



Quick Opening Closure

Rx2™





Installation, Operation & Maintenance Manual • Quick Opening Closure Rx2™

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WARNING!

FAILURE TO SELECT OR USE THE PRODUCTS AND/OR SYSTEMS DESCRIBED HERE, OR RELATED ITEMS, CORRECTLY CAN LEAD TO SERIOUS CONSEQUENCES, INCLUDING DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE.

Additional information can be found on the identification plate and/or embossed data located on the Quick Opening Closure. These markings provide supplementary details essential for the proper identification, operation, and maintenance of the equipment.

Ergil Group offers component or system options based on data or specifications provided by the user, the user must ensure that the provided data and specifications are suitable and adequate for all applications and foreseeable uses of the components or systems.

Ensure that the Quick Opening Closure is used correctly in order to maintain a safe operational environment. This manual contains critical notices and essential information regarding the installation, operation, and maintenance of the Quick Opening Closure. It is imperative that the operating authority follows these guidelines. While every effort is made to ensure the accuracy of the information provided, it is should to note that the manufacturer cannot be held liable for any inaccuracies or subsequent consequences that may arise from them, regardless of the circumstances.

Product Modification Notice and Manual Recommendation!

Ergil Group fundamental principles include the continuous improvement of its products in line with evolving technological advancements and the requisite additional equipment. Therefore, Ergil Group reserves the right to modify its products and their specifications without prior notice. We recommend carefully reading this manual and retaining it for future reference.

We wish you good use.



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PUBLICATION HISTORY

The following table provides a summary of the revisions made to this document throughout its publication history.

REVISION	DATE	DESCRIPTION OF CHANGE



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1) INTRODUCTION:

As an Ager brand, Ergil is a world leader in the manufacture of quick opening closures. This product line is developed to meet international requirements applicable to pressure vessels used in the oil, gas, petrochemical, wastewater treatment, and marine industries. The Quick Opening Closure Rx2™ is intended for enhanced safety in oil, gas, and liquid services.

Ergil closures are high-pressure quick opening closures (QOC) available in both vertical and horizontal configurations. Designed for ease of use, QOC Rx2™ can be opened and closed by a single person within a few minutes.

This manual provides complete guidance on the installation, operation, and maintenance of the QOC. It covers the initial setup and seamless integration into existing systems, as well as the day-to-day operation and routine maintenance tasks. The aim is to ensure optimal performance, longevity, and reliability of the QOC in different industrial applications.

This manual contains essential information regarding the installation, operation, and maintenance of the QOC. That all operating authorities comply with the instructions and guidelines outlined in this manual. That the entire documentation is provided to the authorized person well in advance of assembly and start-up, and remains accessible wherever the QOC is employed.

Before installation and operation of QOC, qualified personnel must read the entire instruction manual and keep it in a designated place. Failure to comply with the safety notices outlined in this manual may result in significant risks to personnel, the integrity of the QOC, and the surrounding environment. Comply with the guidelines set out in this document in order to ensure the safety and efficacy of operations.

2) PRODUCT OVERVIEW:

Ergil is capable of providing quick closures for any size and pressure ratings. Easy to use and install, can be applied all kind of QOC. Ergil quick closures is made of corrosion resistant materials with long life duration.

Designed to ASME B31.4, ASME B31.8 and ASME Section VIII Div. 1 Codes. Ergil offers spare parts for all of its products during maintenance. Standard Ergil pig traps come with standard Ergil Rx2 quick opening closures. You do not need any special tools or experience to install Ergil closures.

"Quick Opening Closure" is produced in two different types, horizontal and vertical. With easy installation, long-term durability, and high load capacity, it provides solutions. The robust structure and resistance to buckling and deformation ensure a long lifespan and safe operations.

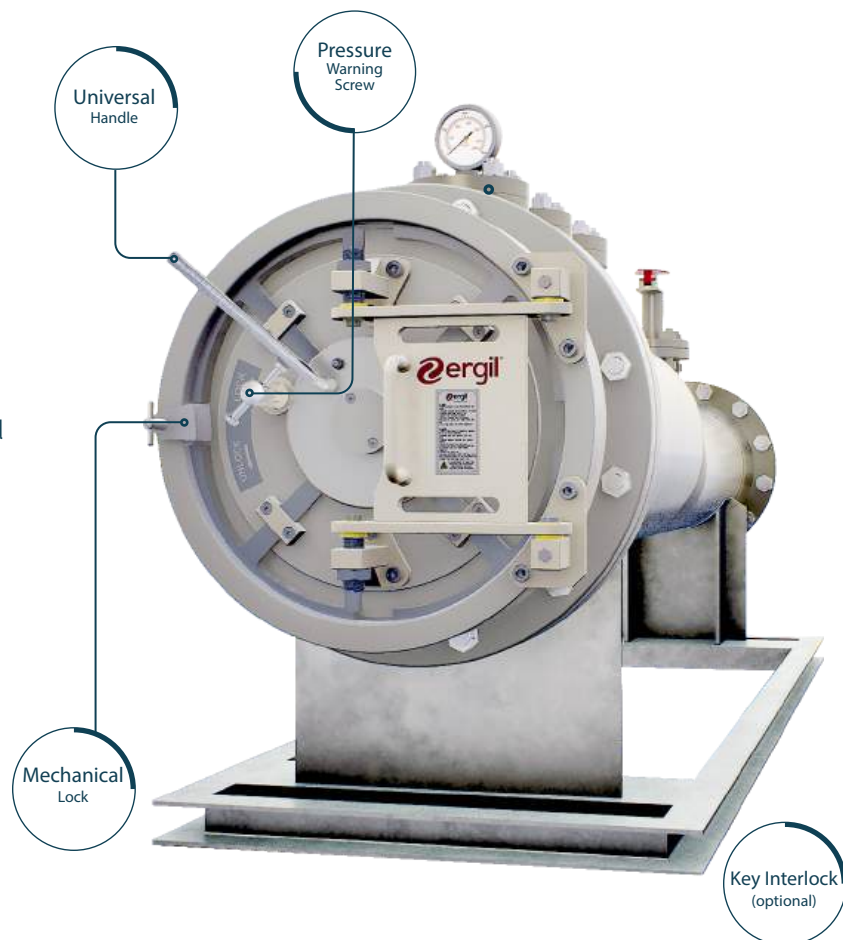


Figure 1: QOC with Pig Launcher



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QOC is designed to meet the safety and efficiency requirements critical to industrial products such as Pressure Vessels, Basket Filters, etc. Specially designed to ensure reliable operation in all climatic conditions, QOC is certified with the ASME 'U' stamp. They are also manufactured in accordance with international standards, ensuring full compliance with various international design codes.

An important safety feature includes a device that prevents the hand wheel from moving when internal pressure is present. This ensures that the lid cannot be accidentally opened without first manually deactivating this safety device. This design feature enhances operational safety by preventing accidental or unauthorized access to the lid during pressurized conditions, thus protecting personnel and equipment integrity.

Quick Opening Closures are designed to minimize maintenance requirements while facilitating effortless operation by a single person in the field. This design ensures that they can be opened and closed conveniently without the need for extensive maintenance procedures or specialized tools.

Hydrostatic test was performed at 150% of the design pressure for the QOC. You can contact for more detailed information.

It comes with excellent service, offering pre and post-sales technical support to ensure a seamless experience for customers.

The parameters to be aware of and utilized in our operations are as follows:

- Type of stored liquid
- Design Temperature: in °C,
- Design Pressure: mbar(g)

At **Ergil**, our commitment is to offer our valued clients the best application at the most competitive price-to-performance ratio.

Environmental Guidelines for QOC Support Systems:

To ensure optimal storage conditions, we recommend storing the item indoors, where humidity levels are low. Ensure that the storage environment is free from rain, dust, chemicals, oils, radiation, and ozone.

Furthermore, items should be stored on a surface that is free from impact and vibrations. Take precautions to prevent water from reaching above the container bottom support. Finally, maintain stable conditions and avoid large shake in storage environments.

3) INSTALLATION & COMMISSIONING:

The installation section of the manual serves as a complete guide, providing instructions for the accurate installation of the QOC. It has been carefully designed to cover every essential aspect of the installation process, ensuring that the QOC is correctly positioned and aligned for optimum performance.

Check the Quick Opening Closure and make sure that there is no damage or deformation. Make sure that all materials required for assembly and welding are complete

Clean the surfaces to be assembled. Remove all oil, dirt and oxidation using a wire brush and solvent. Determine the correct position on the machine where the Quick Opening Closure is to be installed.

Place the Quick Opening Closure on the surface where it will be installed and secure it temporarily.

Start welding in accordance with the methods and parameters specified in the welding procedure document. First, make temporary welding seams and check the alignment of the assembly.

After the temporary weld seams, make full weld seams. Check the weld seams for cracks, pores or other defects.

It is essential that the installation site is prepared according to the specifications. This also requires the floor to be level.



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Additionally, make sure that the installation area meets the specified dimensions and complies with the necessary safety standards.

QOC is factory tested before delivery. It should be checked immediately after delivery to ensure that it is intact.

Minimum team requirements:

- 1 Foreman
- 1 workers for QOC with a diameter less than Ø32", and 2 workers for larger QOC.

The foundation should be of an appropriate size and durability based on the equipment's weight and local ground conditions. During installation, it must be ensured that the equipment is securely fastened and any movement is prevented.

QOC will arrive on site fully assembled as a single product. Please check the quantity and condition of spare flanges and fittings. No welding or cutting is required.

General Installation:

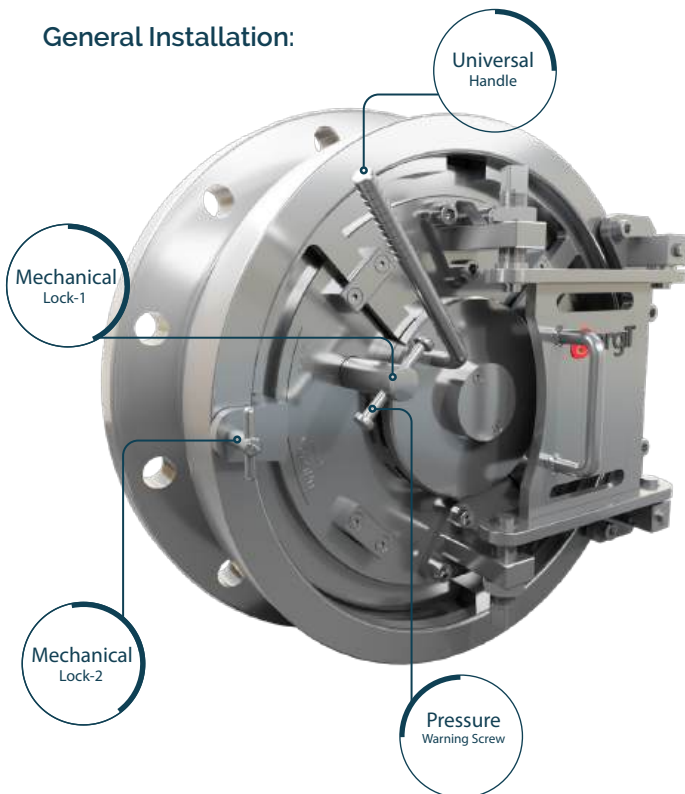


Figure 1: QOC with Pig Launcher

Please visually inspect the Cover surface and all nozzles to determine if there is any damage. In case of any damage to the Quick Opening Closure, the part in question must be replaced. The gasket inside the Quick Opening Closures should be checked during maintenance. If there is any damage to the gasket surface, it must be replaced.

1. In this section the closing details of the Quick Opening Closure will be given. The system will be brought to the site as a single piece in assembly.
2. Begin the lifting operation while observing the necessary safety precautions.
3. Examine the system to be installed. Prepare a layout plan for the system where the cover will be installed.

NOTE: Detailed instructions for opening the Quick Release Cover are given in chapter 4. Please refer to this chapter for more information.

4. The cover must be installed in horizontal position. Ensuring that the lid is horizontal also helps to distribute the pressure evenly and avoid unnecessary stress on the cover mechanism.

NOTE: The hinge block, door bracket and their fasteners are precisely adjusted at the factory. These components are calibrated to ensure correct alignment and functionality of the closing door. Under no circumstances should these fasteners be removed or adjusted when dismantling the closing door.

Tampering with these factory settings may compromise the integrity and proper operation of the closing mechanism.

5. Ensure that the primary seal groove in the door is clean and free from debris.
6. To ensure effective corrosion protection, lightly apply a thin film of general-purpose grease to both the seal and mating faces. This practice helps to prevent corrosion and ensures a better seal between the surfaces.



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7. Applying a thin film of general-purpose grease to the O-RING and mating surfaces can aid in corrosion protection and enhance the sealing performance.
8. The mechanic locking-2 segment can now be re-fitted; on no account should this item be forced to fit. If proper fit is not achieved, it means that the fit is incomplete or the seals are not properly positioned. Check that all surfaces are clean and corrosion free. Adjust if necessary only after thorough cleaning.
9. After the mechanical lock is in place, replace the mechanical lock with its plate and pin.
10. Move the universal handle from unlock to lock.
11. As the final step, ensure that all components are correctly installed. Check all connection elements for proper installation.

Please refer to section 6.4 for detailed safety guidelines. Safety is our top priority, so we kindly request your careful attention to this matter.

When installing and operating a Quick Opening Closure, the relevant national regulations must be complied with, including those relating to operational safety. In Germany, this includes compliance with regulations governing the safe operation of equipment.

Quick Opening Closure is only to be used for the specified application, in accordance with the provided technical drawings and documentation, operating conditions. Failure to comply with these regulations can lead to safety hazards, equipment failure and even legal consequences. Therefore, when installing and using Quick Opening Closure, the requirements specified in this operating safety regulations must be observed.

Regular maintenance and inspections should be carried out to guarantee that the Quick Opening Closure remain in compliance with safety regulations and operate effectively. Any deviations from specified practices, documentation, operating conditions must be addressed immediately to maintain safe operation and regulatory compliance.

4) OPERATION:

Follow the recommended guidelines provided by the company during the commissioning process.

This involves following a step-by-step process outlined in the manufacturer's documentation to ensure the safe and efficient operation of the equipment.

Prior to commencing the start-up process, it is vital to conduct any necessary tests required by relevant national regulations, particularly in Germany, where regulations comply with operating safety is mandatory.

These regulations govern the safe operation of equipment and ensure compliance with established safety standards.

The start-up procedure should be carried out by specialist staff who have been trained in the operation of the specific equipment and are familiar with the recommended start-up protocol.

Comply with all safety precautions and guidelines outlined in the manufacturer's documentation and relevant national regulations throughout the start-up process.

Conduct regular monitoring and inspection during the start-up process to ensure that all systems are functioning correctly and safely.

In normal operation, the product should perform as expected. Monitor the product during regular operation to ensure it functions as expected.

This involves actively observing the equipment and processes to identify any deviations from normal operation.

By monitoring regularly, operators can identify potential issues at an early stage and take measures to maintain optimal performance and prevent disruptions to operations.



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4.1. Opening Of The Quick Opening

Before attempting to open the closure, check that the vessel isolating procedures have been fully complying to. Ensure the vessel is fully drained, vented, and isolated from any pressure source.

1. Begin by loosening the pressure warning screw slowly. Do not fully remove the screw, just loosen it enough to relieve pressure.
2. As you slacken the screw, watch the milled groove in the screw threads. This groove is designed to allow any residual pressure in the vessel to escape safely.
3. If there is residual pressure, you will hear or see it venting through the groove. This indicates that the vessel is still under pressure.
4. If you detect any pressure, immediately re-check the status of all valves to ensure they are properly isolated. There may be a valve that is not fully closed or another issue that is allowing pressure to remain in the vessel.
5. Only proceed with further maintenance or inspection once you are certain that all pressure has been safely relieved and the vessel is fully isolated from any pressure sources.
6. Fully remove the pressure warning screw. At this point, there should be no pressure venting from the vessel.
7. Carefully pull the mechanical lock item holding the pressure warning screw in place downwards. This lock item is a safety feature to prevent accidental removal of the screw while the vessel is under pressure.
8. Carefully loosen the mechanical locking 2 screw. Take care not to abrade the threads of the screws. After removing the mechanical locking 2 screw, remove the item holding the screw together. Check for any wear, damage or deformation.
9. Move the universal handle from the lock position to the unlock position.

10. Pull the door towards you and open it.
11. Make sure that the door is fully opened and that work can be carried out safely.
12. "Quick Opening Closure" closing and its details are given in detail in Chapter 3. Please refer to Chapter 3

Follow the steps below to ensure that the Quick Opening Closure (QOC) is ready for operation:

- Have the O-ring gasket sealing surfaces and the teeth of the safety lock plate and pressure warning screw been inspected for signs of pitting, corrosion, scratches, and other surface defects?
- Are all uncoated, machined surfaces lightly oiled? Be careful not to have excess lubricant on these surfaces, as it can attract dust and debris.
- Is the O-ring / gasket properly installed? Verify that the O-ring or gasket is seated correctly in its seat with no kinks, gaps or misalignment.
- Is the Quick Opening Closure properly aligned with the lower part?
- Was the bolt torque properly applied as specified on the manual?

Ensure that all exposed areas of the SAFETY LOCK are lubricated with grease to protect the lubrication from environmental elements, prevent corrosion and ensure smooth operation.

- Is the Pressure Warning Screw correctly installed?
- Are the warning labels readable?

Make a detailed visual inspection covering all components of the closure and sealing surfaces.



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5) HANDLING and TRANSPORTATION

Before attempting to open the closure, check that the vessel isolating procedures have been fully complying to. Ensure the vessel is fully drained, vented, and isolated from any pressure source.



Please do not stand near or under the parts of the QOC during transportation.

Take necessary safety precautions during transportation.



Safe Transportation and Lifting Procedures for parts of the QOC.

Utilize Crane or Carrier Rope:

When transporting the parts of the QOC, always use a crane or a suitable carrier rope for lifting and moving the product. These specialized lifting tools provide controlled and secure handling, minimizing the risk of accidents or damage during transportation.

Lift According to Center of Gravity:

Before lifting the product, identify its center of gravity to ensure safe and balanced handling.

Lift the Quick Opening Closure in accordance with its center of gravity to maintain stability and prevent tipping or imbalance during lifting operations.

This helps distribute the weight evenly and reduces the risk of damage or accidents.

It is crucial to store the Quick Opening Closure in a closed, dry, and clean room to prevent damage. Take all necessary precautions to avoid any potential hazards, such as objects falling on them or passing vehicles.

Failure to comply with these instructions and information may result in liability exclusion. This exclusion of liability also means that any right to claim for damages is also lost.

Handle and store the Quick Opening Closure with the care and in accordance with the provided guidelines in order to ensure their integrity and functionality.

Packaging and Unpacking:

Ensure that the Quick Opening Closure is adequately protected during transportation.

The use of appropriate packaging materials is essential to prevent damage caused from bumps, drops, or other impacts that may occur during transit.

Upon arrival, the package should be carefully unpacked to ensure that the Quick Opening Closure has remained intact throughout the journey.

Transportation Guidelines:

Ensure the secure handling of the parts of the Quick Opening Closure during transportation to prevent any potential harm.

It is necessary to use appropriate safety methods to minimize movement and vibration during transportation, thereby reducing the risk of damaging the product.

Furthermore, comply with speed limits and the use of cautious driving practices can further reduce the likelihood of accidents or mishaps during transportation.

Inspection upon Receipt:

Upon receipt of the parts of the Quick Opening Closure, a thorough inspection should be conducted to check for any visible damage incurred during transportation.

Any issues or concerns should be reported to the relevant parties without delay in order to initiate resolution processes and prevent further complications.

This approach ensures that any potential issues are addressed promptly, thereby minimizing any potential downtime and disruption to operations.



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This particularly applies in the case of:

- Improper installation
- Improper application
- Any change or modification of the Quick Opening Closure
- Non-compliance with safety notices
- Improper maintenance work
- Improper storage
- Corrosion resulting from non-compliance with the above points

6) SAFETY

The information contained in this operating manual is specifically applicable to the machine whose model number is indicated on the title page.

The model number and production year are written on the introduction page of the user manual. It is essential that whenever consulting us for assistance or inquiries, the following details are accurately provided:

- Series
- Model
- Production Year
- Serial Number

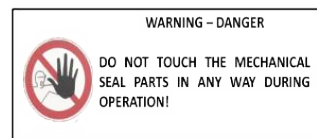
Ensuring the accuracy of this information is crucial for us to effectively process your query promptly and efficiently.

By providing the correct series, model, production year, and serial number, we can swiftly address any concerns or provide the necessary support tailored to your specific machine requirements.

Thank you for your cooperation and attention to detail.

6.1. Notes/Explanations:

The following symbols are used in this document to indicate potentially hazardous situations



WARNING!

Read this information to prevent damage to the product.



WARNING!

Read this information to prevent damage to the product.



WARNING!

In this manual are denoted by a warning triangle symbol for easy identification and emphasize important safety precautions and potential hazards.

You should encounter these symbols, please comply with the instructions and proceed carefully. A complete overview of safety protocols for equipment operation:

In any industrial setting, the safety of personnel and the proper functioning of equipment are of the importance. To guarantee a safe working environment and prevent accidents or injuries, it is essential to implement and comply to complete safety protocols.

This manual provides a complete examination of the fundamental safety guidelines for equipment operation, encompassing pivotal aspects such as hazard identification, personal protective equipment (PPE) utilization, and emergency procedures.



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6.2. General Safety Guidelines:

The implementation of safety precautions is the foundation of a safe work environment.

Ensure that all personnel involved in equipment operation comply with these guidelines at all times. By following safety protocols, the risk of accidents.

Hazard Identification:

To ensure a safe working environment, potential hazards must be identified during both the installation and operation of equipment.

Personnel need to be trained to recognize various hazards such as electrical, mechanical or chemical risks and take measures to alleviate them.

Regular risk assessments and hazard analyses should be conducted to immediately identify and address potential safety issues.

6.3. Personal Protective Equipment (PPE):

The use of personal protective equipment (PPE) is of paramount importance in ensuring the safety of personnel in the workplace.

All personnel must wear suitable personal protective equipment (PPE) when operating equipment, including items such as helmets, gloves, goggles, and protective clothing.

Provide proper training on PPE selection, usage, and maintenance in order to ensure maximum effectiveness and protection against workplace hazards.

6.4. Safety Precautions:

The operating manual is an essential component, its functionality and operation.

That operators have easy access to the information they require, ensuring that vital information is readily available whenever needed.

The manual contains not only instructions on how to operate the machine but also crucial safety guidelines and warnings, which serve to protect the health and safety of employees.

It is the operators' responsibility to familiarize themselves with the contents of the manual, as it contains the information necessary to ensure the safe and efficient operation of the machine.

The manual acts as a constant companion for both new and experienced operators, guiding them through the finer points of the machine's features and operating procedures.

It is the responsibility of the customer to actively monitor and enforce compliance with safety precautions in the workplace.

Regular inspections and audits can help identify any shortcomings in safety protocol and ensure that corrective measures are implemented promptly.

Furthermore, encouraging open channels of communication allows employees to promptly report safety concerns or incidents, facilitating an approach to safety management.

Safety Precautions during QOC Cleaning:

- Since there will be dangerous vapors and pipes with continuous flow around the tank, safety precautions must be taken while the system is in operation.
- First, after establishing a safe working zone, the flow in the system is cut off.
- No rags, cotton waste, etc. should be left on or near the QOC and tank.
- The QOC will be opened after the necessary precautions have been taken. Any damage or dirt on the inside of the QOC must be corrected. Replace any parts that need to be replaced.
- Do not measure after dark.



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It is imperative that all personnel involved in the lifting operation receive adequate training in safety procedures and protocols.

Before starting the lifting operation, a pre-lifting safety training should be provided to review the lifting plan, identify potential hazards and communicate safety precautions.

It is necessary to use suitable rigging equipment to secure the equipment to the lifting apparatus. Hardware components such as slings, shackles and hooks should be inspected for signs of wear or damage before use.

When lifting equipment, ensure that it is done smoothly and steadily, avoiding sudden movements. Monitor the lift at all times.

It is imperative that a specialist staff be assigned to supervise the lifting operation and ensure that all safety protocols are followed.

Communicate effectively with the hoisting team using hand signals or two-way radios.

The lowering and installation of the equipment must be carried out in accordance with the relevant safety protocols.

The equipment must be lowered into place with great care, avoiding collisions or contact with surrounding structures.

Levelling devices or shims should be used to ensure that the equipment is properly aligned and supported.

After the installation is completed, a post-installation inspection should be performed.

A thorough inspection of the installed equipment should be performed to verify that it meets all safety requirements and specifications.

Please correct any problems or deficiencies immediately to ensure safe operation.

All relevant information should be documented and reviewed.

Keep detailed records of the removal operation, including removal plans, safety briefings, inspection reports and certificates.

Review the removal process to identify areas for improvement and incorporate lessons learnt into future removal operations.

If you have any questions or concerns, please feel free to reach out to Ergil.

We are here to assist you and provide the support you need.

Whether you require clarification on operating procedures, assistance with troubleshooting, or guidance on product features, our dedicated team is ready to help.

Your satisfaction and peace of mind are our top priorities, and we are committed to ensuring that you have a positive experience with our products and services.

Don't hesitate to contact us—we're here to help!

7) MAINTENANCE and SERVICE

Regular maintenance is essential to guarantee optimum performance of the equipment.

Detailed maintenance programs will be provided to guide operators in carrying out routine maintenance tasks at appropriate intervals.

This includes tasks such as greasing, calibration and inspection of key components to prevent wear, vapor leakage and ensure trouble-free operation.

It is the responsibility of the operating authority to ensure that all maintenance, installation, and repair work is carried out by authorized and specialist staff.

It is essential that these individuals have received sufficient training and information by carefully studying the instruction manual.



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It is the responsibility and liability of the operating authority to oversee the equipment and assembly after start-up. This emphasizes the importance of employing skilled personnel for maintenance tasks.

Regular Inspections: It is the responsibility of operators to comply with all relevant national regulations concerning regular inspections. In Germany, these regulations include the operating safety regulation, which establishes maximum intervals for Quick Opening Closure inspections for various fluid groups.

It is the responsibility of operators to comply with these regulations in order to ensure compliance with safety standards and to maintain the integrity and performance of the equipment.

Regular inspections allow for the identification of potential issues at an early stage, thereby facilitating timely maintenance and the prevention of unexpected downtime or failures.

Note that regular inspections are required. Regarding regular inspections, Comply with the relevant national regulations. In Germany, these regulations include the operating safety regulation, which sets the maximum intervals for Quick Opening Closure for fluid Group II gas and liquid medium, among other specifications.

7.1. General Maintenance Instructions

Interior Examination: Every 2 years.

Note that inspections must be conducted by a qualified surveying authority in order to ensure compliance with safety standards and regulations.

The inspections must be conducted by a surveying authority. Periodic inspections should be carried out on the components' connections, secured by stainless steel bolts, to prevent corrosion or potential leaks. Verify the integrity of the sealing systems regularly.

Any worn-out or damaged sealing elements should be replaced promptly to uphold the system's integrity. Note that inspections must be conducted by a qualified surveying authority in order to ensure compliance with safety standards and regulations.

Please address any irregularities in the system without delay to prevent potential vapor leakage or safety risks. It is essential to maintain continuous monitoring and integrity of the entire system to ensure effective prevention of vapor losses and resilience to external forces impacting shell surfaces.

Quick Opening Closure units not subjected to alternating stress remain operable as long as routine inspections, conducted regularly, reveal no safety-related faults.

In the event that other countries do not have specific regulations for regular inspections, it is advisable to follow the guidelines set out in the German operating safety regulations (Betriebssicherheitsverordnung). Please inspect of Quick Opening Closure for any signs of damage or corrosion.



It is imperative that you do not open or loosen Quick Opening Closure parts or storage system parts unless you are certain that the operation has been stopped.

Connection lines or connected unit be unpressurised prior to any other action being taken.

For optimal performance and safety, only use original **Ergil** replacement parts. In the event that a part of the Quick Opening Closure is subjected to excess pressure or temperature, the damaged stage must be replaced with new parts.

7.2. Equipment and Materials

Before initiating any maintenance procedures, it is imperative to assemble the following equipment and materials:



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Personal Protective Equipment (PPE):

Gloves: Protect hands from chemicals, sharp edges, and debris. **Safety Goggles:** Shield eyes from splashes, dust, and debris.

Appropriate Clothing: Wear protective clothing such as coveralls to prevent skin exposure to chemicals or contaminants.

Tools for Disassembly:

Wrenches: Assorted sizes of wrenches for loosening and tightening bolts. **Nuts and bolts:** Various sizes of nuts and bolts for disassembly and reassembly.

Screwdrivers: Both flat and Phillips screwdrivers for removing screws.

Pliers: For gripping and holding components securely during disassembly.

Maintenance Actions:

Solvents: Cleaning solvents or degreasers to remove dirt, grease or grime.

Brushes: Various types of brushes (e.g. wire brush, bristle brush) used to scrub and clean surfaces.

Rags: Clean, lint-free cloths or rags for wiping surfaces and absorbing spills.

Lubricants: Oil or grease to lubricate moving parts during reassembly.

Replacement Parts (if necessary):

Identify and procure any replacement parts that may be required based on the inspection results. Ensure that replacement parts are genuine and compatible with the equipment to maintain optimal performance and safety.

By ensuring that all necessary equipment and materials are readily available before commencing maintenance

procedures, operators can streamline the process, minimize downtime, and maintain a safe working environment.

Additionally, comply with proper safety protocols and the use of appropriate PPE are essential for preventing accidents and injuries during maintenance activities.

7.3. Procedure

Please make sure that the QOC is stable and in a safe position and that the system is emptied.

Please ensure that you are wearing the appropriate personal protective equipment (PPE) to ensure your safety during the cleaning process.

Please examine all components for any signs of wear, corrosion, or damage. It is imperative that all components are free from any contaminants or obstructions.

Safety Reminder:

- Ensure that all personnel involved in the maintenance process are adequately trained in the use of PPE and understand the importance of safety precautions.
- Inspect PPE for any damage or defects before use, and replace if necessary to maintain effectiveness.

7.4. Disassembly

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

Ensure the vessel is fully drained, vented, and isolated from any pressure source. Please refer to chapter 4 for details on how to open the cover.



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During the company-determined periodic maintenance, conduct scheduled visual inspections as per the established schedule.

If any damage or inappropriate circumstances are observed during the inspection, promptly take the appropriate safety measures and make necessary adjustments to address the issue.



Serious injury or death can be prevented by ensuring that the Quick Opening Closure can be opened safely by observing the following points.

- Thoroughly inspect for any signs of wear, rust or damage. If such problems are detected, do not continue to open the cover as this could jeopardize safety.
- Make sure that the internal pressure of the container is completely relieved. Opening the cover with residual pressure can cause dangerous accidents.
- Never tamper with or disable any safety mechanisms, including the mechanical lock, Pressure warning screw and universal handle. These devices are critical to ensure the safe operation of the hatch.
- Always position yourself to the side of the QOC when opening it. Standing in front poses a significant risk in case of sudden release of pressure or other hazards.
- Keep hands and all body parts away from the gap between the lid and the container to avoid crush injuries or other damage during operation.
- Always tighten the Draw Bolts and Safety Bolts to the specified torque values. Properly tightened

Scheduled Visual Inspections:

If an agreement is established between the company and the customer for planned maintenance, it is the responsibility of the company to conduct scheduled visual inspections of the QOC during the periodic maintenance intervals that have been determined. Please examine all components for any signs of wear, damage, or improper functioning.

Safety Measures and Adjustments:

If any damage or inappropriate circumstances are detected during the inspection, immediately take appropriate safety measures to prevent accidents or further damage. Make necessary adjustments to identify during the inspection process.

7.5. Cleaning Procedure:

Prior to cleaning, please inspect all components of the QOC for any visible debris, residue, or contaminants. Please pay particular attention to areas where debris or residue may accumulate, such as grooves, crevices.

Use suitable cleaning solvents, brushes and cloths during the cleaning process. These should be used to thoroughly clean all components and pay particular attention to areas with accumulated residue or debris.

After the cleaning process is complete, all openings and passages should be thoroughly inspected to detect any blockages.

This complete cleaning and inspection protocol not only removes dirt and residue but also identifies and rectifies potential issues that could compromise the performance and integrity of the components, thereby ensuring optimal functionality and longevity of the equipment.

1. Ensure that the sealing surface of the door is clean, free from mechanical damage, and corrosion-free. Refresh as needed to maintain integrity
2. The gasket surfaces are cleaned with solvent.
3. The gasket, pressure surfaces of the seal, and friction-clamped surfaces are lubricated with grease.



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Ergil recommends using only a quality lubricant inhibitor. After applying lubricant to the machined surfaces, leave only a layer of lubricant on the machined surfaces.

4. The sealing surface of the pressure pin is cleaned, lubricated and screwed into its place. 5. Grease oil is pumped from the grease nipple located on the hinge spindle, ensuring optimal lubrication for smooth and efficient operation of the mechanism.
6. Fasteners and flanges of all connection nozzles are checked. If necessary, they will be replaced.
7. To prepare the closure for painting the locking band, pressure warning screw assembly and seal must be removed from the door. (Pressure warning screw assembly are stainless steel and do not require painting).
8. Visually inspect for thread wear and corrosion in the pressure warning screw whole.
9. Check for damage to the pressure warning screw seal face.
10. Check gap between the hub and the door in the top and bottom positions. See Chapter 10 for detailed information.
11. Check the freedom of movement of the hinge pins and bearings. Check there is no excessive wear.
12. Check the condition of the door seals and replace if necessary. When replacing, make sure that the seal is within the shelf life indicated on the package.
13. 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.

Note: 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.

7.6. Reassembly Procedure:

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.

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

To make sure that the Quick Opening Closure (QOC) is ready for operation, refer to chapter 4. If it passes the conditions specified there, the system can be returned.

Verify Adaptation of New Parts:

Ensure that any new parts provided by the manufacturer are adapted correctly and fit seamlessly into the assembly.

Verify that the new parts are compatible with existing components and do not cause any interference or alignment issues.

Please provide a detailed description of the documentation.

Please document the reassembly process, noting any challenges encountered, adjustments made, or observations regarding the condition of the equipment. It is necessary to keep detailed records of reassembly activities for future reference and compliance purposes.

7.7. Final Check Procedure:

When reassembly is complete, a complete inspection is required to verify that all parts are securely fastened and in their correct positions.

Carefully inspect each component of the Quick Opening Closure to verify that it has been properly reinstalled and aligned according to the manufacturer's specifications.

Please pay attention to all bolts, nuts or fasteners to ensure they are securely tightened. It is advisable to conduct a visual inspection for any signs of damage, wear, or corrosion that may have



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been overlooked during the cleaning and reassembly process. It is important to address any issues promptly to prevent potential problems during operation.

Please inspect for any loose parts. Please inspect the surrounding area for any loose parts, tools, or debris that may have been left behind during reassembly.

7.8. Completion:

Quick Opening Closure is now prepared for use, having thorough cleaning and replacement of any necessary parts.

It's essential to note that this procedure should be carried out by specialist staff who possess a good understanding of the operation and maintenance of the Quick Opening Closure.

Always consult the manufacturer's guidelines and specifications tailored to your specific Quick Opening Closure model.

8) WARRANTY CONDITIONS

Warranty Information: Warranty details and support information will be provided separately.

Contact Information for Support: Contact details for customer support will be provided.

9) TORQUE VALUES FOR SS FLANGES

For cast components, it is of the importance to comply with the correct torqueing procedures.

Failure to follow the correct torqueing procedures can result in structural integrity issues due to the complex geometries often associated with castings.

Fasteners that are not torqued correctly may result in gaps between components, which could compromise safety and durability.

Furthermore, the risk of leakage in pressurized systems is increased when fasteners are not tightened correctly, particularly in components with permeability to fluids or gases.

The precision of assembly for cast components, which is typically delicate, becomes more challenging without comply to correct torqueing procedures.

This can potentially longer assembly time and proper functionality.

It is therefore of the importance to pay attention to the correct torque specifications and procedures in order to ensure the reliability and performance of cast components.



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8-bolts



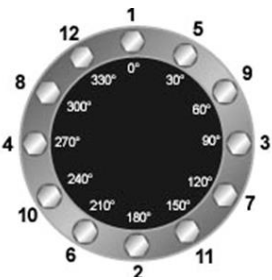
Sequential Order

- 1-2
- 3-4
- 5-6
- 7-8

Rotational Order

- 1
- 5
- 3
- 7
- 2
- 6
- 4
- 8

12-bolts



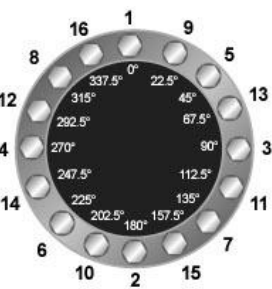
Sequential Order

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10
- 11-12

Rotational Order

- 1
- 5
- 9
- 3
- 7
- 11
- 2
- 6
- 10
- 4
- 8
- 12

16-bolts



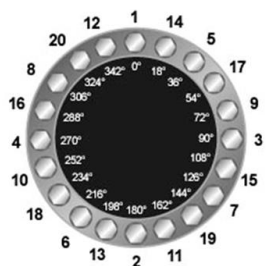
Sequential Order

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10
- 11-12
- 13-14
- 15-16

Rotational Order

- 1
- 9
- 5
- 13
- 3
- 11
- 7
- 15
- 2
- 10
- 6
- 14
- 4
- 12
- 8
- 16

20-bolts



Sequential Order

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10
- 11-12
- 13-14
- 15-16
- 17-18
- 19-20

Rotational Order

- 1
- 13
- 5
- 17
- 9
- 3
- 15
- 7
- 19
- 11
- 2
- 14
- 6
- 18
- 10
- 4
- 16
- 8
- 20
- 12

Table 1: Torque Tightening Values

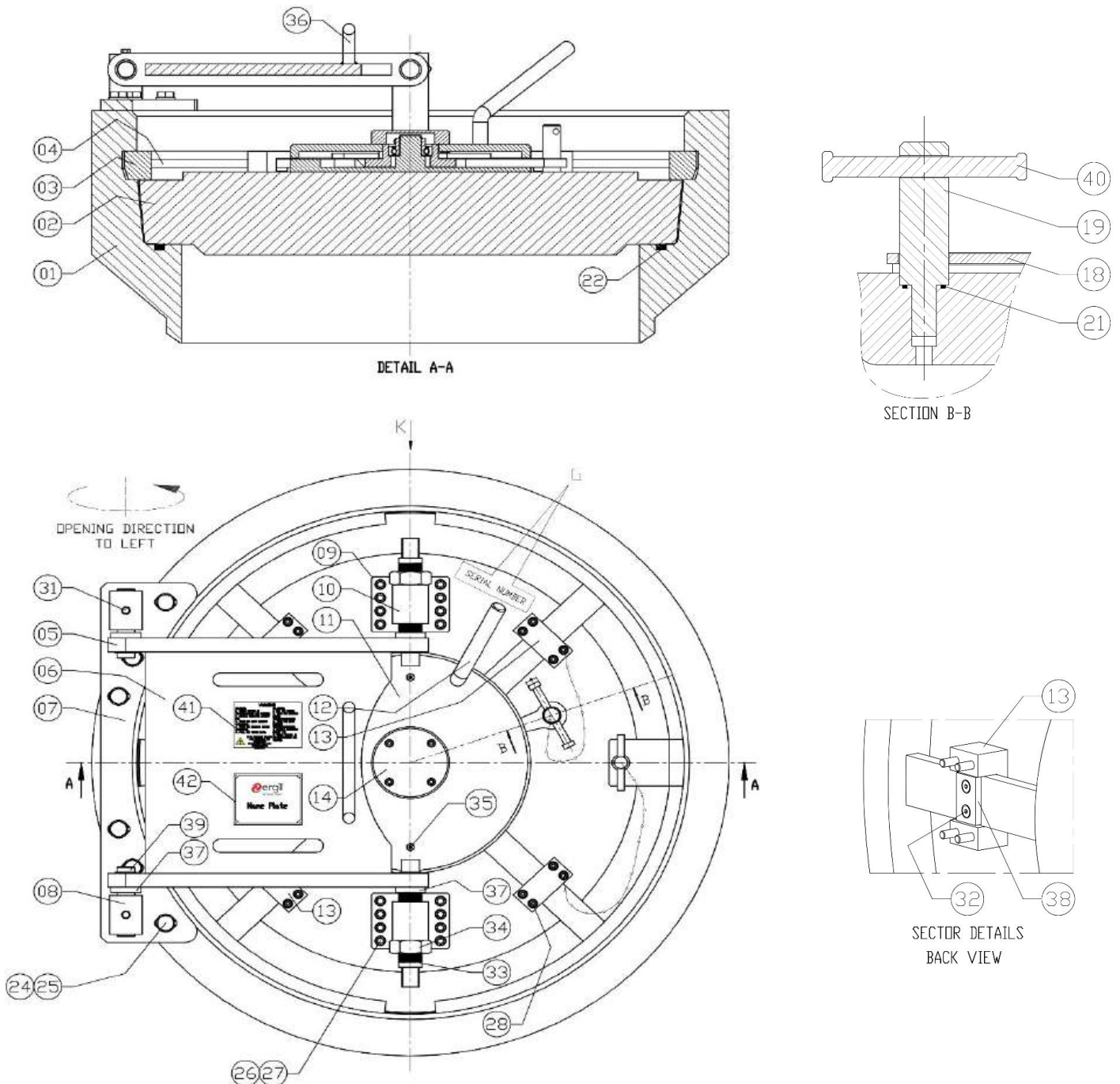
Grade	6.8	8.8
Diameter	TORQUING VALUES (Nm)	
M1	2.3	2.9
M5	4.5	6
M6	7.7	10
M8	19	25
M10	37	49
M12	65	86
M14	05	135
M16	169	210
M18	215	290
M20	305	410
M22	415	550
M24	530	710
M27	656	790
M30	1050	1450
M33	1450	1900
M36	1850	2450
M39	2400	3200
M42	2950	3950
M45	3700	4950
M48	4450	5950
M52	5750	7650
M56	7150	9550
M60	8900	11900
M64	10700	14300



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10) PRODUCT PARTS and MATERIAL INFORMATION:

General Arrangement Drawing





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Table 1: Torque Tightening Values

POSE	QUA.	DESCRIPTION	MATERIAL
01	1	CLOSURE NECK, HUB, ϕ 1060x420 Thk.	SA 350 LF2 Cl.1
02	1	CLOSURE DOOR, ϕ 902x150mm	SA 350 LF2 Cl.1
03	4	SECTOR, RING PLATE, 51.8 Thk.	SA 240 GR. 316
04	4	SECTOR, FLAT PLATE, 15 Thk.	SA 240 GR. 316
05	2	HINGE ARM, PLT., 533x60x25mm	S235JR
06	1	HINGE ARM, PLT., 400x410x25mm	S235JR
07	1	HUB HINGE, PLT., 650x160x20mm	S235JR
08	2	HUB HINGE, PLT., 54x70x82mm	S235JR
09	2	DOOR HINGE, PLT., 130x100x15mm	S235JR
10	2	DOOR HINGE, PLT., 60x70x200mm	S235JR
11	1	COVER ARM, PLT., ϕ 400x25mm	S235JR
12	1	COVER ARM, PLT., ϕ 25x350mm	S235JR
13	4	GUIDE ELEMENT, 96x44x37mm	SA 240 GR. 316
14	1	CENTRE COVER, ϕ 130x25mm	S235JR
15	1	BEARING HOUSE, ϕ 150x41mm	S235JR
16	1	CENTRE TRUNK, ϕ 200x66mm	S235JR
17	1	BEARING, ϕ 72x32mm	S235JR
18	1	SAFETY LOCK PLATE, 15 Thk.	SA 240 GR. 316
19	1	PRESSURE WARNING SCREW, ϕ 30x175	SA 479 Gr. 316
20	4	PLATE, 10 Thk.	SS 316
21	1	PRESSURE O-RING, ϕ 24, T1.25mm	NITRILE
22	1	CLOSURE SEAL	NITRILE
24	6	HEX BOLT, 16	SA 193 B7
25	6	WASHER, M16	SA 194 2H
26	16	ALLEN SCREW, M12	SA 193 B7
27	16	WASHER, M12	SA 194 2H
28	16	ALLEN SCREW, M8	SA 193 B7
29	8	COUNTERSUNK SOCKET SCREW, M12	SA 193 B7
30	4	ALLEN SCREW, M8	SA 193 B7
31	2	HEX BOLT, 8	SA 193 B7
32	8	COUNTERSUNK SOCKET SCREW, M6	SA 193 B7
33	2	SPECIAL STUD, ϕ 39x230mm	SS 316
34	2	SPECIAL NUT, ϕ 69x24mm	SS 316
35	2	GREASE NIPPLE, M6	SS 316
36	1	HANDLE, ϕ 20x300	S235JR
37	4	BRUSH, ϕ 50x37mm	BRASS
38	4	PLATE, 48x30x7mm	BRASS
39	2	SHAFT, ϕ 30x125mm	SS 316
40	1	ROD, ϕ 20x130mm	SS 316
41	1	WARNING PLATE, 0.5 Thk.	SA 240 Gr.304
42	1	NAME PLATE, 0.5 Thk.	SA 240 Gr.304
43	1	EXTERNAL CIRCLIP, ϕ 35	SS 302
44	4	EXTERNAL CIRCLIP, ϕ 16	SS 302



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Table 2: Design Data

DESIGN DATA	
PROJECT CODE	ERG.P01.217.23
MANUFACTURER'S S/N	ERG.013.2023/ERG.014.2023
QUANTITY	2
DESIGN / FABRICATION	ASME SEC. VIII, DIV-1, 2021 EDITION
SERVICE MEDIUM	---
ASME CERTIFICATION MARK	YES, U-PART
NATIONAL BOARD REGISTRATION / CRN	NOT REQUIRED / NOT REQUIRED
LETHAL SERVICE / SPECIAL SERVICE	NO / NO
DESIGN PRESSURE AT THE HIGHEST POINT	MPa 7,584
DESIGN PRESSURE (EXT.)	MPa N/A
DESIGN TEMPERATURE (MIN/MAX)	°C 0 / +60
MINIMUM DESIGN METAL TEMPERATURE	°C 0 at 7,584 MPa
OPERATING PRESSURE (NORM.)	MPa MIN 2,06 / MAX 6,89
OPERATING TEMPERATURE (MIN/MAX)	°C MIN 15 / MAX 20
MAX. ALLOWABLE WORKING PRESSURE (MAWP-Internal)	MPa 7,854 at +60 °C
MAX. ALLOWABLE WORKING PRESSURE (MAWP-External)	MPa N/A
HYDROSTATIC TEST POSITION	HORIZONTAL
HYDROSTATIC TEST PRESSURE & MEDIUM	MPa 11,376 (UG-99(d)) & WATER
HYDROSTATIC TEST TEMPERATURE (MIN.)	°C 12
NDE REQUIREMENT	AS PER UW-51 IS REQUIRED FOR CIRCUMFERENTIAL WELD OF CLOSURE NECK AFTER INSTALLATION. FOR FILLET WELDS, PT BY ERGIL
CORROSION ALLOWANCE	mm 2
PWHT	NOT REQUIRED ACC. TO UCS-56
HEAT TREATMENT (FOR HEAD AFTER FORMING)	NOT REQUIRED ACC. TO UCS-79
IMPACT TEST	EXEMPTED AS PER UCS-66 (a), UCS-66 (g) & UHA-51
NACE REQUIREMENT	No
Q.A.C WEIGHT (ERECTED)	kg 1550
PRESSURE CYCLING	YES
CYCLIC LOADING	YES
NUMBER OF DESIGN CYCLES	7000 TOTAL; Pmax:10MPa, Pmin: 0MPa



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LIST OF MATERIALS TO BE USED FOR INSTALLATION

<p>HAND TOOLS</p>	 <p>Wrench</p>  <p>Torque Wrench</p>  <p>Hammer</p>  <p>Rubber Hammer</p>  <p>Mastic Sealant</p>  <p>Tape Measure</p>  <p>Sheet Scissor</p>  <p>Spanner Set</p>  <p>Pencil</p>  <p>Screw Driver</p>  <p>Star Spanner Set</p>  <p>Caulking Gun</p>  <p>Bubble Level</p>
<p>POWER TOOLS</p>	 <p>Drill</p>  <p>Bit Set</p>  <p>Air Compressor</p>  <p>Air Drill</p>  <p>Jig Saw</p>
<p>SPE</p>	 <p>Helmet</p>  <p>Safety Glass</p>  <p>Hearing Protector</p>  <p>Safety Harness</p>  <p>Safety Gloves</p>  <p>Safety Shoes</p>

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Rx2™ Band Type
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Ergil Website
QR Code

