



# Shafts -Standard Type / Precision Type- One End Female Thread

CAD Data

For Shafts with wrench flats and cross-drilled holes, please see P.111

**RoHS**

Precision Type	Type				Material	Hardness	Surface Treatment
	Standard	Standard	Standard	Standard			
VFJT	SFJT	SFUT	-	-	1.3505/100Cr6	-	-
VSFJT	SSFJT	SSFUT	-	-	1.4125/ X105CrMo17 equivalent	Induction Hardening Effective Hardening Depth $\geq$ P.104	-
VPFJT	PSFJT	PSFUT	-	-	1.3505/100Cr6	50HRC	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness: 5µm or more
VPSFJT	PSSFJT	PSSFUT	-	-	1.4125/ X105CrMo17 equivalent	56HRC	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness: 10µm or more
VRJT	RSFJT	-	-	-	1.3505/100Cr6	LTBC	-
-	-	-	-	-	1.1191/C45E	-	-
-	-	-	-	-	1.4301/ X5CrNi18-10	-	-

D Tolerance			
D	g6	h5	f8
4			
5	-0.004	0	-
6	-0.012	-0.005	-0.010
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12			
13			
15	-0.006	0	-0.016
16	-0.017	-0.008	-0.043
18			
20			
25	-0.007	0	-0.020
30	-0.020	-0.009	-0.053
35			
40	-0.009	0	-0.025
50	-0.025	-0.011	-0.064

**Features of precision type**  
Squareness is  $\perp$  0.03

Precision Type has center holes at the end faces.

When Mx2.5+4zL, tap pilot hole may go through.

Part Number Type	D	L		M (Coarse Threads) Selection										C				
		1mm Increments																
Precision type (D Tolerance g6) VFJT VSFJT VPFJT VPSFJT VRJT	4	25-200	2															0.2 or less
	5	25-300		2.6	3													0.5 or less
	6	25-300			3													
	8	25-300			3	4	5											
	10	25-350			3	4	5	6										
	12	25-350				4	5	6	8									
	13	25-350				4	5	6	8									
	15	25-350				4	5	6	8	10								
	16	25-350				4	5	6	8	10								
	18	25-350				4	5	6	8	10	12							
20	30-450				4	5	6	8	10	12								
25	30-450				4	5	6	8	10	12	16							
30	30-450				4	5	6	8	10	12	16	20						

Part Number Type	D	L		M (Coarse Threads) Selection										C				
		1mm Increments																
Standard Type (D Tolerance g6) SFJT SSFJT PSFJT PSSFJT RSFJT (D≤30, L≤500)	4	20-300	2															0.2 or less
	5	20-400		2.6	3													0.5 or less
	6	20-600			3													
	8	20-800			3	4	5											
	10	20-800			3	4	5	6										
	12	20-1000				4	5	6	8									
	13	25-1000				4	5	6	8									
	15	25-1000				4	5	6	8	10								
	16	30-1200				4	5	6	8	10								
	18	30-1200				4	5	6	8	10	12							
20	30-1200				4	5	6	8	10	12								
25	35-1200				4	5	6	8	10	12	16							
30	35-1500				4	5	6	8	10	12	16	20						
35	35-1500				4	5	6	8	10	12	16	20	24					
40	50-1500				4	5	6	8	10	12	16	20	24	30				
50	65-1500				4	5	6	8	10	12	16	20	24	30				

**Price** **Volume Discount** (Round down to one Cent.) P.88

Quantity	1-4	5-12	13-19	20-49
Discount Rates		5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number Type	D	€ Unit Price											
		Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
SFJT SFUT	4												
	5												
	6												
	8												
	10												
	12-13												
	15-16												
	18-20												
	25												
	30												
SSFJT SSFUT	4												
	5												
	6												
	8												
	10												
	12-13												
	15-16												
	18-20												
	25												
	30												

Part Number Type	D	€ Unit Price						
		Min. L	L51	L101	L151	L201	L301	L401
RSFJT	4							
	5							
	6							
	8							
	10							
	12							
	13							
	15							
	16							
	18							

Part Number Type	D	€ Unit Price							
		Min. L	L101	L201	L401	L601	L801	L1001	L1201
PSFJT	6								
	8								
	10								
	12-13								
	15-16								
	18-20								
	25								
	30								
	35								
	40								

Part Number Type	D	€ Unit Price				
		Min. L	L51-100	L101-200	L201-300	L301-450
VFJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15-16					
	18					
	20					

Part Number Type	D	€ Unit Price							
		Min. L	L101	L201	L401	L601	L801	L1001	L1201
VSFJT	6								
	8								
	10								
	12								
	13								
	15-16								
	18-20								
	25								
	30								
	35								

Part Number Type	D	€ Unit Price				
		Min. L	L51-100	L101-200	L201-300	L301-450
VPFJT	4					
	5					
	6					
	8					
	10					
	12					
	13					
	15-16					
	18					
	20					

**Example**

-Precision Type A requires no steps and is effective for assembly.

**Alterations** **Part Number** - L - M (MSC) - (LKC...etc.) **10 Days**

(RSFJT is to be shipped on the 13th day after order)

Keyway machining (KC) only.

DKC alterations was discontinued in June 2010. Please specify new part numbers; SFUT, SSFUT, PSFUT and PSSFUT on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder	Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes: Applicable when L=200 or less for precision type. When using LKC, L dimensions can be specified in 0.1 increments. L<200 → ±0.03 200≤L<500 → ±0.05 L≥500 → ±0.1	4,00		DKC	Change to h5 O.D. tolerance Ordering Code DKC Application Notes: Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	FC	Add Set Screw Flat at one location Ordering Code FC10-E8 Application Notes: Not applicable to precision type. Specify FC and E in 1mm increments. FC≤3xD When 1.5xD<FC, FCs/L/2 E=0 or E≥2 Can not be used with WFC	2,00		MSC	Change to fine thread tap. Ordering Code MSC14 M is changed to MSC Application Notes: Applicable for D = 6 or more	3,00
	WFC	Add Set Screw Flats at two locations Ordering Code WFC8-A8-E4 Application Notes: Not applicable to precision type. Specify WFC, A and E in 1mm increments. WFCs/3xD When 1.5xD<FC, 2WFCs/L/2 A (E) = 0 or A (E) ≥ 2 Machining on the same plane is not applicable. Cannot be combined with FC.	4,00		RC	Add 90-deg. Set Screw Flat at one location Ordering Code RC10 Application Notes: Applicable for D=10-30 Not applicable to precision type Can not be used with WRC	5,00
					WRC	2 x 90-deg. Set Screw Flats Ordering Code WRC10-Y10 Application Notes: Applicable for D=10-30 Not applicable to precision type Cannot be used in combination with RC Not available on the same plane.	10,00
					KC	One keyway is added. Ordering Code KC10-G10 Application Notes: Applicable only to D = 12, 16, 20, 25 or 30. Not applicable to precision type	5,00

Please see Alteration Guides for details if provided P.105

For more than one alteration, 2mm or more separation required between machined sections. P.106

Alterations may lower hardness. P.104

**Order Example** Part Number - L - M Days to Ship

VFJT8 - 200 - M4 8 Days Express A 8,00 EUR/unit 5 Days P.88

RSFJT20 - 325 - M8 10 Days Express B 8,00 EUR/unit P.88

Express Charge of 21,60 EUR for 3 or more pieces of identical products.

Express is not available for VRJT.



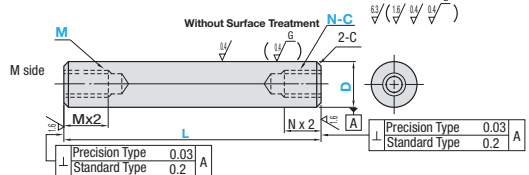
# Shafts -Standard Type / Precision Type-

## -Both Ends Female Thread-

CAD Data

For Shafts with wrench flats and cross-drilled holes, please see P.115

RoHS		Type				Material	Hardness	Surface Treatment	D Tolerance			
Precision Type	Standard	D Tolerance g6	D Tolerance g8	D Tolerance h8	D				g6	h5	f8	
VFJW	SFJW	SFUW	-	-	1.359/100/6	Induction Hardening Effective Hardening Depth $\geq$ P.104	Hard Chrome Plating Plating Hardness: H750 - Plating Thickness: 5µ or more	4	-	-	-	
VSFJW	SSFJW	SSFUW	-	-	1.4125/1050/Me17 equivalent			5	-0.004	0	-0.010	
VPFJW	PSFJW	PSFUW	-	-	1.359/100/6	58HRC - 1.4125/1050/Me17 equivalent	Hard Chrome Plating Plating Hardness: H750 - Plating Thickness: 5µ or more	6	-	-	-0.028	
VPSFJW	PSSFJW	PSSFUW	-	-	1.4125/1050/Me17 equivalent			8	-0.005	0	-0.013	
VRJW	RSFJW	-	-	-	1.359/100/6	LTBC	-	10	-0.014	-0.006	-0.035	
-	-	-	-	-	1.181/104E			12	-	-	-	
-	-	-	-	-	PSPFGW	-	-	13	-0.006	0	-0.016	
-	-	-	-	-	PSSFGW			15	-0.017	-0.008	-0.043	
-	-	-	-	-	1.4301/152/18-10	16	-	-	-			
-	-	-	-	-	-	17	-	-	-			
-	-	-	-	-	-	18	-	-	-			
-	-	-	-	-	-	20	-0.007	0	-0.020			
-	-	-	-	-	-	25	-0.020	-0.009	-0.053			
-	-	-	-	-	-	30	-	-	-			
-	-	-	-	-	-	35	-0.009	0	-0.025			
-	-	-	-	-	-	40	-0.025	-0.011	-0.064			
-	-	-	-	-	-	50	-	-	-			



L needs to be  $M \times 2 + N \times 2 < L$ . When  $M \times 2.5 + 4 + N \times 2.5 + 4 < L$ , tap pilot hole may go through.

Part Number	D	L	M (Coarse Threads) / N (Coarse Threads) Selection	C
Precision Type	4	25-200	2	0.2 or less
(D Tolerance g6)	5	25-300	2.6 3	
VFJW	6	25-300	3	
VSFJW	8	25-300	3 4 5	
VPFJW	10	25-350	3 4 5 6	
VPSFJW	12	25-350	4 5 6 8	
VRJW	13	25-350	4 5 6 8	
	15	25-350	4 5 6 8 10	
	16	25-350	4 5 6 8 10	
	18	25-350	4 5 6 8 10 12	
	20	30-450	4 5 6 8 10 12	
	25	30-450	4 5 6 8 10 12 16	
	30	30-450	6 8 10 12 16 20	

Part Number	D	L	M (Coarse Threads) / N (Coarse Threads) Selection	C
Standard Type	4	20-300	2	0.5 or less
(D Tolerance h5)	5	20-400	2.6 3	
SFJW	6	20-600	3	
SSFJW	8	20-800	3 4 5	
PSFJW	10	20-1000	3 4 5 6 8	
PSSFJW	12	25-1000	4 5 6 8	
RSFJW (D=30, L≤500)	15	25-1000	4 5 6 8 10	
	16	30-1200	4 5 6 8 10	
	18	30-1200	4 5 6 8 10 12	
	20	30-1200	4 5 6 8 10 12	
	25	35-1200	4 5 6 8 10 12 16	
	30	35-1500	6 8 10 12 16 20	
	35	35-1500	8 10 12 16 20 24	
	40	50-1500	10 12 16 20 24 30	
	50	65-1500	12 16 20 24 30	

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

Part Number	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
SFJW	4											
SSFJW	6											
PSFJW	10											
PSSFJW	12											
RSFJW	15											
SSFJW	16											
SSFJW	18											
SSFJW	20											
SSFJW	25											
SSFJW	30											
SSFJW	35											
SSFJW	40											
SSFJW	50											

For D tolerance h5, 2.00 EUR is added to the prices above.

Part Number	Min. L	L51	L101	L151	L201	L301	L401
RSFJW	4						
RSFJW	5						
RSFJW	6						
RSFJW	8						
RSFJW	10						
RSFJW	12						
RSFJW	13						
RSFJW	15						
RSFJW	16						
RSFJW	18						
RSFJW	20						
RSFJW	25						
RSFJW	30						

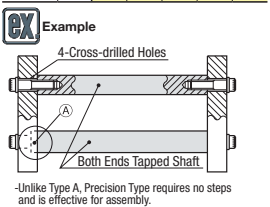
Part Number	Min. L	L101	L201	L401	L601	L801	L1001	L1201
PSSFJW	6							
PSSFJW	8							
PSSFJW	10							
PSSFJW	12							
PSSFJW	15							
PSSFJW	18							
PSSFJW	25							
PSSFJW	30							
PSSFJW	40							
PSSFJW	50							
PSSFJW	6							
PSSFJW	8							
PSSFJW	10							
PSSFJW	12							
PSSFJW	15							
PSSFJW	18							
PSSFJW	25							
PSSFJW	30							
PSSFJW	40							
PSSFJW	50							

Part Number	Min. L	L51	L101	L201	L301	L401
VFJW	4					
VFJW	5					
VFJW	6					
VFJW	8					
VFJW	10					
VFJW	12					
VFJW	13					
VFJW	15					
VFJW	16					
VFJW	18					
VFJW	20					
VFJW	25					
VFJW	30					

Part Number	Min. L	L101	L201	L401	L601	L801	L1001	L1201
VPSFJW	4							
VPSFJW	5							
VPSFJW	6							
VPSFJW	8							
VPSFJW	10							
VPSFJW	12							
VPSFJW	13							
VPSFJW	15							
VPSFJW	16							
VPSFJW	18							
VPSFJW	20							
VPSFJW	25							
VPSFJW	30							
VPSFJW	4							
VPSFJW	5							
VPSFJW	6							
VPSFJW	8							
VPSFJW	10							
VPSFJW	12							
VPSFJW	15							
VPSFJW	18							
VPSFJW	20							
VPSFJW	25							
VPSFJW	30							

Part Number	Min. L	L51	L101	L201	L301	L401
VPSFJW	4					
VPSFJW	5					
VPSFJW	6					
VPSFJW	8					
VPSFJW	10					
VPSFJW	12					
VPSFJW	13					
VPSFJW	15					
VPSFJW	16					
VPSFJW	18					
VPSFJW	20					
VPSFJW	25					
VPSFJW	30					

Part Number	Min. L	L101	L201	L401	L601	L801	L1001	L1201
VPSFJW	4							
VPSFJW	5							
VPSFJW	6							
VPSFJW	8							
VPSFJW	10							
VPSFJW	12							
VPSFJW	13							
VPSFJW	15							
VPSFJW	16							
VPSFJW	18							
VPSFJW	20							
VPSFJW	25							
VPSFJW	30							
VPSFJW	4							
VPSFJW	5							
VPSFJW	6							
VPSFJW	8							
VPSFJW	10							
VPSFJW	12							
VPSFJW	15							
VPSFJW	18							
VPSFJW	20							
VPSFJW	25							
VPSFJW	30							



Unlike Type A, Precision Type requires no steps and is effective for assembly.

Alterations: Part Number - L - M (MSC) - N (NSC) - LKC...etc.

Alterations	Code	Spec.	Price Adder
LKC	LKC	Alteration to L dimension tolerance (	















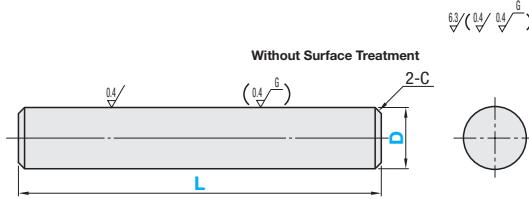
# Shafts

## -Straight Type-

CAD Data

Shaft length can be specified in 1mm increments.

RoHS		Type	M	H	S	D Tolerance			
D Tolerance g6	D Tolerance h5	D Tolerance f8	Material	Hardness	Surface Treatment	D	g6	h5	f8
SFJ	SFU	-	1.3505	Induction Hardening	-	3	-0.002	0	-0.004
SSFJ	SSFU	-	1.4125	Effective Hardening	-	4	-0.008	0	-
PSFJ	PSFU	-	1.3505	Depth: P104	Hard Chrome Plating	5	-0.004	0	-0.005
PSSFJ	PSSFU	-	1.4125	1.3505 58HRC-	Plating Hardness: HV750 ~	6	-0.012	0	-0.010
RSFJ	-	-	1.3505	1.4125 equivalent 56HRC-	Plating Thickness: 5µ or more	8	-0.005	0	-0.013
-	-	PSFG	1.1191	-	LTBC	10	-0.014	-0.006	-0.035
-	-	PSSFG	1.4301	-	Hard Chrome Plating	12	-0.006	0	-0.016
-	-	-	-	-	Plating Hardness: HV750 ~	15	-0.017	-0.008	-0.043
-	-	-	-	-	Plating Thickness: 10µm or more.	18	-0.007	0	-0.020
-	-	-	-	-	-	20	-0.020	-0.009	-0.053
-	-	-	-	-	-	25	-0.009	0	-0.025
-	-	-	-	-	-	30	-0.025	-0.011	-0.064
-	-	-	-	-	-	35	-	-	-
-	-	-	-	-	-	40	-	-	-
-	-	-	-	-	-	50	-	-	-



Part Number	D	L 1mm Increments	C
SFJ	3	10~400	0.2 or less
SSFJ	4	10~400	
PSFJ	5	10~400	
PSSFJ	6	20~600	
RSFJ	8	20~800	
SFU	10	20~800	0.5 or less
SSFU	12	20~1000	
PSFU	13	25~1000	
PSFU	15	25~1000	
PSSFU	16	30~1200	
SFU	18	30~1200	1.0 or less
SSFU	20	30~1200	
PSFU	25	35~1200	
PSSFU	30	35~1500	
PSSFU	35	35~1500	
RSFU	40	50~1500	1.0 or less
PSSFU	50	50~1500	

Part Number	D	L 1mm Increments	C
PSFG	6	20~600	0.5 or less
PSSFG	8	20~800	
PSSFG	10	20~800	
PSSFG	12	20~1000	
PSSFG	13	25~1000	
PSSFG	15	25~1000	1.0 or less
PSSFG	16	30~1200	
PSSFG	18	30~1200	
PSSFG	20	30~1200	
PSSFG	25	35~1200	
PSSFG	30	35~1500	1.0 or less
PSSFG	35	35~1500	
PSSFG	40	50~1500	
PSSFG	50	65~1500	

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

Minimum quoted quantity for precision grade shafts larger than 30mm O.D. with LTBC plating is 50.

Part Number	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
SFJ	SFU	3-4-5												
SSFJ	SSFU	6												
PSFJ	PSFU	8												
PSSFJ	PSSFU	10												
RSFJ		12												
		13												
		15-16												
		18-20												
		25												
		30												
		35												
		40												
		50												

Part Number	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
PSFJ	PSFU	3												
PSFJ	PSFU	4												
PSFJ	PSFU	5												
PSFJ	PSFU	6												
PSFJ	PSFU	8												
PSFJ	PSFU	10												
PSFJ	PSFU	12												
PSFJ	PSFU	13												
PSFJ	PSFU	15-16												
PSFJ	PSFU	18-20												
PSFJ	PSFU	25												
PSFJ	PSFU	30												
PSFJ	PSFU	35												
PSFJ	PSFU	40												
PSFJ	PSFU	50												

For D tolerance h5, 2.00 EUR is added to the prices above.

Part Number	Type	D	Min. L	L51	L101	L151	L201	L301	L401
RSFJ		3-4-5	50	100	150	200	300	400	500
RSFJ		6							
RSFJ		8							
RSFJ		10							
RSFJ		12							
RSFJ		13							
RSFJ		15							
RSFJ		18							
RSFJ		20							
RSFJ		25							
RSFJ		30							

Part Number	Type	D	Min. L	L101	L201	L401	L601	L801	L1001	L1201	L1501
PSFG		6	100	200	400	600	800	1000	1200	1500	
PSFG		8									
PSFG		10									
PSFG		12									
PSFG		13									
PSFG		15-16									
PSFG		18-20									
PSFG		25									
PSFG		30									
PSFG		35									
PSFG		40									
PSFG		50									
PSSFG		6									
PSSFG		8									
PSSFG		10									
PSSFG		12									
PSSFG		13									
PSSFG		15-16									
PSSFG		18-20									
PSSFG		25									
PSSFG		30									
PSSFG		35									
PSSFG		40									
PSSFG		50									

Alterations Part Number - L - (LKC / SC...etc.) SFJ30 - 250 - LKC

10 Days (RSFJ is to be shipped on the 13th day after order)

DKC alterations was discontinued in June 2010. Please specify new part numbers; SFU, SSFU, PSFU and PSSFU on the left page to place orders.

Alteration Details P.105

Alterations	Code	Spec.	Price Adder
	LKC	L Dimension Tolerance Changes (Precision) [Order number] LKC When using LKC, L dimensions can be specified in 0.1 increments. L < 200 → L±0.03 200 ≤ L < 500 → L±0.05 L ≥ 500 → L±0.1	4,00
	SC	Adds a set of wrench flats. [Order number] SC5 [Application Notes] Applicable to D = 6 and over SC=1mm increment SC ≤ L ± L SC=0 or SC ≥ 1 Can not be used with WSC	4,00
	WSC	Add wrench flats at two locations [Order number] WSC12-X8 [Application Notes] Applicable to D = 6 and over Specify WSC/X in 1mm increments WSC = X + L ± 2 - L WSC (X) = 0 or WSC (X) ≥ 1 Can not be machined on the same plane. Can not be used with SC.	8,00
	FC	Add Set Screw Flat at one location [Order number] FC10-A8 Specify FC and A in 1mm increments. FC ≤ 3xD When 1.5xD < FC, FC ≤ L/2 A = 0 or A ≥ 2 Can not be used with WFC	2,00
	WFC	Add Set Screw Flats at two locations [Order number] WFC10-A8-E20 Specify WFC, A and E in 1mm increments WFC ≤ 3xD When 1.5xD < FC, 2WFC ≤ L/2 A (E) = 0 or A (E) ≥ 2 Can not be machined on the same plane. Cannot be combined with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance [Ordering Code] DKC [Application Notes] Not applicable for RSFJ, PSFG and PSSFG are not applicable.	-
	RC	Add 90-deg. Set Screw Flat at one location [Ordering Code] RC10 [Application Notes] Applicable for D = 10 ~ 30 Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats [Ordering Code] WRC10-Y10 [Application Notes] Applicable for D = 10 ~ 30 Can not be used in combination with RC. Not available on the same plane.	10,00
	VC	Add V groove at one location [Ordering Code] VC8 [Application Notes] Applicable to D = 6 and over Can not be used with WVC	2,00
	WVC	Two V-grooves. [Ordering Code] WVC180-F8 [Application Notes] Applicable to D = 6 and over Can not be used with VC	4,00
	KC	One keyway is added. [Ordering Code] KC10-G10 [Application Notes] Applicable only to D = 12, 16, 20, 25 or 30.	5,00

Please see Alteration Guides for details if provided. P.105  
For more than one alteration, 2mm or more separation required between machined sections. P.106  
Alterations may lower hardness. P.104

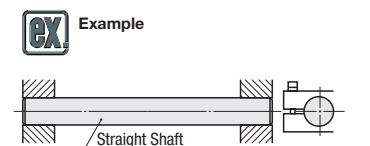
Order Example Part Number - L - SFJ20 - 75

Degreasing Service P.83

Days to Ship **8 Days** **5 Days**

RSFJ **13 Days**

Express A 8,00 EUR/unit  
Express Charge of 21,60 EUR for 3 or more pieces of identical products.



Straight Shaft









# Shafts -Standard Type / Precision Type- -One End Male Thread with Undercut-

CAD Data

For Shafts with wrench flats **P131**

RoHS

Precision Type	Type				Material	Hardness	Surface Treatment	D Tolerance			
	D Tolerance g6	D Tolerance h5	D Tolerance h6	D Tolerance f8				D	g6	h5	f8
VAFN	SAFN	SFNU	-	1.3505/100Cr6	1.4125/ X105CrMo17 equivalent <b>P104</b>	Induction Hardening Effective Hardening Depth 58HRC- ~ Plating Thickness 5µ or more	Hard Chrome Plating Plating Thickness 5µ or more	8	-0.005	0	-0.013
VSAFN	SSAFN	SSFNU	-	1.4125/ X105CrMo17 equivalent				10	-0.014	-0.006	-0.035
VPAFN	PSAFN	PSSFNU	-	1.3505/100Cr6				12	-0.006	0	-0.016
VPSAFN	PSSAFN	PSSFNU	-	1.4125/ X105CrMo17 equivalent				13	-0.017	-0.008	-0.043
VRFN	RSAFN	-	-	1.3505/100Cr6	15	-0.007	0	-0.020			
-	-	-	PSAGN	1.1191/C45E	16	-0.020	-0.009	-0.053			
-	-	-	PSSAGN	1.4301/ X5CrNi18-10	18	-0.009	0	-0.025			
-	-	-	-	-	20	-0.025	-0.011	-0.064			
-	-	-	-	-	25	-	-	-			
-	-	-	-	-	30	-	-	-			
-	-	-	-	-	35	-	-	-			
-	-	-	-	-	40	-	-	-			
-	-	-	-	-	45	-	-	-			
-	-	-	-	-	50	-	-	-			

Features of Precision Type  
Squareness is  $\leq 0.03$

Without Surface Treatment  
Precision Type 0.03  
Standard Type 0.2

MC dimensions in ( ) are for Precision Type M6 (Coarse).

Part Number	1mm Increments			Selection		(Y) Max.	C	Undercut Dimensions (Coarse Threads)			
	Type	D	L	M (Coarse Threads)	F			M	Pitch	MC	(g)
Precision Type (D Tolerance g6) VAFN VSAFN VPAFN VPSAFN VRFN	8	25-295	5 ≤ F ≤ Mx3 ⊕F-(g) ≥ Pitchx3	6	300	0.5 or less	6	1.0	300	2	
	10	25-345		6 8	350		8	1.25	350	3	
	12	25-345		6 8 10	350		10	1.5	350	4	
	13	25-345		6 8 10 12	350		12	1.75	350	5	
	15	25-345		6 8 10 12 16	350		16	2.0	350		
	16	25-345		6 8 10 12	350		20	2.5	350		
	18	25-345		6 8 10 12 16	350		24	3.0	350		
	20	25-445		6 8 10 12 16 20	450		30	3.5	450		
	25	25-443		8 10 12 16 20 24	450						
	30	25-443		8 10 12 16 20 24	450						

Part Number	1mm Increments			Selection		(Y) Max.	C	
	Type	D	L	M (Coarse Threads)	F			
Standard Type (D Tolerance h5) SAFN SSAFN PSAFN PSSAFN RSAFN (D ≤ 30, L ≤ 500)	8	25-795	5 ≤ F ≤ Mx3 ⊕F-(g) ≥ Pitchx3	6	800	0.5 or less	6	800
	10	25-795		6 8	1000		8	1000
	12	25-995		6 8 10	1000		10	1200
	13	25-995		6 8 10 12	1200		12	1200
	15	25-995		6 8 10 12 16	1200		16	1200
	16	25-1195		6 8 10 12	1200		20	1200
	18	25-1195		6 8 10 12 16	1200		24	1200
	20	25-1195		6 8 10 12 16 20 24	1500		30	1500
	25	25-1195		8 10 12 16 20 24 30	1500		40	1500
	30	25-1495		10 12 16 20 24 30	1500		50	1500

**Price** **Volume Discount** (Round down to one Cent) **P87**

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

Part Number	€ Unit Price												Part Number	€ Unit Price														
	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801		L1001	L1201	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001
SAFN SFNU	8														8													
	10														10													
	12-13														12-13													
	15-16														15-16													
	18-20														18-20													
	25														25													
	30														30													
	35														35													
	40														40													
	50														50													
SSAFN SSFNU	8													8														
	10													10														
	12-13													12-13														
	15-16													15-16														
	18-20													18-20														
	25													25														
	30													30														
	35													35														
	40													40														
	50													50														

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number	€ Unit Price							Part Number	€ Unit Price					Part Number	€ Unit Price							
	Type	D	Min. L	L51	L101	L151	L201		L301	L401	Type	D	Min. L		L51	L101	L201	L301	Type	D	Min. L	L51
RSAFN	8							VAFN	8						VPAFN	8						
	10								10							10						
	12								12							12						
	13								13							13						
	15								15							15						
	16								16							16						
	18								18							18						
	20								20							20						
	25								25							25						
	30								30							30						
PSAGN	8							VSAFN	8						VPSAFN	8						
	10								10							10						
	12-13								12-13							12-13						
	15-16								15-16							15-16						
	18-20								18-20							18-20						
	25								25							25						
	30								30							30						
	35								35							35						
	40								40							40						
	50								50							50						
PSSAGN	8							VRFN	8							8						
	10								10							10						
	12-13								12-13							12-13						
	15-16								15-16							15-16						
	18-20								18-20							18-20						
	25								25							25						
	30								30							30						
	35								35							35						
	40								40							40						
	50								50							50						

**Alterations** Part Number - L - F - M (MMC / MMS) - LKC...etc.  
SAFN30 - 250 - F20 - M10 - LKC  
Keyway machining (KC) only. 10 Days (RSAFN is to be shipped on the 13th day after order)

Alterations	Code	Spec.	Price Adder	Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code   LKC Application Notes   Applicable when L=200 or less to precision type When using LKC, L dimensions can be specified in 0.1 increments. ⊕ L<200 → L±0.03 200 ≤ L < 500 → L±0.05 L ≥ 500 → L±0.1 ⊗ Not applicable when D-M ≤ 2	4,00		DKC	Change to h5 O.D. tolerance Ordering Code   DKC Application Notes   Precision type, D tolerance and Not applicable to LTBC Plated Shafts.	-
	FC	Add Set Screw Flat at one location Ordering Code   FC10-E8 Application Notes   Not applicable to precision type Specify FC and E in 1mm increments. ⊕ FC ≤ 3xD ⊕ When 1.5xD < FC, FC ≤ L/2 ⊕ E=0 or E ≤ 2 ⊗ Can not be used with WFC	2,00		RC	Add 90-deg. Set Screw Flat at one location Ordering Code   RC10 Application Notes   Applicable for D=10 - 30 ⊗ Not applicable to precision type ⊗ Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats Ordering Code   WRC10-Y10 Application Notes   Applicable for D=10 - 30 ⊗ Not applicable to precision type ⊗ Cannot be used in combination with RC. ⊗ Not available on the same plane.	10,00		MMS	Change to fine threads. Ordering Code   MMC14 (M is changed to MMC) MMS14 (M is changed to MSC)	3,00
	WFC	Add Set Screw Flats at two locations Ordering Code   WFC8-AB-E4 Application Notes   Not applicable to precision type Specify WFC, A and E in 1mm increments ⊕ WFC ≤ 3xD ⊕ When 1.5xD < FC, 2WFC ≤ L/2 ⊕ A (E) = D or A (E) ≥ 2 ⊗ Cannot be machined on the same plane. ⊗ Cannot be combined with FC.	4,00		KC	One keyway is added. Ordering Code   KC10-G10 Application Notes   Applicable only to D = 12, 16, 20, 25 or 30. ⊗ Not applicable to precision type	5,00

**Order Example** Part Number - L - F - M  
VAFN13 - 200 - F20 - M10  
SAFN13 - 800 - F23 - M10

**Days to Ship** 8 Days Express A 8,00 EUR/unit **5 Days** P88  
⊕ A Express Charge of 21,60 EUR for 3 or more identical pieces.

**10 Days** Express B 8,00 EUR/unit P88  
⊕ A Express Charge of 21,60 EUR for 3 or more identical pieces.

**13 Days**  
- VAFN - VSAFN - VPAFN - VPSAFN - VRFN  
- SSAFN - SSFNU  
- RSAFN  
⊗ Express is not available for VRFN.

Degreasing Service P83









# Shafts -Standard Type-

## -Both Ends Male Thread with O.D. same as Shaft O.D.-

CAD Data

For Both Ends Male Thread Shafts with different diameters, please see P.135

**RoHS**

Type	Material	Hardness	Surface Treatment
SFAL	EN 1.3505 Equivalent	Induction Hardening	-
SSFAL	1.4125/X105CrMo17 equivalent	Effective Hardening	-
PSFAL	EN 1.3505 Equivalent	Depth P104	Hard Chrome Plating
PSSFAL	1.4125/X105CrMo17 equivalent	58HRC	Plating Hardness: HV750
RSFAL	1.3505/100Cr6	56HRC	Plating Thickness: 5µ or more
PSFGL	1.191/CA5E	-	LTBC
PSSFGL	1.4301/XSCNi18-10	-	Hard Chrome Plating
			Plating Hardness: HV750
			Plating Thickness: 10µm or more.

D Tolerance			
D	g6	h5	f8
3	-0.002	0	-
4	-0.008	-0.004	-
5	-0.004	0	-
6	-0.012	-0.005	-0.010
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	-0.006	0	-0.016
16	-0.017	-0.008	-0.043
20	-0.007	0	-0.020
30	-0.020	-0.009	-0.053

2-M (Coarse Thread) =D

Without Surface Treatment

L does not include incomplete threads.

Part Number	1mm Increments				M	(Y) Max.	Coarse Thread Dimensions	
	Type	D	L	B / S			M	Pitch
(D Tolerance g6) (D Tolerance h5)								
SFAL	SFUL	3	25~194	3~15	3	200	3	0.5
SSFAL	SSFUL	4	25~292	4~20	4	300	4	0.7
PSFAL	PSFUL	5	25~392	4~25	5	400	5	0.8
PSSFAL	PSSFUL	6	25~590	5~30	6	600	6	1.0
RSFAL (L≤500, Ymax≤800)		8	25~786	7~40	8	800	8	1.25
		10	25~784	8~50	10	800	10	1.5
		12	25~982	9~60	12	1000	12	1.75
(D Tolerance f8)		16	25~1180	10~80	16	1200	16	2.0
PSFGL		20	25~1174	13~100	20	1200	20	2.5
PSSFGL		30	25~1464	18~150	30	1500	30	3.5

For "Thread O.D. = Shaft O.D." shafts, L dimension has priority. B (S) dimension will be B (S) - (Pitch x 2).

**Volume Discount** (Round down to one Cent) P.87

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for 50 or more LTBC plated shafts.

Part Number	€ Unit Price												Part Number	€ Unit Price																												
	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801		L1001	L1201	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201													
SFAL SFUL	3	11,50	14,16	15,11	15,96	-	-	-	-	-	-	-	-	-	PSFAL PSFUL	3	13,49	14,54	15,58	18,43	-	-	-	-	-	-	-	-	-	-												
	4	11,50	14,16	15,11	15,96	19,10	-	-	-	-	-	-	-	-		4	13,21	14,16	15,20	18,43	21,19	-	-	-	-	-	-	-	-	-												
	5	11,50	14,16	15,11	15,96	19,10	21,95	-	-	-	-	-	-	-		5	13,21	14,16	15,20	18,43	21,19	21,57	-	-	-	-	-	-	-	-	-											
	6	5,89	8,93	11,88	14,82	17,10	17,39	21,85	26,13	-	-	-	-	-		6	7,32	11,02	14,73	18,43	21,19	21,57	26,98	32,40	-	-	-	-	-	-	-	-										
	8	6,18	9,31	12,45	15,49	17,39	17,39	21,85	26,13	34,87	-	-	-	-		8	7,22	10,74	14,25	17,96	21,66	22,71	28,50	34,20	45,60	-	-	-	-	-	-	-										
	10	6,27	9,31	12,45	15,58	17,58	17,58	19,38	21,19	28,41	-	-	-	-		10	7,22	10,74	14,25	17,96	21,19	22,04	26,79	31,45	41,04	-	-	-	-	-	-	-										
SSFAL SSFUL	12	6,37	9,60	12,73	15,87	18,05	18,15	20,14	21,95	30,69	34,68	-	-	PSSFAL PSSFUL	12	7,89	11,69	15,68	19,57	22,71	23,37	27,84	32,21	41,33	53,01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16	7,70	11,50	15,30	19,19	21,47	21,38	23,56	25,46	34,49	38,57	43,80	-		-	16	8,74	13,11	17,39	21,85	24,42	24,42	29,26	34,01	43,51	53,68	64,51	-	-	-	-	-	-	-								
	20	7,89	11,69	15,68	19,57	21,95	21,95	24,23	26,32	35,53	39,81	44,37	-		-	20	10,64	15,87	21,19	26,60	29,55	29,26	34,68	40,00	50,45	61,09	71,63	-	-	-	-	-	-	-								
	30	8,65	12,92	17,29	21,57	25,08	25,84	28,88	32,11	43,23	49,78	56,15	70,30		-	-	30	11,97	17,96	23,94	29,93	33,82	33,82	40,76	47,69	61,09	74,77	88,45	110,58	-	-	-	-	-	-	-						
	3	15,49	19,57	21,09	22,52	-	-	-	-	-	-	-	-		-	3	19,48	21,66	23,56	29,45	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
	4	15,49	19,38	20,81	22,04	26,98	-	-	-	-	-	-	-		-	4	19,48	21,66	23,56	29,45	36,39	-	-	-	-	-	-	-	-	-	-	-	-	-								
SSFAL SSFUL	5	15,49	19,38	20,81	22,04	26,98	28,79	-	-	-	-	-	-	PSSFAL PSSFUL	5	19,48	21,66	23,56	29,45	36,39	38,95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	8,08	11,97	15,96	20,05	24,70	26,51	33,06	39,71	-	-	-	-		6	11,78	17,58	23,56	29,45	36,39	38,95	48,64	58,33	-	-	-	-	-	-	-	-	-	-	-								
	8	8,27	12,54	16,72	20,90	25,18	26,51	33,06	39,71	52,92	-	-	-		8	12,26	18,34	24,42	30,50	36,96	38,95	47,50	56,15	74,86	-	-	-	-	-	-	-	-	-	-								
	10	8,27	12,54	16,72	20,90	24,80	25,84	31,26	36,58	47,79	-	-	-		10	12,26	18,34	24,42	30,50	36,39	37,81	45,79	53,77	71,73	-	-	-	-	-	-	-	-	-									
	12	9,12	13,68	18,34	22,80	26,60	27,27	32,40	37,62	48,17	61,75	-	-		12	13,40	20,14	26,89	33,54	38,95	40,00	47,60	55,20	70,78	90,54	-	-	-	-	-	-	-	-									
	16	10,17	15,20	20,33	25,37	28,50	28,41	34,11	39,71	50,64	62,61	75,05	-		-	16	15,01	22,42	29,83	37,34	41,90	41,71	49,97	58,14	74,39	91,87	110,30	-	-	-	-	-	-	-								
20	12,45	18,62	24,80	31,07	34,39	34,01	40,38	46,65	58,81	71,16	83,41	-	-	20	18,24	27,36	36,48	45,60	50,54	50,07	59,28	68,40	86,45	104,41	122,46	-	-	-	-	-	-	-										
30	13,97	21,00	27,84	34,87	39,43	39,52	47,50	55,58	71,16	87,02	102,98	128,73	-	30	20,43	30,78	41,04	51,21	57,86	58,05	69,73	81,61	104,41	127,87	151,24	189,05	-	-	-	-	-											

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number	€ Unit Price								
	Type	D	Min. L	L51	L101	L151	L201	L301	L401
RSFAL	3	19,29	21,95	22,90	23,75	-	-	-	-
	4	19,29	21,95	22,90	23,75	26,89	-	-	-
	5	19,29	21,95	22,90	23,75	26,89	29,74	-	-
	6	13,68	16,72	19,67	22,61	26,03	26,32	31,92	-
	8	13,97	17,10	21,38	24,42	27,46	28,60	34,11	-
	10	14,06	18,24	21,38	26,79	29,83	30,97	33,92	-
	12	15,30	19,67	23,94	28,12	32,59	34,87	39,14	-
	16	17,77	23,75	28,69	37,05	42,75	45,98	51,49	-
	20	20,14	27,36	33,54	43,04	51,02	51,49	57,48	-
	30	27,65	38,67	44,94	57,48	66,22	75,72	87,50	-

Alterations Part Number - L - B - S - (SC...etc.)  
SFAL30 - 300 - B30 - S40 - SC10

Alterations	Code	Spec.	Price Adder
	SC	Adds a set of wrench flats. [Ordering Code] SC5 [Application Notes] Applicable to D = 6 and over SC = 1mm Increment ⊕ SC = 0 or SC = 1 ⊗ Can not be used with WSC	4,00
	WSC	Add wrench flats at two locations [Ordering Code] WSC15 WSC (X) = Specified in 1mm increments ⊕ WSC = X + 1 x 2 < L ⊕ WSC (X) = 0 or WSC (X) ≥ 1 ⊗ Not available on the same plane. ⊗ Can not be used with	8,00
	FC	Add Set Screw Flat at one location [Ordering Code] FC10-E8 Specify FC and E in 1mm increments. ⊕ FC ≤ 3xD ⊕ When 1.5xD < FC, FC ≤ L/2 ⊕ E = 0 or E ≤ 2 ⊗ Can not be used with WFC	2,00
	WFC	Add Set Screw Flats at two locations [Ordering Code] WFC10-A8-E20 Specify WFC, A and E in 1mm increments ⊕ WFC ≤ 3xD ⊕ When 1.5xD < WFC, 2WFC ≤ L/2 ⊕ A (E) = 0 or A (E) ≥ 2 ⊗ Machining on the same plane is not applicable. Can not be used with FC.	4,00

Order Example Part Number - L - B - S  
SFAL20 - 300 - B20 - S15

Part Number	€ Unit Price									
	Type	D	Min. L	L101	L201	L401	L601	L801	L1001	L1201
PSFGL	6	7,98	13,30	16,53	24,80	-	-	-	-	-
	8	8,08	13,30	16,63	25,08	33,35	-	-	-	-
	10	8,08	13,40	16,82	20,33	27,17	-	-	-	-
	12	8,17	13,68	17,39	21,09	29,45	33,06	-	-	-
	16	9,88	16,53	20,43	24,42	32,97	36,96	44,27	-	-
	20	10,07	16,72	21,00	25,18	34,01	38,10	42,47	-	-
PSSFGL	6	11,59	19,29	27,17	40,76	-	-	-	-	-
	8	11,69	19,48	27,46	41,23	54,91	-	-	-	-
	10	11,69	19,48	26,70	38,10	50,64	-	-	-	-
	12	12,83	21,38	28,22	38,95	50,07	64,03	-	-	-
	16	14,25	23,66	29,45	41,14	52,54	64,89	77,81	-	-
	20	17,39	28,88	35,25	48,36	61,09	73,72	86,45	-	-
30	19,57	32,59	40,95	57,67	73,72	90,35	106,			







# Shafts -Standard Type / Precision Type-

-Both Ends Male Thread with Wrench Flats / Both Ends Male Thread with Cross-drilled Hole-

CAD Data

For Shafts w/o wrench flats or cross-drilled holes, please see P.135

**RoHS**

Type		Material	Hardness	Surface Treatment
With Wrench Flats		EN1.3505 Equivalent	Induction Hardening	-
With Cross-drilled Holes		1.4125/ equivalent	Effective Hardening	-
Standard		EN1.3505 Equivalent	Depth P.104	Hard Chrome Plating
Precision Type		1.4125/ equivalent	SRRC	Plating Hardness: HV750 - Plating Thickness: 5µm or more
Precision Type		1.3505/100Cr6	SRRC	LTC
Precision Type		1.1191/CA5E	-	Hard Chrome Plating
Precision Type		1.4301/VS/EN16-10	-	Plating Hardness: HV750 - Plating Thickness: 10µm or more

D Tolerance			
D	g6	h5	f8
6	-0.004	0	-0.010
6	-0.012	-0.005	-0.028
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	-0.006	0	-0.016
13	-0.017	-0.008	-0.043
15	-0.007	0	-0.020
20	-0.020	-0.009	-0.053
25	-0.009	0	-0.025
30	-0.025	-0.011	-0.064
35	-0.009	0	-0.025
40	-0.025	-0.011	-0.064
50	-0.009	0	-0.025
50	-0.025	-0.011	-0.064

When B = 0 or S = 0, no thread machining will be performed.

With wrench flats

With cross-drilled holes (8<D<30, L<500)

Features of Precision Type

- Concentricity is  $\pm 0.02$
- Squareness is  $\pm 0.03$

Precision Type has grinding undercuts at the bottom ends of threads and center holes at the ends.

Part Number	Type	1mm Increments			P / Q Selection	Wrench Flats Dimensions		R	C	Coarse Thread Dimensions	
		D	L	F / T		B / S	W			ℓ	M
Precision Type (D Tolerance g6) VFBU VSFAU VPSFAU VPFBU VPSFBU VRBU	6	25-292			3 4	5	300			3	0.5
	8	25-292			3 4 5 6 8	7	300			4	0.7
	10	25-340			4 5 6 8 10	8	350			5	0.8
	12	25-340			5 6 8 10 12	10	350			6	1.0
	13	25-340			5 6 8 10 12	11	350	0.3 or less	0.2 or less	8	1.25
	15	25-340			5 6 8 10 12 16	13	350			10	1.5
	16	25-340			5 6 8 10 12 16	14	350			12	1.75
	18	25-340			6 8 10 12 16 20	16	350			16	2.0
	20	25-440			8 10 12 16 20	17	450			20	2.5
	25	25-436			8 10 12 16 20	22	450			24	3.0
30	25-436			8 10 12 16 20 24	27	450			30	3.5	

Part Number	Type	1mm Increments			P / Q Selection	Wrench Flats Dimensions		R	C	Cross-drilled Hole Dimensions	
		D	L	F / T		B / S	W			ℓ	H
Standard Type (Shafts with Wrench Flats) (D Tolerance g6) SFAU (D Tolerance h5) VSFAU (D Tolerance g6) VPSFAU (D Tolerance g6) VPFBU (D Tolerance g6) VPSFBU (D Tolerance h5) RFAU (D Tolerance h5) VSFAU (D Tolerance h5) VPSFAU (D Tolerance h5) VPFBU (D Tolerance h5) VPSFBU (D Tolerance f8) PSFAU (D Tolerance f8) VSFAU (D Tolerance f8) VPSFAU (D Tolerance f8) VPFBU (D Tolerance f8) VPSFBU	6	25-596			3 4 5	5	600				
	8	25-796			3 4 5 6 8	7	800				
	10	25-796			4 5 6 8 10	8	800				
	12	25-996			5 6 8 10 12	10	1000				
	13	25-996			5 6 8 10 12	11	1000	0.3 or less	0.5 or less		
	15	25-996			5 6 8 10 12 16	13	1000				
	16	25-1196			5 6 8 10 12 16	14	1000				
	18	25-1196			6 8 10 12 16 20	16	1200				
	20	25-1196			8 10 12 16 20 24	17	1200				
	25	25-1196			8 10 12 16 20 24	22	1200				

Price	Volume Discount (Round down to one cent) P.87				
	Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%	

Part Number	Type	€ Unit Price											
		Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
6	9.89	12.93	15.88	18.82	21.10	21.39	25.85	30.13	-	-	-	-	-
8	10.18	13.31	16.45	19.49	21.39	21.39	25.85	30.13	38.87	-	-	-	-
10	10.27	13.31	16.45	19.58	21.58	21.58	23.38	25.19	32.41	-	-	-	-
12-13	10.37	13.60	16.73	19.87	22.05	22.15	24.14	25.95	34.69	38.68	-	-	-
15-16	11.70	15.50	19.30	23.19	25.47	25.38	27.56	29.46	38.49	42.57	47.80	-	-
18-20	11.89	15.69	19.68	23.57	25.95	25.95	28.23	30.32	39.53	43.81	48.37	-	-
25	12.27	16.45	20.63	24.81	27.85	28.32	30.98	33.74	44.09	49.79	55.40	-	-
30	12.65	16.92	21.29	25.57	29.08	29.84	32.88	36.11	47.23	53.78	60.15	74.30	-
35	13.31	17.97	22.62	27.28	31.55	32.69	36.59	40.39	52.83	60.62	68.79	85.04	-
40	18.06	25.09	32.12	39.06	44.30	45.04	49.79	54.45	68.79	78.39	88.08	108.98	-
50	19.39	27.18	34.88	42.57	49.48	51.50	57.49	63.66	81.05	93.68	105.84	131.30	-
6	12.08	15.97	19.96	24.05	28.70	30.51	37.06	43.71	-	-	-	-	-
8	12.27	16.54	20.72	24.90	29.18	30.51	37.06	43.71	56.92	-	-	-	-
10	12.27	16.54	20.72	24.90	29.18	30.51	37.06	43.71	56.92	-	-	-	-
12-13	13.12	17.68	22.34	26.80	30.60	31.84	38.40	41.62	52.17	65.75	-	-	-
15-16	14.17	19.20	24.33	29.37	32.90	32.41	38.11	43.71	54.64	66.61	79.05	-	-
18-20	16.45	22.62	28.80	35.07	38.59	38.01	44.38	50.65	62.81	75.16	87.41	-	-
25	17.11	23.57	30.13	36.68	40.48	40.39	47.32	54.26	68.22	82.09	96.34	-	-
30	17.97	25.00	31.84	38.87	43.43	43.52	51.50	59.58	75.16	91.02	108.98	132.73	-
35	19.96	28.04	36.02	44.00	52.17	54.64	63.00	71.36	90.07	106.89	123.51	153.34	-
40	23.67	33.45	42.24	53.02	63.00	66.04	76.39	86.75	109.93	130.54	151.25	188.02	-
50	22.31	46.37	60.62	74.68	87.03	89.79	104.13	118.48	152.30	181.94	211.39	263.45	-

Part Number	Type	€ Unit Price											
		Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
6	11.32	15.02	18.73	22.43	25.19	25.57	30.98	36.40	-	-	-	-	-
8	11.22	14.74	18.25	21.96	25.66	26.71	32.50	38.20	49.60	-	-	-	-
10	11.22	14.74	18.25	21.96	25.19	26.04	30.79	35.45	45.04	-	-	-	-
12-13	11.89	15.69	19.68	23.57	26.71	27.37	31.84	36.21	45.33	57.01	-	-	-
15-16	12.74	17.11	21.39	25.85	28.42	28.42	33.26	38.01	47.51	57.68	68.51	-	-
18-20	14.64	19.87	25.19	30.60	33.55	33.26	38.68	44.00	54.45	65.09	75.63	-	-
25	15.21	20.72	26.42	32.03	35.26	35.26	41.24	47.23	59.10	71.07	83.33	-	-
30	15.97	21.96	27.94	33.93	37.82	37.82	44.76	51.69	65.09	78.77	92.45	114.58	-
35	16.16	22.15	28.32	34.40	39.91	41.34	46.37	51.41	67.56	77.82	88.46	109.64	-
40	22.34	31.46	40.58	49.79	56.63	57.49	63.66	69.84	88.46	101.09	113.44	140.80	-
50	24.14	34.21	44.28	54.35	63.47	65.85	73.73	81.71	104.51	120.76	136.81	169.87	-
6	15.78	21.58	27.56	33.45	40.39	42.95	52.64	62.33	-	-	-	-	-
8	16.26	22.34	28.42	34.50	40.96	42.95	51.50	60.15	78.86	-	-	-	-
10	16.26	22.34	28.42	34.50	40.39	41.81	49.79	57.77	75.73	-	-	-	-
12-13	17.40	24.14	30.89	37.54	42.95	44.00	51.60	59.20	74.78	94.54	-	-	-
15-16	19.01	26.42	33.83	41.34	45.90	45.71	53.97	62.14	78.39	95.87	114.30	-	-
18-20	22.24	31.36	40.48	49.60	54.54	54.07	63.28	72.40	90.45	108.41	126.46	-	-
25	23.19	32.79	42.29	51.98	57.58	57.39	67.56	77.82	98.24	118.67	139.57	-	-
30	24.43	34.78	45.04	55.21	61.86	62.05	73.73	85.61	108.41	131.87	155.24	193.05	-
35	26.71	38.01	49.41	60.72	72.21	75.73	87.60	99.48	125.98	149.83	173.39	215.66	-
40	31.84	45.71	59.58	73.54	87.60	92.07	106.79	121.42	154.10	183.36	212.62	264.78	-
50	44.09	64.14	84.18	104.23	121.61	125.51	145.93	166.26	214.24	256.13	298.03	371.46	-

Part Number	Type	€ Unit Price						
		Min. L	L51	L101	L151	L201	L301	L401
6	17.68	20.72	23.67	26.61	30.03	30.32	35.92	
8	17.97	21.10	25.38	28.42	31.46	32.60	38.11	
10	18.06	22.24	25.38	30.79	33.83	34.97	37.92	
12	19.30	23.67	27.94	32.12	36.59	38.87	43.14	
13	19.39	23.76	27.94	33.36	38.01	40.29	44.57	
15	21.77	26.71	32.69	38.87	44.47	47.70	53.31	
16	21.77	27.75	32.69	41.85	46.75	49.98	55.49	
18	23.10	29.08	35.35	43.71	50.55	55.02	57.77	
20	24.14	31.36	37.54	47.04	55.02	55.49	61.48	
25	27.94	36.59	45.23	53.40	61.95	68.79	73.73	
30	31.65	42.67	48.94	61.48	70.22	79.72	91.50	

Part Number	Type	€ Unit Price						
		Min. L	L101	L201	L401	L601	L1001	L1201
6	11.98	17.30	20.53	28.80	-	-	-	
8	12.08	17.30	20.63	29.08	37.35	-	-	
10	12.08	17.40	20.82	24.33	31.17	-	-	
12-13	12.17	17.68	21.39	25.09	33.45	37.06	-	
15-16	13.88	20.53	24.43	28.42	36.97	40.96	48.27	





# Shafts -Standard Type / Precision Type- -Both Ends Male Thread with Undercuts-

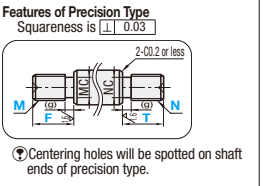
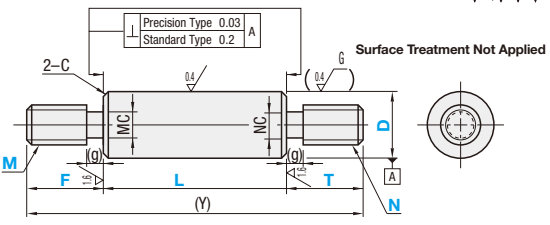
CAD Data

For Shafts with wrench flats or with cross-drilled hole P.141



Type				Material	Hardness	Surface Treatment
Precision Type	Standard					
VAFM	SAFM	SFMU	-	EN1.3505 Equivalent	Induction Hardening	-
VSAFM	SSAFM	SSFMMU	-	1.4125	Effective Hardening Depth HF P.104	
VPAFM	PSAFM	PSSFMU	-	EN1.3505 Equivalent	EN1.3505 Equivalent 58HRC- 1.4125/X105CrMo17 equivalent 58HRC ~	
VPSAFM	PSSAFM	PSSFMU	-	1.4125	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5µ or more	
VRFM	RSAFM	-	-	1.3505	LTBC	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness: 10µm or more.
-	-	PSAGM	-	1.1191	-	
-	-	PSSAGM	-	1.4301	-	

D	D Tolerance		
	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	-	-	-
13	-0.006	0	-0.016
15	-0.017	-0.008	-0.043
16	-	-	-
18	-	-	-
20	-0.007	0	-0.020
25	-0.020	-0.009	-0.053
30	-	-	-
35	-0.009	0	-0.025
40	-0.025	-0.011	-0.064
50	-	-	-



Part Number	Type	1mm Increments		Selection	(Y) Max.	C	Undercut Dimensions (Coarse Threads)			
		D	L				M · N (Coarse)	M	N	Pitch
Precision Type (D Tolerance g6) VAFM VSAFM VPAFM VPSAFM VRFM	8	25-290	5<F<Mx3 5<T<Nx3	6	300	0.2 or less	6	1.0	4.4 (4.2)	2
	10	25-340		6 8	350		8	1.25	6.0	3
	12	25-340		6 8 10	350		10	1.5	7.7	4
	13	25-340		6 8 10 12	350		12	1.75	9.4	5
	15	25-340		6 8 10 12 16	350		16	2.0	13.0	
	16	25-340		6 8 10 12 16 20	350		20	2.5	16.4	
	18	25-340		6 8 10 12 16 20 24	350		24	3.0	19.6	
	20	25-440		8 10 12 16 20	450		30	3.5	25.0	
	25	25-436			450					
	30	25-436			450					

Part Number	Type	1mm Increments		Selection	(Y) Max.	C
		D	L			
Standard Type (D Tolerance g6) SAFM SSAFM PSAFM PSSAFM RSAFM	8	25-790	5<F<Mx3 5<T<Nx3	6	800	0.5 or less
	10	25-790		6 8	800	
	12	25-990		6 8 10	1000	
	13	25-990		6 8 10 12	1000	
	15	25-990		6 8 10 12	1000	
	16	25-1190		6 8 10 12	1200	
	18	25-1190		6 8 10 12 16	1200	
	20	25-1190		6 8 10 12 16	1200	
	25	25-1190		8 10 12 16 20 24	1200	
	30	25-1490		8 10 12 16 20 24 30	1500	
Precision Type (D≤30, L≤500, Ymax≤800) PSAGM PSSAGM	35	25-1490		10 12 16 20 24 30	1500	1.0 or less
	40	25-1490		12 16 20 24 30	1500	
	40	25-1490		16 20 24 30	1500	
	50	25-1490		16 20 24 30	1500	

Quantity	Volume Discount (Round down to one Cent) P.87			
	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	Type	€ Unit Price												
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
8	SAFM	6.50	9.80	13.10	16.30	18.30	23.00	27.50	36.70	-	-	-	-	-
10	SAFM	6.60	9.80	13.10	16.40	18.50	24.00	29.00	38.50	-	-	-	-	-
12-13	SAFM	6.70	10.10	13.40	16.70	19.00	24.50	29.50	39.00	-	-	-	-	-
15-16	SAFM	8.10	12.10	16.10	20.20	22.60	25.80	26.80	36.30	40.60	46.10	-	-	-
18-20	SAFM	8.20	12.30	16.50	20.60	23.10	25.50	27.70	37.40	41.90	46.70	-	-	-
25	SAFM	8.70	13.10	17.50	21.90	25.10	28.40	31.30	42.20	48.20	54.10	-	-	-
30	SAFM	9.10	13.60	18.20	22.70	26.40	27.20	30.40	33.80	45.50	52.40	59.10	74.00	-
35	SAFM	9.80	14.70	19.60	24.50	29.00	30.20	34.30	38.30	51.40	59.60	68.20	85.30	-
40	SAFM	14.80	22.20	29.60	36.90	42.50	43.20	48.20	53.10	68.20	78.30	88.50	110.50	-
50	SAFM	16.20	24.40	32.50	40.60	48.10	50.00	56.30	62.80	81.10	94.40	107.20	134.00	-

Part Number	Type	€ Unit Price												
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
8	PSAFM	7.60	11.30	15.00	18.90	22.80	23.90	30.00	36.00	48.00	-	-	-	-
10	PSAFM	7.60	11.30	15.00	18.90	22.30	23.20	28.20	33.10	43.20	-	-	-	-
12-13	PSAFM	8.30	12.30	16.50	20.60	23.90	24.60	29.30	33.90	43.50	55.80	-	-	-
15-16	PSAFM	9.20	13.80	18.30	23.00	25.70	25.70	30.80	35.80	45.80	56.50	67.90	-	-
18-20	PSAFM	11.20	16.70	22.20	28.00	31.10	30.80	36.50	42.10	53.10	64.30	75.40	-	-
25	PSAFM	11.80	17.60	23.60	29.50	32.90	32.90	39.20	45.50	58.00	70.60	83.50	-	-
30	PSAFM	12.60	18.90	25.20	31.50	35.60	35.60	42.90	50.20	64.30	78.70	93.10	116.40	-
35	PSAFM	12.80	19.10	25.60	32.00	37.80	37.80	44.60	49.90	66.90	77.70	88.90	111.20	-
40	PSAFM	19.30	28.90	38.50	48.20	55.40	56.30	62.80	69.30	88.90	102.20	115.20	144.00	-
50	PSAFM	21.20	31.80	42.40	53.00	62.60	65.10	73.40	81.80	105.80	122.90	139.80	174.60	-

Part Number	Type	€ Unit Price							
		D	Min. L	L51	L101	L151	L201	L301	L401
8	RSAFM	13.60	16.70	20.90	23.90	26.80	27.90	33.30	-
10	RSAFM	13.70	17.80	20.90	26.20	29.20	30.30	33.20	-
12	RSAFM	14.90	19.20	23.40	27.50	31.80	34.10	38.30	-
13	RSAFM	15.00	19.30	23.40	28.70	33.20	35.50	39.70	-
15	RSAFM	17.30	22.20	28.00	34.10	39.60	42.70	48.20	-
16	RSAFM	17.30	23.20	28.00	36.20	41.80	45.00	50.40	-
18	RSAFM	18.60	24.50	30.60	38.80	45.50	49.90	52.60	-
20	RSAFM	19.70	26.70	32.80	42.10	49.90	50.40	56.20	-
25	RSAFM	23.40	31.80	40.30	48.30	56.70	63.40	68.20	-
30	RSAFM	27.00	37.80	43.90	56.20	64.80	74.10	85.60	-

Part Number	Type	€ Unit Price								
		D	Min. L	L101	L201	L401	L601	L801	L1001	L1201
8	PSAGM	8.50	14.00	17.50	26.40	35.10	-	-	-	-
10	PSAGM	8.50	14.10	17.70	21.40	28.60	-	-	-	-
12-13	PSAGM	8.60	14.40	18.30	22.20	31.00	34.80	-	-	-
15-16	PSAGM	10.40	17.40	21.50	25.70	34.70	38.90	46.60	-	-
18-20	PSAGM	10.60	17.60	22.10	26.50	35.80	40.10	46.60	-	-
25	PSAGM	11.30	18.90	24.50	30.00	40.40	46.10	51.80	-	-
30	PSAGM	11.80	19.60	26.00	32.30	43.60	50.10	56.50	70.80	-
35	PSAGM	12.60	21.10	28.80	36.70	49.10	57.10	65.30	81.60	-
40	PSAGM	19.10	31.90	41.30	50.90	65.30	75.00	84.70	105.80	-
50	PSAGM	21.00	35.00	47.80	60.10	77.60	90.40	102.50	128.30	-

Part Number	Type	€ Unit Price								
		D	Min. L	L101	L201	L401	L601	L801	L1001	L1201
8	PSSAGM	12.30	20.50	28.90	43.40	57.80	-	-	-	-
10	PSSAGM	12.30	20.50	28.10	40.10	53.30	-	-	-	-
12-13	PSSAGM	13.50	22.50	29.70	41.00	52.70	67.40	-	-	-
15-16	PSSAGM	15.00	24.90	31.00	43.30	55.30	68.30	81.90	-	-
18-20	PSSAGM	18.30	30.40	37.10	50.90	64.30	77.60	91.00	-	-
25	PSSAGM	19.30	32.00	39.70	54.90	70.10	85.20	100.80	-	-
30	PSSAGM	20.60	34.30	43.10	60.70	77.60	95.10	112.40	140.60	-
35	PSSAGM	23.70	39.30	55.30	73.50	94.00	112.20	130.40	163.20	-
40	PSSAGM	28.80	48.20	67.90	90.40	115.70	138.20	160.70	200.90	-
50	PSSAGM	41.80	69.50	93.60	125.00	161.80	194.20	226.40	283.10	-

Alterations: SAFM30 - 300 - F40 - M20 - T48 - N16 - LKC

Alterations	Code	Spec.	Price Adder
	DKC	Alteration to L dimension tolerance (Ordering Code) LKC (Application Notes) Applicable when L=200 or less for precision type ⊗ Not applicable when D-M (N)≤2 When using LKC, L dimensions can be specified in 0.1 increments. ⊕ L<200 ...L±0.03 200≤L<500...L±0.05 L≥500 ...L±0.1	4,00
	WSC	Add wrench flats at two locations (Ordering Code) WSC12-X8 Specify WSC/X in 1mm increments. ⊕ WSC(X)+Lx2<L ⊕ WSC(X)=0 Or WSC(X)≥1 ⊗ Machining on the same plane is not applicable.	8,00
	FC	Add Set Screw Flat at one location (Ordering Code) FC10-E8 (Application Notes) ⊗ Not applicable to precision type Specify FC and A in 1mm increments. ⊕ FC≤3xD ⊕ When 1.5xD<FC, FC≤L/2 ⊕ A=0 or A≥2 ⊗ Can not be used with WFC	2,00
	WFC	Add Set Screw Flats at two locations (Ordering Code) WFC8-A8-E4 (Application Notes) ⊗ Not applicable to precision type Specify WFC, A and E in 1mm increments. ⊕ WFC≤3xD ⊕ When 1.5xD<FC, 2WFC≤L/2 ⊕ A(E)=0 or A(E)≥2 ⊗ Machining on the same plane is not applicable. Can not be used with FC.	4,00

Alterations	Code	Spec.	Price Adder
	DKC	Change to h5 O.D. tolerance (Ordering Code) DKC (Application Notes) ⊗ Not applicable to Precision Type, Shafts with D tolerance f8 and LTBC plating.	-
	RC	Add 90-deg. Set Screw Flat at one location (Ordering Code) RC10 (Application Notes) Applicable for D=10-30 ⊗ Not applicable to precision type ⊗ Can not be used with WRC	5,00
	WRC	2 x 90-deg. Set Screw Flats (Ordering Code) WRC10-Y10 (Application Notes) Applicable to D=10-30 ⊗ Not applicable to precision type ⊗ Cannot be used in combination with RC. ⊗ Not available on the same plane.	10,00
	MMS NMC NMS	Change to fine threads. (Ordering Code) MMC14 (M is changed to MMC) MMS14 (M is changed to MMS) NMC14 (N is changed to NMC) NMS14 (N is changed to NMS)	3,00

Please see Alteration Guides for details if provided. P.105  
For more than one alteration, 2mm or more separation required between machined sections. P.106  
Alterations may lower hardness. P.104

Order Example: VAFM20 - 200 - F30 - M10 - T20 - N10

Days to Ship: 8 Days Express A 8,00 EUR/unit P.88  
5 Days P.88  
10 Days Express B 8,00 EUR/unit P.88  
13 Days

⊕ A Express Charge of 21.60 EUR for 3 or more identical pieces.  
⊗ Express is not available for VRFM.

For D tolerance h5, 2,00 EUR is added to the prices above.



# Shafts - Standard Type / Precision Type -

## -Both Ends Male Thread w/Undercuts and Wrench Flats / Both Ends Male Thread w/Undercuts and Cross-drilled Hole-

CAD Data

For Shafts w/o wrench flats or cross-drilled holes, please see P.139

**RoHS**

Precision Type	Type					Material	Hardness	Surface Treatment	D Tolerance			
	With Wrench Flats	With Cross-drilled Holes							D	g6	h5	f8
VAFU	SAFU	SSFU	-	SFHAM	-	EN 1.3505 Equivalent	Induction Hardening	-	8	-0.005	0	-0.013
VSAFU	SSAFU	SSFFU	-	SSHAM	-	1.4125 equivalent	Effective Hardening Depth	-	10	-0.014	0	-0.035
VPAFU	PSAFU	PSFFU	-	PSHAM	-	EN 1.3505 Equivalent	Hard Chrome Plating	Hard Chrome Plating	15	-0.006	0	-0.016
VPSAFU	PSSAFU	PSSFFU	-	PSSHAM	-	1.4125 equivalent	Plating Thickness: HW/50	Plating Thickness: 5µm or more	18	-0.017	0	-0.043
VRFU	RSAFU	-	RSHAM	-	1.3505	EN 1.3505 Equivalent	Plating Thickness: 5µm or more	LTBC	20	-0.007	0	-0.020
-	-	PSAGU	-	PSHGM	-	1.1191	EN 1.1191 Equivalent	Plating Thickness: 10µm or more	25	-0.020	0	-0.053
-	-	PSSAGU	-	-	-	1.4301	EN 1.4301 Equivalent	-	30	-0.009	0	-0.025
-	-	-	-	-	-	-	-	-	35	-0.009	0	-0.025
-	-	-	-	-	-	-	-	-	50	-0.017	0	-0.064

With wrench flats

Surface Treatment Not Applied

With cross-drilled holes

Surface Treatment Not Applied

**Features of Precision Type**  
Squariness is  $\leq 0.03$

Centering holes will be spotted on shaft ends of precision type.

Part Number	Type	1mm Increments			Selection	Wrench Flats Dimensions			(Y) Max.	C	Undercut Dimensions (Coarse Threads)				
		D	L	F / T		M / N (Coarse)	W	l <sub>1</sub>			MC	Pitch	NC	(g)	
Precision Type		8	25-290		6	7	8	300							
(Shafts with Wrench Flats)	(D Tolerance g6)	10	25-340		6 8	8	8	350							
VAFU		12	25-340		6 8 10	10	10	350							
VSAFU		13	25-340		6 8 10 12	11	10	350							
VPAFU		15	25-340		6 8 10 12	13	13	350							
VPSAFU		16	25-340		6 8 10 12 16	14	10	350							
VRFU		18	25-340		6 8 10 12 16	16	16	350							
		20	25-440		6 8 10 12 16	17	17	450							
		25	25-436		8 10 12 16 20	22	22	450							
		30	25-436		8 10 12 16 20 24	27	15	450							

Part Number	Type	1mm Increments			Selection	Wrench Flats Dimensions			(Y) Max.	C	Cross-drilled Hole Dimensions			
		D	L	F / T		M / N (Coarse)	W	l <sub>1</sub>			H	d	Max.	
Standard Type		8	25-790		6	7	8	800						
(Shafts with Wrench Flats)	(D Tolerance h5)	10	25-790		6 8	8	8	800						
(D Tolerance g6)	(D Tolerance g6)	12	25-990		6 8 10	10	10	1000						
SAFU		13	25-990		6 8 10 12	11	10	1000						
SSAFU		15	25-990		6 8 10 12	13	13	1000						
SSFFU		16	25-1190		6 8 10 12 16	14	10	1200						
PSAFU		18	25-1190		6 8 10 12 16	16	16	1200						
PSSAFU		20	25-1190		6 8 10 12 16	17	17	1200						
RSAFU		25	25-1490		8 10 12 16 20 24	22	20	1500						
RSHAM		30	25-1490		8 10 12 16 20 24	27	15	1500						
(D Tolerance f8)	(D Tolerance f8)	35	25-1490		10 12 16 20 24 30	30	30	1500						
PSAGU		40	25-1490		12 16 20 24 30	36	20	1500						
PSSAGU		50	25-1490		16 20 24 30	41	20	1500						

**Price**

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	Type	€ Unit Price												
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
SAFU	8	10.50	13.80	17.10	20.30	22.30	22.30	27.00	31.50	40.70	-	-	-	-
SSFU	10	10.60	13.80	17.10	20.40	22.50	22.50	27.00	31.50	33.90	-	-	-	-
SFHAM	12-13	10.70	14.10	17.40	20.70	23.00	23.10	25.20	27.10	36.30	40.50	-	-	-
	15-16	12.10	16.10	20.10	24.20	26.60	26.50	28.80	30.80	40.30	44.60	50.10	-	-
	18-20	12.30	16.30	20.50	24.60	27.10	27.10	29.50	31.70	41.40	45.90	50.70	-	-
	25	12.70	17.10	21.50	25.90	29.10	29.60	32.40	35.30	46.20	52.00	58.10	-	-
	30	13.10	17.60	22.20	26.70	30.00	31.20	34.40	37.80	49.50	56.40	63.10	78.00	-
	35	13.80	18.70	23.60	28.50	33.40	34.20	38.30	42.30	55.40	63.90	72.20	89.30	-
	40	18.80	26.20	33.60	40.90	46.50	47.20	52.20	57.10	72.20	82.30	92.50	114.50	-
	50	20.20	28.40	36.50	44.60	52.10	54.00	60.30	66.80	85.10	98.40	111.20	138.00	-
	8	-	17.20	21.60	26.00	30.50	31.90	38.80	45.80	59.70	-	-	-	-
	10	12.70	17.20	21.60	26.00	30.10	31.20	36.90	42.50	54.30	-	-	-	-
	12-13	13.60	18.40	23.30	28.00	32.00	32.70	38.10	43.60	54.70	69.00	-	-	-
	15-16	14.70	20.00	25.40	30.70	34.00	35.30	39.90	45.80	57.30	69.90	-	-	-
	18-20	17.10	23.60	30.10	36.70	40.20	40.90	46.50	53.10	65.90	78.90	91.80	-	-
	25	17.80	24.60	31.50	38.40	42.50	43.20	49.00	56.90	71.60	86.20	101.20	-	-
	30	18.70	26.10	33.00	40.70	45.00	45.70	51.60	59.50	75.60	91.40	107.00	139.50	-
	35	20.80	29.30	37.70	46.10	51.30	52.00	58.00	66.10	83.40	100.00	117.00	151.50	-
	40	24.70	35.00	45.30	55.60	61.90	62.60	69.00	78.10	98.00	119.00	140.00	181.50	-
	50	33.80	48.60	63.60	78.40	86.10	86.80	94.00	104.00	132.00	158.00	184.00	241.50	-

For D tolerance h5, 2,00 EUR is added to the prices above. (Applied to D<30, L<500)  
For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D<30, L<500)

Part Number	Type	D	€ Unit Price						
			Min. L	L51	L101	L151	L201	L301	L401
RSAFU	8	17,30	20,40	24,60	27,60	30,50	31,60	37,00	
	10	17,40	21,50	24,60	29,90	32,90	34,00	36,90	
	12	18,60	22,90	27,10	31,20	35,50	37,80	42,00	
	13	18,70	23,00	27,10	32,40	36,90	39,20	43,40	
	15	21,00	25,90	31,70	37,80	43,30	46,40	51,90	
	16	21,00	26,90	31,70	39,90	45,50	48,70	54,10	
	18	22,30	28,20	34,40	42,50	49,20	53,60	56,30	
	20	23,40	30,40	36,50	45,80	53,60	54,10	59,90	
	25	27,10	35,50	44,00	52,00	60,40	67,10	71,90	
	30	30,70	41,50	47,60	59,90	68,50	77,80	89,30	

Part Number	Type	D	€ Unit Price						
			Min. L	L101	L201	L401	L601	L801	L1001
PSAGU	8	12,50	18,00	21,50	30,40	39,10	-	-	-
	10	12,50	18,10	21,70	25,40	32,60	-	-	-
	12-13	12,60	18,40	22,30	26,20	35,00	38,80	-	-
	15-16	14,40	21,40	25,50	29,70	38,70	42,90	50,60	-
	18-20	14,60	21,60	26,10	30,50	39,80	44,10	50,60	-
	25	15,30	22,90	28,50	34,00	44,40	50,10	55,80	-
	30	15,80	23,60	30,00	36,30	47,60	54,10	60,50	74,80
	35	16,60	25,10	32,80	40,70	53,10	61,10	69,30	85,60
	40	23,10	35,90	45,30	54,90	69,30	79,00	88,70	109,80
	50	25,00	39,00	51,80	64,10	81,60	94,40	106,50	132,30

Part Number	Type	D	€ Unit Price						
			Min. L	L101	L201	L401	L601	L801	L1001
PSSHGM	8	16,30	24,50	32,90	47,40	61,80	-	-	-
	10	16,30	24,50	32,10	44,10	57,30	-	-	-
	12-13	17,50	26,50	33,70	45,00	56,70	71,40	-	-
	15-16	19,00	28,90	35,00	47,30	59,30	72,30	85,90	-
	18-20	22,30	34,40	41,10	54,90	68,30	81,60	95,00	-
	25	23,30	36,00	43,70	58,90	74,10	89,20	104,80	-
	30	24,60	38,30	47,10	64,70	81,60	99,10	116,40	144,60
	35	27,70	43,30	59,30	77,50	98,00	116,20	134,40	167,20
	40	32,80	52,20	71,90	94,40	119,70	142,20	164,70	204,90
	50	45,80	73,50	97,60	129,00	165,80	198,20	230,40	287,10

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D<30, L<500)

**Alterations**

Part Number - L - F - M (MMC - MMS) - T - N (NMC - NMS) - SC - H - (LKC...etc.)

SAFU30 - 300 - F40 - M20 - T48 - N16 - 20 - LKC

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance [Ordering Code] LKC [Application Notes] Applicable when L=200 or less for precision type ⊗ Not applicable when D-M (N)≤2 When using LKC, L dimensions can be specified in 0.1 increments. ⊕ L<200 → L±0.03 2	





# Shafts

## -One End Male Thread / One End Female Thread-

CAD Data

For Shafts with wrench flats or with cross-drilled hole, please see P.145



- Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness.
- P.104
- Circularity, Straightness, Perpendicularity, P.103
- Features of LTBC P.118

Precision Type	Type				Material	Hardness	Surface Treatment
	Standard	Standard	Standard	Standard			
VFBD	SFAD	SFUD	-	-	EN 1.3505 Equivalent	Induction Hardening	-
VSFBD	SSFAD	SSFUD	-	-	1.4125/ equivalent	Effective Hardening Depth	-
VPFBD	PSFAD	PSFUD	-	-	EN 1.3505 Equivalent	P.104	Hard Chrome Plating
VPSFBD	PSSFAD	PSSFUD	-	-	1.4125/ equivalent	EN 1.3505 Equivalent	Plating Thickness: HV750 - Plating Thickness: 5µ or more
VRBD	RSFAD	-	-	-	1.3505/100C6	58HRC~LTBC	Hard Chrome Plating
-	-	-	-	-	1.1191/C4SE	-	Plating Thickness: 10µm or more
-	-	-	-	-	PSSFGD	-	-
-	-	-	-	-	PSSFGD	-	-

Without Surface Treatment

Features of Precision Type: Concentricity is  $\pm 0.02$ , Squareness is  $\pm 0.03$

Overall length L requires Nx3-L

When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F=(Pitch x 2).

Part Number	Type	1mm Increments				P (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C	Coarse Thread Dimensions	
		D	L	F	B						M	Pitch
Precision Type (D Tolerance g6)	5	25-296				3	2.5 3	300	0.2 or less		3	0.5
	6	25-296				3 4	3	300		4	0.7	
	8	25-296				3 4 5 6	3 4 5	300		5	0.8	
	10	25-345				4 5 6 8 10	3 4 5 6	350		6	1.0	
	12	25-345				5 6 8 10 12	4 5 6 8	350		8	1.25	
	13	25-345				5 6 8 10	4 5 6 8	350		10	1.5	
	15	25-345				5 6 8 10 12	4 5 6 8 10	350		12	1.75	
	16	25-345				5 6 8 10 12	4 5 6 8 10	350		16	2.0	
	18	25-345				5 6 8 10 12 16	4 5 6 8 10 12	350		20	2.5	
	20	25-445				6 8 10 12 16	4 5 6 8 10 12	450		24	3.0	
25	25-443				8 10 12 16 20	4 5 6 8 10 12 16	450		30	3.5		
30	25-443				8 10 12 16 20 24	6 8 10 12 16 20 24	450					

Part Number	Type	1mm Increments				P (Coarse) Selection	N (Coarse) Selection	(Y) Max.	R	C
		D	L	F	B					
Standard Type (D Tolerance g6)	5	25-296				3 4	2	300	0.2	0.2
	6	25-398				3 4 5	3	400	Less than	Less than
	8	25-598				3 4 5 6	3	600		
	10	25-798				3 4 5 6 8	3 4 5	800		
	12	25-998				4 5 6 8 10	3 4 5 6	800		
	13	25-998				5 6 8 10 12	4 5 6 8	1000		
	15	25-998				5 6 8 10 12	4 5 6 8 10	1000		
	16	25-1198				5 6 8 10 12 16	4 5 6 8 10	1200		
	18	25-1198				5 6 8 10 12 16	4 5 6 8 10 12	1200		
	20	25-1198				6 8 10 12 16 20	4 5 6 8 10 12	1200		
25	25-1198				8 10 12 16 20 24	4 5 6 8 10 12 16	1200			
30	25-1498				8 10 12 16 20 24 30	6 8 10 12 16 20	1500			
35	25-1498				10 12 16 20 24 30	8 10 12 16 20 24	1500			
40	40-1498				12 16 20 24 30	10 12 16 20 24 30	1500			
50	50-1498				16 20 24 30	12 16 20 24 30	1500			

Quantity	Volume Discount (Round down to one Cent) P. 87			
	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

Part Number	Type	€ Unit Price												
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
SFAD	4	9.60	14.16	14.92	15.96	19.10	-	-	-	-	-	-	-	-
	5	9.60	14.16	14.92	15.96	19.10	21.95	-	-	-	-	-	-	-
	6	4.94	7.41	9.98	12.45	14.54	15.01	18.91	22.61	-	-	-	-	-
	8	5.04	7.41	9.98	12.45	14.35	14.73	18.43	22.04	29.55	-	-	-	-
	10	5.04	7.51	9.98	12.54	14.54	15.01	16.72	18.43	24.80	-	-	-	-
	12	5.13	7.70	10.36	12.83	15.01	15.49	17.39	19.29	28.12	32.02	-	-	-
	13	5.13	7.70	10.36	12.83	15.01	15.49	17.39	19.29	28.12	32.02	-	-	-
	15	7.32	11.21	14.92	18.53	21.09	21.19	23.56	25.75	35.06	39.71	45.03	-	-
	18	20	7.51	11.21	15.01	18.81	21.47	21.76	24.23	26.60	36.39	41.14	45.79	-
	25	8.17	12.16	16.25	20.33	23.66	24.32	27.36	30.40	41.23	47.50	53.49	-	
30	8.46	12.73	16.91	21.19	25.08	26.03	29.55	32.97	44.84	51.78	58.81	73.53		
35	9.12	13.78	18.34	22.90	27.74	29.26	33.54	37.81	51.40	59.28	68.02	84.93		
40	11.21	16.72	22.42	28.03	33.25	34.68	39.81	44.84	58.33	67.45	77.05	96.24		
50	12.64	18.91	25.18	31.45	38.48	40.85	49.40	57.86	70.97	83.13	95.86	119.70		
SSFAD	4	13.78	19.38	20.81	22.04	26.98	-	-	-	-	-	-	-	
	5	13.78	19.38	20.81	22.04	26.98	28.79	-	-	-	-	-	-	
	6	7.32	10.83	14.44	18.15	22.42	24.04	30.12	36.10	-	-	-	-	
	8	7.32	10.83	14.44	18.15	22.42	24.04	30.12	36.10	48.26	-	-	-	
	10	7.32	10.83	14.44	18.15	21.95	23.37	28.79	34.30	44.84	-	-	-	
	12	7.89	11.78	15.77	19.67	23.37	24.32	29.55	34.68	45.41	58.81	-	-	
	13	7.89	11.78	15.77	19.67	23.37	24.32	29.55	34.68	45.41	58.81	-	-	
	15	9.12	13.68	18.34	22.80	26.03	26.13	32.02	37.81	48.64	60.04	72.11	-	
	18	10.55	15.87	21.09	26.41	29.83	29.93	36.01	42.09	54.82	67.07	79.33	-	
	20	11.59	17.39	23.09	28.88	32.78	32.97	39.81	46.65	60.42	74.86	88.73	-	
25	12.45	18.62	24.89	31.16	35.53	36.01	44.08	51.87	67.83	83.70	99.66	124.64		
30	14.06	21.00	28.03	35.06	43.23	46.17	54.53	62.89	81.70	98.23	115.05	143.74		
40	17.01	25.46	34.01	42.47	52.63	56.34	66.60	76.95	100.13	120.75	141.36	176.70		
50	24.13	36.10	48.17	60.23	72.49	76.29	90.63	105.07	138.99	168.53	197.98	247.57		

Part Number	Type	€ Unit Price											
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001
PSFAD	4	12.16	14.35	15.58	16.53	19.67	-	-	-	-	-	-	-
	5	12.16	14.35	15.58	16.53	19.67	20.43	-	-	-	-	-	-
	6	6.56	9.88	13.21	16.53	19.67	20.43	25.65	30.78	-	-	-	-
	8	6.27	9.31	12.45	15.58	19.29	20.62	25.94	31.16	41.52	-	-	-
	10	6.27	9.31	12.45	15.58	18.91	20.14	24.70	29.45	38.29	-	-	-
	12	6.65	10.07	13.40	16.72	20.05	20.90	25.27	29.74	38.95	50.45	-	-
	13	6.65	10.07	13.40	16.72	20.05	20.90	25.27	29.74	38.95	50.45	-	-
	15	7.89	11.69	15.68	19.57	22.33	22.61	27.46	32.40	41.90	51.68	62.04	-
	18	9.03	13.49	18.15	22.71	25.65	25.75	30.97	36.20	47.03	57.57	68.02	-
	20	9.88	14.92	19.86	24.80	28.12	28.12	34.20	40.00	51.87	64.22	76.10	-
25	10.64	15.96	21.28	26.60	30.50	31.07	37.81	44.65	58.14	72.01	85.60	107.07	
30	11.97	17.96	23.85	29.83	36.10	36.10	43.61	49.21	66.98	77.24	88.54	110.58	
40	14.63	21.95	29.26	36.58	43.32	45.03	51.78	58.52	76.00	87.88	100.51	125.50	
50	16.44	24.51	32.78	40.95	50.07	52.20	64.32	75.43	92.53	108.40	124.74	155.99	
PSSFAD	4	19.29	21.28	23.28	26.60	32.97	-	-	-	-	-	-	-
	5	19.29	21.28	23.28	26.60	32.97	35.34	-	-	-	-	-	-
	6	10.64	15.87	21.19	26.60	32.97	35.34	44.18	53.01	-	-	-	-
	8	10.64	15.87	21.19	26.60	32.97	35.34	44.08	52.63	70.40	-	-	-
	10	10.64	15.87	21.19	26.60	32.97	35.34	42.37	50.26	67.17	-	-	-
	12	11.50	17.29	22.90	28.69	34.20	35.63	43.32	50.92	66.60	86.45	-	-
	13	11.50	17.29	22.90	28.69	34.20	35.63	43.32	50.92	66.60	86.45	-	-
	15	13.49	20.14	26.98	33.63	38.10	38.48	46.93	55.39	71.44	88.26	105.83	-
	18	15.49	23.28	30.97	38.76	43.80	43.99	52.82	61.85	80.47	98.52	116.57	-
	20	16.91	25.37	33.82	42.37	48.07	48.26	58.43	68.40	88.83	109.82	130.25	-
25	18.24	27.36	36.48	45.70	52.25	52.92	64.60	76.19	99.66	122.93	146.49	183.07	
30	19.86	29.74	39.71										





# Shafts - Standard Type / Precision Type-

## -One End Male Thread and One End Female Thread w/Wrench Flats / One End Male Thread and One End Female Thread w/Cross-drilled Hole-

Price Reduction  
3%

CAD Data

For Shafts w/o wrench flats or cross-drilled holes, please see P.143

**RoHS**

Type		Material	Hardness	Surface Treatment
With Wrench Flats	Standard	EN 1.355 Equivalent	Induction Hardening	-
With Cross-drilled Hole	Standard	EN 1.4125	Effective Hardening Depth	-
With Wrench Flats	Precision Type	EN 1.355 Equivalent	Induction Hardening	Hard Chrome Plating Plating Hardness: H750 - Plating Thickness: 5µ or more
With Cross-drilled Hole	Precision Type	EN 1.355 Equivalent	Effective Hardening Depth	Hard Chrome Plating Plating Hardness: H750 - Plating Thickness: 10µm or more
With Wrench Flats	Precision Type	EN 1.355 Equivalent	Induction Hardening	Hard Chrome Plating Plating Hardness: H750 - Plating Thickness: 5µ or more
With Cross-drilled Hole	Precision Type	EN 1.355 Equivalent	Effective Hardening Depth	Hard Chrome Plating Plating Hardness: H750 - Plating Thickness: 10µm or more

**With wrench flats**

**With cross-drilled holes** (8≤D<30, L≤500)

**Features of Precision Type**  
Concentricity is 0.02  
Squareness is 0.03

Overall length L requires Nx3<L.  
When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).

Part Number	Type	1mm Increments			P (Coarse) Selection		N (Coarse) Selection		Wrench Flats Dimensions		R	C	Coarse Thread Dimensions	
		D	L	F	W	Δt	Y	Max.	M	pitch				
6	25-296	6	25-296	6	3 4 5 6	3	3 4 5 6	5	300	3	0.5	3	0.5	
8	25-296	8	25-296	8	3 4 5 6	3	3 4 5 6	7	300	4	0.7	4	0.7	
10	25-345	10	25-345	10	4 5 6 8	4	4 5 6 8	8	350	5	0.8	5	0.8	
12	25-345	12	25-345	12	5 6 8 10	5	5 6 8 10	10	350	6	1.0	6	1.0	
13	25-345	13	25-345	13	5 6 8 10	5	5 6 8 10	11	350	8	1.25	8	1.25	
15	25-345	15	25-345	15	5 6 8 10 12	5	5 6 8 10 12	13	350	10	1.5	10	1.5	
16	25-345	16	25-345	16	5 6 8 10 12	5	5 6 8 10 12	14	350	12	1.75	12	1.75	
18	25-345	18	25-345	18	5 6 8 10 12 16	5	5 6 8 10 12 16	16	350	16	2.0	16	2.0	
20	25-445	20	25-445	20	6 8 10 12 16	6	6 8 10 12 16	17	450	20	2.5	20	2.5	
25	25-443	25	25-443	25	8 10 12 16 20	8	8 10 12 16 20	22	450	24	3.0	24	3.0	
30	25-443	30	25-443	30	8 10 12 16 20 24	8	8 10 12 16 20 24	27	450	30	3.5	30	3.5	

Part Number	Type	1mm Increments			P (Coarse) Selection		N (Coarse) Selection		Wrench Flats Dimensions		Cross-drilled Hole Dimensions		R	C
		D	L	F	W	Δt	H	d	Y	Max.				
6	25-598	6	25-598	6	3 4 5 6	3	3 4 5 6	5	8	3	800	0.5	or less	
8	25-798	8	25-798	8	3 4 5 6 8	3	3 4 5 6 8	7	8	4	1000	0.3	or less	
10	25-798	10	25-798	10	4 5 6 8 10	4	4 5 6 8 10	8	10	6	1200	1.0	or less	
12	25-998	12	25-998	12	5 6 8 10 12	5	5 6 8 10 12	10	10	8	1500	0.5	or less	
13	25-998	13	25-998	13	5 6 8 10 12	5	5 6 8 10 12	11	10	9	1800	0.5	or less	
15	25-998	15	25-998	15	5 6 8 10 12	5	5 6 8 10 12	13	10	11	2000	0.5	or less	
16	25-1198	16	25-1198	16	5 6 8 10 12 16	5	5 6 8 10 12 16	14	10	12	2200	0.5	or less	
18	25-1198	18	25-1198	18	5 6 8 10 12 16	5	5 6 8 10 12 16	16	10	14	2400	0.5	or less	
20	25-1198	20	25-1198	20	6 8 10 12 16 20	6	6 8 10 12 16 20	17	10	15	2600	0.5	or less	
25	25-1498	25	25-1498	25	8 10 12 16 20 24	8	8 10 12 16 20 24	22	10	20	3000	0.5	or less	
30	25-1498	30	25-1498	30	8 10 12 16 20 24	8	8 10 12 16 20 24	27	10	24	3500	0.5	or less	

**Price**

Quantity	1-4	5-12	13-19	20-49
Discount Rates	0%	5%	10%	15%

Part Number	Type	€ Unit Price																
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201				
6	SFAZ	9.00	11.50	14.00	16.60	18.80	19.30	23.20	27.00	-	-	-	-	-	-	-	-	-
8	SFAZ	9.10	11.50	14.10	16.60	18.80	19.30	22.70	26.40	34.10	-	-	-	-	-	-	-	-
10	SFAZ	9.10	11.60	14.10	16.70	18.80	19.30	21.00	22.70	29.20	-	-	-	-	-	-	-	-
12	SFAZ	9.20	11.80	14.50	17.00	19.30	19.70	21.70	23.60	32.60	36.60	-	-	-	-	-	-	-
15	SFAZ	11.40	15.40	19.20	22.80	25.60	26.00	28.00	30.20	39.70	44.50	49.90	-	-	-	-	-	-
18	SFAZ	11.60	15.40	19.30	23.10	25.90	26.30	28.30	31.10	41.10	45.90	50.70	-	-	-	-	-	-
25	SFAZ	12.30	16.30	20.50	24.70	28.00	28.40	31.90	35.00	46.00	52.40	58.50	-	-	-	-	-	-
30	SFAZ	12.60	16.90	21.20	25.60	29.50	30.50	34.10	37.60	49.70	56.80	64.00	79.00	-	-	-	-	-
35	SFAZ	13.20	18.00	22.70	27.30	32.30	33.80	38.20	42.50	56.40	64.50	73.40	90.60	-	-	-	-	-
40	SFAZ	15.40	21.00	26.80	32.50	37.90	39.30	44.60	49.70	63.50	72.80	82.60	102.20	-	-	-	-	-
50	SFAZ	16.80	23.20	29.60	36.00	43.20	45.60	54.40	63.00	76.40	88.80	101.80	126.10	-	-	-	-	-

Part Number	Type	€ Unit Price							
		D	Min. L	L51	L101	L151	L201	L301	L401
6	RSFAZ	16.10	18.50	20.90	23.50	26.10	27.10	31.50	-
8	RSFAZ	16.20	18.50	21.60	24.60	27.00	28.50	33.20	-
10	RSFAZ	16.20	19.20	22.20	25.80	29.40	30.90	33.70	-
12	RSFAZ	16.90	20.50	24.20	27.70	31.50	34.20	38.20	-
13	RSFAZ	16.90	20.60	24.20	28.30	32.80	35.50	39.50	-
15	RSFAZ	20.10	25.00	30.20	36.00	41.20	44.70	50.20	-
16	RSFAZ	20.10	25.60	30.80	37.10	43.50	46.80	52.40	-
18	RSFAZ	20.90	26.60	32.60	39.50	46.50	51.20	56.00	-
20	RSFAZ	21.40	28.30	34.70	42.30	50.30	53.60	59.10	-
25	RSFAZ	24.90	33.00	41.40	49.60	58.50	64.00	71.20	-
30	RSFAZ	27.80	38.00	46.30	56.60	66.00	73.70	85.70	-

Part Number	Type	€ Unit Price								
		D	Min. L	L101	L201	L401	L601	L801	L1001	L1201
6	PSGGZ	10.70	15.20	18.60	26.00	-	-	-	-	-
10	PSGGZ	10.90	15.40	19.00	22.60	28.90	-	-	-	-
12	PSGGZ	10.90	15.70	19.60	23.40	32.30	36.10	-	-	-
15	PSGGZ	14.10	20.70	25.30	29.90	39.30	44.10	52.00	-	-
18	PSGGZ	14.20	21.00	25.90	30.80	40.50	45.40	50.10	-	-
20	PSGGZ	15.00	22.40	28.50	34.70	45.70	51.80	57.90	-	-
25	PSGGZ	15.50	23.20	30.20	37.20	49.20	56.20	63.20	78.10	-
30	PSGGZ	16.50	24.80	33.40	42.10	55.80	63.70	72.50	89.50	-
40	PSGGZ	19.20	29.50	38.80	49.20	62.80	72.00	81.60	101.00	-
50	PSGGZ	21.10	32.50	45.00	62.30	75.50	87.80	100.50	124.60	-

For shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to 8≤D<30, L≤50)

**Alterations**

Part Number - L - F - B - P (PMC - PSC) - N (NSC) - SC - H - (LKC, etc.)

Example: SFAZ30 - 250 - F40 - B30 - P10 - N10 - SC10 - H - LKC

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance (Ordering Code) LKC Application Notes: Applicable when L=200 or less for precision type ⊗ Not applicable when D-P<2 When using LKC, L dimensions can be specified in 0.1 increments.	4.00
	SX	Add wrench flats at two locations (Ordering Code) SX15 Application Notes: Applicable to "Shafts with Wrench Flats" only. Specify SX in 1mm increments ⊗ SC-SX+1x2<L ⊗ SX = 0 or SX ≥ 1 ⊗ Not available on the same plane.	4.00
	FC	Add Set Screw Flat at one location (Ordering Code) FC10-E8 Application Notes: ⊗ Not applicable to precision type Specify FC and E in 1mm increments. ⊗ FC≤3xD ⊗ When 1.5xD<FC, FC≤L/2 ⊗ E=0 or E≥2 ⊗ Can not be used with WFC	2.00
	WFC	Add Set Screw Flats at two locations (Ordering Code) WFC8-A8-E4 Application Notes: ⊗ Not applicable to precision type Specify WFC, A and E in 1mm increments ⊗ WFC≤3xD ⊗ When 1.5xD<FC, 2WFC≤L/2 ⊗ A (E) = 0 or A (E) ≥ 2 ⊗ Machining on the same plane is not applicable. Can not be used with FC.	4.00

Part Number	Type	€ Unit Price					
		D	Min. L	L51	L101	L201	L301
6	VFAZ	24.70	27.90	34.30	41.80	-	-
8	VFAZ	26.10	29.40	36.00	43.80	-	-
10	VFAZ	27.40	30.80	37.50	45.80	50.70	-
12	VFAZ	31.70	35.80	44.80	54.30	60.20	-
13	VFAZ	33.00	37.40	46.60	56.40	62.60	-
15	VFAZ	34.60	39.00	48.40	58.40	64.70	-
16	VFAZ	35.50	40.00	49.30	59.40	65.70	-
18	VFAZ	37.60	42.20	52.00	62.60	69.20	-
20	VFAZ	41.10	45.70	54.70	66.10	80.70	-
25	VFAZ	46.00	51.30	61.80	74.90	91.90	-
30	VFAZ	53.50	60.00	72.80	88.80	109.90	-

Part Number	Type	€ Unit Price								
		D	Min. L	L101	L201	L401	L601	L801	L1001	L1201
6	VPSFAZ	10.70	15.20	18.60	26.00	-	-	-	-	-
10	VPSFAZ	10.90	15.40	19.00	22.60	28.90	-	-	-	-
12	VPSFAZ	10.90	15.70	19.60	23.40	32.30	36.10	-	-	-
15	VPSFAZ	14.10	20.70	25.30	29.90	39.30	44.10	52.00	-	-
18	VPSFAZ	14.20	21.00	25.90	30.80	40.50	45.40	50.10	-	-
20	VPSFAZ	15.00	22.40	28.50	34.70	45.70	51.80			



# Shafts -Standard Type / Precision Type- -One End Male Thread / One End Female Thread with Undercut-

CAD Data

For Shafts with wrench flats or with cross-drilled hole, please see P.149

**RoHS**

Precision Type	Type				Material	Hardness	Surface Treatment
	Standard	Standard	Standard	Standard			
VAFD	SAFD	SFDU	-	-	EN 1.3505 Equivalent 1.4125/X105CrMo17 equivalent	Induction Hardening Effective Hardening Depth	-
VSAFD	SSAFD	SSFUDU	-	-	EN 1.3505 Equivalent 1.4125/X105CrMo17 equivalent	EN 1.3505 Equivalent 58HRC - 1.4125/X105CrMo17 equivalent	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 5µ or more
VPAFD	PSAFD	PSFDU	-	-	EN 1.3505 Equivalent 1.4125/X105CrMo17 equivalent	EN 1.3505 Equivalent 58HRC - 1.4125/X105CrMo17 equivalent	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 5µ or more
VPSAFD	PSSAFD	PSSFDU	-	-	1.3505/100Cr6	58HRC	LTBC
VRFD	RSAFD	-	-	-	1.1191/C45E	-	-
-	-	PSAGD	-	-	1.4301/ X5CrNi18-10	-	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness: 10µm or more.
-	-	PSSAGD	-	-	-	-	-

**D Tolerance**

D	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	0	-0.035
12	-	-	-
13	-	-	-
15	-0.006	0	-0.016
16	-0.017	0	-0.043
18	-	-	-
20	-0.007	0	-0.020
25	-0.020	0	-0.053
30	-	-	-
35	-0.009	0	-0.025
40	-0.025	0	-0.064
50	-	-	-

**Features of Precision Type**  
Squareness is  $\sqrt{0.03}$

Centering holes will be spotted on shaft ends of precision type.

Overall length L requires Nx3≤L.

Part Number	Type	1mm Increments			M (Coarse Threads) Selection			N (Coarse) Selection			(Y) Max.	C
		D	L	F	6	8	10	3	4	5		
Precision type (D Tolerance g6) VAFD VSAFD VPAFD VPSAFD VRFD	8	25-295			6			3	4	5	300	0.2 or less
	10	25-345			6 8			3	4	5	350	
	12	25-345			6 8 10			4	5	6	350	
	13	25-345			6 8 10			4	5	6	350	
	15	25-345			6 8 10 12			4	5	6	350	
	16	25-345			6 8 10 12			4	5	6	350	
	18	25-345			6 8 10 12 16			4	5	6	350	
	20	25-445			6 8 10 12 16			4	5	6	450	
	25	25-443			8 10 12 16 20			4	5	6	450	
	30	25-443			8 10 12 16 20 24			6	8	10	450	

Undercut Dimensions (Coarse Threads)

M	Pitch	MC	(g)
6	1.0	4.4 (4.2)	2
8	1.25	6.0	3
10	1.5	7.7	3
12	1.75	9.4	4
16	2.0	13.0	4
20	2.5	16.4	5
24	3.0	19.6	5
30	3.5	25.0	5

MC dimensions in ( ) are for Precision Type M6.

Part Number	Type	1mm Increments			M (Coarse Threads) Selection			N (Coarse) Selection			(Y) Max.	C
		D	L	F	6	8	10	3	4	5		
Standard Type (D Tolerance g6) SAFD SSAFD PSAFD RPAFD RSAGD	8	25-795			6			3	4	5	800	0.5 or less
	10	25-795			6 8			3	4	5	800	
	12	25-995			6 8 10			4	5	6	1000	
	13	25-995			6 8 10 12			4	5	6	1000	
	15	25-995			6 8 10 12			4	5	6	1000	
	16	25-1195			6 8 10 12			4	5	6	1200	
	18	25-1195			6 8 10 12 16			4	5	6	1200	
	20	25-1195			6 8 10 12 16			4	5	6	1200	
	25	25-1493			8 10 12 16 20 24			4	5	6	1500	
	35	25-1492			8 10 12 16 20 24 30			6	8	10	1500	

**Price**

Quantity	Discount Rates	€ Unit Price
1-4	5%	
5-12	10%	
13-19	10%	
20-49	15%	

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	Type	€ Unit Price											
		Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
8	SAFD	5.30	7.80	10.50	13.10	15.10	15.50	19.40	23.20	31.10	-	-	-
10	SAFD	5.30	7.90	10.50	13.20	15.30	15.80	17.60	19.40	26.10	-	-	-
12-13	SAFD	5.40	8.10	10.90	13.50	15.80	16.30	18.30	20.30	29.60	33.70	-	-
15-16	SAFD	7.70	11.80	15.70	19.50	22.20	22.30	24.80	27.10	36.90	41.80	47.40	-
18-20	SAFD	7.90	11.80	15.80	19.80	22.60	22.90	25.50	28.00	38.30	43.30	48.20	-
25	SFDU	8.60	12.80	17.10	21.40	24.90	25.60	28.80	32.00	43.40	50.00	56.30	-
30	SFDU	9.80	13.40	17.80	22.30	26.40	27.40	31.10	34.70	47.20	54.50	61.90	77.40
35	SFDU	9.60	14.50	19.30	24.10	29.20	30.80	35.30	39.80	54.10	62.40	71.60	89.40
40	SFDU	11.80	17.60	23.60	29.50	35.00	36.50	41.90	47.20	61.40	71.00	81.10	101.30
50	SFDU	13.30	19.90	26.50	33.10	40.50	43.00	52.00	60.90	74.70	87.50	100.90	126.00

Part Number	Type	€ Unit Price											
		Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
8	PSAFD	6.60	9.80	13.10	16.40	20.30	21.70	27.30	32.80	43.70	-	-	-
10	PSAFD	6.60	9.80	13.10	16.40	19.90	21.20	26.00	31.00	40.30	-	-	-
12-13	PSAFD	7.00	10.60	14.10	17.60	21.10	22.00	26.60	31.30	41.00	53.10	-	-
15-16	PSAFD	8.30	12.30	16.50	20.60	23.50	23.80	28.90	34.10	44.10	54.40	65.30	-
18-20	PSAFD	9.50	14.20	19.10	23.90	27.00	27.10	32.60	38.10	49.50	60.60	71.60	-
25	PSFDU	10.40	15.70	20.90	26.10	29.60	29.60	36.00	42.10	54.60	67.60	80.10	-
30	PSFDU	11.20	16.80	22.40	28.00	32.10	32.70	39.80	47.00	61.20	75.80	90.10	112.70
35	PSFDU	12.60	18.90	25.10	31.40	38.00	40.10	45.90	51.80	70.50	81.30	93.20	116.40
40	PSFDU	15.40	23.10	30.80	38.50	45.60	47.40	54.50	61.60	80.00	92.50	105.80	132.10
50	PSFDU	17.30	25.80	34.50	43.10	52.70	56.00	67.70	79.40	97.40	114.10	131.30	164.20

Part Number	Type	€ Unit Price						
		Min. L	L51	L101	L151	L201	L301	L401
8	RSAGD	12.50	14.80	17.90	20.90	23.30	24.80	29.50
10	RSAGD	12.50	15.50	18.50	22.10	25.70	27.20	30.00
12	RSAGD	13.20	16.80	20.50	24.00	27.80	30.50	34.50
13	RSAGD	13.20	16.90	20.50	24.60	29.10	31.80	35.80
15	RSAGD	16.40	21.30	26.50	32.30	37.50	41.00	46.50
16	RSAGD	16.40	21.90	27.10	33.40	39.80	43.10	48.70
18	RSAGD	17.20	22.90	28.90	35.80	42.80	47.50	52.30
20	RSAGD	17.70	24.60	31.00	38.60	46.60	49.90	55.40
25	RSAGD	21.10	29.30	37.70	45.90	54.80	60.30	67.50
30	RSAGD	24.10	34.30	42.60	52.90	62.30	70.00	82.00

Part Number	Type	€ Unit Price							
		Min. L	L101	L201	L401	L601	L801	L1001	L1201
8	PSAGD	6.80	11.30	14.80	22.20	29.60	-	-	-
10	PSAGD	6.90	11.40	15.00	18.60	24.90	-	-	-
12-13	PSAGD	6.90	11.70	15.60	19.40	28.30	32.10	-	-
15-16	PSAGD	10.10	16.70	21.30	25.90	35.30	40.10	48.00	-
18-20	PSAGD	10.20	17.00	21.90	26.80	36.50	41.40	46.10	-
25	PSAGD	11.00	18.40	24.50	30.70	41.70	47.80	53.90	-
30	PSAGD	11.50	19.20	26.20	33.20	45.20	52.20	59.20	74.10
35	PSAGD	12.50	20.80	29.40	38.10	51.80	59.70	68.50	85.50
40	PSAGD	15.20	25.50	34.80	45.20	58.80	68.00	77.60	97.00
50	PSAGD	17.10	28.50	41.10	58.30	71.50	83.80	96.50	120.60

Part Number	Type	€ Unit Price				
		Min. L	L51	L101	L201	L301
8	VAFD	19.80	22.80	28.70	35.80	-
10	VAFD	21.00	24.10	30.10	37.60	41.90
12	VAFD	24.80	28.60	36.60	45.10	50.40
13	VAFD	26.10	29.90	38.20	47.10	52.60
15	VAFD	27.50	31.40	39.80	48.90	54.50
16	VAFD	28.40	32.30	40.70	49.70	55.40
18	VAFD	30.20	34.30	43.10	52.60	58.50
20	VAFD	33.30	37.40	45.50	55.80	68.90
25	VAFD	37.70	42.50	51.90	63.70	78.90
30	VAFD	44.50	50.30	61.80	76.10	95.10

Part Number	Type	€ Unit Price						
		Min. L	L101	L201	L401	L601	L801	L1001
8	VSAFD	23.80	29.00	39.30	51.10	-	-	-
10	VSAFD	25.60	30.90	41.60	54.20	61.40	-	-
12	VSAFD	31.60	38.40	52.70	68.20	77.30	-	-
13	VSAFD	33.00	39.90	54.30	70.00	79.30	-	-
15	VSAFD	36.60	44.10	59.80	77.20	87.30	-	-
16	VSAFD	37.40	45.10	61.10	78.90	89.20	-	-
18	VSAFD	38.50	46.40	62.90	81.20	91.80	-	-
20	VSAFD	39.40	47.50	64.40	83.10	93.90	-	-
25	VSAFD	45.20	52.10	65.80	82.50	105.00	-	-
30	VSAFD	51.80	59.40	74.60	93.20	118.30	-	-

Part Number	Type	€ Unit Price				
		Min. L	L51	L101	L201	L301
8	VPAFD	27.70	31.90	40.20	50.10	-
10	VPAFD	29.40	33.70	42.10	52.60	58.70
12	VPAFD	34.70	40.00	51.20	63.10	70.60
13	VPAFD	36.50	41.90	53.50	65.90	73.60
15	VPAFD	38.50	44.00	55.70	68.50	76.30
16	VPAFD	39.80	45.20	57.00	69.60	77.80
18	VPAFD	42.30	48.00	60.30	73.60	81.90
20	VPAFD					





# Shafts - Standard Type / Precision Type-

-One End Male Thread and One End Female Thread w/Undercut and Wrench Flats / One End Male Thread and One End Female Thread w/Undercut and Cross-drilled Hole-

CAD Data

For Shafts w/o wrench flats or cross-drilled holes, please see P.147

Precision Type	Type						Material	Hardness	Surface Treatment
	Standard		With Cross-drilled Holes		D	g6			
VAZF	SAFZ	SFBU	-	SAHD			-	EN 1.3505 Equivalent	Induction Hardening Effective Hardening Depth $\geq$ P.104
VSAFZ	SSAFZ	SSFBU	-	SSAHD	-	1.4125/ X105CrMo17 equivalent			
VPAFZ	PSAFZ	PSFBU	-	PSAHD	-	EN 1.3505 Equivalent	EN 1.3505 Equivalent 58HRC-1.4125/ X105CrMo17 equivalent 56HRC	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 5µ or more	
VPSAFZ	PSSAFZ	PSSFBU	-	PSSAHD	-	1.4125/ X105CrMo17 equivalent			
VRFZ	RSAFZ	-	-	RSAHD	-	1.3505/100Cr6	LTBC	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness: 10µm or more.	
-	-	-	-	PSAGZ	-	1.4301/ XSCN18-10			

Part Number	Type	1mm Increments			M (Coarse Threads) Selection			N (Coarse) Selection			Wrench Flats Dimensions			C
		D	L	F	M	N	W	ℓ1	(Y) Max.	M	Pitch	MC	Undercuts (g)	
10	25-345	6	8	10	3	4	5	7	8	300	7	8	300	0.2 or less
12	25-345	6	8	10	3	4	5	6	8	350	8	8	350	
13	25-345	6	8	10	4	5	6	8	10	350	10	10	350	
15	25-345	6	8	10	4	5	6	8	10	350	11	11	350	
16	25-345	6	8	10	4	5	6	8	10	350	12	12	350	
18	25-345	6	8	10	4	5	6	8	10	350	13	13	350	
20	25-445	6	8	10	4	5	6	8	10	450	14	14	450	
25	25-443	6	8	10	4	5	6	8	10	450	16	16	450	
30	25-443	6	8	10	4	5	6	8	10	450	17	17	450	
35	25-443	6	8	10	4	5	6	8	10	450	22	22	450	

Part Number	Type	1mm Increments			M (Coarse Threads) Selection			N (Coarse) Selection			Wrench Flats Dimensions			Cross-drilled Hole Dimensions			C
		D	L	F	M	N	W	ℓ1	(Y) Max.	H	d	Max.					
10	25-795	6	8	10	3	4	5	7	8	800	7	8	800	3	800	0.5 or less	
12	25-795	6	8	10	3	4	5	6	8	1000	8	8	1000	4	1000		
13	25-995	6	8	10	4	5	6	8	10	1000	10	10	1000	6	1200		
15	25-995	6	8	10	4	5	6	8	10	1000	11	11	1000	7	1200		
16	25-1195	6	8	10	4	5	6	8	10	1200	13	13	1200	8	1200		
18	25-1195	6	8	10	4	5	6	8	10	1200	14	14	1200	9	1200		
20	25-1195	6	8	10	4	5	6	8	10	1200	16	16	1200	10	1200		
25	25-1193	6	8	10	4	5	6	8	10	1500	17	17	1500	11	1500		
30	25-1493	6	8	10	4	5	6	8	10	1500	22	22	1500	12	1500		
35	25-1492	6	8	10	4	5	6	8	10	1500	27	27	1500	13	1500		

**Price** Volume Discount (Round down to one Cent) P. 87

Quantity	Discount Rates
1-4	5%
5-12	10%
13-19	15%
20-49	

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating. For 50 or more shafts with diameter greater than 30 and applied low temp chrome plating, please request for quote.

Part Number	Type	€ Unit Price												
		Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500	L601 600	L801 800	L1001 1000	L1201 1200	L1493 1493	
8	SAFZ	9.30	11.80	14.50	17.10	19.10	19.50	23.40	27.20	35.10	-	-	-	-
10	SAFZ	9.30	11.90	14.50	17.20	19.30	19.80	21.60	23.40	30.10	-	-	-	-
12-13	SAFZ	9.40	12.10	14.90	17.50	19.80	20.30	24.30	33.60	37.70	-	-	-	-
15-16	SAFZ	11.70	15.80	19.70	23.50	26.30	28.80	31.10	40.90	45.80	51.40	-	-	-
18-20	SAFZ	11.90	15.80	19.80	23.80	26.60	29.50	32.00	42.30	47.30	52.20	-	-	-
25	SAFZ	12.60	16.80	21.10	25.40	28.90	29.80	36.00	47.40	54.00	60.30	-	-	-
30	SAFZ	12.90	17.40	21.80	26.30	30.40	31.40	35.10	38.70	51.20	58.50	65.90	81.40	-
35	SAFZ	13.60	18.50	23.30	28.10	33.20	34.80	39.30	43.80	58.10	66.40	75.60	93.40	-
40	SAFZ	15.80	21.60	27.60	33.50	39.00	40.50	45.90	51.20	65.40	75.00	85.10	105.30	-
50	SAFZ	17.30	23.90	30.50	37.10	44.50	47.00	56.00	64.90	78.70	91.50	104.90	130.00	-

Part Number	Type	D	€ Unit Price						
			Min. L 50	L51 100	L101 150	L151 200	L201 300	L301 400	L401 500
8	RSFAFZ	16.20	18.50	21.60	24.60	27.00	28.50	33.20	
10	RSFAFZ	16.20	19.20	22.20	25.80	29.40	30.90	33.70	
12	RSFAFZ	16.90	20.50	24.20	27.70	31.50	34.20	38.20	
13	RSFAFZ	16.90	20.60	24.20	28.30	32.80	35.50	39.50	
15	RSFAFZ	20.10	25.00	30.20	36.00	41.20	44.70	50.20	
16	RSFAFZ	20.10	25.60	30.80	37.10	43.50	46.80	52.40	
18	RSFAFZ	20.90	26.60	32.60	39.50	46.50	51.20	56.00	
20	RSFAFZ	21.40	28.30	34.70	42.30	50.30	53.60	59.10	
25	RSFAFZ	24.80	33.00	41.40	49.60	58.50	64.00	71.20	
30	RSFAFZ	27.80	38.00	46.30	56.60	66.00	73.70	85.70	

Part Number	Type	D	€ Unit Price									
			Min. L 100	L101 200	L201 400	L401 600	L601 800	L801 1000	L1001 1200	L1201 1493		
8	PSAGZ	10.80	15.30	18.80	26.20	33.60	-	-	-	-	-	
10	PSAGZ	10.90	15.40	19.00	26.60	28.90	-	-	-	-	-	
12-13	PSAGZ	10.90	15.70	19.60	23.40	32.30	36.10	-	-	-	-	
15-16	PSAGZ	14.10	20.70	25.30	29.90	39.30	44.10	52.00	-	-	-	
18-20	PSAGZ	14.20	21.00	25.90	30.80	40.50	45.40	50.10	-	-	-	
25	PSAGZ	15.00	22.40	28.50	34.70	45.70	51.80	57.90	-	-	-	
30	PSAGZ	15.50	23.20	30.20	37.20	49.20	56.20	63.20	78.10	-	-	
35	PSAGZ	16.50	24.80	33.40	42.10	55.80	63.70	72.50	89.50	-	-	
40	PSAGZ	19.20	29.50	38.80	49.20	62.80	72.00	81.60	101.00	-	-	
50	PSAGZ	21.10	32.50	45.10	62.30	75.50	87.80	100.50	124.60	-	-	
8	PSSAGZ	14.60	21.70	30.30	43.30	56.50	-	-	-	-	-	
10	PSSAGZ	14.60	21.70	29.50	41.40	53.90	-	-	-	-	-	
12-13	PSSAGZ	15.60	23.30	30.50	41.80	53.50	68.30	-	-	-	-	
15-16	PSSAGZ	17.50	26.50	32.60	45.20	57.10	69.60	82.80	-	-	-	
18-20	PSSAGZ	19.60	29.90	36.70	49.90	63.80	77.20	90.60	-	-	-	
25	PSSAGZ	21.00	32.40	39.90	54.90	70.10	85.60	100.80	-	-	-	
30	PSSAGZ	22.30	34.50	43.30	60.60	78.10	95.40	112.80	140.10	-	-	
35	PSSAGZ	24.70	38.50	54.40	72.60	93.10	111.40	129.60	161.00	-	-	
40	PSSAGZ	29.00	45.80	65.50	88.00	113.30	135.80	158.40	197.00	-	-	
50	PSSAGZ	39.50	63.10	87.30	118.70	155.60	187.90	220.20	274.30	-	-	

For Shafts with cross-drilled holes, the prices on the right page are to be subtracted from the prices above. (Applied to D=30, L=500)

**Alterations** Part Number - L - F - M - N - SC - H - (LKC...etc.)

SAFZ20 - 250 - F40 - M20 - N20 - SC10 - H - LKC

Alterations	Code	Spec.	Price Adder
	LKC	Alteration to L dimension tolerance Ordering Code LKC Application Notes Applicable when L=200 or less for precision type Not applicable when D-M=2 When using LKC, L dimensions can be specified in 0.1 increments. L<200 → L±0.03 200≤L<500 → L±0.05 L≥500 → L±0.1	4.00
	SX	Add wrench flats at two locations Ordering Code SX15 Application Notes Applicable to Shafts with Wrench Flats only. Specify SX in 1mm increments. SC+SX+ℓ1x2<L SX = 0 or SX ≥ 1 Not available on the same plane.	4.00
	FC	Add set screw flat at one location Ordering Code FC10-E8 Application Notes Not applicable to precision type Specify FC and E in 1mm increments. FC≤3d When 1.5xD<FC, FC≤L/2 E=0 or E≥2 Can not be used with WFC	2.00
	WFC	Add set screw flats at two locations Ordering Code WFC9-AB-E4 Application Notes Not applicable to precision type Specify WFC, A and E in 1mm increments WFC≤3d When 1.5xD<WFC, 2WFC≤L/2 A(E) = 0 or A(E) ≥ 2 Cannot be machined on the same plane. Cannot be combined with FC.	4.00

Part Number	Type	D	€ Unit Price				
			Min. L 50	L51 100	L101 200	L201 300	L301 445
8	VAFZ	25.80	28.80	34.70	41.70	-	
10	VAFZ	27.00	30.10	36.10	43.50	47.80	
12	VAFZ	30.80	34.60	42.60	51.00	56.30	
13	VAFZ	32.10	35.90	44.20	53.00	58.40	
15	VAFZ	33.50	37.40	45.80	54.80	60.30	
16	VAFZ	34.40	38.30	46.70	55.70	61.20	
18	VAFZ	36.20	40.30	49.10	58.50	64.30	
20	VAFZ	39.30	43.40	51.60	61.70	74.70	
25	VAFZ	43.70	48.50	57.90	69.60	84.80	
30	VAFZ	50.50	56.30	67.80	82.00	100.90	
8	VSAFZ	29.80	35.00	45.30	57.10	-	
10	VSAFZ	31.60	36.90	47.60	60.20	67.20	
12	VSAFZ	37.60	44.50	58.70	74.10	83.10	
13	VSAFZ	39.00	45.90	60.30	76.00	85.10	
15	VSAFZ	42.60	50.10	60.80	76.30	93.10	
16	VSAFZ	43.50	50.70	61.50	77.00	96.10	
18	VSAFZ	44.20	51.10	62.40	77.80	97.70	
20	VSAFZ	45.40	51.60	63.80	78.60	98.40	
25	VSAFZ						





# Shafts -Standard Type / Precision Type-

## -One End Stepped and Female Thread / One End Stepped-

CAD Data

For Shafts with Wrench flats, please see P.153

RoHS		Type		Material	Hardness	Surface Treatment	D Tolerance		
One End Stepped and Female Thread	One End Stepped	D	g6				h5	f8	
Standard	Standard	8	-0.005	0	-0.013	EN 1.3505 Equivalent	Induction Hardening		
Standard	Standard	10	-0.014	0	-0.035	1.4125 equivalent	Effective Hardening		
VFAG	SFAG	SFUG	-	SFAC	SFCU	-	-	-	-
VSFAG	SSFAG	SSFUG	-	SSFAC	SSFUCU	-	-	-	-
VPFAG	PSFAG	PSFUG	-	PSFAC	PSFCU	-	-	-	-
VPSFAG	PSSFAG	PSSFUG	-	PSSFAC	PSSFCU	-	-	-	-
VRAG	RSFAG	-	-	RSFAC	-	-	-	-	-
VSRAG	-	-	-	-	-	-	-	-	-
-	-	PSSFGG	-	-	PSSCGC	-	-	-	-
-	-	PSSFGG	-	-	PSSCGC	-	-	-	-

One End Stepped and Female Thread

Precision Type 0.03  
Standard Type 0.2

Surface Treatment Not Applied

2-C  $\sqrt{R}/\sqrt{1.6}/\sqrt{0.4}/\sqrt{0.4}$

One End Stepped

Surface Treatment Not Applied

2-C  $\sqrt{R}/\sqrt{1.6}/\sqrt{0.4}/\sqrt{0.4}$

Features of Precision Type

Concentricity is  $\sqrt{0.02}$

Squareness is  $\sqrt{0.03}$

Precision Type will have an undercut (max. width: 1mm, max. depth: 0.1mm) at the base of stepped section, and centering holes on the ends.

Part Number	D	L	F	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Precision Type	8	25-298		6	3	300		0.5 or less
One End Stepped and Female Thread (D Tolerance g6)	10	25-348		6-8	3 4 5	350		0.3 or less
	12	25-348		6-10	3 4 5 6	350		
	13	25-348		6-11	3 4 5 6 8	350		1.0 or less
	15	25-348		6-13	3 4 5 6 8 10	350		
	16	25-348		6-14	3 4 5 6 8 10	350		
	18	25-348		8-16	4 5 6 8 10 12	350		
	20	25-448		8-17	4 5 6 8 10 12	450		
	25	25-448		8-22	4 5 6 8 10 12 16	450		
	30	25-448		9-27	5 6 8 10 12 16 20 24	450		

Part Number	D	L	F	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Standard Type	8	25-798		6	3	800		0.5 or less
One End Stepped and Female Thread (D Tolerance h5)	10	25-798		6-8	3 4 5	800		0.3 or less
One End Stepped and Female Thread (D Tolerance g6)	12	25-998		6-10	3 4 5 6	1000		
SFAG	13	25-998		6-11	3 4 5 6 8	1000		1.0 or less
SSFAG	15	25-998		6-13	3 4 5 6 8 10	1000		
PSFAG	16	25-1198		6-14	3 4 5 6 8 10	1200		
PSSFAG	18	25-1198		8-16	4 5 6 8 10 12	1200		
RSFAG	20	25-1198		8-17	4 5 6 8 10 12	1200		
(D Tolerance f8)	25	25-1198		8-22	4 5 6 8 10 12 16	1200		
PSSFAG	30	25-1498		9-27	5 6 8 10 12 16 20 24	1500		
	35	25-1498		9-32	5 6 8 10 12 16 20 24	1500		
	40	25-1498		11-37	6 8 10 12 16 20 24 30	1500		
	50	25-1498		11-47	6 8 10 12 16 20 24 30	1500		

One End Stepped and Female Thread (M + 3 ≤ P is required for P Dimension). When Mx2.5+4≥Y, tap pilot hole may go through. For Precision Type, (Y) dimensions needs to be Mx4≤(Y). Tap pilot hole may go through.

**Price** Volume Discount (Round down to one Cent) P87

Quantity	Discount Rates	Unit Price	5%	10%	15%
1-4					
5-12					
13-19					
20-49					

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201	L1498
SFAG	8-10	4.50	6.80	9.00	11.30	13.50	14.20	15.80	17.60	23.40	-	-	-	-
SFUG	12-13	4.60	6.90	9.00	11.50	14.00	14.70	16.60	18.40	26.80	30.60	-	-	-
SFAC	15-16	4.90	7.30	9.70	12.20	14.90	15.80	17.60	19.60	28.50	32.50	39.10	-	-
SFCU	18-20	5.50	8.30	11.00	13.80	16.20	16.70	19.00	21.20	30.40	34.70	39.20	-	-
SSFAG	25	6.90	10.40	14.00	17.50	21.20	22.30	25.00	27.70	37.80	43.20	48.10	76.30	-
SSFUG	30	8.10	12.20	16.30	20.30	23.90	24.60	27.80	31.00	41.90	48.60	61.10	76.30	-
SSFAC	35	8.60	13.00	17.40	21.60	25.70	26.50	31.30	35.20	47.70	55.80	63.20	79.00	-
SSFCU	40	10.00	15.00	19.90	24.90	30.50	32.50	37.20	41.90	56.30	65.90	75.40	94.20	-
PSSFAG	50	11.60	17.50	23.10	29.00	36.00	38.60	45.00	51.40	68.90	81.40	93.90	117.40	-
PSSFUG	8-10	5.70	8.60	11.40	14.20	17.50	18.20	20.80	23.80	33.30	-	-	-	-
PSSFAC	12-13	6.10	9.20	12.20	15.30	18.70	19.40	22.40	25.60	35.60	52.30	-	-	-
PSSFAG	15-16	7.00	10.60	14.10	17.60	20.90	21.60	24.60	28.00	38.60	52.70	63.20	-	-
PSSFUG	18-20	8.40	12.60	16.70	20.90	24.10	24.80	28.20	31.60	42.70	59.10	70.70	-	-
PSSFAC	25	9.10	13.60	18.20	22.70	26.10	26.80	30.60	34.60	46.60	64.60	77.90	99.50	-
PSSFCU	30	10.60	15.80	21.20	26.50	31.10	32.00	36.20	40.30	54.70	73.70	88.20	112.80	-
PSSFCU	35	11.30	16.90	22.60	28.30	34.00	35.00	40.90	45.80	62.10	82.40	103.10	130.10	-
PSSFCU	40	13.00	19.50	26.00	32.50	39.70	42.20	48.40	54.50	73.40	98.20	122.80	158.80	-
PSSFCU	50	15.10	22.70	30.30	37.80	46.90	50.30	58.70	66.90	89.80	116.00	142.40	183.00	-
PSSFCU	8-10	8.40	12.60	16.70	20.90	25.70	27.40	34.80	42.30	56.40	-	-	-	-
PSSFCU	12-13	9.00	13.50	18.00	22.50	27.50	29.30	36.50	43.50	58.10	76.80	-	-	-
PSSFCU	15-16	10.40	15.60	20.70	25.90	30.20	31.00	38.60	46.40	61.70	77.30	92.80	-	-
PSSFCU	18-20	12.30	18.40	24.60	30.70	35.40	36.10	44.60	53.00	70.10	86.80	104.00	-	-
PSSFCU	25	13.30	20.00	26.60	33.30	38.60	39.50	49.20	58.80	77.90	97.30	117.10	-	-
PSSFCU	30	14.60	21.80	29.10	36.40	42.00	42.80	54.50	66.20	88.30	109.70	131.80	164.70	-
PSSFCU	35	20.10	30.10	40.10	50.10	58.00	59.00	75.20	91.30	121.70	151.20	181.60	227.10	-
PSSFCU	40	28.70	42.90	57.20	71.60	82.60	84.20	107.40	130.30	173.80	215.90	259.60	324.50	-
PSSFCU	50	41.00	61.40	81.80	102.30	118.10	120.40	153.50	186.30	247.30	299.90	364.40	465.50	-

One End Stepped and Female Thread

For D tolerance h5, 3, 90 EUR is added to the above prices. And then the prices on the right page are subtracted.

For D tolerance g6, the prices on the right page are subtracted from the above prices.

Part Number	D	Min. L	L51	L101	L151	L201	L301	L401
RSFAG	8	11.80	13.90	16.50	19.20	21.80	23.60	26.20
RSFAG	10	11.80	14.50	17.10	20.30	24.00	25.70	28.30
RSFAG	12	12.40	15.70	19.00	22.20	26.10	29.00	32.90
RSFAG	13	12.40	15.70	19.00	22.70	27.20	30.20	34.10
RSFAG	15	13.80	17.20	21.00	25.50	30.70	34.90	39.80
RSFAG	16	13.80	17.70	21.50	26.60	33.00	37.10	42.00
RSFAG	18	14.90	19.70	24.40	30.30	36.90	41.70	46.30
RSFAG	20	15.50	21.30	26.50	33.10	40.70	44.10	49.30
RSFAG	25	19.50	27.10	34.80	42.30	51.40	57.20	63.90
RSFAG	30	23.40	33.20	41.20	51.00	59.90	67.40	78.90

Part Number	D	Min. L	L101	L201	L401	L601	L801	L1001	L1201	L1498
PSFAG	8-10	5.90	9.80	13.80	17.10	22.80	-	-	-	-
PSFAG	12-13	6.00	10.10	14.10	17.80	26.00	29.70	-	-	-
PSFAG	15-16	6.40	10.60	15.20	19.00	27.70	31.50	37.80	-	-
PSFAG	18-20	7.20	12.00	16.30	20.40	29.60	33.80	37.90	-	-
PSFAG	25	9.10	15.20	21.70	26.90	36.70	41.90	47.30	-	-
PSFAG	30	10.60	17.70	23.90	30.10	40.80	47.10	53.90	74.10	-
PSSFCG	35	11.60	19.30	27.20	34.80	47.20	55.30	62.60	78.20	-
PSSFCG	40	13.30	22.20	32.00	41.40	55.80	65.10	74.50	93.20	-
PSSFCG	50	15.50	25.80	38.20	50.80	68.20	80.60	92.90	116.20	-
PSSFCG	8-10	8.40	14.00	20.30	31.50	42.00	-	-	-	-
PSSFCG	12-13	9.10	15.10	21.90	32.40	43.20	57.20	-	-	-
PSSFCG	15-16	10.40	17.40	23.00	34.50	45.90	57.50	69.00	-	-
PSSFCG	18-20	12.30	20.50	26.90	39.40	52.20	64.60	77.40	-	-
PSSFCG	25	13.40	22.30	29.40	43.70	58.10	72.50	87.20	-	-
PSSFCG	30	14.90	24.80	32.50	50.20	67.10	83.30	100.10	125.00	-
PSSFCG	35	20.50	34.20	44.80	69.30	92.30	114.80	137.90	172.40	-
PSSFCG	40	29.30	49.00	64.00	99.00	132.00	164.00	197.10	246.30	-
PSSFCG	50	41.90	69.90	91.40	141.50	165.00	204.90	246.30	307.80	-

For One End Stepped, the right prices are subtracted from the above prices.

Alterations

Part Number - L - F - P - M - (LKC - FC...etc.)

SFAG30 - 400 - F25 - P16 - M10 - LKC

Keyway machining (Only KC and WKC) 10 Days (RSFAG and RSFAC are to be shipped on the 13th day after order)



# Shafts -Standard Type / Precision Type- -One End Stepped and Female Thread with Wrench Flats-

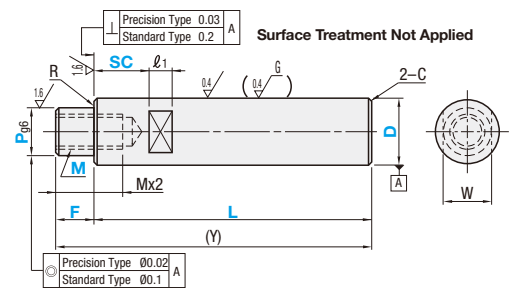
CAD Data

For Shafts w/o wrench flats, please see P.151



Precision type	Type				Material	Hardness	Surface Treatment
	D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance f8			
VSPFG	SFPFG	SFPFG	-	-	EN 1.3505 Equivalent	Induction Hardening Effective Hardening Depth	-
VSFPFG	SSFPFG	SSFPFG	-	-	1.4125	ENF P104	-
VPPFG	PSFPFG	PSFPFG	-	-	EN 1.3505 Equivalent	Hard Chrome Plating Plating Hardness: HVT50 - Plating Thickness: 5µ or more	-
VPSFPFG	PSSFPFG	PSSFPFG	-	-	1.4125	EN 1.3505 Equivalent 50HRC-	-
VRPG	RSFPFG	-	-	-	1.3505	1.4125/110SCM17 equivalent 50HRC-	LTBC
VSRPG	-	-	-	-	1.4125	-	-
-	-	-	-	-	1.1191	Hard Chrome Plating Plating Hardness: HVT50 - Plating Thickness: 10µm or more.	-
-	-	-	-	-	1.4301	-	-

D	D Tolerance			
	g6	h5	f8	f8
8	-0.005	0	-0.013	-
10	-0.014	-0.006	-0.035	-
12	-	-	-	-
13	-0.006	0	-0.016	-
15	-0.017	-0.008	-0.043	-
16	-	-	-	-
18	-	-	-	-
20	-0.007	0	-0.020	-
25	-0.020	-0.009	-0.053	-
30	-	-	-	-
35	-0.009	0	-0.025	-
40	-0.025	-0.011	-0.064	-
50	-	-	-	-



Surface Treatment Not Applied

Features of Precision Type  
Concentricity is  $\leq 0.02$   
Squareness is  $\leq 0.03$

Precision Type will have an undercut (max. width: 1mm, max. depth: 0.1mm) at the base of stepped section, and centering holes on the ends.

- Annealing required for machining wrench flats and shaft end threading (thread effective length + approx. 10mm) may lower hardness. P.104
- Changes in circularity, straightness, perpendicularity, coaxiality and hardness. P.103
- Features of LTBC. P.118

M + 3 ≤ P is required for P Dimension. For Precision Type, (Y) dimensions needs to be Mx4 ≤ (Y). Tap pilot hole may go through.

Part Number	Type	1mm Increments				M (Coarse Threads) Selection		Wrench Flats Dimensions		(Y) Max.	R	C
		D	L	F	P	W	ℓ <sub>1</sub>					
Precision Type (D Tolerance g6)	8	25-298	6	3	7	300	SC=1mm Increment	8	0.3 or less	0.5 or less		
VSPFG	10	25-348	6-8	3 4 5	8	350						
VSFPFG	12	25-348	6-10	3 4 5 6	10	350	SC+ℓ <sub>1</sub> ≤ L	10	0.3 or less	1.0 or less		
VPPFG	13	25-348	6-11	3 4 5 6 8	11	350	SC=0					
VPSFPFG	15	25-348	6-13	3 4 5 6 8 10	13	350	or SC ≥ 1	15	0.5 or less	1.0 or less		
VRPG	16	25-348	6-14	3 4 5 6 8 10 12	14	350	Details of Wrench Flats P.104					
VSRPG	18	25-348	8-16	4 5 6 8 10 12	16	350		20	0.5 or less	1.0 or less		
	20	25-448	8-17	4 5 6 8 10 12	17	450						
	25	25-448	8-22	4 5 6 8 10 12 16	22	450		27	15	450		
	30	25-448	9-27	5 6 8 10 12 16 20 24	27	450						

Part Number	Type	1mm Increments				M (Coarse Threads) Selection		Wrench Flats Dimensions		(Y) Max.	R	C
		D	L	F	P	W	ℓ <sub>1</sub>					
Standard Type (D Tolerance g6)	8	25-798	6	3	7	800	SC=1mm Increment	8	0.3 or less	0.5 or less		
SFPFG	10	25-798	6-8	3 4 5	8	800						
VSFPFG	12	25-998	6-10	3 4 5 6	10	1000	SC+ℓ <sub>1</sub> ≤ L	10	0.3 or less	1.0 or less		
SSFPFG	13	25-998	6-11	3 4 5 6 8	11	1000	SC=0					
PSFPFG	15	25-998	6-13	3 4 5 6 8 10	13	1000	or SC ≥ 1	15	0.5 or less	1.0 or less		
VSPFG	16	25-1198	6-14	3 4 5 6 8 10 12	14	1200	Details of Wrench Flats P.104					
VPSFPFG	18	25-1198	8-16	4 5 6 8 10 12	16	1200		20	0.5 or less	1.0 or less		
VPPFG	20	25-1198	8-17	4 5 6 8 10 12	17	1200						
VPSFPFG	25	25-1198	8-22	4 5 6 8 10 12 16	22	1200		27	15	1500		
VRPG	30	25-1498	9-27	5 6 8 10 12 16 20 24	27	1500						
VSRPG	35	25-1498	9-32	5 6 8 10 12 16 20 24	30	1500		36	15	1500		
	40	25-1498	11-37	6 8 10 12 16 20 24 30	36	1500						
	50	25-1498	11-47	6 8 10 12 16 20 24 30	41	1500						

Quantity	Discount Rates	€ Unit Price
1-4	5%	
5-12	10%	
13-19	15%	
20-49		

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	Type	€ Unit Price												
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
8-10	SFPFG	8.50	10.80	13.00	15.30	17.50	18.20	19.80	21.60	27.40	-	-	-	-
12	SFPFG	8.60	10.90	13.30	15.50	18.00	18.70	20.60	22.40	30.80	34.60	-	-	
13	SFPFG	8.60	10.90	13.30	15.60	18.00	18.70	20.60	22.40	31.50	35.20	-	-	
15-16	SFPFG	8.90	11.30	13.70	16.20	18.80	19.80	21.60	23.60	32.50	36.50	43.10	-	
18-20	SFPFG	9.50	12.30	15.00	17.80	20.20	20.70	22.50	25.00	34.40	38.70	43.20	-	
25	SFPFG	10.90	14.40	18.00	21.50	25.20	26.30	29.00	31.70	41.80	47.20	52.80	-	
30	SFPFG	12.10	16.20	20.30	24.30	27.90	28.60	31.80	35.00	45.90	52.60	65.10	80.30	
35	SFPFG	12.60	17.00	21.40	25.60	30.10	31.50	35.30	39.20	51.70	59.80	72.70	83.00	
40	SFPFG	14.00	19.00	23.90	28.90	34.50	36.50	41.20	45.90	60.30	69.90	87.40	98.20	
50	SFPFG	15.60	21.50	27.10	33.00	40.00	42.60	49.00	55.40	72.90	85.40	97.90	121.40	
8-10	SSFPFG	9.70	12.60	15.40	18.20	21.20	22.60	27.80	32.80	42.30	-	-	-	
12-13	SSFPFG	10.10	13.20	16.20	19.20	22.50	23.90	28.80	33.60	43.60	56.30	-	-	
15-16	SSFPFG	11.00	14.60	18.10	21.60	25.10	26.50	30.40	35.60	45.90	56.70	67.20	-	
18-20	SSFPFG	12.40	16.60	20.70	24.90	28.10	29.60	34.30	40.10	51.70	63.10	74.70	-	
25	SSFPFG	13.10	17.60	22.20	26.70	30.90	32.50	37.50	44.10	57.10	70.20	83.80	-	
30	SSFPFG	13.90	18.90	23.80	28.60	33.20	34.90	40.10	47.00	61.40	75.70	91.20	116.20	
35	SSFPFG	18.20	25.20	32.40	39.40	44.90	47.50	57.00	68.40	89.80	110.70	132.20	164.20	
40	SSFPFG	24.30	34.30	44.40	54.60	62.30	65.90	79.80	96.00	126.70	156.40	187.10	233.00	
50	SSFPFG	32.80	47.40	61.80	76.20	87.30	91.90	112.30	135.50	157.40	194.50	232.90	290.20	

Part Number	Type	€ Unit Price											
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001
8-10	PSFPFG	9.90	12.80	15.80	18.70	21.60	22.50	24.70	27.00	34.60	-	-	-
12	PSFPFG	10.00	13.00	16.00	19.00	22.10	23.10	25.50	27.90	39.00	43.90	-	-
13	PSFPFG	10.10	13.10	16.20	19.10	22.40	23.40	26.00	28.50	39.80	44.70	-	-
15-16	PSFPFG	10.30	13.50	16.70	19.80	23.30	24.40	27.00	29.60	41.30	46.30	54.80	-
18-20	PSFPFG	11.10	14.80	18.30	21.90	25.20	25.90	28.80	31.50	43.80	49.30	54.90	-
25	PSFPFG	13.10	17.60	22.20	26.70	31.50	33.20	36.70	40.10	53.30	60.30	67.60	-
30	PSFPFG	14.60	19.80	25.20	30.50	35.10	36.00	40.20	44.30	58.70	67.30	83.70	103.50
35	PSFPFG	15.30	20.90	26.60	32.30	38.00	39.80	44.90	49.80	66.10	76.80	86.40	107.10
40	PSFPFG	17.00	23.50	30.00	36.50	43.70	46.20	52.40	58.50	77.40	89.70	102.20	126.80
50	PSFPFG	19.10	26.70	34.30	41.80	50.90	54.30	62.70	70.90	93.80	110.00	126.40	157.00
8-10	PSSFPFG	12.40	16.60	20.70	24.90	29.70	31.40	38.80	46.30	60.40	-	-	-
12-13	PSSFPFG	13.00	17.50	22.00	26.50	31.50	33.30	40.50	47.50	62.10	80.80	-	-
15-16	PSSFPFG	14.40	19.60	24.70	29.90	34.20	35.00	42.60	50.40	65.70	81.30	96.80	-
18-20	PSSFPFG	16.30	22.40	28.60	34.70	39.40	40.10	48.60	57.40	74.10	90.80	108.00	-
25	PSSFPFG	17.30	24.00	30.60	37.30	42.60	43.50	52.20	62.80	81.90	101.30	121.10	-
30	PSSFPFG	18.60	25.80	33.10	40.40	46.00	46.80	58.50	70.20	92.30	113.70	135.80	168.70
35	PSSFPFG	24.10	34.10	44.10	54.10	62.00	63.00	79.20	95.30	125.70	155.20	185.60	231.10
40	PSSFPFG	32.70	46.90	61.20	75.60	86.60	88.20	111.40	134.30	177.80	219.90	263.60	328.50
50	PSSFPFG	45.00	65.40	85.80	106.30	122.10	124.40	157.50	190.30	221.30	273.90	328.40	409.50

For D tolerance h5, 2.00 EUR is added to the prices above.

Part Number	Type	€ Unit Price						
		D	Min. L	L51	L101	L151	L201	L301
8	RSFPFG	15.50	17.60	20.20	22.90	25.50	27.30	29.90
10	RSFPFG	15.50	18.20	20.80	24.00	27.80	29.40	32.00
12	RSFPFG	16.10	19.40	22.70	25.90	29.80	32.70	36.60
13	RSFPFG	16.10	19.40	22.70	26.50	30.90	33.90	37.80
15	RSFPFG	17.50	20.90	24.70	29.20	34.50	38.60	43.60
16	RSFPFG	17.50	21.40	25.20	30			





# Shafts -Standard Type / Precision Type-

## -Both Ends Stepped and Female Thread / Both Ends Stepped-

**Price Reduction**  
3%

CAD Data

For Both Ends Female Thread with Wrench Flats, please see P.157

**RoHS**

Type	Both Ends Female Thread			Both Ends Stepped			Material	Hardness	Surface Treatment	D Tolerance			
	Standard	Standard	Standard	Standard	Standard	Standard				D	g6	h5	f8
VFAH	SFAH	SFUH	SFAJ	SFUJ	SFAJ	SFUJ	EN 1.3505 Equivalent	Induction Hardening	-	8	-0.005	0	-0.013
VSAFH	SSFAH	SSFUH	SSFAJ	SSFUJ	SSFAJ	SSFUJ	1.4125/ equivalent	Effective Hardening Depth		13	-0.014	-0.006	-0.035
VPSFAH	PSSFAH	PSSFUH	PSSFAJ	PSSFUJ	PSSFAJ	PSSFUJ	EN 1.3505 Equivalent	EN 1.3505 Equivalent	15	-0.006	0	-0.016	
VRAH	RSFAH	-	RSFAJ	-	-	-	1.4125/ equivalent	EN 1.3505 Equivalent	16	-0.017	-0.008	-0.043	
VSRAH	-	-	-	-	-	-	1.3505/100Cr6	1.4125/105CrMo17	18	-0.007	0	-0.020	
-	-	-	PSFGH	-	-	PSFGJ	1.4125/ equivalent	Equivalent	20	-0.020	-0.009	-0.053	
-	-	-	-	-	-	-	1.1191/CA5E	-	25	-0.009	0	-0.025	
-	-	-	-	-	-	-	1.4301/ X5CrNi18-10	-	30	-0.025	-0.011	-0.064	

Both Ends Female Thread

Both Ends Stepped

**Features of Precision Type**  
Concentricity is  $\square 0.02$   
Squareness is  $\square 0.03$

Surface Treatment Not Applied

Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm).

Part Number	Type	D	L	1mm Increments	F / T	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Precision Type		8	25-296			6	3	300		
Both Ends Female Thread (D Tolerance g6)		10	25-346			6-8	3 4 5	350		0.5 or less
VFAH	SFAH	12	25-346			6-10	3 4 5 6	350		0.3 or less
VSAFH	SSFAH	13	25-346			6-11	3 4 5 6 8	350		1.0 or less
VPSFAH	PSSFAH	15	25-346		2 ≤ F ≤ P x 4	6-13	3 4 5 6 8 10	350		
VRAH	RSFAH	16	25-346		2 ≤ T ≤ P x 4	6-14	3 4 5 6 8 10	350		
VSRAH	-	18	25-346			8-16	4 5 6 8 10 12	350		
		20	25-446			8-17	4 5 6 8 10 12	450		
		25	25-446			8-22	4 5 6 8 10 12 16	450		
		30	25-446			9-27	5 6 8 10 12 16 20 24	450		

Both Ends Female Thread (M + 3 ≤ P is required for P Dimension). For Precision Type, (Y) dimensions need to be Mx4 ≤ (Y). Tap pilot hole may go through.

Part Number	Type	D	L	1mm Increments	F / T	P	M (Coarse Threads) Selection	(Y) Max.	R	C
Standard Type		8	25-796			6	3	800		
Both Ends Female Thread (D Tolerance g6)		10	25-796			6-8	3 4 5	800		0.5 or less
SFAH	SFUH	12	25-996			6-10	3 4 5 6	1000		0.3 or less
VFAH	SFAH	13	25-996			6-11	3 4 5 6 8	1000		1.0 or less
VSAFH	SSFAH	15	25-996		2 ≤ F ≤ P x 4	6-13	3 4 5 6 8 10	1200		
VPSFAH	PSSFAH	16	25-1196		2 ≤ T ≤ P x 4	6-14	3 4 5 6 8 10	1200		
VRAH	RSFAH	18	25-1196			8-16	4 5 6 8 10 12	1200		
VSRAH	-	20	25-1196			8-17	4 5 6 8 10 12	1200		
		25	25-1196			8-22	4 5 6 8 10 12 16	1200		
		30	25-1496			9-27	5 6 8 10 12 16 20 24	1500		
		35	25-1496			9-32	5 6 8 10 12 16 20 24	1500		
		40	25-1496			11-37	6 8 10 12 16 20 24 30	1500		
		50	25-1496			11-47	6 8 10 12 16 20 24 30	1500		

Both Ends Female Thread (M + 3 ≤ P is required for P Dimension). When (MX2.5+4)X2 ≤ (Y), tap pilot hole may go through.

**Price**

Quantity	1-4	5-12	13-19	20-49
Discount Rates	0%	5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	Type	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
8-10	SFAH	8	7.20	10.80	14.40	18.00	19.70	21.50	23.20	25.00	33.30	-	-	-
12	SFAH	12	7.30	10.90	14.50	18.10	20.10	22.00	23.90	25.90	34.50	38.20	-	-
13	SFAH	13	7.40	11.00	14.60	18.20	20.20	22.30	24.10	26.10	35.00	38.90	-	-
15-16	SFAH	15	7.90	11.80	15.80	19.60	21.70	23.70	25.80	27.70	36.70	40.70	46.00	-
18-20	SFAH	18	8.00	11.90	16.00	19.90	22.00	24.30	26.40	28.60	37.90	42.10	46.30	-
25	SFAH	25	11.60	17.30	23.10	28.80	31.60	34.30	37.00	39.70	50.20	57.40	61.00	-
30	SFAH	30	11.90	17.80	23.70	29.50	32.30	35.00	37.80	40.60	51.10	58.30	61.90	90.10
35	SFAH	35	12.40	18.60	24.80	30.90	34.00	37.00	40.00	43.00	53.60	60.80	64.30	92.80
40	SFAH	40	14.10	21.20	28.20	35.30	38.40	41.50	44.60	47.70	58.40	65.60	69.10	108.30
50	SFAH	50	15.40	23.00	30.60	38.20	44.50	50.70	56.70	62.60	73.40	80.20	83.70	130.60
8-10	SSFAH	8	8.40	12.50	16.70	20.90	25.20	29.60	34.00	38.40	48.80	54.40	-	-
12-13	SSFAH	12	9.20	13.70	18.20	22.70	27.30	31.90	36.50	41.10	51.60	57.20	-	-
15-16	SSFAH	15	10.00	15.10	20.20	25.30	30.40	35.50	40.60	45.70	56.20	61.80	-	-
18-20	SSFAH	18	12.20	18.10	24.20	30.30	36.40	42.50	48.60	54.70	65.20	70.80	-	-
25	SSFAH	25	12.80	19.00	25.40	31.70	38.00	44.30	50.60	56.90	67.40	73.00	-	-
30	SSFAH	30	13.30	19.90	26.60	33.00	39.30	45.60	51.90	58.20	68.70	74.30	134.80	-
35	SSFAH	35	19.30	28.90	38.50	48.20	58.40	68.60	78.80	89.00	109.40	129.80	192.80	-
40	SSFAH	40	23.10	34.70	46.30	57.90	69.50	81.10	92.70	104.30	124.90	145.50	239.30	-
50	SSFAH	50	31.00	46.40	61.90	77.40	92.90	108.40	123.90	139.40	159.90	180.40	336.60	-

Both Ends Female Thread

For D tolerance h5, 2.00 EUR is added to the prices above.

For D tolerance h5, 3.90 EUR is added to the prices above. And then the prices on the right page are subtracted.

For D tolerance g6, the prices on the right page are subtracted from the above prices.

Part Number	Type	D	Min. L	L51	L101	L151	L201	L301	L401
8	RSFAH	8	14.50	17.90	22.50	25.90	28.70	31.50	34.20
10	RSFAH	10	14.50	19.00	22.50	28.10	30.80	33.60	36.40
12	RSFAH	12	15.70	20.20	24.80	29.20	33.40	37.30	41.40
13	RSFAH	13	15.80	20.30	24.90	30.50	34.60	38.70	42.70
15	RSFAH	15	17.30	22.20	28.10	34.10	39.30	44.50	49.80
16	RSFAH	16	17.30	23.20	28.10	36.20	41.50	46.70	51.90
18	RSFAH	18	18.60	24.40	30.50	38.60	45.20	51.70	54.20
20	RSFAH	20	19.60	26.60	32.70	41.90	49.60	52.10	59.70
25	RSFAH	25	26.40	36.20	46.20	55.50	65.60	72.40	77.20
30	RSFAH	30	29.90	42.20	49.70	65.50	71.60	83.10	94.60

Part Number	Type	D	Min. L	L101	L201	L401	L601	L801	L1001	L1201
8-10	PSFGH	8	9.30	15.50	19.80	27.00	34.30	-	-	-
12-13	PSFGH	12	9.90	16.50	20.80	27.60	34.70	43.70	-	-
15-16	PSFGH	15	10.10	16.80	21.70	28.20	35.20	43.70	52.50	-
18-20	PSFGH	18	12.10	20.20	24.20	32.50	40.70	48.50	56.70	-
25	PSFGH	25	16.10	26.80	31.30	40.60	55.00	60.20	68.20	-
30	PSFGH	30	16.80	28.10	33.40	44.00	55.80	64.60	73.40	91.90
35	PSFGH	35	18.50	30.90	36.50	46.30	58.70	66.20	74.30	92.80
40	PSFGH	40	21.20	35.20	44.50	53.80	68.00	77.30	86.70	108.30
50	PSFGH	50	22.90	38.20	50.70	62.70	80.10	92.50	104.50	130.60
8-10	PSFGJ	8	14.10	23.50	33.40	46.00	61.30	-	-	-
12-13	PSFGJ	12	15.30	25.60	35.10	47.00	59.30	74.80	-	-
15-16	PSFGJ	15	16.90	28.20	36.50	49.40	62.10	75.80	90.90	-
18-20	PSFGJ	18	20.40	34.00	42.60	56.90	71.00	85.10	98.70	-
25	PSFGJ	25	21.40	35.60	44.50	60.60	76.20	92.20	108.30	-
30	PSFGJ	30	22.40	37.40	48.10	66.60	84.70	103.00	121.30	151.70
35	PSFGJ	35	30.50	50.90	72.40	93.90	115.40	137.00	162.60	203.30
40	PSFGJ	40	36.50	60.90	88.30	115.70	143.00	170.40	202.00	252.40
50	PSFGJ	50	49.00	81.60	121.20	160.90	200.50	240.20	284.00	355.10

For Both Ends Stepped, the right prices are subtracted from the above prices.

**Alterations**

Part Number - L - F - P - M - T - (LKC - WSC...etc.)

SFAH20 - 400 - F25 - P16 - M10 - T20 - LKC

Keyway machining (KC / WKC) only 10 Days (RSFAH and RSFAJ are to be shipped on the 13th day after order)

Alterations	Code	Spec.	Price Adder
LKC	LKC	Alteration to L dimension tolerance [Ordering Code] LKC [Application Notes] Applicable when L=200 or less for precision type Not applicable when D-P ≤ 2 When using LKC, L dimensions can be specified in 0.1 increments. L < 200 → L ± 0.03 200 ≤ L < 500 → L ± 0.05 L ≥ 500 → L ± 0.1	4,00
WSC	WSC	Add wrench flats at two locations [Ordering Code] WSC12-X8 Specify WSC/X in 1mm increments. WSC (X) = 0 or WSC (X) ≥ 1 Not available on the same plane.	8,00
FC	FC	Add set screw flat at one location [Ordering Code] FC10-E8 [Application Notes] Not applicable to precision type Specify FC and E in 1mm increments. FC: 3x30 When 1.5xD < FC, FC/L2 E=0 or E ≥ 2 Can not be used with WFC	2,00
WFC	WFC	Add set screw flats at two locations [Ordering Code] WFC8-A8-E4 [Application Notes] Not applicable to precision type Specify WFC, A and E in 1mm increments WFC: 3x30 When 1.5xD < FC, 2WFC/L2 A (E) = 0 or A (E) ≥ 2 Machining on the same plane is not applicable. Can not be used with FC.	4,00

Part Number	Type	D	Min. L	L51	L101	L201	L301
8	VFAH	8	17.70	21.40	28.00	35.80	-





# Shafts -Standard Type / Precision Type-

## -Both Ends Stepped and Female Thread with Wrench Flats-

Price Reduction  
3%

CAD Data

For Shafts w/o Wrench Flats, please see P.155

**RoHS**

Precision Type	Type				Material	Hardness	Surface Treatment	D Tolerance			
	Standard	Standard	Standard	Standard				D	g6	h5	f8
VFPFH	SSFPFH	SSFHU	-	-	EN 1.3505 Equivalent	Induction Hardening	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 5µ or more	8	-0.005	0	-0.013
VSPFPFH	PSSFPFH	PSSFHU	-	-	EN 1.4125 equivalent	Effective Hardening Depth		10	-0.014	-0.006	-0.035
VRPFH	RSFPFH	RSSFHU	-	-	EN 1.3505 Equivalent	P.104		13	-0.006	0	-0.016
VSRPFH	PSSFPFH	PSSFHU	-	-	EN 1.3505 Equivalent			58HRC~	15	-0.017	-0.008
-	-	-	-	-	1.4125 equivalent	58HRC~		16	-	-	-
-	-	-	-	-	1.3505/100Cr6	56HRC~		18	-	-	-
-	-	-	-	-	1.4125	56HRC~		20	-	-	-
-	-	-	-	-	1.1191/C45E	-		25	-0.007	0	-0.020
-	-	-	-	-	1.4301	-		30	-0.020	-0.009	-0.053
-	-	-	-	-	-	-		35	-0.009	0	-0.025
-	-	-	-	-	-	-	40	-0.025	-0.011	-0.064	

**Features of Precision Type**  
Concentricity is  $\text{M} \leq 0.02$   
Squarness is  $\text{L} \leq 0.03$

Ⓜ + 3 ≤ P is required for P Dimension. Ⓞ For Precision Type, (Y) dimensions needs to be  $Mx4 \leq (Y)$ . Tap pilot hole may go through.

Part Number	Type	1mm Increments				M (Coarse Threads) Selection				Wrench Flats Dimensions		(Y) Max.	R	C
		D	L	F / T	P	W	ℓ <sub>1</sub>							
8	10	12	13	15	16	18	20	25	30	7	8	300	0.5	less
25-296	25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-1196	25-1196	10	10	350	0.3	less
25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-1196	25-1196	13	13	350	0.3	less
25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-1196	25-1196	14	14	350	0.3	less
25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-346	25-1196	25-1196	16	16	350	0.3	less
25-446	25-446	25-446	25-446	25-446	25-446	25-446	25-446	25-1196	25-1196	17	17	450	1.0	less
25-446	25-446	25-446	25-446	25-446	25-446	25-446	25-446	25-1196	25-1196	22	22	450	1.0	less
25-446	25-446	25-446	25-446	25-446	25-446	25-446	25-446	25-1196	25-1196	27	15	450	1.0	less

Part Number	Type	1mm Increments				M (Coarse Threads) Selection				Wrench Flats Dimensions		(Y) Max.	R	C
		D	L	F / T	P	W	ℓ <sub>1</sub>							
8	10	12	13	15	16	18	20	25	30	7	8	800	0.5	less
25-796	25-796	25-996	25-996	25-996	25-996	25-996	25-996	25-1196	25-1196	10	10	1000	0.3	less
25-996	25-996	25-996	25-996	25-996	25-996	25-996	25-996	25-1196	25-1196	11	11	1000	0.3	less
25-996	25-996	25-996	25-996	25-996	25-996	25-996	25-996	25-1196	25-1196	13	13	1000	0.3	less
25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	14	14	1200	0.3	less
25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	16	16	1200	0.3	less
25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	25-1196	17	17	1200	0.3	less
25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	27	27	1500	0.5	less
25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	30	30	1500	0.5	less
25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	36	36	1500	0.5	less
25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	25-1496	41	41	1500	0.5	less

**Price** Volume Discount (Round down to one Cent) P.87

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

Part Number	Type	€ Unit Price											
		D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001
8-10	SFPFH	11,10	14,70	18,30	21,90	25,50	29,10	32,70	36,30	39,90	43,50	47,10	50,70
12-13	SFPFH	11,20	14,80	18,40	22,00	25,60	29,20	32,80	36,40	40,00	43,60	47,20	50,80
15-16	SFPFH	11,80	15,40	19,00	22,60	26,20	29,80	33,40	37,00	40,60	44,20	47,80	51,40
18-20	SFPFH	11,90	15,50	19,10	22,70	26,30	29,90	33,50	37,10	40,70	44,30	47,90	51,50
25	SFPFH	15,50	19,10	22,70	26,30	29,90	33,50	37,10	40,70	44,30	47,90	51,50	55,10
30	SFPFH	15,80	19,40	23,00	26,60	30,20	33,80	37,40	41,00	44,60	48,20	51,80	55,40
35	SFPFH	16,20	19,80	23,40	27,00	30,60	34,20	37,80	41,40	45,00	48,60	52,20	55,80
40	SFPFH	18,00	21,60	25,20	28,80	32,40	36,00	39,60	43,20	46,80	50,40	54,00	57,60
50	SFPFH	19,30	22,90	26,50	30,10	33,70	37,30	40,90	44,50	48,10	51,70	55,30	58,90
8-10	SSFPFH	12,30	15,90	19,50	23,10	26,70	30,30	33,90	37,50	41,10	44,70	48,30	51,90
12-13	SSFPFH	13,00	16,60	20,20	23,80	27,40	31,00	34,60	38,20	41,80	45,40	49,00	52,60
15-16	SSFPFH	13,90	17,50	21,10	24,70	28,30	31,90	35,50	39,10	42,70	46,30	49,90	53,50
18-20	SSFPFH	16,10	19,70	23,30	26,90	30,50	34,10	37,70	41,30	44,90	48,50	52,10	55,70
25	SSFPFH	16,60	20,20	23,80	27,40	31,00	34,60	38,20	41,80	45,40	49,00	52,60	56,20
30	SSFPFH	17,20	20,80	24,40	28,00	31,60	35,20	38,80	42,40	46,00	49,60	53,20	56,80
35	SSFPFH	23,30	26,90	30,50	34,10	37,70	41,30	44,90	48,50	52,10	55,70	59,30	62,90
40	SSFPFH	27,10	30,70	34,30	37,90	41,50	45,10	48,70	52,30	55,90	59,50	63,10	66,70
50	SSFPFH	35,00	38,60	42,20	45,80	49,40	53,00	56,60	60,20	63,80	67,40	71,00	74,60

Part Number	Type	D	€ Unit Price						
			Min. L	L51	L101	L151	L201	L301	L401
8	RSFPFH	18,20	21,60	25,00	28,40	31,80	35,20	38,60	
10	RSFPFH	18,20	22,70	26,10	29,50	32,90	36,30	39,70	
12	RSFPFH	19,40	23,90	27,30	30,70	34,10	37,50	40,90	
13	RSFPFH	19,50	24,00	27,40	30,80	34,20	37,60	41,00	
15	RSFPFH	21,10	25,90	29,70	33,50	37,30	41,10	44,90	
16	RSFPFH	21,10	26,90	31,70	35,50	39,30	43,10	46,90	
18	RSFPFH	22,30	28,10	33,90	37,70	41,50	45,30	49,10	
20	RSFPFH	22,30	30,40	36,20	40,00	43,80	47,60	51,40	
25	RSFPFH	30,10	39,90	49,70	59,50	69,30	79,10	88,90	
30	RSFPFH	33,60	45,90	58,20	70,50	82,80	95,10	107,40	

Part Number	Type	D	€ Unit Price						
			Min. L	L101	L201	L401	L601	L801	L1001
8-10	PFPFGH	13,30	19,50	23,80	28,10	32,40	36,70	41,00	
12-13	PFPFGH	13,90	20,50	24,80	29,10	33,40	37,70	42,00	
15-16	PFPFGH	14,10	20,80	25,10	29,40	33,70	38,00	42,30	
18-20	PFPFGH	16,10	24,20	28,50	32,80	37,10	41,40	45,70	
25	PFPFGH	20,10	30,80	35,10	39,40	43,70	48,00	52,30	
30	PFPFGH	20,80	32,10	36,40	40,70	45,00	49,30	53,60	
35	PFPFGH	22,50	34,90	39,20	43,50	47,80	52,10	56,40	
40	PFPFGH	25,20	39,20	43,50	47,80	52,10	56,40	60,70	
50	PFPFGH	26,90	42,20	46,50	50,80	55,10	59,40	63,70	
8-10	VRPFH	18,10	27,50	37,00	46,50	56,00	65,50	75,00	
12-13	VRPFH	19,30	29,60	39,10	48,60	58,10	67,60	77,10	
15-16	VRPFH	20,90	32,20	41,70	51,20	60,70	70,20	79,70	
18-20	VRPFH	24,40	38,00	47,50	57,00	66,50	76,00	85,50	
25	VRPFH	25,40	39,60	49,10	58,60	68,10	77,60	87,10	
30	VRPFH	26,40	41,40	51,90	61,40	70,90	80,40	89,90	
35	VRPFH	34,50	54,90	64,40	73,90	83,40	92,90	102,40	
40	VRPFH	40,50	64,90	74,40	83,90	93,40	102,90	112,40	
50	VRPFH	53,00	85,60	95,10	104,60	114,10	123,60	133,10	

Part Number	Type	D	€ Unit Price						
			Min. L	L101	L201	L401	L601	L801	L1001
8	VSRPFH	23,70	25,40	32,00	38,60	45,20	51,80	58,40	
10	VSRPFH	23,40	27,10	33,70	40,30	46,90	53,50	60,10	
12	VSRPFH	28,30	32,00	38,60	45,20	51,80	58,40	65,00	
13	VSRPFH	29,90	34,60	41,20	47,80	54,40	61,00		



# Shafts - Standard Type / Precision Type -

-One End Stepped and Both Ends Female Thread / One End Stepped and One End Female Thread-

CAD Data

For One End Stepped and Both Ends Female Thread with Wrench Flats, please see P.161

**RoHS**

Type		Material		Hardness		Surface Treatment	
Both Ends Female Thread		One End Female Thread		M		S	
Prec. type	Standard	D Tolerance	D Tolerance	g6	h5	f8	
VFAA	SFAA	SFUE	SFNA	SFEU	SFNU		EN 1.3505 Equivalent 1.4125 eq.
VFAA	SSFAA	SSFUE	SSFNA	SSFUEU	SSFNU		EN 1.3505 Equivalent 1.4125 eq.
VPFAA	PSFAA	PSFUE	PSFNA	PSFEU	PSFNU		EN 1.3505 Equivalent 1.4125 eq.
VPSFAA	PSSFAA	PSSFUE	PSSFNA	PSSFEU	PSSFNU		1.3505/100Cr6 1.4125 eq.
VRAA	RSFAA	RSFUE	RSFNA	RSFEU	RSFNU		1.4125/100Cr6 1.4125 eq.
VPSRAA	RPSSFAA	RPSFUE	RPSSFNA	RPSFEU	RPSSFNU		1.1191/C45E 1.4301

**D Tolerance**

D	g6	h5	f8
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12			
13			
15	-0.006	0	-0.016
16	-0.017	-0.008	-0.043
18			
20			
25	-0.007	0	-0.020
30	-0.020	-0.009	-0.053
35			
40	-0.009	0	-0.025
50	-0.025	-0.011	-0.064

**Surface Treatment Not Applied**

**Features of Precision Type**  
Concentricity is  $\pm 0.02$   
Squareness is  $\pm 0.03$

**Precision shafts have grinding undercuts at stepped sections (max. width 1mm / max. depth 0.1mm). Grinding undercut (max. width 1mm / max. depth 0.1mm) is added.**

Part Number	D	L	P	M (Coarse Threads) Selection	N (Coarse Threads) Selection	(Y) Max.	R	C
Precision type	8	25-298	6	3	3 4 5	300		0.5 or less
One End Stepped - Both Ends Female Thread	10	25-348	6-8	3 4 5	3 4 5 6	350		
(D Tolerance g6)	12	25-348	6-10	3 4 5 6	4 5 6 8	350		0.3 or less
VFAA	13	25-348	6-11	3 4 5 6 8	4 5 6 8 10	350		
VFAA	15	25-348	6-13	3 4 5 6 8 10	4 5 6 8 10	350		1.0 or less
VPFAA	16	25-348	6-14	3 4 5 6 8 10	4 5 6 8 10	350		
VPSFAA	18	25-348	8-16	4 5 6 8 10 12	4 5 6 8 10 12	350		
VRAA	20	25-448	8-17	4 5 6 8 10 12	4 5 6 8 10 12	450		
VPSRAA	25	25-448	8-22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	450		
VSRAA	30	25-448	9-27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	450		

Part Number	D	L	F	M (Coarse Threads) Selection	N (Coarse Threads) Selection	(Y) Max.	R	C
Standard Type	8	25-798	6	3	3 4 5	800		0.5 or less
One End Stepped - Both Ends Fem. Thread	10	25-798	6-8	3 4 5	3 4 5 6	800		
(D Tolerance h5)	12	25-998	6-10	3 4 5 6	4 5 6 8	1000		0.3 or less
SFAA	13	25-998	6-11	3 4 5 6 8	4 5 6 8	1000		
SFAA	15	25-998	6-13	3 4 5 6 8 10	4 5 6 8 10	1000		1.0 or less
VPFAA	16	25-1198	6-14	3 4 5 6 8 10	4 5 6 8 10	1200		
VPSFAA	18	25-1198	8-16	4 5 6 8 10 12	4 5 6 8 10 12	1200		
VRAA	20	25-1198	8-17	4 5 6 8 10 12	4 5 6 8 10 12	1200		
VPSRAA	25	25-1498	8-22	4 5 6 8 10 12 16	4 5 6 8 10 12 16	1200		
VSRAA	30	25-1498	9-27	5 6 8 10 12 16 20 24	6 8 10 12 16 20	1500		
	35	25-1498	9-32	5 6 8 10 12 16 20 24	8 10 12 16 20 24	1500		
	40	25-1498	11-37	6 8 10 12 16 20 24 30	10 12 16 20 24 30	1500		
	50	25-1498	11-47	6 8 10 12 16 20 24 30	12 16 20 24 30	1500		

**Price**

Quantity	1-4	5-12	13-19	20-49
Discount Rates		5%	10%	15%

RFQ for ordering 50 or more Precision Type Shafts with diameter 30 or more and LTBC plating.

Part Number	D	Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201
SFAA	8-10	5,90	8,90	11,80	14,80	16,20	17,60	19,10	20,60	27,40	-	-	-
SFAA	12-13	6,00	9,00	12,10	15,00	16,70	18,30	19,90	21,50	28,80	32,00	-	-
SFAA	15-16	6,50	9,70	13,00	16,20	17,90	19,40	21,20	22,90	30,30	33,70	37,90	-
SFAA	18-20	6,60	9,80	13,10	16,40	18,30	20,00	21,70	23,50	31,10	34,70	38,20	-
SFAA	25	9,50	14,20	19,10	23,80	26,00	28,20	30,40	32,70	41,30	47,30	50,20	-
SFAA	30	9,80	14,60	19,40	24,40	26,90	29,50	32,00	34,60	43,60	48,80	59,40	74,20
SFAA	35	10,20	15,30	20,30	25,50	28,70	31,80	35,00	38,20	48,30	54,60	61,20	76,50
SFAA	40	11,60	17,50	23,10	29,00	32,90	36,70	40,50	44,40	56,10	63,70	71,60	89,40
SFAA	50	12,60	18,90	25,20	31,50	36,60	41,80	46,70	51,70	66,10	76,20	86,10	107,60
SSFAA	8-10	6,90	10,30	13,70	17,20	20,80	24,50	29,00	33,70	43,30	-	-	-
SSFAA	12-13	7,50	11,30	15,00	18,70	22,30	25,70	30,10	34,70	44,40	54,70	-	-
SSFAA	15-16	8,30	12,40	16,50	20,60	23,80	26,60	31,40	36,10	45,50	55,40	66,50	-
SSFAA	18-20	10,00	15,00	20,00	24,90	28,00	31,10	36,40	41,80	52,00	62,30	72,30	-
SSFAA	25	10,40	15,70	20,90	26,10	29,30	32,50	38,20	44,20	55,80	67,50	79,10	-
SSFAA	30	11,00	16,50	21,90	27,10	31,20	35,20	41,30	47,70	62,00	75,40	88,70	111,10
SSFAA	35	15,40	23,10	30,90	38,50	46,70	54,90	63,10	71,20	87,50	103,90	123,40	154,30
SSFAA	40	18,50	27,70	36,90	46,30	56,90	67,40	77,40	87,70	108,40	129,20	153,10	191,40
SSFAA	50	24,80	37,20	49,50	61,90	77,00	92,00	106,90	122,00	152,00	182,10	215,40	269,40

Part Number	Type	D	Min. L	L51	L101	L151	L201	L301	L401
RSFAA	8	13,10	15,90	19,10	22,50	24,30	26,70	29,20	-
RSFAA	10	13,10	16,40	19,70	23,60	26,50	28,90	31,40	-
RSFAA	12	13,70	17,50	21,40	25,30	28,40	32,10	35,80	-
RSFAA	13	13,70	17,60	21,60	25,90	29,70	33,30	37,10	-
RSFAA	15	15,30	19,40	24,00	29,20	33,50	38,30	43,20	-
RSFAA	16	15,30	19,90	24,60	30,40	35,80	40,40	45,30	-
RSFAA	18	15,90	21,10	26,40	32,70	38,80	44,80	48,80	-
RSFAA	20	16,50	22,70	28,50	35,50	42,60	47,20	51,80	-
RSFAA	25	21,90	30,60	39,60	48,10	55,80	62,70	69,00	-
RSFAA	30	25,00	35,40	44,10	54,80	62,70	71,90	82,80	-

Part Number	Type	D	Min. L	L101	L201	L401	L601	L801	L1001	L1201	L1498
PSFGA	8	9,30	15,40	18,20	21,00	28,10	-	-	-	-	-
PSFGA	10	9,10	14,90	17,30	19,60	30,20	-	-	-	-	-
PSFGA	12	9,00	14,90	17,50	20,00	26,70	-	-	-	-	-
PSFGA	13	9,20	15,20	17,80	20,50	27,40	-	-	-	-	-
PSFGA	15-16	10,10	16,80	19,90	23,00	30,60	33,80	37,90	-	-	-
PSFGA	18-20	10,20	16,80	20,30	23,60	31,20	34,50	37,70	-	-	-
PSNGA	25	14,80	24,70	28,70	32,90	41,50	47,20	49,70	-	-	-
PSNGA	30	17,10	25,50	30,90	36,20	45,60	50,90	61,90	77,50	-	-
PSNGA	35	18,50	30,90	38,40	46,00	58,20	65,70	73,50	92,00	-	-
PSNGA	40	21,20	35,10	44,30	53,50	67,40	76,50	85,80	107,20	-	-
PSNGA	50	24,10	40,60	55,40	69,80	89,40	104,10	118,40	148,10	-	-
PSSFGA	8	11,60	19,30	27,50	37,90	40,10	-	-	-	-	-
PSSFGA	10	11,30	18,60	26,10	35,80	49,50	-	-	-	-	-
PSSFGA	12	12,30	20,40	27,50	36,50	45,90	58,10	-	-	-	-
PSSFGA	13	12,30	20,50	27,70	36,70	46,20	58,40	-	-	-	-
PSSFGA	15-16	14,00	23,00	29,80	40,20	50,50	61,70	73,90	-	-	-
PSSFGA	18-20	16,70	28,00	34,70	46,50	58,00	69,40	80,50	-	-	-
PSSFGA	25	17,50	29,30	36,20	49,20	61,90	74,90	87,80	-	-	-
PSSFGA	30	22,60	34,00	41,90	58,20	74,30	90,50	106,70	133,40	-	-
PSSFGA	35	26,30	44,00	63,40	82,80	102,20	121,50	144,50	180,60	-	-
PSSFGA	40	31,50	52,80	77,40	102,10	126,70	151,40	179,60	224,50	-	-
PSSFGA	50	44,40	74,90	114,60	154,30	194,00	233,70	276,90	346,30	-	-

For One End Stepped and One End Female Thread Shafts, the prices right are subtracted from the above prices.

Part No.	Type	D	Min. L	L51	L101	L201	L301
VFAA	8	14,90	18,20	24,80	32,50	-	-
VFAA	10	16,10	19,50	26,30	34,30	39,40	-
VFAA	12	20,00	24,20	33,20	42,40	48,60	-
VFAA	13	21,30	25,60	34,90	44,40	50,90	-
VFAA	15	22,70	27,10	36,50	46,20	52,90	-
VFAA	16	23,70	28,10	37,40	47,20	53,80	-
VFAA	18	25,50	30,00	39,80	50,10	57,10	-
VFAA	20	28,50	33,10	42,20	53,20	68,70	-
VFAA	25	32,60	37,90	48,40	61,20	79,20	-
VFAA	30	38,90	45,30	58,20	73,70	95,90	-

Part Number	Type	D	Min. L	L
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# Shafts

## -One End Stepped and Male Thread / Both Ends Stepped and Male Thread-

CAD Data

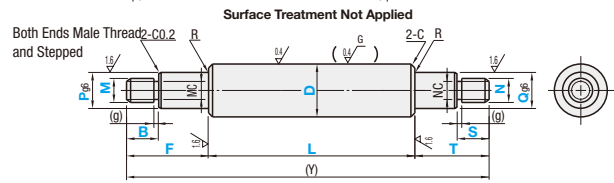
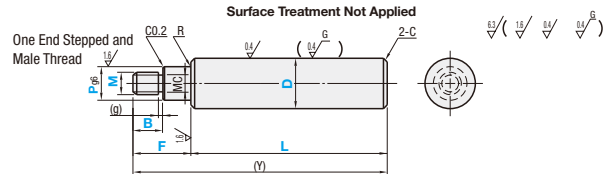
Precision Type selections are available on P.169

RoHS



Type		Material	Hardness	Surface Treatment
One End Stepped and Male Thread	Both Ends Male Thread and Stepped			
SFAX	SUFUF	EN 1.3505 Equivalent	Induction Hardening	-
SSFAF	SSFUF	1.4125/Equivalent	Effective Hardening	
PSFAF	PSFUF	EN 1.3505 Equivalent	Depth	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 5µ or more
PSSFAF	PSSFUF	1.4125/Equivalent	EN 1.3505 Equivalent	
RSFAF	RSFUF	1.3505/100Cr6	EN 1.3505 Equivalent	LTBC
-	-	-	-	
-	-	1.1191/CA5E	50HRC-	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 5µ or more
-	-	1.4301/NCN18-10	50HRC-	

D Tolerance			
D	g6	h5	f8
8	-0.005	-	-0.013
10	-0.014	0	-0.035
12	-	-	-
13	-	-	-
15	-0.006	0	-0.016
16	-0.017	-0.008	-0.043
18	-	-	-
20	-	-	-
25	-0.007	0	-0.020
30	-0.020	-0.009	-0.053
35	-	-	-
40	-0.009	0	-0.025
50	-0.025	-0.011	-0.064



- Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing P.104
- Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. Coaxiality / Changes in Hardness / Male Thread Relief Dimensions P.103
- Features of LTBC P.118

Part Number	Type	1mm Increments					M / N (Coarse) Selection	(Y) Max.	R	C	Undercut Dimensions (Coarse Threads)			
		D	L	F / T	M / S	P / Q					M	N	MC	
8	25-790	8	10	12	13	15	16	18	20	25	30	35	40	50
10	25-790	10	12	13	15	16	18	20	25	30	35	40	50	
12	25-990	12	13	15	16	18	20	25	30	35	40	50		
13	25-990	13	15	16	18	20	25	30	35	40	50			
15	25-990	15	16	18	20	25	30	35	40	50				
16	25-1190	16	18	20	25	30	35	40	50					
18	25-1190	18	20	25	30	35	40	50						
20	25-1190	20	25	30	35	40	50							
25	25-1490	25	30	35	40	50								
30	25-1490	30	35	40	50									
35	25-1480	35	40	50										
40	25-1480	40	50											
50	25-1480	50												

Quantity	Volume Discount (Round down to one Cent) P. 87			
	1-4	5-12	13-19	20-49
Discount Rates	5%	10%	15%	15%

Part Number	Type	€ Unit Price												
		D	Min. L	L51-100	L101-150	L151-200	L201-300	L301-400	L401-500	L501-600	L601-800	L801-1000	L1001-1200	L1201-1490
8	5.30	8.00	10.60	13.30	16.10	18.70	23.40	28.00	37.40	-	-	-	-	-
10	5.50	8.10	10.90	13.50	16.30	19.00	21.90	24.60	32.80	-	-	-	-	-
12	5.60	8.40	11.20	13.90	17.00	20.00	22.90	25.80	39.10	-	-	-	-	-
13	5.70	8.50	11.30	14.20	17.20	20.30	23.40	26.40	39.50	46.10	-	-	-	-
15	5.90	8.70	11.50	14.50	17.50	20.60	23.70	26.70	40.00	46.60	55.90	63.30	-	-
16	6.00	8.80	11.60	14.60	17.60	20.70	23.80	26.80	40.50	47.10	57.40	64.50	-	-
25	10.20	15.30	20.40	25.50	29.70	33.90	38.20	42.50	58.20	66.70	75.20	-	-	-
30	10.60	16.10	21.30	26.70	31.50	36.30	41.20	46.00	63.00	72.50	82.00	102.60	-	-
35	13.60	20.60	27.40	34.10	41.20	48.20	55.30	62.40	85.50	99.00	113.10	141.40	-	-
40	14.90	22.40	29.90	37.30	46.00	54.50	63.00	71.70	97.40	116.30	131.50	164.20	-	-
50	17.10	25.80	34.40	43.00	54.40	65.70	77.20	88.70	120.30	142.40	165.30	206.70	-	-
8	8.30	12.40	16.50	20.60	26.70	32.80	40.90	49.00	65.70	-	-	-	-	-
10	8.30	12.40	16.50	20.60	26.70	32.80	40.90	49.00	65.70	-	-	-	-	-
12	9.40	14.10	18.70	23.40	28.20	34.00	42.20	50.50	67.30	88.80	-	-	-	-
13	9.40	14.10	18.70	23.40	28.20	34.00	42.20	50.50	67.30	88.80	-	-	-	-
15	10.80	16.20	21.60	27.00	33.00	39.00	46.00	54.00	71.30	89.40	107.40	-	-	-
16	12.80	19.30	25.80	32.70	41.80	51.00	61.30	71.70	91.00	100.00	119.90	-	-	-
25	13.80	20.70	27.50	34.40	43.50	52.60	61.70	70.80	91.00	111.50	134.20	-	-	-
30	15.00	22.60	30.50	37.50	46.00	55.00	64.00	73.00	94.00	115.00	138.00	189.00	-	-
35	17.50	26.30	35.10	43.80	55.70	67.70	81.20	94.70	125.00	152.00	179.00	224.00	-	-
40	21.60	32.50	43.30	54.10	68.70	83.30	100.00	116.70	154.00	187.00	221.00	276.60	-	-
50	31.90	48.00	63.90	79.90	97.90	115.70	139.10	162.30	217.30	265.20	313.00	391.40	-	-

For D tolerance h5, 2.00 EUR is added to the prices above.

Part Number	Type	€ Unit Price						
		D	Min. L	L51-100	L101-150	L151-200	L201-300	L301-400
8	12.50	15.00	18.00	21.10	24.20	27.80	33.20	41.80
10	12.70	15.70	18.80	22.40	26.60	30.20	34.00	41.80
12	13.30	17.10	20.80	24.40	28.90	33.90	38.70	47.20
13	13.40	17.20	20.90	25.20	30.20	35.20	40.30	48.90
15	17.90	23.30	29.20	35.80	41.40	47.70	53.90	58.60
16	17.90	23.90	29.70	36.90	43.70	49.80	56.00	60.80
18	18.60	25.20	31.80	39.40	46.90	54.40	59.90	63.30
20	19.20	26.50	33.90	42.20	50.70	58.60	63.00	68.90
25	22.50	31.70	40.80	49.70	59.30	68.00	76.20	80.30
30	25.70	36.80	45.90	57.00	67.00	78.30	91.40	91.40

Part Number	Type	€ Unit Price												
		D	Min. L	L51-100	L101-150	L151-200	L201-300	L301-400	L401-500	L501-600	L601-800	L801-1000	L1001-1200	L1201-1490
8	6.70	10.10	13.50	16.80	21.80	26.70	33.40	40.00	53.40	-	-	-	-	-
10	6.70	10.10	13.50	16.80	21.80	26.70	33.40	40.00	53.40	-	-	-	-	-
12	7.70	11.50	15.20	19.10	23.50	27.90	34.40	41.10	54.80	72.40	-	-	-	-
13	7.70	11.50	15.20	19.10	23.50	27.90	34.40	41.10	54.80	72.40	-	-	-	-
15	8.90	13.30	17.20	22.10	25.70	29.20	36.50	43.70	58.10	77.40	-	-	-	-
16	8.90	13.30	17.20	22.10	25.70	29.20	36.50	43.70	58.10	77.40	-	-	-	-
18	10.50	15.70	20.90	26.10	30.00	34.00	42.00	49.90	66.00	81.90	97.70	-	-	-
25	11.20	16.80	22.30	28.00	32.60	37.00	46.00	55.00	72.00	88.00	108.20	-	-	-
30	12.30	18.40	24.40	30.60	35.90	41.10	51.00	61.70	82.30	102.30	123.00	147.70	-	-
35	16.40	24.70	32.80	41.10	49.60	58.50	70.00	83.00	102.90	119.00	136.10	163.40	-	-
40	18.00	27.00	36.00	45.00	55.00	65.70	78.90	94.00	117.20	138.10	157.90	189.70	-	-
50	20.70	31.00	41.30	51.60	65.40	79.20	92.90	106.60	144.70	171.40	198.80	238.70	-	-
8	12.10	18.20	24.20	30.20	39.30	48.20	62.00	75.60	100.80	-	-	-	-	-
10	12.10	18.20	24.20	30.20	39.30	48.20	62.00	75.60	100.80	-	-	-	-	-
12	13.80	20.70	27.50	34.40	42.10	49.80	61.90	74.00	98.80	130.40	-	-	-	-
13	13.80	20.70	27.50	34.40	42.10	49.80	61.90	74.00	98.80	130.40	-	-	-	-
15	15.90	23.80	31.70	39.60	46.20	52.60	65.70	78.80	104.80	131.40	157.70	-	-	-
16	15.90	23.80	31.70	39.60	46.20	52.60	65.70	78.80	104.80	131.40	157.70	-	-	-
18	18.80	28.20	37.60	46.90	54.20	61.30	75.70	90.10	119.00	147.60	176.10	-	-	-
25	20.30	30.30	40.50	50.60	58.60	66.50	82.90	99.10	131.40	163.70	197.00	-	-	-
30	22.00	33.10	44.10	55.10	64.50	74.00	92.70	111.40	146.60	184.80	221.80	277.30	-	-
35	25.70	38.60	51.40	64.30	81.70	99.20	119.00	139.30	183.40	223.00	262.70	328.50	-	-
40	31.80	47.60	63.50	79.30	100.70	122.00	146.70	171.20	226.30	275.30	324.30	405.40	-	-
50	46.90	70.20	93.70	117.00	143.40	169.70	203.80	238.00	316.30	389.90	459.10	573.80	-	-

Part Number	Type	€ Unit Price						
		D	Min. L	L51-100	L101-150	L151-200	L201-300	L301-400
8	15.50	19.60	24.60	28.50	32.10	35.80	42.90	51.80
10	15.60	20.70	24.70	30.90	34.50	38.20	41.80	51.80
12	16.80	22.10	27.20	32.30	37.30	42.20	47.20	58.60
13	16.90	22.20	27.40	33.60	38.60	43.80	48.90	58.60
15	19.70	25.60	32.70	39.80	46.10	52.30	58.60	70.00
16	19.70	26.60	32.70	42.00	48.30	54.50	60.80	72.40
18	21.10	28.10	35.40	44.80	52.30	59.70	63.	





# Shafts

-One End Stepped and Female Thread - One End Male Thread / One End Stepped - One End Male Thread-

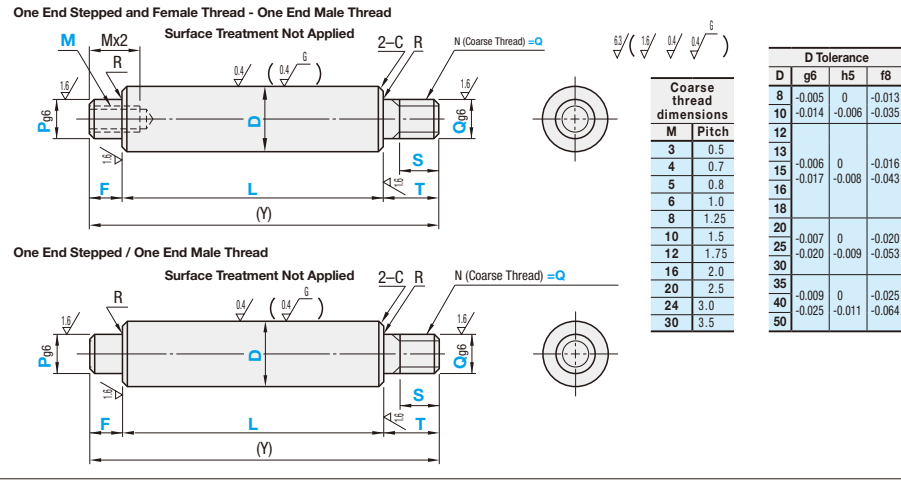
Price Reduction  
3%

CAD Data



RoHS

Type						Material	Hardness	Surface Treatment
One End Stepped and Female Thread - One End Male Thread			One End Stepped / One End Male Thread					
D Tolerance g6	D Tolerance h5	D Tolerance f8	D Tolerance g6	D Tolerance h5	D Tolerance f8	EN 1.3505 Equivalent	Induction Hardening Effective Hardening Depth #P.104	
SFAB	SFUA	-	SFNB	SFUB	-			1.4125/X105CrMo17 equivalent
SSFAB	SSFUA	-	SSFNB	SSFUB	-	1.3505/100C6		
PSFAB	PSFUA	-	PSFNB	PSFUB	-	1.1191/C45E	EN 1.3505 Equivalent 58HRC-1.4125/X105CrMo17 equivalent	
PSSFAB	PSSFUA	-	PSSFNB	PSSFUB	-	1.4301/X5CrNi18-10		
RSFAB	-	-	RSFNB	-	-	-	56HRC-LTBC	
-	-	PSFGB	-	-	PSNGB	-	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 10µ or more	
-	-	PSSFGB	-	-	PSSNGB	-	Hard Chrome Plating Plating Hardness: HV750 - Plating Thickness 10µ or more	



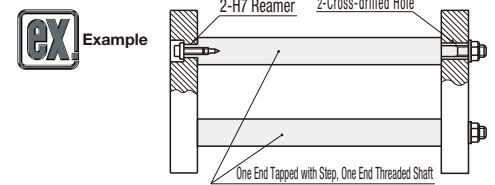
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.  
Changes in Circularity, Straightness, Perpendicularity, Coaxiality and Hardness. #P.103  
Features of LTBC #P.118

Part Number	Type	D	€ Unit Price						
			Min. L / 50	L51 / 100	L101 / 150	L151 / 200	L201 / 300	L301 / 400	L401 / 500
RSFAB RSFNB	8	15,10	18,90	23,80	27,60	30,50	33,50	36,50	
	10	15,10	20,00	23,80	29,80	32,70	35,70	38,70	
	12	16,30	21,20	26,20	31,00	35,30	39,40	43,80	
	13	16,40	21,20	26,40	32,30	36,70	40,80	45,10	
	15	18,10	23,40	29,60	36,00	41,40	46,60	52,20	
	16	18,10	24,40	29,60	38,20	43,70	48,90	54,40	
	18	19,30	25,60	31,90	40,50	47,30	54,00	56,70	
	20	20,30	27,90	34,10	43,80	51,70	54,40	62,30	
	25	27,50	37,80	48,40	58,40	68,70	75,70	80,80	
	30	31,00	43,80	51,80	68,40	74,50	86,40	98,30	

The prices below are subtracted from the above prices.  
Price Deductions for Tap Machining on One End Stepped - One End Male Thread Shafts

D	Price Deductions
8 - 10 - 12 - 13	- 0,80
15 - 16 - 18 - 20 - 25	- 1,20
30 - 35 - 40 - 50	- 1,80

EX) SFNB20-400-F25-P16-T35-S25-Q16  
---27,50-1,20=26,30 EUR



Alterations: Part Number - L - F - P - M - T - S - Q (QMC - QMS) - (LKC...etc.) - LKC-QC

Part Number	Type	D	€ Unit Price							
			Min. L / 100	L101 / 200	L201 / 400	L401 / 600	L601 / 800	L801 / 1000	L1001 / 1200	L1201 / 1496
PSFGB PSNGB	8	12,80	21,20	25,20	29,10	30,40	-	-	-	-
	10	12,50	20,80	24,30	27,70	41,10	-	-	-	-
	12	12,60	20,90	24,70	28,40	38,10	41,70	-	-	-
	13	12,70	21,20	25,00	29,10	38,80	42,90	-	-	-
	15-16	14,00	23,20	27,60	32,10	42,70	47,20	53,00	-	-
	18-20	14,10	23,30	28,30	32,90	43,70	48,20	52,90	-	-
	25	20,40	34,10	40,00	45,80	58,00	66,00	69,70	-	-
	30	22,70	34,40	41,20	47,70	60,00	66,60	81,10	101,40	-
	35	25,00	41,50	51,00	60,50	76,50	85,80	95,70	119,50	-
	40	28,50	47,30	58,60	70,00	88,20	99,60	111,20	138,90	-
50	30,50	50,50	65,40	79,70	101,30	116,30	130,50	163,30	-	
PSSFGB PSSNGB	8	15,90	26,60	37,80	52,10	69,50	-	-	-	-
	10	15,60	25,80	36,50	50,00	67,80	-	-	-	-
	12	17,10	28,40	38,40	51,00	64,30	81,30	-	-	-
	13	17,10	28,40	38,50	51,30	64,50	81,60	-	-	-
	15-16	19,10	31,80	41,10	55,60	69,80	85,10	102,10	-	-
	18-20	23,10	38,50	47,90	64,30	79,90	95,80	111,10	-	-
	25	24,10	40,20	50,00	68,00	85,60	103,40	121,30	-	-
	30	29,10	44,00	53,60	74,30	94,20	114,70	134,90	168,80	-
	35	34,90	58,00	82,10	106,20	130,30	154,40	183,50	229,30	-
	40	41,70	69,30	100,10	130,60	161,40	192,10	227,50	284,40	-
50	55,80	92,60	136,90	181,00	225,40	269,60	318,70	398,40	-	

The left prices are subtracted from the above prices.

DKC alteration was discontinued in June 2010. Please specify new part numbers; SFUG, SSFUG, PSFUG, PSSFUG, SFUC, SSFUC, PSFUC and PSSFUC on the left page. Please specify SFUA, SSFUA, PSFUA, PSSFUA, SFUB, SSFUB, PSFUB and/or PSSFUB to place orders.

Part Number	Type	D	1mm Increments				M (Coarse Threads) Selection	Q Selection	(Y) Max.	R	C
			L	F	T	S					
One End Stepped and Female Thread - One End Male Thread	8	25-796				6-8	3 4 5 6 8 10	3 4 5 6 8 10	800	0.5 or less	
(D Tolerance g6) (D Tolerance h5) (D Tolerance g6) (D Tolerance h5)	10	25-796				6-10	3 4 5 6 8 10 12	4 5 6 8 10 12	800		
SFAB SFUA SFNB SFUB	12	25-996				6-11	3 4 5 6 8 10	5 6 8 10 12	1000		
SSFAB SSFUA SSFNB SSFUB	13	25-996				6-13	3 4 5 6 8 10	5 6 8 10 12	1000		
PSFAB PSFUA PSFNB PSFUB	15	25-996				6-14	3 4 5 6 8 10	5 6 8 10 12 16	1200		
PSSFAB PSSFUA PSSFNB PSSFUB	16	25-1196	2≤F≤P×4	2≤T≤Q×5		8-16	4 5 6 8 10 12	5 6 8 10 12 16	1200		
RSFAB RSFNB	18	25-1196				8-17	4 5 6 8 10 12	6 8 10 12 16 20	1200		
(D≤30, L≤500, Ymax=800) (D≤30, L≤500, Ymax=800)	20	25-1196				8-22	4 5 6 8 10 12 16	8 10 12 16 20 24	1500		
(D Tolerance f8) (D Tolerance f8)	30	25-1496				9-27	5 6 8 10 12 16 20 24	8 10 12 16 20 24 30	1500		
PSFGB PSNGB	35	25-1496				9-32	5 6 8 10 12 16 20 24	10 12 16 20 24 30	1500		
PSSFGB PSSNGB	40	25-1496				11-37	6 8 10 12 16 20 24 30	12 16 20 24 30	1500		
	50	25-1496				11-47	6 8 10 12 16 20 24 30	16 20 24 30	1500		

M + 3 ≤ P is required for P Dimension. L+F dimension needs to be M x 4 or more.  
When D=P, please specify T=S as S dimensions. L and T dimensions, however, have priority to build, thus S dimensions should be T-(Pitch x 2).

Quantity	Volume Discount (Round down to one Cent) #P.87		
	1-4	5-12	13-19
Discount Rates	€ Unit Price	5%	10%
		15%	

Part Number	Type	D	€ Unit Price											
			Min. L / 50	L51 / 100	L101 / 150	L151 / 200	L201 / 300	L301 / 400	L401 / 500	L501 / 600	L601 / 800	L801 / 1000	L1001 / 1200	L1201 / 1496
SFAB SFUA SFNB SFUB	8-10	7,90	11,90	15,80	19,70	21,70	23,60	25,70	27,40	36,60	-	-	-	-
	12-13	8,00	11,90	16,00	19,90	22,10	24,10	26,30	28,40	38,00	42,10	-	-	-
	15-16	8,70	13,00	17,30	21,70	23,90	25,90	28,30	30,40	40,50	45,00	50,70	-	-
	18-20	8,80	13,10	17,40	21,80	24,30	26,70	29,10	31,40	41,60	46,20	50,90	-	-
	25	12,80	19,00	25,50	31,80	34,80	37,70	40,70	43,60	55,20	63,20	67,00	-	-
	30	13,00	19,50	25,90	32,50	35,80	39,30	42,80	46,10	58,20	65,10	79,20	99,10	-
	35	13,60	20,40	27,20	34,00	38,20	42,40	46,80	50,90	64,60	72,90	81,70	102,00	-
	40	15,50	23,20	31,10	38,80	43,90	49,00	54,20	59,20	74,70	85,10	95,50	119,20	-
	50	16,90	25,20	33,70	42,10	48,90	55,70	62,40	69,00	88,00	101,80	114,90	143,70	-
	8-10	9,30	13,80	18,40	22,90	27,90	32,70	38,80	45,10	57,80	-	-	-	-
12-13	10,00	15,10	20,10	25,00	29,60	34,40	40,10	45,90	57,90	73,10	-	-	-	
15-16	11,00	16,50	22,00	27,50	31,70	35,70	42,10	48,40	60,70	74,00	88,70	-	-	
18-20	13,30	20,00	26,60	33,30	37,40	41,50	48,50	55,60	69,40	83,20	96,50	-	-	
25	13,90	20,90	28,00	34,90	39,00	43,40	51,30	59,10	74,40	90,10	105,70	-	-	
30	14,60	21,90	29,30	36,50	41,80	46,90	56,00	65,00	82,60	100,60	118,40	148,20	-	
35	21,20	31,90	42,50	53,00	64,30	75,50	86,70	97,90	120,30	142,70	169,70	212,00	-	
40	25,50	38,20	50,80	63,50	77,80	92,10	106,40	120,50	149,10	177,70	210,50	263,20	-	
50	33,90	51,10	68,10	85,10	105,80	126,50	147,10	167,70	209,10	250,50	296,10	370,30	-	
PSFAB PSFUA PSFNB PSFUB	8-10	9,00	13,20	17,80	22,20	25,40	28,50	33,70	38,80	49,20	-	-	-	-
	12-13	9,50	14,20	18,90	23,60	26,70	29,80	34,80	39,70	49,80	62,60	-	-	-
	15-16	9,70	14,60	19,40	24,10	27,70	31,10	35,80	40,50	50,60	62,60	75,30	-	-
	18-20	11,60	17,40	23,20	28,90	32,00	34,90	40,70	46,70	58,30	69,60	81,40	-	-
	25	15,40	23,10	30,90	38,50	41,80	45,10	51,60	58,20	72,60	86,30	97,90	-	-
	30	16,20	24,20	32,30	40,40	44,20	47,90	55,50	63,20	77,50	92,70	105,30	131,70	-
	35	18,30	27,40	36,50	45,60	51,40	57,00	62,60	68,30	86,70	97,80	109,80	137,20	-
	40	20,80	31,20	41,60	52,00	58,80	65,70	72,60	79,60	100,50	114,10	128,10	160,00	-
	50	22,50	33,80	45,00	56,30	65,60	74,80	83,70	92,70	118,40	136,60	154,40	193,00	-
	8-10	13,90	20,80	27,80	34,70	42,10	49,40	58,80	68,00	90,50	-	-	-	-
12-13	15,00	22,70	30,30	37,70	44,80	51,90	60,70	69,40	87,60	110,50	-	-	-	
15-16	16,70	24,90	33,30	41,70	48,00	53,90	63,50	73,00	91,70	112,00	134,20	-	-	
18-20	20,10	30,20	40,20	50,30	56,70	62,80	73,50	84,20	104,90	125,80	146,00	-	-	
25	21,10	31,60	42,20	52,70	59,30	65,70	77,60	89,50	112,60	136,20	159,90	-	-	
30	22,20													

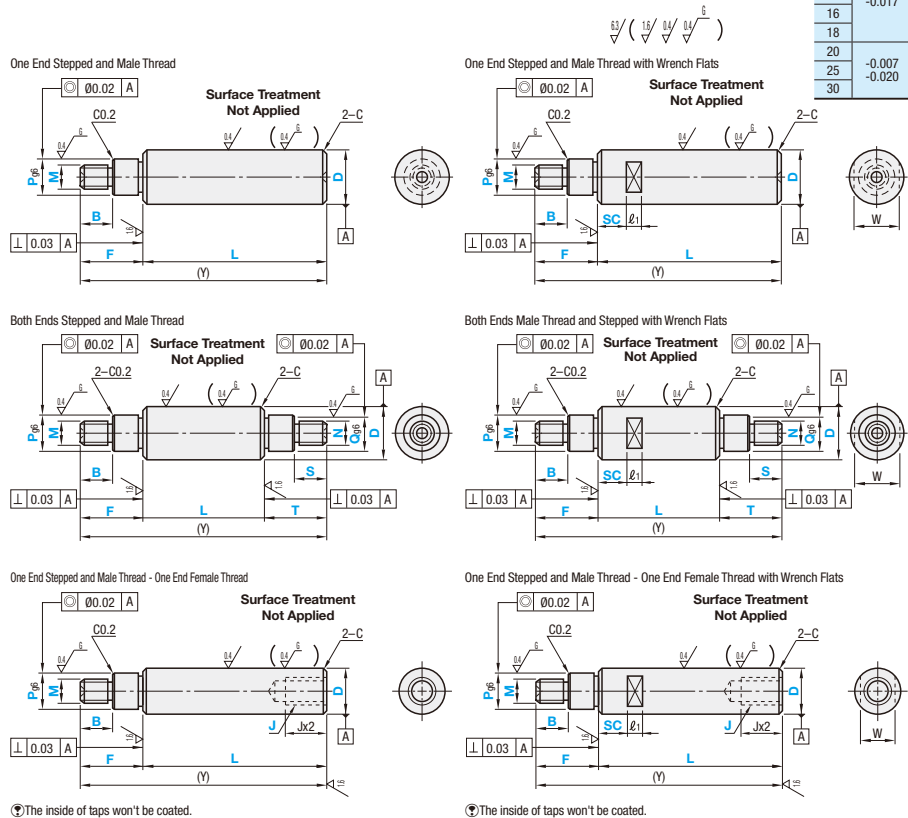
# High Precision Linear Shafts

Stepped Ends · Stepped Ends with Wrench Flats  
 -One End Male Thread · Both Ends Male Thread · One End Male Thread - One End Female Thread-

CAD Data

RoHS

Type		D	Material	Hardness	S Surface Treatment	D Tolerance	
One End Stepped and Male Thread	Both Ends Stepped and Male Thread					Dg6	Dg6
Standard	With Wrench Flats	Standard	With Wrench Flats	Standard	With Wrench Flats	4	-0.004
VFAN	VFPN	VFAM	VFPM	VFAD	VFPD	5	-0.012
VSFAN	VSFPN	VSFAM	VSFPM	VSFAD	VSFPD	8	-0.005
VRAN	VRPN	VRAM	VRPM	VRAD	VRPD	10	-0.014
VSRAN	VSRPN	VSRAM	VSRPM	VSRAD	VSRPD	12	-0.006
						15	-0.017
						16	-0.007
						18	-0.020
						20	-0.007
						25	-0.014
						30	-0.020



- ⊕ Annealing required for machining wrench flats and shaft end threading (effective thread length + approx. 10mm) may lower hardness. P104
- ⊕ Changes in hardness and thread undercut dimensions. P103
- ⊕ There will be centering holes on end faces of the shafts.
- ⊕ Features of LTBC. P118

⊕ The inside of taps won't be coated.

Part Number	Type	1mm Increments					M · N (Coarse) Selection	J (Coarse) Selection	Wrench Flats Dimensions		(Y) Max.	C
		D	L	F · T	B · S	P · Q			W	ℓ <sub>1</sub>		
VFAN	VFPN	(4)	25-195				3	2			200	0.2
VSFAN	VSFPN	(5)	25-295				3 4	2 3			300	or less
VRAN	VRPN	6	25-295				3 4 5	3			300	
VSRAN	VSRPN	8	25-295				3 4 5 6	3 4 5			300	
		10	25-345				4 5 6 8	3 4 5 6			350	
		12	25-345	5 ≤ F ≤ P × 5			5 6 8 10	4 5 6 8			350	0.5
		13	25-345				5 6 8 10	4 5 6 8			350	or less
		15	25-345	5 ≤ T ≤ N × 5			5 6 8 10 12	4 5 6 8 10			350	
		16	25-345				5 6 8 10 12	4 5 6 8 10			350	
		18	25-345				5 6 8 10 12	4 5 6 8 10 12			350	
		20	25-445				6 8 10 12 16	4 5 6 8 10 12			450	
		25	25-445				8 10 12 16 20	4 5 6 8 10 12 16			450	1.0
		30	25-445				8 10 12 16 20 24	6 8 10 12 16 20			450	or less

⊕ For full length L of VFAD, VRAD, VSFAD, VSRAD, VFPD, VSFPD, VRPD, and VSRPD, J x 3 ≤ L is required. ⊕ F-B (T-S) ≥ 2 is required.

⊕ Specify M = 0 when B = 0; N = 0 when S = 0. ⊕ Sizes in ( ) are not applicable to shafts with wrench flats.

**Order Example**

Part Number - L - F - B - P - M - SC  
 VFAN20 - 400 - F30 - B20 - P10 - M8

Part Number - L - F - B - P - M - T - S - Q - N - SC  
 VFPN12 - 300 - F30 - B20 - P10 - M8 - T20 - S10 - Q10 - N6 - SC10

Part Number - L - F - B - P - M - J - SC  
 VSFAD30 - 250 - F50 - B40 - P20 - M16 - J20

Days to Ship **10 Days** Express B 8,00 EUR/unit P88  
 ⊕ A Express Charge of 21,60 EUR for 3 or more identical pieces.  
 ⊕ Express Services not available for LTBC Plated Shafts.

Price Volume Discount (Round down to one Cent) P87

Part Number	Type	D	€ Unit Price				
			Min. L - 50	L51-100	L101-200	L201-300	L301-445
VFAN		4	17,90	22,00	30,00	-	-
		5	18,50	22,40	30,10	39,00	-
		6	18,50	21,70	28,10	35,50	-
		8	19,80	23,20	29,80	37,50	-
		10	21,20	24,60	31,30	39,50	44,30
		12	25,40	29,60	38,60	47,90	53,80
		13	26,80	31,10	40,40	50,10	56,20
		15	28,40	32,80	42,10	52,10	58,30
		16	29,40	33,80	43,10	53,10	59,30
		18	31,40	36,00	45,70	56,20	62,80
		20	34,80	39,40	48,50	59,80	74,30
		25	39,80	45,10	55,60	68,60	85,50
		30	47,30	53,80	66,60	82,50	103,50

Part Number	Type	D	€ Unit Price				
			Min. L - 50	L51-100	L101-200	L201-300	L301-440
VFAM		4	24,30	28,80	36,70	-	-
		5	25,10	29,30	37,10	46,20	-
		6	25,00	28,60	34,90	42,70	-
		8	26,90	30,50	37,10	45,20	-
		10	28,70	32,50	39,20	47,70	54,20
		12	34,30	38,80	47,80	57,50	63,70
		13	36,20	40,80	50,00	60,20	66,60
		15	38,50	43,20	52,60	62,90	69,50
		16	39,80	44,50	53,90	64,20	70,90
		18	42,80	47,70	57,50	68,50	75,40
		20	47,00	51,90	61,00	72,10	87,00
		25	55,40	61,00	71,50	84,40	101,90
		30	68,40	75,20	88,00	104,00	125,80

Part Number	Type	D	€ Unit Price				
			Min. L - 50	L51-100	L101-200	L201-300	L301-445
VFAD		4	20,10	24,30	32,20	-	-
		5	20,80	24,70	32,40	41,30	-
		6	20,70	23,90	30,30	37,80	-
		8	22,10	25,40	32,00	39,80	-
		10	23,40	26,80	33,50	41,80	46,70
		12	27,70	31,80	40,80	50,30	56,20
		13	29,00	33,40	42,60	52,40	58,60
		15	30,60	35,00	44,40	54,40	60,70
		16	31,60	36,00	45,30	55,40	61,70
		18	33,60	38,20	48,00	58,60	65,20
		20	37,10	41,70	50,70	62,10	76,70
		25	42,00	47,30	57,80	70,90	87,90
		30	49,50	56,00	68,80	84,80	105,90

⊕ For "LTBC Plated" shafts, please add low temp chrome plating charges below to the above non-plated shafts unit prices.

Part Number	D	Additional Price				
		Min. L - 50	L51-100	L101-200	L201-300	L301-445
Low Temp Black Chrome Plating Additional Price	4-6	1,00	1,00	1,00	1,00	-
	8 / 10	2,00	2,00	2,00	3,00	5,00
	12 / 13	2,00	2,00	4,00	6,00	8,00
	15 / 16	3,00	3,00	6,00	9,00	12,00

Part Number	Type	D	€ Unit Price				
			Min. L - 50	L51-100	L101-200	L201-300	L301-445
VSFAN		4	21,20	27,70	40,10	-	-
		5	22,40	29,00	41,90	56,40	-
		6	21,40	26,40	36,40	47,70	-
		8	24,30	30,10	41,60	54,60	-
		10	26,30	32,20	44,10	58,10	66,00
		12	33,00	40,60	56,40	73,60	83,70
		13	34,60	42,30	58,30	75,70	85,90
		15	38,50	46,90	58,80	76,10	94,80
		16	39,30	47,30	59,30	76,50	97,70
		18	40,10	47,70	60,20	77,20	99,20
		20	41,60	48,50	62,10	78,60	100,60
		25	48,10	55,80	71,00	89,60	114,60
		30	55,40	63,90	80,80	101,50	129,40

Part Number	Type	D	€ Unit Price				
			Min. L - 50	L51-100	L101-200	L201-300	L301-440
VSFAM		4	28,30	35,10	47,50	-	-
		5	30,10	36,90	49,90	64,70	-
		6	28,80	34,20	44,10	55,80	-
		8	33,00	39,20	50,70	64,10	-
		10	36,10	42,40	54,30	68,70	78,40
		12	45,60	53,60	69,40	87,10	97,60
		13	48,00	56,00	72,00	90,00	100,70
		15	54,30	63,00	72,90	90,70	112,20
		16	55,30	63,60	73,70	91,40	113,70
		18	56,20	64,10	75,40	92,70	115,10
		20	58,00	65,20	78,80	95,30	117,90
		25	69,40	77,40	92,60	111,30	137,10
		30	82,40	91,20	108,10	129,10	158,10

Part Number	Type	D	€ Unit Price				
			Min. L - 50	L51-100	L101-200	L201-300	L301-445
VSFAD		4	23,40	29,90	42,30	-	-
		5	24,70	31,20	44,10	58,70	-
		6	23,60	28,60	38,60	50,00	-
		8	26,50	32,30	43,80	57,00	-
		10	28,50	34,50	46,30	60,40	68,40
		12	35,20	42,80	58,60	75,90	86,10
		13	36,80	44,50	60,50	78,00	88,30
		15	40,70	49,20	61,00	78,40	97,20
		16	41,50	49,60	61,50	78,80	98,70
		18	42,30	50,00	62,40	79,50	100,10
		20	43,80	51,70	64,30	80,90	103,00
		25	50,30	58,00	73,30	91,90	117,00
		30	57,70	66,20	83,10	103,80	131,80

⊕ For "LTBC Plated" shafts, please add low temp chrome plating charges below to the above non-plated shafts unit prices.

Part Number	D	Additional Price				
		Min. L - 50	L51-100	L101-200	L201-300	L301-445
Low Temp Black Chrome Plating Additional Price	18 / 20	5,00	5,00	10,00	15,00	19,00
	25	8,00	8,00	15,00	23,00	32,00
	30	11,00	11,00	22,00	34,00	45,00

Alterations Part Number - L - F - B - P - M (MMC - MMS) - T - J (JSC) - S - Q - N (NMC / NMS) - (LKC)

Alterations	Code	Change to Fine Thread	
		MMC, MMS (Fine Thread)	NMC, NMS (Fine Thread)
Alteration to L Dimension Tolerance	LKC	Change to Fine Thread	JSC (Fine Thread)
Spec.	LKC	Changes the threads to Fine Threads shown in the table below. (MMC and NMC are applicable to Bearing Nut fine thread pitch) (MMS and NMS are applicable to Cylinder fine thread pitch)	Female Thread thread changed to fine thread listed in the table below.
		⊕ Applicable to L dimension 200 or less.	⊕ Applicable to JSC14
		⊕ When using LKC, L dimensions can be specified in 0,1mm increments.	⊕ Specify as J changed to JSC.
		⊕ Not applicable when D-P (Q) ≥ 2	⊕ J dimension is equal to JSC.
			⊕ Only Applicable for V_AD / VS_AD / V_PD / VS_PD
Price Adder	4,00	3,00	3,00

















# Shafts

## -Keyway Type-

CAD Data

**RoHS**

Type		Material	Hardness	Surface Treatment
D Tolerance g6	D Tolerance h5			
SFAK	SFUk	EN 1.3505 Equivalent	Induction Hardening Effective Hardening Depth $\geq$ P.104	-
SSFAK	SSFUK	1.4125/ equivalent		
PSFAK	PSFUk	EN 1.3505 Equivalent	58HRC ~ 1.4125/X105CrMo17 equivalent	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5 $\mu$ or more
PSSFAK	PSSFUK	1.4125/ equivalent		
RSFAK	-	1.3505/100Cr6	56HRC ~	LTBC
-	-	PSFGK	1.1191/C45E	Hard Chrome Plating Plating Hardness: HV750 ~ Plating thickness 10 $\mu$ or more
-	-	PSSFGK	1.4301/X5CrNi18-10	

D Tolerance			
D	g6	h5	f8
6	-0.004	0	-0.010
6	-0.012	-0.005	-0.028
8	-0.005	0	-0.013
10	-0.014	-0.006	-0.035
12	-	-	-
13	-	-	-
15	-0.006	0	-0.016
16	-0.017	-0.008	-0.043
18	-	-	-
20	-	-	-
25	-0.007	0	-0.020
30	-0.020	-0.009	-0.053
35	-	-	-
40	-0.009	0	-0.025
50	-0.025	-0.011	-0.064

Surface Treatment Not Applied

Changes in circularity, straightness, perpendicularity and hardness  $\geq$  P.103

Features of LTBC  $\geq$  P.118

Part Number	Type	1mm Increments			W	H	C
		D	L	F			
(D Tolerance g6) SFAK, SSFAK, PSFAK, PSSFAK, RSFAK (D $\leq$ 30, L $\leq$ 500)	SFUK, SSFUk, PSFUk, PSSFUK	6	20~600	5 $\leq$ F $\leq$ L/2	3.1	3	0.5 or less
		8	20~800				
		10	20~800				
		12	20~1000				
		13	25~1000				
		15	25~1200				
		16	30~1200				
		18	30~1200				
		20	30~1200				
		25	35~1200				
(D Tolerance f8) PSFGK, PSSFGK	PSFGK, PSSFGK	30	35~1500	7 $\leq$ F $\leq$ L/2	5.1	6, 7, 8, 10	1.0 or less
		35	35~1500				
		40	50~1500				
		50	65~1500				

Order Example: Part Number SFAK16, L 265, F F25

Days to Ship: 8 Days, 5 Days, 13 Days (RSFAK)

Express A: 8,00 EUR/unit  $\geq$  P.88

A Express Charge of 21,60 EUR for 3 or more identical pieces.

Alterations Example: Part Number SFAK16, L 625, F F25, LKC

DKC alterations was discontinued in June 2010. Please specify new part numbers; SFUK, SSFUk, PSFUk and PSSFUK to place orders.

Alterations may lower hardness.  $\geq$  P.104

For more than one alteration, 2mm or more separation required between machined sections.  $\geq$  P.106

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats
	DKC	LKC	SC
Code	DKC	LKC	SC
Spec.	Outer diameter tolerance is altered to h5. [Ordering Code] DKC	Changes "L Tolerance". [Ordering Code] LKC L < 200...L $\pm$ 0.03 200 $\leq$ L < 500 ...L $\pm$ 0.05 L $\geq$ 500...L $\pm$ 0.1 When using LKC, L dimensions can be specified in 0.1mm increments.	Adds a wrench flat. [Ordering Code] SC5 SC=1mm Increment SC+ $\ell_1$ $\leq$ L SC=0 or SC $\geq$ 1
	Table of D and h5 Tolerance	Table of D, W, and $\ell_1$	Table of D, W, and $\ell_1$
Price Adder	-	4,00	4,00

Price

Volume Discount (Round down to one Cent) P.87

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Part Number	Type	D	€ Unit Price												
			Min. L	L51	L101	L151	L201	L301	L401	L501	L601	L801	L1001	L1201	
SFAK	SFUK	6	4,40	6,60	8,70	11,00	13,10	13,70	15,40	17,10	-	-	-	-	-
		8	4,40	6,60	8,70	11,00	13,10	13,70	15,40	17,10	22,90	-	-	-	-
		10	4,50	6,80	9,00	11,30	13,50	14,20	15,80	17,60	23,40	-	-	-	-
		12	4,60	6,90	9,30	11,50	14,00	14,70	16,60	18,40	26,80	30,60	-	-	-
		13	4,60	6,90	9,30	11,60	14,00	14,90	16,70	18,70	27,50	31,20	-	-	-
		15	4,90	7,30	9,70	12,20	14,90	15,80	17,60	19,60	28,50	32,50	39,10	-	-
		16	5,50	8,30	11,00	13,80	16,20	16,70	19,00	21,20	30,40	34,70	39,20	-	-
		18	5,50	8,30	11,00	13,80	16,20	16,70	19,00	21,20	30,40	34,70	39,20	-	-
		20	5,50	8,30	11,00	13,80	16,20	16,70	19,00	21,20	30,40	34,70	39,20	-	-
		25	6,80	10,40	14,00	17,50	21,20	22,30	25,00	27,70	37,80	43,20	48,80	-	-
SSFAK	SSFUK	30	7,90	12,20	16,30	20,30	23,90	24,60	27,80	31,00	41,90	48,60	61,10	76,30	
		35	8,50	13,00	17,40	21,60	26,10	27,50	31,30	35,20	47,70	55,80	63,20	79,00	
		40	9,70	15,00	19,90	24,90	30,50	32,50	37,20	41,90	56,30	65,90	75,40	94,20	
		50	-	17,40	23,10	29,00	36,00	38,60	45,00	51,40	68,90	81,40	93,90	117,40	
		6	5,50	8,40	11,10	13,90	17,00	18,10	23,00	28,00	-	-	-	-	
		8	5,50	8,40	11,10	13,90	17,00	18,10	23,00	28,00	37,30	-	-	-	
		10	5,70	8,60	11,40	14,20	17,50	18,60	23,80	28,80	38,30	-	-	-	
		12	6,10	9,20	12,20	15,30	18,70	19,90	24,80	29,60	39,60	52,30	-	-	
		13	6,10	9,20	12,20	15,30	18,70	19,90	24,80	29,60	39,60	52,30	-	-	
		15	7,00	10,60	14,10	17,60	20,60	21,10	26,40	31,60	41,90	52,70	63,20	-	
PSFAK	PSFUk	18	8,40	12,60	16,70	20,90	24,10	24,60	30,30	36,10	47,70	59,10	70,70	-	
		25	8,80	13,60	18,20	22,70	26,40	26,90	33,50	40,10	53,10	66,20	79,80	-	
		30	9,60	14,90	19,80	24,80	28,60	29,20	37,10	45,00	60,20	74,70	89,70	112,20	
		35	13,80	21,20	28,40	35,40	40,90	41,70	53,00	64,40	85,80	106,70	128,20	160,20	
		40	19,70	30,30	40,40	50,60	58,30	59,50	75,80	92,00	122,70	152,40	183,10	229,00	
		50	-	43,30	57,80	72,20	83,30	85,00	108,30	131,50	153,40	190,50	228,90	286,20	
		6	5,70	8,60	11,40	14,20	17,10	17,90	20,10	22,30	-	-	-	-	
		8	5,70	8,60	11,40	14,20	17,10	17,90	20,10	22,30	29,60	-	-	-	
		10	5,90	8,80	11,80	14,70	17,60	18,50	20,70	23,00	30,60	-	-	-	
		12	6,00	9,00	12,00	15,00	18,10	19,10	21,50	23,90	35,00	39,90	-	-	
PSSFAK	PSSFUK	13	6,10	9,10	12,20	15,10	18,40	19,40	22,00	24,50	35,80	40,70	-	-	
		15	6,30	9,50	12,70	15,80	19,30	20,40	23,00	25,60	37,30	42,30	50,80	-	
		18	7,10	10,80	14,30	17,90	21,20	21,90	24,80	27,50	39,80	45,30	50,90	-	
		25	8,80	13,60	18,20	22,70	27,50	28,20	32,70	36,10	49,30	56,30	63,60	-	
		30	10,40	15,80	21,20	26,50	31,10	32,00	36,20	40,30	54,70	63,30	79,70	99,50	
		35	11,00	16,90	22,60	28,30	34,00	35,80	40,90	45,80	62,10	72,80	82,40	103,10	
		40	12,70	19,50	26,00	32,50	39,70	42,20	48,40	54,50	73,40	85,70	98,20	122,80	
		50	-	22,70	30,30	37,80	46,90	50,30	58,70	66,90	89,80	106,00	122,40	153,00	
		6	8,10	12,20	16,20	20,30	24,90	26,60	33,80	41,00	-	-	-	-	
		8	8,10	12,20	16,20	20,30	24,90	26,60	33,80	41,00	54,70	-	-	-	
RSFAK	RSFUk	10	8,40	12,60	16,70	20,90	25,70	27,40	34,80	42,30	56,40	-	-	-	
		12	9,00	13,50	18,00	22,50	27,50	29,30	36,50	43,50	58,10	76,80	-	-	
		13	10,40	15,60	20,70	25,90	30,20	31,00	38,60	46,40	61,70	77,30	92,80	-	
		15	12,30	18,40	24,60	30,70	35,40	36,10	44,60	53,00	70,10	86,80	104,00	-	
		18	14,20	21,80	29,10	36,40	42,00	42,80	54,50	66,20	88,30	109,70	131,80	164,70	
		25	19,50	30,10	40,10	50,10	58,00	59,00	75,20	91,30	121,70	151,20	181,60	227,10	
		35	27,90	42,90	57,20	71,60	82,60	84,20	107,40	130,30	173,80	215,90	259,60	324,50	
		40	-	61,40	81,80	102,30	118,10	120,40	153,50	186,30	217,30	269,90	324,40	405,50	
		50	11,70	13,70	15,70	17,80	19,80	21,40	23,00	-	-	-	-	-	
		8	11,70	13,70	15,70	17,80	19,80	20,90	22,50	25,20	-	-	-	-	
10	11,80	13,90	15,90	17,90	19,20	20,30	21,90	24,70	-	-	-	-			
12	11,90	15,10	18,50	21,60	25,00	27,90	31,80	-	-	-	-	-			
13	11,90	15,10	18,50	21,70	26,10	29,20	33,00	-	-	-	-	-			
15	13,20	16,60	19,90	24,40	29,20	33,20	38,20	-	-	-	-	-			
16	13,20	16,60	21,00	24,40	31,30	35,50	40,40	-	-	-	-	-			
18	13,80	18,60	23,30	28,10	34,70	39,60	46,10	-	-	-	-	-			
20	13,80	19,70	25,50	30,30	38,00	43,90	46,50	-	-	-	-	-			
25	17,20	25,00	32,70	40,30	47,70	54,10	62,80	-	-	-	-	-			
30	20,40	29,90	40,30	45,90	57,30	63,10	74,60	-	-	-	-	-			

For D tolerance h5, 2,00 EUR is added to the prices above.

Part Number	Type	D	€ Unit Price							
			Min. L	L101	L201	L401	L601	L801	L1001	L1201
6	6,30	10,40	14,60	18,20	-	-	-	-	-	
8	6,10	10,20	14,00	17,30	21,00	-	-	-	-	
10	6,00	10,00	13,60	16,50	21,90	-	-	-	-	
12	6,10	10,10	13,90	16,90	25,00	28,20	-	-	-	
13	6,30	10,30	14,10	17,60	26,00	29,30	-	-	-	
15-16	6,80	11,30	15,80	19,60	28,70	32,60	39,10	-	-	
18	7,70	12,70	16,90	21,10	30,50	34,70	39,10	-	-	
20	7,70	12,70	16,90	21,10	30,50	34,70	38,80	-	-	
25	11,10	13,60	22,50	27,50	37,70	42,80	48,10	-	-	
30	11,40	18,90	25,00	31,10	42,40	48,90	61,60	76,90	-	
35	13,70	22,60	31,20	39,40	53,60	62,40	70,20	87,80	-	
40	15,80	25,90	36,70	46,80	62,90	73,10	83,30	104,00	-	
50	29,20	32,20	48,00	63,80	85,80	101,30	117,00	146,30	-	
6	8,70	14,60	21,30	32,90	-	-	-	-	-	
8	8,50	14,00	20,30	31,30	47,00	-	-	-	-	
10	8,40	13,80	19,60	30,20	40,30	-	-	-	-	
1										



# Shafts

## -One End Tapered - One End Female Thread / One End Stepped and Female Thread / One End Male Thread-

CAD Data

Hardness of J+10 area will be lower due to annealing required for machining. Case hardening and plating layers do not remain on the tapered area.

### One End Tapered - One End Female Thread

Type	Material	Hardness	Surface Treatment
SFTF	SFLU	EN 1.3505 Equivalent	Induction Hardening
SSFTF	SSFLU	1.4125 equivalent	Effective Hardening Depth $\geq$ P104
PSFTF	PSFLU	EN 1.3505 Equivalent	EN 1.3505 Equivalent 58HRC~
PSSFTF	PSSFLU	1.4125 equivalent	1.4125(X105CrMo17 equivalent) 56HRC~

Without Surface Treatment

Changes in circularity, straightness, perpendicularity and hardness  $\geq$  P103  
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

### One End Tapered - One End Stepped and Female Thread

Type	Material	Hardness	Surface Treatment
SFTG	SFJU	EN 1.3505 Equivalent	Induction Hardening
SSFTG	SSFJU	1.4125 equivalent	Effective Hardening Depth $\geq$ P104
PSFTG	PSFJU	EN 1.3505 Equivalent	EN 1.3505 Equivalent 58HRC~
PSSFTG	PSSFJU	1.4125 equivalent	1.4125(X105CrMo17 equivalent) 56HRC~

Without Surface Treatment

Changes in circularity, straightness, perpendicularity, coaxiality and hardness  $\geq$  P103  
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

### One End Tapered - One End Male Thread

Type	Material	Hardness	Surface Treatment
SFTN	SFKU	EN 1.3505 Equivalent	Induction Hardening
SSFTN	SSFKU	1.4125 equivalent	Effective Hardening Depth $\geq$ P104
PSFTN	PSFKU	EN 1.3505 Equivalent	EN 1.3505 Equivalent 58HRC~
PSSFTN	PSSFKU	1.4125 equivalent	1.4125(X105CrMo17 equivalent) 56HRC~

Without Surface Treatment

Changes in circularity, straightness, perpendicularity, coaxiality and hardness  $\geq$  P103  
Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

### One End Tapered - One End Female Thread

Part Number	D	L	J	M (Coarse Threads) Selection	C
SFTF	6	25-200	5-7	3	0.5 or less
SSFTF	8	25-200	5-10	3 4 5	
PSFTF	10	30-200	5-14	3 4 5 6	
PSSFTF	12	40-300	5-18	4 5 6 8	
	13	40-300	5-20	4 5 6 8 10	
	15	50-300	10-24	4 5 6 8	
	16	50-500	10-25	4 5 6 8 10 12	
	18	60-500	10-28	4 5 6 8 10 12	
	20	60-500	10-32	4 5 6 8 10 12	

L needs to be L-J $\geq$ 20

### One End Tapered - One End Female Thread Types

Part Number	D	L	F	P	J	M (Coarse Threads) Selection	(Y) Max.	R	C
SFTG	8	25-198	2 $\leq$ F $\leq$ Px4	6	5-10	3	200	0.3 or less	0.5 or less
SSFTG	10	30-198		6-8	5-14	3 4 5	200		
PSFTG	12	40-298		6-10	5-18	3 4 5 6	300		
PSSFTG	13	40-298		6-11	5-20	3 4 5 6 8	300		
	15	50-298		6-13	10-24	3 4 5 6 8 10	300		
	16	50-498		6-14	10-25	3 4 5 6 8 10 12	500		
	18	60-498		8-16	10-28	4 5 6 8 10 12	500		
	20	60-498		8-17	10-32	4 5 6 8 10 12	500		

M + 3  $\leq$  P is required for P Dimension. L needs to be L-J $\geq$ 20

### One End Tapered - One End Male Thread

Part Number	D	L	F	B	P Selection	1mm Increments	(Y) Max.	R	C
SFTN	6	25-198	2 $\leq$ F $\leq$ Px5	B $\leq$ F-2	3 4 5 6	5-7	200	0.3 or less	0.5 or less
SSFTN	8	25-198		(When P $\leq$ 6)	3 4 5 6 8	5-10	200		
PSFTN	10	30-198		B $\leq$ F-3	4 5 6 8 10	5-14	200		
PSSFTN	12	40-298		(When P=8/10)	5 6 8 10 12	5-18	300		
	13	40-298		B $\leq$ F-5	5 6 8 10 12	5-20	300		
	15	50-298		(When P $\leq$ 12)	5 6 8 10 12	10-24	300		
	16	50-498		B=0	5 6 8 10 12 16	10-25	500		
	18	60-498		(When without threads)	5 6 8 10 12 16	10-28	500		
	20	60-498			5 6 8 10 12 16 20	10-32	500		

When D=P, please specify F=B as B dimensions. L and F dimensions, however, have priority to build, thus B dimensions should be F-(Pitch x 2).

Thread machining will not be applied when B = 0 is specified. L needs to be L-J $\geq$ 20 B  $\geq$  Pitch x 3 is required.

Order Example

One End Tapered - One End Female Thread

Part Number - L - J - M

SFTF20 - 350 - J15 - M6

One End Tapered - One End Stepped and Female Thread

Part Number - L - F - P - J - M

SFTG20 - 350 - F25 - P16 - J10 - M8

One End Tapered - One End Male Thread

Part Number - L - F - B - P - J

SFTN20 - 350 - F40 - B30 - P10 - J10

Price

Volume Discount (Round down to one Cent) P87

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

### One End Tapered - One End Female Thread

Part Number	D	Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-500
SFTF	6	6.10	9.20	12.20	15.20	-	-	-
SSFTF	8	6.20	9.20	12.30	15.30	-	-	-
PSFTF	10	6.20	9.30	12.30	15.50	-	-	-
PSSFTF	12	6.30	9.50	12.70	15.80	18.50	-	-
	13	6.30	9.50	12.70	15.80	18.70	-	-
	15	9.00	13.80	18.30	22.80	25.90	-	-
	16	9.00	13.80	18.30	22.80	25.90	28.90	32.00
	18-20	-	13.80	18.50	23.10	26.40	29.60	32.90
SSFTF	6	8.90	13.30	17.70	22.20	-	-	-
SSFTF	8	8.90	13.30	17.70	22.20	-	-	-
SSFTF	10	8.90	13.30	17.70	22.20	-	-	-
SSFTF	12	9.60	14.50	19.40	24.10	28.70	-	-
SSFTF	13	9.60	14.50	19.40	24.10	28.70	-	-
SSFTF	15	11.30	16.80	22.50	28.10	32.00	-	-
SSFTF	16	11.30	16.80	22.50	28.10	32.00	35.70	43.70
SSFTF	18-20	-	19.40	25.90	32.50	36.60	40.90	49.10

For D tolerance h5, 2,00 EUR is added to the prices above.

### One End Tapered - One End Female Thread Types

Part Number	D	Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-498
SFTG	8-10	9.50	14.40	19.10	23.90	-	-	-
SSFTG	12	9.60	14.50	19.40	24.10	26.80	-	-
PSFTG	13	9.80	14.60	19.40	24.30	27.00	-	-
PSSFTG	15	10.50	15.70	21.00	26.20	28.90	-	-
	16	10.50	15.70	21.00	26.20	28.90	31.60	34.40
	18-20	-	15.80	21.20	26.50	29.50	32.50	35.30
SSFTG	8-10	11.20	16.60	22.20	27.80	-	-	-
SSFTG	12-13	12.10	18.30	24.30	30.30	36.00	-	-
SSFTG	15	13.30	20.10	26.60	33.40	38.30	-	-
SSFTG	16	13.30	20.10	26.60	33.40	38.30	43.30	50.90
SSFTG	18-20	-	24.10	32.30	40.30	45.40	50.40	59.00

For D tolerance h5, 2,00 EUR is added to the prices above.

### One End Tapered - One End Male Thread

Part Number	D	Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-498
SFTN	6-8-10	7.70	11.50	15.30	19.10	-	-	-
SSFTN	12	7.70	11.50	15.50	19.40	21.30	-	-
PSFTN	13	7.70	11.70	15.70	19.40	21.50	-	-
PSSFTN	15	8.40	12.60	16.80	21.00	23.20	-	-
	16	8.40	12.60	16.80	21.00	23.20	25.20	27.50
	18-20	-	12.70	16.90	21.20	23.70	25.90	28.20
SSFTN	6-8-10	8.90	13.30	17.70	22.20	-	-	-
SSFTN	12-13	9.60	14.60	19.40	24.30	28.90	-	-
SSFTN	15	10.70	16.10	21.30	26.60	30.80	-	-
SSFTN	16	10.70	16.10	21.30	26.60	30.80	34.60	40.80
SSFTN	18-20	-	19.40	25.90	32.30	36.40	40.20	47.20

For D tolerance h5, 2,00 EUR is added to the prices above.



Alterations

One End Tapered - One End Female Thread

Part Number - L - J - M - (LKC - SC)

SFTF20 - 350 - J15 - M6 - LKC

One End Tapered - One End Stepped and Female Thread

Part Number - L - F - P - J - M - (SC)

SFTG20 - 350 - F25 - P16 - J10 - M8 - SC5

One End Tapered - One End Male Thread

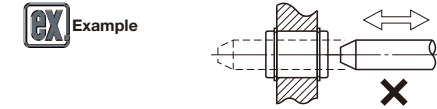
Part Number - L - F - B - P - J - (SC)

SFTN20 - 350 - F40 - B30 - P10 - J10 - SC5

Days to Ship

8 Days Express A 8,00 EUR/unit P88

5 Days Express Charge of 21,60 EUR for 3 or more identical pieces.



Not suitable for usage requiring frequent insertions with Linear Bushings. (due to potential breakage of Linear Bushings)

Part Number	D	Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-500
PSFTF	6	8.10	12.10	16.20	20.30	-	-	-
PSFTF	8-10	7.70	11.40	15.30	19.10	-	-	-
PSFTF	12-13	8.20	12.40	16.50	20.60	24.60	-	-
PSFTF	15	9.60	14.40	19.30	24.00	27.50	-	-
PSFTF	16	9.60	14.40	19.30	24.00	27.50	30.80	37.50
PSFTF	18-20	-	16.60	22.20	27.80	31.50	35.10	42.20
PSSFTF	6-8-10	13.10	19.50	26.00	32.70	-	-	-
PSSFTF	12-13	14.00	21.20	28.20	35.30	42.00	-	-
PSSFTF	15	16.60	24.80	33.10	41.30	46.80	-	-
PSSFTF	16	16.60	24.80	33.10	41.30	46.80	52.50	64.10
PSSFTF	18-20	-	28.50	38.00	47.60	53.70	59.90	72.20

Part Number	D	Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-498
PSFTG	8-10	10.80	16.10	21.40	26.90	-	-	-
PSFTG	12-13	11.40	17.20	22.90	28.70	32.50	-	-
PSFTG	15	11.80	17.60	23.40	29.30	33.60	-	-
PSFTG	16	11.80	17.60	23.40	29.30	33.60	37.70	43.40
PSFTG	18-20	-	21.20	28.10	35.10	38.60	42.20	49.50
PSSFTG	8-10	16.40	24.50	32.70	40.90	-	-	-
PSSFTG	12-13	17.70	26.80	35.60	44.60	52.80	-	-
PSSFTG	15	19.60	29.40	39.20	49.10	56.30	-	-
PSSFTG	16	19.60	29.40	39.20	49.10	56.30	63.50	74.80
PSSFTG	18-20	-	35.50	47.40	59.20	66.70	74.20	86.70

Part Number	D	Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-498
PSFTN	6-8-10	8.60	12.80	17.20	21.40	-	-	-
PSFTN	12-13	9.20	13.80	18.40	22.90	25.90	-</	



# Shafts

-One End Stepped / One End Female Thread Hollow Shafts-

CAD Data

Type	Material	Hardness	Surface Treatment
SPJA			
PSPJA	1.3505/100Cr6	Induction Hardening Effective Hardening Depth: P104 58HRC~	Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5µ or more
RSPJA			LTBC

Features of LTBC: P118  
 Changes in circularity, straightness, perpendicularity and hardness: P103  
 LTBC plating is not applied to the inside of hollow shafts, taps, bored holes and lateral holes, and may rust.  
 Shaft End Machined Area (Effective Thread Length + approx. 10mm) hardness may be reduced by annealing.

About hollow shaft wall thickness deviations: P184

Part Number	1mm Increments			M (Coarse Threads) Selection	(Y) Max.	d	R	C
	Type	Dg6	L					
SPJA	6	-0.004 -0.012	25~ 598	5≤P<D	3	600	2	0.5 or less
	8	-0.005 -0.014	25~ 798	6≤P<D	4 5	800	3	
	10	-0.006 -0.017	25~ 998	7≤P<D	5 6	800	4	
	12	-0.006 -0.017	25~ 998	10≤P<D	8 T1(RC1/8)	1000	6	
	13	-0.006 -0.017	25~ 998	10≤P<D	10 T1(RC1/8)	1000	7	
	16	-0.007 -0.020	25~1198	13≤P<D	12 T2(RC1/4)	1200	10	
	20	-0.007 -0.020	25~1198	16≤P<D	16 T3(RC3/8)	1200	14	
	25	-0.007 -0.020	25~1198	20≤P<D	20	1200	16	
	30	-0.009 -0.025	25~1498	22≤P<D	20	1500	17	
	35	-0.009 -0.025	25~1498	24≤P<D	24	1500	19	
PSPJA	40	-0.009 -0.025	25~1498	25≤P<D	24 30	1500	20	1.0 or less
	40	-0.009 -0.025	25~1498	32≤P<D	30	1500	26	
	50	-0.009 -0.025	25~1498	32≤P<D	30	1500	20	

When T1, T2 or T3 is selected as M, tapered thread machining is applied. (Ordering Code: MT1)  
 Overall length L requires Mx3≤L

**Order Example**  
 Part Number - L - F - P - M  
 SPJA20 - 277 - F25 - P16 - M16

**Days to Ship**  
 8 Days 5 Days -RSPJA 13 Days  
 Express A 8,00 EUR/unit P88  
 A Express Charge of 21,60 EUR for 3 or more identical pieces.

**Alterations**  
 Part Number - L - F - P - M - (DKC-LKC-SC)  
 SPJA20 - 277 - F25 - P16 - M16 - LKC

**Price**  
**Volume Discount** (Round down to one Cent) P87

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

Alterations	Revise O.D. Tolerance (Precision Grade)	Alteration to L Dimension Tolerance	Wrench Flats
Code	DKC	LKC	SC
Spec.	Outer diameter tolerance is altered to h5. Ordering Code DKC	Changes "L Tolerance". Ordering Code LKC L<200→L±0.03 200≤L<500 →L±0.05 L≥500→L±0.1 When using LKC, L dimensions can be specified in 0.1mm increments. When D-P (Q)≤2	Adds a wrench flat. Ordering Code SC5 SC=1mm Increment SC=0 or SC≥1
Price Adder	2,00	4,00	4,00

Alterations may lower hardness. P104

Part Number	Type	D	€ Unit Price											
			Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-500	L501-600	L601-800	L801-1000	L1001-1200	L1201-1498
SPJA	6													
	8													
	10													
	12													
	13													
	16													
	20													
	25													
	30													
	35													
PSPJA	40													
	40													
	50													
	6													
	8													
	10													
	12													
	13													
	16													
	20													
25														
30														
35														
40														
50														

Low Temp Black Chrome Plating Additional Price	D	Additional Price							
		Min. L - 50	L51-100	L101-150	L151-200	L201-300	L301-400	L401-500	L501-600
6									
8									
10									
12									
13									
16									
20									
25									
30									

For Low Temp Chrome Plated Shafts, please add low temp chrome plating charges to the above non-plated shaft unit prices.  
 EX:RSPJA20-277-F25→14,30+33,00=47,30 EUR  
 Features of LTBC: P118

# Shafts

-Continuous Support - Predrilled and Female Thread-

CAD Data

Type	Material	Hardness	Surface Treatment
SFAE	1.3505/100Cr6		
SSFAE	1.4125/X105CrMo17 equivalent	Induction Hardening Effective Hardening Depth: P104 1.3505/100Cr6 58HRC~	
PSFAE	1.3505/100Cr6		Hard Chrome Plating Plating Hardness: HV750 ~ Plating Thickness 5µ or more
PSSFAE	1.4125/X105CrMo17 equivalent	1.4125/X105CrMo17 equivalent 58HRC~	

Changes in circularity, straightness, perpendicularity and hardness: P103

Part Number	L 1mm Increments		M (Coarse Thread)	P	h	C	A	F
	Type	Dg6						
SFAE PSFAE	10	-0.005 -0.014	200~ 800	M4	100	0.5 or less	4.3	2.0
	12	-0.006 -0.017	200~1000					
	13	-0.006 -0.017	200~1000					
SFAE SSFAE PSFAE PSSFAE	16	-0.007 -0.020	200~1200	M5	150	1.0 or less	5.5	2.5
	20	-0.007 -0.020	200~1200					
	25	-0.007 -0.020	300~1200	M6	200	1.0 or less	9	3.0
	30	-0.007 -0.020	300~1500					
	35	-0.007 -0.020	300~1500					
	40	-0.009 -0.025	400~1500	M8	300	1.0 or less	11	3.5
	50	-0.009 -0.025	400~1500					

**Order Example**  
 Part Number - L  
 SFAE10 - 300

**Days to Ship**  
 8 Days  
 Express A 8,00 EUR/unit P88  
 A Express Charge of 21,60 EUR for 3 or more identical pieces.

**Price**  
**Volume Discount** (Round down to one Cent) P87

Quantity	1-4	5-12	13-19	20-49
Discount Rates	€ Unit Price	5%	10%	15%

For orders larger than indicated quantity, please request a quotation.

**Correlation between L Dimension and Number of Taps**

Pitch	P=100	P=150	P=200	P=300	Number of Taps	K (Number of pitches)	N
L	200-219	200-319	300-419	400-619	2	1	N = L-PxK / 2
	220-319	320-469	420-619	620-919	3	2	
	320-419	470-619	620-819	920-1219	4	3	
	420-519	620-769	820-1019	1220~	5	4	
	520-619	770-919	1020-1219	-	6	5	
	620-719	920-1069	1220-1419	-	7	6	
	720-819	1070~	1420~	-	8	7	
	820-919	-	-	-	9	8	
	920~	-	-	-	10	9	

Part Number	Type	D	€ Unit Price											
			L200-300	L301-400	L401-500	L501-600	L601-800	L801-1000	L1001-1200	L1201-1500				
SFAE	10													
	12													
	13													
	16													
	20													
	25													
	30													
	35													
	40													
	50													
SSFAE	16													
	20													
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PSSFAE	16													
	20													
	25													
	30													
	50													

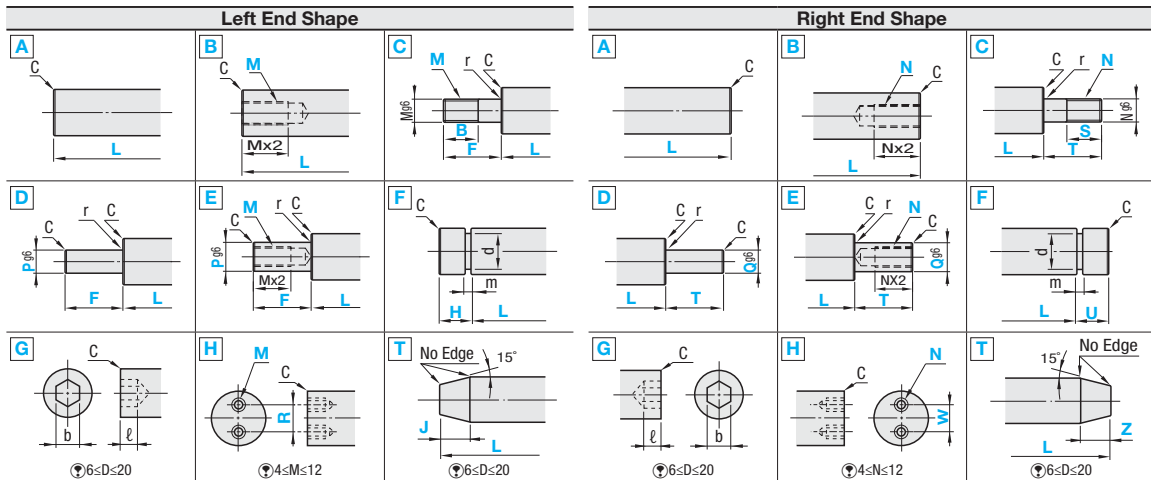
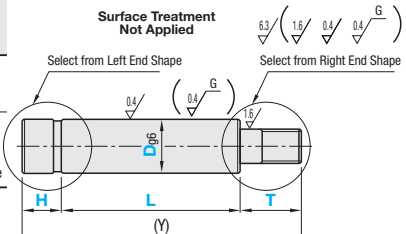


# Shafts

## -Shaft Ends Configurable Type-

Type	D Tolerance g6	D Tolerance h5	Material	Hardness	Surface Treatment
FSFJ	FSFU		1.3505/100Cr6	Induction Hardening Effective Hardening Depth $\geq$ P.104	Hard Chrome Plating Plating Hardness: HV750 -; Plating Thickness 5 $\mu$ or more
FSSFJ	FSSFU		1.4125/X105Cr-Mo17 equivalent	1.3505/100Cr6	
FPSFJ			1.3505/100Cr6	58HRC~	
FPSSFJ			1.4125/X105Cr-Mo17 equivalent	56HRC~	

Ⓜ(Y) dimensions need to be (Y)≤Dx50. (Y)≤1500  
ⓂChanges in circularity, straightness, perpendicularity, coaxiality and hardness  $\geq$  P.103



**Machining Conditions** (No alteration condition for Shape A)

<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>																					
<ul style="list-style-type: none"> <li>- When M3 ~ 8 M(N)≤D-3</li> <li>- When M10 or 12 M(N)≤D-4</li> <li>- When M16, 20 or 24 M(N)≤D-5</li> <li>- When M30 M(N)≤D-6</li> <li>L≥M(N)x4</li> </ul>	<table border="1"> <tr><th>D</th><th>r</th></tr> <tr><td>6~30</td><td>0.3 or less</td></tr> <tr><td>31~50</td><td>0.5 or less</td></tr> </table> <p>Please specify M(N) Dimensions. ⓂB and S ≥ Pitch x 3 is required.</p>	D	r	6~30	0.3 or less	31~50	0.5 or less	<table border="1"> <tr><th>D</th><th>r</th></tr> <tr><td>6~30</td><td>0.3 or less</td></tr> <tr><td>31~50</td><td>0.5 or less</td></tr> </table>	D	r	6~30	0.3 or less	31~50	0.5 or less	<table border="1"> <tr><th>D</th><th>r</th></tr> <tr><td>6~30</td><td>0.3 or less</td></tr> <tr><td>31~50</td><td>0.5 or less</td></tr> </table> <p>P(Q)(N)+3            - When M3 ~ 8 M(N)≤P(Q)-3            - When M10 or 12 M(N)≤P(Q)-4            - When M16, 20 or 24 M(N)≤P(Q)-5            - When M30 M(N)≤P(Q)-6</p>	D	r	6~30	0.3 or less	31~50	0.5 or less			
D	r																							
6~30	0.3 or less																							
31~50	0.5 or less																							
D	r																							
6~30	0.3 or less																							
31~50	0.5 or less																							
D	r																							
6~30	0.3 or less																							
31~50	0.5 or less																							
<b>F</b>	<b>G</b>	<b>H</b>	<b>T</b>																					
For Set Screw Detailed Dimensions, P.734 D dimensions 31 and 38 can not be specified.	<table border="1"> <tr><th>D</th><th>b</th><th>Hexagon Socket Depth</th></tr> <tr><td>6/7</td><td>2.5</td><td>3.5</td></tr> <tr><td>8/9</td><td>3</td><td>4.5</td></tr> <tr><td>10</td><td>4</td><td>6</td></tr> <tr><td>12~15</td><td>5</td><td>7.5</td></tr> <tr><td>16~19</td><td>6</td><td>9</td></tr> <tr><td>20</td><td>8</td><td>12</td></tr> </table>	D	b	Hexagon Socket Depth	6/7	2.5	3.5	8/9	3	4.5	10	4	6	12~15	5	7.5	16~19	6	9	20	8	12	D≥16 D≥M+4+R D≥N+4+W R≥M+3 W≥N+3 Tap Depth Mx2 Nx2	D-J(Z) tan15°x2≥2 (Tip diameter Ø2 or more) - L needs to be L-J(Z) ≥20 - When both ends are in T shape, needs to be L-(J+Z) ≥20
D	b	Hexagon Socket Depth																						
6/7	2.5	3.5																						
8/9	3	4.5																						
10	4	6																						
12~15	5	7.5																						
16~19	6	9																						
20	8	12																						

ⓂWhen only one end requires alteration, select Shape A for the opposite end that does not require alteration. ⓂG and H will not be symmetrical when applied to both ends of the shaft.  
 ⓂWhen D = P or D = N is selected for shaft shape C, B (S) needs to be specified as F = B (T = S). However, L, F, and T dimensions have manufacturing priority and B (S) dimension will be F (T) (Pitch x 2).

Type	Part Number		Selection	1mm Increments					C			
	Left End Shape	Right End Shape		D	L	F/T	B/S	H/U		P/Q	R/W	J/Z
(D Tolerance g6) FSFJ FSSFJ FPSFJ FPSSFJ	A B C D E F G H T	A B C D E F G H T	6 17 31 7 18 32 8 19 35 9 20 38 10 22 40 12 24 45 13 25 50	20.0-1500.0 (L≤DX5)	2≤F≤Px5 2≤F≤MX5 2≤T≤QX5 2≤T≤NX5	2≤B≤Mx3 2≤S≤NX3 B≤F-2 S≤T-2 (When M and N≤6) B≤F-3 S≤T-3 (When M and N≤8/10) B≤F-5 S≤T-5 (When M and N≤12)	2≤H/U (When D=6) 3≤H/U (When 6<D≤10) 4≤H/U (When 10<D≤20) 5≤H/U (When 20<D)	D/3≤P/ Q<D	D≥M+4+R D≥N+4+W R≥M+3 W≥N+3	D J / Z 6/7 5-7 8/9 5-10 10 5-14 12 5-18 13/14 5-20 15 10-24 16/17 10-25 18/19 10-28 20 10-32	3 4 5 6 8 10 12 16 20 24 30	0.2 or less when D-Q (P/M/N) ≤4 When D<20, 0.5 or less When D≥20, 1.0 or less
(D Tolerance h5) FSFU FSSFU	A B C D E F G H T	A B C D E F G H T	14 26 15 28 16 30									

Order Example: Part Number Type Left End Right End - D - L - F - M - B - T - N - S - H - U - P - Q - R - W - J - Z

FSFJ A C - D12 - L100 - T30 - N6 - S12

Days to Ship: 10 Days Express B 5,00 EUR/piece P. 88 Alterations

ⓂA Express Charge of 13,50 EUR for 3 or more identical pieces.  
 ⓂD=6.8.10.12.13.15.16.18.20.25.30.35.  
 Express is only available for 40, 50

ⓂFor details, please see Alterations Overview P.105  
 ⓂAvailable only for LKC, SC, WSC, PMC, PMS, QMC and QMS.  
 ⓂDKC alterations was discontinued in June 2010.  
 ⓂPlease specify new part numbers; FSFU and FSSFU to place orders.  
 ⓂNot available for Hard Chrome Plated Shafts

Type	D	Volume Discount (Round down to one Cent) P. 87										Shaft End Alteration € Unit Price								
		Quantity		5-12		13-19		20-49		Material € Unit Price		Left Shaft: A Shape		Right Shaft: A Shape		Shaft End Alteration € Unit Price				
		1-4	5-12	13-19	20-49	€ Unit Price	5%	10%	15%	B	C	D	E	F	G	H	T			
FSFJ	6																			
	7																			
	8																			
	9																			
	10																			
	12																			
	13																			
	14-15																			
	16																			
	17-18-19																			
2,00 EUR is added to the prices indicated right.	20																			
22-24																				
25																				
26-28																				
30																				
31-32																				
35																				
38																				
40																				
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FSSFJ	6																			
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	12																			
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	14-15																			
	16																			
	17-18-19																			
2,00 EUR is added to the prices indicated right.	20																			
22-24																				
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26-28																				
30																				
31-32																				
35																				
38																				
40																				
45																				
50																				
FPSFJ	6																			
	7																			
	8																			
	9																			
	10																			
	12																			
	13																			
	14-15																			
	16																			
	17-18-19																			
2,00 EUR is added to the prices indicated right.	20																			
22-24																				
25																				
26-28																				
30																				
31-32																				
35																				
38																				
40																				
45																				
50																				
FPSSFJ	6																			
	7																			
	8																			
	9																			
	10																			
	12																			
	13																			
	14-15																			
	16																			
	17-18-19																			
2,00 EUR is added to the prices indicated right.	20																			
22-24																				
25																				
26-28																				
30																				
31-32																				
35																				
38																				
40																				
45																				
50																				

ⓂPrice = Standard material unit price + Standard shaft ends alteration unit price.  
 EX) FSFJBC-D6-L70~ → 2,90+2,70+5,90=11,50 EUR  
 ⓂFor orders larger than indicated quantity, please request a quotation.