

Wizard® Quick-change Chucks and Collets

COST
CUTTING
TOOLS



TOOL **FABRICATION** CORPORATION

1 **800** 790 TOOL (8665)

www.toolfab.com

2940 NORTH 117TH STREET PO BOX 26248 MILWAUKEE, WI 53226

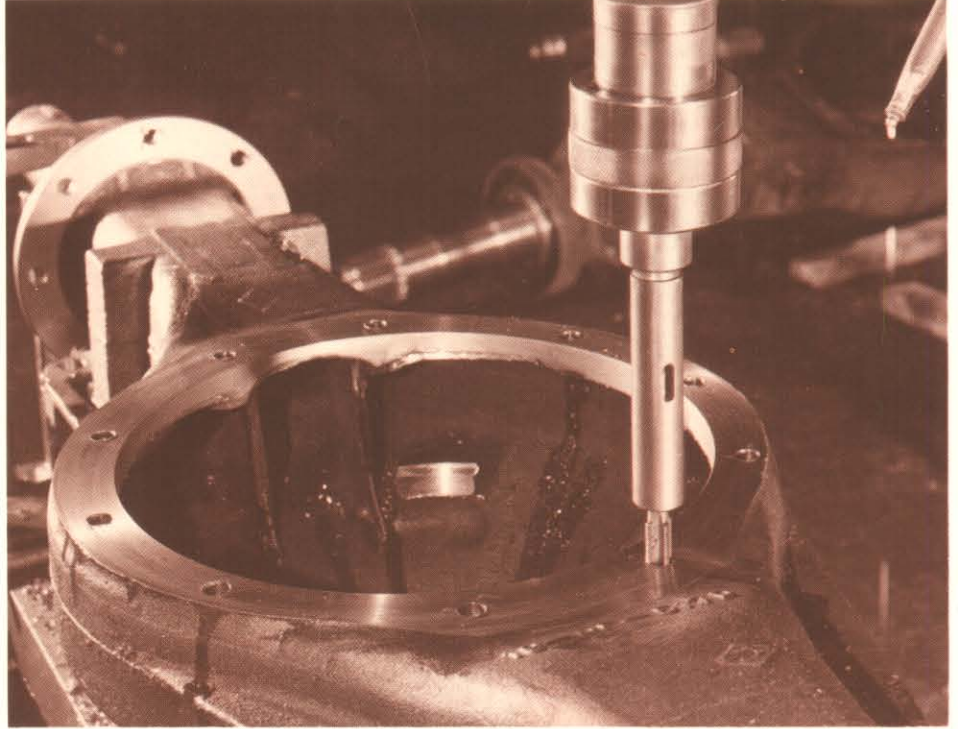
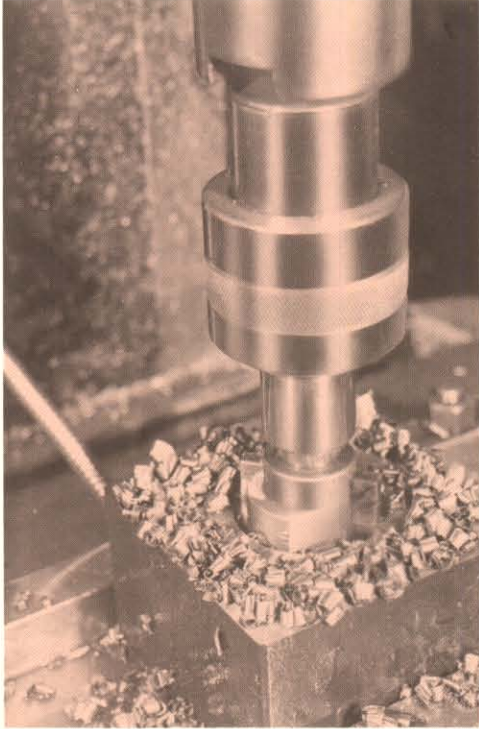
phone 414.453.5030 fax 414.453.5650

Bulletin No. 21-C

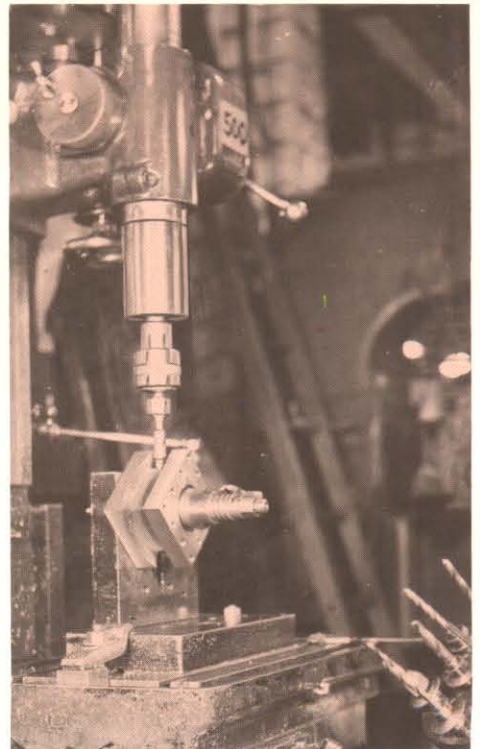
osky

**McCrosky
Wizard®**
quick-change
chucks and collets

Typical
Installations

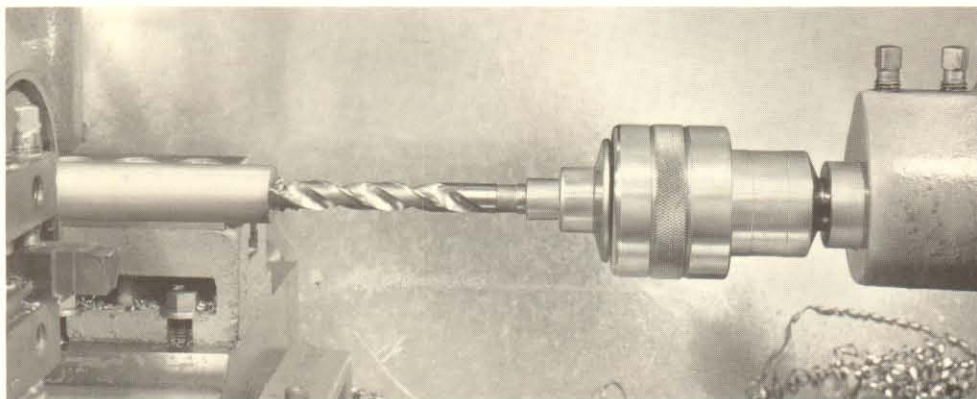
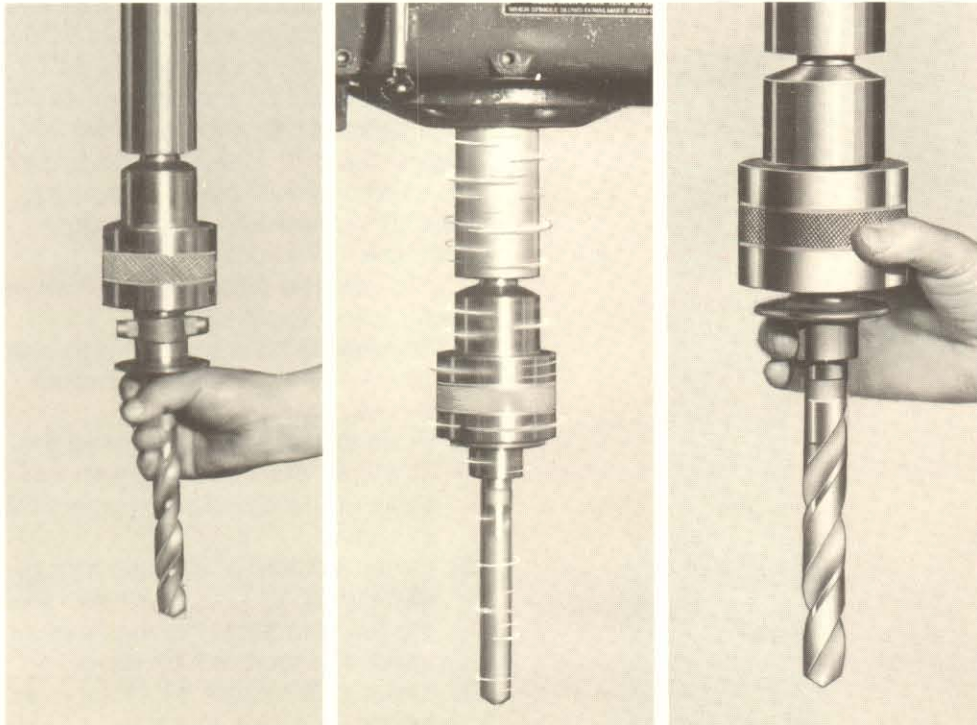


Typical installations of Wizard
quick-change chucks and collets



Advantages and construction features

Operating views; inserting tool — running — removing tool.



McCrosky's Wizard quick-change chucks add stations to turret lathes.

Tools held rigidly and centered in vertical or horizontal position

Since the collet bears partly on the bevel in the bottom of the chuck and partly on the ground surface between the driving lugs and the flange — an exclusive feature of Wizard design — the collet and tool are automatically centered and held rigidly in position. This permits the use of Wizard quick-change chucks and collets not only

vertically as in drill presses, etc., but also horizontally in lathes when desired.

To release the collet, the operator simply grips the knurled collar of the chuck *lightly* with his thumb and fore-finger and partially rotates it. This motion forces the collar back against the spring, disengages the latches, and permits the collet to drop down into his fingers — see views above.

McCrosky's Wizard quick-change chucks enable an operator to insert a new tool into a chuck, disengage that tool when desired, and insert the next tool, easily and quickly. Thus multiple-tool jobs become continuous, increasing production and cutting costs.

Exclusive shop-proved design

The chuck portion of a Wizard quick-change assembly consists of the body and the spring-operated locking collar. Both are hardened and ground to ensure extreme accuracy and efficient service.

The bottom of the bore in the chuck body is beveled to correspond with the bevel on the end of the collet, and two slots are provided to engage the driving lugs on the collet, permitting the driving force to be transmitted directly from the chuck to the collet.

The locking collar, which serves simply to lock the collet into the chuck and permit easy disengagement, is spring operated. It is knurled on the outside and has two inside latches.

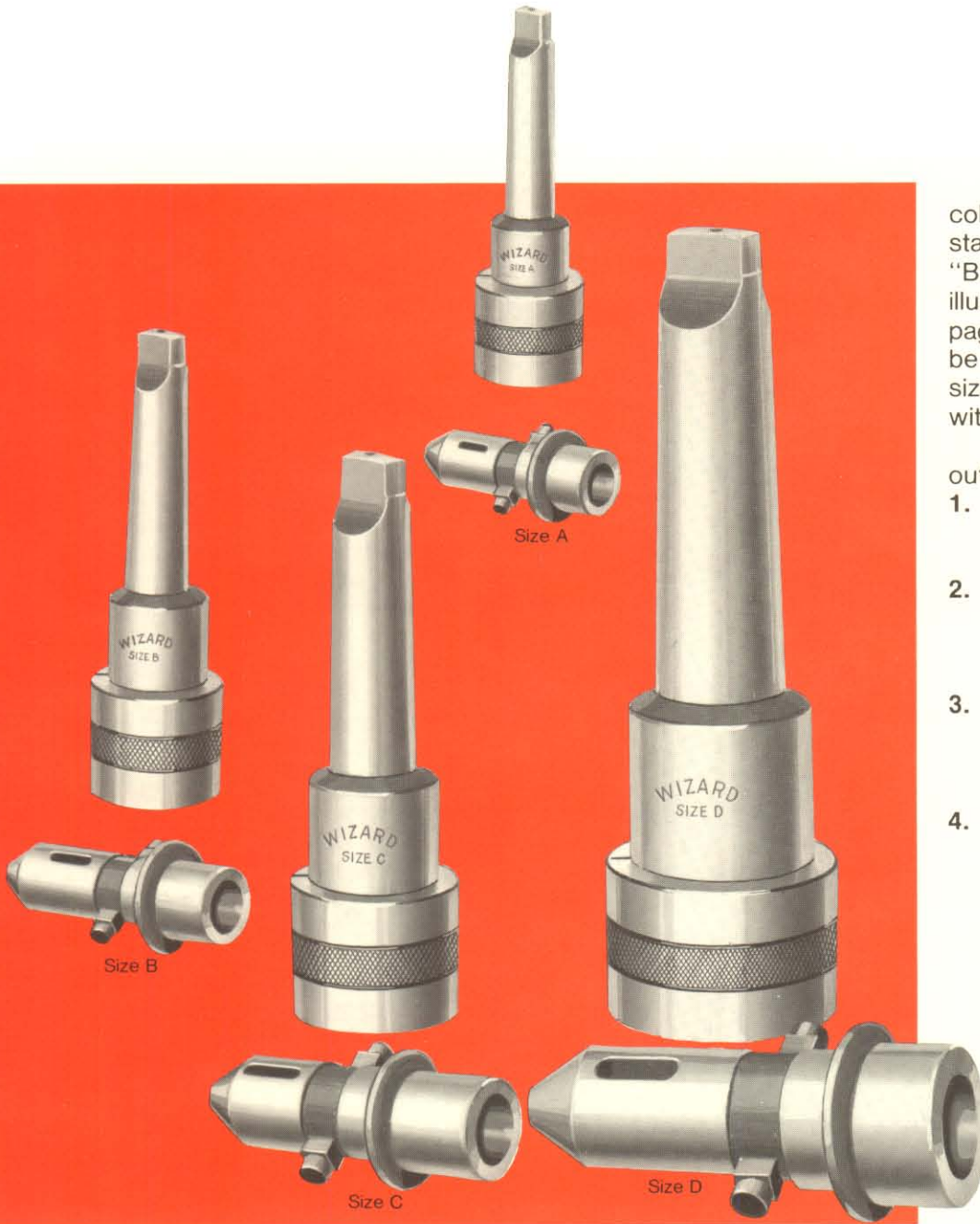
When the operator pushes the Wizard collet with the new tool into the chuck, the driving lugs on the collet press against the underside of these latches forcing the collar backward against the spring. As the collet passes completely into the chuck body, the spring closes the collar and locks the collet securely in the chuck. (See views below.)



Views show action of the latches as the collet is raised into the chuck.

McCrosky
Wizard®
 quick-change
 chucks & collets

How to select...



Wizard quick-change chuck and collet assemblies are available in four standard sizes, known as the "A", "B", "C" and "D" assemblies, see the illustration at left, and the tables on pages 4 and 5. Size "A" collets can be used only with size "A" chucks; size "B" collets can be used only with size "B" chucks, etc.

To select a Wizard quick-change outfit, follow these steps:

1. Determine the maximum size of the shanks on the tools you expect to use.
2. From the table below, select the smallest-size collet that will hold tools of the shank size determined in step 1.
3. Order a chuck of corresponding identity (A, B, C or D) whose shank fits the spindle of the machine on which the tools will be used.
4. Order collets from information and tables on pages 5 and 6.

The accompanying illustration shows the relative sizes of Wizard chucks and collets.

Specifications for ordering Wizard quick-change chucks

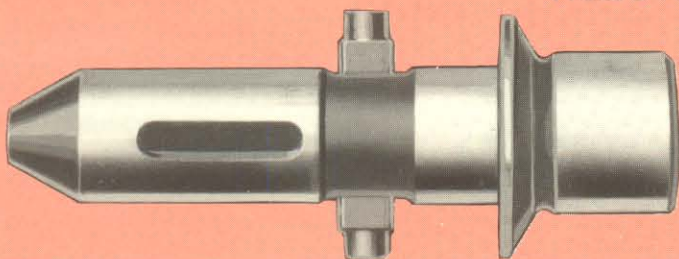
Size identity of chuck	Size of Morse taper shank	Diameter of hole in chuck (in.)	Outside diameter of chuck collar (in.)	Size identity of collet	Size of Morse taper sockets for No. 3 collets
A-2 A-3	2 3	15/16	2-3/16	A	Nos. 1, 2
B-3 B-4	3 4	1-1/4	2-25/32	B	Nos. 1, 2, 3
C-4 C-5	4 5	1-11/16	3-1/2	C	Nos. 1, 2, 3, 4
D-5 D-6	5 6	2-3/8	4-11/16	D	Nos. 3, 4, 5

NOTE:
 All chucks listed are standard stock items with Morse taper shanks for right hand rotation and push cuts. Chucks with shanks having tapers other than those shown, chucks with straight shanks, chucks with blank shanks to be machined to size in your plant and pull-drive, back-facing or nose-drive chucks can be furnished when desired on special order.

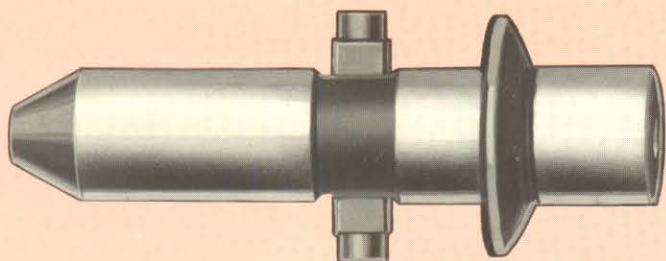
WIZARD collets for use with quick-change chucks are illustrated on pages 5 and 6.

McCrosky Wizard®

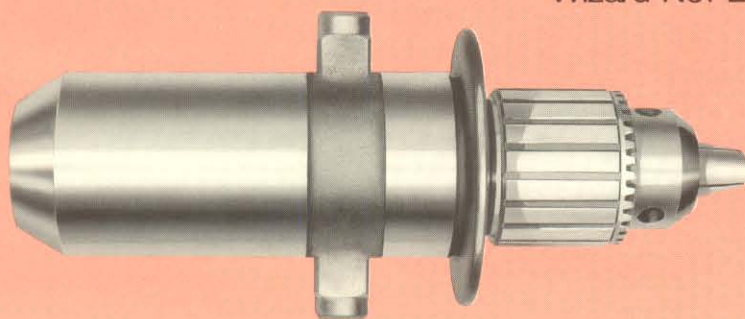
No. 3, No. 2, and No. 23 quick-change collets



Wizard No. 3 Collets are used in 85 to 90% of all WIZARD chuck installations. These collets are drop forged, machined, hardened, and ground to close tolerance for long, efficient service. Furnished in "A", "B", "C" and "D" sizes for use with tools with Morse taper shanks from No. 1 to No. 5.



Wizard No. 2 Collets are furnished blank, carburized but not hardened, in "A", "B", "C" and "D" sizes, for fitting to the tool by the purchaser. After the blank collet has been fitted to the tool, the collet should be hardened by heating to 1500°F and quenching in water. The bearing surface between the driving lugs and the flange — which is furnished oversize — should then be ground to finished diameter (.937 inches for the "A" size; 1.249 inches for the "B" size; 1.686 inches for the "C" size; and 2.374 inches for the "D" size) to fit these respective chucks.



Wizard No. 23 Collets are fitted with Jacobs chucks, and are intended for use with straight-shank tools. Standard No. 23 collets fitted with Jacobs chucks for tool shanks within the range of diameters listed in the table below are carried in stock. No. 23 collets fitted with Jacobs chucks for straight-shank tools with larger diameters than listed below can be furnished on special order.

Specifications for ordering Wizard quick-change collets

Style	Size A	Size B	Size C	Size D	Collets take tool shank with:
No. 3 collets	A-31	B-31	C-31	—	No. 1 Morse taper
	A-32	B-32	C-32	—	No. 2 Morse taper
	—	B-33	C-33	D-33	No. 3 Morse taper
	—	—	C-34	D-34	No. 4 Morse taper
	—	—	—	D-35	No. 5 Morse taper
No. 2 blank collets	A-20	B-20	C-20	D-20	To be fitted
No. 23 collets	A-23	B-23	—	—	0-3/8 straight shank
	—	—	C-23	D-23	0-1/2 straight shank

McCrosky Wizard®

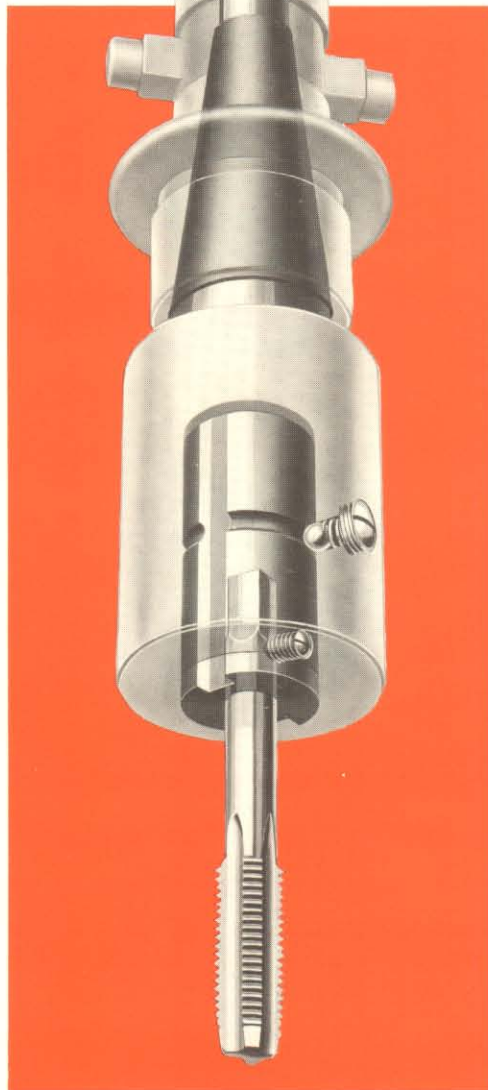
No. 8 friction drive tapping collets

Wizard No. 8 tapping collets mount directly in standard "A", "B", "C" and "D" quick-change chucks (see table on page 4) and thus permit high-speed tapping — without danger of tap breakage — to be combined into a continuous, efficient sequence with drilling and reaming.

As illustrated in the phantom view at right, the hand or pipe tap mounts in a bushing and is held with a screw that bears against a flat on the shank, permitting the tap to be driven by the square end. The bushing in turn is keyed into a recess in the base of the tapered plug and floats in the plug.

Friction is adjustable to suit tap size

The body of the No. 8 collet is taper reamed and the tapered hole is fiber lined to permit the drive from the collet body to be passed to the tapered plug by friction. The differential nut at the top of the through plug is adjustable; it permits the amount of friction imparted from the collet to the plug to be varied to suit the pull of different sizes of taps. When a tap strikes an obstruction, a rough place in the metal or the bottom of a blind hole, the friction drive slips and the through plug, bushing and tap stop turning. Also, if the spindle should be



retracted too rapidly in backing out a tap, the ball (under spring tension) that retains the bushing in the plug will slip, permitting the tap and bushing to be drawn out of the recess in the plug, preventing damage to the tap, bushing or the work.

Wizard No. 8 friction driven tapping collets can be used with hand taps up to 1-1/2 inches in diameter and pipe taps up to 1-1/4 inches in diameter.

Each size of tap requires its own individual bushing — Tap driven by square end.



Specifications for ordering Wizard No. 8 collets, without bushings

No. 8 COLLETS				RECESS IN BASE OF PLUG	
Size A	Size B	Size C	Size D	I.D. (in.)	Holds Bushing Reference No.
A-55	B-55	C-55	—	3/4	55-T or 550-T
A-56	B-56	C-56	—	1-1/8	56-T or 560-T
	B-57	C-57	D-57	1-3/4	57-T or 570-T

Instructions for resetting the friction on No. 8 collets will be found on page 11.

NOTE:
All bushings listed are standard stock items designed to hold taps with shank and square dimensions that conform to standards approved by American Standards Association. Special bushings for taps with shanks other than standard, including metric-size taps, can be furnished special to order; specify the decimal diameter of shank and width of square.

Bushings for use with No. 8 collets

HARDENED READY-TO-USE BUSHINGS				ANNEALED BLANK BUSHINGS (To be fitted by user)	
Bushing		Fitted to ONE size only of the following standard taps		Bushing	
Reference No.	O.D. (in.)	Hand taps (in.)	Pipe taps (in.)	Reference No.	O.D. (in.)
55-T	3/4	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2	1/8	550-T	3/4
56-T	1-1/8	3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8	1/8, 1/4, 3/8, 1/2	560-T	1-1/8
57-T	1-3/4	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-1/2	1/8, 1/4, 3/8, 1/2, 3/4, 1, 1-1/4	570-T	1-3/4

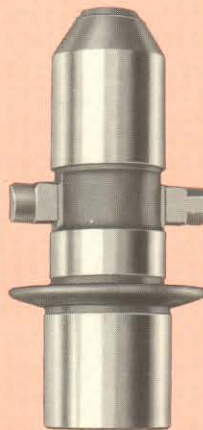
When ordering bushings for WIZARD No. 8 collets, be sure to specify the quantity desired, the bushing reference number, the size of tap each bushing is to hold, and the reference number of the A, B, C, or D collet with which the bushing is to be used.

No. 22 and No. 24 positive drive tapping collets

As a general rule, when tapping mild steel with proper coolant, a size "A" No. 8 collet provides sufficient friction to pull hand taps up to 1/2 inch and 1/8 inch pipe taps; the size "B", hand taps up to 7/8 inch and pipe taps up to 1/4 inch; the size "C", hand taps up to 1-1/4 inches and pipe taps up to 3/4 inch; the size "D", hand taps up to 1-1/2 inches and pipe taps up to 1-1/4 inches. This rule may vary somewhat with the type of thread and the hardness of the metal.

Each different size of standard hand or pipe tap has a different size of shank and square end. Consequently, the hole in the tap bushing can fit just one size of tap. The bushings are not interchangeable from one size of tap to another. Three different sizes of tap holding bushings, 3/4 inch O.D., 1-1/8 inches O.D. and 1-3/4 inches O.D. respectively, are required to cover the entire range from 1/8-inch to 1-1/2-inch taps — and the No. 8 collets to fit the A, B, C and D chucks are furnished to hold one or another of these three sizes of bushings.

When ordering a No. 8 friction drive tapping outfit, select the bushings (by reference number) from the lower table on page 6 and — from the upper table — the No. 8 collet that will hold the bushing and fit the chuck size required by your other tools.



Wizard No. 22 positive drive tapping collets are recommended for use with hand taps larger than 1-1/2 inches and pipe taps larger than 1-1/4 inches. Each collet is fitted to take only one size of tap. The tap is driven by the square end and has a slight float in the collet. A screw in the side of the collet bears against the round of the shank and retains the tap in the collet.

No. 22 collets are built special to order. When ordering, be sure to specify the tap size and size identity of WIZARD chuck each collet is to fit. If the tap is not standard, give the decimal diameter of the shank and width of the square.

Wizard No. 24 positive drive tapping collets are designed to accommodate either standard 56 or 57-T bushings. Thus one collet with a set of bushings will take several size taps — maximum 1-1/2 inches in hand tap and 1-1/4 inches in pipe tap.

When ordering No. 24 collets be sure to specify size of the WIZARD chuck the collet is to fit, whether the collet is to take 56 or 57-T bushings, and the tap size and quantity of the bushings required. See table on page 6 for standard bushings available from stock.

McCrosky WIZARD friction safety tap holders permit high speed tapping — safely — in minimum space. They save taps, prevent work spoilage, speed production, and can be mounted directly in the drill press spindle, in the turret or tail stock of a lathe or in a No. 3 quick-change collet of suitable size. See the table on page 5.

The construction of WIZARD tap holders is simple — there are only five main parts. The tap is mounted in a bushing and is driven by the square end. The bushing is keyed into a barrel that is tapered top and bottom, and floats in the barrel. The top taper of the barrel fits into a fiber-lined cup in the body. The bottom taper of the barrel fits into a separate fiber-lined cup. A tongue-and-slot connection transmits the drive to the two cups which are drawn together by a differentially threaded collar so that the drive is imparted to the tapered barrel by friction. The large, compact frictional area provides a powerful drive that can be adjusted sensitively, by turning the narrow collar by hand or with a spanner wrench, to suit the pull of different sizes of taps. Consequently, when a tap strikes an obstruction, the tapered barrel bushing and tap stop turning. Also, if the tap holder should be retracted too quickly, the ball (under spring tension) that retains the bushing in the tapered barrel will slip, permitting the bushing to be drawn



out of the tapered barrel and preventing damage to the tap, bushing or the work.

Each tap requires its own bushing, see table below. These are furnished in three sizes to fit the three sizes of tapered barrels. When ordering, first determine the size of tap that will be used, and select the tap holder and bushing indicated in the table.

Specifications for ordering Wizard friction safety tap holders

TAP HOLDERS WITHOUT BUSHINGS				BUSHINGS		
Size No.	Morse taper size of shank	Maximum diameter (in.)	Length exclusive of shank (in.)	O.D. (in.)	Fitted to ONE size only of the following standard taps	
					Hand taps (in.)	Pipe taps (in.)
155-2 155-3	No. 2 No. 3	2-1/2	2-1/4	3/4	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2	1/8
156-3 156-4	No. 3 No. 4	2-7/8	2-9/16	1-1/8	3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8	1/8, 1/4, 3/8, 1/2
157-4 157-5	No. 4 No. 5	3-3/4	2-7/8	1-3/4	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-1/2	1/8, 1/4, 3/8, 1/2, 3/4, 1, 1-1/4

NOTE:
All bushings listed are standard stock items designed to hold taps with shank and square dimensions that conform to the standards approved by the American Standards Association. Bushings for tap holders are interchangeable with those for No. 8 friction-drive collets, listed on page 6. Special bushings for taps with shanks other than standard can be furnished special to order; specify the decimal diameter of shank and width of square.

Tap holders with straight shanks can be furnished on special order. When ordering bushings, specify size number of holder each is to fit, and size of tap each is to take.

**McCrosky
Wizard®**
quick-change
chucks and collets

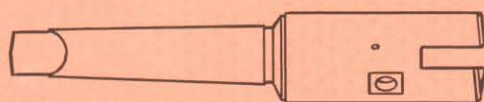
Repair parts

Parts for
Wizard chucks

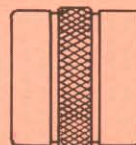
When ordering specify:

1. whether they are
for Size A, B, C or D
chucks.

2. number of
Morse taper shank if
body is required.



BODY



COLLAR



SPRING



BODY PIN

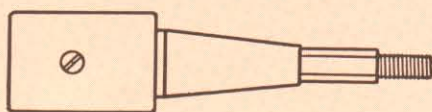


COLLAR PIN

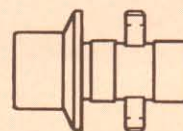
Parts for Wizard
No. 8 friction-drive
tapping collets

When ordering specify:

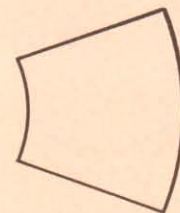
whether for Size A — 55
or 56; B — 55, 56 or 57;
C — 55, 56 or 57; D — 57



PLUG



BODY



FIBER LINER



KEY



OUTSIDE
NUT



WASHER



INSIDE
NUT

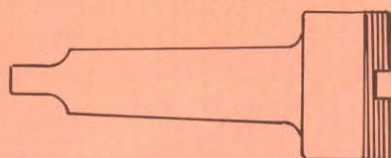


BUSHING RETAINER
ASSEMBLY

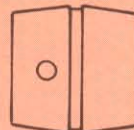
Parts for Wizard
safety tap holders

When ordering specify:

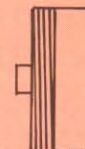
whether for Size No.
155-2; 155-3; 156-3; 156-4;
157-4; 157-5



SHANK



BARREL



SLEEVE



NUT



FIBER LINER
(1 Pair required)

Wizard chucks

Removing and replacing collars

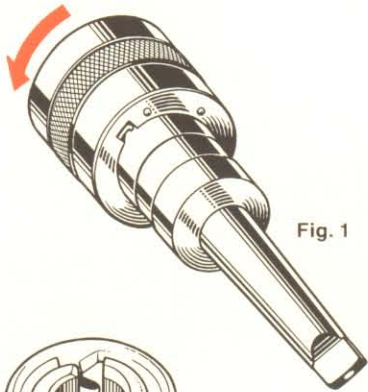


Fig. 1

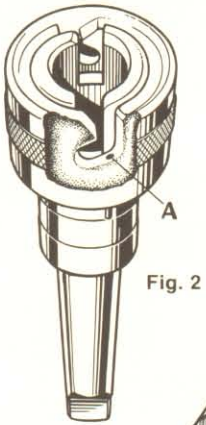


Fig. 2

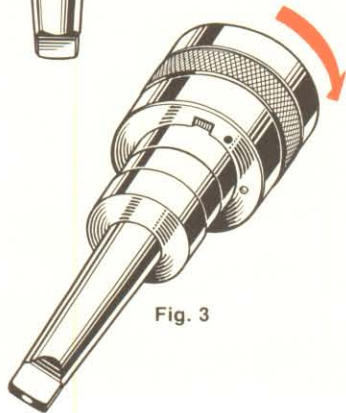


Fig. 3

To remove collar: Grip the tang of the chuck in a vise, horizontally. Turn the collar in the direction shown in Fig. 1 until the end of the spring is seen in the slot. Pry the end of the spring from the hole in the body with a small screwdriver. Insert a small punch in hole (A), shown in Fig. 2 and drive out the pin. Turn the collar in the direction shown in Fig. 3 until the square pin is in alignment with the slot; then withdraw the collar from the body.

To remove spring: Drive out the remaining pin in the collar. This pin is notched to receive a punch. The spring is now free and can be pried out with a screwdriver.

To replace spring: Work the spring into its groove, starting the end with the small bend first and prying each coil into place with a screwdriver. Place the small bent end between the two pin holes and insert the notched pin in the hole farthest from the square slot in the correct position to permit its being driven out again.

To replace collar: Grip the tang of the chuck vertically in a vise and start the collar onto the body. Lift the projecting end of the spring to clear the body. Keep the slot in the collar in alignment with the square pin in the body. When the collar is firmly shouldered against the square pin, turn it in the direction shown in Fig. 3 until the spring snaps into the hole in the body. Then turn the collar in the direction shown in Fig. 1 as far as possible and insert the pin in hole (A), shown in Fig. 2.

Wizard friction-drive

Resetting friction

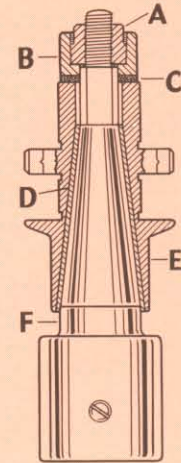


Fig. 1

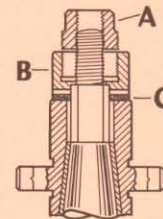


Fig. 2

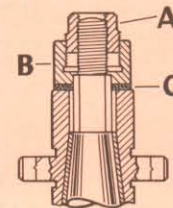


Fig. 3

- A—Inside-nut
- B—Outside-nut
- C—Fiber washer
- D—Fiber liner
- E—Body
- F—Taper plug

Collets

These cross-sectional views show the essential parts of a Wizard friction-drive collet. Friction can be adjusted exactly to the desired amount, easily and accurately by simply tightening or loosening the differential nut at the top of the collet. The coarse thread on the upper end of the taper plug engages the inside-nut "A". The fine thread on the outside of the inside-nut engages the outside-nut "B". This combination of coarse and fine thread produces a powerful and very sensitive differential action. The fiber washer "C" separates the outside-nut from the body.

Fig. 1 on page 10 shows the relative position of the outside and inside nuts after repeated tightening to offset wear and compression of the fiber lining "D". Friction has been increased as much as possible with this setting of the nuts because the inside-nut has bottomed on the outside-nut. However, by resetting the nuts and using the following described procedure, the friction can be renewed many times more before it is necessary to replace the fiber liner.

First, unscrew the inside-nut "A" until it is clear of the outside-nut "B" — see Fig. 2, — and position the outside-nut about 1/32 inch above the fiber washer. Then screw the inside-nut into the outside-nut. The 1/32 inch clearance permits the inside-nut to screw into the outside-nut the proper distance before applying friction — see Fig. 3 — and the gap between the inside-nut and the outside-nut indicates the additional adjustment that can be made before it is again necessary to reset the nuts. The friction setting should be checked on the job to determine the exact amount of friction required. Any needed adjustment can be made easily and quickly by simply tightening or loosening the inside-nut "A". When resetting the nuts no longer renews the friction, a new fiber liner should be installed between the body and the plug. It is also advisable to renew the fiber washer "C" when it becomes worn.

Wizard tap holders Adjusting friction

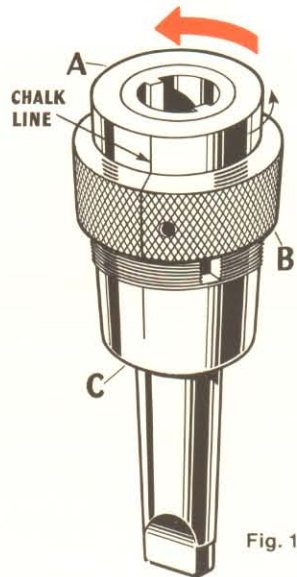


Fig. 1

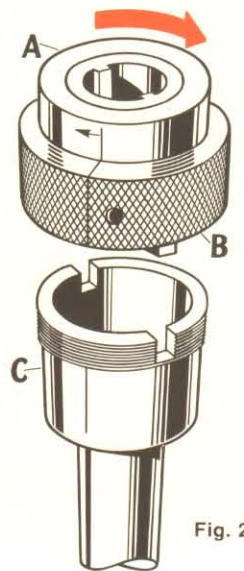


Fig. 2

First operation: Referring to Fig. 1, grip the shank of the holder in a vise, vertically, and turn the collar "B" in the direction indicated by the arrow. Just as "B" screws off "C", chalk a line on "A", "B" and "C", as indicated.

Second operation: Referring to Fig. 2, holding "B" in the same relative position to "C" as it was at the end of the first operation, turn "A" 180° in the direction indicated by the arrow. Re-assemble "B" on "C" after making sure that the thread of "B" starts on "C" in the same position as when removed in the first operation, using the chalked lines as a guide.

If the holder has been properly adjusted, several threads on "C" will remain exposed when friction has been set reasonably tight. The friction setting should be checked on the job to determine the exact amount of friction required and any needed adjustment can be made quickly and easily — without removing the holder from the machine — by simply tightening or loosening the collar "B".

When friction can no longer be renewed by the adjusting operations described above, the holder should be completely disassembled and new liners installed. When it has been reassembled and collar "B" has been tightened, three or four threads of "C" should show below "B". If these threads do not show, the parts are not in proper position, and the holder should be reassembled properly in accordance with the directions above.

Cut it with the best...

**COST
CUTTING
TOOLS**

Jack-Lock[®] milling cutters

Face mills, shank and shell end mills, half-side and staggered-tooth milling cutters fitted with high-speed-steel, super high-speed or carbide-tipped blades. Sizes from 3 inches to 24 inches in diameter to meet any milling requirement. Write for bulletin.



Zip[®] indexable milling cutters

Cutters with a serrated locking wedge provide positive locking, yet permit easy release for re-indexing. One-piece body is of hardened steel. Complete range of designs, including shell, half-side and face mills. Sizes from 1-1/2-inch to 24-inch diameters. Write for bulletin.



Multiple-operation tools

McCrosky "Specials" combine two or more related boring, facing, chamfering or reaming operations into a single tool — do them all simultaneously — with just one tool — and one set-up, — assuring accurate alignment of all surfaces, saving time and cutting costs. Engineered by McCrosky to your work prints.



Super[®] adjustable reamers

Complete line includes chucking reamers with straight or tapered shanks, shell reamers with tapered holes for standard arbors or large straight holes for line bar reaming. Shop-proved. Stock sizes from 15/16 inch to 6 inches in diameter. High-speed or carbide-tipped blades. Write for bulletin.



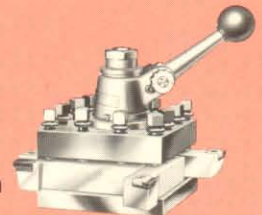
Block type boring bars

An individually ground-and-hardened tapered V-key centers the block and cutting blades accurately and rigidly, yet permits easy release for regrinding and floating with extreme accuracy when making finishing cuts. High-speed or carbide-tipped blades. Straight or tapered shank with or without pilots. Blocks 1 inch to 15 inches in diameter. Write for bulletin.



Turret tool posts

These tool posts permit successive tools to be swung into cutting position quickly, indexed accurately, in any of 12 different indexing positions, and locked rigidly, giving engine lathes many of the advantages of turret lathes or other specialized machines. Five styles — 9 sizes. Write for bulletin.



McCrosky

MCT-1134 Litho in U.S.A.

McCrosky Tool Corporation, Meadville, Pa. 16335 • (814) 337-3291