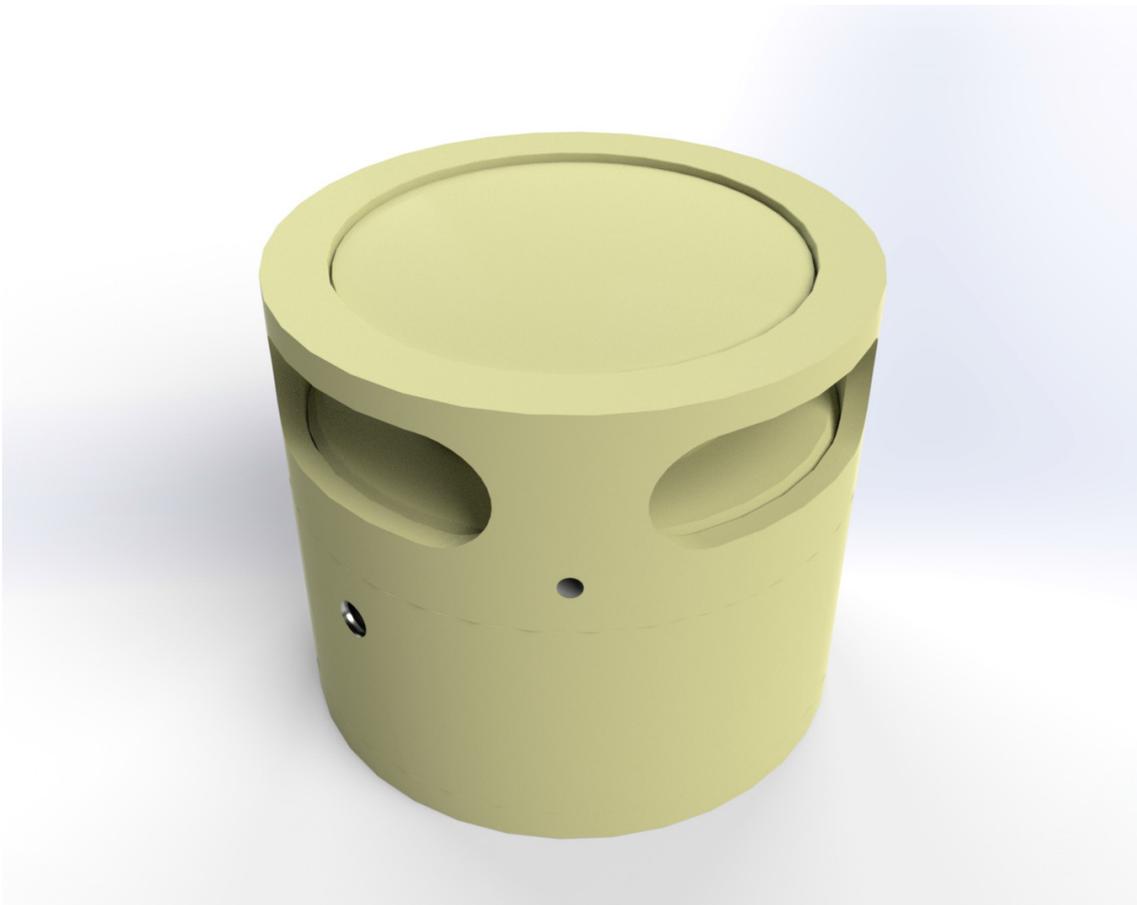


Operating Manual

QDR Valve



Manufacturer:

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Abbreviations

CDA	Clean Dry Air
DI	Deionised
NO	normally open
NC	normally closed
PP	Polypropylene
PTFE	Polytetrafluorethylene
PVDF	Polyvinylidene fluoride
VI	Preventive maintenance

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1 Manifestations for the available operating manual

The available operating manual is a part of the technical documentation of the valve. Please read the operating manual carefully before starting up the valve. By reading the operating manual before starting up the system for the first time unnecessary errors while operating the valve can be avoided. Also you are right from the start conversantly with the operation and the advantages of the valve.

This operating instruction is dedicated to trained experts, which have experience with the assembly, installation, starting up, maintenance and service of valves.

The available operating instruction contains manifestations, which you have to consider for your own safety and also for prevention of property damage. The details for your own safety are accentuated by a warning triangle, details to exclusive property damage are without a warning triangle. Depending on the degree of hazard the warning notices would be represented in diminishing order as follows:

 Danger	Danger with warning triangle means, that death or gravity bodily injury will eventuate, when the appropriate measures of precaution are not taken.
 Warning	Warning with warning triangle means, that death or gravity body injury could eventuate, when the appropriate measures of precaution are not taken.
 Attension	Attention with warning triangle means, that a body injury could eventuate, when the appropriate measures of precaution are not taken.
 Attension	Attention without warning triangle means, that property damage could eventuate, when the appropriate measures of precaution are not taken.
 Warning	Warning means, that an unwanted happening or situation could eventuate, when the appropriate security measures are not taken.
 Advice	An advice shows you a fact, which simplifies the service or the operation of the plant.

2 Service

If a technical problem occurs we are right at your service. You can contact us during our business hours as follows:

Monday – Friday:	07:00 a.m. – 4:00 p.m. (GMT +1)
Telephone number:	+49-(0) 8104 – 6487 – 0

Outside our business hours an answering machine records your messages.

If you can't contact us by phone, you can send us an e-mail to the following email address: info@ramgraber.de.

3 Specifications

3.1 General

CDA	2 x G1/8"
Pressure	3,5 Bar / 50 PSI

 Warning	 Attention	The drain and exhaust piping has to be hooked up to the customer site disposal system according to the P&ID and layout drawings.
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3.2 Allowed liquids and gases

The machine may only be operated with DI-Water, CDA and the for the basin and piping materials suitable chemicals. (Material resistance)

the necessary instructions of the personal and if necessary deployment of personal protection equipment are to provide and take responsibility by the operating company.

The RAMGRABER GmbH does not adhere for direct and indirect damage of the machine by the supply or use of the used chemicals.

 Attention	Only the before mentioned chemicals are allowed in the working and the process area. The use of othere chemicals or media compositions is only allowed with a written declaration of clearance of the Ramgraber GmbH.
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4 Important Notes

The present operating manual contains the most important notes for operating the valve safely.

4.1 Note Obligations, Liability and Instructions in the Operating Manual

The operator must be familiar with the basic safety instructions and regulations to ensure safe handling and trouble-free operation of this valve. The present operating manual, in particular the safety instructions must be observed by everyone who works with the valve. In addition, the accident prevention rules and regulations in force at the operation site must be observed.

Potential Machine Hazards:

The machine has been designed in accordance with state-of-the-art principles and recognized safety regulations. However, hazards to life and limb of the user or third parties and damage to the machine or other objects may occur during operation. The machine must only be used

- for its intended purpose
- in a totally safe operating condition.

Any faults that could affect safety must be rectified immediately.

Warranty and Liability:

In general, our “General Terms for the Delivery and Performance in the Electrical Industry and Galvanization Technology” apply. These shall be supplied to the operator at the latest on conclusion of the contract. No warranty claims or liability for personal and material damage shall be accepted if they are attributable to one or more of the following causes:

- Improper use of the machine
- Incorrect assembly, commissioning, operation or maintenance of the machine
- Operation of the machine with faulty safety mechanisms or incorrectly fitted or non-functional safety and protective devices
- Failure to comply with the operating manual with regard to transportation, storage, assembly, commissioning, operation, maintenance and equipping of the machine
- Machine modifications carried out without the knowledge of the manufacturer
- Settings changed without the knowledge of the manufacturer
- Insufficient control of machine parts subject to wear

- Incorrectly performed repairs
- Catastrophic occurrences caused by foreign bodies and force majeure
- Failure to comply with accident prevention regulations, other work safety regulations and generally recognized health and safety regulations. The most recent edition of these regulations shall apply
- Non-compliance with regulations issued by the relevant works council for your company

RAMGRABER GmbH shall not be liable for any errors, such as incompleteness, not being up to date or inaccuracies in the present documentation. Under statutory regulations no liability shall be assumed for direct or indirect damage relating to the supply or use of the plant by Ramgraber GmbH. The owner shall not be entitled to any warranty or liability claims in the event of grossly negligent and improper use of the plant.

Copyright of the transfer documentation (operating manual, diagrams, software) shall remain with Ramgraber GmbH. The transfer documentation is intended for operating and supervisory personnel. It contains regulations and technical diagrams that may not be photocopied, distributed either in part or in full, or used for the purposes of competitors or other parties.

The declaration of conformity applies only to the system delivered by Ramgraber GmbH. The customer is responsible for modifications or additions to the machine not carried out by Ramgraber GmbH. Such modifications/additions render the customer himself as the manufacturer and must therefore obtain harmonization with EC regulations.

4.2 Organizational Procedures

 Warning	 Attention	In order to prevent property- and/or bodily damages the following organizational measures are to be observed.
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- The customer shall provide the necessary personal protection devices.
- The safety datasheet for the media used must be observed.
- All existing safety mechanisms must be regularly inspected.
- The machine and the purchased parts must be maintained.

4.3 Informal Safety Procedures

 Warning	 Attention	<p>In order to prevent property- and/or bodily damages the following informal safety procedures are to be observed.</p>
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- The operating manual must always be kept by the machine. In addition to the operating manual, national and local work safety and environmental protection regulations must be displayed and observed
- All safety and hazard instructions on the machine must be kept legible and replaced if necessary
- The documentation with these operating manual must at all times be accessible to the maintenance and repair staff that must be familiar with it
- Observe the equipment descriptions contained in the in the technical documentation
- A thorough understanding of the operating manual is the only safeguard against errors and of ensuring trouble-free operation. It is therefore important that the responsible people are familiar with these operating manual

4.4 Personnel Training

 Warning	 Attention	<p>In order to prevent property- and/or bodily damages the following advices for personnel training are to be observed.</p>
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- Only trained and instructed personnel may work on the machine
- The areas of personnel responsibility must be clearly defined in terms of operating, refitting and servicing
- Trainee personnel must only work on the machine under supervision from an experienced person

Persons	Instructed personnel	Personnel with technical training	Supervisor with corresponding competency
Activity			
Packaging Transportation		✓	
Commissioning			✓
Operation	✓		
Troubleshooting		✓	
Troubleshooting mech.		✓	
Setup, Equipping	✓		
Maintenance		✓	
Repairs		✓	
Decommissioning, Storage		✓	

Only trained personnel are authorized to work on the machine. Training must be acknowledged in writing.

4.5 Safety Measures for Normal Operation



Danger

In order to prevent property- and/or bodily damages the following advices for safety measures for normal operation are to be observed.

- Only operate the machine when all the safety mechanisms are fully functional.
- Before powering up the machine ensures that no one is at risk from the machine starting up.
- The switch on/off procedures specified in the operating manual must be observed.
- Check the machine for external signs of damage and test the safety mechanisms at least once a day.
- Do not perform any action which could affect the safety of the machine.

4.6 Hazards Caused by Residual Energy

 <p>Warning</p>	Observe the incidence of mechanical, hydraulical, pneumatical and electrical residual energy on the plant and implement suitable action at the instruction the operating personnel.
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- Watch out for mechanical and pneumatic residual energy on the machine and take appropriate measures on how to deal with this when instruction the operating personnel.
- Detailed notes are also given in the respective chapters of the operating manual.

4.7 Particular Hazard Areas

Process basins, tanks and Process room

	<p>Mechanical hazard</p>
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 <p>Warning</p>	<p>When handling the system always wear sufficient protective equipment on account of the hazardous media used.</p> <p>See also the safety data sheet for these media.</p> 
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4.8 Maintenance and Repairs, Troubleshooting

 Warning	 Attention In order to prevent property- and/or bodily damages the following advices for safety measures during maintenance and repairs are to be observed
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- Observe the intervals for recurrent checks in accordance with DGUV V3.
- Only work on the machine when it is de-energized, switched off, drained and clean.
- Observe procedures for switching on/off.
- Make sure any loose screw connections are secured. After completing maintenance work check test the safety mechanisms.
- Procedure in the event of one or more defects. (A defect is any condition that could affect safety):
- If you detect a defect, it must be rectified immediately. If a severe hazard exists until the defect is rectified, ensure that the machine is not used until the defect is rectified (DGUV V3). If the operating conditions do not allow immediate action to be taken to rectify the damage, limit the hazard in the first instance for example by blocking off the machine, signaling or attaching labels. Inform the supervisor or responsible office as soon as possible (VDE 0105 Part 1).
- If the defects pose an immediate danger, they must be rectified immediately by engineers, trained personnel or supervised untrained personnel.
- Service the machine in accordance with the operating instructions.

4.9 Machine Modifications

 Warning	 Attention In order to prevent property- and/or bodily damages the following advices for safety measures are to be observed
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- No modifications, additions or reconditioning of the machine may be carried out without the manufacturer's approval. This applies also to welding work on supporting components.
- Any reconditioning requires written approval from Ramgraber GmbH.
- No independent modifications or reconditioning work may be undertaken if it affects the safety of the machine.
- Immediately replace any machine parts that are not in perfect working order.
- Only use original spare parts.
- When replacing standard components such as screws make sure they have the same rating.
- Bought-out parts will not necessarily be designed and manufactured to the same levels of resistance and safety.

4.10 Cleaning the Machine and Disposal

 Warning	 Attention In order to prevent property- and/or bodily damages the following advices for safety measures are to be observed
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- Take care to ensure that no fluids or other foreign bodies can enter inside the electrical equipment.
- Handle and dispose of the materials used in a correct fashion, especially
 - when working on lubricant systems and equipment and
 - when cleaning with solvents.
 - Observe waste water protection regulations when disposing of waste water.
- When cleaning the machine take care not to adjust any sensors and make sure the sensors and their environment are not damp before continuing operation.
- When cleaning take care not to adjust any equipment settings. This includes:
 - membrane and manual valves
 - sensor switch distances
 - sensor arrangement
 - sensor and switch link activation points
 - sensor and switch link switching hysteresis.
- Note the safety data sheets for the media used in the plant.
- For the cleaning the Laws of the UVV have to be followed.

4.11 Assembly/Disassembly

Assembly:

- Ensure suitability of the valve for the respective application. The valve must be suitable for the operating conditions of the system (medium, medium concentration, temperature and pressure) and the respective ambient conditions. Check the technical data of the valve and the materials.
- Shut down the system or part of the system.
- Secure against being switched on again.
- Depressurise the system or system part.
- Completely empty the system or system part and allow it to cool down until the temperature falls below the evaporation temperature of the medium and scalding is impossible.
- Decontaminate, flush and ventilate the system or system part properly.

Disassembly

Before disassembling the machine it must be thoroughly cleaned due to the hazardous materials used, residual materials and discharged gases.

When disassembling, always disconnect the machine from the air supply and clean the plant carefully of all chemical residues.

4.12 Cleaning of the machine

To wet-clean the machine, use only water and cleaning solutions that have been approved by Ramgraber GmbH.

Carry out checks prior to start-up and in the event of operating faults, as well as after trials. Depending on the nature and scope of the contamination, carry out cleaning immediately or during routine maintenance. Any contamination that could affect the inflow or drainage of fluid must be removed.

Always observe work safety measures, state of the art technology and company regulations when carrying out cleaning.

Also observe all notes and regulations in chapter 6, "Important notes".

4.13 Additional Instructions

 Warning	 Attention In order to prevent property- and/or bodily damages the following advices for safety measures are to be observed
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- Do not operate the plant unsupervised.
- Sources of ignition such as hot surfaces, flames, hot gases, mechanically produced sparks, electrical equipment, electrical compensating currents, static electricity, electromagnetic waves >100 kHz, ionized radiation, additional ultrasound, adiabatic compression and shock waves must not be introduced to the machine or its environment.
- Avoid external shocks, vibrations and interference.
- Observe the emission protection regulations for discharge air.
- If the machine is not used for a long period of time, fully drain, clean and separate it from the compressed air supply.
- To avoid creating sparks caused by electrostatic charge, we recommend the use of antistatic (electrostatically conductive) protective clothing and shoes.
- Make sure there is a supply of first aid material in accordance with accident prevention regulations "First Aid" (DGUV V1).
- The machine must not be operated in an explosion hazardous atmosphere. This also applies if the machine itself contains explosion hazardous materials.

5 Commissioning

 Warning	 Attention In order to prevent property- and/or bodily damages the following advices for safety measures are to be observed
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Before using the machine for the first time make sure you have read all the safety instructions, the whole operating manual and all equipment descriptions.

When the machine has been delivered remove all the packaging material.

The connections have to be done like in the drawings.

The settings have to be in the Area of the manufacturers instruction and have to be checked and if necessary corrected.

For the first commissioning or restart after repair work or modification, we recommend filling with DI water and testing for leaks.

The inlet flow (quantity and pressure) of the media must be adjusted to prevent it from spraying out of the basins.

Once the consumables have been filled, check again for leaks.