EN- Operating and assembly manual
Two-way valves

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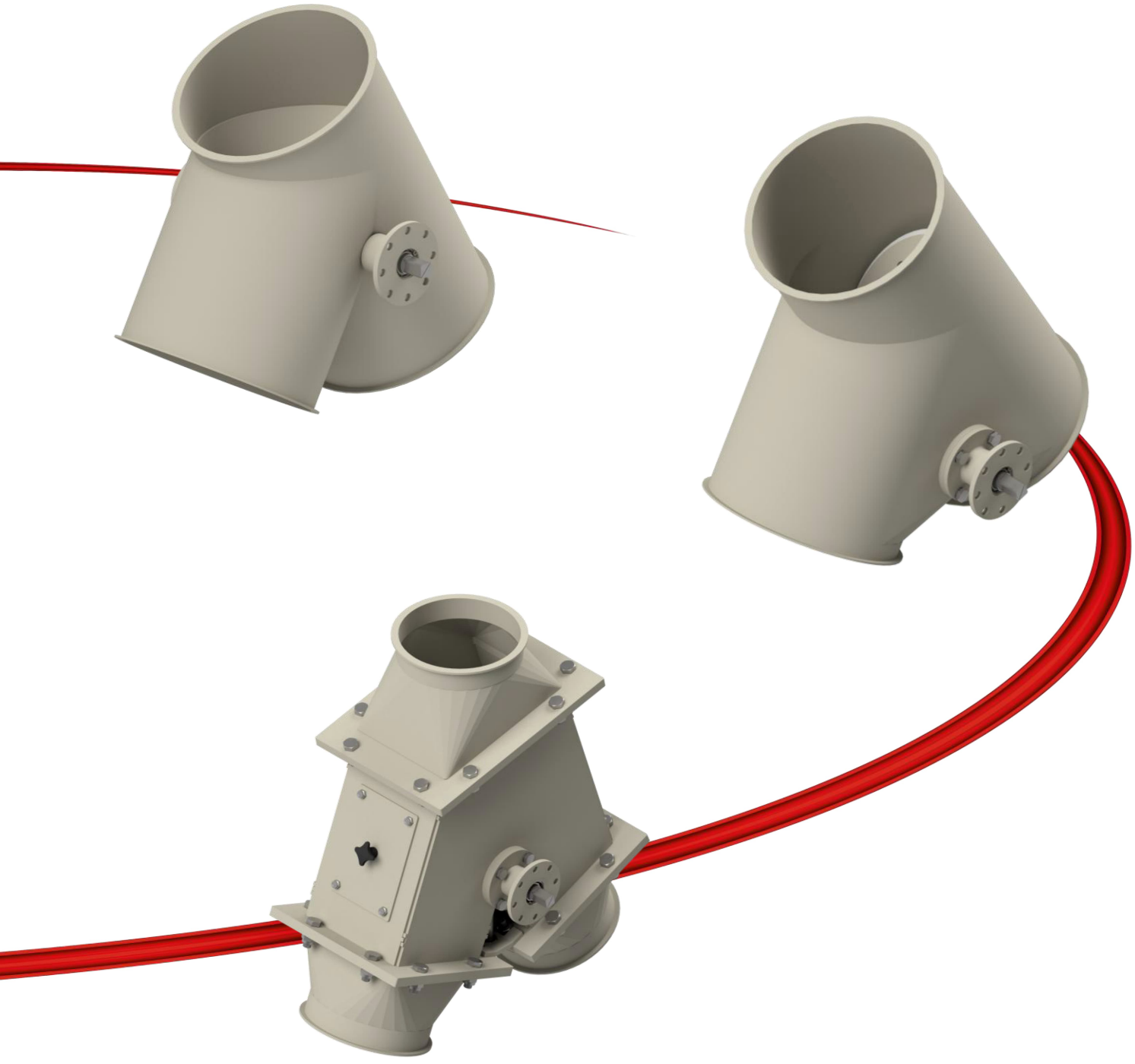


Forword

We are delighted that you have purchased our product and thank you for the trust you have placed in our company.

This operating and assembly manual contains all the necessary information required for the proper use, safe assembly of the two-way valve described below, connection, commissioning, handling, maintenance and servicing.

This product is an incomplete machine within the meaning of the Machinery Directive 2006/42/EC and is not capable of functional independently. The two-way valve may only be put into operation once it has been established that the complete unit into which they are to be installed complies with the applicable provisions of the Machinery Directive and the declaration of conformity for the complete machine is available.

The two-way valve has been developed and manufactured in accordance with the relevant harmonised standards. Nevertheless, improper installation or use contrary to the intended purpose may result in hazards to persons, property and the environment.

Therefore, read these instructions carefully before you start the assembly of, or connection or integration of, the incomplete machine. Follow the instructions described for all steps.

Table of contents

1 General information

1.1 Purpose of the manual

The compliance with the operating manual is a prerequisite for trouble-free operation and the fulfilment of warranty claims.
Therefore, please read the operating and assembly manual first before using the two-way valve. The manual contains important information about servicing. Therefore, keep them in your records.
Please observe the instructions in the individual chapters of the operating and assembly manual.

1.2 Applicable documents

In addition to this operating and installation manual, the complete documentation package includes the following documents, depending on the respective version:

- Technical data sheet
- EC declaration of incorporation in accordance with the EC Machinery Directive 2006/42/EC, Annex II, B for incomplete machinery
- Acceptance report
- Documentation for pneumatic or electrical components
- ATEX declaration of conformity in accordance with EC Directive 2014/34/EU (only for ATEX version)

1.3 Notes to the operator

The operator is obliged to read this operating and assembly manual carefully before using the two-way valve and to ensure that all persons involved – including planners, fitters, operators and maintenance personnel – understand and apply its contents.

The operator can integrate the manual into the manual of the complete machine or the entire system. The instructions must be easily accessible at the place of use and consulted in case of uncertainty or doubt.

The intended use of the two-way valves must be observed *(see, p.8, 2.1 Intended use).* The manufacturer shall not be liable for damage or malfunctions resulting from failure to comply with these operating and installation instructions. The risk is borne solely by the operator, and warranty claims shall lapse in the event of non-compliance.

The operator is responsible for carrying out a comprehensive hazard assessment of the entire system in which this component is integrated and must take potential residual risks into account. Based on this assessment, additional protective measures may need to be implemented. The operator is responsible for the conformity of the entire system, including the CE marking.

The operator must ensure that no unauthorised modifications, additions or alterations are made to the two-way valve, as these may compromise safety, functionality and reliability. We recommend using only original spare parts and accessories authorised by the manufacturer to ensure technical requirements and safety are met.

The operator is responsible for compliance with the ATEX directive throughout the entire system, where necessary.

These notes are intended to assist the operator in fulfilling their duty of care, ensuring the safety of personnel and the system, and comprehensively considering the requirements of the Machinery Directive 2006/42/EC.

1.4 Meaning of symbols and warnings

The safety and hazard instructions listed in this operating and assembly manual are intended to protect you, third parties and the protection of the product. The instructions must be followed.

GEFAHR

Dangerous situation that can result in death or serious injury if not observed.

WARNUNG

Potentially dangerous situation that can result in death or serious injury if not observed.

VORSICHT

Potentially dangerous situation that can result in minor to moderate injury if not observed.

HINWEIS

Important information and notes.

2 Safety

The safety of the two-way valve is guaranteed according to the state of the art, but there are residual risks that must be minimized by appropriate measures. The operator is obliged to implement the following safety aspects to prevent personal injury and damage to property and to comply with the requirements of the Machinery Directive 2006/42/EC.

2.1 Intended use

The two-way valve is only suitable for diverting dry, non-abrasive bulk materials in non-pressureless conveyor systems. A flap adjustment may only take place when the product flow is interrupted. The residual moisture of the bulk material must not exceed 15%.

In ATEX versions, use is limited to bulk materials with a KSt value of up to 160 bar m/sec.

Operational safety is only guaranteed if the two-way valve is used in an enclosed space and all connections in the system are professionally installed, tension-free and sealed. Outdoor use is only possible with an appropriate protective coating and suitable protective covers.

The permissible operating limits in terms of pressure, temperature and flow rate must be observed to ensure proper functioning. These depend on the sealing materials used, the attachments and the applicable technical data The operating limits can be found in the applicable technical data sheet. A further prerequisite for intended use is that the two-way valve is operated exclusively with the components and accessories authorised by the manufacturer.

2.2 Foreseeable misuse

Any deviation from the intended use constitutes misuse.

In particular, the following cases are considered foreseeable misuse:

- Operation of the two-way valve without connected pipelines or without the prescribed clamping ring or flange connection, which can result in significant crushing hazards.
- Removing, bypassing or manipulating protective devices as well as operating with overridden safety devices.
- Use of the two-way valve with liquids and gases, adhesive or aggressive media, explosive or self-igniting substances, as well as operation outside the permissible pressure and temperature ranges.
- Use in conveyor systems for seeds
- Use in pneumatic conveying lines with positive or negative pressure.
- Installation deviates from the permissible installation position.
- Stepping on the two-way valve or adjacent pipelines
- Exceeding the maximum permitted switching frequency (>100 switches/hour).
- Removal or manipulation of valve throttles in pneumatically driven components.
- Carrying out maintenance or repair work while the system is under pressure or tension, or without interrupting the product flow, as well as leaving tools or foreign objects in the valve case.
- Operation in potentially explosive areas without appropriate ATEX certification or without grounding against electrostatic charge.

The aforementioned misuse can lead to significant personal injury and property damage. The manufacturer accepts no liability for damage caused by improper use. The risk is borne solely by the operator.

2.3 General safety instructions

The operating instructions must be read in full before the assembly of the product, commissioning, operation, maintenance or disassembly and must be always kept available. All national and company regulations on accident prevention and environmental protection must be observed. Operation of the two-way valve is permitted only in perfect condition, and regular inspections are required. In the event of malfunctions, such as failure to switch or leaks, the system must be shut down immediately. Proper grounding must be ensured in potentially explosive atmospheres and only ATEX-compliant designs may be used, whereby conductive media must be excluded, and temperature classes must be observed. Environmental pollution from lubricants or cleaning agents should be avoided, and energy consumption (e.g. compressed air) should be optimised to promote sustainability.

2.4 Sources of danger and residual risks

The two-way valve harbours various sources of danger that cannot be eliminated by design. Mechanical hazards include crushing and shearing from the movable inner flap or drive, injuries caused by sharp edges due to wear, leakage of bulk materials under pressure, and blockages or overloads caused by product columns. Electrical hazards exist in the form of electric shocks or short circuits when working on electric drives, solenoid valves or limit switches. Mechanical hazards (e.g. when using pneumatics) include injuries caused by compressed air escaping or explosion hazards in the event of overpressure. Thermal hazards arise from hot surfaces that can cause burns. Chemical/biological hazards result from harmful materials or lubricants (skin/eye irritation, infections). Acoustic hazards caused by noise >85 dB(A) can cause hearing damage. In ATEX areas, there are explosion risks due to electrostatic charges, sparks or overheating, which must be minimised by grounding and suitable designs. Additional common hazards include changes in switching speed, power supply or control failure, incorrect assembly of components or breakage during operation.

The operator must take these residual risks into account in the hazard assessment for the entire system.

2.5 Protective measures and protective equipment

Specific protective measures are needed to minimise the risks. Protective devices such as covers or limit switches must not be removed or bypassed. Installation in a pipe system prevents direct access to the movable flap and reduces the risk of crushing or shearing.

An emergency stop system in accordance with EN ISO 13850 should be integrated into the entire system. Before maintenance work, the power and compressed air supply must be disconnected and secured against being switched back on to prevent hazards.

In ATEX areas, ignitable conditions (e.g. sparks, rapid movements exceeding 1m/s) must be avoided and the temperature classes of the attachments must be observed. Proper grounding or equipotential bonding prevents electrostatic charges in ATEX areas. The operator must implement additional protective measures based on their hazard assessment.

2.6 Personal protective equipment (PPE)

The use of personal protective equipment (PPE) is required to ensure the safety and health of employees in the workplace.

The operator shall ensure that the necessary PPE is provided, regularly inspected and maintained. Operating personnel are responsible for the proper use of PPE.

Before commencing the relevant activities related to this product, at least the following personal protective equipment must be provided:

Use foot protection!

Wear suitable foot protection during transport, assembly of, disassembly, maintenance and cleaning work.

Use hand protection!

Wear suitable hand protection during transport, assembly of, disassembly, maintenance and cleaning work.

If necessary: use head protection!

Wear suitable head protection when working overhead, e.g. when lifting, during the assembly of equipment or during maintenance work.

If necessary: use hearing protection!

Wear suitable hearing protection when noise levels exceed 85 dB (A).

If necessary: use protective clothing!

Wear suitable protective clothing when carrying out maintenance and cleaning work.

2.7 Qualification and training of staff

The individual activities at the two-way valve require different personnel qualifications, which are listed in the table "Qualification matrix" *(see p.14, table "Qualification matrix").*

The contents of the operating and assembly manual must be fully understood by the personnel. If necessary, the required knowledge should be imparted through training courses. If desired, this can be carried out by the manufacturer on behalf of the operator.

Responsibilities for operation, maintenance and troubleshooting must be clearly defined and documented to ensure safe and efficient handling. Young people may only work under the supervision of a qualified professional. The different qualifications are characterised by the following skills and knowledge:

- **Planners/operators** have knowledge of pipe system design, hazard assessment, ATEX and hygiene regulations where applicable and are responsible for the conformity of the entire system, training, documentation and environmental protection.
- **Trained persons/operating personnel** are familiar with safety regulations, PPE use and simple operating tasks and are responsible for safe system monitoring and reporting any abnormalities.
- **Specialists** possess technical knowledge in mechanics and pneumatics, carry out the assembly of components, maintenance and troubleshooting, and are responsible for compliance with safety and hygiene regulations
- **Electricians** are responsible for installing, maintaining and repairing electrical components and are responsible for laying cables to connect to control and switch cabinets.

The table should be interpreted as follows:

"A specialist is required to assemble the two-way valve."

Activities	Planners / Operators	Trained persons / operating personnel	Specialist	Electrician
Planning and technical design	X			
Transport		X		
Assembly			X	
Pneumatic installation			X	
Installation, maintenance and disassembly of electrical components				X
Commissioning			X	
Operation		X		
Maintenance, servicing & cleaning			X	
Troubleshooting & fault rectification			X	
Disassembly			X	
Disposal & recycling	X		X	

Table: "Qualification matrix "

2.8 Safety during assembly, operation, maintenance and disassembly

NOTE

- Work on the two-way valve may only be carried out during a standstill.
- Clean the inside of the two-way valve before working on it.

The following steps must be carried out to shut down the two-way valve:

- Interrupt product feed to the two-way valve
- Switch off the compressed air supply to the pneumatic system
- Switch off the main switch
- Secure main switch to prevent reactivation

DANGER

- Do not switch the two-way valve back on immediately if it has stopped for reasons that are initially unexplained. Someone may have stopped the system for manual intervention and failed to secure it against reactivation. Unexpected reactivation may result in injury (personal injury).
- When carrying out maintenance work inside the two-way valve, all connection openings should be securely covered to prevent injuries and to prevent objects from falling into the pipelines
- Protective devices must not be modified, removed or impaired in their function

WARNING

- For safety reasons, original spare parts and accessories authorized by the manufacturer must be used for repairs. The use of other parts may result in personal injury and property damage.
- Modifications or alterations to the two-way valve are only permitted after consultation with the manufacturer. All correspondence regarding this matter must be conducted in writing.

NOTE

- The electrical control of the two-way valve is carried out by the system operator.

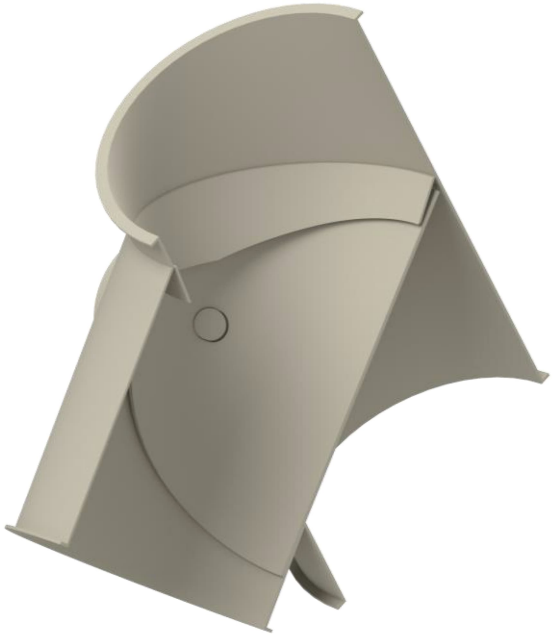
Warning! Risk of hand injuries!

Reaching into control or inspection openings may result in serious crushing or shearing injuries to fingers and hands due to unexpected movement of the internal flap. Work must only be carried out when the machine is at a standstill and the product flow has been stopped. Once the work is complete, ensure that the control or inspection openings are properly closed again.

3 Technical descriptions

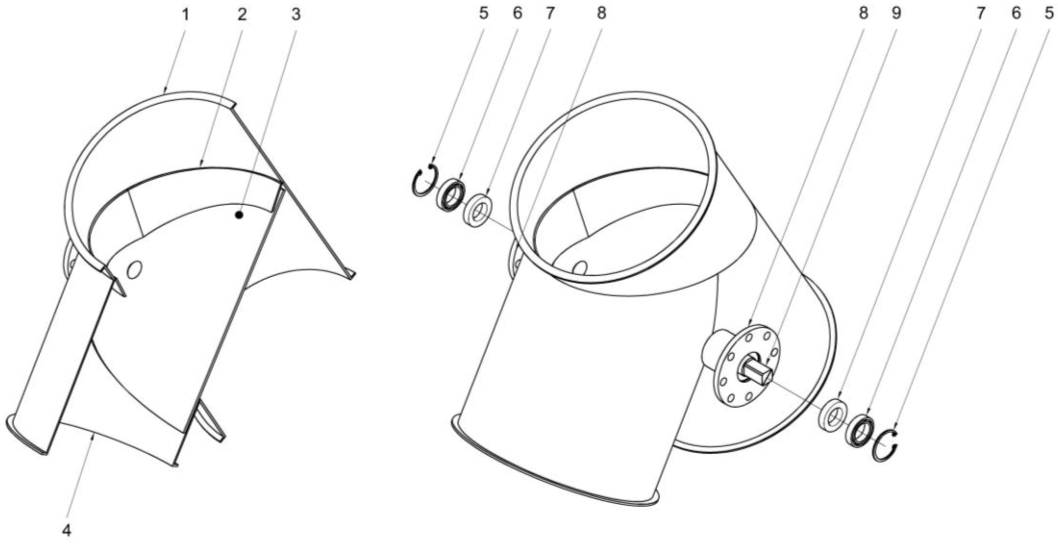
3.1 Two-way valve with interior collar, 60°

pictured version DN 200	
asymmetrical	***symmetrical***
	

pictured version DN 200


3.1.1 Product structure

pictured version: Two-way valve with interior collar, 60°, asymmetrical, DN 200



No.	Naming	Quantity
1	Inlet	1
2	Collar	1
3	Flap	1
4	Outlet	2
5	Retaining ring	2
6	Deep groove ball bearings	2
7	Shaft seal	2
8	Flange bushing	2
9	Shaft with square	2

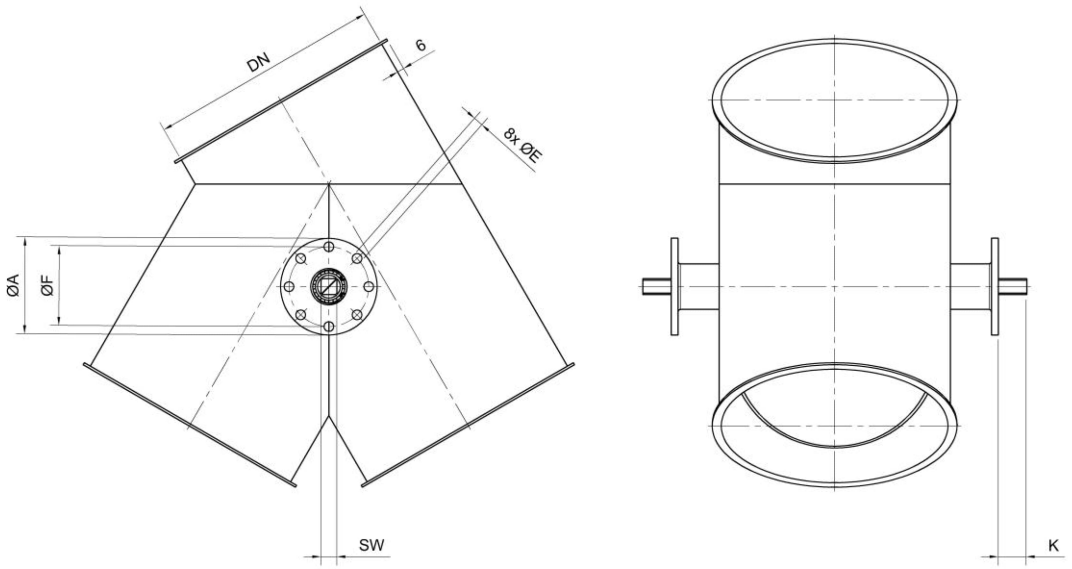
3.1.2 Product description

The medium flows into the two-way valve via the inlet (1). The flow is diverted through the curved flap (3) into one of the two outlets (4). The flap is mounted in the case and is swivelled into the desired position via two shafts (9).

The drive is attached to the flange bushing (8) and transmits the torque to the flap via a shaft with a square (9). The bearings are provided by deep groove ball bearings (6), which enable smooth movement. A shaft seal (7) prevents dust from escaping from the pipe and at the same time protects the bearing from dust deposits.

Two-way valves with interior collars are not completely tight, so that a certain leakage volume flow is present due to the design.

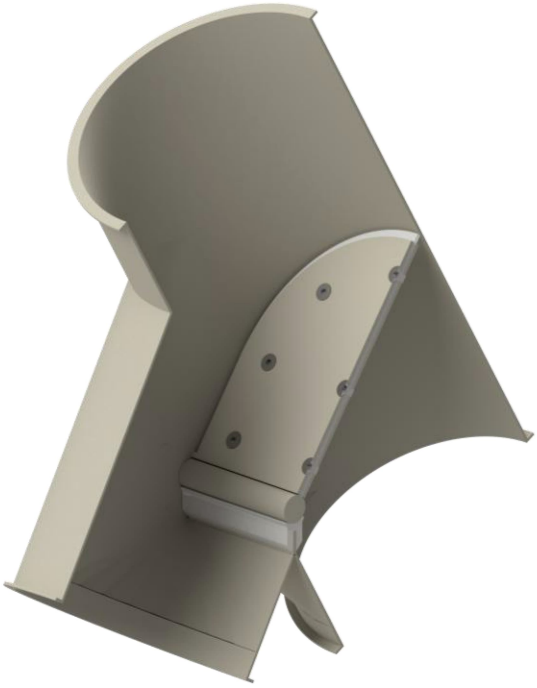
3.1.3 Connection



DN	SW	K	ØF	ØA	ØE
100 – 350	□14	25	F07	85	9

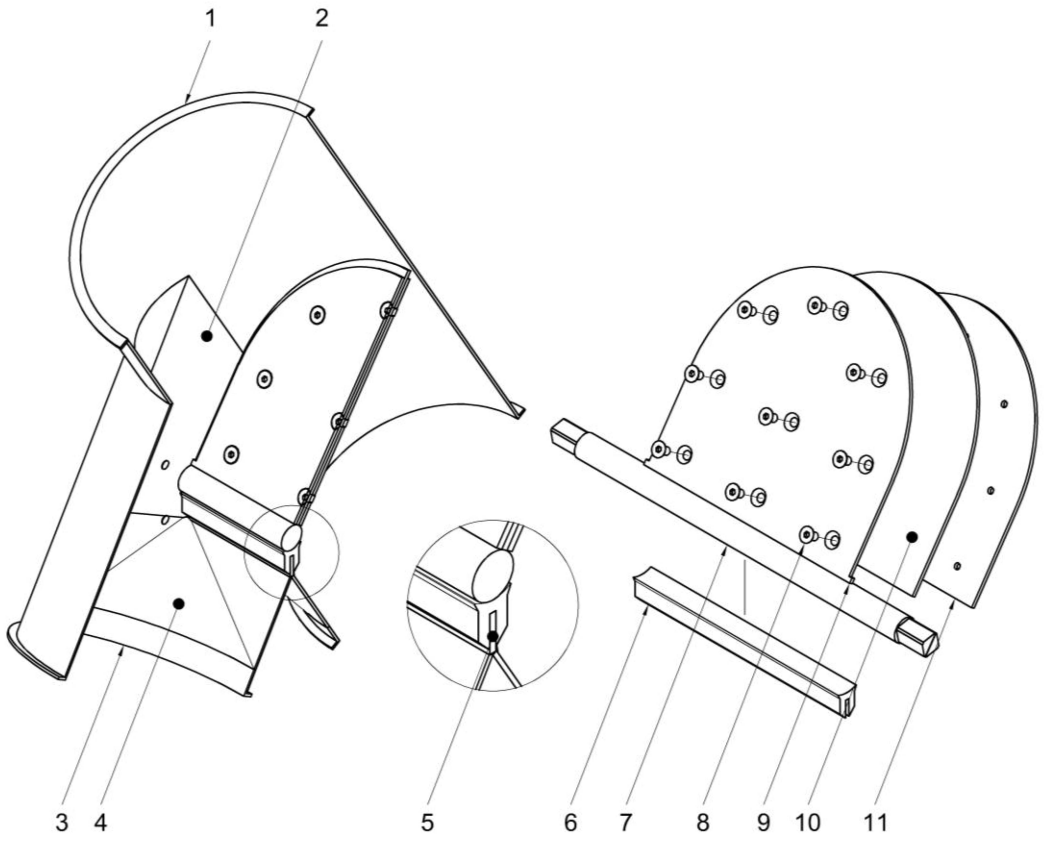
3.2 Two-way valve with flap seal, 45° & 60°

pictured version DN 200, 60°	
asymmetrical	***symmetrical***
	

pictured version DN 200, 60°


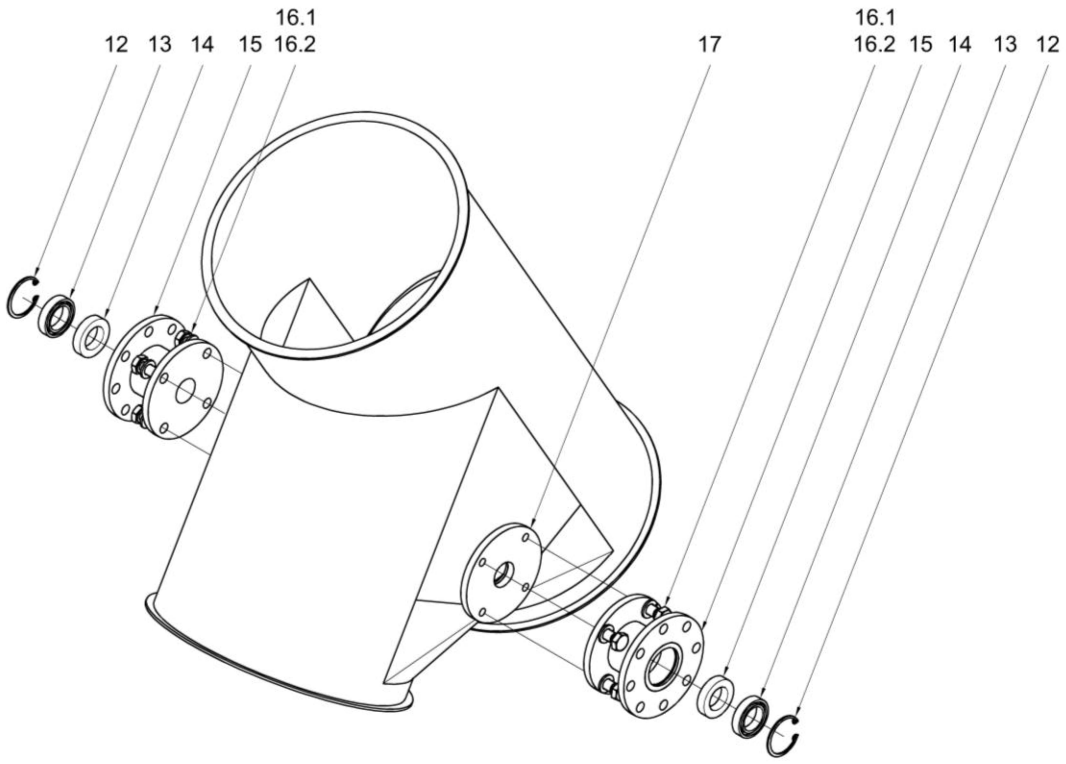
3.2.1 Product structure

pictured version: two-way valve with flap seal, 60°, asymmetrical, DN 200



No.	Naming	Quantity
1	Inlet	1
2	Side panel	2
3	Outlet	2
4	Transition piece	2
5	Shaft seal holder	1
6	Shaft seal	1
7	Shaft with square	1
8	Flat-head-screw	variable
9	Flap with countersinks	1
10	Flap seal	1
11	Flap with thread	1

pictured version: two-way valve with flap seal, 60°, asymmetrical, DN 200



No.	Naming	Quantity
12	Retaining ring	2
13	Deep groove ball bearings	2
14	Shaft seal	2
15	Flange bushing	2
16	Hexagonal screws with spring washer	8
17	Weld-on flange	2

3.2.2 Product descriptions

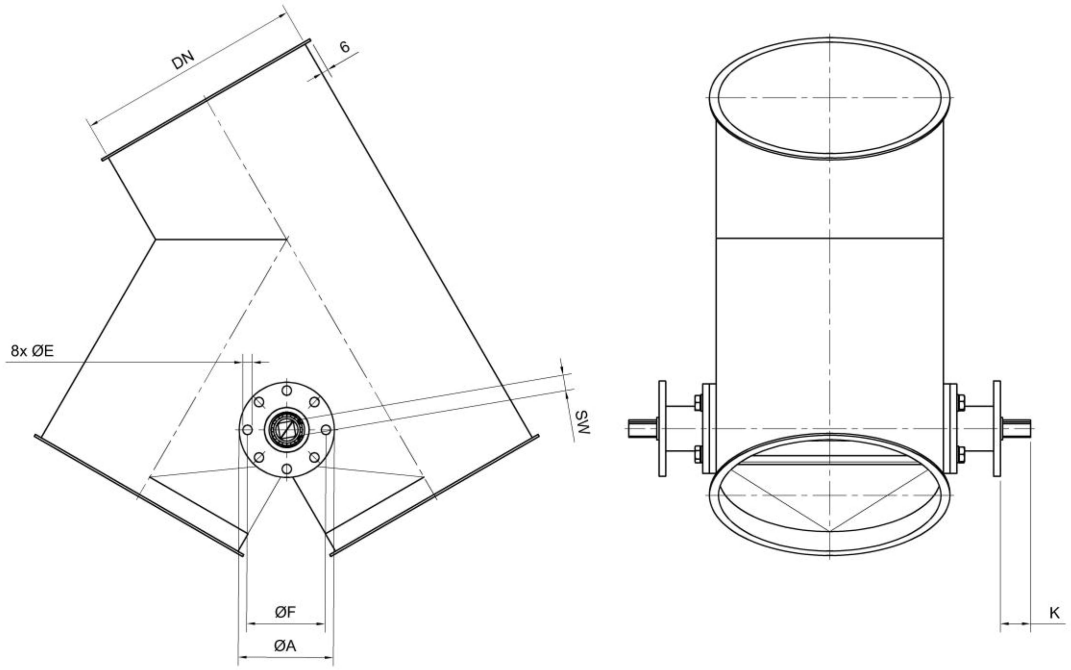
In free fall, the bulk material is guided vertically or – in the case of the asymmetrical two-way valve – with an inclination into the two-way valve (1) and deflected via the flap unit to the desired outlet (3).

The flat flap unit is in the case. The flap seal (10) attached between the two flap blades (9 / 11) closes tightly within the case. Flap and shaft seals (10/6) ensure a dust-tight seal of the cavity between the case and the flap unit.

The drive is attached to the flange bushing (15) and swivels the flap over the shaft (7) into the desired outlet. The bearings are provided by deep groove ball bearings (13), which ensure smooth movement. A shaft seal (14) prevents dust from escaping from the pipeline and at the same time protects the bearing from dust deposits.

3.2.3 Connection

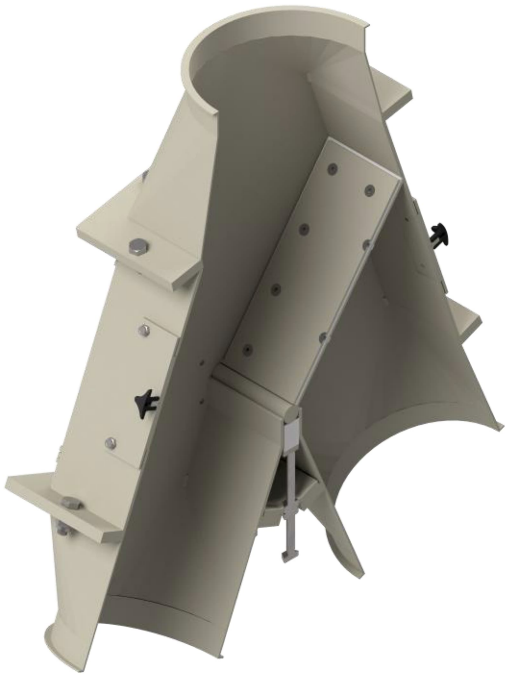
pictured version: two-way valve with flap seal, 60°, asymmetrical, DN 200



DN	SW	K	ØF	ØA	ØE
100 – 400	□14	25	F07	85	9

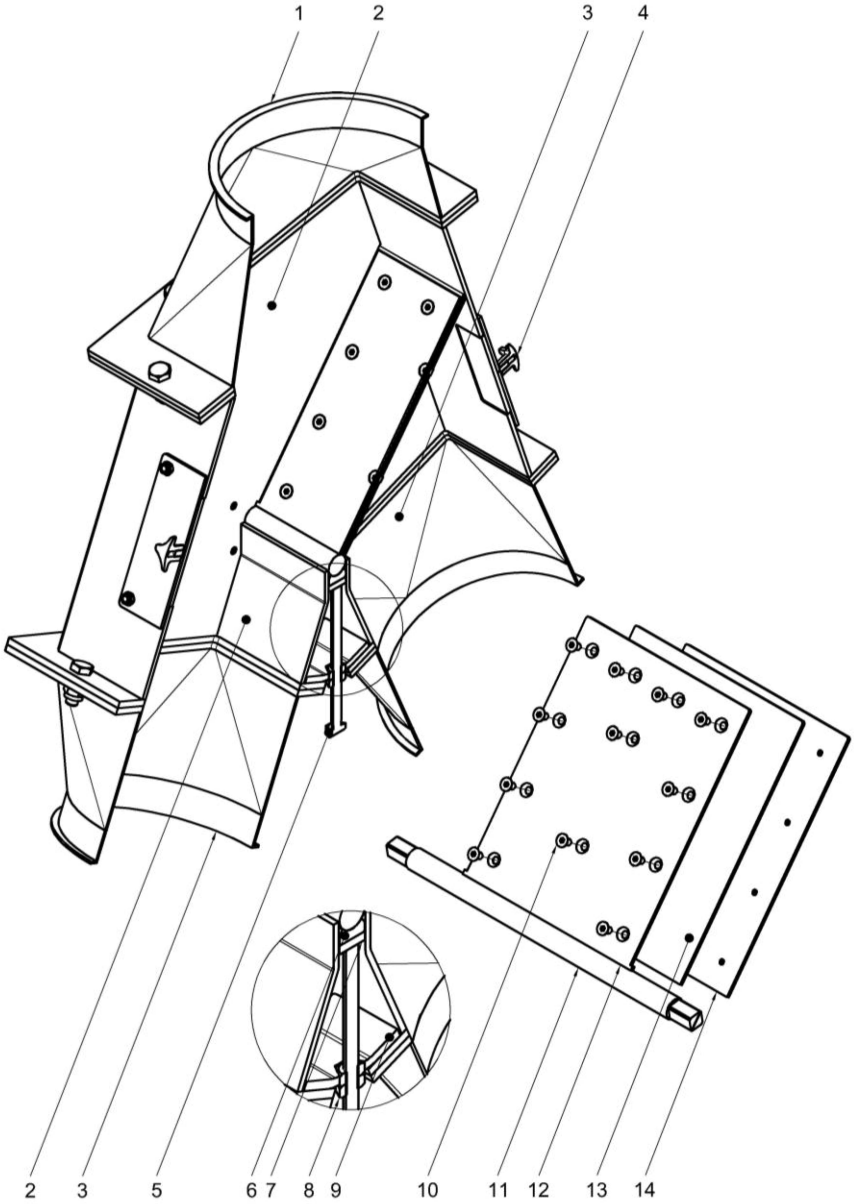
3.3 Modular two-way valve

pictured version DN 200, 45°
asymmetrical


pictured version DN 200, 45°


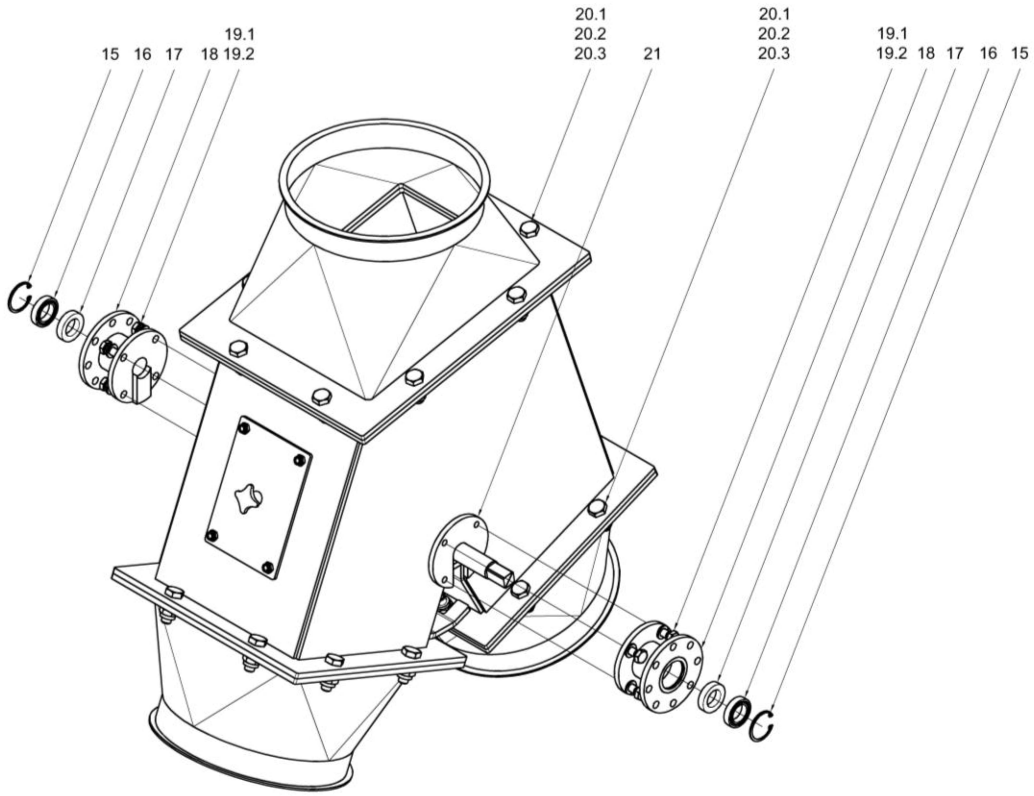
3.3.1 Product structure

pictured version: modular two-way valve, 45°, asymmetrical, DN 200



No.	Naming	Quantity	No.	Naming	Quantity
1	Inlet transition piece	1	**8**	Hexagonal nuts	variable
2	Case	1	**9**	Pressure plate	1
3	Outlet transition piece	2	**10**	Flat-head-screws	variable
4	Control lid	2	**11**	Shaft with square	1
5	Hexagonal screws	variable	**12**	Flap with countersinks	1
6	Shaft seal	1	**13**	Flap seal	1
7	Seal holder	1	**14**	Flap with thread	1

pictured version: modular two-way valve, 45°, asymmetrical, DN 200



No.	Naming	Quantity
15	Retaining ring	2
16	Deep groove ball bearings	2
17	Shaft seal	2
18	Flange bushing	2
19	Hexagonal screws with spring washer	8
20	Hexagonal screws with two washers and nuts	variable
21	Weld-on flange	2

3.3.2 Product description

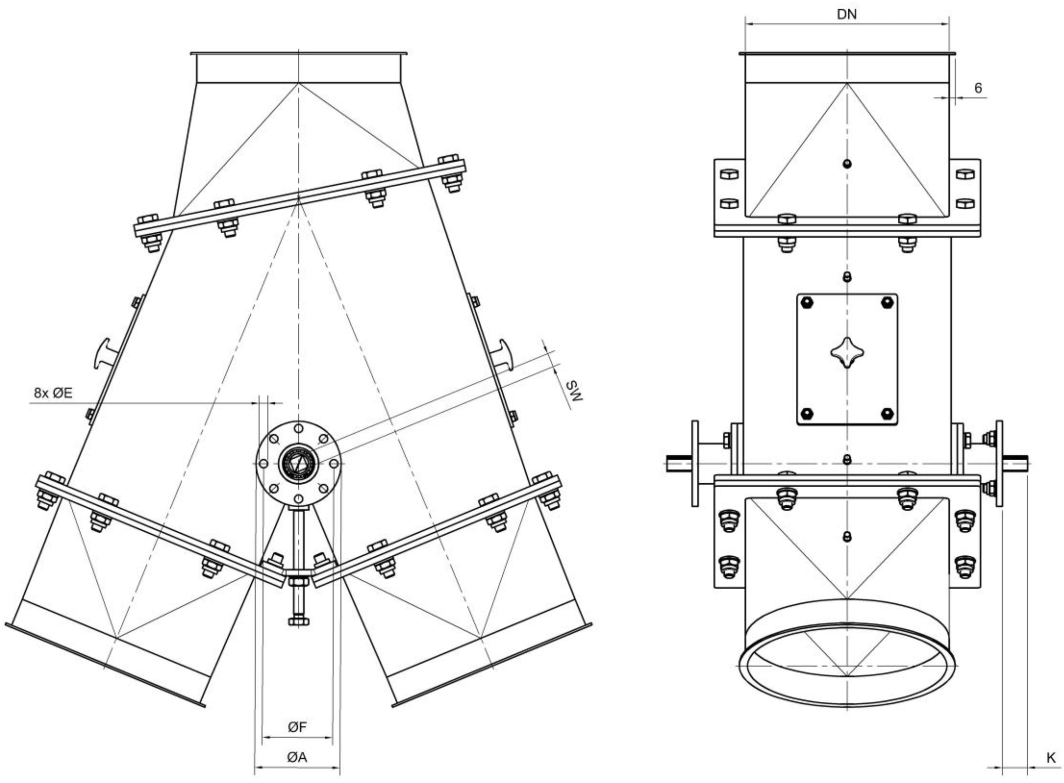
In free fall, the bulk material is guided into the modular two-way valve either vertically or with an inclination and deflected to the desired outlet (3) via the flap unit.

The flat flap unit is in the case. The flap seal (13) attached between the two flap blades (12/14) closes tightly within the case. Flap and shaft seals (6/13) ensure a dust-tight seal of the cavity between the case and the flap unit.

The flap unit is completely replaceable by removing it. The sealing effect of the shaft seal (6) can be readjusted.

The drive is attached to the flange bushing (18) and swivels the flap over the shaft (11) into the desired outlet. The bearings are provided by deep groove ball bearings (16), which ensure smooth movement. A shaft seal (17) prevents dust from escaping from the pipeline and at the same time protects the bearing from dust deposits.

3.3.3 Connection



DN	SW	K	ØF	ØA	ØE
150 – 400	□14	25	F07	85	9

3.4 Technical data

See applicable technical data sheet.

3.5 Nameplate

1	Name and address of the manufacturer
2	Article number; if applicable, ATEX marking
3	Serial number
4	QR code with reference to website
5	Calendar week/year of construction

4 Transport and storage

4.1 Transport

Inspect the delivery immediately upon receipt for any transport damages. Communicate this immediately to the manufacturer or the transport company. You may not be able to operate a damaged two-way valve. Depending on the number of items, the two-way valve is delivered loose or in a packaging box. In-house transport to storage or final assembly can be done by forklift, pallet truck or manually.

4.2 Storage

In case of long-term storage, please check whether the case shows any kind of damage and that all moving parts fulfil their functions. For long-term storage, please observe the storage conditions listed in the following table:

Climate zone: moderate (Europe, USA, Canada, China and Russia, except for tropical areas)		
Packaging*	**Packed in containers, sealed in foil with desiccant and humidity indicator**	**Open (no packaging)**
Storage location	Covered, protection against rain and snow, vibration-free	Covered and closed at a constant temperature and humidity (5 °C to 60 °C, < 50% relative humidity). No sudden temperature changes, no aggressive vapours and no vibrations.
Storage period	Max. 3 years with regular inspection of packaging and humidity indicator (relative humidity < 50%)	2 years and more with regular inspection. Check for cleanliness and mechanical damage during inspection. Check the integrity of the anti -corrosion coating.

Climate zone: tropical (Asia, Africa, Central and South America, Australia, New Zealand, excluding temperate areas)		
Packaging*	**Packed in containers, sealed in foil with desiccant and humidity indicator**	**Open (no packaging)**
Storage location	Covered, protection against rain and snow, vibration-free	Covered and closed at a constant temperature and humidity (5 °C to 60 °C, < 50% relative humidity). No sudden temperature fluctuations, no aggressive vapours and no vibrations, protection from insect damage.
Storage period	Max. 3 years with regular inspection of packaging and humidity indicator (relative humidity < 50%)	2 years and more with regular inspection. Check for cleanliness and mechanical damage during inspection. Check the integrity of the anti -corrosion coating.

NOTE

The packaging must be performed by an experienced company using packaging material expressly approved for the application.

5 Assembly

5.1 Preparatory measures

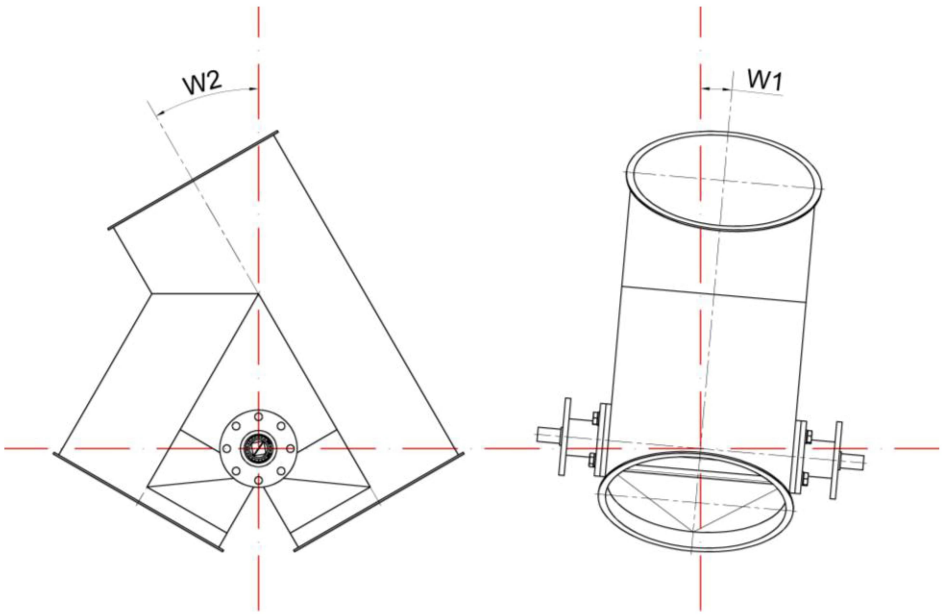
Two-way valves are designed for installation in a pipeline and for assembly with other machines. During installation, ensure that there are sufficient suspension and support. For the component dimensions and weights, please refer to the applicable technical data sheet.

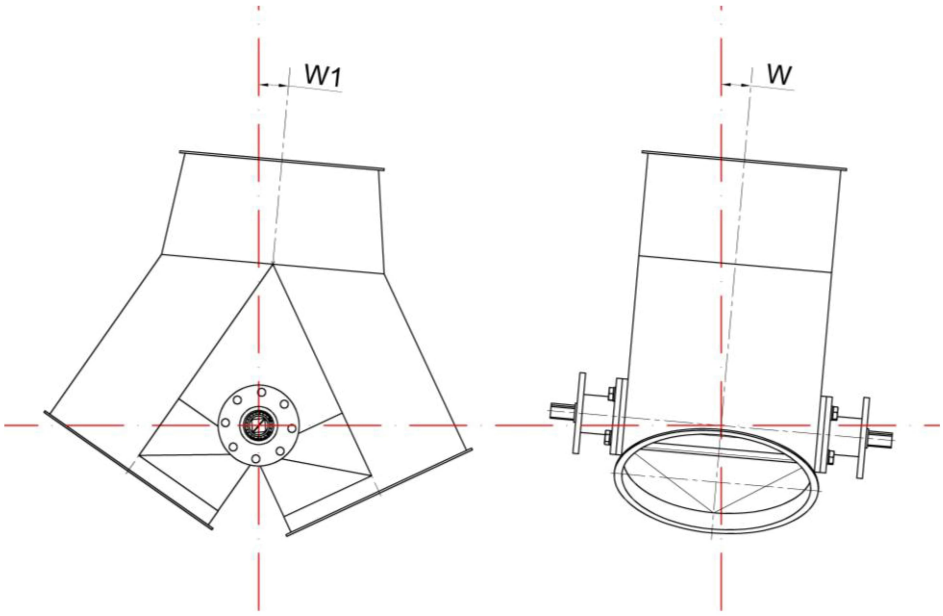
The further pipe construction must be assembled and suspended without tension.

Outdoor installation is only possible if the two-way valves are coated with a weatherproof protective coating. For two-way valves with electric and/or pneumatic actuators, additional protective covers may be required. The actuators must be designed for the ambient temperatures.

The end positions of the flaps are preset at the factory via the limit switches or proximity switches. If necessary, adjust the flap end positions using the limit switches. The procedure for adjusting the end position can be found in the manufacturer's documentation.

5.2 Mounting position

Asymmetrical two-way valve	
	
Ideal mounting position	**Permissible mounting position**
W2 = 30° (for 60° two-way valves) W2 = 22.5° (for 45° two-way valves) W1 = 0°	W1 and W2: +/- 5°

Symmetrical two-way valve	
	
Ideal mounting position	**Permissible mounting position**
W1 and W = 0°	W1 and W: +/- 5°

5.3 Integration into the pipeline

The two-way valve can be assembled with the pipeline via clamping ring connections or flange connections.

5.3.1 Clamping ring connections: Clamping rings with sealing rings

NOTE

Select clamping and sealing rings to match the pipe diameter and material thickness.

1

Pull the sealing ring - starting from the seam - over one of the flanged edges (lips). The profiled side of the sealing ring must point towards the connection pipe part. The sealing ring can be easily expanded for mounting.

2

Now place the connection pipe to fit the pipe with the tightly wound sealing ring.

3

Loosen both tension screws of the clamping ring, but do not unscrew them completely from the tie rods. One of the tie rods is yellow galvanized or has a groove. Unhook this tie rod and open the tension ring.

4

Now place the clamping ring around the two joined pipe parts and hook the tie rod back in.

5

Finally, tighten the two screws evenly with a screwdriver/torque wrench.

5.3.2 Flange connection: fixed flange

welded flanges

NOTE

For fixed flange connections, use flat seals that you place between the flanges.

1 Align the flanges of the pipe parts to be connected so that the holes are over each other.

2

For each screw connection, a washer must be placed on the screw, the screw must be passed through both flanges, then another washer must be placed, and the nut must be screwed by hand.

3

Then use the torque wrench to tighten two opposing screw connections at a time. The remaining screws are then tightened in any order.

The following tightening torques must be observed:

M10 → 40 Nm
M12 → 60 Nm
M16 → 80 Nm

6 Commissioning

6.1 Connection of the electrical and pneumatic components

Before commissioning, a control system must be available or procured for components with electrical and/or pneumatic actuations. All necessary control cables must be connected according to the terminal diagram. The terminal diagrams for drives and drive components can be found in the corresponding data sheets and instructions of the manufacturers. The clamping diagrams and circuit diagrams for the control system must be provided on site by the system operator.

For pneumatically operated two-way valves, ensure sufficient operating pressure (at least 5 bar).

For electrically actuated components, make sure that there is a sufficient/suitable operating voltage.

After installation and electrical connection, a test run with a function check must be carried out.

7 Use in potentially explosive environments

7.1 Conditions of use

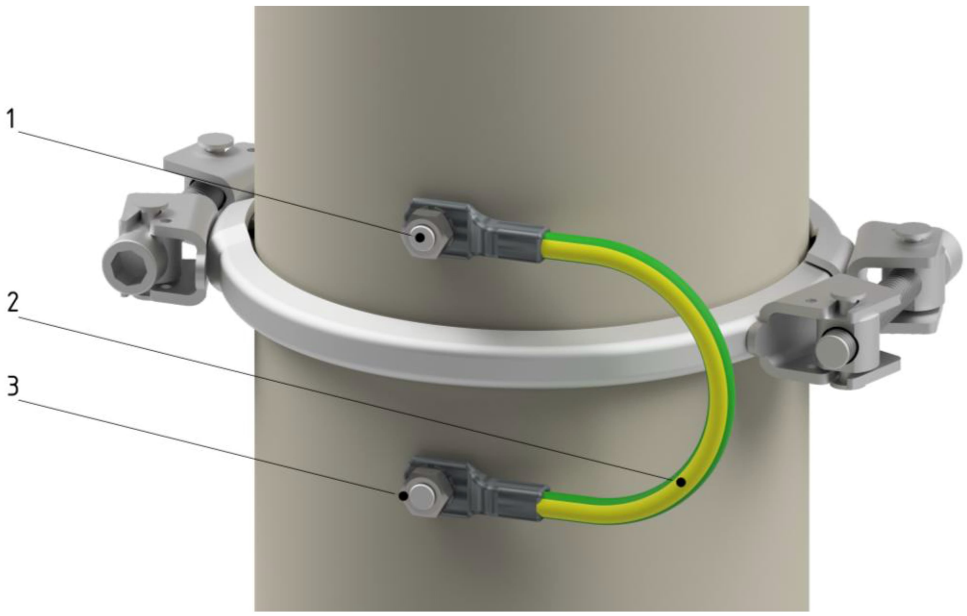
Two-way valves are marked accordingly for use in hazardous areas for Zone 22 (dust) *(see p.27, 3.4 Nameplate).* They are suitable for use in low-dust environments where an explosive atmosphere is rare and short-lived in normal operation.

7.2 Equipotential bonding

Two-way valves are equipped with factory-welded grounding bolts (M6 x 10 mm) for use in potentially explosive areas to safely dissipate electrostatic charges.

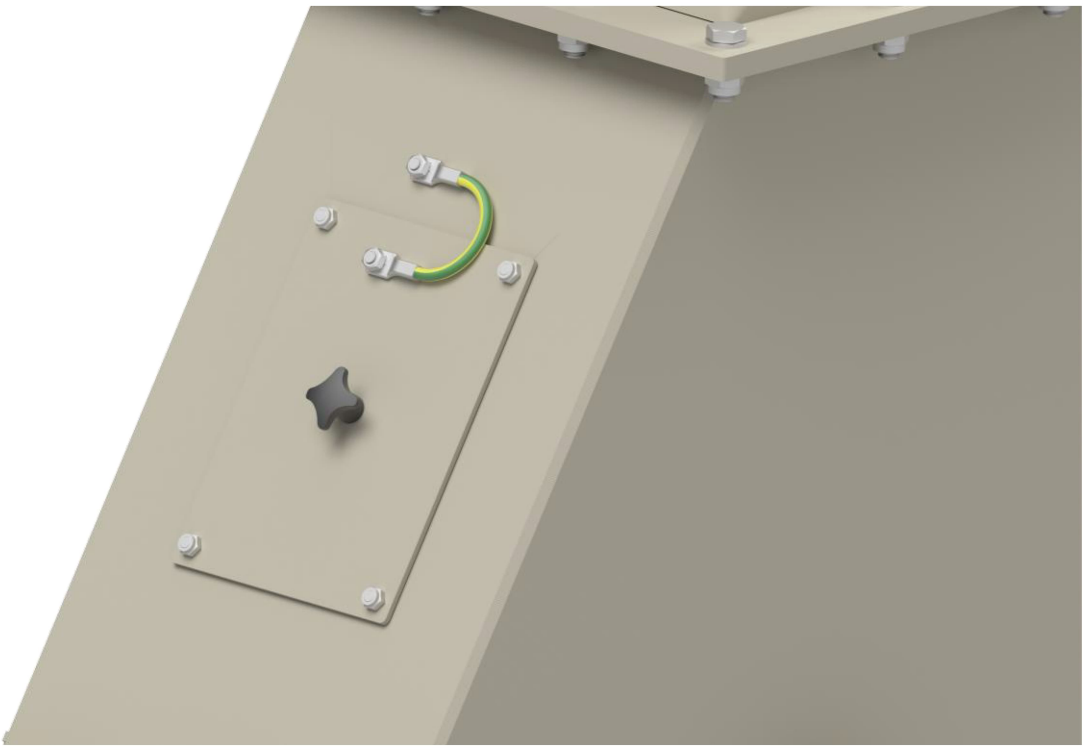
During installation, it must be ensured that the two-way valve is conductively connected to the connected pipeline and the equipotential bonding system of the entire system via suitable grounding cables. The electrical connection must be durable and corrosion resistant. The applicable regulations must be observed. Before commissioning, the grounding resistance according to VDE 0165 (< 10^6 ohms) must be tested and verified by a phase resistance measurement.

The operator is obliged to regularly check the proper equipotential bonding and to document the results. Improperly executed or interrupted grounding can lead to the formation of ignition sources due to electrostatic discharges and represents a considerable risk in the potentially explosive area.



No.	Naming
1	Grounding bolt M6 x 10 mm
2	Ground cable (Copper, 16 mm²)
3	Tooth lock washer & Hexagonal Nut M6

7.2.1 Equipotential bonding for control or inspection openings



NOTE

After finishing work on two-way valves with control or inspection openings, restore the equipotential bonding if necessary and check the functions and dust tightness.

7.3 Avoidance of ignition sources

For use in potentially explosive atmospheres, it must be ensured that no additional ignition sources can arise from static electricity or from impermissible heating such as continuous operation or too fast cycles.
Metallic surfaces can become charged and lead to sparking. Appropriate grounding must be ensured. Hot surfaces can cause an explosion. The maximum permissible surface temperature (130°C, see device marking) must not be exceeded. The maximum switching frequency of 100 switches/hour must not be exceeded. The speed of the moving components must not exceed 1m / sec.
The entry of metallic foreign bodies or smouldering nests must be avoided. Maintenance and cleaning plans must be drawn up and adhered to. The maintenance plan listed here in the chapter "Maintenance and inspection" *(see p.42, 9.1 Maintenance plan)* contains only the minimum requirements.

ATEX two-way valves consist of equipment that is declared and labelled in accordance with Directive 2014/34/EU and simple non-electrical equipment without its own potential ignition source, which does not fall within the scope of Directive 2014/34/EU. An ignition hazard assessment has shown that assembling these devices into the assembly does not create any additional ignition hazard.
The assembly can be used in Zone 22 (dust). As an incomplete machine, it does not receive CE marking.
Care must be taken to ensure proper installation: The connections and pipelines must be connected in such a way that no dust can escape from the pipeline or the two-way valve to the outside, so that no ignitable atmosphere can form.

8 Operational disruptions

If you need the help of our customer service or technical advice, we ask for the following information:

- The order confirmation number you received from us
- Two-way valve serial number
- Type and extent of the disruption
- Time and circumstances of the disruption
- Suspected cause

Disruption	Possible cause(s)	Action(s)
Flap does not open or close **Flap does not close tightly**	Product adhesion in the valve	Disassemble and clean the two-way valve
	Bearing defective or shaft / flap is stuck	Replace all bearings, align shaft / flap
	Product column in the two-way valve	Remove product column
	Shaft broken	Replace the two-way valve
	No compressed air supply	Check and restore compressed air supply
	No electrical voltage	Check and restore power supply
	Solenoid valve defective	Replace solenoid valve
	Drive blocked	Control drive and mechanics and release blockage
Flap moves stiffly	Seal dirty or damaged**	Clean or replace seal
	Foreign object between flap and seal**	Remove foreign object
	Wear of the seal**	Replace the seal
Unusual noises when operated	Bearing or shaft dirty or damaged	Clean or replace bearing
	Lack of lubrication	Perform lubrication
	Oblique or braced installation of the pipeline	Ensure stress-free installation
Flap does not open or close	Foreign objects in the case	Clean the case
	Defective bearings	Replace bearings
	Loose drive parts	Check fastenings
Low flow rate	valve or pipe clogged	Locate and clear blockage
	Shut-off devices in the system defective	Check shut-off devices

Leaks in the two-way valve	Product stowage in the two-way valve	Reduce output
	Incorrect installation position	Correct the installation position
	Product deposits on the sealing surfaces	Disassemble and clean the two-way valve
	Flap seal defective**	Replace seal
	Flap worn out	Repair the flap, if necessary. replace the two-way valve
	Collar worn*	Repair collar, if necessary. replace the two-way valve
No feedback on end positions	Defective sensor or incorrect setting	Adjust or replace the sensor
	Cable connection interrupted	Check the cable and replace if necessary
	Control not programmed correctly	Check and improve control
Leakage of bulk materials or dust	Shaft seal worn	Replace shaft seal
	Case or flange leaking	Check the case for damage and repair it, if necessary, check and repair sealing surfaces, if necessary, retighten flange fittings
Flap remains in intermediate position	Pressure not sufficient	Check pressure level (min. 5 bar) and adjust
	Solenoid valve blocked	Clean/replace solenoid valve
	Electrical control faulty	Check and improve control
** only for two-way valves with interior collar* *** only for two-way valves with flap seal*		

9 Maintenance and inspection

9.1 Maintenance plan

The service life of the two-way valve can be affected by the following maintenance intervals*:	
Every 1000 machine hours, at least quarterly	▪ Visual inspection of seals for damage, replace damaged parts ▪ Check the limit switches, adjust them if necessary
Depending on operating conditions, no later than once a year	▪ Check rolling bearings and shaft seals for damage / wear, replace damaged parts ▪ Check the flap for damage / wear, replace damaged parts
Depending on external influences and the characteristics of the conveying product	▪ Check the inside of the case for impurities, clean if necessary ▪ Check product-carrying parts for wear, replace if necessary ▪ If necessary, repair or renew surface and corrosion protection coating ▪ If necessary, adjust the time intervals for the replacement of rolling bearings and shaft seals

NOTE

The exact time intervals for inspection and maintenance must be determined by the manufacturer of the complete machine or by the plant operator.

9.2 Inspection requirements

For all inspection and maintenance work, observe the safety instructions *(see p.10, 2.3 General safety instructions).*

9.3 Replacement of spare parts

For safety reasons, only use original spare parts and accessories authorized by the manufacturer for the replacement of wear parts.

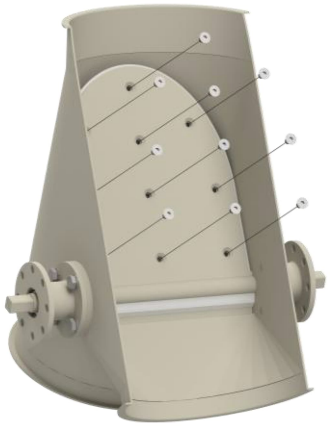
The use of other parts may result in personal injury and property damage, as well as loss of warranty claims.

NOTE

- Spare part article numbers can be found in the technical data sheets.
- For the replacement of spare parts, the two-way valve must be removed from the pipeline.

9.3.1 Replacement of the flap seal

1

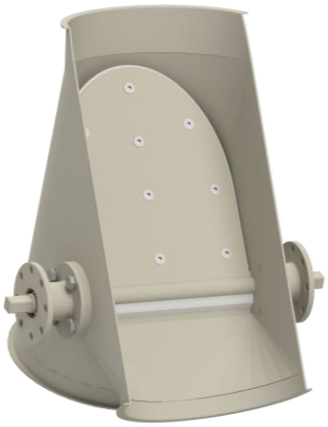


Loosen the countersunk screws in the flap.

2

Remove the loose flap and the worn flap seal.

3



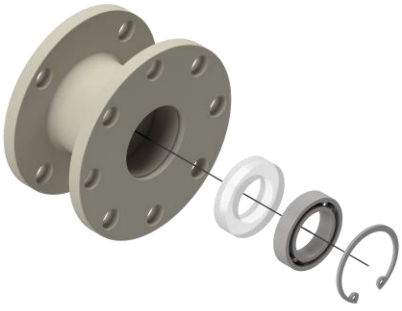
The replacement seal is delivered pre-cut to size. Insert the flap seal and install the flap unit in the reverse order.

9.3.2 Replacement of the shaft seal

1

Loosen the screw connection between the case and the flange bushing. Then pull out the flange bushing.

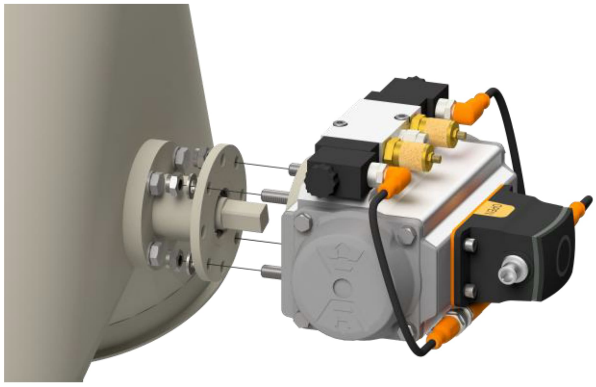
2



Remove the retaining ring, ball bearing and sealing ring with a suitable tool. Replace the worn individual parts and install the two-way valve in reverse order.

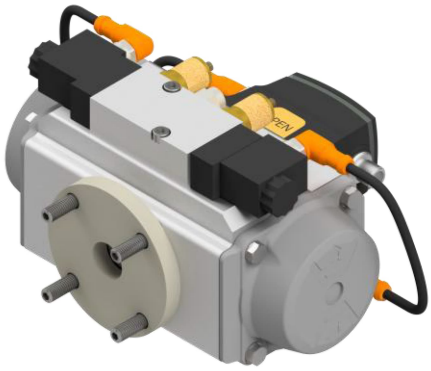
9.3.3 Replacement of a pneumatic rotary actuator

1



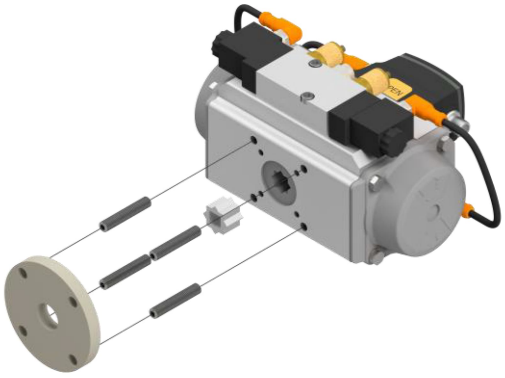
Loosen the hex nuts on the flange bushing.

2



Disconnect the actuator from the square shaft.

3



Remove the spacer, set screws and, if necessary, the reducing sleeve.

NOTE

- To install the new drive, carry out all steps in reverse order.
- The procedure for adjusting the end position can be found in the manufacturer's documentation.

9.3.4 Replacement of an electric actuator

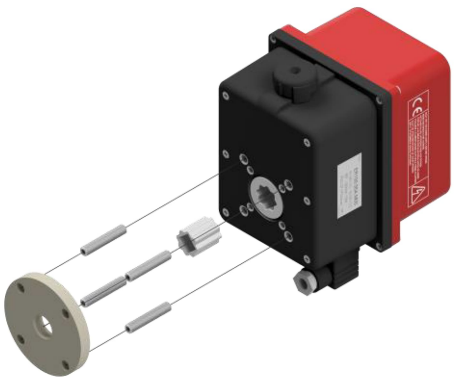
1

Loosen the hex nuts on the flange bushing.

2

Disconnect the actuator from the square shaft.

3



Remove the spacer, set screws and, if necessary. the reducing sleeve.

NOTE

- To install the new drive, carry out all steps in reverse order.
- The procedure for adjusting the end position can be found in the manufacturer's documentation.

9.4 Cleaning instructions

Clean the two-way valve as specified in the maintenance plan *(see p.42, 9.1 Maintenance plan).*
The cleaning agents to be used and the cleaning procedures to be applied must be specified by the manufacturer of the complete machine or by the plant operator.

10 Disassembly and disposal

10.1 Disassembly

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When disassembling, observe the safety instructions *(see p. 10, 2.3 General safety instructions)*!

We recommend disassembling our products into as many parts as possible, if it is safe to do so. Disassembly from the pipeline is carried out in reverse order, as in the procedures described in chapter 5 *(see p. 30, 5 Assembly)*. When disassembling the drive, observe the relevant instructions provided by the drive manufacturer

10.2 Disposal

NORO products can be disposed of by classifying them into different waste materials for reuse or incineration. If possible, recycle the individual waste materials when disposing of them. When disposing of the drive, observe the disposal instructions provided by the drive manufacturer. Please observe the country-specific disposal regulations.

NOTE

The illustrations are for illustrative purposes only. The product supplied may differ from the illustrations in terms of shape, colour and features. In the event of any discrepancies, please refer to the technical data in the acceptance report and the technical data sheets attached.