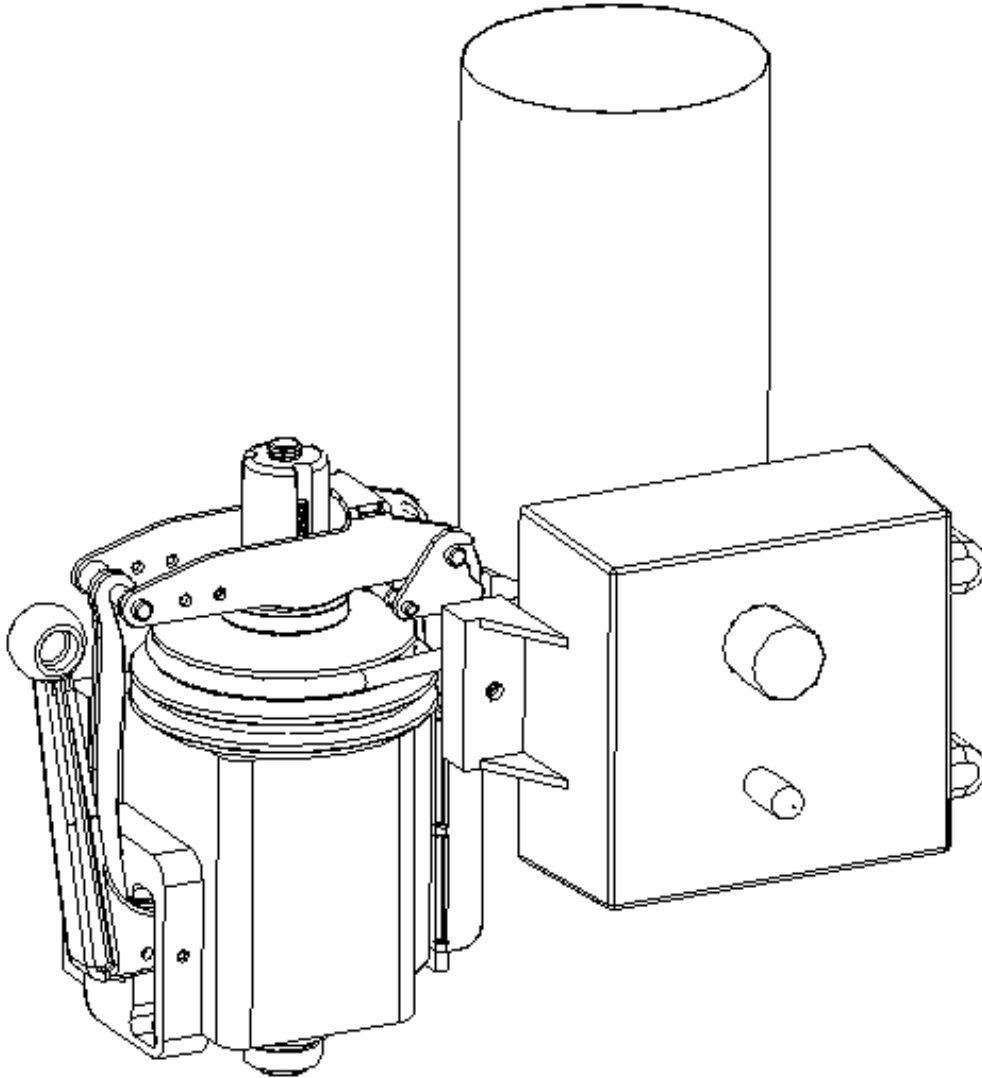


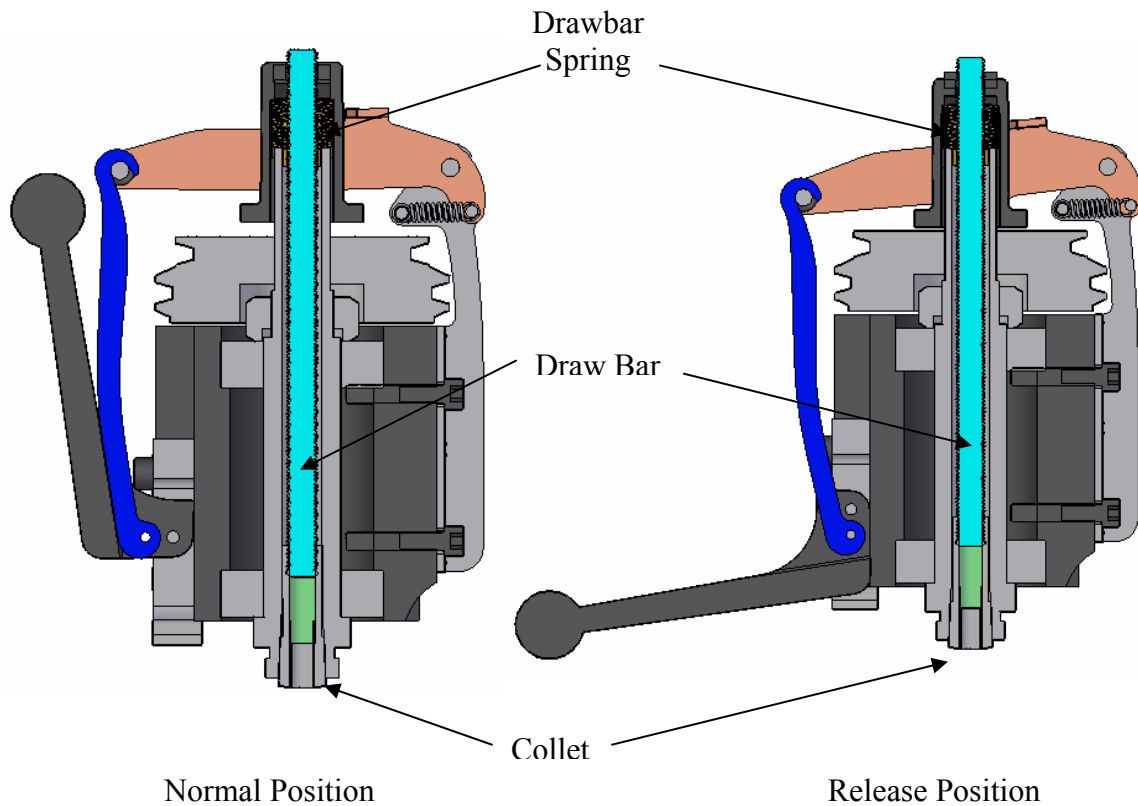
**Home Shop Accessories Inc.**  
**WWW.HSACC.COM**  
**Louisville, KY**

**Quick Release Tooling Mechanism for Miniature Machine Tools**



## Features and Function

The function of the quick release device is fairly straightforward. The drawbar is coupled to a powerful spring, which pulls upward against the spindle, keeping constant force on the collet. The QC mechanism pushes directly against the back of the collet when you activate the release lever, forcing the collet out of the spindle nose. The quick release mechanism is a compound lever that takes a light force applied over a long distance and turns it into a large force applied over a very small distance.

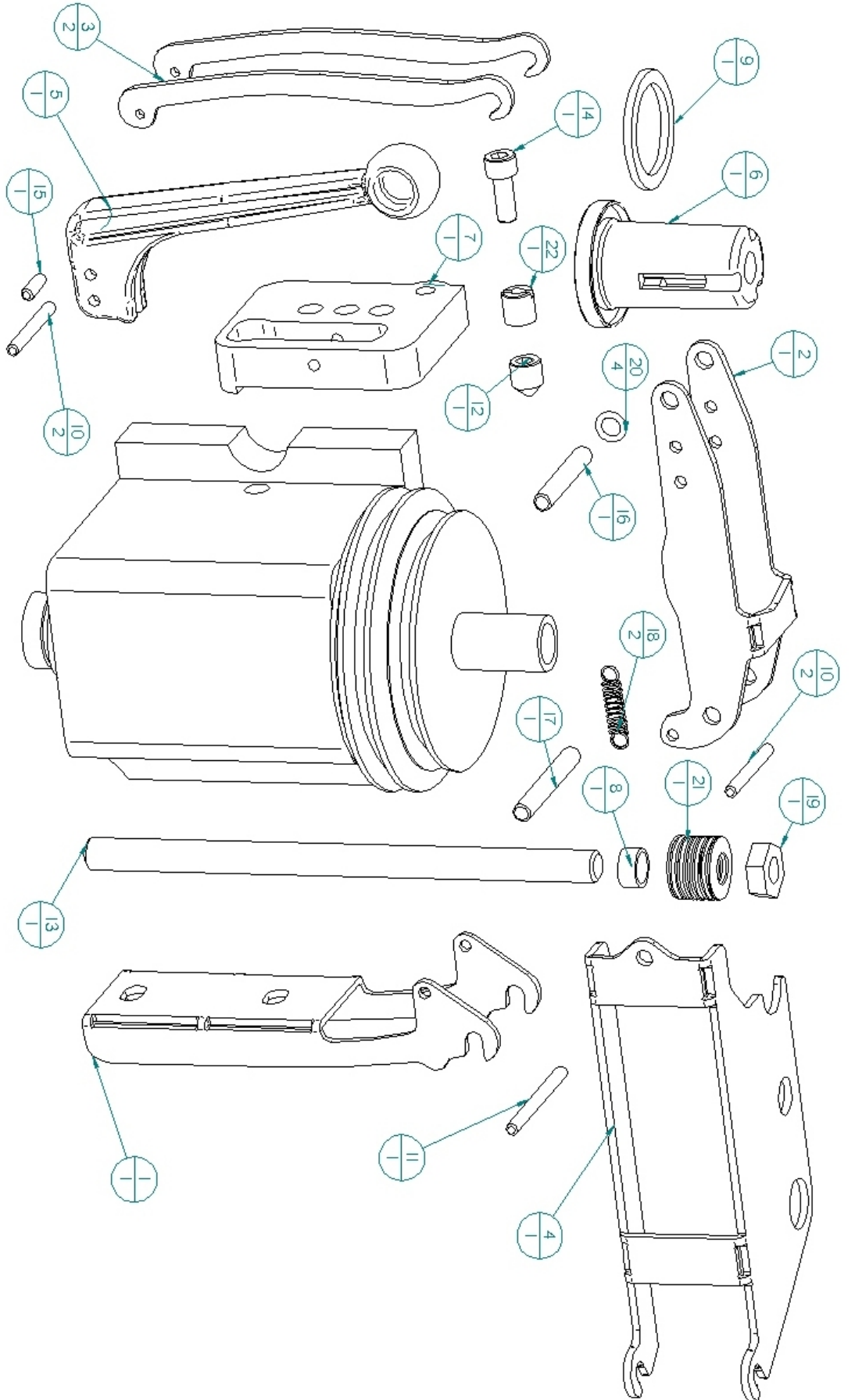


### Features of the HSA Quick-Release System

- Installed in minutes with no machining and no modifications to the original machine.
- Tools required are simply and allen wrench, screwdriver, snips, file, and a pair of pliers.
- Once installed, can be removed in seconds to accommodate original tooling, lathe threading attachment, custom setups, etc.
- Can be used with a mills or lathes, and with MT1 or WW collets, and quick-change tool holders (additional purchase required for WW or QC toolholders)
- Mechanism is simple and self-contained, only two individual assemblies to install
- Expandable to semi-automatic or full-automatic operation (expansion kit required)

# Parts List and Exploded View

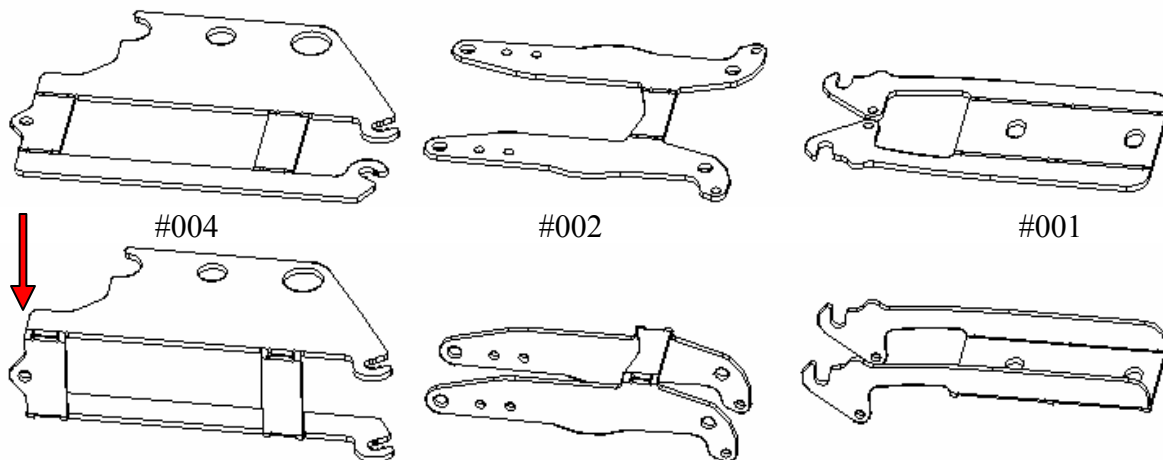
| Item | Title               | Part # | Qty. | Item | Title                | Part #       | Qty. | Item | Title                | Part #       | Qty. |
|------|---------------------|--------|------|------|----------------------|--------------|------|------|----------------------|--------------|------|
| 1    | Main Bracket        | HSA001 | 1    | 9    | Thrust Washer        | HSA009       | 1    |      |                      |              |      |
| 2    | Actuator Lever      | HSA002 | 1    | 10   | Dowel, 1/8" x 1.25"  | MCM98381A476 | 2    | 17   | Dowel, 3/16" x 1.5"  | MSC06023154  | 1    |
| 3    | Connecting Rod      | HSA003 | 2    | 11   | Dowel, 1/8" x 1.5"   | MCM98381A478 | 1    | 18   | Return Spring        | MSC06813703  | 2    |
| 4    | Motor Bracket       | HSA004 | 1    | 12   | 5/16 Set Screw       | MSC02315950  | 1    | 19   | Drawbar Nut 5/16     | MSC07921714  | 1    |
| 5    | Lever, Plastic      | HSA005 | 1    | 13   | Drawbar              | MSC04354320  | 1    | 20   | O-ring Retainer      | MSC09260068  | 4    |
| 6    | Spring Cup, Plastic | HSA006 | 1    | 14   | 10-32 x 7/8" SHCS    | MSC05498084  | 1    | 21   | Spring Belleville    | MSC060482072 | 1    |
| 7    | Lever Mount         | HSA007 | 1    | 15   | Dowel, 1/8" x 3/8"   | MSC06022032  | 1    | 22   | 5/16" x 10-32 Insert | MSC82025560  | 1    |
| 8    | Drawbar Bushing     | HSA008 | 1    | 16   | Dowel, 3/16" x 1.25" | MSC06023121  | 1    |      |                      |              |      |



# Instructions for assembly of Quick Release system

## Part 1 Remove and bend sheet metal parts, assemble components

1. You have received your sheet metal laser cut parts all on one sheet. Using a pair of wire cutters, snip the small retaining tabs and remove the parts from the sheet.
2. File the burs from the cut area of the parts
3. Following the diagrams below, bend the parts exactly as shown in the diagram. Part #001 and Part #002 can be bent either way without a problem, but be careful bending part #004. If it is bent the wrong way you may not be able to re-bend it without breaking it.

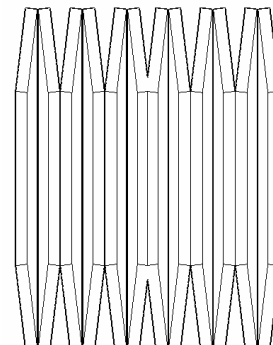
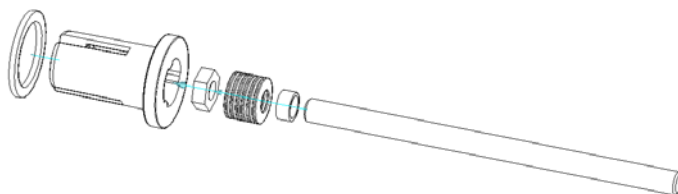


4. The parts are designed to bend at the laser cut joints. You should be able to easily bend the parts by hand using the sharp edge of a flat surface and a pair of stout pliers. Bend the parts slowly till all the joints are a nice 90-degree bend. A small misalignment is nothing to be concerned about. Small adjustments can be made during assembly.



Note: If you want to paint your parts it's easy to do now after bending and before assembly!!

5. Thread the drawbar bushing #008 onto the drawbar. Insert the drawbar nut into the inside hex recess of the spring cup (part #006). Stack the Belleville springs inside the spring cup as shown. The easiest way to do this is to insert a small diameter Allen wrench inside the spring cup and drop the Belleville springs into the cup one pair at a time. The springs must be oriented as shown or the mechanism will not function properly. You should have six pairs of Belleville springs.

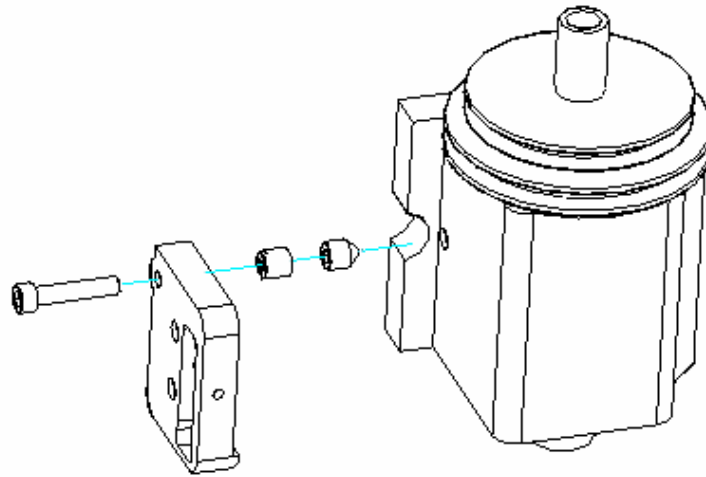


Spring Arrangement

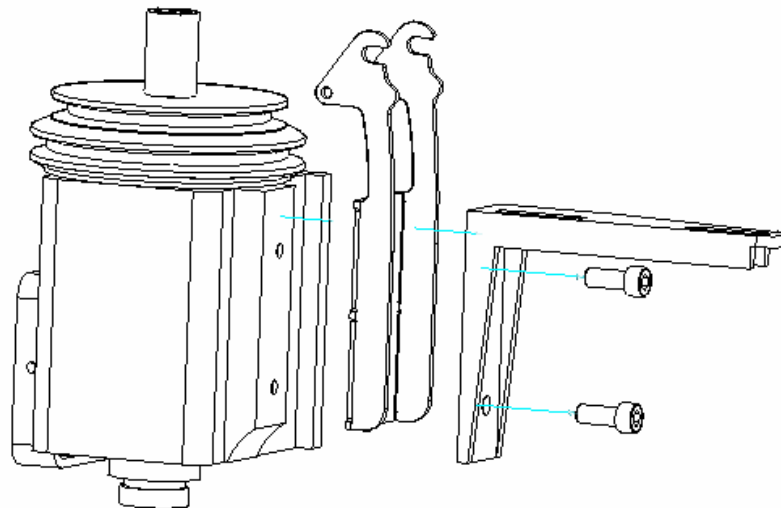
# Instructions for installation of the Quick Release system

## Part 2 Disassemble Sherline Motor, Install brackets.

1. Turn off spindle, and un-plug AC power. If you have a CNC system, disable power to the motor drivers so that the machine will not move unexpectedly during installation of the quick release system.
2. Remove the Sherline motor and motor mounting bracket
3. Disassemble the plastic belt cover and motor speed control. Set aside the two halves of the plastic belt cover. This will be replaced with a new motor mount assembly.
4. Remove the 5/16" cone point setscrew which holds the headstock to the Z axis milling column and replace it with the identical, shorter, cone point set screw provided. Tighten the setscrew firmly.



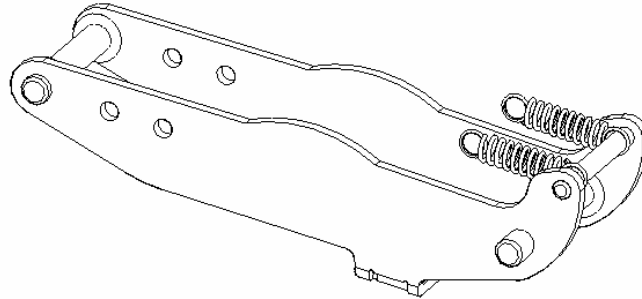
5. Insert and tighten the 5/16" to 10-32 threaded adaptor screw into the same hole as the headstock mounting screw.
6. Place the part #007 Lever Mount along the side of the headstock and fasten (as shown above) with the 10-32 socket head screw provided.
7. Place the Part #001 Main Bracket against the headstock on the opposite side and fasten the original Sherline motor mounting bracket and the main bracket together as shown.



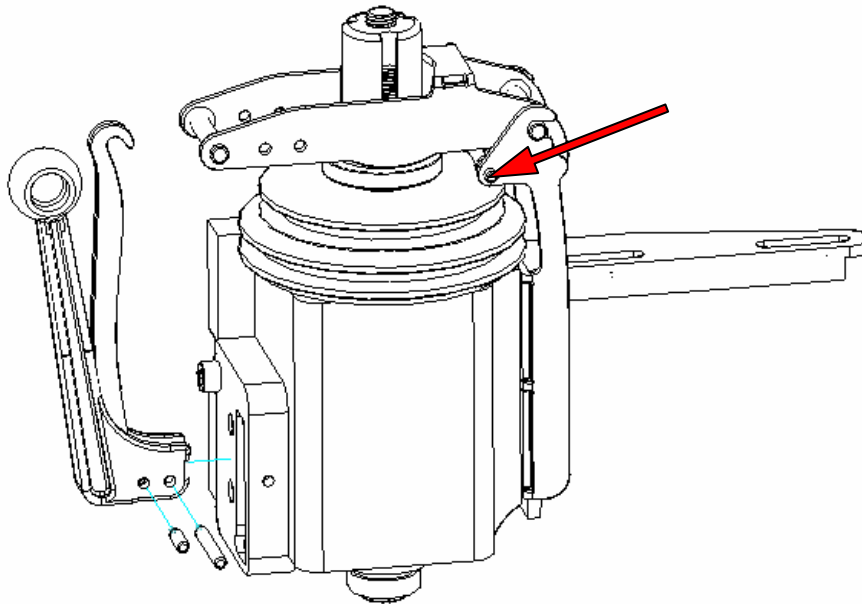
# Instructions for installation of the Quick Release system

## Part 3 Assemble quick release mechanism.

1. Assemble the 3 dowels and springs to the Actuator Lever (part #002) as shown. The O-rings are used to prevent the 3/16" dowel pins from falling out of the assembly. The longer of the two dowels should be to the rear of the lever. The laser cut holes in the sheet metal parts should allow sufficient clearance for the dowel pins, if not simply clean the hole diameter with the appropriately sized drill bit.

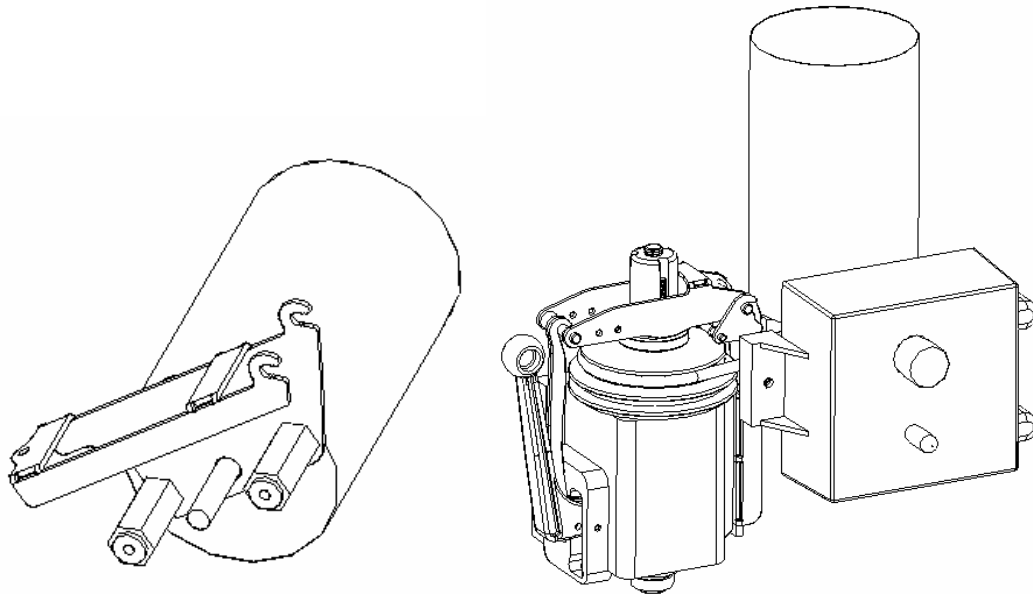


2. The Belleville springs should be snug between the drawbar bushing (#008) and the spring cup. Slide the drawbar assembly into the spindle, making sure the plastic spring cup is pushed all the way down on the spindle. The spring cup should be a very snug fit on the spindle and there should be appx. 1/8" inch between the bottom of the spring cup and the top of the spindle pulley. The actuator assembly fits into the slots of the Main Bracket (part #001) and the 1/8" dowel should pass thru both return springs (shown by red arrow)



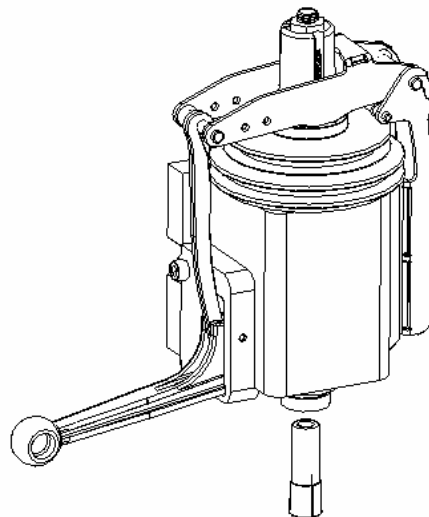
3. Assemble the two connecting rods (part #003) to the lever (part #005), then assemble the lever to the lever mounting bracket (part #007) as shown. When the assembly is at rest there should be appx .03" between the top of the spring cup flange and the bottom of the Actuator. If not simply adjust the spring pre-load by tightening the spring cup against the drawbar bushing, thus compressing the Belleville springs.

4. Assemble the motor mount bracket (#004) to the Sherline motor. The motor control snaps into the motor mount bracket and is secured in place by the 10-32 screw similar to the original Sherline arrangement. The motor can now be installed onto the headstock.



## Using the Quick Change

To start using your quick-change mechanism, simply pull the lever to the down position. Holding the lever down, insert a collet into the spindle nose and thread it onto the drawbar. Snug the collet to the point that it just begins to tighten against the spindle nose. Insert a tool into the collet and release the lever. A piece of shim stock can act as a wrench and aid in insertion and removal of Morse or WW collets if needed.



You may have to play with the spacing of the collet a little to get the correct tension. If the drawbar is too long or too short it can simply be re-positioned by threading the bushing and spring cup a little further up or down on the drawbar. Setting the pre-load tension on the Belleville springs is something that is left to each individual user. The more pre-load tension you set, the less the drawbar will move after the spring is released. Note that this will not change the actual force applied to the drawbar.

## Optional Accessories

1. WW collet adaptor. This small part allows the use of WW collets with the Quick Change mechanism. Note you must have the Sherline WW collet adaptor nose piece to use WW collets with the Sherline Spindle. Available Now!

2. Quick Change Tooling. The quick change tooling is a great addition, especially for a CNC system. The Quick change tool holder works just like a full size machine tool. Your cutting tool is fixed in the holder and tool length is accurately maintained. Accessory includes the drawbar fingers, spindle nose adaptor, and two quick change tool holders. Additional tool holders can be purchased to add great versatility to your system. Available Fall 2005.

3.. Automatic Actuator. The Automatic Actuator accessory allows automatic release and retraction of the tool holder when used in conjunction with the Quick Change Tooling Accessory. The automatic actuator includes an air cylinder and air cylinder adaptor, a special short lever to replace the standard actuator lever, air valve and all the pneumatic plumbing necessary to hook up the air cylinder. Available Fall 2005.

### Contact

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or Email [homeshopaccessories@insightbb.com](mailto:homeshopaccessories@insightbb.com)

For ordering information, comments, or suggestions.