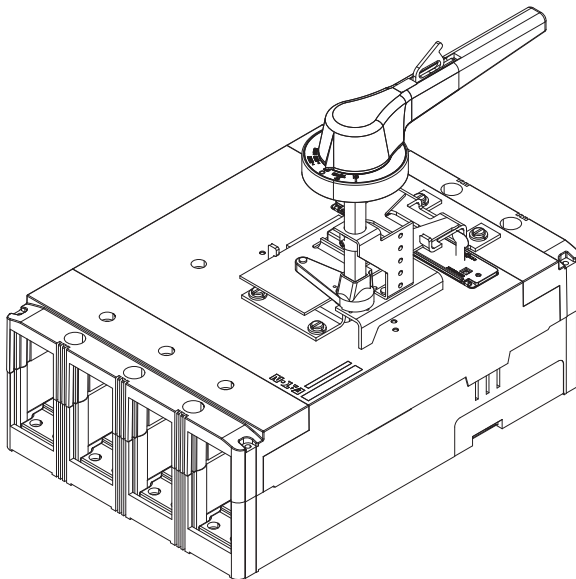


Instructions for Drilling and Assembling Rotary Handle Mechanism for PDG5 Circuit Breakers, Molded Case Switches and HMCPs

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⚠ WARNING

DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. DEATH, SEVERE PERSONAL INJURY, OR SUBSTANTIAL PROPERTY DAMAGE CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING WITH THE TASK, AND ALWAYS FOLLOW GENERALLY ACCEPTED SAFETY PROCEDURES.

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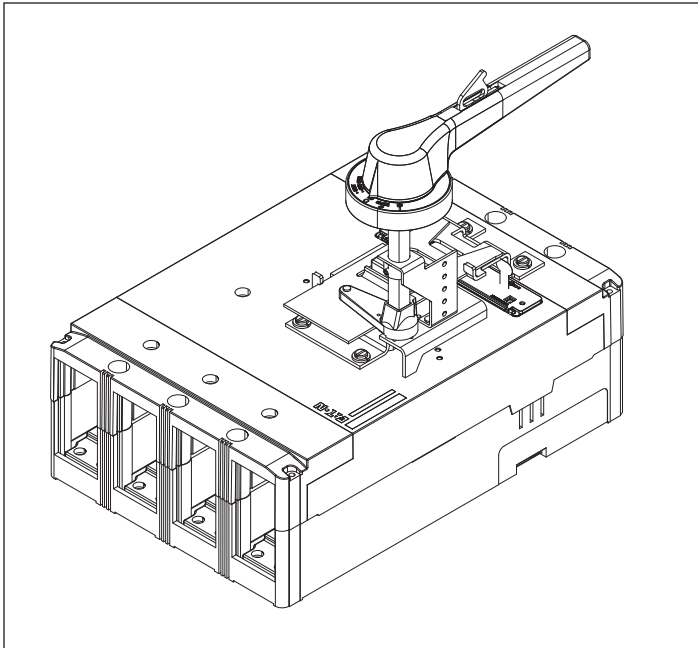


Figure 1. PDG5 Rotary Handle Mechanism Assembly.

Description

The Eaton general purpose Rotary Handle mechanism is suitable for use with NEMA 1, 3R, 12, 4, and 4X fabricated enclosures. For NEMA 4 and 4X enclosures, the rotary handle is labeled and gasketed for these applications. It is designed for use with PDG5 circuit breakers, molded case switches, and motor circuit protectors (HMCP) up to 1,200 amps (see Figure 1).

Required for a standard application are the operating handle, shaft, and mechanism.

The operating handle has been designed to meet NEMA requirements. It may be mounted in either the horizontal or vertical direction. The handle was ergonomically designed with extra clearance for a "gloved hand" to operate. It may be padlocked in the Off position utilizing three padlocks (0.312" [7.93 mm] Max).

The standard label on the operating handle indicates ON/Tripped/OFF/Reset. To fulfill international requirements, an alternate handle may be ordered which indicates(I)/Tripped/(O)/Reset.

To meet the various enclosure depths, four variable depth shafts are offered (6, 12, 16, and 24") (152.4, 304.8, 406.4, and 609.6 mm). Each shaft includes a support brace to ensure proper alignment. In addition, the 16 and 24" (406.4 and 609.6 mm) extra long shafts include an adjustable support bracket.

The standard mechanism located on the breaker does include means for internally locking the breaker in the "OFF" position with up to three padlocks each with a maximum diameter of .312" (7.93 mm).

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker. This accessory would be mounted on the mechanism and comes with 24" (609.6 mm) pigtail leads.

Installation Instructions

The installation procedure consists of: drilling and modifying customer enclosure; installing the circuit breaker and operating assembly; assembling the shaft to the operating assembly, and handle assembly to the enclosure cover; and testing function of installed handle mechanism. To install the handle mechanism, perform the following steps.

⚠ WARNING

WHEN INSTALLING A NEW HANDLE MECHANISM, OR A NEW CIRCUIT BREAKER AND HANDLE MECHANISM IN AN EXISTING ELECTRICAL SYSTEM, MAKE SURE THERE IS NO VOLTAGE PRESENT WHERE WORK IS TO BE PERFORMED. SPECIAL ATTENTION SHOULD BE PAID TO REVERSE FEED APPLICATIONS TO ENSURE NO VOLTAGE IS PRESENT. THE VOLTAGES IN ENERGIZED EQUIPMENT CAN CAUSE DEATH OR SEVERE PERSONAL INJURY.

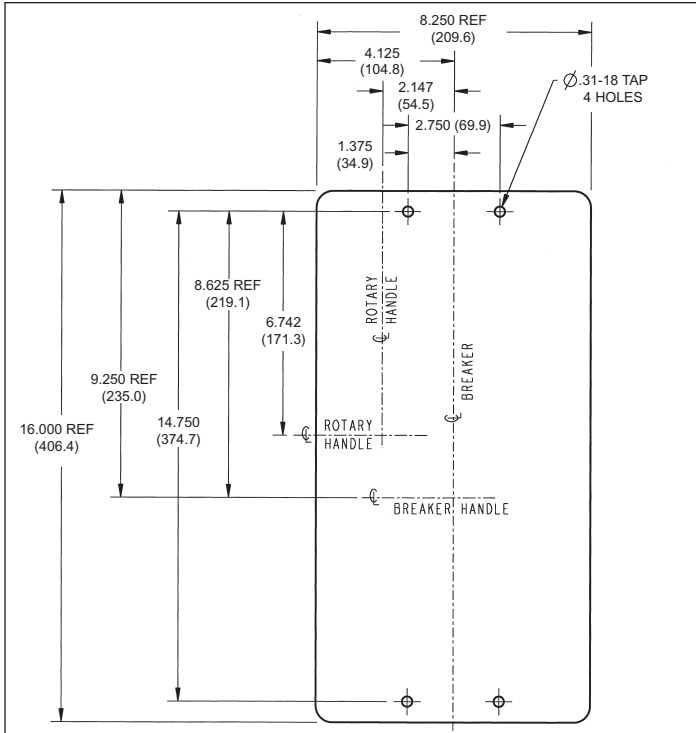


Figure 2. Drill and Tapping Plan for PDG5 Breaker.

Installation of Circuit Breaker and Operating Assembly

1. Determine the position for the circuit breaker in the enclosure . Drill and tap the circuit breaker mounting holes in the enclosure mounting surface as shown in Figure 2.
2. Turn the circuit breaker to the "OFF" position.
3. Mount the circuit breaker to enclosure using the four (4) 0.3125-18 x 1.25" long screws from the hardware kit . Insert the screws and lock washers into the load and line end circuit breaker mounting holes and tighten securely into the tapped holes from Step 1. (see figure 3).
4. Mount the mechanism on to the circuit breaker, ensuring the slide plate is engaged with the circuit breaker handle . Remove the two (2) breaker cover screws and two (2) load cover screws as shown in Figure 3 and discard the screws. Insert the four (4) 0.250-20 x 3.5" screws and lock washers from the hardware kit through the mounting holes of the mechanism and into the empty cover screw holes of the circuit breaker, as shown in Figure 3.

Installation of Shaft to Operating Assembly

1. Measure panel depth "D" then determine the shaft length by subtracting 6.00" (152.40 mm) from this dimension .
2. Mark the shaft, measuring the length beginning at the pointed end, and cut to the correct length (see Figure 4).

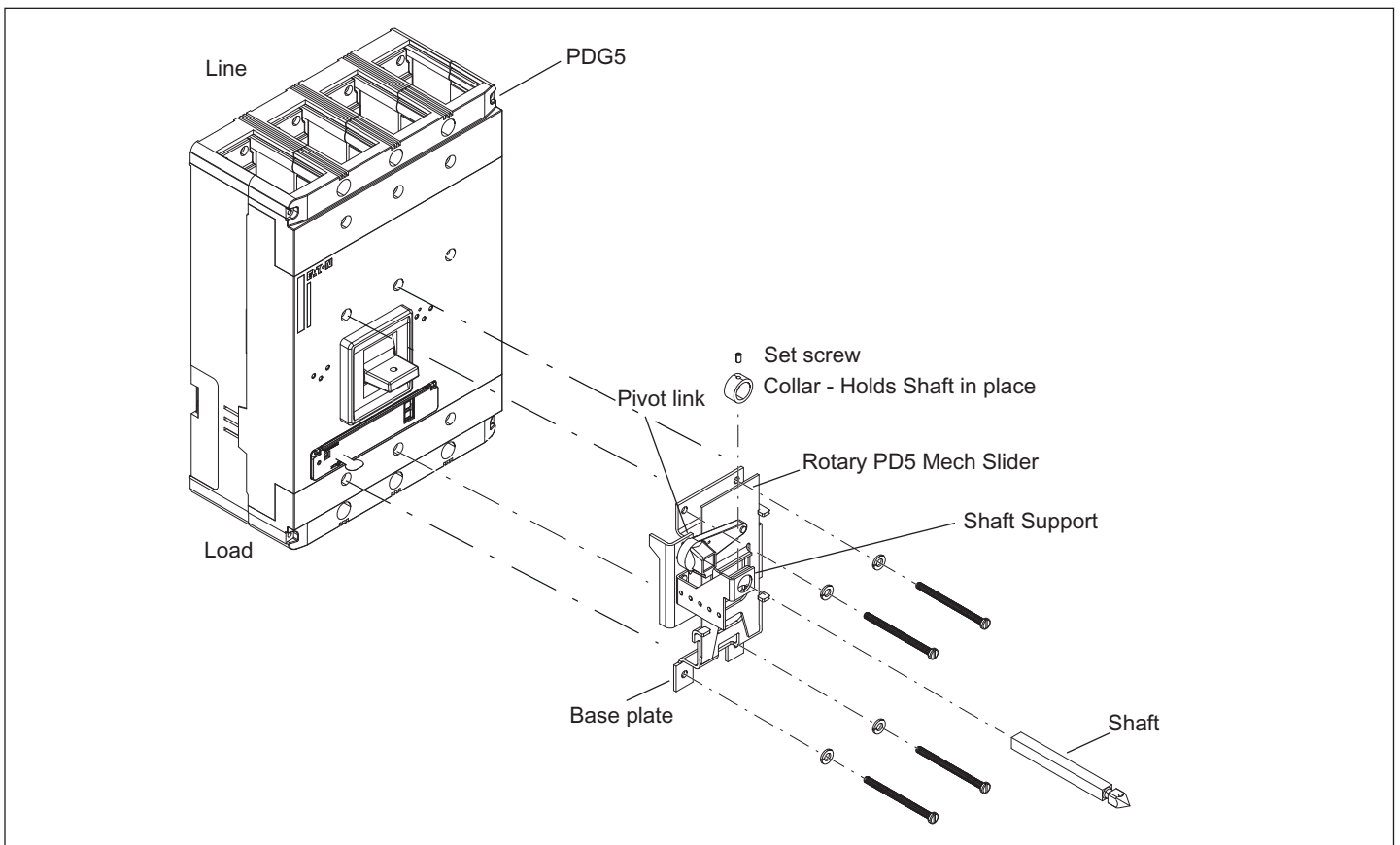


Figure 3. PDG5 Breaker/Mechanism Assembly.

Installation of Shaft to Operating Assembly

1. Using panel depth "D" from Step 4, determine the shaft length by subtracting 3.875" (98.43 mm) from this dimension .
2. Mark the shaft, measuring the length beginning at the pointed end, and cut to the correct length (see Figure 4).

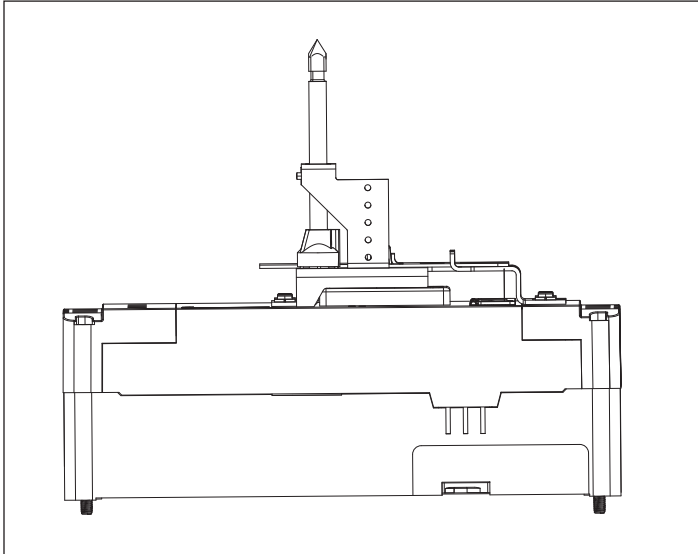


Figure 4. Cutting the Shaft to Length and Collar to Shaft.

3. If the adjustable support extension is being used (designed for 16" and 24" [406.4 and 609.6 mm] shaft lengths), install it loosely at this time . Remove the screws from the extension and use them to attach to shaft support bracket .
4. Place the square end of shaft into the square opening of die cast pivot link on the operating mechanism attached to the circuit breaker. Ensure the pin is in the shaft and correctly oriented with respect to anticipated handle position (vertical or horizontal handle placement, see Figure 5).
5. Take the set screw and shaft collar from the hardware kit and insert the set screw into shaft collar . Place the square end of shaft through the shaft support bracket then through the shaft collar and into square opening of die cast pivot link on the operating mechanism attached to the circuit breaker, as shown in Figure 3. Position the shaft collar lightly against the underside of the shaft support collar and torque the set screw between 28-30 in-lbs (3.16-3.39 N•m).
6. For vertical and horizontal handle mounting orientation, see Figure 6.
7. If the adjustable support extension is being used, tighten the set screw securely at this time .

Installation of the Handle Assembly onto Enclosure Cover

1. To determine where to drill the enclosure door cover, close the cover with moderate force in order to cause the point of the shaft to scratch/mark the paint on the inside of the door .
2. Prior to drilling the 1.50" (38.1 mm) diameter hole in the cover door, use correction factor per Table 1. Correction should be made from the mark on the door (Step 1) towards the hinge . Drill 1.50" (38.1 mm) diameter hole.
3. After the hole is drilled, close the enclosure cover, allowing the shaft to stick through the opening . Check this dimension per Figure 4. If the dimension is not correct, loosen the set screw holding the shaft in the die cast pivot link and adjust such that the dimension is within the required limits . Retighten set screw .

Table 1. Correction Factor Table.

Distance From Hinge	Correction	
	Flat Hinge	Offset Hinge
4	3/16" (4.8 mm)	9/16" (14.3 mm)
5	5/32" (4.0 mm)	7/16" (11.1 mm)
6	1/8" (3.2 mm)	11/32" (8.7 mm)
7	3/32" (2.4 mm)	9/32" (7.1 mm)
8	3/32" (2.4 mm)	1/4" (6.4 mm)
9	3/32" (2.4 mm)	7/32" (5.6 mm)
10	1/16" (1.6 mm)	3/16" (4.8 mm)
11	1/16" (1.6 mm)	3/16" (4.8 mm)
12	1/16" (1.6 mm)	5/32" (4.0 mm)

4. Close the enclosure door. Place the gasket/template supplied in hardware kit. Place the template over the shaft ensuring the text/ wording is facing outward . With the use of your fingers, remove any play by rotating the shaft in a clockwise motion . Align the template cutout with the shaft profile and mark the handle mounting holes. Drill four 0.281" (7.14 mm) diameter holes.
5. Carefully remove the inner portion of the gasket/template keeping the outer gasket ring and place it between the handle assembly and the door. If this installation is a NEMA 4 or 4X, use the neoprene gasket supplied with the hardware kit . Loosely drive the four 0.25-20 x 0.5" screws through both the door and gasket from the inside of the enclosure door cover and into the handle assembly. Tighten evenly to 43-44 in-lbs (4.85-4.97 N•m) . For international handle styles, the handle mounting hardware is similar to the M6 x 1 x 12 mm screw if misplaced .
6. With the power isolated from the circuit breaker, test the function of installed handle mechanism in the following manner:
 - A. Close the enclosure door. Switch the handle mechanism to ON.
 - B. Check that the handle mechanism switches the circuit breaker to the ON position and that the enclosure door cannot be opened.
 - C. Switch the handle mechanism to OFF position .
 - D. Check that the handle mechanism switches the circuit breaker to OFF position and that the enclosure door cannot be opened.
 - E. Turn the handle to OPEN COVER position and ensure the door opens.
 - F. Close the enclosure door. Switch the handle mechanism/ circuit breaker to ON.
 - G. Turn the interlock defeater counter-clockwise with a flat blade screw driver.
 - H. Open the enclosure door.
 - I. Press the Push-To-Trip button in the circuit breaker trip unit with a small flat-blade screw driver to trip circuit breaker .
7. After the door has been drilled and the shaft and handle interaction have been verified, it is suggested to remove the point from the end of the shaft (see Figure 7).
 - A. Grip the removable point with a pair of pliers (see Figure 8).
 - B. With a slight twisting motion of the pliers, remove the point (see Figure 9).

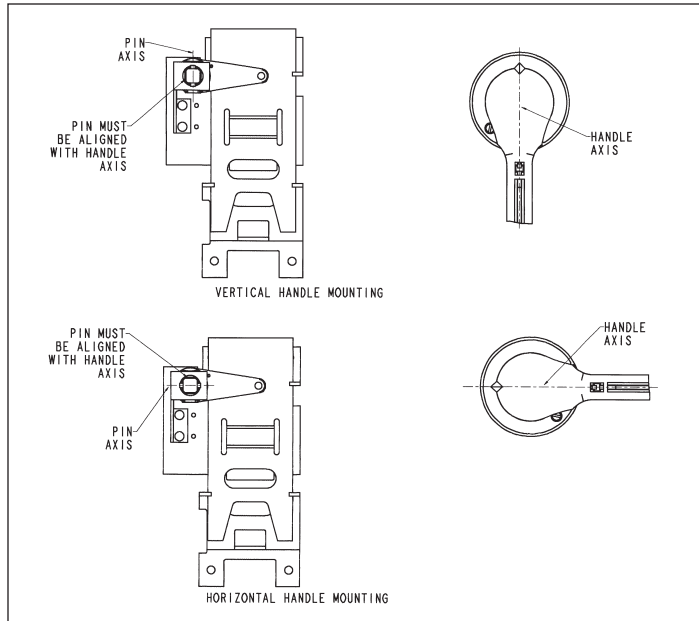


Figure 5. Handle Orientation.

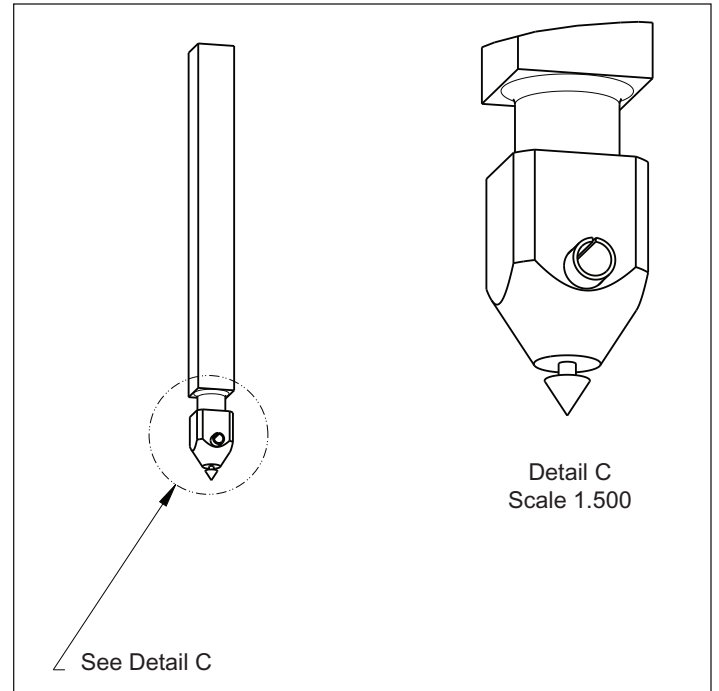


Figure 7. Shaft and Handle.

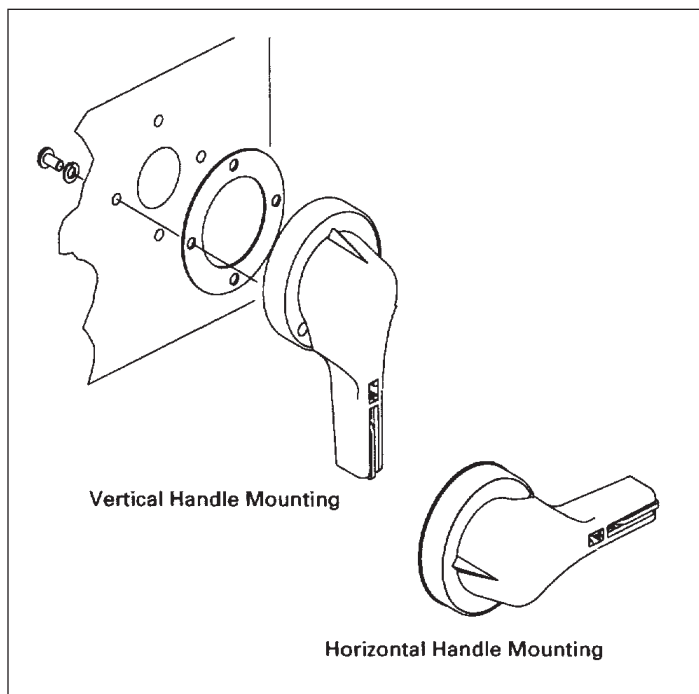


Figure 6. New Handle on Door.

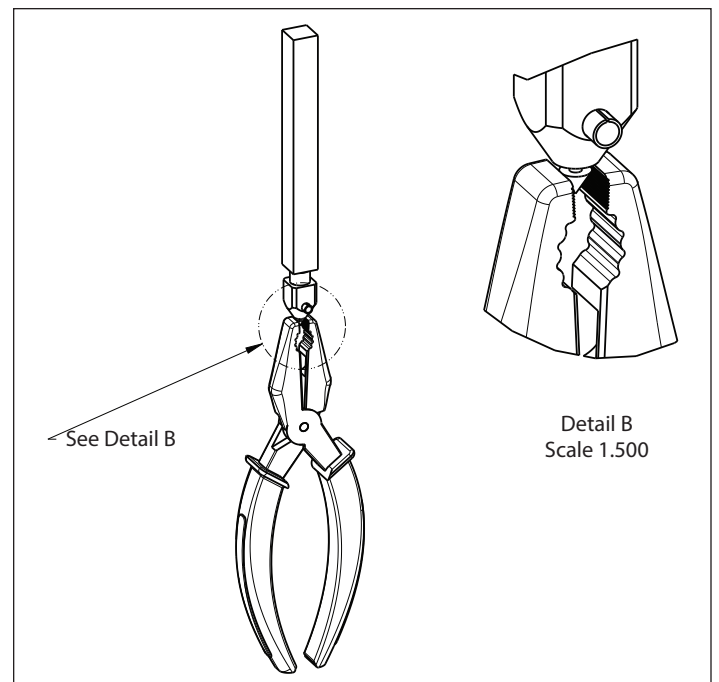


Figure 8. Removing the Point with Pliers.

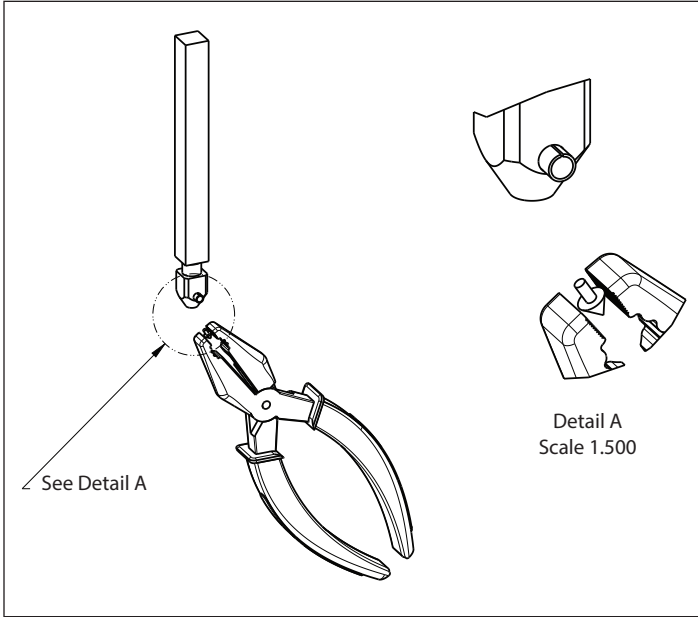


Figure 9. Twisting to Remove the Point.

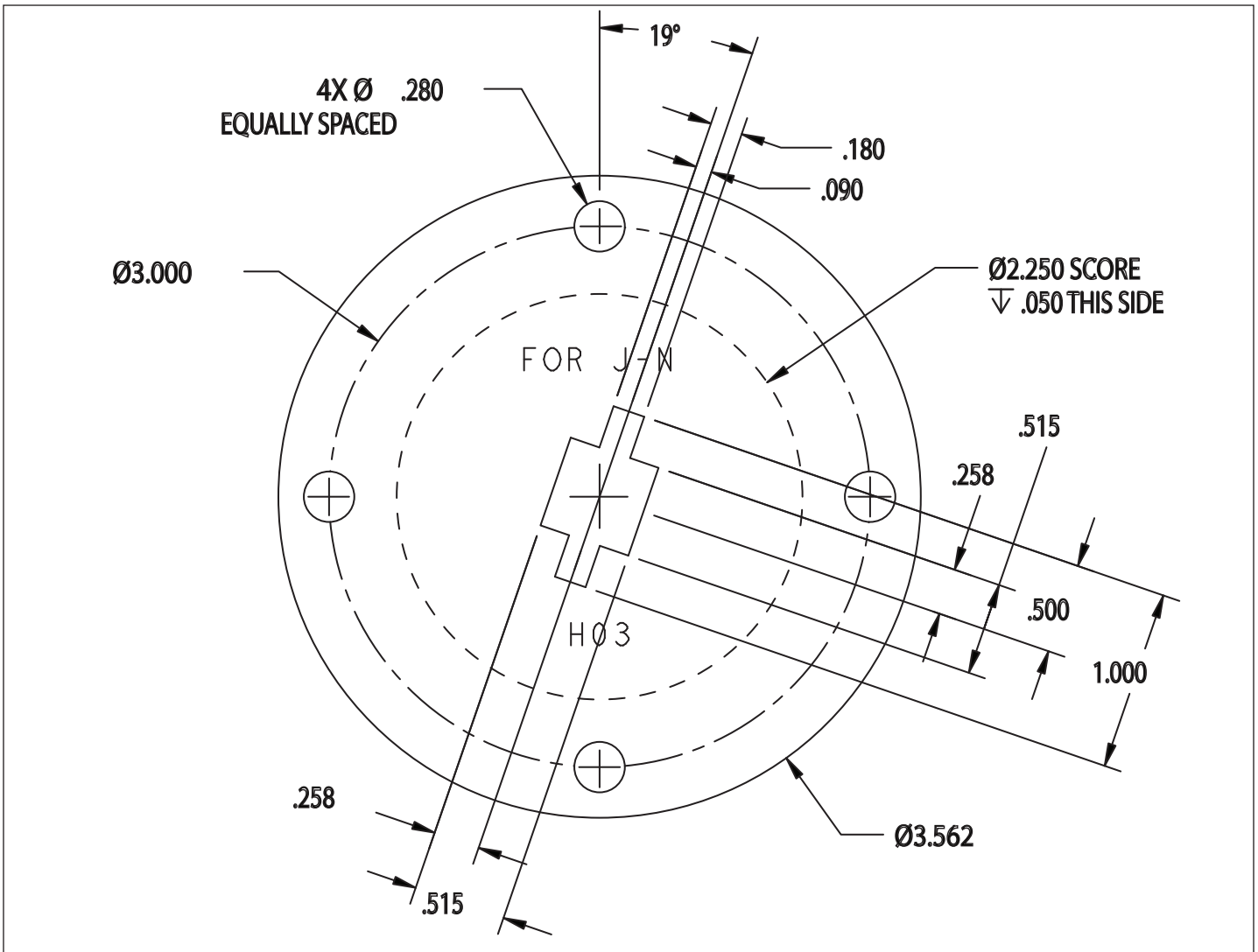


Figure 10. Door Drilling/Cutout Template (Note: Not to Scale).

Instructions for Drilling and Assembling Rotary Handle
Mechanism for PDG5 Circuit Breakers, Molded Case
Switches, and HMCPs

Instruction Leaflet IL012359EN
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