Operating Instructions
Stop Valves according to DIN 16270, DIN 16271, DIN 16272

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Contents

1. Information on This Operating Instruction

- The manual is aimed at specialists and semi-skilled personnel.
- Please read the instructions carefully before carrying out any operation and keep the specified order.
- Thoroughly read and understand the information in chapter 2 “Safety Instructions”.

If you have any problems or questions, please contact your supplier or contact us directly at:

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1.1 Pictographs Used

In this manual, pictographs are used as hazard warnings.

Particular information, instructions and restrictions designed for the prevention of personal or substantial property damage:

WARNING! Is used to warn you against an imminent danger that may result in personal injury or death.

IMPORTANT! Is used to warn you against a possibly hazardous situation that may result in personal, property or environmental damage.

CAUTION! Is used to draw your attention to important recommendations to be observed. Disregarding them may result in property damage.

Passages in the text containing **explanations, information or advice** are highlighted with this pictograph.

The following symbol highlights
actions you have to conduct
or
instructions that have to be strictly observed.

1.2 Exclusion of Liability

We accept no liability for any damage or malfunction resulting from incorrect installation, inappropriate use of the device or failure to follow the instructions in this manual.

1.3 General Information

Please inspect the transport packaging and the delivered items immediately upon their receipt to determine their integrity and completeness. You have purchased an instrument that was manufactured according to high quality standards in our company, which is certified according to DIN ISO 9001.

2. Safety Instructions

Please read this operating instruction thoroughly before installing the device.
Disregarding the containing warnings, especially the safety instructions, may result in danger for people, the environment, and the device and the system it is connected to.

The ARMANO Messtechnik GmbH provides support for the use of its products either personally or via relevant literature. The customer verifies that our product is fit for purpose based on our technical information. The customer performs customer and application specific tests to ensure that the product is suitable for the intended use. With this verification, all hazards and risks are transferred to our customers. Our warranty expires in case of inappropriate use.

Qualified personnel:
The personnel that is charged for the installation, operation and maintenance of the instrument must hold a relevant qualification. This can be based on training or relevant tuition. The personnel must be aware of this manual and have access to it at all times.

General safety instructions:
- In all work, the existing national regulations for accident prevention and safety at the workplace must be complied with. Any internal regulations of the operator must also be complied with, even if these are not mentioned in this manual.
- Please regard relevant national and international safety instructions (ATEX 137, ExVo, BetrSichV etc.).
- Please do never manipulate the device! Otherwise, you will lose your warranty!
- Repairs may only be carried out by the manufacturer.
- Use the instrument in its perfect technical condition only. Damaged or defective instruments need to be checked immediately and replaced if necessary.
- Only use appropriate tools for mounting, connecting and dismounting the device.
- Nameplates or other information on the device shall neither be removed nor obliterated, since otherwise any warranty and manufacturer responsibility expires.

IMPORTANT! Disregarding the respective regulations may result in severe personal injuries and / or property damage.

☞ **Special safety instructions:**
Warnings, which are specifically relevant to individual operating procedures or activities, are to be found at the beginning of the relevant sections of this operating instruction.

3. General Information on Stop Valves

This operating instruction applies to manually operated valves with shut-off function.

The fittings are marked according to DIN EN 19 with: nominal width (DN), nominal pressure (PN), body material, manufacturer's symbol, batch code and an arrow for the flow direction, or according to the corresponding design standards.

The valid technical regulations, such as AD and TRD "Merkblätter" (leaflets), DIN standards, DVGW regulations, as well as other relevant guidelines, have to be regarded for operation. The stop valves are operated within the limits of the pressure and temperature ranges specified in the data sheets or type approvals! Temperature-related pressure reductions must be observed.
It is assumed that the user is familiar with these regulations.

If there is any uncertainty, the manufacturer has to be contacted prior to using the valve.

In addition, the requirements and stipulations of the accident prevention regulation "Oxygen – VBG 62" have to be regarded for fittings for oxygen! The "freedom from oil and grease" required therein must be guaranteed at all times. In this case, the lubrication work described in the subsequent texts is not applicable.

Unless ordered otherwise by the user, every valve that leaves the factory is subjected to a final inspection in accordance with DIN EN 12266-1.

4. Mounting

For manual stop valves, any installation position is possible. Installation with vertical spindle and actuating element up is to be preferred.

Prior to mounting, please check that no visible damage is present. In case of doubt, such fittings must not be installed. After removing the protection caps, please check that there are no foreign objects (e.g. packaging residues) inside the housing.

The pipelines have to be clean and free of any foreign objects. Prior to the mounting of the fittings, the pipelines should be blown out or flushed for cleaning.
Installation before cleaning the pipe may damage the sealing surfaces in the housing.

Shut-off valves are mounted according to the indicated flow direction (direction arrow). Pipelines have to be laid in such a way that the fitting can be installed free of any bending and torsional forces.

4.1 Fittings with Nipple Connection According to DIN 16284

The connection of the shut-off valves on the input side is carried out via nipple connection according to DIN 16284 (nipple connections for pressure gauges and their accessories).

Tube recommendation: seamless precision tubes, which meet the welding and soldering requirements, and which meet the valid stipulations of the relevant VdTÜV material data sheets when used in accordance with the Pressure Equipment Directive 2014/68/EU.

Work steps:
- Cut the tube perpendicularly, slightly deburr the inside, prepare the weld seam and the soldering joint according to the intended joining process.
- Place the nipple union nut on the nipple shaft and weld or solder it axially aligning to the prepared tube end.
- Clean the joint from any welding or soldering residues.
- Select the washer according to DIN 16258 taking into account the corrosive influence of the operating medium and place it on the nipple sealing surface.
- Screw on the union nut manually until the washer is firmly seated and then tighten with a suitable fitting tool ¼ to ½ turns.

The connection on the output side is basically carried out via clamping sleeve according to DIN 16283. Selection of the washer according to the input side.

The permissible operating temperature of 120 °C corresponds to the stipulation for the sockets of the pressure measuring instruments according to DIN EN 837-1 and takes into account the demand that valves and pressure measuring instruments have to be protected against heating due to hot media by using sufficiently long measuring lines or siphons according to DIN 16282.

4.2 Fittings with Flanges

Pipe flanges and valve flanges must be in alignment. Position deviations from concentricity, parallelism or perpendicularity have to be avoided.

Flange fittings have to be mounted into pipelines in such a way that the screw connections are tightened evenly crosswise with the counter flanges. Please ensure that the sealing is inserted precisely.

4.3 Fittings with Welding Ends

The welding ends on pipelines and valves must be in alignment. Position deviations from concentricity, parallelism or perpendicularity have to be avoided.

For welding fittings, utmost cleanliness is necessary. Do not allow any impurities to enter the valve during welding, otherwise damage to the inner sealing surfaces must be expected. It must also be ensured that the fitting is open during welding in order to prevent heat build-up and to avoid damage to the sealing surfaces inside the valve.
The welding process must be carried out at temperatures below the maximum permissible material temperature. After each weld seam, the valve body must be cooled down before further weld seams are applied. The welding process shall only be carried out with suitable filler metals by qualified personnel.

4.4 Fittings with Connection Cone Bushing According to DIN 3865

Tube recommendation:
seamless precision steel tube, according to DIN 1630 and DIN 2391
Material recommendation: DIN 3859

Work steps:
- Cut the tube perpendicularly, slightly deburr the inside, prepare the weld seam according to the intended welding process.
- Place the union nut on the shaft of the cone bushing and screw it to the connecting piece of the fitting.
- Weld the prepared tube end axially aligning to the cone bushing.
- Oil the sealing surface and the tapered junction at the cone bushing as well as the thread of the union nut.
- Screw on the union nut until the cone bushing is seated in the connecting piece.
- Tighten the union nut ¼ to ½ turns.

4.5 Fittings with Cutting Ring Fitting According to DIN 2353

Tube and material recommendation: see chapter 4.4

Work steps:
- Cut the tube perpendicularly, slightly deburr the inside and the outside.
- Slightly oil connecting piece thread, inner cone and cutting ring outside.
- Slide the union nut and the cutting ring onto the tube, ensure that the cutting ring is in the correct position (the conical end has to face the union nut).
- Insert the tube end into the inner cone, press the front end of the tube tightly against the contact in the connection piece and manually screw the union nut against the contact of the cutting ring.
- Tighten the union nut 1 ½ turns while securing the tube against twisting. In case of thin-walled tubes, tighten the union nut only 1 turn.
- Loosen the union nut, check the material throw-up (visible bulge in front of the cutting edge of the tube). It must be possible to turn the cutting ring on the tube. A cut in the inner cone of the connecting piece will be the result of incorrect installation (possible reason: excessive strength of the tube material). Damaged components must be replaced!
- After the visual inspection, screw the union nut manually until stop, then tighten with approximately ¼ turns. Pay attention to the axial position of the tube.

4.6 Compression Fittings

During mounting, the rotational movement of the nut is converted into an axial motion along the tube by the rear clamping ring. The sealing on the front clamping ring is achieved by axial compression instead of rotation. Thus, neither grooves nor tensions arise on the tube.

Tube selection:
- The same materials for tubes and screw fittings shall be used. The main reasons for this are: identical thermal expansion coefficients and corrosion resistance.
- For conical screw threads, the use of the correct lubricants and sealants is crucial for a leak-free connection.
- The tube shall have a lower degree of hardness than the screw fitting to achieve perfect sealing. For stainless steel, annealed seamless tubes with a hardness of HB 80 or less, suitable for bending and crimping, are recommended. For copper, high-quality seamless drawn tubes, soft-annealed or equivalent, are recommended.
- The tube must be free of grooves, defects and contaminations, and must be flexible and expandable.
- The tube ends must not be chrome-plated or oval. They have to be cut perpendicularly and without any burr.

Work steps:
- Slide the tube carefully and smoothly into the screw connection of the valve until stop without having to remove the screw connection from the valve. First, tighten the union nut finger-tight, then with a suitable mounting wrench 1 ¼ turns.
- The compression fittings can be loosened and reassembled several times. Ensure that the sealing surfaces are clean and without any damage to the surface.
- Never use extensive force when sliding the tube into the clamping ring. If the tube cannot be slid smoothly into the compression fitting, it might not be deburred or might be oval.

5. Operation

Sometimes it is inevitable that deposits of foreign objects (e.g. welding beads, shavings) accumulate during commissioning new systems or after repairs of system components. Therefore, the system should be flushed or blown out prior to commissioning. Flushing has to be carried out with utmost care to avoid any damage of the sensitive sealing surfaces.
The operation is carried out by turning the actuating element manually. The valve is closed by turning into clockwise direction. Do not tighten it more firmly than necessary for achieving tightness. Otherwise, excessive wear will occur on the valve seating and within the flanks of the spindle thread. No auxiliary means shall be used for this purpose. Shut-off valves must be opened or closed completely. For intermediate positions, in which a reduction shall be carried out, the application of fittings with regulating cone is recommended.
Similarly, the vent screw, which allows for pressure reduction in the outlet chamber and ventilation during filling the system if the valve is shut off, must not be closed too firmly for shut-off valves with venting device.

If the valve is open and pressurised, loosen the vent screw only slightly or not at all, since the medium escapes via the thread or there is the risk of the thread tearing off after a certain opening path, and the medium is released with the internal pressure.
Operate valves for oxygen slowly and smoothly!

6. Repair

For repairs, the fittings must be unpressurised, emptied and have room temperature. Repairs are considered to be the replacement of spindle and packing. For this purpose, loosen the gland union nut and screw out the spindle along with the packing. When the actuating element has been dismantled, the worn components are to be replaced by new ones. Apply new suitable lubricant into the thread and within the packing area of the valve spindle. Mounting is carried out in reverse order. Packing adjustment according to chapter 7 “Maintenance”.

7. Maintenance / Cleaning, Storage and Transport

Maintenance:
All fittings are designed and mounted largely maintenance-free. As far as permitted, movable components, such as spindles, couplings etc., are lubricated with suitable long-term lubricants to ensure proper function. To ensure their safety, fittings that are rarely operated should be checked for function at intervals of several months. The inspection intervals are determined by the operating conditions (pressure, temperature, actuation frequency).
The maintenance of the valves includes the readjustment of the packing. To avoid leakages, the gland nut or union nut is to be tightened if necessary. The inspection intervals are determined by the operating conditions (pressure, temperature, actuation frequency). Do not tighten the packing more firmly than absolutely necessary for spindle sealing. Overtightening causes unnecessary packing wear and hampers the actuation.
When commissioning new valves, we therefore recommend to loosen the gland union nut, which is set to the nominal pressure, and to readjust it to the existing operating pressure.

Cleaning:
- Clean the device with a dry or slightly dampened soft cloth.
- Do not use any sharp objects or aggressive agents for cleaning.

Storage and transport:
- Use the original packaging or comparable packaging for storage / for transport.
- Avoid impacts or strong vibrations.
- Protect the device against damage caused by external influences.

Please contact the manufacturer in case of uncertainties.

8. Dismounting and Disposal

WARNING! Risk of injury!
Never remove the device from a system in operation.
Make sure that the system is switched off professionally.

Before dismounting:
Check before dismounting, whether the system
- is switched off,
- is in a safe and currentless state,
- is unpressurised and cooled down.

Disposal:

Please help us protect our environment and dispose of or recycle the used materials according to the respective and valid regulations.

9. Declaration of Manufacturer

Herstellererklärung

Declaration of Manufacturer

Für die nachfolgend bezeichneten Erzeugnisse

We hereby declare for the following named goods

ABSPERRHÄHNE gemäß Datenblatt 11100
nach DIN 16 262:2004-07
in den Werkstoffen
STAHL, EDELSTAHL UND MESSING

PRESSURE GAUGE COCKS according to data sheet 11100
according to DIN 16 262:2004-07
made of
STEEL, STAINLESS STEEL AND BRASS

ABSPERRVENTILE gemäß Datenblatt 11200
nach DIN 16270 ff. und ähnliche
in den Werkstoffen
STAHL, EDELSTAHL UND MESSING

PRESSURE GAUGE VALVES according to data sheet 11200
according to DIN 16270 ff. and similar
made of
STEEL, STAINLESS STEEL AND BRASS

ÜBERDRUCKSCHUTZVORRICHTUNGEN TYP S
gemäß Datenblatt 11500
in den Werkstoffen
EDELSTAHL UND MESSING

OVERRANGE PROTECTORS MODEL S
according to data sheet 11500
made of
STAINLESS STEEL AND BRASS

wird hiermit erklärt:

Die oben aufgeführten Ventile fallen unter die Gültigkeit der

The abovementioned valves are produced according to

Druckgeräterichtlinie (DGRL) 2014/68/EU.

Pressure Equipment Directive (PED) 2014/68/EU.

Aufgrund ihrer Nennweite DN < 25 gilt für diese Produkte der Artikel 4.3 der DGRL.
Solche Produkte dürfen nicht mit einem CE-Kennzeichen versehen werden.

They are assigned to article 4.3 of the PED due to their nominal width DN < 25.
Such products are not allowed to bear the CE mark.

Sie sind in Übereinstimmung mit der in Deutschland geltenden guten Ingenieurpraxis konstruiert und hergestellt.

They are designed and manufactured according to German sound engineering practice.

Ferner fallen diese Erzeugnisse gemäß Definition Artikel 1 Absatz 3 der Richtlinie 2014/34/EU (ATEX-Richtlinie) nicht in den Anwendungsbereich dieser Richtlinie. Sie dürfen im Ex-Bereich (Zone 1/21 und 2/22) eingesetzt werden.

In addition, according to definition article 1 paragraph 3 of the directive 2014/34/EU (ATEX Directive), these goods are not within the scope of this directive. They may be applied in the explosion hazardous area (zone 1/21 and 2/22).

Diese Erklärung wird verantwortlich für den Hersteller:
This declaration is issued under the sole responsibility of the manufacturer:

ARMANO Messtechnik GmbH
abgegeben durch / *by*
Grünhain-Beierfeld, 2018-09-14

Bernd Vetter
Geschäftsführender Gesellschafter / *Managing Director*

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Operating Instructions
Stop Valves according to DIN 16270, DIN 16271, DIN 16272

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