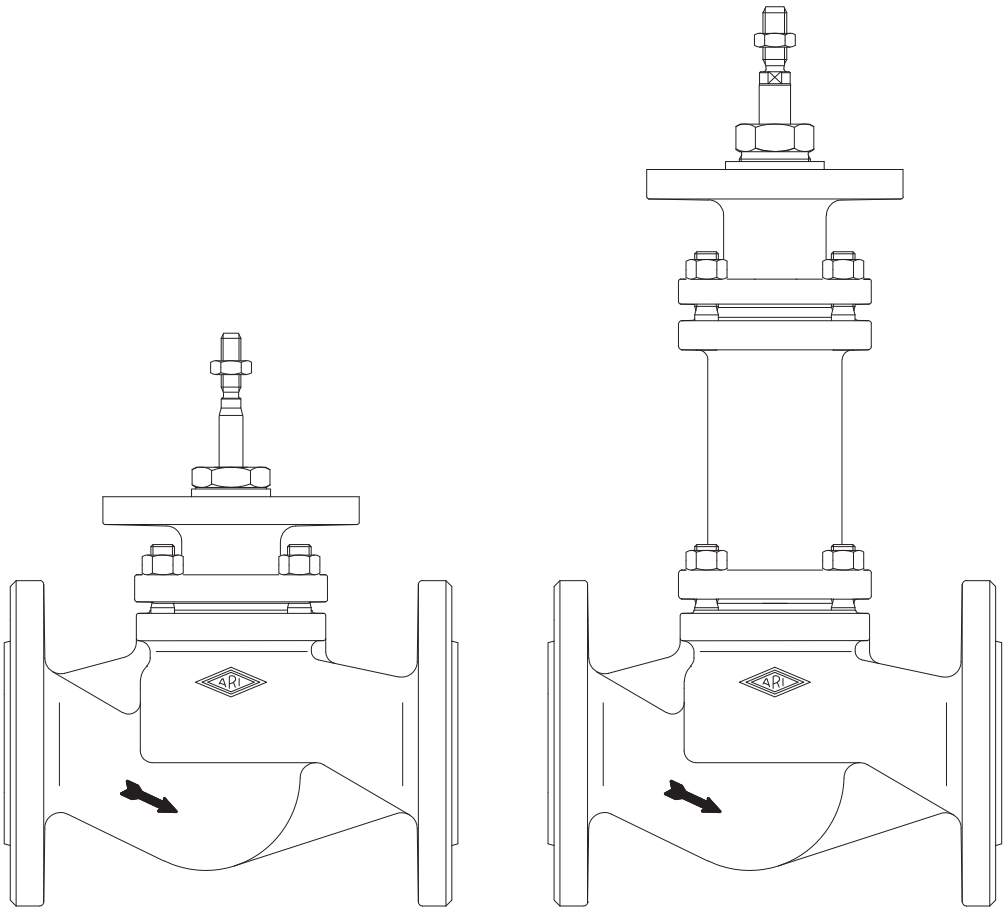
Operating and installation instructions

Straight through stop valves - STEVI® 405 / 460

DN 15 - 250



Series 405 Series 460

Contents

1.0 General information on operating instructions

These operating instructions provide information on mounting and maintaining the fittings. Please contact the supplier or the manufacturer in case of problems which cannot be solved by reference to the operating instructions.

They are binding on the transport, storage, installation, start-up, operation, maintenance and repair.
The notes and warnings must be observed and adhered to.

- Handling and all work must be carried out by expert personnel or all activities must be supervised and checked.

It is the owner's responsibility to define areas of responsibility and competence and to monitor the personnel.

- In addition, current regional safety requirements must be applied and observed when taking the fittings out of service as well as when maintaining and repairing them.

The manufacturer reserves the right to introduce technical modifications at any time.

These operating instructions comply with the requirements of EU Directives.

2.0 Notes on possible dangers

2.1 Significance of symbols

ATTENTION !

. . .

Warning of general danger.

2.2 Explanatory notes on safety information

In these operating and installation instructions dangers, risks and items of safety information are highlighted to attract special attention.

Information marked with the above symbol and "***ATTENTION !*** " describe practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

All other information not specifically emphasised such as transport, installation, operating and maintenance instructions as well as technical data (in the operating instructions, product documentation and on the device itself) must also be complied with to the fullest extent in order to avoid faults which in turn can cause serious injury to persons or damage to property.

3.0 Storage and transport

ATTENTION !

- Protect against external force (like impact, vibration, etc.).

- Valve mountings such as actuators, handwheels, hoods must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.

- Suitable materials handling and lifting equipment should be used. See catalog sheet for weights.

- At -20 °C to +65 °C.
- The paint is a base coat to protect against corrosion during transportation and storage. Do not damage paint protection.

4.0 Description

4.1 Scope of applications

Valves are used for „interrupting the flow of liquids, gases and vapours in chemical, processing, and other plants“.

ATTENTION !

- Refer to the data sheet for applications, limits on use and possibilities.

- Certain media require or preclude the use of special materials.

- The valves are designed for standard operating conditions. If conditions exceed these requirements, e.g. aggressive or abrasive media, the operator should state the higher requirements when ordering.

- Valves made from grey cast iron are not authorised for use in systems subject to TRD 110.

The information complies to the Pressure Equipment Directive 2014/68/EU.
It is the responsibility of the machine planner to ensure compliance.
The special markings on the valve must be taken into account.

Refer to the catalogue sheet to see which materials are used in standard versions.

Please contact the supplier or the manufacturer if you have any questions.

4.1.1 Operating principles

The stop valves are particularly suitable for operation by pneumatic or electrical actuators.

The flow direction in these stop valves must be always opposite to the closing direction.

4.2 Diagram

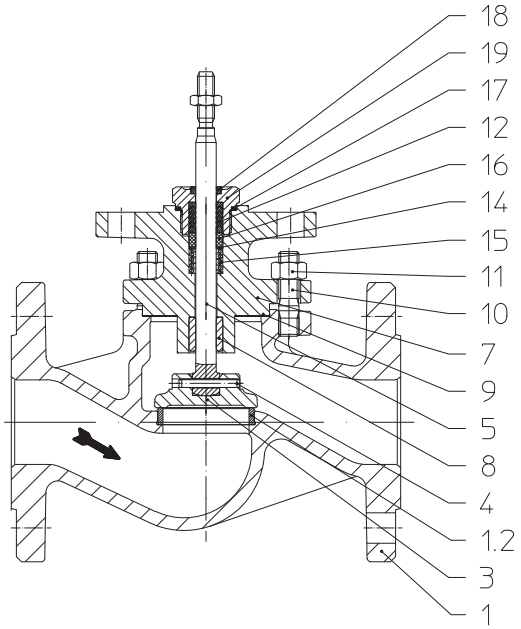


Fig. 1: Series 405 standard design

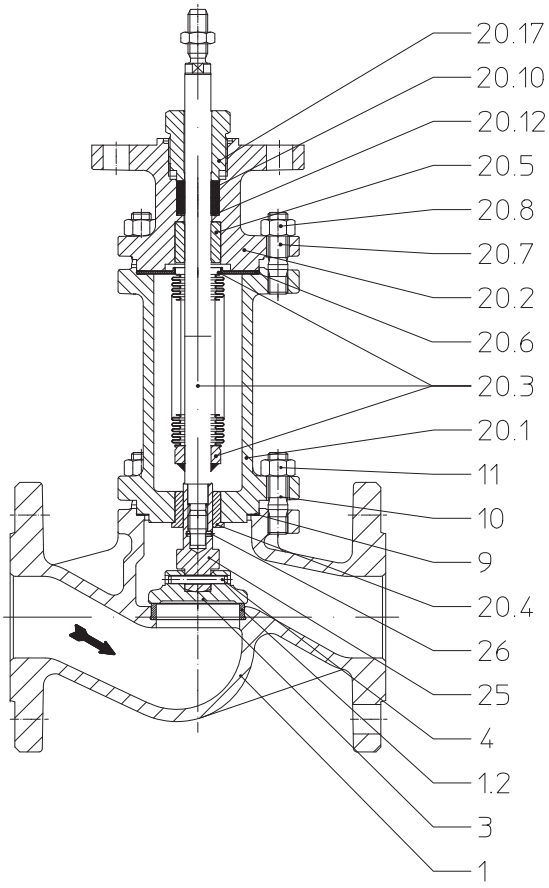


Fig. 2: Series 460 standard design

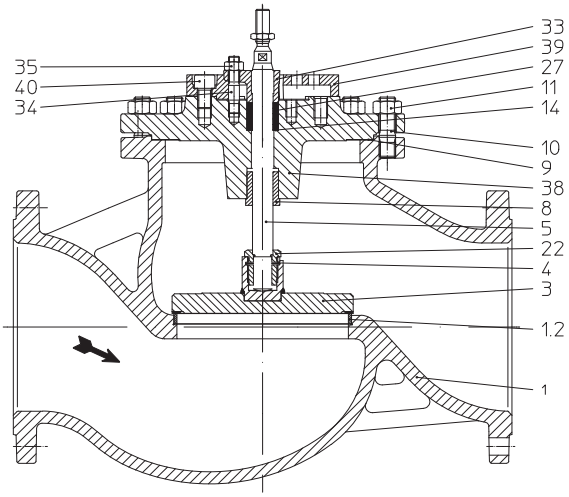


Fig. 3: Series 405
DN125v-150v / DN200-250

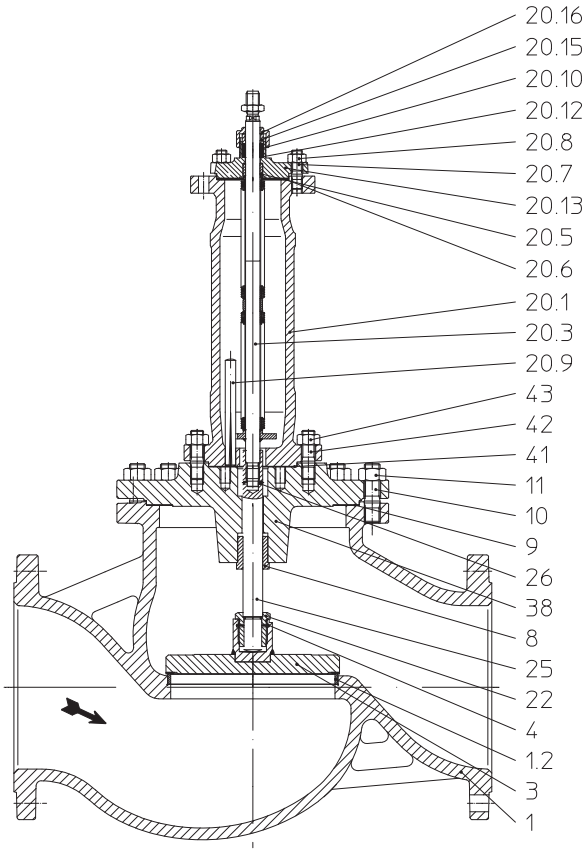


Fig. 4: Series 460
DN125v-150v / DN200-250

4.3 Technical data

for

- Principal dimensions

- **Pressure-temperature-ratings, etc.** refer to data sheet.

4.4 Marking

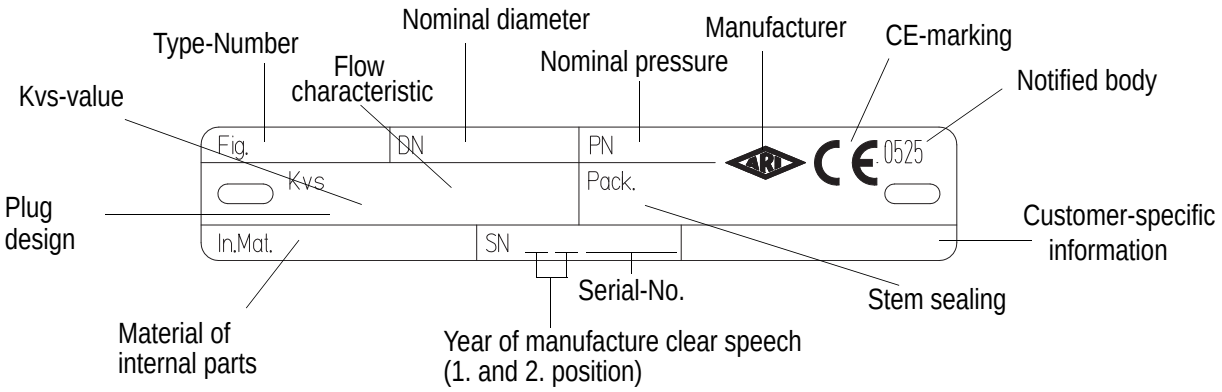


Fig. 5

Address of manufacturer: refer to item 11.0 Warranty / Guarantee

According to the Pressure Equipment Directive diagram 6, annex II valves without safety function are only allowed to bear the CE-marking DN32 onwards.

5.0 Installation

5.1 General notes on installation

The following items should be taken into account besides the general principles governing installation work:

ATTENTION !

- Remove flange covers if present.

- The interior of valve and pipeline must be free from foreign particles.

- Note installation position with reference to flow, see mark on valve.

- Steam line systems should be designed to prevent water accumulation.

- Lay pipelines so that damaging transverse, bending and torsional forces are avoided.

- Protect valves from dirt during construction work.

- Connection flanges must mate exactly.

- Connecting bolts for pipe flanges should be mounted preferably from the counter flange side (hexagon nuts from the valve side).
At DN15-32: If valves should be mounted directly to valves, the upper flange connecting bolts should be preferably executed with studs and hexagon nuts on both sides.

- Valve mountings such as actuators, handwheels, hoods must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.

- Suitable materials handling and lifting equipment should be used.
Refer to data sheet for weights.

- Keep the thread and shaft of the stem free from paint.

- Centre gaskets between the flanges.

- Strainers or filters should be installed before the valves.

- Planners / construction companies or operators are responsible for positioning and installing products.
- The valves are designed for application, not influenced from weather.
- For application outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapours, etc.), special constructions or protective measures are recommended.

5.2 Requirements at the place of installation

The place of installation should be easily accessible and provide ample space for maintenance and removing the actuator. The valve should preferably installed vertically with the actuator at the top. Inclined or horizontal installation without supports is permissible only with light actuators.
For this installation position, the two distance columns (or joke) have to be above each other in the vertical plane.

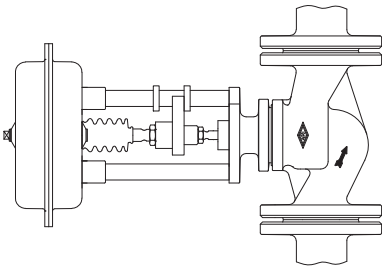


Fig. 6: Pipeline vertically

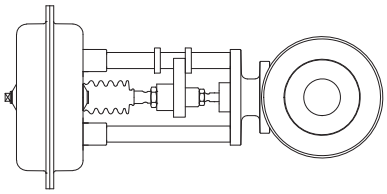


Fig. 7: Pipeline horizontally

Permissible actuator weights for valves with unsupported horizontal stems:

20 kg for DN 15 - 32	40 kg for DN 125 - 150
25 kg for DN 40 - 65	55 kg for DN 125v - 150v
35 kg for DN 80-100	55 kg for DN 200 - 250

The pipes must be lagged to protect the actuators from excessive heat. Sufficient space must be left for the maintenance of the stem packing.

5.3 Installation instructions concerning actuators

Normally, stop valves are supplied complete with actuator fitted.
It is not permitted to mantle / dismantle actuators with valves operating and service conditions (temperature and pressure). The actuators must be assemble as describe in the operating instructions during conversion and maintenance.

During assembly work, the plug is not be turned on its seating at closing pressure.

ATTENTION !

Care must be taken with the bellow type valves when actuators are mounted or removed. (Hold the valve-stem against turning with an open-end wrench!)

When retrofitting actuators, the maximum permissible force for valve actuation must be taken into account:

Series 405	**Series 460**
12kN for DN 15- 50	18kN for DN 15-100
29kN for DN 65-100	37kN for DN 125v-150v
40kN for DN 125-150	37kN for DN 200-250
59kN for DN 125v-150v	
59kN for DN 200-250	

6.0 Putting the valve into operation

ATTENTION !

- Before putting the valve into operation, check material, pressure, temperature and direction of flow.

- Regional safety instructions must be adhered to.

- Residues in piping and valves (dirt, weld beads, etc.) inevitably lead to leakage.

- Touching the valve when it is operating at high (> 50 °C) or low (< 0 °C) media temperatures can cause injury.
Affix warning notice or protective insulation as appropriate!

Before putting a new plant into operation or restarting a plant after repairs or modification, always make sure that:

- All works has been completed!

- The valve is in the correct position for its function.

- Safety devices have been attached.

7.0 Care and maintenance

Maintenance and maintenance intervals have to be defined by the operator according to the service conditions.

7.1 Replacement of stem sealings

7.1.1 PTFE V-ring unit design

PTFE V-ring unit (pos. 12) consisting of: 1 backing ring
4 sealing rings
1 cover ring

Owing to the installed compression spring (pos. 15), this stem packing is self-adjusting. If the stem starts leaking, the ring pack is worn out and must be replaced.

Replacement PTFE V-ring unit:

ATTENTION !

Refer to item 10.0 and 11.0 before dismantling the valve.

- Remove actuator. (Refer to operating instructions for actuator!)
- When replacing PTFE V-ring unit (pos. 12), make sure that the parts are installed in the correct order and positions (refer to Fig. 8 - Fig. 9).
- DN15-100: Gasket (pos. 17) must be replaced.

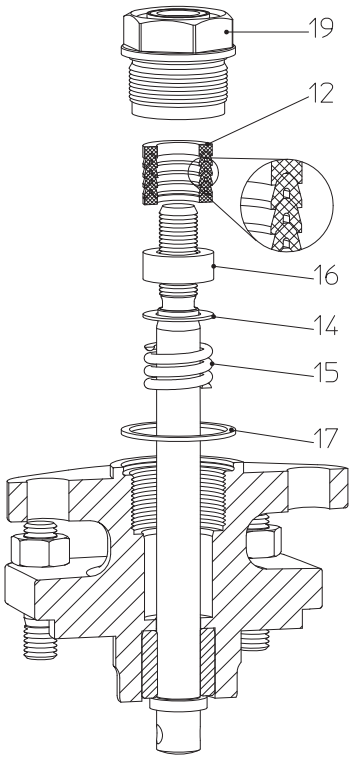


Fig. 8: PTFE V-ring unit DN15-100

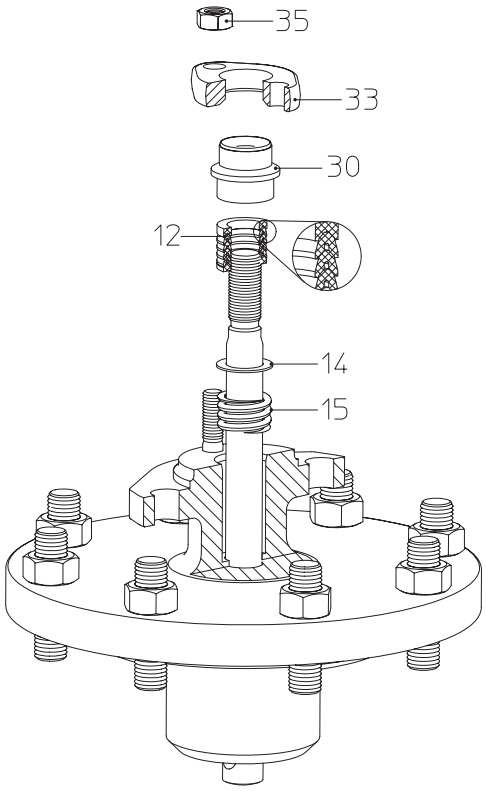


Fig. 9: PTFE V-ring unit DN125-150

Damaged stems must also be replaced (refer to item 7.2 for instructions) since a new sealing will soon start leaking again if the stem is damaged.

7.1.2 Stuffing box packing design

The stuffing box packing (pos. 27) requires maintenance.

If leaks develop, immediately tighten the screw joint (pos. 29) respectively the nuts (pos. 35) gradually until the packing (pos. 27) stops leaking.

The service life of stuffing box packings (pos. 27) can be increased by checking regularly leakage.

If leaks can no longer be stopped by tightening the screw joint (pos. 29) respectively the nuts (pos. 35), a new packing ring (pos. 27) must be inserted into the gland.

Replacement of stuffing box packings:

ATTENTION !

Refer to item 10.0 and 11.0 before dismantling the valve.

- Remove actuator. (Refer to operating instructions for actuator!)
- Insert new packing ring (pos. 27) as shown in Fig. 10 - Fig. 13.

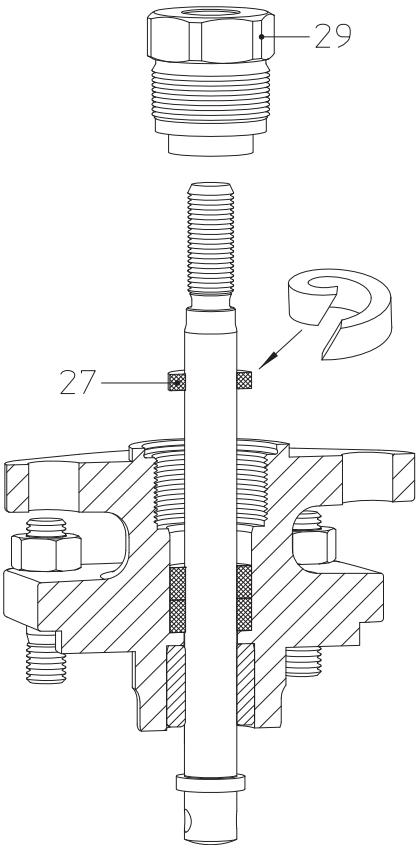


Fig. 10: Stuffing box packing DN15-100

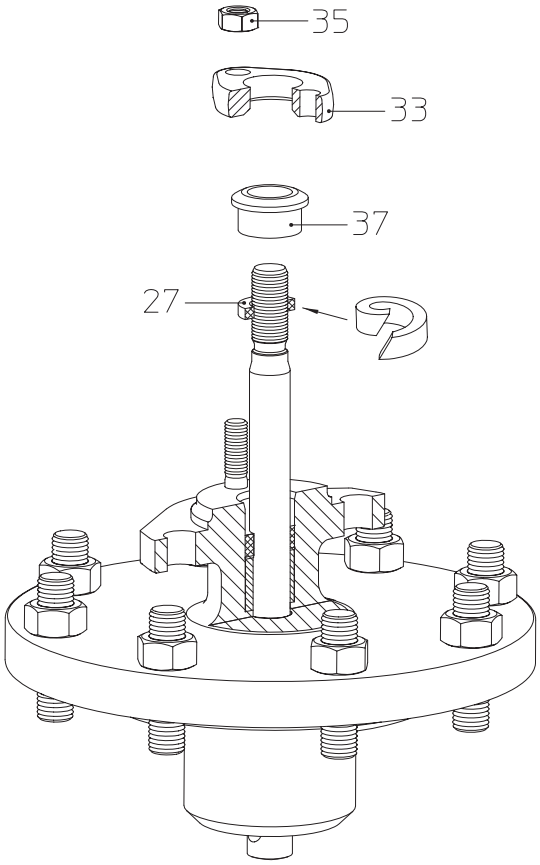


Fig. 11: Stuffing box packing DN125-150

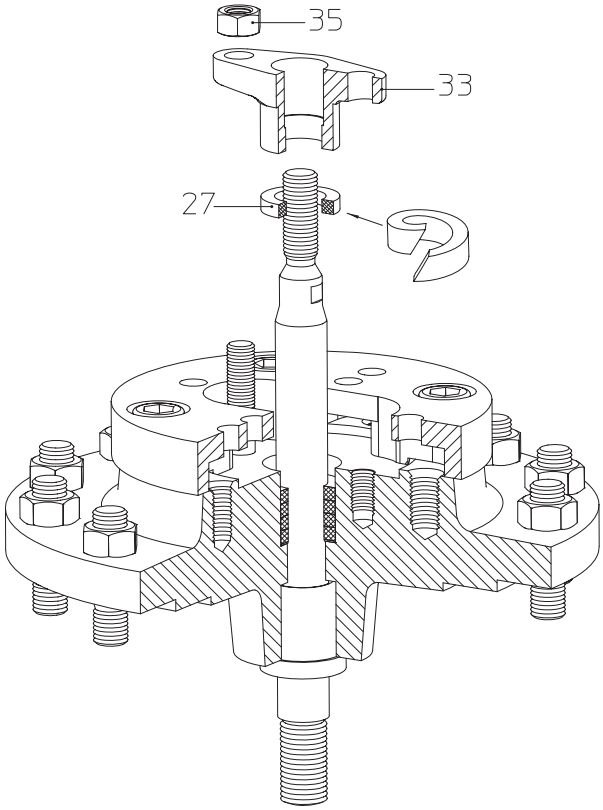


Fig. 12: Stuffing box packing
DN125v-150v / DN200-250

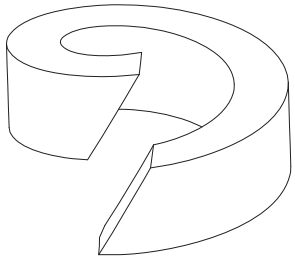


Fig. 13: split packing ring

If a split packing ring is used, cut with a chamfer as shown in Fig. 13.

Damaged stems must also be replaced (refer to item 7.2 for instructions) since a new sealing will soon start leaking again if the stem is damaged.

7.1.3 Bellows seal design

If the stem leaks, the bellows seal (pos. 20.3) is defective. The leak can initially be stopped by tightening the screw joint (pos. 20.17).

Stem and bellows (pos. 20.3) can only be replaced together.

Replacement of bellows seals:

> ***ATTENTION !***
>
> ***Refer to item 10.0 and 11.0 before dismantling the valve.***

- Remove actuator. (Refer to operating instructions for actuator!)

<u>DN15-150</u>:

- Loose nuts (pos. 11).
- Detach bellows assembly (pos. 20).
- Slacken screw joint (pos. 20.17) by about one turn.
- Press stem/bellows-unit (pos. 20.3) down.
- Drive spring pin (pos. 26) out with a drift.
- Unscrew stem adapter (pos. 25) with plug (pos. 3).
- Loose nuts (pos. 20.8).
- Detach mounting bonnet (pos. 20.2)
- Extract stem/bellows-unit (pos. 20.3) from the bellows housing (pos. 20.1).
- Bolt new parts together and drill them.
- Replace 2 gaskets (pos. 20.6) and 1 gasket (pos. 9).
- Assemble in reverse order.

> ***ATTENTION at DN125-150!***
>
> *- Ensure that the torsion lock is correctly positioned when inserting new stem/ bellows unit. Introduce the grooved pin (pos. 20.9) into the torsion lock groove. Make sure it runs smoothly!*

- Secure with nuts (pos. 10 and pos. 20.8) and tighten them crosswise. (For tightening torques refer to item 7.3)
- Tighten screw joint (pos. 20.17) gradually up to tightness of the stuffing box packing (pos. 20.10).

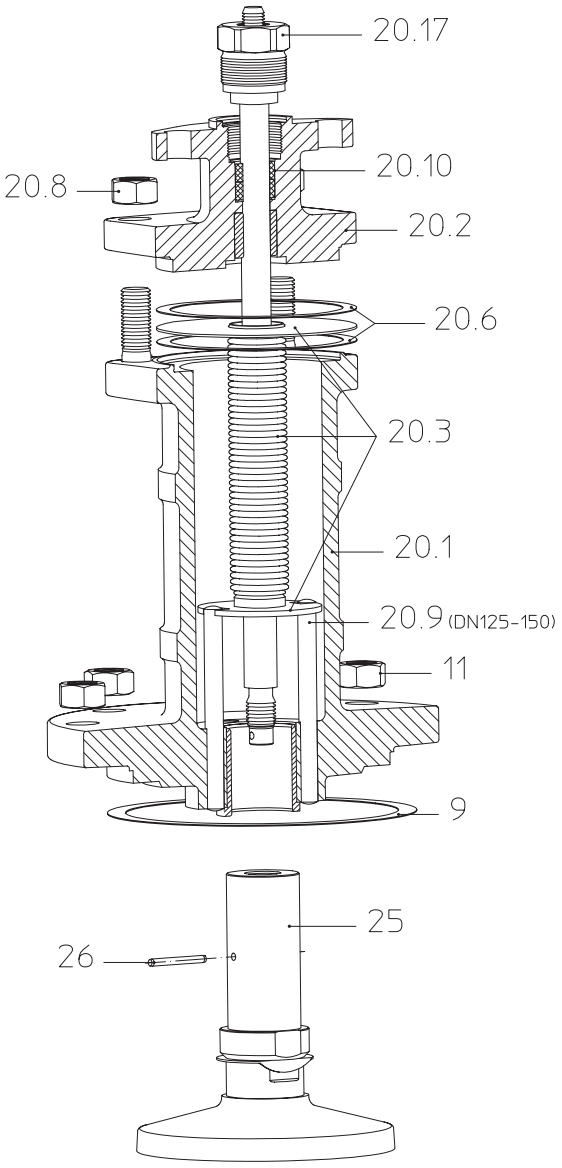


Fig. 14: Series 460
DN15-150

DN125v-150v / DN200-250:

- Loose nuts (pos. 11).
- Detach bellows assembly (pos. 20) incl. stuffing box housing (pos. 38).
- Slacken sleeve nut (pos. 20.16) by about one turn.
- Loose nuts (pos. 43).
- Lift bellows housing (pos. 20.1)
- Drive spring pin (pos. 26) out with a drift.
- Unscrew stem adapter (pos. 25) with plug (pos. 3).
- Loose nuts (pos. 20.8).
- Detach stuffing box housing (pos. 20.13)
- Extract stem/bellows-unit (pos. 20.3) from the bellows housing (pos. 20.1).
- Bolt new parts together and drill them.
- Replace 2 gaskets (pos. 20.6), 1 gasket (pos. 9) and 1 gasket (pos. 41).
- Assemble in reverse order.

ATTENTION at DN125-150!

- Ensure that the torsion lock is correctly positioned when inserting new stem/ bellows unit. Introduce the grooved pin (pos. 20.9) into the torsion lock groove. Make sure it runs smoothly!

- Secure with nuts (pos. 11, 20.8 and 20.8) and tighten them crosswise.
  (For tightening torques refer to item 7.3)
- Tighten sleeve nut (pos. 20.16) gradually up to tightness of the stuffing box packing (pos. 20.10).

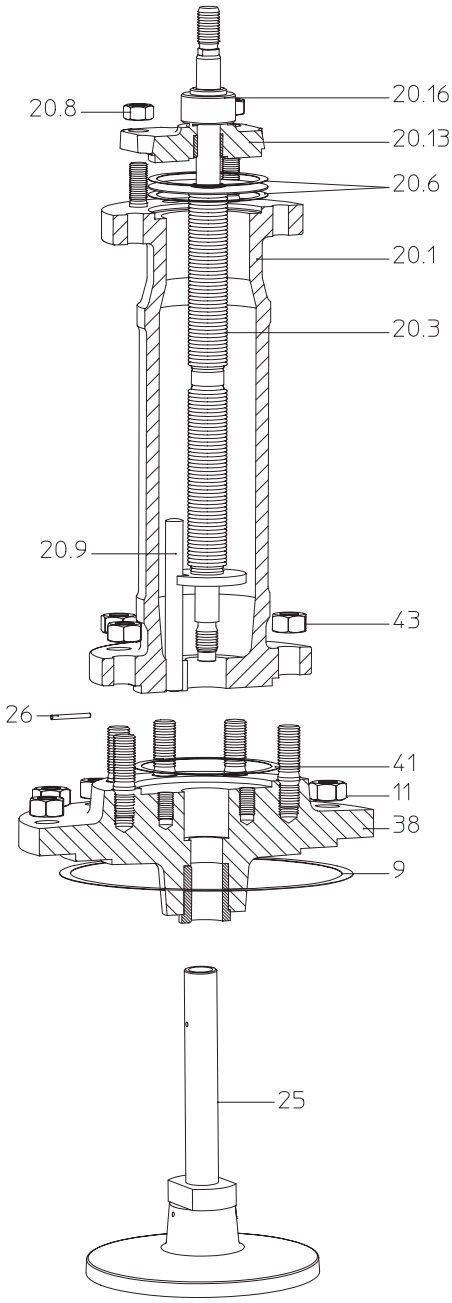


Fig. 15: Series 460
DN125v-150v /
DN200-250

7.2 Replacement of internal parts

7.2.1 Replacment of plug and stem

ATTENTION !

Refer to item 10.0 and 11.0 before dismantling the valve.

- Remove actuator. (Refer to operating instructions for actuator!)

Series 405:

- Loose nuts (pos. 11).
- Detach mounting bonnet (pos. 7) respectively stuffing box housing (pos. 38).
- DN15-100: Slacken screw joint (pos. 19 or 29) by about 1 turn.
- DN125-250: Slacken hexagon nuts (pos. 35) by about 2-3 turns.
- Extract plug (pos. 3) and stem (pos. 5).
- Drive pin (pos. 4) out with a drift.
- Pin new parts.
- Replace gasket (pos. 9).
- Assemble in reverse order.
- Secure with nuts (pos. 10) and tighten them crosswise.
  (For tightening torques refer to item 7.3)

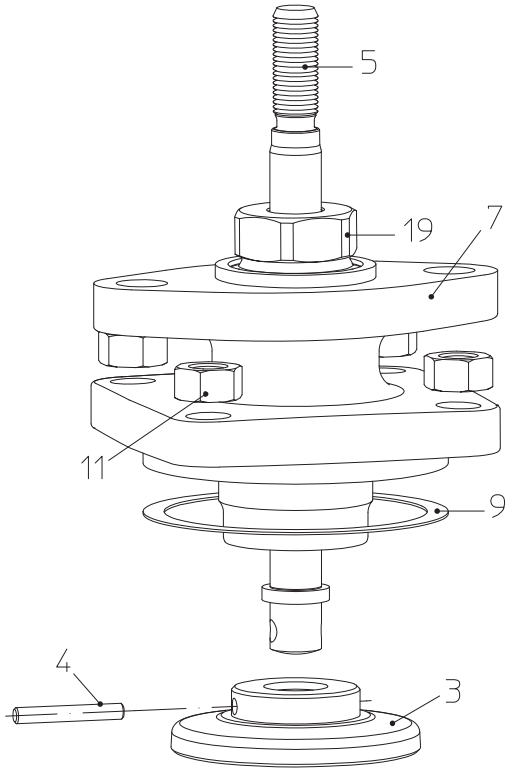


Fig. 16: Series 405 DN15-100

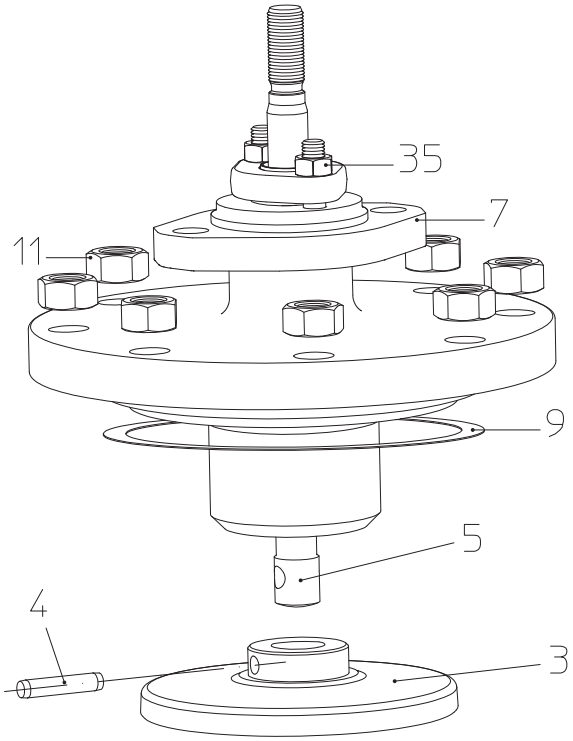


Fig. 17: Series 405 DN125-150

Series 460:

For replacement of plug and stem with bellows sealing (Series 460) refer to item 7.1.3.

7.3 Tightening torques

7.3.1 Tightening torques for nuts

M 10	=	15 - 30 Nm
M 12	=	35 - 50 Nm
M 16	=	80 - 120 Nm
M 20	=	150 - 200 Nm
M 24	=	340 - 410 Nm

! Refer to operating instructions for actuator concerned for installing actuators !

8.0 Troubleshooting

In the event of malfunction or faulty operating performance check that the installation and adjustment work has been carried out and completed in accordance with these Operating Instructions.

ATTENTION !
- It is essential that the safety regulations are observed when identifying faults.

If malfunctions cannot be eliminate with the help of the following table
"**9.0 Troubleshooting table**", the supplier or manufacturer should be consulted.

9.0 Troubleshooting table

ATTENTION !

- read item 10.0 and 11.0 prior to dismantling and repair work!
- read item 6.0 before restarting the plant !

Fault	Possible cause	Corrective measures
No flow	Valve closed.	Open valve (using actuator).
	Flange covers not removed.	Remove flange covers.
Little flow	Valve not sufficiently open.	Open valve (using actuator).
	Dirt sieve clogged.	Clean / replace sieve.
	Piping system clogged.	Check piping system.
Valve stem moves in jerks.	Stuffing box sealing too tight (for valves with graphite packings).	Slacken screw joint (pos. 29) or hexagon nuts (pos. 35) slightly. Valve must nor start leaking!
Valve stem leaking.	PTFE V-ring unit damaged or worn.	Replace ring pack (pos. 12) - refer to item 7.1.1
	In valves with packed stuffing boxes, tighten screw joint (pos. 29) or hexagon nuts (pos. 35).	Tighten screw joint (pos. 29) or hexagon nuts (pos. 35); replace packing if necessary; refer to item 7.1.2
	Bellows defective in valves with bellow seal.	Replace bellows unit; refer to item 7.1.3
Leakage too high when valve is closed.	Sealing surfaces of plug eroded or worn.	Replace plug; refer to item 7.2.1.
	Sealing edge of seating damages or worn.	Grind the seat
	Seating and/or plug dirty.	Clean internals of valve;
	Pneumatic actuator not completely vented; spring force not fully effective.	Vent actuator air chamber completely.
	Actuator not powerful enough.	Install more powerful actuator.

10.0 Dismantling the valve or the top part

ATTENTION !

The following points must be observed:

- *Pressureless pipe system.*
- *Medium must be cool.*
- *Plant must be drained.*
- *Purge piping systems in case of caustic, inflammable, aggressive or toxic media.*

11.0 Warranty / Guarantee

The extent and period of warranty cover are specified in the "Standard Terms and Conditions of Albert Richter GmbH & Co. KG“ valid at the time of delivery or, by way of departure, in the contract of sale itself.

We guarantee freedom of faults in compliance with state-of-the-art technology and the confirmed application.

No warranty claims can be made for any damage caused as the result of incorrect handling or disregard of operating and installation instructions, datasheets and relavant regulations.

This warranty also does not cover any damage which occurs during operation under conditions deviating from those laid down by specifications or other agreements.

Justified complaints will be eliminated by repair carried out by us or by a specialist appointed by us.

No claims will be accepted beyond the scope of this warranty. The right to replacement delivery is excluded.

The warranty shall not cover maintenance work, installation of external parts, design modifications or natural wear.

Any damage incurred during transport should not be reported to us but *rather* to the competent cargo-handling depot, the railway company or carrier company immediately or else claims for replacements from these companies will be invalidated.

Technology for the Future.
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