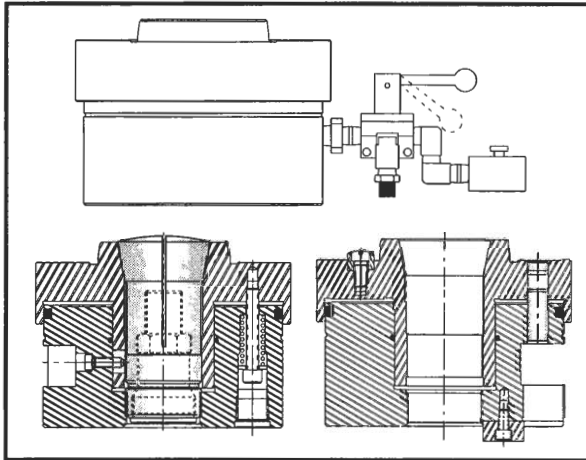


16C Collet Block for Light to Medium Duty Mills



General Requirements and Operating Conditions

- 50-100 PSI air pressure required (recommend 85 PSI – filtered & lubricated).
- 11/16" (17.46mm) keys used on bottom of unit.
- 1/8" NPT male fitting required for hookup. Suggest quick disconnect fittings.
- Use Anti-Seize lubricant on collet and spindle angle as well as the back-bearings when running with water soluble coolants or machining long run jobs dry. If using oil-based coolants anti-seize lubricant is not usually required.
- Standard 16C collet stops cannot be used with the 16C Collet Block. A special collet stop is required (part number: 2193-00-00-0000).
- Keep milling cutters sharp and do not exceed proper machining depth of cut.
- Extreme chatter during cut can lead to seizure of the fixture. This is especially prevalent on large diameter parts.
- Do not actuate fixture without a collet in place. The collet must also have the proper sized part in the collet bore.

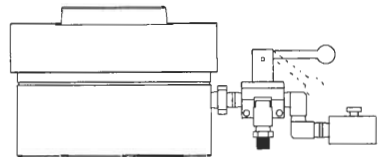
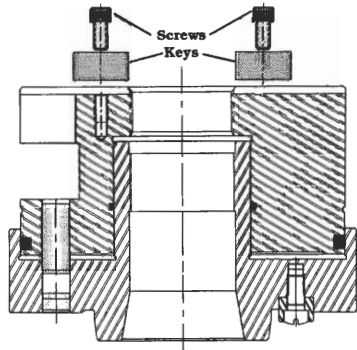
Table of Contents

Description	Page
Assembly and Disassembly instructions	4,5,6
Dead-Length® Collets	4
Expanding Collet Usage	4
Mounting A2-5"-16C Adapter	4
Mounting – Collets & Step Chucks	3
Mounting – Mill Table	2
Parts List	6
Setting the Stop Assembly	2

Setup and Operating Instructions when using 16C Collets

Mounting unit to mill table

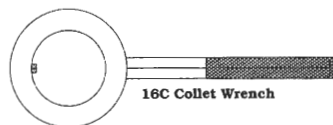
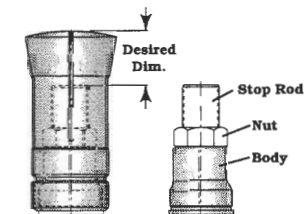
- 11/16" (17.46mm) keys are supplied with the fixture. Mount the keys using the furnished cap screws. If the slots in mill table are greater than or less than the furnished keys, you must alter furnished keys or make special keys to fit.
- Assemble the valve and fittings to the collet block. These were not assembled to the fixture to prevent damage in shipping.
- Bolt the fixture to the bed of the machine using T-bolts and nuts not supplied with fixture.
- Hook up the air supply. We suggest quick disconnect fittings and a filter and lubricator.



Use 5 micron or smaller air filter

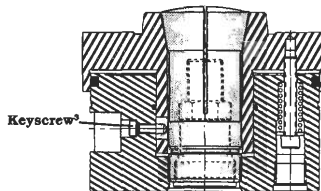
Stop Setting

- The stop has to be mounted into the 16C collet before inserting the collet into the collet block.
 - Determine the distance desired from the face of the stop rod to the face of the collet.
 - The stop rod can be machined to conform to the part requirements.
 - Adjust the stop rod to the desired dimension and lock the jam nut.
 - While holding the 16C collet with a collet wrench, tighten the stop assembly against the collet using a 3/8" hex wrench.



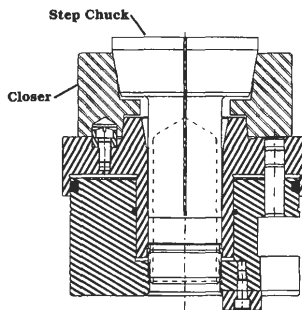
Mounting the Collet

- Thread the collet into the collet block using a face wrench until the collet taper contacts the mating spindle taper.
- Slowly back out the collet until the collet keyway (in line with the Hardinge name on the collet) lines up with one of the three keyscrews in the collet block. Slowly turn the collet back and forth while turning in the keyscrew to make certain it mates properly with the keyway. If this is not done, the key screw will lock on the collet bearing diameter and damage it.
- Put the part to be gripped into the collet. Close the collet by moving the actuation valve handle down.
- Check the height of the part. If height is not correct, the collet must be removed from the collet block and the stop assembly readjusted accordingly.
- Check the opening and closing of the collet with the part in place.
 - If the collet does not open enough to get the part in or out, loosen the keyscrew, back the collet out 1/3 turn to the next keyscrew location and tighten keyscrew into the collet keyway.



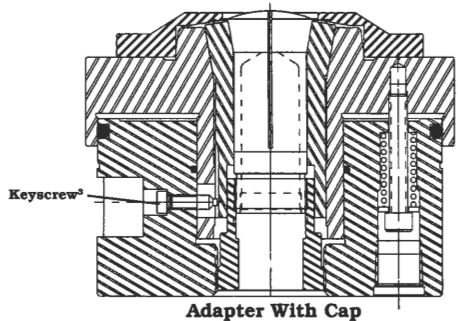
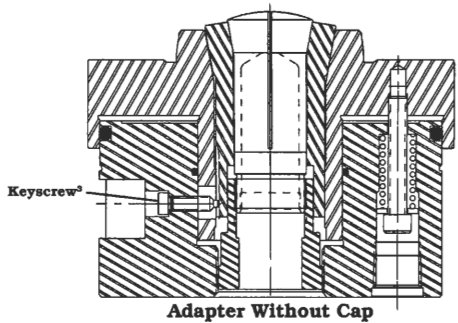
Mounting and Operating Instructions for Step Chucks and Closers

- Mount the proper size step chuck closer on the spindle nose and secure it with four 7/16"-14 TPI by 1" cap screws.
- Thread the step chuck into the fixture until closing angle on the step chuck contacts the closing angle on the closer.
- Back out to line up the step chuck's keyway (in line with the Hardinge name on the collet) with one of the three keyscrews in the collet block. Slowly turn the step chuck back and forth while turning in the keyscrew to make certain it mates properly with the keyway. If this is not done, the key screw will lock on the bearing diameter and damage it.
- Put the part to be gripped into the step chuck. Close the step chuck by moving the actuation valve handle down.
- Check the opening and closing of the step chuck with the part in place.
 - If the step chuck does not open enough to get the part in or out, loosen the keyscrew, back the step chuck out 1/3 turn and tighten the keyscrew.



Mounting and Operating Instructions for 16C to 5C Spindle Adapter

- Assemble the 5C collet into the adapter body per instructions which came with the adapter.
- Thread the collet and adapter into the fixture until closing angle on the adapter contacts the closing angle on the spindle. A 5C Face Spanner wrench is required (Part # 7899-00-00-000000).
- Back out to line up the spindle adapter's keyway (in line with the Hardinge name on the adapter) with one of the three keyscrews in the collet block. Slowly turn the adapter back and forth while turning in keyscrew to make certain it mates properly with the keyway. If this is not done, the key screw will lock on the adapter and damage it.
- Put the part to be gripped into the 5C Collet. Close the collet and adapter by moving the actuation valve handle down.
- Check the opening and closing of the 5C Collet with the part in place.
 - If the Collet does not open enough to get the part in or out, loosen the key-screw, back the adapter out 1/3 turn and tighten the keyscrew.



- NOTE:** Use of the retaining cap that bolts to the spindle nose is optional.
- If during long runs the 5C collet and adapter bushing stick together (collet does not open) the cap can be bolted to the spindle nose to ensure that the adapter bushing travels up and down with the spindle, allowing the collet to open.
 - The Adapter and the 5C Collet must be removed to change the 5C Collet.
 - The Standard 5C Solid Stop can be used.

Using Expanding Collets with the 16C Collet Block

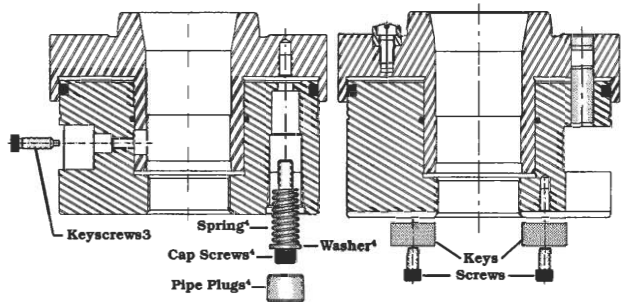
- Draw Plug style expanding collets normally used with fixed spindles will not have their usual length control feature when used with the 16C Collet Block because of its moving spindle and stationary collet.

Dead-Length® Collets are not used with the 16C Collet Block

- The standard collet is stationary in the 16C Collet Block. The workpiece will not move lengthwise even though the chucking diameter varies. The part has to locate against a shoulder in the collet or against a collet stop. Therefore, special Dead-Length® Collets are not necessary.

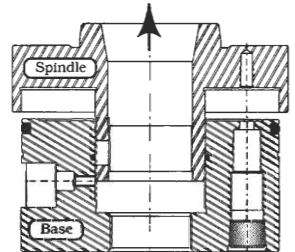
Disassembly and Re-Assembly of Collet Block

- Unhook air line.
- Remove collet block from machine.
- Remove two keys in bottom of the collet block.
- Remove all three key-screws.
- Remove 4 pipe plugs on bottom of unit.
- Remove four 5/16"-24TPI x 2" long cap screws, four washers and four springs.



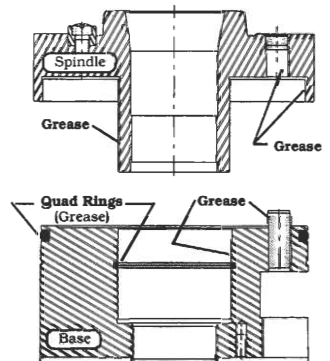
Separating the Spindle from the Base:

- This is most easily done by temporarily replacing the four pipe plugs in the bottom, hooking up the air supply and then VERY SLOWLY adding air pressure until the spindle lifts off the base.
- Shut the air off and disconnect the air supply line and remove the pipe plugs.
- Carefully pull the spindle out of the base, making sure not to get it cocked.



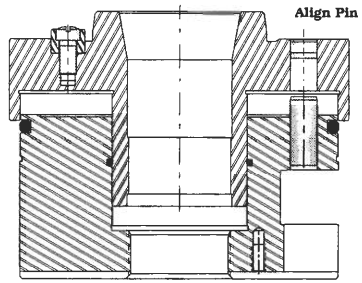
Cleaning – Reconditioning – Greasing

- Check the condition of the two quad-rings.
 - One on the outside of the base
 - One on the inside of the base.
 - Replace if worn or torn. Coat each quad-ring with Mobil #28.
- Carefully check all sliding surfaces for any chips, dings, etc. Remove them before reassembly.
- Check sliding surfaces for any signs of "Galling" (a copper colored discoloration).
 - If there are any signs of galling, clean off grease and remove the discoloration with fine Scotchbrite®.
- Double check that there are absolutely no chips or contaminants on the inside of the assembly.
 - Reapply grease very liberally (Mobil 28 or equivalent) to the sliding surfaces between the spindle and the base, the 1/2" dowel, and both quad-rings. The inside of the dowel pin hole in the spindle must be liberally coated with grease.



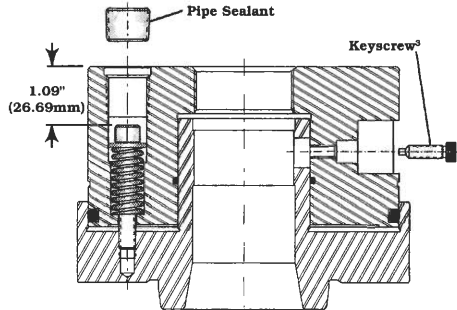
● **Re-Assemble the Spindle & Base**

- Visually orient the dowel pin in the base with the mating hole in the spindle.
- Lower spindle into base being extremely careful not to cock spindle off center.
 - Push down until quad-ring contact.
 - Push down firmly to get past quad-rings.
 - Turn spindle until dowel pin and mating hole align.
 - Continue pushing to fully bottom spindle in the base.

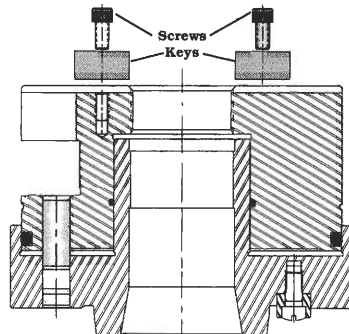


● **Flip assembly over**

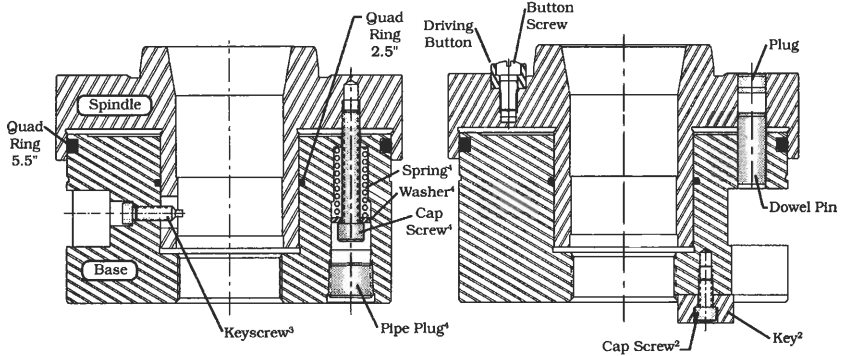
- Put four washers on the four 5/16"-24TPI x 2" socket head cap screws.
- Put four springs over the screws.
- Replace screws with the washers and springs on them into the holes in the base.
- Tighten all four bolts until the head of the screw is 1.09" (27.69mm) from the face of the base.
- Put pipe sealant on the four pipe plugs and replace them in the base.
- Replace all three keyscrews.
 - Thread into base until shoulder of screw contacts counter-bore in the base. Back all three out approximately 3 turns.



- Replace keys on the bottom.
- Bolt fixture to machine and reconnect the air line.

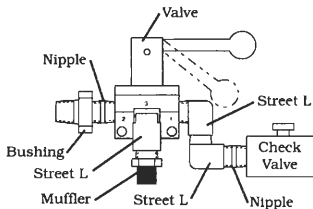


Main Assembly Parts List



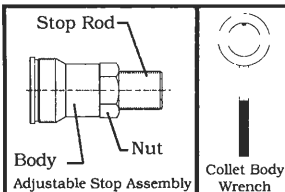
Description	Qty	Part number	Description	Qty	Part number
16C Collet Block Assembly -Including the following: Quad Ring (5.5 ID 3/16 CS)	1	2185-00-00-000000	Button Screw	1	A2-0011920-S
Spindle	1	2189-00-00-000000	Plug	1	2199-00-00-000000
Keyscrew	3	2191-00-00-000000	Std Dowel (1/2" x 1-1/4")	1	CE-0050125
Quad Ring (2.5 ID 3/32 CS)	1	CE-0011151414	Base	1	2187-00-00-000000
Cap Screw (5/16-24TPI x 2")	4	100732	Washer (5/16")	4	37-0000672
Spring (.625 OD, .087 wire)	4	CE-0000625	Pipe Plug (1/2"-14)	4	TM-0006992
Driving Button	1	A2-0011920	Key	2	HV-0004121-01
			Cap Screw (1/4-20 x 1/2")	2	100608
			Mobil 28 Grease	0	CS-10994

Valve Assembly Parts List



Description	Qty	Part number
Pipe Sealant	0	LT-0010884-S
Nipple (1/8" NPT)	1	NC-0003519
Valve	1	CE-0001111A025
Check Valve	1	CE-0011452
Street L (90° 1/8" NPT)	3	CT-000770901
Muffler	1	CT-0011335
Bushing (1/4" to 1/8")	1	AUA-0010785

Adjustable Stop Assembly Parts List



Description	Qty	Part number
Adjustable Stop Assembly	1	2193-00-00-000000
Stop Body	1	2195-00-00-000000
Nut (1"-20TPI)	1	1185-00-00-000000
Stop Rod (1"-20TPI x 4")	1	2197-00-00-000000
Collet Body Wrench	1	CC-11759
16C Face Wrench (Not Shown)	1	7901-00-00-000000

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Litho in USA
November 1994