



To prevent **SERIOUS INJURY** and **PROPERTY DAMAGE**, you should read, understand and follow these Operating Instructions. Keep for future reference.



Quick Opening Closure

Operating Instructions

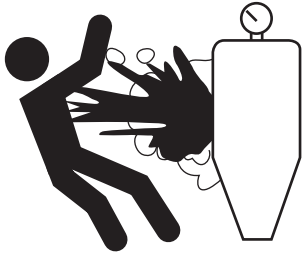
ISO 9001



ENGINEERING YOUR SUCCESS.

1. Safety Information

DANGER



To prevent **SERIOUS INJURY** or **DEATH**, before pressurizing:

- **ALWAYS** confirm both Yoke Gaps are equal to each other and are within $\pm 1/16$ " of the nameplate value.
- **ALWAYS** tighten the Drawbolts and the Safety Bolts to the torque values stamped on the nameplate.

WARNING

To prevent **SERIOUS INJURY** or **DEATH**:

- **NEVER** attempt to open this unit when pressure is present.
- **READ** and **FOLLOW** all instructions and safety messages before use.
- **NEVER** exceed the pressure rating on the nameplate.
- **NEVER** stand in front of the QOC while opening.
- **ALWAYS** check the pressure is zero (0 PSIG) before attempting to open this unit.
- **NEVER** disable any safety devices or the Pressure Warning Device (PWD) that can help prevent an accident.
- **INSPECT** for signs of wear, rust and damage. **DO NOT** return to service if damaged.
- **DO NOT** place hands and other body parts between QOC and the filter housing.
- **ALWAYS** confirm yoke gap and apply the proper Drawbolt torque and Safety Bolt torque before pressurizing. For yoke gap and torque requirements, see nameplate.

2. Tools Required

To Open and Close the Quick Opening Closure:

Small to medium size closures may be opened using normal hand tools (up to 30" diameter).

Larger closures will require air or hydraulic assisted impact or torque wrenches (greater than 30" diameter).

3. Before Getting Started



ALWAYS review and follow any applicable unit specific procedure concerning the service to which the operator will be exposed. These documents should tell you the precautions that need to be taken prior to opening the unit.



ALWAYS wear the appropriate Personal Protective Equipment (PPE). If the applicable Corporate Policy or Procedure does not tell you, ask your Supervisor **BEFORE** opening the Quick Opening Closure.

- 3.1 A labeled diagram of a horizontal Quick Opening Closure (QOC) is provided in Figure 1 to assist with part identification.

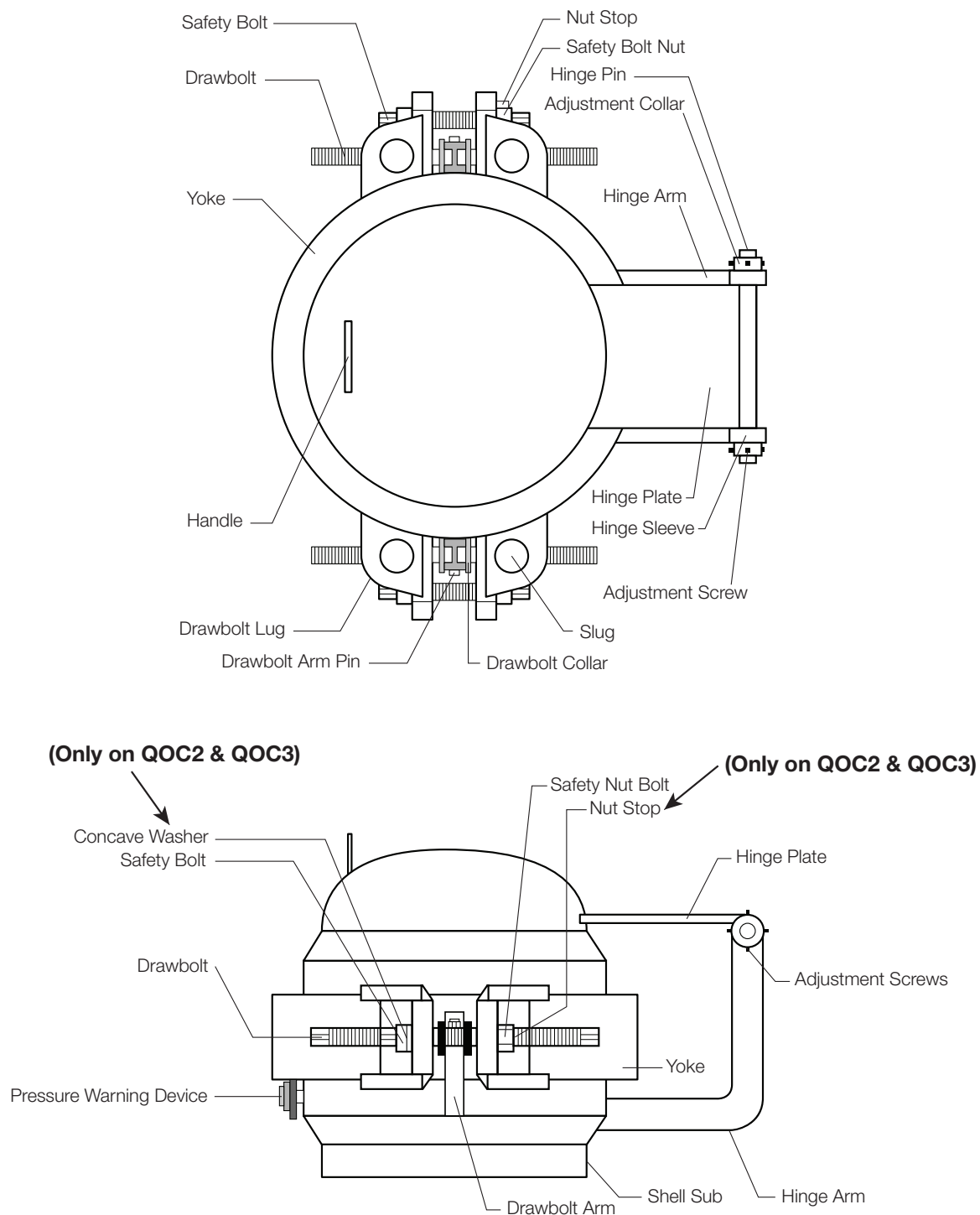


Figure 1: QOC Horizontal Assembly with Parts Identified

3.2 The warning labels and their approximate locations on a Quick Opening Closure (QOC) are provided in Figure 2. Periodically inspect the warning labels to ensure they are clean and legible. If needed, contact Parker to order replacement labels.

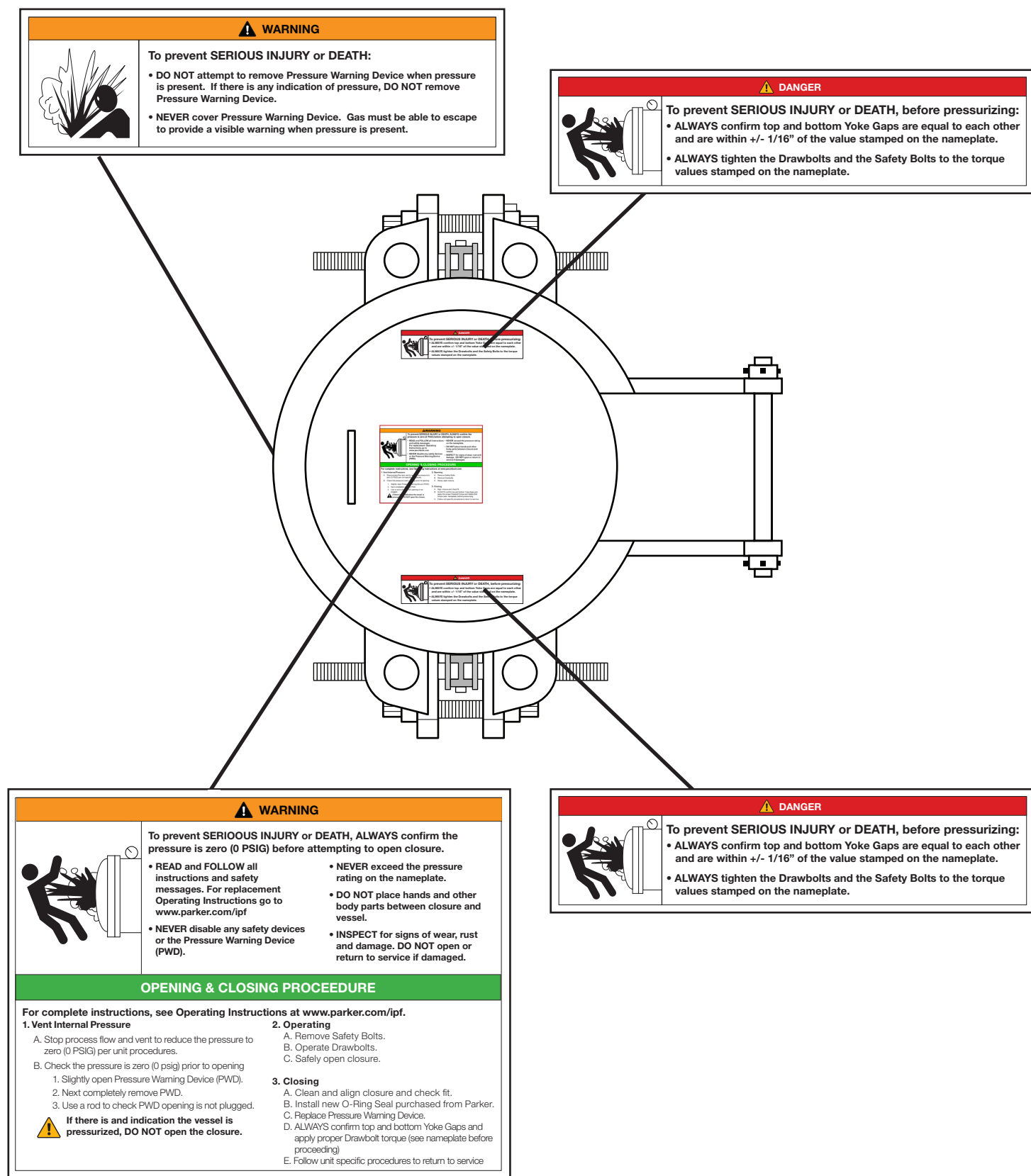


Figure 2: QOC Warning Labels Locations

4. Confirm if Closure is a an Original QOC or a generation 2 or 3 design.

Parker's QOC2 and QOC3 closures are very similar to the PECO Original QOC with one important operational difference – the Safety Bolts **MUST** be torqued along with the Drawbolts. The QOC2 and QOC3 designs generally allow Parker to use smaller bolts requiring less torque than the original QOC, which will allow easier operation to meet today's filtration needs.

4.1 ALWAYS check the Nameplate

- 4.1.1 The quickest and easiest way to determine which closure you have is by looking at the nameplate. The QOC2 and QOC3 nameplates will have a spot for both “Drawbolt Torque” and “Safety Bolt Torque”.

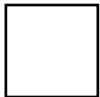
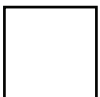
Original QOC Nameplate	QOC2 or QOC3 Nameplate (including Safety Bolt Torque)
	
C.R.N.	C.R.N.
CERTIFIED BY PERRY EQUIPMENT CORP. MINERAL WELLS, TEXAS U.S.A.	CERTIFIED BY PERRY EQUIPMENT CORP. MINERAL WELLS, TEXAS, U.S.A.
W PART	U PART
MAWP PSIG AT °F	MAWP PSIG AT °F
MDMT °F AT PSIG	MDMT °F AT PSIG
S/N YR. BLT	S/N YR. BLT
CA. INCH	CA. IN YOE GAP
QUICK OPENING CLOSURE	QUICK OPENING CLOSURE
GASK. MATL	GASKET MATL
 YOKE END GAP	B/U RING
PRESS. WARNING DEV.	PRESS. WARNING DEV.
DRAWBOLT TORQUE FT. LBS	DRAWBOLT TORQUE FT. LBS
FT. LBS PRIOR TO PRESSURIZING. CAUTION: SEE INSTRUCTION MANUAL PRIOR TO OPERATION	SAFETY BOLT TORQUE FT. LBS
	FT. LBS PRIOR TO PRESSURIZING. CAUTION: SEE INSTRUCTION MANUAL PRIOR TO OPERATION
	

Figure 3: Original QOC Nameplate and QOC2 or QOC3 Nameplate including Safety Bolt Torque

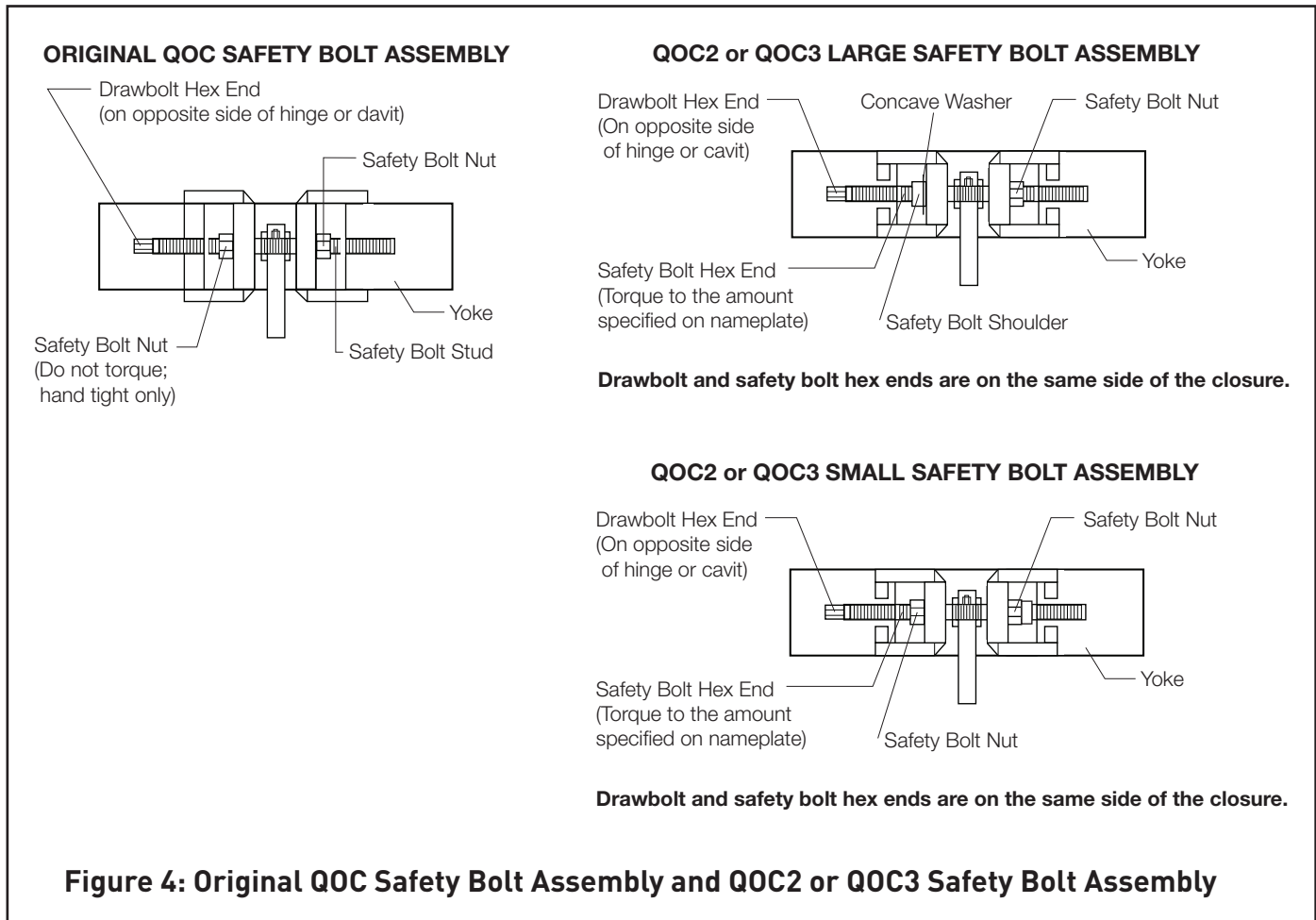


These torque values are **MANDATORY** to ensure safe operation of the closure. Failure to properly torque the Drawbolts and Safety Bolts may result in **PERSONAL INJURY, DEATH** or property damage.

If you have any problems achieving the torque values on the nameplates, call Parker **BEFORE** pressurizing the QOC.

4.2 Inspect the Safety Bolt Assembly

4.2.1 Most QOC2 or QOC3 models are shipped with a safety bolt that has a hex-head on one end and a standard nut on the other. The Original QOC's safety bolt is a standard through bolt with a nut on both ends. A sketch distinguishing these different safety bolts is below. Nevertheless, it is still important to check the nameplate for the "Safety Bolt Torque" value as some smaller QOC2 or QOC3 models may have standard through bolts.



Drawbolt Dimensions

Drawbolt Thread Size	Hex Size
1"	.75"
1.25"	1"
1.5"	1.25"
2"	1.5"
2.5"	2"
3"	2.5"
3.5"	3"
4"	3"

Safety Bolt Dimensions

Safety Bolt Thread Size	Hex Size
1.5"	1.5"
1.75"	1.5"
2"	2"
2.25"	2.5"
2.5"	2.5"
3	2.5"
3.5"	3"
4"	3.5"

4.3 Only the QOC2 or QOC3 has “Nut Stops”

4.3.1 The QOC2 or QOC3 will have two “Nut Stops” on the hinge arm side of the closure. These Nut Stop Tabs will hold the non-drive side safety nut in position while the Safety Bolt is torqued. Only the QOC2 or QOC3 will have Nut Stops; therefore, this is another helpful way to distinguish the Original QOC from the QOC2 or QOC3. An up-close sketch of this Nut Stop is shown in Figures 6 & 7 below. As seen in Figure 5, the original QOC Safety Bolt Assembly does not include a Nut Stop Tab.

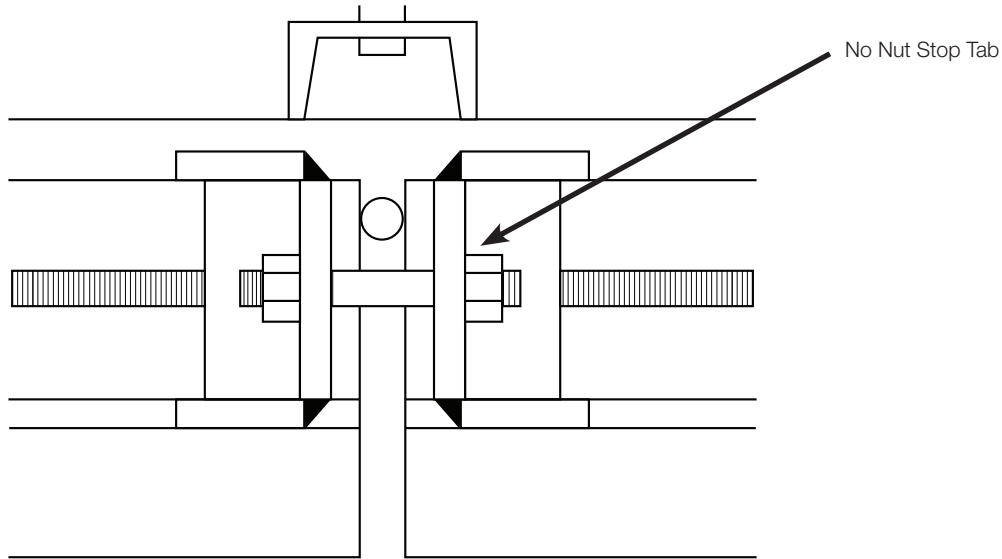


Figure 5: Original QOC Safety Bolt Assembly

4.3.2 Most QOC2 or QOC3 models have a Safety Bolt that has a hex head on one end and a standard nut on the other end. It is important to check the nameplate as seen in Figure 3 above, as some smaller QOC2 or QOC3 models may have standard through bolts as seen in Figure 7 below.

4.3.3 The Quick Opening Closure may have an elliptical head or a flat head. Usually the larger diameter higher pressure closures will have an elliptical head. Small vertical closure davits may have a hex nut, which can be turned with a wrench to lift the head. Larger vertical closures may have a hydraulic jack to lift the head.

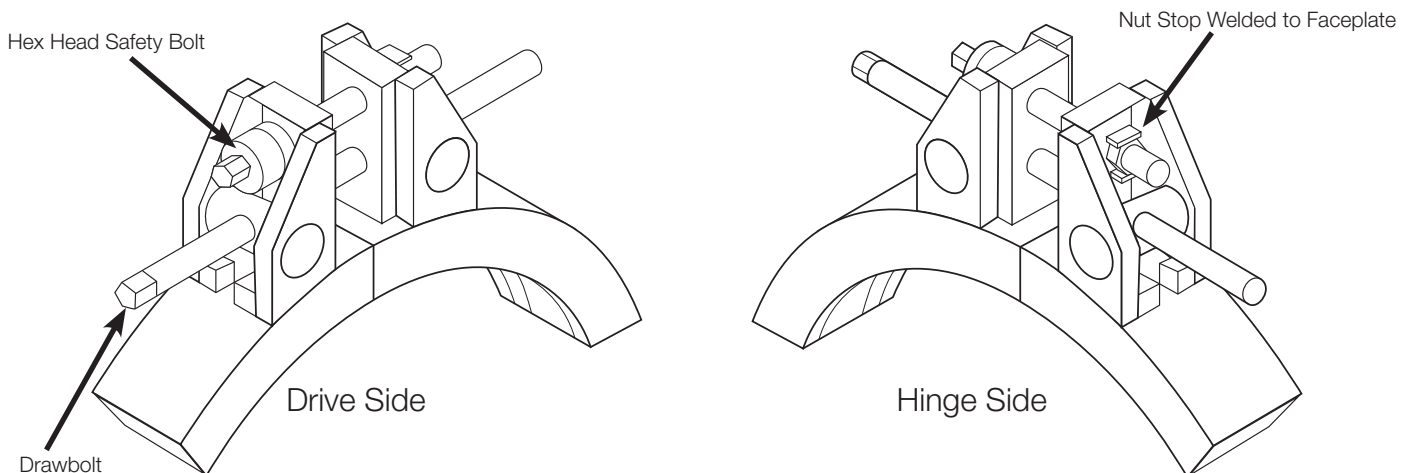


Figure 6: QOC2 or QOC3 Safety Bolt Assembly with Hex Head Safety Bolt

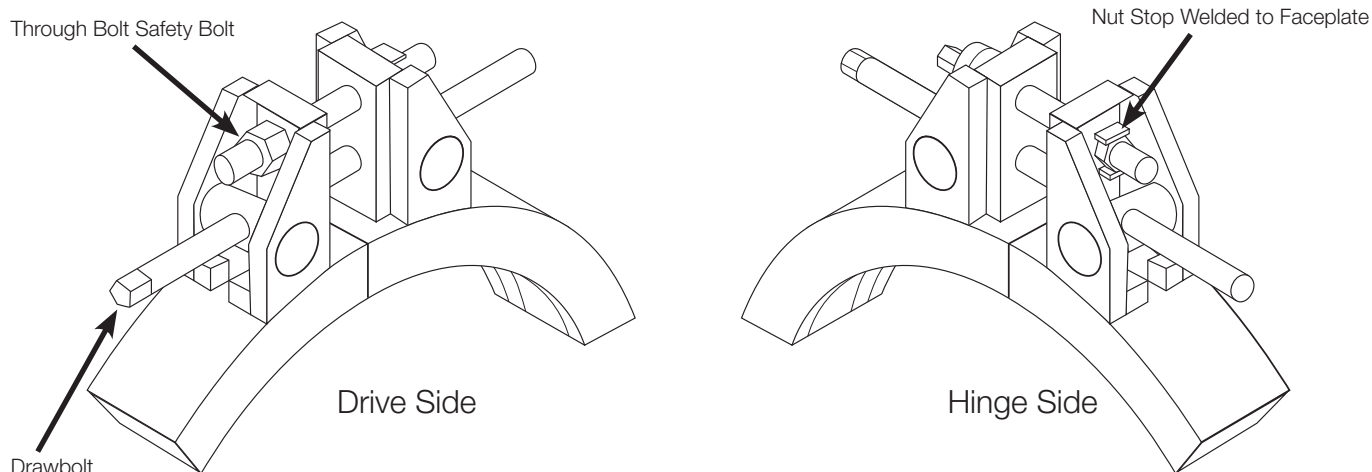


Figure 7: QOC2 or QOC3 with Through Bolt for Safety Bolt

5. Vent Internal Pressure

- 5.1 Close all block valves to stop flow to the vessel.
- 5.2 Open blow down, vent, and drain valves as per unit specific procedures to reduce the internal pressure to zero (0 PSIG).
- 5.3 Once the pressure indicator shows the vessel internal pressure has reached zero, locate Pressure Warning Device (PWD).



The Pressure Warning Device is a safety device. DO NOT alter this sealing arrangement.

- 5.4 The PWD is designed to warn of any residual internal vessel pressure that must be fully vented prior to opening the QOC. This device restricts opening the QOC until you check for internal pressure.



DO NOT attempt to remove Pressure Warning Device when pressure is present. If there is any indication of pressure, DO NOT remove Pressure Warning Device.



NEVER cover Pressure Warning Device. Gas must be able to escape to provide audible warning when pressure is present.

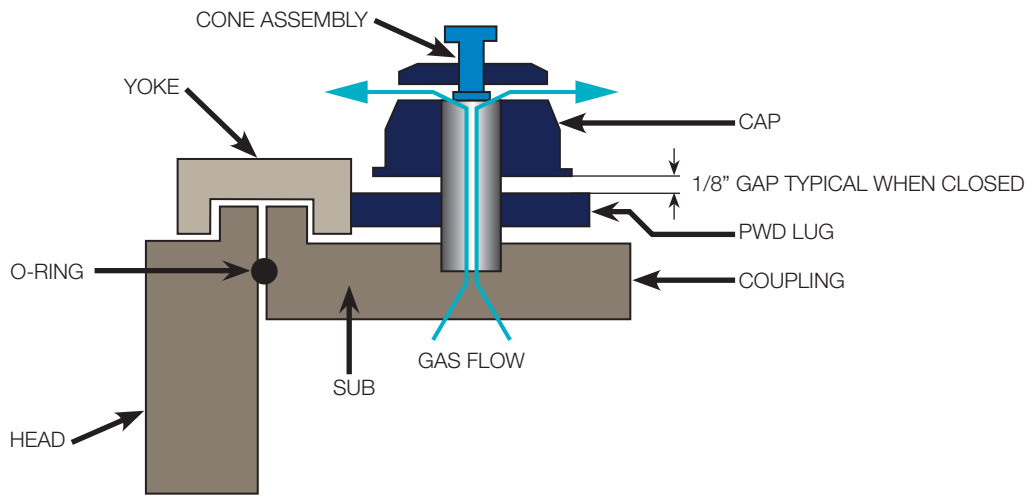


Figure 8: Pressure Warning Device (PWD) Diagram

5.5 Slightly open the PWD to check if the internal pressure is zero (see Figure 8).



If the Pressure Warning Device makes noise or if there is any indication the unit is pressurized, DO NOT attempt to open the closure.

5.6 If there is no sound of pressure escaping, completely remove the PWD.



If the Pressure Warning Device makes noise or if there is any indication the unit is pressurized, DO NOT attempt to open the closure.

5.7 Use a rod to check the bore of the PWD coupling is clear to insure it has not been plugged with internal debris or corrosion.

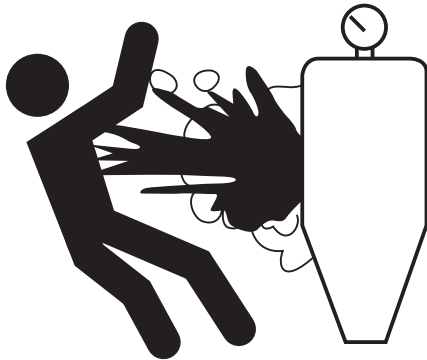


If there is any indication the unit is pressurized, DO NOT attempt to open the closure.

6. Opening the QOC



To prevent **SERIOUS INJURY** or **DEATH**:



- **NEVER** stand in front of the QOC while opening.
- **ALWAYS** confirm the pressure is zero (0 PSIG) before attempting to open closure.
- **NEVER** disable any safety devices or the Pressure Warning Device (PWD).
- **DO NOT** place hands and other body parts between closure and vessel.
- **INSPECT** for signs of wear, rust and damage. **DO NOT** open if damaged.

6.1 Once the vessel pressure has been relieved to 0 PSIG, the PWD has been removed and there is no indication of pressure, remove the Safety Bolts from each assembly.

6.2 Check the threads of the Drawbolts are not inhibited from turning by paint, tape or other protective coating. If so, remove the coating. Do not remove fluorocarbon coating used as lubricant.

6.3 Lubricate the Drawbolts and slugs with a good lubricant.

6.4 Simultaneously (or alternating every few turns between Drawbolts) turn the Drawbolts counter-clockwise to open.

If the Drawbolts are alternately turned, turn them so the yokes are opened at a maximum interval (Gap "G") of 1" for vessels 30" and over (See Figure 9).

For 8" to 30" closures, the maximum interval should only be ½".

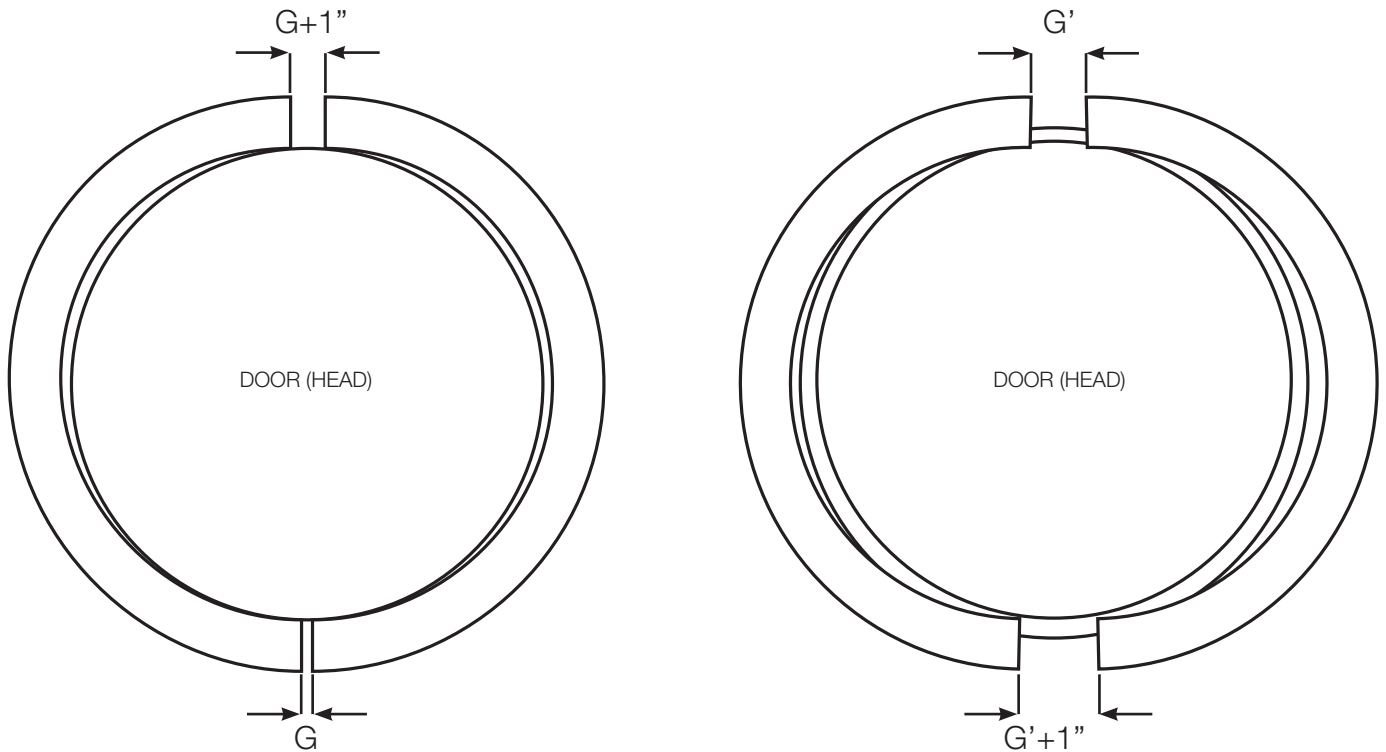


Figure 9: Diagram of Alternating Between Drawbolts When Opening Yokes

6.5 Once the yokes are opened to the point that the head (door) is free to open through the yokes, the yokes are opened far enough (See Figure 10).



Prior to opening the head (door), check the head for fit between the head and the shell sub. The sealing faces must be parallel and the outer periphery should be even.

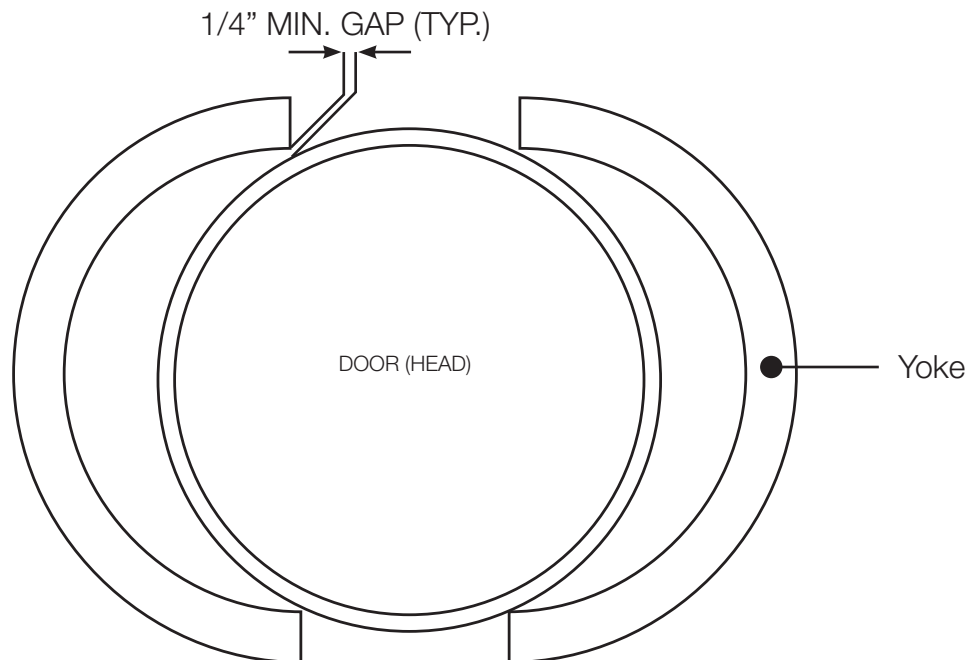
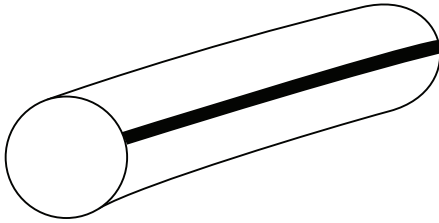


Figure 10: Yoke Clearance Diagram

6.6 Open the head (door) slowly.

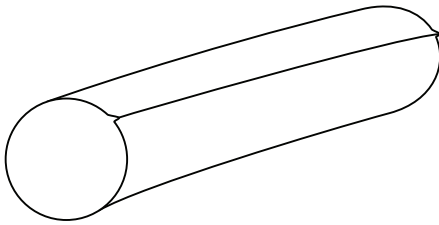
7. Cleaning and Inspection

7.1 Remove the existing gasket and check it for possible points of improper fit. (Refer to Figure 11)



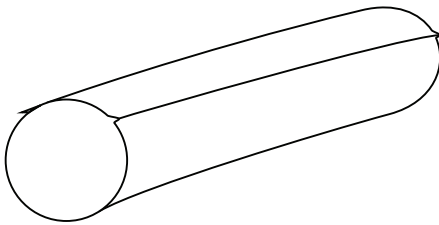
A slight marking indicates:

A good seal as well as a good fitup between sealing surfaces.



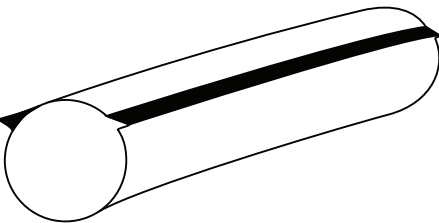
An extruded edge indicates:

1. A metal to metal seal (radially behind gasket) was not obtained.
2. Sealing surfaces were not properly aligned.



Extruded edges on two sides of the o-ring indicates:

1. A metal to metal seal was not obtained.
2. O-ring gasket was too large in diameter or length for the o-ring groove.



Laced edges indicate:

1. The o-ring was too large for the o-ring groove.
2. There was no metal to metal seal of the gasket sealing surfaces obtained.
3. The o-ring was dangerously close to being extruded.
4. The o-ring may not be the correct durometer (hardness).

Figure 11: O-ring Examination

7.2 Clean all of the sealing surfaces and the teeth of the head, shell sub and yoke halves removing all debris present. Inspect these surfaces for pitting, corrosion, scratches and other surface defects.

7.3 Lubricate both of the O-ring sealing surfaces as well as all of the unpainted surfaces of the head, sub and yoke halves. Parker recommends using only a quality lubricant and rust preventative. Following application of grease to machined surfaces, wipe grease off of the machined surfaces with a cloth rag leaving only a film of grease behind.



Over greasing can result in improper closing of the yokes causing proper yoke gaps not to be achieved.

7.4 Clean and lubricate Drawbolts.

7.4.1 Clean and lubricate Drawbolts, Safety Bolts and slugs using fresh lubricant, such as JT-6 Mystik.

7.4.2 Lightly lubricate and install a new Parker O-ring as specified by the nameplate. If the closure is equipped with an anti-extrusion gasket, for proper installation refer to Figures 12 & 13 for “Old Style” gasket and back-up ring or to Figures 14 & 15 for the “Current Style” gasket and back-up ring.

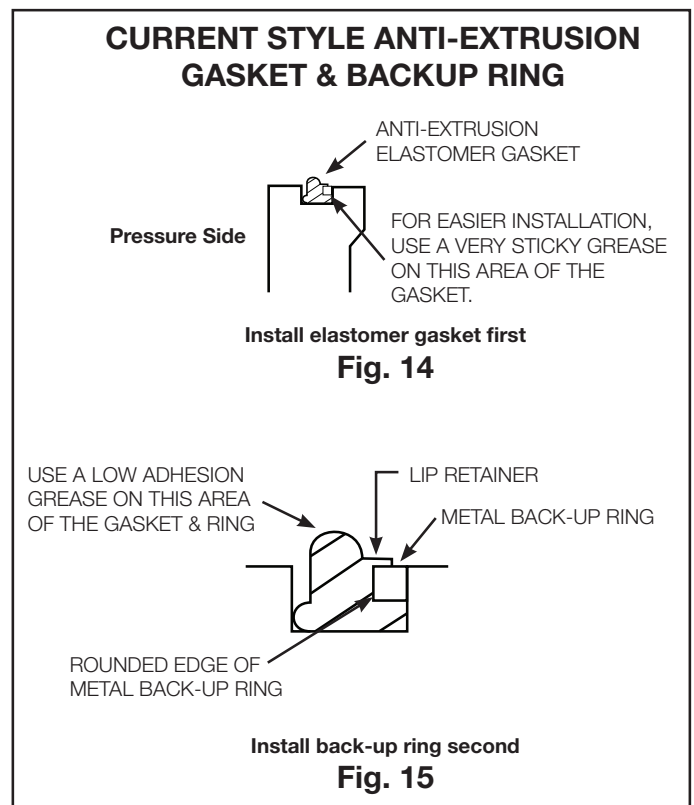
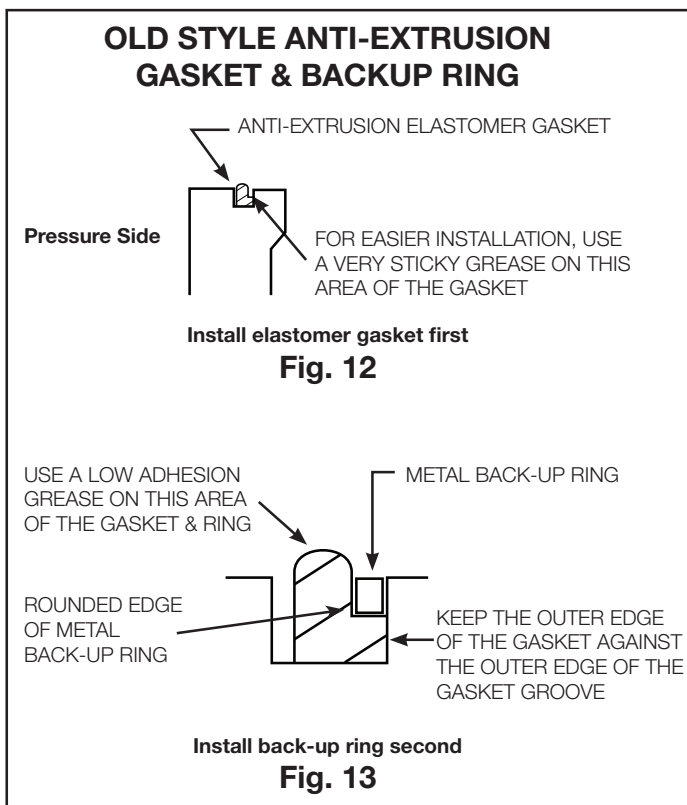
7.4.3 The Parker part number (Inventory Control Number, ICN) for the proper gasket (and backup ring for an anti-extrusion gasket) is listed on the closure nameplate (See Figure 3 at the beginning of these instructions).

7.4.4 For closures built before 1985, the Parker part number for the gasket was not included on the nameplate. If this is the case, contact Parker with the vessel serial number for proper replacement part information.

7.4.5 Parker has added a lip retainer (See Figure 15) to the elastomer anti-extrusion gasket. This lip helps hold the metal back-up ring in place during installation in the O-ring groove. This lip may shear off during operation of the closure, but this will not hamper the sealing capability of the anti-extrusion gasket. The retainer lip is not necessary for the anti-extrusion gasket to seal. It is only to aid in the installation.



Parker recommends using replacement gaskets supplied by Parker. However, any replacement gasket for the closure, whether purchased from Parker or elsewhere, must be identical in dimension, material and hardness to the original gasket designed and furnished by Parker. The use of a gasket not identical in dimension, material and hardness could create serious problems in achieving the seal and fit required for proper closure operation. Do not install silicone or any material other than the lubricated O-ring in the gasket groove.



**Figures 12, 13, 14 & 15:
Old Style and Current Style Anti-Extrusion Gasket and Back-up Ring Diagrams**

7.5 Confirm Alignment

- 7.5.1 Confirm alignment of the head and sub prior to closing the yokes by closing the head (door) slowly. Do not bump the head against the shell sub as this may dislodge the gasket. With the head and shell subs together, check the match-up of the sub and head at the 12, 3, 6 and 9 o'clock positions. The head tooth should be even with the sub tooth within ± 0.020 inches.
- 7.5.2 If the closure is not properly aligned, then proceed to implement step 7.6 for horizontal closures to align the closure prior to closing the yokes and putting the closure in service.
- 7.5.3 If the closure alignment is acceptable, then proceed to Section 8 – Closing the Yokes.



Failing to align the closure door prior to closing the yokes, can result in failing to achieve the seal and fit required for proper closure operation.

7.6 Closure Readjustment

- 7.6.1 The Parker Quick Opening Closure is adjusted at the factory for proper operation. If you notice the head does not match the shell sub, it will be necessary to readjust the closure to maintain the ease of operation and insure proper sealing (Refer to Figure 16). This is accomplished in the following manner for horizontal closures:
- A. With the head closed against the shell sub, note the position of the mismatch.
 - B. Adjust the hinge adjustment bolts until the head and sub match for their entire circumference.
- 7.6.2 For example, if the top (12 o'clock) of the head overlaps the shell sub, the head must be lowered. This is accomplished by simultaneously loosening the inside (closest to the closure) top adjustment screw and the outside (farthest from the closure) lower adjustment screw until the head and sub match. Then tighten the opposing adjustment screws firmly.
- 7.6.3 Another example: if the side of the head opposite the hinge overlaps the shell sub, the head must be moved closer to the hinge pivot. This is accomplished by loosening both the top and bottom outside (farthest from the closure) adjustment screws, then tightening both the top and bottom inside (closest to the closure) adjustment screws until the head and sub match. After adjustment, tighten all adjustment screws to maintain the adjustment.



Mismatches along the other axis can be adjusted in the same manner using the adjustment screws located 90 degrees from the inside and outside adjustment screws.



Do not disassemble the closure until parts have been marked for reassembly in the same order and location.

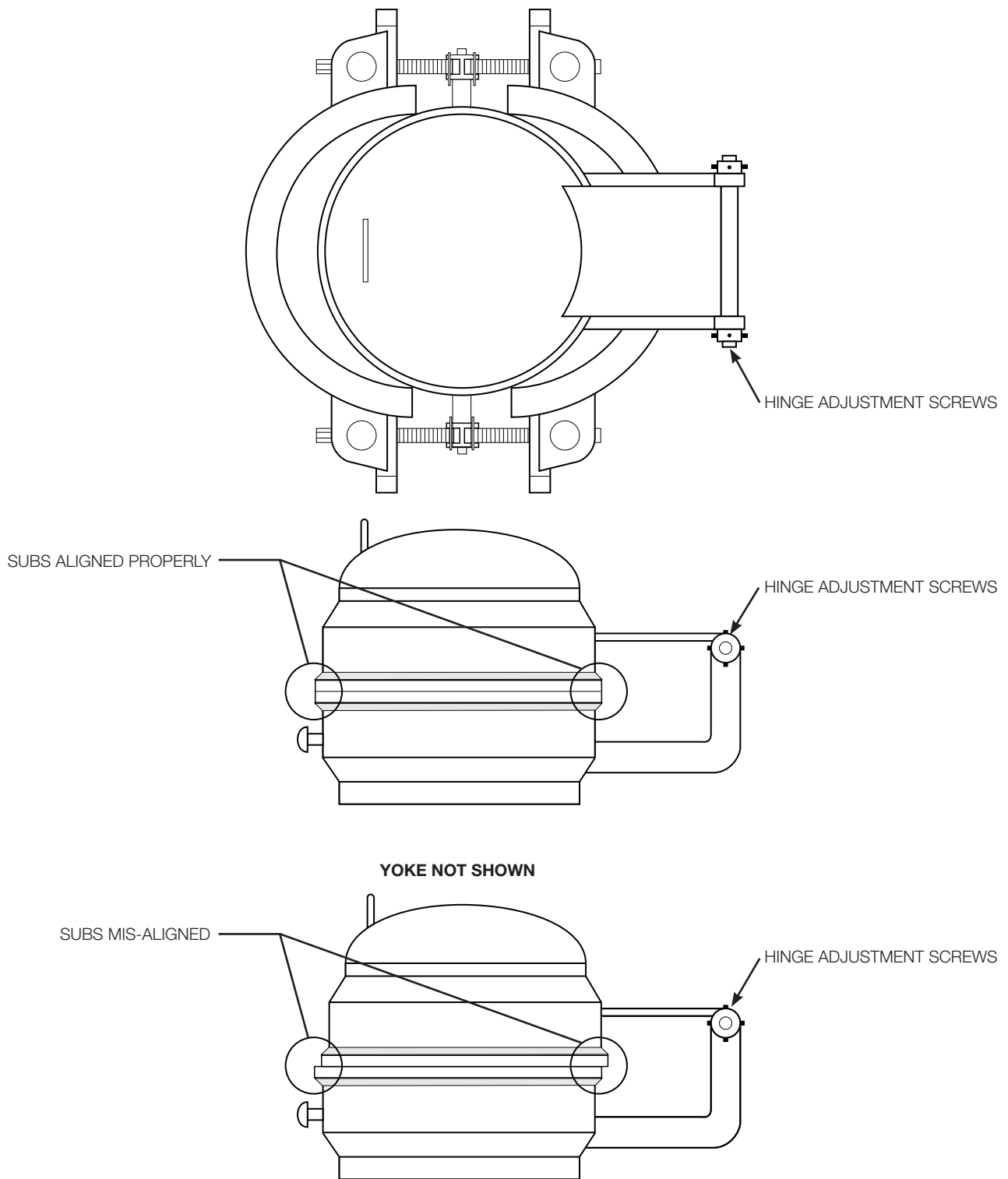


Figure 16: Subs Alignment Diagram

8. Closing the Yokes

8.1 Confirm proper installation of the O-ring or AE gasket. Confirm alignment of the head and sub prior to closing the yokes. If the head and sub are not aligned, see Section 7.6 for additional guidance.

8.2 Close the yokes by turning the Drawbolts clockwise. Alternate closing each yoke end no more than 1" at a time.

 **As the yokes get closer together, use smaller increments (less than 1") when alternating between each yoke. Care must be taken to keep pressure warning device lug from scrapping against PWD threads causing damage.**

8.3 Tighten the Drawbolts so the Yoke Gap between yoke halves are within $\pm 1/16$ " of the value stamped on the nameplate (see Figure 3) and both the top and bottom Yokes Gaps are equal to each other. The Drawbolts and the Safety Bolts must be tightened to the torque that is stamped on the nameplate. These torque values are mandatory to ensure safe operation of the closure and to insure proper preloading to the faces of the head and shell. (See Figure 17)

DANGER



To prevent **SERIOUS INJURY** or **DEATH**, before pressurizing:

- **ALWAYS** confirm top and bottom Yoke Gaps are equal to each other and are within $\pm 1/16$ " of the nameplate value.
- **ALWAYS** tighten the Drawbolts and the Safety Bolts to the torque values stamped on the nameplate. **DO NOT** exceed the torque value noted on the nameplate by more than 25 ft. lbs.

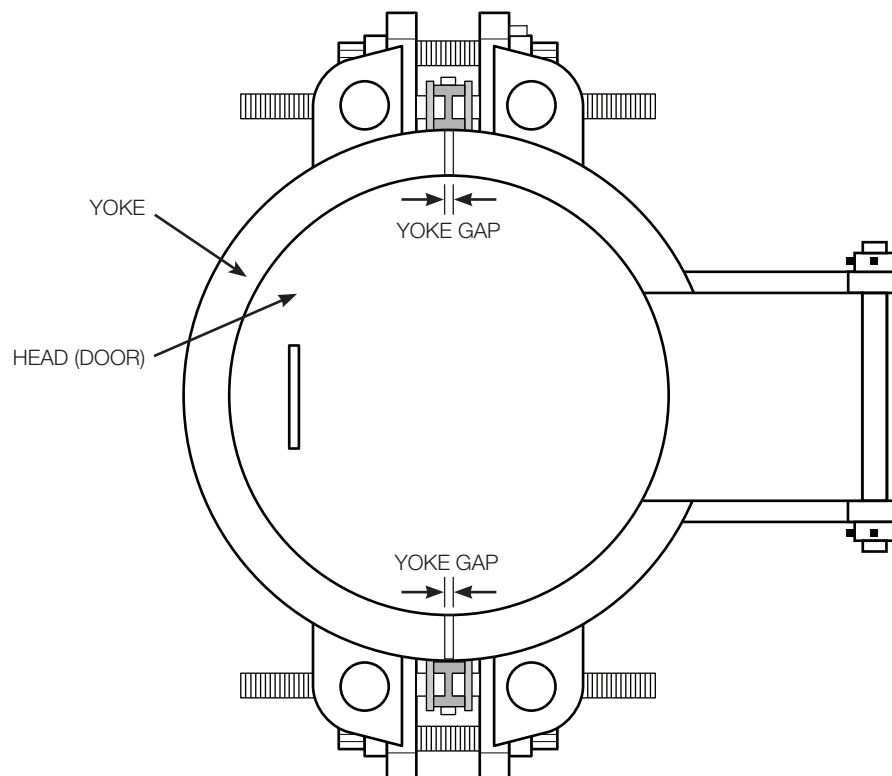


FIGURE 17: YOKE GAP

8.4 Install the Safety Bolts

- 8.4.1 **For an Original QOC:** If the closure is an original QOC as determined earlier, install the Safety Bolts at both yoke ends, tightening the nuts finger tight. The nuts must rest against the lug faceplate. The Safety Bolts are only a backup to the Drawbolts and are NOT to be torqued.
- 8.4.2 **For a QOC2 or QOC3:** If the closure is a QOC2 or QOC3 as determined earlier, install the Safety Bolts at both yoke ends (See Figures 6 & 7). Then torque the Safety Bolts to the torque specified on the nameplate (See Figure 3). This is mandatory per ASME Section VIII, Division 1.



The required torque for the safety bolts can vary from very little torque to a large amount of torque depending on the design of the closure. If the safety bolt and Drawbolt torques specified on the nameplate are equal, the safety bolts should be torqued to a lesser value that will not loosen the Drawbolts.

- 8.4.3 The safety bolt may be a through bolt and two nuts for the smaller bolts (See Figures 6 & 7). Larger safety bolts will have a self-aligning machined bolt and concave washer specifically designed for this purpose (See Figures 6 & 7). The safety bolt assembly has welded stops to prevent the nut from turning during the torqueing operation on the hinge (non-drive side) (See Figures 6 & 7).



ALWAYS tighten the Safety Bolts to the torque value stamped on the nameplate. DO NOT exceed the torque value noted on the nameplate by more than 25 ft. lbs.

- 8.5 Clean, lubricate, and install the Pressure Warning Device (PWD). The PWD must be wrench tight. Excessive torque should not be applied to the PWD to obtain a seal.

If the PWD does not seal, remove the PWD and check the sealing surfaces for solids buildup or damage. As noted in Figure A, there must be a gap between the PWD and the PWD lug plate which is attached to the yoke.



The purpose of the PWD is to provide an audible warning if there is pressure present prior to opening the closure.

The PWD is NOT designed to assure proper alignment and fit of the closure. The installation of the PWD cannot be relied upon as a check that the proper steps were taken to closing the yokes.

DISCLAIMER

Change or modification to the original design, materials of construction, elastomer, sealing devices or operation without written authorization of Parker, voids the warranty and the ASME “U” stamp if so furnished.

Parker disclaims responsibility for any damage sustained from violation of any and all of the written instructions of operation, maintenance, or safety.

Checklist

Confirm the QOC is ready to be returned to service:

1. Have the O-ring gasket sealing surfaces and the teeth of the head, shell sub and yoke halves been inspected for signs of pitting, corrosion, scratches and other surface defects?
2. Have all uncoated, machined surfaces been lightly lubricated?
NOTE: Be careful not to have excess lubricant on these surfaces.
3. Is the O-ring/gasket installed properly?
4. Is the head (door) aligned properly with the sub?
5. Are the yokes closed to within the yoke gap specified on the nameplate?
6. Was the Drawbolt torque properly applied as specified on the nameplate?
7. Are the Safety Bolts installed and torqued as specified on the nameplate?
NOTE: To preserve the lubrication of the Drawbolts, Parker recommends covering the exposed areas with a weatherproof material.
8. Is the Pressure Warning Device (PWD) properly installed?
9. Check the warning labels are present and legible. See Figure 2 for warning label locations. If not, contact Parker for replacement warning labels.
10. Was the visual inspection satisfactory?

Once the responsible party is satisfied that all of the items above have been completed, the closure is ready for to be returned to service per unit specific procedures.

END of QOC Operating Instructions

NOTES:

GLOBAL OIL & GAS FILTRATION OFFICES

North America

USA Oil & Gas Filtration

Mineral Wells, TX
940-325-2575
industrialprocess.na@parker.com

Canada Oil & Gas Filtration

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