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# Technical Document

## Collet Closer Installation

**Product Identification:** 5C Collet Closer (PN 33283)

**Purpose:** This document details the installation and use of the collet closer on a 15L Slant-PRO lathe.

Qty.	5C Collet Closer	PN
1	Collet Closer	—
1	Index Ring/Adapter Assembly	—
1	Collet Handle	—
6	M6 Socket Head Cap Screw	—
6	M6 Lock Washer	—



**NOTE:** If any of these items are missing, contact Tormach Customer Service at (608) 849-8381 for a replacement.

### Required Tools:

- .0005" Magnetic Dial Indicator (PN 31947)
- Bandsaw or hacksaw
- Dead-blow hammer
- Machinist's stone or similar

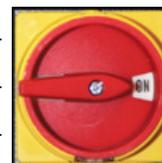
**WARNING! Electrical Shock Hazard:** Be sure to power off machine before making any electrical modifications. Failure to do so may result in serious injury or death.

### Power Off/On Procedure

<b>Power Off</b>	1. Push in red E-stop button
	2. Click <i>Exit</i> on screen; when prompted click <i>OK</i> to power off
	3. Turn Main Disconnect <i>Off</i> (see image at right)



<b>Power On</b>	1. Turn Main Disconnect <i>On</i> (see image at right)
	2. After software loads, turn red E-stop clockwise to release
	3. Press green <i>Start</i> button
	4. Click <i>Reset</i> on screen



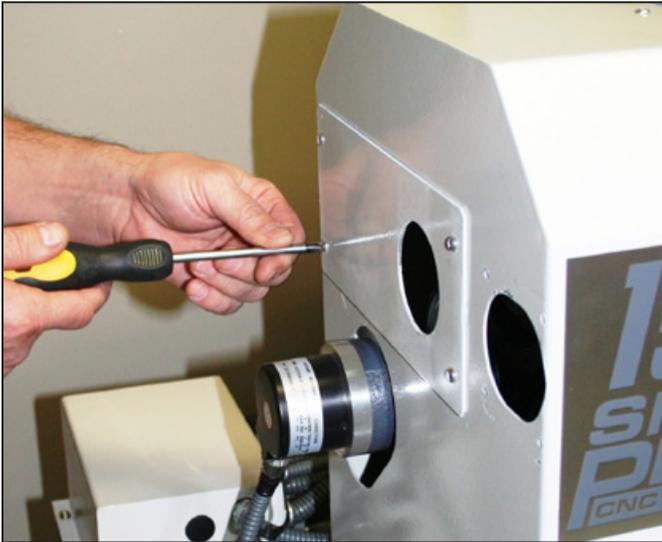


Figure 1

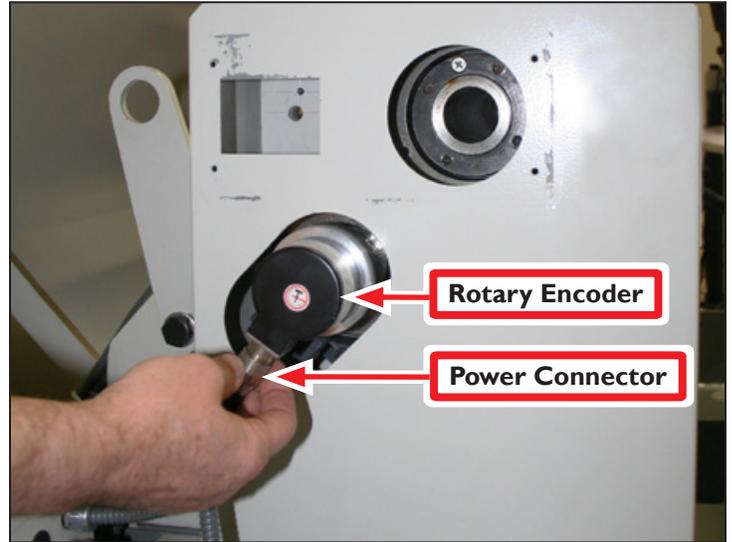


Figure 2

## Installation

1. Remove four Phillips-head screws securing panel to belt guard (see **Figure 1**); set aside for future use.
2. Unscrew Power Connector from Rotary Encoder (see **Figure 2**).
3. Loosen five Phillips-head screws securing belt guard cover to lathe; remove cover and set all aside (see **Figure 3**).

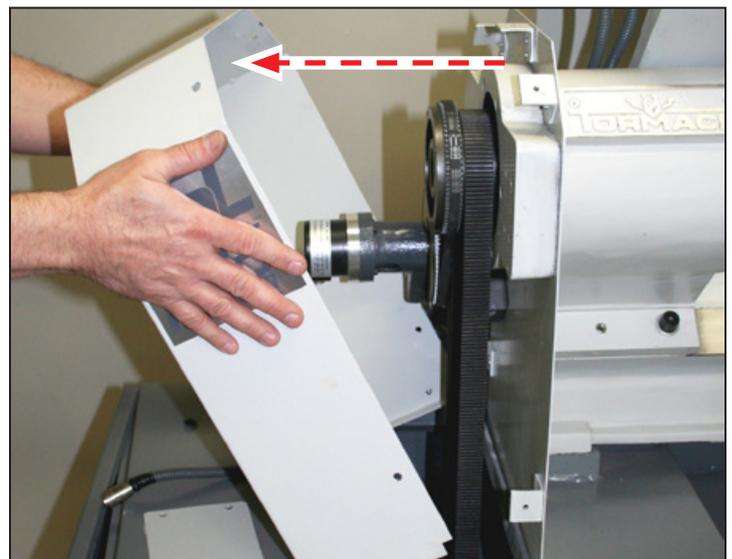


Figure 3

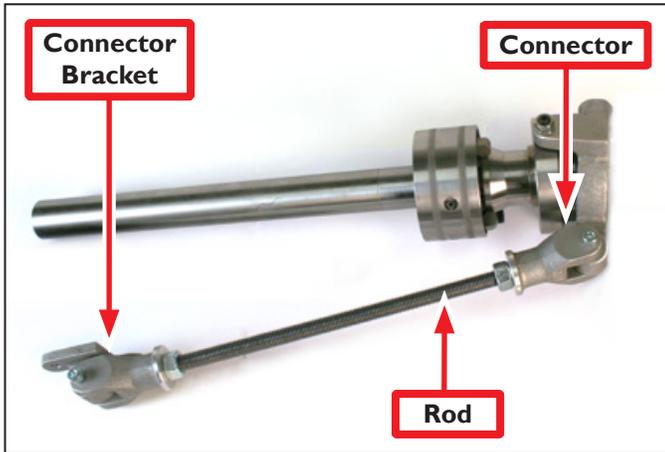


Figure 4



Figure 5

4. Unscrew Rod from Connector (see **Figure 4**) on Collet Closer.
5. Locate two pilot holes on lathe to attach Connector Bracket (see **Figure 4** and **Figure 5**).
6. Using two M6 Socket Head Cap Screws and two M6 Lock Washers, attach Connector Bracket to lathe (see **Figure 6**).

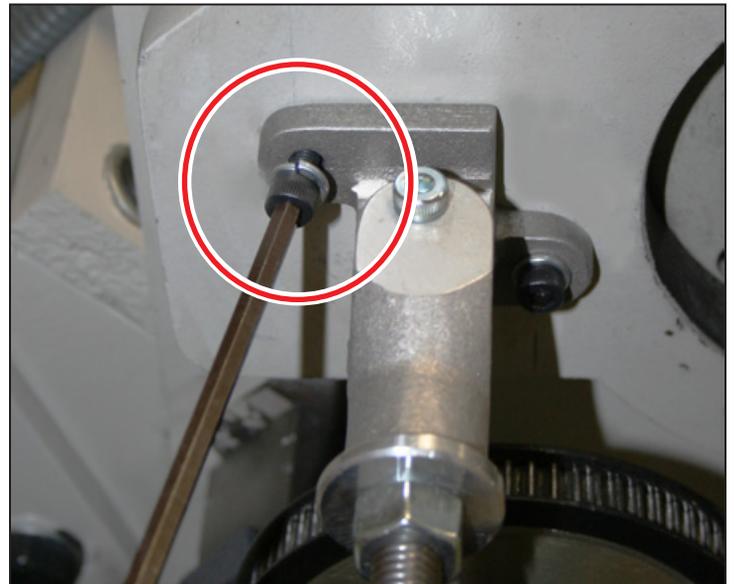


Figure 6

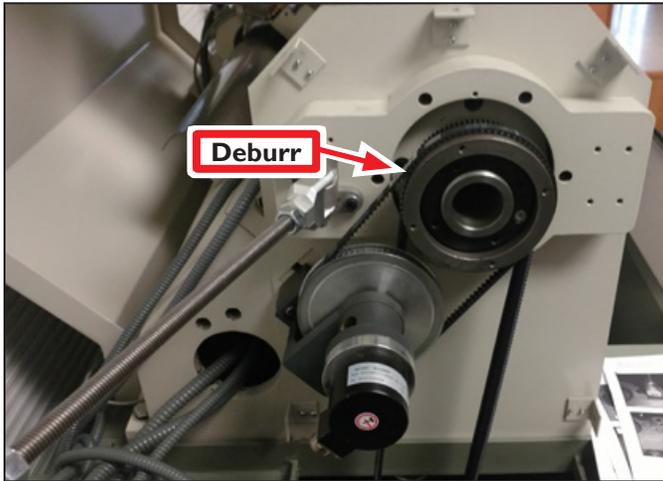


Figure 7

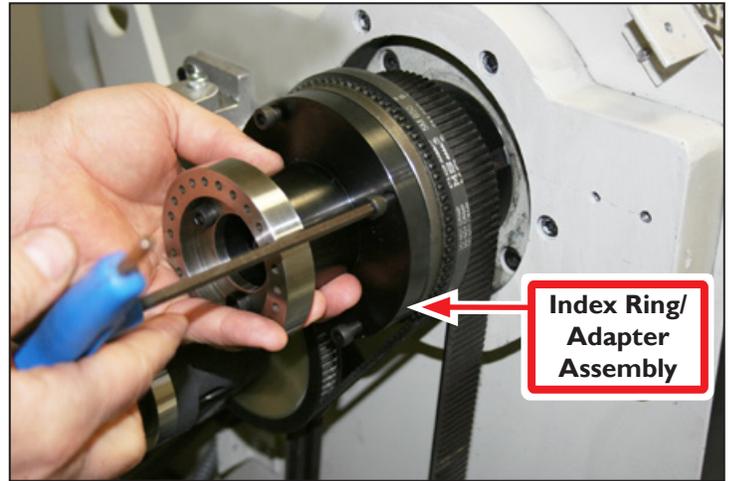


Figure 8

7. Using machinist's stone or similar, lightly stone the back of the Index Ring/Adapter assembly and the face of the spindle pulley (see **Figure 7**) to remove burrs. Presence of burrs may cause runout.
8. Using four M6 Socket Head Cap Screws and four M6 Lock Washers, attach Index Ring/Adapter Assembly to spindle pulley (see **Figure 8**).
9. Attach .0005" magnetic dial indicator to lathe and position indicator tip against index ring (see **Figure 9**).

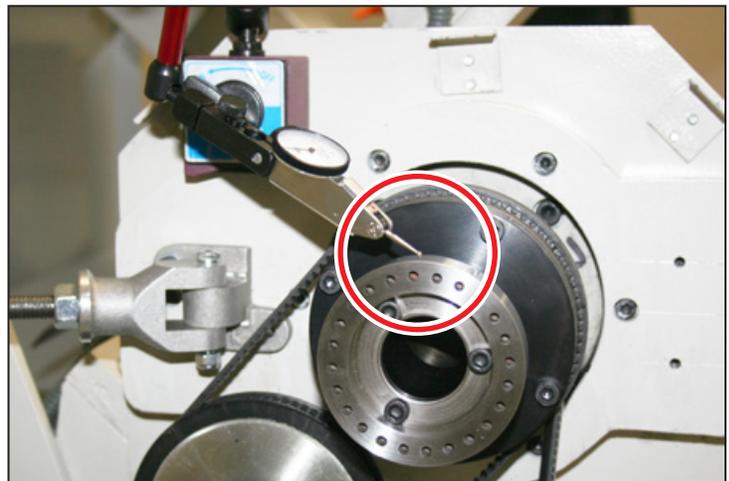
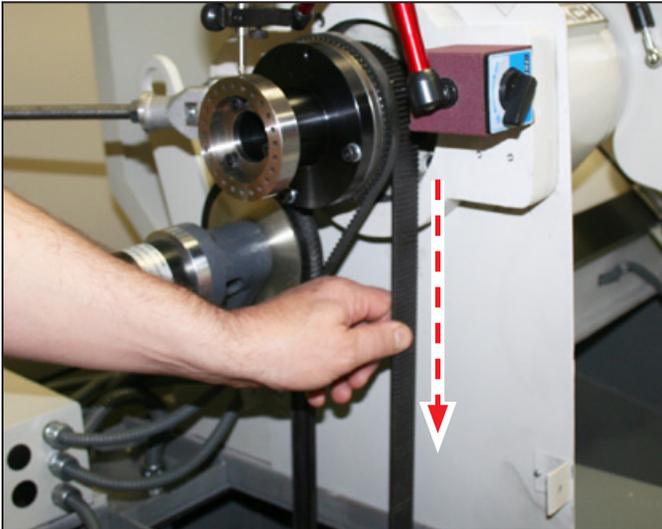


Figure 9

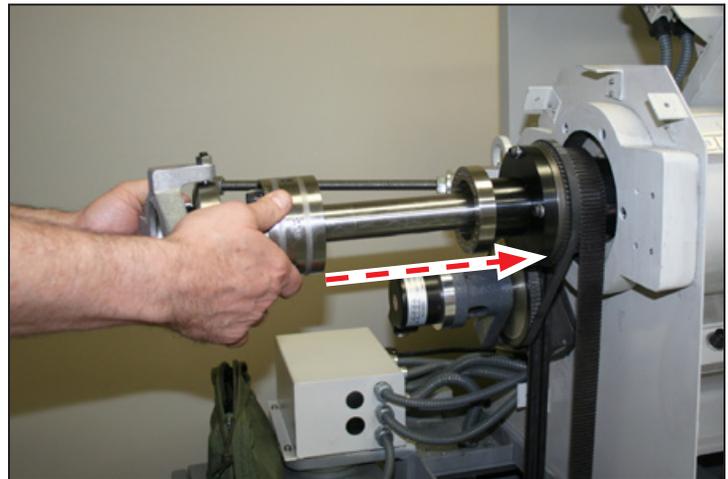


**Figure 10**



**Figure 11**

10. Slowly pull down on spindle belt to rotate index ring (see **Figure 10**); complete one full cycle and make note of reading on dial indicator. Alignment should hold a total indicated runout of 0.001" or better.
11. If reading on indicator moves more than 0.001", carefully loosen three socket head cap screws on Index Ring and tap with a dead-blow hammer to bring center in line with lathe's spindle bore (see **Figure 11**).
12. Repeat Step 10 and Step 11 until alignment is achieved.
13. Carefully tighten three socket head cap screws on Index Ring.
14. Temporarily insert Collet Closer into lathe's spindle bore (see **Figure 12**).

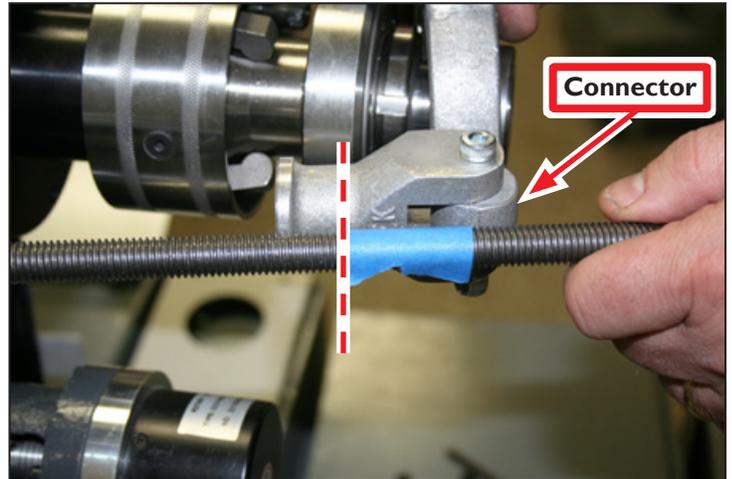


**Figure 12**

15. Position rod next to Connector on Collet Closer; estimate length of rod necessary for full range of motion and mark with tape (see **Figure 13**).

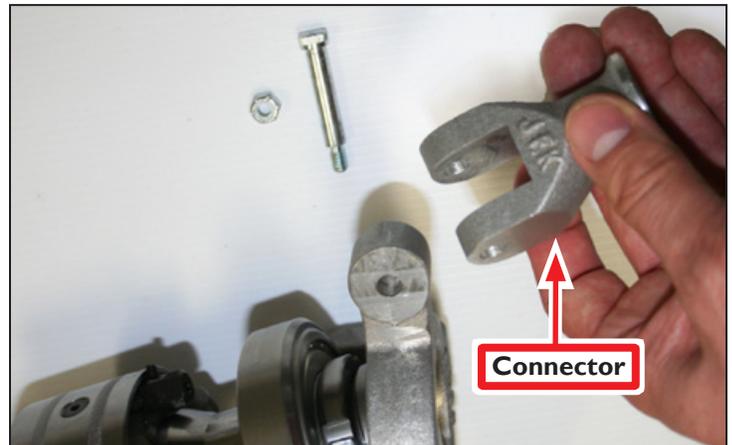
**NOTE:** Required rod length varies; adjustments may be necessary after Collet Closer installation is complete.

16. Using a bandsaw or hacksaw, cut rod as determined in Step 15.
17. Lightly stone newly-cut end of rod.



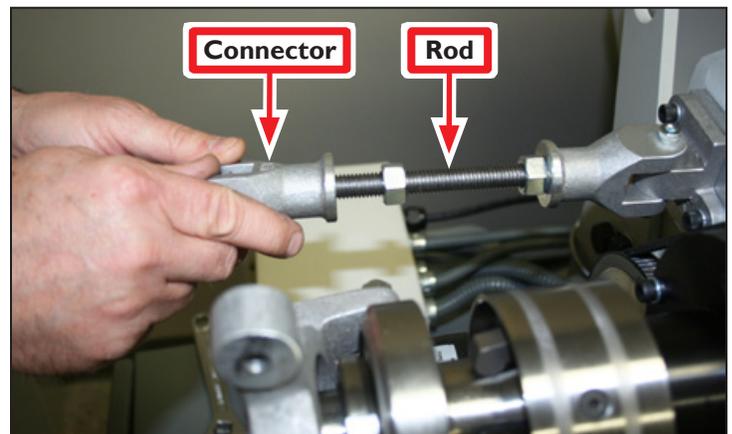
**Figure 13**

18. Remove Connector from Collet Closer by removing nut and bolt (see **Figure 14**).



**Figure 14**

19. Screw Connector onto newly-cut end of Rod; (see **Figure 15**) using nut, tighten securely.



**Figure 15**

20. Screw Collet Handle into Collet Closer; tighten securely (see **Figure 16**).

21. Re-attach Connector to Collet Closer with nut and bolt set aside in Step 18; tighten securely.

**NOTE:** Connector should be able to move freely.

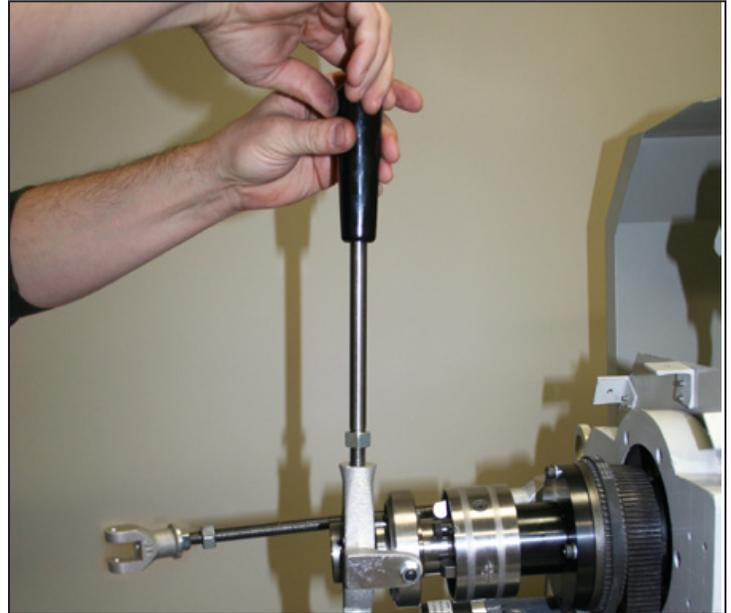


Figure 16

22. Ensure 5C insert (included with lathe) is inserted in spindle (see **Figure 17** and **inset**).

23. Insert 5C collet (not included) into adapter and rotate to engage the collar's internal pin with the groove on the collet (see **Figure 18**).



Figure 17



Figure 18

24. Hold the collet still in the spindle with one hand; using the other hand, turn the Collet Closer's collar clockwise to thread it on to the collet (see **Figure 19**).

25. Insert a piece of material into the collet and turn the Collet Closer's collar clockwise until desired tension is achieved on the workpiece.

**IMPORTANT!** Avoid excess tension on collet.

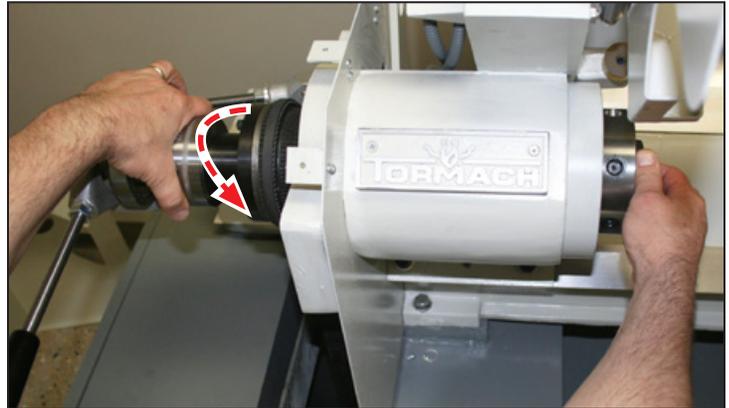


Figure 19

26. Move the collet handle back and forth between the locked position (away from the headstock) and the released position (toward the headstock). Ensure handle is past centerline in either position (see **Figure 20**).

**IMPORTANT!** If collet handle is not past center in the locked position (see **Figure 20**), adjust rod length until proper alignment is achieved.

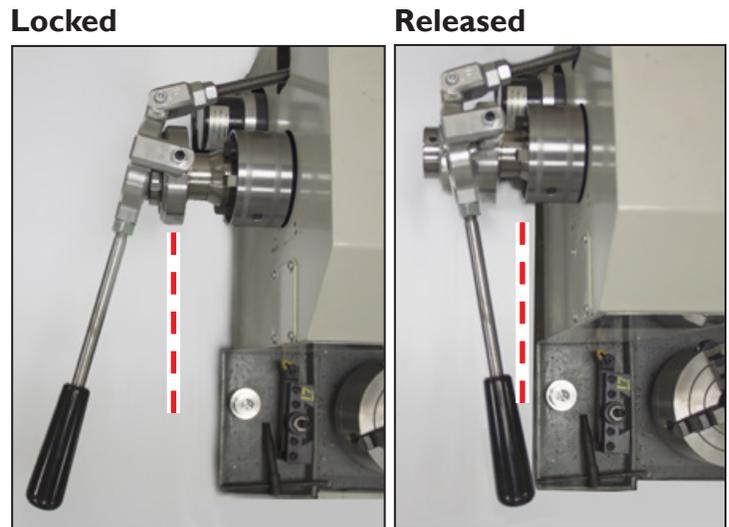


Figure 20

27. Temporarily remove Collet Closer from lathe spindle assembly (see **Figure 21**).

28. Using five Phillips-head screws, reattach Belt Guard Cover to lathe.

29. Re-insert Collet Closer into lathe spindle assembly.

30. Re-install power connector to rotary encoder.

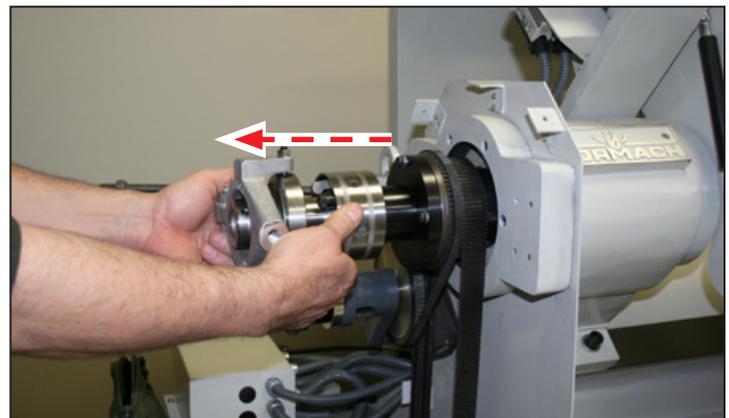


Figure 21

31. Proceed to *Operation* section to identify any adjustments required to operate the collet closer. You have now completed the installation (see **Figure 22**).



Figure 22

## Operation

1. With a piece of material inserted in the collet, ensure the Collet Closer is in the released position (see **Figure 20**), with the collet handle toward the headstock.
2. Identify Index Pin on Collet Closer's index plate (see **Figure 23**).

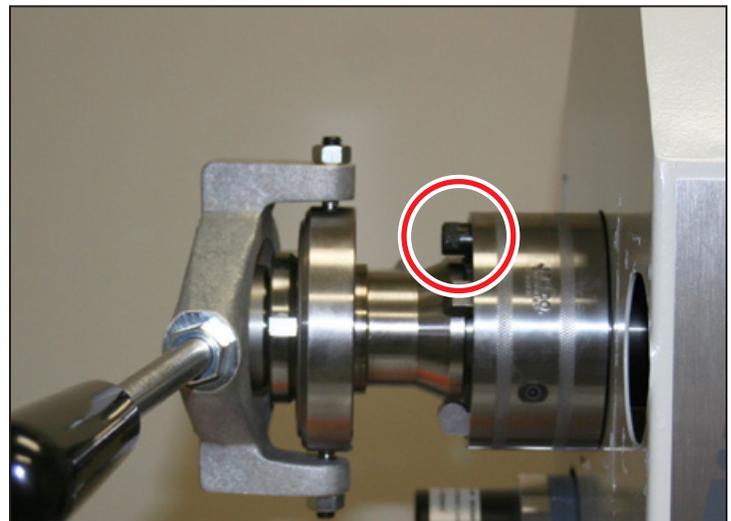


Figure 23

Pin In

Pin Out



Figure 24

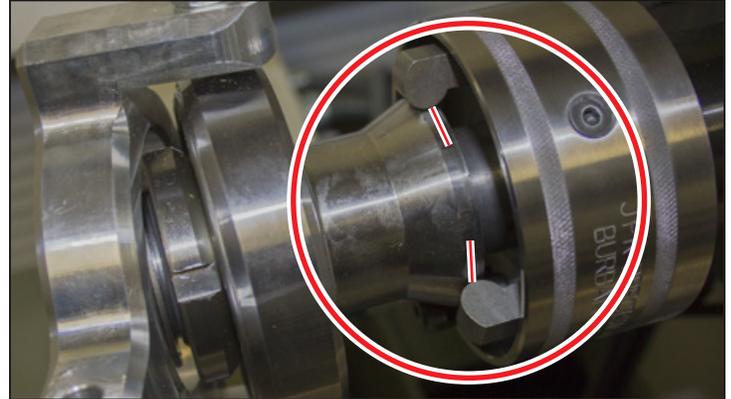


Figure 25

3. Ensure the index pin is in the Pin Out position (see **Figure 24**).

**NOTE:** When the pin is in, the collet closer is in run mode. When the pin is out, the collet closer is in adjust mode.

4. Move the collet handle to the locked position (away from the headstock); ensure cams are centered on the hub as shown in **Figure 25**. If the cams are not centered on the hub:
  - Rotate Stop Collar to access Set Screw on Collet Closer (**Figure 26**); loosen set screw.
  - Slide unit forward or backward until cams rest in center of hub as shown in **Figure 25**.
  - When adjustment is complete, re-tighten set screw on Collet Closer's hub.
5. Move the Index Pin to the Pin In position (see **Figure 24**) by twisting to release and allowing it to enter the closest hole in the index plate.

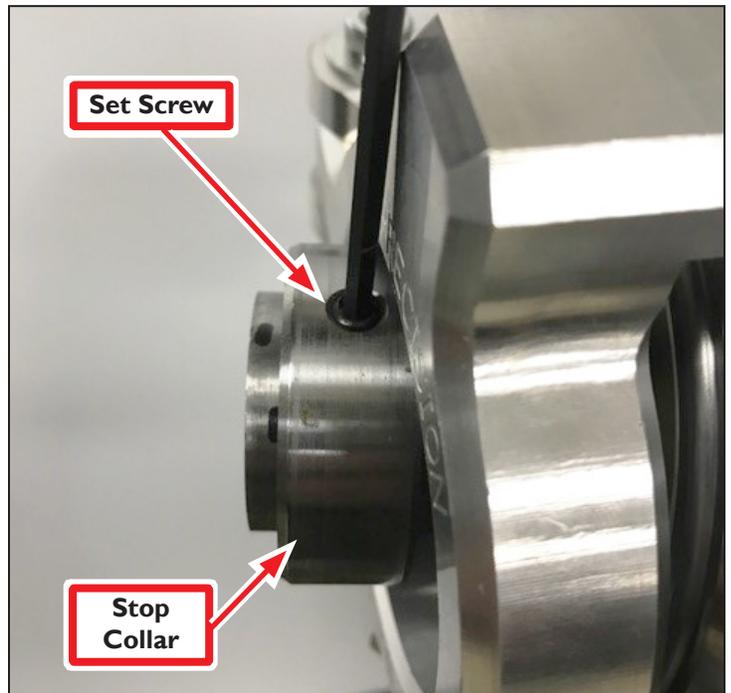
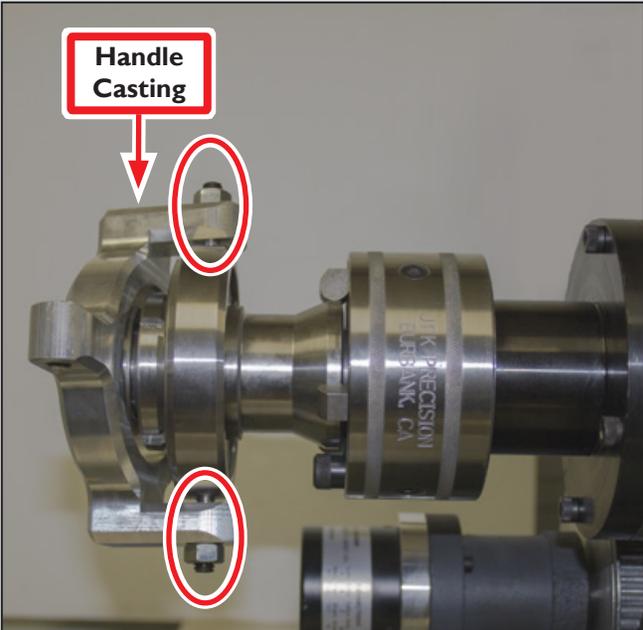


Figure 26

**NOTE:** If necessary, turn the collar slightly to allow the index pin to seat completely.

6. With the Index Pin in the Pin In position, the collet closer is in run mode. You have now adjusted the collet closer for operation.

## Troubleshooting

Problem	Possible Cause	Discussion
	Runout on Index Ring/Adapter	Ensure both sides of Index Ring/Adapter assembly are free of debris (see <b>Figure 7</b> ).
	Connector and/or connector bracket is too loose or too tight	Adjust bolts on connector and connector bracket as necessary (see <b>Figure 14</b> ).
Handle wobbles	Handle casting is not centered	<p>Loosen top and bottom height screw locknuts (see <b>Figure 27</b>) on Handle Casting and adjust set screws until it is centered.</p>  <p><b>Figure 27</b></p>
Handle moves itself to the released position	Cams are not centered on the hub	Loosen Set Screw on Stop Collar (see <b>Figure 26</b> ) and slide unit until cams rest in the center of the hub (see <b>Figure 25</b> ). Re-tighten Set Screw.
or		
Index pin does not engage in index ring	Threaded rod is too long	Ensure handle is past centerline when in the locked position (see <b>Figure 20</b> ). If not, make adjustments to threaded rod length – either cut the rod or tighten it further into connector and/or connector bracket.