

# **RTI TECHNOLOGIES, INC.**

## **BRC500 & BRC550**

Feed Mechanism

Adjustments & Service

Technical Instructions

The feed mechanism of the BRC500/550 is designed to be robust for long life. Occasionally an assembly error or normal service after many hours of use may require that service or adjustments be performed.

This bulletin provides the service technician with the correct disassembly, adjustment, and reassembly procedure.

Call RTI Technical Support for more information

800-468-2321 (Ext. 259)

560-80154-00

## Feed Mechanism Adjustments & Service

Manual and Automatic feed of the tool holders should be smooth. Switching between auto and manual feed should be easy with a definite snap action as the knob is moved into either position. Auto feeding while in manual feed mode indicates a need for adjustment. If the pre-load on the bearings is not correct, the Hand Wheel will move in towards the Gear Box Housing when turned clockwise and move out away from the Gear Box Housing when the Hand Wheel is turned counter-clockwise. It may be difficult (or impossible) to manually feed the cutting tool holders or they may move automatically when the Knob is pulled out into the manual position.

The following steps describe the procedure for checking the adjustments of the various components of the feed mechanism. Refer to the exploded view drawing which identifies the various components.

- 1) Disconnect power from the lathe.
- 2) Loosen the Castellated Nut (Figure 1). This nut is located on the rear of the housing where the Hand Wheel is attached.

First try lightly tapping a wide-bladed screw driver held against one of the tabs on the Castellated Nut. The Castellated Nut is secured with Lock-Tite and may require heating to loosen. Remove all grease from the shaft and nut before applying heat. It is important that excessive heat not be applied, as damage can result to the Bearing. A cigarette lighter may be all that is needed. More heat can be applied using a heat gun or acetylene torch with a welding tip. If a torch is used, make sure the **flame is small** and no longer than **one inch**. Turn the Hand Wheel to apply heat to all sides of the Castellated Nut. Immediately try to loosen the Castellated Nut.

Hold the Castellated Nut with pliers and turn the Hand Wheel counterclockwise several turns to move nut away from the Washer about 1/8 inch.

- 3) Remove the Knob (Figure 2) by turning counterclockwise. If pliers must be used, place a soft rag over the knob to prevent scratching.
- 4) Loosen the two Set Screws using a 3 mm Allen Wrench (Figure 3). Unscrew the Detent Collar from the Control Shaft.
- 5) Pull Hand Wheel off Control Shaft. Remove Key from slot in the Control Shaft. If pliers are used, do not damage the Key.

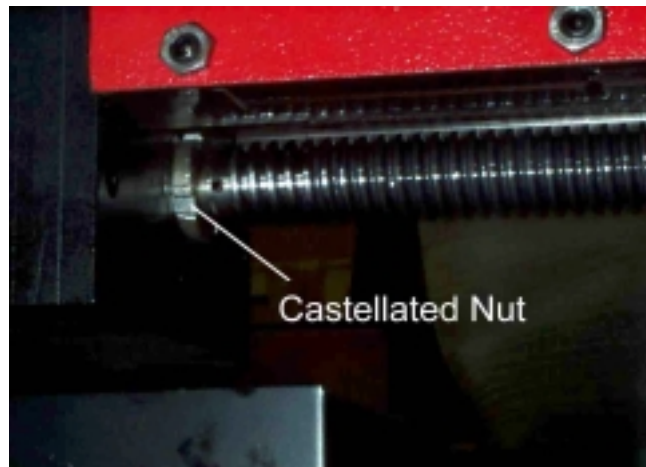


Figure 1

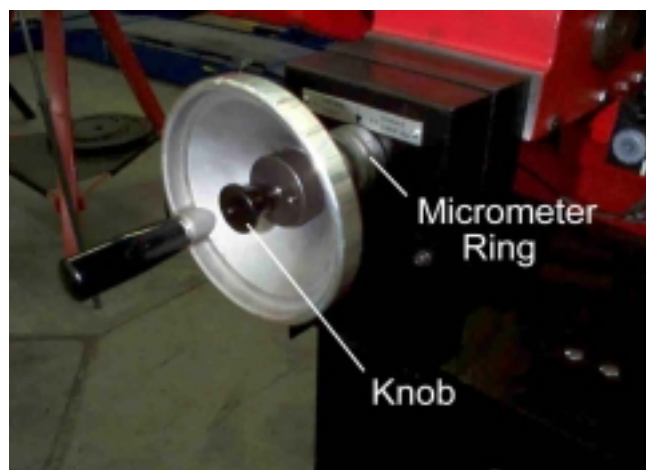


Figure 2

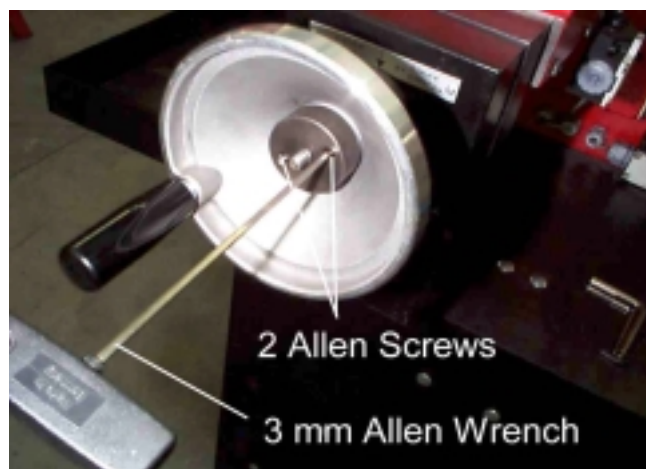
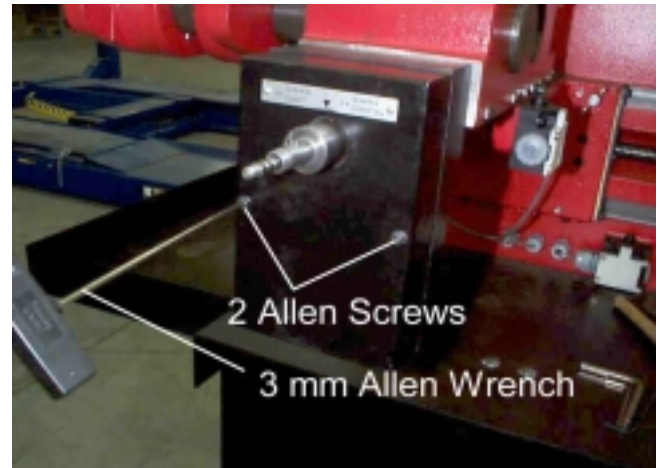


Figure 3

## Feed Mechanism Adjustments & Service

- 6) Pull off Micrometer Ring (Figure 2) which is held in place by an O-Ring on the inner diameter.
- 7) Remove the two Allen Screws using a 3 mm Allen Wrench (Figure 4). Remove Cover.



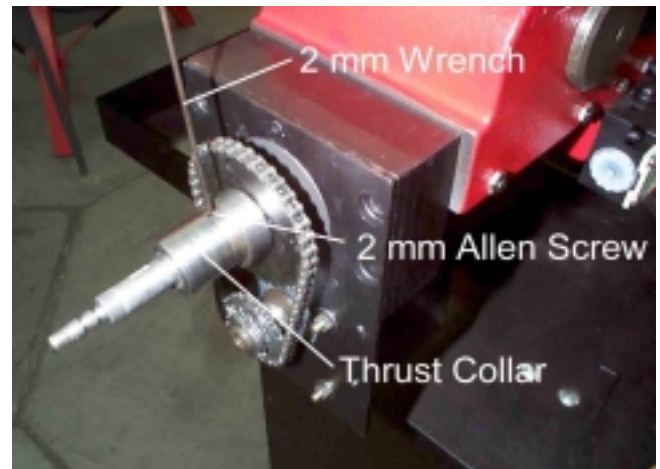
**Figure 4**

- 8) Loosen Set Screw using a 2 mm Allen Wrench and remove Thrust Collar (Figure 5).

Temporarily place the Hand Wheel and Key on the Control Shaft. Turn the Hand Wheel counter-clockwise two turns.

Pull the Large Gear and the Washer behind it forward on the Control Shaft. The Snap Ring and both sides of the groove should now be visible. The Snap Ring is shown in Figure 9. Check that the Snap Ring is fully seated (all the way around) in the groove on the Control Shaft.

Proceed to Page 5 for Assembly Instructions.

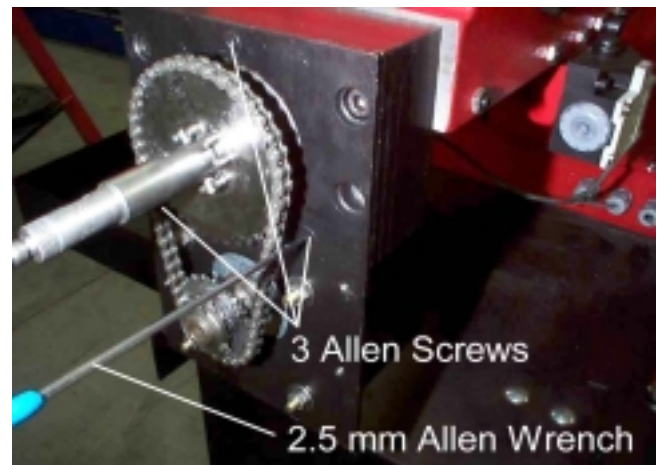


**Figure 5**

### NOTE

If necessary the following steps can be taken to remove the Vertical Pin and Gear to gain better access to the Snap Ring.

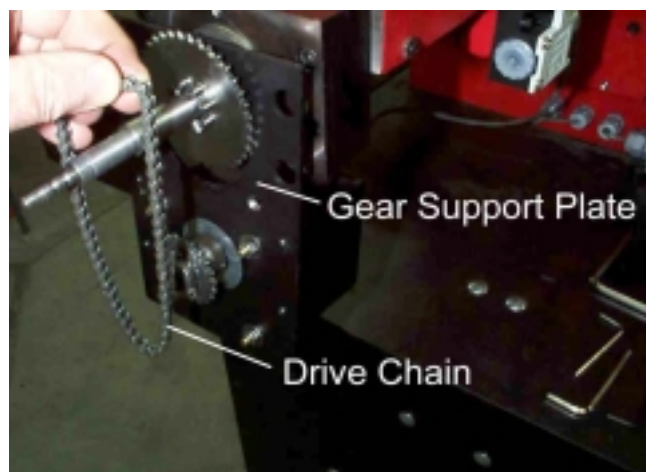
- 9) Remove three screws holding Gear Support Plate on front of Pillow Block using a 2.5 mm Allen Wrench (Figure 6).



**Figure 6**

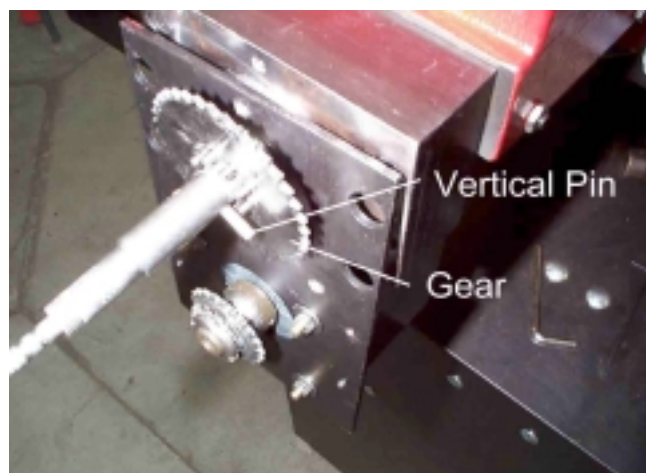
## Feed Mechanism Adjustments & Service

10) Lift Gear Support Plate (Figure 7) and remove Chain.



**Figure 7**

11) Remove Vertical Pin from the Control Shaft (Figure 8). It may be necessary to **gently** tap the pin out using a flat-faced punch.



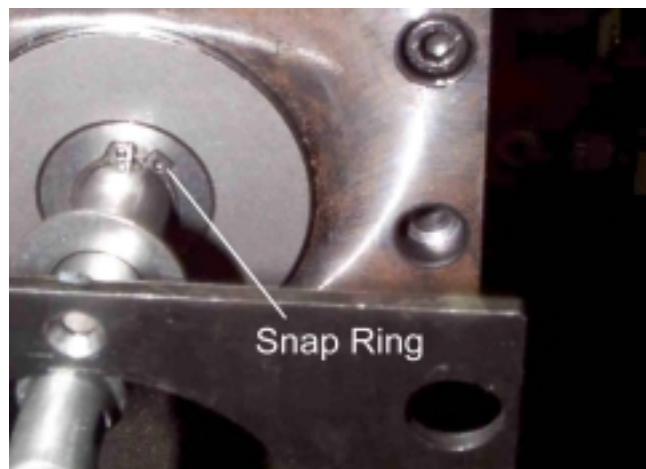
**Figure 8**

12) Remove Gear from Control Shaft.

13) Slide Gear Support Plate and Washer back to expose Snap Ring (Figure 9).

Avoid excessive force while removing or installing the Snap Ring. Use snap ring pliers and only open the Snap Ring enough to clear the shaft. Do not bend the Snap Ring sideways.

Replace a bent or damaged Snap Ring.

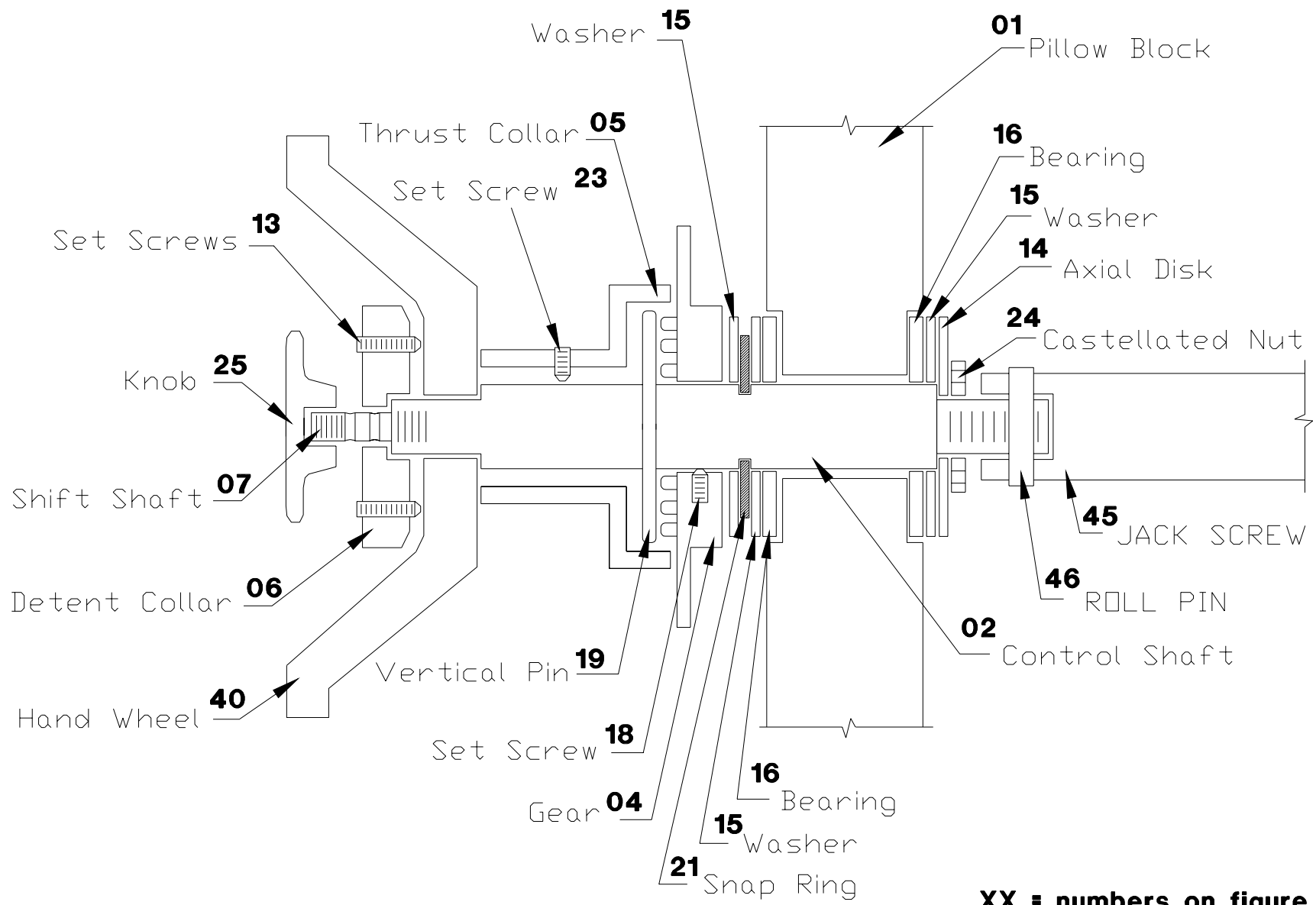


**Figure 9**

## Feed Mechanism Adjustments & Service

Following are the steps to reassemble the Feed Mechanism. Excessive force is not required to install any of the components.

- 1) Be sure the Snap Ring is fully seated in the groove of the shaft (Figure 9).
- 2) Temporarily install the Key and Hand Wheel on the Control Shaft.
- 3) Apply a small amount of Blue Loc-Tite on the threads of the shaft between the Castellated Nut and Washer. Hold the Castellated Nut with pliers and turn the Hand Wheel clockwise. The Snap Ring and Castellated Nut will squeeze the Washers against the Bearings in the Pillow Block. Continue turning the Hand Wheel until there is a **very slight** resistance felt. Remove the pliers from the Castellated Nut and operate the Hand Wheel to evaluate the smoothness of operation as the Tool Holder Assembly moves in and out from the lathe.
- 4) Remove the Hand Wheel and Key.
- 5) If the Gear and Vertical Pin were removed, follow these steps. Otherwise proceed to Step 6.
  - 5.1 Slide the Gear onto the Control Shaft. Make sure the Washer is between the Gear and Snap Ring.
  - 5.2 Lift the Gear Support Plate and install the Chain onto the two gears.
  - 5.3 Attach the Gear Support Plate to the Pillow Block using the three 2.5 mm Allen Screws.
  - 5.4 Insert the Vertical Pin into the Control Shaft. A special hardened Pin is available if excessive wear has occurred. Check the Vertical Pin for any wear and turn it in such a way that any worn surfaces will not contact the Horizontal Pins in the large gear. The Vertical Pin must be inserted into the Control shaft such that it is centered. This can be checked by observing the relationship of the Vertical Pin to the Horizontal Pins on the Gear.
- 6) Place the Thrust Collar on the Control Shaft (Figure 5). Remove the set screw (using a 2 mm Allen Wrench) and align the hole in the Thrust Collar with the drilled hole in the Control Shaft. Insert the set screw and tighten. There should be a slight clearance between the Gear and Thrust Collar. When the Shift Shaft is pulled out the Horizontal and Vertical Pins should not be engaged. When the Shift Shaft is pushed in the Horizontal and Vertical Pins should engage.
- 7) Install the Cover (Figure 4) using the two 3 mm Allen Screws.
- 8) Push the Micrometer Ring (Figure 2) onto the Control Shaft. The numbered edge should be nearest the Control Cover.
- 9) Install the Key and slide the Hand Wheel onto the Control Shaft. The Hand Wheel must be pushed onto the Control Shaft until the back is against the shoulder on the Control Shaft.
- 10) Screw the Detent Collar onto the Control Shaft (Figure 3) as far as possible. The beveled edge must be towards the Hand Wheel.
- 11) Tighten the two 3 mm Allen Screws in the Detent Collar. This locks it to the Hand Wheel. Do not apply excessive tightening force.
- 12) Install the Knob. A small amount of Blue Lock-Tite can be used to secure the Knob.
- 13) Connect the Lathe to power and check the manual and automatic feed.



**XX = numbers on figure above**

REV	DATE	DESCRIPTION	RTI TECHNOLOGIES, INC. YORK, PENNSYLVANIA		MATERIAL
			FEED MECHANISM BRC500 / 550		FINISH
					DRAWN BY T. L. Crandall 12-12-98
					050-80140-XX