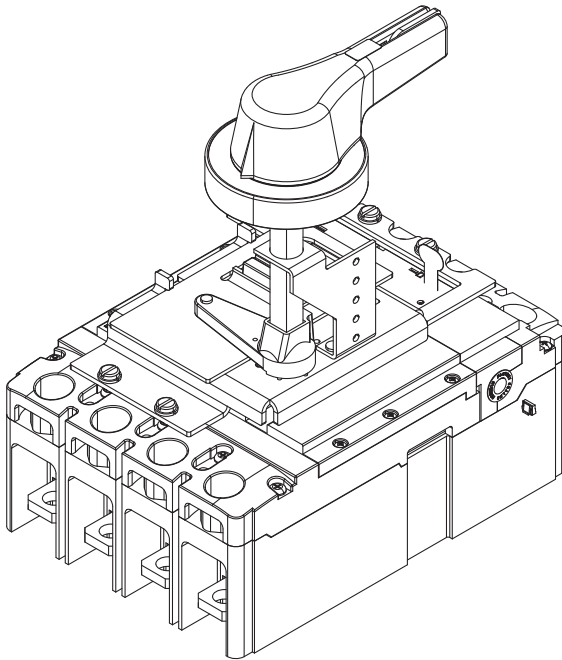


# Instructions for Drilling and Assembling Rotary Handle Mechanism for PDG3 Circuit Breakers, Molded Case Switches, and HMCPs



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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.**

**EATON IS NOT LIABLE FOR THE MISAPPLICATION OR MISINSTALLATION OF ITS PRODUCTS.**

The User is cautioned to observe all recommendations, warnings, and cautions relating to the safety of personnel and equipment as well as all general and local health and safety laws, codes, and procedures.

The recommendations and information contained here in are based on Eaton's experience and judgment, but should not be considered to be all-inclusive or covering every application or circumstance which may arise. If any questions arise, contact Eaton for further information or instructions.

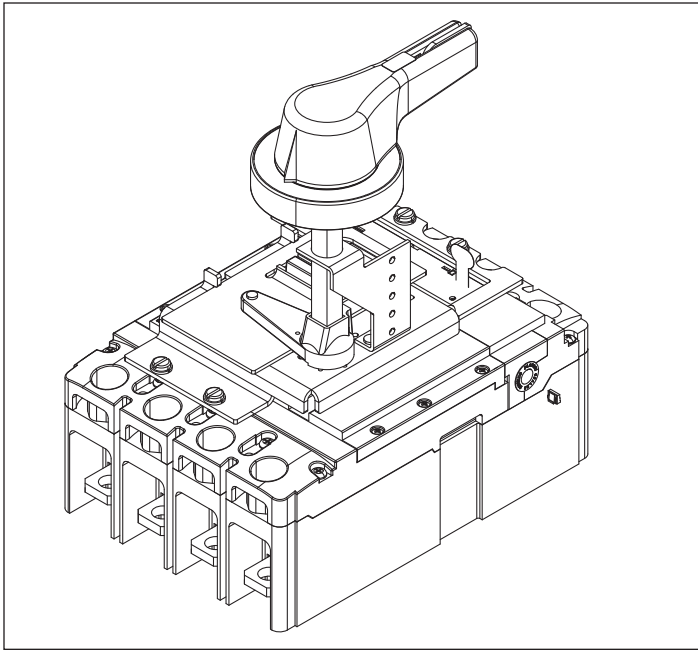


Figure 1. PDG3 Handle Mechanism Assembly.

## Description

The Eaton general purpose Rotary Handle mechanism is suitable for use with NEMA1, 3R, 12, 4, and 4X fabricated enclosures. It is designed for use with PDG3 circuit breakers, molded case switches, and motor circuit protectors (HMCP) up to 400 amps.

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 custom-er 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.**

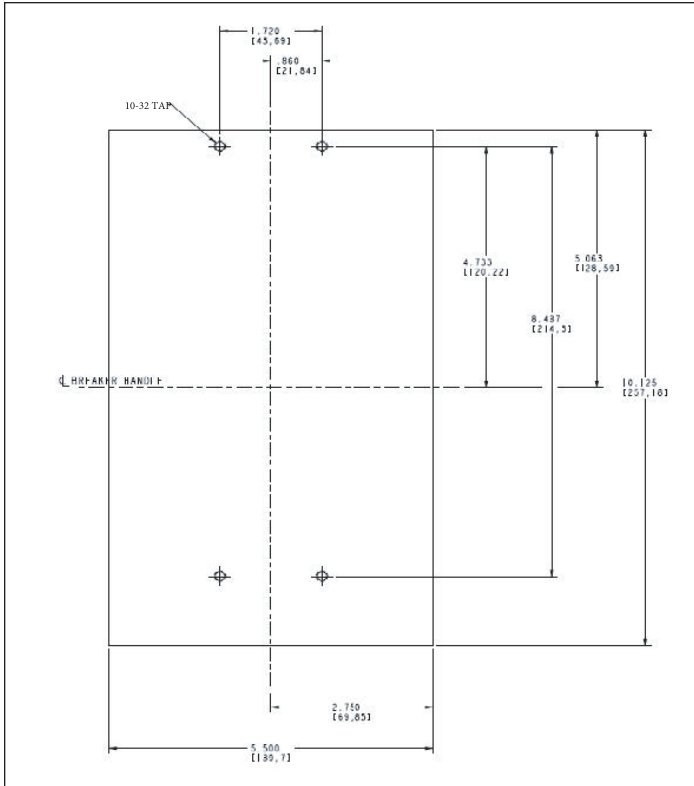


Figure 2. Drill and Tapping Plan for PDG3 Breaker.

### Installation of Circuit Breaker and Operating Assembly

1. Determine the position for circuit breaker in the enclosure. Drill and tap the circuit breaker mounting holes in the enclosure mounting surface as shown in Figure 2
2. Mount the circuit breaker to enclosure using the two longer screws and two standoffs from the hardware kit. If a PXR (electronic) trip unit is used, the thinner spacers needs inserted between the standoff and the breaker. Insert the screws into the two line end circuit breaker mounting holes and the standoffs into the load end mounting holes. Tighten the screws and standoffs into tapped holes from Step 1 (see Figure. 3).
3. Turn the circuit breaker to the "OFF" position. Remove and discard the two cover screws that share the counter-bore with the mounting screws from Step.2
4. Measure the panel depth "D" per Figure 4. If "D" is less than 8" (203.2 mm), remove the shaft support bracket from the operating assembly and discard
5. Mount the mechanism on to the circuit breaker, ensuring the slide plate is engaged with the circuit breaker handle. Insert the new cover screws along with the thicker spacers and lock washers from the hardware kit, through the line end mounting holes of the mechanism, and into the empty cover screw holes of the circuit breaker. Insert the shorter screws, and lock washers, from the hardware kit, through the holes in the mechanism into the standoffs (see Figure 3)

### 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).

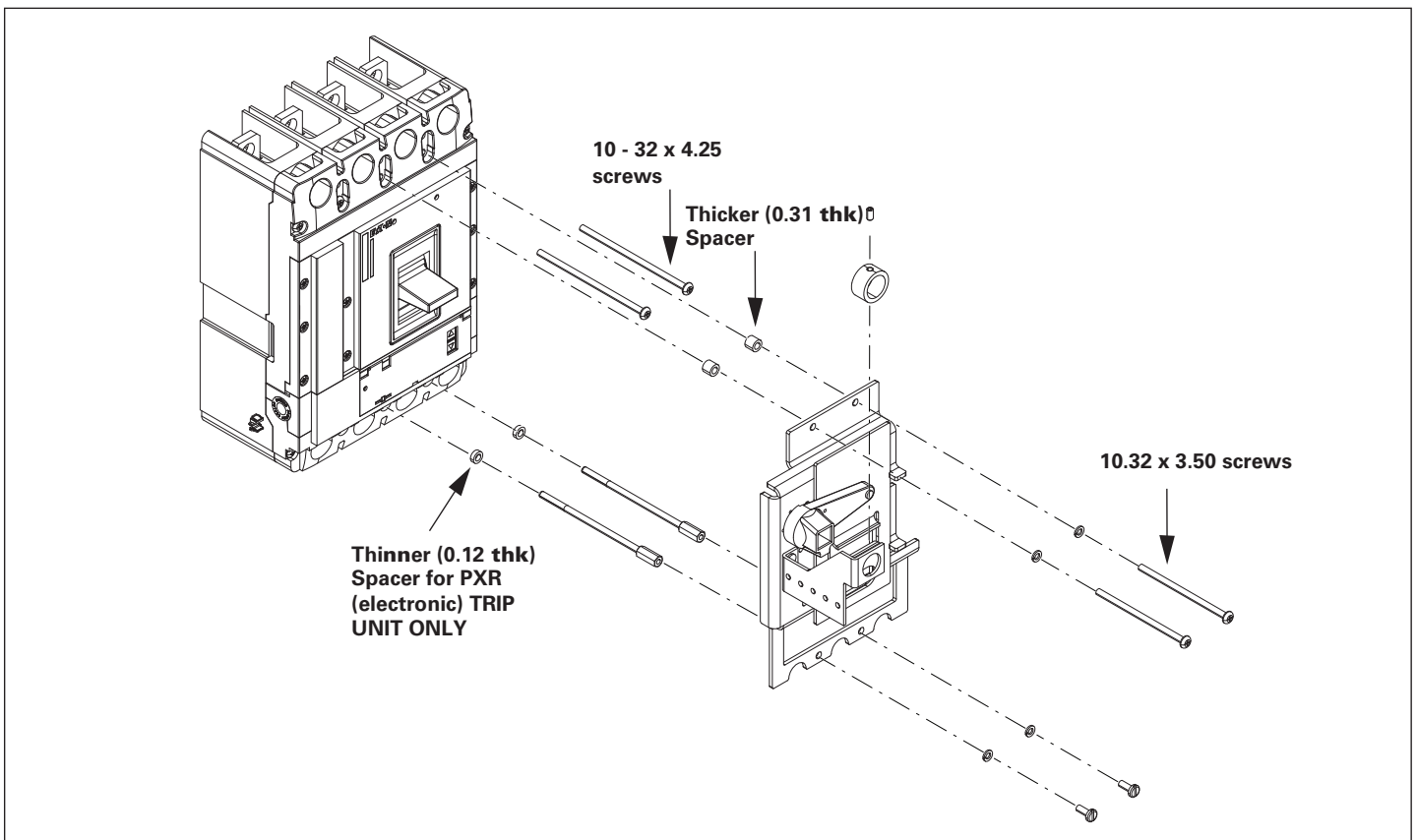
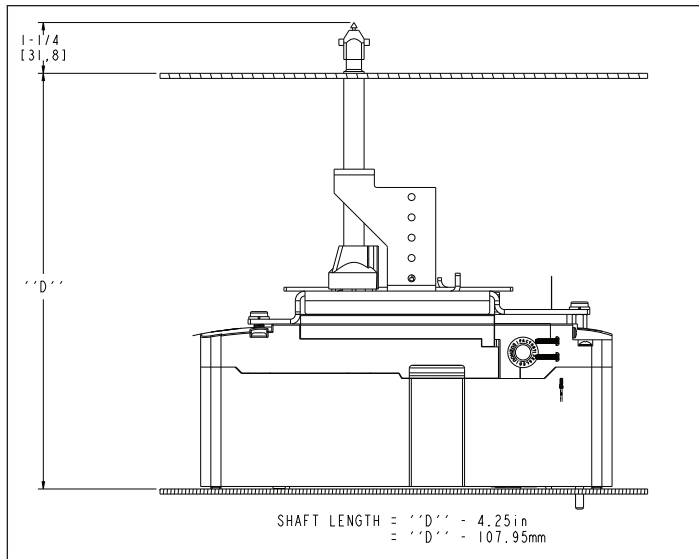


Figure 3. PDG3 Breaker/Mechanism Assembly.



**Figure 4. Cutting the Shaft to Length.**

- 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.
- 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). Insert the set screw from the hardware kit into pivot link and torque to 50 lb.-in (5-6 N•m).
- Take set screw and shaft collar from hardware kit and insert set screw into shaft collar. Place square end of shaft through shaft support bracket then through 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 shaft collar lightly against the underside of the shaft support collar and torque set screw between 28-30 in.-lbs (3.16-3.39 N m).

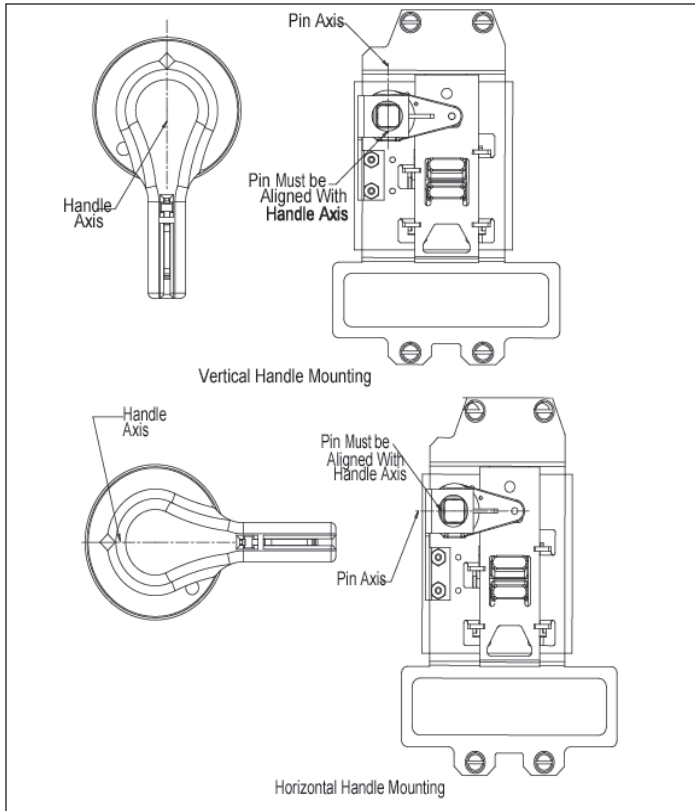
#### Installation of the Handle Assembly onto Enclosure Cover

- 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.
- 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.
- 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.
- 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.

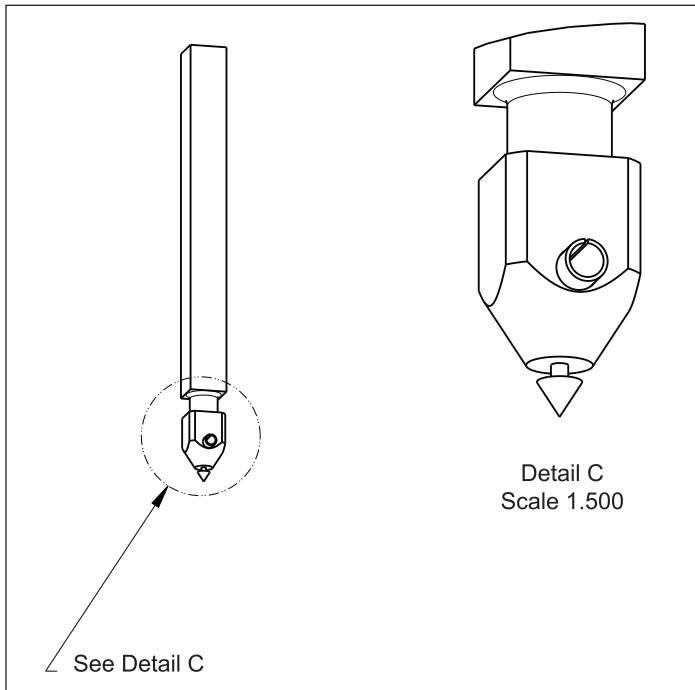
**Table 1. Correction Factor Table.**

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)

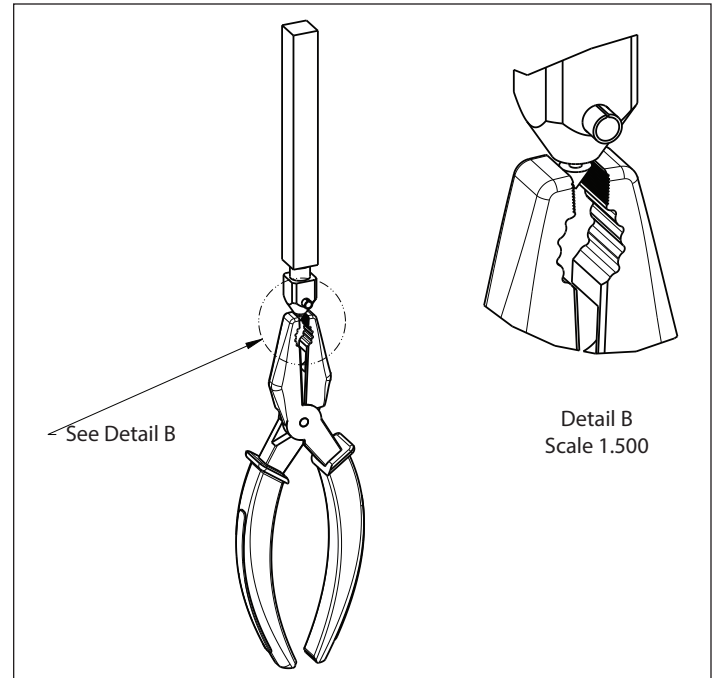
- Carefully remove the inner portion of the gasket/template keeping the outer gasket ring and place it between the handle assembly and the door. If this installation is a NEMA 4 or 4X, use the neoprene gasket supplied with the hardware kit. Loosely drive the four 0.25-20 x 0.5" screws through both the door and gasket from the inside of the enclosure door cover and into the handle assembly. Tighten evenly. For international handle styles, the handle mounting hardware is similar to the M6 x 1 x 12 mm screw if misplaced.
- With the power isolated from the circuit breaker, test the function of installed handle mechanism in the following manner:
  - Close the enclosure door. Switch the handle mechanism to ON.
  - Check that the handle mechanism switches the circuit breaker to the ON position and that the enclosure door cannot be opened.
  - Switch the handle mechanism to OFF position.
  - Check that the handle mechanism switches the circuit breaker to OFF position and that the enclosure door cannot be opened.
  - Turn the handle to OPEN COVER position and ensure the door opens.
  - Close the enclosure door. Switch the handle mechanism/circuit breaker to ON.
  - Turn the interlock defeater counterclockwise with a flat blade screw driver.
  - Open the enclosure door.
  - Press the Push-To-Trip button in the circuit breaker trip unit with a small flat-blade screw driver to trip circuit breaker.
  - Align the handle assembly with the shaft and close enclosure door.
  - Switch the handle mechanism to the OPEN COVER (RESET) position. Check to ensure the breaker resets.
- 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 6).
  - Grip the removable point with a pair of pliers (see Figure 7).
  - With a slight twisting motion of the pliers, remove the point (see Figure 8).



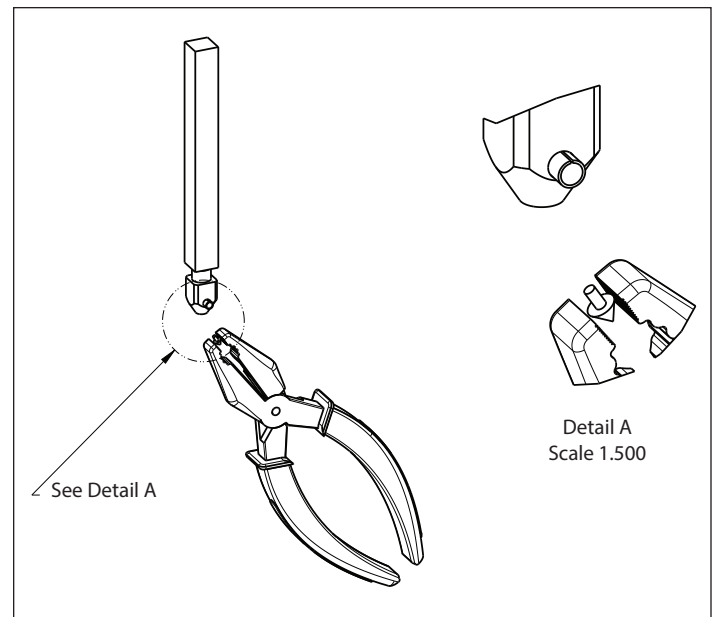
**Figure 5. Handle Orientation.**



**Figure 6. Shaft and Handle.**



**Figure 7. Removing the Point with Pliers.**



**Figure 8. Twisting to Remove the Point.**

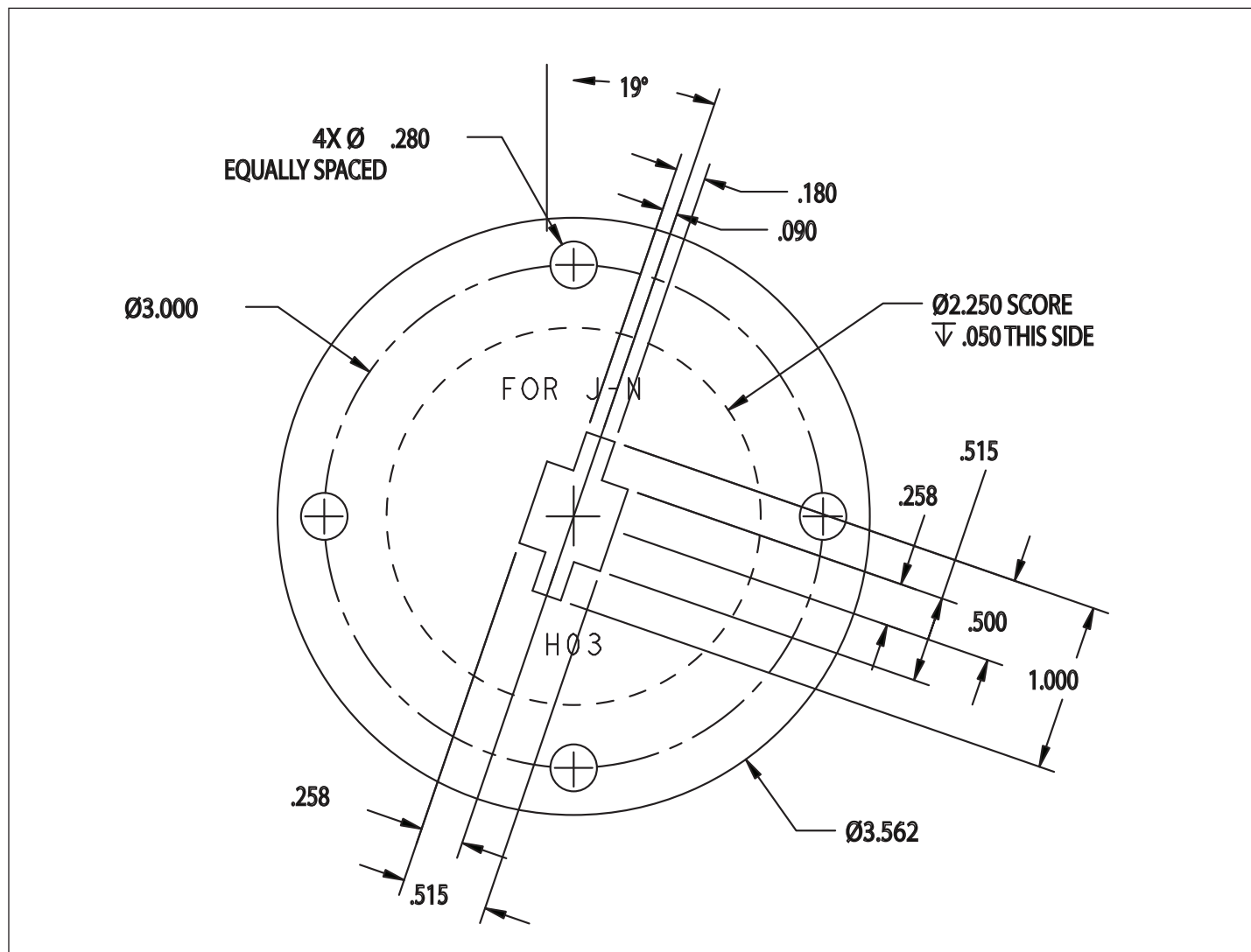


Figure 9. Door Drilling/Cutout Template (Note: Not to Scale).

Instructions for Drilling and Assembling Rotary Handle  
Mechanism for PDG3 Circuit Breakers, Molded Case Switches,  
and HMCPs

Instruction Leaflet IL012357EN

Effective August 2020

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