

Operating instructions

Diverter plug valve Type 7111



IMPORTANT

Read carefully before use.

Keep for future reference.

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1 About these instructions

1.1 Principles

The operating instructions are part of the valve named on the front page.




1.2 Applicable documents

Document	Contents
Catalogue page	Description of the valve

For accessories, refer to the respective manufacturer's documentation.

1.3 Hazard levels

The warning notes are marked and classified according to the following hazard levels:

Symbol	Explanation
 DANGER	Identifies a hazard with a high risk level that will result in death or serious injury.
 WARNING	Identifies a hazard with a moderate risk level that will result in death or serious injury.
 CAUTION	Identifies a hazard with a low risk level that will result in a minor or moderate injury.
NOTICE	Identifies a risk to property. Damage to property may occur if this notice is ignored.

2 Safety

2.1 Intended use

The valve is intended for installation in a pipeline or pressure tank system in order to block media or allow them to pass through within the permissible operating conditions. The permissible operating conditions are specified in these operating instructions.

The valve is suitable for the media listed in these operating instructions; see section 4.5 "Media". Operating conditions and applications deviating from these require the approval of the manufacturer.

Only media may be employed to which the materials used for the valve body and seals are resistant. Contaminated media or usage outside of the pressure and temperature specifications can lead to damage to the valve body and seals.

Avoidance of foreseeable incorrect use

- ▶ Never exceed the permissible usage limits specified in the data sheet or in the documentation with regard to pressure, temperature, etc.
- ▶ Follow all safety instructions and operating procedures in these operating instructions.

2.2 Meaning of the operating instructions

The operating instructions are to be read and followed by the responsible technical personnel before mounting and start-up. As part of the valve the operating instructions must always be available close to it. People could be seriously injured or killed if the operating instructions are not followed.

- ▶ Read and observe the operating instructions before using the valve.
- ▶ Retain the operating instructions and make sure they are available.
- ▶ Pass on the operating instructions to subsequent users.

2.3 Instructions for people who work with the valve

People could be seriously injured or killed if the valve is used improperly. In order to avoid accidents, all persons who work on the valve must meet the following minimum requirements:

- They are physically capable of controlling the valve.
- They can safely carry out the work with the valve within the scope of these operating instructions.
- They understand the operating principles of the valve within the scope of their work and are able to recognise and avoid the hazards of the work.
- They have understood the operating instructions and are able to implement the information of the operating instructions accordingly.

2.4 Personal protective equipment

Missing or unsuitable personal protective equipment increases the risk of damage to health and injuries to people.

- ▶ The following protective equipment is to be provided and worn during work:
 - Protective clothing
 - Safety shoes
- ▶ Define and use additional protective equipment depending on the application and the media:
 - Safety gloves
 - Eye protection
 - Ear protection
- ▶ Wear the specified personal protective equipment for all work on the valve.

2.5 Additional equipment and spare parts

Additional equipment and spare parts not conforming to the manufacturer's requirements can negatively affect the operational safety of the valve and cause accidents.

- ▶ In order to ensure operational safety, use original parts or parts that conform to the manufacturer's requirements. If in doubt, have these confirmed by the dealer or manufacturer.

2.6 Adhere to the technical thresholds

If the technical thresholds for the valve are not adhered to, the valve may sustain damage, accidents may be caused and people may be seriously injured or killed.

- ▶ Adhere to the thresholds. See section "4 Description of the valve".

2.7 Safety instructions

DANGER

Hazardous medium.

Escaping operating medium can lead to poisoning, burns and caustic burns!

- ▶ Wear the prescribed protective equipment.
- ▶ Provide suitable collecting containers.

WARNING

Harmful and/or hot/cold conveyed media, lubricants and fuels

Hazardous for persons and the environment!

- ▶ Collect and dispose of rinsing medium and any residual media.
- ▶ Wear protective clothing and a protective mask.
- ▶ Observe legal regulations regarding the disposal of harmful media.

⚠ WARNING

Risk of injury if maintenance work is done incorrectly!

Incorrect maintenance can lead to serious injury and considerable material damage.

- ▶ Before the start of work, ensure there is sufficient room for doing the work.
- ▶ Ensure the space around the work is tidy and clean! Parts and tools in loose piles or lying around are hazard sources.
- ▶ If parts have been removed, take care to assemble correctly and re-install all attachment items.
- ▶ Before putting back into service, ensure:
 - All maintenance work has been carried out and completed.
 - There are no persons in the hazard area.
 - All covers and safety devices are installed and operating correctly.

⚠ CAUTION

Cold/hot pipelines and/or valves.

Risk of injury due to thermal influences!

- ▶ Insulate valves.
- ▶ Attach warning signs.

Medium escaping at high speed and high/low temperature.

Risk of injury!

- ▶ Wear the prescribed protective equipment

NOTICE

Impermissible stresses arising from operating conditions and extensions / added structures.

Leakage or rupture of the valve body!

- ▶ Provide suitable support.
- ▶ Additional loads, such as traffic, wind or earthquakes, are not explicitly taken into account by default and require separate sizing.

Condensation in air conditioning, cooling and refrigeration plants.

Icing!

Blocking of the actuation mechanism!

Damage due to corrosion!

- ▶ Insulate valves with diffusion-tight material

Improper mounting.

Damage to the valve!

- ▶ Remove cover caps before mounting.
- ▶ Clean the sealing surfaces.
- ▶ Protect the body against hammering.

Painting of valves and pipelines.

Functional impairment of the valve / loss of information!

- ▶ Protect stem, plastic parts and type plate against the application of paint.

Impermissible load.

Damage to the control mechanism!

- ▶ Do not use the valve as a foothold.
- ▶ Tools for increasing the torque of the lever are not permitted.

Exceeding the maximum permissible operating conditions.

Damage to the valve!

- ▶ The maximum permissible operating pressure must not be exceeded, and the minimum and maximum allowable operating temperatures must be observed.

3 Transport and storage

3.1 Inspection of condition on delivery

- ▶ Inspect the valve for damage upon receipt.
In case of transport damage, determine and document the precise extent of the damage, and report it immediately to the supplying dealer/carrier and the insurer.

3.2 Transportation

- ▶ Transport the valve in the packaging supplied.
The valve is delivered ready to operate with lateral connections protected by cover caps.
- ▶ Protect the valve against shocks, impacts, vibrations and dirt.
- ▶ Adhere to a transport temperature range of -20 °C to +65 °C.

3.3 Storage

- ▶ Store the valve in a clean and dry place.
- ▶ Make use of a desiccant or heating in damp storerooms to prevent the formation of condensation.
- ▶ Adhere to a storage temperature range of -20 °C to +65 °C.

4 Description of the valve

Refer to the respective catalogue page for further detailed information.

4.1 Structure



Design

Non-automatically opening and closing, straight-type globe valve.

Component	Design
Body	Multi-way design, one-piece body
Bonnet	Flanged, without stem thread
Operating mechanism	Non-rising stem
Obturator	Plug with seal made of non-metallic materials
Stem bushing	Non self-sealing, packing gland
Body end	Thread end

4.2 Marking

The valves are provided with an individual marking for identification.

Symbol	Explanation
DN	Nominal size
PN	Rated working pressure (max. permissible operating pressure)
-.....°C+.....°C	Temperature, min. / max.
	Manufacturer's mark "HEROSE"
01/16	Date of manufacture, MM/YY
12345	Type
01234567	Serial no.
e.g. EN1626	Standard
 0045	CE-mark, ID of notified body
e.g. CC491K	Material

4.3 Intended use

Div erter plug v valve for the installation of two safety valves in combination with bursting discs for protecting gas storage tanks. The requirements of the pressure equipment directive for redundant or different types of safety devices are fulfilled with this valve and in combination with safety valves with the same setting pressure. Additional connections for suitable bursting discs are available on each side.

In the case of servicing the safety valves or replacement of the bursting discs, the side to be serviced is isolated from the tank.

In the end position one outlet is open and the other is closed. It is not possible to shut off both outlets at the same time.

4.4 Operational data

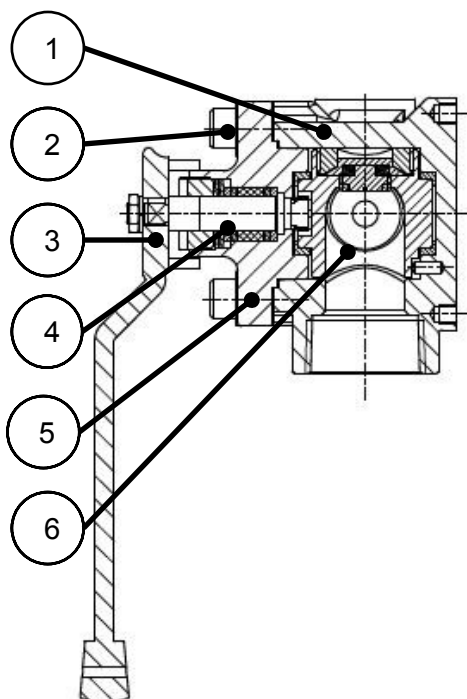
Valve	Nominal pressure	Temperature	Max. operating pressure
7111	PN50	-196 °C to +120 °C	50 bar
		-196 °C to +60 °C	40 bar with O ₂ application
		-196 °C to +120 °C	25 bar with O ₂ application

4.5 Media

Gases, cryogenic liquefied gases and their gas mixtures, such as:

Name
Argon
Chlorotrifluoromethane
Nitrous oxide
Ethane
Ethylene
Carbon dioxide
Carbon monoxide
Krypton
LPG
LNG
Methane
Oxygen
Nitrogen oxide
Nitrogen
Trifluoromethane
Hydrogen

4.6 Materials



Part no.	Name	Material
1	Body	CC491K
2	Bolt	1.4301
3	Lever	CC491K/1.4308
4	Stem	1.4301
5	Top work	CC491K
6	Obturator	CW614N/PTFE

4.7 Scope of delivery

- Valve
- Operating instructions

4.8 Dimensions and weights

- ▶ See catalogue page.

4.9 Lifetime

The user is obligated to use Herose products only for their intended purpose.

In this case, a technical service life may be assumed in accordance with the underlying product standards (e.g. EN1626 for shut-off valves and EN ISO 4126-1 for safety valves).

The technical service life can be restarted several times through the exchange of wearing parts within the context of the maintenance intervals, and lifetimes of more than 10 years can be achieved.

If products are stored for a period exceeding 3 years, then the plastic components and elastomer sealing elements fitted to the product should be replaced as a precautionary measure before mounting and use.

5 Assembly

5.1 Installation position

Attention must be paid to the direction of flow.

The installation position is arbitrary.

The preferred installation position should be with the stem horizontal.

5.2 Notices regarding the mounting

- ▶ Use suitable tools.
- ▶ Clean tools before the installation
- ▶ Open the packaging only directly before the mounting. Freedom from oil and grease for oxygen (O₂)
Valves for oxygen are permanently marked with "O₂".
- ▶ Only install the valve if the maximum operating pressure and operating conditions correspond to the marking on the valve.
- ▶ Remove protective caps or covers before mounting.
- ▶ Inspect the valve for dirt and damage. DO NOT install a damaged or dirty valve.
- ▶ Remove any dirt and residues from the pipeline and valve in order to prevent leaks.
- ▶ Avoid damaging the connections.
The sealing surfaces must remain clean and intact.
- ▶ Seal the valve with suitable seals.
No sealant (sealing tape, liquid sealing tape) may enter the valve.
Respect the suitability for use with O₂.
- ▶ Connect pipelines in a force-free and torque-free manner.
Stress-free mounting.
- ▶ In order to ensure trouble-free operation, no impermissible static, thermal or dynamic stresses may be transmitted to the valve. Observe reaction forces.
- ▶ Temperature-dependent changes in length in the pipework system must be compensated with expansion joints.
- ▶ Fasten the valve in the body with the existing threads.
- ▶ The valve must be protected against dirt and damage during construction work.
- ▶ Check the leak-tightness.

Tightening torques

Diverter plug valve	Nominal size [G; Rc; NPT]	Tightening torque (Nm)								Number of layers of PTFE tape			
		Tightening torque G [Nm]	Tightening torque NPT [Nm]		Tightening torque SV with double nipple and clamping sleeve in diverter valve [Nm]		Tightening torque SV with copper washer in diverter valve [Nm]		Tightening torque Rc [Nm]	G thread	NPT thread	Rc thread	Length [cm]
			min.	max.	min.	max.	min.	max.					
7111	1/2	50	30	50	40	60	40	60			3		20-25
	3/4	50	40	60	40	70	40	70			5		40-45
	1	50	50	80	50	80	50	80			6		55-60
	1.1/4	55	50	100	50	100	50	100			6		80-85
	1.1/2	60	70	100	60	100	60	100			6		90-95
Screw plug test thread	1/4	20	20	20	20	20	20	20	20		2	2	10-15

6 Operation

6.1 Prior to start-up

- ▶ Check the following points prior to start-up:
 - All mounting and installation work are completed.
 - The safety guards are in place.
 - Compare the material, pressure, temperature and installation position with the lay out plan for the pipework system.
 - Remove dirt and residues from the pipeline and valve in order to prevent leaks.

7 Maintenance and service

7.1 Safety during cleaning

- ▶ Take note of the specifications in the safety data sheet and the general occupational health and safety rules if degreasers are used for process-related reasons for the cleaning of bearing parts, unions and other precision parts.

7.2 Maintenance

The maintenance intervals must be defined by the user according to the operating conditions. The recommendations for the functional checking of the valves are to be taken from section 7.2.1 "Inspection and maintenance intervals" in these operating instructions.

7.2.1 Inspection and maintenance intervals

Recommended intervals		
Description	Interval	Scope
Inspection	▶ During start-up	<ul style="list-style-type: none"> ■ Visual inspection <ul style="list-style-type: none"> <input type="checkbox"/> of the diverter plug valve for damage; <input type="checkbox"/> of the valving marking for legibility; ■ Leak-tightness <ul style="list-style-type: none"> <input type="checkbox"/> at the gland packing; <input type="checkbox"/> of the valve seat; <input type="checkbox"/> at the connections; <input type="checkbox"/> at the plug screw; ■ Test of the opening and closing functions of the diverter plug valve.
Functional testing	▶ Annually	<ul style="list-style-type: none"> ■ Test the opening and closing functions of the diverter plug valve including a visual inspection.
External inspection	▶ Every 2 years	<ul style="list-style-type: none"> ■ Check of function and leak-tightness including visual check.
Internal inspection	▶ Every 5 years	<ul style="list-style-type: none"> ■ Replacement of all sealing elements, including a function and leak test as well as a visual inspection.
Hydraulic testing	▶ Every 10 years	<ul style="list-style-type: none"> ■ Replacement of all sealing elements, including a function and leak test as well as an inspection.

7.3 Fault table

Fault	Cause	Remedial action
<ul style="list-style-type: none"> ■ Leak at the stem 	Gland nut loose	▶ Retighten the gland nut
	Gland packing defective	▶ Replace the diverter plug valve
	Fit on the stem damaged	▶ Replace the diverter plug valve
<ul style="list-style-type: none"> ■ Leaking lateral connections 	Inadequate seals	▶ Seal with suitable sealants
	Blind plug / bolted-on safety valves loose	▶ Tighten to the specified torques
	Lateral connections cracked	▶ Replace the diverter plug valve
<ul style="list-style-type: none"> ■ Body leaking 	Discontinuity/gas cavity open	▶ Replace the diverter plug valve
<ul style="list-style-type: none"> ■ Diverter plug valve cannot be switched over 	Gland nut overtightened	▶ Loosen the gland nut Tightness must still be ensured
	Thread seized	▶ Replace the diverter plug valve
	Lever lock not removed	▶ Remove lever lock

7.4 Spare parts

We require the following details for your spare part orders:

- Article no. of the spare part package,
- desired delivery quantity,
- dispatch and delivery address,
- desired method of dispatch.

7.5 Returns / complaints

Use the Service form in case of returns/complaints.



Contact in case of service:
 Herose.com › Service › Product service › Complaints
 E-mail: service@herose.com
 Fax: +49 4531 509 – 9285

8 Disassembly and disposal

8.1 Notices regarding the disassembly

- ▶ Take note of all national and local safety requirements.
- ▶ The pipework system must be depressurised.
- ▶ The medium and valve must be at ambient temperature.
- ▶ Aerate / flush the pipework system in the case of corrosive and aggressive media.

8.2 Disposal

1. Dismount the valves.
 - ▶ Collect greases and lubricating fluids during dismantling.
2. Separate the materials:
 - Metal
 - Synthetic material
 - Electronic scrap
 - Greases and lubricating fluids
3. Carry out a sorted disposal of the materials.