Operating instructions

3-piece ball valve

READ CAREFULLY BEFORE USE! RETAIN 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 ball valve

Refer to the manufacturer's documentation for accessories.

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 ball valve is intended for installation in a pipework 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 ball 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 installation and start-up. As part of the ball valve the operating instructions must 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 ball valve.
- Retain the operating instructions and make sure they are available.
- Pass on the operating instructions to subsequent users.

2.3 Requirements for persons who work on the ball valve

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

- They are physically capable to control the ball valve.
- They can safely carry out the work on the ball valve within the scope of these operating instructions.
- They understand the operating principles of the ball 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
- ▶ Set out and use additional protective equipment depending on the utilisation and the media:
  - ☐ Safety gloves
  - ☐ Eye protection
  - ☐ Ear protection
- ▶ Wear the specified personal protective equipment for all work on the ball 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 ball 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 ball valve are not adhered to, the ball 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 ball 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 ball valve.

Risk of injury due to thermal influences!

- ▶ Insulate the ball valve.
- ▶ 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 dimensioning.

Condensation in air conditioning, cooling and refrigeration plants.

Icing!

Blocking of the actuation mechanism!

Damage due to corrosion!

- ▶ Insulate ball valve with diffusion-tight material.

Improper installation.

Damage to the ball valve!

- ▶ Remove cover caps before installation.
- ▶ Clean the sealing surfaces.
- ▶ Protect the body against impacts.

Painting of ball valve and pipelines.

Functional impairment of the ball valve / loss of information!

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

Impermissible stress.

Damage to the control mechanism!

- ▶ Do not use the ball valve as a foothold.

Exceeding the maximum permissible operating conditions.

Damage to the ball valve!

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

3 Transport and storage

3.1 Inspection of condition on delivery

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

3.3 Storage

- Store the ball 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 ball valve

Refer to the respective catalogue page for further detailed information.

4.1 Structure

Design

Non-automatically opening and closing straight-flow 3-part ball valve, insertable on one side in flow direction.

Component	Design
Body	Straight-type
Bonnet	Flanged
Hand lever	Non-ascending
Closing body	Ball with seal made of non-metallic materials
Body end	with soldering end with welding end with threaded end (G; R; NPT) with flange connection with welded-in/soldered-in pipes

4.2 Marking

The ball valve is provided with an individual marking for identification.

Symbol	Explanation
DN…..	Nominal size
PN…..	Rated working pressure (max. permissible operating pressure)
-…..°C +…..°C	Temperature
	Manufacturer's mark "HEROSE"
01/18	Date of manufacture MM/YY
12345	Type
01234567	Serial no.
EN1626	Standard
CE 0045	CE-mark and number of the notified body
e.g. CF3M / 1.4409	Material

4.3 Intended use

Ball valves are used to allow or block the flow of media under pressure. Ball valves are intended exclusively for installation in pipework systems with connections of the same pressure rating and corresponding connection or between flanges of the same pressure rating and identical flange connection. The closing direction is clockwise.

4.4 Operating data

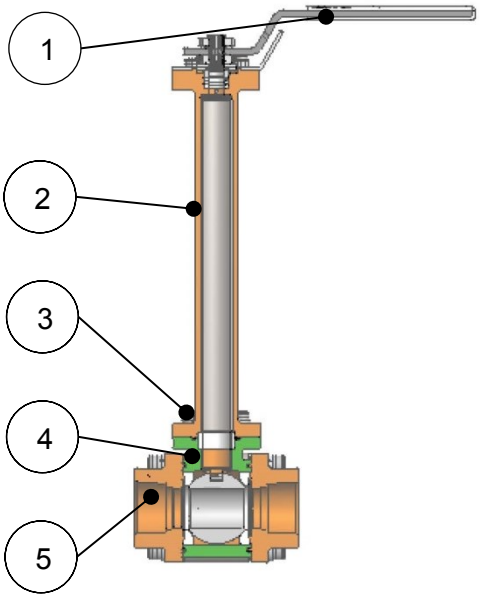
Valve	Rated pressure	Temperature	Max. operating pressure
15C01	PN 50	-196 °C to +65 °C	50 bar

4.5 Media

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

Name
Argon
Chlorotrifluoromethane
Nitrous oxide
Ethane
Ethylene
Helium
Carbon dioxide
Carbon monoxide
Krypton
Air
Methane
Neon
Oxygen
Nitrogen
Trifluoromethane
Hydrogen
Xenon

4.6 Materials



Part no.	Name	Material
1	Hand lever	ASTM A240 S30400
2	Bonnet	1.4409/CF3M
3	Screws	A2-70
4	Body	1.4409/CF3M
5	Side parts	1.4409/CF3M

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 installation and use.

5 Assembly

5.1 Installation position

With regard to the installation position, pay attention to the flow direction arrow. Installation is only permitted in the flow direction. When installing the valve in a horizontal pipeline a vertical position of the spindle is recommended (hand lever at the top) or an inclination of up to 65° from the vertical.

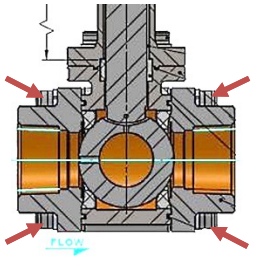
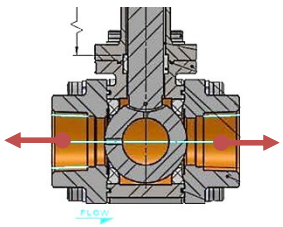
5.2 Notes regarding the installation

- Use suitable tools.
  - ☐ Allen keys of sizes 6, 8, 10, 14, 19;
  - ☐ Open-ended spanners;
  - ☐ Torque wrench;
  - ☐ TIG welding machine;
  - ☐ Oxy-fuel welding machine;
- Clean tools before the installation.
- Use suitable transport and lifting equipment for the installation.
- Open the packaging only directly before the installation. Freedom from oil and grease for oxygen (O_2)
  Valves for oxygen are permanently marked with "O_2".
- Only install the valve if the maximum operating pressure and usage conditions of the plant correspond to the marking on the valve.
- Remove protective caps or covers before assembly.
- Inspect the valve for dirt and damage.
  DO NOT install a damaged or dirty valve.
- 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 O_2.
- Connect pipelines in a force-free and torque-free manner.
  Stress-free installation.
- 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.
- The valve is supported by the pipework system.
- The valve must be protected against dirt and damage during construction work.
- Remove the transport lock if fitted.
- Check the leak-tightness.

5.3 Welding / soldering

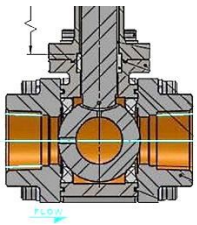
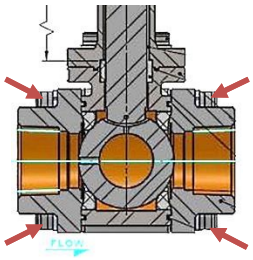
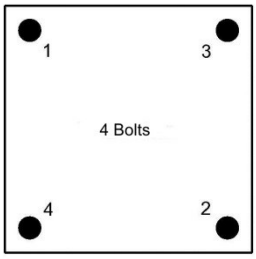
Welding / soldering of the valves and any heat treatment that may be required are the responsibility of the contracting construction company or operating company.

■ Before welding / soldering

	▶ Loosen the bolts Direction of rotation: counter clockwise ▶ Remove the bolts
	▶ Remove the side parts

	▶ Weld on / solder in the side parts

■ After welding / soldering

	▶ Position the body between the side parts ⚠ Do not damage the seal
	▶ Mount the bolts ▶ Tighten the bolts to the specified tightening torque in a criss-cross pattern Direction of rotation: clockwise
	▶ Assembly sequence for the bolts
	▶ Side part / body tightening torques

Nominal size	Side part/body [Nm]	Cap bolt
DN 15	15	M6
DN 25	18	M8
DN 50	70	M14

	▶ Check the leak-tightness

6 Operation

6.1 Prior to start-up

- Check the following points prior to start-up:
  - ☐ All assembly and installation work are completed.
  - ☐ If fitted: Remove transport lock before start-up.
  - ☐ The safety guards are in place.
  - ☐ Compare the material, pressure, temperature and installation position with the layout plan for the pipework system.
  - ☐ Dirt and residues have been removed 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, fittings 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	■ Visual inspection ☐ of the valve for damage; ☐ of the marking for legibility; ☐ Installation position; ■ Leak-tightness ☐ at the gland packing; ☐ between bonnet and body; ☐ of the valve seat; ■ Test of the opening and closing function of the valve.
Functional testing	▶ annually	■ Test of the opening and closing function of the valve(s), including visual inspection.
External inspection	▶ Every 2 years	■ Check of function and leak-tightness including visual check.
Internal inspection	▶ Every 5 years	■ Replacement of all sealing elements, including a function and leak test as well as a visual inspection.
Hydraulic testing	▶ Every 10 years	■ Replacement of all sealing elements, including a function, leak and pressure test as well as an inspection.

7.3 Fault table

Fault	Cause	Remedial action
■ Leak at the spindle	Gland nut loose	▶ Retighten the gland nut
	Gland packing defective	▶ Replace the gland packing
	Fit on the spindle damaged	▶ Replace the spindle
■ Leak between bonnet and body	Bonnet loose	▶ Retighten the bonnet screws
	Seal damaged	▶ Replace seal
■ Ball valve does not open / close	Gland nut overtightened	▶ Loosen the gland nut Tightness must still be ensured

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 Notes 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 valve materials:
   - ☐ Metal
   - ☐ Plastic
   - ☐ Electronic scrap
   - ☐ Greases and lubricating fluids
3. Carry out a sorted disposal of the materials.