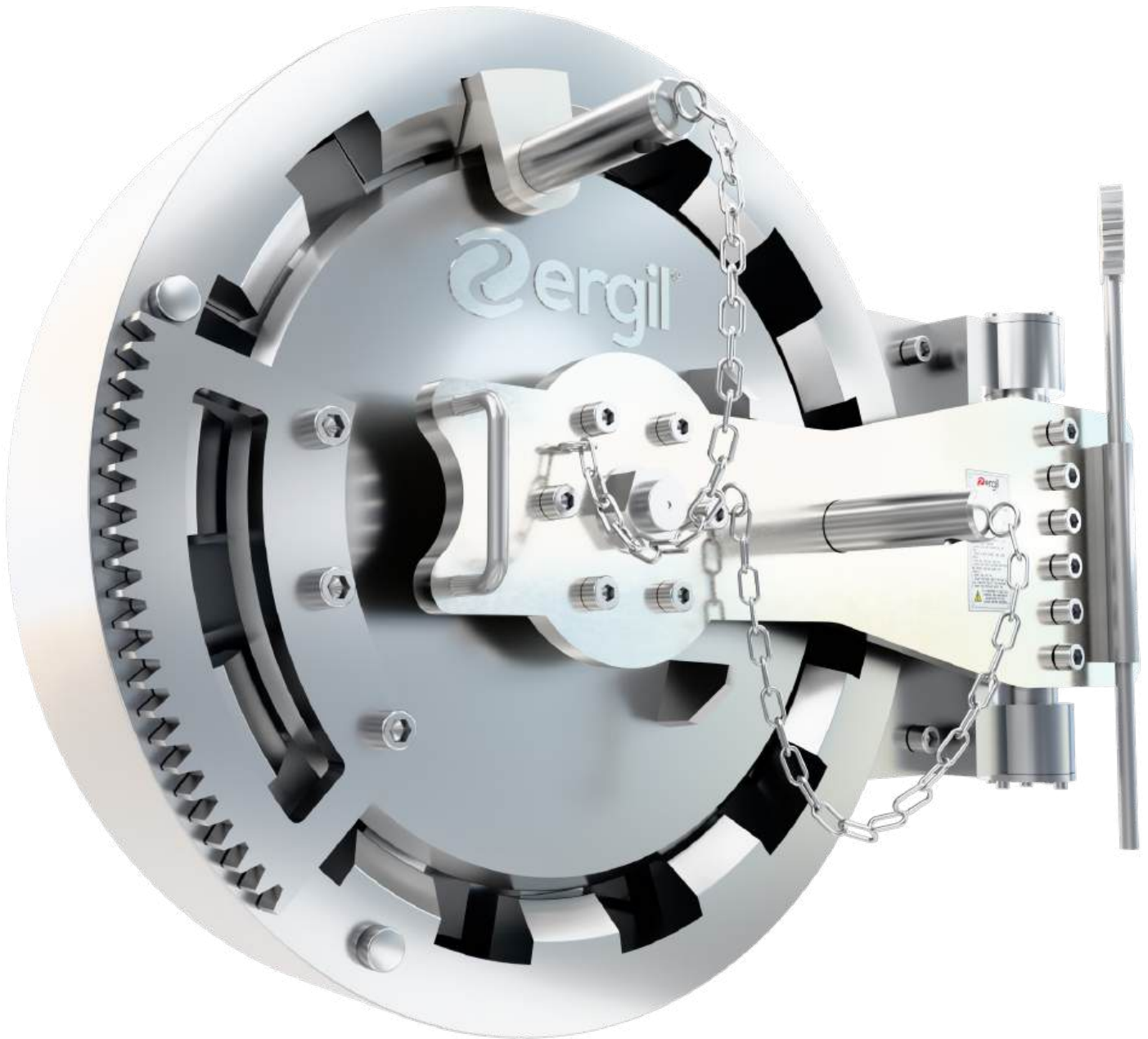





QUICK ACCUATING CLOSURE MAINTENANCE & TEST INSTRUCTIONS





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QUICK ACCUATING CLOSURE MAINTENANCE & TEST INSTRUCTIONS

1 RESPONSIBILITIES

It is the responsibility of the user to ensure that the sensing and safety devices and equipment specified by the manufacturer are properly installed before initial operation and maintained during subsequent operation. Provision of written operation and maintenance procedures and training of personnel are also the responsibility of the owner of user.

2. HORIZONTAL CLOSURE COMPONENTS

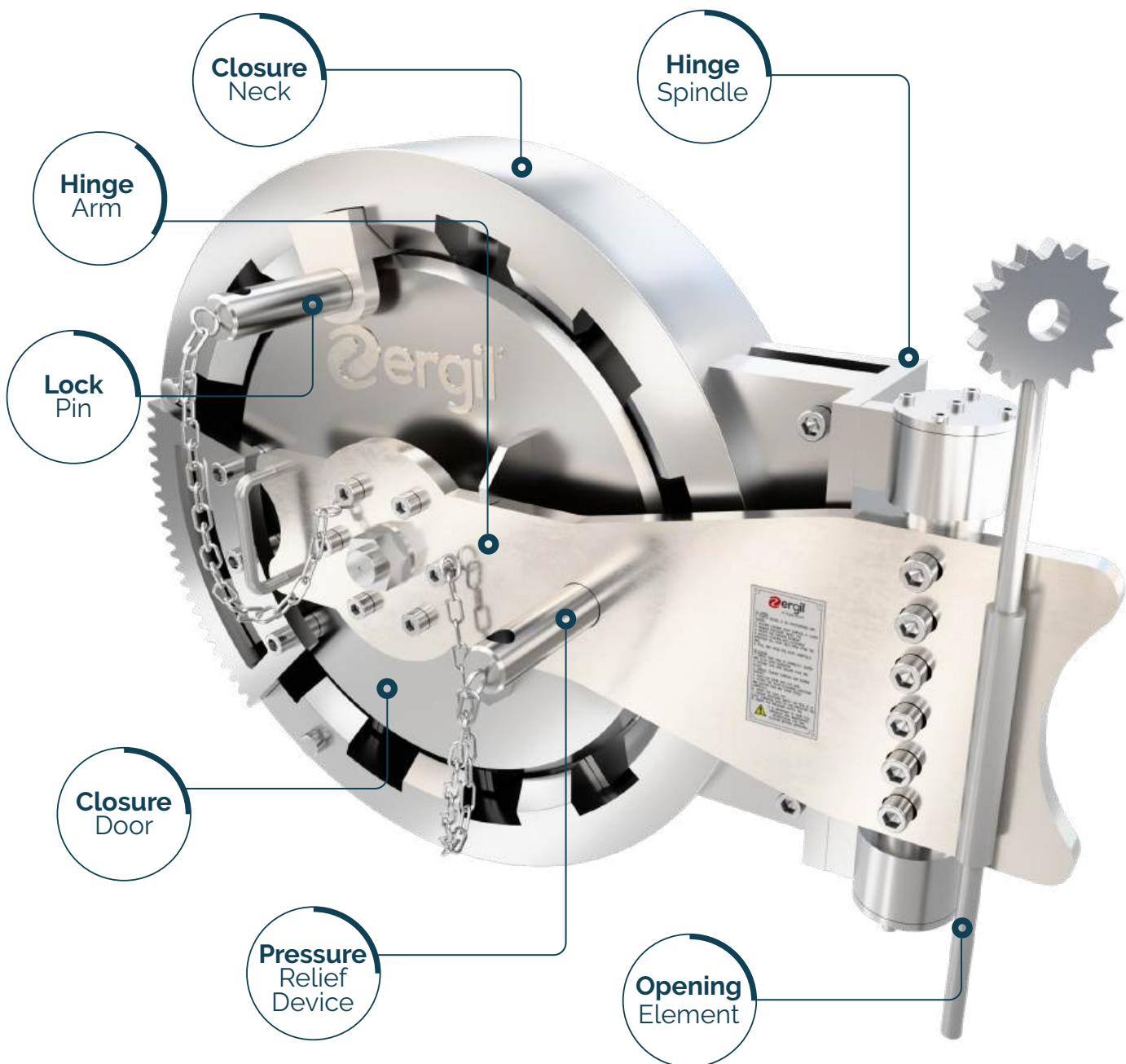


Figure 2.1. Horizontal Closure Components



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2.1. HORIZONTAL CLOSURE LOCKING MECHANISM COMPONENTS

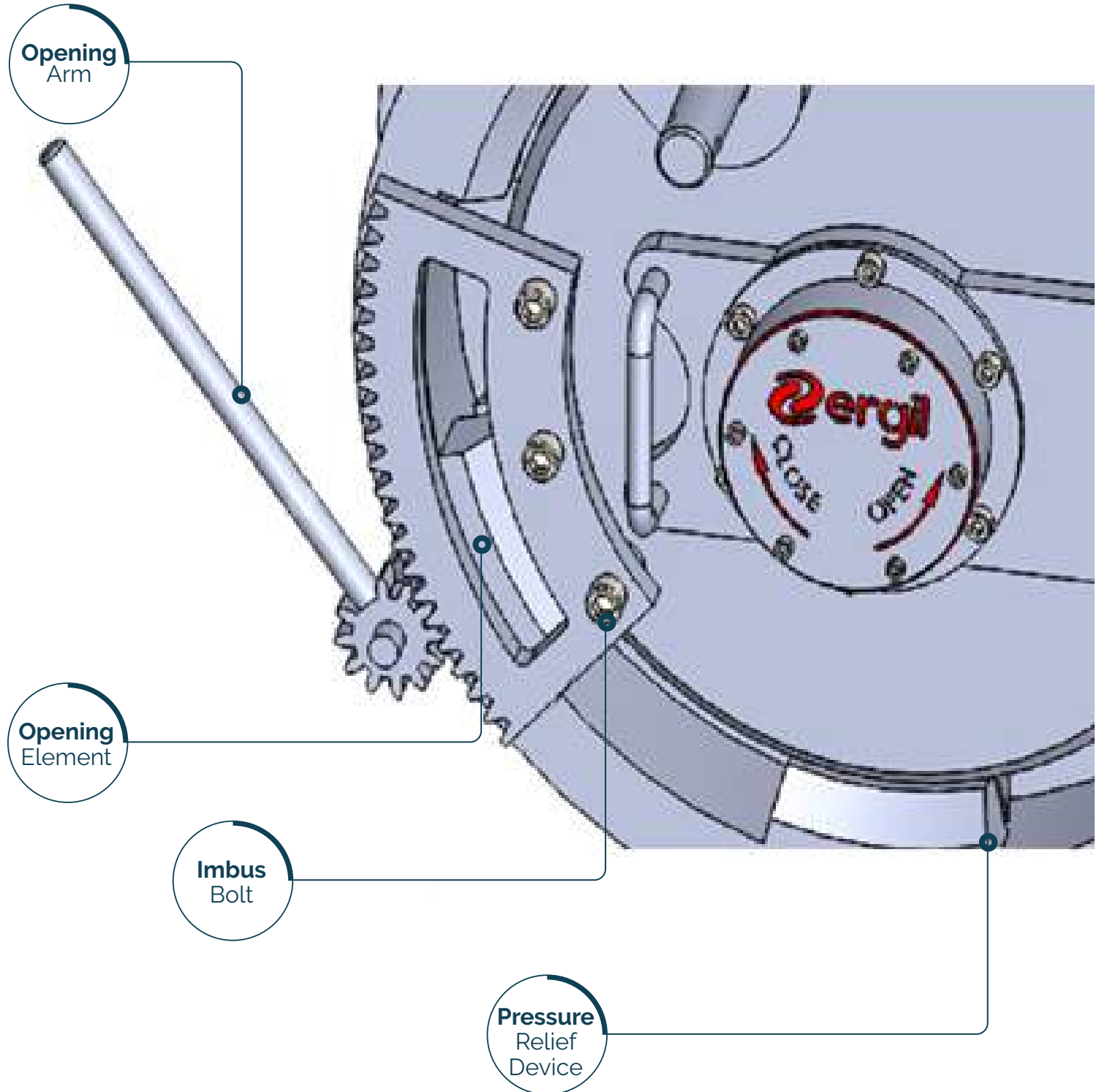
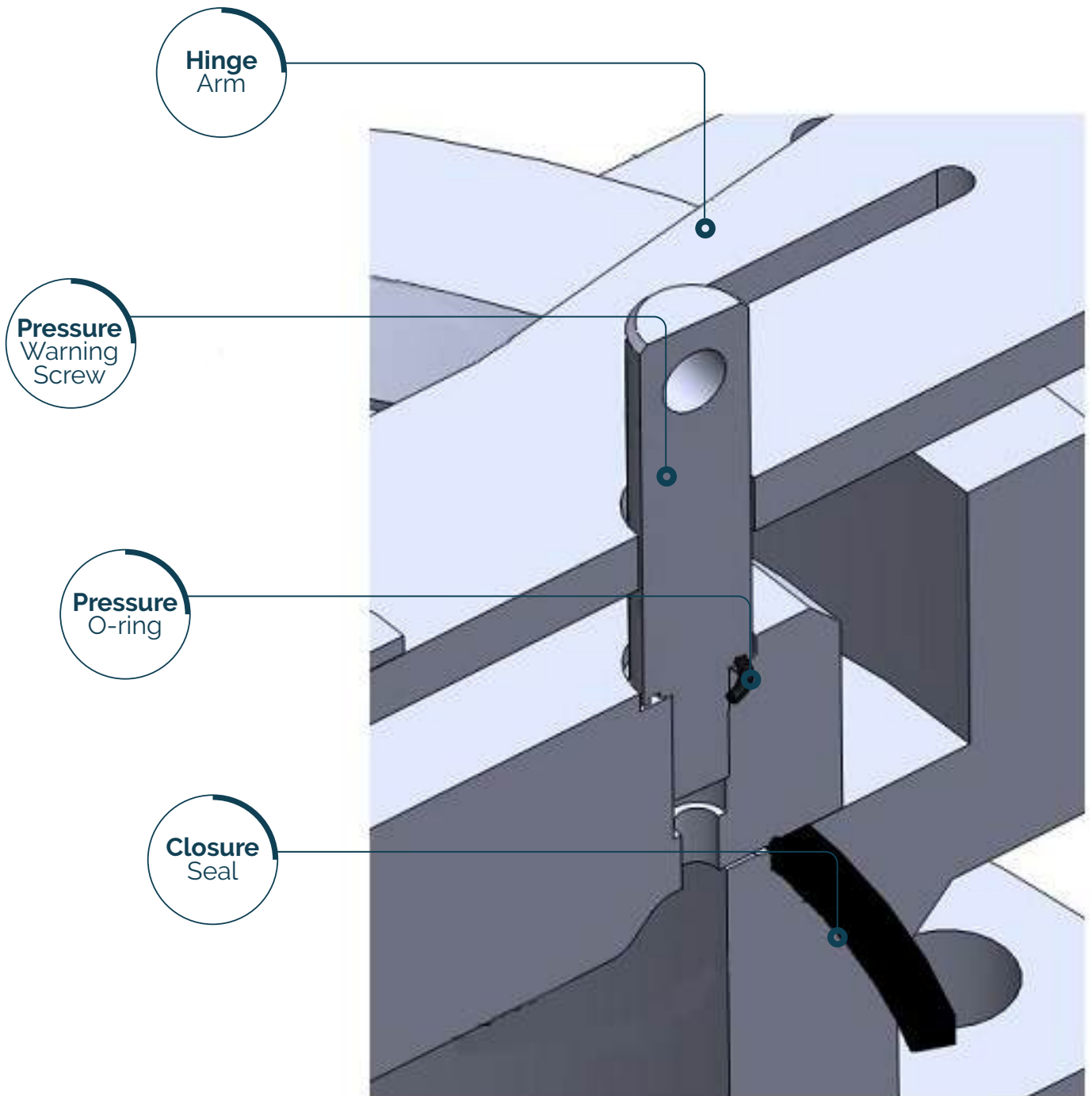


Figure 2.1.1 Horizontal Closure Locking Mechanism Compo-



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2.2. QUICK ACTUATING CLOSURE PRESSURE WARNING SCREW & LOCKING SEGMENT ASSEMBLY





QUICK ACCUATING CLOSURE MAINTENANCE & TEST INSTRUCTIONS

3. INITIAL INSTALLATION

3.1. CLOSURE ORIENTATION

Quick Actuating Closure must be installed truly horizontal ensuring that the drain Groove is located at the lowest position for right/left hand hinge orientation. Vessels which are required for inclined or declined installations (nominally 1 to 10 from the horizontal) should be accommodated with a mitred closure weld preparation. This leaves the closure horizontal whilst accounting for the nominal angle of the vessel.

WARNING!

DO NOT INSTALL CLOSURES WHICH ARE NOT IN A TRULY HORIZONTAL POSITION

IMPORTANT NOTE

Prior to commencement of initial installation and fabrication of the closure to any pressure vessel, it is vital that you refer to sections 2.4 and 2.5 of this manual which provides important details in respect of distortion and recommendations for closures that require post weld heat-treatment. Quick Actuating Closure door must always be removed prior to welding the closure to a vessel.

3.2. CLOSURE DOOR REMOVAL

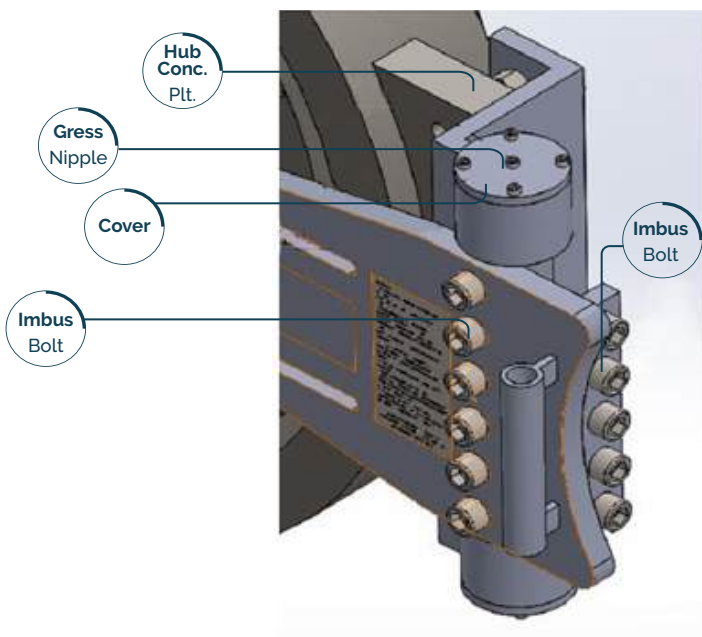


Figure 3.2. 1 Closure Door Removal

4. Remove the pressure warning screw and locking plate and contract the locking band to its 'door open' position (reference section 3.1 and 3.2 for unlocking and locking procedure).

5. Ensure that the Quick Actuating Closure door is adequately supported in an approved sling (some larger doors may have a lifting eye provided for additional safety), loosen the hinge pin retaining screw and remove the hinge pin connecting the hinge block to hinge arm.

6. It is now safe to remove the door from the closure.

IMPORTANT NOTE

- When storing the door it is important to always make sure that the seal and all machined surfaces are adequately protected from damage
- On no account must the hinge block or door bracket, fasteners be removed when it is required to remove the closure door (i.e. for fabrication or painting). These have been factory set and should not require adjustment. Ensure that the hinge pin bearings are fully protected from ingress of paint (reference section 2.6 for full instructions)

4. HYDROSTATIC TESTING

- The closure must not be hydrostatically tested at a pressure greater than 1.5 x design pressure (stamped on the closure nameplate). Prior to performing the hydrostatic test, the seal must be removed and both the seal and sealing groove cleaned thoroughly and a thin layer of general purpose grease applied

• After Hydrostatic testing

- Ensure that closure internal surfaces, paying particular attention to the seal groove, are thoroughly dried and greased to prevent corrosion.

- It is advisable to inspect the seal for damage. This is particularly important for closures with a design pressure of 425Barg (#2500) and above. The seal must be replaced if damaged.



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5. MASKING PROCEDURE FOR PAINTING THE QUICK ACTUATING CLOSURE

1 When painting is required the areas shown "masked" should not be painted but protected with a blast proof masking material.

2 To prepare the closure for painting the locking band, pressure warning screw assembly and seal must be removed from the door. (The locking band and pressure warning screw assembly are stainless steel and do not require painting).

3 Closure door hinge bearings and all threaded holes must be suitably protected from ingress of shot blast and paint material

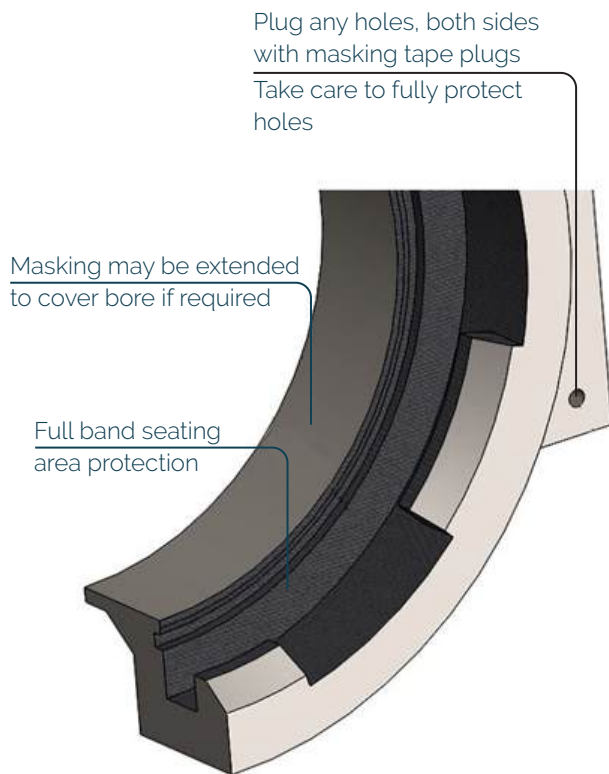


Figure 3.4.1 Masking Procedure-1

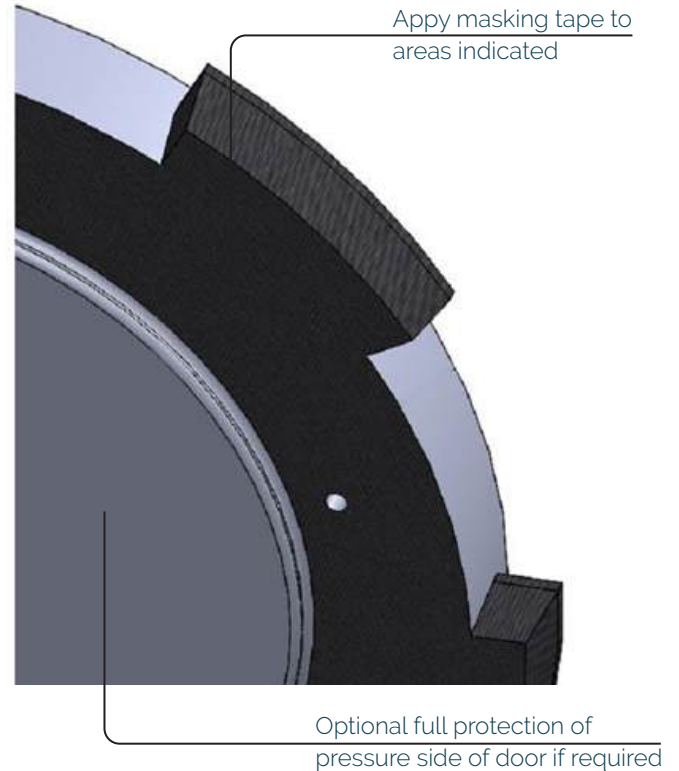


Figure 3.4.2 Masking Procedure-2

6. QUICK ACTUATING CLOSURE INSTALLATION

- When ready to re-install the Quick Actuating Closure door following initial installation, vessel fabrication or routine maintenance, the following procedure should be followed:
- Ensure that the closure door is adequately supported in an approved sling. Refit the hinge pins and tighten their retaining screws
- It is important that the door height is checked immediately after re-installation of the door
- Ensure that all machined surfaces are corrosion protected
- Expand the locking band to its locked position; refit the locking segment and pressure warning screw.
- Strictly adhering to the above procedure will ensure ease of re-alignment of the closure door following installation.



QUICK ACCUATING CLOSURE MAINTENANCE & TEST INSTRUCTIONS

7. QUICK ACTUATING CLOSURE OPERATION

1. Before attempting to open the closure, check that the vessel isolating procedures have been fully adhered to.

Ensure the vessel is fully drained, vented and isolated from any pressure source.

2. Slacken off the pressure warning screw without attempting to remove it, any residual pressure in the vessel will be indicated when vented through the milled groove cut in the pressure warning screw threads.

Should an indication be given, re-check the status of all valve isolations.

3. When completely satisfied that the closure is safe to open, remove the pressure warning screw and its integral locking plate (reference Fig. 3.0) from the closure.

Note: A slight rocking movement is required after the bolt has cleared the threads to enable the band locking segment to move from its seating.

4. Locate the universal handle into the drive link (reference Fig. 2.0) attached to the locking mechanism. Make sure that the universal handle is positively located in the hole provided.

Rotate the universal handle anti-clockwise through approximately 180°. This will actuate the drive link and horseshoe mechanism and progressively

5. Insert the universal handle into the bottom of the hinge assembly in the location hole provided and swing the door open.

6. The door is mounted on a double pivot mechanism, which gives a degree of straight-line movement and allows the door to be rotated for access to seal and band.

Prior to Closing and Locking out the

1. Ensure that the rust preventative coating on sealing and machined surfaces that may have become contaminated with product or corrosion deposits is fully removed and the surface areas wiped clean.

2. Ensure that the door seal is inspected for material splits, tears, blisters or any chemical damage or degradation.

3. Ensure that the primary seal groove in the door is clean and free from debris.

4. Lightly smear seal and mating faces with a thin film of general purpose grease for corrosion protection.

5. Ensure that the locking band is fully contracted onto the door shoulder.

6. Swing the door inwards until the hinge side of the band is touching the hinge and then align the door by means of the universal handle so that the door enters squarely into the closure hub.

7. Using the universal handle and applying an inward force on the door, compress the seal, which allows clearance between the band and hub face.

Having located the universal handle (reference Fig. 2.0) in the drive link, rotate this in a clockwise direction until the locking band expands into the hub recess. The locking mechanism is designed to give 'over-centre' locking.

8. The locking segment can now be refitted; on no account should this plate be forced or altered to fit - if proper fitting cannot be achieved then the locking band or seal is not properly located. Check that all surfaces are clean and corrosion free. Adjust if necessary only after thorough cleaning.

9. Screw home the pressure warning screw containing the metal bonded seal and tighten



QUICK ACCUATING CLOSURE MAINTENANCE & TEST INSTRUCTIONS

8. MAINTENANCE

Locking Band (reference Fig. 1.0)

- a) Clean the locking band.
- b) Check for any distortion within the band and the lugs to the band. Ensure that the retaining clips are correctly installed.
- c) Lightly lubricate the locking band with general purpose grease.

Door / Closure Hub (reference Fig. 3.0)

- a) Check that the sealing surface of the door is clean and free from mechanical damage and corrosion, refurbish as necessary.
- b) Check that the sliding surfaces of the door/band interface are clean and free from mechanical damage and corrosion, refurbish as necessary.
- c) Visually inspect for thread wear and corrosion in the pressure warning screw hole.
- d) Check for damage to the pressure warning screw seal face.
- e) Check gap between the hub and the door in the top and bottom positions, (ref section 2.8). These gaps should be equal.
- f) Lightly lubricate the locking band groove and all machined surfaces with general purpose grease.

Pressure Warning Screw (reference Fig. 3.0)

- a) Check for thread wear, corrosion and straightness of the pressure warning screw and check the condition of the pressure warning screw seal and replace if necessary.

Locking Mechanism (reference Fig. 2.0)

- a) Expand the locking band outwards to its 'locked' position and fit the locking segment and integral pressure warning screw. With the pressure warning screw in position, check that the gap between the ends of the locking band and segment are approximately 1/16" (1.5mm) each side.

If it is necessary to reset the gap, adjust the two eccentric stops (reference Fig. 2.0) such that they make contact with the edges of the locking band lugs whilst leaving a gap of approximately 1/16" (1.5mm) each side.

- b) Secure stops by tightening hexagon socket counter-sunk screws.

Hinges (reference Fig. 1.0)

- a) Check the freedom of movement of the hinge pins and bearings. Check there is no excessive wear.

Seal

- a) Check the condition of the door seal and replace if necessary ensuring that the seal is within its shelf life, as quoted on the seal packaging.
- b) Lightly lubricate the seal and its mating faces with general purpose grease.

WARNING: Do not apply heat treatment to the entire product. Local heat treatment to the welding joint is recommended.

Leak Testing

- a) Upon completion of all remedial work, and in accordance with client operational

procedures we recommend that a leak and pressure test is performed to verify closure integrity.



QUICK ACCUATING CLOSURE MAINTENANCE & TEST INSTRUCTIONS

Warning Plate Details



Äger GmbH

Germany Head Office + R&D + Sales
Herzogspitalstraße 24
Munich 80331
Germany
+49 (0) 89 1250 15240
www.aager.de
sales@aager.de

Turkey Head Office + Sales
Ağaoğlu My Office 212
No: 3 B Blok /175
P.K 34218 Güneşli – Bağcılar
Istanbul / Turkey
+90 212 485 40 07
+90 212 485 40 42
www.ergil.com
sales@ergil.com

Turkey Factory + Engineering + R&D
+ Sales
Mersin Tarsus OSB.13.CD.NO:7
P.K: 33540 Mersin, Turkey
+90 324 676 44 04
+90 324 676 44 03
sales@ergil.com

U.A.E. Sales + Warehouse
Jumeirah Lake Towers, X2 Tower 1906
P.O. Box: 123661 Dubai, U.A.E.
+971 4 450 8051
+971 4 450 8041
sales@ergil.com

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