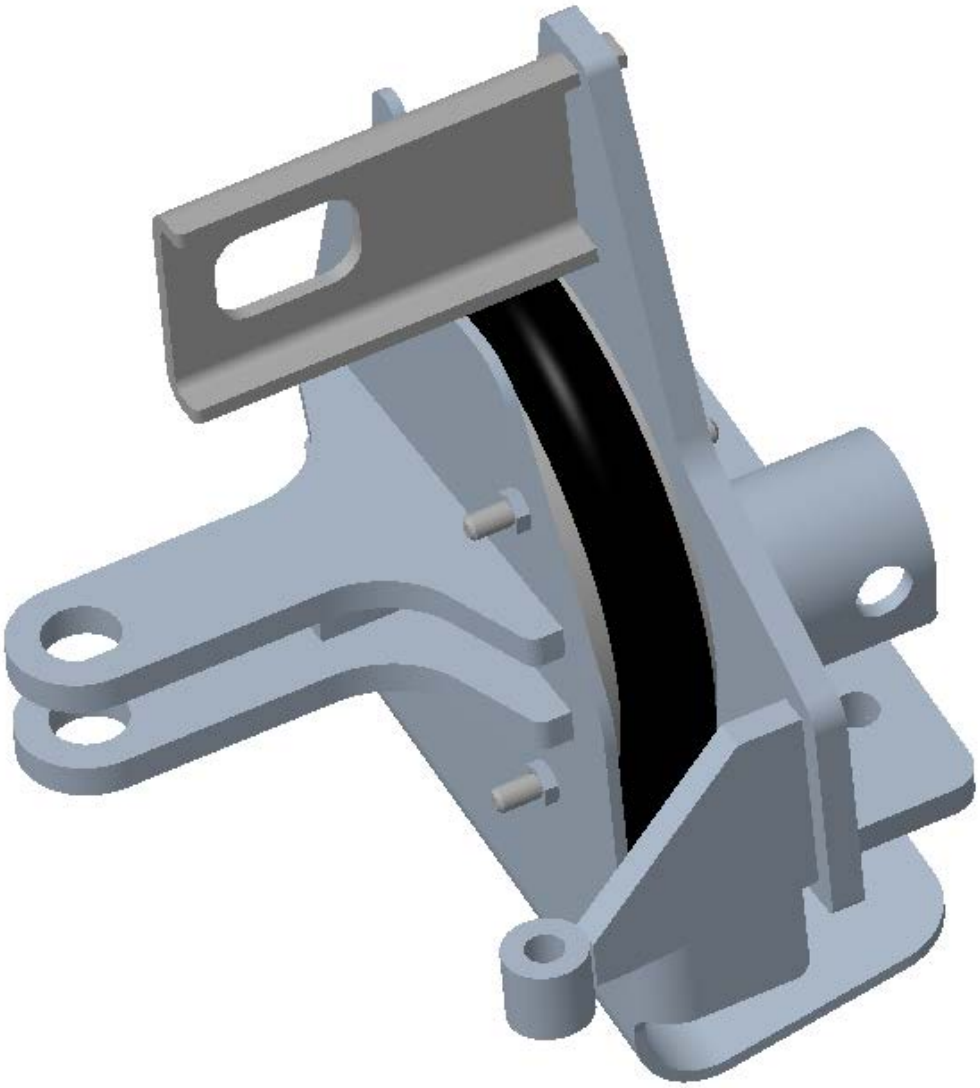
TM-23021

UBX® ACTUATOR RECONDITIONING

Rev. B
TM191021A



Wabtec
Cardwell Westinghouse

Table of Contents

1 Scope

1.1 To provide information on disassembly, inspection, and rebuild processes for a UBX® actuator.

2 Warnings & Safety Procedures

2.1 This manual is meant to be used as a guide and is not all inclusive. Be sure to exercise care and follow the proper safety protection procedures per your facility. Cardwell Westinghouse does not assume liability for injuries or damage caused while re-building a UBX® actuator.

3 Maintenance Schedule

3.1 At least once every 144 months, or more frequently if service conditions require, the UBX® actuator should be reconditioned or replaced.

4 Replacement Part Information

4.1 To ensure satisfactory operation and reliability of this device, only Cardwell Westinghouse replacement parts should be used in the reconditioning of a UBX® actuator.

4.2 Please see drawing TM-23018 for Cardwell Westinghouse UBX® actuator rebuild kits.

4.2.1 For any parts not included in the kit that may need replacement, per Section 7, please consult TM-22003 & TM-22003-2 for replacement part numbers.

5 Required Equipment

5.1 Fixtures

5.1.1 A suitable holding fixture for the safe assembly and disassembly of the UBX® actuator must be constructed.

5.1.2 A suitable testing fixture for leak testing, per Section 10, of the UBX® actuator must be constructed.

5.1.2.1 Testing fixture may be combined with assembly/disassembly fixture.

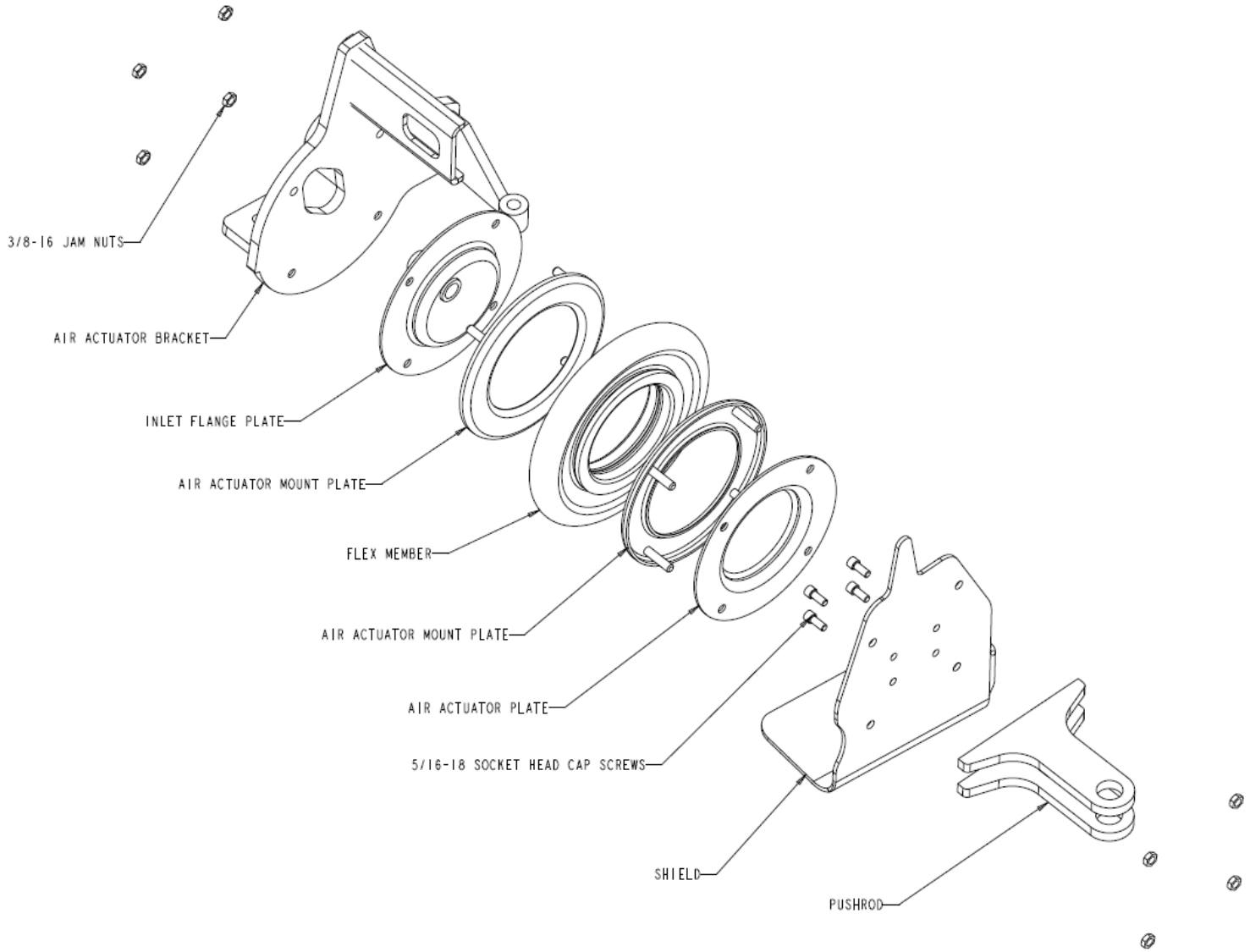


Figure 1. UBX Actuator Components

6 Disassembly

6.1 Carefully loosen and remove the eight 3/8”-16 jam nuts from the threaded studs. The jam nuts are to be scrapped.

6.2 Remove the shield, with the push rod still installed, and actuator bracket.

6.2.1 Inspect per Sections7.4, 7.5, & 7.8.

6.3 Remove the air actuator plate and inlet flange plate.

6.3.1 Inspect per Sections 7.6 & 7.7.

6.4 Air actuator mount plates and flex member are to be scrapped.

7 Cleaning, Painting, & Inspection

7.1 Clean all parts per facility’s Standard Work Instructions (SWI).

7.2 After parts are clean, they must be completely dry per facility’s SWI.

7.3 Painting

7.3.1 If original actuator is not painted, continue to Section 7.4. Standard actuators are unpainted. Cardwell Westinghouse does not require the painting of the UBX® actuator for functionality.

7.3.2 If rebuilding a painted UBX® actuator, inspect paint per facility’s SWI.

7.3.2.1 If paint meets standards, parts do not need to be repainted.

7.3.2.2 If paint is found to have chips, flakes, blemishes, etc, all paint should be removed and re applied per facility’s SWI and paint manufacturers specifications.

7.4 Inspect the push rod.

7.4.1 Throat opening dimension must fall within 1.13” – .88” throughout the width constraint range, see Figure 2. If throat opening exceeds 1.13” or is smaller than .88” inside the width constraint range, the part must be replaced.

7.4.2 Wall thickness around hole must exceed .40” at any point, see Figure 2. If the wall thickness around the hole is less than .40” at any point, the part must be replaced.

7.4.3 Inspect for cracked, broken, or missing welds. If defect is discovered, the part must be replaced.

7.4.4 If pushrod replacement is required, 5/16”-18 socket head cap screws must also be replaced.

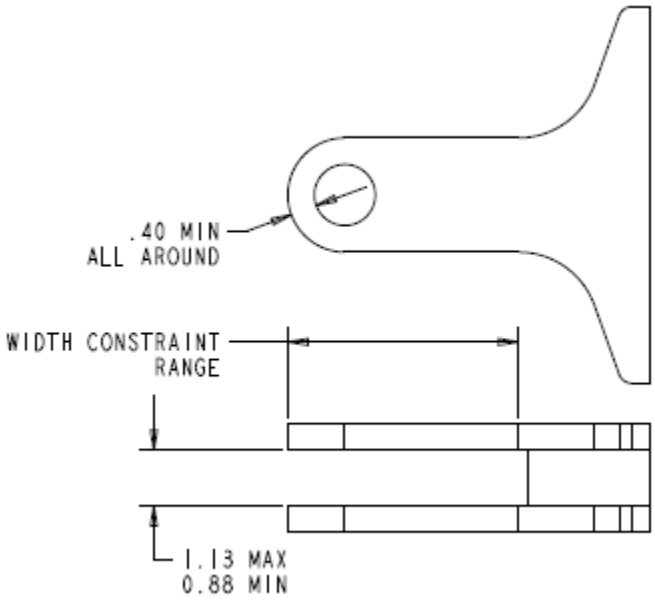


Figure 2. Push Rod Condemning Limits

7.5 Inspect the shield.

7.5.1 Flatness of mating face may not exceed .063", see Figure 3. If flatness of mating face exceeds .063", the part must be replaced.

7.5.2 Angle between mounting face and shield bottom must be 80° ± 10°, see Figure 3. If angle between mounting face and shield bottom exceeds 80° ± 10°, the part must be replaced.

7.5.3 If pre-2009 shield is inspected, see Figure 4, and accepted per the criteria above, the shield may be cut flush along the vertical edges, flush along the indicator edge and top edge, and reused. All sharp edges must be broken, and sharp corners rounded.

7.5.4 If shield replacement is required, 5/16"-18 socket head cap screws must also be replaced.

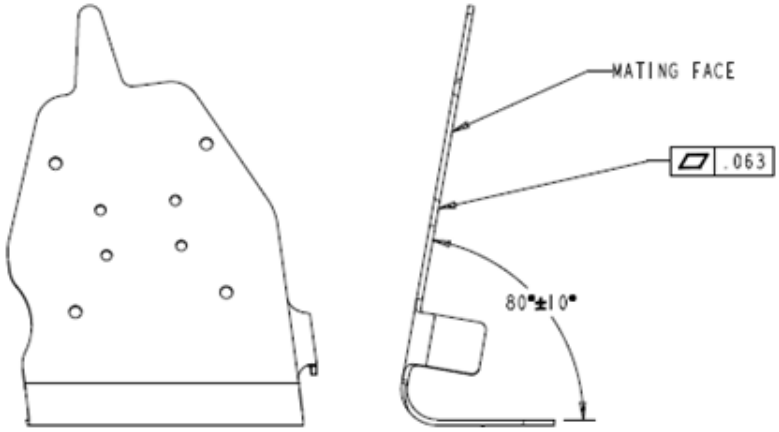


Figure 3. Shield Condemning Limits

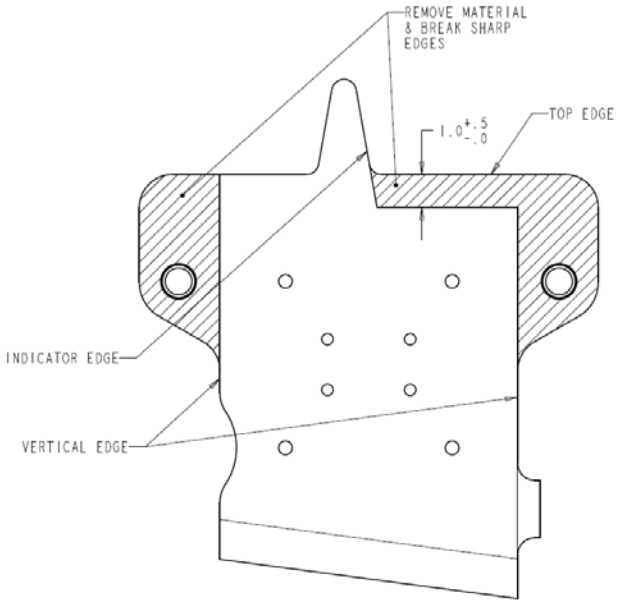


Figure 4. Shield Pre-2009

7.6 Inspect air actuator plate.

7.6.1 Flatness of mating face may not exceed .063", see Figure 5. If flatness of mating face exceeds .063", the part must be replaced.

7.6.2 Scrapes or gouges on the sealing surface must not exceed .05" deep, see Figure 5. If scrapes or gouges exceed .05" deep on the sealing surface, the part must be replaced.

7.6.3 Any oxidation and/or loose paint must be removed from the sealing surface, see Figure 5.

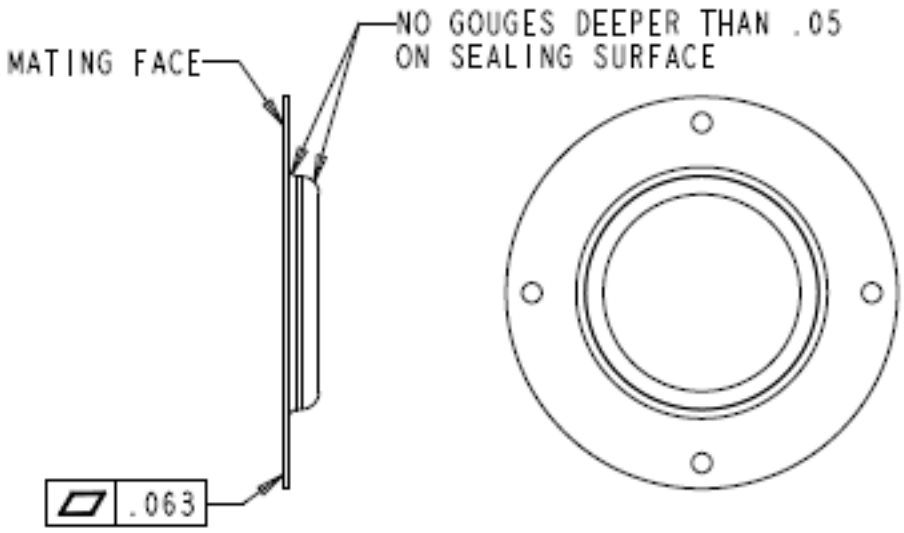


Figure 5. Air Actuator Plate Condemning Limits

7.7 Inspect inlet flange plate

7.7.1 Flatness of mating face may not exceed .063", see Figure 6. If flatness of mating face exceeds .063", the part must be replaced.

7.7.2 Scrapes or gouges on the sealing surface must not exceed .05" deep, see Figure 6. If scrapes or gouges exceed .05" deep on the sealing surface, the part must be replaced.

7.7.3 Inspect for cracked, broken, or missing welds. If defect is discovered, the part must be replaced.

7.7.4 Scrapes or gouges on the air flange sealing surface must not exceed .05" deep, see Figure 6. If scrapes or gouges exceed .05" deep on the air flange sealing surface, the part must be replaced.

7.7.5 Tapped holes on inlet flange must accept a 1/2"-13 UNC bolt, see Figure 6 or be chased. If threads cannot be chased, the part must be replaced.

7.7.6 Any oxidation and loose paint must be removed from the sealing surface and air flange sealing surface, see Figure 6.

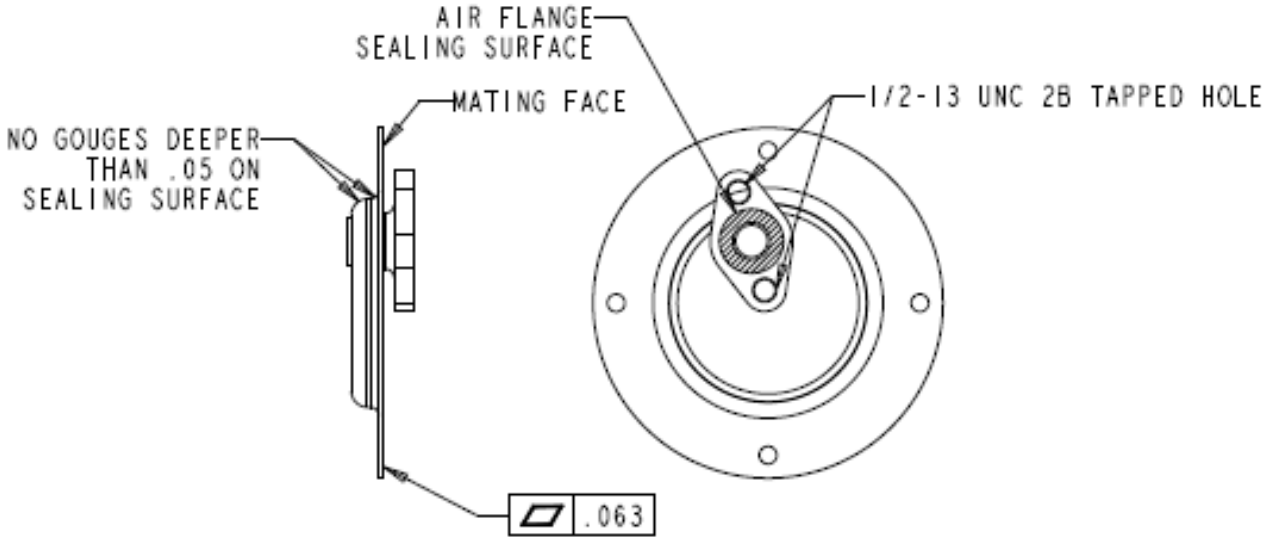


Figure 6. Inlet Flange Plate Condemning Limits

7.8 Inspect the air actuator bracket.

7.8.1 Flatness of mating face may not exceed .063", see Figure 7. If flatness of mating face exceeds .063", the part must be replaced.

7.8.2 Inspect areas highlighted in Figure 7 for cracked, broken, or missing welds.

7.8.3 Inspect mounting surfaces. If slag or torch marks are present, area must be ground smooth and blended with original steel surface.

7.8.4 Inspect for broken, bent, and missing parts. If parts are broken, bent, or missing, the entire part must be replaced.

7.8.4.1 If piston travel indicator is damaged, see RTM-22015 for optional replacement procedure.

7.8.5 If pre-2009 air actuator bracket is inspected, see Figure 8, and accepted per the criteria above, rod guides are to be removed and ground flush with bracket and flat. Actuator bracket may be reused with rod guides removed.

7.8.6 If bracket has "wrap around" P.T. indicator, see Figure 9, air actuator bracket must be scrapped regardless of condition.

7.8.7 If bracket only has a single mounting hole, see Figure 10, air actuator must be scrapped regardless of condition.

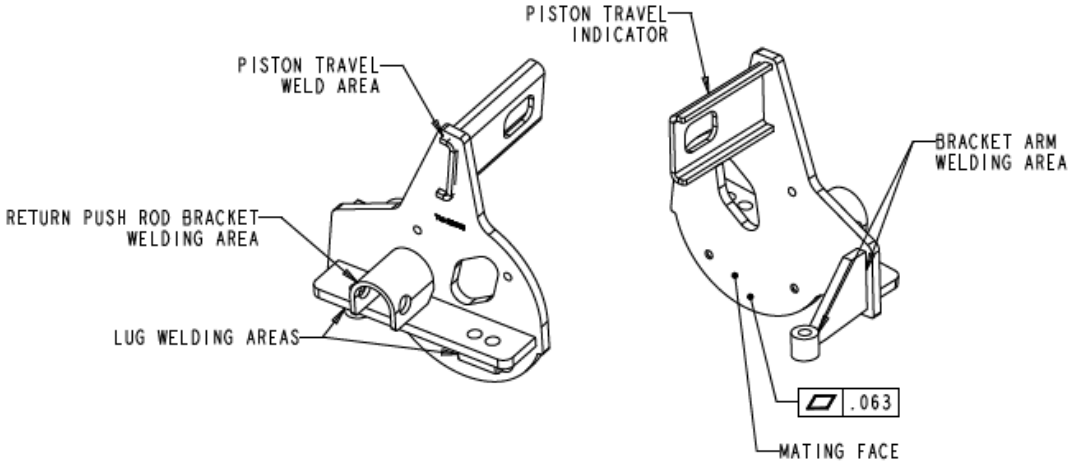


Figure 7. Air Actuator Bracket Condemning Limits

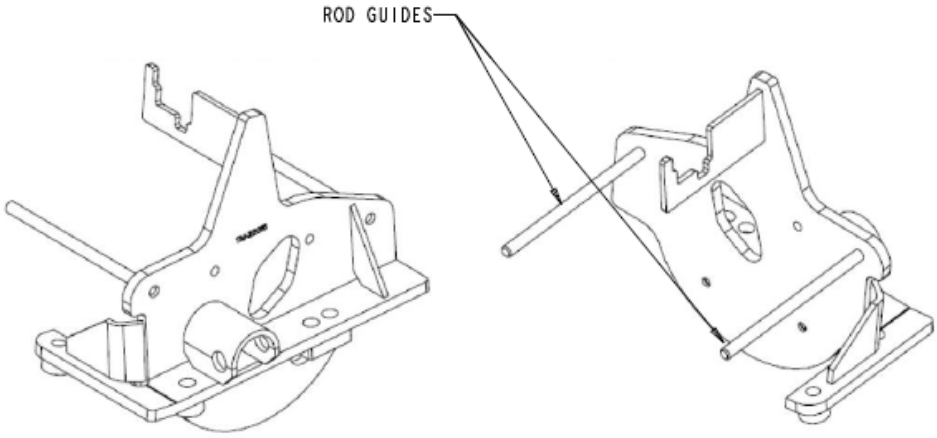


Figure 8. Pre-2009 Air Actuator Bracket

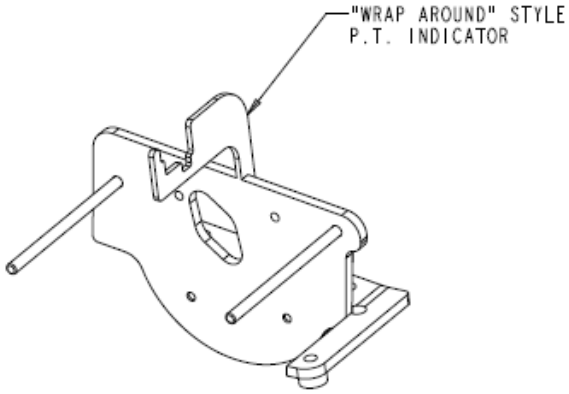


Figure 9. Wrap Around Style P.T. Indicator Assembly

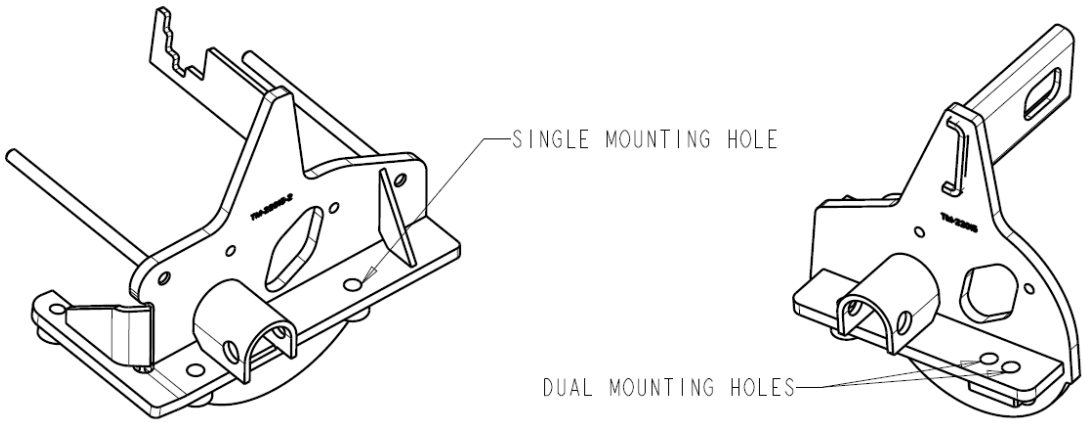


Figure 10. Mounting Hole Configuration

8 Assembly

8.1 Reassemble UBX actuator per facility's SWI.

9 Travel Indicator Decal

9.1 If existing air actuator bracket can be re-used, no change in the piston travel indicator decal is required.

9.2 If pre-2009 air actuator bracket is replaced, the appropriate piston travel indicator decal will also need to be ordered and installed on the car.

Piston Travel	Decal Part Number
Short (3-3/4")	TM-22033
Long (4-1/2")	TM-22037

10 Testing

10.1 It is recommended by Cardwell Westinghouse that all reconditioned actuators be tested per AAR MSRP-[E] S-4004 Section 3.0, or equivalent, per facility's SWI.