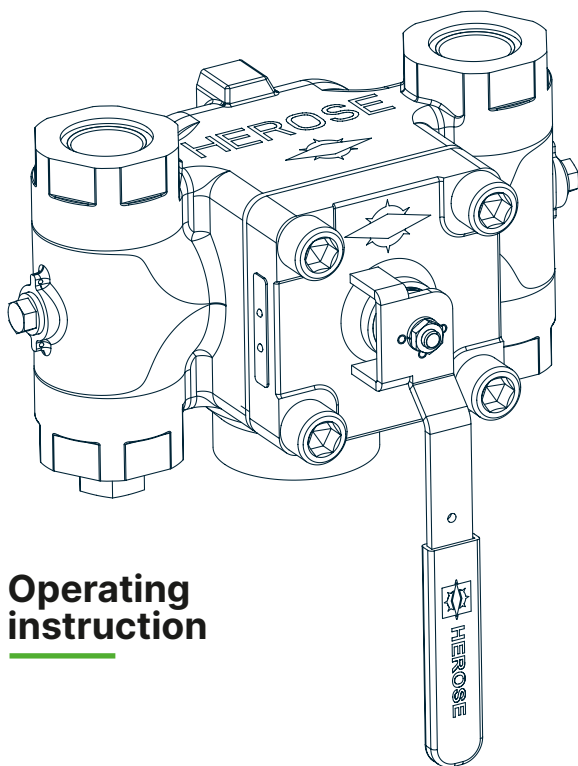




HEROSE



Operating instruction

Art.-No.: 37000.0017.0100

DE

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Important

Read carefully before use.
Retain for later use.



4th issue 12/2023

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Assembly, maintenance and operating instructions

Designation
Diverter plug valve
Model number
7111

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About these instructions

Principles

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

Applicable documents

Document	Contents
Data sheet	Description of the valve

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

Hazard levels

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

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.

Safety

Intended application

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 "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.

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.

Requirements 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.

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.

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.

- › 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.

Adhere to the technical thresholds

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

- › Adhere to the thresholds. See section "Description of the valve".
- › This product is designed for ≤ 500 loading cycles at pressure differences from zero to PN and any number of loading cycles at pressure differences not exceeding $0.1 \times PN$.

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 fittings.

- Risk of injury due to thermal influences!
- › Insulate fittings.
 - › Attach warning signs.

Medium escaping at high speed and high/low temperature.

- Risk of injury!
- › Wear the prescribed protective equipment.

⚠ NOTICE

Impermissible stress due to 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 fittings 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 fittings and pipelines.

- Functional impairment of the valve / loss of information!
- › Protect stem, plastic parts and type plate against the application of paint.

Impermissible stress.

- 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 working pressure must not be exceeded, and the minimum and maximum allowable working temperatures must be observed.

Particles and other contaminants in the conveyed medium.

- Damage to the valve / internal leak!
- › Remove particles/contaminants from the conveyed medium.
 - › It is recommended to install strainers / dirt filters in the pipework system.

Transport and storage

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.

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 $+65^{\circ}\text{C}$

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 $+65^{\circ}\text{C}$.

Description of the valve

Refer to the respective catalogue page for further detailed information.

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

Marking

The valves are provided with an individual marking for identification.

Symbol	Explanation
DNxxx	Nominal diameter
PNxxx	Rated working pressure (max. permissible operating pressure)
$-xxx^{\circ}\text{C}$ / $+xxx^{\circ}\text{C}$	Temperature, min. / max.
	Manufacturer's mark "HEROSE"

Symbol	Explanation
e.g. 01/16	Year of construction MM/YY
e.g. 12345	Type
e.g. 01234567	Serial no.
EN1626	Standard
CE _{xxxx}	CE-mark and number of the notified body
e.g. CC491K	Material

Intended application

Diverter plug 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 vessel.

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.

Operational data

Valve	Nominal pressure	Temperature	Max. working pressure
7111	PN50	-196 °C bis +120 °C	50 bar

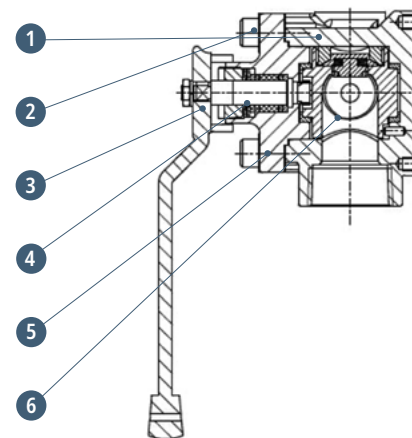
Media

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

The use of other media is only permitted after consultation with the manufacturer.

Materials



Part no.	Name	Material
1	Body	CC491K
2	Bolt	A2-70
3	Lever	CC491K 1.4308
4	Stem	1.4301
5	Top work	CC491K
6	Obturator	CW614N PTFE

Scope of delivery

- › Valve
- › Operating instructions

Dimensions and weights

- › See data sheet.

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 synthetic material components and elastomer sealing elements fitted to the product should be replaced as a precautionary measure before mounting and use.

Assembly

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.

Fitting Notice

- › Use suitable tools.
- › Clean tools before fitting
- › Open the packaging only directly before the mounting. Free from oil and grease for oxygen (O₂)

Valves for oxygen are permanently labelled with "O₂".

Take note of the HEROSE information sheet "O₂ instructions".

- › Only install the valve if the maximum working pressure and operating conditions correspond to the marking on the valve.
- › Remove protective caps or covers before mounting.
- › Inspect the valve for contamination 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.
- › 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

		Tightening torque (in Nm)								Number of layers of PTFE tape	
Type	Nominal size [G; Rc; NPT]	Tightening torque G	Tightening torque NPT		Tightening torque SV with double nipple and clamping sleeve in diverter valve		Tightening torque SV with copper washer in diverter valve		NPT thread	Length (in 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				
Nominal size [G; Rc; NPT]	Tightening torque	Number of layers of PTFE tape		
		NPT thread	Rc thread	Length
1/4	20 Nm	2	2	10–15 cm

Operation

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 layout plan for the pipework system.
 - › Remove dirt and residues from the pipeline and valve in order to prevent leaks.

Maintenance and service

Safety during cleaning

- › Take note of the specifications in the safety data sheet, the general occupational health and safety rules and the HEROSE information sheet "Use with oxygen" if degreasers are used for process-related reasons for the cleaning of bearing parts, unions and other precision parts.

Maintenance

The maintenance and inspection intervals must be defined by the operating company according to the operating conditions and the national regulations.
The manufacturer's general recommendations for the maintenance and inspection of the valve are given in the table below and are based on the national standards of the country of manufacture.

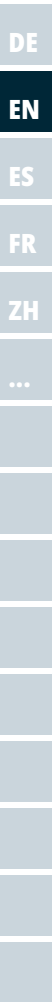
Inspection and maintenance

Recommended intervals		
Description	Interval	Scope
Inspection	During start-up	› Visual inspection » of the diverter plug valve for damage » of the valving marking for legibility › Leak-tightness » at the packing gland » of the valve seat » at the connections » at the plug screw › Test of the opening and closing functions of the diverter plug valve
Functional testing	Inspection and maintenance in accordance with the respective legal regulations. In Germany, for example, according to the Operational Safety Ordinance	› Test the opening and closing functions of the diverter plug valve including a visual inspection
External inspection	Inspection and maintenance in accordance with the respective legal regulations. In Germany, for example, according to the Operational Safety Ordinance	› Function and tightness test including visual inspection
Internal inspection	Every 5 years or ≥ 500 loading cycles	› Replacement of all sealing elements if the tightness test, functional test and visual inspection yield negative results

Description	Interval	Scope
Strength test	Every 10 years	› Replacement of all sealing elements, including a function and tightness test as well as an inspection.

Fault table

Fault	Cause	Remedy
Leak at the stem	Gland nut loose	› Retighten the gland nut
	Packing gland defective	› Replace the diverter plug valve
	Fit on the stem damaged	› Replace the diverter plug valve
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
Body leaking	Discontinuity / gas cavity open	› Replace the diverter plug valve
Diverter plug valve cannot be switched over	Gland nut overtightened	› Loosen gland nut Tightness must still be ensured
	Thread seized	› Replace the diverter plug valve
	Lever lock not removed	› Remove lever lock



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Notices regarding the disassembly

- ## Disposal

- ## Notes

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