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28 Birmingham Road
Unit 10
Willowton
Pietermaritzburg

HSS CENTRE DRILLS

Stock Code	Point Ø mm	Body Ø mm	Overall length mm
CDM1	1.0	3.15	31.5
CDM1.6	1.6	4.0	35.5
CDM2	2.0	5.0	40.0
CDM2.5	2.5	6.3	45.0
CDM3.15	3.15	8.0	50.0
CDM4	4.0	10.0	56.0
CDM5	5.0	12.5	63.0
CDM6.3	6.3	16.0	71.0

Stock Code	Point Ø mm	Body Ø mm	Overall length mm
CDM1C	1.0	3.15	31.5
CDM2C	2.0	5.0	40.0
CDM2.5C	2.5	6.3	45.0
CDM3.15C	3.15	8.0	50.0
CDM4C	4.0	10.0	56.0
CDM5C	5.0	12.5	63.0
CDM6.3C	6.3	16.0	71.0

HSS CENTRE DRILLS DIN 333 FORM A

120˚ point angle bright finish

Range of applications
Centre drill for the production of centre holes according to DIN 332 sheet 1, form A (without protective chamfer)

Stock Code	Point Ø mm	Body Ø mm	Overall length mm
ACD1	1.0	3.15	31.5
ACD1.6	1.6	4.0	35.5
ACD2	2.0	5.0	40.0
ACD2.5	2.5	6.3	45.0
ACD3.15	3.15	8.0	50.0
ACD4	4.0	10.0	56.0
ACD5	5.0	12.5	63.0
ACD6.3	6.3	16.0	71.0

BRITISH STANDARD CENTRE DRILLS HSS - RIGHT HAND

NO.6142 B.S. 328 A (1950)

Stock Code	Point Ø mm	Body Ø mm	Overall length mm
CDBS1	1.19	3.17	38.0
CDBS2	1.59	4.76	44.0
CDBS3	2.38	6.35	51.0
CDBS4	3.17	7.94	57.0
CDBS5	4.76	11.11	63.0
CDBS6	6.35	15.87	76.0
CDBS7	7.94	19.05	89.0

HSS STEPPED SHEET METAL DRILLS

Stock Code	Capacity mm	Diameter range mm	No. of steps	Shank Ø	Overall length mm
SMD4-12X5	4-12	4,6,8,10,12	5	6	65
SMD4-12X9	4-12	4,5,6,7,8,9,10,11,12	9	6	65
SMD4-20X9	4-20	4,6,8,10,12,14,16,18,20	9	6	65
SMD6-38X12	6-38	6,9,13,16,19,21,23 26,29,32,35,39	12	10	100

HSS SINGLE ENDED STUB DRILLS

DIN 1897 RH cutting 118˚ point angle

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
SDR2.8S	2.8	16	46
SDR3S	3.0	16	46
SDR3.2S	3.2	18	49
SDR3.3S	3.3	18	49
SDR3.5S	3.5	20	52
SDR2.8S	2.8	16	46
SDR3S	3.0	16	46
SDR3.2S	3.2	18	49
SDR3.3S	3.3	18	49
SDR3.5S	3.5	20	52
SDR3.8S	3.8	22	55
SDR4S	4.0	22	55
SDR4.1S	4.1	22	55
SDR4.2S	4.2	22	55
SDR4.5S	4.5	24	58
SDR4.8S	4.8	26	62
SDR4.9S	4.9	26	62
SDR5S	5.0	26	62
SDR6S	6.0	28	66
SDR6.2S	6.2	31	70
SDR6.5S	6.5	31	70

HSS STUB DRILLS FULLY GROUND

DIN 1897RN

118˚ point angle cross cut point steam tempered

Range of applications
Industrial quality twist drill for drilling of steel and steel castings, alloy and plain carbon. For drilling thin sections and sheet-metal.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ASDR2S#	2.0	38	12
ASDR2.1S#	2.1	38	12
ASDR2.2S#	2.2	40	13
ASDR2.3S#	2.3	40	13
ASDR2.4S#	2.4	43	14

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ASDR2.5S#	2.5	43	14
ASDR2.6S#	2.6	43	14
ASDR2.7S#	2.7	46	16
ASDR2.8S#	2.8	46	16
ASDR2.9S#	2.9	46	16
ASDR3S#	3.0	46	16
ASDR3.1S#	3.1	49	18
ASDR3.2S#	3.2	49	18
ASDR3.3S#	3.3	49	18
ASDR3.4S#	3.4	52	20
ASDR3.5S#	3.5	52	20
ASDR3.6S#	3.6	52	20
ASDR3.7S#	3.7	52	20
ASDR3.8S#	3.8	55	22
ASDR3.9S#	3.9	55	22
ASDR4S#	4.0	55	22
ASDR4.1S#	4.1	55	22
ASDR4.2S#	4.2	55	22
ASDR4.3S#	4.3	58	24
ASDR4.4S#	4.4	58	24
ASDR4.5S#	4.5	58	24
ASDR4.6S#	4.6	58	24
ASDR4.7S#	4.7	58	24
ASDR4.8S#	4.8	62	26
ASDR4.9S#	4.9	62	26
ASDR5S#	5.0	62	26
ASDR5.1S#	5.1	62	26
ASDR5.2S#	5.2	62	26
ASDR5.3S#	5.3	62	26
ASDR5.4S#	5.4	66	28
ASDR5.5S#	5.5	66	28
ASDR5.6S#	5.6	66	28
ASDR5.7S#	5.7	66	28
ASDR5.8S#	5.8	66	28
ASDR5.9S#	5.9	66	28
ASDR6S#	6.0	66	28
ASDR6.2S#	6.2	70	31
ASDR6.5S#	6.5	70	31
ASDR6.8S#	6.8	74	34
ASDR7S#	7.0	74	34
ASDR7.2S#	7.2	74	34
ASDR7.5S#	7.5	74	34
ASDR7.8S#	7.8	79	37
ASDR8S#	8.0	79	37
ASDR8.2S#	8.2	79	37
ASDR8.5S#	8.5	84	37
ASDR9S#	9.0	84	40
ASD9.5S#	9.5	84	40
ASD10S#	10.0	89	43
ASDR10.2S#	10.2	89	43
ASDR10.5S#	10.5	89	43
ASDR11S#	11.0	95	47
ASDR11.5S#	11.5	95	47
ASDR12.S#	12.0	102	51
ASDR12.5S#	12.5	102	51
ASDR13S#	13.0	102	51
ASDR13.5S#	13.5	107	54
ASDR14S#	14.0	107	54
ASDR15S#	15.0	111	56
ASDR16S#	16.0	115	56

HSS-ECo STUB DRILLS FULLY GROUND

DIN 1897PZ

118˚ point angle cross cut point AC bright finish

Range of applications

5% - cobalt alloyed high-efficiency drill with re-inforced web. Specially suitable for drilling stainless steel, acid-resisting steel, spring steel. best for hand held operation.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ACOSDR1.S	1.0	26	6
ACOSDR1.1S	1.1	28	7
ACOSDR1.2S	1.2	30	8
ACOSDR1.3S	1.3	30	8
ACOSDR1.4S	1.4	32	9
ACOSDR1.5S	1.5	32	9
ACOSDR1.6S	1.6	34	10
ACOSDR1.7S	1.7	34	10
ACOSDR1.8S	1.8	36	11
ACOSDR1.9S	1.9	36	11
ACOSDR2.S	2.0	38	12
ACOSDR2.1S	2.1	38	12
ACOSDR2.2S	2.2	40	13
ACOSDR2.3S	2.3	40	13
ACOSDR2.4S	2.4	43	14
ACOSDR2.5S	2.5	43	14
ACOSDR2.6S	2.6	43	14
ACOSDR2.7S	2.7	46	16
ACOSDR2.8S	2.8	46	16
ACOSDR2.9S	2.9	46	16
ACOSDR3.S	3.0	46	16
ACOSDR3.1S	3.1	49	18
ACOSDR3.2S	3.2	49	18
ACOSDR3.3S	3.3	49	18
ACOSDR3.4S	3.4	52	20
ACOSDR3.5S	3.5	52	20
ACOSDR3.6S	3.6	52	20
ACOSDR3.7S	3.7	52	20
ACOSDR3.8S	3.8	55	22
ACOSDR3.9S	3.9	55	22
ACOSDR4S	4.0	55	22
ACOSDR4.1S	4.1	55	22
ACOSDR4.2S	4.2	55	22
ACOSDR4.3S	4.3	58	24
ACOSDR4.4S	4.4	58	24
ACOSDR4.5S	4.5	58	24
ACOSDR4.6S	4.6	58	24
ACOSDR4.7S	4.7	58	24
ACOSDR4.8S	4.8	62	26
ACOSDR4.9S	4.9	62	26
ACOSDR5S	5.0	62	26
ACOSDR5.1S	5.1	62	26
ACOSDR5.2S	5.2	62	26
ACOSDR5.3S	5.3	62	26
ACOSDR5.4S	5.4	66	28
ACOSDR5.5S	5.5	66	28
ACOSDR5.6S	5.6	66	28
ACOSDR5.7S	5.7	66	28
ACOSDR5.8S	5.8	66	28
ACOSDR5.9S	5.9	66	28
ACOSDR6S	6.0	66	28
ACOSDR6.1S	6.1	70	31
ACOSDR6.2S	6.2	70	31
ACOSDR6.3S	6.3	70	31
ACOSDR6.4S	6.4	70	31
ACOSDR6.5S	6.5	70	31
ACOSDR6.6S	6.6	70	31
ACOSDR6.7S	6.7	70	31
ACOSDR6.8S	6.8	74	34
ACOSDR6.9S	6.9	74	34
ACOSDR7S	7.0	74	34
ACOSDR7.1S	7.1	74	34
ACOSDR7.2S	7.2	74	34
ACOSDR7.3S	7.3	74	34
ACOSDR7.4S	7.4	74	34
ACOSDR7.5S	7.5	74	34
ACOSDR7.6S	7.6	79	37
ACOSDR7.7S	7.7	79	37
ACOSDR7.8S	7.8	79	37
ACOSDR7.9S	7.9	79	37

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ACOSDR8S	8.0	79	37
ACOSDR8.1S	8.1	79	37
ACOSDR8.2S	8.2	79	37
ACOSDR8.3S	8.3	79	37
ACOSDR8.4S	8.4	79	37
ACOSDR8.5S	8.5	79	37
ACOSDR8.6S	8.6	84	40
ACOSDR8.7S	8.7	84	40
ACOSDR8.8S	8.8	84	40
ACOSDR8.9S	8.9	84	40
ACOSDR9S	9.0	84	40
ACOSDR9.1S	9.1	84	40
ACOSDR9.2S	9.2	84	40
ACOSDR9.3S	9.3	84	40
ACOSDR9.4S	9.4	84	40
ACOSDR9.5S	9.5	84	40
ACOSDR9.6S	9.6	89	43
ACOSDR9.7S	9.7	89	43
ACOSDR9.8S	9.8	89	43
ACOSDR9.9S	9.9	89	43
ACOSDR10S	10.0	89	43
ACOSDR10.2S	10.2	89	43
ACOSDR10.5S	10.5	89	43
ACOSDR11S	11.0	95	47
ACOSDR11.5S	11.5	95	47
ACOSDR12S	12.0	102	51
ACOSDR12.5S	12.5	102	51
ACOSDR13S	13.0	102	51

HSS-E/PM SPIRAL DRILLS DIN 1897 FORTE

130° point angle point shape B alunit

Range of applications

High-performance-twist drills with FORTE - special profile for optimized chipping. Especially suitable for machining-centres and automatic lathes.

Big range of application for all materials up to approx. 1300 N/mm^2, predominately longchipping ones and also for stainless-austenitic steels. Suitable for dry cutting of steels.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ACOTSDR2.8S	2.8	46	16
ACOTSDR3S	3.0	46	16
ACOTSDR3.3S	3.3	49	18
ACOTSDR3.5S	3.5	52	20
ACOTSDR3.7S	3.7	52	20
ACOTSDR4S	4.0	55	22
ACOTSDR4.2S	4.2	55	22
ACO0TSDR4.5S	4.5	58	24
ACOTSDR4.65S	4.65	58	24
ACOTSDR4.8S	4.8	62	26
ACOTSDR5S	5.0	62	26
ACOTSDR5.5S	5.5	66	28
ACOTSDR6S	6.0	66	28
ACOTSDR6.5S	6.5	70	31
ACOTSDR6.8S	6.8	74	34
ACOTSDR7S	7.0	74	34
ACOTSDR7.4S	7.4	74	34
ACOTSDR7.5S	7.5	74	34
ACOTSDR8S	8.0	79	37
ACOTSDR8.5S	8.5	79	37
ACOTSDR9S	9.0	84	40
ACOTSDR9.3S	9.3	84	40
ACOTSDR9.5S	9.5	84	40

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ACOTSDR10S	10.0	89	43
ACOTSDR10.2S	10.2	89	43
ACOTSDR10.5S	10.5	89	43
ACOTSDR11S	11.0	95	47
ACOTSDR11.5S	11.5	95	47
ACOTSDR12S	12.0	102	51

HSS DOUBLE ENDED STUB DRILLS

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
DESDR2S	2.0	38	7.5
DESDR2.2S	2.2	40	8.5
DESDR2.5S	2.5	43	9.5
DESDR2.8S	2.8	46	10.6
DESDR3S	3.0	46	10.6
DESDR3.2S	3.2	49	11.2
DESDR3.3S	3.3	49	11.2
DESDR3.5S	3.5	52	12.5
DESDR3.8S	3.8	55	14.0
DESDR4S	4.0	55	14.0
DESDR4.1S	4.1	55	14.0
DESDR4.2S	4.2	55	14.0
DESDR4.5S	4.5	58	15.5
DESDR4.8S	4.8	62	17.0
DESDR4.9S	4.9	62	17.0
DESDR5S	5.0	62	17.0
DESDR5.2S	5.2	62	17.0
DESDR5.5S	5.5	66	19.0
DESDR5.8S	5.8	66	19.0
DESDR6S	6.0	66	19.0
DESDR6.2S	6.2	70	21.2
DESDR6.5S	6.5	70	21.2
DESDR7S	7.0	74	23.6
DESDR7.5S	7.5	74	23.6
DESDR8S	8.0	79	25.0

HSS TWIST DRILLS GROUND FLUTE STRAIGHT SHANK

DIN 338 130° point angle split point

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
GDR1SYG	1.00	34	12
GDR1.1SYG	1.10	36	14
GDR1.2SYG	1.20	38	16
GDR1.3SYG	1.30	38	
GDR1.4SYG	1.40	40	16
			18
GDR1.5SYG	1.50	40	18
GDR1.6SYG	1.60	43	20
GDR1.7SYG	1.70	43	20
GDR1.8SYG	1.80	46	
GDR1.9SYG	1.90	46	22
			22
GDR2SYG	2.00	49	24
GDR2.1SYG	2.10	49	24
GDR2.2SYG	2.20	53	27
GDR2.3SYG	2.30	53	27
GDR2.4SY	2.40		

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
GDR2.5SYG	2.50	57	30
GDR2.6SYG	2.60	57	30
GDR2.7SYG	2.70	57	30
GDR2.8SYG	2.80	61	33
GDR2.9SYG	2.90	61	33
GDR3SYG	3.00	61	33
GDR3.1SYG	3.10	61	33
GDR3.2SYG	3.20	65	36
GDR3.3SYG	3.30	65	36
GDR3.4SYG	3.40	65	36
GDR3.5SYG	3.50	70	39
GDR3.6SYG	3.60	70	39
GDR3.7SYG	3.70	70	39
GDR3.8SYG	3.80	70	39
GDR3.9SYG	3.90	75	43
GDR4SYG	4.00	75	43
GDR4.1SYG	4.10	75	43
GDR4.2SYG	4.20	75	43
GDR4.3SYG	4.30	75	43
GDR4.4SYG	4.40	80	47
GDR4.5SYG	4.50	80	47
GDR4.6SYG	4.60	80	47
GDR4.7SYG	4.70	80	47
GDR4.8SYG	4.80	80	47
GDR4.9SYG	4.90	86	52
GDR5SYG	5.00	86	52
GDR5.1SYG	5.10	86	52
GDR5.2SYG	5.20	86	52
GDR5.3SYG	5.30	86	52
GDR5.4SYG	5.40	86	52
GDR5.5SYG	5.50	93	57
GDR5.6SYG	5.60	93	57
GDR5.7SYG	5.70	93	57
GDR5.8SYG	5.80	93	57
GDR5.9SYG	5.90	93	57
GDR6SYG	6.00	93	57
GDR6.1SYG	6.10	93	57
GDR6.2SYG	6.20	101	63
GDR6.3SYG	6.30	101	63
GDR6.4SYG	6.40	101	63
GDR6.5SYG	6.50	101	63
GDR6.6SYG	6.60	101	63
GDR6.7SYG	6.70	101	63
GDR6.8SYG	6.80	101	63
GDR6.9SYG	6.90	109	69
GDR7SYG	7.00	109	69
GDR7.1SYG	7.10	109	69
GDR7.2SYG	7.20	109	69
GDR7.3SYG	7.30	109	69
GDR7.4SYG	7.40	109	69
GDR7.5SYG	7.50	109	69
GDR7.6SYG	7.60	117	75
GDR7.7SYG	7.70	117	75
GDR7.8SYG	7.80	117	75
GDR7.9SYG	7.90	117	75
GDR8SYG	8.00	117	75
GDR8.1SYG	8.10	117	75
GDR8.2SYG	8.20	117	75
GDR8.3SYG	8.30	117	75
GDR8.4SYG	8.40	117	75
GDR8.5SYG	8.50	117	75
GDR8.6SYG	8.60	125	81
GDR8.7SYG	8.70	125	81
GDR8.8SYG	8.80	125	81
GDR8.9SYG	8.90	125	81
GDR9SYG	9.00	125	81
GDR9.1SYG	9.10	125	81
GDR9.2SYG	9.20	125	81
GDR9.3SYG	9.30	125	81
GDR9.4SYG	9.40	125	81
GDR9.5SYG	9.50	125	81
GDR9.6SYG	9.60	133	87
GDR9.7SYG	9.70	133	87

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
GDR9.8SYG	9.80	133	87
GDR9.9SYG	9.90	133	87
GDR10SYG	10.00	133	87
GDR10.1SYG	10.10	133	87
GDR10.2SYG	10.20	133	87
GDR10.3SYG	10.30	133	87
GDR10.4SYG	10.40	133	87
GDR10.5SYG	10.50	133	87
GDR10.6SYG	10.60	133	87
GDR10.7SYG	10.70	142	94
GDR10.8SYG	10.80	142	94
GDR10.9SYG	10.90	142	94
GDR11SYG	11.00	142	94
GDR11.1SYG	11.10	142	94
GDR11.2SYG	11.20	142	94
GDR11.3SYG	11.30	142	94
GDR11.4SYG	11.40	142	94
GDR11.5SYG	11.50	142	94
GDR11.6SYG	11.60	142	94
GDR11.7SYG	11.70	142	94
GDR11.8SYG	11.80	142	94
GDR11.9SYG	11.90	151	101
GDR12SYG	12.00	151	101
GDR12.1SYG	12.10	151	101
GDR12.2SYG	12.20	151	101
GDR12.3SYG	12.30	151	101
GDR12.4SYG	12.40	151	101
GDR12.5SYG	12.50	151	101
GDR12.6SYG	12.60	151	101
GDR12.7SYG	12.70	151	101
GDR12.8SYG	12.80	151	101
GDR12.9SYG	12.90	151	101
GDR13SYG	13.00	151	101

HSS TWIST DRILLS GROUND FLUTE STRAIGHT SHANK

DIN 338 130˚ point angle split point Bronzecoat

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
GDR.8SC	0.80	30	10
GDR.9SC	0.90	32	11
GDR1SC	1.00	34	12
GDR1.1SC	1.10	36	14
GDR1.2SC	1.20	38	16
GDR1.3SC	1.30	38	16
GDR1.4SC	1.40	40	18
GDR1.5SC	1.50	40	18
GDR1.6SC	1.60	43	20
GDR1.7SC	1.70	43	20
GDR1.8SC	1.80	46	22
GDR1.9SC	1.90	46	22
GDR2SC	2.00	49	24
GDR2.1SC	2.10	49	24
GDR2.2SC	2.20	53	27
GDR2.3SC	2.30	53	27
GDR2.4SC	2.40	57	30
GDR2.5SC	2.50	57	30
GDR2.6SC	2.60	57	30
GDR2.7SC	2.70	61	33
GDR2.8SC	2.80	61	33
GDR2.9SC	2.90	61	33
GDR3SC	3.00	61	33
GDR3.1SC	3.10	65	36
GDR3.2SC	3.20	65	36

HSS TWIST DRILLS GROUND FLUTE STRAIGHT SHANK

DIN 338 130° point angle split point Bronzecoat

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
GDR3.3SC	3.30	65	36
GDR3.4SC	3.40	70	39
GDR3.5SC	3.50	70	39
GDR3.6SC	3.60	70	39
GDR3.7SC	3.70	70	39
GDR3.8SC	3.80	75	43
GDR3.9SC	3.90	75	43
GDR4SC	4.00	75	43
GDR4.1SC	4.10	75	43
GDR4.2SC	4.20	75	43
GDR4.3SC	4.30	80	47
GDR4.4SC	4.40	80	47
GDR4.5SC	4.50	80	47
GDR4.6SC	4.60	80	47
GDR4.7SC	4.70	80	47
GDR4.8SC	4.80	86	52
GDR4.9SC	4.90	86	52
GGDR5SC	5.00	86	52
GDR5.1SC	5.10	86	52
GDR5.2SC	5.20	86	52
GDR5.3SC	5.30	86	52
GDR5.4SC	5.40	93	57
GDR5.5SC	5.50	93	57
GDR5.6SC	5.60	93	57
GDR5.7SC	5.70	93	57
GDR5.8SC	5.80	93	57
GDR5.9SC	5.90	93	57
GDR6SC	6.00	93	57
GDR6.1SC	6.10	101	63
GDR6.2SC	6.20	101	63
GDR6.3SC	6.30	101	63
GDR6.4SC	6.40	101	63
GDR6.5SC	6.50	101	63
GDR6.6SC	6.60	101	63
GDR6.7SC	6.70	101	63
GDR6.8SC	6.80	109	69
GDR6.9SC	6.90	109	69
GDR7SC	7.00	109	69
GDR7.1SC	7.10	109	69
GDR7.2SC	7.20	109	69
GDR7.3SC	7.30	109	69
GDR7.4SC	7.40	109	69
GDR7.5SC	7.50	109	69
GDR7.6SC	7.60	117	75
GDR7.7SC	7.70	117	75
GDR7.8SC	7.80	117	75
GDR7.9SC	7.90	117	75
GDR8SC	8.00	117	75
GDR8.1SC	8.10	117	75
GDR8.2SC	8.20	117	75
GDR8.3SC	8.30	117	75
GDR8.4SC	8.40	117	75
GDR8.5SC	8.50	117	75
GDR8.6SC	8.60	125	81
GDR8.7SC	8.70	125	81
GDR8.8SC	8.80	125	81
GDR8.9SC	8.90	125	81
GDR9SC	9.00	125	81
GDR9.1SC	9.10	125	81
GDR9.2SC	9.20	125	81
GDR9.3SC	9.30	125	81
GDR9.4SC	9.40	125	81
GDR9.5SC	9.50	125	81

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
GDR9.6SC	9.60	133	87
GDR9.7SC	9.70	133	87
GDR9.8SC	9.80	133	87
GDR9.9SC	9.90	133	87
GDR10SC	10.00	133	87
GDR10.1SC	10.10	133	87
GDR10.2SC	10.20	133	87
GDR10.3SC	10.30	133	87
GDR10.4SC	10.40	133	87
GDR10.5SC	10.50	133	87
GDR10.6SC	10.60	133	87
GDR10.7SC	10.70	142	94
GDR10.8SC	10.80	142	94
GDR10.9SC	10.90	142	94
GDR11SC	11.00	142	94
GDR11.1SC	11.10	142	94
GDR11.2SC	11.20	142	94
GDR11.3SC	11.30	142	94
GDR11.4SC	11.40	142	94
GDR11.5SC	11.50	142	94
GDR11.6SC	11.60	142	94
GDR11.7SC	11.70	142	94
GDR11.8SC	11.80	142	94
GDR11.9SC	11.90	151	101
GDR12SC	12.00	151	101
GDR12.1SC	12.10	151	101
GDR12.2SC	12.20	151	101
GDR12.3SC	12.30	151	101
GDR12.4SC	12.40	151	101
GDR12.5SC	12.50	151	101
GDR12.6SC	12.60	151	101
GDR12.7SC	12.70	151	101
GDR12.8SC	12.80	151	101
GDR12.9SC	12.90	151	101
GDR13SC	13.00	151	101

HSS JOBBER DRILLS FULLY GROUND

DIN 338RN

118° point angle cross cut point AC steam tempered

Range of applications

Industrial quality twist drill for drilling of steel and steel castings, alloy and plain carbon, grey iron castings, copper-alloys, nickel-silver, graphite and similar materials.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ADR0.4S	0.4	20	5
ADR0.45S	0.45	20	5
ADR0.5S	0.5	22	6
ADR0.55S	0.55	24	7
ADR0.6S	0.6	24	7
ADR0.65S	0.65	26	8
ADR0.7S	0.7	29	9
ADR0.75S	0.75	28	9
ADR0.8S	0.8	30	10
ADR0.85S	0.85	30	10
ADR0.9S	0.9	32	11
ADR0.95S	0.95	32	11
ADR1S	1.0	34	12
ADR1.05S	1.05	34	12
ADR1.1S	1.1	36	14
ADR1.15S	1.15	36	14
ADR1.2S	1.2	38	16
ADR1.25S	1.25	38	16
ADR1.3S	1.3	38	16
ADR1.35S	1.35	40	18

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ADR1.4S	1.4	40	18
ADR1.45S	1.45	40	18
ADR1.5S	1.5	40	18
ADR1.55S	1.55	43	20
ADR1.6S	1.6	43	20
ADR1.65S	1.65	43	20
ADR1.7S	1.7	43	20
ADR1.75S	1.75	46	22
ADR1.8S	1.8	46	22
ADR1.85S	1.85	46	22
ADR1.9S	1.9	46	22
ADR1.95S	1.95	49	24
ADR2S	2.0	49	24
ADR2.05S	2.05	49	24
ADR2.1S	2.10	49	24
ADR2.15S	2.15	53	27
ADR2.2S	2.2	53	27
ADR2.25S	2.25	53	27
ADR2.3S	2.3	53	27
ADR2.35S	2.35	53	27
ADR2.4S	2.4	57	30
ADR2.45S	2.45	57	30
ADR2.5S	2.5	57	30
ADR2.55S	2.55	57	30
ADR2.6S	2.6	57	30
ADR2.65S	2.65	57	30
ADR2.7S	2.7	61	33
ADR2.75S	2.75	61	33
ADR2.8S	2.8	61	33
ADR2.85S	2.85	61	33
ADR2.9S	2.9	61	33
ADR2.95S	2.95	61	33
ADR3S	3.0	61	33
ADR3.1S	3.10	65	36
ADR3.2S	3.2	65	36
ADR3.25S	3.25	65	36
ADR3.3S	3.3	65	36
ADR3.4S	3.4	70	39
ADR3.5S	3.5	70	39
ADR3.6S	3.6	70	39
ADR3.7S	3.7	70	39
ADR3.75S	3.75	70	43
ADR3.8S	3.8	75	43
ADR3.9S	3.9	75	43
ADR4S	4.0	75	43
ADR4.1S	4.1	75	43
ADR4.2S	4.2	75	47
ADR4.25S	4.25	80	47
ADR4.3S	4.3	80	47
ADR4.4S	4.4	80	47
ADR4.5S	4.5	80	47
ADR4.6S	4.6	80	47
ADR4.7S	4.7	80	47
ADR4.75S	4.75	86	52
ADR4.8S	4.8	86	52
ADR4.9S	4.9	86	52
ADR5S	5.0	86	52
ADR5.1S	5.1	86	52
ADR5.2S	5.2	86	52
ADR5.25S	5.25	86	52
ADR5.3S	5.3	93	57
ADR5.4S	5.4	93	57
ADR5.5S	5.5	93	57
ADR5.6S	5.6	93	57
ADR5.7S	5.7	93	57
ADR5.75S	5.75	93	57
ADR5.8S	5.8	93	57
ADR5.9S	5.9	101	57
ADR6S	6.0	101	63
ADR6.1S	6.1	101	63
ADR6.2S	6.2	101	63
ADR6.25S	6.25	101	63
ADR6.3S	6.3	101	63

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ADR6.4S	6.4	101	63
ADR6.5S	6.5	101	63
ADR6.6S	6.6	101	63
ADR6.7S	6.7	101	69
ADR6.75S	6.75	109	69
ADR6.8S	6.8	109	69
ADR6.9S	6.9	109	69
ADR7S	7.0	109	69
ADR7.1S	7.1	109	69
ADR7.2S	7.2	109	69
ADR7.25S	7.25	109	69
ADR7.3S	7.3	109	69
ADR7.4S	7.4	109	69
ADR7.5S	7.5	109	75
ADR7.6S	7.6	117	75
ADR7.7S	7.7	117	75
ADR7.75S	7.75	117	75
ADR7.8S	7.8	117	75
ADR7.9S	7.9	117	75
ADR8S	8.0	117	75
ADR8.1S	8.1	117	75
ADR8.2S	8.2	117	75
ADR8.25S	8.25	117	75
ADR8.3S	8.3	117	75
ADR8.4S	8.4	117	75
ADR8.5S	8.5	117	81
ADR8.6S	8.6	125	81
ADR8.7S	8.7	125	81
ADR8.75S	8.75	125	81
ADR8.8S	8.8	125	81
ADR8.9S	8.9	125	81
ADR9S	9.0	125	81
ADR9.1S	9.1	125	81
ADR9.2S	9.2	125	81
ADR9.25S	9.25	125	81
ADR9.3S	9.3	125	81
ADR9.4S	9.4	125	81
ADR9.5S	9.5	125	87
ADR9.6S	9.6	133	87
ADR9.7S	9.7	133	87
ADR9.75S	9.75	133	87
ADR9.8S	9.8	133	87
ADR9.9S	9.9	133	87
ADR10S	10.0	133	87
ADR10.1S	10.1	133	87
ADR10.2S	10.2	133	87
ADR10.25S	10.25	133	87
ADR10.3S	10.3	133	87
ADR10.4S	10.4	133	87
ADR10.5S	10.5	133	87
ADR10.6S	10.6	133	94
ADR10.7S	10.7	142	94
ADR10.75S	10.75	142	94
ADR10.8S	10.8	142	94
ADR10.9S	10.9	142	94
ADR11S	11.0	142	94
ADR11.1S	11.1	142	94
ADR11.2S	11.2	142	94
ADR11.25S	11.25	142	94
ADR11.3S	11.3	142	94
ADR11.4S	11.4	142	94
ADR11.5S	11.5	142	94
ADR11.6S	11.6	142	94
ADR11.7S	11.7	142	94
ADR11.75S	11.75	142	94
ADR11.8S	11.8	142	101
ADR11.9S	11.9	151	101
ADR12S	12.0	151	101
ADR12.1S	12.1	151	101
ADR12.2S	12.2	151	101
ADR12.25S	12.25	151	101
ADR12.3S	12.3	151	101
ADR12.4S	12.4	151	101
ADR12.5S	12.5	151	101
ADR12.6S	12.6	151	101
ADR12.7S	12.7	151	101
ADR12.75S	12.75	151	101

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ADR12.8S	12.8	151	101
ADR12.9S	12.9	151	101
ADR13S	13.0	151	101
ADR13.25S	13.25	160	108
ADR13.5S	13.5	160	108
ADR13.75S	13.75	160	108
ADR14S	14.0	160	108
ADR14.25S	14.25	169	114
ADR14.5S	14.5	169	114
ADR14.75S	14.75	169	114
ADR15S	15.0	169	114
ADR15.25S	15.25	178	120
ADR15.5S	15.5	178	120
ADR15.75S	15.75	178	120
ADR16S	16.0	178	120
ADR16.5S	16.5	184	125
ADR17S	17.0	184	125
ADR17.5S	17.5	191	130
ADR18S	18.0	191	130
ADR18.5S	18.5	198	135
ADR19S	19.0	198	135
ADR19.5S	19.5	205	140
ADR20S	20.0	205	140

HSS-ECo JOBBER DRILLS

DIN 338RN

130° point angle cross cut point C bright finish

Range of applications
5% - cobalt alloyed jobber drills with high heat resistance for drilling steels with tensile strength over 800 N/mm², specially suitable for high alloyed steels, bearing-steels, hot/cold-rolled steel.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ASTDCODR1S	1.0	34	12
ASTDCODR1.1S	1.1	36	14
ASTDCODR1.2S	1.2	38	16
ASTDCODR1.3S	1.3	38	16
ASTDCODR1.4S	1.4	40	18
ASTDCODR1.5S	1.5	40	18
ASTDCODR1.6S	1.6	43	20
ASTDCODR1.7S	1.7	43	20
ASTDCODR1.8S	1.8	46	22
ASTDCODR1.9S	1.9	46	22
ASTDCODR2S	2.0	49	24
ASTDCODR2.1S	2.1	49	24
ASTDCODR2.2S	2.2	53	27
ASTDCODR2.3S	2.3	53	27
ASTDCODR2.4S	2.4	57	30
ASTDCODR2.5S	2.5	57	30
ASTDCODR2.6S	2.6	57	30
ASTDCODR2.7S	2.7	61	33
ASTDCODR2.8S	2.8	61	33
ASTDCODR2.9S	2.9	61	33
ASTDCODR3S	3.0	61	33
ASTDCODR3.1S	3.1	65	36
ASTDCODR3.2S	3.2	65	36
ASTDCODR3.3S	3.3	65	36
ASTDCODR3.4S	3.4	70	39

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ASTDCODR3.5S	3.5	70	39
ASTDCODR3.6S	3.6	70	39
ASTDCODR3.7S	3.7	70	39
ASTDCODR3.8S	3.8	75	43
ASTDCODR3.9S	3.9	75	43
ASTDCODR4S	4.0	75	43
ASTDCODR4.1S	4.1	75	43
ASTDCODR4.2S	4.2	75	43
ASTDCODR4.3S	4.3	80	47
ASTDCODR4.4S	4.4	80	47
ASTDCODR4.5S	4.5	80	47
ASTDCODR4.6S	4.6	80	47
ASTDCODR4.7S	4.7	80	47
ASTDCODR4.8S	4.8	86	52
ASTDCODR4.9S	4.9	86	52
ASTDCODR5S	5.0	86	52
ASTDCODR5.1S	5.1	86	52
ASTDCODR5.2S	5.2	86	52
ASTDCODR5.3S	5.3	86	52
ASTDCODR5.4S	5.4	93	57
ASTDCODR5.5S	5.5	93	57
ASTDCODR5.6S	5.6	93	57
ASTDCODR5.7S	5.7	93	57
ASTDCODR5.8S	5.8	93	57
ASTDCODR5.9S	5.9	93	57
ASTDCODR6S	6.0	93	57
ASTDCODR6.1S	6.1	101	63
ASTDCODR6.2S	6.2	101	63
ASTDCODR6.3S	6.3	101	63
ASTDCODR6.4S	6.4	101	63
ASTDCODR6.5S	6.5	101	63
ASTDCODR6.6S	6.6	101	63
ASTDCODR6.7S	6.7	101	63
ASTDCODR6.8S	6.8	109	69
ASTDCODR6.9S	6.9	109	69
ASTDCODR7S	7.0	109	69
ASTDCODR7.1S	7.1	109	69
ASTDCODR7.2S	7.2	109	69
ASTDCODR7.3S	7.3	109	69
ASTDCODR7.4S	7.4	109	69
ASTDCODR7.5S	7.5	109	69
ASTDCODR7.6S	7.6	117	75
ASTDCODR7.7S	7.7	117	75
ASTDCODR7.8S	7.8	117	75
ASTDCODR7.9S	7.9	117	75
ASTDCODR8S	8.0	117	75
ASTDCODR8.1S	8.1	117	75
ASTDCODR8.2S	8.2	117	75
ASTDCODR8.3S	8.3	117	75
ASTDCODR8.4S	8.4	117	75
ASTDCODR8.5S	8.5	117	75
ASTDCODR8.6S	8.6	125	81
ASTDCODR8.7S	8.7	125	81
ASTDCODR8.8S	8.8	125	81
ASTDCODR8.9S	8.9	125	81
ASTDCODR9S	9.0	125	81
ASTDCODR9.1S	9.1	125	81
ASTDCODR9.2S	9.2	125	81
ASTDCODR9.3S	9.3	125	81
ASTDCODR9.4S	9.4	125	81
ASTDCODR9.5S	9.5	125	81
ASTDCODR9.6S	9.6	133	87
ASTDCODR9.7S	9.7	133	87
ASTDCODR9.8S	9.8	133	87
ASTDCODR9.9S	9.9	133	87
ASTDCODR10S	10.0	133	87
ASTDCODR10.2S	10.2	133	87
ASTDCODR10.5S	10.5	133	87
ASTDCODR11S	11.0	142	94
ASTDCODR11.5S	11.5	142	94
ASTDCODR12S	12.0	151	101
ASTDCODR12.5S	12.5	151	101
ASTDCODR13S	13.0	151	101
ASTDCODR14S	14.0	160	108
ASTDCODR15S	15.0	169	114

GOLD P POWDER METALLURGY CO5

DIN 338 140° Point angle, Split point, Bright body TiN coated on operational area

Range of applications
High performance drilling in alloy steels, non alloy steels, cast iron and magnesium alloys.

Stock Code	Ø h8 mm	Flute length mm	Overall length mm
DRCO51GP	1.0	12	34
DRCO51.1GP	1.1	14	36
DRCO51.2GP	1.2	16	38
DRCO51.3GP	1.3	16	38
DRCO51.4GP	1.4	18	40
DRCO51.5GP	1.5	18	40
DRCO51.6GP	1.6	20	43
DRCO51.7GP	1.7	20	43
DRCO51.8GP	1.8	22	46
DRCO51.9GP	1.9	22	46
DRCO52GP	2.0	24	49
DRCO52.1GP	2.1	24	49
DRCO52.2GP	2.2	27	53
DRCO52.3GP	2.3	27	53
DRCO52.4GP	2.4	30	57
DRCO52.5GP	2.5	30	57
DRCO52.6GP	2.6	30	57
DRCO52.7GP	2.7	33	61
DRCO52.8.GP	2.8.	33	61
DRCO52.9GP	2.9	33	61
DRCO53GP	3.0	33	61
DRCO53.1GP	3.1	36	65
DRCO53.2GP	3.2	36	65
DRCO53.3GP	3.3	36	65
DRCO53.4GP	3.4	39	70
DRCO53.5GP	3.5	39	70
DRCO53.6GP	3.6	39	70
DRCO53.7GP	3.7	39	70
DRCO53.8GP	3.8	43	75
DRCO53.9GP	3.9	43	75
DRCO54GP	4.0	43	75
DRCO54.1GP	4.1	43	75
DRCO54.2GP	4.2	43	75
DRCO54.3GP	4.3	47	80
DRCO54.4GP	4.4	47	80
DRCO54.5GP	4.5	47	80
DRCO54.6GP	4.6	47	80
DRCO54.7GP	4.7	47	80
DRCO54.8GP	4.8	52	86
DRCO54.9GP	4.9	52	86
DRCO55GP	5.0	52	86
DRCO55.1GP	5.1	52	86
DRCO55.2GP	5.2	52	86
DRCO55.3GP	5.3	52	86
DRCO55.4GP	5.4	57	93
DRCO55.5GP	5.5	57	93
DRCO55.6GP	5.6	57	93
DRCO55.7GP	5.7	57	93
DRCO55.8GP	5.8	57	93
DRCO55.9GP	5.9	57	93
DRCO56GP	6.0	57	93
DRCO56.1GP	6.1	63	101
DRCO56.2GP	6.2	63	101
DRCO56.3GP	6.3	63	101
DRCO56.4GP	6.4	63	101

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Stock Code	Ø h8 mm	Flute length mm	Overall length mm
DRCO56.5GP	6.5	63	101
DRCO56.6GP	6.6	63	101
DRCO56.7GP	6.7	63	101
DRCO56.8GP	6.8	69	109
DRCO56.9GP	6.9	69	109
DRCO57GP	7.0	69	109
DRCO57.1GP	7.1	69	109
DRCO57.2GP	7.2	69	109
DRCO57.3GP	7.3	69	109
DRCO57.4GP	7.4	69	109
DRCO57.5GP	7.5	69	109
DRCO57.6GP	7.6	75	117
DRCO57.7GP	7.7	75	117
DRCO57.8GP	7.8	75	117
DRCO57.9GP	7.9	75	117
DRCO58GP	8.0	75	117
DRCO58.1GP	8.1	75	117
DRCO58.2GP	8.2	75	117
DRCO58.3GP	8.3	75	117
DRCO58.4GP	8.4	75	117
DRCO58.5GP	8.5	75	117
DRCO58.6GP	8.6	81	125
DRCO58.7GP	8.7	81	125
DRCO58.8GP	8.8	81	125
DRCO58.9GP	8.9	81	125
DRCO59GP	9.0	81	125
DRCO59.1GP	9.1	81	125
DRCO59.2GP	9.2	81	125
DRCO59.3GP	9.3	81	125
DRCO59.4GP	9.4	81	125
DRCO59.5GP	9.5	81	125
DRCO59.6GP	9.6	87	133
DRCO59.7GP	9.7	87	133
DRCO59.8GP	9.8	87	133
DRCO59.9GP	9.9	87	133
DRCO510GP	10.0	87	133
DRCO510.1GP	10.1	87	133
DRCO510.2GP	10.2	87	133
DRCO510.3GP	10.3	87	133
DRCO510.4GP	10.4	87	133
DRCO510.5GP	10.5	87	133
DRCO510.6GP	10.6	87	133
DRCO510.7GP	10.7	94	142
DRCO510.8GP	10.8	94	142
DRCO510.9GP	10.9	94	142
DRCO511GP	11.0	94	142
DRCO511.1GP	11.1	94	142
DRCO511.2GP	11.2	94	142
DRCO511.3GP	11.3	94	142
DRCO511.4GP	11.4	94	142
DRCO511.5GP	11.5	94	142
DRCO511.6GP	11.6	94	142
DRCO511.7GP	11.7	94	142
DRCO511.8GP	11.8	94	142
DRCO511.9GP	11.9	101	151
DRCO512GP	12.0	101	151
DRCO512.1GP	12.1	101	151
DRCO512.2GP	12.2	101	151
DRCO512.3GP	12.3	101	151
DRCO512.4GP	12.4	101	151
DRCO512.5GP	12.5	101	151
DRCO512.6GP	12.6	101	151
DRCO512.7GP	12.7	101	151
DRCO512.8GP	12.8	101	151
DRCO512.9GP	12.9	101	151
DRCO513GP	13.0	101	151

HSS-ECo JOBBER DRILLS

DIN 338RN

130˚ point angle cross cut point C bright finish

Range of applications

General high performance twist drills for drilling of hard machinable, high-strength materials for example steels with a tensile strength up to 1300 N/mm², stainless steels and titanium alloys.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ATCODR1S	1.0	34	12
ATCODR1.5S	1.5	40	18
ATCODR1.6S	1.6	43	20
ATCODR2S	2.0	49	24
ATCODR2.5S	2.5	57	30
ATCODR3S	3.0	61	33
ATCODR3.2S	3.2	65	36
ATCODR3.3S	3.3	65	36
ATCODR3.5S	3.5	70	39
ATCODR3.7S	3.7	70	39
ATCODR3.8S	3.8	75	43
ATCODR4S	4.0	75	43
ATCODR4.2S	4.2	75	43
ATCODR4.3S	4.3	80	47
ATCODR4.5S	4.5	80	47
ATCODR4.6S	4.6	80	47
ATCODR4.8S	4.8	86	52
ATCODR5S	5.0	86	52
ATCODR5.1S	5.1	86	52
ATCODR5.5S	5.5	93	57
ATCODR5.7S	5.7	93	57
ATCODR5.8S	5.8	93	57
ATCODR6.S	6.0	93	57
ATCODR6.5S	6.5	101	63
ATCODR6.8S	6.8	109	69
ATCODR7S	7.0	109	69
ATCODR7.5S	7.5	109	69
ATCODR7.8S	7.8	117	75
ATCODR8S	8.0	117	75
ATCODR8.2S	8.2	117	75
ATCODR8.5S	8.5	117	75
ATCODR9S	9.0	125	81
ATCODR9.5S	9.5	125	81
ATCODR10S	10.0	133	87
ATCODR10.2S	10.20	133	87
ATCODR10.5S	10.5	133	87
ATCODR11S	11.0	142	94
ATCODR11.2S	11.2	142	94
ATCODR11.5S	11.5	142	94
ATCODR12S	12.0	151	101
ATCODR12.5S	12.5	151	101
ATCODR13S	13.0	151	101

HSS JOBBER DRILLS QUICK SPIRAL

DIN 338RW

130˚ point angle bright finish

Range of applications

Fast spiral drill for soft and tough materials giving long chips e.g. aluminium, aluminium alloys, magnesium alloys, soft thermoplastics, hard wood, etc.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AQDR1S	1.0	34	12
AQDR1.1S	1.1	36	14
AQDR1.2S	1.2	38	16
AQDR1.3S	1.3	38	16
AQDR1.4S	1.4	40	18
AQDR1.5S	1.5	40	18

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AQDR1.6S	1.6	43	20
AQDR1.7S	1.7	43	20
AQDR1.8S	1.8	46	22
AQDR1.9S	1.9	49	24
AQDR2S	2.0	49	24
AQDR2.1S	2.1	49	24
AQDR2.2S	2.2	53	27
AQDR2.3S	2.3	53	27
AQDR2.4S	2.4	57	30
AQDR2.5S	2.5	57	30
AQDR2.6S	2.6	57	30
AQDR2.7S	2.7	61	33
AQDR2.8S	2.8	61	33
AQDR2.9S	2.9	61	33
AQDR3S	3.0	61	33
AQDR3.1S	3.1	65	36
AQDR3.2S	3.2	65	36
AQDR3.3S	3.3	65	36
AQDR3.4S	3.4	70	39
AQDR3.5S	3.5	70	39
AQDR3.6S	3.6	70	39
AQDR3.7S	3.7	70	39
AQDR3.8S	3.8	75	43
AQDR3.9S	3.9	75	43
AQDR4S	4.0	75	43
AQDR4.1S	4.1	75	43
AQDR4.2S	4.2	75	43
AQDR4.3S	4.3	80	47
AQDR4.4S	4.4	80	47
AQDR4.5S	4.5	80	47
AQDR4.6S	4.6	80	47
AQDR4.7S	4.7	80	47
AQDR4.8S	4.8	86	52
AQDR4.9S	4.9	86	52
AQDR5S	5.0	86	52
AQDR5.1S	5.1	86	52
AQDR5.2S	5.2	86	52
AQDR5.3S	5.3	86	52
AQDR5.4S	5.4	93	57
AQDR5.5S	5.5	93	57
AQDR5.6S	5.6	93	57
AQDR5.7S	5.7	93	57
AQDR5.8S	5.8	93	57
AQDR5.9S	5.9	93	57
AQDR6S	6.0	93	57
AQDR6.1S	6.1	101	63
AQDR6.2S	6.2	101	63
AQDR6.3S	6.3	101	63
AQDR6.4S	6.4	101	63
AQDR6.5S	6.5	101	63
AQDR6.6S	6.6	101	63
AQDR6.7S	6.7	101	63
AQDR6.8S	6.8	109	69
AQDR6.9S	6.9	109	69
AQDR7S	7.0	109	69
AQDR7.1S	7.1	109	69
AQDR7.2S	7.2	109	69
AQDR7.3S	7.3	109	69
AQDR7.4S	7.4	109	69
AQDR7.5S	7.5	109	69
AQDR7.6S	7.6	117	75
AQDR7.7S	7.7	117	75
AQDR7.8S	7.8	117	75
AQDR7.9S	7.9	117	75
AQDR8S	8.0	117	75
AQDR8.1S	8.1	117	75
AQDR8.2S	8.2	117	75
AQDR8.3S	8.3	117	75
AQDR8.4S	8.4	117	75
AQDR8.5S	8.5	117	75
AQDR8.6S	8.6	125	81
AQDR8.7S	8.7	125	81
AQDR8.8S	8.8	125	81
AQDR8.9S	8.9	125	81
AQDR9S	9.0	125	81

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AQDR9.1S	9.1	125	81
AQDR9.2S	9.2	125	81
AQDR9.3S	9.3	125	81
AQDR9.4S	9.4	125	81
AQDR9.5S	9.5	125	81
AQDR9.6S	9.6	133	87
AQDR9.7S	9.7	133	87
AQDR9.8S	9.8	133	87
AQDR9.9S	9.9	133	87
AQDR10S	10.0	133	87
AQDR10.2S	10.2	133	87
AQDR10.5S	10.5	133	87
AQDR11S	11.0	142	94
AQDR11.5	11.5	142	94
AQDR12S	12.0	151	101
AQDR12.5	12.5	151	101
AQDR13S	13.0	151	101

HSS-ECo JOBBER DRILLS

DIN 338 FORTE

130° point angle cross cut point AC nitrided lands

Range of applications

5%-cobalt drills with an extremely sturdy construction (re-inforced web) for drilling under difficult conditions e.g. poor chip removal and deep holes, for use in steel and cast iron with tensile strength up to 1000 N/mm².

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFNCODR1S	1.0	34	12
AFNCODR1.1S	1.1	36	14
AFNCODR1.2S	1.2	38	16
AFNCODR1.3S	1.3	38	16
AFNCODR1.4S	1.4	40	18
AFNCODR1.5S	1.5	40	18
AFNCODR1.6S	1.6	43	20
AFNCODR1.7S	1.7	43	20
AFNCODR1.8S	1.8	46	22
AFNCODR1.9S	1.9	49	24
AFNCODR2S	2.0	49	24
AFNCODR2.1S	2.1	49	24
AFNCODR2.2S	2.2	53	27
AFNCODR2.3S	2.3	53	27
AFNCODR2.4S	2.4	57	30
AFNCODR2.5S	2.5	57	30
AFNCODR2.6S	2.6	57	30
AFNCODR2.7S	2.7	61	33
AFNCODR2.8S	2.8	61	33
AFNCODR2.9S	2.9	61	33
AFNCODR3S	3.0	61	33
AFNCODR3.1S	3.1	65	36
AFNCODR3.2S	3.2	65	36
AFNCODR3.3S	3.3	65	36
AFNCODR3.4S	3.4	70	39
AFNCODR3.5S	3.5	70	39
AFNCODR3.6S	3.6	70	39
AFNCODR3.7S	3.7	70	39
AFNCODR3.8S	3.8	75	43
AFNCODR3.9S	3.9	75	43
AFNCODR4S	4.0	75	43
AFNCODR4.1S	4.1	75	43
AFNCODR4.2S	4.2	75	43

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFNCODR4.3S	4.3	80	47
AFNCODR4.4S	4.4	80	47
AFNCODR4.5S	4.5	80	47
AFNCODR4.6S	4.6	80	47
AFNCODR4.7S	4.7	80	47
AFNCODR4.8S	4.8	86	52
AFNCODR4.9S	4.9	86	52
AFNCODR5S	5.0	86	52
AFNCODR5.1S	5.1	86	52
AFNCODR5.2S	5.2	86	52
AFNCODR5.3S	5.3	86	52
AFNCODR5.4S	5.4	93	57
AFNCODR5.5S	5.5	93	57
AFNCODR5.6S	5.6	93	57
AFNCODR5.7S	5.7	93	57
AFNCODR5.8S	5.8	93	57
AFNCODR5.9S	5.9	93	57
AFNCODR6S	6.0	93	57
AFNCODR6.1S	6.1	101	63
AFNCODR6.2S	6.2	101	63
AFNCODR6.3S	6.3	101	63
AFNCODR6.4S	6.4	101	63
AFNCODR6.5S	6.5	101	63
AFNCODR6.6S	6.6	101	63
AFNCODR6.7S	6.7	101	63
AFNCODR6.8S	6.8	109	69
AFNCODR6.9S	6.9	109	69
AFNCODR7S	7.0	109	69
AFNCODR7.1S	7.1	109	69
AFNCODR7.2S	7.2	109	69
AFNCODR7.3S	7.3	109	69
AFNCODR7.4S	7.4	109	69
AFNCODR7.5S	7.5	109	69
AFNCODR7.6S	7.6	117	75
AFNCODR7.7S	7.7	117	75
AFNCODR7.8S	7.8	117	75
AFNCODR7.9S	7.9	117	75
AFNCODR8S	8.0	117	75
AFNCODR8.1S	8.1	117	75
AFNCODR8.2S	8.2	117	75
AFNCODR8.3S	8.3	117	75
AFNCODR8.4S	8.4	117	75
AFNCODR8.5S	8.5	117	75
AFNCODR8.6S	8.6	125	81
AFNCODR8.7S	8.7	125	81
AFNCODR8.8S	8.8	125	81
AFNCODR8.9S	8.9	125	81
AFNCODR9S	9.0	125	81
AFNCODR9.1S	9.1	125	81
AFNCODR9.2S	9.2	125	81
AFNCODR9.3S	9.3	125	81
AFNCODR9.4S	9.4	125	81
AFNCODR9.5S	9.5	125	81
AFNCODR9.6S	9.6	133	87
AFNCODR9.7S	9.7	133	87
AFNCODR9.8S	9.8	133	87
AFNCODR9.9S	9.9	133	87
AFNCODR10S	10.0	133	87
AFNCODR10.2S	10.2	133	87
AFNCODR10.5S	10.5	133	87
AFNCODR11S	11.0	142	94
AFNCODR11.5	11.5	142	94
AFNCODR12S	12.0	151	101
AFNCODR12.5	12.5	151	101
AFNCODR13S	13.0	151	101

HSS-ECo JOBBER DRILLS

DIN 338 R-AS

130° point angle cross cut point AC bright finish

Range of applications

5%-cobalt alloyed drills in a solid sturdy version, specially suitable for corrosion and acid resistant austenitic steel and heat resistant steels etc.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ACODR2S	2.0	49	24
ACODR2.1S	2.1	49	24
ACODR2.2S	2.2	53	27
ACODR2.3S	2.3	53	27
ACODR2.4S	2.4	57	30
ACODR2.5S	2.5	57	30
ACODR2.6S	2.6	57	30
ACODR2.7S	2.7	61	33
ACODR2.8S	2.8	61	33
ACODR2.9S	2.9	61	33
ACODR3S	3.0	61	33
ACODR3.1S	3.1	65	36
ACODR3.2S	3.2	65	36
ACODR3.3S	3.3	65	36
ACODR3.4S	3.4	70	39
ACODR3.5S	3.5	70	39
ACODR3.6S	3.6	70	39
ACODR3.7S	3.7	70	39
ACODR3.8S	3.8	75	43
ACODR3.9S	3.9	75	43
ACODR4S	4.0	75	43
ACODR4.1S	4.1	75	43
ACODR4.2S	4.2	75	43
ACODR4.3S	4.3	80	47
ACODR4.4S	4.4	80	47
ACODR4.5S	4.5	80	47
ACODR4.6S	4.6	80	47
ACODR4.7S	4.7	80	47
ACODR4.8S	4.8	86	52
ACODR4.9S	4.9	86	52
ACODR5S	5.0	86	52
ACODR5.1S	5.1	86	52
ACODR5.2S	5.2	86	52
ACODR5.3S	5.3	86	52
ACODR5.4S	5.4	93	57
ACODR5.5S	5.5	93	57
ACODR5.6S	5.6	93	57
ACODR5.7S	5.7	93	57
ACODR5.8S	5.8	93	57
ACODR5.9S	5.9	93	57
ACODR6S	6.0	93	57
ACODR6.1S	6.1	101	63
ACODR6.2S	6.2	101	63
ACODR6.3S	6.3	101	63
ACODR6.4S	6.4	101	63
ACODR6.5S	6.5	101	63
ACODR6.6S	6.6	101	63
ACODR6.7S	6.7	101	63
ACODR6.8S	6.8	109	69
ACODR6.9S	6.9	109	69
ACODR7S	7.0	109	69
ACODR7.1S	7.1	109	69
ACODR7.2S	7.2	109	69
ACODR7.3S	7.3	109	69
ACODR7.4S	7.4	109	69
ACODR7.5S	7.5	109	69
ACODR7.6S	7.6	117	75
ACODR7.7S	7.7	117	75
ACODR7.8S	7.8	117	75
ACODR7.9S	7.9	117	75

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ACODR8S	8.0	117	75
ACODR8.1S	8.1	117	75
ACODR8.2S	8.2	117	75
ACODR8.3S	8.3	117	75
ACODR8.4S	8.4	117	75
ACODR8.5S	8.5	117	75
ACODR8.6S	8.6	125	81
ACODR8.7S	8.7	125	81
ACODR8.8S	8.8	125	81
ACODR8.9S	8.9	125	81
ACODR9S	9.0	125	81
ACODR9.1S	9.1	125	81
ACODR9.2S	9.2	125	81
ACODR9.3S	9.3	125	81
ACODR9.4S	9.4	125	81
ACODR9.5S	9.5	125	81
ACODR9.6S	9.6	133	87
ACODR9.7S	9.7	133	87
ACODR9.8S	9.8	133	87
ACODR9.9S	9.9	133	87
ACODR10S	10.0	133	87
ACODR10.2S	10.2	133	87
ACODR10.5S	10.5	133	87
ACODR11S	11.0	142	94
ACODR11.5S	11.5	142	94
ACODR12S	12.0	151	101
ACODR12.5S	12.5	151	101
ACODR13S	13.0	151	101
ACODR13S	13.5	160	108
ACODR14S	14.0	160	108
ACODR14S	14.5	169	114
ACODR15S	15.0	169	114
ACODR15S	15.5	178	120
ACODR16S	16.0	178	120

TWIST DRILLS HSS LONG SERIES STRAIGHT SHANK

DIN 340N

Stock Code	Ø h8 mm	Flute length mm	Overall length mm	Stock Code	Ø h8 mm	Flute length mm	Overall length mm
GDR2LSC	2.00	56	85	GDR4.5LSC	4.50	82	126
GDR2.1LSC	2.10	56	85	GDR4.6LSC	4.60	82	126
GDR2.2LSC	2.20	56	85	GDR4.7LSC	4.70	82	126
GDR2.3LSC	2.30	59	90	GDR4.8LSC	4.80	87	132
GDR2.4LSC	2.40	62	95	GDR4.9LSC	4.90	87	132
GDR2.5LSC	2.50	62	95	GDR5LSC	5.00	87	132
GDR2.6LSC	2.60	62	95	GDR5.1LSC	5.10	87	132
GDR2.7LSC	2.70	66	100	GDR5.2LSC	5.20	87	132
GDR2.8LSC	2.80	66	100	GDR5.3LSC	5.30	87	132
GDR2.9LSC	2.90	66	100	GDR5.4LSC	5.40	91	139
GDR3LSC	3.00	66	100	GDR5.5LSC	5.50	91	139
GDR3.1LSC	3.10	69	106	GDR5.6LSC	5.60	91	139
GDR3.2LSC	3.20	69	106	GDR5.7LSC	5.70	91	139
GDR3.3LSC	3.30	69	106	GDR5.8LSC	5.80	91	139
GDR3.4LSC	3.40	73	112	GDR5.9LSC	5.90	91	139
GDR3.5LSC	3.50	73	112	GDR6LSC	6.00	91	139
GDR3.6LSC	3.60	73	112	GDR6.1LSC	6.10	97	148
GDR3.7LSC	3.70	73	112	GDR6.2LSC	6.20	97	148
GDR3.8LSC	3.80	78	119	GDR6.3LSC	6.30	97	148
GDR3.9LSC	3.90	78	119	GDR6.4LSC	6.40	97	148
GDR4LSC	4.00	78	119	GDR6.5LSC	6.50	97	148
GDR4.1LSC	4.10	78	119	GDR6.6LSC	6.60	97	148
GDR4.2LSC	4.20	78	119	GDR6.7LSC	6.70	97	148
GDR4.3LSC	4.30	82	126	GDR6.8LSC	6.80	102	156
GDR4.4LS	4.40	82	126	GDR6.9LSC	6.90	102	156

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Stock Code	Ø h8 mm	Flute length mm	Overall length mm	Stock Code	Ø h8 mm	Flute length mm	Overall length mm
GDR7LSC	7.00	102	156	DR8.8LSC	8.80	115	175
GDR7.1LSC	7.10	102	156	DR8.9LSC	8.90	115	175
GDR7.2LSC	7.20	102	156	DR9LSC	9.00	115	175
GDR7.3LSC	7.30	102	156	DR9.1LSC	9.10	115	175
GDR7.4LSC	7.40	102	156	DR9.2LSC	9.20	115	175
GDR7.5LSC	7.50	102	156	DR9.3LSC	9.30	115	175
GDR7.6LSC	7.60	109	165	DR9.4LSC	9.40	115	175
GDR7.7LS C	7.70	109	165	DR9.5LSC	9.50	115	175
GDR7.8LSC	7.80	109	165	DR9.6LSC	9.60	121	184
GDR7.9LSC	7.90	109	165	DR9.7LSC	9.70	121	184
GDR8LSC	8.00	109	165	DR9.8LSC	9.80	121	184
GDR8.1LSC	8.10	109	165	DR9.9LSC	9.90	121	184
GDR8.2LSC	8.20	109	165	DR10.LSC	10.00	121	184
GDR8.3LSC	8.30	109	165	DR10.5LSC	10.50	121	184
GDR8.4LSC	8.40	109	165	DR11LSC	11.00	128	195
GDR8.5LSC	8.50	109	165	DR11.5LSC	11.50	128	195
GDR8.6LSC	8.60	115	175	DR12LSC	12.00	134	205
GDR8.7LSC	8.70	115	175				

HSS LONG SERIES DRILLS

DIN 340 RN

118° point angle cross cut point AC steam tempered

Range of applications

Industrial quality twist drill for drilling of steel and steel castings, alloy and plain carbon, grey iron castings, copper-alloys, nickel-silver, graphite and similar materials.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ALSDR1S	1.0	56	33
ALSDR1.1S	1.1	60	37
ALSDR1.2S	1.2	65	41
ALSDR1.3S	1.3	65	41
ALSDR1.4S	1.4	70	45
ALSDR1.5S	1.5	70	45
ALSDR1.6S	1.6	76	50
ALSDR1.7S	1.7	76	50
ALSDR1.8S	1.8	80	53
ALSDR1.9S	1.9	80	53
ALSDR2S	2.0	85	56
ALSDR2.1S	2.1	85	56
ALSDR2.2S	2.2	90	59
ALSDR2.3S	2.3	90	59
ALSDR2.4S	2.4	95	62
ALSDR2.5S	2.5	95	62
ALSDR2.6S	2.6	95	62
ALSDR2.7S	2.7	100	66
ALSDR2.8S	2.8	100	66
ALSDR2.9S	2.9	100	66
ALSDR3S	3.0	100	66
ALSDR3.1S	3.1	106	69
ALSDR3.2S	3.2	106	69
ALSDR3.3S	3.3	106	69
ALSDR3.4S	3.4	112	73
ALSDR3.5S	3.5	112	73
ALSDR3.6S	3.6	112	73
ALSDR3.7S	3.7	112	73
ALSDR3.8S	3.8	119	78
ALSDR3.9S	3.9	119	78

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ALSDR4S	4.0	119	78
ALSDR4.1S	4.1	119	78
ALSDR4.2S	4.2	119	78
ALSDR4.3S	4.3	126	82
ALSDR4.4S	4.4	126	82
ALSDR4.5S	4.5	126	82
ALSDR4.6S	4.6	126	82
ALSDR4.7S	4.7	126	82
ALSDR4.8S	4.8	132	87
ALSDR4.9S	4.9	132	87
ALSDR5S	5.0	132	87
ALSDR5.1S	5.1	132	87
ALSDR5.2S	5.2	132	87
ALSDR5.3S	5.3	132	87
ALSDR5.4S	5.4	139	91
ALSDR5.5S	5.5	139	91
ALSDR5.6S	5.6	139	91
ALSDR5.7S	5.7	139	91
ALSDR5.8S	5.8	139	91
ALSDR5.9S	5.9	139	91
ALSDR6S	6.0	139	91
ALSDR6.1S	6.1	148	97
ALSDR6.2S	6.2	148	97
ALSDR6.3S	6.3	148	97
ALSDR6.4S	6.4	148	97
ALSDR6.5S	6.5	148	97
ALSDR6.6S	6.6	148	97
ALSDR6.7S	6.7	148	97
ALSDR6.8S	6.8	156	102
ALSDR6.9S	6.9	156	102
ALSDR7S	7.0	156	102
ALSDR7.1S	7.1	156	102
ALSDR7.2S	7.2	156	102
ALSDR7.3S	7.3	156	102
ALSDR7.4S	7.4	156	102
ALSDR7.5S	7.5	156	102
ALSDR7.6S	7.6	165	109
ALSDR7.7S	7.7	165	109
ALSDR7.8S	7.8	165	109
ALSDR7.9S	7.9	165	109
ALSDR8S	8.0	165	109
ALSDR8.1S	8.1	165	109
ALSDR8.2S	8.2	165	109
ALSDR8.3S	8.3	165	109
ALSDR8.4S	8.4	165	109
ALSDR8.5S	8.5	165	109
ALSDR8.6S	8.6	175	115
ALSDR8.7S	8.7	175	115
ALSDR8.8S	8.8	175	115
ALSDR8.9S	8.9	175	115
ALSDR9S	9.0	175	115
ALSDR9.1S	9.1	175	115
ALSDR9.2S	9.2	175	115
ALSDR9.3S	9.3	175	115
ALSDR9.4S	9.4	175	115
ALSDR9.5S	9.5	175	115
ALSDR9.6S	9.6	184	121
ALSDR9.7S	9.7	184	121
ALSDR9.8S	9.8	184	121
ALSDR9.9S	9.9	184	121
ALSDR10S	10.0	184	121
ALSDR10.2S	10.2	184	121
ALSDR10.5S	10.5	184	121
ALSDR11S	11.0	195	128
ALSDR11.5S	11.5	195	128
ALSDR12S	12.0	205	134

Continued ...

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ALSDR12.5S	12.5	205	134
ALSDR13S	13.0	205	134
ALSDR13.5S	13.5	214	140
ALSDR14S	14.0	214	140
ALSDR14.5S	14.5	220	144
ALSDR15S	15.0	220	144
ALSDR15.5S	15.5	227	149
ALSDR16S	16.0	227	149
ALSDR16.5S	16.5	235	154
ALSDR17S	17.0	235	154
ALSDR17.5S	17.5	241	158
ALSDR18S	18.0	241	158
ALSDR18.5S	18.5	247	162
ALSDR19S	19.0	247	162
ALSDR19.5S	19.5	254	166
ALSDR20S	20.0	254	166

HSS ECo LONG SERIES DRILLS

DIN 340 RN

118° point angle cross cut point AC bright finish

Range of applications

5% - cobalt alloyed jobber drills with high heat resistance for drilling steels with tensile strength over 800 N/mm², specially suitable for high alloyed steels, bearing-steels, hot/cold-rolled steel.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ALSCODR2S	2.0	85	65
ALSCODR2.1S	2.1	85	56
ALSCODR2.2S	2.2	90	59
ALSCODR2.3S	2.3	90	59
ALSCODR2.4S	2.4	95	62
ALSCODR2.5S	2.5	95	62
ALSCODR2.6S	2.6	95	62
ALSCODR2.7S	2.7	100	66
ALSCODR2.8S	2.8	100	66
ALSCODR2.9S	2.9	100	66
ALSCODR3S	3.0	100	66
ALSCODR3.1S	3.1	106	69
ALSCODR3.2S	3.2	106	69
ALSCODR3.3S	3.3	106	69
ALSCODR3.4S	3.4	112	73
ALSCODR3.5S	3.5	112	73
ALSCODR3.6S	3.6	112	73
ALSCODR3.7S	3.7	112	73
ALSCODR3.8S	3.8	119	78
ALSCODR3.9S	3.9	119	78
ALSCODR4S	4.0	119	78
ALSCODR4.1S	4.1	119	78
ALSCODR4.2S	4.2	119	78
ALSCODR4.3S	4.3	126	82
ALSCODR4.4S	4.4	126	82
ALSCODR4.5S	4.5	126	82
ALSCODR4.6S	4.6	126	82
ALSCODR4.7S	4.7	126	82
ALSCODR4.8S	4.8	132	87
ALSCODR4.9S	4.9	132	87
ALSCODR5S	5.0	132	87
ALSCODR5.1S	5.1	132	87
ALSCODR5.2S	5.2	132	87
ALSCODR5.3S	5.3	132	87
ALSCODR5.4S	5.4	139	91
ALSCODR5.5S	5.5	139	91
ALSCODR5.6S	5.6	139	91
ALSCODR5.7S	5.7	139	91
ALSCODR5.8S	5.8	139	91
ALSCODR5.9S	5.9	139	91

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
ALSCODR6S	6.0	139	91
ALSCODR6.2S	6.2	148	97
ALSCODR6.5S	6.5	148	97
ALSCODR6.8S	6.8	156	102
ALSCODR7S	7.0	156	102
ALSCODR7.2S	7.2	156	102
ALSCODR7.5S	7.5	156	102
ALSCODR7.8S	7.8	165	109
ALSCODR8S	8.0	165	109
ALSCODR8.2S	8.2	165	109
ALSCODR8.5S	8.5	165	109
ALSCODR8.8S	8.8	175	115
ALSCODR9S	9.0	175	115
ALSCODR9.2S	9.2	175	115
ALSCODR9.5S	9.5	175	115
ALSCODR9.8S	9.8	184	121
ALSCODR10S	10.0	184	121
ALSCODR10.5S	10.5	184	121
ALSCODR11S	11.0	195	128
ALSCODR11.5S	11.5	195	128
ALSCODR12S	12.0	205	134
ALSCODR12.5S	12.5	205	134
ALSCODR13S	13.0	205	134

HSS LONG SERIES DRILLS QUICK SPIRAL

DIN 340 FORTE W

130° point angle point shape A bright finish

Range of applications

High efficiency drill with special designed flute profile for better chip removal and deeper holes, suitable for long chipping materials up to 500 N/mm².

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFLSDR2S	2.0	85	56
AFLSDR2.1S	2.1	85	56
AFLSDR2.2S	2.2	90	59
AFLSDR2.3S	2.3	90	59
AFLSDR2.4S	2.4	95	62
AFLSDR2.5S	2.5	95	62
AFLSDR2.6S	2.6	95	62
AFLSDR2.7S	2.7	100	66
AFLSDR2.8S	2.8	100	66
AFLSDR2.9S	2.9	100	66
AFLSDR3S	3.0	100	66
AFLSDR3.1S	3.1	106	69
AFLSDR3.2S	3.2	106	69
AFLSDR3.3S	3.3	106	69
AFLSDR3.4S	3.4	112	73
AFLSDR3.5S	3.5	112	73
AFLSDR3.6S	3.6	112	73
AFLSDR3.7S	3.7	112	73
AFLSDR3.8S	3.8	119	78
AFLSDR3.9S	3.9	119	78
AFLSDR4S	4.0	119	78
AFLSDR4.1S	4.1	119	78
AFLSDR4.2S	4.2	119	78
AFLSDR4.3S	4.3	126	82
AFLSDR4.4S	4.4	126	82
AFLSDR4.5S	4.5	126	82
AFLSDR4.6S	4.6	126	82
AFLSDR4.7S	4.7	126	82
AFLSDR4.8S	4.8	132	87
AFLSDR4.9S	4.9	132	87

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFLSDR5S	5.0	132	87
AFLSDR5.1S	5.1	132	87
AFLSDR5.2S	5.2	132	87
AFLSDR5.3S	5.3	132	87
AFLSDR5.4S	5.4	139	91
AFLSDR5.5S	5.5	139	91
AFLSDR5.6S	5.6	139	91
AFLSDR5.7S	5.7	139	91
AFLSDR5.8S	5.8	139	91
AFLSDR5.9S	5.9	139	91
AFLSDR6S	6.0	139	91
AFLSDR6.2S	6.2	148	97
AFLSDR6.5S	6.5	148	97
AFLSDR6.8S	6.8	156	102
AFLSDR7S	7.0	156	102
AFLSDR7.2S	7.2	156	102
AFLSDR7.5S	7.5	156	102
AFLSDR7.8S	7.8	165	109
AFLSDR8S	8.0	165	109
AFLSDR8.2S	8.2	165	109
AFLSDR8.5S	8.5	165	109
AFLSDR8.8S	8.8	175	115
AFLSDR9S	9.0	175	115
AFLSDR9.2S	9.2	175	115
AFLSDR9.5S	9.5	175	115
AFLSDR9.8S	9.8	184	121
AFLSDR10S	10.0	184	121
AFLSDR10.2S	10.2	184	121
AFLSDR10.5S	10.5	184	121
AFLSDR11S	11.0	195	128
AFLSDR11.5S	11.5	195	128
AFLSDR12S	12.0	205	134
AFLSDR12.5S	12.5	205	134
AFLSDR13S	13.0	205	134

HSS EXTRA LONG SERIES DRILLS

DIN 1869 R1 RN

118° point angle cross cut point AC steam tempered

Range of applications

High efficiency drill for extremely deep holes where working conditions such as cutting speed, feed, coolant and frequent chip removal have to be observed.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AELDR12S	2.0	125	85
AELDR12.5S	2.5	140	95
AELDR13S	3.0	150	100
AELDR13.5S	3.5	165	115
AELDR14S	4.0	175	120
AELDR14.5S	4.5	185	125
AELDR15S	5.0	195	135
AELDR15.5S	5.5	205	140
AELDR16S	6.0	205	140
AELDR16.5S	6.5	215	150
AELDR17S	7.0	225	155
AELDR17.5S	7.5	225	155
AELDR18S	8.0	240	165
AELDR18.5S	8.5	240	165
AELDR19S	9.0	250	175
AELDR19.5S	9.5	250	175
AELDR110S	10.0	265	185
AELDR110.5S	10.5	265	185
AELDR111S	11.0	280	195
AELDR111.5S	11.5	280	195
AELDR112S	12.0	295	205
AELDR112.5S	12.5	295	205
AELDR113S	13.0	295	205

HSS EXTRA LONG SERIES DRILLS

DIN 1869 R2 RN

118° point angle cross cut point AC steam tempered

Range of applications

High efficiency drill for extremely deep holes where working conditions such as cutting speed, feed, coolant and frequent chip removal have to be observed.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AELDR23S	3.0	190	130
AELDR23.5S	3.5	210	145
AELDR24S	4.0	220	150
AELDR24.5S	4.5	235	160
AELDR25S	5.0	245	170
AELDR25.5S	5.5	260	180
AELDR26S	6.0	260	180
AELDR26.5S	6.5	275	190
AELDR27S	7.0	290	200
AELDR27.5S	7.5	290	200
AELDR28S	8.0	305	210
AELDR28.5S	8.5	305	210
AELDR29S	9.0	320	220
AELDR29.5S	9.5	320	220
AELDR210S	10.0	340	235
AELDR210.5S	10.5	340	235
AELDR211S	11.0	365	250
AELDR211.5S	11.5	365	250
AELDR212S	12.0	375	260
AELDR212.5S	12.5	375	260
AELDR213S	13.0	375	260

HSS EXTRA LONG SERIES DRILLS

DIN 1869 R3 RN

118° point angle cross cut point AC steam tempered

Range of applications

High efficiency drill for extremely deep holes where working conditions such as cutting speed, feed, coolant and frequent chip removal have to be observed.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AELDR3.5S	3.5	265	180
AELDR34S	4.0	280	190
AELDR34.5S	4.5	295	200
AELDR35S	5.0	325	210
AELDR35.5S	5.5	330	225
AELDR36S	6.0	330	225
AELDR36.5S	6.5	350	235
AELDR37S	7.0	370	250
AELDR37.5S	7.5	370	250
AELDR38S	8.0	390	265
AELDR38.5S	8.5	390	265
AELDR39S	9.0	410	280
AELDR39.5S	9.5	410	280
AELDR310S	10.0	430	295
AELDR310.5S	10.5	430	295
AELDR311S	11.0	455	310
AELDR311.5S	11.5	455	310
AELDR312S	12.0	480	330
AELDR312.5S	12.5	480	330
AELDR313S	13.0	480	330

HSS ECo EXTRA LONG SERIES DRILLS

DIN 1869 R1 FORTE

130° point angle cross cut point AC nitrided lands

Range of applications

High efficiency drill with reinforced web and special designed flute profile for better chip removal and deeper holes, suitable for long chipping materials up to 1000 N/mm².

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFNELCODR13S	3.0	150	100
AFNELCODR13.5S	3.5	165	115
AFNELCODR14S	4.0	175	120
AFNELCODR14.5S	4.5	185	125
AFNELCODR15S	5.0	195	135
AFNELCODR15.5S	5.5	205	140
AFNELCODR16S	6.0	505	140
AFNELCODR16.5S	6.5	215	150
AFNELCODR17S	7.0	225	155
AFNELCODR17.5S	7.5	225	155
AFNELCODR18S	8.0	240	165
AFNELCODR18.5S	8.5	240	165
AFNELCODR19S	9.0	250	175
AFNELCODR19.5S	9.5	250	175
AFNELCODR110S	10.0	265	185

HSS ECo EXTRA LONG SERIES DRILLS

DIN 1869 R2 FORTE

130° point angle cross cut point AC nitrided lands

Range of applications

High efficiency drill with reinforced web and special designed flute profile for better chip removal and deeper holes, suitable for long chipping materials up to 1000 N/mm².

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFNELCODR23S	3.0	190	130
AFNELCODR23.5S	3.5	210	145
AFNELCODR24S	4.0	220	150
AFNELCODR24.5S	4.5	235	160
AFNELCODR25S	5.0	245	170
AFNELCODR25.5S	5.5	260	180
AFNELCODR26S	6.0	260	180
AFNELCODR26.5S	6.5	275	190
AFNELCODR27S	7.0	290	200
AFNELCODR27.5S	7.5	290	200
AFNELCODR28S	8.0	305	210
AFNELCODR28.5S	8.5	305	210
AFNELCODR29S	9.0	320	220
AFNELCODR29.5S	9.5	320	220
AFNELCODR210S	10.0	340	235

HSS ECo EXTRA LONG SERIES DRILLS

DIN 1869 R3 FORTE

130° point angle cross cut point AC nitrided lands

Range of applications

High efficiency drill with reinforced web and special designed flute profile for better chip removal and deeper holes, suitable for long chipping materials up to 1000 N/mm².

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
AFNELCODR33.5S	3.5	265	180
AFNELCODR34S	4.0	280	190
AFNELCODR34.5S	4.5	295	200
AFNELCODR35S	5.0	315	210
AFNELCODR35.5S	5.5	330	225
AFNELCODR36S	6.0	330	225
AFNELCODR36.5S	6.5	350	235
AFNELCODR37S	7.0	370	250
AFNELCODR37.5S	7.5	370	250
AFNELCODR38S	8.0	390	265
AFNELCODR38.5S	8.5	390	265
AFNELCODR39S	9.0	410	280
AFNELCODR39.5S	9.5	410	280
AFNELCODR310S	10.0	430	295

DRILL SETS HSS

HSS GROUND FLUTE

Stock Code	Ø Range mm	No of pieces	Increments mm
DSM1-13C	1-13	25	0.5
DSM1-5,9	1-5.9	50	0.1
DSM6-10	6-10	41	0.1
DSM1-13	1-13	25	0.5

HSS GROUND FLUTE TiN COATED

Stock Code	Ø Range mm	No of pieces	Increments mm
DSMT1-13	1-13	25	0.5

Continued ...

TG DRILL SET HSSCO - GOLD P

DIN 338

HSS GROUND FLUTE

Stock Code	Ø Range mm	No of pieces	Increments mm
DSM1-13CO5GP	1-13	25	0.5

TA TWIST DRILLS HSS STD MORSE TAPER SHANK

DIN 345N

Stock Code	Ø h8 mm	Overall length mm	Flute length mm	Shank MT
DR5MTC	5.00	133	52	1
DR5.25MTC	5.20	133	52	1
DR5.5MTC	5.50	138	57	1
DR5.8MTC	5.80	138	57	1
DR6MTC	6.00	144	57	1
DR6.2MTC	6.20	144	63	1
DR6.3MTC	6.30	144	63	1
DR6.5MTC	6.50	150	63	1
DR6.7MTC	6.70	150	63	1
DR6.8MTC	6.80	150	69	1
DR7MTC	7.00	150	69	1
DR7.5MTC	7.50	150	69	1
DR7.75MTC	7.75	150	69	1
DR7.8MTC	7.80	156	75	1
DR8MTC	8.00	156	75	1
DR8.2MTC	8.20	156	75	1
DR8.5MTC	8.50	156	75	1
DR8.75MTC	8.75	162	81	1
DR8.8MTC	8.80	162	81	1
DR9MTC	9.00	162	81	1
DR9.2MTC	9.20	162	81	1
DR9.5MTC	9.50	162	81	1
DR9.8MTC	9.80	168	87	1
DR10MTC	10.00	168	87	1
DR10.2MTC	10.20	168	87	1
DR10.25MT	10.25	168	87	1
DR10.5MTC	10.50	168	87	1
DR10.75MT	10.75	168	87	1
DR10.8MTC	10.80	175	94	1
DR11MTC	11.00	175	94	1
DR11.2MTC	11.20	175	94	1
DR11.5MTC	11.50	175	94	1
DR11.8MTC	11.80	175	94	1
DR12MTC	12.00	182	101	1

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm	Shank MT
DR12.2MTC	12.20	182	101	1
DR12.5MTC	12.50	182	101	1
DR12.75MTC	12.75	182	101	1
DR12.8MTC	12.80	182	101	1
DR13MTC	13.00	182	101	1
DR13.2MTC	13.20	182	101	1
DR13.25MTC	13.25	189	108	1
DR13.5MTC	13.50	189	108	1
DR13.75MTC	13.75	189	108	1
DR13.8MTC	13.80	189	108	1
DR14MTC	14.00	189	108	1
DR14.25MTC	14.25	212	114	2
DR14.5MTC	14.50	212	114	2
DR14.75MTC	14.75	212	114	2
DR15MTC	15.00	212	114	2
DR15.25MTC	15.25	218	120	2
DR15.5MTC	15.50	218	120	2
DR15.75MTC	15.75	218	120	2
DR16MTC	16.00	218	120	2
DR16.25MTC	16.25	223	125	2
DR16.5MTC	16.50	223	125	2
DR16.75MTC	16.75	223	125	2
DR17MTC	17.00	223	125	2
DR17.25MTC	17.25	228	130	2
DR17.5MTC	17.50	228	130	2
DR17.75MTC	17.75	228	130	2
DR18MTC	18.00	228	130	2
DR18.25MTC	18.25	233	135	2
DR18.5MTC	18.50	233	135	2
DR18.75MTC	18.75	233	135	2
DR19MTC	19.00	233	135	2
DR19.25MTC	19.25	238	140	2
DR19.5MTC	19.50	238	140	2
DR19.75MTC	19.75	238	140	2
DR20MTC	20.00	238	140	2
DR20.25MTC	20.25	243	145	2
DR20.5MTC	20.50	243	145	2
DR20.75MTC	20.75	243	145	2
DR21MTC	21.00	243	145	2
DR21.25MTC	21.25	248	150	2
DR21.5MTC	21.50	248	150	2
DR21.75MTC	21.75	248	150	2
DR22MTC	22.00	248	150	2
DR22.25MTC	22.25	248	150	2
DR22.5MTC	22.50	253	155	2
DR22.75MTC	22.75	253	155	2
DR23MTC	23.00	253	155	2
DR23.25MTC	23.25	276	155	3
DR23.5MTC	23.50	276	155	3
DR23.75MTC	23.75	281	160	3
DR24MTC	24.00	281	160	3
DR24.25MTC	24.25	281	160	3
DR24.5MTC	24.50	281	160	3
DR24.75MTC	24.75	281	160	3
DR25MTC	25.00	281	160	3
DR25.25MTC	25.25	286	165	3
DR25.5MTC	25.50	286	165	3
DR25.75MTC	25.75	286	165	3
DR26MTC	26.00	286	165	3
DR26.25MTC	26.25	286	165	3
DR26.5MTC	26.50	286	165	3
DR26.75MTC	26.75	291	170	3
DR27MTC	27.00	291	170	3
DR27.25MTC	27.25	291	170	3
DR27.5MTC	27.50	291	170	3
DR27.75MTC	27.75	291	170	3
DR28MTC	28.00	291	170	3
DR28.25MTC	28.25	296	175	3
DR28.5MTC	28.50	296	175	3
DR28.75MTC	28.75	296	175	3
DR29MTC	29.00	296	175	3
DR29.25MTC	29.25	296	175	3
DR29.5MTC	29.50	296	175	3

Continued ...

Stock Code	Ø h8 mm	Overall length mm	Flute length mm	Shank MT
DR29.75MTC	29.75	296	215	3
DR30MTC	30.00	296	220	3
DR30.25MTC	30.25	301	220	3
DR30.5MTC	30.50	301	220	3
DR30.75MTC	30.75	301	220	3
DR31MTC	31.00	301	220	3
DR31.25MTC	31.25	301	225	3
DR31.5MTC	31.50	301	225	4
DR31.75MTC	31.75	306	225	4
DR32MTC	32.00	334	230	4
DR32.25MTC	32.25	334	230	4
DR32.5MTC	32.50	334		4
DR32.75MTC	32.75	334	108	4
			114	
DR33MTC	33.00	334	114	4
DR33.5MTC	33.50	334	114	4
DR34MTC	34.00	339	114	4
DR34.5MTC	34.50	339		4
DR35MTC	35.00	339	120	4
			120	
DR35.5MTC	35.50	339	120	4
DR36MTC	36.00	344	120	4
DR36.5MTC	36.50	344	125	4
DR37MTC	37.00	344		4
DR37.5MTC	37.50	344	125	4
			125	
DR38MTC	38.00	349	125	4
DR38.5MTC	38.50	349	125	4
DR39MTC	39.00	349	130	4
DR39 5MTC	39.50	349	130	4
DR40MTC	40.00	349		4
			130	
DR40.5MTC	40.50	354	130	4
DR41MTC	41.00	354	135	4
DR4I.5MTC	41.50	354	135	4
DR42MTC	42.00	354	135	4
DR42.5MTC	42.50	354		4
			135	
DR43MTC	43.00	359	140	4
DR43.5MTC	43.50	359	140	4
DR44MTC	44.00	359	140	4
DR44.5MTC	44.50	359	140	4
DR45MTC	45.00	359		4
			145	
DR45.5MTC	45.50	364	145	4
DR46MTC	46.00	364	145	4
DR46.5MTC	46.50	364	145	4
DR47MTC	47.00	364	150	4
DR47.5MTC	47.50	364		4
			150	
DR48MTC	48.00	369	150	4
DR48.5MTC	48.50	369	150	4
DR49MTC	49.00	369	150	4
DR49.5MTC	49.50	369	155	4
DR50MTC	50.00	369		4
DR51MTC	51.00	412	155	5
DR52MTC	52.00	412	155	5
DR53MTC	53.00	412	155	5
DR54MTC	54.00	417	155	5
DR55MTC	55.00	417	160	5
DR56MTC	56.00	417	230	5
DR57MTC	57.00	422	235	5
DR58MTC	58.00	422	235	5
DR59MTC	59.00	422	235	5
DR60MTC	60.00	422	235	5
DR61MTC	61.00	427	240	5
DR62MTC	62.00	427	240	5
DR63MTC	63.00	427	240	5
DR64MTC	64.00	432	245	5
DR65MTC	65.00	432	245	5
DR66MTC	66.00	432	245	5
DR67MTC	67.00	432	245	5
DR68MTC	68.00	437	250	5
DR69MTC	69.00	437	250	5
DR70MTC	70.00	437	250	5
DR71MTC	71.00	437	250	5
DR72MTC	72.00	442	255	5
DR73MTC	73.00	442	255	5
DR74MTC	74.00	442	255	5
DR75MTC	75.00	442	255	5
DR76MTC	76.00	447	260	5
DR80MTC	80.00	519	260	6
DR83MTC	83.00	519	265	6

HSS EXTRA LONG SERIES TAPER SHANK DRILLS

DIN 1870 R1 RN

118° point angle point shape A steam tempered

Range of applications

High efficiency drill for extremely deep holes where working conditions such as cutting speed, feed, coolant and frequent chip removal have to be observed.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm	Shank MT
AELDR18MT	8.0	265	165	1
AELDR18.5MT	8.5	265	165	1
AELDR19MT	9.0	275	175	1
AELDR19.5MT	9.5	275	175	1
AELDR110MT	10.0	285	185	1
AELDR110.5MT	10.5	285	185	1
AELDR111MT	11.0	300	195	1
AELDR111.5MT	11.5	300	195	1
AELDR112MT	12.0	310	205	1
AELDR112.5MT	12.5	310	205	1
AELDR113MT	13.0	310	205	1
AELDR113.5MT	13.5	325	220	1
AELDR114MT	14.0	325	220	1
AELDR114.5MT	14.5	340	220	2
AELDR115MT	15.0	340	220	2
AELDR115.5MT	15.5	355	230	2
AELDR116MT	16.0	355	230	2
AELDR116.5MT	16.5	355	230	2
AELDR117MT	17.0	355	230	2
AELDR117.5MT	17.5	370	245	2
AELDR118MT	18.0	370	245	2
AELDR118.5MT	18.5	370	245	2
AELDR119MT	19.0	370	245	2
AELDR119.5MT	19.5	385	260	2
AELDR120MT	20.0	385	260	2
AELDR120.5MT	20.5	385	260	2
AELDR121MT	21.0	385	260	2
AELDR121.5MT	21.5	405	270	2
AELDR122MT	22.0	405	270	2
AELDR122.5MT	22.5	405	270	2
AELDR123MT	23.0	405	270	2
AELDR123.5MT	23.5	425	270	3
AELDR124MT	24.0	440	290	3
AELDR124.5MT	24.5	440	290	3
AELDR125MT	25.0	440	290	3
AELDR125.5MT	25.5	440	290	3
AELDR126MT	26.0	440	290	3
AELDR126.5MT	26.5	440	290	3
AELDR127MT	27.0	460	305	3
AELDR127.5MT	27.5	460	305	3
AELDR128MT	28.0	460	305	3
AELDR128.5MT	28.5	460	305	3
AELDR129MT	29.0	460	305	3
AELDR129.5MT	29.5	460	305	3
AELDR130MT	30.0	460	305	3
AELDR131MT	31.0	480	320	3
AELDR132MT	32.0	505	320	4
AELDR133MT	33.0	505	320	4
AELDR134MT	34.0	530	340	4
AELDR135MT	35.0	530	340	4
AELDR136MT	36.0	530	340	4
AELDR137MT	37.0	530	340	4
AELDR138MT	38.0	555	360	4
AELDR139MT	39.0	555	360	4
AELDR140MT	40.0	555	360	4

HSS EXTRA LONG SERIES TAPER SHANK DRILLS

DIN 1870 R2 RN

118° point angle point shape A steam tempered

Range of applications

High efficiency drill for extremely deep holes where working conditions such as cutting speed, feed, coolant and frequent chip removal have to be observed.

Stock Code	Ø h8 mm	Overall length mm	Flute length mm	Shank MT
AELDR28MT	8.0	330	210	1
AELDR28.5MT	8.5	330	210	1
AELDR29MT	9.0	345	220	1
AELDR29.5MT	9.5	345	220	1
AELDR210MT	10.0	360	235	1
AELDR210.5MT	10.5	360	235	1
AELDR211MT	11.0	375	250	1
AELDR211.5MT	11.5	375	250	1
AELDR212MT	12.0	395	260	1
AELDR212.5MT	12.5	395	260	1
AELDR213MT	13.0	395	260	1
AELDR213.5MT	13.5	410	275	1
AELDR214MT	14.0	410	275	1
AELDR214.5MT	14.5	425	275	2
AELDR215MT	15.0	425	275	2
AELDR215.5MT	15.5	445	295	2
AELDR216MT	16.0	445	295	2
AELDR216.5MT	16.5	445	295	2
AELDR217MT	17.0	445	295	2
AELDR217.5MT	17.5	465	310	2
AELDR218MT	18.0	465	310	2
AELDR218.5MT	18.5	465	310	2
AELDR219MT	19.0	465	310	2
AELDR219.5MT	19.5	490	325	2
AELDR220MT	20.0	490	325	2
AELDR220.5MT	20.5	490	325	2
AELDR221MT	21.0	490	325	2
AELDR221.5MT	21.5	515	345	2
AELDR222MT	22.0	515	345	2
AELDR222.5MT	22.5	515	345	2
AELDR223MT	23.0	515	345	2
AELDR223.5MT	23.5	535	345	3
AELDR224MT	24.0	535	365	3
AELDR224.5MT	24.5	555	365	3
AELDR225MT	25.0	555	365	3
AELDR225.5MT	25.5	555	365	3
AELDR226MT	26.0	555	365	3
AELDR226.5MT	26.5	555	365	3
AELDR227MT	27.0	850	385	3
AELDR227.5MT	27.5	580	385	3
AELDR228MT	28.0	580	385	3
AELDR228.5MT	28.5	580	385	3
AELDR229MT	29.0	580	385	3
AELDR229.5MT	29.5	580	385	3
AELDR230MT	30.0	580	385	3
AELDR231MT	31.0	610	410	3
AELDR232MT	32.0	635	410	4
AELDR233MT	33.0	635	410	4
AELDR234MT	34.0	665	430	4
AELDR235MT	35.0	665	430	4
AELDR236MT	36.0	665	430	4
AELDR237MT	37.0	665	430	4
AELDR238MT	38.0	695	460	4
AELDR239MT	39.0	695	460	4
AELDR240MT	40.0	695	460	4

MASONRY DRILLS

Stock Code	Size mm	Length mm
MDR3X75	3	75
MDR3.5X75	3.5	75
MDR4X75	4	75
MDR5X85	5	85
MDR6X100	6	100
MDR6.5X100	6.5	100
MDR7X100	7	100
MDR8X100	8	100
MDR10X150	10	150
MDR12X150	12	150
MDR13X150	13	150
MDR14X150	14	150
MDR16X150	16	150
MDR19X160	19	160
MDR20X160	20	160
MDR25X160	25	160

CARBIDE TIPPED DRILLS STRAIGHT SHANK AND MORSE TAPER SHANK

Note: Various sizes available on request

SOLID CARBIDE CENTRE DRILLS

Stock Code	Ø mm	Body Ø mm	Overall length mm
SCCD.8	0.8	3.15	20.0
SCCD1	1.0	3.15	31.5
SCCD1.25	1.25	3.15	31.5
SCCD1.6	1.6	4.00	35.5
SCCD2	2.0	5.00	40.0
SCCD2.5	2.5	6.30	45.0
SCCD3.15	3.15	8.00	50.0
SCCD4	4.0	10.00	56.0
SCCD5	5.0	12.50	63.0
SCCD6.3	6.3	16.00	71.0

SOLID CARBIDE STRAIGHT SHANK DRILLS - STUB LENGTH

DIN 1897

Stock Code	Ø h7 mm	Overall length mm	FluteOverall length mm
SCDR.5	0.5	26	6
SCDR.6	0.6	26	6
SCDR.7	0.7	26	6
SCDR.8	0.8	26	6
SCDR.9	0.9	26	6
SCDR1	1.0	26	6
SCDR1.1	1.1	28	7
SCDR1.2	1.2	30	8
SCDR1.3	1.3	30	8
SCDR1.4	1.4	32	9
SCDR1.5	1.5	32	9
SCDR1.6	1.6	34	10
SCDR1.7	1.7	34	10
SCDR1.8	1.8	36	11
SCDR1.9	1.9	36	11
SCDR2	2.0	38	12
SCDR2.1	2.1	38	12
SCDR2.2	2.2	40	13
SCDR2.3	2.3	40	13
SCDR2.4	2.4	43	14
SCDR2.5	2.5	43	14
SCDR2.6	2.6	43	14
SCDR2.7	2.7	46	16
SCDR2.8	2.8	46	16
SCDR2.9	2.9	46	16
SCDR3	3.0	46	16
SCDR3.1	3.1	49	18
SCDR3.2	3.2	49	18
SCDR3.3	3.3	49	18
SCDR3.4	3.4	52	20
SCDR3.5	3.5	52	20
SCDR3.6	3.6	52	20
SCDR3.7	3.7	52	20
SCDR3.8	3.8	55	22
SCDR3.9	3.9	55	22
SCDR4	4.0	55	22
SCDR4.1	4.1	55	22
SCDR4.2	4.2	55	22
SCDR4.3	4.3	58	24
SCDR4.4	4.4	58	24
SCDR4.5	4.5	58	24
SCDR4.6	4.6	58	24
SCDR4.7	4.7	58	24
SCDR4.8	4.8	62	26
SCDR4.9	4.9	62	26
SCDR5	5.0	62	26
SCDR5.1	5.1	62	26
SCDR5.2	5.2	62	26
SCDR5.3	5.3	66	26
SCDR5.4	5.4	66	28
SCDR5.5	5.5	66	28
SCDR5.6	5.6	66	28
SCDR5.7	5.7	66	28
SCDR5.8	5.8	66	28
SCDR5.9	5.9	66	28
SCDR6	6.0	70	28
SCDR6.1	6.1	70	31
SCDR6.2	6.2	70	31
SCDR6.3	6.3	70	31
SCDR6.4	6.4	70	31
SCDR6.5	6.5	70	31
SCDR6.6	6.6	70	31
SCDR6.7	6.7	74	31
SCDR6.8	6.8	74	34
SCDR6.9	6.9	74	34
SCDR7	7.0	74	34
SCDR7.1	7.1	74	34

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
SCDR7.2	7.2	74	34
SCDR7.3	7.3	74	34
SCDR7.4	7.4	74	34
SCDR7.5	7.5	74	34
SCDR7.6	7.6	79	34
SCDR7.7	7.7	79	37
SCDR7.8	7.8	79	37
SCDR7.9	7.9	79	37
SCDR8	8.0	79	37
SCDR8.1	8.1	79	37
SCDR8.2	8.2	79	37
SCDR8.3	8.3	79	37
SCDR8.4	8.4	79	37
SCDR8.5	8.5	84	37
SCDR8.6	8.6	84	40
SCDR8.7	8.7	84	40
SCDR8.8	8.8	84	40
SCDR8.9	8.9	84	40
SCDR9	9.0	84	40
SCDR9.1	9.1	84	40
SCDR9.2	9.2	84	40
SCDR9.3	9.3	84	40
SCDR9.4	9.4	84	40
SCDR9.5	9.5	89	40
SCDR9.6	9.6	89	43
SCDR9.7	9.7	89	43
SCDR9.8	9.8	89	43
SCDR9.9	9.9	89	43
SCDR10	10.0	89	43
SCDR10.2	10.2	89	43
SCDR10.5	10.5	95	43
SCDR11	11.0	95	47
SCDR11.5	11.5	102	47
SCDR12	12.0	102	51
SCDR12.5	12.5	102	51
SCDR13	13.0	107	51
SCDR13.5	13.5	107	54
SCDR14	14.0	107	54
SCDR15	15.0	111	56
SCDR15.5	15.5	115	58
SCDR16	16.0	115	58

SOLID CARBIDE STRAIGHT SHANK STUB DRILL TIALN COATED

140° point angle

DIN 6539

Stock Code	Ø h7 mm	Overall length mm	Flute length mm
SCDR3YG	3.0	46	16
SCDR.3.2YG	3.2	49	18
SCDR3.3YG	3.3	49	18
SCDR3.5YG	3.5	52	20
SCDR3.8YG	3.8	55	22
SCDR4YG	4.0	55	22
SCDR.4.2YG	4.2	55	22
SCDR4.3YG	4.3	85	24
SCDR4.5YG	4.5	58	24
SCDR4.7YG	4.7	58	24
SCDR5YG	5.0	62	26
SCDR5.3YG	5.3	62	26
SCDR5.4.YG	5.4	66	28
SCDR5.7YG	5.7	89	43
SCDR6YG	6.0	66	28
SCDR6.2YG	6.2	70	31
SCDR6.5YG	6.5	70	31
SCDR6.8YG	6.8	74	34
SCDR7YG	7	74	34
SCDR8YG	8	79	37
SCDR8.2YG	8.2	79	37
SCDR8.5YG	8.5	79	37

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Stock Code	Ø h8 mm	Overall length mm	Flute length mm
SCDR9YG	9	84	40
SCDR9.5YG	9.5	89	43
SCDR10YG	10	89	43
SCDR10.2YG	10.2	89	43
SCDR10.5YG	10.5	89	43
SCDR11.5YG	11.5	95	47
SCDR12YG	12	102	51
SCDR13YG	13	102	51
SCDR14YG	14	107	54
SCDR16YG	16	115	58

SOLID CARBIDE STRAIGHT SHANK DRILLS - JOBBER LENGTH

DIN 338

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
SCLDR1	1	34	12
SCLDR1.1	1.1	36	14
SCLDR1.2	1.2	38	16
SCLDR1.3	1.3	38	16
SCLDR1.4	1.4	40	18
SCLDR1.5	1.5	40	18
SCLDR1.6	1.6	43	20
SCLDR1.7	1.7	43	20
SCLDR1.8	1.8	46	22
SCLDR1.9	1.9	46	22
SCLDR2	2	49	24
SCLDR2.1	2.1	49	24
SCLDR2.2	2.2	53	27
SCLDR2.3	2.3	53	27
SCLDR2.4	2.4	57	30
SCLDR2.5	2.5	57	30
SCLDR2.6	2.6	57	30
SCLDR2.7	2.7	57	30
SCLDR2.8	2.8	57	30
SCLDR2.9	2.9	61	33
SCLDR3	3	61	33
SCLDR3.1	3.1	61	33
SCLDR3.2	3.2	61	33
SCLDR3.3	3.3	65	36
SCLDR3.4	3.4	65	36
SCLDR3.5	3.5	65	36
SCLDR3.6	3.6	70	39
SCLDR3.7	3.7	70	39
SCLDR3.8	3.8	70	39
SCLDR3.9	3.9	70	39
SCLDR4	4	75	43
SCLDR4.1	4.1	75	43
SCLDR4.2	4.2	75	43
SCLDR4.3	4.3	75	43
SCLDR4.4	4.4	75	43
SCLDR4.5	4.5	80	47
SCLDR4.6	4.6	80	47
SCLDR4.7	4.7	80	47
SCLDR4.8	4.8	80	47
SCLDR4.9	4.9	80	47
SCLDR5	5	86	52
SCLDR5.1	5.1	86	52
SCLDR5.2	5.2	86	52
SCLDR5.3	5.3	86	52
SCLDR5.4	5.4	86	52
SCLDR5.5	5.5	86	52
SCLDR5.6	5.6	93	57
SCLDR5.7	5.7	93	57
SCLDR5.8	5.80	93	57
SCLDR5.9	5.90	93	57

...Continued

Stock Code	Ø h8 mm	Overall length mm	Flute length mm
S CLDR6	6.00	93	57
SCLDR6.1	6.10	93	57
SCLDR6.2	6.20	93	57
SCLDR6.3	6.30	101	63
SCLDR6.4	6.40	101	63
SCLDR6.5	6.50	101	63
SCLDR6.6	6.60	101	63
SCLDR6.7	6.70	101	63
SCLDR6.8	6.80	101	63
SCLDR6.9	6.90	101	63
SCLDR7	7.00	109	69
SCLDR7.1	7.10	109	69
SCLDR7.2	7.20	109	69
SCLDR7.3	7.30	109	69
SCLDR7.4	7.40	109	69
SCLDR7.5	7.50	109	69
SCLDR7.6	7.60	109	69
SCLDR7.7	7.70	109	69
SCLDR7.8	7.80	117	75
SCLDR7.9	7.90	117	75
SCLDR8	8.00	117	75
SCLDR8.1	8.10	117	75
SCLDR8.2	8.20	117	75
SCLDR8.3	8.30	117	75
SCLDR8.4	8.40	117	75
SCLDR8.5	8.50	117	75
SCLDR8.6	8.60	117	75
SCLDR8.7	8.70	117	75
SCLDR8.8	8.80	125	81
SCLDR8.9	8.90	125	81
SCLDR9	9.00	125	81
SCLDR9.1	9.10	125	81
SCLDR9.2	9.20	125	81
SCLDR9.3	9.30	125	81
SCLDR9.4	9.40	125	81
SCLDR9.5	9.50	125	81
SCLDR9.6	9.60	125	81
SCLDR9.7	9.70	125	81
SCLDR9.8	9.80	133	87
SCLDR9.9	9.90	133	87
SCLDR10	10.00	133	87
SCLDR10.2	10.20	133	87
SCLDR10.5	10.50	133	87
SCLDR10.8	10.80	142	94
SCLDR11	11.00	142	94
SCLDR11.5	11.50	142	94
SCLDR12	12.00	151	101
SCLDR12.5	12.50	151	101
SCLDR13	13.00	160	108
SCLDR13.5	13.50	160	108
SCLDR14	14.00	160	108
SCLDR14.5	14.50	169	114
SCLDR15	15.00	169	114
SCLDR15.5	15.50	178	120
SCLDR16	16.00	178	120

V = Surface speed m/min
n = RPM
D = Cutter diameter

To calculate surface speed :

$$V = \frac{\pi . D . n}{1000}$$

To calculate RPM :

$$n = \frac{V . 1000}{\pi . D}$$

Yes SOLID CARBIDE HIGH PRODUCTION, HIGH FEED, STRAIGHT SHANK TWIST DRILLS. TiN COATED

Stub length to works standard

Stock Code	Ø h7 mm mm	Shank Ø h6 mm	Overall length mm	Flute length mm	Drilling depth
YDR3S#	3.0	4.0	55	20	15
YDR3.1S#	3.1	4.0	55	20	15
YDR3.2S#	3.2	4.0	55	20	15
YDR3.3S#	3.3	4.0	55	20	15
YDR3.4S#	3.4	4.0	55	20	15
YDR3.5S#	3.5	4.0	55	20	15
YDR3.6S#	3.6	4.0	55	25	19
YDR3.7S#	3.7	4.0	55	25	19
YDR3.8S#	3.8	4.0	55	25	19
YDR3.9S#	3.9	4.0	55	25	19
YDR4S#	4.0	4.0	55	25	19
YDR4.1S#	4.1	4.0	55	25	19
YDR4.2S#	4.2	5.0	62	32	25
YDR4.3S#	4.3	5.0	62	32	25
YDR4.4S#	4.4	5.0	62	32	25
YDR4.5S#	4.5	5.0	62	32	25
YDR4.6S#	4.6	5.0	62	32	25
YDR4.7S#	4.7	5.0	62	32	25
YDR4.8S#	4.8	5.0	62	32	25
YDR4.9S#	4.9	5.0	62	32	25
YDR5S#	5.0	5.0	62	32	25
YDR5.1S#	5.1	5.0	62	32	25
YDR5.2S#	5.2	6.0	66	36	27
YDR5.3S#	5.3	6.0	66	36	27
YDR5.4S#	5.4	6.0	66	36	27
YDR5.5S#	5.5	6.0	66	36	27
YDR5.6S#	5.6	6.0	66	36	27
YDR5.7S#	5.7	6.0	66	36	27
YDR5.8S#	5.8	6.0	66	36	27
YDR5.9S#	5.9	6.0	66	36	27
YDR6S#	6.0	6.0	66	36	27
YDR6.1S#	6.1	6.0	66	36	27
YDR6.2S#	6.2	7.0	74	42	32
YDR6.3S#	6.3	7.0	74	42	32
YDR6.4S#	6.4	7.0	74	42	32
YDR6.5S#	6.5	7.0	74	42	32
YDR6.6S#	6.6	7.0	74	42	32
YDR6.7S#	6.7	7.0	74	42	32
YDR6.8S#	6.8	7.0	74	42	32
YDR6.9S#	6.9	7.0	74	42	32
YDR7S#	7.0	7.0	74	42	32
YDR7.1S#	7.1	7.0	74	42	32
YDR7.2S#	7.2	8.0	79	46	34
YDR7.3S#	7.3	8.0	79	46	34
YDR7.4S#	7.4	8.0	79	46	34
YDR7.5S#	7.5	8.0	79	46	34
YDR7.6S#	7.6	8.0	79	46	34
YDR7.7S#	7.7	8.0	79	46	34
YDR7.8S#	7.8	8.0	79	46	34
YDR7.9S#	7.9	8.0	79	46	34
YDR8S#	8.0	8.0	79	46	34
YDR8.1S#	8.1	8.0	79	46	34
YDR8.2S#	8.2	9.0	84	50	37
YDR8.3S#	8.3	9.0	84	50	37

Continued ...

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Stock Code	Ø h7 mm mm	Shank Ø h6 mm	Overall length mm	Flute length mm	Drilling depth mm
YDR8.4S#	8.4	9.0	84	50	37
YDR8.5S#	8.5	9.0	84	50	37
YDR8.6S#	8.6	9.0	84	50	37
YDR8.7S#	8.7	9.0	84	50	37
YDR8.8S#	8.8	9.0	84	50	37
YDR8.9S#	8.9	9.0	84	50	37
YDR9.0S#	9.0	9.0	84	50	37
YDR9.1S#	9.1	9.0	84	50	37
YDR9.2S#	9.2	10.0	89	53	38
YDR9.3S#	9.3	10.0	89	53	38
YDR9.4S#	9.4	10.0	89	53	38
YDR9.5S#	9.5	10.0	89	53	38
YDR9.6S#	9.6	10.0	89	53	38
YDR9.7S#	9.7	10.0	89	53	38
YDR9.8S#	9.8	10.0	89	53	38
YDR9.9S#	9.9	10.0	89	53	38
YDR10S#	10.0	10.0	89	53	38
YDR10.2S#	10.2	11.0	95	55	40
YDR10.3S#	10.3	11.0	95	55	40
YDR10.5S#	10.5	11.0	95	55	40
YDR10.8S#	10.8	11.0	95	55	40
YDR11S#	11.0	11.0	95	55	40
YDR11.5S#	11.5	12.0	102	62	44
YDR12S#	12.0	12.0	102	62	44
YDR12.5S#	12.5	13.0	102	62	42
YDR13S#	13.0	13.0	102	62	42
YDR13.5S#	13.5	14.0	107	64	43
YDR14S#	14.0	14.0	107	64	43
YDR14.5S#	14.5	15.0	111	67	45
YDR15S#	15.0	15.0	111	67	45
YDR15.5S#	15.5	16.0	115	69	45
YDR16S#	16.0	16.0	115	69	45

Yes SOLID CARBIDE HIGH PRODUCTION, HIGH FEED, STRAIGHT SHANK TWIST DRILLS. TiN COATED

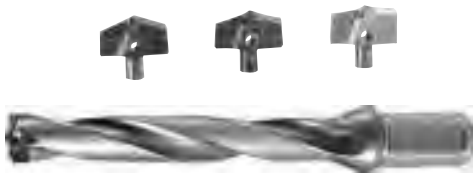
Jobber length to works standard

Stock Code	Ø h7 mm mm	Shank Ø h6 mm	Overall length mm	Flute length mm	Drilling depth
YDR3LS#	3.0	4.0	80	45	40
YDR3.5LS#	3.5	4.0	80	45	40
YDR4LS#	4.0	4.0	80	45	39
YDR4.5LS#	4.5	5.0	80	45	38
YDR5LS#	5.0	5.0	80	45	38
YDR5.5LS#	5.5	6.0	83	50	41
YDR6LS#	6.0	6.0	83	50	41
YDR6.5LS#	6.5	7.0	85	53	43
YDR7LS#	7.0	7.0	85	53	43
YDR7.5LS#	7.5	8.0	90	58	46
YDR8LS#	8.0	8.0	90	58	46
YDR8.5LS#	8.5	9.0	98	64	51
YDR9LS#	9.0	9.0	98	64	51
YDR10LS#	10.0	10.0	105	68	53
YDR10.2LS#	10.2	11.0	110	73	57
YDR11LS#	11.0	11.0	110	73	57
YDR12LS#	12.0	12.0	120	80	62
YDR13LS#	13.0	13.0	137	90	71
YDR14LS#	14.0	14.0	147	96	75

INTERCHANGEABLE INSERT DRILLS STANDARD LENGTH.

Polished flutes. High production. Through coolant, single locking

Type YTDI
Inserts supplied seperately



Stock Code	Ø range mm	Shank Ø h6 mm	Overall length mm	Flute length mm	Depth of cut mm
YDRB080SL	8-8.4	10	85	26	3XD
YDRB085SL	8.5-8.9	10	85	26	3XD
YDRB090SL	9-9.4	10	85	33	3XD
YDRB095SL	9.5-9.9	12	95	33	3XD
YDRB100SL	10-10.4	12	95	33	3XD
YDRB105SL	10.5-10.9	12	100	43	3XD
YDRB110SL	11-11.4	12	100	43	3XD
YDRB115SL	11.5-11.9	12	105	48	3XD
YDRB120SL	12-12.4	12	105	48	3XD
YDRB12.5SL	12.5-12.9	16	110	48	3XD
YDRB130SL	13-13.4	16	110	48	3XD
YDRB135SL	13.5-13.9	16	115	52	3XD
YDRB140SL	14-14.4	16	115	52	3XD
YDRB145SL	14.5-14.9	20	125	55	3XD
YDRB150SL	15-15.4	20	125	55	3XD
YDRB155SL	15.5-15.9	20	125	55	3XD
YDRB160SL	16-16.4	20	130	55	3XD
YDRB165SL	16.5-16.9	20	130	55	3XD
YDRB170SL	17-17.4	20	130	55	3XD
YDRB175SL	17.5-17.9	20	130	55	3XD
YDRB180SL	18-18.4	20	140	63	3XD
YDRB185SL	18.5-18.9	20	140	63	3XD
YDRB190SL	19.0-19.4	20	140	63	3XD
YDRB195SL	19.5-19.9	20	140	63	3XD
YDRB200SL	20.0-20.4	25	150	63	3XD
YDRB205SL	20.5-20.9	25	150	69	3XD
YDRB210SL	21.0-21.4	25	150	69	3XD
YDRB215SL	21.5-21.9	25	150	69	3XD
YDRB220SL	22.0-22.4	25	160	75	3XD
YDRB225SL	22.5-22.9	25	160	75	3XD
YDRB230SL	23.0-23.4	25	160	75	3XD
YDRB235SL	23.5-23.9	25	160	75	3XD
YDRB240SL	24.0-24.4	32	170	83	3XD
YDRB245SL	24.5-24.9	32	170	83	3XD
YDRB250SL	25.0-25.4	32	170	83	3XD
YDRB255SL	25.5-25.9	32	170	83	3XD
YDRB260SL	26.0-26.4	32	180	90	3XD
YDRB265SL	26.5-26.9	32	180	90	3XD
YDRB270SL	27.0-27.4	32	180	90	3XD
YDRB275SL	27.5-27.9	32	180	90	3XD
YDRB280SL	28.0-28.4	32	180	97	3XD
YDRB285SL	28.5-28.9	32	190	97	3XD
YDRB290SL	29.0-29.4	32	190	97	3XD
YDRB295SL	29.5-29.9	32	190	97	3XD
YDRB300SL	30.0-30.4	32	200	105	3XD
YDRB305SL	30.5-30.9	32	200	105	3XD
YDRB310SL	31.0-31.4	32	200	105	3XD
YDRB315SL	31.5-31.5	32	200	105	3XD
YDRB320SL	32.0-32.4	32	210	110	3XD
YDRB325SL	32.5-32.9	32	210	110	3XD
YDRB330SL	33.0-33.4	32	210	110	3XD

Continued ...

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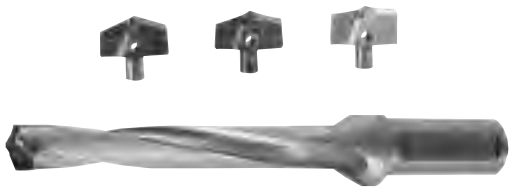
Stock Code	Ø range mm	Shank Ø mm	Overall length mm	Flute length mm	Depth of cut mm
YDRB335SL	33.5-33.9	40	210	110	3XD
YDRB340SL	34.0-34.5	40	230	118	3XD
YDRB345SL	34.5-34.9	40	230	118	3XD
YDRB350SL	35.0-35.4	40	230	118	3XD
YDRB355SL	35.5-35.9	40	230	118	3XD
YDRB360SL	36.0-36.4	40	250	125	3XD
YDRB365SL	36.5-36.9	40	250	125	3XD
YDRB370SL	37.0-37.4	40	250	125	3XD
YDRB375SL	37.5-37.9	40	250	125	3XD
YDRB380SL	38.0-38.4	40	250	132	3XD
YDRB385SL	38.5-38.9	40	250	132	3XD
YDRB390SL	39.0-39.4	40	250	132	3XD
YDRB395SL	39.5-39.9	40	270	138	3XD
YDRB400SL	40.0-40.4	40	270	138	3XD
YDRB405SL	40.5-40.9	40	270	138	3XD
YDRB410SL	41.0-41.4	40	270	138	3XD
YDRB415SL	41.5-41.9	40	270	145	3XD
YDRB420SL	42.0-42.4	40	270	145	3XD
YDRB425SL	42.5-42.9	40	270	145	3XD
YDRB430SL	43.0-43.4	40	270	145	3XD
YDRB435SL	43.5-43.9	40	270	145	3XD
YDRB440SL	44.0-44.4	40	280	153	3XD
YDRB445SL	44.5-44.9	40	280	153	3XD
YDRB450SL	45.0-45.4	40	280	153	3XD
YDRB455SL	45.5-45.9	40	280	153	3XD
YDRB460SL	46.0-46.4	40	280	160	3XD
YDRB465SL	46.5-46.9	40	280	160	3XD
YDRB470SL	47.0-47.4	40	280	160	3XD
YDRB475SL	47.5-47.9	40	280	160	3XD
YDRB480SL	48.0-48.4	40	300	167	3XD
YDRB485SL	48.5-48.9	40	300	167	3XD
YDRB490SL	49.0-49.4	40	300	167	3XD
YDRB495SL	49.5-49.9	40	300	167	3XD
YDRB500SL	50.0-50.4	40	300	167	3XD

INTERCHANGEABLE INSERT 'KRUZ' DRILLS DEEP HOLE DRILLING

TiN coated flutes, high production through coolant, single locking

Inserts supplied seperately



Stock Code	mm	Ø range mm	Shank Ø mm	Overall length mm	Flute length mm	Depth of cut
YDRB1005KRUZ		10.0-10.4	12	115	58	5XD
YDRB1007KRUZ		10.0-10.4	12	140	78	7XD
YDRB1055KRUZ		10.5-10.9	12	125	68	5XD
YDRB1057KRUZ		10.5-10.9	12	150	88	7XD
YDRB1105KRUZ		11.0-11.4	12	125	68	5XD
YDRB1107KRUZ		11.0-11.4	12	150	88	7XD
YDRB1155KRUZ		11.5-11.9	12	130	73	5XD
YDRB1157KRUZ		11.5-11.9	12	160	98	7XD
YDRB1205KRUZ		12.0-12.4	16	130	73	5XD
YDRB1207KRUZ		12.0-12.4	16	160	98	7XD

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Stock Code	Ø range mm	Shank Ø mm	Overall length mm	Flute length mm	Depth of cut mm
YDRB1255KRUZ	12.5-19.9	16	140	77	5XD
YDRB1257KRUZ	12.5-19.9	12	175	102	7XD
YDRB1305KRUZ	13.0-13.4	16	140	77	5XD
YDRB1307KRUZ	13.0-13.4	16	175	102	7XD
YDRB1355KRUZ	13.5-13.9	16	145	82	5XD
YDRB1357KRUZ	13.5-13.9	16	180	107	7XD
YDRB1405KRUZ	14.0-14.4	16	145	82	5XD
YDRB1407KRUZ	14.0-14.4	16	180	107	7XD
YDRB1455KRUZ	14.5-14.9	20	148	85	5XD
YDRB1457KRUZ	14.5-14.9	20	185	117	7XD
YDRB1505KRUZ	15.0-15.4	20	158	95	5XD
YDRB1507KRUZ	15.0-15.4	20	185	117	7XD
YDRB1555KRUZ	15.5-15.9	20	158	95	5XD
YDRB1557KRUZ	15.5-15.9	20	185	117	7XD
YDRB1605KRUZ	16.0-16.4	20	160	110	5XD
YDRB1607KRUZ	16.0-16.4	20	190	123	7XD
YDRB1655KRUZ	16.5-16.9	20	160	97	5XD
YDRB1657KRUZ	16.5-16.9	20	190	123	7XD
YDRB1705KRUZ	17.0-17.4	20	160	99	5XD
YDRB1707KRUZ	17.0-17.4	20	200	128	7XD
YDRB1755KRUZ	17.5-17.9	20	160	99	5XD
YDRB1757KRUZ	17.5-17.9	20	200	128	7XD
YDRB1805KRUZ	18.0-18.4	20	170	100	5XD
YDRB1807KRUZ	18.0-18.4	20	210	138	7XD
YDRB1855KRUZ	18.5-18.9	20	170	100	5XD
YDRB1857KRUZ	18.5-18.9	20	210	138	
YDRB1905KRUZ	19.0-19.4	20	170	100	7XD 5XD
YDRB1907KRUZ	19.0-19.4	20	210	138	7XD
YDRB1955KRUZ	19.5-19.9	20	170	100	5XD
YDRB1957KRUZ	19.5-19.9	20	210	138	7XD
YDRB2005KRUZ	20.0-20.4	25	190	110	5XD
YDRB2007KRUZ	20.0-20.4	25	230	153	7XD
YDRB2055KRUZ	20.5-20.9	25	190	110	5XD
YDRB2057KRUZ	20.5-20.8	25	230	153	7XD
YDRB2105KRUZ	21.0-21.4	25	190	110	5XD
YDRB2107KRUZ	21.0-21.4	25	230	153	7XD
YDRB2155KRUZ	21.5-21.9	25	190	110	5XD
YDRB2177KRUZ	21.5-21.9	25	230	153	7XD
YDRB2205KRUZ	22.0-22.4	25	200	121	5XD
YDRB2207KRUZ	22.0-22.4	25	240	168	7XD
YDRB2255KRUZ	22.5-22.9	25	200	121	5XD
YDRB2257KRUZ	22.5-22.9	25	240	168	7XD
YDRB2305KRUZ	23.0-23.4	25	200	121	5XD
YDRB2307KRUZ	23.0-23.4	25	240	168	7XD
YDRB2355KRUZ	23.5-23.9	25	200	121	5XD
YDRB2357KRUZ	23.5-23.9	25	240	168	7XD
YDRB2405KRUZ	24.0-24.4	32	220	133	5XD
YDRB2407KRUZ	24.0-24.4	32	270	183	7XD
YDRB2455KRUZ	24.5-24.9	32	220	133	5XD
YDRB2457KRUZ	24.5-24.9	32	270	183	7XD
YDRB2505KRUZ	25.0-25.4	32	220	133	5XD
YDRB2507KRUZ	25.0-25.4	32	270	183	7XD
YDRB2555KRUZ	25.5-25.9	32	220	133	5XD
YDRB2557KRUZ	25.5-25.9	32	270	183	7XD
YDRB2605KRUZ	26.0-26.4	32	240	144	5XD
YDRB2607KRUZ	26.0-26.4	32	290	198	7XD
YDRB2655KRUZ	26.5-26.9	32	240	144	5XD
YDRB2657KRUZ	26.5-26.9	32	290	198	7XD
YDRB2705KRUZ	27.0-27.4	32	240	144	5XD
YDRB2707KRUZ	27.0-27.4	32	290	198	7XD
YDRB2755KRUZ	27.5-27.9	32	240	144	5XD
YDRB2757KRUZ	27.5-27.9	32	290	198	7XD

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Stock Code	Ø range mm	Shank Ø mm	Overall length mm	Flute length mm	Depth of cut mm
YDRB2805KRUZ	28.0-28.4	32	250	155	5XD
YDRB2807KRUZ	28.0-28.4	32	300	213	7XD
YDRB2855KRUZ	28.5-28.9	32	250	155	5XD
YDRB2857KRUZ	28.5-28.9	32	300	213	7XD
YDRB2905KRUZ	29.0-29.4	32	250	155	5XD
YDRB2907KRUZ	29.0-29.4	32	300	213	7XD
YDRB2955KRUZ	29.5-29.9	32	250	155	5XD
YDRB2957KRUZ	29.5-29.9	32	300	213	7XD
YDRB3005KRUZ	30.0-30.4	32	260	165	5XD
YDRB3007KRUZ	30.0-30.4	32	320	228	7XD
YDRB3055KRUZ	30.5-30.9	32	260	165	5XD
YDRB3057KRUZ	30.5-30.9	32	320	228	7XD
YDRB3105KRUZ	31.0-31.4	32	260	165	5XD
YDRB3107KRUZ	31.0-31.4	32	320	228	7XD
YDRB3155KRUZ	31.5-31.9	32	260	165	5XD
YDRB3157KRUZ	31.5-31.9	32	320	228	7XD
YDRB3205KRUZ	32.0-32.5	32	270	177	5XD
YDRB3207KRUZ	32.0-32.5	32	340	243	7XD
YDRB3255KRUZ	32.5-32.9	32	270	177	5XD
YDRB3257KRUZ	32.5-32.9	32	340	243	7XD
YDRB3305KRUZ	33.0-33.4	32	270	177	5XD
YDRB3307KRUZ	33.0-33.4	32	340	243	7XD
YDRB3355KRUZ	33.5-33.9	32	270	177	5XD
YDRB3357KRUZ	33.5-33.9	32	340	243	7XD
YDRB3405KRUZ	34.0-34.4	40	300	188	5XD
YDRB3407KRUZ	34.0-34.4	40	360	258	7XD
YDRB3455KRUZ	34.5-34.9	40	300	188	5XD
YDRB3457KRUZ	34.5-34.9	40	360	258	7XD
YDRB3505KRUZ	35.0-35.4	40	300	188	5XD
YDRB3507KRUZ	35.0-35.4	40	360	258	7XD
YDRB3555KRUZ	35.5-35.9	40	300	188	5XD
YDRB3557KRUZ	35.5-35.9	40	360	258	7XD
YDRB3605KRUZ	36.0-36.4	40	310	199	5XD
YDRB3607KRUZ	36.0-36.4	40	380	273	7XD
YDRB3655KRUZ	36.5-36.9	40	310	199	5XD
YDRB3657KRUZ	36.5-36.9	40	380	273	7XD
YDRB3705KRUZ	37.0-37.4	40	310	199	5XD
YDRB3707KRUZ	37.0-37.4	40	380	273	7XD
YDRB3755KRUZ	37.5-37.9	40	310	199	5XD
YDRB3757KRUZ	37.5-37.9	40	380	273	7XD
YDRB3805KRUZ	38.0-38.4	40	320	210	5XD
YDRB3807KRUZ	38.0-38.4	40	400	288	7XD
YDRB3855KRUZ	38.5-38.9	40	320	210	5XD
YDRB3857KRUZ	38.5-38.9	40	400	288	7XD
YDRB3905KRUZ	39.0-39.4	40	320	210	5XD
YDRB3907KRUZ	39.0-39.4	40	400	228	7XD
YDRB3955KRUZ	39.5-39.9	40	320	210	5XD
YDRB3957KRUZ	39.5-39.9	40	400	228	7XD
YDRB4005KRUZ	40.0-40.4	40	340	221	5XD
YDRB4007KRUZ	40.0-40.4	40	420	303	7XD
YDRB4055KRUZ	40.5-40.9	40	340	221	5XD
YDRB4057KRUZ	40.5-40.9	40	420	303	7XD
YDRB4105KRUZ	41.0-41.4	40	340	221	5XD
YDRB4107KRUZ	41.0-41.4	40	420	303	7XD
YDRB4155KRUZ	41.5-41.9	40	340	221	5XD
YDRB4157KRUZ	41.5-41.9	40	420	303	7XD
YDRB4205KRUZ	42.0-42.4	40	340	232	5XD
YDRB4207KRUZ	42.0-42.4	40	420	318	7XD
YDRB4255KRUZ	42.5-42.9	40	340	232	5XD
YDRB4257KRUZ	42.5-42.9	40	420	318	7XD
YDRB4305KRUZ	43.0-43.4	40	340	232	5XD
YDRB4307KRUZ	43.0-43.4	40	420	318	7XD
YDRB4355KRUZ	43.5-43.9	40	340	232	5XD
YDRB4357KRUZ	43.5-43.9	40	420	318	7XD

Continued ...

...Continued

Stock Code	Ø range mm	Shank Ø mm	Overall length mm	Flute length mm	Depth of cut mm
YDRB4405KRUZ	44.0-44.4	40	370	243	5XD
YDRB4407KRUZ	44.0-44.4	40	460	333	7XD
YDRB4455KRUZ	44.5-44.9	40	370	240	5XD
YDRB4457KRUZ	44.5-44.9	40	460	333	7XD
YDRB4505KRUZ	45.0-45.4	40	370	243	5XD
YDRB4507KRUZ	45.0-45.4	40	460	333	7XD
YDRB4555KRUZ	45.5-45.9	40	370	243	5XD
YDRB4557KRUZ	45.5-45.9	40	460	333	7XD
YDRB4605KRUZ	46.0-46.4	40	370	255	5XD
YDRB4607KRUZ	46.0-46.4	40	460	348	7XD
YDRB4655KRUZ	46.5-46.9	40	370	255	5XD
YDRB4657KRUZ	46.5-46.9	40	460	348	7XD
YDRB4705KRUZ	47.0-47.4	40	370	255	5XD
YDRB4707KRUZ	47.0-47.4	40	460	348	7XD
YDRB4755KRUZ	47.5-47.9	40	370	255	5XD
YDRB4757KRUZ	47.5-47.9	40	460	342	7XD
YDRB4805KRUZ	48.0-48.4	40	390	265	5XD
YDRB4807KRUZ	48.0-48.4	40	490	363	7XD
YDRB4855KRUZ	48.5-48.9	40	390	265	5XD
YDRB4857KRUZ	48.5-48.9	40	490	363	7XD
YDRB4905KRUZ	49.0-49.4	40	390	265	5XD
YDRB4907KRUZ	49.0-49.4	40	490	363	7XD
YDRB4955KRUZ	49.5-49.9	40	390	265	5XD
YDRB4957KRUZ	49.5-49.9	40	490	363	7XD
YDRB5005KRUZ	50.0-50.4	40	390	265	5XD
YDRB5007KRUZ	50.0-50.4	40	490	363	7XD

INSERT DRILLS

For holes up to 3 x diameter

BODIES

Stock Code	Ø mm	Shank Ø mm	Insert
KID163	16	20	WC••0302
KID173	17	20	WC••0302
KID183	18	20	WC••0302
KID193	19	20	WC••0302
KID203	20	20	WC••0302
KID223	22	25	WC••0402
KID243	24	25	WC••0402
KID253	25	25	WC••0402
KID283	28	32	WC••0503
KID303	30	32	WC••0503
KID323	32	32	WC••06T3
KID343	34	32	WC••06T3
KID363	36	32	WC••06T3
KID383	38	32	WC••06T3
KID403	40	32	WC••06T3
KID443	44	40	WC••0804
KID453	45	40	WC••0804
KID483	48	40	WC••0804
KID503	50	40	WC••0804
KID563	56	40	WC••0804

...Continued

...Continued

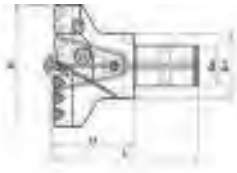
INSERTS

Stock Code			
WCMT	030204	C21	NCM325
WCMT	030208	C20	PC5300
WCMT	030208	C20	NCM325
WCMT	040208	C20	NCM25P
WCMT	040208	C20	PC230
WCMT	050308	C20	NCM325
WCMT	050308	C20	PC230
WCMT	06T308	C20	CX1554
WCMT	080408	C20	NCM325

Note: Please see our full range of carbide cutting, turning and milling on pages 74.....

MAX DRILL VMD

Korea Technics Ltd.
HIGH SPEED CUTTING TOOLS



N = INNER
T = OUTER

Stock code	D	DS	D1	L1	L	Plot Drill	Cartridge	Insert	Screw	Driver
VMD-045050	45-50	13	28	50	85	PLD-1035 TiN-H	VMC-045050N/T	WC..030204		TXL-6
VMD-050055	50-55	13	28	50	85		VMC-050055N/T		TSB-22045	
VMD-055060	55-60	16	32	60	100	PLD-1238 TiN-H	VMC-055060N/T	WC..040204	T SB-25055	TXL-6
VMD-060065	60-65	16	32	60	100		VMC-060065N/T	MC..050308	TSB-30070	
VMD-065070	65-70	16	32	60	100		VMC-065070N/T			
VMD-070075	70-75	22	40	70	115		VMC-070075N/T			
VMD-075080	75-80	22	40	70	115	PLD-1645 TiN-H	VMC-075080N/T	WC..06T308	TSB-35090	TXL-15
VMD-080085	80-85	22	40	70	115		VMC-080085N/T			
VMD-085090	85-90	27	48	70	120		VMC-085090N/T			
VMD-090095	90-95	27	48	70	120		VMC090095N/T			
VMD-095100	95-100	27	48	70	120		VMC-095100N/T			
VMD-100105	100-105	32	58	80	130	PLD-2045 TiN-H	VMC-100105N/T	WC..050308	TSB-30070	TXL-8
NMD-105110	105-110	32	58	80	130		VMC-105110N/T	WC..06T308	TSB-35090	TXL-15
VMD-110115	110-115	32	58	80	130		VMC110115N/T			
VMD-115120	115-120	40	70	90	145		VMD-115120N/T			
VMD-120125	120-125	40	70	90	145	PLD-2556 TiN-H	VMD-120125N/T			
VMD-125130	125-130	40	70	90	145		VMC-125130N/T			
VMD-130135	130-135	40	70	90	145		VMC-130135N/T			
VMD-135140	135-140	40	70	90	145		VMC-135140N/T			
VMD-140150	140-150	50	80	100	160		VMC140150N/T	WC..080408	TSB-40110	
VMD-150160	150-160	50	80	100	160		VMC150160N/T			
VMD-160170	160-170	50	80	100	160	PLD-3068 TiN-H	VMD-160170N/T			
VMD-170180	170-180	50	80	100	160		VMD-170180N/T			

PILOT DRILL

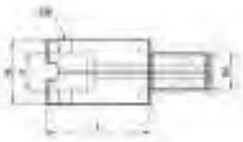
Stock code	D	L
PLD-V1035 TIN-H	10	35
PLD-V1238 TIN-H	12	38
PLD-V1645 TIN-H	16	45
PLD-2045 TIN-H	20	45
PLD-2556 TIN-H	25	56
PLD-3068 TIN-H	30	68

DRIVE RING

Stock code	D	d	S
DVR-281310	28	13	10
DVR-321610	32	16	
DVR402212	40	22	12
DVR-482712	48	27	
DVR-583214	58	32	14
DVR-704014	70	40	
DVR-805016	80	50	16

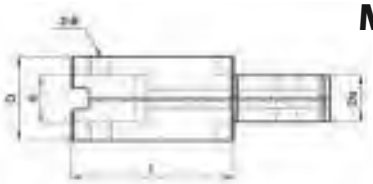
MX HOLDER

Korea Technics Ltd.
HIGH SPEED CUTTING TOOLS



Stock code	Ds	d	L	D	Ls	B	Drive ring
MXA-3213115	32	13	115	28	70	MTB-08115	DVR-281310
MXA-3213200	32	13	200	28			
MXA-3213300	32	13	300	28			
MXA-4016125	40	16	125	32	80		DVR-321610
MXA-4016200	40	16	200	32			
MXA-4016300	40	16	300	32			
MXA-4022148	40	22	148	40		MTB-10145	DVR-402212
MXA-4022200	40	22	200	40			
MXA-4022300	40	22	300	40			
MXA-4027168	40	27	168	48		MTB-12175	DVR-482712
MXA-4027300	40	27	300	48			
MXA-4032186	40	32	186	58		MTB-12195	DVR-583214
MXA-4032300	40	32	300	58			
MXA-5040186	50	40	186	70	80	MTB-16260	DVR-704014
MXA-W5040300	50	40	300	70			
MXA-5050184	50	50	184	80			DVR-805016
MXA-5050300	50	50	300	80			

MX EXTENSION



Stock code	D	d	L	Ds	B	Drive ring
MXB-2813115	28	13	115	13	MTB-08115	DVR-281310
MXB-2813150	28	13	150	13		
MXB-2813200	28	13	200	13		
MXB-2813300	28	13	300	13		
MXB-3216115	32	16	115	16	MTB-08115	DVR-32610
MXB-3216200	32	16	200	16		
MXB-3216300	32	16	300	16		
MXB-4022113	40	22	113	22	MTB-10145	DVR-402212
MXB-4022200	40	22	200	22		
MXB-4022300	40	22	300	22		
MXB-4827113	48	27	113	27	MTB-12175	DVR-482712
MXB-4827200	48	27	200	27		
MXB-4827300	48	27	300	27		
MXB-5832186	58	32	186	32	MTB-12195	DVR-583214
MXB-5832300	58	32	300	32		
MXB=7040186	70	40	186	40	MTB-16260	DVR-704014
MXB-7040300	70	40	300	40		
MXB-7040500	70	40	500	40		
MXB-8050204	80	50	204	50		DVR-805016
MXB-8050300	80	50	300	50		
MXB-8050500	80	50	500	50		

KORLOY Inc. KING DRILL

Stock Code	Shank Ø mm	Overall length mm	Flute length mm	Insert
KINGD14203D-05	20	110	45	SPMT0502+XOMT0502
KINGD15203D-05	20	114	48	SPMT0502+XOMT0502
KINGD16203D-05	20	117	51	PMT0502+XOMT0502
KINGD16205D-05	20	117	51	SPMT0502+XOMT0502
KINGD17253D-06	25	126	54	SPMT0602+XOMT0602
KINGD175255D-06	25	126	54	SPMT0602+XOMT0602
KINGD18253D-06	25	130	57	SPMT0602+XOMT0602
KINGD18255D-06	25	130	57	SPMT0602+XOMT0602
KINGD19253D-06	25	133	60	SPMT0602+XOMT0602
KINGD19255D-06	25	133	60	SPMT0602+XOMT0602
KINGD20253D-07	25	138	63	SPMT07T2+XOMT07T2
KINGD20255D-07	25	138	63	SPMT0702+XOMT0702
KINGD21253D-07	25	141	69	SPMT07T2+XOMT07T2
KINGD21255D-07	25	141	69	SPMT0702+XOMT0702
KINGD22253D-07	25	144	75	SPMT07T2+XOMT07T2
KINGD22255D-07	25	144	75	SPMT07T2+XOMT07T2
KINGD24323D-09	32	157	75	SPMT0903+XOMT0903
KINGD24324D-09	32	157	75	SPMT0903+XOMT0903
KINGD24325D-09	32	157	75	SPMT0903+XOMT0903
KINGD25323D-09	32	160	78	SPMT0903+XOMT0903
KINGD26323D-09	32	163	78	SPMT0903+XOMT0903
KINGD26325D-09	32	163	81	SPMT0903+XOMT0903
KINGD27323D-09	32	167	81	SPMT0903+XOMT0903
KINGD28323D-09	32	171	87	SPMT0903+XOMT0903
KINGD28325D-09	32	171	87	SPMT0903+XOMT0903
KINGD285323D-09	32	171	87	SPMT0903+XOMT0903
KINGD30323D-11	32	180	93	SPMT11T3+XOMT11T3
KINGD30325D-11	32	180	93	SPMT11T3+XOMT11T3
KINGD32323D-11	32	186	99	SPMT11T3+XOMT11T3
KINGD32325D-11	32	186	99	SPMT11T3+XOMT11T3
KINGD33323D-11	32	190	102	SPMT11T3+XOMT11T3
KINGD35323D-11	32	196	108	SPMT11T3+XOMT11T3
KINGD38403D-13	40	219	118	SPMT1304+XOMT1304
KINGD4040D-13	40	226	121	SPMT1304+XOMT1304

V = Surface speed m/min
n = RPM
D = Cutter diameter

To calculate surface speed :

$$V = \frac{\pi . D . n}{1000}$$

To calculate RPM :

$$n = \frac{V . 1000}{\pi . D}$$

MAGICUT BI-METAL HOLE SAWS

35 mm depth of cut "variable pitch"

Stock Code	Ø mm	Stock Code	Ø mm	Stock Code	Ø mm	Stock Code	Ø mm
HS14M	14	HS33M	33	HS57M	57	HS92M	92
HS16M	16	HS35M	35	HS59M	59	HS95M	95
HS17M	17	HS37M	37	HS60M	60	HS98M	98
HS19M	19	HS38M	38	HS64M	64	HS102M	102
HS20M	20	HS40M	40	HS65M	65	HS105M	105
HS21M	21	HS41M	41	HS67M	67	HS108M	108
HS22M	22	HS43M	43	HS70M	70	HS111M	111
HS24M	24	HS44M	44	HS73M	73	HS114M	114
HS25M	25	HS46M	46	HS76M	76	HS121M	121
HS27M	27	HS48M	48	HS79M	79	HS127M	127
HS29M	29	HS51M	51	HS83M	83	HS133M	133
HS30M	30	HS52M	52	HS86M	86	HS140M	140
HS32M	32	HS54M	54	HS89M	89	HS152M	152

Note : Recommended speeds on page 497

MAGICUT BI-METAL HOLE SAW SETS

Stock Code	Contents
HSGPK	General purpose kit 22,29,35,44,51 and 64 Mandrel 14-30 and 32-210 And Ejector Spring
HSEK	Electrician kit 16,20,22,25,29,35,44,51,64,68 and 76 Mandrel 14-30 and 32-210 And Ejector Spring
HSPK	Plumber kit 16,19,22,29,35,38,44,51,57Hole Saws 32, 38,44, 57, 60, 68 Mandrel 14-30 and 32-210 And Ejector Spring

MAGICUT® HOLE SAW MANDRELS

Stock Code	To suit hole saw Ø	Ø mm	Length mm
HSA02	14-30	19	29
HSA05	32-210	24	50

PILOT DRILLS

Stock Code	To suit hole saw Ø	Ø mm	Length mm
HSD01	16-30	6.35	80
HSD02	32-210	6.35	102

Rotabroach® FULLY GROUND M2 HIGH SPEED STEEL CUTTERS

Standard Series
25mm Cutting Depth

Stock Code	Ø mm	Stock Code	Ø mm
RBS12	12	RBS24	24
RBS13	13	RBS25	25
RBS14	14	RBS26	26
RBS15	15	RBS28	28
RBS16	16	RBS30	30
RBS17	17	RBS32	32
RBS18	18	RBS36	36
RBS20	20	RBS40	40
RBS21	21	RBS46	46
RBS22	22	RBS50	50
RBS23	23	RBS65	65

Rotabroach® FULLY GROUND M2 HIGH SPEED STEEL CUTTERS

Long Series
50mm Cutting Depth

Stock Code	Ø mm	Stock Code	Ø mm
RBL12	12	RBL24	24
RBL13	13	RBL25	25
RBL14	14	RBL26	26
RBL15	15	RBL28	28
RBL16	16	RBL30	30
RBL17	17	RBL32	32
RBL18	18	RBL36	36
RBL20	20	RBL40	40
RBL21	21	RBL50	50
RBL22	22		
RBL23	23		

Rotabroach® PILOT PIN CORE EJECTORS

Stock Code	Ø mm
RBSP11-12	11-12
RBPS13-52	13-52
RBPL12	12
RBPL13-52	13-52

Rotabroach® HSS 90° COUNTERSINKS

Stock Code	Ø mm	Shank Ø
RCS30	30	19
RCS40	40	19
RCS55	55	19

Rotabroach® TCT ROTARY BROACH CUTTERS FOR MAGNETIC BASE DRILLS

STANDARD SERIES

Stock Code	Size	Length mm	Stock Code	Size	Length mm
RBS18C	18	35	RBS29C	29	35
RBS20C	20	35	RBS30C	30	35
RBS21C	21	35	RBS31C	31	35
RBS22C	22	35	RBS32C	32	35
RBS23C	23	35	RBS33C	33	35
RBS24C	24	35	RBS34C	34	35
RBS25C	25	35	RBS35C	35	35
RBS26C	26	35	RBS40C	40	35
RBS27C	27	35	RBS45C	45	35
RBS28C	28	35	RBS50C	50	35

Rotabroach® LONG SERIES

Stock Code	Size	Length mm	Stock Code	Size	Length mm
RBL18C	18	50	RBL28C	28	50
RBL19C	19	50	RBL29C	29	50
RBL20C	20	50	RBL30C	30	50
RBL21C	21	50	RBL31C	31	50
RBL22C	22	50	RBL32C	32	50
RBL23C	23	50	RBL33C	33	50
RBL24C	24	50	RBL34C	34	50
RBL25C	25	50	RBL35C	35	50
RBL26C	26	50	RBL40C	40	50
RBL27C	27	50	RBL45C	45	50
			RBL50C	50	50

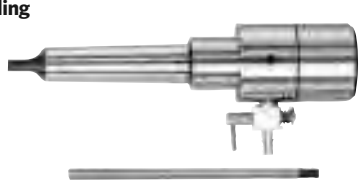
Rotabroach® PILOT PIN

Stock Code	mm
CRBSP	90
CRBLP	105

Rotabroach® ARBORS FOR MAGNETIC BASE DRILL

To hold rotabroach cutters

With Internal Cooling



Stock code	External Taper MT	Internal Connection Weldon mm
RBMTC2	2	19
RBMTC3	3	19

Without Internal Cooling

Stock code	External Taper MT	Internal Connection Weldon mm
EWBB02#	2	19
EWBB04#	3	19

Rotabroach® DRILL CHUCK ADAPTORS

Stock code	Parallel Connection mm	Taper Connection
AW-B16	19 Weldon	B16

Rotabroach® TWIST DRILL ADAPTOR 19.05MM SHANK

for use on stub length drills from 4-12mm

Stock Code	Ø mm	Stock Code	Ø mm
RD2003/040	4	RD2003/090	9
RD2003/050	5	RD2003/100	10
RD2003/060	6	RD2003/110	11
RD2003/070	7	RD2003/120	12
RD2003/080	8		

TA THREE FLUTE COUNTERSINKS 90° STRAIGHT SHANK

DIN 335C

Stock Code	Nominal Ø mm	Minor Ø mm	Overall length mm	Shank Ø mm h9
3CSK906.3C	6.3	1.5	45	5
3CSK908.3C	8.3	2	50	6
3CSK9010.4C	10.4	2.5	50	6
3CSK9012.4C	12.4	2.8	56	8
3CSK9015C	15	3.2	60	10
3CSK9016.5C	16.5	3.2	60	10
3CSK9020.5C	20.5	3.5	63	10
3CSK9025C	25	3.8	67	10
3CSK9031C	31	4.2	71	12

BECK THREE FLUTE COUNTERSINKS 90° STRAIGHT SHANK

DIN 335C

Stock Code	Nominal Ø mm	Minor Ø mm	Overall length mm	Shank Ø mm h9
3CSK904.3S	4.30	1.3	40	4
3CSK905S	5.00	1.5	40	4
3CSK905.3S	5.30	1.5	40	4
3CSK905.8 S	5.80	1.5	45	5
3CSK906S	6.00	1.5	45	5
3CSK906.3S	6.30	1.5	45	5
3CSK907S	7.00	1.8	50	6
3CSK907.3S	7.30	1.8	50	6
3CSK908S	8.00	2	50	6
3CSK908.3S	8.30	2	50	6
3CSK909.4S	9.40	2.2	50	6
3CSK9010S	10.00	2.2	50	6
3CSK9010.4S	10.40	2.5	50	6
3CSK9011.5S	11.50	2.8	56	8
3CSK9012.4S	12.40	2.8	56	8
3CSK9013.4S	13.40	2.9	56	8
3CSK9015S	15.00	3.2	60	10
3CSK9016.5S	16.50	3.2	60	10
3CSK9019S	19.00	3.5	63	10
3CSK9020.5S	20.50	3.5	63	10
3CSK9023S	23.00	3.8	67	10
3CSK9025S	25.00	3.8	67	10
3CSK9026S	26.00	3.8	67	10
3CSK9028S	28.00	4.0	71	12
3CSK9030S	30.00	4.2	71	12
3CSK9031S	31.00	4.2	71	12

BECK TA THREE FLUTE COUNTERSINKS 90° MORSE TAPER SHANK

DIN 335D

Stock Code TA	Stock Code BECK	Nominal Ø mm	Minor Ø mm	Overall length mm	Morse taper size
3CSK9015MTC	3CSK9015MT	15.00	3.2	85	1
3CSK9016.5MTC	3CSK9016.5MT	16.50	3.2	85	1
3CSK9019MTC	3CSK9019MT	19.00	3.5	100	2

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Stock Code TA	Stock Code BECK	Nominal Ø mm	Minor Ø mm	Overall length mm	Morse taper size
3CSK9020.5MTC	3CSK9020.5MT	20.50	3.5	100	2
3CSK9023MTC	3CSK9023MT	23.00	3.8	106	2
3CSK9025MTC	3CSK9025MT	25.00	3.8	106	2
3CSK9026MTC	3CSK9026MT	26.00	3.8	106	2
3CSK9028MTC	3CSK9028MT	28.00	4	112	2
3CSK9030MTC	3CSK9030MT	30.00	4.2	112	2
3CSK9031MTC	3CSK9031MT	31.00	4.2	112	2
3CSK9034MTC	3CSK9034MT	34.00	4.5	118	2
3CSK9037MTC	3CSK9037MT	37.00	4.8	118	2
3CSK9040MTC	3CSK9040MT	40.00	10.0	140	3
3CSK9050MTC	3CSK9050MT	50.00	14.0	150	3
3CSK9063MTC	3CSK9063MT	63.00	16.0	180	4
3CSK9080MTC	3CSK9080MT	80.00	22.0	190	4
3CSK90100MTC	3CSK90100MT	100.00	28.0	200	4

Note: TiN coated countersinks available on request.

MULTIFLUTE COUNTERSINKS 90° STRAIGHT SHANK

DIN 335A

Stock Code	Nominal Ø mm	Minor Ø mm	Overall length mm	Number of teeth	Shank Ø mm h9
MCSK908S	8.00	-	48	5	8
MCSK9012.5S	12.50	2	48	5	8
MCSK9016S	16.00	3.2	56	7	10
MCSK9020S	20.00	5	60	7	10

MULTIFLUTE COUNTERSINKS 90° + 60° MORSE TAPER SHANK

DIN 335B + DIN 334B

Note: Available on request. 16-80mm

THREE FLUTE COUNTERSINKS 60° STRAIGHT SHANK

DIN 334C

Stock Code	Nominal Ø mm	Minor Ø mm	Overall length teeth	Shank Ø mm h9
3CSK606.3S	6.30	1.6	45	5
3CSK608S	8.00	2	50	6
3CSK6012.5S	12.50	3.2	56	8
3CSK6016S	16.00	4	63	10
3CSK6020S	20.00	5	67	10
3CSK6025S	25.00	6.3	71	10

Note: Also available TiN coated ex works.

THREE FLUTE COUNTERSINKS 60° MORSE TAPER SHANK

DIN 334D

Stock Code	Nominal Ø mm	Minor Ø mm	Overall length mm	Number of teeth	Morse taper
3CSK6016MT	16.00	4	90	3	1
3CSK6020MT	20.00	5	106	3	2
3CSK6025MT	25.00	6.3	112	3	2
3CSK6031.5MT	31.50	10	118	3	2
3CSK6040MT	40.00	12.5	150	3	3
3CSK6050MT	50.00	16	160	3	3
3CSK6063MT	63.00	20	190	3	4
3CSK6080MT	80.00	25	200	3	4

Note: Also available TiN coated ex works.

MULTIFLUTE COUNTERSINKS 60° STRAIGHT SHANK

DIN 334A

Stock Code	Nominal Ø mm	Minor Ø mm	Overall length mm	Number of teeth	Shank Ø mm h9
MCSK608S	8.00	-	50	5	8
MCSK6012.5S	12.50	2	50	5	8
MCSK6016S	16.00	3.2	60	7	10
MCSK6020S	20.00	5	63	7	10

SINGLE FLUTE COUNTERSINKS 90° STRAIGHT SHANK

WN 181

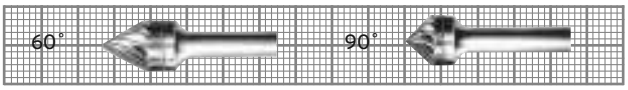
Stock Code	Nominal Ø mm	Overall lenght mm	Small Ø mm
1CSK906S	6.00	45	6
1CSK908S	8.00	50	8
1CSK9012.5S	12.50	59	8
1CSK9016S	16.00	56	10
1CSK9020S	20.00	60	10
1CSK9025S	25.00	75	12
1CSK9031.5S	31.50	80	12

SINGLE FLUTE COUNTERSINKS 60° STRAIGHT SHANK

WN180

Stock Code	Nominal Ø mm	Overall lenght mm	Small Ø mm
1CSK606S	6.00	45	6
1CSK608S	8.00	50	8
1CSK6012.5S	12.50	52	8
1CSK6016S	16.00	60	10
1CSK6020S	20.00	63	10
1CSK6025S	25.00	82	12
1CSK6031.5S	31.50	90	12

SOLID CARBIDE COUNTERSINKS



TYPE SCCSK60 60° included angle

Stock Code	Ø mm	Head length mm	Shank Ø mm	Shank length mm	No of teeth
SCCSK6010	10	7.5	6	35	14
SCCSK6012	12	11	6	35	24
SCCSK6016	16	13	6	35	24

TYPE SCCSK60 90° included angle

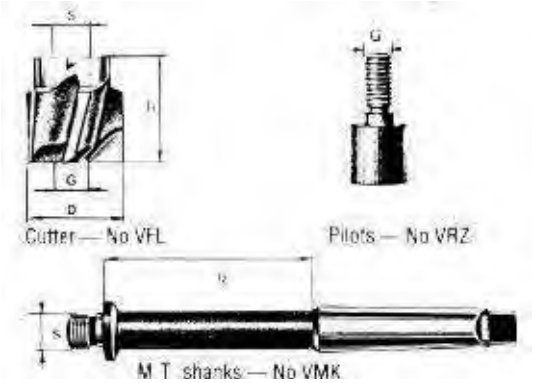
Stock Code	Ø mm	Head length mm	Shank Ø mm	Shank length mm	No of teeth
SCCSK9010	10	5	6	35	14
SCCSK9013	12	8	6	35	24
SCCSK9016	16	8	6	35	24

HSS STRAIGHT SHANK COUNTER BORES

DIN 373

Stock Code	Major Ø mm	Pilot Ø mm	To suit thread	Overall length incl. pilot mm	Flute length mm	Shank Ø mm
CB8X3.2Q	8	3.2	M4	71	18	5
CB10X5Q	10	5	M5	80	18	8
CB11X6Q	11	6	M6	80	18	8
CB15X8.4Q	15	8.4	M8	100	22	13
CB18X10.5Q	18	10.5	M10	100	22	13
CB18X11Q	18	11	M10	100	22	13
CB20X13Q	20	13	M12	100	22	13

IFANGER COUNTERBORE TOOLS HSS



Ifanger Counterbore Cutters Available on request

HAND REAMERS

DIN 206 H7

Stock Code	Ø mm	Overall length mm	Flute length	No of teeth
HR3	3.0	62	31	6
HR3.5	3.5	71	35	6
HR4	4.0	76	38	6
HR4.5	4.5	81	41	6
HR5	5.0	87	44	6
HR5.5	5.5	93	47	6
HR6	6.0	93	47	6
HR7	7.0	107	54	6
HR8	8.0	115	58	6
HR9	9.0	124	62	6
HR10	10.0	133	66	6
HR11	11.0	142	71	6
HR12	12.0	152	76	6
HR13	13.0	152	76	6
HR14	14.0	163	81	8
HR15	15.0	163	81	8
HR16	16.0	175	87	8
HR17	17.0	175	87	8
HR18	18.0	188	93	8
HR19	19.0	188	93	8
HR20	20.0	201	100	8
HR21	21.0	201	100	8
HR22	22.0	215	107	8
HR23	23.0	215	107	8
HR24	24.0	231	115	8
HR25	25.0	231	115	8
HR26	26.0	231	115	8
HR27	27.0	247	124	8
HR28	28.0	247	124	10
HR30	30.0	247	124	10
HR32	32.0	265	133	10
HR34	34.0	284	142	10
HR35	35.0	284	142	10
HR36	36.0	284	142	10
HR38	38.0	305	152	10
HR40	40.0	305	152	10
HR42	42.0	305	152	12
HR44	44.0	326	163	12
HR45	45.0	326	163	12
HR46	46.0	326	163	12
HR48	48.0	347	174	12
HR50	50.0	347	174	12

ADJUSTABLE HAND REAMERS

Stock Code	Ø mm	Overall length mm	Blade length mm	No of blades
AR7	7.6-8.5	90	26	6
AR8	8.4-9.4	95	30	6
AR9	9.3-10.4	105	33	6
AR10	10.25-11.45	110	36	6
AR11	11.30-12.65	120	41	6
AR12	12.50-14.00	135	46	6
AR13	13.75-15.25	145	50	6
AR15	15.00-16.70	155	54	6
AR16	16.50-18.40	170	59	6
AR18	18.25-20.25	185	64	6
AR19	19.75-22.00	200	71	6
AR21	21.50-24.00	215	76	6

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Stock Code	Ø mm	Overall length mm	Blade length mm	No of blades
AR23	23.75-26.60	240	84	6
AR26	26.50-29.75	265	93	6
AR29	29.50-33.00	295	105	6
AR32	32.50-36.50	320	116	6
AR36	36.00-40.40	355	127	6
AR40	40.00-45.00	390	143	6
AR44	44.50-50.00	435	161	6
AR49	49.50-55.00	435	161	6
AR54	54.50-60.00	435	161	6

SET OF ADJUSTABLE REAMERS

Stock Code	No reamers	Range mm
ARSET	12	10-33

MACHINE CHUCKING REAMERS STRAIGHT SHANK

DIN 212 H7

Stock Code	Ø mm	Overall length mm	Cutting edge length mm	No of teeth
MR2S	2.0	49	11	4
MR2.2S	2.2	53	12	4
MR2.5S	2.5	57	14	4
MR2.8S	2.8	61	15	6
MR3S	3.0	61	15	6
MR3.5S	3.5	70	18	6
MR4S	4.0	75	19	6
MR4.5S	4.5	80	21	6
MR5S	5.0	86	23	6
MR5.5S	5.5	93	26	6
MR6S	6.0	93	26	6
MR7S	7.0	109	31	6
MR8S	8.0	117	33	6
MR9S	9.0	125	36	6
MR10S	10.0	133	38	6
MR11S	11.0	142	41	6
MR12S	12.0	151	44	6
MR13S	13.0	151	44	6
MR14S	14.0	160	47	6
MR15S	15.0	162	50	6
MR16S	16.0	170	59	6

Note: Straight shank machine reamers are available in 0.01 mm increments ex stock.

MACHINE CHUCKING REAMERS MORSE TAPER SHANK

DIN 208 H7

Stock Code	Ø mm	Overall length mm	Flute length mm	No of teeth	Morse taper size
MR6MT	6.0	138	26	6	1
MR7MT	7.0	150	31	6	1
MR8MT	8.0	156	33	6	1
MR9MT	9.0	162	36	6	1
MR10MT	10.0	168	38	6	1
MR11MT	11.0	175	41	6	1
MR12MT	12.0	182	44	6	1
MR13MT	13.0	182	44	6	1
MR14MT	14.0	189	47	8	1
MR15MT	15.0	204	50	8	2
MR16MT	16.0	210	52	8	2
MR17MT	17.0	214	54	8	2
MR18MT	18.0	219	56	8	2
MR19MT	19.0	223	58	8	2
MR20MT	20.0	228	60	8	2
MR22MT	22.0	237	64	8	2
MR24MT	24.0	268	68	8	3
MR25MT	25.0	268	68	8	3
MR26MT	26.0	273	70	8	3
MR28MT	28.0	277	71	10	3
MR30MT	30.0	281	73	10	3
MR32MT	32.0	317	77	10	4

BOILERMAKERS BRIDGE REAMERS HSS

DIN 311

Stock code	Nominal Ø mm	Length of starting taper mm	Overall length mm	Cutting edge length mm	Morse taper size
BR10	10.0	30	171	95	1
BR11	11.0	33	176	100	1
BR12	12.0	39	199	105	2
BR13	13.0	39	199	105	2
BR14	14.0	42	209	115	2
BR15	15.0	45	219	125	2
BR16	16.0	48	229	135	2
BR17	17.0	51	251	135	3
BR18	18.0	58	261	145	3
BR19	19.0	58	261	145	3
BR20	20.0	62	271	155	3
BR21	21.0	62	271	155	3
BR22	22.0	66	281	165	3
BR23	23.0	66	281	165	3
BR24	24.0	72	296	180	3
BR25	25.0	72	296	180	3
BR26	26.0	72	296	180	3
BR27	27.0	78	311	195	3
BR28	28.0	78	311	195	3
BR29	29.0	78	311	195	3
BR30	30.0	78	311	195	3
BR31	31.0	84	326	210	3
BR34	34.0	84	364	220	4

SPIRAL POINT COMBO TAP

Multipurpose tap for use on various materials including stainless steel, carbon steel, alloyed steel, tool steel

DIN 371/376

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SPM4COMB	M4	0.7	63	4.5	3.4
SPM5COMB	M5	0.8	70	6	4.9
SPM6COMB	M6	1.0	80	6	4.9
SPM8COMB	M8	1.25	90	8	6.2
SPM10COMB	M10	1.5	100	10	8
SPM12COMB	M12	1.75	110	9	7

SPIRAL FLUTE COMBO TAP

Multipurpose tap for use on various materials including stainless steel, carbon steel, alloyed steel, tool steel

DIN 371/376

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SFM4COMB	M4	0.7	63	3.4	3.3
SFM5COMB	M5	0.8	70	4.9	4.2
SFM6COMB	M6	1.0	80	6	4.9
SFM8COMB	M8	1.25	90	8	6.2
SFM10COMB	M10	1.5	100	10	8
SFM12COMB	M12	1.75	110	9	7

SPIRAL POINT MACHINE TAPS METRIC HSS

DIN 371

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SPM2	M2	0.4	45	2.8	2.1
SPM2.5	M2.5	0.45	50	2.8	2.1
SPM3	M3	0.5	56	3.5	2.7
SPM3.5	M3.5	0.6	56	4	3
SPM4	M4	0.7	63	4.5	3.4
SPM5	M5	0.8	71	6	4.9
SPM6	M6	1.0	80	6	4.9
SPM7	M7	1.0	80	7	5.5
SPM8	M8	1.25	90	8	6.2
SPM9	M9	1.25	90	9	7
SPM10	M10	1.5	100	10	8

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DIN 376

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SPM11	M11	1.5	110	8	6.3
SPM12	M12	1.75	110	9	7
SPM14	M14	2.0	110	11	9
SPM16	M16	2.0	110	12	9
SPM18	M18	2.5	125	14	11
SPM20	M20	2.5	140	16	12
SPM22	M22	2.5	140	18	14.5
SPM24	M24	3	160	18	14.5
SPM27	M27	3	160	20	16
SPM30	M30	3.5	180	22	18
SPM33	M33	3.5	180	25	20
SPM36	M36	4.0	200	28	22

SPIRAL FLUTE MACHINE TAPS METRIC HSS

DIN 371

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SFM2	M2	0.4	45	2.8	2.1
SFM2.5	M2.5	0.45	50	2.8	2.1
SFM3	M3	0.5	56	3.5	2.7
SFM4	M4	0.7	63	4.5	3.4
SFM5	M5	0.8	71	6	4.9
SFM6	M6	1.0	80	6	4.9
SFM8	M8	1.25	90	8	6.2
SFM10	M10	1.5	100	10	8

DIN 376

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SFM12	M12	1.75	110	9	7
SFM16	M16	2.0	110	12	9
SFM20	M20	2.5	140	16	12
SFM24	M24	3	160	18	14.5
SFM27	M27	3	160	20	16
SFM30	M30	3.5	180	22	18
SFM36	M36	4.0	200	28	22

SETS OF HAND TAPS SERIAL METRIC HSS.

Sets of three

DIN 352

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
PHTM1.2	M1.2	0.2 5	32	2.5	2.1
PHTM1.4	M1.4	0.3	32	2.5	2.1
HTM2	M2	0.4	36	2.8	2.1
HTM2.5	M2.5	0.45	40	2.9	2.1
HTM3	M3	0.5	40	3.5	2.7

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DIN 352

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
HTM3.5	M3.5	0.6	45	4.0	3.0
HTM4	M4	0.7	45	4.5	3.4
HTM5	M5	0.8	50	6	4.9
HTM6	M6	1.0	50	6	4.9
HTM7	M7	1.0	50	6	4.9
HTM8	M8	1.25	56	6	4.9
HTM9	M9	1.25	63	7	5.5
HTM10	M10	1.5	70	7	5.5
HTM11	M11	1.5	70	8	6.2
HTM12	M12	1.75	75	9	7
HTM14	M14	2.0	80	11	9
HTM16	M16	2.0	80	12	9
HTM18	M18	2.5	95	14	11
HTM20	M20	2.5	95	16	12
HTM22	M22	2.5	100	18	14.5
HTM24	M24	3.0	110	18	14.5
HTM27	M27	3.0	110	20	16
HTM30	M30	3.5	125	22	18
HTM33	M33	3.5	125	25	20
HTM36	M36	4.0	150	28	22
HTM42	M42	4.5	150	32	24

SPIRAL POINT MACHINE TAPS METRIC FINE HSS

DIN 374

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SPM5X.5	M5X.5	.5	70	3.5	2.7
SPM6X.75	M6X.75	.75	80	4.5	3.4
SPM8X.75	M8X.75	.75	80	6	4.9
SPM8X1	M8X1	1	90	6	4.9
SPM10X.75	M10X.75	.75	90	7	5.5
SPM10X1	M10X1	1	90	7	5.5
SPM10X1.25	M10X1.25	1.25	100	7	5.5
SPM12X1	M12X1	1	100	9	7
SPM12X1.25	M12X1.25	1.25	100	9	7
SPM14X1	M14X1	1	100	11	9
SPM14X1.25	M14X1.25	1.25	100	11	9
SPM14X1.5	M14X1.5	1.5	100	11	9
SPM16X1	M16X1	1	100	12	9
SPM16X1.5	M16X1.5	1.5	100	12	9
SPM18X1	M18X1	1	110	14	11
SPM18X1.5	M18X1.5	1.5	110	14	11
SPM20X1	M20X1	1	125	16	12
SPM20X1.5	M20X1.5	1.5	125	16	12
SPM22X1	M22X1	1	125	18	14.5
SPM22X1.5	M22X1.5	1.5	125	18	14.5
SPM24X1.5	M24X1.5	1.5	140	18	14.5
SPM24X2	M24X2	2	140	18	14.5

SPIRAL FLUTE MACHINE TAPS METRIC FINE HSS

DIN 374

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
SFM8X1	M8X1	1	90	6	4.9
SFM10X1	M10X1	1	90	7	5.5
SFM10X1.25	M10X1.25	1.25	100	7	5.5
SFM12X1	M12X1	1	100	9	7
SFM12X1.25	M12X1.25	1.25	100	9	7
SFM12X1.5	M12X1.5	1.5	100	9	7

SETS OF HAND TAPS METRIC FINE.

Sets of two

DIN 2181

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
HTM5X.5	M5X.5	.5	50	6	4.9
HTM6X.75	M6X.75	.75	50	6	4.9
PHTM7X.75#	M7X.75	.75	50	6	4.9
HTM8X.75	M8X.75	.75	50	6	4.9
HTM8X1	M8X1	1	50	6	4.9
PHTM9X.75#	M9X.75	.75	63	7	5.5
HTM10X.75	M10X.75	.75	63	7	5.5
HTM10X1	M10X1	1	63	7	5.5
HTM10X1.25	M10X1.25	1.25	63	7	5.5
HTM12X1	M12X1	1	70	9	7
HTM12X1.25	M12X1.25	1.25	70	9	7
HTM12X1.5	M12X1.5	1.5	70	9	7
HTM14X1	M14X1	1	70	11	9
HTM14X1.25	M14X1.25	1.25	70	11	9
HTM14X1.5	M14X1.5	1.5	70	11	9
HTM16X1	M16X1	1	80	12	9
HTM16X1.5	M16X1.5	1.5	80	12	9
HTM18X1	M18X1	1	80	14	11
HTM18X1.5	M18X1.5	1.5	80	14	11
HTM20X1	M20X1	1	80	16	12
HTM20X1.5	M20X1.5	1.5	80	16	12
HTM22X1	M22X1	1	80	18	14.5
HTM22X1.5	M22X1.5	1.5	80	18	14.5
HTM24X1.5	M24X1.5	1.5	90	18	14.5
HTM24X2	M24X2	2	90	18	14.5

SPIRAL POINT MACHINE TAPS UNC HSS

DIN 371

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
SPUNC6-32	6	32	56	13	4	3
SPUNC8-32	8	32	63	14	4.5	3.4
SPUNC10-24	10	24	70	15	6	4.9
SPUNC12-24	12	24	80	17	6	4.9

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DIN 371

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
SPUNC1/4	1/4	20	80	17	7	5.5
SPUNC5/16	5/16	18	90	20	8	6.2
SPUNC3/8	3/8	16	100	22	10	8

DIN 376

SPUNC7/16	7/16	14	100	22	8	6.2
SPUNC1/2	1/2	13	110	24	9	7
SPUNC9/16	9/16	12	110	28	11	9
SPUNC5/8	5/8	11	110	30	12	9
SPUNC3/4	3/4	10	125	33	14	11
SPUNC7/8	7/8	9	140	36	18	14.5
SPUNC1-8	1	8	160	39	18	14.5

ITA SPIRAL FLUTE MACHINE TAPS UNC HSS

DIN 371

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
SFUNC6-32	6	32	56	6.5	4	3
SFUNC8-24	8	24	63	7.5	4.5	3.4
SFUNC10-24	10	24	70	9	6	4.9
SFUNC12-24	12	24	80	11	6	4.9
SFUNC1/4	1/4	20	80	11	7	5.5
SFUNC5/16	5/16	18	90	12.5	8	6.2
SFUNC3/8	3/8	16	100	14	10	8

DIN 376

SFUNC7/16	7/16	14	100	14	8	6.2
SFUNC1/2	1/2	13	110	14	9	7
SFUNC9/16	9/16	12	110	14	11	9
SFUNC5/8	5/8	11	110	18	12	9
SFUNC3/4	3/4	10	125	21	14	11
SFUNC7/8	7/8	9	140	24	18	14.5
SFUNC1-8	1	8	160	27	18	14.5

TiG SETS OF HAND TAPS UNC

Sets of three

DIN 351

Stock Code	Ø mm	Pitch mm	Overall length mm	Shank Ø mm	Square mm
HTUNC2X56	2	56	36	2.8	2.1
HTUNC3X48	3	48	40	2.8	2.1
HTUNC4X40	4	40	42	3.5	2.7
HTUNC5X40	5	40	42	3.5	2.7
HTUNC6X32	6	32	45	4	3
HYUNC8X32	8	32	48	4.5	3.4
HTUNC10X24	10	24	52	6	4.9
HTUNC12X24	12	24	56	6	4.9
HTUNC1/4	1/4	20	56	6	4.9
HTUNC5/16	5/16	18	63	6	4.9
HTUNC3/8	3/8	16	70	7	5.5
HTUNC7/16	7/16	14	70	8	6.2
HTUNC1/2	1/2	13	80	9	7
HTUNC9/16	9/16	12	80	11	9
HTUNC5/8	5/8	11	90	12	9
HTUNC3/4	3/4	10	105	14	11
HTUNC7/8	7/8	9	110	18	14.5
HTUNC1	1	8	110	20	16

ITA SETS OF HAND TAPS UNC HSS

Sets of three

ISO 592

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
HTUNC6-32C	6	32	50	13	4	3
HTUNC8-32C	8	32	53	13	4.5	3.4
HTUNC10-24C	10	24	58	16	6	4.9
HTUNC12-24C	12	24	62	17	6	4.9
HTUNC1/4C	1/4	20	66	19	7	5.5
HTUNC5/16C	5/16	18	72	22	8	6.2
HTUNC3/8C	3/8	16	80	24	10	8
HTUNC7/16C	7/16	14	85	25	8	6.2
HTUNC1/2C	1/2	13	89	29	9	7
HTUNC9/16C	9/16	12	95	30	11	9
HTUNC5/8C	5/8	11	102	32	12	9
HTUNC3/4C	3/4	10	112	37	14	11
HTUNC7/8C	7/8	9	118	38	18	14.5
HTUNC1-8C	1	8	120	45	18	14.5

ITA SPIRAL POINT MACHINE TAPS UNF HSS

DIN 371

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
SPUNF6-40	6	40	56	13	4	3
SPUNF8-36	8	36	63	14	4.5	3.4
SPUNF10-32	10	32	70	15	6	4.9
SPUNF12-28	12	28	80	17	6	4.9
SPUNF1/4	1/4	28	80	17	7	5.5

DIN 376

SPUNF5/16	5/16	24	90	20	6	4.9
SPUNF3/8	3/8	24	100	22	7	5.5
SPUNF7/16	7/16	20	100	22	8	6.2
SPUNF1/2	1/2	20	100	24	9	7
SPUNF9/16	9/16	18	100	24	11	9
SPUNF5/8	5/8	18	100	26	12	9
SPUNF3/4	3/4	16	125	30	14	11
SPUNF7/8	7/8	17	140	32	18	14.5
SPUNF1-12	1	12	160	36	18	14.5

ITA SPIRAL FLUTE MACHINE TAPS UNF HSS

DIN 371

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
SFUNF6-40	6	40	56	6.5	4	3
SFUNF8-36	8	36	63	7.5	4.5	3.4
SFUNF10-32	10	32	70	9	6	4.9
SFUNF12-28	12	28	80	11	6	4.9
SFUNF1/4	1/4	28	80	11	7	5.5
SFUNF5/16	5/16	24	90	12.5	8	6.2
SFUNF3/8	3/8	24	100	14	10	8

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DIN 376

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
SFUNC7/16	7/16	20	100	14	8	6.2
SFUNC1/2	1/2	20	100	14	9	7
SFUNC9/16	9/16	18	100	14	11	9
SFUNC5/8	5/8	18	100	14	12	9
SFUNC3/4	3/4	16	125	18	14	11
SFUNC7/8	7/8	14	140	20	18	14.5
SFUNC1	1	12	160	22	18	14.5

SETS OF HAND TAPS UNC HSS

Sets of three

ISO 2181

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
HTUNF4X48	4	48	42	10	3.5	2.7
HTUNF5X44	5	44	42	10	3.5	2.7
HTUNF6X40	6	40	45	11	4	3
HTUNF8X36	8	36	48	12	4.5	3.4
HTUNF10X32	10	32	52	14	6	4.9
HTUNF12X28	12	28	56	16	6	4.9
HTUNF1/4	1/4	28	56	16	6	4.9
HTUNF5/16	5/16	24	63	17	6	4.9
HTUNF3/8	3/8	24	63	18	7	5.5
HTUNF7/16	7/16	20	70	20	8	6.2
HTUNF1/2	1/2	20	70	20	9	7
HTUNF9/16	9/16	18	70	20	11	9
HTUNF5/8	5/8	18	70	20	12	9
HTUNF3/4	3/4	16	80	22	14	11
HTUNF7/8	7/8	14	80	22	18	14.5
HTUNF1	1	12	80	22	18	14.5

SETS OF HAND TAPS UNF HSS.

Sets of two

ISO592

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
HTUNF6X40C	6	40	50	13	3.55	2.8
HTUNF8X36C	8	36	53	13	4.5	3.55
HTUNF10X32C	10	32	58	16	5	4
HTUNF12X28C	12	28	62	17	5.6	4.5
HTUNF1/4C	1/4	28	66	19	6.3	5
HTUNF3/8C	3/8	24	80	24	10	8
HTUNF7/16C	7/16	20	82	22	8	6.3
HTUNF1/2C	1/2	20	84	24	9	7.1
HTUNF9/16C	9/16	28	90	25	11.2	9
HTUNF5/8C	5/8	28	95	25	12.5	10
HTUNF3/4C	3/4	16	104	29	14	11.2
HTUNF7/8C	7/8	14	113	33	16	12.5

SETS OF HAND TAPS BSW HSS

Sets of three

DIN 351

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
HTBSW1/8	1/8	40	42	10	3.2	2.7
HTBSW3/16	3/16	24	52	14	6	4.9
HTBSW1/4	1/4	20	56	16	6	4.9
HTBSW5/16	5/16	18	63	20	6	4.9
HTBSW3/8	3/8	16	70	22	7	5.5
HTBSW7/16	7/16	14	70	22	8	6.2
HTBSW1/2	1/2	12	80	25	9	7
HTBSW5/8	5/8	11	90	27	12	9
HTBSW3/4	3/4	10	105	32	14	11
HTBSW7/8	7/8	9	110	32	18	14.5
HTBSW1	1	8	110	36	20	16
HTBSW11/8	1 1/8	7	125	40	22	18
HTBSW11/4	1 1/4	7	125	40	25	20
HTBSW13/8	1 3/8	6	150	50	28	22
HTBSW11/2	1 1/2	6	150	50	32	24
HTBSW13/4	1 3/4	5	160	58	36	29

SETS OF HAND TAPS BSW HSS

Sets of two

DIN 5171

Stock Code	Size	TPI	Overall length mm	Flute length mm	Shank Ø mm	Square mm
HTBSP1/8	1/8	28	63	18	7	5.5
HTBSP1/4	1/4	19	70	20	9	11.8
HTBSP3/8	3/8	19	70	20	12	9
HTBSP1/2	1/2	14	80	22	16	12
HTBSP3/4	3/4	14	90	22	20	16
HTBSP1	1	11	100	25	25	20
HTBSP11/2	1 1/2	11	140	30	36	29

HSS-CO BLUE BAND SPIRAL POINT MACHINE TAPS TYPE Z

For through holes in tough materials with an elongation of between 25% and 50%. such as stainless steel

DIN 371

Stock Code	Ø mm	Pitch	Length of thread mm	Shank Ø mm	Square mm
SPZVM2	2	0.4	7	2.8	2.1
SPZVM2.5	2.5	0.45	9	2.8	2.1
SPZVM3	3	0.5	5.5	3.5	2.7
SPZVM4	4	0.7	7.5	4.5	3.4
SPZVM6	6	1	11	6	4.9
SPZVM8	8	1.25	12.5	8	6.2
SPZVM10	10	1.5	14	10	8
SPZVM12	12	1.75	14	9	7
SPZVM14	14	2	14	11	9
SPZVM16	16	2	18	12	9
SPZVM18	18	2.5	21	14	11
SPZVM20	20	2.5	24	16	12
SPZVM24	24	3	27	18	14.5

HSS-CO BLUE BAND SPIRAL FLUTE MACHINE TAPS TYPE Z

For blind holes in tough materials with an elongation of between 25% and 50%, such as stainless steel.

DIN 371

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SFZVM2.5	2.5	0.45	9	2.8	2.1
SFZVM3	3	0.5	5.5	3.5	2.7
SFZVM3.5	3.5	0.6	6.5	4	3
SFZVM4	4	0.7	7.5	4.5	3.4
SFZVM5	5	0.8	9	6	4.9
SFZVM6	6	1	11	6	4.9
SFZVM8	8	1.25	12.5	8	6.2
SFZVM10	10	1.5	14	10	8

DIN 376

Stock Code	Ø mm	Pitch mm mm	Length of thread mm	Shank Ø	Square mm
SFZVM12	12	1.75	14	9	7
SFZVM14	14	2	14	11	9
SFZVM16	16	2	18	12	9
SFZVM18	18	2.5	21	14	11
SFZVM20	20	2.5	24	16	12
SFZVM24	24	3	27	18	14.5

HSS-CO RED BAND SPIRAL POINT MACHINE TAPS

For through holes in hard materials with a tensile strength of up to 1400N/mm², such as tool steel.

DIN 371

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SPHM2	2	0.4	7	2.8	2.1
SPHM2.5	2.5	0.45	9	2.8	2.1
SPHM3	3	0.5	5.5	3.5	2.7
SPHM3.5	3.5	0.6	6.5	4	3
SPHM4	4	0.7	7.5	4.5	3.4
SPHM5	5	0.8	9	6	4.9
SPHM6	6	1	11	6	4.9
SPHM8	8	1.25	12.5	8	6.2
SPHM10	10	1.5	14	10	8
SPHM12	12	1.75	14	9	7
SPHM14	14	2	14	11	9
SPHM16	16	2	18	12	9
SPHM18	18	2.5	21	14	11
SPHM20	20	2.5	24	16	12
SPHM24	24	3	27	18	14.5
SPHM27	27	3	27	20	16
SPHM30	30	3.5	30	22	18

HSS-CO RED BAND SPIRAL FLUTE MACHINE TAPS

For blind holes in hard materials with a tensile strength of up to 1400N/mm², such as tool steel.

DIN 371

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SFHM2	2	0.4	7	2.8	2.1
SFHM2.5	2.5	0.45	9	2.8	2.1
SFHM3	3	0.5	5.5	3.5	2.7
SFHM3.5	3.5	0.6	6.5	4	3
SFHM4	4	0.7	7.5	4.5	3.4

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DIN 371

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SFHM5	5	0.8	9	6	4.9
SFHM6	6	1	11	6	4.9
SFHM8	8	1.25	12.5	8	6.2
SFHM10	10	1.5	14	10	8

DIN 376

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SFHM12	12	1.75	14	9	7
SFHM14	14	2	14	11	9
SFHM16	16	2	18	12	9
SFHM18	18	2.5	21	14	11
SFHM20	20	2.5	24	16	12
SFHM24	24	3	27	18	14.5
SFHM27	27	3	27	20	16
SFHM30	30	3.5	30	22	18

HSS-CO YELLOW BAND SPIRAL POINT MACHINE TAPS

For through holes in soft materials such as aluminium.

DIN 371

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SPWM2	2	0.4	7	2.8	2.1
SPWM2.5	2.5	0.45	9	2.8	2.1
SPWM3	3	0.5	5.5	3.5	2.7
SPWM3.5	3.5	0.6	6.5	4	3
SPWM4	4	0.7	7.5	4.5	3.4
SPWM5	5	0.8	9	6	4.9
SPWM6	6	1	11	6	4.9
SPWM8	8	1.25	12.5	8	6.2
SPWM10	10	1.5	14	10	8

DIN 376

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SPWM12	12	1.75	14	9	7
SPWM16	16	2	18	12	9

HSS-CO YELLOW BAND SPIRAL FLUTE MACHINE TAPS

For blind holes in soft materials such as aluminium.

DIN 371

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SFWM2	2	0.4	7	2.8	2.1
SFWM2.5	2.5	0.45	9	2.8	2.1
SFWM3	3	0.5	5.5	3.5	2.7
SFWM3.5#	3.5	0.6	6.5	4	3
SFWM4	4	0.7	7.5	4.5	3.4
SFWM5	5	0.8	9	6	4.9
SFWM6	6	1	11	6	4.9
SFWM8	8	1.25	12.5	8	6.2
SFWM10	10	1.5	14	10	8

DIN 376

Stock Code	Ø mm	Pitch mm	Length of thread mm	Shank Ø mm	Square mm
SFWM12	12	1.75	14	9	7
SFWM16	16	2	18	12	9

HSS HEX DIE NUTS

Stock Code	Size mm	Pitch mm	Accross flats mm	Height mm
DNM3	M3	0.5	18	5
DNM4	M4	0.7	18	5
DNM5	M5	0.8	18	7
DNM6	M6	10	18	7
DNM8	M8	1.25	21	9
DNM10	M10	4.5	27	11
DNM12	M12	1.75	36	14
DNM14	M14	2.0	36	14
DNM16	M16	2.0	41	18
DNM18	M18	2.5	41	18
DNM20	M20	2.5	41	18
DNM22	M22	2.5	50	22
DNM24	M24	3.0	50	22
DNM27	M27	3.0	60	25
DNM30	M30	3.5	60	25
DNM33	M33	3.5	60	25
DNM36	M36	4	60	25

SOLID ROUND DIES - HSS METRIC

DIN 223

Stock Code	Ø mm	Pitch mm	Outside Ø mm	Width mm
DIEM2Q	M2	0.4	16	5
DIEM3Q	M3	0.5	20	5
DIEM4Q	M4	0.7	20	5
DIEM5Q	M5	0.8	20	7
DIEM6Q	M6	1	20	7
DIEM7Q	M7	1	25	9
DIEM8Q	M8	1.25	25	9
DIEM10Q	M10	1.5	30	11
DIEM12Q	M12	1.75	38	14
DIEM14Q	M14	2	38	14
DIEM16Q	M16	2	45	18
DIEM18Q	M18	2.5	45	18
DIEM20Q	M20	2.5	45	18
DIEM24Q	M24	3	55	22
DIEM30Q	M30	3.5	65	25
DIEM33Q	M33	3.5	65	25
DIEM36Q	M36	4	65	25
DIEM42Q	M42	4.5	75	30

SOLID ROUND DIES - HSS METRIC FINE

DIN 223

Stock Code	Ø mm	Pitch mm	Outside Ø mm	Width mm
DIEM5X.5Q	M5X.5	0.5	20	5
DIEM5X.75Q	M5X.75	0.75	20	7
DIEM6X.75Q	M6X.75	0.75	20	7
DIEM8X.75Q	M8X.75	0.75	25	9

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Stock Code	Ø mm	Pitch mm	Outside Ø mm	Width mm
DIEM10X.75Q	M10X.75	0.75	30	9
DIEM10X1Q	M10X1	1.0	30	9
DIEM10X1.25Q	M10X1.25	1.25	30	9
DIEM12X1Q	M12X1	1.0	38	10
DIEM12X1.25Q	M12X1.25	1.25	38	10
DIEM12X1.5Q	M12X1.5	1.5	38	10
DIEM14X1Q	M14X1	1.0	38	10
DIEM14X1.25Q	M14X1.25	1.25	38	10
DIEM14X1.5Q	M14X1.5	1.5	38	10
DIEM16X1.5Q	M16X1.5	1.5	45	14
DIEM18X1.5Q	M18X1.5	1.5	45	14
DIEM18X2Q	M18X2	2.0	45	14
DIEM20X1Q	M20X1	1.0	45	14
DIEM20X1.25Q	M20X1.25	1.25	45	14
DIEM20X1.5Q	M20X1.5	1.5	45	14
DIEM20X2Q	M20X2	2.0	45	14
DIEM24X1.5Q	M24X1.5	1.5	55	16
DIEM24X2Q	M24X2	2.0	55	16
DIEM25X1.5Q	M25X1.5	1.5	55	16
DIEM26X1.5Q	M26X1.5	1.5	55	16

SOLID ROUND DIES - HSS UNC

Class 2A

Stock Code	Ø mm	T.P.I.	Outside Ø mm	Width mm
DIEUNC6Q	6	32	20	7
DIEUNC8Q	8	32	20	7
DIEUNC10Q	10	24	20	7
DIEUNC12Q	12	24	20	7
DIEUNC1/4Q	1/4	20	20	7
DIEUNC5/16Q	5/16	18	25	9
DIEUNC3/8Q	3/8	16	30	11
DIEUNC7/16Q	7/16	14	30	11
DIEUNC1/2Q	1/2	13	38	14
DIEUNC9/16Q	9/16	12	38	14
DIEUNC5/8Q	5/8	11	45	18
DIEUNC3/4Q	3/4	10	45	18
DIEUNC7/8Q	7/8	9	55	22
DIEUNC1Q	1	8	55	22

SOLID ROUND DIES - HSS UNF

Class 2A

Stock Code	Ø mm	T.P.I.	Outside Ø mm	Width mm
DIEUNF6Q	6	40	20	5
DIEUNF8Q	8	36	20	7
DIEUNF10Q	10	32	20	7
DIEUNF12Q	12	28	20	7
DIEUNF1/4Q	1/4	28	20	7
DIEUNF5/16Q	5/16	24	25	9
DIEUNF3/8Q	3/8	24	30	11
DIEUNF7/16Q	7/16	20	30	11
DIEUNF1/2Q	1/2	20	38	10
DIEUNF9/16Q	9/16	18	38	10
DIEUNF5/8Q	5/8	18	45	14
DIEUNF3/4Q	3/4	16	45	14
DIEUNF7/8Q	7/8	14	55	16
DIEUNF1Q	1	12	55	16

TAP AND DIE SETS

HSS

Stock Code	Description	
SETM3 - 12HSSC	32 piece M3 to M12	3 taps per size
SETM3- 20HSSC	54 piece M3 to M20	3 taps per size
SETM3- 12HSS-BC	32 piece M3 to M12	3 taps per size
SETM12- 20HSS-BC	22 piece M12 to M20	3 taps per size

HSS - combination M/MF

SETM/MF6-24HSSC	45 piece M + MF	M6-M24

Carbon Steel

Stock Code	Description	
SETM3 - 12CS	32 piece M3 to M12	3 taps per size
SETM12 - 20CS	23 piece M12 to M20	3 taps per size

T-TYPE TAP WRENCHES DIN 5157

Stock code	Description
TR1	T Type 1.6-4.0
TR2	T Type 4.0-6 .0
TR3	T Type 6.0-12 .0
TRS2	T Handle with spindle 4.0-6.0
TRS3	T Handle with spindle 6.0-12.0
TRR1	Ratchet 1.6-4.0
TRR2	Ratchet 4.0-6.0
TRR3	Ratchet 6.0-12.0

WALTON T-TYPE TAP WRENCHES

For correct alignment on a drill press or lathe

Stock code	Description	Stock code	Description
70176W	T Type M1.5 - M6	70276W	T Type M6 - M12

TAP WRENCHES DIN 5157

Stock code	Range	Stock code	Range
TW1	M1-M5	TW3	M5-M14
TW2	M4-M8	TW4	M10-M27

DIE HOLDERS

Stock code	Size mm	Stock code	Size mm
DH16	16X140	DH38	38X330
DH20	20X180	DH45	45X400
DH25	25X220	DH55	55X480
DH30	30X280	DH65	65X560

WALTON TAP EXTRACTORS

Stock code	Flute in mm	Size Tap
10043W	3	M3
10063W	3	M3.5
10083W	3	M4
10103W	3	M5
10253W	3	M6
10313W	3	M7, M8
10373W	3	M9, M10
10433W	3	M11
10503W	3	M12
10563W	3	M14
10623W	3	M16
10753W	3	M18, M20
10504W	4	M12
10564W	4	M14
10624W	4	M16
10684W	4	M18
10754W	4	M18, M20
18001W	4	SET M5-M12
18002W	4	SET M6-M16
18003W	4	SET M8-M16

PIN VICES

Stock code	Description
PVSET	0-4.7 mm

PIN VICE WITH THREE COLLETS

Stock code	Description
PV	Pin vice set 0-2.4

SWIVEL HEAD PIN VICES

Stock code	Description
SHPV	Swivel head

V-COIL THREAD INSERT SYSTEM HAND TAPS FOR WIRE THREAD INSERTS

Second Lead

Stock Code	Thread size	Pitch mm	Tap major Ø mm	Shank Ø mm
WTHTM2	M2	0.4	2.5	2.8
WTHTM2.5	M2.5	0.45	3.1	3.15
WTHTM3	M3	0.5	3.6	4.0
WTHTM3.5	M3.5	0.6	4.3	4.5
WTHTM4	M4	0.7	4.9	5.0
WTHTM5	M5	0.8	6.0	6.3
WTHTM6	M6	1.0	7.3	8.0
WTHTM8	M8	1.25	9.6	10.0
WTHTM10	M10	1.5	11.9	9.0
WTHTM12	M12	1.75	14.3	11.2
WTHTM14	M14	2.0	16.6	12.5
WTHTM16	M16	2.0	18.6	14.0
WTHTM20	M20	2.5	23.3	16.0

V-COIL THREAD INSERT SYSTEM SPIRAL POINT MACHINE TAPS FOR WIRE THREAD INSERTS

Stock Code	Thread size	Pitch mm	Tap major Ø mm	Shank Ømm
WTSPTM3	M3	0.5	3.6	4.0
WTSPTM3.5	M3.5	0.6	4.3	4.5
WTSPTM4	M4	0.7	4.9	5.0
WTSPTM5	M5	0.8	6.0	6.3
WTSPTM6	M6	1.0	7.3	8.0
WTSPTM8	M8	1.25	9.3	10.0
WTSPTM10	M10	1.5	11.9	8.0
WTSPTM12	M12	1.75	14.3	11.2
WTSPTM14	M14	2.0	16.6	12.5
WTSPTM16	M16	2.0	18.6	14.0

V-COIL THREAD INSERT SYSTEM WIRE THREAD SPARK PLUG TAPS WITH PILOT NOSE

Stock Code	Thread & pilot size	Pitch mm	Tap major Ø mm	Shank Ø mm
WTSPPTM6	M6	1.0	7.3	8
WTSPPTM8	M8	1.25	9.6	8
WTSPPTM10	M10	1.5	11.9	9
WTSPPTM10x1	M10x1	1.0	11.3	8
WTSPPTM12x1.25	M12x1.25	1.25	13.6	9
WTSPPTM14x1.25	M14x1.25	1.25	15.6	12
WTSPPTM18x1.5	M18x1.5	1.5	20.0	16

V-COIL THREAD INSERT SYSTEM WIRE THREAD INSERTS

Stainless steel DIN8140 ISO2 tolerance 6H

Size	Stock Code	Length mm	Stock Code	Length mm	Stock Code	Length mm
M2	WTIM2x1	2	WTIM2x1.5	3	WTIM2x2	4
M2.5	WTIM2.5x1	2.5	WTIM2.5x1.5	3.75	WTIM2.5x2	5
M3	WTIM3x1	3	WTIM3x1.5	4.5	WTIM3x2	6
M3.5	WTIM3.5x1	3.5	WTIM3.5x1.5	5.25	WTIM3.5x2	7
M4	WTIM4x1	4	WTIM4x1.5	6	WTIM4x2	8
M5	WTIM5x1	5	WTIM5x1.5	7.5	WTIM5x2	10
M6	WTIM6x1	6	WTIM6x1.5	9	WTIM6x2	12
M8	WTIM8x1	8	WTIM8x1.5	12	WTIM8x2	16
M10	WTIM10x1	10	WTIM10x1.5	15	WTIM10x2	20
M10x1	WTIM10x1x1	10	WTIM10x1x1.5	15	WTIM10x1x2	20
M12	WTIM12x1	12	WTIM12x1.5	18	WTIM12x2	24
M12x1.25	M12x1.25x1	12	M12x1.25x1.5	18	M12x1.25x2	24
M14	WTIM14x1	12	WTIM14x1.5	21	WTIM14x2	28
M14x1.25	WTIM14x1.25x1	12	WTIM14x1.25x1.5	21	WTIM14x1.25x2	28
M16	WTIM16x1	12	WTIM16x1.5	24	WTIM16x2	32
M18x1.5	WTIM18x1.5x1	12	WTIM18x1.5x1.5	27	WTIM18x1.5x2	36
M20	WTIM20x1	12	WTIM20x1.5	30	WTIM20x2	40

V-COIL THREAD WIRE INSERTING WRENCH

With locking ring

Stock Code	To suit wire insert	
WIW2	M2, M2.2	UNC2
WIW2.5	M2.5	
WIW3	M3	UNC/UNF4
WIW3.5	M3.5	UNC/UNF6
WIW4	M4	UNC/UNF8
WIW5	M5	UNC/UNF10 UNC12
WIW6	M6	UNC/UNF1/4
WIW7	M7	UNC5/16
WIW8	M8, M8x1	UNF5/16
WIW9	M9, M9x1	UNC3/8
WIW10	M10, M10x1,M10x1.25	UNF3/8
WIW11	M11	UNC/UNF7/16
WIW12	M12, M12x1, M12x1.25, M12x1.5	UNC/UNF1/2
WIW14	M14, M14x1.5	UNC/UNF9/16
WIW14X1.25	M14x1.25, M14x1	
WIW16	M16, M16x1.5	UNC/UNF5/8
WIW18	M18, M18x2, M18x1.5	UNC3/4
WIW20	M20, M20x2, M20x1.5	UNF3/4

V-COIL INSERT EXTRACTING TOOLS

Stock Code	Extract inserts
ET2	M3-M10
ET3	M11-M24

V-COIL THREAD REPAIR KITS

Stock Code	Thread size	Drill Ø mm	Wire inserting wrench	Tang breaker	No of inserts
TRKM2	M2	2.1	WIW2	No 2	20
TRKM2.5	M2.5	2.6	WIW2.5	No 3	20
TRKM3	M3	3.2	WIW3	No 4	20
TRKM3.5	M3.5	3.7	WIW3.5	No 5	20
TRKM4	M4	4.2	WIW4	No 6	20
TRKM5	M5	5.2	WIW5	No 8	20
TRKM6	M6	6.3	WIW6	No 9	20
TRKM8	M8	8.3	WIW8	No 11	20
TRKM10	M10	10.4	WIW10	No 13	15
TRKM12	M12	12.4	WIW12	No 15	10
TRKM14	M14	-	WIW14	-	10
TRKM14x1.25	M14x1.25	-	WIW14SP	-	10
TRKM16	M16	-	WIW16	-	10
TRKM18	M18	-	WIW18	-	5
TRKM20	M20	-	WIW20	-	5

V-COIL WORKSHOP THREAD REPAIR KITS

Stock Code	Thread range	No of drills	No of wrenches	No of inserts
WTRKM5-12	M5, M6, M8, M10, M12	5	5	110
WTRKM6-M14x1.25	M6, M8, M10, M12, M14x1.25	5	5	95

ITA GO / NO GO THREAD PLUG GAUGES

METRIC

Stock Code	Size 6H	Pitch mm	Stock Code	Size 6H	Pitch mm
G/NGPM2C	M2	0.4	G/NGPM12C	M12	1.75
G/NGPM2.2C	M2.2	0.45	G/NGPM14C	M14	1.2
G/NGPM2.5C	M2.5	0.45	G/NGPM16C	M16	2.0
G/NGPM3C	M3	0.5	G/NGPM18C	M18	2.5
G/NGPM3.5C	M3.5	0.6	G/NGPM20C	M20	2.5
G/NGPM4C	M4	0.7	G/NGPM22C	M22	2.5
G/NGPM5C	M5	0.8	G/NGPM24C	M24	3.0
G/NGPM6C	M6	1.0	G/NGPM27C	M27	3.0
G/NGPM7C	M7	1.0	G/NGPM30C	M30	3.0
G/NGPM8C	M8	1.25	G/NGPM33C	M33	3.5
G/NGPM9C	M9	1.25	G/NGPM36C	M36	4.0
G/NGPM10C	M10	1.5	G/NGPM39C	M39	4.5
G/NGPM11C	M11	1.5	G/NGPM42C	M42	4.5

METRIC FINE

Stock Code	Size 6H	Pitch mm	Stock Code	Size 6H	Pitch mm
G/NGPM5x0.5C	M5	0.5	G/NGPM14x1.5C	M14	1.5
G/NGPM6x0.5C	M6	0.5	G/NGPM16x1C	M16	1.0
G/NGPM6x0.75C	M6	0.75	G/NGPM16x1.5C	M16	1.5
G/NGPM8x0.75C	M8	0.75	G/NGPM18x1C	M18	1.0
G/NGPM8x1C	M8	1.0	G/NGPM18x1.5C	M18	1.5
G/NGPM10x.75C	M10	0.75	G/NGPM20x1C	M20	1.0
G/NGPM10x1C	M10	1.0	G/NGPM20x1.5C	M20	1.5
G/NGPM10x1.25C	M10	1.25	G/NGPM22x1.5C	M22	1.5
G/NGPM12x1C	M12	1.0	G/NGPM24x1.5C	M24	1.5
G/NGPM12x1.25C	M12	1.25	G/NGPM24x2.0C	M24	2.0
G/NGPM12x1.5C	M12	1.5	G/NGPM25x1.5C	M25	1.5
G/NGPM14x1C	M14	1.0	G/NGPM26x1.5C	M226	1.5
G/NGPM14x1.25C	M14	1.25	G/NGPM30x1.5C	M30	1.5

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BSP

Stock Code	Size to DIN 228	TPI	Stock Code	Size to DIN 228	TPI
G/NGPBSP1/8C	1/8 BSP	28	G/NGPBSP5/8C	5/8 BSP	14
G/NGPBSP1/4C	1/4 BSP	19	G/NGPBSP3/4C	3/4 BSP	14
G/NGPBSP3/8C	3/8 BSP	19	G/NGPBSP1C	1 BSP	6
G/NGPBSP1/2C	1/2 BSP	14			

UNC

Stock Code	Size 2B	TPI	Stock Code	Size 2B	TPI
G/NGPUNC1/4CC	1/4 UNC	20	G/NGPUNC9/16C	9/16 UNC	12
G/NGPUNC5/16C	5/16 UNC	18	G/NGPUNC5/8C	5/8 UNC	11
G/NGPUNC3/8C	3/8 UNC	16	G/NGPUNC3/4C	3/4 UNC	10
G/NGPUNC7/16C	7/16 UNC	14	G/NGPUNC7/8C	7/8 UNC	9
G/NGPUNC1/2C	1/2 UNC	13	G/NGPUNC1C	1 UNC	8

UNF

Stock Code	Size 2B	TPI	Stock Code	Size 2B	TPI
G/NGPUNF1/4C	1/4 UNF	28	G/NGPUNF9/16C	9/16 UNF	18
G/NGPUNF5/16C	5/16 UNF	24	G/NGPUNF5/8C	5/8 UNF	18
G/NGPUNF3/8C	3/8 UNF	24	G/NGPUNF3/4C	3/4 UNF	16
G/NGPUNF7/16C	7/16 UNF	20	G/NGPUNF7/8C	7/8 UNF	14
G/NGPUNF1/2C	1/2 UNF	20	G/NGPUNF1C	1 UNF	12

NPT

Stock Code	Size to DIN 228	TPI	Stock Code	Size to DIN 228	TPI
G/NGPNPT1/8C	1/8 NPT	27	G/NGPNPT1/2C	1/2 NPT	14
G/NGPNPT1/4C	1/4 NPT	18	G/NGPNPT3/4C	3/4 NPT	14
G/NGPNPT3/8C	3/8 NPT	13	G/NGPNPT1C	1 NPT	11 1/2

ITA GO / NO GO THREAD RING GAUGES

METRIC

Stock Code Go ring	Stock code No Go ring	Size 6g	Pitch mm
GRM3C	NGRM3C	M3	0.5
GRM4C	NGRM4C	M4	0.7
GRM5C	NGRM5C	M5	0.8
GRM6C	NGRM6C	M6	1.0
GRM8C	NGRM8C	M8	1.25
GRM10C	NGRM10C	M10	1.5
GRM12C	NGRM12C	M12	1.75
GRM14C	NGRM14C	M14	2.0
GRM16C	NGRM16C	M16	2.0
GRM18C	NGRM18C	M18	2.5
GRM20C	NGRM20C	M20	2.5
GRM22C	NGRM22C	M22	2.5
GRM24C	NGRM24C	M24	3.0
GRM27C	NGRM27C	M27	3.0
GRM30C	NGRM30C	M30	3.5
GRM36C	NGRM36C	M36	4.0
GRM42C	NGRM42C	M42	4.5

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METRIC FINE

Stock Code Go ring	Stock code No Go ring	Size 6g	Pitch mm
GRM5x0.5C	NGRM5x0.5C	M5	0.5
GRM6x1C	NGRM6x0.5C	M6	0.5
GRM6x1C	NGRM6x0.75C	M6	0.75
GRM8x0.75C	NGRM8x0.75C	M8	0.75
GRM8x1C	NGRM8x1C	M8	1.0
GRM10x.75C	NGRM10x.75C	M10	0.75
GRM10x1C	NGRM10x1C	M10	1.0
GRM10x1.25C	NGRM10x1.25C	M10	1.25
GRM12x1C	NGRM12x1C	M12	1.0
GRM12x1.25C	NGRM12x1.25C	M12	1.25
GRM12x1.5C	NGRM12x1.5C	M12	1.5
GRM14x1C	NGRM14x1C	M14	1.0
GRM14x1.5C	NGRM14x1.5C	M14	1.5
GRM16x1C	NGRM16x1C	M16	1.0
GRM16x1.5C	NGRM16x1.5C	M16	1.5
GRM18x1C	NGRM18x1C	M18	1.0
GRM18x1.5C	NGRM18x1.5C	M18	1.5
GRM18x2C	NGRM18x2C	M18	2.0
GRM20x1C	NGRM20x1C	M20	1.0
GRM20x1.5C	NGRM20x1.5C	M20	1.5
GRM22x1.5C	NGRM22x1.5C	M22	1.5
GRM24x1.5C	NGRM24x1.5C	M24	1.5
GRM24x2C	NGRM24x2C	M24	2.0
GRM25x1.5C	NGRM25x1.5C	M25	1.5
GRM26x1.5C	NGRM26x1.5C	M26	1.5
GRM30x1.5C	NGRM30x1.5C	M30	1.5

BSP

Stock Code Go ring	Stock code No Go ring	Size to DIN 255	TPI
GRBSP1/8C	NGRBSP1/8C	1/8BSP	28
GRBSP1/4C	NGRBSP1/4C	1/4BSP	19
GRBSP3/8C	NGRBSP3/8C	3/8BSP	19
GRBSP1/2C	NGRBSP1/2C	1/2BSP	14
GRBSP5/8C	NGRBSP5/8C	5/8BSP	14
GRBSP3/4C	NGRBSP3/4C	3/4BSP	14
GRBSP1C	NGRBSP1C	1BSP	11

HS HSS PUSH TYPE KEYWAY BROACHES

Stock Code	Size mm	Style	No of shims	Min length of cut mm	Max length of cut mm
KBI2	2	I	0	5.1	28
KBI3	3	I	1	5.1	28
KBII4	4	II	1	7.5	43
KBII5	5	II	1	7.5	43
KBIII5	5	III	1	10.3	63
KBIII6	6	III	1	10.3	63
KBIII8	8	III	1	10.3	63
KBIV10	10	IV	2	19	150
KBIV12	12	IV	2	19	150
KBIV14	14	IV	2	19	150

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Stock Code	Size mm	Style	No of shims	Min length of cut mm	Max length of cut mm
KBV16	16	V	3	19	150
KBV18	18	V	3	19	150
KBVI20	20	VI	3	19	150
KBVI22	22	VI	4	19	150
KBVI24	24	VI	4	19	150
KBVI25	25	VI	4	19	150

Note: Also available ex stock: Guide bushes, shims, Hex, Square, Corner square broaches, pull broaches and Imperial size broaches.

SETS OF HSS PUSH TYPE KEYWAY BROACHES

Stock Code	Size mm	Bush diameter mm
KBSET2-3	2mm Style I 3mm Style I	6, 7, 8, 9, 10
KBSET2-8	2mm Style I 3mm Style I	8, 10
	4mm Style II 5mm Style II	12,14, 16, 18
	6mm Style III 8mm Style III	18, 19, 20, 22, 24, 25 26, 28, 30, 32, 34, 36

Stock Code	Size mm	Bush diameter mm
KBSET4-8	4mm Style II 5mm Style II	12,14, 16, 18
	6mm Style III 8mm Style III	20, 22, 24, 26, 28

Stock Code	Size mm	Bush diameter mm
KBSET10-14	10mm Style IV 12mm Style IV 14mm Style IV	34, 36, 38, 40 42, 44, 46, 48

Stock Code	Size mm	Bush diameter mm
KBSET16-18	16mm Style V 18mm Style V	54, 56, 58, 60, 62, 64

Stock Code	Size mm	Bush diameter mm
KBSET14-18	14mm Style IV 16mm Style V 18mm Style V	44, 45, 46, 48, 50 52, 54, 55, 56, 58, 60 62, 64, 65, 66, 68, 70

Note: Imperial size Keyway broach sets available ex stock

HSS CIRCULAR BLADES FOR CUT OFF MACHINES

BW Geometry, the teeth are alternatively beveled and is suitable for cutting round and square tube.

BW

Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
COSBW200X2X32X220C	200	2	32	220
COSBW200X2X32X160C	200	2	32	160
COSBW225X2X32X220C	225	2	32	220
COSBW225X2X32X200C	225	2	32	200
COSBW225X2X32X180C	225	2	32	180
COSBW250X2X32X220C	250	2	32	220
COSBW250X2X32X160C	250	2	32	160
COSBW250X2X40X280C	250	2	40	280
COSBW250X2X40X220C	250	2	40	220
COSBW250X2.5X40X240C	250	2.5	40	240
COSBW250X2.5X32X280C	250	2.5	32	280
COSBW250X2.5X32X240C	250	2.5	32	240
COSBW250X2.5X32X220C	250	2.5	32	220
COSBW250X2.5X32X160C	250	2.5	32	160
COSBW275X2X32X280C	275	2	32	280
COSBW275X2X40X280C	275	2	40	280
COSBW275X2.5X32X280C	275	2.5	32	280
COSBW275X2.5X32X220C	275	2.5	32	220
COSBW275X2.5X32X180C	275	2.5	32	180
COSBW275X2.5X40X280C	275	2.5	40	280
COSBW300X2X32X300C	300	2	32	300
COSBW300X2X32X280C	300	2	32	280
COSBW300X2X32X220C	300	2	32	220
COSBW300X2X40X280C	300	2	40	280
COSBW300X2X40X220C	300	2	40	220
COSBW300X2.5X32X220C	300	2.5	32	220
COSBW300X2.5X32X160C	300	2.5	32	160
COSBW300X2.5X32X120C	300	2.5	32	120
COSBW300X2.5X40X180C	300	2.5	40	180
COSBW315X2.5X32X280C	315	2.5	32	280
COSBW315X2.5X32X220C	315	2.5	32	220
COSBW315X2.5X40X280C	315	2.5	40	280
COSBW315X2.5X40X220C	315	2.5	40	220
COSBW315X2.5X40X180C	315	2.5	40	180
COSBW315X3X32X310C	315	3	32	310
COSBW315X3X32X220C	315	3	32	220
COSBW315X3X32X180C	315	3	32	180

continued ...

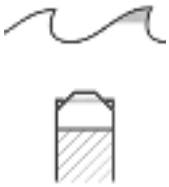
...continued

Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
COSBW315X3X40X310C	315	3	40	310
COSBW315X3X40X240C	315	3	40	240
COSBW315X3X40X180C	315	3	40	180
COSBW350X3X32X310C	350	3	32	310
COSBW350X3X32X220C	350	3	32	220
COSBW350X3X32X160C	350	3	32	160
COSBW400X3X40X310C	400	3	40	310

HSS CIRCULAR BLADES FOR CUT OFF MACHINES

The HZ tooth form is used mainly for solid round and square bar as well as thick-walled tube cutting, the roughing tooth is bevelled on both sides and between 0.2 and 0.3 mm higher than the finishing tooth.

HZ



Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
COSHZ200X2X32X220C	200	2	32	220
COSHZ200X2X32X160C	200	2	32	160
COSHZ225X2X32X180C	225	2	32	180
COSHZ250X2X32X220C	250	2	32	220
COSHZ250X2X32X200C	250	2	32	200
COSHZ250X2X32X160C	250	2	32	160
COSHZ250X2X40X220C	250	2	40	220
COSHZ250X2.5X32X280C	250	2.5	32	280
COSHZ250X2.5X32X220C	250	2.5	32	220
COSHZ250X2.5X32X200C	250	2.5	32	200
COSHZ250X2.5X32X160C	250	2.5	32	160
COSHZ275X2X32X280C	275	2	32	280
COSHZ275X2X32X220C	275	2	32	220
COSHZ275X2X32X180C	275	2	32	180
COSHZ275X2X40X280C	275	2	40	280
COSHZ275X2X40X180C	275	2	40	180
COSHZ275X2.5X32X280C	275	2.5	32	280
COSHZ275X2.5X32X220C	275	2.5	32	220
COSHZ275X2.5X32X180C	275	2.5	32	180
COSHZ275X2.5X40X280C	275	2.5	40	280
COSHZ275X2.5X40X220C	275	2.5	40	220
COSHZ300X2X32X300C	300	2	32	300
COSHZ300X2X32X280C	300	2	32	280
COSHZ300X2X32X220C	300	2	32	220
COSHZ300X2X32X160C	300	2	32	160
COSHZ300X2X40X220C	300	2	40	220
COSHZ300X2.5X32X300C	300	2.5	32	300
COSHZ300X2.5X32X220C	300	2.5	32	220
COSHZ300X2.5X32X160C	300	2.5	32	160
COSHZ300X2.5X32X120C	300	2.5	32	120

continued ...

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Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
COSHZ315X2.5X32X280C	315	2.5	32	280
COSHZ315X2.5X32X220C	315	2.5	32	220
COSHZ315X2.5X32X180C	315	2.5	32	180
COSHZ315X2.5X40X280C	315	2.5	40	280
COSHZ315X2.5X40X220C	315	2.5	40	220
COSHZ315X2.5X40X180C	315	2.5	40	180
COSHZ315X3X32X220C	315	3	32	220
COSHZ350X3X32X310C	350	3	32	310
COSHZ350X3X32X220C	350	3	32	220
COSHZ350X3X32X160C	350	3	32	160
COSHZ350X3X40X220C	350	3	40	220
COSHZ350X3X40X180C	350	3	40	180

TiN COATED HSS CUT OFF BLADES

BW Geometry, the teeth are alternatively beveled and is suitable for cutting round and square tube.

BW

Stock code	Ø mm	Width mm	Bore mm	No of teeth
COSTIN200X2X32X160	200	2	32	160
COSTIN225X2X32X220	225	2	32	220
COSTIN225X2X32X160	002	2	32	180
COSTIN250X2X32X220	250	2	32	220
COSTIN250X2X32X160	250	2	32	160
COSTIN250X2X40X280	250	2	40	280
COSTIN250X2X40X220	250	2	40	220
COSTIN250X2.5X40X240	250	2.5	40	240
COSTIN250X2.5X32X280	250	2.5	40	280
COSTIN250X2.5X32X240	250	2.5	32	240
COSTIN250X2.5X40X220	250	2.5	32	220
COSTIN250X2.5X32X160	250	2.5	32	160
COSTIN275X2X32X280	275	2	32	280
COSTIN275X2X32X220	275	2	32	220
COSTIN275X2X32X180	275	2	32	180
COSTIN275X2X40X280	275			
COSTIN275X2X40X180	275	2	40	280
COSTIN275X2.5X32X280	275	2	40	180
		2.5	32	280
COSTIN275X2.5X32X220	275	2.5	32	220
COSTIN275X2.5X32X180	275	2.5	32	180
COSTIN275X2.5X40X280	275	2.5	40	280
COSTIN275X2.5X40X220	275	2.5	40	220
COSTIN300X2X32X300	300	2	32	300
COSTIN300X2X32X280	300	2	32	280
COSTIN300X2X32X220	300	2	32	220
COSTIN300X2X32X160	300	2	32	160
COSTIN300X2X40X220	300	2	40	220
COSTIN300X2.5X32X300	300	2.5	32	300
COSTIN300X2.5X32X160	300	2.5	32	160
COSTIN315X2.5X32X280	315	2.5	32	280
COSTIN315X2.5X32X220	315	2.5	32	220
COSTIN315X2.5X40X220	315	2.5	40	220
COS315X2.5X40X180	316	2.5	40	180
COSCB350X3X32X220C	350	3	32	220

TCT SAW BLADES FOR ALUMINIUM

Stock code	Ø mm	Width mm	Bore mm	No of teeth
ASB255X30X100	255	3.0	30	100
ASB255X30X120	255	3.0	30	120
ASB305X30X100	305	3.0	30	100
ASB305X30X120	305	3.0	30	120
ASB355X30X144	355	3.2	30	100
ASB400X30X120	400	3.4	30	120
ASB450X30X120	450	4.0	30	120
ASB500X30X120	500	4.4	30	120

HSS FINE TOOTH SLITTING SAWS

Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
SAW63x.3x16	63	0.3	16	128
SAW63x.4x16	63	0.4	16	128
SAW63x.5x16	63	0.5	16	128
SAW63x.6x16	63	0.6	16	100
SAW63x.7x16	63	0.7	16	100
SAW63x.8x16	63	0.8	16	100
SAW63x.9x16	63	0.9	16	100
SAW63x1x16	63	1.0	16	100
SAW63x1.2x16	63	1.2	16	80
SAW63x1.5x16	63	1.5	16	80
SAW63x1.6x16	63	1.6	16	80
SAW63x2x16	63	2.0	16	80
SAW63x2.5x16	63	2.5	16	64
SAW63x3x16	63	3.0	16	64
SAW63x4x16	63	4.0	16	64
SAW63x5x16	63	5.0	16	48
SAW63x6x16	63	6.0	16	48
SAW80x.5x22	80	0.5	22	128
SAW80x.6x22	80	0.6	22	128
SAW80x.7x22	80	0.7	22	128
SAW80x.8x22	80	0.8	22	128
SAW80x.9x22	80	0.9	22	100
SAW80x1x22	80	1.0	22	100
SAW80x1.2x22	80	1.2	22	100
SAW80x1.5x22	80	1.5	22	100
SAW80x1.6x22	80	1.6	22	100
SAW80x2x22	80	2.0	22	80
SAW80x2.5x22	80	2.5	22	80
SAW80x3x22	80	3.0	22	80
SAW80x3.5x22	80	3.5	22	80
SAW80x4x22	80	4.0	22	64
SAW80x5x22	80	5.0	22	64
SAW100x.5x22	100	0.5	22	160
SAW100x.6x22	100	0.6	22	160

continued ...

Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
SAW100x.8x22	100	0.8	22	128
SAW100x.9x22	100	0.9	22	128
SAW100x1x22	100	1.0	22	128
SAW100x1.2x22	100	1.2	22	128
SAW100x1.5x22	100	1.5	22	128
SAW100x1.6x22	100	1.6	22	100
SAW100x2x22	100	2.0	22	100
SAW100x2.5x22	100	2.5	22	100
SAW100x3x22	100	3.0	22	80
SAW100x3.5x22	100	3.5	22	80
SAW100x4x22	100	4.0	22	80
SAW100x5x22	100	5.0	22	80
SAW100x6x22	100	6.0	22	64
SAW125x1.2x27	125	1.2	27	128
SAW125x1.5x27	125	1.5	27	128
SAW125x1.6x27	125	1.6	27	128
SAW125x2x27	125	2.0	27	128
SAW125x2.5x27	125	2.5	27	100
SAW125x3x27	125	3.0	27	100
SAW125x4x27	125	4.0	27	100
SAW125x5x27	125	5.0	27	80
SAW125x6x27	125	6.0	27	80
SAW160x1.2x32	160	1.2	32	160
SAW160x1.6x32	160	1.6	32	160
SAW160x2x32	160	2.0	32	128
SAW160x2.5x32	160	2.5	32	128
SAW160x3x32	160	3.0	32	128
SAW160x4x32	160	4.0	32	100
SAW160x5x32	160	5.0	32	100
SAW160x6x32	160	6.0	32	100
SAW200x1x32	200	1.0	32	200
SAW200x1.5x32	200	1.5	32	200
SAW200x1.6x32	200	1.6	32	160
SAW200x2x32	200	2.0	32	160
SAW200x2.5x32	200	2.5	32	160
SAW200x3x32	200	3.0	32	128
SAW200x6x32	200	6.0	32	100
SAW250x2x32	250	2.0	32	200
SAW250x4x32	250	4.0	32	160
SAW315x3x40	315	3.0	40	200
SAW315x4x40	315	4.0	40	160

HSS COARSE TOOTH SLITTING SAWS

Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
CSAW80x.8x22	80	0.8	22	64
CSAW80x1x22	80	1.0	22	40
CSAW80x1.6x22	80	1.6	22	40
CSAW80x2x22	80	2.0	22	40
CSAW80x2.5x22	80	2.5	22	32
CSAW80x3x22	80	3.0	22	32
CSAW80x4x22	80	4.0	22	32

continued ...

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Stock Code	Ø mm	Width mm	Bore mm	No. of Teeth
CSAW100x1x22	100	1.0	22	50
CSAW100x1.2x22	100	1.2	22	50
CSAW100x1.6x22	100	1.6	22	50
CSAW100x2x22	100	2.0	22	40
CSAW100x2.5x22	100	2.5	22	40
CSAW100x3x22	100	3.0	22	40
CSAW125x1.2x22	100	6.0	22	32
CSAW125x1.2x27	125	1.2	27	64
CSAW125x1.6x27	125	1.6	27	50

HSS STAGGERED TOOTH SIDE AND FACE CUTTERS - COARSE TOOTH

Stock Code	Ø mm ±0.1	Width mm k11	Bore mm H7	No of teeth
SF63x8x22	63	8	22	12
SF63x12x22	63	12	22	12
SF80x8x27	80	8	27	14
SF80x10x22	80	10	22	14
SF80x10x27	80	10	27	14
SF80x12x27	80	12	27	14
SF100x10x27	100	10	27	14
SF100x12x27	100	12	27	14
SF100x12x27	100	12	27	14
SF100x12x32	100	12	32	14
SF125x12x32	125	12	32	16

HSS STAGGERED TOOTH SIDE AND FACE CUTTERS - FINE TOOTH

Stock Code	Ø mm ±0.1	Width mm k11	Bore mm H7	No of teeth
SFF50x4x16	50	4	16	18
SFF50x5x16	50	5	16	18
SFF50x6x16	50	6	16	18
SFF63x5x22	63	5	22	20
SFF63x6x22	63	6	22	20
SFF63x8x22	63	8	22	20
SFF63x10x22	63	10	22	20
SFF80x6x22	80	6	22	22
SFF80x8x22	80	8	22	22
SFF80x10x22	80	10	22	22

continued ...

Stock Code	ø mm ±0.1	Width mm k11	Bore mm H7	No of teeth
SFF100x8x22	100	8	22	24
SFF100x10x22	100	10	22	24
SFF100x14x22	100	14	22	24
SFF100x16x27	100	16	27	24
SFF125x16x27	125	16	27	26

HSS DOUBLE EQUAL ANGLE CUTTERS

Stock Code	Ø mm	Width mm	Bore mm	Included Angle
DA63 x 45	63	10	22	45˚
DA80 x 45	80	12	27	45˚
DA100 x 45	100	18	32	45˚
DA63 x 60	63	14	22	60˚
DA80 x 60	80	16	27	60˚
DA100 x 60	100	22	32	60˚
DA63 x 90	63	16	22	90˚
DA80 x 90	80	20	27	90˚
DA100 x 90	100	28	32	90˚

HSS SINGLE ANGLE CUTTERS

Stock Code	Ø mm	Width mm	Bore mm	Angle per side
SA63x45	63	12	22	45˚
SA80x45	80	16	27	45˚
SA100x45	100	22	32	45˚
SA50x60	50	12	16	60˚
SA63x60	63	16	22	60˚
SA80x60	80	20	27	60˚
SA100x60	100	25	32	60˚

HSS INVOLUTE GEAR MILLING CUTTERS

Form relieved. 20˚ Presure angle. Basic profile 1 to DIN 3972 (Depth = 2.167 x module)

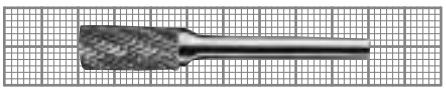
* When ordering please suffix stock code with cutter number.

Stock Code	Module	Presure angle	Cutter Ø	Bore
M.5*	0.5	20˚	28	13
M1*	1	20˚	60	22
M1.25*	1.25	20˚	60	22
M1.5*	1.5	20˚	60	22
M1.75*	1.75	20˚	60	22
M2*	2	20˚	60	22
M2.25*	2.25	20˚	60	22
M2.5*	2.5	20˚	60	22
M2.75*	2.75	20˚	70	27
M3*	3	20˚	70	27
M3.25*	3.25	20˚	70	27
M3.5*	3.5	20˚	80	27
M3.75*	3.75	20˚	80	27
M4*	4	20˚	80	27
M4.5*	4.5	20˚	80	27
M5*	5	20˚	90	32
M5.5*	5.5	20˚	90	32
M6*	6	20˚	100	32
M7*	7	20˚	105	32
M8*	8	20˚	105	32
M9*	9	20˚	110	32
M10*	10	20˚	120	32

To determine cutter number please see of the technical section at the back of this catalogue.

SOLID CARBIDE ROTARY BURRS

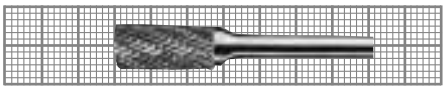
Supplied as standard with super cut chip breaker.
Cylinder ISO shape A



Stock code	Head Ø mm	Head length mm	Shank Ø mm
A2x6x3	2	6	3
A3x12x3	3	12	3
A3x12x6	3	12	6
A4x14x6	4	14	6
A6x12x3	6	12	3
A6x16x6	6	16	6
A8x20x6	8	20	6
A10x20x6	10	20	6
A12x6x6	12	6	6
A12x25x6	12	25	6
A16x25x6	16	25	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

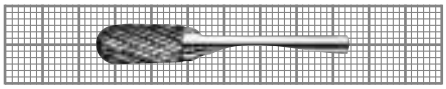
End cutting cylinder ISO shape B



Stock code	Head Ø mm	Head length mm	Shank Ø mm
B3x12x3	3	12	3
B4x14x6	4	14	6
B6x16x6	6	16	6
B8x20x6	8	20	6
B10x20x6	10	20	6
B12x6x6	12	6	6
B12x25x6	12	25	6
B16x25x6	16	25	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

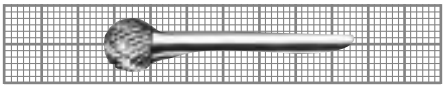
Ball nose cylinder ISO shape C



Stock code	Head Ø mm	Head length mm	Shank Ø mm
C2x6x3	2	6	3
C3x12x3	3	12	3
C3x12x6	4	12	6
C6x12x3	6	12	3
C6x16x6	6	16	6
C8x20x6	8	20	6
C10x20x6	10	20	6
C12x25x6	12	25	6
C16x25x6	16	25	6

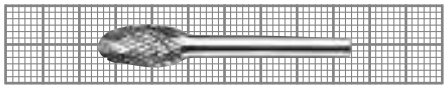
Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

Ball ISO shape D



Stock code	Head Ø mm	Shank Ø mm
D3x3	3	3
D6x3	6	3
D6x6	6	6
D8x6	8	6
D10x6	10	6
D12x6	12	6
D16x6	16	6

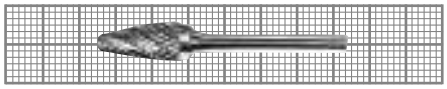
Oval ISO shape E



Stock code	Head Ø mm	Head length mm	Shank Ø mm
E3x6x3	3	6	3
E6x10x6	6	10	6
E10x16x6	10	16	6
E12x22x6	12	22	6
E16x25x6	16	25	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

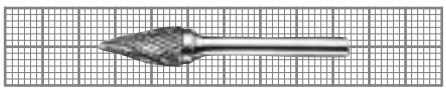
Ball nose tree ISO shape F



Stock code	Head Ø mm	Head length mm	Shank Ø mm
F3x12x3	3	12	3
F6x12x3	6	12	3
F6x16x6	6	16	6
F10x20x6	10	20	6
F12x25x6	12	25	6
F16x25x6	16	25	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

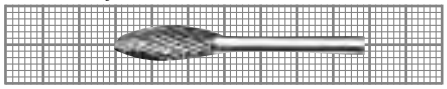
Tree ISO shape G



Stock code	Head Ø mm	Head length mm	Shank Ø mm
G3x12x3	3	12	3
G3x12x6	3	12	6
G6x12x3	6	12	3
G6x16x6	6	16	6
G8x20x6	8	20	6
G10x20x6	10	20	6
G12x25x6	12	25	6
G16x25x6	16	25	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

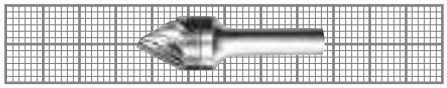
Flame ISO shape H



Stock code	Head Ø mm	Head length mm	Shank Ø mm
H8x20x6	8	20	6
H12x30x6	12	30	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

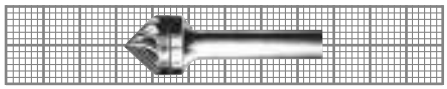
60° Countersink ISO shape J



Stock code	Head Ø mm	Head length mm	Shank Ø mm	Included angle
SCCSK6010	10	10	6	60°
SCCSK6012	12	12	6	60°
SCCSK6016	16	16	6	60°

Note: Supplied without chipbreaker.

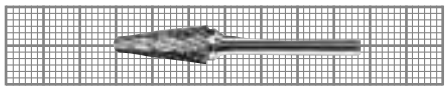
90° Countersink ISO shape K



Stock code	Head Ø mm	Head length mm	Shank Ø mm	Included angle
SCCSK9010	10	8	6	90°
SCCSK9012	12	10	6	90°
SCCSK9016	16	12	6	90°

Note: Supplied without chipbreaker.

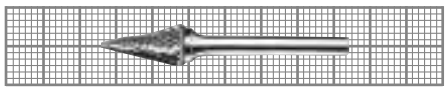
Ball nose cone ISO shape L



Stock code	Head Ø mm	Head length mm	Shank Ø mm
L3x12x3	3	12	3
L6x16x6	6	16	6
L10x30x6	10	30	6
L12x30x6	12	30	6
L16x30x6	16	30	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

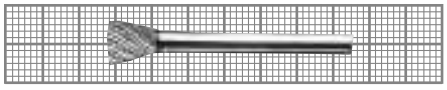
Cone ISO shape M



Stock code	Head Ø mm	Head length mm	Shank Ø mm
M3x12x3	3	12	3
M3x16x3	3	16	3
M3x16x6	3	16	6
M6x16x6	6	16	6
M10x20x6	10	20	6
M12x25x6	12	25	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

Inverted cone ISO shape N



Stock code	Head Ø mm	Head length mm	Shank Ø mm
N6x6x3	6	6	3
N6x6x6	6	6	6
N12x12x6	12	12	6

Note: Burrs with no chip breaker or burrs with the number of teeth other than standard, available on request.

HSS CORNER ROUNDING CUTTERS M2

DIN 6518

Stock code	Radius mm H11	Ø mm ±0.2	Shank Ø mm	Overall length mm
CR2	2	10	10	60
CR2.5	2.5	10	10	60
CR3	3	12	12	60
CR4	4	14	12	60
CR5	5	16	12	60
CR6	6	20	16	67
CR8	8	24	16	73
CR10	10	28	25	85
CR12	12	34	25	90
CR14	14	42	25	90
CR16	16	48	32	90
CR20	20	60	32	115

HSS WOODRUFF CUTTERS M2

Threaded shank. For woodruff keys to DIN 898

DIN 350B

Stock Code	Ø h11 h11 mm	Width e8 mm	For Woodruff keyseat slots DIN 6888 mm	Overall length mm	Ø of shank h7 mm
W10.5X2	10.5	2	2x3.7	50	6
W10.5X2.5	10.5	2.5	2.5x3.7	50	6
W10.5X3	10.5	3	3x3.7	50	6
W13.5X3	13.5	3	3x5	50	8
W13.5X4	13.5	4	4x5	56	8
W16.5X3	16.5	3	3x6.5	56	8
W16.5X4	16.5	4	4x6.5	56	8
W16.5X5	16.5	5	5x6.5	56	8
W19.5X4	19.5	4	4x7.5	63	8
W19.5X5	19.5	5	5x7.5	63	8
W19.5X6	19.5	6	6x7.5	63	8
W22.5X5	22.5	5	5x9	63	8
W22.5X6	22.5	6	6x9	63	8
W22.5X8	22.5	8	8x9	63	8
W25.5X6	25.5	6	6x11	63	10
W28.5X8	28.5	8	8x11	63	10
W32.5X10	32.5	10	10x13	71	10

HSS DOVETAIL CUTTERS M2

DIN 1831

Stock Code	Ø mm js16	Angle per side ±15′	Shank Ø mm	Overall length mm
DTC45x16	16	45°	12	60
DTC45x20	20	45°	12	63
DTC45x25	25	45°	16	67
DTC60x16	16	60°	12	60
DTC60x20	20	60°	12	63
DTC60x25	25	60°	16	67

HSS INVERTED DOVETAIL CUTTERS M2

DIN 1831

Stock Code	Ø mm js16	Angle per side ±15′	Shank Ø mm	Overall length mm
IDTC45x16	16	45°	12	60
IDTC45x20	20	45°	12	63
IDTC45x25	25	45°	16	67
IDTC60x16	16	60°	12	60
IDTC60x20	20	60°	12	63
IDTC60x25	25	60°	16	67

HSS T SLOT CUTTERS M2

DIN 851A

Stock Code	Ø d11 mm	Width mm	For T slots DIN 650 mm	Overall length mm	Ø of shank h7 mm	No of teeth
TSC12.5	12.5	6	6	53.5	10	8
TSC16	16	8	8	62	10	8
TSC18	18	8	10	70	12	8
TSC21	21	9	12	74	12	8
TSC25	25	11	14	82	16	8
TSC32	32	14	18	90	25	8

TANK POWER STANDARD TWO FLUTE SLOT DRILLS PLAIN SHANK

HSS Premium powder metallurgy TiALN coated

Stock code	Ø e8 mm	Shank Ø h6 mm	Flute length mm	Overall length mm
SD1T	1	6	2.5	47
SD2T	2	6	4	48
SD3T	3	6	5	49
SD4T	4	6	7	51
SD5T	5	6	8	52

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Stock code	Ø e8 mm	Shank Ø h6 mm	Flute length mm	Overall length mm
SD6T	6	6	8	52
SD7T	7	10	10	60
SD8T	8	10	11	61
SD9T	9	10	11	61
SD10T	10	10	13	63
SD12T	12	12	16	73
SD14T	14	12	16	73
SD16T	16	16	19	79
SD18T	18	16	19	79
SD20T	20	20	22	88
SD22T	22	20	22	88
SD25T	25	25	26	102

TANK POWER STANDARD TWO FLUTE BALL SLOT DRILL PLAIN SHANK

HSS Premium powder metallurgy TiALN coated

Stock code	Ø e8 mm	Shank Ø h6 mm	Flute length mm	Overall length mm
BSD1T	1	6	2.5	47
BSD2T	2	6	4	48
BSD3T	3	6	5	49
BSD4T	4	6	7	51
BSD5T	5	6	8	52
BSD6T	6	6	8	52
BSD7T	7	10	10	60
BSD8T	8	10	11	61
BSD9T	9	10	11	61
BSD10T	10	10	13	63
BSD12T	12	12	16	72
BSD14T	14	12	16	72
BSD16T	16	16	19	79
BSD18T	18	16	19	79
BSD20T	20	20	22	88
BSD22T	22	20	22	88
BSD25T	25	25	26	102

TANK POWER STANDARD FOUR FLUTE END MILL PLAIN SHANK

HSS Premium powder metallurgy TiALN coated

Stock code	Ø e8 mm	Shank Ø h6 mm	Flute length mm	Overall length mm
EM1T	1	6	3	49
EM2T	2	6	7	51
EM3T	3	6	8	52
EM4T	4	6	11	55
EM5T	5	6	13	57
EM6T	6	6	13	57
EM7T	7	10	16	66
EM8T	8	10	19	69
EM9T	9	10	19	69
EM10T	10	10	22	72
EM12T	12	12	26	83
EM14T	14	12	26	83
EM16T	16	16	32	92
EM18T	18	16	32	92
EM20T	20	20	38	104
EM22T	22	20	38	104
EM25T	25	25	45	104

TANK POWER STANDARD MULTI FLUTE FINE PITCH RIPPERS WELDON FLAT

HSS Premium powder metallurgy TiALN coated

Stock code	Ø e8 mm	Shank Ø h6 mm	Flute length mm	Overall length mm
FR6T	6	6	13	57
FR7T	7	10	16	66
FR8T	8	10	19	69
FR9T	9	10	19	69
FR10T	10	10	22	72
FR12T	12	12	26	83
FR14T	14	12	26	83
FR16T	16	16	32	92
FR18T	18	16	32	92
FR20T	20	20	38	104
FR22T	22	20	38	104
FR25T	25	25	45	121

THREE FLUTE THROW AWAY END MILLS PLAIN SHANK CENTRE CUTTING HSS-C08

DIN Tolerance
Cutting ø: e^8 Shank ø: h^6

Short length TAEM

Stock code	Ø e8 mm	Shank Ø h6 mm	Flute length mm	Overall length mm
TAEM1.5	1.5	6	3	34
TAEM2	2	6	4	35
TAEM2.5	2.5	6	5	36
TAEM3	3	6	5	36
TAEM4	4	6	7	38
TAEM5	5	6	8	39
TAEM6	6	6	8	39
TAEM7	7	8	10	42
TAEM8	8	8	11	43
TAEM9	9	10	11	48
TAEM10	10	10	13	50

Long length LTAEM

Stock code	Ø e8 mm	ShankØ h6 mm	Flute length mm	Overall length mm
LTAEM3	3	6	8	39
LTAEM4	4	6	11	42
LTAEM5	5	6	13	44
LTAEM6	6	6	13	44

THREE FLUTE THROW AWAY END MILLS- PLAIN SHANK- CENTRE CUTTING HSS-C08

Clarkson Tolerances
Cutting ø: e^8
Shank ø: 0,025/0,032

Continued ...

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Short length TAEMC

Stock code TAEMC	Ø mm e8	Shank Ø mm 0.025/0.032	Flute length mm	Overall length mm
TAEM1.5C	1.5	6	2	24.5
TAEM2C	2	6	2.5	24.5
TAEM3C	3	6	3	25.5
TAEM4C	4	6	4.5	28
TAEM5C	5	6	7.5	36
TAEM6C	6	6	9.5	36

Long length LTAEMC

Stock code TAEMC	Ø mm e8	Shank Ø mm 0.025/0.032	Flute length mm	Overall length mm
LTAEM2C	2	6	4.5	29.0
LTAEM3C	3	6	7.5	34.0
LTAEM4C	4	6	9.5	39.0
LTAEM5C	5	6	12.5	44.5
LTAEM6C	6.0	6	16	44.5

STANDARD SLOT DRILLS THREE FLUTE HSS-CO8 PLAIN SHANK

DIN 327

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
3PSD3	3	6	5	49
3PSD4	4	6	7	51
3PSD5	5	6	8	52
3PSD6	6	6	8	52
3PSD8	8	10	11	61
3PSD10	10	10	13	63
3PSD12	12	12	16	73
3PSD14	14	12	16	73
3PSD16	16	16	19	79
3PSD18	18	16	19	79
3PSD20	20	16	22	88
3PSD22	22	25	22	88
3PSD25	25	25	26	102

Note: Also available in TiN and TiCN coated

STANDARD SLOT DRILLS THREE FLUTE HSS-CO8 THREADED SHANK

DIN 327

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
3SD2	2	6	4	48
3SD3	3	6	5	49
3SD4	4	6	7	51
3SD5	5	6	8	52
3SD6	6	6	8	52
3SD8	8	10	11	61
3SD10	10	10	13	63
3SD12	12	12	16	73
3SD14	14	12	16	73
3SD16	16	16	19	79
3SD18	18	16	19	79
3SD19	19	16	19	79
3SD20	20	16	22	88
3SD22	22	25	22	88
3SD24	24	25	26	102
3SD25	25	25	26	102
3SD26	26	25	26	102
3SD28	28	25	26	102
3SD30	30	25	26	102

Note: Also available TiN and TiCN coated

STANDARD SLOT DRILLS HSS-CO8 PLAIN SHANK WITH WELDON FLATS

DIN 327

Stock code TAEM	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
PSD2	2	6	4	48
PSD2.5	2.5	6	5	49
PSD3	3	6	5	49
PSD3.5	3.5	6	6	50
PSD4	4	6	7	51
PSD4.5	4.5	6	7	51
PSD5	5	6	8	52
PSD5.5	5.5	6	8	52
PSD6	6	6	8	52
PSD6.5	6.5	10	10	60
PSD7	7	10	10	60
PSD7.5	7.5	10	10	60
PSD8	8	10	11	61
PSD8.5	8.5	10	11	61
PSD9	9	10	11	61
PSD9.5	9.5	10	11	61
PSD10	10	10	13	63
PSD11	11	12	13	70
PSD12	12	12	16	73
PSD13	13	12	16	73
PSD14	14	12	16	73
PSD16	16	16	19	79
PSD17	17	16	19	79
PSD18	18	16	19	79
PSD19	19	16	19	79
PSD20	20	16	22	82
PSD22	22	20	22	88
PSD25	25	25	26	102
PSD28#	28	25	26	102
PSD32	32	32	32	112
PSD36#	36	32	32	112

Note: Also available in TiN and TiCN coated

STANDARD SLOT DRILLS HSS-CO8 THREADED SHANK

DIN 327

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
SD1.5	1.5	6	3	47
SD2	2	6	4	48
SD2.5	2.5	6	5	49
SD3	3	6	5	49
SD3.5	3.5	6	6	50
SD4	4	6	7	51
SD4.5	4.5	6	7	51
SD5	5	6	8	52
SD5.5	5.5	6	8	52
SD6	6	6	8	52
SD6.5	6.5	10	10	60
SD7	7	10	10	60
SD7.5	7.5	10	10	60
SD8	8	10	11	61
SD8.5	8.5	10	11	61
SD9	9	10	11	61
SD9.5	9.5	10	11	61
SD10	10	10	13	63
SD11	11	12	13	70
SD12	12	12	16	73
SD13	13	12	16	73
SD14	14	12	16	73
SD15	15	12	16	73
SD16	16	16	19	79
SD17	17	16	19	79

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Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
SD18	18	16	19	79
SD19	19	16	19	79
SD20	20	16	22	88
SD22	22	25	22	88
SD24	24	25	26	102
SD25	25	25	26	102
SD26	26	25	26	102
SD28	28	25	26	102
SD30	30	25	26	102
SD32	32	32	32	112
SD34	34	32	32	112
SD36	36	32	32	112
SD40	40	32	38	118
SD45	45	32	38	118
SD50	50	32	41	118

Note: Also available TiN and TiCN coated

LONG SERIES SLOT DRILLS HSS-CO8 PLAIN SHANK WITH WELDON FLATS

DIN 844

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
LPSD3	3	6	8	52
LPSD4	4	6	11	55
LPSD5	5	6	13	57
LPSD6	6	6	13	57
LPSD7	7	10	16	66
LPSD8	8	10	19	69
LPSD9	9	10	19	69
LPSD10	10	10	22	72
LPSD12	12	12	26	83
LPSD14	14	12	26	83
LPSD16	16	16	32	92
LPSD18	18	16	32	92
LPSD20	20	20	38	104
LPSD22	22	20	38	104

Note: Also available in TiN and TiCN coated

LONG SERIES SLOT DRILLS HSS-CO8 THREADED SHANK

DIN 844

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
LSD1.5	1.5	6	7	51
LSD2	2	6	7	51
LSD2.5	2.5	6	8	52
LSD3	3	6	8	52
LSD3.5	3.5	6	10	54
LSD4	4.	6	11	55
LSD4.5	4.5	6	11	55
LSD5	5	6	13	57
LSD5.5	5.5	6	13	57
LSD6	6	6	13	57
LSD6.5	6.5	10	16	66
LSD7	7	10	16	66
LSD7.5	7.5	10	16	66
LSD8	8	10	19	69
LSD8.5	8.5	10	19	69
LSD9	9	10	19	69
LSD9.5	9.5	10	19	69
LSD10	10	10	22	72
LSD11	11	12	22	79
LSD12	12	12	26	83

Continued ...

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Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
LSD13	13	12	26	83
LSD14	14	12	26	83
LSD15	15	12	26	83
LSD16	16	16	32	92
LSD17	17	16	32	92
LSD18	18	16	32	92
LSD19	19	16	32	92
LSD20	20	20	38	104
LSD22	22	20	38	104
LSD24	24	25	45	121
LSD25	25	25	45	121
LSD26	26	25	45	121
LSD28	28	25	45	121
LSD30	30	25	45	121

Note: Also available in TiN and TiCN coated

STANDARD BALL NOSE SLOT DRILLS PLAIN SHANK

DIN 844

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
PBSD3	3	6	5	49
PBSD3.5	3.5	6	6	50
PBSD4	4	6	7	51
PBSD4.5	4.5	6	7	51
PBSD5	5	6	8	52
PBSD5.5	5.5	6	8	52
PBSD6	6	10	10	60
PBSD7	7	10	11	61
PBSD8	8	10	11	61
PBSD9	9	10	13	63
PBSD10	10	12	13	70
PBSD11	11	12	16	73
PBSD12	12	12	16	73
PBSD13	13	12	16	73
PBSD14	14	12	16	73
PBSD15	15	16	19	79
PBSD16	16	16	19	79
PBSD17	17	16	19	79
PBSD18	18	16	19	79
PBSD19	19	16	22	82
PBSD20	20	20	22	88
PBSD22	22	25	26	102
PBSD24	24	25	26	102
PBSD25	25			

Note: Also available in TiN and TiCN coated

STANDARD BALL NOSE SLOT DRILLS HSS-CO8 THREADED SHANK

DIN 844

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
BSD3	3	6	5	49
BSD3.5	3.5	6	6	50
BSD4	4	6	7	51
BSD4.5	4.5	6	7	51
BSD5	5	6	8	52

Continued ...

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Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
BSD5.5	5.5	6	8	52
BSD6	6	6	8	52
BSD7	7	10	10	60
BSD8	8	10	11	61
BSD9	9	10	11	61
BSD10	10	10	13	63
BSD11	11	12	13	70
BSD12	12	12	16	73
BSD13	13	12	16	73
BSD14	14	12	16	73
BSD15	15	12	16	73
BSD16	16	16	19	79
BSD17	17	16	19	79
BSD18	18	16	19	79
BSD19	19	16	19	79
BSD20	20	16	22	82
BSD22	22	20	22	88
BSD24	24	25	26	102
BSD25	25	25	26	102

Note: Also available TiN and TiCN coated

LONG SERIES BALL NOSE SLOT DRILLS HSS-CO8 PLAIN SHANK

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
LPBSD3	3	6	8	52
LPBSD4	4	6	11	55
LPBSD5	5	6	13	57
LPBSD6	6	6	13	57
LPBSD7	7	10	16	66
LPBSD8	8	10	19	69
LPBSD9	9	10	19	69
LPBSD10	10	10	22	72
LPBSD12	12	12	26	83
LPBSD13	13	12	26	83
LPBSD14	14	12	26	83
LPBSD15	15	12	26	83
LPBSD16	16	16	32	92
LPBSD17	17	16	32	92
LPBSD18	18	16	32	92
LPBSD20	20	20	38	104
LPBSD22	22	20	38	104
LPBSD25	25	25	45	121
LPBSD26	26	25	45	121
LPBSD28	28	25	45	121
LPBSD30	30	25	45	121

LONG SERIES BALL NOSE SLOT DRILLS HSS-CO8 THREADED SHANK

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
LBSD3	3	6	8	52
LBSD4	4	6	11	55
LBSD5	5	6	13	57
LBSD6	6	6	13	57
LBSD7	7	10	16	66
LBSD8	8	10	19	69
LBSD9	9	10	19	69

Continued ...

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Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
LBSD10	10	10	22	72
LBSD12	12	12	26	83
LBSD13	13	12	26	83
LBSD14	14	12	26	83
LBSD15	15	12	26	83
LBSD16	16	16	32	92
LBSD17	17	16	32	92
LBSD18	18	16	32	92
LBSD20	20	20	38	104
LBSD22	22	20	38	104
LBSD25	25	25	45	121
LBSD26	26	25	45	121
LBSD28	28	25	45	121
LBSD30	30	25	45	121

Note: Also available TiN and TiCN coated

STANDARD END MILLS HSS-CO PLAIN SHANK WITH WELDON FLATS CENTRE CUTTING

DIN 844

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
PEM2	2	6	7	51	4
PEM3	3	6	8	52	4
PEM4	4	6	11	55	4
PEM5	5	6	13	57	4
PEM6	6	6	13	57	4
PEM7	7	10	16	66	4
PEM8	8	10	19	69	4
PEM9	9	10	19	69	4
PEM10	10	10	22	72	4
PEM11	11	12	22	79	4
PEM12	12	12	26	83	4
PEM13	13	12	26	83	4
PEM14	14	12	26	83	4
PEM16	16	16	32	92	4
PEM17	17	16	32	92	4
PEM18	18	16	32	92	4
PEM20	20	16	38	98	4
PEM22	22	20	38	104	6
PEM25	25	25	45	121	6
PEM30	30	25	45	121	6

Note: Also available in TiN and TiCN coated

STANDARD END MILLS HSS-CO8 THREADED SHANK CENTRE CUTTING

DIN 844

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
EM2	2	6	7	51	4
EM2.5	2.5	6	8	52	4
EM3	3	6	8	52	4
EM3.5	3.5	6	10	54	4
EM4	4	6	11	55	4
EM4.5	4.5	6	11	55	4
EM5	5	6	13	57	4
EM5.5	5.5	6	13	57	4
EM6	6	6	13	66	4
EM6.5	6.5	10	16	66	4

...continued

...continued

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
EM7	7	10	16	66	4
EM7.5	7.5	10	16	66	4
EM8	8	10	16	66	4
EM8.5	8.5	10	16	66	4
EM9	9	10	19	69	4
EM9.5	9.5	10	19	69	4
EM10	10	10	22	72	4
EM11	11	12	22	79	4
EM12	12	12	26	83	4
EM13	13	12	26	83	4
EM14	14	12	26	83	4
EM15	15	16	26	83	4
EM16	16	16	32	92	4
EM18	18	16	32	92	4
EM19	19	16	32	92	4
EM20	20	16	38	104	4
EM22	22	25	38	104	6
EM25	25	25	45	121	6
EM28	28	25	45	121	6
EM30	30	25	45	121	6
EM32	32	32	53	133	6
EM34	34	32	53	143	6
EM36	36	32	53	143	6
EM38	38	32	63	143	6
EM40	40	32	63	143	6

Note: Also available TiN and TiCN coated

LONG SERIES END MILLS HSS-CO PLAIN SHANK WITH WELDON FLAT

DIN 844

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
LPEM3	3	6	12	56	4
LPEM4	4	6	19	63	4
LPEM5	5	6	24	68	4
LPEM6	6	6	24	68	4
LPEM7	7	10	30	80	4
LPEM8	8	10	38	88	4
LPEM9	9	10	38	88	4
LPEM10	10	10	45	75	4
LPEM11	11	12	45	102	4
LPEM12	12	12	53	110	4
LPEM14	14	12	53	110	4
LPEM16	16	16	63	123	4
LPEM18	18	16	63	123	4
LPEM20	20	16	75	141	4
LPEM22	22	25	75	141	6
LPEM24	24	25	90	166	6
LPEM25	25	25	90	166	6

Note: Also available in TiN and TiCN coated

LONG SERIES END MILLS HSS-CO8 THREADED SHANK

DIN 844

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
LEM2	2	6	10	54	4
LEM2.5	2.5	6	12	56	4
LEM3	3	6	12	56	4
LEM3.5	3.5	6	15	59	4
LEM4	4	6	19	63	4

...continued

...continued

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
LEM4.5	4.5	6	19	63	4
LEM5	5	6	24	68	4
LEM5.5	5.5	6	24	68	4
LEM6	6	6	24	68	4
LEM6.5	6.5	10	30	80	4
LEM7	7	10	30	80	4
LEM7.5	7.5	10	30	80	4
LEM8	8	10	38	88	4
LEM8.5	8.5	10	38	88	4
LEM9	9	10	38	88	4
LEM9.5	9.5	10	38	88	4
LEM10	10	10	45	95	4
LEM11	11	12	45	102	4
LEM12	12	12	53	110	4
LEM13	13	12	53	110	4
LEM14	14	12	53	110	4
LEM15	15	12	53	110	4
LEM16	16	16	63	123	4
LEM17	17	16	63	123	4
LEM18	18	16	63	123	4
LEM19	19	16	63	123	4
LEM20	20	16	75	141	4
LEM22	22	25	75	141	6
LEM24	24	25	90	166	6
LEM25	25	25	90	166	6
LEM26	26	25	90	166	6
LEM28	28	25	90	166	6
LEM30	30	25	90	166	6
LEM32	32	32	106	186	6
LEM36	36	32	106	186	6
LEM40	40	40	125	217	6

Note: Also available TiN and TiCN coated

QUICK SPIRAL END MILLS HSS-CO8 PLAIN SHANK

DIN 844

Stock code	Ø mm 0/+0.04	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
QEM2	2	6	7	51	4
QEM3	3	6	8	52	4
QEM4	4	6	11	55	4
QEM5	5	6	13	57	4
QEM6	6	6	13	57	4
QEM7	7	10	16	66	4
QEM8	8	10	19	69	4
QEM9	9	10	19	69	4
QEM10	10	10	22	72	4
QEM12	12	12	26	83	4
QEM14	14	12	26	83	4
QEM16	16	16	32	92	4
QEM18	18	16	32	92	4
QEM20	20	16	38	98	4

ROUGHING END MILLS STD SERIES HSS-CO THREADED SHANK

DIN 844

Stock code	Ø mm js12	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
R6	6	6	13	57	3
R7	7	10	16	66	3
R8	8	10	19	69	3
R9	9	10	19	69	3
R10	10	10	22	72	4

...continued

...continued

Stock code	Ø mm js12	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
R6	6	6	13	57	3
R7	7	10	16	66	3
R8	8	10	19	69	3
R9	9	10	19	69	3
R10	10	10	22	72	4
R11	11	12	22	79	4
R13	13	12	26	83	4
R14	14	12	26	83	4
R15	15	12	26	83	4
R16	16	16	32	92	4
R17	17	16	32	92	4
R18	18	16	32	92	4
R19	19	16	32	92	4
R20	20	16	38	98	4
R22	22	25	38	104	5
R24	24	25	45	121	5
R25	25	25	45	121	5
R26	26	25	45	121	6
R28	28	25	45	121	6
R30	30	25	45	121	6
R32	32	32	53	133	6
R35	35	32	53	133	6
R36	36	32	53	133	6
R38	38	32	63	155	6
R40	40	32	63	155	6
R50	50	32	75	155	6

ROUGHING END MILLS LONG SERIES HSS-CO THREADED SHANK

DIN 844

Stock code	Ø mm js12	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
LR10	10	10	45	95	4
LR12	12	12	53	110	4
LR14	14	12	53	110	4
LR15	15	12	53	110	4
LR16	16	16	63	123	4
LR18	18	16	63	123	4
LR20	20	16	75	135	4
LR22	22	25	75	151	5
LR24	24	25	90	166	5
LR25	25	25	90	166	5
LR26	26	25	90	166	6
LR28	28	25	90	166	6
LR30	30	25	90	166	6
LR32	32	32	106	186	6
LR35	35	32	106	186	6
LR36	36	32	106	186	6
LR40	40	32	125	217	6

FINE PITCH RIPPING CUTTERS M42 HSS-CO PLAIN SHANK

DIN 844

...continued

...continued

FINE PITCH RIPPING CUTTERS CONT..

Stock code	Ø mm js12	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
FR6	6	6	13	57	3
FR8	8	10	19	69	3
FR10	10	10	22	72	4
FR12	12	12	26	83	4
FR14	14	12	26	83	4
FR16	16	16	32	92	4
FR18	18	16	32	92	4
FR20	20	16	38	104	4
FR22	22	25	38	104	5
FR25	25	25	45	121	5
FR30	30	25	45	121	5

SOLID CARBIDE SLOT DRILLS

Stock code	Ø mm	Flute length mm	Overall length mm	Shank Ø mm
CSD1	1	3	39	3
CSD1.5	1.5	5	39	3
CSD2	2	7	39	3
CSD2.5	2.5	7	39	3
CSD3	3	12	32	3
CSD3.5	3.5	12	51	4
CSD4	4	12	40	4
CSD5	5	14	50	5
CSD6	6	16	50	6
CSD8	8	20	60	8
CSD9	9	22	70	10
CSD10	10	22	70	10
CSD12	12	25	76	12
CSD14	14	30	89	14
CSD16	16	25	75	16
CSD20	20	32	100	20

SOLID CARBIDE COATED SLOT DRILLS GRADE K2

DIN 6528 Two flute

Stock code	Ø mm	Flute length mm	Overall length mm	Shank Ø mm
CSD4K2	4	8	50	4
CSD5K2	5	10	50	5
CSD6K2	6	10	57	6
CSD8K2	8	16	63	8
CSD10K2	10	8	72	10
CSD12K2	12	10	83	12
CSD16K2	16	10	92	16
CSD20K2	20	16	104	20

SOLID CARBIDE COATED BALL NOSE SLOT DRILLS GRADE K2

Stock code	Ø mm	Flute length mm	Overall length mm	Shank Ø mm
CBSD3K2	3	5	75	3
CBSD4K2	4	8	75	4
CBSD5K2	5	9	75	5
CBSD6K2	6	10	100	6
CBSD8K2	8	12	100	8
CBSD10K2	10	14	100	10
CBSD12K2	12	16	100	12
CBSD14K2	14	18	100	14
CBSD16K2	16	22	150	16

SOLID CARBIDE COATED END MILLS GRADE K2

DIN 6528 Four flute

Stock code	Ø mm	Flute length mm	Overall length mm	Shank Ø mm
CEM4K2	4	11	50	4
CEM5K2	5	13	50	5
CEM6K2	6	13	57	6
CEM8K2	8	19	63	8
CEM10K2	10	22	72	10
CEM12K2	12	26	83	12
CEM16K2	16	32	92	16
CEM20K2	20	20	38	20

X5070 SOLID CARBIDE COATED END MILLS DRILLS WITH CORNER RADIUS

Futura XC coated. For machining hardened materials. Suitable for high speed dry cutting.

Stock code	Ø mm	Corner radius mm	Flute length mm	Overall length mm	Shank Ø mm
CSD0.8XX.05	0.8	0.05	1.2	40	3
CSD1XX.1	1	0.1	1.5	40	3
CSD1.5XX.1	1.5	0.1	2.2	40	3
CSD2XX.1	2	0.1	6	40	3
CSD2.5XX.1	2.5	0.1	6	40	3
CSD3XX.1	3	0.1	6	45	6
CSD3.5XX.1	3.5	0.1	7	45	6
CSD4XX.1	4	0.1	9	45	6
CSD4.5XX.1	4.5	0.1	9	45	6
CSD5XX.2	5	0.2	10	50	6
CSD6XX.2	6	0.2	11	50	6
CSD8XX.2	8	0.2	18	60	8
CSD10XX.3	10	0.2	25	75	10
CSD12XX.3	12	0.3	30	75	12
CSD16XX.3	16	0.3	38	90	16
CSD20XX.3	20	0.3	45	100	20

X5070 SOLID CARBIDE BALL NOSE SLOT DRILLS

Futura XC coated. For machining hardened materials. Suitable for high speed dry cutting

Stock code	Ø mm	Flute length mm	Overall length mm	Shank Ø mm
CBSD1XX	1	1	50	4
CBSD1.2XX	1.2	1.2	50	4
CBSD1.5XX	1.5	1.5	50	4
CBSD2XX	2	2	50	6
CBSD3 XX	3	3	60	6
CBSD4XX	4	4	70	6
CBSD5XX	5	5	80	6
CBSD6XX	6	6	90	6
CBSD7XX	7	7	90	8
CBSD8XX	8	8	100	8
CBSD9XX	9	9	100	10
CBSD10XX	10	10	100	10
CBSD12XX	12	12	110	12

SOLID CARBIDE END MILLS

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SOLID CARBIDE END MILLS CONT...

Stock code	Ø mm	Flute length mm	Overall length mm	Shank Ø mm
CEM1YG	1	5	39	3
CEM1.5YG	1.5	5	39	3
CEM2	2	5	39	3
CEM2.5	2.5	7	39	3
CEM3	3	12	32	3
CEM4	4	14	51	4
CEM5	5	14	50	5
CEM6	6	16	64	6
CEM8	8	20	60	8
CEM10	10	20	70	10
CEM12	12	22	70	12
CEM14	14	25	75	14
CEM16	16	25	75	16
CEM20	20	32	100	20
CEM25	25	38	102	25

X5070 SOLID CARBIDE END MILLS WITH CORNER RADIUS

Futura XC coated. For machining hardened materials. Suitable for high speed dry cutting.

Stock code	Ø mm	Corner radius mm	Flute length mm	Overall length mm	Shank Ø mm
CEM1XX.1	1	0.1	1.5	40	3
CEM1.5XX	1.5	0.1	2.2	40	3
CEM2XX.1	2	0.1	6	40	3
CEM2.5XX.1	2.5	0.1	6	40	3
CEM3XX.1	3	0.1	7	45	6
CEM3.5XX.1	3.5	0.1	9	45	6
CEM4XX.1	4	0.1	9	45	6
CEM4.5XX.1	4.5	0.1	10	45	6
CEM5XX.2	5	0.2	11	50	6
CEM6XX.2	6	0.2	14	50	6
CEM8 XX.2	8	0.2	18	60	8
CEM10XX.3	10	0.2	25	75	10
CEM12XX.3	12	0.3	30	75	12
CEM16XX.3	16	0.3	38	90	16
CEM20XX.3	20	0.3	45	100	20

X-POWER SOLID CARBIDE END MILLS

TiALN coated. For milling hardened steels up to HRc 65. Excellent performance when dry cutting.

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm
CEM6X	6	6	13	50
CEM8X	8	8	19	60
CEM10X	10	10	22	70
CEM12X	12	12	26	75

X-POWER QUICK SPIRAL SOLID CARBIDE END MILLS

TiALN coated. For milling hardened steels up to HRc 65. For very high speed machinig. Excellent performance when dry cutting.

Stock code	Ø mm e8	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
CQEM6X	6	6	13	57	6
CQEM8X	8	8	19	63	6
CQEM10X	10	10	22	72	6
CQEM12X	12	12	26	83	6

X-POWER SOLID CARBIDE ROUGHING END MILLS

TiALN coated. For milling hardened steels up to HRc 65. For very high speed machinig. Excellent performance when dry cutting.

Stock code	Ø e8 mm	Shank Ø mm h6	Flute length mm	Overall length mm	No of teeth
CFR6X	6.0	6	7	54	3
CFR8X	8.0	8	9	58	3
CFR10X	10.0	10	14	66	4
CFR12X	12.0	12	16	73	4
CFR16X	16.0	16	22	82	4
CFR20X	20.0	20	26	92	4
CFR25X	25.0	25	26	110	5

X-POWER SOLID CARBIDE BALL NOSE SLOT DRILLS

Two flute. TiALN coated. For milling hardened steels up to HRc 65. Excellent performance when dry cutting.

Stock code	Ø e8 mm	Shank Ø mm h6	Flute length mm	Overall length mm
CBSD2X	2	6	3	50
CBSD3X	3	6	4	50
CBSD4X	4	6	5	54
CBSD5X	5	6	6	54
CBSD6X	6	6	7	54
CBSD8X	8	8	9	58
CBSD10X	10	10	11	66
CBSD12X	12	12	12	73
CBSD16X	16	16	16	88

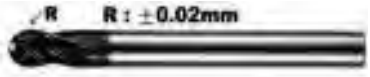
X POWER SOLID CARBIDE BALL NOSE SLOT DRILLS - LONG SERIES

Two flute. TiALN coated. For milling hardened steels up to HRc 65. Excellent performance when dry cutting.

Stock code	Ø e8 mm	Shank dia h6	Flute length mm	Overall length mm
LCBSD2X	2	6	5	50
LCBSD3X	3	6	8	60
LCBSD4X	4	6	8	70
LCBSD5X	5	6	10	80
LCBSD6X	6	6	12	90
LCBSD8X	8	8	14	90
LCBSD10X	10	10	18	100

X POWER SOLID CARBIDE 4 FLUTE BALL NOSE END MILLS - LONG LENGTH

TiALN coated. For milling hardened steels up to HRc 65. Excellent performance when dry cutting.



Stock code	Ø e8 mm	Shank Ø h6	Flute length mm	Overall length mm
LCBEM1X	1	4	2.5	50
LCBEM2X	2	6	5	50
LCBEM3X	3	6	8	60
LCBEM4X	4	6	8	70
LCBEM5X	5	6	10	80
LCBEM6X	6	6	13	89
LCBEM8X	8	8	14	102
LCBEM10X	10	10	19	102
LCBEM12X	12	12	22	108
LCBEM16X	16	16	32	140

X POWER SOLID CARBIDE END MILLS - RADIUSED TEETH

TiALN coated. Radiused end teeth for additional strength.

Stock code	Ø e8 mm	Tooth radius	Shank Ø h6	Flute length mm	Overall length mm
CEM6Q.5	6	R0.5	6	13	70
CEM8Q.5	8	R0.5	8	19	90
CEM10Q.5	10	R0.5	10	22	100
CEM12Q.5	12	R0.5	12	26	110
CEM16Q1	Z6	R1.0	16	32	130
CEM20Q1	20	R1.0	20	38	140
CEM20Q1.5	20	R1.5	20	38	140

JET POWER STANDARD TWO FLUTE 35° HELIX PLAIN SHANK SLOT DRILLS

Ultra micro grain carbide. TiALN coated. For stainless steel and alloy steels under HRc 45.

Stock code	Ø e8 mm	Shank Ø h6	Flute length mm	Overall length mm
CSD2J	2	6	6	40
CSD4J	4	6	11	45
CSD6J	6	6	13	50
CSD8J	8	8	19	60
CSD10J	10	10	22	70
CSD12J	12	12	26	75

JET POWER STANDARD FOUR FLUTE 35° HELIX PLAIN SHANK END MILLS

Ultra micro grain carbide. TiALN coated. For stainless steel and alloy steels under HRc 45.

Stock code	Ø e8 mm	Shank Ø h6	Flute length mm	Overall length mm
CEM6J	6	6	13	57
CEM8J	8	8	19	69
CEM10J	10	10	22	72
CEM12J	12	12	26	83

JET POWER STANDARD MULTI FLUTE 50° HELIX PLAIN SHANK END MILLS

Ultra micro grain carbide. TiALN coated. For stainless steel and alloy steels under HRc 45.

Stock code	Ø e8 mm	Shank Ø h6	Flute length mm	Overall length mm
CQEM6J	6	6	13	50
CQEM8J	8	8	19	60
CQEM10J	10	10	22	70
CQEM12J	12	12	25	75
CQEM16J	16	16	32	90
CQEM20J	20	20	38	100

JET POWER SHORT LENGTH MULTI FLUTE 45° HELIX FINE PITCH RIPPER

Ultra micro grain carbide. TiALN coated. For stainless steel and alloy steels under HRc 45.

Stock code	Ø e8 mm	Shank Ø h6	Flute length mm	Overall length mm
CFRS8J	8	8	9	58
CFRS10J	10	10	14	66
CFRS12J	12	12	16	73
CFRS16J	16	16	22	82
CFRS18J	18	18	24	84
CFRS20J	20	20	26	92

JET POWER STANDARD LENGTH MULTI FLUTE 45° HELIX FINE PITCH RIPPER

Ultra micro grain carbide. TiALN coated. For stainless steel and alloy steels under HRc 45.

Stock code	Ø e8 mm	Shank Ø h6	Flute length mm	Overall length mm
CFR8J	8	8	16	57
CFR10J	10	10	22	72
CFR12J	12	12	26	83
CFR14J	14	14	26	83
CFR16J	16	16	32	92
CFR25J	25	25	45	121

ALU-POWER SINGLE FLUTE CARBIDE SLOT DRILL

Stock code	Ø mm	Shank Ø h6	Flute length mm	Overall length mm
ICSD3ALU	3	4	12	50
ICSD4ALU	4	4	15	60
ICSD5ALU	5	5	17	60
ICSD6ALU	6	6	20	65
ICSD8ALU	8	8	22	65
ICSD10ALU	10	10	25	70

ALU POWER STANDARD TWO FLUTE 45° HELIX SLOT DRILLS

Ultra grain carbide. For aluminium.

Stock code	Ø h10 mm	Shank dia h6	Flute length mm	Overall length mm
CSD3ALU	3	6	8	57
CSD4ALU	4	6	11	57
CSD5ALU	5	6	13	57
CSD6ALU	6	6	13	57
CSD8ALU	8	8	19	63
CSD10ALU	10	10	22	72
CSD12ALU	12	12	26	83
CSD14ALU	14	14	26	83
CSD16ALU	16	16	32	92

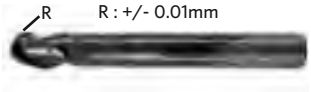
ALU POWER TWO FLUTE 45° HELIX, TiCN COATED SLOT DRILLS

Ultra grain carbide. For aluminium.

Stock code	Ø h10 mm	Shank dia h6	Flute length mm	Overall length mm
CSD3ALUTICN	3	6	8	57
CSD4ALUTICN	4	6	11	57
CSD5ALUTICN	5	6	13	57
CSD6ALUTICN	6	6	13	57

ALU POWER STANDARD BALL NOSE SLOT DRILLS TiCN COATED

Ultra grain carbide. For aluminium.



Stock code	Ø e8 mm	Shank dia h6	Flute length mm	Overall length mm
CBSD2ALUTICN	2	6	3	60
CBSD3ALUTICN	3	6	4.5	60
CBSD4ALUTICN	4	6	6	65
CBSD5ALUTICN	5	6	7.5	65
CBSD6ALUTICN	6	6	9	75
CBSD8ALUTICN	8	8	12	75
CBSD10ALUTICN	10	10	15	80
CBSD12ALUTICN	12	12	18	90
CBSD16ALUTICN	16	16	24	100

ALU POWER SHORT LENGTH, MULTI FLUTE ROUGHING END MILLS, TiALN COATED

Ultra grain carbide. For aluminium.

Stock code	Ø js12 mm	Shank dia h6	Flute length mm	Overall length mm
CRS12ALUTIALN	12	12	26	83
CRS14ALUTIALN	14	12	26	83
CRS16ALUTIALN	16	16	32	92
CRS18ALUTIALN	18	16	32	92
CRS20ALUTIALN	20	20	38	104

SWIVEL BLADES

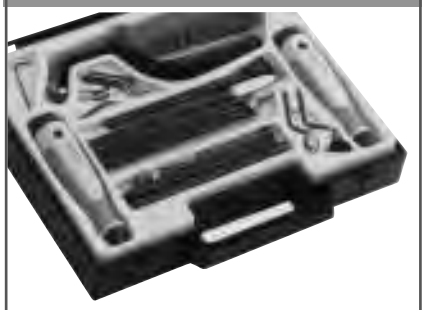
ROTO DRIVE COUNTERSINKS

SCRAPERS

DOUBLE EDGE CUTTING

CERAMICS

SETS AND KITS



NG HANDLE

NG1000 Holds all 's' blades with large s

NG1003 With 3 blades - S10, S20, S35

NG1005 With 5 blades - S10, S20, S35, S101, S202

NG3000 Holds all blade holders

NG3003 NG3000 handle, S holder, S20, S30,s100 blades

S HOLDER

EL02003 Blade holder. Telescopes from 30-115mm. Holds all 's' blades.

N HOLDER

EL01033 Holds light duty 2.6mm blades. Telescopes from 25-115mm. Holds all "N" blades

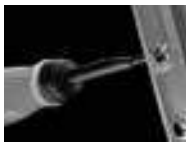
C HOLDER

EL03003 HoldsC12, C20, C30 countersink heads

EDGE OFF

EO1000 Edge off disposable tool


NG3700 Fine Mini scraper for internal scraping
Blade BD5010

NG3710 Fine internal scraper for deburring bottom side of holes
Blade BD6610



EO1000 Disposable burr tool. With S 10 blade

RB1000 Rapid burr alluminium handle With S 10 blade


NG3800 Leader Burr. External chamfering tool.


NG3100 Countersink with 20mm ø counersink.


NG1200 Roto-drive countersink.
Cranked bit holder with 10.4mm ø countersink.
The quickest way to chamfer by hand


NG3400 Roto-drive countersink
Cranked bit holder with 20mm ø countersink.
The quickest way to chamfer by hand

Continued ...

...Continued


NG3500 Chamfer the OD on bars and tubes
Range 8-28mm


DB1000 Double Burr for sheet metal.


NG3300 Keyway deburring tool.


Blade CR6000 - soft 65˚
CR6100 - hard 75˚

NC5100 Handle with ceramic blade for soft abrasive plastic.
NC5200 Handle with ceramic blade for hard abrasive plastic.
NC5000 Handle only.


BLADE : BT1200

SC1500 Heavy duty adjustable scraper Blade 7.4mm x 120mm


BLADE : BT8001

SC8000 Adjustable scraper Blade 4.2mm x 80mm

COUNTERSINKING / REVERSE COUNTERSINKING


RC1000 Range 3-5.5mm Ø
RC2000 Range 5-9mm Ø
RC2200 Range 10-22mm Ø

Continued ...

TUBE REAMER PLASTIC BODY

for aluminium, brass and copper tubing

Stock Code	Range	Blades
SP8100	4-42mm	3

DEBURRING SYSTEM SWIVEL BLADES REGULAR SIZE BLADES TYPE S HEAVY DUTY

BS1010		Heavy duty. For steel, aluminium and plastic.
BS1012		PVD coated TIN for high wear materials.
BS2010		Heavy duty for brass and cast iron.
BS3010		Simultaneously removes external and internal burrs.
BS3510		For straight edges.
BS6001		For deburring the inside of cross holes and back side of walls.

REGULAR SIZE BLADES - TYPE K

BK1010		Fine point blade for small holes, for steel, plastic and aluminium.
BK1012		PVD coated TIN
BK2010		Fine point blade with heavy duty shank for brass and cast iron.

SMALL SIZE BLADES - LIGHT DUTY TYPE N

BN1010		For steel, plastic and aluminium.
BN1012		PVD coated TIN for high wear materials
BN2010		For brass and cast iron.
BN3010		Simultaneously removes external and internal burrs.

...Continued

CRANKED BLADES

BC3201		Patented cranked Countersink 3.2mm for small holes 0-3mm
BC6301		Patented cranked Countersink 6.3mm
BC8301		Patented cranked Countersink 8.3mm
BC1041		Patented cranked Countersink 10.4mm
BC1651		Patented cranked Countersink 16.5mm
EX2001		Patented cranked External Countersink

FIXED BLADES

BN8010		Blades used with double-burr.
BN8043		M42-Co for stainless steel.
BN7001		For keyways 1.2-8 mm.
BN9009		For keyways 3-15 mm.
BL1001		Blade used with leader for steel and aluminium.
BC1211		12 mm Countersink, fits into C-holder
BC2011		20 mm Countersink, fits into C-holder
BC3011		30 mm Countersink, fits into C-holder

SCRAPER BLADES

BD5010

Internal MiniScraper 3mm

BD6610

Internal Scraper Blade 3.2mm

BD8001

Double Ended Triangular Scraper 4.2mm

BT1200

Double Ended Triangular Scraper 7.4mm

PLATINUM BOX

Stock code

NG9500

Meets the total requirements of tool and die makers and for deburring specialists
Includes: Double Burr, NogaGrip 1 handle, NogaGrip 3 handle, Teddy Burr handle, S holder, N holder, D holder + D50, D holder + D66, K holder + N80K, C holder + C20 Countersink, T holder + T70, 18mm external RotoDrive blade, 10.4mm countersink RotoDrive Swivel Blades: N1, N2, S10, S20, S30, S150, 1.5mm Hex Key.

GOLD BOX

Stock code

NG9400

The most complete box for professional machinists.
Includes: NogaGrip 3 handle, Ajustable scraper, Plastic Edge Off handle, S holder, N holder, D holder + D50, K holder + N80K, C holder + C20, Swivel Blades: N1, N2, S10, S20, S30, S150, D66, 10.4mm countersink RotoDrive, 1.5mm Hex Key.

SILVER BOX

Stock code

NG9300

The most suitable for MRO
Includes: NogaGrip 3 handle,
S holder, Medium reversible countersink, Plastic Edge Off handle, 3.2mm RotoDrive countersink, 10.4mm RotoDrive countersink, 16.5mm RotoDrive countersink, 18mm External RotoDrive, Swivel Blades: S10, S20, S30

BRONZE UNIKIT

Stock code

NG9200

The most economical deburring kit for all machinists.

Includes:NogaGrip 3 handle,
S holder, N holder, C holder + C20, D holder + D50,
Swivel Blades: N1, N2, S10, S20, S30, S150

THE SET

Stock code

SP7700

The 7 most popular tools.
Includes : NG3003 handle and S blades, NG 3100 countersink, NG3300 keyway, NG3710 internal scraper.
NG3200 Vcut, NG3700 mini scraper and SC 8000 adjustable scraper.

BAND SAW BLADING

DoALL DART CARBON HARD BACK

Use this blade to cut:
mild steels, cast iron, wood, lead, zinc, aluminium, copper, bronze and brass.

Stock Code	Size	Gauge	Set
CSBSB5x14	5x14 precision	0.6	1.09
CSBSB5x18	5x18 precision	0.6	1.09
CSBSB6x10	6x10 precision	0.6	1.09
CSBSB6x14	6x15 precision	0.6	1.09
CSBSB6x18	6x18 precision	0.6	1.09
CSBSB10x4C	10x4 claw	0.6	1.09
CSBSB10x6C	10x6 claw	0.6	1.09
CSBSB10x8	10x8 precision	0.6	1.09
CSBSB10x10	10x10 precision	0.6	1.09
CSBSB10x14	10x14 precision	0.6	1.09
CSBSB10x18	10x18 precision	0.6	1.09

Stock Code	Size	Gauge	Set
CSBSB13x6	13x6 precision	0.6	1.09
CSBSB13x10	13x10 precision	0.6	1.09
CSBSB13x14	13x14 precision	0.6	1.09
CSBSB13x18	13x18 precision	0.6	1.09
CSBSB13x4C	13x4 claw	0.6	1.09
CSBSB13x6C	13x6 claw	0.6	1.09
CSBSB13x24	13x24 precision	0.6	1.09
CSBSB16x10	16x10 precision	0.8	1.37
CSBSB19x6	19x6 precision	0.8	1.37
CSBSB19x8	19x8 precision	0.8	1.37
CSBSB19x10	19x10 precision	0.8	1.37
CSBSB19x14	19x14 precision	0.8	1.37
CSBSB19x19C	19x19 claw	0.8	1.37
CSBSB25x6	25x6 precision	0.9	1.47
CSBSB25x8	25x8 precision	0.9	1.47
CSBSB25x10	25x10 precision	0.9	1.47
CSBSB25x14	25x14 precision	0.9	1.47

DoALL METAL MASTER CARBON FLEX BACK

Use this blade to cut:
mild steels, cast iron, brass, lead, zinc, non-ferrous metals, plastic, copper, cork, wood, bronze and fiberglass.

Stock Code	Size	Gauge	Set
MMBSB6x10	6x10	0.6	1.09
MMBSB6x14	6x14	0.6	1.09

DoALL PENETRATOR

Use this blade to cut:
Mild steels, Stainless steels, Inconel, High speed steels, Hastelloy, Titanium, Alloy steels, Uranium, Tool steels, Waspalloy , Die steels, Monel, High nickel, Zirconium, Chrome, Moly steels.

Features
- Precision ground tooth
- Curvilinear tooth profile
- M42 8% cobalt cutting edge

Benefits
- Reduced chipping
- Faster cutting, less chipping
- Better wear resistance

Stock Code	Size	Gauge	Set
BMBSB27x2-3P	27x2-3	1.1	1.65
BMBSB27x3-4P	27x3-4	0.9	1.47
BMBSB27x4-6P	27x4-6	0.9	1.47
BMBSB27x5-8P	27x5-8	0.9	1.40
BMBSB34x1.3P	34x1.3	1.1	1.83
BMBSB34x2-3P	34x2-3	1.1	1.65
BMBSB34x3-4P	34x3-4	1.1	1.65
BMBSB34x4-6P	34x4-6	1.1	1.65
BMBSB34x5-8P	34x5-8	1.1	1.57
BMBSB41x1.3P	41x1.3	1.3	2.16
BMBSB41x1.5-2P	41x1.5-2	1.3	2.03
BMBSB41x2-3P	41x2-3	1.3	2.03
BMBSB41x3-4P	41x3-4	1.3	2.03
BMBSB54x1.3P	54x1.3	1.6	2.54
BMBSB54x1.5-2P	54x1.5-2	1.6	2.54
BMBSB54x2-3P	54x2-3	1.6	2.54
BMBSB54x3-4P	54x3-4	1.6	2.41

DoALL STRUCTURAL

Sawing structurals and tubing.

Use this blade to cut:
Standard and Heavy Wall Tubing, Pipe, Bundles, Standard and Heavy Wall Structurals.

Features
- Enhanced tooth profile
- Positive rake
- Ground tooth profile
- Quiter cutting
- M42 8% cobalt cutting edge

Benefits
- Increased strength and chip resistance
- Aggressive cutting, lower cutting forces
- Smooth chip flow, increased fatigue life
- Prevents vibration and tooth chipping
- Better wear resistance

Stock Code	Size	Gauge	Set
BMBSB27x3-4SA	27x3-4	0.9	1.65
BMBSB27x4-6SA	27x4-6	0.9	1.65
BMBSB27x5-8SA	27x5-8	0.9	1.65
BMBSB34x3-4SA	34x3-4	1.1	2.03
BMBSB34x4-6SA	34x4-6	1.1	2.03
BMBSB41x3-4SA	41x3-4	1.3	2.54
BMBSB41x4-6SA	41x4-6	1.3	2.54
BMBSB54x3-4SA	54x3-4	1.6	2.79
BMBSB54x4-6SA	54x4-6	1.6	2.79

DoALL SILENCER II

High production for free cutting materials.

Use this blade to cut:
All metals in tubing, profiles, solids and budles.

Features
- M42 HSS tooth
- Positive rake tooth
- Special tooth form

Benefits
- Aggressive wear resistant
- Several wide set pitches for greater back clearance

Stock Code	Size	Gauge	Set
BMBSB19x3SII	19x3	0.9	1.47
BMBSB19x4-6SII	19x4-6	0.9	1.47
BMBSB27x3-4SII	27x3-4	0.9	1.47
BMBSB34x3-4SII	34x3-4	1.1	1.65
BMBSB41x3-4SII	41x3-4	1.3	2.29
BMBSB54x3-4SII	54x3-4	1.3	2.29
BMBSB54x4-6SII	54x4-6	1.3	2.29

DoALL SUPREME

Sawing work-hardening materials and superalloys.

Use this blade to cut:
Work Hardeing Alloys, High Temperature Alloys, Iconels, Monels, Hastalloy, Titanium.

The secret is in the stepped teeth and extended wave length tooth pattern:

Features
- Long length variable tooth height
- Positive rake tooth profile
- Powdered metal HSS tooth tips
- 70 Rc tooth cutting

Benefits
- Increased penetration & broaching action of large workpieces
- Faster, more aggressive cutting
- Tougher, long lasting cutting edges
- Better wear resistance

Stock Code	Size	Gauge	Set
BMBSB27x3-4I	27x3-4	0.9	1.65
BMBSB27x4-6I	27x4-6	0.9	1.65
BMBSB34x2-3I	34x2-3	1.1	1.78
BMBSB34x3-4I	34x3-4	1.1	1.78
BMBSB41x2-3I	41x2-3	1.3	2.16
BMBSB41x3-4I	41x3-4	1.3	2.16

DoALL SILENCER

Sawing structurals and tubing quietly.

Use this blade to cut:
All metals in tubing, profiles and small solids.

Features	Benefits
• Neutral rake tooth • Wide range sizes and pitches	• Strong wear-resistant, tool stays sharp longer • Best choice for machines with short blade lengths.

Stock Code	Size	Gauge	Set
BMBSB6x10-14CS	6x10-14	0.6	1.12
BMBSB10x5-8CS	10x5-8	0.6	1.12
BMBSB13x6-10CS	13x6-10	0.9	1.12
BMBSB13x10-14CS	13x10-14	0.9	1.12
BMBSB19x4-6S	19x4-6	0.9	1.47
BMBSB19x6-10S	19x6-10	0.9	1.47
BMBSB19x8-12S	19x8-12	0.9	1.47
BMBSB19x10-14S	19x10-14	0.9	1.47
BMBSB27x4-6S	27x4-6	0.9	1.47
BMBSB27x5-8S	27x5-8	0.9	1.47
BMBSB27x6S	27x6	0.9	1.47
BMBSB27x6-10S	27x6-10	0.9	1.47
BMBSB27x8-12S	27x8-12	0.9	1.47
BMBSB27x10S	27x10	0.9	1.47
BMBSB27x10-14S	27x10-14	0.9	1.47
BMBSB34x4-6S	34x4-6	1.1	1.65
BMBSB34x5-8S	34x5-8	1.1	1.65
BMBSB34x6-10S	34x6-10	1.1	1.65
BMBSB41x4-6S	41x4-6	1.3	2.54
BMBSB41x5-8S	41x5-8	1.3	2.03

ADVANCED BLADE TECHNOLOGY

KNIFE EDGE

For cutting plastic, foam rubber, sponge, wool, cloth, fibre glass, insulation and other soft materials.

Standard Width & Thickness mm:

3x0.6	10x0.45	20x0.5	25x0.81
3.6x0.6	10x0.5	20x0.63	30x0.45
4.5x0.8	12.7x0.5	20x0.81	30x0.5
6x0.38	12.7x0.81	25x0.5	40xx0.5
6x0.5	15x0.5	25x0.63	40x0.6

SCALLOP EDGE

For cutting more compact materials such as rubber, transformer coils, paper board, dense foam and fabric.

Standard Width & Thickness mm:

11x0.41	15x0.5	20x0.81	25x0.81
12.7x0.5	15x0.63	20x0.89	
12.7x0.63	20x0.5	25x0.5	
12.7x0.81	20x0.63	25x0.63	

V-TOOTH

For cutting polyurethane and other non-fibrous materials including high density foam.

Standard Width & Thickness mm:

3x0.45	10x0.5	20x0.5	40x0.5
3x0.6	12.7x0.5	25x0.5	
4.5x0.8	12.7x0.81	25x0.81	
6x0.5	15x0.5	30x0.5	

SPECTRA / BIMETAL M42

Bimetal Bandsaw Blades / No. 072 S

Bimetal bandsaw blade made of -4% high chrome alloyed backing material and a HSS cutting edge made of HSS M42 / material No. 1.3247 with a cobalt content of 8%. The teeth hardness of approx. 68 HRc combined with a tenacious backing material with highbending fatigue strength is ideal for the cutting of all common steels grades up to a hardness of approx. 45 HRc in all diameters. Honsberg Spectra is the cutting solution for universal usage of bimetal bandsaw blades with mixed materials and diameters for all types of steel and machinery.

Tooth Forms

Area of application

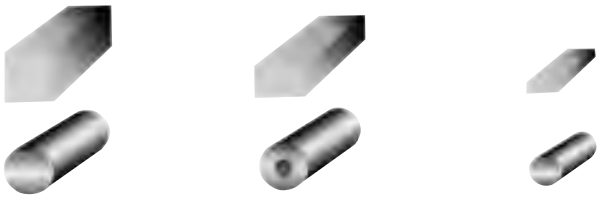
Stock Code		
BMBSB19X14SE	BMBSB27X10-14SP	BMBSB41X1.5-2KSP
BMBSB19X5-8SE	BMBSB27X2-3KSP	BMBSB54X2-3KSP
BMBSB19X6-10SE	BMBSB27X3-4KSP	
BMBSB19X8-12SE	BMBSB27X4-6KSP	
BMBSB19X10-14SE	BMBSB34X3-4SP	
BMBSB27X3-4SP	BMBSB34X4-6SP	
BMBSB27X14SP	BMBSB34X2-3KSP	
BMBSB27X4-6SP	BMBSB34X3-4KSP	
BMBSB27X6-10SP	BMBSB41X6-10SP	
BMBSB27X8-12SP	BMBSB41X2-3KSP	

DELTA / BIMETAL M42

Bimetal Bandsaw Blades / No. 073

Bimetal bandsaw blade made of -4% high chrome alloyed, tenacious backing material and a HSS cutting edge made of HSS M42 / material No. 1.3247 with a cobalt content of 8% and a hardness of approx. 68 HRc. This blade with an aggressive cutting angle of 16° positive is designed to cut solids and thick walled tubes and structurals on 2-column and swing type machinery with low vibrations.

Area of application



Stock Code

BMBSB41X1.5-2DE
BMBSB54X1.5-2DE

YORKSHIRE

BIMETAL M42

Price eficient Bimetal Bandsaw Blades

Area of application

For universal usage for mix materials (solids and structurals) and diameters for all types of steel

Features

Special design of cutting edge and angle suits different alloy materials saw cutting

The equal teeth height and sharpness are better than traditional gear milling technology and the glossiness made for easily chip removal.

Stock Code	Size	Gauge
BMBSB19X6-10Y	19X6-10	0.9
BMBSB19X8-12Y	19X8-12	0.9
BMBSB19X10-14Y	19X10-14	0.9
BMBSB27X2-3Y	27X2-3	0.9
BMBSB19X3-4Y	19X3-4	0.9
BMBSB27X4-6Y	27X4-6	0.9
BMBSB27X5-8Y	27X5-8	0.9
BMBSB27X6-10Y	27X6-10	0.9
BMBSB27X8-12Y	27X8-12	0.9
BMBSB27X10-14Y	27X10-14	0.9
BMBSB34X2-3Y	34X2-3	1.1
BMBSB34X3-4Y	34X3-4	1.1
BMBSB34X4-6Y	34X4-6	1.1
BMBSB34X5-8Y	34X5-8	1.1
BMBSB41X2-3Y	41X2-3	1.3
BMBSB41X3-4Y	41X3-4	1.3
BMBSB41X4-6Y	41X4-6	1.3

MAGICUT POWER HACKSAW BLADE

Stock Code	Length mm	Height mm	TPI	Unit of Pack
PSB300X25X1.25	300	25	10,14	10
PSB350X25X1.25	350	25	10,14	10
PSB350X32X 1.60	350	32	6,10,14	10
PSB350X38X2.00	350	38	4,6,	10
PSB400X25X1.25	400	25	10,14	10
PSB400X32X1.60	400	32	6,10,14	10
PSB400X38X2.00	400	38	4,6,10	10
PSB425X25X1.25	425	25	10,14	10
PSB425X32X1.60	425	32	6,10	10
PSB450X32X1.60	450	32	4,6,10,14	10
PSB450X38X2.00	450	38	4,6,10	10
PSB500X32X1.60	500	32	10,	10
PSB500X40X2.00	500	40	4,6	10
PSB500X50X2.5	500	50	4,6	10
PSB525X40X2.00	525	40	4,6,10	5
PSB550X40X2.00	550	40	4,6	5
PSB600X50X2.50	600	50	4,6	5
PSB650X50X2.50	650	50	4,6	5
PSB700X50X2.5	700	50	4,6	5

MAGICUT HACKSAW BLADES

Carbon Steel
high carbon steel blades for all light duty work and are unbreakable in normal condition. They are suitable for all relatively soft materials, such as aluminium, copper, brass, mild steel and other metals

Bimetal M2
Bimetal high speed steel hand hacksaw blades are virtually unbreakable bimetal blades for superb cutting performance. They cut through all types of matrials including alloys and stainless steels.

Bimetal 8% Cobalt
A shatter proof blade for high wear resitance as compared to conventional bimetal blades. The teeth have hardness of 66 to 68 HRC with a high wear resistance property. They cut through all types of materials including high alloy steels.

Carbon Steel

Stock Code	Length mm	Height mm	TPI
HSBF18	300	13	18
HSBF24	300	13	24
HSBF32	300	13	32

Bi-metal M2

Stock Code	Length mm	Height mm	TPI
HSBBM18	300	13	18
HSBBM24	300	13	24
HSBBM32	300	13	32
Bimetal 8% cobalt			
HSBBM18Q	300	13	18
HSBBM24Q	300	13	24
HSBBM32Q	300	13	32

Junior hacksaw blades

HSB15018	150		18
HSBBM24	150		24

MAGICUT ALUMINIUM HACKSAW FRAME

Stock Code	Size mm
HSFQ	300

MAGICUT JUNIOR HACKSAW FRAME

Stock Code	Size mm
JSF	150

MAGICUT PISTOL GRIP JUNIOR SAW FRAME

Stock Code	Size mm
JSFQ	150

MAGICUT HACKSAW FRAME MINI

Stock Code	Size mm
MHF	300

ROUND TOOLBITS HSS

Stock Code	Ø mm j9	Length mm ±2
RTB4x63C	4	63
RTB4x80C	4	80
RTB4x100C	4	100
RTB5x63C	5	63
RTB5x80C	5	80
RTB5x100C	5	100
RTB6x63C	6	63
RTB6x80C	6	80
RTB6x100C	6	100
RTB6x160C	6	160
RTB8x63C	8	63
RTB8x80C	8	80
RTB8x100C	8	100
RTB8x160C	8	160
RTB8x200C	8	200

Stock Code	Ø mm j9	Length mm ±2
RTB10x63C	10	63
RTB10x80C	10	80
RTB10x100	10	100
RTB10x160C	10	160
RTB10x200C	10	200
RTB12x100C	12	100
RTB12x160C	12	160
RTB12x200C	12	200
RTB16x100C	16	100
RTB16x160C	16	160
RTB16x200C	16	200
RTB20x160C	20	160
RTB20x200C	20	200
RTB25x200C	25	200

10% COBALT

Stock Code	Ø mm j9	Length mm ±2
RTBC0104x63C	4	63
RTBC0104x80C	4	80
RTBC0104x100C	4	100
RTBC0105x63C	5	63
RTBC0105x75C	5	75
RTBC0105x100C	5	100
RTBC0106x63C	6	63
RTBC0106x75C	6	75
RTBC0106x80C	6	80
RTBC0106x100C	6	100
RTBC0106x160C	6	160
RTBC0108x80C	8	80
RTBC0108x100C	8	100
RTBC0108x150C	8	150
RTBC0108x160C	8	160
RTBC0108x200C	8	200

Stock Code	Ø mm j9	Length mm ±2
RTBC01010x80C	10	80
RTBC01010x100C	10	100
RTBC01010x150C	10	150
RTBC01010x160C	10	160
RTBC01010x200C	10	200
RTBC01012x100C	12	100
RTBC01012x150C	12	150
RTBC01012x160C	12	160
RTBC01012x200C	12	200
RTBC01014x150C	14	150
RTBC01014x200C	14	200
RTBC01016x100C	16	100
RTBC01016x200C	16	200
RTBC01020x200C	20	200
RTBC01025X200C	25	200

V = Surface speed m/min
n = RPM
D = Cutter diameter

To calculate surface speed :

$$V = \frac{\pi \cdot D \cdot n}{1000}$$

To calculate RPM :

$$n = \frac{V \cdot 1000}{\pi \cdot D}$$

SQUARE TOOLBITS HSS

Stock Code	A/F mm h12	Length mm ±2
STB4x63C	4	63
STB4x100C	4	100
STB5x63C	5	63
STB5x80C	5	80
STB5x100C	5	100
STB6x63C	6	63
STB6x80C	6	80
STB6x100C	6	100
STB6x160C	6	160
STB6x200C	6	200
STB8x63C	8	63
STB8x80C	8	80
STB8x100C	8	100
STB8x160C	8	160
STB8x200C	8	200
STB10x63C	10	63
STB10x80C	10	80
STB10x100C	10	100
STB10x160C	10	160
STB10x200C	10	200
STB12x63C	12	63
STB12x80C	12	80
STB12x100C	12	100
STB12x160C	12	160
STB12x200C	12	200
STB14x200C	14	200
STB16x100C	16	100
STB16x160C	16	160
STB16x200C	16	200
STB18x200C	18	200
STB20x160C	20	160
STB20x200C	20	200
STB25x200C	25	200

5% COBALT

Stock Code	A/F mm h12	Length mm ±2
STBC054x63C	4	63
STBC055x63C	5	63
STBC056x63C	6	63
STBC056x80C	6	80
STBC056x100C	6	100
STBC056x160C	6	160
STBC056x200C	6	200
STBC058x63C	8	63
STBC058x80C	8	80
STBC058x100C	8	100
STBC058x160C	8	160
STBC058x200C	8	200
STBC0510x63C	10	63
STBC0510x80C	10	80
STBC0510x100	10	100
STBC0510x160	10	160
STBC0510x200	10	200
STBC0512x63	12	63
STBC0512x80	12	80
STBC0512x100	12	100
STBC0512x160	12	160
STBC0512x200	12	200
STBC0516x100	16	100
STBC0516x160	16	160
STBC0516x200	16	200
STBC0520x160	20	160
STBC0520x200	20	200
STBC0525x200	25	200

10% COBALT

Stock Code	A/F mm h12	Length mm ±2
STBC0104x63C	4	63
STBC0105x63C	5	63
STBC0106x63C	6	63
STBC0106x80C	6	80
STBC0106x100C	6	100
STBC0106x160C	6	160
STBC0106x200C	6	200
STBC0108x63C	8	63
STBC0108x80C	8	80
STBC0108x100C	8	100
STBC0108x160C	8	160
STBC0108x200C	8	200
STBC01010x63C	10	63
STBC01010x80C	10	80
STBC01010x100C	10	100
STBC01010x160C	10	160
STBC01010x200C	10	200
STBC01012x63C	12	63
STBC01012x100C	12	100
STBC01012x160C	12	160
STBC01012x200C	12	200
STBC01014x150C	14	150
STBC01014x200C	14	200
STBC01016x100C	16	100
STBC01016x160C	16	160
STBC01016x200C	16	200
STBC01018x200C	18	200
STBC01020x160C	20	160
STBC01020x200C	20	200
STBC01025x200C	25	200

RECTANGULAR TOOLBITS HSS

Stock Code	Height mm h12	Width mm h12	Length mm ±2
RTB8x4x100C	8	4	100
RTB8x5x100C	8	5	100
RTB10x5x100C	10	5	100
RTB10x6x160C	10	6	160
RTB10x6x200C	10	6	200
RTB12x6x160C	12	6	160
RTB12x6x200C	12	6	200
RTB12x8x200C	12	8	200
RTB16x8x160C	16	8	160
RTB16x8x200C	16	8	200
RTB16x10x200C	16	10	200
RTB20x10x200C	20	10	200
RTB20x12x200C	20	12	200
RTB25x12x200C	25	12	200
RTB25x16x200C	25	16	200

10% COBALT

Stock Code	Height mm h12	Width mm h12	Length mm ±2
RTBCO1010x3x150C	10	3	150
RTBCO1010x4x150C	10	4	150
RTBCO1010x4x200C	10	4	200
RTBCO1010x5x200C	10	5	200
RTBCO1010x6x150C	10	6	150
RTBCO1010x6x160C	10	6	160
RTBCO1010x6x200C	10	6	200
RTBCO1012x3x150C	12	3	150
RTBCO1012x4x150C	12	4	150
RTBCO1012x5x150C	12	5	150
RTBCO1012x5x200C	12	5	200
RTBCO1012x6x160C	12	6	160
RTBCO1012x6x200C	12	6	200
RTBCO1012x8x160C	12	8	160
RTBCO1012x8x200C	12	8	200
RTBCO1015x3x150C	15	3	150
RTBCO1015x4x150C	15	4	150
RTBCO1015x6x150C	15	6	150
RTBCO1015x6x200C	15	6	200
RTBCO1015x8x200C	15	8	200
RTBCO1015x10x200C	15	10	200
RTBCO1016x8x160C	16	8	160
RTBCO1016x10x160C	16	10	160
RTBCO1018x4x200C	18	4	200
RTBCO1020x3x200C	20	3	200
RTBCO1020x4x200C	20	4	200
RTBCO1020x6x160C	20	6	160
RTBCO1020x6x200C	20	6	200
RTBCO1020x8x160C	20	8	160
RTBCO1020x10x150C	20	10	150
RTBCO1020x10x160C	20	10	160
RTBCO1020x10x200C	20	10	200
RTBCO1020x12x200C	20	12	200
RTBCO1025x6x160C	25	6	160
RTBCO1025x8x200C	25	8	200
RTBCO1025x10x200C	25	10	200
RTBCO1025x16x200C	25	16	200
RTBCO1025x16x250C	25	16	250

PARTING TOOL BLADES HSS

Stock Code	Height mm	Width mm	Length mm
PB12	12	2.5	100
PB16	16	3	130
PB20	20	4	150
PB25	25	4	150

PARTING TOOL HOLDERS

Stock Code	Blade size mm	Width mm	Height mm
PTH12	12x2.5	8	19
PTH16	16x3	9.5	22
PTH20	20x4	13	28
PTH25	25x4	19	40

Supplied without blades

TURNING TOOL HOLDERS- STRAIGHT PATTERN

Stock Code	Width mm	Height mm	Length mm	Toolbit size mm
TH5	8	19	110	5
TH6	10	22	125	6
TH8	12	28	150	8
TH10	16	33	175	9.5
TH12	19	40	200	12

Supplied without toolbits
Left and right hand holders available while stocks last.

BORING BARS

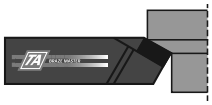
Stock Code	Toolbit size mm	Bar Ø mm	Bar length mm	Holder size mm	Holder length mm
BB3	3	9.5	110	13	56
BB5	5	11	130	13	63
BB6	6	14	170	16	75
BB8	8	19	230	22	95
BB10	10	22	290	32	110
BB12	12	30	350	40	125

Supplied without toolbits

FLY CUTTERS

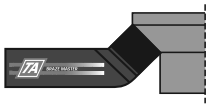
Stock Code	Description
FCSET	12.7mm Shank 19, 29, 38 Dia
FC50	50 Dia - 19 shank 8mm toolbit
FC62	62Dia - R8 shank 8mm toolbit

BRAZED TURNING TOOLS
75° APPROACH STRAIGHT TURNING TOOL E



Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
E3RP25	ISO1	10	10	RH	P25	steel
E4RP25	ISO1	12	12	RH	P25	steel
E5RP25	ISO1	16	16	RH	P25	steel
E6RP25	ISO1	20	20	RH	P25	steel
E8RP25	ISO1	25	25	RH	P25	steel
E3LP25	ISO1	10	10	LH	P25	steel
E4LP25	ISO1	12	12	LH	P25	steel
E5LP25	ISO1	16	16	LH	P25	steel
E6LP25	ISO1	20	20	LH	P25	steel
E8LP25	ISO1	25	25	LH	P25	steel

45° APPROACH CRANKED TURNING TOOL J



Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
J3RP25	ISO2	10	10	RH	P25	steel
J4RP25	ISO2	12	12	RH	P25	steel
J5RP25	ISO2	16	16	RH	P25	steel
J6RP25	ISO2	20	20	RH	P25	steel
J8RP25	ISO2	25	25	RH	P25	steel
J3LP25	ISO2	10	10	LH	P25	steel
J4LP25	ISO2	12	12	LH	P25	steel
J5LP25	ISO2	16	16	LH	P25	steel
J6LP25	ISO2	20	20	LH	P25	steel
J8LP25	ISO2	25	25	LH	P25	steel
J3RK20	ISO2	10	10	RH	K20	cast iron
J4RK20	ISO2	12	12	RH	K20	cast iron
J5RK20	ISO2	16	16	RH	K20	cast iron
J6RK20	ISO2	20	20	RH	K20	cast iron
J8RK20	ISO2	25	25	RH	K20	cast iron

RECESSING TOOL D

Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
D3P25	ISO4	10	10	RH	P25	steel
D4P25	ISO4	12	12	RH	P25	steel
D5P25	ISO4	16	16	RH	P25	steel
D6P25	ISO4	20	20	RH	P25	steel
D8P25	ISO4	25	25	RH	P25	steel

CRANKED KNIFE TOOL B

Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
B3RP25	ISO6	10	10	RH	P25	steel
B4RP25	ISO6	12	12	RH	P25	steel
B5RP25	ISO6	16	16	RH	P25	steel
B6RP25	ISO6	20	20	RH	P25	steel
B8RP25	ISO6	25	25	RH	P25	steel

Continued...

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Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
B3LP25	ISO6	10	10	LH	P25	steel
B4LP25	ISO6	12	12	LH	P25	steel
B5LP25	ISO6	16	16	LH	P25	steel
B6LP25	ISO6	20	20	LH	P25	steel
B8LP25	ISO6	25	25	LH	P25	steel
B3RK20	ISO6	10	10	RH	K20	cast iron
B4RK20	ISO6	12	12	RH	K20	cast iron
B5RK20	ISO6	16	16	RH	K20	cast iron
B6RK20	ISO6	20	20	RH	K20	cast iron
B8RK20	ISO6	25	25	RH	K20	cast iron

STRAIGHT KNIFE TOOL G

Stock Code	Shank height mm	Shank width mm	Direction	Grade	To cut
G3RP25	10	10	RH	P25	steel
G4RP25	12	12	RH	P25	steel
G5RP25	16	16	RH	P25	steel
G6RP25	20	20	RH	P25	steel
G8RP25	25	25	RH	P25	steel
G3LP25	10	10	LH	P25	steel
G4LP25	12	12	LH	P25	steel
G5LP25	16	16	LH	P25	steel
G6LP25	20	20	LH	P25	steel
G8LP25	25	25	LH	P25	steel

CRANKED ROUND NOSE ROUGHING TOOL A

Stock Code	Shank height mm	Shank width mm	Direction	Grade	To cut
A3RP25	10	10	RH	P25	steel
A4RP25	12	12	RH	P25	steel
A5RP25	16	16	RH	P25	steel
A6RP25	20	20	RH	P25	steel
A8RP25	25	25	RH	P25	steel

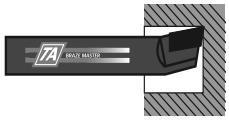
STRAIGHT ROUND NOSE ROUGHING TOOL C

Stock Code	Shank height mm	Shank width mm	Direction	Grade	To cut
C3P25	10	10	neutral	P25	steel
C4P25	12	12	neutral	P25	steel
C5P25	16	16	neutral	P25	steel
C6P25	20	20	neutral	P25	steel
C8P25	25	25	neutral	P25	steel

PARTING TOOL H

Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
H4RP25	ISO7	12	12	RH	P25	steel
H5RP25	ISO7	16	16	RH	P25	steel
H6RP25	ISO7	20	20	RH	P25	steel
H6.4RP25	ISO7	20	12	RH	P25	steel
H8.5RP25	ISO7	25	16	RH	P25	steel
H4RK20	ISO7	12	12	RH	K20	cast iron
H5RK20	ISO7	16	16	RH	K20	cast iron
H6RK20	ISO7	20	20	RH	K20	cast iron
H6.4RK20	ISO7	20	12	RH	K20	cast iron
H8.5RK20	ISO7	25	16	RH	K20	cast iron

INTERNAL BORING BAR P



Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
P3RP25	ISO9	10	10	RH	P25	steel
P4RP25	ISO9	12	12	RH	P25	steel
P5RP25	ISO9	16	16	RH	P25	steel
P6RP25	ISO9	20	20	RH	P25	steel
P8RP25	ISO9	25	25	RH	P25	steel
P3RK20	ISO9	10	10	RH	K20	cast iron
P4RK20	ISO9	12	12	RH	K20	cast iron
P5RK20	ISO9	16	16	RH	K20	cast iron
P6RK20	ISO9	20	20	RH	K20	cast iron
P8RK20	ISO9	25	25	RH	K20	cast iron

CHAMFERING TOOL F

Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
F5.3P25	ISO10	16	10	nutral	P25	steel
F6.4P25	ISO10	20	12	nutral	P25	steel
F8.5P25	ISO10	25	16	nutral	P25	steel

CHAMFERING TOOL F

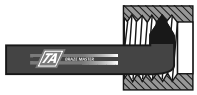
With full carbide head

Stock Code	Designation	Shank height mm	Shank width mm	Grade cut	To
F1WP25	ISO10	6	6	P25	steel
F3WP25	ISO10	10	10	P25	steel
F4WP25	ISO10	12	12	P25	steel

THREADING TOOL K

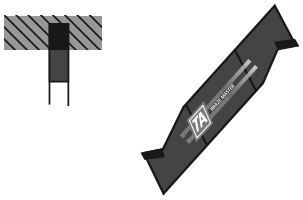
Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
K6.4RP2560	ISO13	20	12	RH 60˚	P25	steel
K8.5RP2560	ISO13	25	16	RH 60˚	P25	steel
K6.4RP2555	ISO13	20	12	RH 55˚	P25	steel
K8.5RP2555	ISO13	25	16	RH 55˚	P25	steel
K6.4RK2060	ISO13	20	12	RH 60˚	K20	cast iron
K8.5RK2060	ISO13	25	16	RH 60˚	K20	cast iron

INTERNAL THREADING TOOL KI



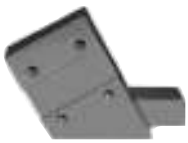
Stock Code	Designation	Shank height mm	Shank width mm	Direction	Grade	To cut
KI3RP2560	ISO14	10	10	RH 60˚	P25	steel
KI4RP2560	ISO14	12	12	RH 60˚	P25	steel
KI5RP2560	ISO14	16	16	RH 60˚	P25	steel
KI6RP2560	ISO14	20	20	RH 60˚	P25	steel
KI3RP2555	ISO14	10	10	RH 55˚	P25	steel
KI4RP2555	ISO14	12	12	RH 55˚	P25	steel
KI5RP2555	ISO14	16	16	RH 55˚	P25	steel
KI6RP2555	ISO14	20	20	RH 55˚	P25	steel

TANGENTIAL PARTING BLADE



StockCode	Description
TPB3	3mm wide tip x 23.4mm high x 170mm long P25

TANGENTIAL BLADE HOLDER



Stock Code	Description
TPH	20mm high x 100mm long


KORLOY

OFFICIAL DISTRIBUTORSHIP

Country : SOUTH AFRICA

Company : ALLIED PUTZIGER PTY LTD

Address : ALLIED PUTZIGER PTY LTD.
PRESS AVENUE AND MAIN REEF ROAD,
CROWN MINES (SELBY EXTENSION 22),
JOHANNESBURG, SOUTH AFRICA

We, Korloy Inc.,hereby certify that ALLIED PUTZIGER PTY LTD company is an official distributor for SOUTH AFRICA

01st January of 2010.

KORLOY INC.

Mun Young Ho/Team manager


QMS-0405

Certificate of Registration

KORLOY Inc.

KS A 9001 : 2001 / ISO 9001 : 2000

The Design Development, Manufacture and Servicing of Inserts, End Mills, Drills & Tungsten Carbide Blanks

BICC B. J. Peck

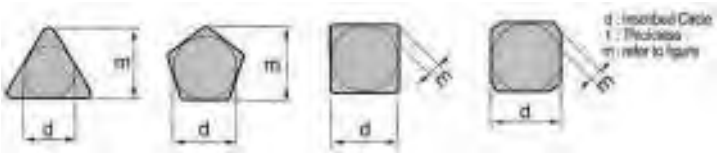
1. Insert Shape

			
C	D	E	K
			
L	R	S	T
			
V	W		

2. Clearance Angle

			
B	C	D	E
			
F	N	P	
Special			
O			

3. Tolerance



Class	d	m	t
A	40.025	40.005	40.025
C	40.025	40.013	40.025
H	40.013	40.013	40.025
E	40.025	40.025	40.025
G	40.025	40.025	40.13
J	40.05 - 40.15	40.005	40.025
K	40.05 - 40.15	40.013	40.025
L	40.05 - 40.15	40.025	40.025
M	40.05 - 40.15	0.08 - 0.20	40.13
U	40.08 - 40.25	0.13 - 0.38	40.13

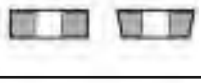
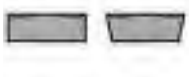
Tolerance on C, H, R, T, W class (exceptional)

d	Tolerance on d		Tolerance on m	
	J, K, L, M, N	U	M, N	U
6.35	40.05	40.08	40.08	40.13
9.525	40.05	40.08	40.08	40.13
12.7	40.08	40.13	40.13	40.20
15.875	40.10	40.18	40.15	40.27
19.05	40.10	40.18	40.15	40.27
25.4	40.13	40.25	40.18	40.38

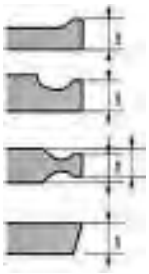
Tolerance on D class (exceptional)

d	Tolerance on d	Tolerance on m
6.35	40.05	40.11
9.525	40.05	40.11
12.7	40.08	40.15
15.875	40.10	40.18
19.05	40.10	40.18

4. Cross Section Type

	
A	B
	
C	F
	
G	H
	
J	M
	
N	Q
	
R	T
	
U	W
Special Type	
X	

6 Height of Cutting Edge



Symbol		Height of Cutting Edge (t)	
Metric	Inch	mm	Inch
-	0.5(1)	0.79	1-32
T0	0.6	1.00	0.040
01	1(2)	1.59	1/16
T1	1.2	1.98	5.64
02	1.5(3)	2.38	3/32
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8	12.70	1/2

*( ) Symbol for small size insert

7 Nose Corner Radius (Nose R)

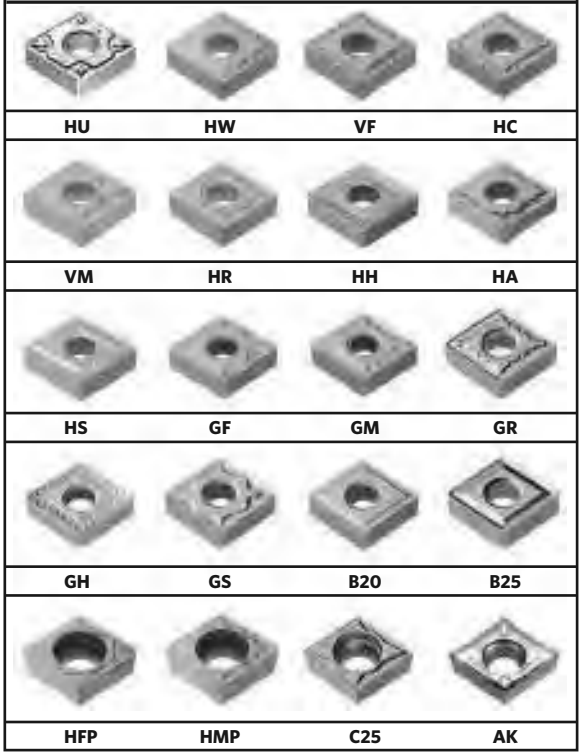
Symbol		Height of Cutting Edge (t)	
Metric	Inch	mm	Inch
01	0	0.1	0.004
02	5.0	0.2	0.008
04	1	0.4	1/64
08	2	0.8	1/32
12	3	1.2	3/64
16	4	1.6	1/16
20	5	2.0	5/64
24	6	2.4	3/32
28	7	2.8	7/64
32	8	3.2	1/8
00	-	Round Insert (Inch)	
MO	-	Round Insert (Metric)	

16	04	08	VM
5	6	7	8

5 Cutting Edge Length, Diameter of Inscribed circle

Symbol								IC
C	D	S	T	R	V	W		
Metric							Inch	d(mm)
03	04	03	06	03	-	02	1.2(5)	3.97
04	05	04	08	04	08	S3	1.5(6)	4.76
05	06	05	09	05	09	03	1.8(7)	5.56
-	-	-	-	06	-	-	-	6.00
06	07	06	11	06	11	04	2	6.35
08	09	07	13	07	13	05	2.5	7.94
-	-	-	-	08	-	-	-	8.00
09	11	09	16	09	16	06	3	9.525
-	-	-	-	10	-	-	-	10.00
11	13	11	19	11	19	07	3.5	11.11
-	-	-	-	12	-	-	-	12.00
12	15	12	22	12	22	08	4	12.70
14	17	14	24	14	24	09	4.5	14.29
16	19	15	27	15	27	10	5	15.875
-	-	-	-	16	-	-	-	16.00
17	21	17	30	17	30	11	5.5	17.46
19	23	19	33	19	33	13	6	19.05
-	-	-	-	20	-	-	-	20.00
22	27	22	38	22	38	15	7	22.225
-	-	-	-	25	-	-	-	25.00
25	31	25	44	25	44	17	8	25.40
32	38	31	54	31	54	21	10	31.75
-	-	-	-	32	-	-	-	32.00

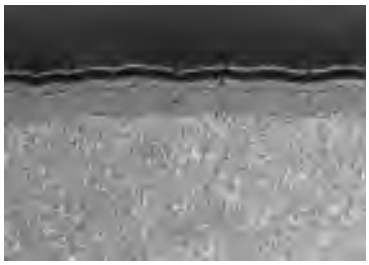
8 Chip Breaker for Turning



CVD COATING GRADES

Special Features

- Having superior wear resistance and toughness at the same time due to special crystalline structure of film.
- High bonding strength between film and substrate by adopting new-coating technology



Cross sectional view of CVD coating film

TiN •Reduce friction force

Al_2O_3 •Wear resistance, prevent build up edge

TiC •Wear resistance

TiCN •Enhancing wear resistance and toughness by adopting new coating tech.

GUIDE OF GRADE SELECTION

Turning CVD

Workpiece		Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
P	Steel	Continuous Cutting	**NC3010**	300(200-400)	P01	NC3010
					P10	
					P15	
			NC3220 New	280(150-380)	P20	NC3220 New
		Interrupted Cutting	**NC3120**	250(150-350)		NC3120
			NC3030	200(150-250)	P30	NC3030
			NC5330 New	190(100-230)	P35	NC5330 New
			NC500H	100(50-150)	P40	NC500H
M	Stainless Steel	Continuous cutting	**NC9025**	140(80-220)	M30	NC9025
		Interrupted cutting			M40	
K	Cast iron	Continuous Cutting	**NC6205** New	270(150-300)	K05	NC6205 New
			NC6210 New	350(250-450)	K10	NC6210 New
		Interrupted Cutting	**NC315K**	200(150-250)	K20	NC315K
			NC5330	180(130-230)	K30	NC5330 New
S	HRSA	Continuous Cutting	**NC5330**	40(20-60)	S20	
		Interrupted Cutting			S30	NC5330 New

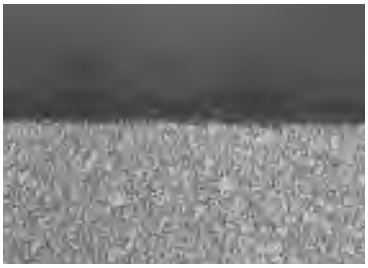
Turning PVD

Workpiece		Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
P	Steel	Continuous Cutting	**PC5300**	150(120-220)	P30	PC5300
		Interrupted Cutting			P40	
M	Stainless steel	Continuous Cutting	**PC8110**	200(150-250)	M10	PC8110
			PC5300	170(120-220)	M20	
		Interrupted Cutting			M30	PC5300
			PC9030	120(50-180)	M40	PC9030
S	HRSA	Continuous Cutting	**PC8110**	60(40-90)	S10	PC8110
		Interrupted Cutting	**PC5300**	50(30-70)	S20	
					S30	PC5300

KORLOY Inc. PVD COATING GRADES

Special Features

1) PVD coating technique have inherent advantage such as superior chipping resistance of coated film itself and maintain the toughness of carbide substrate. Thus it is possible to increase the tool life approximately 2~4 times longer than carbide cutting tools.
2) PVD coating can make sharp cutting edge without blunting of sharp substrate.
3) Ti-base coating film can provide excellent surface finish and high accuracy machining due to the low affinity of Ti film and work piece.



Cross sectional view of PVD coating film

KORLOY PVD Trio

PC3600: Steel milling grade equipped with tough substrate and Nano-TiAlN coating film.
PC9030: Exclusive grade for turning of stainless steel consist of tough substrate and TiAlN coating film.
PC9530: Exclusive grade for milling of stainless steel consist of ultra fine grain size substrate and TiAlN coating film.

GUIDE OF GRADE SELECTION

Workpiece		Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
P	Steel	Continuous Cutting	**NC5330** New	270(220-320)	P15	NC5300 New
					P20	
		Continuous Cutting	**NCM325**	250(150-300)	P25	NCM325
					P30	
		Interrupted Cutting	**NCM335**	230(120-280)	P35	NCM335
					P40	
M	Stainless steel	Continuous Cutting	**NC5330** New	200(150-250)	M10	NC5330 New
					M20	
		Continuous Cutting	**NCM325**	180(140-230)	M30	NCM325
		Interrupted Cutting	**NCM335**	170(120-210)	M40	NCM335
K	Cast iron	Continuous Cutting	**NC5330** New	170(130-220)	K20	NC5330 New
					K30	

Milling PVD

Workpiece		Machining types	Recommended grade	Recommended cutting speed (m/min)	ISO	Application range
P	Steel	Continuous Cutting	**PC3600** New	200(150-250)	P20	PC3600 New
					P30	
		Interrupted Cutting	**PC5300**	120(100-150)	P40	PC5300
			PC3545	130(50-200)	P50	PC3545
M	Stainless steel	Continuous Cutting	**PC5300**	200(100-150)	M20	PC5300
		Interrupted Cutting	**PC9530**	130(50-200)	M30	PC9530
			PC3545	120(100-150)	M40	
K	Cast iron	Continuous Cutting	**PC8110**	250(200-400)	K01	PC8110
			PC6510	200(150-250)	K05	PC6510
		Interrupted Cutting	**PC5300**	165(120-210)	K10	PC5300
					K20	PC5300
S	HSRA	Continuous Cutting	**PC5300**	70(40-100)	S20	PC3545
		Interrupted Cutting	**PC3545**	50(30-70)	S30	
H	High hardness steel	Continuous Cutting	**PC210F**	250(150-300)	H01	PC210F
					H10	

CERMET GRADES

SPECIAL FEATURES
Korloy cermet is a kind of carbonitride type which have a ultra fine micro structure by adding TiN, TiCN powders as additives. It has superior thermal shock resistance and optimal wear resistance and toughness as per cutting condition, as well.

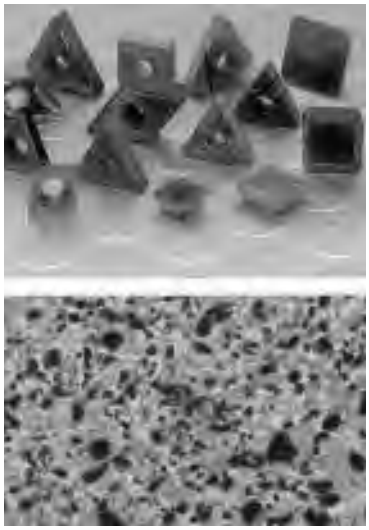
SPECIAL ADVANTAGES
Cermet, using TiCN as main component, is harder than cemented carbide and have lower affinity with Ferrous work piece at high temperature, thus cermet have special advantage as below:

Comparing with Un-coated Carbide

1) Since cermet have superior wear resistance and cratering resistance, higher speed cutting is available.
2) Since cermet have low affinity with ferrous work piece, from low to high speed cutting is available
3) Low affinity with work piece provides excellent surface finish.
4) Exceptional tool life and cutting performance can be acquired at high speed finishing.

Comparing with Coated Carbide

1) Suitable for shallow depth and light cutting (finishing).
2) Better wear resistance and surface finish can be acquired at the same cutting condition.



Microstructure of Cermet

GUIDE OF GRADE SELECTION

Turning

Work piece	Coating	1st Recommended grade	Recommended cutting speed m/min	Recommended cutting speed sfm	ISO	Application range
Steel	Finishing	CC105 CC115	230(150~300)	760(500~990)	P01	CC115
	Light to medium cutting	CN100 CT10	200(150~280) 200(130~250)	660(500~920)6 60(430~820)	P10	CC105 CN1000
		CN200	180(130~250)	590(430~820)	P20	CT10 CN2000

Milling

Work piece	Coating	1st Recommended grade	Recommended cutting speed m/min	Recommended cutting speed sfm	ISO	Application range
Steel	Finishing	CN20	230(150~300)	760(500~990)	P01	
	Light to medium cutting	CN30	200(150~250)	660(500~820)	P10	CN20
					P20	CN30

KORLOY Chip Breaker For Turning

KORLOY Inc.

	Geometry	Cutting edge	Application range	Features
V Series	VC		feed rate (mm/rev): 0.1~0.35, 0.5~2.5	**For finishing** • Ensures stable chip flow even at very small depth of cut • Suitable for copying
	VO		feed rate (mm/rev): 0.1~0.4, 1.0~3.0	**For Medium to Finish Cutting** • Strong cutting edge makes excellent cutting performance at interrupted cutting
	VL		feed rate (mm/rev): 0.1~0.35, 0.2~1.5	**For Medium cutting** • Stable chip control in high toughness material; low carbon steel, pipe steel & steel plates • Improved chip control for facing, copy machining and better surface finish
	VF		feed rate (mm/rev): 0.05~0.35, 0.5~2.0	**For Finishing** • Good chip control quality on varied depth of cut • Excellent cutting edge strength has been acquired due to the special chip-breaker
	VB		feed rate (mm/rev): 0.15~0.45, 0.5~2.0	**For Finishing** • Improved chip control for smaller depth of cuts • Excellent chip control in copying, corner R machining
	VC		feed rate (mm/rev): 0.12~0.45, 0.5~3.5	**For medium finishing** • Stable chip control in copying and internal machining with various depths of cut
	VM		feed rate (mm/rev): 0.1~0.5, 1.0~5.0	**For Medium cutting** • Wide available chip control range from medium finishing to medium roughing • Suitable chip breaker for CNC machining
	VK		feed rate (mm/rev): 0.15~0.5, 1.0~5.0	**For Medium to Roughing of Milling** • Optimal for high speed machining and interrupted machining
	VH		feed rate (mm/rev): 0.7~1.4, 6.0~15.0	**For Heavy duty cutting** • Designed specifically for heavy machining • Specialized chip breaker for the heavy industries like Ship building, Power plant industry
	VT		feed rate (mm/rev): 0.75~1.6, 7.0~17.0	**For Heavy duty cutting** • Designed specifically for heavy machining • Specialized chip breaker for the heavy industries like Ship building, Power plant industry
	VCT		feed rate (mm/rev): 0.07~0.20, 0.10~1.5	**For Finishing** • High positive cutting edge • Reduced chip contact minimizes compression to improve tool life
	VMT		feed rate (mm/rev): 0.10~0.40, 0.50~4.5	**For medium finishing** • Stable chip control and high machinability in copying with various depths of cut
	VP1		feed rate (mm/rev): 0.12~0.5, 0.50~5.0	**For medium machining** • High positive cutting edge with wide land • Stable cutting performance in interrupted machining with high toughness • Stable machinability and chip control in machining with high depth of cut
H Series	HL		feed rate (mm/rev): 0.03~0.25, 0.1~1.5	**For Ultra-fine Finishing, Finishing** • Suitable for a machining need fine surface finish and a machining generate low cutting force due to sharp cutting edge design • Specially designed chip breaker ensure stable chip control at ultra fine finishing condition
	HR		feed rate (mm/rev): 0.25~0.65, 2.5~7.0	**For Roughing** • Excellent chip control at deep depth of cut and fast feed rate • Strong cutting edge makes excellent cutting performance at intermittent cutting
	HA		feed rate (mm/rev): 0.03~0.3, 0.5~2.5	**For Light-alloy, Stainless-steel machining** • Sharp cutting edge generates low cutting force • Specially designed tough main cutting edge • Suitable for cutting of low carbon steel, stainless steel, aluminum

*Notice : Application ranges are based on main cutting material

KORLOY Chip Breaker For Turning

KORLOY Inc.

	Geometry		Cutting edge	Application range	Features
H Series	HS			0.1~0.4 1.0~4.0	**For Medium cutting of Stainless steel** • Exclusive design for stainless steel cutting provide longer tool life • Wear resistance have been reinforced through high rake angle of chip breaker land
G Series	GM			0.1~0.5 0.7~4.0	**For Medium to Light cutting** • Excellent chip control at general cutting conditions • Strong cutting edge strength provides good performance at intermittent and fast feed cutting
	GR			0.3~0.8 3.0~8.0	**For Medium to Roughing** • Suitable for deep depth of cut and high feed cutting of steel and cast iron • Suitable for intermittent cutting
	GH			0.3~1.3 3.0~11.0	**For Heavy duty cutting** • Suitable for heavy duty cutting due to strong cutting edge • Wide chip control range with low cutting force
	GS			0.15~0.5 1.5~5.5	**For Medium to Roughing of Stainless-steel** • Exclusive chip breaker for stainless steel
B Series	BM			0.5~1.0 4.0~10.0	**For General cutting** • Suitable for general cutting condition cutting
V-posi Series	VF			0.05~0.25 0.1~1.5	**For Finishing** • Improved surface finish and size accuracy due to stable inner boring
	VL			0.05~0.20 0.1~1.0	**For Finishing** • Superior chip control in low carbon steel, pipes, and steel plates
H-posi Series	HFH			0.05~0.25 0.1~1.5	**For Finishing** • Excellent chip control at shallow depth of cut and low feed rate • Excellent surface finish of work piece due to reduced cutting force • Suitable for fine boring
	HMF			0.08~0.4 0.5~3.5	**For Medium cutting** • Excellent chip control at wide range of cutting conditions • Suitable for stainless steel cutting
C Series	CSP			0.1~0.35 1.0~3.0	**For Medium cutting** • Suitable for interrupted cutting and cast iron machining • Good surface finish due to low cutting force • Suitable for both boring and outer diameter turning
AL Series	AK			0.03~0.4 0.1~4.0	**For Aluminum cutting** • High rake angle and low resistance cutting edge secures long tool life in continuous cutting of aluminum turning • High speed of finishing operation
	AR			0.05~0.5 0.5~4.0	**For Aluminum cutting** • High stability of cutting edge secures great performance in high speed and interrupted machining • High speed of medium and interrupted operation
Auto tool Series	KF			0.01~0.12 0.01~1.0	**For Finishing** • Shallow depth of cut with sharp edge • Longer tool life at high speed cutting due to low cutting force • Good surface finish
	KM			0.04~0.15 0.05~1.5	**For Medium to Finish Cutting** • Improved chip control makes tool life long and better machining
Wiper tool Series	LW			0.15~0.8 1.0~5.0	**For Medium cutting(Wiper)** • Guarantees excellent surface roughness and good chip controls at high feed machining
	WW			0.15~0.5 0.5~3.5	**For Finishing(Wiper)** • Improved surface roughness at shallow depth of cut and high feed due to strong cutting edge

KORLOY Chip Breaker For Milling

KORLOY Inc.

		Geometry	Cutting edge	Application range	Features
MX Series	MX			0.1~0.3 1.0~5.0	**For General Milling** • Possible to increase productivity through increase feed and depth • Excellent heat resistance due to the special chip breaker design of top face of insert
Futur Mill Series	MF			0.05~0.2 0.5~5.0	**For Finishing of Milling** • Special design for light cutting of gummy materials like stainless steel and hard to machine material provide fine surface finish and longer tool life
	MM			0.05~0.3 1.0~5.0	**For Medium cutting of Milling** • Chip breaker design to cover general cutting condition provides wide available application range • Ground type and as sintered type is available
	MR			0.05~0.35 1.5~5.0	**For Roughing of Milling** • Strongest cutting edge strength provide stable tool life even in case of severe cutting with heavy intermittent and heavy roughing
	MA			0.1~0.35 0.5~5.0	**For Aluminum** • Suitable design for aluminum machining like sharp cutting edge, mirror face of insert top which prevent built up-edge provide excellent cutting performance
RichMill Series-RM8	MA			0.05~0.35 0.3~6.0	**For Aluminum** • Sharp cutting edge and buffed top face show excellent chip flow and welding resistance in aluminum machining
	MF			0.05~0.35 0.3~6.0	**For Finishing of Milling** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM			0.1~0.4 0.5~6.0	**For Medium to Roughing of Milling** • Suitable geometry design for general milling has wider ranges of machining
RichMill Series-RM4	MA			0.05~0.25 0.3~14.0	**For Aluminum Milling** • Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult- toost materials, aluminum and light machining
	MF			0.05~0.3 0.5~14.0	**For Finishing of Milling** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM			0.05~0.3 1.0~14.0	**For Medium to Roughing of Milling** • Suitable geometry design for general milling has wider ranges of machining
RichMill Series-RMT	MF			0.05~0.2 0.5~5.0	**For Finishing of Milling** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM			0.05~0.3 0.5~8.0	**For Medium to Roughing of Milling** • Suitable geometry design for general milling has wider ranges of machining
RichMill Series-RM16	MA			0.05~0.3 0.3~5.5	**For Aluminum cutting** • Sharp cutting edge design ensures low cutting resistance and excellent machining in difficult- toost materials, aluminum and light machining
	MF			0.05~0.4 0.3~5.5	**For Finishing of Milling** • Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM			0.1~0.45 0.5~5.5	**For Medium to Roughing of Milling** • Suitable geometry design for general milling has wider ranges of machining
	W			0.05~0.3 0.3~2.0	**For Finishing of Milling (Wiper)** • Wiper insert provides improved surface roughness due to special cutting edge

Notice : Application ranges are based on main cutting material

KORLOY Chip Breaker For Milling

	Geometry	Cutting edge	Application range	Features
Alpha Mill Series	MA 		0.1~0.4 0.5~16	**For Aluminum** - Sharp cutting edge and buffed top face show excellent chip flow and welding resistance in aluminum machining
	MF 		0.05~0.15 0.5~16	**For Finishing of Milling** - Low cutting force chip breaker design ensures longer tool life and excellent machining in difficult-to-cut material and light machining
	MM 		0.1~0.25 0.5~16	**For Medium to Roughing of Milling** - Suitable geometry design for general milling has wider ranges of machining

KORLOY Chip Breaker For Drilling

	Geometry	Cutting edge	Application range	Features
King-Drill Series	PD 		0.04~0.15 25~300	**General steel** - Chip breaker for King Drill ensures optimal chip control in general drilling and high performance in stainless steel and cast iron machining
	ND 		0.04~0.15 25~300	**Non-ferrous metals** - Chip breaker with sharp and polished cutting edge for aluminum and non-ferrous metals. Machining with King Drill ensures good chip flow and resistance to chip welding

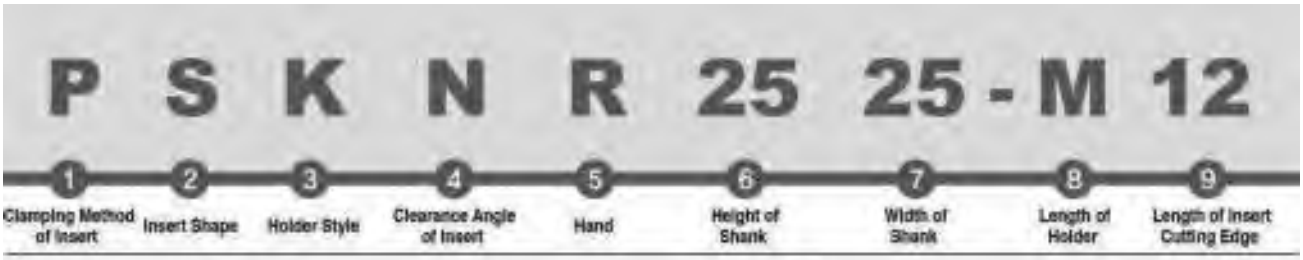
Notice : Application ranges are based on main cutting materials

GRADES & CHIP BREAKERS

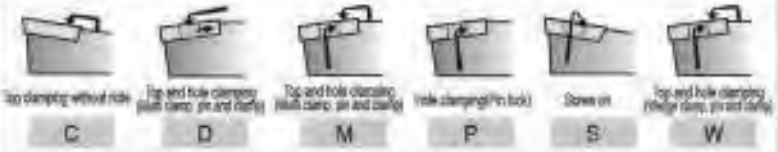
Korloys new grades are designed with optimal substrates for each application and are PVD coated for high temperature, high hardness and oxidation resistance, or CVD coated for high tempeure and wear resistance. Additionally, the improved post-coating treatment provides superior surface finishes to ensure the highest levels of quality and productivity.

KORLOY Inc.

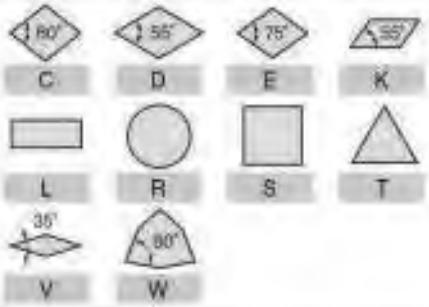
EXTERNAL TOOL HOLDER CODE SYSTEM (ISO)



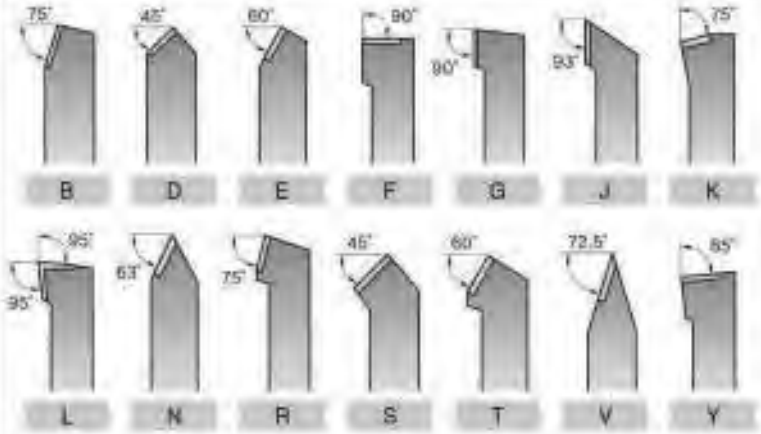
1 Clamping Method of Insert



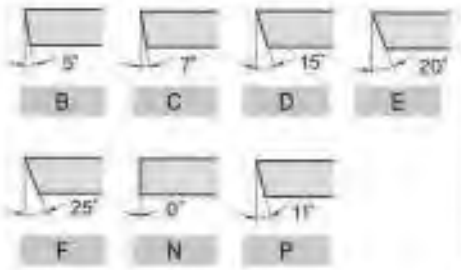
2 Insert Shape



3 Holder Style



4 Clearance Angle of Insert



5 Hand

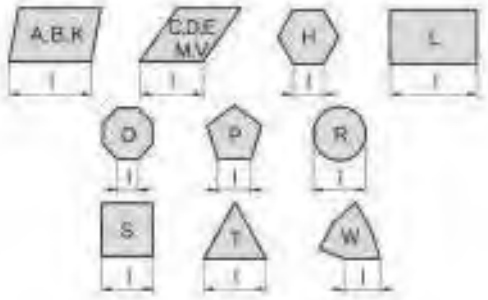
6 Height of Shank

7 Width of Shank

8 Length of Holder

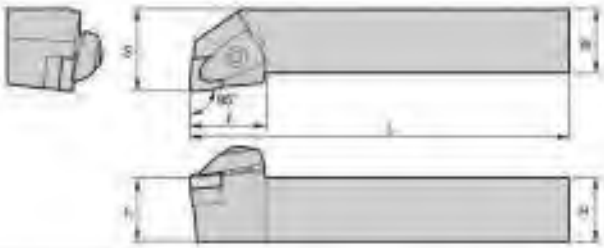
A - 32	H - 100	Q - 180	X-Special Item
B - 40	J - 110	R - 200	
C - 50	K - 125	S - 250	
D - 60	L - 140	T - 300	
E - 70	M - 150	U - 350	
F - 80	N - 160	V - 400	
G - 90	P - 170	W - 450	

9 Length of Insert Cutting Edge



DCLNR/L

CN□□



95°

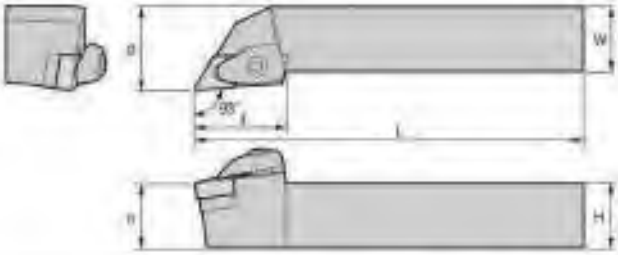
- R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DCLNR/L	2020-K09	20	20	125	25	20	24.5	CN□□0903□□	CVH3	CH00415	SC32V	FTKA0307	SPR0510	HW25P
	2525-M09	25	25	150	32	25	24.5							
	2020-K12	20	20	125	25	20	30	CN□□1204□□	CVH4	CH00518	SC44V	FTKA0410	SPR0714	HW30P
	2525-M12	25	25	150	32	25	30							
	3225-P12	32	25	170	32	32	30							
	3232-P12	32	32	170	40	32	30							
	2525-M16	25	25	150	32	25	36	CN□□1606□□	CVH5	CH00622	SC54V	FTNA0511	SPR0811	HW40L
	3225-P16	32	25	170	32	32	36							
	3232-P16	32	32	170	40	32	36							
	2525-M19	25	25	150	32	25	40	CN□□1906□□	CVH6	CH00622	SC63V	FTNA0511	SPR0811	HW40L
	3225-P19	32	25	170	32	32	40							
	3232-P19	32	32	170	40	32	40							
	4040-S19	40	40	250	50	40	40							

DDJNR/L

DN□□



93°

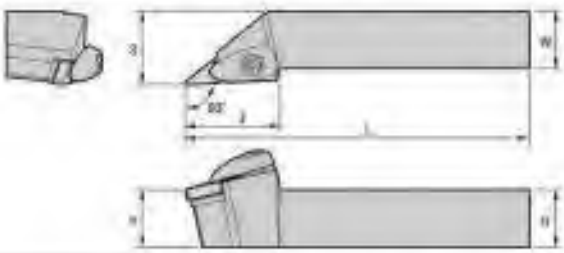
- R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DDJNR/L	2020-K11	20	20	125	25	20	30	DN□□1104□□	CVH3	CH00415	SD32V	FTKA0307	SPR0510	HW25P
	2525-M11	25	25	150	32	25	30							
	3225-P11	32	25	170	32	32	30							
	3232-P11	32	32	170	40	32	30							
	2020-K15	20	20	125	25	20	35	DN□□1506□□	CVH4	CH00518	SD43V	FTKA0410	SPR0714	HW30P
	2525-M15	25	25	150	32	25	35							
	3225-P15	32	25	170	32	32	35							
	3232-P15	32	32	170	40	32	35							
	2020-K15-3	20	20	125	25	20	35	DN□□1504□□	CVH4	CH00518	SD44V	FTKA0410	SPR0714	HW30P
	2525-M15-3	25	25	150	32	25	35							
	3232-P15-3	32	32	170	40	32	35							

DVJNR/L

VN□□



93°

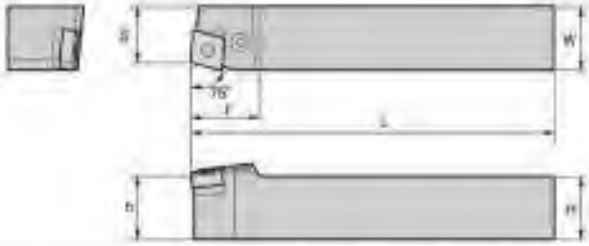
- R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DVJNR/L	2020-K16	20	20	125	25	20	41.5	VN□□1604□□	CVH3V	CH00518	SV32V	FTNA0350S	SPR0714	HW30P
	2525-M16	25	25	150	32	25	41.5							
	3232-P16	32	32	170	40	32	41.5							

PCBNR/L

CN□□



75°

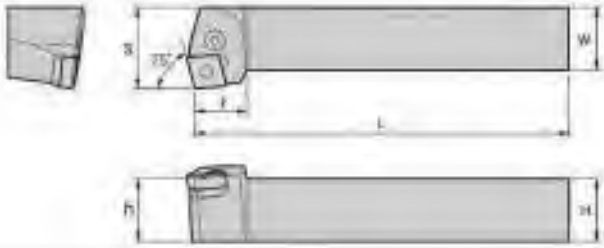
• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Stamp Punch
PCBNR/L	2020-K12	20	20	125	17	20	27							
	2525-M12	25	25	150	22	25	27	CN□□1204□□	LV4	VHX0821	SC42	SP4	HW30L	LSPS8
	3225-P12	32	25	170	22	32	27							
	2525-M16	25	25	150	22	25	33	CN□□1606□□	LV5	VHX0825	SCS3	SP5	HW30L	LSPS8
	3232-P16	32	32	170	27	32	33							
	3232-P19	32	32	170	27	32	36	CN□□1906□□	LV6N	VHX1027N	SC63N	SP6N	HW40L	LSPS8
	4040-S19	40	40	250	35	40	36							
	4040-S25	40	40	250	35	40	47	CN□□2509□□	LV8N	VHX1236N	SC84N	SP8N	HW50L	LSPS8
	4040-S25-5	40	40	250	35	40	47	CN□□2507□□						
PCBNR/L	2020-K12N	20	20	125	17	20	27							
	2525-M12N	25	25	150	22	25	27	CN□□1204□□	LV4N	VHX0820N	SC42N	SP4N	HW30L	LSPS4
	3225-P12N	32	25	170	22	32	27							
	2525-M16N	25	25	150	22	25	33	CN□□1606□□	LV5N	VHX0820AN	SC53N	SP5N	HW30L	LSPS5
	3232-P16N	32	32	170	27	32	33							

PCKNR/L

CN□□



95°

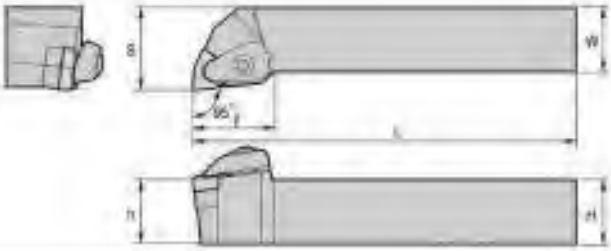
• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Stamp Punch
PCKNR/L	2020-K12	20	20	125	25	20	27							
	2525-M12	25	25	150	32	25	27	CN□□1204□□	LV4	VHX0821	SC42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	40	32	30							
	3232-P16	32	32	170	40	32	26	CN□□1606□□	LV5	VHX0825	SCS3	SP5	HW30L	HW30L
	4040-S16	40	40	250	50	40	25							
PCKNR/L	2020-K12N	20	20	125	25	20	27							
	2525-M12N	25	25	150	32	25	27	CN□□1204□□	LV4N	VHX0820N	SC42N	SP4N	HW30L	LSPS4
	3225-P12N	32	25	170	40	32	30							
	3232-P16N	32	32	170	40	32	26	CN□□1606□□	LV5N	VHX0820AN	SC53N	SP5N	HW30L	LSPS5
	4040-S16N	40	40	250	50	40	25							

DWLNR/L

WN□□



95°

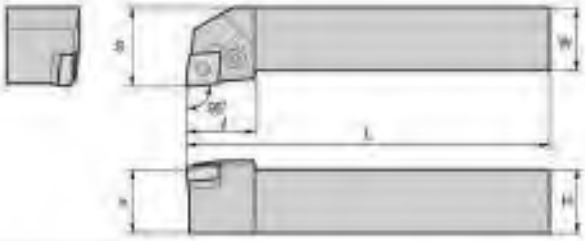
• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
DWLNR/L	2020-K06	20	20	125	25	20	26							
	2525-M06	25	25	150	32	25	26	WN□□0604□□	CVH3	CH00415	SW32V	FTKA0307	SPR0510	HW25P

PCLNR/L

CN□□



95°

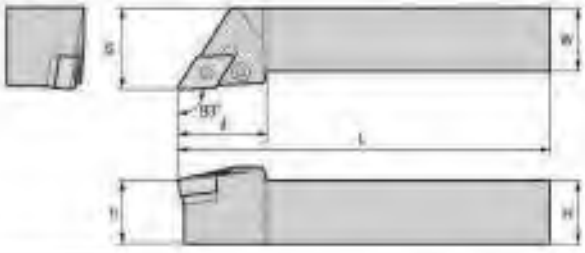
• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Punch
PCLNR/L	1616-H09	16	16	100	20	16	28							
	2020-K09	20	20	125	25	20	22	CN□□0903□□	LV3	VH00617	SC32	SP3	HW25L	LSPS3
	2525-M09	25	25	150	32	25	22							
	1616-H12	16	16	100	20	16	28							
	2020-K12	20	20	125	25	20	28							
	2525-M12	25	25	150	32	25	28	CN□□1204□□	LV4	VH00821	SC42	SP4	HW30L	LSPS4
	3225-P12	32	25	170	32	32	28							
	3232-P12	32	32	170	40	32	28							
	2525-M16	25	25	150	32	25	33	CN□□1606□□	LV5	VH00825	SC53	SP5	HW30L	LSPS5
	3232-P16	32	32	170	40	32	33							
	2525-M19	25	25	150	32	25	36							
	3225-P19	32	25	170	32	32	36							
	3232-P19	32	32	170	40	32	36	CN□□1906□□	LV6N	VH01027N	SC63N	SP6N	HW40L	LSPS6
	4040-P19	40	40	170	50	40	36							
	4040-S19	40	40	250	50	40	36							
	4040-S25	40	40	250	50	40	47	CN□□2509□□	LV8N	VH01236N	SC84N	SP8N	HW50L	LSPS8
	5050-T25	50	50	300	60	50	47							
	4040-S25-5	40	40	250	50	40	47	CN□□2507□□	LV8N	VH01236N	SC84N	SP8N	HW50L	LSPS8
	5050-S25-5	50	50	300	60	50	47							
PCLNR/L	1616-H09N	16	16	100	20	16	20							
	2020-K09N	20	20	125	25	20	22	CN□□0903□□	LV3N	VH00617N	SC32N	SP3N	HW25L	LSPS3
	2525-M09N	25	25	150	32	25	22							
	1616-H12N	16	16	100	20	16	28			VH00817N				
	2020-K12N	20	20	125	25	20	28							
	2525-M12N	25	25	150	32	25	28	CN□□1204□□	LV4N	VH00820N	SC42N	SP4N	HW30L	LSPS4
	3225-P12N	32	25	170	32	32	28							
	3232-P12N	32	32	170	40	32	28							
	2525-M16N	25	25	150	32	25	33	CN□□1606□□	LV5N	VH00830N	SC53N	SP5N	HW30L	LSPS5
	3232-P16N	32	32	170	40	32	33							

PDJNR/L

DN□□



93°

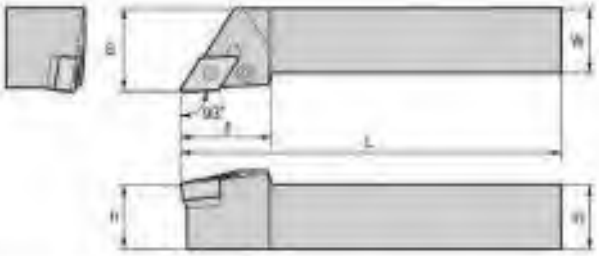
• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Punch
PDJNR/L	1616-H11	16	16	100	20	16	25							
	2020-K11	20	20	125	25	20	25	DN□□1104□□	LV3	VH00617	SD317	SP3	HW25L	LSPS3
	2525-M11	25	25	150	32	25	30							
	2020-K15	20	20	125	25	20	35							
	2525-M15	25	25	150	32	25	35							
	3225-P15	32	25	170	32	32	35	DN□□1506□□	LV4B	VH00821	SD42	SP4	HW30L	LSPS4
	3232-P15	32	32	170	40	32	35							
	2020-K15-3	20	20	125	25	20	35							
	2525-M15-3	25	25	150	32	25	35	DN□□1504□□	LV4	VH00821	SD42	SP4	HW30L	LSPS4
	3232-P15-3	32	32	170	40	32	35							

PDJNR/L

DN□□



93°

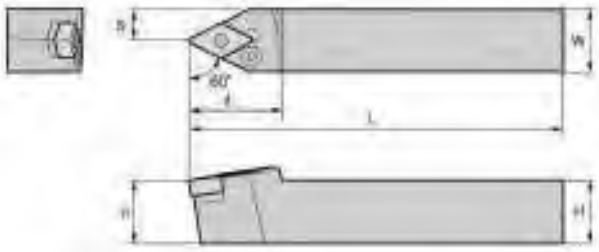
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Stamp Punch
PDJNR/L	1616-H11N	16	16	100	20	16	25	DN□□1104□□	LV3AN	VH00617N	SD32N	SP3N-1	HW25L	LSPS3
	2020-K11N	20	20	125	25	20	25							
	2525-M11N	25	25	150	32	25	30							
	2020-K15N	20	20	125	25	20	35	DN□□1506□□	LV4BN	VH00821N	SD42N	SP4N	HW30L	LSPS4
	2525-M15N	25	25	150	32	25	35							
	3225-P15N	32	25	170	32	32	35							
	3232-P15N	32	32	170	40	32	35							
	2020-K15-3N	20	20	125	25	20	35	DN□□1504□□	LV4BN	VH00821N	SD43N	SP4N	HW30L	LSPS4
	2525-M15-3N	25	25	150	32	25	35							
	3232-P15-3N	32	32	170	40	32	35							

PDNNR/L

DN□□



63°

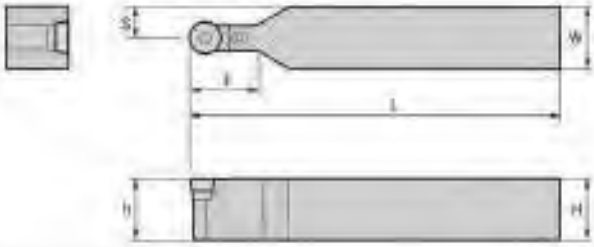
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Stamp Punch
PDNNR/L	2020-K15	20	20	125	8	20	37	DN□□1506□□	LV4B	VH00821	SD42	SP4	HW30L	LSPS4
	2525-M15	25	25	150	12.5	25	37							
	3232-P15	32	32	150	16	32	37							
	4025-M15	40	25	170	12.5	32	37							
	2525-M15-3	25	25	150	12.5	25	37	DN□□1504□□	LV4	VH00821	SD42	SP4	HW30L	LSPS4
	4025-M15-3	40	25	150	12.5	25	37							
PDNNR/L	2020-K15N	20	20	125	8	20	37	DN□□1506□□	LV4BN	VH00821N	SD42N	SP4N	HW30L	LSPS4
	2525-M15N	25	25	150	12.5	25	37							
	3232-P15N	32	32	170	16	32	37							
	2525-M15-3N	25	25	150	12.5	25	37	DN□□1504□□	LV4BN	VH00821N	SD43N	SP4N	HW30L	LSPS4
	3232-P15-3N	32	32	170	16	32	37							

PRDCN

RCMX

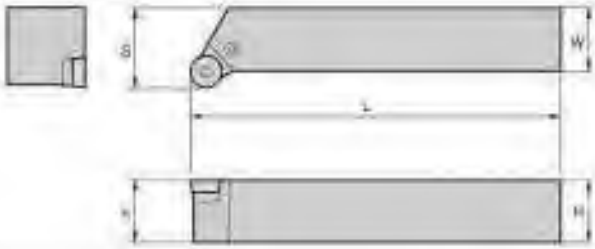


(mm)

Designation		H	W	L	S	h	l	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Stamp Punch
PRDCN	2020-M10	20	20	150	15	20	24	RCMX 1003M0	LR10	VH00514	SR10	SP3	HW20L	LSPS3
	2525-M10	25	25	150	17.5	25	24							
	2525-M12	25	25	150	18.5	25	24	RCMX 1204M0	LR12	VH00617	SR12	SP3	HW25L	LSPS3
	2020-K12	20	20	125	16	20	24							
	3225-Q12	32	25	180	18.5	32	24							
	2525-Q16	25	25	180	20.5	25	30	RCMX 1606M0	LR16	VH00621	SR16	SP4	HW25L	LSPS4
	3225-Q16	32	25	180	20.5	32	30							
	3232-Q16	32	32	180	24	32	35							
	3232-Q20	32	32	180	26	32	40	RCMX 2006M0	LR20	VH00823	SR20	SP5-1	HW30L	LSPS5
	4040-S25	40	40	250	32.5	40	42	RCMX 2507M0	LR25	VHX1030	SR25	SP6N	HW40L	LSPS6
	4040-T25	40	40	300	32.5	40	42							
	5050-U32	50	50	350	41	50	52	RCMX 3209M0	LR32	VHX1236	SR32	SP8N	HW50L	LSPS8

PRGCR/L

RCMX



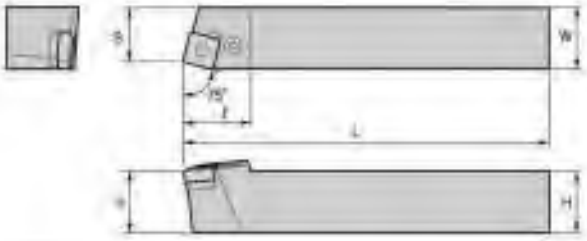
• R type insert

(mm)

Designation		H	W	L	S	h	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Stamp Punch
PRGCR/L	2020-K10	20	20	125	25	20	RCMX 1003M0	LR10	VH00514	SR10	SP3	HW20L	LSPS3
	2525-M10	25	25	150	32	25							
	2020-K12	20	20	125	25	20	RCMX 1204M0	LR12	VH00617	SR12	SP3	HW25L	LSPS3
	2525-M12	25	25	150	32	25							
	3225-P12	32	25	170	32	32							
	2525-M16	25	25	150	32	25	RCMX 1606M0	LR16	VH00621	SR16	SP4	HW25L	LSPS4
	3225-P16	32	25	170	32	32							
	3232-P20	32	32	170	40	32	RCMX 2006M0	LR20	VH00823	SR20	SP5-1	HW30L	LSPS5
	4040-S25	40	40	250	50	40	RCMX 2507M0	LR25	VHX1030	SR25	SP6N	HW40L	LSPS6

PSBNR/L

SN□□



75°

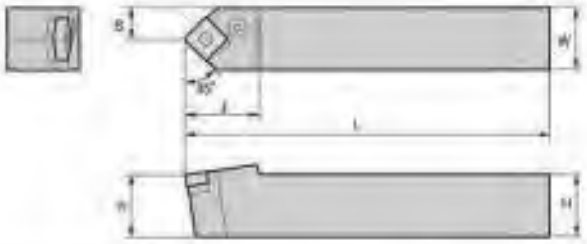
• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Simple Pinch
PSBNR/L	1616-H09	16	16	100	13	16	21	SN□□0903□□	LV3	VH00617	SS32	SP3	HW25L	LSPS3
	2020-K09	20	20	125	17	20	23							
	2020-K12	20	20	125	17	20	28	SN□□1204□□	LV4	VH00821	SS42	SP4	HW30L	LSPS4
	2525-M12	25	25	150	22	25	28							
	3225-P12	32	32	170	22	32	28							
	3232-P12	32	32	170	27	32	28							
	2525-M15	25	25	150	22	25	35	SN□□1506□□	LV5	VH00825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	27	32	35							
	3232-P19	32	32	170	27	32	40	SN□□1906□□	LV6N	VH01027N	SS63N	SP6N	HW40L	LSPS6
	4040-S19	40	40	250	35	40	40							
	4040-S25	40	40	250	35	40	50	SN□□2507□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	4040-S25-6	40	40	250	35	40	50	SN□□2509□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25	50	50	300	43	50	50	SN□□2507□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
PSBNR/L	1616-H09N	16	16	100	13	16	21	SN□□0903□□	LV3N	VH00617N	SS32N	SP3N	HW25L	LSPS3
	2020-K09N	20	20	125	17	20	23							
	2020-K12N	20	20	125	17	20	28	SN□□1204□□	LV4N	VH00820N	SS42N	SP4N	HW30L	LSPS4
	2525-M12N	25	25	150	22	25	28							
	3225-P12N	32	25	150	22	25	28							
	3232-P12N	32	32	170	27	32	28							
	2525-M15N	25	25	150	22	25	35	SN□□1506□□	LV5N	VH00820AN	SS53N	SP5N	HW30L	LSPS5
	3232-P15N	32	32	170	27	32	35							

PSDNN

SN□□



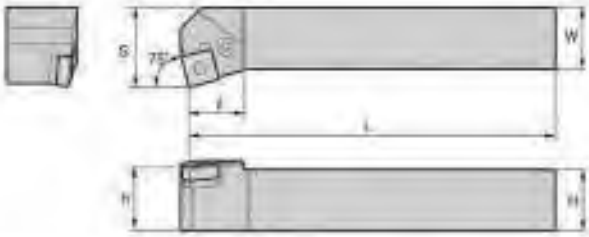
45°

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Simple Pinch
PSDNN	1616-H09	16	16	100	8	16	23	SN□□0903□□	LV3	VH00617	SS32	SP3	HW25L	LSPS3
	2020-K12	20	20	125	10	20	30	SN□□1204□□	LV4	VH00821	SS42	SP4	HW30L	LSPS4
	2525-M12	25	25	150	12.5	25	30							
	3232-P12	32	32	170	16	32	40							
	2525-M15	25	25	150	12.5	25	40	SN□□1506□□	LV5	VH00825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	16	32	40							
	3225-P19	32	25	170	12.5	32	40	SN□□1906□□	LV6N	VH01027N	SS63N	SP6N	HW40L	LSPS6
	3232-P19	32	32	170	16	32	40							
	4040-S19	40	40	250	20	40	40							
	4040-S25	40	40	250	20	40	50	SN□□2507□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25	50	50	300	25	50	50							
	4040-S25-6	40	40	250	20	40	50	SN□□2509□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25-6	50	50	300	25	50	50							
PSDNN	1616-H09N	16	16	100	8	16	23	SN□□0903□□	LV3N	VH00617N	SS32N	SP3N	HW25L	LSPS3
	2020-K12N	20	20	125	10	20	30	SN□□1204□□	LV4N	VH00820N	SS42N	SP4N	HW30L	LSPS4
	2525-M12N	25	25	150	12.5	20	30							
	3225-P12N	32	25	170	12.5	32	30							
	3232-P12N	32	32	170	16	32	40							
	2525-M15N	25	25	150	12.5	25	40	SN□□1506□□	LV5N	VH00820AN	SS53N	SP5N	HW30L	LSPS5
	3232-P15N	32	32	170	16	32	40							

PSKNR/L

SN□□



75°

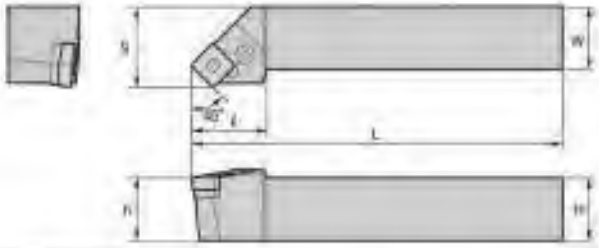
• R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Punch
PSKNR/L	1616-H09	16	16	100	20	16	17	SN□□0903□□	LV3	VH00617	SS32	SP3	HW25L	LSPS3
	2020-K09	20	20	125	25	20	20							
	2020-K12	20	20	125	25	20	23	SN□□1204□□	LV4	VH00821	SS42	SP4	HW30L	LSPS4
	2525-M12	25	25	150	32	25	23							
	3232-P12	32	32	170	40	32	23							
	2525-M15	25	25	150	32	25	28	SN□□1506□□	LV5	VH00825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	40	32	28							
	3232-P19	32	32	170	40	32	41.5	SN□□1906□□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	4040-S19	40	40	250	50	40	41.5							
	4040-S25	40	40	250	50	40	46	SN□□2507□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	4040-S25-6	40	40	250	50	40	46	SN□□2509□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	5050-T25-6	50	50	300	60	50	37.5	SN□□2509□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
PSKNR/L	1616-H09N	16	16	100	20	16	17	SN□□0903□□	LV3N	VHX0617N	SS32N	SP3N	HW25L	LSPS3
	2020-K09N	20	20	125	25	20	20							
	2020-K12N	20	20	125	25	20	26	SN□□1204□□	LV4N	VHX0820N	SS42N	SP4N	HW30L	LSPS4
	2525-M12N	25	25	150	32	25	26							
	3232-P12N	32	32	170	40	32	26							
	2525-M15N	25	25	150	32	25	32	SN□□1506□□	LV5N	VHX0820AN	SS53N	SP5N	HW30L	LSPS5
	3232-P15N	32	32	170	40	32	32							

PSSNR/L

SN□□



45°

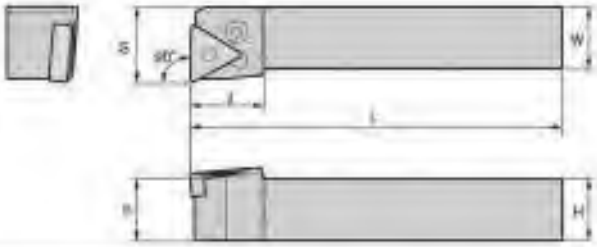
• R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Punch
PSSNR/L	1616-H09	16	16	100	20	16	25	SN□□0903□□	LV3	VH00617	SS32	SP10	HW25L	LSPS3
	2020-K12	20	20	125	25	20	30	SN□□1204□□	LV4	VH00821	SS42	SP4	HW30L	LSPS4
	2525-M12	25	25	150	32	25	36							
	3232-P12	32	32	170	40	32	40							
	2525-M15	25	25	150	32	25	36	SN□□1506□□	LV5	VH00825	SS53	SP5	HW30L	LSPS5
	3232-P15	32	32	170	40	32	45							
	3232-P19	32	32	170	40	32	41.5	SN□□1906□□	LV6N	VHX1027N	SS63N	SP6N	HW40L	LSPS6
	4040-R19	40	40	200	50	40	41.5							
	4040-S19	40	40	250	50	40	41.5							
	4040-S25	40	40	250	50	40	48	SN□□2507□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
	4040-S25-6	40	40	250	50	40	48	SN□□2509□□	LV8N	VHX1236N	SS84N	SP8N	HW50L	LSPS8
PSSNR/L	1616-H09N	16	16	100	20	16	25	SN□□0903□□	LV3N	VHX0617N	SS32N	SP10	HW25L	LSPS3
	2020-K12N	20	20	125	25	20	30	SN□□1204□□	LV4N	VHX0821N	SS42N	SP4	HW30L	LSPS4
	2525-M12N	25	25	150	32	25	36							
	3225-P12N	32	25	170	32	32	45							
	3232-P12N	32	32	170	40	32	40							
	2525-M15N	25	25	150	32	25	36	SN□□1506□□	LV5N	VHX0820N	SS53N	SP5	HW30L	LSPS5
	3232-P15N	32	32	170	40	32	45							

PTFNR/L

TN□□



90°

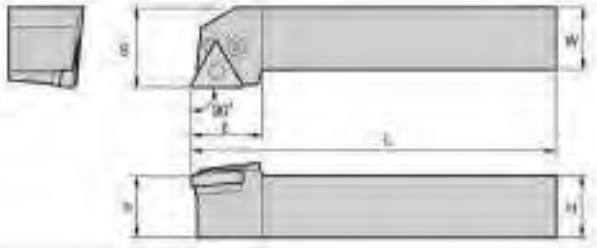
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Wrench
PTFNR/L	1616-H16	16	16	100	20	16	20	TN□□1604□□	LV3	VH00817	ST317	SP3	HW25L	LSPS3
	2020-K16	20	20	125	25	20	20							
	2525-M16	25	25	150	32	25	20							
	2525-M22	25	25	150	32	25	25	TN□□2204□□	LV4	VH00821	ST42	SP4	HW30L	LSPS4
	3232-P22	32	32	170	40	32	25							
	3232-P27	32	32	170	40	32	34	TN□□2706□□	LV5	VH00825	ST53	SP5	HW30L	LSPS5
	4040-S27	40	40	250	50	40	34							
PTFNR/L	1616-H16N	16	16	100	20	16	20	TN□□1604□□	LV3N	VH00817N	ST317N	SP3N	HW25L	LSPS3
	2020-K16N	20	20	125	25	20	20							
	2525-M16N	25	25	150	32	25	20							
	2525-M22N	25	25	150	32	25	25	TN□□2204□□	LV4N	VH00820N	ST42N	SP4N	HW30L	LSPS4
	3232-P22N	32	32	170	40	32	25							
	3232-P27N	32	32	170	40	32	34	TN□□2706□□	LV5AN	VH00823N	ST53N	SP5N	HW30L	LSPS5
	4040-S27N	40	40	250	50	40	34							

PTGNR/L

TN□□



90°

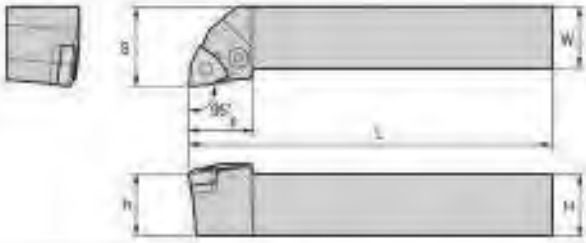
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shim Pin Wrench
PTGNR/L	1212-F11	12	12	80	16	12	16	TN□□1103□□	LV2	VH00509B	-	-	HW20L	-
	1616-H11	16	16	100	20	16	18							
	2020-K11	20	20	125	25	20	19							
	2525-M11	25	25	150	32	25	20							
	1616-H16	16	16	100	20	16	20	TN□□1604□□	LV3	VH00817	ST317	SP3	HW25L	LSPS3
	2020-K16	20	20	125	25	20	20							
	2525-M16	25	25	150	32	25	20							
	3232-P16	32	32	170	40	32	20							
	2525-M22	25	25	150	32	25	28	TN□□2204□□	LV4	VH00821	ST42	SP4	HW30L	LSPS4
	3232-P22	32	32	170	40	32	28							
	3232-P27	32	32	170	40	32	33	TN□□2706□□	LV5	VH00825	T53	SP5	HW30L	LSPS5
	4040-S27	40	40	250	50	40	33							
PTGNR/L	1616-H16N	16	16	100	20	16	20	TN□□1604□□	LV3N	VH00817N	ST317N	SP3N	HW25L	LSPS3
	2020-K16N	20	20	125	25	20	20							
	2525-M16N	25	25	150	32	25	20							
	3232-P16N	32	32	170	40	32	20							
	2525-M22N	25	25	150	32	25	28	TN□□2204□□	LV4N	VH00820N	ST42N	SP4N	HW30L	LSPS4
	3232-P22N	32	32	170	40	32	28							
	3232-P27N	32	32	170	40	32	33	TN□□2706□□	LV5AN	VH00823N	ST53N	SP5N	HW30L	LSPS5
	4040-S27N	40	40	250	50	40	33							

PWLNR/L

WN□□



95°

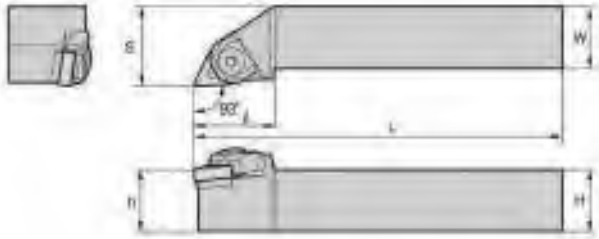
• R type insert

(mm)

Designation		H	W	L	S	h	J	Insert	Lever	Screw	Shim	Shim Pin	Wrench	Shimph Punch
PWLNR/L	1616-H06	16	16	100	20	16	20	WN□□0604□□	LV3	VH00617	SW317	SP3	HW25L	LSPS3
	2020-K06	20	20	125	25	20	20							
	2525-M06	25	25	150	32	25	20							
	2020-K08	20	20	125	25	20	26	WN□□0804□□	LV4	VH00821	SW42	SP4	HW30L	LSPS4
	2525-M08	25	25	150	32	25	26							
PWLNR/L	1616-H06N	16	16	100	20	16	20	WN□□0604□□	LV3N	VH00617N	ST317N	SP3N	HW25L	LSPS3
	2020-K06N	20	20	125	25	20	20							
	2525-M06N	25	25	150	32	25	20							
	2020-K08N	20	20	125	25	20	26	WN□□0804□□	LV4N	VH00820N	ST42N	SP4N	HW30L	LSPS4
	2525-N08N	25	25	150	32	25	26							

WTJNR/L

TN□□



93°

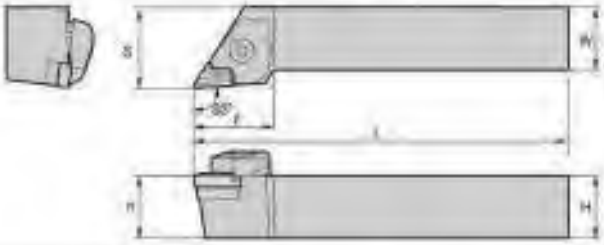
• R type insert

(mm)

Designation		H	W	L	S	h	J	Insert	Wedge Clamp	Screw	Stopper Ring	Shim	Shim Pin	Nut	Wrench
WTJNR/L	2020-K16	20	20	125	25	20	33	TN□□1604□□	CMH6R6	MH00626	ER04	ST32M	SP3M-1 SP3M	NG407	HW30L
	2525-M16	25	25	150	32	25	33								
	3232-P16	32	32	170	40	32	33								
	2525-M22	25	25	150	32	25	35	TN□□2204□□	CMH6R1	MH00626	ER04	ST43M	SP4M	NG508	HW30L
	3232-P22	32	32	170	40	32	35								

CKJNR/L

KN□□



93°

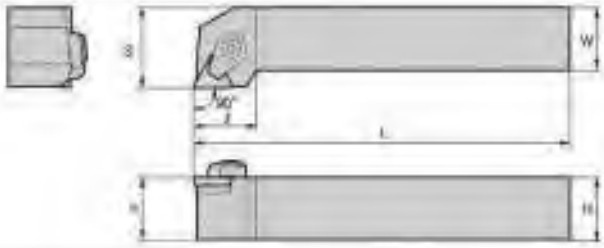
• R type insert

(mm)

Designation		H	W	L	S	h	J	Insert	Clamp	Clamp Screw	Spring	Shim	pin-Spring	Shim Screw	Wrench
CKJNR	2020-K16	20	20	125	25	20	32	KN□□1604□□R	CTH6R1	CH00625	SR3	SK33C	PN0515 SR4	SH00310	HW20L HW40L
	2525-M16	25	25	150	32	25	32								
	3225-M16	32	25	150	32	32	32								
	3225-P16	32	25	170	32	32	32								
	3232-P16	32	32	170	40	32	32								
	4040-R16	40	40	200	50	40	32								
CKJNL	2020-K16	20	20	125	25	20	32	KN□□1604□□L	CTH6L1	CH00625	SR3	SK33CL	PN0515 SR4	SH00310	HW20L HW40L
	2525-M16	25	25	150	32	25	32								
	3232-P16	32	32	170	40	32	32								
	4040-R16	40	40	200	50	40	32								

CTGPR/L

TP□R



90°

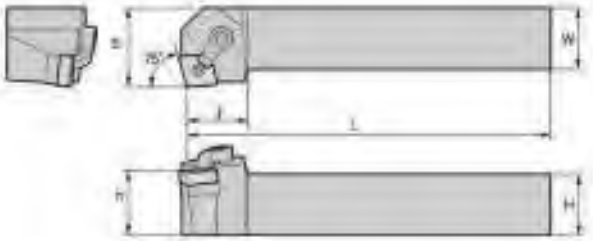
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Crang	Wrench
CTGPR/L	1212-F11	12	12	80	16	12	20	TP□R 1103□□	CH53R1	CH00515C	-	-	CR03C	HW25L
	1616-H11	16	16	100	20	16	20							
	2020-K11	20	20	125	25	20	20							
	2020-K16	20	20	125	25	20	25	TP□R 1603□□	CH6R5	CH00622C	ST32C	SP3C	CR04C	HW30L
	2525-M16	25	25	150	32	25	25							
	2525-M22	25	25	150	32	25	32	TP□R 2204□□	CH83R1	CH00823C	ST43C	SP4C	CR05C	HW40L
	3232-P22	32	32	170	40	32	32							

MCKNR/L

CN□□



75°

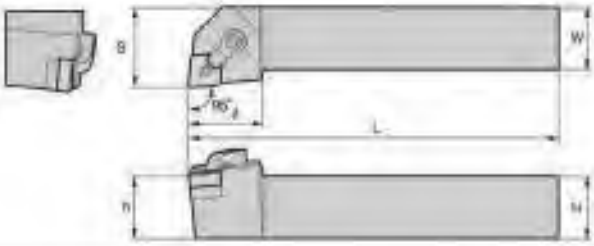
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCKNR/L	2020-K12	20	20	125	25	20	32	CN□□1204□□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	2525-M12	25	25	150	32	25	32						
	3232-P12	32	32	170	40	32	32						

MCLNR/L

CN□□



95°

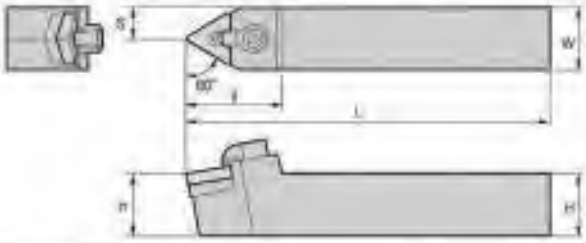
- R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MCLNR/L	1616-H09	16	16	100	20	16	25	CN□□0903□□	CDH7N	DHA10-32-19	SC32D	SP3DS	HW29.8L HW19.8L
	2020-K09	20	20	125	25	20	25						
	2525-M09	25	25	150	32	25	25						
	2020-K12	20	20	125	25	20	32	CN□□1204□□	CDH6N	DHA1/4-25	SC43D	SP4D	HW31.8L HW23.8L
	2525-M12	25	25	150	32	25	32						
	3225-P12	32	25	170	32	32	32						
	3232-P12	32	32	170	40	32	32						
	2525-M16	25	25	150	32	25	33	CN□□1606□□	CDH8N	DHA5/16-32	SC53D	SP5D	HW39.7L HW31.8L
	3232-P16	32	32	170	40	32	33						
	4040-S16	40	40	250	50	40	33						
	2525-M19	25	25	150	32	25	38	CN□□1906□□	CDH8N	DHA5/16-32	SC63D	SP6D	HW39.7L HW35.7L
	3232-P19	32	32	170	40	32	38						
	4040-S19	40	40	250	50	40	38						
	4040-S25	40	40	250	50	40	38	CN□□2507□□	CDH8N3	DHA3/8-35	SC84D	SP8D	HW39.7L HW47.6L

MTENN

TN□□



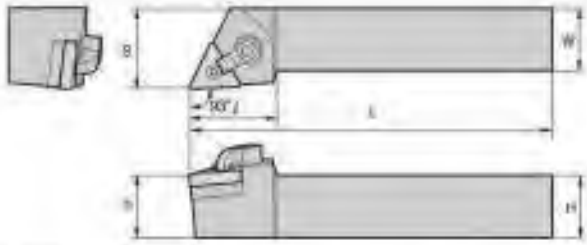
60°

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTENN	2020-K16	20	20	125	10	20	32	TN□□1604□□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
	2525-M16	25	25	150	12.5	25	32						
	2525-M22	25	25	150	12.5	25	35	TN□□2204□□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	3232-P27	32	32	170	16	32	35	TN□□2706□□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	4040-S33	40	40	250	20	40	40	TN□□3307□□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

MTJNR/L

TN□□



93°

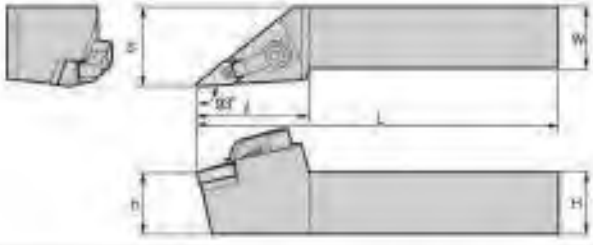
- R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MTJNR/L	2020-K16	20	20	125	25	20	32	TN□□1604□□	CDH7N	DHA10-32-19	ST32D	SP3D	HW23.8L HW19.8L
	2525-M16	25	25	150	32	25	32						
	2525-M22	25	25	150	32	25	32	TN□□2204□□	CDH8N1	DHA5/16-32	ST43D	SP4D	HW39.7L HW23.8L
	3232-P22	32	32	170	40	32	32						
	3232-P27	32	32	170	40	32	35	TN□□2706□□	CDH8N1	DHA5/16-32	ST53D	SP5D	HW39.7L HW31.8L
	4040-S27	40	40	250	50	40	35						
	4040-S33	40	40	250	50	40	40	TN□□3307□□	CDH8N	DHA5/16-32	ST63D	SP6DL	HW39.7L HW35.7L

MVJNR/L

VN□□



93°

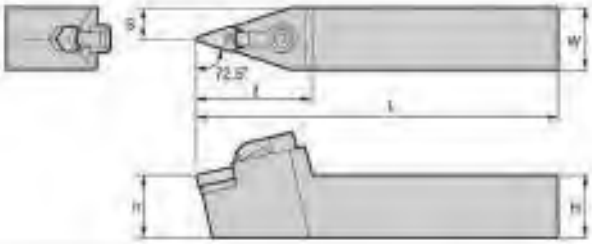
- R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVJNR/L	2020-K16	20	20	125	25	20	37	VN□□1604□□	CDH8N2	DHA5/16-32	SV32D	SP3D	HW39.7L HW19.8L
	2525-M16	25	25	150	32	25	37						
	3232-P16	32	32	170	40	32	37						
	2525-M22	25	25	150	32	25	50	VN□□2204□□	CDH8N2	DHA5/16-32	SV43D	SP4D	HW39.7L HW23.8L
	3232-P22	32	32	170	40	32	50						
	4040-S22	40	40	250	50	40	50						

MVVNN

VN□□



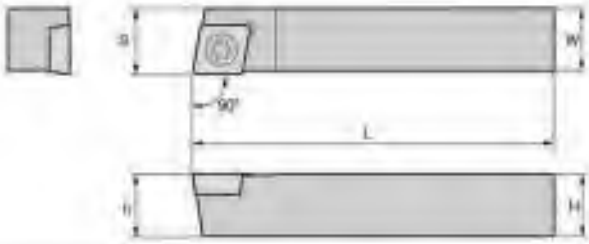
72.5°

(mm)

Designation		H	W	L	S	h	l	Insert	Clamp	Clamp Screw	Shim	Shim Pin	Wrench
MVVNN	2020-K16	20	20	125	25	20	42	VN□□1604□□	CDH8N2	DHA5/16-32	SV32D	SP8D	HW39.7L HW19.8L
	2525-M16	25	25	150	32	25	42						

SCACR/L

CC□□



90°

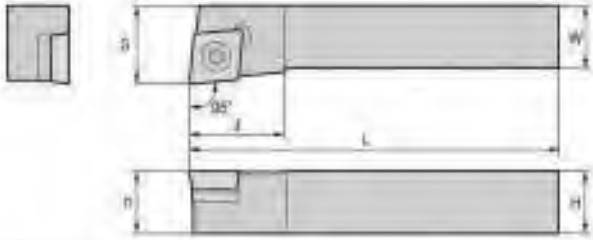
• R type insert

(mm)

Designation		H	W	L	S	h	Insert	Screw	Shim	ShimScrew	Wrench
SCACR/L	1010-E06	10	10	70	10.5	10	CC□□0602□□	FTKA02565	-	-	TW07P
	1212-F09	12	12	80	12.5	12	CC□□09T3□□	FTKA03508	-	-	TW15P

SCLCR/L

CC□□



95°

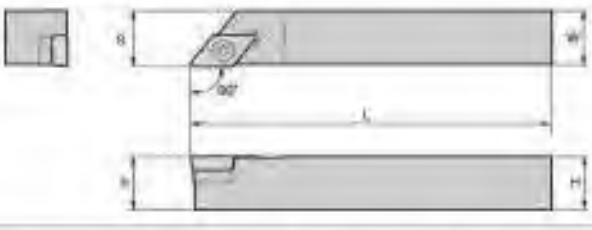
• R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Screw	Shim	ShimScrew	Wrench
SCLCR/L	0808-D06	08	08	80	10	08	10	CC□□0602□□	FTKA02565	-	-	TW07P
	1010-E06	10	10	70	16	10	10					
	1212-F09	12	12	80	20	12	16	CC□□09T3□□	FTGA03508	-	-	TW15P
	1616-H09	16	16	100	20	16	16					
	2020-K09	20	20	125	25	20	16					
	2020-K12	20	20	125	25	20	25	CC□□1204□□	FTGA0411F	SC42S	SH06N610F	TW15P HW40L
	2525-M12	25	25	150	32	25	26					

SDACR/L

DC□□



90°

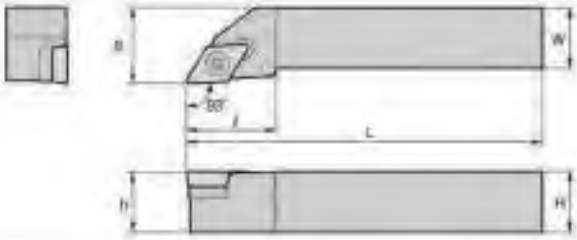
• R type insert

(mm)

Designation		H	W	L	S	h	Insert	Screw	Shim	ShimScrew	Wrench
SDACR/L	1010-E07	10	10	70	10.5	10	DC□□0702□□	FTKA02565	-	-	TW07P
	1212-F11	12	12	80	12.5	12	DC□□11T3□□	FTKA03508	-	-	TW15P
	1616-H11	16	16	100	16.5	16					

SDJCR/L

DC□□



93°

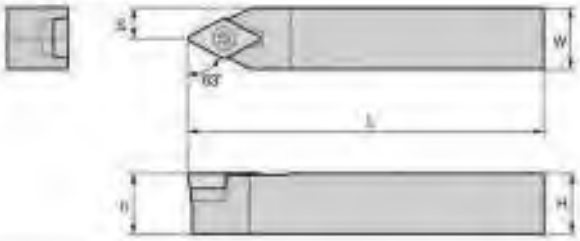
- R type insert

(mm)

Designation		H	W	L	S	h	l	Insert	Screw	Shim	ShimScrew	Wrench
SDJCR/L	1010-E07	10	10	70	12	10	15	DC□□0702□□	FTKA02565	-	-	TW07P
	1212-F07	12	12	80	16	12	15					
	1616-H07	16	16	100	20	16	18					
	2020-K07	20	20	125	25	20	15					
	1212-F11	12	12	80	16	12	15	DC□□11T3□□	FTGA03512	SD32S	SH3N0509F	TW15P, HW35L
	1616-H11	16	16	100	20	16	24					
	2020-K11	20	20	125	25	20	24					
	2525-M11	25	25	150	32	25	29					

SDNCN

DC□□



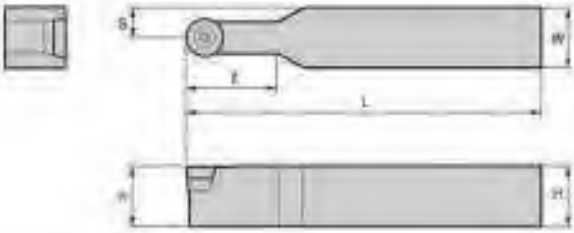
63°

(mm)

Designation		H	W	L	S	h	Insert	Screw	Shim	ShimScrew	Wrench
SDNCN	1010-E07	10	10	70	5	10	DC□□0702□□	FTKA02565	-	-	TW07P
	1212-F07	12	12	80	6	12					
	1212-H11	12	12	100	6	12	DC□□11T3□□	FTGA03508	-	-	TW15P
	1616-H11	16	16	100	8	16	DC□□1173□□	FTGA03512	SD32S	SH3N0509F	TW15P, HW35L
	2020-K11	20	20	125	10	20					

SRDCN

RCGT



(mm)

Designation		H	W	L	S	h	l	Insert	Screw	Shim	ShimScrew	Wrench
SRDCN	1010-E06	10	10	70	5	10	10	RCGT 0602M0	FTKA02565			TW07P
	1212-F06	12	12	80	6	12	12					
	1616-H06	16	16	100	8	16	12					
	2525-M06	25	25	150	12.5	25	20					
	1616-H08	16	16	100	8	16	16	RCGT 0803M0	FTNA0307	-	-	TW09P
	2020-K08	20	20	125	10	20	20					
	2525-M08	25	25	150	12.5	25	20					
	1616-H10	16	16	100	8	16	25	RCGT 1003M0	FTKA03511A	SR10S	SH3N0509F	TW15P HW35L
	2020-K10	20	20	125	10	20	25					
	2525-M10	25	25	150	12.5	25	25					
	2020-K12	20	20	125	10	20	28	RCGT 1204M0	FTGA03512	SR12S	SH3N0509F	TW15P HW35L
	2525-M12	25	25	150	12.5	25	28					

Boring Bar Code System(ISO)

S 12 M - S T F P R - 11

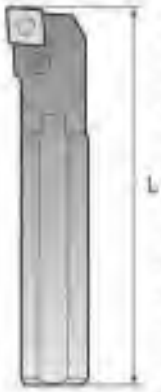
1	2	3	4	5	6	7	8	9
Type of Bar	Bar Diameter	Bar Length	Method of Mounting Insert	Insert Shape	Lead Angle of Boring Bar	Relief Angle of Insert	Hand of Bar	Length of Cutting Edge

1 Type of Bar

"A" Steel with coolant hole
"E" Carbide bar with fixed steel head and coolant hole
"C" Carbide shank
"S" Steel shank
"X" Special type

2 Bar Diameter

3 Bar Length



length(L)	(mm)
H	100
J	110
K	125
M	150
N	160
Q	180
R	200
S	250
T	300
U	350
V	400
W	450
Y	500

4 Method of Mounting Insert


Top clamping — C

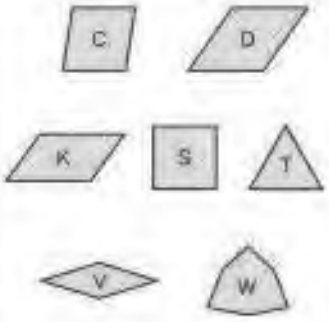

Top and hole clamping — D


Top and hole clamping — M


Hole clamping — F


Screw on — S

5 Insert Shape



6 Lead Angle of Boring Bar

L

F

U

K

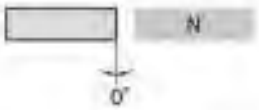
Q

Z

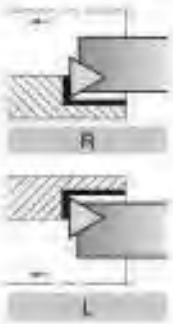
J

W

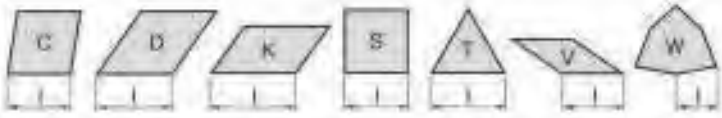
7 Relief Angle of Insert



8 Hand of Bar

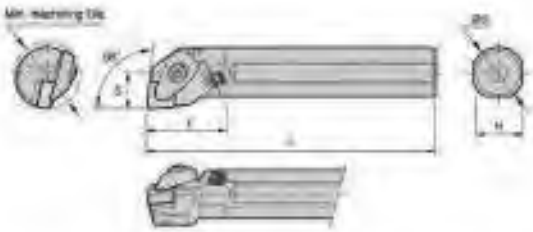


9 Length of Cutting Edge



DCLNR/L

CN□□



95°

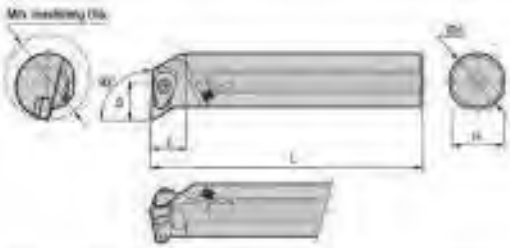
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	l	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench
A25R-DCLNR/L-09	32	25	23	200	17	27	CN□□0903□□	CVH3	CH03415	SC32V	FTKA0307	SPR0510	CN0605	HW25P
A25R-DCLNR/L-12	32	25	23	200	17	28	CN□□1204□□	CVH4	CH03518	SC42V	FTKA0410	SPR0714	CN0605	HW30P
A32S-DCLNR/L-12	40	32	30	250	22	27								
A40T-DCLNR/L-12	50	40	37	300	27	30								
A50U-DCLNR/L-16	63	50	47	350	35	40	CN□□1604□□	CVH5	CH03622	SC54V	FTNA0511	SPR0811	CN0605	HW40L

DDUNR/L

DN□□



93°

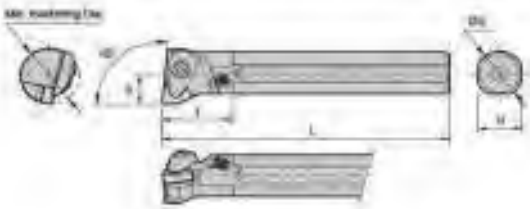
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	l	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench
A40T-DDUNR/L-15	50	40	37	300	27	25	DN□□1506□□	CVH4	CH03518	SD44V	FTKA0410	SPR0714	CN0605	HW30P
A50U-DDUNR/L-15	63	50	47	350	35	30								
A40T-DDUNR/L-15-3	50	40	37	300	27	25	DN□□1504□□	CVH4	CH03518	SD43V	FTKA0410	SPR0714	CN0605	HW30P
A50U-DDUNR/L-15-3	63	50	47	350	35	30								

DWLNR/L

WN□□



95°

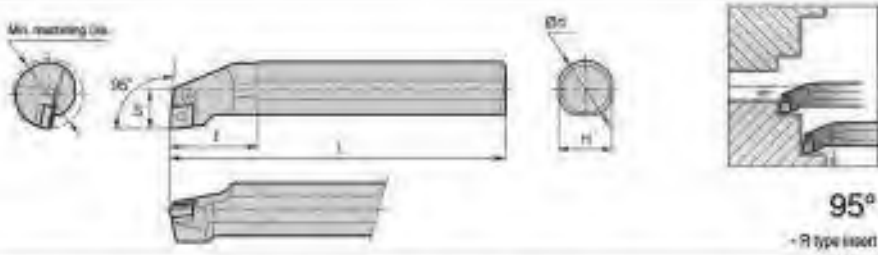
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	l	Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Nozzle	Wrench
A25R-DWLNR/L-06	32	25	23	200	17	19	WN□□0604□□	CVH3	CH03415	SW32V	FTKA0307	SPR0510	CN0605	HW25P
A32S-DWLNR/L-06	40	32	30	250	22	20								
A40T-DWLNR/L-06	50	40	37	300	27	25								
A25R-DWLNR/L-08	33	25	23	200	17	20	WN□□0804□□	CVH4	CH03518	SW42V	FTKA0410	SPR0714	CN0605	HW30P
A32S-DWLNR/L-08	40	32	30	250	22	24								
A40T-DWLNR/L-08	50	40	37	300	27	25								
A50U-DWLNR/L-08	63	50	47	350	35	32								

PCLNR/L

CN□□



95°

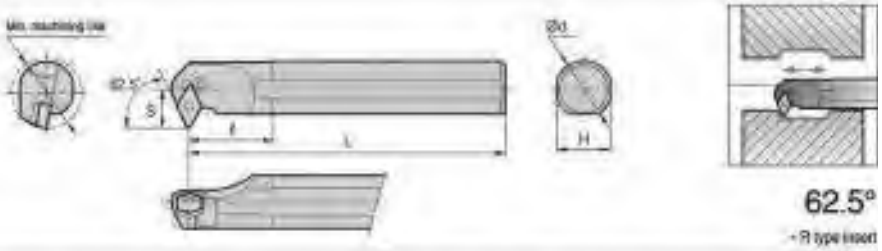
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	l	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench
S16R-PCLNR/L-09	20	16	15	200	11	28	CN□□0903□□	LV3C	VH05093	–	–	–	HW20L
S20S-PCLNR/L-09	25	20	18	250	13	32							
S25R-PCLNR/L-09	32	25	23	200	17	36							
S25R-PCLNR/L-12	32	25	23	200	17	40	CN□□1204□□	LV4A	VH00613A	–	–	–	HW25L
S32S-PCLNR/L-12	40	32	30	250	22	50		LV4	VH00821	SC42B	SP4	LSPS4	HW30L
S40T-PCLNR/L-12	50	40	37	300	27	55							
S50U-PCLNR/L-12	63	50	47	350	35	55							
S50U-PCLNR/L-19	70	50	47	350	35	63	CN□□1906□□	LV6	VH01027	SC63	SP6	LSPS6	HW40L
A25R-PCLNR/L-12	32	25	24	200	17	40	CN□□1204□□	LV4A	VH00613A	–	–	–	HW25L
A32S-PCLNR/L-12	44	32	31	250	22	50		LV4	VH00821	SC42B	SP4	LSPS4	HW30L
A40T-PCLNR/L-12	50	40	47	300	27	60							
S16R-PCLNR/L-09N	20	16	15	200	11	25	CN□□0903□□	LV3CN	VH00509BN	–	–	–	HW20L
S20S-PCLNR/L-09N	25	20	18	250	13	25							
S25R-PCLNR/L-09N	32	25	23	200	17	25							
S25R-PCLNR/L-12N	32	25	23	200	17	25	CN□□1204□□	LV4AN	VHX0613N	–	–	–	HW25L
S32S-PCLNR/L-12N	40	32	30	250	22	30		LV4N	VH00617N	SC42N	SP4N	LSPS4	HW30L
S40T-PCLNR/L-12N	50	40	37	300	27	30		LV4N	VH00820N	SC42N	SP4N	LSPS4	HW30L
S50U-PCLNR/L-12N	63	50	47	350	35	30							
S50U-PCLNR/L-19N	63	50	47	350	35	30	CN□□1906□□	LV6N	VHX1027N	SC63N	SP6N	LSPS6	HW40L
A16R-PCLNR/L-09N	20	16	15	200	11	28	CN□□0903□□	LV3CN	VH00509BN	–	–	–	HW20L
A20S-PCLNR/L-09N	25	20	18	250	13	25							
A25R-PCLNR/L-09N	32	25	23	200	17	25							
A25R-PCLNR/L-12N	32	25	23	200	17	25	CN□□1204□□	LV4AN	VHX0613N	–	–	–	HW25L
A32R-PCLNR/L-12N	40	32	30	250	22	30		LV4N	VH00617N	SC42N	SP4N	LSPS4	HW30L
A40T-PCLNR/L-12N	50	40	37	300	27	30		LV4N	VH00820N	SC42N	SP4N	LSPS4	HW30L
A50U-PCLNR/L-12N	63	50	47	350	35	30							
A50U-PCLNR/L-19N	63	50	47	350	35	30	CN□□1906□□	LV6N	VHX1027N	SC63N	SP6N	LSPS6	HW40L

PDSNR/L

DN□□



62.5°

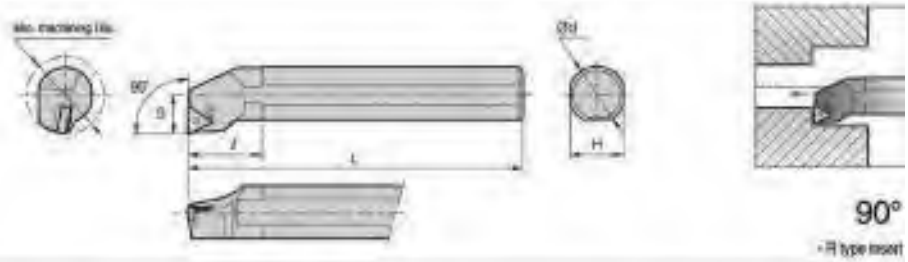
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	l	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench
S32S-PDSNR/L-15	40	32	30	250	22	45	DN□□1508□□	LV4B	VH00821	SD42	SP4	LSPS4	HW30L
S40T-PDSNR/L-15	50	40	37	300	27	43							
S32S-PDSNR/L-15-3	40	32	30	450	22	45	DN□□1504□□	LV4	VH00821	SD42	SP4	LSPS4	HW30L
S40T-PDSNR/L-15-3	50	40	37	300	27	43							
A32S-PDSNR/L-15	40	32	31	250	22	45	DN□□1508□□	LV4B	VH00821	SD42	SP4	LSPS4	HW30L
A32S-PDSNR/L-15-3	40	32	31	250	22	45	DN□□1504□□	LV4	VH00821	SD42	SP4	LSPS4	HW30L
S32S-PDSNR/L-15N	40	32	30	250	22	15	DN□□1508□□	LV4BN	VH00821	SD42N	SP4N	LSPS4	HW30L
S40T-PDSNR/L-15N	50	40	37	300	27	15							
S32S-PDSNR/L-15-3N	40	32	30	250	22	15	DN□□1504□□	LV4BN	VH00821	SD43N	SP4N	LSPS4	HW30L
S40T-PDSNR/L-15-3N	50	40	37	300	27	15							
A32S-PDSNR/L-15N	40	32	30	250	22	15	DN□□1508□□	LV4BN	VH00821	SD42N	SP4N	LSPS4	HW30L
A40T-PDSNR/L-15N	50	40	37	300	27	15							
A32S-PDSNR/L-15-3N	40	32	30	450	22	15	DN□□1504□□	LV4BN	VH00821	SD43N	SP4N	LSPS4	HW30L
A40T-PDSNR/L-15-3N	50	40	37	300	27	15							

PTFNR/L

TN□□



90°

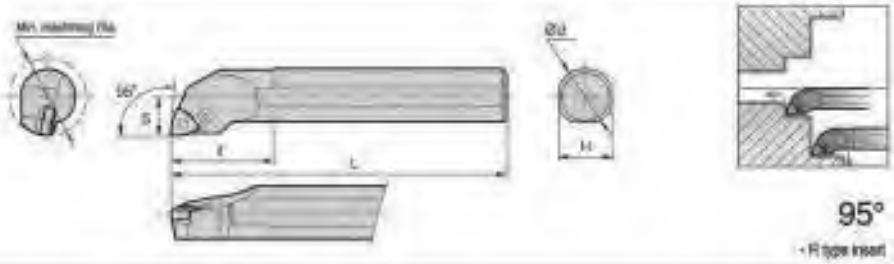
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	◊	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench
S16R-PTFNR/L-11	20	16	15	200	11	28	TN□□1103□□	LV2	VH-05509B	–	–	–	HW25L
S20S-PTFNR/L-11	25	20	18	250	13	33							
S25R-PTFNR/L-11	32	25	23	200	17	36							
S25R-PTFNR/L-16	32	25	23	200	17	42	TN□□1604□□	LV3B	VH-05512B	–	–	–	HW20L
S32S-PTFNR/L-16	44	32	30	250	22	50		LV3	VH-05617	ST317B	SP3	LSPS3	HW25L
S40T-PTFNR/L-16	54	40	37	300	27	55							
A25R-PTFNR/L-16	32	25	24	200	17	40		LV3	VH-05617	ST317B	SP3	LSPS3	HW25L
A32S-PTFNR/L-16	40	32	31	250	22	50		LV3	VH-05617	ST317B	SP3	LSPS3	HW25L
S25R-PTFNR/L-16N	32	25	23	200	17	42	TN□□1604□□	LV3BN	VH-05512B	–	–	–	HW20L
S32S-PTFNR/L-16N	44	32	30	250	22	50		LV3N	VH-05617N	ST317N	SP3N	LSPS3	HW25L
S40T-PTFNR/L-16N	54	40	37	300	27	55							
A25R-PTFNR/L-16N	32	25	23	200	17	42	TN□□1604□□	LV3BN	VH-05512B	–	–	–	HW20L
A32S-PTFNR/L-16N	44	32	30	250	22	50		LV3N	VH-05617N	ST317N	SP3N	LSPS3	HW25L
A40T-PTFNR/L-16N	54	40	37	300	27	55							

PWLNR/L

WN□□



95°

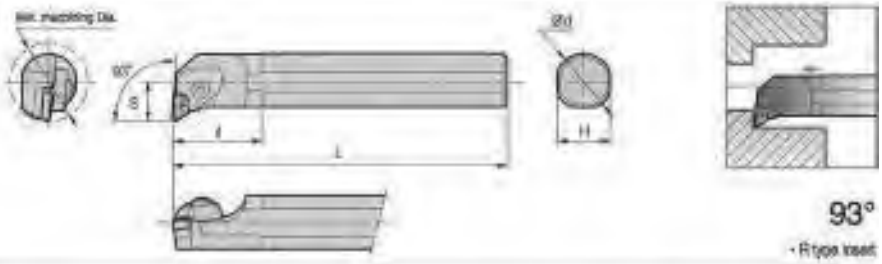
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	◊	Insert	Lever	Screw	Shim	Shim pin	Shim pin Punch	Wrench
S20S-PWLNR/L-06	25	20	18	250	13	40	WN□□0604□□	LV3B	VH-05512B	–	–	–	HW20L
S25R-PWLNR/L-06	32	25	23	200	17	40							
S32S-PWLNR/L-06	44	32	30	250	22	45		LV3B	VH-05613B	SW317	SP3	LSPS3	HW25L
S25R-PWLNR/L-08	32	25	23	200	17	45	WN□□0804□□	LV4A	VH-05613A	–	–	–	HW25L
S32S-PWLNR/L-08	44	32	30	250	22	50		LV4	VH-05621	SW42	SP4	LSPS3	HW30L
S20S-PWLNR/L-06N	25	20	18	250	13	40	WN□□0604□□	LV3BN	VH-05512BN	–	–	–	HW20L
S25R-PWLNR/L-06N	32	25	23	200	17	40		LV3BN	VH-05512BN	–	–	–	HW20L
S32S-PWLNR/L-06N	44	32	30	250	22	45		LV3N	VH-05617N	SW317N	SP3N	LSPS3	HW25L
S25R-PWLNR/L-08N	32	25	23	200	17	25	WN□□0804□□	LV4AN	VH-05613N	–	–	–	HW25L
S32S-PWLNR/L-08N	44	32	30	S	22	25		LV4N	VH-05620N	SW42N	SP4N	LSPS4	HW30L

CKUNR/L

KN□□



93°

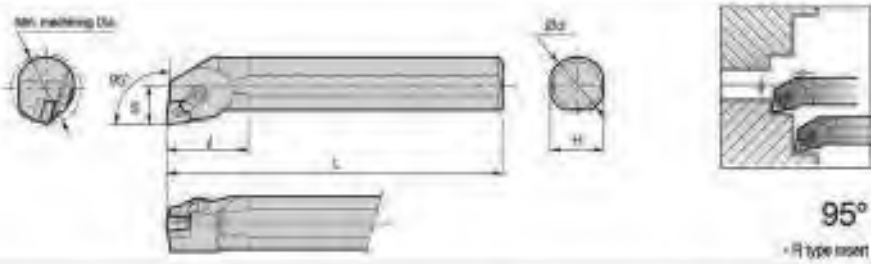
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Spring	Shim	pin-Spring	Shim Screw	Wrench
S32S-CKUNR-16	40	32	30	250	22	70	KN□□1604□□L	CTH6LI	CH0825	SR3 SR4	SK33CL	PN6515	SH0830	HW40L HW20L
S40T-CKUNR-16	50	40	37	300	27	60								
S50U-CKUNR-16	63	50	43	350	35	55								
S32S-CKUNL-16	40	32	30	250	22	70	KN□□1604□□R	CTH6RI	CH0825	SR3 SR4	SK33C	PN6515	SH0830	HW40L HW20L
S40T-CKUNL-16	50	40	37	300	27	60								
S50U-CKUNL-16	63	50	43	350	35	55								

MCLNR/L

CN□□



95°

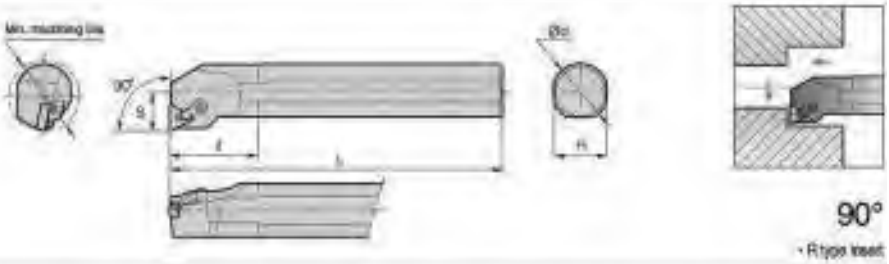
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim pin	Wrench
S20S-MCLNR/L-09	25	20	18	250	13	36	CN□□0903□□	CDH7N	DHA10-32-19	-	SP3D3	HW19.8L HW23.8L
S25R-MCLNR/L-09	32	25	23	200	17	36						
S25R-MCLNR/L-12	32	25	23	200	17	36	CN□□1204□□	CDH8N	DHA1/4-21	-	SP4DS	HW31.8L HW23.8L
S32S-MCLNR/L-12	40	32	30	250	22	50				SC43D	SP4D	
S40T-MCLNR/L-12	50	40	37	300	27	60						
A25R-MCLNR/L-12	32	25	23	200	17	40	CN□□1204□□	CDH8N	DHA1/4-21	-	SP4DS	HW31.8L HW23.8L
A32S-MCLNR/L-12	40	32	30	250	22	50				SC43D	SP4D	

MTFNR/L

TN□□



90°

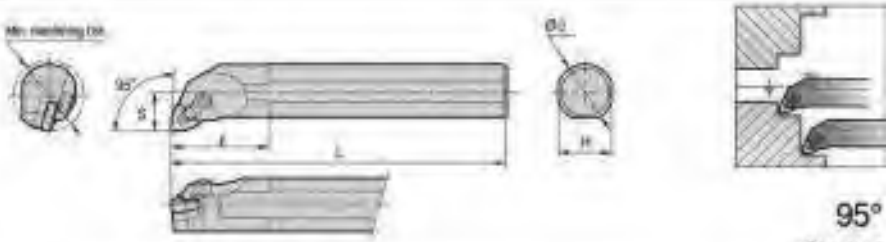
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim pin	Wrench
S25R-MTFNR/L-16	32	25	23	200	17	36	TN□□1604□□	CDH7N1	DHA10-32-19	-	SP3D3	HW23.8L HW19.8L
S32S-MTFNR/L-16	40	32	30	250	22	50				ST32D	SP3D	
S40T-MTFNR/L-16	50	40	37	300	27	60						
A25R-MTFNR/L-16	32	25	23	200	17	40	TN□□1604□□	CDH7N1	DHA10-32-19	-	SP3D3	HW23.8L
A32S-MTFNR/L-16	40	32	30	250	22	50				ST32D	SP3D	HW19.8L

MWLNR/L

WN□□



95°

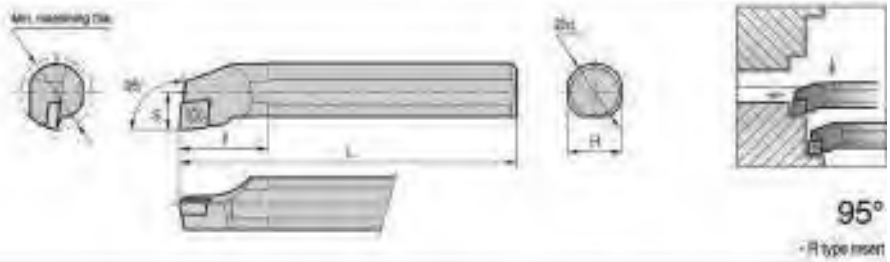
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Clamp	Clamp Screw	Shim	Shim pin	Wrench
S25R-MWLNR/L-06	32	25	23	200	17	38	WN□□0604□□	CDH7N	DHA10/32-19	-	SP3D3	HW23.8L
S32S-MWLNR/L-06	40	32	30	250	22	50				SW32D	SP3D	HW19.8L
S40T-MWLNR/L-06	50	40	37	300	27	60						
S25R-MWLNR/L-08	32	25	23	200	17	38	WN□□0804□□	CDH6N	DHA1/4-21	-	SP4DS	HW31.8L
S32S-MWLNR/L-08	40	32	30	250	22	50				SW43D	SP4D	HW23.8L
S40T-MWLNR/L-08	50	40	37	300	27	60						
A25R-MWLNR/L-06	32	25	23	200	17	40	WN□□0604□□	CDH7N	DHA10/32-19	-	SP3D3	HW31.8L
A32S-MWLNR/L-06	40	32	30	250	22	50				SW32D	SP3D	HW19.8L
A25R-MWLNR/L-08	32	25	23	200	17	40	WN□□0804□□	CDH6N	DHA1/4-21	-	SP4DS	HW31.8L
A32S-MWLNR/L-08	40	32	30	250	22	50				SW43D	SP4D	HW23.8L

SCLCR/L

CC□□



95°

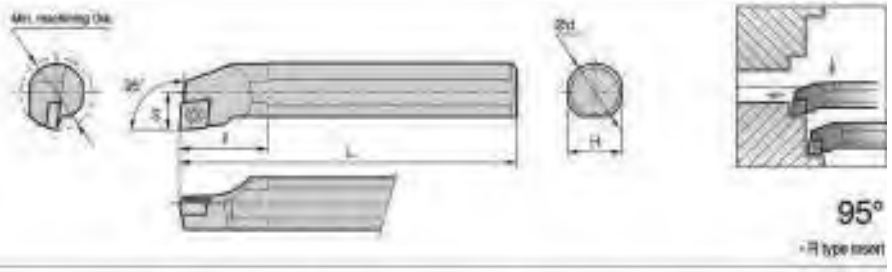
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
S08K-SCLCR/L-06	10	8	7	125	5	14	CC□□0602□□	FTKA02555	-	-	TW07P
S10K-SCLCR/L-06	12	10	8	125	6	14		FTKA02565			
S10M-SCLCR/L-06	12	10	9	150	6	14					
S12M-SCLCR/L-06	16	12	11	150	9	25					
S16R-SCLCR/L-06	20	16	15	200	11	32					
S12M-SCLCR/L-09	16	12	11	150	9	25	CC□□09T3□□	FTGA03508	-	-	TW15P
S16R-SCLCR/L-09	20	16	15	200	11	32.5					
S20S-SCLCR/L-09	25	20	18	250	13	38					
S25R-SCLCR/L-09	32	25	23	200	17	45		FTGA03510			
S25R-SCLCR/L-12	32	25	23	200	17	45	CC□□1204□□	FTGA0411F	-	-	TW15P
S32S-SCLCR/L-12	40	32	30	250	22	50			SC42S	SH90N0610F	HW40L, TW15P
S40T-SCLCR/L-12	50	40	37	300	27	60					
A08F-SCLCR/L-06	10	8	7.5	80	5	14	CC□□0602□□	FTKA02555	-	-	TW07P
A10H-SCLCR/L-06	12	10	9.5	100	6	14		FTKA02565			
A12K-SCLCR/L-06	16	12	11	125	9	25					
A12K-SCLCR/L-09	16	12	11	125	9	25	CC□□09T3□□	FTGA03508	-	-	TW15P
A16M-SCLCR/L-09	20	16	15	150	11	32.5					
A20Q-SCLCR/L-09	25	20	19	180	12	38					
A25R-SCLCR/L-09	32	25	24	200	17	45		FTGA03510			
A25R-SCLCR/L-12	32	25	24	200	17	45	CC□□1204□□	FTGA0411F	-	-	TW15P
A32S-SCLCR/L-12	40	32	31	250	32	50			SC42S	SH90N0610F	HW40L, TW15P

SCLCR/L

CC□□



95°

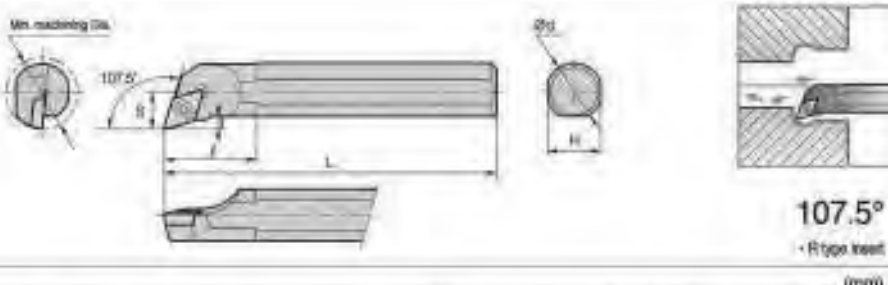
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
S08K-SCLCR/L-06	10	8	7	125	5	14	CC□□0602□□	FTKA02555	-	-	TW07P
S10K-SCLCR/L-06	12	10	8	125	6	14		FTKA02565			
S10M-SCLCR/L-06	12	10	9	150	6	14					
S12M-SCLCR/L-06	16	12	11	150	9	25					
S16R-SCLCR/L-06	20	16	15	200	11	32					
S12M-SCLCR/L-09	16	12	11	150	9	25	CC□□09T3□□	FTGA03508	-	-	TW15P
S16R-SCLCR/L-09	20	16	15	200	11	32.5					
S20S-SCLCR/L-09	25	20	18	250	13	38					
S25R-SCLCR/L-09	32	25	23	200	17	45		FTGA03510			
S25R-SCLCR/L-12	32	25	23	200	17	45	CC□□1204□□	FTGA0411F	-	-	TW15P
S32S-SCLCR/L-12	40	32	30	250	22	50			9C42S	SH00N0610F	HW40L, TW15P
S40T-SCLCR/L-12	50	40	37	300	27	60					
A08F-SCLCR/L-06	10	8	7.5	80	5	14	CC□□0602□□	FTKA02555	-	-	TW07P
A10H-SCLCR/L-06	12	10	9.5	100	6	14		FTKA02565			
A12K-SCLCR/L-06	16	12	11	125	9	25					
A12K-SCLCR/L-09	16	12	11	125	9	25	CC□□09T3□□	FTGA03508	-	-	TW15P
A16M-SCLCR/L-09	20	16	15	150	11	32.5					
A20Q-SCLCR/L-09	25	20	19	180	12	38					
A25R-SCLCR/L-09	32	25	24	200	17	45		FTGA03510			
A25R-SCLCR/L-12	32	25	24	200	17	45	CC□□1204□□	FTGA0411F	-	-	TW15P
A32S-SCLCR/L-12	40	32	31	250	32	50			9C42S	SH00N0610F	HW40L, TW15P

SDQCR/L

DC□□



107.5°

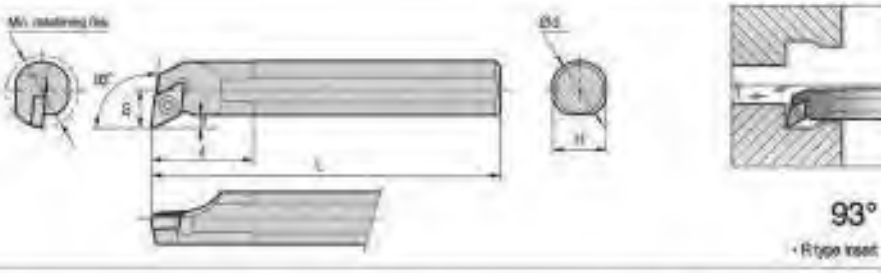
- R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	f	Insert	Screw	Wrench
S10M-SDQCR/L-07	13	10	9	150	7	20	2.5	DC□□0702□□	FTKA02555	TW07P
S12M-SDQCR/L-07	16	12	11	150	9	22	3.5		FTKA02565	
S16R-SDQCR/L-07	20	16	15	200	11	27	4			
S16R-SDQCR/L-11	20	16	15	200	11	32	4	DC□□11T3□□	FTGA03508	TW15P
S20S-SDQCR/L-11	25	20	18	250	13	32	4.5			
S25R-SDQCR/L-11	32	25	23	200	17	32	7		FTGA03510	
A10H-SDQCR/L-07	13	10	9.5	100	7	20	2	DC□□0702□□	FTKA02555	TW07P
A12K-SDQCR/L-07	16	12	11	125	9	22	3		FTKA02565	
A16M-SDQCR/L-11	20	16	15	150	11	27	3	DC□□11T3□□	FTGA03508	TW15P
A20Q-SDQCR/L-11	25	20	19	180	13	32	3			
A25R-SDQCR/L-11	32	25	24	200	17	32	4		FTGA03510	

SDUCR/L

DC□□



93°

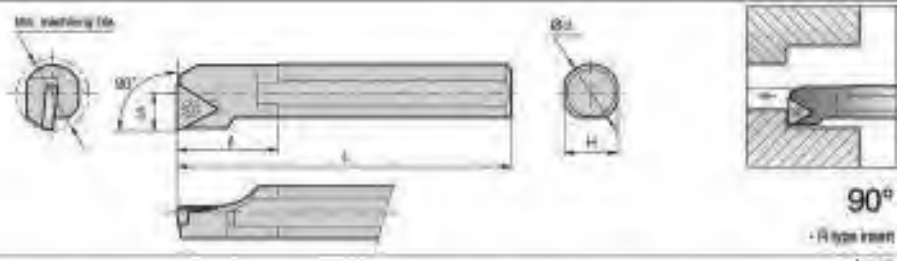
· R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	f	Insert	Screw	Wrench
S10M-SDUCR/L-07	13	10	9	150	7	0	2.5	DC□□□0702□□	FTKA02555	TW07P
S12M-SDUCR/L-07	16	12	11	150	9	22	3.5		FTKA02565	
S16R-SDUCR/L-07	20	16	15	200	11	27	4			
S16R-SDUCR/L-11	20	16	15	200	11	27	4	DC□□□11T3□□	FTGA03508	TW15P
S20S-SDUCR/L-11	25	20	18	250	13	40	4.3			
S25R-SDUCR/L-11	32	25	23	200	17	46	6.6		FTGA03510	
S32S-SDUCR/L-11	40	32	30	250	22	50	8.4			
A10H-SDUCR/L-07	13	10	9.5	100	7	0	2	DC□□□0702□□	FTKA02555	TW07P
A12K-SDUCR/L-07	16	12	11	125	9	22	3		FTKA02565	
A16M-SDUCR/L-07	20	16	15	150	11	27	3			
A20Q-SDUCR/L-11	25	20	19	180	13	35	3	DC□□□11T3□□	FTGA03508	TW15P
A25R-SDUCR/L-11	32	25	24	200	17	46	4.5		FTGA03510	

STFCR/L

TC□□



90°

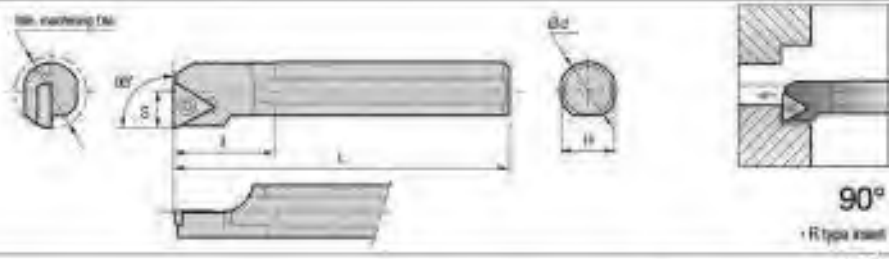
· R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Shim	Shim Screw	Wrench
S10M-STFCR/L-09	13	10	9	150	7	23	TC□□□0902□□	FTKA02206	-	-	TW06P
S12M-STFCR/L-09	16	12	11	150	9	28					
S12M-STFCR/L-11	16	12	11	150	9	30	TC□□□1102□□	FTKA02565	-	-	TW07P
S16R-STFCR/L-11	20	16	15	200	11	35					
S20S-STFCR/L-11	25	20	18	250	13	36					
S20S-STFCR/L-16	25	20	18	250	13	40	TC□□□16T3□□	FTGA03510	-	-	TW15P
S25R-STFCR/L-16	32	25	23	200	17	49					
S32S-STFCR/L-16	40	32	30	250	22	50	TC□□□16T3□□	FTGA03512	ST32S	SH0N0509F	TW15P, HW35L
S40T-STFCR/L-16	50	40	37	300	27	60					
A10H-STFCR/L-09	13	10	9.5	100	7	23	TC□□□0902□□	FTKA02206	-	-	TW06P
A12K-STFCR/L-09	16	12	11	125	9	23					
A12K-STFCR/L-11	16	12	11	125	9	30	TC□□□1102□□	FTKA02565	-	-	TW07P
A16M-STFCR/L-11	20	16	15	150	11	35					
A20Q-STFCR/L-11	25	20	19	180	13	36					
A25R-STFCR/L-16	32	25	24	200	17	49	TC□□□16T3□□	FTKA03510	-	-	TW15P
A32S-STFCR/L-16	40	32	31	250	22	50		FTGA03512	ST32S	SH0N0509F	TW15P, HW35L

STFPR/L

TP□□



90°

• R type insert

(mm)

Designation	ØD	Ød	H	L	S	ℓ	Insert	Screw	Wrench
S10M-STFPR/L-11	12	10	9	150	6	–	TP□□1103□□	FTNA0305	TW09P
S12M-STFPR/L-11	16	12	11	150	8	10		FTNA0307	TW09P
S16N-STFPR/L-11	20	16	15	160	10	12			
S16R-STFPR/L-11	20	16	15	200	10	12			
S20N-STFPR/L-16	25	20	18	160	12.5	14	TP□□1604□□	FTNA0408	TW15P
S20S-STFPR/L-16	25	20	18	250	12.5	14			
A10H-STFPR/L-11	12	10	9.5	100	6	–	TP□□1103□□	FTNA0305	TW09P
A12K-STFPR/L-11	16	12	11	125	8	10		FTNA0307	TW09P
A16M-STFPR/L-11	20	16	15	150	10	12			
A20Q-STFPR/L-16	25	20	19	180	12.5	14	TP□□1604□□	FTNA0408	TW15P

SCLCR/L

CC□□

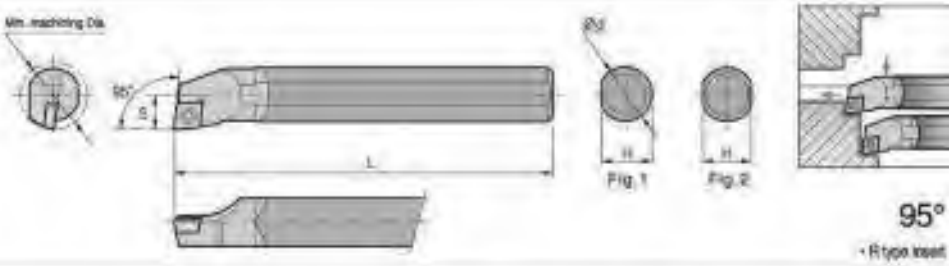


Fig. 1 Fig. 2

95°

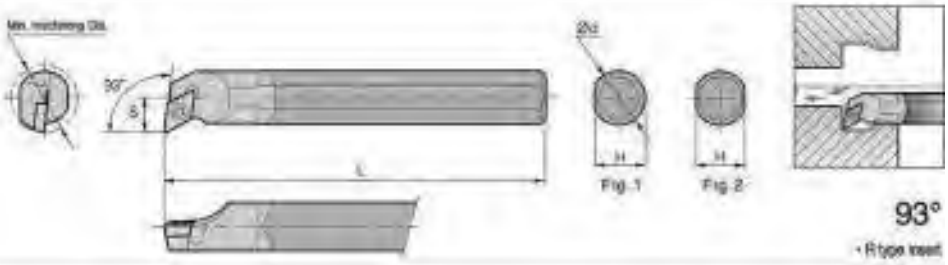
• R type insert

(mm)

Designation	ØD	Ød	H	L	S	Insert	Screw	Wrench	Fig.
C04G-SCLCR/L-03	5	4	3.8	90	2.5	DC□T0301□□	FTNA01633	TW06P	1
C05H-SCLCR/L-03	6	5	4.4	100	3				
C06H-SCLCR/L-04	7	6	5.4	100	3.5	CC□T0401□□	FTNA0238		
C07K-SCLCR/L-04	8	7	6.4	125	4				
C08K-SCLCR/L-06	10	8	7	125	5	CC□T0602□□	FTKA02555	TW07P	2
C10K-SCLCR/L-06	12	10	9	125	6		FTKA02565		
C10M-SCLCR/L-06	12	10	9	150	6				
C12M-SCLCR/L-06	14	12	11	150	7				
C12Q-SCLCR/L-06	14	12	11	180	7				
C12M-SCLCR/L-09	15	12	11	150	8	CC□T09T3□□	FTGA03508	TW15P	
C12Q-SCLCR/L-09	15	12	11	180	8				
C16R-SCLCR/L-09	20	16	15	250	10				
C16S-SCLCR/L-09	20	16	15	250	10				
C20R-SCLCR/L-09	25	20	18	200	13				
C20S-SCLCR/L-09	25	20	18	250	13				
C25T-SCLCR/L-12	32	25	23	300	17	CC□T1204□□	FTGA0411F		
E06H-SCLCR/L-04	7	6	5.4	100	3.5	DC□T0401□□	FTNA0238	TW06P	1
E07K-SCLCR/L-04	8	7	6.4	125	4				
E08K-SCLCR/L-06	10	8	7	125	5	CC□T0602□□	FTKA02555	TW07P	2
E10K-SCLCR/L-06	12	10	9	125	6		FTKA02565		
E10M-SCLCR/L-06	12	10	9	150	6				
E12M-SCLCR/L-06	14	12	11	150	7				
E12Q-SCLCR/L-06	14	12	11	180	7				
E12M-SCLCR/L-09	15	12	11	150	8	CC□T09T3□□	FTGA03508	TW15P	
E12Q-SCLCR/L-09	15	12	11	180	8				
E16R-SCLCR/L-09	20	16	15	250	10				
E16S-SCLCR/L-09	20	16	15	250	10				
E20R-SCLCR/L-09	25	20	18	200	13				
E20S-SCLCR/L-09	25	20	18	250	13				
E25T-SCLCR/L-12	32	25	23	300	17	CC□T1204□□	FTGA0411F		

SDUCR/L

DC□□



93°

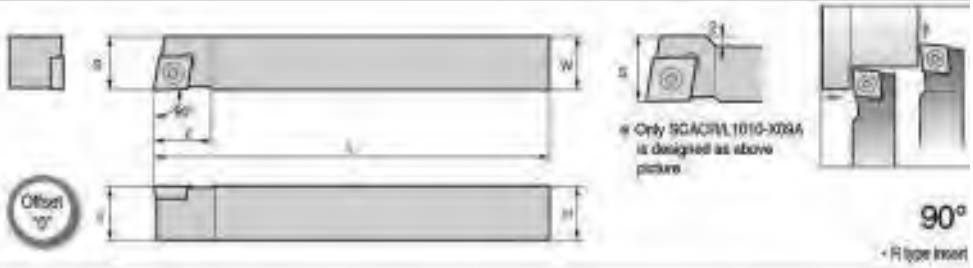
• R type insert

(mm)

Designation	ØD	Ød	H	L	S	Insert	Screw	Wrench	Fig.
C10K-SDUCR/L-07	13	10	9	125	7	DC □T0702 □□	FTKA02555	TW07P	2
C10M-SDUCR/L-07	13	10	9	150	7				
C12M-SDUCR/L-07	16	12	11	150	9		FTKA02565		
C12Q-SDUCR/L-07	16	12	11	180	9				
C16R-SDUCR/L-07	20	16	15	200	11				
C16S-SDUCR/L-07	20	16	15	250	11				
C16R-SDUCR/L-11	20	16	15	200	11	DC □T11T3 □□	FTGA03508	TW15P	
C16S-SDUCR/L-11	20	16	15	250	11				
C20R-SDUCR/L-11	25	20	18	200	13				
C20S-SDUCR/L-11	25	20	18	250	13				
C25T-SDUCR/L-11	32	25	23	300	17		FTGA03510		
E10K-SDUCR/L-07	13	10	9	125	7	DC □T0702 □□	FTKA02555	TW07P	2
E10M-SDUCR/L-07	13	10	9	150	7				
E12M-SDUCR/L-07	16	12	11	150	9		FTKA02565		
E12Q-SDUCR/L-07	16	12	11	180	9				
E16R-SDUCR/L-07	20	16	15	200	11				
E16S-SDUCR/L-07	20	16	15	250	11				
E16R-SDUCR/L-11	20	16	15	200	11	DC □T11T3 □□	FTGA03508	TW15P	
E16S-SDUCR/L-11	20	16	15	250	11				
E20R-SDUCR/L-11	25	20	18	200	13				
E20S-SDUCR/L-11	25	20	18	250	13				
E25T-SDUCR/L-11	32	25	23	300	17		FTGA03510		

SCACR/L

CCGT



90°

• R type insert

(mm)

Designation		H	W	L	S	h	ℓ	Insert	Screw	Wrench
SCACR/L	0808-X06A	8	8	120	8	8	10	CCGT 0602 □□	FTKA02565	TW 07P
	1010-X06A	10	10	120	10	10	10			
	1010-X09A	10	10	120	12	10	13	CCGT 09T3 □□	FTKA0410	TW 15P
	1212-X09A	12	12	120	12	12	16			
	1616-X09A	16	16	120	16	16	16			

KORLOY Inc.

SPB/SPB-S
(Blades)

SP

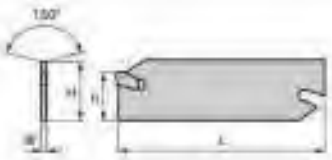


Fig. 1

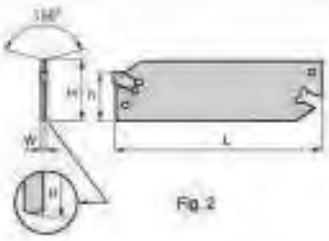


Fig. 2

(mm)

Designation		H	W	L	h	Inserts	Wrench		Fig.
SPB	**226**	26	1.6	110	21	SP200, 200R/L	SW50L	-	1
	326	26	2.4	110	21	SP300, 300R/L			
	426	26	3.2	110	21	SP400, 400R/L			
	526	26	4.0	110	21	SP500, 500R/L			
	626	26	5.2	110	21	SP600, 600R/L			
	232	32	1.6	150	25	SP200, 200R/L			
	332	32	2.4	150	25	SP300, 300R/L			
	432	32	3.2	150	25	SP400, 400R/L			
	532	32	4.0	150	25	SP500, 500R/L			
	632	32	5.2	150	25	SP600, 600R/L			
SPB	**226-S**	26	1.6	110	21	SP200, 200R/L	-	SW15S	2
	326-S	26	2.4	110	21	SP300, 300R/L			
	426-S	26	3.2	110	21	SP400, 400R/L			
	526-S	26	4.0	110	21	SP500, 500R/L			
	626-S	26	5.2	110	21	SP600, 600R/L			
	232-S	32	1.6	150	25	SP200, 200R/L			
	332-S	32	2.4	150	25	SP300, 300R/L			
	432-S	32	3.2	150	25	SP400, 400R/L			
	532-S	32	4.0	150	25	SP500, 500R/L			
	632-S	32	5.2	150	25	SP600, 600R/L			

SPH/SPH-S
(Holder)

SP

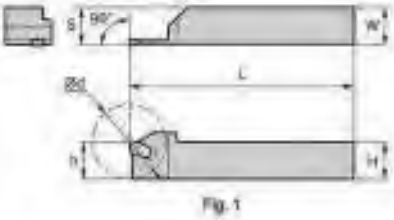


Fig. 1

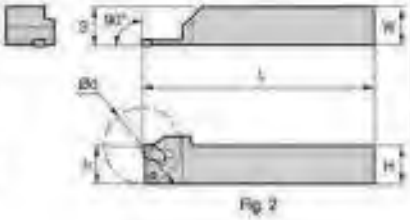


Fig. 2

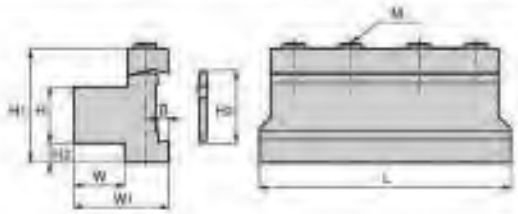
R type insert

(mm)

Designation		H-(h)	W	L	Od	S	Inserts	Wrench		Fig.
SPH	**316R/L**	16	16	100	32	16.3	SP300, 300R/L	SW50L	-	1
	320R/L	20	20	120	40	20.3	SP300, 300R/L			
	420R/L	20	20	120	50	20.4	SP400, 400R/L			
	520R/L	20	20	120	60	20.5	SP500, 500R/L			
	325R/L	25	25	150	50	25.3	SP300, 300R/L			
	425R/L	25	25	150	60	25.4	SP400, 400R/L			
	525R/L	25	25	150	70	25.5	SP500, 500R/L			
SPH	**316R/L-S**	16	16	100	32	16.3	SP300, 300R/L	-	SW15S	2
	320R/L-S	20	20	120	40	20.3	SP300, 300R/L			
	420R/L-S	20	20	120	50	20.4	SP400, 400R/L			
	520R/L-S	20	20	120	60	20.5	SP500, 500R/L			
	325R/L-S	25	25	150	50	25.3	SP300, 300R/L			
	425R/L-S	25	25	150	60	25.4	SP400, 400R/L			
	525R/L-S	25	25	150	70	25.5	SP500, 500R/L			

SMBB
(Block)

SPB□□□(-S)

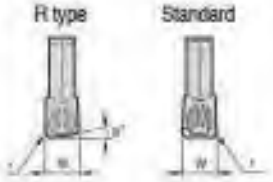


(mm)

Designation		H	W	H3	L	H1	H2	W1	B	M	Blades	Wrench
SMBB	1626	16	12	26	86	43	13	30	5.3	3-M6	SPB□□□(-S)	HW50L
	2026	20	19	26	86	43	9	38	5.3	3-M6		
	2032	20	19	32	100	50	13	38	5.3	4-M6	SPB□□□(-S)	
	2526	25	23	26	86	43	4	42	5.3	4-M6	SPB□□□(-S)	
	2532	25	23	32	110	50	8	42	5.3	4-M6	SPB□□□(-S)	
	3232	32	30	32	110	54	5	48	5.3	4-M6		

Inserts

(mm)

Application	Picture	Designation		Coated NC3120	NC3220	NC3030	NCM325	NC5330	NC9020	PC3500	NC500H	PC8110	PC5300	PC9030	PC6510	ST30A	W	l	r	Configuration
parting blade		SP	160														1.6	7.8	0.16	
			180														1.8	9.3	0.16	
			200	●	●	●	●					●	●	●			2.2	9.3	0.2	
			200R	●	●							●		●			2.2	9.3	0.2	
			200L											●			2.2	9.3	0.2	
			300	●	●	●	●	●				●	●	●	●	●	3.1	11.3	0.2	
			300R	●	●	●						●					3.1	11.3	0.2	
			300L		●												3.1	11.3	0.2	
			400	●	●	●	●					●	●	●	●		4.1	11.3	0.25	
			400R	●	●							●					4.1	11.3	0.25	
			400L		●												4.1	11.3	0.25	
			500	●	●	●	●				●	●	●		●		5.1	11.4	0.3	
			500R														5.1	11.4	0.3	
			500L														5.1	11.4	0.3	
			600	●	●			●					●		●		6.4	11.4	0.35	
			600R														6.4	11.4	0.35	
			600L														6.4	11.4	0.35	

● : Stock item

Features of multi parting tools

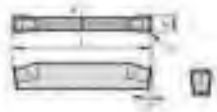
KORLOY Inc.

- Available for various workpiece
  - Alloy steel, Cast iron, Stainless steel, etc
- Cutting tool life has been increased due to specially designed rake angle
- Minimum size of Nose radius R has been employed to elimitnate "Burr"
- Line-up of various lead angles for the best machining
- Small width of chip can be acquired due to special chip breaker & cutting edge design

Workpiece	CVD					PVD					Uncoated	Cutting width (mm)				
	NC3120	NC3030	NCM325	NC5330	NC500H	PC230	PC8110	PC5300	PC3500	PC6510	ST30A	2	3	4	5	6
SM□□C	80~180			80~180		80~180						0.02~0.15	0.03~0.2	0.06~0.3	0.10~0.4	0.12~0.5
SCM	70~150	70~150	70~150	70~150	70~150	70~150			70~150			"	"	"	"	"
GC/GCD				50~100						50~100	50~100	0.05~0.12	0.1~0.25	0.1~0.30	0.1~0.35	0.1~0.40
STS			50~120	50~120			50~120	60~140				0.02~0.1	0.03~0.15	0.06~0.25	0.1~0.35	0.12~0.40
Non-ferrous metal (Al, Copper)											200~450	0.05~0.1	0.05~0.2	0.05~0.25	0.05~0.30	0.05~0.35

Inserts

(mm)

Application	Picture	Designation	Coated				Cermet?	Dimensions					Configuration
			[illegible]	[illegible]	[illegible]	[illegible]		b?	r	l	d	θ?	
Grooving	KGMN-L 	KGMN 200-02-L	●		●	●		2.0	0.2	20	1.7	-	
		300-02-L	●		●	●		3.0	0.2	20	2.3	-	
		400-02-L	●		●	●		4.0	0.4	20	3.3	-	

KGEHR/L

For grooving, Turning, Parting off, Relieving, Profiling machining

KGGN / KGMN / KGMR / KRMN

(mm)

Designation		H=(h)	W	L	S	T_{max}	Inserts	Screw	Wrench
KGEHR/L	2020-2-T17	20	20	150	25.2	17	KGMN200-□-□	MHA0512	HW40L
	2525-2-T17	25	25	150	25.2	17			
	2020-3-T20	20	20	150	25.4	20	KGGN300-□ KGMN300-□-□ KGMR300-R□-□ KRMN300-□	MHA0512	HW40L
	2525-3-T00	25	25	150	25.4	4.8			
	2525-3-T20	25	25	150	25.4	20			
	2020-4-T20	20	20	150	25.4	20	KGMN400-□-□ KRMN400-□	BHA0616	HW50L
	2525-4-T00	25	25	150	25.4	4.8			
	2525-4-T20	25	25	150	25.4	20			
	2525-5-T20	25	25	150	25.4	20	KGMN500-□-□	BHA0616	HW50L
	2525-6-T20	25	25	150	25.4	20	KGMN600-□-□	BHA0616	HW50L
	2525-8-T25	25	25	150	25.4	25	KGMN800-□-□	BHA0616	HW50L

KGEUR/L

For relieving

KRMN

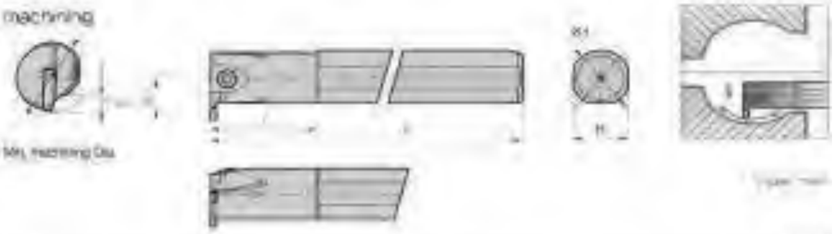
(mm)

Designation		H=(h)	W	L	S	T_{max}	Inserts	Screw	Wrench
KGEUR/L	2525-3	25	25	150	28	8.0	KRMN300-□	MHA0512	HW40L

KGIVR/L

For grooving, Turning, Profiling machining

KGMI



(mm)

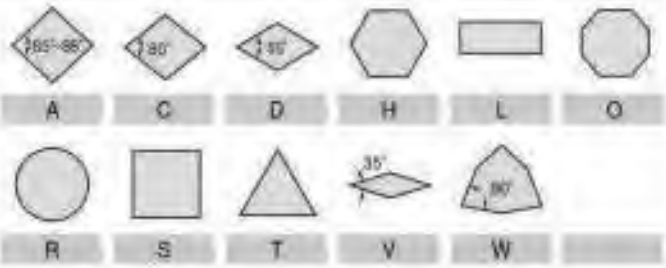
Designation		øD	ød	L	l	T_{max}	H	S	Inserts	Screw	Wrench
KGIVR/L	3225-2	32	25	200	45	7	23	19	KGMI200-□-□	MHA0512	HW40L
	3225-3	32	25	200	45	7	23	19	KGMI300-□-□		
	3225-4	32	25	200	45	7	23	19	KGMI400-□-□		

S P K R 12

1 Insert Shape | 2 Relief Angle | 3 Tolerance | 4 Cross Section Type | 5 Cutting Edge Length, Diameter of Inscribed circle

1 Insert Shape

S P K R 12 03 T S R - MX

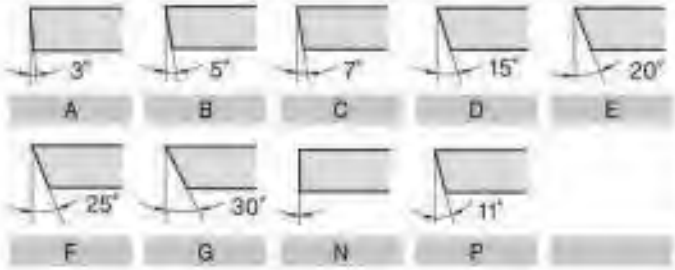


A C D H L O

R S T V W

2 Relief Angle

S P K R 12 03 T S R - MX



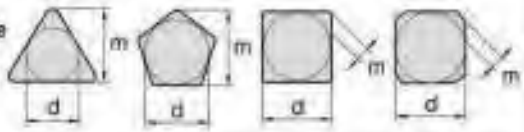
A B C D E

F G N P

3 Tolerance

S N K R 12 03 T S R - MX

d : Inscribed Circle
t : Thickness
m : refer to figure



(mm)

Class	d	m	t
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.05 ~ ±0.15	±0.005	±0.025
K	±0.05 ~ ±0.15	±0.013	±0.025
L	±0.05 ~ ±0.15	±0.025	±0.025
M	±0.05 ~ ±0.15	±0.08 ~ ±0.20	±0.13
U	±0.08 ~ ±0.25	±0.13 ~ ±0.38	±0.13

■ Tolerance on C,E,H,M,O,P,R,S,T,W Insert Shape (exceptional case)

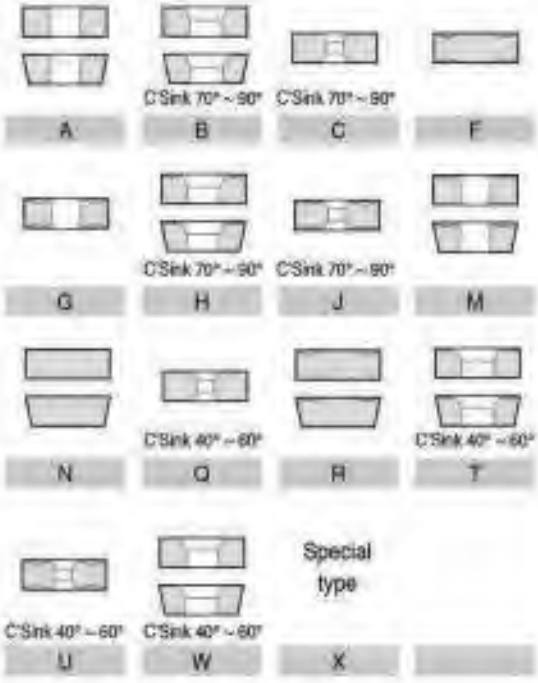
d	Tolerance on d: J,K,L,M,N	Tolerance on d: C	Tolerance on m: M,N	Tolerance on m: W
6.35	±0.05	±0.08	±0.08	±0.13
9.525	±0.05	±0.08	±0.08	±0.13
12.7	±0.08	±0.13	±0.13	±0.20
15.875	±0.10	±0.18	±0.15	±0.27
19.05	±0.10	±0.18	±0.15	±0.27
25.4	±0.13	±0.25	±0.18	±0.38

■ Tolerance on D Insert Shape (exceptional case)

d	Tolerance on d	Tolerance on m
6.35	±0.05	±0.11
9.525	±0.05	±0.11
12.7	±0.08	±0.15
15.875	±0.10	±0.16
19.05	±0.10	±0.18

4 Cross Section Type

S P K R 12 03 T S R - MX



A B C F

G H J M

N Q R T

U W X

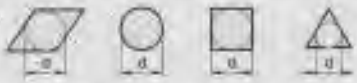
5 Cutting Edge Length, Diameter of Inscribed circle

S P K R 12 03 T S R - MX

■ Metric system

* Decimal integer constant

■ Inch system



· Use 1/32" unit for a insert having smaller I.C under 1/4"
· Use 1/8" unit for a insert having larger I.C over 1/4"

* In case of rectangular and rhombic insert indicate cutting edge length instead of inscribed circle.

■ Cross over chart for "Metric" and "Inch" system

△	06	09	11	16	22	27	33	44
○ □	03	05	06	08	12	15	19	25
◇	04	06	07	11	15	19	23	31
⬠	03	05	06	09	12	16	19	25
inscribed circle	5/32"	7/32"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
inch system	5	7	2(8)	3	4	5	6	8

03 ED 08 S R - MX

6	7	8	9	10
Height of Cutting Edge	Nose Radius (Nose R)	Edge Preparation	Hand	Chip Breaker for Milling

6 Height of Cutting Edge

S P K R 12 **03** E S R - MX

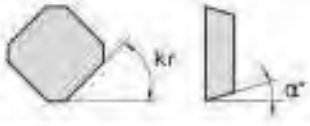
Symbol		Height of cutting edge(t)	
Metric	Inch	mm	Inch
01	1(2)	1.59	1/16
T0	1.125	1.79	9/128
T1	1.2	1.98	5/64
02	1.5(3)	2.38	3/32
T2	1.75	2.78	7/64
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8(16)	12.70	1/2

( ) Symbol for small size insert

7 Nose Radius (Nose R)

S P K R 12 03 **08** E R - MX

r		Symbol		r		Symbol	
mm	Inch	mm	Inch	mm	Inch	mm	Inch
00	0	0.0		12	3	1.2	3/64
02		0.2		15		1.5	
04	1	0.4	1/64	16	4	1.6	4/64
05		0.5		24	6	2.4	6/64
08	2	0.8	2/64	32	8	3.2	8/64
10		1.0		40		4.0	



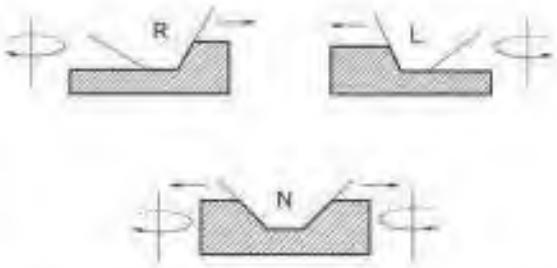
Parallel Land	Relief Angle	
kr	α°	
A - 45°	A - 3°	F - 25°
D - 60°	B - 5°	G - 30°
E - 75°	C - 7°	N - 0°
F - 85°	D - 15°	P - 11°
P - 90°	E - 20°	
Z - Special		

8 Edge Preparation

S P K R 12 03 R **S** R - MX

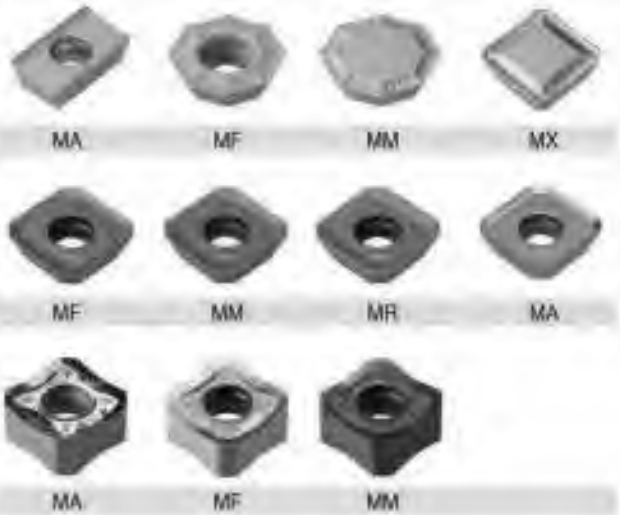
9 Hand

S P K R 12 03 R S **R** - MX



10 Chip Breaker for Milling

S P K R 12 03 R S R - **MX**



ADN(M)4000

KORLOY Inc.

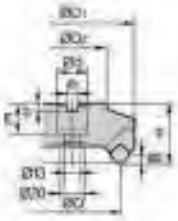


Fig. 1

Fig. 2

Fig. 3

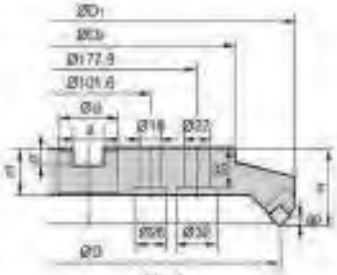


Fig. 4

• AR : 15°
• RR : -4°

(mm)

Designation		ⓢ	øD	øD1	øD2	ød	a	b	E	F	ap		Fig.
ADN(M)	4080R/L	4	80	105	57	25.4(27)	9.5(12.4)	6(7)	25(22)	50	6	1.9	1
	4100R/L	5	100	125	67	31.75(32)	12.7(14.4)	8(8)	32(28)	50	6	2.5	2
	4125R/L	6	125	149	87	38.1(40)	15.9(16.4)	10(9)	38(30)	63	6	4.3	2
	4160R/L	8	160	183	107	50.8(40)	19.0(16.4)	11(9)	38(30)	63	6	6.4	2
	4200R/L	10	200	223	130	47.625(60)	25.4(25.7)	14(14)	38(38)	63	6	8.7	3
	4250R/L	12	250	273	180	47.625(60)	25.4(25.7)	14(14)	38(38)	63	6	14.0	3
	4315R/L	14	315	336	240	47.625(60)	25.4(25.7)	14(14)	38(38)	63	6	21.0	4

• ( )Metric Size

Available Inserts

SDCN	SDKN-SM	SDKN-MU	SDKN-SU
			

SDKR-MX	SDKR-SM	SDXN-FM	SDXR-FM
			

Designation		Coated									Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC4500	PC5300	PC4545	PC3530	PC8510	PC215K	PD3000	CN2000	CN50	CN30	H01	G10	ST30A	ST20
SDCN	42M															●			
	42M-G															●			
	42MT			●									●		●			●	●
	42MT-RH				●														
	42MT-S20								●										
	1203AEEN																		
	1203AEEN-RH																		
	1203AESN																		
	1203AESN-RH																		
SDKN	1203AESN-SM																		
	1203AEEN-SM																		
	1203AESN-MU																		
	1203AESN-SU								●	●									
SDKR	1203AESN-MX																		
	1203AETN-MX																		
	1203AEN-MX	●																	
	1203AESN-SM																		
SDXN	1203AESN-FM																		
	1203AEEN-FM																		
SDXR	1203AESN-FM																		

Available Arbors

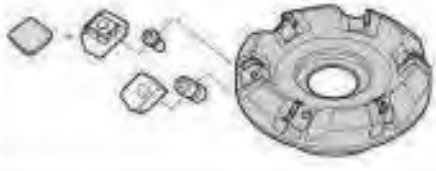
Designation	General Arbor	NC Arbors	
		ADN	ADNM
ADN(M)4080R/L	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
4100R/L	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
4160R/L	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
4200R/L	NT*□□(M/U)-FMM7.05-25,KCP-6***	BT**□□-FMA47.625-□□	FMB60
4250R/L	NT*□□(M/U)-FMM7.05-25,KCP-6***	BT**□□-FMA47.625-□□	FMB60
4315R/L	KCP-6***(Center Ring Plug)		

*□□-NT Number **□□-BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC8530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC8510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling



Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
				
LADN4R/L	WEPN4R/L	DHA0821F	LTX0514	HW40

ADN(M)5000

Fig. 1 Fig. 2 Fig. 3 Fig. 4

• AR : 15°
• RR : -4°

(mm)

Designation		Z	ØD	ØD1	ØD2	Ød	a	b	E	F	ap	kg	Fig.
ADN(M)	5080R/L	4	80	107	57	25.4(27)	9.5(12.4)	6(7)	25(22)	50	8	2.0	1
	5100R/L	5	100	128	67	31.75(32)	12.7(14.4)	8(8)	32(28)	50	8	2.7	2
	5125R/L	6	125	150	87	38.1(40)	15.9(16.4)	10(9)	38(30)	63	8	4.3	2
	5160R/L	8	160	185	107	50.8(40)	19.0(16.4)	11(9)	38(30)	63	8	6.5	2
	5200R/L	10	200	225	130	47.625(60)	25.4(25.7)	14(14)	38(38)	63	8	8.1	3
	5250R/L	12	250	275	180	47.625(60)	25.4(25.7)	14(14)	38(38)	63	8	14.5	3
	5315R/L	14	315	340	240	47.625(60)	25.4(25.7)	14(14)	38(38)	63	8	21.0	4

• ( ) Metric Size

Available Inserts

SDCN SDKN-SM SDKN-MU SDKN-SU

SDKR-MX SDKR-SM SDXN-FM SDXR-FM

Designation		Coated											Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC3600	PC5300	PC5340	PC9530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
SDCN	53M																●		
	53M-G															●			
	53MT	●	●										●		●			●	●
	53MT-RH				●														
	53MT-S20							●											
	1504AEEN																		
	1504AEEN-RH						●			●									
	1504AESN																		
	1504AESN-RH									●									
SDKN	1504AESN-SM																		
	1504AEEN-SM																		
	1504AESN-MU																		
	1504AESN-SU					●		●											
SDKR	1504AESN-MX		●																
	1504AETN-MX																		
	1504AEN-MX	●																	
	1504AESN-SM																		
SDXN	1504AESN-FM																		
	1504AEEN-FM																		
SDXR	1504AESN-FM																		

Available Arbors

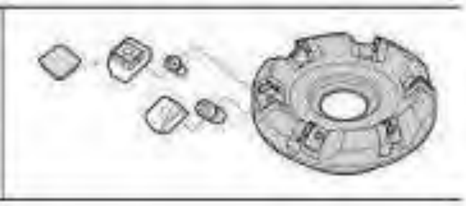
Designation	General Arbor	NC Arbors	
		ADN	ADNM
ADN(M)5080R/L	NT*□□(M/J)-FMA25.4-25	BT**□□-FMA25.4 -□□	FMC27
5100R/L	NT*□□(M/J)-FMA31.75 -□□	BT**□□-FMA31.75 -□□	FMC32
5125R/L	NT*□□(M/J)-FMA38.1 -□□	BT**□□-FMA38.1 -□□	FMB40
5160R/L	NT*□□(M/J)-FMA50.8 -□□	BT**□□-FMA50.8 -□□	FMB40
5200R/L	NT*□□(M/J)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625 -□□	FMB60
5250R/L	NT*□□(M/J)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625 -□□	FMB60
5315R/L	KCP-8***(Center Ring Plug)		

*□□—NT Number **□□—BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	60 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC6510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling



Parts

LADN5R/L WEPN5R/L DHA0621F LTX0514 HW40

AE(M)4000

KORLOY Inc.

Fig. 1 Fig. 2 Fig. 3 Fig. 4

- AR : 20°
- RR : -3°

(mm)

Designation			øD	øD1	øD2	ød	a	b	E	F	ap		Fig.
AE(M)	4080R/L	4	80	103	60	25.4(27)	9.5(12.4)	6(7)	25(22)	50	5.5	1.7	1
	4100R/L	5	100	122	80	31.75(32)	12.7(14.4)	8(8)	32(28)	50	5.5	2.9	2
	4125R/L	6	125	146	100	38.1(40)	15.9(16.4)	10(9)	38(30)	63	5.5	4.4	2
	4160R/L	8	160	181	120	50.8(40)	19.0(16.4)	11(9)	38(30)	63	5.5	6.1	2
	4200R/L	10	200	220	130	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	5.5	8.9	3
	4250R/L	12	250	270	180	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	5.5	15.7	3
	4315R/L	15	315	335	240	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	5.5	25.1	4

• ( )Metric Size

Available Inserts

SECN SEKN-SM SEKN-SU SEKR-MF1 SEKR-MX

SEKR-X35 SEKR-SM SEXN-FM SEXR-FM

Designation		Coated											Cermet			Uncoated		
		NCM325	NCM335	NC5330	PC3500	PC3600	PC5300	PC3545	PC9530	PC6510	PC215K	PD3000	CN2000	CN20	CN30	H01	G10	ST30A
SECN	1203AFFN															●	●	
	1203AFTN												●	●	●			●
	1203AFEN																	
	1203AFSN	●	●															
	1203AFEN-RH						●			●								
	1203AFSN-RH									●								
	1203AFTN-S20								●									
SEKN	1203AFSN-SM																	
	1203AFEN-SM																	
	1203AFSN-SU					●		●										
SEKR	1203AFSN-MF1																	
	1203AFSN-MX	●	●						●						●			
	1203AFSN-X35																	
	1203AFFN-X35																	
	1203AFSN-SM																	
SEXN	1203AFSN-FM																	
	1203AFEN-FM																	
SEXR	1203AFSN-FM																	

Available Arbors

Designation	General Arbor	NC Arbors	
		AE	AEM
AE(M)4080R/L	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
4100R/L	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
4160R/L	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
4200R/L	NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
4250R/L	NT*□□(M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
4315R/L	KCP-8***(Center Ring Plug)		

*□□–NT Number **□□–BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC6510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling

Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
LAE4R/L	WAE4R/L	DHA0821F	LTX0512	HW40

AE(M)5000

KORLOY Inc.

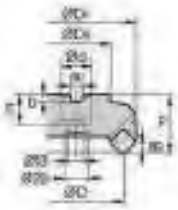


Fig. 1

Fig. 2

Fig. 3

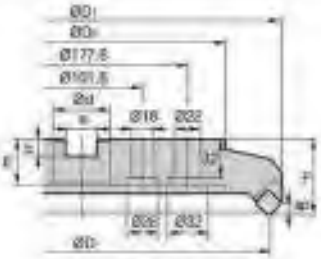


Fig. 4

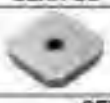
+AR : 20°
+RR : -3°

(mm)

Designation		⊙	øD	øD1	øD2	ød	a	b	E	F	ap	⊙	Fig.
AE(M)	5080R/L	4	80	103	60	25.4(27)	9.5(12.4)	6(7)	25(22)	50	7.5	1.7	1
	5100R/L	5	100	122	80	31.75(32)	12.7(14.4)	8(8)	32(28)	50	7.5	2.9	2
	5125R/L	6	125	146	100	38.1(40)	15.9(16.4)	10(9)	38(30)	63	7.5	4.4	2
	5160R/L	8	160	181	120	50.8(40)	19.0(15.4)	11(9)	38(30)	63	7.5	6.1	2
	5200R/L	10	200	220	130	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	7.5	8.9	3
	5250R/L	12	250	270	180	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	7.5	15.7	3
	5315R/L	15	315	335	240	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	7.5	25.1	4

+( )Metric Size

Available Inserts

SECN	SEKN-SU	SEKN-SM	SEKR-MX
			

SEKR-SM	SEXN-FM	SEXR-FM
		

Designation		Coated									Cermet		Uncoated	
		NCM325	NCM335	NC3220	PC3500	PC3000	PC3300	PC3545	PC6530	PC6510	PC215K	PD2000	CN2000	CN20	CN60	H01	G10	ST30A
SECN	1504AFFN															●		
	1504AFTN														●			●
	1504AFEN																	
	1504AFSN	●	●															
	1504AFEN-RH																	
	1504AFSN-RH										●							
	1504AFTN-S20																	
SEKN	1504AFSN-SM																	
	1504AFEN-SM																	
	1504AFSN-SU					●		●										
SEKR	1504AFSN-MX	●	●						●									
	1504AFSN-SM																	
SEXN	1504AFSN-FM																	
	1504AFEN-FM																	
SEXR	1504AFSN-FM																	

Available Arbors

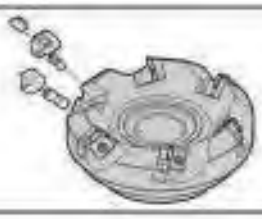
Designation	General Arbor	NC Arbors	
		AE	AEM
AE(M)5080R/L	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
5100R/L	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
5125R/L	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
5160R/L	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
5200R/L	NT*□□(M/U)-FMA47.625-25, KCP-6***	BT**□□-FMA47.625-□□	FMB60
5250R/L	NT*□□(M/U)-FMA47.625-25, KCP-6***	BT**□□-FMA47.625-□□	FMB60
5315R/L	KCP-6***(Center Ring Plug)		

*□□-NT Number **□□-BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 – 300	0.05 – 0.15	NCM325
	120 – 230	0.05 – 0.20	PC3500
	100 – 200	0.05 – 0.20	ST30A
M	50 – 200	0.05 – 0.20	PC6530
	50 – 120	0.05 – 0.20	ST30A
K	150 – 250	0.05 – 0.30	PC6510
	100 – 200	0.05 – 0.30	G10

Assembling



Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
				
LAE5R/L	WAE5R/L	DHA0821F	LTX0512	HW40

EN(M)4000

KORLOY Inc.

• AR : -6°
• RR : -5°

(mm)

Designation		⊙	øD	øD1	øD2	ød	a	b	E	F	ap	⊙	Fig.
EN(M)	4080R/L	5	80	87	57	25.4(27)	9.5(12.4)	6(7)	25(22)	50	8.5	1.4	1
	4100R/L	6	100	107	67	31.75(32)	12.7(14.4)	8(8)	32(28)	50	8.5	2.1	2
	4125R/L	8	125	132	87	38.1(40)	15.9(16.4)	10(9)	38(30)	63	8.5	3.8	2
	4160R/L	10	160	167	107	50.8(50)	19.0(16.4)	11(9)	38(30)	63	8.5	5.7	2
	4200R/L	12	200	207	130	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	8.5	8.4	3
	4250R/L	16	250	257	180	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	8.5	13.8	3
	4315R/L	20	315	322	240	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	8.5	21.6	4

• ( )Metric Size

Available Inserts

SNCN

SNKN

Designation	Coated								Cermet		Uncoated		
	NCM325	NCM350	NC3030	PC3500	PC5300	PC3545	PC9530	PC6510	PC215K	PD1000	CN2000	CN20	CN90	H01	G10	ST30A	ST20
SNCN 1204ENN	●															●	●	●
SNKN 1204ENN								●									

Available Arbors

Designation	General Arbor	NC Arbors	
		EN	ENM
EN(M) 4080R/L	NT*□□ (M/U)-FMA25.4-25-□□	BT**□□-FMA25.4-□□	FMC27
4100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
4160R/L	NT*□□ (M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB60
4200R/L	NT*□□ (M/U)-FMM47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB80
4250R/L	NT*□□ (M/U)-FMM47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB80
4315R/L	KCP-8***(Center Ring Plug)		

*□□-NT Number **□□-BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC6510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling

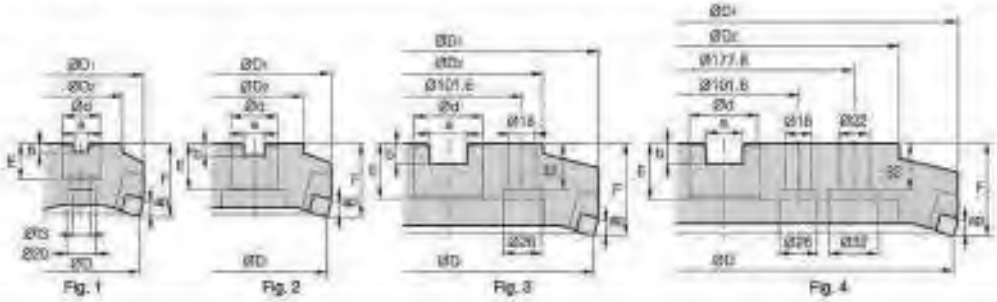
Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
				
LEN4R/L	WENR/L WENR1*/L1*	DHA0830 DHA0825*	LTX0512	HW40

* : Ø80 ~ Ø100

EPN(M)4000

KORLOY Inc.



• AR : 7°
• RR : 0°

(mm)

Designation		⊙	øD	øD1	øD2	ød	a	b	E	F	ap	⚖	Fig.
EPN(M)	4080R/L	5	80	86	57	25.4(27)	9.5(12.4)	6(7)	25(22)	50	9	1.4	1
	4100R/L	6	100	107	67	31.75(32)	12.7(14.4)	8(8)	32(28)	50	9	2.1	2
	4125R/L	8	125	132	87	38.1(40)	15.9(16.4)	10(9)	38(30)	63	9	3.8	2
	4160R/L	10	160	166	107	50.8(40)	19.0(16.4)	11(9)	38(30)	63	9	5.7	2
	4200R/L	12	200	206	130	47.625(60)	25.4(25.7)	14(14)	38(38)	63	9	8.2	3
	4250R/L	16	250	256	160	47.625(60)	25.4(25.7)	14(14)	38(38)	63	9	13.5	3
	4315R/L	20	315	321	240	47.625(60)	25.4(25.7)	14(14)	38(38)	63	9	21.1	4

• ( ) Metric Size

Available Inserts

SPCN	SPKN-SM	SPKN-SU	SPKN-MU
			
SPKR-MX	**SPKR-SM**	**SPXN-FM**	**SPXR-FM**
			

Designation		Coated									Cermet		Unsoated			
		NCM325	NCM335	NC3330	PC5300	PC3000	PC3545	PC9030	PC6510	PC8110	CN2000	CN25	CN35	H01	G10	ST30A	ST20
SPCN	1203EDR	●	●										●	●	●	●	●
	1203EDL														●	●	
	1203EDR-G													●			
	1203EDER-RH					●			●								
	1203EDSR-RH								●	●							
	1203EDTR-RH				●												
	1203EDR-S20								●								
SPKN	1203EDSR-SM																
	1203EDER-SM																
	1203EDER-MU																
	1203EDSR-SU					●	●	●									
	1203EDSL-SU					●											
SPKR	1203EDSR-MX	●	●		●												
	1203EDSL-MX	●															
	1203EDSR-SM																
SPXN	1203EDSR-FM																
	1203EDER-FM																
SPXR	1203EDSR-FM																

Available Arbors

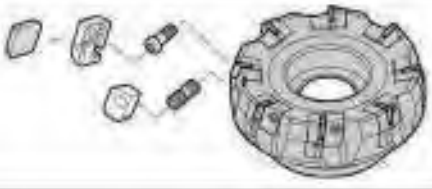
Designation	General Arbor	NC Arbors	
		EPN	EPNM
EPN(M) 4080R/L	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
4100R/L	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
4160R/L	NT*□□(M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
4200R/L	NT*□□(M/U)-FMM7.825-25,KCP-8***	BT**□□-FMA47.825-□□	FMB60
4250R/L	NT*□□(M/U)-FMM7.825-25,KCP-8***	BT**□□-FMA47.825-□□	FMB60
4315R/L	KCP-8***(Center Ring,Plug)		

*□□-NT Number **□□-BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC6510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling



Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
				
LEPN4R/L LEPN4R1*/L1*	WEPN4R/L	DHA0821F DHA0818F*	LTX0514	HW40

*: Ø80 ~ Ø100

EPN(M)5000

KORLOY Inc.

• AR : 7°
• RR : 0°

(mm)

Designation			øD	øD1	øD2	ød	a	b	E	F	ap		Fig.
EPN(M)	5080R/L	5	80	91	57	25.4(27)	9.5(12.4)	8(7)	25(22)	50	12	1.5	1
	5100R/L	6	100	110	67	31.75(32)	12.7(14.4)	8(8)	32(28)	50	12	2.1	2
	5125R/L	8	125	134	87	38.1(40)	15.9(16.4)	10(9)	38(30)	63	12	3.9	2
	5160R/L	10	160	169	107	50.8(40)	19.0(16.4)	11(9)	38(30)	63	12	5.7	2
	5200R/L	12	200	209	130	47.625(60)	25.4(25.7)	14(14)	38(38)	63	12	8.4	3
	5250R/L	16	250	259	180	47.625(60)	25.4(25.7)	14(14)	38(38)	63	12	13.6	3
	5315R/L	20	315	324	240	47.625(60)	25.4(25.7)	14(14)	38(38)	63	12	21.8	4

• ( )Metric Size

Available Inserts

SPCN	SPKN-SM	SPKN-SU	SPKN-MU
			

SPKR-MX	SPKR-SM	SPXN-FM	SPXR-FM
			

Designation		Coated								Cermet		Uncoated		
		NCM325	NCM335	NC5330	PC3505	PC3500	PC3545	PC9530	PC5510	PC8110	PD2000	CN2000	CN25	CN35	HP1	G10	ST30A	ST20
SPCN	150412T																	
	1504EDR	●											●			●	●	●
	1504EDSR		●															
	1504EDL								●								●	
	1504EDR-G														●			
	1504EDER-RH					●			●									
	1504EDSR-RH								●									
	1504EDTR-RH				●													
	1504EDR-S20																	
SPKN	1504ESR-SM																	
	1504EDER-SM																	
	1504EDSR-MU																	
	1504EDSR-SU					●	●	●										
	1504EDSL-SU																	
SPKR	1504EDR-MX	●																
	1504EDSR-MX		●		●													
	1504EDSR-SM																	
SPXN	1504EDSR-FM																	
	1504EDER-FM																	
SPXR	1504EDSR-FM																	

Available Arbors

Designation		General Arbor	NC Arbors	
			EPN	EPNM
EPN(M)	5080R/L	NT*□□(MU)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
	5100R/L	NT*□□(MU)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
	5125R/L	NT*□□(MU)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
	5160R/L	NT*□□(MU)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
	5200R/L	NT*□□(MU)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	5250R/L	NT*□□(MU)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
	5315R/L	KCP-8***(Center Ring Plug)		

*□□–NT Number **□□–BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 – 300	0.05 – 0.15	NCM325
	120 – 230	0.05 – 0.20	PC3500
	100 – 200	0.05 – 0.20	ST30A
M	50 – 200	0.05 – 0.20	PC9530
	50 – 120	0.05 – 0.20	ST30A
K	150 – 250	0.05 – 0.30	PC6510
	100 – 200	0.05 – 0.30	G10

Assembling

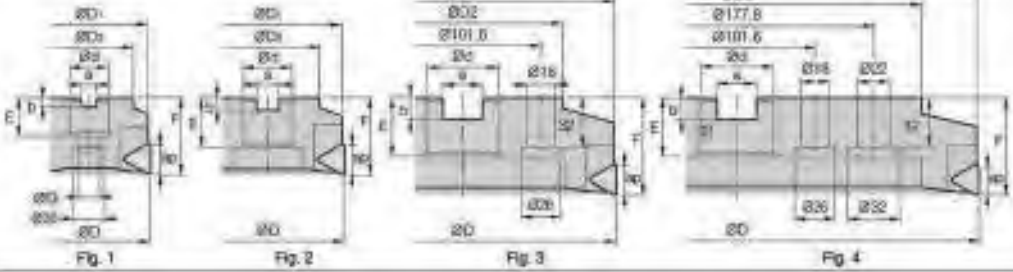
Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
				
LEPN5R/L LEPN5R1*/LT*	WEPN5R/L	DHA0821F DHA0818F*	LTX0514	HW40

*: Ø80 – Ø100

PPN(M)4000

KORLOY Inc.



• AR : 7°
• RR : 0°

(mm)

Designation		ⓒ	øD	øD1	øD2	ød	a	b	E	F	ap	ⓢ	Fig.
PPN(M)	4080R/L	5	80	79	57	25.4(27)	9.5(12.4)	6(7)	25(22)	50	18	1.3	1
	4100R/L	6	100	98	67	31.75(32)	12.7(14.4)	8(8)	32(28)	50	18	1.9	2
	4125R/L	8	125	124	87	38.1(40)	15.9(16.4)	10(9)	38(30)	63	18	3.5	2
	4160R/L	10	160	158	107	50.8(40)	19.0(16.4)	11(9)	38(30)	63	18	5.6	2
	4200R/L	12	200	198	130	47.625(60)	25.4(25.7)	14(14)	38(38)	63	18	8.1	3
	4250R/L	16	250	248	180	47.625(60)	25.4(25.7)	14(14)	38(38)	63	18	13.3	3
	4315R/L	20	315	313	240	47.625(60)	25.4(25.7)	14(14)	38(38)	63	18	21.4	4

• ( ) Metric Size

Available Inserts

TPCN	TPKN-SM	TPKN-SU	TPKN-MU
			
TPKR-MX	**TPKR-SM**	**TPXN-FM**	**TPXR-FM**
			

Designation		Coated									Cermet		Uncoated			
		NCM325	NCM335	NC3330	PC3500	PC3600	PC5300	PC5340	PC9530	PC9510	PD270/90	CN2000	CN20	CN30	HF1	G10	ST30A	ST20
TPCN	2204PDR	●											●		●	●	●	
	2204PDR-G													●				
	2204PDL																●	
	2204PDSR		●															
	2204PDTR																	
	2204PDR-RH																	
	2204PDER-RH						●			●	●							
	2204PDSR-RH									●	●							
	2204PDR-S20									●								
TPKN	2204PDSR-SM																	
	2204PDER-SM																	
	2204PDSR-MU																	
	2204PDSR-SU					●	●	●										
	2204PDSL-SU					●												
TPKR	2204PDR-MX	●																
	2204PDSR-MX	●	●															
	2204PPR-MX																	
	2204PDSR-SM																	
TPXN	2204PDSR-FM																	
	2204PDER-FM																	
TPXR	2204PDSR-FM																	

Available Arbors

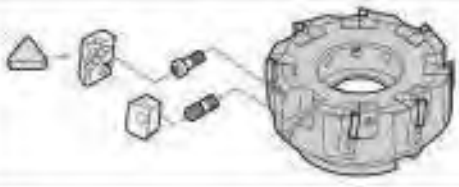
Designation	General Arbor	NC Arbors	
		PPN	PPNM
PPN(M) 4080R/L	NT*□□ (M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
4100R/L	NT*□□ (M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□ (M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40
4160R/L	NT*□□ (M/U)-FMA50.8-□□	BT**□□-FMA50.8-□□	FMB40
4200R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
4250R/L	NT*□□ (M/U)-FMA47.625-25, KCP-8***	BT**□□-FMA47.625-□□	FMB60
4315R/L	KCP-8***(Center Ring Plug)		

*□□-NT Number **□□-BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC5510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling



Parts

Locator	Wedge	Wedge Screw	Locator Screw	Wrench
				
LPPN4R/L LPPN4R1*/L1*	WPPN4R/L	DHA0621F DHA0817F*	LTX0514	HW40

*: Ø80 ~ Ø100

PES2000/3000/4000

KORLOY Inc.

2000/3000 type 4000 type

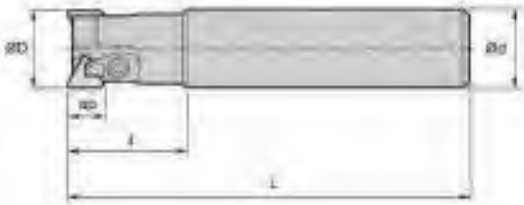


Fig. 1

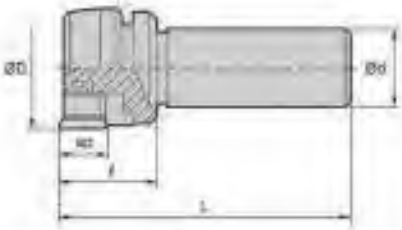


Fig. 2

• AR : 10°~15°
• RR : 2°~3°

(mm)

Designation		◎	oD	od	ℓ	L	ap	◎	Fig.
PES	2020R	2	20	20	30	110	8	0.3	1
	2025R	2	25	25	35	120	8	0.5	1
PES	3030R	2	30	32	45	160	13	0.9	1
	3032R	2	32	32	45	160	13	1.0	1
	3033R	2	33	32	45	160	13	1.1	1
	3035R	2	35	32	45	160	13	1.2	1
	3036R	2	36	32	45	160	13	1.3	1
	3040R	2	40	32	45	160	13	1.4	1
PES	4050R	3	50	32	40	120	16.5	1.2	2
	4050R-S42	3	50	42	40	120	16.5	1.5	2
	4063R	4	63	32	40	120	16.5	1.5	2
	4063R-S42	4	63	42	40	120	16.5	1.8	2

◎ Available Inserts

TECN TEEN

Type	Designation		Coated								Cermet		Uncoated		
			NCM325	NCM335	NC3330	PC3500	PC3000	PC3545	PC3530	PC8510	PC210K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
2000 type	TECN	22R														●			
		22TR													●		●		
3000 type	TECN	32R														●			
		32TR																	
		32TR-S20							●										
4000 type	TEEN	43R														●			
		43R-G																	
		43TR	●	●						●			●	●				●	●
		43TR-S20							●										
		43TR-Z																●	
		43TR-ZH					●		●										

◎ Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC8530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC8510
	100 ~ 200	0.05 ~ 0.30	G10

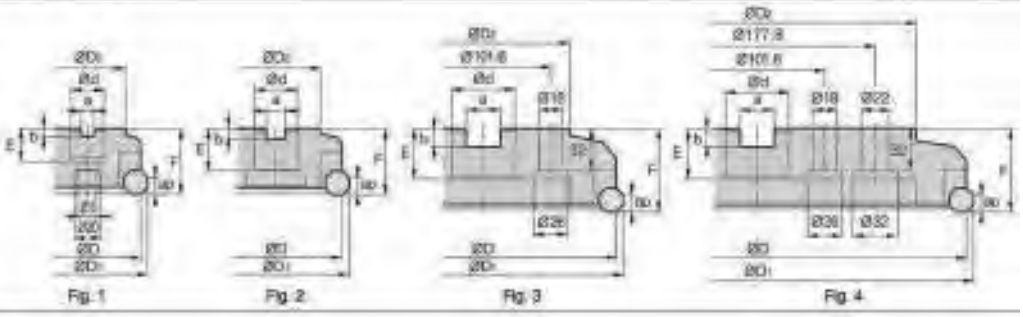
Assembling

◎ Parts

2000 type	-	-	-	CHX0407	HW25L	-	CH4R1	ER03
3000 type	-	-	-	CHX0510	HW30L	-	CH5R1	ER04
4000 type	LPTS4R/L	WPTSR	DHA0815	LTX0512	-	HW40	-	-

AFO(M)4000

KORLOY Inc.



• AR : 15°
• RR : 5°

(mm)

Designation		◎	øD	øD1	øD2	ød	a	b	E	F	ap		Fig.
AFO(M)	4080R/L	5	80	88	60	25.4(27)	9.5(12.4)	6(7)	25(22)	50	6.5	1.4	1
	4100R/L	6	100	108	80	31.75(32)	12.7(14.4)	8(8)	32(28)	50	6.5	2.0	1
	4125R/L	8	125	133	100	38.1(40)	15.9(16.4)	10(9)	38(30)	63	6.5	3.1	1

• ( )Metric Size

◎ Available Inserts

OFCW	OFKT-MF	OFKT-MM	OFKT-MA
			

Designation		Coated								Cermet		Uncoated		
		NCM325	NCM335	NC5330	PC3500	PC5100	PC3545	PC9530	PC6510	PC210K	PD3000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
OFCW	05T3SN																	
	05T3FN																	
	05T308FN																	
OFKT	05T3SN-MF	●	●						●									
	05T308SN-MF																	
	05T3SN-MM	●	●		●			●										
	05T308SN-MM																	
	05T3FN-MA														●			
	05T3EN-MA																	

◎ Available Arbors

Designation	General Arbor	NC Arbors	
		AFO	AFOM
AFO(M)4080R/L	NT*□□(M/U)-FMA25.4-25	BT**□□-FMA25.4-□□	FMC27
4100R/L	NT*□□(M/U)-FMA31.75-□□	BT**□□-FMA31.75-□□	FMC32
4125R/L	NT*□□(M/U)-FMA38.1-□□	BT**□□-FMA38.1-□□	FMB40

*□□–NT Number **□□–BT Number ***Over Milling 5

◎ Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC6510
	100 ~ 200	0.05 ~ 0.30	G10

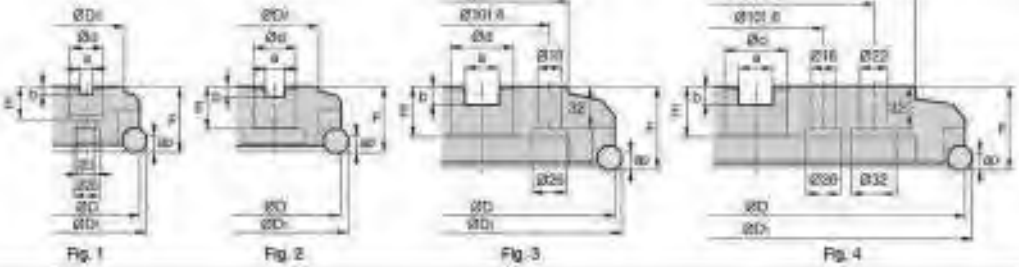
Assembling	
	

◎ Parts

Locator	Wedge	Wedge Screw	Screw	Wrench
				
LAF04R/L	WAFO4R/L	DHA0815	FTKA0408	TW15S

AFO(M)5000

KORLOY Inc.



• AR : 15°
• RR : 5°

(mm)

Designation		◎	øD	øD1	øD2	od	a	b	E	F	ap		Fig.
AFO(M)	5080R/L	5	80	91	60	25.4(27)	9.5(12.4)	6(7)	25(22)	50	9.5	1.4	1
	5100R/L	6	100	111	80	31.75(32)	12.7(14.4)	8(8)	32(28)	50	9.5	2.0	2
	5125R/L	8	125	136	100	38.1(40)	15.9(16.4)	10(9)	38(30)	63	9.5	3.1	2
	5160R/L	10	160	171	120	50.8(40)	19.0(16.4)	11(9)	38(30)	63	9.5	5.2	2
	5200R/L	12	200	211	130	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	9.5	7.5	3
	5250R/L	16	250	261	180	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	9.5	16.1	3
	5315R/L	20	315	326	240	47.625(60)	25.4(25.7)	13.5(14)	38(38)	63	9.5	22.8	4

• ( )Metric Size

Available Inserts

OFKT-MM | OFKT-MA | OFCN | OFKR-MF

OFKR-MM | OFKR-MA | REKR-MM

Designation		Coated							Cermet		Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC3530	PC3545	PC6530	PC6510	PC210K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
OFCN	0704SN	●			●		●		●									
	0704FN																	
	070408SN		●															
	070408FN																	
OFKR	0704SN-MF	●	●															
	070408SN-MF	●																
	0704SN-MM	●	●		●		●	●	●									
	070408SN-MM	●																
	0704FN-MA															●		
	0704EN-MA																	
OFKT	0704SN-MM	●																
	0704FN-MA															●		
	0704EN-MA																	
REKR	170400-MM																	

Available Arbors

Designation	General Arbor	NC Arbors	
		AFO	AFOM
AFO(M)5080R/L	NT□□(M,U)-FMA25.4-25	BT□□-FMA25.4-□□	FMC27
5100R/L	NT□□(M,U)-FMA31.75-□□	BT□□-FMA31.75-□□	FMC32
5125R/L	NT□□(M,U)-FMA38.1-□□	BT□□-FMA38.1-□□	FMB40
5160R/L	NT□□(M,U)-FMA50.8-□□	BT□□-FMA50.8-□□	FMB40
5200R/L	NT□□(M,U)-FMA47.625-25, KCP-8**	BT□□-FMA47.625-□□	FMB60
5250R/L	NT□□(M,U)-FMA47.625-25, KCP-8**	BT□□-FMA47.625-□□	FMB60
5315R/L	KCP-8***(Center Ring Plug)		

*□□-NT Number **□□-BT Number ***Over Milling 5

Recommended Cutting Condition

Workpiece	Cutting Condition		Grades
	vc(m/min)	fz(mm/t)	
P	150 ~ 300	0.05 ~ 0.15	NCM325
	120 ~ 230	0.05 ~ 0.20	PC3500
	100 ~ 200	0.05 ~ 0.20	ST30A
M	50 ~ 200	0.05 ~ 0.20	PC9530
	50 ~ 120	0.05 ~ 0.20	ST30A
K	150 ~ 250	0.05 ~ 0.30	PC6510
	100 ~ 200	0.05 ~ 0.30	G10

Assembling

Parts

	LAF05R/L LAF05R*/L-1*	WEFR/L	DHA0621F	LTX0512	HW40

* : Ø80 ~ Ø160

PBAC(M)5000

KORLOY Inc.

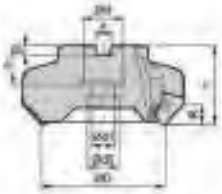


Fig. 1

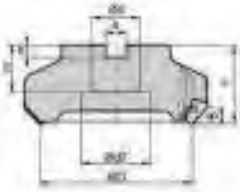


Fig. 2

Fig. 3

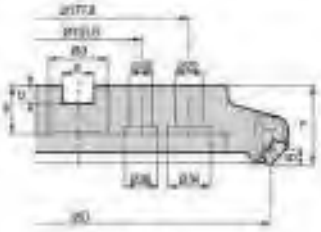


Fig. 4

- AR : -5°
- RR : -11°

(mm)

	Designation		ⓒ	øD	ød	ød1	ød2	a	b	E	F	ap	Fig.
Coarse pitch	PBAC(M)	5080R/L	4	80	25.4(27)	14	20	9.5(12.4)	6(7)	25(22)	50	12	1
		5100R/L	4	100	31.75(32)	-	45	12.7(14.4)	8(8)	32(28)	50	12	2
		5125R/L	6	125	38.1(40)	-	56	15.9(16.4)	10(9)	38(32)	63	12	2
		5160R/L	8	160	50.8(40)	-	100	19(16.4)	11(9)	38(32)	63	12	2
		5200R/L	10	200	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	12	3
		5250R/L	12	250	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	12	3
		5315R/L	14	315	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	12	4
Close pitch	PBAC(M)	5080R/L-M	6	80	25.4(27)	14	20	9.5(12.4)	6(7)	25(22)	50	12	1
		5100R/L-M	6	100	31.75(32)	-	45	12.7(14.4)	8(8)	32(28)	50	12	2
		5125R/L-M	8	125	38.1(40)	-	56	15.9(16.4)	10(9)	38(32)	63	12	2
		5160R/L-M	10	160	50.8(40)	-	100	19(16.4)	11(9)	38(32)	63	12	2
		5200R/L-M	12	200	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	12	3
		5250R/L-M	14	250	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	12	3
		5315R/L-M	16	315	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	12	4

* ( )Metric Size

Available Inserts

TNMX-NM

Designation	Coated										Cermet			Uncoated			
	NC4325	NC4335	NC3330	PC3500	PC5300	PC3545	PC9530	PC8510	PC210K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
TNMX 2710AZNR-NM		●	●	●	●		●										
2710AZNL-NM																	

Available Arbors

Designation		Available Arbors	
		PBAC	PBACM
PBAC (PBACM)	5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
	5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	5200R-□ 5250R-□ 5315R-□	BT□□-FMA47.625-□□	BT□□-FMB80-□□

Parts

Screw	Shim	Shim Screw	Wrench
			
FTGA0518	ST53AZR	SHXN0712F	TW20-100

PBZC(M)5000

KORLOY Inc.

Fig. 1

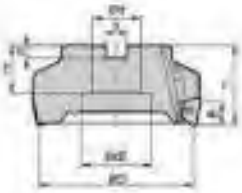


Fig. 2

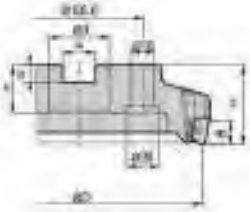


Fig. 3

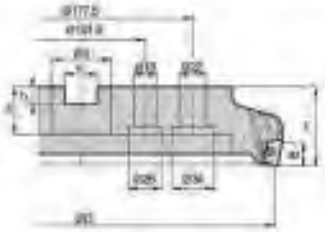


Fig. 4

AA 80°

- AR : -6°
- RR : -12°

(mm)

	Designation		◎	øD	ød	ød1	ød2	a	b	E	F	ap	Fig.
Coarse pitch	PBZC(M)	5080R/L	4	80	25.4(27)	14	20	9.5(12.4)	6(7)	25(22)	50	18	1
		5100R/L	4	100	31.75(32)	-	45	12.7(14.4)	8(8)	32(28)	50	18	2
		5125R/L	6	125	38.1(40)	-	56	15.9(16.4)	10(9)	38(32)	63	18	2
		5160R/L	8	160	50.8(40)	-	100	19(16.4)	11(9)	38(32)	63	18	2
		5200R/L	10	200	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	18	3
		5250R/L	12	250	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	18	3
		5315R/L	14	315	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	18	4
Close pitch	PBZC(M)	5080R/L-M	6	80	25.4(27)	14	20	9.5(12.4)	6(7)	25(22)	50	18	1
		5100R/L-M	6	100	31.75(32)	-	45	12.7(14.4)	8(8)	32(28)	50	18	2
		5125R/L-M	8	125	38.1(40)	-	56	15.9(16.4)	10(9)	38(32)	63	18	2
		5160R/L-M	10	160	50.8(40)	-	100	19(16.4)	11(9)	38(32)	63	18	2
		5200R/L-M	12	200	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	18	3
		5250R/L-M	14	250	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	18	3
		5315R/L-M	16	315	47.625(60)	-	-	25.4(25.7)	14(14)	38(38)	63	18	4

- ( ) Metric Size

Available Inserts

TNMX-NM

Designation	Coated										Cermet			Uncoated			
	NCM325	NCM335	NCS330	PC3500	PC5300	PC3545	PC9530	PC8510	PC215K	PD2500	CM2000	CM20	CM30	H01	G10	ST304	ST20
TNMX 2710AZNR-NM		●	●	●	●		●										
2710AZNL-NM																	

Available Arbors

Designation		Available Arbors	
		PBZC	PBZCM
PBZC (PBZCM)	5080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
	5100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	5125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	5160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	5200R-□ 5250R-□ 5315R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

Parts

Screw	Shim	Shim Screw	Wrench
			
FTGA0518	ST53AZR	SHXN0712F	TW20-100

RM8AC(M)4000

KORLOY Inc.

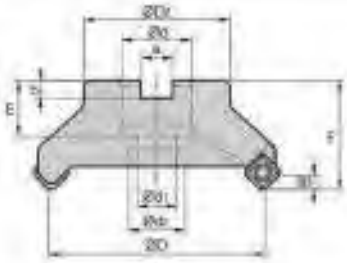


Fig. 1

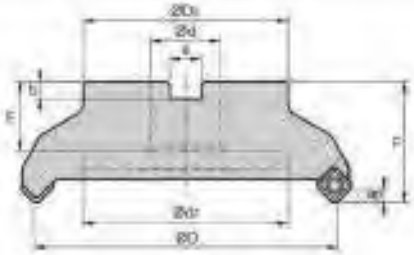


Fig. 2

- AR : -6°
- RR : -9°~6°

(mm)

Designation		⊙	øD	øD₂	ød	ød₁	ød₂	a	b	E	F	ap	⊙	Fig.
RM8ACM	4050HR-M	4	50	49	22	11	18	10.4	6.3	20	40	5.0	0.5	1
	4050HR-H	5	50	49	22	11	18	10.4	6.3	20	40	5.0	0.5	1
	4063HR-M	6	63	49	22	11	18	10.4	6.3	20	40	5.0	0.7	1
	4063HR-H	9	63	49	22	11	18	10.4	6.3	20	40	5.0	0.7	1
RM8AC	4080HR	5	80	57	25.4(27)	14	20	9.5(12.4)	6(7)	25(23)	50	5.0	1.2	1
(RM8ACM)	4080HR-M	7	80	57	25.4(27)	14	20	9.5(12.4)	6(7)	25(23)	50	5.0	1.2	1
	4080HR-H	10	80	57	25.4(27)	14	20	9.5(12.4)	6(7)	25(23)	50	5.0	1.3	1
	4100HR	8	100	67	31.75(32)	18	26	12.7(14.4)	8	33(25.5)	63(50)	5.0	1.7	1
	4100HR-M	9	100	67	31.75(32)	18	26	12.7(14.4)	8	33(25.5)	63(50)	5.0	1.7	1
	4100HR-H	12	100	67	31.75(32)	18	26	12.7(14.4)	8	33(25.5)	63(50)	5.0	1.7	1
	4125HR	8	125	87	38.1(40)	22	32	15.9(16.4)	10(9)	36(30)	63	6.0	3.6	1
	4125HR-M	10	125	87	38.1(40)	22	32	15.9(16.4)	10(9)	36(30)	63	6.0	3.6	1
	4125HR-H	16	125	87	38.1(40)	22	32	15.9(16.4)	10(9)	36(30)	63	6.0	3.7	1
	4160R	10	160	107	50.8(40)	-	107	19(16.4)	11(9)	38(32)	63	6.0	4.8	2
	4160R-M	12	160	107	50.8(40)	-	107	19(16.4)	11(9)	38(32)	63	6.0	5.3	2
	4160R-H	20	160	107	50.8(40)	-	107	19(16.4)	11(9)	38(32)	63	6.0	5.4	2

Available Inserts

SNEX-MF	SNEX-MM	SNEX-MA	SNEX-W	SNMX-MF	SNMX-MM
					

Designation		Coated							Cermet		Uncoated			page
		NC6325	NC6330	PC3500	PC5300	PC5325	PC9530	PC9510	PC215K	PD2000	CN2000	CN20	CN00	H01	G10	ST20A	ST30	
SNEX	1206ANN-MF			●	●		●											E17
	1206ANN-MM	●		●	●		●											
SNMX	1206ANN-MF			●	●		●											
	1206ANN-MM	●		●	●		●	●										
SNEX	1206ANN-MA													●				
	1206ANN-W			●			●											

Available Arbors

Designation		Available Arbors	
		RM8AC	RM8ACM
RM8ACM	4050HR-□ 4063HR-□	-	BT□□-FMC22-□□
RM8AC (RM8ACM)	4080HR-□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
	4100HR-□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
	4125HR-□	BT□□-FMA38.1-□□	BT□□-FMB40-□□
	4160R-□	BT□□-FMA50.8-□□	BT□□-FMC40-□□
	4200R-□ 4250R-□ 4315R-□ 4400R-□	BT□□-FMA47.625-□□	BT□□-FMB60-□□

Parts

Screw	Wrench
	
FTKA0410	TW15S

KORLOY Inc.

RM4PC(M)3000

KORLOY Inc.

Fig. 1

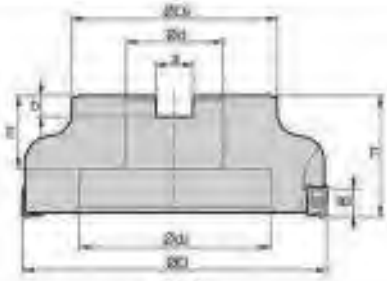


Fig. 2

AA 90°

- AR : -6°
- RR : -19°~-13°

(mm)

Designation		⊙	øD	øD₂	ød	ød₁	ød₂	a	b	E	F	ap	⚖	Bolt	Fig.
RM4PC(M)	3040HR	4	40	35	16	9	14	8.4	5.6	19	40	9.0	0.24	SB0625	1
	3040HR-M	5	40	35	16	9	14	8.4	5.6	19	40	9.0	0.23	SB0625	1
	3050HR	5	50	42	22	11	18	10.4	6.3	20	40	9.0	0.36	SB1025	1
	3050HR-M	7	50	42	22	11	18	10.4	6.3	20	40	9.0	0.35	SB1025	1
	3063HR	7	63	49	22	11	18	10.4	6.3	20	40	9.0	0.61	SB1025	1
	3063HR-M	9	63	49	22	11	18	10.4	6.3	20	40	9.0	0.6	SB1025	1
	3080HR	8	80	57	25.4(27)	14	20	9.5(12.4)	6.0(7.0)	25(23)	50	9.0	1.25(1.24)	SB1230	1
	3080HR-M	10	80	57	25.4(27)	14	20	9.5(12.4)	6.0(7.0)	25(23)	50	9.0	1.24(1.23)	SB1230	1
	3100HR	9	100	67	31.75(32)	18	26	12.7(14.4)	8.0(8.0)	33(25)	63(50)	9.0	2.46(1.94)	SB1630	1
	3100HR-M	12	100	67	31.75(32)	18	26	12.7(14.4)	8.0(8.0)	33(25)	63(50)	9.0	2.44(1.93)	SB1630	1

• ( ) Metric Size

Available Inserts

LNEX-MF LNEX-MM LNEX-MA LNMX-MF LNMX-MM

Designation	Coated							Cermet			Uncoated			
	NC9025	NC9035	NC5330	PC5500	PC5300	PC5540	PC9030	PC9010	PC215K	PD2000	CN2000	CN25	CN30	H01	G10	ST30A	ST20
LNEX 100605PNR-MF				●	●			●									
LNMX 100605PNR-MF				●	●			●									
LNEX 100605PNR-MM				●	●			●									
LNMX 100605PNR-MM				●	●	●	●	●									
LNEX 100608PNR-MF				●				●									
LNMX 100608PNR-MF								●									
LNEX 100608PNR-MM								●									
LNMX 100608PNR-MM				●													
LNEX 100605PNR-MA														●			
LNEX 100605PNL-MM																	
LNMX 100605PNL-MM				●													

Available Arbors

Designation		Available Arbors	
		RM4PC	RM4PCM
RM4PC(M)	3040HR 3040HR-M	-	BT□□-FMC16-□□
	3050HR 3050HR-M 3063HR 3063HR-M	-	BT□□-FMC22-□□
	3080HR 3080HR-M	BT□□-FMA25.4-□□	BT□□-FMC27-□□
	3100HR 3100HR-M	BT□□-FMA31.75-□□	BT□□-FMC32-□□

Parts

Screw	Wrench
	
FTKA0307	TW09S

RM4PC(M)4000

KORLOY Inc.

Fig. 1

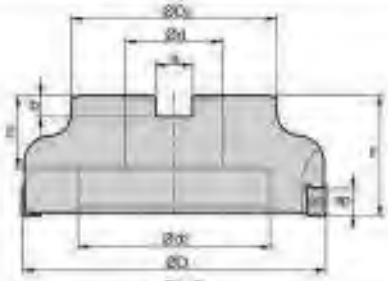


Fig. 2

+ AR : -6°
+ RR : -19°~-13°

(mm)

Designation		◎	øD	øD₂	ød	ød₁	ød₂	a	b	E	F	ap	⚖	Bolt	Fig.
RM4PC(M)	4050HR	3	50	46	22	11	18	10.4	6.3	20	40	14	0.36	SB1025	1
	4050HR-M	4	50	46	22	11	18	10.4	6.3	20	40	14	0.35	SB1025	1
	4063HR	4	63	49	22	11	18	10.4	6.3	20	40	14	0.56	SB1025	1
	4063HR-M	5	63	49	22	11	18	10.4	6.3	20	40	14	0.57	SB1025	1
	4080HR	5	80	57	25.4(27)	14	20	9.5(12.4)	6.0(7.0)	25(23)	50	14	1.18(1.16)	SB1230	1
	4080HR-M	7	80	57	25.4(27)	14	20	9.5(12.4)	6.0(7.0)	25(23)	50	14	1.17(1.14)	SB1230	1
	4100HR	5	100	67	31.75(32)	18	26	12.7(14.4)	8.0(8.0)	33(25)	63(50)	14	2.35(1.84)	SB1630	1
	4100HR-M	8	100	67	31.75(32)	18	26	12.7(14.4)	8.0(8.0)	33(25)	63(50)	14	2.31(1.82)	SB1630	1
	4125HR	7	125	87	38.1(40)	22	32	15.9(16.4)	10(9.0)	35(30)	63	14	3.87(3.79)	SB2040	1
	4125HR-M	10	125	87	38.1(40)	22	32	15.9(16.4)	10(9.0)	35(30)	63	14	3.82(3.70)	SB2040	1
	4160R	8	160	107	50.8(40)	-	100	19(16.4)	11(9.0)	38(32)	63	14	5.0(4.75)	MBA	2
	4160R-M	12	160	107	50.8(40)	-	100	19(16.4)	11(9.0)	38(32)	63	14	4.97(4.71)	MBA	2

* ( )Metric Size

Available Inserts

LNEX-MF	LNEX-MM	LNEX-MA	LNMX-MF	LNMX-MM
				

Designation	Coated								Cermet		Uncoated			
	NC4325	NC8325	NC5330	PC5300	PC5320	PC5340	PC9030	PC9530	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
LNEX 151004PNR-MF				●			●									
LNMX 151004PNR-MF				●			●									
LNEX 151004PNR-MM																
LNMX 151004PNR-MM							●									
LNEX 151008PNR-MF					●		●									
LNMX 151008PNR-MF				● ●			●									
LNEX 151008PNR-MM				● ●			●									
LNMX 151008PNR-MM				● ●	●	●	●									
LNEX 151016PNR-MF																
LNMX 151016PNR-MF																
LNEX 151016PNR-MM																
LNMX 151016PNR-MM				●												
LNEX 151004PNR-MA													●			
LNEX 151008PNR-MA													●			
LNEX 151008PNL-MM																
LNMX 151008PNL-MM																

Available Arbors

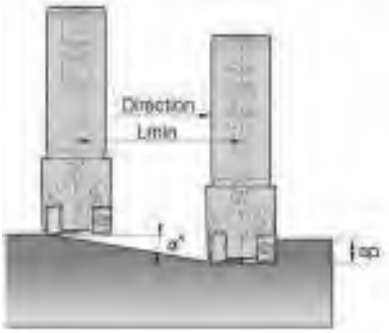
Designation	Available Arbors	
	RM4PC	RM4PCM
RM4PC(M) 4050HR 4050HR-M 4063HR 4063HR-M	–	BT□□-FMC22-□□
4080HR 4080HR-M	BT□□-FMA25.4-□□	BT□□-FMC27-□□
4100HR 4100HR-M	BT□□-FMA31.75-□□	BT□□-FMC32-□□
4125HR 4125HR-M	BT□□-FMA38.1-□□	BT□□-FMB40-□□ BT□□-FMC40-□□
4160R 4160R-M	BT□□-FMA50.8-□□	

Parts

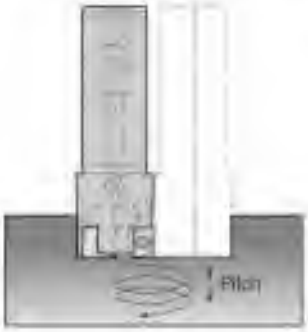
Screw	Wrench
	
FTKA0412B	TW15S

Ramping and Helical cutting

1. Ramping



2. Helical cutting for blind hole



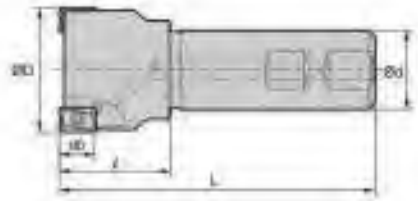
3. Helical cutting for through hole

Designation	1. Ramping			2. Helical cutting for blind hole				3.Helical cutting for through hole	
	D	α°	Lmin	Maximum Hole Diameter	Maximum Pitch	Minimum Hole Diameter	Maximum Pitch	Minimum Hole Diameter	Maximum Pitch
RM4PS3014HR	14	5	114	27	3	25	2.5	19	1.0
RM4PS3016HR	16	4	143	31	3	29	2.0	23	1.0
RM4PS3018HR	18	4	143	35	3	33	3.0	27	2.0
RM4PS3020HR	20	4	143	39	4	37	3.0	31	2.0
RM4PS3025HR	25	3.5	163	49	4	47	4.0	41	3.0
RM4PS3032HR	32	3	191	63	4.5	61	4.0	55	3.5
RM4PS3040HR	40	2	286	79	4	77	3.5	71	3.0
RM4PS3050HR	50	1.5	382	99	3.5	97	3.5	91	3.0
RM4PC(M)3040HR	40	2	286	79	4	77	4.0	71	3.0
RM4PC(M)3050HR	50	1.5	382	99	3.5	97	3.5	91	3.0
RM4PC(M)3063HR	63	1	573	125	3	123	3.0	117	2.5
RM4PC(M)3080HR	80	1	573	159	4	157	4.0	151	3.5
RM4PCM3100HR	100	0.5	1146	199	2	197	2.0	191	2.0
RM4PS4032HR	32	2.5	229	62	4	59.5	3.0	49	2.0
RM4PS4040HR	40	2.0	286	78	4	75.5	3.0	65	2.0
RM4PS4050HR	50	2.0	286	98	5	95.5	4.0	85	3.5
RM4PS4063HR	63	2.0	286	124	5	121.5	5.0	111	5.0
RM4PC(M)4050HR	50	2.0	286	98	5	95.5	4.0	85	3.5
RM4PC(M)4063HR	63	2.0	286	124	5	121.5	5.0	111	5.0
RM4PC(M)4080HR	80	1.5	382	158	5	155.5	5.0	145	5.0
RM4PCM4100HR	100	1.0	573	198	5	195.5	4.5	185	4.0
RM4PC(M)4125HR	125	1.0	573	248	5	245.5	5.0	235	5.0
RM4PC(M)4160R	160	0.5	1146	318	4	315.5	3.5	305	3.5

The Lmin is when depth of cut is 10.0mm (Lmin = 10/tan α)

RM4PS3000

KORLOY Inc.



• AR : -6°
• RR : -39°~-16°

(mm)

Designation		◎	øD	ød	l	L	ap	kg
RM4PS	3014HR-S16	1	14	16	23	90	9.0	0.11
	3016HR-S16	1	16	16	25	90	9.0	0.11
	3018HR-S16	2	18	16	23	90	9.0	0.12
	3020HR-S20	2	20	20	30	100	9.0	0.21
	3020HR-S20M	3	20	20	30	100	9.0	0.21
	3025HR-S25	2	25	25	35	115	9.0	0.38
	3025HR-S25M	3	25	25	35	115	9.0	0.38
	3032HR-S32	3	32	32	40	125	9.0	0.69
	3032HR-S32M	4	32	32	40	125	9.0	0.7
	3040HR-S32	4	40	32	42	130	9.0	0.86
	3040HR-S32M	5	40	32	42	130	9.0	0.85
	3040HR-S40	4	40	40	42	130	9.0	1.17
	3040HR-S40M	5	40	40	42	130	9.0	1.17
	3040HR-S42	4	40	42	42	130	9.0	1.26
	3040HR-S42M	5	40	42	42	130	9.0	1.25
	3050HR-S32	5	50	32	45	135	9.0	1.06
	3050HR-S32M	7	50	32	45	135	9.0	1.05
	3050HR-S40	5	50	40	45	135	9.0	1.38
	3050HR-S40M	7	50	40	45	135	9.0	1.37
	3050HR-S42	5	50	42	45	135	9.0	1.48
	3050HR-S42M	7	50	42	45	135	9.0	1.48

Available Inserts

LNEX-MF	LNEX-MM	LNEX-MA	LNMX-MF	LNMX-MM
				

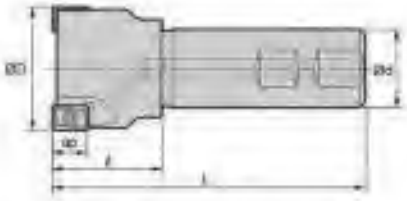
Designation	Coated										Cermet			Uncoated			
	NC3225	NC3235	NC5330	PC3500	PC5300	PC3545	PC9530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
LNEX 100605PNR-MF				●	●			●									
LNMX 100605PNR-MF				●	●			●									
LNEX 100605PNR-MM				●	●			●									
LNMX 100605PNR-MM				●	●	●	●	●									
LNEX 100608PNR-MF				●				●									
LNMX 100608PNR-MF								●									
LNEX 100608PNR-MM								●									
LNMX 100608PNR-MM				●													
LNEX 100605PNR-MA														●			
LNEX 100605PNL-MM								●									
LNMX 100605PNL-MM				●				●									

Parts

Screw	Wrench
	
FTKA0307	TW09S

RM4PS4000

KORLOY Inc.



- AR : -6°
- RR : -24°~-14°

(mm)

Designation		⊙	øD	ød	ℓ	L	ap	⚖
RM4PS	4032HR-S32	2	32	32	40	125	14	0.68
	4040HR-S32	3	40	32	42	125	14	0.83
	4040HR-S40	3	40	40	42	125	14	1.14
	4040HR-S42	3	40	42	42	125	14	1.23
	4050HR-S32	3	50	32	45	125	14	1.02
	4050HR-S32M	4	50	32	45	125	14	1.02
	4050HR-S40	3	50	40	45	125	14	1.35
	4050HR-S40M	4	50	40	45	125	14	1.34
	4050HR-S42	3	50	42	45	125	14	1.45
	4050HR-S42M	4	50	42	45	125	14	1.45
	4063HR-S32	4	63	32	45	125	14	1.25
	4063HR-S32M	6	63	32	45	125	14	1.24
	4063HR-S40	4	63	40	45	125	14	1.62
	4063HR-S40M	6	63	40	45	125	14	1.61
	4063HR-S42	4	63	42	45	125	14	1.71
	4063HR-S42M	6	63	42	45	125	14	1.7

Available Inserts

LNEX-MF	LNEX-MM	LNEX-MA	LNMX-MF	LNMX-MM
				

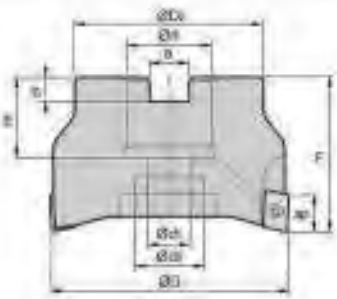
Designation	Coated									Cermet			Uncoated			
	NC3125	NC3135	NC3330	PC3500	PC3330	PC3545	PC3530	PC8510	PC215K	PD3000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
LNEX 151004PNR-MF				●				●									
LNMX 151004PNR-MF				●				●									
LNEX 151004PNR-MM																	
LNMX 151004PNR-MM								●									
LNEX 151006PNR-MF					●			●									
LNMX 151008PNR-MF				●	●			●									
LNEX 151008PNR-MM				●	●			●									
LNMX 151008PNR-MM				●	●	●	●	●									
LNEX 151016PNR-MF																	
LNMX 151016PNR-MF																	
LNEX 151016PNR-MM																	
LNMX 151016PNR-MM				●													
LNEX 151004PNR-MA														●			
LNEX 151006PNR-MA														●			

Parts

Screw	Wrench
	
FTKA0412B	TW15S

AMC(M)1000S

KORLOY Inc.



- AR : 9°~13°
- RR : -14°~-5°

(mm)

Designation		ⓢ	øD	øD₂	ød	ød₁	ød₂	a	b	E	F	ap	
AMC(M)	1032HS	6	32	30	16	9	14	8.4	5.6	19	40	5.6	0.15
	1040HS-16	10	40	34	16	9	14	8.4	5.6	19	40	5.6	0.24
	1040HS-22	10	40	34	22	11	18	10.4	6.3	21	40	5.6	0.24
	1050HS	12	50	42	22	11	18	10.4	6.3	21	40	5.6	0.36
	1063HS	14	63	49	22	11	18	10.4	6.3	21	40	5.6	0.61

Available Inserts

APMT-MM

APMT-MF

Designation		Coated									Cermet			Uncoated			
		NC5325	NC5335	NC5330	PC3500	PC3300	PC3545	PC9530	PC5510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
APMT	060202PDSR-MM			●	●	●	●											
	0602PDSR-MM			●	●	●	●	●	●									
	060208PDSR-MM			●	●	●	●											
	060212R-MM			●	●	●												

Available Arbors

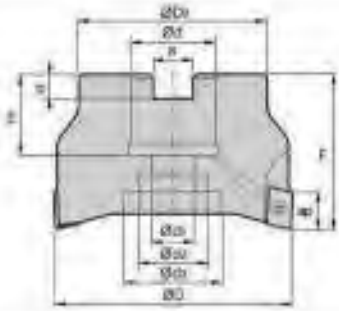
Designation		Ød	NC Arbors
AMC(M)	1032HS 1040HS-16	16	BT□□-FMC16-□□
	1040HS-22 1050HS 1063HS	22	BT□□-FMC22-□□

Parts

Screw	Wrench
	
FTKA01842	TW06S-A

AMC(M)1500S

KORLOY Inc.



• AR : 9°~13°
• RR : -14°~-5°

(mm)

Designation		ⓓ	øD	øD₂	ød	ød₁	ød₂	ød₃	a	b	E	F	ap	
AMC(M)	15040HS	5	40	34	16	9	14	-	8.4	5.6	19	40	9	0.22
	15050HS	6	50	42	22	11	18	-	10.4	6.3	21	40	9	0.34
	15063HS	8	63	49	22	11	18	-	10.4	6.3	21	40	9	0.57
	15080HS	10	80	57	25.4(27)	14	25	35	9.5(12.4)	6(7)	24(23)	50	9	1.10
	15100HS	12	100	67	31.75(32)	18	26	42	12.7(14.4)	8(8)	32(26)	63	9	2.10

• ( ) Metric Size

Available Inserts

APMT-MM

APMT-MF

Designation		Coated									Cermet			Uncoated			
		NC3020	NC3030	NC5330	PC3500	PC5300	PC3545	PC9530	PC9510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
APMT	0903PDSR-MM			●	●	●	●											
	090308PDSR-MM			●	●	●	●											
	090312R-MM					●	●											
	090316R-MM				●	●												
	090320R-MM				●	●												

Available Arbors

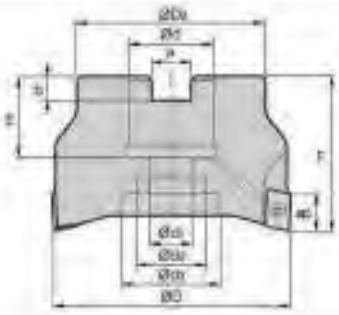
Designation		Ød	NC Arbors
AMC(M)	15040HS	16	BT□□-FMC16-□□
	15050HS 15063HS	22	BT□□-FMC22-□□
	15080HS	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	15100HS	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□

Parts

Screw	Wrench
	
FTKA02565S	TW08S

AMC(M)2000S

KORLOY Inc.



• AR : 9°~13°
• RR : -14°~-5°

(mm)

Designation			øD	øD₂	ød	ød₁	ød₂	ød₃	a	b	E	F	ap	
AMC(M)	2040HS	5	40	34	16	9	14	-	8.4	5.6	16	40	11	0.22
	2050HS	6	50	42	22	11	18	-	10.4	6.3	20	40	11	0.34
	2063HS	8	63	49	22	11	18	-	10.4	6.3	20	40	11	0.57
	2080HS	8	80	57	25.4(27)	14	25	35	9.5(12.4)	6(7)	25(22)	50	11	1.16
	2100HS	10	100	67	31.75(32)	18	26	42	12.7(14.4)	8(8)	32(28)	63	11	2.10

• ( )Metric Size

Available Inserts

APMT-MM

APMT-MF

Designation		Coated									Cermet			Uncoated			
		NC4035	NC4036	NC5330	PC3500	PC3300	PC3545	PC9530	PC6510	PC215K	PD2000	CN6000	CN25	CN30	H01	G10	ST30A	ST20
APMT	11T3PDSR-MM	●		●	●	●	●	●										
	11T3PDSR-MF	●		●	●	●	●											
	11T308PDSR-MM	●		●	●	●	●											
	11T312PDSR-MM	●		●	●	●	●											
	11T316R-MM	●		●	●	●												
	11T318R-MM																	
	11T324R-MM			●	●	●	●											

Available Arbors

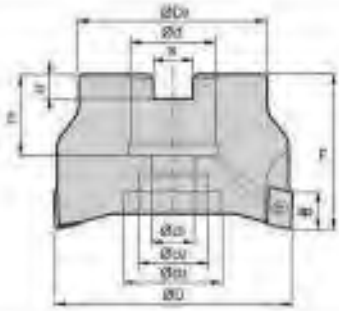
Designation		Ød	NC Arbors
AMC(M)	2040HS	16	BT□□-FMC16-□□
	2050HS 2063HS	22	BT□□-FMC22-□□
	2080HS	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	2100HS	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□

Parts

FTKA02565S TW08S

AMC(M)3000S

KORLOY Inc.



• AR : 14°
• RR : -12°~-6°

(mm)

Designation		◎	øD	øD2	ød	ød1	ød2	ød3	a	b	E	F	ap	⚖
AMC(M)	3040HS	4	40	34	16	9	14	-	8.4	5.6	16	40	16	0.16
	3050HS	5	50	42	22	11	18	-	10.4	6.3	20	40	16	0.28
	3063HS	6	63	49	22	11	18	-	10.4	6.3	20	40	16	0.50
	3080HS	7	80	57	25.4(27)	14	25	36	9.5(12.4)	6(7)	25(22)	50	16	1.02
	3100HS	8	100	67	31.75(32)	18	25	42	12.7(14.4)	8(8)	32(28)	63	16	2.05

• ( ) Metric Size

Available Inserts

APMT-MM

APMT-MF

Designation		Coated									Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC5505	PC5510	PC215K	PD2000	CN2000	CN20	CN30	H01	Q10	ST30A	S120
APMT	1604PDSR-MM	●		●	●	●	●	●	●									
	1604PDSR-MF	●		●	●	●	●											
	160410PDSR-MM	●			●		●											
	160416PDSR-MM	●		●	●	●	●											
	160424R-MM			●	●	●	●											
	160430R-MM																	
	160432R-MM	●		●	●	●	●											

Available Arbors

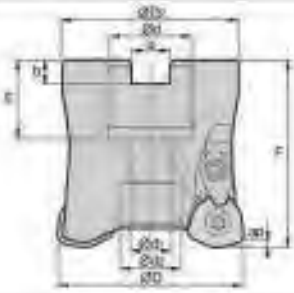
Designation		Ød	NC Arbors
AMC(M)	3040HS	16	BT□□-FMC16-□□
	3050HS 3063HS	22	BT□□-FMC22-□□
	3080HS	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	3100HS	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□

Parts

Screw	Wrench
	
FTKA0410	TW15S

HRMC(M)13/15

KORLOY Inc.



AA 15

• AR : 7°
• RR : -15°~-5°

(mm)

Designation			⊙	øD	øD2	ød	ød1	ød2	a	b	E	F	ap	(kg)	Bolt
HRMC(M)	13050HR-3		3	50	47	22.225(22)	11	16.4	8.8(10.4)	5(6.3)	20(21)	50	2.0	0.4	SB1035
	13050HR-4		4	50	47	22.225(22)	11	16.4	8.8(10.4)	5(6.3)	20(21)	50	2.0	0.4	SB1035
	13063HR-4		4	63	60	22.225(22)	11	17	8.8(10.4)	5(6.3)	20(21)	50	2.0	0.7	SB1035
	13080HR-5		5	80	76	31.75(27)	18(13)	26(20)	12.7(12.4)	8(7)	32(23)	70	2.0	1.6	SB16(12)45
HRMC(M)	15063HR-3		3	63	60	22.225(22)	11	17	8.8(10.4)	5(6.3)	20(21)	50	2.5	0.7	SB1035
	15080HR-4		4	80	76	31.75(27)	18(13)	26(20)	12.7(12.4)	8(7)	32(23)	70	2.5	1.7	SB16(12)45
	15100HR-5		5	100	96	31.75(32)	18	26	12.7(14.4)	8(8)	32(26)	70	2.5	2.8	SB1645
	15100HR-6		6	100	96	31.75(32)	18	26	12.7(14.4)	8(8)	32(26)	70	2.5	3.2	SB1645
	15125HR-6		6	125	98	38.1(40)	22	32	15.9(16.4)	10(9)	35(29)	63	2.5	3.3	SB2040
	15160R-7		7	160	100	50.8(40)	-	72	19.0(16.4)	11(9)	38(35)	63	2.5	4.3	MBA-M24(M20)

Note) Through coolant type between Ø50~Ø125

• ( )Metric Size

Available Inserts

WDKT-MH

Type	Designation	Coated									Cermet			Uncoated				
		NC9025	NC9035	NC3030	PC3500	PC5300	PC3045	PC3630	PC6510	PC215K	PD2000	CN2000	CN20	CN35	H01	G10	ST30A	ST20
13 type	WDKT130520ZDSR-MH				●	●	●	●	●									
15 type	WDKT150625ZDSR-MH				●	●	●	●	●									

Available Arbors

Designation		Available Arbors	
		HRMC	HRMCM
HRMC(M)	13050HR-3 13050HR-4	BT□□-FMA22.225-□□	BT□□-FMC22-□□ SK□□-FMC22-□□
	13063HR-4		
	13080HR-5	BT□□-FMA31.75-□□ SK□□-FMA31.75-□□	BT□□-FMC27-□□ SK□□-FMC27-□□
	15063HR-3	BT□□-FMA22.225-□□	BT□□-FMC22-□□ SK□□-FMC22-□□
	15080HR-4	BT□□-FMA31.75-□□ SK□□-FMA31.75-□□	BT□□-FMC27-□□ SK□□-FMC27-□□
	15100HR-5 15100HR-6		BT□□-FMC32-□□ SK□□-FMC32-□□
	15125HR-6	BT□□-FMA38.1-□□ SK□□-FMA38.1-□□	SK□□-FMC40-□□
	15160R-7	BT□□-FMA50.8-□□	

Bolt

Fig. 1

Fig. 2

Designation	Dimensions(mm)							Fig.
	M	a	b	b1	C	L	pitch	
SB1035	M10	16	10	-	-	35	1.5	1
SB1245	M12	18	12	-	-	45	1.75	1
SB1645	M16	24	16	-	-	45	2.0	1
SB2040	M20	30	20	-	-	40	2.5	1
MBA-M20	M20	50	14	20	27	30	2.5	2
MBA-M24	M24	65	14	24	37	36	3.0	2

Parts

13 type (Ø50,63,80)	FTGA0513-P	CHH4.5R1	CTXD04513H	CR03	TW20-100
15 type (Ø63,80,100,125, 160)	FTGA0513-P	CHH5.5R1	CTX0515	CR04	TW20-100

HRMD is more economical due to the use of 6 cutting edges compared to HRM tool with a 3 edge positive insert

HRMDouble

- HRMD is more economical due to the use of 6 cutting edges compared to HRM tool with a 3 edge positive insert
- High rake angle cutting edge and chip breaker reduces cutting load
- Negative geometry has been designed for rigidity of cutting edge and double sided function
- Simple screw on system and stable support achieves strong clamping force
- Unique insert design for high feed and multifunctional machining
- HRMD insert with symmetrical cutting edge is applicable for both R and L type machining

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Features of Insert

① Nose-R

- Security of rigid edge in ramping Pocket machining
- Round edge suitable for high feed rates insert geometry
- Possible to use R/L type machining

② Clamping surface

- Design for stable clamping
- Prevention of friction by chip

③ Minor cutting edge

- Improvement of surface roughness in high feed machining
- Special design for decreasing thrust force
- Symmetrical insert design for R/L type tool

④ Chip breaker

- Reduction of cutting load due to high rake angle
- Improvement of chip flow and evacuation in various applications
- Prevention of damage on clamping face of insert

⑤ Major cutting edge

- Symmetrical design insert for R/L type tool
- Superior cutting performance due to high rake angle cutting edge
- Low cutting resistance in high feed
- Special design for decreasing thrust force

Features of Cutter

Inner coolant system

- Improvement of chip control and evacuation
- Longer tool life due to reduced cutting temperature

Simple screw on system

- Strong clamping of screw on system
- Convenient clamping system
- Wide chip pocket for better chip evacuation

3-surface constrained System

- Strong clamping system
- Stable clamping system against different cutting resistances in various machining applications

NOTE : There is lots of repeated information. For example: Symmetrical design for R/L type tool is repeated 4 times on this one page

HRMS 08/10

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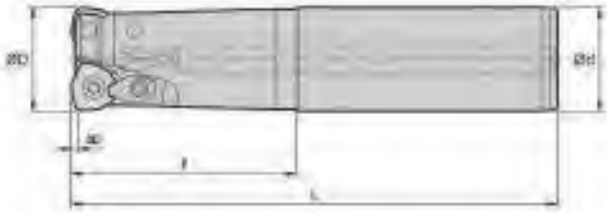

• AR : 7°
• RR : -11°~-5°

(mm)

	Designation	◎	øD	ød	l	L	ap	
HRMS	0820HR-2S20	2	20	20	50	130	1.0	0.3
	0820HR-2M20	2	20	20	100	180	1.0	0.4
	0820HR-2L20	2	20	20	130	250	1.0	0.5
	0821HR-2S20	2	21	20	50	130	1.0	0.3
	0821HR-2M20	2	21	20	50	180	1.0	0.4
	0821HR-2L20	2	21	20	50	250	1.0	0.5
HRMS	1025HR-2S25	2	25	25	60	140	1.5	0.4
	1025HR-2M25	2	25	25	120	200	1.5	0.6
	1025HR-2L25	2	25	25	180	300	1.5	0.9
	1026HR-2S25	2	26	25	60	140	1.5	0.4
	1026HR-2M25	2	26	25	60	200	1.5	0.6
	1026HR-2L25	2	26	25	60	300	1.5	1.0
	1030HR-2S32	2	30	32	70	150	1.5	0.8
	1030HR-2M32	2	30	32	120	200	1.5	1.0
	1030HR-2L32	2	30	32	180	300	1.5	1.5

Available Inserts

WDKT-MH

Type	Designation	Coated									Cermet			Uncoated				
		NC9325	NC9303	NC5330	PC3500	PC5300	PC3545	PC5630	PC5610	PC215K	PD2000	CN2000	CN03	CN30	H01	G10	ST30A	ST20
08 type	WDKT080316ZDSR-MH				●	●	●	●										
10 type	WDKT10T320ZDSR-MH				●	●	●	●	●									

Parts

08 type	FTNA0306	-	-	-	TW08P
10 type	FTKA0408	CHH3.5R1	CTX03510	CR03	TW15S

AMS1000M/1500M

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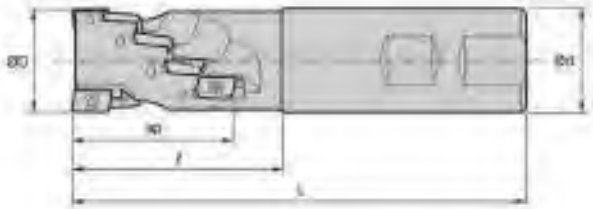


• AR : 7°~9°
• RR : -13°~-10°

(mm)

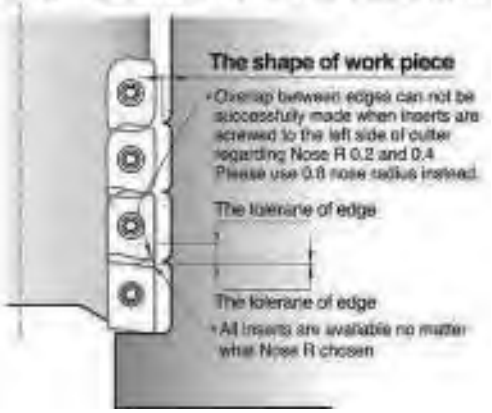
Designation			øD	ød	l	L	No. of flute	ap	
AMS	1016M	6	16	16	30	80	2	15.5	0.3
	1020M	12	20	20	32	85	3	20.5	0.3
	1025M	20	25	25	38	95	4	25.5	0.3
AMS	15020M	3	20	20	42	105	1	26.5	0.3
	15025M	8	25	25	50	110	2	35	0.3
	15032M	10	32	32	60	120	2	44	0.3

Available Inserts

APMT-MM

Type	Designation	Coated									Cermet			Uncoated			
		NCM025	NCM035	NC5330	PC3500	PC5300	PC3545	PC9530	PC9510	PC210K	PD2000	CN2000	CN03	CN30	H01	G10	ST30A	ST20
1000 type	APMT 060202PDSR-MM			●	●	●	●											
	0602PDSR-MM			●	●	●	●	●	●									
	060206PDSR-MM			●	●	●	●											
	060212R-MM			●	●	●												
	060216R-MM				●													
1500 type	APMT 0903PDSR-MM			●	●	●	●											
	090308PDSR-MM			●	●	●	●											
	090312R-MM					●	●											
	090316R-MM				●	●												
	090320R-MM				●	●												

Caution when insert are screwed



Parts

1000 type	FTKA01842	-	TW08S-A
1500type	FTKA02585S	TW08S	-

AMS2000M/4000M

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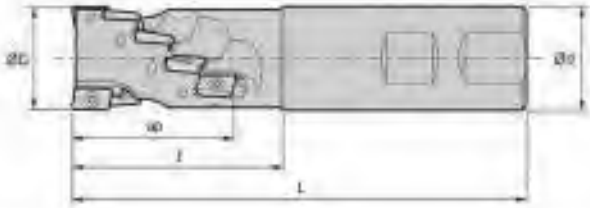


- AR : 7°~9°
- RR : -13°~-10°

(mm)

Designation		ⓓ	øD	ød	l	L	No. of flute	ap	
AMS	2020M	3	20	20	45	120	1	29.4	0.32
	2025M	8	25	25	55	130	2	36.9	0.40
	2032M	10	32	32	65	140	2	48.5	0.65
	2040M	14	40	40	75	150	2	58	0.75
AMS	4032M	4	32	32	60	130	2	31.6	0.65
	4040M	6	40	40	70	140	2	46	1.11
	4050M-S40	6	50	40	55	125	2	46	1.22
	4050M	8	50	40	70	140	2	61	1.37

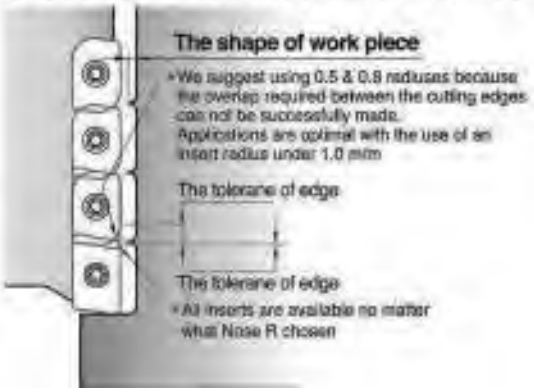
Available Inserts

APMT-MF

APMT-MM

Type	Designation	Coated										Cermet			Uncoated			
		NC9025	NC9035	NC3200	PC3500	PC5300	PC3545	PC9530	PC9510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
2000 type	APMT 11T3PDSR-MM	●		●	●	●	●	●										
	11T3PDSR-MF	●		●	●	●	●											
	11T308PDSR-MM	●		●	●	●	●											
	11T312PDSR-MM	●		●	●	●	●											
	11T316R-MM	●		●	●	●	●											
	11T318R-MM																	
	11T324R-MM			●	●	●	●											
4000 type	APMT 1806PDSR-MM	●		●	●	●	●		●									
	1806PDSR-MF			●		●	●											
	1806PDSR-ML			●	●		●											
	180612PDSR-MM	●		●	●	●	●											
	180616PDSR-MM			●			●											
	180620PDSR-MM																	
	180624PDSR-MM			●	●													
	180630R-MM																	
	180632R-MM			●	●		●											

Caution when insert are screwed



Parts

2000 type	FTKA02555S	TW08S
4000 type	FTKA0410	TW15S

AMS1000MH/1500MH/2000MH/3000MH

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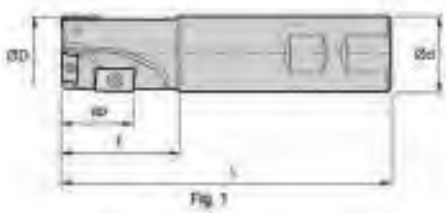

Fig. 1

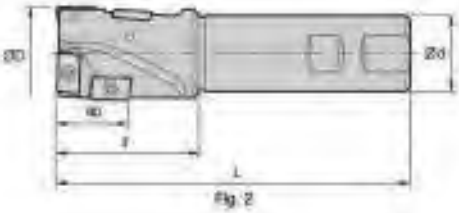

Fig. 2

- AR : 9°~12°
- RR : -12°~-10°

(mm)

Designation			øD	ød	l	L	ap		APMT 0602-	APMT 0903-	APMT 11T3-	APMT 1604-	APKT 1604-	Fig.
AMS	1014MH	3	14	12	30	120	11	0.16	3	-	-	-	-	1
	1016MH	3	16	14	30	140	11	0.20	3	-	-	-	-	1
	1018MH	3	18	16	30	140	11	0.21	3	-	-	-	-	1
AMS	15020MH	3	20	20	35	140	17	0.31	1	2	-	-	-	1
AMS	2025MH	3	25	25	40	130	20	0.45	-	-	3	-	-	1
	2032MH	3	32	32	50	140	30	0.75	-	-	1	2	-	1
AMS	3040MH-K	4	40	32	60	150	40	0.90	-	-	-	-	4	2

Available Inserts


APKT-MF


APKT-MM


APMT-MF


APMT-MM


APXT-MA

Type	Codigo	Coated										Cermet			Uncoated			
		NC3525	NC3535	NC5330	PC3500	PC3000	PC3545	PC8530	PC8510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
1000 Type	APMT 060202PDSR-MM			●	●	●	●											
	0602PDSR-MM			●	●	●	●	●	●									
	060208PDSR-MM			●	●	●	●											
1500 Type	APMT 0903PDSR-MM			●	●	●	●											
	090308PDSR-MM			●	●	●	●											
2000 Type	APMT 11T3PDSR-MM	●		●	●	●	●	●										
	11T3PDSR-MF	●		●	●	●	●											
	11T308PDSR-MM	●		●	●	●	●											
	11T312PDSR-MM	●		●	●	●	●											
	11T316R-MM	●		●	●	●												
	11T318R-MM																	
	11T324R-MM			●	●	●	●											
3000 Type	APMT 1604PDSR-MM	●		●	●	●	●	●	●									
	1604PDSR-MF	●		●	●	●	●											
3000 K Type	APKT 1604PDSR-MM	●	●		●	●	●	●	●									
	1604PDSR-MF	●				●												

Parts

1000 type	FTKA01842	-	TW06S-A
1500 type	FTKA02565S	TW08S	-
2000 type	FTKA02565S	TW08S	-
3000 type	FTKA0410	TW15S	-

Recommended Cutting Condition


Drilling


Shouldering


Slotting

vc(m/min)	80~200	80~200	80~200
fz(mm/t)	0.03~0.06	0.05~0.25	0.05~0.20

- Please keep the drill depth under 0.25D when you're drilling
- Please keep the step depth from 0.2 to 0.3mm

FMAC(M)3000

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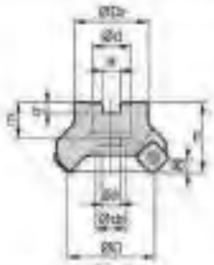


Fig. 1

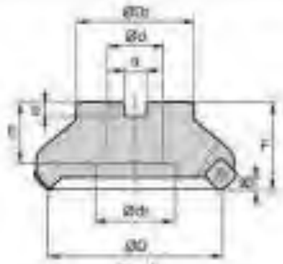


Fig. 2

- AR : 21°
- RR : -17°~12°

(mm)

Designation		(teeth)	ØD	ØD₂	Ød	a	b	E	F	Ød₁	Ød₂	ap	(kg)	Fig.
FMAC(M)	3050HR	4	50	42	22	10.4	6.3	20	40	11	17.5	4.0	0.4	1
	3050HR-H	6	50	42	22	10.4	6.3	20	40	11	17.5	4.0	0.4	1
	3063HR	5	63	49	22	10.4	6.3	20	40	11	17.5	4.0	0.6	1
	3063HR-H	8	63	49	22	10.4	6.3	20	40	11	17.5	4.0	0.6	1
	3080HR	6	80	57	25.4(27)	9.5(12.4)	6(7)	25(23)	50	14	20	4.0	1.1	1
	3080HR-H	10	80	57	25.4(27)	9.5(12.4)	6(7)	25(23)	50	14	20	4.0	1.2	1
	3100HR	7	100	67	31.75(32)	12.7(14.4)	8(8)	25(25.5)	50	(18)	45(26)	4.0	1.7	2(1)
	3100HR-H	12	100	67	31.75(32)	12.7(14.4)	8(8)	25(25.5)	50	(18)	45(26)	4.0	1.7	2(1)
	3125HR	8	125	87	38.1(40)	15.9(16.4)	10(9)	42(29)	63	(22)	55(32)	4.0	3.3(3.5)	2(1)
	3125HR-H	14	125	87	38.1(40)	15.9(16.4)	10(9)	42(29)	63	(22)	55(32)	4.0	3.3(3.5)	2(1)

* ( )Metric Size

Available Inserts

SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW	SEEW-W

Designation		Coated										Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC9530	PC8010	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
SEET	0903AGFN-MA														●			
	0903AGSN-MF	●						●										
	0903AGSN-MM	●				●		●										
SEXT	0903AGSN-MF					●												
	0903AGSN-MM				●					●								
	0903AGSN-MR																	
SEEW	0903AGTN													●				

Available Arbors

Designation		Ød	NC Arbors
FMAC(M)	3050HR-□ 3063HR-□	22	BT□□-FMC22-□□
	3080HR-□	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	3100HR-□	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□
	3125HR-□	38.1	BT□□-FMA38.1-□□
		40	BT□□-FMB40-□□

Parts

Screw	Insert Wrench
	
FTKA0307	TW09S

FMAC(M)3000-A KORLOY Inc. (Aluminum body)

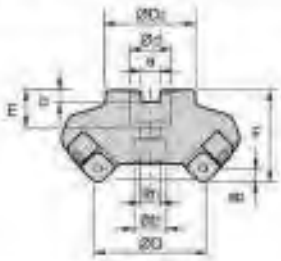


Fig. 1

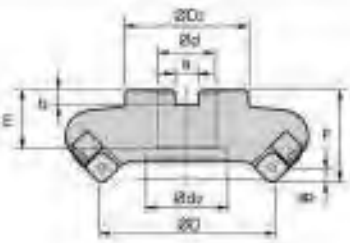


Fig. 2


• AR : 21°
• RR : -16°~-12°

(mm)

Designation		ⓒ	øD	øD1	ød	a	b	E	F	ød1	ød2	ap	ⓠ	Fig.
FMAC(M)	3063R-A	3	63	49	22	10.4	6.3	20	40	11	18	4	0.5	1
	3080R-A	4	80	57	25.4(27)	9.5(12.4)	6(7)	25	50	13.5	20	4	0.6	1
	3100R-A	5	100	67	31.75(32)	12.7(14.4)	8(8)	32	50	-	45	4	0.8	2
	3100R-25.4-A	5	100	67	25.4	9.5	6	25	50	-	38	4	0.8	2
	3125R-A	6	125	67	38.1(40)	15.9(16.4)	10(9)	38	63	-	56	4	1.6	2
	3125R-25.4-A	6	125	70	25.4	9.5	6	25	63	-	38	4	1.7	2

• ( ) Metric Size

Available Inserts

SEET-MF	SEET-MM	SEET-MA	SEXT-MF	SEXT-MM	SEXT-MR	SEEW
						

Designation		Coated									Cermet			Uncoated			
		NC4325	NC4335	NC5330	PC3500	PC3000	PC4545	PC5300	PC5510	PC215K	PD2000	CH2500	CH20	CH30	H01	G10	ST30A	ST20
SEET	0903AGFN-MA														●			
	0903AGSN-MF	●						●										
	0903AGSN-MM	●				●		●										
SEXT	0903AGSN-MF					●												
	0903AGSN-MM				●					●								
	0903AGSN-MR																	
SEEW	0903AGTN													●				

Available Arbors

Designation		Ød	NC Arbors
FMAC(M)	3063R-□	22	BT□□-FMC22-□□
	3080R-□	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	3100R-□	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□
	3125R-□	38.1	BT□□-FMA38.1-□□
		40	BT□□-FMB40-□□

Parts

Screw	Seat Wrench	Locky Wrench	Locator	Locator Screw
				
FTKA0307	TW09S	HW30L	LFMA3FI-A	DHA620

FMPC(M)3000

KORLOY Inc.

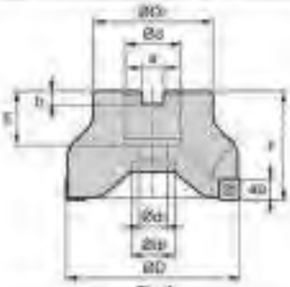


Fig. 1

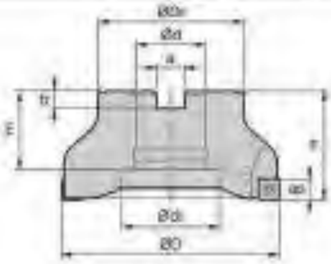


Fig. 2

- AR : 10°
- RR : -9°~-8°

(mm)

Designation		◎	øD	$øD_2$	ød	a	b	E	F	$ød_1$	$ød_2$	ap	kg	Fig.
FMPC(M)	3050HS	5	50	40	22	10.4	6.3	20	40	11	18	7	0.3	1
	3063HS	6	63	40	22	10.4	6.3	20	40	11	18	7	0.5	1
	3080HS	7	80	55	25.4(27)	9.5(12.4)	6(7)	25(22)	50	14	20	7	1.0	1
	3100HS	8	100	67	31.75(32)	12.7(14.4)	8(8)	36(26)	50	18	45(26)	7	1.5	2(1)

- ( )Metric Size

Available Inserts

SDET-MF　SDET-MM　SDET-MA　SDXT-MF　SDXT-MM　SDXT-MA

Designation		Coated										Cermet			Uncoated			
		NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC8530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
SDET	09M402R-MA										●				●			
	09M405R-MF																	
	09M405R-MM																	
SDXT	09M405R-MF	●	●			●		●	●									
	09M405L-MF																	
	09M405R-MM	●	●		●	●		●	●									
	09M405L-MM																	
	09M405R-MA														●			

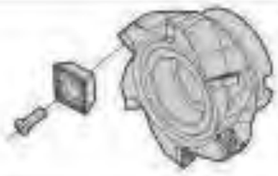
Available Arbors

Designation		Ød	NC Arbors
FMPC(M)	3050HS 3063HS	22	BT□□-FMC22-□□
	3080HS	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	3100HS	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□

Parts

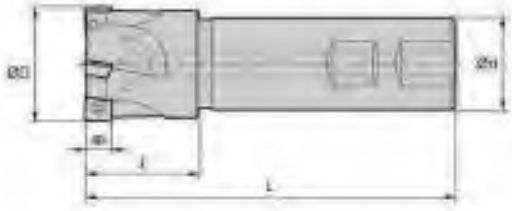
Screw	Wrench
	
FTGA03508	TW15S

Assembling



FMPS3000

KORLOY Inc.



• AR : 10°
• RR : -8°~8°

(mm)

Designation		◎	øD	ød	l	L	ap	
FMPS	3025HS	2	25	25	35	115	7	0.4
	3032HS	3	32	25	40	125	7	0.5
	3040HS	4	40	32	40	130	7	0.8
	3040HS-S40	4	40	40	45	140	7	1.2
	3040HS-S42	4	40	42	45	140	7	1.3
	3050HS	5	50	32	40	135	7	1
	3050HS-S40	5	50	40	40	140	7	1.3
	3050HS-S42	5	50	42	40	140	7	1.4
	3063HS	6	63	32	45	135	7	1.2
	3063HS-S40	6	63	40	45	145	7	1.6
	3063HS-S42	6	63	42	45	145	7	1.7

Available Inserts

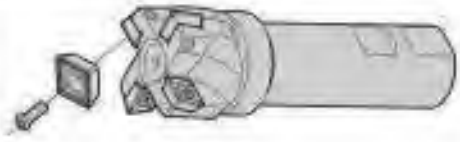
SDET-MF	SDET-MM	SDET-MA	SDXT-MF	SDXT-MM	SDXT-MA
					

Designation		Coated									Cermet			Uncoated			
		NC9325	NC9335	NC5330	PC1500	PC5300	PC3545	PC5330	PC5610	PC210K	PD2500	CN2000	CN20	CN30	H01	G10	ST30A	ST20
SDET	09M402R-MA										●				●			
	09M405R-MF																	
	09M405R-MM																	
SDXT	09M405R-MF	●	●			●		●	●									
	09M405L-MF																	
	09M405R-MM	●	●		●	●		●	●									
	09M405L-MM																	
	09M405R-MA														●			

Parts

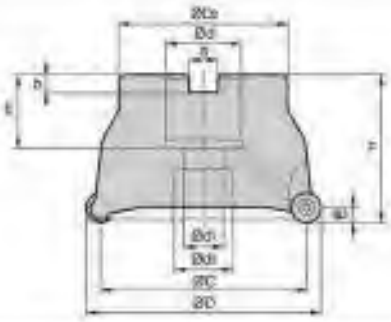
Screw	Wrench
	
FTGA03508	TW15S

Assembling



FMRC(M)3000

KORLOY Inc.



• AR : 5
• RR : -5

(mm)

Designation		⊚	øD	øC	øD1	ød	a	b	E	F	ød2	ød1	ap	kg
FMRC(M)	3040HRD	3	40	30	36	16	8.4	5.6	18	40	9	14	5.0	0.2
	3040HRD-H	4	40	30	36	16	8.4	5.6	18	40	9	14	5.0	0.2
	3050HRD	4	50	40	42	22	10.4	6.3	20	40	11	16.5	5.0	0.3
	3050HRD-H	5	50	40	42	22	10.4	6.3	20	40	11	16.5	5.0	0.3
	3063HRD	5	63	53	49	22	10.4	6.3	20	50	11	16.5	5.0	0.64
	3063HRD-H	6	63	53	49	22	10.4	6.3	20	50	11	16.5	5.0	0.64
	3080HRD	6	80	70	57	25.4(27)	9.5(12.4)	6(7.0)	25(22)	50(50)	14	19	5.0	1.1
	3080HRD-H	7	80	70	57	25.4(27)	9.5(12.4)	6(7.0)	25(22)	50(50)	14	19	5.0	1.1
	3100HRD	7	100	90	67	31.75(32)	12.7(14.4)	8(8.0)	32(28)	63(63)	18	26	5.0	2.1
	3100HRD-H	8	100	90	67	31.75(32)	12.7(14.4)	8(8.0)	32(28)	63(63)	18	26	5.0	2.1

Note) It's general that you measure of inner diameter when the diameter of FMRC/FMRCM is Ø40-Ø63.

• ( )Metric Size

Available Inserts

RDKT-MF

RDKT-MM

RDCT-MA

Designation	Coated										Cermet			Uncoated			
	NC3025	NC3035	NC3030	PC3000	PC3300	PC3545	PC9530	PC9510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
RDCT 10T3M0-MA														●			
RDKT 10T3M0-MF					●	●	●										
10T3M0-MM	●	●		●	●	●	●	●									

Available Arbors

Designation		Ød	Available Arbors
FMRC(M)	3040HRD 3040HRD-H	16	BT□-FMC16-□
	3050HRD 3050HRD-H 3063HRD 3063HRD-H	22	BT□-FMC22-□
	3080HRD	25.4	BT□-FMA / FMB25.4-□
	3080HRD-H	27	BT□-FMB / FMC27-□
	3100HRD	31.75	BT□-FMA31.75-□
	3100HRD-H	32	BT□-FMC32-□

Parts

Screw	Wrench
	
FTGA03508	TW15S

FMRS3000

KORLOY Inc.

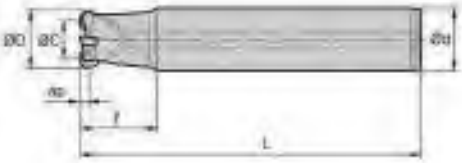


Fig. 1

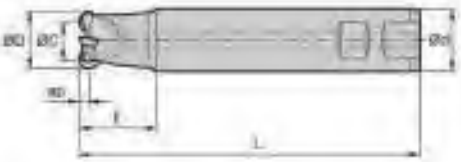


Fig. 2

- AR : 5°
- RR : -6°~-5°

(mm)

Designation			øD	øC	ød	ℓ	L	ap		Fig.
FMRS	3021HRD-M	1	21	11	20	40	150	5	0.4	1
	3021HRD-M2	2	21	11	20	40	150	5	0.4	1
	3021HRD-L	1	21	11	20	50	200	5	0.6	1
	3021HRD-L2	2	21	11	20	50	200	5	0.6	1
	3025HRD-S	2	25	15	25	35	115	5	0.5	2
	3025HRD-M	2	25	15	25	70	200	5	0.7	1
	3025HRD-L	2	25	15	25	100	250	5	1	1
	3026HRD-M	2	26	16	25	70	200	5	0.65	1
	3026HRD-L	2	26	16	25	100	250	5	0.7	1
	3032HRD-S	3	32	22	32	40	125	5	1	2
	3032HRD-M	3	32	22	32	70	200	5	1.3	1
	3032HRD-L	3	32	22	32	150	300	5	1.6	1
	3040HRD-S	4	40	30	32	40	125	5	1.3	2
	3040HRD-M	4	40	30	32	70	200	5	1.5	1
	3040HRD-L	4	40	30	32	150	300	5	1.8	1

Available Inserts

	RDKT-MF	RDKT-MM	RDCT-MA
			

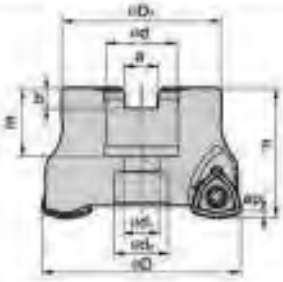
Designation	Coated										Cermet			Uncoated			
	NC9025	NC9035	NC5330	PC5500	PC5300	PC5545	PC5600	PC5610	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
RDCT 10T3M0-MA														●			
RDKT 10T3M0-MF					●	●	●										
10T3M0-MM	●	●		●	●	●	●	●									

Parts

Screw	Wrench
	
FTGA03506(07)	TW15S

HRMDC(M)09

KORLOY Inc.



AA 14°

- AR : -7°
- RR : -12°~-18°

(mm)

Designation		◎	øD	øD₂	ød	ød₁	ød₂	a	b	E	F	ap	⚖	Bolt
HRMDCM	09040HR-3	3	40	34	16	9	14	8.4	5.6	19	40	1.5	0.2	SB0825
	09040HR-4	4	40	34	16	9	14	8.4	5.6	19	40	1.5	0.2	
	09050HR-4	4	50	42	22	11	18	10.4	6.3	21	40	1.5	0.3	SB1025
	09050HR-5	5	50	42	22	11	18	10.4	6.3	21	40	1.5	0.3	
	09063HR-5	5	63	49	22	11	18	10.4	6.3	21	40	1.5	0.5	SB1025
	09063HR-6	6	63	49	22	11	18	10.4	6.3	21	40	1.5	0.5	
	09080HR-6	6	80	57	27	14	20	12.4	7	23	50	1.5	1.1	SB1230
	09080HR-7	7	80	57	27	14	20	12.4	7	23	50	1.5	1.1	
	09100HR-7	7	100	67	32	18	26	14.4	8	25	50	1.5	1.7	SB1630
	09100HR-8	8	100	67	32	18	26	14.4	8	25	50	1.5	1.7	
HRMDC	09060HR-6	6	80	57	25.4	14	20	9.5	6	24	50	1.5	1.1	SB1230
	09080HR-7	7	80	57	25.4	14	20	9.5	6	24	50	1.5	1.1	
	09080HR-31.75-6	6	80	67	31.75	18	26	12.7	8	32	63	1.5	1.5	SB1630
	09080HR-31.75-7	7	80	67	31.75	18	26	12.7	8	32	63	1.5	1.5	
	09100HR-7	7	100	67	31.75	18	26	12.7	8	32	63	1.5	2.1	SB1630
	09100HR-8	8	100	67	31.75	18	26	12.7	8	32	63	1.5	2.1	

Available Inserts

WNMX-MM

Designation	Coated										Cermet			Uncoated			
	NC6020	NC6030	NC9330	PC5500	PC5300	PC3545	PC9530	PC6510	PC215K	PD1000	CR2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 09T316ZNN-MM				●	●	●	●										

Available Arbors

Designation		NC Arbors
HRMDCM	09040HR-□	BT□□-FMC16-□□
		SK□□-FMC16-□□
	09050HR-□	BT□□-FMC22-□□
	09063HR-□	SK□□-FMC22-□□
	09080HR-□	BT□□-FMC27-□□
		SK□□-FMC27-□□
	09100HR-□	BT□□-FMC32-□□
		SK□□-FMC32-□□
HRMDC	09060HR-□	BT□□-FMA25.4-□□
		SK□□-FMA25.4-□□
	09080HR-31.75-□	BT□□-FMA31.75-□□
	09100HR-□	SK□□-FMA31.75-□□

Bolt

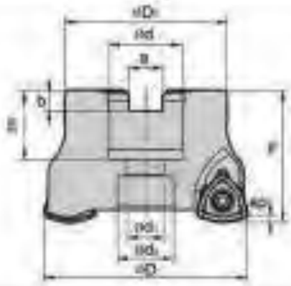
Designation	Dimensions(mm)				
	M	a	b	L	pitch
SB0825	M08	13	8	25	1.25
SB1025	M10	16	10	25	1.5
SB1230	M12	18	12	30	1.75
SB1630	M16	24	16	30	2.0

Parts

FTKA0307 TW09S

HRMDC(M)13

KORLOY Inc.



• AR : -7°
• RR : -12°~-4°

(mm)

Designation		Z	øD	øD2	ød	ød1	ød2	a	b	E	F	ap	kg	Bolt
HRMDCM	13050HR-3	3	50	42	22	11	17	10.4	6.3	21	40	2	0.3	SB1025
	13050HR-4	4	50	42	22	11	17	10.4	6.3	21	40	2	0.3	
	13063HR-4	4	63	49	22	11	18	10.4	6.3	21	40	2	0.5	SB1025
	13063HR-5	5	63	49	22	11	18	10.4	6.3	21	40	2	0.5	
	13080HR-5	5	80	57	27	14	20	12.4	7	23	50	2	1	SB1230
	13080HR-6	6	80	57	27	14	20	12.4	7	23	50	2	1	
	13100HR-6	6	100	67	32	18	26	14.4	8	25	50	2	1.6	SB1630
	13100HR-7	7	100	67	32	18	26	14.4	8	25	50	2	1.6	
	13125HR-7	7	125	87	40	22	32	16.4	9	29	63	2	3.2	SB2040
	13125HR-8	8	125	87	40	22	32	16.4	9	29	63	2	3.2	MBA-M20
HRMDC	13080HR-5	5	80	57	25.4	14	20	9.5	6	24	50	2	1	SB1230
	13080HR-6	6	80	57	25.4	14	20	9.5	6	24	50	2	1	
	13080HR-31.75-5	5	80	67	31.75	18	26	12.7	8	32	63	2	1.4	SB1630
	13080HR-31.75-6	6	80	67	31.75	18	26	12.7	8	32	63	2	1.4	
	13100HR-6	6	100	67	31.75	18	26	12.7	8	32	63	2	2.1	SB1630
	13100HR-7	7	100	67	31.75	18	26	12.7	8	32	63	2	2.1	
	13125HR-7	7	125	87	38.1	22	32	15.9	10	35	63	2	3.3	SB2040
	13125HR-8	8	125	87	38.1	22	32	15.9	10	35	63	2	3.3	MBA-M20

Available Inserts

WNMX-MM

Designation	Coated										Cermet			Uncoated				page
	NCM325	NCM335	NC5330	PC3500	PC5300	PC3545	PC9530	PC8510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20	
WNMX 130520ZNN-MM				●	●	●	●											E21

Available Arbors

Designation		NC Arbors
HRMDCM	13050HR-□	BT□□-FMC22-□□
		SK□□-FMC22-□□
	13063HR-□ 13080HR-□	BT□□-FMC22-□□
		SK□□-FMC27-□□
	13100HR-□	BT□□-FMC32-□□
		SK□□-FMC32-□□
	13125HR-□	BT□□-FMC40-□□
		SK□□-FMC40-□□
HRMDC	13080HR-□ 13080HR-31.75-□	BT□□-FMA25.4-□□
		SK□□-FMA25.4-□□
	13100HR-□	BT□□-FMA31.75-□□
		SK□□-FMA31.75-□□
	13125HR-□	BT□□-FMA38.1-□□
		SK□□-FMA38.1-□□

Bolt

Fig. 1 Fig. 2

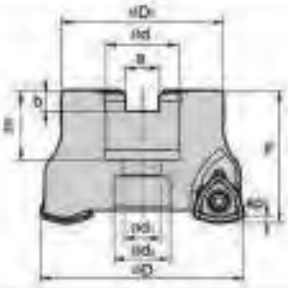
Designation	Dimensions(mm)							Fig.
	M	a	b	b1	C	L	pitch	
SB1025	M10	16	10	-	-	25	1.5	1
SB1230	M12	18	12	-	-	30	1.75	1
SB1630	M16	24	16	-	-	30	2.0	1
SB2040	M20	30	20	-	-	40	2.5	1
MBA-M20	M20	50	14	20	27	30	2.5	2

Parts

Screw	Wrench
	
FTKA0412B	TW15S

HRMDC(M)13

KORLOY Inc.



- AR : -7°
- RR : -12°~4°

(mm)

Designation		ⓡ	øD	øD2	ød	ød1	ød2	a	b	E	F	ap	ⓦ	Bolt
HRMDCM	13050HR-3	3	50	42	22	11	17	10.4	6.3	21	40	2	0.3	SB1025
	13050HR-4	4	50	42	22	11	17	10.4	6.3	21	40	2	0.3	
	13063HR-4	4	63	49	22	11	18	10.4	6.3	21	40	2	0.5	SB1025
	13063HR-5	5	63	49	22	11	18	10.4	6.3	21	40	2	0.5	
	13080HR-5	5	80	57	27	14	20	12.4	7	23	50	2	1	SB1230
	13080HR-6	6	80	57	27	14	20	12.4	7	23	50	2	1	
	13100HR-6	6	100	67	32	18	26	14.4	8	25	50	2	1.6	SB1630
	13100HR-7	7	100	67	32	18	26	14.4	8	25	50	2	1.6	
	13125HR-7	7	125	87	40	22	32	16.4	9	29	63	2	3.2	SB2040
	13125HR-8	8	125	87	40	22	32	16.4	9	29	63	2	3.2	MBA-M20
HRMDC	13080HR-5	5	80	57	25.4	14	20	9.5	6	24	50	2	1	SB1230
	13080HR-6	6	80	57	25.4	14	20	9.5	6	24	50	2	1	
	13080HR-31.75-5	5	80	67	31.75	18	26	12.7	8	32	63	2	1.4	SB1630
	13080HR-31.75-6	6	80	67	31.75	18	26	12.7	8	32	63	2	1.4	
	13100HR-6	6	100	67	31.75	18	26	12.7	8	32	63	2	2.1	SB1630
	13100HR-7	7	100	67	31.75	18	26	12.7	8	32	63	2	2.1	
	13125HR-7	7	125	87	38.1	22	32	15.9	10	35	63	2	3.3	SB2040
	13125HR-8	8	125	87	38.1	22	32	15.9	10	35	63	2	3.3	MBA-M20

Available Inserts

WNMX-MM

Designation	Coated									Cermet			Uncoated			
	NC3025	NC3035	NC5330	PC3500	PC5300	PC5545	PC5630	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 130520ZNN-MM				●	●	●	●										

Available Arbors

Designation		NC Arbors
HRMDCM	13050HR-□	BT□□-FMC22-□□
		SK□□-FMC22-□□
	13063HR-□	BT□□-FMC22-□□
	13080HR-□	SK□□-FMC27-□□
	13100HR-□	BT□□-FMC32-□□
		SK□□-FMC32-□□
	13125HR-□	BT□□-FMC40-□□
		SK□□-FMC40-□□
HRMDC	13080HR-□	BT□□-FMA25.4-□□
	13080HR-31.75-□	SK□□-FMA25.4-□□
	13100HR-□	BT□□-FMA31.75-□□
		SK□□-FMA31.75-□□
	13125HR-□	BT□□-FMA38.1-□□
		SK□□-FMA38.1-□□

Bolt

Fig. 1

Fig. 2

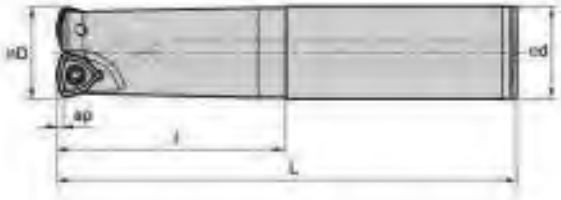
Designation	Dimensions(mm)							Fig.
	M	a	b	b1	C	L	pitch	
SB1025	M10	16	10	-	-	25	1.5	1
SB1230	M12	18	12	-	-	30	1.75	1
SB1630	M16	24	16	-	-	30	2.0	1
SB2040	M20	30	20	-	-	40	2.5	1
MBA-M20	M20	50	14	20	27	30	2.5	2

Parts

Screw	Wrench
	
FTKA0412B	TW15S

HRMDS06 New

KORLOY Inc.



• AR : -7°
• RR : -17°~25°

(mm)

Designation			øD	ød	l	L	ap	
HRMDS	0616HR-2S16	2	16	16	30	110	1.0	0.15
	0616HR-2M16	2	16	16	70	150	1.0	0.20
	0616HR-2L16	2	16	16	100	200	1.0	0.26
	0617HR-2S16	2	17	16	20	110	1.0	0.15
	0617HR-2M16	2	17	16	20	150	1.0	0.21
	0617HR-2L16	2	17	16	20	200	1.0	0.28
	0618HR-2S16	2	18	16	20	110	1.0	0.15
	0618HR-2M16	2	18	16	20	150	1.0	0.21
	0618HR-2L16	2	18	16	20	200	1.0	0.28
	0620HR-2S20	2	20	20	50	130	1.0	0.28
	0620HR-2M20	2	20	20	100	180	1.0	0.38
	0620HR-2L20	2	20	20	130	250	1.0	0.53
	0621HR-2S20	2	21	20	20	130	1.0	0.29
	0621HR-2M20	2	21	20	20	180	1.0	0.40
	0621HR-2L20	2	21	20	20	250	1.0	0.57
	0625HR-3S25	3	25	25	60	140	1.0	0.44
	0625HR-3M25	3	25	25	60	180	1.0	0.57
	0625HR-3L25	3	25	25	120	250	1.0	0.80
	0626HR-3S25	3	26	25	30	140	1.0	0.46
	0626HR-3M25	3	26	25	30	180	1.0	0.50
	0626HR-3L25	3	26	25	30	250	1.0	0.64
	0632HR-4S32	4	32	32	70	150	1.0	0.82
	0632HR-4M32	4	32	32	100	200	1.0	1.10
	0632HR-4L32	4	32	32	180	300	1.0	1.66
	0633HR-4S32	4	33	32	40	200	1.0	1.14
	0633HR-4M32	4	33	32	40	250	1.0	1.43
	0633HR-4L32	4	33	32	40	300	1.0	1.73

Available Inserts

WNMX-MM

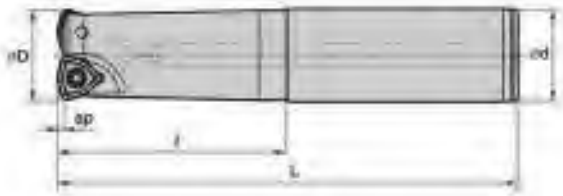
Designation	Coated										Cermet			Uncoated			
	NC3225	NC3335	NC3300	PC3500	PC5300	PC3545	PC8530	PC8510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 060312ZNN-MM																	

Parts

Screw	Wrench
	
ETNA02508	TW07S

HRMDS09

KORLOY Inc.



• AR : -7°
• RR : -17°~-25°

(mm)

Designation			øD	ød	l	L	ap	
HRMDS	0925HR-2S25	2	25	25	60	140	1.5	0.5
	0925HR-2M25	2	25	25	120	200	1.5	0.6
	0925HR-2L25	2	25	25	180	300	1.5	1
	0926HR-2S25	2	26	25	60	140	1.5	0.5
	0926HR-2M25	2	26	25	60	200	1.5	0.7
	0926HR-2L25	2	26	25	60	300	1.5	1
	0930HR-3S32	3	30	32	70	150	1.5	0.8
	0930HR-3M32	3	30	32	120	200	1.5	1
	0930HR-3L32	3	30	32	180	300	1.5	1.5
	0932HR-3S32	3	32	32	70	150	1.5	0.8
	0932HR-3M32	3	32	32	120	200	1.5	1.1
	0932HR-3L32	3	32	32	180	300	1.5	1.7
	0933HR-3S32	3	33	32	70	150	1.5	0.8
	0933HR-3M32	3	33	32	70	200	1.5	1.1
	0933HR-3L32	3	33	32	70	300	1.5	1.7
	0935HR-4S32	4	35	32	50	150	1.5	0.9
	0935HR-4M32	4	35	32	50	200	1.5	1.1
	0935HR-4L32	4	35	32	50	300	1.5	1.7
	0940HR-4S32	4	40	32	50	150	1.5	0.9
	0940HR-4M32	4	40	32	50	250	1.5	1.5
	0940HR-4L32	4	40	32	50	300	1.5	1.8
	0940HR-4S40	4	40	40	60	150	1.5	1.3

Available Inserts

WNMX-MM

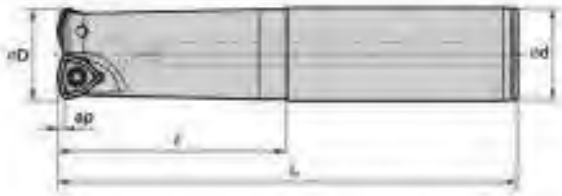
Designation	Coated									Cermet			Uncoated			
	NCM325	NCM335	NC6030	PC3500	PC5300	PC3545	PC3530	PC6510	PC210K	PD2500	CN2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 09T316ZNN-MM				●	●	●	●										

Parts

Screw	Wrench
	
FTKA0307	TW09S

HRMDS09

KORLOY Inc.



- AR : -7°
- RR : -17°~25°

(mm)

Designation		◎	øD	ød	ℓ	L	ap	
HRMDS	0940HR-4M40	4	40	40	130	250	1.5	2.2
	0940HR-4L40	4	40	40	180	300	1.5	2.7
	0940HR-4S42	4	40	42	60	150	1.5	1.4
	0940HR-4M42	4	40	42	130	250	1.5	2.3
	0940HR-4L42	4	40	42	180	300	1.5	2.8
	0950HR-4S32	4	50	32	40	150	1.5	1.1
	0950HR-4M32	4	50	32	40	250	1.5	1.6
	0950HR-4L32	4	50	32	40	300	1.5	2
	0950HR-4S40	4	50	40	40	150	1.5	1.4
	0950HR-4M40	4	50	40	40	250	1.5	2.4
	0950HR-4L40	4	50	40	40	300	1.5	2.9
	0950HR-4S42	4	50	42	40	150	1.5	1.6
	0950HR-4M42	4	50	42	40	250	1.5	2.6
	0950HR-4L42	4	50	42	40	300	1.5	3.1
	0950HR-5S32	5	50	32	40	150	1.5	1.1
	0950HR-5M32	5	50	32	40	250	1.5	1.6
	0950HR-5L32	5	50	32	40	300	1.5	2
	0950HR-5S40	5	50	40	40	150	1.5	1.4
	0950HR-5M40	5	50	40	40	250	1.5	2.4
	0950HR-5L40	5	50	40	40	300	1.5	2.9
	0950HR-5S42	5	50	42	40	150	1.5	1.6
	0950HR-5M42	5	50	42	40	250	1.5	2.6
	0950HR-5L42	5	50	42	40	300	1.5	3.1

Available Inserts

WNMX-MM

Designation	Coated										Cermet			Uncoated			
	NC3325	NC3325	NC3320	PC3300	PC5300	PC3545	PC9530	PC6910	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 09T316ZNN-MM				●	●	●	●										

Parts

Screw	Wrench
	
FTKA0307	TW09S

HRMDS13

KORLOY Inc.

- AR : -7°
- RR : -14°~16°

(mm)

Designation		◎	øD	ød	l	L	ap	
HRMDS	1332HR-2S32	2	32	32	70	150	2	0.8
	1332HR-2M32	2	32	32	120	200	2	1
	1332HR-2L32	2	32	32	180	300	2	1.6
	1333HR-2S32	2	33	32	70	150	2	0.8
	1333HR-2M32	2	33	32	70	200	2	1.1
	1333HR-2L32	2	33	32	70	300	2	1.7
	1335HR-2S32	2	35	32	50	150	2	0.8
	1335HR-2M32	2	35	32	50	200	2	1.1
	1335HR-2L32	2	35	32	50	300	2	1.7
	1340HR-3S32	3	40	32	50	150	2	0.8
	1340HR-3M32	3	40	32	50	250	2	1.4
	1340HR-3L32	3	40	32	50	300	2	1.7
	1340HR-3S40	3	40	40	60	150	2	1.2
	1340HR-3M40	3	40	40	130	250	2	2.1
	1340HR-3L40	3	40	40	180	300	2	2.6
	1340HR-3S42	3	40	42	60	150	2	1.4
	1340HR-3M42	3	40	42	130	250	2	2.3
	1340HR-3L42	3	40	42	180	300	2	2.7
	1350HR-3S32	3	50	32	50	150	2	1.1
	1350HR-3M32	3	50	32	50	250	2	1.7
	1350HR-3L32	3	50	32	50	300	2	2
	1350HR-3S40	3	50	40	50	150	2	1.5
	1350HR-3M40	3	50	40	50	250	2	2.4
	1350HR-3L40	3	50	40	50	300	2	2.9
	1350HR-3S42	3	50	42	50	150	2	1.8
	1350HR-3M42	3	50	42	50	250	2	2.6
	1350HR-3L42	3	50	42	50	300	2	3.1

◎ Available Inserts

WNMX-MM

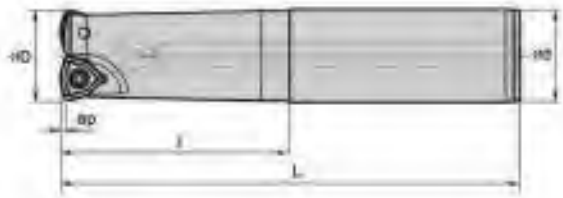
Designation	Coated									Cermet			Uncoated			
	NC3325	NC3335	NC3330	PC3500	PC5300	PC3545	PC9530	PC6510	PC215K	PD2050	CN2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 130520ZNN-MM				●	●	●	●										

◎ Parts

Screw	Wrench
	
FTKA0412B	TW15S

HRMDS13

KORLOY Inc.



• AR : -7°
• RR : -14°~18°

(mm)

Designation			øD	ød	l	L	ap	
HRMDS	1350HR-4S32	4	50	32	50	150	2	1.1
	1350HR-4M32	4	50	32	50	250	2	1.7
	1350HR-4L32	4	50	32	50	300	2	2
	1350HR-4S40	4	50	40	50	150	2	1.5
	1350HR-4M40	4	50	40	50	250	2	2.4
	1350HR-4L40	4	50	40	50	300	2	2.9
	1350HR-4S42	4	50	42	50	150	2	1.6
	1350HR-4M42	4	50	42	50	250	2	2.6
	1350HR-4L42	4	50	42	50	300	2	3.1
	1363HR-4S32	4	63	32	50	150	2	1.4
	1363HR-4M32	4	63	32	50	250	2	2.1
	1363HR-4L32	4	63	32	50	300	2	2.4
	1363HR-4S40	4	63	40	50	150	2	1.8
	1363HR-4M40	4	63	40	50	250	2	2.8
	1363HR-4L40	4	63	40	50	300	2	3.2
	1363HR-4S42	4	63	42	50	150	2	1.9
	1363HR-4M42	4	63	42	50	250	2	3
	1363HR-4L42	4	63	42	50	300	2	3.5
	1363HR-5S32	5	63	32	50	150	2	1.5
	1363HR-5M32	5	63	32	50	250	2	2
	1363HR-5L32	5	63	32	50	300	2	2.3
	1363HR-5S40	5	63	40	50	150	2	1.6
	1363HR-5M40	5	63	40	50	250	2	2.8
	1363HR-5L40	5	63	40	50	300	2	3.2
	1363HR-5S42	5	63	42	50	150	2	1.9
	1363HR-5M42	5	63	42	50	250	2	3
	1363HR-5L42	5	63	42	50	300	2	3.5

Available Inserts

WNMX-MM

Designation	Coated									Cermet			Uncoated			
	NC4325	NC4335	NC5330	PC3500	PC5300	PC3545	PC8530	PC6610	PC215K	PD2050	CN2000	CN20	CN30	H01	G10	ST30A	ST20
WNMX 130520ZNN-MM				●	●	●	●										

Parts

Screw	Wrench
	
FDKA0412B	TW15S

Longer tool life is achieved due to the excellent cutting performance of the insert grade

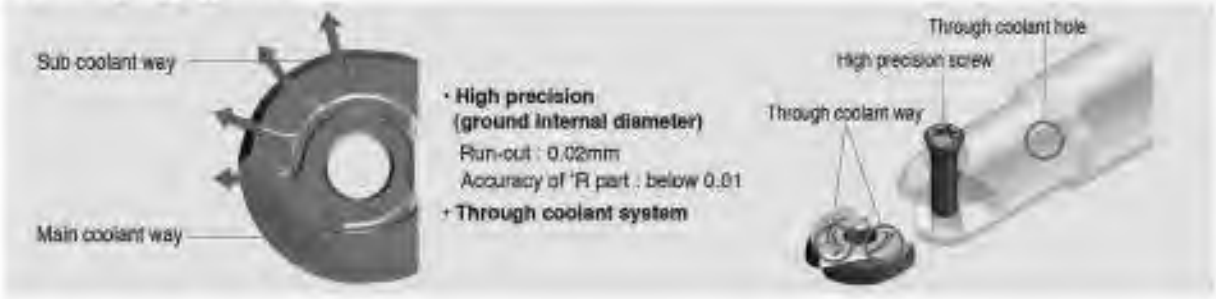
Laser Mill

- Long tool life has been achieved due to the excellent cutting performance of the insert grade
- Optimum machining of molds has been achieved with the MQL available system
- Easy clamping with simple screw on system
- Various holder line up: steel shank, carbide shank, modular type
- High accuracy indexable endmills for mold finishing

MQL System

- Environmental friendly system
- Decreased coolant cost
- Lubrication of cutting edge
- Improved chip control property
- Increased tool life & improved surface quality

Clamping system



- **High precision (ground internal diameter)**
  Run-out : 0.02mm
  Accuracy of 'R part : below 0.01
- **Through coolant system**

KORLOY Inc.

Available Inserts

Holders	LBH (Ball type)	LRH (Corner radius type)	LFH (High feed type)	LCF (Chamfer type)	LBS(Ball type)	LR(Corner radius type)
	R accuracy ±0.005	Corner R ±0.015			R accuracy ±0.005	Corner R ±0.015
LBE080	LBH080 LBH090				LBS080 LBS090	
LBE100 **LRE100**	LBH100 LBH110	LRH100-R05 LRH100-R20 LRH100-R10 LRH110-R05	LFH100		LBS100 LBS110	LR100-R05 LR100-R20 LR100-R10 LR110-R05
LBE120 **LRE120**	LBH120 LBH130	LRH120-R05 LRH120-R20 LRH120-R10 LRH130-R05	LFH120		LBS120 LBS130	LR120-R05 LR120-R20 LR120-R10 LR130-R05
LBE160 **LRE160**	LBH160 LBH170	LRH160-R05 LRH160-R30 LRH160-R10 LRH170-R05 LRH160-R20	LFH160	LCF160-D90	LBS160 LBS170	LR160-R05 LR160-R30 LR160-R10 LR170-R05 LR160-R20
LBE200 **LRE200**	LBH200 LBH210	LRH200-R05 LRH200-R30 LRH200-R10 LRH210-R05 LRH200-R20	LFH200	LCF200-D90	LBS200 LBS210	LR200-R05 LR200-R30 LR200-R10 LR210-R05 LR200-R20
LBE250 **LRE250**	LBH250 LBH260	LRH250-R05 LRH250-R30 LRH250-R10 LRH260-R05 LRH250-R20	LFH250	LCF250-D90	LBS250 LBS260	LR250-R05 LR250-R30 LR250-R10 LR260-R05 LR250-R20
LBE300 **LRE300**	LBH300 LBH310	LRH300-R10 LRH300-R30 LRH300-R20 LRH310-R05	LFH300		LBS300 LBS310	LR300-R10 LR300-R30 LR300-R20 LR310-R05
LBE320 **LRE320**	LBH320	LRH320-R10 LRH320-R30 LRH320-R20	LFH320		LBS320	LR320-R10 LR320-R30 LR320-R20

Carbide Shank-Ball, Corner R type
LBE 08/10/12/16/20/25/30/32

Straight type

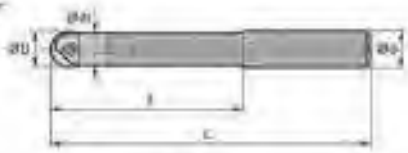


Fig. 1

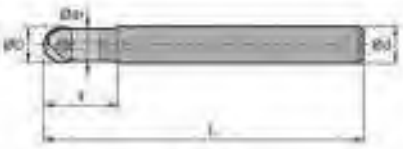


Fig. 2

(mm)

	Designation	øD	ød	ød1	l	L	Parts Clamp Screw	Parts Wrench	Available Inserts(D)	Fig.
LBE	0800805-S08C	8, 9	8	7.5	60	136	ETND02506F	TWP07S	8,9	1
	0801005-S08C	8, 9	8	7.5	100	156				1
	0800205-S08C-130	8, 9	8	7.5	20	130	ETND02506F	TWP07S	8,9	2
	0800205-S08C-150	8, 9	8	7.5	20	150				2
	1000805-S10C	10, 11	10	9.5	80	136	ETND0307F	TWP08S	10, 11	1
	1001205-S10C	10, 11	10	9.5	120	176				1
	1000235-S10C-130	10, 11	10	9.5	23	130	ETND0307F	TWP08S	10, 11	2
	1000235-S10C-170	10, 11	10	9.5	23	170				2
	1201005-S12C	12, 13	12	11.5	100	156	ETND03509	TWP10S	12,13	1
	1201505-S12C	12, 13	12	11.5	150	206				1
	1200255-S12C-150	12, 13	12	11.5	25	150	ETND03509	TWP10S	12,13	2
	1200255-S12C-200	12, 13	12	11.5	25	200				2
	1601005-S16C	16, 17	16	15.5	100	160	ETND0413	TWP15S	16,17	1
	1601505-S16C	16, 17	16	15.5	150	210				1
	1600305-S16C-160	16, 17	16	15.5	30	160	ETND0413	TWP15S	16,17	2
	1600305-S16C-210	16, 17	16	15.5	30	210				2
	2001205-S20C	20, 21	20	19.5	120	190	ETKD0516	TWP20	20,21	1
	2001705-S20C	20, 21	20	19.5	170	240				1
	2000355-S20C-190	20, 21	20	19.5	35	190	ETKD0516	TWP20	20,21	2
	2000355-S20C-240	20, 21	20	19.5	35	240				2
	2501405-S25C	25, 26	25	24.5	140	220	ETKD0620	TWP25	25,26	1
	2501705-S25C	25, 26	25	24.5	170	250				1
	2500405-S25C-220	25, 26	25	24.5	40	220	ETKD0620	TWP25	25,26	2
	2500405-S25C-250	25, 26	25	24.5	40	250				2
	3001405-S32C	30, 31	32	29.5	140	230	ETGD0825	TWP40	30,31	1
	3001705-S32C	30, 31	32	29.5	170	260				1
	3000505-S32C-230	30, 31	32	29.5	50	230	ETGD0825	TWP40	30,31	2
	3000505-S32C-260	30, 31	32	29.5	50	260				2
	3201405-S32C	32	32	31.5	140	230	ETGD0825	TWP40	32	1
	3201705-S32C	32	32	31.5	170	260				1
	3200505-S32C-230	32	32	31.5	50	230	ETGD0825	TWP40	32	2
	3200505-S32C-260	32	32	31.5	50	260				2

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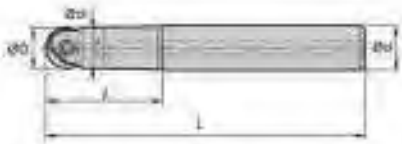
Steel Shank-Ball, Corner R type
LBE08/10/12/16/20/25/30/32

Taper type

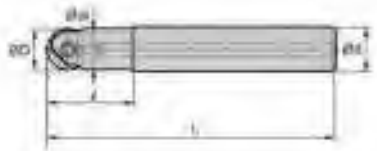


(mm)

	Designation	øD	ød	ød1	ℓ	L	Parts		Available Inserts(Ø)
							Clamp Screw	Wrench	
LBE	080035T-S12	8, 9	12	7.5	35	91	ETND03506F	TWP07S	8, 9
	080055T-S12	8, 9	12	7.5	55	111			
	080075T-S12	8, 9	12	7.5	75	131			
	100035T-S12	10, 11	12	9.5	35	91	ETND03507F	TWP08S	10, 11
	100055T-S12	10, 11	12	9.5	55	111			
	100075T-S12	10, 11	12	9.5	75	131			
	120055T-S12	12, 13	12	10.4	55	111	ETND03509	TWP10S	12, 13
	120085T-S16	12, 13	16	11.5	85	145			
	160065T-S16	16, 17	16	14	65	125	ETND0413	TWP15S	16, 17
	160100T-S20	16, 17	20	15.5	100	170			
	200075T-S20	20, 21	20	17.5	75	145	ETKD0516	TWP20	20, 21
	200115T-S25	20, 21	25	19.5	115	195			
	250090T-S25	25, 26	25	22	90	170	ETKD0620	TWP25	25, 26
	250135T-S32	25, 26	32	24.5	135	255			
	300105T-S32	30, 31	32	29.5	105	195	ETGD0625	TWP40	30, 31
	300160T-S32	30, 31	32	29.5	160	250			
	320105T-S32	32	32	29	105	195	ETGD0625	TWP40	32
	320160T-S32	32	32	29	160	250			

Steel Shank-Ball, Corner R type
LBE12/16/20/25/30/32

Straight type



(mm)

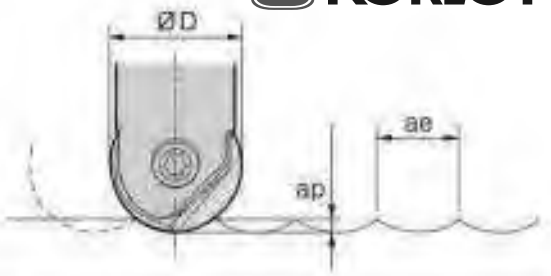
	Designation	øD	ød	ød1	ℓ	L	Parts		Available Inserts(Ø)
							Clamp Screw	Wrench	
LBE	120035S-S12	12, 13	12	11.5	35	91	ETND03509	TWP10S	12,13
	160035S-S16	16, 17	16	15.5	35	95	ETND0413	TWP15S	16,17
	200040S-S20	20, 21	20	19.5	40	110	ETKD0516	TWP20	20,21
	250045S-S25	25, 26	25	24.5	40	125	ETKD0620	TWP25	25,26
	300055S-S32	30, 31	32	29.5	55	145	ETGD0625	TWP40	30,31
	320055S-S32	32	32	31.5	55	145	ETGD0625	TWP40	32

Cutting condition formula for milling

Cutting speed	RPM
$vc = \frac{\pi \times De \times n}{1000}$ (m/min)	$n = \frac{vce \times 1000}{\pi \times De}$ (rev/min)

Feed per tooth	Feed per minute
$fz = \frac{vf}{n \times z}$ (mm/t)	$vf = fz \times n \times z$ (mm/min)

Chip removal amount	Power requirement
$Q = \frac{ap \times ae \times vf}{1000}$ (cm³/min)	$Pkw = \frac{Q \times kc}{60 \times 1000 \times \eta}$ (kW) $H = \frac{Pc}{0.75}$ (kw)



vc = Cutting speed(m/min)	Pkw= Power Requirement (kW)
vce = Practical cutting speed(m/min)	Php = Horsepower requirement(hp)
n = Revolution per Minute(min⁻¹)	Q = Chip removal amount(cm3/min)
Dc = Cutting diameter(mm)	ap = Depth of cut(mm)
De = Actual diameter(mm)	ae = Width of cut(mm)
vf = Feed per minute(mm/min)	kc = Specific cutting resistance(kg/mm²)
fz = Feed per tooth(mm/t)	η = Mechanical efficiency(%)
z = Number of tooth	

Recommended Cutting Condition

Workpiece	Recommended grade	Hardness	vc(m/min)	fz(mm/t)	ap	ae
					ap(mm)	ae(mm)
Carbon steel, Alloy steel	PC210F	HnC300(6)	100 ~ 250	0.2 ~ 0.3	0.07D	0.07D
Carbon steel, Alloy steel	PC210F	HnC30 ~ 40	80 ~ 150	0.1 ~ 0.3	0.07D	0.07D
Die steel	PC210F	HnC30 ~ 40	80 ~ 150	0.1 ~ 0.2	0.05D	0.05D
Cast iron	PC210F	-	100 ~ 200	0.3 ~ 0.35	0.07D	0.07D
Hardened steel	PC210F	HnC50 ~ 60	100 ~ 150	0.1 ~ 0.3	0.03D	0.03D
Stainless steel	PC210F	-	80 ~ 150	0.1 ~ 0.3	0.05D	0.05D
Aluminum alloy	PC210F	-	200 ~ 300	0.15 ~ 0.4	0.15D	0.15D

Practical cutting speed calculation formulas

1. 6°Using : Calculating cutting speed at P point (Cutting speed according to depth of cut when ramping)

• Formula : Practical cutting speed

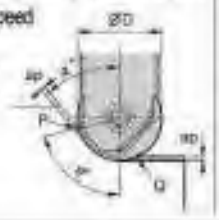
$$vc = \frac{\pi \times De \sin\theta \times n}{1000} \text{ (m/min)}$$

$$\theta = \cos^{-1}\left(\frac{De - 2ap}{De}\right) + 90 - \alpha^{\circ}$$

2. In case of using ap : Calculating cutting speed at Q point

• Formula : Practical cutting speed

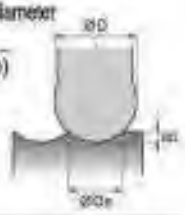
$$vce = \frac{2\pi n\sqrt{ap(De - ap)}}{1000}$$



3. Formula of actual diameter

• Formula of actual diameter

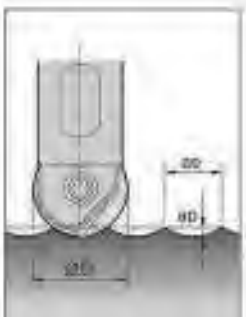
$$De = 2\sqrt{ap(D - ap)}$$



Practical cutting speed calculation formulas

	h(surface roughness) (μm)									
ae(mm) / Radius	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
5	0.3	1.0	2.3	4.0	6.3	9.0	12.3	16.0	20.3	25.0
6	0.2	0.8	1.9	3.3	5.2	7.5	10.2	13.3	16.9	20.8
8	0.2	0.6	1.4	2.5	3.9	5.6	7.7	10.0	12.7	15.6
10	0.1	0.5	1.1	2.0	3.1	4.5	6.1	8.0	10.1	12.5
12.5	0.1	0.4	0.9	1.6	2.5	3.6	4.9	6.4	8.1	10.0
15	0.1	0.3	0.8	1.3	2.1	3.0	4.1	5.3	6.8	8.3
16	0.1	0.3	0.7	1.3	2.0	2.8	3.8	5.0	6.3	7.8

• Formula of surface roughness : h(surface finish) = $\frac{(ae)^2}{8R} \times 1000(\mu m)$



All applications for chamfers

Chamfer Tool

- All chamfer applications
- Chamfer angles 15°, 30°, 45°, 60° for various customer's needs
- The long cutting edge provides a wide chamfering range

Back & Front Champer Tools

Long Champer Tools

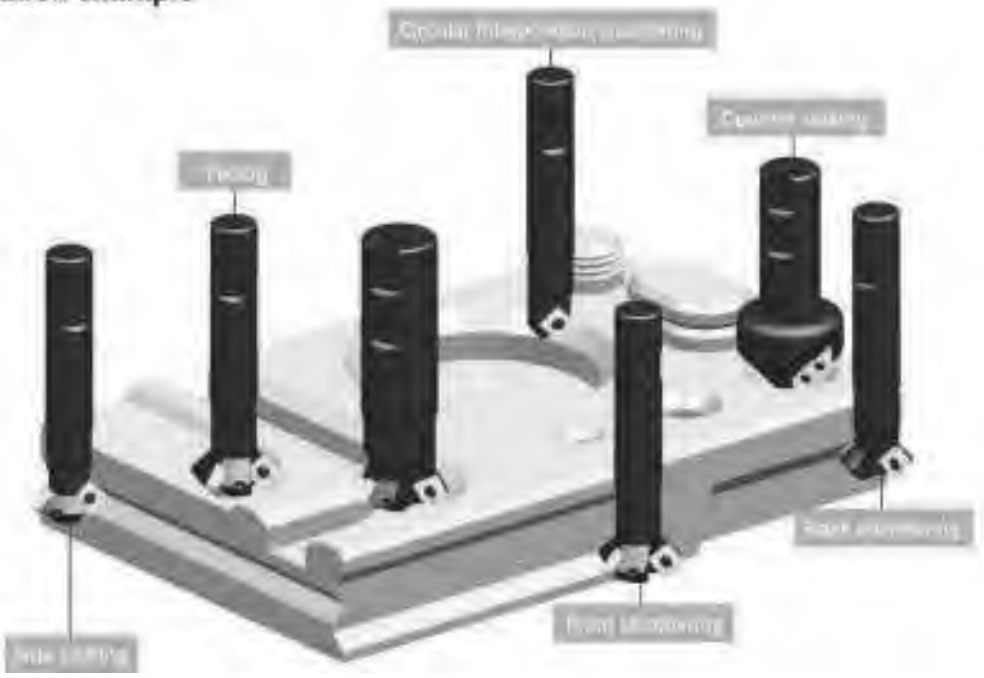
Code System

CE	45	–	11	25	R	–	S	20
Chamfer Endmill	Chamfer angle: 45°		Inscribed circle of insert: 11 : SPMT110408-KC, 12 : SPMN120308, 31 : XCET310404ER-KC	Min. Cutting Dia.: Ø25	Hand: R: Right, L: Left		Overall length: S : Standard, M : Middle, L : Long	Shank Dia.: Ø20

Recommended Cutting Condition

Workpiece	Grades	ØD(Ø5 ~Ø20)		ØD(Ø25 ~Ø35)	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	PC3500 PC5300 ST30A	100~160	0.05~0.25	100~160	0.05~0.25
M	PC5300 PC3545	90~120	0.05~0.20	90~120	0.10~0.30
K	PC5300 G10	100~160	0.10~0.30	100~160	0.30~0.50

Application example



Multi-functional Chamfer Tool

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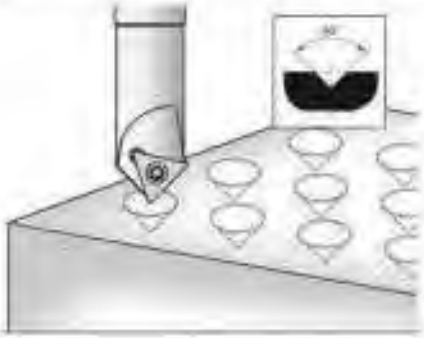
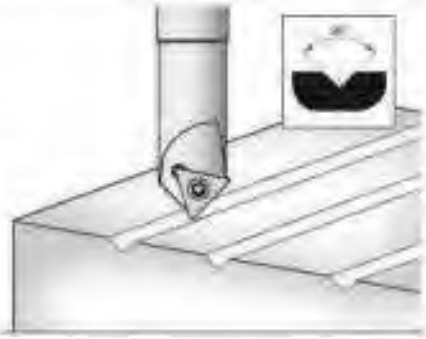
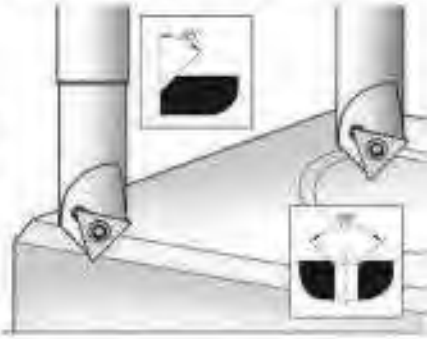
Code System

CE 45 - 16 00 R - S 20

Chamfer Endmill	Chamfer angle	Inscribed circle of insert	Min. Cutting Dia.	Hand	Overall length	Shank Dia.
	45°	16 : TWX16R-KC 22 : TWX22R-KC	Ø0	R : Right L : Left	S : 90,110 L : 200	Ø12 Ø20 Ø25

Application area and recommended cutting condition

Centering	Grooving	Chamfering
		

Workpiece	Hardness (HRC)	Centering, Grooving		Chamfering	
		vc(mm/min)	fz(mm/t)	vc(mm/min)	fz(mm/t)
Mild steel, Carbon steel, Alloy steel	Under HRC 30	80 ~ 200	0.01 ~ 0.04	100 ~ 250	0.04 ~ 0.06
High Carbon steel, Alloy steel	HRC 30~40	150 ~ 250	0.02 ~ 0.06	150 ~ 300	0.05 ~ 0.10
Aluminum, Copper	–	150 ~ 300	0.04 ~ 0.08	150 ~ 350	0.05 ~ 0.10
Cast Iron	–	80 ~ 150	0.02 ~ 0.06	100 ~ 250	0.05 ~ 0.10
Stainless steel	–	60 ~ 120	0.01 ~ 0.03	80 ~ 150	0.03 ~ 0.06
HRSA		60 ~ 80	0.01 ~ 0.03	80 ~ 100	0.03 ~ 0.06

Note) Please keep fz. Backtouch & Chipping one caused by wrong fz

Machining Example

Chamfering	Grooving	Chamfering
		

CE (Back & Front)

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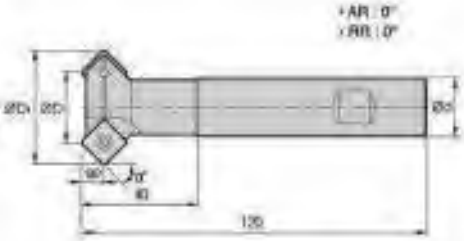

Fig. 1

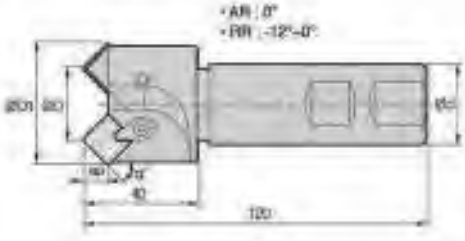

Fig. 2

(mm)

	Designation	◎	øD	øD1	od	ap	Fig.	Available Inserts	α°(Chamfer angle) Front	α°(Chamfer angle) Back	Machining range (Min-Max)	Uses
CE	15-1125R-S20	2	25	30.5	20	9.5	1	SPMT110408 - KC	15°	-	Ø25~Ø30	Front chamfering
	30-1125R-S20	2	25	35.5	20	9.5	1		30°	60°	Ø25~Ø35	Front, Back chamfering
	45-1107R-S20	1	7	21.9	20	7.0	1		45°	-	Ø7~Ø21	Front chamfering
	45-1119R-S20	2	19	33.9	20	7.0	1		45°	45°	Ø19~Ø33	Front, Back chamfering
	45-1125R-S20	3	25	39.9	20	7.0	1		45°	45°	Ø25~Ø39	Front, Back chamfering
	60-1125R-S32	3	25	43.8	32	5.0	2		60°	30°	Ø25~Ø42	Front, Back chamfering
CE	45-1207R-S32	1	7	23.8	32	7.8	2	SPMN120308	45°	-	Ø7~Ø22	Front chamfering
	45-1220R-S32	2	20	37.3	32	7.8	2		45°	-	Ø21~Ø36	Front chamfering
	45-1225R-S32	2	25	42.3	32	7.8	2		45°	-	Ø26~Ø41	Front chamfering
	45-1235R-S32	2	35	52.3	32	7.8	2		45°	-	Ø36~Ø51	Front chamfering

Available Inserts

SPMT-KC

SPMN

Designation	Coated										Cermet			Uncoated			
	NCM325	NCM335	NC3330	PC3530	PC5300	PC3545	PC9530	PC6510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
SPMT 110408-KC				●											●	●	
SPMN 120308																●	

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Parts

CE□□-11□□R-S	FTKA0408	-	-	TW15S	-
CE□□-12□□R-S	CHX0617L	CH6R2	CR05	-	HW30L

CE (Long Champer)

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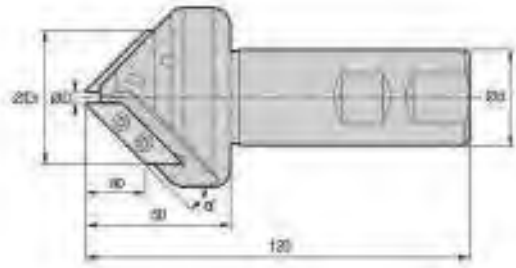


• AR : -5°~1°
• RR : 0°

(mm)

	Designation	ⓢ	øD	øD1	ød	ap	α°(Chamfer angle)	Machining range (Min~Max)	Uses
CE	30-3105R-S32	1	5	35	32	26	30°	Ø5~Ø35	Front Chamfering
	45-3105R-S32	2	5	48	32	21	45°	Ø5~Ø48	Front Chamfering
	60-3105R-S32	2	5	57	32	16	60°	Ø5~Ø57	Front Chamfering

Available Inserts

XCET-KC

CE(Multi-functional)

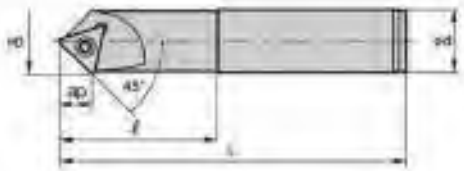


Fig. 1

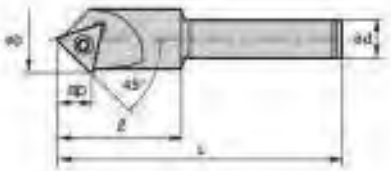


Fig. 2

• AR : -12°~15°
• RR : 0°

(mm)

	Designation	øD	ød	ℓ	L	ap	Fig	Available Inserts	Machining range (Min~Max)	Uses
CE	45-1600R-S12	22	12	40	90	10	2	TWX16R-KC	Ø0 ~ Ø20	Centering Grooving Chamfering
	45-1600R-S20	22	20	50	110	10	1	TWX16R-KC	Ø0 ~ Ø20	
	45-1600R-L20	22	20	60	200	10	1	TWX16R-KC	Ø0 ~ Ø20	
	45-2200R-S12	29	12	40	90	14	2	TWX22R-KC	Ø0 ~ Ø27	
	45-2200R-S25	29	25	50	110	14	1	TWX22R-KC	Ø0 ~ Ø27	
	45-2200R-L25	29	25	60	200	14	1	TWX22R-KC	Ø0 ~ Ø27	

Strong clamping due to the concave design of insert bottom

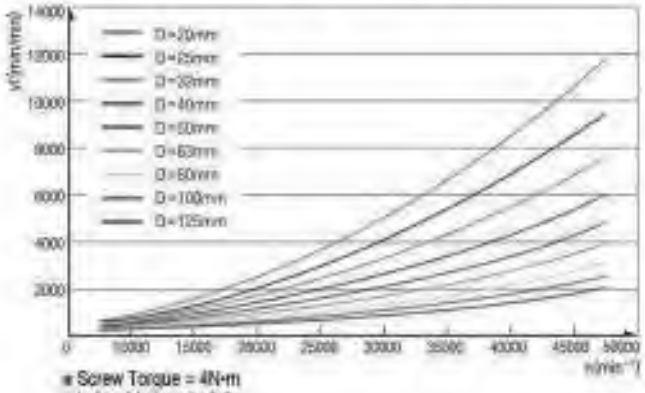
Pro-X mill

- Strong clamping due to the concave design of insert bottom
- Good chip flow and less build up edge acheived with the buffed surface of insert
- High rake angle of insert provides good surface finish and low cutting load
- Specially designed for high speed machining of aluminum
- Suitable for square shouldering and curved surface machining

Clamping system for high speed

- Clamping design as per FEM analysis
- Strong clamping of insert

Centrifugal force as per RPM



* Screw Torque = 4N•m
* Indexable insert : 6.6g

Marking [• Designation • Max. RPM]

Max. RPM as per cutting diameter

Cutting diameterØD(mm)		Max. RPM	
5000 type	6000 type	n(min⁻¹)	vc(m/min)
20	-	15,000	940
25	25	32,500	2,559
32	32	28,800	2,894
40	40	25,800	3,240
50	50	23,000	3,611
63	63	20,500	4,055
80	80	18,200	4,572
100	100	16,300	5,118
125	125	14,600	5,731

* In case of actual machining accidental breakage of insert or tool could happen even under the written RPM special cover or door is necessary to prevent damage from broken insert or broken tool

Recommended Cutting Condition

Workpiece		Cutting Speed vc(m/min)	Feed fz(mm/t)
Aluminum alloy	Rm≥80 < MPa	1200	0.30
	Rm≥80 > MPa	1000	0.25
Copper alloy	Long chipping	400	0.20
Thermo plastic	-	350	0.15
Aluminum alloy	Si <12%	1000	0.25
	Si ≥12%	-	-
Copper alloy	Short chipping	500	0.20
Magnesium alloy	-	450	0.20
Duroplastics	-	200	0.15

Pro-X Mill Ramping & Helical cutting technical data

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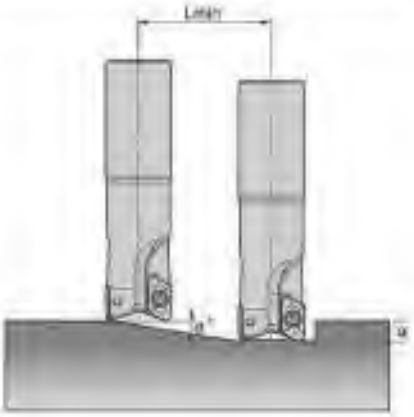
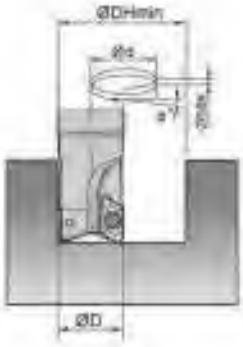
1. Ramping	2. Blind hole Helical cutting	3. Thru hole Helical cutting





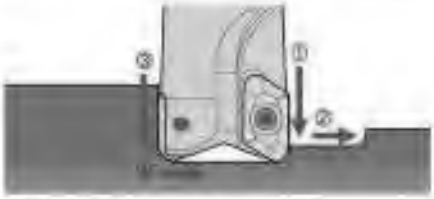
Designation	ØD(mm)	Ramping		Blind hole Helical cutting				Thru hole Helical cutting	
		α°(max)	Lmin(mm)	ØDHmax(mm)	dmax(mm)	ØDHmin(mm)	dmax(mm)	ØDHmin(mm)	dmax(mm)
PAXS5020HR	20	8.4	68	34	5.0	32	4.7	27	4.0
PAXS5025HR	25	13.2	43	44	10.4	42	9.9	34	8.0
PAXS5032HR	32	9.5	60	58	9.7	56	9.3	48	8.0
PAXS5040HR	40	7.1	80	74	9.3	72	9.0	64	8.0
PAXCM5050HR	50	5.4	105	94	9.0	92	8.8	84	8.0
PAXCM5063HR	63	4.2	138	120	8.7	118	8.6	110	8.0
PAXC(M)5080HR	80	3.2	180	154	8.6	152	8.4	144	8.0
PAXC(M)5100HR	100	2.5	230	194	8.4	192	8.3	184	8.0
PAXC(M)5125HR	125	2.0	293	244	8.3	242	8.3	234	8.0
PAXS6025HR	25	9.0	63	44	6.9	42	6.6	36	6.0
PAXS6032HR	32	6.6	87	58	6.7	56	6.5	52	6.0
PAXS6040HR	40	12.1	47	74	15.9	72	15.4	56	12.0
PAXCM6050HR	50	9.0	63	94	14.8	92	14.5	76	12.0
PAXCM6063HR	63	6.7	85	120	14.1	118	13.9	102	12.0
PAXC(M)6080HR	80	5.0	113	154	13.6	152	13.4	136	12.0
PAXC(M)6100HR	100	3.9	147	194	13.2	192	13.1	176	12.0
PAXC(M)6125HR	125	3.0	188	244	13.0	242	12.8	226	12.0

- Lmin : when ap=10mm
- Lmin : Minimum inclination cutting length

$$Lmin = \frac{ap}{\tan \alpha^{\circ}} \ (mm)$$

α° : Max. rampig angle
ap : Depth of cut

Plunging, Slotting, Drilling technical data



1. When drilling, grooving machining sequence is ① → ② → ③ → ④
2. When drilling, grooving, decrease the feed and cutting speed 30%–50% from the recommended data

• Cutting condition for drilling

Holder	ap(mm)	
	5000 Type	6000 Type
Ø20	6	-
Ø25	4	11
Ø32	4	8
Ø40~125	4	6

Insert	ap(mm)
XETK19	4
XETK25	6

Uses


Copying


Helical cutting


Slotting & Shouldering


Ramping

PAXC(M)5000

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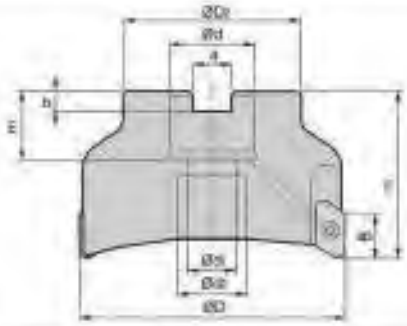


- AR : 8°~17.5°
- RR : -9.5°~-5°

(mm)

Designation		◎	øD	øDs	ød	ød1	ød2	a	b	E	F	Max rpm	ap	
PAXC(M)	5040HR-A,B	3	40	34	16	9	14	8.4	5.6	19	40	25,800	17	0.15
	5050HR-A,B	4	50	42	22	11	18	10.4	6.3	21	50	23,000	17	0.3
	5063HR-A,B	5(4)	63	49	22	11	18	10.4	6.3	21	50	20,500	17	0.56
	5080HR-A,B	5	80	57	25.4(27)	14	20	9.5(12.4)	6(7)	24(23)	50	18,200	17	1.0
	5100HR-A,B	6	100	67	31.75(32)	16	26	12.7(14.4)	8(8)	32(26)	63	16,300	17	2.3
	5125HR-A,B	7	125	87	38.1(40)	22	32	15.9(16.4)	10(9)	35(29)	63	14,600	17	3.2

- A type : Insert NoseR 0.4~3.2, B type : Insert NoseR 4.0~5.0

*( )Metric Size

Available Inserts

XEKT-MA

Designation		Coated										Cermet			Uncoated			
		NC9025	NC9035	NC5330	PC3500	PC5300	PC3545	PC8530	PC8510	PC215K	PD2000	CN2000	CN20	CN30	H01	G10	ST30A	ST20
XEKT	19M504FR-MA										●				●			
	19M508FR-MA										●				●			
	19M512FR-MA										●				●			
	19M516FR-MA														●			
	19M518FR-MA																	
	19M520FR-MA										●				●			
	19M530FR-MA														●			
	19M532FR-MA										●				●			
	19M540FR-MA										●				●			
	19M550FR-MA										●				●			

Available Adaptors

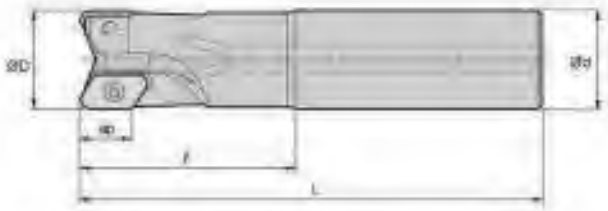
Designation		Ød	Available Arbors
PAXC(M)	5040HR-A,B	16	BT□□-FMC16-□□
	5050HR-A,B 5063HR-A,B	22	BT□□-FMC22-□□
	5080HR-A,B	25.4	BT□□-FMA25.4-□□
		27	BT□□-FMC27-□□
	5100HR-A,B	31.75	BT□□-FMA31.75-□□
		32	BT□□-FMC32-□□
	5125HR-A,B	38.1	BT□□-FMA38.1-□□
		40	BT□□-FMC40-□□

Parts

Screw	Wrench
	
PTKA040B	TW15S

PAXS5000

KORLOY Inc.



- AR : 5°~10°
- RR : -14°~-5°

(mm)

	Designation	ⓢ	øD	ød	ℓ	L	Max rpm	ap	kg
PAXS	5020HR-A,B	1	20	20	60	130	15,000	17	0.24
	5025HR-A,B	2	25	25	60	140	32,600	17	0.4
	5025HR-A,B-L200	2	25	25	60	200	32,600	17	0.63
	5032HR-A,B	2	32	32	70	150	28,800	17	0.74
	5032HR-A,B-L220	2	32	32	70	220	28,800	17	1.2
	5040HR-A,B-S32	3	32	40	70	160	25,800	17	1.0
	5040HR-A,B-L220	3	40	40	70	220	25,800	17	1.4
	5040HR-A,B-S40	3	40	40	70	160	25,800	17	1.3
	5040HR-A,B-S42	3	42	40	70	160	25,800	17	1.4

* A type : Insert NoseR 0.4~3.2, B type : Insert NoseR 4.0~5.0

Available Inserts

XEKT-MA

	Designation	Coated									Cermet			Uncoated			
		NC3125	NC3135	NC5330	PC3500	PC5300	PC3545	PC8530	PC8510	PC215K	PD3000	CN2000	CN30	CN40	H01	G10	ST30A	ST20
XEKT	19M504FR-MA										●				●			
	19M508FR-MA										●				●			
	19M512FR-MA										●				●			
	19M516FR-MA														●			
	19M518FR-MA																	
	19M520FR-MA										●				●			
	19M530FR-MA														●			
	19M532FR-MA										●				●			
	19M540FR-MA										●				●			
	19M550FR-MA										●				●			

Parts

Screw	Wrench
	
PTKA040B	TW15S

Carmex Precision Tools Ltd.

Product Identification

Threading Toolholders Ordering Codes

S	E	R	2020	K	16	

Clamping Method
D = Clamp
S = Screw

E = External
I = Internal

R = Right Hand
L = Left Hand

Shank Cross Section:

External toolholders square shank

2020=20 mm x 20 mm

Internal toolholders & boring bars round shank

0020 = Diam. of 20 mm

Length of Toolholder:

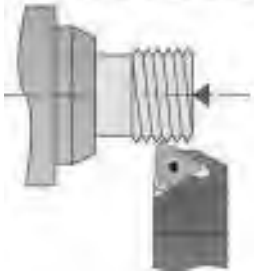
	mm
D	60
F	80
H	100
K	125
L	140
M	150
P	170
R	200
S	250
T	300
U	350
V	400

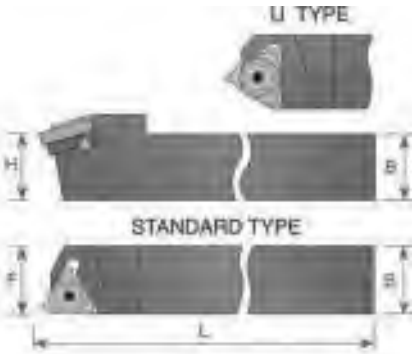
Insert Pocket Size

L	I.C.
06	5/32"
08	3/16"
08U	3/16"U
11	1/4"
16	3/8"
22	1/2"
22U	1/2"U
27	5/8"
27U	5/8"U
33U	3/4"U

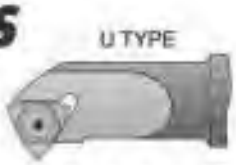
B - With coolant bore
C - Carbide shank
V - Vertical (on edge)
VS - Slim throat
O - Offset style
D - Drop head
G - Gang tool
U - U type

External Toolholders

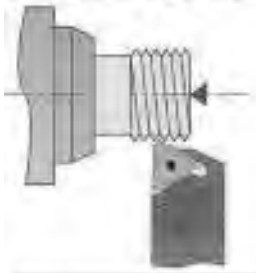


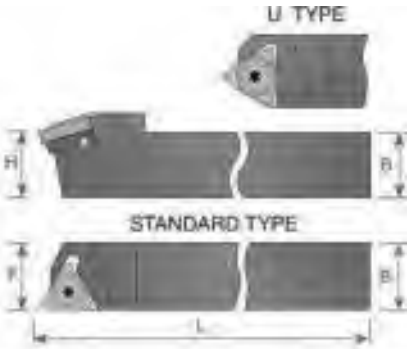


Internal Toolholders



External Toolholders





Ordering Code Right Hand	↕	B = H	L	F	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
* SER 8 8 H11	11	8	100	11	S11	-	K11	-	-
* SER 10 10 H11	11	10	100	11	S11	-	K11	-	-
* SER 10 10 M11	11	10	150	11	S11	-	K11	-	-
* SER 12 12 K11	11	12	125	12	S11	-	K11	-	-
* SER 12 12 M11	11	12	150	12	S11	-	K11	-	-
SER 12 12 F16	16	12	80	16	S16	A16	K16	AE16	AI16
SER 16 16 H16	16	16	100	16	S16	A16	K16	AE16	AI16
SER 20 20 K16	16	20	125	20	S16	A16	K16	AE16	AI16
SER 25 25 M16	16	25	150	25	S16	A16	K16	AE16	AI16
SER 32 32 P16	16	32	170	32	S16	A16	K16	AE16	AI16
SER 25 25 M22	22	25	150	25	S22	A22	K22	AE22	AI22
SER 32 32 P22	22	32	170	32	S22	A22	K22	AE22U	AI22U
SER 40 40 R22	22	40	200	40	S22	A22	K22	AE22U	AI22U
SER 25 25 M22U	22U	25	150	28	S22	A22	K22	AE22U	AI22U
SER 32 32 P22U	22U	32	170	32	S22	A22	K22	AE22	AI22
SER 40 40 R22U	22U	40	200	40	S22	A22	K22	AE22	AI22
SER 25 25 M27	27	25	150	32	S27	A27	K27	AE27	AI27
SER 32 32 P27	27	32	170	32	S27	A27	K27	AE27U	AI27U
SER 40 40 R27	27	40	200	40	S27	A27	K27	AE27U	AI27U
SER 25 25 M27U	27U	25	150	32	S27	A27	K27	AE27U	AI27U
SER 32 32 P27U	27U	32	170	32	S27	A27	K27	AE27	AI27
SER 40 40 R27U	27U	40	200	40	S27	A27	K27	AE27	AI27
* SER 25 25 M33U	33U	25	150	32	S33	-	K33	-	-
* SER 32 32 P33U	33U	32	170	32	S33	-	K33	-	-

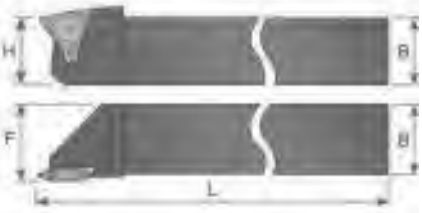
* Toolholders with no anvil

For LEFT HAND toolholders specify SEL instead of SER

Toolholders are made with a **1.5° Helix Angle**. For other Helix Angles please consult helix angle chart in the technical section of this catalogue.

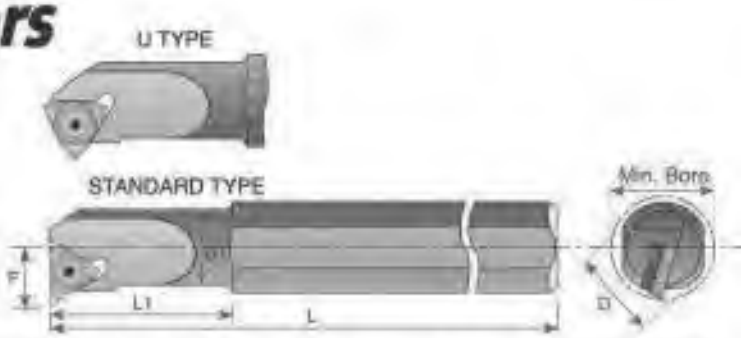
Carmex Precision Tools Ltd.

Vertical toolholders



Ordering Code Right Hand	↕	B=H	L	F	Insert Screw	Torx Key
SER 1616 H16V	16	16	100	18	S16S	K16
SER 2020 K16V	16	20	125	22	S16S	K16
SER 2525 M16V	16	25	150	27	S16S	K16
SER 2525 M22V	22	25	150	27.5	S22S	K22
SER 3232 P27V-T10	27	32	170	36	S27S	K27

Internal Toolholders



Ordering Code Right Hand		D	D1	Min Bore Diam.	L	L1	F	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
* SIR 0005 H06	6	12	5.1	6.0	100	12	4.3	S06	-	K06	-	-
* SIR 0007 K08	8	16	6.6	7.8	125	18	5.3	S08	-	K08	-	-
* SIR 0008 K08U	8U	16	7.3	9.0	125	21	6.6	S08	-	K08	-	-
* SIR 0010 H11	11	10	10	12	100	-	7.4	S11	-	K11	-	-
* SIR 0010 K11	11	16	10	12	125	25	7.4	S11	-	K11	-	-
* SIR 0013 L11	11	16	13	15	140	32	8.9	S11	-	K11	-	-
* SIR 0013 M16	16	16	13	16	150	32	10.2	S16S	-	K16	-	-
* SIR 0016 P16	16	20	16	19	170	40	11.7	S16S	-	K16	-	-
SIR 0020 P16	16	20	20	24	170	-	13.7	S16	A16	K16	AI16	AE16
SIR 0025 R16	16	25	25	29	200	-	16.2	S16	A16	K16	AI16	AE16
SIR 0032 S16	16	32	32	36	250	-	19.7	S16	A16	K16	AI16	AE16
SIR 0040 T16	16	40	40	44	300	-	23.7	S16	A16	K16	AI16	AE16
SIR 0050 U16	16	50	50	54	350	-	28.7	S16	A16	K16	AI16	AE16
* SIR 0020 P22	22	20	20	24	170	-	15.6	S22S	-	K22	-	-
SIR 0025 R22	22	25	25	29	200	-	18.1	S22	A22	K22	AI22	AE22
SIR 0032 S22	22	32	32	38	250	-	21.6	S22	A22	K22	AI22	AE22
SIR 0040 T22	22	40	40	46	300	-	25.6	S22	A22	K22	AI22	AE22
SIR 0050 U22	22	50	50	56	350	-	30.6	S22	A22	K22	AI22	AE22
SIR 0032 S22U	22U	32	32	38	250	-	24.4	S22	A22	K22	AI22U	AE22U
SIR 0040 T22U	22U	40	40	46	300	-	28.1	S22	A22	K22	AI22U	AE22U
SIR 0050 U22U	22U	50	50	57	350	-	30.8	S22	A22	K22	AI22U	AE22U
SIR 0032 S27	27	32	32	40	250	-	22.6	S27	A27	K27	AI27	AE27
SIR 0040 T27	27	40	40	48	300	-	26.6	S27	A27	K27	AI27	AE27
SIR 0050 U27	27	50	50	58	350	-	31.6	S27	A27	K27	AI27	AE27
SIR 0060 V27	27	60	60	68	400	-	36.6	S27	A27	K27	AI27	AE27
SIR 0032 S27U	27U	32	32	40	250	-	25.8	S27	A27	K27	AI27U	AE27U
SIR 0040 T27U	27U	40	40	48	300	-	29.4	S27	A27	K27	AI27U	AE27U
SIR 0050 U27U	27U	50	50	58	350	-	34.3	S27	A27	K27	AI27U	AE27U
SIR 0060 V27U	27U	60	60	68	400	-	39.7	S27	A27	K27	AI27U	AE27U
SIR 0050 U33U	33U	50	50	62	350	-	37.5	S33	-	K33	-	-

* Toolholders with no anvil.

For LEFT HAND toolholders specify SIL instead of SIR

Toolholders are made with a **1.5° Helix Angle.** For other Helix Angles please consult Helix Angle chart in the technical section of this catalogue.

Carmex Precision Tools Ltd.

Product Identification

Thread Turning Inserts Ordering Codes

16	E	R		12	UN		BMA

L	I.C.
06	5/32"
08	3/16"
08U	3/16"U
11	1/4"
16	3/8"
16V	3/8"V
22	1/2"
22V	1/2"V
22U	1/2"U
27	5/8"
27V	5/8"V
27U	5/8"U
33U	3/4"U

E = External
I = Internal

R = Right Hand
L = Left Hand

B = Type B

Pitch
in mm:
0.35-12

or TPI
(Threads
per Inch)
72-2

Full Profiles:
ISO
UN
WHIT
NPT
NPTF
BSPT
ACME
ST.ACME
TRAPEZ
ROUND
UNJ
MJ
PG
AM. BUTT.
SAGE
API
VAM

Partial Profiles:

A	60°
G	55°
AG	
N	
Q	
U	

Multitooth style & number of teeth

API size & taper

Carbide Grade:
BMA
BLU
HBA
MXC
P25C

Note:
BMA = Genral Purpose
Blu = Stainless Steel
HBA = High Carbon & Hardness Steels up to HRC 65

Partial Profile 60°

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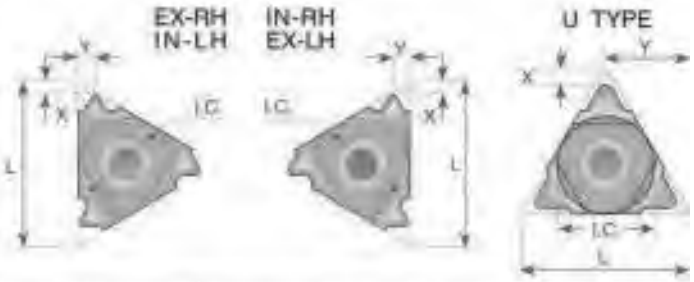
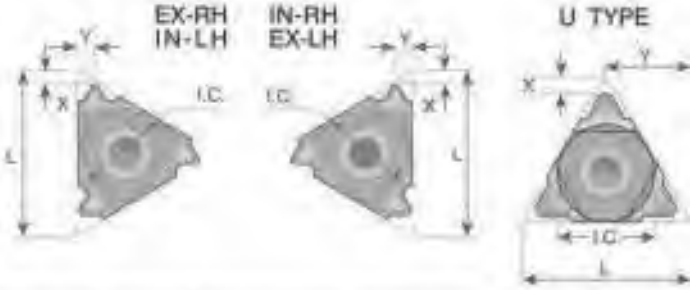


L	I.C. in	Pitch Range mm	Pitch Range TPI	EXTERNAL Ordering Code Right Hand	EXTERNAL Ordering Code Left Hand	INTERNAL Ordering Code Right Hand	INTERNAL Ordering Code Left Hand	X	Y
11	1/4	0.5-1.5	48-16	**11 ER A60**	11 EL A60	**11 IR A60**	11 IL A60	0.8	0.9
22	1/2	3.5-5.0	7- 5	**22 ER N60**	22 EL N60	**22 IR N60**	22 IL N60	1.7	2.5

Partial Profile 55°



L	I.C. in	Pitch Range mm	Pitch Range TPI	EXTERNAL Ordering Code Right Hand	EXTERNAL Ordering Code Left Hand	INTERNAL Ordering Code Right Hand	INTERNAL Ordering Code Left Hand	X	Y
6	5/32	0.5-1.25	48-20	*ULTRA -MINI* →		**°06 IR A55**	°06 IL A55	0.5	0.6
27U	5/8U	6.5-9.0	4-2.75	27U E/R/L U55				1.2	13.7

Partial Profile 60°
Vertical

L	I.C. in	Pitch Range mm	Pitch Range TPI	EXTERNAL Ordering Code Right Hand	EXTERNAL Ordering Code Left Hand	INTERNAL Ordering Code Right Hand	INTERNAL Ordering Code Left Hand	X	Y	T
16	3/8	0.5 - 1.5	48-16	**16V ER A60**	16V EL A60			1.0	0.9	3.6
16	3/8	1.75- 3.0	14- 8	**16V ER G60**	16V EL G60			1.0	1.8	3.6
16	3/8	0.5 - 3.0	48- 8	**16V ER AG60**	16V EL AG60			1.0	1.8	3.6
22	1/2	1.75- 3.0	14- 8	**22V ER G60**	22V EL G60			1.2	1.7	4.0
22	1/2	0.5 - 5.0	7- 5	**22V ER N60**	22V EL N60			1.2	2.5	4.8
27	5/8	6.0 -10.0	4- 2.5	**27V ER V60**	27V EL V60	**27V IR V60**	27V IL V60	1.8	5.2	10.4

Order example: 16V ER G60 BMA

ISO - metric

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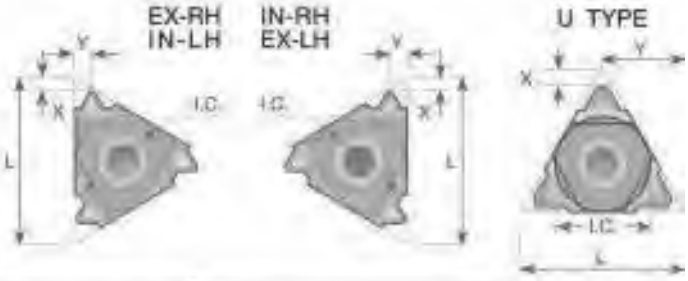
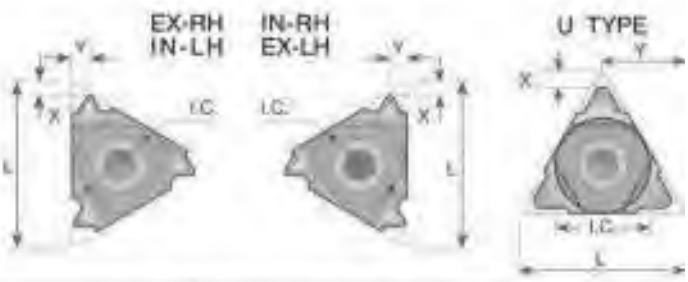


Pitch mm	L	I.C. in	EXTERNAL Ordering Code Right Hand	Left Hand	X	Y	INTERNAL Ordering Code Right Hand	Left Hand	X	Y
1.0	16	3/8	16 ER 1.0 ISO	16 EL 1.0 ISO	0.7	0.7	16 IR 1.0 ISO	16 IL 1.0 ISO	0.6	0.7
1.25	16	3/8	16 ER 1.25 ISO	16 EL 1.25 ISO	0.8	0.9	16 IR 1.25 ISO	16 IL 1.25 ISO	0.8	0.9
1.5	16	3/8	16 ER 1.5 ISO	16 EL 1.5 ISO	0.8	1.0	16 IR 1.5 ISO	16 IL 1.5 ISO	0.8	1.0
1.75	16	3/8	16 ER 1.75 ISO	16 EL 1.75 ISO	0.9	1.2	16 IR 1.75 ISO	16 IL 1.75 ISO	0.9	1.2
2.0	16	3/8	16 ER 2.0 ISO	16 EL 2.0 ISO	1.0	1.3	16 IR 2.0 ISO	16 IL 2.0 ISO	1.0	1.3
2.5	16	3/8	16 ER 2.5 ISO	16 EL 2.5 ISO	1.1	1.5	16 IR 2.5 ISO	16 IL 2.5 ISO	1.1	1.5
3.0	16	3/8	16 ER 3.0 ISO	16 EL 3.0 ISO	1.2	1.6	16 IR 3.0 ISO	16 IL 3.0 ISO	1.1	1.5
3.5	16	3/8	16 ER 3.5 ISO	16 EL 3.5 ISO	1.2	1.7	16 IR 3.5 ISO	16 IL 3.5 ISO	1.2	1.7

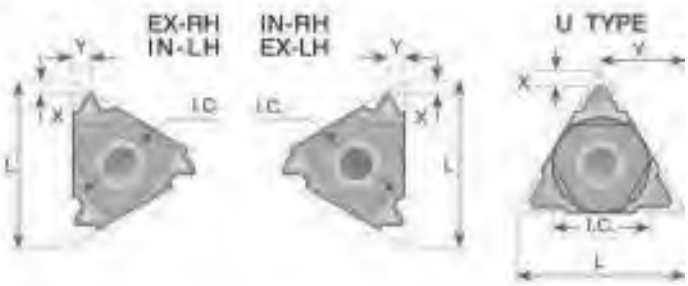
ISO - metric

Carmex Precision Tools Ltd.



Pitch mm	L	I.C. in	EXTERNAL Ordering Code Right Hand	Left Hand	X	Y	INTERNAL Ordering Code Right Hand	Left Hand	X	Y
3.5	22	1/2	22 ER 3.5 ISO	22 EL 3.5 ISO	1.6	2.3	22 IR 3.5 ISO	22 IL 3.5 ISO	1.6	2.3
4.0	22	1/2	22 ER 4.0 ISO	22 EL 4.0 ISO	1.6	2.3	22 IR 4.0 ISO	22 IL 4.0 ISO		
4.5	22	1/2	22 ER 4.5 ISO	22 EL 4.5 ISO	1.7	2.4	22 IR 4.5 ISO	22 IL 4.5 ISO	1.6	2.4
5.0	22	1/2	22 ER 5.0 ISO	22 EL 5.0 ISO	1.7	2.5	22 IR 5.0 ISO	22 IL 5.0 ISO	1.6	2.3

UN - Unified UNC, UNF, UNEF, UNS



Standard Kits

Threading Kits are a versatile solution for users that cut a variety of thread types in limited quantity and do not want to sacrifice thread quality.

EXTERNAL ISO KIT
Ordering Code:KEG

INSERTS
16 ER A60 P25C
16 ER G60 P25C
16 ER 0.75 ISO P25C
16 ER 1.0 ISO P25C
16 ER 1.25 ISO P25C
16 ER 1.5 ISO P25C
16 ER 1.75 ISO P25C
16 ER 2.0 ISO P25C
16 ER 2.5 ISO P25C
16 ER 3.0 ISO P25C
TOOLHOLDER
SER 2020 K16
KEY
K16
SCREW
S16

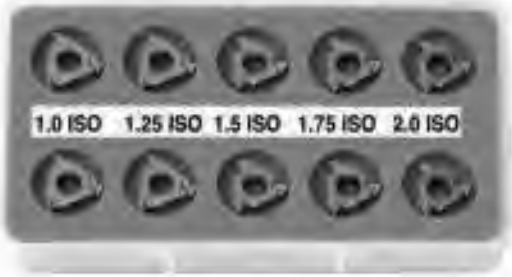
INTERNAL ISO KIT
Ordering Code:KIG

INSERTS
16 IR A60 P25C
16 IR G60 P25C
16 IR 0.75 ISO P25C
16 IR 1.0 ISO P25C
16 IR 1.25 ISO P25C
16 IR 1.5 ISO P25C
16 IR 1.75 ISO P25C
16 IR 2.0 ISO P25C
16 IR 2.5 ISO P25C
16 IR 3.0 ISO P25C
TOOLHOLDER
SIR 0020 P16
KEY
K16
SCREW
S16

If a larger toolholder with a 25 mm shank is required, add to the Kit "25". For example: KIG-25

Type B Kits

Type B threading inserts.
A combination of ground profile and sintered chip-breaker threading inserts.
BMA Grade: Sub-Micron carbide grade with TIALN Multi-Layer Coating.



TYPE B

EXTERNAL ISO KIT
KEMB-BMA

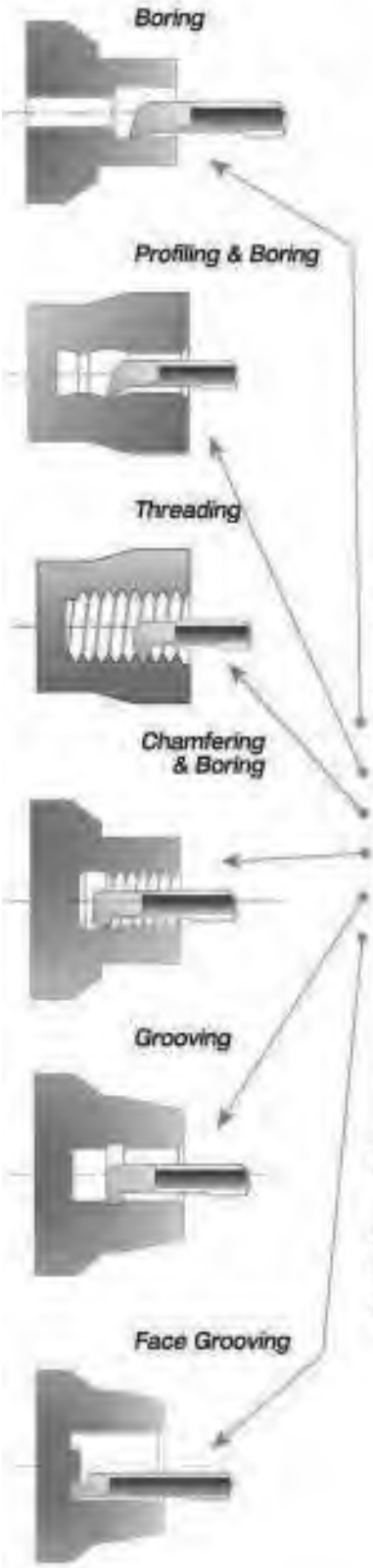
16 ER B 1.0	ISO BMA	2 Pcs
16 ER B 1.25	ISO BMA	2 Pcs
16 ER B 1.5	ISO BMA	2 Pcs
16 ER B 1.75	ISO BMA	2 Pcs
16 ER B 2.0	ISO BMA	2 Pcs

INTERNAL ISO KIT
KIMB-BMA

16 IR B 1.0	ISO BMA	2 Pcs
16 IR B 1.25	ISO BMA	2 Pcs
16 IR B 1.5	ISO BMA	2 Pcs
16 IR B 1.75	ISO BMA	2 Pcs
16 IR B 2.0	ISO BMA	2 Pcs

Carmex Precision Tools Ltd.

Tiny Tools Kits



KT4-20	KT5-20
MTR 4 R0.2 L10	MTR 5 R0.2 L15
MPR 4 R0.2 L10	MPR 5 R0.2 L15
MIR 4 L15 A60	MIR 5 L15 A60
MCR 4 R0.2 L15	MCR 5 R0.2 L15
MGR 4 B1.5 L10	MGR 5 B1.5 L15
MFR 4 B1.0 L15	MFR 5 B1.0 L22
SIM 0020 H4	SIM 0020 H5
K25	K25

Order example: KT4-20

Also available are kits with a
16mm or 22mm shank diameter bar holder.
Order example: KT4-16

Tiny Tools Bar Holder

Miniature & Ultra-miniature Kits

Ordering Code	Type	No. of Inserts	Contents		
			Insert	Boring Bar	Key
KU60M-BXC	ULTRA	10	06 IR A60 BXC	SIR 0005 H06	K6
KM60M-BXC	MINI	10	08 IR A60 BXC	SIR 0007 K08	K8

Threading & Boring Combination Kit

A practical and convenient combination kit for Ultra Miniature Threading and Boring. It enables Boring and Threading of mini bores as small as 6 mm diameter (1/4") with just one deep reaching CARBIDE shank ultra mini Boring Bar.

Ordering Code	Contents			
	Threading Insert	Turning Insert	Boring Bar	Key
KC6TM	06 IR A60 BXC 10 Pcs	06 IR TURN BMA 10 Pcs	SIR 0005 H06CB	K6

BMA - Coated carbide grade for medium to high cutting speeds
BXC - Coated carbide grade for low cutting speed - 40 to 90 m/min
CB - Carbide shank boring bar with coolant bore

Carmex Precision Tools Ltd.

Mini Chamfer Kit

Kit KMC	Qty
MC 0303 C12 A90	1
MC 03025 C6 A90	1
MC 0404 C10 A90	1
MC 04035 C9 A90	1
MC 05045 C11 A90	1
MC 0606 C24 A90	1

Internal ISO Kits

MTK 12 I ISO	MTK 14 I ISO
INSERTS	INSERTS
12 I 0.75 ISO	14 I 1.0 ISO 2 Pcs
12 I 1.0 ISO 2 Pcs	14 I 1.5 ISO 2 Pcs
12 I 1.25 ISO	14 I 2.0 ISO 2 Pcs
12 I 1.5 ISO 2 Pcs	
TOOLHOLDER	TOOLHOLDER
SR 0009 H12	SR 0017 H14
KEY	KEY
K12	K14
SCREW	SCREW
S12	S14

Order example : MTK 14 I ISO

STRAIGHT KNURLING HOLDER (DISPOSABLE)

Stock Code	Size of holder
SK12	12 X 12 X 100mm

DOUBLE WHEEL KNURLING HOLDER

Knurl size : 19x9.5x6.4mm

Stock Code	Size of holder
DWK12	12 X 12 X 115mm

SWIVEL KNURL HOLDER

Knurl size : 19x9.5x6.4mm

Stock Code	Size of holder
SHK	16 X 35 X 190mm

REVOLVING HEAD KNURLING HOLDERS

Knurl size : 20x10x6mm

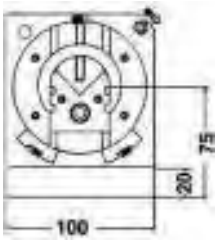
Stock Code	Size of holder
KTH	30 X 25mm
KTHS	32 X 20mm

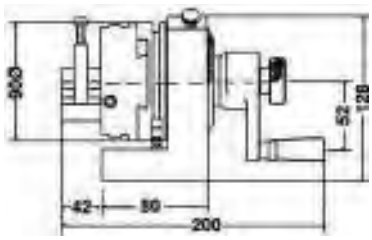
Price does NOT include wheels

KNURLS HSS

Stock Code	Description	Ø mm	Width mm	Bore mm	Pitch mm
AA20x10x6x.5P	AA Straight	20	10	6	0.5
AA20x10x6x.6P	AA Straight	20	10	6	0.6
AA20x10x6x.8P	AA Straight	20	10	6	0.8
AA20x10x6x1P	AA Straight	20	10	6	1
AA20x10x6x1.2P	AA Straight	20	10	6	1.2
AA20x10x6x1.6P	AA Straight	20	10	6	1.6
BR20x10x6x.6P	BR Righthand	20	10	6	0.6
BR20x10x6x.8P	BR Righthand	20	10	6	0.8
BR20x10x6x1P	BR Righthand	20	10	6	1
BR20x10x6x1.2P	BR Righthand	20	10	6	1.2
BR20x10x6x1.6P	BR Righthand	20	10	6	1.6
BR20x10x6x2P	BR Righthand	20	10	6	2
BL20x10x6x.6P	BL Lefthand	20	10	6	0.6
BL20x10x6x.8P	BL Lefthand	20	10	6	0.8
BL20x10x6x1P	BL Lefthand	20	10	6	1
BL20x10x6x1.2P	BL Lefthand	20	10	6	1.2
BL20x10x6x1.6P	BL Lefthand	20	10	6	1.6
BL20x10x6x2P	BL Lefthand	20	10	6	2
BR19x9.5x6.4F	Righthand	19	9.5	6.4	Fine
BR19x9.5x6.4M	Righthand	19	9.5	6.4	Medium
BR19x9.5x6.4C	Righthand	19	9.5	6.4	Coarse
BL19x9.5x6.4F	Lefthand	19	9.5	6.4	Fine
BL19x9.5x6.4M	Lefthand	19	9.5	6.4	Medium
BL19x9.5x6.4C	Lefthand	19	9.5	6.4	Coarse

PRECISION PUNCH FORMER AND GRINDING WHEEL FORM DRESSER





Stock Code	PFQ
Punch body diameter	4-25 mm
Minimum length of punch body	22 mm
V block travel - Z axis	25 mm
V block travel - X axis	25 mm
Length of V block	30 mm
Centre height	80 mm
Dial graduations	360° x 1° increments
Indexing positions	24 divisions = 15° 4 10"

SPIN ROLL PUNCH GRINDER

Stock Code	Punch Grinding Range mm	Length mm	Width mm	Height mm
SRPGQ	3ø - 30ø	165	165	115

PIERCING PUNCHES TYPE PP

DIN 9861 HWS material

Hardened and ground. HWS - 12% chrome steel. Hardness: Shaft HRC 62 ±2 Head HRC 55 ± 5 Standard Length: 70mm Increments: 0.1mm. Also available 80mm and 100mm long. Form D.

Order example:
1) 10 off PP 2X70
= 10 off 12% chrome steel piercing punches 2mm Ø X 70 long.
2) 10 off PP 3.6X80
= 10 off 12% chrome steel piercing punches 3.6mm Ø X 80 long.

Ø d1 h6 mm	Ø d2 mm	K mm	L 0/+0.5 mm	L 0/+0.5 mm	L 0/+0.5 mm
1.0- 1.1	1.8	0.5	70	80	100
1.2- 1.3	2.0	0.5	70	80	100
1.4- 1.5	2.2	0.5	70	80	100
1.6- 1.7	2.5	0.5	70	80	100
1.8- 1.9	2.8	0.5	70	80	100
2.0	3.0	0.5	70	80	100
2.1- 2.2	3.2	0.5	70	80	100
2.3- 2.5	3.5	0.5	70	80	100
2.6- 2.9	4.0	0.5	70	80	100
3.0- 3.4	45	0.5	70	80	100
3.5- 3.9	5.0	0.5	70	80	100
4.0- 4.4	5.5	0.5	70	80	100
4.5- 4.9	6.0	0.5	70	80	100
5.0- 5.4	6.5	0.5	70	80	100
5.5- 5.9	7.0	0.5	70	80	100
6.0- 6.4	8.0	0.5	70	80	100
6.5- 7.4	9.0	1.0	70	80	100
7.5- 8.4	10.0	1.0	70	80	100
8.5- 9.4	11.0	1.0	70	80	100
9.5- 10.4	12.0	1.0	70	80	100
10.5- 11.4	13.0	1.0	70	80	100
11.5- 12.4	14.0	1.0	70	80	100
12.5- 13.4	15.0	1.0	70	80	100
13.5- 14.4	16.0	1.0	70	80	100
14.5- 15.0	17.0	1.5	70	80	100
				80	100

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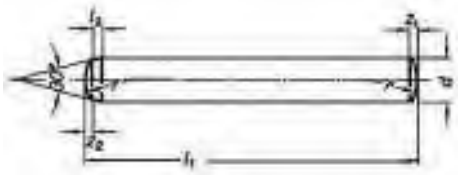
Ø d1 h6 mm	Ø d2 mm	K mm	L 0/+0.5 mm	L 0/+0.5 mm	L 0/+0.5 mm
15.1- 16	18.0	1.5	70	80	100
16.1- 17	19.0	1.5	70	80	00
17.1- 18	20.0	1.5	70	80	100
18.1- 19	21.0	1.5	70	80	100
19.1- 20	22.0	1.5	70	80	100
20.1- 22	22.0	1.5	70	80	100

Also available in WS-special steel and HSS-high speed steel

HARDENED,GROUND AND LAPPED DOWEL PINS TO DIN 6325



Hardened to HRc 60 ± 2

Dimensions d m6	l	r	z	z
0.8	0.4	0.8	0.12	0.06
1	0.4	1	0.15	0.08
1.5	0.5	1.6	0.23	0.12
2	0.6	2	0.3	0.18
2.5	0.7	2.5	0.4	0.25
3	0.8	3	0.45	0.3
4	1	4	0.6	0.4
5	1.2	5	0.75	0.5
6	1.5	6	0.9	0.6
8	1.8	8	1.2	0.8
10	2	10	1.5	1
12	2.5	12	1.8	1.3
13	2.5	12	2	1.3
14	2.5	16	2	1.3
16	3	16	2.5	1.7
20	4	20	3	2

Stock Code	Ø mm	Length mm
DP2x10	2	10
DP2x12	2	12
DP2x14	2	14
DP2x16	2	16
DP2x18	2	18
DP2x20	2	20
DP2x24	2	24
DP2x28	2	28
DP2x30	2	30
DP2x32	2	32
DP2x36	2	36
DP3x10	3	10
DP3x12	3	12
DP3x14	3	14
DP3x16	3	16
DP3x18	3	18
DP3x20	3	20
DP3x24	3	24
DP3x28	3	28
DP3x30	3	30
DP3x32	3	32
DP3x36	3	36
DP3x40	3	40
DP4x10	4	10
DP4x12	4	12
DP4x14	4	14

Stock Code	Ø mm	Length mm
DP4x16	4	16
DP4x18	4	18
DP4x20	4	20
DP4x24	4	24
DP4x28	4	28
DP4x30	4	30
DP4x32	4	32
DP4x36	4	36
DP4x40	4	40
DP4x45	4	45
DP4x50	4	50
DP4x55	4	55
DP4x60	4	60
DP5x10	5	10
DP5x12	5	12
DP5x14	5	14
DP5x16	5	16
DP5x18	5	18
DP5x20	5	20
DP5x24	5	24
DP5x28	5	28
DP5x30	5	30
DP5x32	5	32
DP5x36	5	36
DP5x40	5	40

Continued ...

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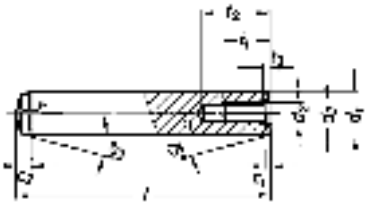
Stock Code	Ø mm	Length mm
DP5x45	5	45
DP5x50	5	50
DP5x55	5	55
DP5x60	5	60
DP5x70	5	70
DP5x80	5	80
DP6x10	6	10
DP6x12	6	12
DP6x14	6	14
DP6x16	6	16
DP6x18	6	18
DP6x20	6	20
DP6x24	6	24
DP6x28	6	28
DP6x30	6	30
DP6x32	6	32
DP6x36	6	36
DP6x40	6	40
DP6x45	6	45
DP6x50	6	50
DP6x55	6	55
DP6x60	6	60
DP6x70	6	70
DP6x80	6	80
DP6x90	6	90
DP8x18	8	18
DP8x20	8	20
DP8x24	8	24
DP8x28	8	28
DP8x30	8	30
DP8x32	8	32
DP8x36	8	36
DP8x40	8	40
DP8x45	8	45
DP8x50	8	50
DP8x55	8	55
DP8x60	8	60
DP8x70	8	70
DP8x80	8	80
DP8x90	8	90
DP8x100	8	100
DP10x20	10	20
DP10x24	10	24
DP10x28	10	28
DP10x30	10	30
DP10x32	10	32
DP10x36	10	36
DP10x40	10	40
DP10x45	10	45
DP10x50	10	50
DP10x55	10	55
DP10x60	10	60
DP10x70	10	70
DP10x80	10	80
DP10x90	10	90
DP10x100	10	100
DP10x120	10	120
DP12x20	12	20
DP12x24	12	24
DP12x28	12	28
DP12x30	12	30
DP12x32	12	32
DP12x36	12	36
DP12x40	12	40
DP12x45	12	45
DP12x50	12	50
DP12x55	12	55
DP12x60	12	60
DP12X70	12	70
DP12x80	12	80
DP12x90	12	90
DP12x100	12	100
DP12x120	12	120
DP12x130	12	130
DP12x140	12	140
DP12x150	12	150
DP14x40	14	40
DP14X45	14	45
DP14x50	14	50
DP14x55	14	55
DP14x60	14	60
DP14x70	14	70
DP14x80	14	80
DP14x90	14	90
DP14x100	14	100
DP14x120	14	120
DP14x130	14	130
DP14x140	14	140
DP14x150	14	150
DP16x45	16	45
DP16x50	16	50
DP16x55	16	55
DP16x60	16	60
DP16x70	16	70
DP16x80	16	80
DP16x90	16	90
DP16x100	16	100
DP16x120	16	120
DP16x130	16	130
DP16x140	16	140
DP16x150	16	150
DP18x45	18	45
DP18x50	18	50
DP18x55	18	55
DP18x60	18	60
DP18x70	18	70
DP18x80	18	80
DP18x90	18	90
DP18x100	18	100
DP18x120	18	120
DP18x130	18	130
DP18x140	18	140
DP18x150	18	150
DP20x45	20	45
DP20x50	20	50
DP20x55	20	55
DP20x60	20	60
DP20x70	20	70
DP20x80	20	80
DP20x90	20	90
DP20x100	20	100
DP20x120	20	120
DP20x130	20	130
DP20x140	20	140
DP20x150	20	150

THREADED HARDENED,GROUND AND LAPPED DOWEL PINS TO DIN 7979 TYPE TDP



For use in blind holes. With a flat ground along the length to prevent compression of air.Hardened to HRc 60 ± 2

d1m6	6	8	10	12	13	14	16	20
d2	M4	M5	M6	M8	M8	M8	M10	M12
d3	4.3	5.3	6.4	8.4	9	9.8	10.5	13
rffi	6	8	10	12	13	14	16	20
t1	7	9	10	13	14	15	17	20
t2	11	13	16	21	21	23	26	31
t3	1	1.2	102	1.2	1.3	1.3	1.5	105
c1max	0.8	1	102	1.6	1.6	1.8	2	2.5
c2max	2.1	2.6	3	3.8	4.1	4.4	4.7	6

Stock Code	Ø mm	Length mm
TDP6x20	6	20
TDP6x24	6	24
TDP6x28	6	28
TDP6x32	6	32
TDP6x36	6	36
TDP6x40	6	40
TDP6x45	6	45
TDP6x50	6	50
TDP8x36	8	36
TDP8x40	8	40
TDP8x45	8	45
TDP8x50	8	50
TDP8x55	8	55
TDP8x60	8	60
TDP8x70	8	70
TDP8x80	8	80
TDP8x90	8	90
TDP8x100	8	100
TDP8x120	8	120
TDP10x20	10	20
TDP10x24	10	24
TDP10x28	10	28
TDP10x32	10	32
TDP10x36	10	36
TDP10x40	10	40
TDP10x45	10	45
TDP10x50	10	50
TDP10x55	10	55
TDP10x60	10	60
TDP10x70	10	70
TDP10x80	10	80
TDP10x90	10	90
TDP10x100	10	100
TDP10x120	10	120
TDP10x140	10	140
TDP12x20	12	20
TDP12x24	12	24
TDP12x28	12	28
TDP12x32	12	32
TDP12x36	12	36
TDP12x40	12	40
TDP6x70	6	70
TDP6x80	6	80
TDP6x90	6	90
TDP6x100	6	100
TDP8x20	8	20
TDP8x24	8	24
TDP8x28	8	28
TDP8x32	8	32
TDP12x45	12	45
TDP12x50	12	50
TDP12x55	12	55
TDP12x60	12	60
TDP12x70	12	70
TDP12x80	12	80
TDP12x90	12	90
TDP12x100	12	100
TDP12x120	12	120
TDP12x140	12	140
TDP14x32	14	32
TDP14x36	14	36
TDP14x40	14	40
TDP14x45	14	45
TDP14x50	14	50
TDP14x55	14	55
TDP14x60	14	60
TDP14x70	14	70
TDP14x80	14	80
TDP14x90	14	90
TDP14x100	14	100
TDP14x120	14	120
TDP14x140	14	140
TDP16x40	16	40
TDP16x45	16	45
TDP16x50	16	50
TDP16x55	16	55
TDP16x60	16	60
TDP16x70	16	70
TDP16x80	16	80
TDP16x90	16	90
TDP16x100	16	100
TDP16x120	16	120

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Stock Code	Ø mm	Length mm	Stock Code	Ø mm	Length mm
TDP16x140	16	140	TDP20x70	20	70
TDP20x40	20	40	TDP20x80	20	80
TDP20x45	20	45	TDP20x90	20	90
			TDP20x100	20	100
TDP20x50	20	50			
TDP20x55	20	55	TDP20x120	20	120
TDP20x60	20	60	TDP20x140	20	140

EJECTOR PINS FORM A

DIN 1530

Stock Code	Type	Ø mm	Length mm
EPN2x100	Nitrided	2	100
EPN2x125	Nitrided	2	125
EPN2x160	Nitrided	2	160
EPN2.5x100	Nitrided	2.5	100
EPN2.5x125	Nitrided	2.5	125
EPN2.5x160	Nitrided	2.5	160
EPN2.5x200	Nitrided	2.5	200
EPN3x100	Nitrided	3	100
EPN3x125	Nitrided	3	125
EPN3x160	Nitrided	3	160
EPN3x200	Nitrided	3	200
EPN3.2x100	Nitrided	3.2	100
EPN4x100	Nitrided	4	100
EPN4x125	Nitrided	4	125
EPN4x160	Nitrided	4	160
EPN4x200	Nitrided	4	200
EPN4x250	Nitrided	4	250
EPN5x100	Nitrided	5	100
EPN5x125	Nitrided	5	125
EPN5x160	Nitrided	5	160
EPN5x200	Nitrided	5	200
EPN5x250	Nitrided	5	250
EPN6x100	Nitrided	6	100
EPN6x125	Nitrided	6	125
EPN6x160	Nitrided	6	160
EPN6x200	Nitrided	6	200
EPN6x250	Nitrided	6	250
EPN8x100	Nitrided	8	100
EPN8x125	Nitrided	8	125
EPN8x160	Nitrided	8	160
EPN8x200	Nitrided	8	200
EPN8x250	Nitrided	8	250
EPN10x100	Nitrided	10	100
EPN10x125	Nitrided	10	125
EPN10x160	Nitrided	10	160
EPN10x200	Nitrided	10	200
EPN10x250	Nitrided	10	250
EPN12x160	Nitrided	12	160
EPTH2x100	Through Hardened	2	100
EPTH2x125	Through Hardened	2	125
EPTH2x160	Through Hardened	2	160
EPTH2x200	Through Hardened	2	200
EPTH2.5x100	Through Hardened	2.5	100
EPTH2.5x125	Through Hardened	2.5	125
EPTH2.5x160	Through Hardened	2.5	160
EPTH2.5x200	Through Hardened	2.5	200
EPTH3x100	Through Hardened	3	100
EPTH3x125	Through Hardened	3	125
EPTH3x160	Through Hardened	3	160
EPTH3x200	Through Hardened	3	200
EPTH3x250	Through Hardened	3	250
EPTH4x100	Through Hardened	4	100
EPTH4x125	Through Hardened	4	125
EPTH4x160	Through Hardened	4	160
EPTH4x200	Through Hardened	4	200
EPTH4x250	Through Hardened	4	250
EPTH5x100	Through Hardened	5	100
EPTH5x125	Through Hardened	5	125
EPTH5x160	Through Hardened	5	160
EPTH5x200	Through Hardened	5	200
EPTH5x250	Through Hardened	5	250
EPTH6x100	Through Hardened	6	100
EPTH6x125	Through Hardened	6	125
EPTH6x160	Through Hardened	6	160

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Stock Code	Type	Ø mm	Length mm
EPTH6x200	Through Hardened	6	200
EPTH6x250	Through Hardened	6	250
EPTH8x100	Through Hardened	8	100
EPTH8x125	Through Hardened	8	125
EPTH8x160	Through Hardened	8	160
EPTH8x200	Through Hardened	8	200
EPTH8x250	Through Hardened	8	250
EPTH10x100	Through Hardened	10	100
EPTH10x125	Through Hardened	10	125
EPTH10x160	Through Hardened	10	160
EPTH10x200	Through Hardened	10	200
EPTH10x250	Through Hardened	10	250

SHOULDER BOLTS

Ground shoulder Material: SCM45 HRc 38-40

Stock code	Thread	Shoulder Ø mm e9	Shoulder length 4 0.1	Head Ø mm
SBM5x6x15	M5	6	15	1
SBM5x6x20	M5	6	20	1
SBM5x6x25	M5	6	25	1
SBM5x6x30	M5	6	30	1
SBM5x6x35	M5	6	35	1
SBM5x6x40	M5	6	40	1
SBM6x8x15	M6	8	15	13
SBM6x8x20	M6	8	20	13
SBM6x8x25	M6	8	25	13
SBM6x8x30	M6	8	30	13
SBM6x8x35	M6	8	35	13
SBM6x8x40	M6	8	40	13
SBM6x8x45	M6	8	45	13
SBM6x8x50	M6	8	50	13
SBM6x8x55	M6	8	55	13
SBM8x10x25	M8	10	25	16
SBM8x10x30	M8	10	30	16
SBM8x10x35	M8	10	35	16
SBM8x10x40	M8	10	40	16
SBM8x10x45	M8	10	45	16
SBM8x10x50	M8	10	50	16
SBM8x10x60	M8	10	60	16
SBM8x10x70	M8	10	70	16
SBM8x10x75	M8	10	75	16
SBM8x10x80	M8	10	80	16
SBM10x12x25	M10	12	25	18
SBM10x12x30	M10	12	30	18
SBM10x12x35	M10	12	35	18
SBM10x12x40	M10	12	40	18
SBM10x12x45	M10	12	45	18
SBM10x12x50	M10	12	50	18
SBM10x12x60	M10	12	60	18
SBM10x12x70	M10	12	70	18
SBM10x12x85	M10	12	85	18
SBM10x12x110	M10	12	110	18
SBM10x13x25	M10	13	25	18
SBM10x13x30	M10	13	30	18
SBM10x13x35	M10	13	35	18
SBM10x13x40	M10	13	40	18
SBM10x13x45	M10	13	45	18
SBM10x13x50	M10	13	50	18
SBM10x13x60	M10	13	60	18
SBM10x13x70	M10	13	70	18
SBM10x13x85	M10	13	85	18
SBM10x13x110	M10	13	110	18
SBM12x16x50	M12	16	50	24
SBM12x16x60	M12	16	60	24
SBM12x16x65	M12	16	65	24
SBM12x16x70	M12	16	70	24
SBM12x16x90	M12	16	90	24
SBM12x16x100	M12	16	100	24

BORDIGNON RECTANGULAR SECTION DIE SPRINGS TO ISO 10243

These are rectangular wire section compression springs with rounded edges.For the same dimensions,each spring has four different load and stroke values, according to the series it belongs to. The four series are distinguished by an identifying colour. In order to identify a spring using the tables, all that is necessary is to specify the following three parameters: Load Series + External Diameter + Free Length.

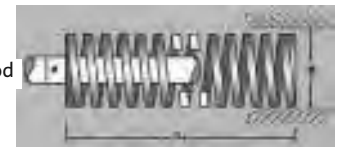
The code indicates the values of all three parameters in sequence:

Series:	**1S**	Green Colour	Light Load
	2S	Blue Colour	Medium Load
	3S	Red Colour	Heavy Load
	4S	Yellow Colour	Extra heavy Load
	5S	Bronze	Super heavy Duty (on request)

External Diameter: Diameter of the hole or housing that the spring will fit into.

Free length: Length of the spring at rest.

Spring rate: Load - in Newton - necessary to deflect the spring by 1 mm (1 Newton = 0.102 kg).



Free length

When selecting and using die springs, the following points are recommended:

- Select the lightest and longest springs that working conditions allow
- Operating travel must never exceed the maximum deflection indicated. Ensure this is so each time the die is sharpened.
- Pre-load each spring in the tool by at least 5% of the free length, with a minimum of 2mm
- Provide for an even base for each spring
- Provide proper guidance to avoid buckling

SERIES 1S • LIGHT LOAD - COLOUR GREEN

Hole Ø D - 10mm. Rod Ø d - 5mm
Wire section - 1,7mm x 1mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 30% N	mm	Max deflection 40% N	mm	Deflection to solid approx N	mm
1S10025	25	10.0	75.0	7.5	100	10.0	130	13
1S10032	32	8.5	81.6	9.6	109	12.8	136	16
1S10038	38	6.8	77.5	11.4	103	15.2	136	20
1S10045	44	6.0	79.2	13.2	106	17.6	144	24
1S10050	51	5.0	76.5	15.3	102	20.4	135	27
1S10065	64	4.3	82.6	19.2	110	25.6	151	35
1S10075	76	3.2	73.0	22.8	97.3	30.4	125	39
1S10303	305	1.1	101	91.5	134	122	169	154

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Hole Ø D - 12.5mm. Rod Ø d - 6.3mm
Wire section - 2.4mm x 1.25mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 30% N	mm	Max deflection 40% N	mm	Deflection to solid approx N	mm
1S13025	25	17.9	134	7.5	179	10.0	233	13
1S13032	32	16.4	157	9.6	210	12.8	279	17
1S13038	38	13.6	155	11.4	207	15.2	286	21
1S13045	44	12.1	160	13.2	213	17.6	315	26
1S13050	51	11.4	174	15.3	233	20.4	331	29
1S13065	64	9.3	179	19.2	238	25.6	344	37
1S13075	76	7.1	162	22.8	216	30.4	298	42
1S13090	89	5.4	144	26.7	192	35.6	270	50
1S13303	305	1.4	128	91.5	171	122	227	162

Hole Ø D - 16mm. Rod Ø d - 8mm
Wire section - 3.2mm x 1.5mm

1S16025	25	23.4	176	7.5	234	10.0	304	13
1S16032	32	22.9	202	9.6	293	12.8	389	17
1S16038	38	19.3	202	11.4	293	15.2	386	20
1S16045	44	17.1	226	13.2	301	17.6	428	25
1S16050	51	15.7	240	15.3	320	20.4	424	27
1S16065	64	10.7	205	19.2	274	25.6	385	36
1S16075	76	10.0	228	22.8	304	30.4	430	43
1S16090	89	8.6	230	26.7	306	35.6	447	52
1S16101	102	7.8	239	30.6	318	40.8	452	58
1S16303	305	2.5	229	91.5	305	122	415	166

Hole Ø D - 20mm. Rod Ø d -10mm
Wire section - 4mm x 2mm

1S19025	25	55.8	419	7.5	558	10.0	725	13
1S19032	32	45.0	432	9.6	576	12.8	465	17
1S19038	38	33.3	380	11.4	506	15.2	666	20
1S19045	44	30.0	396	13.2	528	17.6	720	24
1S19050	51	24.5	375	15.3	500	20.4	662	27
1S19065	64	20.0	384	19.2	512	25.6	700	35
1S19075	76	16.0	365	22.8	486	30.4	640	40
1S19090	89	14.0	374	26.7	498	35.6	686	49
1S19101	102	12.0	367	30.6	490	40.8	660	55
1S19115	115	10.9	375	34.5	501	46.0	676	62
1S19126	127	9.5	362	38.1	483	50.8	675	71
1S19140	139	8.4	350	41.7	467	55.6	638	76
1S19151	152	7.5	342	45.6	456	60.8	608	81
1S19303	305	4.0	366	91.5	488	122	672	168

Hole Ø D - 25mm. Rod Ø d -12.5mm
Wire section - 5.4mm x 2.7mm

1S26025	25	100	750	7.5	1000	10.0	1200	12
1S26032	32	80.3	771	9.6	1028	12.8	1285	16
1S26038	38	62.0	707	11.4	942	15.2	1178	19
1S26045	44	52.9	698	13.2	931	17.6	1164	22
1S26050	51	44.0	673	15.3	898	20.4	1100	25
1S26065	64	35.2	676	19.2	901	25.6	1197	34
1S26075	76	28.0	638	22.8	851	30.4	1064	38
1S26090	89	24.0	641	26.7	854	35.6	1152	48
1S26101	102	21.1	646	30.6	861	40.8	1139	54
1S26115	115	18.7	645	34.5	860	46.0	1141	61
1S26126	127	16.7	636	38.1	848	50.8	1152	69
1S26140	139	15.3	638	41.7	851	55.6	1148	75
1S26151	152	14.0	638	45.6	851	60.8	1134	81
1S26176	178	12.5	668	53.4	890	71.2	1200	96
1S26202	203	10.4	633	60.9	844	81.2	1144	110
1S26303	305	7.0	641	91.5	854	122	1176	168

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Hole Ø D - 32mm. Rod Ø d -16mm
Wire section - 6.9.mm x 3.25mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 30% N	mm	Max deflection 40% N	mm	Deflection to solid approx N	mm
1S32038	38	94.0	072	11.4	1429	15.2	1692	18
1S32054	44	79.5	1049	13.2	1399	17.6	1749	22
1S32050	51	67.0	1025	15.3	1367	20.4	1675	25
1S32065	64	53.0	1018	19.2	1357	25.6	1802	34
1S32075	76	44.0	1003	22.8	1338	30.4	1760	40
1S32090	89	37.2	993	26.7	1324	35.6	1786	48
1S32101	102	32.0	979	30.6	1306	40.8	1760	55
1S32115	115	29.0	1001	34.5	1334	46.0	1827	63
1S32126	127	25.0	953	38.1	1270	50.8	1725	69
1S32140	139	23.0	959	41.7	1279	55.6	1771	77
1S32151	152	21.5	980	45.6	1307	60.8	1742	81
1S32176	178	18.2	972	53.4	1296	71.2	1729	95
1S32202	203	15.8	962	60.9	1283	81.2	1770	112
1S32252	254	12.5	963	76.2	1270	102	1788	143
1S32303	305	10.3	942	91.5	1257	122	1803	175

Hole Ø D - 40mm. Rod Ø d -20mm
Wire section - 8.1.mm x 3.9mm

1S38050	51	92.0	1408	15.3	1877	20.4	2300	25
1S38065	64	73.0	1402	19.2	1869	25.6	2409	33
1S38275	76	63.0	1436	22.8	1915	30.4	2457	39
1S38090	89	5130	1362	26.7	1816	35.6	2397	47
1S38101	102	43.0	1306	30.6	1754	40.8	2322	54
1S38115	115	39.6	1366	34.5	1822	46.0	2416	61
1S38126	127	37.0	1410	38.1	1880	50.8	2442	66
1S38140	139	32.0	1334	41.7	1779	55.6	2432	76
1S38151	152	28.0	1277	45.6	1702	60.8	2268	81
1S38176	178	25.2	1346	53.4	1794	71.2	2344	93
1S38202	203	22.7	1382	60.9	1843	81.2	2497	110
1S38252	254	17.0	1295	76.2	1727	102	2312	136
1S38303	305	14.8	1354	91.5	1806	122	2412	163

Hole Ø D - 50mm. Rod Ø d 25mm
Wire section - 11.15.mm x 5.35mm

1S510651	64	156	2995	19.2	3994	25.6	4836	31
1S51075	76	125	2852	22.8	3800	30.4	4500	36
1S51090	89	109	2910	26.7	3880	35.6	4796	44
1S51101	102	94.0	2876	30.6	3835	40.8	4606	49
1S51115	115	81.0	2795	34.5	326	46.0	4860	60
1S51126	127	71.0	2705	38.1	3607	50.8	4544	64
1S51140	139	66.5	2773	41.7	3697	55.6	4655	70
1S51151	152	60.0	2736	45.6	3648	60.8	4620	77
1S51176	178	52.0	2777	53.4	3702	71.2	4888	94
1S51202	203	44.0	2680	60.9	3573	81.2	4620	105
1S51229	229	38.2	2624	68.7	3499	91.6	4813	126
1S57252	254	35.0	2667	76.2	3556	102	4795	137
1S51303	305	28.5	2608	91.5	3477	122	4788	168

Hole Ø D - 63mm. Rod Ø d -38mm
Wire section - 11.5.mm x 7.6mm

1S63075	76	189	4309	22.8	5746	30.4	7182	38
1S63090	89	158	4219	26.7	5625	35.6	7110	45
1S63101	102	131	4009	30.6	4345	40.8	6812	52
1S63115	115	116	4002	34.5	5336	46.0	6960	60
1S63126	127	103	3924	.801	5232	50.8	6489	63
1S63151	152	84.3	3844	45.6	5125	60.8	6575	78
1S63176	178	71.5	3818	53.4	5091	71.2	6364	89
1S63202	203	61.7	3758	60.9	5010	81.2	6664	108
1S63252	254	47.0	3581	76.2	4775	102	6439	137
1S63303	305	38.2	3495	91.5	4660	122	6227	163

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SERIES 2S • MEDIUM LOAD - COLOUR BLUE

Hole Ø D - 10mm. Rod Ø d - 5mm
Wire section - 1.8mm x 1.2mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 25% N	mm	Max deflection 37.5% N	mm	Deflection to solid approx N	mm
2S10025	25	16.0	100	6.3	150	9.4	192	12
2S10032	32	13.0	104	8.0	156	12.0	182	14
2S10038	38	11.9	113	9.5	170	14.3	226	19
2S10045	44	10.3	113	11.0	170	16.5	237	23
2S10050	51	8.9	113	12.8	170	19.1	240	27
2S10065	64	7.5	120	16.0	180	24.0	233	31
2S10075	76	5.3	101	19.0	151	28.5	196	37
2S10303	305	1.6	122	76.3	183	114	219	137

Hole Ø D - 12.5mm. Rod Ø d - 6.3mm
Wire section - 2.4mm x 1.6mm

2S13025	25	30.0	188	6.3	281	9.4	300	10
2S13032	32	24.8	198	8.0	298	12.0	322	13
2S13038	38	21.4	203	9.5	305	14.3	342	16
2S13045	44	18.5	204	11.0	305	16.5	370	20
2S13050	51	15.5	198	12.8	296	19.1	388	25
2S13065	64	12.1	194	16.0	290	24.0	339	28
2S13075	76	10.2	194	19.0	291	28.5	347	34
2S13090	90	8.4	187	22.3	280	33.4	344	41
2S13303	305	2.1	160	76.3	240	114	269	128

Hole Ø D - 16mm. Rod Ø d - 8mm
Wire section - 3.2mm x 1.9mm

2S16025	25	49.4	309	6.3	463	9.4	543	11
2S16032	32	37.1	297	8.0	445	12.0	557	15
2S16038	38	33.9	322	9.5	483	14.3	610	18
2S16045	44	30.0	330	11.0	495	16.5	660	22
2S16050	51	26.4	337	12.8	505	19.1	634	24
2S16065	64	20.5	328	16.0	492	24.0	656	32
2S16075	76	17.8	338	19.0	507	28.5	641	36
2S16090	90	15.2	338	22.3	507	33.4	654	43
2S16101	101	13.5	344	25.5	516	38.3	635	47
2S16303	305	4.8	366	76.3	549	114	667	139

Hole Ø D - 20mm. Rod Ø d - 10mm
Wire section - 4.05mm x 2.45mm

2S19025	25	98.0	613	6.3	919	9.4	980	10
2S19032	32	72.6	581	8.0	871	12.0	944	13
2S19038	38	56.0	532	9.5	798	14.3	896	16
2S19045	44	47.5	523	11.0	784	16.5	903	19
2S19050	51	41.7	532	12.8	798	19.1	876	21
2S19065	64	32.3	517	16.0	775	24.0	904	28
2S19075	76	25.1	477	19.0	715	28.5	828	33
2S19090	90	22.0	490	22.3	734	33.4	902	41
2S19101	101	19.8	505	25.5	757	38.3	950	48
2S19115	115	18.1	520	28.8	781	43.1	996	55
2S19126	127	16.6	527	31.8	791	47.6	1013	61
2S19140	139	15.1	525	34.8	787	52.1	1012	67
2S19151	152	13.2	502	38.0	752	57.0	977	74
2S19303	305	6.1	465	76.3	698	114	891	146

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Hole Ø D - 25mm. Rod Ø d - 12.5mm
Wire section - 5.4mm x 3.1mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 25% N	mm	Max deflection 37.5% N	mm	Deflection to solid approx N	mm
2S26025	25	147	919	6.3	1378	9.4	1617	11
2S26032	32	118	944	8.0	1416	12.0	1534	13
2S26038	38	93.0	884	9.5	1325	14.3	1674	18
2S26045	44	80.8	889	11.0	1333	16.5	1697	21
2S26050	51	68.6	875	12.8	1312	19.1	1578	23
2S26065	64	53.0	848	16.0	1272	24.0	1590	30
2S26075	76	43.2	821	19.0	1231	28.5	1512	35
2S26090	90	38.2	850	22.3	1275	33.4	1643	43
2S26101	101	33.0	842	25.5	1262	38.3	1617	49
2S26115	115	28.0	805	28.8	1208	43.1	1568	56
2S26126	139	25.9	822	31.8	1233	47.6	1554	60
2S26140	140	23.2	806	34.8	1209	52.1	1508	65
2S26151	152	20.8	790	38.0	1186	57.0	1477	71
2S26176	178	17.8	792	44.5	1188	66.8	1513	85
2S26202	203	15.8	802	50.8	1203	76.1	1517	96
2S26303	305	10.2	778	76.3	1167	114	1530	150

Hole Ø D - 32mm. Rod Ø d - 16mm
Wire section - 6.9mm x 3.9mm

2S32038	38	185	1758	9.5	2636	14.3	3145	17
2S32045	44	158	1738	11.0	2607	16.5	3002	19
2S32050	51	134	1709	12.8	2563	19.1	3082	23
2S32065	64	99.0	1584	16.0	2376	24.0	2970	30
2S32075	76	80.5	1530	19.0	2294	28.5	2737	34
2S32090	89	69.1	1537	22.3	2306	33.4	2902	42
2S32101	102	58.8	1499	25.5	2249	38.3	2764	47
2S32115	115	51.5	1481	28.8	2221	43.1	2833	55
2S32126	139	44.8	1422	31.8	2134	47.6	2733	61
2S32140	140	42.3	1470	34.8	2205	52.1	2876	68
2S32151	152	37.8	1436	38.0	2155	57.0	2835	75
2S32176	178	32.5	1446	44.5	2169	66.8	2893	89
2S32202	203	28.9	1467	50.8	2200	76.1	2919	101
2S32252	254	21.4	1359	63.5	2038	95.3	2645	124
2S32303	305	18.3	1395	76.3	2093	114	2745	150

Hole Ø D - 40mm. Rod Ø d - 20mm
Wire section - 8.15mm x 4.7mm

2S38050	51	182	2315	12.8	3473	19.1	3814	21
2S38065	64	140	2240	16.0	3360	24.0	3920	28
2S38075	76	108	2052	19.0	3078	28.5	3564	33
2S38090	89	90.7	2018	22.3	3027	33.4	3719	41
2S38101	102	81.0	2066	25.5	3098	38.3	3645	45
2S38115	115	71.8	2064	28.8	3096	43.1	3734	52
2S38126	127	62.7	1991	31.8	2986	47.6	3699	59
2S38140	139	57.5	1998	34.8	2997	52.1	3795	66
2S38151	152	51.6	1961	38.0	2941	57.0	3664	71
2S38160	160	47.5	1900	40.0	2850	60.0	3420	72
2S38176	178	44.1	1962	44.5	2944	66.8	3660	83
2S38202	203	36.7	1863	50.8	2794	76.1	3450	94
2S38252	254	30.1	1911	63.5	2867	95.3	3431	114
2S38303	305	24.6	1876	76.3	2814	114	3641	148

Hole Ø D - 50mm. Rod Ø d - 25mm
Wire section - 10.9mm x 5.95mm

2S51065	64	209	3344	16.0	5016	24.0	6270	30
2S51075	76	168	3192	19.0	4788	28.5	6048	36
2S51090	89	140	3115	22.3	4673	33.4	6020	43
2S51101	102	119	3035	25.5	4552	38.3	5712	48
2S51115	115	106	3048	28.8	4571	43.1	5830	55
2S51126	127	97.0	3080	31.8	4620	47.6	6111	63
2S51140	139	87.0	3023	34.8	4535	52.1	5742	66
2S51151	152	80.0	3040	38.0	4560	57.0	5760	72
2S51160	160	76.0	3040	40.0	4560	60.0	5928	78
2S51176	178	69.5	3093	44.5	4639	66.8	5908	85
2S51202	03	59.8	3035	50.8	4552	76.1	5681	95
2S51229	229	50.9	2914	57.3	4371	85.9	5803	114
2S51252	254	43.9	2788	63.5	4181	95.3	5488	125
2S51303	305	38.6	2943	76.3	4415	114	5790	150

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Hole Ø D - 63mm. Rod Ø d - 38mm
Wire section - 11.5mm x 9.2mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 25% N	mm	Max deflection 37.5% N	mm	Deflection to solid approx N	mm
2S63075	76	312	5928	19.0	8892	28.5	9360	30
2S63090	89	260	5785	22.3	8678	33.4	9880	38
2S63101	102	221	5636	25.5	8453	38.3	9503	43
2S63115	115	187	5376	28.8	8064	43.1	9350	50
2S63126	127	168	5334	31.8	8001	47.6	8736	52
2S63151	152	136	5168	38.0	7752	57.0	9112	67
2S63160	160	128	5120	40.0	7680	60.0	8960	70
2S63176	178	114	5073	44.5	7610	66.8	8892	78
2S63202	203	100	5075	50.8	7613	76.1	8800	88
2S63229	229	89.2	5107	57.3	7660	85.9	9098	102
2S63252	254	78.4	4978	63.5	7468	95.3	9016	115
2S63303	305	64.7	4933	76.3	7400	114	8670	134
2S63315	315	62.8	4946	78.8	7418	118	9043	144
2S63400	400	48.5	4850	100	7275	150	9555	197

SERIES 3S • HEAVY LOAD - COLOUR RED

Hole Ø D - 10mm. Rod Ø d - 5mm
Wire section - 1.8mm x 1.4mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 20% N	mm	Max deflection 30% N	mm	Deflection to solid approx N	mm
3S10025	25	22.1	111	5.0	166	7.5	199	9
3S10032	32	17.5	112	6.4	168	9.6	210	12
3S10038	38	17.1	130	7.6	195	11.4	257	15
3S10045	44	15.0	132	8.8	198	13.2	255	17
3S10050	51	12.8	131	10.2	196	15.3	269	21
3S10065	64	10.7	137	12.8	205	19.2	278	26
3S10075	76	7.5	114	15.2	171	22.8	233	31
3S10303	305	2.1	128	61.0	192	91.5	256	122

Hole Ø D - 12.5mm. Rod Ø d - 6.3mm
Wire section - 2.5mm x 1.9mm

3S13025	25	42.1	211	5.0	316	7.5	376	9
3S13032	32	33.2	212	6.4	319	9.6	432	13
3S13038	38	29.3	223	7.6	334	11.4	440	15
3S13045	44	24.6	216	8.8	325	13.2	443	18
3S13050	51	19.6	200	10.2	300	15.3	392	20
3S13065	64	15.0	192	12.8	288	19.2	390	26
3S13075	76	13.2	201	15.2	301	22.8	396	30
3S13090	89	11.4	203	17.8	304	26.7	399	35
3S13303	305	2.8	171	61.0	256	91.5	344	123

Hole Ø D - 16mm. Rod Ø d - 8mm
Wire section - 3mm x 2.3mm

3S16025	25	75.7	379	5.0	568	7.5	681	9
3S16032	32	52.8	338	6.4	507	9.6	739	14
3S16038	38	48.5	369	7.6	553	11.4	825	17
3S16045	44	42.8	377	8.8	565	13.2	856	20
3S16050	51	37.1	378	10.2	568	15.3	779	21
3S16065	64	30.3	388	12.8	582	19.2	848	28
3S16075	76	25.7	391	15.2	586	22.8	848	33
3S16090	89	21.7	386	17.8	579	26.7	846	39
3S16101	102	19.3	394	20.4	591	30.6	849	44
3S16303	305	7.1	433	61.0	650	91.5	902	127

Hole Ø D - 20mm. Rod Ø d - 10mm
Wire section - 4.05mm x 3.2mm

3S19025	25	216	1080	5.0	1620	7.5	1944	9
3S19032	32	168	1075	6.4	1613	9.6	1848	11
3S19038	38	129	980	7.6	1471	11.4	1677	13
3S19045	44	112	986	8.8	1478	13.2	1792	16
3S19050	51	94.0	959	10.2	1438	15.3	1880	20
3S19065	64	72.1	923	12.8	1384	19.2	1803	25
3S19075	76	59.7	907	15.2	1361	22.8	1731	29

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Stock code	Free length mm	Spring rate N/mm	Recommended deflection 20% N	mm	Max deflection 30% N	mm	Deflection to solid approx N	mm
3S19090	89	50.5	899	17.8	1348	26.7	1768	35
3S19101	102	44.2	902	20.4	1353	30.6	1768	40
3S19115	115	38.4	883	23.0	1325	34.5	1805	47
3S19126	127	34.1	866	25.4	1299	38.1	1773	52
3S19140	139	31.0	862	27.8	1293	41.7	1767	57
3S19151	152	28.2	857	30.4	1286	45.6	1748	62
3S19303	305	15.0	915	61.0	1373	91.5	1815	121

Hole Ø D - 25mm. Rod Ø d - 12.5mm
Wire section - 5.6mm x 4.1mm

3S26025	25	375	1875	5.0	2813	7.5	3375	9
3S26032	32	297	1901	6.4	2851	9.6	3267	11
3S26038	38	219	1664	7.6	2497	11.4	3066	14
3S26045	44	187	1646	8.8	2468	13.2	2992	16
3S26050	51	156	1591	10.2	2387	15.3	2964	19
3S26065	64	123	1574	12.8	2362	19.2	3198	26
3S26075	76	99.0	1505	15.2	2257	22.8	2871	29
3S26090	89	84.0	1495	17.8	2243	26.7	2940	35
3S26101	102	73.0	1489	20.4	2234	30.6	2847	39
3S26115	115	65.0	1495	23.0	2243	34.5	2925	45
3S26126	127	57.7	1466	25.4	2198	38.1	2770	48
3S26140	139	52.7	1465	27.8	2198	41.7	2846	54
3S26151	152	47.8	1453	30.4	2180	45.6	2868	60
3S26176	178	41.0	1460	35.6	2189	53.4	2747	67
3S26202	203	35.8	1453	40.6	2180	60.9	2864	80
3S26303	305	22.9	1397	61.0	2095	91.5	2725	119

Hole Ø D - 32mm. Rod Ø d - 16mm
Wire section - 7mm x 5.25mm

3S26038	38	388	2949	7.6	4423	11.4	5044	13
3S26045	44	324	2851	8.8	4277	13.2	5184	16
3S26050	51	272	2774	10.2	4162	15.3	4896	18
3S26065	64	212	2714	12.8	4070	19.2	4876	23
3S26075	76	172	2614	15.2	3922	22.8	4644	27
3S26090	89	141	2510	17.8	3765	26.7	4653	33
3S26101	102	122	2489	20.4	3733	30.6	4758	39
3S26115	115	107	2461	23.0	3692	34.5	4601	43
3S26126	127	93.0	2362	25.4	3543	38.1	4371	47
3S26140	139	86.0	2391	27.8	3586	41.7	4386	51
3S26151	152	78.0	2371	30.4	3557	45.6	4290	55
3S26176	178	67.2	2392	35.6	3588	53.4	4637	69
3S26202	203	59.1	2399	40.6	3599	60.9	4787	81
3S26252	254	46.4	2357	50.8	3536	76.2	4594	99
3S26303	305	38.0	2318	61.0	3477	91.5	4522	119

Hole Ø D - 40mm. Rod Ø d - 20mm
Wire section - 8.4mm x 6.1mm

3S38050	51	350	3570	10.2	5355	15.3	6300	18
3S38065	64	369	3443	12.8	5165	19.2	6725	25
3S38075	76	219	3329	15.2	4993	22.8	6570	30
3S38090	89	190	3382	17.8	5073	26.7	6840	36
3S38101	102	163	3325	20.4	4988	30.6	6683	41
3S38115	115	142	3266	23.0	4899	34.5	6674	47
3S38126	127	128	3251	25.4	4877	38.1	6784	53
3S38140	139	115	3197	27.8	4796	41.7	6440	56
3S38151	152	105	3192	30.4	4788	45.6	6510	62
3S38176	178	89.0	3168	35.6	4753	53.4	6230	70
3S38202	203	77.0	3126	40.6	4689	60.9	6391	83
3S38252	254	61.0	3099	50.8	4648	76.2	6161	101
3S38303	305	51.0	3111	61.0	4667	91.5	6477	127

Hole Ø D - 50mm. Rod Ø d - 25mm
Wire section - 11mm x 7.3mm

3S51065	64	413	5286	12.8	7930	19.2	10738	26
3S51075	76	339	5153	15.2	7729	22.8	9831	29
3S51090	89	288	5126	17.8	7690	26.7	10080	35
3S51101	102	245	4998	20.4	7497	30.6	10045	41
3S51115	115	215	4945	23.0	7418	34.5	10105	47

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Stock code	Free length mm	Spring rate N/mm	Recommended deflection 20% N	mm	Max deflection 30% N	mm	Deflection to solid approx N	mm
3S51126	127	192	4877	25.4	7315	38.1	10560	55
3S51140	139	168	4670	27.8	7006	41.7	10248	61
3S51151	152	154	4682	30.4	7022	45.6	10164	66
3S51176	178	134	4770	35.6	7156	53.4	10050	75
3S51202	203	117	4750	40.6	7125	60.9	10179	87
3S51252	254	89.0	4521	50.8	6782	76.2	9612	108
3S51303	305	73.0	4453	61.0	6680	91.5	9709	133

SERIES 4S • EXTRA HEAVY LOAD - COLOUR YELLOW

Hole Ø D - 10mm. Rod Ø d - 5mm
Wire section - 2mm x 1.5mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 17% N	mm	Max deflection 25% N	mm	Deflection to solid approx N	mm
4S10025	25	36.8	156	4.3	230	6.3	331	9
4S10032	32	27.9	152	5.4	223	8.0	335	12
4S10038	38	23.7	153	6.5	225	9.5	332	14
4S10045	44	19.2	144	7.5	211	11.0	326	17
4S10050	51	16.5	143	8.7	210	12.8	314	19
4S10065	64	13.2	144	10.9	211	16.0	304	23
4S10075	76	10.9	141	12.9	207	19.0	327	30
4S10303	305	2.6	135	51.9	198	76.3	304	117

Hole Ø D - 12.5mm. Rod Ø d - 6.3mm
Wire section - 2.4mm x 2mm

4S13025	25	58.5	249	4.3	366	6.3	527	9
4S13032	32	43.9	239	5.4	351	8.0	527	12
4S13038	38	36.0	233	6.5	342	9.5	504	14
4S13045	44	30.3	227	7.5	333	11.0	545	18
4S13050	51	26.2	227	8.7	334	12.8	524	20
4S13065	64	21.2	231	10.9	339	16.0	572	27
4S13075	76	17.1	221	12.9	325	19.0	547	32
4S13090	89	14.5	219	15.1	323	22.3	551	38
4S13303	305	4.3	223	51.9	328	76.3	495	115

Hole Ø D - 16mm. Rod Ø d - 8mm
Wire section - 3.15mm x 2.7mm

4S16025	25	118	502	4.3	738	6.3	1180	10
4S16032	32	89.0	484	5.4	712	8.0	1068	12
4S16038	38	72.1	466	6.5	685	9.5	1009	14
4S16045	44	60.9	456	7.5	670	11.0	1035	17
4S16050	51	52.3	453	8.7	667	12.8	994	19
4S16065	64	41.2	448	10.9	659	16.0	1030	25
4S16075	76	34.1	441	12.9	648	19.0	989	29
4S16090	89	29.5	446	15.1	656	22.3	1062	36
4S16101	102	25.6	444	17.3	653	25.5	973	38
4S16303	305	8.4	436	51.9	641	76.3	1008	120

Hole Ø D - 20mm. Rod Ø d - 10mm
Wire section - 4.1mm x 3.8mm

4S19025	25	293	1245	4.3	1831	6.3	2051	7
4S19032	32	224	1219	5.4	1792	8.0	2240	10
4S19038	38	177	1143	6.5	1682	9.5	2124	12
4S19045	44	149	1115	7.5	1639	11.0	2086	14
4S19050	51	128	1110	8.7	1632	12.8	2048	16
4S19065	64	99.0	1077	10.9	1584	16.0	2178	22
4S19075	76	81.7	1056	12.9	1552	19.0	2043	25
4S19090	89	69.5	1052	15.1	1546	22.3	2455	31
4S19101	102	60.6	1051	17.3	1545	25.5	2182	36
4S19115	115	53.0	1036	19.6	1524	28.8	2226	42
4S19126	127	47.5	1026	21.6	1508	31.8	2043	43
4S19140	139	43.0	1016	23.6	1494	34.8	2064	48
4S19151	152	39.0	1008	25.8	1482	38.0	2028	52
4S19303	305	21.2	1099	51.9	1617	76.3	2226	105

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Hole Ø D - 25mm. Rod Ø d - 12.5mm
Wire section - 5.6mm x 4.6mm

Stock code	Free length mm	Spring rate N/mm	Recommended deflection 17% N	mm	Max deflection 25% N	mm	Deflection to solid approx N	mm
4S26032	32	374	2037	5.4	2995	8.0	4118	11
4S26038	38	346	2235	6.5	3287	9.5	4498	13
4S26045	44	244	1825	7.5	2684	11.0	3904	16
4S26050	51	208	1799	8.7	2646	12.8	3735	18
4S26065	64	161	1752	10.9	2576	16.0	3703	23
4S26075	76	131	1690	12.9	2485	19.0	3401	26
4S26090	89	111	1672	15.1	2459	22.3	3426	31
4S26101	102	96.3	1670	17.3	2456	25.5	3467	36
4S26115	115	85.7	1675	19.6	2464	28.8	3514	41
4S26126	127	76.3	1647	21.6	2423	31.8	3586	47
4S26151	152	63.5	1641	25.8	2413	38.0	3429	54
4S26176	178	53.9	1631	30.3	2399	44.5	3396	63
4S26202	203	47.0	1622	34.5	2385	50.8	3384	72
4S26303	305	30.9	1602	51.9	2356	76.3	3492	113

Hole Ø D - 32mm. Rod Ø d - 16mm
Wire section - 7.15mm x 5.7mm

4S32038	38	528	3412	6.5	5018	9.5	6338	12
4S32045	44	424	3175	7.5	4668	11.0	6366	15
4S32050	51	353	3061	8.7	4501	12.8	6001	17
4S32065	64	269	2929	10.9	4307	16.0	5922	22
4S32075	76	219	2823	12.9	4152	19.0	5463	25
4S32090	89	180	2728	15.1	4012	22.3	5950	33
4S32101	102	155	2688	17.3	3953	25.5	5580	36
4S32115	115	140	2737	19.6	4025	28.8	5880	42
4S32126	127	124	2677	21.6	3937	31.8	5704	46
4S32151	152	102	2636	25.8	3876	38.0	5712	56
4S32176	178	88.2	2669	30.3	3925	44.5	5645	64
4S32202	203	76.0	2623	34.5	3857	50.8	5396	71
4S32252	254	60.8	2625	43.2	3861	63.5	5472	90
4S32303	305	49.0	2541	51.9	3736	76.3	5047	103

Hole Ø D - 40mm. Rod Ø d - 20mm
Wire section - 8.55mm x 6.9mm

4S38050	51	628	5445	8.7	8007	12.8	10676	17
4S38065	64	487	5299	10.9	7792	16.0	11201	23
4S38075	76	379	4897	12.9	7201	19.0	10233	27
4S38090	89	321	4857	15.1	7142	22.3	9951	31
4S38101	102	281	4873	17.3	7166	25.5	10116	36
4S38115	115	245	4790	19.6	7044	28.8	9800	40
4S38126	127	221	4771	21.6	7017	31.8	9724	44
4S38126	139	202	4773	23.6	7020	34.8	10504	52
4S38151	152	168	4341	25.8	6384	38.0	9408	56
4S38176	178	148	4478	30.3	6586	44.5	9028	61
4S38202	203	132	4555	34.5	6699	50.8	9636	73
4S38252	254	107	4620	43.2	6795	63.5	9951	93
4S38303	305	87.8	4552	51.9	6695	76.3	9307	106

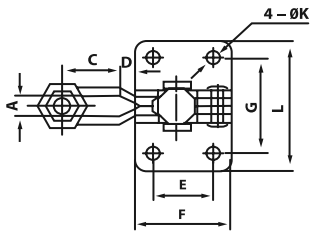
Hole Ø D - 50mm. Rod Ø d - 25mm
Wire section - 11.5mm x 9.2mm

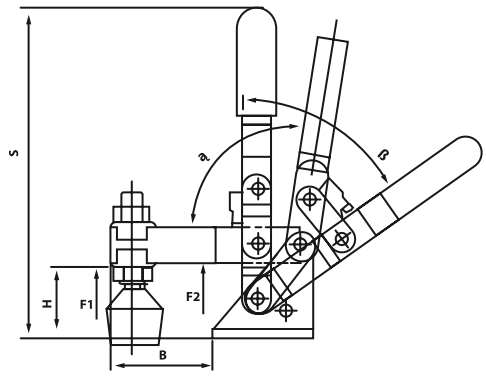
4S51065	64	709	7714	10.9	11344	16.0	14889	21
4S51075	76	572	7390	12.9	10868	19.0	14300	25
4S51090	89	475	7187	15.1	10569	22.3	13300	28
4S51101	102	405	7023	17.3	10328	25.5	13365	33
4S51115	115	352	6882	19.6	10120	28.8	13376	38
4S51126	127	316	6822	21.6	10033	31.8	13588	43
4S51126	139	289	6829	23.6	10043	34.8	13583	47
4S51151	152	239	6176	25.8	9082	38.0	12667	53
4S51176	178	216	6536	30.3	9612	44.5	12960	60
4S51202	203	187	6453	34.5	9490	50.8	13277	71
4S51252	254	153	6607	43.2	9716	63.5	13923	91
4S51303	305	127	6585	51.9	9684	76.3	13462	106

VERTICAL TOGGLE CLAMPS

50kg CLAMPING FORCE Type 101 A Horzontal base, open clamping arm, length 51mm. Holding capacity N F1 = 160 F2 = 490

Stock code VTC50

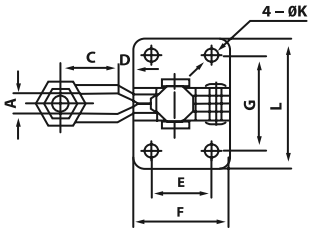


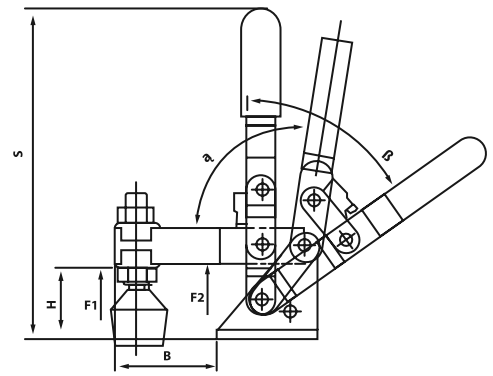


A	B	C	D	E	F	G	H	L	K	S	a °	ß °
5.5	26	17	4	16	25.4	24	16	34	4.5	77	100	56

115kg CLAMPING FORCE Type 102 B Horzontal base, open clamping arm, length 68mm. Holding capacity N F1 = 399 F2 = 980

Stock code VTC115





A	B	C	D	E	F	G	H	L	K	S	a °	ß °
6.5	39	24	9	14	29	18	19	28	5	94	90	65

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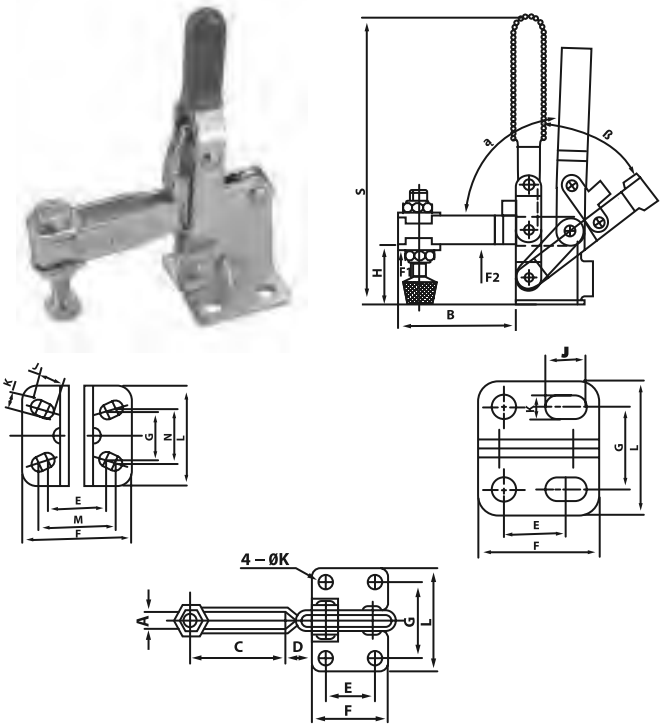
150kg CLAMPING FORCE Type 11421 Horzontal base, open clamping arm, length 106mm. Holding capacity N F1 = 672 F2 = 1470

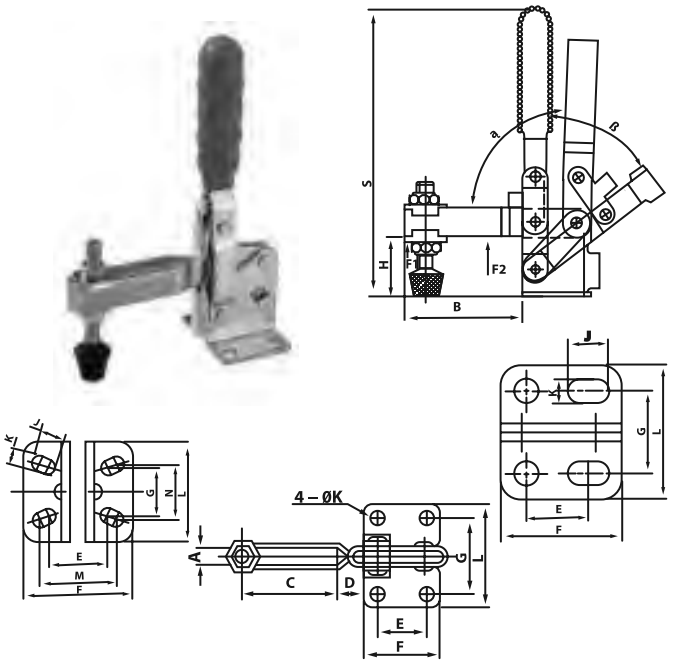
Stock code VTC150



A	B	C	D	E	F	G	H	L	K	S	a °	ß °
8.5	63	35	20	24	43	33	38	50	8.5	139	94	53

340kg CLAMPING FORCE Type 12265 Horzontal base, open clamping arm, length 144mm. Holding capacity N F1 = 807 F2 = 3332

Stock code VTC340



A	B	C	D	E	F	G	H	L	K	S	a °	ß °
10.5	85	62	11	32	50	45	44	64	8.5	201	105	58

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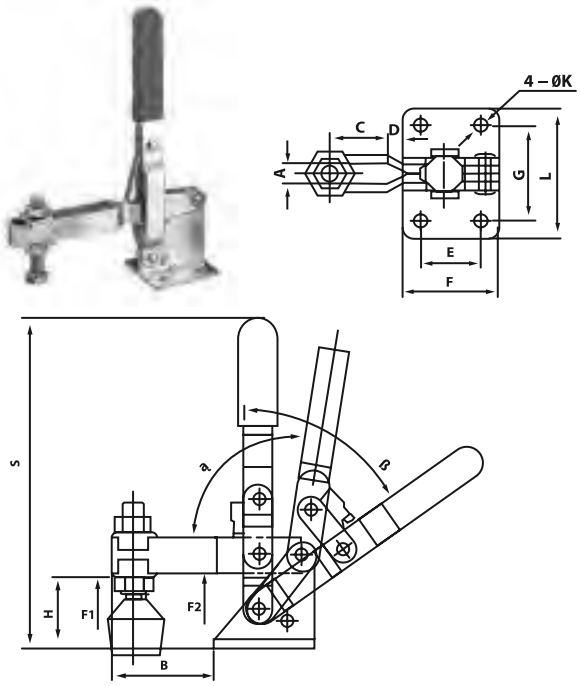
450kg CLAMPING FORCE Type 101H Horzontal base, open clamping arm, length 195mm. Holding capacity N F1 = 1002 F2 = 4410

Stock code VTC450

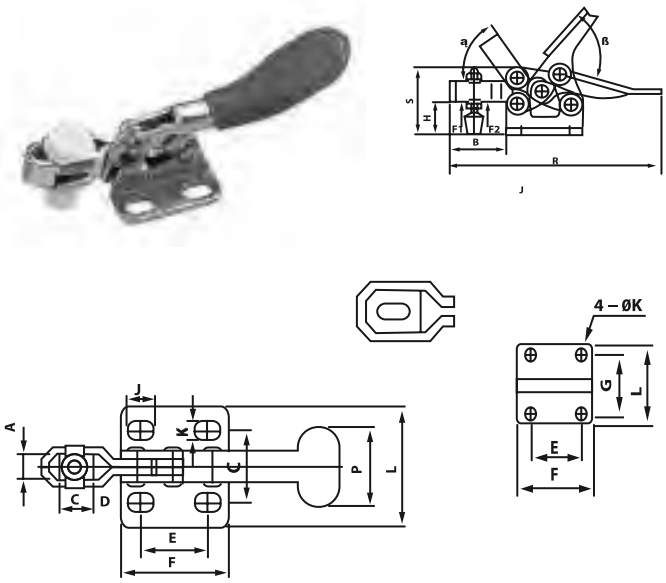


A	B	C	D	E	F	G	H	L	K	S	a °	ß °
17	128	102	15	40	70	43	60	70	9.5	270	101	63

HORIZONTAL TOGGLE CLAMPS

27kg CLAMPING FORCE Type 201 Horzontal base, open clamping arm, length 79mm. Holding capacity N F1 = 164 F2 = 264

Stock code HTC27



A	B	C	D	E	F	G	H	L	J	K	P	R	S	a	ß
4.5	20	10	8	14	24	16	8	24	7	20	10	8	14	24	16

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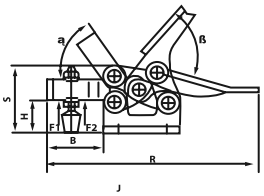
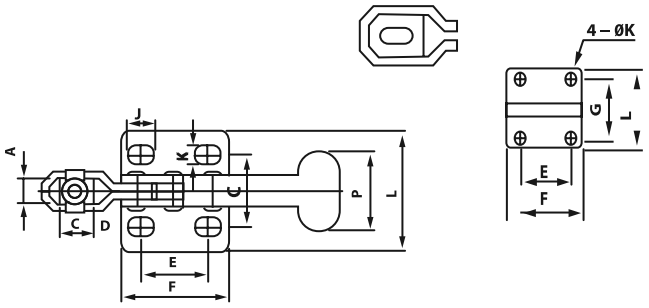
90kg CLAMPING FORCE Type 201 B Horzontal base, open clamping arm, length 138mm. Holding capacity N F1 = 320 F2 = 882

Stock code HTC90



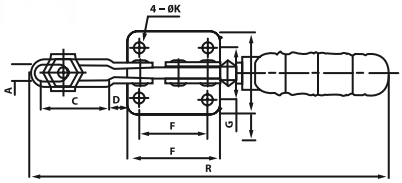


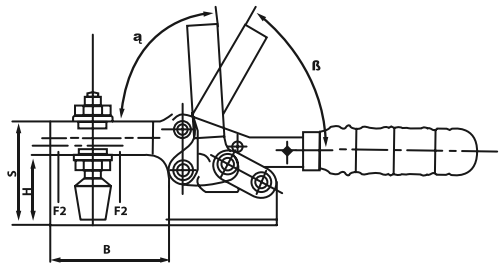
A	B	C	D	E	F	G	H
6.5	56	35	15	26	36	22	25.5

L	J	K	P	R	S	a °	ß °
36	6	5.5	20	141	39	85	60

100kg CLAMPING FORCE Type 201 C Horzontal base, open clamping arm, length 146mm. Holding capacity N F1 = 164 F2 = 264

Stock code HTC100





A	B	C	D	E	F	G	H	L	K	S	a °	ß °
8.5	63	35	20	24	43	33	38	50	8.5	139	94	53

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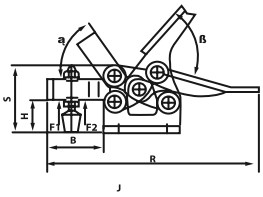
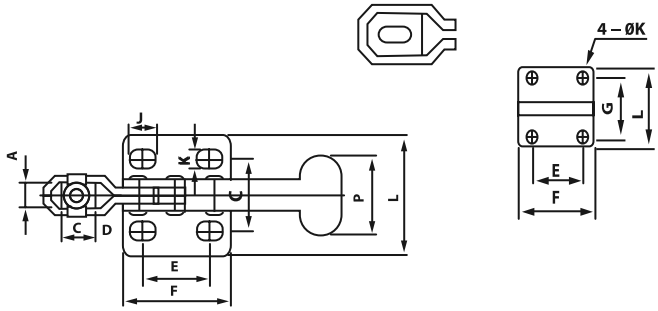
227kg CLAMPING FORCE Type 225 D Horzontal base, open clamping arm, length 168mm. Holding capacity N F1 = 1200 F2 = 2224

Stock code HTC227



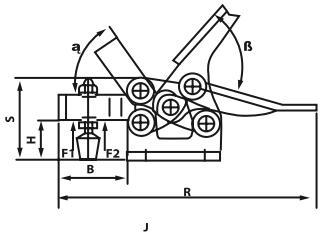


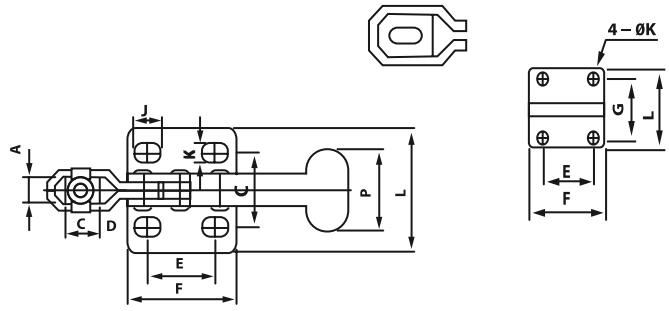
A	B	C	D	E	F	G	H
8.5	75	32	30	23	38	24	35.5

L	J	K	P	R	S	a °	ß °
35	11	6.5	26	168	48	90	65

250kg CLAMPING FORCE Type 22165H Horzontal base, open clamping arm, length 185mm. Holding capacity N F1 = 1431 F2 = 2450

Stock code HTC250





A	B	C	D	E	F	G	H
8.5	71.5	32	32	28	56	22	33

L	J	K	P	R	S	a °	ß °
35	10	6.5	30	185	50	96	88

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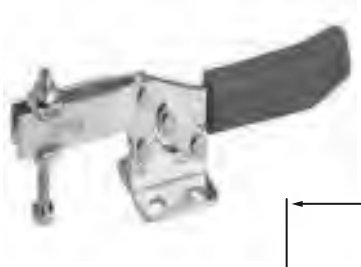
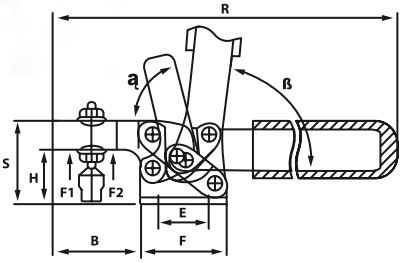
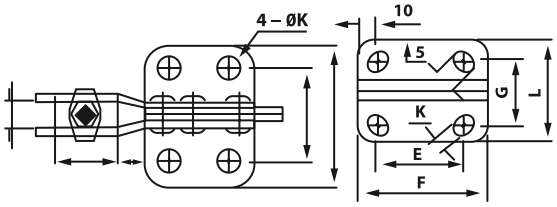
280kg CLAMPING FORCE Type 25382 Horzontal base, open clamping arm, length 260mm. Holding capacity N F2 = 2774

Stock code HTC280





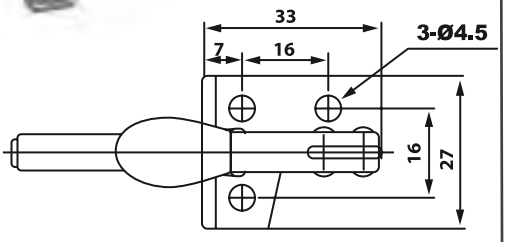


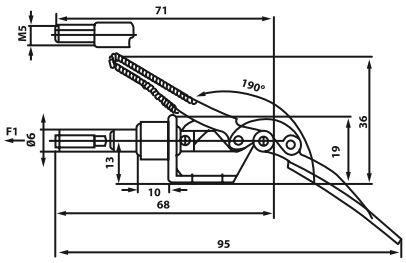
A	B	C	D	E	F	G	H	L	K	R	S	a °	ß °
8.5	85	56	17	30	50	37	36.5	57	10.5	248	56.5	80	80

PUSH / PULL TOGGLE CLAMPS

45kg CLAMPING FORCE Type 301 AM Horzontal base, plunger stroke 16.7mm, length 63mm. Holding capacity N F1 = 441 F2 = 38

Stock code PPTC45





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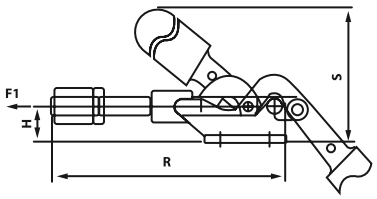
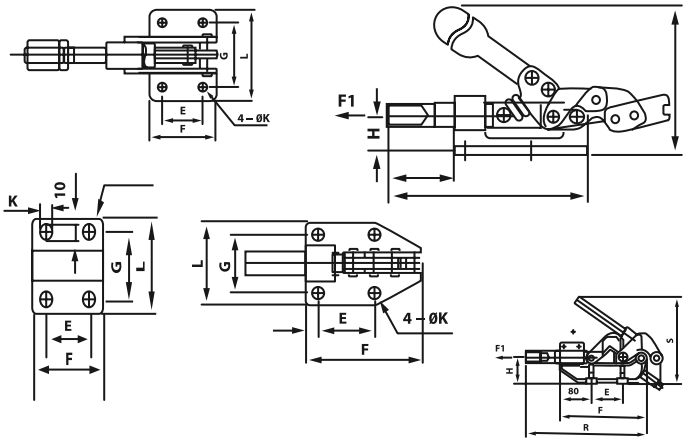
180kg CLAMPING FORCE Type 36020 AM Horzontal base, plunger stroke 30mm, length 91.5mm. Holding capacity N F1 = 1764 F2 = 387

Stock code PPTC180

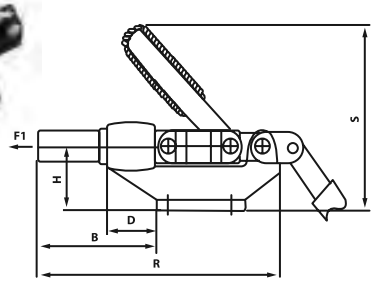


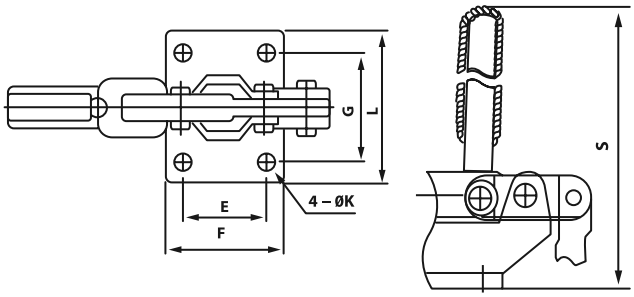


E	F	G	H	L	K	R	S
40	83	20	20	50	6.5	126	103

227kg CLAMPING FORCE Type 304 CM Horzontal base, plunger stroke 32mm, length 125mm. Holding capacity N F1 = 2224 F2 = 337

Stock code PPTC227





B	D	E	F	G	H	L	ø d	K	R	S
52	22	35	52	41	25	57	6.5	6.5	126	75

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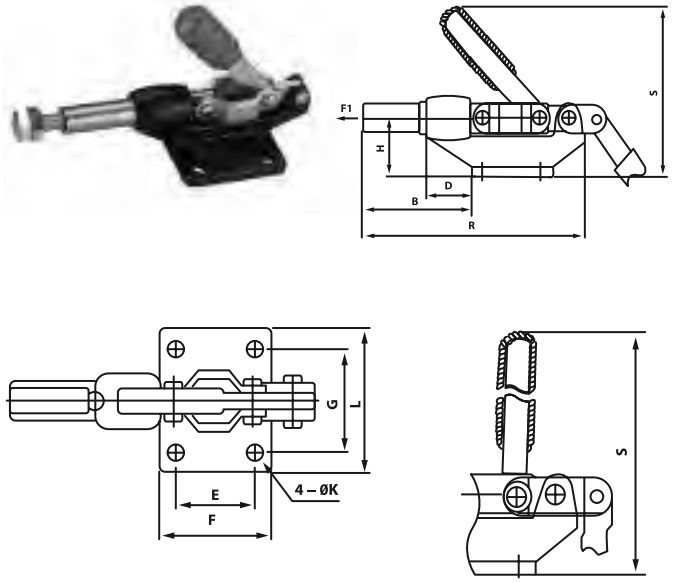
386kg CLAMPING FORCE Type 304 EM Horzontal base, plunger stroke 32mm, length 158mm. Holding capacity N F1 = 2224 F2 = 337

Stock code PPTC 386

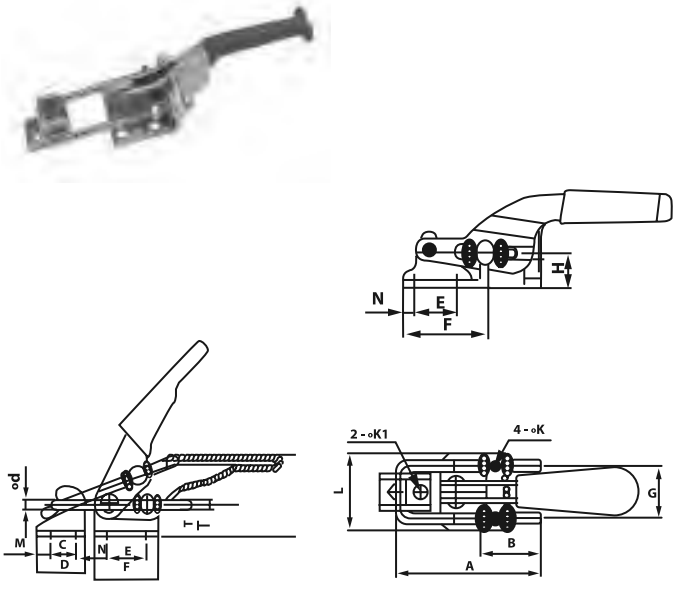


B	D	E	F	G	H	L	ø d	K	R	S
52	22	35	52	41	35	57	6.5	6.5	126	75

LATCH TOGGLE CLAMPS

160kg CLAMPING FORCE Type 40323 Horzontal base, base length 26mm Holding capacity N F1 = 1600 F2 = 74

Stock code LTC160



A	B	C	D	E	F	G	L
57	24	10	20	16	26	19	29

M	N	K	K1	ø d	H	T	S
6	5	4.5	4	12	M4	M4	30

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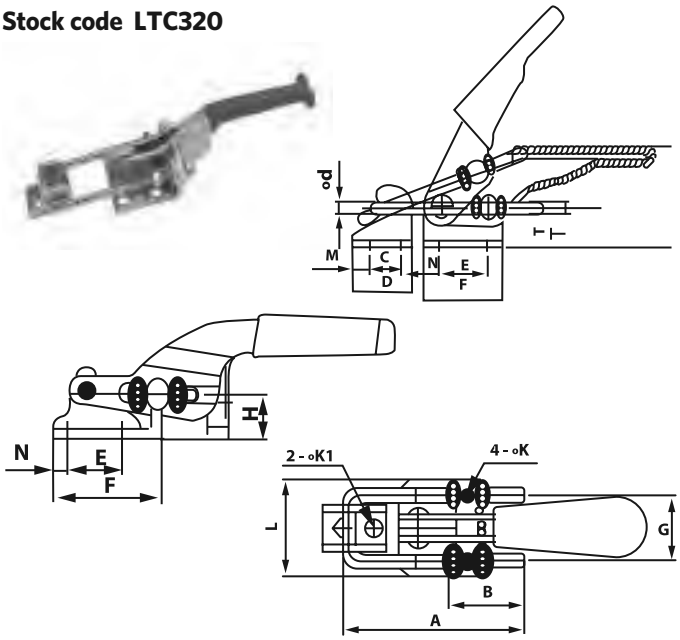
320kg CLAMPING FORCE Type 431 Horzontal base, base length 40mm Holding capacity N F1 = 3116 F2 = 234

Stock code LTC320

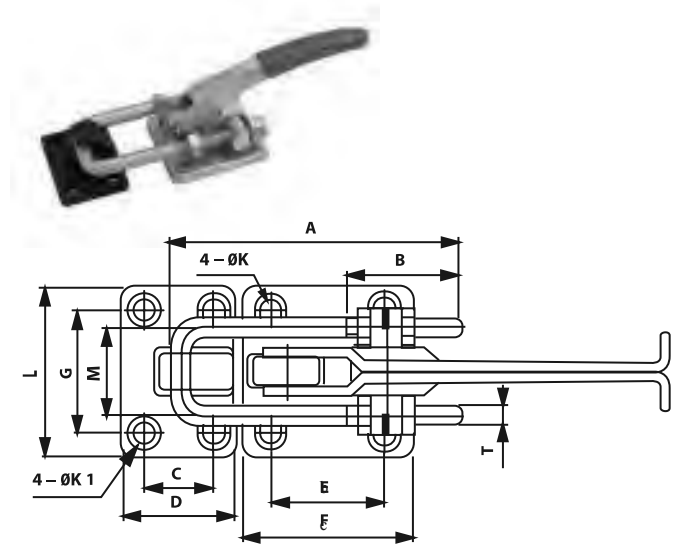


A	B	C	D	E	F	G	L
92	40	12	26	19	40	32	45

M	N	K	K1	ø d	H	T	S
7	6.5	6.5	6.5	6	16	M6	51

3400kg CLAMPING FORCE Type 40380 Horzontal base, base length 86mm Holding capacity N F1 = 33320 F2 = 1480

Stock code LTC3400

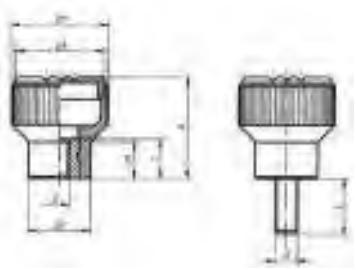


A	B	C	D	E	F	G	L
147	74	35	57	57	85	57	79

M	N	K	K1	ø d	R	T	S
54	28	10.5	10.5	12	M12	185	83

KIPP KNURLED KNOBS

Anthracite grey thermoplastic, bush and thread bolt; blue chromonated steel.
Also available in stainless steel.



Internal thread

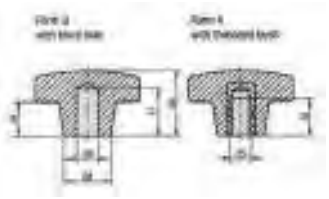
Stock code	Thread size	D1	D2	D3	H	H1	T
6092-105	M5	21	14	12	22	8	10
6092-106	M6	21	14	19	22	8	10
6092-208	M8	24	18	23	26	9.5	14
6092-310	M10	34	22	31	36	13	14

External thread

Stock code	Thread size	D1	D2	D3	H	H1	T
6092-105X15	M5	21	14	19	22	8	15
6092-106X15	M6	21	14	19	22	8	15
6092-208X20	M8	26	18	23	26	9.5	20
6092-208X25	M8	26	18	23	26	9.5	25
6092-208X20	M10	34	22	31	36	13	20
6092X310X30	M10	34	22	31	36	13	30
6092X310X40	M10	34	22	31	36	13	40

KIPP CROSS KNOBS

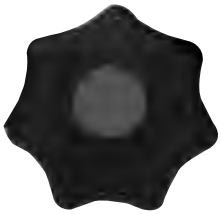
DIN 6335. Black duroplastic, bush : galvanised steel.

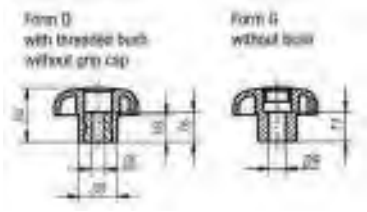


Stock code	Thread size	T6	Out side Ø	small Ø	Height mm
6180-205	M5	9.5	25	12	16
6180-206	M6	12	32	14	20
6180-208	M8	14	40	18	25
6180-210	M10	18	50	22	32
6180-212	M12	22	63	26	40

KIPP STAR GRIPS WITH INTERNAL THREADS

Black thermoplastic with steel bush
DIN 6336





Stock code	Thread size	D8	Out side Ø	H3	H4	T6
6220-204	M4	12	25	8	16	10
6220-205	M5	12	25	8	16	10
6220-2051	M5	14	32	10	20	10
6220-206	M6	14	32	10	20	10
6220-208	M8	18	40	13	25	14
6220-2081	M8	22	50	17	32	14
6220-210	M10	22	50	17	32	14
6220-2102	M10	26	63	21	40	14
6220-212	M12	26	63	21	40	18
6220-216	M16	26	63	21	40	18

KIPP CROSS KNOBS

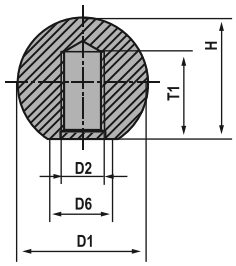
Black duroplastic, bush : galvanised steel.

DIN 6335

Stock code	Thread size	Out side Ø	small Ø	Overall length	L
6220-405X15	M5	25	12	16	15
6220-405X20	M5	25	12	16	20
6220-405X25	M5	25	12	16	25
6220-406X10	M6	20	14	20	10
6220-406X15	M6	20	14	20	15
6220-406X20	M6	20	14	20	20
6220-406X25	M6	20	14	20	25
6220-406X40	M6	20	14	20	40
6220-4061X25	M6	32	14	20	25
6220-408X15	M8	32	14	20	15
6220-408X25	M8	32	14	20	25
6220-408X30	M8	32	14	20	30
6220-408X40	M8	32	14	20	40
6220-4081X25	M8	40	18	25	25
6220-4081X30	M8	40	18	25	30
6220-410X30	M10	40	18	25	30
6220-410X35	M10	40	18	25	35
6220-410X60	M10	40	18	25	60
6220-4101X30	M10	50	22	32	30
6220-412X35	M12	50	22	32	35
6220-412X40	M12	50	22	32	40
6220-412X60	M12	50	22	32	60
6220-4121X60	M12	63	26	40	60
6220-416X45	M16	63	26	40	45

KIPP BALL KNOBS

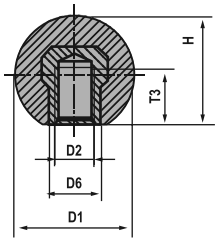
Black thermoplastic, pressed thread
DIN 319, Form C



Stock code	Thread size	D1	D6	H	T1
6250-11604	M4	16	8	15	7.5
6250-11605	M5	16	8	15	7.5
6250-12006	M6	20	12	18	10.5
6250-12506	M6	25	15	23	13.5
6250-12508	M8	25	15	23	13.5
6250-13208	M8	32	18	29	16
6250-13210	M10	32	18	29	16
6250-14010	M10	40	20	37.5	23
6250-14012	M12	40	20	37.5	23
6250-15012	M12	50	22	48	31

KIPP BALL KNOBS

Black duroplastic with threaded steel bush
DIN 319, Form E

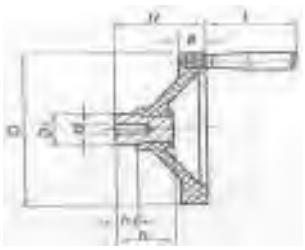


Stock code	Thread size	D1	D6	H	T3
6250-21604	M4	16	8	15	7.5
6250-22005	M5	20	12	18	10.5
6250-22006	M6	20	12	18	10.5
6250-22506	M6	25	15	23	13.5
6250-22508	M8	25	15	23	13.5
6250-23208	M8	32	18	29	16
6250-23210	M10	32	18	29	16
6250-24010	M10	40	20	37.5	23
6250-24012	M12	40	20	37.5	23
6250-25012	M12	50	22	48	31

DISC HANDWHEELS

With revolving taper grip
Black duroplastic with threaded steel bush

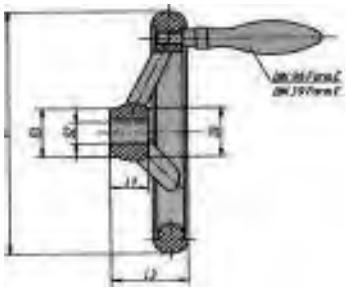
DIN 319, Form E



Stock code	D	B	D1	d	H	h	h1	L
8313-06X100	100	14	24	6	41	26	10	48
8313-08X120	120	17	28	8	48	30	12	64
8313-10X160	160	22	36	10	59	35	15	74
8313-10X150	190	25	40	10	77	45	15	74

KIPP ALUMINIUM HANDWHEELS

Without handle
DIN 950



Stock code	D	D2	D3	L1	L3	keyway width mm	Handle thread
6273-0100X10	100	10	26	17	33	3	M6
6273-0100X12	100	12	26	17	33	4	M6
6273-0125X12	125	14	28	18	36	4	M8
6273-0160X14	160	16	32	20	40	5	M10
6273-0160X16	160	18	32	20	40	5	M10
6273-0200X18	200	22	38	24	45	6	M10
6273-0250X22	250	22	45	28	50	6	M12

KIPP REVOLVING MACHINE HANDLES

DIN 98 Form E

Stock code	mounting thread	to suit wheel Ø	Ø mm	Handle length mm
6308-0616055	M6	100	16	49
6308-0820067	M8	125	20	61
6308-1025083	M10	160/200	25	75
6308-1232105	M12	250	32	95

KIPP INTERNAL THREAD CLAMP LEVERS

Handles die cast zinc. Steel parts class 5.8

DIN 98 Form E

Stock code	mounting thread	overall length mm	overall height mm	large Ø mm	small Ø mm
6450-1051	M5	47	31	14	10
6450-1061	M6	47	31	14	10
6450-2081	M8	74.5	42.5	19	13.5
6450-3081	M8	91	54.5	22	16
6450-3101	M10	91	54.5	22	16
6450-4101	M10	109	63	27.5	19
6450-4121	M12	109	63	27.5	19
6450-5161	M16	126	73	32	23

KIPP EXTERNAL THREAD CLAMP LEVERS

Handles die cast zinc. Steel parts class 5.8

Stock code	mounting thread	overall length mm	overall height without thread mm	large Ø mm	small Ø mm
6460-1061X20	M6	20	47	13	10
6460-1061X30	M6	30	47	13	10
6460-1061X40	M6	40	47	13	10
6460-1061X50	M6	50	47	13	10
6460-2081X20	M8	20	74.5	18.5	13.5
6460-2081X30	M8	30	74.5	18.5	13.5
6460-2081X40	M8	40	74.5	18.5	13.5
6460-2081X60	M8	60	74.5	18.5	13.5
6460-3101X30	M10	30	91	21	16
6460-3101X45	M10	45	91	21	16
6460-3101X50	M10	50	91	21	16
6460-3101X60	M10	60	91	21	16
6460-4101X35	M10	35	109	27	19
6460-4101X40	M10	40	109	27	19
6460-4101X50	M10	50	109	27	19
6460-4101X60	M10	60	109	27	19
6460-4121X30	M12	30	109	27	19
6460-4121X40	M12	60	109	27	19

KIPP INTERNAL THREAD CLAMP LEVERS

Handles glass fibre reinforced with toothed wheel in die cast zinc. Steel parts class 5.8

Stock code	mounting thread	overall length mm	overall height without thread mm	large Ø mm	small Ø mm
6600-1041	M4	47	30	13	10
6600-1051	M5	47	30	13	10
6600-1061	M6	47	30	13	10
6600-2081	M8	75	41.5	18	13.5
6600-3101	M10	91.5	53.5	21.5	16
6600-4121	M12	109	61	25.5	19
6600-5121	M12	126	72	30	23
6600-5161	M16	126	72	30	23

KIPP EXTERNAL THREAD CLAMP LEVERS

Handles glass fibre reinforced with toothed wheel in die cast zinc. Steel parts class 5.8

Stock code	mounting thread	thread length mm	overall length mm	overall height without thread mm	large Ø mm	small Ø mm
6610-1051X20	M5	20	47	30	13	10
6610-1051X30	M5	30	47	30	13	10
6610-1051X40	M5	40	47	30	13	10
6610-1061X20	M6	20	47	30	13	10
6610-1061X30	M6	30	47	30	13	10
6610-1061X40	M6	40	47	30	13	10
6610-2081X20	M8	20	75	41.5	18	13.5
6610-2081X30	M8	30	75	41.5	18	13.5
6610-2081X40	M8	40	91.5	41.5	18	13.5
6610-3101X30	M10	30	91.5	53.5	21.5	16
6610-3101X40	M10	40	91.5	53.5	21.5	16
6610-3101X50	M10	50	91.5	53.5	21.5	16
6610-4121X30	M12	30	109	61	25.5	19
6610-4121X50	M12	50	109	61	25.5	19
6610-4121X60	M12	60	109	61	25.5	19

KIPP SUPPORT BOLTS

Material hardened and ground tool steel

DIN 6321, Form A

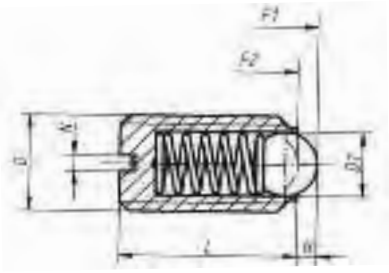
Stock code	head Ø	Body Ø mm	head length mm	overall thread mm
2020-106	M5	47	30	10
2020-110	M5	47	30	10
2020-116	M5	47	30	10
2020-125				

DIN 6321, Form B

Stock code	head Ø	Body Ø mm	head length mm	champhered length mm	overall length mm
2020-206	6	4	7	4	13
2020-208	8	6	10	6	19
2020-210	10	6	10	6	19
2020-212	12	6	10	6	19
2020-216	16	8	13	8	25
2020-220	20	12	15	9	33

KIPP SPRING PLUNGERS

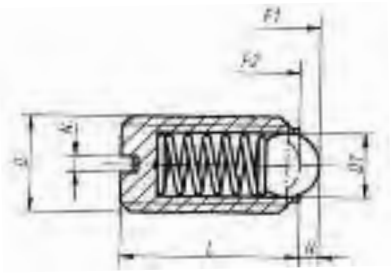
With recess and ball. Steel class 5.8
DIN 319, Form E



Stock code						spring initial pressure	force N final pressure
	D2	D1	L	H	N	F1	F2
3000-03	M3	1.5	7	0.5	0.4	1.5	3
3000-04	M4	2.5	9	0.8	0.6	4	10
3000-05	M5	3	12	0.9	0.8	6	11
3000-06	M6	3.5	14	1	1	9	13
3000-08	M8	5	16	1.5	1.2	15	30
3000-10	M10	6	19	2	1.6	20	35
3000-12	M12	8	22	2.5	2	30	55
3000-16	M16	10	24	3.5	2.5	65	125
3000-20	M20	12	30	4.5	2.5	80	180

KIPP STAINLESS STEEL SPRING PLUNGERS

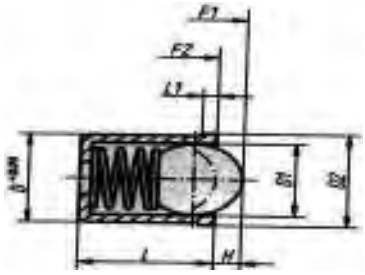
Sleeve : 1.4305, ball : 1.4034, spring : 1.4130



Stock code						spring initial pressure	force N final pressure
	D2	D1	L	H	N	F1	F2
3010-03	M3	1.5	7	0.5	0.4	1.5	3
3010-04	M4	2.5	9	0.8	0.6	4	10
3010-05	M5	3	12	0.9	0.8	6	11
3010-06	M6	3.5	14	1	1	9	13
3010-08	M8	5	16	1.5	1.2	15	30
3010-10	M10	6	19	2	1.6	20	35
3010-12	M12	8	22	2.5	2	30	55
3010-16	M16	10	24	3.5	2.5	65	125
3010-20	M20	12	30	4.5	2.5	80	180

KIPP SMOOTH SURFACE STAINLESS STEEL SPRING PLUNGERS

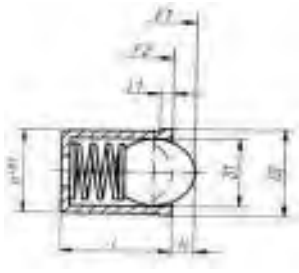
Sleeve natural finish. Ball hardness and ground stainless steel



Stock code							spring initial pressure	force N final pressure
	D	D1	D2	L	L1	H	F1	F2
3070-04	4	3	4.6	5	1	0.8	3	7
3070-05	5	4	5.6	6	1	1	4	7
3070-06	6	5	6.5	7	1	1.5	6	12
3070-08	8	6.5	8.5	9	1	1.8	6	12
3070-10	10	8	12	13.5	2.5	2.7	10	20
3070-12	12	10	14	16	2.5	3.5	15	25

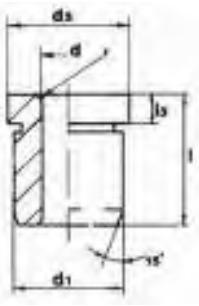
KIPP SMOOTH SURFACE STAINLESS STEEL SPRING PLUNGERS

Thermoplastic sleeve. Stainless steel ball and spring



Stock code							spring initial pressure	force N final pressure
	D	D1	D2	L	L1	H	F1	F2
03071-04	4	3	4.6	5	1	0.7	3	7
03071-05	5	4	5.6	6	1	1	4	7
03071-06	6	5	6.5	7	1	1.5	6	12
03071-08	8	6.5	8.5	9	1	1.8	6	12

PRESS FIT, THROUGH HARDENED HEADED DRILL BUSHES TO DIN 172A



SHORT

Stock code	Bore d F7	d1 n6	d3	L	L2
HDB2.0-HDB2.6	2.0-2.6	5	8	6	2
HDB2.7-HDB3.3	2.7-3.3	6	10	8	2
HDB3.4-HDB4	3.4-4	7	11	8	2
HDB4.1-HDB5	4.1-5	8	12	8	2
HDB5.1-HDB6	5.1-6	10	14	10	3
HDB6.1-HDB8	6.1-8	12	16	10	3
HDB8.1-HDB10	8.1-10	15	19	12	4
HDB10.1-HDB12	10.1-12	18	22	12	4
HDB12.1-HDB15	12.1-15	22	26	16	4
HDB15.1-HDB18	15.1-18	26	30	16	4
HDB18.1-HDB22	18.1-22	30	35	20	5
HDB22.1-HDB26	22.1-26	35	40	20	5
HDB26.1-HDB30	26.1-30	42	47	20	5
HDB30.1-HDB35	30.1-35	48	55	25	5
HDB35.1-HDB42	35.1-42	55	62	25	5
HDB42.1-HDB48	42.1-48	63	69	30	6
HDB48.1-HDB50	48.1-50	70	77	30	6

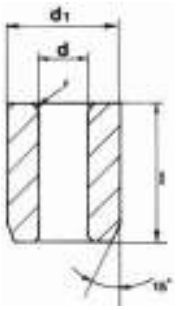
Note: Bushes with Ø range 2mm to 20mm are available in 0.1mm increments and bushes with Ø range 21mm to 50mm are available in 1.0mm increments.

LONG

Stock code	Bore d F7	d1 n6	d3	L	L2
HDBL2.0-HDBL2.6	2.0-2.6	5	8	9	2
HDBL2.7-HDBL3.3	2.7-3.3	6	10	12	3
HDBL3.4-HDBL4	3.4-4	7	11	12	3
HDBL4.1-HDBL5	4.1-5	8	12	12	3
HDBL5.1-HDBL6	5.1-6	10	14	16	3
HDBL6.1-HDBL8	6.1-8	12	16	16	3
HDBL8.1-HDBL10	8.1-10	15	19	20	4
HDBL10.1-HDBL12	10.1-12	18	22	20	4
HDBL12.1-HDBL15	12.1-15	22	26	28	4
HDBL15.1-HDBL18	15.1-18	26	30	28	4
HDBL18.1-HDBL22	18.1-22	30	35	36	5
HDBL22.1-HDBL26	22.1-26	35	40	36	5
HDBL26.1-HDBL30	26.1-30	42	47	36	5
HDBL30.1-HDBL35	30.1-35	48	55	45	5
HDBL35.1-HDBL42	35.1-42	55	62	45	5
HDBL42.1-HDBL48	42.1-48	63	69	56	6

Note: Bushes with Ø range 2mm to 20mm are available in 0.1mm increments and bushes with Ø range 21mm to 50mm are available in 1.0mm increments.

PRESS FIT, THROUGH HARDENED HEADLESS DRILL BUSHES TO DIN 179A



SHORT

Stock code	Bore d F7	d1	L	L2
HLDB2.0-HLDB2.6	2.0-2.6	5	6	1
HLDB2.7-HLDB3.3	2.7-3.3	6	8	1
HLDB3.4-HLDB4	3.4-4	7	8	1
HLDB4.1-HLDB5	4.1-5	8	8	1
HLDB5.1-HLDB6	5.1-6	10	10	1
HLDB6.1-HLDB8	6.1-8	12	10	1
HLDB8.1-HLDB10	8.1-10	15	12	1.5
HLDB10.1-HLDB12	10.1-12	18	12	1.5
HLDB12.1-HLDB15	12.1-15	22	16	1.5
HLDB15.1-HLDB18	15.1-18	26	16	1.5
HLDB18.1-HLDB22	18.1-22	30	20	1.5
HLDB22.1-HLDB26	22.1-26	35	20	1.5
HLDB26.1-HLDB30	26.1-30	42	20	1.5
HLDB30.1-HLDB35	0.1-35	48	25	2
HLDB35.1-HLDB42	35.1-42	55	25	2
HLDB42.1-HLDB48	42.1-48	63	30	2
HLDB48.1-HLDB55	48.1-55	70	30	2

Note: Bushes with Ø range 2mm to 20mm are available in 0.1mm increments and bushes with Ø range 21mm to 50mm are available in 1.0mm increments.

LONG

Stock code	Bore d F7	d1	L	L2
HLDBL2.0-HLDBL2.6	2.0-2.6	5	9	1
HLDBL2.7-HLDBL3.3	2.7-3.3	6	12	1
HLDBL3.4-HLDBL4	3.4-4	7	12	1
HLDBL4.1-HLDBL5	4.1-5	8	16	1
HLDBL5.1-HLDBL6	5.1-6	10	16	1
HLDBL6.1-HLDBL8	6.1-8	12	16	1
HLDBL8.1-HLDBL10	8.1-10	15	20	1.5
HLDBL10.1-HLDBL12	10.1-12	18	20	1.5
HLDBL12.1-HLDBL15	12.1-15	22	28	1.5
HLDBL15.1-HLDBL18	15.1-18	26	28 36	1.5
HLDBL18.1-HLDBL22	18.1-22	30		1.5
HLDBL22.1-HLDBL26	22.1-26	35	36	1.5
HLDBL26.1-HLDBL30	26.1-30	42	36	1.5
HLDBL30.1-HLDBL35	30.1-35	48	45	2
HLDBL35.1-HLDBL42	35.1-42	55	45	2
HLDBL42.1-HLDBL48	42.1-48	62	56	2
HLDBL48.1-HLDBL55	48.1-55	70	56	2

Note: Bushes with Ø range 2mm to 20mm are available in 0.1mm increments and bushes with Ø range 21mm to 50mm are available in 1.0mm increments.

QUARTZ HALOGEN LAMPS WITH MAGNETIC BASES

With built in transformer. Completely insulated. Water proof.

Globe 12v 35w

Stock code	Volt	Bulb Watt	Overall length mm	Base LxWxH mm	Lamp Ø mm
QLMB	220	12v 35w	730	70 x 70 x 104	74
QL	220	12v 35w	730	without base	74

QUARTZ HALOGEN MACHINE LAMPS

Anti-explosion, dust proof and water proof. 24V have a builtin transformer

2 types available 220v input and 24v input. Globe 12v 55w and 24 v 70w respectively

Stock code	Arm	Volt	Bulb Watt	Base arm length mm	Top arm length mm	Lamp Ø mm
QLS	Short	220	12v 55w	95	-	125
QLM	Medium	220	12v 55w	185	260	125
QLL	Long	220	12v 55w	400	430	125
QLS24	Short	24	24v 70w	95	-	125
QLM24	Medium	24	24v 70w	185	260	125
QLL24	Long	24	24v 70w	400	430	125

TABLE MOUNTED INSPECTION LAMPS

Mounted on inspection table. Lamp head fitted with magnifying lens and circular fluorescent tube.

Globe 22w

Stock code	Volt	Tube Watt	Magni-fication	Base length	Height mm
TIL	220	22w	5x	320	340

INSPECTION LAMPS

Lamp head fitted with magnifying lens and circular fluorescent tube.

Globe 22w

Stock code	Arm	Volt	Tube Watt	Magni-fication	Base arm length mm	Top arm length mm	Head Ø mm
ILM	Medium	220	22w	5x	265	260	235
ILL	Long	220	22w	5x	400	430	235
ILS#	Spring	220	22w	5x	400	430	235

KEY TYPE DRILL CHUCKS

Excellent quality to price ratio

Stock code	Capacity mm	Body Ø mm	Length mm	Mounting	Key
DC13B16C	13	40	60	B16	S2
DC13B16	13	42	60	B16	T5
DC131/2X20C	13	42.5	72.5	1/2 x 20	S2
QDC131/2X20C	13	53.0	86.0	1/2 x 20	S3
QDC13B16	13	54	70	B16	T8
QDC16B18	16	58	75	B18	T8

KEY TYPE DRILL CHUCKS

LIGHT DUTY

Stock code	Capacity mm	Body Ø mm	Length mm	Mounting	Key
PLDDC103/8x24	1-10	33	60	3/8 x 24	KS10
PLDDC101/2x20	1-10	33	60	1/2 x 20	KS10
PLDDC133/8x24	1.5-13	42.5	74	3/8 x 24	KS2
PLDDC131/2x20	1.5-13	42.5	74	1/2 x 20	KS2

MEDIUM DUTY

Stock code	Capacity mm	Body Ø mm	Length mm	Mounting	Key
PMDDC6B10	0-6	30	52	B10	KS1
PMDDC6J1	0-6	30	52	J1	KS1
PMDDC63/8x24	0-6	30	52	3/8 x 24	KS1
PMDDC83/8x24	0-8	30	52	3/8 x 24	KS1
PMDDC81/2x20	0-8	30	52	1/2 x 20	KS1
PMDDC10B12	0-10	36.5	60	B12	KS2
PMDDC103/8x24	0-10	36.5	60	3/8 x 24	KS2
PMDDC101/2x20	0-10	36.5	60	1/2 x 20	KS2

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Stock code	Capacity mm	Body Ø mm	Length mm	Mounting	Key
PMDDC13B16	1.5-13	42.7	74	B16	KS2
PMDDC13J6	1.5-13	42.7	74	J6	KS2
PMDDC133/8x24	1.5-13	42.7	74	3/8 x 24	KS2
PMDDC131/2x20	1.5-13	42.7	74	1/2 x 20	KS2
PMDDC16B16	3-16	51	89	B16	KS3
PMDDC16B18	3-16	51	89	B18	KS3
PMDDC16J6	3-16	51	89	J6	KS3
PMDDC165/8x16	3-16	51	89	5/8 x 16	KS3
PMDDC16M18	3-16	51	89	M18	KS3

HEAVY DUTY

Stock code	Capacity mm	Body Ø mm	Length mm	Mounting	Key
PHDDC8B12	0-8	36.5	60	B12	KS2
PHDDC10B16	0-10	42.7	74	B16	KS2
PHDDC10J2	0-10	42.7	74	J2	KS2
PHDDC13B16	0-13	51	78	B16	KS3
PHDDC13J6	0-13	51	78	J6	KS3
PHDDC135/8x16	0-13	51	78	5/8 x 16	KS3
PHDDC16B18	1-16	60	100	B18	KS3
PHDDC16J6	1-16	60	100	J6	KS3
PHDDC16J3	1-16	60	100	J3	KS3
PHDDC165/8x16	1-16	60	100	5/8 x 16	KS3
PHDDC20B22	5-20	60	111	B22	KS3
PHDDC20J3	5-20	60	111	J3	KS3
PHDDC26B24	5-26	75	139	B24	K20

KEYLESS DRILL CHUCKS

Premium Quality

Stock code	Capacity mm	Body Ø mm	Length mm	Total indicated run out	Mounting
KLDC13B16C	1-13	49	100	0.06	B16
KLDC16B16C	3-16	54	110	0.07	B16
QKLDC13B16	1-13	48	90	-	B16
QKLDC16B16	1-16	55	100	-	B16

KEYLESS DRILL CHUCKS

Stock code	Capacity mm	Body Ø mm	Length mm	Mounting
PKLDC6B10	0-6	34	68	B10
PKLDC6B12	0-6	34	68	B12
PKLDC6J1	0-6	34	68	J1
PKLDC8B12	0-8	34	68	B12
PKLDC8J1	0-8	34	68	J1
PKLDC8J2	0-8	34	68	J2
PKLDC83/8x24	0-8	34	68	3/8 x 24

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KEYLESS DRILL CHUCKS

Stock code	Capacity mm	Body Ø mm	Length mm	Mounting
PKLDC10B12	1-10	35.5	81	B12
PKLDC103/8x24	1-10	35.5	81	3/8 x 24
PKLDC101/2x20	1-10	35.5	81	1/2 x 20
PKLDCHD10B16	1-10HD	40.5	89	B16
PKLDC13B16	1-13	43	98	B16
PKLDC13J6	1-13	43	98	J6
PKLDC133/8x24	1-13	43	98	3/8 x 24
PKLDC131/2x20	1-13	43	98	1/2 x 20
PKLDCHD13B16	0-13HD	48.5	106	B16
PKLDCHD13J6	0-13HD	48.5	106	J6
PKLDCHD13J33	0-13HD	48.5	106	J33
PKLDC16B16	3-16	51	109	B16
PKLDC16B18	3-16	51	109	B18
PKLDC16J6	3-16	51	109	J6
PKLDC16J3	3-16	51	109	J3
PKLDC161/2x20	3-16	51	109	1/2 x 20
PKLDC165/8x16	3-16	51	109	5/8 x 16

INTEGRAL SHANK KEYLESS DRILL CHUCKS

Stock code	Capacity mm	Shank	Body Ø mm	Length from gauge line mm	
				Min	Max
KLDC13R8Q	0.2-13	R8	48	81	90.6
KLDC13BT40Q	0.2-13	BT40	48	90	99.6
KLDC13ISO40Q	0.2-13	ISO40	48	90	99.6
KLDC13BT50Q	0.2-13	BT50	54	70	121.2
KLDC13DIN40Q	0.2-13	DIN40	48	80	99.6

HARDENED AND GROUND STRAIGHT SHANK DRILL CHUCK ARBORS

Stock code	Shank Ø mm	Chuck mounting taper	Shank length mm	Overall length mm
B16X10	10	B16	45	73
B16X12	12	B16	45	73
B16X16	16	B16	50	80

HARDENED AND GROUND MORSE TAPER DRILL CHUCK ARBORS WITH DRAW THREAD

Stock code	Shank	Chuck mounting taper	Drawber thread	Overall length mm
B16XMT2M10	MT2	B16	M10	101
B16XMT3M12	MT3	B16	M12	108

HARDENED AND GROUND DRILL CHUCK ARBORS

For taper bores to DIN 238 & Jacobs

Stock code	Machine mounting taper	Chuck mounting taper	Overall length mm
B10XMT1	B10	MT1	84
B10XMT2	B10	MT2	101
B12XMT1	B12	MT1	90
B12XMT2	B12	MT2	105
B12XMT3	B12	MT3	124
B16XMT1	B16	MT1	97
B16XMT2	B16	MT2	112
B16XMT3	B16	MT3	131
B16XMT4	B16	MT4	156
B18XMT2	B18	MT2	120
B18XMT3	B18	MT3	139
B18XMT4	B18	MT4	164
B22XMT2	B22	MT2	128
B22XMT3	B22	MT3	147
B22XMT4	B22	MT4	164
B24XMT3	B24	MT3	157
B24XMT4	B24	MT4	182
J3XMT2	J3	MT2	114
J3XMT3	J3	MT3	133
J6XMT2	J6	MT2	108
J6XMT3	J6	MT3	127
M20XMT3	M20	MT3	147
M20XMT4	M20	MT4	164

HARDENED AND GROUND R8 DRILL CHUCK ARBORS

Stock code	Mounting taper	Chuck taper	Overall length mm	Drawbar thread
R8B16	R8	B16	135	7/16UNF
R8J6	R8	J6	132	7/16UNF

HARDENED AND GROUND ISO DRILL CHUCK ARBORS

Stock code	Shank	Mounting taper	Overall length mm	Drawbar thread
ISO40B16	ISO40	B16	143	M16
ISO50B16	ISO50	B16	182	M24

HARDENED AND GROUND BT DRILL CHUCK ARBORS

Stock code	Shank	Length-gauge line to front mm	Mounting taper
BT40B12-32Y	BT40	45	B12
BT40B16-32Y	BT40	45	B16
BT40B18-32Y	BT40	45	B18

HARDENED AND GROUND DRILL SLEEVES

To DIN 228

Stock code	Morse taper Ext.	Morse taper Int.	Length mm	Stock code	Morse taper Ext.	Morse taper Int.	Length mm
2-1	2	1	92	5-2	5	2	156
3-1	3	1	99	5-3	5	3	156
3-2	3	2	112	5-4	5	4	171
4-1	4	1	124	6-3	6	3	218
4-2	4	2	124	6-4	6	4	218
4-3	4	3	140	6-5	6	5	218

HARDENED AND GROUND EXTENSION SLEEVES

To DIN 228

Stock code	Morse taper Ext.	Morse taper Int.	Length mm overall	Length mm parallel
2-1EXT	2	1	160	76
2-2EXTC	2	2	175	91
2-3EXTC	2	3	196	112
3-1EXT	3	1	175	78
3-2EXTC	3	2	194	91
3-3EXTC	3	3	215	112
3-4EXTC	3	4	240	137
4-2EXT	4	2	215	93
4-3EXTC	4	3	240	112
4-4EXTC	4	4	265	137
5-3EXTC	5	3	268	116
5-4EXTC	5	4	300	137
5-5EXTC	5	5	335	172

R8 HARDENED AND GROUND DRILL SLEEVES

Stock code	Mounting taper	Inside taper	Overall length mm	Drawbar thread
R81	R8	MT1	102	7/16UNF
R82	R8	MT2	105	7/16UNF
R83	R8	MT3	135	7/16UNF

Continued...

R8 COLLETS

Stock code	Mounting taper	Inside tapermm	Overall length mm	Drawbar thread
R86	R8	6	101.6	7/16UNF
R810	R8	10	101.6	7/16UNF
R812	R8	12	101.6	7/16UNF
R816	R8	16	101.6	7/16UNF
R820	R8	20	101.6	7/16UNF

MORSE TAPER ADAPTORS ISO SHANKS

Stock code	Outside taper	Inside taper	Body Ø mm	Overall length
ISO40MTA2C	ISO40	MT2	32	143
ISO40MTA3C	ISO40	MT3	40	158
ISO40MTA4C	ISO40	MT4	48	188
ISO50MTA2C	ISO50	MT2	32	187
ISO50MTA3C	ISO50	MT3	40	192
ISO50MTA4C	ISO50	MT4	48	197

BT MORSE TAPER ADAPTORS

Stock code	Shank	Length-gauge line to front nut mm	Morse taper
BT40MTA1-450Y	BT40	45	1
BT40MTA2-50Y	BT40	50	2
BT40MTA3-70Y	BT40	70	3
BT40MTA4-95Y	BT40	95	4

MORSE TAPER FACE MILL HOLDERS

Stock code	Shank	Spigot Ø mm	Driving dug width mm	Drawbar thread
MT2FMA16	MT2	16	8	M10
MT2FMA22	MT2	22	10	M10
MT3FMA16	MT3	16	8	M12
MT3FMA22	MT3	22	10	M12
MT3FMA27	MT3	27	12	M12
MT3FMA32	MT3	32	14	M12

R8 SHELL MILL ARBORS

Stock code	Mounting taper	Spigot Ø	Overall length mm	Drawbar thread
R8FMA16	R8	16	150	7/16UNF
R8FMA22	R8	22	159	7/16UNF
R8FMA27	R8	27	161	7/16UNF
R8FMA32	R8	32	170	7/16UNF

ISO FACE MILL HOLDERS

Stock code	Shank	Spigot Ø mm	Driving dog width mm	Overall length mm
ISO40FMH22C	ISO40	22	8	156
ISO40FMH27C	ISO40	27	12	159
ISO40FMH32C	ISO40	32	14	178
ISO50FMH27C	ISO50	27	12	211
ISO50FMH32C	ISO50	32	14	215
ISO50FMH40C	ISO50	40	16	219

BT40 FACE MILL ARBORS

Stock code	Shank	Length-gauge line to front nut mm	Spiggot Ø mm
BT40FMA16-45Q	BT40	40	16
BT40FMA22-45Q	BT40	45	22
BT40FMA27-45Q	BT40	45	27
BT40FMA32-60Q	BT40	60	32
BT40FMA40-60Q	BT40	70	40

BT COMBINATION MILLING ARBORS

Stock code	Shank	Length-gauge line to front nut mm	Spiggot Ø mm
BT40CMA16-55Y	BT40	55	16
BT40CMA22-55Y	BT40	55	22
BT40CMA27-55Y	BT40	55	27
BT40CMA32-60Y	BT40	60	32
BT40CMA40-60Y	BT40	60	40

R8 LONG MILLING ARBORS

Stock code	Shank	Spigot Ø mm	Working length mm	Overall length mm
R8LMA13C	R8	13	63	199
R8LMA16C	R8	16	63	201
R8LMA22C	R8	22	63	206
R8LMA27C	R8	27	63	211
R8LMA32C	R8	32	63	215

ISO LONG MILLING ARBORS

Supplied with spacers, without running bushes

Stock code	Shank	Spigot Ø mm	Working length mm	Spacer Ø mm
ISO40LMA22X315	ISO40	22	315	34
ISO40LMA22X400	ISO40	22	400	34
ISO40LMA27X315	ISO40	27	315	41
ISO50LMA27X500	ISO50	27	500	41
ISO50LMA32X315	ISO50	32	315	47
ISO50LMA32X500	ISO50	32	500	47

ISO SIDE LOCK HOLDERS

Stock code	Shank	Bore mm	Length-gauge line to front mm
ISO40SLH6C	ISO40	6	50
ISO40SLH8C	ISO40	8	50
ISO40SLH10C	ISO40	10	50
ISO40SLH12C	ISO40	12	50
ISO40SLH16C	ISO40	16	60
ISO40SLH20C	ISO40	20	60
ISO40SLH25C	ISO40	25	80
ISO40SLH32C	ISO40	32	80
ISO50SLH6C	ISO50	6	60
ISO50SLH8C	ISO50	8	60
ISO50SLH10C	ISO50	10	65
ISO50SLH12C	ISO50	12	65
ISO50SLH16C	ISO50	16	65
ISO50SLH20C	ISO50	20	65
ISO50SLH25C	ISO50	25	80
ISO50SLH32C	ISO50	32	80

BT SIDE LOCK HOLDERS

Stock code	Shank	Bore mm	Length-gauge line to front mm
BT40SLH6-50Y	BT40	6	50
BT40SLH8-50Y	BT40	8	63
BT40SLH10-63Y	BT40	10	63
BT40SLH12-63Y	BT40	12	63
BT40SLH16-63Y	BT40	16	63
BT40SLH20-63Y	BT40	20	63
BT40SLH25-90Y	BT40	25	60
BT40SLH32-100Y	BT40	32	100
BT50SLH6-63Y	BT50	6	63
BT50SLH8-65Y	BT50	8	65
BT50SLH10-65Y	BT50	10	65
BT50SLH12-80Y	BT50	12	80
BT50SLH16-80Y	BT50	16	80
BT50SLH20-80Y	BT50	20	80
BT50SLH25-100Y	BT50	25	100
BT50SLH32-105Y	BT50	32	105
BT50SLH40-120Y	BT50	40	120
BT50SLH50-120Y	BT50	50	120

DIN 69871 SIDE LOCK HOLDERS

Stock code	Shank	Bore mm	Length-gauge line to front mm
SK40SLH6-50Y	SK40	6	50
SK40SLH8-50Y	SK40	8	50
SK40SLH10-50Y	SK40	10	50
SK40SLH12-50Y	SK40	12	50
SK40SLH16-63Y	SK40	16	63
SK40SLH20-63Y	SK40	20	63
SK40SLH25-100Y	SK40	25	100
SK40SLH32-100Y	SK40	32	100

MILLING CHUCKS FOR THREADED SHANK END MILLS

Stock code	Shank	End mill capacity	Collets
ACS MT2Q	2MT	20	6,10,12,16
ACS MT3Q	3MT	20	6,10,12,16
ACS ISO40Q	ISO40	20	6,10,12,16
		20	6,10,12,16

SPARE COLLETS

Stock code	Size mm	Stock code	Size mm
TC6Q	6	TC12Q	12
TC10Q	10	TC16Q	16

MORSE TAPER ER MILLING CHUCKS

Stock code	Collet	End mill Clamping range mm	shank mm	Draw bar Thread
MT2ER20	ER20	2-12	MT2	M10
MT3ER20	ER20	2-12	MT3	M12
MT3ER25	ER25	2-16	MT3	M12

ER COLLET CHUCKS STRAIGHT SHANK

Stock code	Collet	Clamping range mm	shank Ømm	Over all length mm	Shank length mm
SS16ER11-140Q	ER11	0.5-7	16	172	140
SS20ER16-140Q	ER16	2-10	20	182	140
SS20ER20-140Q	ER20	2-13	20	182	140

ER COLLET CHUCKS STRAIGHT SHANKS

Stock code	Shank Ø mm	Collet	Clamping range mm mm	Overall length mm	Shank length mm	Front nut Ø mm
SS16ER11-140Y	16	ER11	0.5-7	172	140	19
SS20ER16-140Y	20	ER16	0.5-10	172	140	28
SS20ER20-140Y	20	ER20	2-13	172	140	34
SS25ER16-140Y	25	ER16	0.5-10	190	140	34
SS25ER20-140Y	25	ER20	1-13	181	140	41

ER COLLET CHUCKS R8 SHANKS

Stock code	Shank	Collet	Clamping range mm	Length-gauge line to front nut mm	Front nut Ø mm
R8ER16-35	R8	ER16	0.5-10	38	28
R8ER25-50	R8	ER25	1-16	40	42
R8ER32-50	R8	ER32	2-20	40	50
R8ER40-60	R8	ER40	3-26	70	63

ISO ER COLLET CHUCKS

Stock code	Shank	Collet	Clamping range mm	Length-gauge line to front nut mm	Front nut Ø mm
ISO40ER32-50	ISO40	ER32	2-20	50	50
ISO40ER40-60	ISO40	ER40	3-26	60	63

BT ER COLLET CHUCKS

Stock code	Shank	Collet	Clamping range mm	Length-gauge line to front nut mm	Front nut Ø mm
BT40ER16-70Q	BT40	ER11	0.5-7	70	19
BT40ER20-70Q	BT40	ER20	1-13	70	34
BT40ER25-70Q	BT40	ER25	1-16	65	42
BT40ER32-70Q	BT40	ER32	2-20	75	50
BT40ER40-80Q	BT40	ER40	3-26	80	63
BT50ER25-100	BT50	ER25	1-16	100	42
BT50ER32-100	BT50	ER32	2-20	100	50
BT50ER40-100	BT50	ER40	3-26	100	63

BT ER COLLET CHUCKS

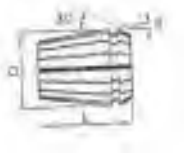
Stock code	Shank	Collet	Clamping range mm	Length-gauge line to front nut mm	Front nut Ø mm
BT40ER11-70Y	BT40	ER11	0.5-7	70	19
BT40ER16-70Y	BT40	ER16	0.5-10	70	28
BT40ER20-70Y	BT40	ER20	1-13	70	34
BT40ER25-70Y	BT40	ER25	1-16	65	42
BT40ER32-70Y	BT40	ER32	2-20	75	50
BT40ER40-70Y	BT40	ER40	3-26	80	63

DIN 69871 ER COLLET CHUCKS

Stock code	Shank	Collet	Clamping range mm	Length-gauge line to front nut mm	Front nut Ø mm
SK40ER11-70Y	SK40	ER11	0.5-7	70	19
SK40ER16-75Y	SK40	ER16	0.5-10	75	28
SK40ER20-75Y	SK40	ER20	1-13	75	34
SK40ER25-70Y	SK40	ER25	1-16	70	42
SK40ER32-75Y	SK40	ER32	2-20	75	50
SK40ER40-80Y	SK40	ER40	3-26	80	63

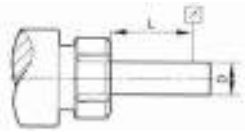
ER COLLETS

Case hardened steel - Ground to DIN 6499 class 1 tolerances.
Collapsability: ER11-0.5mm. ER16 to ER40-1.0mm.



Type	ER11	ER16	ER20	ER25	ER32	ER32
D	11.5	17	21	26	33	41
L	18	27	31	35	40	46

Collet concentricity



L(mm)	D(mm)	DIN 6499 class 1	DIN 6499 class 2
6	1.0-1.4		
10	1.5-2.9	0.015	0.01
16	3.0-5.9		
25	6.0-9.9		
40	10.0-17.9		
50	18.0-26.9	0.02	0.015
60	27-34.9		

ER COLLETS

ER 11

Stock Code	Clamping range mm	Stock Code	Clamping range mm
ER111K	1.0-0.5	ER114.5K	4.5-4.0
ER111.5K	1.5-1.0	ER115K	5.0-4.5
ER112K	2.0-1.5	ER115.5K	5.5-5.0
ER112.5K	2.5-2.0	ER116K	6.0-5.5
ER113K	3.0-2.5	ER116.5K	6.5-6.0
ER113.5K	3.5-3.0	ER117K	7.0-6.5
ER114K	4.0-3.5		

ER 16

ER161K	1-0.5	ER166K	6-5
ER161.5K	1.5-1	ER167K	7-6
ER162K	2-1	ER168K	8-7
ER163K	3-2	ER169K	9-8
ER164K	4-3	ER1610K	10-9
ER165K	5-4		

ER 20

ER202K	2-1.5	ER208K	8-7
ER203K	3-2.5	ER209K	9-8
ER204K	4-3	ER2010K	10-9
ER205K	5-4	ER2011K	11-10
ER206K	6-5	ER2012K	12-11
ER207K	7-6	ER2013K	13-12

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ER COLLETS CONT..

ER 25

ER252K	2-1.5	ER2510K	10-9
ER253K	3-2	ER2511K	11-10
ER254K	4-3	ER2512K	12-11
ER255K	5-4	ER2513K	13-12
ER256K	6-5	ER2514K	14-13
ER257K	7-6	ER2515K	15-14
ER258K	8-7	ER2516K	16-15
ER259K	9-8		

ER 32

ER323K	3-2.5	ER3212K	12-11
ER324K	4-3	ER3213K	13-12
ER325K	5-4	ER3214K	14-13
ER326K	6-5	ER3215K	15-14
ER327K	7-6	ER3216K	16-15
ER328K	8-7	ER3217K	17-16
ER329K	9-8	ER3218K	18-17
ER3210K	10-9	ER3219K	19-18
ER3211K	11-10	ER3220K	20-19

ER 40

ER404K	4-3.5	ER4016K	16-15
ER405K	5-4	ER4017K	17-16
ER406K	6-5	ER4018K	18-17
ER407K	7-6	ER4019K	19-18
ER408K	8-7	ER4020K	20-19
ER409K	9-8	ER4021K	21-20
ER4010K	10-9	ER4022K	22-21
ER4011K	11-10	ER4023K	23-22
ER4012K	12-11	ER4024K	24-23
ER4013K	13-12	ER4025K	25-24
ER4014K	14-13	ER4026K	26-25
ER4015K	15-14		

CASTLE FRONT NUTS

Stock code	To Suit collet	Ø mm	Length mm	Thread MF
SLER11FN	ER11	16	8	13X0.75
SLER16FN	ER16	18	12	19X1.0
SLER20FN	ER20	19	19	24X1

ER FRONT NUTS WITH BEARING

Front nuts with a built-in bearing provide substantially higher clamping torque than standard clamping nuts.

Stock code	To suit collet	Ø mm	Thread MF
ER11BFN	ER11	19	M14x0.75
ER16BFN	ER16	28	M22x1.5
ER20BFN	ER20	34	M25x1.5
ER25BFN	ER25	42	M32X1.5
ER32BFN	ER32	50	M40x1.5
ER40BFN	ER40	63	M50x1.5

ER FRONT NUT SPANNERS

ER11 to ER20

ER25 to ER40

Stock code	To suit nut
ER11S	ER11
ER16S	ER16
ER20S	ER20

Stock code	To suit nut
ER25S	ER25
ER32S	ER32
ER40S	ER40

ER25 to ER40

Stock code	To suit nut
ER25SQ	ER25
ER32SQ	ER32
ER40SQ	ER40

CASTLE NUT SPANNER

Stock code	To suit nut
ER11SLSQ	ER11
ER16SLSQ	ER16

Stock code	To suit nut
ER20SLSQ	ER20

air turbine tools®

the tools of a new generation™

Precision Hand Tool Series

Stock code	Collet mm	Rpm
AT201SV65K	3	65,000
AT525SVB40K	6	40,000
AT230XDM40K	6	40,000

Standard Features include :

- Up to 25 000 RPM 90 000 RPM models available
- Powerful speed governed motor with no gears : up to 1.4 HP / 1.04 kW
- Patented light weight range.
- Less fatigue and injury risk. Low vibration & noise.
- High torque and power : 25,000 rpm - 90,000 rpm
- No gears, no vanes, low friction, no lubrication, no maintenance, no control unit
- Greater precision, finer finished surfaces. “Speed Does the Cutting”.
- Patented automatic brake option.

air turbine tools®

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Air Turbine Motors

Stock code	Collet	Rpm
AT430HD25K	ER11	25,000
AT430XHD40K	ER11	40,000
AT740XP30K	ER11	30,000

Standard Features include :

- Powerful governed direct drives with no gears : up to 1.4 HP / 1.04 kW
- Faster feed rates increased productivity at constant 25,000 RPM - 65,000 RPM.
- Patented constant high speed and high torque governed motor cuts materials faster and cleaner.
- 24/7 Operation. No Duty Cycle.
- Light & precise : Low vibration.
- Totally oil free. No gears, no vanes, No lubrication, no maintenance, no control unit.
- Only two moving parts : turbine + bearings for less repairs.

air turbine tools®

the tools of a new generation™

Air Turbine Spindles

Stock code	Collet mm	Rpm	Straight Shank mm
AT602JS65K	ER8	65,000	20
AT625JS40K	ER11	40,000	20
AT650JS40K	ER11	40,000	20

Standard Features include :

- Patented governed high speed and torque motor - maintains high speed and high torque under load.
- Direct drive with only two rp to 25 000 RPM 90 000 RPM models available
- Powerful speed governed motor with no gears : up to 1.4 HP / 1.04 kW
- No duty cycle, low heat.
- Totally oil-free, low friction powerful motor - reliable in continous 24/7 operation. Cooled by turbine air.
- Effecient governed low air consumption.
- Autochange option for VMC’s for full integration in CNC programs.
- Substantially Reduced Cycle Times.
- Negligible heat and thermal expansion.

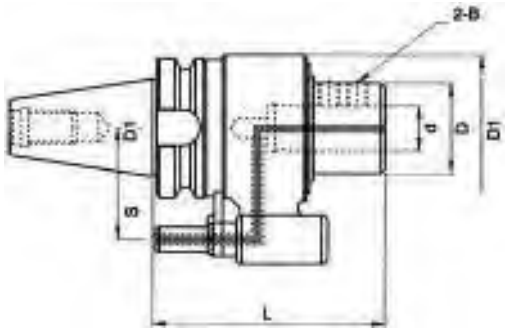
HYDRUALIC MILLING CHUCKS

With axial adjustment

Stock code	Shank	Bore mm	Body Ø mm	Body large Ø mm	Length of small body mm	Length from gauge line mm
BT40HC6-90	BT40	6	26	49.5	30	90
BT40HC8-90	BT40	8	28	49.5	30	90
BT40HC10-90	BT40	10	30	49.5	32	90
BT40HC12-90	BT40	12	32	49.5	35	90
BT40HC16-90	BT40	16	38	49.5	40	90
BT40HC20-90	BT40	20	42	49.5	40	90
BT40HC25-100	BT40	25	50	60	45	100
BT40HC32-105	BT40	32	60	60	50	105
BT50HC6-90	BT50	6	26	49.5	30	90
BT50HC10-90	BT50	10	30	49.5	32	90
BT50HC12-90	BT50	12	32	49.5	35	90
BT50HC16-90	BT50	16	38	49.5	40	90
BT50HC20-90	BT50	20	42	49.5	40	90
BT50HC25-105	BT50	25	50	60	45	105
BT50HC32-115	BT50	32	60	60	50	115

Available on request

KOREA TECHNICS OIL FEED HOLDER



BT40

Stock code	d	L	S	D	D1	B
BT40OFH20	20	120	65	55	80	M12
BT40OFH25	25	140	65	55	80	M12
BT40OFH30	30	140	65	65	80	M12

BT50

Stock code	d	L	D	B	P
BT50BSL16-165	26	165	48	90	80
BT50BSL20-165	20	165	50	90	80
BT50BSL25-165	25	165	58	90	80
BT50BSL32-165	32	165	59	106	80
BT50BSL40-165	40	165	59	106	80

Maximum coolant pressure: 7 bar
Max speed: BT40 = 6000 Rpm BT50 = 4000 Rpm

Available on request

Continued ...

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SLEEVES

Stock code	Outside Ø mm	Bore mm	Depth of bore mm	Overall length mm
OSL25-16	25	16	48	60
OSL25-20	25	20	56	60
OSL32-20	32	25	48	64
OSL32-25	32	32	56	64
OSL40-25	40	40	50	74
OSL40-32	40	40	56	74

ER TAPPING CHUCKS

For tapping on machining centres with or without rigid-tap function.

Stock code	Shank	Tapping range mm	Length from gauge line	Forward float mm	Backward float mm
BT40TER16	BT40	M3-M12	70	8	4
BT40TER20	BT40	M4-M16	80	8	4
BT40TER32	BT40	M8-M27	100	10	4

ER TAPPING COLLETS

Stoc cod	Collet size	Tap size	Norm	Ø mm	Square mm
ER16TCM3	ER16	M3	DIN 371	3.5	2.7
ER16TCM4	ER16	M4	DIN 371	4.5	3.4
ER16TCM5/6	ER16	M5/M6	DIN 371	6.0	4.9
ER16TCM8	ER16	M8	DIN 371	8.0	6.2
ER20TCM4	ER20	M4	DIN 371	4.5	3.4
ER20TCM5/6	ER20	M5/M6	DIN 371	6.0	4.9
ER20TCM8	ER20	M8	DIN 371	8.0	6.2
ER20TCM10	ER20	M10	DIN 371	10.0	8.0
ER20TCM12	ER20	M12	DIN 376	9.0	7.0
ER32TCM5/6	ER32	M5/M6	DIN 371	6.0	4.9
ER32TCM8	ER32	M8	DIN 371	8.0	6.2
ER32TCM10	ER32	M10	DIN 371	10.0	8.0
ER32TCM12	ER32	M12	DIN 376	9.0	7.0
ER32TCM16	ER32	M16	DIN 376	12.0	9.0
ER32TCM20	ER32	M20	DIN 376	16.0	12.0

QUICK CHANGE TAPPING CHUCKS

Stock code	Shank	Capacity	Body outside Ø mm	Body bore mm	Length from gauge line mm
BT40TCM12	BT40	M3-M12	36	19	64
BT40TCM20	BT40	M7-M20	53	31	97
BT40TCM36	BT40	M14-M36	78	48	149
BT50TCM12	BT50	M3-M12	36	19	64
BT50TCM20	BT50	M7-M20	53	31	97
BT50TCM36	BT50	M14-M36	78	48	149

TAP COLLETS

Direct drive - without clutch

M3-M12

Stock code	Tap	Tap shank mm	Tap square mm	Collet Ø
TC123.15X2.5	M3	3.15	2.5	19
TC123.5X2.7	M3	3.5	2.7	19
TC124X3.15	M4	4	3.15	19
TC124.5X3.4	M4	4.5	3.4	19
TC125X4	M5	5	4	19
TC126X4.9	M5/M6	6	4.9	19
TC126.3X5	M6	6.3	5	19
TC128X6.3	M8	8	6.3	19
TC1210X8	M10	10	8	19
TC129X7.1	M12	9	7.1	19

M8-M20

Stock code	Tap	Tap shank mm	Tap square mm	Collet Ø
TC208X6.3	M8	8	6.3	31
TC2010X8	M10	10	8	31
TC209X7.1	M12	9	7.1	31
TC2011X9	M14	11	9	31
TC2011.2X9	M14	11.2	9	31
TC2012X9	M16	12	9	31
TC2012.5X10	M16	12.5	10	31
TC2014X11.2	M18/M20	14	11.2	31
TC2016X12	M20	16	12	31

M14-M36

Stock code	Tap	Tap shank mm	Tap square mm	Collet Ø
TC3611.2X9	M14	11.2	9	48
TC3612X9	M16	12	9	48
TC3612.5X10	M16	12.5	10	48
TC3614X11.2	M18/M20	14	11.2	48
TC3616X12	M20	16	12	48
TC3616X12.5	M22	16	12.5	48
TC3618X14.5	M22/M24	18	14.5	48
TC3618X14	M24	18	14	48
TC3620X16	M27/M30	20	16	48
TC3622X18	M30	22	18	48
TC3622.4X18	M33	22.4	18	48
TC3625X20	M33/M36	25	20	48
TC3628X22	M36	28	22	48

TAP COLLETS

With clutch - torque adjustable

M3-M12

Stock code	Tap	Tap shank mm	Tap square mm	Collet Ø
TCC123.15X2.5	M3	3.15	2.5	19
TCC123.5X2.7	M3	3.5	2.7	19
TCC124X3.15	M4	4	3.15	19
TCC124.5X3.4	M4	4.5	3.4	19
TCC125X4	M5	5	4	19
TCC126X4.9	M5/M6	6	4.9	19
TCC126.3X5	M6	6.3	5	19
TCC128X6.3	M8	8	6.3	19
TCC1210X8	M10	10	8	19
TCC129X7.1	M12	9	7.1	19

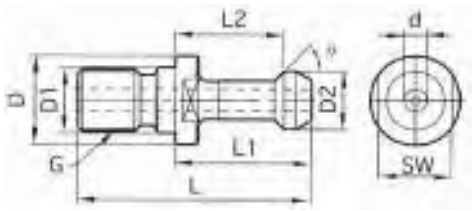
M8-M20

Stock code	Tap	Tap shank mm	Tap square mm	Collet Ø
TCC208X6.3	M8	8	6.3	31
TCC2010X8	M10	10	8	31
TCC209X7.1	M12	9	7.1	31
TCC2011X9	M14	11	9	31
TCC2011.2X9	M14	11.2	9	31
TCC2012X9	M16	12	9	31
TCC2012.5X10	M16	12.5	10	31
TCC2014X11.2	M18/M20	14	11.2	31
TCC2016X12	M20	16	12	31

M14-M36

Stock code	Tap	Tap shank mm	Tap square mm	Collet Ø
TCC3611.2X9	M14	11.2	9	48
TCC3612X9	M16	12	9	48
TCC3612.5X10	M16	12.5	10	48
TCC3614X11.2	M18/M20	14	11.2	48
TCC3616X12	M20	16	12	48
TCC3616X12.5	M22	16	12.5	48
TCC3618X14.5	M22/M24	18	14.5	48
TCC3618X14	M24	18	14	48
TCC3620X16	M27/M30	20	16	48
TCC3622X18	M30	22	18	48
TCC3622.4X18	M33	22.4	18	48
TCC3625X20	M33/M36	25	20	48
TCC3628X22	M36	28	22	48

PULL STUDS



Stock code	L	L1	L2	D	D1	D2	Ø	G
P40M1C	60	35	28	23	17	15	45	M16
P40M2C	60	35	28	23	17	15	60	M16
P50M1C	85	45	35	38	25	23	45	M24
P50M2C	85	45	35	38	25	23	60	M24

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With through coolant hole

Stock code	L	L1	L2	D	D1	D2	Ø	G
P40M1CC	60	35	28	23	17	15	45	M16
P40M2CC	60	35	28	23	17	15	60	M16
P50M1CC	85	45	35	38	25	23	45	M24
P50M2CC	85	45	35	38	25	23	60	M24

5C COLLETS (ROUND)

Hardness of clamp part HRC 55-60

Stock	Bore mm	Length mm
5CC6	6	83.3
5CC8	8	83.3
5CC10	10	83.3
5CC12	12	83.3
5CC16	16	83.3
5CC20	20	83.3
5CC25	25	83.3

HORIZONTAL/VERTICAL TOOL POTS

Stock code	Accepts taper	Height mm	Base length mm
BT40TP	BT/DIN/ISO40	171	130
BT50TP	BT/DIN/ISO50	216	175

CNC TOOL STORAGE TROLLEY

Stock code	Taper	No of Pots
38103-40	ISO/BT40	28
38103-50	ISO/BT50	20
38103-HSK63	HSK63	24

DRILL DRIFTS

Stock code	Size	Morse taper	O/A lenght mm	Height mm	Width mm
DD1C	1	1+2	140	20	5
DD3C	3	3	190	25	7
DD4C	4	4	225	30	10
DD5C	5	5+6	265	35	15

SINGLE HAND DRILL DRIFTS

DIN 318

Stock code	To eject morse tapers	Overall length mm
SHDD1	MT1, MT2, MT3	317
SHDD2	MT4, MT5, MT6	380

DEAD CENTRES – STEEL

Hardened and ground.

Stock Code	Taper	Large Ø mm	Length mm	Stock Code	Taper	Large Ø mm	Length mm
DC1C	MT1	12	80	DC4C	MT4	32	100
DC2C	MT2	17.8	100	DC5C	MT5	45	200
DC3C	MT3	24	125	DC6C	MT6	64	270

DEAD CENTRES – CARBIDE TIPPED

Hardened and ground.

Stock Code	Taper	Large Ø	Length mm	Stock Code	Taper	Large Ø	Length mm
TCTDC1C	MT1	12	80	TCTDC4C	MT4	32	100
TCTDC2C	MT2	17.8	100	TCTDC5C	MT5	45	200
TCTDC3C	MT3	24	125	TCTDC6C	MT6	64	270

PRECISION REVOLVING CENTRES

Hardened and ground tool steel. Ball bearings sealed.

Stock Code	Taper	Head Ø mm	Point length mm	Max point Ø mm	Max load kg	Max RPM	Run out mm
LC2Q	MT2	45	24	20	200	7000	0.005
LC3Q	MT3	60	31	25	500	5000	0.005
LC4Q	MT4	70	41	32	800	3800	0.005
LC5Q	MT5	90	50.5	40	2000	3000	0.005

PRECISION NC REVOLVING CENTRES

Stock Code	Taper	Head Ø mm	Point length mm	Max point Ø mm	Max load kg	Max RPM	Run out mm
NCLC2Q	MT2	45	34	20	140	7000	0.005
NCLC3Q	MT3	60	47	25	400	5000	0.005
NCLC4Q	MT4	70	53	32	500	3800	0.005
NCLC5Q	MT5	90	65	40	1200	3000	0.005

HEAVY DUTY REVOLVING CENTRES

Stock code	Taper	Body Ø mm	Max point Ø mm	Point lenght mm	Max radial load N	Max RPM	Run out mm
HDLC2Q	MT2	46	21	26	400	6000	0.005
HDLC3Q	MT3	54	26	32	600	5000	0.005
HDLC4Q	MT4	64	32	38	1000	4500	0.005
HDLC5Q	MT5	84	42	46	2500	3500	0.005
HDLC6Q	MT6	120	63	66	5000	1500	0.008

PIPE CENTRES

Stock Code	Taper	Large Ø mm	Small Ø mm	Angle of head °
PC2X6060	2MT	60	20	60
PC2X6075	2MT	60	12	75
PC2X8060	2MT	80	25	60
PC2X8075	2MT	80	12	75
PC3X7060	3MT	70	20	60
PC3X7075	3MT	70	12	75
PC3X10060	3MT	100	30	60
PC3X10075	3MT	100	32	75
PC3X12060	3MT	120	40	60
PC3X12075	3MT	120	32	75
PC4X8060	4MT	80	25	60
PC4X8075	4MT	80	12	75
PC4X10060	4MT	140	30	60
PC4X10075	4MT	100	32	75
PC4X13060	4MT	130	40	60
PC4X13075	4MT	130	35	75
PC4X16060	4MT	160	40	60
PC4X16075	4MT	160	35	75
PC5X10060	5MT	100	30	60
PC5X10075	5MT	100	32	75
PC5X16060	5MT	160	40	60
PC5X16075	5MT	160	35	75
PC5X20060	5MT	200	66	60
PC5X20075	5MT	200	40	75

FACE DRIVING CENTRES TYPE FDC

Interchangeable driving discs and centre points. Hydraulically equalised driving pins. Spring loaded centre point.

Stock code	Ø turning range mm	Clamping range mm	Body Ø mm	Shank	No of driving discs per set
FDC	10-100	10-50	70	3MT	8

THREE JAW SELF CENTERING LATHE CHUCKS. BACK PLATE MOUNTING PRIME GRIP

Mono block jaws

Stock code	Outside Ø mm	Max clamping Ø mm	Bore Ø mm	Max RPM	Back recess Ø mm
3JSC80Q	80	63	16	4000	55
3JSC100Q	100	80	22	3500	72
3JSC125Q	125	110	30	3000	95
3JSC160Q	160	145	40	2500	130
3JSC200Q	200	200	65	2000	165
3JSC250Q	250	250	80	1600	206
3JSC315Q	315	315	100	1200	272
3JSC380Q	380	380	135	1000	325

THREE JAW SELF CENTERING LATHE CHUCKS. BACK PLATE MOUNTING. PRIME GRIP

Hard base jaws with reversible top jaws to ISO3442

Stock code	Outside Ø mm	Max clamping Ø mm	Bore Ø mm	Max RPM	Back recess Ø mm
3JSC160AQ	160	160	40	2500	142
3JSC200AQ	200	200	65	2000	180
3JSC250AQ	250	250	80	1600	226
3JSC315AQ	315	315	100	1200	285
3JSC325AQ	325	325	100	1200	270
3JSC380AQ	380	380	125	1000	325
3JSC400AQ	400	400	130	1000	368
3JSC500AQ	500	500	210	800	465

THREE JAW SELF CENTERING LATHE CHUCKS. DIRECT MOUNTING. PRIME GRIP

Hard base jaws with reversible top jaws to ISO3442

CAMLOCK MOUNTING

Stock code	Outside Ø mm	Spindle Ø mm	Bore Ø mm	Max RPM	Stud P.C.D. mm
3JSC160ACL4Q	160	4	40	2500	82.6
3JSC200ACL4Q	200	4	50	2000	82.6
3JSC200ACL5Q	200	5	50	2000	104.8
3JSC200ACL6Q	200	6	50	2000	133.4
3JSC250ACL6Q	250	6	70	1600	133.4
3JSC250ACL8Q	250	8	80	1600	171.4
3JSC325ACL6Q	325	6	100	1200	133.4
3JSC325ACL8Q	325	8	100	1200	171.4
3JSC380ACL11Q	380	11	135	1000	235

DIN MOUNTING FORM C

Stock code	Outside Ø mm	Spindle Ø mm	Bore Ø mm	Max RPM	Stud P.C.D. mm
3JSC250ADIN6Q	250	6	70	1600	133.4
3JSC325ADIN8Q	325	8	100	1200	171.4

FOUR JAW SELF CENTERING LATHE CHUCKS. BACK PLATE MOUNTING PRIME GRIP

Stock code	Outside Ø mm	Max clamping Ø mm	Bore Ø mm	Max RPM	Back recess Ø mm
4JSC160Q	160	160	40	2500	130
4JSC200Q	200	200	65	2000	165
4JSC250Q	250	250	80	1600	206
4JSC325AQ	325	325	100	1200	272

FOUR JAW INDEPENDENT LATHE CHUCKS. BACK PLATE MOUNTING PRIME GRIP

Stock code	Outside Ø mm	Max clamping Ø mm	Bore Ø mm	Back recess Ø mm
4JI100	100	100	25	72
4JI125	125	125	32	72
4JI160	160	160	45	65
4JI200	200	200	55	80
4JI250	250	250	75	110

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Stock code	Outside Ø mm	Max clamping Ø mm	Bore Ø mm	Back recess Ø mm
4JI320	320	320	95	140
4JI400	400	400	125	160
4JI500	500	500	160	200
4JI630	630	630	180	220
4JI800	800	800	210	250

FOUR JAW INDEPENDENT LATHE CHUCKS DIRECT MOUNTING PRIME GRIP

CAMLOCK MOUNTING

Stock code	Outside Ø mm	Spindle Ø mm	Bore Ø mm	Stud P.C.D. mm
4JI200CL4	200	4	56	82.6
4JI250CL4	250	4	61	82.6
4JI250CL5	250	5	75	104.8
4JI315CL5	315	5	79	104.8
4JI320CL6	320	6	79	133.4
4JI400CL6	400	6	95	133.4
4JI400CL8	400	8	125	171.4
4JI500CL8	500	8	136	171.4
4JI500CL11	500	11	160	235.0
4JI630CL11	630	11	180	235.0

ADAPTOR PLATES DIN 55022

Finnished. For self centering lathe chucks.

Stock code	To suit chuck Ø mm	Spindle Ø inch	Stock code	To suit chuck Ø mm	Spindle Ø inch
AP160DIN4	160	4	AP250DIN6	250	6
AP160DIN5	160	5	AP250DIN8	250	8
AP200DIN4	200	4	AP315DIN6	315	6
AP200DIN5	200	5	AP315DIN8	315	8
AP200DIN6	200	6	AP400DIN8	400	8

ADAPTOR PLATES CAMLOCK D1

Finnished. For self centering lathe chucks.

Stock code	To suit chuck Ø mm	Spindle Ø inch	Stock code	To suit chuck Ø mm	Spindle Ø inch
AP160CL3	160	3	AP315CL8	315	8
AP160CL4	160	4	AP315CL11	315	11
AP160CL5	160	5	AP325CL6	325	6
AP200CL4	200	4	AP325CL8	325	8
AP200CL5	200	5	AP325CL11	325	11

Note : See page 489 for spindle nose measurements

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ADAPTOR PLATES CAMLOCK D1 CONT.....

Stock code	To suit chuck Ø mm	Spindle Ø inch	Stock code	To suit chuck Ø mm	Spindle Ø inch
AP200CL6	200	6	AP380CL6	380	6
AP200CL8	200	8	AP380CL8	380	8
AP250CL4	250	4	AP380CL11	380	11
AP250CL5	250	5	AP400CL8	400	8
AP250CL6	250	6	AP400CL11	400	11
AP250CL8	250	8	AP500CL11	500	11
AP315CL6	315	6			

CHANDOX THREE JAW SELF CENTERING LATHE SCROLL CHUCKS

Black plate mounting, monoblock jaws

Stock code	Outside Ø mm	Max clamping Ø mm	Bore Ø mm	Back recess Ø mm	Max RPM
3J100SC	100	90	24	80	2500
3J125SC	125	110	32	100	2500
3J160SC	160	160	45	130	2000
3J200SC	200	220	58	160	2000
3J250SC	250	260	89	220	1800
3J315SC	315	300	105	260	1800

CHANDOX THREE JAW SELF CENTERING HOLLOW BORE POWER CHUCKS

Direct mounting, split jaws

Stock code	Outside Ø mm	Spindle nose	Bore Ø mm	Jaw stroke mm	Max RPM	Max gripping force Kg F
3JPC160OC	169	A5	45	5.5	6000	5710
3JPC200OC	210	A6	52	7.4	4800	8360
3JPC250OC	254	A8	75	8.8	4200	11010

ITA BENCH VICES WITH SWIVEL BASES

Cast Iron

Stock Code	Jaw width mm	Max opening mm	Jaw height mm	Weight Kg
BV100C	90	100	50	7
BV150C	130	150	70	14
BV200C	180	200	80	20

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HEAVY DUTY

Stock Code	Jaw width mm	Max opening mm	Jaw height mm	Weight Kg
BV150HD	150	180	108	26

ITA FABRICATED ALL STEEL BENCH VICE

Stock Code	Jaw width mm	Max opening mm	Jaw height mm	Weight Kg
RTBV150	150	190	78	22

YORK BENCH VICES

Complete with swivel base

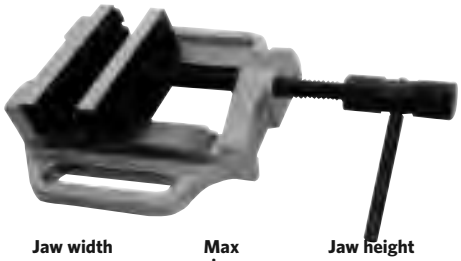
Stock Code	Jaw width mm	Jaw opening mm	Weight kg
YBV80	80	70	6
YBV100	100	105	12.5
YBV125	125	115	20
YBV150	150	125	30

ITA DRILL VICES STANDARD

Stock code	Jaw width mm	Opening mm	Jaw height mm	Weight kg
DVS75Q	75	50	20	2.0
DVS100Q	100	75	23	3.1
DVS125Q	125	100	26	3.1
DVS150Q	150	125	30	3.3
DVS200Q	200	175	35	4.6

PREMIUM QUALITY DRILL VICES

Jaws, slides and guides hardened and ground



Stock Code	Jaw width mm	Max opening mm	Jaw height mm	Clamp slot width mm
PQDV80	80	61	25	11
PQDV100	100	87	30	13.5
PQDV125	125	108	30	13.5

TILTING DRILL VICES

Stock code	Jaw width mm	Opening mm	Jaw height mm	Weight kg
TDV85Q	85	80	32	5.2
TDV115Q	115	90	40	8

COMPOUND DRILL VICES

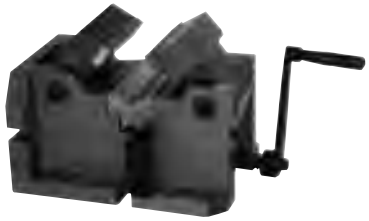
Stock Code	Jaw width mm	Max opening mm	Jaw height mm	Length stroke mm	Cross stroke mm
CDV150Q	152	135	42	100	100

TOOLMAKERS VICES

For high accuracy light machining, inspection or marking out of precision components. Vice can be used standing on its base, sides, end or top. Guaranteed within 0.005 mm in parallelism, flatness and squareness with the vice in any mode. Manufactured from high grade oil hardening cast steel, hardened and tempered to ensure stability and accuracy throughout the unit´s working life.

Stock code	Jaw width mm	Length mm	Jaw opening mm	Depth of jaws mm
TMV50	50	140	65	25
TMV63	63	175	85	32
TMV73	73	190	100	35
TMV100	100	245	125	45

PIPE VICES



Stock code	Jaw width mm	Clamping range Ø mm
PV100C	100	10-80

MACHINE VICES

With unguarded lead screw

Stock code	Jaw width mm	Length mm	Max Opening mm	Jaw height mm
LDMV160	160	350	130	50
LDMV200	200	440	220	63

SWIVEL BASE MILLING MACHINE VICES

Stock code	Jaw width mm	Jaw height mm	Max opening mm	Overall length mm
MV100Q	100	35	80	240
MV125Q	125	40	100	290
MV160Q	160	52	125	390
MV200Q	200	63	160	430

ACCU-LOCK DOWN GRIP MACHINE VICES

Stock code	Jaw width mm	Jaw height mm	Max opening mm	Overall length mm	Parallelism -top surface to bottom over 100mm
ALMV100Q	100	32	100	337	0.015
ALMV125Q	125	40	110	377	0.015
ALMV160Q	160	45	140	448	0.015
ALMV200Q	200	56	190	540	0.015

HYDRAULIC MACHINE VICES

Clamping force adjustable. High tensile cast iron body. Hardened and ground slide ways.

Stock code	Jaw width mm	Jaw opening mm	Jaw height mm	Vice length mm	Clamping force kg
HMV100	100	170	36	430	2500
HMV125	125	220	46	540	3500
HMV150	150	300	51	620	4500
HMV200	200	300	62	700	8500

TILTING & SWIVELING MACHINE VICES

Stock code	Jaw width mm	Length mm	Opening mm	Jaw height mm
TSMV100	100	505	170	36
TSMV150	150	490	310	58

ANGLE PLATES – SLOTTED

Stock Code	Width mm	Height mm	Depth mm
AP75C	75	63	50
AP90C	90	75	63
AP112C	112	88	75
AP150C	150	125	112
AP200C	200	150	125
AP250C	250	200	150
AP300C	300	225	200

TILTING ANGLE PLATES

Stock code	Length mm	Width mm	Height mm	T. slot width mm
AAP180	180	130	91	10
AAP250	250	175	133	12
AAP380	380	260	185	16
AAP600	600	310	205	16

SETS OF PARALLELS

Stock code	No of pairs in set	Width mm	Length mm	Height range mm
PS9	9	6.35	150	19-41
PS5	13	5	150	14-50
PS10	13	10	150	14-50

MACHINISTS V BLOCKS

Supplied in pairs.

Stock code	Length mm	Width mm	Height mm	Width accross V mm
MVB75C	75	32	60	45
MVB100C	100	40	65	50
MVB125C	125	50	80	50
MVB150C	150	63	87	80
MVB200C	200	100	112	100
MVB250C	250	125	165	125
MVB300C	300	175	200	162

UNIVERSAL V BLOCKS

Stock code	Capacity Ø mm	V Block length mm	V Block width mm	V Block height mm
UVB	32	35	20	32

V BLOCK AND CLAMP SETS

Stock Code	Length mm	Width mm	Height mm	Clamping capacity
VB50	50	40	50	30
VB75	75	55	55	50
VB100	100	75	70	70

MAGNETIC V BLOCKS - LONG

Stock code	Length mm	Height mm	Width mm	Magnetic force N
MVBC	100	95	70	588

MAGNETIC V BLOCKS - SHORT

Stock code	Length mm	Height mm	Width mm	Magnetic force N
SMVBC	50	80	100	196

MAGNETIC TRANSFER V BLOCKS

Stock code	Length mm	Width mm	Height mm	Unit
MTVB	50	60	48	pair
MTVB1	110	60	48	each

MAGNETIC TRANSFER BLOCKS

Sold in pairs

Stock code	Length mm	Width mm	Height mm
MB100C	100	50	25

POT MAGNETS

Stock Code	Diameter mm	Height mm	Tapped hole	Magnetic Pull kg	Magnetic Pull N
PM17C	17	16	M6	2.6	25
PM22C	22	19	M6	4.2	41
PM27C	27	25.4	M6	7	68
PM35C	35	30	M6	20	190
PM65C	65	43	M12	41	400

MAGNETIC LIFTERS

Stock code	Height mm	Width mm	Length mm	Magnetic force N	Magnetic force kg
ML588N	55	50	63	588	60
ML748N	55	50	69	748	80
ML900N	55	50	88	900	100
ML1178N	55	50	118	1178	120

PERMANENT MAGNETIC LIFTERS

Stock code	Rated lifting capacity Steel Plate kg	Round Steel kg	Max pull of Force kg	Weight kg
ML100	100	50	350	3
ML300	300	150	1050	12
ML600	600	300	2100	25
ML1000	1000	500	3500	43
ML2000	2000	1000	6000	85

HIGH POWER RECTANGULAR PERMANENT MAGNETIC CHUCKS

Stock code	Width mm	Length mm	Height mm	Magnetic pull N/cm²
PRMC120X254C	120	254	48	M120
PRMC150X300C	150	300	48	M120
PRMC150X350C	150	350	48	M120
PRMC150X400C	150	400	48	M120
PRMC200X400C	200	400	48	M120
PRMC200X460C	200	460	48	M120
PRMC200X500C	200	500	48	M120
PRMC200X600C	200	600	48	M120
PRMC250X500C	250	500	53	M120
PRMC250X600C	250	600	53	M120

Height dimensions may change.

CIRCULAR PERMANENT MAGNETIC CHUCKS

Stock code	Ø mm	Height mm	Magnetic pull N/cm²
CMC160C	160	66	U80
CMC200C	200	73	U80
CMC250C	250	80	U80
CMC300C	300	94	U120
CMC400C	400	100	U120

DEMAGNETISERS

Stock code	Capacity	Length mm	Width mm	Height mm
DM100C	100VA	160	125	85
DM300C	300VA	200	160	120

SIMPLE INDEXER

Vertical/horizontal operation. Supplied with a master indexing plate with 24 index positions and additional plates having 2, 3, 4, 6, 8, 12 index positions.

Stock code	To suit chuck Ø mm	Face plate Ø	Centre height mm	Overall height mm	Width mm
SI150	150	167	130	218	156
SI200	200	210	149.25	257	173

Note: Supplied without three jaw chuck. Tail stock available on request.

HORIZONTAL/VERTICAL ROTARY TABLES

Worm drive hardened and ground. Graduated through 360˚. One turn of the handle moves the table 4˚.

Stock code	Table Ø mm	Height mm	Base mm	Centre sleeve MT	Worm gear ratio
HVRT150	150	78	220x160	2	90:1
HVRT200	200	110	310x225	3	90:1
HVRT250	250	110	320x280	3	90:1
HVRT300	300	140	410x325	4	90:1
HVRT350	350	140	460x380	4	90:1
HVRT400	400	150	510x435	5	90:1

Note: Supplied without indexing plates or lathe chuck

SEMI-UNIVERSAL DIVIDING HEAD

Dividing ratio: 1:40. Base and head block - stabilized cast iron. Head stock spindle - chrome nickel steel, hardened (HRc 60) and ground.
Standard accessories: Indexing plates and tail stock.

Stock code	Centre height mm	To suit lathe chuck Ø mm	Height mm	Width mm
SUD100	100	100/125	173	140
SUD128	128	125/150	220	156

Note: Supplied without lathe chuck.

UNIVERSAL DIVIDING HEADS

With gear train for spiral milling.
Dividing ratio: 1:40.
Base and head block - stabilized cast iron.
Head stock spindle - chrome nickel steel, hardened (HRc 60) and ground.
Standard accessories: Gear train, tailstock and indexing plates.

Stock code	Centre height mm	To suit lathe chuck Ø mm	Height mm	Width mm
UD132.7	132.7	150/180	236	272

Note: Supplied without lathe chuck.

CNC ROTARY TABLES

Bronze /Nickel worm wheel with case hardened steel worm screw.
Multi point pneumatic brake system. Interfaces as either a true fourth axis or as a M-code indexer.

Stock code	Table Ø mm	Centre height mm	Height when horizontal mm	Bore Ø mm H7	Gear ratio
CNC-200	200	160	165	35	1:90

Indexing unit	Max RPM	Indexing accuracy	Repeatability	Max load horizontal Kg	Max load vertical Kg
1.001˚	22.2	A/25"	43"	200	100

Note: Fitted standard with a FANUC servo motor. Also available with Meldas, Siemens or Heidenhain motors.
Indexing accuracy class AA/6" and S/50" also available on request

COMPOUND TABLES TYPE CT

Stock code	Table length mm	Table width mm	Base length mm	Base width mm	X travel mm	Y axis travel mm	T slot width mm
CT240	240	190	195	155	120	140	12
CT340	340	190	195	155	200	140	12
CT430	430	240	260	190	280	180	12
CT600	600	240	260	190	400	180	12

RIGHT ANGLE HEADS

Stock code	Driving spindle	Output spindle	Arbor Ø mm
R8RAH	R8	R8	22
ISO40RAH	ISO40	R8	22

POWER FEED ATTACHMENTS

Stock code	Axis	Speed RPM	Torque Newton Meters
PFAXQ	X	0-200	16
PFAX	X	0-200	16
PFAY	Y	0-200	16
PFAZ	Z	0-200	16

FORTY POSITION QUICK CHANGE TOOL POSTS

The toolpost has a main body with a ground tooth coupling. Toolholders are clamped against the ground teeth with a dual clamping system with an eccentric cam. Forty clamping positions are possible. The system ensures superior rigidity and precision. Precision repeatability is within 0.01mm.

SETS

Set comprises 1 off turret, 3 off turning toolholders and 1 off toolholder with V groove for use with boring bars.

Stock code	Series	Lathe swing mm	Max toolholder sq mm	Max boring bar Ø
MQCTPSETA0	A0	120-220	12	12
MQCTPSETA1	A1	150-300	20	20
MQCTPSETE5	E5	200-400	20	25
MQCTPSETB2	B2	300-500	25	32
MQCTPSETC3	C3	400-700	32	40

TURRETS

Stock code	Series	Lathe swing mm	Max toolholder sq mm	Max toolholder length mm	Max boring bar Ø mm
MQCTA0	A0	120-220	12	50	12
MQCTA1	A1	150-300	20	90	20
MQCTE5	E5	200-400	25	100	30
MQCTB2	B2	300-500	32	140	32
MQCTC3	C3	400-700	40	170	40
MQCTD1	D1	600-1000	63	180	50

STANDARD TOOL HOLDERS

Stock code	Series	Shank sq mm	Shank length mm
MQCTHA012	A0	12	50
MQCTHA113	A1	16	90
MQCTHA120	A1	20	90
MQCTHE520	E5	20	100
MQCTHE525	E5	25	100
MQCTHB225	B2	25	120
MQCTHB232	B2	32	140
MQCTHC332	C3	32	150
MQCTHC340	C3	40	170
MQCTHD140	D1	40	180
MQCTHD150	D1	50	180

BORING BAR HOLDERS

Stock code	Series	Boring bar Ø mm	Boring bar length mm
MQCBHA0	A0	12	50
MQCBHA1	A1	20	90
MQCBHE5	E5	30	100
MQCBHB2	B2	32	130
MQCBHC3	C3	40	160

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DRILL HOLDERS

Stock code	Series	Holder bore mm	Holder length mm	Max morse taper	Max drill Ø
MQCDHA0	A0	15	50	1MT	14
MQCDHA1	A1	30	80	2MT	23
MQCDHE5	E5	40	100	3MT	31.5
MQCDHB2	B2	40	140	4MT	50
MQCDHC3	C3	40	150	4MT	50

MORSE TAPER BUSHES

Stock code	Series	Outside Ø mm	Lenght mm	Max morse taper	Max drill Ø
MQCBA0	A0	15	50	1MT	14
MQCBA1	A1	30	80	2MT	23
MQCBE5	E5	40	100	3MT	31.5
MQCBB2	B2	40	140	4MT	50
MQCBC3	C3	40	150	4MT	50
MQCBD1	D1	63	185	5MT	76

QUICK CHANGE TOOL POSTS

Supplied with 4 toolholders: 3 off standard for external tools, 1 off with V for boring bars.

Stock code	Size	Centre height mm	Height from centre to toolpost mm Min	Max	Accepts turning tool mm	Accepts boring bar Ø mm	Morse taper
QCTPM	M	120	24	34	16x16	14	1
QCTPAP	AP	140	25	41	16x16	16	1
QCTPA	A	170	32	42	20x20	18	2
QCTPBP	BP	200	38	53	25x25	20	3
QCTPB	B	230	47	65	32x32	24	3
QCTPC	C	280	51	72	32x32	26	4
QCTPD	D	350	61	95	40x40	36	4
QCTPE	E	450	75	111	50x50	38	5

STANDARD TOOL HOLDERS

Stock code	Series	Shank sq mm	Shank length mm
QCTHM	M	16	50
QCTHAP	AP	16	60
QCTHA	A	20	65
QCTHBP	BP	25	85
QCTHB	B	32	100
QCTHC	C	32	120

TOOLPOST GRINDERS

Stock code	Wheel Ø mm	Motor power HP	Distance from centre to base mm	Height mm	Overall length mm
TPG125S	125	1/2	38	240	440
TPG180S	180	1	40	270	485
TPG250S	250	2	55	360	455

TPG250-IS - External only
Internal arbor optional extra

STANDARD BORING HEADS

Stock code	Head ø Ø mm	Head length mm	Boring bar Ø mm
BH50	50	62	12
BH75	75	80	18
BH100	100	90	25

ARBORS

Stock code	Taper	To suit head
R8BHA	R8	50-75-100
3MTBHA	3MT	50-75-100
4MTBHA	4MT	50-75-100
ISO30BHA	ISO30	50-75-100
ISO40BHA	ISO40	50-75-100

AUTO BORING AND FACING HEADS

Supplied without arbor. Vernier scale: 1 division = 0.01 mm on Ø.

Stock code	Max facing Ø mm	Max boring Ø mm	Slide travel mm	Manual return mm/rev	Head Ø mm	Boring bar Ø mm
BFH36B	220	160	36	3	78	16
BFH56B	330	230	56	3	115	25
BFH80B	380	280	80	3	140	25
BFH110B	430	340	110	3	140	25
BFH125B	600	380	125	4	190	32
BFH160B	680	450	160	4	190	32

ARBORS

Stock code	Taper	To suit head
R8BFHA36	R8	36
R8BFHA56#	R8	56
ISO30BFHA36	ISO30	36
ISO40BFHA36	ISO40	36
ISO40BFHA	ISO40	56/80/110
ISO50BFHA	ISO50	56/80/110/125/160

REVERSING TAP CHUCKS

Stock code	Tapping range mm	Mounting taper mm	Forward float mm	Backward float mm	Front nut Ø mm
207B16C	M2-M7	B16	3.5	5	23
412B16C	M4-M12	B16	4.5	5	28
820C	M8-M20	M20	6	6	40

NON REVERSING TAP CHUCKS

Stock code	Tapping range mm	Mounting taper mm	Forward float mm	Backward float mm	Front nut Ø mm
207NB16	M2-M7	B16	5	5	23
412NJ6	M4-M12	BJ6	5	5	28
820N	M8-M20	M20	8	6	40

BALL JOINT UNIVERSAL CLAMPS

Forged steel with brass shoes

Stock code	Lenght mm	Width mm	Stud	Table T slot width mm
BJUCM12	125	37	M12	14
BJUCM16	150	47	M16	18

ADJUSTABLE PLAIN CLAMPS

Stock code	To suit T bolt	Length mm	Width mm	Thickness mm	Slot width mm
APC80M10	M10	80	30	15	11
APC100M12	M12	100	40	20	15
APC125M12	M12	125	50	25	18

PLAIN CLAMPS

DIN 6314

Stock code	To suit T Bolt	Lenght mm	Width mm	Height mm	Width of slot mm	Length of slot mm
PC7x50C	M6	50	20	10	7	20
PC9x60C	M8	60	25	12	9	22
PC11x80C	M10	80	30	15	11	30
PC14x100C	M12/14	100	40	20	14	40
PC14x125C	M12/14	125	40	20	14	50
PC18x125C	M16/18	125	50	25	18	45
PC18x160C	M16/18	160	50	25	18	65
PC22x160C	M20/22	160	60	30	22	60
PC22x200C	M20/22	200	60	30	22	80
PC26x200C	M24	200	70	30	26	80

CRANKED HEEL CLAMPS

DIN6316

Stock code	To suit T bolt	Length mm	Width mm	Height mm	Slot width mm
CHC14X125C	M12	125	40	20	14
CHC14X160C	M14	160	50	25	16
CHC18X160C	M16	160	50	25	18
CHC22X160C	M20	160	60	30	22

OPEN END CLAMPS

DIN 6315B

Stock code	To suit T Bolt	Lenght mm	Width mm	Height mm	Width of slot mm
OEC7x60C	M6	60	19	12	7
OEC9x80C	M8	80	25	15	9
OEC11x100C	M10	100	31	20	11
OEC14x125C	M12/14	125	38	25	14
OEC18x160C	M16/18	160	48	30	18
OEC18x200C	M16/18	200	52	30	18
OEC22x200C	M20/22	200	62	40	22
OEC26x200C	M24	200	66	40	26
OEC26x315C	M24	315	66	40	26

STEPPED CLAMPS

DIN 6314Z

To be used with step blocks DIN 6500

Stock code	To suit T Bolt	Lenght mm	Width mm	Height mm	Width of slot mm	Length of slot mm
SC7x50	M6	50	20	10	7	20
SC9x60	M8	60	25	12	9	22
SC11x80	M10	80	30	15	11	30
SC14x100	M12/14	100	40	20	14	40
SC18x125	M16/18	125	50	25	18	45
SC22x160	M20/22	160	60	30	22	60
SC26x200	M24	200	70	30	26	80

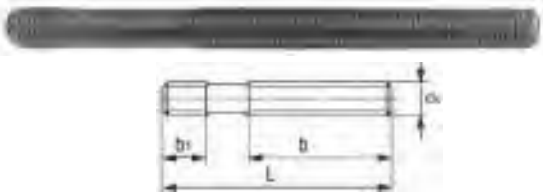
UNIVERSAL STEP BLOCKS

DIN 6500

Stock code	Size	Max rising height mm	Step block height mm	Step block width mm
USB1	1	51	33	19
USB2	2	107	66	35.5
USB3	3	208	131	68

HIGH TENSILE STUDS TYPE S

DIN 6379. Execution: heat treated, rolled thread.
Tensile strength class: 8.8.



Stock code	d	L	b	b1
SM6x32	M6	32	16	9
SM6x40	M6	40	20	9
SM6x50	M6	50	30	9
SM6x63	M6	63	40	9
SM6x80	M6	80	50	9
SM8x40	M8	40	20	11
SM8x63	M8	63	40	11
SM8x100	M8	100	63	11
SM8x160	M8	160	100	11
SM10x50	M10	50	25	13
SM10x80	M10	80	50	13
SM10x100	M10	100	75	13
SM10x125	M10	125	75	13
SM10x160	M10	160	100	13
SM10x200	M10	200	125	13
SM12x50	M12	50	25	15
SM12x63	M12	63	32	15
SM12x80	M12	80	50	15
SM12x100	M12	100	63	15
SM12x125	M12	125	75	15
SM12x160	M12	160	100	15
SM12x200	M12	200	125	15
SM14x63	M14	63	32	17
SM14x100	M14	100	63	17
SM14x160	M14	160	100	17
SM14x200	M14	200	125	17
SM14x250	M14	250	160	17
SM16x63	M16	63	32	19
SM16x80	M16	80	50	19
SM16x100	M16	100	63	19
SM16x125	M16	125	75	19
SM16x160	M16	160	100	19
SM16x200	M16	200	125	19
SM16x250	M16	250	160	19
SM16x315	M16	315	180	19
SM16x500	M16	500	315	19
SM18x80	M18	80	50	23
SM18x125	M18	125	75	23
SM18x160	M18	160	100	23
SM18x200	M18	200	125	23
SM18x250	M18	250	150	23
SM18x315	M18	315	180	23
SM20x80	M20	80	32	27
SM20x125	M20	125	70	27
SM20x160	M20	160	100	27
SM20x200	M20	200	125	27
SM20x250	M20	250	160	27
SM20x315	M20	315	200	27
SM20x400	M20	400	250	27
SM20x500	M20	500	315	27
SM22x100	M22	100	45	31
SM22x160	M22	160	100	31
SM22x200	M22	200	125	31

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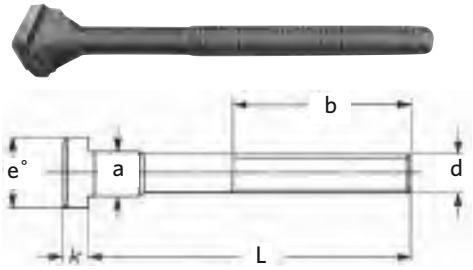
Stock code	d	L	b	b1
SM22x250	M22	250	160	31
SM22x315	M22	315	180	31
SM22x400	M22	400	250	31
SM24x100	M24	100	45	35
SM24x125	M24	125	70	35
SM24x160	M24	160	100	35
SM24x200	M24	200	125	35
SM24x250	M24	250	160	35
SM24x315	M24	315	200	35
SM24x400	M24	400	250	35
SM24x500	M24	500	315	35
SM24x630	M24	630	315	35

HIGH TENSILE T BOLTS TYPE TB

DIN 787 Execution: forged, heat treated, milled head, rolled thread.
Tensile strength class: M6-M12 class 10.9,
M14-M42 class 8.8.



Stock code	d x a x L	b	a	e	k
TB6M6x25	M 6x 6x 25	15	5.7	10	4
TB6M6x40	M 6x 6x40	28	5.7	10	4
TB6M6x63	M 6x 6x 63	40	5.7	10	4
TB8M8x32	M 8x 8x 32	22	7.7	13	6
TB8M8x50	M 8x 8x 50	35	7.7	13	6
TB8M8x80	M 8x 8x 80	50	7.7	13	6
TB10M10x40	M10x10x 40	30	9.7	15	6
TB10M10x63	M10x10x 63	45	9.7	15	6
TB10M10x100	M10x10x 100	60	9.7	15	6
TB12M12x50	M12x12x 50	35	11.7	18	7
TB12M12x63	M12x12x 63	40	11.7	18	7
TB12M12x80	M12x12x 80	55	11.7	18	7
TB12M12x125	M12x12x 125	75	11.7	18	7
TB12M12x200	M12x12x 200	120	11.7	18	7
TB14M12x50	M12x14x 50	35	13.7	22	8
TB14M12x63	M12x14x 63	45	13.7	22	8
TB14M12x80	M12x14x 80	55	13.7	22	8
TB14M12x125	M12x14x 125	75	13.7	22	8
TB14M12x200	M12x14x 200	120	13.7	22	8
TB16M14x63	M14x16x 63	45	15.7	25	9
TB16M14x100	M14x16x 100	65	15.7	25	9
TB16M14x160	M14x16x 160	100	15.7	25	9
TB16M14x250	M14x16x 250	150	15.7	25	9
TB16M16x63	M16x16x 63	45	15.7	25	9
TB16M16x80	M16x16x 80	55	15.7	25	9
TB16M16x100	M16x16x 100	65	15.7	25	9
TB16M16x160	M16x16x 160	100	15.7	25	9
TB16M16x200	M16x16x 200	125	15.7	25	9
TB16M16x250	M16x16x 250	150	15.7	25	9
TB18M16x63	M16x18x 63	45	17.7	28	10
TB18M16x80	M16x18x 80	55	17.7	28	10
TB18M16x100	M16x18x 100	65	17.7	28	10
TB18M16x160	M16x18x 160	100	17.7	28	10

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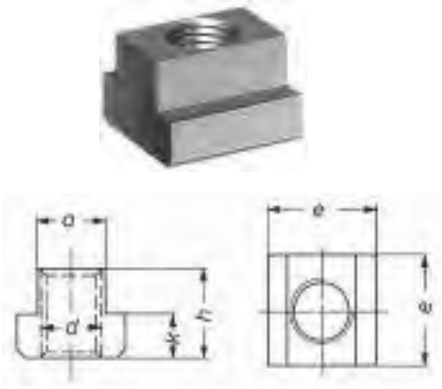
Stock code	d x a x L	b	a	e	k
TB18M16x200	M16x18x200	125	17.7	28	10
TB18M16x250	M16x18x 250	150	17.7	28	10
TB20M20x80	M20x80 80	55	19.7	32	12
TB20M20x100	M20x20 100	65	19.7	32	12
TB20M20x125	M20x20 125	85	19.7	32	12
TB20M20x160	M20x20 160	110	19.7	32	12
TB20M20x200	M20x20 200	125	19.7	32	12
TB20M20x250	M20x20 250	150	19.7	32	12
TB20M20x315	M20x20 315	190	19.7	32	12
TB22M20x80	M20x22 80	55	21.7	35	14
TB22M20x100	M20x22 100	65	21.7	35	14
TB22M20x125	M20x22 125	85	21.7	35	14
TB22M20x160	M20x22 160	110	21.7	35	14
TB22M20x200	M20x22x200	125	21.7	35	14
TB22M20x250	M20x22x250	150	21.7	35	14
TB22M20x315	M20x22x315	190	21.7	35	14
TB24M24x100	M24x24x100	70	23.7	40	16
TB24M24x125	M24x24x125	85	23.7	40	16
TB24M24x160	M24x24x160	110	23.7	40	16
TB24M24x200	M24x24x200	125	23.7	40	16
TB24M24x250	M24x24x250	150	23.7	40	16
TB24M24x315	M24x24x315	190	23.7	40	16
TB24M24x400	M24x24x400	240	23.7	40	16
TB28M24x100	M24x28x100	70	27.7	44	18
TB28M24x125	M24x28x125	85	27.7	44	18
TB28M24x200	M24x28x200	125	27.7	44	18
TB28M24x100	M24x28x250	150	27.7	44	18
TB28M24x125	M24x28x315	190	27.7	44	18
TB28M24x200	M24x28x400	240	27.7	44	18

HIGH TENSILE T NUTS TYPE TN

DIN 508. Tensile strength - 1000 N/mm^2



Stock code	a	e	h	k
TN6M5	5.7	10	8	4
TN8M6	7.7	13	10	6
TN10M8	9.7	15	12	6
TN12M10	11.7	18	14	7
TN14M12	13.7	22	16	8
TN16M12	15.7	25	18	9
TN16M14	15.7	25	18	9
TN18M14	17.7	28	20	10
TN18M16	17.7	28	20	10

Continued ...

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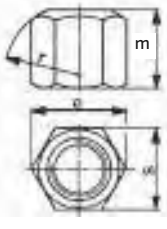
Stock code	a	a	e	h	k
TN20M16	M16x20	19.7	32	24	12
TN20M18	M18x20	19.7	32	24	12
TN22M20	M20x22	21.7	35	28	14
TN24M20	M20x24	23.7	40	32	16
TN24M22	M22x24	23.7	40	32	16
TN28M24	M24x28	27.7	44	36	18
TN30M24	M24x30	29.7	48	38	19
TN32M27	M27x32	31.6	50	40	20
TN36M24	M24x36	35.6	54	44	22

HIGH TENSILE FIXTURE NUTS TYPE FN

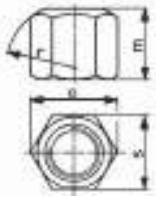
DIN 6330B. Tensile strength - 1000 N/mm^2. With spherical end matching taper face of DIN 6319 D or G. Flat end matching hardened washers DIN 6340.



Stock code	d	s	e	m 1,5d	r
FNM6	M6	10	11.5	9	9
FNM8	M8	13	15.0	12	12
FNM10	M10	16	18.2	15	15
FNM12	M12	18	20.4	18	17
FNM14	M14	21	23.8	21	20
FNM16	M16	24	27.7	24	22
FNM18	M18	27	31.2	27	24
FNM20	M20	30	34.6	30	27
FNM22	M22	34	38.6	33	30
FNM24	M24	36	41.6	36	32

HIGH TENSILE COLLAR NUTS TYPE CN

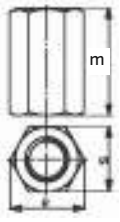
DIN 6331. Tensile strength - 1000 N/mm^2. Milled.



Stock code	d	s	e	m 1,5d	a	d1
CNM6	M6	10	11.5	9	3.0	14
CNM8	M8	13	15.0	12	3.5	18
CNM10	M10	16	18.2	15	4.0	22
CNM12	M12	18	20.4	18	4.0	25
CNM14	M14	21	23.8	21	4.5	28
CNM16	M16	24	27.7	24	5.0	31
CNM18	M18	27	31.2	27	5.0	34
CNM20	M20	30	34.6	30	6.0	37
CNM22	M22	34	38.6	33	6.0	40
CNM24	M24	36	41.6	36	6.0	45

HIGH TENSILE EXTENSION NUTS TYPE EN

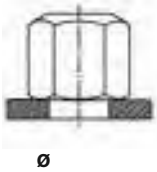
No. 6334. Tensile strength - 1000 N/mm^2. For functional and safety purposes bolts and/or studs to be coupled should be screwed in, on either side to half the length of the nut. Maximum screw in length 1 x Ø.

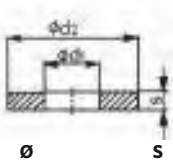


Stock code	d	s	e	m 3d
ENM6	M6	10	11.5	18
ENM8	M8	13	15.0	24
ENM10	M10	16	17.8	30
ENM12	M12	18	20.0	36
ENM14	M14	21	23.4	42
ENM16	M16	24	27.7	48
ENM18	M18	27	31.2	54
ENM20	M20	30	34.6	60
ENM22	M22	34	37.7	66
ENM24	M24	36	41.6	72

HARDENED WASHERS TYPE W

DIN 6340. Tensile strength - 1200/1400 N/mm^2.

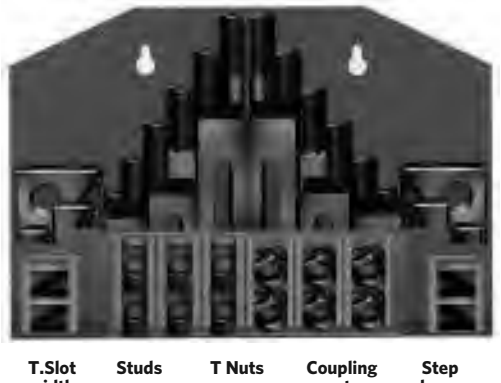




Stock code	For bolt	Ø d1	Ø d2	S
WM6	M6	6.4	17	3
WM8	M8	8.4	23	4
WM10	M10	10.5	28	4
WM12	M12	13.0	35	5
WM14	M14	15.0	40	5
WM16	M16	17.0	45	6
WM18	M18	19.0	45	6
WM20	M20	21.0	50	6
WM22	M22	23.0	50	8
WM24	M24	25.0	60	8

STANDARD CLAMPING KITS TYPE SCK

All elements heat treated and blackened.



Stock code	T.Slot width mm	Studs	T Nuts	Coupling nuts	Step clamps	Step blocks
SCK12M10Q	12	4 off M10x75, 100, 125, 150, 175, 200	6 off M10	4 off M10	6 off	6 pairs

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Stock code	T.Slot width mm	Studs	T Nuts	Coupling nuts	Step clamps	Step blocks
SCK14M12Q	14	4 off M12x75, 100, 125, 150, 175, 200	6 off M12	4 off M12	6 off	6 pairs
SCK16M14Q	16	4 off M14x75, 100, 125, 150, 175, 200	6 off M14	4 off M14	6 off	6 pairs
SCK18M16Q	18	4 off M16x80, 100, 125, 150, 200	6 off M14	4 off M16	6 off	6 pairs

cemp COOLANT PUMPS

Stock code	Length from flange to impeller mm	Power KW	Pump volume l/mm	Head M	Voltage V
CP9009/220	90	0.09	35	2	220
CP12009/220	120	0.09	35	2	220
CP17009/220	170	0.09	35	2	220
CP22009/220	220	0.09	35	2	220
CP9009/380	90	0.09	35	2	380
CP12009/380	120	0.09	35	2	380
CP17009/380	170	0.09	35	2	380
CP22009/380	220	0.09	35	2	380
CP12015/380	120	0.15	75	2	380
CP17015/380	170	0.15	75	2	380
CP22015/380	220	0.15	75	2	380
CP27015/380	270	0.15	75	2	380
CP35015/380	350	0.15	75	2	380
CP27037/380	270	0.37	150	4	380
CP27055/380	270	0.55	180	4	380
CP35055/380	350	0.55	180	4	380
CP12009/500	120	0.09	35	2	500
CP17009/500	170	0.09	35	2	500
CP17015/500	170	0.15	75	2	500

Egaña MACHINE MOUNTS

Rubber or polyurethane base. Rubber base has a hardness of 65 shöre. Polyurethane base can withstand higher loads and is resistant to chemicals and oils.

Stock code	Base type	Working range kg	Base Ø mm mm	Base height mm	Spigot
00B	rubber	30-100	60	18	M10
0B	rubber	80-150	70	22	M12
1B	rubber	100-350	90	25	M12
2B	rubber	300-600	115	29	M16
3B	rubber	500-900	125	31	M16
4B	rubber	800-1500	150	33	M16
F - 90	polyurethane	500-2000	100	30	M16
F - 120	polyurethane	2000-4000	120	33	M20
F - 160	polyurethane	4000-6000	180	40	M20

WEDGE BLOCKS

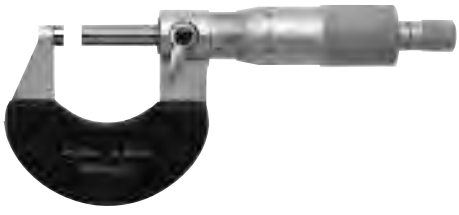
Stock Code	Working range kg
1C70	500-1500
1CA90	700-3500

ANTIVIBRATION NON SLIDE MATS

Stock Code	Dimensions mm	Working range kg
ADD-50	400 x 400 x 17	80-300

Mitutoyo OUTSIDE MICROMETERS

Series 102



Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
102-301	0-25	0.01	±2

Mitutoyo OUTSIDE MICROMETERS

Series 103

up to 100 mm

Above 100 mm

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
103-137	0-25	0.01	±2
103-138	25-50	0.01	±2
103-139-10	50-75	0.01	±2
103-140-10	75-100	0.01	±3
103-141-10	100-125	0.01	±3
103-142-10	125-150	0.01	±3
103-143	150-175	0.01	±4
103-144-10	175-200	0.01	±4
103-145-10	200-225	0.01	±4
103-146	225-250	0.01	±5
103-147	250-275	0.01	±5
103-148	275-300	0.01	±5
103-149	300-325	0.01	±6
103-150	325-350	0.01	±6
103-151	350-375	0.01	±6
103-152	375-400	0.01	±7
103-153	400-425	0.01	±7
103-154	425-450	0.01	±7
103-155	450-475	0.01	±8
103-156	475-500	0.01	±8
103-179	2″-3″	0.001″	0.0001″
103-180	3″-4″	0.001″	0.0015″
103-181	4″-5″	0.001″	0.0015″
103-182	5″-6″	0.001″	0.0015″
103-183	6″-7″	0.001″	0.0002″
103-184	7″-8″	0.001″	0.0002″

Continued ...

Mitutoyo SETS OF OUTSIDE MICROMETERS

Series 103

Mitutoyo no	Range mm	No of micrometer/set	Graduation mm
103-913-50	0-150	6	0.01
103-914-50	0-300	12	0.01
103-915-10	150-300	6	0.01

Mitutoyo INTERCHANGEABLE ANVIL OUTSIDE MICROMETERS

Series 104

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
104-135A	0-150	0.01	±(4+L/75)
104-136A	150-300	0.01	±(4+L/75)
104-139A	0-100	0.01	±(4+L/75)
104-140A	100-200	0.01	±(4+L/75)
104-141A	200-300	0.01	±(4+L/75)
104-142A	300-400	0.01	±(4+L/75)
104-143A	400-500	0.01	±(4+L/75)
104-144A	500-600	0.01	±(4+L/75)
104-145A	600-700	0.01	±(4+L/75)
104-146A	700-800	0.01	±(4+L/75)
104-147A	800-900	0.01	±(4+L/75)
104-148A	900-1000	0.01	±(4+L/75)

Mitutoyo LARGE DIAMETER OUTSIDE MICROMETERS

Series 105

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
105-408	1000-1100	0.01	±(6+L/75)
105-409	1100-1200	0.01	±(6+L/75)

Mitutoyo BLADE MICROMETERS

Series 122

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
122-101	0-25	0.01	±3
122-102	25-50	0.01	±3
122-103	50-75	0.01	±3
122-104	75-100	0.01	±4

Mitutoyo DISC MICROMETERS

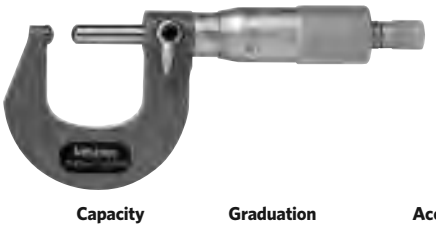
Series 123

Rotating spindle

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
123-101	0-25	0.01	±4
123-102	25-50	0.01	±4
123-103	50-75	0.01	±4

Mitutoyo TUBE MICROMETERS

Series 115



Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
115 - 101	0-15	0.01	±3
115 - 115	0-25	0.01	±3
115 - 215	0-25	0.01	3

Mitutoyo POINT MICROMETERS

Series 112

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
112-153	0-25	0.01	±3

Mitutoyo SCREW THREAD MICROMETERS

Series 126

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
126-125	0-25	0.01	±4
126-126	25-50	0.01	±4
126-127	50-75	0.01	±4
126-128	75-100	0.01	±5

MEASURING TIPS

Mitutoyo no	Pitch range M	TPI range UN60°	TPI range whit 55°
126-800	0.4-7	64-3.5	-
126-801	0.4-0.5	64-48	-
126-802	0.6-0.9	44-28	-
126-803	1-1.75	24-14	-
126-804	2-3	13-9	-
126-805	3-5	8-5	-
126-806	5.5-7.0	4.5-3	-
126-811	-	-	60-48
126-812	-	-	48-40
126-813	-	-	40-32
126-814	-	-	32-24
126-815	-	-	24-18
126-816	-	-	18-14
126-817	-	-	14-10
126-818	-	-	10-7
126-819	-	-	7-4.5
126-820	-	-	4.5-3.5

Mitutoyo SHEET METAL MICROMETERS

Series 118

Mitutoyo no	Capacity mm	Throat mm	Reading mm
118-102	0-25	150	0.01

Mitutoyo DIGITAL OUTSIDE MICROMETERS

Series 193

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
193-111	0-25	0.001	±2
193-101	0-25	0.01	±2
193-102	25-50	0.01	±2
193-103	50-75	0.01	±2
193-104	75-100	0.01	±3

Mitutoyo ELECTRONIC DIGITAL OUTSIDE MICROMETERS

Series 293

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
293-330	0-25/0-1	0.001/0.00005	±1
293-331	25-50/1-2	0.001/0.00005	±1
293-332	50-75/2-3	0.001/0.00005	±1
293-333	75-100/3-4	0.001/0.00005	±2

METRIC ONLY

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
293-230	0-25	0.001	±1
293-231	25-50	0.001	41
293-232	50-75	0.001	±1
293-233	75-100	0.001	±2

WITHOUT SPC OUTPUT

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
293-240	0-25	0.001	±1
293-241	25-50	0.001	±1
293-242	50-75	0.001	±1
293-243	75-100	0.001	±2

Mitutoyo DIGITMATIC OUTSIDE MICROMETERS - ECONOMY

Series 293

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
293-821	0-25/0-1	0.001	±2

Mitutoyo COOLANT PROOF MICROMETERS QUANTUMIKE

Series 293

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
293-140	0-25	0.001	±1
293-141	25-50	0.001	±1

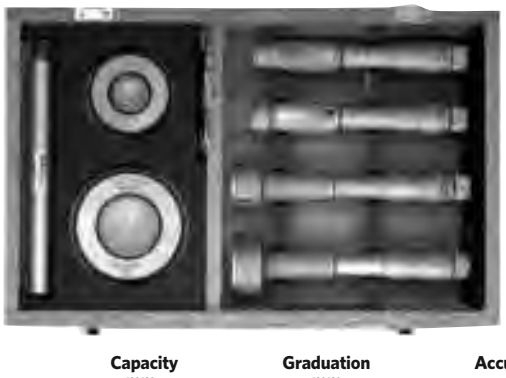
Mitutoyo THREE POINT INSIDE MICROMETERS

Series 368

Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
368-161	6-8	0.001	±2
368-162	8-10	0.001	±2
368-163	10-12	0.001	±2
368-164	12-16	0.005	±2
368-165	16-20	0.005	±2
368-166	20-25	0.005	±3
368-167	25-30	0.005	±3
368-168	30-40	0.005	±3
368-169	40-50	0.005	±3
368-170	50-63	0.005	±3
368-171	62-75	0.005	±3
368-172	75-88	0.005	±3
368-173	87-100	0.005	±3

Mitutoyo SETS OF THREE POINT MICROMETERS

Series 368



Mitutoyo no	Capacity mm	Graduation mm	Accuracy µm
368-911	6-12	0.001	±2
368-912	12-20	0.005	±2
368-913	20-50	0.005	±3
368-914	50-100	0.005	±3

Mitutoyo SMALL BORE GAUGES

Series 154

Mitutoyo no	Capacity mm	Description
154-902	3-13	Set of 4. Used with micrometer

Mitutoyo INSIDE MICROMETER AND EXTENSION RODS

Series 137

Micrometer head

Mitutoyo no	Range mm	Graduation mm	Travel mm	Min length mm
137-011	50-63	0.01	13	50

Micrometer heads with extension rods - steel measuring faces

Mitutoyo no	Range mm	Extension rods mm
137-011	50-63	-
137-201	50-150	13, 25, 50
137-202	50-300	13, 25, 2x50, 100
137-203	50-500	13, 25, 2x50, 100,200
137-204	50-1000	13, 25, 50, 2x100, 150, 200, 300
137-205	50-1500	13, 25, 50, 2x100, 150, 2x200, 2x300

Micrometer heads with extension rods - carbide measuring faces

Mitutoyo no	Range mm	Extension rods mm
137-209	50-1000	13, 25, 50, 2x100, 150, 200, 300
137-210	50-1500	13, 25, 50, 2x100, 150, 2x200, 2x300

Mitutoyo TUBULAR INSIDE MICROMETERS SINGLE ROD TYPE

Series 133

Mitutoyo no	Range mm	
133-901	50-150	4 heads per set
133-902	50-300	10 heads per set

Mitutoyo INSIDE MICROMETER AND RODS

Series 139 & 140

Mitutoyo no	Range mm	Graduation mm	Extension rods mm
139-176	100-1700	0.01	25, 50, 100, 200, 3x400
139-177	100-2100	0.01	25, 50, 100, 200, 4x400
140-158	1000-3000	0.01	50, 2x100, 200, 500, 1000

Mitutoyo INSIDE MICROMETERS

Series 141

Mitutoyo no	Range mm	Graduation mm	Travel mm	No of rods
141-101	25-50	0.01	7	2
141-205	50-200	0.01	13	6

Mitutoyo INSIDE MICROMETERS

Series 145

Mitutoyo no	Measuring range mm	Graduation mm	Accuracy µm
145-185	5-30	0.01	±5
145-186	25-50	0.01	±6
145-187	50-75	0.01	±7

Mitutoyo TELESCOPIC GAUGES

Series 155

Continued ...

Continued ...

TELESCOPIC GAUGE CONT.

Mitutoyo no	Measuring range mm	Overall length mm
155-127	8-12.7	110
155-128	12.7-19	110
155-129	19-32	110
155-130	32-54	150
155-131	54-90	150
155-132	90-150	150
155-905	8-150	set of 6

Mitutoyo BORE GAUGES

Series 526

Mitutoyo no	Measuring range mm	Graduation length mm	Probe depth mm
526-126	7-10	0.01	56
526-127	10-18	0.01	62
526-124	7-10	0.001	56
526-125	10-18	0.001	62

Mitutoyo BORE GAUGES

Series 511

Mitutoyo no	Measuring range mm	Graduation length mm	Probe depth mm
511-711	18-35	0.01	100
511-712	35-60	0.01	100
511-713	50-100	0.01	150
511-714	100-160	0.01	150
511-715	160-250	0.01	150
511-721	18-35	0.001	100
511-722	35-60	0.001	100
511-723	50-150	0.001	150
511-921	18-150	0.01	set of 4
511-922	18-150	0.001	set of 4

Mitutoyo INSIDE DIAL CALIPER GAUGES

Series 209

Mitutoyo no	Measuring range mm	Graduation mm	Length of leg mm
209-106	10-35	0.025	80
209-107	30-55	0.025	80
209-108	50-75	0.025	80

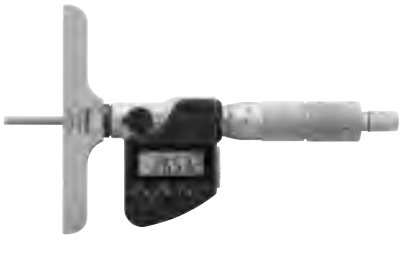
Mitutoyo DEPTH MICROMETERS

Series 129

Mitutoyo no	Measuring range mm	Graduation mm	Length of reference face mm
129-154	0-25	0.01	63
129-109	0-50	0.01	63
129-111	0-100	0.01	63
129-115	0-100	0.01	101
129-112	0-150	0.01	63
129-116	0-150	0.01	101
129-153	0-300	0.01	101

Mitutoyo ELECTRONIC DEPTH MICROMETERS

Series 329



Mitutoyo no	Measuring range mm	Graduation mm	Length of reference face mm
329-250-10	0-150	0.001	101
329-251-10	0-300	0.001	101

Mitutoyo SCREW LOCK VERNIER CALIPERS

Series 530

METRIC

Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
530-101	0-150	0.05	±0.05
530-108	0-200	0.05	±0.05
530-109	0-300	0.05	±0.05

METRIC / IMPERIAL

Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
530-104	0-150/6″	0.05/ 1/128″	±0.05
530-114	0-200/8″	0.05/ 1/128″	±0.05
530-118	0-200/8″	0.05/ 0.001″	±0.03
530-119	0-300/12″	0.05/ 0.001″	±0.04

Mitutoyo AUTO LOCK VERNIER CALIPERS

Series 531

Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
531-101	0-150	0.05	±0.05
531-102	0-200	0.05	±0.05
531-103	0-300	0.05	±0.08
531-128	0-150/6″	0.02/0.001″	±0.03
531-129	0-200/8″	0.02/0.001″	±0.03
531-112	0-300/12″	0.02/0.001″	±0.04

Mitutoyo FINELY ADJUSTABLE VERNIER CALIPERS

Series 532

Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
532-101	0-130	0.02	±0.03
532-102	0-180	0.02	±0.03
532-103	0-280	0.02	±0.04

Mitutoyo NIB JAW VERNIER CALIPERS WITH FINE ADJUSTMENT

Series 160

Mitutoyo no	Measuring Internal	range mm External	Vernier reading mm	Accuracy mm
160-127	10.300	0-300	0.02	±0.04
160-128	20-450	0-450	0.02	±0.05
160-101	20-600	0-600	0.02	±0.05
160-104	20-1000	0-1000	0.02	±0.07

Mitutoyo LONG JAW VERNIER CALIPERS WITH FINE ADJUSTMENT

Series 534

Mitutoyo no	Measuring range external mm	Depth of jaw mm	Vernier reading mm	Accuracy mm
534-113	0-300	90	0.02	±0.04
534-114	0-500	200	0.02	±0.06
534-115	0-750	200	0.02	±0.08

Mitutoyo DIAL CALIPERS

Titanium coated slideways

Series 505

Mitutoyo no	Measuring range mm	Dial reading graduation mm	Range per Rev. mm	Accuracy mm
505-681	0-150	0.01	1	±0.02
505-671	0-150	0.02	2	±0.03
505-672	0-200	0.02	2	±0.03
505-673	0-300	0.02	2	±0.04

Mitutoyo ELECTRONIC CALIPERS

Series 500

Mitutoyo no	Measuring range mm	Digital readout mm	Accuracy mm	
500-151-20	0-150	0.01	±0.02	
500-181-20	0-150	0.01	±0.02	no data output
500-152-20	0-200	0.01	±0.02	
500-153	0-300	0.01	±0.03	
500-501-10	0-600	0.01	±0.05	
500-171-20	0-150/6"	0.01/0.0005"	±0.02	
500-172-20	0-200/8"	0.01/0.0005"	±0.02	
500-173	0-300/12"	0.01/0.0005"	±0.03	

WATERPROOF METRIC

Mitutoyo no	Measuring range mm	Digital readout mm	Accuracy mm
500-702-10	0-150	0.01	±0.02
500-703-10	0-200	0.01	±0.02
500-707-11	0.200	0.01	±0.02
500-704-10	0-300	0.01	±0.02

WATERPROOF METRIC / IMPERIAL

Mitutoyo no	Measuring range mm	Digital readout mm	Accuracy mm
500-752-10	0-150/6"	0.01/0.0005"	±0.02

Mitutoyo DEPTH VERNIERS

Series 527

With fine adjustment

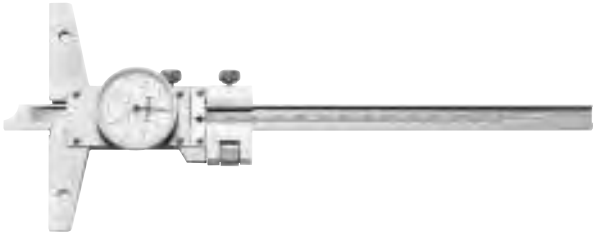
Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
527-101	0-150	0.02	±0.03
527-102	0-200	0.02	±0.03
527-103	0-300	0.02	±0.04

Without fine adjustment

Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
527-201	0-150	0.05	±0.05
527-202	0-200	0.05	±0.05
527-203	0-300	0.05	±0.08

Mitutoyo DIAL DEPTH GAUGES WITH FINE ADJUSTMENT

Series 527



Mitutoyo no	Measuring range mm	Dial reading mm	Accuracy mm
527-301-50	0-150	0.05	±0.05
527-302-50	0-200	0.05	±0.05
527-303-50	0-300	0.05	±0.08

Mitutoyo ELECTRONIC DEPTH GAUGES

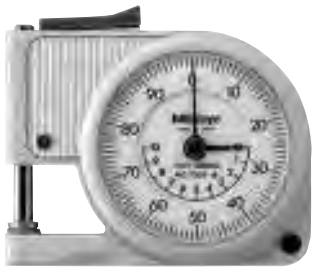
Series 571

Mitutoyo no	Measuring range mm	Digital readout mm	Accuracy mm
571-201-20	0-150	0.01	±0.02
571-202-20	0-200	0.01	±0.02
571-203-20	0-300	0.01	±0.02
571-211-20	0-150/6"	0.01/0.0005"	±0.02

Mitutoyo DIAL DEPTH GAUGES

Mitutoyo code	Graduation range mm	Reference mm	Reference face length mm
7211	0-200	0.01	63.5
7212	0-200	0.01	101.6

Mitutoyo POCKET THICKNESS GAUGES



Mitutoyo no	Measuring range mm	Graduation mm	Throat depth mm
7331S	0-10	0.01	19

Mitutoyo DIAL THICKNESS GAUGES

Mitutoyo no	Measuring range mm	Graduation mm	Throat depth mm
Type A - Standard type			
7301	0-10	0.01	30
7305	0-20	0.01	30
7327	0-10	0.001	30
Type E - For tube thickness			
7360	0-10 Tube	0.01	20
Type B - Deep throat type			
7321	0-10	0.01	120
7323	0-20	0.01	120

Mitutoyo DIAL INDICATORS

2046S-60

Mitutoyo no	Stroke mm	Graduation mm	Bezel Ø mm	Comment
1044S	5	0.01	40	-
2046S	10	0.01	55	-
2046S-60	10	0.01	55	water proof
2048S-10	10	0.01	55	jeweled
2050S	20	0.01	55	-
2052S	30	0.01	55	-
2109S-10	1	0.001	55	micron reading
2119S-10	5	0.001	55	micron reading
3050S	20	0.01	78	-
3052S-19	30	0.01	75	-
3058S-19	50	0.01	75	-

Mitutoyo FINGER CLOCKS

Series 513

Mitutoyo no	Range mm	Graduation mm	Bezel Ø mm	Stylus length mm	Comment
513-517T	0.8	0.01	32	21	full set

Mitutoyo VERTICAL DIAL TEST INDICATORS

Series 513

Mitutoyo no	Range mm	Graduation mm	Bezel Ø mm	Stylus length mm	Comment
513-405E	0-0.2	0.002	38	14.7	gauge only
513-405T	0-0.2	0.002	38	14.7	set
513-404E	0-0.8	0.01	38	20.9	gauge only
513-404T	0.0.8	0.01	38	20.9	set

Mitutoyo HORIZONTAL DIAL TEST INDICATORS

Series 513

Mitutoyo no	Range mm	Graduation mm	Bezel Ø mm	Stylus length mm	Comment
513-454T	0-0.8	0.01	38	20.9	set

Mitutoyo DIAL SNAP GAUGES

Series 201

Without dial indicator

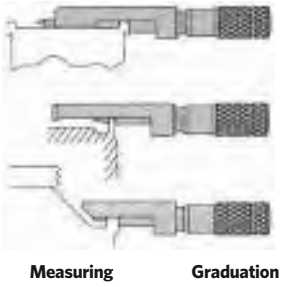
Mitutoyo no	Measuring range mm	Anvil size mm	Anvil retracting range mm
201-101	0-25	13.5x12	2
201-102	25-50	13.5x12	2
201-103	50-75	13.5x12	2
201-104	75-100	13.5x12	2

Supplied **without** dial indicator. Accepts dial indicators DI0-10 and 2046S

Mitutoyo CAN SEAM MICROMETERS

Series 147

for steel cans



MCSMS

for aluminium cans

MCSMA

for aerosol spray cans

MCSMAS

Mitutoyo no	Measuring range mm	Graduation mm	Measuring application
147-103	0-13	0.01	steel cans
147-105	0-13	0.01	aluminium cans
147-202	0-13	0.01	aerosol spray cans

Mitutoyo HEIGHT GAUGES

Series 514

Mitutoyo no	Measuring range mm	Vernier reading mm	Accuracy mm
514-102	300	0.02	±40
514-104	450	0.02	±50
514-106	600	0.02	±50

Mitutoyo ELECTRONIC HEIGHT GAUGES

Series 570

Mitutoyo no	Measuring range mm	Resolution mm	Accuracy mm	Repeatability mm
570-302	300	0.01	±0.04	0.01
570-304	600	0.01	±0.05	0.01

Mitutoyo DOUBLE BEAM ELECTRONIC HEIGHT GAUGES

Series 192

Mitutoyo no	Measuring range mm	Resolution mm	Accuracy mm	Repeatability mm
192-613-10	300	0.01	±0.02	0.01
192-614-10	600	0.01	±0.05	0.01
192-615-10	1000	0.01	±0.07	0.01

Mitutoyo DIGITAL HEIGHT GAUGES

LINEAR HEIGHT LITE

Highly accurate height gauge.

Mitutoyo no	Measuring height mm	Data output	
518-230	350	R5 - 232C	
Accuracy mm		**Resolution mm**	**Repeatability μ**
±0.01		0.001/0.005	0.003

Mitutoyo ELECTRONIC INDICATORS

Series 543

543-392

Mitutoyo no	Measuring range mm	Resolution	Stem Ø mm	Accuracy mm
543-783	0-12	0.1mm/0.0005"	3/8	0.0008
543-781	0-12	0.01mm	8	0.02
543-390	0-12.7	0.001mm	8	0.003
543-490B	0-50.8	0.001mm	8	0.005

Mitutoyo ELECTRONIC INDICATORS

Series 575

Mitutoyo no	Measuring range mm	Resolution mm	Stem Ø mm	Accuracy mm
575-121	0-25	0.01	8	0.02

Mitutoyo ELECTRONIC MICROMETER HEADS

Carbide tipped anvil. Non rotating spindle. Direct reading.

Mitutoyo no	Measuring range mm	Reading mm	Error limits mm
164-163	0-50	0.001	0.003

Mitutoyo ELECTRONIC MINI PROCESSOR

Mitutoyo no	Mitutoyo model type	Data output	Printer
264-504-5D	DP-IHS	RS-232C	Thermal dot matrix

Note: Price is for base unit. Optional accessories extra.

Mitutoyo MAGNETIC BASES

Mitutoyo no	Base mm width	length	height	Column length mm lower	upper	Fine adjustment
7010S-10	50	60	55	176	165	without
7011S-10	50	60	55	176	150	with

Mitutoyo MICROMETER STANDS

Mitutoyo code	Micrometer no	Comment range mm
156-101-10	0-100mm	adjustable angle

Mitutoyo DIAL COMPARATOR STANDS

Mitutoyo no	Measuring range mm	Fine adjustment ange mm	Anvil
7001-10	0-100	2	serrated
7002-10	0-100	2	flat

Mitutoyo UNIVERSAL BEVEL PROTRACTOR

Mitutoyo no	Blade length mm
187-901	150,300 w/60', 45',30' edges

Mitutoyo SETTING RINGS

Mitutoyo code	Inside Ø mm	Cylindricity mm	Manufacturing tolerance mm
177-125	8	1	±0.01
177-126	10	1	±0.01
177-177	16	1	±0.01
177-139	25	1	±0.01
177-140	35	1	±0.01
177-178	45	1	±0.01
177-146	50	1	±0.02
177-147	70	1.5	±0.02
177-148	90	1.5	±0.02

Mitutoyo OPTICAL FLATS

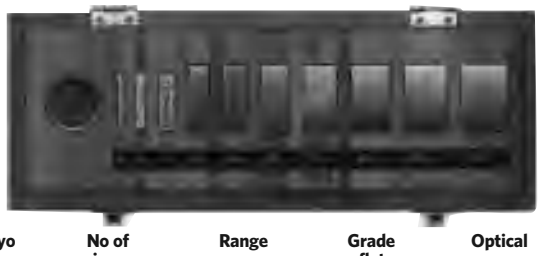
Mitutoyo no	To check micrometer	Flatness ×m	Parallelism ×m	Ø mm
157-903	0-25mm	1	2	30

Mitutoyo SLIP GAUGES

SLIP GAUGES

Mitutoyo no	No of pieces	Range mm	Grade
516-938-10	112	1.0005-100	0
516-939-10	112	1.0005-100	1
516-942-10	103	1.0005-100	0
516-943-10	103	1.0005-100	1
516-944-10	103	1.0005-100	2
516-946-10	87	1.001-100	0
516-947-10	87	1.001-100	1
516-948-10	87	1.001-100	2
516-950-10	76	1.005-100	0
516-952-10	76	1.005-100	2
516-956-10	56	1.001-100	2
516-964-10	47	1.005-100	2
516-967-10	32	1.005-60	1
516-968-10	32	1.005-60	2

Mitutoyo SLIP GAUGES FOR MICROMETER INSPECTION



Mitutoyo no	No of pieces	Range mm	Grade flat	Optical mm
516-106-10	10	2.5-25	0	12

Mitutoyo CARBIDE WEAR BLOCKS

Mitutoyo no	Size mm	Grade mm	No of pieces
516-807-10	1	0	2
516-802-10	2	1	2

Mitutoyo SLIP GAUGES ACCESSORIES

Mitutoyo code	No of pieces no	per set
516-602	14	For slip gauges up to 100 mm

Mitutoyo SERIES 302 PROFILE PROJECTORS

PJ-A3000

PJ-H30

Continued ...

Continued ...

Stock code	X Y range mm	Effective table area mm	Screen Ø mm
302-704-1D	50x50	82x82	315
302-703-1D	100x100	142x142	315

Resolution mm	Standard lens	Screen centre height
0.001	10x	854
0.001	10x	854

Stock code	X Y range mm	Effective table area mm	Screen Ø mm	Resolution mm	Standard lens
302-702-1D	100X100	180X150	315	0.001	10x

Mitutoyo TOOLMAKERS MICROSCOPES TM500

Well suited for measuring dimensions and angles on machined components. Can also be used to check the shape of small components by attaching an optical reticle. Angle measurement is achieved by turning an angle scale disc to align the cross hair reticle with the workplace image.

Stock code	XY range mm	Effective area of table mm	Max workpiece height mm	Total magnification
176-811D	50x50	96x96	115	30x
176-812D	50x50	150x92	107	30x

A wide range of standard optical reticles and optical accessories are available.

A wide range of Toolmakers microscopes with varying specifications are available on request.

Price is quoted without micrometer heads. Both mechanical and electronic heads are available. Please specify your preference.

Mitutoyo PORTABLE SURFACE ROUGHNESS TESTERS

For highly accurate measurement of surface roughness. SJ-210

Stock code	Transverse range mm	Measuring range ×	Evaluation parameters
178-560-02D	12.5	300(4150)	Ra,Rq, Ry, Rz, Rt, Rp, Mr, S, Sm, Pc

A wide range of surface testers with varying specifications are available on request.

Mitutoyo ROUNDESS MEASURING INSTRUMENTS

Easy to use devise for measuring component roundness or geometry.

RA-120

Stock code	Workpiece Ø mm	Workpiece weight kg	Table Ø mm	Measuring Ø mm	Probing height mm	Depth mm
211-544D	440	25	150	280	280	100

A wide range of roundness testers with varying specifications are available on request.

Mitutoyo PORTABLE HARDNESS TESTERS

For on site hardness measurement. Can measure hardness on curved and flat surfaces. Measures L hardness (conforming to ASTM A 956)

HH411

Stock code	Hardness Conversions
810-298	Rockwell C Vickers Rockwell B Shore

A wide range of hardness testers with varying specifications are available on request.

newall DIGITAL READ OUT SYSTEMS

Spherosyn Transducers

Unlike traditional glass scales, Newall´s linear encoders incorporate the precision of ball bearings and the durability of electro-magnetic technology to provide accurate and dependable measurement even under the harshest workshop conditions. The unit is a totally sealed, non contact systyem.

Encoders

Stock code	Travel mm	Stock code	Travel mm
SS254E35	254	SS813E35	813
SS102E35	152	SS864E35	864
SS152E35	178	SS914E35	914
SS178E35	203	SS965E35	965
SS203E35	254	SS1016E35	1016
SS254E35	305	SS1067E35	1067
SS305E35	356	SS1118E35	1118
SS356E35	406	SS1168E35	1168
SS406E35	457	SS1219E35	1219
SS457E35	508	SS1270E35	1270
SS508E35	559	SS1321E35	1321
SS559E35	610	SS1372E35	1372
SS610E35	660	SS1422E35	1422
SS660E35	711	SS1473E35	1473
SS711E35		SS1524E35	1524
SS762E35	762		

* E35 suffix = 3.5mm cable
E70 suffix = 7.0mm cable

Spherosyn Head (Std)

Spherosyn Head (7m cable)

Scale Bracket Kit (Std)

Single End Mounting Bracket

Heavy Duty Bracket Kit

Microsyn transducers are available on request.

DP 700 DIGITAL READOUT

This is the latest Newall product featuring a compact and ergonomic design. A powerful and easy to use Digital Readout, it can be interfaced to the market leading Spherosyn™ and Microsyn™ linear encoders with ease.

Designed for all machining applications, this DP700 digital readout features:

Intuitive Use

High Reliability

A Panel Mount Version also available

Stock Resolution code	No of axes	µm
DP7001A	1	1,2,5,10,20,50
DP7002A	2	1,2,5,10,20,50
DP7003A	3	1,2,5,10,20,50

2 and 3 axis versions available in mill and lathe

DP 1200 DIGITAL READOUT

A new dimension of ultimate performance

Engineered specifically for long travel machine tools, the DP1200 DRO offers features that are essential for increasing productivity of boring mills, planer mills, VTLs, milling machines and long travel lathes. Built with the operator in mind, the DP1200 includes large, clear numerical displays with a high resolution 3.5" TFT screen. With an intuitive user interface and an optional DSU, the DP1200 is the ideal solution for either retrofit or OEM.

Stock Code	No. of Axix
DP12002A	2
DP12003A	3
DP12003A1	3 X 1
DP12004A	4

Available in 2, 3 or 4 axes (inlcuding rotary / angular)

- Clean, Crisp, Extra Large, LEDs
- 3.5" TFT LCD diplay - high density, high contrast
- User Definable Axis Legends
- Solid Cast Construction
- Long Life Membrane Keypad
- Safe, Low Voltage Power Supply (UL)
- Panel Mount Version Available

DP1200 Features Include:

- Real-Time Tool Path Graphics
- Auto-Zoom
- Feed Rate Display
- Bolt Hole Circle Routine
- Line Hole Routine
- Arc Contouring
- Programmable Memory/Teach
- Polar Coordinate Readings
- Tool Offsets
- Taper Calculations
- Axis Vectoring/Summing
- Linear and Segmented Error Comp.
- Skew
- RS232 Output
- Languages: English, French, German, Spanish, Italian, Turkish, Czech, Russian, Portugues, Danish

DIGITAL READ OUT SYSTEMS

For accurate positioning on conventional machine tools. The same counter is suitable for both lathes and milling machines. Multifunctional : 2 or 3 axis units. Arc calculation function, circular dividing, oblique line positioning, angular surface processing, taper measurement, mathematical calculation.

ISO9001

Stock code	Machine axes	No of resolution	Storage memory
2AMCQ	2	0.5/.15	200
3AMCQ	3	0.5/.15	200

SCALES

SLIM LINE

Stock code	Travel mm	Cable length M	Accuracy mm	Stock code	Travel length mm	Cable length M	Cicc mm
SCALE220SQ	220	3	0.005	SCALE370SQ	370	3	0.005
SCALE270SQ	270	3	0.005	SCALE420SQ	420	3	0.005
SCALE320SQ	320	3	0.005	SCALE420SQ	420	3	0.005

NORMAL

Stock code	Travel mm	Cable length M	Accuracy mm	Stock code	Travel length mm	Cable length M	Cicc mm
SCALE420Q	420	3	0.005	SCALE1100Q	1100	3	0.005
SCALE420/7Q	420	7	0.005	SCALE1100/7Q	1100	7	0.005
SCALE470Q	470	3	0.005	SCALE1200Q	1200	3	0.005
SCALE520Q	520	3	0.005	SCALE1200/7Q	1200	7	0.005
SCALE570Q	570	3	0.005	SCALE1400Q	1400	3	0.005
SCALE620Q	620	3	0.005	SCALE1400/7Q	1400	7	0.005
SCALE670Q	670	3	0.005	SCALE1600Q	1600	3	0.005
SCALE720Q	720	3	0.005	SCALE1600/7Q	1600	7	0.005
SCALE820Q	820	3	0.005	SCALE1700Q	1700	3	0.005
SCALE870Q	870	3	0.005	SCALE1700/7Q	1700	7	0.005
SCALE920Q	920	3	0.005	SCALE1800/7Q	1800	7	0.005
SCALE970Q	970	3	0.005	SCALE1900/7Q	1900	7	0.005
SCALE1020Q	1020	3	0.005	SCALE2100/7Q	2100	7	0.005

RENISHAW
apply innovation™

Tool setting and broken tool detection Solutions

Tool checking probes for MACHINING CENTRES

TS27R
Contact tool setting and broken tool detection

. The standard setting probe for machining centres
. Precise tool length and diameter measurement
. Rotating tools can be checked without wear to the tool or stylus
. Stylus protected by a weak link, preventing probe damage in the event of a collision

RENISHAW
apply innovation™

Component set-up and inspection Solutions

Probe systems for MACHINING CENTRES

OMP40-2 with OMI-2T
Ultra-compact probe

. Ultra compact design Ø40mm x 50mm in length
. Probe transmits through a full 360˚ at 90˚ angle to the spindle with a range of over 4m
. Uses standard-sized 1/2 AA batteries and offers industry leading continuous-use battery life of over 140 hours
. Ideal for use in small and compact machining centres, where space is at a premium
. Suitable for use with Renishaw's twin probe system.

RENISHAW
apply innovation™

Component set-up and inspection Solutions

Probe systems for MACHINING CENTRES

OMP60-2 with OMI-2 / OMI-2T
State-of-the-art modulated optical transmission

. Compact size - Ø63mm x 76mm in length
. Probe transmits through 360˚ at 90˚ angle to the spindle with a range of over 6m
. User selectable switch-on/switch-off methods
. Simple probe configuration via Renishaw Triggerlogic™

Tool setting and broken tool detection Solutions

Tool checking probes for MACHINING CENTRES

OTS
Tool setting and tool breakage dectection

. Wireless optical communication
. Precise tool length and diameter measurement
. Stylus protected by weak link

Styli and accessories
When precision counts, insist on genuine Renishaw styli. Don't settle for less!

Continued ...

Continued ...

Styli and accessories Cont.....

The range of genuine Renishaw styli :

- Straight styli
- Star styli
- Disc styli
- Cylindrical styli

baty Reprorubber

Stock Code

RRP220	Quick set putting 220ml
RRT130	Thin pour 130ml

Metrology grade casting material

- Quick casting - Zero shrinkage
- No release agent required - will not stick to part.
- Exact surface finish replication.
- Copies can be re-copied.
- Replicas are permanent.
- 5 to 15 minute cure time.
- More accurate than RTV

baty Vision System

V Master is a manual 2D vision system with a massive difference.

Stock code
CNC-VM

Continued ...

Continued ...

V Master Cont....

Standard features :

- Large 400mm x 300mm measuring range
- Patented measuring technology
- Teach and repeat part programming
- Video edge detection
- Digital zoom
- Fully integrated system - everything is included: built-in PC, 19" flat screen monitor and printer
- Programmable segmented LED lighting system
- Motorised autofocus
- Image grab
- CNC option available

CNC Vision System

Venture CNC models takes the power of fusion software one stage further by completely automating the inspection process. Now advanced features like scanning and best fitting can be done quickly without taking up the time of skilled operators.

Stock code
CNC-VVS

Standard CNC System Features include :

- Teach and repeat programming
- Programmable segmented LED lighting
- High resolution 0.5✕ mi scales for increased accuracy
- CAD import / export
- Scanning & best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- 165mm Z axis measuring range on adjustable dovetail slide
- 250mm x 120mm and 300mm x 300mm XY stages available
- Auto program from CAD

CNC Vision System

The Venture Plus range includes all of the standard Venture features with a little more measuring range that is.

Stock code
Non - stock

Standard CNC System Features include :

- Teach and repeat programming
- Programmable segmented LED lighting
- High resolution 0.5✕ mi scales for increased accuracy
- CAD import / export
- Scanning & best fitting
- Fully dimensioned part view
- SPC included
- One click output to Excel™
- Autofocus
- Renishaw TP20 touch probe joint

Profile Projector

R14

Stock code
R14GXLE

Standard features :

- 340mm (14") screen with 90° crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice : x10, x20, x25, x50, and x100
- Surface illumination (fibre optic)
- Helix adjustment of light source ± 7° for accurate thread form projection
- Workstage with machined slot for holding accessories
- Workstage measuring range of 75mm (7") x 100mm (4")
- Digital angle measurement to 1 minute

baty Profile Projector R400

Stock code
R400- GXL-E

Standard Features include :

- 400mm (16") screen with 90° crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice : x10, x20, x25, x50, and x100
- Surface illumination (fibre optic)
- Helix adjustment of light source for accurate thread form projection
- Workstage with machined slot for holding accessories
- Workstage measuring range of 300mm (12") x 150mm (6")
- Digital angle measurement to 1 minute

baty Profile Projector R600

Stock code
R600 - GLX-E

Standard Features include :

- 600mm (24") screen with 90° crosslines and chart clips
- Heavy duty workstage with 450mm x 200mm (18" x 8") measuring range and 2 machined slots for workpiece holders
- Angular rotation of ± 15° workstage for measuring threadforms or cutting tools
- Vertical 200mm (8") Y axis power driven with joystick control
- Lens magnification choice - x5, x10, x20, x25, x50, x100
- 4 position rotating lens turret for ease of lens changing
- Profile illumination with halogen lamp and green filter
- Screen hood and curtains for use in bright ambient light conditions
- Digital angle measurement

baty Profile Projector SM350

Stock code On request

Standard Features include :

- Fully usable 340mm screen
- Digital screen protractor
- Built in helix adjustment
- Sturdy all-steel design
- Cross roller bearings
- Quick release 'X' and 'Y' travel
- Erect image
- Easy-view vertical screen
- Large stage travel 10" (250mm) x 5" (125mm)
- Rotating chart clips
- Fibre optic illumination for surface measurement
- Includes 10x lens

Propen PROTABLE MARKING MACHINE

Stock code
M7000

Pure performance in your hand

- **Powerful : Deep mark** on the hardest surfaces.
- **Ergonomic :** makes marking easy on vertical or inclined surfaced.
- **High qualitymarks :** permanent marking on any shape and material.
- **Flexible connectivity** for easy data exchange with a PC, a code reader or a USB key.

Choose freedom

- **Touch'n Mark :** Intuitive touch-screen interface. Large navigation icons give direct access to desired functions with your finger, a stylus and even wearing a glove.
- **Full mobility :** The integrated control unit and the powerful belt battery allows you to mark everything everywhere, even outdoors.

Meet your marking requirements

- **Reliable :** Robust compents and shock-resistant composite materials.
- Economical : No consumables or maintenance, stylus point can be resharpened.
- **Ready to mark :** Operational out of the box. No special set-up or training required. Begin marking immediately using local language menus.

- **Technology :** Electromagnectic
  Micro-percussion
- **Marking area :** 80 x 30mm
- **Powered by battery or directly from the mains supply**.

NEW GENERATION OF MARKING SOLUTIONS

Stock code
P5000M

Simple & Flexible
The P5000 is **flexible** to the size of the part to mark (height up to 300mm) and it can mark all types of materials material up to a hardness of 62 HRC.

Economic & Productive
This machine allows a rapid marking 5 characters per second, with **high quality.**

Main Characteristics
Energy : pneumatic or electromagnetic
Marking zone : 10x12cm
Characters size : from 15-80mm
Height of the part to be marked : up to 300mm
Dimensions : L=580mm W=280mm H=730mm
Standard marking tool : PN12 or EM11/c

Linkwith External Files
USB key (to save and transfer files and to update the intenal software)

RS232 and ethernet

ELECTRICAL ARC ENGRAVER

Stock code	Description
EAE	Free hand electric arc engraver

WHEEL LOAD SCALE

Wireless

Cable

Stock code	Description	Max Load
ALS315AFX20WT	Axle load scale wireless type	15000 kg
ALS315X20CT	Axle load scale cable type	15000 kg

AXLE LOAD SCALE INDICATOR

Weigh in motion or static

Wireless

Cable

Stock code		No. of Platforms	Printer	Weight
ALSI300WT	Wireless	6	Built in	4.2kg
ALSI300LT	Cable	2	Built in	4.2kg

CRANE SCALES TA SERIES

Stock code	Capacity kg	Dimension kg	Keypad
TA200	200	0.1	on/off,zero,tare,hold
TA500	0-250/250-500	0.1/0.2	on/off,zero,tare,hold

CRANE SCALES TCB SERIES

Stock code	Capacity kg	Display mm	Weight kg
CSTCB5TF	5000	5 Digit 30.4	16
CSTCB10TF	10000	5 Digit 30.4	26.9
CSTCB15TF	15000	5 Digit 30.4	75
CSTCB20TF	20000	5 Digit 30.4	126

CRANE SCALE HIGH CAPACITY

Stand

Stock code	Capacity kg	Display mm
CSTCB30TF	30000	5 Digit 30.4
CSTCB50TF	50000	5 Digit 30.4
CS30TSS	stand for 30 ton	
CS50TSS	stand for 50 ton	

REMOTE CONTROL

Stock code	Description
WCTF400	Crane scale remote controller

ZIGBEE DONGLE

Stock code	Description
WCTF200ZIG	Dongle for hardware interface

PRINTERS

Stock code	Description
YJ380	Dot matrix printer
YJ380T	Direct thermal printing

SALTER MECHANICAL HANGING SCALE

Stock code	Dial Ø mm	Capacity kg	Increments g
235-6M 50	150	50	200
235-6M 100	150	100	500

COUNTING SCALE

Stock code	Capacity kg	Increments g
B1406	6	0.2
B14015	15	0.5
B14030	30	1

PLATFORM SCALE

Stock code	Capacity kg	Increments kg	Platform size
DSB	2500	0,5	1500X1500

BENCH SCALE

Stock code	Capacity kg	Increments g	Platform size
S133	300	50	520X420

MOBILE PLATFORM SCALE

Stock code	Capacity kg	Increments kg	Platform size
DS1000	500	0.2	800X80

Floor stand optional extra

ZEUS DATA BOOKS

Stock Code
Zeus

MACHINIST CALCULATOR

Increase your shop's productivity and profitability.
Precise, fast, easy to use, convenient.

Stock Code
MACHCALC

Speeds and feeds
3-Wire Measurements
Right Triangle Math
Trigonometric Functions
Bolt Pattern
Thread Siza
Drill Point
Drill Size

This calculator is ideal for machinists, setters, tool and die makers and machine shop supervisors

WIGGLER SET

Stock code	Description
WS	Wiggler set

EDGE FINDER

Stock code	Description	Shank Ø mm	Point Ø mm
EDGE	Single end edge finder	12	5

EDGE FINDER

Stock code	Shank ømm	Touch point ø mm	Body ø mm	Overall length mm	Concentricity mm
EF	10	10	19	82.5	0.005

ELECTRONIC EDGE FINDER

Stock code	Body ø mm	Probe ø mm	Overall length mm	Concentricity mm
EEF	20	10	96.5	0.01

ACCU CENTRE EDGE FINDER

Stock code	Small Ø mm	Large Ø mm	Overall length mm	Repeatability mm
ACCUCENTRE	10	19	81.5	±0.002

SURFACE ROUGHNESS COMPARATORS

Surface comparisons for milling, turning lapping, grinding and reaming

Stock code	No of specimens	Specimen unit size mm	Measuring range × Milling & turning	Grinding	Lapping
RC	32	22X10	16, 32, 63, 125, 250, 500	2, 4, 8, 16, 32, 63	2, 4, 8

Z-AXIS SETER

Stock code	Height mm	Range mm	Graduation mm
ZAS	50	0-2	0.01

NEW 3D TASTER

Stock code	Accuracy mm	Indicator Ømm	Graduation mm	Shank Ø mm h5
N3D	0.01	50	0.01	20

FINGER CLOCKS

Jeweled • Vibration proof • Pivot ball bearing • Carbide contact ball

Stock Code	Resolution mm	Travel mm	Bezel Ømm	Contact ball Ø mm
FC	0.01	0.8	30	2

HORIZONTAL FINGER CLOCKS

Vertical body dial test indicators with horizontal face

Stock Code	Resolution mm	Travel mm	Accuracy mm	Bezel Ø mm
HFC	0.01	0.8	0.008	31.8

ELECTRONIC FINGER CLOCKS

Metric / Imperial

Stock Code	Resolution mm	Bezel width mm	Bezel height mm	Ball Ø mm	Stylus length mm
EFC	0.01	50	37.5	2	26

DIAL INDICATORS

Jeweled • Steel body • With back lug

Stock Code	Bezel Ø mm	Resolution mm	Travel mm
DI0-3	42	0.01	3
DI0-5	58	0.01	5
DI0-10	58	0.01	10
DISP0-10	58	0.01	10 Shockproof
DI0-1	58	0.001	1

ELECTRONIC DIGITAL INDICATORS

Stock Code	Travel mm	Resolution	Bezel Ø mm	Stem mm
EDG	10	0.01mm/0.0005"	57	8

BORE GAUGES

Stock code	Range mm	Resolution mm	Depth mm	No of anvils
BG6	6-10	0.01	40	9
BG10	10-18	0.01	100	9
BG18	18-35	0.01	125	7
BG35	35-50	0.01	150	3
BG50	50-100	0.01	150	5
BG100	50-160	0.01	150	5
BG160	160-250	0.01	400	5
BG250	250-450	0.01	400	5

THICKNESS GAUGES

Stock code	Range mm	Reading mm	Throat depth mm
TG10	0-10	0.01	100

ELECTRONIC THICKNESS GAUGES

Stock code	Range mm	Reading mm	Throat depth mm	Anvil Ø mm
ETG15	0-15	0.01	15	9
ETG25	0-25	0.01	20	9

PIN POINT ELECTRONIC THICKNESS GAUGES

Stock Code	Range mm	Reading mm	Max throat depth mm	Anvil Ø mm
ETGP15	0-15	0.01	35	2.0

GROOVE TESTERS

Stock code	Measuring range Ø mm	Graduation mm	Measuring sphere Ømm	Max measuring depth mm
GT15-35	15-35	0.01	3	50
GT35-55	35-55	0.01	3	80
GT55-75	55-75	0.01	3	100
GT75-95	75-95	0.01	3	100
GT95-115	95-115	0.01	3.2	150
GT115-135	115-135	0.01	3.2	150

MONOBLOCK VERNIER CALIPERS

Stainless steel • Satin chromed • Hardened • With depth rod

Stock code	Measuring range mm	Vernier scale mm	Length of external jaws mm
V150MB	150	0.02	40
V200MB	200	0.02	60
V300MB	300	0.02	60

STANDARD VERNIER CALIPERS

Stock code	Measuring range mm	Vernier scale mm	Length of external jaws mm
V100	100	0.02	30
V15002	150	0.02	40
V15005	150	0.05	40
V200	200	0.02	60
V300	300	0.02	60

METRIC / IMPERIAL

Stock code	Measuring range mm	Vernier scale mm	Length of external jaws mm
VI150	150/6"	0.02 mm / 0.001"	40

LARGE CAPACITY

With fine adjustment. Without depth gauge

Stock code	Measuring range mm	Vernier scale mm	Length of external jaws mm
V500	500	0.02	100
V1000	1000	0.02	125
V1500	1500	0.02	125
V2000	2000	0.02	150

INTERNAL GROOVE VERNIER CALIPERS

Stainless steel • Satin chromed • Hardened and ground • With depth rod

Stock code	Measuring range mm	Vernier scale mm	Flat point thickness mm	Flat point length mm	Accuracy mm
IGV	18-150	0.02	2.0	5.0	±0.02

CARBON FIBRE DIAL VERNIERS

Stock code	Measuring range mm	Reading mm	Jaw length mm
CFDLV150	0-150	0.01	40

DIAL CALIPERS

Stock code	Measuring range Ø mm	Reading mm	External jaw length mm	Internal jaw length mm	Accuracy mm
DLV150	0-150	0.02	40	17.3	±0.03
DLV200	0-200	0.02	50	20.3	±0.03
DLV300	0-300	0.02	60	21.3	±0.04

ELECTRONIC DIGITAL CALIPERS

ABSOLUTE

Power on / off switch • Zero setting at any position • Data output port

Protection rating IP40

Stock cod	Measuring range Ø mm	Reading mm	External jaw length mm	Internal jaw length mm	Accuracy mm
EV150	150	0.01mm/0.0005"	40	17.3	±0.03
EV200	200	0.01mm/0.0005"	50	20.3	±0.03
EV300	300	0.01mm/0.0005"	60	21.3	±0.03

WATER RESISTANT

Stock Code	Measuring range Ø mm	Vernier scale mm	External jaw length mm	Internal jaw length mm	Accuracy mm
WPEV150	150	0.01mm/0.0005"	40	17.3	±0.03

ELECTRONIC DIGITAL CALIPERS

Power on / off switch • Zero setting at any position • Data output port

Stock code	Measuring range Ø mm	Resolution mm inch mm	External jaw length mm	min mt measure mm	Accuracy Ø mm
EV500	0-500	0.01/0.005	100	20	0.05
EV1000	0-1000	0.01/0.005	150	20	0.05
EV1500	0-1500	0.01/0.005	150	20	0.05

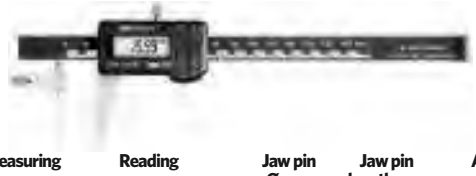
LEFT HAND ELECTRONIC DIGITAL CALIPERS

Power on / off switch • Zero setting at any position • Data output port

Stock code	Measuring range mm	Reading	External jaw length mm	Internal jaw length mm	Accuracy mm
LHEV150	150	0.01mm / 0.0005"	40	21	±0.03

ELECTRONIC DIGITAL TUBE CALIPERS

Power on / off switch • Zero setting at any position • Data output port



Stock code	Measuring range mm	Reading	Jaw pin Ø mm	Jaw pin length mm	Accuracy mm
ETC	0-150	0.01mm / 0.0005"	4	30	±0.03

ELECTRONIC DIGITAL INTERNAL GROOVE CALIPERS

Power on / off switch • Data output port

Stock code	Measuring range mm	Reading	Flat point thickness mm	Flat point length mm	Accuracy mm
EIGC	22-150	0.01mm / 0.0005"	1.0	6.0	±0.04

ELECTRONIC PRINTER

For use with electronic measuring instruments for statistical process control.

Stock code	Type	Power supply
PRINTERC#	Impact dot matrix to suit	AC adaptor (DCSV-17A)

Printer features: Upper limits, lower limits, average values, standard deviations, number of measurements.

DEPTH GAUGES WITH PROTRACTOR

Stock code	Protracter Ø mm	Rule length mm	Rule graduation mm
DGP	75	150	0.5

DEPTH GAUGES

Stock code	Length of bridge mm	Measuring range mm	Rule graduation mm
DG	75	150 std	0.5

DEPTH VERNIERS

Stock code	Range mm	Vernier scale mm	Length of bridge mm
DV200	0-200	0.02	102
DV300	0-300	0.02	102

WITH HOOK

Stock code	Range mm	Vernier scale mm	Length of bridge mm
DVH200	0-200	0.02	102

ELECTRONIC DIGITAL DEPTH GAUGES

Stock code	Range mm	Reading	Length of bridge mm
EDV200	0-200	0.01 mm/0.0005"	100
EDV300	0-300	0.01 mm/0.0005"	100

GEAR TOOTH VERNIERS

Stock Code	Measuring range module mm	Reading mm	Accuracy mm
GTV	1-26	0.02	±0.02

ELECTRONIC DIGITAL HEIGHT GAUGES

Stock Code	Measuring height mm	Resolution	Length of scriber mm	Accuracy mm
EHG300	300	0.01mm / 0.0005"	75	±0.04
EHG500	500	0.01mm / 0.0005"	100	±0.05

HEIGHT GAUGES

Stock Code	Measuring height mm	Resolution mm	Length of scriber mm	Accuracy mm
HG300	300	0.02	75	±0.04
HG500	500	0.02	100	±0.05
HG1000	1000	0.02	110	±0.07

DOUBLE BEAM DIAL HEIGHT GAUGES

Stock code	Measuring height mm	Dial reading mm	Counter graduation mm	Accuracy mm
DBHG300	300	0.01	1.0	±0.04
DBHG600	600	0.01	1.0	±0.05

MEASURING KITS

Stock code	Contents
MK	0-25 mm outside micrometer, 150 mm Vernier, Scriber, Square, Rule

MICROMETER STANDS

Stock code	Height mm	Width mm	Length mm	Weight kg
MSC	120	115	170	1.2

MICROMETER HEADS

Ratchet stop small barrel

Stock code	Measuring range mm	Reading mm	Accuracy mm	Body Ø mm	Clamping spigot Ø mm	Clamping spigot length mm	Overall length mm
SMH0-25	0.25	0.01	0.003	18	$12\ ^{0}_{-0.011}$	17.5	113

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Ratchet stop large barrel

Stock Code	Measuring range mm	Reading mm	Accuracy mm	Body Ø mm	Clamping spigot Ø mm	Clamping spigot length mm	Overall length mm
LMH0-25	0.25	0.01	0.004	29	12 $^{0}_{-0.011}$	17.5	115

ELECTRONIC MICROMETER HEADS

Carbide anvils, friction thimble, RS232 data output.

DIN 863/1 DIN40050/IEC529-

Stock Code	Measuring range mm	Reading mm	Accuracy mm	Clamping spigot Ø mm
EMH	0-25/1"	0.001mm/0.00005"	0.003	12 $^{0}_{-0.011}$

MINI OUTSIDE MICROMETERS

Satin chromed • For measuring small componenets

Stock code	Measuring range mm	Reading mm	Accuracy mm	Overall length mm
MM0-15	0-15	0.01	±0.004	67.5

OUTSIDE MICROMETERS

Carbide measuring faces. Ratchet stop.

Stock code	Measuring range mm	Reading mm	Accuracy mm
OSM0-25	0-25	0.01	±0.004
OSM25-50	25-50	0.01	±0.004
OSM50-75	50-75	0.01	±0.005
OSM75-100	75-100	0.01	±0.005

OUTSIDE MICROMETERS LEFT / RIGHT HAND

Carbide measuring faces. Ratchet stop.

Stock code	Measuring range mm	Reading mm	Accuracy mm
LHOSM	0-25	0.01	±0.004

OUTSIDE MICROMETERS

Carbide measuring faces. Ratchet stop.

Stock code	Measuring range mm	Reading mm	Accuracy mm
OSM100-125	100-125	0.01	±0.006
OSM125-150	125-150	0.01	±0.006
OSM150-175	150-175	0.01	±0.007
OSM175-200	175-200	0.01	±0.007
OSM200-225	200-225	0.01	±0.008
OSM225-250	225-250	0.01	±0.008
OSM250-275	250-275	0.01	±0.009
OSM275-300	275-300	0.01	±0.009

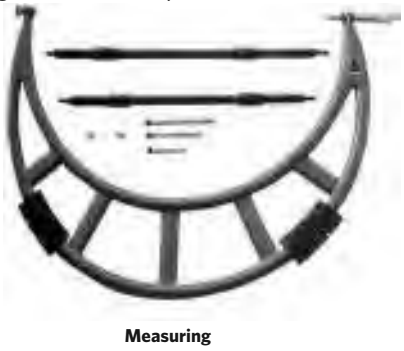
INTERCHANGEABLE ANVIL MICROMETERS

Carbide measuring faces. Ratchet stop.

Stock code	Measuring range mm	Reading mm	No of anvils	No of standards
OSMIA0-100	0-100 mm	0.01	4	3
OSMIA100-200	100-200 mm	0.01	4	4
OSMIA200-300	200-300 mm	0.01	4	4

LARGE DIAMETER OUTSIDE MICROMETERS

Carbide measuring faces. Ratchet stop.



Stock code	Measuring range mm	Reading mm
OSM300-400	300-400	0.01
OSM400-500	400-500	0.01
OSM500-600	500-600	0.01
OSM600-700	600-700	0.01
OSM700-800	700-800	0.01
OSM800-900	800-900	0.01
OSM900-1000	900-1000	0.01

SETS OF OUTSIDE MICROMETERS

Carbide measuring faces. Ratchet stop.

Stock code	Measuring range mm	No of micrometers	Reading mm
OSM0-100	0-100	4	0.01
OSM0-150	0-150	6	0.01
OSM150-300	150-300	6	0.01
OSM0-300	0-300	12	0.01

ELECTRONIC DIGITAL OUTSIDE MICROMETERS

Carbide measuring faces • Ratchet stop • Auto on/off • Zero setting of any position • Relative and absolute measurement interchangeability • With data holding function.

IP54

Stock Code	Measuring range	Resolution	Accuracy mm
EOSM0-25	0-25mm/0-1″	0.001mm/0.00005″	0.004
EOSM25-50	25-50mm/1-2″	0.001mm/0.00005″	0.004
EOSM50-75	50-75mm/2-3″	0.001mm/0.00005″	0.005
EOSM75-100	75-100mm/3-4″	0.001mm/0.00005″	0.005

MECHANICAL DIGITAL OUTSIDE MICROMETERS

Carbide measuring faces

Stock code	Measuring range mm	Reading mm	Anvil Ø mm	Accuracy mm
DOSM0-25	0-25	0.01	6.5	±0.004

LARGE BARREL OUTSIDE MICROMETERS

Carbide measuring faces • Ratchet friction thimble.

Stock code	Measuring range mm	Reading mm	Accuracy mm	Barrel Ø mm	Anvil Ø mm
LBOSM0-25	0-25	0.01	±0.004	30	8

TUBE MICROMETERS

Stock code	Measuring range mm	Graduation mm	Accuracy mm	Vertical spindle anvil Ø mm
TM0-25	0-25	0.01	±0.004	5

TUBE MICROMETERS TYPE J

Stock code	Measuring range mm	Graduation mm	Accuracy mm	Min tube bore mm
TMJ 0-25	0-25	0.01	±0.004	10.0

PIN ANVIL MICROMETERS

Carbide tipped anvils

Stock code	Measuring range mm	Graduation mm	Pin Ø mm	Pin length mm	Accuracy mm
PAM0-25	0-25	0.01	2.0	5.0	±0.004

POINT MICROMETERS

Carbide points

Stock code	Measuring range mm	Graduation mm	Point angle	Accuracy mm
PM0-25	0-25	0.01	30˚	±0.004

BLADE MICROMETERS

Stock code	Measuring range mm	Reading mm	Blade thickness mm	Blade length mm	Accuracy mm
BM0-25	0-25	0.01	0.75	6.5	±0.004
BM25-50	25-50	0.01	0.75	6.5	±0.004
BM50-75	50-45	0.01	0.75	6.5	±0.005
BM75-100	75-100	0.01	0.75	6.5	±0.005

DISC MICROMETERS

Stock code	Measuring range mm	Reading mm	Disc Ø mm	Anvil Ø mm	Accuracy mm
DM0-25	0-25	0.01	2.0	8	±0.004
DM25-50	25-50	0.01	2.0	8	±0.004
DM50-75	50-45	0.01	2.0	8	±0.005
DM75-100	75-100	0.01	2.0	8	±0.005

DEEP THROAT MICROMETERS

Carbide measuring faces

Stock code	Measuring range mm	Reading mm	Throat depth mm	Anvil Ø mm	Accuracy mm
DTM0-25	0-25	0.01	50	6.5	±0.003

SHEET METAL MICROMETERS

Stock code	Measuring range mm	Reading mm	Throat depth mm	Anvil Ø mm	Accuracy mm
SMM0-15	0-15	0.01	50	6.5	±0.004

UNI MICROMETERS

Supplied with two interchangeable vertical anvils – Round and flat. For measuring tube wall thickness, shoulder edge distance, rivit head height etc.

Stock code	Measuring range mm	Reading mm	Flat anvil width mm	Round anvil Ø mm	Accuracy mm
UM0-25	0-25	0.01	6.5	3.0	±0.004

SCREW THREAD MICROMETERS

Non-rotating spindles. Interchangeable anvils, 60˚ & 55˚

Stock code	Measuring range mm	Reading mm	Anvil shank Ø mm	Anvil shank length mm	Accuracy mm
STM0-25	0-25	0.01	5.0	15	±0.004
STM25-50	25-50	0.01	5.0	15	±0.004
STM50-75	50-75	0.01	5.0	15	±0.004
STM75-100	75-100	0.01	5.0	15	±0.005

ANVILS 60˚

Stock code	Pitch range metric mm	TPI Range UN	Stock code	Pitch range metric mm	TPI Range UN
A0.4 - 0.5	4 - 0.5	64-48	A2-3	2-3	13 - 9
A0.6 - 0.9	0.6 - 0.9	44-28	A3.5 - 5	3.5 - 5	8 - 5
A1 - 1.75	1.0 - 1.75	24-14	A5 - 5.7	5 - 5.7	41/2 - 31/2

Supplied in pairs

ANVILS 55˚

Stock code	TPI Range W	Stock code	TPI Range W	Stock code	TPI Range W
A60 - 40	60 - 40	A24 - 18	24 - 18	A10 - 7	10 - 7
A48 - 40	48 - 40	A18 - 14	18 -14	A7 - 4.5	7 - 41/2
A40 - 32	40 - 32	A14 - 10	14 -10	A4.5 - 3.5	41/2 - 31/2
A32 - 24	32 - 24				

Supplied in pairs

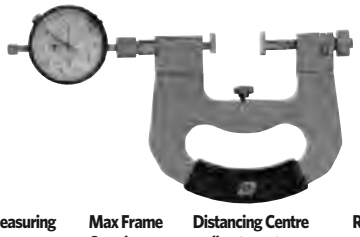
ELECTRONIC SCREW THREAD MICROMETERS

Non-rotating spindles. Interchangeable anvils, 60° & 55°. Absolute and relative measuring modes. Supplied complete with Data output RS232c / SPC cables

Stock code	Measuring range mm	Reading mm	Anvil shank Ø mm	Anvil shank length mm	Accuracy mm
ESTM0-25	0-25	0.001/0.00005"	5.0	15	±0.004
ESTM25-50	25-50	0.001/0.00005"	5.0	15	±0.004
ESTM50-75	50-75	0.001/0.00005"	5.0	15	±0.004
ESTM75-100	75-100	0.001/0.00005"	5.0	15	±0.005

DIAL SNAP GAUGES

Supplied with dial indicator. Measuring anvils 14mmx11mm



Stock code	Measuring range mm	Max Frame Opening mm	Distancing Centre line to rest Pad mm	Rest Pad Ø mm	Moving Anvil Travel mm
DSG0-25	0-25	42	20	15	3
DSG25-50	25-50	69	32.5	15	3
DSG50-75	50-75	94	45.0	15	3
DSG75-100	75-100	119	57.5	15	3
DSG100-125	100-125	144	70.0	15	3
DSG125-150	125-150	169	82.5	15	3
DSG150-175	150-175	194	95.0	15	3
DSG175-200	175-200	219	107.0	15	3
DSG200-225	200-225	244	120.0	15	3
DSG225-250	225-250	269	132.5	15	3
DSG250-275	250-275	294	145.0	15	3
DSG275-300	275-300	319	157.5	15	3

INTERNAL GROOVE MICROMETERS

Non-rotating spindles.

Stock code	Measuring range mm Outside	Inside	Reading mm	Disc thickness mm	Disc Ø mm	Anvil Ø mm	Parallelism mm
IGM0-25	0-25	1.6	0.01	0.75	6.5	3	0.01

CALIPER TYPE INSIDE MICROMETERS

Carbide measuring faces • Ratchet stop.

Stock Code	Measuring range mm	Reading mm	Accuracy mm	Anvil Ø mm	Anvil length mm
CISM5-30	5-30	0.01	40.005	2.0	5.0
CISM25-50	25-50	0.01	40.006	2.0	5.0

INSIDE MICROMETERS

Stock code	Measuring range mm	Reading mm	No of extension rods
ISM25-50	25-50	0.01	2
ISM50-300	50-300	0.01	5
ISM50-500	50-500	0.01	6
ISM50-1000	50-1000	0.01	8
ISM50-1500	50-1500	0.01	10

Accuracy: ± (3+n+L/50) µm

THREE POINT MICROMETERS

Carbide tipped contact points • Supplied with setting rings

Stock code	Measuring range mm	Reading mm	Accuracy mm	Setting ring Ø mm	Measuring depth without extensions mm	Measuring distance from blind hole mm
TPM3-4	3-4	0.001	0.004	4	22.5	0.5
TPM4-5	4-5	0.001	0.004	5	22.5	0.5
TPM5-6	5-6	0.001	0.004	6	22.5	0.5
TPM6-8	6-8	0.001	0.004	8	54.5	1.5
TPM8-10	8-10	0.001	0.004	8	54.5	1.5
TPM10-12	10-12	0.001	0.004	10	54.5	1.5
TPM12-16	12-16	0.005	0.004	16	80	0.5
TPM16-20	16-20	0.005	0.004	16	80	0.5
TPM20-25	20-25	0.005	0.004	25	90	0.5
TPM25-30	25-30	0.005	0.004	25	90	0.5
TPM30-40	30-40	0.005	0.004	40	97	0.5
TPM40-50	40-50	0.005	0.005	40	97	0.5
TPM50-63	50-63	0.005	0.005	62	114	0.5
TPM63-75	63-75	0.005	0.005	62	114	0.5
TPM75-88	75-88	0.005	0.005	87	114	0.5
TPM87-100	87-100	0.005	0.005	87	114	0.5

SETS OF THREE POINT MICROMETERS

Carbide tipped contact points. Supplied complete with setting ring gauges

Continued ...

Continued ...

Stock code	Measuring range mm	Reading mm	Number of of gauges per set	Number of setting rings	Extension rods mm
TPM6-12	6-12	0.001	3	3	100
TPM11-20	11-20	0.005	2	1	150
TPM20-50	20-50	0.005	4	2	150

ELECTRONIC THREE POINT MICROMETERS

Self-centering anvils. Carbide tipped contact points. Protection level IP54. RS232 data output. Supplied with setting rings

Stock code	Measuring range mm	Reading mm inch	Accuracy mm	Setting ring Ø mm	Measuring depth without extensions mm	Measuring distance from blind hole mm
ETPM3-4	3-4	0.001/ 0.0005	0.004	4	22.5	0.5
ETPM4-5	4-5	0.001/ 0.0005	0.004	5	22.5	0.5
ETPM5-6	5-6	0.001/ 0.0005	0.004	6	22.5	0.5
ETPM6-8	6-8	0.001/ 0.0005	0.004	6	54.5	1.5
ETPM8-10	8-10	0.001/ 0.0005	0.004	8	54.5	1.5
ETPM10-12	10-12	0.001/ 0.0005	0.004	10	54.5	1.5
ETPM12-16	12-16	0.001/ 0.0005	0.004	16	80	0.5
ETPM16-20	16-20	0.001/ 0.0005	0.004	16	80	0.5
ETPM20-25	20-25	0.001/ 0.0005	0.004	25	90	0.5
ETPM25-30	25-30	0.001/ 0.0005	0.004	25	90	0.5
ETPM30-40	30-40	0.001/ 0.0005	0.004	40	97	0.5
ETPM40-50	40-50	0.001/ 0.0005	0.005	40	97	0.5

TELESCOPIC GAUGES

Stock Code	Measuring range mm	No of pieces per set
TG	0-150	6

Individule measuring range Ø /depth mm

A	B	C	D	E	F
8-12.7/102	12.7-19/102	19-32/102	32-54/102	54-90/102	90-150/102

DEPTH MICROMETERS

Stock Code	Measuring range mm	Reading mm	Accuracy mm	Length of base mm
DM	0-150	0.01	±0.005	63

SLIP GAUGES

To DIN 861-1980. HRc ≥ 64

Stock code	No of pieces mm	Grade	Nominal dimensions mm	Steps mm	No of blocks
SG472	47	2	1.005	-	1
			1.01-1.09	0.01	9
			1.1-1.9	0.1	9
			1-24	1	24
			25-100	25	4
SG762	76	2	1.005	-	1
			1.01-1.49	0.01	49
			0.5-9.5	0.1	19
			10-50	10	5
			75-100	25	2
SG1032	103	2	1.005	-	1
			1.01-1.49	0.01	49
			0.5-24.5	0.5	49
			25-100	25	1
SG1122	112	2	1.0005	-	1
			1.001-1.009	0.001	9
			1.01-1.49	0.01	49
			0.5-24.5	0.05	49
			25-100	25	4
SG1120	112	0	1.0005	-	1
			1.001-1.009	0.001	9
			1.01-1.49	0.01	49
			0.5-24.5	0.05	49
			25-100	25	4

Mμ CHECKERS

Probes run on linear bearings and operate on the inductive principle. Set includes an electrical indicating instrument, pedal switch, SPC connecting cable, P1104, AC adaptor, software for data acquisition and inductive probe.

Stock code	No of pieces mm	Grade	Nominal dimensions mm	Steps mm	No og blocks
MCSET	0.1	2000	RS232	8	0.2 + $3L^3$

GRANITE PLATES

Stock Code	Length mm	Width mm	Height mm	Grade
GSP300x200	300	200	50	0
GSP300x300	300	300	70	0
GSP400x250	400	250	70	0
GSP630x400	630	400	100	0
GSP1000x630	1000	630	150	0

GRANITE SQUARES

Stock code	Length mm	Bredth mm	Width mm	Grade
GS100	100	63	16	0
GS160	160	100	20	0
GS250	250	160	25	0

GRANITE PARALLELS

Stock code	Length mm	Height mm	Width mm	Grade
GP160	160	25	16	0
GP250	250	40	25	0

GRANITE STRAIGHT EDGES

Stock Code	Length mm	Height mm	Width mm	Grade
GSE400	400	60	25	0
GSE630	630	100	35	0
GSE1000	1000	160	50	0

GRANITE DIAL COMPARATOR STANDS

Stock code	Base width mm	Base length mm	Base height mm	Column Ø mm	Column length mm	Measuring range mm
GCS150	150	100	40	18	150	0-100

STEEL DIAL COMPARATOR STANDS

Stock code	Base width mm	Base length mm	Base height mm	Column Ø mm	Column length mm	Measuring range mm
DCS	140	85	40	25	220	0-100

UNIVERSAL INDICATOR HOLDERS

Used for affixing a dial test indicator to a pedestal drill (or other) spindle

Stock code	To clamp on quill Ø mm	Test indicator clamp
UIH	448	dovetail

CENTERING ARM

Stock coder	Stem Ø mm	Bottom arm mm	Top arm mm
NF1015	8	56	51

FLEXIBLE STEM MAGNETIC BASES

Stock Code	Magnetic force	Clamp Ø mm	Base width mm	Base length mm	Base height mm
FSMB	588N	8	54	70	50

MAGNETIC BASES WITH CENTRAL CLAMPING

Stock code	Magnetic force	Clamp Ø mm	Base width mm	Base length mm	Height mm
DG61003	800N	8.0	50	60	55

MINI MAGNETIC BASE WITH CENTRAL CLAMPING

Stock Code	Magnetic force	Clamp Ø mm	Base width mm	Base length mm	Height mm
NF1030	280N	8.0	16	60	32

NOGA MAGNETIC BASE

Stock code	Magnetic force	Post mm	Arm mm	Attachment
PH2040	800N	14x20	12x190	6mm, 8mm,3/4" Dovetail & Back Lug

ITA MAGNETIC BASES

Without fine adjustment

Stock Code	Magnetic force	Clam Ø mm	Base width mm	Base length mm	Stem Ø mm	Arm Ø mm
MB	588N	8.0	50	65	12	10

ITA MAGNETIC BASES

With fine adjustment

Stock Code	Magnetic force	Clamp Ø mm	Base width mm	Base length mm	Height mm
MBF	588N	8.0	50	65	54

SMALL MAGNETIC STANDS

Stock code	Magnetic force	Base height mm	Overall height mm	Base Ø mm
SMS	60N	25	125	25

NOGA VACUUM BASE

Stock code	Force (N)	Thread	Ø mm
DG0040	350	M8	92

ITA POCKET RULES

Stock code	Measuring range mm	Graduation mm	Width mm	Thickness mm
PR	150	1	7	0.1

ITA STAINLESS STEEL RULES

Stock code	Measuring range mm	Graduation mm	Width mm	Thickness mm
SR100	100	0.5/1.0	16	0.5
SR150	150	0.5/1.0	20	0.7
SR300	300	0.5/1.0	28	1.0
SRMI300	300	1.0/1/32	28	1.0
SR500	500	1.0	26	1.0
SR600	600	1.0	28	1.0
SR1000	1000	1.0	30	1.0

FOLDING STEEL RULE

Stock Code	Dimensions mm
FR600	300 x 300

LINE OF CHORDS

Stock Code	Description
6OR	Two fold, Graduated in millimeters, Line of chords on one side and millimeter and circumference scale on the other. Instructions Included.

STEEL SQUARE

Stock Code	Dimensions mm
BS600X400	400 x 600

KNIFE STRAIGHT EDGES

DIN 874

Stock code	Length mm	Width mm	Grade
SE75	75	5	0
SE100	100	5	0
SE150	150	6	0
SE200	200	6	0

BEVELLED STRAIGHT EDGES

Ungraduated

Stock Code	Length mm	Width mm	Thickness mm	Grade
BSE1000	1000	40	5	2
BSE1500	1500	40	5	2
BSE2000	2000	40	5	2

STRAIGHT EDGES

Ungraduated

Stock Code	Length mm	Width mm	Thickness mm	Grade
SE500	500	30	6	2
SE750	750	40	8	2
SE1000	1000	40	8	2
SE1500	1500	50	10	2
SE2000	2000	60	12	2
SE2500	2500	60	12	2
SE3000	3000	80	15	2
SE4000	4000	100	16	2

GRADUATED STRAIGHT EDGES

Bevel edge

Stock Code	Length mm	Width mm	Thickness mm	Grade
SEG1000	1000	40	5	2
SEG1500	1500	40	5	2

PRECISION KNIFE EDGE SQUARES

DIN 875

Stock Code	Height mm	Base length mm	Width mm	Grade
PS50	50	40	4	0
PS75	75	50	4	0
PS100	100	70	5	0
PS150	150	100	6	0
PS200	200	130	6	0

ENGINEERS SQUARES

Wide base

Stock code	Nominal size mm	Overall height mm	Base length mm	Base height mm	Base width mm
ES50	50	72	52	19	13
ES75	75	100	63	19	13
ES100	100	125	75	19	13
ES150	150	180	100	25	16
ES200	200	145	125	32	16
ES250	250	300	150	36	16
ES300	300	350	200	36	18

PRECISION ENGINEERS SQUARES

Wide base. Dimension to DIN 875 . Tolerances Grade 1

Stock code	Height mm	Base length mm	Base height mm	Base width mm	Grade
PES 75	75	50	15	8	1
PES100	100	70	20	12	1
PES150	150	100	25	15	1
PES200	200	130	28	18	1

FLAT BASE PRECISION SQUARES

Din 875 stainless steel

Stock code	Height mm	Base length mm	Grade	Section mm
FBS50	50	40	0	12x5
FBS75	75	50	0	15x5
FBS100	100	70	0	20x5
FBS150	150	100	0	25x5
FBS200	200	130	0	30x6
FBS250	250	160	0	35x7
FBS300	300	200	0	40x8
FBS400	400	265	0	45x10
FBS500	500	330	0	50x10

BEVEL PROTRACTORS

Stock code	Reading arc minute	Accuracy	Division	Length of rule mm
BP	5	45′	4x90°	300

COMBINATION SETS

Stock code	Protractor reading	Accuracy	Range	Length of rule mm
CSQ	1°	415′	0-180°	300

COMBINATION SQUARE

Stock Code	Dimensions mm
CS300	300

SLIDING BEVEL

Stock Code	Size mm	Handle
SB250W	250	Wood
SB300A	300	Aluminium

DIAMETER AND CIRCUMFERENCE

Stock code	Width of tape mm	Length mm	Ø Max mm	Circumference mm
PR22MD	13	3	0.96	3

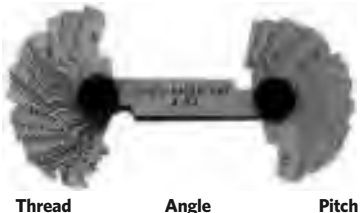
FEELER GAUGES

Stock Code	No of leaves	Leaf length	Sizes mm					
FG14	14	100	0.05	0.06	0.07	0.08	0.09	0.10
			0.15	0.20	0.25	0.30	0.35	0.40
			0.75	1.00				
FG17	17	100	0.02	0.03	0.04	0.05	0.06	0.07
			0.08	0.09	0.10	0.15	0.20	0.25
			0.30	0.35	0.40	0.45	0.50	
FG20	20	100	0.05	0.10	0.15	0.20	0.25	0.30
			0.35	0.40	0.45	0.50	0.55	0.60
			0.65	0.70	0.75	0.80	0.85	0.90
			0.95	1.00				
FG26M	26	100	0.03	0.04	0.05	0.06	0.08	0.09
			0.10	0.15	0.20	0.25	0.30	0.35
			0.40	0.45	0.50	0.55	0.60	0.65
			0.70	0.75	0.80	0.85	0.90	0.95
			1.00					

IMPERIAL

Stock code	No of leaves	Leaf length	Sizes inch		
FG15I	15	90	0.002	0.003	0.004
			0.005	0.006	0.008
			0.011	0.012	0.013
			0.014	0.016	0.018
			0.020	0.022	0.025
FG26I	26	90	0.0015	0.002	0.0025
			0.003	0.004	0.005
			0.064	0.007	0.008
			0.009	0.010	0.011
			0.012	0.013	0.014
			0.015	0.016	0.0017
			0.018	0.019	0.020
			0.021	0.022	0.023
			0.024	0.025	

THREAD PITCH GAUGES



Stock Code	Thread form	Angle	Pitch range	No of blocks
TPGM	Metric	60˚	0.4-6.0mm	20
TPGU	Unified	60˚	40-13TPI	10
TPGW	Whitworth	55˚	48-4TPI	22
TPGM/W	Metric/ Whitworth	60˚ 55˚	0.25-6.0mm 62-4TPI	52 52

SCREW CUTTING GAUGES

Stock Code	Thread form	Angle
SCG55	Metric	60˚
SCG60	Whitworth	55˚

SCREW CUTTING GAUGES

Trapezoidal and Acme

SCG30

SCG29

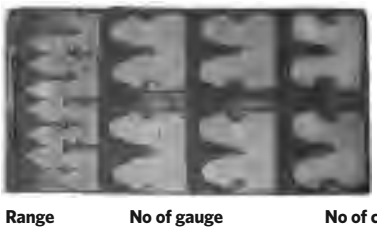
SCGST

Stock Code	Thread form	Angle	Pitch range mm
SCG30	Trapezodial	30˚	2-12
SCGST	Square / Trapezodial	55˚ 60˚ 30˚	2-12
SCG29	Acme	29˚	1-10

RADIUS GAUGES

Stock Code	Measuring range R mm	Increments mm	No of leaves	Length of leaves mm
RG1-7	1-7	0.5	34	35
RG7.5-15	7.5-15	0.5	32	40
RG15-25	15-25	0.5	31	40

RADIUS GAUGE SETS



Stock Code	Range mm	No of gauge	No of convex+concave measuring faces/gauge
RG0.5-13	0.5-13	26	5

WELD SEAM GAUGES

Stock code	Measuring range mm	Reading mm	Angles
WSG	0-20	0.01	60˚, 70˚, 80˚, 90˚

FIRM JOINT CALIPERS

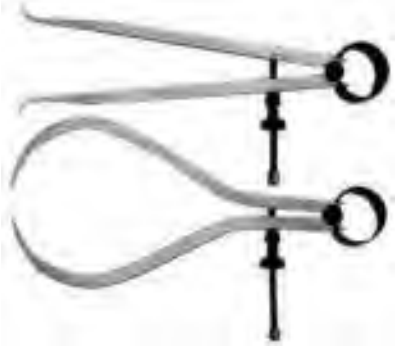
OUTSIDE

Stock Code	Length mm
OC100Q	100
OC150Q	150
OC200Q	200

INSIDE

Stock Code	Length mm
IC100Q	100
IC150Q	150
IC200Q	200

SPRING JOINT CALIPERS



OUTSIDE

Stock Code	Length mm
OCS75	75
OCS100	100
OCS150	150
OCS200	200
OCS250	250
OCS300	300

INSIDE

Stock Code	Length mm
ICS75	75
ICS100	100
ICS150	150
ICS200	200
ICS250	250
ICS300	300

SPRING JOINT DIVIDERS

Stock Code	Length mm	Stock Code	Length mm
D75	75	D200	200
D100	100	D250	250
D150	150	D300	300

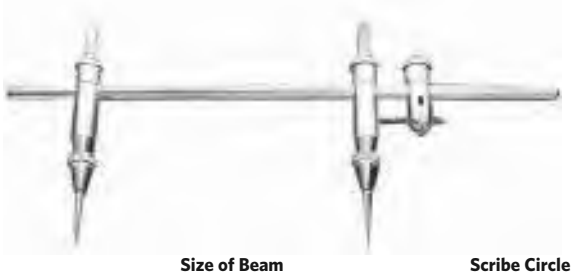
JENNY CALIPERS

Stock Code	Length mm
JC	150

COMPASSES

Stock Code	Description	Length mm
C150	Plain Heavy Duty Compass	150
C200	Plain Heavy Duty Compass	200
C250	Plain Heavy Duty Compass	250
C300	Plain Heavy Duty Compass	300
WC150	Heavy Duty Compass with Wing	150
WC200	Heavy Duty Compass with Wing	200
WC250	Heavy Duty Compass with Wing	250
WC300	Heavy Duty Compass with Wing	300

STEEL BEAM TRAMMEL



Stock Code	Size of Beam mm	Scribe Circle Dia mm
SBT	365	650

TOOLMAKER SURFACE GAUGES

Stock Code	Length of spindle	Length mm	Base Width mm	Height mm
TSG175	100 & 175	55	40	20
TSG300	225 & 300	82	63	25

SCRIBERS

Double end

Stock code	Description	Length
DES	Hardened steel points	250 mm long

Plastic handle double end

Stock code	Description	Length
PDES	Hardened steel points with plastic handle	250 mm long

Pocket

Stock code	Description	Length
CTS145	Carbide tip pocket scriber	145 mm long
CTS160	Carbide tip pocket scriber	160 mm long

PRECISION BLOCK SPIRIT LEVELS

Measurinfg faces hardened, ground and scraped. Body enameled.
With flat base and cross prisms.

Stock Code	Length mm	Width mm	Height mm	Accuracy
SL100Q	100	40	32	0.2 mm/1000 mm
SL150Q	150	40	32	0.2 mm/1000 mm

PRECISION HORIZONTAL SPIRIT LEVELS

Measurinfg faces hardened, ground and scraped. Body enameled.
With flat and prismic base.

Stock Code	Length mm	Width mm	Height mm	Accuracy
HSL150Q	150	42	40	0.05 mm / 1000 mm
HSL200Q	200	42	40	0.05 mm / 1000 mm
HSL250Q	250	42	40	0.05 mm / 1000 mm
HSL300Q	300	42	40	0.05 mm / 1000 mm

PRECISION FRAME SPIRIT LEVELS

Measurinfg surfaces hardened, ground and scraped. Body enameled. With insulating handle. Two surfaces flat and two surfaces prismic.

Stock Code	Length mm	Width mm	Height mm	Accuracy
FSL150Q	150	40	150	0.02 mm / 1000 mm
FSL200Q	200	42	200	0.02 mm / 1000 mm
FSL250Q	250	42	250	0.02 mm / 1000 mm
FSL300Q	300	42	300	0.02 mm / 1000 mm

ROCKWELL HARDNESS TESTER

Conform to ISO 3804-1966 and 135891-1962 parts I and II for Rockwell hardness testing

Stock code	Test range Rockwell	Penetrators for A+c scale	Penetrators for othe scale	Max test height mm	Throat mm
RHTC	A to K	120° diamond	1/16" steel ball	150	130

PORTABLE HARDNESS TESTER

For measuring hardness on a variety of materials. With RS232 port for down loading data to PC or printer.

Stock code	Measuring range-steel HB	HRc	HRB	HV	Accuracy mean uncertainty
PHT	80-850	20-68	39-99	80-977	0.8%

Measuring range varies slightly dependant on material tested.

DIGITAL SHORE DUROMETERS

Stock Code	Range	Resulotion	Contact point mm Ø
DSDA	0-100HA	0.5HA	0.79
DSDD	0-100HD	0.5HD	SR0.1
DSDC	0-1100HC	0.5HC	SR2.5

SHORE A DUROMETER : Designed for testing the hardness of soft rubber, printer rollers and other elastomer materials.

SHORE D DUROMETER : Designed for testing the hardness of hard rubber, such as thermoplastics, plastic floor etc.

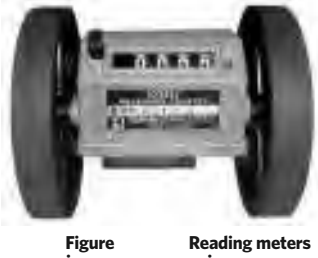
SHORE C DUROMETER : Designed for measuring foam, sponge.

STROKE COUNTERS

Knob twist reset

Stock code	No of digits	Overall height mm	Shaft height mm	Overall length mm	Max counting speed c/min
SC5Q	5	32	18.8	79.8	500

LENGTH COUNTERS



Stock Code	No of digits	Figure size mm	Reading meters min	Reading meters max	Max speed per minute
LC5C	5	3.8x6.5	0.1	9999.9	200

HAND TALLY COUNTERS

Stock Code	No of digits	Base	Max display
HTCQ	4	without	9999

MECHANICAL REV COUNTERS

Stock Code	Figure size	No of digits	RPM	Rotation torque g/cm
MRCQ	3x4.4	5	300	80

DIGITAL TACHOMETERS

Stock Code	Surface speed	Rotation RPM	Accuracy
DCTAC	0.1-1999.9m/min	1-99999	±0.05% of reading + 1 digit

PORTABLE REFREACTOMETER

For determining the concentration of oil in water emulsions.

Stock Code	Measuring range	Min scale	Accuracy
REFRACTOMETER	Brix 0-15%	0.2%	0.2%

LUBRICANTS, COOLANTS, CUTTING OILS & COMPOUNDS

NO 1 FULLY SYNTHETIC GRINDING FLUID

General purpose grinding fluid concentrate

Stock code	Vol Litre
NO15	5

DoALL NO 2 TOOLSAVER LUBRICATION STICK

Improves tool life and enhances cutting action when sawing, drilling, tapping, countersinking, grinding,reaming etc.

Stock code	Weight
NO2	450 grams

NO 3 TAPPING FLUID

Cutting oil for tapping in both steel and aluminium.

Stock code	Vol Litre
NO3 1/4	0 .25
NO31	1.0
NO32	2.0
NO35	5.0

NO 4 BLACK MAGIC CUTTING COMPOUND

Excellent for tapping and other cutting operations in stainless steel

Stock code	Weight Kg.
NO41/2	0.5
NO41	1.0

NO.7 MULTI PURPOSE MOISTURE DISPERSANT

Rust and oil solvent and penetrating fluid. Especially effective on electrical connections

Stock code	Vol, Litre	Container
NO7400	0.4	aerosol can

Continued ...

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NO 8 SEMI SYNTHETIC SOLUBLE OIL

Soluble concentrate for bandsawing and general machining.

Stock code	Vol Litre	Container
NO85	5.0	plastic bottle
NO820	20.0	plastic bottle

NO 9 FULLY SYNTHETIC SOLUBLE FLUID

Soluble concentrate for general purpose machining. Offers extended fluid and tool life. Eco friendly.

Stock code	Vol, Litre	Container
NO95	5.0	plastic bottle
NO920	20.0	plastic bottle

NO 10 SOLUBLE OIL

Conventional soluble mineral oil. For general purpose machining.

Stock code	Vol Litre	Container
NO105	5.0	plastic bottle
NO1020	20.0	plastic bottle

NO 12 ENGINEERS MARKING BLUE

Lay out and scribing fluid. Fast drying.

Stock code	Vol	Container
NO12300	300ml	aerosol can

PENETRATING FLUID - Q10

Stock code	Description	Container
Q10400	Penetrating fluid 400g	aerosol can

MOISTURE REPELLANT - Q20 GENERAL PURPOSE SPRAY

Stock code	Description	Container
Q20300	Water repellant 300g	aerosol can

NO 14 HAND CLEANER

Stock code	Description	Container
No145	Hand cleaner 5kg	plastic bucket
No1420	Hand cleaner 20kg	plastic bucket

NO 17 WELD SPATTER BLOCK

Prevents weld spatter from adhering to work piece or welding equipment

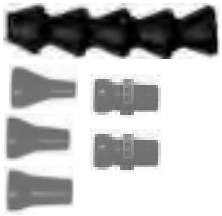
Stock code	Vol, Litre	Container
NO175	5.0	plastic bottle
NO1725	25	plastic bottle

LOC-LINE The original modular hose system

COOLANT HOSE ASSEMBLIES, FITTINGS AND UNITS

Max pressure 3600 PSI

6.35 mm SYSTEM

Stock code		Description
40413		Hose assembly kit 6.35 mm x 300 mm long
41401		6.35 mm hose segments 290 mm long
41402		1.6 mm round nozzle
41403		3 mm round nozzle
41404		6 mm round nozzle
41405		1/8 " NPT male connector
41406		1/4 " NPT male connector
41407		25 mm flare nozzle
41408		Y fitting
41409		Double socket
41411		6.35 mm to 1/8" NPT (female) socket
41412		3/8" NPS (female) adaptor
41414		1/4" NPS (female) adaptor
41415		Elbow fitting
41416		T fitting
41417		1/8" BSPT male connector

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Stock code		Description
41418		1/4" BSPT male connector
41470		1.6 mm 90˚ nozzle
41471		3 mm 90˚ nozzle
41472		6 mm 90˚ nozzle
41473		6 mm 90˚ spray bar nozzle
41475		Extended element with clamp - pack of four
41476		Extended element
41477		Clamp
41478		Side flow nozzle
41479		Circular flow nozzle kit
41480		End cap
41481		Swivel nozzle 1 mm ø holes
41482		Swivel nozzle 1.5 mm ø holes
49421		Hose segments 1000 mm long
21191		In line check valve
21192		1/4" NPT male valve
21193		1/4" NPT female valve
21194		In line valve
21195		Manifold bracket
78001		Hose assembly pliers

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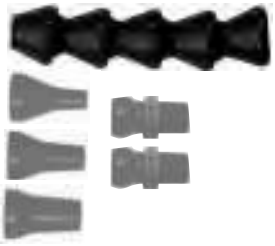
12.7 mm SYSTEM

Stock code		Description
50813		Hose assembly kit 12.7 mm ø x 330 mm long
51801		12.7 mm ø segments 300 mm long
51802		10 mm ø round nozzle
51803		12 mm ø round nozzle
51804		3/8 " NPT connector
51805		1/2 " NPT connector
51806		6 mm ø round nozzle
51807		32 mm flare nozzle
51808		Y fitting
51809		63 mm flare nozzle
51811		Double socket
51821		12.7 mm to 6.35 mm adaptor
51822		Y reducer 12.7 mm to 6.35 mm
51823		3/8 NPS adaptor
51824		Elbow fitting
51825		T fittings
51826		3/8" BSPT connector
51827		1/2" BSPT connector
51828		6 mm 90˚ nozzle

Continued ...

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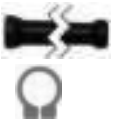
Stock code		Description
51829		10 mm 90˚ nozzle
51830		12 mm 90˚ nozzle
51831		90˚ spray bar nozzle
51832		90˚ nozzle kit
51833		Extended element
51834		Element clamp
51835		Extended elements with clamp - pack of four
51836		Side flow nozzle
51837		Circular flow nozzle kit
51838		
32091		End cap
32092		In line check valve
32093		1/2" NPT male valve
2094		1/2" NPT female valve
32095		1/2" NPT in line valve
59861		Manifold bracket
78002		Hose segment 1000 mm long Hose assembly pliers

Continued ...

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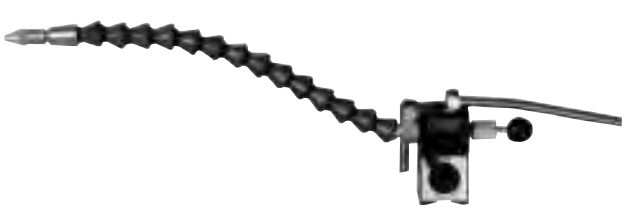
19 mm SYSTEM

Stock code		Description
60513		Hose assembly kit 19 mm ø x 350 mm long
61501		19 mm ø segments 300 mm long
61502		19 mm ø nozzle
61503		16 mm ø nozzle
61505		3/4 " NPT connector
61507		75 mm flare nozzle
61508		19 mm to 12.7 mm adaptor
61509		3/4" BSPT connector
61511		19 mm Y fitting
61512		9 mm to 12.7 mm Y reducer

NOGA MINI COOL MIST SPRAY SYSTEM

Atomises liquid coolant for maximum heat dissipation



Stock code	Features
MC1700	Strong magnetic base. Separate on/off air & fluid controls. Stainless steel armoured syphon & air hose

ABRASIVES

CUT OFF WHEELS

MINI CUT OFF WHEELS

TYPE 41

INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101100010	50	0,8	9,5	30 500	10	Flexi-cut®
101100020	50	0,8	6	30 500	50	SG-ELASTIC
101100030	50	1,1	6	30 500	50	SG-ELASTIC
101100040	50	1,4	6	30 500	50	SG-ELASTIC
101100050	50	1,6	9,5	30 500	10	Flexi-cut®
101100060	50	2,5	9,5	30 500	10	Flexi-cut®
101100070	50	3,2	9,5	30 500	10	Flexi-cut®

INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101100080	65	0,8	6	23 500	50	SG-ELASTIC
101100090	65	0,8	10	23 500	50	SG-ELASTIC

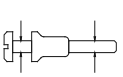
INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101100100	75	0,8	9,5	20 300	10	Flexi-cut®
101100110	75	1,6	9,5	20 300	10	Flexi-cut®
101100120	75	2,4	9,5	20 300	10	Flexi-cut®
101100130	75	3,2	9,5	20 300	10	Flexi-cut®

INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101100140	76	0,8	6	20 100	50	SG-ELASTIC
101100150	76	0,8	10	20 100	50	SG-ELASTIC
101100160	76	1,1	6	20 100	50	SG-ELASTIC
101100170	76	1,1	10	20 100	50	SG-ELASTIC
101100180	76	1,4	10	20 100	50	SG-ELASTIC

MANDRILS FOR MINI CUT OFF WHEELS



Code	Description	Pack
109020010	6mm spindle fits a 6mm wheel hole	1
109020011	6mm spindle fits a 10mm wheel hole	1
109020012	6mm spindle fits a 9.5mm wheel hole	1

Continued ...

CUT OFF WHEELS

100mm

TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101102110	100	2,4	16	15 300	25	SG-ELASTIC
101102120	100	2,5	16	15 300	25	KARBOSAN

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101102210	100	2,4	16	15 300	25	SG-ELASTIC

STONE/CAST IRON/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101102610	100	2,4	16	15 300	25	SG-ELASTIC

115mm

TYPE 41

INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101104010	115	2,5	22,23	13 300	25	UNICUT

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101104110	115	1	22,23	13 300	50	RHODIUS
101104140	115	2,4	22,23	13 300	25	SG-ELASTIC
101104150	115	3	22,23	13 300	25	KARBOSAN

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101104210	115	0,8	22,23	13 300	25	SG-PLUS
101104220	115	1	22,23	13 300	50	RHODIUS
101104230	115	1	22,23	13 300	25	SG-ELASTIC
101104240	115	1	22,23	13 300	25	KARBOSAN
101104250	115	1	22,23	13 300	25	GRASSLAND
101104260	115	1,6	22,23	13 300	25	SG-ELASTIC
101104270	115	2,4	22,23	13 300	25	SG-ELASTIC
101104280	115	2,5	22,23	13 300	25	KARBOSAN

CUT OFF WHEELS

115mm

TYPE 41

ALUMINIUM/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101104510	115	1	22,23	13 300	25	SG-ELASTIC
101104520	115	1,6	22,23	13 300	25	SG-ELASTIC
101104530	115	3	22,23	13 300	25	KARBOSAN

STONE/ALUMINIUM/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101104610	115	1	22,23	13 300	25	PS-FORTE
101104620	115	2,4	22,23	13 300	25	SG-ELASTIC

MASONRY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101104630	115	2,5	22,23	13 300	25	KARBOSAN

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010010	115	1,3	22,23	13 300	1	DIAMOND X
104010020	115	2,8	22,23	13 300	1	DIAMOND X

125mm

TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101106110	125	2,4	22,23	12 200	25	SG-ELASTIC
101106120	125	2,5	22,23	12 200	25	KARBOSAN

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101106210	125	1	22,23	12 200	25	SG-ELASTIC
101106220	125	1	22,23	12 200	25	KARBOSAN
101106230	125	2,4	22,23	12 200	25	SG-ELASTIC
101106240	125	2,5	22,23	12 200	25	KARBOSAN

ALUMINIUM/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101106510	125	1	22,23	12 200	25	SG-ELASTIC
101106520	125	1,6	22,23	12 200	25	SG-ELASTIC

STONE/CAST IRON/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101106610	125	2,4	22,23	12 200	25	SG-ELASTIC

MASONRY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101106620	125	2,5	22,23	12 200	25	KARBOSAN

CUT OFF WHEELS

125mm

TYPE 41

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010030	125	1,3	22,23	12 200	1	DIAMOND X
104010040	125	2,8	22,23	12 200	1	DIAMOND X

150mm

TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101108110	150	3	22,23	10 200	25	SG-ELASTIC

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101108210	150	2,5	22,23	10 200	25	SG-ELASTIC

178mm

TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101110110	178	2,9	22,23	8 600	25	SG-ELASTIC
101110120	178	3	22,23	8 600	25	PS-FORTE
101110130	178	3	22,23	8 600	25	KARBOSAN

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101110210	178	1,8	22,23	8 600	25	SG-ELASTIC
101110220	178	2,5	22,23	8 600	25	SG-ELASTIC
101110230	178	3	22,23	8 600	25	KARBOSAN

STONE/CAST IRON/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101110610	178	3,2	22,23	8 600	25	SG-ELASTIC

STONE/ALUMINIUM/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101110620	178	3,2	22,23	8 600	25	PS-FORTE

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010070	178	1,6	22,23	8 600	1	DIAMOND X
104010080	178	3,1	22,23	8 600	1	DIAMOND X

CUT OFF WHEELS

230mm

TYPE 41

INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101112010	230	3	22,23	6 600	25	UNICUT

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101112120	230	3,2	22,23	6 600	25	SG-ELASTIC
101112130	230	3	22,23	6 600	25	PS-FORTE
101112140	230	3	22,23	6 600	25	KARBOSAN

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101112210	230	1,9	22,23	6 600	25	RHODIUS
101112220	230	2	22,23	6 600	25	SG-ELASTIC
101112230	230	2	22,23	6 600	25	GRASSLAND
101112240	230	2,5	22,23	6 600	25	SG-ELASTIC
101112250	230	3,2	22,23	6 600	25	SG-ELASTIC
101112260	230	3	22,23	6 600	25	KARBOSAN

ALUMINIUM/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101112510	230	2,9	22,23	6 600	25	SG-ELASTIC
101112520	230	3	22,23	6 600	25	KARBOSAN

STONE/CAST IRON/NON-FERROUS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101112610	230	3,2	22,23	6 600	25	SG-ELASTIC
101112620	230	3,2	22,23	6 600	25	PS-FORTE
101112630	230	3	22,23	6 600	25	KARBOSAN

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010090	230	1,6	22,23	6 600	1	DIAMOND X
104010100	230	3,1	22,23	6 600	1	DIAMOND X

CUT OFF WHEELS

300mm TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101115120	300	3,6	25,4	5 100	20	SG-ELASTIC
101115130	300	3	25,4	5 100	25	KARBOSAN

STEEL - CHOPSAW

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101115110	300	2,8	25,4	5 100	20	SG-ELASTIC

STEEL - HEAVY DUTY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101115140	300	3,4	32,3	5 100	2O	SG-ELASTIC

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101115210	300	3,4	25,4	5 100	20	SG-ELASTIC

CAST IRON / STONE - DRY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101115610	300	3,6	25,4	5 100	20	SG-ELASTIC

CAST IRON / STONE - WET

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101115620	300	3,6	25,4	5 100	20	SG-ELASTIC

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010110302		3,1	25,4	5 100	1	DIAMOND X

CUT OFF WHEELS

350mm TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117010	350	3,6	25,4	4 400	10	SG-ELASTIC
101117015	350	3,5	25,4	4 400	10	GRASSLAND
101117020	350	3,5	25,4	4 400	25	KARBOSAN

STEEL - CHOPSAW

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117005	350	2,8	25,4	4 400	10	SG-ELASTIC

STEEL - HEAVY DUTY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117030	350	3,8	32,2	4 400	10	SG-ELASTIC

RAIL CUTTING

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117045	350	4,2	25,4	5 500	10	SG-ELASTIC
104010140	356	3,9	25,4	5 500	1	DIAMOND X

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117130	350	3,4	25,4	4 400	10	SG-ELASTIC

CAST IRON / STONE - DRY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117610	350	4	25,4	4 400	10	SG-ELASTIC

CAST IRON / STONE - WET

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117620	350	4	25,4	4 400	10	SG-ELASTIC

MASONRY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101117630	350	4	25,4	4 400	25	KARBOSAN

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010130	352	3,1	25,4	4 400	1	DIAMOND X

CUT OFF WHEELS

400mm

TYPE 41

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101118120	400	4	25,4	3 800	10	SG-ELASTIC
101118130	400	4	25,5	3 800	10	KARBOSAN
101118150	400	3	25,4	3 800	10	GRASSLAND
101118170	400	4	40	3 800	10	KARBOSAN

STEEL - CHOPSAW

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101118110	400	3,2	25,4	3 800	10	SG-ELASTIC

STEEL - HEAVY DUTY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101118160	400	4,2	40	3 800	10	SG-ELASTIC

RAIL CUTTING

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101118190	400	4,2	25,4	4 800	10	SG-ELASTIC
104010160	406	3,9	25,4	4 800	1	DIAMOND X

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101118210	400	4	25,4	3 800	10	SG-ELASTIC

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010150	409	3,3	25,4	3 800	1	DIAMOND X

450mm

TYPE 41

STEEL - HEAVY DUTY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101119110	450	4,2	40	3 400	5	SG-ELASTIC

CAST IRON/STONE

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101119610	450	5	25,4	3 400	5	SG-ELASTIC

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010170	459	3,7	25,4	3 400	1	DIAMOND X

CUT OFF WHEELS

500mm

TYPE 41

STEEL - HEAVY DUTY

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101120110	500	5,2	40	3 100	5	SG-ELASTIC

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104010190	510	3,7	25,4	3 100	1	DIAMOND X

ANGLE GRINDING WHEELS

100mm

TYPE 27

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101011110	100	5	16	15 300	10	SG-ELASTIC
101011130	100	6	16	15 300	10	KARBOSAN

STEEL/CAST IRON

101011120	100	6	16	15 300	10	PS-FORTE

STAINLESS STEEL

101011210	100	6	16	15 300	10	PS-FORTE

115mm

TYPE 27

INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101012010	115	6	22,23	13 300	10	UNIGRIND

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101012110	115	6	22,23	13 300	10	SG-ELASTIC
101012130	115	6,4	22,23	13 300	10	KARBOSAN
101012140	115	6	22,23	13 300	10	LUKAS
101012150	115	7	22,23	13 300	10	CUMIFLEX

Continued ...

Continued ...

ANGLE GRINDING WHEELS

115mm

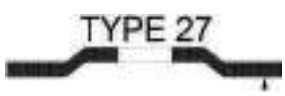
STEEL/CAST IRON

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101012120	115	6	22,23	13 300	10	PS-FORTE

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101012210	115	5	22,23	13 300	10	SG-ELASTIC
101012220	115	6	22,23	13 300	10	PS-FORTE
101012230	115	6,4	22,23	13 300	10	KARBOSAN

115mm



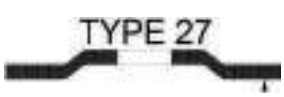
ALUMINIUM

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101012510	115	6,4	22,23	13 300	10	KARBOSAN

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104000010	115		22,23	13 300	1	DIAMOND X

125mm



STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101013120	125	6,4	22,23	12 200	10	KARBOSAN
101013130	125	6	22,23	12 200	10	LUKAS

STEEL/CAST IRON

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101013110	125	6	22,23	12 200	10	PS-FORTE

STAINLESS STEEL

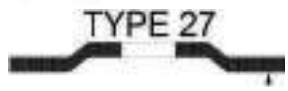
Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101013210	125	6	22,23	12 200	10	PS-FORTE
101013220	125	6,4	22,23	12 200	10	KARBOSAN

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104000030	125		22,23	13 300	1	DIAMOND X

ANGLE GRINDING WHEELS

150mm



STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101014110	150	7	22,23	10 200	10	SG-ELASTIC

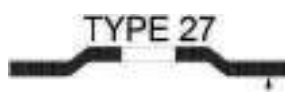
STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101014210	150	7	22,23	10 200	10	SG-ELASTIC

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104000050	150		22,23	13 300	1	DIAMOND X

178mm



STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101015110	178	7	22,23	8 600	10	SG-ELASTIC
101015130	178	6,4	22,23	8 600	10	KARBOSAN
101015140	178	6,5	22,23	8 600	10	LUKAS

STEEL/CAST IRON

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101015120	178	7	22,23	8 600	10	PS-FORTE

STAINLESS STEEL

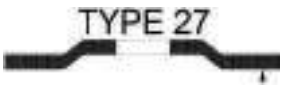
Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101015210	178	7	22,23	8 600	10	SG-ELASTIC
101015220	178	7	22,23	8 600	10	PS-FORTE
101015230	178	6,4	22,23	8 600	10	KARBOSAN

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104000070	178		22,23	13 300	1	DIAMOND X

ANGLE GRINDING WHEELS

230mm



INOX / STEEL / CAST IRON / NON-Fe METALS

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101016010	230	6	22,23	6 600	10	UNIGRIND

STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101016110	230	7	22,23	6 600	10	SG-ELASTIC
101016120	230	8	22,23	6 600	10	SG-ELASTIC
101016140	230	6,4	22,23	6 600	10	KARBOSAN
101016150	230	8	22,23	6 600	10	KARBOSAN

STEEL/CAST IRON

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101016130	230	7	22,23	6 600	10	PS-FORTE

STAINLESS STEEL

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101016210	230	7	22,23	6 600	10	PROMAX
101016220	230	5	22,23	6 600	10	ZIRCONIA
101016230	230	7	22,23	6 600	10	SG-ELASTIC
101016240	230	5	22,23	6 600	10	SG-ELASTIC
101016250	230	7	22,23	6 600	10	PS-FORTE
101016260	230	6,4	22,23	6 600	10	KARBOSAN

CAST IRON/STONE

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101016610	230	7	22,23	6 600	10	SG-ELASTIC

CASTING SCALE

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
101016620	230	5	22,23	6 600	10	SG-ELASTIC

CAST IRON/STEEL/RUBBER/COMPOSITES

Code	Ø mm	Width mm	Bore mm	MAX RPM	Pack	Brand
104000090	230		22,23	13 300	1	DIAMOND X

FLAP DISC

100mm

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105112010	100	16	40	13 300	10	Garryson®
105114010	100	16	60	13 300	10	Garryson®
105115010	100	16	80	13 300	10	Garryson®
105117010	100	16	120	13 300	10	Garryson®

115mm

CERAMIQ

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122020	115	22,23	40	13 300	10	Garryson®
105124010	115	22,23	60	13 300	10	Garryson®
105125010	115	22,23	80	13 300	10	Garryson®

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105120010	115	22,23	24	13 300	10	Garryson®
105121010	115	22,23	36	13 300	10	Garryson®
105122040	115	22,23	40	13 300	10	Garryson®
105124030	115	22,23	60	13 300	10	Garryson®
105125030	115	22,23	80	13 300	10	Garryson®
105127020	115	22,23	120	13 300	10	Garryson®

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122030	115	22,23	40	13 300	10	Garryson®
105124020	115	22,23	60	13 300	10	Garryson®
105125020	115	22,23	80	13 300	10	Garryson®
105127010	115	22,23	120	13 300	10	Garryson®

FLAP DISC

115mm

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122060	115	22,23	40	13 300	10	Gold line
105124050	115	22,23	60	13 300	10	Gold line
105125050	115	22,23	80	13 300	10	Gold line
105127040	115	22,23	120	13 300	10	Gold line

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122050	115	22,23	40	13 300	10	Gold line
105124040	115	22,23	60	13 300	10	Gold line
105125040	115	22,23	80	13 300	10	Gold line
105127030	115	22,23	120	13 300	10	Gold line

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122080	115	22,23	40	13 300	10	Silver line
105124070	115	22,23	60	13 300	10	Silver line
105125070	115	22,23	80	13 300	10	Silver line
105127060	115	22,23	120	13 300	10	Silver line

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122070	115	22,23	40	13 300	10	Silver line
105124060	115	22,23	60	13 300	10	Silver line
105125060	115	22,23	80	13 300	10	Silver line
105127050	115	22,23	120	13 300	10	Silver line

FLAP DISC

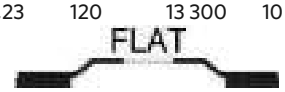
115mm

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122100	115	22,23	40	13 300	10	Home Grown
105124090	115	22,23	60	13 300	10	Home Grown
105125090	115	22,23	80	13 300	10	Home Grown
105127080	115	22,23	120	13 300	10	Home Grown

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105122090	115	22,23	40	13 300	10	Home Grown
105124080	115	22,23	60	13 300	10	Home Grown
105125080	115	22,23	80	13 300	10	Home Grown
105127070	115	22,23	120	13 300	10	Home Grown



ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105121020	115	22,23	36	13 300	10	TA
105124150	115	22,23	60	13 300	10	TA

178mm

CERAMIQ

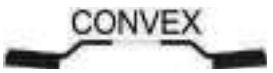
Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152010	178	22,23	40	13 300	10	Garryson®
105154020	178	22,23	60	13 300	10	Garryson®
105155010	178	22,23	80	13 300	10	Garryson®

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105151030	178	22	36	8 600		Garryson®
105152020	178	22	40	8 600		Garryson®
105154030	178	22	60	8 600		Garryson®
105155020	178	22	80	8 600		Garryson®
105157020	178	22	120	8 600		Garryson®

FLAP DISCS


178mm



ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105151020	178	22	36	8 600		Garryson®
105152030	178	22	40	8 600		Garryson®
105154040	178	22	60	8 600		Garryson®
105155030	178	22	80	8 600		Garryson®
105157030	178	22	120	8 600		Garryson®

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152040	178	22	40	8 600		Gold line
105154050	178	22	60	8 600		Gold line
105155040	178	22	80	8 600		Gold line
105157040	178	22	120	8 600		Gold line

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152050	178	22	40	8 600		Gold line
105154060	178	22	60	8 600		Gold line
105155050	178	22	80	8 600		Gold line
105157050	178	22	120	8 600		Gold line

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152060	178	22	40	8 600		Silver line
105154070	178	22	60	8 600		Silver line
105155060	178	22	80	8 600		Silver line
105157060	178	22	120	8 600		Silver line

FLAP DISCS


178mm

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152070	178	22	40	8 600		Silver line
105154080	178	22	60	8 600		Silver line
105155070	178	22	80	8 600		Silver line
105157070	178	22	120	8 600		Silver line

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152080	178	22	40	8 600		Home Grown
105154090	178	22	60	8 600		Home Grown
105155080	178	22	80	8 600		Home Grown
105157080	178	22	120	8 600		Home Grown

ZIRCONIA

Code	Ø mm	Bore mm	Grit	MAX RPM	Pack	Brand
105152090	178	22	40	8 600		Home Grown
105154100	178	22	60	8 600		Home Grown
105155090	178	22	80	8 600		Home Grown
105157090	178	22	120	8 600		Home Grown

RESIN FIBRE DISCS

100mm

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105211010	100	16	24	25	PFERD
105212010	100	16	36	25	PFERD
105214010	100	16	60	25	PFERD
105215010	100	16	80	25	PFERD

115mm

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105222050	115	22,23	36	25	ECONO
105224040	115	22,23	60	25	ECONO

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105221020	115	22,23	24	25	HOME GROWN
105222040	115	22,23	36	25	HOME GROWN
105224030	115	22,23	60	25	HOME GROWN
105225020	115	22,23	80	25	HOME GROWN
105226020	115	22,23	100	25	HOME GROWN
105227010	115	22,23	120	25	HOME GROWN

ZIRCONIA ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105221120	115	22,23	24	25	KARBOSAN
105222120	115	22,23	36	25	KARBOSAN
105224120	115	22,23	60	25	KARBOSAN
105225120	115	22,23	80	25	KARBOSAN
105226120	115	22,23	100	25	KARBOSAN
105227110	115	22,23	120	25	KARBOSAN

RESIN FIBRE DISCS

125mm

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105231010	125	22,23	24	25	PFERD
105232010	125	22,23	36	25	PFERD
105233010	125	22,23	50	25	PFERD
105234010	125	22,23	60	25	PFERD
105235020	125	22,23	80	25	PFERD
105236010	125	22,23	100	25	PFERD
105237010	125	22,23	120	25	PFERD

178mm

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105252040	178	22,23	36	25	ECONO
105254050	178	22,23	60	25	ECONO

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105250010	178	22,23	16	25	PFERD
105251010	178	22,23	24	25	PFERD
105252020	178	22,23	36	25	PFERD
105253010	178	22,23	50	25	PFERD
105254030	178	22,23	60	25	PFERD
105255010	178	22,23	80	25	PFERD
105256010	178	22,23	100	25	PFERD
105257010	178	22,23	120	25	PFERD

SILICON CARBIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105250410	178	22,23	16	25	PFERD
105251410178	22,23	24	25	PFERD	
105254410	178	22,23	60	25	PFERD

RESIN FIBRE DISCS

178mm

ZIRCONIA ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105251220	178	22,23	24	25	KARBOSAN
105252120	178	22,23	36	25	KARBOSAN
105254220	178	22,23	60	25	KARBOSAN
105255120	178	22,23	80	25	KARBOSAN
105256120	178	22,23	100	25	KARBOSAN
105257110	178	22,23	120	25	KARBOSAN

ZIRCONIA ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105251210	178	22,23	24	25	PFERD
105252110	178	22,23	36	25	PFERD
105254210	178	22,23	60	25	PFERD
105255110	178	22,23	80	25	PFERD
105256110	178	22,23	100	25	PFERD

230mm

ALUMINIUM OXIDE

Code	Ø mm	Bore mm	Grit	Pack	Brand
105261010	230	22,23	24	25	PFERD
105262010	230	22,23	36	25	PFERD
105264010	230	22,23	60	25	PFERD
105265010	230	22,23	80	25	PFERD

115mm

BACKING PADS

Code	Ø mm	Bore	Description
109000010	115	5/8"	White Flexible backing pad
109000020	115	M14	White Flexible backing pad
109000030	115	M14	black firm backing pad

178mm

BACKING PADS

Code	Ø mm	Bore	Description
109000040	178	5/8"	black firm backing pad
109000050	178	M14	black firm backing pad
109000060	178	M14	White Flexible backing pad

M14 = Electrical tools
5/8" - Pneumatic tools

SPINDLE MOUNTED FLAP WHEELS

30mm X 10mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105400020	30	10	80	25 000	1
105400040	30	10	120	25 000	1
105400070	30	10	240	25 000	1

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105400001	30	10	40	25 000	10
105400011	30	10	60	25 000	10
105400021	30	10	80	25 000	10
105400041	30	10	120	25 000	10
105400051	30	10	150	25 000	10
105400061	30	10	180	25 000	10
105400071	30	10	240	25 000	10

30mm X 15mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105400101	30	15	40	25 000	10
105400111	30	15	60	25 000	10
105400121	30	15	80	25 000	10
105400141	30	15	120	25 000	10
105400151	30	15	150	25 000	10
105400161	30	15	180	25 000	10
105400171	30	15	240	25 000	10

30mm X 25mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105400210	30	25	60	25 000	1
105400220	30	25	80	25 000	1
105400240	30	25	120	25 000	1
105400270	30	25	240	25 000	1

SPINDLE MOUNTED FLAP WHEELS

40mm X 10mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401001	40	10	40	19 000	10
105401021	40	10	80	19 000	10
105401041	40	10	120	19 000	10
105401051	40	10	150	19 000	10
105401071	40	10	240	19 000	10

38mm X 15mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401120	38	15	80	19 000	1
105401140	38	15	120	19 000	1

40mm X 15mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401101	40	15	40	19 000	10
105401111	40	15	60	19 000	10
105401121	40	15	80	19 000	10
105401141	40	15	120	19 000	10
105401151	40	15	150	19 000	10
105401161	40	15	180	19 000	10
105401171	40	15	240	19 000	10
105401191	40	15	320	19 000	10

40mm X 20mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401201	40	20	40	19 000	10
105401211	40	20	60	19 000	10
105401221	40	20	80	19 000	10
105401241	40	20	120	19 000	10
105401251	40	20	150	19 000	10
105401261	40	20	180	19 000	10
105401291	40	20	320	19 000	10

SPINDLE MOUNTED FLAP WHEELS

38mm X 25mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401310	38	25	60	19 000	1
105401320	38	25	80	19 000	1
105401340	38	25	120	19 000	1

40mm X 25mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401301	40	25	40	19 000	10
105401311	40	25	60	19 000	10
105401321	40	25	80	19 000	10
105401341	40	25	120	19 000	10
105401371	40	25	240	19 000	10

38mm X 30mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401410	38	30	60	19 000	1
105401420	38	30	80	19 000	1
105401430	38	30	100	19 000	1
105401440	38	30	120	19 000	1

40mm X 30mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401411	40	30	60	19 000	10
105401421	40	30	80	19 000	10
105401441	40	30	120	19 000	10
105401451	40	30	150	19 000	10
105401461	40	30	180	19 000	10
105401471	40	30	240	19 000	10

40mm X 40mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105401511	40	40	60	19 000	10
105401541	40	40	120	19 000	10

SPINDLE MOUNTED FLAP WHEELS

50mm X 10mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402001	50	10	40	15 000	10
105402011	50	10	60	15 000	10
105402021	50	10	80	15 000	10
105402040	50	10	120	15 000	10

50mm X 15mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402110	50	15	60	15 000	1
105402120	50	15	80	15 000	1

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402101	50	15	40	15 000	10
105402111	50	15	60	15 000	10
105402121	50	15	80	15 000	10
105402141	50	15	120	15 000	10
105402151	50	15	150	15 000	10
105402161	50	15	180	15 000	10
105402171	50	15	240	15 000	10

50mm X 20mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402211	50	20	60	15 000	10
105402221	50	20	80	15 000	10
105402241	50	20	120	15 000	10
105402251	50	20	150	15 000	10
105402261	50	20	180	15 000	10
105402271	50	20	240	15 000	10

SPINDLE MOUNTED FLAP WHEELS

50mm X 30mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402410	50	30	60	15 000	1
105402430	50	30	100	15 000	1
105402440	50	30	120	15 000	1
105402470	50	30	240	15 000	1

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402401	50	30	40	15 000	10
105402411	50	30	60	15 000	10
105402421	50	30	80	15 000	10
105402441	50	30	120	15 000	10
105402451	50	30	150	15 000	10
105402461	50	30	180	15 000	10
105402471	50	30	240	15 000	10
105402491	50	30	320	15 000	10

50mm X 40mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105402501	50	40	40	15 000	10
105402511	50	40	60	15 000	10
105402521	50	40	80	15 000	10
105402531	50	40	100	15 000	10
105402541	50	40	120	15 000	10
105402551	50	40	150	15 000	10
105402561	50	40	180	15 000	10
105402571	50	40	240	15 000	10

60mm X 10mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105403011	60	10	60	12 600	10
105403021	60	10	80	12 600	10

60mm X 15mm

PREMIUM

Code	Ø mm	Height mm	Grit	Pack	Pack
105403101	60	15	40	12 600	10
105403111	60	15	60	12 600	10
105403121	60	15	80	12 600	10

SPINDLE MOUNTED FLAP WHEELS

60mm X 50mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105403601	60	50	40	12 600	10
105403611	60	50	60	12 600	10
105403621	60	50	80	12 600	10
105403641	60	50	120	12 600	10
105403651	60	50	150	12 600	10
105403661	60	50	180	12 600	10
105403671	60	50	240	12 600	10

63mm X 19mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105403210	63	19	60	12 600	1

63mm X 25mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105403310	63	25	60	12 600	1
105403320	63	25	80	12 600	1
105403340	63	25	120	12 600	1

63mm X 40mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105403510	63	40	60	12 600	1
105403520	63	40	80	12 600	1
105403530	63	40	100	12 600	1
105403540	63	40	120	12 600	1

75mm X 25mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105404310	75	25	60	10 200	1

SPINDLE MOUNTED FLAP WHEELS

75mm X 30mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105404420	75	30	80	10 200	1
105404440	75	30	120	10 200	1

75mm X 50mm

ECONOMY

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105404600	75	50	40	10 200	1
105404610	75	50	60	10 200	1
105404620	75	50	80	10 200	1
105404640	75	50	120	10 200	1

80mm X 25mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105405311	80	25	60	9 500	6
105405321	80	25	80	9 500	6
105405341	80	25	120	9 500	6
105405371	80	25	240	9 500	6

80mm X 30mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105405401	80	30	40	9 500	6
105405411	80	30	60	9 500	6
105405421	80	30	80	9 500	6
105405441	80	30	120	9 500	6
105405471	80	30	240	9 500	6

80mm X 40mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105405501	80	40	40	9 500	6
105405511	80	40	60	9 500	6
105405521	80	40	80	9 500	6
105405541	80	40	120	9 500	6
105405551	80	40	150	9 500	6
105405561	80	40	180	9 500	6

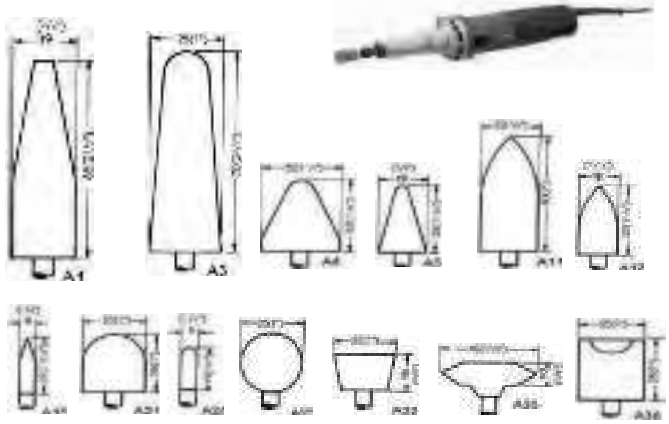
SPINDLE MOUNTED FLAD WHEELS

80mm X 50mm

PREMIUM

Code	Ø mm	Height mm	Grit	MAX RPM	Pack
105405601	80	50	40	9 500	6
105405611	80	50	60	9 500	6
105405621	80	50	80	9 500	6
105405641	80	50	120	9 500	6
105405651	80	50	150	9 500	6
105405661	80	50	180	9 500	6
105405661	80	50	240	9 500	6

KINIK® MOUNTED POINTS

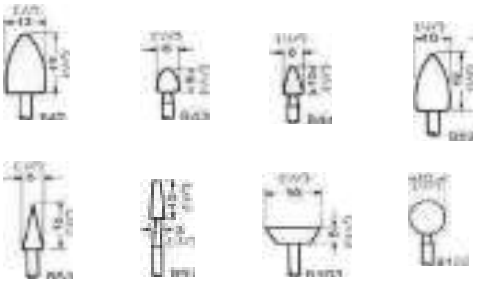


SERIES A

6 X 30 Standard spindle

Code	Shape	Ø mm	Height mm	Colour	Grade	MAX RPM	Pack
101311010	A1	19	63	Pink	PA46PV	20 960	20
101311011	A1	19	63	Ruby	RA46PV	20 960	20
101311030	A3	25	70	Pink	PA46PV	15 530	20
101311032	A3MINI	16	45	Pink	PA46PV	23 873	20
101311031	A3	25	70	Ruby	RA46PV	15 530	20
101311040	A4	32	32	Pink	PA46PV	28 550	20
101311050	A5	19	28	Pink	PA46PV	38 550	20
101311070	A11	22	50	Pink	PA46PV	25 430	20
101311071	A11	22	50	Ruby	RA46PV	25 430	20
101311080	A12	18	32	Pink	PA60QV	38 050	20
101311110	A15	6	27	Pink	PA60QV	50 510	20
101311120	A21	25	25	Pink	PA46PV	35 510	20
101311140	A24	6	19	Pink	PA60QV	56 000	20
101311141	A24	6	19	Ruby	RA46PV	56 000	20
101311150	A25	25		Pink	PA46PV	35 510	20
101311160	A26	16		Pink	PA60QV	48 980	20
101311180	A32	26	16	Pink	PA60QV	38 200	20
101311200	A36	42	10	Pink	PA46PV	23 510	20
101311221	A38	25	25	Ruby	RA46PV	35 510	20

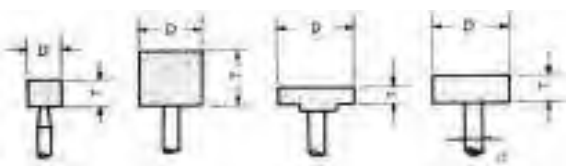
KINIK® MOUNTED POINTS



SERIES B

3 X 30 Standard spindle

Code	Shape	Ø mm	Height mm	Colour	Grade	MAX RPM	Pack
101312020	B42	13	19	Pink	PA80QV	19 600	20
101312030	B43	6	8	Pink	PA80QV	42 500	20
101312040	B44	6	10	Pink	PA80TV	42 500	20
101312050	B52	10	19	Pink	PA80TV	25 500	20
101312060	B53	6	16	Pink	PA80TV	42 500	20
101312150	B97	3	10	Pink	PA80TV	72 000	20
101312170	B103	16	5	Pink	PA80QV	39 700	20
101312190	B122	10		Pink	PA80TV	35 000	20



SERIES W

3 X 30 Standard spindle

Code	Shape	Ø mm	Height mm	Colour	Grade	MAX RPM	Pack
101313020	W146	3	13	Pink	PA100T	51 000	20
101313040	W163	6	13	Pink	PA100TV	42 400	20
101313080	W175	10	10	Pink	PA80QV	35 000	20

6 X 30 Standard spindle

Code	Shape	Ø mm	Height mm	Colour	Grade	MAX RPM	Pack
101313160	W203	20	13	Pink	PA60Q	25 100	20
101313161	W203	20	13	Ruby	RA60Q	25 100	20

6 X 38 longer spindle

Code	Shape	Ø mm	Height mm	Colour	Grade	MAX RPM	Pack
101313162	W203	20	13	Ruby	RA60Q	25 100	20

6 X 30 Standard spindle

Code	Shape	Ø mm	Height mm	Colour	Grade	MAX RPM	Pack
101313180	W205	19	25	Pink	PA46PV	25 100	20
101313181	W205	19	25	Ruby	RA46P	25 100	20
101313223	W220	25	25	Green	GC54PV	19 100	20
101313222	W220	25	25	Brown	A/W460B	19 100	20
101313310	W242	50	25	Pink	PA30QV	12 700	20

KINIK® MOUNTED POINTS

CBN for Steel

ELECROPLATED

Code	Ø	Height	Spindle	Grade
103647180	2	5	3	B151P
103647280	3	5	3	B151P
103647300	4	6	3	B151P
103647320	5	8	3	B151P
103647345	6	10	6	B151P
103647365	7	10	6	B181P
103647385	8	10	6	B151P
103647415	10	10	6	B151P
103647435	12	10	6	B151P
103647455	14	10	6	B151P
103647475	16	10	6	B181P

RESIN BOND

Code	Ø	Height	Spindle	Grade
103646040	6	10	6	B126B
103646060	8	10	6	B126B
103646080	10	10	6	B126B
103646100	12	10	6	B126B
103646130	15	10	6	B126B
103646140	16	10	6	B126B

DIAMOND for Ceramic & Tungsten Carbide

ELECROPLATED

Code	Ø	Height	Spindle	Grade
103641180	2	5	3	D151P
103641280	3	5	3	D151P
103641305	4	10	6	D151P
103641325	5	10	6	D151P
103641345	6	10	6	D151P
103641365	7	10	6	D151P
103641385	8	10	6	D181P
103641415	10	10	6	D151P
103641435	12	10	6	D151P
103641455	14	10	6	D151P

RESIN BOND

Code	Ø	Height	Spindle	Grade
103640030	6	10	6	D126B
103640040	7	3	6	D76R
103640050	8	10	6	D126B
103640070	10	10	6	D126B
103640090	12	10	6	D126B
103640120	15	10	6	D126B
103640130	16	10	6	D126B

KINIK® WHEELS FOR BENCH/PEDISTAL GRINDERS

150mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
150X13X31.75A60P	150	13	31,75	A60 P V	4200	Kinik
150X20X31.75A36Q	150	20	31,75	A36 Q V	4200	Kinik
150X20X31.75A36QC	150	20	31,75	A36 Q V	4200	T/A
150X20X31.75A46Q	150	20	31,75	A46 Q V	4200	Kinik
150X20X31.75A46QC	150	20	31,75	A46 Q V	4200	T/A
150X20X31.75A60Q	150	20	31,75	A60 Q V	4200	Kinik
150X20X31.75A60QC	150	20	31,75	A60 Q V	4200	T/A
150X25X31.75A36Q	150	25	31,75	A36 Q V	4200	Kinik
150X25X31.75A36QC	150	25	31,75	A36 Q V	4200	T/A
150X25X31.75A46Q	150	25	31,75	A46 Q V	4200	Kinik
150X25X31.75A46QC	150	25	31,75	A46 Q V	4200	T/A
150X25X31.75A60Q	150	25	31,75	A60 Q V	4200	Kinik
150X25X31.75A60QC	150	25	31,75	A60 Q V	4200	T/A

HIGH SPEED STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
150X13X31.75WA46K	150	13	31,75	WA46 K V	4200	Kinik
150X13X31.75WA60K	150	13	31,75	WA60 K V	4200	Kinik
150X20X31.75WA46K	150	20	31,75	WA46 K V	4200	Kinik
150X20X31.75WA60K	150	20	31,75	WA60 K V	4200	Kinik
150X20X31.75WA80K	150	20	31,75	WA80 K V	4200	Kinik

TUNGSTEN CARBIDE / CERAMICS

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
150X13X31.75GC100K	150	13	31,75	GC100 K V	4200	Kinik
150X13X31.75GC100KC	150	13	31,75	GC100 K V	4200	T/A
150X13X31.75GC120KC	150	13	31,75	GC100 K V	4200	T/A
150X13X31.75GC60K	150	13	31,75	GC60 K V	4200	Kinik
150X13X31.75GC46KC	150	13	31,75	GC60 K V	4200	T/A
150X13X31.75GC80K	150	13	31,75	GC80 K V	4200	Kinik
150X13X31.75GC80KC	150	13	31,75	GC80 K V	4200	T/A
150X20X31.75GC60K	150	20	31,75	GC60 K V	4200	Kinik
150X20X31.75GC60KC	150	20	31,75	GC60 K V	4200	T/A
150X20X31.75GC80K	150	20	31,75	GC80 K V	4200	Kinik
150X20X31.75GC80KC	150	20	31,75	GC80 K V	4200	T/A
150X25X31.75GC60K	150	25	31,75	GC60 K V	4200	Kinik
150X25X31.75GC60KC	150	25	31,75	GC60 K V	4200	T/A
150X25X31.75GC80K	150	25	31,75	GC80 K V	4200	Kinik
150X25X31.75GC80KC	150	25	31,75	GC80 K V	4200	T/A

WHEELS FOR BENCH/PEDISTAL GRINDERS

180mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
180X13X31.75A46Q	180	13	31,75	A46 Q V	3500	Kinik
180X20X31.75A46Q	180	20	31,75	A46 Q V	3500	Kinik
180X20X31.75A60P	180	20	31,75	A60 P V	3500	Kinik
180X25X31.75A46Q	180	25	31,75	A46 Q V	3500	Kinik
180X25X31.75A60Q	180	25	31,75	A60 Q V	3500	Kinik

HIGH SPEED STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
180X13X31.75WA46K	180	13	31,75	WA46 K V	3500	Kinik
180X13X31.75WA60K	180	13	31,75	WA60 K V	3500	Kinik
180X20X31.75WA46K	180	20	31,75	WA46 K V	3500	Kinik
180X20X31.75WA60K	180	20	31,75	WA60 K V	3500	Kinik
180X20X31.75WA80K	180	20	31,75	WA80 K V	3500	Kinik
180X25X31.75WA46K	180	25	31,75	WA46 K V	3500	Kinik

TUNGSTEN CARBIDE / CERAMICS

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
180X20X31.75GC60K	180	20	31,75	GC60 K V	3500	Kinik
180X20X31.75GC80K	180	20	31,75	GC80 K V	3500	Kinik
180X25X31.75GC60K	180	25	31,75	GC60 K V	3500	Kinik

200mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
200X20X31.75A36Q	200	20	31,75	A36 Q V	3600	Kinik
200X20X31.75A36QC	200	20	31,75	A36 Q V	3600	T/A
200X20X31.75A46Q	200	20	31,75	A46 Q V	3600	Kinik
200X20X31.75A46QC	200	20	31,75	A46 Q V	3600	T/A
200X20X31.75A60P	200	20	31,75	A60 P V	3600	Kinik
200X20X31.75A60PC	200	20	31,75	A60 P V	3600	T/A
200X25X31.75A36Q	200	25	31,75	A36 Q V	3600	Kinik
200X25X31.75A36QC	200	25	31,75	A36 Q V	3600	T/A
200X25X31.75A46Q	200	25	31,75	A46 Q V	3600	Kinik
200X25X31.75A46QC	200	25	31,75	A46 Q V	3600	T/A
200X25X31.75A60P	200	25	31,75	A60 P V	3600	Kinik
200X25X31.75A60P	200	32	31,75	A60 P V	3600	Kinik
200X25X31.75A60PC	200	25	31,75	A60 P V	3600	T/A

WHEELS FOR BENCH/PEDISTAL GRINDERS

200mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
200X25X50.8A60P	200	25	50,8	A60 P V	3600	Kinik
200X32X31.75A36Q	200	32	31,75	A36 Q V	3600	Kinik
200X32X31.75A46Q	200	32	31,75	A46 Q V	3600	Kinik
200X32X31.75A60P	200	32	31,75	A60 P V	3600	Kinik

HIGH SPEED STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
200X13X31.75WA46K	200	13	31,75	WA46 K V	3600	Kinik
200X13X31.75WA60K	200	13	31,75	WA60 K V	3600	Kinik
200X20X31.75WA36L	200	20	31,75	WA36 L V	3600	Kinik
200X20X31.75WA46K	200	20	31,75	WA46 K V	3600	Kinik
200X20X31.75WA60K	200	20	31,75	WA60 K V	3600	Kinik
200X20X50.8WA46K	200	20	50,8	WA46 K V	3600	Kinik
200X25X31.75WA46K	200	25	31,75	WA46 K V	3600	Kinik
200X25X31.75WA60K	200	25	31,75	WA60 K V	3600	Kinik
200X25X50.8WA46K	200	25	50,8	WA46 K V	3600	Kinik

TUNGSTEN CARBIDE / CERAMICS

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
200X20X31.75GC60K	200	20	31,75	GC60 K V	3600	Kinik
200X20X31.75GC60KC	200	20	31,75	GC60 K V	3600	T/A
200X20X31.75GC80K	200	20	31,75	GC80 K V	3600	Kinik
200X20X31.75GC80KC	200	20	31,75	GC80 K V	3600	T/A
200X25X31.75GC100K	200	25	31,75	GC100 K V	3600	Kinik
200X25X31.75GC60K	200	25	31,75	GC60 K V	3600	Kinik
200X25X31.75GC60KC	200	25	31,75	GC60 K V	3600	T/A
200X25X31.75GC80K	200	25	31,75	GC80 K V	3600	Kinik
200X25X31.75GC80KC	200	25	31,75	GC80 K V	3600	T/A
200X32X31.75GC60K	200	32	31,75	GC60 K V	3600	Kinik
200X32X31.75GC60KC	200	32	31,75	GC60 K V	3600	T/A
200X32X31.75GC80K	200	32	31,75	GC80 K V	3600	Kinik

250mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
250X25X31.75A36Q	250	25	31,75	A36 Q V	2500	Kinik
250X25X31.75A36QC	250	25	31,75	A36 Q V	2500	T/A
250X25X31.75A46Q	250	25	31,75	A46 Q V	2500	Kinik
250X25X31.75A46QC	250	25	31,75	A46 Q V	2500	T/A
250X25X31.75A60P	250	25	31,75	A60 P V	2500	Kinik
250X25X31.75A60PC	250	25	31,75	A60 P V	2500	T/A
250X32X31.75A36Q	250	32	31,75	A36 Q V	2500	Kinik
250X32X31.75A36QC	250	32	31,75	A36 Q V	2500	T/A
250X32X31.75A46Q	250	32	31,75	A46 Q V	2500	Kinik
250X32X31.75A60P	250	32	31,75	A60 P V	2500	Kinik
250X32X31.75A60PC	250	32	31,75	A60 P V	2500	T/A

WHEELS FOR BENCH/PEDISTAL GRINDERS

250mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
250X40X50.8A36Q	250	40	50,8	A36 Q V	2500	Kinik
250X40X50.8A36QC	250	40	50,8	A36 Q V	2500	T/A
250X40X50.8A60Q	250	40	50,8	A60 Q V	2500	Kinik
250X40X50.8A60QC	250	40	50,8	A60 Q V	2500	T/A

HIGH SPEED STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
250X25X76.2WA46J	250	25	76,2	WA46 J V	2500	Kinik
250X25X76.2WA60J	250	25	76,2	WA60 J V	2500	Kinik
250X32X76.2WA46J	250	32	76,2	WA46 J V	2500	Kinik
250X32X76.2WA60J	250	32	76,2	WA60 J V	2500	Kinik

TUNGSTEN CARBIDE / CERAMICS

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
250X25X31.75GC60K	250	25	31,75	GC60 K V	2500	Kinik
250X25X31.75GC60KC	250	25	31,75	GC60 K V	2500	T/A
250X25X31.75GC80K	250	25	31,75	GC80 K V	2500	Kinik
250X32X31.75GC60K	250	32	31,75	GC60 K V	2500	Kinik
250X32X31.75GC80K	250	32	31,75	GC80 K V	2500	Kinik

300mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
300X32X31.75A36Q	300	32	31,75	A36 Q V	3100	Kinik
300X32X31.75A60P	300	32	31,75	A60 P V	3100	Kinik
300X40X31.75A36Q	300	40	31,75	A36 Q V	3100	Kinik
300X40X31.75A46Q	300	40	31,75	A46 Q V	3100	Kinik
300X40X31.75A60P	300	40	31,75	A60 P V	3100	Kinik
300X40X50.8A36Q	300	40	50,8	A36 Q V	3100	Kinik
300X40X50.8A46Q	300	40	50,8	A46 Q V	3100	Kinik
300X40X50.8A60Q	300	40	50,8	A60 Q V	3100	Kinik
300X40X76.2A36Q	300	40	76,2	A36 Q V	3100	Kinik
300X40X76.2A36QC	300	40	76,2	A36 Q V	3100	T/A
300X40X76.2A46P	300	40	76,2	A46 P V	3100	Kinik
300X40X76.2A46PC	300	40	76,2	A46 P V	3100	T/A
300X40X76.2A60P	300	40	76,2	A60 P V	3100	Kinik
300X40X76.2A60PC	300	40	76,2	A60 P V	3100	T/A
300X50X31.75A36Q	300	50	31,75	A36 Q V	3100	Kinik
300X50X31.75A46Q	300	50	31,75	A46 Q V	3100	Kinik
300X50X31.75A60P	300	50	31,75	A60 P V	3100	Kinik
300X50X50.8A36Q	300	50	50,8	A36 Q V	3100	Kinik
300X50X50.8A46Q	300	50	50,8	A46 Q V	3100	Kinik
300X50X50.8A60P	300	50	50,8	A60 P V	3100	Kinik
300X50X76.2A36Q	300	50	76,2	A36 Q V	3100	Kinik

WHEELS FOR BENCH/PEDISTAL GRINDERS

300mm

TUNGSTEN CARBIDE / CERAMICS

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
300X40X31.75GC60K	300	40	31,75	GC60 K V	3100	Kinik
300X40X50.8GC60K	300	40	50,8	GC60 K V	3100	Kinik
300X40X76.2GC60K	300	40	76,2	GC60 K V	3100	Kinik
300X50X31.75GC60K	300	50	31,75	GC60 K V	3100	Kinik
300X50X50.8GC60K	300	50	50,8	GC60 K V	3100	Kinik

350mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
350X40X50.8A36Q	350	40	50,8	A36 Q V	1800	Kinik
350X40X50.8A46Q	350	40	50,8	A46 Q V	1800	Kinik
350X40X50.8A60P	350	40	50,8	A60 P V	1800	Kinik
350X40X76.2A36Q	350	40	76,2	A36 Q V	1800	Kinik
350X50X127A36Q	350	50	127	A36 Q V	1800	Kinik
350X50X127A46Q	350	50	127	A46 Q V	1800	Kinik
350X50X127A60P	350	50	127	A60 P V	1800	Kinik
350X50X50.8A36Q	350	50	50,8	A36 Q V	1800	Kinik
350X50X50.8A36QC	350	50	50,8	A36 Q V	1800	T/A
350X50X50.8A46Q	350	50	50,8	A46 Q V	1800	Kinik
350X50X50.8A46QC	350	50	50,8	A46 Q V	1800	T/A
350X50X50.8A60P	350	50	50,8	A60 P V	1800	Kinik

TUNGSTEN CARBIDE / CERAMICS

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
350X50X76.2GC60K	350	50	76,2	GC60 K V	1800	Kinik

400mm

MILD STEEL

Code	Ø mm	Width mm	Bore mm	Spec.	MAX RPM	Brand
400X50X50.8A46P	400	50	50,8	A46 P V	1600	Kinik

PLASTIC REDUCING BUSHES

Stock code	Specification
F13	31.75x6x12.7
F16	31.75x6x15.88
F19	31.75x6x19.5
F20	31.75x6x20
F25	31.75x6x25.4
F31.75	50.8x10x31.75

DRESSING TOOLS FOR BENCH/ PEDISTAL GRINDER

DRESSING STICK

Code	Length mm	Width mm	Height mm	Spec.	Brand
150X25X25C24S	150	25	25	C24SV	Kinik

HAND HELD MULTIPOINT DRESSER

Code	Length mm	Width mm	Height mm	Spec.
HDD	20	6	8	Coarse

HAND HELD SINGLE POINT DIAMOND DRESSERS

Grade A

Code	Carat	Wheel Ø mm
DWD25A	0,25	M 200
DWD50A	0,5	200 > 300
DWD75A	0,75	300 > 400
DWD100A	1	400 < 500
DWD150A	1,5	> 500

Grade B

Code	Carat	Wheel Ø mm
DWD25B	0,25	M 200
DWD50B	0,5	200 > 300
DWD75B	0,75	300 > 400
DWD100B	1	400 < 500
DWD150B	1,5	> 500

BLADE TYPE WHEEL DRESSERS

Dresser unit

Code	Size	Wheel Ø mm
WD0Q	0	M 250

Spares

Code	Part	Size
WDB0Q	Blades	0
WDS0	Spindle	0
WD0BSH	Bush	0

Dresser unit

Code	Size	Wheel Ø mm
WD1Q	1	250 > 350

Spares

Code	Part	Size
WDB1Q	Blades	1
WDS1	Spindle	1

Dresser unit

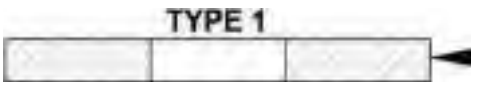
Code	Size	Wheel Ø mm
WD2Q	2	> 350

Spares

Code	Part	Size
WDB2Q	Blades	2
WDS2	Spindle	2

SURFACE & CYLINDRICAL GRINDING WHEELS

150mm



Type 1 - Straight wheels

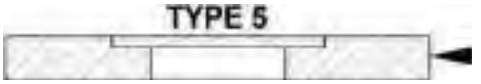
Stock Code	Ø mm	Width mm	Bore mm	Spec
50X3X31.75PA80O	150	3	31,75	PA 80 O 8 V
150X6X31.75WA150M	150	6	31,75	WA 150 M 8 V
150X6X31.75WA60L	150	6	31,75	WA 60 L 8 V
150X13X31.75WA46K	150	13	31,75	WA 46 K 8 V
150X13X31.75WA60K	150	13	31,75	WA 60 K 8 V
150X20X31.75WA46K	150	20	31,75	WA 46 K 8 V
150X20X31.75WA60K	150	20	31,75	WA 60 K 8 V
150X20X31.75WA80K	150	20	31,75	WA 80 K 8 V

180mm

Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	Spec
180X13X31.75WA46K	180	13	31,75	WA 46 K 8 V
180X13X31.75WA60K	180	13	31,75	WA 60 K 8 V
180X20X31.75WA46K	180	20	31,75	WA 46 K 8 V
180X20X31.75WA60K	180	20	31,75	WA 60 K 8 V
180X20X31.75WA80K	180	20	31,75	WA 80 K 8 V
180X25X31.75WA46K	180	25	31,75	WA 46 K 8 V

200mm

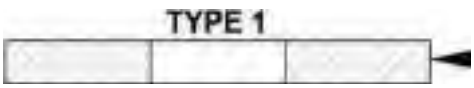


Type 5 - Single recess wheels

Stock Code	Ø mm	Width mm	Bore mm	Spec
180X25X31.75MA46I5A	180	25	31,75	MA 46I8V 100X10

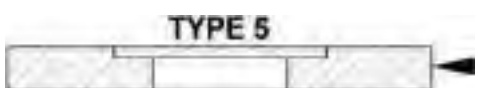
SURFACE & CYLINDRICAL GRINDING WHEELS

200mm



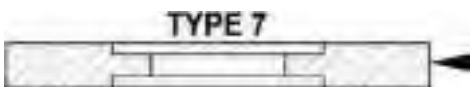
Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
200X13X31.75WA46K	200	13	31,75	WA46 K 8 V
200X13X31.75WA60K	200	13	31,75	WA60 K 8 V
200X20X31.75WA36L	200	20	31,75	WA36 L 8 V
200X20X31.75WA46K	200	20	31,75	WA46 K 8 V
200X20X31.75MA46J	200	20	31,75	MA46 J 8 V
200X20X31.75WA60K	200	20	31,75	WA60 K 8 V
200X20X50.8WA46K	200	20	50,8	WA46 K 8 V
200X25X31.75WA46K	200	25	31,75	WA46 K 8 V
200X25X31.75WA60K	200	25	31,75	WA60 K 8 V
200X25X50.8WA46K	200	25	50,8	WA46 K 8 V
200X25X76.2PSA60J	200	25	76,2	PSA60 J 8 V
200X30X31.75WA100V1A	200	30	31,75	WA100 L 8 V



Type 5 - Single recess wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
200X25X31.75MA46I5A	200	25	31,75	MA 46 I 8 VI00X10
200X25X31.7593A46H5A	200	25	31,75	93A 46 H P72 VI00X10

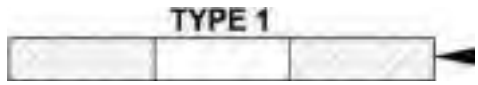


Type 7 - Double recess wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
200X25X31.75PSA120J7	200	25	31,75	PSA 120 J V110X5

SURFACE & CYLINDRICAL GRINDING WHEELS

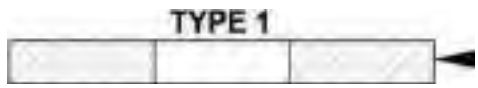
225mm



Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	
225X25X51WA46K	225	25	51	WA64K8V

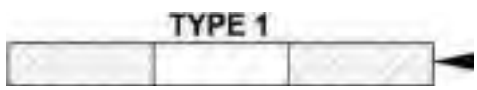
250mm



Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
250X25X76.2WA46J	250	25	76,2	WA46J8V
250X25X76.2MA46I	250	25	76,2	MA46I8V
250X25X76.2PSA46J	250	25	76,2	PSA46JV
250X25X76.2WA60J	250	25	76,2	WA60J8V
250X32X76.2WA46J	250	32	76,2	WA46J8V
250X32X76.2WA60J	250	32	76,2	WA60J8V
250X32X76.2PSA46J	250	32	76,2	PSA46JW

300mm

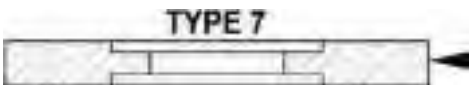


Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
300X13X127GC100K	300	13	127	GC100K8V
300X25X127WA46K	300	25	127	WA46K8V
300X25X12732A60J	300	25	127	32A60J8V
300X25X127PSA60J	300	25	127	PSA60J8V
300X25X127WA60J	300	25	127	WA60J8V
300X25X127GC60K	300	25	127	GC60K8V
300X25X127GC100K	300	25	127	GC100K8V
300X32X76.2PA46K	300	32	76,2	PA46K8V
300X32X76.2WA46K	300	32	76,2	WA46K8V
300X32X76.2PA60K	300	32	76,2	PA60K8V
300X40X127WA46J	300	40	127	WA46J8V
300X40X127PSA46I	300	40	127	PSA46IV
300X40X127FA60L	300	40	127	FA60L8V
300X40X127WA60K	300	40	127	WA60KV
300X40X76.2GC60K	300	40	76,2	GC60KV
300X50X76.2WA46K	300	50	76,2	WA46K8V

SURFACE & CYLINDRICAL GRINDING WHEELS

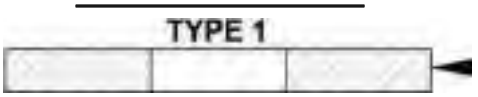
300mm



Type 7 - Double recess wheels

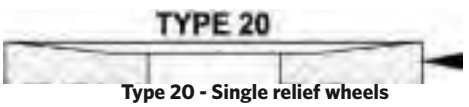
Stock Code	Ø mm	Width mm	Bore mm	
300X50X76.2PA46K7A	300	50	76,2	PA46K8V160X10
300X50X76.2WA46K7A	300	50	76,2	WA46K8V160X10

350mm



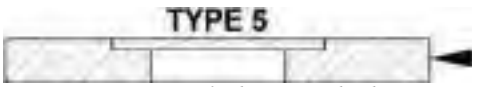
Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
350X25X127FA60L	350	25	127	FA60L8V
350X25X127WA60J	350	25	127	WA60JV
350X25X127GC100K	350	25	127	GC100K8V
350X32X127WA46K	350	32	127	WA46K8V
350X32X127PA60K	350	32	127	PA60K8V
350X40X127MA46H	350	40	127	MA46H10V
350X40X12732A46H	350	40	127	32A46H12VP
350X40X127PA46J	350	40	127	PA46J9V
350X40X12732A60J	350	40	127	32A60J8V
350X40X127GC60J	350	40	127	GC60J8V
350X40X127PA60J	350	40	127	PA60J8V
350X40X127WA60J	350	40	127	WA60J8V
350X50X127PA46K	350	50	127	PA46K8V
350X50X127WA46K	350	50	127	WA46K8V
350X50X127PA60K	350	50	127	PA60K8V
350X50X127WA60K	350	50	127	WA60K8V



Type 20 - Single relief wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
350X40X127FA60LV20A	350	40	127	FA60L8V

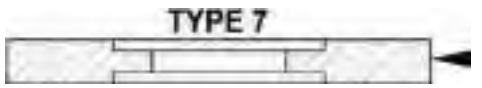


Type 5 - Single recess wheels

Stock Code	Ø mm	Width mm	Bore mm	Specs
350X60X12732A60LV5A	350	60	127	32A60LV195X20

SURFACE & CYLINDRICAL GRINDING WHEELS

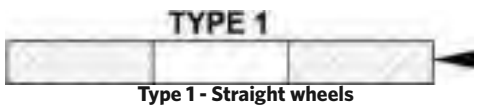
350mm



Type 7 - Double recess wheels

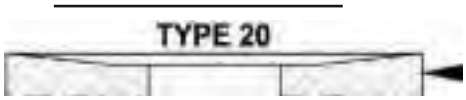
Stock Code	Ø mm	Width mm	Bore mm	Specs
350X50X127PA46JV7A	350	50	127	PA46JV200X10
350X50X127WA46JV7A	350	50	127	WA46JV200X10
350X50X127PA54JV7A	350	50	127	PA54JV200X10

400mm



Type 1 - Straight wheels

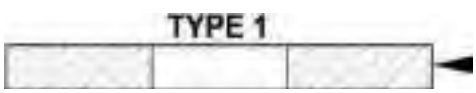
Stock Code	Ø mm	Width mm	Bore mm	
400X25X127FA60L	400	25	127	FA60L8V
400X25X127WA60J	400	25	127	WA60JV
400X25X127FA80K	400	25	127	FA80K8V
400X32X127CA46P#	400	32	127	CA46PB
400X40X127WA60J	400	40	127	WA60JV
400X50X12732A46H	400	50	127	32A46H12VP
400X50X127PA46J	400	50	127	PA46J8V
400X50X127FA60L	400	50	127	FA60L8V



Type 20 - Single relief wheels

Stock Code	Ø mm	Width mm	Bore mm	
400X40X127FA60LV20A	400	40	127	FA60L8V
400X40X203.2FA60L20A	400	40	203,2	FA60L8V

450mm

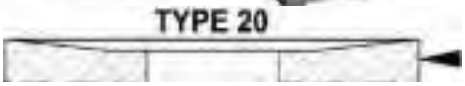


Type 1 - Straight wheels

Stock Code	Ø mm	Width mm	Bore mm	
450X40X203.2FA46K	450	40	203,2	FA46K8V
450X50X127FA60/2L	450	50	127	FA60L8V
450X65X203.2FA54L	450	65	203,2	FA54L8V

SURFACE & CYLINDRICAL GRINDING WHEELS

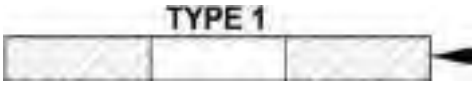
450mm



Type 20 - Single relief wheels

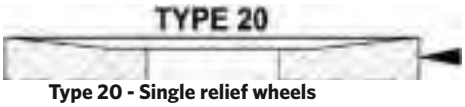
Stock Code	Ø mm	Width mm	Bore mm	Specs
450X40X203.2FA60L	450	40	203,2	FA60L8V

500mm



Type 1 - Straight wheels

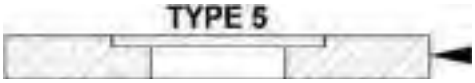
Stock Code	Ø mm	Width mm	Bore mm	Specs
500X40X203.2WA60J	500	40	≥03,2	WA60J8V
500X40X203.2WA60J	500	40	203,2	WA60J8V
500X50X12793A46HP42V	500	50	127	93A46HP42V
500X160X304.8FA60M	500	160	304,8	FA60M8V



Type 20 - Single relief wheels

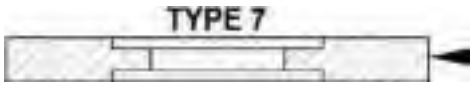
Stock Code	Ø mm	Width mm	Bore mm	Specs
500X60X203.2FA60L20A	500	60	203,2	FA60L8V

600mm



Type 5 - Single recess wheels

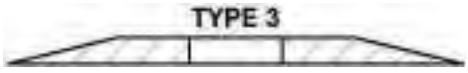
Stock Code	Ø mm	Width mm	Bore mm	Specs
600X125X304.8FA46M5A	600	125	304,8	FA46M8V400X25



Type 7 - Double recess wheels

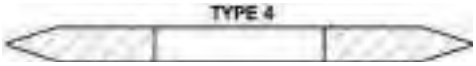
Stock Code	Ø mm	Width mm	Bore mm	Specs
600X100X203.2FA60M	600	100	203,2	FA60MSV290X20

HOB GRINDING WHEELS



Code	Ø mm	Width mm	Bore mm	Spec
250X14X50.8KGB60HV3A	250	14	50,8	KGB60HV
300X25X50.8PSA54H3-4	300	25	50,8	PSA54H18V
300X25X50.8WA54JV3-4	300	25	50,8	WA54J8V

GEAR GRINDING WHEELS



Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
350X25X12732A60IV4A	4	350	25	127	40° 32A60IV4A
350X25X127KGB60HV4A	4	350	25	127	40° KGB60HV4A
395X30X127WA60IV4A	4	395	30	127	40° WA60I8V4A
395X40X127WA60IV4A	4	395	40	127	40° WA60I8V4A
400X8X160KGB80HV4A	4	400	8	160	40° KGB80H8V4A
400X13X160KGB80HV4A	4	400	13	160	40° KGB80H8V4A
400X16X160KGB80HV4A	4	400	16	160	40° KGB80H8V4A
400X20X160KGB80HV4A	4	400	20	160	40° KGB80H8V4A

CRANK SHAFT GRIDING WHEELS

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
610X19X203.2A463L8	8	610	19	203.2	A463L5V10
610X25X203.2A463L8	8	610	25	203.2	A463L5V10
660X17X203.2A463L8	8	660	17	203,2	A463L5V10
660X19X203.2A463L8	8	660	19	203.2	A463L5V10
660X22X203.2A463L8	8	660	22	203.2	A463L5V10
660X25X203.2A463L8	8	660	25	203.2	A463L5V10
660X28X203.2A463L21	21	660	28	203.2	A463L5V10
660X32X203.2A463L21	21	660	32	203.2	A463L5V10

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CRANK SHAFT GRIDING WHEELS CONT.

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
710X17X203.2A463L8	8	710	17	203,2	A463L5V10
710X19X203.2A463L8	8	710	19	203.2	A463L5V10
710X22X203.2A463L8	8	710	22	203.2	A463L5V10
710X25X203.2A463L8	8	710	25	203.2	A463L5V10
710X28X203.2A463L21	21	710	28	203.2	A463L5V10
710X32X203.2A463L21	21	710	32	203.2	A463L5V10
710X35X203.2A463L26	26	710	35	203.2	A463L5V10
760X19X203.2A463L8	8	760	19	203.2	A463L5V10
760X22X203.2A463L8	8	760	22	203.2	A463L5V10
760X25X203.2A463L21	21	760	25	203.2	A463L5V10
760X28X203.2A463L21	21	760	28	203.2	A463L5V10
760X32X203.2A463L21	21	760	32	203.2	A463L5V10
760X35X203.2A463L26	26	760	35	203.2	A463L5V10
810X17X203.2A463L8	8	810	17	203,2	A463L5V10
810X19X203.2A463L8	8	810	19	203.2	A463L5V10
810X25X203.2A463L8	8	810	25	203.2	A463L5V10
810X25X304.8A463L8	8	810	25	304.8	A463L5V10
810X32X203.2A463L21	21	810	32	203.2	A463L5V10
810X38X203.2A463L26	26	810	38	203.2	A463L5V10
900X19X304.8A463L8	8	900	19	304.8	A463L8V10

KINIK® PRECISION NON RE-INFORCED SLITTING WHEELS

Stock code	Size mm	Grade
150x0.5x19.05A120R	150x0.5x19.05	A120R
150x0.7x31.75A80P	150x0.7x31.75	A80PBR30
150x1x31.75A60Q	150x1x31.75	A60QBR30
150x1.6x31.75A60Q	150x1.6x31.75	A60QB30
205x1.6x31.75A60Q	205x1.6x31.75	A60QB30
205x1.6x31.75FA46P	205x1.6x31.75	FA46PB30
255x1.6x31.75A60PB30	255x1.6x31.75	A60PB30

KINIK® INTERNAL GRINDING WHEELS

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
25X25X6.35WA60LV5A	5	25	25	6.3	WA60L8V5A
25X25X6.355KG70KV5A	5	25	25	6.35	5KG70KV5A
32X32X9.53WA60LV5A	5	32	32	9.53	WA60L8V5A
38X38X9.53WA60LV5A	5	38	38	9.53	WA60L8V5A
40X40X12.7RA60KV5A	5	40	40	12.7	RA60KV5A

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INTERNAL GRINDING WHEELS CONT..

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
45X40X12.7RA60KV5A	5	45	40	12.7	RA60KV5A
50X38X12.7WA60LV5A	5	50	38	12.7	WA60L8V5A
60X38X22.23FA60MV5A	5	60	38	22.23	FA60M8V5A
60X50X20RA60KV5A	5	60	50	20	RA60KV5A
80X50X25.4FA54MV5A	5	80	50	25.4	FA54MV5A
80X50X25.4RA60KV5A	5	80	50	25.4	RA60KV5A

KINIK® STRAIGHT CUP GRINDING WHEELS

Type 6 Straight cup wheels

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
76X40X20PSA80L6A	6	76	40	20	PSA80LV6A
100X50X31.75MA80J6A	6	100	50	31.75	MA80J8V6A
100X50X31.75WA46K6A	6	100	50	31.75	WA46KV6A
100X50X31.75GC60K6A	6	100	50	31.75	GC60KV6A
100X50X31.75WA60K6A	6	100	50	31.75	WA60KV6A
125X50X31.75PSA46K6A	6	125	50	31.75	PSA46K8V6
125X50X31.75WA46K6A	6	125	50	31.75	WA46K8V6A
125X50X31.75WA60J6A	6	125	50	31.75	WA60J8V6A
150X50X31.75WA46K6A	6	150	50	31.75	WA46KV6A
150X50X31.75WA60K6A	6	150	50	31.75	WA60KV6A
150X65X31.75WA60K6A	6	150	65	31.75	WA60KV6A
150X65X31.7593A54I6A	6	150	65	31.75	93A54I8V6A

KINIK® TYPE 11 FLARING CUP WHEELS

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
90X50X31.75WA46K11A	11	90	50	31.75	WA46K8V
90X50X31.75WA60K11A	11	90	50	31.75	WA60K8V
100X50X31.75MA46K11A	11	100	50	31.75	MA46K8V
100X50X31.75MA60K11A	11	100	50	31.75	MA60K8V
125X50X31.75WA46K11A	11	125	50	31.75	WA46K8V
125X50X31.75WA60K11A	11	125	50	31.75	WA60K8V
125X50X31.75PSA60K11	11	125	50	31.75	PSA60K8V
150X50X31.75WA46J11A	11	150	50	31.75	WA46J11A
150X65X31.75PA54J11Y	11	150	65	31.75	PA54JV11Y
150X65X31.75WA46K11Y	11	150	65	31.75	WA46K8V
150X65X31.75WA60J11Y	11	150	65	31.75	WA60J8V
150X65X31.7593A54I6A	11	150	65	31.75	93A54I8V

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TYPE 12 SAUCER SHAPE WHEELS

Stock code	Shape	Ø mm	Width mm	Bore Ø mm	Specification
150X19X31.75WA46K12A	12	150	19	31.75	WA46KV12A
150X19X31.75WA60K12A	12	150	19	31.75	WA60KV12A
180X19X31.75WA46K12A	12	180	19	31.75	WA46KV12A
180X19X31.75WA60K12A	12	180	19	31.75	WA60KV12A

DRESSING TOOLS FOR PRECISION GRINDING

MULTI POINT DIAMOND DRESSER

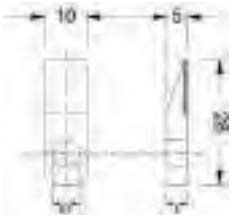
Stock code	Diamond section W	L	H	angle	Grit size	Shank Ø mm
DG2A6A7	6	13	7	flat	6	11
DG2A6A8	6	13	7	flat	6	12
IDDOC	6	13	8	flat	-	12
DG3A6A8	6	20	7	flat	6	12
DG3R6K8	10ø	-	7	flat	6	12
	9ø	-	8	flat	-	12
DG2R6K8	8ø	-	7	flat	6	12
		-				

SINGLE POINT DIAMOND DRESSERS

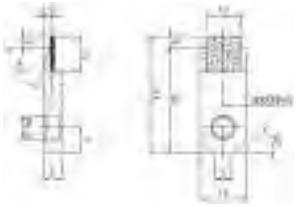
Grade A Code	Carat	Wheel Ø mm	Grade B Code	Carat	Wheel Ø mm
DWD25A	0,25	M 200	DWD25B	0,25	M 200
DWD50A	0,5	200 > 300	DWD50B	0,5	200 > 300
DWD75A	0,75	300 > 400	DWD75B	0,75	300 > 400
DWD100A	1	400 < 500	DWD100B	1	400 < 500
DWD150A	1,5	> 500	DWD150B	1,5	> 500

DRESSING TOOLS CONT..

Fliesen Type dressers



Code	D	L	T	H	
DWDFBS115T6	10	28	5	6,5	



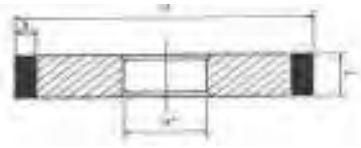
Code	D	L	w	H	
DWDMDD-B13	12	33	10	6,5	

Forming Diamond dresser

Code	D	L	Angle	Radius	Shank	
DWDFDD-F09	14	44	55°	0,25	MT1	

SUPERABRASIVES

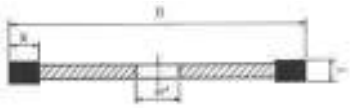
Diamond and CBN Grinding Wheels



Type 1A1 - Straight wheels

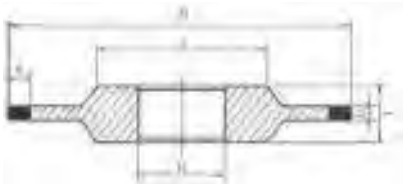
stock code	D	T	H	Rim	Spec.	Apply
E150X10X31.75D1261A1	150	10	31,75	3X	D126R75BG	Tc/Cer
200X10X31.75D1261A1	200	10	31,75	3X	D126N75B	Tc/Cer
300X25X127D151C3B1A1	300	25	127	5X	D151C75B	Tc/Cer

SUPERABRASIVES CONT.



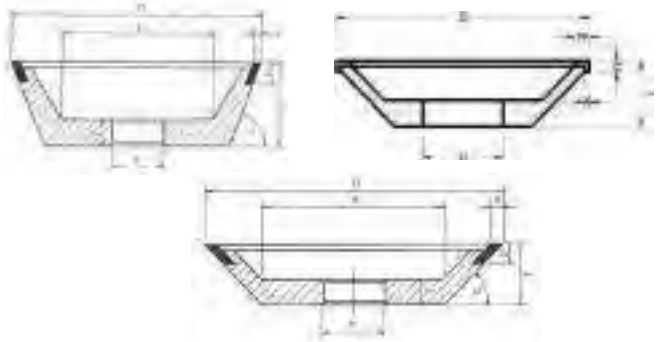
Type 1A1R - Slitting wheels

stock code	D	T	H	Rim	Spec.	Apply
150X1X31.75B1401A1R	150	1	31,75	7X	B140R125B	Steel
150X1.5X31.7D1401A1R	150	1,5	31,75	5X	D140R100B	Tc/Cer
E150X1X31.75D1401A1R	150	1	31,75	7X	D140R125BX	Tc/Cer
E200X1.2X22.23D1511A	203,2	1,2	22,23	7X	D151C125B	Tc/Cer
E305X1.2X127D1511A1R	304,8	1,2	127	7X	D151N100BL2	Tc/Cer



Type 14A1

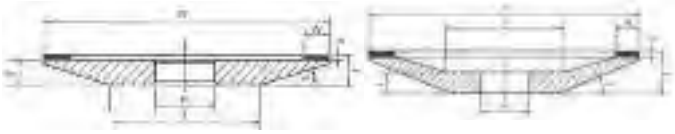
stock code	D	T	H	Rim	Spec.	Apply
125X8X31.751UD9114A1	125	8	31,75	3X-1U	D91N75B	Tc/Cer
125X8X31.752UD9114A1	125	8	31,75	3X-2U	D91N75B	Tc/Cer
125X8X31.75D12614A3U	125	8	31,75	3X-3U	D126N100B	Tc/Cer
125X8X31.75D12614A4U	125	8	31,75	3X-4U	D126N75B	Tc/Cer
150X5X31.75D9114A13U	150	5	31,75	5X-3U	D91P100BW	Tc/Cer



Type 11C9; 11V9; 12V9 - Dish shape wheels

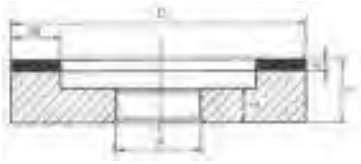
stock code	D	T	H	Rim	Spec.	Apply
E90X40X31.75B12611V9	90	40	31,75	3X-10U	B126C75BG	Steel
90X40X31.75D12611V9	90	40	31,75	3X-10U	D126N75B	Tc/Cer
E100X35X31.7D12611V9	100	35	31,75	3X-10U	D126R75BG	Tc/Cer
E100X25X31.7D12611C9	100	25	31,75	2X-6W-4U	D126R75BG	Tc/Cer
100X20X31.75D12612V9	100	20	31,75	3X-6U	D126N75B	Tc/Cer
125X35X31.75D1261V9	125	35	31,75	3X-10U	D126C75BW	Tc/Cer
E125X35X31.7D12611V9	125	35	31,75	3X-12U	RCS126R75B	Tc/Cer
150X50X31.75D12611V9	150	50	31,75	3X-U10	D126C75BW	Tc/Cer

SUPERABRASIVES CONT.



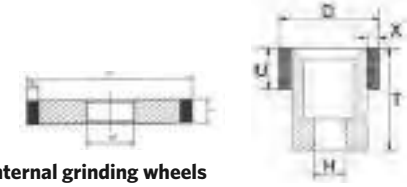
Type 4A2; 12A2 - Saucer shape wheels

stock code	D	T	H	Rim	Spec.	Apply
125X7X31.75D914A2	125	7	31,75	2X-6W	D91N75B	Tc/Cer
125X14X31.75D12612A2	125	14	31,75	3X-6W	D126N75BW	Tc/Cer
125X14X31.75D3012A2	125	14	31,75	3X-6W	D30N75BW	Tc/Cer
125X14X31.75D5412A2	125	14	31,75	3X-6W	D54N75BW	Tc/Cer
150X16X31.75D12612A	150	16	31,75	3X-6W	D126N75B	Tc/Cer
150X16X31.75D5412A2	150	16	31,75	3X-6W	D54N75BD	Tc/Cer
150X16X31.75D6412A2	150	16	31,75	3X-6W	D64N75BW	Tc/Cer



Type 6A2 - Straight Cup wheels

stock code	D	T	H	Rim	Spec.	Apply
65X25X12.7D466A2	65	25	12,7	3X-W6	D46C75BD	Tc/Cer
100X50X20D1266A2	100	50	20	2X-15W	D126N75BW	Tc/Cer
E150X25X31.75D1266A2	150	25	31,75	3X-10W	D126R75BG	Tc/Cer
E200X25X31.75D1266A2	200	25	31,75	3X-10W	D126R75BG	Tc/Cer



Type 6A1 - Internal grinding wheels

stock code	D	T	H	Rim	Spec.	Apply
E25X10X10B1261A1	25	10	10	3X	B126R75BG	Steel
E30X20X12.75B1266A9	30	20	12,75	3X-10U	B126R75BG	Steel
E40X25X10B1813A1S	40	25	10	3X-10U	B126R75BG	Steel
E50X30X12.7B1813A1S	50	30	12,7	3X-10U	B181R75BG	Steel

DRESSING TOOLS FOR SUPERABRASIVES

DIAMOND/CBN TRUING ATTACHMENT

Stock code	Full description
D/CBNTA	Diamond/CBN truing attachment

Note: Designed for truing resin bond Diamond and CBN wheels

Replacement wheel for triming attachment
Stock code: 80x25x12.7 C80M

DRESSING STONE

Stock code
75X20X84D

PERIPHERAL SPEED OF SUPERABRASIVE WHEELS

Too high an operating speed for diamond wheels will generate excessive heat, causing damage to the wheel, and shortening its life. Generally the speed for dry grinding is 15-20 M/S and with coolant 20-25 M/S. CBN wheels give better results when operated at maximum recommended speed, care should be taken to ensure that the machine is in good condition, and the wheel accurately balanced when operating at maximum speed.

RECOMMENDATION OF PROPER PERIPHERAL SPEED

Diamond Wheels m/min

Bond	Dry Grinding	Wet Grinding
Vitrified (V)	1,000-1,400	1,300-1,800
Resinoid (8)	800-1,200	1,300-1,800
Electroplated (P)	600-1,200	1,200-1,800
Metallic (M)	600-1 ,000	1,000-1 ,500

CBN Wheels m/min

Bond	Dry Grinding	Wet Grinding
Vitrified (V)	1,600-2,000	1,600-2 ,400
Resinoid (8)	1,000- 1,400	1,600-2 ,400
Electroplated (P)	900-1 ,600	1,600-2,400
Metallic (M)	1,000-1,500	1,600-2 ,400

COOLANT

Small parts can be ground in a dry condition (25 M/S) provided the depth of cut is not too great. Heavy cuts will generate excessive heat at the point at contact which will cause the component to become burnished, load the wheel face, and damage the bond.

Wet grinding is preferable in all cases. This will allow a deeper cut and faster stock removal, as well as greatly increasing the wheel life.

Care must be taken to ensure that the coolant is directed to the point of contact of the wheel.

DEPTH OF CUT

Keeping required surface roughness, better wheel life could be attained by using the depth of cut as follows. These figures might be varied on feed rate and workpiece materials.

KINIK® DIAMOND NEEDLE FILES

Stock code	Shape	Cut mm	Length mm
DFFM	Flat	Medium	140
DFHRM	Half Round	Medium	140
DFRM	Round	Medium	140
DFSM	Square	Medium	140
DFTM	Triangular	Medium	140
DFFF	Flat	Fine	140
DFHRF	Half Round	Fine	140
DFRF	Round	Fine	140
DFSF	Square	Fine	140
DFTF	Triangular	Fine	140

DIAMOND NEEDLE FILES (SETS)

Stock code	Cut mm	Length mm
DFFS	Fine	140
DFCS	Coarse	140

DIAMOND HAND LAPS

Stock Code	Cut mm	Length mm
DHLM	Medium	140
DHLF	Fine	140

DIAMOND PASTE

Stock code	Grain size µm	Colour	Approximate surface finish achieveable Ra
DP1/0	0-1	light yellow	0.020-0.040
DP3/2	2-3	yellow	0.020-0.040
DP5/3	3-5	light green	0.020-0.040
DP7/5	5-7	green	0.032-0.063
DP10/7	7-10	dark green	0.032-0.063
DP14/10	10 14	light blue	0.063-0.100
DP20/14	14-20	blue	0.063-0.100
DP28/20	20-28	dark blue	0.080-0.160
DP40/28	28-40	red	0.080-0.160

SQUARE SHARPENING STONES

Stock code	Size mm	Grade
SSS100x10220	100x10	A220
SSS100x10600	100x10	A600
SSS150x13220	150x13	A220
SSS150x13600	150x13	A600
SSS150x20220	150x20	A220
SSS150x25220	150x25	A220

TRIANGULAR SHARPENING STONES

Stock code	Size mm	Grade
TSS100x10600	100x10	A600
TSS150x13220	150x13	A220

COMBINATION STONES

Stock code	Size mm	Grade
200x50x25C120/220M	200x50x25	C120/220M

ALUMINIUM OXIDE COATED HANDY ROLLS

Stock code	Width mm	Length m	Grit
HR25P40	25	50	P40
HR25P50	25	50	P50
HR25P60	25	50	P60
HR25P80	25	50	P80
HR25P100	25	50	P100
HR25P120	25	50	P120

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ALUMINIUM OXIDE CONT..

Stock code	Width mm	Length m	Grit
HR25P150	25	50	P150
HR25P180	25	50	P180
HR25P240	25	50	P240
HR25P320	25	50	P320
HR25P360	25	50	P360
HR25P400	25	50	P400
HR40P40	40	50	P40
HR40P50	40	50	P50
HR40P60	40	50	P60
HR40P80	40	50	P80
HR40P100	40	50	P100
HR40P120	40	50	P120
HR40P150	40	50	P150
HR40P180	40	50	P180
HR40P240	40	50	P240
HR40P320	40	50	P320
HR40P360	40	50	P360
HR50P40	50	50	P40
HR50P50	50	50	P50
HR50P60	50	50	P60
HR50P80	50	50	P80
HR50P100	50	50	P100
HR50P120	50	50	P120
HR50P150	50	50	P150
HR50P180	50	50	P180
HR50P240	50	50	P240
HR50P320	50	50	P320
HR50P360	50	50	P360
HR50P400	50	50	P400

WET/DRY SILICON CARBIDE SHEETS

100 sheets per pack

Stock code	Size & Grit
WP80100	230 x 280 P80
WP100100	230 x 280 P100
WP120100	230 x 280 P120
WP150100	230 x 280 P150
WP180100	230 x 280 P180
WP220100	230 x 280 P220
WP240100	230 x 280 P240
WP320100	230 x 280 P320

Stock code	Size & Grit
WP360100	230 x 280 P360
WP400100	230 x 280 P400
WP500100	230 x 280 P500
WP600100	230 x 280 P600
WP800100	230 x 280 P800
WP1000100	230 x 280 P1000
WP1200100	230 x 280 P1200

DIAMOND X WHEELS

APPLICATIONS :

- High & Low Carbon Steel
- Hard Facing Alloys
- Ductile Iron
- Cast Iron
- Rail Track
- Steel Section, Bar & Tube
- Weld Blending
- Plastics
- Fiberglass
- Carbon Fiber

DIAMOND BLADES

											Brick				Cement			Concrete					Pavers																	
Code	Ø	T	X	Rim	Slot	Brazing	Quality	Application	Wet/Dry	Asphalt	General	Cement Stock	Clay Stock	Face Brick	Soft	Block	Pavers	General	Green	Cured	Reinforced	Pre-stressed	Cement pavers	Clay Pavers	Ceramic Tiles	Granite	Marble	Slate	Terrazzo	General Purpose	Glass	Masonry	Porcelain	Refractory
104213100	115		7	Continuous	None	Sintered	DIY		W/D																Y									
104213300	115	1,8	9	Continuous	None	Sintered	Med Project		W/D									Y								Y			Y					
104215100	115		7	Segmented	Narrow	Sintered	DIY		W/D		Y																			Y		Y		
104215200	115	2,2	7	Segmented	Narrow	Sintered	Small project		W/D		Y		Y	Y				Y		Y	Y	Y		Y					Y	Y		Y		Y
104215300	115	1,8	7,5	Segmented	Narrow	Sintered	Med Project		W/D		Y		Y	Y			Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		Y
104214100	115		8	Turbo	None	Sintered	DIY		W/D		Y																			Y		Y		
104214300	115	2,2	7	Turbo	None	Sintered	Med Project		W/D									Y		Y					Y	Y	Y	Y	Y			Y		Y
104219100	125		7	Continuous	None	Sintered	DIY		W/D																Y									
104221300	125	2,2	7	Segmented	Narrow	Sintered	Med Project		W/D	Y		Y	Y		Y	Y	Y	Y	Y					Y										
104233300	180	2,2	7	Segmented	Narrow	Sintered	Med Project		W/D	Y		Y	Y		Y	Y	Y	Y	Y					Y										
104229400	180	10	12	Segmented	Narrow	Laser	Industrial	Crack chaser	Wet											Y														
104239400	200	1,8	9,5	Continuous	Music	Sintered	Industrial		Wet																Y	Y	Y		Y		Y		Y	
104243100	230		7	Continuous	None	Sintered	DIY		W/D																Y									
104233100	230		7	Segmented	None	Sintered	DIY		W/D		Y																			Y		Y		
104233200	230	2,2	7	Segmented	Narrow	Sintered	Small project		W/D	Y		Y	Y		Y	Y	Y	Y	Y					Y										
104233210	230	2,2	7	Segmented	Narrow	Sintered	Small project		W/D		Y		Y	Y				Y		Y	Y	Y							Y	Y		Y		Y
104233310	230	2,2	7,5	Segmented	Narrow	Sintered	Med Project		W/D		Y		Y	Y			Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		Y
104233300	230	2,2	7	Segmented	Narrow	Sintered	Med Project		W/D	Y		Y	Y		Y	Y	Y	Y	Y					Y										
104247500	230	2,6	7,5	Segmented	Narrow	Laser	Professional		Dry	Y	Y	Y	Y	Y		Y	Y				Y			Y	Y					Y		Y		Y
104247510	230	2,6	7,5	Segmented	Narrow	Laser	Professional		Dry	Y	Y	Y	Y	Y		Y	Y				Y			Y	Y					Y		Y		Y
104238100	230		8	Turbo	None	Sintered	DIY		W/D		Y																			Y		Y		
104238300	230	2,4	7	Turbo	None	Sintered	Med Project		W/D									Y		Y					Y	Y	Y	Y	Y			Y		Y
104233400	230	1,5	10	Continuous	Music	Sintered	Industrial		Wet																Y	Y	Y		Y		Y		Y	
104251400	250	1,8	9,5	Continuous	Music	Sintered	Industrial		Wet																Y	Y	Y		Y		Y		Y	
104258300	300	3,2	10	Segmented	Narrow	Brazed	Med Project		W/D		Y		Y	Y			Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		Y
104259400	300	5	8	Segmented	Narrow	Laser	Industrial	Joint widening	Wet									Y																
104259410	300	6	8	Segmented	Narrow	Laser	Industrial	Joint widening	Wet									Y																
104259420	300	8	8	Segmented	Narrow	Laser	Industrial	Joint widening	Wet									Y																
104259430	300	10	8	Segmented	Narrow	Laser	Industrial	Joint widening	Wet									Y																
104259440	300	12	8	Segmented	Narrow	Laser	Industrial	Joint widening	Wet									Y																
104258400	300	3,2	7	Segmented	Narrow	Brazed	Industrial		W/D	Y					Y	Y			Y															
104258410	300	2,8	9	Segmented	Narrow	Brazed	Industrial		W/D			Y	Y	Y				Y		Y				Y						Y		Y		Y
104259500	300	3,2	8	Segmented	Narrow	Laser	Professional		Wet	Y									Y															
104257400	300	2	10	Continuous	Music	Sintered	Industrial		Wet																Y	Y	Y		Y		Y		Y	

DIAMOND BLADES

											Brick				Cement			Concrete					Pavers															
Code	Ø	T	X	Rim	Slot	Brazing	Quality	Application	Wet/Dry	Asphalt	General	Cement Stock	Clay Stock	Face Brick	Soft	Block	Pavers	General	Green	Cured	Reinforced	Pre-stressed	Cement pavers	Clay Pavers	Ceramic Tiles	Granite	Marble	Slate	Terrazzo	General Purpose	Glass	Masonry	Porcelain	Refractory
104264300	350	3	14	MAX	Narrow	Brazed	Med Project		W/D	Y		Y	Y		Y	Y	Y	Y	Y				Y											
104264200	350	3	14	Segmented	Narrow	Brazed	Small project		W/D	Y		Y	Y		Y	Y	Y	Y	Y				Y											
104264210	350	3	14	Segmented	Narrow	Brazed	Small project		W/D		Y		Y	Y				Y		Y	Y	Y		Y					Y	Y		Y		Y
104264310	350	3,2	10	Segmented	Narrow	Brazed	Med Project		W/D		Y		Y	Y			Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		Y
104264400	350	3,2	7	Segmented	Narrow	Brazed	Industrial		W/D	Y					Y	Y			Y															
104264420	350	3	7	Segmented	Narrow	Brazed	Industrial		Wet		Y																					Y		
104264410	350	3,2	9	Segmented	Narrow	Brazed	Industrial		W/D			Y	Y	Y				Y		Y				Y						Y		Y		Y
104265520	350	3,2	8	Segmented	Narrow	Laser	Professional		Wet											Y														
104265500	350	3,2	8	Segmented	Narrow	Laser	Professional		Wet	Y									Y															
104265510	350	4	8	Segmented	Wide	Laser	Professional	Ring Saw	Wet							Y				Y	Y										Y		
104263400	350	2	10	Continuous	Music	Sintered	Industrial		Wet																Y	Y	Y		Y		Y		Y	
104270400	400	3,2	7	Segmented	Narrow	Brazed	Industrial		W/D	Y					Y	Y			Y															
104270410	400	3,2	9	Segmented	Narrow	Brazed	Industrial		W/D			Y	Y	Y				Y		Y				Y						Y		Y		Y
104271500	400	3,6	8	Segmented	Narrow	Laser	Professional		Wet											Y														
104273300	450	3,2	10	Segmented	Narrow	Brazed	Med Project		W/D		Y		Y	Y			Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		Y
104273400	450	3,4	7	Segmented	Narrow	Brazed	Industrial		W/D	Y					Y	Y			Y															
104273410	450	3,4	9	Segmented	Narrow	Brazed	Industrial		W/D			Y	Y	Y				Y		Y				Y						Y		Y		Y
104273420	450	3,4	9	Segmented	Narrow	Brazed	Industrial		Wet		Y							Y																Y
104274510	450	3,6	10	Segmented	Narrow	Laser	Professional		Wet											Y														
104274520	450	4,8	10	Segmented	Narrow	Laser	Professional		Wet											Y														
104274500	450	3,6	7,5	Segmented	Wide	Laser	Professional		Dry	Y	Y	Y	Y	Y		Y	Y				Y		Y	Y						Y		Y		Y
104275400	500	3,4	9	Segmented	Narrow	Brazed	Industrial		W/D			Y	Y	Y				Y		Y				Y						Y		Y		Y
104278500	600	4	9	Segmented	Narrow	Laser	Professional		Wet	Y																								
104278510	600	4,8	10	Segmented	Narrow	Laser	Professional		Wet											Y														
104278520	600	4,4	12	Sprinter seg	Wide	Laser	Professional	Wall saw	Wet												Y													
104280500	750	4,4	10	Segmented	Narrow	Laser	Professional		Wet											Y														
104280510	750	4,4	12	Sprinter seg	Wide	Laser	Professional	Wall saw	Wet												Y													
104282500	800	4,4	12	Sprinter seg	Wide	Laser	Professional	Wall saw	Wet												Y													
104284500	900	4,4	12	Sprinter seg	Wide	Laser	Professional	Wall saw	Wet												Y													
104286500	1000	4,4	10	Segmented	Narrow	Laser	Professional		Wet											Y														
104286510	1000	4,4	12	Sprinter seg	Wide	Laser	Professional	Wall saw	Wet												Y													
104288500	1200	4,4	12	Sprinter seg	Wide	Laser	Professional	Wall saw	Wet												Y													

CIRCULAR WIRE WHEELS

Crimped steel wire. For surface cleaning after welding and other applications

Stock code	Ø mm	Face width mm	Bore mm	Wire Ø mm	Wire length mm	Max RPM
WW100X19X20Q	100	19	20	0.3	17	6000
WW150X25X32Q	150	25	32	0.3	30	6000
WW200X25X32Q	200	25	32	0.3	45	4500
WW250X25X32Q	250	25	32	0.3	50	3600

WIRE WHEELS WITH SHANK

Crimped steel wire. For removal of paint, rust & corrosion

Standard

Stock code	Ø mm	Width mm	Shank Ømm	Wire Ø mm	Max RPM
WWS38X5Q	38	5	6	0.3	6000
WWS50X7Q	50	7	6	0.3	4500
WWS75X10Q	75	10	6	0.3	4500
WWS100X12Q	100	12	6	0.3	4500
HDWWS30X9Q	30	9	6	0.3	6000
HDWWS50X17Q	50	17	6	0.3	4500
HDWWS60X18Q	60	18	6	0.3	4500
HDWWS70X18Q	70	18	6	0.3	4500
HDWWS80X19Q	80	19	6	0.3	4500

WIRE CUP WHEELS

Crimped steel wire. Cleaning prior to and after welding. Removal of spatter and corrosion. Used on angle grinders.

Stock code	Ø mm	Bore	Pitch mm	Wire Ø mm	Max RPM
WCW100Q	100	M14	2	0.3	8500
WCW150Q	150	M14	2	0.3	6500

KNOTTED WIRE CUP WHEELS

Heavy duty cleaning on large metal surfaces and weld scale removal.

Stock code	Ø mm	Bore	Pitch mm	Wire Ø mm	Max RPM
KWCW100Q	100	M14	2	0.5	8500
KWCW120Q	120	M14	2	0.5	6500

DOUBLE ROW KNOTTED WIRE CUP WHEELS

Large trimming area with polishing effect. For use with angle grinders.

Stock code	Ø mm	Bore	Pitch mm	Wire Ø mm	Max RPM
DRKWCW100Q	100	M14	2	0.5	8500
DRKWCW125Q	125	M14	2	0.5	6500
DRKWCW150Q	150	M14	2	0.5	6500

WIRE CUP WHEELS WITH SHANK

For removal of rust corrosion & paint.

Stock code	Ø mm	Shank Ø mm	Wire Ø mm	Max RPM
WCWS38X6Q	38	6	0.2	4500
WCWS50X6Q	50	6	0.3	4500
WCWS63X6Q	63	6	0.3	4500
WCWS75X6Q	75	6	0.3	4500

SETS OF WIRE WHEEL

Circular wheels with seperate shanks.

Stock code	No of wheels	Wheels Ø mm	Shank Ø mm
WWSET3/25-50	3	25 28 50	6
WWSET3/50-75	3	50 63 75	6
WWSET5/25-75	5	25 38 50 63 75	6

SETS OF CIRCULAR CUP WHEELS

With shanks.

Stock code	No of wheels	Wheels Ø mm	Cup wheel Ø mm	End wheel Ø mm	Shank Ø mm
WWSSET2/50-75	2	50 75	-	-	6
WWSSET6/25-75	6	38 50 63 75	50	-	6
WWSSET2/50-100	2	100	50	-	6
WWSSET4/25-75	4	50 75	50	25	6
WWSSET6/25-100	6	38 50 75 100	75	25	6

WELDING TOOTH BRUSHES.

Stock code	Wire material	No of wire rows	No of wire pods	Wire Ø mm	Overall length mm
WBS	steel	2	9	0.2	225
WBB	brass	2	9	0.2	225
WBSS	stainless steel	2	9	0.2	225

BLOCK BRUSHES

Stock code	Wire material	No of wire rows	No of wire pods	Wire Ø mm
BB5S	steel	5	16	0.33
BB5SS	stainless steel	5	16	0.3
BB6S	steel	6	17	0.33
BB6SS	stainless steel	6	17	0.3

FILE BRUSHES

Stock code	Wire needle length mm	Wire needle width mm	Wire material	Handle
FB50	50	25	steel	wooden
FB75	75	50	steel	wooden
FB115	115	115	steel	wooden

WOOD WORKING MACHINES

Circular saw 600mm

Sliding table with outrigger support

Stock Code	Cross cut Capacity mm	Motor kW	Blade Ø mm	Depth cut with tilting arbor mm	Volt
JTS-600	600	2.6	250	80	230

WOOD WORKING MACHINES

Circular saw 760mm

Cast Iron table and extensions

Stock Code	Rip Capacity mm	Motor kW	Blade Ø mm	Depth cut mm	Volt
JPS-10TS	760	2.6	250	79	230

WOOD WORKING MACHINES

Scroll saw

Blower included can be linked to vacuum

Stock Code	Blade size mm	Throat mm	Motor W	Table	Volt
JSS-16	380	400	Variable speed	Aluminium tilting	230

JET WOOD WORKING MACHINES

Bandsaw

Rip fence, mitre square and re-saw guide

Stock Code	Blade size	Throat mm	Motor kW	Depth of Cut mm	Volt
JWBS-14	2560x6/10/13	380	0.55	200	230

ITA WOOD WORKING BAND SAW

Stock code	Blade mm	Table size mm	Working capacity W	H	Spindle speed RPM	Motor kW	V
WWBS	2362 x 13 x 1	350x353	349	140	170, 290, 460, 780	0.3	230

JET WOOD WORKING MACHINES

Protable Thicknesser

Stock Code	Width of cut mm	Motor kW	Blade thickness mm	Volt
JWP-12	310	1.6	3	230

JET WOOD WORKING MACHINES

Combination Planner / Thicknesser

Cast iron table

Stock Code	Thickness width x height mm	Motor kW	Volt
JPT-260	252 x 225	1.71	230
JPT-310	310 x 225	2.2	230 or 380

JET WOOD WORKING MACHINES

Thicknesser

Extension table supports included

Stock Code	Cut width x Thick mm	Motor kW	Blades mm	Volt
JWP-160S	400 x 200	2.2	3 x 3 thick	230

WOOD WORKING MACHINES

DRUM SANDER

Balanced aluminium drum

Stock Code	Drum width mm	Motor kW	Volt
16-32	400	0.736	230
22-44	560	1.3	230

WOOD WORKING MACHINES

Belt and disc sander

Cast iron tilting table
dust extraction

Stock Code	Disc Ø mm	Belt mm	Motor kW	Volt
JSG-96	230	150	0.5	230

Stand is optional

BELT / DISC SANDER

Stock code	Ø mm	mm	speed RPM	kW	V
BDS	300	150x1220	2850	0.75	230

HORIZONTAL / VERTICAL BELT SANDER

Stock code	Table length mm	Table width mm	Belt length mm	Belt width mm	Linear speed m/min	Motor kW	V
HVBS/220	685	250	2260	150	1000	1.1	230
HVBS/380	685	250	2260	150	1000	1.1	380

WOOD WORKING MACHINES

Mini lathe

Cast iron bed

Stock Code	Between centres mm	Motor kW	Swing mm	Volt
JML-1014I	350	0.55	250	230

WOOD WORKING MACHINES

Wood lathe

Stock Code	Between centres mm	Swing mm	Motor kW	Speed RPM mm	Volt
JWL-1442	1000	350	1.5	370-2500	230

JET WOOD WORKING MACHINES

Air filter

Stock Code	Motor kW
AFS1000	0.2

Filtered air in 20m³/min

Pen turning kit (TW-ZB030)

Specifications :
The complete kit needed to turn pens including a selection of pen blanks. The #2 morse taper adaptor holds the arbor firmly yet allows the arbor length to be adjusted to match the pen being turned. The end mill tool is guided on the inside of the pen tube for perfectly milled ends on your pen blanks. Also includes drill bit for drilling pen blank, alignment tool for assembling.

Full range of wood turning chisels available

ITA ARBOR PRESSES

Four position anvil. Steel rams and pinions.

Stock code	Pressure ton	Throat height mm	Throat depth mm	Base mm
AP1/2	1/2	112	90	100 x 240
AP1	1	130	100	125 x 275
AP2	2	215	150	170 x 430
AP3	3	315	175	205 x 460
AP5	5	715	220	250 x 680

CABALL BENCH FLY PRESSES

Stock code	Pressure ton	Throat height mm	Throat depth mm	Table mm
FP3	3	170	110	250 x 230
FP5	5	170	250	320 x 230

ITA PLATE & BAR SHEARS

Stock code	Max plate mm	Max flat mm	Max round mm	Blade length mm
P&BS4	4	70 x 5	10	120
P&BS5	5	70 x 6	11	160
P&BS6	6	70 x 7	13	200
P&BS7	7	80 x 7	16	250
P&BS4/13	4	70 x 6	13	300

PLATE, BAR & SECTION SHEARS

Stock code	Max plate mm	Max round mm	Max flat mm	Max square mm	Max angle	T´s mm	Blade length mm
PB&SS8/16	8	16	100x10	-	40x6	40x60	200
PB&SS8/22	8	22	100x10	18	-	-	200

Stock code	Max plate mm	Max round mm	Max flat mm	Max square mm	Max angle mm	T´s mm	Blade length mm
PB&SS8/20	8	20	80x12	18	50x6	50x6	175

PUNCHES

Stock code	Max punch Ø mm	Throat max plate mm	Throat mm
P10	10	6	80
P12	12	8	120
P16	16	10	160

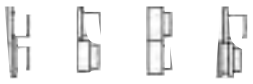
COMBINED SHEAR PUNCHES

Stock code	Max plate mm	Max flat mm	Max round mm	Max square mm	Max punch Ø mm	Throat max plate mm	Throat mm
CSP	6	70x7	13	11	10	6	80

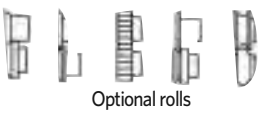
CONCRETE / STEEL CUTTER

Stock code	Concrete reinforced steel bar		
	max round mm	max square mm	max flat mm
CSC22	22	20	30 x 10
CSC28	28	24	40 x 15

CABALL JENNY / MULTI ROLL



Standard rolls



Optional rolls

Stock code	Capacity mm	Roller centre mm	Throat mm
JENNY	1.6	68	280

CABALL UNIVERSAL TUBE BENDERS

Stock code	Suitable for	Max Ø mm	Tube □ mm	Max bend angle
UTB	round & square	25.4	25.4	180°

STANDARD DIES

Stock code	Tube	Size mm	To bend tube mm	Min radii possible mm
UTBSD13	square	13	12+12.7sq	59
UTBSD16	square	16	15.9sq	80
UTBSD20	square	20	19.1+19.6sq	93
UTBSD26	square	26	25+25.4sq	115
UTBRD13	round	13	12+12.7 Ø	48
UTBRD20	round	20	19.5 Ø	70
UTBRD22	round	22	21.4 Ø	70
UTBRD26	round	26	25+25.4 Ø	89

CABALL PERFECT 100 BAR BENDERS

Stock code		Capacity Cold			Capacity Hot	
	bar mm	Ø mm	sq mm	bar mm	Ø mm	sq mm
BB	100x6	18	16	100x8	25	20

ITA MANUAL PIPE BENDER

Stock code	Pipe bending range	No of formers	Bend angle
PB25C	10 - 25mm	7	M180°

ITA HYDRAULIC PIPE BENDERS

Stock code	Pipe bending range	No of formers	Bend angle	Working pressure Mpa	Max stroke mm
HPB50C	1/2" - 2"	6	M180°	45	250
HPB75C	1/2" - 3"	8	M180°	50	320

ITA AUTO HYDRAULIC PIPE BENDER

Stock code	Bending range Ø Pressure bend mm	Rotary angle bend mm	Formers	No of formers	Angle of bend	Max wall thickness
AHPB	8-38	19+25	1/2" - 2"	6	180°	7 mm

NC HYDRAULIC PIPE BENDING MACHINE

Models SB38NC & SB50NC

Stock code	Max diam mm	Max bending radius mm	Max bending angle
PBSB38NC	38	200 / 180	185°

Max mandrel length mm	Oil pump kw	Weight kg
1700	5	750

Stock code	Max diam mm	Max bending radius mm	Max bending angle
PBSB50NC	50.8	250 / 220	185°

Max mandrel length mm	Oil pump kw	Weight kg
2210	7.5	950

MOTORISED JENNY BORDERING - TRIMMING MACHINE

Models IBKS2.5-4

Stock code	Bordering Capacity mm	Roll Diameter mm
JENNYIBKS2.5/380	2.5	96

Throat Depth	Shaft length mm	Motor rotation	Motor kw	Motor v
160	250	5m/min	1,5	380

Dimensions	Weight kg
1400Lx550Wx1120H	350

SECTION AND PIPE BENDING MACHINE

Models PK35F

Made in Turkey

Stock code	Max shaft diam mm	Max section mm	Max pipe diam mm	Roll diam mm
PBM35/380	35	various	70x2	155

Working speed m/min	Motor kw	Motor v	Size mm	Weight kg
4.5	1.5	380	750x1000x1400	400

SECTION AND PIPE BENDING MACHINE

Models HPK80

Made in Turkey

Stock code	Max shaft diam mm	Max section mm	Max pipe diam mm	Roll diam mm
HPBM80/380	50	various	100x2.5	245

Working speed m/min	Motor kw	Motor v	Size mm	Weight kg
6	4	380	1450x1000x1400	1700

Available with optional NC Control System

SECTION AND PIPE BENDING MACHINE

Models HPK100

Made in Turkey

Stock code	Max shaft diam mm	Max section mm	Max pipe diam mm	Roll diam mm
HPK100	75	various	125x2.5	315

Working speed m/min	Motor kw	Motor v	Size mm	Weight kg
7	7.5	380	2000x1450x1700	3650

Available with optional NC Control System

UNIVERSAL PLATE CUTTER

Stock code	Max plate thickness mm Steel mm	Stainless steel mm	Aluminium mm	Copper mm
UPC	3	2.5	4.8	4.8

METALCRAFT MULTI PURPOSE WROUGHT IRON WORKING KITS

Stock code	MCSET2/6	MCSET3/4	MCSET3/13
No of pieces	6	4	13
Punch Ø mm	4	4	4
Shear rectangular mm	30x5	40x5	40x5
Shear square mm	6x6	6x6	6x6
Shear round Ø mm	6	6	6
Twist rectangular mm	30x5	40x5	40x5
Twist square mm	10x10	14x14	14x14
Bend & Scroll rectangular mm	30x5	40x5	40x5
Bend & Scroll square mm	10x10	14x14	14x14
Bend & Scroll round Ø mm	10	14	14
Bend angle	U60°	U60°	U60°
Riviting	4x30	4x30	4x30
Circling	R>60	R>60	R>60

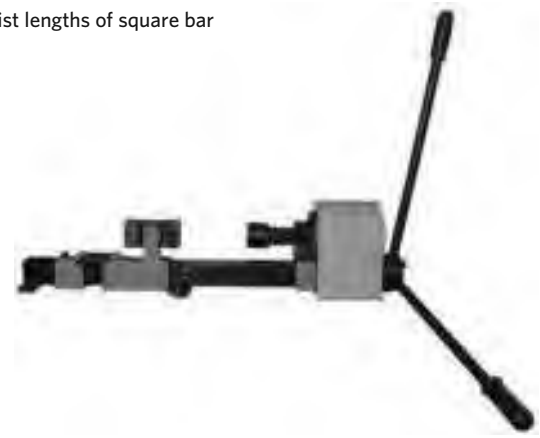
METALCRAFT CIRCLING MACHINE

To form round, flat and square bar into a circle.

Stock code	Capacity round hollow bar mm	Capacity square tube mm	Capacity flat bar mm	Min roll Ø mm
CM	30	40	40x10	200

METALCRAFT LANTERN TWISTING MACHINE

To twist lengths of square bar



Stock code	Capacity
LTM	4 Pieces 6mmx160mm long / 4pieces 8mmx170mm long

METALCRAFT HYDRAULIC WROUGHT IRON BENDING MACHINE

Stock code	Max working pressure mm	Capacity mm Flat bar	Capacity mm Square bar	Capacity mm Round bar	Motor Kw	Motor V
HWIBM/380	20	30X10	16	16	22	380

METALCRAFT MOTORISED WROUGHT IRON CIRCLING MACHINE

Stock code	round tube mm	square tube mm	Capacity mm round bar mm	square bar mm	flat bar mm	RPM	Motor Kw	Motor V
HWICM/380	30x1	30x1	Ø16	16	30x10	9	11	380

METALCRAFT MOTORISED WROUGHT IRON TWISTING MACHINE

Stock code	Capacity squarebar mm	Capacity flat bar mm	Bar length mm	RPM	Motor Kw	Motor V
HWITM/380	25	30x10	200-800	12	2.2	380

METALCRAFT MOTORISED WROUGHT IRON SCROLLING MACHINE

Stock code	Capacity mm round bar	Capacity mm square bar	Capacity mm flat bar	RPM	Motor Kw	Motor V
HWISM/380	16Ø	16sq	30x10	15	2.2	380

METALCRAFT HYDRAULIC WROUGHT IRON COINING MACHINE

For pattern rolling

Stock code	Capacity mm flat bar	Capacity mm rectangular tube	Capacity mm square bar	Capacity mm round bar	Motor Kw	Motor V
HWICOINM/380	60X10	80X50	25	20Ø	5.5	380

METALCRAFT GAS FIRED FISHTAIL COINING MACHINES

Prosseses square, flat and round bar into fishtailed form

Stock code	Capacity mm round bar	Capacity mm square bar	Capacity mm flat bar	Motor Kw	V
FTM/380	14	14X14	60x8	3	380

TA COMBINATION PRESSBRAKE, SHEAR & ROLL

Stock code	Max length to be worked mm	Max bending + rolling thickness mm	Max shearing thickness mm	Guage range mm	Dimensions mm
CPB	762	0.8	0.6	12.7-406	1020 x 830 x 585

CABALL BOX AND PAN FOLDERS

Stock code	Max bending capacity mm	Table bar mm	Min return bend with angle mm	Max depth of tray formed mm	No + width of finger mm
BPF900	900 x 2	50x50x5	16	95	6x50, 4x75, 3x100
BPF1250	1250 x 2	50x50x5	16	95	6x50, 5x75, 4x100, 2x80, 1x95
BPF2000	2000x1.6	60x60x5	16	95	6x50, 4x75, 4x100, 4x150, 2x200

CABALL SLIP ROLLS

Stock code	Length of rolls mm	Max plate mm	Min roll Ø mm
SR	1270	1.6	75

CABALL GUILLOTINES

Stock code	Operation	Max sheet width mm	Max sheet thickness mm	Back guage distance mm	Front guage distance mm
GH	hand	1250	2	610	660
GT	treadle	1250	1.6	610	660
GM	motorised	1250	2	610	660

MOTORISED GUILLOTINES

Model QH11D

Stock code	Max plate width mm	Max plate thickness mm	Strokes per min	Back guage distance mm	Front support arms mm	Motor kW	V
PSM1250/380	1250	3.5	10	0-650	1000	5.5	380

HYDRAULIC GUILLOTINES

Mechanical down drive system. Mechanical back gauge

Model Q11-4x2500

Stock code	Shearing thickness mm	Shearing width mm	Shearing angle	Back guage range mm	Table height mm	Motor kW	V
PSM2500x4/380	4	2500	1°3′	500	800	5.5	380

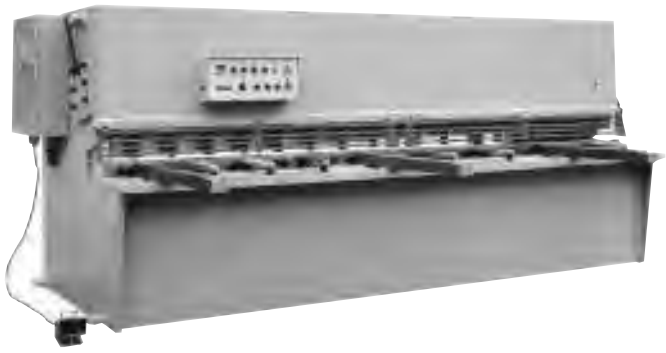
Available with full CNC Control

HEAVY DUTY HYDRAULIC SWING BEAM GUILLOTINES

Plate alignment by light beam. Mechanical back gauge

Premium quality hydraulics & electrics

Models Q12-6x2500, 3200 & 4000
Q12-12x4000



Stock code	Shearing thickness mm	Shearing width mm	Shearing angle	Weight kg	Main motor kw
PSM2500x6/380	6	2500	1°3′	5200	7.5/380
PSM3200x6/380	6	3200	1°3′	5900	7.5/380
PSM4000x6/380	6	4000	1°3′	8600	7.5/380
PSM4000X12/380	12	4000	1°3′	14600	18.5/380

TORQUE SHAFT SYNCRONISED HYDRAULIC PRESSBRAKES

Mechanically adjustable X & Y axes with digital display for stroke and back guage adjustment. Premium quality hydraulics and electrics.
Model WEM63/2500 and WEM 40 /2000
Model WEH110/3100, WEH160/4100
Motorised RAM back stop and 2 axis DRO

Stock code	Nominal pressure KN	Table length mm	Throat depth mm	Open height mm	Ram stroke mm	Motor kW	Motor V
PB40x2000/380	400	2000	250	380	100	4	380
PB63x2500/380	630	2500	250	390	100	4	380
PB110x3100/380	1100	3100	410	420	150	75	380
PB160x3100/380	1600	3100	350	450	160	11	380
PB160x4100/380	1600	4100	410	450	160	11	380

Available with full CNC Control

MOTORISED PLATE ROLLING MACHINES. 3 ROLLER ASYMMETRICAL STRUCTURE

Models W11 2X1200

Stock code	Length of Rolls mm	Max plate thickness mm	Min Rolling Ø mm	Motor kW
PRM1200x2/380	1200	2	250	2.2

MOTORISED PLATE ROLLING MACHINES. 3 ROLLER SYMMETRICAL STRUCTURE

Models W11 2500x4, W11 2500x6

Stock code	Length of Rolls mm	Max plate thickness mm	Min Rolling Ø mm	Motor kW
PRM2500x4/380	2500	4	300	4
PRM2500x6/380	2500	6	380	5.5

3 ROLL HYDRAULIC PLATE ROLLING MACHINE

Model 3RHS30-210 & 3RHS 25-280

Made in Turkey

Stock code	Max plate thickness mm	Motor kw	Working speed m/min	Size	Weight kg
PRM3100X6/380	6	7.5	5	4400x1200x1300	5205
PRM2550X10/380	13	11	5	4600x1400x1550	7720

4 ROLL HYDRAULIC PLATE ROLLING MACHINE

Model 4RHS25-190 & 4RHS30-245

Made in Turkey

Stock code	Max plate thickness mm	Main Motor kw	v	Working speed m/min	Weight kg
4PRM2550X6/380	6	5,5	380	1,5-6	4000
4PRM3100x8/380	8	7,5	380	1,5-6	6600

HYDRAULIC IRON WORKER

Model Microcrop 36 with punching and shearing functions

Stock code	Punching power ton	Flats shear mm	Angle iron shear mm at 90°	at 45°	Round shear mm
HIW36/380	36	200 x 13	80x80x8	50x50x6	20

Square shear mm	Punching capacity mm	Throat mm	Motor kW	V
20	27Ø x 10 thick	170	2.2	380

Optional extras: Notching steel 8mm. Notching angle iron 60mm. Channel and I beam shear, Triangular notcher, tube notcher, pressbrake, blades to increase round shear to 35 mm Ø and square to 30 mm square, oversize punching attachment (Ø 36 x8)mm

HYDRAULIC IRON WORKER

Model Minicrop 45 with punching, shearing and rectangular nothching functions

Stock code	Punching power ton	Flats shear	Angle iron shear mm at right angles	Round shear mm	Square shear mm
HIW45/380	45	200 x 13 300 x 10	80x80x8 100x100x10 slight distortion	30	20

Notching sheet metal mm	angle iron mm	Punching capacity mm	throat mm	Motor kW	V
7	60	27Ø x 13 thick	175	2.2	380

Optional extras: Channel and I beam shear, pressbrake, tube notcher, oversize punching attachment (Ø100X4) mm

HYDRAULIC IRON WORKER

Model Hydracrop 55/110A with punching, shearing and rectangular notching functions

Stock code	Punching power ton	Flats shear mm	Angle iron shear at right angles mm	Round shear mm	Square shear mm
HIW55/380	55	300x15	120x120x10	40	40

Notching sheet metal mm	angle iron mm	Punching capacity mm	throat mm	Motor kW	V
10	12	40Øx10	250	3	380

Optional extras: Tube notcher, pressbrake, special blades to increase shearing and cropping capacity.

GEKA HYDRAULIC IRON WORKER

Mode bendicrop 60 SD with bending, notching, punching and shearing functions.

Stock code	Punching power ton	Flats shear mm	Angle iron shear at right angles mm	Round shear mm
BENDI60SD/380	60	356x10	120x120x10	45

Angle iron shear at right angles mm	Throat mm	Notching capacity mm	Bending throat mm	Strokes/min
127x127x10	254	100x100x10	152x10	32

Optional extras: Tube notcher, pressbrake, special blades to increase shearing and cropping capacity.

GEKA HYDRAULIC IRON WORKER

Mode bendicrop 85 SD with bending, notching, punching and shearing functions

Stock code	Punching power ton	Flats shear mm	Angle iron shear at right angles mm	Round shear mm
BENDI85/SD	85	457x14	127x127x14	40

Angle iron shear at right angles mm	Throat mm	Notching capacity mm	Bending throat mm	Strokes/min
127x127x10	508	90x50x14	197x14	40

Optional extras: Tube notcher, pressbrake, special blades to increase shearing and cropping capacity.

GEKA HYDRAULIC IRON WORKER

Model Hydracrop 110/180S with punching, shearing and rectangular notching functions

Stock code	Punching power ton	Flats shear mm	Angle iron shear at right angles mm	Round shear mm	Square shear mm
HIW110/380	110	600x15 400x20	152x152x13 70x70x7	50	50

Notching sheet metal mm	angle iron mm	Punching capacity mm	throat mm	Motor kW	V
13	16	40Ø x20	300	5	380

Optional extras: Tube notcher, pressbrake, special blades to increase shearing and cropping capacity.

GEKA HYDRAULIC IRON WORKER

Model Hydracrop 110/SD with Semi-Paxy CNC table and Fagor controller

Stock code	Punching power ton	Flats shear mm	Angle iron shear at right angles mm	Round shear mm	Square shear mm
HYDR-110/SD	110	600x15 400x20	152x152x13 160x160x16	50	50

Notching sheet metal mm	angle iron mm	Punching capacity mm	throat mm	Motor kW	V
10	100	40Ø x20	500	5	380

GEKA ALPS 150 CNC IRON WORKER

For automatic punching and shearing of iron channel and flat bar. The product has been designed to support the tower and pylon construction industry.
Control: FAGOR 8070 CNC, based on PC technology operating under Windows

Stock code	Capacity max ⌞	min ⌞	max ⌟	min ⌟	max ▬	min ▬
ALPS150	150x150x15	35x35x4	120x60	60x30	150x15	40x4

Punching power Ton	Max Ø mm	Max thickness mm	Shearing power Ton	Hydraulic flow pump	Motor Kw	V
73	31	15	187	65 L/min	20	380

Also available: Material output assembly and automatic loading store.
Detailed literature available on request

ITA ABRASIVE CUT OFF MACHINES

Stock code	Ø	Maximum cutting capacity mm Sq 90˚	Sq 45˚	Rect 90˚	Rect 45˚	Wheel Ø mm	Motor kW	V
ACOM/220	40	70	60	55x95	55x65	405	2.2	220
ACOM/380	40	70	60	55x95	55x65	405	3.7	380

Note: Supplied without cut off wheel.

Sieber HEAVY DUTY ABRASIVE CUT OFF MACHINES

Swivel head 45˚ left and right.

Stock code	Cutting capacity mm 90˚ ●	○	□	▭	45˚ ●	○	□	▭
COM400/380	70	135	115x115	120x115	50	115	80x80	120x80
COM750/380	90	165	135x135	165x135	70	130	100x100	165x135

Wheel Ø mm	Motor KW	V
300/350/400	4	380
400/500	7.5	380

Note: Supplied with standard equipment; chain vice, 2 x table extensions.

THOMAS ABRASIVE CUT OFF MACHINES

Stock code	Cutting capacity mm 90˚ ●	○	□	▭	45˚ ●	○	□	▭
TACOM	70	120	95	115 x 90	50	105	80	90 x 8

Wheel	Max RPM	Vice opening mm	Motor KW	V
350x30	4100	140	5.6	380

Note: Supplied with standard equipment; barstop, abrasive disc, quick lock vice, service spanners and instruction manual.
Machine stand, stock code TACOMS is an optional extra.

THOMAS CIRCULAR CUT OFF MACHINES

High speed steel circular saw blades

Stock Code	Blade Ø mm	Vice opening mm	RPM	Motor
TCOM250/220	225/250	105	40	220V
TCOM250/380	225/250	105	40 + 80	380V

Cutting capacity mm

90° ●	90° ○	90° □	90° ▭	45° ●	45° ○	45° □	45° ▭
30	70	65	100 x 45	25	60	55	60 x 50

Mitre cut: 0-45˚R

Stock code	Blade Ø mm	Vice opening mm	RPM	Motor
TCOM315/220	300/315	120	41	220V
TCOM315/380	300/315	120	41 + 82	380V

Cutting capacity mm

90° ●	90° ○	90° □	90° ▭	45° ●	45° ○	45° □	45° ▭
45	95	82	110x 70	35	90	80	85 x 70

Mitre cut: 0-45˚ L & R

Stock Code	Blade Ø mm	Vice opening mm	RPM	Motor
TCOM350/380	300/350	170	22 + 44 + 88	380V

Cutting capacity mm

90° ●	90° ○	90° □	90° ▭	45° ●	45° ○	45° □	45° ▭
85	120	105	160x 90	75	100	85	85 x 70

Mitre cut: 0-90˚R & 0-45˚ L

Note: The above cut off machines are supplied without the machine stand.
Machine stands are an optional extra.
All saws supplied with the smaller diameter blade.

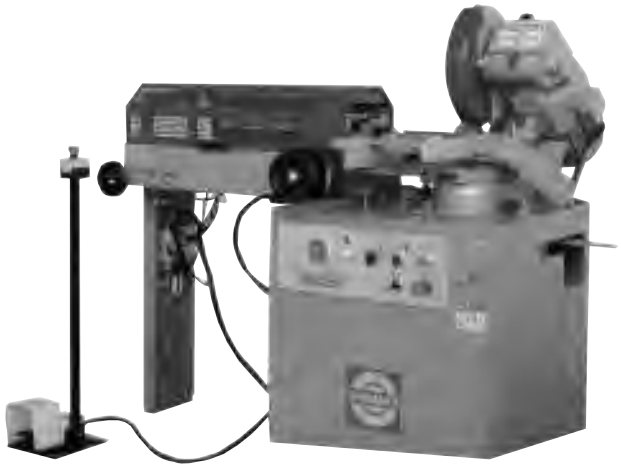
THOMAS ALUMINIUM CUT OFF MACHINES

Head and vice revolve right and left 0˚-45˚. With Tungsten carbide tipped blade

Stock code	Cutting capacity mm 0˚			Cutting capacity mm 45˚		
TALCOM450/380#	145	135	330x70 200x100	145	125	240x55 185x50

THOMAS FULLY AND SEMI AUTOMATIC CIRCULAR CUT OFF MACHINES

Fully automatic model. With programable cutting cycle. Pneumatically operated



Stock code	Blade Ø mm	Vice opening mm	RPM	Motor Kw	Motor V
TACOM350/380 TSACOM350/380	350	170	22/44/88	2.4	380

Cutting capacity mm

90° ●	90° ○	90° □	90° ▭	45° ●	45° ○	45° □	45° ▭
60	120	105	160 x 190	60	100	85	85 x 70

BAND SAW MACHINE 128Ø CAPACITY

Metal cutting, Horizontal / Vertical Model RF128

Stock code	Sawing capacity mm ●	▬	Blade speeds M/min	Blade size mm	Motor kW	V
BSM128/220	128	115x150	24 36 67	1635x13	0.2	220

SWIVEL HEAD BAND SAW MACHINES 180Ø CAPACITY

Metal cutting, 45˚ swivel head Model RF712N

Stock code	Sawing capacity mm ●	▬	Blade speeds M/min	Blade size mm	Motor kW	V
SHBSM180/220	180	180x215	23 34 50 65	2362x19	0.75	220
SHBSM180/380	180	180x215	23 34 50 65	2362x19	0.75	380

BAND SAW MACHINES 200Ø CAPACITY

Metal cutting, Horizontal Model RF812N

Stock code	Sawing capacity mm ●	▬	Blade speeds M/min	Blade size mm	Motor kW	V
BSM200/220	200	305x178	23 34 50 65	2362x19	0.75	220
BSM200/380	200	305x178	23 34 50 65	2362x19	0.75	380

BAND SAW MACHINES 230Ø CAPACITY

Metal cutting, Horizontal Model RF912B

Stock code	Sawing capacity mm ●	▬	Blade speeds M/min	Blade size mm	Motor kW	V
BSM230/220	230	127x300	25 41 61 82	2655x27	1	220
BSM230/380	230	127x300	25 41 61 82	2655x27	1	380

BAND SAW MACHINES 254Ø CAPACITY

Metal cutting, Horizontal Model RF1018S

Stock code	Sawing capacity mm ●	▬	Blade speeds M/min	Blade size mm	Motor kW	V
BSM250/380	254	457x127	29 50 73 96	3280x27	1.5	380

DOUBLE COLUMN SEMI AUTOMATIC 300Ø CAPACITY

Horizontal Metal cutting, bandsaw with hydraulic vice
Model RF300

Stock cod	Sawing capacity mm 0° ●	▬	●	Blad size	Motor kW	V	Weight kg
SABSM300/380	300	300X500	300	3950x34	3	380	760

SWIVEL HEAD BAND SAW MACHINES 254Ø CAPACITY

Metal cutting, Horizontal semi automatic with two way swivel head and variable speed motor Model RF-250NA

Stock code	Sawing capacity mm 0° ●	▬	45° ●	▬	60° ●	▬	Blade size mm	Motor kW	V
BSM254/380	254	79x458	254	254x280	204	127x200	3353x27	1.5	380

BAND SAW MACHINES 200Ø CAPACITY

Metal cutting, Horizontal , Manual operation Model MH812LC

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CBSM200/220	200	180	180x330	19 29 47 79	2720x25	0.75	220
CBSM200/380	200	180	180x330	19 29 47 79	2720x25	0.75	380

BAND SAW MACHINES 250Ø CAPACITY

Metal cutting, Horizontal , Manual operation Model MH1016JA

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CBSM250/380	250	230	230x400	19 31 48 78	3353x25	1.5	380

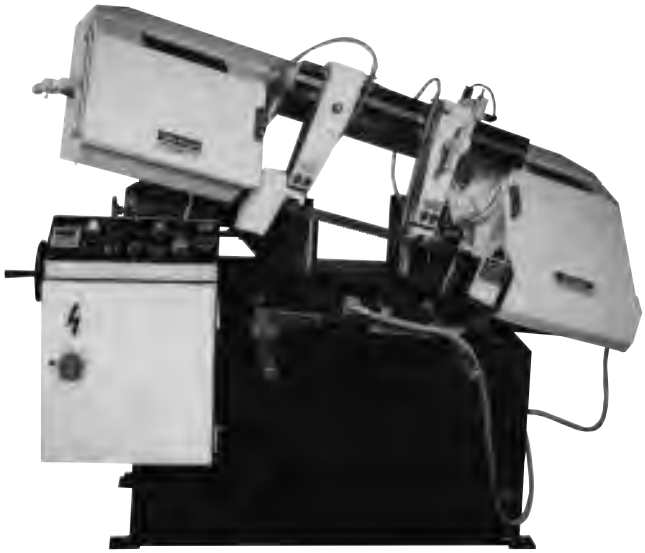
SEMI AUTOMATIC BAND SAW MACHINES 250Ø CAPACITY

Metal cutting, Horizontal , Swivel bed Model SH460M

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CSABSM250S/380	250	230	230x460	19 31 48 78	3505x25	1.5	380

AUTOMATIC BAND SAW MACHINES 250Ø CAPACITY

Metal cutting, motorised roller feeding system, hydraulic clamping, automatic positioning Model AH250R



Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CABSM250A/380	250	230	230x250	19 31 48 78	3350x27	1.5	380

AUTOMATIC BAND SAW MACHINES 250Ø CAPACITY HEAVY DUTY PRODUCTION CUTTING

Metal cutting. Horizontal. Automatic feed of material and cut off after initial set up and programming. Hydraulic blade tensioning. Power driven blade brush. Hydraulic shuttle vice. Models AH-250 & AH-300H Supplied complete with chip conveyor.

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CHDABSM250/380	250	250	280x250	23-67	3505x27	2.2	380
CHDABSM300/380	300	300	355x300	23-67	3820x34	3.75	380

BAND SAW MACHINES
330Ø CAPACITY FOR STRUCTURAL MATERIAL

Metal cutting, Horizontal. Swivel head, manual operation MH500M

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CABSM330S/380	330	280	280x460	24 38 60 105	4150x25	1.5	380

TWIN COLUMN SEMI AUTOMATIC HEAVY DUTY BAND SAW MACHINE
420Ø CAPACITY

With chip conveyer. Hydraulic blade tensioning. Tungsten carbide blade guide. Model SH-5542

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CSABSM420A/380	420	420	460x420	20-100	5300x41	5.5	380

Standard accesories: Blade breakage detector, work light, complete coolant system, full stroke vice.

SEMI AUTOMATIC DUAL COLUMN FRAME SWIVEL MITER - CUTTING BAND SAW
500Ø CAPACITY

Model SH-700M

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CSABSM500/380	500	500	400x700	25-95	5450-141	5,6	380

CNC AUTOMATIC BANDSAW WITH SHUTTLE VICE FOR MASS PRODUCTION
325Ø CAPACITY

Model C-325NC
Supplied with 2 meter roller table

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V
CNCBSM325/380	325	325	380x325	20-100	3820x34	3.75	380

Weight kg	Foot print mm
1800	2045x2015x1345

SEMI-AUTOMATIC SWIVEL HEAD MITERING BANDSAW 330Ø CAPACITY

Model SH-500M

Stock code	Sawing capacity mm 0° ●	■	45° ●	■	60° ●	■	Blade size	Weight kg
CSABSM300M/380	330	283x500	330	280x280	220	280x200	415X27	900

Motor kW	V	Blade speed m/min
2.25	380	23,36,51,71

HIGH SPEED CIRCULAR SAWING MACHINE

For Mass Production, Precision Cutting

Stock code	Sawing capacity mm ●	■	Blade speeds RPM	Blade size mm	Motor kW	V
KTC-150SP/380	40-150	110	10-160	460X2.7T	15	380

TC-75 NC CIRCULAR SAW

Model C-325NC
Supplied with 2 meter roller table

Stock Code	Sawing capacity mm ●	■	Blade Speed RPM	Motor kW	V	Weight kg	Blade size
DATC-75NCCS	8-75	8-60	30-150	7.5	380	2800	285x2.0 (T)x1.7 (t)

Loader capacity
13x75

BANDSAW MACHINE 180Ø +225Ø CAPACITY

Pull down bow Model ZIP22 + ZIP29

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V	Machine weight kg
TBSM225/380V	225	200	240x160	32/64	2450x27	1.1	380	215
TBSM180/380	180	180	200x150	40/80	2085x20	0.75	220	180

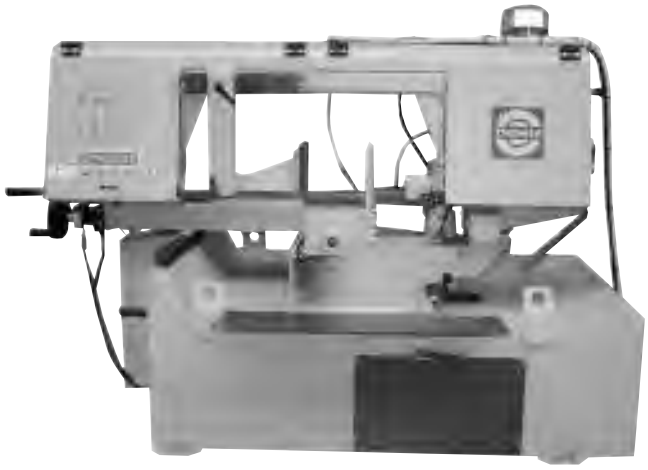
THOMAS SEMI-AUTOMATIC BANDSAW 258Ø CAPACITY

Super TRAD 301 SO Digit

Stock code	Sawing capacity mm ●	■	▬	Blade speeds M/min	Blade size mm	Motor kW	V	Machine weight kg
TSABSM300/380	255	250	300x200	33/66	2750x27	1.4	380	510

THOMAS SEMI AUTOMATIC BAND SAW MACHINES 330Ø CAPACITY

Heavy duty, large capacity, swivel head. Available with Manual or Hydraulic Vice
Model SAR 332 SA GDS



Stock code	Cutting capacity mm 0° ●	■	▬	Cutting capacity mm 45° ●	■	▬	Blade size mm
TSABSM330/380	330	330	480x130	300	250	280x250	3810X27
TSABSM330M/380	330	330	480x130	300	250	280x250	3810X27

ITA VERTICAL BAND SAW MACHINES

Metal cutting, manual operation. Model KB

Stock code	Throat depth mm	Max work height mm	Table size mm	Blade speeds m/min	Blade size mm	Motor kW	V
VBSM310/380	310	175	500x400	20-90	2520x3-16	0.4	380
VBSM355/380	355	230	500x400	20-90	2840x3-16	0.75	380
VBSM455/380	455	255	600x500	25-115	3490x3-16	0.75	380

FUMO VERTICAL BAND SAW MACHINES

Metal cutting, manual operation. Model VBS

Stock code	Throat depth mm	Max work height mm	Table size mm	Blade speeds m/min	Blade size mm	Motor kW	V
VBSM356/380	356	205	500x600	20/80	2900x16	0.75	380
VBSM396/380	396	255	550x600	20/80, 250/1000	3140x16	1.5	380
VBSM508/380	508	305	600x560	65/555, 390/3280	3975x25	1.5	380

FORD VERTICAL BAND SAW MACHINES WITH AUTO POWER FEED TABLE

With blade welder, blade grinder and blade tension indicator
Model VBS3612

Stock code	Throat depth mm	Max work height mm	Table size mm	Blade length mm	Blade speeds m/min	Motor kW	Motor V
VABSM915/380	915	305	700x600 700x450	5040	15-1500	2.2	380

TA POWER SAWS

Metal cutting, reciprocating action, hydraulic lift on back stroke.
Automatic shut off at the end of cut
Model Y-400AE

Stock code	Sawing capacity 90°	Sawing capacity 45°	Blade size mm	Strokes per min	Stroke mm	Motor kW	Motor V
PS205/220	205	90	400x32x1.6	70&90	130-190	0.38	220

TA HEAVY DUTY POWER SAWS

Metal cutting, reciprocating action, variable hydraulic feed
Model KP225

Stock code	Sawing capacity 90°	Sawing capacity 45°	Blade size mm	Strokes per min	Motor kW	Motor V
PS200/380	200	90	350x32x1.6	110&140	0.75	380
PS225/380	225	120	400x32x1.6	80,100 &120	1.5	380
PS280/380	280	130	450x32x1.6	80,100 &120	1.5	380

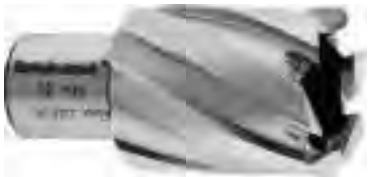
Rotabroach CUTSMART™ TECHNOLOGY

Green. The machine is working correctly within its safe operating parameter. By working within this zone you will gain longer life from your machine and your cutters.

Orange. As the indicator turns to orange this means that you are putting too much pressure on to the machine at this point you should release the pressure to bring the indicator back to the green zone. Maintaining this amount of pressure could cause additional wear to both its internal parts and your cutter.

Red. If the pressure on the machine is increased too far the indicator will eventually turn from orange to red. upon reaching this the motor will cut off to prevent any further damage. The machine will be held in this state for 5 seconds upon which the panel

Full range of Annular cutters on page 31



Rotabroach® ELEMENT 30

Stock code	MaxØ Broach only mm	RPM	Spindle	Weight kg	Magnetic Adhesion kgs
ELEMENT30	30x35 deep	600	19.05	10	850

Rotabroach® ELEMENT 40

Stock code	MaxØ Broach only mm	RPM	Spindle	Weight kg	Magnetic Adhesion kgs
ELEMENT40	40x50 deep	300/600	19.05	12.2	850

Rotabroach® FALCON

Stock code	MaxØ Broach only mm	Max drill mm	RPM	Spindle	Weight kg	Magnetic Adhesion kgs
FALCON	50	23	250/450	MT2/19.05	13	1850

Rotabroach® COBRA

Stock code	MaxØ Broach only mm	RPM	Spindle	Weight kg	Magnetic Adhesion kgs
COBRA	65X50	160/640	19.05	19.8	1200

Rotabroach® SCORPION

Stock code	MaxØ Broach only mm	RPM	Spindle	Weight kg	Magnetic Adhesion kgs
SCORPION	100X100	40-600	MT3/19.05	26	3000

ROSCAMAT 3 ARM

Choose an arm that will meet your weight and reach requirements.

Contact us and we will engineer a solution for you!

ROSCAMAT PIVOT ARM THREADING MACHINES

Easy, versatile, accurate tapping. Works on the parallelogram system which produces perfectly vertical threaded holes. Hand feed ensures no oversize threads.

Stock code	Threading capacity	Speed range	Pneumatic motor power	air consumption
ROSCAMAT400	M2-M24	90-1050 RPM	730W	700L/min

Min imum Radius: 120 mm **Maximum Radius** : 1100mm

GEARED TAPPING MODULES

Seven quick change modules are available in order to adapt the motor to accommodate a range of speeds and torques for tapping different sizes from M2- M24.

Stock code	Max thread steel >HRC22	Max thread steel <HRC22	Max thread aluminium	Max RPM	Collet
405G0000	M6	M6	M8	1000	TZ12
405F0000	M6	M8	M10	725	TZ12
405E0000	M8	M10	M12	525	TZ12
405D0000	M12	M14	M16	250	TZ12
405C0000	M16	M18	M20	160	TZ24
405A0000	M20	M22	M24	80	TZ24

TA BENCH DRILLING MACHINES

Belt drive

BDM13

BDM16

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Distance spindle to base	Spindle travel	V
BDM13/220	13	600-2600	103	250	50	220
BDM16/220	16	270-2600	163	610	70	220

ITA BENCH DRILLING MACHINES

Geared head

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
BDM25/380	25	100-2900	225	3MT	150	0.55	380

REXON BENCH DRILLING MACHINES

Belt drive

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
RBDM20/220C	20	210-2580	168	MT2	85	0.55	220
RBDM20/380C	20	210-2580	168	MT2	85	0.55	380

REXON PEDESTAL DRILLING MACHINES

Belt drive

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
RPDM20/220C	20	210-2580	168	2MT	85	0.55	220
RPDM20/380C	20	210-2580	168	2MT	85	0.55	380
RPDM25/220C	25	210-2500	215	3MT	82	0.75	220
RPDM25/380C	25	210-2500	215	3MT	82	0.85	380

ITA PEDESTAL DRILLING MACHINES

Geared head

PDM25S
Square table

PDM25R
Round table

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
PDM25S/380	25	100-2900	315	3MT	150	0.75	380
PDM25R/380	25	100-2900	225	3MT	150	0.75	380

PEDESTAL DRILLING MACHINE

Geared head

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mma	Motor kW	V
SPDM25/380	25	105-2900	255	3MT	135	0.65/0.95	380

PEDESTAL DRILLING MACHINE

Automatic feed, geared head

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
SPDM28/380	28	70-3000	320	MT3	150	0.9/1.2	380

CYCLEMATIC PEDESTAL DRILLING MACHINE

Automatic feed, geared head, tapping facility.

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
CPDM35/380	35	80-950	300	MT4	168	1.5	380

HEAVY DUTY PEDESTAL DRILLING MACHINES

Geared head. With coolant. With tapping mechanism. Automatic feed.

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm	Spindle taper	Spindle travel mm	Motor kW	V
HPDM35/380	35	70-2600	330	4MT	150	2.2	380
HPDM40/380	40	42-2050	360	4MT	180	2.8	380

HEAVY DUTY PEDESTAL DRILLING MACHINE

Z axis power feed. Model RF-500S

Stock code	Drilling capacity mm	Tapping capacity	Spindle speed RPM	Throat mm	Distance Spindle to table mm
HDPM50/380	50	M33	60-1810	340	713.5

Z axis feed mm/Rev	Spindle travel mm	Spindle taper	Table working surface	Motor kW	V
0.1/0.2/0.3./04	200	MT4	600x600	2.2	380

RADIAL ARM DRILLING MACHINES

Model Z3032x8

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm min	Throat mm max	Distance Spindle to base min	Distance Spindle to base max
RADM32/380	32	75-1220	320	820	240	900

Vertical arm lengthl mm	Spindle travel mm	Spindle taper	Motor kW	Motor V	Weight kg
820	150	4MT	1.5	380	1200

RADIAL ARM DRILLING MACHINES

Models Z3032x10/1 &Z3040X13/2 & Z3050x16

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm min	Throat mm max	Distance Spindle to base min	Distance Spindle to base max
RADM32x1000/380	32	75-1220	320	820	240	900

Vertical arm lengthl mm	Spindle travel mm	Spindle taper	Motor kW	Motor V	Weight kg
1100	150	4MT	1.5	380	1200

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm min	Throat mm max
RADM40x1300/380	40	32-2500	250	1000

Vertical arm lengthl mm	Spindle travel mm	Spindle taper	Motor kW	Motor V	Weight kg
2000	280	4MT	2.2	380	1600

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm min	Throat mm max	Distance Spindle to base min	Distance Spindle to base max
RADM50x1600/380	50	25-2000	350	1600	320	1220

Vertical arm length mm	Spindle travel mm	Spindle taper	Motor kW	Motor V	Weight kg
1600	315	5MT	4.0	380	3500

RADIAL ARM DRILLING MACHINES

Model Z3063X13/2

Stock code	Drilling capacity mm	Spindle speed RPM	Throat mm min	Throat mm max
RADM63x2000/380	63	20-1600	400	1600

Vertical arm lengthl mm	Spindle travel mm	Spindle taper	Motor kW	Motor V	Weight kg
2000	400	5MT	5.5	380	7000

DRILLING / MILLING MACHINES

Model RF 25

Stock code	Drilling capacity steel mm	Spindle taper	Face milling capacity steel	Face milling capacity cast iron
DM25R8/220	25	R8	25	76
DM253MT/220	25	3MT	25	76
DM253MT/380	25	3MT	25	76

End milling capacity steel	End milling capacity cast iron	Table	Table travel	Motor kW	Motor V
16	25	585 x 190	340	.55	220
16	25	585 x 190	340	.55	220
16	25	585 x 190	340	.55	380

Supplied without stand.

DRILLING / MILLING MACHINES

Model RF 31

Stock code	Drilling capacity steel mm	Spindle taper	Face milling capacity steel mm	Face milling capacity cast iron mm
DM32R8/220	32	R8	32	76
DM32R8/380	32	R8	32	76
DM323MT/380	32	3MT	32	76

End milling capacity steel mm	End milling capacity cast iron mm	Table mm	Table travel mm	Motor kW	Motor V
20	32	730 x 210	430	1.1	380
20	32	730 x 210	430	1.1	380
20	32	730 x 210	430	1.1	380

Supplied without stand.

GEARED HEAD DRILLING / MILLING MACHINES

Model RF 40

Stock code	Drilling capacity steel mm	Spindle taper	Face milling capacity steel mm	Face milling capacity cast iron mm
GHDM32R8/220	32	R8	32	76
GHDM32R8/380	32	R8	32	76

End milling capacity steel mm	End milling capacity cast iron mm	Table mm	Table travel mm	Motor kW	Motor V
20	32	730 x 210	500	0.75	220
20	32	730 x 210	500	0.75	380

Supplied without stand.

PEDESTAL DRILLING / MILLING MACHINE

Model RF 400 HC

Stock code	Drilling capacity steel mm	Spindle taper	Face milling capacity steel	Face milling capacity cast iron
PDM323MT/380	32	3MT	32	76

End milling capacity steel	End milling capacity cast iron	Table	Table travel	Motor kW	Motor V
20	32	585 x 190	340	1.1	380

GEARED HEAD PEDESTAL DRILLING / MILLING MACHINES

Model RF 40 CPF

Stock code	Drilling capacity steel mm	Spindle taper	Face milling capacity steel	Face milling capacity cast iron
GHPDM32R8/380	32	R8	32	76

End milling capacity steel	End milling capacity cast iron	Table	Table travel	Motor kW	Motor V
20	32	585 x 190	320	0.75	380

COMBINATION BELT & DISC SANDERS

Stock code	Belt size mm	Disc Ø mm	Belt speed M/s	Motor kW	Motor V	Weight kg
CS120x1500/220	120x1500	350	14	0.75	220	49
CS120x1500/380	120x1500	350	14	0.75	380	49
CS150x1750/380	150x1750	350	15/30	1.2/1.7	380	83
CS250x2000/380	250x2000	500	15	3	380	132

Note : Supplied without stand. Stand is an opptional extra

DOUBLE DISC SANDERS

Stock Code	Disc Ø mm	RPM	Motor kW	Motor V	Weight kg
DDS350/380#	350	1400	1.5	380	68

Note : Supplied without stand. Stand is an opptional extra

DISC SANDERS

Stock code	Disc Ø mm	RPM	Motor kW	Motor V	Weight kg
DS350/220	350	1400	0.75	220	34
DS350/380	350	1400	1.3	380	56
DS500/380	500	1400	3.0	380	83

Note : Supplied without stand. Stand is an opptional extra

VERTICAL BELT SANDERS

Stock code	Belt size mm	Belt speed M/s	Motor kW	Motor V	Weight kg
VBS50x2000/380	50x2000	30	1.5	380	100

Supplied without stand. Stand is an optional extra

HORIZONTAL BELT SANDER

Stock code	Belt size mm	Belt speed M/s	Motor kW	Motor V	Weight kg
HBS120x1500/220	120x1500	15	0.75	220	40
HBS120x1500/380	120x1500	14/28	0.6/0.8	380	40
HBS150x1750/380	150x1750	15	1.5	380	70

Note : Supplied without stand. Stand is an opptional extra

BENCH GRINDERS

Double ended

Stock code	Wheel size mm	Speed RPM	Motor kW	Motor V	Weight kg
BG150/220	150x20x12	2950	0.2	220	8
BG200/220	200x20x16	2950	0.35	220	15
BG200/380	200x20x16	2950	0.35	380	15
BG300/380	300x40x75	1500	1.5	380	75

BG300/380 supplied with pedestal

BENCH GRINDERS - HEAVY DUTY

Double ended

Stock code	Wheel size mm	Speed RPM	Motor kW	Motor V	Weight kg
MBG150/220	150x20x16	2800	0.38	220	8.3
MBG150/380	150x20x16	2800	0.55	380	8.3
MBG200/220	200x25x20	2800	0.75	220	13
MBG200/380	200x25x20	2800	0.75	380	13
MBG250/380	250x30x20	1430	1.1	380	22
MBG300/380	300x40x31.75	1430	2.2	380	63

COMBINATION BENCH GRINDERS - HEAVY DUTY

Supplied with one grinding wheel and one wire wheel

Stock code	Buff Ø mm	Speed RPM	Motor kW	Motor V	Weight kg
CBG200/380	200x25x20	2800	0.75	380	14
CBG250/380	280x35x25	1400	1.5	380	42

COMBINATION BENCH POLISHERS - HEAVY DUTY

Supplied with one pair of polishing buffs

Stock code	Buff Ø mm	Speed RPM	Motor kW	Motor V	Weight kg
BP150/380	150	2800	0.55	380	10.5
BP200/220	200	2800	0.75	220	14
BP200/380	200	2800	0.75	380	14
BP250/380	250	2800	1.5	380	42

PEDESTALS FOR GRINDERS AND POLISHERS

Pedestals are optional extras

Stock code	To suit grinder/ polisher	Description
Pedestal150	150/200	Single pillar with removable top and base. Light duty
Pedestal300	300/400	Single pillar with removable top and base. Light duty

DRILL SHARPENING MACHINE 'DRILL DOCTOR'

Model 750SP. Light duty

Stock code	Drill sharpening capacity mm	Point angles	Point styles	Motor kW	Motor V
DSM750X	2.5-19	118˚ +135˚	conventional split point	0.18	220

PRECISION DRILL POINT SHARPENING MACHINE

Suitable for conic and standard split point grinding

Model V391

Stock code	Drill sharpening capacity mm	Point angles	Motor kW	Motor V
DSMV391	3 - 19	118˚ - 140˚	0.25	220

PRECISION DRILL POINT SHARPENING MACHINES

Capable of point relief grinding and split pointing

Stock code	Drill sharpening capacity mm	Point angles	Point styles	Motor kW	Motor V
DSM750SPQ#	13-26	118˚ - 135˚	conventional split point	0.18	220

UNIVERSAL DRILL SHARPENING MACHINES

Model FC50N. Automatic

Stock code	Drill sharpening capacity mm	Point angles	End mill face grinding capacity flutes
UDSM2.5-50/380	2.5 - 50	40˚ +180˚	2 3 6 12

Grinding wheel	Point thinning wheel	Motor kW	Motor V
180x32x31.75 mm	165x21x31.75 mm	.75	380

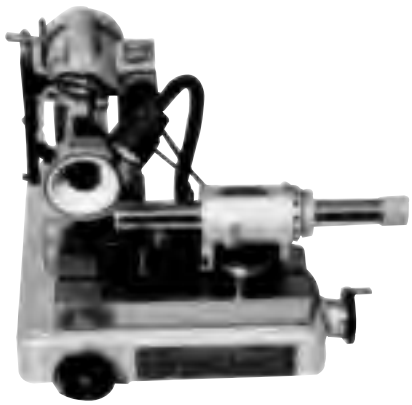
Optional extras: Coolant system, diamond and CBN wheels, work light, radius relief attachment for radius relief and end mill face sharpening, wheel balancer, cam for L.H. drills & cam for 3 flute drill grinding

MANUAL TOOL & CUTTER GRINDER

For sharpeneing end mills, drills and tool bits

Stock code	Collet range	Collet type	Wheel mm	Travel mm	Taper grinding	Relief grinding	Motor kw	Motor v
TCG/220	3-28	R8	100X50	140	0-180º	0-44º	220	220

AIR BEARING TOOL AND CUTTER GRINDING



Stock code	Max tool shank ø mm	Max tool cutter ø mm	Max tool length mm	Collet type	Air bearing stroke mm	Motor kW	Motor V
ABCG/220	50	220	220	5C	250	0.25	220

OPTIONAL ACCESSORIES 5C COLLETS EXTRA

Stock code	Description
CGRA	Radius grinding attachment
CGDA	Drill sharpening attachment
CGTA	Tap sharpening attachment
CGS2MT	Sleeve 2MT

Stock code	Description
CGS3MT	Sleeve 3MT
CGS32	Sleeve 32mm ø
CGS40	Sleeve 40mm ø
CGS50	Sleeve 50mm ø

UNIVERSAL TOOL & CUTTER GRINDERS

Model CT610. Air bearing system.

Stock code	Distance between centres mm	Swing over table mm	Collets Ø mm	Parallel sleeves Ømm
UTCG/220	250	205	6 8 10 12 16 20 25	32 11/4
UTCG/380	250	205	6 8 10 12 16 20 25	32 11/4

Morse taper adaptor	Cap wheel Ø mm	Dish wheel Ø mm	Motor kW	V
2MT 3MT	127	152	0.25	220
2MT 3MT	127	152	0.25	330

OPTIONAL EXTRAS

Stock code	Description
C1SG	Circular blade attachment 500 max Ø
C1RG	Radius grinding attachment

LATHE TOOL GRINDERS

For sharpening brazed carbide tipped turning tools. Supplied with diamond grinding wheel.

Stock code	Grinding wheel mm	Table vertical tilt	Table t angle block	Motor kW	V
LTG/220	125x16x25	20˚	70°	0.25	220

SURFACE GRINDING MACHINES BENCH TYPE

Model GSG612B. Hand operated.

Stock code	Table size mm	Table travel mm x	y	Wheel size mm
SGM305x152/220	305x152	320	170	180x13x31.5
SGM305x152/380	305x152	320	170	180x13x31.5

Max distance spindle to table mm	Motor kW	V
280	0.55	220
280	0.55	380

Optional extras: Floor stand cabinet, magnetic chuck, diamond wheel dresser, wheel balancing stand.

PRECISION SURFACE GRINDERS – MANUAL FEED

X axis - Roller ball ways. Y axis - Double V ways

Stock code	Table size mm	Table travel mm x	y	Distance: spindle to table mm	Table speed
SGM450x150/380	450x150	450	150	450	manual

Y axis wheel scale mm 1 rev	1 graduation	Z axis wheel scale mm 1 rev	1 graduation	Wheel speed Rpm	Motor kW	V
5	0.02	2	0.01	3500	1.5	380

PRECISION SURFACE GRINDERS – AUTO X & Y FEEDS

X axis - hydraulic, flat V ways. Y axis - Solid stale relay, double V ways

Stock code	Table size mm	Table travel mm x	y	Distance: spindle to table mm	Table speed M/mm
SGAH450x200/380	450x200	450	200	450	5 - 25

Power feed X axis	Auto Y axis feed increments	Z axis wheel scale mm 1 rev	1 graduation	Wheel speed Rpm	Motor kW	V
90mm/min	0.1-12 mm	2	0.01	3500	1.5	380

PRECISION SURFACE GRINDERS – AUTO X&Y FEEDS

SGAH600 – Hydraulic x-axis feed, Solid-state relay y-axis feed.
SGAH800 - Sensor & solenoid valve x axis feed, Solid state relay y axis feed

Stock code	Table size mm	Table travel mm x	y	Distance: spindle to table mm	Table speed M/mm
SGAH600x300/380	600x300	700	340	500	5 - 25

Power feed Y axis	Auto Y axis feed increments	Z axis wheel scale mm 1 rev	1 graduation	Wheel speed Rpm	Motor kW	V
900mm/min	0.1-20 mm	2	0.01	1750	3.8	380

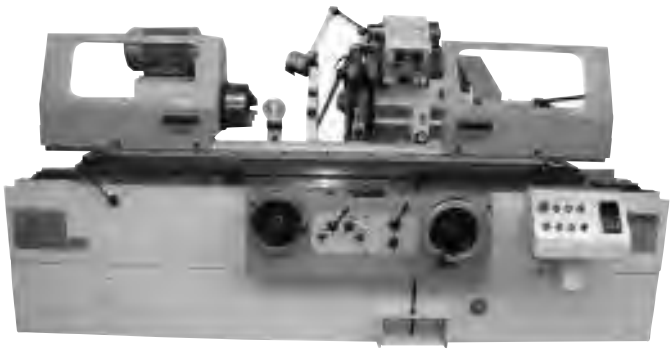
Stock code	Table size mm	Table travel mm x	y	Distance: spindle to table mm	Table speed M/mm
SGAH800x400/380	800x400	860	450	550	5 - 25

Power feed Y axis	Auto Y axis feed increments	Z axis wheel scale mm 1 rev	1 graduation	Wheel speed Rpm	Motor kW	V
900mm/min	0.1-20 mm	2	0.01	1750	3.8	380

UNIVERSAL CYLINDRICAL GRINDERS

Automatic hydraulic feed. Supplied with internal grinding attachments, wheel dresser and balacing arbor

Model M1432B



Stock code	Distance between centres mm	Centre height mm	Max Workpiece OD mm	Max Workpiece ID mm	Max Internal grinding length mm	Motor kW	V
UCG1000/380	1000	180	8-320	30-100	125	1.5	380

VERTICAL MILLING MACHINE

Model CES 626

Stock code	Spindle taper	Spindle travel mm	Table size mm	Table travel mm x	y	Distance spindle to table mm	Motor kW	V
VMMR8/220	R8	80	600 x 152	370	150	6-195	0.75	220

Optional extras: Newall Digital Readout, clamping kit, vice, dividing head, angle plate, drill and milling chuck, arbors

UNIVERSAL MILLING MACHINE

Model UH-1

Stock code	Spindle taper	Table size mm	Table travel mm x	y	z	Table swivel	Motor kW	V
UMMISO40/380	ISO 40	1055 x 240	560	260	260	90°	2.25	380

Optional extras: Newall Digital Readout, clamping kit, vice, dividing head, angle plate, drill and milling chuck, arbors.

UNIVERSAL MILLING MACHINE

Model UH-1 with Power Feed on Z axis

Stock code	Spindle taper H & V	Table size mm	Table travel mm x	y	z	Motor kW	V
UMMISO40+P/FEED	ISO 40	1055 x 240	560	260	260	2.25	380

Optional extras: Newall Digital Readout, clamping kit, vice, dividing head, angle plate, drill and milling chuck, arbors.

Pinnacle VERTICAL TURRET MILLING MACHINE

Meehanite cast iron, hardened and ground slideways. Power feed on the longitudinal axis. Models PK 1½ GRM-KB & PK 1½ GRM-KV

STEPPED PULLEY HEAD:

Stock code	Spindle taper	Table size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
VTMMR8/380	R8	1067 x 228	680	305	406	80, 135, 210, 325, 660, 1115, 1750, 2720	1.5	380

VARIABLE SPEED HEAD:

Stock code	Spindle taper	Table size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
VSVTMMR8/380	R8	1250 x 228	680	305	406	75 - 3800	1.5	380

Optional extras: Newall Digital Readout, clamping kit, vice, dividing head, angle plate, drill and milling chuck, arbors, power feed attachment for cross slide.

Pinnacle VARIABLE SPEED VERTICAL TURRET MILLING MACHINE

Meehanite cast iron, hardened and ground slideways. Power feed on the x, y and z axes. Model PK-GRSM-V2

Stock code	Spindle taper	Table size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
VSVTMMISO40/380	ISO40	1372x254	900	380	380	40-3400	3.75	380

Optional extras: Newall Digital Readout, clamping kit, vice, dividing head, angle plate, drill and milling chuck, arbors.

VERTICAL HORIZONTAL MILLING MACHINE

Model X6332Z

Stock code	Spindle taper ISO	Table size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
UMD1320X320/380	40	1320X320	800 (750)	200	550	90-2000	2.2	380

Weight kg
2000

BED-TYPE UNIVERSAL SWIVEL HEAD MILLING MACHINE

Model X715

Stock code	Spindle taper ISO	Tab size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
BTUMM2100X500/380	50	2100X500	1500	670	670	35-1345	7.5	380

Max load on table kg	Rapid feed m/min	Weight kg
2000	3500	7000

BED-TYPE VARI SPEED TURRET HEAD MILLING MACHINE

Model X713

Stock code	Spindle taper ISO	Tab size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
BTMM1525X320/380	40	1525X320	1050	470	650	70-3620	3	380

Weight kg
2300

HORIZONTAL & VERTICAL UNIVERSAL MILLING/DRILLING MILLING MACHINE

Model X6432

Stock code	Spindle taper ISO	Tab size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
UMM1320X320/380	40	1320X320	1000	300	660	45-1660V 40-1300H	3	380

Weight kg
2100

KNEE TYPE UNIVERSAL HORIZONTAL & VERTICAL SWIVEL HEAD MILLING MACHINE

Model X6436

Stock code	Spindle tape ISO	Tab size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
UMM1600X360/380	50	1600X360	1300	300	400	58-1800	4	380

Weight kg
2480

VARIABLE SPEED BED TYPE MILLING MACHINE

Robust solid cast bed. Power feed on the x, y and z axes. Hardened and ground slideways and table.
Model YS5BVS

Stock code	Spindle taper	Table size mm	Table travel mm x	y	z	Spindle speeds RPM	Motor kW	V
VSBTMMISO40/380	ISO40	250x1370	1000	500	700	70-4200	4	380

Optional extras: Newall Digital Readout, clamping kit, vice, dividing head, angle plate, drill chuck, ER collet chuck, arbors.

HORIZONTAL MILLING AND BORING MACHINE

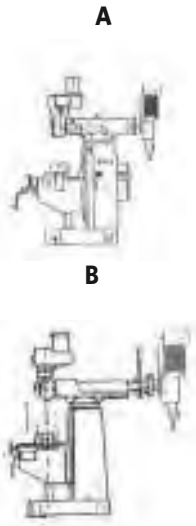
Model TP (X) 6111B

Stock code	Spindle taper MT	Tabel size mm	Table travel mm x	z	Spindle speeds RPM	Table load kg
HMBM1100X960/380	6	1100x960	960	1000	8-1000	2500

Facing head speed RPM	Rapid feed m/min x y w	Vertical travel head stock mm	Spindle travel mm	Weight kg
4-200	2500	900	600	13000

SLOTTING HEAD ATTACHMENT TYPE FLANGE A AND B

Model TS-125



Stock code	Flange	Motor kw	Stroke mm	Stroke per min
SHD	A	7	125	30,47,69,98,140

Stock code	Flange	Motor kw	Stroke mm	Stroke per min
SHA	B	7	125	35,54,79,112,160

SLOTTING MACHINE

Stock code	Table Ø mm	Table travel mm x	y	Ram stroke	Ram strokes / min	Index ratio	Motor kW	V
SM400/380	400	300	260	200	26, 43, 74, 100	1:80	1.5	380

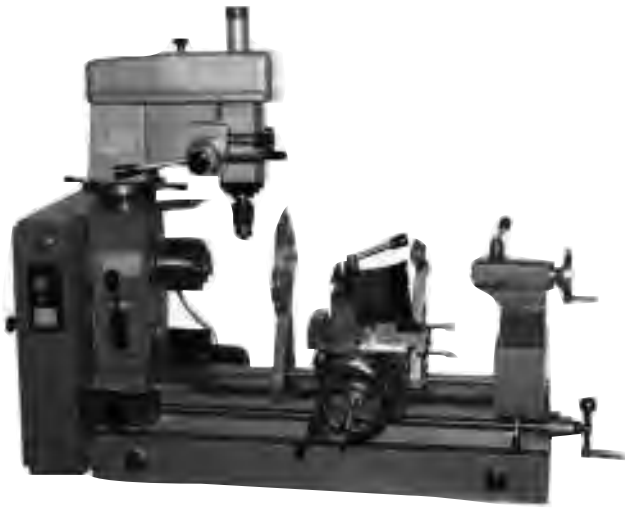
SHAPING MACHINE

Model MB6050B

Stock code	Table size mm	Table travel mm x	y	Max cutting length mm	Ram speed strokes / min	Motor kW	V
SM500/380	500X380	500	300	500	15-188	3	380

THREE IN ONE MULTI PURPOSE LATHES

Models CHQ 4038 & 4050



Stock code	Distance between centres mm	Centre height mm	Spindle & tailstock taper	Max drilling capacity	Max vertical milling Ø mm	Max face milling Ø mm	Motor kW	V
MPL400x210/220	400	210	3MT	15	20	63	0.55	220
MPL500x210/220	500	210	3MT	15	20	63	0.55	220

Supplied with standard equipment: 3 jaw lathe chuck, dead centres, drill chuck, drawbar, change gears for thread cutting.

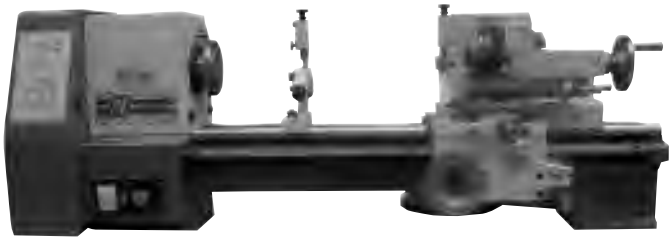
THREE IN ONE MULTI PURPOSE LATHES

With separate milling/drilling attachment. Model HQ 500.

Stock code	Distance between centres mm	Centre height mm	Spindle & tailstock taper	Max drilling capacity	Max vertical milling Ø mm	Max face milling Ø mm	Motor kW	V
MPLSA500x210/220	500	210	4 & 3MT	22	28	80	0.55	220

Supplied with standard equipment: 3 jaw lathe chuck, dead centres, drill chuck, drawbar, fixed + travel steadies, change gears for thread cutting.

BENCH LATHE



Stock code	Model	Distance between centres mm	Swing over bed mm	Swing over saddle mm	Chuck Ø mm 3 jaw	4 jaw	Spindle taper	Motor kW	V
BL550/220	BB2245-1	550	220	115	100	125	3MT	0.37	220

Supplied with standard equipment: lathe chucks, dead centres, steadies and change gears.

GEARED HEAD BENCH LATHES

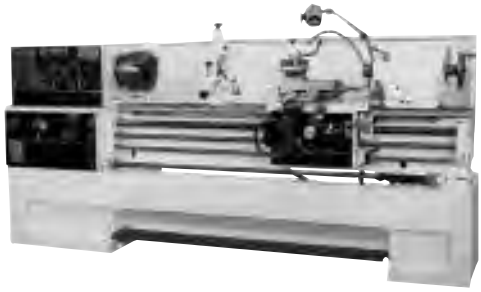
Bedways hardened and ground. Taper roller bearings on main spindle.

Stock code	Model	Distance between centres mm	Swing over bed mm	Chuck Ø mm 3 jaw	4 jaw	Spindle	Motor kW	V
MBL1000Ax360/220	C0636B	1000	360	160	200	38	1.1	220
MBL1000Ax360/380	GHB1340B	1000	360	160	200	38	1.5	380

Supplied with standard equipment: stand, lathe chucks, dead centres, steadies, change gears and coolant system.
Optional extra: Digital Readout System, quick change toolposts and revolving centres

GEARED HEAD LATHES

Bedways hardened and ground. Head stock gears hardened and ground. Taper roller bearings on main spindle.



Stock code	Model	Distance between centres mm	Swing over bed mm	Chuck Ø mm 3 jaw	4 jaw	Spindle mm	Motor kW	V
L1000Ax360/380	GH1440K	1000	360	160	200	38	5.5	380
L1000A/380	GH1640ZX	1000	400	200	250	52	5.5	380
L1500A/380	GH1660ZX	1500	400	200	250	52	5.5	380
L1550A/380	GH1660ZX	1500	410	250	315	80	5.5	380
L2000Ax460/380	GHK1880ZX	460	250	315		80	5.5	380

Stock code	Model	Distance between centres mm	Swing over bed mm	Chuck Ø mm 3 jaw	4 jaw	Spindle mm	Motor kW	V
L1500Ax500/380	C6250A	1500	500	250	315	80	5.5	380
L2000Ax500/380	C6250A	2000	500	250	315	80	5.5	380
L2000Ax660/380	C6266C	2000	660	325	400	104	7.5	380
L3000Ax660/380	C6266C	3000	660	325	400	104	7.5	380

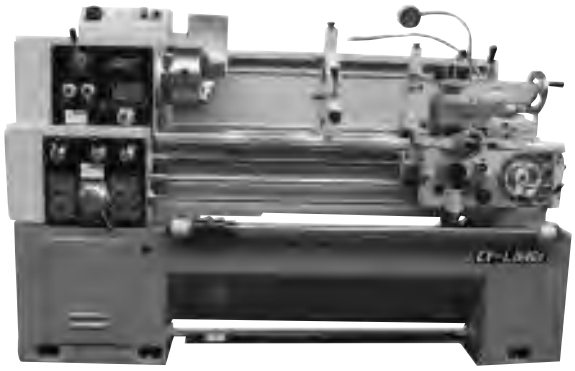
HEAVY DUTY

Stock code	Model	Distance between centres mm	Swing over bed mm	Chuck Ø mm 3 jaw	4 jaw	Spindle mm	Motor kW	V
L3000Ax910/380	CW6291B	3000	910	325	500	104	11	380
L4000Ax910/380	CW6291B	4000	910	325	500	104	11	380

Supplied with standard equipment: lathe chucks, dead centres, steadies and change gears, coolant system.
Optional extra: Digital Readout System, quick change toolposts, revolving centres

GEARED HEAD LATHES

Bedways hardened and ground. Head stock gears hardened and ground. Taper roller bearings on main spindle. CY Series



Stock code	Model	Distance between centres mm	Swing over bed mm	Chuck Ø mm 3 jaw	4 jaw	Spindle mm	Motor kW	V
L1000/380	CY-L1640G	1000	410	200	250	52	5.5	380
L1500/380	CY-L1660G	1500	410	200	250	52	5.5	380

GEARED HEAD LATHES

Stock code	Model	Distance between centres mm	Swing over bed mm	Chuck Ø mm 3 jaw	4 jaw	Spindle mm	Motor kW	V
L1500x500/380	CY-6250B	1500	500	250	320	82	7.5	380
L2000x500/380	CY-6250B	2000	500	250	320	82	7.5	380
L2000x660/380	CY-PML6266L	2000	660	320	400	104	11	380
L3000x660/380	CY-PML6266L	3000	660	320	400	104	11	380

Supplied with standard equipment: lathe chucks, dead centres, steadies and change gears, coolant system.
Optional extra: Digital Readout System, quick change toolposts, and revolving centres

CNC FLAT BED LATHE

GSK Controller , 4 position Electric Turret,

Stock code	Max turning length	Swing over bed	Swing over crosslide	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCL360X750	550	360	220	250	50	3.7
CNCL510NX1500	1350	500	290	250	80	11
CNCL510NX2000	1800	500	290	250	80	11

Optional extras: Fanuc control, Hydraulic chuck, hydraulic tailstock , 6 position toolpost

CNC FLAT BED LATHE

GSK Control, 6 position electric turret

Stock code	Max turning length	Swing over bed	Swing over crosslide	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCLPTC51HGSK	1400	520	290	250	80	7.5/11

Optional extras: Fanuc control, Hydraulic chuck
Available in different in turning lengths from 500-1900 mm

TARGET CNC FLAT BED LATHE

GSK Control, 6 position electric turret

Stock code	Max turning length mm	Swing over bed mm	Swing over cross slide mm	Chuck Ø size mm	Spindle bore mm	Motor kW
CNCLCK6150BX1500	975	500	300	250	80	7.5

CNC SLANT BED LATHES

GSK Ccontrol, 6 position turret

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCLKJ180GSK	110	400	150	150	32	3.7

FCL-120 SLANT BED LATHE

Fanuc Controller, 8 position Turret, chip conveyor

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCFCL-120	160	400	235	150	45	5.5

Optional extras : Syntec controller, bar feeder, Gang type tooling

FCL-140 SLANT BED LATHE

Fanuc Controller, 10 position Turret, chip conveyor, Hydraulic quill, 52mm bar capacity

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCLFCL-140	290	470	140	150	52	11

Optional extras: Syntec control, parts catcher, tool setting probe, bar feeder

Gang type toling

FCL-200 HT SLANT BED LATHE

Fanuc Controller, 10 position Turret, chip conveyor, Hydraulic quill, bar feeder interface

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCLFCL-200HT	479	470	318	200	65	15

Optional extras : Syntec controller, Bar feeder, tool setting probes, parts catcher

FCL-300P SLANT BED LATHE

Fanuc Controller, 10 position turret, chip conveyor, hydraulic quill, bar feed interface

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCLFCL-300P	700	600	338	250	77	18.5

Optional extras: Bar feeder, tool setting probes, parts catcher, programmable tailstock

FBL-300 SLANT BED LATHE

Fanuc Controller, 10 position turret, chip conveyer, hydraulic quill, bar feed interface

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCLFBL-300	594	654	417	250	77	15/18.5
CNCLFBL-300L	1554	654	417	250	77	15/18.5

Optional extras: Bar feeder, tool setting probes, parts catcher

FBL-360L SLANT BED LATHE

Fanuc Controller, 10 position turret, chip conveyer, hydraulic quill, bar feed interface

Stock code	Max turning length	Swing over bed	Swing over covers	Chuck size	Spindle bore	Spindle motor kw
	mm	mm	mm	mm	mm	
CNCFBL-360	762	770	550	300	91	22/26
CNCFBL-360L	2026	770	550	300	91	22/26

Optional extras: Bar feeder, tool setting probes, parts catcher, programmable tailstock

VERTICAL MACHINING CENTRE

GSK control BT30 spindle taper

Stock code	Table size	Travel x	y	z	Spindle speed RPM	Spindle motor kw
	mm		mm			
CNCMXH7125GSK	600X250	400X240X400			6000	3.7

Optional extras: Fanuc control

CNC VERTICAL MACHINING CENTRE

GSK Control, 16 position umbrella tool change, BT40 spindle

Stock code	Table size	Travel x	y	z	Spindle speed RPM	Spindle motor kw
	mm		mm			
CNCMXH7132AGSK	920X320	620X350X500			6000	5.5

Optional extras: Fanuc control, arm type tool changer

CNC BED TYPE TURRET MILL

GSK Control, ISO40 spindle

Stock code	Table size	Travel x	y	z	Spindle speed RPM	Spindle motor kw
	mm		mm			
CNCMXKW7136BGSK	1325X320	1050X420X300			3600	3.7

Eagle CNC MILLING MACHINES KM100 + KM150

Syntec control, 16 position tool change, BT40 spindle

Stock code	Table size	Travel x	y	z	Spindle speed RPM	Spindle motor kw
	mm		mm			
KM100ATC16	330X1370	1000X500X530			8000	7.5
KM150ATC16	450X1800	1500X650X620			8000	11.0

Pinnacle CNC MACHINING CENTRES

Fanuc Oi control 20 Umbrella type toolchanger, BT40 spindle

Stock code	Table size mm	Travel x y z mm	Spindle speed RPM	Spindle motor kw
CNCSV65	800X510	650X650X560	8000	7.5
CNCSV85	1000X510	850X560X560	8000	7.5
CNCSV105	1200X510	1020X560X560	8000	11
CNCSV96	1100X610	950X610X610	8000	11
CNCSV116	1300X610	1140X610X610	8000	11
CNCSV126	1450X610	1300X610X610	8000	15

Optional extras: Arm type tool change, fourth + fith axis, through spindle coolant, chip conveyor

Available with linear guides

Pinnacle CNC MACHINING CENTRES

Fanuc control, 20/24 tool change, BT40/50 spindle

Stock code	Table size mm	Travel x y z mm	Spindle speed RPM	Spindle motor kw
CNCQV117	1300x700	1140X710X610	6000/8000	11
CNCQV127	1500X700	1300X710X610	6000/8000	11
CNCQV147	1600X700	1400X710X610	6000/8000	11
CNCQV159	1700X850	1500X900X850	6000/8000	18
CNCQV179	2000X850	1700X900X850	6000/8000	18
CNCQV209	2200X850	2000X900X850	6000/8000	18

Optional 4th & 5th axis, through spindle coolant, chip conveyor

CNC TRAINING MACHINES - TURNING

Our innovative CNC training machine. The 3D animation software simulates the operation and setting of tools and workpiece. Safe and easy operation. No machine collisions, accidents and maintenance.

Turning simulator is based on Fanuc 0iT controller

Stock code : CNCLATHESIM

CNC TRAINING MACHINES - MILLING

Our innovative CNC training machine. The 3D animation software simulates the operation and setting of tools and workpiece. Safe and easy operation. No machine collisions, accidents and maintenance.

Milling simulator is based on Fanuc 0iM controller

Stock code : CNCMILLSIM

CNC Training machine;
1) CNC cutter simulation on a large sized LCD TV screen
2) LCD touch panel to simulate CNC controller function panel
3) Real user interface operation panel

No tooling or material costs.

* PC Based virtual training software also avaible.

CNC VERTICAL MACHINING CENTRE DESIGNED FOR EDUCATIONAL AND TRAINING INSTALLATIONS

PC controlled Boxford 300VMCi. The inclusive user-friedly software has routines for Computer Aided Design (CAD) at both simple and sophisticated levels and will process both 2D and 3D designs through to a full machining routine.

Stock code : CNCM300VCI/220

X Axis Travel (longitudal)	304mm
Y Axis Travel (cross)	157mm
Z Axis Travel (vertical)	213mm
Table Area	505x135mm
Spindle motor	1.2Kw
Spindle speed	200-4000 rpm
Electrics	110/220/240 V 1 PHASE

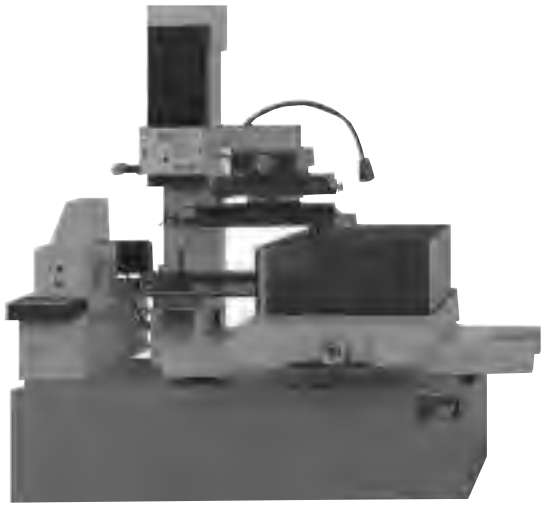
CNC LATHE DESIGNED FOR EDUCATIONAL AND TRAINING INSTALLATIONS

PC controlled Boxford 250PCi. The rigid construction allows steel to be cut to close tolerances. Operating on IBM/100% compatible computers, the inclusive user-friendly software has routines for Computer Aided Design (CAD) at both simple and sophisticated levels and will process the drawing through to a full machining routine.

Stock code : CNCLTCL250I/220

Swing Over bed	250mm
X Axis Travel (cross)	200mm
Z Axis Travel (longitudinal)	265mm
Spindle drive motor	2.2Kw
Infinitely variable spindle speeds	200-3200 rpm
Electrics	110/220/240v 1 PHASE

CNC HIGH SPEED WIRE-CUT



Stock code	Table size LxW mm	Travel x y mm	Table load kg	Power consumption
CNCDK7750D	900X600	500x630	800	2KVA

Other models avaible

CNC WIRE CUT EDM

Stock code	Max work pieces L x W x H mm	Travel x y z mm	Work piece weight
A/WT355	710X560X205	350X250X210	300
A/WT455	750x650x245	450x300x250	450
A/WT655	1100x720x345	650x400x350	700
A/WT855	1280x780x345	850x450x350	1000
A/WT1275	1700x1050x445	1200x700x450	5000

Submergable or flood type available

BROKEN TAP REMOVER

Stock code	Electrode holder mm
EDM-TR100	1.5-6.0

ELECTRICAL DISCHARGE MACHINE

Stock code	Table size mm	Travel x y z mm	Max work piece weight	Work tank WxDxM
EDM-JM322	600X300	300X200X200	550	830X500X300
EDM-JM430	600X400	400x300x200	900	1060x600x340

ZNC or CNC options

FILTERMIST

Elliminate oil mist, oil smoke, welding fume and dust
Filtermist provide a comprehensive range of collectors, filters and extraction systems for the reliable removal of oil mist, smoke, fume and dust from the workplace.

Stock code	Airflow m3/hr	Motor kw	Noise DBA	Weight kg
FX4002	1250 @ 50Hz	1.5	70	24
FX5002	1675 @ 50Hz	2.2	71	29
FX6002	2000 @ 50Hz	2.2	73	34
FX7002	2750 @ 50Hz	2.2	73	34

FILTERMIST

How it works :

1. Oil mist is removed at source
2 Oil mist is removed from the air by centrifugal impaction
3 Clean oil is returned to machine
4 Clean air is returned to workplace
5 Smoke and fume can be removed and efficiency increased with the addition of a clip-on afterfilter

A perforated drum with specially designed vanes rotates at high speed. Oil mist is drawn into the unit and impacts on its vanes at high velocity. Special drum pads assist the coalescing process and filter out stray solid particles.
Centrifugal force pushes oil to the unit's outer case where it drains back to the machine for re-use or collection and clean air is returned to the workshop through the top of the unit

Application examples :

NUAIR RECIPROCATING PISTON COMPRESSORS

Large cooling fins and special belt guard design guarantee excellent cooling. Large wheels and convenient handle for ease of transportation. Simple user friendly controls. Second quick coupler mounted on tank allowing dual use. Compressor block built with cast iron cylinders

Stock code	Tank litres	Power HP/kW	Voltage	Pressure bar	CFM
NAC/1.5/8/220/50/RECIP	50	2/1,5	220	8	7,8
NAC/1.5/10/220/100/B2800B/RECIP	100	2/1.5	220	10	9
NAC/2.2/10/220/200/B2800B/RECIP	200	2/1.5	220	10	9
NAC/2.2/10/220/150/B3800B/RECIP	150	3/2.2	220	10	13,8
NAC/2.2/10/220/270/B3800B/RECIP	270	3/2.2	220	10	13,8
NAC/4.0/11/380/500/RECIP	500	5.5/4	380	11	22,6
NAC/5.5/11/380/270/RECIP	270	7.5/5.5	380	11	29,7
NAC/7.5/10/380/500/RECIP	500	10/7.5	380	11	43,4

Additional receiver, power, voltage, and pressure options available on enquiry.

NUAIR NUAIR SCREW COMPRESSORS

MERCURY 5.5kW

Poly-V transmission guarantees long life and minimum maintenance. Low speed of the air end guarantees reduced wear and extended lifespan. Designed for 24 hour continuous use. Compact design results in excellent access to internal components thereby allowing ease of maintenance. Low noise level allows installation of unit near to the work site.

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...Continued

MERCURY COMPRESSORS CONT..

Model	kW	CFM	Pressure Bar	Receiver litres	Noise level dB(A)
BASE UNIT					
NAC/5.5/8/380/MERCURY	5,5	25,4	8	-	64
NAC/5.5/10/380/MERCURY	5,5	22,9	10	-	64
RECEIVER MOUNTED					
NAC/5.5/8/380/200/TA/MERCURY	5,5	25,4	8	200	64
NAC/5.5/10/380/200/TA/MERCURY	5,5	22,9	10	200	64
RECEIVER MOUNTED WITH DRYER					
NAC/5.5/8/380/200/TA/ES/MERCURY	5,5	25,4	8	200	64
NAC/5.5/10/380/200/TA/ES/MERCURY	5,5	22,9	10	200	64

Also available with 270 or 500 litre receiver.

NUAIR SCREW COMPRESSORS

SATURN 7.5/11/15 kW

Poly-V transmission guarantees long life and minimum maintenance. Low speed of the air end guarantees reduced wear and extended lifespan. Designed for 24 hour continuous use. Compact design results in excellent access to internal components thereby allowing ease of maintenance. Low noise level allows installation of unit near to the work site. Electronic controller offers ease of programming operational parameters and diagnostic analysis.

Model	kW	CFM	Pressure Bar	Receiver litres	Noise level dB(A)
NAC/7.5/8/380/500/SATURN	7,5	44	8	500	68
NAC/7.5/10/380/500/SATURN	7,5	35,3	10	500	68
NAC/7.5/13/380/500/SATURN	7,5	26,5	13	500	68
NAC/11/8/380/500/SATURN	11	58	8	500	69
NAC/11/10/380/500/SATURN	11	51,2	10	500	69
NAC/11/13/380/500/SATURN	11	38,8	13	500	69
NAC/15/8/380/500/SATURN	15	70,6	8	500	70

Also available as base mounted and / or with / without dryer 7.5 kW and 11 kW units also available on 270 litre receiver

...Continued

SATURN COMPRESSORS CONT....

Model	kW	CFM	Pressure Bar	Receiver litres	Noise level dB(A)
NAC/15/10/380/500/ SATURN	15	63,5	10	500	70
NAC/15/13/380/500/ SATURN	15	53	13	500	70

NUAIR SCREW COMPRESSOR

VEGA 18.5 to 75 kW

Poly-V transmission guarantees long life and minimum maintenance. Low speed of the air end guarantees reduced wear and extended lifespan. Designed for 24 hour continuous use. Compact design results in excellent access to internal components thereby allowing ease of maintenance. Low noise level allows installation of unit near to the work site. Electronic controller offers ease of programming operational parameters and diagnostic analysis.

Model	kW	CFM	Pressure Bar	Noise level dB(A)
NAC/18.5/8/380/VEGA	18,5	95	8	70
NAC/18.5/10/380/VEGA	18,5	86	10	70
NAC/18.5/13/380/VEGA	18,5	72	13	70
NAC/22/8/380/VEGA	22	116	8	71
NAC/22/10/380/VEGA	22	102	10	71
NAC/22/13/380/VEGA	22	81	13	71
NAC/30/8/380/VEGA	30	148	8	74
NAC/30/10/380/VEGA	30	138	10	74
NAC/30/13/380/VEGA	30	111	13	74
NAC/37/7.5/380/VEGA	37	208	7,5	70
NAC/37/10/380/VEGA	37	184	10	70
NAC/37/13/380/VEGA	37	145	13	70
NAC/45/7.5/380/VEGA	45	254	7,5	72
NAC/45/10/380/VEGA	45	229	10	72
NAC/45/13/380/VEGA	45	180	13	72
NAC/55/7.5/380/VEGA	55	304	7,5	74
NAC/55/10/380/VEGA	55	275	10	74
NAC/55/13/380/VEGA	55	226	13	74
NAC/75/7.5/380/VEGA	75	431	7,5	72
NAC/75/10/380/VEGA	75	371	10	72
NAC/75/13/380/VEGA	75	293	13	72

55kW and 75kW available as variable speed option

NUAIR SCREW COMPRESSORS

POLAR 75kW TO 250kW

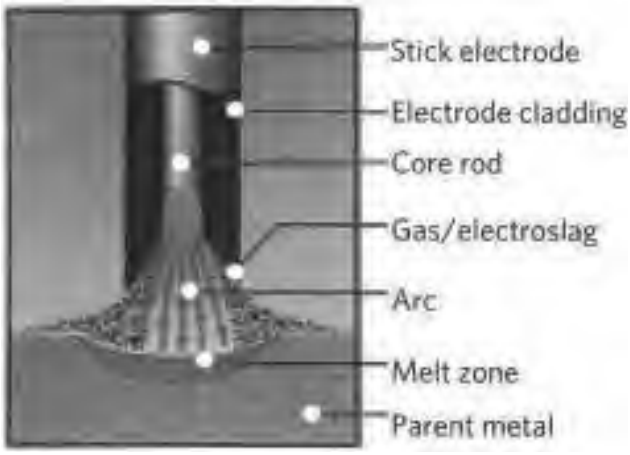
Power transmission is via a flexible coupling and helical gearbox.Low speed of the air end guarantees reduced wear and extended lifespan. Designed for 24 hour continuous use. Compact design results in excellent access to internal components thereby allowing ease of maintenance. Low noise level allows installation of unit near to the work site. Electronic controller offers ease of programming operational parameters and diagnostic analysis.

Model	kW	CFM	Pressure Bar	Noise level dB(A)
NAC/75/7.5/380/POLAR	75	445	7,5	73
NAC/75/10/380/POLAR	75	371	10	73
NAC/75/13/380/POLAR	75	311	13	73
NAC/90/7.5/380/POLAR	90	561	7,5	75
NAC/90/10/380/POLAR	90	473	10	75
NAC/90/13/380/POLAR	90	409	13	75
NAC/110/7.5/380/POLAR	110	660	7,5	75
NAC/110/10/380/POLAR	110	575	10	75
NAC/110/13/380/POLAR	110	491	13	75
NAC/132/7.5/380/POLAR	132	826	7,5	74
NAC/132/10/380/POLAR	132	702	10	74
NAC/132/13/380/POLAR	132	575	13	74
NAC/160/7.5/380/POLAR	160	946	7,5	74
NAC/160/10/380/POLAR	160	826	10	75
NAC/160/13/380/POLAR	160	702	13	75
NAC/200/7.5/380/POLAR	200	1228	7,5	75
NAC/200/10/380/POLAR	200	1017	10	75
NAC/200/13/380/POLAR	200	861	13	75
NAC/250/7.5/380/POLAR	250	1430	7,5	76
NAC/250/10/380/POLAR	250	1299	10	76
NAC/250/13/380/POLAR	250	1017	13	76

All of the above are available as variable speed option

A full range of Pneumatic Air Tools available on page 429

MMA WELDING



SUITABLE MACHINES

IWM200/220Q	IWM400/380Q
IWM250/380Q	IWM500/380Q
IWM315/380Q	

ARCMASTER

MMA DC INVERTER 200AMP/220VOLT

FITTED WITH A VRD (Voltage Reducing Device)

Stock code	**IWM200/220Q**
Machine ID	MMA-200
Input Voltage	220 AC
Input Current / KVA	32 Amp / 7KVA
Output Current	30 - 200 Amp
Duty Cycle	60% @ 200 Amp
	100% @ 150 Amp
Electrode Size	2.0 - 4.0mm
Cooling	Fan Cooled
Dimensions / Weight	460L x 270W x 345H / 8Kg
Included with Machine	Welding Cables
	Primary power cord & plug
	VRD Fitted

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ARCMASTER

MMA DC INVERTER CONT..

Optional extras for TIG welding (Secondary process on this machine, scratch start TIG)

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP26-8MV2PCQ	TIG Torch 200AMP

Replacement accessories for IWM200/220Q

Stock code	
WELDCABLE200A	Welding cable
EARTHCABLE200A	Earth cable
MS10-25Q	Machine socket
CCM10-25Q	Cable connector
WC25B	200AMP Cable
CL35-12Q	Cable lug
EC300AQ	300AMP Earth clamp
EH300AQ	300AMP Electrode holder

ARCMASTER

MMA DC INVERTER 250AMP/380VOLT

Stock code	**IWM250/380Q**
Machine ID	MMA-250
Input Voltage	380 AC
Input Current / KVA	15 Amp / 9KVA
Output Current	30 - 250 Amp
Duty Cycle	60% @ 250 Amp
	100% @ 185 Amp
Electrode Size	2.0 - 5.0mm
Cooling	Fan Cooled
Dimensions / Weight	585L x 320W x 420H / 15Kg
Included with Machine	Welding Cables
	Primary power cord
NOT Included with Machine	Three phase plug

Optional extras for TIG welding (Secondary process on this machine, scratch start TIG)

Air cooled system up to 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP26-8MV2PCQ	TIG Torch 200AMP

Water cooled system above 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP18-8MV-4PCW/CQ	TIG Torch 350AMP W/C
WC10LQ	Water cooler 10L/220V

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Replacement accessories for IWM250/380Q

WELDCABLE300A	Welding cable
EARTHCABLE300A	Earth cable
MS35-50Q	Machine Socket
CCM35-50Q	Cable Connect
WC35G	300Amp Cable
CL50-12Q	Cable Lug
EC300AQ	300Amp Earth Clamp
EH300AQ	300Amp Electrode Holder

ARCMASTER

MMA DC INVERTER 315AMP/380VOLT

Stock code	**IWM315/380Q**
Machine ID	MMA-315
Input Voltage	380 AC
Input Current / KVA	20 Amp / 13 KVA
Output Current	30 - 315 Amp
Duty Cycle	60% @ 315 Amp
	100% @ 235 Amp
Electrode Size	2.0 - 6.0mm
Cooling	Fan Cooled
Dimensions / Weight	555L x 415W x 355H / 24Kg
Included with Machine	Welding, Cables Primary power cord
NOT Included with Machine	Three phase plug

Optional extras for TIG welding (Secondary process on this machine, scratch start)

Air cooled system up to 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP26-8MV2PCQ	TIG Torch 200AMP

Water cooled system above 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP18-8MV-4PCW/CQ	TIG Torch 350AMP W/C
WC10LQ	Water cooler 10L/220V

Replacement accessories for IWM315/380Q

Stock code	
WELDCABLEKIT300A	Welding cable
EARTHCABLE300A	Earth cable
MS35-50Q	Machine socket
CCM35-50Q	Cable connect
WC35G	300AMP Cable
CL50-12Q	Cable lug
EC300AQ	300AMP Earth clamp
EH300AQ	300AMP Eectrode holder

ARCMASTER

MMA DC INVERTER 400AMP/380VOLT

FITTED WITH A VRD (Voltage Reducing Device)

Stock code	**IWM400/380Q**
Machine ID	MMA-400
Input Voltage	380 AC
Input Current	28 Amp/18KVA
Output Current	40 - 400 Amp
Duty Cycle	60% @ 400 Amp
	100% @ 300 Amp
Electrode Size	2.5 - 8.0mm
Cooling	Fan Cooled
Dimensions / Weight	630L x 370W x 500H / 27Kg
Included with Machine	Welding Cables
	Primary power cord
NOT Included with Machine	Three phase plug

Optional extras for TIG welding (Secondary process on this machine, scratch start TIG)

Air cooled system up to 250Amps

MTFMQ	MIG/TIG Flow meter
TTWP26-8MV2PCQ	TIG Torch 200AMP

Water cooled system above 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP18-8MV-4PCW/CQ	TIG Torch 350AMP W/C
WC10LQ	Water cooler 10L/220V

Optional extras for gouging

Stock code	
GTK5Q	Gouging torch K5/1000A

Use maximum 6.5mm Gouging Carbon on the IWM400/380Q

Replacement accessories for IWM400/380Q

Stock Code	
WELDCABLE400A	Welding cable
EARTHCABLE400A	Earth cable
MS50-70Q	Machine socket
CCM50-70Q	Cable connect
WC50R	400AMP Cable
CL70-12Q	Cable lug
EC600AQ	600AMP Earth clamp
EH600AQ	600AMP Electrode holder

ARCMASTER

MMA DC INVERTER 500AMP/380VOLT

Stock code	**IWM500/380Q**
Machine ID	MMA-500
Input Voltage	380 AC
Input Current	30 Amp/20KVA
Output Current	50 - 500 Amp
Duty Cycle	60% @ 500 Amp
	100% @ 375 Amp
Electrode Size	2.5 - 8.0mm
Cooling	Fan Cooled
Dimensions / Weight	645L x 380W x 705H / 55Kg
Included with Machine	Welding Cables
	Primary power cord
NOT Included with Machine	Three phase plug

Optional extras for TIG welding (Secondary process on this machine, scratch start TIG)

Air cooled system up to 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP26-8MV2PCQ	TIG Torch 200AMP

Water cooled system above 250Amps

Stock code	
MTFMQ	MIG/TIG Flow meter
TTWP18-8MV-4PCW/CQ	TIG Torcg 350AMP W/C
WC10LQ	Water cooler 10L/220V

Optional extras for gouging

Stock code	
GTK5Q	Gouging torch K5/1000A

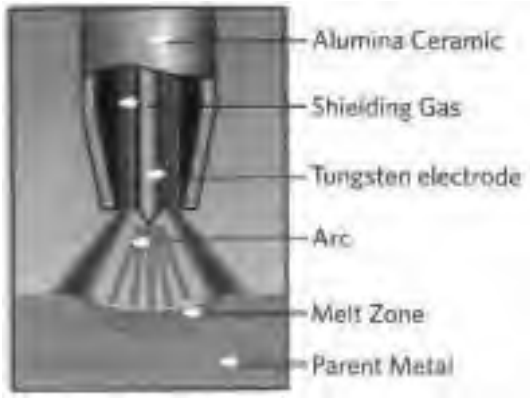
Use maximum 8.0mm Gouging Carbon on the IWM500/380Q

Replacement accessories for IWM500/380Q

WELDCABLE500A	Welding cable
EARTHCABLE500A	Earth cable
MS50-70Q	Machine socket
CCM50-70Q	Cable connect
WC70B	500AMP Cable
CL95-12Q	Cable lug
EC600AQ	600AMP Earth clamp
EH600AQ	600AMP Electrode holder

ARCMASTER

TIG WELDING



SUITABLE MACHINES

IWM200/220QTIG	IWM200/220QAC/DC
IWM250/380QTIG	IWM315/380QAC/DC

ARCMASTER

TIG DC INVERTER 200AMP/220VOLT

Stock code	**IWM200/220QTIG**
Machine ID	TIG-200
Input Voltage	220 AC
Input Current	21 Amp/5KVA
Output Current	10 - 200 Amp
Duty Cycle	60% @ 200 Amp
	100% @ 150 Amp
Filler Rod Size	1.6 - 2.4mm
Cooling	Fan Cooled
Dimensions / Weight	460L x 270W x 345H / 8Kg
Included with Machine	Tig Torch, Earth Cable,
	Argon Flow Meter
	Primary power cord & plug

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Replacement accessories for IWM200/220QTIG

Stock code	
EARTHCABLE200A	200Amp Earth Cable
MS10-25Q	Machine Socket
CCM10-25Q	Cable Connect
WC25B	200Amp Cable
CL35-12Q	Cable Lug
EC300AQ	300Amp Earth Clamp
MSTIG	Machine Socket Tig
TTWP26-8MT2PCQ	Tig Torch 200Amp
MTFMQ	Mig/Tig Flow Meter

ARCMASTER

TIG DC INVERTER 250AMP/380VOLT

Stock code	IWM250/380QTIG
Machine ID	TIG-250
Input Voltage	380 AC
Input Current	12 Amp/8KVA
Output Current	10 - 250 Amp
Duty Cycle	60% @ 250 Amp
	100% @ 185 Amp
Filler Rod Size	1.6 - 3.2mm
Cooling	Fan Cooled
Dimensions / Weight	585L x 320W x 420H / 15Kg
Included with Machine	Water cooled Tig Torch,
	Earth Cable, Argon Flow Meter
	Primary power cord
NOT Included with Machine	Three phase plug

Optional extras

Water cooled system above 250Amps

WC10LQ	Water cooler 10L/220V

Replacement accessories for IWM250/380QTIG

Stock code	
EARTHCABLE300A	300AMP Earth cable
MS35-50Q	Machine socket
CCM35-50Q	Cable connect
WC35G	300AMP Cable
CL50-12Q	Cable lug
EC300AQ	300AMP Eath clamp
MSTIG	Machine socket TIG
TTWP18-8MT-3PCW/CQ	TIG Torch 350AMP
MTFMQ	MIG/TIG Flow meter

ARCMASTER

TIG AC/DC INVERTER 200AMP/220VOLT

Stock code	IWM200/220QAC/DC
Machine ID	WSE200
Input Voltage	220 AC
Input Current	20 Amp/5KVA
Output Current	10 - 200 Amp
Duty Cycle	60% @ 200 Amp
	100% @ 150 Amp
Filler Rod Size	1.6 - 2.4mm
Cooling	Fan Cooled
Dimensions / Weight	495L x 390W x 330H / 22Kg
Included with Machine	Tig Torch, Earth Cable,
	Argon Flow Meter
	Primary power cord & Plug

Optional extras

IWM200FP	Foot Pedal Control

Replacement accessories for IWM200/220QAC/DC

Stock code	
EARTHCABLE200A	200AMP Earth cable
MS10-25Q	Machine socket
CCM10-25Q	Cable connect
WC25B	200AMP Cable
CL35-12Q	Cable lug
EC300AQ	300AMP Earth clamp
MSTIG	Machine Socket TIG
TTWP26-8MT2PCQ	TIG Torch 200AMP
MTFMQ	MIG/TIG Flow meter

ARCMASTER

TIG AC/DC INVERTER 315AMP/380VOLT

Stock code	IWM315/380QAC/DC
Machine ID	WSME315
Input Voltage	380 AC
Input Current	20 Amp/13KVA
Output Current	10 - 315 Amp
Duty Cycle	60% @ 315 Amp
	100% @ 235 Amp

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Filler Rod Size	1.6 - 3.2mm
Cooling	Fan Cooled
Dimensions / Weight	630L X 340W X 680H / 40Kg
Included with Machine	Water Cooled Tig Torch
	Earth Cable, Argon Flow Meter
	Primary Power Cord
NOT Included with Machine	Three Phase Plug
Secondary Process	MMA Welding (Not for Production)

Compulsory extra

WC10L	Water Cooler 10L/220V

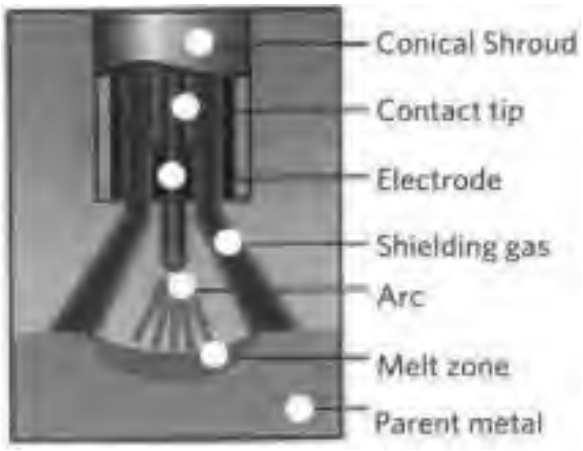
Optional extras

IWM200FP	Foot Pedal Control

Replacement accessories for IWM315/380QAC/DC

Stock code	
EARTHCABLE300A	300Amp Earth Cable
MS35-50Q	Machine Socket
CCM35-50Q	Cable Connect
WC35G	300Amp Cable
CL50-12Q	Cable Lug
EC300AQ	300Amp Earth Clamp
MSTIG	Machine Socket Tig
TTWP18-8MT-3PCW/CQ	Tig Torch 350Amp W/C
MTFMQ	Mig/Tig Flow Meter

MIG WELDING



SUITABLE MACHINES

MIGWELD250/220Q
MIG350/380QWF
MIG500/380QWF

ARCMASTER

MIG INVERTER 250AMP/220VOLT

Stock code	**MIGWELD250/220Q**
Machine ID	MIG250
Input Voltage	220 AC
Input Current	32 Amp/7KVA
Output Current	50 - 250 Amp
Duty Cycle	60% @ 250 Amp
	100% @ 185 Amp
Filler Wire Size	0.8 - 1.0mm
Cooling	Fan Cooled
Dimensions / Weight	860L x 450W x 685H / 28Kg
Included with Machine	Mig Torch, Earth Cable,
	Argon Flow Meter
	Primary power cord & Plug

Replacement accessories for MIGWELD250/220Q

Stock code	
EARTHCABLE300A	300Amp Earth Cable
MS35-50Q	Machine Socket
CCM35-50Q	Cable Connect
WC35G	300Amp Cable
CL50-12Q	Cable Lug
EC300AQ	300AMP Earth clamp
WMIGTORCHHR25-5Q	MIG Torch HR25 250A
MTFMQ	MIG/TIG Flow meter

ARCMASTER

MIG WELDER 350AMP/380VOLT

Stock code	**MIG350/380QWF**
Machine ID	KR350
Input Voltage	380 AC
Input Current	27AMP/18 KVA

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Output Current	60 - 350 Amp
Duty Cycle	60% @ 350 Amp
	100% @ 260 Amp
Filler Wire Size	0.8 - 1.2mm
Cooling	Fan Cooled
Dimensions / Weight	720L x 410W x 1040H / 160Kg
Included with Machine	Wire Feeder, Mig Torch,
	Earth Cable, Argon Flow Meter
	Primary power cord
NOT Included with Machine	Three phase plug

Replacement accessories for MIG350/380QWF

Stock code	
EARTH CABLE400A	400 AMP Earth cable
WC50R	400Amp Cable
CL70-12Q	Cable Lug
EC600AQ	600Amp Earth Clamp
WMIGTORCHHR36-5Q	Mig Torch HR36 360A
MTQTB350 (Old Model)	Mig Torch QTB 350A
MTFMQ	Mig/Tig Flow Meter

ARCMASTER

MIG WELDER 500AMP/380VOLT

Stock cocde	**MIG500/380QWF**
Machine ID	KR500
Input Voltage	380 AC
Input Current	48 AMP/32 KVA
Output Current	80 - 500 Amp
Duty Cycle	60% @ 500 Amp
	100% @ 375 Amp
Filler Wire Size	0.8 - 1.6mm
Cooling	Fan Cooled
Dimensions / Weight	770L x 450W x 1050H / 206Kg
Included with Machine	Wire Feeder, Mig Torch,
	Earth Cable, Argon Flow Meter
	Primary power cord
NOT Included with Machine	Three phase plug

Replacement accessories for MIG500/380QWF

Stock code	
EARTH CABLE 500A	500AMP Cable kit
WC70B	500AMP Cable
CL95-12Q	Cable lug
EC600AQ	600AMP Earth Clamp

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WMIGTORCHHR40-5Q	MIG Torch HR40 400A
MTQTB500 (Old Model)	MIG Torch QTB 500A
MTFMQ	MIG/TIG Flow meter
Optional extra	
Water cooled system	
WMIGTORCHHR501-5Q	MIG Torch HR501 500A W/C
WC10L	Water cooler 10L/220V

ARCMASTER

MIG WIRE FEEDERS

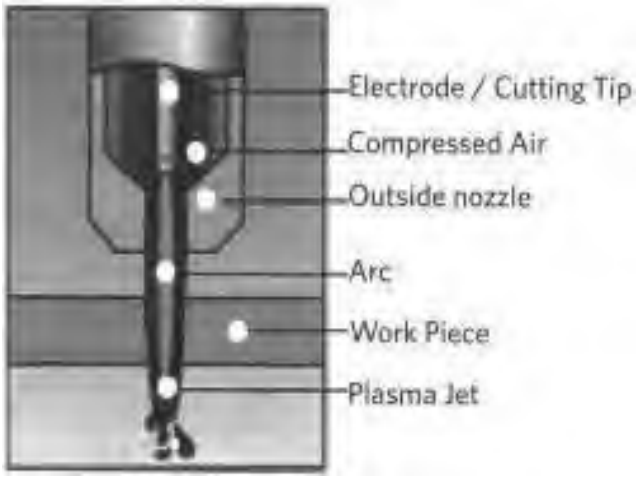
With Euro Torch Fitting

Stock code
WFKR350Q
For MIG350/380QWF

Stock code
WFKR500Q
For MIG500/380QWF

ARCMASTER

PLASMA CUTTING



Suitable machines

PLASMACUT40/220Q	PLASMALGK120/380
PLASMALGK63/380	PLASMALGK160/380

PLASMACUT 40AMP/220VOLT

Stock code	**PLASMACUT40/220Q**
Machine ID	CUT 40
Input Voltage	220 AC
Input Current	10 Amp / 2KVA
Output Current	20 - 40 Amp
Duty Cycle	60% @ 40 Amp
	100% @ 30 Amp
Dry Air Supply	3-5 Bar
	3-5 CFM
Plate thickness (on mildsteel)	Pierce 5mm
	Edge 10mm
Cooling	Fan Cooled
Dimensions / Weight	460L x 270W x 345H / 8Kg
Included with Machine	Hand Torch, Earth Cable,
	Water Trap / Regulator
	Primary power cord & Plug

Replacement accessories for PLASMACUT40/220Q

Stock code	
EARTHCABLE200A	200AMP Earth cable
MS10-25Q	Machine socket
CCM10-25Q	Cable connect
WC25B	200AMP Cable
CL35-12Q	Cable lug
EC300AQ	300AMP Earth clamp
MSPLASMA	Machine socket plasma
PTSG55/5MQ	Hand torch SG55
PWTRQ	Water trap/regulator

PLASMALGK 63AMP/380VOLT

Stock code	**PLASMALGK63/380**
Machine ID	PLASMALGK63/380
Input Voltage	380 AC
Input Current	13 Amp/9KVA

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Output Current	20 - 63 Amp
Duty Cycle	60% @ 63 Amp
	100% @ 45 Amp
Dry Air Supply	3-5 Bar
	3-5 CFM
Plate thickness (on mildsteel)	Pierce 10mm
	Edge 20mm
Cooling	Fan Cooled
Dimensions / Weight	550L x 300W x 450H / 40kg
Included with Machine	Hand Torch, Earth Cable,
	Water Trap / Regulator
	Primary power cord
NOT Included with Machine	Three phase plug

Replacement accessories for PLASMALGK63/380

Stock code	
EARTHCABLE200A	200AMP EARTH CABLE
MS10-25Q	MACHINE SOCKET
CCM10-25Q	CABLE CONNECT
WC25B	200AMP CABLE
CL35-12Q	CABLE LUG
EC300AQ	300AMP EARTH CLAMP
MSPLASMA	MACHINE SOCKET PLASMA
PHTPT80Q	HAND TORCH PT80
PWTRQ	WATER TRAP/REGULATOR

PLASMALGK 120AMP/380VOLT

Stock code	**PLASMALGK120/380**
Machine ID	PLASMALGK120/380
Input Voltage	380 AC
Input Current	27 Amp/18KVA
Output Current	20 - 120 Amp
Duty Cycle	60% @ 120 Amp
	100% @ 90 Amp
Dry Air Supply	3-5 Bar
	3-5 CFM
Plate thickness (on mildsteel)	Pierce 15mm
	Edge 30mm
Cooling	Fan Cooled
Dimensions / Weight	550L x 300W x 450H / 40kg
Included with Machine	Hand Torch, Earth Cable,
	Water Trap / Regulator
	Primary power cord
NOT Included with Machine	Three phase plug

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Replacement accessories for PLASMALGK120/380

Stock code	
EARTHCABLE200A	200AMP EARTH CABLE
MS10-25Q	MACHINE SOCKET
CCM10-25Q	CABLE CONNECT
WC25B	200AMP CABLE
CL35-12Q	CABLE LUG
EC300AQ	300AMP EARTH CLAMP
MSPLASMA	MACHINE SOCKET PLASMA
PHTPT80Q	HAND TORCH PT80
PWTRQ	WATER TRAP/REGULATOR

PLASMALGK 160AMP/380VOLT

Stock code	PLASMALGK160/380
Machine ID	PLASMALGK160/380
Input Voltage	380 AC
Input Current	43 Amp/28KVA
Output Current	40 - 160 Amp
Duty Cycle	60% @ 160 Amp
	100% @ 120 Amp
Dry Air Supply	3-5 Bar
	3-5 CFM
Plate thickness (on mildsteel)	Pierce 20mm
	Edge 35mm
Cooling	Fan Cooled
Dimensions / Weight	700L x 330W x 600H / 80kg
Included with Machine	Machine Torch, Earth Cable,
	Water Trap / Regulator
	Primary power cord
NOT Included with Machine	Three phase plug
Compulsory extra	
WC10L	Water cooler 10L/220V
Optional extras	
PHTLGK160W/CQ	Hand torch LGK160 W/C

Replacement accessories for PLASMALGK160/380

Stock code	
EARTHCABLE200A	200AMP Earth cable
MS10-25Q	Machine socket
CCM10-25Q	Cable connect
WC25B	200AMP Cable
CL35-12Q	Cable lug
EC300AQ	300AMP Earth clamp
MSPLASMA	Machine socket plasma
PSTLGK160W/CQ	Straight torch LGK160 W/C
PWTRQ	Water trap/regulator

GENERAL ACCESSORIES

MACHINE SOCKET

Universal
MS10-25Q 200Amp
MS35-50Q 300Amp
MS50-70Q 500Amp

All TIG Machine
MSTIG

All PLASMA Machine
MSPLASMA

CABLE CONNECTORS

Male
CCM10-25Q 200Amp
CCM35-50Q 300Amp
CCM50-70Q 500Amp

Female
CCF10-25Q 200Amp
CCF35-50Q 300Amp
CCF50-70Q 500Amp

WELDING CABLE

Double Insulated PVC Nitrile cable - SABS Approved

Sold per meter

WC25B BLUE CABLE 25mm2 / 200Amp

WC35G GREY CABLE 35mm2 / 300Amp

WC50R RED CABLE 50mm2 / 400Amp

WC70B BROWN CABLE 70mm2 / 500Amp

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ARCMASTER

CABLE LUGS

Stock Code	Use On
CL35-12Q	Blue cable
CL50-12Q	Grey cable
CL70-12Q	Red cable
CL95-12Q	Brown cable

EARTH CLAMPS

Stock Code	
EC300AQ	Earth clamps 300Amp
EC600AQ	Earth clamps 600Amp

ELECTRODE HOLDER

Stock Code	
EH300AQ	Electrode holder 300Amp
EH600AQ	Electrode holder 600Amp

WELDING CABLE

Connector, 5 Meter Cable & Electrode Holder

Stock Code	
WELDCABLE200A	10-25 Connector
WELDCABLE300A	35-50 Connector
WELDCABLE400A	50-70 Connector
WELDCABLE500A	50-70 Connector

EARTH CABLE

Connector, 5 Meter Cable & Earth Clamp

Stock Code	
EARTHCABLE200A	10-25 Connector
EARTHCABLE300A	35-50 Connector
EARTHCABLE400A	50-70 Connector
EARTHCABLE500A	50-70 Connector

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ARCMASTER

WELDERS CHIPPING HAMMER

Stock Code	
WCH300	300G Chipping hammer

WELDERS CHIPPING HAMMER

Stock Code	
WB5S	5 Row steel
WB5SS	5 Row stainless steel
WB6S	6 Row steel
WB6SS	6 Row stainless steel

TIG WELDING ACCESSORIES

FLOW METER

Stock Code	
MTFMQ	MIG/TIG Flow meter

TIG TORCHES

Water cooled system to be used above 250Amps

Air cooled Tig torch used for scratch start Tig welding on IWM200/220Q, IWM250/380Q, IWM315/380Q

Stock Code	
TTWP26-8MV2PCQ	TIG Torch 200Amp 8meter

Air cooled Tig torch used on

IWM200/220QTIG & IWM200/220QAC/DC

Stock Code	
TTWP26-8MT2PCQ	TIG TORCH 200Amp 8METER

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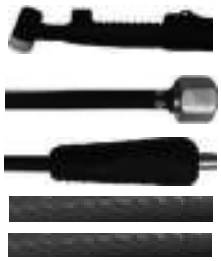
Water cooled Tig torch used for scratch start Tig welding on IWM250/380Q, IWM315/380Q



Stock Code	
TTWP18-8MV-4PCW/CQ	TIG Torch 350Amp 8meter

Water cooled Tig torch used on IWM250/3800QTIG & IWM315/380QAC/DC

Stock Code	
TTWP18-8MT-3PCW/CQ	TIG Torch 350Amp 8meter

TIG TORCH ASSEMBLY

[1]	Torch body
[2]	Gas valve or Trigger switch
[3]	Collet body
[4]	Alumina ceramic
[5]	Collet
[6]	Tungsten (Red or White Tip)
[7]	Long or short back cap

...Continued

TIG TORCH BODIES

Stock Code	
TTB26VQ	WP26 With valve
TTB18VQ	WP18 With valve

Stock Code	
TTB26Q	WP26 No valve
TTB18Q	WP18 No valve

TIG TORCH VALVE

Stock Code	
TIGV17Q	WP17 Valve
TIGV18&26Q	WP18 & 26 Valve

TIG TORCH TRIGGER SWITCHES

TPTB
FOR TIG/Plasma torches

TPTF
FOR TIG/Plasma torches

TIG TORCH COLLET BODY

Stock Code
WTTCB1.6Q
WTTCB2.4Q

TIG TORCH COLLET

WTTC1.6Q
WTTC2.4Q

TIG TORCH ALUMINA CERAMIC

Stock Code	
WTTAC6Q	DIA.6MM - NO4 - 10N50
WTTAC8Q	DIA.8MM - NO5 - 10N49
WTTAC10Q	DIA.10MM - NO6 - 10N48
WTTAC11Q	DIA.11MM - NO7 - 10N47
WTTAC13Q	DIA.13MM - NO8 - 10N46
WTTAC16Q	DIA.16MM - NO10 - 10N45
WTTAC19Q	DIA.19MM - NO12 - 10N44

LONG ALUMINA CERAMIC

WTTACL8Q	DIA.8MM - NO5L - 10N49L
WTTACL10Q	DIA.10MM - NO6L - 10N48L

...Continued

TIG Torch Tungsten Electrodes

WELDING OF STEEL & STAINLESS STEEL

TTR1.6Q	Thoriated 1.6 Red Tip
TTR2.4Q	Thoriated 2.4 Red Tip

WELDING OF ALUMINIUM

ZTW1.6Q	Zirconiated 1.6 White Tip
ZTW2.4Q	Zirconiated 2.4 White Tip

TIG TORCH BACK CAPS

Stock Code

LBCQ	Long Back Cap WP17,18,26

SBCQ	Short Back up Cap WP17,18,26

PLASMA TORCHES

PLASMA TORCH PT31
Use on old type Cut30 & Cut40 Plasma Cutter. No HF

Stock Code

[1] PCT	Complete hand torch
[2] PEDE	Electrode
[3] PAD	Air Diffuser
[4] PTIP	Tip
[5] PON	Outside Nozzle

PLASMA TORCH SG55
Use on Plasmacut40/220Q. New model with HF
Stock Code

[1] PTSG55/5MQ	Complete hand torch
[2] PTHSG55Q	Torch head
[3] PESG55Q	Electrode

...Continued

...Continued

[4] PTSG55Q	Tip
[5] PSCSG55Q	Shield cup
[6] PSOGSG55Q	Stand off guide

PLASMA TORCH PT80
Use on PLASMALGK63/380 & PLASMALGK120/380

Stock Code

[1] PHTPT80Q	Complete hand torch
[1] PSTPT80Q	Complete straight torch
[2] PHTHPT80Q	Hand torch head
[2] PSTHPT80SQ	Straight torch head
[3] PEPT80Q	Electrode
[4] PT1.3PT80Q	Tip 1.3
[4] PT1.5PT80Q	Tip 1.5
[5] SCPT80Q	Shield cup
[6] PSOGPT80Q	Stand off guide

PLASMA TORCH LGK160
Use on PLASMALGK160/380

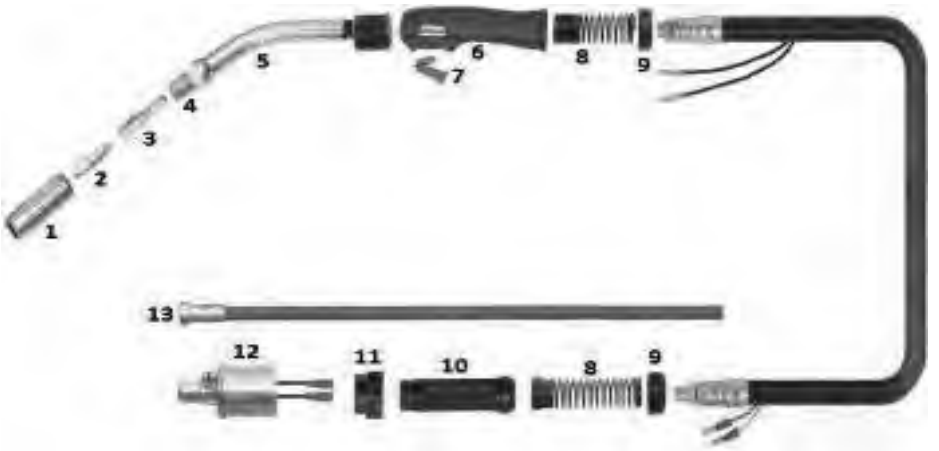
Stock Code

[1] PHTLGK160W/CQ	Complete hand torch
[1] PSTLGK160W/CQ	Complete straight torch
[2] PHTHLGK160Q	Hand torch head
[2] PSTHLGK160Q	Striaght torch head
[3] WPDLGK160	Diffuser
[4] PELGK160Q	Electrode
[5] PT1.4LGK160Q	Tip 1.4
[5] PT1.7LGK160Q	Tip 1.7
[6] WPSCLGK160	Shield cup
[7] PSOGLGK160Q	Stand off guide

HR25 - 250Amp Air Cooled MIG Torch

Use on MIGWELD250/220Q

A

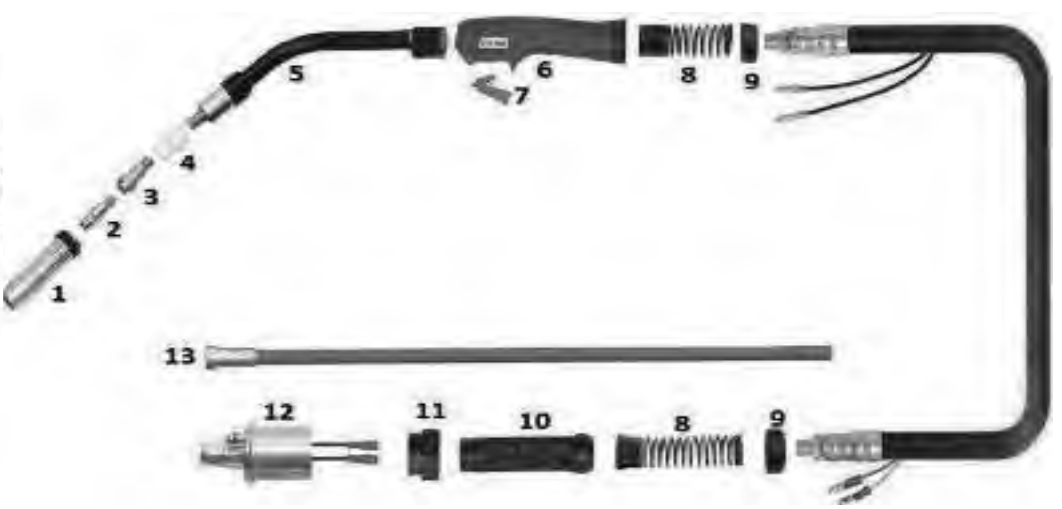


Stock Code		Stock Code	
[A] WMIGTORCHHR25-5Q	Complete torch		
[1] WMTCSHR25Q	Conical shroud	[8] WMTFHSHRRANGEQ	Support spring
[2] MCTM6X0.9	M6 X 0.9 Contract tip	[9] WMTLNFHRRQ	Lock nut
[3] WMTTHHR25Q	Tip holderIP HOLDER	[10] WMTRHHRRQ	Rear handle
[4] WMTNSHR25Q	Neck spring	[11] WMTRCNHRRQ	Connector nut
[5] WMTSNHR25Q	Zwan/goose neck	[12] WMTECCHRRQ	Euro fitting
[6] WMTFHHRRQ	Front handle	[13] MTLHR0.6-0.9Q	Steel liner 0.6 - 0.9mm
[7] WMTMSHRRQ	Trigger switch	[13] MTLT1.0-1.2Q	Teflon liner 1.0 - 1.2mm

HR36 - 360Amp Air Cooled MIG Torch

Use on MIG350/380QWF

A

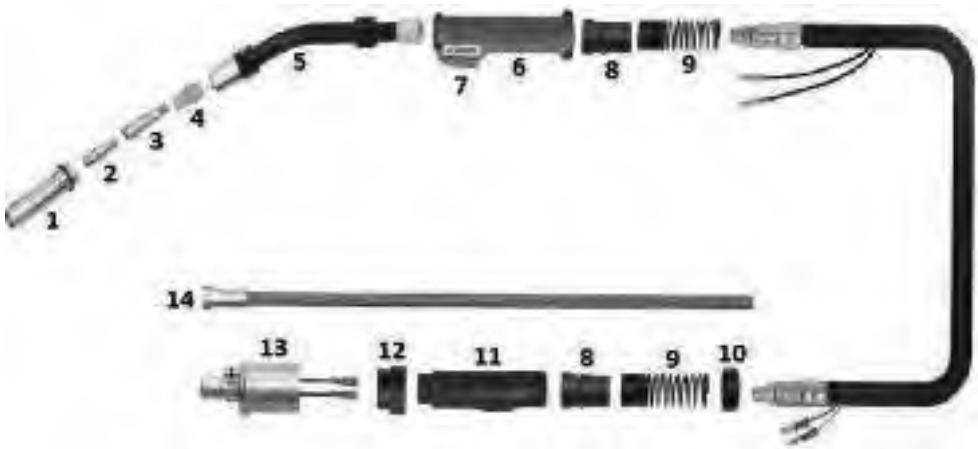


Stock Code		Stock Code	
[A] WMIGTORCHHR36-5Q	Complete torch		
[1] WMTCSHR36Q	Conical Shourd	[8] WMTFHSHRRANGEQ	Support Spring
[2] MCTM8X1.2	M8 X 1.2 Contact Tip	[9] WMTLNFHRRQ	Lock Nut
[3] WMTTHHR36Q	Tip Holder	[10] WMTRHHRRQ	Rear Handle
[4] WMTGDHR36Q	Gas Diffuser	[11] WMTRCNHRRQ	Connector Nut
[5] WMTSNHR36Q	Zwan/Goose Neck	[12] WMTECCHRRQ	Euro Fitting
[6] WMTFHHRRQ	Front Handle	[13] MTLHR1.0-1.2Q	Steel Liner 1.0 - 1.2mm
[7] WMTMSHRRQ	Trigger Switch	[13] MTLT1.0-1.2Q	Teflon Liner 1.0 - 1.2mm

HR40 - 400Amp Air Cooled MIG Torch

Use on MIG500/380QWF

A



Stock Code		Stock Code	
[A] WMIGTORCHHR40-5Q	Complete torch		
[1] WMTCSHR40Q	Conical Shourd	[9] WMTCSHRRANGE	Support Spring
[2] MCTM8x1.2	M8 X 1.2 Contact Tip	[10] WMTLNHR40Q	Lock Nut
[3] WMTTHHR40Q	Tip Holder	[11] WMTRHHR40Q	Rear Handle
[4] WMTGDHR40Q	Gas Diffuser	[12] WMTRCNHRRQ	Connector Nut
[5] WMTSNHR40Q	Zwan/Goose Neck	[13] WMTECCHRRQ	Euro Fitting
[6] WMTFHHR40Q	Front Handle	[14] MTLHR1.0-1.2Q	Steel Liner 1.0 - 1.2mm
[7] WMTMSHR40Q	Trigger Switch	[14] MTLHR1.6Q	Steel Liner 1.6mm
[8] WMTBJHR40Q	Ball Joint	[14] MTLT1.0-1.2Q	Teflon Liner 1.0 - 1.2mm

HR501 - 500Amp Water Cooled MIG Torch

Use on MIG500/380QWF with a water cooler

A

Stock Code		Stock Code	
[A] WMIGTORCHHR501-5Q	Complete torch		
[1] WMTCSHR501Q	Conical Shourd	[9] WMTFSHR501	Front Support Spring
[2] MCTM8X1.2	M8 X 1.2 Contact Tip	[10] WMTLNFHR501Q	Lock Nut
[3] WMTGDHR501Q	Gas Diffuser	[11] WMTRSHR501	Rear Support Spring
[4] WMTTHHR501Q	Tip Holder	[12] WMTRHHRRQ	Rear Handle
[5] WMTSNHR501Q	Zwan/Goose Neck	[13] WMTRCNHRRQ	Connector Nut
[6] WMTFHHR501Q	Front Handle	[14] WMTECCHR501Q	Euro Fitting
[7] WMTMSHR501Q	Trigger Switch	[15] MTLHR1.0-1.2Q	Steel Liner 1.0 - 1.2mm
[8] WMTBJHR501Q	Ball Joint	[15] MTLT1.0-1.2Q	Teflon Liner 1.0 - 1.2mm

STRAIGHT LINE CUTTER

Stock Code	WGPCQ
Machine ID	WGPCQ
Input Voltage	220 AC (5M Power cord)
Dimensions / Weight	470L x 240W x 230H / 18Kg
	I, Y, V Cutting can be done
	Torch adjustable 45-90 Deg
Plate Thickness	5-100mm mild steel
Straight Line Cutting	Effective cutting length 1.4M
	1) 1.8M Rail Included / 5Kg
Circle Cutting Diameter	0.200 - 2.000 Meter

MANUAL PROFILE CUTTER

Stock Code	WGMPCQ
Machine ID	WGMPCQ
Input Voltage	220 AC (5M Power cord)
Dimensions / Weight	1490L X 335W X 880H / 59Kg
Plate Thickness	5-100mm mild steel

OPTIONAL EXTRAS FOR THE ABOVE WGPCQ & WGMPCQ

Cutting with Oxygen & Acetylene

Stock Code	
WGOXYREGTHQ	Oxygen Regulator
WGACETREGTHQ	Acetylene Regulator
WGFBAOXREG3/8Q	Flashback Oxy Reg 3/8"
WGFBAACREG3/8Q	Flashback Acet Reg 3/8"
WGHC13-15	Hose Clamp 13-15
WGHCPAR	Hose Clamp Parallel 8mm
WOXYH8	Oxygen Hose 8mm

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...Continued

WACEH8	Acetylene Hose 8mm
WGFBAOXTORCH3/8Q	Flashback Oxy Torch 3/8"
WGFBAACTORCH3/8Q	Flashback Acet Torch 3/8"
WGANMCN-1.6Q	ANM Cutting Nozzle 1.6mm
WGANMCN-1.9Q	ANM Cutting Nozzle 1.9mm

Cutting with Oxygen & LPG (Liquid propane)

WGOXYREGTHQ	Oxygen Regulator
WGLPGR	LPG Regulator
WGFBAOXREG3/8Q	Flashback Oxy Reg 3/8"
WGHC13-15	Hose Clamp 13-15"
WGHCPAR	Hose Clamp Parallel 8mm
WOXYH8	Oxygen Hose 8mm
WLPGH	LPG Hose 8mm
WGFBAOXTORCH3/8Q	Flashback Oxy Torch 3/8"
WGPNMCN-1.6Q	PNM Cutting Nozzle 1.6mm
WGPNMCN-1.9Q	PNMCutting Nozzle 1.9mm

GAS CUTTING & BRAZING KIT

Stock Code **WGC&BKIT**

Oxygen & Acetylene regulators, Gas hose, Flashbacks, Torch handle, Cutting attachment, Cutting nozzles, Gas mixer, Brazing nozzles, Brazing goggles, Lighter, Nozzle cleaner

GAS REGULATORS

Stock Code	
[1] WGOXYREGTHQ	Oxygen single stage T-Handle
[2] WGACETREGTHQ	Acetylene single stage T-handle
[3] WGLPGR	LPG regulartor

FLASHBACK ARRESTORS

Stock Code	
WGFBAOXREG3/8Q	Oxygen Reg Mount 3/8"
WGFBAACREG3/8Q	Acetylene Reg Mount 3/8"
WGFBAOXTORCH3/8Q	Oxygen Torch Mount 3/8"
WGFBAACTORCH3/8Q	Acetylene Torch Mount 3/8"

GAS HOSES SABS approved

Stock Code	
[1] WOXYH8	Oxygen hose 8mm (Blue)
[2] WACEH8	Acetylene Hose 8mm (Red)
[3] WLPGH	LPG Hose 8mm (Orange)

HOSE CLAMPS

Stock Code	
[1] WGHC13-15	Hose Clamp 13-15mm
[1] WGHC15-18	Hose Clamp 15-18mm
[2] WGHCPAR	Hose Clamp Parallel 8mm

GAS CUTTING TORCHES

Stock Code	
WGCT1PCBRHQ	Cut Torch 1Pce Complete
WGTH	Torch Handle
WGCA	Cutting Attachment

GAS CUTTING NOZZLES

Stock Code

One piece cutting nozzle. Use with Oxygen & Acetylene

[1] ANM NOZZLES	MM - INCHES - PLATE SIZE
WGANMCN-0.8Q	0.8mm - 1/32 "- 3-6mm
WGANMCN-1.2Q	1.2mm - 3/64" - 6-12mm
WGANMCN-1.6Q	1.6mm - 1/16" - 12-75mm
WGANMCN-1.9Q	1.9mm - 5/64" - 75-100mm
WGANMCN-2.4Q	2.4mm - 3/32" - 100-150mm
WGANMCN-3.2Q	3.2mm - 1/8" - 150-300mm

Two piece cutting nozzle. Use with Oxygen & LPG

[2] PNM NOZZLES	MM - INCHES - PLATE SIZE
WGPNMCN-0.8Q	0.8mm - 1/32" - 3-6mm
WGPNMCN-1.2Q	1.2mm - 3/64" - 6-12mm
WGPNMCN-1.6Q	1.6mm - 1/16" - 12-75mm
WGPNMCN-1.9Q	1.9mm - 5/64" - 75-100mm
WGPNMCN-2.4Q	2.4mm - 3/32" - 100-150mm
WGPNMCN-3.2Q	3.2mm - 1/8" - 150-300mm

GAS MIXER & WELDING / BRAZING NOZZLES

Stock Code	
[1] WGMO&A	Mixer - Oxygen & Acetylene
[1] WGMO&L	Mixer - Oxygen & Lpg
[2] WGWN1	Welding Nozzle No 1
[2] WGWN2	Welding Nozzle No 2
[2] WGWN3	Welding Nozzle No 3
[2] WGWN5	Welding Nozzle No 5
[2] WGWN7	Welding Nozzle No 7
[2] WGWN10	Welding Nozzle No 10
[2] WGWN13	Welding Nozzle No 13

GAS FITTINGS

Stock Code

[1] WGTN	Boc Tip Nut

Use with cutting torch & ANM / PNM cutting nozzles

[3] WGBNRH	Bullnose Nut RH (Oxygene)
[3] WGBNLH	Bullnose Nut LH (Acetylene)
[2] WGBS	Bullnose Long Stem

Use on Oxygen & Acetylene regulators

[4] WGTNRH	Tailnut 3/8 RH (Oxygen)
[4] WGTNLH	Tailnut 3/8 LH (Acetylene)
[5] WGTP	Tail Piece - Fit 8mm Hose

Use on Oxygen & Acetylene regulators & Cutting torches

GAS LIGHTER & NOZZLE CLEANER

Stock Code

[1] TFLQ	Triple Flint Lighter
[2] STFQ	Spare Triple Flint
[3] WGNC130Q	Nozzle Cleaners 130mm

CNC PLASMA / GAS PROFILE CUTTER

Stock code	**CNCPGPCQ**
Cutting Area	1.5 x 3.0 Meter
Cutting Thickness - Oxy & Ace / LPG	100mm Mild Steel
Cutting Thickness - Plasma	Piercing: + - 20mm Mild Steel / 10mm Stainless Steel
	Edge: + - 35mm Mild Steel / 17mm Stainless Steel

Included:

CNCCT1.5X3.0	[1] Water bed cutting table
CNCFC1530QA	[2] CNC Host
CNC-THC	[3] Torch height controller
PLASMALGK160/380	[4] Plasma cutter 160Amp 380Volt
PSTLGK160W/CQ	[5] Straight torch 10Meter
WC10LQ	[6] Water cooler
	Fastcam drawing programe (compatible with CAD)

GANTRY TYPE CNC PLASMA / GAS PROFILE CUTTER

Stock code	**CNCSG3006**
Cutting Area	2.4 x 4.6 Meter
Cutting Thickness - Oxy & Ace / LPG	100mm Mild Steel
Cutting Thickness - Plasma	Piercing: + - 15mm Mild Steel / 7mm Stainless Steel
	Edge: + - 30mm Mild Steel / 15mm Stainless Steel

Included :

CNC Host

Torch height controller

Plasma cutter Thermal Dynamics A120 380Volt

Straight torch

Tracks

Fastcam drawing programe (compatible with CAD)

SPOT WELDERS

Stock code	**SW3/220 - SW3/380**
Machine ID	DN25 220V - DN25 380V
Input Voltage	220V - 380V
Adjustment	7 Settings + Timmer
Duty Cycle	20%
Electrode Pressure	Manual Foot Pedal - 155KG
Plate thickness	1 + 1 / 3 + 3mm
Arm Length	200mm
Dimensions / Weight	990L X 320W X 1070Hmm / 94KG

Replacement tips for SW3/220 & SW3/380

Stock code	
SW3TIPHOLDER	TIP Hold Set
SW3TS	TIP Set

Compulsory extra

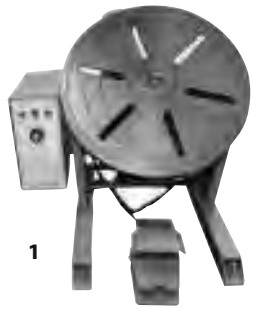
Stock code	
WC10L	Water cooler 10L/220V

WATER COOLER

Suitable for :
IWM250/380QTIG, IWM315/380QAC/DC
MIG500/380QWF,SW3/220, SW3/380

Stock code	**WC10LQ**
Machine ID	CT-10
Input Voltage	220V
Tank Capacity / Flow Rate	10 Liter - 8L/Min
Dimentions / Weight	565L X 325W X 385Hmm / 20KG

WELDING TURN TABLES



[1] WELDING TURN TABLE	100KG
Stock code	**WTT100**
Machine ID	BY-100
Input Voltage	220V
Rotation Motor Wattage	120W
Rotation Motor Speed	2 - 15 Rpm
	Forward & Reverse
Table Dimensions	500L X 470W X 415Hmm
Disc Diameter	345mm
Horizontal Weight Capacity	100kg
Vertical Weight Capacity	50kg
Tilt Range	0 - 90 Degrees
Tilt Mode	Manual
Included with Machine	Foot pedal & Torch attachment

Optional extra
[2] CHUCK

Stock code	**WTTC200**
ID	D 200
Centre Hole	65mm
Clamp Range	5 - 200mm

[1] WELDING TURN TABLE	600KG
Stock code	**WTT600**
Machine ID	BY-600
Input Voltage	380V
Rotation Motor Wattage	370W
Rotation Motor Speed	0.2 - 1.8 RPM
	Forward & Reverse
Table Dimensions	650L X 800W X 675Hmm
Disc Diameter	650mm
Horizontal Weight Capacity	600kg
Vertical Weight Capacity	300kg
Tilt Range	0 - 90 Degrees
Tilt Mode	Motorised
Tilt Motor Wattage	550W
TiltMotor Speed	0.2 - 1.8 RPM
Included with Machine	Foot pedal & Torch attachment

Optional extra
[2] CHUCK

Stock code	**WTTC500**
ID	D 500
Centre Hole	240mm
Clamp Range	200 - 500mm

HOTBOX

Stock code	**PEHB220V/10KG**
Machine ID	AF-10
Input Voltage	220V / 700W
Adjustment	50 - 300 Degrees C
Capacity	10KG Electrodes

STICK WELDING ELECTRODES

MILD STEEL 6013
WE2.5MS6013/1
WE2.5MS6013/5
WE3.2MS6013/1
WE3.2MS6013/5

PIPE WELD 6010
WE2.5PW6010/5
WE3.2PW6010/5
WE4.0PW6010/5

LOW HYDROGEN 7018
WE2.5LH7018/4
WE3.2LH7018/4
WE4.0LH7018/5

IRON POWDER 7024
WE3.2IP7024/4
WE4.0IP7024/5

STAINLESS STEEL 308
WE2.5SS308/5
WE3.2SS308/5
WE4.0SS308/5

STAINLESS STEEL 309
WE2.5SS309/5
WE3.2SS309/5
WE4.0SS309/5

STAINLESS STEEL 310
WE2.5SS310/5
WE3.2SS310/5
WE4.0SS310/5

STAINLESS STEEL 312
WE2.5SS312/5
WE3.2SS312/5
WE4.0SS312/5

STAINLESS STEEL 316
WE2.5SS316/5
WE3.2SS316/5
WE4.0SS316/5

CAST IRON 55%
WE2.5CI55/1
WE3.2CI55/1

CAST IRON 99%
WE2.5CI99/1
WE3.2CI99/1

HARD FACING 55
WE3.2HF55/4
WE4.0HF55/4

HARD FACING 60
WE3.2HF60/4
WE4.0HF60/4

TIG WELDING RODS

MILD STEEL 70S-6
TR1.6MS70S6/5
TR2.0MS70S6/5
TR2.4MS70S6/5

STAINLESS STEEL 308
TR1.6SS308/5
TR2.4SS308/5
TR3.2SS308/5

STAINLESS STEEL 316
TR1.6SS316/5
TR2.4SS316/5
TR3.2SS316/5

ALUMINIUM 4043
TR1.6AL4043/5
TR2.4AL4043/5
TR3.2AL4043/5

ALUMINIUM 5356
TR1.6AL5356/5
TR2.4AL5356/5
TR3.2AL5356/5

MIG WIRE

MILD STEEL 70S-6
MIGWIRE0.8/15
MIGWIRE0.9/15
MIGWIRE1.0/15
MIGWIRE1.2/15

MILD STEEL ER100
ER100MIGWIRE1.0/15
ER100MIGWIRE1.2/15

STAINLESS STEEL 308
308MIGWIRE1.0/15
308MIGWIRE1.2/15

STAINLESS STEEL 316
316MIGWIRE1.0/15
316MIGWIRE1.2/15

ALUMINIUM 4043
4043MIGWIRE0.8/6
4043MIGWIRE0.9/6
4043MIGWIRE1.0/6
4043MIGWIRE1.2/6

ALUMINIUM 5356
5356MIGWIRE0.8/6
5356MIGWIRE0.9/6
5356MIGWIRE1.0/6
5356MIGWIRE1.2/6

GAS ECONOMIZER

Shielding gas economiser

Stock Code
SGEMK1

Use on TIG & MIG welding machines:
Reduces surging
Improves weld start quality
Substantially reduces gas consumption
Lock-out prevents tampering with set gas flow rate

ANTI SPATTER

Use with MMA & MIG welding to prevent spatter from sticking to work piece. Water base, Environment friendly

[1] NO175	Anti Spatter 5Ltr
[1] NO1720	Anti Spatter 20Ltr
[1] NO195	Anti Spatter 5L High Temp
[1] NO1920	Anti Spatter 20L High Temp
[2] TSB500ML	500ml Empty Spray Bottle
[3] NO18	Gel To Protect Mig Torch Shroud
[4] NO19AEROSOL	Anti Spatter 400ml

GAS WELDING & BRAZING RODS

COPPER COATED RODS	BRONZ BRAZING RODS
CCR1.6/5	BBR1.6/5
CCR2.5/5	BBR2.0/5
CCR3.2/5	BBR3.2/5

GOUGING CARBONS

Stock Code

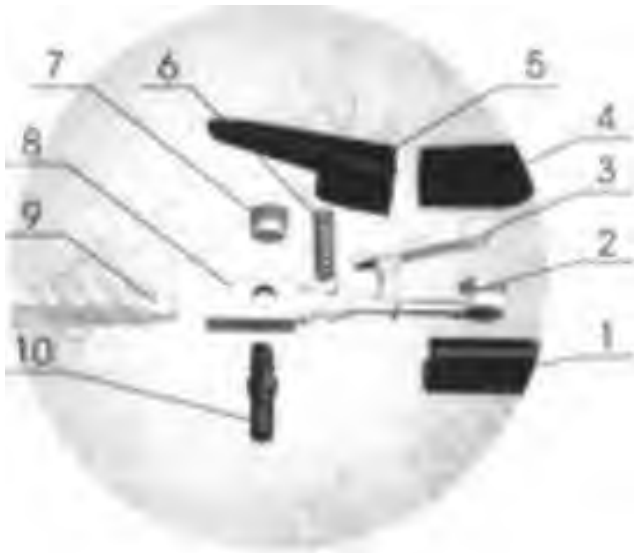
GC6.5/100
GC8.0/100
GC9.5/100
GC13/100
GC16/100
GC19/100

GOUGING TORCH

Stock Code

GTK5CQ — K5 Gouging Torch/1000 Amp

GOUGING TORCH CONSUMABLES



Stock Code	
[1&4] GTK5IQ	K5 Insulation
[2] GTK5HAQ	K5 Head Assembling
[3] GTK5UAQ	K5 Upper Arm
[5] GTK5PHQ	K5 Press Handle
[6] GTK5SQ	K5 Spring
[7] GTK5BQ	K5 Bonnet
[8] GTK5DAQ	K5 Dump Arm
[9] GTK5CQ	K5 Connector
[10] GTK5SAQ	K5 Spod Assembling

WELDING HELMETS

Stock Code	
[1] FFWH	Flip Front welding helmet
[2] CWL	Clear glass lens 108 X 51mm
[3] DWL8	Shade 8 lens 108 X 51mm
[3] DWL10	Shade 10 lens 108 X 51mm
[3] DWL12	Shade 12 lens 108 X 51mm

AUTO DARK WELDING HELMETS

Stock Code

[1] ADWH-1	Standard Auto Dark Helmet
Shade	Adjustable 9 - 13
Power Source	2 X AAA Batteries
[3] ADWH-1IL	Inner lens
[3] ADWH-1OL	Outer lens
[2] ADWH-2	Pro Series Auto Dark Helmet with Grinding function
Shade	Adjustable 9 - 13
Power Source	Solar panel
[3] ADWH-2IL	Inner lens
[3] ADWH-2OL	Outer lens

BRAZING / GAS WELDING GOGGLE

Stock Code

WG	Welding Goggle
CWLR	Clear Lens 50Mm Round
DWL6R	Shade 6 Lens 50Mm Round

WELDING BAY

Used in training centers

Stock Code

WELDING BAY

YELLOW WELDING SCREENS

Stock Code

WSY2X2	Standard 2X2m
WSY2X3	Standard 2X3m

Frame not included

WELDING STRIP CURTAINS

- The strip curtain comes in a kit form and are easy to assemble
- The blue strips are 200mm wide x 2mm thick with a 50mm overlap.
- (13) 1.6 meter strips are fitted to the 2 X 2meter frame
- The frames are designed to form a 90 degree corner with out having a gap.
- Its also fitted with wheels to easily move around

Stock Code

WSCF2X2	Standard 2x2m

TOGGLE PLIERS

Stock code	clamping force kg	Min jaw opening mm	Throat mm	Overall length mm
TP90Q	90	25	30	130
TP160Q	160	32	44	165
TP320Q	320	44	70	215

VICE GRIP - EUROPEAN PATTERN

Stock code	Length mm		Max saw opening mm
VG175	175		33
VG250	250		45
VG250MP	250	1 straight jaw	45
VG250Ni (Nickle Coated)#	250		45

WELDERS VICE GRIPS

Double Jaw

Stock Code	Overall length mm	Max Opening mm	Throat Depth mm	Throat Height mm	Jaw Width mm
WVG250	250	76	80	30	75

WELDERS VICE GRIPS

Single Jaw, Forged & heat treated

Stock	Max Opening mm	Throat Depth mm	Throat Height mm	Overall length mm
WVG100	100	80	100	280

LONG REACH WELDERS VICE GRIPS

Stock	Max Opening mm	Throat Depth mm	Throat Height mm	Overall length mm
LRWVG	200	300	100	500

ADJUSTABLE LONG REACH CLAMP

Stock code	Throat Depth mm	Overall length mm
UC740A	350, 405, 460 + 510	585-740

UTILITY CLAMPS

Four functions forged steel. Supplied with extension piece and V pad for pipe work.

Stock Code	Opening mm	Throat mm	Overall length mm	Section mm	Clamp force Kg	Threaded hole
UC120	120	100	80	16X8	250	M10
UC170	170	125	110	22X11	450	M10
UC220	220	160	120	16X8	250	M10
UC270	270	220	140	25X12	550	M10

UTILITY CLAMPS RATCHET ACTION AND MAG SPRING

*JR

Stock code	Capacity	Clamping pressure kg	Rail size
UC178RM	178	450	22
UC254RM	254	450	22
UC521RM	521	500	26
* UC254JRM	254	450	22

MAG SPRING CLAMP

Stock code	Capacity	Clamping pressure kg	Clamp press kg
UC140M	140	83	230

EASY GRIP RATCHET CLAMPS

Stock code	Capacity mm	Throat depth mm	Clamp pressure kg
UC215EZ	215	76	120
UC420EZ	420	76	120

QUICK ACTION SHARK CLAMPS

Multi purpose clamp for metal and wood clamping

Stock Code	Opening mm	Throat mm	Overall length mm	Clamping Pressure Kg	Handle straight
SHARK125T	125	80	300	450	T

HALF CLAMPS

Used to align plates prior to welding

Stock Code	Screw Anvil	Throat mm	Max clamp height mm	Handle straight
HC50	Copper plated	80	89	T

Continued ...

Continued ...

How to use

Tack weld the front side of 50mm pipe to the lower of the surfaces.

Slide half clamp onto the cut pipe, turn the handle until the misaligned materials align.

Use the half clamp to easily break off the welded pipe. Rotate and re-use the cut pipes at least 25 times.

HEAVY DUTY CAST IRON G-CLAMPS

Stock code	Clamp capacity mm	Throat mm
GCLAMP50	50	27
GCLAMP75	75	43
GCLAMP100	100	63
GCLAMP125	125	67
GCLAMP150	150	74
GCLAMP200	200	94

MAGNETIC WELDER SQUARES

Stock code	Size mm	Angles
WS1	110x95	30˚, 90˚, 135˚
WS2	110x65	30˚, 45˚, 60˚ 75˚, 90˚

HEAVY DUTY MAGNETIC WELDERS SQUARES

45˚ & 90˚ angles. With on/off switch. For use on round & flat tubing/ bar and angle & flat stock

Stock code	Base mm	Height mm	Width mm	Magnetic force Kg	Angles
MSQ110	110	95	95	36/60/30	45˚ & 90˚
MSQ150	150	130	130	65/55/55	45˚ & 90˚

HIGH CLAMPING FORCE MAGNETIC WELDERS SQUARES

90˚ angle. With two on/off switches. Holds both rounds & flats

Stock Code	Base mm	Height mm	Width mm	Magnetic force Kg	Angles
HFMS	200	200	48	68	90˚

ADJUSTABLE ANGLE MAGNETIC WELDERS SQUARES

Holds both rounds & flats.

Stock code	Base mm	Height mm	Width mm	Magnetic force Kg	Angles	Vernier reading
AMS	110	190	38	40	30˚-275˚	1˚

MAGNETIC LEVELS

90˚ angle. With on/off switch. 3 Bubble dials

Stock code	Base length mm	Base height mm	Width mm	Magnetic force Kg	Weight g
ML400	400	100	25	22	900

SNAKE CLAMP

Stock code	Description
VC450FC	2 Flat magnetic pads on 450mm flexible cable

MAGNETIC TAB HOLDER

Stock code	Description
MFT10	Versatile magnetic V shape and adjustable flat magnets

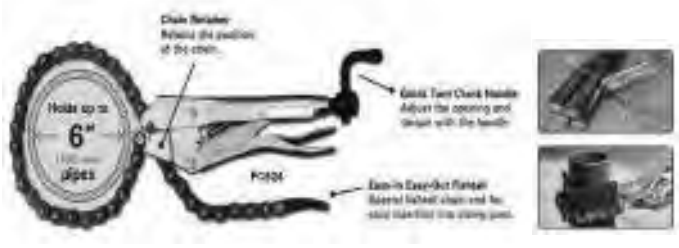
ADJUSTABLE MAGNETIC V PADS

Stock code	Description
MVDF44	Magnetic V pad kit

CORNER MAGNETS

Stock code	Description
MST327	Corner magnet twin pack 90° & 60°

LOCKING CHAIN PLIERS



Stock code	Description
UCP60C	Flexibility to clamp add shape items

HANDY HAMMER

Stock code	Dimensions mm	Weight gram
UH133	45x133	400

TABLE MOUNT LOCKING C-CLAMP

Stock code	Throat Depth mm	Capacity max	Mount thread
UCTM155	155	120	M8

EXPANDING PLIERS (Reverse action)

Stock code	OAL mm	Clamp Pressure kg	Thread	Min mm	Stroke mm
UPE165	165	230	M8	25	19
UPE255	255	410	M10	35	35

PORTABLE MAGNETIC VICE

Stock code	Base height mm	Jaw length mm	Jaw height mm	Capacity max mm
WK50	25	85	30	50

WELDERS 3 AXIS FIXTURE CLAMP

Stock code	Miter joints mm	Jaw length mm	Jaw height mm	clearance mm
WAC35SW	95	122	35	62

MAGNETIC EARTH CLAMP

Stock code	Max Amps	Dimensions mm	Mag force kg
ECGM205	300	50x70x64	50

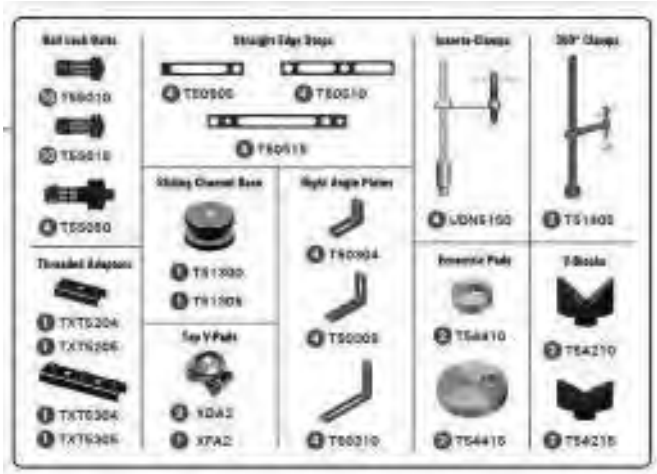
VICE GRIP EARTH CLAMP (Build Pro™)

Stock code	Throat depth mm	Max open mm	Tapped hole mm	Clamp pressure kg
WVGEARTH	89	64	M10	180

WELDING TABLE

Stock code	Table height mm	Top dimension mm	Plate thickness mm
WCT1175X950	900	1175x950	16

MODULAR FIXTURING KIT 71 PIECE



Stock code WCK71

Variety of kits available on request.

CONTOUR MARKERS

To lay out pipe and structural steel joints from 38mm - 450mm Ø

Stock code	Description
CNT1	X shape frame, carbide tipped protractor and triple jointed arm

CENTERING HEADS

Stock code	Description
CNT6	Standard Y shaped centering head for setting of center lines on pipe from 12-100 mm Ø with adjustable dial bubble protractor
CNT7	Jumbo Y shaped centering head for setting of center lines on pipe from 25-200 mm Ø with adjustable dial bubble protractor

PRO MAG LEVEL

Stock code	Description
CNT07220	Magnetic level with 360˚ adjustable dial set level grooved for use on pipes or flats

DIAL SET LEVEL

Stock code	Description
CNT8	Adjustable dial bubble protractor used in level and centering heads.

RADIUS MARKER

Stock code	Description
CNT1224	For scribing circles for up to maximum 600mm

FLANGE ALIGNER BASE

Stock code	Description
CNT32	Aligner base with cast-in magnest for use with square

HAND PROTECTION

Stock Code : GLCPS50

Gloves 2'' candy pig skin leather

Stock Code : GLCCL50

Gloves 2'' candy chrome leather

Stock Code : GLWCLD50

Gloves 2'' chrome leather weld double palm

Stock Code : GLWCLDP200

Gloves 8'' chrome leather weld double palm

Stock Code : GLWCLDP400

Gloves 16'' chrome leather weld double palm

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Stock Code : GLWGL50

Gloves 2'' green lined welding

Stock Code : GLWGL200

Gloves 8'' green lined welding

Stock Code : GLWGL400

Gloves 16'' green lined welding

Stock code : GLPD50

Gloves 2'' polka dot reversible

Stock code : GLCK50

Gloves 2'' cotton knitted

Stock Code : GLT50

Gloves 2'' tig welding

Stock Code : GLTLQ

Gloves 6'' tig welding

....continued

....continued

Stock Code : GLRHR200

Gloves 8'' red heat resistant

Stock Code : GLPVCKNIT50

Gloves 2'' PVC knit wrist med weight

Stock Code : GLPVC200HD

Gloves 8'' PVC elbow length heavy duty

Stock Code : GLPVC200

Gloves 8'' p v c elbow length med weight

Stock Code : GLPVC400

Gloves 8'' p v c shoulder length med weight

Stock Code : NINJAX4

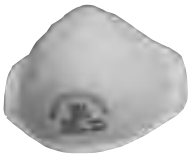
Gloves nylon cut proof

Stock Code : NINJAFLEXL OR M

Gloves nylon cut proof

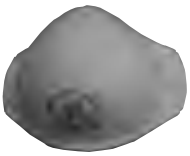
Available : Large and Medium

PERSONAL PROTECTIVE EQUIPMENT



Stock Code : DMFF1N

FF1 NORTH dust masks

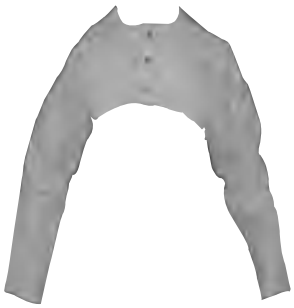


Stock Code : DMFF2N

FF2 NORTH dust masks

Stock Code : DMFF2CVN

FF2 NORTH active carbon with valve



Stock Code : WYCLQ

Shoulder yokes large chrome leather

Stock Code : WACLQ
WACLLQ

60x90cm chrome leather apron
70X120cm chrome leather apron

Stock Code : WSPATCLQ

Standard chrome leather spats

Stock Code : WSPATLCL

Long chrome leather spats

Stock Code : PVCA

60x90cm Heavy duty PVC Apron

Stock Code : RV

Reflective vests

Stock Code : RJ

Reflective jacket with zip and ID pocket

EAR PROTECTION

Stock Code : EPFC
Ear plug foam corded

Stock Code : EM-N
Standard

Stock Code : EPBSB2000
Banded ear plug SB200

POLY CARBON SPECTACLES

Stock Code : PCCSG-N
Colour : Clear

Stock Code : PCYSG-N
Colour : Yellow

Stock Code : PCDSG-N
Colour : Dark

SAFETY GOGGLES

Stock code	Colour
SG	clear

TURN-UP WELDING GOGGLES

Stock code	Colour
WG-N	dark

TRANSPARENT FACE SPLASH GUARDS

Stock code	Colour
TFSG	clear

PVC SAFETY MASKS

Stock code	Colour
PVCSM	clear

SAFETY HELMETS / HARD HATS

Stock code	Colour	Stock code	Colour
RSH-N	red	YSH-N	yellow
BSH-N	blue	OSH-N	orange

1/4" DRIVE 16 PIECE SOCKET SET 4 - 13 MM

Stock code	No of pieces	Contents
1/4 SSET4-13/16	12	1/4" sockets: 4 4.5 5 5.5 6 7 8 9 10 11 12 13
	1	1/4" driving handle
	1	1/4" 50mm long extension
	1	1/4" sliding T
	1	1/4" ratchet

1/4" DRIVE 32 PIECE SOCKET SET 4 - 13 MM

Stock code	No of pieces	Contents
1/4 SSET4-13/32	13	1/4" sockets: 4 4.5 5 5.5 6 7 8 9 10 11 12 13
	1	1/4" drive bit coupler
	12	1/4" drive bits
	1	1/4" drive handle
	1	1/4" 50mm long extension
	1	1/4" sliding T
	1	1/4" ratchet
	3	Hex keys: 1.5 2 2.5

3/8" DRIVE 21 PIECE SOCKET SET 6 - 24 MM

Stock code	No of pieces	Contents
3/8SSET6-24	13	3/8" sockets: 6 8 10 11 12 13 14 15 17 19 21 22 24
	1	3/8" ratchet
	1	3/8" sliding T
	3	3/8" extension 45, 75 + 150mm long
	2	3/8" 16 + 21mm spark plug socket
	1	3/8" universal joint

1/4" & 1/2" DRIVE 56 PIECE SOCKET SET 4 - 32 MM

Stock code	No of pieces	Contents
1/4-1/2SSET4-32	11	1/4" sockets: 4 4.5 5 5.5 6 7 8 9 10 11 13
	17	1/4" socket drive bits: No's 1 2 No's 1 2 3 No's 4 5.5 7 No's T10 T15 T20 T25 T30 No's 3 4 5 6
	1	1/4" ratchet
	1	1/4"drive handle
	1	1/4" sliding T
	1	1/4" universal joint
	1	1/4" 100mm long extension
	13	1/2" sockets: 10 11 12 13 14 15 17 19 22 24 27 30 32
	1	1/2" ratchet
	2	1/2" 16 + 21mm spark plug sockets
	2	1/2" 125 + 250mm long extension
	1	1/2" M to 3/8"F reducer
	1	1/2" universal joints
	3	hex keys: 1 1.5 2

1/2" DRIVE 13 PIECE SOCKET SET 8 - 22 MM

Superlock - Flank drive for nut corner protection and to enable the fastening of damaged nuts.

Stock code	No of pieces	Contents
1/2SSET8-22	11	1/2" sockets: 8 9 10 11 12 13 14 15 17 19 22
	1	1/2" ratchet
	1	1/2" 125mm long extension

1/2" DRIVE 17 PIECE SOCKET SET 10 - 24 MM

Stock code	No of pieces	Contents
1/2SSET10-24	11	1/2" sockets: 10 11 12 13 14 15 17 19 21 22 24
	1	1/2" ratchet
	2	1/2" 125 + 250mm long extension
	1	1/2" M to 3/8"F reducer
	1	1/2" universal joints
	1	1/2" 21mm socket

1/2" DRIVE 28 PIECE SOCKET SET 8 - 32 MM

Stock code	No of pieces	Contents
1/2SSET8-32	20	1/2" sockets: 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 27 30 32
	1	1/2" ratchet
	2	1/2" 125 + 250mm long
	1	extension
	1	1/2" 16 + 21mm spark plug sockets
	1	1/2" sliding T
	1	1/2" universal joints
	1	1/2" speed brace

1/2" DRIVE 24 PIECE SAE SOCKET SET 5/16"-1 1/4"

Stock code	No of pieces	Contents
1/2SSET5/16-1 1/4#	18	1/2" sockets: 5/16, 3/8, 13/32, 7/16, 15/32, 1/2, 9/16, 19/32, 5/8, 21/32, 11/16, 3/4, 13/16, 7/8, 15/16, 1 1/16, 1 1/8, 1 1/4
	1	1/2" ratchet
	2	1/2" extension bar 125 + 150mm long
	1	1/2" spark plug sockets
	1	1/2" sliding T
	1	1/2" universal joints

1/2" DRIVE HEX SOCKET SET 9 PIECE

Stock code	No of pieces	Contents Hex Size
1/2SHSET	9	4 5 6 7 8 10 12 14 17

1/2" DRIVE SAE HEX SOCKET SET 9 PIECE

Stock code	No of pieces	Contents Hex Size
1/2SHSETIMP	9	3/16, 7/32, 1/4, 9/32, 5/16, 3/8, 1/2, 9/16, 5/8

1/2" DRIVE TORX SOCKET SET 9 PIECE

Stock code	No of pieces	Contents Torx Size
1/2STSET	9	T20 T25 T27 T30 T40 T45 T50 T55 T60

1/2" DEEP IMPACT SOCKET SET 17-21 NYLON COATED

Stock code	No of pieces	Contents Hex Size
1/2SSET 17-21/3	3	17 19 21

3/4" DRIVE 15 PIECE SOCKET SET 22 - 50 MM 12 POINT

Stock code	No of pieces	Contents
3/4SSET22-50	10	3/4" sockets: 22 24 27 30 32 36 38 41 46 50
	1	3/4" ratchet handle
	1	3/4"sliding T
	2	3/4"extension 100 + 200mm long

3/4" DRIVE 20 PIECE SAE SOCKET SET 7/8" - 2"

Stock code	No of pieces	Contents
3/4SSET7/8-2	16	3/4" sockets: 7/8, 15/16, 1, 11/16, 11/8, 13/16, 11/4, 15/16, 13/8, 17/16, 11/2, 15/8, 13/4, 113/16, 17/8, 2
	1	3/4" ratchet handle
	1	3/4"sliding T
	2	3/4"extension bars 4" and 8" long

1" DRIVE PIECE SOCKET SET 36 - 80 MM 12 POINT

Stock code	No of pieces	Contents
1 SSET36-80	10	1" sockets: 36 41 46 50 55 55 60 65 70 75 80
		1" ratchet
	1	1" sliding T
	1	1" 200 + 400mm long
	2	extension bar

1/4" DRIVE SOCKETS 6 POINT SUPER LOCK

Superlock - Flank drive for nut corner protection and to enable the fastening of damaged nuts.

Stock code	Size mm	D vmm	L mm
1/4S4	4	12	25
1/4S4.5	4.5	12	25
1/4S5	5	12	25
1/4S5.5	5.5	12	25
1/4S6	6	12	25
1/4S7	7	12	25
1/4S8	8	12	25
1/4S9	9	13	25
1/4S10	10	14	25
1/4S11	11	16	25
1/4S12	12	17	25
1/4S13	13	18	25
1/4S14	14	20	25

3/8" DRIVE SOCKETS 6 POINT SUPER LOCK

Superlock - Flank drive for nut corner protection and to enable the fastening of damaged nuts.

Stock code	Size mm	D mm	L mm
3/8S8	8	17	28
3/8S9	9	17	28
3/8S10	10	17	28
3/8S11	11	17	28
3/8S12	12	17	28

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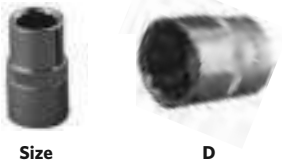
Stock code	Size mm	D mm	L mm
3/8S13	13	18	28
3/8S14	14	20	28
3/8S15	15	22	28
3/8S16	16	22	28
3/8S17	17	24	28
3/8S18	18	26	30
3/8S19	19	26	30
3/8S20	20	26	30
3/8S21	21	28	30
3/8S22	22	30	30
3/8S24	24	32	30

1/2" DRIVE SOCKETS 12 POINT SUPER LOCK

Superlock - Flank drive for nut corner protection and to enable the fastening of damaged nuts.



Stock code	Size mm	D mm	L mm
1/2S8	8	22	38
1/2S9	9	22	38
1/2S10	10	22	38
1/2S11	11	22	38
1/2S12	12	22	38
1/2S13	13	22	38
1/2S14	14	22	38
1/2S15	15	22	38
1/2S16	16	22	38
1/2S17	17	24	38
1/2S18	18	26	38
1/2S19	19	26	40
1/2S20	20	28	40
1/2S21	21	28	40
1/2S22	22	30	40
1/2S23	23	32	40
1/2S24	24	32	40
1/2S27	27	36	42
1/2S30	30	40	42
1/2S32	32	42	42

3/4" DRIVE SOCKETS 6 POINT

Stock code	Size mm	D mm	L mm
3/4S19	19	30	47.5
3/4S21	21	30	47.5
3/4S22	22	33	49.5
3/4S23	23	34	49.5
3/4S24	24	35	49.5
3/4S26	26	37	50
3/4S27	27	38	52
3/4S29	29	40	52
3/4S30	30	42	54
3/4S32	32	44	56
3/4S33	33	46	56
3/4S35	35	48	58
3/4S36	36	50	58
3/4S38	38	52	60
3/4S41	41	56	64

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Stock code	Size mm	D mm	L mm
3/4S46	46	62	68
3/4S50	50	68	72
3/4S55	55	74	76
3/4S60	60	80	78

3/4" DRIVE SAE SOCKETS 12 POINT

Stock code	Size A/F inch	D mm	L mm
3/4S3/4	3/4	30	47.5
3/4S13/16	13/16	32	49.5
3/4S7/8	7/8	33	49.5
3/4S15/16	15/16	35	49.5
3/4S1	1	37	50
3/4S11/16	11/16	38	52
3/4S11/8	11/8	40	52
3/4S13/16	13/16	42	54
3/4S11/4	11/4	44	56
3/4S15/16	15/16	46	56
3/4S13/8	13/8	48	58
3/4S17/16	17/16	50	58
3/4S11/2	11/2	52	60
3/4S15/8	15/8	56	64
3/4S13/4	13/4	60	66
3/4S113/14	113/14	62	68
3/4S17/8	17/8	64	70
3/4S2	2	68	72

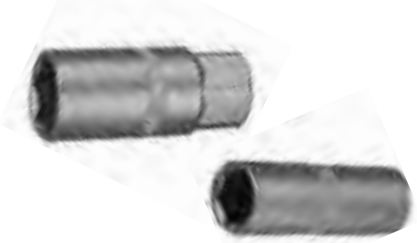
1" DRIVE SOCKETS 12 POINT

Stock code	Size mm	D mm	L mm
1S35	35	48	61
1S36	36	51	65
1S38	38	54	65
1S41	41	57	70
1S46	46	65	75
1S50	50	70	75
1S54	54	74	80
1S55	55	76	80
1S58	58	79	80
1S60	60	82	84
1S63	63	86	87
1S65	65	88	87
1S67	67	90	90
1S70	70	94	93
1S71	71	95	93
1S75	75	100	97
1S77	77	102	103
1S80	80	103	103

1/2" DRIVE DEEP SOCKETS 6 POINT

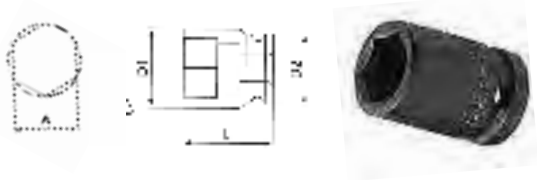
Stock code	Size mm	D mm	L mm
1/2SL10	10	22	77
1/2SL11	11	22	77
1/2SL12	12	22	77
1/2SL13	13	22	77
1/2SL14	14	22	77
1/2SL15	15	22	77
1/2SL16	16	22	77
1/2SL17	17	24	77
1/2SL18	18	26	77
1/2SL19	19	26	77
1/2SL20	20	28	77
1/2SL21	21	28	77
1/2SL22	22	30	77
1/2SL24	24	32	77
1/2SL27	27	36	77
1/2SL30	30	40	77
1/2SL32	32	42	77

SPARK PLUG SOCKETS



Stock code	Drive	Size mm	D mm	L mm
1/2SPS16	1/2	16	22	65
1/2SPS21	1/2	21	28	67

1/2" DRIVE IMPACT SOCKET STANDARD LENGTH



Stock code	Size mm	D1 mm	D2 mm	L mm
1/2IS8	8	14	23	38
1/2IS10	10	17	23	38
1/2IS11	11	18	23	38
1/2IS13	13	20	23	38
1/2IS14	14	22	23	38
1/2IS15	15	23	23	38
1/2IS16	16	24	24	38
1/2IS17	17	26	26	38
1/2IS18	18	27	27	38
1/2IS19	19	28	28	40
1/2IS21	21	31	31	40
1/2IS22	22	32	32	42

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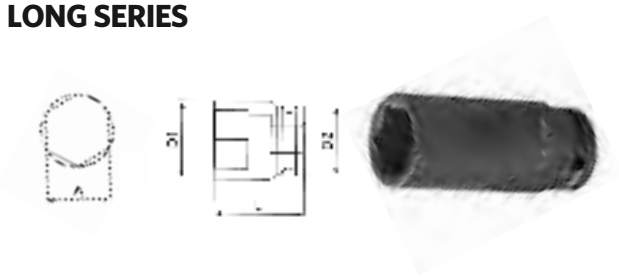
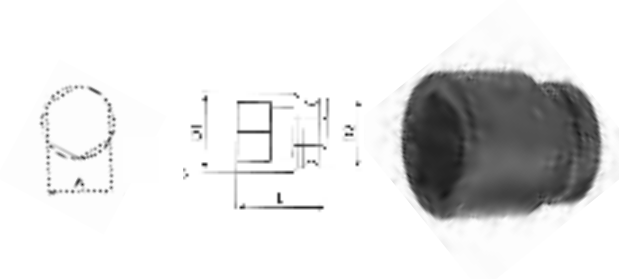
Stock code	Size mm	D1 mm	D2 mm	L mm
1/2IS24	24	34	34	44
1/2IS27	27	38	35	46
1/2IS30	30	42	35	46
1/2IS32	32	44	35	46

1/2" DRIVE DEEP IMPACT SOCKET LONG SERIES



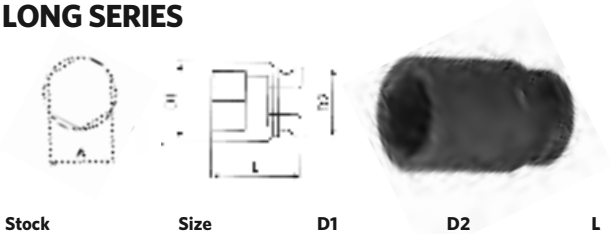
Stock code	Size mm	D1 mm	D2 mm	L mm
1/2DIS10	10	17	23	78
1/2DIS11	11	18	23	78
1/2DIS13	13	20	23	78
1/2DIS14	14	22	23	78
1/2DIS15	15	23	23	78
1/2DIS16	16	24	24	78
1/2DIS17	17	26	26	78
1/2DIS18	18	27	27	78
1/2DIS19	19	28	28	78
1/2DIS21	21	31	31	78
1/2DIS22	22	32	32	78
1/2DIS23	23	33	33	78
1/2DIS27	27	38	35	78
1/2DIS30	30	42	35	78
1/2DIS32	32	44	35	78

3/4" DRIVE IMPACT SOCKET STANDARD LENGTH



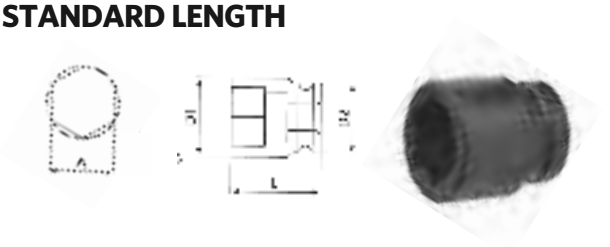
Stock code	Size mm	D1 mm	D2 mm	L mm
3/4IS17	17	29	38	53
3/4IS18	18	30	38	53
3/4IS19	19	32	38	53
3/4IS21	21	34	38	53
3/4IS22	22	36	40	53
3/4IS24	24	38	40	53
3/4IS27	27	42	42	53
3/4IS30	30	46	44	53
3/4IS32	32	48	44	53
3/4IS34	34	51	44	53
3/4IS36	36	53	44	53
3/4IS41	41	60	44	58
3/4IS46	46	66	44	63
3/4IS50	50	71	44	68
3/4IS55	55	77	54	73
3/4IS60	60	83	60	80

3/4" DRIVE DEEP IMPACT SOCKET LONG SERIES



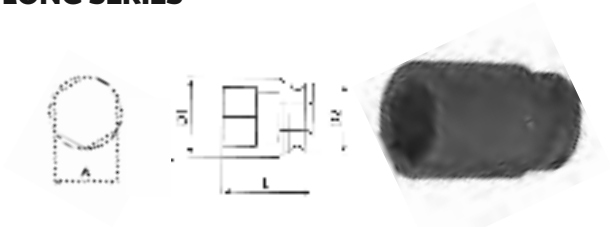
Stock code	Size mm	D1 mm	D2 mm	L mm
3/4DIS17	17	29	38	80
3/4DIS18	18	30	38	80
3/4DIS19	19	32	38	80
3/4DIS20	20	32	38	80
3/4DIS21	21	34	38	80
3/4DIS22	22	36	40	80
3/4DIS27	27	42	42	80
3/4DIS30	30	46	44	80
3/4DIS32	32	48	44	80
3/4DIS34	34	51	44	80
3/4DIS36	36	53	44	80
3/4DIS40	40	59	44	80
3/4DIS41	41	60	44	80
3/4DIS46	46	66	44	95
3/4DIS50	50	71	44	100

1" DRIVE IMPACT SOCKET STANDARD LENGTH



Stock code	Size mm	D1 mm	D2 mm	L mm
1IS27	27	45	50	60
1IS30	30	49	50	62
1IS32	32	52	52	63
1IS34	34	54	54	63
1IS36	36	56	53	67
1IS41	41	63	54	70
1IS46	46	69	54	76
1IS50	50	74	54	82
1IS55	55	80	55	87
1IS60	60	86	60	91

1" DRIVE DEEP IMPACT SOCKET LONG SERIES



Stock code	Size mm	D1 mm	D2 mm	L mm
1DIS27	27	45	50	88
1DIS30	30	49	52	88
1DIS32	32	52	53	88
1DIS36	36	56	54	88
1DIS41	41	63	54	88

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Stock code	Size mm	D1 mm	D2 mm	L mm
1DIS46	46	69	54	100
1DIS50	50	74	54	100
1DIS55	55	80	55	110
1DIS60	60	87	60	110
1DIS65	65	93	65	120
1DIS70	70	99	70	125

IMPACT EXTENTION BARS

Stock code	Drive	Overall Length
3/4IE200	3/4"	200mm
1IE200	1"	200mm

IMPACT ADAPTERS

Stock code	Male Drive	Female Drive
AD3/4 - 1/2	1/2	3/4
AD3/4 - 1	1	3/4
AD1 - 3/4	3/4	1
AD1 - 1/2	1/2	1

E SOCKETS

1/4" DRIVE

Stock code	Size mm	Stock code	Size mm
1/4SE4	4	1/4SE8	8
1/4SE5	5	1/4SE10	10
1/4SE6	6	1/4SE11	11
1/4SE7	7		

3/8" DRIVE

Stock code	Size mm
3/8SE6	6
3/8SE7	7
3/8SE8	8
3/8SE10	10
3/8SE11	11
3/8SE12	12
3/8SE14	14
3/8SE16	16
3/8SE18	18
3/8SE20	20

1/2" DRIVE

Stock code	Size mm
1/2SE10	10
1/2SE11	11
1/2SE12	12
1/2SE14	14
1/2SE16	16
1/2SE18	18
1/2SE20	20
1/2SE22	22
1/2SE24	24

HEX SOCKET BITS

1/4" DRIVE

Stock code	Size mm
1/4SH3	3
1/4SH4	4
1/4SH5	5
1/4SH6	6
1/4SH7	7
1/4SH8	8
1/4SH10	10

3/8" DRIVE

Stock code	Size mm
3/8SH3	3
3/8SH4	4
3/8SH5	5
3/8SH5.5	5.5
3/8SH6	6
3/8SH7	7
3/8SH8	8
3/8SH9	9
3/8SH10	10

1/2" DRIVE

Stock code	Size mm	Stock code	Size mm
1/2SH4	4	1/2SH10	10
1/2SH5	5	1/2SH12	12
1/2SH6	6	1/2SH14	14
1/2SH7	7	1/2SH17	17
1/2SH8	8		

TORX SOCKET BITS

1/4" DRIVE

Stock code	Size mm	Stock code	Size mm
1/4ST8	T8	1/4ST25	T25
1/4ST10	T10	1/4ST27	T27
1/4ST15	T15	1/4ST30	T30
1/4ST20	T20	1/4ST40	T40

3/8" DRIVE

Stock code	Size mm	Stock code	Size mm
3/8ST8	T8	3/8ST27	T27
3/8ST10	T10	3/8ST30	T30
3/8ST15	T15	3/8ST40	T40
3/8ST20	T20	3/8ST45	T45
3/8ST25	T25	3/8ST50	T50
		3/8ST55	T55

1/2" DRIVE

Stock code	Size mm	Stock code	Size mm
1/2ST20	T20	1/2ST45	T45
1/2ST25	T25	1/2ST50	T50
1/2ST27	T27	1/2ST55	T55
1/2ST30	T30	1/2ST60	T60
1/2ST40	T40	1/2ST70	T70

UNIVERSAL JOINTS

Stock code	Drive mm	Ø mm	Overall length mm
1/4UJ	1/4"	13	40
3/8UJ	3/8"	19	50
1/2UJ	1/2"	24	72
1UJ	1"	24	143

REDUCING ADAPTORS

Stock code	Description	Head Ø mm	Length mm
3/8S-1/4	3/8" female - 1/4" male	17	28
1/2S-3/8	1/2" female - 3/8" male	22	35
3/4S-1/2	3/4" female - 1/2" male	32	54

COUPLING DRIVES

Stock code	Female square drive	Female hex drive	Head Ø mm	Length mm
1/4S-1/4HEX	1/4"	1/4"	12	25
3/8S-1/4HEX	3/8"	1/4"	18	30
1/2S-1/4HEX	1/2"	1/4"	22	28

RATCHET HANDLES

Stock code	Drive	Pawl tooth	Head Ø mm	Overall length mm
1/2RL24	1/4"	24	46.8	265

Stock code	Drive	Pawl tooth	Head Ø mm	Overall length mm
1/4RL	1/4"	36	25	146
3/8RL	3/8"	36	35	200
1/2RL	1/2"	36	41	255
3/4RL	3/4"	24	70	500

Stock code	Drive	Pawl tooth	Head Ø mm	Overall length mm
1/4RL72	1/4"	72	25	144
3/8RL72	3/8"	72	35	200
1/2RL72	1/2"	72	40	250

1" RATCHET HANDLES

Stock code	Drive	Pawl tooth	Head Ø mm	Overall length mm
1RL	1"	24	70	165
1HANDLE				550

RATCHET HANDLES WITH DISC CHANGE

Stock code	Drive	Overall length mm
1/2R	1/2"	250
3/4R	3/4"	500

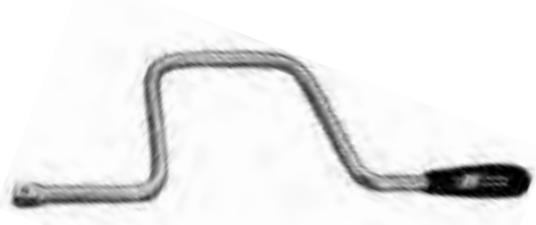
EXTENSION BARS

Stock code	Drive	Overall length mm	HeadØ mm
1/4E50	1/4"	50	12.5
1/4E100	1/4"	100	12.5
1/4E150	1/4"	150	12.5
3/8E75	3/8"	75	18
3/8E150	3/8"	150	18
3/8E250	3/8"	250	18
1/2E75	1/2"	75	24
1/2E125	1/2"	125	24
1/2E150	1/2"	150	24
1/2E200	1/2"	200	24
1/2E250	1/2"	250	24
3/4E200	3/4"	200	36
3/4E400	3/4"	400	36
1E200	1"	200	36
1E400	1"	400	36

WOBBLE EXTENSION BARS

Stock code	Drive	Overall length mm	HeadØ mm
1/4WE100	1/4"	100	12.5
1/4WE150	1/4"	150	12.5
3/8WE150	3/8"	150	18
1/2WE75#	1/2"	75	24
1/2WE125	1/2"	125	24

SPEED BRACE



Stock code	Description	Overall length mm
1/2SB	1/2" Drive speed brace	395

SLIDING T' s

Stock code	Drive mm	Head Ø mm	Length mm
1/4ST	1/4"	13	115
3/8ST	3/8"	19	165
1/2ST	1/2"	24	250
3/4ST	3/4"	35	450
1ST	1"	50	550

POWER BARS

Stock code	Description	Overall length mm
1/2PB	1/2" drive power bar	360
3/4PB	3/4" drive power bar	475
1PB	1" drive power bar	650
PBSQ1/2	Square for 1/2" power bar	

1/4" DRIVE HANDLES

Stock code	Drive mm	Length mm
1/4DH	1/4"	150

Wera 1/4" MAGNETIC BIT HOLDER

Stock code	Drive mm	Length mm
BITHOLDER	1/4"	210

Wera BIT HOLDER FOR DRILL

Stock code	
WSDBITHOLDER	Holder for 1/4" bits

1/4" HEX DRIVE PHILLIPS BITS

Stock code	Size Phillips	Length mm	Stock code	Size Phillips	Length mm
BITPH0	0	25	BITPHL1	1	50
BITPH1	1	25	BITPHL2	2	50
BITPH2	2	25	BITPHL3	3	50
BITPH3	3	25			
BITPH4	4	25			

1/4" HEX DRIVE POZIDRIVE BITS

Stock code	Size pozi	Length mm	Stock code	Size pozi	Length mm
BITPZ0	pz0	25	BITPZL1	pz1	50
BITPZ1	pz1	25	BITPZL2	pz2	50
BITPZ2	pz2	25	BITPZL3	pz3	50
BITPZ3	pz3	25			

1/4" HEX DRIVE HEX BITS

Stock code	Size mm	Length mm	Stock code	Size mm	Length mm
BITHE1.5	1.5	25	BITHEX6	6	25
BITHEX2	2	25	BITHEX7#	7	25
BITHEX2.5	2.5	25	BITHEX8	8	25
BITHEX3	3	25	BITHEX10	10	25
BITHEX4	4	25			
BITHEX5	5	25			

1/4" HEX DRIVE SLOT BITS

Stock code	Blade thickness mm	Blade width mm	Length	Stock code	Blade thickness mm	Blade width mm	Length
BITSLOT3#	0.5	3	25	BITSLOT6	1	6	25
BITSLOT4	0.8	4	25	BITSLOT7#	1.2	7	25
BITSLOT5	0.8	5	25	BITSLOT8#	1.2	8	25

1/4" HEX DRIVE TORX BITS

Stock code	Size	Length	Stock code	Size	Length
BITT8	T8	25	BITT25	T25	25
BITT10	T10	25	BITT27	T27	25
BITT15	T15	25	BITT30	T30	25
BITT20	T20	25	BITT40	T40	25

TORQUE WRENCHES CLICK TYPE

Stock code	Drive	Dimensions Width mm	Dimensions Length mm	Max Torque (NM)	Min Torque (NM)
TW3/8110	3/8	35.8	306	110	5
TW1/2210	1/2	46.4	450	210	28
TW1/2350	1/2	46.4	635	350	35
TW3/4560	3/4	74	850	560	70

TORQUE WRENCHES

Alll steel construction ± 4% accuracy

Stock code	Drive	Dimensions Width	Dimensions Length	Torque Range Nm
TW1/420Q	1/4	38	290	4 - 20
TW3/860Q	3/8	38	388	10 - 60
TW1/2200Q	1/2	40	468	40 - 200
TW1/2335Q	1/2	40	528	65 - 335
TW3/41000Q	3/4	60	1055	200 - 1000

TORQUE TESTER

Stock code	Rang mm	Accuracy + %	Resolution mm
TT20-400	20-400	2	0.1

DOUBLE SOCKET RATCHET PODGER SPANNERS

Stock code	Size mm	Head width mm	Overall length mm
PS10-13	10x13	34	230
PS16-18	16x18	38	310
PS17-19	17x19	42	310
PS19-21	19x21	52	350
PS24-30	24x30	61	390
PS32-36	32x36	69	420

COMBINATION SPANNERS

DEEP OFF-SET

Deep off-set Chrome Vanadium DIN3113 Form B

Stock code	Size mm	Length mm	Stock code	Size mm	Length mm
CS6	6	100	CS19	19	258
CS7	7	112	CS20	20	270
CS8	8	125	CS21	21	280
CS9	9	133	CS22	22	292
CS10	10	143	CS23	23	305
CS11	11	158	CS24	24	318
CS12	12	168	CS25	25	328
CS13	13	185	CS26	26	340
CS14	14	198	CS27	27	352
CS15	15	210	CS28	28	370
CS16	16	220	CS29	29	370
CS17	17	232	CS30	30	390
CS18	18	245	CS32	32	412

COMBINATION SPANNER SETS

DEEP OFF-SET

Chrome Vanadium DIN3113 Form B

Stock code	No of pieces	Range mmA/F	Contents mmA/F
CSSET6-22/12	12	6-22	6 7 8 9 10 11 12 13 14 17 19 22
CSSET6-22/14	14	6-22	6 7 8 9 10 11 12 13 14 15 17 18 19 22
CSSET6-22/17	17	6-22	all sizes 6-22x1mm
CSSET6-24/19	19	6-24	all sizes6-24x1mm
CSSET6-32/26	26	6-32	all sizes6-32x1mm (except 31mm)

COMBINATION SPANNERS

15° OFF-SET

Chrome Vanadium Satin finish DIN3113 Form A

Stock code	Size mm	Length mm	Stock code	Size mm	Length mm
CS6/15	6	125	CS20/15	20	248
CS7/15	7	116	CS21/15	21	270
CS8/15	8	140	CS22/15	22	290
CS9/15	9	145	CS23/15	23	290
CS10/15	10	160	CS24/15	24	310
CS11/15	11	168	CS25/15	25	320
CS12/15	12	170	CS26/15	26	320
CS13/15	13	180	CS27/15	27	330
CS14/15	14	200	CS30/15	30	350
CS15/15	15	200	CS32/15	32	370
CS16/15	16	221	CS36/15	36	450
CS17/15	17	222	CS41/15	41	470
CS18/15	18	223	CS46/15	46	490
CS19/15	19	224	CS50/15	50	500

COMBINATION SPANNER SETS

15° OFF-SET

Chrome Vanadium. DIN3113 Form A

Stock code	No of pieces	Range mmA/F	Contents mmA/F
CSSET6-22/15/12	12	6-22	6 7 8 9 10 11 12 13 14 17 19 22
CSSET6-22/15/14	14	6-22	6 7 8 9 10 11 12 13 14 15 17 18 19 22
CSSET6-22/15/17	17	6-22	all sizes 6-22x1mm
CSSET6-24/15/19	19	6-24	all sizes6-24x1mm
CSSET6-32/15/26	26	6-32	all sizes6-32x1mm (except 31mm)

DOUBLE OPEN ENDED SPANNERS

Chrome Vanadium. DIN3110

Stock code	Size mm	Length mm	Stock code	Size mm	Length mm
DOES6-7	6-7	122	DOES20-22	20-22	235
DOES8-9	8-9	140	DOES21-23	21-23	250
DOES10-11	10-11	154	DOES22-24	22-24	265
DOES12-13	12-13	172	DOES24-27	24-27	265
DOES14-15	14-15	190	DOES27-30	27-30	300
DOES16-17	16-17	205	DOES30-32	30-32	301
DOES18-19	18-19	222			

DOUBLE OPEN END SPANNERS SETS

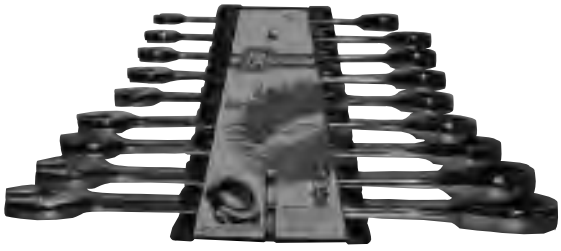
Chrome Vanadium. DIN3110

Stock code	No of pieces	Range mm A/F	Contents
DOESSET6-22	8	6-22	6x7 8x9 10x11 12x13 14x15 16x17 18x19 20x22
DOESSET6-32	12	6-32	6x7 8x9 10x11 12x13 14x15 16x17 18x19 20x22 21x23 24x27 25x28 30x32

DOUBLE FLEX SOCKET WRENCHES

Stock code	Socket size mm	Length mm	d1	d2
DFSW6-7	6x7	175	11	11
DFSW8-9	8x9	180	14	14
DFSW10-11	10x11	200	14	16
DFSW12-13	12x13	217	18	18
DFSW14-15	14x15	244	20	22
DFSW16-17	16x17	255	24	24
DFSW18-19	18x19	277	26	26
DFSW20-22	20x22	302	30	31
DFSW21-23	21x23	316	30	33

RATCHET WRENCH SET



Stock code	No Pieces	Range mm	Contents
RWSET8-24	9	8-24	8,10, 11, 13, 14, 17, 19, 22, 24

RATCHET WRENCHES

Stock code	Size mm	Length mm
RW8	8	130
RW9	9	130
RW10	10	145
RW11	11	165
RW12	12	185
RW13	13	185
RW14	14	200
RW15	15	200
RW16	16	220
RW17	17	220
RW18	18	240
RW19	19	240
RW21	21	245
RW22	22	245
RW24	24	245

C SPANNERS

For grooved nuts to DIN1804 and bearing nuts to DIN981

Stock code	Capacity mm	Overall length mm	Thickness mm
CSPAN34-36	34-36	170	5
CSPAN40-42	40-42	170	5
CSPAN45-50	45-50	206	6
CSPAN52-55	52-55	206	6
CSPAN58-62	58-62	240	7
CSPAN68-75	68-75	240	7
CSPAN80-90	80-90	280	8
CSPAN95-100	95-100	280	8
CSPAN110-115	110-115	335	10

SHIFTING SPANNERS HEAVY DUTY

Chrome Vanadium steel Drop Forged

Stock Code	Length mm	Max jaw opening mm	Torque test Nm
SS100	100	17	70
SS150	150	20	164
SS200	200	25	300
SS250	250	30	510
SS300	300	35	860
SS450	450	55	2300
SS600	600	65	2800

SHIFTING SPANNERS HEAVY DUTY

Chrome Vanadium steel Drop Forged. Best price to quality ratio

Stock Code	Length mm	Max jaw opening mm	Torque test Nm
SS150C	150	14	160
SS200C	200	20	300
SS250C	250	25	510
SS300C	300	35	860
SS375C	375	45	1700

SLOGGING SPANNERS

Stock Code	Size mm	Head Ø mm	Head width mm	Length mm
SS30	30	51	20	190
SS32	32	54	25	207
SS36	36	54	25	207
SS41	41	62	28	210
SS46	46	68	31	260
SS50	50	74	35	263
SS55	55	81	35	295
SS60	60	88	41	295
SS65	65	95	44	327
SS70	70	102	47	330
SS75	75	109	50	371
SS80	80	116	54	380
SS85	85	123	54	425
SS90	90	130	54	431

SILVER LINE ENGINEERS COMBINATION PLIERS DIN 5244

Chrome Vanadium

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPa
ECP160	160	1.6	1600
ECP180	180	1.6	1600
ECP200	200	1.6	1600

SILVER LINE FENCING PLIERS ANSI STANDARD

Chrome Vanadium

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPa
FP270	270	2.3	830

SILVER LINE LONG NOSE PLIERS DIN 5236A

Chrome Vanadium

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPa
LNP160	160	1.6	1600
LNP200	200	1.6	1600

SILVER LINE BENT NOSE PLIERS DIN 5236B

Chrome Vanadium

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPa
BNP200	200	1.6	1600

SILVER LINE DIAGONAL CUTTERS DIN 5238B

Chrome Vanadium

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPa
DC140	140	1.6	1600
DC160	160	1.6	1600

SILVER LINE HEAVY DUTY DIAGONAL CUTTERS DIN 5238A

Chrome Vanadium

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPa
DC180	180	1.8	1600

HEAVY DUTY CUTTERS

Chrome Vanadium

DIN 5749

Stock Code	Length mm	Max wire Ø mm	Tensile strength MPA
DC200	200	1.6	1600

SILVER LINE FLAT NOSE PLIERS DIN 5258

Chrome Vanadium

Stock Code	Length mm	Length of jaw mm	Width of jaw mm
FNP160	160	51.5	8.7

SILVER LINE ROUND NOSE PLIERS DIN 5249

Chrome Vanadium

Stock Code	Length mm	Length of jaw mm	Jaw large Ø	Jaw small Ø mm
RNP160	160	47.5	8.7	2.5

END NIPPER PLIERS

Stock Code	Length mm	Max wire Ø mm	Jaw length	Head width
ENP160	160	1.6	6.8	23.8

TOWER PINCERS

Drop forged S55C body. Body heat treated to HRc 42-48. Blades heat treated to HRc 58-60

Stock Code	Size mm	Wire Ø mm	Length mm
TP225Q	250	2	250

WIRE STRIPPERS

Chrome Vanadium

Stock Code	Length mm	Max wire stripping Ø mm	Jaw length
WS160	160	6	38.5

AUTOMATIC WIRE STRIPPERS

AWS2 & AWS3

AWS8

Stock Code	Length mm	Max wire stripping Ø mm
AWS2	165	0.5 - 2.0
AWS3	165	1.0 - 3.2
AWS8	165	0.5 - 8

WATER PUMP PLIERS

Chrome Vanadium

Stock Code	Length mm	Opening mm	Length of jaws mm
WPP250	250	47	34.5
WPP315	315	50	37.5

WATER PUMP PLIERS

Best price to quality ratio. Chrome Vanadium

Stock Code	Length mm	Opening mm	Length of jaws mm
WPP250Q	250	47	34.5
WPP300Q	300	50	37.5

ENGINEERS COMBINATION PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Tensile strength MPa
ECP160C	160	1.6	1600
ECP180C	180	1.6	1600
ECP 200C	200	1.6	1600

MINI ENGINEER COMBINATION PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Tensile strength MPa
MECP110	110	1.25	1241

FLAT NOSE PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Length of jaw mm	Width of jaw mm
FNP160C	160	51.5	8.7

MINI FLAT NOSE PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Width of jaw mm	Tensile strength MPa
MFNP130	130	5	1241

LONG NOSE PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Jaw length mm	Jaw max width mm	Jaw min width
LNP160C	160	1.6	51.5	8.7	2.5
LNP200C	200	1.6	79.5	10.4	4.0

MINI LONG NOSE PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Tensile strength MPa
MLNP125	125	1.25	1241

LONG NOSE PLIERS EXTRA LONG

Stock Code	Length mm
LNP400#	400

MINI BENT NOSE PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Nose width mm	Tensile strength MPa
MBNP120	120	2.4	1241

DIAGONAL CUTTERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Tensile strength MPa
DC160C	160	1.6	1600
DC180C	180	1.8	1600

MINI DIAGONAL CUTTERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Tensile strength MPa
MDC110	110	1.25	1241

ELECTRICAL CUTTERS

Stock Code	Size mm	Range mm AWG	Range mm Copper
EC125	125	18	20

MINI END NIPPER PLIERS

Best price to quality ratio. Chrome Vanadium

Stock code	Length mm	Max wire Ø mm	Tensile strength MPa
MENP110	110	1.25	1241

1000V ELECTRICIANS INSULATED COMBINATION PLIERS

Insulated handles. Tested to 1000 Volts.

Stock Code	Length mm	Cutting normal wire mm	Capacity hard wire mm
ECP180V	180	2.8	2.5
ECP 200V	200	3.0	2.5

1000V ELECTRICIANS INSULATED COMBINATION NOSE PLIERS

Insulated handles. Tested to 1000Volts.

Stock Code	Length mm	Cutting normal wire mm	Capacity hard wire mm
LNP160V	160	2.5	1.6
LNP 200V	200	2.8	1.6

1000V ELECTRICIANS INSULATED DIAGONAL CUTTERS

Insulated handles. Tested to 1000Volts.

Stock Code	Length mm	Cutting normal wire mm	Capacity hard wire mm
DC160V	160	2.8	2.0
DC180V	180	3.0	2.5

EXTERNAL CIRCLIP PLIERS - STRAIGHT NOSE

Chrome Vanadium

Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ECPS140	140	0.9	10-25
ECPS180	180	1.8	19-60
ECPS225	225	2.3	40-100

EXTERNAL CIRCLIP PLIERS - BENT NOSE

Chrome Vanadium

Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ECPB130	130	0.9	10-25
ECPB170	170	1.8	19-60
ECPB210	210	2.3	40-100

INTERNAL CIRCLIP PLIERS - STRAIGHT NOSE

Chrome Vanadium

Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ICPS140	140	0.9	8-25
ICPS180	180	1.8	19-60
ICPS225	225	2.3	40-100

INTERNAL CIRCLIP PLIERS - BENT NOSE

Chrome Vanadium

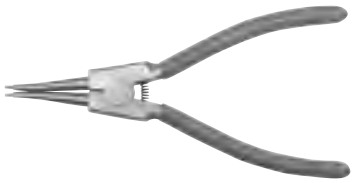
Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ICPB130	130	0.9	8-25
ICPB170	170	1.8	19-60
ICPB210	210	2.3	40-100

COMBINATION INTERNAL / EXTERNAL CIRCLIP PLIERS

Stock code	Description
CIECP	Set comes with straight, 90˚ & 45˚, convertible jaws. Jaws can be exchanged easily for 6 internal-external different purposes.

EXTERNAL CIRCLIP PLIERS STRAIGHT NOSE

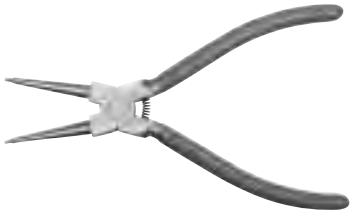
Best price to quality ratio



Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ECPS125Q	125	0.9	10-25
ECPS175Q	175	1.8	19-100
ECPS225Q	225	2.3	40-100
ECPS330Q	330	3.2	80-130

INTERNAL CIRCLIP PLIERS STRAIGHT NOSE

Best price to quality ratio



Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ICPS125Q	125	0.9	10-25
ICPS175Q	175	1.8	19-100
ICPS225Q	225	2.3	40-100
ICPS330Q	330	3.2	80-130

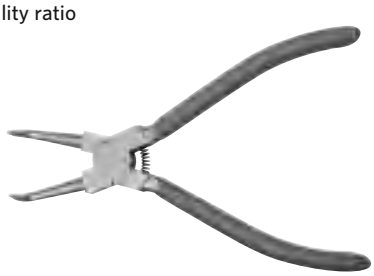
EXTERNAL CIRCLIP PLIERS BENT NOSE

Best price to quality ratio

Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ECPB125Q	125	0.9	10-25
ECPB175Q	175	1.8	19-100
ECPB225Q	225	2.3	40-100
ECPB330Q	330	3.2	80-150

INTERNAL CIRCLIP PLIERS BENT NOSE

Best price to quality ratio



Stock code	Length mm	Point Ø mm	To suit circlips Ø mm
ICPB125Q	125	0.9	10-25
ICPB175Q	175	1.8	19-100
ICPB225Q	225	2.3	40-100
ICPB330Q	330	3.2	80-150

CRIMPERS FOR NON INSULATED TERMINALS

OPT

Stock Code	Range mm²	Length mm
CRIMPER 8	1.5-10	250
CRIMPER 14	6-16	270
CRIMPER 22	6-25	365

CRIMPER FOR INSULATED TERMINALS

OPT

Stock Code	Range mm²	Length mm
CRIMPER 3	0.5-6	230

CRIMPER FOR WIRE FERRULES

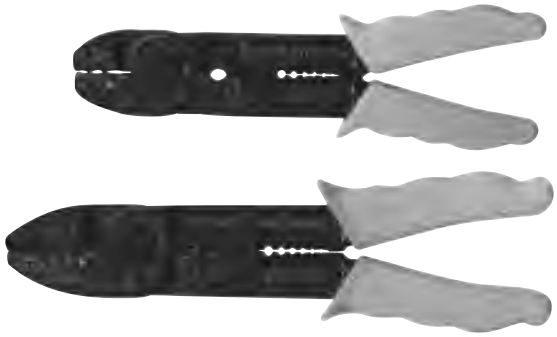
OPT

Bootlace

Stock Code	Range mm²	Length mm
CRIMPER6	0.5 - 6	230
CRIMPER16	6 - 16	230

MULTI CRIMPING TOOL

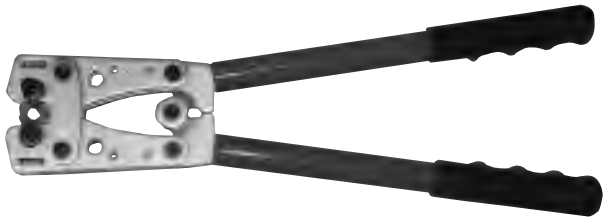
OPT



Stock Code	Range mm²	Length mm
CRIMPERMULTI18	Insulated Terminals 0.75 - 6	200
CRIMPERMULTI19	Insulated Terminals 0.75 - 6	230

CABLE LUG CRIMPING TOOL

OPT



Stock Code	Range mm²	Length mm
CRIMPER50	6 - 50	180

HYDRAULIC CRIMPING TOOL

OPT

Stock Code	Range mm²	Length mm
HCP10-185	Non - Insulated Terminal 10-185	390
With standard dies	10, 25, 50, 95, 150, 185	

OPT HYDRAULIC CRIMPING TOOL HEAD ONLY

Stock Code	Range mm²	Length mm	Output p/ton
HCNP16-400 With standard dies	Non - Insulated Terminal 35-400 35, 50, 70, 95, 120, 150, 185 240, 300, 400	250	12

OPT HYDRAULIC PUMP

Stock Code	Max Pressure Kg/cm³	Weight Kg	Oil Port
HP	700	8	3/8 NPT

TUBE CUTTER

Stock Code	Capacity mm
TC4-32	4 - 32
TC4-45	5 - 45

CABLE CUTTERS

Stock Code	Length mm	Capacity Ø mm
CC160	160	19
CC200	200	21
CC250	250	24

COPPER CABLE CUTTERS

Stock Code	Ø	Copper cable mm²	Length mm
CC400	52	400	270

WIRE ROPE CUTTERS OPT

Stock Code	Capacity Dia Ø	Length mm
WRC180Q	5	180
WRC200	5	200
WRC360Q	6	360
WRC450	12	450
WRC600	14	600
WRC900	16	900
WRC1060	20	1060

AVIATION TIN SNIPS-S

Stock code	Length mm	Cutting capacity cold rolled steel mm	Cutting capacity stainless steel mm
ATSS	250	1.2	0.7

Cuts straight or wide curves left or right in light stock
- Drop forged SAE-6150 Chrome-Vanadium steel blades with serrated edges
- Hardened HRC 55-60
- Induction Hardened cutting edges 60-62

AVIATION TIN SNIPS-L

Stock code	Length mm	Cutting capacity cold rolled steel mm	Cutting capacity stainless steel mm
ATSL	250	1.2	0.7

Cuts left from tight curves to straight
- Drop forged SAE-6150 Chrome-Vanadium steel blades with serrated edges
- Hardened HRC 55-60
- Induction Hardened cutting edges 60-62

AVIATION TIN SNIPS-R

Stock code	Length mm	Cutting capacity cold rolled steel mm	Cutting capacity stainless steel mm
ATSR	250	1.2	0.7

Cuts right from tight curves to straight
- Drop forged SAE-6150 Chrome-Vanadium steel blades with serrated edges
- Hardened HRC 55-60
- Induction Hardened cutting edges 60-62

ENGLISH TIN SNIPS

Stock code	Size mm	Jaw length A mm	Cuts cold rolled steel mm
ETS200	200	60	0.61
ETS250	250	70	0.78
ETS300	300	90	0.91
ETS350	350	90	1.2

AMERICAN TIN SNIPS

Stock code	Size mm	Jaw length A mm	Cuts cold rolled steel mm
ATS200	200	60	0.61
ATS250	250	70	0.78
ATS300	300	90	0.91

PVC PIPE CUTTER

Stock code	Pipe cutting range
PVCC42	0-42 mm Ø

MINI BOLT CUTTERS

Chrome Vanadium Jaws

Stock code	Overall length mm	Cutting capacity mm	Jaw hardness HRc
BC200MINIC	200	3	56-58

HEAVY DUTY BOLT CUTTERS

Chrome Vanadium Jaws

Stock code	Size mm	Cutting capacity Ø mm
BC300	300	5
BC350	350	7
BC450	450	8
BC600	600	10
BC750	750	13
BC900	900	16
BC1050	1050	18

BOLT CUTTER FORGED HANDLE

Stock code	Size mm	Cutting capacity Ø mm
BC450Q	450	8
BC600Q	600	10
BC750Q	750	13
BC1050Q	900	16

ALUMINIUM ALLOY HANDLE BOLT CUTTERS

Light Weight. High Strength

Stock code	Size mm	Cutting capacity Ø mm
ABC300	300	5
ABC350	350	7
ABC450	450	8

MINI SWAGING TOOL

Stock code	Length mm
MST200#	200

SWAGING TOOL

Stock code	Length mm	Dia Oval Sleeve mm
ST450#	450	3 - 16

PIPE WRENCHES

Drop Forged

Stock code	Length mm	Max jaw opening mm	Jaw width mm
PW250C	250	50	25
PW300C	300	60	30
PW350C	350	70	30
PW450C	450	75	35
PW600	600	80	45
PW900	900	135	62
PW1200	1200	130	70

LIGHT WEIGHT ALUMINIUM ALLOY PIPE WRENCHES

Stock code	Length mm	Max jaw opening mm	Jaw width mm
APW350	350	65	23
APW450	450	85	28

OFFSET PIPE WRENCHS

Stock code	Length mm	Max jaw opening	Jaw width
OSPW350	350	65	23
OSPW450	450	85	28

BELT WRENCHES

Drop forged handle

Stock code	Max belt clamping Ø mm	Handle length mm	Belt length mm
BW110	110	230	400

CHAIN PIPE WRENCHES

Drop forged handle

Stock code	Max chain clamping Ø mm	Handle length mm	Chain length mm
CPW110	110	300	400

DOUBLE SIDED CHAIN PIPE WRENCHES

Drop forged steel. Teeth hardened and tempered.

Stock code	Max pipe Ø mm	Handle length mm	Chain length mm
CPW50	50	350	300
CPW76	76	690	400
CPW100	100	900	670
CPW150	150	10000	840

PIPE VICE

Stock code	Pipe Ø mm	
PV40	10-40	
PV60	10-60	
PV90	10-90	
PV115	15-115	
PV165	15-165	
PVT40	10-40	on Tripod
PVT90	10-90	on Tripod
PVT115	15-115	on Tripod

CHAIN VICES

Stock code	Size Ø	Description
CVS	166mm	Chain Vice on Stand

ROTATING PUNCH

For Leather

Stock code	Sizes mm
RP	3, 3.5, 4, 4.5, 5, 5.5

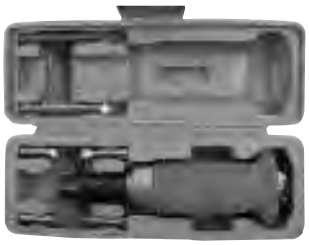
HAND RIVETERS

Hand Riveter

Lazy Riveter

Stock code	Description
Riveter	Hand Riveter takes rivets from 2,4 - 4,8 mm
RiveterSet	Hand Riveter takes rivets from 2,4 - 4,8 mm & Includes 100 assorted rivets
LazyRivet	Lazy Riveter takes rivets from 2,4 - 6,4 mm

IMPACT SCREW DRIVER SET



Stock code	Slot blade bits thicker x width mm	Phillips blade bits
ISS#	1.2 x 7.0 1.6 x 8.0 1.6 x 9.0	PH2 PH3 PH4

JEWELLERS SCREWDRIVER SETS

Stock Code	No of pieces	Contents
JSDSET	6	⊖ 1.4 2 2.4 3 ◐ 0 1

Wera BLACK POINT SCREWDRIVER FLAT ⊖

Stock code	Blade width mm	Blade length mm	Stock code	Blade width mm	Blade length mm
WSD2.5x75	2.5	75	WSD5.5x40	5.5	40
WSD3.5x75	3.5	75	WSD8x150	8	150
WSD4x100	4	100	WSD8x200	8	200
WSD4x150	4	150	WSD10x150	10	150
WSD5.5x150	5.5	150	WSD10x250	10	250
			WSD12x300	12	300

Wera BLACK POINT SCREWDRIVER PHILLIPS ⊕

Stock code	Phillips no	Blade Ø mm	Blade length mm
WPSD0x60	0	3	60
WPSD1x80	1	4.5	80
WPSD2x40	2	6	40
WPSD2x100	2	6	100
WPSD3x150	3	8	150

Wera BLACK POINT SCREWDRIVER POZI DRIVE ⊛

Stock code	Phillips no	Blade Ø mm	Blade length mm
WSDPZ1x80	1	4.5	80
WSDPZ2x100	2	6	100

Wera BLACK TIP SCREWDRIVER SET

Stock code	No of pieces	Contents
WSDSET6	6	⊖ 3.5x75, 4x100, 6.5x125, 8x150, ✪ 1x80 2x100
WSDSET9	9	⊖ 3.5x75, 4x100, 5.5x40, 5.5x150, 6.5x125, 8x150, 10x175 ✪ 1x80, 2x100

Wera ELECTRICAL INSULATED SCREW DRIVERS SET

Stock Code	No of pieces	Contents
1760I/6CLASSIC	6	⊖ 1x2.5x80, 1x3.5X100 1x4X100, 1X5.5X125 ✪ 1xPH 1x80; 1xPH 2x100

Wera TORX BIT SET

Stock code	
WSDTXSET9	Bit Set TX7, 8, 10, 15, 20, 25, 27, 30 and 40 with bitholder

Wera BIT SET

Stock code	
WSDBITSET6	Bit Set Flat 5.5 and 6.5, Pozi P22, Star PH1 and PH2 with bitholder

Wera TORX DRIVERS

✪

Stock code	Tip width	Blade Ø mm	Blade length mm	Handle length mm
WSDTX6	TX6	3.0	83	70
WSDTX7	TX7	3.0	83	70
WSDTX8	TX8	3.0	83	70
WSDTX9	TX9	3.0	83	70
WSDTX10	TX10	3.5	88	80
WSDTX15	TX15	3.5	88	80
WSDTX20	TX20	4.0	88	80
WSDTX25	TX25	4.5	94	90
WSDTX27	TX27	5.5	94	90
WSDTX30	TX30	6.0	94	100
WSDTX40	TX40	7.0	105	100

TA 1/4" MAGNETIC BIT HOLDER

Stock code	Drive	Length mm
BITHOLDER	1/4"	210

AMF WORKSHOP STAND T-HANDLE HEX KEYS

Blade chrome vanadium steel, hardened and nickel plated. Shock resistant black ABS-terpolymer handle.
AMF no. 906WM7 in metal stand.

Stock code	Contents mm
AKST	2x90 2.5x90 3x90 4x50 5x150 6x200 8x200

AMF WORKSHOP STAND STANDARD HEX KEYS

Chrome vanadium steel. For hexagon socket screws up to tensile strength class12.9. To DIN 911. Hardened and nickel plated. AMF no 911WM9.

Stock code	Contents mm
AKS	2.5 3 4 5 6 8 10 12 14

AMF HEX KEYS WALLETS

Chrome vanadium steel. For hexagon socket screws up to tensile strength class12.9. To DIN 911. Hardened and nickel plated.
AMF no 911TM.

Stock code	Contents mm
AKW6	2 2.5 3 4 5 6
AKW8	2 2.5 3 4 5 6 8 10

HEX KEY BOXED SETS STANDARD

Chrome vanadium steel. For hexagon socket screws up to tensile strength class12.9. To DIN 911. Hardened and nickel plated. AMF no 911BM.

Stock code	Contents mm
AKB10	2 2.5 3 4 5 6 8 10mm

HEX KEY BOX SETS LONG SERIES

Long arm and long arm with ball end. Chrome vanadium steel. For hexagon socket screws up to tensile strength class12.9. To DIN 911. Hardened and nickel plated. AMF no´s 911L - BM8 and 911LG - BM8.

Stock Code	Contents mm
LAKB	2 2.5 3 4 5 6 8 10mm without ball
LAKBB	2 2.5 3 4 5 6 8 10mm with ball

HEX KEY STANDARD

Chrome vanadium steel. For hexagon socket screws up to tensile strength class12.9. To DIN 911. Hardened and nickel plated. AMF no 911D.

Stock code	Size mm	Stock Code	Size mm
AK2	2	AK5	5
AK2.5	2.5	AK6	6
AK3	3	AK8	8
AK4	4	AK10	10

HEX KEY STRAIGHT-HANDLE

Blade chrome vanadium steel. Hardened and nickel plated. Shock resistant black ABS-terpolymer handle.
AMF no. 306.

Stock code	Hex mm	Blade length mm	Overall length mm
AKSH1.5	1.5	90	162
AKSH2	2	90	162
AKSH2.5	2.5	90	162
AKSH3	3	90	162

TORX KEYS WITH STRAIGHT HANDLE

Blade chrome vanadium steel. Hardened and nickel plated. Shock resistant black ABS-terpolymer handle.
AMF no. 907L.

Stock code	Size	For Screws	Blade length mm	Overall length mm
TKST8	T8	M2.5	60	140
TKST9	T9	M2.5	60	140
TKST10	T10	M3	80	170
TKST15	T15	3M.5	80	170
TKST20	T20	M4	100	210
TKST25	T25	Special	100	210
TKST27	T27	M5	115	220
TKST30	T30	M6	115	220

HEX KEY T-HANDLE

Blade chrome vanadium steel. Hardened and nickel plated. Shock resistant black ABS-terpolymer handle.
AMF no. 906Q.

Stock code	Size	Handle length mm	Blade length mm	Overall length mm
AKT2.5	2.5	80	100	125
AKT3	3	80	100	125
AKT4	4	80	100	125
AKT5	5	100	100	131
AKT6	6	100	100	131
AKT8	8	100	100	131
AKT10	10	120	100	138

TORX KEYS WITH T- HANDLE

Blade chrome vanadium steel. Hardened and nickel plated. Shock resistant black ABS-terpolymer handle.
AMF no. 907Q.

Stock code	Size mm	For Screws	Blade length mm	Overall length mm
TKTT9	T9	M2.5	100	125
TKTT10	T10	M3	100	125
TKTT15	T15	M3.5	100	125
TKTT20	T20	M4	100	125
TKTT25	T25	M5	100	125
TKTT27	T27	Special	100	131
TKTT30	T30	M6	100	131

HEX KEY SET FOLDING TYPE

Stock code	No of pieces	Contents mm
HKF10	7	2,5; 3, 4, 5, 6, 8, 10

HEX KEYS - CLIP POUCH

Chrome Vanadium

Stock code	No of pieces	Contents mm
HKC10	9	1.5 2 2.5 3 4 5 6 8 10

HEX KEYS - BOXED SETS

Chrome Vanadium

Stock code	No of pieces	Contents
HKB10	9	1.5 2 2.5 3 4 5 6 8 10 mm
HKB3/8	9	1/16 5/64 3/32 1/8 5/32 3/16 1/4 5/16 3/8 inch

LONG HEX KEYS - BOXED SETS

Chrome Vanadium

Stock code	No of pieces	Contents
LHKB10	8	2 2.5 3 4 5 6 8 10 mm
LHKB3/8	8	5/64 3/32 1/8 5/32 3/16 1/4 5/16 3/8 inch

LONG HEX KEY SET 13 PCS (IN METAL BOX)

Stock code	No of pieces	Contents mm
LHKTB17	13	1.5 2 2.5 3 4 5 5.5 6 8 10 12 14 17

LONG BALL END HEX KEYS - POUCHED SETS

Chrome Vanadium

Stock code	No of pieces	Contents
LBHKP10	8	2 2.5 3 4 5 6 8 10 mm
LBHKP3/8	8	5/64 3/32 1/8 5/32 3/16 1/4 5/16 3/8 inch

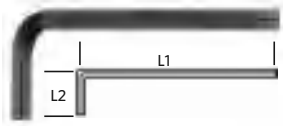
LONG TORX KEYS - POUCHED SETS

Chrome Vanadium

Stock code	No of pieces	Contents mm
LTKP	8	T10 T15 T20 T25 T30 T40 T45 T50

INDIVIDUAL HEX KEYS - METRIC

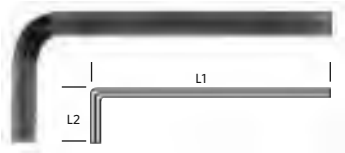
Chrome Vanadium



Stock code	Size mm	L1 mm	L2 mm	Stock code	Size mm	L1 mm	L2 mm
HK1.5	1.5	45	14	HK6	6	90	32
HK2	2	50	16	HK7	7	95	34
HK2.5	2.5	56	18	HK8	8	100	36
HK3	3	63	20	HK9	9	106	38
HK3.5	3.5	66	22	HK10	10	112	40
HK4	4	70	25	HK12	12	125	45
HK4.5	4.5	75	26	HK14	14	140	56
HK5	5	80	28	HK17	17	160	163
HK5.5	5.5	85	30	HK19	19	180	170

INDIVIDUAL HEX KEYS - LONG SERIES METRIC

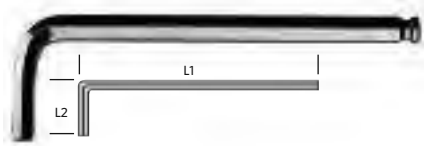
Chrome Vanadium



Stock code	Size mm	L1 mm	L2 mm	Stock code	Size mm	L1 mm	L2 mm
LHK1.5	1.5	90	14	LHK6	6	180	32
LHK2	2	100	16	LHK7	7	190	34
LHK2.5	2.5	112	18	LHK8	8	200	36
LHK3	3	126	20	LHK10	10	224	40
LHK4	4	140	25	LHK12	12	250	45
LHK5	5	160	28	LHK14	14	280	54
LHK5.5	5.5	170	30				

INDIVIDUAL BALL END HEX KEYS LONG SERIES METRIC

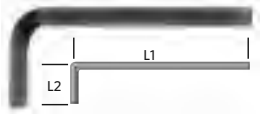
Chrome Vanadium



Stock code	Size mm	L1 mm	L2 mm
LBHK1.5	1.5	77	14
LBHK2	2	83	16
LBHK2.5	2.5	90	18
LBHK3	3	98	20
LBHK4	4	106	24
LBHK5	5	118	28
LBHK5.5	5.5	128	30
LBHK6	6	137	32
LBHK7	7	147	34
LBHK8	8	156	36
LBHK10	10	170	40
LBHK12	12	207	45
LBHK14	14	230	54

INDIVIDUAL HEX KEYS - IMPERIAL

Chrome Vanadium



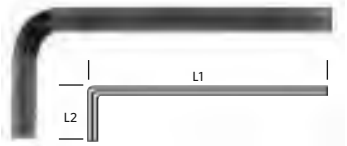
Stock code	Size inch	L1 mm	L2 mm
HK1/16	1/16	45	14
HK5/64	5/64	50	16
HK3/32	3/32	56	18
HK7/64	7/64	59	19
HK1/8	1/8	63	20
HK9/64	9/64	66	22
HK5/32	5/32	70	25
HK3/16	3/16	80	28
HK7/32	7/32	85	30
HK1/4	1/4	90	32

Continued ...

Stock code	Size inch	L1 mm	L2 mm
HK5/16	5/16	100	36
HK3/8	3/8	112	40
HK1/2	1/2	125	45
HK9/16	9/16	140	56
HK5/8	5/8	160	63
HK3/4	3/4	180	70
HK7/8	7/8	200	80
HK1	1	235	90

INDIVIDUAL HEX KEYS - LONG SERIES IMPERIAL

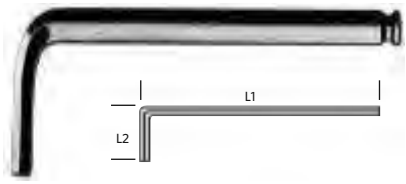
Chrome Vanadium



Stock code	Size inch	L1 mm	L2 mm
LHK1/16	1/16	90	14
LHK5/64	5/64	100	16
LHK3/32	3/32	112	18
LHK1/8	1/8	126	20
LHK5/32	5/32	140	25
LHK3/16	3/16	160	28
LHK7/32	7/32	170	30
LHK1/4	1/4	180	32
LHK5/16	5/16	200	36
LHK3/8	3/8	224	40
LHK1/2	1/2	250	45

INDIVIDUAL BALL END HEX KEYS LONG SERIES IMPERIAL

Chrome Vanadium



Stock code	Size inch	L1 mm	L2 mm
LBHK1/16	1/16	77	14
LBHK5/64	5/64	83	16
LBHK3/32	3/32	90	18
LBHK7/64	7/64	94	19
LBHK1/8	1/8	98	20
LBHK9/64	9/64	102	22
LBHK5/32	5/32	106	24
LBHK3/16	3/16	118	28
LBHK7/32	7/32	128	30
LBHK1/4	1/4	137	32
LBHK5/16	5/16	156	36
LBHK3/8	3/8	170	40
LBHK1/2	1/2	207	45

INDIVIDUAL TORX KEYS

Chrome Vanadium

Stock code	Size	L1 mm	L2 mm
TK10	T10	90	14
TK15	T15	100	16
TK20	T20	112	18
TK25	T25	126	20
TK27	T27	140	25
TK30	T30	160	28
TK40	T40	180	32
TK45	T45	200	36
TK50	T50	224	40

T -HANDLE BALL HEX KEYS BOXED SETS

Chrome Vanadium

Stock code	No of pieces	Contents
THBHKB12	9	2 2.5 3 4 5 6 8 10 12

T-HANDLE TORX KEYS BOXED SETS

Chrome Vanadium

Stock code	No of pieces	Contents
THTKB	9	T10 T15 T20 T25 T27 T30 T40 T45 T50

INDIVIDUAL T -HANDLE BALL HEX KEYS

Chrome Vanadium

Stock code	Size mm	L1 mm	L2 mm
THBHK2	2	100	12
THBHK2.5	2.5	100	12
THBHK3	3	100	12
THBHK4	4	150	14
THBHK5	5	150	14
THBHK6	6	150	14
THBHK8	8	200	16
THBHK10	10	200	16
THBHK12	12	200	16

INDIVIDUAL T -HANDLE TORX KEYS

Chrome Vanadium

Stock code	Size	L1 mm	L2 mm
THTKT9	T9	100	12
THTKT10	T10	100	12
THTKT15	T15	100	12
THTKT20	T20	100	12
THTKT25	T25	150	14
THTKT27	T27	150	14
THTKT30	T30	150	14
THTKT40	T40	200	16
THTKT45	T45	200	16
THTKT50	T50	200	16
THTKT55	T55	200	16

ENGINEERS HAMMERS

German pattern

Stock code	Head weight g	Overall length mm
QEH100	100	260
QEH200	200	280
QEH300	300	300
QEH500	500	320
QEH800	800	350

BALL PEIN HAMMERS

Fibre handles

Stock code	Head weight g	Head weight oz	Overall length mm
BPH220	220	8	290
BPH340	340	12	290
BPH450	450	16	330
BPH680	680	24	380

Hickory handles

Stock code	Head weight g	Head weight oz	Overall length mm
BPHH680	680	24	406
BPHH900	900	32	406

CROSS PEIN HAMMERS

Hickory handles

Stock code	Head weight g	Head weight oz	Overall length mm
CPH112	112	4	260
CPH224	224	8	290

CLAW HAMMERS

Fibre handles

Stock code	Head weight g	Head weight oz	Overall length mm
CH250	250	9	290
CH450	450	16	330

CLUB HAMMERS

Fibre handles

Stock code	Head weight kg	Head weight lbs	Overall length mm
CH1500	1.5	3.3	280
CH2000	2	4.4	300

SLEDGE HAMMERS

Fibre handles

Stock code	Head weight kg	Head weight lbs	Overall length mm
SLH3600	3.6	8	815
SLH6300	6.3	14	865

SOFT FACE HAMMERS

Steel handles

Stock code	Description
SFH	soft face hammer 32.5 mm diameter
SFHIN	nylon insert
SFHITPR	rubber insert
SFHIA	acetate insert

Wera NON RECOIL SOFT FACE HAMMERS

Fibre handles

Stock code	Description	Ø mm	Head length mm	Overall length mm
NRSF30	Hammer	30	100	330
NRSF50	Hammer	50	119	350
SFIP50	Inserts for above	50		

COPPER HAMMERS

Fibre handles

Stock code	Head weight g	Overall length mm
COPH450	450	280
COPH900	900	280
COPH1300	1300	300

DEAD BLOW HAMMERS

Stock code	Head Ø mm	Outside Ø mm	Weight g	Head length mm	Overall length mm
DBH400	30	35	400	80	260
DBH520	40	45	520	90	286
DBH1050	50	55	1050	108	350
DBH1500	60	65	1500	128	370

WELDERS CHIPPING HAMMERS

Stock code	Description
WCH300	300g welders chipping hammer

OIL CAN

Stock Code	Description
OC500	Oil can 500 ml with flex + rigid spout

STEEL WIND UP TAPE

Stock Code	Measuring length mm	Width of tape mm	Case
TM20X10	20	10	ABS
TM30X10	20	10	ABS

STANDARD TAPE MEASURES

Stock Code	Measuring length	Width of blade mm
TM3C	3m	12.5
TM5C	5m	19

Komelon® TAPE MEASURES

Nylon coated, hardened carbon steel blade

Standard

4 x 4 for rugged terrain

Stock Code	Measuring length mm	Width of blade mm	Case
TM3x16	3	16	yellow
TM5x19	5	19	yellow
TM10x25	10	25	yellow
TM3x16C	3	16	chrome
TM5x19C	5	19	chrome

MAGNETIC TIP

Stock Code	Measuring length mm	Width of blade mm	Case
4x4TM 5x25MAG	5	25	4x4 rubber
4x4TM 8x25MAG	8	25	4x4 rubber

ROSS TOOLS ARTISAN LEVELS

Light duty aluminium box section with single plumb and horizontal vials. Graduated in mm's on bottom edge.

Stock code	Length mm	Width mm	Height mm	Accuracy	Vials	Base
SL300A	300	24	60	1mm/M	3	Machined aluminium
SL450A	450	24	60	1mm/M	3	Machined aluminium
SL600A	600	24	60	1mm/M	3	Machined aluminium
SL800A	800	24	60	1mm/M	3	Machined aluminium
SL1000A	1000	24	60	1mm/M	3	Machined aluminium
SL1200A	1200	24	60	1mm/M	3	Machined aluminium

BOAT LEVELS

Aluminium and plastic body with magnetic base. Fitted with horizontal, vertical and 45° vials.

Stock code	Length mm	Width mm	Height mm	Accuracy	Vials	Base
TSL225A	225	16	40	1mm/M	3	Magnetic

AUTO LEVELING LASER LEVEL KIT

High intensity laser. Supplied in a plastic case, complete with tripod & automatic leveling head.

Stock code	Horz/Vert accuracy	Laser wave length	Laser power mW	Self leveling scope	Operating distance
ALLKIT	40.5mm/m	650nM	M1	44˚	M5m

UTILITY KNIVES

Stock code	Description
QUK	Utility knife with rubber grip & 3 spare blades

BLADES

Stock code	Description
UKB	Utility knife blades pack of 5
UKB/BULK	Utility knife blades in despenser 100

ENGINEERS SCRAPERS

Stock Code	Description
SF150	150 mm flat
SF200	200 mm flat
SHR150	150 mm half round
SHR200	200 mm half round
ST150	150 mm triangular
ST200	200 mm triangular

ENGINEERS FILES

Stock Code	Length mm	Cut	Shape
FLAT1001Q	100	Bastard	Flat
FLAT1002Q	100	2nd Cut	Flat
FLAT1003Q	100	Smooth	Flat
FLAT1501Q	150	Bastard	Flat
FLAT1502Q	150	2nd Cut	Flat
FLAT1503Q	150	Smooth	Flat
FLAT2001Q	200	Bastard	Flat
FLAT2002Q	200	2nd Cut	Flat
FLAT2003Q	200	Smooth	Flat
FLAT2501Q	250	Bastard	Flat
FLAT2502Q	250	2nd Cut	Flat
FLAT2503Q	250	Smooth	Flat
FLAT3001Q	300	Bastard	Flat
FLAT3002Q	300	2nd Cut	Flat
FLAT3003Q	300	Smooth	Flat
FLAT3501Q	350	Bastard	Hand
FLAT3502Q	350	2nd Cut	Hand
FLAT3503Q	350	Smooth	Hand
HAND1001Q	100	Bastard	Hand
HAND1002Q	100	2nd Cut	Hand
HAND1003Q	100	Smooth	Hand
HAND1501Q	150	Bastard	Hand
HAND1502Q	150	2nd Cut	Hand
HAND1503Q	150	Smooth	Hand
HAND2001Q	200	Bastard	Hand
HAND2002Q	200	2nd Cut	Hand
HAND2003Q	200	Smooth	Hand
HAND2501Q	250	Bastard	Hand
HAND2502Q	250	2nd Cut	Hand
HAND2503Q	250	Smooth	Hand
HAND3001Q	300	Bastard	Hand
HAND3002Q	300	2nd Cut	Hand
HAND3003Q	300	Smooth	Hand
HAND3501Q	350	Bastard	Half round
HAND3502Q	350	2nd Cut	Half round
HAND3503Q	350	Smooth	Half round
HR1501Q	150	Bastard	Half round
HR1502Q	150	2nd Cut	Half round
HR1503Q	150	Smooth	Half round
HR2001Q	200	Bastard	Half round
HR2002Q	200	2nd Cut	Half round
HR2003Q	200	Smooth	Half round
HR2501Q	250	Bastard	Half round
HR2502Q	250	2nd Cut	Half round
HR2503Q	250	Smooth	Half round
HR3001Q	300	Bastard	Half round
HR3002Q	300	2nd Cut	Half round
HR3003Q	300	Smooth	Half round
HR3501Q	350	Bastard	Round
HR3502Q	350	2nd Cut	Round
HR3503Q	350	Smooth	Round

Continued....

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Stock code	Length mm	Cut	Shape
RND1501Q	150	Bastard	Round
RND1502Q	150	2nd Cut	Round
RND1503Q	150	Smooth	Round
RND2001Q	200	Bastard	Round
RND2002Q	200	2nd Cut	Round
RND2003Q	200	Smooth	Round
RND2501Q	250	Bastard	Round
RND2502Q	250	2nd Cut	Round
RND2503Q	250	Smooth	Round
RND3001Q	300	Bastard	Round
RND3002Q	300	2nd Cut	Round
RND3003Q	300	Smooth	Round
RND3501Q	350	Bastard	Round
RND3502Q	350	2nd Cut	Round
RND3503Q	350	Smooth	Round
SQ1501Q	150	Bastard	Square
SQ1502Q	150	2nd Cut	Square
SQ1503Q	150	Smooth	Square
SQ2001Q	200	Bastard	Square
SQ2002Q	200	2nd Cut	Square
SQ2003Q	200	Smooth	Square
SQ2501Q	250	Bastard	Square
SQ2502Q	250	2nd Cut	Square
SQ2503Q	250	Smooth	Square
SQ3001Q	300	Bastard	Square
SQ3002Q	300	2nd Cut	Square
SQ3003Q	300	Smooth	Square
TRI1001Q	100	Bastard	Triangular
TRI1002Q	100	2nd Cut	Triangular
TRI1003Q	100	Smooth	Triangular
TRI1501Q	150	Bastard	Triangular
TRI1502Q	150	2nd Cut	Triangular
TRI1503Q	150	Smooth	Triangular
TRI2001Q	200	Bastard	Triangular
TRI2002Q	200	2nd Cut	Triangular
TRI2003Q	200	Smooth	Triangular
TRI2501Q	250	Bastard	Triangular
TRI2502Q	250	2nd Cut	Triangular
TRI2503Q	250	Smooth	Triangular
TRI3001Q	300	Bastard	Triangular
TRI3002Q	300	2nd Cut	Triangular
TRI3003Q	300	Smooth	Triangular
SLIM2001Q	200	Bastard	Slim Taper
SLIM2002Q	200	2nd Cut	Slim Taper
SLIM2003Q	200	Smooth	Slim Taper

FARMERS OWN FILES

Stock code	Length mm	Cut
FO200	200	Farmers Own File
FO250	250	Farmers Own File

PLASTIC FILE HANDLES

Stock code	Description
FH1	Plastic File Handle Small
FH2	Plastic File Handle Medium
FH3	Plastic File Handle Large
FH4	Plastic File Handle Extra Large

FILE SETS

Stock Code	Description
FILESET 200x5Q	200mm Bastard, Flat, Triangle, Half-round, Round, Square
FILESET 250x5Q	250mm Bastard, Flat, Triangle, Half-round, Round, Square

NEEDLE FILE SETS

Stock Code	Length mm	No. per Set	Cut
NFSET61402Q	140	6	2nd
NFSET61602Q	160	6	2nd
NFSET51802Q	180	5	2nd
NFSET121802Q	180	12	2nd
NFSET121802HQ	180 (with Handle)	12	2nd

THREAD FILES

For external and internal threads.

Stock code	Angle	For threads	Length mm	Sq
TFMETRIC	60˚	8-3 pitch	230	10
TFUN	60˚	24-11TPI	230	10
TFW	55˚	20-10TPI	230	10

HOLLOW PUNCH SETS

Stock code	Sizes mm
HPS5-35	5 6 8 10 11 13 16 19 22 25 28 32 35

HOLLOW PUNCH SETS

Set of 5

Stock code	Sizes mm
HPS2-13	2 3 4 5 6 8 9 10 13
HPS3-19	3 4 5 6 8 9 10 11 12 14 16 19
HPS3-25	3 4 5 6 7 8 9 10 11 12 14 16 19 21 25

HOLLOW PUNCHES

Polished hardened C45 carbon steel

Stock code	Punch hole Ø mm	Punch outside Ø mm	Overall length mm
HP3Q	3	6	84
HP4Q	4	7	85
HP5Q	5	8	85
HP6Q	6	9	86
HP8Q	8	12	89
HP10Q	10	14	94
HP12Q	12	16	96
HP13Q	13	17	102
HP16Q	16	20	105
HP18Q	18	22	110
HP20Q	20	24	112

LONG PIN PUNCH SET

Set of 5 long pin punches

Stock code	No of punches	Overall length mm	Pin length mm	Ø range mm
LPPSET	5	115	9	3.2 4.8 6.3 8.0 9.5

DRIVE PIN PUNCHES

Stock code	Pin Ø mm	Shaft Ø mm	Overall length mm	Pin length mm
PP2	2	7	100	18
PP3	3	9	150	40
PP4	4	9	150	50
PP5	5	10	150	55
PP6	6	10	150	60
PP8	8	12	150	70
PP10	10	14	150	70

DRIVE PIN PUNCH SET

Set of 5 drive pin punches

Stock code	No of punches	Overall length mm	Ø range mm
PPSETC	5	150	3 4 5 6 8

GENERAL PURPOSE PUNCH SET

Set of 3

Stock code	Contents
GPPSET	3 mm center punch, 4 mm nail punch, prick punch

CENTRE PUNCHES

Stock code	Pin Ø mm	Shaft Ø mm	Overall length mm
CP3	3	8	100
CP4	4	8	100
CP5	5	10	100

CENTRE PUNCH SET

Set of 5

Stock code	No of punches	Overall length mm	Ø range mm
CPSET	5	75 & 100	1.6 2.0 2.4 3.6 4.0

CENTRE PUNCH WITH PROTECTIVE SLEEVE

Stock Code	Pin Ø mm	Shaft Ø mm	Overall length mm
CP3S	3	8	100
CP4S	4	8	100
CP5S	5	8	100

SQUARE HEAD CENTRE PUNCH

Stock Code	Pin Ø mm	Shaft Ø mm	Overall Length mm
CPSQ3.2	3.2	8	100
CPSQ4	4	8	100
CPSQ4.8	4.8	8	100
CPSQ6.3	6.3	8	100

AUTOMATIC CENTRE PUNCHES

Stock code	Description
ACP	Automatic centre punch

COLD CHISELS

Stock Code	Chisel width mm	Overall length mm	Shaft Ø mm
CCF12x150	12	150	12.5
CCF16x160	16	160	12.5
CCF19x180	19	180	18
CCF22x200	22	200	21
CCF25x200	25	200	21
CCF25x300	25	300	21

WRECKING BARS

Claw end and chisel end

Stock code	Length mm	Hex A/F mm	Steel
WB450	450	19	C45
WB720	720	18	C45
WB1030	1030	18	C45

TOMMY BARS

Off set chisel end and point end

Stock code	Length mm	Hex A/F mm	Steel
TB450	450	16	C45
TB720	720	18	C45

CROW BARS

Chisel end and point end

Stock code	Length mm	Hex A/F mm	Steel
CB1520	1520	25	C45
CB1820	1820	25	C45
CB2020	2020	25	C45

PINCH BARS

Off set chisel end + front end

Stock code	Length mm	Hex A/F mm	Steel
PB1200	1200	25	C45
PB1500	1500	25	C45
PB1800	1800	25	C45

5 PIECE COLD CHISEL SET

Stock code	Description
CCS5#	5 piece cold chisel set

6 PIECE PUNCH & CHISEL SET

Stock code	Description
PPCSET6	Chisel, Pin Punch, Centre Punch + Taper Punch Set

16 PIECE PUNCH & CHISEL SET

Stock code	Description
PPCSET	chisel, pin punch & taper punch set

COLD CHISELS WITH HAND GRIP

Stock code	Shape	Length mm
CCFLAT	Flat	300
CCFLATLONG	Flat	350
CCPLUG	Plug	300
CCSTAR	Star	300
CCBULL	Bull	300

SETS OF LETTER AND NUMBER PUNCHES

Stock code	Description
LP2Q	letter punch set 2 mm
LP3Q	letter punch set 3 mm
LP5Q	letter punch set 5 mm
LP6Q	letter punch set 6 mm
LP8Q	letter punch set 8 mm
LP10Q	letter punch set 10 mm
LP12Q	letter punch set 12 mm
NP2Q	number punch set 2 mm
NP3Q	number punch set 3 mm
NP4Q	number punch set 4 mm
NP5Q	number punch set 5 mm
NP6Q	number punch set 6 mm
NP8Q	number punch set 8 mm
NP10Q	number punch set 10 mm
NP12Q	number punch set 12 mm
NLP2Q	number and letter punch set 2 mm
NLP3Q	number and letter punch set 3 mm
NLP4Q	number and letter punch set 4 mm
NLP5Q	number and letter punch set 5 mm
NLP6Q	number and letter punch set 6 mm
NLP8Q	number and letter punch set 8 mm

ALUMINIUM CASES

Sturdy aluminium construction. Rounded corners and edges.

Stock code	Length mm	Width mm	Height mm	Colour	Contents
ACB	455	330	152	black	Dividers & pocket layout

PLASTIC TOOL BOXES

With seperator tool tray

Stock code	Length mm	Width mm	Height mm
PTB580	580	280	295

PLASTIC TOOL BOXES ON WHEELS

With inner tool tray

Stock code	Length mm	Width mm	Height mm
PTBW	620	440	445

LONG PLASTIC TOOL BOXES ON WHEELS

With inner tray and extention cord hanger

Stock code	Length mm	Width mm	Height mm
LPTBW	660	295	315

STAINLESS STEEL TOOL BOXES ON WHEELS

Stock code	Length mm	Width mm	Height mm
SSTBW	500	350	400

TOOLBOXES

TB5

TB3

Stock Code	No of compartments	Width mm	Depth mm	Height mm
TB3	3	465	210	170
TB5	5	495	200	290

TOOLBOXES HEAVY DUTY

Stock code	No of compartments	Width mm	Depth mm	Height mm
TB3L	3	500	230	170
TB5L	5	550	230	220

TOOL CHEST WITH TRAY

Stock code	Description	Size mm L	W	D
TC660	Tool chest with tray	660	370	285

SERVICE TROLLEYS

Stock code	Length mm	Width mm	Height mm
ST	719	365	780
STW	790	400	735

HEAVY DUTY TOOL TROLLEYS

Stock code	Height mm	Width mm	Depth mm	No of drawers
TT980	980	562	705	5
TT980/7	980	562	705	7

TOOL CHEST

Stock code	Description	Size mm H	W	D
TB6	6 drawer tool chest	377	660	307

TOOL TROLLEYS

Drawers with Linear Bearings

Stock code	Description	Size mm H	W	D
TT7	7 drawer tool trolley	856	680	458
TT5	5 drawer tool trolley	856	680	458

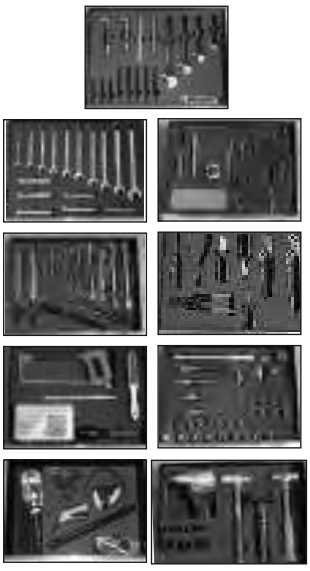
STAINLESS STEEL TOOL TROLLEY & TOOL CHEST

TB7STAIN

TT7STAIN

Stock code	Description	Size mm H	W	D
TT7STAIN	7 drawer tool trolley	780	680	470
TB7STAIN	7 drawer tool chest	485	680	470

DIESEL MECHANICS TOOL TROLLEY



Stock code	Description
TQ001	7 Drawer Tool Trolley and 7 Drawer Stainless Tool Chest Complete with Set of Tools for a Diesel Mechanic

MAINTENANCE TOOL TROLLEY 183 PIECES

Stock code	Description
MTT7	7 Drawer Trolley Complete with 183 Tools Ideal for any Maintenance Technician

MECHANICS COMPLETE TOOL TROLLEYS

Stock code	Description
MTT	7 Drawer Heavy Duty Tool Trolley Complete with 176 Tools. Ideal for Motor Mechanic.

Note: A complete list of contents available on request

TOOLKITS

Standard Apprentice Toolkits

ELECTRICAL BOX

Stock Code TQT1

Contents

Toolbox 550x230x220 5 Tray
Digital Multimeter 600v
Engineer Pliers 200mm 1000v Insulated
Diagonal Cutter 200mm 1000v Insulated
Long Nose Pliers 200mm 1000v Insulated
Round Nose Pliers 160mm
Knife Utility Rubber Grip Push Button
Water Pump Pliers 250mm
Vice Grip 250mm
Screwdrivers Set 6 Pieces
Automatic Wire Stripper 1.0-3.2mm
Premium Hacksaw Frame 300mm
300mm Steel Rule
Shifting Spanner 300mm
6-24 15º 19pc Combi Spanner Set
1/2" Drive Socket Set (13 Pce) 8-22mm
Steel Measuring Tape 3M x 12.5mm
Padlock Brass 38mm
Ball Pein Hammer 450g
150mm Vernier 0.02mm
150mm Engineers Steel Square
Std Hex Key Set 1.5-10mm Box
Std Hex Key Set 1/16-3/8 Box
File Set 250mm Flat,hr,tri,rnd&sq 2nd
Earplug
Poly Carbon Safety Glasses
Set Of 5 Drive Pin Punches
Crimper 1.5-10mm Non Insulated Lugs
Scriber
Divider Spring Joint 100mm Long
Tube Spanner Set 8-19 mm

FITTER BOX

Stock Code TQT2

Contents

Toolbox Chest 660x370x285
6-24 15º 19pc Combi Spanner Set
1/2" Drive Socket Set (17 Pce) 10-24mm
Screwdrivers Set 6 Pieces

Continued ...

Continued ...

Ball Pein Hammer 220g
Ball Pein Hammer 680g
Combination Pliers 200mm
Long Nose Pliers 200mm
Diagonal Cutters 180mm
Circlip Pliers External Straight 175mm
Circlip Pliers Internal Straight 175mm
Circlip Pliers External Bent 175mm
Circlip Pliers Internal Bent 175mm
Std Hex Key Set 1.5-10mm Box
Std Hex Key Set 1/16-3/8 Box
Padlock Brass 38mm
150mm Vernier 0.02mm
Shifting Spanner 150mm
Shifting Spanner 300mm
Aviation Tin Snips Straight 250mm
Vice Grip 250mm
Outside Micrometer 0-25mm
Outside Micrometer 25-50mm
Pipe Wrench Malleable Cast Iron 350mm
Mag Base No Fine Adjustment
Dial Indicator 58x0.01x10mm
Premium Hacksaw Frame 300mm
File Set 250mm Flat, hr, tri, rnd & sq 2nd
Set Of 5 Drive Pin Punches
Divider Spring Joint 150mm Long
Outside Spring Joint Caliper 150mm Long
Inside Spring Joint Caliper 150mm Long
300mm Steel Rule
Steel Measuring Tape 5M x 16mm
Precision Data Book Metric
Double End Steel Scriber
Jenny Caliper Plain Leg 150mm
Poly Carbon Safety Glasses
Screw Pitch Gauge 55º/60º 52 Blades
Cold Chisel 19x180mm
Soft Face Hammer
Hollow Punch Set 3-20mm
Prick Punch 8mm
Tommy Bar 450mm Long
Earplug
Feeler Gauge 20 Leaf

MILLWRIGHT BOX

Stock Code TQT3

Contents

Toolbox Chest 660x370x285mm
Digital Multimeter 600v
Combination Pliers 200mm
Diagonal Cutters 180mm
Long Nose Pliers 200mm
Round Nose Pliers 160mm
Screwdrivers Set 6 Pieces
External Circlip Pliers Straight 175mm
Internal Circlip Pliers Straight 175mm
External Circlip Pliers Bent 175mm
Internal Circlip Pliers Bent 175mm
Std Hex Key Set 1.5-10mm Box
Std Hex Key Set 1/16-3/8 Box
Crimper 1.5-10mm Non Insulated Lugs
Automatic Wire Stripper 1.0-3.2mm
Water Pump Pliers 250mm

Continued ...

Continued ...

Premium Hacksaw Frame 300mm
150mm Vernier 0.02mm
Outside Micrometer 0-25mm
Outside Micrometer 25-50mm
Padlock Brass 38mm
Screw Pitch Gauge 55º/60º 52 Blades
Steel Measuring Tape 5M x 16mm
File Set 250mm Flat,hr, tri, rnd & sq 2nd
Feeler Gauge 26 Leaf Imperial
Knife Utility
Vice Grip 250mm
6-32 15º26pc Combi Spanner Set
Ball Pein Hammer 680g
Fine Adjustment Magnetic Base
Dial Indicator 58x0.01x10mm
Hollow Punch Set 2-10mm
English Tin Snips 300mm
Cold Chisel 19x180mm
Level Magnetic 230mm
Shifting Spanner 150mm
Shifting Spanner 300mm
Tommy Bar 450mm Long
Tube Spanner 8-9 mm
Tube Spanner 10-11 mm
Centre Punch 5x8x100mm
Pipe Wrench 350mm
Divider Spring Joint 150mm Long
Scriber
Poly Carbon Safety Glasses
Earplug
Zeus Precision Data Book Metric
Socket set 8-32mm 28pcs

DIESEL MECHANIC BOX

Stock Code TQT5

Contents

Toolbox Chest 660x370x285mm
1/2" Drive Socket Set (28 Pce) 8-32mm
6-32 15º 22pc Combi Spanner Set
Shifting Spanner 300mm
Shifting Spanner 450mm
Pipe Wrench 450mm
Water Pump Pliers 250mm
Vice Grip 250mm
Ball Pein Hammer 220g
Ball Pein Hammer 900g
Hollow Punch Set 6-19 mm
Screwdrivers Set 6 Pieces
Set Of 5 Drive Pin Punches
150mm Vernier 0.02mm
Combination Pliers 200mm
Long Nose Pliers 200mm
Diagonal Cutters 180mm
Padlock Brass 38mm
Internal Circlip Pliers Straight 175mm
External Circlip Pliers Straight 175mm
Internal Circlip Pliers Bent 175mm
External Circlip Pliers Bent 175mm
Feeler Gauge 26 Leaf

Continued ...

Continued ...

English Tin Snips 250mm
Outside Spring Joint Caliper 150mm Long
Inside Spring Joint Caliper 150mm Long
Centre Punch 5x8x100mm
Knife Utility
Multimeter Digital 600v
300mm Steel Rule
File Set 250mm Flat, hr, tri,rnd & sq 2nd
Std Hex Key Set 1.5-10mm Box
Std Hex Key Set 1/16-3/8 Box
1/2" Hex Set 9 Piece 4-17mm
1/2" Torx Set 9 Piece T20-T60
Tommy Bar 450mm Long
Divider Spring Joint 150mm Long

PLATER WELDER BOX

Stock Code TQT6

Contents

Toolbox Chest 660x370x285mm
Curvomark Contour Marker
Curvomark Centre Head Standard
Ball Pein Hammer 680g
Ball Pein Hammer 900g
Chalk For Chalkline
Chalkline
300mm Sliding Bevel Aluminium
6-32 15º 22pc Combi Spanner Set
Premium Hacksaw Frame 300mm
Screwdrivers Set 6 Pieces
300mm Steel Rule
600mm Steel Rule
1000mm Steel Rule
English Tin Snips 250mm
Steel Measuring Tape 5Mx16mm
Steel Measuring Tape Wind Up 30mx10
Gloves
Leather Apron Gbl Chrome
Welding Goggles
Standard Welding Helmet
Steel Beam Trammel 365mm Dia
150mm Engineers Steel Square
Steel Line Cord 600mm
Padlock Brass 38mm
Prick Punch 8mm
Centre Punch 5x8x100mm
Lighter Triple Flint
Std Hex Key Set 1.5-10mm Box
Std Hex Key Set 1/16-3/8 Box
Vice Grip 250mm
Scriber
Outside Spring Joint Caliper 150mm Long
Inside Spring Joint Caliper 150mm Long
Divider Spring Joint 150mm Long
File Set 250mm Flat, hr, tri, rnd & sq 2nd
Cold Chisel 19x180mm
Divider Spring Joint 300mm Long
Poly Carbon Safety Glasses
Tip Cleaner Set
Boilermaker Square 600x400mm

DIE CAST ALUMINIUM CONVENIENT TOOLBOX

Stock code	Description
CTB1	Convenient toolbox size 1

CONTENTS

Stock code	Description	Size	Layer
1/2S8	1/2" Socket	8 mm	Top
1/2S9	1/2" Socket	9 mm	Top
1/2S10	1/2" Socket	10 mm	Top
1/2S11	1/2" Socket	11 mm	Top
1/2S12	1/2" Socket	12 mm	Top
1/2S13	1/2" Socket	13 mm	Top
1/2S14	1/2" Socket	14 mm	Top
1/2S15	1/2" Socket	15 mm	Top
1/2S17	1/2" Socket	17 mm	Top
1/2S19	1/2" Socket	19 mm	Top
1/2S22	1/2" Socket	22 mm	Top
1/2RL	1/2 Ratchet		Top
1/2E125	1/2 Extension	125 mm	Top
EH300	Engineers Hammer	300gram	Top
LNP160	Long Nose Pliers	160 mm	Top
ECP180	Engineers Pliers	180 mm	Top
TM3X16C	Tape Measure	3m	Top
HK1.5	Hex Key	1.5 mm	Top
HK2	Hex Key	2 mm	Top
HK2.5	Hex Key	2.5 mm	Top
HK3	Hex Key	3 mm	Top
HK4	Hex Key	4 mm	Top
HK5	Hex Key	5 mm	Top
HK6	Hex Key	6 mm	Top
HK8	Hex Key	8 mm	Top
HK10	Hex Key	10 mm	Top
UHSF	Hacksaw Frame		Bottom
DC160	Diagonal Cutters		Bottom
WPP250	Water Pump Pliers		Bottom
CS10/15	Combination Spanner	10 mm 15˚	Bottom
CS11/15	Combination Spanner	11 mm 15˚	Bottom
CS13/15	Combination Spanner	13 mm 15˚	Bottom
CS17/15	Combination Spanner	17 mm 15˚	Bottom
CS19/15	Combination Spanner	19 mm 15˚	Bottom
WSD3.5X75	Screwdriver	Flat 3.5x75	Side
WSD4X100	Screwdriver	Flat 4x100	Side
WSD5.5X150	Screwdriver	Flat 6x150	Side
WSD8X150	Screwdriver	Flat 8x150	Side
WSD10X150	Screwdriver	Flat 10x150	Side
WSD5.5X40	Screwdriver	Flat 6x40	Side
WPSD2X40	Screwdriver	Philips No2	Side
WPSD1X80	Screwdriver	Philips No1	Side
WPSD2X100	Screwdriver	Philips No2	Side
WSDPZ2X100	Screwdriver	Pozi No2	Side

Aluminium Toolbox plus Tray

DIE CAST ALUMINIUM CONVENIENT TOOLBOX

Stock code	Description
CTB2	Convenient toolbox size 2

CONTENTS

Stock code	Description	Size	Layer
1/2S8	1/2" Socket	8 mm	Top
1/2S9	1/2" Socket	9 mm	Top
1/2S10	1/2" Socket	10mm	Top
1/2S11	1/2" Socket	11mm	Top
1/2S12	1/2" Socket	12mm	Top
1/2S13	1/2" Socket	13mm	Top
1/2S14	1/2" Socket	14mm	Top
1/2S15	1/2" Socket	15mm	Top
1/2S17	1/2" Socket	17mm	Top
1/2S19	1/2" Socket	19 mm	Top
1/2S22	1/2" Socket	22 mm	Top
1/2RL	1/2 Ratchet		Top
1/2E125	1/2 Extension	125 mm	Top
BPH680	Ball Pein Hammer	680gram	Top
LNP160	Long Nose Pliers	160mm	Top
ECP180	Engineers Pliers	180mm	Top
HKC10	Hex Key Clip		Top
DC160	Diagonal Cutter		Bottom
WPP250	Water Pump Pliers		Bottom
CS6/15	Combination Spanner	6 mm 15°	Bottom
CS7/15	Combination Spanner	7 mm 15°	Bottom
CS8/15	Combination Spanner	8 mm 15°	Bottom
CS9/15	Combination Spanner	9 mm 15°	Bottom
CS10/15	Combination Spanner	10 mm 15°	Bottom
CS11/15	Combination Spanner	11 mm 15°	Bottom
CS12/15	Combination Spanner	12 mm 15°	Bottom
CS13/15	Combination Spanner	13 mm 15°	Bottom
CS14/15	Combination Spanner	14 mm 15°	Bottom
CS15/15	Combination Spanner	15 mm 15°	Bottom
CS16/15	Combination Spanner	16 mm 15°	Bottom
CS17/15	Combination Spanner	17 mm 15°	Bottom
CS18/15	Combination Spanner	18 mm 15°	Bottom
CS19/15	Combination Spanner	19 mm 15°	Bottom
CS20/15	Combination Spanner	20 mm 15°	Bottom
CS21/15	Combination Spanner	21 mm 15°	Bottom
CS22/15	Combination Spanner	22 mm 15°	Bottom
CS24/15	Combination Spanner	24 mm 15°	Bottom
WSD3.5X75	Screwdriver	Flat 3.5x75	Side
WSD4X100	Screwdriver	Flat 4X100	Side
WSD5.5X150	Screwdriver	Flat 6X150	Side
WSD8X150	Screwdriver	Flat8X150	Side
WSD10X150	Screwdriver	Flat10x150	Side
WSD5.5X40	Screwdriver	Flat 6X40	Side
WPSD2X40	Screwdriver	Philips No2	Side
WPSD1X80	Screwdriver	Philips No1	Side
WPSD2X100	Screwdriver	Philips No2	Side
WSDPZ2X100	Screwdriver	Pozi No2	Side

Aluminium Toolbox plus Tray

DIE CAST ALUMINIUM CONVENIENT TOOLBOX

Stock code	Description
CTB3	Convenient toolbox size 3

CONTENTS

Stock code	Description	Size
1/2S8	1/2" Socket	8 mm
1/2S10	1/2" Socket	10 mm
1/2S11	1/2" Socket	11 mm
1/2S12	1/2" Socket	12 mm
1/2S13	1/2" Socket	13 mm
1/2S14	1/2" Socket	14 mm
1/2S15	1/2" Socket	15 mm
1/2S16	1/2" Socket	16 mm
1/2S17	1/2" Socket	17 mm
1/2S18	1/2" Socket	18 mm
1/2S19	1/2" Socket	19 mm
1/2S21	1/2" Socket	21 mm
1/2S22	1/2" Socket	22 mm
1/2S24	1/2" Socket	24 mm
1/2S27	1/2" Socket	27 mm
1/2S30	1/2" Socket	30 mm
1/2S32	1/2" Socket	32 mm
1/2ST30	1/2" Torx Socket	5 mm
1/2ST35	1/2" Torx Socket	6 mm
1/2ST40	1/2" Torx Socket	8 mm
1/2ST45	1/2" Torx Socket	10 mm
1/2ST50	1/2" Torx Socket	12 mm
1/2ST55	1/2" Torx Socket	14 mm
1/2RL	1/2 Ratchet	
1/2E125	1/2 Extension	125 mm
1/2ST	1/2 Sliding T	
1/2UJ	1/2 Universal Joint	
1/2SPS21	1/2 Spark Plug Socket	21
FG26	Feeler Gauge	26
WPP250	Water Pump Pliers	250 mm
HKC10	Hex Key Clip	1.5-10 mm
SS250	Shifting spanner	250 mm
QUK	Utility knife	4 spare blades
CS6	Combination Spanner	6 mm
CS7	Combination Spanner	7 mm
CS8	Combination Spanner	8 mm
CS9	Combination Spanner	9 mm
CS10	Combination Spanner	10 mm
CS11	Combination Spanner	11 mm
CS12	Combination Spanner	12 mm
CS13	Combination Spanner	13 mm
CS14	Combination Spanner	14 mm
CS15	Combination Spanner	15 mm
CS16	Combination Spanner	16 mm
CS17	Combination Spanner	17 mm
CS18	Combination Spanner	18 mm
CS19	Combination Spanner	19 mm
CS20	Combination Spanner	20 mm
CS21	Combination Spanner	21 mm
CS22	Combination Spanner	22 mm
WSD3.5X75	Screwdriver	Flat 3.5x75
WSD4X100	Screwdriver	Flat 4X100
WSD5.5X150	Screwdriver	Flat 6X150
WSD8X150	Screwdriver	Flat8X150
WSD10X150	Screwdriver	Flat10x150
WSD5.5X40	Screwdriver	Flat 6X40
WPSD2X40	Screwdriver	Philips No2
WPSD1X80	Screwdriver	Philips No1
WPSD2X100	Screwdriver	Philips No2
WSDPZ2X100	Screwdriver	Pozi No2

Aluminium Toolbox plus Tray

DIE CAST ALUMINIUM CONVENIENT TOOLBOX PLUS

Stock code	Description
CTB4	Convenient toolbox size 4

CONTENTS

Stock code	Description	Size
1/2S8	1/2" Socket	8 mm
1/2S10	1/2" Socket	10 mm
1/2S11	1/2" Socket	11 mm
1/2S12	1/2" Socket	12 mm
1/2S13	1/2" Socket	13 mm
1/2S14	1/2" Socket	14 mm
1/2S15	1/2" Socket	15 mm
1/2S16	1/2" Socket	16 mm
1/2S17	1/2" Socket	17 mm
1/2S18	1/2" Socket	18 mm
1/2S19	1/2" Socket	19 mm
1/2S21	1/2" Socket	21 mm
1/2S22	1/2" Socket	22 mm
1/2S24	1/2" Socket	24 mm
1/2S27	1/2" Socket	27 mm
1/2S30	1/2" Socket	30 mm
1/2S32	1/2" Socket	32 mm
1/2ST30	1/2" Torx Socket	5 mm
1/2ST35	1/2" Torx Socket	6 mm
1/2ST40	1/2" Torx Socket	8 mm
1/2ST45	1/2" Torx Socket	10 mm
1/2ST50	1/2" Torx Socket	12 mm
1/2ST55	1/2" Torx Socket	14 mm
1/2RL	1/2 Ratchet	
1/2E125	1/2 Extension	125 mm
1/2ST	1/2 Sliding T	
1/2UJ	1/2 Universal Joint	
1/2SPS21	1/2 Spark Plug Socket	21
FG26	Feeler Gauge	26
WPP250	Water Pump Pliers	250 mm
HKC10	Hex Key Clip	1.5-10 mm
SS250	Shifting spanner	250 mm
QUK	Utility knife	4 spare blades
CCSET6-22/17/15	6-22/17 Set Combination spanner	
CS6/15	Combination Spanner	6 mm
CS7/15	Combination Spanner	7 mm
CS8/15	Combination Spanner	8 mm
CS9/15	Combination Spanner	9 mm
CS10/15	Combination Spanner	10 mm
CS11/15	Combination Spanner	11 mm
CS12/15	Combination Spanner	12 mm
CS13/15	Combination Spanner	13 mm
CS14/15	Combination Spanner	14 mm
CS15/15	Combination Spanner	15 mm
CS16/15	Combination Spanner	16 mm
CS17/15	Combination Spanner	17 mm
CS18/15	Combination Spanner	18 mm
CS19/15	Combination Spanner	19 mm
CS20/15	Combination Spanner	20 mm
CS21/15	Combination Spanner	21 mm
CS22/15	Combination Spanner	22 mm
WSD3.5X75	Screwdriver	Flat 3.5x75
WSD4X100	Screwdriver	Flat 4X100
WSD5.5X150	Screwdriver	Flat 6X150
WSD8X150	Screwdriver	Flat8X150
WSD10X150	Screwdriver	Flat10x150
WSD5.5X40	Screwdriver	Flat 6X40
WPSD2X40	Screwdriver	Philips No2
WPSD1X80	Screwdriver	Philips No1
WPSD2X100	Screwdriver	Philips No2
WSDPZ2X100	Screwdriver	Pozi No2

DIE CAST ALUMINIUM CT4 CONT...

ECP200	Engineer Pliers	200mm
DC160	Diagonal Cutters	160mm
LNP160	Long Nose Pliers	160mm
BPH450	Ball Pain Hammer	450mm

Aluminium Toolbox plus Tray

ELECTRICAL TOOLKIT

Stock code	Description
TQT8	

CONTENTS

Stock code	Description	Size
ECP200	Combination Pliers	200mm
DC160	Diagonal Cutters	160mm
LNP160	Long Nose Pliers	160mm
EC125	Cutter Electrical	
AWS2	Wire Stripper	0.5-2Mm
SDSET7Q	Screwdriver	
CRIMPERMULT19	Crimper And Wire Stripper	23mm
SI40W	Soldering Iron 40W	
SS	Solder Sucker	
SIS	Soldering Iron Stand	
M600VSTU	Multimeter Digital Dc 600 Ac 600 Student	
WPP250	Water Pump Pliers 250Mm	
TW	Tweezers	
WSDTXSET9	Wera Bit Set Tx7-Tx40 With Bithlder 9 Pc	
WSDBITSET6	Wera Bit Set Flat,Ph&Pz 6 Pc	
BITHOLDER	Bit Holder 1/4"	
ETS250	English Tin Snips 250Mm Cuts 0.78Mm	
HKF10	Hex Key Set 2.5-10 Folding Knife Set	
MINIPLIERSET	Plier Set 125Mm (5Pcs) Leather Case	
QUK	Utility Knife	
JSFQ	Mini Hacksaw	
ACB	Case Aluminium Black 455X330X152	
TC4-32	Tube Cutter	

WALL CABINETS

Supplied **without** tools

Stock code	Size mm H	W	D
WC1200	1100	1200	350

BOAT KIT IN ROLL UP POUCH

Stock code	Description
BTK	Flat screwdriver 3.5x75mm and 6.5x100 Phillips No.2x100, spanners 6x7, 8x9, 10x11, 12x13, 14x15, 16x17 and 18x19mm Side cutters DC160, longnose pliers 160mm, Pliers 180mm, Shifting Spanner 200mm, Water pump pliers 250mm. Spark plug socket 21mm, 1/2 Tbar, 1/2 22mm socket for propeller Tin of Multipurpose spray

WORK BENCHES

500kg Max. Load

Shown with C400-2 draws

Vice not included

Draws not included

Stock code	Size mm H	L	D	
WB1870STD	890	1870	830	(no drawers)

ATTACHABLE DRAWER CABINETS

Stock code	Size mm H	L	D	Number of drawers
C400-2	400	562	705	2

WORK BENCHES

500kg Max. Load

Stock code	Size mm H	L	W	Thickness of top mm
WBGREENTOP	855	1800	700	35
WBSTEELTOP	855	1800	700	35

WORKBENCH LIGHT DUTY

Stock code	Size mm H	L	W
WB1500	865	1500	640

BEARING PULLERS - 2 JAW

Stock code	Size mm	Height mm	Bearing Ø mm
BP752	75	90	15-80
BP1002	100	120	20-110
BP1502	150	180	25-160
BP2002	200	235	30-210
BP2502	250	290	40-265
BP3002	300	335	50-317
BP3502	350	400	80-370

BEARING PULLERS - 3 JAW

Stock code	Size mm	Height mm	Bearing Ø mm
BP753	75	90	15-80
BP1003	100	120	20-110
BP1503	150	180	25-160
BP2003	200	235	30-210
BP2503	250	290	40-265
BP3003	300	335	50-317
BP3503	350	400	80-420

COMBINATION INTERNAL AND EXTERNAL PULLERS

Stock code	Internal range mm	External range mm	No of jaws	No of pieces per set
CIEP	15-80	15-80	3	4

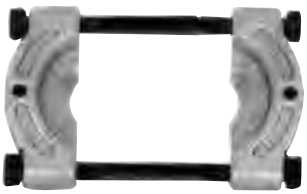
HYDRAULIC BEARING PULLERS

Rotary pump handle. With spring draw back.

Stock code	Internal range mm	External range mm	No of jaws	No of pieces per set
HBP3T	3 Ton	150	60	2 & 3
HBP5T	5 Ton	200	60	2 & 3
HBP10T	10 Ton	250	60	2 & 3
HBP20	20 Ton	350	60	2 & 3

Note : If 2 jaw configuration is used, the rated load is reduced by 1/3

BEARING SEPARATORS

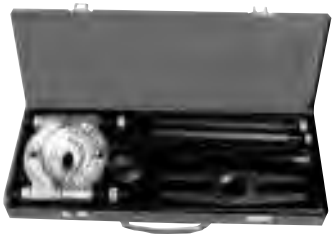


Stock code	Size mm	Max spread mm	Min spread mm
BS50	50	50	30
BS75	75	75	50
BS100	100	100	75
BS150	150	150	80

BEARING SEPARATOR KITS

Stock code	Size mm	Stock code	Size mm	Stock code	Size mm
BS50/75	50.75	BS100	100	BS150	150

HYDRAULIC BEARING SEPERATOR KITS



Stock code	Load size	mm	Stock code	Load size	mm
HBSK100	10 Ton	100	HBSK150	12 Ton	150

BEARING SEPARATORS

Stock code	No of pieces	Hydraulic ram	Seperator size mm	Puller size mm
CHBSK	23	10 Ton	100	100, 150, 200

STUD REMOVERS

Wide working range

Stock code	Working range mm	Weight kg
SR 5 - 19	5 - 19	0.5

NUT SPLITTERS

Body drop forged carbon steel, blade CrV

Stock code	for nuts mm	stock code	for nuts mm
NS 9 - 12	9 - 12	NS 16 -13	16 - 22
NS 12 - 16	12 - 16	NS 19 24	19 - 24

HYDRAULIC NUT SPLITTERS

Off set shape assists in confined spaces. Body drop forged steel, blade CrV

Stock code	for nuts mm	stock code	for nuts mm
HNS 7 - 22	7 - 22	HNS 22 - 36	22 - 36

FLAT HYDRAULIC CYLINDERS

Low height for confined spaces, single acting, spring return

Stock code	Capacity Ton	Stroke mm	Minimum height mm	Cylinder Ø mm	piston Ø mm
FHC5T	5	6	32	41	25.4
FHC10T	10	12	42	55	38.1
FHC20T	20	11	51	76	50.8
FHC30T	30	13	58	95	63.4
FHC50T	50	16	64	114	69.8

SHORT HYDRAULIC CYLINDERS

Light weight, low profile

Stock code	Capacity Ton	Stroke mm	Minimum height mm	Cylinder Ø mm	piston Ø mm
SHC20T	20	45	98	92	50.8
SHC30T	30	62	117	101	66.5
SHC50T	50	60	122	124	69.8
SHC100T	100	57	141	165	92.2

LONG HYDRAULIC CYLINDERS

Single acting. Heavy duty spring return. Collars & pistons drilled & tapped

Stock code	Capacity Ton	Stroke mm	Minimum height mm	Cylinder Ø mm	piston Ø mm
LHC5T	5	127	215	38	25.4
LHC10T	10	156	247	57	38.1
LHC15T	15	152	271	69	41.4
LHC25T	25	158	273	85	57.2
LHC50T	50	159	282	127	75.5

DOUBLE RAM HYDRAULIC CYLINDER

Single acting. Long stroke

Stock code	Capacity Ton	No of rams	Stroke mm	Minimum height mm	Cylinder Ø mm
DRHC10T	10	2	270	250	110

HYDRAULIC TOE JACKS

For use on the repair, maintenance and installation of heavy machines.
Revolve through 360

Stock code	Toe Capacity Ton	Minimum toe height mm	Stroke mm	Lift range mm
TJ5T	5	25	250	25-230
TJ10T	10	30	230	30-260

HEAD AND TOE JACKS

For use on the repair, maintenance and installation of heavy machines. Lift toe spring return.

Stock code	Head capacity ton	Toe capacity ton	Minimum toe height mm	Stroke mm	Jaw size mm
HATJ10T	10	5	23	147	98x53
HATJ20T	20	10	28	152	123x60
HATJ30T	30	15	40	155	149x60

HYDRAULIC BOTTLE JACKS

With adjustable screw top and safety bypass valve.

Stock code	Max load ton	Min height mm	Lifting height mm	Screw adjusting height mm	Weight Kg
BJ2TONCE	2	181	116	48	2.9
BJ3TONCE	3	194	118	60	3.6
BJ5TONCE	5	216	127	70	4.8
BJ10TONCE	10	230	150	80	6.8
BJ20TONCE	20	242	150	60	11.5

DOUBLE RAM BOTTLE JACKS

With adjustable screw top and safety bypass valve.

Stock code	Max load ton	Min height mm	Lifting height mm	Screw adjusting height mm	Weight Kg
DRBJ2TON	2	150	160	60	4.7
DRBJ4TON	4	160	170	60	6.4
DRBJ6TON	6	215	270	100	8.9

SUPPORT JACKS

Stock code	Max load ton	Min height mm	Max height mm	Lifting height mm	Weight Kg
SJ5TON	5	240	340	100	4.2
SJ10TON	10	292	453	160	7.1
SJ20TON	20	402	632	230	15.6

HYDRAULIC HAND PUMPS

Two speed. Supplied complete with hydraulic hose & couplers

Stock code	Pressure rating bar	Oil displacement/stroke cm³		Oil capacity	
	LD	HP	LP	HP	cm ³
HHP0.7L	13	700	12.5	2.3	700
HHP2.2L	25	700	16.2	2.4	2200
HHP3L	25	700	16.2	2.4	3000

HYDRAULIC POWER PACK PUMP

Supplied with hydraulic hose and couples

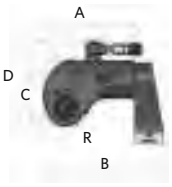
Stock code	Max Working Load	Outled at high load	Tank Capacity	Motor K W
HPPP	70 Mpa	2L/Min	30L	1.5/2.2

Hi-Force TL TOUGHLIFT JACKS

Working pressure 700 bar, 12 models with a range of accessories, used in mining , construction and railway industries

Available from 50-200 tonne - in electric or as air driven hydraulic pump unit

Hi-Force HYDRAULIC TOOLS TW-N HYDRAULIC TORQUE WRENCH - SQUARE DRIVE



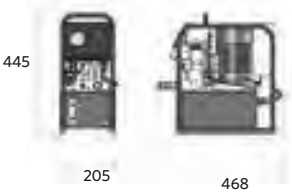
Torque Capacity

Model number	Nm at 700 Bar	lbf.ft at 10,000 PSI	Square drive size	Weight incl. reaction foot kg
TWS17N	1727	1254	3/4"	1.9
TWS45N	4529	3289	1"	4.8
TWS100N	10064	7308	1.1/2"	9.0
TWS150N	14974	10873	1.1/2"	15.0

Dimensions in mm

A	B	C	D	E	F	R
129	167	90	131	51	73	25
167	218	121	170	68	98	34
223	293	163	211	92	135	46
247	323	192	236	100	141	54

Hi-Force HYDRAULIC TOOLS HTWP -TORQUE WRENCH PUMPS



Displacement l/min

Model Number	Max pressure bar	Power supply V	Motor rating kW	Low pressure	High pressure	Change pressure bar
HTWP2142AR	700	240	0.55	3.9	0.36	60

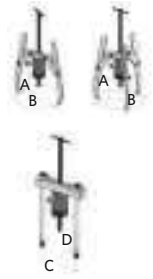
Hi-Force HYDRAULIC TOOLS PKC-COMPREHENSIVE HYDRAULIC PULLER KITS

Capacities from 10 to 50 tonnes

Combination of 4 different pullers in one set

Quick set-up time, easy to use

- Working pressure 700 Bar
- Complete hydraulic system supplied, including gauge
- High quality, drop-forged steel components
- Supplied complete with carrying case



Model number	Capacity tonnes	Cylinder model no.	Pump model no.	Weight kg
PKC10	10	HHS102	HP110	25
PKC20	20	HHS202	HP110	60
PKC30	30	HHS302	HP110	116
PKC50	50	HHS603	HP227	268

Dimensions in mm

A	B	C Min	C Max	D	E	F Min	F Max	G Min	G Max	H
296	350	115	260	300	110	10	110	40	145	115
320	480	135	345	265	152	11	134	40	145	115
407	580	180	440	284	260	15	250	60	240	150
727	920	230	580	447	260	15	250	60	240	150

Dimensions A & B calculated with 15° outward angled puller legs.

Hi-Force HYDRAULIC TOOLS SJS - STEPPED JAW SPREADERS

SJS10

Model number	Capacity tonnes	Oil cap. cm^3	Weight kg
SJS10	13	74	5.5
SJS10M	13	74	7.5

Dimensions in mm

A	B	C	D	E	F	G	H	I	J
279	60	40	15	8	10	328	60	28	49
433	60	40	15	8	10	483	60	28	49

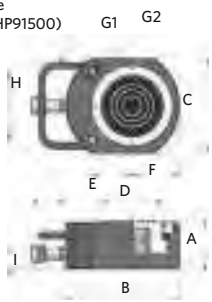
Hi-Force HYDRAULIC TOOLS HPS-SINGLE ACTING LOW HEIGHT PAD CYLINDERS

Capacities from 4.5 to 147 tonnes

Stroke lengths from 6 to 16mm

Working pressure 700 Bar.

- Single acting, spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals



Model number	Capacity tonnes	Stroke mm	Oil cap. cm³	Cyl. eff. area cm²	Weight kg
HPS50	4.5	6	4	6.4	0.8
HPS51	4.5	18	10	6.4	0.9
HPS100	10	10	14	14.4	1.6
HPS200	20	11	31	28.6	2.6
HPS300	32	12	55	45.6	4.2
HPS500	50	15	107	71.3	6.6
HPS750	73	16	164	102.7	10.4
HPS1000	109	16	245	153.4	23.2
HPS1500	147	16	330	206.2	28.5

Dimensions in mm

A	B	C	D	E	F	G1	G2	H	I
32	60	38	24	20	19	5.6	9.75	26	19
42	60	38	24	20	19	5.6	9.75	26	19
46	81	56	38	34	28	6.8	11.25	37	19
52	100	76	51	40	39	8.8	14.25	50	19
59	115	95	60	46	48	8.8	14.25	52	19
67	140	114	70	54	60	10.8	17.25	67	20
81	165	140	82	67	70	13.0	19.00	76	21
91	215	180	114	75	90	12.8	19.00	130	29
100	215	191	114	83	95	13.0	19.00	117	29

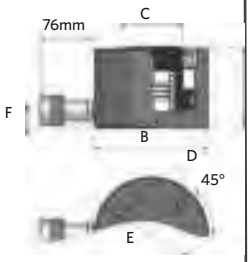
Hi-Force HLS-SINGLE ACTING LOW HEIGHT CYLINDERS

Capacities from 10 to 147 tonnes

Stroke lengths from 25 to 60mm

Working pressure 700 Bar

- Spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals



[*] = HLS101 Features 2 base mounting holes at 90° from coupler

Model number	Capacity tonnes	Stroke mm	Oil cap. cm²	Cyl. eff. area cm²	Weight kg
HLS101	10	40	58	14.4	2.4
HLS201	20	44	126	28.6	4.8
HLS301	32	25	114	45.6	5.0
HLS302	32	60	274	45.6	7.0
HLS501	50	25	178	71.3	8.4
HLS502	50	60	428	71.3	10.4
HLS1001	109	25	384	153.4	19.8
HLS1002	109	60	921	153.4	24.0
HLS1501	147	25	516	206.2	37.0
HLS1502	147	50	1031	206.2	42.0

Continued ...

Dimensions in mm

A	B	C	D	E	F
95	70	38	M8	40	19
102	90	51	M8	60	19
83	102	60	M8	80	19
119	102	60	M8	80	19
91	127	70	M8	80	20
126	127	70	M8	80	20
108	178	114	M12	140	30
143	178	114	M12	140	30
130	216	114	M12	165	41
155	216	114	M12	165	41

Hi-Force HSS-SINGLE ACTING MULTI-PURPOSE CYLINDERS

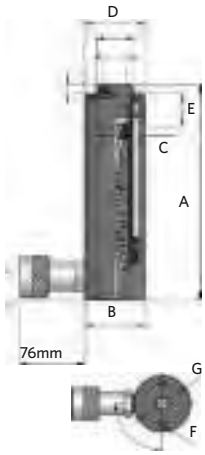
Capacities from 4.5 to 109 tonnes

Stroke lengths from 25 to 457mm

Working pressure 700 Bar

- Spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals
- Collar threads withstand full load
- Piston rod thread on all models up to 30t
- Base mounting holes on all models (except HSS308)
- Optional piston rod saddles (see page 25)
- Collar thread protector supplied as standard

Lightweight aluminium alternatives available



Model number	Capacity tonnes	Stroke mm	Oil cap. cm²	Cyl. eff. area cm²	Weight kg
HSS51	4.5	25	16	6.4	1.0
HSS52	4.5	50	32	6.4	1.2
HSS53	4.5	75	48	6.4	1.4
HSS54	4.5	100	54	6.4	1.5
HSS55	4.5	125	80	6.4	1.8
HSS57	4.5	176	113	6.4	2.0
HSS59	4.5	227	146	6.4	2.4
HSS101	10	25	36	144	1.8
HSS102	10	56	61	144	2.4
HSS104	10	100	144	144	3.0
HSS106	10	150	217	144	4.2
HSS108	10	206	297	144	5.0
HSS1010	10	250	361	144	5.4
HSS1012	10	305	440	144	6.2

Dimensions in mm(unless otherwise stated)

A	B	C	D	E	F	G	H
107	38	24	1 ½ "-16un	28	M6	25	19
132	38	24	1 ½ "-16un	28	M6	25	19
157	38	24	1 ½ "-16un	28	M6	25	19
182	38	24	1 ½ "-16un	28	M6	25	19
207	38	24	1 ½ "-16un	28	M6	25	19
258	38	24	1 ½ "-16un	28	M6	25	19
308	38	24	1 ½ "-16un	28	M6	25	19
100	57	35	2¼ "-14un	27	M8	40	19
131	57	35	2¼ "-14un	27	M8	40	19
175	57	35	2¼ "-14un	27	M8	40	19
225	57	35	2¼ "-14un	27	M8	40	19
281	57	35	2¼ "-14un	27	M8	40	19
325	57	35	2¼ "-14un	27	M8	40	19
379	57	35	2¼ "-14un	27	M8	40	16

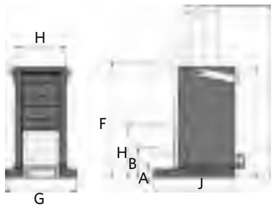
Hi-Force HMJ - STEEL MACHINE LIFT JACKS

Capacities of 10 and 25 tonnes

Working pressure 700 Bar

Minimum toe height as low as 21mm

- Multi-position lifting toe
- Remote operation gives improved operator safety
- Stroke length 150mm
- Can be used for simultaneous multiple lift point applications



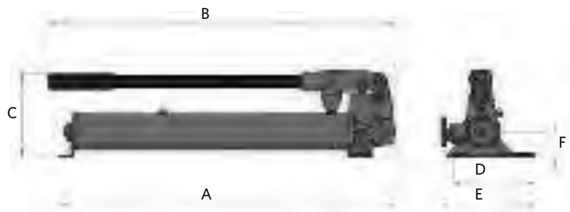
Model number	Toe Tonnes	Head tonnes	Stroke mm	Weight kg
HMJ10	8.5	10	150	29.2
HMJ25	2.0	25	150	55.1

Dimensions in mm

A	B	C	D	E	F	G	H	J
25	79	133	272	422	283	202	122	187
35	117	199	330	480	349	292	152	211

Hi-Force HP-MANUALLY OPERATED PUMPS - STEEL

Single or two speed operation, Choice of control valves, Working pressure 700 Bar



Single speed hand operated pumps for single acting cylinders and tools

Model number	Valve type	Displacement per stroke cm² 1st stage	2nd stage	Usable oil cap. litres	Handle effort kg	Weight kg
HP110	2 way	2.9	-	1.0	45	5.6

Two speed hand operated pumps for single acting cylinders and tools

Model number	Valve type	1st stage	2nd stage	Usable oil cap. litres	Handle effort kg	Weight kg
HP227	2 way	12.9	23		38	10.5
HP257	2 way	12.9	23		38	15.2

Dimensions in mm

A	B	C	D	E	F
558	566	128	134	145	40
544	597	168	135	145	53
545	597	168	135	150	53

Hi-Force HEP2-ELECTRIC DRIVEN PUMPS GENERAL DUTY MEDIUM FLOW

- High pressure flow rate 0.65 ltr/min. up to 700 Bar
- Low pressure flow rate 7 ltr/min. up to 70 Bar
- Two stage hydraulic pump unit
- Externally adjustable pressure relief valve
- Manual valve with load holding feature fitted as standard
- Solenoid valve options available

Model number	Valve type	Oil cap. litres	Motor kW	Motor voltage	Weight kg
HEP207112	2-way	25	1.5	220 / 240 V - 1Ph	47.0
HEP207114	3-way	10	1.5	380 / 440 V - 3Ph	47.0
HEP207122	P-T Plate	25	1.5	220 / 240 V - 1Ph	63.0
HEP207124	P-T Plate	25	1.5	380 / 440 V - 3Ph	63.0
HEP207212	P-T Plate	25	1.5	220 / 240 V - 1Ph	47.5
HEP207214	P-T Plate	10	1.5	380 / 440 V - 3Ph	47.5
HEP207222	2-way	25	1.5	220 / 240 V - 1Ph	63.5
HEP207224	2-way	25	1.5	380 / 440 V - 3Ph	63.5
HEP207312	2-way	25	1.5	220 / 240 V - 1Ph	47.5
HEP207314	3-way	10	1.5	380 / 440 V - 3Ph	47.5
HEP207322	3-way	25	1.5	220 / 240 V - 1Ph	63.5
HEP207324	3-way	25	1.5	380 / 440 V - 3Ph	63.5
HEP207412	4-way	25	1.5	220 / 240 V - 1Ph	47.5
HEP207414	4-way	10	1.5	380 / 440 V - 3Ph	47.5
HEP207422	4-way	25	1.5	220 / 240 V - 1Ph	63.5
HEP207424	4-way	25	1.5	380 / 440 V - 3Ph	63.5

Dimensions in mm

A	B	C	D	E	F	G
498	198	230	246	221	368	438
498	198	230	246	221	368	438
527	227	259	306	281	490	570
527	227	259	306	281	490	570
498	198	230	246	221	368	438
498	198	230	246	221	368	438
527	227	259	306	281	490	570
527	227	259	306	281	490	570
498	198	230	246	221	368	438
498	198	230	246	221	368	438
527	227	259	306	281	490	570
527	227	259	306	281	490	570
498	198	230	246	221	368	438
498	198	230	246	221	368	438
527	227	259	306	281	490	570
527	227	259	306	281	490	570

CREEPER

Stock code	Length mm	Width mm	Height mm	Max load kg
CREEPER930	930	500	140	150

SCISSOR JACKS

CE

Stock code	Max load ton	Min height mm	Max height mm	Max length mm	Base width mm	Weight Kg
SJ2TON	2	90	380	460	120	2.9

HIGH LIFT JACKS

Stock code	Max height mm	Min height mm	Weight Kg
HLJ	1070	154	14

GARAGE JACKS

CE

Stock code	Max load ton	Min height mm	Max height mm	Overall length mm	Weight Kg
GJ2.25TON	2 1/4	130	490	688	35.5
GJ3TON	3	145	520	695	39

HYDRAULIC LONG FLOOR JACKS

Stock code	Max load ton	Min height mm	Max height mm	Overall length mm	Weight Kg
HLFJ2TON	2	140	800	1220	58
HLFJ3TON	3	130	600	1400	70
HLFJ5TON	5	150	560	1510	95
HLFJ10TON	10	160	560	1640	145

PNEUMATIC LONG FLOOR JACKS

Stock code	Max load ton	Min height mm	Max height mm	Overall length mm	Weight Kg
PLFJ5TON	5	150	560	1510	100
PLFJ10TON	10	160	560	1640	140

FOLDABLE ENGINE CRANES

Stock code	Max load ton	Lifting range mm	Max length mm	Max width mm	Max height mm	Weight Kg
FEC1TON	1	25-2000	1520	1100	1500	73

ENGINE CRANES

Stock code	Max load ton	Lifting range mm	Max length mm	Max width mm	Max height mm	Weight Kg
EC750KG	0.75	0-2355	1805	840	1505	54
EC1TON	1	55-2270	1560	935	1530	76
EC2TON	2	380-2400	2310	1300	1575	73

ENGINE LEVELERS

Stock code	Max load Kg	Length mm	Weight Kg
EL	680	400	5.5

BAKKIE CRANE

Stock code	Max load kg	Min height mm	Max height mm	Weight Kg
BC	500	870	1800	43

TELESCOPIC TRANSMISSION STANDS

Stock code	Max load Kg	Min height mm	Max height mm	Weight Kg
TTS300KG	300	1100	1900	32
TTS500KG	500	1100	1900	32

TRANSMISSION JACKS

Stock code	Max load ton	Min height mm	Max height mm	Weight Kg
TJ500KG	0.5	220	575	35.5
TJ1TON	1	210	775	68

HYDRAULIC RAMS

Stock code	Max load ton	Min length mm	Max length mm	Ram stroke	Weight Kg
HR3TON	3	620	1115	495	10.5
HR5TON	5	625	1120	495	13.5
HR8TON	8	630	1120	490	15

HYDRAULIC RAM KITS

Includes hand pump, hose, cylindrical ram, spreader ram, rubber head. rubber faced flat base, v base, serrated saddle, thread adaptor & extensions

Stock code	Max load ton	Min ram length mm	Ram stroke mm	Weight Kg
HRKIT	10	470	150	31

TRESTLE STANDS

Stock code	Max load ton	Min height mm	Max height mm	Lifting height mm	Weight Kg
TS3TON	3	300	430	130	2
TS6TON	6	375	570	195	2.2

RATCHET TRESTLE STANDS

Stock code	Max load ton	Min height mm	Max height mm	Lifting height mm	Weight Kg
RTS2TON	2	278	420	142	2.5
RTS3TON	3	285	420	135	3.3
RTS6TON	6	386	605	219	6.8

ENGINE STANDS

Stock code	Max load kg	Base length mm	Weight Kg
ES340KG	340	875	18.5
ES450KG	450	880	21

BENCH TOP SHOT BLASTERS

Stock code	Overall dimensions length mm	width mm	height mm	Working space length mm	width mm	height mm	Weight Kg
BTSB	630	530	480	560	460	280	18

FLOOR STANDING SHOT BLASTERS

Stock code	Height mm	Width mm	Depth mm	Weight Kg
FSSB	960	600	610	48

HEAVY DUTY INDUSTRIAL SHOT BLASTERS

Perforated steel floor. Partical separating screen - foot perdal operated

Stock code	Heigtht mm	Width mm	Depth mm	Weight kg
HDISB	1750	1320	1200	160

PARTS WASHER

Stock code	Capacity litre	Height mm	Length mm	Depth mm	Weight kg
PW8	15	470	360	250	6.5
PW44	90	790	550	320	25

Note: PW44 supplied with floor stand

LARGE CAPACITY PARTS WASHER

Single piece tank construction. Fully sealed magnetic drive pump.

Stock code	Capacity litre	Heigtht mm	Length mm	Depth mm	Weight kg
PW150	150	890	1130	54	42

OIL DRAINERS

With air pressure valve and fluid lever guage.

Stock code	Capacity litre	Heigtht Min mm	Length max mm	Depth mm	Weight kg
OD68	68	124	290	640	21

MULTI PURPOSE OIL DRAINERS

Drains, collets, fills. Compressed air creates a vacume which sucks oil out. Adjustable oil tray

Stock code	Tank capacity litre	Sucking speed L/min	Collecting height mm	Draining pressure bar	Weight kg
MPOD	65	0.6-1.6	1.85	0.5	32

HAND OIL PUMP

Bi directional - can either suck or pump. Self priming

Stock code	Sucking speed	Handle speed RPM	Output connections
HOP	13L/80 Revs	23	3/4 NPT

WORKSHOP PRESS 5 TON

Stock code	Max load ton	Max height mm	Max width mm	Weight Kg
WP5TON	5	1760	515	42.5

WORKSHOP PRESS 10 TON

With pressure guage

Stock code	Max load ton	Stroke mm	Work range mm	Max height mm	Max width mm	Weight Kg
WPG10TON	10	180	160-330	700	520	46

WORKSHOP PRESS 12 TON

Stock code	Max load ton	Max height mm	Max width mm	Weight Kg
WP12TON	12	1230	490	43

WORKSHOP PRESS 20 TON

Stock code	Max load ton	Stroke mm	Work range mm	Bed width mm	Weight Kg
WP20TON	20	160	0-998	750	129

DIGITAL MULTIMETER - PROFESSIONAL 750V

Large LCD display, dat hold, low battery indication, full overload protection fuse protection at 10A, protection rubber holster

Model : VC890 D

Stock code : M750VPRO
Frequecy response : 40 ˜400 Hz
DC voltage : 200mV/2V/20V/200V/1000V (± 0.5%)
AC voltage : 2V/20V/200V/750V (± 0.8%)
DC current : 20µA/2mA/200mA/20A (± 1.2%)
AC current : 2mA/200mA/20A (± 1.2%)
Resistance : 200Ω/2kΩ/20kΩ/200kΩ/2MΩ (± 0.8%)
Capacitance : 20nF/200nF/20µF/200µF (± 4.0%)
Diode check
Continuitytest (audible)
Power source : 6F22 (9V) x 1
Dimension : 155 x 90 x 48mm
Weight : approx. 270g (including battery)

DIGITAL MULTIMETER - PROFESSIONAL 600V

Large LED display, back light, EMF sender, auto power off.

Model : EM5511

Stock code : M600VPRO
Function measuring range
DC voltage : 400mV/4V/40V/400V/600V
AC voltage : 4V/40V/400V/600V
DC current : 400µA/4000µA/40mA/400A/4A/10A
AC current : 400µA/4000µA/40A/400mA/4A/10A
OHM : 400Ω/4kΩ/40kΩ/400kΩ/4M/40mΩ
Capacitance : 4nF/40nF/400nF/4µF/ 40µf/100µF
Frequence : 10Hz/100Hz/1KHz/10KHz/100KHz/>200KHz
Temp -20-400˚c
400˚C - 1000˚C
Duty cycle 1 % - 99%
Diode check 1.5V Continuitytest (audible)
EMF 400-4000mG

DIGITAL MULTIMETERS - DIY 750V

Large LCD display. Auto on/off. Data hold function.
Overload protection. Model EM8900.

Stock code : M750VDIY#

Function	Measuring range	Function	Measuring range
DCV	200mV/2V/20V/200V/1000V	Diode check •))	2.8V/1mA <30ff Buzzer will sound
ACV	2/20V/200V/750V		
DCA	20µA/2mA/20mA/200mA/10A		
ACA	2mA/20mA/200mA/10A	Power source	9V Battery (6F22)x1
OHM	200Ω/2kΩ/20kΩ/200kΩ/2MΩ/20MΩ	Dimensions	180x90x40mm
Battery check	1.5V, 9V	Weight	360g approx.

DIGITAL MULTIMETERS - STUDENT 600V

Large LCD display. Auto on/off. Overload protection.
Safety category II. Model EM390

Stock code : M600VSTU

Function	Measuring range	Function	Measuring range
DCV	200mV/2V/20V/200V/1000V	Battery check	1.5V, 9V
ACV	200V/600V	Diode check	2.8V/1mA
DCA	2mA/20mA/200mA/10A	Power source	9V Battery (NEDA6F22)x1
OHM	200Ω/2kΩ/20kΩ/200kΩ/2MΩ	Dimensions	128x70x28mm
		Weight	137g

DIGITAL CLAMP METER

Large LCD display. Data hold function. Overload protected.
Model EM204

Stock code : CM750V

Function	Measuring range	Function	Measuring range
DCV	1000V	FREQ	2KHz
ACV	750V	STR	Yes
ACA	200/1000A	Diode check	2.8V/1mA
DCA	1	Size	250x99x43mm
OHM	200kff	Weight	400g

INSULATION RESISTANCE TESTER

Stock code	Function
IRMM	Accurate, reliable and easy to operate. For testing insulation resistance. Voltage can be switched between 250V, 500V and 1000V. Also used to test ACV resistance. For testing transformers, cables, switches, electrical appliances and automotive wiring.

AUTOMOTIVE DIGITAL VOLTAGE TESTER

Model GK9A

Stock code	Volatge range
ADVT	2V 3V 4V 5V 9V 12V 12.5V 13.5V

DIGITAL THERMOMETER

Model EM528A Non contact, data hold

Stock code	Temp Range	Accuracy
T1000C	-20-1000C	1%

INSPECTION CAMERA

Stock code	Volatge range
HHIC	Hand held inspection camera with flexible tube and light
USBIC	USB inspection camera with flexible tube & led

FLUKE DIGITAL MULTIMETER

Compact general purpose multimeters
Model 115 CATIII 600V

Stock code : FLUKE-115

Function	Maximum	Max Resolution
DCV	600V	1mV
ACV	600V	1mV
DCA	10A	1mA
ACA	10A	0.01A
Resistance	40mΩ	0.1Ω
Capacitance	10000µF	1nF
Frequency	50KHz	0.01Hz

FLUKE DIGITAL MULTIMETERS

Versatile meters for field service or bench repair
Model 177 CATIII 1000V

Stock code : FLUKE-177

Function	Maximum	Max Resolution
DCV	1000V	0.1mV
ACV	1000V	0.1mV
DCA	10A	1mA
ACA	10A	0.01A
Resistance	50mΩ	0.1Ω
Capacitance	10000µF	1nF
Frequency	100KHz	0.01Hz

FLUKE INSULATION MULTIMETERS

Digital Multimeterand insulation testing up to 1KVA
Model 1587 CATIII 1000V

Stock code : FLUKE-1587

Function	Maximum	Max Resolution
VDC	1000V	1mV
VAC	1000V	0.1mV
DCA	400mA	0.01mA
ACA	400mA	0.01mA
Resistance	50.0mΩ	0.1Ω
Capacitance	9999µF	1nF
Frequency	99.99KHz	0.01Hz
Temperature	-40°C/+537°C	0.1°C

FLUKE CONTINUITY AND CURRENT TESTERS

With automatic selection, continuity bleeper & sleep mode
Model TS-1000 CAT III 1000V

Stock code : **FLUKE-TS -1000**

Function	Maximum
VDC	1000V
VAC	1000V
ACA	100A
Resistance	1000Ω

FLUKE CLAMP METER - TRUE - rms

for general trouble shooting CAT III 600V

Stock code : **FLUKE-TS -323** **FLUKE-TS -373**

Function	Maximum	
VDC	600V	600
VAC	600V	600
ACA	400A	600
Resistance	400Ω/4000Ω	0-6000Ω
Continuity	≤70Ω	≤30Ω
Capacitance	-	10-100µf/1000µf

FLUKE VOLTALERT ELECTRICAL TESTERS

Detects voltage without metalic contact.
Model 1AC11

Stock code	Operating range AC	Safety catagory	Length mm	Batteries
FLUKE1AC11	200-1000V	1V	148	2xAAA

FLUKE INFRARED THERMOMETER

Takes heat and dust and A ± 3 meter drop
Model 1AC11

Stock code : **FLUKE-62MAX**

Function	Maximum
Temp range	-30°C - 500°C
Accuracy	± 1.5% or ± 1.5°C whichever is greater
Response time	< 500 Ms
Optical resolution	10 : 1
Power	AA Battery

FLUKE TEST LEADS

Premium test lead set

Stock code	Description
FLUKE-TL71	One pair consisting of red and black comfort grip probes with silicone insulated, right-angle test leads Recommended for ×V measurements CAT 1V 600V, CAT III 1000V, 10A Rating UL listed

FLUKE Lite DIGITAL MULTIMETER

Stock code	FLUKE-15B	FLUKE-17B	
Function	Maximum	Maximum	Resolution
VPC	1000V	1000V	0.1mV
VAC	1000V	1000V	0.1mV
OCA	10A	10A	0.1mA
ACA	10A	10A	0.1mA
Resistance	40Mff	40Mff	0.1ff
Capacitance	100×F	100×F	0.01nF
Frequency		100KHz	
Tempreture		+400°C	

CLAMP METERS

Data hold, Back light
CAT III 600V

Stock code	FLUKE-302	FLUKE-303	FLUKE-305
Function			
DCV	400/600	400/600	400/600
ACV	400/600	400/600	400/600
ACA	400A	600A	1000A
Resistance	4000ff	4000ff	4000ff
Continuity	M70ff	M70ff	M70ff

TWO POLE TESTERS

	T90	T110	T130	T150
Voltage ac/dc	12V to 690V	12V to 690V	6V to 690 V	6V to690V
Continuity	0 to 400 kΩ			
Frequency	0 / 40 to 400 Hz			
Phase rotation	-	100V to 690V		
Resistance measurements	-	-	-	Up to 1000Ω
Response time LED indicator	<,5s			
200kff imput impedance	Current draw 3.5mA @ 690V current draw 1.15mA @ 230V			
7 kΩ imput inpedance (with load buttons pressed)	-	Current draw 30mA @ 230V		
Safety rating	Cat II 690V Cat III 600V	Cat III 690V, Cat IV 600V		
IP rating	IP 54	IP64	IP64	IP64

PADLOCKS BRASS

Stock Code	Size mm
BP25	25
BP32	32
BP38	38
BP50	50

TORCHES - ALUMINIUM BODY

StockCode	Battery	Length mm	Head Ø mm	Body Ø mm
TORCH2AA	2 x AA	145	25	18
TORCH2D	2 x D	255	58	38
TORCH3D	3 x D	310	58	38

REVERSIBLE PNEUMATIC DRILL 10MM CAPACITY

Model 1230 Oil daily

Stock code	Drill chuck capacity mm	Free speed RPM	Air consumption CFM	Air pressure bar	Air inlet
PDR10	10	1800	4.5	6.2	1/4"

HEAVY DUTY REVERSIBLE PNEUMATIC DRILL 10MM CAPACITY

Model 630

Stock code	Drill chuck capacity mm	Free speed RPM	Air consumption CFM	Air pressure bar	Air inlet
HDPD10	10	2200	4.5	6.2	1/4"

Oil daily

REVERSIBLE PNEUMATIC DRILL 13MM CAPACITY

Model 531

Stock code	Drill chuck capacity mm	Free speed RPM	Air consumption CFM	Air pressure bar	Air inlet
PDR13	13	700	4.5	6.2	1/4"

Oil daily

3/8" SQUARE DRIVE HEAVY DUTY REVERSIBLE PNEUMATIC IMPACT WRENCH

Model 660

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW3/8	8500	311	5	Jumbo hammer	6.2	1/4"

Oil daily

1/2" SQUARE DRIVE REVERSIBLE PNEUMATIC IMPACT WRENCH

Model 1560

Light duty DIY

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
PIW1/2	7200	542	6.3	twin	6.2	1/4"

Oil daily

1/2" SQUARE DRIVE HEAVY DUTY REVERSIBLE PNEUMATIC IMPACT WRENCH

Model 460

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW1/2	7200	678	7	twin	6.2	1/4"

Oil daily

1/2" SQUARE DRIVE REVERSIBLE TORQUE WRENCH HIGH TORQUE

Model HY 2860

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW1/2HT	7500	1287	8.0	twin	6.3	1/4"

Oil daily

3/4" SQUARE DRIVE HEAVY DUTY PNEUMATIC IMPACT WRENCH

Model 861

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW3/4	4400	1762	6.6	Dyno Pact	6.2	3/8"
Oil daily						

3/4" SQUARE DRIVE PNEUMATIC IMPACT WRENCH STRAIGHT TYPE

Model HY761

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW3/4S	4000	1760	11.6	twin	6.3	3/8"
Oil daily						

1" SQUARE DRIVE HEAVY DUTY PNEUMATIC IMPACT WRENCH

Model 162

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW1S	4200	1979	13.4	rocking dog	6.3	1/4"
Oil daily						

1" SQUARE DRIVE HEAVY DUTY PNEUMATIC IMPACT WRENCH HS - LONG ANVIL

Model 362

Stock code	Free speed RPM	Max torque Nm	Air consumption CFM	Clutch type	Air pressure bar	Air inlet
HDPIW1	3700	2576	14.4	pin	6.3	1/4"
Oil daily						

3/8" SQUARE DRIVE PNEUMATIC RATCHET WRENCHES

Model 951

Stock code	Square drive	Free speed RPM	Max torque Nm	Air consumption CFM	Air pressure bar	Clutch type
PR3/8	3/8	280	41	5	6.3	3 gear planetary
Oil daily						

1/2" SQUARE DRIVE PNEUMATIC RATCHET WRENCHES

Model 2150

Stock code	Square drive	Free speed RPM	Max torque Nm	Air consumption CFM	Air pressure bar	Clutch type
PR1/2	1/2	180	108	4	6.3	3 gear planetary
Oil daily						

PNEUMATIC SCREW DRIVERS

Models 210 & 213

Stock code	Free speed RPM	Capacity	Max torque Nm	Air consumption CFM	Air pressure bar	Length mm
PSD7000	7000	M5-M6	57	4.75	6.3	240
PSD10000	10000	M5-M6	47	4	6.3	220

Oil daily

MICRO PNEUMATIC DIE GRINDER KIT

Model 060

Stock code	Contents
MPDGK	pneumatic micro die grinder, 3mm collet, 10 off mounted points, spanners

MINI PNEUMATIC DIE GRINDER

Model 447

Stock code	Collet Ø mm	Free speed RPM	Air exhaust	Length mm	Weight kg	Air pressure bar	Air consumption CFM
MPDG	6	25000	front	120	0.37	6.2	3

Oil daily

PNEUMATIC DIE GRINDER

Model 1942
745
2142

Stock code	Collet Ø mm	Free speed RPM	Air exhaust	Length mm	Weight kg	Air pressure bar	Air consumption CFM
PDG	6	25000	rear	220	0.6	6.2	4.4
PDGM	6	18000	rear	190	1.5	6.3	5.25
PDGL	6	23000	rear	285	0.7	6.3	4.6

Oil daily

PNEUMATIC ANGLE GRINDER

Model 549 & 1249

Stock code	Wheel Ø mm	Free speed RPM	Air consumption CFM	Air exhaust	Air pressure bar	Air inlet
PAG	100	11000	6	rear	6.2	1/4"
PAGL115	115	11000	6	rear	6.2	1/4"

Oil daily

150MM DUEL ACTION PNEUMATIC SANDER

Model 280

Stock code	Wheel Ø mm	Free speed RPM	Air consumption CFM	Air pressure bar	Air inlet
DAPS	150	10 000	5	6.2	1/4"

Oil daily

PNEUMATIC ORBITAL SANDER - PALM HELD

Non vacuming action
Model 487

Stock code	Wheel Ø mm	Free speed RPM	Air consumption CFM	Air pressure bar	Air inlet
POS	150	11000	4.75	6.3	1/4"

Oil daily

PNEUMATIC ANGLE SANDER RUBBER BACKING

Model 1082

Stock code	Wheel Ø mm	Free speed RPM	Air consumption CFM	Air pressure bar
PASP	50	15 000	4.3	6.2

Oil daily

PNEUMATIC ANGLE SANDER - VELCRO BACKING

Model 882

Stock code	Wheel Ø mm	Free speed RPM	Air consumption CFM	Air pressure bar
PAS	50	15 000	4.5	6.2

Oil daily

PNEUMATIC HIGH SPEED SANDER - RESIN FIBRE BACKING PADS

Model 381

Stock code	Wheel Ø mm	Free speed RPM	Air consumption CFM	Air pressure bar
PHSAS	125	18 000	4	6.2

Oil daily

PNEUMATIC HAMMER KIT

Set 064

Stock code	Free speed rpm	Stroke mm	Chisel shank hex	Air consumption CFM	Air pressure bar
PHK	3500	66	10.2	9	6.2

PNEUMATIC CHISEL SETS

Set B69H4

Stock code	No of pieces per set	Overall length mm	Shank hex mm
PLSS	5	125	10.2

LUBRICATION FILTERS AUTO DRAIN

½ NPT

Stock code	Description
PF	Pneumatic filters
PPG	Pneumatic presure gauge
PL	Pneumatic lubrication
PRK	Pneumatic filter, regulator & lubrication kit

SANDING DISC

Stock code	Grit	Size mm
SD50A36	36	50
SD50A80	80	50
SD75A36	36	75
SD75A80	80	75

STRIPPING DISC

Stock code	Size mm
DISC50	50

DISC HOLDER

Stock code	Size mm
PDH50	50
PDH75	75

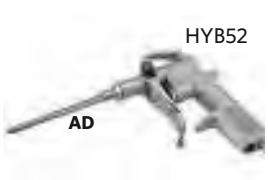
SWIVEL CONNECTOR

Stock code	Size
SC1/4NPT	1/4"

IN-LINE OILER

Stock code	Size
ILO1/4NPT	1/4"

AIR DUSTERS



Stock code	Description
AGL	long nose plastic handle
AD	Long Nozzle Pistol Grip

MANUAL PIPE THREADING MACHINE

Stock code	Dies BSPT
MPT	1/2", 3/4", 1", 1.1/4", 1.1/2", 2

HAND HELD POWER THREADER

Stock code	Dies BSPT
PHHPT	1/2", 3/4", 1", 1.1/4"

HAND HELD POWER THREADER

Stock code	Dies BSPT
LPHHPT	1/2", 3/4", 1", 1.1/4", 1.1/2", 2

PIPE THREADING MACHINE

Stock code	Dies BSPT
PTM 1/2-2	1/2" - 2

Accessories	Description
PTM2D	Pipe thread machine power drive
PTM2QDH	2" Quick open die head
PTM2ADH	2" Automatic die head

PIPE THREADING MACHINE

Stock code	Dies BSPT
PTM 1/2-4	1/2" - 4"

Accessories	Description
PTM4ADH2	Automatic die head 1/2-2"
PTM4ADH4	Automatic die head 2.1/2-4"

THREADING DIES HSS FOR HAND HELD MACHINES

Stock code	Stock code
HD1/2BSPT	HD1.1/4BSPT
HD3/4BSPT	HD1.1/2 BSPT
HD1"BSPT	HD2BSPT
HD1 BSPT	

THREADING DIES HSS FOR PIPE THREADING MACHINES

Stock code	Stock code
HD1/2-3/4BSPT	HD2.1/2-3BSPT
HD1-2BSPT	HD2.1/2-4 BSPT

HINGED PIPE CUTTER

Stock code	Capacity mm
HPC4	50-100

POWER PIPE CUTTER

Stock code	Cpacity mm
PPC8	60-200

PIPE CLEANER

Stock code	Capacity mm
PC4	18-100

FISH TAPES

Rigid yet flexible. For pulling, wire, string rope etc. Durable nylon handle. High impact plastic case.

Stock code	Cable length M	Stock code	Cable length M
FT15	15	FT60	60
FT30	30		

exact PIPE CUTTING SYSTEM

Pipe Cutting System

The Exact pipe cutting system is designed and made for professional use. All pipe cutters are lightweight and easy to carry and operate on-site. You can use the Exact pipe saws to cut steel, plastic, copper, cast-iron, stainless steel and multi-layer pipes. In our product range we have also special pipe saws for cutting ventilation pipes and for cut and bevel plastic pipes in one process/rotation. Our pipe cutting systems have been used for over 10 years and our patented technology has been used globally by many world-leading brands. You have everything you need in one handy shoulder bag.

exact PIPE CUTTER 170E

Pipe Cutting System

1200W

Pipe not included

Stock code	O/D Capacity mm	Max pipe wall thickness steel mm	Max pipe wall thickness plastic mm
EPC 170E	15-170	8	14

exact PIPE CUTTER 220E

Pipe Cutting System

1200W

Pipe not included

Stock code	O/D Capacity mm	Max pipe wall thickness steel mm	Max pipe wall thickness plastic mm
EPC220E	15-220	8	14

exact PIPE CUTTER 280E

Pipe Cutting System

1750W

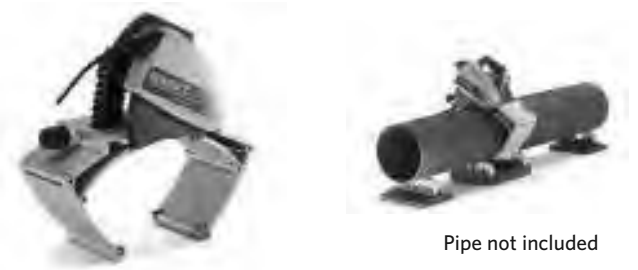
Pipe not included

Stock code	O/D Capacity mm	Max Pipe Wall Thickness mm steel mm	plastic mm
EPC 280E	40-280	10	38

exact PIPE CUTTER 360E

Pipe Cutting System

1750W



Pipe not included

Stock code	O/D Capacity mm	Max pipe wall thickness steel	plastic
EPC 360E	75-360	10	38

exact PIPE CUTTER 400

Pipe Cutting System

Cut and bevel plastic pipe in one process/rotation

1010W

Pipe not included

Stock code	O/D Capacity mm	Max pipe wall thickness plastic mm
EPCP400	100-400	25 cut 22 cut + bevel

exact PIPE CUTTER V1000

Pipe Cutting System

for spiral duct cutting

1010W

Pipe not included

Stock code	O/D Capacity mm	Max wall mm	Max wall seam mm
EPCV1000	75-1000	1.5	6

exact PIPE CUTTER BLADES

Pipe Cutting System

Stock code	Dimensions	Machine mm	Material mm
EPC-TCTB140	140X62X1.8X1.4X46	170E	Steel copper plastic Alu
EPC-CB140	140X62X1.8X1.4X46	170E	Stainless
EPC-TCTB165	165X62X1.8X1.4X52	280E-360E	Steel copper plastic Alu
EPC-CBX165	165X62X1.8X1.4X52	280E-360E	Stainless

Diamond blades for cast iron also available

makita ANGLE GRINDER

Stock code	Max capacity disc mm	No load speed r/min	Continuous rating input
GA4530	115	11000	720W

makita ANGLE GRINDER

Stock code	Max capacity disc mm	No load speed r/min	Continuous rating input
9557HN	115	11000	840W

makita ANGLE GRINDER

Stock code	Max capacity disc mm	No load speed r/min	Continuous rating input
9565H	125	11000	1100W

Makita ANGLE GRINDER

Stock code	Max capacity disc mm	No load speed r/min	Continuous rating input2
9565CV	125	2800 -12000	1400W

Makita ANGLE GRINDER

Supplied without dics

Stock code	Max capacity disc mm	No load speed r/min	Continuous rating input
GA9010C	230	6600	2000W
GA9020K	230	6600	2200W
GA9040K	230	6600	2600W

Makita BELT SANDER

Stock code	Belt size mm	Belt speed m/min	Continuous rating input
9032	13X533	300 -1700	500W

Makita PORTABLE CUT-OFF & MITRE SAW STEEL CUTTING

Stock code	Diameter Wheel mm	Hole mm	No load speed r/min	Continuous rating input
2414EN	355	25.4	3800	2000W

Makita DIE GRINDER - HIGH SPEED

Supplied with 6mm collet

Mounted point not supplied

Stock code	Collet Size mm	Capacity mm	No load speed	Abrasive type	Continuous rating input
GD0600	6.35		25000	mounted points	400W
GD0810C	6.35		1800-7000	flap wheels	750W
GD0800C	6.35		7000 - 28000	mounted points	750W

Optional extra : 6mm & 8mm collet

Makita ROTARY DRILL

Stock code	Drilling capacity Steel mm	Wood mm	No load speed r/min	Continuous rating input
DP2010	6.5	15	0-4000	350W

Makita IMPACT DRILL

Stock code	Drilling capacity Concrete mm	Steel mm	Wood mm	No load speed r/min	Continuous rating input
HP1630	16	13	30	0-3200	710W
HP1640	16	13	30	0-2800	680W

Makita IMPACT DRILL - 2 SPEED WITH GEAR CHUCK

Stock code	Max capacity Concrete mm	Steel mm Hi	Steel mm Lo	Wood mm Hi	Wood mm Lo	No load speed r/min Hi	No load speed r/min Lo	Continuous rating input
HP2050	20	8	13	25	40	0-2900	0-1200	720W

Makita IMPACT DRILL - 2 SPEED WITH KEYLESS CHUCK

Stock code	Max capacity Concrete mm	Steel mm Hi	Steel mm Lo	Wood mm Hi	Wood mm Lo	No load speed r/min Hi	No load speed r/min Lo	Continuous rating input
HP2051	20	8	13	25	40	2900	1200	720W

Makita IMPACT DRILL - 2 SPEED

Extra heavy duty

Stock code	Max capacity Concrete mm	Steel mm	Wood mm	No load speed r/min Hi	No load speed r/min Lo	Continuous rating input
HP2020	20	13	40	0-2300	0-900	800W

Makita IMPACT WRENCH

Stock code	Capacity Standard bolt	Capacity High tensile bolt	Square drive mm	No load speed r/min	Max torque Nm	Continuous rating input
TW0200	M10-M16	M10-M12	12.7	0-2200	200	380W

Makita IMPACT WRENCH

Stock code	Capacity Standard bolt	Capacity High tensile bolt	Square drive mm	No load speed r/min	Max torque Nm	Continuous rating input
TW0350	M12-M20	M12-M16	12.7	2000	350	400W

Makita JIG SAW

Stock code	Max cutting capacity In wood at 90°	Max cutting capacity In steel at 90°	Length of stroke mm	Strokes per min	Continuous rating input
4350FCT	135mm	10mm	26	800-2800	720W

Makita NIBBLER

Stock code	Max cutting capacity Mild steel mm	Max cutting capacity Stainless steel mm	Max cutting capacity Aluminium mm	Min. Cutting radius Outside edge mm	Min. Cutting radius Inside edge mm	Continuous rating input
JN1601	1.6	1.2	2.5	50	45	550W

Makita NIBBLER

Stock code	Max cutting capacity Mild steel mm	Max cutting capacity Stainless steel mm	Min. Cutting radius Outside edge mm	Min. Cutting radius Inside edge mm	Continuous rating input
JN3201J	3.2	2.5	128	120	710W

Makita SHEAR

Stock code	Max cutting capacity Mild steel mm	Max cutting capacity Stainless steel mm	Min. cutting radius mm	Continuous rating input
JS1602	1.6	1.2	30	380W

Makita SHEAR

Stock code	Max cutting capacity Mild steel mm	Stainless steel mm	Min. cutting mm	Continuous rating input
JS3201J	3.2	2.5	50	710W

Makita SANDER POLISHER

Stock code	Max capacity (dia) Abraisive disc mm	Wool pad mm	No load speed r/min	Continuous rating put
9227CB	180	180	0- 3000	1200W

Makita ROTARY HAMMER 2.4 JOULES 26MM

Supplied without bit

Stock code	Capacities Concete	Steel	Wood	No load speed r/min	Blows per min	Weight kg	Continuous rating input
HR2600	26	13	32	0-1200	0-4600	2.8	800W

Makita ROTARY HAMMER 5.5 JOULES 32MM

Supplied without bit

Stock code	Capacities Concete mm	Steel mm	Wood mm	No load speed r/min	Blows per min	Weight kg	Continuous rating input
HR3200	32	13	32	315-630	1650-3300	4.8	850W

Makita ROTARY HAMMER 19.7 JOULES 52MM

AVT : Anti Vibration Technology

Supplied without bit

Stock code	Max Bit Ø 5DS mm	No load speed r/min	Blows per min	Weight kg	Continuous rating input
HR5211C	52	130-260	1075-2150	12,2	1500W

Makita DEMOLITION HAMMER 33.8 JOULES

Supplied without bit

Stock code	SHANK mm	Blows r/min	Weight kg	Continuous rating input
HM1307C	30 hex	730-1450	15,3	1510W

Makita ELECTRIC BREAKER 63 JOULES

Supplied without bit

Stock code	SHANK mm	Blows p/min	Weight kg	Continuous rating input
HM1801	28.6 hex	1100	29.7	2000W

Makita CORDLESS PERCUSSION & DRIVER DRILL

Supplied with 2x1,9 Ah 18V Ni-Cd Batteries & charger

Stock code	Capacities Steel mm	Wood mm	Masonary mm	No load speed r/min 3	2	1	Voltage
8444DWAE	13	65	16	1700	600	300	18V

CORDLESS DRILL 80NM - 18V

Lithium-Ion Cordless Tools
Batteries and Chargers Sold Seperately

Stock Code	Capacity Steel mm	Capacity Wood mm	Capacity Masonary mm	No Load Speed r/min Hi	No Load Speed r/min low	Weight Kg
BHP454ZK	13	65	16	0-1700	0-400	2.4

CORDLESS DRILL 50NM - 18V

Lithium-Ion Cordless Tools
Batteries and Chargers Sold Seperately

Stock code	Capacity Steel mm	Capacity Wood mm	No load speed r/min Hi	No load speed r/min Low	Weight Kg
BHP456ZK	13	38	0-1500	0-400	1.6

CORDLESS ANGLE GRINDER - 18V

Lithium-Ion Cordless Tools
Batteries and Chargers Sold Seperately

Stock code	DIA mm	No Load Speed r/min	Weight Kg
BGA452ZK	115	10 000	1.9

CORDLESS CIRCULAR SAW - 18V

Lithium-Ion Cordless Tools
Batteries and Chargers Sold Seperately

Stock Code	Dia mm	Max. Cutting Capacity mm 90º mm	Max. Cutting Capacity mm 45º mm	Max. Cutting Capacity mm 50º mm	No Load Speed r/min	Weight Kg
BSS610ZK	165	57	60	36	3700	3.2

CORDLESS JIG SAW - 18V

Lithium-Ion Cordless Tools
Batteries and Chargers Sold Seperately

Stock Code	Length Stroke mm	Max Cutting Capacity at 90º mm Steel mm	Max Cutting Capacity at 90º mm Wood mm	Max Cutting Capacity at 90º mm Alluminium mm	Strokes per Minute	Weight Kg
BJV180ZK	26	10	135	20	0 - 2600	2.8

CHARGER FOR 18V LITHIUM - ION BATTERY

Stock code	Description
DC18RC	Optimum charging system with built in CPU and active current, thermal and voltage control. 22 minute charge time

LITHIUM-ION BATTERY 18V

Stock code	Description
BL1830	3.0Ah 18V Lithium-Ion Battery

metabo® ANGLE GRINDER 115

Supplied without disc

Stock code	Disc capacity mm	No load speed r/min	Continuous rating imput
W8-115	115	10000	850W
WP8-115	115	10000	850W (Dead man switch)

metabo® ANGLE GRINDER 230

Supplied without disc

Stock code	Max Disc capacity mm	No load speed r/min	Continuous rating imput
W26-230	230	6600	2600W

Dead man switch optional extra

metabo® IMPACT DRILLS

Supplied without bit

Stock code	Max capacity concrete mm	steel mm	wood mm	No load speed r/min	Continuous rating imput
SBE561	12	10	20	0-2800	560W

metabo® IMPACT DRILL

Supplied without bit

Stock code	Max capacity concrete mm	steel mm	wood mm	No load speed r/min	Continuous rating imput
SBE710	20	13	40	3100	710W

metabo® IMPACT DRILL

Supplied without bit

Stock code	Max capacity concrete mm	steel mm	wood mm	No load speed r/min	Continuous rating imput
SBE900 IMPULSE	20	13	40	0-3100	900W

metabo® IMPACT DRILL

Supplied without bit

Stock code	Max capacity concrete mm	steel mm	wood mm	No load speed r/min	Continuous rating imput
SBE1100	20	16	40	0-700 0-2800	1100W

metabo® IMPACT DRILL

Supplied without bit

Stock code	Max SDS Drill mm			No load speed r/min	Continuous rating imput
SBE1300	20	16	40	0-1000 & 0-3100	1300W

metabo® ROTARY HAMMER 2.8 JOULES

Complete with SDS and standard chuck

Supplied without bit

Stock code	Max SDS Drill mm	No load speed r/min	Continuous rating imput
UHE2850	28	0-945 - 0-2480	1010W

metabo® DIE GRINDER COMPACT

For mounted points

Stock code	No load speed r/min	Continuous rating imput
GE710 COMPACT	13000 - 34000	710W

metabo® DIE GRINDER PLUS

For mounted points

Stock code	No load speed r/min	Continuous rating imput
GE710PLUS	10000 - 30500	710W

metabo® DIE GRINDER

For flap wheels

Stock code	No load speed r/min	Continuous rating imput
GE950GPLUS	2500 - 8700	950W

metabo® CORDLESS IMPACT DRILL 18V 100NM

2 x Battery and charger included

Supplied without bit

Stock code	No load speed r/min	Capacity mm	Battery
SBI8LTXIMPULSE	0-400 0-1400	13	lion 18V 5.2 AH

ITA T-PIPE BEVELLING MACHINE

Availible in Pneumatic & Electric

Stock Code : ISY-80

Working range I.D. mm	Wall thicknes mm	Rotating rate r/min
Ø28-76	<15	55

GENERATORS SMALL

Stock code	Type	KVA	Max. Output Watts	HP	V
PG5KVAES/220	Petrol Open	5	4000	11	220
PG6.2KVAES/220	Petrol Open	6.2	5000	13	220
DG5KVAES/220	Diesel Open	5	3800	-	220
DG5KVAES/380	Diesel Open	5	4800	-	380
DEG5KVAES/220	Diesel Silent	5	3800	-	220
DEG5KVAES/380	Diesel Silent	6	4800	-	3800
DG10KVA/220	Diesel Open	10	8000	-	220
DG10KVA/380	Diesel Open	10	8000	-	380

Optional Extras

Stock code	Description
GB220V	Generator Battery 12V
GWM	Generator Wheels and Handle

GENERATORS LARGE

Stock code	Type	KVA	Max. Output KW	Cylinder
DG20KVA/380	Diesel Open	20	16	3
DG37.5KVA/380	Diesel Open	37.5	30	4
DG150KVA/380	Diesel Open	150	120	6

Optional Extras

Stock code	Description
DG20KVAATS	Diesel Generator 20 KVA. Auto Transfer Switch
DG37.5KVAATS	Diesel Generator 37.5 KVA. Auto Transfer Switch
DG150KVAATS	Diesel Generator 150 KVA. Auto Transfer Switch

WELDER GENERATOR

Stock code	Description
GW190A/220	Generator welder 190 Amp 13 HP 220V

FIELD SERVICE TOOLKITS

Custom and standard kits available on requiest for various vehicles

TECHNICAL SECTION

MATERIAL COMPARISON CHART OF SIMILAR COMMON LOCALLY PRODUCED STEELS

Material	Werkstoff	DIN	B.S.	E.N.	AISI	Condition	% Elongation	Tensile No. Strength
Free cuting steel	1.0711	9520	220M07	IA	1213	CD	7-10	540-780
	1.0711	9520	220M07	IA	1213	N	25	U350
Case hardening	1.0301	C10	040A10	2A	1010	ACH	13-16	490-780
steel								
Heat treatable	1.0402	C22	050A20	2C	–	Q&T	20-22	500-700
carbon steels	–	–	070M20	3A	1020	N	21	400-430
	1.0503	C45	080M46	–	1045	N	14-17	630-850
	–	–	080M40	8	1040	Q	16	620-770
	–	–	080M40	8	1040	R	16	690-850
	1.0501	C35	060A35	8A	1035	Q&T	17-20	550-780
	1.1203	CK55	070M55	9	1055	Q&T	12-l5	750-950
Mn steel	1.1133	20MnS	150M19	14A	1024	Q&T	18-22	490-690
Mn steel	1.1167	36Mn5	150M36	15	1041	Q & T	12-l5	690-1080
Cr steel	1.0735	41 Cr4	530M40	18	5140	Q & T	10-14	800-1200
Cr Mo steel	–	–	709M40	19	4140	R	15	690-850
Cr Mo steel	–	–	709M40	19	4140	S	13	770-930
Cr Mo steel	–	–	709M40	19	4140	T	13	850-1000
Cr Mo steel	–	–	709M40	19	4140	U	12	930-1080
Cr Mo steel	1.7225	42CrMo4	708M40	19A	4140	Q&T	10-13	900-1300
NiCr steel	1.5755	31NiCr14	653M31	23	–	Q&T	11-13	830-1080
	1.6582	34CrNiMo6	817M40	24	4340	Q&T	9-12	1000-1400
	1.6747	30NiCrMo166	835M30	30B	–	Z	7	1200-1595
Carbon steel	1.0401	CK15	-	32B		ACH	12-14	740-880
NiCr steel	-	-	665M17	34		ACH	18	1665
	1.0401	C15	080M15	32C	1015	ACH	12-14	590-880
	1.5752	4NiCr14	655M13	36A	3415	ACH	9-10	930-1320
	1.5860	14NiCr18	835M15	39B	–	ACH	7-8	1080-1420
	1.8515	31CrMo12	722M24	40B	–	Q&T	10-12	1100-1130
	1.7015	SCr3	523M IS	206	5015	ACH	10-11	690-1030
	1.7131	16MnCr5	527M17	–	SI IS	ACH	9-11	640-1080
Nitriding steel	1.8507	34CrAlMo5	905M31	41A	A355D	Q&T	14	780
	1.8509	41 CrAlMo7	905M39	41 B	A355 A	Q & T	12	980
Carbon steel	1.1221	CK60	060A62	43D		Q&T	11-14	850-1000
	–	3Cr12	–	–	–	–	20	460
Stainless steel	1.4016	X8Cr17	430515	–	430	–	20	450-600
	1.4301	XSCrNi189	304515	58E	304	–	50	500-700
	1.4306	X2CrNi189	304512	58E	304L	–	50	450-700
	1.4404	X2CrNiMo1810	316511	–	31 6L	–	45	450-700
	1.4436	XSCrNiMo1812	316516	58J	316	–	45	500-700
	1.4438	X2CrNiMo1816	317512	58J	317L	–	45	500-700
	1.4541	X10CrNiTi189	321512	58C	321	–	40	500-750
	1.4573	X10CrNiMoTi1812	320533	–	316TI	–	40	490-740
Heot resisting	1.4828	X1SCrNi5i2012	309524	–	309	–	30	500-750
steel	1.4841	X1SCrNi5i2520	–	–	310	–	30	550-800
	1.4845	X12CrNi2521	310524	–	3105	–	35	500-750
ROQ-tuf	–	–	–	–	–	–	18	800-930
ROQ-last	–	–	–	–	–	–	13	1220-1350
Inconel 600	2.4816	–	3072	–	B163	AN	40	655
Inconel 601	2.4851	–	–	–	–	AN	40	760
Inconel 625	2.4856		3074	–	B443	AN	50	740
Inconel718	2.4668	–	–	–	B670	PH	30	1400
Inconel X750	2 4669	–	HR505	–	B637	PH	30	1300
Nimonic75	2.4951	–	HR5	–	–	AN	30	740
Nimonic 80A	2.4952	–	HR1	–	–	PH	35	1250
Nimonic90	2.4632	–	HR2	–	–	PH	35	1150
Incoloy 800	1.4876	X10NiCrAlTi3220	–	–	B407	AN	30	540-740

Material	Werkstoff No.	DIN	B.S. EN	AISI	As annealed Tensile Strength Nlmm HRC	Hardness after Heat Treatment
Silver Steel	1.1545	C105W1	-	WI 10	640	65
(Carbon Tool	1.1620	C70W2	-		640	63
Steel)	1.1645	C105W2	-		640	65
	1.1740	C60W	-		700	58
	1.1830	C85W	-		760	60
					Annealing Hardness HB	
Cold Work Tool	1.2067	100Cr6	534A91 31	52100	230	63
Steel	1.2080	X210Cr12	BD3	D3	250	63
	1.2101	625iMnCr4	-	-	225	61
	1.2379	XSSCrVMo121	BD2	D2	250	64
	1.2436	X210CrW12	-	-	250	64
	1.2510	100MnCrW4	B01	01	215	64
	1.2601	X165CrMoV12	-	-	250	63
	1.2842	90MnCrV8	B02	02	220	64
Hot Work Tool	1.2343	X38CrMoV51	BH11	H11	235	55
Steel	1.2344	X40CrMoV51	BH13	H13	225	55
	1.2542	45WCrV7	BSI	SI	225	57
	1.2581	X30WCrV93	BH21	H21	240	51I
	1.2622	X60WCrMoV94	-	-	270	57
High Speed	1.3249	S2.9.2.8.	BM34	M34	235-300	64
Steel	1.3247	S2.10.1.8.	BM42	M42	240-300	67
	1.3343	S6.5.2.	BM2	M2	450-600	67
					Naturally Hard HB	**Soft Annealed HB**
Spring Steel	1.0903	51Si7	250A53 45	9255	270	245
	1.7138	52MnCrB3	-	-	320	230

ACH = After case hardening, at core. AN = Annealed. CD = Cold drawn. N = Normolised. Q & T = Quenched and tempered. PH = Precipitation hardened.

APPROXIMATE[4] HARDNESS COMPARISONS FOR STEEL

Main derivision DIN 50150
NOTE: Not valid for austenitic qualities.

Tensile Strength	Vickers	Brinell[2]	Rockwell		Tenslie Strength Tons/
N/mm2	HV	HB	HRB	HRC	Sq. in
255	80	76,0	-	-	-
270	85	80,7	41,0	-	-
285	90	85,5	48,0	-	-
305	95	90,2	52,0	-	-
320	100	95,0	56,2	-	-
335	105	99,8	-	-	24
350	110	105	62,3	-	24
370	115	109	-	-	25
385	120	114	66,7	-	26
400	125	119	-	-	27
415	130	124	71,2	-	28
430	135	128	-	-	29
450	140	133	75,0	-	30
465	145	138	-	-	31
480	150	143	78,7	-	32
495	155	147	-		33
510	160	152	81,7		
530	165	156	-	-	35
545	170	162	85,0		
560	175	166	-	-	37
575	180	171	87,1	-	38
595	185	176	-	-	39
610	190	181	89 5	-	40
625	195	185	-		41
640	200	190	91,5	-	42
660	205	195	92,5	-	
675	210	199	93 5	-	43
690	215	204	94 0	-	44
705	220	209	95,0	-	46
720	225	214	96,0	-	47
740	230	219	96.7	-	48
755	235	223	-	-	49
770	240	228	98,1	20,2	49
785	245	233	-	21,3	50
800	250	238	99,5	22,2	51
820	255	242	-	23,1	52
835	260	247	-	24,0	53
850	265	252	-	24,8	54
865	270	257	-	25,6	55
880	275	261	-	26,4	56
900	280	266	-	27 1	57
915	285	271	-	27 8	58
930	290	276	-	28,5	59
950	295	280	-	29 2	60
965	300	285	-	29 8	61
995	310	295	-	31,0	63
1030	320	304	-	32,2	65
1060	330	314	-	33 3	68
1095	340	323	-	34 4	70
1125	350	333	-	35,5	72

Tensile Strength	Vickers	Brinell[2]	Rockwell		Tensile Strength Tons/
N/mm²	HV	HB	HRB	HRC	Sq. in
1155	360	342	-		36,6	74
1190	370	352	-		37,7	75
1220	380	361	-		38,8	77
1255	390	371	-		39,8	80
1290	400	380	-		40,8	82
1320	410	390	-		41,8	84
1350	420	399	-		42,7	85
1385	430	409	-		43,6	88
1420	440	418	-		44,5	90
1455	450	428	-		45,3	92
1485	460	437	-		46,1	94
1520	470	447	-		46,9	96
1555	480	(456)	-		44,7	84
1595	490	(466)	-		48,4	101
1630	500	(475)	-		49,1	104
1665	510	(485)	-		49,8	106
1700	520	(494)	-		50,5	108
1740	530	(504)	-		51,1	110
1775	540	(513)	-		51,7	113
1810	550	(523)	-		52,3	118
1845	560	(532)	-		53,0	119
1880	570	(542)	-		53,6	121
1920	580	(551)	-		54,1	122
1955	590	(561)	-		54,7	126
1995	600	(570)	-		55,2	127
2030	610	(580)	-		55,7	129
2070	620	(589)	-		56,3	132
2105	630	(599)	-		56,8	133
2145	640	(608)	-		57,3	136
2180	650	(618)	-		57,8	138
-	660	-	-		58,3	-
-	670	-	-		58,8	-
-	680	-	-		59,2	-
-	690	-	-		59,7	141
-	700	-	-		60,1	-
-	720	-	-		61,0	146
-	740	-	-		61,8	-
-	760	-	-		62,5	-
-	780	-	-		63,3	-
-	800	-	-		64,0	-
-	820	-			64,7	-
-	840	-			65,3	-
-	860	-	-		65,9	-
-	880	-			66,4	-
-	900	-			67,0	-
-	920	-	-		67 5	-
-	940	-	-		68 0	-
-	-	-			-	-
-	-	-			-	-
-	-	-	-		-	-

1) For: Kg/mm²÷10.
2) Based on HB = 0.95 HV.
3) Variations to these figures occur dependent on material.
4) ( ) indicate load with carbide ball.

HANDY FILE HARDNESS TEST.

Approx Brinell Hardness No.

100 Easy to file
200 Slightly more pressure required to remove material
300 Metal shows resistance to file
400 Takes more pressure on file
500 File removes almost no metal
600 Metal cannot be filed.

CONSTITUTION OF HIGH-SPEED STEELS

C	—Carbon	—	is essential for martensite transformation hence the ultimate hardness of the HSS. It is also responsible for the amount of carbide and the matrix hardness.
Cr	—Chromium	—	is a carbide former and enhances the hardenability and wear resistance of the HSS.
Co	—Cobalt	—	improves the material's resistance to temper when operating at elevated temperatures. This is frequently referred to as hot hardness .
W	—Tungsten	—	is a carbide former, increases secondary hardness and enhances the wear resistance of the HSS. Secondary hardness is the material's ability to achieve its full hardness potential during the tempering operation.
Mo	—Molybdenum	—	performs the same role as Tungsten, however full replacement of W by Mo would increase the steel's tendency to decarburise. 1% Mo is equivalent to 2% W.
V	—Vanadium	—	alloys with carbon to form a hard carbide which is stable and inhibits grain growth during heat treatment.

Code	Application	Nominal composition (% wt) C	W	Mo	Cr	V	Co	Equivalent German Materials
		MOLYBDENUM BASE						**NEW OLD**
M1	General tools	0.80	1.50	8.00	4.00	1.00	—	S2.9.1 (B Mo9) 1.3346
M2	light and	0.85	6.00	5.00	4.00	2.00	—	S 6.5.2 (D Mo 5)1.3343 H.S.S.
M 3/2	medium duty	1.20	6.50	5.00	4.20	3.00	—	S653(EMo5V3)1344HSS-EM4
1.30	5.50	4.50	4.00	4.00				
M7	Medium duty	1.00	1.75	8.75	4.00	2.00	—	S 2.9.2 (B Mo 9V) 1.3348
M35	Heavy duty	0.80	6.00	5.00	4.00	2.00	5.00	S6.5.2.5(E Mo5Co5)1.3243H.S.C.O.
M34		0.90	2.00	8.00	4.00	2.00	8.00	S 2.9.2.8 (E Mo 9 Co 8)1.3249
	For machining							
M15	of abrasive materials	1.50	6.60	3.00	4.75	5.00	5.00	
M42	and general finishing	1.10	1.50	9.50	3.75	1.15	8.00	
		TUNGSTEN BASE						
	General tools, light							
T1	and medium duty	0.75	18.00	—	4.00	1.00	—	S 18.0.1 (B 18)1.3355
T2	Medium duty	0.80	18.00	—	4.00	2.00	—	S 18.1.2.3 (E 18 Co 3)1.3245
T4	Heavy duty	0.75	18.00	—	4.00	1.00	5.00	S 18.1.2.5(E18Co5)1.3255
T5		0.80	18.00	—	4.00	2.00	8.00	S 18.1.2.10 (E 18 Co 10)1.3265
	For machining of							
T15	abrasive materials	1.50	12.00	—	4.00	5.00	5.00	S 12.1.4.5(Ev4Co)1.3202
T42	and general finishing	1.30	9.00	3.00	4.00	3.00	9.00	

ISO STANDARD TOLERANCES FOR SIZES 1 TO 500 mm (DIN Standard 7151)

ISO Standard Tolerances apply to all linear dimensions, such as diameter, width, length, etc.

Numerical values for tolerance grades, values in 0.001 mm

Nominal Ø mm		IT 01	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
From	1	0.3	0.5	0.8	1.2	2	3	4	6	10	14	25	40	60	100	140	250	400	600	-	-
To	3																				
Above	3	0.4	0.6	1	1.5	2.5	4	5	8	12	18	30	48	75	120	180	300	480	750	-	-
To	6																				
Above	6	0.4	0.6	1	1.5	2.5	4	6	9	15	22	36	58	90	150	220	360	580	900	1500	-
To	10																				
Above	10	0.5	0.8	1.2	2	3	5	8	11	18	27	43	70	110	180	270	430	700	1100	1800	2700
To	18																				
Above	18	0.6	1	1.5	2.5	4	6	9	13	21	33	52	84	130	210	330	520	840	1300	2100	3300
To	30																				
Above	30	0.6	1	1.5	2.5	4	7	11	16	25	39	62	100	160	250	390	620	1000	1600	2500	3900
To	50																				
Above	50	0.8	1.2	2	3	5	8	13	19	30	46	74	120	190	300	460	740	1200	1900	3000	4600
To	80																				
Above	80	1	1.5	2.5	4	6	10	15	22	35	54	87	140	220	350	540	870	1400	2200	3500	5400
To	120																				
Above	120	1.2	2	3.5	5	8	12	18	25	40	63	100	160	250	400	630	1000	1600	2500	4000	6300
To	180																				
Above	180	2	3	4.5	7	10	14	20	29	46	72	115	185	290	460	720	1150	1850	2900	4600	7200
To	250																				
Above	250	2.5	4	6	8	12	16	23	32	52	81	130	210	320	520	810	1300	2100	3200	5200	8100
To	315																				
Above	315	3	5	7	9	13	18	25	36	57	89	140	230	360	570	890	1400	2300	3600	5700	8900
To	400																				
Above	400	4	6	8	10	15	20	27	40	63	97	155	250	400	630	970	1550	2500	4000	6300	9700
To	500																				

Example: IT6 stands for ISO Series of Tolerances (IT) tolerance grade 6.
Numerical values for tolerance grades, values in 0.001 mm
ISO is the term given to International Standards and stands for International Standards Organisation

ISO ALLOWANCES

Dimensions in μm

Nominal size in mm

Designation		A					B					
		9	10	11	12	13	8	9	10	11	12	13
To	3	+295 +270	-	+330 +270	+370 +270	+410 +270	+154 +140	+165 +140	+180 +140	+200 +140	+240 +140	+280 +140
Above	3	+300	+318	+345	+390	+420	+158	+170	+188	+215	+260	+320
To	6	+270	+270	+270	+270	+270	+140	+140	+140	+140	+140	+140
Above	6	+316	+338	+370	+430	+500	+172	+186	+208	+240	+300	+370
To	10	+280	+280	+280	+280	+280	+150	+150	+150	+150	+150	+150
Above	10	+333	+360	+400	+470	+560	+177	+193	+220	+260	+330	+420
To	18	+290	+290	+290	+290	+290	+150	+150	+150	+150	+150	+150
Above	18	+352	-	+430	+510	+630	+193	+212	+244	+290	+370	+490
To	30	+300		+300	+300	+300	+160	+160	+160	+160	+160	+160
Above	30	+372	-	+470	+560	+700	+209	+232	+270	+330	+420	+560
To	40	+310		+310	+310	+310	+170	+170	+170	+170	+170	+170
Above	40	+382	-	+480	+570	+710	+219	+242	+280	+340	+430	+570
To	50	+320		+320	+320	+320	+180	+180	+180	+180	+180	+180
Above	50	+414	-	+530	+640	+800	+236	+264	+310	+380	+490	+650
To	65	+340		+340	+340	+340	+190	+190	+190	+190	+190	+190
Above	65	+434	-	+550	+660	+820	+246	+274	+320	+390	+500	+660
To	80	+360		+360	+360	+360	+200	+200	+200	+200	+200	+200
Above	80	+467	-	+600	+730	+920	+274	+307	+360	+440	+570	+760
To	100	+380		+380	+380	+380	+220	+220	+220	+220	+220	+220
Above	100	+497	-	+630	+760	+950	+294	+327	+380	+460	+590	+780
To	120	+410		+410	+410	+410	+240	+240	+240	+240	+240	+240
Above	120	+560	-	+710	+860	+1090	+323	+360	+420	+510	+660	+890
To	140	+460		+460	+460	+460	+260	+260	+260	+260	+260	+260
Above	140	+620	-	+770	+920	+1150	+343	+380	+440	+530	+680	+910
To	160	+520		+520	+520	+520	+280	+280	+280	+280	+280	+280
Above	160	+680	-	+830	+980	+1210	+373	+410	+470	+560	+710	+940
To	180	+580		+580	+580	+580	+310	+310	+310	+310	+310	+310
Above	180	+775	-	+950	+1120	+1380	+412	+455	+525	+630	+800	+1060
To	200	+660		+660	+660	+660	+340	+340	+340	+340	+340	+340
Above	200	+855	-	+1030	+1200	+1460	+452	+495	+565	+670	+840	+1100
To	225	+740		+740	+740	+740	+380	+380	+380	+380	+380	+380
Above	225	+935	-	+1110	+1280	+1540	+492	+535	+605	+710	+880	+1140
To	250	+820		+820	+820	+820	+420	+420	+420	+420	+420	+420
Above	250	+1050	-	+1240	+1440	+1730	+561	+610	+690	+800	+1000	+1290
To	280	+920		+920	+920	+920	+480	+480	+480	+480	+480	+480
Above	280	+1180	-	+1370	+1570	+1860	+621	+670	+750	+860	+1060	+1350
To	315	+1050		+1050	+1050	+1050	+540	+540	+540	+540	+540	+540
Above	315	+1340	-	+1560	+1770	+2090	+689	+740	+830	+960	+1170	+1490
To	355	+1200		+1200	+1200	+1200	+600	+600	+600	+600	+600	+600
Above	355	+1490	-	+1710	+1920	+2240	+796	+820	+910	+1040	+1250	+1570
To	400	+1350		+1350	+1350	+1350	+680	+680	+680	+680	+680	+680
Above	400	+1655	-	+1900	+2130	+2470	+857	+915	+1010	+1160	+1390	+1730
To	450	+1500		+1500	+1500	+1500	+760	+760	+760	+760	+760	+760
Above	450	+1805	-	+2050	+2280	+2620	+937	+995	+1090	+1240	+1470	+1810
To	500	+1650		+1650	+1650	+1650	+840	+840	+840	+840	+840	+840

Dimensions in μm

Nominal size in mm

Designation		D							
		6	7	8	9	10	11	12	13
To	3	+26 +20	+30 +20	+34 +20	+45 +20	+60 +20	+80 +20	+120 +20	+160 +20
Above	3	+38	+42	+48	+60	+78	+105	+150	+210
To	6	+30	+30	+30	+30	+30	+30	+30	+30
Above	6	+49	+55	+62	+76	+98	+130	+190	+260
To	10	+40	+40	+40	+40	+40	+40	+40	+40
Above	10	+61	+68	+77	+93	+120	+160	+230	+320
To	18	+50	+50	+50	+50	+50	+50	+50	+50
Above	18	+78	+86	+98	+116	+149	+195	+275	+395
To	30	+65	+65	+65	+65	+65	+65	+65	+65
Above	30	+96	+105	+119	+142	+180	+240	+330	+470
To	50	+80	+80	+80	+80	+80	+80	+80	+80
Above	50	+119	+130	+146	+174	+220	+290	+400	+560
To	80	+100	+100	+100	+100	+100	+100	+100	+100
Above	80	+142	+155	+174	+207	+260	+340	+470	+660
To	120	+120	+120	+120	+120	+120	+120	+120	+120
Above	120	+170	+185	+208	+245	+305	+395	+545	+775
To	180	+145	+145	+145	+145	+145	+145	+145	+145
Above	180	+199	+216	+242	+285	+355	+460	+630	+890
To	250	+170	+170	+170	+170	+170	+170	+170	+170
Above	250	+222	+242	+271	+320	+400	+510	+710	+1000
To	315	+190	+190	+190	+190	+190	+190	+190	+190
Above	315	+246	+267	+299	+350	+440	+570	+780	+1100
To	400	+210	+210	+210	+210	+210	+210	+210	+210
Above	400	+270	+293	+327	+385	+480	+630	+860	+1200
To	500	+230	+230	+230	+230	+230	+230	+230	+230

Nominal size in mm

Designation		E						EF					
		5	6	7	8	9	10	3	5	6	7	8	9
To	3	+18 +14	+20 +14	+24 +14	+28 +14	+39 +14	+54 +14	+12 +10	+14 +10	+16 +10	+20 +10	+24 +10	+35 +10
Above	3	+25	+28	+32	+38	+50	+68	-	+19	+22	+26	+32	+44
To	6	+20	+20	+20	+20	+20	+20		+14	+14	+14	+14	+14
Above	6	+31	+34	+40	+47	+61	+83	-	+24	+27	+33	+40	+54
To	10	+25	+25	+25	+25	+25	+25		+18	+18	+18	+18	+18
Above	10	+40	+43	+50	+59	+75	+102	-	-	-	-	-	-
To	18	+32	+32	+32	+32	+32	+32						
Above	18	+49	+53	+61	+73	+92	+124	-	-	-	-	-	-
To	30	+40	+40	+40	+40	+40	+40						
Above	30	+61	+66	+75	+89	+112	+150	-	-	-	-	-	-
To	50	+50	+50	+50	+50	+50	+50						
Above	50	+73	+79	+90	+106	+134	+180	-	-	-	-	-	-
To	80	+60	+60	+60	+60	+60	+60						
Above	80	+87	+94	+107	+126	+159	+212	-	-	-	-	-	-
To	120	+72	+72	+72	+72	+72	+72						
Above	120	+103	+110	+125	+148	+185	+245	-	-	-	-	-	-
To	180	+85	+85	+85	+85	+85	+85						
Above	180	+120	+129	+146	+172	+215	+285	-	-	-	-	-	-
To	250	+100	+100	+100	+100	+100	+100						
Above	250	+133	+142	+162	+191	+240	+320	-	-	-	-	-	-
To	315	+110	+110	+110	+110	+110	+110						
Above	315	+150	+161	+182	+214	+265	+355	-	-	-	-	-	-
To	400	+125	+125	+125	+125	+125	+125						
Above	400	+162	+175	+198	+323	+290	+385	-	-	-	-	-	-
To	500	+135	+135	+135	+135	+135	+135						

Dimensions in μm

Nominal size in mm

Designation		C				CD				
		8	9	10	11	6	7	8	9	10
To	3	+74 +60	+85 +60	+100 +60	+120 +60	-	+44 +34	+48 +34	+59 +34	+74 +34
Above	3	+88	+100	+118	+145	+54	+58	+64	+76	+94
To	6	+70	+70	+70	+70	+46	+46	+46	+46	+46
Above	6	+102	+116	+138	+170	+65	+71	+78	+92	+114
To	10	+80	+80	+80	+80	+56	+56	+56	+56	+56
Above	10	+122	+138	+165	+205	-	-	-	-	-
To	18	+95	+95	+95	+95					
Above	18	+143	+162	+194	+240	-	-	-	-	-
To	30	+110	+110	+110	+110					
Above	30	+159	+182	+220	+280	-	-	-	-	-
To	40	+120	+120	+120	+120					
Above	40	+169	+192	+230	+290	-	-	-	-	-
To	50	+130	+130	+130	+130					
Above	50	+186	+214	+260	+330	-	-	-	-	-
To	65	+140	+140	+140	+140					
Above	65	+196	+224	+270	+340	-	-	-	-	-
To	80	+150	+150	+150	+150					
Above	80	+224	+257	+310	+390	-	-	-	-	-
To	100	+170	+170	+170	+170					
Above	100	+234	+267	+320	+400	-	-	-	-	-
To	120	+180	+180	+180	+180					
Above	120	+263	+300	+360	+450	-	-	-	-	-
To	140	+200	+200	+200	+200					
Above	140	+273	+310	+370	+460	-	-	-	-	-
To	160	+210	+210	+210	+210					
Above	160	+293	+330	+390	+480	-	-	-	-	-
To	180	+230	+230	+230	+230					
Above	180	+312	+355	+425	+530	-	-	-	-	-
To	200	+240	+240	+240	+240					
Above	200	+332	+375	+445	+550	-	-	-	-	-
To	225	+260	+260	+260	+260					
Above	225	+352	+395	+465	+570	-	-	-	-	-
To	250	+280	+280	+280	+280					
Above	250	+381	+430	+510	+620	-	-	-	-	-
To	280	+300	+300	+300	+300					
Above	280	+411	+460	+540	+650	-	-	-	-	-
To	315	+330	+330	+330	+330					
Above	315	+449	+500	+590	+720	-	-	-	-	-
To	355	+360	+360	+360	+360					
Above	355	+489	+540	+630	+760	-	-	-	-	-
To	400	+400	+400	+400	+400					
Above	400	+537	+595	+690	+840	-	-	-	-	-
To	450	+440	+440	+440	+440					
Above	450	+577	+635	+635	+880	-	-	-	-	-
To	500	+480	+480	+480	+480					

Dimensions in μm

Nominal size in mm

Designation		F						
		3	5	6	7	8	9	10
To	3	+6 +4	+10 +6	+12 +6	+16 +6	+20 +6	+31 +6	-
Above	3	-	+15	+18	+22	+28	+40	+58
To	6		+10	+10	+10	+10	+10	+10
Above	6	-	+19	+22	+28	+35	+49	+71
To	10		+13	+13	+13	+13	+13	+13
Above	10	-	+24	+27	+34	+43	+59	+86
To	18		+16	+16	+16	+16	+16	+16
Above	18	-	+29	+33	+41	+53	+72	-
To	30		+20	+20	+20	+20	+20	
Above	30	-	+36	+41	+50	+64	+87	-
To	50		+25	+25	+25	+25	+25	
Above	50	-	+43	+49	+60	+76	+104	-
To	80		+30	+30	+30	+30	+30	
Above	80	-	+51	+58	+71	+90	+123	-
To	120		+36	+36	+36	+36	+36	
Above	120	-	+61	+68	+83	+106	+143	-
To	180		+43	+43	+43	+43	+43	
Above	180	-	+70	+79	+96	+122	+165	-
To	250		+50	+50	+50	+50	+50	
Above	250	-	+79	+88	+108	+137	+186	-
To	315		+56	+56	+56	+56	+56	
Above	315	-	+87	+98	+119	+151	+202	-
To	400		+62	+62	+62	+62	+62	
Above	400	-	+95	+108	+131	+165	+223	-
To	500		+68	+68	+68	+68	+68	

Nominal size in mm

Designation		FG						G					
		5	6	7	8	9	10	3	5	6	7	8	9
To	3	+6 +4	+7 +4	+8 +4	+10 +4	+14 +4	-	+4 +2	+5 +2	+6 +2	+8 +2	+12 +2	+16 +2
Above	3	-	-	+11	+14	+18	+24	-	-	+9	+12	+16	-
To	6			+6	+6	+6	+6			+4	+4	+4	
Above	6	-	-	+14	+17	+23	+30	-	-	+11	+14	+20	-
To	10			+8	+8	+8	+8			+5	+5	+5	
Above	10	-	-	-	-	-	-	-	-	+14	+17	+24	-
To	18									+6	+6	+6	
Above	18	-	-	-	-	-	-	-	-	+16	+20	+28	-
To	30									+7	+7	+7	
Above	30	-	-	-	-	-	-	-	-	+20	+25	+34	-
To	50									+9	+9	+9	
Above	50	-	-	-	-	-	-	-	-	+23	+29	+40	-
To	80									+10	+10	+10	
Above	80	-	-	-	-	-	-	-	-	+27	+34	+47	-
To	120									+12	+12	+12	
Above	120	-	-	-	-	-	-	-	-	+32	+39	+54	-
To	180									+14	+14	+14	
Above	180	-	-	-	-	-	-	-	-	+35	+44	+61	-
To	250									+15	+15	+15	
Above	250	-	-	-	-	-	-	-	-	+40	+49	+69	-
To	315									+17	+17	+17	
Above	315	-	-	-	-	-	-	-	-	+43	+54	+75	-
To	400									+18	+18	+15	
Above	400	-	-	-	-	-	-	-	-	+47	+60	+83	-
To	500									+20	+20	+20	

ISO ALLOWANCES

Dimensions in μm

Nominal size in mm

Designation		H								
		1	2	3	4	5	6	7	8	9
To	3	+0.8	+1.2	+2	+3	+4	+6	+10	+14	+25
		0	0	0	0	0	0	0	0	0
Above	3	+1	+1.5	+2.5	+4	+5	+8	+12	+18	+30
To	6	0	0	0	0	0	0	0	0	0
Above	6	+1	+1.5	+2.5	+4	+6	+9	+15	+22	+36
To	10	0	0	0	0	0	0	0	0	0
Above	10	+1.2	+2	+3	+5	+8	+11	+18	+27	+43
To	18	0	0	0	0	0	0	0	0	0
Above	18	1.5	+2.5	+4	+6	+9	+13	+21	+33	+52
To	30	0	0	0	0	0	0	0	0	0
Above	30	+1.5	+2.5	+4	+7	+11	+16	+25	+39	+62
To	50	0	0	0	0	0	0	0	0	0
Above	50	+2	+3	+5	+8	+13	+19	+30	+46	+74
To	80	0	0	0	0	0	0	0	0	0
Above	80	+2.5	+4	+6	+10	+15	+22	+35	+54	+87
To	120	0	0	0	0	0	0	0	0	0
Above	120	+3.5	+5	+8	+12	+18	+25	+40	+63	+100
To	180	0	0	0	0	0	0	0	0	0
Above	180	+4.5	+7	+10	+14	+20	+29	+46	+72	+115
To	250	0	0	0	0	0	0	0	0	0
Above	250	+6	+8	+12	+16	+23	+32	+52	+81	+130
To	315	0	0	0	0	0	0	0	0	0
Above	315	+7	+9	+13	+18	+25	+36	+57	+89	+140
To	400	0	0	0	0	0	0	0	0	0
Above	400	+8	+10	+15	+20	+27	+40	+63	+97	+155
To	500	0	0	0	0	0	0	0	0	0

Nominal size in mm

Designation		H								
		10	11	12	13	14	15	16	17	18
To	3	+40	+60	+100	+140	+250	+400	+600	-	-
		0	0	0	0	0	0	0		
Above	3	+40	+75	+12	+180	+0300	+480	+750	-	-
To	6	0	0	0	0	0	0	0		
Above	6	+58	+90	+150	+220	+360	+580	+900	+1500	-
To	10	0	0	0	0	0	0	0	0	
Above	10	+70	+110	+180	+270	+430	+700	+1100	+1800	+2700
To	18	0	0	0	0	0	0	0	0	0
Above	18	+84	+130	+210	+330	+520	+840	+1300	+2100	+3300
To	30	0	0	0	0	0	0	0	0	0
Above	30	+100	+160	+250	+390	+620	+1000	+1600	+2500	+3900
To	50	0	0	0	0	0	0	0	0	0
Above	50	+120	+190	+300	+460	+740	+1200	+1900	+3000	+4600
To	80	0	0	0	0	0	0	0	0	0
Above	80	+140	+220	+350	+540	+870	+1400	+2200	+3500	+5400
To	120	0	0	0	0	0	0	0	0	0
Above	120	+160	+250	+400	+630	+1000	+1600	+2500	+4000	+6300
To	180	0	0	0	0	0	0	0	0	0
Above	180	+185	+290	+460	+720	+1150	+1850	+2900	+4600	+7200
To	250	0	0	0	0	0	0	0	0	0
Above	250	+210	+320	+520	+810	+1300	+2100	+3200	+5200	+8100
To	315	0	0	0	0	0	0	0	0	0
Above	315	+230	+360	+570	+890	+1400	+2300	+3600	+5700	+8900
To	400	0	0	0	0	0	0	0	0	0
Above	400	+250	+400	+630	+970	+1550	+2500	+4000	+6300	+9700
To	500	0	0	0	0	0	0	0	0	0

Dimensions in μm

Nominal size in mm

Designation		K								M					
		3	4	5	6	7	8	9	10	3	4	5	6	7	8
To	3	0	0	0	0	0	0	0	0	-2	-2	-2	-2	-2	-
		-2	-3	-4	-6	-10	-14	-25	-40	-4	-5	-6	-8	-12	
Above	3	-	-	+5	+2	+3	+3	-	-	-	-	-3	-1	0	+2
To	6			-5	-6	-9	-13					-8	-9	-12	-16
Above	6	-	-	+1	+2	+5	+6	-	-	-	-	-4	-3	0	+1
To	10			-5	-7	-10	-16					-10	-12	-15	-21
Above	10	-	-	+2	+2	+6	+8	-	-	-	-	-4	-4	0	+2
To	18			-6	-9	-12	-19					-12	-15	-18	-25
Above	18	-	-	+1	+2	+6	+10	-	-	-	-	-5	-4	0	+4
To	30			-8	-11	-15	-23					-14	-17	-21	-29
Above	30	-	-	+2	+3	+7	+12	-	-	-	-	-5	-4	0	+5
To	50			-9	-13	-18	-27					-16	-20	-25	-34
Above	50	-	-	+3	+4	+9	+14	-	-	-	-	-6	-5	0	+5
To	80			-10	-15	-21	-32					-19	-24	-30	-41
Above	80	-	-	+2	+4	+10	+16	-	-	-	-	-8	-6	0	+6
To	120			-13	-18	-25	-36					-23	-28	-35	-48
Above	120	-	-	+3	+4	+12	+20	-	-	-	-	-9	-8	0	+8
To	180			-15	-21	-28	-43					-27	-33	-40	-55
Above	180	-	-	+2	+5	+13	+22	-	-	-	-	-11	-8	0	+9
To	250			-18	-24	-33	-50					-31	-37	-46	-63
Above	250	-	-	+3	+5	+16	+25	-	-	-	-	-13	-9	0	+9
To	315			-20	-27	-36	-56					-36	-41	-52	-72
Above	315	-	-	+3	+7	+17	+28	-	-	-	-	-14	-10	0	+11
To	400			-22	-29	-40	-61					-39	-46	-57	-78
Above	400	-	-	+2	+8	+18	+29	-	-	-	-	-16	-10	0	+11
To	500			-25	-32	-45	-68					-43	-50	-63	-86

Nominal size in mm

Designation		N									P					
		3	4	5	6	7	8	9	10	11	3	5	6	7	8	9
To	3	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-6	-6	-6	-6	-6
		-6	-7	-8	-10	-14	-18	-29	-44	-64	-6	-10	-10	-12	-20	-31
Above	3	-	-	-7	-5	-4	2	0	0	0	-	-11	-11	-9	-12	-12
To	6			-12	-13	-16	-20	-30	-48	-75		-16	-16	-17	-30	-42
Above	6	-	-	-8	-7	-4	3	0	0	0	-	-13	-13	-12	-15	-15
To	10			-14	-16	-19	-25	-36	-58	-90		-19	-19	-21	-37	-51
Above	10	-	-	-9	-9	-5	3	0	0	0	-	-15	-15	-15	-18	-18
To	18			-17	-20	-23	-30	-43	-70	-110		-23	-23	-26	-45	-61
Above	18	-	-	-12	-11	-7	3	0	0	0	-	-19	-19	-18	-22	-22
To	30			-21	-24	-28	-36	-52	-84	-130		-28	-28	-31	-55	-74
Above	30	-	-	-13	-12	-8	3	0	0	0	-	-22	-22	-21	-26	-26
To	50			-24	-28	-33	-42	-62	-100	-160		-33	-33	-37	-65	-88
Above	50	-	-	-15	-14	-9	4	0	0	0	-	-27	-27	-26	-32	-32
To	80			-28	-33	-39	-50	-74	-120	-190		-40	-40	-45	-78	-106
Above	80	-	-	-18	-16	-10	4	0	0	0	-	-32	-32	-30	-37	-37
To	120			-33	-38	-45	-58	-87	-140	-220		-47	-47	-52	-91	-124
Above	120	-	-	-21	-20	-12	4	0	0	0	-	-37	-37	-36	-43	-43
To	180			-39	-45	-52	-67	-100	-160	-250		-55	-55	-61	-106	-143
Above	180	-	-	-25	-22	-14	5	0	0	0	-	-44	-44	-41	-50	-50
To	250			-45	-51	-60	-77	-115	-185	-290		-64	-64	-70	-122	-165
Above	250	-	-	-27	-25	-14	5	0	0	0	-	-49	-49	-47	-56	-56
To	315			-50	-57	-66	-86	-130	-210	-320		-72	-72	-79	-137	-186
Above	315	-	-	-30	-26	-16	5	0	0	0	-	-55	-55	-51	-62	-62
To	400			-55	-62	-73	-94	-140	-230	-360		-80	-80	-87	-151	-202
Above	400	-	-	-33	-27	-17	6	0	0	0	-	-61	-61	-55	-68	-68
To	500			-60	-67	-80	-106	-155	-250	-400		-88	-88	-95	-165	-223

Dimensions in μm

Nominal size in mm

Designation		J			JS						
		6	7	8	1	2	3	4	5	6	7
To	3	+2	+4	+6	+0.4	+0.6	+1	+1.5	+2	+3	+5	+7
		-4	-6	-8	-0.4	-0.6	-1	-1.5	-2	-3	-5	-7
Above	3	+5	+6	+10	+0.5	+0.75	+1.25	+2	+2.5	+4	+6	+9
To	6	-3	-6	-8	-0.5	-0.75	-1.25	-2	-2.5	-4	-6	-9
Above	6	+5	+8	+12	+0.5	+0.75	+1.25	+2	+3	+4.5	+7.5	+11
To	10	-4	-7	-10	-0.5	-0.75	-1.25	-2	-3	-4.5	-7.5	-11
Above	10	+6	+10	+15	+0.6	+1	+1.5	+2.5	+4	+5.5	+9	+13.5
To	18	-5	-8	-12	-0.6	-1	-1.5	-2.5	-4	-5.5	-9	-13.5
Above	18	+8	+12	+20	+0.75	+1.25	+2	+3	+4.5	+6.5	+10.5	+16.5
To	30	-5	-9	-13	-0.75	-1.25	-2	-3	-4.5	-6.5	-10.5	-16.5
Above	30	+10	+14	+24	+0.75	+1.25	+2	+3.5	+5.5	+8	+12.5	+19.5
To	50	-6	-11	-15	-0.75	-1.25	-2	-3.5	-5.5	-8	-12.5	-19.5
Above	50	+13	+18	+28	+1	+1.5	+2.5	+4	+6.5	+9.5	+15	+23
To	80	-6	-12	-18	-1	-1.5	-2.5	-4	-6.5	-9.5	-15	-23
Above	80	+16	+22	+34	+1.25	+2	+3	+5	+7.5	+11	+17.5	+27
To	120	-6	-13	-20	-1.25	-2	-3	-5	-7.5	-11	-17.5	-27
Above	120	+18	+26	+41	+1.75	+2.5	+4	+6	+9	+12.5	+20	+31.5
To	180	-7	-14	-22	-1.75	-2.5	-4	-6	-9	-12.5	-20	-31.5
Above	180	+22	+30	+47	+2.25	+3.5	+5	+7	+10	+14.5	+23	+36
To	250	-7	-16	-25	-2.25	-3.5	-5	-7	-10	-14.5	-23	-36
Above	250	+25	+36	+55	+3	+4	+6	+8	+11.5	+16	+26	+40.5
To	315	-7	-16	-26	-3	-4	-6	-8	-11.5	-16	-26	-40.5
Above	315	+29	+39	+60	+3.5	+4.5	+6.5	+9	+12.5	+18	+28.5	+44.5
To	400	-7	-16	-29	-3.5	-4.5	-6.5	-9	-12.5	-18	-28.5	-44.5
Above	400	+33	+43	+66	+4	+5	+7.5	+10	+13.5	+20	+31.5	+48.5
To	500	-7	-20	-31	-4	-5	-7.5	-10	-13.5	-20	-31.5	-48.5

Nominal size in mm

Designation		JS									
		9	10	11	12	13	14	15	16	17	18
To	3	+12.5	+20	+30	+50	+70	+125	+200	+300	-	-
		-12.5	-20	-30	-50	-70	-125	-200	-300		
Above	3	+15	+24	+37.5	+60	+90	+150	+240	+375	-	-
To	6	-15	-24	-37.5	-60	-90	-150	-240	-375		
Above	6	+18	+29	+45	+75	+110	+180	+290	+450	+750	-
To	10	-18	-29	-45	-75	-110	-180	-290	-450	-750	
Above	10	+21.5	+35	+50	+90	+135	+215	+350	+550	+900	+1350
To	18	-21.5	-35	-50	-90	-135	-215	-350	-550	-900	-1350
Above	18	+26	+42	+65	+105	+165	+260	+420	+650	+1050	+1650
To	30	-26	-42	-65	-105	-165	-260	-420	-650	-1050	-1650
Above	30	+31	+50	+80	+125	+195	+310	+500	+800	+1250	+1950
To	50	-31	-50	-80	-125	-195	-310	-500	-800	-1250	-1950
Above	50	+37	+60	+95	+150	+230	+370	+600	+950	+1500	+2300
To	80	-37	-60	-95	-150	-230	-370	-600	-950	-1500	-2300
Above	80	+43.5	+70	+110	+175	+270	+435	+700	+1100	+1750	+2700
To	120	-43.5	-70	-110	-175	-270	-435	-700	-1100	-1750	-2700
Above	120	+50	+80	+125	+200	+315	+500	+800	+1250	+2000	+3150
To	180	-50	-80	-125	-200	-315	-500	-800	-1250	-2000	-3150
Above	180	+57.5	+92.5	+145	+230	+360	+575	+925	+1450	+2300	+3600
To	250	-57.5	-92.5	-145	-230	-360	-575	-925	-1450	-2300	-3600
Above	250	+65	+105	+160	+260	+405	+650	+1050	+1600	+2600	+4050
To	315	-65	-105	-160	-260	-405	-650	-1050	-1600	-2600	-4050
Above	315	+70	+115	+180	+285	+445	+700	+1150	+1800	+2850	+4450
To	400	-70	-115	-180	-285	-445	-700	-1150	-1800	-2850	-4450
Above	400	+77.5	+125	+200	+315	+485	+775	+1250	+2000	+3150	+4850
To	500	-77.5	-125	-200	-315	-485	-775	-1205	-2000	-3150	-4850

Dimensions in μm

Nominal size in mm

Designation		R						S					
		3	5	6	7	8	9	5	6	7	8	9	10
To	3	-10	-10	-10	-10	-10	-	-14	-14	-14	-14	-14	-
		-12	-14	-16	-20	-24		-18	-20	-24	-28	-39	
Above	3	-	-14	-12	-11	-15	-15	-18	-16	-15	-19	-19	-19
To	6		-19	-20	-23	-33	-45	-23	-24	-27	-37	-49	-67
Above	6	-	-17	-16	-13	-19	-19	-21	-20	-17	-23	-23	-23
To	10		-23	-25	-28	-41	-55	-27	-29	-32	-45	-59	-81
Above	10	-	-20	-20	-16	-23	-23	-25	-25	-21	-28	-28	-28
To	18		-28	-31	-34	-50	-66	-33	-36	-39	-55	-71	-98
Above	18	-	-25	-24	-20	-28	-	-32	-31	-27	-35	-35	-
To	30		-34	-37	-41	-61		-41	-44	-48	-68	-87	
Above	30	-	-30	-29	-25	-34	-	-39	-38	-34	-43	-43	-
To	50		-41	-45	-50	-73		-50	-54	-59	-82	-105	
Above	50	-	-36	-35	-30	-41	-	-48	-47	-42	-53	-53	-
To	65		-49	-54	-60	-87		-61	-66	-72	-99	-127	
Above	65	-	-38	-37	-32	-43	-	-54	-53	-48	-59	-59	-
To	80		-51	-56	-62	-89		-67	-72	-78	-105	-133	
Above	80	-	-46	-44	-38	-51	-	-66	-64	-58	-71	-71	-
To	100		-61	-66	-73	-105		-81	-86	-93	-125	-158	
Above	100	-	-49	-47	-41	-54	-	-74	-72	-66	-79	-79	-
To	120		-64	-69	-76	-108		-89	-94	-101	-133	-166	
Above	120	-	-57	-56	-48	-63	-	-86	-85	-77	-92	-92	-
To	140		-75	-81	-88	-126		-104	-110	-117	-155	-192	
Above	140	-	-59	-58	-50	-65	-	-94	-93	-85	-100	-100	-100
To	160		-77	-83	-90	-128		-112	-118	-125	-163	-200	-260
Above	160	-	-62	-61	-53	-68	-	-102	-101	-93	-108	-108	-108
To	180		-80	-86	-93	-131		-120	-126	-133	-171	-208	-268
Above	180	-	-71	-68	-60	-77	-77	-116	-113	-105	-122	-122	-122
To	200		-91	-97	-106	-149	-192	-136	-142	-151	-194	-237	-307
Above	200	-	-74	-71	-63	-80	-80	-124	-121	-113	-130	-130	-130
To	225		-94	-100	-109	-152	-195	-144	-150	-159	-202	-245	-315
Above	225	-	-78	-75	-67	-84	-84	-134	-131	-123	-140	-140	-140
To	250		-98	-104	-113	-156	-199	-154	-160	-169	-212	-255	-325
Above	250	-	-87	-85	-74	-94	-94	-151	-149	-138	-158	-158	-158
To	280		-110	-117	-126	-175	-224	-174	-181	-190	-239	-288	-368
Above	280	-	-91	-89	-78	-98	-98	-163	-161	-150	-170	-170	-170
To	315		-114	-121	-130	-179	-228	-186	-193	-202	-251	-300	-380
Above	315	-	-101	-97	-87	-108	-108	-183	-179	-169	-190	-190	-190
To	355		-126	-133	-144	-197	-248	-208	-215	-226	-279	-330	-420
Above	355	-	-107	-103	-93	-114	-114	-201	-197	-187	-208	-208	-208
To	400		-132	-139	-150	-203	-254	-226	-233	-244	-297	-348	-438
Above	400	-	-119	-113	-103	-126	-126	-225	-219	-209	-232	-232	-232
To	450		-146	-153	-166	-223	-281	-252	-259	-272	-329	-387	-482
Above	450	-	-125	-119	-109	-132	-132	-245	-239	-229	-252	-252	-252
To	500		-152	-159	-172	-229	-287	-272	-279	-292	-349	-407	-502

ISO ALLOWANCES

Dimensions in μm

Nominal size in mm

Designation		T				U						V		
		6	7	8	9	6	7	8	9	10	11	6	7	8
To	3	-	-	-	-	-18 -24	-18 -28	-	-	-	-	-	-	-
Above	3	-	-	-	-	-20	-19	-23	-23	-23	-	-	-	-
To	6					-28	-31	-41	-53	-71				
Above	6	-	-	-	-	-25	-22	-28	-28	-28	-	-	-	-
To	10					-34	-37	-50	-64	-86				
Above	10	-	-	-	-							-	-	-
To	14					-30	-26	-33	-33	-33	-			
Above	14	-	-	-	-	-41	-44	-60	-76	-103		-36	-32	-39
To	18											-47	-50	-66
Above	18	-	-	-	-	-37	-33	-	-	-	-	-43	-39	-
To	24					-50	-54					-56	-60	
Above	24	-37	-33	-	-	-44	-40	-48	-48	-	-	-51	-47	-
To	30	-50	-54			-57	-61	-81	-100			-64	-68	
Above	30	-43	-39	-	-	-55	-51	-60	-60	-	-	-63	-59	-
To	40	-59	-64			-71	-76	-99	-122			-79	-84	
Above	40	-49	-45	-	-	-65	-61	-70	-70	-70	-	-76	-72	-
To	50	-65	-70			-81	-86	-109	-132	-170		-92	-97	
Above	50	-60	-55	-	-	-81	-76	-87	-87	-87	-	-96	-91	-
To	65	-79	-85			-100	-106	-133	-161	-207		-115	-121	
Above	65	-69	-64	-	-	-96	-91	-102	-102	-102	-	-114	-109	-
To	80	-88	-94			-115	-121	-148	-176	-222		-133	-139	
Above	80	-84	-78	-	-	-117	-111	-124	-124	-124	-	-139	-133	-
To	100	-106	-113			-139	-146	-178	-211	-264		-161	-168	
Above	100	-97	-91	-104	-	-137	-131	-144	-144	-144	-144	-165	-159	-
To	120	-119	-126	-158		-159	-166	-198	-231	-284	-364	-187	-194	
Above	120	-115	-107	-122	-	-163	-155	-170	-170	-170	-170	-195	-187	-
To	140	-140	-147	-185		-188	-195	-233	-270	-330	-420	-220	-227	
Above	140	-127	-119	-134	-	-183	-175	-190	-190	-190	-190	-221	-213	-
To	160	-152	-159	-197		-208	-215	-253	-290	-350	-440	-246	-253	
Above	160	-139	-131	-148	-	-203	-195	-210	-210	-210	-210	-245	-237	-
To	180	-164	-171	-209		-228	-235	-273	-310	-370	-460	-270	-277	
Above	180	-157	-149	-166	-	-227	-219	-236	-236	-236	-236	-275	-267	-
To	200	-186	-195	-238		-256	-265	-308	-351	--421	-526	-304	-313	
Above	200	-171	-163	-180	-180	-249	-241	-258	-258	-258	-258	-301	-293	-
To	225	-200	-209	-252	-295	-278	-287	-330	-373	-443	-548	-330	-339	
Above	225	-187	-179	-196	-196	-275	-267	-284	-284	-284	-284	-331	-323	-
To	250	-216	-225	-268	-311	-304	-313	-356	-399	-469	-574	-360	-369	
Above	250	-209	-198	-218	-218	-306	-295	-315	-315	-315	-315	-376	-365	-
To	280	-241	-250	-299	-348	-338	-347	-396	-445	-525	-635	-408	-417	
Above	280	-231	-220	-240	-240	-341	-330	-350	-350	-350	-350	-416	-405	-
To	315	-263	-272	-321	-370	-373	-392	-431	-480	--560	-670	-448	-457	
Above	315	-257	-247	-268	-268	-379	-369	-390	-390	-390	-390	-464	-454	-
To	355	-293	-304	-375	-408	-415	-426	-479	-530	-620	-750	-500	-511	
Above	355	-283	-273	-294	-294	-424	-414	-435	-435	-435	-435	-519	-509	-
To	400	-319	-330	-383	-434	-460	-471	-524	-575	-665	-795	-555	-566	
Above	400	-317	-307	-330	-330	-477	-467	-490	-490	-490	-490	-582	-572	-
To	450	-357	-370	-427	-485	-517	-530	-587	-645	-740	-890	-622	-635	
Above	450	-347	-337	-360	-360	-527	-517	-540	-540	-540	-540	-647	-637	-
To	500	-387	-400	-457	-515	-567	-580	-637	-695	-790	-940	-687	-700	

Dimensions in μm

Nominal size in mm

Designation		X						Y	Z				
		6	7	8	9	10	11	7	7	8	9	10	11
To	3	-20 -26	-20 -30	-20 -34	-20 -45	-	-	-	-26 -36	-26 -40	-26 -51	-	-
Above	3	-25	-24	-28	-28	-	-	-	-31	-35	-35	-35	-
To	6	-33	-36	-46	-56				-43	-53	-65	-83	
Above	6	-31	-28	-34	-34	-	-	-	-36	-42	-42	-42	-
To	10	-40	-43	-56	-70				-51	-64	-78	-100	
Above	10	-37	-33	-40	-40	--	-	-	-43	-50	-50	-50	-
To	14	-48	-51	-67	-83				-61	-77	-93	-120	
Above	14	-42	-38	-45	-45	45	-	-	-53	-60	-60	-60	-
To	18	-53	-56	-72	-88	-115			-71	-87	-103	-130	
Above	18	-50	-46	-54	-54	-54	-	-55	-65	-73	-73	-73	-
To	24	-63	-67	-87	-106	-138		-76	-86	-106	-125	-157	
Above	24	-60	-56	-64	-64	-64	-	-67	-80	-88	-88	-88	-88
To	30	-73	-77	-97	-116	-148		-88	-101	-121	-140	-172	-218
Above	30	-75	-71	-80	-80	-80	-	-85	-103	-112	-112	-112	-112
To	40	-91	-96	-119	-142	-180		-110	-128	-151	-174	-212	-272
Above	40	-92	-88	-97	-97	-97	-	-105	-	-136	-136	-136	-136
To	50	-108	-113	-136	-159	-197		-130		-175	-198	-236	-296
Above	50	-116	-111	-122	-122	-122	-122	-133	-	-172	-172	-172	-172
To	65	-135	-141	-168	-196	-242	-312	-163		-218	-246	-292	-362
Above	65	-140	-135	-146	-146	-146	-146	-163	-	-210	-210	-210	-210
To	80	-159	-165	-192	-220	-266	-336	-193		-256	-284	-330	-400
Above	80	-171	-165	-178	-178	-178	-178	-201	-	-258	-258	-258	-258
To	100	-193	-200	-232	-265	-318	-398	-236		-312	-345	-398	-478
Above	100	-203	-197	-210	-210	-210	-210	-241	-	-310	-310	-310	-310
To	120	-225	-232	-264	-297	-350	-430	-276		-364	-397	-450	-530
Above	120	-241	-	-248	-248	-248	-248	-285	-	-365	-365	-365	-365
To	140	-266		-311	-348	-408	-498	-325		-428	-465	-525	-615
Above	140	-273	-	-280	-280	-280	-280	-325	-	-415	-415	-415	-415
To	160	-298		-343	-380	-440	-530	-365		-478	-515	-575	-665
Above	160	-303	-	-310	-310	-310	-310	-365	-	-	-465	-465	-465
To	180	-328		-373	-410	-470	-560	-406			-565	-625	-715
Above	180	-341	-	-350	-350	-350	-350	-408	-	-	-520	-520	-520
To	200	-370		-422	-465	-535	-640	-454			-635	-705	-810
Above	200	-376	-	-385	-385	-385	-385	-453	-	-	-575	-575	-575
To	225	-405		-457	-500	-570	-675	-499			-690	-760	-865
Above	225	-416	-	-425	-425	-425	-425	-503	-	-	-	-640	-640
To	250	-445		-497	-540	-610	-715	-549				-852	-930
Above	250	-466	-	-475	-475	-475	-475	-560	-	-	-	-710	-710
To	280	-498		-556	-605	-685	-795	-612				-920	-1030
Above	280	-516	-	-525	-525	-525	-525	-630	-	-	-	-790	-790
To	315	-548		-606	-655	-735	-845	-682				-1000	-1110
Above	315	-579	-	-590	-590	-590	-590	-709	-	-	-	-900	-900
To	355	-615		-679	-730	-820	-950	-766				-1130	-1260
Above	355	-649	-	-	-660	-660	-660	-799	-	-	-	-1000	-1000
To	400	-685			-800	-890	-1020	-856				-1230	-1360
Above	400	-727	-	-	-740	-740	-740	-897	-	-	-	-1100	-1100
To	450	-767			-895	-990	-1140	-960				-1350	-1500
Above	450	-807	-	-	-820	-820	-820	-977	-	-	-	-1250	-1250
To	500	-847			-975	-1070	-1220	-1040				-1500	-1650

Dimensions in μm

Nominal size in mm

Designation		ZA					ZB					ZC				
		7	8	9	10	11	7	8	9	10	11	7	8	9	10	11
To	3	-92 -42	-	-	-	-	-40 -50	-40 -54	-40 -65	-	-	-60 -70	-60 -74	-60 -85	-60 -100	-60 -120
Above	3	-38	-	-	-	-	-45	-50	-50	-	-	-76	-80	-80	-80	-80
To	6	-50					-58	-68	-80			-88	-98	-110	-128	-155
Above	6	-46	-52	-	-	-	-61	-67	-67	-67	-67	-91	-97	-97	-97	-97
To	10	-61	-74				-76	-89	-103	-125	-157	-106	-119	-133	-155	-187
Above	10	-57	-64	-	-	-	-	-90	-90	-90	-90	-	-130	-130	-130	-130
To	14	-75	-91					-117	-133	-160	-200		-157	-173	-200	-240
Above	14	-70	-77	-	-	-	-	-108	-108	-108	-108	-	-150	-150	-150	-150
To	18	-88	-104					-135	-151	-178	-218		-177	-193	-220	-260
Above	18	-	-98	-98	-	-	-	-136	-136	-136	-136	-	-188	-188	-188	-188
To	24		-131	-150				-169	-188	220	-266		-221	-240	-272	-318
Above	24	-	-118	-118	-	-	-	-160	-160	-160	-160	-	-218	-218	-218	-218
To	30		-151	-170				-193	-212	244	-290		-251	-270	-302	-348
Above	30	-	-148	-148	-	-	-	-200	-200	-200	-200	-	-	-274	-274	-274
To	40		-187	-210				-239	-262	-300	-360			-336	-374	-434
Above	40	-	-180	-180	-180	-	-	-242	-242	-242	-242	-	-	-325	-325	-325
To	50		-219	-242	-280			-281	-304	-342	-402			-387	-425	-485
Above	50	-	-226	-226	-226	-	-	-300	-300	-300	-300	-	-	-405	-405	-405
To	65		-272	-300	-346			-346	-374	-420	-490			-479	-525	-595
Above	65	-	-274	-274	-274	-	-	-	-360	-360	-360	-	-	-	-480	-480
To	80		-320	-348	-394				-434	-480	-550				-600	-670
Above	80	-	-335	-335	-335	-	-	-	-445	-445	-445	-	-	-	-585	-585
To	100		-389	-422	-475				-532	-585	-665				-725	-805
Above	100	-	-	-400	-400	-400	-	-	-	-525	-525	-	-	-	-690	-690
To	120			-487	-540	-620				-665	-745				-830	-910
Above	120	-	-	-470	-470	-470	-	-	-	-620	-620	-	-	-	-800	-800
To	140			-570	-630	-720				-780	-870				-960	-1050
Above	140	-	-	-535	-535	-535	-	-	-	-700	-700	-	-	-	-	-900
To	160			-635	-695	-785				-860	-950					-1150
Above	160	-	-	-	-600	-600	-	-	-	-780	-780	-	-	-	-	-1000
To	180				-760	-850				-940	-1030					-1250
Above	180	-	-	-	-670	-670	-	-	-	-880	-880	-	-	-	-	-1150
To	200				-855	-960				-1065	-1170					-1440
Above	200	-	-	-	-740	-740	-	-	-		-960	-	-	-	-	-1250
To	225				-925	-1030					-1250					-1540
Above	225	-	-	-	-820	-820	-	-	-		-1050	-	-	-	-	-1350
To	250				-1005	-1110					-1340					-1640
Above	250	-	-	-	-920	-920	-	-	-		-1200	-	-	-	-	-1550
To	280				-1130	-1240					-1520					-1870
Above	280	-	-	-	-1000	-1000	-	-	-		-1300	-	-	-	-	-1700
To	315				-1210	-1320					-1620					-2020
Above	315	-	-	-	-1150	-1150	-	-	-		-1500	-	-	-	-	-1900
To	355				-1380	-1510					-1860					-2260
Above	355	-	-	-	-	-1300	-	-	-		-1650	-	-	-	-	-2100
To	400					-1660					-2010					-2460
Above	400	-	-	-	-	-1450	-	-	-		-1850	-	-	-	-	-2400
To	450					-1850					-2250					-2800
Above	450	-	-	-	-	-1600	-	-	-		-2050	-	-	-	-	-2600
To	500					-2000					-2450					-3000

ISO ALLOWANCES

are

Extracts from DIN 7176

Dimensions in μm

ISO ALLOWANCES

Dimensions in μm

Nominal size in mm

Designation		a					b					
		9	10	11	12	13	8	9	10	11	12	13
To	3	-270	-	-270	-270	-270	-140	-140	-140	-140	-140	-140
		-295		-330	-370	-410	-154	-165	-180	-200	-240	-280
Above	3	-270	-270	-270	-270	-270	-140	-140	-140	-140	-140	-140
To	6	-300	-318	-345	-390	-450	-158	-170	-188	-215	-260	-320
Above	6	-280	-280	-280	-280	-280	-150	-150	-150	-150	-150	-150
To	10	-316	-338	-370	-430	-500	-172	-186	-208	-240	-300	-370
Above	10	-290	-290	-290	-290	-290	-150	-150	-150	-150	-150	-150
To	18	-333	-360	-400	-470	-560	-177	-193	-220	-260	-330	-420
Above	18	-300	-	-300	-300	-300	-160	-160	-160	-160	-160	-160
To	30	-352	-	-430	-510	-630	-193	-212	-244	-290	-370	-490
Above	30	-310	-	-310	-310	-310	-170	-170	-170	-170	-170	-170
To	40	-372	-	-470	-560	-700	-209	-232	-270	-330	-420	-560
Above	40	-320	-	-320	-320	-320	-180	-180	-180	-180	-180	-180
To	50	-382	-	-480	-570	-710	-219	-242	-280	-340	-430	-570
Above	50	-340	-	-340	-340	-340	-190	-190	-190	-190	-190	-190
To	65	-414	-	-530	-640	-800	-236	-264	-310	-380	-490	-650
Above	65	-360	-	-360	-360	-360	-200	-200	-200	-200	-200	-200
To	80	-434	-	-550	-660	-820	-246	-274	-320	-390	-500	-660
Above	80	-380	-	-380	-380	-380	-220	-220	-220	-220	-220	-220
To	100	-467	-	-600	-730	-920	-274	-307	-360	-440	-570	-760
Above	100	-410	-	-410	-410	-410	-240	-240	-240	-240	-240	-240
To	120	-497	-	-630	-760	-950	-294	-327	-380	-460	-590	-780
Above	120	-460	-	-460	-460	-460	-260	-260	-260	-260	-260	-260
To	140	-560	-	-710	-860	-1090	-323	-360	-420	-510	-660	-890
Above	140	-520	-	-520	-520	-520	-280	-280	-280	-280	-280	-280
To	160	-620	-	-770	-920	-1150	-343	-380	-440	-530	-680	-910
Above	160	-580	-	-580	-580	-580	-310	-310	-310	-310	-310	-310
To	180	-680	-	-830	-980	-1210	-373	-410	-470	-560	-710	-940
Above	180	-660	-	-660	-660	-660	-340	-340	-340	-340	-340	-340
To	200	-775	-	-950	-1120	-1380	-412	-455	-525	-630	-800	-1060
Above	200	-740	-	-740	-740	-740	-380	-380	-380	-380	-380	-380
To	225	-855	-	-1030	-1200	-1460	-452	-495	-565	-670	-840	-1100
Above	225	-820	-	-820	-820	-820	-420	-420	-420	-420	-420	-420
To	250	-935	-	-1110	-1280	-1540	-492	-535	-605	-710	-880	-1140
Above	250	-920	-	-920	-920	-920	-480	-480	-480	-480	-480	-480
To	280	-1050	-	-1240	-1440	-1730	-561	-610	-690	-800	-1000	-1290
Above	280	-1050	-	-1050	-1050	-1050	-540	-540	-540	-540	-540	-540
To	315	-1180	-	-1370	-1570	-1860	-621	-670	-750	-860	-1060	-1350
Above	315	-1200	-	-1200	-1200	-1200	-600	-600	-600	-600	-600	-600
To	355	-1340	-	-1560	-1770	-2090	-689	-740	-830	-960	-1170	-1490
Above	355	-1350	-	-1350	-1350	-1350	-980	-680	-680	-680	-680	-680
To	400	-1490	-	-1710	-1920	-2240	-769	-820	-910	-1040	-1250	-1570
Above	400	-1500	-	-1500	-1500	-1500	-760	-760	-760	-760	-760	-760
To	450	-1655	-	-1900	-2130	-2470	-857	-915	-1010	-1160	-1390	-1730
Above	450	-1650	-	-1650	-1650	-1650	-840	-840	-840	-840	-840	-840
To	500	-1805	-	-2050	-2280	-2620	-937	-995	-1090	-1470	-1470	-1810

Dimensions in μm

Nominal size in mm

Designation		c							cd					
		5	6	7	8	9	10	11	5	6	7	8	9	10
To	3	-	-	-	-60	-60	-60	-60	-	-	-34	-34	-34	-34
					-74	-85	-100	-120			-44	-48	-59	-74
Above	3	-70	-70	-70	-70	-70	-70	-70	-46	-46	-46	-46	-46	-
To	6	-75	-78	-82	-88	-100	-118	-145	-51	-54	-58	-64	-76	
Above	6	-60	-80	-80	-80	-80	-80	-80	-56	-56	-56	-56	-56	-
To	10	-86	-89	-95	-102	-116	-138	-170	-62	-65	-71	-78	-92	
Above	10	-95	-95	-95	-95	-95	-95	-95	-	-	-	-	-	-
To	18	-103	-106	-113	-122	-138	-165	-205						
Above	18	-	-	-	-110	-110	-110	-110	-	-	-	-	-	-
To	30				-143	-162	-194	-240						
Above	30	-	-	-	-120	-120	-120	-120	-	-	-	-	-	-
To	40				-159	-182	-220	-280						
Above	40	-	-	-	-130	-130	-130	-130	-	-	-	-	-	-
To	50				-169	-192	-230	-290						
Above	50	-	-	-	-140	-140	-140	-140	-	-	-	-	-	-
To	65				-186	-214	-260	-330						
Above	65	-	-	-	-150	-150	-150	-150	-	-	-	-	-	-
To	80				-196	-224	-270	-340						
Above	80	-	-	-	-170	-170	-170	-170	-	-	-	-	-	-
To	100				-224	-257	-310	-390						
Above	100	-	-	-	-180	-180	-180	-180	-	-	-	-	-	-
To	120				-234	-267	-320	-400						
Above	120	-	-	-	-200	-200	-200	-200	-	-	-	-	-	-
To	140				-263	-300	-360	-450						
Above	140	-	-	-	-210	-210	-210	-210	-	-	-	-	-	-
To	160				-273	-310	-370	-460						
Above	160	-	-	-	-230	-230	-230	-230	-	-	-	-	-	-
To	180				-293	-330	-390	-480						
Above	180	-	-	-	-240	-240	-240	-240	-	-	-	-	-	-
To	200				-312	-355	-425	-530						
Above	200	-	-	-	-260	-260	-260	-260	-	-	-	-	-	-
To	225				-332	-375	-445	-550						
Above	225	-	-	-	-280	-280	-280	-280	-	-	-	-	-	-
To	250				-352	-395	-465	-570						
Above	250	-	-	-	-300	-300	-300	-300	-	-	-	-	-	-
To	280				-381	-430	-510	-620						
Above	280	-	-	-	-330	-330	-330	-330	-	-	-	-	-	-
To	315				-411	-460	-540	-650						
Above	315	-	-	-	-360	-360	-360	-360	-	-	-	-	-	-
To	355				-449	-500	-590	-720						
Above	355	-	-	-	-400	-400	-400	-400	-	-	-	-	-	-
To	400				-489	-540	-630	-760						
Above	400	-	-	-	-440	-440	-440	-440	-	-	-	-	-	-
To	450				-537	-595	-690	-840						
Above	450	-	-	-	-480	-480	-480	-480	-	-	-	-	-	-
To	500				-577	-635	-730	-880						

Dimensions in μm

Nominal size in mm

Designation		d								
		5	6	7	8	9	10	11	12	13
To	3	-20	-20	-20	-20	-20	-20	-20	-20	-20
		-24	-26	-30	-34	-45	-60	-80	-120	-160
Above	3	-30	-30	-30	-30	-30	-30	-30	-30	-30
To	6	-35	-38	-42	-48	-60	-78	-105	-150	-210
Above	6	-40	-40	-40	-40	-40	-40	-40	-40	-40
To	10	-46	-49	-55	-62	-76	-98	-130	-190	-260
Above	10	-50	-50	-50	-50	-50	-50	-50	-50	-50
To	18	-58	-61	-58	-77	-93	-120	-160	-230	-320
Above	18	-65	-65	-65	-65	-65	-65	-65	-65	-65
To	30	-74	-78	-86	-98	-117	-149	-195	-275	-395
Above	30	-80	-80	-80	-80	-80	-80	-80	-80	-80
To	50	-91	-96	-105	-119	-142	-180	-240	-330	-470
Above	50	-100	-100	-100	-100	-100	-100	-100	-100	-100
To	80	-113	-119	-130	-146	-174	-220	-290	-400	-560
Above	80	-120	-120	-120	-120	-120	-120	-120	-120	-120
To	120	-135	-142	-155	-174	-207	-260	-340	-470	-660
Above	120	-145	-145	-145	-145	-145	-145	-145	-145	-145
To	180	-163	-170	-185	-208	-245	-305	-395	-545	-775
Above	180	-170	-170	-170	-170	-170	-170	-170	-170	-170
To	250	-190	-199	-216	-242	-285	-355	-460	-630	-890
Above	250	-190	-190	-190	-190	-190	-190	-190	-190	-190
To	315	-213	-222	-242	-271	-320	-400	-510	-710	-1000
Above	315	-210	-210	-210	-210	-210	-210	-210	-210	-210
To	400	-235	-246	-267	-299	-350	-440	-570	-780	-1100
Above	400	-230	-230	-230	-230	-230	-230	-230	-230	-230
To	500	-257	-270	-293	-327	-385	-480	-630	-860	-1200

Dimensions in μm

Nominal size in mm

Designation		e					ef					
		5	6	7	8	9	3	5	6	7	8	9
To	3	-14	-14	-14	-14	-14	-10	-10	-10	-10	-10	-10
		-18	-20	-12	-28	-39	-12	-14	-16	-20	-24	-35
Above	3	-20	-20	-20	-20	-20	-	-14	-14	-14	-14	-14
To	6	-25	-28	-32	-38	-50		-19	-22	-26	-32	-44
Above	6	-25	-25	-25	-25	-25	-	-18	-18	-18	-18	-18
To	10	-31	-34	-40	-47	-61		-24	-27	-33	-40	-54
Above	10	-32	-32	-32	-32	-32	-	-	-	-	-	-
To	18	-40	-43	-50	-59	-75						
Above	18	-40	-40	-40	-40	-40	-	-	-	-	-	-
To	30	-49	-53	-61	-73	-92						
Above	30	-50	-50	-50	-50	-50	-	-	-	-	-	-
To	50	-61	-66	-75	-89	-112						
Above	50	-60	-60	-60	-60	-60	-	-	-	-	-	-
To	80	-73	-79	-90	-106	-134						
Above	80	-72	-72	-72	-72	-72	-	-	-	-	-	-
To	120	-87	-94	-107	-126	-159						
Above	120	-85	-85	-85	-85	-85	-	-	-	-	-	-
To	180	-103	-110	-125	-148	-185						
Above	180	-100	-100	-100	-100	-100	-	-	-	-	-	-
To	250	-120	-129	-146	-172	-215						
Above	250	-110	-110	-110	-110	-110	-	-	-	-	-	-
To	315	-133	-142	-162	-191	-240						
Above	315	-125	-125	-125	-125	-125	-	-	-	-	-	-
To	400	-150	-161	-182	-214	-265						
Above	400	-135	-135	-135	-135	-135	-	-	-	-	-	-
To	500	-162	-175	-198	-232	-290						

Dimensions in μm

Nominal size in mm

Designation		f						
		3	4	5	6	7	8	9
To	3	-6	-6	-6	-6	-6	-6	-6
		-8	-9	-10	-12	-16	-20	-31
Above	3	-	-10	-10	-10	-10	-10	-10
To	6		-14	-15	-18	-22	-28	-40
Above	6	-	-13	-13	-13	-13	-13	-13
To	10		-17	-19	-22	-28	-35	-49
Above	10	-	-16	-16	-16	-16	-16	-16
To	18		-21	-24	-27	-34	-43	-59
Above	18	-	-20	-20	-20	-20	-20	-20
To	30		-26	-29	-33	-41	-53	-72
Above	30	-	-25	-25	-25	-25	-25	-25
To	50		-32	-36	-41	-50	-64	-87
Above	50	-	-30	-30	-30	-30	-30	-30
To	80		-38	-43	-49	-60	-76	-104
Above	80	-	-36	-36	-36	-36	-36	-36
To	120		-46	-51	-58	-71	-90	-123
Above	120	-	-43	-43	-43	-43	-43	-43
To	180		-55	-61	-68	-83	-106	-143
Above	180	-	-50	-50	-50	-50	-50	-50
To	250		-64	-70	-79	-96	-122	-165
Above	250	-	-56	-56	-56	-56	-56	-56
To	315		-72	-79	-88	-108	-137	-186
Above	315	-	-62	-62	-62	-62	-62	-62
To	400		-80	-87	-98	-119	-151	-202
Above	400	-	-68	-68	-68	-68	-68	-68
To	500		-88	-95	-108	-131	-165	-223

Dimensions in μm

Nominal size in mm

Designation		fg						g				
		3	4	5	6	7	8	3	4	5	6	7
To	3	-4	-4	-4	-4	-4	-	-2	-2	-2	-2	-2
		-6	-7	-8	-10	-14		-4	-5	-6	-8	-12
Above	3	-	-6	-6	-6	-6	-6	-	-4	-4	-4	-4
To	6		-10	-11	-14	-18	-24		-8	-9	-12	-16
Above	6	-	-8	-8	-8	-8	-8	-	-5	-5	-5	-5
To	10		-12	-14	-17	-23	-30		-9	-11	-14	-20
Above	10	-	-	-	-	-	-	-	-6	-6	-6	-6
To	18								-11	-14	-17	-24
Above	18	-	-	-	-	-	-	-	-7	-7	-7	-7
To	30								-13	-16	-20	-28
Above	30	-	-	-	-	-	-	-	-9	-9	-9	-9
To	50								-16	-20	-25	-34
Above	50	-	-	-	-	-	-	-	-10	-10	-10	-10
To	80								-18	-32	-29	-40
Above	80	-	-	-	-	-	-	-	-12	-12	-12	-12
To	120								-22	-27	-34	-47
Above	120	-	-	-	-	-	-	-	-14	-14	-14	-14
To	180								-26	-32	-39	-54
Above	180	-	-	-	-	-	-	-	-15	-15	-15	-15
To	250								-29	-35	-44	-61
Above	250	-	-	-	-	-	-	-	-17	-17	-17	-17
To	315								-33	-40	-49	-69
Above	315	-	-	-	-	-	-	-	-18	-18	-18	-18
To	400								-36	-43	-54	-75
Above	400	-	-	-	-	-	-	-	-20	-20	-20	-20
To	500								-40	-47	-60	-83

ISO ALLOWANCES

Dimensions in μm

Nominal size in mm

Designation		h 1	2	3	4	5	6	7	8	9
To	3	0	0	0	0	0	0	0	0	0
		-0.8	-1.2	-2	-3	-4	-6	-10	-14	-25
Above	3	0	0	0	0	0	0	0	0	0
To	6	-1	-1.5	-2.5	-4	-5	-8	-12	-18	-30
Above	6	0	0	0	0	0	0	0	0	0
To	10	-1	-1.5	-2.5	-4	-6	-9	-15	-22	-36
Above	10	0	0	0	0	0	0	0	0	0
To	18	-1.2	-2	-3	-5	-8	-11	-18	-27	-43
Above	18	0	0	0	0	0	0	0	0	0
To	30	-1.5	-2.5	-4	-6	-9	-13	-21	-33	-52
Above	30	0	0	0	0	0	0	0	0	0
To	50	-1.5	-2.5	-4	-7	-11	-16	-25	-39	-62
Above	50	0	0	0	0	0	0	0	0	0
To	80	-2	-3	-5	-8	-13	-19	-30	-46	-74
Above	80	0	0	0	0	0	0	0	0	0
To	120	-2.5	-4	-6	-10	-15	-22	-35	-54	-87
Above	120	0	0	0	0	0	0	0	0	0
To	180	-3.5	-5	-8	-12	-18	-25	-40	-63	-100
Above	180	0	0	0	0	0	0	0	0	0
To	250	-4.5	-7	-10	-14	-20	-29	-46	-72	-115
Above	250	0	0	0	0	0	0	0	0	0
To	315	-6	-8	-12	-16	-23	-32	-52	-81	-130
Above	315	0	0	0	0	0	0	0	0	0
To	400	-7	-9	-13	-18	-25	-36	-57	-89	-140
Above	400	0	0	0	0	0	0	0	0	0
To	500	-8	-10	-15	-20	-27	-40	-63	-97	-155

Nominal size in mm

Designation		h 10	11	12	13	14	15	16	17	18
To	3	0	0	0	0	0	0	0	-	-
		-40	-60	-100	-140	-250	-400	-600		
Above	3	0	0	0	0	0	0	0	-	-
To	6	-48	-75	-120	-180	-300	-480	-750		
Above	6	0	0	0	0	0	0	0	0	-
To	10	-58	-90	-150	-220	-360	-580	-900	-1500	
Above	10	0	0	0	0	0	0	0	0	0
To	18	-70	-110	-180	-270	-430	-700	-1100	-1800	-2700
Above	18	0	0	0	0	0	0	0	0	0
To	30	-84	-130	-210	-330	-520	-840	-1300	-2100	-3300
Above	30	0	0	0	0	0	0	0	0	0
To	50	-100	-160	-250	-390	-620	-1000	-1600	-2500	-3900
Above	50	0	0	0	0	0	0	0	0	0
To	80	-120	-190	-300	-460	-740	-1200	-1900	-3000	-4600
Above	80	0	0	0	0	0	0	0	0	0
To	120	-140	-220	-350	-540	-870	-1400	-2200	-3500	-5400
Above	120	0	0	0	0	0	0	0	0	0
To	180	-160	-250	-400	-630	-1000	-1600	-2500	-4000	-6300
Above	180	0	0	0	0	0	0	0	0	0
To	250	-185	-290	-460	-720	-1150	-1850	-2900	-4600	-7200
Above	250	0	0	0	0	0	0	0	0	0
To	315	-210	-320	-520	-810	-1300	-2100	-3200	-5200	-8200
Above	315	0	0	0	0	0	0	0	0	0
To	400	-230	-360	-570	-890	-1400	-2300	-3600	-5700	-8900
Above	400	0	0	0	0	0	0	0	0	0
To	500	-250	-400	-630	-970	-1550	-2500	-4000	-6300	-9700

Dimensions in μm

Nominal size in mm

Designation		j 5	6	7	8	js 1	2	3	4	5	6	7
To	3	+2	+4	+6	+8	+0.4	+0.6	+1	+1.5	+2	+3	+5
		-2	-2	-4	-6	-0.4	-0.6	-1	-1.5	-2	-3	-5
Above	3	+3	+6	+8	-	+0.5	+0.75	+1.25	+2	+2.5	+4	+6
To	6	-2	-2	-4		-0.5	-0.75	-1.25	-2	-2.5	-4	-6
Above	6	+4	+7	+10	-	+0.5	+0.75	+1.25	+2	+3	+4.5	+7.5
To	10	-2	-2	-5		-0.5	-0.75	-1.25	-2	-3	-4.5	-7.5
Above	10	+5	+8	+12	-	+0.6	+1	+1.5	+2.5	+4	+5.5	+9
To	18	-3	-3	-6		-0.6	-1	-1.5	-2.5	-4	-5.5	-9
Above	18	+5	+9	+13	-	+0.75	+1.25	+2	+3	+4.5	+6.5	+10.5
To	30	-4	-4	-8		-0.75	-1.25	-2	-3	-4.5	-6.5	-10.5
Above	30	+6	+11	+15	-	+0.75	+1.25	+2	+3.5	+5.5	+8	+12.5
To	50	-5	-5	-10		-0.75	-1.25	-2	-3.5	-5.5	-8	-12.5
Above	50	+6	+12	+18	-	+1	+1.5	+2.5	+4	+6.5	+9.5	+15
To	80	-7	-7	-12		-1	-1.5	-2.5	-4	-6.5	-9.5	-15
Above	80	+6	+13	+20	-	+1.25	+2	+3	+5	+7.5	+11	+17.5
To	120	-9	-9	-15		-1.25	-2	-3	-5	-7.5	-11	-17.5
Above	120	+7	+14	+22	-	+1.75	+2.5	+4	+6	+9	+12.5	+20
To	180	-11	-11	-18		-1.75	-2.5	-4	-6	-9	-12.5	-20
Above	180	+7	+16	+25	-	+2.25	+3.5	+5	+7	+10	+14.5	+23
To	250	-13	-13	-21		-2.25	-3.5	-5	-7	-10	-14.5	-23
Above	250	+7	+16	+26	-	+3	+4	+6	+8	+11.5	+16	+26
To	315	-15	-16	-26		-3	-4	-6	-8	-11.5	-16	-26
Above	315	+7	+18	+29	-	+3.5	+4.5	+6.5	+9	+12.5	+18	+28.5
To	400	-18	-18	-28		-3.5	-4.5	-6.5	-9	-12.5	-18	-28.5
Above	400	+7	+20	+31	-	+4	+5	+7.5	+10	+13.5	+20	+31.5
To	500	-20	-20	-32		-4	-5	-7.5	-10	-13.5	-20	-31.5

Nominal size in mm

Designation		js 8	9	10	11	12	13	14	15	16	17	18
To	3	+7	+12.5	+20	+30	+50	+70	+125	+200	+300	-	-
		-7	-12.5	-20	-30	-50	-70	-125	-200	-300		
Above	3	+9	+15	+24	+37.5	+60	+90	+150	+240	+375	-	-
To	6	-9	-15	-24	-37.5	-60	-90	-190	-240	-375		
Above	6	+11	+18	+29	+45	+75	+110	+180	+290	+450	+750	-
To	10	-11	-18	-29	-45	-75	-110	-180	-290	-450	-750	
Above	10	+13.5	+21.5	+35	+55	+90	+135	+215	+350	+550	+900	+1350
To	18	-13.5	-21.5	-35	-55	-90	-135	-215	-350	-550	-900	-1350
Above	18	+16.5	+26	+42	+65	+105	+165	+260	+420	+650	+1050	+1650
To	30	-16.5	-26	-42	-65	-105	-165	-260	-420	-650	-1050	-1650
Above	30	+19.5	+31	+50	+80	+125	+195	+310	+500	+800	+1250	+1950
To	50	-19.5	-31	-50	-80	-125	-195	-310	-500	-800	-1250	-1950
Above	50	+23	+37	+60	+95	+150	+230	+370	+600	+950	+1500	+2300
To	80	-23	-37	-60	-95	-150	-230	-370	-600	-950	-1500	-2300
Above	80	+27	+43.5	+70	+110	+175	+270	+435	+700	+1100	+1750	+2700
To	120	-27	-43.5	-70	-110	-175	-270	-435	-700	-1100	-1750	-2700
Above	120	+31.5	+50	+80	+125	+200	+315	+500	+800	+1250	+2000	+3150
To	180	-31.5	-50	-80	-125	-200	-315	-500	-800	-1250	-2000	-3150
Above	180	+36	+57.5	+92.5	+145	+230	+360	+575	+925	+1450	+2300	+3600
To	250	-36	-57.5	-92.5	-145	-230	-360	-575	-925	-1450	-2300	-3600
Above	250	+40.5	+65	+105	+160	+260	+405	+650	+1050	+1600	+2600	+4050
To	315	-40.5	-65	-105	-160	-260	-405	-650	-1050	-1600	-2600	-4050
Above	315	+44.5	+70	+115	+180	+285	+445	+700	+1150	+1800	+2850	+4450
To	400	-44.5	-70	-115	-180	-285	-445	-700	-1150	-1800	-2850	-4450
Above	400	+48.5	+77.5	+125	+200	+315	+485	+775	+1250	+2000	+3150	+4850
To	500	-48.5	-77.5	-125	-200	-315	-485	-775	-1250	-2000	-3150	-4850

Dimensions in μm

Nominal size in mm

Designation		k 3	4	5	6	7	8	9	10	11	m 3	4	5	6	7
To	3	+2	+3	+4	+4	+10	+14	+25	+40	+60	+4	+5	+6	+8	-
		0	0	0	0	0	0	0	0	0	+2	+2	+2	+2	
Above	3	+2.5	+5	+6	+6	+13	+18	+30	+48	+75	+6.5	+8	+9	+12	+16
To	6	0	+1	+1	+1	+1	0	0	0	0	+4	+4	+4	+4	+4
Above	6	+2.5	+5	+7	+7	+16	+22	+36	+58	+90	-	+10	+12	+15	+21
To	10	0	+1	+1	+1	+1	0	0	0	0		+6	+6	+6	+6
Above	10	+3	+6	+9	+9	+19	+27	+43	+70	+110	-	+12	+15	+18	+25
To	18		+1	+1	+1	+1	0	0	0	0		+7	+7	+7	+7
Above	18	-	+8	+11	+11	+23	+33	+52	+84	+130	-	+14	+17	+21	+29
To	30		+2	+2	+2	+2	0	0	0	0		+8	+8	+8	+8
Above	30	-	+9	+13	+13	+27	+39	+62	+100	+160	-	+16	+20	+25	+34
To	50		+2	+2	+2	+2	0	0	0	0		+9	+9	+9	+9
Above	50	-	+10	+15	+15	+32	+46	+74	+120	+190	-	+19	+24	+30	+41
To	80		+2	+2	+2	+2	0	0	0	0		+11	+11	+11	+11
Above	80	-	+13	+18	+18	+38	+54	+87	+140	+220	-	+23	+28	+35	+48
To	120		+3	+3	+3	+3	0	0	0	0		+13	+13	+13	+13
Above	120	-	+15	+21	+21	+43	+63	+100	+160	+250	-	+27	+33	+40	+55
To	180		+3	+3	+3	+3	0	0	0	0		+15	+15	+15	+15
Above	180	-	+18	+24	+24	+50	+72	+115	+185	+290	-	+31	+37	+46	+63
To	250		+4	+4	+4	+4	0	0	0	0		+17	+17	+17	+17
Above	250	-	+20	+27	+27	+56	+81	+130	+210	+320	-	+36	+43	+52	+72
To	315		+4	+4	+4	+4	0	0	0	0		+20	+20	+20	+20
Above	315	-	+22	+29	+29	+61	+89	+140	+230	+360	-	+39	+46	+57	+78
To	400		+4	+4	+4	+4	0	0	0	0		+21	+21	+21	+21
Above	400	-	+25	+32	+32	+68	+97	+155	+250	+400	-	+43	+50	+63	+86
To	500		+5	+5	+5	+5	0	0	0	0		+23	+23	+23	+23

Nominal size in mm

Designation		n 3	4	5	6	7	p 3	4	5	6	7	8	9
To	3	+6	+7	+8	+10	+14	+8	+9	+10	+12	+16	+20	-
		+4	+4	+4	+4	+4	+6	+6	+6	+6	+6	+6	
Above	3	-	+12	+13	+16	+20	-	+16	+17	+20	+24	+30	+42
To	6		+8	+8	+8	+8		+12	+12	+12	+12	+12	+12
Above	6	-	+14	+16	+19	+25	-	+19	+21	+24	+30	+37	+51
To	10		+10	+10	+10	+10		+15	+15	+15	+15	+15	+15
Above	10	-	+17	+20	+23	+30	-	+23	+26	+29	+36	+45	+61
To	18		+12	+12	+12	+12		+18	+18	+18	+18	+18	+18
Above	18	-	+21	+24	+28	+36	-	+28	+31	+35	+43	+55	-
To	30		+15	+15	+15	+15		+22	+22	+22	+22	+22	
Above	30	-	+24	+28	+33	+42	-	+33	+37	+42	+51	+65	-
To	50		+17	+17	+17	+17		+26	+26	+26	+26	+26	
Above	50	-	+28	+33	+39	+50	-	+40	+45	+51	+62	+78	-
To	80		+20	+20	+20	+20		+32	+32	+32	+32	+32	
Above	80	-	+33	+38	+45	+58	-	+47	+52	+59	+72	+91	-
To	120		+23	+23	+23	+23		+37	+37	+37	+37	+37	
Above	120	-	+39	+45	+52	+67	-	+55	+61	+68	+83	+106	-
To	180		+27	+27	+27	+27		+43	+43	+43	+43	+43	
Above	180	-	+45	+51	+60	+77	-	+64	+70	+79	+96	+122	-
To	250		+31	+31	+31	+31		+50	+50	+50	+50	+50	
Above	250	-	+50	+57	+66	+86	-	+72	+79	+88	+108	+137	-
To	315		+34	+34	+34	+34		+56	+56	+56	+56	+56	
Above	315	-	+55	+62	+73	+94	-	+80	+87	+98	+119	+151	-
To	400		+37	+37	+37	+37		+62	+62	+62	+62	+62	
Above	400	-	+60	+67	+80	+103	-	+88	+95	+108	+131	+165	-
To	500		+40	+40	+40	+40		+68	+68	+68	+68	+68	

Dimensions in μm

Nominal size in mm

Designation		a 3	4	5	6	7	8	9	b 4	5	6	7	8	9	10
To	3	+12	+13	+14	+16	+20	+24	-	+17	+18	+20	+24	+28	+39	-
		+10	+10	+10	+10	+10	+10		+14	+14	+14	+14	+14	+14	
Above	3	-	+19	+20	+23	+27	+33	+45	+23	+24	+27	+31	+37	+49	+67
To	6		+15	+15	+15	+15	+15	+15	+19	+19	+19	+19	+19	+19	+19
Above	6	-	+23	+25	+28	+34	+41	+55	+27	+29	+32	+38	+45	+59	+81
To	10		+19	+19	+19	+19	+19	+19	+23	+23	+23	+23	+23	+23	+23
Above	10	-	+28	+31	+34	+41	+50	+66	+33	+36	+39	+46	+55	+71	+98
To	18		+23	+23	+23	+23	+23		+28	+28	+28	+28	+28	+28	+28
Above	18	-	+34	+37	+41	+49	-	-	+41	+44	+48	+46	+68	+87	-
To	30		+28	+28	+28	+28			+35	+35	+35	+35	+35	+35	
Above	30	-	+41	+45	+50	+59	-	-	+50	+54	+59	+68	+82	+105	-
To	50		+34	+34	+34	+34			+43	+43	+43	+43	+43	+43	
Above	50	-	+49	+54	+60	+71	-	-	+61	+66	+72	+83	+99	+127	-
To	65		+41	+41	+41	+41			+53	+53	+53	+53	+53	+53	
Above	65	-	+51	+56	+62	+73	-	-	+67	+72	+78	+89	+105	+133	-
To	80		+43	+43	+43	+43			+59	+59	+59	+59	+59	+59	
Above	80	-	+61	+66	+73	+86	-	-	+81	+86	+93	+106	+125	+158	-
To	100		+51	+51	+51	+51			+71	+71	+71	+71	+71	+71	
Above	100	-	+64	+69	+76	+89	-	-	+89	+94	+101	+114	+133	+166	-
To	120		+54	+54	+54	+54			+79	+79	+79	+79	+79	+79	
Above	120	-	+75	+81	+88	+103	-	-	+104	+110	+117	+132	+155	+192	-
To	140		+63	+63	+63	+63			+92	+92	+92	+92	+92	+92	
Above	140	-	+77	+83	+90	+105	-	-	+112	+118	+125	+140	+163	+200	+260
To	160		+65	+65	+65	+65			+100	+100	+100	+100	+100	+100	+100
Above	160	-	+80	+86	+93	+108	-	-	+120	+126	+133	+148	+171	+208	+268
To	180		+68	+68	+68	+68			+108	+108	+108	+108	+108	+108	+108
Above	180	-	+91	+97	+106	+123	+149	+192	+136	+142	+151	+168	+194	+237	+307
To	200		+77	+77	+77	+77	+77	+77	+122	+122	+122	+122	+122	+122	+122
Above	200	-	+94	+100	+109	+126	+152	+195	+144	+150	+159	+176	+202	+245	+315
To	225		+80	+80	+80	+80	+80	+80	+130	+130	+130	+130	+130	+130	+130
Above	225	-	+98	+104	+113	+130	+156	+199	+154	+160	+169	+186	+212	+255	+325
To	250		+84	+84	+84	+84	+84	+84	+140	+140	+140	+140	+140	+140	+140
Above	250	-	+110	+117	+126	+146	+175	+224	+174	+181	+190	+210	+239	+288	+368
To	280		+94	+94	+94	+94	+94	+94	+158	+158	+158	+158	+158	+158	+158
Above	280	-	+114	+121	+130	+150	+179	+228	+186	+193	+202	+222	+251	+300	+380
To	315		+98	+98	+98	+98	+98	+98	+170	+170	+170	+170	+170	+170	+170
Above	315	-	+126	+133	+144	+165	+197	+248	+208	+215	+226	+247	+279	+330	+420
To	355		+108	+108	+108	+108	+108	+108	+190	+190	+190	+190	+190	+190	+190
Above	355	-	+132	+139	+150	+171	+203	+254	+226	+233	+244	+265	+297	+348	+438
To	400		+119	+114	+114	+114	+114	+114	+208	+208	+208	+208	+208	+208	+208
Above	400	-	+146	+153	+166	+189	+223	+281	+252	+259	+272	+295	+329	+387	+482
To	450		+126	+126	+126	+126	+126	+126	+232	+232	+232	+232	+232	+232	+232
Above	450	-	+152	+159	+172	+195	+229	+287	+272	+279	+292	+315	+349	+407	+502
To	500		+132	+132	+132	+132	+132	+132	+252	+252	+252	+252	+252	+252	+252

ISO ALLOWANCES

Dimensions in μm

Nominal size in mm

Designation		t					u						
		5	6	7	8	9	5	6	7	8	9	10	11
To	3	-	-	-	-	-	+22 +18	+24 +18	+28 +18	+32 +18	-	-	-
Above	3	-	-	-	-	-	+28	+31	+35	+41	+53	+71	-
To	6						+23	+23	+23	+23	+23	+23	
Above	6	-	-	-	-	-	+34	+37	+43	+50	+64	+86	-
To	10						+28	+28	+28	+28	+28	+28	
Above	10	-	-	-	-	-							-
To	14						+41	+44	+51	+60	+76	+103	
Above	14	-	-	-	-	-	+33	+33	+33	+33	+33	+33	-
To	18												
Above	18	-	-	-	-	-	+50	+54	+62	+74	-	-	-
To	24						+41	+41	+41	+41			
Above	24	+50	+54	+62	-	-	+57	+61	+69	+81	+100	-	-
To	30	+41	+41	+41			+48	+48	+48	+48	+48		
Above	30	+59	+64	+73	-	-	+71	+76	+85	+99	+122	-	-
To	40	+48	+48	+48			+60	+60	+60	+60	+60		
Above	40	+65	+70	+79	-	-	+81	+86	+95	+109	+132	+170	-
To	50	+54	+54	+54			+70	+70	+70	+70	+70	+70	
Above	50	+79	+85	+96	-	-	+100	+106	+117	+133	+161	+207	-
To	65	+66	+66	+66			+87	+87	+87	+87	+87	+87	
Above	65	+88	+94	+105	-	-	+115	+121	+132	+148	+176	+222	-
To	80	+75	+75	+75			+102	+102	+102	+102	+102	+102	
Above	80	+106	+113	+126	-	-	+139	+146	+159	+178	+211	+264	-
To	100	+91	+91	+91			+124	+124	+124	+124	+124	+124	
Above	100	+119	+126	+139	+158	-	+159	+166	+179	+198	+231	+284	+364
To	120	+104	+104	+104	+104		+144	+144	+144	+144	+144	+144	+144
Above	120	+140	+147	+162	+185	-	+188	+195	+210	+233	+270	+330	+420
To	140	+122	+122	+122	+122		+170	+170	+170	+170	+170	+170	+170
Above	140	+152	+159	+174	+197	-	+208	+215	+230	+253	+290	+350	+440
To	160	+134	+134	+134	+134		+190	+190	+190	+190	+190	+190	+190
Above	160	+164	+171	+186	+209	-	+228	+235	+250	+273	+310	+370	+460
To	180	+146	+146	+146	+146		+210	+210	+210	+210	+210	+210	+210
Above	180	+186	+195	+212	+238	-	+256	+265	+282	+308	+351	+421	+526
To	200	+166	+166	+166	+166		+236	+236	+236	+236	+236	+236	+236
Above	200	+200	+209	+226	+252	+295	+278	+287	+304	+330	+373	+443	+548
To	225	+180	+180	+180	+180	+180	+258	+258	+258	+258	+258	+258	+258
Above	225	+216	+225	+242	+268	+311	+304	+313	+330	+356	+399	+469	+574
To	250	+196	+196	+196	+196	+196	+284	+284	+284	+284	+384	+284	+284
Above	250	+241	+250	+270	+299	+348	+338	+347	+367	+396	+445	+525	+635
To	280	+218	+218	+218	+218	+218	+315	+315	+315	+315	+315	+315	+315
Above	280	+263	+272	+292	+321	+370	+373	+382	+402	+431	+480	+560	+670
To	315	+240	+240	+240	+240	+240	+350	+350	+350	+350	+350	+350	+350
Above	315	+293	+304	+325	+357	+408	+415	+426	+447	+479	+530	+620	+750
To	355	+268	+268	+268	+268	+268	+390	+390	+390	+390	+390	+390	+390
Above	355	+319	+330	+351	+383	+434	+460	+471	+492	+524	+575	+665	+795
To	400	+294	+294	+294	+294	+294	+435	+435	+435	+435	+435	+435	+435
Above	400	+357	+370	+393	+427	+485	+517	+530	+553	+587	+645	+740	+890
To	450	+330	+330	+330	+330	+330	+490	+590	+490	+490	+490	+490	+490
Above	450	+387	+400	+423	+457	+515	+567	+580	+603	+637	+695	+790	+940
To	500	+360	+360	+360	+360	+360	+540	+540	+540	+540	+540	+540	+540

Dimensions in μm

Nominal size in mm

Designation		z						za					
		6	7	8	9	10	11	6	7	8	9	10	11
To	3	+32 +26	+36 +26	+40 +26	+51 +26	+66 +26	-	+38 +32	+42 +32	-	-	-	-
Above	3	+43	+47	+53	+65	+83	-	+50	+54	-	-	-	-
To	6	+35	+35	+35	+35	+35		+42	+42				
Above	6	+51	+57	+64	+78	+100	-	+61	+67	+74	-	-	-
To	10	+42	+42	+42	+42	+42		+52	+52	+52			
Above	10	+61	+68	+77	+93	+120	-	+75	+82	+91	-	-	-
To	14	+50	+50	+50	+50	+50		+64	+64	+64			
Above	14	+71	+78	+87	+103	+130	-	+88	+95	+104	-	-	-
To	18	+60	+60	+60	+60	+60		+77	+77	+77			
Above	18	+86	+94	+106	+125	+157	-	-	+119	+131	+150	-	-
To	24	+73	+73	+73	+73	+73			+98	+98	+98		
Above	24	+101	+109	+121	+140	+172	+218	-	+139	+151	+170	-	-
To	30	+88	+88	+88	+88	+88	+88		+118	+118	+118		
Above	30	+128	+137	+151	+174	+212	+272	-	+173	+187	+210	-	-
To	40	+112	+112	+112	+112	+112	+112		+148	+148	+148		
Above	40	-	+161	+175	+198	+236	+296	-	-	+219	+242	+280	-
To	50		+136	+136	+136	+136	+136			+180	+180	+180	
Above	50	-	+202	+218	+246	+292	+362	-	-	+272	+300	+346	-
To	65		+172	+172	+172	+172	+172			+226	+226	+226	
Above	65	-	-	+256	+284	+330	+400	-	-	+320	+348	+394	-
To	80			+210	+210	+210	+210			+274	+274	+274	
Above	80	-	-	+312	+345	+398	+478	-	-	+389	+422	+475	-
To	100			+258	+258	+258	+258			+335	+335	+335	
Above	100	-	-	+364	+397	+450	+530	-	-	-	+487	+540	+620
To	120			+310	+310	+310	+310				+400	+400	+400
Above	120	-	-	+428	+465	+525	+615	-	-	-	+570	+630	+720
To	140			+365	+365	+365	+365				+470	+470	+470
Above	140	-	-	+478	+515	+575	+665	-	-	-	+635	+695	+785
To	160			+415	+415	+415	+415				+535	+535	+535
Above	160	-	-	-	+565	+625	+715	-	-	-	-	+760	+850
To	180				+465	+465	+465					+600	+600
Above	180	-	-	-	+635	+705	+810	-	-	-	-	+855	+960
To	200				+520	+520	+520					+670	+670
Above	200	-	-	-	+690	+760	+865	-	-	-	-	+925	+1030
To	225				+575	+575	+575					+740	+740
Above	225	-	-	-	-	+825	+930	-	-	-	-	+1005	+1110
To	250					+640	+640					+820	+820
Above	250	-	-	-	-	+920	+1030	-	-	-	-	+1130	+1240
To	280					+710	+710					+920	+920
Above	280	-	-	-	-	+1000	+1110	-	-	-	-	+1210	+1320
To	315					+790	+790					+1000	+1000
Above	315	-	-	-	-	+1130	+1260	-	-	-	-	+1380	+1510
To	355					+900	+900					+1150	+1150
Above	355	-	-	-	-	+1230	+1360	-	-	-	-	-	+1660
To	400					+1000	+1000						+1300
Above	400	-	-	-	-	+1350	+1500	-	-	-	-	-	+1850
To	450					+1100	+1100						+1450
Above	450	-	-	-	-	+1500	+1650	-	-	-	-	-	+2000
To	500					+1250	+1250						+1650

Dimensions in μm

Nominal size in mm

Designation		v											y	
		5	6	7	8	5	6	7	8	9	10	11	6	7
To	3	-	-	-	-	+24 +20	+26 +20	+30 +20	+34 +20	+45 +20	-	-	-	-
Above	3	-	-	-	-	+33	+36	+40	+46	+58	-	-	-	-
To	6					+28	+28	+28	+28	+28				
Above	6	-	-	-	-	+40	+43	+49	+56	+70	-	-	-	-
To	10					+34	+34	+34	+34	+34				
Above	10	-	-	-	-	+48	+51	+58	+67	+83	-	-	-	-
To	14					+40	+40	+40	+40	+40				
Above	14	+47	+50	+57	+66	+53	+56	+63	+72	+88	+115	-	-	-
To	18	+39	+39	+39	+39	+45	+45	+45	+45	+45	+45			
Above	18	+56	+60	+68	-	+63	+67	+75	+87	+106	+138	-	+76	+84
To	24	+47	+47	+47		+54	+54	+54	+54	+54	+54		+63	+63
Above	24	+64	+68	+76	-	+73	+77	+85	+97	+116	+148	-	+88	+96
To	30	+55	+55	+55		+64	+64	+64	+64	+64	+64		+75	+75
Above	30	+79	+84	+93	-	+91	+96	+105	+119	+142	+180	-	+110	+119
To	40	+68	+68	+68		+80	+80	+80	+80	+80	+80		+94	+94
Above	40	+92	+97	+106	-	+108	+113	+122	+136	+159	+197	-	+130	+139
To	50	+81	+81	+81		+97	+97	+97	+97	+97	+97		+114	+114
Above	50	+115	+121	+132	-	+135	+141	+152	+168	+196	+242	+312	+163	+174
To	65	+102	+102	+102		+122	+122	+122	+122	+122	+122	+122	+144	+144
Above	65	+133	+139	+150	-	+159	-	+176	+192	+220	+266	+336	+193	+204
To	80	+120	+120	+120		+146		+146	+146	+146	+146	+146	+174	+174
Above	80	+161	+168	+181	-	+193	-	+213	+232	+265	+318	+398	+236	+249
To	100	+146	+146	+146		+178		+178	+178	+178	+178	+178	+214	+214
Above	100	+187	+194	+207	-	+225	-	+245	+264	+297	+350	+430	+276	+289
To	120	+172	+172	+172		+210		+210	+210	+210	+210	+210	+254	+254
Above	120	+220	+227	+242	-	+266	-	+288	+311	+348	+408	+498	+325	+340
To	140	+202	+202	+202		+248		+248	+248	+248	+248	+248	+300	+300
Above	140	+246	+253	+268	-	+298	-	+320	+343	+380	+440	+530	+365	+380
To	160	+228	+228	+228		+280		+280	+280	+280	+280	+280	+340	+340
Above	160	+270	+277	+292	-	+328	-	-	+373	+410	+470	+560	+405	+420
To	180	+252	+252	+252		+310			+310	+310	+310	+310	+380	+380
Above	180	+304	+313	+330	-	+370	-	-	+422	+465	+535	+640	+454	+471
To	200	+284	+284	+384		+350			+350	+350	+350	+350	+425	+425
Above	200	+330	+339	+356	-	+405	-	-	+457	+500	+570	+675	+499	+516
To	225	+310	+310	+310		+385			+385	+385	+385	+385	+470	+470
Above	225	+360	+369	+386	-	+445	-	-	+497	+540	+610	+715	+549	+566
To	250	+340	+340	+340		+425			+425	+425	+425	+425	+520	+520
Above	250	+408	+417	+437	-	+498	-	-	+556	+605	+685	+795	+612	+632
To	280	+385	+385	+385		+475			+475	+475	+475	+475	+580	+580
Above	280	+448	+457	+477	-	+548	-	-	+606	+655	+735	+845	+682	+702
To	315	+425	+425	+425		+525			+525	+525	+525	+525	+650	+650
Above	315	+500	+511	+532	-	+615	-	-	+679	+730	+820	+950	+766	+787
To	355	+475	+475	+475		+690			+590	+590	+590	+590	+730	+730
Above	355	+555	+566	+587	-	+685	-	-	-	+800	+890	+1020	+856	+877
To	400	+530	+530	+530		+660				+660	+660	+660	+820	+820
Above	400	+622	+635	+658	-	+767	-	-	-	+895	+990	+1140	+960	+983
To	450	+595	+595	+595		+740				+740	+740	+740	+920	+920
Above	450	+687	+700	+723	-	+847	-	-	-	+975	+1070	+1220	+1040	+1063
To	500	+660	+660	+660		+820				+820	+820	+820	+1000	+1000

Dimensions in μm

Nominal size in mm

Designation		zb					zc				
		7	8	9	10	11	7	8	9	10	11
To	3	+50 +40	+54 +40	+65 +40	-	-	+70 +60	+74 +60	+85 +60	-	+120 +60
Above	3	+62	+68	+80	-	-	+92	+98	+110	+128	+155
To	6	+50	+50	+50			+80	+80	+80	+80	+80
Above	6	+82	+89	+103	+125	+157	+112	+119	+133	+155	+187
To	10	+67	+67	+67	+67	+67	+97	+97	+97	+97	+97
Above	10	+108	+117	+133	+160	+200	-	+157	+173	+200	+240
To	14	+90	+90	+90	+90	+90		+130	+130	+130	+130
Above	14	+126	+135	+151	+178	+218	-	+177	+193	+220	+260
To	18	+108	+108	+108	+108	+108		+150	+150	+150	+150
Above	18	+157	+169	+188	+220	+266	-	+221	+240	+272	+318
To	24	+136	+136	+136	+136	+136		+188	+188	+188	+188
Above	24	-	+193	+212	+244	+290	-	+251	+270	+302	+348
To	30		+160	+160	+160	+160		+218	+218	+218	+218
Above	30	-	+239	+262	+300	+360	-	-	+336	+374	+434
To	40		+200	+200	+200	+200			+274	+274	+274
Above	40	-	+281	+304	+342	+402	-	-	+387	+425	+485
To	50		+242	+242	+242	+242			+325	+325	+325
Above	50	-	+346	+374	+420	+490	-	-	+479	+525	+595
To	65		+300	+300	+300	+300			+405	+405	+405
Above	65	-	-	+434	+480	+550	-	-	-	+600	+670
To	80			+360	+360	+360				+480	+480
Above	80	-	-	+532	+585	+665	-	-	-	+725	+805
To	100			+445	+445	+445				+585	+585
Above	100	-	-	-	+665	+745	-	-	-	+830	+910
To	120				+525	+525				+690	+690
Above	120	-	-	-	+780	+870	-	-	-	+960	+1050
To	140				+620	+620				+800	+800
Above	140	-	-	-	+860	+950	-	-	-	-	+1150
To	160				+700	+700					+900
Above	160	-	-	-	+940	+1030	-	-	-	-	+1250
To	180				+780	+780					+1000
Above	180	-	-	-	+1065	+1170	-	-	-	-	+1440
To	200				+880	+880					+1150
Above	200	-	-	-	-	+1250	-	-	-	-	+1540
To	225					+960					+1250
Above	225	-	-	-	-	+1340	-	-	-	-	+1640
To	250					+1050					+1350
Above	250	-	-	-	-	+1520	-	-	-	-	+1870
To	280					+1200					+1550
Above	280	-	-	-	-	+1620	-	-	-	-	+2020
To	315					+1300					+1700
Above	315	-	-	-	-	+1860	-	-	-	-	+2260
To	355					+1500					+1900
Above	355	-	-	-	-	+2010	-	-	-	-	+2460
To	400					+1650					+2100
Above	400	-	-	-	-	+2250	-	-	-	-	+2800
To	450					+1850					+2400
Above	450	-	-	-	-	+2450	-	-	-	-	+3000
To	500					+2050					+2600

RECOMMENDED CUTTING CONDITIONS FOR HSS DRILLS - UNCOATED

Materials	Tensile strength N/mm²	Material number	Din description	Coolant	VC min	VC start	VC max	Ø2 f	Ø2 v	Ø5 f	Ø5 v	Ø8 f	Ø8 v	Ø12 f	Ø12 v	Ø16 f	Ø16 v
Structural steels	< 500	1.0037	St 37-2	E	30	**40**	50	0.05	318	0.12	306	0..20	318	0.25	265	0.30	239
	500-850	1.0050, 1.0060	St 50-2, St 60-2	E	25	**30**	35	0.05	239	0.12	229	0..20	239	0.25	199	0.30	179
Free cutting steels	< 850	1.0711, 1.0718, 1.0726	9S 20, 9 S MnPb 28, 35 S 20	E	25	**30**	35	0.05	239	0.12	229	0..20	239	0.25	199	0.30	179
	850-1000	1.0728	60 S 20	E	20	**25**	30	0.03	119	0.07	111	0.10	99	0.16	106	0.20	99
Unalloyed heat treatable steels	< 700	1.0402, 1.0501, 1.1180	C 22, C 35, Ck 35	E	25	**30**	35	0.03	143	0.07	134	0.10	119	0.16	127	0.20	119
	700-850	1.0503, 1.1191	C 45, Ck 45	E	20	**25**	30	0.03	119	0.07	111	0.10	99	0.16	106	0.20	99
	850-1000	1.1167, 1.1221	36 Mn 5, Ck 60	E/O	20	**22**	25	0.02	84	0.06	84	0.09	79	0.14	82	0.18	79
Alloyed heat treatable steels	850-1000	1.7003, 1.7030	38 Cr2, 28Cr 4	E/O	15	**17**	20	0.02	54	0.05	54	0.08	543	0.12	54	0.14	47
	1000-1200	1.7218, 16582, 1.7225	25 CrMo 4, 34 CrNiMo 6, 42 CrMo 4	E/O	8	**10**	12	0.02	32	0.05	32	0.08	2	0.12	32	0.14	28
Unalloyed case hardening steels	< 750	1.0401, 1.1141	C 15, Ck15	E/O	25	**30**	35	0.03	143	0.07	134	0.10	119	0.16	127	0.20	119
Alloyed case hardening steels	< 1000	1.5919, 1.7012, 1.7131	15 CrNi 6, 13Cr 2, 16 MnCr 5	O	15	**18**	20	0.02	57	0.05	57	0.08	57	0.12	57	0.14	50
	1000-1200	1.7147, 1.7262	20 MnCr 5, 15 CrMo 5	O	8	**10**	12	0.02	32	0.05	32	0.08	32	0.12	32	0.14	28
Nitriding steels	< 1000	1.8507, 1.8504, 1.8506	34 CrAlMo 5, 34 CrAl 6, 34 CrAlS 5	E/O	10	**13**	15	0.02	41	0.05	41	0.08	41	0.12	41	0.14	36
	1000-1200	1.8519	31 CrMoV 9	E/O	8	**10**	12	0.02	32	0.05	32	0.08	32	0.12	32	0.14	28
Tool steels	< 850	1.1730, 1.2067	C 45 W, 100 Cr 6	E/O	10	**13**	15	0.02	41	0.05	41	0.08	41	0.12	41	0.14	36
	850-1100	1.2312, 1.2316, 1.2363	40 CrMnMoS 8-6, X 36 CrMo 17, x 100 CrMoV 51X 210	E/O	8	**10**	12	0.02	32	0.05	32	0.08	32	0.12	32	0.14	28
	1100-1400	1.2080, 1.2344, 1.2379	Cr 12, X 40 CrMoV 51, X 155 CrVMo 12 1	E/O	6	**8**	10	0.02	25	0.05	25	0.08	25	0.12	25	0.14	22
High speed steels	850-1200	1.3255, 1.3265, 1.3243	S 18-1-2-5, S 18-1-2-10, S 6-5-2	E/O	6	**8**	10	0.02	25	0.05	25	0.08	25	0.12	25	0.14	22
Wear resisting structural steels	1350		Hardox 400	E	8	**9**	10					0.08	29	0.12	29	0.15	27
Spring steels	< 1200	1.5023, 1.7176, 1.8159	38 Si 7, 55 Cr 3, 50 CrV 4	E/O	5	**8**	10	0.02	25	0.05	25	0.08	25	0.12	25	0.14	22
Stainless steels, sulphuretted	< 700	1.4104, 1.4305	X 14 CrMoS 17, X 8 CrNiS 18-9	E	10	**15**	20	0.02	48	0.05	48	0.08	48	0.12	48	0.14	42
Stainless steels, austenitic	< 700	1.4000, 1.4417, 1.4845	X 6 Cr 13, X 2 CrNiMoSi 19 53, X 12 CrNi 25-21	E	10	**15**	20	0.02	48	0.05	48	0.08	48	0.12	48	0.14	42
Stainless steels, martensitic	< 850	1.4005, 1.4021, 1.4371	X 12 CrS 12, X 20 Cr 13, X 12 CrMnNi 18 8 5	E	8	**12**	15	0.02	38	0.05	38	0.08	38	0.12	38	0.14	33
Special alloys	< 1100	1.4057, 1.4310, 2.4632	X 17 CrNi 16-2, X 12 CrNi 177, NiCr 20 Co 18 Ti	E	6	**8**	10	0.02	25	0.05	25	0.08	25	0.12	25	0.14	22
Grey cast iron	< 1200	2.4634, 2.4602, 2.4668	Nimonic 105, Hastelloy C22, Inconell 718	O	3	**5.5**	8	0.02	18	0.05	18	0.08	18	0.12	18	0.14	15
Spheroidal graphite, malleable cast iron	< 180HB	0.6015, 0.6020	GG 15, GG 20	T/A	20	**25**	30	0.05	199	0.12	191	0..20	199	0.25	166	0.30	149
	> 180HB	0.6025, 0.6030, 0.6040	GG 25, GG 30, GG40	T/A	20	**25**	30	0.04	159	0.10	159	0.16	159	0.20	133	0.25	124
	> 180HB	0.7040, 0.7060, 0.8040	GGG-40, GGG-60, GTW-40	E	25	**30**	35	0.05	239	0.12	229	0.20	239	0.25	199	0.30	179
Titanium, Titanium alloys	< 260HB	0.7080, 0.8165	GGG-80, GTS-65	E	18	**20**	22	0.04	127	0.10	127	0.16	127	0.20	106	0.25	99
Aluminium, Al-alloys	< 850	3.7025, 3.7124, 3.7114	Ti 1, TiCu 2, TiAl 5 Sn 2,5	O	3	**5.5**	8	0.02	18	0.05	18	0.08	18	0.12	18	0.14	15
Aluminium, Al-cast <10% Si alloys	< 530	3.3561, 3.3535, 3.3527	G-AlMg 5, AlMg 3, AlMg 2 Mn 0,8	E	40	**70**	100	0.05	557	0.14	624	0.18	501	0.22	408	0.30	418
Magnesium, Mg-alloys	< 600	3.2151, 3.2341, 3.2381.01	G-AlSi 6 Cu 4, G-AlSi5 Mg, G-AlSi 10 Mg	E	30	**45**	60	0.05	358	0.14	401	0.18	322	0.22	263	0.30	269
Copper, low alloyed	< 280	3.5314, 3.5200, 3.5812	MgAl 3 Zn, MgMn 2, MgAl 8 Zn	E	40	**70**	100	0.05	557	0.14	624	0.18	501	0.22	408	0.30	418
Brass, short chipping	< 350	2.0070, 2.1020	SE-Cu, CuSn 6	E/O	35	**50**	65	0.05	398	0.14	446	0.18	358	0.22	292	0.30	298
Brass, long chipping	< 600	2.0380, 2.0401	CuZn 39 Pb 2, CuZn 39 Pb 3,	T/E/O	60	**80**	100	0.08	1019	0.18	917	0.25	796	0.30	637	0.35	557
Bronze, short chipping	< 600	2.0250, 2.0280, 2.0332	CuZn 20, CuZn 33, CuZn 37 Pb 0,5	E/O	35	**45**	60	0.05	358	0.15	430	0.40	716	0.25	298	0.35	313
Bronze, long chipping	< 600	2.1090, 2.1170,	G-CuSn 7 Zn, G-CuPb 5 Sn	E/O	25	**40**	50	0.05	318	0.08	204	0.14	223	0.20	212	0.25	199
	650-850	2.0790	CuNi 18 Zn 19 Pb 1	E/O	25	**40**	50	0.05	318	0.08	204	0.14	223	0.20	212	0.25	199
	< 850	2.0916, 2.0960	CuAl 5, CuAl 9 Mn 2	E/O	15	**23**	35	0.05	183	0.08	117	0.14	128	0.20	122	0.25	114
	850-1200	2.1247	CuBe 2	E/O	15	**23**	35	0.05	183	0.08	117	0.14	128	0.20			

RECOMMENDED CUTTING CONDITIONS FOR HSS DRILLS - COATED

Materials	Tensile strength N/mm²	Material number	Din description	Coolant	VC min	VC start	VC max	Ø2 f	Ø2 v	Ø5 f	Ø5 v	Ø8 f	Ø8 v	Ø12 f	Ø12 v	Ø16 f	Ø16 v
Structural steels	< 500	1.0037	St 37-2	E	38	**50**	63	0.05	430	0.13	414	0.22	430	0.27	358	0.32	322
	500-850	1.0050, 1.0060	St 50-2, St 60-2	E	31	**37**	44	0.05	318	0.13	306	0.22	318	0.27	265	0.32	238
Free cutting steels	< 850	1.0711, 1.0718, 1.0726	9S 20, 9 S MnPb 28, 35 S 20	E	31	**37**	44	0.05	318	0.13	306	0.22	318	0.27	265	0.32	238
	850-1000	1.0728	60 S 20	E	25	**31**	38	0.03	158	0.08	150	0.11	133	0.17	141	0.22	133
Unalloyed heat treatable steels	< 700	1.0402, 1.0501, 1.1180	C 22, C 35, Ck 35	E	31	**37**	44	0.03	188	0.08	179	0.11	159	0.17	169	0.22	159
	700-850	1.0503, 1.1191	C 45, Ck 45	E	25	**31**	38	0.03	158	0.08	150	0.11	133	0.17	141	0.22	133
	850-1000	1.1167, 1.1221	36 Mn 5, Ck 60	E/O	25	**27**	31	0.02	112	0.06	110	0.10	105	0.15	109	0.19	104
Alloyed heat treatable steels	850-1000	1.7003, 1.7030	38 Cr2, 28Cr 4	E/O	19	**21**	25	0.02	74	0.05	72	0.09	72	0.13	72	0.15	64
	1000-1200	1.7218, 16582, 1.7225	25 CrMo 4, 34 CrNiMo 6, 42 CrMo 4	E/O	10	**12**	15	0.02	42	0.05	41	0.09	41	0.13	41	0.15	36
Unalloyed case hardening steels	< 750	1.0401, 1.1141	C 15, Ck15	E/O	31	**37**	44	0.03	188	0.08	179	0.11	159	0.17	169	0.22	159
Alloyed case hardening steels	< 1000	1.5919, 1.7012, 1.7131	15 CrNi 6, 13Cr 2, 16 MnCr 5	O	19	**22**	25	0.02	77	0.05	76	0.09	75	0.13	76	0.15	67
	1000-1200	1.7147, 1.7262	20 MnCr 5, 15 CrMo 5	O	10	**12**	15	0.02	42	0.05	41	0.09	41	0.13	41	0.15	36
Nitriding steels	< 1000	1.8507, 1.8504, 1.8506	34 CrAlMo 5, 34 CrAl 6, 34 CrAlS 5	E/O	13	**16**	19	0.02	56	0.05	55	0.09	55	0.13	55	0.15	48
	1000-1200	1.8519	31 CrMoV 9	E/O	10	**12**	15	0.02	42	0.05	41	0.09	41	0.13	41	0.15	36
Tool steels	< 850	1.1730, 1.2067	C 45 W, 100 Cr 6	E/O	13	**16**	19	0.02	56	0.05	55	0.09	55	0.13	55	0.15	48
	850-1100	1.2312, 1.2316, 1.2363	40 CrMnMoS 8-6, X 36 CrMo 17, x 100 CrMoV 51X 210	E/O	10	**12**	15	0.02	42	0.05	41	0.09	41	0.13	41	0.15	36
	1100-1400	1.2080, 1.2344, 1.2379	Cr 12, X 40 CrMoV 51, X 155 CrVMo 12 1	E/O	7.5	**10**	13	0.02	35	0.05	34	0.09	34	0.13	34	0.15	30
High speed steels	850-1200	1.3255, 1.3265, 1.3243	S 18-1-2-5, S 18-1-2-10, S 6-5-2	E/O	7.5	**10**	13	0.02	35	0.05	34	0.09	34	0.13	34	0.15	30
Wear resisting structural steels	1350		Hardox 400	E	10	**11**	13					0.09	38	0.13	38	0.16	35
Spring steels	< 1200	1.5023, 1.7176, 1.8159	38 Si 7, 55 Cr 3, 50 CrV 4	E/O	6	**10**	13	0.02	35	0.05	34	0.09	34	0.13	34	0.15	30
Stainless steels, sulphuretted	< 700	1.4104, 1.4305	X 14 CrMoS 17, X 8 CrNiS 18-9	E	13	**19**	25	0.02	67	0.05	65	0.09	65	0.13	66	0.15	57
Stainless steels, austenitic	< 700	1.4000, 1.4417, 1.4845	X 6 Cr 13, X 2 CrNiMoSi 19 53, X 12 CrNi 25-21	E	13	**19**	25	0.02	67	0.05	65	0.09	65	0.13	66	0.15	57
Stainless steels, martensitic	< 850	1.4005, 1.4021, 1.4371	X 12 CrS 12, X 20 Cr 13, X 12 CrMnNi 18 8 5	E	10	**15**	19	0.02	53	0.05	52	0.09	51	0.13	52	0.15	45
Special alloys	< 1100	1.4057, 1.4310, 2.4632	X 17 CrNi 16-2, X 12 CrNi 177, NiCr 20 Co 18 Ti	E	7.5	**10**	13	0.02	35	0.05	34	0.09	34	0.13	34	0.15	30
Grey cast iron	< 1200	2.4634, 2.4602, 2.4668	Nimonic 105, Hastelloy C22, Inconell 718	O	3.5	**7**	10	0.02	25	0.05	24	0.09	24	0.13	24	0.15	21
	< 180HB	0.6015, 0.6020	GG 15, GG 20	T/A	25	**31**	38	0.05	266	0.13	257	0.22	266	0.27	222	0.32	200
Spheroidal graphite, malleable cast iron	> 180HB	0.6025, 0.6030, 0.6040	GG 25, GG 30, GG40	T/A	25	**31**	38	0.04	217	0.11	213	0.17	212	0.22	178	0.27	167
	> 180HB	0.7040, 0.7060, 0.8040	GGG-40, GGG-60, GTW-40	E	31	**37**	44	0.05	318	0.13	306	0.22	318	0.27	265	0.32	238
Titanium, Titanium alloys	< 260HB	0.7080, 0.8165	GGG-80, GTS-65	E	23	**25**	28	0.04	175	0.11	172	0.17	171	0.22	143	0.27	134
Aluminium, Al-alloys	< 850	3.7025, 3.7124, 3.7114	Ti 1, TiCu 2, TiAl 5 Sn 2,5	O	3.5	**7**	10	0.02	25	0.05	24	0.09	24	0.13	24	0.15	21
Aluminium, Al-cast <10% Si alloys	< 530	3.3561, 3.3535, 3.3527	G-AlMg 5, AlMg 3, AlMg 2 Mn 0,8	E	50	**87**	125	0.05	748	0.15	842	0.19	672	0.24	549	0.32	561
Magnesium, Mg-alloys	< 600	3.2151, 3.2341, 3.2381.01	G-AlSi 6 Cu 4, G-AlSi5 Mg, G-AlSi 10 Mg	E	38	**56**	75	0.05	481	0.15	542	0.19	432	0.24	354	0.32	361
Copper, low alloyed	< 280	3.5314, 3.5200, 3.5812	MgAl 3 Zn, MgMn 2, MgAl 8 Zn	E	50	**87**	125	0.05	748	0.15	842	0.19	672	0.24	549	0.32	561
Brass, short chipping	< 350	2.0070, 2.1020	SE-Cu, CuSn 6	E/O	44	**62**	81	0.05	533	0.15	600	0.19	479	0.24	391	0.32	400
Brass, long chipping	< 600	2.0380, 2.0401	CuZn 39 Pb 2, CuZn 39 Pb 3,	T/E/O	75	**100**	125	0.08	1369	0.19	1235	0.27	1074	0.32	859	0.38	752
Bronze, short chipping	< 600	2.0250, 2.0280, 2.0332	CuZn 20, CuZn 33, CuZn 37 Pb 0,5	E/O	44	**56**	75	0.05	481	0.16	578	0.22	481	0.27	401	0.38	421
	< 600	2.1090, 2.1170,	G-CuSn 7 Zn, G-CuPb 5 Sn	E/O	31	**50**	63	0.05	430	0.09	274	0.15	302	0.22	286	0.27	269
Bronze, long chipping	650-850	2.0790	CuNi 18 Zn 19 Pb 1	E/O	31	**50**	63	0.05	430	0.09	274	0.15	302	0.22	286	0.27	269
	< 850	2.0916, 2.0960	CuAl 5, CuAl 9 Mn 2	E/O	19	**29**	44	0.05	249	0.09	159	0.15	175	0.22	166	0.27	156
	850-1200	2.1247	CuBe 2	E/O	19	**29**	44	0.05	249	0.09	159	0.15	175	0.22	166	0.27	156

SPEEDS AND FEEDS FOR CARBIDE DRILLS

Solid carbide and carbide tipped drills can achieve far higher speeds than HSS because they are harder and the can absorb more heat than can HSS drills.

material ferrous metals	tensile strength σ_B[N/mm2] hardness [HB, HRC]	grade	bore diameter d [mm]	feed/ revolution Sn (mm/rev)	speed v [m/min]	coolant
cast iron	upto 250 [HB]	K 10 K 20	3 - 8 8 - 20 20 - 40	0,04 - 0,08 0.08 - 0,16 0,16 - 0,35	40 - 60 50 - 70 60 - 80	dry
alloyed castiron	250-350 [HB]	K 10 K 20	3 - 8 8 - 20 20 - 40	0,02 - 0,04 0,03 - 0,08 0,08 - 0,16	20 - 40 25 - 50 30 - 60	dry
	360 - 450 [HB]	K 10 K 20	3 - 8 8 - 20 20 - 40	0,02 - 0,04 0,03 - 0,06 0,05 - 0,1	8 - 20 10 - 25 12 - 30	dry
chilled cast iron	480 - 650 [HB]	K 10 K20	3 - 8 8 - 20 20 - 40	0,01- 0,03 0,02 - 0,04 0,03 - 0,06	5 - 8 6 - 10 8 - 12	dry
spherolitic cast iron malleable cast iron	upto270 [HB]	K 10 K 20	3 - 8 8 - 20 20 - 40	0,03 - 0,05 0,05 - 0,10 0,10 - 0,20	40 - 45 45 - 50 50 - 60	dry
cast steel	up to 500 [N/mm2]	P 25	3 - 8 8 - 20 20 - 40	0,04 - 0,08 0,08 - 0,16 0,16 - 0,25	40 - 48 46 - 54 52 - 60	emulsion
	500 - 700 [N/mm2]	P 25	3 - 8 8 - 20 20 - 40	0,03 - 0,06 0,06 - 0,14 0,14 - 0,20	32 - 40 38 - 46 44 - 50	emulsion
	over 700 [N/mm2]	K 20	3 - 8 8 - 20 20 - 40	0,02 - 0,05 0,05 - 0,12 0,12 - 0,18	25 - 32 30 - 38 35 - 40	emulsion
structural steels (general-purpose con- structional steel, heat treatable steel, case hardened steel, free cutting steel nitride steel)	upto 1400 [N/mm2]	P25	3 - 8 8 - 20 20 - 40	0,03 -0,06 0,06 - 0,14 0,14 - 0,20	40 - 47 45 - 54 52 - 60	emulsion cutting oil
tool steels	850 -1 000 [N/mm2]	P 25	3 - 8 8 - 20 20 - 40	0,02 - 0,05 0,05 - 0,12 0,12 - 0,18	40 - 50 45 - 55 50 - 60	emulsion cutting oil
	1 000 -1 400 [N/mm2]	P 25	3 - 8 8 - 20 20 - 40	0,02 - 0,03 0,03 - 0,06 0,06 - 0,10	25 - 30 27 - 32 30 - 35	emulsion
	1 400 -1 800 [N/mm2]	K 10 K 20	3 - 8 8 - 20 20 - 40	0,01- 0,02 0,02 - 0,04 0,04 - 0,06	20 - 22 22 - 24 23 - 25	emulsion
	1 800 - 2000 [N/mm2]	K 1 0 K 20	3 - 8 8 - 20	0,01 - 0,02 0,02 - 0,03	8 - 10 10 - 12	emulsion
special steels (heat-resistant steel, high-temperature steel, stainless steel, chemi- cal resistant steel		K 10 K 20 20 - 40	3 - 8 8 - 20 0,10 - 0,15	0,03 - 0,06 0,06 - 0,10 27 - 30	20 - 25 23 - 27	emulsion
copper		K 10 K 20	3 - 8 8 - 20 20 - 40	0,04 - 0,08 0,08 - 0,20 0,20 - 0,30	70 - 80 80 - 90 90 - 100	dry
brass, bronze, zinc, red brass		K 10 K 20	3 - 8 8 - 20 20 - 40	0,06 - 0,10 0,10 - 0,20 0,20 - 0,30	80 - 100 90 - 110 100 -120	dry
high-temperature ma- terials (Cr-Ni-basic, Cr-Ni-Co-basic)		K 10 K 20	3 - 8 8 - 20	0,01 - 0,02 0,02 - 0,03	15 - 20 20 - 25	cutting oil
aluminium alloys (Si-content < 12%) magnesium alloys		K 10 K 20 20 - 40	3 - 8 8 - 20 0,1 8 - 0,25	0,06 - 0,10 0,10 - 0,18 120 - 140	100 - 120 110 - 130	emulsion petroleum

material ferrous metals	tensil strength σB[N/mm2] hardness [HB, HRC]	grade	bore diameter d [mm]	feed/ revolution Sn (mm/rev)	speed v [m/min]	coolant
aluminium alloys (Si-content > 12%)		K 10 K 20	3 - 8 8 - 20 20 - 40	0.03 - 0,06 0,06 - 0,08 0,08 - 0,12	50 - 60 55 - 70 60 - 80	emulsion petroleum
titanium, titanium alloys		K 10 K 20	3 - 8 8 - 20 20 - 40	0,02 - 0,03 0,02 - 0,04 0,03 - 0,04	60 - 75 70 - 85 75 - 90	emulsion cutting oil
laminated paper		K 10	3 - 8 8 - 20 20 - 40	0,04 - 0,08 0,08 - 0,16 0,16 - 0,28	60 - 100 80 - 120 100 - 140	dry
thermoplastics		K 10	3 - 8 8 - 20 20 - 40	0,03 - 0,06 0,06 - 0,16 0,16 - 0,24	80 - 100 100 - 120 120 - 150	dry
duroplastics		K 10	3 - 8 8 - 20 20 - 40	0,03 - 0,12 0,12 - 0,25 0,25 - 0,40	80 - 100 90 - 110 100 - 120	dry
glass-fiber reinforced epoxy-resin		K 10	0,3 - 0,5 0,6 - 1,5 1,6 - 3,0	0,02 - 0,05 0,06 - 0,15 0,16 - 0,20	70 - 150	dry
glass		K 05 K 10	3 - 8	0,02 - 0,03	8 - 1 2	turpentine petroleum water

Yes DRILLS

RECOMMENDED CUTTING DATA

Feeds and speeds for starting point only. It is recommended to use these values as a starting point until optimal results are obtained

YTDI Indexable Drills, Metric

Drill Dia. / Condition / Material Group	8~16mm		16~25mm		25~32mm		32~40mm		40~50mm	
	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)
Grey cast iron (FC)	50~70	0.20~0.30	50~70	0.25~0.45	50~80	0.35~0.55	60~90	0.34~0.58	80~100	0.38~0.60
Nodular cast iron (FCD)	40~65	0.15~0.25	40~65	0.22~0.45	45~75	0.32~0.52	50~80	0.35~0.62	70~100	0.38~0.60
Carbon steel (S45C)	55~70	0.15~0.30	55~70	0.16~0.40	60~85	0.20~0.40	70~90	0.22~0.48	75~95	0.25~0.54
Alloy steel (SCM440)	50~75	0.15~0.30	50~75	0.15~0.40	55~80	0.18~0.40	60~90	0.25~0.47	65~95	0.27~0.52
Hardened steel (SKD11)	40~50	0.10~0.20	40~50	0.12~0.28	40~50	0.16~0.35	40~60	0.20~0.38	40~60	0.22~0.42
Stainless steel (SUS)	30~40	0.10~0.20	35~50	0.10~0.22	35~50	0.15~0.28	40~55	0.18~0.30	40~55	0.22~0.32
Aluminum 130HB (AL)	80~100	0.20~0.30	80~100	0.25~0.40	90~110	0.30~0.45	90~110	0.30~0.45	90~120	0.30~0.50

YSD Solid carbide Drills

Drill Dia. / Condition / Material Group	3~5mm		5~8mm		8~10mm		10~12mm		12~14mm		14~20mm	
	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)	Speed (m/min)	Feed (mm/rev)
Grey cast iron (FC)	80~85	0.1~0.25	80~90	0.2~0.3	85~95	0.2~0.3	90~95	0.2~0.4	90~100	0.2~0.4	95~100	0.2~0.5
Nodular cast iron FCD)	80~85	0.1~0.25	80~85	0.2~0.3	80~85	0.2~0.3	80~90	0.2~0.4	80~90	0.2~0.4	80~90	0.2~0.5
Carbon steel (S45C)	60~65	0.1~0.2	65~70	0.15~0.25	70~75	0.15~0.25	70~80	0.2~0.3	70~80	0.25~0.3	75~80	0.3~0.4
Alloy steel (SCM440)	50~55	0.1~0.25	55~60	0.15~0.25	60~65	0.15~0.25	60~70	0.2~0.35	65~70	0.25~0.35	65~70	0.3~0.45
Hardened steel (SKD11)	25~30	0.06~0.12	25~30	0.1~0.15	30~35	0.1~0.15	30~35	0.1~0.25	30~35	0.1~0.25	30~35	0.1~0.25
Stainless steel (SUS)	20~25	0.05~0.1	20~25	0.1~0.15	25~30	0.1~0.15	25~30	0.1~0.25	25~30	0.1~0.25	25~30	0.1~0.25

NOTE
- Yes Carbide drill are not recommended for use on low powered equipment.
- Check spindle, machine and fixture rigidity before operation.
- Ensure accurate alignment between the centre line of the drill and the workpiece when drilling on lathe.
- Use copious cutting fluids.

SPEEDS AND FEEDS FOR REAMING WITH H.S.S. REAMERS

V = Surface speed in metres per minute. S = Feed in mm per rev.

Material		Diameter to Reamer 5	8	10	15	20	25	30	40	50
Mild steel up to 95 HRb or 700 N/mm²	v					8-10				
	s	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4
Steel up to 26 HRc	v					6-8				
	s	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4
Steel up to 34 HRc	v				4-6					
	s	0.08	0.1	0.1	0.15	0.2	0.25	0.3	0.35	0.4
Cast Steel up to 31 HRb or 500 N/mm²	v					6-10				
	s	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4
Cast Steel up to 95 HRb or 700 N/mm²	v					4-6				
	s	0.07	0.08	0.1	0.13	0.18	0.18	0.22	0.25	0.3
Cast Iron up to 200 Brinell	v					8-10				
	s	0.18	0.2	0.23	0.25	0.3	0.3	0.35	0.4	0.45
Cast Iron over 200 Brinell	v					4-6				
	s	0.12	0.15	0.17	0.2	0.25	0.25	0.3	0.35	0.4
Malleable Cast iron up to 130 Brinell	v					8-10				
	s	0.18	0.2	0.23	0.25	0.3	0.3	0.35	0.4	0.45
Malleable Cast iron up to 175 Brinell	v					6-8				
	s	0.15	0.18	0.2	0.2	0.25	0.3	0.35	0.4	0.4
Copper	v					8-12				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.45
Brass	v					10-12				
	s	0.2	0.25	0.3	0.35	0.4	0.4	0.45	0.5	0.6
Aluminium Extruded	v					15-20				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.4
Aluminium Cast	v					10-12				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.4

FEEDS AND SPEEDS FOR REAMING WITH CARBIDE REAMERS

Material		Diameter of Reamer 5	8	10	15	20	25	30	40	50
Steel up to 95 HRb or 700 N/mm²	v					10-15				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5
Steel up to 29 HRc	v					8-12				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5
Steel up to 42 HRc	v				6-10					
	s	0.12	0.15	0.15	0.18	0.2	0.2	0.25	0.3	0.4
Cast Steel up to 81 HRb or 500 N/mm²	v					8-12				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5
Cast Steel up to 95 HRb or 700 N/mm²	v					6-10				
	s	0.12	0.15	0.15	0.18	0.2	0.2	0.25	0.3	0.4
Cast Iron up to 200 Brinell	v					8-12			10-15	
	s	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6
Cast Iron over 200 Brinell	v					6-10			8-12	
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5
Malleable Cast iron	v					8-12				
	s	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5
Copper	v					20-30			25-40	
	s	0.3	0.34	0.4	0.45	0.5	0.5	0.55	0.6	0.7
Brass	v					15-25			20-30	
	s	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6
Bronze	v					15-25			20-30	
	s	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6
Aluminium	v					15-25			20-30	
	s	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6

REAMING ALLOWANCES

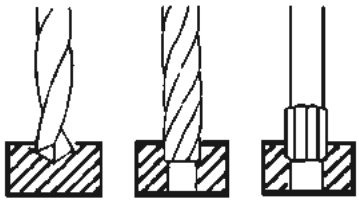
Material	Diameter of Bore in mm 3-5	5.1-10	10.1-20	20.1-30	30.1 and over
Steel up to 700 N/mm²	0.1 - 0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5
Steel up to 34 HRc	0.1 - 0.2	0.2	0.2	0.3	0.3-0.4
Cast Steel	0.1 - 0.2	0.2	0.2	0.2-0.3	0.3-0.4
Cast Iron	0.1 - 0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5
Malleable Cast Iron	0.1 - 0.2	0.2	0.3	0.4	0.5
Copper	0.1 - 0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
Brass/Bronze	0.1 - 0.2	0.2	0.2-0.3	0.3	0.3-0.4
Aluminium	0.1 - 0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5

To operate successfully a reamer must remove enough material. It not enough material is removed, the reamer will only cut on the secondary bevel, causing a rubbing effect which drastically reduces reaming life. On the other hand if too much material is removed, severe strain is placed on the reamer which will In turn produce a poor finish and the reamer life will also be substantially reduced.

CORRECT REAMING SEQUENCE

To obtain H7 tolerance when the length of the bore is no more than three times the diameter of the bore:-

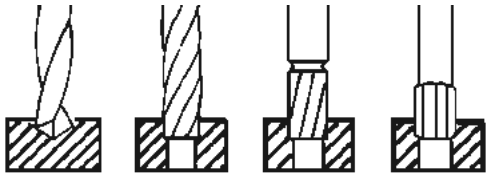
1. Drill with a twist drill.
2. True with a core drill.
3. Ream to finished size.



To obtain H7 tolerance when the length of the bore is longer than three times the diameter of the bore:

1. Drill with a twist drill.
2. True with a core drill.
3. True with an end cutting truing drill or end facing reamer. /
4. Ream to finished size.

Operations 2 and 3 may be dispensed with by boring.



All reamers taper back from the major diameter to create relief and to prevent the reamer from rubbing and binding in the bore. This taper is approx. 0,015 mm on diameter over a length of 100 mm.
DIN 208 MTS machine reamers and DIN 212 SS machine reamers over 10 mm Ø are manufactured as standard with a double bevel of 45° and 22,5°.
DIN 208 and DIN 212 reamers with a 45° quick spiral are manufactured with a simple bevel of 30°.
DIN 206 hand reamers have double bevels — 45°and 30°for reamers up to 30 mm Ø and 20° for reamers over 30 mm Ø.The secondary bevel on hand reamers is much shallower than on machine reamers because it is much longer than on a machine reamer. The length of this bevel is approx. 25% of the total cutting length enabling the operator to centralize the reamer during hand reaming operations.

REAMER MANUFACTURING TOLERANCES

Extract from DIN 1420

Nominal diameter of reamer d in mm		Permissible upper and lower allowanre limits for reamer nominal Ø d in ×m for borehole toleranre range.									
		A		B				C			
		9	11	8	9	10	11	8	9	10	11
from	1	+291	+321	+151	+161	+174	+191	+ 71	+ 81	+ 94	+111
to	3	+282	+300	+146	+152	+160	+170	+ 66	+72	+80	+90
from	3	+295	+333	+155	+165	+180	+203	+ 85	+ 95	+110	+133
to	6	+284	+306	+148	+154	+163	+176	+ 78	+ 84	+ 93	+106
from	6	+310	+356	+168	+180	+199	+226	+ 98	+110	+129	+156
to	10	+297	+324	+160	+167	+178	+194	+ 90	+ 97	+108	+124
from	10	+326	+383	+172	+186	+209	+243	+117	+131	+154	+188
to	18	+310	+344	+162	+170	+184	+204	+107	+115	+129	+149
from	18	+344	+410	+188	+204	+231	+270	+138	+154	+181	+220
to	30	+325	+364	+176	+185	+201	+224	+126	+135	+151	+174
from	30	+362	+446	+203	+222	+255	+306	+153	+172	+205	+256
to	40	+340	+390	+189	+200	+220	+250	+139	+150	+170	+200
from	40	+372	+456	+213	+232	+265	+316	+163	+182	+215	+266
to	50	+350	+400	+199	+210	+230	+260	+149	+160	+180	+210
from	50	+402	+501	+229	+252	+292	+351	+179	+202	+242	+301
to	65	+376	+434	+212	+226	+250	+284	+162	+176	+200	+234
from	65	+422	+521	+239	+262	+302	+361	+189	+212	+252	+311
to	80	+396	+454	+222	+236	+260	+294	+172	+186	+210	+244
from	80	+453	+567	+265	+293	+339	+407	+215	+243	+289	+357
to	100	+422	+490	+246	+262	+290	+330	+196	+212	+240	+280
from	100	+483	+597	+285	+313	+359	+427	+225	+253	+299	+367
to	120	+452	+520	+266	+282	+310	+350	+206	+222	+250	+290

Nominal diameter of reamer d in mm		Permissible upper and lower allowanre limits for reamer nominal Ø d in ×m for borehole toleranre range.									
		D				E			F			
		8	9	10	11	7	8	9	6	7	8	9
from	1	+ 31	+ 41	+ 54	+ 71	+ 22	+ 25	+ 35	+ 11	+ 14	+ 17	+ 27
to	3	+ 26	+ 32	+ 40	+ 50	+ 18	+ 20	+ 26	+ 8	+ 10	+ 12	+ 18
from	3	+ 45	+ 55	+ 70	+ 93	+ 30	+ 35	+ 45	+ 16	+ 20	+ 25	+ 35
to	6	+ 38	+ 44	+ 53	+ 66	+ 25	+ 28	+ 34	+ 13	+ 15	+ 18	+ 24
from	6	+ 58	+ 70	+ 89	+116	+ 37	+ 43	+ 55	+ 20	+ 25	+ 31	+ 43
to	10	+ 50	+ 57	+ 68	+ 84	+ 31	+ 35	+ 42	+ 16	+ 19	+ 23	+ 30
from	10	+ 72	+ 86	+109	+143	+ 47	+ 54	+ 68	+ 25	+ 31	+ 38	+ 52
to	18	+ 62	+ 70	+ 84	+104	+ 40	+ 44	+ 52	+ 21	+ 24	+ 28	+ 36
from	18	+ 93	+109	+136	+175	+ 57	+ 68	+ 84	+ 31	+ 37	+ 48	+ 64
to	30	+ 81	+ 90	+106	+129	+ 49	+ 56	+ 65	+ 26	+ 29	+ 36	+ 45
from	30	+113	+132	+165	+216	+ 71	+ 83	+102	+ 38	+ 46	+ 58	+ 77
to	50	+ 99	+110	+130	+160	+ 62	+ 69	+ 80	+ 32	+ 37	+ 44	+ 55
from	50	+139	+162	+202	+261	+ 85	+ 99	+122	+ 46	+ 55	+ 69	+ 92
to	80	+122	+136	+160	+194	+ 74	+ 82	+ 96	+ 39	+ 44	+ 52	+ 66
from	80	+165	+193	+239	+307	+101	+117	+145	+ 54	+ 65	+ 81	+109
to	120	+146	+162	+190	+230	+ 88	+ 98	+114	+ 46	+ 52	+ 62	+ 78

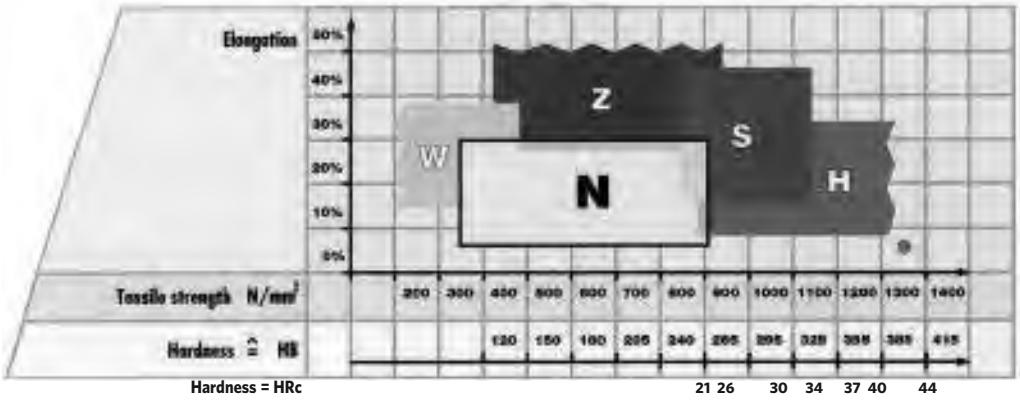
Nominal diameter of reamer d in mm		Permissible upper and lower allowanre limits for reamer nominal Ø d in ×m for borehole toleranre range.										
		G		H						J		
		6	7	6	7	8	9	10	11	12	6	7	8
from	1	+ 7	+10	+ 5	+ 8	+11	+21	+ 34	+ 51	+ 85	+ 1	+ 2	+ 3
to	3	+ 4	+ 6	+ 2	+ 4	+ 6	+12	+ 20	+ 30	+ 50	- 2	- 2	- 2
from	3	+10	+14	+ 6	+10	+15	+25	+ 40	+ 63	+102	+ 3	+ 4	+ 7
to	6	+ 7	+ 9	+ 3	+ 5	+ 8	+14	+ 23	+ 36	+ 60	0	- 1	0
from	6	+12	+17	+ 7	+12	+18	+30	+ 49	+ 76	+127	+ 3	+ 5	+ 8
to	10	+ 8	+11	+ 3	+ 6	+10	+17	+ 28	+ 44	+ 74	- 1	- 1	0
from	10	+15	+21	+ 9	+15	+22	+36	+ 59	+ 93	+153	+ 4	+ 7	+10
to	18	+11	+14	+ 5	+ 8	+12	+20	+ 34	+ 54	+ 90	0	0	0
from	18	+18	+24	+11	+17	+28	+44	+ 71	+110	+178	+ 6	+ 8	+15
to	30	+13	+16	+ 6	+ 9	+16	+25	+ 41	+ 64	+104	+ 1	0	+ 3
from	30	+22	+30	+13	+21	+33	+52	+ 85	+136	+212	+ 7	+10	+18
to	50	+16	+21	+ 7	+12	+19	+30	+ 50	+ 80	+124	+ 1	+ 1	+ 4
from	50	+26	+35	+16	+25	+39	+62	+102	+161	+255	+10	+13	+21
to	80	+19	+24	+ 9	+14	+22	+36	+ 60	+ 94	+150	+ 3	+ 2	+ 4
from	80	+30	+41	+18	+29	+45	+73	+119	+187	+297	+12	+16	+25
to	120	+22	+28	+10	+16	+26	+42	+ 70	+110	+174	+ 4	+ 3	+ 6

Nominal diameter of reamer d·in mm		Permissible upper and lower allowanre limits for reamer nominal Ø d·in ×m for borehole toleranre range.									
		JS				K			M		
		6	7	8	9	6	7	8	6	7	8
from	1	+ 2	+ 3	+ 4	+ 8	- 1	- 2	- 3	- 3	- 4	- 5
to	3	- 1	- 1	- 1	- 1	- 4	- 6	- 8	- 6	- 8	-10
from	3	+ 2	+ 4	+ 6	+10	0	+ 1	+ 2	- 3	- 2	- 1
to	6	- 1	- 1	- 1	- 1	- 3	- 4	- 5	- 6	- 7	- 8
from	6	+ 3	+ 5	+ 7	+12	0	+ 2	+ 2	- 5	- 3	- 3
to	10	- 1	- 1	- 1	- 1	- 4	- 4	- 6	- 9	- 9	-11
from	10	+ 3	+ 6	+ 9	+15	0	+ 3	+ 3	- 6	- 3	- 3
to	18	- 1	- 1	- 1	- 1	- 4	- 4	- 7	-10	-10	-13
from	18	+ 4	+ 7	+11	+18	0	+ 2	+ 5	- 6	- 4	- 1
to	30	- 1	- 1	- 1	- 1	- 5	- 6	- 7	-11	-12	-13
from	30	+ 5	+ 8	+13	+21	0	+ 3	+ 6	- 7	- 4	- 1
to	50	- 1	- 1	- 1	- 1	- 6	- 6	- 8	-13	-13	-15
from	50	+ 6	+10	+16	+25	+1	+ 4	+ 7	- 8	- 5	- 2
to	80	- 1	- 1	- 1	- 1	- 6	- 7	-10	-15	-16	-19
from	80	+ 7	+12	+18	+30	0	+ 4	+ 7	-10	- 6	- 3
to	120	- 1	- 1	- 1	- 1	- 8	- 9	-12	-15	-19	-22

Nominal diameter of reamer d·in mm		Permissible upper and lower allowanre limits for reamer nominal Ø d·in ×m for borehole toleranre range.									
		N						P		R	
		6	7	8	9	10	11	6	7	6	7
from	1	- 5	- 6	- 7	-8	-10	-13	-7	- 8	-11	-12
to	3	- 8	-10	-12	-17	-24	-34	-10	-12	-14	-16
from	3	- 7	- 6	- 5	- 5	- 8	-12	-11	-10	-14	-13
to	6	-10	-11	-12	-16	-25	-39	-14	-15	-17	-18
from	6	- 9	- 7	- 7	- 6	- 9	-14	-14	-12	-18	-16
to	10	-13	-13	-15	-19	-30	-46	-18	-18	-22	-22
from	10	-11	- 8	- 8	- 7	- 11	-17	-17	-14	-22	-19
to	18	-15	-15	-18	-23	-36	-56	-21	-21	-26	-26
from	18	-13	-11	- 8	- 8	-13	-20	-20	-18	-26	-24
to	30	-18	-19	-20	-27	-43	-66	-25	-26	-31	-32
from	30	-15	-12	- 9	-10	-15	-20	-24	-21	-32	-29
to	50	-21	-21	-23	-32	-50	-80	-30	-30	-38	-38
from	50									-38	-35
to	65	-17	-14	-11	-12	-18	-29	-29	-26	-45	-46
from	65	-24	-25	-28	-38	-60	-96	-36	-37	-40	-37
to	80									-47	-48
from	80									-48	-44
to	100	-20	-16	-13	-14	-21	-33	-34	-30	-56	-57
from	100	-28	-29	-32	-45	-70	-110	-42	-43	-51	-47
to	120									-59	-60

Nominal diameter of reamer d·in mm		Permissible upper and lower allowanre limits for reamer nominal Ø d·in ×m for borehole toleranre range.									
		S		T	U		X	Z			
		6	7	6	6	7	10	10	11	10	11
from	1	-15	-16	-19	-19	-20	-24	-26	-29	-32	-35
to	3	-18	-20	-22	-22	-24	-38	-40	-50	-46	-56
from	3	-18	-17	-22	-22	-21	-31	-36	-40	-43	-47
to	6	-21	-22	-25	-25	-26	-48	-53	-67	-60	-74
from	6	-22	-20	-27	-27	-25	-37	-43	-48	-51	-56
to	10	-26	-26	-31	-31	-31	-58	-64	-80	-72	-88
from	10							-51	-57	-61	-67
to	14	-27	-24	-32	-32	-29	-44	-76	-96	-86	-106
from	14	-31	-31	-36	-36	-36	-69	-56	-62	-71	-77
to	18						-81	-101	-96	-116	
from	18				-39	-37	-54	-67	-74	-86	-93
to	24	-33	-31	-39	-44	-45	-84	-97	-1 20	-116	-139
from	24	-38	-39	-44	-46	-44	-61	-77	-84	-101	-108
to	30				-51	-52	-91	-107	-130	-131	-154
from	30			-46	-58	-55	-75	-95	-104	-127	-136
to	40	-41	-38	-52	- 64	-64	-110	-130	-160	-162	-192
from	40	-47	-47	-52	-68	-65	-85	-112	-121	-151	-160
to	50			-58	-74	-74	-120	-147	-177	-186	-216
from	50	-50	-47	-63	-84	-81	-105	-140	-151	-190	-201
to	65	-57	-58	-70	-91	-92	-147	-182	-218	-232	-268
from	65	-56	-53	-72	-99	-96	-120	-164	-175	-228	-239
to	80	-63	-64	-79	-106	-107	-162	-206	-242	-270	-306
from	80	-68	-64	-88	-121	-117	-145	-199	-211	-279	-291
to	100	-76	-77	-96	-129	-130	-194	-248	-288	-328	-368
from	100	-76	-72	-101	-141	-137	-165	-231	-243	-331	-343
to	120	-84	-85	-109	-149	-150	-214	-280	-320	-380	-420

HIGH PERFORMANCE THREADING SYSTEM



N = for normal materials
W = yellow band for soft materials
Z = blue band for tough materials
H = red band for high tensile materials
S = special materials

Two basic features determine the tapability of material: Tensile strength which is related to hardness, and elongation which is related to toughness. In order to determine which is the correct tap for a given material, first establish the tensile strength and % elongation of the material by using the table on Page 12/4. Thereafter it is simply a matter of deciding into which group the material falls by consulting the diagram above.

Choosing the correct tap makes the difference:

Type N
Normal materials: Mild steel, free cutting steel, cast steel, cast iron etc. These materials have a tensile strength between 350 and 950 N/mm^2 and an elongation between 10% and 40%.

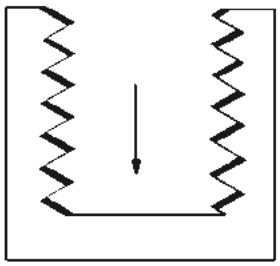
Type W (yellow band taps)
Weak materials: Aluminium, magnesium, soft brass etc. These materials have a low tensile strength of between 100 and 500 N/mm^2 and an elongation between 20% and 55%.

Type Z (blue band taps)
Tough materials: Stainless steel, heat resisting steel, titanium alloy etc. These materials have a tendency to "clamp" in on the tap during the cutting operation. D.C. blue band (Z series) taps overcome the problem. Tough materials have a tensile strength of between 450 and 1 050 N/mm^2 and a high elongation between 40% and 65%.

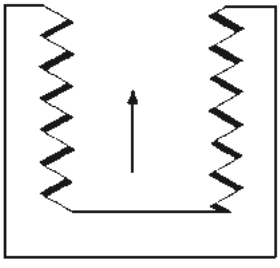
Type H (red band taps)
Hard materials: Tool steel, heat treatable steel, case hardening steels, pure titanium etc. These materials have a tensile strength between 950 and 1 350 N/mm^2 and an elongation of between 5% and 35%.

THE CAUSE OF OVERSIZE THREADS

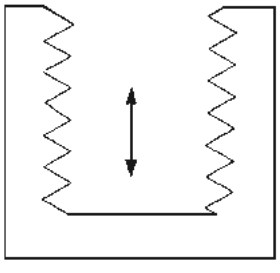
A
The tap was forced into the hole, causing the front flanks of the tap to remove more material than they should.



B
The tap pulled the spindle into the hole, causing the rear flanks of the tap to remove more material than they should.



Correct profile:
The tap cut without axial interference.



RULES FOR SUCCESSFUL TAPPING

1. Ensure correct core hole size, hole is straight, and not out of round. A 65% to 75% thread height is normally sufficiently strong, larger thread heights can result in torn threads and broken taps. Refer to charts for tap drill sizes—use largest acceptable. (See notation 1)
2. Use sharp tools for core holes. Blunt drills or punches cause surface glazing which often leads to tapping problems.
3. Chamfered holes give extended tool life.
4. Select correct tap suited to job—refer to DC tap selection chart.
5. Select correct cutting oil, (see notation 2) and use sufficient, at the lead teeth.
6. Select correct speed. Too fast causes premature tap wear and excessive load on tap, often leading to breakage. Too slow can cause delinquent' chips which lead to cold welding especially in root of tap, and also to chips jamming under teeth leading to compessive fracture. Higher speeds generally give better results.
7. Match choice of machine, tapping attachments, holder to size of tapping. Units too large or too small can create threading problems.
8. Ensure tapping equipment is in good condition. Worn or out of line spindles cause oversize and bellmouth holes.
9. Sharp taps are essential for successful tapping. Sharpen by machine. Do not attempt to sharpen taps by hand.
10. When starting to tap, do not force or retard the tap, as this leads to bellmouthing. Likewise excessive forward or backward pressure on the tap causes oversize threads. Pitch controlled machines are recommended. When not available, tapping attachments or tap holders with adequate float (backward and forward) are essential.
11. Avoid roughing threads too close to finish size, as taps may bind and break, or may rub instead of cut.
12. Avoid bottoming in blind holes, use machine stops to reverse.

Notation—1)
The percentage of height of thread being tapped is important in its relation to efficient and economical tapping.

Too great a percentage of thread serves no useful purpose, while throwing an unnecessary strain on the teeth of the tap itself. Additional power to tap is required because more metal must be removed in a given time. This often results in tap breakage and difficulty in holding size.

A common nut drilled out so that it contains only 50% of full thread will break the bolt, before the nut will strip.

A common nut drilled out so that it contains 75% of full thread is only 5% stronger than a 50% height of thread, yet it requires three times the power to tap.

The selection of the tap drill should be governed by the hardness and toughness of the material to be tapped, together with the depth of the tapped hole.

The following table may be useful as a guide to the percentage of full thread in tapped holes for your particular application.
2) Torque requirements increase incredibly and tap life decreases substantially, as well as thread finish, all dependent on correct choice of cutting oil.

Suggested percentages of full thread in tapped holes

	Deep Hole Tapping	Average Commercial Work	Thin Sheet Stock or Stampinos
Hard or Tough Materials, Forgings Cast Steel, Stainless Steel	55%-65%	60%-70%	70%-80%
Free Cutting Materials, Copper, Aluminium, Cast Iron, Brass, Mild Steel	60%-70%	65%-75%	75%-85%

RECOMMENDED SPEEDS FOR TAPPING

Material to be tapped—cut/rolled	V-m/min Cut	V-m/min Rolled	Lubricant/ Cut Coolant Tapping [3]
Free cutting steels	12 - 15	20 - 30	Cutting oil, emulsion 8 -10%
Mild steels < 700 N/mm²	10 - 15	20 - 30	Cutting oil, emulsion 8 -10%
Steel 700 - 900 N/mm²	8 - 12	20 - 30[1]	
Steel > 900 N/mm²	4 - 8	–	Sulphur, chlorinated cutting oil
Rust and acid resisting steel (stainless), Heat resisting steel	3 - 5	10 - 20	Sulphur chlorinated cutting oil
Cast iron GG (soft)	10 - 15	–	Cutting oil, emulsion 8 -10%
(hard)	4 - 7	Cutting oil, dry	
Malleable iron	10 - 15	–	Cutting oil
Aluminium (low alloy) (long chipping)	20 - 25	20 - 50	Special aluminium cutting oil
Alum-silicon alloy (short chipping)	10 -15	20 - 50[2]	Special aluminium cutting oil
Thermoplastic (hard)	4 - 7	–	Compressed air, dry
(soft)	10 - 15		
Brass (brittle) MS 60 and above	20 - 30	Cutting oil	
Brass (ductile) MS 58	30 - 40	10 - 20	Cutting oil, emulsion 8 -10%
Bronze, Gun metal	8 -10		
Copper	20 - 25	20 - 30	Cutting oil

Note: Circular dies - use 1/3 of tapping speed
1) Under normal conditions only steel to 800 N/mm² (28Rc) is suitable for rolling, and minimum elasticity of 12% is necessary.
2) Materials can be rolled to max 12% Si.
3) Rolling requires high pressure cutting oil.

CORE HOLES FOR TAPPING

ISO 724/965.1	Pitch	Core Ø		Drill
M		Min	Max	Ø
1	0,25	0,729	0,785	0,75
1,1	0,25	0,829	0,885	0,85
1,2	0,25	0,929	0,985	0,95
1,4	0,3	1,075	1,142	1,1
1,6	0,35	1,221	1,321	1,25
1,7	0,35	1,256	1,346	1,3
1,8	0,35	1,421	1,521	1,45
2	0,4	1,567	1,679	1,6
2,2	0,45	1,713	1,838	1,75
2,3	0,4	1,795	1,920	1,9
2,5	0,45	2,013	2,138	2,05
2,6	0,45	2,036	2,176	2,1
3	0,5	2,459	2,599	2,5
3,5	0,6	2,850	3,010	2,9
4	0,7	3,242	3,422	3,3
4,5	0,75	3,688	3,878	3,75
5	0,8	4,134	4,334	4,2
6	1	4,917	5,153	5
7	1	5,917	6,153	6
8	1,25	6,647	6,912	6,8
9	1,25	7,647	7,912	7,8
10	1,5	8,376	8,676	8,5
11	1,5	9,376	9,676	9,5
12	1,75	10,106	10,441	10,2
14	2	11,835	12,210	12
16	2	13,835	14,210	14
18	2,5	15,294	15,744	15,5
20	2,5	17,294	17,744	17,5
22	2,5	19,294	19,744	19,5
24	3	20,752	21,252	21
27	3	23,752	24,252	24
30	3,5	26,211	26,771	26.5
33	3,5	29,211	29,771	29,5
36	4	31,670	32,270	32
39	4	34,670	35,270	35
42	4,5	37,129	37,799	37,5
45	4,5	40,129	40,799	40,5
48	5	42,587	43,297	43
52	5	46,587	47,297	47
56	5,5	50,046	50,796	50,5

MF ISO 724/995.1		Core Ø		Drill
MF	Pitch	Min	Max	Ø
2,5	0,35	2,121	2,221	2,2
3	0,35	2,621	2,721	2,6
3,5	0,35	3,121	3,221	3,1
4	0,5	3,459	3,599	3,5
4.5	0,5	3,959	4,099	4
5	0,5	4,459	4,599	4,5
5,5	0,5	4,959	5,099	5
6	0,75	5,188	5,378	5,2
7	0,75	6,188	6,378	6,2

Pitch		Core Ø		Drill
MF		Min	Max	Ø
8	0,75	7,188	7,378	7,2
8	1	6,917	7,153	7
9	0.75	8,188	8,378	8,2
9	1	7,917	8,153	8
10	0.75	9,188	9,378	9,2
10	1	8,917	9,153	9
10	1,25	8,647	8,912	8,8
11	0,75	10,188	10,378	10,2
11	1	9,917	10,153	10
12	1	10,917	11,153	11
12	1,25	10,647	10,912	10,8
12	1,5	10,376	10,676	10,5
14	1	12,917	13,153	13
14	1,25	12,647	12,912	12,8
14	1,5	12,376	12,676	12,5
15	1	13.917	14,153	14
15	1,5	13,376	13,676	13,5
16	1	14,917	15,153	15
16	1,5	14,376	14,676	14,5
17	1	15,917	16,153	16
17	1,5	15,376	15,676	15,5
18	1	16,917	17,153	17
18	1,5	16,376	16,676	16,5
18	2	15,835	16,210	16
20	1	18,917	19,153	19
20	1,5	18,376	18,676	18,5
20	2	17,835	18,210	18
22	1	20,917	21,153	21
22	1,5	20,376	20,676	20,5
22	2	19,835	20,210	20
24	1	22,917	23,153	23
24	1,5	22,376	22,676	22,5
24	2	21,835	22,210	22
25	1	23,917	24,153	24
25	1,5	23,376	23,676	23,5
25	2	22,835	23,210	23
27	1	25,917	26,153	26
27	1,5	25,376	25,676	25,5
27	2	24,835	25,210	25
28	1	7 26,917	27,153	2
28	1,5	26,376	26,676	26,5
28	2	25,835	26,210	26
30	1	28,917	29,153	29
30	1,5	28,376	28,676	28,5
30	2	27,835	28,210	28
30	3	26,752	27,252	27
32	1,5	30,376	30,676	30,5
32	2	29,835	30,210	30
33	1,5	31,376	31,676	31,5
33	2	30,835	31,210	31
33	3	29,752	30,252	30
35	1,5	33,376	33,676	33,5
36	1,5	34,376	34,676	34,5

CORE HOLES FOR TAPPING

ISO 724/965.1	Pitch	Core Ø		Drill
MF		Min	Max	Ø
36	2	33,835	34,210	34
36	3	32,752	33,252	33
39	1,5	37,376	37,676	37,5
39	2	36,835	37,210	37
39	3	35,752	36,252	36
40	1,5	38,376	38,676	38,5
40	2	37,835	38,210	38
40	3	36,752	37,252	37
42	1,5	40,376	40,676	40,5
42	2	39,835	40,210	40
42	3	38,752	39,252	39
45	1,5	43,376	43,676	43,5
45	2	42,835	43,210	43
45	3	41,752	42,252	42
48	1,5	46,376	46,676	46,5
48	2	45,835	46,210	46
48	3	44,752	45,252	45
50	1,5	48,376	48,676	48,5
50	2	47,835	48,210	48
60	3	46,752	47,252	47
52	1,5	50,376	50,676	50,5
52	2	49,835	50,210	50
52	3	48,752	49,252	49
52	4	47,670	48,270	48

UNC ASA B 1.1.1960		Core Ø		Drill
UNc	T.P.I.	Min	Max	Ø
1	64	1,425	1,582	1,5
2	56	1,694	1,872	1,8
3	48	1,941	2,146	2
4	40	2,156	2,385	2,3
5	40	2,487	2,697	2,6
6	32	2,642	2,896	2,7
8	32	3,302	3,531	3,5
10	24	3,683	3,962	3,8
12	24	4,343	4,597	4,5
14	20	4,978	5,258	5,1
5/16	18	6,401	6,731	6,5
3/8	16	7,798	8,153	7,9
7/16	14	9,144	9,550	9,3
1/2	13	10,592	11,024	10,7
9/16	12	11,989	12,446	12,3
5/8	11	13,386	13,868	13,5
3/4	10	16,307	16,840	16,5
7/8	9	19,177	19,761	19,3
1	8	21,971	22,606	22,25
1 1/8	7	24,638	25,349	25
1 1/4	7	27,813	28,524	28
1 3/8	6	30,353	31,115	30,75
1 1/2	6	33,528	34,290	33,5
1 3/4	5	38,964	39,827	39
2	4 1/2	44,679	45,593	45
2 1/4	4 1/2	51,029	51,943	51,5

ASA B1. 1. 1960	T.P.I.	Core Ø		Drill
UNC		Min	Max	Ø
2 1/2	4	56,617	57,582	57
2 3/4	4	62,967	63,932	63,5
3	4	69,317	70,282	69,5
3 1/4	4	75,667	76,632	76
3 1/2	4	82,017	82,982	82,5
3 3/4	4	88,367	89,332	88,5
4	4	94,717	95,682	95

UNF ASA B 1.1. 1960		Core Ø		Drill
UNF	T.P.I.	Min	Max	Ø
0	80	1,181	1,306	1,2
1	72	1,473	1,613	1,5
2	64	1,755	1,913	1,8
3	56	2,024	2,197	2,1
4	48	2,271	2,459	2,4
5	44	2,550	2,741	2,6
6	40	2,819	3,023	2,9
8	36	3,404	3,607	3,5
10	32	3,962	4,166	4
12	28	4,496	4,724	4,6
1/4	28	5,359	5,588	5,4
5 /16	24	6,782	7,036	6,9
3/8	24	8,382	8,636	8,4
7/16	20	9,728	10,033	9,9
1/2	20	11,328	11,608	11,5
9/16	18	12,751	13,081	13
5/8	18	14,351	14,681	14,5
3/4	16	17,323	17,678	17,4
7/8	14	20,269	20,676	20,4
1	12	23,114	23,571	23,25
1 1/8	12	26,289	26,746	26,5
1 1/4	12	29,464	29,921	29,75
1 3/8	12	32,639	33,096	33
1 1/2	12	35,814	36,271	36

UNEF ASA B 1.1. 1960		Core Ø		Drill
UNEF	T.P.I.	Min	Max	Ø
12	32	4,623	4,826	4,7
1/4	32	5,486	5,690	5,6
5/16	32	7,087	7,264	7,2
3/8	32	8,661	8,865	8,8
7/16	28	10,135	10,338	10,2
1/2	28	11,709	11,938	11,8
9/16	24	13,132	13,386	13,2
5/8	24	14,732	14,986	14,75
3/4	20	17,678	17,958	17,75
7/8	20	20,853	21,133	21
1	20	24,028	24,308	24,25
1 1/8	18	27,051	27,381	27,25
1 1/4	18	30,226	30,556	30,5
1 3/8	18	33,401	33,731	33,5

CORE HOLES FOR TAPPING

DIN 11		Core Ø		Drill
W	**T.P.I.**	**Min**	**Max**	**Ø**
1/4	20	4,744	5,224	5,1
5/16	18	6,151	6,661	6,5
3/8	16	7,512	8,052	7,9
7/16	14	8,809	9,379	9,2
1/2	12	10,015	10,610	10,4
5/8	11	12,948	13,598	13,4
3/4	10	15,831	16,538	16,25
7/8	9	18,647	19,411	19,25
1	8	21,375	22,185	22
1 1/8	7	23,976	24,879	24,5
1 1/4	7	27,151	28,054	27,75
1 3/8	6	29,558	30,555	30,25
1 1/2	6	32,733	33,730	33,5
1 5/8	5	34,834	35,921	35,5
1 3/4	5	38,009	39,096	38,5
1 7/8	4 1/2	40,468	41,648	41,25
2	4 1/2	43,643	44,823	44,5
2 1/4	4	49,100	50,420	50
2 1/2	4	55,450	56,770	56
2 3/4	3 1/2	60,648	62,108	61,5
3	3 1/2	66,999	68,459	68
3 1/4	3 1/4	72,641	74,244	73,5
3 1/2	3 1/4	78,991	80,594	80
3 3/4	3	84,513	86,210	85,5
4	3	90,863	92,560	92

BSP DIN 259		Core Ø		Drill
BSP	**T.P.I.**	**Min**	**Max**	**Ø**
1/8	28	8,566	8,848	8,7
1/4	19	11,445	11,890	11,6
3/8	19	14,950	15,395	15
1/2	14	18,631	19,172	19
5/8	14	20,587	21,128	20,75
3/4	14	24,117	24,658	24,5
7/8	14	27,877	28,418	28,1
1	11	30,291	30,931	30,5
1 1/8	11	34,939	35,579	35
1 1/4	11	38,952	39,592	39,5
1 3/8	11	41,365	42,005	41,5
1 1/2	11	44,845	45,485	45
1 3/4	11	50,788	51,428	51
2	11	56,656	57,296	57
2 1/4	11	62,752	63,392	63
2 1/2	11	72,226	72,866	72,5
2 3/4	11	78,576	79,216	79
3	11	84,926	85,566	85,5
3 1/4	11	91,022	91,662	91,5
3 1/2	11	97,372	98,012	97,75
3 3/4	11	103,722	104,362	104
4	11	110,072	110,712	110,5
4 1/2	11	122,772	123,412	123
5	11	135,472	136,112	135,75
5 1/2	11	148,172	148,812	148,5
6	11	160,872	161,512	161,25

BS 84		Core Ø		Drill
BSF	**T.P.I.**	**Min**	**Max**	**Ø**
3 1/6	32	3,746	4,005	3,90
7/32	28	4,394	4,676	4,5
1/4	26	5,100	5,397	5,25
9/32	26	5,892	6,189	6
5/16	22	6,459	6,81 7	6,7
3/8	20	7,899	8,331	8,2
7/16	18	9,304	9,763	9,6
1/2	16	10,668	11,163	11
9/16	16	12,255	12,750	12,5
5/8	14	13,553	14,094	13,9
11/16	14	15,140	15,681	15,5
3/4	12	16,337	16,939	16,75
7/8	11	19,268	19,908	19,75
1	10	22,148	22,834	22,6
1 1/8	9	24,963	25,704	25,5
1 1/4	9	28,138	28,879	28,75
1 3/8	8	30,861	31,673	31,5
1 1/2	8	34,036	34,848	34,5

BA BS 93,1951		Core Ø		Drill
BA	**Pitch**	**Min**	**Max**	**Ø**
14	0,28	0,720	0,805	0,75
13	0,25	0,900	0,995	0,95
12	0,28	0,960	1,065	1
11	0,31	1,130	1,245	1,2
10	0,35	1,280	1,410	1,35
9	0,39	1,430	1,575	1,5
8	0,43	1,680	1,840	1,8
7	0,48	1,920	2,100	2
6	0,53	2,160	2,360	2,3
5	0,59	2,490	2,710	2,6
4	0,66	2,810	3,060	2,95
3	0,73	3,220	3,495	3,4
2	0,81	3,730	4,035	3,9
1	0,9	4,220	4,560	4,4
0	1	4,800	5,175	5

PG DIN 40 430		Core Ø		Drill
PG	**T.P.I.**	**Min**	**Max**	**Ø**
7	20	11,28	11,43	11,35
9	18	13,86	14,01	14
11	18	17,26	17,41	17,25
13,5	18	19,06	19,21	19
16	18	21,16	21,31	21,25
21	16	26,78	27,03	26,9
29	16	35,48	35,73	35,5
36	16	45,48	45,73	45,5
42	16	52,48	52,73	52,5
48	16	57,78	58,03	57,8

SHAFT DIAMETERS FOR MALE THREADS

ISO 724/965.1	Pitch	Thread outside Ø ISO-6g		Turning Ø basic size
M		Min	Max	Ø
1	0,25	0,933	1,000	0,97
1,1	0,25	1,033	1,100	1,07
1,2	0,25	1,133	1,200	1,17
1,4	0,3	1,325	1,400	1,36
1,6	0,35	1,496	1,581	1,54
1,8	0,35	1,696	1,781	1,7,4
2	0,4	1,886	1,981	1,93
2,2	0,45	2,080	2,180	2,13
2,5	0,45	2,380	2,480	2,43
3	0,5	2,874	2,980	2,92
3,5	0,6	3,354	3,479	3,41
4	0,7	3,838	3,978	3,91
4,5	0,75	4,338	4,478	4,41
5	0,8	4,826	4,976	4,90
6	1	5,794	5,974	5,88
7	1	6,794	6,974	6,88
8	1,25	7,760	7,972	7,87
10	1,5	9,732	9,968	9,85
12	1,75	11,701	11,966	11,83
14	2	13,682	13,962	13,82
16	2	15,682	15,962	15,82
18	2,5	17,623	17,958	17,79
20	2,5	19,623	19,958	19,79
22	2,5	21,623	21,958	21,79
24	3	23,577	23,952	23,77
27	3	26,577	26,952	26,77
30	3,5	29,522	29,947	29,73
33	3,5	32,522	32,947	32,73
36	4	35,465	35,940	35,70
39	4	38,465	38,940	38,70
42	4,5	41,437	41,937	41,69
45	4,5	44,437	44,937	44,69
48	5	47,399	47,929	47,66
52	5	51,399	51,929	51,66

MF ISO 724/965.1		Thread outside Ø ISO-6g		Turning Ø
MF	Pitch	Min	Max	basic size
2	0,25	1,915	1,982	1,95
2,2	0,25	2,115	2,182	2,15
2,5	0,35	2,396	2,481	2,44
3	0,35	2,896	2,981	2,94
3.5	0,35	3,396	3,481	3,44
4	0,35	3,896	3,981	3,94
4	0,5	3,874	3,980	3,93
4,5	0,5	4,374	4,480	4,43
5	0,35	4,896	4,981	4,94
5	0,5	4,874	4,980	4,93
5	0,75	4,838	4,978	4,90
5,5	0,5	5,374	5,480	5,43
6	0,5	5,874	5,980	5,93
6	0,75	5,838	5,978	5,90
7	0,5	6,874	6,980	6,93
7	0,75	6,838	6,978	6,90

ISO 724/965.1	Pitch	Thread outside Ø ISO-6g		Turning Ø basic size
MF		Min	Max	Ø
8	0,5	7,874	7,980	7,93
8	0,75	7,838	7,978	7,90
8	1	7,794	7,974	7,88
9	0,5	8,874	8,980	8,93
9	0,75	8,838	8,978	8,90
9	1	8,794	8,974	8,88
10	0,5	9,874	9,980	9,93
10	0,75	9,838	9,978	9,90
10	1	9,794	9,974	9,88
10	1,25	9,760	9,972	9,86
11	0,5	10,874	10,980	10,93
11	0,75	10,838	10,978	10,90
11	1	10,794	10,974	10,88
11	1,25	10,760	10,972	10,86
12	0,5	11,874	11,980	11,93
12	0,75	11,838	11,978	11,90
12	1	11,794	11,974	11,88
12	1,25	11,760	11,972	11,86
12	1,5	11,732	11,968	11,85
13	0,75	12,838	12,978	12,90
13	1	12,794	12,974	12,88
14	0,5	13,874	13,980	13,93
14	0,75	13,838	13,978	13,90
14	1	13,794	13,974	13,88
14	1,25	13,760	13,972	13,65
14	1,5	13,732	13,968	13,85
15	1	14,794	14,974	14,88
15	1,5	14,732	14,968	14,85
16	0,5	15,874	15,980	15,93
16	0,75	15,838	15,978	15,90
16	1	15,794	15,974	15,88
16	1,25	15,760	15,972	15,86
16	1,5	15,732	15,968	15,85
17	1	16,794	16,974	16,88
17	1,5	16,732	16,968	16,85
18	0,75	17,838	17,978	17,90
18	1	17,794	17,974	17,88
18	1,25	17,760	17,972	17,86
18	1,5	17,732	17,968	17,85
18	2	17,682	17,962	17,82
19	1	18,794	18,974	18,88
20	1	19,794	19,974	19,88
20	1,5	19,732	19,968	19,85
20	2	19,682	19,962	19,82
22	1	21,794	21,974	21,88
22	1,5	21,732	21,968	21,85
22	2	21,682	21,962	21,82
24	1	23,794	23,974	23,88
24	1,5	23,732	23,968	23,85
24	2	23,682	23,962	23,82
25	1	24,794	24,974	24,88
25	1,5	24,732	24,968	24,85

SHAFT DIAMETERS FOR MALE THREADS

ISO 724/965.1	Pitch	Thread outside Ø ISO-6g		Turning Ø basic size
MF	h	Min	Max	Ø
25	2	24,682	24,962	24,82
26	1	25,794	25,974	25,88
26	1,5	25,732	25,968	25,85
26	2	25,682	25,962	25,82
27	1	26,794	26,974	26,88
27	1,5	26,732	26,968	26,85
27	2	26,682	26,962	26,82
28	1	27,794	27,974	27,88
28	1,5	27,732	27,968	27,85
28	2	27,682	27,962	27,82
30	1	29,794	29,974	29,88
30	1,5	29,732	29,968	29,85
30	2	29,682	29,962	29,82
30	3	29,577	29,952	29,76
32	1	31,794	31,974	31,88
32	1,5	31,732	31,968	31,85
32	2	31,682	31,962	31,82
33	1,5	32,732	32,968	32,85
33	2	32,682	32,962	32,82
33	3	32,577	32,952	32,76
34	1	33,794	33,974	33,88
34	1,5	33,732	33,968	33,85
35	1,5	34,732	34,968	34,85
35	2	34,682	34,962	34,82
36	1,5	35,732	35,968	35,85
36	2	35,682	35,962	35,82
36	3	35,577	35,952	35,76
38	1,5	37,732	37,968	37,85
38	2	37,682	37,962	37,82
39	1,5	38,732	38,968	38,85
39	2	38,682	38,962	38,82
39	3	38,577	38,952	38,76
40	1,5	39,732	39,968	39,85
40	2	39,682	39,962	39,82
42	1,5	41,732	41,968	41,85
42	2	41,682	41,962	41,82
42	3	41,577	41,952	41,76
45	1,5	44,732	44,968	44,85
45	2	44,682	44,962	44,82
45	3	44,577	44,952	44,76
48	1,5	47,732	47,968	47,85
48	2	47,682	47,962	47,82
48	3	47,577	47,952	47,76
50	1,5	49,732	49,968	49,85
52	1,5	51,732	51,968	51,85
52	2	51,682	51,962	51,82
52	3	51,577	51,952	51,76
55	1,5	54,732	54,968	54,85
56	1,5	55,732	55,968	55,85
60	1,5	59,732	59,968	59,85

ASA B1. 1. 1960		Thread outside Ø TOL. 2A		Turning Ø basic size
UNC	T.P.I.	Min	Max	Ø
1	64	1,742	1,839	1,79
2	56	2,065	2,169	2,12
3	48	2,383	2,497	2,44
4	40	2,695	2,825	2,76
5	40	3,025	3,155	3,09
6	32	3,333	3,485	3,41
8	32	3,991	4,143	4,07
10	24	4,618	4,801	4,71
12	24	5,278	5,461	5,37
1/4	20	6,116	6,322	6,22
5/16	18	7,687	7,908	7,80
3/8	16	9,253	9,492	9,37
7/16	14	10,814	11,076	10,95
1/2	13	12,385	12,662	12,52
9/16	12	13,957	14,247	14,10
5/8	11	15,527	15,834	15,68
3/4	10	18,676	19,004	18,84
7/8	9	21,824	22,177	22,00
1	8	24,968	25,349	25,16
1 1/8	7	28,102	28,519	28,31
1 1/4	7	31,277	31,694	31,49
1 3/8	6	34,402	34,864	34,63
1 1/2	6	37,577	38,039	37,81
1 3/4	5	43,860	44,381	44,12
2	4 1/2	50,167	50,726	50,45

UNF ASA B 1. 1. 1960 Tolerance band 2A

UNF	T.P.I.	Min	Max	Turning Ø basic size
0	80	1,430	1,511	1,47
1	72	1,750	1,839	1,79
2	64	2,072	2,169	2,12
3	56	2,393	2,497	2,44
4	48	2,713	2,827	2,77
5	44	3,035	3,157	3,10
6	40	3,355	3,485	3,42
8	36	4,006	4,146	4,08
10	32	4,651	4,803	4,73
12	28	5,296	5,461	5,38
1/4	28	6,160	6,325	6,24
5/16	24	7,727	7,910	7,82
3/8	24	9,314	9,497	9,41
7/16	20	10,873	11,079	10,98
1/2	20	12,461	12,667	12,56
9/16	18	14,031	14.252	14,14
5/8	18	15,618	15,839	15,73
3/4	16	18,773	19,012	18,89
7/8	14	21,922	22,184	22,05
1	12	25,064	25,354	25,21
1 1/8	12	28,239	28,529	28,38
1 1/4	12	31,414	31,704	31,56
1 3/8	12	34,587	34,877	34,73
1 1/2	12	37,762	38,052	37,91

SHAFT DIAMETERS FOR MALE THREADS

ASA B1. 1. 1960

UNEF	T.P.I.	Thread outside Ø TOL. 2A Min	Max	Turning Ø basic size Ø
12	32	5,311	5,463	5,38
1/4	32	6,173	6,325	6,30
5/16	32	7,761	7,913	7,83
3/8	32	9,348	9,500	9,42
7/16	28	10,919	11,084	11,00
1/2	28	12,507	12,672	12,59
9/16	24	14,075	14,258	14,16
5/8	24	15,662	15,845	15,75
11/16	24	17,249	17,432	17,34
3/4	Z0	18,811	19,017	18,91
13/16	20	20,399	20,605	20,50
7/8	20	21,986	22,192	22,09
15/16	20	23,570	23,776	23,67
1	20	25,158	25,364	25,61
1 1/16	18	26,731	26,952	26,84
1 1/8	18	28,318	28,539	28,43
1 3/16	18	29,903	30,124	30,00
1 1/4	18	31,491	31,712	31,60
1 5/16	18	33,079	33,300	33,19
1 3/8	18	34,666	34,887	34,77
1 7/16	18	36,253	36,474	36,36
1 1/2	18	37,841	38,062	37,95

PG DIN 40403

PG	T.P.I.	Min	Max	Turning Ø basic size
7	20	12,3	12,5	12,4
9	18	15	15,2	15,1
11	18	18,4	18,6	18,5
13,5	18	20,2	20,4	20,3
16	18	22,3	22,5	22,4
21	16	28	28,3	28,15
29	16	36,7	37	36,85
36	16	46,7	47	46,85
42	16	53,7	54	53,85
48	16	59	59,3	59,15

DIN 259

BSP	T.P.I.	Thread outside Ø Min	Max	Turning Ø basic size Ø
1/8	28	9,514	9 728	9,62
1/4	19	12,907	13157	13,03
3/8	19	16,412	16,662	16,53
1/2	14	20,671	20,955	20,81
5/8	14	22,627	22,911	22,77
3/4	14	26,157	26,441	26,30
7/8	14	29,917	30,201	30,06
1	11	32,889	33,249	33,07
1 1/8	11	37,537	37,897	37,71
1 1/4	11	41,550	41,910	41,73
1 3/8	11	43 963	44,323	44,14
1 1/2	11	47 434	47,803	47,62
1 3/4	11	53,386	53,746	53,56
2	11	59,254	59 614	59,43
2 1/4	11	65,276	65710	65,49
2 1/2	11	74,750	75,184	74,96

W DIN 11 Sheet 4 - DIN medium, coarse

BSW	T.P.I.	Min	Max	Turning Ø basic size
1/4	20	6,000	6,330	6,16
5/16	18	7,600	7,918	7,76
3/8	16	9,100	9,505	9,30
7/16	14	10,700	11,093	10,89
1/2	12	12,200	12,675	12,43
5/8	11	15,400	15,846	15,62
3/4	10	18,500	19,018	18,76
7/8	9	21,600	22,190	21,89
1	8	24,800	25,361	25,08
1 1/8	7	27,900	28,529	28,21
1 1/4	7	31,000	31,704	31,35
1 3/8	6	34,100	34,873	34,48
1 1/2	6	37,300	38,048	37,67
1 5/8	5	40,300	41,214	40,75
1 3/4	5	43,500	44,389	43,94
2	4 1/2	49,800	50,732	50,26

THREAD ROLLING

Recommended rolling speeds:
Carbon steel tensile strength to 700 N/mm²—30-60 m/min
Heat treatable steel to 1 000 N/mm²—30-70 m/min
Stainless steels 40-70 m/min
Alloy steels 30-50 m/min
N.F. metals—brass with +60% Cu, copper & light alloys 60-90 m/min
Higher speeds are preferred—DO NOT roll at less than 30 m/min

Pitch control not necessary
Long tap life—under good conditions well in excess of 3 000 metres of perfect thread can be expected. Brittle & hard materials should yield 50-300 metres or more. Tool life can be extended by phosphating material prior to rolling and by stress relieving after every 2-3 working shifts.

Stronger threads, better wear resistance, better fatigue strength. Higher surface speeds.

Limitations
Only suitable for materials with over 12% elasticity and with tensile strength below 1 100 N/mm².

Continued

CORE SIZES FOR THREAD ROLLING (ISO METRIC THREADS)

Thread	Pitch	Core hole Ø (guide-line)	Thread MF	Pitch	Core hole Ø (guide-line)	Thread UNC	TPI	Core hole Ø (guide-line)	Thread UNF	TPI	Core hole 0 (guide-line)
1	0,25	0,87	2,5	0,35	2,35	1	64	1,67	0	80	1 38
1,2	0,25	1,07	3	0,35	2,85	2	56	1,98	1	72	1 69
1,4	0,3	1,25	4	0,5	3,80	3	48	2,28	2	64	2,0
1,6	0,35	1,42	5	0,5	4,80	4	40	2,55	3	56	2,31
1,7	0,35	1,52	6	0,5	5,80	5	40	2,88	4	48	2,61
1,8	0,35	1,62	6	0,75	5,68	6	32	3,14	5	44	2 92
2	0,4	1,8	8	0,75	7,68	8	32	3,80	6	40	3 22
2,2	0,45	1,97	8	1	7,54	10	24	4,33	8	36	3,85
2,3	0,4	2,1	10	1	9,54	12	24	4,98	10	32	4,46
2,5	0,45	2,27	12	1	11,54	1/4	20	5,75	1/4	28	5,94
2,6	0,45	2,37	12	1,5	11,30	5/16	18	7,26	5/16	24	7,44
3	0,5	2,75			3/8	16	8,76				
3,5	0,6	3;2									
4	0,7	3,65									
5	0,8	4,6									
6	1	5,5									
8	1,25	7,37									
10	1,5	9,25									
12	1,75	11,12									

The cored holes required for roll tapping are larger than for thread cutting. This is because the material is forced to flow in both directions. Since a cold formed thread is much stronger than a conventionally cut thread, the thread height can be reduced to 60% without a loss of strength. However a 65% to 75% thread is recommended. A 75% rolled thread is stronger than a 90% cut thread.

To find the drill hole diameter for roll tapping metric thread, use the following formula:

Full Thread:

Diameter of tap $-\ \frac{P}{2}$

Threads whlch do not have full thread:

Diameter of tap $-\ \left(\frac{P}{2} - \left[\frac{P}{2} \times .5 \times \left\{\frac{100 - \%\ \text{thread required}}{100}\right\}\right]\right)$

E.g. 1 What is the drill hole diameter for a M10 x 1,5 roll tap when a full thread is required?

$= 10 - \frac{1.5}{2}$

= 9,25 mm diameter

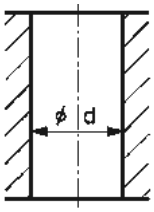
E.g. 2 What is the drill hole diameter for a M10 x 1,5 tap when a 60% thread is required?

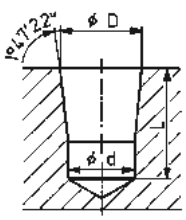
$= 10 - \left(\frac{1,5}{2} - [1,5 \times .5 \times .4]\right)$

$=10 - .6$

= 9.4 mm diameter

CORE HOLE DIAMETERS FOR NPT, NPTF AND BSPT THREADS

Parallel hole Nominal Not recommended Increased tap wear	TPI Ø	TPI NPT NPTF	Ø d mm BSPT	Ø d mm NPT NPTF	BSPT
	1/16	27	28	6.0	6.2
	1/8	27	28	8.30	8.2
	1/4	18	19	10.75	11
	3/8	18	19	14.25	14.5
	1/2	14	14	17.50	18
	3/4	14	14	22.75	23.5
	1	11 1/2	11	28.50	29.5
	1 1/4	11 1/2	11	37.50	38.25
	1 1/2	11 1/2	11	43.50	44.25
	2	11 1/2	11	55.50	55.75

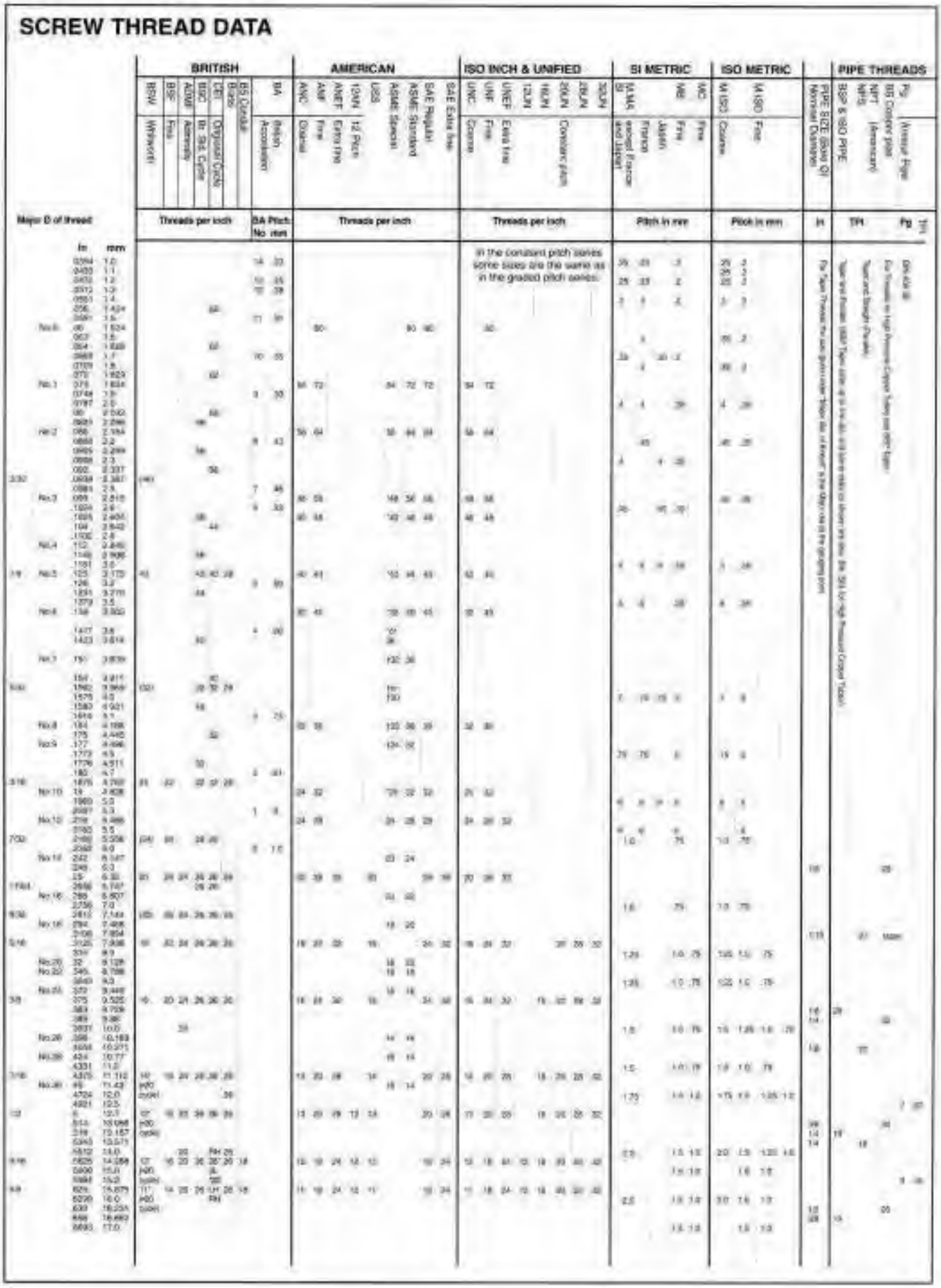
Tapered hole 1:16 Pre-drilled Ø d and taper ream to Ø D	Nominal Ø	TPI NPT NPTF	TPI BSPT	Ø D NPT, NPTF mm	Ø D BSPT	Min drilling depth L NPT, NPTF	Min drilling depth L BSPT
	1/16	27	28	6.40	6.56	12.0	11.9
	1/8	27	28	8.75	8.57	12.0	11.9
	1/4	18	19	11.35	11.45	17.50	17.7
	3/8	18	19	14.80	14.95	17.50	18.1
	1/2	14	14	18.32	18.63	23.0	24.0
	3/4	14	14	23.67	24.12	23.0	25.3
	1	11 1/2	11	29.70	30.29	27.50	30.6
	1 1/4	11 1/2	11	38.45	38.95	27.50	32.9
	1 1/2	11 1/2	11	44.52	44.85	28.0	32.9
	2	11 1/2	11	56.56	53.66	28.0	37.2

METRIC ISO THREADS Effective diameter tolerances of threading taps

Nominal thread Ø mm (outside) From	To	Pitch	Tolerance class	Lower value ×	Upper value ×
0.99	1.4	0.2	ISO1/4H	+ 3	+ 15
			ISO2/6H	+ 15	+ 25
		0.25	ISO1/4H	+ 6	+ 17
			ISO2/6H	+ 17	+ 28
		0.3	ISO1/4H	+ 6	+ 18
			ISO2/6H	+ 18	+ 30
1.4	2.8	0.2	ISO1/4H	+ 6	+ 16
			ISO2/6H	+ 16	+ 26
		0.25	ISO1/4H	+ 6	+ 18
			ISO2/6H	+ 18	+ 30
		0.35	ISO1/4H	+ 6	+ 20
			ISO2/6H	+ 20	+ 34
		0.4	ISO1/4H	+ 7	+ 21
			ISO2/6H	+ 21	+ 35
			ISO3/6G	+ 35	+ 49
		0.45	ISO1/4H	+ 8	+ 23
			ISO2/6H	+ 23	+ 38
			ISO3/6G	+ 38	+ 53
2.8	5.6	0.35	ISO1/4H	+ 6	+ 21
			ISO2/6H	+ 21	+ 36
		0.5	ISO1/4H	+ 8	+ 24
			ISO2/6H	+ 24	+ 40
			ISO3/6G	+ 40	+ 56
			7G	+ 56	+ 72
		0.6	ISOl/4H	+ 9	+ 27
			ISO2/6H	+ 27	+ 45
			ISO3/6G	+ 45	+ 63
			7G	+ 63	+ 81
		0.7	ISO1/4H	+ 10	+ 29
		0.75	ISO2/6H	+ 29	+ 48
			ISO3/6G	+ 48	+ 67
			7G	+ 67	+ 86
		0.8	ISO1/4H	+ 10	+ 30
			ISO2/6H	+ 30	+ 50
			ISO3/6G	+ 50	+ 70
			7G	+ 70	+ 90
5.6	11.2	0.5	ISO1/4H	+ 9	+ 27
			ISO2/6H	+ 27	+ 45
			ISO3/6G	+ 45	+ 63
			7G	+ 63	+ 81
		0.75	ISO1/4H	+ 11	+ 32
			ISO2/6H	+ 32	+ 53
			ISO3/6G	+ 53	+ 74
			7G	+ 74	+ 95
			ISO1/4H	+ 11	+ 35
			ISO2/6H	+ 35	+ 59
			ISO3/6G	+ 59	+ 83
			7G	+ 83	+107
		1.25	ISO1/4H	+ 13	+ 38
			ISO2/6H	+ 38	+ 63
			ISO3/6G	+ 63	+ 88
			7G	+ 88	+113
		1.5	ISO1/4H	+ 14	+ 42
			ISO2/6H	+ 42	+ 70
			ISO3/6G	+ 70	+ 98
			7G	+ 98	+126
11.2	22.4	0.5	ISO1/4H	+ 10	+ 29
			ISO2/6H	+ 29	+ 48
			ISO3/6G	+ 48	+ 67
			7G	+ 67	+ 86
		0.75	ISO1/4H	+ 12	+ 34
			ISO2/6H	+ 34	+ 56
			ISO3/6G	+ 56	+ 78
			7G	+ 78	+100
		1	ISO1/4H	+ 13	+ 38
			ISO2/6H	+ 38	+ 63
			ISO3/6G	+ 63	+ 88
			7G	+ 88	+113
		1.25	ISO1/4H	+ 14	+ 42
			ISO2/6H	+ 42	+ 70
			ISO3/6G	+ 70	+ 98
			7G	+ 98	+126
		1.5	ISO1/4H	+ 15	+ 45
			ISO2/6H	+ 45	+ 75
			ISO3/6G	+ 75	+ 105
			7G	+ 105	+ 135
		1.75	ISO1/4H	+ 16	+ 48
			ISO2/6H	+ 48	+ 80
			ISO3/6G	+ 80	+ 112
			7G	+ 112	+ 144
		2	ISO1/4H	+ 17	+ 51
			ISO2/6H	+ 51	+ 85
			ISO3/6G	+ 85	+ 119
			7G	+ 119	+ 153

Nominal thread Ø mm (outside) From	To	Pitch	Tolerance class	Lower value ×	Upper value ×
11.2	22.4	2.5	ISO1/4H	+ 18	+ 54
			ISO2/6H	+ 54	+ 90
			ISO3/6G	+ 90	+ 126
			7G	+ 126	+ 162
22.4	45	0.5	ISO1/4H	+ 10	+ 30
			IS02/6H	+ 30	+ 50
			IS03/6G	+ 50	+ 70
			7G	+ 70	+ 90
		0.75	IS01/4H	+ 12	+ 36
			ISO2/6H	+ 36	+ 60
			ISO3/6G	+ 60	+ 84
			7G	+ 84	+ 108
		1	ISO1/4H	+ 14	+ 40
			ISO2/6H	+ 40	+ 66
			ISO3/6G	+ 66	+ 92
			7G	+ 92	+ 118
		1.5	ISO1/4H	+ 16	+ 48
			ISO2/6H	+ 48	+ 80
			ISO3/6G	+ 80	+ 112
			7G	+ 112	+ 144
		2	ISO1/4H	+ 18	+ 54
			ISO2/6H	+ 54	+ 90
			ISO3/6G	+ 90	+ 126
			7G	+ 126	+ 162
		3	ISO1/4H	+ 22	+ 64
			ISO2/6H	+ 64	+ 106
			ISO3/6G	+ 106	+ 148
			7G	+ 148	+ 190
		3.5	ISO1/4H	+ 22	+ 67
			ISO2/6H	+ 67	+ 112
			ISO3/6G	+ 112	+ 157
			7G	+ 157	+ 202
		4	ISO 1 /4H	+ 24	+ 71
			ISO2/6H	+ 71	+ 118
			ISO3/6G	+ 118	+ 165
			7G	+ 165	+ 212
		4.5	ISO1/4H	+ 25	+ 75
			ISO2/6H	+ 75	+ 125
			ISO3/6G	+ 125	+ 175
			7G	+ 175	+ 225
45	90	0.5	IS01/4H	+ 12	+ 34
			IS02/6H	+ 34	+ 56
			IS03/6G	+ 56	+ 78
			7G	+ 78	+ 100
		0.75	ISO1/4H	+ 13	+ 38
			ISO2/6H	+ 38	+ 63
			ISO3/6G	+ 63	+ 88
			7G	+ 88	+ 113
			ISO1/4H	+ 15	+ 45
			ISO2/6H	+ 45	+ 75
			ISO3/6G	+ 75	+ 105
			7G	+ 105	+ 135
		1.5	ISO1/4H	+ 17	+ 51
			ISO2/6H	+ 51	+ 85
			ISO3/6G	+ 85	+ 119
			7G	+ 119	+ 153
		2	ISO1/4H	+ 19	+ 57
			ISO2/6H	+ 57	+ 95
			ISO3/6G	+ 95	+ 133
			7G	+ 133	+ 171
		3	ISO1/4H	+ 22	+ 67
			ISO2/6H	+ 67	+ 112
			ISO3/6G	+ 112	+ 157
			7G	+ 157	+ 202
		4	ISO1/4H	+ 25	+ 75
			ISO2/6H	+ 75	+ 125
			ISO3/6G	+ 125	+ 175
			7G	+ 175	+ 225
		5	ISO1/4H	+ 27	+ 80
			ISO2/6H	+ 80	+ 133
			ISO3/6G	+ 133	+ 186
			7G	+ 186	+ 239
		5.5	ISO1/4H	+ 28	+ 84
			ISO2/6H	+ 84	+ 140
			ISO3/6G	+ 140	+ 196
			7G	+ 196	+ 252
		6	ISO1/4H	+ 30	+ 90
			ISO2/6H	+ 90	+ 150
			ISO3/6G	+ 150	+ 210
			7G	+ 210	+ 270

SCREW THREAD DATA



SCREW THREAD DATA

SCREW THREAD DATA

Major Ø of thread	in	mm	BRITISH BSW Whitworth	BSF Fine	ADMF Admiralty	AMERICAN ANC Coarse	8 AN	12 AN	16 AN Constant pitch	USS	SAE Regular	SAE Extra fine	ISO INCH & UNIFIED UNC Coarse	4UN	6UN	8UN	12UN	16UN	20UN Constant pitch	SI METRIC MAA.SI	MB Fine	MC Fine	MD Fine	ME Fine	ISO METRIC M ISO Coarse	M ISO Fine	PIPE SIZE (Bore Ø) Nominal Diameter	BSP & ISO PIPE	NPT (American) NPS	BS Copper size
			TPI			Threads per inch							Threads per inch							Pitch in mm					Pitch in mm		in	TPI		
	2.587	65.71																												
2-5/8	2.625	66.675	[illegible]		5			12	16	[illegible]	12	16		4	6	8	12	16	20											
	2.6772	68																		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
	2.679	68.047																												
2-3/4	2.75	69.85	3-1/2	6	5	3	8	12	16	8	12	16	4	4	6	8	12	16	20											
	2.7559	70																												
	2.8346	72																												
	2.8622	72.7																												
2-7/8	2.875	73.025	(3-1/2)		5			12	16	3-1/2	12	16		4	6	8	12	16	20											
	2.929	74.397																												
	2.9528	75																												
	2.98	75.165																												
	2.9921	76																												
3	3.0	76.2	3-1/2	5	5	4	8	12	16	3-1/2	12	16	4	4	6	8	12	16	20											
	3.0709	78																												
3-1/8	3.125	79.375																												
	3.1496	80																												
	3.203	81.356																												
	3.21	81.534																												
	3.2284	82																												
3-1/4	3.25	82.55																												
	3.3071	84																												
	3.3465	85																												
3-3/8	3.375	85.725																												
	3.453	87.706																												
	3.46	87.884																												
	3.4646	88																												
	3.4885	88.608																												
3-1/2	3.5	88.9																												
	3.5039	89																												
	3.5433	90																												
	3.622	92																												
3-5/8	3.625	92.075																												
	3.7	93.98																												
	3.7008	94																												
	3.727	94.666																												
	3.7402	95																												
3-3/4	3.75	95.25																												
	3.8582	98																												
3-7/8	3.875	98.425																												
	3.8976	99																												
	3.937	100																												
	3.950	100.33																												
	3.971	100.864																												
	3.9866	101.26																												
4	4.0	101.6																												
	4.0158	102																												
	4.0945	104																												
4-1/8	4.125	104.775																												
	4.1339	105																												
	4.2	106.68																												
4-1/4	4.25	107.95																												
	4.251	108																												
	4.2913	109																												
	4.3307	110																												
4-3/8	4.375	111.125																												
	4.4094	112																												
	4.45	113.03																												
	4.4871	113.97																												
	4.4882	114																												
4-1/2	4.5	114.3																												
	4.5276	115																												
4-5/8	4.625	117.475																												
	4.6457	118																												
	4.685	119																												
	4.7244	120																												
4-3/4	4.75	120.65																												
	4.8032	122																												
4-7/8	4.875	123.825																												
	4.8819	124																												
	4.9213	125																												
5	5.0	127																												
	5.0394	128																												
	5.0787	129																												
	5.1181	130																												
5-1/8	5.125	130.175																												
	5.1969	132																												
5-1/4	5.25	133.35																												
	5.2756	134																												
	5.315	135																												
5-3/8	5.375	136.525																												
	5.4331	138																												
	5.45	138.43																												
	5.4724	139																												
5-1/2	5.5	139.7																												
	5.5118	140																												
	5.5453	140.85																												
	5.5905	142																												
5-5/8	5.625	142.875																												
	5.6693	144																												
	5.7087	145																												
5-3/4	5.75	146.05																												
	5.8268	148																												
	5.8661	149																												
5-7/8	5.875	149.225																												
	5.9055	150																												
	5.9842	152																												
6	6.0	152.4																												
	6.1024	155																												
	6.2205	158																												
	6.2992	160																												
	6.3779	162																												
	6.45	163.83																												

V-COIL THREAD INSERT SYSTEM

Recommended Tapping Drill Sizes For Wire Thread Inserts

D	P	Ø
M/MF		mm
M	2x0.4	2.10
M	2.5x0.45	2.6
M	3x0.5	3.20
M	3.5x0.6	3.70
M	4x0.7	4.20
M	5x0.8	5.20
M	6x1.0	6.30
M	7x1.0	7.30
M	8x1.25	8.30
M	8x1.0	8.30
M	9x1.25	9.30
M	10x1.5	10.40
M	10x1.25	10.30
M	10x1.0	10.30
M	11x1.5	11.40
M	12x1.75	12.40
M	12x1.5	12.40
M	12x1.25	12.30
M	12x1.0	12.30
M	14x2.0	14.50
M	14x1.5	14.40
M	14x1.25	14.40
M	14x1.0	14.30
M	16x2.0	16.50
M	16x1.5	16.40
M	18x2.5	18.60
M	18x2.0	18.50
M	18x1.5	18.50
M	20x2.5	20.60
M	20x2.0	20.50
M	20x1.5	20.50
M	22x2.5	22.60
M	22x20	20.50
M	22x1.5	22.50
M	24x3.0	24.75
M	24x2.0	24.50
M	24x1.5	24.50
M	26x1.5	26.50
M	27x1.5	27.50
M	27x2.0	27.50
M	27x3.0	27.75
M	28x1.5	28.50
M	30x1.5	30.50
M	30x2.0	30.50
M	30x3.5	31.00
M	33x2.0	33.50
M	33x3.5	34.00
M	36x1.5	36.50
M	36x2.0	36.50
M	36x3.0	37.00
M	36x4.0	37.00

D	P	Ø
UNC		mm
No.	2x56	2.4
No.	4x40	3.0
No.	5x40	3.4
No.	6x32	3.7
No.	8x32	4.4
No.	10x24	5.1
No.	12x24	5.7
	1/4x20	6.7
	5/16x18	8.3
	3/8x16	9.9
	7/16x14	11.60
	1/2x13	13.00
	9/16x12	14.80
	5/8x11	16.50
	3/4x10	19.75
	7/8x9	23.00
	1x8	26.25
	1.1/8x7	29.50
	1.14x7	33.00
	1.38x6	36.00
	1.1/2x6	39.50
UNF		
No.	4x48	3.0
No.	6x40	3.7
No.	8x36	4.4
No.	10x32	5.1
	1/4x28	6.6
	5/16x24	8.2
	3/8x24	9.8
	7/16x20	11.50
	1/2x20	13.00
	9/16x18	14.80
	5/8x18	16.25
	3/4x16	19.50
	7/8x14	22.75
	1x12	26.00
	1.1/8x12	29.00
	1.14x12	32.50
	1.3/8x12	35.50
	1.12x12	

D	P	Ø
BSW		mm
1/8X40		3.4
3/16X24		5.1
1/4X20		6.7
5/16X18		8.3
3/8X16		9.9
7/16X14		11.6
1/2x12		13.0
9/16x12		14.8
5/8x11		16.7
3/4x10		20.0
7/8x9		23.0
1x8		26.5
BSF		
3/16x32		5.0
1/4x26		6.6
5/16x22		8.3
3/8x20		9.9
7/16x18		11.6
1/2x16		13.0
9/16x16		14.8
5/8x14		16.4
3/4x12		19.5
7/8x11		22.7
1x10		26.5
UNx8		
1.1/8		28.75
1.1/4x8		31.75
1.3/8x8		35.00
1.1/2x8		38.00
1.5/8x8		41.50
1.3/4x8		44.50
1.78x8		47.75
2x8		50.90

D	P	Ø
G(BSP)		mm
1/8x28		10.00
1/4x19		13.60
3/8x19		17.10
1/2x14		21.50
5/8x14		23.40
3/4x14		27.00
1x11		33.70

RECOMMENDED MILLING SPEEDS AND FEEDS FOR MILLING WITH HSS MILLING CUTTERS

ENGINEERING DATA - SPEED AND FEED CALCULATIONS

v	=	Speed	m/min
D	=	Cutter-diameter	mm
n	=	Revolution per min	
Sn	=	Feed per revolution	mm
S′	=	Feed per minute	mm
Sz	=	Feed per tooth	mm
Z	=	No. of teeth	
V	=	Chip volume	cm^3/min
a	=	Depth of cut	mm
b	=	Length of cut	mm
t	=	Machining time	minutes
l	=	Length of workpiece	mm

FORMULA:

$$v = \frac{\pi \cdot D \cdot n}{1000}$$

$$n = \frac{v \cdot 1000}{\pi \cdot D}$$

$$Sn = \frac{S'}{n}$$

$$Sz = \frac{S'}{n \cdot z}$$

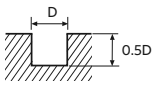
$$S' = n \cdot z \cdot Sz$$

$$V = \frac{a \cdot b \cdot S'}{1000}$$

$$t = \frac{l}{S'}$$

HSS-Co SLOT DRILLS

MATERIAL ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	5600	40	4500	30	4000	30	2200	15	12000	160
3	3500	55	3200	45	2500	40	1600	20	11000	250
4	2800	70	2200	55	1800	45	1100	30	8000	290
5	2200	90	1800	70	1600	60	900	35	6300	310
6	1800	90	1600	80	1200	60	800	40	5600	310
8	1400	100	1100	90	900	70	560	45	400	390
10	1100	100	900	90	800	80	450	45	3100	400
12	900	110	800	100	630	80	400	50	2500	380
14	800	110	700	90	560	80	350	50	2200	350
16	700	110	560	90	450	70	280	45	2000	350
18	630	100	500	90	400	70	250	45	1800	350
20	560	100	450	90	400	70	220	45	1600	320
22	500	100	450	90	350	70	220	45	1400	300
25	450	90	400	80	310	60	180	35	1200	280
28	400	80	350	70	280	55	160	30	1100	270
30	350	70	310	60	250	50	160	30	1100	270
32	350	70	280	55	220	45	140	30	1000	240
36	310	60	250	50	200	40	120	25	900	220
40	280	60	220	50	180	40	110	25	800	200

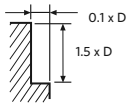


The FEED, in long and extra long types, should be reduced by around 50%.

RPM = Revolution per min.
FEED = mm/min.

HSS-Co RIPPING CUTTERS

MATERIAL ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	1800	80	1600	60	1200	55	800	30	4500	200
8	1400	105	1100	75	900	65	560	35	3100	230
10	1100	150	900	120	800	110	450	60	2500	350
12	900	180	800	140	630	110	400	70	2000	400
14	800	180	700	140	560	110	350	70	1800	420
16	700	180	560	140	450	110	280	70	1600	450
18	630	180	500	140	400	110	250	70	1400	470
20	560	180	450	140	400	110	220	70	1200	500
22	500	220	450	170	350	140	220	85	1100	470
25	450	220	400	170	310	140	180	85	1000	450
28	400	210	350	160	280	130	160	85	900	510
30	350	210	310	160	250	130	160	85	900	530
32	350	210	280	160	220	130	140	85	800	500
36	310	210	250	160	200	130	120	85	700	470
40	280	200	220	150	180	120	110	80	630	450
50	220	200	180	170	160	140	90	80	500	370

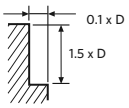


The FEED, in long and extra long types, should be reduced by around 50%.

RPM = Revolution per min.
FEED = mm/min.

HSS-Co END MILLS

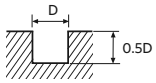
MATERIAL / ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	5600	80	4500	55	4000	45	2200	20	12000	240
3	3500	110	3200	80	2500	60	1600	30	11000	380
4	2800	140	2200	100	1800	65	1100	45	8000	440
5	2200	180	1800	125	1600	90	900	50	6300	470
6	1800	180	1600	145	1200	90	800	60	5600	470
8	1400	200	1100	160	900	105	560	65	400	580
10	1100	200	900	160	800	120	450	65	3100	600
12	900	220	800	180	630	120	400	75	2500	570
14	800	220	700	160	560	120	350	75	2200	530
16	700	220	560	160	450	105	280	65	2000	530
18	630	200	500	160	400	105	250	65	1800	530
20	560	200	450	160	400	105	220	65	1600	480
22	500	200	450	160	350	105	220	65	1400	450
25	450	180	400	145	310	90	180	50	1200	420
28	400	160	350	125	280	80	160	45	1100	400
30	350	140	310	110	250	75	160	45	1100	400
32	350	140	280	100	220	65	140	45	1000	360
36	310	120	250	90	200	60	120	35	900	330
40	280	120	220	90	180	60	110	35	800	300



RPM = Revolution per min.
FEED = mm/min.

TiN COATED HSS-Co SLOT DRILLS

MATERIAL / ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	6700	50	5400	35	5000	35	2600	20	14000	190
3	4200	65	3800	55	3000	50	1900	25	13000	300
4	3400	85	2600	65	2200	55	1300	35	9500	350
5	2600	110	2200	85	1900	70	1100	40	7500	370
6	2200	110	1900	95	1400	70	950	50	6700	370
8	1700	120	1300	110	1100	85	670	55	5000	470
10	1300	120	1100	110	950	95	550	55	3700	480
12	1100	130	950	120	750	95	500	60	3000	460
14	950	130	850	110	670	95	400	60	2600	420
16	850	130	670	110	550	85	340	55	2400	420
18	750	120	600	110	500	85	300	55	2200	420
20	670	120	550	110	500	85	260	55	1900	380
22	600	120	550	110	400	85	260	55	1700	360
25	550	110	500	95	370	70	220	40	1400	340
28	500	95	400	85	340	65	190	35	1300	320
30	400	85	370	70	300	60	190	35	1300	320
32	400	85	340	65	260	55	170	35	1200	290
36	370	70	300	60	240	50	140	30	1100	260
40	340	70	260	60	220	50	130	30	950	240

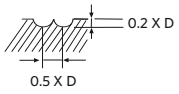


The FEED, in long and extra long types, should be reduced by around 50%.

RPM = Revolution per min.
FEED = mm/min.

HSS-Co BALL NOSE SLOT DRILLS

MATERIAL / ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1.5X3.0	4500	95	3400	70	2000	30	1400	20	11000	230
R2.0X4.0	3200	115	2400	80	1400	35	1000	25	8000	260
R3.0X6.0	2200	135	1700	90	1000	45	700	25	5600	280
R4.0X8.0	1600	160	1200	105	700	50	500	30	4000	350
R5.0X10.0	1300	180\170	1000	120	560	60	400	35	3200	360
R6.0X12.0	1000	150	800	105	450	55	320	35	2500	340
R8.0X16.0	800	140	600	100	350	55	250	35	2000	300
R10.0X20.0	600	130	500	85	300	50	200	35	1600	280
R12.5X25.0	500		400	70	220	40	160	30	1300	250

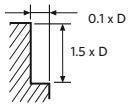


The FEED, in long and extra long types, should be reduced by around 50%.

RPM = Revolution per min.
FEED = mm/min.

TiN COATED HSS-Co END MILLS

MATERIAL / ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	6700	95	5400	365	5000	55	2600	25	14000	290
3	4200	130	3800	95	3000	70	1900	35	13000	460
4	3400	170	2600	120	2200	80	1300	55	9500	530
5	2600	220	2200	150	1900	110	1100	60	7500	560
6	2200	220	1900	170	1400	110	950	70	6700	560
8	1700	240	1300	190	1100	125	670	80	5000	700
10	1300	240	1100	190	950	145	550	80	3700	720
12	1100	260	950	220	750	145	500	90	3000	680
14	950	260	850	190	670	145	400	90	2600	640
16	850	260	670	190	550	125	340	80	2400	640
18	750	240	600	190	500	125	300	80	2200	640
20	670	240	550	190	500	125	260	80	1900	580
22	600	240	550	190	400	125	260	80	1700	540
25	550	220	500	175	370	110	220	60	1400	500
28	500	190	400	150	340	95	190	55	1300	480
30	400	170	370	130	300	90	190	55	1300	480
32	400	170	340	120	260	80	170	55	1200	430
36	370	145	300	110	240	70	140	40	1100	400
40	340	145	260	110	220	70	130	40	950	360



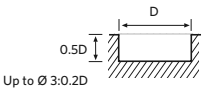
The FEED, in long and extra long types, should be reduced by around 50%.

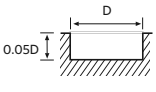
RPM = Revolution per min.
FEED = mm/min.

X-Power

2 FLUTE, SHORT, SLOTTING

MATERIAL STEELS	NON-ALLOYED STEELS CAST IRON		ALLOY STEELS STEELS		STAINLESS STEELS ALLOY STEELS		HARDENED STEELS HEAT RESISTANT		HARDENED	
HARDNESS	HRc30		HRc30-HRc45				HRc45-HRc55		HRc55-HRc65	
STRENGTH	1000N		1000-1500N/mm²				1500-2000N/mm²		2000N/mm²-	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	11560	190	7560	120	6300	90	5040	35		
3	8920	210	5560	140	4620	120	3360	40	1900	40
4	7560	300	4620	180	3880	150	2940	40	1480	40
5	6300	320	3780	190	3160	160	2320	50	1260	40
6	5560	350	3360	220	2840	180	2000	55	1100	40
8	4200	380	2520	200	2100	180	1680	75	840	40
10	3260	330	2000	160	1680	160	1360	60	680	35
12	2740	280	1680	130	1360	130	1160	55	560	35
16	2200	220	1360	110	1060	110	900	40	440	20
20	1680	170	1060	80	840	80	680	30	320	20
25	1360	130	840	70	680	60	540	20	260	15

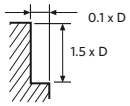




RPM = Revolution per min.
FEED = mm/min.

TiN COATED HSS-Co RIPPING CUTTERS

MATERIAL ALLOYS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40			
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	2200	95	1900	70	1400	65	950	35	5500	240
8	1700	125	1300	90	1000	80	670	40	3700	280
10	1300	180	1000	145	950	130	550	70	3000	420
12	1000	220	950	170	750	130	500	85	2500	480
14	950	220	850	170	670	130	420	85	2200	500
16	850	220	670	170	550	130	340	85	1900	540
18	750	220	600	170	500	130	300	85	1700	560
20	650	220	550	170	500	130	260	85	1400	600
22	600	260	550	200	400	170	260	100	1300	560
25	500	260	500	200	370	170	220	100	1200	540
28	500	250	400	190	340	160	190	100	1100	600
30	400	250	370	190	300	160	190	100	1100	640
32	400	250	340	190	260	160	170	100	950	600
36	370	250	300	190	240	160	140	100	850	560
40	340	240	260	180	220	140	130	95	750	540
50	260	240	220	200	190	170	110	95	600	440



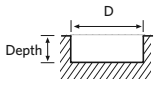
The FEED, in long and extra long types, should be reduced by around 50%.

RPM = Revolution per min.
FEED = mm/min.

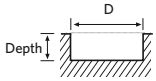
2 FLUTE, MINIATURE, SLOTTING

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	HRc30-HRc45		HRc45-HRc55	
STRENGTH	1000-1500N/mm²		1500-2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED
0.4	30000	180	23000	100
0.8	24000	300	18000	130
1	20000	320	15000	150
1.2	16000	320	12000	150
1.5	12000	300	9000	140

D<1
Depth = 0.15 X D
D L1
Depth = 0.25 X D



D<1
Depth = 0.02 X D
D L1
Depth = 0.05 X D

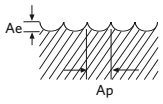


RPM = Revolution per min.
FEED = mm/min.

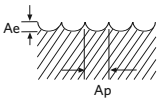
2 FLUTE, MINIATURE, BALL NOSE

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	HRc30-HRc45		HRc45-HRc55	
STRENGTH	1000-1500N/mm²		1500-2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED
0.6	30000	600	30000	300
0.8	27000	650	27000	380
1	25000	650	25000	400
1.2	24000	670	24000	410
1.5	23000	700	23000	430

D<1
Ae = 0.05 X D
Ap = 0.15 X D
D L1
Ae = 0.075 X D
Ap = 0.15 X D



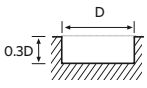
D<1
Ae = 0.05 X D
Ap = 0.1 X D
D L1
Ae = 0.05 X D
Ap = 0.15 X D



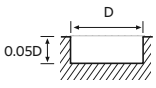
RPM = Revolution per min.
FEED = mm/min.

2 FLUTE, LONG, SLOTTING

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	-HRc30		HRc30-HRc45		HRc45-HRc55	
STRENGTH	-1000N/mm²		1000-1500N/mm²		1500-2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
2	6300	60	5040	50	3150	25
3	4410	70	3570	60	2200	30
4	3570	85	2840	70	1790	35
5	3050	105	2420	85	1580	40
6	2630	125	2100	105	1370	50
8	2000	135	1580	105	1050	50
10	1680	135	1370	105	840	50
12	1370	105	1160	95	700	40
16	1160	95	890	75	560	35
20	840	70	680	50	420	25



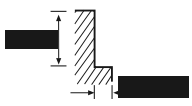
Up to Ø3:0.4mm



RPM = Revolution per min.
FEED = mm/min.

4 FLUTE, SHORT, SIDE CUTTING

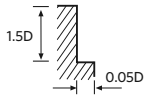
MATERIAL STEELS	NON-ALLOYED STEELS CAST IRON		ALLOY STEELS STEELS		STAINLESS STEELS ALLOY STEELS		HARDENED STEELS HEAT RESISTANT		HARDENED	
HARDNESS	-HRc30		HRc30-HRc45				HRc45-HRc55		HRc55-HRc65	
STRENGTH	-1000N		1000-1500N/mm²				1500-2000N/mm²		2000N/mm²-	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	11560	280	7560	170	6300	140	5040	50		
3	8920	320	5560	200	4620	170	3360	60	1900	60
4	7560	570	4620	350	3880	280	2940	60	1480	60
5	6300	600	3780	360	3160	300	2320	70	1260	60
6	5560	660	3360	410	2840	330	2000	80	1100	60
8	4200	710	2520	380	2100	350	1680	110	840	60
10	3260	610	2000	300	1680	300	1360	90	680	50
12	2740	520	1680	250	1360	240	1160	80	560	50
16	2200	410	1360	200	1100	200	900	60	440	30
20	1680	320	1060	160	840	150	680	40	320	30
25	1360	250	840	130	680	120	540	30	260	20

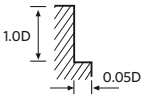


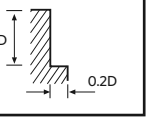
RPM = Revolution per min.
FEED = mm/min.

6 & 8 FLUTE, 45° HELIX LONG, SIDE CUTTING (HIGH SPEED CUTTING)

MATERIAL	HEAT RESISTANT STEELS HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	-HRc30		HRc30-HRc45		HRc45-HRc55	
STRENGTH	-1750N/mm²		1750-2080N/mm²		2080N/mm²-	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
6	16800	6090	8400	3050	4200	1470
8	12600	6090	6300	3050	3160	1470
10	9980	5990	5040	3050	2520	1470
12	8400	5040	4200	2520	2100	1260
16	6300	3780	3160	1890	1580	950
20	5040	3050	2520	1470	1260	760
25	4500	2700	2200	1300	1120	670

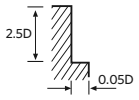
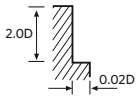






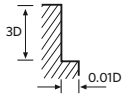
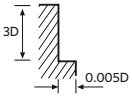
RPM = Revolution per min.
FEED = mm/min.

4 FLUTE, LONG, SIDE CUTTING

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	-HRc30		HRc30-HRc45		HRc45-HRc55		HRc55-HRc65	
STRENGTH	~1000N		1000-1500N/mm²		1500-2000N/mm²		2000N/mm²~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	6300	100	5040	80	3150	45		
3	4410	115	3570	100	2200	55	1890	30
4	3570	140	2840	115	1790	60	1470	35
5	3050	180	2420	140	1580	70	1260	40
6	2630	215	2100	180	1370	90	1160	50
8	2000	230	1580	180	1050	90	840	50
10	1680	230	1370	180	840	90	670	50
12	1370	180	1160	160	700	70	560	40
16	1160	160	890	125	560	60	440	35
20	840	115	680	90	420	45	340	25
								

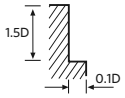
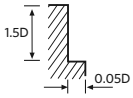
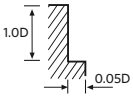
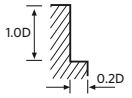
RPM = Revolution per min.
FEED = mm/min.

6 FLUTE, 45˚ HELIX, EXTRA LONG, SIDE CUTTING

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	-HRc40		HRc40-HRc50		HRc50-HRc60		HRc60-HRc65	
STRENGTH	~1250N		1250-1750N/mm²		1750-2080N/mm²		2080N/mm²~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	2230	470	1670	350	1390	250	1110	200
8	1670	450	1250	330	1050	240	840	180
10	1330	440	1000	300	840	230	680	160
12	1110	400	840	270	690	210	560	150
16	840	330	630	230	530	170	420	130
20	670	280	500	200	420	150	320	120
25	540	240	400	170	340	130	270	95
								

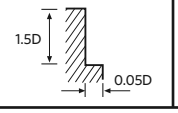
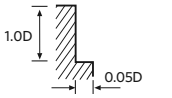
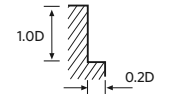
RPM = Revolution per min.
FEED = mm/min.

6 & 8 FLUTE, 45˚ HELIX, LONG, SIDE CUTTING

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	-HRc30		HRc30-HRc45		HRc45-HRc55		HRc55-HRc65	
STRENGTH	~1000N		1000-1500N/mm²		1500-2000N/mm²		2000N/mm²~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5560	2000	3880	1370	1580	210	1100	130
8	4200	2000	3940	1370	1160	210	840	130
10	3360	2000	2320	1370	1000	210	680	130
12	2840	1680	2000	1160	840	180	560	110
16	2100	1260	1480	880	640	130	420	70
20	1680	1010	1160	690	500	110	320	60
25	1500	900	1100	600	430	90	260	50
								

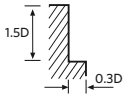
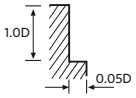
RPM = Revolution per min.
FEED = mm/min.

6 FLUTE, 45˚ HELIX, CORNER RADIUS, SIDE CUTTING
(HIGH SPEED CUTTING)

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	-HRc50		HRc50-HRc60		HRc60-HRc65	
STRENGTH	~1750N/mm²		1750-2080N/mm²		2080N/mm²~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
6	16800	6090	8400	3050	4200	1470
8	12600	6090	6300	3050	3160	1470
10	9980	5990	5040	3050	2520	1470
12	8400	5040	4200	2520	2100	1260
16	6300	3780	3160	1890	1580	950
20	5040	3050	2520	1470	1260	760
						

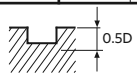
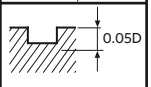
RPM = Revolution per min.
FEED = mm/min.

MULTI FLUTE, ROUGHING, SIDE CUTTING

MATERIAL STEELS	NON-ALLOYED STEELS CAST IRON		ALLOY STEELS STEELS		ALLOY STEELS ALLOY STEELS STEELS		HARDENED STEELS HEAT RESISTANT		HARDENED HEAT RESISTANT	
HARDNESS	-HRc30		HRc30-HRc38		HRc38-HRc45		HRc45-HRc55		HRc55-HRc65	
STRENGTH	~1000N		1000-1200N/mm²		1200-1400N/mm²		1400-2000N/mm²		2000N/mm²~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	15600	2320	12400	840	8400	570	3400	260	2400	190
8	11600	2320	9200	840	6300	570	2400	240	1800	180
10	9200	2320	7600	840	5100	570	2000	290	1300	190
12	8000	2400	6000	800	4200	570	1680	260	1200	190
14	6800	2400	5200	840	3600	570	1400	200	900	130
16	6000	2400	4800	760	3300	510	1200	160	800	110
18	5200	2320	4400	720	2700	420	1100	150	700	100
20	4800	2160	3600	560	2400	360	1000	150	660	100
25	4300	2150	3200	620	2160	410	900	160	600	100
										

RPM = Revolution per min.
FEED = mm/min.

3 & 4 FLUTE, 50˚ HELIX, SLOTTING

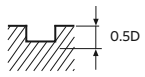
MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	-HRc30		HRc30-HRc45					
STRENGTH	~1000N		1000-1500N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5560	310	3360	200	2840	160	1160	40
8	4200	340	2520	180	2100	160	840	40
10	3260	300	2000	140	1680	140	670	40
12	2740	250	1680	120	1370	120	560	30
16	2200	200	1360	100	1050	100	420	25
18	1940	175	1210	85	950	85	370	20
20	1680	150	1060	70	840	70	320	20
25	1360	115	840	60	670	60	270	15
								

RPM = Revolution per min.
FEED = mm/min.

Jet-Power

2 FLUTE, SHORT, SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY	
HARDNESS	-HRc30		HRc30-HRc45			
STRENGTH	1000N/mm²		1000-1500N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
2	11560	190	7560	120	6300	90
3	8920	210	5560	140	4620	120
4	7560	300	4620	180	3880	150
5	6300	320	3780	190	1360	160
6	5560	350	3360	220	2840	180
8	4200	380	2520	200	2100	180
10	3260	330	2000	160	1680	160
12	2740	280	1680	130	1360	130
16	2200	220	1360	110	1060	110
20	1680	170	1060	80	840	80
25	1360	130	840	70	680	60

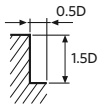


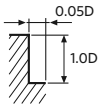
(Up to Ø 3:0.2D)

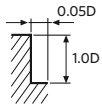
RPM = Revolution per min.
FEED = mm/min.

3 & 4 FLUTE, 50˚ HELIX, SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	-HRc30		HRc30-HRc45					
STRENGTH	-1000N		1000-1500N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5560	400	3360	250	2840	250	1160	55
8	4200	420	2520	230	2100	265	840	50
10	3260	370	2000	180	1680	230	670	50
12	2740	310	1680	150	1370	180	560	45
16	2200	250	1360	120	1050	150	420	35
18	1940	220	1210	110	950	130	370	30
20	1680	190	1060	95	840	115	320	30
25	1360	150	840	75	670	90	270	25



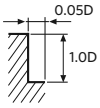




RPM = Revolution per min.
FEED = mm/min.

4 FLUTE, SHORT, SIDE CUTTING

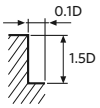
MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY	
HARDNESS	-HRc30		HRc30-HRc45			
STRENGTH	1000N/mm²		1000-1500N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
2	11560	280	7560	170	6300	140
3	8920	320	5560	200	4620	170
4	7560	570	4620	350	3880	280
5	6300	600	3780	360	1360	300
6	5560	660	3360	410	2840	330
8	4200	710	2520	380	2100	350
10	3260	610	2000	300	1680	300
12	2740	520	1680	250	1360	240
16	2200	410	1360	200	1060	200
20	1680	320	1060	160	840	150
25	1360	250	840	130	680	120

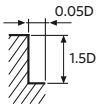


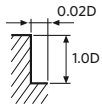
RPM = Revolution per min.
FEED = mm/min.

6 & 8 FLUTE, 45˚ HELIX, LONG, SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	-HRc30		HRc30-HRc45					
STRENGTH	-1000N		1000-1500N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5560	2000	3880	1370	3370	1100	1350	280
8	4200	2000	2940	13701370	2490	1100	1000	280
10	3360	2000	2320	1160	1920	1100	440	280
12	2840	1680	2000	880	1610	1000	400	250
16	2100	1260	1480	690	1160	770	310	190
20	1680	1010	1160	600	900	620	250	155
25	1500	900	1100		850	540	220	135



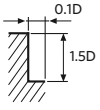


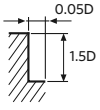


RPM = Revolution per min.
FEED = mm/min.

6 & 8 FLUTE, 45˚ HELIX, LONG, SIDE CUTTING (HIGH SPEED CUTTING)

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS	
HARDNESS	-HRc30		HRc45-HRc65	
STRENGTH	1000N/mm²		1000-1500N/mm²	
DIAMETER	RPM	FEED	RPM	FEED
6	22200	8000	16800	6090
8	16800	8000	12600	6090
10	13400	8000	9980	5990
12	11350	6720	8400	5040
16	8400	5040	6300	3780
20	6700	4040	5040	3050
25	6000	3600	4500	2700





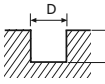
RPM = Revolution per min.
FEED = mm/min.

Alu-Power

2 FLUTE, 45˚ HELIX, FOR ALUMINIUM

(SLOTTING)

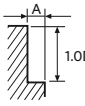
MATERIAL	ALUMINIUM NONFERROUS METALS	
DIAMETER	RPM	FEED
3	10000	700
4	10000	900
5	10000	1000
6	10000	1200
8	8000	1400
10	8000	1700
12	8000	2100
14	6000	1800
16	6000	1900
18	4000	1400
20	4000	1600



SIDE CUTTING)

MATERIAL	ALUMINIUM NONFERROUS METALS	
DIAMETER	RPM	FEED
3	10000	900
4	10000	1100
5	10000	1300
6	10000	1500
8	8000	1800
10	8000	2100
12	8000	2600
14	6000	2200
16	6000	2400
18	4000	1800
20	4000	1900

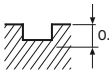
A:
Ø3-Ø10=0.25 X D
Ø12-Ø20=0.5 X D

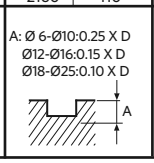


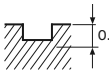
RPM = Revolution per min.
FEED = mm/min.

MULTI FLUTE, ROUGHING, SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	-HRc30		HRc30-HRc45					
STRENGTH	1000N		1000-1500N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	15600	2320	12400	840	8400	570	2400	190
8	11600	2320	9500	840	6300	570	1800	180
10	9200	2320	7600	840	5100	570	1300	190
12	800	2400	6000	800	4200	570	1200	190
14	6800	2400	5200	840	3600	570	900	130
16	6000	2400	4800	760	3300	510	800	110
18	5200	2320	4400	720	2700	420	700	100
20	4800	2160	3600	560	2400	360	660	100
25	4300	2150	3200	620	2160	410	600	110





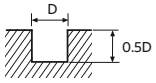


RPM = Revolution per min.
FEED = mm/min.

2 FLUTE, 45° HELIX, FOR ALUMINIUM TiCN COATED

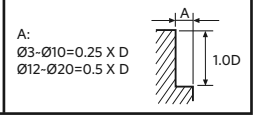
(SLOTTING)

MATERIAL	ALUMINIUM NONFERROUS METALS	
DIAMETER	RPM	FEED
3	13000	900
4	13000	1200
5	13000	1300
6	13000	1500
8	10000	1800
10	10000	2200
12	10000	2700
14	8000	2300
16	8000	2500
18	5000	1800
20	5000	2000



(SIDE CUTTING)

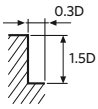
MATERIAL	ALUMINIUM NONFERROUS METALS	
DIAMETER	RPM	FEED
3	13000	1200
4	13000	1400
5	13000	1700
6	13000	2000
8	10000	2300
10	10000	2700
12	10000	3400
14	8000	2800
16	8000	3100
18	5000	2300
20	5000	2500

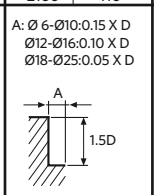


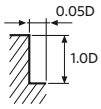
RPM = Revolution per min.
FEED = mm/min.

MULTI FLUTE, ROUGHING, SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	-HRc30		HRc30-HRc45					
STRENGTH	1000N		1000-1500N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	15600	2320	12400	840	8400	570	2400	190
8	11600	2320	9500	840	6300	570	1800	180
10	9200	2320	7600	840	5100	570	1300	190
12	800	2400	6000	800	4200	570	1200	190
14	6800	2400	5200	840	3600	570	900	130
16	6000	2400	4800	760	3300	510	800	110
18	5200	2320	4400	720	2700	420	700	100
20	4800	2160	3600	560	2400	360	660	100
25	4300	2150	3200	620	2160	410	600	110





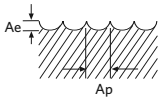


RPM = Revolution per min.
FEED = mm/min.

3 FLUTE, BALL NOSE, FOR ALUMINIUM TiCN COATED

MATERIAL	ALUMINIUM ALUMINIUM ALLOY		STAINLESS STEELS TITANIUM ALLOY		COPPER BRASS NONFERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	18600	550	9000	120	13000	450
4	14000	550	6700	120	10000	460
5	11000	650	5500	120	8000	450
6	9400	650	4400	130	6800	500
8	7200	740	3400	130	5200	500
10	5600	740	2600	130	4000	500
12	4700	860	2200	130	3400	500
16	3500	740	1700	140	2600	500

Ae: 0.2 x D
Ap: 0.5 x D

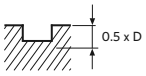


RPM = Revolution per min.
FEED = mm/min.

Tank Power

2 FLUTE, REGULAR, SLOTTING, TIALN COATED

MATERIAL	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc35		HRc35-HRc40	
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²		1100-1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	6700	100	5600	80	4700	85	3000	55	1900	35
3	4700	140	3900	120	3200	100	2200	70	1700	55
4	4100	200	3400	155	3000	140	1900	80	1500	65
5	3700	220	3100	175	2500	160	1600	90	11300	65
6	3300	230	2750	185	2200	165	1400	95	1100	75
8	2500	240	2100	210	1700	175	1100	100	850	75
10	2000	260	1700	230	1400	200	850	110	670	90
12	1700	240	1400	210	1100	180	700	100	550	75
14	1500	230	1200	200	950	170	600	95	480	70
16	1300	230	1100	185	850	155	530	90	420	70
18	1100	210	900	170	750	140	480	85	380	65
20	900	190	750	145	670	130	420	80	340	60
22	800	160	680	130	570	110	380	70	300	50
25	720	135	600	120	470	100	340	65	240	45

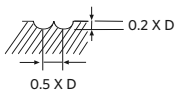


RPM = Revolution per min.
FEED = mm/min.

MULTI FLUTE, BALL NOSE, PROFILING TiALN COATED

EP933

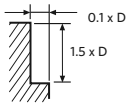
MATERIAL	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEEL TOOL STEELS	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc40	
STRENGTH	-500N/mm²		500-800N/mm²		800-1000N/mm²		1000-1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1.5 X 3.0	7000	300	5500	200	3700	110	1900	50
R2.0 X 4.0	5700	370	4400	250	2900	140	1500	65
R3.0X 6.0	4200	420	3300	280	2200	155	1150	75
R4.0X 8.0	3200	460	2500	310	1700	175	850	75
R5.0 X 10.0	2600	520	2000	350	1350	200	650	90
R6.0 X 12.0	2200	460	1700	310	1150	175	550	75
R8.0 X 16.0	1600	420	1250	280	850	155	420	70
R10.0 X 20.0	1300	360	1000	240	650	130	340	60
R12.5 X25.0	900	270	700	180	450	100	240	45



RPM = Revolution per min.
FEED = mm/min.

4 FLUTE, REGULAR, SIDE CUTTING, TiALN COATED

MATERIAL	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			-HRc20		HRc20-HRc30		HRc30-HRc35		HRc35-HRc40	
STRENGTH	-500N		500-800N/mm²		800-1000N/mm²		1000-1100N/mm²		1100-1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	8800	250	8000	210	5800	150	3900	110	3200	75
3	6300	360	5700	300	4200	220	2800	155	2300	110
4	5000	420	4500	350	3400	260	2200	175	1900	130
5	4200	440	3800	370	2800	275	1900	190	1600	140
6	3700	470	3400	390	2500	285	1700	200	1400	155
8	3000	500	2500	420	1900	320	1300	210	1100	160
10	2200	550	2000	460	1500	330	1000	230	850	175
12	1900	500	1700	420	1300	320	850	210	690	160
14	1700	480	1500	400	1100	300	750	200	600	150
16	1550	440	1300	370	950	290	650	190	520	145
18	1400	400	1200	350	850	270	600	170	480	130
20	1200	380	1000	320	750	240	500	155	420	120
22	1000	360	900	280	650	220	450	140	380	115
25	950	320	800	265	600	200	400	130	340	110

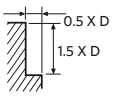


RPM = Revolution per min.
FEED = mm/min.

MULTI FLUTE, ROUGHING, SIDE CUTTING, TiALN COATED

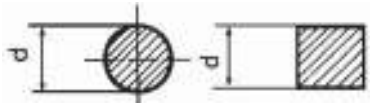
EP941

MATERIAL	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEEL TOOL STEELS	
HARDNESS	-HRc20		HRc20-HRc30		HRc30-HRc35		HRc35-HRc40	
STRENGTH	-800N/mm²		800-1000N/mm²		1000-1100N/mm²		1100-1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	2700	200	2100	155	1500	100	1250	90
8	2300	250	1800	200	1300	140	1000	110
10	1800	360	1400	275	1000	170	850	140
12	1500	360	1150	290	850	200	700	155
14	1300	360	1000	290	720	200	600	155
16	1150	360	900	290	625	200	520	155
18	1000	360	850	290	580	200	470	155
20	920	370	720	290	500	200	420	155
22	850	370	620	290	450	200	380	155
25	750	360	570	275	400	190	340	155



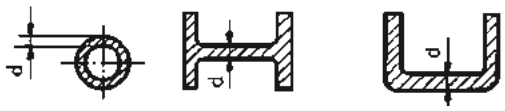
RPM = Revolution per min.
FEED = mm/min.

SPEEDS AND FEEDS FOR HSS SLITTING SAWS—SOLID MATERIALS



Material	Material width or Ø d mm	Speed m/min	Feed mm/min	Pitch mm
Steel up to 850 N/mm²	8-20	20-40	50-200	5-7
	20-40	20-40	50-200	7-9
	40-60	20-40	50-200	9-12
	60-100	20-40	50-200	12-22
Chrome nickel steel 850 to 1300 N/mm²	8-20	15-25	50-200	5-7
	20-40	15-25	50-150	7-9
	40-60	8-18	50-150	9-12
	60-100	8-18	50-150	12-22
Aluminium	8-20	500-800	200-500	6-8
	20-40	500-800	100-300	8-12
	40-60	500-800	100-300	12-18
	60-100	400-600	100-300	18-30
Copper	8-20	150-300	200-500	5-7
	20-40	150-300	200-500	7-10
	40-60	100-200	100-300	10-14
	60-100	100-200	100-300	14-26
Brass	8-20	150-300	300-500	4-5
	20-40	150-300	300-500	5-8
	40-60	150-300	200-400	8-12
	60-100	150-300	200-400	12-24
Bronze	8-20	60-120	300-500	4-5
	20-40	60-120	300-500	5-8
	40-60	60-100	200-400	8-12
	60-100	60-100	200-400	12-24
Grey cast iron	8-20	15-20	50-200	5-7
	20-40	12-18	50-200	7-8
	40-60	12-18	50-200	8-10
	60-100	12-18	50-200	10-18

SPEEDS AND FEEDS FOR HSS SLITTING SAWS—PROFILES AND TUBES

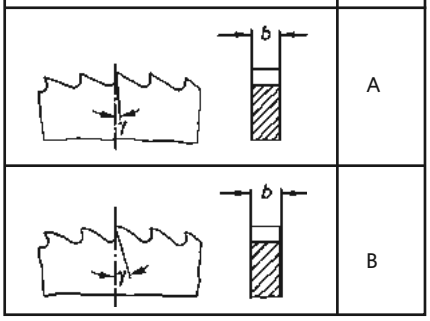


Material	Material thickness d mm	Speed m/min	Feed mm/min	Pitch mm
Steel up to	1-2	40-60	200-400	1-2
500 N/mm²	2-4	40-60	200-400	2-4
	4-8	40-60	100-200	5-8
	8-12	40-60	100-200	8-10
Steel up to	1-2	30-40	200-400	2-3
850 N/mm²	2-4	30-40	200-400	3-5
	4-8	30-40	100-200	5-8
	8-12	30-40	100-200	8-10
Steel up to	1-2	10-30	200-300	2-3
1300 N/mm²	2-4	10-30	100-200	3-5
	4-8	10-30	50-100	5-7
	8-12	10-30	50-100	7-9
Chrome nickel	1-2	20-30	200-400	2-3
Steel	2-4	20-30	100-300	3-5
	4-8	20-30	100-200	5-8
	8-12	20-30	50-200	8-10
Aluminium	1-2	1000-1500	200-500	3-5
	2-4	800-1200	200-500	5-6
	4-8	800-1200	100-300	6-8
	8-12	600-1000	100-300	8-12
Copper	1-2	300-600	200-500	3-5
	2-4	300-400	200-400	5-6
	4-8	320 400	100-300	6-8
	8-12	200-400	100-300	8-10
Brass	1-2	400-800	200-400	2-3
	2-4	400-600	200-400	3-5
	4-8	400-600	100-300	5-7
	8-12	300-500	100-300	7-9
Bronze	1-2	400-800	200-400	2-3
	2-4	400-600	200-400	3-5
	4-8	400-600	100-300	5-7
	8-12	200-400	100-300	7-9
Cast steel	1-2	30-60	200-400	2-3
	2-4	20-40	200-400	3-5
	4-8	20-40	100-200	5-8
	8-12	20-40	50-150	8-10
Cast iron	1-2	20-30	200-400	2-3
	2-4	20-30	200-400	3-4
	4-8	20-30	100-200	5-6
	8-12	20-30	100-200	6-8

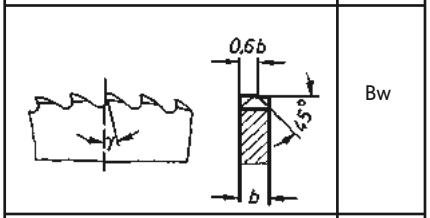
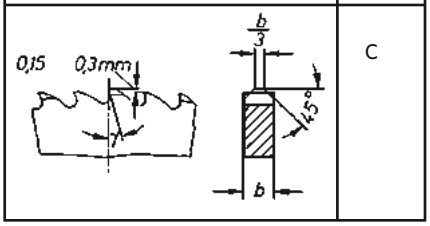
CIRCULAR SAW BLADE TECHNICAL INFORMATION

Tooth Form Type	Form	Application
Angular to Din 1837	A	Brittle short chipping material. Fine pitches. Pitches to 2,0 mm suitable for depth 3-4 mm max. Larger pitches to 15 mm depth or cross section.
Curved to Din 1838	B	Long chipping material. All circular cut-off machines Universal application. For shallow depths & for non-ferrous materials.
	C	Min. thickness 1mm. Only suitable for cut-off Produces 3 chips due to precut teeth. Suitable for heavy cuts.
	BW	Alternate bevel for small sections & for deep slots.

Din standards for Circular Metal Saws
Tooth Form

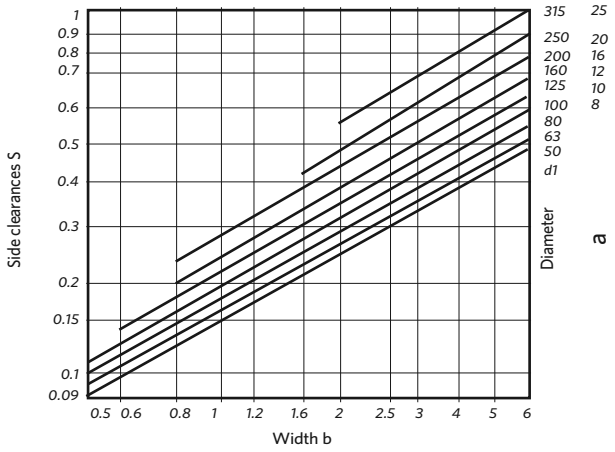
Angular Description	Sketch Form		Angle y for tool type N H W	
			4 2° 4 2° 4 2°	
Curved tooth		A	5° 0° 10°	= DIN 1837 Normal
		B	15° 8° 25°	DIN 1838 Normal

DIN 1837 from t
> 3,15 mm special

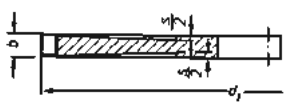
Description	Sketch	Code	Angle y N	H	W	
Curved tooth with alternate bevel teeth		Bw	42°	42°	42°	DIN1837 from t U 3.15mm and b U 2 mm special
			15°	8°	25°	DIN 1838 from b U 2 mm special
Curved tooth with roughing & tfinishing teeth		C	15°	8°	25°	DIN1837 from t U 3.15mm and b U 2 mm special
						DIN 1838 from b U 2 mm special

SIDE CLEARANCE DIN 1840

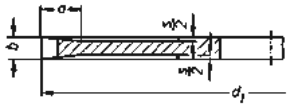
Values for saws from 50 to 315 Ø



Normal execution



Special execution (strengthened)



Manufacturing tolerances DIN 1840

DIN 1840

Outside diameter above	to	Permissible deviation Runout at side position 2	d1 Runout roundness at position 1
	40	0.1	0.1
40	100	0.16	0.1
100	200	0.25	0.16
200	315	0.4	0.16

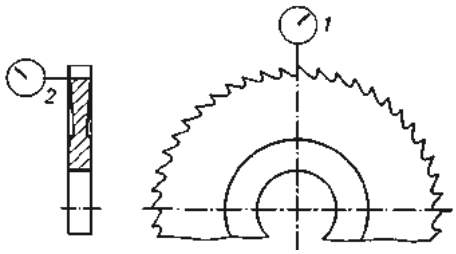
Alesa Tolerances

Outside diameter above	to	Permissible deviation Runout at side position 2	Runout roundness at position 1
30	80	0.11	0.06
100	200	0.17	0.10
200	315	0.27	0.10

For measuring the saw must be held on an arbor accurate within 10 ×m

Diameter	js 16
Width	js 11
Bore	H7

Note: Matched sets must be ordered as such.



HOW TO DETERMINE THE CUTTER NUMBER OF INVOLUTE GEAR CUTTERS:

Cutter No 1 = 12 - 13 teeth, No 2 = 14 - 16 teeth, No 3 = 17 - 20 teeth, No 4 = 21 - 25 teeth, No 5 = 26 - 34 teeth, No 6 = 35 - 54 teeth, No 7 = 55 - 135 teeth, No 8 = 135 teeth to Rack.

ENGINEERING DATA – SPEED AND FEED CALCULATIONS

v	=	Speed	m/min
D	=	Cutter-diameter	mm
n	=	Revolution per min	
Sn	=	Feed per revolution	mm
S′	=	Feed per minute	mm
Sz	=	Feed per tooth	mm
Z	=	No. of teeth	
V	=	Chip volume	cm^3/min
a	=	Depth of cut	mm
b	=	Length of cut	mm
t	=	Machining time	minutes
l	=	Length of workpiece	mm

FORMULA:

$$v = \frac{\pi \cdot D \cdot n}{1000}$$

$$n = \frac{v \cdot 1000}{\pi \cdot D}$$

$$Sn = \frac{S'}{n}$$

$$Sz = \frac{S'}{n \cdot z}$$

$$S' = n \cdot z \cdot Sz$$

$$V = \frac{a \cdot b \cdot S'}{1000}$$

$$t = \frac{l}{S'}$$

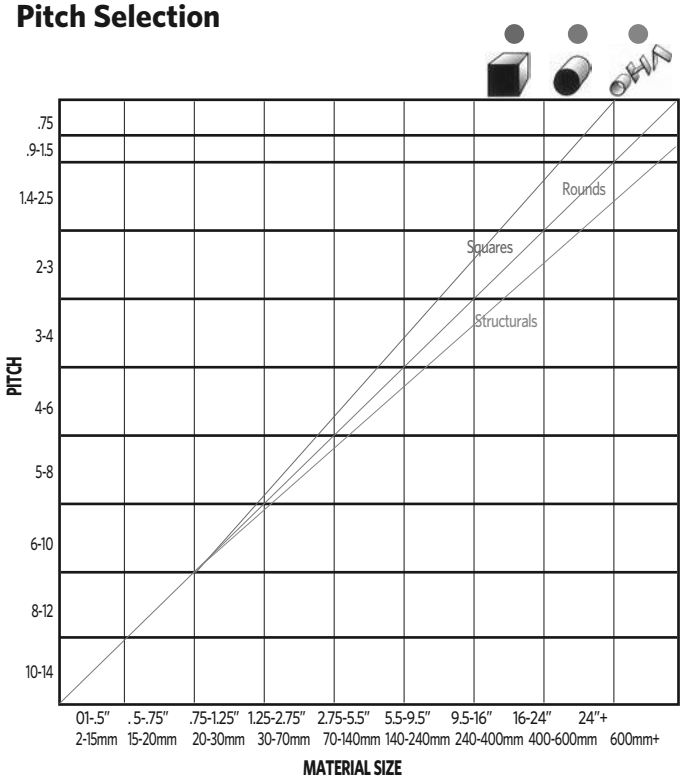
DoALL SAW BLADE SELECTOR GUIDE

Band saw blade selector by material and size.

Material & Size	Silencer 1 Neutral 0° rake	Silencer 2 10% Positive rake	Imperial 101 Neutral 0° rake	Penetrator 3 15° Positive rake
Free machining Carbon Solids	**M2**	**M2**	**M42**	**M42**
3 - 13 mm	6-10		6-10	5-8
13 - 25 mm	6-10		6-10	5-8
25 - 75 mm	5-8	5-8		5-8
75 - 150 mm	4-6	4-6	4-6	4-6
150 - 250 mm		3-4 & 2-3	2 Claw	3-4 & 2-3
250 mm		2-3	2 Claw	2-3 & 1.3
Carbon Steels				
3 - 13 mm	6-10		6-10	5-8
13 - 25 mm	6-10		6-10	5-8
25 - 75 mm	5-8	5-8		5-8
75 - 150 mm	4-6	4-6	4-6	4-6
150 - 250 mm		3-4 & 2-3	2 Claw	3-4 & 2-3
250 mm		2-3	2 Claw	2-3 & 1.3
Tool Steels				
3 - 13 mm			6-10	
13 - 25 mm		5-8		5-8
25 - 75 mm		4-6	4-6	4-6
75 - 150 mm		3-4 & 2-3	3-4	3-4
150 - 250 mm			3 Claw	2+3 & 3-4
250 mm			2 Claw	2-3 & 1.3
Alloy Steels				
3 - 13 mm			6-10	
13 - 25 mm		5-8		5-8
25 - 75 mm		4-6	4-6	4-6
75 - 150 mm		3-4	3-4	3-4
150 - 250 mm		2-3 & 3-4	3 Claw	2+3 & 3-4
250 mm			2 Claw	2-3 & 1.3
Stainless Steels				
3 - 13 mm			6-10	
13 - 25 mm				5-8
25 - 75 mm			4-6	4-6
75 - 150 mm			3-4	3-4
150 - 250 mm				2-3 & 3-4
250 mm				2-3 & 1.3
Exotic Materials				
3 - 13 mm	6-10		6-10	5-8
13 - 25 mm	6-10		6-10	5-8
25 - 75 mm	5-8	5-8	4-6	5-8
75 - 150 mm	4-6	4-6	3-4	4-6 & 3-4
150 - 250 mm		3-4 & 2-3	3 Claw	3-4 & 2-3
250 mm			2 Claw	2-3 & 1.3
Structurals & Tubing				
3 - 13 mm	10-14		10-14	
13 - 25 mm	6-10		6-10	
25 - 75 mm	5-8 or 4-6	5-8 or 4-6	4-6	5-8 or 4-6
75 - 150 mm	4-6	4-6 or 3-4	4-6 or 3-4	4-6 or 3-4
150 - 250 mm		3-4	3-4	3-4 or 2-3
250 mm		2-3	3 Claw	2-3 or 1.3

SAW BLADE CHARACTERISTICS

Pitch Selection



Breaking-in the blade

The blade break-in procedure dresses and strengthens new, ultra-sharp teeth. Proper break-in can increase band life by 25 to 50 percent.

Always break-in a new blade.
Saw at the recommended band speed,
Cut at 1/2 the normal feed rate. (Cuts should take twice as long).
Cut for 20 minutes, then increase feed force in steps until you attain the normal cutting time.

To ensure penetration in very tough and work hardening materials, you may need to apply more feed force and cut at a faster rate than described above.

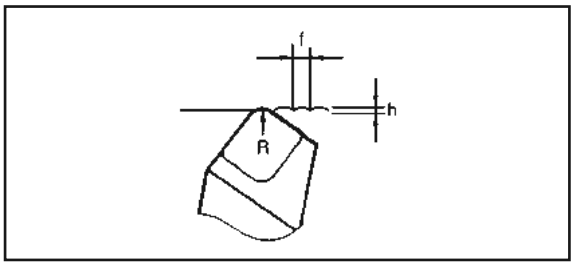
Sawing after breaking-in

After break-in, as the blade gradually dulls, you will need to periodically increase the feed force to maintain cutting rate. When the blade is too dull and the feed force too high, excessive band deflection will cause the blade to cut crooked.

Chip Characteristics

Chip form								
Condition	Thick hard & short	Thick hard & brittle	Thick hard & springy	Thin hard & springy	Thin curly & springy	Thin straight & springy	Powdery	Powdery
Colour	Blue or Brown	Blue or Brown	Silver or Light Straw	Silver	Silver	Silver	Silver	Silver
Band Speed	Reduce	Reduce	OK	Increase	OK	OK	Reduce	OK
Feed Rate	Reduce	Reduce	Reduce slightly	Reduce	OK	Increase	Increase	Reduce
Other	Check cutting fluid and mix ratio	Check cutting fluid and mix ratio	Check for correct blade pitch	Check for correct blade pitch				Use a coarser pitch blade

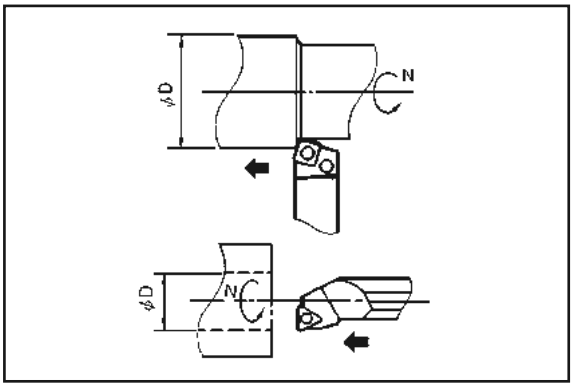
THEORETICAL SURFACE FINISH



$$h = \frac{f^2}{8R} \times 1000$$

h: Surface finish (×m)
f: Feed (mm/rev)
R: Nose radius (mm)

CALCULATION FORMULAS FOR TURNING Cutting speed



When calculating the cutting speed from the number of revolutions

$$V = \frac{Ⓟ \times D \times N}{1000}$$

V: Cutting speed (m/min)
N: Number of revolution (r.p.m.)
D: Work Ø (mm)
Ⓟ: 3.14

When calculating the number of revolutions from the cutting speed

$$N = \frac{1000 \times V}{Ⓟ \times D}$$

Example:
Calculating the cutting speed when cutting a 150 mm Ø work piece at 250 r.p.m.

$$V = \frac{3.14 \times 150 \times 250}{1000} = 117 \text{ m/min}$$

• FACTORS AFFECTING CHIP CONTROL

1) Cutting condition

1 Feed
2 Depth of cut
3 Cutting speed

- Of these feed has the greatest effect followed by depth of cut and cutting speed in order listed.
- Feed is proportionate to the thickness of chips.
- Depth of cut is proportionate to the width of chips.
- There are optimum values (effective range) in feed and depth of cut.
- Cutting speed is in inverse proportion to chip thickness. Effective range becomes narrow at high speed.

2) Work material

1 Alloy element
2 Hardness
3 Heat treatment condition

- These are related to thickness of chips and ease of curling.
- Mild steel chips are thicker than those of hard steel.
- Hard steel chips liable to curl more than those of mild steel.
- Chips that do not curl are thin. As an exception, in case of mild steel even if thick, may not curl.

3) Shape of tool

1 Side cutting edge angle
2 Nose radius

- Side cutting edge angle is relative to chip thickness and width.
- Side cutting edge angle is preferably small .
- Nose radius is relative to thickness and width and the direction of flowing out.
- In finishing, a small nose radius is better, while for rough cutting, a large radius is better for chipping. However a larger radius produces a better finish.

4) Shape of breaker

1 Rake angle
2 Breaker width
3 Breaker depth

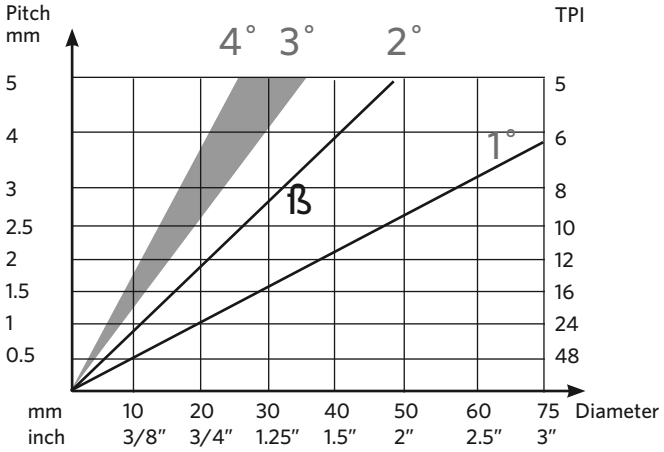
- Rake angle is in inverse proportion to chip thickness.
- Depending on the work material, there is an optimum value.
- Breaker width is selected proportionately to feed.
- Narrow at low feed and wide at high feed.
- Breaker depth is to be selected so as to be inversely proportionate to feed.
- Deep at low feed and shallow at high feed.

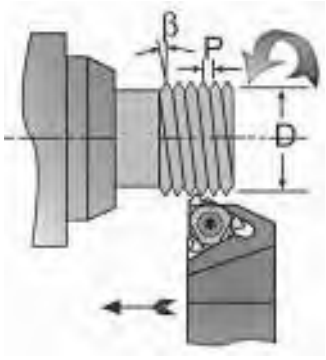
The data listed below is for reference purposes only, and indicates potential starting conditions. It is the responsibility of the site operation manager to determine correct application requirements.

Material to be cut	Cutting Surface Speed Meters per minute	Cutter Diameter / Material / RPM Relationship													
		13		14		18		22		30		50		65	
	Lower - Upper	L	U	L	U	L	U	L	U	L	U	L	U	L	U
Aluminium	60 - 90	1 469	2203	1364	2046	1061	1591	868	1302	637	955	382	573	294	441
Brass & Bronze	40 - 50	979	1224	909	1137	707	884	579	723	424	530	255	318	196	245
Iron: Cast (Soft)	30 - 50	734	1224	682	1137	530	884	434	723	318	530	191	318	147	245
Iron: Cast (Hard)	15 - 21	367	514	341	477	265	371	217	304	159	223	95	134	73	103
Iron: Cast (Malleable)	15 - 30	367	734	341	682	265	530	217	434	159	318	95	191	73	147
Steel: Mild	24 - 30	588	734	546	682	424	530	347	434	255	318	153	191	118	147
Steel: High Tensile	3 - 5	73	122	68	114	53	88	43	72	32	53	19	32	15	24
Stainless Steel: Free Cutting	15 - 18	367	441	341	409	265	318	217	260	159	191	95	115	73	88
Stainless Steel: Heat Resisting	6 - 13	26	318	136	296	106	230	87	188	64	138	38	83	29	64

THREADING INSERT TECHNICAL DATA

THREAD HELIX DATA





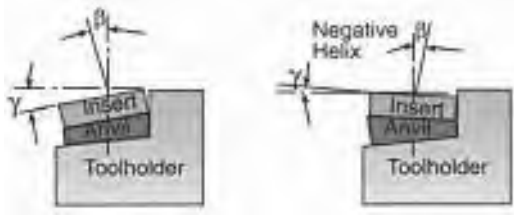
$$\text{Tan } ß = \frac{P}{ⓟD}$$

$$ß = \frac{20.P}{D}$$

STANDARD AND SLANTED ANVILS

CARMEX Toolholder Pockets have a built in 1.5˚ Helix compensation Angle. This angle may be adjusted to better match the thread Helix Angle by simply changing the Anvil.

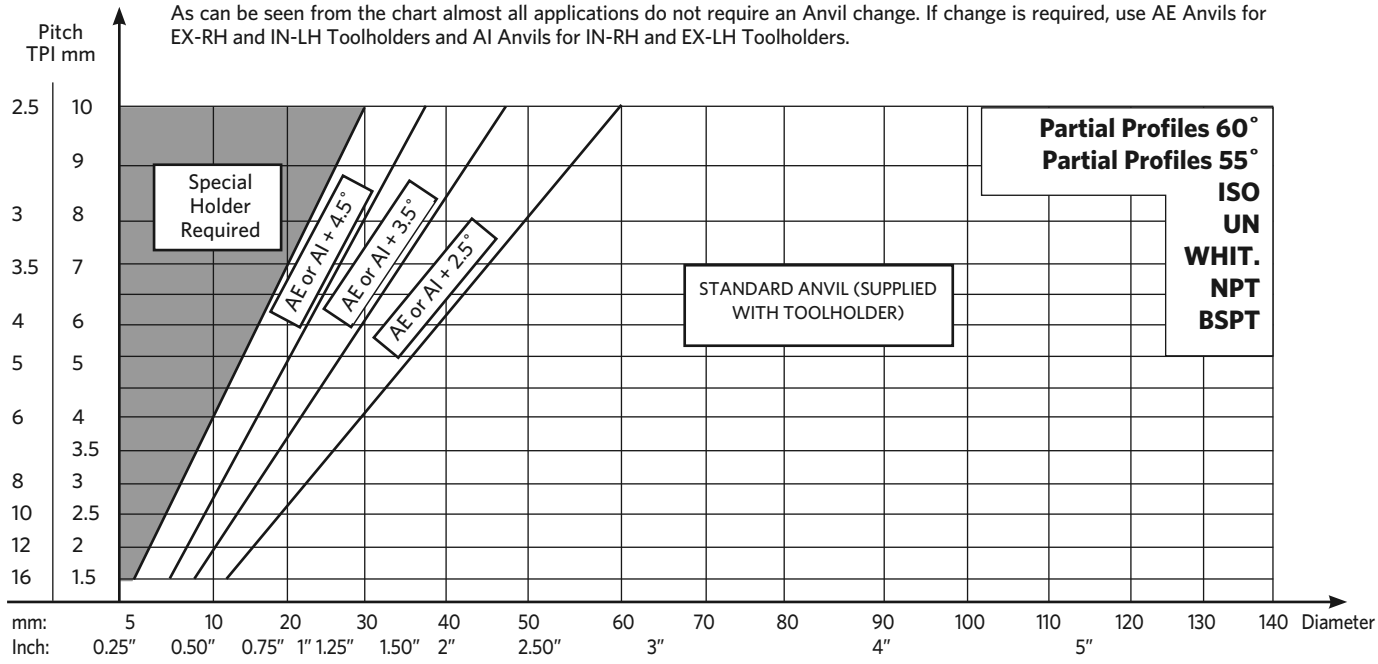
Negative Helix is usually used when Threading RH Thread with LH Holder or LH Thread with RH Holder.



L IC	Anvil´s Angle ¥ ⟶ Toolholders	4.5˚	3 5˚	2.5˚	1.5˚ Stardard	0.5˚	-0.5˚	-1.5˚
16 3/8	EX-RH OR IN-LH EX-LH OR IN-RH	AE16+4.5 AI 16+4.5	AE16+3.5 AI 16+3.5	AE16+2.5 AI 16+2.5	AE16 AI 16	AE16+0.5 AI 16+0.5	AE16-0.5 AI 16-0.5	AE16-1.5 AI 16-1.5
22 1/2	EX-RH OR IN-LH EX-LH OR IN-RH	AE22+4.5 AI 22+4.5	AE22+3.5 AI 22+3.5	AE22+2.5 AI 22+2.5	AE22 AI 22	AE22+0.5 AI 22+0.5	AE22-0.5 AI 22-0.5	AE22-1.5 AI 22-1.5
22U 1/2U	EX-RH OR IN-LH EX-LH OR IN-RH	AE22U+4.5 AI 22U+4.5	AE22U+3.5 AI 22U+3.5	AE22U+2.5 AI 22U+2.5	AE22U AI 22U	AE22U+0.5 AI 22U+0.5	AE22U-0.5 AI 22U-0.5	AE22U-1.5 AI 22U-1.5
27 5/8	EX-RH OR IN-LH EX-LH OR IN-RH	AE27+4.5 AI 27+4.5	AE27+3.5 AI 27+3.5	AE27+2.5 AI 27+2.5	AE27 AI 27	AE27+0.5 AI 27+0.5	AE27-0.5 AI 27-0.5	AE27-1.5 AI 27-1.5
27U 5/8U	EX-RH OR IN-LH EX-LH OR IN-RH	AE27U+4.5 AI 27U+4.5	AE27U+3.5 AI 27U+3.5	AE27U+2.5 AI 27U+2.5	AE27U AI 27U	AE27U+0.5 AI 27U+0.5	AE27U-0.5 AI 27U-0.5	AE27U-1.5 AI 27U-1.5

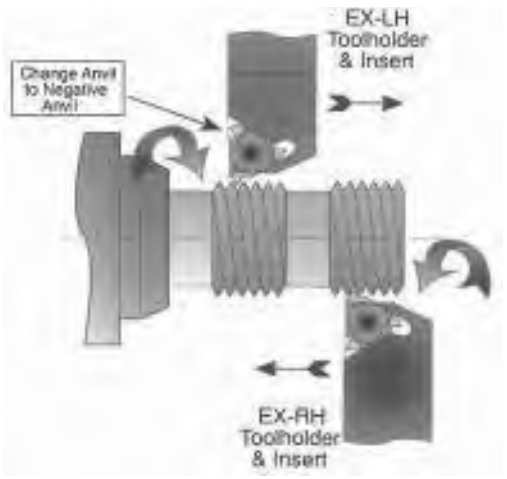
ANVIL CHANGE RECOMENDATIONS

As can be seen from the chart almost all applications do not require an Anvil change. If change is required, use AE Anvils for EX-RH and IN-LH Toolholders and AI Anvils for IN-RH and EX-LH Toolholders.

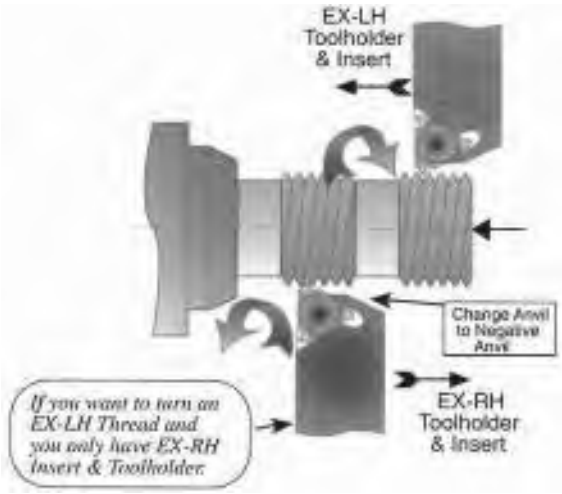


THREAD TURNING METHODS

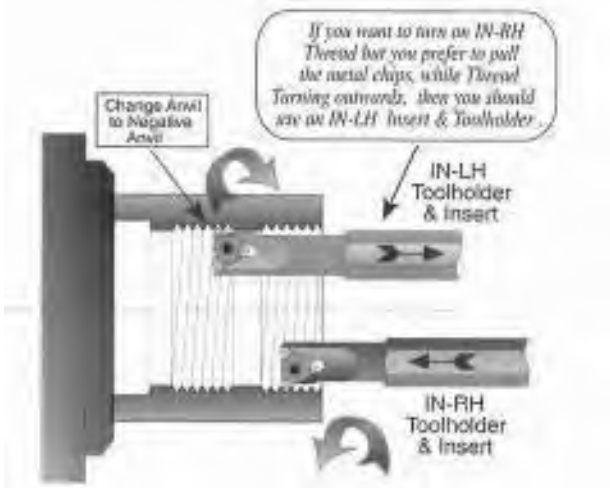
EXTERNAL R.H. THREAD



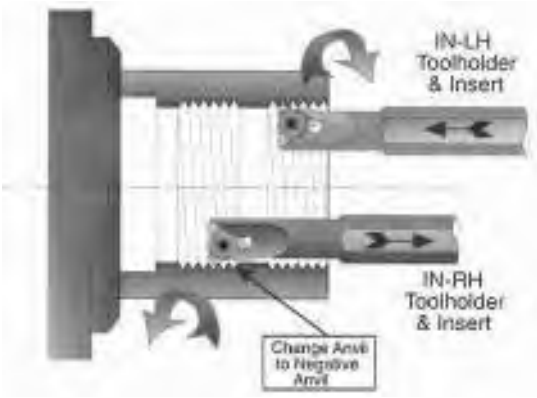
EXTERNAL L.H. THREAD



INTERNAL R.H. THREAD



INTERNAL L.H. THREAD



SELECTION OF THE NUMBER OF PASSES FOR THREADING

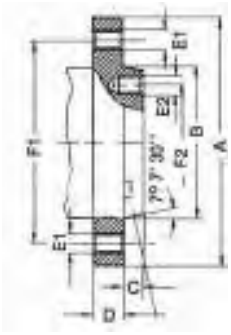
1. For most standard applications, the middle of the range is a good starting point
2. For most materials, the tougher the material, the higher the number of cutting passes you should select.
3. As a general rule of thumb, less passes are better than more speed.
4. Infeed per pass should ensure an even machine load.

Pitch: mm TPI	0.5 48	0.1 24	1.5 16	2.0 12	2.5 10	3.0 8	4.0 6	6.0 4
Number of passes	3-6	4-9	5-11	6-13	7-15	8-17	10-20	11-22

SURFACE SPEEDS FOR THREADING

Grades **Materials**	**P15**	**P30** **Uncoated**	**K20**	**P25C**	**MXC** **Coated**	**BXC**	**T20**	**C6** **Cermet**
Low & Medium Carbon Steels	110-150	70-120		100-200	100-250	20-100	10-50	120-200
High Carbon Steels	100-140	60-100		80-160	80-180	30-80	10-40	120-180
Alloy Steels Treated Steels	60-100	50-80		50-120	90-120	40-90	10-40	120-180
Stainless Steels	90-130	70-100	80-100		90-160	30-90	5-30	150-200
Cast Steels	90-140	70-110		90-150	130-170	40-90	10-40	160-220
Non Ferrous & Aluminium			120-200		150-300	20-120	10-60	

STANDARD SPINDLE NOSES - ASA



From taper size 4 with driver

A1

Has tapped holes on both the outer bolt circle F_1 and inner bolt circle F_2.

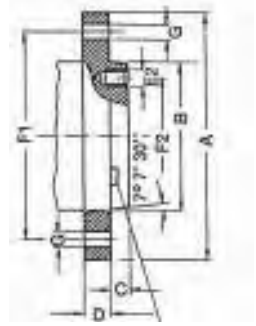
Spindle size	A	B	C	D	No of holes on outer P.C.D.	F1	No of holes on inner P.C.D.	F2
5	133.4	82.6	14.3	22.2	11x$^{7}/_{16}$NC	104.8	8x$^{7}/_{16}$NC	61.9
6	165.1	106.4	15.9	25.4	11x$^{1}/_{2}$NC	133.4	8x$^{1}/_{2}$NC	82.6
8	209.5	139.7	17.5	28.6	11x$^{5}/_{8}$NC	171.4	8x$^{5}/_{8}$NC	111.1
11	279.4	196.9	19.0	34.9	11x$^{3}/_{4}$NC	235.0	8x$^{3}/_{4}$NC	165.1
15	381.0	285.8	20.6	41.3	12x$^{7}/_{8}$NC	330.2	12x$^{7}/_{8}$NC	247.6

A2

Has tapped holes on both the outer bolt circle F_1 but has no holes on inner bolt circle F_2.

Spindle size	A	B	C	D	No of holes on outer P.C.D.	F1
3	92.1	54.0	11.1	15.9	3x$^{7}/_{16}$NC	70.66
4	108.0	63.5	11.1	19.0	11x$^{7}/_{16}$NC	82.55
5	133.4	82.6	12.7	22.2	11x$^{7}/_{16}$NC	104.8
6	165.1	106.4	14.3	25.4	11x$^{1}/_{2}$NC	133.4
8	209.5	139.7	15.9	28.6	11x$^{5}/_{8}$NC	171.4
11	279.4	196.9	17.5	34.9	11x$^{3}/_{4}$NC	235.0
15	381.0	285.8	19.0	41.3	12x$^{7}/_{8}$NC	330.2

B1



From taper size 4 with driver

Has drilled holes on the outer bolt circle F_1 and tapped holes on the inner bolt circle F_2.

Spindle size	A	B	C	D	No of holes on outer P.C.D.	F1	No of holes on inner P.C.D.	F2
5	133.4	82.6	14.3	22.2	11x11.9	104.8	8x$^{7}/_{16}$NC	61.9
6	165.1	106.4	15.9	25.4	11x13.5	133.4	8x$^{1}/_{2}$NC	82.6
8	209.5	139.7	17.5	28.6	11x16.7	171.4	8x$^{5}/_{8}$NC	111.1
11	279.4	196.9	19.0	34.9	11x20.2	235.0	8x$^{3}/_{4}$NC	165.1
15	381.0	285.8	20.6	41.3	12x23.4	330.2	11x$^{7}/_{8}$NC	247.6

Continued...

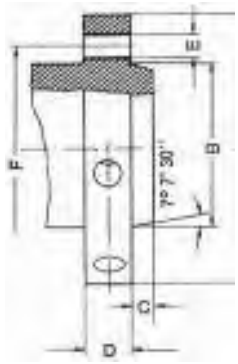
...Continued

B2

B2 has drilled holes on the outer bolt circle F_1 but has no holes on inner bolt circle F_2.

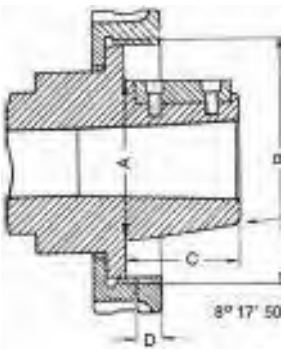
Spindle size	A	B	C	D	No of holes on outer P.C.D.	F1
3	92.1	54.0	11.1	15.9	3x11.9	70.66
4	108.0	63.5	11.1	19.0	11x11.9	82.55
5	133.4	82.6	12.7	22.2	11x11.9	104.8
6	165.1	106.4	14.3	25.4	11x13.5	133.4
8	209.5	139.7	15.9	28.6	11x16.7	171.4
11	279.4	196.9	17.5	34.9	11x20.2	235.0
15	381.0	285.8	19.0	41.3	12x23.4	330.2

STANDARD SPINDLE NOSES TYPE D CAMLOCK



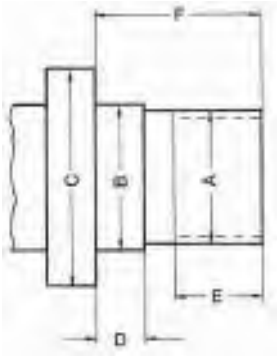
Spindle size	A	B	C	D	E	F
3	92.1	54.0	11.1	31.8	3x15.1	70.66
4	117.5	63.5	11.1	33.3	3x16.7	82.55
5	146	82.6	12.7	38.1	6x19.8	104.8
6	181	106.4	14.3	44.5	6x23	133.4
8	225.4	139.7	15.9	50.8	6x26.2	171.4
11	298.5	196.9	17.5	60.3	6x31	235.0
15	403	285.8	19.0	69.9	6x35.7	330.2

STANDARD SPINDLE NOSES, AMERICAN STANDARD LONG TAPER TYPE L



Spindle size	A + 0.051	B	C	D	Key Sq x length
L00	69.850	95.25x6TPI	50.008	14.288	9.25x38.1
L0	82.550	114.30x6TPI	60.325	15.875	9.25x44.4
L1	104.775	152.4x6TPI	73.025	19.050	15.87x60.3
L2	133.350	196.85x5TPI	85.725	25.400	19.05x73.0
L3	165.100	263.53x4TPI	98.425	28.575	25.4x82.5

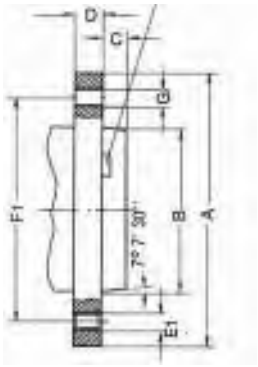
STANDARD SPINDLE NOSES - THREADED MOUNT DIN 800



A	Bg5	C Ø min	D	E	F
M20	21	30	6.3	10	20
M24	25	36	8	12	24
M33	34	50	9	14	30
M39	40	56	10	16	35
M45	46	67	11	18	40
M52	55	80	12	20	45
M60	62	90	14	22	50
M76x6	78	112	16	30	63
M105x6	106	150	20	40	80

STANDARD SPINDLE NOSES - DIN 55021 FORM A

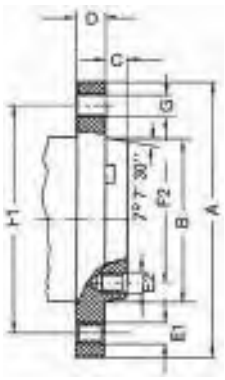
From taper size 4 with driver



Tapped and through holes on the outer P.C.D.F1

Spindle size	A	B	C	D	No. of holes on outer P.C.D. E1	G	Centre of holes on P.C.D F1
3	102	54.0	11	16	3xM10	3x10.5	75
4	112	63.5	11	20	3xM10	3x10.5	85
5	135	82.6	13	22	7xM10	4x10.5	104.8
6	170	106.4	14	25	7xM12	4x13	133.4
8	220	139.7	16	28	7xM16	4x17	171.4
11	290	196.9	18	35	12xM20	6x21	235
15	380	285.8	20	42	12xM24	6x25	330.2

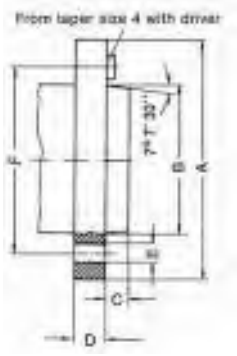
STANDARD SPINDLE NOSES - DIN 55021 FORM B



Tapped and through holes on the outer P.C.D.F1, tapped holes on the inner P.C.D. F2..

Spindle size	A	B	C	D	No. of holes on outer P.C.D. F1 E1	G	No. of holes on inner P.C.D F2
5	135	82.6	13	22	7xM10	4x10.5	8xM10
6	170	106.4	14	25	7xM12	4x13	8xM12
8	220	139.7	16	28	7xM16	4x17	8xM16
11	290	196.9	18	35	12xM20	6x21	11xM20
15	380	285.8	20	42	12xM24	6x25	11xM24

STANDARD SPINDLE NOSES - BAYONET FIXING DIN 55022



Spindle size	A	B	C	D	No. of holes on outer P.C.D. E	G	Centres of holes on P.C.D F
3	102	54.0	11	16	3xM10	3x10.5	75
4	112	63.5	11	20	3xM10	3x10.5	85
5	135	82.6	13	22	7xM10	4x10.5	104.8
6	170	106.4	14	25	7xM12	4x13	133.4
8	220	139.7	16	28	7xM16	4x17	171.4
11	290	196.9	18	35	12xM20	6x21	235
15	380	285.8	20	42	12xM24	6x25	330.2

ISO 10243 STANDARD DIE SPRINGS

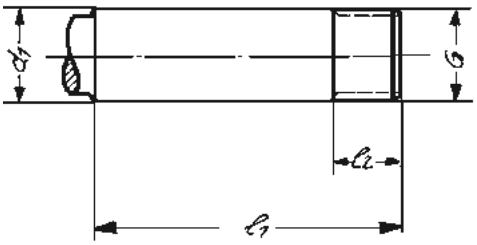
Technical data and advice for use

MATERIAL:
"Valve-spring" quality, vacuum degassed Chrome- Vanadium and Chrome-Silicon steel alloys have been employed.

TOLERANCES:
Spring rate: + 10%.
Free length: 1%, with a minimum of + 1 mm.
In this case, ISO provides for ample tolerances, up to + 3% for some lengths.
External diameter: The external diameter of the spring is smaller than the housing diameter indicated in the catalogue.
Internal diameter: The internal diameter of the spring is always greater than the diameter of the guiding pin indicated in the catalogue.

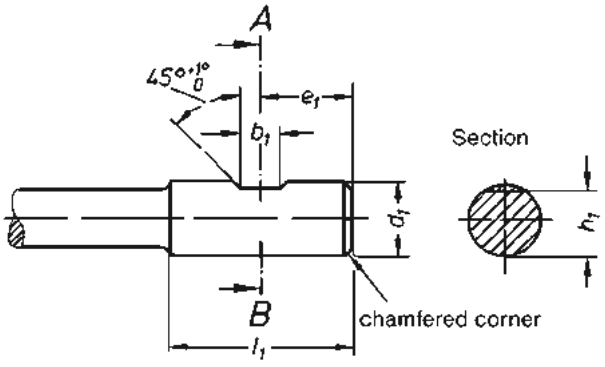
ADVICE:
- Choose the longer and smaller series springs as far as job requirements allow.
- Absolutely avoid total deflection (pre-load plus working stroke) superior to the maximum indicated in the catalogue.
- Always pre-load springs, at least up to 5% of the free length, with a minimum of 2 mm.
- Insure that the resting area allows the spring to function along the axis.
- Guide springs with an internal pin or deep housing.

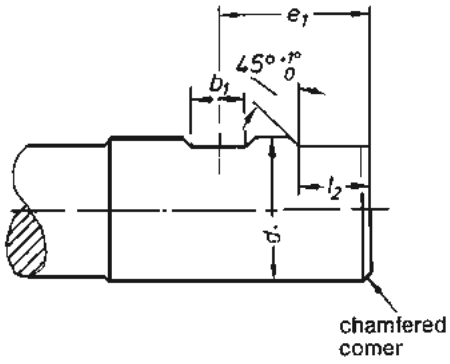
THREADED SHANKS FOR END MILLS TO DIN 1835



d1 h6	l1 41	l2 +l	Thread dimension G Nominal Ø	Flank angle	Major Ø. -0.1	Pitch Ø -0.05	Minor Ø -0.05
6	36	10	W 5.9X20		5.9	5.08	4.27
10	40	10	W 9.9X20		9.9	9.08	8.27
12	45	10	W11.9X20		11.9	11.08	10.27
16	48	10	W15.9X20	55°	15 9	15.08	14.27
20	50	15	W19.9X20		19.9	19.08	18.27
25	56	15	W24.9X20		24.08	24.08	23.27
32	60	15	W31.9x20		31.9	31.08	30.27

PLAIN SHANKS FOR END MILLS TO DIN 1835. FORM B WITH FLATS

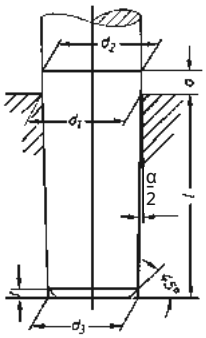




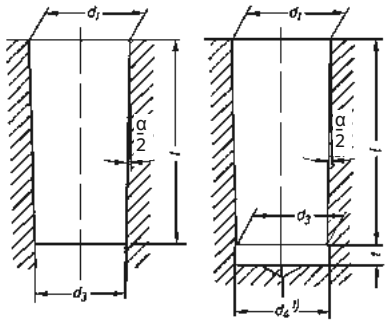
d1 h6	b1 +0.05 0	e1 40.5	h1 h13	l1 41
6	4.2	18	4.8	36
8	5.5		6.6	
10	7	20	8.4	40
12	8	22.5	10.4	45
16	10	24	14.2	48
20	11	25	18.2	50

d1 h6	b1 +0.05 0	e1 40.5	h1 h13	l1 41	l2 +1 0
25	12	32	23	56	17
32		36	30	60	
40	14	40	38	70	19
50		45	47.8	80	
63	18	50	60.8	90	23

DRILL CHUCK MOUNTING TAPERS



External



Internal

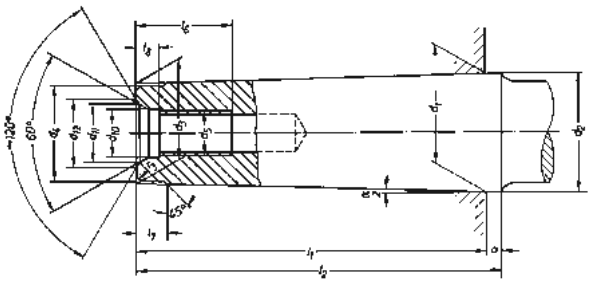
DIN 238

Mounting taper	a large Ø	d_1	d_2 z	d_3 z	d_4	f	l	t small Ø	α 2	Taper to DIN 228	Chuck capacity to DIN 6349
B6	3	6.35	6.5	5.85	6.5	0.5	10	3	1°25'56"	1:20=0.05	–
B10	3.5	10.094	10.3	9.4	9.8	1	14.5	3.5	1°25'43"	1:20.047	6.3
B12		12.065	12.2	11.1	11.5		18.5			=0.04988	8
B16	5	15.733	16.0	14.5	15.0	1.5	24.0	4.0	1°25'50"	1:20.020	13
B18		17.780	18.0	16.2	16.8		32.0			=0.04995	16
B22		21.793	22.0	19.8	20.5	2	40.5	4.5	1°26'16"	1:19.922	20
B24		23.825	24.1	21.3	22.0		50.5			=0.05020	26

JACOBS (internal)

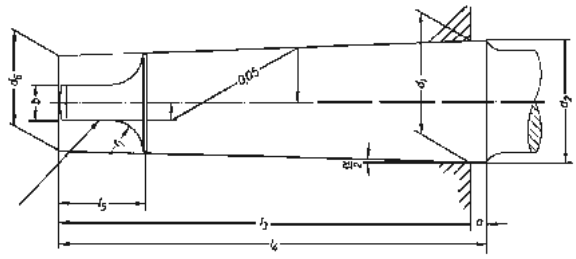
Jacobs taper	d_1 large Ø	d_2 small Ø	l	Taper per foot inches
0	6.35	5.80	11.12	.59145
1	9.754	8.47	16.67	.92508
2	14.2	12.39	22.23	.97861
2 short	13.94	12.39	19.05	.97861
3	20.6	18.95	30.96	.63898
4	28.55	26.35	42.07	.62886
5	35.89	33.43	47.63	.62010
6	17.17	15.85	25.40	.62292
33	15.85	14.24	25.40	.76194
E	20.03	18.98	20.24	.6240

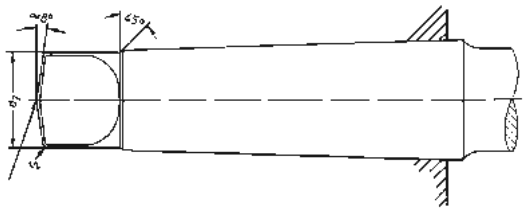
DIMENSIONS – MORSE & METRIC TAPERS WITH DRAW BAR THREADS TO DIN 228



Taper size		Taper	α 2	a	d_1	d_2 z	d_3 z	d_4	d_5	d_6	d_7	d_8	d_9	l_1	l_2	l_3	l_4	l_5	r_2
Morse Taper	0	1:19,212 = 0,05205	1°29'27"	3	9.045	9.2	6.4	6	-	-	-	-	50	53	-	4	-	0.2
	1	1:20,047 = 0,04988	1°25'43"	3.5	12.065	12.2	9.4	9	M6	6.4	8	8.5	53.5	57	16	5	4	0.2
	2	1:20,020 = 0,04995	1°25'50"	5	17.780	18	14.6	14	M10	10.5	12.5	13.2	64	69	24	5	5	0.2
	3	1:19,922 = 0,05020	1°26'16"	5	23.825	24.1	19.8	19	M12	13	15	17	81	86	28	7	6	0.6
	4	1:19,254 = 0,05194	1°29'15"	6.5	31.267	31.6	25.9	25	M16	17	20	22	102.5	109	32	9	8	1
	5	1:19,002 = 0,05263	1°30'26"	6.5	44.399	44.7	37.6	35.7	M20	21	26	30	129.5	136	40	10	11	2.5
	6	1:19,180 = 0,05214	1°29'36"	8	63.348	63.8	53.9	51	M24	25	31	36	182	190	50	16	12	4
Metr. Taper	80	1:20 = 0,05	1°28'56"	8	80	80.4	70.2	67	M30	31	38	45	196	204	65	24	14	5
	100			10	100	100.5	88.4	85	M36	37	45	52	232	242	80	30	16	5

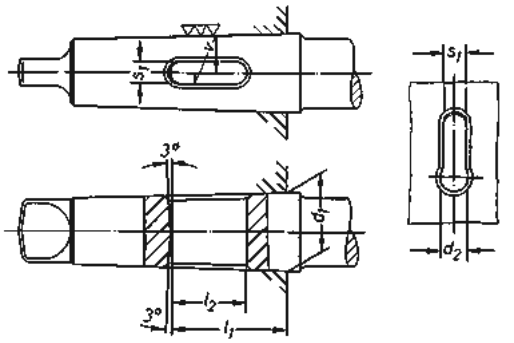
DIMENSIONS – MORSE & METRIC TAPERS WITH TANGS – TO DIN 228

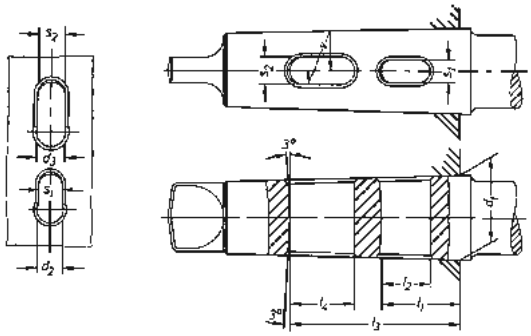




Taper size		Taper	$\frac{\alpha}{2}$	a	b h13	d_1	d_2 ²) z	d_3 ²) z	d_7	l_3 -1	l_4	l_5	r_1	r_2
Morse Taper	0	1:19,212 = 0,05205	1°29'27"	3	3.9	9.045	9.2	6.1	6	56.5	59.5	10.5	4	1
	1	1:20,047 = 0,04988	1°25'43"	3.5	5.2	12.065	12.2	9	8.7	62	65.5	13.5	5	1.2
	2	1:20,020 = 0,04995	1°25'50"	5	6.3	17.780	18	14	13.5	75	80	16	6	1.6
	3	1:19,922 = 0,05020	1°26'16"	5	7.9	23.825	24.1	19.1	18.5	94	99	20	7	2
	4	1:19,254 = 0,05194	1°29'15"	6.5	11.9	31.267	31.6	25.2	24.5	117.5	124	24	8	2.5
	5	1:19,002 = 0,05263	1°30'26"	6.5	15.9	44.399	44.7	36.5	35.7	149.5	156	29	10	3
	6	1:19,180 = 0,05214	1°29'36"	8	19	63.348	63.8	52.4	51	210	218	40	13	4
Metric Taper	80	1:20 = 0,05	1°25'56"	8	26	80	80.4	69	67	220	228	48	24	5
	100			10	32	100	100.5	87	85	260	270	58	30	5

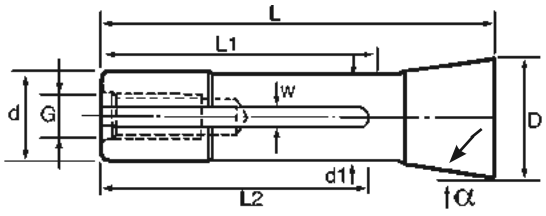
DIMENSIONS – MORSE & METRIC TAPERS WITH TANGS & COTTER SLOTS – TO DIN 228





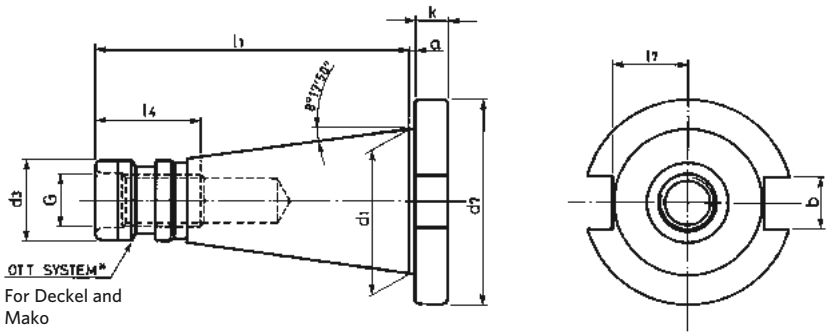
Taper size		d_1	d_2	d_3	l_1	l_2	l_3	l_4	s_1	s_2	v
Morse Taper	3	23.825	9.2	-	55.5	32	-	-	8.3	-	01.
	4	31.267	9.4		59.5	37			8.3		
	5	44.399	14		64	42			12.4		01.
	6	63.348	18.75	22.5	56	35	122	47	16.4	19.5	
Metric Taper	80	80	22.5	30	64	43	136	54	19.5	26.5	0.15
	100	100	30	37	70	51	155	61	26.5	32.5	

DIMENSIONS – R8



Taper	D	d 40.01	d_1 40.05	L 40.25	L_1 40.5	L_2 41.0	W	α	G
R8	31.75	24.10	23.35	101.25	75.5	71	4	8° 17' 50"	7/16UNF

DIMENSIONS – ISO TAPERS TO DIN 2080

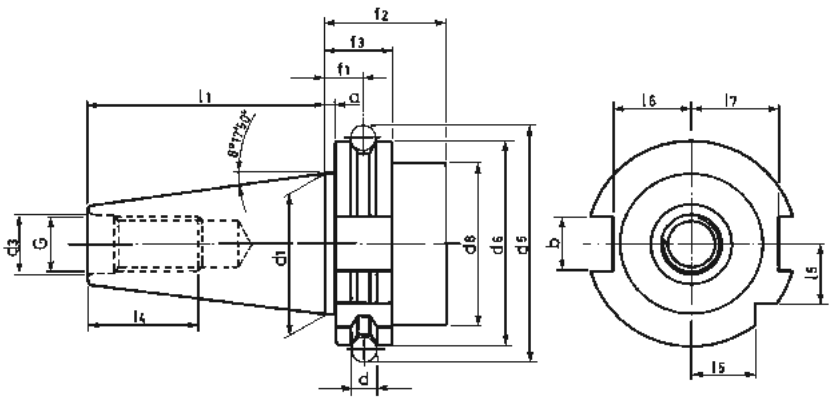


For Deckel and Mako

Taper	a 40.2	b H12	d1	d2	G	d7	k 40.15
ISO 30	1.6	16.1	31.75	17.4	M12	50	8
ISO 40	1.6	16.1	44.45	25.3	M16	63	10
ISO 50	3.2	25.7	69.85	39.6	M24	97.5	12

Taper	L1	L4	L7 Max	Taper AT3
ISO 30	68.4	24	16.2	0.002
ISO 40	93.4	32	22.5	0.003
ISO 50	126.8	47	35.3	0.004

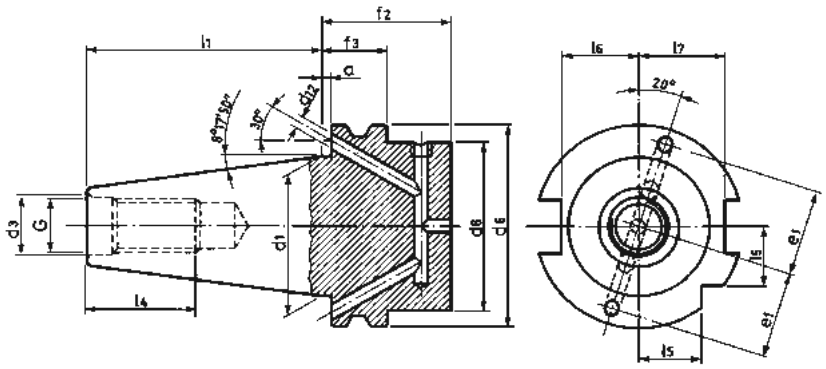
DIMENSIONS – DIN 69871 A



Taper	a 40.1	b H12	d	d1	G	d3 H7	d5 40.05	d6 -0.1	d8 Max	f1 40.1
SK 30	3.2	16.1	7	31.75	M12	13	59.30	50.00	45	11.1
SK 40	3.2	16.1	7	44.45	M12	17	72.30	63.55	50	11.1
SK 45	3.2	19.3	7	57.15	M20	21	91.35	82.55	63	11.1
SK 50	3.2	25.7	7	69.85	M24	25	107.25	97.50	80	11.1

Taper	f2 Min	f3 -0.1	L1 -0.3	L4 Min	L5 -0.3	L6 -0.4	L7 -0.4	Taper AT3
SK30	35	19.1	47.80	24	15.0	16.4	19.0	0.002
SK40	35	19.1	68.40	32	18.5	22.8	25.0	0.003
SK45	35	19.1	82.70	40	24.0	29.1	31.3	0.003
SK50	35	19.1	101.75	47	30.0	35.5	37.7	0.004

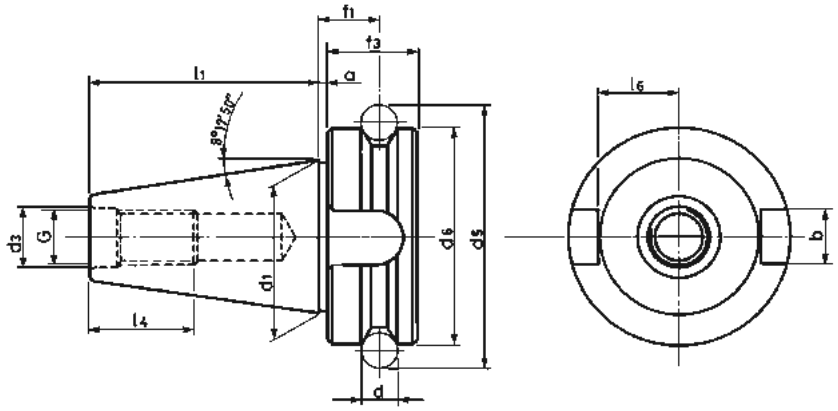
DIMENSIONS – DIN 69871 B



Taper	a 40.1	b H12	d	d1	G	d3 H7	d6 -0.1	d8 Max
SK 30	3.2	16.1	7	31.75	M12	13	50.00	45
SK 40	3.2	16.1	7	44.45	M12	17	63.55	50
SK 45	3.2	19.3	7	57.15	M20	21	82.55	63
SK 50	3.2	25.7	7	69.85	M24	25	97.50	80

Taper	e 40.1	1f2 Min	f3 -0.1	L1 -0.3	L4 Min	L5 -0.3	L6 -0.4	L7 -0.4	Taper AT3
SK30	21	35	19.1	47.80	24	15.0	16.4	19.0	0.002
SK40	27	35	19.1	68.40	32	18.5	22.8	25.0	0.003
SK45	35	35	19.1	82.70	40	24.0	29.1	31.3	0.003
SK50	42	35	19.1	101.75	47	30.0	35.5	37.7	0.004

DIMENSIONS – BT MAS 403

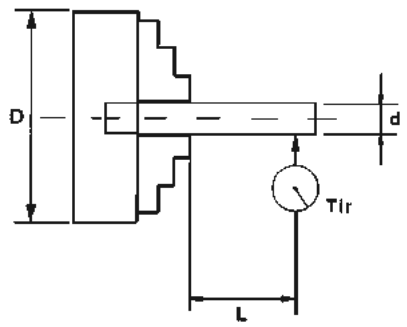


Taper	a	b H12	d	d1	G	d3 H8	d5	d6 H8	f1 40.1
BT30	2	16.1	8	31.75	M12	12.5	56.144	46	13.6
BT35*	2	14.1	10	38.10	M12	13	65.680	53	13.0
BT40	2	16.1	10	44.45	M16	17	75.679	63	16.6
BT45	3	19.3	12	57.15	M20	21	100.216	85	21.2
BT50	3	25.7	15	69.85	M24	25	119.020	100	23.2

Taper	F3	L1 40.2	L4 Min	L6 -0.2	Taper AT-3
BT30	20	48.4	24	16.3	0.002
BT35*	20	56.5	24	19.3	0.003
BT40	25	65.4	30	22.6	0.003
BT45	30	82.8	38	29.1	0.003
BT50	35	101.8	45	35.4	0.004

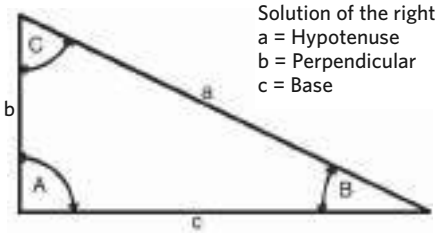
* NOT MAS-403 (KITAMURA TYPE)

LATHE CHUCK PERMISABLE TOTAL INDICATED RUN OUT TO DIN 6386



ØD mm	Tir Din 6386 Class I	Tir Din 6386 Class II	L mm	Ød medum mm
80	0.04	0.075	40	12
100	0.04	0.075	40	14
125	0.04	0.075	60	25
160	0.04	0.075	60	30
200	0.06	0.075	80	40
250	0.06	0.1	80	53
315	0.08	0.1	120	75
400	0.08	0.1	120	100

SOLUTION OF THE RIGHT ANGLED TRI-ANGLE



Solution of the right angled triangle
a = Hypotenuse
b = Perpendicular
c = Base

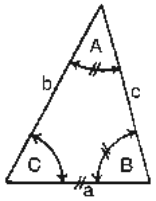
TAN B = $\frac{b}{c}$ COTAN B = $\frac{c}{b}$

SINE B = $\frac{b}{a}$ COSEC B = $\frac{a}{b}$

COS B = $\frac{c}{a}$ SEC B = $\frac{a}{c}$

Data known	Formulae for side and angles		
a & b	$c = \sqrt{a^2 - b^2}$	Sin B = $\frac{b}{a}$	C = 90° – B
a & c	$b = \sqrt{a^2 - c^2}$	Sin C = $\frac{c}{a}$	B = 90° – C
b & c	$a = \sqrt{b^2 - c^2}$	Tan B = $\frac{b}{c}$	C = 90° – B
a & B	b = a Sin B	c = a Cos B	C = 90° – B
a & C	b = a Cos C	c = a Sin C	B = 90° – C
b & B	a = $\frac{b}{\text{Sin B}}$	c = b Cot B	C = 90° – B
b & C	a = $\frac{b}{\text{Cos C}}$	c = b Tan C	B = 90° – C
c & B	a = $\frac{c}{\text{Cos B}}$	c = c Tan B	C = 90° – B
c & C	a = $\frac{c}{\text{Sin C}}$	c = c Cot C	B = 90° – C
A.B.C.	Infinite number of solutions		

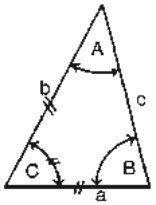
SOLUTION OF THE OBLIQUE-ANGLED TRIANGLES



NB: // Signifies data known
ANY ONE SIDE & ANY TWO ANGLES KNOWN
For example: denote the known side a and the angle A and B
Then:
C = 180° - (A + B)

$b = \frac{a \text{ Sin B}}{\text{Sin A}}$ $c = \frac{a \text{ Sin C}}{\text{Sin A}}$

Area = $\frac{a \times b \times \text{Sin C}}{2}$

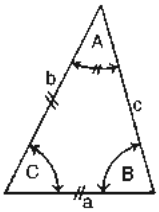


TWO SIDES & THE INCLUDING ANGLE
For example: denote the sides a and b and the angle C

Then:
Tan A = $\frac{a \text{ Sin C}}{b - a \text{ Cos C}}$

B = 180° - (A = C) $c = \frac{a \text{ Sin C}}{\text{Sin A}}$

Area = $\frac{a \times b \times \text{Sin C}}{2}$

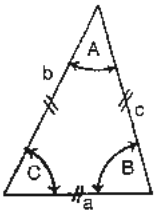


TWO SIDES AND THE OPPOSITE ANGLE
For example: Let the angles be A and B and the sides a + b.

Then:
Sin B = $\frac{b \text{ Sin A}}{a}$

$c = \frac{a \text{ Sin C}}{\text{Sin A}}$ C = 180° - (A + B)

Area = $\frac{a \times b \times \text{Sin C}}{2}$



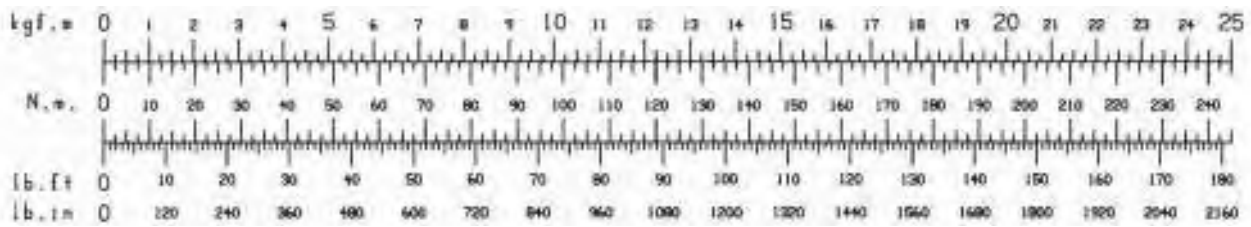
ALL SIDES GIVEN
For example: Let the sides be a, b, & c. and the angles opp. A,B, & C.

Then:
Cos A = $\frac{b^2 + c^2 - a^2}{2bc}$

Sin B = $\frac{b \text{ Sin A}}{a}$ C = 180° - (A + B)

Area = $\frac{a \times b \times \text{Sin C}}{2}$

TORQUE CONVERSION SCALE



RECOMMENDED MAXIMUM BOLT LOADS AND TORQUE VALUES (Metric coarse threads)

	3.65.6		6.9		8.8		10.9		12.9		A/F		
mm	Newtons	N.m	Newtons	N.m	Newtons	N.m	Newtons	N.m	Newtons	N.m	Newtons	N.m	mm
2	284	0.12	378	0.16	731	0.31	863	0.37	1216	0.52	1461	0.63	4
3	726	0.44	966	0.59	1863	1.13	2206	1.34	3109	1.88	3727	2.26	5.5
4	1255	1.00	1677	1.34	3226	2.60	3825	3.04	5374	4.31	6453	5.15	7
5	2059	1.96	2736	2.65	5286	5.10	6257	6.03	8806	8.48	10591	10.20	8
6	2903	3.43	3864	4.51	7453	8.73	8836	10.30	12405	14.71	14906	17.65	10
8	5315	8.24	7090	10.79	13680	21.57	16230	25.50	22751	35.30	27360	42.17	13
10	8473	16.7	11278	21.57	21771	42.17	25791	50.01	36284	70.61	43541	85.32	17
12	12356	28.4	16475	38.25	31773	73.55	37657	87.28	52956	122.60	63547	147.10	19
16	23340	69.6	31087	93.16	60016	178.50	71196	210.80	100027	299.10	120131	357.90	24
20	36481	135	48641	180	93849	384.1	111305	411.9	156415	578.6	187796	696.3	30
24	52563	230	70019	308.9	135331	598.2	160338	711.0	225552	1000	270662	1196	36
30	84043	466	112286	622.7	215745	1206	255952	1422	359902	2010	432471	2403	46
36	123073	814	164261	1089	316753	2099	374612	2481	527595	3491	632526	4197	55
42	169164	1304	225552	1746	435413	3364	515827	3991	725688	5609	870826	6727	65

Bi METAL HSS HOLE SAW SPEEDS

Size (mm)	Mild steel	Tool steel Stainless steel	Cast iron	Brass	Aluminum
14	580	300	400	790	900
16	550	275	365	730	825
17	500	250	330	665	750
19	460	230	300	600	690
20	425	210	280	560	630
21	425	210	280	560	630
22	390	195	260	520	585
24	370	185	245	495	555
25	350	175	235	470	525
28	325	155	205	415	465
30	285	145	190	380	425
32	275	140	180	360	410
33	260	135	175	345	390
35	285	145	190	380	425
37	240	120	160	315	360
38	230	115	150	300	345
40	220	110	145	290	330
41	210	105	140	280	315
43	205	100	135	270	305
44	195	95	130	250	295
46	190	95	125	250	285
48	180	90	120	240	270
51	170	85	115	230	255
52	165	80	110	220	245
54	160	80	105	210	240
57	150	75	100	200	225
59	145	70	95	190	220
60	140	70	95	190	220
64	135	65	90	180	205
65	130	65	85	175	200
67	130	65	85	170	195
68	130	65	85	170	195
70	125	60	80	160	185
73	120	60	80	160	180
76	115	55	75	150	170
	110	55	70	140	165
86	100	50	65	130	150
89	95	45	65	130	145
92	95	45	60	120	140
95	90	45	60	120	135
98	85	40	55	110	130
102	85	40	55	110	130
105	80	40	55	110	120
108	80	40	55	110	120
111	75	35	50	100	105
114	75	35	50	100	105
121	70	35	45	90	95
127	65	30	40	85	90
140	60	30	35	80	85
146	55	25	35	75	85
152	55	25	35	75	85

A/F SPANNER SIZES FOR NUTS

SPANNER OPENING SW		METRIC SIZES																AMERICAN SIZES								
		Thread diameters																Thread diameters								
		DIN ISO 272					ISO R 272 1968		German standard DIN					French standard	Swedish standard			American standard ANSI Nuts Bolts and screws								
minimum dimension (mm)	maximum dimension (mm)	**nominal size of wrench mm**	standard hexagon	large hexagon	screw with flange	nut with flange	normal hexagon	small hexagon	normal hexagon	large hexagon	small hexagon	screw with flange	nut with flange	NFE 27-111-1930	Metric large SMS 1412	Metric small SMS 1414	Withworth large SMS 1413	Withworth small SMS 1415	**nominal size of wrench mm**	a normal	b square	c heavy	d machine screw nuts	e normal	f heavy	g machine screws	h square head set screws
3.22	3.28	**3,2**	1.6				1.6		1.6																		
3.23	3.35																		**1/8**							No 1,2+3	
3.52	3.60	**3,5**																									
4.01	4.14													2.5					**5/32**				No 0+1				
4.02	4.12	**4**	2				2		2							2.3											
4.52	4.62	**4,5**														2.6											
4.83	4.95																		**3/16**				No 2+3			No 3,4+5	No 10
5.02	5.12	**5**	2.5				2.5		2.5					3		3											
5.21	5.33																		**13/64**								
5.52	5.62	**5,5**	3				3		3																		
5.59	5.72																		**7/32**								
6.00	6.13																		**15/64**								
6.03	6.15	**6**							3.5					3.5	3	3.5											
6.40	6.53																		**1/4**				N0 4			N0 6+8	1/4
6.82	6.97																		**17/64**								
7.03	7.15	**7**	4		5		4		4					4+4.5	3.5	4											
7.19	7.32																		**9/32**					No 10			
7.62	7.77																		**19/64**								
8.03	8.18																		**5/16**				No 5+6			No10+12	5/16
8.03	8.15	**8**	5		6	5	5		5		6	5	5	5	4	5											
8.41	8.56																		**21/64**								
8.81	8.97																		**11/32**				No 8				
90.3	9.15	**9**							(5)					5.5	5												
9.60	9.75																		**3/8**				No 10	1/4		1/4	3/8
10.04	10.19	**10**	6		8	6	6		6		8	6	6	6		6											
10.39	10.55																		**13/32**								
11.04	11.19	**11**	7				7		7						6	7		1/4									
11.18	11.33																		**7/16**	1/4	1/4		No 12+1/4	1/4			7/16
11.99	12.14																		**15/32**								
12.04	12.24	**12**						8						7		8											
12.80	12.95																		**1/2**	5/16		1/4		5/16		5/16	1/2
13.04	13.24	**13**	8		10	8	8		8		10	8	8				1/4	5/16									
13.60	13.77																		**17/32**								
14.05	14.27	**14**						10	(8)					8	8												
14.38	14.55																		**9/16**	3/8	5/16	5/16	5/16	3/8		3/8	9/16
15.05	15.27	**15**			12	10						10	10			10	5/16	3/8									
15.18	15.36																		**19/32**								
15.98	16.15																		**5/8**		3/8		3/8	7/16			5/8
16.05	16.27	**16**	10	SP: M10 + M14					10		12	12		9													
16.77	16.95																		**21/32**								
17.05	17.30	**17**					10	12	(10)		(12)			10	10												
17.58	17.75																		**11/16**	7/16		3/8					
18.05	18.30	**18**	12	SP:M12	14	12			12		16	14	12			12	3/8	7/16									
19.06	19.36	**19**					12	14	(12)		(16)			11													
19.18	19.38																		**3/4**	1/2	7/16	7/16		1/2			3/4
19.97	20.17																		**25/32**								
20.06	20.36	**20**																									
20.78	20.98																		**13/16**		1/2			9/16			
20.86	21.16	**20,8**		SP: M14 + M18																							
21.06	21.36	**21**	14	12	16	14			14	12		16	14	12		14	7/16	1/2									
22.06	22.36	**22**					14	16	(14)	12					12+14												
22.35	22.56																		**7/8**	9/16		1/2			1/2		7/8
23.06	23.36	**23**												14			1/2										
23.98	24.21																		**15/16**	5/8		9/16		5/8			
24.06	24.36	**24**	16	14		16	16	18	16		20		16			16		5/8									
24.76	24.99																		**31/32**								
25.06	25.36	**25**																									
25.55	25.78																		**1**		5/8						1
26.08	26.48	**26**		SP: M 18										16													
27.08	27.48	**27**	18	16	20		18	20	18	16		20			16	18											
27.13	27.36																		**11/16**			5/8			5/8		
28.08	28.48	**28**															5/8	3/4									
28.75	29.01																		**11/8**	3/4	3/4			3/4			1 1/8
29.08	29.48	**29**												18													
30.08	30.48	**30**	20	18		20	20	22	20		24		20			20											
30.34	30.59																		**13/16**								
31.93	32.18																		**11/4**			3/4			3/4		1 1/4
32.08	32.48	**32**					22	24	(22)	20				20	18+20	22											
33.08	33.48	**33**															3/4	7/8									
33.53	33.81																		**15/16**	7/8	7/8			7/8			
34.08	34.48	**34**	22	20					22	20						24											
35.10	35.60	**35**												22													
35.13	35.41																		**13/8**								1 3/8
36.10	36.60	**36**	24	22			24	27	24	22	30				22+24												

A/F SPANNER SIZES FOR NUTS

SPANNER OPENING SW		METRIC SIZES															AMERICAN SIZES								
		Thread diameters															Thread diameters								
		DIN ISO 272					ISO R 272 1968		German standard DIN					French standard	Swedish standard			American standard ANSI Nuts Bolts and screws								
minimum dimension (mm)	maximum dimension (mm)	**nominal size of wrench mm**	standard hexagon	large hexagon	screw with flange	nut with flange	normal hexagon	small hexagon	normal hexagon	large hexagon	small hexagon	screw with flange	nut with flange	NFE 27-111-1930	Metric large SMS 1412	Metric small SMS 1414	Withworth large SMS 1413	Withworth small SMS 1415	**nominal size of wrench mm**	a normal	b square	c heavy	d machine screw nuts	e normal	f heavy	g machine screws	h square head set screws
36.73	37.01																		**1 7/16**			7/8			7/8		
37.10	37.60	**37**															7/8	1									
38.10	38.60	**38**												24													
38.30	38.61																		**1 1/2**	1	1			1			11/2
39.89	40.20																		**1 9/16**								
41.10	41.60	**41**	27	24			27	30	27	24					27												
41.50	41.81																		**1 5/8**			1			1		
42.10	42.60	**42**												27			1	11/8									
42.67	42.93																										
43.08	43.38																		**1 11/16**	11/8	11/8			11/8			
44.70	45.03																		**1 3/4**								
46.10	46.60	**46**	30	27			30	33	30	27	36			30	30												
46.28	46.61																		**1 13/16**			1 1/8			1 1/8		
47.10	47.60	**47**															1 1/8	1 1/4									
47.88	48.21																		**1 7/8**	1 1/4	1 1/4			1 1/4			
50.10	50.60	**50**	33	30			33	36	33	30				33	33												
51.08	51.44																		**2**			1 1/4			1 1/4		
52.10	52.60	**52**															1 1/4	1 3/8									
52.68	53.04																		**2 1/16**	1 3/8	1 3/8			1 3/8			
54.12	54.72	**54**												36													
54.25	54.61																		**2 1/8**								
55.12	55.72	**55**	36	33			36	39	36		42				36												
55.88	56.26																		**2 3/16**			1 3/8			1 3/8		
56.12	56.72	**56**															1 3/8	1 1/2									
57.45	57.84																		**2 1/4**	1 1/2	1 1/2			1 1/2			
58.12	58.72	**58**												39													
60.12	60.72	**60**	39	36			39		39	36					39		1 1/2	1 5/8	**2 3/8**			1 1/2			1 1/2		
60.66	61.06																		**2 7/16**								
62.23	62.64																										
63.12	63.72	**63**												42					**2 1/2**								
63.83	64.24																										
65.12	65.72	**65**	42	39			42		42		48				42		1 5/8	1 3/4	**2 9/16**			1 5/8					
65.43	65.86																		**2 5/8**					1 3/4			
67.03	67.46																										
67.12	67.72	**67**												45					**2 3/4**			1 3/4			1 3/4		
70.12	70.72	**70**	45				45		45						45		1 3/4	1 7/8									
70.26	70.69																		**2 13/16**								
71.12	71.72	**71**												48					**2 15/16**			1 7/8					
71.81	72.26																										
75.03	75.51																		**3**					2			
75.15	75.85	**75**	48				48		48		56				48		1 7/8	2									
76.61	77.09																		**3 1/8**			2			2		
77.15	77.85	**77**												52													
79.81	80.31																										
80.15	80.85	**80**	52				52		52						52		2										
82.15	82.85	**82**												56					**3 3/8**					2 1/4			
85.15	85.85	**85**	56				56		56																		
86.18	86.72																		**3 1/2**			2 1/4			2 1/4		
88.15	88.85	**88**												60													
89.36	89.92																										
90.15	90.85	**90**	60				60		60																		
94.15	94.85	**94**												64					**3 3/4**					2 1/2			
95.15	95.85	**95**	64				64		64										**3 7/8**			2 1/2			2 1/2		
95.76	96.34																										
98.93	99.52																										
100.15	100.85	**100**	68				68		68					68					**4 1/8**					2 3/4			
105.20	106.00	**105**	72				72		72					72					**4 1/4**			2 3/4			2 3/4		
105.33	105.97																										
108.51	109.14																		**4 1/2**					3			
110.20	111.00	**110**	76				76		76					76													
114.91	115.57																										
115.20	116.00	**115**	80				80		80										**4 5/8**			3			3		
116.20	117.00	**116**												80													
118.08	118.77																										
120.20	121.00	**120**	85				85		85																		

a) Hex Flat & Hex Flat Jam Nuts
Hex Nuts and Hex Jam Nuts
Hex Slotted Nuts
Hex Thick Nuts
Hex Thick Slotted Nuts
Hex Castle Nuts

b) Square Nuts

c) Heavy Square Nuts
Heavy Hex Flat Nuts
Heavy Hex Flat Jam Nuts
Heavy Hex Nuts
Heavy Hex Jam Nuts
Heavy Hex Slotted Nuts

d) ANSI B 18.6.3-1972

e) Square Bolts
Hex Bolts
Hex Cap Screws
Lag Screws

f) Heavy Hex Bolts
Heavy Hex Structural Bolts
Heavy Hex Screws

g) ANSI B 18.6.3-1972 (R 1983)

h) ANSI B 18.6.2-1972 (R 1983)

* Square Bolt and Lag Screw only

DIMENSIONAL CONVERSION TABLE

1″ = 25.4 mm

Inch Fraction	Decimal		1″ 25,400	2″ 50,800	3″ 76,200	4″ 101,600	5″ 127,000
1/64	.015625	0,397	25,797	51,197	76,597	101,997	127,397
1/32	.03125	0,794	26,194	51,594	76,994	102,394	127,794
3/64	.046875	1,191	26,591	51,991	77,391	102,791	128,191
1/16	.0625	1,588	26,988	52,388	77,788	103,188	128,588
5/64	.078125	1,984	27,384	52,784	78,184	103,584	128,984
3/32	.09375	2,381	27,781	53,181	78,581	103,981	129,381
7/64	.109375	2,778	28,178	53,578	78,978	104,378	129,778
1/8	.125	3,175	28,575	53,975	79,375	104,775	130,175
9/64	.140625	3,572	28,972	54,372	79,772	105,172	130,572
5/32	.15625	3,969	29,369	54,769	80,169	105,569	130,969
11/16	.171875	4,366	29,766	55,166	80,566	105,966	131,366
3/16	.1 875	4,763	30,163	55,563	80,963	106,363	131,763
13/64	.203125	5,159	30,559	55,959	81,359	106,759	132,159
7/32	.21875	5,556	30,956	56,356	81,756	107,156	13255615/64
.234375	5,953	31,353	56,753	82,153	107,553	132,953	
1/4	.25	6,350	31,750	57,150	82,550	107,950	133,350
17/64	.265625	6,747	32,147	57,547	82,947	108,347	133,747
9/32	.28125	7,144	32,544	57,944	83,344	108,744	134,144
19/64	.296875	7,541	32,941	58,341	83,741	109,141	134,541
5/16	.3125	7,938	33,338	58,738	84,138	109,538	134,938
21/64	.328125	8,334	33,734	59,134	84,534	109,934	135,334
11/32	.34375	8,731	34,131	59,531	84,931	110,331	135,731
23/64	.359375	9,128	34.528	59,928	85,328	110,728	136,128
3/8	.375	9,525	34,925	60,325	85,725	111,125	136,525
25/64	.390625	9,922	35,322	60,722	86,122	111,522	136,922
13/32	.40625	10,319	35,719	61,119	86,519	111,919	137,319
27/64	.421875	10,716	36,116	61,516	86,916	112,316	137,716
7/16	.4375	11,113	36,513	61,913	87,313	112,713	138,113
29/64	.453125	11,509	36,909	62,309	87,709	113,109	138,509
15/32	.46875	11,906	37,306	62,706	88,106	113,506	138,906
31/64	.484375	12,303	37,703	63,103	88,503	113,903	139,303
1/2	.5	12,700	38,100	63,500	88,900	114,300	139,700
33/64	.515625	13,097	38,497	63,897	89,297	114,697	140,097
17/32	.53125	13,494	38,894	64,294	89,694	115,094	140,494
35/64	.546875	13,891	39,291	64,691	90,091	115,491	140,891
9/16	.5625	14,288	39,688	65,088	90,488	115,888	141,288
37/64	.578125	14,684	40,084	65,484	90,884	116,284	141,684
19/32	.59375	15,081	40,481	65,881	91,281	116,681	142,081
39/64	.609375	15,478	40,878	66,278	91,678	117,078	142,478
5/8	.625	15,875	41,275	66,675	92,075	117,475	142,875
41/64	.640625	16,272	41,672	67,072	92,472	117,872	143,272
21/32	.65625	16,669	42,069	67,469	92,869	118,269	143,669
43/64	.671875	17,066	42,466	67,866	93,266	118,666	144,066
11/16	.6875	17,463	42,863	68,263	93,663	119,063	144,463
45/64	.703125	17,859	43,259	68,659	94,059	119,459	144,859
23/32	.71875	18,256	43,656	69,056	94,456	119,856	145,256
47/64	.734375	18,653	44,053	69,453	94,853	120,253	145,653
3/4	.75	19,050	44,450	69,850	95,250	120,650	146,050
49/64	.765625	19,447	44,847	70,247	95,647	121,047	146,447
25/32	.78125	19,844	45,244	70,644	96,044	121,444	146,844
51/64	.796875	20,241	45,641	71,041	96,441	121,841	147,241
13/16	.8125	20,638	46,038	71,438	96,838	122,238	147,638
53/64	.828125	21,034	46,434	71,834	97,234	122,634	148,034
27/32	.84375	21,431	46,831	72,231	97,631	123,031	148,431
55/64	.859375	21,828	47,228	72,628	98,028	123,428	148,828
7/8	.875	22,225	47,625	73,025	98,425	123,825	149,225
57/64	.890625	22,622	48,022	73,422	98,822	124,222	149,622
29/32	.90625	23,019	48,419	73,819	99,219	124,619	150,019
59/64	.921875	23,416	48,816	74,216	99,616	125,016	150,416
15/16	.9375	23,813	49,213	74,613	100,013	125,413	150,813
61/64	.953125	24,209	49,609	75,009	100,409	125,809	151,209
31/32	.96875	24,606	50,006	75,406	100,806	126,206	151,606
63/64	.984375	25,003	50,403	75,803	101,203	126,603	152,003

Inch Fraction	Decimal	6″ 152.400	7″ 177.800	8″ 203.200	9″ 228.600	10″ 254.000
1/64	.015625	152,797	178,197	203,597	228,997	254,397
1/32	.03125	153,194	178,594	203,994	229,394	254,794
3/64	.046875	153,591	178,991	204,391	229,791	255,191
1/16	.0625	153,988	179,388	204,788	230,188	255,588
5/64	.078125	154,384	179,784	205,184	230,584	255,984
3/32	.09375	154,781	180,181	205,581	230,981	256,381
7/64	.109375	155,178	180,578	205,978	231,378	256,778
1/8	.125	155,575	180,975	206,g75	231,775	257,175
9/64	.140625	155,972	181,372	206,772	232,1 72	257,572
5/32	.15625	156,369	181,769	207,169	232,569	257,969
11/64	.171875	156,766	182,166	207,566	232,966	258,366
3/16	.1875	157,163	182,563	207,963	233,363	258,763
13/64	.203125	157,559	182,959	208,359	233,759	259,159
7/32	.21875	157,956	183,356	208,756	234,156	259,556
15/64	.234375	158,353	183,753	209,153	234,553	259,953
1/4	.25	158,750	184,150	209,550	234,950	260,350
17/64	.265625	159,147	184,547	209,947	235,347	260,747
9/32	.28125	159,544	184,944	210,344	235,744	261,144
19/64	.296875	159,941	185,341	210,741	236,141	261,541
5/16	.3125	160,338	185,738	211,138	236,538	261,938
21/64	.328125	160,734	186,134	211,534	236,934	262,334
11/32	.3437	161,131	186,531	211,931	237,331	262,731
23/64	.359375	161,528	186,928	212,328	237,728	263,128
3/ 8	.375	161,925	187,325	212,725	238,125	263,525
25/64	.390625	162,322	187,722	213,122	238,522	263,922
13/32	.40625	162,719	188,119	213,519	238,919	264,319
27/64	.421875	163,116	188,516	213,916	239,316	264,716
7/16	.4375	163,513	188,913	214,313	239,713	265,113
29/64	.453125	163,909	189,309	214,709	240,109	265,509
15/32	.46875	164,306	189,706	215,106	240,506	265,906
31/64	.484375	164,703	190,103	215,503	240,903	266,303
1/2	.5	165,100	190,500	215,900	241,300	266,700
33/64	.515625	165,497	190,897	216,297	241,697	267,097
17/32	.53125	165,894	191,294	216,694	242,094	267,494
35/64	.546875	166,291	191,691	217,091	242,491	267,891
9/16	.5625	166,688	192,088	217,488	242,888	268,288
37/64	.578125	167,084	192,484	217,884	243,284	268,684
19/32	.59375	167,481	192,881	218,281	243,681	269,081
39/64	.609375	167,878	193,278	218,678	244,078	269,478
5/8	.625	168,275	193,675	219,075	244,475	269,875
41/64	.640625	168,672	194,072	219,472	244,872	270,272
21/32	.65625	169,069	194,469	219,869	245,269	270,669
43/64	.671875	169,466	194,866	220,266	245,666	271,066
11/16	.6875	169,863	195,263	220,663	246,063	271,463
45/64	.703125	170,259	195,659	221,059	246,459	271,859
23/32	.71875	170,656	196,056	221,456	246,856	272,256
47/64	.734375	171,053	196,453	221,853	247,253	272,653
3/4	.75	171,450	196,850	222,250	247,650	273,050
49/64	.765625	171,847	197,247	222,647	248,047	273,447
25/32	.78125	172,244	197,644	223,044	248,444	273,844
51/64	.796875	172,641	198,041	223,441	248,841	274,241
13/16	.8125	173,038	198,438	223,838	249,238	274,638
53/64	.828125	173,434	198,834	224,234	249,634	275,034
27/32	.84375	173,831	199,231	224,631	250,031	275,431
55/64	.859375	174,228	199,628	225,028	250,428	275,828
7/8	.875	174,625	200,025	225,425	250,825	276,225
57/64	.890625	175,022	200,422	225,822	251,222	276,622
29/32	.90625	175,419	200,819	226,219	251,619	277,019
59/64	.921875	175,816	201,216	226,616	252,016	277,416
15/16	.9375	176,213	201,613	227,013	252,413	277,813
61/64	.953125	176,609	202,009	227,409	252,809	278,209
31/32	.96875	177,006	202,406	227,806	253,206	278,606
63/64	.984375	177,403	202,803	228,203	253,603	279,003

NOTES