



# TOOL POST SYSTEM

SERIES 718:

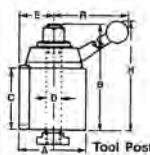


MACHINE SHOP DISCOUNT SUPPLY

MACHINE TOOL ACCESSORIES

## SUPER PRECISION WEDGE TYPE TOOL POST AND TOOL HOLDER SETS

Wedge Type Tool Posts are precision engineered to assure repetitive accuracy. Advanced design provides built in quick tool changing versatility with positive rigidity to meet the most exacting working tolerances. Quickly and easily installed on an engine, bench or turret lathe for a wide range of operations, from fine precise work to heavy duty cutting.



**Precision wedge type tool post sets** consist of one precision tool post plus five tool holders. One (1) each style: 1, 2, 4, 7, and 10

### TOOL HOLDER SETS

For Swing Up To	Order No.	Price
12	7105025	
10 - 15	7105030	
13 - 18	7105035	
14 - 20	7105040	

## WEDGE TYPE QUICK CHANGE TOOL POST

Series	A	B	C	D	E	H	R	For Swing Up to	Order No.	Price
AXA	2-1/2	3-7/8	2-1/4	9/16	1-3/8	4-11/16	5-3/4	12"	7100125	
BXA	3	4-5/8	2-3/4	5/8	1-5/8	5-9/16	7-5/16	10 - 15"	7100130	
CXA	3-1/2	5-1/8	3	3/4	1-7/8	6-1/8	7-7/8	13 - 18"	7100135	
CA	4	6-1/4	3-5/8	7/8	2-1/8	7	9	14 - 20"	7100140	

### Features:

- All working parts hardened and ground.
- No time wasted with shims.
- Completely sealed for maintenance free operation.
- Maximum rigidity for chatter-free performance.
- Speed up lathe operations 90%
- Takes only a few seconds to change tools.

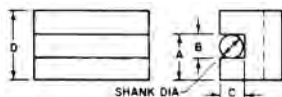
## TOOL HOLDERS (INTERCHANGEABLE WITH MOST POPULAR BRANDS) Precise & Durable

### TURNING AND FACING HOLDERS

Style No. 1



Takes various sizes of bits. Turning and facing tools can be locked in together. Saves time and labor when changing operations



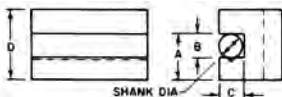
A	B	C	D	Tool Bit	Order No.	Price
15/16	1/2	7/16	1-1/2	3/16 - 1/2	7101251	
1-1/8	5/8	1/2	1-3/4	1/4 - 5/8	7101301	
1-7/16	3/4	5/8	2-1/8	1/2 - 3/4	7101351	
1-11/16	1	3/4	2-1/2	1/2 - 1	7101401	

### BORING, TURNING AND FACING HOLDERS

Style No. 2



"V" groove holds round shank boring bars and tools as well as square tool bits. Boring bar not included.



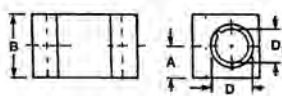
A	B	C	D	Tool Bit	Shank	Order No.	Price
15/16	1/2	7/16	1-1/2	3/16 - 1/2	7/16	7101252	
1-1/8	5/8	1/2	1-3/4	1/4 - 5/8	1/2	7101302	
1-7/16	3/4	5/8	2-1/8	1/2 - 3/4	3/4	7101352	
1-11/16	1	3/4	2-1/2	1/2 - 1	13/16	7101402	

### HEAVY DUTY BORING BAR HOLDERS

Style Nos. 4 and 41



Equipped with a split bushing to accommodate a boring bar of smaller diameter. It grips with extreme rigidity, cuts smoothly without chatter. Holders supplied with split bushing.



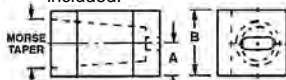
A	B	D	D1	Order No.	Price
3/4	1-1/2	3/4	5/8	7101254	
3/4	1-3/4	1	3/4	7101304	
1	2	1	3/4	7101354	
1-3/8	2-3/4	1-1/4	1	7101404	
7/8	1-3/4	1	3/4	7112541	
1	2	1-1/4	1	7113041	
1-1/8	2-1/4	1-1/4	1	7113541	
1-3/8	2-3/4	1-1/2	1-1/4	7114041	

### MORSE TAPER HOLDER

Style Nos. 5 and 53



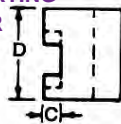
Drills with carriage by using power feed instead of tail stock. Easily centered. For Nos. 2,3 & 4 Morse Taper drills. Drills not included.



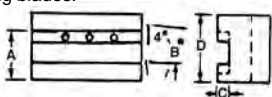
A	B	Taper Hole Size	Order No.	Price	A	B	Taper Hole Size	Order No.	Price
3/4	1-1/2	# 2 MT	7101255		3/4	1-1/2	# 3 MT	7112553	
7/8	1-3/4	# 2 MT	7101305		7/8	1-3/4	# 3 MT	7113053	
1	2	# 3 MT	7101355		1	2-1/8	# 4 MT	7113553	
1-1/4	2-1/2	# 3 MT	7101405		1-1/4	2-1/2	# 4 MT	7114053	

### UNIVERSAL PARTING BLADE HOLDER

Style No. 7



For bevel as well as T-cut blades. Enables you to cut-off close to chuck. Absence of vibration prevents breaking blades.



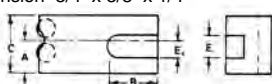
A	B	C	D	Blade Hgt	Order No.	Price
13/16	1/2	3/16	1-1/2	1/2	7101257	
1	11/16	3/16	1-3/4	11/16	7101307	
1-3/16	3/4	3/16	2	3/4	7101357	
1-7/16	7/8	1/4	2-1/2	1	7101407	

### KNURLING, TURNING AND FACING HOLDERS

Style No. 10



For turning and facing as well as knurling. Supplied with a set of high speed precision ground lapped medium diamond knurls. Dimension 3/4" x 3/8" x 1/4"



A	B	C	E	E1	Tool Bit	Order No.	Price
7/8	2-1/2	1-9/16	1/2	3/8	3/16 - 1/2	7112510	
1	2-5/8	1-3/4	5/8	1/2	1/4 - 5/8	7113010	
1-3/16	3-1/8	2	3/4	5/8	1/2 - 3/4	7113510	
1-7/16	3-3/4	2-1/2	1	3/4	1/2 - 1	7114010	

## TOOL POST & HOLDERS

SERIES 720:



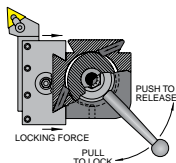
### SUPER Quick Change Tool Post



**High Performance**  
**Built to Last . . .**  
**We Guarantee It!**

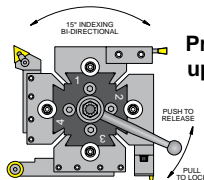
Repeatability with .00001"  
 Zero Backlash  
 Maintenance - Free  
 US Patented Locking System  
 Interchangeable with industry  
 standard Tool Posts

New patented locking system eliminates the worm gear and gib, which are most affected by wear. The new system increases durability and life expectancy of the tool post.



While these are the most popular holders, DORIAN makes many others; please inquire.

### QUADRA Index Tool Post

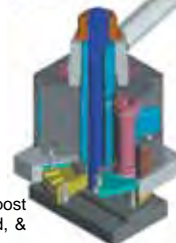


**Increase Productivity up to 500%!**



4 Quick Change Tool Holder  
 24 Position Indexing System

- 15° Indexing
  - .00005 repeatability
  - Instant tool repositioning within .00005
- The only quick change tool holder & indexing tool post "All-In-One" with precise .00005 repeatability, speed, & rigidity to make your lathe perform like a CNC.



Description Order No.	SD25AXA 6101000	SD30BXA 6101002	SD35CXA 6101004	SD40CA 6101006	SD50DA 6101008	SD60EA 6101010
Price						
Lathe Swing Over Bed	UP-12"	13-15"	14-17"	16-20"	17-32"	25"-XHD
T-Tool Cap.	0.500	0.625	0.750	1.000	1.250	1.500
Optimum C.H.	1.250	1.594	1.750	2.156	2.688	3.000

Description Order No.	QITP25 6100000	QITP30 6100002	QITP35 6100004	QITP40 6110006	QITP50 6110008	QITP60 6110010
Price						
Lathe Swing Over Bed	UP-12"	13-15"	14-17"	16-20"	17-32"	25"-XHD
T-Tool Cap.	0.500	0.625	0.750	1.000	1.250	1.500
Optimum C.H.	1.250	1.437	1.750	2.094	2.750	3.625

### #1 Turning & Facing

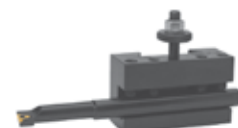
For high speed or carbide square shank tools



Desc.	Order No.	Price	Desc.	Order No.	Price	Shank Size
D25AXA-1	6101100		QITP25-1	6100100		0.500
D30BXA-1	6101250		QITP30-1	6100250		0.625
D35CXA-1	6101400		QITP35-1	6100400		0.750
D40CA-1	6101550		QITP40-1	6100550		1.000
D50DA-1	6101700		QITP50-1	6100700		1.250
D60EA-1	6101850		QITP60-1	6100850		1.500

### #2 Turning, Facing, & Boring

For high speed & square shank tools, & with a "V" groove for holding a boring bar



Desc.	Order No.	Price	Desc.	Order No.	Price	Bar Cap.
D25AXA-2	6101104		QITP25-2	6100104		0.500
D30BXA-2	6101254		QITP30-2	6100254		0.625
D35CXA-2	6101404		QITP35-2	6100404		0.625
D40CA-2	6101554		QITP40-2	6100554		0.750
D50DA-2	6101704		QITP50-2	6100704		0.875
D60EA-2	6101854		QITP60-2	6100854		1.250

### #4 Heavy Duty Boring

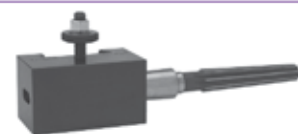
Precision ground bore with a 360° collar locking system gives the best rigidity in metal removing without scarring the boring bar - Double height adjustment makes the tool reversible for extended center height range



Desc.	Order No.	Price	Desc.	Order No.	Price	Bar Cap.
D25AXA-4	6101110		QITP25-4	6101110		0.750
D30BXA-4	6101260		QITP30-4	6101260		1.000
D35CXA-4	6101410		QITP35-4	6101410		1.000
D40CA-4	6101560		QITP40-4	6101560		1.250
D50DA-4	6101710		QITP50-4	6101710		1.500
D60EA-4	6101860		QITP60-4	6101860		2.000

### #5 Morse Taper

For holding morse taper tooling.



Desc.	Order No.	Price	Desc.	Order No.	Price	Morse Taper
D25AXA-5-2	6101122		QITP25-5-2	6100122		2
D30BXA-5-3	6101272		QITP30-5-3	6100272		3
D35CXA-5-4	6101424		QITP35-5-4	6100424		4
D40CA-5-4	6101572		QITP40-5-4	6100572		4
D50DA-5-5	6101722		QITP50-5-5	6100722		5
D60EA-5-5	6101872		QITP60-5-5	6100872		5

### #7-71C Reversible Cut-off

For high speed & Dorcut True Grip blades. It gives max. rigidity & performance in cutting & face grooving. Taper lock system & double height adjustment make the tool reversible for downright positioning.



Desc.	Order No.	Price	Desc.	Order No.	Price	Bar Cap.
D25AXA-7-71C	6101126		QITP25-7-71C	6100126		0.750
D30BXA-7-71C	6101276		QITP30-7-71C	6100276		1.000
D35CXA-7-71C	6101428		QITP35-7-71C	6100428		1.000
D40CA-7-71C	6101576		QITP40-7-71C	6100576		1.250
D50DA-7-71C	6101726		QITP50-7-71C	6100726		1.500
D60EA-7-71C	6101876		QITP60-7-71C	6100876		2.000

### #881 O.D. or I.D. Threading

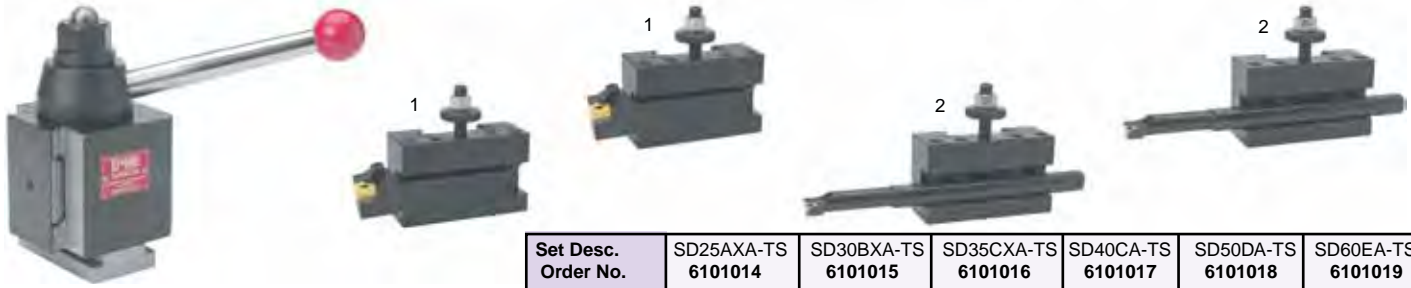
Capable of covering all threading requirements. Uses standard carbide inserts. Supplied cartridge for external threading with an on-edge insert



Desc.	Order No.	Price	Desc.	Order No.	Price	TNMC Inserts
D25AXA-881	6101132		QITP25-881	6100132		32
D30BXA-881	6101282		QITP30-881	6100282		
D35CXA-881	6101434		QITP35-881	6100434		32
D40CA-881	6101582		QITP40-881	6100582		



**SUPER SETS**  
SERIES 720:



**Quick Change Tool Post Turning Set**

The Turning Set consists of one tool post and the four holders listed. Tool holders, inserts, and boring bars are not included.

Set Desc. Order No.	SD25AXA-TS 6101014	SD30BXA-TS 6101015	SD35CXA-TS 6101016	SD40CA-TS 6101017	SD50DA-TS 6101018	SD60EA-TS 6101019
Price						
Lathe Swing Over Bed	Up to 12"	13"- 15"	14"- 17"	16"- 20"	17"- 32"	25"-XHD
	<b>Turning Set Includes:</b>					
1-Tool Post	SD25AXA	SD30BXA	SD35CXA	SD40CA	SD50DA	SD60EA
2-Holder No.1	D25AXA-1	30BXA-1	D35CXA-1	D40CA-1	D50DA-1	D60EA-1
2-Holder No.2	D25AXA-2	D30BXA-2	D35CXA-2	D40CA-2	D50DA-2	D60EA-2



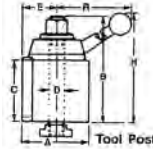
**TOOL POST SYSTEM**  
SERIES 954:



**GUARANTEED LASTING REPETITIVE ACCURACY TO WITHIN MILLIONTHS**

**FEATURES:**

- Only a second to change tools
- Rugged - no chatter or vibration
- No time wasted with shims
- Unlimited versatility • Safe and simple to operate
- Speed your lathe operations up to 90%
- Guaranteed\*



**ALORIS SUPER- PRECISION TOOL POST**

Precision engineered to assure repetitive accuracy. Advanced design provides built-in quick tool changing versatility with positive rigidity to meet the most exacting working tolerance. Quickly and easily installed on any engine lathe, bench or CNC lathe, for a wide range of operations - from fine precision work to heavy duty cutting.

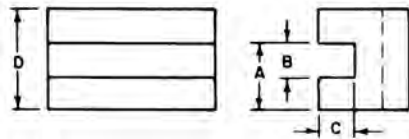


A	B	C	D	E	H	R	SWING	Model No	Order No.	Price
2-1/2"	3-7/8"	2-1/4"	9/16"	1-3/8"	4-11/16"	5-3/4"	UP to 12"	AXA	<b>9541000</b>	
3"	4-5/8"	2-3/4"	5/8"	1-5/8"	5-9/16"	7-5/16"	10-15"	BXA	<b>9542000</b>	
3-1/2"	5-1/8"	3"	3/4"	1-7/8"	6-1/8"	7-7/8"	13-18"	CXA	<b>9543000</b>	
4"	6-1/4"	3-5/8"	7/8"	2-1/8"	7"	9"	14-20"	CA	<b>9544000</b>	
5"	7-5/8"	4-5/8"	1"	2-11/16"	8-3/4"	10-7/8"	17-48"	DA	<b>9545000</b>	
6"	8-1/2"	5"	1-1/4"	3-1/8"	10"	13-3/4"	25" + up	EA	<b>9546000</b>	

\* This guarantee does not include repair or replacement due to misuse, abuse, accidental damage or normal wear

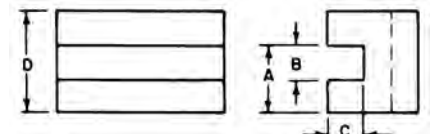
**#1 TURNING AND FACING HOLDER**

Takes various sizes of bits. Turning and facing tools can be locked in together. Saves time and labor when changing operations



A	B	C	D	Tool Bit	Model No	Order No	Price
15/16"	1/2"	7/16"	1-1/2"	3/16"-1/2"	AXA1	<b>9541010</b>	
1-1/8"	5/8"	1/2"	1-3/4"	1/4 - 5/8"	BXA1	<b>9541020</b>	
1-7/16"	3/4"	5/8"	2-1/8"	1/2 - 3/4"	CXA1	<b>9541030</b>	
1-11/16"	1"	3/4"	2-1/2"	1/2 - 1"	CA1	<b>9541040</b>	
2-3/16"	1-1/4"	1"	3-1/8"	1/2 - 1-1/4"	DA1	<b>9541050</b>	
2-11/16"	1-1/2"	1-1/4"	4"	3/4 - 1-1/2"	EA1	<b>9541060</b>	

**#7 UNIVERSAL PARTING BLADE HOLDER**



#7 Holders are only for use with T-Type blades, or with bevel (wedge-shape) blades having parallel top and bottom edges, as shown above. Enables you to cut-off close to chuck. Absence of vibration prevents breaking blades.

A	B	C	D	Blade Height	Model No	Order No	Price
13/16"	1/2"	3/16"	1-1/2"	1/2"	AXA7	<b>9547010</b>	
1"	11/16"	3/16"	1-3/4"	11/16"	BXA7	<b>9547020</b>	
1-3/16"	3/4"	3/16"	2"	3/4"	CXA7	<b>9547030</b>	
1-7/16"	7/8"	1/4"	2-1/2"	7/8"	CA7	<b>9547040</b>	
1-3/4"	1-1/8"	1/4"	2-3/4"	1-1/8"	DA7	<b>9547050</b>	
1-7/8"	1-1/8"	1/4"	3"	1-1/8"	EA7	<b>9547060</b>	

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## TOOL POST SYSTEM

SERIES 954:

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### #2 BORING, TURNING & FACING HOLDER

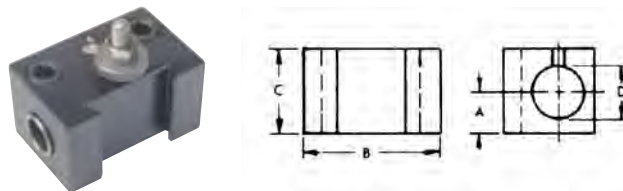


"V" groove holds round shank boring bars and tools as well as square tool bits.

A	B	C	D	Shank	Tool Bit	Model No	Order No.	Price
15/16"	1/2"	7/16"	1-1/2"	7/16"	3/16 - 1/2"	AXA2	9542010	
1-1/8"	5/8"	1/2"	1-3/4"	1/2"	1/4 - 5/8"	BXA2	9542020	
1-7/16"	3/4"	5/8"	2-1/8"	3/4"	1/2 - 3/4"	CXA2	9542030	
1-11/16"	1"	3/4"	2-1/2"	13/16"	1/2 - 1"	CA2	9542040	
2-3/16"	1-1/4"	1"	3-1/8"	1"	1/2 - 1-1/4"	DA2	9542050	
2-11/16"	1-1/2"	1-1/4"	4"	1-1/4"	3/4 - 1-1/2"	EA2	9542060	

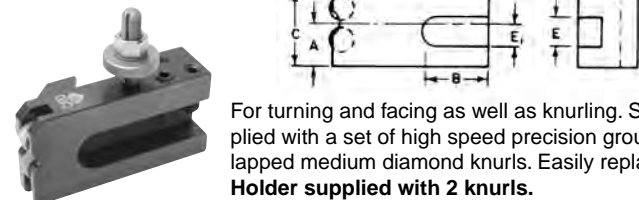
### #4D BORING AND FACING HOLDER

Precision ground bore and split clamping design to accommodate excellent clamping pressure and the ability to adjust positive to negative cutting angle on boring bar. Bushings sold separately.



A	B	D	Model No.	Order No.	Price
3/4"	1-1/2"	3/4"	AXA-4D	9544010	
1"	2"	1"	BXA-4D	9544020	
1"	2"	1"	CXA-4D	9544030	
1-3/8"	2-3/4"	1-1/4"	CA-4D	9544040	
1-5/8"	3-1/4"	1-1/2"	DA-4D	9544050	
2-1/4"	4-1/2"	2-1/2"	EA-4D	9544060	

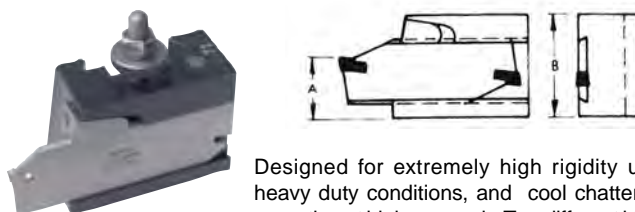
### #10 KNURLING, FACING AND TURNING HOLDER



For turning and facing as well as knurling. Supplied with a set of high speed precision ground and lapped medium diameter knurls. Easily replaceable. Holder supplied with 2 knurls.

A	B	C	E	E1	Model No	Tool Bit	Order No.	Price
7/8"	2-1/2"	1-9/16"	1/2"	3/8"	AXA-10	3/16 - 1/2"	9541001	
1"	2-5/8"	1-3/4"	5/8"	1/2"	BXA-10	1/4 - 5/8"	9541002	
1-3/16"	3-1/8"	2"	3/4"	5/8"	CXA-10	1/2 - 3/4"	9541003	
1-7/16"	3-3/4"	2-1/2"	1"	3/4"	CA-10	1/2 - 1"	9541004	
1-7/8"	4-1/2"	3-1/8"	1-1/4"	1"	DA-10	1/2 - 1-1/4"	9541005	

### #71 CUT-OFF AND GROOVING HOLDER



Designed for extremely high rigidity under heavy duty conditions, and cool chatter free operation at higher speeds. Two different blades

can be used with this holder: self-locking throwaway insert blade, or reversible blade with brazed-in carbide tips. The chip-breaker is an integral part of the blade and cannot be lifted by broken chips.

A	B	Used with blade widths	Model No.	Order No.	Price
15/16"	1-13/16"	1/8, 3/16, or 1/4"	AXA71	9547110	
15/16"	2"	1/8, 3/16, or 1/4"	BXA71	9547120	
1-5/16"	2-3/8"	1/8, 3/16, or 1/4"	CXA71	9547130	
1-7/8"	3-1/4"	3/16 or 1/4"	CA71	9547140	
2"	3-1/4"	3/16 or 1/4"	DA71	9547150	
2-1/16"	3-3/8"	3/16 or 1/4"	EA71	9547160	

### 5 PIECE SET

"5 PC" SET CONSISTS OF THE FOLLOWING: Tool Post, Custom "T"- Bolt & Holders shown below (#1, 2, 4D, & 7).



Series	Model No.	Order No.	Price
AXA	1-BS	9540101	
BXA	2-BS	9540102	
CXA	3-BS	9540103	
CA	4-BS	9540104	
DA	5-BS	9540105	
EA	6-BS	9540106	

While we show some of the most popular  items, we can supply their entire range of products; please inquire.

## TOOL POST TURRETS

SERIES 300:

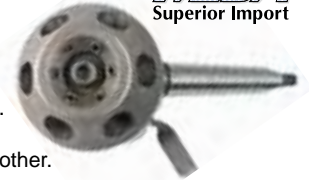


- 4 Tools can be mounted and quickly indexed into any of 12 different positions.
- Indexing stations are spaced 30° apart.
- All essential parts are hardened for long life and made to highest accuracy standards for utmost precision.
- All models furnished with a machineable base to fit your machine.

Model No.	Size	Swing of Lathe	Tool Range	Order No.	Price
TP2	2-1/2	6-12	1/4-3/8	7250002	
TP3	3-1/2	10-13	3/8-1/2	7250003	
TP4	4-1/2	13-16	1/2-3/4	7250004	
TP6	6	14-21	7/8-1-1/4 or No.2 Tool Holder	7250006	

## TAILSTOCK TURRETS

SERIES 300:



- Have 6 holes for holding 6 tools.
- Precision made for highest accuracy.
- Available in 2 sizes with different shanks.
- Conveniently located lever provides instant change-over from one tool to another.

Model No.	Dia. of Head	Hole Size	Shank	Order No.	Price
TTA	2-1/2	5/8	M.T.1	7301001	
TTA	2-1/2	5/8	M.T.2	7301002	
TTB	5	1	M.T.2	7302002	
TTB	5	1	M.T.3	7302003	
TTB	5	1	M.T.4	7302004	
TTB	5	1	1" S.S.	7302010	

## SOLID LATHE CENTERS

SERIES 316:



Hardened and ground to closest tolerances.

Morse Taper	Carbon		H.S.S.		Carbide Tipped	
	Order No.	Price	Order No.	Price	Order No.	Price
1	1945001		1950001		1955001	
2	1945002		1950002		1955002	
3	1945003		1950003		1955003	
4	1945004		1950004		1955004	
5	1945005		1950005		1955005	
6	1945006		1950006		1955006	

## DEAD CENTERS WITH NUT

SERIES 647:



+/-0.0001" T.I.R.

- Centers are provided with the Nut.
- Run out between shank and points is accurate to +/-0.0002" T.I.R.
- These dead centers are designed for use wherever high accuracies are required.
- Case hardened to 61-63 HRC.
- Carbide tipped centers give longer tool life and require less regrinding.
- Center 8725 is threaded and provided with the nut to remove the center from a tailstock.

MT No.	Alloy Steel		Carbide Tipped	
	8725 Order No.	Price	8726 Order No.	Price
2	7545002		7546002	
3	7545003		7546003	
4	7545004		7546004	
5	7545005		7546005	
6	7545006		7546006	

## FULL DEAD CENTERS

SERIES 647:

+/-0.0002" T.I.R.



8712



8711

## HALF DEAD CENTERS

SERIES 647:



8730



8731

MT No.	Carbide Tipped		Ball Bearing Steel		1/2 Ball Bearing Steel		Half Carbide Tipped	
	8711 Order No.	Price	8712 Order No.	Price	8730 Order No.	Price	8731 Order No.	Price
1	7550005		7555005		7540001		7541001	
2	7550010		7555010		7540002		7541002	
3	7550015		7555015		7540003		7541003	
4	7550020		7555020		7540004		7541004	
5	7550025		7555025		7540005		7541005	
6	7550030		7555030		7540006*		7541006	

\*LIMITED QUANTITY

## LIVE CENTERS SERIES 312:



These precision tools are made of the finest materials, to highest accuracy. Bodies are made of forgings, and a combination of amply proportioned thrust bearings, needle bearings and anti-friction bearings absorb the radial and axial pressures separately.

Morse Taper	Order No.	Price
1	1930001	
2	1930002	
3	1930003	
4	1930004	
5	1930005	
6	1930006	

## LIVE CENTER SETS WITH SEVEN INSERTS SERIES 313:



The body of these sets are constructed similar to Series 312 Live Centers, however, for versatility, the bodies are provided with the following seven interchangeable inserts:

- 2 large Male centers
- 1 Female center
- 3 smaller, different sized Male centers
- 1 Bullnose center

Model No.	Morse Taper	Order No.	Price
LCS2	2	1935002	
LCS3	3	1935003	
LCS4	4	1935004	
LCS5	5*	1935005	

\*Supplied with three inserts only.

## J & S HP919 CENTER POINT LUBRICANT

SERIES 312:



A versatile, multi-purpose grease that is specially formulated for use with dead centers, live centers, and work holding clamps. Also protects dead center noses, centerholes, live center bearings, clamp screws and dovetails, against wear due to excessive pressure, heat, and moisture in both high and low speed operations. This solid lubricant film will withstand pressures up to 500,000 PSI, giving metal surfaces the protection they need during periods of high speed, high shock loads, and extreme pressure.



Order No. 3120000 Price \$141.25

## LIVE CENTERS WITH INTERCHANGEABLE INSERTS

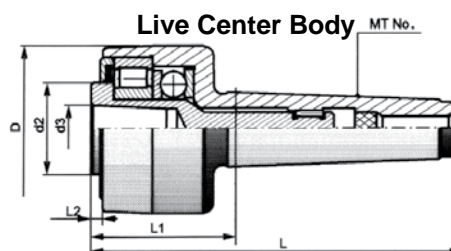
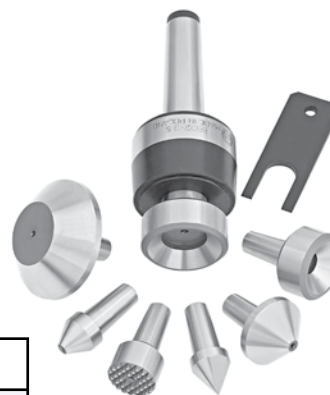
SERIES 647:

Set is provided with the main body and seven different style inserts in a wooden case.

Body of the live center and inserts are made from forgings, hardened and precisely ground. Precision high quality bearings. Special sealing ring protects the bearings from coolant and dust. Inserts are easily interchangeable.

(8832)

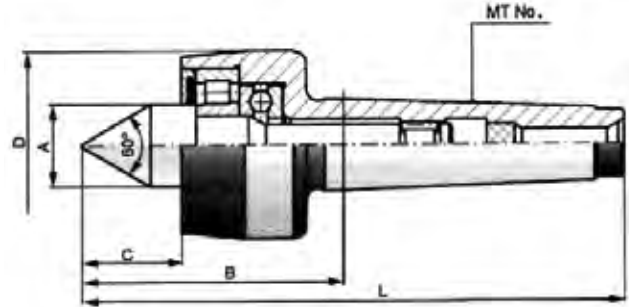
Morse Taper No.	#2	#3	#4	#5	#6
Set Order No.	7570002	7570003	7570004	7570005	7570006
Price	\$25.95	\$28.00	\$33.05	\$42.95	\$63.60
Max R.P.M.	5000	4000	3000	2500	2000
Weight without insert approx. lbs.	0.98	2.02	3.71	8.00	25.40
Accuracy (inch)	0.0008	0.0008	0.0008	0.0012	0.0012
Workpiece weight max. lbs.	220	440	880	1770	3550
L	4.055	5.217	6.220	7.815	10.846
L <sub>1</sub>	1.54	2.03	2.19	2.72	3.70
L <sub>2</sub>	0.177	0.197	0.217	0.256	0.256
D	1.57	2.20	2.52	3.35	5.12
d <sub>2</sub>	0.71	0.98	1.10	1.61	2.48
d <sub>3</sub>	0.28	0.47	0.59	0.87	1.89



## SUPER PRECISION AND PRECISION LIVE CENTERS

SERIES 647:

Machined from one piece of forging, hardened and precisely ground. Three precision, high quality bearings are protected by a special steel shield and neoprene seal. Live centers are lubricated with special grease and do not require any additional lubrication.



(8811)

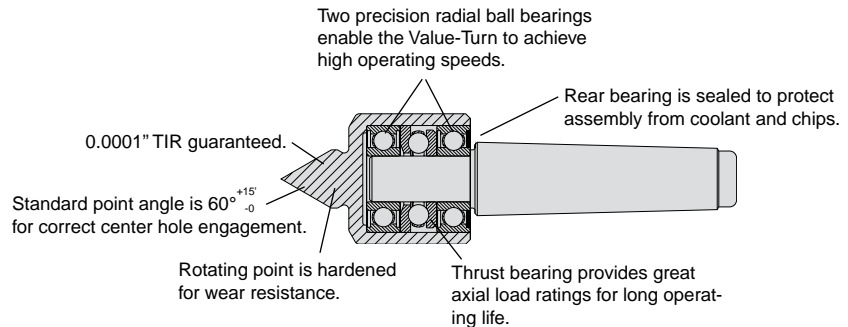
Morse Taper No.	1	2	3	4	5	6
Max. Weight of workpiece (lbs.)	220	460	925	1850	4400	7700
D	1.50	1.57	2.20	2.52	3.35	5.12
A	.59	.70	.98	1.10	1.61	2.48
L	4.07	4.74	6.14	7.24	9.33	13.13
C	.70	.87	1.12	1.24	1.77	2.52
B	1.97	2.22	2.95	3.21	4.23	5.96
Max. RPM	5000	5000	4000	3000	2500	2000
Weight Lbs.	.64	1.00	2.13	3.85	8.37	26.43
"P" Precision Accuracy	.0003	.0003	.0003	.0003	.0004	.0004
Order No.	7565001	7565002	7565003	7565004	7565005	7565006
Price						
"S" SuperPrecision Accuracy	.0002	.0001	.0001	.0001	.0002	.0002
Order No.	7565101	7565102	7565103	7565104	7565105	7565106
Price						

## ROYAL VALUE-TURN LIVE CENTERS

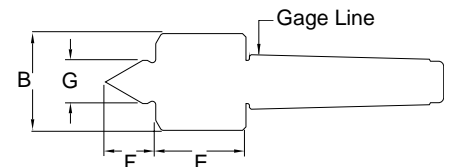
SERIES 450:



- A sturdy low-cost center designed for light/medium-duty turning applications.
- Precision three-bearing design enables the Royal Value-Turn to achieve both high RPM's and good load ratings
- A great American-made alternative to low quality imports.



Taper	B	E	F	G	Max Suggested RPM*	Weight of Workpiece (lbs.)	Thrust Load (lbs.)	Order No.	Price
1MT	1-11/16"	1-9/16"	7/8"	3/4"	5,000	390	3,730	10851	
2MT	1-11/16"	1-9/16"	7/8"	3/4"	5,000	390	3,730	10852	
3MT	1-11/16"	1-9/16"	7/8"	3/5"	5,000	390	3,730	10853	
4MT	2-7/16"	2-1/32"	1-3/16"	1-1/8"	4,500	750	4,990	10854	
5MT	2-7/16"	2-1/32"	1-3/16"	1-1/8"	4,500	750	4,990	10855	



\*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.





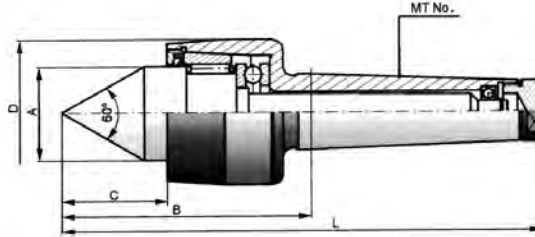
## ULTRA PRECISION ADJUSTABLE LIVE CENTERS

SERIES 647:

HEAVY DUTY, TRIPLE BEARING DESIGN

Accuracy +/-0.00012" T.I.R.

Machined from one piece of forging, hardened and precisely ground. Three precision, high quality bearings are protected by a special steel shield and neoprene seal. Adjustable, ultra precision radial bearing reduces run out to minimum after much use.



(8823)

Morse Taper	Max. Weight of Workpiece lbs.	Thrust/ lbs. at 1000 R.P.M.	L	B	C	D	A	Max R.P.M.	Weight lbs.	Order No.	Price
2	660	400	5.41	2.87	1.02	1.73	0.91	8000	1.33	7567002	
3	1320	530	6.53	3.37	1.26	1.89	1.10	6000	1.95	7567003	
4	2860	770	7.89	3.88	1.69	2.36	1.53	4500	3.62	7567004	
5	4400	990	9.80	4.70	2.01	2.76	1.77	4000	7.17	7567005	
6	8800	1580	12.64	5.47	2.44	3.70	2.40	3000	17.20	7567006	

## SPINDLE TYPE LIVE CENTERS

SERIES 450:



### Accuracy:

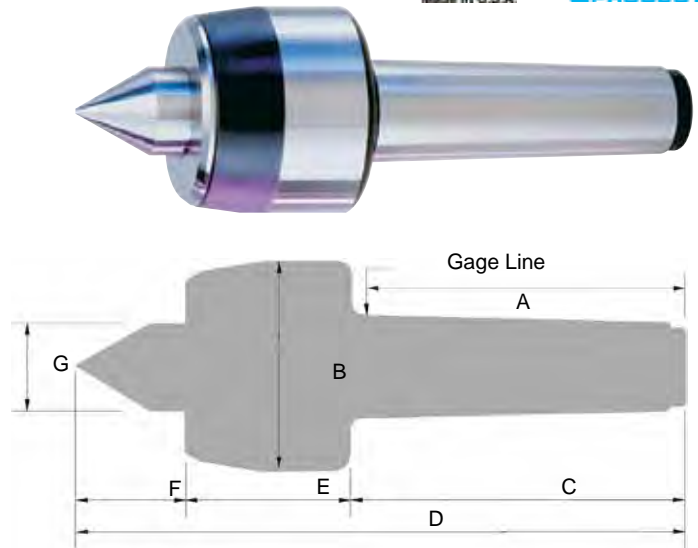
- ± 0.0001" TIR Guaranteed

### Construction:

- The special spindle-like point extends into the shank where it is supported by a needle roller bearing. This design increases rigidity, reduces point deflection and dampens vibration.
- Double-row angular contact bearing in front (single row on 1,2, and 3 Morse Tapers).
- Thrust ball bearing to maximize axial load capacity.
- Bearings are protected by a combination steel shield and neoprene seal.
- Point is heat treated high carbon alloy steel.
- Point has a 60° included point angle.

### Application:

- Excellent for manual lathes and CNC lathes.
- Designed for long life, heavy use, heavy loads, high thrust.



Taper	A	B	C	D	E	F	G	Max Suggested RPM*	Weight of Workpiece (lbs.)	Thrust Load (lbs.)	Comparative Load Rating (lbs.)	Order No.	Price
2MT	2-9/16"	1-3/4"	2-13/16"	5-9/32"	1-7/16"	1-1/32"	7/8"	6,000	725	2,360	3,085	10102	
3MT	3-3/16"	2-3/8"	3-7/16"	6-13/32"	1-3/4"	1-1/4"	1"	5,000	970	3,900	4,870	10103	
4MT	4-1/16"	2-3/4"	4-7/16"	7-7/8"	1-31/32"	1-1/2"	1-1/4"	4,500	1,720	4,050	5,770	9910104	
5MT	5-3/16"	3-1/2"	5-9/16"	10-1/4"	2-13/16"	1-7/8"	1-1/2"	3,500	3,260	5,700	8,960	9910105	
6MT	7-1/4"	4-5/32"	7-3/4"	13-7/32"	3-5/32"	2-5/32"	2"	3,500	4,080	6,000	10,080	10106	

\*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.



## HEAVY DUTY CNC SPINDLE TYPE LIVE CENTERS

SERIES 450:

**Accuracy:**

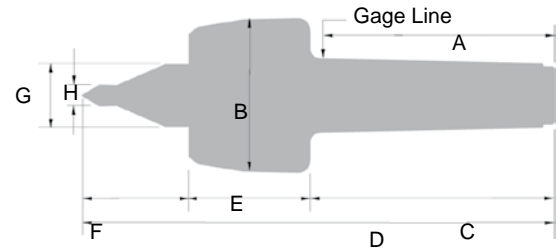
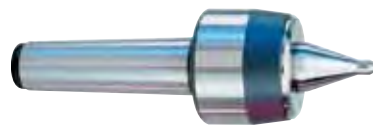
- ± 0.0001" TIR Guaranteed

**Construction:**

- The special spindle-like point extends into the shank where it is supported by a needle roller bearing. This design increases rigidity, reduces point deflection and dampens vibration.
- Double-row angular contact bearing (single row on 1, 2 and 3 Morse Tapers).
- Thrust ball bearing to maximize axial load capacity. Bearings are protected by a combination steel shield and neoprene seal.
- Point is high-carbon alloy steel heat treated to RC 61-63 and specially designed to provide tool clearance.
- Point has a 60° included angle.
- Body is hardened for extra strength, extra rigidity and long life.

**Application:**

- Designed for long life, heavy use, heavy loads and high thrust.
- Excellent for manual lathes and CNC lathes.
- Extended point provides additional tool clearance often needed on CNC lathes.



Taper	A	B	C	D	E	F	G	H	Max Suggested RPM*	Weight of Workpiece (lbs.)	Thrust Load (lbs.)	Comparative Load Rating (lbs.)	Order No.	Price
2MT	2-9/16"	1-3/4"	2-13/16"	5-5/8"	1-7/16"	1-3/8"	7/8"	3/8"	6,000	375	2,360	2,735	10212	
3MT	3-3/16"	2-3/8"	3-7/16"	7-1/16"	1-3/4"	1-7/8"	1"	3/8"	5,000	740	3,900	4,640	910213	
4MT	4-1/16"	2-3/4"	4-7/16"	8-5/8"	1-31/32"	2-7/32"	1-1/4"	1/2"	4,500	1,120	4,050	5,170	9910214	
5MT	5-3/16"	3-1/2"	5-9/16"	11"	2-13/16"	2-5/8"	1-1/2"	1/2"	3,500	1,930	5,700	7,630	10215	
6MT	7-1/4"	4-5/32"	7-3/4"	13-29/32"	3-5/32"	3"	2"	3/4"	3,500	2,420	6,000	8,420	10216	

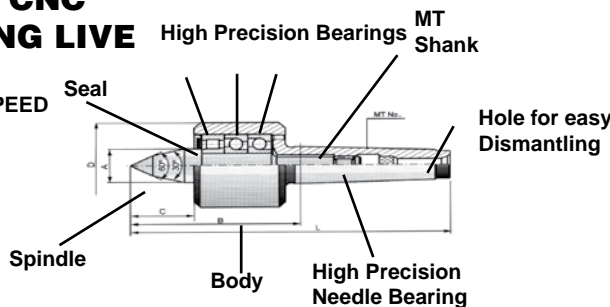
\*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

## HEAVY DUTY CNC

### QUAD-BEARING LIVE CENTERS

HEAVY DUTY, HIGH SPEED

SERIES 647:



(8814NC)

Morse Taper	Max. Weight of Workpiece lbs.	Max R.P.M.	Max Run out	A	B	C	D	L	Weight lbs.	Order No.	Price
4	2200	7000	.0002"	1.10	4.58	1.91	2.76	8.62	5.50	7566004	
5	4400	6000	.0002"	1.57	5.87	2.64	3.47	11.00	11.00	7566005	

## VERSA-TURN LIVE CENTERS

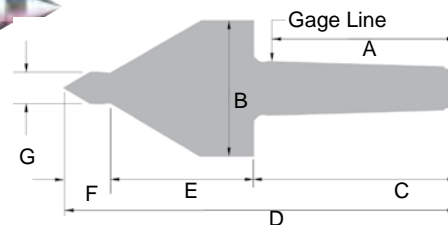
SERIES 450:

**Construction:**

- Two radial ball bearings.
- 60° included point angle.
- ±.0001" TIR guaranteed.
- Thrust bearings provide a very high axial load capacity.

**Application:**

- Excellent for manual lathes and general shop use.
- Combination extended point for clearance and bull head for small tubes and hollow work.
- Close fitting head eliminates seal, resulting in extremely free-turning center.



Taper	A	B	C	D	E	F	G	Max Suggested RPM*	Weight of Workpiece (lbs.)	Thrust Load (lbs.)	Comparative Load Rating (lbs.)	Order No.	Price
2MT	2-9/16"	2-1/8"	2-13/16"	5-3/4"	2-3/16"	3/4"	1/2"	5,000	330	2,160	2,490	10831	
3MT	3-3/16"	2-1/8"	3-7/16"	6-3/8"	2-3/16"	3/4"	1/2"	5,000	330	2,160	2,490	10832	
3MT	3-3/16"	2-1/2"	3-7/16"	6-15/16"	2-9/16"	15/16"	5/8"	4,000	685	5,000	5,685	10833	
4MT	4-1/16"	2-1/2"	4-7/16"	7-15/16"	2-9/16"	15/16"	5/8"	4,000	685	5,000	5,685	10834	
4MT	4-1/16"	3-3/8"	4-7/16"	8-11/16"	3-1/8"	1-1/8"	3/4"	3,500	1,165	5,700	6,685	10835	
5MT	5-3/16"	3-3/8"	5-9/16"	9-13/16"	3-1/8"	1-1/8"	3/4"	3,500	1,165	5,700	6,685	910836	

\*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

## BULLNOSE LIVE CENTERS SERIES 314:



## J & S HP919 CENTER POINT LUBRICANT SERIES 312:



- Designed to hold pipe and hollow work.
- Preloaded bearings to achieve good thrust and radial capacities.
- Head made from heat treated hardened high carbon alloy steel.



3.5 FLUID OZ.



A versatile, multi-purpose grease that is specially formulated for use with dead centers, live centers, and work holding clamps. Also protects dead center noses, centerholes, live center bearings, damp screws and dovetails, against wear due to excessive pressure, heat and moisture in both high and low speed operations. This solid lubricant film will withstand pressures up to 500,000 PSI, giving metal surfaces the protection they need during periods of high speed, high shock loads, and extreme pressure.

Order No. 3120000  
Price:

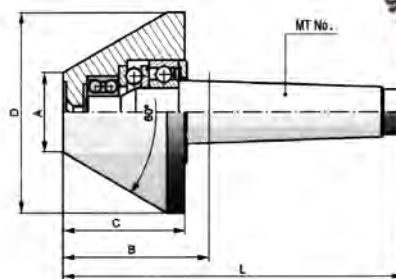
Model No.	Morse Taper	Small End Dia.	Large End Dia.	Order No.	Price
BLC22	2	1/2	2-7/16	1940022	
BLC33	3	3/4	3	1940033	
BLC34	3	1-1/4	4	1940034	
BLC35	3	1-1/2	5	1940035	
BLC45	4	1-3/8	5	1940045	
BLC46	4	2	6	1940046	
BLC56	5	1-3/8	6	1940056	
BLC58	5	2-1/8	8	1940058	

## BULL HEAD LIVE CENTERS

SERIES 647:

TRIPLE BEARING DESIGN

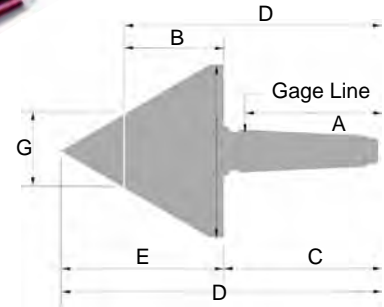
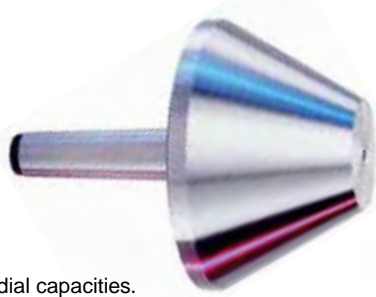
- Three matched bearings are preloaded at the factory providing good thrust and radial capabilities.
- Bearing are protected by a special seal.
- Head is made of high carbon alloy steel, heat treated to RC 61-63.
- 60° head angle.
- Designed to hold pipe and hollow work.



(8825)

MT No.	1	2	2	3	3	4	4	5	6
D	1.97	2.36	3.15	3.15	3.93	3.93	5.51	6.69	11.50
A	0.79	1.18	1.18	1.18	1.57	1.57	2.76	3.94	7.09
B	1.56	1.60	2.32	2.32	2.64	2.70	3.05	3.05	4.57
C	1.38	1.38	2.09	2.09	2.40	2.40	2.76	2.76	4.21
L	3.66	4.11	4.84	5.51	5.83	6.73	7.09	8.15	11.73
R.P.M.	5000	5000	4500	4500	3000	3000	3000	2000	1000
Max. weight of workpiece lbs.	220	400	660	770	1210	1320	1540	1653	4400
Weight lbs.	.77	1.32	2.76	2.98	5.07	5.62	11.00	17.60	75
Max. run out	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0008	.002
Order No.	7575010	7575020	7575021	7575030	7575031	7575040	7575042	7575051	7575060
Price									

**BULL HEAD LIVE CENTERS**  
SERIES 450:



**Accuracy:**

- ± 0.0001" TIR Guaranteed

**Construction:**

- Two matched angular Contact bearings provides good thrust and radial capacities.
- Bearings are protected by a combination steel shield and neoprene seal.
- Point has a 60° included angle.
- Oversized head diameter, 1/8" larger then normal size.
- Reduced knockout diameter prevents taper from mushrooming.

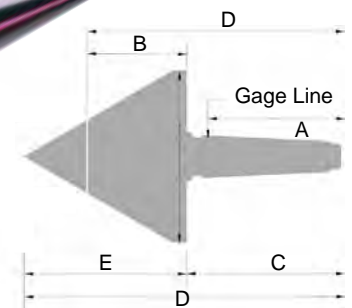
**Application:**

Designed for pipe work, tube work, parts with extra large center holes.

Taper	A	B	C	D	E	G	Max Suggested RPM*	Weight of Workpiece (lbs.)	Thrust Load (lbs.)	Comparative Load Rating (lbs.)	Order No.	Price
3MT	3-3/16"	3-1/8"	3-9/16"	6-1/16"	2-1/2"	1"	5,000	615	1,780	2,395	9910902	
3MT	3-3/16"	4-1/8"	3-9/16"	6-9/16"	3"	1-1/4"	4,500	860	2,550	3,410	9910903	
4MT	4-1/16"	4-1/8"	4-9/16"	7-9/16"	3"	1-1/4"	4,500	860	2,550	3,410	9910904	
5MT	5-3/16"	4-1/8"	5-11/16"	8-11/16"	3"	1-1/4"	4,500	860	2,550	3,410	910905	
4MT	4-1/16"	5-1/8"	4-9/16"	7-3/4"	3-3/16"	2"	4,000	1,145	3,450	4,595	9910906	
5MT	5-3/16"	5-1/8"	5-11/16"	8-7/8"	3-3/16"	2"	4,000	1,450	3,450	4,595	9910907	
5MT	5-3/16"	6-1/8"	5-11/16"	9-5/16"	3-5/8"	2-1/2"	3,500	1,450	4,500	5,950	9910909	
6MT	7-1/4"	6-1/8"	7-7/8"	11-1/2"	3-5/8"	2-1/2"	3,500	1,450	4,500	5,950	9990910	

\*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

**PIPE HEAD LIVE CENTER**  
SERIES 450:



**Accuracy:**

- ± 0.0001" TIR Guaranteed

**Construction:**

- Two matched angular Contact bearings provides good thrust and radial cap.
- Bearings are protected by a combination steel shield and neoprene seal.
- Point has a 60° included angle.
- Oversized head diameter, 1/8" larger then normal size.
- Reduced knockout diameter prevents taper from mushrooming.

**Application:**

Designed for pipe work, tube work, parts with extra large center holes.

Taper	A	B	C	D	E	Max Suggested RPM*	Weight of Workpiece (lbs.)	Thrust Load (lbs.)	Comparative Load Rating (lbs.)	Order No.	Price
2MT	2-9/16"	3-1/8"	2-15/16"	6-5/16"	3-3/8"	5,000	475	1,780	2,255	9910701	
3MT	3-3/16"	3-1/8"	3-9/16"	6-15/16"	3-3/8"	5,000	475	1,780	2,255	9910702	
4MT	4-1/16"	4-1/8"	4-9/16"	8-11/16"	4-1/8"	4,500	630	2,550	3,180	910704	
5MT	5-3/16"	4-1/8"	5-11/16"	9-13/16"	4-1/8"	4,500	630	2,550	3,180	910705	
4MT	4-1/16"	5-1/8"	4-9/16"	9-7/16"	4-7/8"	4,000	845	3,450	4,295	910706	
5MT	5-3/16"	5-1/8"	5-11/16"	10-9/16"	4-7/8"	4,000	845	3,450	4,295	910707	

\*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

## EXPANDING ARBORS

SERIES 704:

Machine these arbors to hold a specific part. For use on lathes, milling machines, grinders, chucks, collets, fixtures, etc.



**EAGLE ROCK**



**MEDA**  
Superior Import

## LATHE MANDRELS

SERIES 302:

**MEDA**  
Superior Import



These Mandrels are made of hardened steel and are accurately ground to size. Mandrels are slightly tapered with the size marked on the large end. Standard taper .0005" per inch. Sizes under 1" are .0005" undersize on small end. Sizes 1-1/16 to 3" are .001" undersize on small end.

Designed for setting up accurately bored or reamed blanks and castings for pulleys, handwheels or hubs, on centers so that the outside diameter can be turned concentrically with the axis of the hole in which the mandrel is fixed.

Size	MEDA		EAGLE ROCK	
	Order No.	Price	Order No.	Price
1/4	7040016		7040014	
3/8	7040024		7040038	
1/2	7040032		7040012	
5/8	7040040		7040058	
3/4	7040048		7040034	
7/8	7040056		7040078	
1	7040064		7040010	
1-1/4	7040080		7040114	
1-1/2	-		7040112	
1-3/4	-		7040134	
2	-		7040020	
2-1/2	-		7040212	
3	-		7040030	

Dia.	Overall Length	Order No.	Price	Dia.	Overall Length	Order No.	Price
1/8	2-1/2	1870008		61/64	6-3/4	1870061	
5/32	3	1870010		31/32	7	1870062	
3/16	3	1870012		1	7	1870064	
7/32	3-3/4	1870014		1-1/16	7-1/4	1870068	
1/4	3-3/4	1870016		1-1/8	7-1/2	1870072	
9/32	4	1870018		1-3/16	7-3/4	1870076	
5/16	4	1870020		1-1/4	8	1870080	
11/32	4-1/4	1870022		1-5/16	8-1/4	1870084	
3/8	4-1/4	1870024		1-3/8	8-1/2	1870088	
13/32	4-1/2	1870026		1-7/16	8-3/4	1870092	
7/16	4-1/2	1870028		1-1/2	9	1870096	
15/32	5	1870030		1-9/16	9-1/4	1870136	
1/2	5	1870032		1-5/8	9-1/2	1870140	
17/32	5-1/4	1870034		1-11/16	9-3/4	1870144	
9/16	5-1/4	1870036		1-3/4	10	1870148	
19/32	5-1/2	1870038		1-13/16	10-1/4	1870152	
5/8	5-1/2	1870040		1-7/8	10-1/2	1870156	
21/32	5-3/4	1870042		1-15/16	10-3/4	1870160	
11/16	5-3/4	1870044		2	11	1870200	
23/32	6	1870046		2-1/8	11-1/2	1870208	
3/4	6	1870048		2-1/4	12	1870216	
25/32	6-1/4	1870050		2-3/8	12	1870224	
13/16	6-1/4	1870052		2-1/2	12-1/2	1870232	
27/32	6-1/2	1870054		2-5/8	12-1/2	1870240	
7/8	6-1/2	1870056		2-3/4	13	1870248	
29/32	6-3/4	1870058		2-7/8	13	1870256	
15/16	6-3/4	1870060		3	13	1870300	

Set of 8 arbors and hex wrenches on a wooden block.

MEDA - SUPERIOR IMPORT	Order No. 7040100	Price	
EAGLE ROCK - USA	Order No. 7040800	Price	

## EXPANDING MANDRELS

SERIES 303:

Hardened and precision-ground. Consists of tapered arbor and expanding sleeve (s). Any size within the range may be obtained by moving sleeve along arbor.



**MEDA**  
Superior Import

Size	Range	Length of Arbor	Length of Sleeve	Sleeves Furnished	Order No.	Price
1	1/2 to 9/16	5	2-1/2	1	1875001	
2	9/16 to 21/32	6	2-3/4	1	1875002	
3	21/32 to 3/4	7	2-3/4	1	1875003	
4	3/4 to 7/8	7	3-1/4	1	1875004	
5	7/8 to 1	7	3-1/4	1	1875005	
6	1 to 1-1/4	9	4	2	1875006	
7	1-1/4 to 1-1/2	9	4	2	1875007	
8	1-1/2 to 2	11-1/2	5	2	1875008	
9	2 to 2-3/4	14	6	2	1875009	
10	2-3/4 to 3-3/4	17	7	2	1875010	

## LATHE DOGS

SERIES 571



**MEDA**  
Superior Import

Capacity	Straight Tail Order No.	Price	Bent Tail Order No.	Price
1/2	5715032		5710032	
3/4	5715048		5710048	
1	5715064		5710064	
1-1/4	5715080		5710080	
1-1/2	5715096		5710096	
1-3/4	5715148		5710148	
2	5715200		5710200	
2-1/2	5715232		5710232	
3	5715300		5710300	
4	5715400		5710400	
5	5715500		5710500	
6	5715600		5710600	

## EXPANDING MANDREL SETS

SERIES 303:

Case not included.

**MEDA**  
Superior Import

Range	No. of Mandrels in Set	Sizes of Mandrels in Set	Order No.	Price
1/2 to 1	5	1 to 5	1880015	
1 to 2	3	6 to 8	1880068	
1/2 to 2	8	1 to 8	1880018	
1/2 to 3-3/4	10	1 to 10	1880110	



**RADIUS CUTTING TOOLS  
(SHAPLANE)**

SERIES 325:



These are indispensable tools for cutting concave and convex radii. Tools are very simple to operate, extremely accurate and they provide a very smooth finish on all types of materials. All tools use 1/4" tool bits except Order No. 1975006 which uses 3/8" tool bits.

**CONVEX RADII**

Radius Capacity	Shank Size	Swing of Lathe	Order No.	Price
0 - 1-5/8 Ball	3/8 x 1 x 4 Long	9-13	1975001	
1/4 - 2-1/2 Ball	9/16 x 1-1/4" x 6 Long	13 & up	1975002	

**CONCAVE RADII**

Minimum Radius	Shank Size	Swing of Lathe	Order No.	Price
3/8	3/8 x 1 x 4 Long	9-13	1975003	
3/4	3/8 x 1 x 4 Long	9-13	1975004	
1/2	9/16 x 1-1/4 x 6 Long	13 and up	1975005	
1	9/16 x 1-1/4 x 6 Long	13 and up	1975006*	

\*Adaptable for use on shapers, planers, and boring mills.

**GRINDING CARRIERS**

SERIES 571:



Capacity	Order No.	Price
1/4" / 6mm	9710001	
3/8" / 9mm	5710002	
1/2" / 12mm	5710003	
5/8" / 16mm	5710004	
3/4" / 19mm	5710005	
1" / 25mm	5710006	
1-1/4" / 30mm	5710007	
1-1/2" / 38mm	5710008	
1-3/4" / 44mm	5710009	
2" / 50mm	5710010	
2-1/2" / 63mm	5710011	
3" / 75mm	5710012	
3-1/2" / 90mm	5710013	
4" / 100mm	5710014	

Set of six grinding carriers 1/4" to 1" (6mm to 25mm)

Order No. **5710015** Price:

Set of ten grinding carriers 1/4" to 2" (6mm to 50mm)

Order No. **5710016** Price:

**CUT - OFF TOOL HOLDERS**

SERIES 431: STRAIGHT  
SERIES 432: RIGHT HAND  
SERIES 433: LEFT HAND



S = Straight R = Right Hand L = Left Hand

For use with H.S.S. and Cobalt Cut-Off Blades. Cut off blades are not included.

Model No.	Size of Holder	Size of Blade	Order No.	Price
M-S*	5/16 x 5/16 x 3	1/16 x 3/16	2450012	
19-S	5/16 x 3/4 x 4-1/2	3/32 x 1/2	2450032	
29-R	5/16 x 3/4 x 4-1/2	3/32 x 1/2	2455032	
29-L	5/16 x 3/4 x 4-1/2	3/32 x 1/2	2460032	
20-S	3/8 x 7/8 x 5	3/32 x 5/8	2450040	
30-R	3/8 x 7/8 x 5	3/32 x 5/8	2455040	
30-L	3/8 x 7/8 x 5	3/32 x 5/8	2460040	
21-S	1/2 x 1-1/8 x 6	1/8 x 3/4	2450048	
31-R	1/2 x 1-1/8 x 6	1/8 x 3/4	2455048	
31-L	1/2 x 1-1/8 x 6	1/8 x 3/4	2460048	
22-S	5/8 x 1-3/8 x 7	1/8 x 7/8	2450056	
32-R	5/8 x 1-3/8 x 7	1/8 x 7/8	2455056	
32-L	5/8 x 1-3/8 x 7	1/8 x 7/8	2460056	
23-S	3/4 x 1-5/8 x 8	3/16 x 1	2450064	
33-R	3/4 x 1-5/8 x 8	3/16 x 1	2455064	
33-L	3/4 x 1-5/8 x 8	3/16 x 1	2460064	

\*Ideal for mini-lathes.

**BORING TOOL HOLDERS**

SERIES 607:



Each holder comes with one Double Ended Boring Bar. Tool Bits are not included.

Model No.	Size of Holder	B/bar Dia.	Tool Bit Size	Order No.	Price
BT2	3/8 x 7/8 x 5-3/8	9/16	3/16	6070012	
BT3	1/2 x 1-1/8 x 6-1/8	3/4	1/4	6070016	
BT4	5/8 x 1-3/8 x 7-7/16	15/16	5/16	6070020	

**TURNING TOOL HOLDERS -  
ADJUSTABLE**

SERIES 428:



- Machined Tool Holders
- Supplied without Tool Bits.



Straight Order No.	Capacity		Overall Length	Price
	Inch	mm		
2435001	3/16 to 1/4"	4.76 to 6.35mm	5"/127mm	
2435002	1/4 to 5/16	6.35 to 7.93mm	5-1/2"/140mm	
2435005	5/16 to 3/8	7.93 to 9.32mm	6"/152mm	
2435004	3/8 to 1/2	9.52 to 12.7mm	8"/203mm	

## TOOL HOLDERS

All Tool Holders are accurately machined and heat treated.  
Each Tool Holder includes a wrench. (Tool Bits are not included.)

### TURNING TOOL HOLDERS

SERIES 428: STRAIGHT  
SERIES 429: RIGHT HAND (Pictured)  
SERIES 430: LEFT HAND

S = Straight  
R = Right Hand  
L = Left Hand



### TURNING TOOL HOLDERS

SERIES 561:

S = Straight  
R = Right Hand  
L = Left Hand



For use with H.S.S. and Cobalt Tool Bits. (See Index)

For use with Carbide Tipped Tool Bits. (See Index)

Model No.	Size of Holder	Size of Tool Bit	Order No.	Price	Model No.	Size of Holder	Size of Tool Bit	Order No.	Price
ML-S*	5/16 X 5/16 X 3-3/8	1/8	2435101		T-0-S	3/8 x 15/16 x 6	1/4	5610016	
ML-R*	5/16 X 5/16 X 3-3/8	1/8	2440101		T-0-R	3/8 x 15/16 x 6	1/4	5610116	
ML-L*	5/16 X 5/16 X 3-3/8	1/8	2445101		T-0-L	3/8 x 15/16 x 6	1/4	5610216	
000-S	5/16 x 1/2 x 4	3/16	2435011		T-1-S	1/2 x 1-1/4 x 7	5/16	5610020	
000-R	5/16 x 1/2 x 4	3/16	2440011		T-1-R	1/2 x 1-1/4 x 7	5/16	5610120	
000-L	5/16 x 1/2 x 4	3/16	2445011		T-1-L	1/2 x 1-1/4 x 7	5/16	5610220	
00-S	5/16 x 3/4 x 4-1/2	3/16	2435012		T-2-S	5/8 x 1-1/2 x 8	3/8	5610024	
00-R	5/16 x 3/4 x 4-1/2	3/16	2440012		T-2-R	5/8 x 1-1/2 x 8	3/8	5610124	
00-L	5/16 x 3/4 x 4-1/2	3/16	2445012		T-2-L	5/8 x 1-1/2 x 8	3/8	5610224	
0-S	3/8 x 7/8 x 5	1/4	2435016		T-3-S	3/4 x 1-3/4 x 9	7/16	5610028	
0-R	3/8 x 7/8 x 5	1/4	2440016		T-3-R	3/4 x 1-3/4 x 9	7/16	5610128	
0-L	3/8 x 7/8 x 5	1/4	2445016		T-3-L	3/4 x 1-3/4 x 9	7/16	5610228	
1-S	1/2 x 1-1/8 x 6	5/16	2435020		T-4-S	7/8 x 1-7/8 x 10	1/2	5610032	
1-R	1/2 x 1-1/8 x 6	5/16	2440020		T-4-R	7/8 x 1-7/8 x 10	1/2	5610132	
1-L	1/2 x 1-1/8 x 6	5/16	2445020		T-4-L	7/8 x 1-7/8 x 10	1/2	5610232	
2-S	5/8 x 1-3/8 x 7	3/8	2435024		T-5-S	1 x 2-1/8 x 12	5/8	5610040	
2-R	5/8 x 1-3/8 x 7	3/8	2440024		T-5-R	1 x 2-1/8 x 12	5/8	5610140	
2-L	5/8 x 1-3/8 x 7	3/8	2445024		T-5-L	1 x 2-1/8 x 12	5/8	5610240	
3-S	3/4 x 1-5/8 x 8	7/16	2435028		T-6-S	1-1/4 x 2-1/4 x 13	3/4	5610048	
3-R	3/4 x 1-5/8 x 8	7/16	2440028		T-6-R	1-1/4 x 2-1/4 x 13	3/4	5610148	
3-L	3/4 x 1-5/8 x 8	7/16	2445028		T-6-L	1-1/4 x 2-1/4 x 13	3/4	5610248	
4-S	7/8 x 1-3/4 x 9	1/2	2435032						
4-R	7/8 x 1-3/4 x 9	1/2	2440032						
4-L	7/8 x 1-3/4 x 9	1/2	2445032						
5-S	1 x 2 x 11	5/8	2435040						
5-R	1 x 2 x 11	5/8	2440040						
5-L	1 x 2 x 11	5/8	2445040						
6-S	1-1/4 x 2-1/4 x 13	3/4	2435048						
6-R	1-1/4 x 2-1/4 x 13	3/4	2440048						
6-L	1-1/4 x 2-1/4 x 13	3/4	2445048						

\*Ideal for mini-lathes.

### LATHE TOOL KIT

SERIES 639:

- 20pc starter set is perfect for tooling mini lathes and other machinery.
- Set includes 5" straight, left hand and right hand tool holders with 1/4" x 2-1/2" HSS tool bits.
- 6-3/4" long double ended boring bar with hex key, holder and 1/4" x 2-1/2" HSS tool bit.
- 4" double wheel pivot head knurling tool fitted with HSS knurls.
- 4-1/2" straight shank cut off tool holder supplied with 3/32" x 1/2" HSS Cut off blade.
- 1/2" lathe dog bent, 1/2" lathe dog straight and T-slot cleaner.
- 7" Heavy duty knurled scribe, 3/32" square head center punch, 6"/150mm stainless steel rule and 6" divider.



Order No. **6390020** Price

### KNURLMASTER HAND KNURLER

SERIES 930:



Excellent for "on the spot" repair work.

The Standard Knurlmaster Kit includes a case and one set of Medium pitch, Straight (AA) pattern knurls.

The Deluxe Knurlmaster Kit includes a case with one set each Coarse, Medium and Fine pitch, Straight (AA) and Diamond (BL and BR) pattern knurls. Knurl size: H - 1/2 x 1/4 x 3/16"

Description	Capacity	Order No.	Price
Knurlmaster Standard Kit	1/8 - 1"	9300129	
Knurlmaster Deluxe Kit	1/8 - 1"	9300130	

## KNURLING TOOL HOLDERS

SERIES 323: MEDA - SUPERIOR IMPORT

SERIES 930: EAGLE ROCK - USA

### SINGLE KNURL TOOL

- Shiny black finish.
- Holder size : 4" x 1/2" x 1/2"
- Knurl size : 3/4" x 3/8" x 1/4"
- Includes 1 Medium Cut H.S.S. Knurl.



Order No. 3230001	Price	
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### PIVOT HEAD KNURLING TOOL

- Self adjusting pivot head.
- Shiny black finish.
- Holder size : 4-1/2" x 1/2" x 1/2"
- Knurl size : 3/4" x 3/8" x 1/4"
- Includes 1 pair of Medium Cut H.S.S. Knurls.



Order No. 3230002	Price	
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### SELF ADJUSTING HEAD KNURLING TOOLS

Knurling tool with double knurl, self-centering head for manual lathes. Includes one set of Medium Pitch Diagonal (BL and BR) pattern knurls to produce a 30° diamond pattern on your part.



Size of Holder	Knurl Dimensions	MEDA		EAGLE ROCK	
		Order No.	Price	Order No.	Price
5/16 x 3/4 x 5	5/8 x 5/16 x 7/32	3230020		9300710	
3/8 x 7/8 x 5-1/2	5/8 x 5/16 x 7/32	3230100		9301012	
1/2 x 1-1/8 x 6-1/2	3/4 x 3/8 x 1/4	3230101		9301416	
5/8 x 1-3/8 x 7-1/2	3/4 x 3/8 x 1/4	3230102		9301618	
7/8 x 1-3/4 x 9	1 x 3/8 x 5/16	-		9302436	

### REVOLVING HEAD KNURLING TOOLS

Revolving head knurling tool with double knurl and self-centering head for manual lathes. Includes one set each of Coarse, Medium and Fine pitch diagonal (BL and BR) pattern knurls to produce a 30° diamond pattern on your part.



Size of Holder	Knurl Dimensions	MEDA		EAGLE ROCK	
		Order No.	Price	Order No.	Price
5/16 x 3/4 x 5	5/8 x 5/16 x 7/32	3233000		9300150	
3/8 x 7/8 x 5-1/2	5/8 x 5/16 x 7/32	3233100		9300151	
1/2 x 1-1/8 x 6-1/2	3/4 x 3/8 x 1/4	1965000		9300152	
5/8 x 1-3/8 x 7-1/2	3/4 x 3/8 x 1/4	3233102		9300153	

## KNURLING TOOLS

### "CLAMP TYPE"

SERIES 323:



These knurling tools fit regular toolposts and square toolpost turrets of any lathes including CNC lathes and chuckers. Since knurling pressure is absorbed between the two knurls there is no pressure on the lathe, compound, centers or cross feed screw. Depth of knurling can be

pre-set for production work before start of operation. Knurling pattern is clear and sharp. Easily removable pins make it simple to change knurls. Furnished with one set of medium diamond pattern knurls but can be used with any other knurls.

Knurl dimensions for both models: 3/4" Dia. x 3/8" Width x 1/4" Bore.

For Use On Work Diameters From:	Total Length of Tool	Shank Size	Order No.	Price
1/16 - 2-1/4	6	1/2 x 5/8	1970001	
2-1/4 - 4-1/2	8-1/4	5/8 x 3/4	1970002	

## KNURLING TOOLS

### "SCISSOR TYPE"

SERIES 930:



These knurling tools fit regular toolposts and square toolpost turrets of any lathes including CNC lathes and chuckers. Since knurling pressure is absorbed between the two knurls there is no pressure on the lathe, compound, centers or cross feed screw. Depth of knurling can be pre-set for production work before start of operation. Knurling pattern (straight of diamond) is clear and sharp. Easily removable pins make it simple to change knurls. Furnished with one set of medium diamond pattern knurls but can be used with any other knurls. Knurl dimensions for both models: 3/4" Dia. x 3/8" Width x 1/4" Bore.

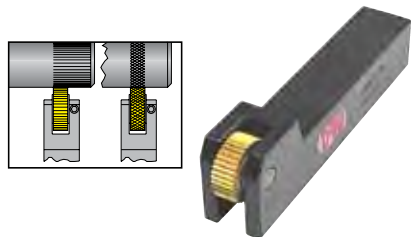
Knurls and Knurl Pins are now quickly and easily replaced while still in your machine to minimize down time. Tool strength has been greatly increased to endure even your worst CNC application. Our exclusive CNC shanks are solid, one piece construction that are offset to allow for virtually no turret overhang of the knurls. Knurling pressures are absorbed by the tool not your bed, compound, centers or feed screw. This new generation of Scissor is certainly one of the best knurling tools you can buy.

Capacity	Shank	Knurl Size	Order No.	Price
0-2 1/8"	5/8 Center	3/4 x 3/8 x 1/4	9300112	
0-2 1/8"	3/4 Round	3/4 x 3/8 x 1/4	9300115	
0-2 1/8"	3/4 RH	3/4 x 3/8 x 1/4	9300116	
0-2 1/8"	3/4 LH	3/4 x 3/8 x 1/4	9300117	
0-2 1/8"	1" Round	3/4 x 3/8 x 1/4	9300118	
0-2 1/8"	1" RH	3/4 x 3/8 x 1/4	9300119	
0-2 1/8"	1" LH	3/4 x 3/8 x 1/4	9300120	
2 1/8-4"	3/4 Center	3/4 x 3/8 x 1/4	9300121	
2 1/8-4"	3/4 Round	3/4 x 3/8 x 1/4	9300122	
2 1/8-4"	3/4 RH	3/4 x 3/8 x 1/4	9300123	
2 1/8-4"	3/4 LH	3/4 x 3/8 x 1/4	9300124	
2 1/8-4"	1" Round	3/4 x 3/8 x 1/4	9300127	
2 1/8-4"	1" RH	3/4 x 3/8 x 1/4	9300128	
2 1/8-4"	1" LH	3/4 x 3/8 x 1/4	9900130	



#### SERIES 930:

MACHINE TOOL ACCESSORIES

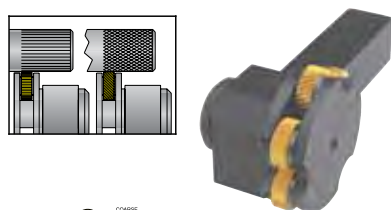


#### SWFKT - Single Wheel Fixed Knurling Tool for Manual or CNC Lathes

Precision square shank with preset center height. Single knurl wheel for straight and diamond pattern. Knurl wheel is mounted between the thrust washers to ensure smooth and even rotation of the knurl while knurling is performed. Best used for straight patterns or bump knurling a diamond pattern.

Center Height	Shank Size	Desc.	Order No	Price	Knurl Wheel Supplied	Knurl Pin Set	Order No.	Price
.500	.500 x .500	SWFKT-50-D	6121730					
.750	.750 x .750	SWFKT-75-M	6121740		MDR/L-25C	KPS-31-75	6128840	
1.00	1.00 x 1.00	SWFKT-100-O	6121750		ODR/L-25C	KPS-31-100	6128845	

Tool supplied with one 25 or 30 TPI knurling wheels for straight pattern. A complete selection of knurl wheel pitches available.

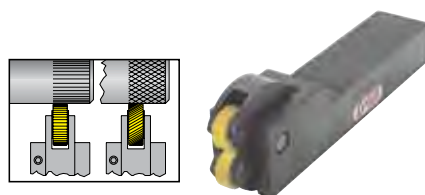
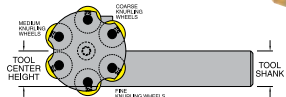


#### 3SHKT - Three Swivel Head Knurling Tool

Designed to knurl multiple applications with one tool. Precision square shank with preset center height. Twin knurl wheels for straight and diamond pattern. Knurl wheels are mounted between the thrust washers to ensure a smooth and even rotation of the knurls while knurling is performed. Self-centering knurling head for precise alignment to the working part.

Center Height	Shank Size	Desc.	Order No	Price	Knurl Wheel Supplied	Knurl Pin Set	Order No.	Price
.500	.500 x .750	3SHKT-50-D	6121510		DDR/L-30C	KPS-18-50	6128805	
.750	.750 x 1.00	3SHKT-75-M	6121530		MDR/L-16C			
1.00	1.00 x 1.00	3SHKT-100-M	6121540		MDR/L-25C	KPS-31-100	6128845	

A complete selection of knurl wheel pitches available.

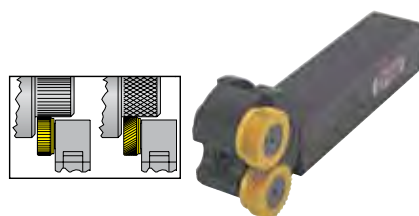
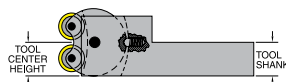


#### SCK - Self-Centering Knurling Tool for CNC Lathe

Specifically designed for CNC lathe. Precision square shank with preset center height. Twin knurl wheels for straight and diamond pattern. Knurl wheels are mounted between the thrust washers to ensure a smooth and even rotation of the knurls while knurling is performed. Self-centering knurling head for a precise alignment to the working part.

Center Height	Shank Size	Desc.	Order No	Price	Knurl Wheel Supplied	Knurl Pin Set	Order No.	Price
.500	.500 x .750	SCK-50-D	6122111		DDR/L-30C	KPS-18-50	6128805	
.750	.750 x 1.25	SCK-75-D	6122121					
1.00	1.00 x 1.20	SCK-100-D	6122131		MDR/L-25C	KPS-31-75	6128845	

Tool supplied with one set of 25 or 30 TPI knurling wheels for diamond pattern. A complete selection of knurl wheel pitches available.

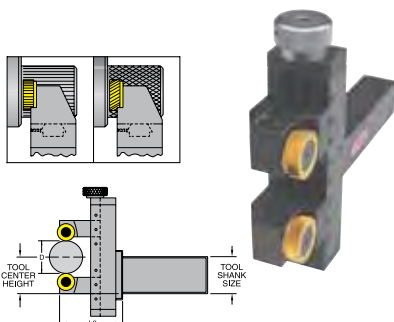
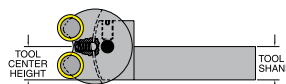


#### SSCK - Shoulder Self-Centering Knurling Tool for CNC Lathe

Specifically designed for CNC lathe. Designed to knurl against a square shoulder. Precision square shank with preset center height. Twin knurl wheels for straight and diamond pattern. Knurl wheels are mounted between the thrust washers to ensure a smooth and even rotation of the knurls while knurling is performed. Supplied with Cobalt TIC/N Coated SW series knurl wheels. Self-centering knurling head for a precise alignment to the working part.

Center Height	Shank Size	Desc.	Order No.	Price	Knurl Wheel Supplied	Knurl Pin Set	Order No.	Price
.500	.500 x .625	SSCK-50-2	6122220		SW2R/L-30C	SW2.0P-2S	6129055	
.750	.750 x .750	SSCK-75-4	6122240					
1.00	1.00 x 1.00	SSCK-100-4	6122250		SW4R/L-25C	SW4.0P-2S	6129085	

Tool supplied with one set of 25 or 30 TPI knurling wheels for diamond pattern. A complete selection of knurl wheel pitches available.



#### KTW109 - Diametral Shoulder Knurling Tool with a Self-Centering Adjustable Floating Straddle

This tool is designed when pressure and deflection are a problem. The knurling heads are able to "float" somewhat and center on the workpiece, compensating for any off-centering. Precise square shank with preset center height. A diametral adjustment screw regulates the depth of the knurl pattern and diameter size.

Refer to the CNC-000-7 when tool clearance is a problem.

Center Height	Shank Size	D Max	L2	Desc.	Order No	Price	Knurl Wheel Style & size	Knurl Pin Set	Order No.	Price
0.75	.750 x 1.00	2.0	3.125	KTW109-75-2-4	6122810		SW4R/L-25C	SW4.0P-2S	6129085	
1.00	1.00 x 1.00	2.0	3.125	KTW109-100-2-4	6122820					

Tool supplied with one set of 25 TPI knurling wheels for diamond pattern. A complete selection of knurl wheel pitches available.





# MODULAR KNURLING TOOLS FOR YOUR CNC

SERIES 930:



## Modular Versatility

The CNC Modular Knurling Tool is a tooling system which combines exceptional versatility, rigidity, ease of handling, and simplicity. Knurl wheels, heads, and shanks can be combined to build your own knurling tool to fit any work application and machine.

- Precision square shank with preset center height.
- Right or Left hand applications.
- One shank fits all heads.

## Precise Adjustable Center Height

The dovetail mounting of the shank and head insures that the tool will be rigid and adjustable yet easy to use. By turning the adjustment screw clockwise or counterclockwise the center height of the head can be adjusted. Each eighth turn of the screw, which is marked on the screw, moves the head .004". After the desired center height has been reached, tightening the lock screw ensures that the head will remain in position while knurling a part.

- One head fits all shanks.
- Easy set-up.
- Center height adjustment.
- Interchangeable knurlheads.

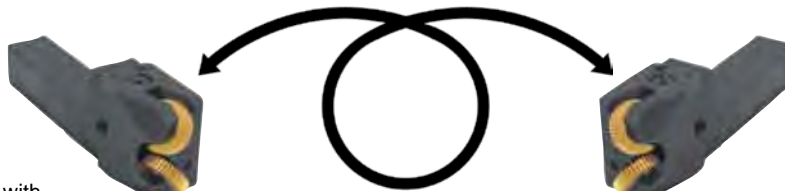
## Method of Knurling

Knurl forming action displaces the material creating a perfect knurl pattern while sacrificing speeds and feeds. The force applied through forming is increased in larger diameters making knurling difficult and slow. Knurling cutting action cuts a perfect knurl pattern 10 to 20 times faster than a forming knurl tool becoming applicable for CNC use. It is engineered to knurl any material, including thin wall tubing, with minimum stress to the spindle and compound lathe.

- High productivity.
- Best knurl quality.
- Low production cost.
- Cutting - 10 to 20 times faster.

**One shank fits all heads.**

- Precision square shank with preset center height.
- Right or Left hand applications.
- Easy set-up.



**One head fits all shanks.**

- Center height adjustment.
- Interchangeable knurl heads.

- High productivity.
- Best knurl quality.
- Low production cost.
- Cutting - 10 to 20 times faster.

### CNC-000-1-2



#### CUTTING Small cutting range: 5/16" to 1-1/2".

- Minimum stress on the machine, and faster than knurl forming action.
- Supplied with SW2S-30C cobalt knurl wheels - Tin coated. Adds longer life and better performance to the knurl wheels.
- Twin straight SW series knurl wheels for diamond pattern. Allows tool to knurl close to a square shoulder.

Desc.	Order No.	Price	Shank Size	Tool Length
CNC-75-1-2	6120410		.750	5.500
CNC-100-1-2	6120420		1.00	6.750
CNC-125-1-2	6120430		1.25	7.250

### CNC-000-2-R



#### CUTTING Heavy duty cutting range: 1" to 5".

- Minimum stress on the machine, and faster than knurl forming action.
- Thrust washers. Ensures smooth and even rotation of the knurls.
- Twin straight R series knurl wheels for diamond pattern. Supplies more rigidity for larger diameters
- Supplied with RS-25-C cobalt knurl wheels - Tin coated. Adds longer life and better performance to the knurl wheels.
- Knurl wheels are mounted between

Desc.	Order No.	Price	Shank Size	Tool Length
CNC-75-2-R	6120510		.750	5.50
CNC-100-2-R	6120520		1.00	6.75
CNC-125-2-R	6120530		1.25	7.25

### CNC-000-3-M



#### CUTTING Extra heavy duty cutting range: 2" & up.

- Minimum stress on the machine, and faster than knurl forming action.
- Thrust washers. Ensures smooth and even rotation of the knurls.
- Twin straight M series knurl wheels for diamond pattern. Supplies more rigidity for larger diameters
- Supplied with MS-25-C cobalt knurl wheels - Tin coated. Adds longer life and better performance to the knurl wheels.
- Knurl wheels are mounted between

Desc.	Order No.	Price	Shank Size	Tool Length
CNC-75-3-M	6120610		.750	5.625
CNC-100-3-M	6120620		1.00	6.875
CNC-125-3-M	6120630		1.25	7.375

### CNC-000-5-O



#### FORMING Straight bump.

- Great quality of knurl pattern.
- Single O series knurl wheel for straight or diamond pattern. Narrow knurl applications, up to .394" wide
- Thrust washers. Ensures smooth and even rotation of the knurl.
- Knurl wheel is mounted between
- Supplied with OS25-C cobalt knurl wheel - Tin coated. Adds longer life and better performance to the knurl wheel.

Desc.	Order No.	Price	Shank Size	Tool Length
CNC-75-5-0	6120710		.750	5.50
CNC-100-5-0	6120720		1.00	6.75
CNC-125-5-0	6120730		1.25	7.25

### CNC-000-7



#### FORMING Small diameter range: up to 1".

- Better quality of knurl pattern.
- Compact design. Allows more clearance for the tool head.
- Thrust washers. Ensures smooth and even rotation of the knurl.
- Twin R series knurl wheels for straight or diamond pattern. Supplies more rigidity for compact design.
- Supplied with RDR/L-30-C cobalt knurl wheels - Tin coated. Adds longer life and better performance to the knurl wheel.
- Self-centering knurling head. Precise alignment to the working part.

Desc.	Order No.	Price	Shank Size	Tool Length
CNC-75-7-R	6120910		.750	5.75
CNC-100-7-R	6120920		1.00	7.00
CNC-125-7-R	6120930		1.25	7.50

## HIGH SPEED STEEL

### KNURLS

#### SERIES 459:

Knurls are individually cut to obtain sharp, perfectly formed teeth - then heat treated and tempered.

**Available with:** 14 (coarse), 21 (medium), and 33 (fine) teeth per inch.

**NOTE:** RH Knurling is produced with LH Knurls. LH Knurling is produced with RH Knurls. Male Diamond Knurling is produced by RH and LH Knurls in pairs.



Dimensions Dia. x Thick. x Hole Dia.	Teeth Per Inch	Straight	RH Diagonal	LH Diagonal	Price
5/8 x 5/16 x 7/32"	14	4590140	4590141	4590142	
	21	4590210	4590211	4590212	
	33	4590330	4590331	4590332	
3/4 x 3/8 x 1/4"	14	2550140	2550141	2550142	
	21	2550210	2550211	2550212	
	33	2550330	2550331	2550332	

MACHINE TOOL ACCESSORIES



## KNURL WHEELS

#### SERIES 916:



**Circular Pitch Knurls** are made to extremely high standards from the finest materials available. Knurls are individually hob cut and lapped to a smooth hard finish to give longer life and impart a smooth clean surface to the knurled part.

Knurls available in High Speed, Cobalt, TIC/N - Coated, beveled, and diametral pitch.

### "C" Series High Speed



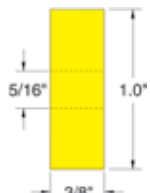
TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
16	90°	0024502	0024610	0024718
20	90°	0024504	0024612	0024720
25	90°	0024506	0024614	0024722
30	90°	0024508	0024616	0024724
35	90°	0024510	0024618	0024726
40	90°	0024512	0024620	0024728
50	70°	0024514	0024622	0024730
80	70°	0024516	0024624	0024732
Price				

### "A" Series High Speed



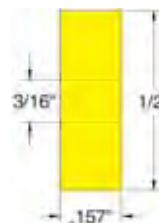
TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
10	90°	0023502	9923634	0023766
12	90°	0023504	0023636	0023768
14	90°	0023506	0023638	0023770
16	90°	0023508	0023640	0023772
20	90°	0023510	0023642	0023774
25	90°	0023512	0023644	0023776
30	90°	0023514	0023646	0023778
35	90°	0023516	0023648	0023780
40	90°	0023518	0023650	0023782
50	70°	0023520	0023652	0023784
80	70°	0023522	0023654	0023786
Price				

### "O" Series High Speed



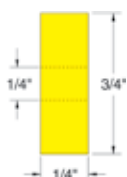
TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Male Diamond	Female Diamond
12	90°	0025606	-	-
14	90°	9925608	-	-
16	90°	0025610	-	-
20	90°	0025612	9926008	0026074
25	90°	0025614	9026010	0026076
30	90°	0025616	9926012	0026078
Price				

### "D" Series Cobalt, TiN Coated



TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
20	90°	25031	925085	25139
30	90°	25035	25089	25143
40	90°	25039	25093	25147
Price				

### "S" Series High Speed



TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
16	90°	0026808	0026930	0027054
20	90°	0026810	9926932	0027056
25	90°	0026812	9926934	0027058
30	90°	0026814	9926936	0027060
40	90°	0026818	0026940	0027064
50	70°	0026820	0026942	0027066
Price				

## Quality Knurling Tools



The Choice Is Yours!!!

(Continued)



# KNURL WHEELS

SERIES 916:  
(Continued)

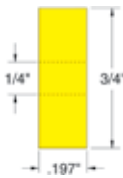


**Circular Pitch Knurls** are made to extremely high standards from the finest materials available. Knurls are individually hob cut and lapped to a smooth hard finish to give longer life and impart a smooth clean surface to the knurled part.

Knurls available in High Speed, Cobalt, TIC/N - Coated, beveled, and diametral pitch.

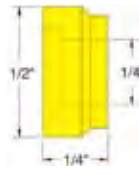
- “SW” knurling wheels are technically designed to knurl against a square shoulder.
- With super precise workmanship, the wheels are made of heat treated High Cobalt Steel to withstand severe knurling operation.
- Knurl wheels are Titanium Nitrate coated to reduce the coefficient of friction when knurling, increasing the quality and the force of knurling as well as the life of the knurl wheels.
- All SW Series knurl wheels are available only in cobalt and tin coated.

“R” Series  
Cobalt



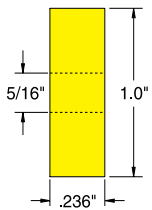
TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
10	90°	0026502	0026564	0026626
12	90°	0026504	0026566	0026628
14	90°	0026506	0026568	0026630
16	90°	0026508	0026570	0026632
20	90°	0026510	0026572	0026634
25	90°	0026512	0026574	0026636
30	90°	0026514	0026576	0026638
35	90°	0026516	0026578	0026640
40	90°	0026518	9926580	0026642
50	70°	0026520	0026582	0026644
Price				

“SW2” Series  
Cobalt



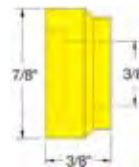
TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
16	90°	0027402	-	-
20	90°	0027404	-	-
25	90°	0027406	0027456	0027506
30	90°	0027408	0027458	0027508
35	90°	0027410	-	-
40	90°	0027412	-	-
50	70°	0027414	-	-
Price				

“M” Series  
Cobalt



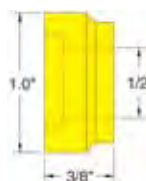
TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
12	90°	0025306	0025372	0025438
14	90°	0025308	0025374	0025440
16	90°	9925310	0025376	0025442
20	90°	0025312	0025378	0025444
25	90°	0025314	0025380	0025446
30	90°	9925316	0025382	0025448
Price				

“SW3.5” Series  
Cobalt



TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
14	90°	-	0027756	0027810
20	90°	9927706	0027760	-
25	90°	9927708	0027762	0027816
Price				

“SW4” Series  
Cobalt



TPI	Included Tooth Angle	Order No.		
		Pattern		
		Straight	Diagonal Right	Diagonal Left
14	90°	0028002	0028056	0028110
16	90°	0028004	0028058	0028112
20	90°	0028006	0028060	0028114
25	90°	0028008	0028062	0028116
30	90°	0028010	0028064	0028118
35	90°	0028012	0028066	0028120
40	90°	0028014	0028068	0028122
Price				



While we show some of the most popular **KNURLS** we can supply many more styles; please inquire.



## R-8 COLLETS

SERIES 333 : MEDA - SUPERIOR IMPORT

SERIES 330 : BISON (Concentricity guaranteed to 0.0004")

Size	MEDA		BISON	
	Order No.	Price	Order No.	Price
1/32**	1995502		-	
1/16	1995104		7169005	
3/32	1995106		7169010	
1/8	1995108		7169012	
5/32	1995110		7169015	
3/16	1995112		7169018	
7/32	1995114		7169020	
1/4	1995116		7169025	
9/32	1995118		7169028	
5/16	1995120		7169031	
11/32	1995122		7169034	
3/8	1995124		7169037	
13/32	1995126		7169040	
7/16	1995128		7169043	
15/32	1995130		7169046	
1/2	1995132		7169050	
17/32	1995134		7169053	
9/16	1995136		7169056	
19/32	1995138		7169055	
5/8	1995140		7169062	
21/32	1995142		7169065	
11/16	1995144		7169068	
23/32	1995146		7169071	
3/4	1995148		7169075	
25/32	1995150		7169078	
13/16	1995152		7169081	
27/32	1995154		7169084	
7/8	1995156		7169087	
1	1995164		7169099	

\*\*Limited quantity.

Size	MEDA		BISON	
	Order No.	Price	Order No.	Price
2mm	3330002		7169602	
3mm	3330003		7169603	
4mm	3330004		7169604	
5mm	3330005		7169605	
6mm	3331006		7169606	
7mm	3330007		7169607	
8mm	3330008		7169608	
9mm	3330009		7169609	
10mm	3330010		7169610	
11mm	3330011		7169611	
12mm	3330012		7169612	
13mm	3331013		7169613	
14mm	3330014		7169614	
15mm	3330015		7169615	
16mm	3330016		7169616	
17mm	3330017		7169617	
18mm	3330018		7169618	
19mm	3330019		7169619	
20mm	3330020		7169620	

## R-8 EMERGENCY COLLET

SERIES 331:

Collets are soft to permit machining to special sizes or shapes. Center hole is 1/16".



Order No. 1990002

Price

## R-8 COLLET SETS

SERIES 333: MEDA - SUPERIOR IMPORT

SERIES 330: BISON (Concentricity guaranteed to 0.0004")



Range	No. of Pieces	MEDA		BISON**	
		Order No.	Price	Order No.	Price
1/8 - 3/4 x 8ths	6	3330006		-	
1/8 - 7/8 x 16ths	13	3330013		7169113	
1/8 - 7/8 x 32nds*	25*	3330025		7169127*	
2-20mm x 1mm	19	3331019		7169669	

\*BISON Set: 1/16 - 7/8 x 32nds; 27pc.

\*\*BISON sets include stand.

While we show some of the most popular **COLLETS** we can supply many more styles. See our website or inquire.

## R-8 COLLET RACK

SERIES 333 :



Collets not included.

Holds 48 collets and can also be used to store arbors, end mill adaptors, shell end mill arbors and any R-8 material. Collets not included. Dimensions: 12-1/2" H x 15-1/2" W x 8" deep.

Order No. 1995007

Price

## R-8 COLLET TOOL TRAY

SERIES 333:



Holds 13 R-8 collets or any other R8 tools. Made of sturdy aluminum casting which does not scratch. Has 2 rows with holes under 1". Attaches to any milling machine by 2 screws (supplied). Dimensions: approx. 14" Wide x 9" Depth. Design of tray permits dirt and chips to fall through.

Order No. 1995000

Price

## R-8 COLLET RACK

SERIES 333:



Collets not included.

Easily mounts on machine with 2 screws (supplied). Holds 12 collets. Flip down cover to protect tools from dirt.

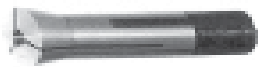
Order No. 1995010

Price



### 3-C & 3-AT COLLETS

SERIES 334: 3-C ROUND  
SERIES 336: 3-AT ROUND



3-C ROUND



3-AT ROUND

Size	3-C	3-AT	Price
	Order No.	Order No.	
1/16	2000104	2005104	
5/64	2000105	2005105	
3/32	2000106	2005106	
7/64	2000107	2005107	
1/8	2000108	2005108	
9/64	2000109	2005109	
5/32	2000110	2005110	
11/64	2000111	2005111	
3/16	2000112	2005112	
13/64	2000113	2005113	
7/32	2000114	2005114	
15/64	2000115	2005115	
1/4	2000116	2005116	
17/64	2000117	2005117	
9/32	2000118	2005118	
19/64	2000119	2005119	
5/16	2000120	2005120	
21/64	2000121	2005121	
11/32	2000122	2005122	
23/64	2000123	2005123	
3/8	2000124	2005124	
25/64	2000125	2005125	
13/32	2000126	2005126	
27/64	2000127	2005127	
7/16	2000128	2005128	
29/64	2000129	2005129	
15/32	2000130	2005130	
31/64	2000131	2005131	
1/2	2000132	2005132	
9/16*	2000136	-	

\*LIMITED QUANTITY.

### MORSE TAPER COLLETS (M.T.2 AND M.T.3)

SERIES 651: ROUND



M.T.2		
Size	Order No.	Price
1/8	6510008	
3/16	6510012	
1/4	6510016	
5/16	6510020	
3/8	6510024	
7/16	6510028	
1/2	6510032	

M.T.3		
Size	Order No.	Price
1/8	6515008	
3/16	6515012	
1/4	6515016	
5/16	6515020	
3/8	6515024	
7/16	6515028	
1/2	6515032	
9/16	6515036	
5/8	6515040	
11/16	6515044	

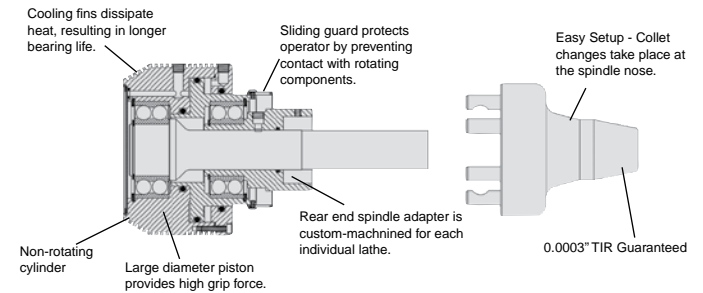
### 5C PNEUMATIC COLLET CLOSERS - FOR MANUAL LATHES & GRINDERS

SERIES 450:



- The Royal 5C Pneumatic Collet Closer enables 5C collets to be used on any manual lathe or workhead.
- This new model, based upon Royal's 50+ years of collet closer experience, has been designed for heavy use under the most demanding manufacturing conditions.
- Fast opening/closing action makes the Royal pneumatic collet closer a great choice for high production applications.
- Closer is very easy to actuate, resulting in minimal worker fatigue and maximum productivity.
- The air cylinder incorporates a large diameter piston, providing strong grip force on the workpiece.
- Royal 5C Pneumatic Collet Closer incorporates several modern safety features designed to help shops meet OSHA and NIOSH requirements. Unlike other collet closers, there are no exposed rotating parts on the outboard side of the machine.
- Pneumatic collet closer assembly includes air cylinder, custom-machined rear end spindle adapter, drawtube, and cam-lock collet adapter. Air controls sold separately.

Drawtube Capacity (in.)	1.06
Cylinder O.D. (in.)	5.94
Max. Operating Speed (rpm)*	4,000*
Max. Air Pressure (psi)	90
Piston Surface Area (sq. in.)	14.72
Max. Drawtube Force (lbs.)	1,325
Max. Clamping Force (lbs.)	4,520



Pneumatic Collet Closer Assembly		
For Lathes With Spindle Nose Type	Order No.	Price
A-3 or D1-3	5017200	\$1,924.70
A-4 or D1-4	5017201	\$2,016.85
A-5 or D1-5	5017202	\$2,217.30
A-6 or D1-6	5017203	\$2,416.80
A-8 or D1-8	5017204	\$2,750.25
Haas TL-1*	5017210	\$2,056.75
Haas TL-2*	5017211	\$2,217.30

\* Haas TL-1 and TL-2 are registered trademarks of Haas Automation, Inc.

Order Air Controls Separately



Description	Order No.	Price
Air Control Kit w/ Hand Valve	5016001	\$298.00
Air Control Kit w/ Foot Valve	5016002	\$469.00



## 5-C COLLETS

(With internal threads)

SERIES 328: MEDA-SUPERIOR IMPORT

SERIES 329: BISON

Concentricity guaranteed to 0.0004".

Made of specially selected steels, carefully heat treated and ground to ensure utmost precision and positive spring tension.



## 5-C COLLET SETS

Range	No. of Pieces	MEDA		BISON*	
		Order No.	Price	Order No.	Price
1/8 - 1-1/8 x 8ths	9	3280009		-	
1/16 - 1-1/8 x 16ths	18	3280018		7168168	
1/16 - 1-1/8 x 32nds	35	3280035		7168185	
1/16 - 1-1/8 x 64ths	69	3280069		7168190	
3-26mm x 1mm	24	3280024		7168674	



\*BISON includes stand.

Size	MEDA		BISON		Size	MEDA		BISON	
	Order No.	Price	Order No.	Price		Order No.	Price	Order No.	Price
3/64	-		7168002		19/32	1990138		7168072	
1/16	1990104		7168004		39/64	1990139		7168074	
5/64	1990105		7168006		5/8	1990140		7168076	
3/32	1990106		7168008		41/64	1990141		7168078	
7/64	1990107		7168010		21/32	1990142		7168080	
1/8	1990108		7168012		43/64	1990143		7168082	
9/64	1990109		7168014		11/16	1990144		7168084	
5/32	1990110		7168016		45/64	1990145		7168086	
11/64	1990111		7168018		23/32	1990146		7168088	
3/16	1990112		7168020		47/64	1990147		7168090	
13/64	1990113		7168022		3/4	1990148		7168092	
7/32	1990114		7168024		49/64	1990149		7168094	
15/64	1990115		7168026		25/32	1990150		7168096	
1/4	1990116		7168028		51/64	1990151		7168098	
17/64	1990117		7168030		13/16	1990152		7168100	
9/32	1990118		7168032		53/64	1990153		7168102	
19/64	1990119		7168034		27/32	1990154		7168104	
5/16	1990120		7168036		55/64	1990155		7168106	
21/64	1990121		7167038		7/8	1990156		7168108	
11/32	1990122		7168040		57/64	1990157		7168110	
23/64	1990123		7168042		29/32	1990158		7168112	
3/8	1990124		7168044		59/64	1990159		7168114	
25/64	1990125		7168046		15/16	1990160		7168116	
13/32	1990126		7168048		61/64	1990161		7168118	
27/64	1990127		7168050		31/32	1990162		7168120	
7/16	1990128		7168052		63/64	1990163		7168122	
29/64	1990129		7168054		1	1990164		7168124	
15/32	1990130		7168056		1-1/64	1990165		7168126	
31/64	1990131		7168058		1-1/32	1990166		7168128	
1/2	1990132		7168060		1-3/64	1990167		7168130	
33/64	1990133		7168062		1-1/16	1990168		7168132	
17/32	1990134		7168064		1-5/64	1990169		7168134	
35/64	1990135		7168066		1-3/32	1990170		7168136	
9/16	1990136		7168068		1-7/64	1990171		7168138	
37/64	1990137		7168070		1-1/8	1990172		7168140	

Size	MEDA		BISON		Size	MEDA		BISON		Size	MEDA		BISON	
Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	
3mm	3280003		7168603		11mm	3280011		7168611		19mm	3280019		7168619	
4mm	3280004		7168604		12mm	3280012		7168612		20mm	3280020		7168620	
5mm	3280005		7168605		13mm	3280013		7168613		21mm	3280021		7168621	
6mm	3280006		7168606		14mm	3280014		7168614		22mm	3280022		7168622	
7mm	3280007		7168607		15mm	3280015		7168615		23mm	3280023		7168623	
8mm	3280008		7168608		16mm	3280016		7168616		24mm	3280024		7168624	
9mm	3282009		7168609		17mm	3280017		7168617		25mm	3280025		7168625	
10mm	3280010		7168610		18mm	3282018		7168618		26mm	3280026		7168626	

### 5-C COLLETS

SERIES 328: MEDA - SUPERIOR IMPORT



HEXAGON			SQUARE	
Size	Order No.	Price	Order No.	Price
1/8	3290208		3300308	
3/16	3290212		3300312	
1/4	3290216		3300316	
5/16	3290220		3300320	
3/8	3290224		3300324	
7/16	3290228		3300328	
1/2	3290232		3300332	
9/16	3290236		3300336	
5/8	3290240		3300340	
11/16	3290244		3300344	
3/4	3290248		3300348	
13/16	3290252		-	
7/8	3290256		-	

### EMERGENCY COLLETS

SERIES 331:



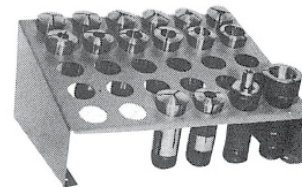
Collets are soft to permit machining to special sizes or shapes. Center hole is 1/16".



Style	Type	Order No.	Price
5-C	Steel	1990000	
5-C	Brass	1990001	
5-C	Nylon	1990003	

### 5-C COLLET RACK

SERIES 328:



Collets not included.

Holds up to 30 collets. Strongly made of 18 gage steel. Dimensions: 9-1/2 x 12", 5-1/2" high at one end and 2-1/2" at other end. Weight: 3 lbs. Baked enamel finish for easy cleaning and protection. Can be hung on wall or set on shelf or work bench.

Order No. 1990030	Price	
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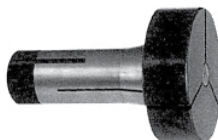
### 5-C CLUTCH (STEP) COLLETS

SERIES 332:



With soft machineable head.

Diameter	Order No.	Price
2	1990502	
3	1990503	
4	1990504	
5	1990505	
6	1990506	



### 5-C COLLET HOLDERS

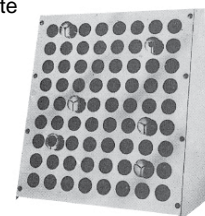
SERIES 328:



Made of durable heavy gage aluminum. Double plate construction. Selects collets instantly and retains collets firmly. Can be set on machine or bench or mounted on wall.

5-C TYPE Holds 72 collets. Dimensions : 12-3/4" H x 15-1/2" W x 8-1/2" deep.

Collets not included.



Order No. 1990072	Price	
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### SOLID COLLET STOP

SERIES 341:



Fits all 5-C collets with standard internal thread.

Order No. 2015000	Price	
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### UNIVERSAL COLLET STOP SET

SERIES 342:



Fits directly into collet and acts as either a solid stop or ejector stop with no distortion of collet.

Set includes stop body with spring ejector assembly, (1) each 1/4" and 1/2" diameter ejector, (1) each 1/4" and 1/2" diameter solid stop, and (2) extra springs.

Order No. 2020000	Price	
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In addition to the Collets we show in this catalogue, many other styles such as:

- B&S Taper #10
- B&S Taper #21
- B&S Taper #40
- B&S Taper #7
- B&S Taper #9
- &
- 2A, 4C, 6K

are available; please inquire.

## 5-C EXPANDING COLLETS

SERIES 326:



**EAGLE ROCK**



**MEDA**  
Superior Import

## 5-C EXPANDING COLLET SETS

4 Piece Set allows "internal chucking" within the range .250" through 1.937". Heads are machinable. Shanks are precision ground to maintain concentricity with  $\pm .0005$ ".

Size	Range	MEDA		EAGLE ROCK	
		Order No.	Price	Order No.	Price
1	.250 - .468	1980001		3260121	
2	.437 - .800	1980002		3260110	
3	.750 - 1.437	1980003		3260112	
4	.750 - 1.937	1980004		3261201	
<b>Complete set of 4 on a wooden rack.</b>					
1-4	.250 - 1.937	1980005		3260005	

The most effective and accurate means of internal chucking for short runs to mass production. Once seated in spindle and machined to size, these collets can hold concentricity well within .0005". Applicable on any manual or CNC Lathe, Milling Machine or Grinder with a 5C spindle. Machinable to any configuration within their stock and minimum machinable diameters. Collets with diameters 4" and larger have a lock ring for greater stability and accuracy while machining to their specific application.

### EAGLE ROCK

Dia.	Lgth.	Min. Mach. Dia.	Order No.	Price
1/2"	1"	.250"	3260121	
1/2"	*2"	.250"	3260122	
1/2"	*3"	.250"	3260123	
1"	1"	.437"	3260110	
1"	*2"	.437"	3260120	
1"	*3"	.437"	3260130	
1-1/2"	1"	.750"	3260112	
1-1/2"	1-1/2"	.750"	3261121	
1-1/2"	2"	.750"	3261122	
1-1/2"	2-1/2"	.750"	3261212	
1-1/2"	3"	.750"	3261123	
2"	1"	.750"	3261201	
2"	1-1/2"	.750"	3262212	
2"	2"	.750"	3262203	
2"	2-1/2"	.750"	3262221	
2"	3"	.750"	3262230	
2-1/2"	1"	.750"	3262121	
2-1/2"	1-1/2"	.750"	3262122	
2-1/2"	2"	.750"	3262120	
2-1/2"	2-1/2"	.750"	3262222	
2-1/2"	3"	.750"	3262123	
3"	1"	.750"	3263010	
3"	1-1/2"	.750"	3263015	
3"	2"	.750"	3263020	
3"	2-1/2"	.750"	3263025	
3"	3"	.750"	3263030	
4"	1"	.750"	3264010	
4"	1-1/2"	.750"	3264012	
4"	2"	.750"	3264020	
4"	2-1/2"	.750"	3264212	
4"	3"	.750"	3264030	
5"	2"	.750"	3265020	
6"	2"	.750"	3266020	

\* Extended 5C Expanding Collets - Made for holding delicate or long and narrow parts or where there is a machine clearance problem. Machinable to any dimension within their range, only the front (1" long) expands.

## THREE-JAW SELF-CENTERING UNIVERSAL LATHE CHUCKS

SERIES 995:

Reversible 2 piece jaws except where noted



Plain Back

Chuck Dia.	Thru Hole	Order No.	Price
3"	.630"	2670003	
4"	.866"	2670004	
5"	1.181"	2670005	
6"	1.575"	2670006	
8"	2.559"	2670008	
10"	3.150"	2670010	
12"	3.937"	2670012	

\* 2 sets of solid jaws.



D-1 Type Mount

Chuck Dia.	Spindle	Thru Hole	Order No.	Price
6"	D1-4	1.575"	2670604	
8"	D1-4	1.969"	9670804	
8"	D1-6	1.969"	2670806	
10"	D1-6	2.756"	2671006	
12"	D1-6	3.937"	2671206	
12"	D1-8	3.937"	2671208	

## THREE-JAW SELF CENTERING THREADED BACK UNIVERSAL CHUCKS

**MEDA**  
Superior Import

SERIES 995:

5" & 6" x 1-1/2" - 8



5" or 6" Diameter 3-Jaw Universal Lathe Chuck, Plain Back. 2 sets of hardened and ground jaws for inside and outside holding. Chuck Key. High quality cast iron body.

Plus 5" or 6" x 1-1/2"-8 Back Plate made for the chuck (Chuck can be used by itself or with included back plate.)

5" Order No. 2670512	Price	
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6" Order No. 2670612	Price	
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## THREE-JAW, SELF-CENTERING SCROLL CHUCKS

### PRECISION, PLAIN BACK

SERIES 269:



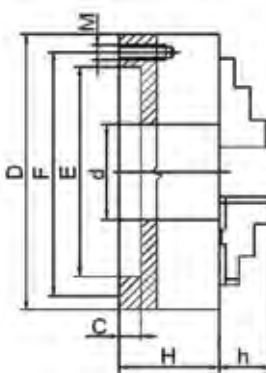
#### Forged Steel Body, Medium Duty

##### Special Features:

- Medium Duty Forged Steel Body Chucks, for use on all types of lathes, and on a different kinds of milling, drilling and CNC attachments
- Chucks come with two sets of hard top reversible jaws and hard master jaws
- Plain back mount, for use with mounting plates
- Chuck body is made of high quality forged steel. All guide ways and bearing surfaces are heat treated and precisely ground.
- Scroll plate, pinions and jaws are drop forged of fine alloy steel, hardened and ground
- Each scroll and chuck are balanced

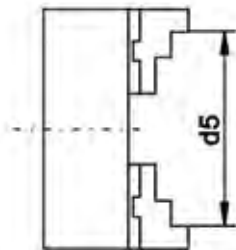
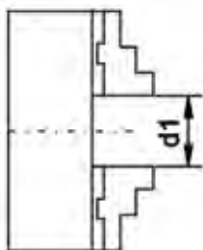
##### Standard Accessories:

- 1 set of hard top jaws
- 1 set of hard master jaws
- 1 chuck wrench
- 1 set of mounting bolts
- 2 hex keys
- 2 lifting eye bolts
- Chuck Manual
- Q.A. Certificate



Chuck Dia. D	Bolt Pattern F	E (H7)	d	H	h	C	Mounting Bolts M		Max. RPM	Est. Gross Weight (lbs)	Order No.	Price
							Thread	Qty.				
6-1/4"	5.5118	4.9213	1.6535	2.756	1.693	0.1575	M8X1.25	6	4500	22.5	<b>2690001</b>	
8"	6.9291	6.2992	2.1654	3.15	1.772	0.1575	M10X1.5	6	4000	42	<b>2690002</b>	
10"	8.8189	7.874	2.9921	3.543	2.087	0.1969	M10X1.5	6	3500	73	<b>2690003</b>	
12-1/2"	11.2598	10.236	4.0551	3.937	2.244	0.1969	M12X1.75	6	2800	129	<b>2690004</b>	
15-3/4"	14.2519	12.9921	5.3543	4.331	2.693	0.1969	M16X2	6	2000	227	<b>2690005</b>	
20"	18.0314	16.5354	7.4803	4.685	3.15	0.1969	M16X2	6	1200	361	<b>2690006</b>	
25"	23.0709	21.4567	9.9212	5.079	3.425	0.2756	M16X2	6	1000	592	<b>2690007</b>	

Gripping Capacity



Chuck Dia. D	Gripping Capacity	
	Min. d1	Max. d5
6-1/4"	0.118	6.3
8"	0.157	7.87
10"	0.197	9.84
12-1/2"	0.394	12.4
15-3/4"	0.394	15.75
20"	0.787	19.69
25"	1.18	24.8



## FOUR-JAW, INDEPENDENT CHUCKS

### PLAIN BACK

SERIES 269:



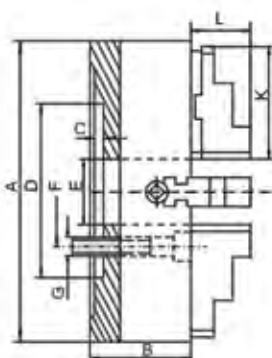
### Semi Steel Body, 2 Piece Jaws, Medium Duty

#### Special Features:

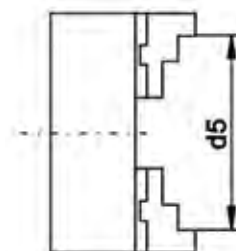
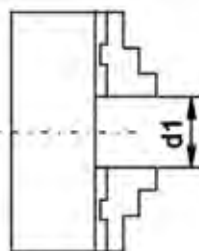
- Medium Duty Semi-Steel Body
- American Standard Tongue and Groove Jaw Mount
- Hard Top and Master Jaws and operating screws are case hardened and precisely ground
- Chuck guideway surfaces are precisely machined
- All chuck face and OD surfaces are precisely ground to insure highest accuracy of every chuck
- Heavy jaw serration ensures high gripping power
- 10" - 50" chucks are provided with the T-Slots

#### Standard Accessories:

- 1 set of hard top jaws
- 1 set of hard master jaws
- 1 T wrench
- 1 L wrench (40" and 50" chucks only)
- 1 set of chuck mounting bolts
- 2 hex keys
- 2 eye bolts (chucks 10" and up)
- 2 lifting eye bolts



Gripping Capacity



Chuck Dia. D	Bolt Pattern F	D (H7)	E	B	L	K	C	Mounting Bolts G		Max. RPM	Est. Gross Weight (lbs)	Gripping Capacity		Order No.	Price
								Thread	Qty.			Min. d1	Max. d5		
8"	3.74	2.953	2.205	2.953	1.827	3.228	0.236	M10	4	1800	36	0.394	7.874	2690008	
10"	4.126	5.906	2.559	3.347	2.378	3.799	0.276	M12	4	1500	62	0.591	9.843	2690009	
12-1/2"	5.252	6.89	3.15	3.74	2.398	4.429	0.276	M16	4	1200	97	0.787	12.402	2690010	
15-3/4"	6.748	7.874	3.937	4.134	2.847	5.079	0.394	M16	4	800	158	0.984	15.748	2690011	
20"	9.252	10.63	4.921	4.724	3.555	5.354	0.472	M20	4	500	246	1.378	19.685	2690012	
25"	9.252	10.63	6.299	5.512	3.85	5.354	0.472	M20	4	400	385	1.969	24.803	2690013	
32"	11.811	9.843	8.268	5.315	3.693	5.354	0.472	M20	8	300	730	2.756	31.496	2690014	
40" *	14.567	12.598	10.236	5.906	4.685	6.299	0.591	M20	8	150	850	3.937	39.73	2690015	
50" *	19.685	15.748	12.008	6.496	4.685	6.299	0.591	M20	8	100	1650	4.921	49.213	2690016	

\*Cast Steel Body

While we show some of the most popular



items, we can supply their

entire range of products. See our website

or inquire.



## THREE AND SIX JAW, SELF-CENTERING SCROLL CHUCKS

HIGH PRECISION, 0.0004" T.I.R., ADJUSTABLE

SERIES 269:



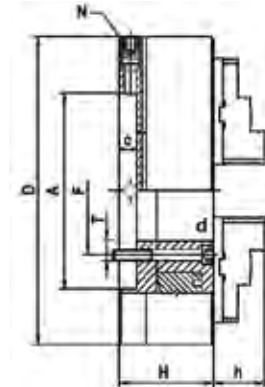
### Forged Steel Body, Medium Duty

#### Special Features:

- Medium Duty Forged Steel Body
- American Standard Tongue and Groove Jaw Mount
- Two Piece/Reversible Stepped Hard Jaws
- Micro Adjustable Screws provide 0.0004" T.I.R repeatability
- 3 pinion design
- Scrolls, pinions, jaw guideways, hub and jaws are precisely hardened and ground
- Wide selection of precision steel adapters are available from stock
- All chuck two piece bodies are made of high quality forged steel guaranteeing high rigidity, accuracy and long life

#### Standard Accessories:

- 1 set of hard top jaws
- 1 set of hard master jaws
- 1 chuck wrench
- 1 set of mounting bolts
- 2 hex keys
- 2 lifting eye bolts
- Chuck Manual
- Q.A. Certificate

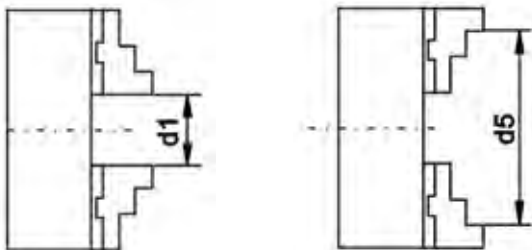


Chuck Dia. D	Bolt Pattern F	A	Thru Holed	H	h	c	Mounting Bolts T		Fine Adjustment Screws N		Max. RPM		Est. Gross Weight (lbs)		3 Jaw Chuck		6 Jaw Chuck	
							Thread	Qty.	Thread	Qty.	3 Jaw	6 Jaw	3 Jaw	6 Jaw	Order No.	Price	Order No.	Price
6-1/4"	5.5118	3.386	1.654	2.677	1.71	0.67	M10x1.5	3	M12x1	4	3500	2500	21	25	2690017		2690024	
8"	6.9291	4.331	2.165	3.071	1.77	0.71	M10x1.5	3	M18x1.5	4	3100	2200	35	42	2690018		2690025	
10"	8.8189	5.709	2.992	3.054	2.05	0.79	M12x1.75	3	M18x1.5	4	2700	1900	59	78	2690019		2690026	
12-1/2"	11.2598	7.087	4.055	3.819	2.24	0.79	M16x2	3	M18x1.5	4	2200	1500	105	128	2690020		2690027	
15-3/4"	6.750	11.782	5.354	4.803	2.64	0.87	5/8x11	6	M18x1.5	8	1800	1500	201	250	2690021		2690028	
20"	9.252	16.032	7.480	5.669	3.11	1.18	3/4x10	6	M18x1.5	8	1200	800	377	397	2690022		2690029	
25"	13.000	16.032	9.921	5.905	3.43	1.18	3/4x10	6	M18x1.5	8	1000	700	630	647	2690023		2690030	

#### 3 Jaw Chucks

#### 6 Jaw Chucks

#### Gripping Capacity



Chuck Dia. D	Gripping Capacity	
	Min. d1	Max. d5
6-1/4"	0.118	6.3
8"	0.157	7.87
10"	0.197	9.84
12-1/2"	0.394	12.4
15-3/4"	0.394	15.75
20"	0.787	19.69
25"	1.18	24.8

Chuck Dia. D	Gripping Capacity	
	Min. d1	Max. d5
6-1/4"	0.315	6.3
8"	0.315	7.87
10"	0.47	9.84
12-1/2"	0.47	12.4
15-3/4"	0.59	15.75
20"	1.18	19.69
25"	1.57	24.8



## THREE-JAW SELF-CENTERING PRECISION CHUCKS

### WITH EXTRA LARGE THRU-HOLE

SERIES 269:



#### Forged Steel Body, Low Profile Design

##### Special Features:

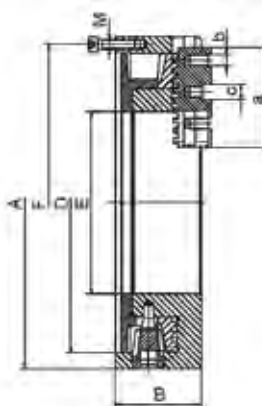
- Designed for pipe machining, such as pipe welding and cut off operations
- Chucks can be used on lathes, milling machines, rotary tables, indexers or welding fixtures
- Chucks are provided with two-piece reversible American Standard Tongue and Groove jaws
- Forged Steel Body
- 3 Pinion design
- Each forged scroll is precisely balanced
- Chuck body guideways and hub are heat treated and ground
- Jaws, scroll and pinions are heat treated and ground

##### Standard Accessories:

- 1 set of hard top jaws
- 1 set of master jaws
- 1 chuck wrench
- 1 set of mounting bolts
- 2 hex keys
- 2 lifting eye bolts
- Chuck Manual
- Q.A. Certificate

##### Optional Accessories:

- HD hard top jaws
- Soft top jaws
- Adapter plates
- Semi-finished adapters



Chuck Dia. A	Thru Hole E	Jaw Stroke		Weight of Workpiece lbs.		B	Bolt Pattern F	D (H7)	a	M	b	c	Max RPM	Est. Gross Weight (lbs)	Order No.	Price
		min.	max.	without support	with support											
15 3/4"	8.66	6.614	11.34	110	3307	4.13	15.000	14.252	4.72	M12x40	5/8"-11	.74996	650	158	2690031	
20"	12.60	9.874	14.96	177	5512	4.72	18.957	18.189	4.75	M12x40	3/4"-10	.74996	460	260	2690032	
26"	15.98	14.800	19.57	265	7716	5.32	24.409	22.835	5.00	M16x40	3/4"-10	.74996	325	325	2690033	
31 1/2"	16.14	7.402	22.28	441	8820	5.95	18.110	27.953	8.86	M24x160	3/4"-10	.74996	260	598	2690034	



Chuck Dia.	d1		d2		d3	
	min.	max.	min.	max.	min.	max.
15 3/4"	5.12	10.63	9.06	13.78	11.81	15.75
20"	9.84	14.96	12.99	17.72	15.16	19.69
26"	14.8	18.5	17.91	22.64	20.28	25
31 1/2"	10.24	22.28	14.17	29.53	16.54	31.5





**ADAPTERS**  
SERIES 269:



**Fully Machined Steel Adapters for 3 Jaw and 6 Jaw Adjustable Chucks**

Type D Mounting Plates - "Camlock"



Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"	25"
<b>Price</b>							
D-3	2690035	-	-	-	-	-	-
D-4	2690036	2690038	-	-	-	-	-
D-5	2690037	2690039	2690041	-	-	-	-
D-6	-	2690040	2690042	2690044	2690047	-	-
D-8	-	-	2690043	2690045	2690048	2690050	2690053
D-11	-	-	-	2690046	2690049	2690051	2690054
D-15	-	-	-	-	-	2690052	2690055

Type A American Standard Short Taper A-1 and A-2 Spindles



Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"	25"
<b>Price</b>							
A-5	2690057	2690058	2690060	-	-	-	-
A-6	-	2690059	2690061	2690063	2690066	-	-
A-8	-	-	2690062	2690064	2690067	2690069	2690072
A-11	-	-	-	2690065	2690068	2690070	2690073
A-15	-	-	-	-	-	2690071	2690074

Threaded Spindles



Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"	25"
<b>Price</b>							
1-1/2"-8	2690075	2690077	-	-	-	-	-
2-1/4"-8	2690076	2690078	-	-	-	-	-
2-3/8"-6	-	2690079	2690080	2690081	-	-	-

**Fully machined Adapters, Semi-Steel for 3 Jaw Plain Back Chucks**

Type D Mounting Plates - "Camlock"



Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"	25"
<b>Price</b>							
D-3	2690082	-	-	-	-	-	-
D-4	2690083	2690085	-	-	-	-	-
D-5	2690084	2690086	2690088	-	-	-	-
D-6	-	2690087	2690089	2690090	2690093	-	-
D-8	-	-	2690143	2690091	2690094	-	-
D-11	-	-	-	2690092	2690095	2690096	2690098
D-15	-	-	-	-	-	2690097	2690099



## ADAPTERS

SERIES 269:



### Semi Finished Adapters for 3 Jaw Scroll and 4 Jaw Independent Chucks

Type A American Standard Short Taper A-1 and A-2 Spindles

Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"	25"
Price							
A-4	-	2690100	-	-	-	-	-
A-5	-	2690101	2690103	-	-	-	-
A-6	-	2690102	2690104	2690106	2690109	-	-
A-8	-	-	2690105	2690107	2690110	2690112	2690114
A-11	-	-	-	2690108	2690111	2690113	2690115
A-15	-	-	-	-	-	2690144	2690116



Threaded Spindles

Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"	25"
Price							
1-1/2"-8	-	2690117	-	-	-	-	-
2-1/4"-8	-	2690118	-	-	-	-	-
2-3/8"-6	-	2690119	2690120	2690121	-	-	-



### Fully Machined Adapters, Semi-Steel for 4 Jaw Independent Chucks

Type D Mounting Plates - "Camlock"

Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"
Price						
D-4	2690122	2690123	-	-	-	-
D-5	-	-	-	-	-	-
D-6	-	2690124	2690125	-	2690129	-
D-8	-	-	2690126	2690127	-	2690131
D-11	-	-	-	2690128	2690130	2690132



Type A American Standard Short Taper A-1 and A-2 Spindles

Spindle	6-1/4"	8"	10"	12-1/2"	15-3/4"	20"
Price						
A-5	2690133	2690134	-	-	-	-
A-6	-	-	2690135	2690136	2690138	-
A-8	-	-	-	2690137	2690139	2690141
A-11	-	-	-	-	2690140	2690142



# UNIVERSAL THREE-JAW SELF-CENTERING SCROLL CHUCKS

SERIES 267:

These Bison modern, precision lathe chucks can be used on all types of lathes and different kinds of milling, drilling, CNC attachments. Chucks are provided with **American Standard Two-Piece Tongue & Groove Jaws** or with two sets of hard solid OD & ID jaws.

**BODY** - is made of high quality cast iron. All guideways and bearing surfaces are precisely machined.

**SCROLL PLATE** - drop forged of fine alloy steel, carefully case hardened. Thread flanks ground on both sides.

**JAWS** - the teeth and guides are hardened and fully ground on both sides.

**PINIONS** - hardened and ground.



Solid Jaw 3" to 25"



Two-Piece Jaw 5" to 25"



Spare parts see pages 511.  
Adapter plates see page 520 - 521.



Chuck Grease  
Order No. 7799025  
Price

**Two-Piece Jaw Chuck Standard Accessories:**

1 set of two-piece reversible jaws (hard top jaws and hard master jaws), 1 self - ejecting wrench, 1 set of mounting screws, 2 allen keys.

**Optional Accessories:** Soft top jaws.

**Solid Jaw Chuck Standard Accessories:**

2 sets of hard solid jaws (inside and outside), 1 self - ejecting wrench, mounting bolts, 1 hex key.

**Optional Accessories:** Soft solid jaws.

**PLAIN BACK**

Chuck Dia.	Hole Dia.	RPM max.	2-pc. Jaws (3205)			Solid Jaws (3204)		
			Wt. lbs.	Order No.	Price	Wt. lbs.	Order No.	Price
3"	.6299	4000	-	-		3.1	7810030	
4"	.7874	3500	-	-		5.3	7810040	
5"	1.2598	3200	10.0	8000500		9.3	7810050	
6-1/4"	1.6535	3000	19.0	8000600		17.0	7810060	
8"	2.1654	2500	34.0	8000800		32.0	7810080	
10"	2.9921	2000	57.0	8001000		52.0	7810100	
12-1/2"	4.0551	1500	96.0	9001200		87.0	7810120	
15-3/4"	5.3543	1000	176	8001600		163	7810160	
20"	7.4803	700	295	8002000		271	7810200	
25"	9.9212	500	529	8002500		469	7810250	
32"*	10.5	300	740	8003200		-		



Back View



**Note:** Plain back chucks require adapter plates which may require machining to fit.

\* 32" Chuck - for more information see page 512.

**A-1/A-2 Type Mount (3215)**

Chuck Dia.	Taper Size	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
6-1/4"	A1-5	1.653	3000	22	8010615	
8"	A1-5	1.653	2500	42	8010815	
	A1-6	2.165	2500	42	8010816	
10"	A2-5	2.992	2000	71	8011015	
	A1-6	2.165	2000	71	8011016	
	A1-8	2.992	2000	71	8011018	
12-1/2"	A2-6	4.055	1500	121	8011226	
	A1-8	3.150	1500	121	8011218	
15-3/4"	A2-6	4.055	1000	203	8011616	
	A2-8	5.354	1000	203	8011618	
	A1-11	5.118	1000	203	8011619	
20"	A2-11	7.590	700	353	8012029	
25"	A2-11	7.590	500	628	8012511	
	A2-15	7.590	500	628	8012515	
32"	A2-20	12.598	300	847	8013220	



See page 514 for accuracy and runout specifications.

(Continued)



## UNIVERSAL THREE-JAW SELF-CENTERING SCROLL CHUCKS

SERIES 267:



### D-1 Type Mount (3245)

Chuck Dia.	Taper Size	Stud Dia.	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
5"	D1-4	5/8	1.260	3000	11	8030534	
6-1/4"	D1-3	9/16	1.654	3000	20	8030633	
	D1-4	5/8	1.654	3000	20	8030634	
8"	D1-3	9/16	2.028	2500	42	8030833	
	D1-4	5/8	2.165	2500	42	8030834	
	D1-5	3/4	2.165	2500	42	8030835	
	D1-6	7/8	2.165	2500	42	8030836	
10"	D1-5	3/4	2.992	2000	71	8031035	
	D1-6	7/8	2.992	2000	71	8031036	
	D1-8	1	2.992	2000	71	8031038	
12-1/2"	D1-6	7/8	4.055	1500	112	8031236	
	D1-8	1	4.055	1500	112	8031238	
	D1-11	1-3/16	4.055	1500	112	8031239	
15-3/4"	D1-6	7/8	4.055	1000	223	8031636	
	D1-8	1	5.354	1000	223	8031638	
	D1-11	1-3/16	5.354	1000	223	8031639	
20"	D1-8	1	5.354	700	331	8032038	
	D1-11	1-3/16	7.598	700	331	8032039	
25"	D1-11	1-3/16	7.598	500	604	8032539	

### "L" Type Mount (3255)

Chuck Dia.	Taper Size	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
6-1/4"	L00	2.20	3000	23	8040641	
	L0	2.60	3000	23	8040642	
8"	L00	2.20	2500	42	8040841	
	L0	2.60	2500	42	8040842	
	L1	3.35	2500	42	8040843	
10"	L0	2.60	2000	64	8041042	
	L1	3.35	2000	64	8041043	
	L2	4.29	2000	64	8041044	
12-1/2"	L0	2.60	1500	134	8041242	
	L1	3.35	1500	134	8041243	
	L2	4.29	1500	134	8041244	
15-3/4"	L1	3.35	1000	251	8041643	
	L2	4.29	1000	251	8041644	



### Threaded (3285/3284)

Chuck Dia.	Thread Dia.	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
4"	1" - 10	.79	3500	8.8	8050451	
	1-1/2" - 8	.79	3500	8.8	8050452	
5"	1" - 10	1.26	3200	12	8050551	
	1-1/2" - 8	1.26	3200	12	8050552	
6-1/4"	1-1/2" - 8	1.57	3000	23	8050652	
	2-1/4" - 8	1.57	3000	23	8050653	
8"	1-1/2" - 8	2.17	2500	45	8050852	
	2-1/4" - 8	2.17	2500	45	8050853	
	2-3/8" - 6	2.17	2500	45	8050854	
10"	2-1/4" - 8	2.99	2000	75	8051053	
12-1/2"	2-3/4" - 8	4.06	1500	121	8051255**	



\*4" only (Solid Jaw)



\*\*LIMITED QUANTITY.



**UNIVERSAL THREE-JAW SELF-CENTERING SCROLL CHUCKS SPARE PARTS**  
 SERIES 287:



Chuck Dia.	Hard Master Jaws 3 Pc. Set		Hard Top Jaws 3 Pc. Set		OD Jaws 3 Pc. Set		ID Jaws 3 Pc. Set		Soft Solid Jaws 3 Pc. Set		3, 4, 6 Jaw Soft Top Jaws 1 Pc.	
	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
3"	-		-		7880303		7881303		7882303		-	
4"	-		-		7880304		7881304		7882304		-	
5"	7885305		7883305		7880305		7881305		7882305		7884305	
6-1/4"	7885306		7883306		7880306		7881306		7882306		7884306	
8"	7885308		7883308		7880308		7881308		7882308		7884308	
10"	7885310		7883310		7880310		7881310		7882310		7884310	
12-1/2"	7885312		7883312		7880312		7881312		7882312		7884312	
15-3/4"	7885316		7883316		7880316		7881316		7882316		7884316	
20"	7885320		7883320		-		7881320		7882320		7884320	
25"	7885325		7883325		7880325		7881325		7882325		7884325	
32"	7885332		-		-		-		-		7884325	



Chuck Dia.	Scroll		Pinion		Wrench			Pinion Screw	
	2-3-4 Jaw Order No.	Price	2-3-4 Jaw Order No.	Price	2-3-4 Jaw Order No.	Square Size	Price	2-3-4Jaw Order No.	Price
3"	7887303		7886303		7889003	.2344		7888904	
4"	7887304		7886304		7889005	.3543		7888904	
5"	7887305		7886305		7889005	.3543		7888906	
6-1/4"	7887306		7886306		7889008	.4331		7888906	
8"	7887308		7886308		7889008	.4331		7888910	
10"	7887310		7886310		7889012	.5512		7888910	
12-1/2"	7887312		7886312		7889012	.5512		7888910	
15-3/4"	7887316		7886316		7889016	.6693		7888920	
20"	7887320		7886320		7889025	.7480		7888920	
25"	7887325		7886325		7889025	.7480		7888920	
32"	7887332		7886332		7889332	.7480		7888920	

All above spare parts sold by piece.

**TWO-JAW SELF-CENTERING SCROLL CHUCKS**

SERIES 284:

These modern Bison, Two-Jaw, precision lathe chucks can be used on all types of lathes and with different kinds of milling, drilling, CNC attachments. Chucks are provided with **American Standard Two-Piece Tongue & Groove Jaws**. Soft top jaws are shaped by user to fit the workpiece.

**BODY** - is made of high quality cast iron. All guideways and bearing surfaces are precisely machined.

**SCROLL PLATE** - drop forged of fine alloy steel, carefully case hard. Thread flanks ground on both sides.

**MASTER JAWS** - the teeth and guides are hardened and fully ground on both sides.

**PINIONS** - hardened and ground.

**Standard Accessories:**

- 1 set of two-piece reversible jaws (soft top jaws and hard master jaws),
- 1 self - ejecting wrench, 1 set of mounting screws,
- 2 hex keys.

Adapter plates see pages 520 - 521.  
 All spare parts available. See our website or inquire.



**PLAIN BACK (3105)**

Chuck Dia.	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
6-1/4"	1.65	3000	19.0	8300600	
8"	2.17	2500	34.0	8300800	
10"	2.99	2000	57.0	8301000	
12-1/2"	4.06	1500	96.0	8301200	
15-3/4"	5.35	1000	176	8301600	

## FOUR-JAW, SELF-CENTERING SCROLL CHUCKS, PLAIN BACK

SERIES 283:



Solid Jaws

3605 Universal and 3705 Precision, Four-Jaw, Scroll Lathe Chucks with two-piece hard reversible jaws. Semi-steel body or Forged Steel Body. Scroll and jaws hardened and ground.

**Standard Accessories:**

- 1 set of two-piece reversible jaws (hard top jaws and hard master jaws),
- 1 wrench, 1 set of mounting screws.

3604 Universal, Four-Jaw, Scroll Lathe Chucks with two-sets of hard solid jaws. Semi-steel body. Scroll and jaws hardened and ground.

**Standard Accessories:**

- 2 sets of hard solid jaws (inside and outside), 1 wrench, 1 set of mounting screws.

**Optional Accessories:**

- Soft solid jaws.

Adapter Plates see pages 520 - 521.  
All spare parts available.  
See our website or inquire.

Chuck Dia.	Hole Dia.	Semi - Steel Body							Forged Steel Body			
		RPM Max.	2 pc. Jaws (3605)			Solid Jaws (3604)			2 pc. Jaws (3705)			
			Wt. lbs.	Order No.	Price	Wt. lbs.	Order No.	Price	RPM Max.	Weight lbs.	Order No.	Price
5"	1.26	3200	10	8400500		9.3	8450500		-	-	-	
6-1/4"	1.65	3000	19	8400600		17	8450600		4500	21	8410600	
8"	2.17	2500	34	8400800		32	8450800		4000	36	8410800	
10"	2.99	2000	57	8401000		52	8451000		3500	75	8411000	
12-1/2"	4.06	1500	96	8401200		87	8451200				-	
15-3/4"	5.35	1000	176	8401600		163	8451600		2000	198	8411601	
20"	7.48	700	295	8402000		271	8452000					
25"	9.92	500	529	8402500		-	-					

## LARGE THROUGH-HOLE THREE-JAW SELF-CENTERING SCROLL CHUCKS, PLAIN BACK

SERIES 267:

### STEEL & SEMI-STEEL BODY

Universal, Three-Jaw, Scroll Lathe Chucks with large through hole. Two-piece reversible tongue and groove jaws. Semi-steel body or steel body. Plain back mount. Jaws, scroll plate and pinions are made of fine alloy steel, carefully heat treated and ground; balanced scroll. Chucks are available with 10-1/2" through-hole which can be increased by the user to 12-1/2".

**Standard Accessories:**

- 1 set of two-piece reversible jaws (hard top jaws and hard master jaws),
- 1 wrench, 1 set of mounting screws.

**Optional Accessories:**

- Soft top jaws.



Adapter Plates see pages 520 - 521.

3205/3307

Chuck Dia.	Chuck Body	Hole Dia.	R.P.M. max.	Weight lbs.	Order No.	Price
31-1/2"	semi-steel	10-1/2"	300	738	8003200	
	steel		450	772	8203200	

## EXTRA LARGE THROUGH-HOLE THREE-JAW SELF-CENTERING SCROLL CHUCKS, PLAIN BACK

SERIES 267:

Large Diameter through-hole Chucks are designed for pipe machining or pipe welding/cut off operations. They can also be used on lathes, rotary tables, welding devices.

Two-piece reversible American Standard Tongue and Groove jaws. Semi-steel body. Plain back mount. Jaws, scroll plate and pinions are made of fine alloy steel, heat treated and ground. Balanced scroll.

**Standard Accessories:**

- 1 set of master jaws.
- 1 wrench, 1 set of mounting screws.

**Optional Accessories:**

- Hard top jaws.
- Soft top jaws.



Adapter Plates see pages 520 - 521.

3295

Chuck Dia.	Hole Dia.	Jaw Stroke		Weight lbs.	R.P.M. max.	Order No.	Price
		min.	max.				
16"	8.66	6.61	11.34	127	500	8191600	
20"	12.60	9.87	14.96	167	350	8192000	
26"	15.98	14.80	19.57	300	250	8192600	

## FRONT MOUNTING 3 & 4 JAW SELF-CENTERING SCROLL CHUCKS, PLAIN BACK

SERIES 283:

3275



3274



3675



3 and 4-Jaw Universal Scroll Chucks are designed for use with rotary tables and other devices where back mounting chucks cannot be used.

They can be mounted directly on 3-slot rotary tables or on base plates when rotary table has 4 or 8 T-slots.

Chuck Dia.	Hole Dia.	Weight lbs.	3 - Jaw				4 - Jaw	
			Solid Jaws		2 pc. Jaws		Order No. (3675)	Price
			Order No. (3274)	Price	Order No. (3275)	Price		
4"	0.7874	5.3	8110400		-		-	
5"	1.2598	9.3	8110500		8120500		8140500	
6-1/4"	1.6535	17.0	8110600		8120600		8140600	
8"	2.1654	32.0	8110800		8120800		8140800	
10"	2.9921	52.0	8111000		8121000		8141000	
12-1/2"	4.0551	87.0	8111200		8121200		8141200	

All spare parts available. See our website or inquire.

## MINI THREE-JAW, SELF CENTERING SCROLL CHUCKS

SERIES 267:



WITH HARD REVERSIBLE JAWS, STEEL BODY

Special compact design to achieve very small turned diameters. These Chucks are suitable for EMCO, UNIMAT 3 & Prazi MD200 Lathes with threaded spindle.

Mounting Thread M14 x 1.

Standard Accessories:

1 set of hard solid reversible jaws and 1 chuck wrench.



Optional Accessories:

1 set of solid jaws.



3286

Chuck Dia.	Weight w/Wrench lbs.	Clamping Ranges min.-max.	Chuck Order No.	Price
2-1/3"	.98	.02 - 2.36	8100214	

## THREE JAW & SIX JAW "SET-TRU" SCROLL CHUCKS

SERIES 642:

With Fine Adjustment, Forged Steel Body, 3 - pinion design.



Chuck - back view



3565



3865



BISON "SET-TRU" chucks can be used for many machining operations for which universal scroll chucks are unsuitable and all operations for which universal chucks are used. 6-jaw grips firmly with less pressure and less distortion per jaw. Ideal for thin wall and second operation work. Eliminates the need for spring collets.

Outstanding accuracy, versatility and long life make BISON "SET-TRU" chucks invaluable in the modern workshop and indispensable in the toolroom.

- 4 micro adjustment screws provide .0004" T.I.R. repeatability.
- 16", 20" & 25" 3- & 6-jaw chucks use 8 micro adjustment screws.
- Extremely high gripping concentricity.
- 2-piece top & master jaws are American Standard Tongue & Groove.
- 4" chuck has 2 sets of solid jaws.
- Chuck body - made of high quality forged steel, is safe at high lathe speeds.
- Forged scroll fully hardened with thread flanks ground on both sides for longer life and higher accuracy.
- Each scroll is precisely balanced.
- Jaws - the teeth and guides on both sides are fully hardened and ground.
- Hardened and ground bushings are pressed into the pinion seats.
- 3 pinions are hardened and ground.
- Each chuck is balanced within fine limits.
- Steel adapter plates for the same size of BISON "SET-TRU" chuck are interchangeable so that one chuck can be used on different spindles.
- The life of BISON "SET-TRU" chucks is approximately 2.5 times longer than universal chucks.

3 & 6 Jaw Chucks With American Standard Two-Piece Tongue & Groove Jaws.

Chuck Dia.	Hole Dia.	3 - Jaw (3565)				6 - Jaw (3865)			
		RPM max.	Wt. lbs.	Order No.	Price	RPM max.	Wt. lbs.	Order No.	Price
4"*	.787	4200	7.3	8668040		-	-	8688040	
5"	1.378	3800	11	8660500		3000	13.7	8680500	
6-1/4"	1.654	3500	21	8660600		2500	25	8680600	
8"	2.165	3100	35	8660800		2200	42	8680800	
10"	2.992	2700	59	8661000		1900	78	8681000	
12-1/2"	4.955	2200	105	8661200		1500	128	8681200	
15-3/4"	5.354	1800	201	8661600		1300	250	8681600	
20"	7.480	1200	374	8662000		800	365	8682000	
25"	9.921	1000	630	8662500		700	647	8682500	

Standard Accessories:

4" - 2 sets of hard solid jaws (OD & ID)  
5" - 25" - 1 set of two-piece reversible jaws (hard top jaws and hard master jaws) 1 wrench, 1 set of mounting bolts, 2 hex keys, 1 set of fine adjustment screws.

Optional Accessories:

Soft top jaws, solid ID & OD jaws. Rotating Body for 4", 5" & 6".

Spare Parts see page 514.

Adapter Plates see page 522.

\* 2 sets of hard solid jaws



## SPARE PARTS FOR "SET-TRU" CHUCKS

SERIES 287:

3pc. set

6pc. set

3pc. set

6pc. set

3 jaw

6 jaw



Hard Top Jaws

Hard Master Jaws

Soft Top Jaws

Chuck Dia.	(Sold in Sets)				(Sold in Sets)				(Sold by Piece)			
	3-Jaw Chucks	Price	6-Jaw Chucks	Price	3-Jaw Chucks	Price	6-Jaw Chucks	Price	3-Jaw Chucks	Price	6-Jaw Chucks	Price
5"	7883305		7883605		7885305		7885605		7884305		-	
6"	7883306		7883606		7885306		7885606		7884306		7884606	
8"	7883308		7883608		7885308		7885608		7884308		7884608	
10"	7883310		7883610		7885310		7885610		7884310		7884610	
12"	7883312		7883612		7885312		7885612		7884312		7884612	
16"	7883316		7883616		7885316		7885616		7884316		7884616	
20"	7883320		7883620		7885320		7885620		7884320		-	
25"	7883325		7883625		7885325		7885625		7884325		-	



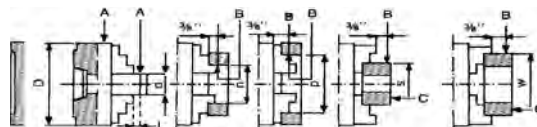
Chuck Dia.	Scroll		Pinion		Wrench			Pinion Sleeve		Half Ring	
	3 & 6 Jaw Order No.	Price	3 & 6 Jaw Order No.	Price	3 & 6 Jaw Order No.	Square Size	Price	3 & 6 Jaw Order No.	Price	3 & 6Jaw Order No.	Price
4"	7887304		7886304		7889005	.35		-		7888904*	
5"	7887505		7886505		7889005	.35		-		7888705	
6"	7887506		7886506		7889008	.43		7888506		7888706	
8"	7887508		7886508		7889008	.43		7888508		7888708	
10"	7887510		7886510		7889012	.55		7888510		7888710	
12"	7887512		7886512		7889012	.55		7888512		7888712	
16"	7887516		7886516		7889016	.67		7888516		7888716	
20"	7887520		7886520		7889020	.75		7888520		7888720	
25"	7887525		7886525		7889025	.75		7888525		7888725	

All above spare parts sold by the piece.

\* Pinion Retaining Screw

## ACCURACY OF BISON SELF-CENTERING SCROLL CHUCKS

All allowable runouts which are specified below concern measurements at three different jaw openings d (1, 2, and 3).



Size of Chuck D	Universal and Precision Chucks Series 3200, 3500, 3600, and 3700								
	d			L	n	p	s	w*	w**
	1	2	3						
3-1/2"	.39	-	.55	1.57	1.57	2.36	1.38	2.48	-
4"	.39	.55	.71	1.57	1.57	2.95	1.97	3.15	-
5"	.71	.98	1.18	2.36	1.97	3.94	2.44	3.94	4.72
6-1/4"	.71	1.18	1.57	2.36	1.97	5.31	3.46	3.94	5.90
8"	1.18	1.57	2.08	3.15	3.15	6.38	3.78	6.30	7.28
10"	1.18	2.08	2.95	3.15	3.15	7.87	5.90	6.30	8.86
12-1/2"	2.08	2.95	3.94	4.72	4.92	9.92	8.27	9.84	11.81
15-3/4"	2.08	3.94	4.92	4.72	4.92	11.10	9.84	9.84	13.78
20"	2.95	3.94	4.92	6.30	7.87	11.10	11.81	15.75	15.75
25"	2.95	4.92	6.30	6.30	7.87	12.79	15.75	15.75	15.75
31-1/2"	6.30	7.87	9.84	6.30	12.80	19.70	15.75	19.70	19.70

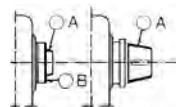
Size of Chuck	Runouts on Universal and Precision Chucks		
	Radial Runout A	B	Axial Runout C
3-1/2"	.0008	.0010	.0006
4"	.0008	.0010	.0006
5"	.0012	.0014	.0008
6-1/4"	.0012	.0014	.0008
8"	.0016	.0018	.0010
10"	.0016	.0018	.0010
12-1/2"	.0020	.0022	.0012
15-3/4"	.0024	.0025	.0012
20"	.0040	.0040	.0020
25"	.0040	.0040	.0020
31-1/2"	.0059	.0059	.0024

\*For solid jaws \*\*For two-piece jaws

## PERMISSIBLE SPINDLE RUNOUT

Radial Runout A  
.0002

Axial Runout B  
.00012



Short Taper Long Taper

For spindle noses: A, D & L.  
For threaded spindles: See Chuck Manual.

### NOTE!

To obtain the specified clamping accuracy of a chuck mounted on a machine tool, it is necessary:

- to reduce play in the spindle bearings to the allowable minimum
- to ensure the machine spindle nose runout not exceed the values specified
- to meet the basic requirements for correct mounting of chuck on the spindle nose.



## THREE-JAW SELF-CENTERING SCROLL CHUCKS, FORGED STEEL

### SERIES 276:

Precision lathe chucks have top accuracy and the guarantee to maintain this accuracy for an extended period of time. These chucks have a modern and compact design. They are able to fulfill the highest demands of our customers. They can be used wherever precision and high precision machining is demanded.

**BODY** - drop-forged of highest grade steel and put through precise machining operations. All bearings surfaces are carefully hardened and precisely ground.

**SCROLL PLATE** - drop-forged of fine alloy steel and carefully case hardened. Thread flanks are ground on both sides.

**JAWS** - the teeth and guides are hardened and fully ground on both sides.

**PINIONS** - hardened and ground.

**BUSHINGS** - hardened and ground, pressed into the pinion seats. Jaws, pinions and bushings are made of fine alloy steel. Precision grinding of scroll and jaws teeth will permit you to:

- eliminate possible deformation as a result of heat treatment
- reach uniform radial gripping force on all teeth of jaws
- increase guarantee period for high centering accuracy
- increase gripping force

Each chuck is provided with lubricator enabling current maintenance and extending chuck components life. Each scroll and assembled chuck is statically balanced within fine limits.

Interstage and final inspection assure high quality of our chucks.

#### Standard Accessories:

- 4" - 2 sets of hard solid jaws (inside and outside)
- 5" - 25" - 1 set of two-piece reversible jaws (hard top jaws and hard master jaws).
- 1 wrench, 1 set of mounting screws

#### Optional Accessories:

- Soft top jaws. Solid I.D. & O.D. jaws.



**See page 514 for accuracy and runout specifications.**



### AMERICAN STANDARD TONGUE & GROOVE JAWS.



32" STEEL BODY CHUCK



**Note:** Plain back chucks require adapter plates which may require machining to fit.

#### Plain Back (3505)

Chuck Dia.	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
5"	1.26	4800	10	8200500	
6-1/4"	1.65	4500	21	8200600	
8"	2.17	4000	36	8200800	
10"	2.99	3500	75	8201000	
12-1/2"	4.06	2800	123	8201200	
15-3/4"	5.35	2000	198	8201600	
20"	7.48	1200	276	8202000	
25"	9.92	1000	485	8202500	
32"	See Page 512				

Spare Parts see page 516.

& Adapter Plates see pages 522.



### CHUCK GREASE

Order No. 7799025

Price



#### A-1/A-2 TYPE MOUNT (3515)

Chuck Dia.	Taper Size	Hole Dia.	RPM max.	Wt. lbs.	Order No.	Price
6-1/4"	A1-5	1.65	4500	22	8210615	
8"	A1-5	1.65	4000	42	8210815	
	A1-6	2.17	4000	42	8210816	
10"	A1-6	2.17	3500	71	8211016	
	A1-8	2.99	3500	71	8211018	
12-1/2"	A2-6	4.06	2800	121	8211226	
	A1-8	3.15	2800	121	8211228	
15-3/4"	A2-8	5.35	2000	203	8211628	
	A1-11	5.12	2000	203	8211629	
20"	A2-8	5.35	1200	353	8212028	
	A2-11	7.48	1200	353	8212029	
25"	A2-11	7.48	1000	628	8212529	
	A2-15	9.92	1000	628	8212530	



#### D-1 TYPE MOUNT (3545)

Chuck Dia.	Taper Size	Stud Dia.	Hole Dia.	RPM max.	Weight lbs.	Order No.	Price
6-1/4"	D1-3	9/16	1.65	4500	20	8230633	
	D1-4	5/8	1.65	4500	20	8230634	
	D1-5	3/4	1.65	4500	20	8230635	
8"	D1-5	3/4	2.17	4000	42	8230835	
	D1-6	7/8	2.17	4000	42	8230836	
10"	D1-6	7/8	2.99	3500	71	8231036	
	D1-8	1	2.99	3500	71	8231038	
12-1/2"	D1-6	7/8	4.06	2800	112	8231236	
	D1-8	1	4.06	2800	112	8231238	
	D1-11	1-3/16	4.06	2800	112	8231239	
15-3/4"	D1-8	1	5.35	2000	223	8231638	
	D1-11	1-3/16	5.35	2000	223	8231639	
20"	D1-8	1	5.35	1200	331	8232038	
	D1-11	1-3/16	7.48	1200	331	8232039	
25"	D1-8	1	5.35	1000	604	8232538	
	D1-11	1-3/16	7.48	1000	604	8232539	

## FORGED STEEL SCROLL CHUCKS

### SPARE PARTS

SERIES 287:



Chuck Dia.	Hard Master Jaws 3 Pc. Set		Hard Top Jaws 3 Pc. Set		OD Jaws 3 Pc. Set		ID Jaws 3 Pc. Set		Soft Solid Jaws 3 Pc. Set		Soft Top Jaw 1 Pc.	
	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
5"	7885305		7883305		7880305		7881305		7882305		7884305	
6-1/4"	7885306		7883306		7880306		7881306		7882306		7884306	
8"	7885308		7883308		7880308		7881308		7882308		7884308	
10"	7885310		7883310		7880310		7881310		7882310		7884310	
12-1/2"	7885312		7883312		7880312		7881312		7882312		7884312	
15-3/4"	7885316		7883316		7880316		7881316		7882316		7884316	
20"	7885320		7883320		-		7881320		7882320		7884320	
25"	7885325		7883325		7880325		7881325		7882325		7884325	



Chuck Dia.	Scroll		Pinion		Wrench			Pinion Sleeve		Half Ring	
	Order No.	Price	Order No.	Price	Order No.	Square Size	Price	Order No.	Price	Order No.	Price
5"	7887505		7886505		7889005	.35		-		7888705	
6-1/4"	7887506		7886506		7889008	.43		7888506		7888706	
8"	7887508		7886508		7889008	.43		7888508		7888708	
10"	7887510		7886510		7889012	.55		7888510		7888710	
12-1/2"	7887512		7886512		7889012	.55		7888512		7888712	
15-3/4"	7887516		7886516		7889016	.66		7888516		7888716	
20"	7887520		7886520		7889025	.75		7888520		7888720	
25"	7887525		7886525		7889025	.75		7888525		7888725	

All above spare parts sold by the piece.

## FOUR - JAW INDEPENDENT CHUCKS

SERIES 995:

The chuck body is made of cast iron. The reversible jaws and operating screw are made of high quality carbon steel, hardened and precision ground.



## FOUR - JAW INDEPENDENT THREADED BACK CHUCKS

SERIES 995:



6" Diameter 4-Jaw Independent Plain Back Chuck PLUS 6" x 1-1/2"-8 or 2-1/4"-8 Finished Backplate made for the chuck mounts instantly (Chuck can be used by itself or with included back plate.) Chuck body is made of high quality semi-steel. Hardened and ground scroll. Heat treated operation screws. Includes chuck wrench and mounting screws.

Chuck Dia.	Thru Hole	Order No.	Price
6"	1-1/2-8	6250612	
6"	2-1/4-8	6250622	



### Plain Back

Chuck Dia.	Thru Hole	Order No.	Price
6"	1-1/2"	6251006	
8"	1-15/16"	6251008	
10"	2-1/2"	6251010	
12"	3-3/4"	6251012	
16"	3-1/2"	6251016	

### D-1 Type Mount

Chuck Dia.	Spindle	Thru Hole	Order No.	Price
8"	D1-4	2.165"	6250804	
10"	D1-4	2.953"	6251104	
10"	D1-5	2.953"	6251105	
10"	D1-6	2.953"	6251106	
12"	D1-6	3.740"	6251206	
16"	D1-8	4.921"	6251608	

## FOUR-JAW INDEPENDENT LATHE CHUCKS

SERIES 279: SEMI-STEEL BODY  
 SERIES 268: STEEL BODY

**BISON** medium duty and heavy duty, 4-Jaw independent chucks are designed to grip round or odd shaped work.  
 Medium duty chuck has semi-steel body and hard solid reversible jaws (36" has two-piece hard reversible jaws).  
 Heavy duty has steel body and two-piece hard reversible jaws.  
 Solid jaws are made of high quality carbon steel and hardened.  
 Hard Top and Hard Master Jaws are made of high quality alloy steel, hardened and ground.

Larger Diameter chucks (from 10" to 49") are supplied with T-slots.



Four jaw, steel body independent Lathe Chucks with two-piece reversible hard jaws.

**Standard Accessories:**  
 1 set of two-piece reversible jaws (hard top jaws and hard master jaws),  
 1 wrench, 1 set of mounting bolts.



**Optional Accessories:**  
 Soft jaws.



Four jaw semi-steel body Lathe Chucks with hard solid reversible jaws.

**Standard Accessories:**  
 Chuck with Dia. 3-1/2" to 32" are provided with 1 set of hard solid reversible jaws, 1 wrench, 1 set of clamping bolts.  
 36" chuck is provided with two-piece reversible jaws (hard top jaws and hard master jaws).

**Optional Accessories:**  
 Hard top jaws, hard master jaws and soft top jaws.  
**Adapter Plates:** (Note: Some machining is required.)  
 See pages 520 - 521.  
**Spare Parts:**  
 See page 519.



Plain Back

4304

4303

Chuck Dia.	Hole Dia.	Semi-Steel			Steel*		
		Weight lbs.	Order No.	Price	Weight lbs.	Order No.	Price
3-1/2"	1.000	3.4	8500300		-	-	
5"	1.0236	8.0	8500500		-	-	
6-1/4"	1.6535	9.0	8500600		-	-	
8"	1.9685	32	8500800		35	8550800	
10"	2.5591	55	8501000		59	8551000	
12-1/2"	3.1496	88	8501200		95	8551200	
15-3/4"	3.9370	139	8501600		150	8551600	
20"	4.9313	231	8502000		250	8552000	
25"	6.2992	364	8502500		390	8552500	
32"	7.8740	700	8503200		750	8553200	
32"/T	10.500	672	8503300		-	-	
36"	7.4809	800	8503600*		856	8553600	
40"	7.4809	-	-		1367	8554000	
49"	7.4809	-	-		2138	8554900	

**CHUCK GREASE**  
 Order No. 7799025  
 Price



\*With two-piece jaws.  
 \*\*Steel body.

**NOTE:** Plain back chucks require adapter or back plate which require machining to fit.



"L" TYPE MOUNT\*

4354

Chuck Dia.	Taper Dia.	Hole Dia.	Weight lbs.	Order No.	Price
8"	L00	1.96	34	8540841	
8"	L0	1.96	34	8540842	
10"	L00	2.56	57	8541041	
10"	L0	2.56	57	8541042	
10"	L1	2.56	57	8541043	
12-1/2"	L0	3.15	119	8541242	
12-1/2"	L1	3.15	119	8541243	
12-1/2"	L2	3.15	119	8541244	
15-3/4"	L1	3.93	154	8541643	
15-3/4"	L2	3.93	154	8541644	
20"	L2	4.92	256	8542044	

\*Semi-Steel only.

(Continued)



## FOUR-JAW INDEPENDENT LATHE CHUCKS (Continued)

SERIES 279: SEMI-STEEL BODY  
 SERIES 268: STEEL BODY



MACHINE TOOL ACCESSORIES

### A1/A2 TYPE MOUNT

4314

4313

Chuck Dia.	Taper Dia.	Hole Dia.	Weight lbs.	Semi-Steel Order No.	Price	Weight lbs.	Steel Order No.	Price
8"	A2-5	1.969	38	9510815			-	
8"	A2-6	1.969	38	9510816		41	8560816	
10"	A2-5	2.559	56	8511025			-	
10"	A2-6	2.559	56	0911016		60	8561016	
10"	A2-8	2.559	56	9911018		60	-	
12-1/2"	A2-5	3.150	88	8511215			-	
12-1/2"	A2-6	3.150	88	8511226		94	8561216	
12-1/2"	A2-8	3.150	88	8511218		94	8561218	
15-3/4"	A2-6	3.937	143	8511626		153	8561616	
15-3/4"	A2-8	3.937	143	8511628		153	8561618	
15-3/4"	A2-11	3.937	143	8511619		153	8561619	
20"	A2-8	4.921	251	-		269	8562018	
20"	A2-11	4.921	251	8512019		269	8562019	
20"	A2-15	4.921	251	-		269	8562020	
25"	A2-11	6.299	364	9512519		389	8562519	
25"	A2-15	6.299	364	-		389	8562520	
32"	A2-11	6.299	672	8513219		719	8563219	
32"	A2-15	6.299	672	-		719	8563220	
40"	A2-15	6.693		-		744	8564015	



### D1 TYPE MOUNT

4344

4343

Chuck Dia.	Taper Size	Stud Dia.	Stud Qty.	Hole Dia.	Weight lbs.	Semi-Steel Order No.	Price	Weight lbs.	Steel Order No.	Price
8"	D1-3	9/16	3	3.150	37	8530833		-	-	
8"	D1-4	5/8	3	3.150	37	8530834		40	8570834	
8"	D1-5	3/4	6	3.150	37	8530835		-	-	
8"	D1-6	7/8	6	3.150	-	-		40	8570836	
10"	D1-4	5/8	3	3.346	61	8531034		-	-	
10"	D1-5	3/4	6	3.346	61	8531035		65	8571035	
10"	D1-6	7/8	6	3.346	61	8531036		65	8571036	
10"	D1-8	1	6	3.346	-	-		65	8571038	
12-1/2"	D1-6	7/8	6	3.740	87	8531236		93	8571236	
12-1/2"	D1-8	1	6	3.740	87	8531238		93	8571238	
15-3/4"	D1-6	7/8	6	4.134	132	8531636		141	8571636	
15-3/4"	D1-8	1	6	4.134	132	8531638		141	8571638	
15-3/4"	D1-11	1-3/16	6	4.134	132	8531639		141	8571639	
20"	D1-8	1	6	4.724	211	8532038		226	8572038	
20"	D1-11	1-3/16	6	4.724	211	8532039		226	8572039	
25"	D1-8	1	6	5.512	364	8532539		389	8572538	
25"	D1-11	1-3/16	6	5.512	-	-		389	8572539	
32"	D1-11	1-3/16	6	6.199	-	-		703	8573239	



## SPARE PARTS FOR FOUR - JAW INDEPENDENT LATHE CHUCKS

SERIES 296:



Chuck Dia.	Hard Reversible Jaws		Hard Master Jaws		Hard Solid Jaws		Medium Soft Top Jaws /1pc.	
	Order No.	Price/ Each	Order No.	Price/ Each	Order No.	Price/ Each	Order No.	Price/ Each
3-1/2"	-		-		8901030		-	
5"	-		-		8901050		7884305	
6-1/4"	-		-		8901060		7884306	
8"	7890208		7890308		8901080		7884308	
10"	7890210		7890310		8901100		7884310	
12-1/2"	7890212		7890312		8901120		7884312	
15-3/4"	7890216		7890316		8901160		7884316	
20"	7890220		7890320		8901200		7884320	
25"	7890225		7890325		8901250		7884325	
32"	7890232		7890332		8901320		7884325	
32"/T	7890232		7890332		8901320		7884325	
36"	7890236		7890336		-		7884332	
40"	7890236		7890336		-		7884332	
49"	7890249		7890336		-		7884332	

All above spare parts sold by piece.



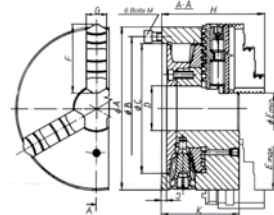
Chuck Dia.	Heavy Duty Soft Top Jaws		Operating Screws		Thrust Bearing		Wrench	
	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
3-1/2"	-		7890603		7890703		-	
5"	-		7890606		7890706		7890906	
6-1/4"	7884206		7890606		7890706		7890906	
8"	7884208		7890608		7890708		7890910	
10"	7884210		7890610		7890710		7890910	
12-1/2"	7884212		7890612		7890712		7890916	
15-3/4"	7884216		7890616		7890716		7890916	
20"	-		7890620		7890720		7890925	
25"	-		7890625		7890725		7890925	
32"	-		7890632		7890732		7890932	
32"/T	-		7890633		7890732		7890932	
36"	-		7890636		7890736		7890932	
40"	-		7890640		7890736		7890932	
49"	-		7890649		7890736		7890932	

All above spare parts sold by piece.

## FOUR-JAW COMBINATION LATHE CHUCKS

SERIES 270:

**BISON** Plain Back combination chucks combine the advantages of a scroll chuck and an independent chuck in one. Each jaw may be adjusted individually with an independent operating screw. After the desired eccentric setting has been made, all jaws can then be opened and closed simultaneously with the use of a scroll and pinion. The jaws are reversible and may be used as both inside and outside jaws.



4605

4805

### Standard Accessories:

1 set of hard solid reversible jaws, 1 wrench, 1 set of mounting screws.



### Optional Accessories:

Soft solid jaws.



### Adapter Plates:

See pages 520-521.

Chuck Dia.	Hole Dia.	Semi-Steel				Steel			
		RPM	Weight lbs.	Order No.	Price	RPM	Wt. lbs.	Order No.	Price
8"	2.17	2000	41.4	8480800		2500	43.0	8490800	
10"	2.99	1800	65.0	8481000		2000	68.3	8491000	
12-1/2"	4.05	1500	120	8481200*		1700	124	8491200	
15-3/4"	5.35	1000	194	8481600		-	-	-	
20"	7.351	500	330	8482000		1000	342	8492000	
25"	9.92	350	551	8482500		750	573	8492500	

\*LIMITED QUANTITY



## 5C ADAPTERS FOR BISON LATHE CHUCKS

SERIES 291:

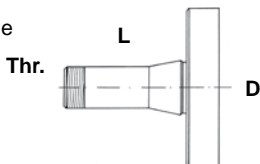
### SEMI-FINISHED

5C Adapters are designed for use with Self-Centering or Independent Lathe Chucks.

Made of high quality forged steel. 5C shank is hardened and precision ground for maximum accuracy.

Soft flange. Wide clamping range and high accuracy makes them very useful in many precision drilling, turning, grinding and milling operations.

**BISON Chucks and 5C Adapters give accuracy not available with standard and precision 5C collets.**



5C						For use with the following Lathe Chucks			
Shank	Flange Dia. D	Hole D	L	Order No.	Price	Chuck Dia.	3 & 4 Jaw Order No.	4 Jaw Order No.	
5C	4"	.866	4.41	7909304		3" & 4"	8100300	8500300	
				8100400			8110400		
	5"			8000500			8100500		8120500
	6"			7909306		6"	8000600	8120600	8140600

## CAST-IRON ADAPTERS

SERIES 291:

NOTE: Number of camlock studs depends on spindle size. See Table.



8240

8242

### D1 ADAPTERS

**8240 Fully Machined Adapters** for BISON plain back, self-centering Chucks - designed for direct mounting on camlock spindle noses.

**8242 Semi Machined Adapters** for plain back Chucks - designed for direct mounting on camlock spindle noses.

Chuck Dia.	Taper Size	Stud Dia.	No. of Studs	Hole Dia. C	Fully Machined			Semi Machined		
					Wt. lbs.	Order No.	Price	Wt. lbs.	Order No.	Price
5"	D1-3	9/16	3	2.02	5.3	7878053	-	-	-	-
5"	D1-4	5/8	3	2.40	5.3	7878054	-	-	-	-
6-1/4"	D1-3	9/16	3	2.02	9.5	7878063	9.3	8780630	-	-
6-1/4"	D1-4	5/8	3	2.40	9.5	7878064	9.3	8780640	-	-
6-1/4"	D1-5	3/4	6	3.13	9.5	7878065	9.3	8780650	-	-
6-1/4"	D1-6	7/8	6	4.06	9.5	7878066	-	-	-	-
8"	D1-3	9/16	3	2.02	15.4	7878083	-	-	-	-
8"	D1-4	5/8	3	2.40	15.4	7878084	27	8780840	-	-
8"	D1-5	3/4	6	3.13	15.4	7878085	27	8780850*	-	-
8"	D1-6	7/8	6	4.06	15.4	7878086	27	8780860	-	-
10"	D1-5	3/4	6	3.13	24.3	7878105	35	8781050*	-	-
10"	D1-6	7/8	6	4.06	24.3	7878106	35	8781060	-	-
10"	D1-8	1	6	5.35	24.3	7878108	35	8781080	-	-
12-1/2"	D1-6	7/8	6	4.06	39.7	7878126	49	8781260*	-	-
12-1/2"	D1-8	1	6	5.35	39.7	7878128	49	8781280	-	-
12-1/2"	D1-11	1-3/16	6	7.59	39.7	7878129	49	8781290	-	-
15-3/4"	D1-6	7/8	6	4.06	79	7878166	93	8781660*	-	-
15-3/4"	D1-8	1	6	5.35	79	7878168	93	8781680	-	-
15-3/4"	D1-11	1-3/16	6	7.59	79	7878169	93	8781690	-	-
20"	D1-8	1	6	5.35	132	7878208	159	8782080	-	-
20"	D1-11	1-3/16	6	7.59	132	7878209	159	8782090	-	-
25"	D1-8	1	6	5.35	232	-	232	8782580*	-	-
25"	D1-11	13/16	6	7.59	232	7878259	232	8782590	-	-

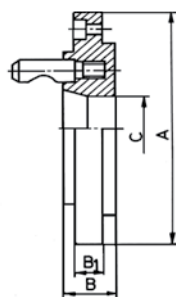
\*LIMITED QUANTITY



Fully Machined



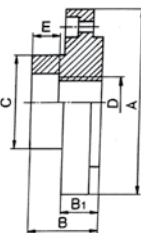
Semi Machined



## THREADED ADAPTERS FOR HARDINGE LATHE

8204

Chuck Dia.	Thread D	Weight lbs.	Order No.	Price
5"	M39 x 4	11	7922051	
5"	2-3/16 - 10	11	7922053	
6-1/4"	2-3/16 - 10	13	7922063	



### Fully Machined Adapters for BISON

plain back, self-centering Chucks - designed for direct mounting on Hardinge 2-3/16" - 10 spindle noses.



# CAST-IRON ADAPTERS

SERIES 291:



**Semi Machined and Fully Machined Adapters** for plain back chucks - designed for direct mounting on A1 and A2 spindle noses. May be used for both scroll and independent chucks.



**Rough Adapters for Scroll Chucks**

Chuck Dia.	Weight lbs.	Order No.	Price
3", 4", 5"	4.4	<b>7870105</b>	
6-1/4"	12	<b>7870106</b>	
8"	22	<b>7870108</b>	
10"	34	<b>7870110</b>	
12-1/2"	66	<b>7870112</b>	
15-3/4"	154	<b>7870116</b>	

**Rough Adapters for 4 Jaw Independent Chucks**

8262

Chuck Dia.	Weight lbs.	Order No.	Price
6-1/4"	8	<b>7870306</b>	
8"	11	<b>7870308</b>	
10"	25	<b>7870310</b>	
12-1/2"	49	<b>7870312</b>	

\*LIMITED QUANTITY



**Semi-Finished Threaded Adapters**

8206

Chuck Dia.	Thread Size	Weight lbs.	Order No.	Price
4"	1-10	8	<b>7871041</b>	
4"	1-1/2-8	8	<b>7871042</b>	
5"	1-10	10	<b>7871051</b>	
5"	1-1/2-8	10	<b>7871052</b>	
6-1/4"	1-1/2-8	12	<b>7871062</b>	
6-1/4"	2-1/4-8	12	<b>7871063</b>	
8"	1-1/2-8	12	<b>7871082</b>	
8"	2-1/4-8	13	<b>7871083</b>	
8"	2-3/8 - 6	13	<b>7871084</b>	
10"	2-1/4-8	22	<b>7871103</b>	
10"	2-3/8-6	25	<b>7871104</b>	
12-1/2"	2-3/8-6	33	<b>7871124</b>	

**A1/A2 TYPE ADAPTERS**

8212

8210

Chuck Dia.	Taper No.	Weight lbs.	SemiMach. Order No.	Price	Weight lbs.	Fully Mach. Order No.	Price
6-1/4"	A-5	6.5	<b>7873065</b>		-		
8"	A-5	19.0	<b>7873085</b>		18	<b>8730850</b>	
8"	A-6	15.5	<b>7873086</b>		-		
10"	A-6	38	<b>7873106</b>		-		
10"	A-8	33	<b>7873108</b>		-		
12-1/2"	A-6	45	<b>7873126</b>		-		
12-1/2"	A-8	62	<b>7873128</b>		-		
15-3/4"	A-6	85	<b>7873168</b>		-		
15-3/4"	A-11	141	<b>7873169</b>		-		
20"	A-11	133	<b>7873209</b>		-		
25"	A-11	158	<b>7873259</b>		-		
25"	A-15	-	<b>7873260</b>		231	<b>8732600</b>	
36", 40", 49"	A-15	242	<b>8733615</b>		-		
36", 40", 49"	A-20	249	<b>8733620</b>		-		

**Fully Machined Adapters** for BISON plain back, self-centering Chucks - designed for direct mounting on L type spindle noses.



8250

**L TYPE ADAPTERS**

Chuck Dia.	Taper No.	Thread Dia.	Weight lbs.	Order No.	Price
6-1/4"	L00	3-3/4"-6	13	<b>7879061</b>	
6-1/4"	L0	4-1/2"-6	13	<b>7879062</b>	
8"	L00	3-3/4"-6	22	<b>7879081</b>	
8"	L0	4-1/2"-6	22	<b>7879082</b>	
8"	L1	6"-6	22	<b>7879083</b>	
10"	L00	3-3/4"-6	33	<b>7879101</b>	
10"	L0	4-1/2"-6	33	<b>7879102</b>	
10"	L1	6"-6	33	<b>7879103</b>	
10"	L2	7-3/4"-5	33	<b>7879104</b>	
12-1/2"	L0	4-1/2"-6	57	<b>7879122</b>	
12-1/2"	L1	6"-6	57	<b>7879123</b>	
12-1/2"	L2	7-3/4"-5	57	<b>7879124</b>	
15-3/4"	L0	4-1/2"-6	95	<b>7879162</b>	
15-3/4"	L1	6"-6	95	<b>7879163</b>	
15-3/4"	L2	7-3/4"-5	95	<b>7879164</b>	
15-3/4"	L3	10-3/8"-4	95	<b>7879165</b>	
20"	L2	7-3/4"-5	159	<b>7879204</b>	
20"	L3	10-3/8"-4	159	<b>7879205</b>	
25"	L2	7-3/4"-5	397	<b>7879254</b>	
25"	L3	10-3/8"-4	397	<b>7879255</b>	

## STEEL ADAPTERS FOR "SET-THRU" CHUCKS (A & D TYPES)

SERIES 266:



D-Type

D-Type (8245)

Chuck Dia.	Taper Size	Studs		Weight lbs.	Order No.	Price
		Qty.	Dia.			
4"	D1-3	3	9/16"	3.31	7875043	
	D1-4	3	5/8"	3.97	7875044	
5"	D1-3	3	9/16"	5.95	7875053	
	D1-4	3	5/8"	5.73	7875054	
	D1-5	6	3/4"	6.92	7875055	
	D1-6	6	7/8"	13.06	7875056	
6-1/4"	D1-3	3	9/16"	10.80	7875063	
	D1-4	3	5/8"	9.92	7875064	
	D1-5	6	3/4"	9.89	7875065	
	D1-6	6	7/8"	13.00	7875066	
8"	D1-3	3	9/16"	10.36	7875083	
	D1-4	3	5/8"	10.36	7875084	
	D1-5	6	3/4"	15.87	7875085	
	D1-6	6	7/8"	17.64	7875086	
10"	D1-4	3	5/8"	18.84	7875104	
	D1-5	6	3/4"	17.64	7875105	
	D1-6	6	7/8"	28.44	7875106	
	D1-8	6	1"	32.41	7875108	
12-1/2"	D1-6	6	7/8"	28.44	7875126	
	D1-8	6	1"	47.84	7875128	
	D1-11	6	1-3/16"	52.91	7875129	
15-3/4"	D1-6	6	7/8"	29.0	7875166	
	D1-8	6	1"	27.2	7875168	
	D1-11	6	1-3/16"	26.8	7875169	
20"	D1-8	6	1"	74	7875208	
	D1-11	6	1-3/16"	78	7875209	
	D1-15	6	1-3/8"	83	7875215	
25"	D1-8	6	1"	74	7875258	
	D1-11	6	1-3/16"	78	7875259	



## 5C FULLY MACHINED STEEL ADAPTERS

SERIES 266:



T.I.R. 0.0005"

5C (8288)

Chuck Dia.	5C Adapters	Price
4"	7-912-304	
5"	7-912-305	
6-1/4"	7-912-306	

Adapters & SET-TRU (3 & 6 Jaw)  
Chucks are sold separately.

\*4" Solid Jaws only.

## STEEL ADAPTERS FOR "SET-TRU" CHUCKS (THREADED & L TYPES)

SERIES 266:



THREADED (8285)

Chuck Dia.	D	Thread	Weight lbs.	Order No.	Price
4"	3.94	1-1/2 - 8 UN-2B	5.29	7876042	
5"	4.92	1-1/2 - 8 UN-2B	6.61	7876052	
		2-3/16-10 HARDINGE	7.05	7876054	
		2-1/4 - 8 UN-2B	6.8	7876056	
6-1/4"	6.30	1-1/2 - 8 UN-2B	7.05	7876062	
		2-3/16 - 10 HARDINGE	7.50	7876064	
		2-1/4 - 8 UN-2B	7.94	7876066	
8"	7.87	1-1/2 - 8 UN-2B	9.92	7876082	
		2-1/4 - 8 UN-2B	11.46	7876083	
		2-3/8 - 6 UN-2B	13.89	7876084	

A-Type (8215)

Chuck Dia.	Taper Size	Weight lbs.	Order No.	Price
5"	A4	4.8	7874054	
	A5	4.2	7874055	
	A6	9.1	7874056	
6-1/4"	A5	6.77	7874065	
8"	A5	9.3	7874085	
	A6	13.5	7874086	
10"	A5	17.3	7874105	
	A6	17.3	7874106	
	A8	20.2	7874108	
12-1/2"	A6	27.3	7874126	
	A8	35.7	7874128	
	A11	41.20	7874129	
15-3/4"	A6	31.4	7874166	
	A8	28.8	7874168	
	A11	35.8	7874169	
20"	A8	69	7874208	
	A11	61	7874209	
	A15	76	7874215	
25"	A8	69	7874258	
	A11	61	7874259	
	A15	76	7874260	
	A20	90	7874265	



A-Type

**NOTE!**  
THESE ADAPTERS ARE DESIGNED TO MOUNT ON A1 & A2 SPINDLES.

L-TYPE (8255)

Chuck Dia.	D	Taper Size	Thread T-UNS3	Weight lbs.	Order No.	Price
6-1/4"	6.30	L00	3-3/4-6	9.0	7879061	
		L0	4-1/2-6	9.5	7879062	
8"	7.87	L00	3-3/4-6	15.0	7879081	
		L0	4-1/2-6	15.4	7879082	
		L1	6-6	16.5	7879083	
10"	9.84	L00	3-3/4-6	25.0	7879101	
		L0	4-1/2-6	26.1	7879102	
		L1	6-6	37.0	7879103	
12-1/2"	12.40	L0	4-1/2-6	37.0	7879122	
		L1	6-6	37.0	7879123	
		L2	7-3/4-5	38.8	7879124	
15-3/4"	11.75	L1	6-6	34.2	7879163	
		L2	7-3/4-5	45.4	7879164	
		L3	10-3/8-4	67.2	7879165	
20"	19.68	L2	7-3/4-5	60.2	7879204	
		L3	10-3/8-4	81.3	7879205	



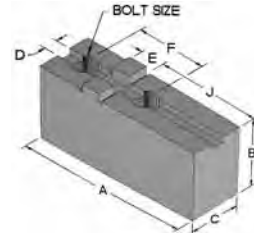


## SOFT TOP JAWS

SERIES 290:

For all chucks with American Standard  
Tongue and Groove Master Jaws

(Bergman, Bison, Buck, Cushman, Huron, Rohm, Forkhardt,  
Pratt Burnerd America, SCA, S.P., W & S, Nobel, and Yuasa)



- Easily machined to desired shape to hold irregular workpieces.
  - Furnished in low carbon steel for carburizing and hardening after machining.
- O - Tongue is offset (See J dimensions) Tongue Height is 1/8".

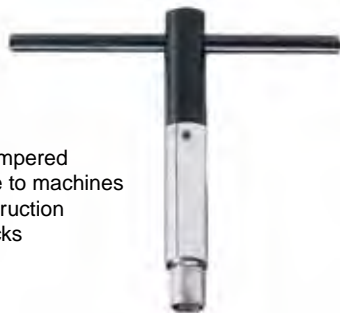
Medium Duty Soft Jaws											
Chuck Size	Model No.	A	B	C	D	E	F	Bolt Size	J	Order No.	Price
6	447	2-5/8	1-5/8	1-1/4	0.313	0.5	1.5	3/8	1-1/8	5201447	
6	6MSH-O	3-1/4	1-3/8	1	0.313	0.5	1.5	3/8	1-13/16	2900006	
8	450	3-1/2	1-5/8	1-1/4	0.313	0.5	1.75	3/8	1-5/8	5201450	
8	8MSH-O	3-3/4	1-7/8	1-1/4	0.313	0.5	1.75	3/8	2-3/16	2900008	
10	452	4-1/4	1-7/8	1-1/2	0.5	0.75	2.12	1/2	1-15/16	5201452	
10	10MSH-O	4-5/8	1-7/8	1-1/2	0.5	0.75	2.12	1/2	2-5/8	2900010	
12	454	4-7/8	2-3/8	1-3/4	0.5	0.75	2.5	1/2	2-5/16	5201454	
12	12MSH-O	5-3/8	2-1/8	1-3/4	0.5	0.75	2.5	1/2	3-1/8	2900012	
15	456	5-5/8	2-5/16	2	0.5	0.75	3	5/8	2-3/4	5201456	
15	15MSH-O	6-1/4	2-5/16	1-3/4	0.5	0.75	3	5/8	3-5/8	2900015	
18-21	457	5-5/8	2-5/16	2	0.5	0.75	3	3/4	2-3/4	5201457	
18-21	18MSH-O	6-3/8	2-13/16	2-1/4	0.5	0.75	3	3/4	3-3/4	2900018	
Heavy Duty Soft Jaws											
6	448	2-5/8	1-5/8	1-1/4	0.313	0.5	1.5	7/16	1-1/8	5201448	
6	6HSH-O	3-1/4	1-3/8	1-1/2	0.313	0.5	1.5	7/16	1-13/16	2900106	
8	451	3-1/2	1-7/8	1-1/2	0.313	0.5	1.75	1/2	1-5/8	5201451	
8	8HSH-O	3-3/4	1-7/8	1-1/2	0.313	0.5	1.75	1/2	2-3/16	2900108	
10	453	4-1/2	2-3/8	1-3/4	0.5	0.75	2.12	5/8	1-15/16	5201453	
10	10HSH-O	4-5/8	1-7/8	1-3/4	0.5	0.75	2.12	5/8	2-5/8	2900110	
12	455	4-7/8	2-3/8	2	0.5	0.75	2.5	5/8	2-5/16	5201455	
12	12HSH-O	5-3/8	2-1/8	2	0.5	0.75	2.5	5/8	3-1/8	2900112	
15-36	457	5-5/8	2-5/16	2	0.5	0.75	3	3/4	2-3/4	5201457	
15-36	15HSH-O	6-1/4	2-5/16	2-1/2	0.5	0.75	3	3/4	3-5/8	2900115	
18-36	458	5-5/8	3-5/16	2-1/2	0.5	0.75	3	3/4	2-3/4	5201458	
18-36	18HSH-O	6-3/8	2-13/16	3	0.5	0.75	3	3/4	3-3/4	2900118	

Many other styles such as pointed, serrated, etc. are available; please inquire.

Aluminum jaws available; please inquire.

## SAFETY SELF EJECTING LATHE CHUCK WRENCHES

Series 643:



- Hardened and tempered
- Prevents damage to machines
- Heavy duty construction
- Fits all lathe chucks

Approximate Size of Square	Order No.	Price
1/4	6430016	
5/16	6430020	
3/8	6430024	
7/16	6430028	
1/2	6430032	
9/16	6430036	

## WRENCHES FOR LATHE CHUCKS

Series 285:



- Hardened and tempered
- Black Finish
- Fits all lathe chucks

Approximate Size of Square	Order No.	Price
15/64	6551564	
1/4	6550014	
9/32	6550932	
5/16	6550516	
3/8	6550038	
7/16	6550716	
1/2	6550112	
9/16	6550916	
5/8	6550058	
11/16	6551116	
3/4	6550034	

## ROTATING CHUCKS WITH MT SHANKS, THREE-JAW SELF CENTERING WITH FINE ADJUSTMENT

SERIES 645:

### SET-TRU .0005" T.I.R.

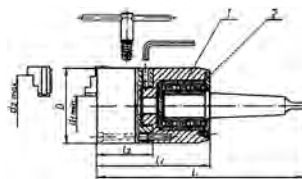
- These precision chucks are used in tail stocks for jobs where centers can not be used (example: machining of tube).
- Steel body.
- Hardened and ground scroll and pinions.
- Hardened and ground MT shank.
- Sealed ball bearings: lubrication through oiler.
- 4 fine adjustment screws provide .0005 T.I.R. repeatability.

### Standard Accessories:

4" 2-sets of hard solid jaws (ID & OD), 1 chuck wrench and 1 hex key.  
5" & 6" 1 set of two-piece reversible jaws (hard top jaws & hard master jaws), 1 chuck wrench and 1 hex key.

### Optional Accessories:

4" soft solid jaws,  
5" & 6" soft top jaws,  
6-Jaw SET-TRU chuck,  
5" 5C Collet Chuck



Rotating chucks are provided in a wooden case.



9164

Chuck Dia.	Max. R.P.M.	MT No.	Weight lbs.	Rotating Chuck Order No.	Price
4"	3500	3	13.5	8610400	
5"	3200	4	25.0	8610500	
6-1/4"	3000	5	34.0	8610600	

## ROTATING CHUCKS WITH MT SHANKS, THREE-JAW SELF CENTERING

SERIES 645:

These precision rotating chucks are used in tailstocks for jobs where centers cannot be used (example: machining of tube).

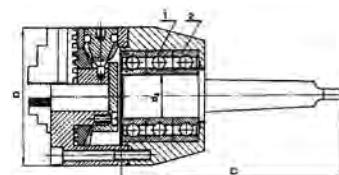
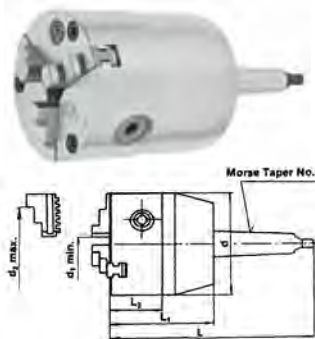
- Steel body.
- Hardened and ground scroll and pinions.
- Hardened and ground MT shank.
- Sealed ball bearings lubrication through oiler.
- 3-Jaw Lathe Chucks and can be easily removed and replaced by 4-Jaw Scroll Chucks (5", 6"), Faceplate (6"), and by the 5C Collet Chuck (5").

### Standard Accessories:

3" & 4" 2-sets of hard solid jaws (ID & OD), 1 chuck wrench and 1 hex key.  
5" & 6" 1-set of two-piece reversible jaws (hard top jaws & hard master jaws), 1 chuck wrench and 1 hex key.

### Optional Accessories:

3" & 4" soft solid jaws,  
5" & 6" soft top jaws,  
4-Jaw Scroll Chuck,  
6" Faceplate and 5" 5C Collet Chuck.



Rotating chucks are provided in a wooden case.

5" & 6" with American Standard Two-Piece Tongue & Groove Jaws

Chuck Dia.	Max. R.P.M.	MT No.	Weight lbs.	Solid Jaws 9154		2-Piece Jaws 9155	
				Order No.	Price	Order No.	Price
3"	4000	2	8.0	8600300		-	
4"	3500	3	13.5	8600400		-	
5"	3200	4	25.0	8600500		8650500	
6-1/4"	3000	5	34.0	8600600		8650600	

## 3" LATHE CHUCKS WITH 5C MOUNT

SERIES 995:

- For use in fixtures and 5C spindles for economical set-up
- Hole thru 5C adaptor .75"



4 - Jaw

3 - Jaw	Order No. 6000330	Price	
4 - Jaw	Order No. 6000063	Price	

**MEGA**  
Superior Import

## SUPER PRECISION 5C COLLET CHUCKS WITH FINE ADJUSTMENT

SERIES 292:



FOR MOUNTING WITH ADAPTER PLATES (SEE BELOW)  
0.0004" T.I.R. AND 6000 R.P.M.

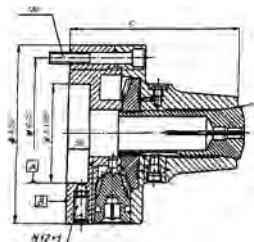
The Super Precision 5C Collet Chucks are designed for use with all 5C Collets. They can be used for turning, facing, boring, grinding and milling operations on center lathes and grinding machines. The simple key operated scroll provides a uniform, distortion free clamping of the workpiece and low collet exchange time.

Four fine adjustment screws are used to set up the chuck on its mounting plate to get precision within .0004" T.I.R. on duplicate parts. Outstanding accuracy, low cost, versatility and long life make **BISON 5" 5-C SET TRU** Chucks invaluable in the workshop and indispensable in the toolroom.

**BODY** - made of high quality **FORGED STEEL**.  
**FORGED SCROLL** - fully hardened & ground for longer life.  
**PINIONS** - hardened and ground.

**Standard Accessories:**

- 1 Chuck Wrench,
- 1 set of mounting bolts,
- 1 hex key.



3960-5C

Chuck Dia.	5C Collet Holding Capacity In.	R.P.M.	Weight lbs.	Order No.	Price
5"	3/64 x 1-1/8	6000	12	9620505	

## FULLY MACHINED STEEL ADAPTERS FOR A, D, DIN AND THREADED SPINDLES

SERIES 266:



Chuck Dia.	Taper Size	Order No.	Price
5"	A-4	7874054	
	A-5	7874055	
	A-6	7874056	
	D1-3	7875053	
	D1-4	7875054	
	D1-5	7875055	
	D1-6	7875056	
	L00	7879905	
	1-1/2" x 8	7876052	
	2-3/16" x 10	7876054	
	2-1/4" x 8	7876056	



## 5C COLLET CHUCKS

SERIES 292:



FOR MOUNTING WITH ADAPTER PLATES (SEE BELOW) 6000 R.P.M.

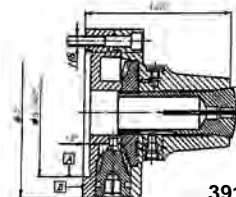
The 5C Collet Chucks are designed for use with all 5C Collets. They can be used for turning, facing, boring, grinding and milling operations on center lathes and grinding machines.

The simple key operated scroll provides a uniform, distortion free clamping of workpieces and low collet exchange times. Their simple design, rugged construction and fine workmanship assures high quality and long service life.

**BODY** - made of high quality **FORGED STEEL**.  
**FORGED SCROLL** - fully hardened and ground for longer life.  
**PINIONS** - hardened and ground.

**Standard Accessories:**

- 1 Chuck Wrench, 1 set of mounting bolts, 1 Hex Key.



3911-5C

Chuck Dia.	5C Collet Holding Capacity In.	R.P.M.	Weight lbs.	Order No.	Price
5"	3/64 x 1-1/8	6000	10	620501	

## MACHINED ADAPTERS FOR A, D, DIN, NST & THREADED LATHE SPINDLES

SERIES 291:



Chuck Dia.	Taper Size	Order No.	Price
5"	A-6	7877001	
	A-8	7877002	
	D1-3	7878053	
	D1-4	7878054	
	D1-5	7878055	
	D1-6	7878056	
	L00	7879051	
	M39 x 4	7922051	
	2-3/16" - 10	7922053	



## SEMI-MACHINED ADAPTERS FOR THREADED LATHE SPINDLES

SERIES 291:

Chuck Dia.	Spindle Size	Order No.	Price
5"	1 x 10 1-1/2 x 8 Rough	7871051 7871052 7870105	





## VERTICAL 5-C COLLET VISE SERIES 344:



**Specifications:**  
Base: 2-1/2" x 7-3/4"  
Height: 4"



Small movement of lever opens or closes collet.

Order No. 2030000	Price	<input type="text"/>
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## VERTICAL 3-C COLLET VISE SERIES 344:



**Specifications:**  
Base: 2-1/8" x 7-3/4"  
Height: 3-1/2"



Small movement of lever opens or closes collet.

Order No. 2035000	Price	<input type="text"/>
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## CAM OPERATED 5-C HORIZONTAL/VERTICAL COLLET FIXTURE



SERIES 347: MEDA - SUPERIOR IMPORT  
SERIES 348: EAGLE ROCK USA



**Specifications:**  
In horizontal position:  
Base: 5" x 4"  
Height: 3-5/8"



In vertical position:  
Base: 5" x 3-5/8"  
Height: 4"

Cam operated spindle permits opening and closing of collet so that setups remain undisturbed.

MEDA - SUPERIOR IMPORT		
Order No. 2045000	Price	<input type="text"/>
EAGLE ROCK USA		
Order No. 3481210	Price	<input type="text"/>

## HORIZONTAL / VERTICAL 5-C COLLET FIXTURE SERIES 343:



**Specifications:**  
Base: 5" x 3-5/8"  
Height: 3-3/4"



Collet does not move up or down and retains positive relation to base.

Order No. 3430000	Price	<input type="text"/>
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## AIR OPERATED 5-C COLLET FIXTURE SERIES 348:



**Specifications:** Base: 5-1/2" Dia.,  
Height: 3-1/4"

Air operated "double acting" piston provides "power" opening and closing of the collet. Collet is locked into position for positive depth location of the workpiece. Fixture is operated in conjunction with a 4-way valve and can be hooked up for hand operation, foot operation or connected to automatic equipment etc. Standard pipe thread connection for air hoses.



Order No. 2050000	Price	<input type="text"/>
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526

## 5-C HEXAGON AND SQUARE COLLET BLOCKS SERIES 327:



For fast and easy setups. Made of hardened tool steel precision ground. Accuracy of parallelism, squareness and flatness within  $\pm .0005"$ . Includes drawbar type nut for tightening and releasing. 1/16" through 1-1/8" capacity. Cam operated quick acting closer also available.

Description	Order No.	Price
Hexagon Collet Block	1985005	
Square Collet Blocks	1985010	
Quick Acting Closer	1985015	
Complete Set (Hexagon and Square Blocks with Nuts and Quick Acting Closer).	1985020	

## COLLET-MASTER INDEX FIXTURE SERIES 641:



### FEATURES:

- 48 Index positions.
- Uses all std. 5-C Collets.
- Two sealed, preloaded ball bearings in spindle.
- Hardened and ground base is held square and parallel to spindle w/i 0.0002".
- Maximum spindle runout is 0.0001".
- Drawbar and fitted case included.
- Optional CM-5C-FVB faceplate & v-block available for eccentric forms.

Model No.	Center Height	Overall Height	Indexing Accuracy	Wt.	Order No.	Price
CM-5C	3-5/8"	6-1/2"	$\pm 45$ Sec.	9	6410047	

Model No.	Faceplate Dia.	V-Block Capacity	Weight	Order No.	Price
CM-5C-FVB	6-1/2"	1-3/8"	15	6410161	



**5-C ROTATING INDEXING FIXTURE**

SERIES 351:



**Specifications:**  
Overall Length: 9"  
Base: 4" x 4"

One degree indexing over 360° using 5-C Collets, makes this tool ideal for grinding, machining, layout, inspection, etc. Hardened and ground spindle is accurate within .0004".

Order No. 2065000	Price	<input type="text"/>
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**HORIZONTAL / VERTICAL 5-C RAPID INDEX**

SERIES 352:

Fast and accurate indexing using 5-C Collets.

Terminal "A" provides 8,4,2 positions (45°, 90°, 180° respectively).  
Terminal "B" provides 12, 6, 3 positions (30°, 60°, 120° respectively).  
Terminal "C" provides 24 positions (15° each respectively).

**Specifications:**  
Parallelism ±.00078"  
Squareness ±.00078"



Order No. 2070500	Price	<input type="text"/>
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**INDEXING FIXTURES**



**The Choice Is Yours!!!**

**MASTER-GRIND WITH "TWIN-DEX"**

SERIES 641:



**5-C COLLET INDEX FIXTURE**

SERIES 351:



Features: 3-1/4" center height. Top ground parallel with bottom, back edge parallel with spindle nose. Spindle can be locked in any position without engaging index pin. The internal 5-C taper is hardened and ground. Can be used in vertical position with an angle plate. Supplied with a 24 hole index plate for 2, 3, 4, 6, 8, 12 and 24 divisions or 15° spacing.



Order No. 2065500	Price	<input type="text"/>
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**HORIZONTAL / VERTICAL 5-C COLLET INDEXING FIXTURE**

SERIES 352:



**Specifications:**  
Horizontal Base 4" x 8"  
Vertical Base 4" x 6"  
Vertical Height 8"  
Swing 8"  
Center Height 4"



For rapid indexing in both vertical and horizontal positions using 5-C collets. 2-1/4" - 8 threaded spindle nose for use with lathe chucks. Instant opening and closing of collets is accomplished by a lever having a leverage ratio of 100 to 1. Rapid rotation of spindle nose is accomplished through a ratchet device on the front of the spindle. Supplied with a 24 hole index plate for 2, 3, 4, 6, 8, 12 and 24 divisions or 15° spacing. Index plate is supplied with screws for masking holes not in use.

Order No. 2070000	Price	<input type="text"/>
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Screw fed tailstock available.

Order No. 2070001	Price	<input type="text"/>
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**FEATURES:**

- "TWIN-DEX"™ Combination 5-C COLLET and V-BLOCK in one fixture
- Horizontal or Vertical V-Block mounting
- 72 position index plate for hard index every five degrees
- Two heavy duty 4" dia. tapered roller bearings in spindle
- Extra large 1-5/8" V-Block capacity
- Built in sine bar for setting angles between hard index locations
- Square and parallel within .0002"
- Spindle runout .00005"
- Sine Set® compatible
- Fitted wooden case included

Accessories available: Motor Drive Kit, Baseplate and Tailstock; please inquire.

Model No.	V-Block Capacity	Collet Capacity	Through Hole	Center Height	Height	Lgth	Width	Weight lbs.	Order No.	Price
MG5CVS1	1-5/8	ALL 5-C	1-1/4"	3"	6"	4"	5"	22	6410046	<input type="text"/>

## HORIZONTAL / VERTICAL "SUPER" INDEXING FIXTURES

SERIES 353:



These indexes combine the advantages of the other Series 353 indexes with those of a worm-gear index. They carry out single-purpose indexing and indirect indexing using the worm-drive mechanism as well as "simple" indexing.

- For milling, drilling, jig boring, and many common shop applications.
- 24 Position hardened and ground index plate (15° increments), satin chrome dial, 360° graduated ring and adjustable 10 second vernier.
- Fast and simple indexing of 2, 3, 4, 6, 8, 12 and 24 divisions.

Specifications	Maximum Variation
Parallelism of table surface to base per 12"	.0006"
True running of axial movement of table surface	.0006
True running of center boss	.0004
Squareness of base to angle face per 12"	.0008
True running of chuck center	.0012
Dividing accuracy individual spacing error	0° 45'

Model No.	Size of Chuck	Description	Weight	Thru* Hole Dia.	Order No.	Price
CS6	6"	Indexing Unit Complete with 3-Jaw chuck, 6 masking plates, & faceplate**	106 lbs.	1-23/32	2075106	
CS8	8"		167 lbs.	2-15/32	2075108	

\* Chuck

\*\* CS6 comes with 8" Faceplate, CS8 comes with 10" Faceplate

## HORIZONTAL / VERTICAL INDEXING FIXTURES

SERIES 353:



- Designed for milling, drilling, jig boring, and many other shop applications.
- Hardened and ground 24 Position index plate (15° increments).
- 360° satin chrome graduated ring with 5 minute adjustable vernier plate insures accurate readings.
- Fast and simple indexing of 2, 3, 4, 6, 8, 12 and 24 divisions.

Specifications	Maximum Variation
Parallelism of table surface to base per 12"	.0006"
True running of axial movement of table surface	.0006
True running of center boss	.0004
Squareness of base to angle face per 12"	.0008
True running of chuck center	.0012
Dividing accuracy individual spacing error	0° 45'

Model No.	Size of Chuck	Description	Wt.	Thru* Hole Dia.	Order No.	Price
CC6	6"	Indexing Unit complete with 3-Jaw chuck & 6 masking plates.	72 lbs.	1-23/32	2075206	
CC8	8"		110 lbs.	2-15/32	2075208	

\*Chuck

## OPTIONAL ACCESSORIES FOR H/V INDEXING FIXTURES AND H/V ROTARY TABLES (Page 526)

SERIES 353, 350:



Dividing Plates Model No.	For Use With	Order No.	Price
DP1	HVRT6	3500001	
DP2	HVRT8	3500002	
DP3	HVRT10, HVRT12, HVRT14	3500003	
DP4	CS6, CS8	3500004	



Tailstock Model No.	For Use With	Center Height (Low/High)	Order No.	Price
TS1	HVRT4, HVRT6	3.81 / 4.76"	3530001	
TS23	CC6, CC8, CS6, CS8, HVRT8, HVRT10, HVRT12	5.23 / 8.26"	3530003	
TS4	HVRT14, HVRT16	8.26 / 11.81"	3530004	

## SUPER SPACERS

SERIES 353:

### HORIZONTAL - VERTICAL

H/V Super Spacers are designed for milling, drilling, jig boring and related machining operations. Fixtures are also used to index parts which are being inspected. High accuracy, versatility, a wide range of accessories and long life make this fixture invaluable in the work shop and indispensable in the tool room. They significantly increase productivity by reducing the time required to position the workpiece on the machine. Bison H/V Super Spacers are provided with different lathe chucks.

**Type 5842** is furnished with 3-jaw, self-centering, precision lathe chuck with forged steel body, Type 3575.

a) **Angular indexing:** can be performed through the graduated ring from 0° to 360° in increments of 1°.

b) **Direct indexing:** is done by means of a special dividing mechanism. This permits divisions in **2, 3, 4, 6, 8, 12 & 24** without any disassembly operations.

c) **Special Indexing:** To obtain divisions not listed above, the manufacturer offers an additional blank dividing plate which can be machined according to user demand.

All Super Spacers are furnished with a special sleeve with MT & 5C sockets which allows use of additional accessories with MT & 5C shanks like 5C Collets, lathe chucks or face drivers.

#### Accuracy:

- Maximum total spacing error..... 0° 2'
- Squareness (base to chuck) ..... .0008" max.
- Parallelism over face ..... .0008" max.
- Chuck concentricity: 5842 ..... .0015" TIR  
5846 and 5849 ..... .0009" TIR
- Center hole concentricity ..... .0008" TIR
- Mounting flange concentricity ..... .0008" TIR

Chuck Dia.	Thru Hole Dia. d	Wt. lbs.	Type 5842	
			Order No.	Price
6-1/4"	1.653	72	7609006	
8"	2.165	127	7609008	
12-1/2"	4.055	317	7609012	



#### Standard Accessories:

2 mounting bolts with T-nuts, 2 hex wrenches, 1 chuck wrench, 2 eye bolts and 2 locating keys, sleeve with MT and 5C sockets.



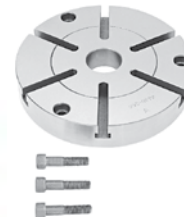
#### Optional Accessories:



76101  
Tailstock



Super Spacer with  
mounted faceplate



76105  
Faceplate

For use with Chuck Dia.	Tailstocks		Faceplates	
	Order No.	Price	Order No.	Price
6-1/4"	7610106		7610506	
8"	7610108		7610508	
12-1/2"	7610112		7610512	

## MILLING AND DRILLING (COMPOUND SLIDING) TABLES

SERIES 426:



Suitable for all kinds of precision machining operations. Easy to read dials are graduated in .001". Dovetail slides have adjustable steel gibs to compensate for wear. T-slots are 5/8" wide x 7/16" deep.

Order No.	2425077	2425612
Price		
Size	7 x 7" (Rotatable 360°)	5-1/2 x 12"
Height	4-1/8"	4-1/2"
Travel	4" on each axis	8" Longitudinal / 5" Transverse
Base Size	4-5/8" diameter	8 x 9" oval
Mounting	1-1/8" Long Base Bolt	U Slots for up to 5/8" Bolts



## DIVIDING HEADS

SERIES 425:



Precision made units for producing accurate indexing and dividing quickly and easily. Headstock swivels from 10° below horizontal to 90° vertical. 24 hole direct indexing plates for numbers 2, 3, 4, 6, 8, 12, and 24. 3 additional dividing plate for indexing all numbers from 2 to 50 and most numbers up to 380. 1 : 40 gear ratio. Hardened and ground spindles are threaded for use with chucks. **Model No. DH2 is a Universal Type Head and is supplied with a full set of gears enabling differential dividing and spiral work.** The following accessories are included with every Dividing Head : Headstock, Adjustable Tailstock, Centers, Dog, Threaded Backplate for mounting lathe chucks, 3 Dividing Plates.

Model No.	Hgt. of Head	Hgt. of Ctr.	Head-stock Taper	Spindle Thread	Weight	Order No.	Price
DH0	6-7/8	4	B&S 7	1-1/2-8	49 lbs.	2420000	
DH1	8-3/4	5-1/8	B&S 9	1-1/2-8	80 lbs.	2420001	
DH2	9-3/8	5-1/4	B&S 10	2-1/4-8	117 lbs.	2420002	



## HORIZONTAL/VERTICAL ROTARY TABLES

SERIES 350:

Suitable for use with dividing plates. Precision ground top plate and general careful construction ensure highest accuracy. Table graduated 360°. Worm gear reduction ratio is 1 : 90 and the gear can be quickly disengaged for rapid indexing. One turn of the handle moves the table through 4°. Micro collar is graduated in steps of 1 minute. Vernier scale makes settings down to 10 seconds possible.



Model No.	Dia.	Center Hole	Weight	Order No.	Price
HVRT4	4	MT1	20 lbs.	<b>2061004</b>	
HVRT6	6	MT2	28 lbs.	<b>2061006</b>	
HVRT8	8	MT3	69 lbs.	<b>2061008</b>	
HVRT10	10	MT3	107 lbs.	<b>2061010</b>	
HVRT12	12	MT4	170 lbs.	<b>2061012</b>	
HVRT14	14	MT4	211 lbs.	<b>2061014</b>	
HVRT16	16	MT4	297 lbs.	<b>2061016</b>	

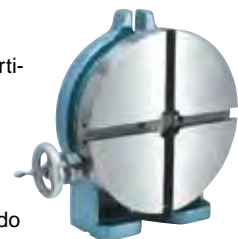
For optional tailstocks & dividing plates see page 528.



## VERTICAL/HORIZONTAL ROTARY INDEXING TABLES

SERIES 444:

- 360° index rotation.
- Tables are for use in either the horizontal or vertical position.
- Table top and vertical and horizontal bases ground for overall squareness.
- Keyway and bolt lugs are provided on both mounting surfaces.
- Heavy handles permit smooth movement and do not extend below the base.
- Table top center bore is 1-5/8".
- Graduated dials with thumbscrews for easy "0" setting.



Model 1062

### LIFETIME GUARANTEE

Model	Table Dia.	Height at 0°	Base	Gear Ratio	Weight	Order No.	Price
862	8"	3-15/16"	12"x9-1/2"	40:1	44 lbs.	<b>32806</b>	
1062	10"	3-7/8"	12"x9-1/2"	40:1	52 lbs.	<b>34105</b>	

## PRECISION TILTING ROTARY TABLES

SERIES 350:



Description	Order No.	Price
10" Tilting Rotary Table	<b>3500010</b>	
12" Tilting Rotary Table	<b>3500012</b>	
Dividing Plates (10", 12")	<b>3500013</b>	
Adjustable Tailstock 10"	<b>3500110</b>	
Adjustable Tailstock 12"	<b>3500112</b>	

Specifications	Maximum Variation (inches/second)
Clamping surface flatness (concave)	.0006"
Cylindrical center bore concentricity	.0008"
Taper center bore concentricity	.0008"
Surface to base parallelism	.0008"
Surface to angle face parallelism	.0004"
Surface to center slot squareness	.0008"

- Accuracy: 45 seconds
- 10 second vernier reading
- Gear ratio 90:1
- Extra deep coolant channel.
- Dual positive action locks
- Low table profile
- Satin chrome dials
- Gear drive immersed in oil
- Optional dividing plates and tailstock

Table Outer Dia.	Table Height	Center Height	Base	Taper Hole	Weight	Order No.
9.81	8.07	5.51	10 x 12	MT-3	172	<b>3500010</b>
12.6	10.04	6.89	13 x 15	MT-4	293	<b>3500012</b>



## CROSS SLIDE ROTARY TABLES

SERIES 444:

- Accurately index work on the X and Y axis as well as 360° of rotation.
- Slides have adjustable gibs to maintain accuracy.
- Tops ground to 0.001" total indicator reading.
- Heavy handles permit smooth movement and do not extend below the base.
- 83, 183, 1583 have 5/8" x 1" T-slots.
- 8" and 10" diameter tables have four 1/2" bolt lugs and 5/8" keyways.
- 15" tables have 5/8" bolt lugs and 11/16" keyways.
- Graduated dials with thumbscrews for easy "0" setting.



Model 83

## TILTING CROSS SLIDE ROTARY TABLES

SERIES 444:

- Accurately index work on the X and Y axis as well as 360° of rotation.
- Tilt is from 0° to 90°; Angle is held by four screws in two sturdy side plates.
- Heavy handles permit smooth movement and do not extend below the base.
- T-slots are 5/8" x 1".
- Table tops are precision ground flat to within 0.001".
- Center bore is 1-5/8" diameter.
- Bolt lugs are 1/2" and base keyways are 5/8".
- Slides have adjustable gibs to maintain accuracy.
- Gear Ratio 40:1



Model 84

### LIFETIME GUARANTEE

Model	Table Dia.	Ht.	Table Trvl. (X x Y)	Base (L x W)	Gear Ratio	Net Wt.	Order No.	Price
83	8"	5-1/2"	4"x4"	6-5/8"x7-5/8"	40:1	40 lbs.	<b>32803</b>	
183	10"	5-5/8"	4"x4"	6-3/8"x7-5/8"	40:1	52 lbs.	<b>34102</b>	

Model	Table Dia.	Height at 0°	Table Trvl. (X x Y)	Base (L x W)	Net Weight	Order No.	Price
84	8"	5"	4"x4"	5"x9"	45 lbs.	<b>32804</b>	
184	10"	5-3/4"	4"x4"	5"x9"	54 lbs.	<b>34103</b>	





Made of Precision Ground Alloy Forged Steel.

**MORSE TAPER SLEEVES**

SERIES 384:  
MEDA - HARDENED TANG ONLY

SERIES 385:  
MEDA - HARDENED AND GROUND THROUGHOUT

SERIES 733: JACOBS



Morse Taper Hole	Morse Taper Outside	MEDA H/Tang Only		MEDA Hard. & Ground		JACOBS H/Tang Only		JACOBS Hard. & Ground	
		Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
0	1	7001		7101		30421		30432	
1	2	2215012		2220012		30422		-	
1	3	2215013		2220013		30424		-	
2	3	2215023		2220023		30423		9930434	
1	4	2215014		2220014		30427		-	
2	4	2215024		2220024		30426		30437	
3	4	2215034		2220034		30425		30436	
1	5	2215015		2220015		30638		30762	
2	5	2215025		2220025		30430		30441	
3	5	2215035		2220035		30429		30440	
4	5	2215045		2220045		30428		30439	
4	6	2215046		2220046		30639		30822	
5	6	2215056		2220056					
5	7	97057		7157					

Made of alloy forged steel with precision ground shanks.



**MORSE TAPER EXTENSION SOCKETS**

SERIES 386:  
MEDA - HARDENED TANG ONLY

SERIES 387:  
MEDA - HARDENED AND GROUND THROUGHOUT

SERIES 733:  
JACOBS - HARDENED TANG ONLY



Model No.	Morse Taper Hole	Morse Taper Shank	MEDA H/Tang Only		MEDA Hardened & Ground		JACOBS H/Tang Only	
			Order No.	Price	Order No.	Price	Order No.	Price
XT11	1	1	2225011		2230011		30443	
XT21	2	1	2225021		2230021		30444	
XT12	1	2	2225012		2230012		30445	
XT22	2	2	2225022		2230022		30446	
XT32	3	2	2225032		2230032		30447	
XT42	4	2	2225042		2230042		-	
XT13	1	3	2225013		2230013		30448	
XT23	2	3	2225023		2230023		30449	
XT33	3	3	2225033		2230033		30450	
XT43	4	3	2225043		2230043		30451	
XT53	5	3	2225053		2230053		-	
XT14	1	4	2225014		2230014		-	
XT24	2	4	2225024		2230024		30640	
XT34	3	4	2225034		2230034		30452	
XT44	4	4	2225044		2230044		30453	
XT54	5	4	2225054		2230054		30454	
XT35	3	5	2225035		2230035		30641	
XT45	4	5	2225045		2230045		30455	
XT55	5	5	2225055		2230055		30456	
XT65	6	5	2225065		2230065		-	
XT46	4	6	2225046		2230046		-	
XT56	5	6	2225056		2230056		-	

Made of alloy forged steel. Precision ground and hardened throughout.



**SOLID SOCKETS WITH MORSE TAPER HOLES**

SERIES 383:  
MEDA - SUPERIOR IMPORT

SERIES 733:  
JACOBS



Socket No.	Morse Taper Hole	Outside Diameter	Overall Length	MEDA		JACOBS	
				Order No.	Price	Order No.	Price
-	1	3/4	3-1/2	-		9930471	
1	1	1	3-1/2	2210001		-	
2	1	1-1/4	3-1/2	2210002		-	
3	1	1-1/2	3-1/2	2210003		-	
4	2	1	4	2210004		9930474	
5	2	1-1/4	4	2210005		0930475	
6	2	1-1/2	4	2210006		9930476	
7	2	1-3/4	4	2210007		-	
8	2	2	4	2210008		-	
9	3	1-1/4	4-3/4	2210009		9030478	
10	3	1-1/2	4-3/4	2210010		9930479	
11	3	1-3/4	4-3/4	2210011		9930480	
12	3	2	4-3/4	2210012		-	
13	4	1-1/2	6	2210013		30482	
14	4	1-3/4	6	2210014		-	
15	4	2	6	2210015		30483	
16	5	2-1/4	7-3/8	2210016		-	
17	5	2-1/2	7-3/8	2210017		-	
18	6	3-1/4	10-1/8	2210018		-	
19	6	3-1/2	10-1/8	2210019		-	

## DRILL CHUCKS

SERIES 319:



## BALL BEARING KEY TYPE SUPER CHUCKS

SERIES 319:



Suitable for heavy duty drilling use. Anti-thrust bearing increases clamping capacity. All parts hardened and precision ground.

These chucks, robust in design, have great precision. All parts subject to wear are hardened for high accuracy and long life. Each chuck supplied with a key.

Capacity	Taper	Order No.	Price
1/64 - 1/4	J.T.1	7401610	
1/32 - 3/8	J.T.2	7402420	
1/32 - 1/2	J.T.33	7403233	
1/32 - 1/2	J.T.6	7403260	
1/32 - 5/8	J.T.3	7404030	
3/64 - 3/4	J.T.3	7404830	
3/16 - 1-1/32	J.T.4	7406440	

Capacity	Taper	Order No.	Price
1/32 - 3/8	J.T.2	3192420	
1/32 - 1/2	J.T.3	3193230	
1/32 - 1/2	J.T.6	3193260	
1/32 - 3/4	J.T.4	3194840	
3/16 - 1	J.T.5	3196450	

HIGH PRECISION - HEAVY DUTY

## PRECISION DRILL CHUCKS

SERIES 319:

LIMITED QUANTITIES

KEY TYPE

Model No.	Capacity (inches)	Chuck Taper No.	Order No.	Price
K5-0	1/64-5/32	0J.T.	859405	
K6-1	1/64-1/4	1J.T.	859410	
K7-1	1/64-5/16	1J.T.	859415	
K10-2	1/32-3/8	2J.T.	859420	
K10-33	1/32-3/8	33J.T.	859425	



RÖHM

Model No.	Capacity (inches)	Chuck Taper No.	Order No.	Price
K13-2	1/32-1/2	2J.T.	859440	
K13-6	1/32-1/2	6J.T.	859435	
K13-33	1/32-1/2	33J.T.	859430	
K16-3	1/32-5/8	3J.T.	859445	
K25-5	3/16-1	5J.T.	859455	

## DRILL CHUCK KEYS

SERIES 733:



- Soft steel handles limit the potential for dangerous fracturing under excessive load.
- Self-ejecting models with spring-loaded ejectors ensure key disengagement after tightening.

Model No.	Pilot Size	Order No.	Price
K0	1/8	3637	
K0M	1/8	3639	
K1	5/32	3641	
K1M	5/32	3643	
K2	1/4	3649	
K3	5/16	3651	
K3C	5/16	3653	
S-K3C*	5/16	2948	
K4	3/8	3655	
K5	7/16	3657	
K7	7/32	3659	
K30	15/64	3664	
K32	1/4	3666	
KK	9/32	30052	
S-KK*	9/32	3157	
KG1	1/4	14273	
KGA	1/4	3605	



## DRILL CHUCK KEYS

SERIES 653:



Model No.	"JACOBS" Key Equivalent	Order No.	Price
DCK0	K0	6530000	
DCK1	K1	6530001	
DCK30	K30	6530030	
DCK2	K2	6530002	
DCK32	K32	6530032	
DCK3	K3	6530003	
DCK4	K4	6530004	
DCK7	K7	6530007	



## WEDGE SETS

SERIES 733:



For removing taper mount chucks from arbor or spindles.

Set No.	Used on JACOBS Taper No.	Order No.	Price
#1 Wedge Set	1JT	13266	
#2 Wedge Set	2JT	13267	
#3 Wedge Set	3JT	13268	
#6 Wedge Set	6JT & 33	13270	



\*Self-ejecting



## DRILL CHUCKS

SERIES 269:



### Industrial Heavy Duty Drill Chuck

#### For Stationary and Portable Drilling Machines

- Specially designed for stationary drilling, turning, milling and wood working machines.
- The one-piece gear ring and sleeve eliminate the possibility of teeth breaking.
- The jaws, gear ring and body are all totally hardened to avoid wear and lengthen the life of the drill chuck.
- Fits tools of up to 19mm (3/4") in diameter.
- Machine fitting via Jacobs tapers.
- Wide range of accessories to fit the drill chuck to any type of drilling machines.



### Ball-Bearing Heavy Duty Drill Chuck

#### For Production Drilling Equipment

- Drill chuck with key for industrial applications that require the toughest machining conditions.
- Equipped with ball bearings to reduce friction in the tightening mechanism and provide a better grip on the drill shaft.
- All the pieces are hardened and ground.
- The one-piece gear ring and sleeve eliminate the possibility of teeth breakage.
- Fits tools up to 25mm (1"). Machine fitting via Jacobs tapers.



Model No.	Capacity	Mount Jacobs	Key	Order No.	Price
C13L JT2	1/32-1/2"	2 JT	K3	2690200	
C13L JT6	1/32-1/2"	6 JT	K3	2690201	
C13L JT33	1/32-1/2"	33 JT	K3	2690202	
C16L JT3	1/32-1/2"	3 JT	K3	2690203	
C19L JT3	1/8-3/4"	3 JT	K3	2690204	

Model No.	Capacity	Mount Jacobs	Key	Order No.	Price
C375BB	1/32-3/8"	2 JT	K32	2690205	
C500BB	1/32-1/2"	3 JT	K3	2690206	
C625BB	1/32-5/8"	3 JT	K4	2690207	
C750BB	1/32-3/4"	4 JT	K4	2690208	
C1000BB	3/16-1"	5 JT	K5	2690209	

### Standard Keyless Medium Duty Drill Chuck

#### For Stationary and Portable Drilling Machines

- Drill chuck for industrial use (medium duty), available with screw fittings for professional portable drilling machines and with taper fittings for stationary drilling machines.
- Automatic fitting for efficient, fast change of tools.
- Self-tightening mechanism automatically increases the grip in proportion to the increase in torque during the drilling and avoids the tool slipping in clockwise rotation.
- Fits tools of up to 20mm (3/4") in diameter.
- Machine fitting Jacobs tapers and UNF thread fittings.



### Keyless Heavy Duty Precision Drill Chuck

#### For Stationary and Portable Drilling Machines

- All KP model drill chucks are 100% inspected to ensure not to exceed a maximum total integrated run-out of 0.0016".
- The self-tightening feature automatically increases clamping force proportional to increased torque to prevent tool shank slippage. This is standard for right-hand rotation applications, left hand rotation is available upon request.
- The KP Series of drill chucks is well suited for use on drill presses with high accuracy: jig bore machines, horizontal and vertical milling machines, and production drilling machines.
- All components of the KP drill chuck series that are exposed to wear have been hardened to maintain accuracy and extend the tool and chuck life.
- Tool holding capacity up to 16mm (5/8") diameter.
- Ranges of 0-3mm and 0-6.7mm made from stainless steel are designed and available upon request.
- Standard mounts available in Jacobs taper and with R8 integrated R8 shank.



Model No.	Capacity	Mount Jacobs	Order No.	Price
K08-J2	0-5/16"	2 JT	2690210	
K10-J2	0-3/8"	2 JT	2690211	
K13-J2	1/32-1/2"	2 JT	2690212	
K13-J33	1/32-1/2"	33 JT	2690213	
K13-J6	1/32-1/2"	6 JT	2690214	
K13-1/2	1/32-1/2"	1/2-20	2690215	
K20-J3	13/64-3/4"	3 JT	2690216	

Model No.	Capacity	Mount	Order No.	Price
KP65-J1	.012 - 1/4"	1 JT	2690217	
KP100-J2	.2 - .394"	2 JT	2690218	
KP100-J33	.2 - .394"	33 JT	2690219	
KP130-J2	1/32 - 1/2"	2 JT	2690220	
KP130-J33	1/32 - 1/2"	33 JT	2690221	
KP130-J6	1/32 - 1/2"	6 JT	2690222	
KP130-R8	1/32 - 1/2"	R8 Integrated	2690223	
KP160-J6	.118 - .63"	6 JT	2690224	



While we show some of the most popular items, we can supply their entire range of products; please inquire.





## BALL BEARING SUPER CHUCKS

SERIES 733:

The Jacobs Ball Bearing Super Chuck is specifically engineered for heavy duty, close tolerance production drilling. It is adaptable to a wide range of production drilling equipment, jig borers, milling machines, lathes and radials. Utilizing a ball thrust bearing to reduce friction in the chuck closing mechanism, it permits the application of more gripping force on drill shanks to maximize drilling torque under the most demanding machining conditions.

### FEATURES:

- Ball bearing construction maximizes gripping force and drilling accuracy.
- Jaws center-ground for absolute straightness and alignment.
- Jaws specially treated to ensure extended thread life and high gripping surface hardness.
- One-piece sleeve eliminates crack between driving teeth often found in other designs.
- Through-hardened sleeve teeth plus hardened nose and keyholes provide outstanding wear resistance.
- Fluted sleeve standard.
- Each chuck 100% inspected for performance and precision.

Model No.	Capacity	Mount Jacobs	Key No.	Order No.	Price
8-1/2N	0 - 1/4	2JT*	K30	30209	
11N	0 - 3/8	2JT	K32	30215	
14N	0 - 1/2	3JT	K3	30221	
16N	1/8 - 5/8	3JT	K3	30227	
18N	1/8 - 3/4	4JT	K4	30233	
20N	3/8 - 1	5JT	K5	30239	

\*Short Style

## PLAIN BEARING CHUCKS

SERIES 733:



The Jacobs Plain Bearing Chuck is the world's most widely used for medium or heavy-duty portable, bench or floor mounted power tools. This industrial quality chuck, with fully hardened and ground working components, offers exceptionally high accuracy, gripping power and durability. Both heavy and medium duty models are available in a wide range of capacities for use on threaded and taper mounted spindles.

### FEATURES:

- Heavy and medium Duty models for threaded or taper mounting.
- Jaws center-ground for absolute straightness and alignment.
- Jaws specially treated to ensure extended thread life and high gripping surface hardness.
- One-piece sleeve eliminates crack between driving teeth often found in other designs.
- Through-hardened sleeve teeth plus hardened nose and keyholes provide outstanding wear resistance.
- Each chuck 100% inspected for performance and precision.

### TAPER MOUNTED HEAVY DUTY MODEL

Fluted sleeve standard except Model 34-33C, which is smooth and ground.

Model No.	Capacity	Mount Jacobs	Key No.	Weight oz.	Order No.	Price
3A	1/8 - 5/8	3JT	K3	32	6223	
3KD	1/8 - 5/8	3JT	K3	33	6228	
3PD	1/8 - 5/8	3JT	K3	33	6230	
34-02	0 - 1/2	2JT	K3	23	14442	
34-06	0 - 1/2	6JT	K3	24	6295	
34-33	0 - 1/2	33JT	K3	23	14445	
34-33 (1)	0 - 1/2	33JT	K3	26	14451	
36	3/16 - 3/4	3JT	K4	45	6309	
36KD(2)	3/16 - 3/4	3JT	K4	44	14865	
36PD (3)	3/16 - 3/4	3JT	K4	45	14866	

- (1) Equipped with locking collar.
- (2) Equipped with positive drive slot.
- (3) Equipped with pin-type positive drive.

### TAPER MOUNTED MEDIUM DUTY MODEL

Fluted sleeve standard except Model 0 and 1A, which are smooth and ground.

Model No.	Capacity	Mount Jacobs	Key No.	Weight oz.	Order No.	Price
0	0 - .156	0JT	K0	2	6200	
1A	0 - 1/4	1JT	K1	5	6206	
2A	0 - 3/8	2JT	K2	13	6214	
31-01	0 - 3/8	1JT	K30	8	14697	
31-02	0 - 3/8	2JT	K30	8	14698	
33	0 - 1/2	33JT	K32	16	6279	
3326A	0 - 1/2	.6250(2)	K32	18	6291	
33KD(1)	0 - 1/2	33JT	K32	17	6281	

- (1) Equipped with positive drive slot.
- (2) Straight Mount Diameter.

### THREAD MOUNTED HEAVY DUTY MODEL

Fluted sleeve standard on all models.

Model No.	Capacity	Mount Thread	Key No.	Weight oz.	Order No.	Price
7BA 3/8	0 - 1/4	3/8-24	K7	7	6255	
32BA 1/2	0 - 3/8	1/2-20	K32	14	8859	
35B 1/2	5/32 - 5/8	1/2-20	K3	25	14723	
36B 3/4	3/16 - 3/4	3/4-16	K4	46	6316	
36B 5/8	3/16 - 3/4	5/8-16	K4	46	6314	

### THREAD MOUNTED MEDIUM DUTY MODEL

Fluted sleeve standard except Model 0B 5/16, 1B 3/8, 1B 3/8 AD, and 41BA 3/8-S, which are smooth and ground.

BA models are drilled and countersunk for retaining screw, necessary for reversible tools.

Model No.	Capacity	Mount Thread	Key No.	Weight oz.	Order No.	Price
0B 5/16	0 - .156	5/16 - 24	K0	2	6204	
1B 3/8	0 - 1/4	3/8 - 24	K1	5	6208	
2BA 3/8	0 - 3/8	3/8 - 24	K2	13	6219	
41BA 1/2	0 - 3/8	1/2 - 20	K30	8	31090	
41BA 3/8-S	0 - 3/8	3/8 - 24	K30	8	31138	
41BA 3/8	0 - 3/8	3/8 - 24	K30	8	30728	
33BA 1/2	0 - 1/2	1/2 - 20	K32	17	6287	
33BA 3/8	0 - 1/2	3/8 - 24	K32	17	6283	
3BA 5/8	0 - 1/2	5/8 - 16	K32	17	6289	



## PRECISION BALL BEARING, KEYLESS DRILL CHUCKS

SERIES 178:

HEAVY DUTY

- Keyless Drill Chucks are precision devices designed for high accuracy applications on either conventional or CNC machines in drilling, boring & counter-boring operations.
- Tightened and released by hand.
- Chucks have self-tightening feature.



Chuck Model	Capacity		Mount	Order No.	Price
	In.	mm			
6/J1	0-1/4	0.3-6	1JT	7051064*	
13/J2	1/32-1/2	1-13	2JT	7051135	
13/J33	1/32-1/2	1-13	33JT	7051137	
13/J6	1/32-1/2	1-13	6JT	7051138	
16/J6	1/8-5/8	3-16	6JT	7051168	
16/J3	1/8-5/8	3-16	3JT	7051169	

\*LIMITED QUANTITY

## KEYLESS DRILL CHUCKS

SERIES 320:

**MEGA**  
Superior Import



Made to highest precision standards, hardened and ground, with heavy duty ball bearings, resulting in great accuracy and long serviceable life. Drills are held securely, because grip tightens as load increases.

Model No.	Capacity	Taper	Order No.	Price
KDC14	0 - 1/4	J.T.1	7451601	
KDC38	0 - 3/8	J.T. 33	7452402	
KDC121	0 - 1/2	J.T. 33	7453233	
KDC122	0 - 1/2	J.T. 6	7453206	
KDC581	1/8 - 5/8	J.T. 3	7454003	
KDC582	1/8 - 5/8	J.T. 6	7454006	

## KEYLESS DRILL CHUCKS

SERIES 801:

**ALBRECHT**



The Albrecht Chuck is "The World's Most Accurate Keyless Drill Chuck" and is being widely used today on the finest precision drilling machinery where close tolerance drilling is essential. All working parts are of alloy steel and expertly hardened making the Albrecht an ideal chuck for heavy duty drilling. The Albrecht Chuck is designed for both toolroom and production machinery where accuracy, gripping power and the keyless features are desired and is being widely used today on high accuracy drill presses, jigborers, milling machines and production drilling equipment.

Model 15-JO keyless drill chuck is especially designed for holding small diameter twist drills and has a micrometer graduation on its sleeve to facilitate the changing of the smallest drills. This model has a maximum capacity of 1/16" and a minimum capacity of .008. Users claim that the accuracy and gripping power of this fine chuck greatly reduces twist drill breakage.

Model No.	Capacity		Mount	Order No.	Price
	In.	mm			
15-J0	0 - 1/16	0-1.5	JT0	70010	
30-J0	0 - 1/8	0-3	JT0	70020	
30-J1	0 - 1/8	0-3	JT1	70030	
50-J1	0 - 3/16	0-5	JT1	70040	
65-J1	0 - 1/4	0-6.5	JT1	70050	
80-J2	0 - 5/16	0-8	JT2	70060	
100-J33	0 - 3/8	0-10	JT33	70070	
100-J2	0 - 3/8	0-10	JT2	70080	
130-J33	1/32 - 1/2	1-13	JT33	70090	
130-J2	1/32 - 1/2	1-13	JT2	70100	
130-J6	1/32 - 1/2	1-13	JT6	70110	
160-J6	1/8 - 5/8	3-16	JT6	70120	

## INDUSTRIAL HIGH PRECISION KEYLESS DRILL CHUCKS

SERIES 733:

Jacobs Industrial Keyless Chucks are high precision devices specifically designed for high accuracy applications on either conventional or CNC equipment. Tightened and released by hand, they permit more rapid tooling changes to increase machining productivity. A self-tightening feature produces significantly higher gripping force to resist tool shank slippage. Precision manufactured and tested to the most exacting quality standards, Jacobs Industrial Keyless Chucks can be counted on for extremely high reliability and durability under the most demanding machining conditions.

**Jacobs**



### FEATURES:

- Each chuck precision tested and furnished with an individualized certification number identifying its specific performance characteristics.
- Self-tightening feature automatically increases gripping force proportional to increased torque to prevent tool shank slippage.
- All components exposed to wear are completely hardened to maintain accuracy and extend chuck life.
- Jacobs taper mount permits use on a wide range of high accuracy drill presses, jig borers, milling machines and production drilling equipment.

Model No.	Capacity	Mount	Order No.	Price
65-J1	0 - 1/4	J1	931121	
80-J2S	0 - 5/16	J2S	9679	
100-J2	0 - 3/8	J2	9681	
100-J33	0 - 3/8	J33	9680	
130-J2	3/64 - 1/2	J2	9683	
130-J33	3/64 - 1/2	J33	9682	
130-J6	3/64 - 1/2	J6	9684	
160-J6	1/8 - 5/8	J6	9685	

## WRENCH-LOCK V-FLANGE CHUCKS WITH INTEGRAL SHANK

**ALBRECHT**

SERIES 801:

**FEATURES:**

- Wrench-lock chucks have integral shanks (CAT and BT tapers).
- Wrench-lock chucks incorporate wren flats for additional tightening force.
- Integral shank design provides for greater accuracy.
- Balanced to 6500 RPM
- Spanner Wrench is included.



Capacity	Shank Type	Wt. Lbs.	Chuck Model	Order No.	Price
1/32-1/2"	CAT 40	4.6	WL130-CAT40	77100	
1/16-5/8"	CAT 40	5.1	WL160-CAT40	77110	
1/16-5/8"	CAT 50	6.2	WL160-CAT50	77120	
1/32-1/2"	BT 40	4.2	WL130-BT40	77160	
1/16-5/8"	BT 40	4.6	WL160-BT40	77170	
1/16-5/8"	BT 50	8.4	WL160-BT50	77180	

## KEYLESS DRILL CHUCKS WITH INTEGRAL R8 SHANK

**VERTEX**

**ALBRECHT**

**FEATURES:**

- Integral shank design is more compact than a combined chuck and arbor and eliminates the possibility of chuck slippage.
- Less chance of chuck run-out.
- Integral shank design provides for greater accuracy.
- Balanced.
- Keyless operation.



SERIES 801: ALBRECHT (CLASSIC PLUS)

**ALBRECHT**

Capacity	Max RPM	Wt. Lbs.	Chuck Model	Order No.	Price
1/32-1/2" (1-13mm)	7000	2.6	CP130-R8	9973040	
1/8-5/8" (3-16mm)	4000	4.2	CP160-R8	9973090	

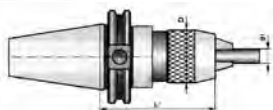
## PRECISION BALL BEARING KEYLESS DRILL CHUCKS AND INTEGRAL SHANKS

SERIES 178:



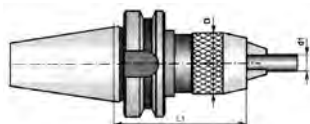
**Draw Bar Threads:**

- CAT-40 5/8" - 11
- CAT-50 1" - 8



- CAT & BT shanks are produced according to AT3 specification.
- Made of alloy forged steel for long, durable service life.
- Integral shank design is more compact than a combined drill chuck and arbor. It gives greater accuracy and rigidity.
- Keyless operations.
- Self-tightening (clockwise rotation only).

Taper No.	Capacity d <sub>1</sub>		D	L <sub>1</sub>	Order No.	Price
	Inches	mm				
CAT 40	1/32-1/2	1 - 13	2	4-15/16	7187433	
	1/8-5/8	3 - 16				
CAT 50	1/32-1/2	1 - 13	2	4-5/16	7187563	
	1/8-5/8	3 - 16				



**Draw Bar Threads:**

- BT-40 M16 x 2
- BT-50 M24 x 3

Taper No.	Capacity d <sub>1</sub>		D	L <sub>1</sub>	Order No.	Price
	in.	mm				
BT 40	1/32-1/2	1 - 13	2	3-3/4	7174433	
	1/8-5/8	3 - 16				
BT 50	1/32-1/2	1 - 13	2	4-1/8	7174563	
	1/8-5/8	3 - 16				

Series 320: VERTEX

**VERTEX**

Model No.	Capacity	Order No.	Price
Int3-R8	0-1/2" (1-13mm)	3190138	
Int6-R8	1/8-5/8" (3-16)	3190168	

## FULLY AUTOMATIC DRILL CHUCKS

SERIES 652:



The spindle never stops. One spindle with a Wahlstrom™ Automatic Drill Chuck does the work of several. Save costly minutes in changing tools for drill press work. Multi-head drill press setups are eliminated. You can spot drill, drill and ream with one setup in your Drill Press or Milling Machine. Pull down on the knurled collar to release your drill, push up on the tapered nose to engage. Available with 3/8" and 1/2" capacities and a wide variety of shanks.



Description	3/8" Capacity		1/2" Capacity	
	Order No.	Price	Order No.	Price
Morse taper shank #1	6521931		6521941	
Morse taper shank #2	6521932		6521942	
Morse taper shank #3	-		6521943	
Jacobs female #2	6521934		6521940	
Jacobs female #33	6521933		6521953	
1/2" straight shank	6521935		6521947	
3/4" straight shank	-		6521948	
R8 shank	6521938		6521944	

**DRILL CHUCK ARBORS**  
 SERIES 318: MEDA - SUPERIOR IMPORT  
 SERIES 733: JACOBS



Precision ground with hardened tangs.

Morse Taper	Jacobs Taper	MEDA		JACOBS		Straight Shank	Jacobs Taper	MEDA		JACOBS	
		Order No.	Price	Order No.	Price			Order No.	Price	Order No.	Price
1	0	7350100		-		1/2	0	7353200		7348	
1	1	7350110		7299		1/2	1	7353201		7349	
1	2	7350120		9997300		1/2	2	7353220		7350	
1	3	7350130		-		1/2	3	7353230		7351	
1	33	7350133		9997304		1/2	33	7353233		7354	
1	5	7350150		-		1/2	4	7353240		-	
1	6	7350160		7303		1/2	6	7353260		7353	
2	0	7350200		-		5/8	1	7354010		7355	
2	1	7350210		7306		5/8	2	7354020		7356	
2	2	7350220		7307		5/8	3	7354030		7357	
2	3	7350230		9997308		5/8	33	7354033		7360	
2	33	7350233		9997312		5/8	4	7354040		-	
2	4	7350240		9997309		5/8	6	7354060		7359	
2	5	7350250		-		3/4	1	862115		-	
2	6	7350260		7311		3/4	2	7354820		9997361	
3	1	7350310		7313		3/4	3	7354830		7362	
3	2	7350320		7314		3/4	33	7354833		7365	
3	3	7350330		7315		3/4	4	7354840		-	
3	33	7350333		7319		3/4	6	7354860		7364	
3	4	7350340		9997316		1	1	862117		-	
3	5	7350350		7317		1	2	7356420		-	
3	6	7350360		7318		1	3	7356430		7367	
4	2	7350420		7320		1	33	7356433		-	
4	3	7350430		7321		1	4	7356440		-	
4	33	7350433		7325		1	5	7356450		-	
4	4	7350440		9997322		1	6	7356460		7368	
4	5	7350450		7323		1-1/2	3	7359630		-	
4	6	7350460		7324		1-1/2	4	7359640		-	
5	3	7350530		7327							
5	4	7350540		7328							
5	5	7350550		7329							
5	6	7350560		-							

Morse Taper	Threaded Mount	MEDA		JACOBS	
		Order No.	Price	Order No.	Price
1	1/2-20 Thread	7351132		-	
2	3/8-24 Thread	7351222		7345	
2	1/2-20 Thread	7351232		7346	
2	5/8-16 Thread	7351242		7347	

R8 Shank	Jacobs Taper	MEDA		JACOBS	
		Order No.	Price	Order No.	Price
R-8	1	7359810		-	
R-8	2	7359820		7339	
R-8	3	7359830		7340	
R-8	33	7359833		7343	
R-8	4	7359840		7341	
R-8	6	7359860		7342	



**DRILL CHUCK ARBORS - NMTB / NST TAPER**  
 SERIES 178:

Taper Shank	Jacobs Taper	Order No.	Price
30	J1	7052031	
	J2	7052032*	
	J3	7052033	
	J33	9052033	
	J6	7052036	
40	J2	7052042	
	J3	7052043	
	J33	9052043	
50	J6	7052046	
	J3	7052053	
	J33	9052053	
	J4	7052054	
	J5	7052055	
	J6	7052056*	

\*LIMITED QUANTITY.



**SENSITIVE DRILL FEED**  
 SERIES 318:



Pictured with optional drill chuck.

- 1/2" straight shank to Jacobs Taper 0.
- Finger sensitive control reduces drill breakage and amount of rejected parts when drilling small holes using high speed machinery.
- Applicable in Mills, Lathes, Drill Presses and Jig Borers.
- For use with any Drill Chucks having a JT0 back.

Order No. 7360000	Price	
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MACHINE TOOL ACCESSORIES



## BORING HEAD SETS

SERIES 420:

Processing Range .2" - 10"

Rigid construction: Finest materials and craftsmanship are employed to combine strength, flexibility and accuracy in a tool of unique design. 2 vertical boring tool holes: one centered and one offset. One cross hole for greater versatility and capacity. Dependable adjustment: far spread graduations for closer reading. Perfectly balanced for high speed operation. Precision ground and hardened integral shank for rigidity and smooth operation.



## BORING HEAD SETS

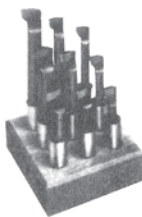
SERIES 420:



Hardened and ground adjusting screw, .001" graduations for fine adjustment, two vertical boring tool holes (one centered and one offset) and one cross hole.

**Set includes:**

- Boring Head
- R8 Shank
- Carbide Tipped (Steel Grade) Boring Bar Set



**Dial Readings: .01mm**

Set includes boring head, fitted case, and an assortment of boring bars and holders to permit a great variety of machining operations.



Shank	Drawbar Thread	Order No.	Price
R8	7/16-20	4200105	
NT40	5/8-11	4200107	

Dia.	Thread Hole	Boring Tool Hole	Offset	Order No.	Price
2	7/8 - 20"	1/2"	5/8"	2395286	
3	1-1/2 - 18"	3/4"	1"	2395386	
4	1-1/2 - 18"	1"	1-5/8"	2395486	

## BORING HEADS

SERIES 420:



- Combines the adaptability of a 2" Boring Head with the capacity of a 3" Boring Head.
- Manufactured under rigid quality control standards to insure accuracy and stability.
- Body integrity combined with new dovetail design practically eliminates chatter in fully extended position.
- Unconditional lifetime warranty by Manufacturer.

**Specifications:**

- Diameter of body: 2-1/2"
- Length of body: 3-7/16"
- Direct dial reading: .001"
- Boring capacity: up to 4"
- Standard tooling: 1/2"
- Offset: 3/4"



Model No.	Shank	Order No.	Price
BHR8B	R8	4205008	
BH34B	3/4	4205034	

## INTEGRATED R-8 SHANK BORING HEAD

SERIES 420:



- Integrated shank for maximum rigidity.
- Hardened and Ground body.
- Black oxide finish.
- Cross and vertical hole dia. 1/2"
- Offset travel 3/4"



Order No.	Head Diameter	Overall Length	Graduation	Price
4202128	2-1/2"	7-3/16"	.0005"	

## BORING HEADS

SERIES 420:



These boring heads are of extremely high quality. The hardened and ground adjusting screw ensures utmost precision and long life. Widespread .001" graduations permit even finer adjustments. Two vertical boring tool holes (one centered and one offset) as well as a cross hole result in great versatility.



## SHANKS FOR BORING HEADS

SERIES 421:



Dia.	Threaded Hole	Boring Tool Hole Size	Offset	Order No.	Price
2	7/8 - 20	1/2	5/8	2395002	
3	1-1/2 - 18	3/4	1	2395003	
4	1-1/2 - 18	1	1-5/8	2395004	
50mm	7/8 - 20	12mm	15mm	2395001	

Shank Size	Order No.		Price
	7/8-20 Thread	1-1/2 - 18 Thread	
MT3	2400103	2400003	
MT4	2400104	2400004	
NST30	2400130	2400030	
NST40	2400140	2400040	
R8	2400100	2400000	
3/4	2400148	2400048	
1	2400164	2400064	



## BORING HEADS WITH INTERCHANGEABLE SHANKS

SERIES 978:

Head Dia.	Threaded Back	Hole Dia.	Overall Length	Offset Travel	Vert. Hole Spacing	Tool No.	Order No.	Price
2	7/8-20	3/8	2-7/16	3/4	5/8	BHTA	9784713	
2-1/2	7/8-20	1/2	3-3/16	3/4	3/4	BHTB	9784714	
2-1/2	7/8-20	5/8	3-3/16	3/4	3/4	BHTC	9784715	
3	1-1/2-18	3/4	3-1/2	1-1/4	5/16	BHTD	9784716	



## INTERCHANGEABLE SHANKS FOR BORING HEADS

SERIES 978:



7/8 — 20 THREAD			
Description	Tool No.	Order No.	Price
2 M.T. with Tang	BHQM2	9784717	
3 M.T. with Tang	BHQM3	9784718	
4 M.T. with Tang	BHQM4	9784719	
#30 N.T. with Draw Bar & Drive Flange	BHQS3	9784720	
#40 N.T. with Draw Bar & Drive Flange	BHQS4	9784721	
1/2" Diameter Straight Shank	BHQ16	9784722	
3/4" Diameter Straight Shank	BHQ24	9784723	
1" Diameter Straight Shank	BHQ32	9784724	
R-8 Shank	BHQR8	9784725	

1-1/2 — 18 THREAD			
Description	Tool No.	Order No.	Price
3 M.T. with Tang	BHXM3	9784726	
4 M.T. with Tang	BHXM4	9784727	
#30 N.T. with Draw Bar & Drive Flange	BHXS3	9784728	
#40 N.T. with Draw Bar & Drive Flange	BHXS4	9784729	
1" Diameter Straight Shank	BHX32	9784730	
1-1/4" Diameter Straight Shank	BHX40	9784731	
1-1/2" Diameter Straight Shank	BHX48	9784732	
R-8 Shank	BHXR8	9784733	

## AUTOMATIC BORING AND FACING HEADS

SERIES 420:

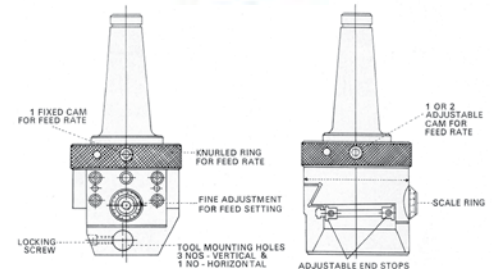
With pre-set stop.

For Boring Mills, Jig Borers, Milling Machines, Radial Drills, and Lathes.

Highly accurate within .002" per 3/4" travel. Automatic facing possible without stopping spindle. Working parts hardened and ground.



Order No.	2395102		2395103		
Price					
Diameter of body	2-3/8		3-1/2		
Shank	R-8*		R-8*		
Height without shank	2-3/4		3-3/4		
No. of feeds per revolution	1	2	1	2	3
Automatic feed (radial) per revolution	.0025"	.005"	.0025"	.005"	.0075"
Radial movement for one graduation or vernier	.0005		.0005		
Vertical tool positions	3		3		
Minimum capacity	1/8		13/64		
Maximum capacity	9-3/4		13-3/4		
Maximum carriage movement (radial)	3/4		1.2		
Maximum speed (for boring only)	1000 RPM (RH only)		700 RPM (RH only)		
Boring bar diameter	1/2		3/4		

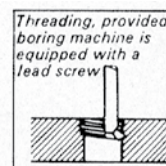
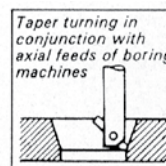
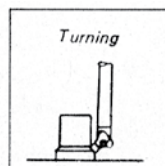
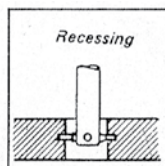
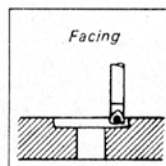
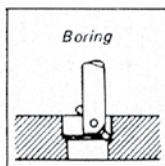


Order No. 2395102 supplied with 1 wrench extension.

\*Other shanks available; please inquire.

Order No. 2395103 supplied with 3 wrench extensions.

### APPLICATIONS:



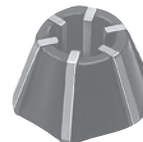
## REVERSIBLE TAPPING ATTACHMENT

SERIES 424:



## RUBBER COLLETS

SERIES 424:



- For use on vertical machines and machines with rotating non-reversing spindles.
- Right or Left hand tapping
- Smooth ball - clutch protects against tap breakage.
- Disengages smoothly and silently.
- Axial float ensures smooth tapping.
- Cushioned drive eliminates cross threading
- Planetary gear allows tap to retract 75% faster.
- Accurate depth control.
- Accurate batch and mass production.



INCLUDES FREE COLLETS AND ARBOR

Order No.	Model No./ Capacity	Rubberflex Collets Included	Shank (Female)	Standard Arbor	Price
4240011	HR1	S161	JT33	1MTJT33	
4240012	1/16"-1/4"	S171		2MTJT33	
4240022	HR2	S212	JT6	2MTJT6	
4240023	1/8"-1/2"	S222		3MTJT6	
4240033	HR3	S413	JT3	3MTJT3	
4240034	5/16"-3/4"	S453		4MTJT3	
4240044	HR4	S613	JT4	4MTJT4	
4240045	9/16"-1-1/8"	S623		5MTJT4	

Model No.	Capacity mm	Capacity Inch	Order No.	Price
S161	2.5 - 4.5	0.098 - 0.177	4240161	
S171	4.5 - 6.5	0.177 - 0.256	4240171	
S212	3.5 - 6.5	0.141 - 0.256	4240212	
S222	6.5 - 10.0	0.256 - 0.394	4240222	
S413	4.5 - 10.0	0.177 - 0.394	4240413	
S453	10.0 - 15.0	0.393 - 0.590	4240453	
S613	9.0 - 16.0	0.354 - 0.630	4240613	
S623	16.0 - 23.0	0.630 - 0.905	4240623	

\* Standard

MACHINE TOOL ACCESSORIES

## QUICK CHANGE TENSION & COMPRESSION TAPPING CHUCKS & COLLETS

SERIES 424:



Tension and compression feature provides greater thread accuracy and higher production rates. Interchangeable with many other systems.



## HAND TAPPER

SERIES 410:



Capacity: #6-5/8"

Assures straight perpendicular tapped holes using spiral pointed gun taps. Furnished complete with tap guide, ground table (base), and tap spindle wrench.

- Spindle - Hardened and precision ground.
- 9 - adapters supplied - size #6, 8, 10, 1/4", 5/16", 3/8", 7/16", 1/2", 5/8".
- No taps furnished.
- Tray holds up to 12 adapters.

Specifications	Order No.	Price
Height	4100010	
Clearance Height		
Throat Depth		
Weight		
Table		

## Quick Change Positive Drive Tap Adapters

Torque control tap adapters and Adapter Sizes #3 and #4 available. See our website or inquire.



ADAPTER SIZE #1

ADAPTER SIZE #2

TAP SIZE			Order No.	Price
Inch	mm	Pipe		
#6	1.6-3.5	-	3401036	
#8	4.0	-	3401041	
#10	4.5-5.0	-	3401048	
#12	-	-	3401054	
1/4	6.0, 6.3	-	3401063	
-	-	1/16, 1/8SS	3401098	
5/16	7.0, 8.0	-	3401079	
3/8	10.0	-	3401095	
7/16	11.0	-	3401111	
1/2	12.0, 12.5	-	3401127	
9/16	14.0	-	3401142	
-	-	1/8LS	3401096	

TAP SIZE			Order No.	Price
Inch	mm	Pipe		
5/16	7.0, 8.0	-	3402079	
7/16	11.0	-	3402111	
1/2	12.0, 12.5	-	3402127	
3/8	10.0	-	3402095	
9/16	14.0	-	3402142	
5/8	16.0	-	3402158	
11/16	18.0	-	3402174	
-	-	1/4	3402135	
3/4	-	-	3402190	
13/16	20.0	-	3402205	
-	-	1/2	3402209	
7/8	22.0	-	3402222	
-	-	3/8	3402166	

### Straight Shank Chucks

Shank Dia	Adapter Size	Order No.	Price
1	#1	4240001	
1	#2	4240002	
1-1/4	#2	4240003	

### Morse Taper Shank Chucks

Shank Dia	Adapter Size	Order No.	Price
1	#1	4240004	
2	#2	4240005	
3	#2	4240006	

### CAT Shank Chucks

Shank	Adapter Size	Order No.	Price
CAT40	#1	7338419	
	#2	7338431	
CAT50	#1	7338519	
	#2	7338531	



See page 537 for a complete selection of arbors.

**TAPPING UNITS**  
SERIES 670:

Collets must be ordered separately; see page 542.



Faster, more accurate tapping on any machine.  
Please inquire for any TAPMATIC items not shown.

**“X” WITH RUBBER-FLEX COLLET SPINDLE**

TORQUE CONTROL, SELF-REVERSING TAPPING UNITS

For Manually Operated Drilling and Milling Machines.

**FEATURES: & ADVANTAGES:**

- **SELF-FEED** - Permits the tap to act as its own lead screw to consistently produce gage perfect threads.
- **PRE-SELECTIVE TORQUE CONTROL** - A safety device which transmits machine power to the tap and helps prevent tap breakage.
- **RE-ENTRY CUSHION** - A cushioned drive to eliminate cross-threading.
- **RIGHT HAND TAPPING ONLY.**



Model	Capacity in 1010 Mild Steel	Collet Series	Mounts	Order No.	Price
30X *Rec Max Speed 2000 RPM	#0-1/4 M1.4-M6 Roll Form #10 Max.	21000 Series	JT6 JT33	6710306 6710333	
50X *Rec Max Speed 1500 RPM	#6-1/2 M3-M12 Roll Form 3/8" Max. NP 1/16", 1/8"	22000 Series	JT6 JT33	6710506 6710533	
70X *Rec Max Speed 1200 RPM	#10-5/8 M5-M16 Roll Form 1/2" Max.	24000 Series	JT3	6710703	
90X *Rec Max Speed 600 RPM	1/2 - 1-1/8" M10-M28 Roll Form 3/4" Max. NP 1/2"	26000 Series	JT4	6710904	

DIN and threaded mounts also available; please inquire.  
\*Run at speeds recommended by Tap Manufacturer, not to exceed this RPM.

**“RX SERIES” WITH RUBBER-FLEX COLLET CHUCK**

For Manually Operated Drilling and Milling Machines.

**FEATURES: & ADVANTAGES:**

- **INCREASED PRODUCTION**
- **NEW DURABLE, RUGGED DESIGN**
- **NEW HEAVY DUTY BALL CLUTCH**
- **PRE-SELECTIVE TORQUE DRIVE** - prevents tap breakage
- 1.75 x 1 Increased Reverse Speed
- **SELF-FEED** - Ensures gage perfect threads
- **RE-ENTRY CUSHION** - eliminates cross threading.



Model	Capacity in 1010 Mild Steel	Collet Series	Mounts	Order No.	Price
Rx 30 *Rec Max Speed 2000 RPM	#0-1/4 M1.4-M6 Roll Form #10 Max.	21000 Series	JT33 JT6 DIN B16	6713033 6713006	
Rx50 *Rec Max Speed 1500 RPM	#6-1/2 M3-M12 Roll Form 3/8" Max. NP 1/16", 1/8"	22200 Series	JT33 JT6 DIN B16	6715033 6715006	
Rx70 *Rec Max Speed 750 RPM	#10-3/4 M5-M18 Roll Form 9/16" Max.	24000 Series	JT3	6717003	

DIN and threaded mounts also available; please inquire.  
\*Run at speeds recommended by Tap Manufacturer, not to exceed this RPM.

**“SPD” WITH RUBBER-FLEX COLLET SPINDLE**

SHORT POSITIVE DRIVE, SELF-REVERSING TAPPING UNITS FOR N/C MACHINES WITH BORE CYCLES, AUTOMATED DRILL UNITS AND HIGH PRODUCTION MANUAL APPLICATIONS.

**FEATURES: & ADVANTAGES:**

- **POSITIVE DRIVE & REVERSE** - The full power of the machine is transmitted to the tap to eliminate slippage.
- **SHORT STROKE SELF-FEED** - Provides the minimum amount of float to compensate for lead error and still allows the tap to act as its own lead screw.
- **RE-ENTRY CUSHION** - Eliminates cross threading.



Model	Capacity in 1010 Mild Steel	Collet Series	*Rec. Max. Speed	Mounts	Order No.	Price
SPD3	#0-1/4" M1.4-M6 Roll Form #10 Max.	21000 Series	2000 RPM	JT6 JT33	6718306 6718333	
SPD5	#6-1/2" M3-M12 Roll Form 3/8" Max. NP 1/16", 1/8"	22000 Series	1500 RPM	JT6 JT33	6718506 6718533	
SPD7	#10-3/4" M5-M18 Roll Form 9/16" Max.	24000 Series	1200 RPM	JT3	6718703	
SPD9A	1/2 - 1-1/8" M10-M28 Roll Form 3/4" Max. NP 1/2"	26000 Series	600 RPM	JT4	6717904	

DIN and threaded mounts also available; please inquire.  
\* Run at speeds recommended by Tap Manufacturer, not to exceed this RPM.



See page 537 for a complete selection of arbors.

## TAPPING UNITS SERIES 670:

Collets must be ordered separately; see below.



Faster, more accurate tapping on any machine. Please inquire for any TAPMATIC items not shown.

### TC/DC WITH RUBBER-FLEX COLLET SPINDLE

SERIES 670:

Self-Reversing, Depth Control Tapping Units For Manually Operated Drilling And Milling Machines.

#### Adjustable Depth Control:

For shallow hole, controlled depth tapping. This provides an adjustable means of reducing or increasing the amount of self-feed required for any specific tapping operation. The self-feed of these units may be reduced to as little as .078.

#### ORDER INFORMATION:

- Please order by Order No. and tap size capacity.
- Order Rubber-Flex collets and arbors separately.
- Always mount a torque bar to keep the tapping attachment's stop arm from rotating; See page 541.



#### FEATURES & ADVANTAGES:

- **Pre-selective Torque Drive:** Prevents tap breakage.
- **1.75 x 1 Reverse Ratio:** Increases productivity.
- **Self-feed:** Ensures gauge perfect threads.
- **Re-Entry Cushion:** Eliminates cross-threading.
- **Right Hand Tapping Only.**

Capacity** 1010 Mild Steel	Model	Mount†	Collet Series	*Rec. Max. Speed	Adj. Self Feed	Order No.	Price
#0-1/4" M1.4-M6 Roll Form #10 Max	30TC/DC	#33JT #6JT	21000 Series	2000 RPM	.078-.140"	14333 14306	
#6-1/2" M3-M12 Roll Form 3/8" Max NP 1/16", 1/8"	50TC/DC	#33JT #6JT	22000 Series	1500 RPM	.078-.235"	14533 14506	
#10-5/8" M5-M16 Roll Form 1/2" Max	70TC/DC	#3 JT	24000 Series	1200 RPM	.078-.375"	14703	

\*Run at speed recommended by manufacturer, not to exceed this RPM.

† Threaded mounts available, please inquire.

\*\*Tool capacity must be reduced by 25% when using roll form taps.

### NSM WITH RUBBER-FLEX COLLET CHUCK

TENSION/COMPRESSION TAPPING UNITS FOR NC MACHINING AND TURNING CENTERS. THE NSM IS THE MOST COMPACT TAP DRIVER AVAILABLE.

#### FEATURES & ADVANTAGES:

- **Tap Holding System:** Uses Rubber-Flex Collets. Only two required.
- **Tension/Compression Compensation:** Provides greater thread accuracy and higher production rates.
- **Compact Design:** For applications where space is limited.
- **Releasable Hard Start:** For accurate depth control.

#### ORDERING INFORMATION:

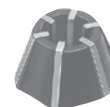
- Please order by Order No. and Tap Size Capacity.
- Order Rubber-Flex collets separately. See below.



Capacity in 1010 Mild Steel*	Model	Shank	Collet Series	Order No.	Price
#0-1/4" M1.4-M6 Roll Form #10 Max	NSM2	5/8" SS	21000 Series	6735876	
#6-1/2" M3-M12 Roll Form 3/8" Max NP 1/16", 1/8"	NSM4	3/4" SS	22000 Series	6735881	
#10-3/4" M5-M18 Roll Form 3/4" Max	NSM6	1" SS	24000 Series	6735886	
1/2" - 1-1/8" M10-M30 Roll Form 3/4" Max NP 1/2"	NSM8	1-1/2" SS	26000 Series	6735893	

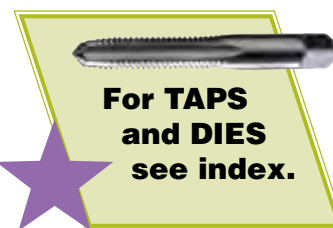
\* Tool capacity must be reduced by 25% when using roll form taps.

### RUBBER-FLEX COLLETS FOR TAPMATIC UNITS



Collet Series	Collet Range Tap Size	Shank Size	Order No.	Price
#21000 Series for attachments with capacities (#0-1/4")	#0-#8	.098-.177	6721600*	
	#10-1/4"	.177-.256	6721700*	
		.040-.098	6721500	
#22000 Series for attachments with capacities (#6-1/2")	#0-1/4"	.139-.257	6722100*	
	1/4" - 1/2"	.253-.383	6722200*	
		.090-.180 .194-.318	6722300 6722000	
#24000 Series for attachments with capacities (#10-3/4")	#10-1/2"	.176-.383	6724100*	
	5/16" - 5/8"	.280-.500 .110-.280 .393-.590	6724000* 6724300 6724500	
#26000 Series for attachments with capacities (1/2" - 1-1/8")	1/2" - 3/4"	.360-.630	6726100	
	7/8" - 1-1/8"	.630-.900	6726200	

\* Standard



For TAPS and DIES see index.





## TAPPING ACCESSORIES

SERIES 670:



Faster, more accurate tapping on any machine. Please inquire for any TAPMATIC items not shown.

### “SFT” WITH STEEL COLLET SPINDLE FOR RIGID TAPPING

Non-Reversing Units For Synchronous Tapping on CNC Machines.

**FEATURES & ADVANTAGES:**

Tapmatic's unique SynchroFlex tap drivers with internal coolant feature a precision machined flexor between the shank and the chuck. This design compensates axially and radially for the unavoidable minute discrepancies between the machine feed & traverse and the actual thread pitch & hole location.

Any deviation at all from the correct feed rate for the thread pitch or the precise hole location results in added wear on the tap. SynchroFlex allows the tap to reproduce itself exactly for maximum life and better thread quality.

**Coolant Through the Spindle Capability**

Standard SFT (shown) - up to 140 PSI or 10 bar.  
High Pressure SFTHP - up to 700 PSI or 50 bar available, please inquire.



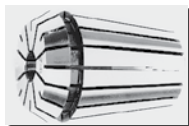
**ORDERING INFORMATION:**

- Order NC arbors separately. Tapmatic NC arbors provide the shortest overall length.
- Tool capacity must be reduced by 25% when using roll form taps.

Capacity 1010 Mild Steel	Model	Mount	Steel Collet Series	Order No.	Price
#2 - #10 M2 - M5	SFT10	1" SS	#11 Series	4310111	
#10-1/2" M5 - M12	SFT50	1" SS	#20 Series	4350120	
1/2" - 3/4" M12 - M20	SFT75	1" SS	#25 Series	4375125	

**Steel Collet without Square Drive for X**

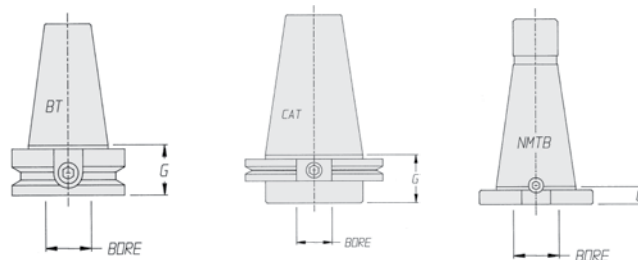
Please select Square Drive Collets whenever possible.



For #11 Series Collets see page 547 - 548.

Steel Collets w/o Internal Square Drive	Tap Size	Shank Size	Order No.	Price
#20 Series	#8	.168"	6721019	
	#10	.194	6721020	
	#12	.220	6721021	
	1/4"	.255	6721022	
	5/16"	.318	6721023	
	7/16"	.323	6721024	
	1/2"	.367	6721025	
#25 Series	3/8"	.381	6721026	
	7/16"	.323	6721030	
	1/2"	.367	6721032	
	3/8"	.381	6721034	
	9/16"	.429	6721036	
	5/8"	.480	6721038	
	11/16"	.542	6721040	
3/4"	.590	6721044		

### NC ARBORS FOR TAPMATIC HEADS



NC ARBORS			
Arbor	Bore	Order No.	Price
CAT-40	1"	6723951	
CAT-45	1"	6723954	
CAT-50	1"	6723953	
CAT-50	1-1/2"	6723957	
BT-30	1"	6723949	
BT-35	1"	6723958	
BT-40	1"	6723952	
BT-45	1"	6723956	
BT-50	1"	6723955	
NMTB-40	1"	6723950	
CAT-40 Extended	5/8"	6723981	
CAT-50 Extended	5/8"	6723983	
BT-40 Extended	5/8"	6723982	
BT-50 Extended	5/8"	6723984	
Reducing Sleeve	1" to 3/4" (O.D.) to Bore	6723921	

### TORQUE BARS

TORQUE BARS FOR USE WITH SELF-REVERSING TAPPING ATTACHMENTS ON CONVENTIONAL MILLING MACHINES AND DRILL PRESSES

Always mount a torque bar to keep the tapping attachment's stop arm from rotating. The torque bar should be securely mounted to the table or quill of your machine. The torque bar installation must be stronger than the largest tap. Please see instructions packaged with tapping attachments.

**Quill Mount Torque Bars -**

Clamp around Quill of Machine

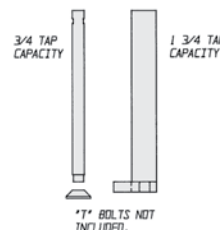
Machine Quill Diameter	Tap Capacity	Order No.	Price
1-1/2 - 2-3/8"	1/2"	29099	
2-3/8 - 4-1/2"	3/4"	9290991	



**Table Mount Torque Bars -**

Mount to the "T" Slots of Table

Tap Capacity	Order No.	Price
3/4"	29097	
1-3/4"	29096	



\*T\* BOLTS NOT INCLUDED.



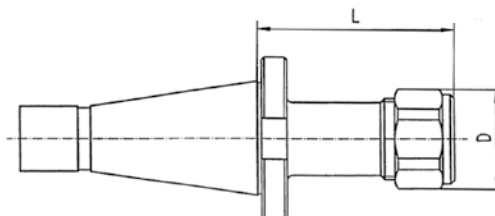
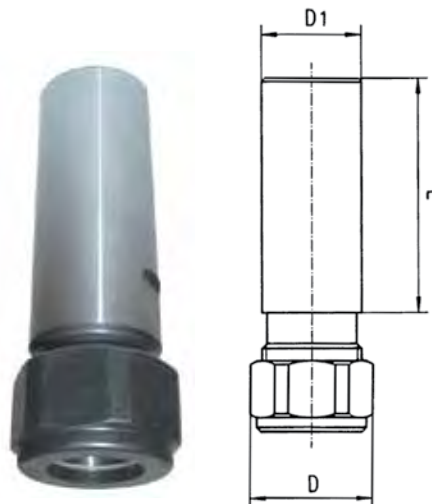
## DA-180 COLLETS, COLLET CHUCKS AND KITS

SERIES 992:

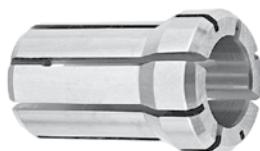
- Full 1/32" range of collapse.
- Concentricity within 0.0005" T.I.R. at collet nose assembled with chuck.
- Self release for rapid, easy operation.
- Interchangeable with all DA-180 Collets and Collet Chucks.
- DA Collets Concentricity guaranteed to 0.0004".

Shank Dia. D	Collet Range	L	Order No.	Price
1-1/4"	1/4"-3/4"	3	7167023	
		5-1/2	7167025	

Taper NMTB	Collet Range	L	Order No.	Price
30	1/4"-3/4"	3	7167013	
40		3	7167014	
50		3-1/2	7167015	



Description	Order No.	Price
Nut	7193818	
Wrench	7193918	



### COLLET DIMENSIONS

Collet Series	Collet Range	Body Dia.	Overall Length
DA-180	1/4"-3/4"	0.873-1.035	1.637

### SPRING COLLETS - METRIC

Nominal Size	Collet Range	Order No.	Price
3	3-2	7167503	
4	4-3	7167504	
5	5-4	7167505	
6	6-5	7167506	
7	7-6	7167507	
8	8-7	7167508	
9	9-8	7167509	
10	10-9	7167510	
11	11-10	7167511	
12	12-11	7167512	
13	13-12	7167513	
14	14-13	7167514	
15	15-14	7167515	
16	16-15	7167516	
17	17-16	7167517	
18	18-17	7167518	
19	19-18	7167519	

### SPRING COLLETS - FRACTIONAL

1761

Nominal Size	DA-180 Code No.	Price	Nominal Size	DA-180 Code No.	Price
1/8	7167110		15/32	7167132	
9/64	7167111		31/64	7167133	
5/32	7167112		1/2	7167134	
			33/64	7167135	
11/64	7167113		17/32	7167136	
3/16	7167114		35/64	7167137	
13/64	7167115		9/16	7167138	
7/32	7167116		37/64	7167139	
15/64	7167117		19/32	7167140	
1/4	7167118		39/64	7167141	
17/64	7167119		5/8	7167142	
9/32	7167120		41/64	7167143	
19/64	7167121		21/32	7167144	
5/16	7167122		43/64	7167145	
21/64	7167123		11/16	7167146	
11/32	7167124		45/64	7167147	
23/64	7167125		23/32	7167148	
3/8	7167126		47/64	7167149	
25/64	7167127		3/4	7167150	
13/32	7167128		17pc. Set	7167192	
27/64	7167129		1/4"-3/4"		
7/16	7167130		x 1/32nd		
29/64	7167131				
			33pc. Set	7167194	
			1/4"-3/4"		
			x 1/64ths		

DA 100, DA 200, DA300  
COLLETS & EXTENSIONS available.  
See our website or inquire.

## MILLING CHUCK AND COLLET SETS

SERIES 663:



7pc. collet set includes:

(1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1")

15pc. collet set includes:

(7 pc. set plus 1/8, 3/16, 7/16, 9/16, 11/16, 13/16, 7/8, 15/16")



- Best selected quality tool steel hardened and precision ground.
- Accuracy concentric to within .008" per inch.
- High rigidity and clamping force.

Each set includes: 1 chuck shank holder, 1 wrench, 1 plastic case, 7 or 15 collets

Taper	No. of Collets	Draw Bar Thread	Order No.	Price
R-8	7	7/16-20	6000050	
R-8	15	7/16-20	6000051	
NT40	7	5/8-11	6000052	
NT40	15	5/8-11	6000053	



## ER-16 MINI SPRING COLLET CHUCK SYSTEM

FINEST QUALITY / ULTRA PRECISE

SERIES 663:



- WIDE HOLDING RANGE OF EACH COLLET: The ER-16 Collets have a range of .040" (1.00mm) per Collet. Guarantees that undersize and oversize cutting tools can be held without sacrificing accuracy or gripping power.
- REDUCES THE NUMBER OF COLLETS REQUIRED to cover the range from .020"(0.5mm) - .393"(10.0mm). Only 10 collets required with ER-16. (Other systems require 23-27 collets.)
- UNIVERSAL COLLET TYPE: The 8° taper design with double angle makes the ER-16 Universal Collet suitable for both milling and drilling operations.
- SIXTEEN MILLED SLOTS: provide 16 Jaws - for higher concentricity and high gripping power, allowing cutting tools to be held on flutes.
- SHORT COLLET DESIGN: ER-16 Short Collet design for less over-hang to prevent small cutting tool breakages.
- SMALL NOSE DIA.: Minimum nose dia. of the ER-16 Collet Chuck is useful for hard-to-reach milling and drilling operations.
- A UNIQUE SELF-RELEASING SYSTEM is built into the collet and nose piece to eliminate cutting tools from sticking in the collet.

## MILLING & DRILLING EXTENSION SETS

Including Chuck and Set of ER Spring Collets and Wrench in fitted case.



## SPRING COLLETS (INDIVIDUAL)

Range		Order No.	Price
Inch	mm		
(.02-.04) 1/32	0.5-1.0	6641601	
(.040-.080) 1/16	1.0-2.0	6641612	
(.080-.120) 3/32	2.0-3.0	6641623	
(.120-.160) 1/8	3.0-4.0	6641634	
(.160-.200) 3/16	4.0-5.0	6641645	
(.200-.236) 7/32	5.0-6.0	6641656	
(.236-.275) 1/4	6.0-7.0	6641667	
(.275-.315) 5/16	7.0-8.0	6641678	
(.315-.354) 11/32	8.0-9.0	6641689	
(.354-.393) 3/8	9.0-10.0	6641690	



Shank	Collet Type	Full Set Pcs.	Collapse Capacity	Set Range	Order No.	Price
R8	ER16	10	.04	1/32-3/8" .02-.393	6640001	
3/4 x 2-1/2					6640002	
3/4 x 4					6640003	
3/4 x 6					6640004	

## SPRING COLLET SET

No. Pcs. Per Set	Collet Range		Set Range		Order No.	Price
	Inch	mm	Inch	mm		
10	.040	1	.020-.393	0.5-10	6641699	

## R8 AND STRAIGHT SHANK EXTENSION COLLET CHUCKS

Shank	L	Order No.	Price
R8	-	6640005	
3/4	2-1/2	6640006	
3/4	4	6640007	
3/4	6	6640008	



STRAIGHT SHANK

## WRENCH FOR ER-16 SYSTEM

Order No.	Price
6640200	



## ER-40 COLLET CHUCK SYSTEM

**FINEST QUALITY / ULTRA PRECISE**

**SERIES 663:**

- **WIDE HOLDING RANGE** of each collet (ER-40 collets have a range of .040") guarantees that undersize and oversize cutting tools can be held without sacrificing accuracy or gripping power; permits number and metric sizes to be used; **reduces the number of collets to cover a given range.**  
(Just 23 ER-40 collets are needed to cover a range of : .118"-1"; some systems require 57 collets for the same range.)
- **UNIQUE 8° TAPER DESIGN** - affords highest gripping power; allows for the thickest segments to prevent twisting of the collets under heavy loads; gives least overhang.
- **TRUE DOUBLE ANGLE**; the collet features a wide closing taper in relation to the 8° clamping taper- for extreme concentricity; for powerful gripping; and for parallel clamping.
- **SIXTEEN MILLED SLOTS** provide 16 jaws - giving higher concentricity and clamping power; allowing cutting tool to be held on flutes.
- A **UNIQUE, SELF RELEASING SYSTEM** is built into the collet and nose piece — eliminates cutting tools sticking in collets.

### How This Collet Chuck System SAVES —

It saves you time and effort... simplifies tool changing on conventional milling machines and eliminates awkward use of draw bar. The safety wrench has four gripping points. In addition, you can use the same chuck for milling, drilling (holding on flutes), reaming, tapping, boring, etc. There's more, too: All ER collet chucks are internally threaded for an internal stop so that cutting tools can be changed to a predetermined length. All NT 40 chucks fit Erickson flange tooling systems. Finally, all ER collet chucks with NT 40 taper have a plastic ring on the taper end of the chuck to protect machine spindles.

### MASTER TOOLING SETS

Including chuck and set of spring collets and wrench in fitted case.



### SPRING COLLETS

Collet Sizes in Sets	Shank	Order No.	Price
15 Collets: 1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, 1	R8	6630001	
	30	6630002	
	40	6630003	
	50	6630004	
	3 MT	6630005	
	4 MT	6630006	
	5 MT	6630007	
	Straight - 1 x 2-3/8	6630008	
	Straight - 1-1/4 x 2-3/8	6630009	

Collet Range (Inch)	Collet Range (mm)	Order No.	Price
1/8 - .12 - .16	3-4	6631773	
3/16 - .16 - .20	4-5	6631774	
7/32 - .20 - .236	5-6	6631775	
1/4 - .236 - .275	6-7	6631776	
5/16 - .275 - .315	7-8	6631777	
11/32 - .315 - .354	8-9	6631778	
3/8 - .354 - .393	9-10	6631779	
13/32 - .393 - .433	10-11	6631780	
7/16 - .433 - .472	11-12	6631781	
1/2 - .472 - .511	12-13	6631782	
17/32 - .511 - .551	13-14	6631783	
9/16 - .551 - .590	14-15	6631784	
5/8 - .590 - .629	15-16	6631785	
21/32 - .629 - .669	16-17	6631786	
11/16 - .669 - .708	17-18	6631787	
3/4 - .708 - .750	18-19	6631788	
25/32 - .750 - .787	19-20	6631789	
13/16 - .787 - .826	20-21	6631790	
27/32 - .826 - .866	21-22	6631791	
7/8 - .866 - .905	22-23	6631792	
15/16 - .905 - .944	23-24	6631793	
31/32 - .944 - .984	24-25	6631794	
1 - .984 - 1.02	25-26	6631795	

### COLLET CHUCKS

Shank	Order No.	Price
R8	6630010	
30	6630011	
40	6630012	
50	6630013	
3MT	6630014	
4MT	6630015	
5MT	6630016	
Straight- 1 x 2 3/8	6630017	
Straight - 1 1/4 x 2 3/8	6630018	



### SPRING COLLET SET

No. Pcs. Per Set	Collet Range	Set Range	Order No.	Price
23	.040"	.118" - 1"	6631770	

### WRENCH FOR ER-40 SYSTEM

Order No.	Price
6631972	





## INDIVIDUAL ER SPRING COLLETS AND COLLET KITS - INCH

SERIES 664:

ER COLLETS CONCENTRICITY  
GUARANTEED TO 0.0004"

- Due to the wide holding range of each collet, fewer collets and changes are required.
- Unique self-releasing system eliminates sticking.
- ER Mini-Collet Chucks allow for machining in tight locations with reduced outside nose diameter.



Nominal Size	Collet Range	ER-11		ER-16		ER-20		ER-25		ER-32		ER-40	
		Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	.020-.040	7171112		7171162		-		-		-		-	
1/16	.040-.080	7171113		1711621		7171203		1712333		-		-	
3/32	.080-.120	7171114		1711623		7171204		1712335		7171328		-	
1/8	.120-.160	7171116		7171163*		7171205*		1712337*		7171330*		7171430*	
5/32	.150-.190	-		1711630		-		-		-		-	
3/16	.160-.200	7171118		7171164*		7171207*		7171234*		7171334*		7171434*	
7/32	.200-.236	7171120		7171165*		7171209*		7171236*		7171336		7171436	
1/4	.236-.275	7171122		7171166*		7171211*		7171238*		7171338*		7171438*	
9/32, 5/16	.275-.315	-		7171167*		7171213*		7171242*		7171340*		7171442*	
11/32	.315-.354	-		7171168*		7171215*		7171244*		7171344		7171444	
3/8	.354-.393			7171169*		7171217*		7171246*		7171346*		7171446*	
13/32	.393-.433			-		7171219*		7171248*		7171348		7171448	
7/16, 15/32	.433-.472			-		7171221*		7171250		7171350*		7171450*	
1/2	.472-.511			-		7171223*		7171254*		7171354*		7171454*	
17/32	.511-.551			-		-		7171256*		7171356		7171456	
9/16	.551-.590			-		-		7171258*		7171358*		7171458*	
19/32, 5/8	.590-.629			-		-		-		7171362*		7171462*	
21/32	.629-.669			-		-		-		7171364		7171464	
11/16	.669-.708			-		-		-		7171366*		7171466*	
23/32, 3/4	.708-.748			-		-		-		7171370*		7171470*	
25/32	.748-.787			-		-		-		-		7171472	
13/16	.787-.826			-		-		-		-		7171474*	
27/32	.826-.866			-		-		-		-		7171476	
7/8	.866-.905			-		-		-		-		7171478*	
29/32, 15/16	.905-.944			-		-		-		-		7171482*	
31/32	.944-.984			-		-		-		-		7171484	
1	.984-1.02			-		-		-		-		7171486*	
<b>Collet Sets: Order No.</b>		<b>7 Piece Set 7171125</b>		<b>7 Piece Set 7171195</b>		<b>10 Piece Set 7171225</b>		<b>12 Piece Set 7171295</b>		<b>11 Piece Set 7171395</b>		<b>15 Piece Set 7171495</b>	
<b>Price</b>													

\*Included in set

## ER COLLET CHUCKS AND KITS

SERIES 664:



Collet Size	Shank Size	Overall Lgth	Collet Chuck Order No.	Price	Kit Order No.	Price	Collet Size	Shank Size	Overall Lgth	Collet Chuck Order No.	Price	Kit Order No.	Price
ER-11	1/2	6.2	1711105		1711115		ER-32	R8	6-1/4	1713008		1713108	
	5/8		1711106		1711116			NMTB 30	5-1/16	1713030		1713130	
ER-16	5/8	6.0	1711606		1711616		NMTB 40	6-1/16	1713040		1713140		
	3/4	6.5	1711607		1711617		MT-3	6-1/16	1713003		1713103		
ER-20	3/4	5.5	1712007		1712017		1	3-3/4	1713001		1713101		
	1		1712009		1712019		ER-40	R8	6-1/2	1714008		1714108	
ER-25	3/4	6.5	1712303		1712313			NMTB 40	6-1/16	1714044		1714140	
	1		1712305		1712315		NMTB 50	7-3/4	1714050		1714150		
	1						1	4-1/2	1714001		1714101		
							1-1/4	4-3/4	1714002		1714102		

## ER COLLET WRENCHES AND NUTS

SERIES 664:



### Quality Machine Tool Accessories

**MEGA**  
Superior Import



### The Choice Is Yours!!!

Collet Type	Nut		Wrench	
	Order No.	Price	Order No.	Price
ER-11	7171951		7171961	
ER-16	7171966		7171976	
ER-20	7188820		7188916	
ER-25	7188825		7188925	
ER-32	7188832		7188932	
ER-40	7188840		9180930	



While we show the most popular **BISON** items, we can supply their entire range of products; please inquire.



## INDIVIDUAL ER SPRING COLLETS, AND COLLET KITS - METRIC

SERIES 664:



ER COLLET SETS



Nominal Size	Collet Range mm	Collet Range inch	ER-11 Order No.	Price	ER-16 Order No.	Price	ER-20 Order No.	Price	ER-25 Order No.	Price	ER-32 Order No.	Price	ER-40 Order No.	Price
1	1-0.5	.019-.039	7171511		7171501		-		-		-		-	
2	2-1	.039-.078	7171513		7171502		7171602		-		-		-	
3	3-2	.078-.118	7171515		7171503		7171603		7171703		7171803		-	
4	4-3	.118-.157	7171517		7171504		7171604		7171704		7171804		7171904	
5	5-4	.157-.196	7171519		7171505		7171605		7171705		7171805		7171905	
6	6-5	.196-.236	7171521		7171506		7171606		7171706		7171806		7171906	
7	7-6	.236-.275	7171523		7171507		7171607		7171707		7171807		7171907	
8	8-7	.275-.314	-		7171508		7171608		7171708		7171808		7171908	
9	9-8	.314-.354	-		7171509		7171609		7171709		7171809		7171909	
10	10-9	.354-.393	-		7171510		7171610		7171710		7171810		7171910	
11	11-10	.393-.433	-		-		-		7171711		7171811		7171911	
12	12-11	.433-.472	-		-		7171612		7171712		7171812		7171912	
13	13-12	.472-.511	-		-		7171613		7171713		7171813		7171913	
14	14-13	.511-.551	-		-		-		7171714		7171814		7171914	
15	15-14	.551-.590	-		-		-		7171715		7171815		7171915	
16	16-15	.590-.629	-		-		-		7171716		7171816		7171916	
17	17-16	.629-.669	-		-		-		-		7171817		7171917	
18	18-17	.669-.708	-		-		-		-		7171818		7171918	
19	19-18	.708-.748	-		-		-		-		7171819		7171919	
20	20-19	.748-.787	-		-		-		-		7171820		7171920	
21	21-20	.787-.826	-		-		-		-		-		7171921	
22	22-21	.826-.866	-		-		-		-		-		7171922	
23	23-22	.866-.905	-		-		-		-		-		7171923	
24	24-23	.905-.944	-		-		-		-		-		7171924	
25	25-24	.944-.984	-		-		-		-		-		7171925	
26	26-25	.984-1.023	-		-		-		-		-		7171926	
<b>Collet Sets:</b>			<b>7 Pc. Set</b>		<b>10 Pc. Set</b>		<b>11 Pc. Set</b>		<b>14 Pc. Set</b>		<b>18 Pc. Set</b>		<b>23 Pc. Set</b>	
<b>Order No.</b>			7171525		7171595		7171695		7171795		7171895		7171935	
<b>Price</b>														

**MILLING MACHINE**

**ARBORS**

SERIES 358:



FOR 30 40 50 NATIONAL STANDARD  
TAPER SPINDLES

Milling Machine Arbors are made of top quality one piece forgings. Carefully heat treated and surfaces ground with extremely narrow tolerances assure a rigid setup and accurate machining operations. All threads are ground. Arbors are equipped with assorted solid spacers and necessary running bushings with standard keyways and threaded arbor nut.

Type A arbors are provided with end pilots  
23/32 x 1-3/4".

Drawbar Threads for:

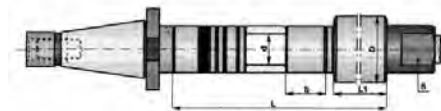
- #30 1/2" - 13
- #40 5/8" - 11
- #50 1" - 8

These arbors have right hand thread.

STYLE A



STYLE B



**RH ARBOR NUTS**

SERIES 360:



RH nuts are hardened and have a ground thread and shoulder.

For Arbor Dia.	Thread Size	Order No.	Price
7/8	7/8 - 14RH	7030005	
1	1-14RH	7030010	
1-1/4	1-1/4 - 12RH	7030015	
1-1/2	1-1/2 - 12RH	7030020	
2	2 - 12RH	7030025	
2-1/2	2-1/2 - 12RH	7030030	

STYLE A WITH PILOT

Arbor No.	Tapor	Arbor Dia. d	Length L	Running Bushing D x L <sub>1</sub>	No. of Bushings	Order No.	Price
30-7/8 - A10-2 31-A10-2 31-1/4 - A10-2 31-1/4 - A10-3	30	7/8 1 1-1/4 1-1/4	10	1-5/8 x 2-5/8 1-5/8 x 2-5/8 1-5/8 x 2-5/8 1-7/8 x 3-1/8	1	7010005 7010010 7010015 7010017	
40-7/8 - A10 40-7/8 - A16-3	40	7/8	10 16	- 1-7/8 x 3-1/8	- 1	7010020 9110025	
41 - A8 41 - A10 41 - A12 41 - A16-3	40	1	8 10 12 16	- - - 1-7/8 x 3-1/8	- - - 1	7010027 7010028 9910030 9910035	
41-1/4 - A8 41-1/4 - A10 41-1/4 - A12 41-1/4 - A16-3	40	1-1/4	8 10 12 16	- - - 1-7/8 x 3-1/8	- - - 1	7010037 7010038 9910040 9910045	
50-7/8 - A10 50-7/8 - A18-4	50	7/8	10 18	- 2-1/8 x 3-3/4	- 1	9210050 9110055	
51 - A8 51 - A12 51 - A18-4	50	1	8 12 18	- - 2-1/8 x 3-3/4	- - 1	7010057 9910060 9910065	
51-1/4 - A8 51-1/4 - A12 51-1/4 - A18-4	50	1-1/4	8 12 18	- - 2-1/8 x 3-3/4	- - 1	7010067 9910070 9910075	

STYLE B

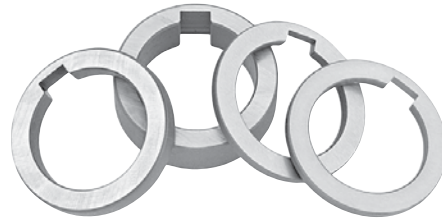
31 - B2	30	1	2	-	-	7015002	
40-7/8 - B14-3 40-7/8 - B16-3	40	7/8	14 16	1-7/8 x 3-1/8	1	7015005 7015006	
41 - B3 41 - B14-3 41 - B20-3	40	1	3 14 20	- 1-7/8 x 3-1/8 1-7/8 x 3-1/8	- 1 1	7015008 7015010 7015015	
41-1/4 - B3 41-1/4 - B14-3 41-1/4 - B20-3 41-1/2 - B20-4	40	1-1/4	3 14 20 20	- 1-7/8 x 3-1/8 1-7/8 x 3-1/8 2-1/8 x 3-3/4	- 1 1 1	7015017 7015020 7015025 7015030	
51 - B3-1/2 51 - B15-4 51 - B18-4 51 - B24-4	50	1	3-1/2 15 18 24	- 2-1/8 x 3-3/4 2-1/8 x 3-3/4 2-1/8 x 3-3/4	- 1 2 2	7015033 7015035 7015040 7015045	
51-1/4 - B3-1/2 51-1/4 - B15-4 51-1/4 - B18-4 51-1/4 - B24-4 51-1/4 - B30-4	50	1-1/4	3-1/2 15 18 24 30	- 2-1/8 x 3-3/4 2-1/8 x 3-3/4 2-1/8 x 3-3/4 2-1/8 x 3-3/4	- 1 2 2 2	7015047 7015050 7015055 7015060 7015065	
51-1/2 - B3-1/2 51-1/2 - B18-4 51-1/2 - B24-5 51-1/2 - B30-5 51-1/2 - B36-5	50	1-1/2	3-1/2 18 24 30 36	- 2-1/8 x 3-3/4 2-3/4 x 4-1/4 2-3/4 x 4-1/4 2-3/4x 4-1/4	- 2 2 2 2	7015067 7015070 7015075 7015080 7015085	
52 - B24-5 52 - B30-5 52 - B36-5	50	2	24 30 36	2-3/4 x 4-1/4	2	7015090 7015095 7015100	
52-1/2 - B36-6	50	2-1/2	36	3-3/8 x 4-1/4	2	7015105	

## SOLID SPACERS WITH KEYWAYS

### SERIES 361:

Spacers are hardened and have parallel and perpendicular surfaces precisely ground to ensure precise operation of cutters on milling machine arbors.

3/4" hole x 1/8" O.D. spacers available; please inquire.



Width of Spacer	7/8" hole 1-3/8" O.D.		1" hole 1-1/2" O.D.		1-1/4" hole 1-3/4" O.D.		1-1/2" hole 2-1/8" O.D.		2" hole 2-3/4" O.D.		2-1/2" hole 3-1/4" O.D.	
	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/16	7020005		7020090		7020175		7020260		7020385		7020470	
3/32	7020010		7020095		7020180		7020265		7020390		7020475	
1/8	7020015		7020100		7020185		7020270		7020395		7020480	
3/16	7020020		7020105		7020190		7020275		7020400		7020485	
1/4	7020025		7020110		7020195		7020280		7020405		7020490	
5/16	7020030		7020115		7020200		7020285		7020410		7020495	
3/8	7020035		7020120		7020205		7020290		7020415		7020500	
7/16	7020040		7020125		7020210		7020295		7020420		7020505	
1/2	7020045		7020130		7020215		7020300		7020425		7020510	
5/8	7020050		7020135		7020220		7020305		7020430		7020515	
3/4	7020055		7020140		7020225		7020310		7020435		7020520	
7/8	7020060		7020145		7020230		7020315		7020440		7020525	
1	7020065		7020150		7020235		7020320		7020445		7020530	
1-1/4	7020070		7020155		7020240		7020325		7020450		7020535	
1-1/2	7020075		7020160		7020245		7020330		7020455		7020540	
2	7020080		7020165		7020250		7020335		7020460		7020545	
3	7020085		7020170		7020255		7020340		7020465		7020550	
Width of Keyway	1/8		1/4		5/16		3/8		1/2		5/8	

## ARBOR RUNNING BUSHINGS

### SERIES 362:

Bushings are hardened and have parallel and perpendicular surfaces precisely ground to ensure maximum holding power, rigid setup and accurate machining operations. Bushings have standard keyways which allow fixed mounting on arbor and prevent rotation.



O.D. of Bushing	Diameter of Hole	Length of Bushing	Width of Keyway	Order No.	Price
1-5/8	7/8	2-5/8	1/8	7025005	
1-5/8	1	2-5/8	1/4	7025010	
1-5/8	1-1/4	2-5/8	5/16	7025015	
1-7/8	7/8	3-1/8	1/8	7025020	
1-7/8	1	3-1/8	1/4	7025025	
1-7/8	1-1/4	3-1/8	5/16	7025030	
2-1/8	7/8	3-3/4	1/8	7025035	
2-1/8	1	3-3/4	1/4	7025040	
2-1/8	1-1/4	3-3/4	5/16	7025045	
2-1/8	1-1/2	3-3/4	3/8	7025050	
2-3/4	7/8	4-1/4	1/8	7025055	
2-3/4	1	4-1/4	1/4	7025060	
2-3/4	1-1/4	4-1/4	5/16	7025065	
2-3/4	1-1/2	4-1/4	3/8	7025070	
2-3/4	2	4-1/4	1/2	7025075	
3-3/8	2-1/2	4-1/2	5/8	7025080	

## ARBOR SPACER SHIM SETS

### SERIES 671:

With standard keyways.



These assortments contain 19 pc. of the most needed shims.  
 2 Ea.: .001, .002, .003, .004, .005, .006  
 1 Ea.: .007, .008, .010, .012, .015, .020, .025

Inside Dia.	Outside Dia.	Order No.	Price
1/2	3/4	6714170	
5/8	1	6714180	
3/4	1-1/8	6714190	
7/8	1-3/8	6714200	
1	1-1/2	6714220	
1-1/4	1-3/4	6714260	
1-1/2	2-1/8	6714460	
2	2-3/4	6714480	



Individual sizes available. See our website or inquire.



**END MILL HOLDERS WITH "R-8" TAPER**  
SERIES 371



- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- End Mill Socket T.I.R. <0.0004".

For holding single and double end end mills.

Model No.	Hole Dia.	MEDA		BISON	
		Order No.	Price	Order No.	Price
ER8-3/16	3/16	2150000		7160005	
ER8-3/8	3/8	2150001		7160010	
ER8-1/2	1/2	2150002		7160015	
ER8-5/8*	5/8	2150003		7160020	
ER8-3/4*	3/4	2150004		7160025	
ER8-7/8*	7/8	2150005		7160030	
ER8-1*	1	2150006		7160035	
ER8-1-1/4*	1-1/4	2150007		7160040	
ER8-1-1/2*	1-1/2	2150008		7160045	

\* For Single-end End Mills only.

**SETS**



Set supplied with wooden stand.

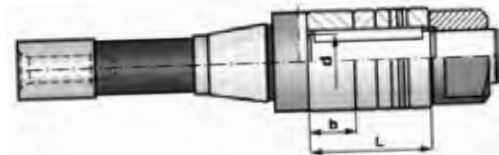
Brand	Pieces Per Set	Range	Order No.	Price
MEDA	6	3/16 - 3/4" + 1"	2150500	
BISON	5	3/16 - 3/4"	7160105	
BISON	8	3/16 - 1 1/4"	7160108	

**SLITTING SAW & STUB MILLING MACHINE ARBOR WITH R8 SHANK**

SERIES 363:



- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- Face is held perpendicular to center line within 0.0004".
- Pilot diameter is sized for precision fit with cutter and is keyed for positive drive.
- Heavy duty locking RH nut and three arbor spacers are included.

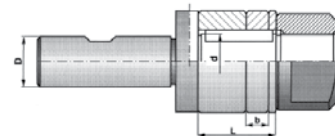


Shank Dia.	Arbor Dia. d	L	MEDA		BISON	
			Order No.	Price	Order No.	Price
R8	1	2	2110010		7070005	
R8	1-1/4	2	2110020		7070010	

**STUB MILLING MACHINE ARBORS, WELDON SHANK**

SERIES 363:

- For holding saws or small cutters.
- Designed to fit directly into standard end mill adapters.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- Face is held perpendicular to center line within 0.0004".
- Pilot diameter is sized for precision fit with cutter and is keyed for positive drive.
- Heavy duty locking LH nut and three arbor spacers are included.



Shank Dia.	Arbor Dia. d	L	MEDA		BISON	
			Order No.	Price	Order No.	Price
1/2	1/2	1	3633232		7072005	
	5/8		3633240		7072010	
	3/4		3633248		7072015	
3/4	1/2	1	3634832		7072020	
	5/8		3634840		7072025	
	3/4		3634848		7072030	
	7/8		3634856		7072035	
	1		3634864		7072040	
	1-1/4		3634880		7072045	

**Quality Machine Tool Accessories**



**The Choice Is Yours!!!**

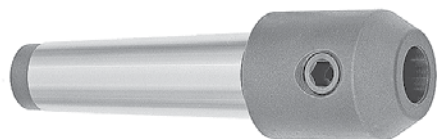
## END MILL HOLDERS WITH MORSE TAPER SHANK

SERIES 369 : STYLE "A" WITH TANG END  
 SERIES 370 : STYLE "B" WITH THREADED END FOR DRAWBAR

- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- End Mill Socket T.I.R. <0.0004".
- Sets are provided with nice wooden case.



Style A - "Tang Style"



Style B - "Drawbar Style"

For holding single and double end end mills.

\* For single-end mills only.

Model No.	Taper	Hole Diameter	Order No.		Price
			Style "A"	Style "B"	
MT2-3/16	M.T.2	3/16	2140040	2145040	
MT2-3/8	M.T.2	3/8	2140041	2145041	
MT2-1/2*	M.T.2	1/2	2140042	2145042	
MT2-5/8*	M.T.2	5/8	2140043	2145043	
MT3-3/16	M.T.3	3/16	2140050	2145050	
MT3-3/8	M.T.3	3/8	2140051	2145051	
MT3-1/2	M.T.3	1/2	2140052	2145052	
MT3-5/8*	M.T.3	5/8	2140053	2145053	
MT3-3/4*	M.T.3	3/4	2140054	2145054	
MT4-3/8	M.T.4	3/8	2140061	2145061	
MT4-1/2	M.T.4	1/2	2140062	2145062	
MT4-5/8	M.T.4	5/8	2140063	2145063	
MT4-3/4	M.T.4	3/4	2140064	2145064	
MT4-7/8*	M.T.4	7/8	2140065	2145065	
MT4-1*	M.T.4	1	2140066	2145066	
MT5-3/8	M.T.5	3/8	2140071	2145071	
MT5-1/2	M.T.5	1/2	2140072	2145072	
MT5-5/8	M.T.5	5/8	2140073	2145073	
MT5-3/4	M.T.5	3/4	2140074	2145074	
MT5-7/8	M.T.5	7/8	2140075	2145075	
MT5-1	M.T.5	1	2140076	2145076	
MT5-1-1/4*	M.T.5	1-1/4	2140077	2145077	
MT5-1-1/2*	M.T.5	1-1/2	2140078	-	
MT5-2*	M.T.5	2	2140079	-	
MT6-1-1/4*	M.T.6	1-1/4	2140081	-	
MT6-1-1/2*	M.T.6	1-1/2	2140082	-	
MT6-2*	M.T.6	2	2140083	-	

**BROWN & SHARPE TAPER**  
 End Mill Holders are available;  
 please inquire.



## SHELL END MILL ARBORS WITH "R-8" TAPER

SERIES 374:



- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- Shell End Mill Pilot T.I.R. <0.0004".

Hole Dia.	Range of Shell E/M	MEDA		BISON	
		Order No.	Price	Order No.	Price
1/2	1-1/4 to 1-1/2	2165002		7065005	
3/4	1-3/4 to 2	2165004		7065010	
1	2-1/4 to 2-3/4	2165006		7065015	
1-1/4	3 to 3-1/2	2165007		7065020	
1-1/2	4 to 5	2165008		7065025	

### SETS:

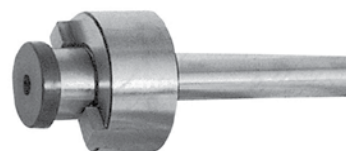


Sets supplied with wooden stand.

Description	MEDA		BISON	
	Order No.	Price	Order No.	Price
5 Pc. Set 1/2 - 1 1/2"	2165005		7065805	

## SHELL END MILL ARBORS WITH STRAIGHT SHANK

SERIES 375:



Dia. of Shank	Dia. for Shell End Mill Hole	Order No.	Price
1/2	1/2	2170023	
1/2	3/4	2170024	
3/4	3/4	2170044	
3/4	1	2170046	

## ARBOR SCREWS FOR SHELL END MILL ARBORS

SERIES 379:



Arbor Dia. Size	Thread	Order No.	Price
1/2	1/4-28	7080005	
3/4	3/8-24	7080010	
1	1/2-20	7080015	
1-1/4	5/8-18	7080020	
1-1/2	3/4-16	7080025	
2	1-14	7080030	

## END MILL HOLDERS WITH NST 30, 40 & 50 TAPERS



SERIES 364:

NST Taper	Hole Dia.	MEDA		BISON		BISON (Sets)	
		Order No.	Price	Order No.	Price	Order No.	Price
30	3/16	2115100		7165005		7165307 7 Pc. Set 3/16 - 1" (no 1/4")	
	1/4	-		7165007			
	3/8	2115110		7165010			
	1/2	2115120		7165015			
	5/8	2115130		7165020			
	3/4	2115140		7165025			
	7/8	2115150		7165026			
	1	2115160		7165027			
40	3/16	2115200		7165030		7165409 9 Pc. Set 3/16 - 1-1/2 (no 1/4")	
	1/4	-		7165032			
	3/8	2115210		7165035			
	1/2	2115220		7165040			
	5/8	2115230		7165045			
	3/4	2115240		7165050			
	7/8	2115250		7165055			
	1	2115260		7165060			
	1-1/4*	2115270		7165065			
	1-1/2*	2115280		7165070			
50	3/16	-		7165073		7165510 9 Pc. Set 3/8 - 2"	
	3/8	2115310		7165075			
	1/2	2115320		7165080			
	5/8	2115330		7165085			
	3/4	2115340		7165090			
	7/8	2115350		7165095			
	1	2115360		7165100			
	1-1/4*	2115370		7165105			
	1-1/2*	2115380		7165110			
	2*	2115390		7165115			
	2-1/2*	2115400		-			

- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- End Mill Socket T.I.R. <0.0004".



Draw Bar Threads:  
 NST 30 1/2" - 13  
 NST 40 5/8" - 11  
 NST 50 1" - 8

\*Holders are only for single end mills

Set supplied with wooden stand.

## SHELL END MILL ARBORS WITH MT SHANK

SERIES 376:



Style A - "Tang Style"

- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- Shell End Mill Pilot T.I.R. <0.0004".

Draw Bar Threads:  
 MT 4 1/2" - 13  
 MT 5 5/8" - 11



Style B - "Drawbar Style"

## FACE MILL HOLDERS

SERIES 204:



- NST Taper is produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Shell Mill Pilot T.I.R. <0.0004".
- Holders have four mounting holes with the thread 5/8 - 11 on a 4" bolt circle to hold 8" or larger Face Milling Cutters.
- Holders have 1" Drive Keys.



Draw Bar Threads:  
 NST 40 5/8" - 11  
 NST 50 1" - 8  
 NST 60 1-1/4" - 7



MT Shank	Arbor Dia.	For Shell End Mills	Style "A"		Style "B"	
			Order No.	Price	Order No.	Price
4	1/2	1-1/4 to 1-1/2	7051005		7055005	
	3/4	1-3/4 to 2	7051010		7055010	
	1	2-1/4 to 2-3/4	7050015		7055015	
	1-1/4	3 to 3-1/2	7051020		7055020	
	1-1/2	4 to 5	7051025		7055025	
5	1	2-1/4 to 2-3/4	7050030		7055030	
	1-1/4	3 to 3-1/2	7050035		7055035	
	1-1/2	4 to 5	7050040		7055040	

Shank	Holder Dia.	Arbor Length	Order No.	Price	*LIMITED QUANTITY
NST 40	2	6.20	7170005		
	2-1/2		7170020		
NST 50	2	7.56	7170010		
	2-1/2		7170025		
NST 60	2	10.70	7170015*		
	2-1/2		7170030		

Shank	Holder Dia.	Arbor Length	Order No.	Price
MT 5	2	9.57	7170035	
	2-1/2		7170045	
MT 6	2	13.58	7170040	
	2-1/2		7170050	

**BROWN & SHARPE TAPER** Shell End Mill Arbors are available; please inquire.



## SHELL END MILL ARBORS WITH NST SHANK

SERIES 373:

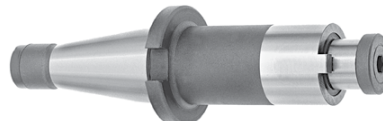
Draw Bar Threads:  
**NST 30** 1/2" - 13  
**NST 40** 5/8" - 11  
**NST 50** 1"-8

NST Shank	Arbor Dia.	For Shell End Mills	Order No.	Price
30	1/2	1-1/4 to 1-1/2	7060005	
	3/4	1-3/4 to 2	7061010	
	1	2-1/4 to 2-3/4	7060015	
	1-1/4	3 to 3-1/2	7061020	
40	1/2	1-1/4 to 1-1/2	7060025	
	3/4	1-3/4 to 2	7060030	
	1	2-1/4 to 2-3/4	7060035	
	1-1/4	3 to 3-1/2	7060040	
	1-1/2	4 to 5	7060045	
	2	5-1/2 to 6	7060050	
50	1/2	1-1/4 to 1-1/2	7060055	
	3/4	1-3/4 to 2	7060060	
	1	2-1/4 to 2-3/4	7060065	
	1-1/4	3 to 3-1/2	7060070	
	1-1/2	4 to 5	7060075	
	2	5-1/2 to 6	7060080	
	2-1/2	6-1/2 & larger	2170040	



## 4" EXTENSION TYPE

SERIES 373:



- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- Shell End Mill Pilot T.I.R. <0.0004".

Sets with wooden stand available; please inquire.

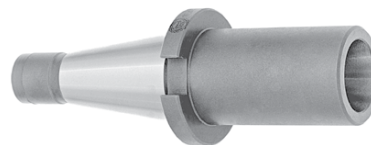
NST Shank	Arbor Dia.	For Shell End Mills	Order No.	Price
40	3/4	1-3/4 to 2	7075002	
	1	2-1/4 to 2-3/4	7075005	
50	1	2-1/4 to 2-3/4	7075010	
	1-1/4	3 to 3-1/2	7075015	
	1-1/2	4 to 5	7075020	

## MILLING MACHINE ADAPTERS

SERIES 365:

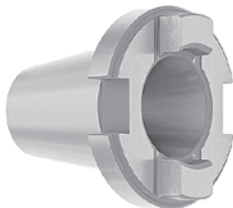


FOR CHANGING FROM NST SHANK TO R8 SOCKET



FOR CHANGING FROM ONE NST TAPER TO A SMALLER NST

- NST Shanks are produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 56-60 and ground to ensure maximum accuracy.
- Taper seat T.I.R. <0.0004".



Adapters are provided with the screw (inside) to hold tools with 7/16-20 R8 shank. To hold adapter in the spindle use draw bar with standard thread.

Drawbar End Type

NST Shank	Hole	Draw Bar Thread	Order No.	Price
40	R8	5/8-11	7105005	
50	R8	1-8	7105010	

Open End Type

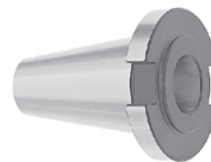
NST Shank	NST Hole	Order No.	Price
40	30	7110005	
50	30	7110010	
50	40	7110015	

FOR CHANGING FROM NST SHANK TO MT SOCKET

Open End Type\*

NST Shank	MT Hole	Order No.	Price
40	2	7090005	
	3	7090010	
	4	7090015	
50	3	7190020	
	4	7090025	

\* Limited Quantity



FOR CHANGING FROM NST SHANK TO MT SOCKET



Drawbar End Type

NST Shank	MT Hole	Draw Bar Thread	Order No.	Price
40	2	5/8 - 11	7100005	
	3		7100010	
	4		7100015	
	5		7100020	
	5		7100025	
50	2	1-8	7100024	
	3		7100025	
	4		7100030	
	5		7100035	

FOR CHANGING FROM R8 SHANK TO MT SOCKET



MEDIA Superior Import

Drawbar End Type

R8 Shank	MT Hole	Draw Bar Thread	MEDA		BISON	
			Order No.	Price	Order No.	Price
R8 R8	2	7/16 - 20	2125004		7115005	
	3	7/16 - 20	2125005		7115010	



**SLITTING OR SLOTTING  
SAW ARBORS**  
SERIES 382



Spring loaded mechanism on Order No.'s 2205000 and 2205002 permits use of saw blades with various hole diameters.

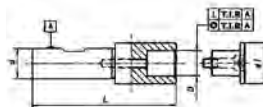
Diameter of Arbor	Length	Fits Hole Sizes	Order No.	Price
1/2	2-1/2	1/2-1	2205000	
R-8	5-3/32	x 8ths	2205002	
1/2	2-3/4	1/4	2205016	
1/2	2-1/2	3/8	2205024	
1/2	2-1/2	1/2	2205032	
<b>3-Piece Set On A Wooden Block</b> Includes: 2205016, 2205024, 2205032				
1/2	2-1/2	1/4, 3/8, 1/2	2205300	

**SLITTING & SLOTTING  
SAW ARBORS**

SERIES 382:

**HARDENED AND PRECISELY GROUND**

- Rigid arbors, with extended length, reach areas that standard short arbors cannot.
- Each arbor is ground for precision within 0.002".
- Super low profile cups allows cutter to get lower and closer to working area.
- Plug style cup gives extra support and rigidity when working with larger diameter saws.
- Sets are supplied in a wooden stand.



Shank Dia. d	T.I.R. Hole Size D	d <sub>1</sub>	L	Order No.	Price
.500	.250	.500	2.70	7123005	
	.375	.625	2.88	7123010	
	.500	.750	3.07	7123015	
Set of 3 Arbors .250" - .500"				7123050	
.750	.625	1.00	3.53	7123105	
	1.000	1.50	3.78	7123110	
	1.250	1.75	4.03	7123115	
	Set of 3 Arbors .625" - 1.250"			7123150	

**CNC TOOL CART**  
SERIES 569:



2-Storage trays, protective lining inside. Angled tray for easy, quick tool access from either side. Heavy duty 5" x 1-1/4" casters load rated at 1000 lbs. Heavy gauge - all steel infrared/baked epoxy finish. Solid side panels for maximum strength & stability. Interlocking side panel construction adds strength. Durable nylon inserts to help prevent damage.



Weight: 75 lbs.  
Dimensions: 18"W x 35-1/4"L x 35"H

Model No.	Order No.	Taper	Description	Price
13930	9913930	#30	Holds 48 BT, CAT V Flange, NMTB	
13935	9913935	#35	Holds 48 BT	
13940	9913940	#40	Holds 48 BT, CAT V Flange, NMTB	
13945	9913945	#45	Holds 36 BT, CAT V Flange	
13950	9013950	#50	Holds 36 BT, CAT V Flange, NMTB	

**CNC AND COLLET PLATFORM**  
SERIES 569:



Conveniently holds your CNC toolholders or collets at the ready, for quick access. Angled platform for the 30-35-40-45-50 taper tools and 5C or R8 collets. Holds 24 toolholders for 30-35 and 40 taper, 18 tools for 45 and 50 taper, and 96 tools for 5C or R8.



Model No.	Order No.	Price	Model No.	Order No.	Price
30P	14830		50P	14850	
35P	14835		96P5C	14856	
40P	14840		96PR8	9914866	
45P	14845				

**CNC TOOLHOLDER RACK FOR  
40 & 50 TAPERS**  
SERIES 569:



Bench mount, hand carry, or mount on top of your shop cart to move your 40 & 50 taper tools to the job. Made of heavy gauge steel with nylon inserts to help protect your tooling, painted texture black with Huot's pollution free powder coating process. Built-in end handles for comfortable carrying.



Model No.	Order No.	Description	Price
14780	14780	For 40 taper tools, holds 6 tools	
14790	14790	For 50 taper tools, holds 5 tools	

**CNC TOOL TOWER**  
SERIES 569:



- Provides economical, free standing storage for 30, 40, 50 taper tools.
- The Tool Tower comes with 3 shelves and can be stacked to form a 5 or 6 shelf tower (optional stacking kit sold separately).
  - Nylon inserts protect each holder.
  - Sturdy 16 gauge steel construction.

Weight: 65 lbs.  
Dimensions: 27-5/16" W x 18-5/16" D x 36" H

Model No.	Description	Taper	Order No.	Price
13830	Holds 24 tools	30	5613830	
13840	Holds 24 tools	40	5613840	
13850	Holds 18 tools	50	5613850	
14860	Stacking Kit	-	5613860	





## CATERPILLAR V-FLANGE TG COLLET CHUCKS

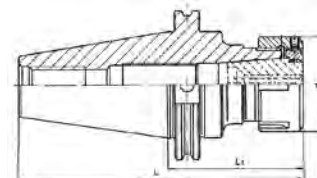
COMPLETELY INTERCHANGEABLE WITH ALL

TG-100 & 150 COLLETS

SERIES 654:

- Completely Interchangeable with all TG Collets.
- Produced according to AT3 specifications.
- Collet seat taper T.I.R. < .0002".
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Through spindle coolant capability.
- Retention Knobs are sold separately.

**Draw Bar Threads:**  
**CAT-40** 5/8" - 11  
**CAT-50** 1" - 8



Collet Wrench

Taper No.	TG Collet No.	Collet Clamping Range	d	L <sub>1</sub>	L	Chuck Order No.	Price
CAT 40	100	3/32-1	2-1/2	3	5-11/16	<b>7180403</b>	
				4	6-11/16	<b>7180404</b>	
				6	8-11/16	<b>7180406</b>	
CAT 50	100	3/32-1	2-1/2	3-1/8	7-1/8	<b>7180503</b>	
				3-1/2	7-1/2	<b>7180504</b>	
				5-1/2	9-1/8	<b>7180505</b>	
				7-1/2	11-1/2	<b>7180507</b>	
	150	1/2-1-1/2	3-1/2	3	7	<b>7180513</b>	
				3-1/2	7-1/2	<b>7180514</b>	
				5-1/2	9-1/2	<b>7180517</b>	

TG Collet Style	Wrench Order No.	Price
100	<b>7180930</b>	
150	<b>7180935</b>	

## 100 TG COLLETS

SERIES 661:



## 150 TG COLLETS

SERIES 662:



Size	Order No.	Price	Size	Order No.	Price
3/32	<b>6610006</b>		37/64	<b>6610037</b>	
7/64	<b>6610007</b>		19/32	<b>6610038</b>	
1/8	<b>6610008</b>		39/64	<b>6610039</b>	
9/64	<b>6610009</b>		5/8	<b>6610040</b>	
5/32	<b>6610010</b>		41/64	<b>6610041</b>	
11/64	<b>6610011</b>		21/32	<b>6610042</b>	
3/16	<b>6610012</b>		43/64	<b>6610043</b>	
13/64	<b>6610013</b>		11/16	<b>6610044</b>	
7/32	<b>6610014</b>		45/64	<b>6610045</b>	
15/64	<b>6610015</b>		23/32	<b>6610046</b>	
1/4	<b>6610016</b>		47/64	<b>6610047</b>	
17/64	<b>6610017</b>		3/4	<b>6610048</b>	
9/32	<b>6610018</b>		49/64	<b>6610049</b>	
19/64	<b>6610019</b>		25/32	<b>6610050</b>	
5/16	<b>6610020</b>		51/64	<b>6610051</b>	
21/64	<b>6610021</b>		13/16	<b>6610052</b>	
11/32	<b>6610022</b>		53/64	<b>6610053</b>	
23/64	<b>6610023</b>		27/32	<b>6610054</b>	
3/8	<b>6610024</b>		55/64	<b>6610055</b>	
25/64	<b>6610025</b>		7/8	<b>6610056</b>	
13/32	<b>6610026</b>		57/64	<b>6610057</b>	
27/64	<b>6610027</b>		29/32	<b>6610058</b>	
7/16	<b>6610028</b>		59/64	<b>6610059</b>	
29/64	<b>6610029</b>		15/16	<b>6610060</b>	
15/32	<b>6610030</b>		61/64	<b>6610061</b>	
31/64	<b>6610031</b>		31/32	<b>6610062</b>	
1/2	<b>6610032</b>		63/64	<b>6610063</b>	
33/64	<b>6610033</b>		1	<b>6610064</b>	
17/32	<b>6610034</b>				
35/64	<b>6610035</b>				
9/16	<b>6610036</b>				

Size	Order No.	Price	Size	Order No.	Price
1/2	<b>6620032</b>		1	<b>6620064</b>	
33/64	<b>6620033</b>		1-1/64	<b>6620065</b>	
17/32	<b>6620034</b>		1-1/32	<b>6620066</b>	
35/64	<b>6620035</b>		1-3/64	<b>6620067</b>	
9/16	<b>6620036</b>		1-1/16	<b>6620068</b>	
37/64	<b>6620037</b>		1-5/64	<b>6620069</b>	
19/32	<b>6620038</b>		1-3/32	<b>6620070</b>	
39/64	<b>6620039</b>		1-7/64	<b>6620071</b>	
5/8	<b>6620040</b>		1-1/8	<b>6620072</b>	
41/64	<b>6620041</b>		1-9/64	<b>6620073</b>	
21/32	<b>6620042</b>		1-5/32	<b>6620074</b>	
43/64	<b>6620043</b>		1-11/64	<b>6620075</b>	
11/16	<b>6620044</b>		1-3/16	<b>6620076</b>	
45/64	<b>6620045</b>		1-13/64	<b>6620077</b>	
23/32	<b>6620046</b>		1-7/32	<b>6620078</b>	
47/64	<b>6620047</b>		1-15/64	<b>6620079</b>	
3/4	<b>6620048</b>		1-1/4	<b>6620080</b>	
49/64	<b>6620049</b>		1-17/64	<b>6620081</b>	
25/32	<b>6620050</b>		1-9/32	<b>6620082</b>	
51/64	<b>6620051</b>		1-19/64	<b>6620083</b>	
13/16	<b>6620052</b>		1-5/16	<b>6620084</b>	
53/64	<b>6620053</b>		1-21/64	<b>6620085</b>	
27/32	<b>6620054</b>		1-11/32	<b>6620086</b>	
55/64	<b>6620055</b>		1-23/64	<b>6620087</b>	
7/8	<b>6620056</b>		1-3/8	<b>6620088</b>	
57/64	<b>6620057</b>		1-25/64	<b>6620089</b>	
29/32	<b>6620058</b>		1-13/32	<b>6620090</b>	
59/64	<b>6620059</b>		1-27/64	<b>6620091</b>	
15/16	<b>6620060</b>		1-7/16	<b>6620092</b>	
61/64	<b>6620061</b>		1-29/64	<b>6620093</b>	
31/32	<b>6620062</b>		1-15/32	<b>6620094</b>	
63/64	<b>6620063</b>		1-31/64	<b>6620095</b>	
			1-1/2	<b>6620096</b>	

## CATERPILLAR V-FLANGE END MILL HOLDERS

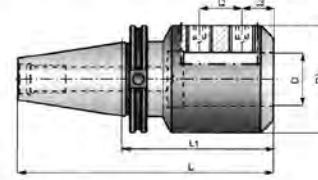
SERIES 655:

Taper No.	D	L <sub>1</sub>	L	L <sub>3</sub>	L <sub>2</sub>	D <sub>1</sub>	Holder Order No.	Price
40	3/16	2-1/2	5-3/16	9/16	-	3/4	7185411	
	1/4	2-1/2	5-3/16		-	13/16	1854113	
	1/4	4	6-11/16		-	13/16	1854114	
	5/16	2-1/2	5-3/16	25/32	-	7/8	1854115	
	5/16	4	6-11/16		-	7/8	1854117	
	3/8	2-1/2	5-3/16		-	1-3/8	7185412	
	3/8	5	7-11/16		-	1-3/8	1854122	
	7/16	2-1/2	5-3/16		-	1-1/4	1854123	
	1/2	2-5/8	5-5/16	7/8	-	1-3/4	7185413	
	1/2	5	7-11/16		-	1-3/4	7185417	
	5/8	3-3/4	6-7/16	15/16	-	1-3/4	7185431	
	5/8	5-1/2	8-3/16	15/16	-	1-3/4	7185437	
	3/4	3-3/4	6-7/16	1	-	1-3/4	7185441	
	3/4	5-1/2	8-3/16	1	-	1-3/4	7185447	
	7/8	4	6-11/16	1-1/16	7/8	2-3/64	7185451	
	1	4	6-11/16			2-31/64	7185461	
	1-1/4	4-1/8	6-15/16			2-3/4	7185471	
	1-1/4	6	8-11/16	1-1/8	1	2-3/4	7185475	
	1-1/2	4-5/8	7-5/16			3-9/64	7185481	
	1-1/2	6	8-11/16			3-9/64	7185485	
50	3/8	4-1/2	8-1/2	25/32	-	1-1/4	7185512	
		6-1/2	10-1/2		-		7185513	
	1/2	2-5/8	6-5/8		-		7185521	
		4-5/8	8-5/8	7/8	-	1-3/4	7185522	
		6-5/8	10-5/8		-		7185523	
	5/8	3-3/4	7-3/4		-		7185531	
		5-3/4	9-3/4	15/16	-	1-3/4	7185532	
		7-3/4	11-3/4		-		7185533	
	3/4	3-3/4	7-3/4		-		7185541	
		5-3/4	9-3/4	1	-	1-3/4	7185542	
		7-3/4	11-3/4		-		7185543	
	7/8	3-3/4	7-3/4		-		7185551	
		5-3/4	9-3/4	1-1/16	7/8	2-3/64	7185552	
		7-3/4	11-3/4				7185553	
	1	4	8				7185561	
		6	10	1-1/8	1	2-31/64	7185562	
		8	12				7185563	
	1-1/4	4	8				7185571	
	6	10	1-1/8	1	2-3/4	7185572		
	8	12				7185573		
1-1/2	4	8				7185581		
	6	10	1-1/8	1	3-9/64	7185582		
	8	12				7185583		
2	5-5/8	9-5/8				7185591		
	7-5/8	11-5/8	1-3/16	1-7/16	3-15/16	7185592		
	9-5/8	13-5/8				7185593		
2-1/2	6	10	1-3/16	1-7/16	4-1/4	7185595		



### DRAW BAR THREADS:

- CAT-40 5/8" - 11
- CAT-50 1" - 8



- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- End Mill Socket T.I.R. <0.0002".
- Through spindle coolant capability.
- Retention Knobs are sold separately.

## UNIVERSAL CNC TOOL TIGHTENING FIXTURES

SERIES 639:

### FEATURES:

- Multiple usage on tool holder tapers NMTB (ISO), CAT & BT as well as cylindrical tooling.
- Efficiently designed for maximum protection of tool holder.
- Enables strong gripping power of cutting tools.
- Compact design for mounting on work table or tool cart.
- Fixture No. 7189543 comes complete with 4 pc. set of inter-changeable adapters to cover tapers 30, 40 & 50.



Taper Size	H	K	L	d	Weight lbs.	Order No.	Price
40		3.0	6.7	1.69	12.5	7189400	
30, 40, & 50	8.0	4.5	9.5	2.83	36.0	7189543	

## CATERPILLAR V-FLANGE FACE MILL HOLDERS

SERIES 656:

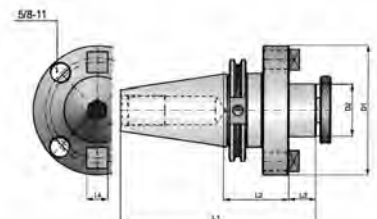
- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Shell Mill Pilot T.I.R. <0.0002".
- Holders have four mounting holes with 5/8 - 11 thread on a 4" bolt circle to hold 8" or larger Face Milling Cutters.
- Retention Knobs are sold separately.

### Draw Bar Threads:

- CAT - 40 5/8" - 11
- CAT - 50 1" - 8



Taper No.	Arbor Dia. D2	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	Drive Key L <sub>4</sub>	D <sub>1</sub>	Holder Order No.	Price
50	2	7.3	2.4	15/16	3/4	4-7/8	7182502	
	2	8.9	4	15/16	3/4	4-7/8	7182504	
	2-1/2	7.5	2.4	1-1/8	1	4-7/8	7182512	
	2-1/2	9.1	4	1-1/8	1	4-7/8	7182514	





## CATERPILLAR V-FLANGE ER COLLET CHUCKS AND SETS

SERIES 664:



- Produced according to AT3 specifications.
- Collet seat taper T.I.R. < .0002".
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Through spindle coolant capability.
- Retention Knobs are sold separately.

See page 548 for Collet Nuts and Wrenches



More chuck lengths & more sets available; please inquire.



17 pc. ER Collet Chuck Sets

Draw Bar Threads:  
CAT-40 5/8" - 11  
CAT-50 1" - 8

Sets include 15 collets  
1/8-1x16<sup>th</sup>, collet chuck  
and wrench in case.

Taper No.	ER Collet No.	Collet Clamping Range	d	L <sub>1</sub>	L	Chuck Order No.	Price
40	ER16	1/8-7/16	1.26	2.5	5.20	7188415	
				3	5.70	7188417	
	ER20	1/8-1/2	1.38	2.5	3.4	7188420	
				4	3.6	7188422	
	ER25	1/8-5/8	1.65	2.5	5.2	7188424	
				4	6.70	7188426	
	ER32	1/8-3/4	1.97	3	5.70	7188431	
				4	6.70	7188432	
	ER40	1/8-1	2.50	4	6.70	7188440	
				17 pc. Set		7188449	
50	ER40	1/8-1	2.50	4	8.00	7188543	
				17 pc. Set		7188549	

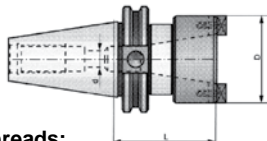
See pages 547 - 548 for COLLETS.

## CATERPILLAR V-FLANGE ADAPTERS, CAT-50 TO 40

SERIES 657:



- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Taper seat T.I.R. < 0.0002".
- Retention Knobs are sold separately.



Draw Bar Threads:  
CAT40 5/8" 11  
CAT50 1" 8

Taper No.	Taper No. Hole	L	D	d	Weight lbs.	Order No.	Price
50	40	3.150	3.46	.65	6.6	7184504	

## CATERPILLAR V-FLANGE DOUBLE ANGLE COLLET CHUCKS

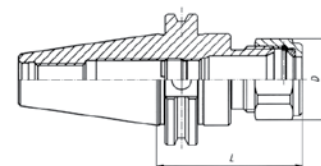
SERIES 654:



- Suitable for use with all DA180 Collets.
- Produced according to AT3 specifications.
- Collet seat taper T.I.R. < .0002".
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Through spindle coolant capability.
- Retention Knobs are sold separately.



Draw Bar Threads:  
CAT-40 5/8" - 11  
CAT-50 1" - 8



DA180 Collets

Taper No.	Collet Range	L	D Hex	Chuck Order No.	Price
CT 40	1/8-3/4	2.75	1.54	7193415	
		4		7193424	
CT 50	1/8-3/4	4	1.54	7193524	
		6		7193526	
		8		7193528	

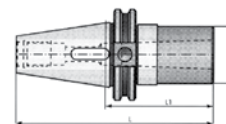
See page 544 for COLLETS.

## CATERPILLAR V-FLANGE MT ADAPTERS

SERIES 657:



- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Morse Taper Seat T.I.R. < 0.0002".
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Retention Knobs are sold separately.



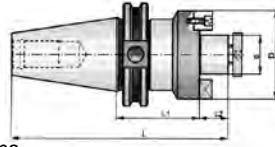
Draw Bar Threads:  
CAT-40 5/8" - 11  
CAT-50 1" - 8

Taper No.	MT Hole	D	L	L <sub>1</sub>	Order No.	Price
40	2	1-1/4	4-7/8	2-3/16	7183402	
	3	1-3/4	5-7/16	2-3/4	7183403	
	4	2	6-1/4	3-9/16	7183404	
50	2	1-1/4	6	2	7183502	
	3	1-5/8	6-1/2	2-1/2	7183503	
	4	2	7-3/8	3-3/8	7183504	
	5	2-3/4	7-3/4	3-3/4	7183505	



## CATERPILLAR V-FLANGE SHELL END MILL HOLDERS

SERIES 656:



- Produced according to AT3 specifications.
- Alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Shell Mill Pilot T.I.R. < 0.0002".
- Retention knobs are sold separately.

**Draw Bar Threads:**  
**CAT-40** 5/8" - 11  
**CAT-50** 1" - 8

Taper No.	d	L <sub>1</sub>	L	L <sub>2</sub>	D <sub>2</sub>	Holder Order No.	Price
40	1/2	1-3/8	4-5/8	9/16	1-3/8	7186403	
	3/4	1-3/8	4-3/4	11/16	1-49/64	7186405	
	1	2-1/16	5-7/16	11/16	2-11/64	7186407	
	1-1/4	2-1/8	5-1/2	11/16	2-33/64	7186409	
	1-1/2	2-13/16	6-1/32	15/16	3-5/64	7186411	
50	1/2	1-1/2	6-3/16	9/16	1-3/8	7186503	
		3-1/2	8-3/16			7186505	
		5-1/2	10-3/16			7186507	
	3/4	1-1/2	6-3/16	11/16	1-49/64	7186509	
		3-1/2	8-3/16			7186511	
		5-1/2	10-3/16			7186513	
	1	2	6-11/16	11/16	2-11/64	7186515	
		4	8-11/16			7186517	
		6	10-11/16			7186519	
	1-1/4	1-1/2	6-3/16	11/16	2-33/64	7186521	
		3-1/2	8-3/16			7186523	
		5-1/2	10-3/16			7186525	
	1-1/2	2-13/32	7-11/32	15/16	3-55/64	7186527	
		4	8-15/16			7186529	
		6	10-15/16			7186531	
2	2-13/32	7-11/32	15/16	3-55/64	7186533		
	4	8-15/16			7186535		
	6	10-15/16			7186537		

## CATERPILLAR V-FLANGE JACOBS TAPER HOLDERS

SERIES 658:



- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Jacobs Taper T.I.R. < 0.0002".
- Retention Knobs are sold separately.

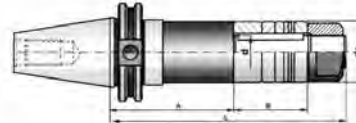
**Draw Bar Threads:**  
**CAT40** 5/8" - 11  
**CAT50** 1" - 8

Taper No.	Jacobs Taper	L	L <sub>1</sub>	L <sub>2</sub>	Order No.	Price
CT40	2	5.062	1.50	2.375	7181402	
	3	5.406		2.719	7181403	
	4	5.844		3.156	7181404	
	6	5.187		2.500	7181406	
CT50	33	5.187	2.500	7181433		
	3	6.718	2.719	7181503		
	4	7.157	3.156	7181504		
	5	7.375	3.375	7181505		
	6	6.500	2.500	7181506		
	33	6.500	2.500	7181533		

## CATERPILLAR V-FLANGE STUB ARBOR HOLDERS

SERIES 659:

- Shank taper accuracy AT3 or better.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Face is held perpendicular to centerline within 0.0002".
- Pilot diameter is sized for precision fit with cutter and is keyed for positive drive.
- Heavy duty locking RH nut and 5 arbor spacers are included - 1/16", 1/8", 1/4", 3/8", 3/4". For more spacers see page 549.
- Retention Knobs are sold separately.



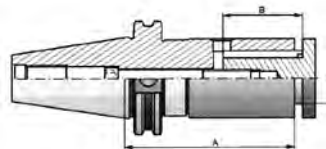
**Draw Bar Threads:**  
**CAT-40** 5/8" - 11  
**CAT-50** 1" - 8

Taper No.	Arbor Dia. d	A	d <sub>1</sub>	L	B	Order No.	Price
40	1	4	1-1/2	7.0	2	7191410	
	1-1/4	4	1-3/4	7-1/4	2	7191415	
	1-1/2	4	2-1/8	7-1/2	2	7191420	
50	1	4	1-1/2	7.0	2	7191510	
	1	6	1-1/2	9.0	2	7191515	
	1-1/4	4	1-3/4	7-1/4	2	7191520	
	1-1/4	6	1-3/4	9-1/4	2	7191525	
	1-1/2	4	2-1/8	7-1/2	2	7191530	
	1-1/2	6	2-1/8	9-1/2	2	7191535	

## CATERPILLAR V-FLANGE SEMI FLUSH SLITTING SAW HOLDERS

SERIES 659:

- Shank taper accuracy AT3 or better.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Face is held perpendicular to centerline within 0.0002".
- Designed for slitting saws up to 5/16" thick. For wider cutters use Stub Arbor Holder.
- Pilot diameter is sized for precision fit with cutter and is keyed for positive drive.
- Semi-flush nose cap gets in tight areas.
- Retention Knobs are sold separately.



**Draw Bar Threads:**  
**CAT-40** 5/8" - 11  
**CAT-50** 1" - 8

Taper No.	Arbor Dia.	A	B	Order No.	Price
40	5/8	4	1.77	7192405	
	1	4	1.77	7192410	
	1-1/4	4	1.77	7192415	
50	1	4	1.77	7192510	
	1	6	3	7192515	
	1-1/4	4	1.77	7192520	
	1-1/4	6	3	7192525	

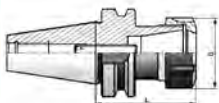
## BT FLANGE ER COLLET CHUCKS AND SETS

SERIES 989:

- Suitable for use with all ER Collets.
- Produced to AT3 specifications.
- Collet seat taper T.I.R. < .0002".
- Alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Through spindle coolant capability.



17 pc. ER Collet Chuck Sets  
Sets include 15 collets  
1/8-1x16"<sup>h</sup>,  
collet chuck and  
wrench in case.



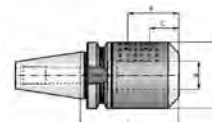
Draw Bar Threads:  
BT-40 M16 x 2  
BT-50 M24 x 3

Taper No.	Collet No.	Collet Range	L	D		Chuck Order No.	Price
BT 40	ER 25	3/64-5/8	2.36	1.65		7178425	
	ER 32	1/8-3/4	2.75	2.00		7178432	
	ER 40	1/8-1	2.75	2.50		7178442	
	ER 40	1/8-1	2.75	2.50	17 pc. Set	7178449	
BT 50	ER 32	1/8-3/4	2.75	2.00		7178532	
	ER 40	1/8-1	3.15	2.50		7178542	
	ER 40	1/8-1	3.15	2.50	17 pc. Set	7178549	

See pages 547 - 548 for collets.

## BT FLANGE END MILL HOLDERS

SERIES 988:

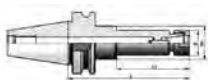


- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- End Mill Socket T.I.R. < 0.0002".
- Through spindle coolant capability.

Taper No.	d	L	D	C	B	Order No.	Price	
40	3/16	2.50	.78	.56	-	7179402		
	1/4	2.50	.78	.56	-	7179404		
	5/16	2.50	.87	.72	-	7179407		
	3/8	2.50	1.12	.75	-	7179411		
	3/8	4.00	1.12	.75	-	7179415		
	1/2	2.50	1.50	.88	-	7179421		
	1/2	4.00	1.50	.88	-	7179425		
	5/8	2.50	1.62	.94	-	7179431		
	5/8	4.00	1.62	.94	-	7179435		
	3/4	2.50	1.75	1.00	-	7179441		
	3/4	4.00	1.75	1.00	-	7179445		
	7/8	3.50	2.17	1.00	1.81	7179451		
	1	3.50	2.38	1.00	2.00	7179461		
	1	5.00	2.38	1.12	2.12	7179465		
	50	3/8	3.00	1.12	.75	-	7179511	
		1/2	3.00	1.50	.88	-	7179521	
5/8		3.00	1.62	.94	-	7179531		
3/4		3.00	1.75	1.00	-	7179541		
1		4.00	2.48	1.00	2.00	7179561		
1-1/4		4.00	2.69	1.00	2.00	7179571		
1-1/2		4.00	2.88	1.00	2.00	7179581		
2		5.00	3.62	1.38	2.88	7179591		

## BT EXTENSION TYPE COLLET CHUCKS

SERIES 989:

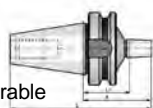


Taper No.	Collet No.	Collet Range	L	L <sub>1</sub>	D	D <sub>1</sub>	Chuck Order No.	Price
BT 40	ER 16	1/32-25/64	3.94	-	1.10	-	7178414	
			5.91	3.35	1.10	1.57	7178416	
BT 50	ER 16	1/32-25/64	3.94	-	1.10	-	7178514	
			5.91	3.35	1.10	1.57	7178516	

## BT FLANGE JACOBS TAPER HOLDERS

SERIES 991:

- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Jacobs Taper T.I.R. < 0.0002".
- Retention Knobs are sold separately.

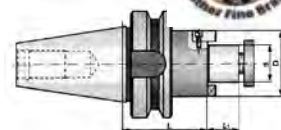


Taper No.	Jacobs Taper	L <sub>1</sub>	B	L	Order No.	Price
BT40	2		2.4	4.95	7175402	
	3		2.7	5.28	7175403	
	4	1-1/2	3.15	5.73	7175404	
	6		2.5	5.07	7175406	
	33		2.5	5.07	7175433	
BT50	3		3.2	7.2	7175503	
	4	2	3.65	7.6	7175504	
	6		3.0	7.0	7175506	
	33		3.0	7.0	7175533	

## BT FLANGE SHELL END MILL HOLDERS

SERIES 990:

- Produced according to AT3 specifications.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 and ground to ensure maximum accuracy.
- Shell End Mill Pilot T.I.R. < 0.0002".
- Through spindle coolant capability.



Taper No.	d	D	L	L <sub>1</sub>	Order No.	Price
40	1/2	1.18	1-3/4	.56	7176403	
	3/4	1.50	2	.69	7176405	
	1	1.73	2	.69	7176407	
	1-1/4	2.08	2-1/4	.69	7176409	
	1-1/2	2.48	2-1/4	.92	7176411	
50	3/4	1.5	2-1/4	.69	7176509	
	1	1.73	2-1/4	.69	7176515	
	1	1.73	4	.69	7176517	
	1	1.73	6	.69	7176519	
	1-1/4	2.08	2-1/2	.69	7176521	
	1-1/4	2.08	4	.69	7176523	
	1-1/4	2.08	6	.69	7176525	
	1-1/2	2.48	2-1/2	.92	7176527	
	1-1/2	2.48	4	.92	7176529	
	1-1/2	2.48	6	.92	7176531	
2	3.07	2-1/2	.94	7176533		
	3.07	4	.94	7176535		

