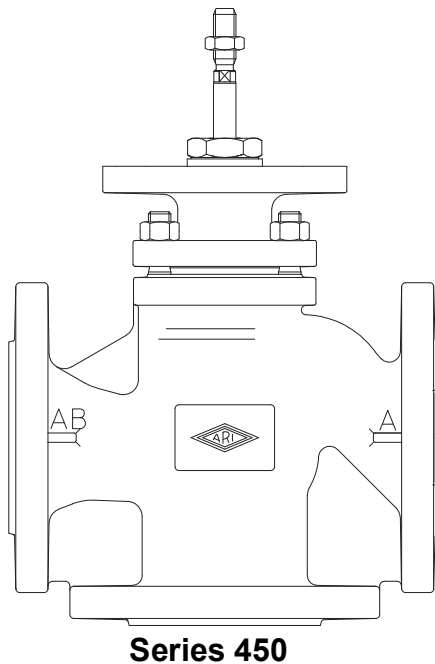


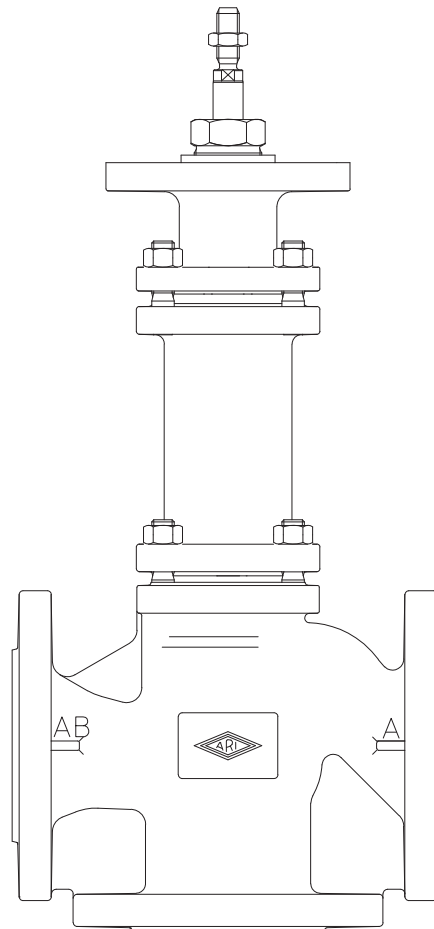


Operating and installation instructions

3-way control valves - STEVI® 450 / 451



Series 450



Series 451

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1.0 General information on operating instructions

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

They are binding for transport, storage, installation, start-up, operation, maintenance and repair.

The notes and warnings must be observed and adhered to.

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

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

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

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

These operating instructions comply with the requirements of EU Directives.

2.0 Notes on possible dangers

2.1 Significance of symbols



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 „controlling the flow of liquids, gases and vapours in chemical and other processing plants and for plant engineering“.



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.

4.2 Operating principles

The control valves are especially suitable for actuation by pneumatic or electrical actuators.

Depending on the mode of operation, two different execution methods are possible:

1. Execution with mixing plug
2. Execution with diverting plug

The execution with the mixing plug is the standard execution method.

This execution method is to be chosen when the valve is also employed as a mixer (2 entrances, 1 exit).

In exceptional cases, the execution with the mixing plug can also be employed as a diverting plug (1 entrance, 2 exits). This requires, however, low differential pressures and stable propulsion.

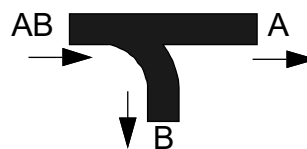
The execution method with the diverting plug is only to be employed with the operation of diverting.

Explanation:

Mixing operation



Diverting operation



4.3 Diagram

4.3.1 Mixing plug design

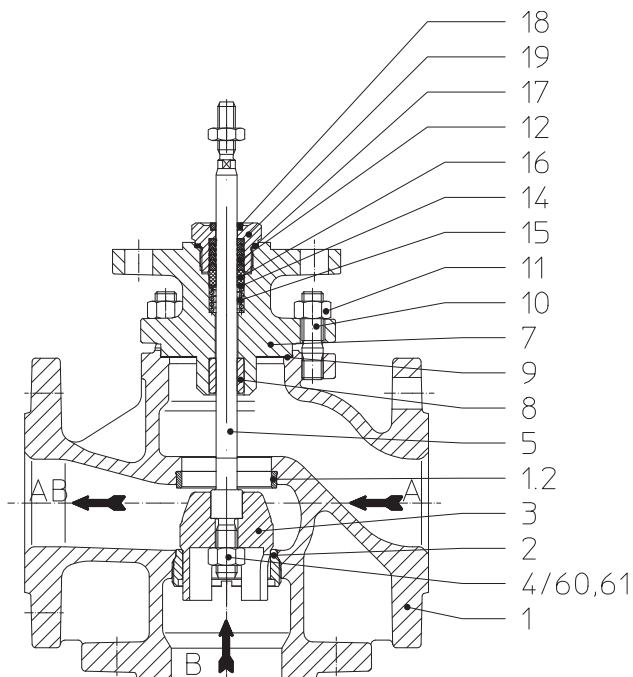


Fig. 1: Series 450 DN15-150

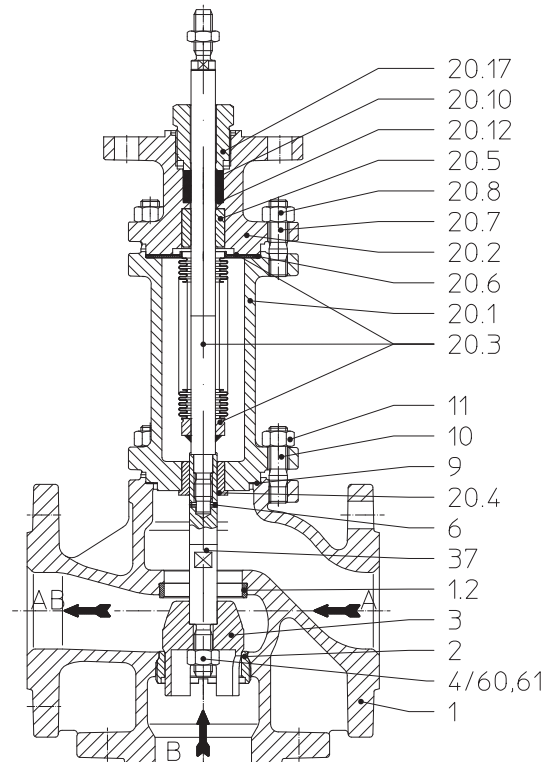


Fig. 2: Series 451 DN15-150

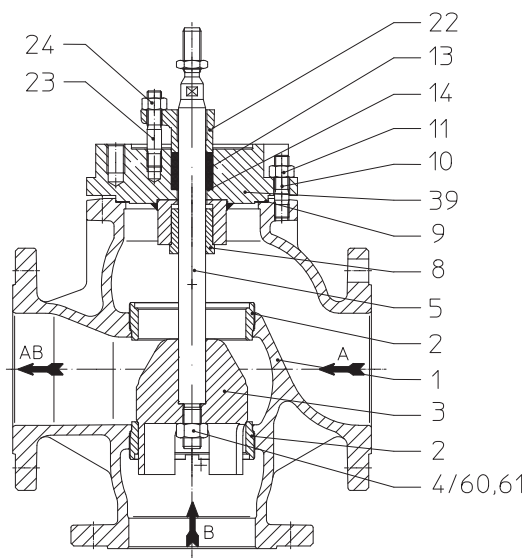


Fig. 3: Series 450 DN125v-150v

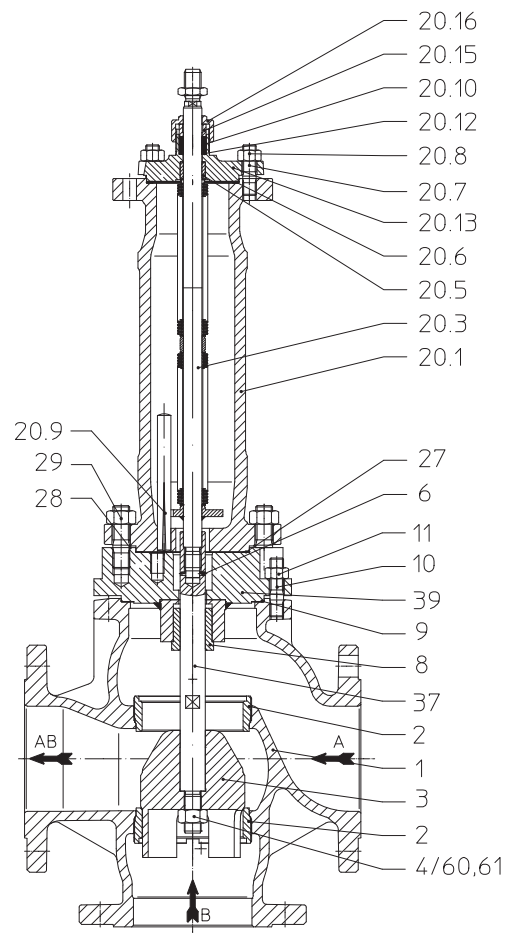


Fig. 4: Series 451 DN125v-150v

4.3.2 Diverting plug design

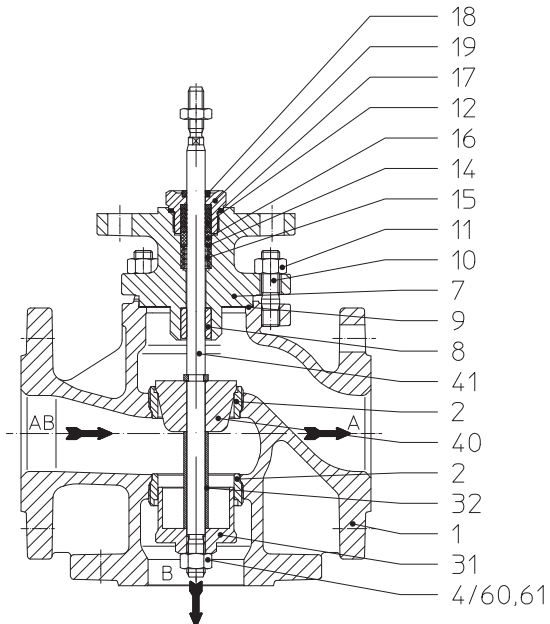


Fig. 5: Series 450 DN15-150

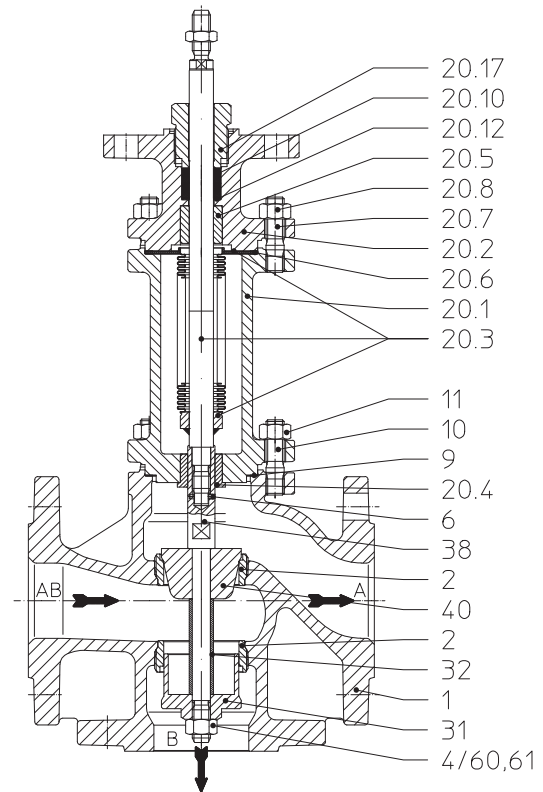


Fig. 6: Series 451 DN15-150

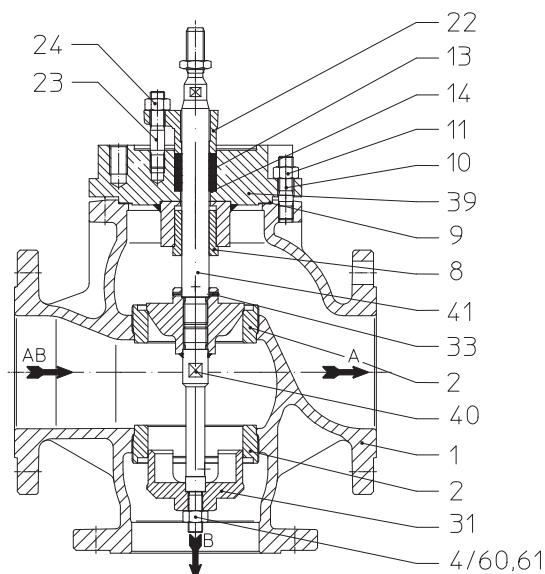


Fig. 7: Series 450 DN125v-150v

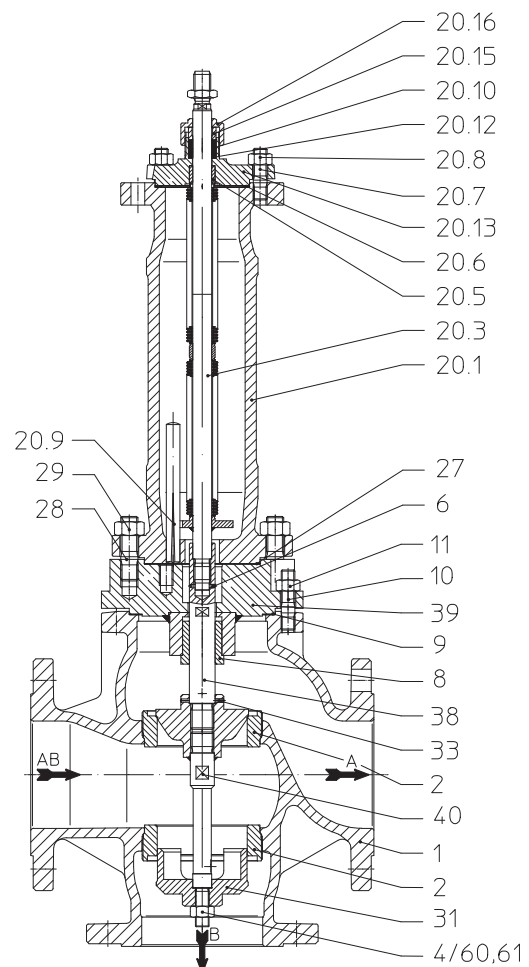


Fig. 8: Series 451 DN125v-150v

4.4 Technical data

for

- **Principal dimensions**

- **Pressure-temperature-ratings, etc.** refer to datasheet.

4.5 Marking

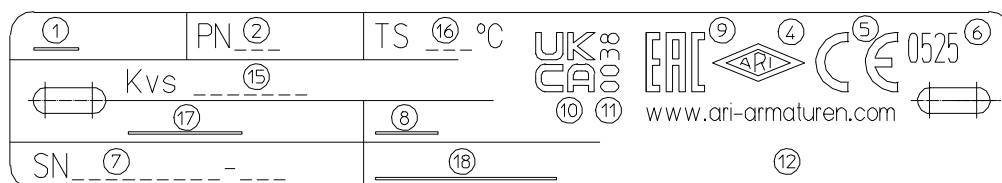


Fig. 9

No.	Value
1	Figure / Product
2	Nominal pressure
4	Manufactured by ARI-Armaturen
5	CE marking
6	Notified body
7	Serial number
8	Year of manufacture
9	EAC marking
10	UKCA marking
11	Notified body
12	Marking at approval
15	Kvs-value / Cv- value
16	Permissible maximum temperature
17	Stem sealing • V-Ring = <i>PTFE-V-ring unit</i> • PTFE = <i>PTFE packing</i> • PTFE FDA = <i>PTFE FDA packing</i> • PTFE-seal FDA = <i>PTFE gasket set FDA</i> • Graphit = <i>pure graphite-packing</i> • Graphit 99,85% = <i>pure graphite 99,85%-packing</i> • EPDM = <i>EPDM sealing</i> • EPDM FDA = <i>EPDM FDA sealing</i> • NBR = <i>NBR sealing</i> • H-NBR = <i>H-NBR sealing</i> • bellows seal = <i>Stainless steel bellows</i>
18	Customized text

Address of manufacturer: refer to item 11.0 Warranty / Guarantee

According to the Pressure Equipment Directive table 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. Stop valves should be installed before and behind the control valve to enable maintenance working without draining the piping system. 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.

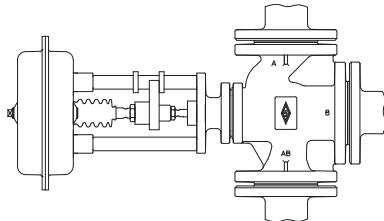


Fig. 10: Pipeline vertically

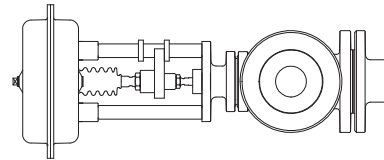


Fig. 11: Pipeline horizontally

Safe actuator weights for a horizontal installation position with reference to the stem, without structural support, are as follows:

- 20 kg for DN 15 - 32
- 25 kg for DN 40 - 65
- 35 kg for DN 80-100
- 40 kg for DN125-150
- 55 kg for DN125v-150v

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

To ensure that the control valves function correctly, the pipe run should be straight for at least 2 x DN upstream and 6 x DN downstream of the valve.

5.3 Installation instructions concerning actuators

Normally, control valves are supplied complete with actuator fitted.

It is not permitted to mantle / dismantle actuators with valves operating at service conditions (temperature and pressure) the actuators must be assembled 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 450

- 12 kN for DN 15- 50
- 29 kN for DN 65-100
- 40 kN for DN125-150
- 59 kN for DN125v-150v

Series 451

- 18 kN for DN 15-100
- 37 kN for DN125-150 / 125v-150v

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 ($> 50\text{ }^{\circ}\text{C}$) or low ($< 0\text{ }^{\circ}\text{C}$) 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. 14), 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 point 10.0 and 11.0 before dismantling the valve.

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

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

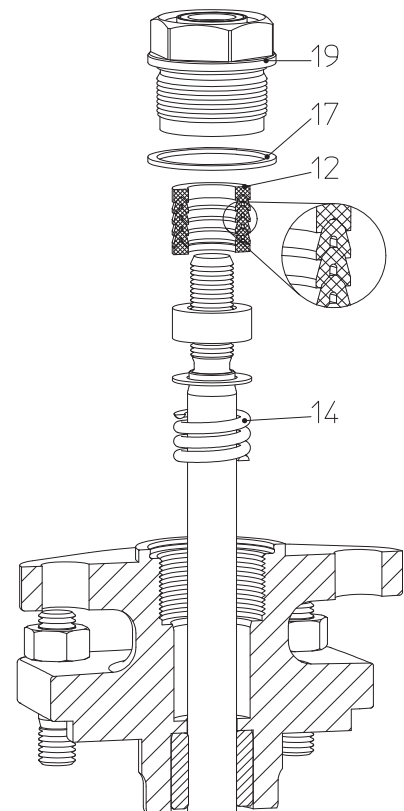


Fig. 12:
Installation V-ring unit
DN15-150

7.1.2 EPDM sealing design

This sealing system can be used for water and steam up to an operating temperature of 180°C. Owing to the elastomer material, the sealing rings are self-sealing and therefore maintenance free. If the stem starts leaking, the seal is worn out and must be replaced.

Replacement of EPDM sealing rings:



ATTENTION !

Before dismantling the valve, refer to sections 10.0 and 11.0.

DN15-150:

- Remove actuator (refer to operating instructions for actuator!).
- To replace the sealing elements, you must replace the complete screw joint including the integral seals (pos. 120).
- Sealing ring (pos. 17) must be replaced.

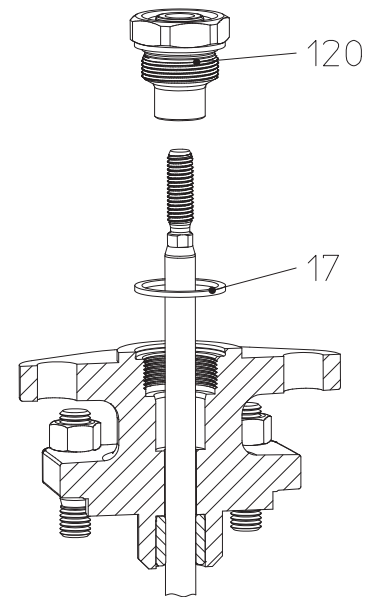


Fig. 13: EPDM sealing
DN15 - DN150

DN125v, DN150v:

- Remove actuator together with universal adapter flange (pos. 25) by loosening socket screws (pos. 26) (refer to operating instructions for actuator!).
- Loosen nuts (pos. 24).
- Remove upper part (pos. 22).
- To replace the sealing elements, you must replace the complete stem seal (pos. 120) including the integral seals.

Damaged stems must also be replaced (for a description, refer to section 7.1.4), because a new ring pack will soon start leaking again if the stem is damaged.

Assemble in reverse order.

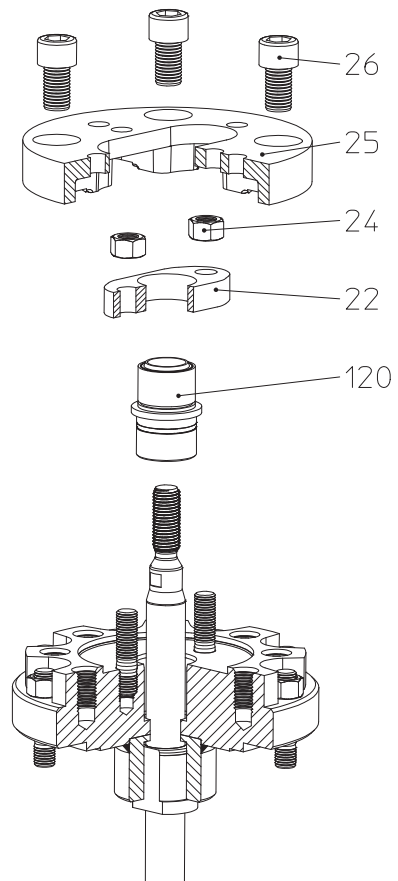


Fig. 14: EPDM sealing
DN125v - DN150v

7.1.3 Stuffing box packing design

The stuffing box packing requires maintenance.

If leaks develop, immediately tighten the screw joint (pos. 42) respectively the hexagon nuts (pos. 24) gradually until the packing ring (pos. 13) stops leaking.

The service life of stuffing box packings (pos. 13) can be increased by checking regularly leakage.

If leaks can no longer be stopped by tightening the screw joint (pos. 42) respectively the nuts (pos. 24), a new packing ring (pos. 13) must be inserted into the gland.

Replacement of stuffing box packings:



ATTENTION !

Refer to point 10.0 and 11.0 before dismantling the valve.

- Remove actuator. (Refer to operating instructions for actuator!)
- Insert new packing ring as shown in the Fig. 15 and Fig. 16.

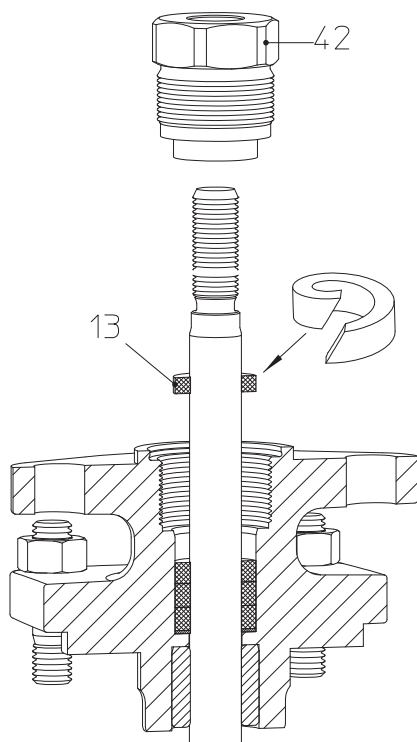


Fig. 15: Stuffing box packing DN15-150

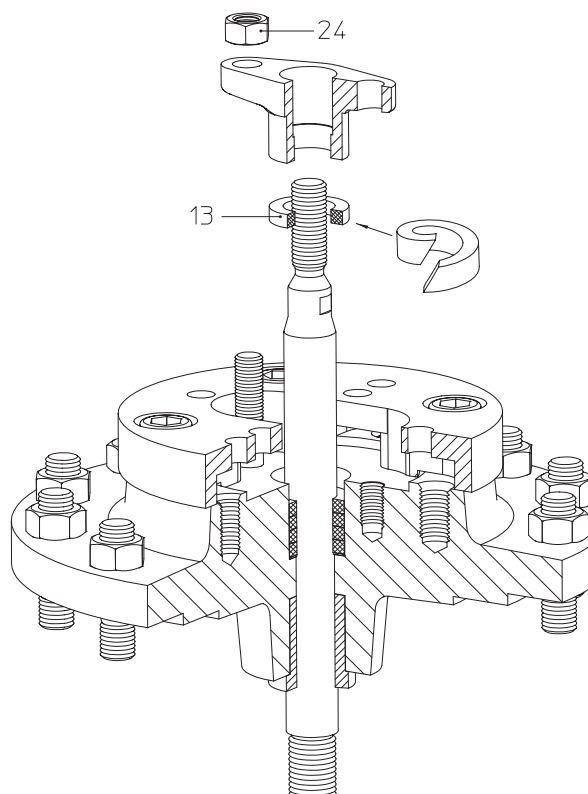


Fig. 16: Stuffing box packing DN125v-150v

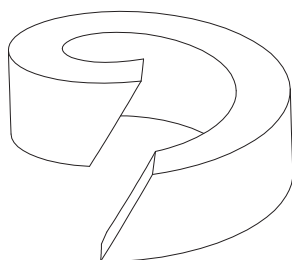


Fig. 17: Split packing ring

If a split packing ring is used, cut with a chamfer as shown in Fig. 17.

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

7.1.4 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) respectively the sleeve nut (pos. 20.16).

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

Replacement of bellows seal:



ATTENTION !

Refer to point 10.0 and 11.0 before dismantling the valve.

- Remove actuator. (Refer to operating instructions for actuator!)
- Slacken screw joint (pos. 20.17) respectively sleeve nut (pos. 20.16) by about one turn.
- Unscrew the bottom seat ring (pos. 2) (refer to point 7.2) -
with diverting plug version (Fig. 20, Fig. 21) not necessary.
- Unscrew hexagon nut (pos. 4 or pos. 60), (holding against spanner face).
- Remove plug (pos. 3 or 31).

7.1.4.1 Bellows seal and mixing plug

DN15-150

- Dismantle as point 7.1.4.
- Loose nuts (pos. 11).
- Detach bellows assembly (pos. 20).
- 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).
- Drive pin (pos. 6) out with a drift.
- Unscrew stem adapter (pos. 37).

Note:

Adapter (pos. 37) and straight pin (pos. 6) are not existing at DN40-50.

- Bolt new parts together, drill and pin them.
- Replace 2 gaskets (pos. 20.6) and 1 gasket (pos. 9).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)



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 and 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).

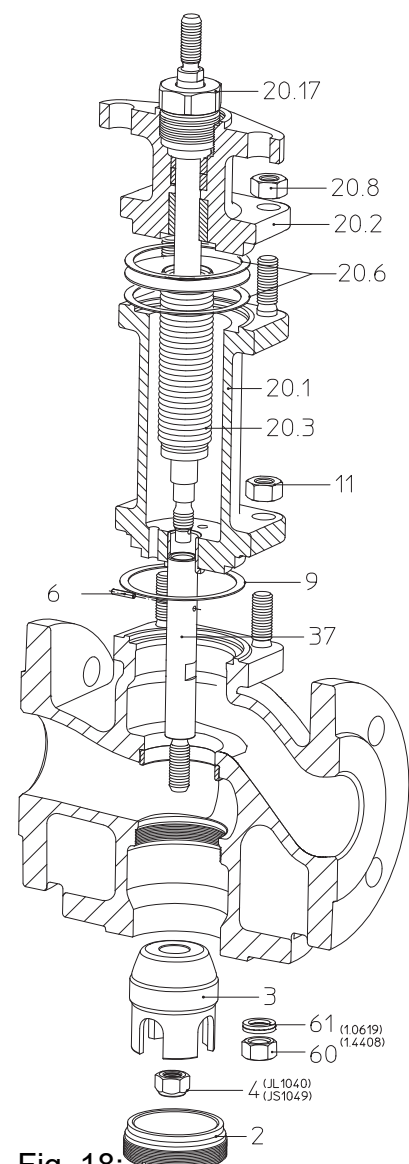


Fig. 18:
Series 451 DN 15-150
with mixing plug

DN125v-150v

- Dismantle as point 7.1.4.
- Loose nuts (pos. 29).
- Detach bellows assembly (pos. 20).
- 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).
- Drive pin (pos. 6) out with a drift.
- Unscrew stem adapter (pos. 37).
- Bolt new parts together, drill and pin them.
- Replace 2 gaskets (pos. 20.6) and 1 gasket (pos. 27).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)



ATTENTION !

- 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. 29 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).

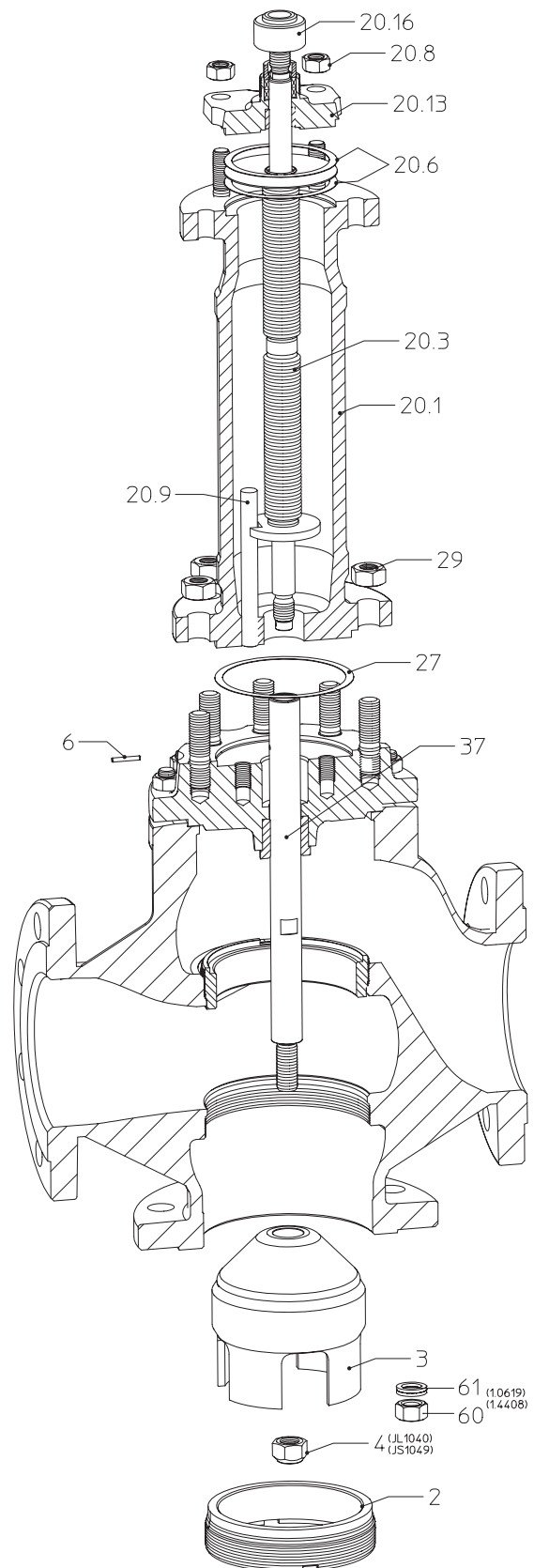


Fig. 19:
Series 451 DN125v-150v
with mixing plug

7.1.4.2 Bellows seal and diverting plug

DN40-150

- Dismantle as item 7.1.4.
- Pull distance bush (pos. 32) from adapter (pos. 38).

Note:

There is no distance bush (pos. 32) on DN 125-150.

- Loose nuts (pos. 11).
- Detach bellows assembly (pos. 20).
- DN 15-100: Pull plug (pos. 40) from adapter (pos. 38).
- DN 125-150: Drive straight pin (pos. 33) out with a drift. Screw plug (pos. 40) from adapter (pos. 38).
- 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).
- Drive pin (pos. 6) out with a drift.
- Unscrew stem adapter (pos. 38).

Note:

Adapter (pos. 38) and straight pin (pos. 6) are not existing at DN40-50.

- Bolt new parts together, drill and pin them.
 - Replace 2 gaskets (pos. 20.6) and 1 gasket (pos. 9).
 - Assemble in reverse order.
- (For tightening torques refer to item 7.3.)



ATTENTION at DN125-150!

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

- Secure with nuts (pos. 11 and 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).

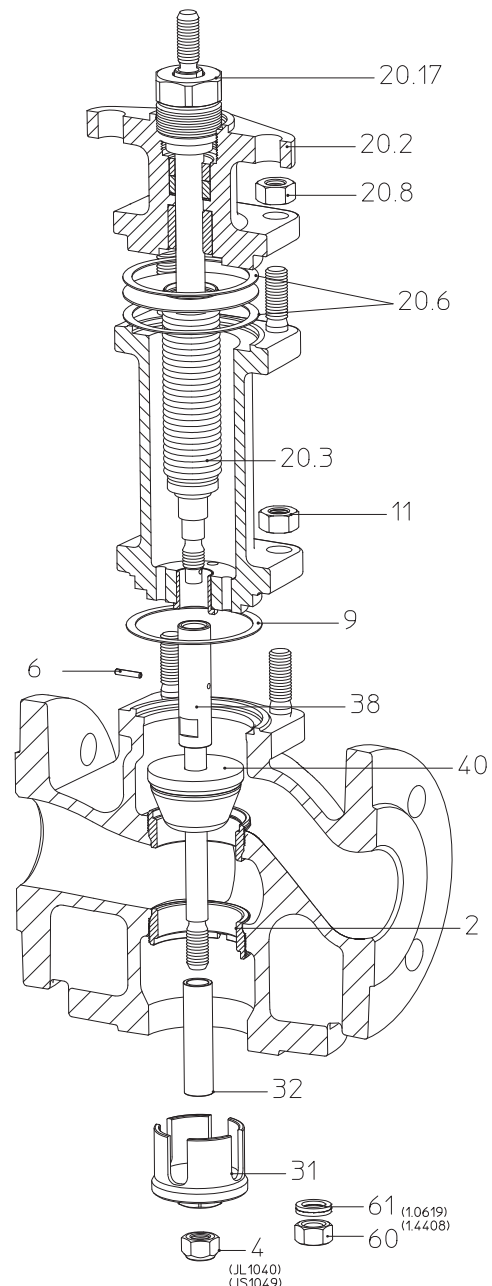


Fig. 20:
Series 451 DN15-150
with diverting plug

DN125v-150v

- Dismantle as item 7.1.4.
- Loose nuts (pos. 11).
- Detach bellows assembly (pos. 20) incl. stuffing box housing (pos. 39).
- Drive pin (pos. 33) out with a drift.
- Unscrew plug (pos. 40) from adapter (pos. 38).
- Loose nuts (pos. 29).
- Detach bellows assembly (pos. 20).
- 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).
- Drive pin (pos. 6) out with a drift.
- Unscrew stem adapter (pos. 38).
- Bolt new parts together, drill and pin them.
- Replace 2 gaskets (pos. 20.6) and each 1 gasket (pos. 27, 9).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)



ATTENTION !

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

- Secure with nuts (pos. 29 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).

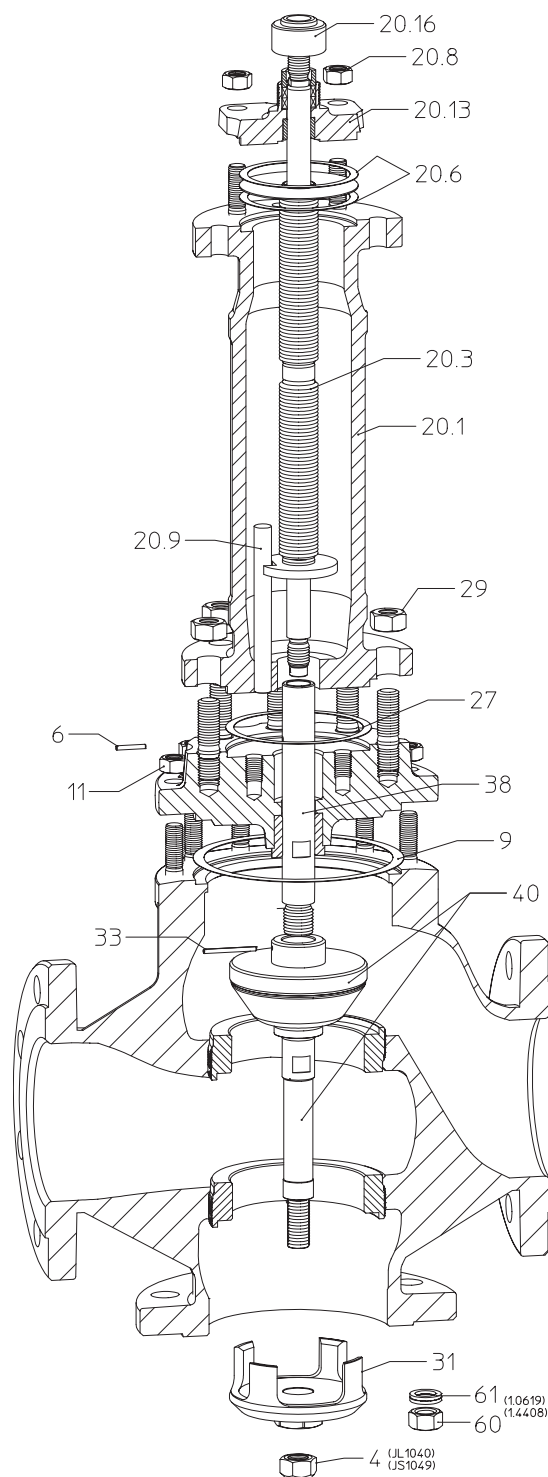


Fig. 21:
Series 451 DN125v-150v
with diverting plug

7.2 Replacement of internal parts



ATTENTION !

Refer to item 10.0 and 11.0 before dismantling the valve.

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

A special wrench is needed to remove the seating (pos. 2). It can be obtained from the manufacturer.

When fitting a new or reconditioned seating, clean thread and sealing taper in body and apply suitable lubricant.

Item 7.1.4 describes how to change the plug and stem in valves with a bellow seal (series 451).

7.2.1 Mixing plug design

DN15-150

- Unscrew seat ring (pos. 2 bottom) and renew or recondition.
- Slacken screw joint (pos. 19 or 42) by about 1 turn.
- Extract and replace plug (pos. 3) and stem (pos. 5).

Note:

DN 125-150: Bolt new parts together, drill and pin them.

- Assemble in reverse order.
(For tightening torques refer to item 7.3.)

The top seat ring can only be replaced in:

DN 125-150 with standard Kvs values

DN 15-150 with multiple reduced Kvs values

- Dismantle seat ring, plug and stem as described above.
- Loose nuts (pos. 11).
- Detach mounting bonnet (pos. 7).
- Unscrew seat ring (pos. 2 top) and renew or recondition.
(For tightening torques refer to item 7.3.)
- Replace gasket (pos. 9).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)
- Secure with nuts (pos. 11) and tighten them crosswise.
(For tightening torques refer to item 7.3.)

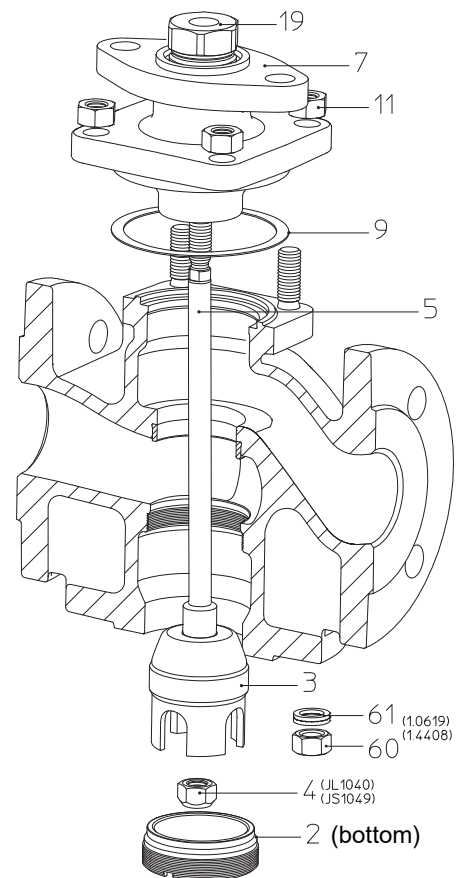


Fig. 22:
Series 450 DN15-150
with mixing plug

DN125v-150v

- Unscrew seat ring (pos. 2 bottom) and renew or recondition.
- Slacken nuts (pos. 24) by about 2-3 turns.
- Extract and replace plug (pos. 3) and stem (pos. 5).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)

Changing the top seat ring:

- Dismantle seat ring, plug and stem as described above.
- Loose nuts (pos. 11).
- Detach stuffing box housing (pos. 39).
- Unscrew seat ring (pos. 2 top) and renew or recondition.
(For tightening torques refer to item 7.3.)
- Replace gasket (pos. 9).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)
- Secure with nuts (pos. 11) and tighten them crosswise.
(For tightening torques refer to item 7.3.)

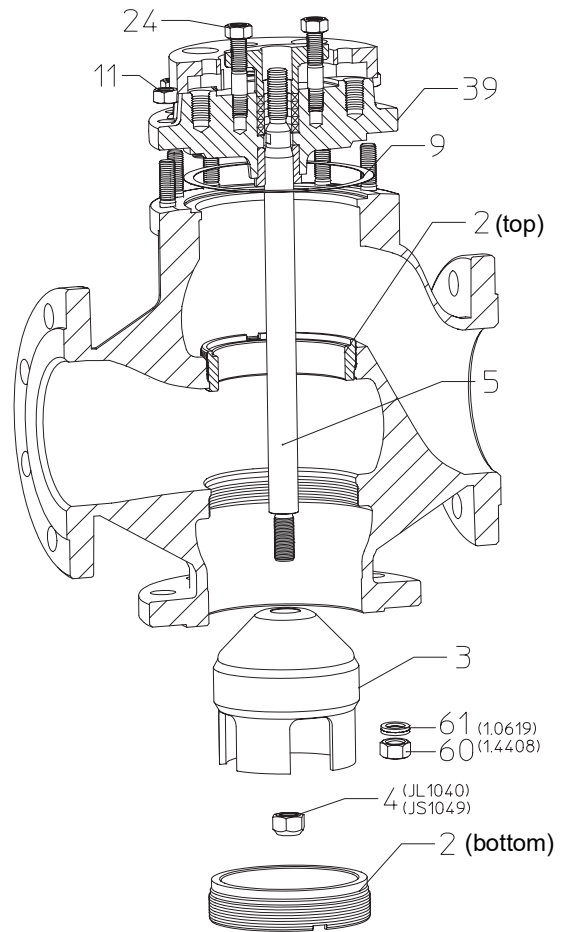


Fig. 23:
Series 450 DN125v-150v
with mixing plug

7.2.2 Diverting plug design

DN40-150

- Slacken screw joint (pos. 19 and 24) by about 1 turn.
- Loose nuts (pos. 11).
- Detach mounting bonnet (pos. 7).
- Loose nut (pos. 4 or pos. 60).
- Pull plug (pos. 31) with distance bush (pos. 32) down.

Note:

There is no distance bush (pos. 32) in DN125-150.

- Pull plug (pos. 40) with stem (pos. 41) up and replace.

Note:

DN125-150: Bolt new parts together, drill and pin them.

- Unscrew seat rings (pos. 2 bottom and top) and renew or recondition.
(For tightening torques refer to item 7.3.)
- Replace gasket (pos. 9).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)
- Secure with nuts (pos. 11) and tighten them crosswise.
(For tightening torques refer to item 7.3.)

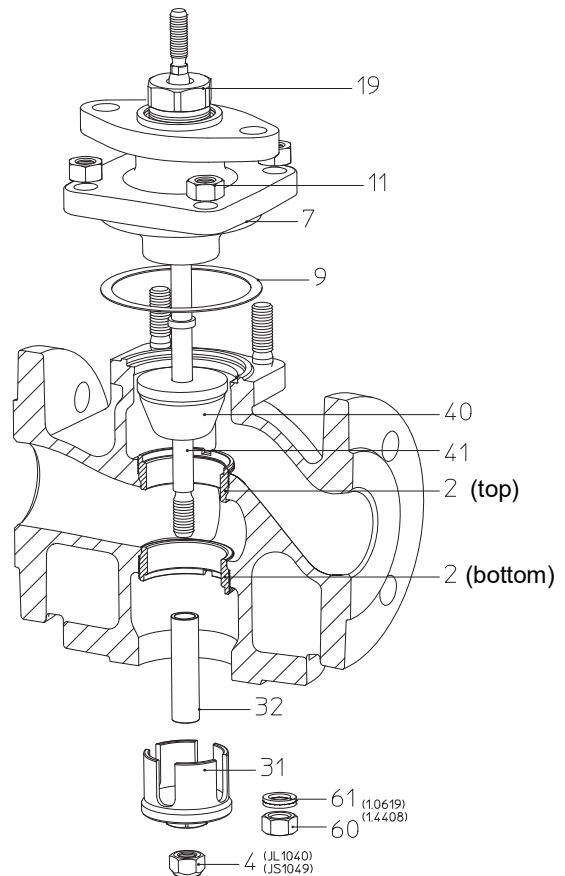


Fig. 24:
Series 450 DN40-150 with diverting
plug Verteilkegel

DN125v-150v

- Loose nuts (pos. 24).
- Loose nuts (pos. 11).
- Detach stuffing box housing (pos. 39).
- Loose nut (pos. 4).
- Pull plug (pos. 31) down.
- Pull plug (pos. 40) with stem (pos. 41) up and replace.
- Bolt new parts together, drill and pin them.
- Unscrew seat rings (pos. 2 bottom and top) and renew or recondition
(For tightening torques refer to item 7.3.)
- Replace gasket (pos. 9).
- Assemble in reverse order.
(For tightening torques refer to item 7.3.)
- Secure with nuts (pos. 11) and tighten them crosswise.
(For tightening torques refer to item 7.3.)

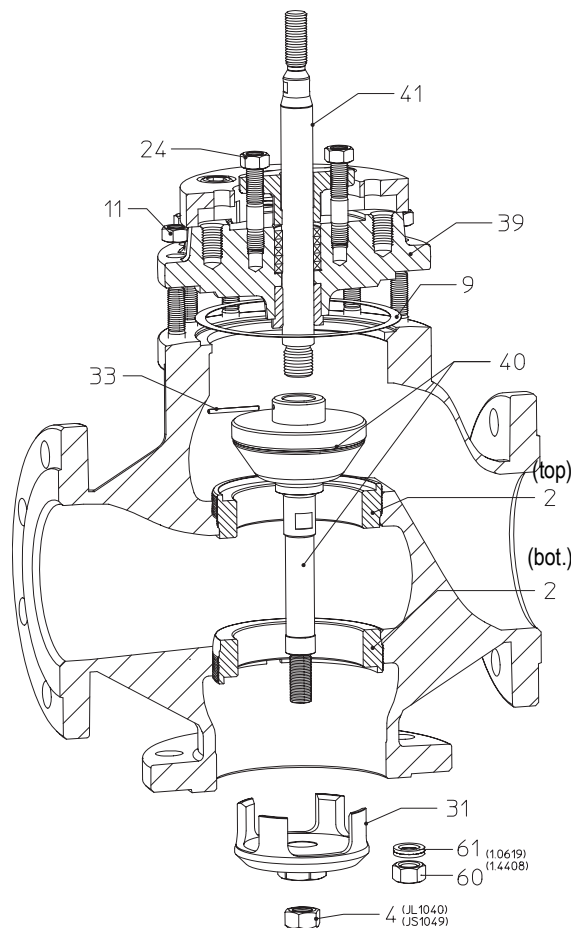


Fig. 25:
Series 450 DN125v-150v with div. plug

7.3 Tightening torques

7.3.1 Tightening torques for hexagon nuts (bonnet)

(Pos. 11, 29, 20.8)

M 10	=	25 - 28 Nm
M 12	=	45 - 48 Nm
M 16	=	110 - 120 Nm
M 20	=	190 - 210 Nm

7.3.2 Tightening torques for hexagon nuts (plug)

(Pos. 4)

M 10	=	50 Nm
M 12	=	85 Nm
M 16	=	180 Nm
M 20 x 1,5	=	360 Nm

(Pos. 60)

M 10	=	35 Nm
M 12	=	60 Nm
M 16	=	140 Nm
M 20 x 1,5	=	270 Nm

7.3.3 Tightening torques for seat rings

(Pos. 2)

DN 15	=	90 Nm
DN 20	=	100 Nm
DN 25	=	110 Nm
DN 32	=	120 Nm
DN 40	=	150 Nm
DN 50	=	180 Nm
DN 65	=	350 Nm
DN 80	=	450 Nm
DN100	=	550 Nm
DN125	=	1000 Nm
DN125v	=	1400 Nm
DN125vv	=	2600 Nm
DN150	=	1200 Nm
DN150v	=	1600 Nm
DN150vv	=	3000 Nm

Refer to operating and installation 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 eliminated 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
	Kvs value of valve unsuitable	Fit valve with higher Kvs value
Stem moves in jerks.	Stuffing box sealing too tight (for valves with graphite packings)	Slacken screw joint (pos. 42/20.17) or hexagon nuts (pos. 24) slightly; valve must not start leaking!
	Valve plug slightly seized owing to solid dirt particles	Clean internals, smooth rough spots.
Stem or plug cannot be moved.	Seating and plug clogged with dirt; especially with V-port and perforated plugs	Clean seating and plug with suitable solvent
	Valve plug seized in seating or guide owing to deposits or dirt in medium	Replace plug and seating; use parts made from different material if necessary
Stem leaking.	PTFE V-ring unit damaged or worn	Replace ring pack; refer to item 7.2
	In valves with packed stuffing boxes tighten screw joint (pos. 42)	Tighten screw joint (pos. 42) or hex. nuts (pos. 24); replace packing if necessary; refer to item 7.1.2
	Bellows defective in valves with bellow seal	Replace bellows unit; refer to item 7.1.4
Leakage too high when valve is closed.	Sealing surfaces of plug eroded or worn	Replace plug; refer to item 7.2
	Sealing edge of seating damages or worn	Replace seating; refer to item 7.2
	Seating and/or plug dirty.	Clean internal parts of the valve
	Pneumatic actuator not completely vented; spring force not fully effective	Vent actuator air chamber completely
	Actuator not powerful enough	Install more powerful actuator; check service data
Stem "hammers".	flow in the closing direction	Compare the plug operation (mixing- or diverting plug) with the application and if necessary exchange the fittings or increase actuator force



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 relevant 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.

Importer to UK and responsible for compilation of the documentation:

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