

Series HV/F, HVR/F

Globe Shut-off or Control Valve bellows sealed



Keep for future use!

This operating manual must be strictly observed before transport, installation, operation and maintenance

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Relevant documents

- ◆ EG-Declaration of conformity
- ◆ Declaration of conformity FDA & 97/48/EG
- ◆ Manufacturer Declaration ATEX Directive 2014/34/EU
- ◆ Manufacturer Declaration TA-Luft
- ◆ Form for Safety Information Concerning the Contamination QM 0912-16-2001_en

1 Technical data

Manufacturer:

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Designation :

Globe shut-off or control valve with safety stuffing box and bellows, Certified to Clean Air Act (TA Luft), as well as interchangeable seat and plug.

Series

HV/F → version with on-off plug

HVR/F → version with control plug

Control characteristics for HVR/F to DIN EN 60534, equal percentage, linear, on-off, rangeability 25:1. V-plug, rangeability 100:1

Certified to Clean Air Act (TA-Luft)

Strength and tightness (P10, P11) of the pressure-bearing body tested to DIN EN 12266-1.

Gas-tight (P12) in the seat to DIN EN 12266-1, leak rate A

Face to face alternatively:

- ◆ DIN EN 558-1 basic series 1, ISO 5752 series 1 with flanges DIN EN 1092-2, type B (ISO 7005-2 type B) PN 16 or flange drilled to ASME B16.5 Class 150.
- ◆ ANSI/ISA-75.08.01 Class 150 with flanges ASME B16.5 Class 150, raised face
- ◆ ANSI/ISA-75.08.01 Class 300 with flanges ASME B16.5 Class 150, raised face

Materials :

Body material: Ductile cast iron EN-JS 1049 to DIN EN 1563 (0.7043 DIN 1693) or ASTM A395

Lining material: PFA .../F
 On request: antistatic .../F-L
 highly permeation-resistant .../F-P

Bellows: PTFE, modified PTFE, Hastelloy

Seat and plug: reinforced modified PTFE at low Cv values also Hastelloy, tantalum

Design pressure :

PN 10 with standard PTFE bellows
 with heavy-duty PTFE bellows with PTFE/carbon support rings
 PN 16 with heavy-duty PTFE bellows with stainless steel support rings
 with Hastelloy C bellows

see pressure-temperature diagram in **Section 1.4**.

Sizes:

DN 15, 20, 25, 40, 50, 65, 80, 100 in mm
 ASME 1/2", 3/4", 1", 1 1/2", 2", 3", 4" in inches, CI 150
 1", 1 1/2", 2" in inches, CI 300 on request

Temperature range :

see pressure-temperature diagram in **Section 1.4**.

Installation position :

The direction of flow is marked by an arrow cast into the body.

See **Section 6.2**.

Dimensions and individual parts :

See **Section 10**.

Weight:

ISO	15	20	25	40	50	65	80	100
ASME	1/2"	3/4"	1"	1 1/2"	2"	---	3"	4"
ca. kg	7	7	12	17	20	22	49	55

Wear parts :

Seat, plug,
bellows

Options :

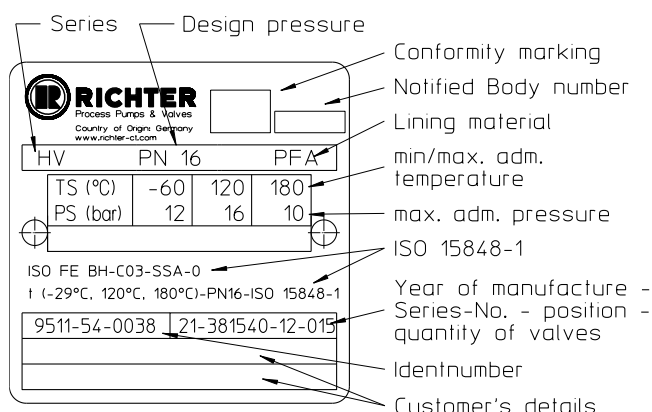
- ◆ Heavy-duty-PTFE-bellows (DN 25-100, 1"- 4")
For permeating media and elevated pressures/temperatures
- ◆ Hastelloy C-bellows
For special applications (e.g. extreme permeation)
- ◆ V-control plug for small Cv values
- ◆ Monitoring connection
For higher safety requirements

1.1 Type plate, conformity and body markings

The stainless steel name plate is firmly riveted to the body.

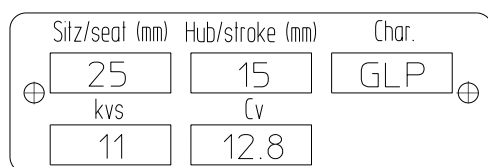
If the operator attaches his identification, it must be ensured that the valve matches the application in question.

Example of name plate with conformity marking:



No conformity marking is permissible for the sizes 15, 20 and 25; the name plate therefore has no conformity marking.

Example: Name plate for control data (HVR/F)



If heavy-duty bellows are installed, another name plate indicates this:

HD - BVA = Heavy-duty bellows with support rings of stainless steel
 HD - BKo = Heavy-duty bellows with support rings of PTFE/carbon

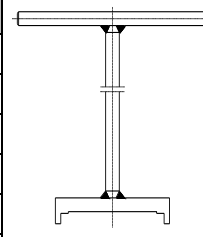
Body identification :

The following are visible on the body according to DIN EN 19 and AD 2000 A4:

- ◆ Nominal size
- ◆ Rated pressure
- ◆ Body material
- ◆ Manufacturer's identification
- ◆ Melt number/Foundry identification
- ◆ Foundry date
- ◆ Arrow for direction of flow

1.2 Screw-in tools for seats

Nominal size		Article No.
[mm]	[inch]	
15, 20	1/2", 3/4"	9568-96-1011
25	1"	9568-96-1001
40	1 1/2"	9568-96-1002
50, 65	2"	9568-96-1003
80	3"	9568-96-1004
100	4"	9568-96-1005



1.3 Tightening torques

All screws greased, tighten in diametrically opposite sequence!

The tightening torques for pipe screws and body screws mentioned must not be exceeded. For an exception, see **Section 8**, Flange connection valve / pipe is leaking.

The following tightening torques are recommended.

Pipe screws, flanges to ISO/DIN

Flange Nominal size [mm]	screws [ISO/DIN]	Tightening torque	
		[Nm]	[in-lbs]
15	4 x M12	6	55
20	4 x M12	8	70
25	4 x M12	10	90
40	4 x M16	20	175
50	4 x M16	26	230
65	4 x M16	40	355
80	8 x M16	25	220
100	8 x M16	35	310

Pipe screws, flanges to ASME Class 150 or flanges ISO/DIN drilled to ASME Class 150

Flange Nominal size		screws [ASME]	Tightening torque	
[mm]	[inch]		[Nm]	[in-lbs]
15	1/2"	4 x 1/2"	5	45
20	3/4"	4 x 1/2"	6	55
25	1"	4 x 1/2"	8	70
40	1 1/2"	4 x 5/8"	15	135
50	2"	4 x 5/8"	25	220
65	--	4 x 5/8"	30	265
80	3"	4 x 5/8"	45	400
100	4"	8 x 5/8"	35	310

Pipe screws, flanges to ASME
Class 300

Flange Nominal size		screws [ASME]	Tightening torque	
[mm]	[inch]		[Nm]	[in-lbs]
25	1	4 x 5/8"	15	133
40	1½	4 x ¾"	25	221
50	2	8 x 5/8"	15	133

Cover screws ISO/DIN

Flange Nominal size		screws [ISO/DIN]	Tightening torque	
[mm]	[inch]		[Nm]	[in-lbs]
15	½"	4 x M10	30	266
20	¾"	4 x M10	30	266
25	1"	4 x M10	50	442
40	1½"	4 x M12	50	442
65	---	4 x M12	50	442
50	2"	4 x M12	50	442
80	3"	8 x M12	50	442
100	4"	8 x M12	50	442

Cover screws ASME

Flange Nominal size		screws [ASME]	Tightening torque	
[mm]	[inch]		[Nm]	[in-lbs]
15	½"	4 x 3/8"	30	266
20	¾"	4 x 3/8"	30	266
25	1"	4 x ½"	50	442
40	1½"	4 x ½"	50	442
50	2"	4 x ½"	50	442
65	---	8 x ½"	50	442
80	3"	8 x ½"	50	442
100	4"	8 x ½"	50	442

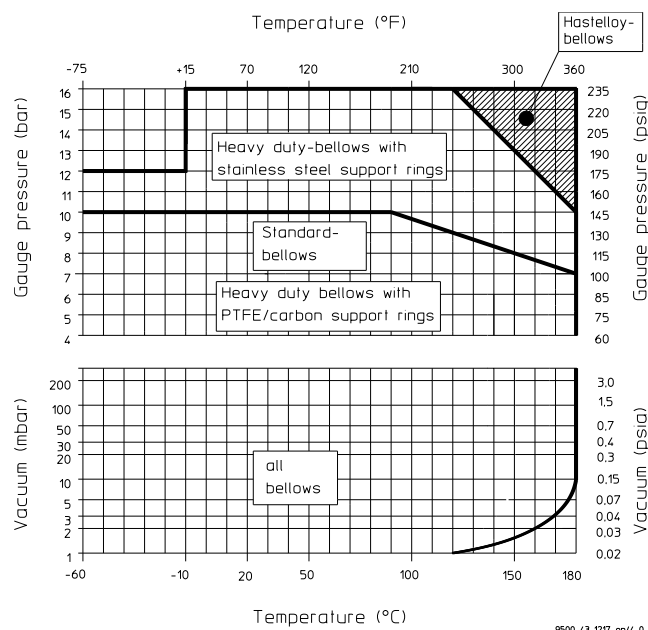
seat

Screws not greased

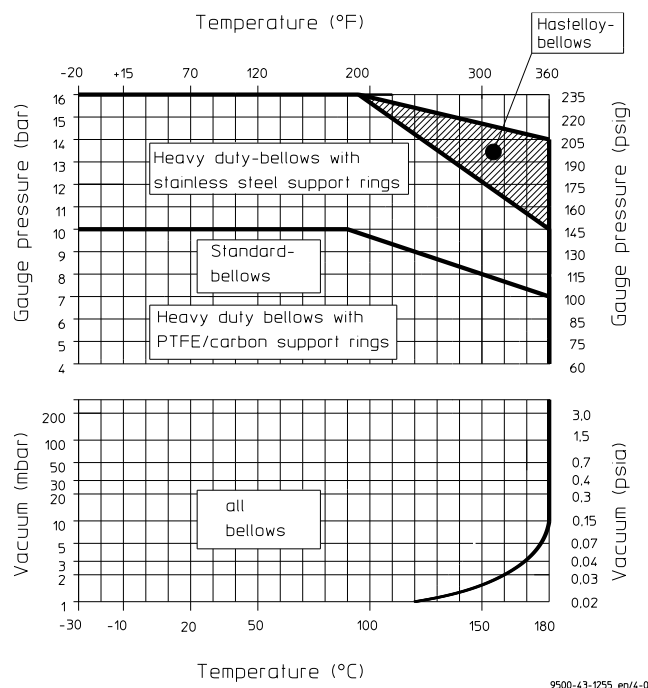
Flange Nominal size		Tightening torque	
[mm]	[inch]	[Nm]	[in-lbs]
15	½"	3	26
20	¾"	3	26
25	1"	6	53
40	1½"	12	106
50	2"	16	142
65	---	16	142
80	3"	28	248
100	4"	30	265

1.4 Pressure-temperature diagram

2014/68/EU (PED), AD2000, DIN EN 16668



ASME B 16.42



DIN EN ISO 15848-1 certificate valid from -29°C to 180°C

When used in the area of application of ASME or ANSI/ISA, the low temperature of ASTM A395 is limited to -20°F (-29°C).



When used in the minus temperature range, the regulations applicable in the country in question must be observed.

1.5 Flow values Kv_{100} (m³/h)

V- and Parabolic plugs

and 1. draw on page

Nominal size		Kv100 Cv	Seat - ø in mm															
[mm]	[inch]		8	8	8	8	8	8	8	8	8	14	14	14	14	14		
15	½"	m3/h USgp m	0.01 0.012	0.02 0.023	0.05 0.06	0.10 0.12	0.20 0.23	0.50 0.58	0.80 0.93	2 2.3								
20	¾"	m3/h USgp m			0.05 0.06	0.10 0.12	0.20 0.23	0.50 0.58	0.80 0.93	2 2.3								
25	1"	m3/h USgp m								2 2.3	0.05 0.06	0.10 0.12	0.20 0.23	0.50 0.58	0.80 0.93			
Nominal size		Kv100 Cv		Seat -ø in mm														
[mm]	[inch]		14	15	20	25	30	40	50	65	80	96						
15	½"	m3/h USgp m		4 4.7														
20	¾"	m3/h USgp m		4 4.7														
25	1"	m3/h USgp m	1.20 1.40	4 4.7														
40	1½"	m3/h USgp m		4 4.7	7 8.2	11 12.8	15 17.5	28 32.6										
50	2"	m3/h USgp m			7 8.2	11 12.8	15 17.5	28 32.6	42 48.9									
65	--	m3/h USgp m			7 8.2	11 12.8	15 17.5	28 32.6	42 48.9									
80	3"	m3/h USgp m					15 17.5	28 32.6	42 48.9	65 75.7	100 117							
100	4"	m3/h USgp m							42 48.9	65 75.7	100 117	155 180						

HV/F with on-off plug

Nominal size		max. Seat ø	kv100	Cv
[mm]	[inch]			
15	½"	15	5	6
20	¾"	20	5	6
25	1"	25	13	15
40	1½"	40	30	35
50	2"	50	45	52
65	--	50	45	52
80	3"	80	111	129
100	4"	96	160	186

Note:

The next lower kv100/Cv value can also be achieved with special plugs without changing the seat ø. This is important if the kv100/Cv value is subsequently changed as only the plug then has to be replaced. Conversion into Cv (US gpm) = kv100 x 1.165.

2 Notes on safety

This operating manual contains fundamental information which is to be observed during installation, operation and maintenance.

It must be read before installation and commissioning!

For valves which are used in potentially explosive areas, see **Section 3**.

Installation and operation are to be performed by qualified staff.

The area of responsibility, authority and supervision of the staff must be regulated by the customer.



General hazard symbol!

People may be put at risk.



Safety symbol! The ball valve and its function may be put at risk if this safety symbol is not observed.

It is imperative to observe warnings and signs attached directly to the ball valve and they are to be kept fully legible.

Non-observance of the notes on safety may result in the loss of any and all claims for damages.

For example, non-observance may involve the following hazards:

- ◆ Failure of important functions of the valve/plant.
- ◆ Risk to people from electric, mechanical and chemical effects.
- ◆ Risk to the environment through leaks of hazardous substances.

2.1 Intended use

Richter globe shut-off or control valves of the series HV/F, HVR/F are pressure containing components in accordance with the Pressure Equipment Directive (PED) for the passage and shut-off of fluids. The valves are suitable for vapours, gases and non-boiling liquids of group 1 according to the PED and have a corrosion-resistant plastic lining.

Sie werden zur Regelung von korrosiven, reinen und hochreinen Flüssigkeiten, Gasen und Dämpfen in Chemie-, Pharma-, Lebensmittel- und industriellen Prozessen eingesetzt.

Solids can lead to increased wear, damage to sealing surfaces or to a reduction in the service life of the valve.

In case of the valve is intended for operating data other than those intended, the customer must carefully examine whether the design of the valve, accessories and materials are suitable for the new application. (Please consult the manufacturer).

2.2 For the customer / operator

When using the valve, it must be ensured that

- ◆ hot or cold valve parts are protected by the customer against being touched
- ◆ the valve has been properly installed in the pipe system
- ◆ the usual flow rates are not exceeded in continuous operation.

This is not the manufacturer's responsibility.

Loads caused by earthquakes were not allowed for in the design.

Fire protection to DIN EN ISO 10497 is not possible (plastic lining and plastic components).

2.3 Improper operation

The operational reliability of the valve supplied is only guaranteed if it is used properly in accordance with **Section 2.1** of this operating manual.



The operation limits specified on the identification plate and in the pressure-temperature diagram must under no circumstances be exceeded.

3 Safety notes for applications in potentially explosive areas based on the Directive 2014/34/ EC (ATEX)

The valves are intended for use in a potentially explosive area and are therefore subject to the conformity assessment procedure of the directive 2014/34/EC (ATEX).

As part of this conformity assessment, an ignition hazard analysis to EN 13463-1 to satisfy the fundamental safety and health requirements was conducted with the following result:

- ♦ **The valves do not have any ignition source of their own.**
- ♦ **The valves are not covered by the scope of application of the ATEX directive and therefore do not need to be identified accordingly.**
- ♦ **The valves may be used in a potentially explosive area.**

It is imperative to observe the individual points of intended use for application in a potentially explosive area.

3.1 Intended use

Inadmissible modes of operation, even for brief periods, may result in serious damage to the unit. In connection with explosion protection, potential sources of ignition (overheating, electrostatic and induced charges, mechanical and electric sparks) may result from these improper operation; their occurrence can only be prevented by adhering to the intended use.

Furthermore, reference is made in this connection to the Directive 95/C332/06 (ATEX 118a) which contains the minimum regulations for improving the occupational health and safety of the workers who may be at risk from an explosive atmosphere.

A difference is made between two cases for the use of chargeable liquids (conductivity $< 10^{-8}$ S/m):

1. Chargeable liquid and non-conductive lining

Charges can occur on the lining surface. As a result, this can produce discharges inside and outside the valve.

a) Discharges inside the valve

However, these discharges inside the valve cannot cause ignitions if the valve is completely filled with medium.

If the valve is not completely filled with medium, e.g. during evacuation and filling, the formation of an explosive atmosphere must be prevented, e.g. by superimposing a layer of nitrogen. It is recommended to wait 1 hour before removing the valve from the plant in order to permit the elimination of static peak charges.

This means that, to safely prevent ignitions, the valve must be completely filled with medium at all times or else a potentially explosive atmosphere must be excluded by superimposing a layer of inert gas.

b) Discharges outside the valve

At the points where the non-conductive lining e.g. protrudes on the sealing surfaces to the outside or gets contact with the atmosphere on the outside, it may lead to discharges from the lining to nearby valves or attachments.

To safely avoid explosion hazards and accidents, therefore, the atmosphere surrounding the valve must not be explosive.

2. Chargeable liquid and conductive lining

No hazardous charges can occur as charges are discharged direct via the lining and shell (surface resistance $< 10^9$ Ohm, leakage resistance $< 10^6$ Ohm).

If non-conductive versions of individual components are installed in the valve, it may restrict the permitted ATEX zone and explosion subgroup when operating the valve despite the conductive lining of the armor plating (see "Technical rules for hazardous substances: Avoidance of ignition hazards due to electrostatic charges" (TRGS 727)). In these cases, consult the manufacturer.

Static discharges of non-conductive linings are only produced through the interaction with a non-conductive medium and are therefore the responsibility of the plant operator.

Static discharges are not sources of ignition which stem from the valves themselves!

- ♦ The temperature of the medium must not exceed the temperature of the corresponding temperature class or the maximum admissible medium temperature as per the operating manual.
- ♦ If the valve is heated (e.g. heating jacket), it must be ensured that the temperature classes prescribed in the Annex are observed.
- ♦ For safe and reliable operation, it must be ensured with regular inspection intervals that the unit is properly serviced and kept in a perfect technical condition.
- ♦ Increased wear to the valve can be expected with the conveyance of liquids containing abrasive constituents. The inspection intervals are to be reduced compared with the usual times.
- ♦ Actuators and electric peripherals, such as temperature, pressure and flow sensors etc., must comply with the valid safety requirements and explosion protection provisions.
- ♦ The valve must be grounded.
This can be achieved in the simplest way via the pipe screws using tooth lock washers.

Otherwise grounding must be ensured by different measures e.g. a cable link.

- ♦ Attachments such as actuators, position controllers, limit switches etc. must satisfy the relevant safety regulations as regards explosion protection

and, if required, be designed in compliance with ATEX.

- ♦ Special attention must be paid to the appropriate safety and explosion protection notes in the respective operating manuals.

- ♦ Plastic-lined valves must not be operated with carbon disulphide.

4 Safety note for valves, certified to Clean Air Act (TA-Luft)

Certificate / Manufacturer Declaration Validity is dependent on the operating instructions being read and observed.

- ♦ Carry out regular maintenance intervals and check the tightness of the screw connections and tighten as necessary.

5 Transport, storage and disposal



It is imperative, for all transport work, to observe generally accepted engineering practice and the accident prevention regulations.



The valve is supplied with flange caps. Do not remove them until just before installation. They protect the plastic surfaces against dirt and mechanical damage.

Handle the goods being transported with care. During transport the valve must be protected against impacts and collisions.

Directly after receipt of the goods, the consignment must be checked for completeness and any in-transit damage.

Do not damage paint protection.

5.1 Storage

If the valve is not installed immediately after delivery, it must be put into proper storage.

It should be stored in a dry, vibration-free and well-ventilated room at as constant a temperature as possible.

Elastomers are to be protected against UV light. In general, a storage period of 10 years should not be exceeded.

5.2 Return consignments



Valves which have conveyed aggressive or toxic media must be well rinsed and cleaned before being returned to the manufacturer's works.

It is **imperative** to enclose a **safety information sheet/general safety certificate** on the field of application with the return consignment.

Pre-printed forms are enclosed with the installation and operating manual.

Safety precautions and decontamination measures are to be mentioned.

5.3 Disposal

Parts of the valve may be contaminated with medium which is detrimental to health and the environment and therefore cleaning is not sufficient.



Risk of personal injury or damage to the environment due to the medium!

- ♦ Wear protective clothing when work is performed on the valve.

6 Installation

- ♦ Examine valve for in-transit damage, damaged globe shut-off or control valves do not install.
- ♦ Before installation the valve and the connecting pipe must be carefully cleaned to remove any dirt, especially hard foreign matter.
- ♦ During installation, pay attention to the correct tightening torque, aligned pipes and tension-free assembly.
- ♦ The all-round gap between the body and the cover must remain constant so that a centric position of the plug in relation to the seat is guaranteed.
- ♦ Operation during maintenance work can be continued with a bypass around the control valve.
- ♦ Depending on the kv-value, the free cross section in the valve may be much smaller than the cross section of the nominal size. To prevent clogging, the pipe must be carefully cleaned upstream of the valve.

6.1 Flange caps and gaskets

- ♦ Contamination of or damage to the sealing surfaces is best avoided if the protective caps remain on the flanges until just before installation. If plastic sealing surfaces, e.g. on mating flanges made of metal or enamel, can be damaged, use PTFE-lined seals with a metal inlay. These gaskets are available as special accessories in the Richter range.

6.2 Direction of flow and installation position

Normally the valve is installed in a horizontal pipe with the handwheel on top. The valve can also be installed vertically facing downwards or at an angle. However, that is only admissible if there is no risk of the bellows becoming contaminated.

Inclined positions of the actuator are only admissible after consultation with the manufacturer. In this case a support structure may have to be provided for the actuator.

- ♦ Prior to the disposal of the valve:
 - Collect any medium, etc. which has escaped and dispose of it in accordance with the local regulations.
 - Neutralise any medium residues in the valve.
- ♦ Separate valve materials (plastics, metals, etc.) and dispose of them in accordance with the local regulations.

The direction of flow is from below against the plug. An arrow on the body indicates the direction of flow.

6.3 Test pressure

The test pressure PT of an open valve must not exceed the value of $1.5 \times \text{PN/PS}$ as per the identification of the valve.

6.4 Grounding

The valve must be grounded.

This can be achieved in the simplest way via the pipe screws using tooth lock washers. One pipe screw per flange is underlaid with toothed disks.

At the customer's request a setscrew M6 with a hex. nut and washer will be provided at each flange as an additional grounding connection.

Otherwise grounding must be ensured by different measures e.g. a cable link.

6.5 Monitoring connection



If the cover flange has a screw-in fitting for an alarm connection, the latter must also be connected or the screw-in fitting has to be sealed. Otherwise, medium could escape if the bellows became defective.

In order to ensure leak monitoring, Richter recommends the combination of the safety stuffing box with a warning connection.

7 Operation

7.1 Initial commissioning

Normally, the globe shut-off valves have been tested for leaks with air or water. Prior to initial operation check cover screws. For tightening torques, see **Section 1.3**.



Unless otherwise agreed there could be residual amounts of water in the flow section of the valve.

This could result in a possible reaction with the medium.

To prevent external leaks, it is possible to retighten all connecting screws after the valve has been subjected to the initial operating pressure and temperature.

For tightening torques, see **Section 1.3**.

7.2 Improper operation and their consequences

- ◆ Crystallisation must be prevented, e.g. by heating. In extreme cases this may cause blocking.
- ◆ Increased wear occurs in operation with solids contents.

8 Malfunctions

- ◆ Flange connection valve/pipe is leaking
Retighten the flange screws to a tightening torque according to **Section 1.3**. If this does not remedy the leak, the recommended torques may be exceeded by 10%.
If this also fails to stop the leak, dismantle and inspect the valve.
- ◆ Flange connection main body/cover is leaking
Retighten the cover screws to a tightening torque according to **Section 1.3**. If this does not remedy the leak, the recommended torques may be exceeded by 10%.
If this also fails to stop the leak, dismantle and inspect the valve.
- ◆ Packing is leaking
Retighten packing nut (DN 15, 20) or hex. nuts of the packing gland follower in line with the details in **Section 1.3**.
Then dismantle the valve as quickly as possible and repair.
Replace bellows.
Replace plug and/or seat.
Replace packing rings.
- ◆ Monitoring connection reports a rise in pressure or a leak
Replace bellows.
Replace plug and/or seat.

- ◆ Operation during cavitation leads to increased wear.
- ◆ Non-observance of the pressure-temperature diagram can lead to damage.
- ◆ If no monitoring is provided by the warning connection, do not tighten safety stuffing box. Otherwise any leak cannot be seen.
- ◆ Do not subject the handwheel to heavy loads; the lever or valve may be damaged.

7.3 Shutdown

The local regulations are to be observed when dismantling the valve.

Prior to undoing the flange connection ensure, that the plant is depressurised and emptied.

Prior to starting any repair work, the valve is to be thoroughly cleaned. Medium residue may be in the valve even if it has been properly drained and flushed.

After dismantling, immediately protect the valve flanges against mechanical damage by using flange caps. See also **Section 6.1**.

Replace packing rings.

- ◆ Valve can only be moved with difficulty.
Is the stuffing box tightened too much?
- ◆ Valve does not close tight
Are there any solids between seat and plug?
Are the sealing surfaces of the seat or plug damaged?
- ◆ The flow rate is too high or too low.
- ◆ The performance curve is not correct.
- ◆ The valve cavitates.
Do the rated data according to the data sheet or works certificate match the data of the plant?
Are the correct seat and plug installed? See markings on the seat and plug and compare them with the name plate and the data sheet.

9 Maintenance

- ♦ All repair work is to be performed by qualified personnel using the appropriate tools. Generally recognised practice in mechanical engineering is to be observed.
- ♦ For the arrangement, designation and item numbers of all parts of the valve, see **Section 10**.
- ♦ Spare parts are to be ordered with all the details in acc. with the valve identification.
- ♦ Only original spare parts may be installed.
- ♦ To prevent leaks, a regular check of the connection screws make in line with the operating requirements.
- For tightening torques, see **Section 1.3**.
- ♦ The maintenance staff can decide whether the valve is dismantled from the pipe or not for maintenance work. In both cases **Section 7.3** is to be observed.

9.1 Dismantling

9.1.1 Maintenance of the upper section

This mainly involves the following work:

- ♦ Replacing the plug **204**.
- ♦ Replacing the bellows **206**.
- ♦ Inspecting the metal parts of the upper section and replacing them if necessary.

The entire dismantling and assembly procedure is described below. If only partial assembly is required, this can be derived from the text.

9.1.2 Dismantling plug

- ♦ Move plug **204** into the open position.
- ♦ Remove cover screw fittings **901/1**, **1x936/1**, **1x936/2** and **920/2** (DN 100 (4") **902/2**, **1x936/1**, **1x936/2**, **920/1** and **920/2**).
- ♦ Pull upper part vertically out of the body **100**.
- ♦ Undo bellows **206** with plug **204** by hand or use a strap wrench. Right-hand thread.
- ♦ With the heavy-duty bellows do not remove the support rings **231** and the support disc **232**.
- ♦ Pull round cord **522** out of the plug **204** with a pair of pliers.
- ♦ Unscrew plug **204** by hand or with a strap wrench. Right-hand thread.
- ♦ Check whether the seat is still OK.
- ♦ If not: **Replace**. See **Section 9.2.2**.

9.1.3 Replace packing rings.

- ♦ Only replace packing rings **402/1** and thrust ring **405** when necessary.
- ♦ Dismantling and assembly are described in the following, once the upper part has already been pulled out of the body.

DN 15 and DN 20 ($\frac{1}{2}$ " - $\frac{3}{4}$ ")

- ♦ Remove spring-type slotted pin **939/3**.
- ♦ Unscrew handwheel **210**.
- ♦ Unscrew packing nut **404**.

- ♦ Remove thrust ring **405/1**.
- ♦ Turn spindle **802** with guide **801** and, when thread is free, pull downwards.
- ♦ Replace packing rings **402/1**.
- ♦ Insert thrust ring **405/1** and packing nut **404**.
- ♦ Push spindle **802** with guide **801** upwards. Make sure that the round head rivet **565/1** lies in the groove of the cover **106**. Then screw spindle/guide into the cover.
- ♦ Tighten packing nut **404** slightly.
- ♦ Screw on handwheel **210**.
- ♦ Force in spring-type slotted pin **939/3**.

DN 25 - DN 65 (1" - $2\frac{1}{2}$ ")

- ♦ Remove locknut **520**.
- ♦ Unscrew handwheel hub **230** with handwheel **210**. The plain bearings **300/1**, **300/2** may fall out of the cover **106**.
- ♦ Undo stuffing box screw fittings **902/1**, **920/1**, **554/1**.
- ♦ Force out spring-type slotted pin **939/1**.
- ♦ Pull out stem **855** downwards.
- ♦ Remove lower plain bearing **300/2**.
- ♦ Remove packing gland follower **503** and thrust ring **405/1**.
- ♦ Replace packing rings **402/1**.
- ♦ Insert thrust ring **405/1** and packing gland follower **503**.
- ♦ Before pushing up the stem, push plain bearing **300/2** and ring **500/1** over the stem.
- ♦ Push up stem **855** and force in spring-type slotted pin **939/1**.
- ♦ Tighten packing gland follower **503** slightly.
- ♦ Screw handwheel hub **230** with handwheel **210** into the plain bearings.
- ♦ Open the valve completely by turning the handwheel counter-clockwise.
- ♦ Secure with locknut **520**.
Torque: 442.5 lb-in (50 Nm)

DN 80 and DN 100 (3" and 4")

- ♦ Unscrew groove nuts **509/1** off the handwheel hub **230**.
- ♦ Now continue as described under DN 25 - DN 65.

9.2 Assembly

9.2.1 Installing plug

- ◆ Screw bellows **206** without lubricant onto the stem **855** and tighten by hand.
- ◆ Check whether the new plug **204** fits into the seat **205**. Make sure that neither the seat nor the plug is damaged.
- ◆ Screw plug **204** or cap **207** with plug **204** without lubricant on the bellows and tighten by hand.
- ◆ Press round cord **522** down to 10 mm into the plug or cap. This facilitates the next dismantling operation.

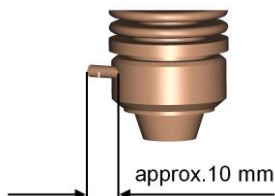


Fig. 3

- ◆ Install stem **855** with bellows **206** and plug **204** without lubricant into the cover **106**.
- ◆ Carefully lower upper section into the body.
- ◆ Install cover screw fittings. For tightening torques, see [Section 1.3](#).

9.2.2 Replacing seat

- ◆ The seat is marked with:

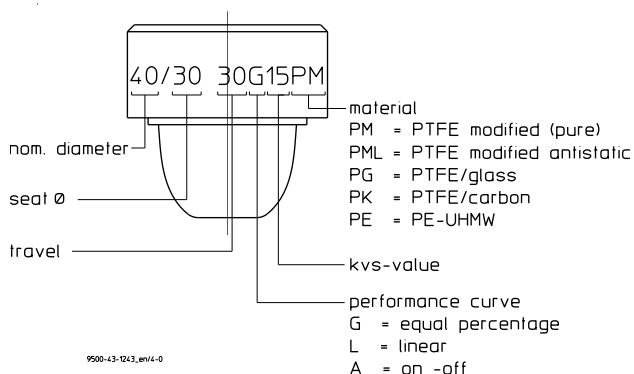


Fig. 1

- ◆ The plug is marked with:

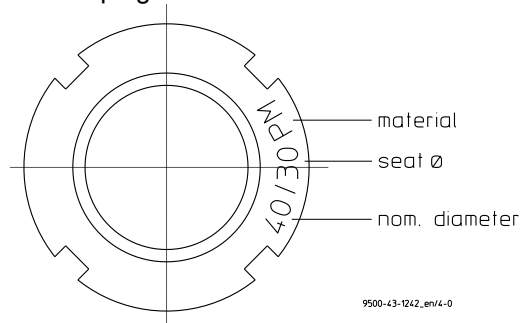


Fig. 2

- ◆ A screw-in tool is required for assembling and dismantling the seat **205**. The article numbers for the individual nominal sizes are listed in [Section 1.2](#).
- ◆ The new seat is to be carefully protected prior to assembly. The sealing edge and the sealing surface for the plug must not be damaged.

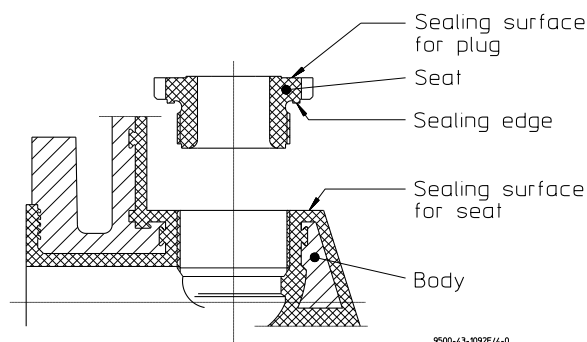


Fig. 4

- ◆ Remove the upper part of the valve as described in [Section 9.1.1](#).
- ◆ Screw the seat **205** out of the body with the Richter screw-in tool. Right-hand thread.
- ◆ Carefully clean the sealing surface in the body **100** and check for damage.
- ◆ If there is any damage, you can try to rework the sealing surface.
- ◆ Screw the new seat **205** without lubricant into the body using the Richter screw-in tool. For tightening torques, see [Section 1.3](#).
- ◆ Further assembly as described in [Section 9.2.1](#).

10 Drawings

10.1 Legend DN 15, 20

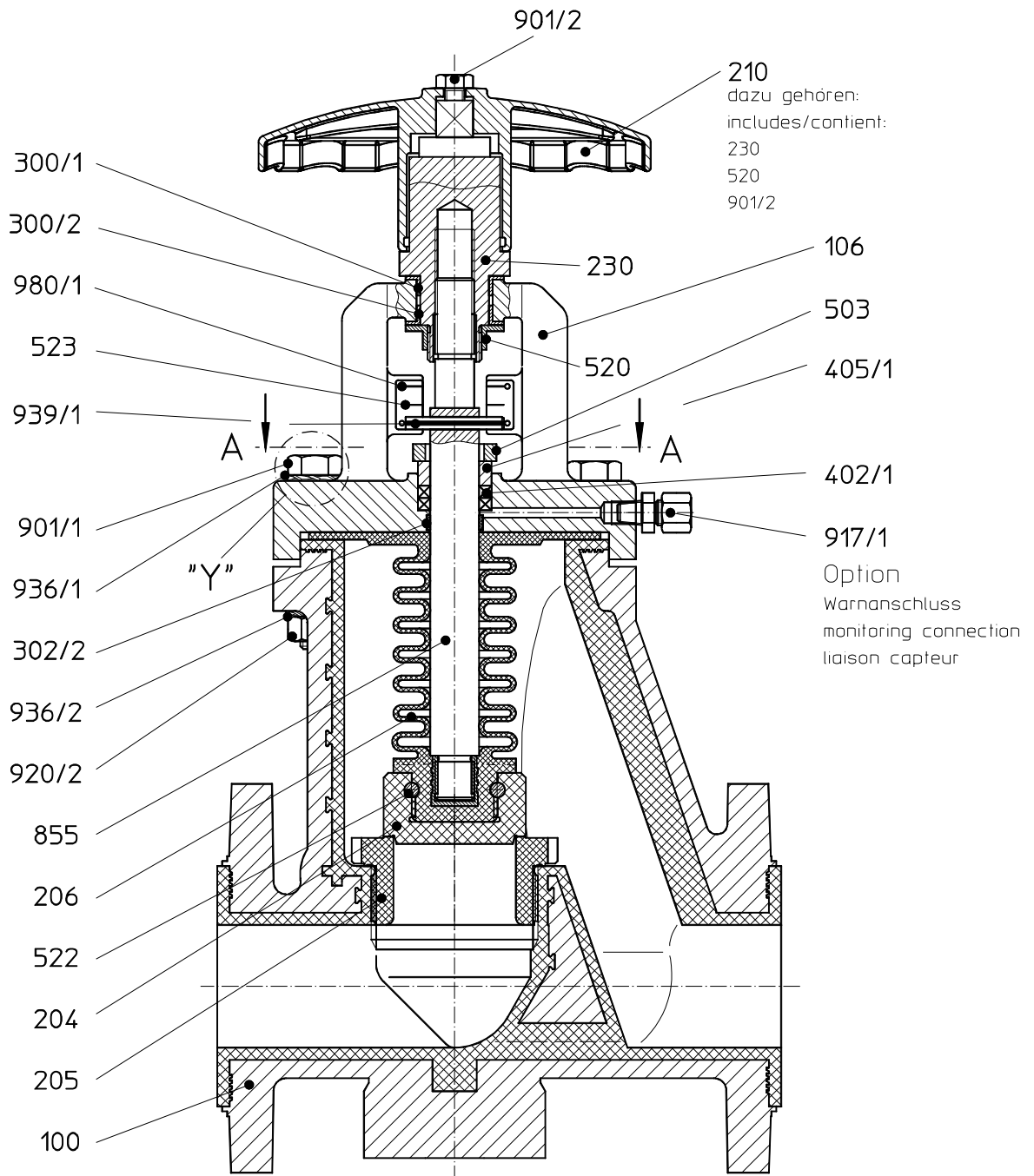
100	Body	405/2	Thrust ring
106	Cover	522	round cord
204	plug	565/1	Round head rivets
205	Seat	801	guide ring
206	Bellows	802	Spindle
210	Handwheel	901/1	Hex. screw
241/1	cylinder roller	917/1	screw-in pipe connector
402/2	Packing ring	920/2	hex. nut
404	Packing nut	936/x	Tooth lock washer
		939/3	Spring-type pin

10.2 Legend DN 25-100

100	Body	300/x	plain bearing
106	Cover	302/2	Guide ring
204	plug	402/1	Packing ring
205	Seat	405/1	Thrust ring
206	Bellows	503	Spring gland follower
206	heavy-duty bellows	522	round cord
	includes:	523	Stroke index
231	support ring	554/1	Washer
232	support disc	855	Stem
	(not for DN 80, 100, 3", 4")	901/1	Hex. screw
210	handwheel (DN25-65)	902/x	stud screw
	includes:	917/1	screw-in pipe connector
230	Handwheel hub	920/x	Hex. nut
520	locknut	936/x	Tooth lock washer
901/2	hex. screw	939/x	spring-type pin
		980/1	round head grooved pin
210	Handwheel (DN80-100)		
	includes:		
230	Handwheel hub		
500/1	ring		
509/1	Groove nut		
901/2	hex. screw		

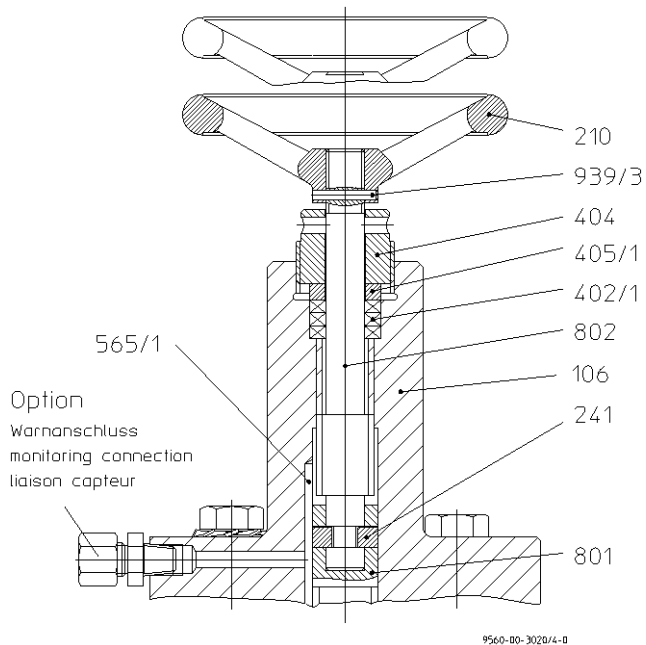
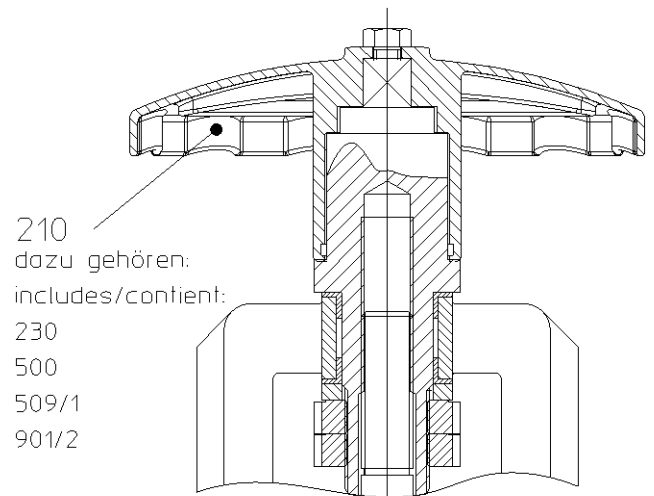
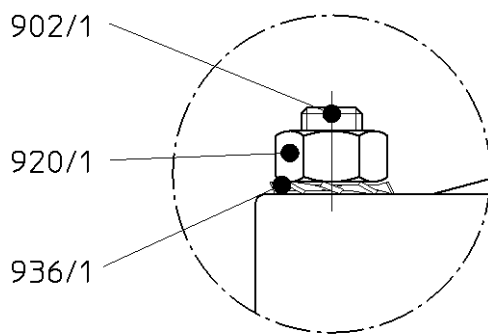
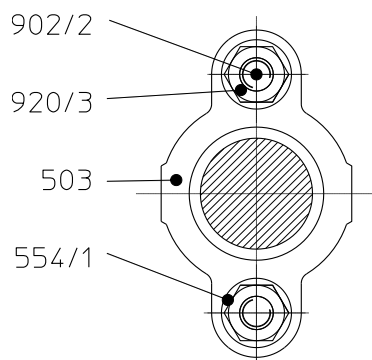
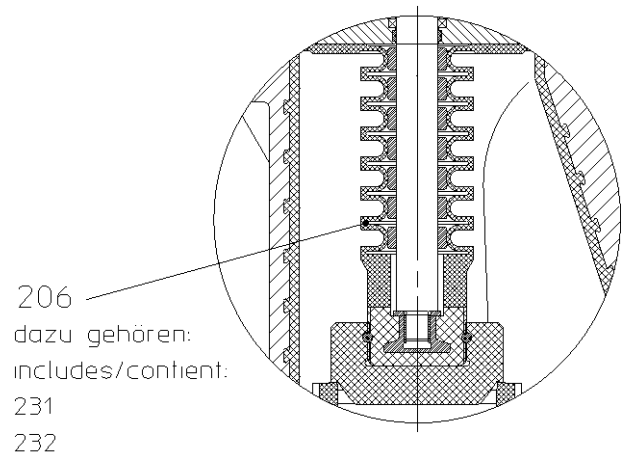
10.3 Sectional drawing HV/F, HVR/F, with standard bellows

DN 25 - DN 65



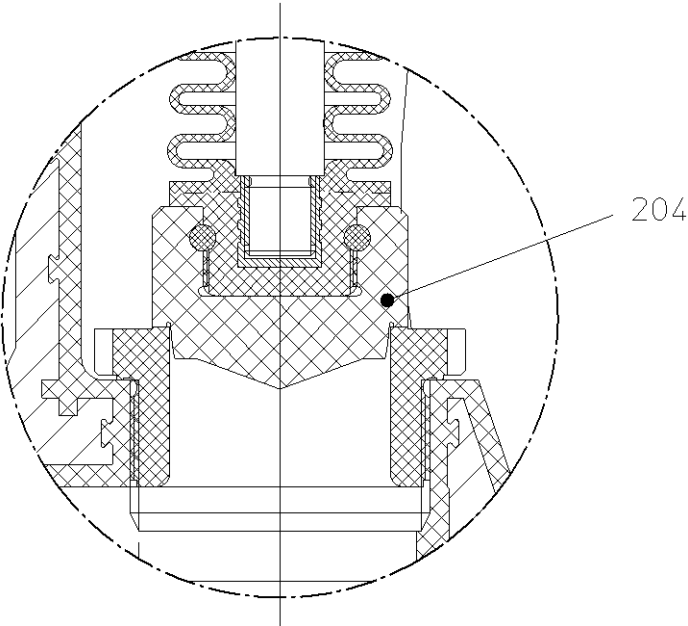
9560-00-3020/4-0

10.4 Section, views and options

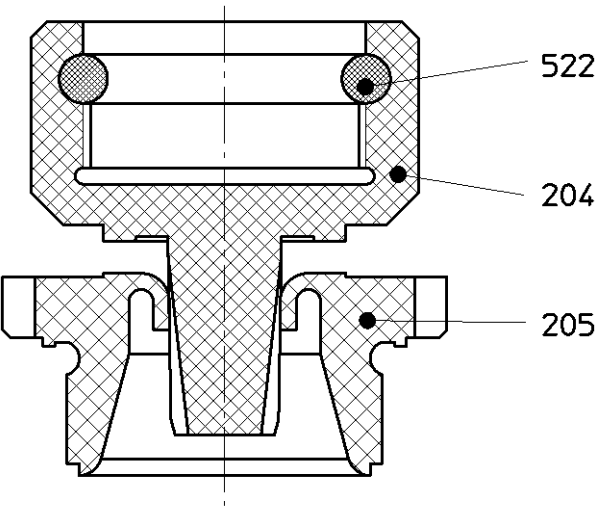
DN15, DN 20**DN 80, DN 100****"Y"
DN100****section A - A****Option
heavy-duty bellows**

10.5 HVR/F Control plug

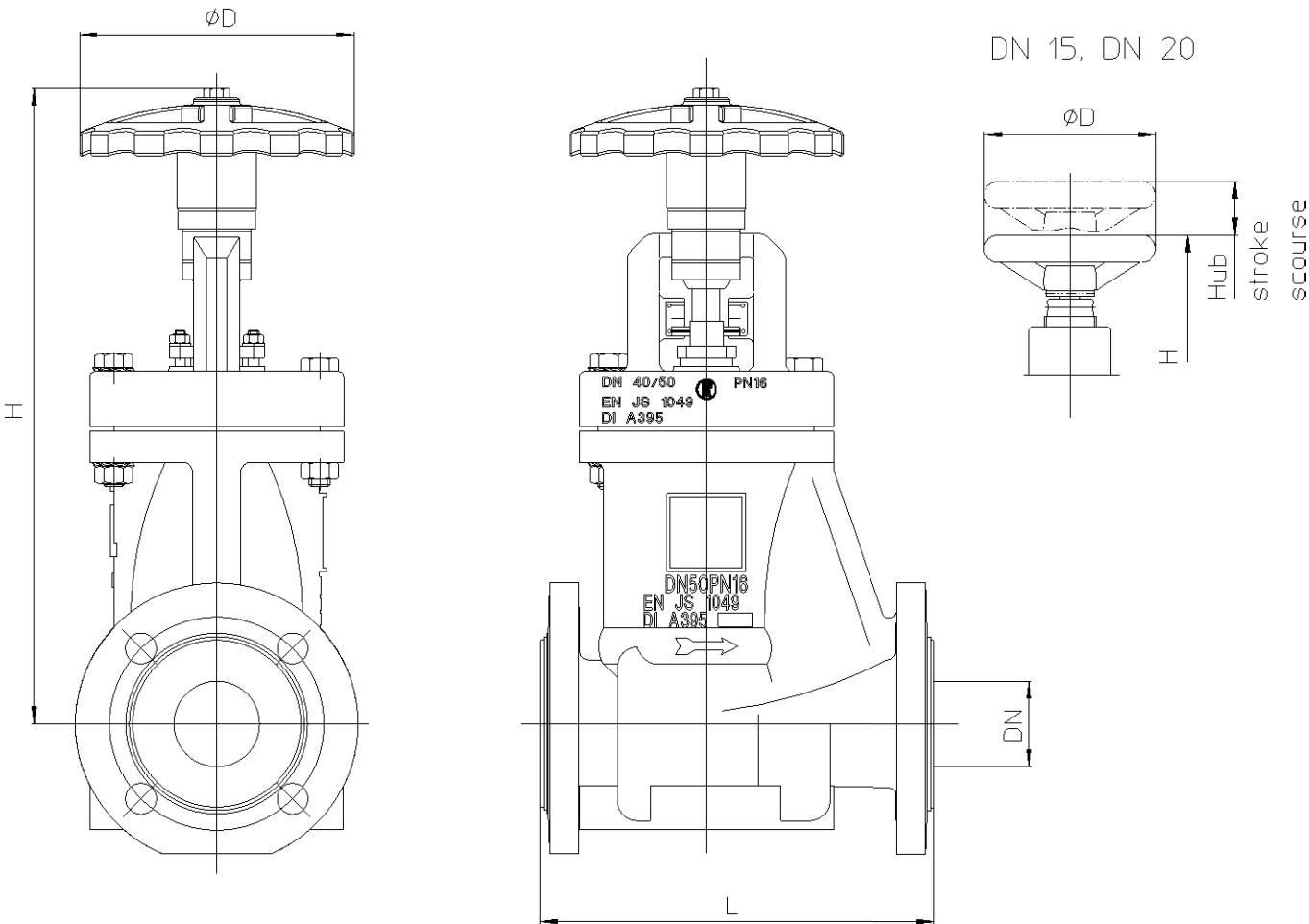
Control plug



Control-V-plug



10.6 Dimensional drawing



DN				EN 558 Reihe 1				ANSI/ISA-75.08.01 class 150	
		$\varnothing D$		H		L		L	
[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
15	½"			130	5.12	130	5.12 *	130 *	5.12 *
20	¾"			130	5.12	130	5.12 *	130 *	5.12 *
25	1"	95	3.74	185	7.28	160	6.30	184	7.24
40	1 ½"	160	6.30	225	8.86	200	7.87	222	8.70
50	2"	160	6.30	230	9.05	230	9.05	254	10.00
65	2 ½"	190	7.48	230	9.05	290	11.42	**	**
80	3"	230	9.05	340	13.35	310	12.20	298	11.73
100	4"	350	13.78	350	13.78	350	13.78	350 *	13.78 *

* not to ANSI/ISA

** not available

 Konformitätserklärung nach EN ISO/IEC 17050
Declaration of Conformity according to EN ISO/IEC 17050

Produkt <i>Product</i>	Kunststoffausgekleidete Regelarmaturen <i>Plastic lined control valves</i>
Bauart <i>Design</i>	Absperr- oder Regelventil, Faltenbalg-Stellventil <i>Globe shut-off or control valve, bellows control valve</i>
Baureihe <i>Series</i>	HV, HVR, RSS
Nennweite <i>Size</i>	DN 15 bis DN 150, ½" bis 6" <i>DN 15 to DN 150, ½" to 6"</i>
Seriennummer <i>Series number</i>	ab/from 01.09.2024
EU-Richtlinie <i>EU-Directive</i>	2014/68/EU Druckgeräterichtlinie 2006/42/EG ²⁾ Maschinenrichtlinie Anhang II, Nr. 1A 2014/68/EU <i>Pressure Equipment</i> 2006/42/EC ²⁾ <i>Directive Machinery Annex II, No. 1A</i>
Angewandte Technische Spezifikation <i>Applied Technical Specification</i>	DIN EN 16668, AD2000 DIN EN ISO 12100
Überwachungsverfahren <i>Surveillance Procedure</i>	2014/68/EU Zertifizierungsstelle für Druckgeräte der TÜV Nord Systems GmbH & Co. KG Große Bahnstraße 31 D-22525 Hamburg Notified Body 0045
Konformitätsbewertungs- verfahren 2014/68/EU <i>Conformity assessment procedure 2014/68/EU</i>	Modul H Zertifikats Nr. 0045/202/1411/Z/00470/22/D/001(00)
Kennzeichnung <i>Marking</i>	2014/68/EU ¹⁾ ≥ DN 32, ≥ 1" 2006/42/EG 2006/42/EC

CE 0045
CE

Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass die o.a. Baureihen die grundsätzlichen Anforderungen der aufgeführten Richtlinien und Normen erfüllen.
Richter Chemie-Technik GmbH confirms that the basic requirements of the above-specified directives and standards have been fulfilled.

¹⁾ Für nicht aufgeführte Nennweiten ist eine Kennzeichnung nicht zulässig.
For sizes not listed a marking is not permitted.

²⁾ Armaturen mit freiem Wellenende, vorbereitet für Antrieb oder mit Antrieb und Zubehör. Ausgenommen sind handbetätigte Armaturen.
Valves with a bare shaft, prepared for actuator or with actuator and accessories. Excluded are manually actuated valves.

Kempen, 01.09.2024


Christian Muders
Director Global Engineering


Manuel Müller
Quality Manager



Konformitätserklärung
Declaration of Conformity

In Übereinstimmung mit den Leitlinien der britischen Regierung
in accordance with UK government guidance

Produkt <i>Product</i>	Kunststoffausgekleidete Regelarmaturen <i>Plastic lined globe control valves</i>
Bauart <i>Design</i>	Absperr- oder Regelventil, Faltenbalg-Stellventil <i>Globe shut-off or control valve, bellows control valve</i>
Baureihe <i>Serie</i>	HV, HVR, RSS
Nennweite <i>Size</i>	DN 15 bis DN 150, ½" bis 6" <i>DN 15 to DN 150, ½" to 6"</i>
Seriennummer <i>Series number</i>	ab/from 01.09.2024
UK Gesetzliche Vorschriften <i>UK Statutory instruments</i>	2016 No. 1105 Druckgeräteverordnung 2016 2008 No. 1597 ¹⁾ Maschinenverordnung 2008 2016 No. 1105 The Pressure Equipment Regulations 2016 2008 No. 1597 ¹⁾ The Supply of Machinery Regulations 2008
Angewandte Technische Spezifikation <i>Applied Technical Specification</i>	DIN EN ISO 12100 DIN EN 16668, EN 13445
Überwachungsverfahren <i>Surveillance Procedure</i>	2016 No. 1105, 2008 No. 1597 Conformity Assessment Durchgeführt gemäß dem bestehenden PED-Modul H-Zertifikat im Rahmen der Erleichterungen der britischen Regierung vom Juni 2022. Applied according to existing PED Module H certificate under the UK government June 2022 easements.
Konformitätsbewertungs- verfahren 2014/68/EU <i>Conformity assessment procedure 2014/68/EU</i>	Modul H Zertifikats Nr. 0045/202/1411/Z/00771/19/D/001(00), TÜV Nord CE 0045 Module H Certificate no. 0045/202/1411/Z/00771/19/D/001(00), TÜV Nord CE 0045
Kennzeichnung <i>Marking</i>	2016 No. 1105, 2008 No. 1597 ¹⁾ 2016 No. 1105, 2008 No. 1597 ¹⁾



Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass die o.a. Baureihen die grundsätzlichen Anforderungen der aufgeführten Richtlinien und Normen erfüllen. Diese Erklärung wird unter der alleinigen Verantwortung des Herstellers abgegeben.
Richter Chemie-Technik GmbH confirms that the basic requirements of the above specified directives and standards have been fulfilled. This declaration is issued under the sole responsibility of the manufacturer.

¹⁾ Armaturen mit freiem Wellenende, vorbereitet für Antrieb oder mit Antrieb und Zubehör. Ausgenommen sind handbetätigte Armaturen.
Valves with a bare shaft, prepared for actuator or with actuator and accessories. Excluded are manually actuated valves.

Kempen, 01.09.2024



Christian Muders
Director Global Engineering



Manuel Müller
Quality Manager

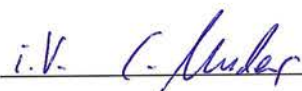
Konformitätserklärung FDA & 2014/68/EU
Declaration of Conformity

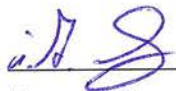
Produkt <i>Product</i>	PFA ausgekleidete Regelarmaturen <i>PFA control valves</i>
Bauarten <i>Design</i>	Absperr- oder Regelventil, Faltenbalg-Stellventil <i>Globe shut-off or control valve, bellows control valve</i>
Baureihen <i>Series</i>	HV, HVR, RSS
Richtlinie <i>Directive</i>	FDA Regulation 21 CFR §177.15 50 2014/68/EU, EU Nr. 10/2011, EU Nr. 1935/2004, 84/500/EWG, 2005/31/EG
Mediumberührte Werkstoffe <i>Materials of media-wetted parts</i>	PFA PTFE Mod. PTFE

Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass in medium berührten Teilen der o.a. Baureihen Materialien verwendet wurden, welche die Vorschriften der FDA Regulation 21 CFR §177.15 50, die Verordnungen 2014/68/EU, EU Nr. 10/2011, EU Nr. 1935/2004, 84/500/EWG und 2005/31/EG erfüllen bzw. dafür die allgemeinen Unbedenklichkeitsbescheinigungen des Herstellers/Lieferanten oder Prüflabors vorliegen. Entsprechende Einzelnachweise sind vorhanden.

The company, Richter Chemie-Technik GmbH, herewith certifies that in medium-wetted parts of the above-mentioned series materials were used which satisfy the provisions of the FDA Regulation 21 CFR §177.15 50 and Directives 2014/68/EU, EU no. 10/2011, EU Nr. 1935/2004, 84/500/EWG and 2005/31/EG or for which general compliance certificates of the manufacturer/supplier/test laboratory are available. Relevant *individual proof can be provided*.

Kempen, 01.09.2024


Christian Muders
Director Global Engineering


Manuel Müller
Quality Manager

Herstellererklärung ATEX
Richtlinie 2014/34/EU
Manufacturer's Declaration ATEX
Directive 2014/34/EU

Alle Richter Armaturen inkl. Absperr-, Regel- und Sicherheitsventile
All Richter Valves incl. Shut-off, Control and Safety Valves

Die oben bezeichneten Armaturen wurden einer Risikoanalyse nach der Richtlinie 2014/34/EU mit folgendem Ergebnis unterzogen:

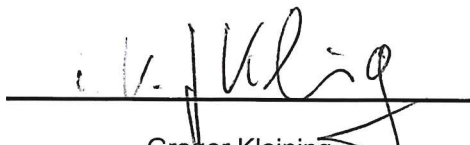
The valves specified above underwent a risk analysis according to Directive 2014/34/EU with the following result:

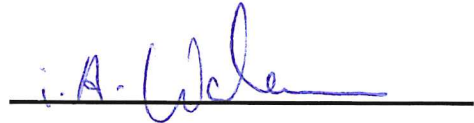
- **Richter Armaturen besitzen keine eigenen potentiellen Zündquellen. Die Armaturen können sowohl manuell als auch mechanisch/elektrisch angetrieben werden.**
Die Armaturen fallen nicht in den Anwendungsbereich der ATEX-Richtlinie 2014/34/EU und dürfen deshalb auch nicht danach gekennzeichnet werden.
Richter valves do not have their own potential sources of ignition. The valves can be actuated manually as well as mechanically/electrically.
ATEX Directive 2014/34/EU is not applicable to these valves. Therefore, it is not allowed to mark the valves according to that Directive.
- **Die Armaturen dürfen in explosionsgefährdeten Bereichen eingesetzt werden.**
The valves can be used in potentially explosive atmospheres.
- **Dennoch müssen für den Armatureneinsatz in explosionsgefährdeten Bereichen Sicherheitshinweise bzgl. des Explosionsschutzes beachtet werden. Richter hat hierzu die Betriebsanleitungen um den Zusatz „Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen in Anlehnung an die Richtlinie 2014/34/EU“ erweitert.**
However, when using the valves in potentially explosive atmospheres, specific safety notes on explosion protection must be observed. Here, Richter has extended their operating manuals to include the supplement „Safety notes for applications in potentially explosive atmospheres based on Directive 2014/34/EU“.

Ergänzender Hinweis: *Supplementary note:*

- **Elektrische/mechanische Antriebe müssen einer eigenen Konformitätsbewertung nach ATEX unterzogen werden.**
Electric/mechanical actuators must undergo a separate conformity assessment.

Kempen, 01.09.2021


Gregor Kleining
Director Global Engineering


Ivo Watermann
ATEX Beauftragter

Herstellereklärung / Manufacturer's Declaration

TA-Luft / German Clean Air Act

Richter Stellventil / Richter Control Valve

Hiermit erklären wir, dass die Stellventile der Baureihen
Hereby we declare, that the Control Valves of the series

RSS, HV

die Anforderung der Leckagerate $L_B (\leq 10^{-4} \text{ mg/s}\cdot\text{m})$ gemäß Ziffer 5.2.6.4 der Technischen Anleitung zur Reinhaltung der Luft (TA-Luft) von 2021 erfüllen.

Grundlage sind die Prüfungen sowie deren Bewertung und Qualifikation nach DIN EN ISO 15848-1 vom TÜV Süd Industrie Service GmbH.

Voraussetzung für die Gültigkeit der Herstellereklärung ist das Beachten und Einhalten der Betriebsanleitung.

meet the requirement of the leakage rate $L_B (\leq 10^{-4} \text{ mg/s}\cdot\text{m})$ according to clause 5.2.6.4 of German Clean Air Act (TA-Luft) of 2021.

This is based on the tests as well as their evaluation and qualification according to DIN EN ISO 15848-1 by TÜV Süd Industrie Service GmbH.

A prerequisite for the validity of the manufacturer's declaration is that the operating instruction manuals are observed and complied with.

Kempen, 01.09.2024



Christian Muders
Director Global Engineering



Manuel Müller
Quality Manager

08.01.2015

Declaration of no objection

Dear Sirs,

The compliance with laws for the industrial safety obligates all commercial enterprises to protect their employees and/or humans and environment against harmful effects while handling dangerous materials.

The laws are such as: the Health and Safety at Work Act (ArbStättV), the Ordinance on Harzadous Substances (GefStoffV, BIOSTOFFV), the procedures for the prevention of accidents as well as regulations to environmental protection, e.g. the Waste Management Law (AbfG) and the Water Resources Act (WHG)

An inspection/repair of Richter products and parts will only take place, if the attached explanation is filled out correctly and completely by authorized and qualified technical personnel and is available.

In principle, radioactively loaded devices sent in, are not accepted.

Despite careful draining and cleaning of the devices, safety precautions should be necessary however, the essential information must be given.

The enclosed declaration of no objection is part of the inspection/repair order. Even if this certificate is available, we reserve the right to reject the acceptance of this order for other reasons.

Best regards
RICHTER CHEMIE-TECHNIK GMBH

Safety Information / Declaration of No Objection Concerning the Contamination of Richter-Pumps, -Valves and Components

1 SCOPE AND PURPOSE

Each entrepreneur (operator) carries the responsibility for the health and safety of his employees. This extends also to the personnel, who implements repairs with the operator or with the contractor.

Enclosed declaration is for the information of the contractor concerning the possible contamination of the pumps, valves and component sent in for repair. On the basis of this information for the contractor is it possible to meet the necessary preventive action during the execution of the repair.

Note: The same regulations apply to repairs **on-site**.

2 PREPARATION OF DISPATCH

Before the dispatch of the aggregates the operator must fill in the following declaration completely and attach it to the shipping documents. The shipping instructions indicated in the respective manual are to be considered, for example:

- Discharge of operational liquids
- remove filter inserts
- lock all openings hermetically
- proper packing
- Dispatch in suitable transport container
- Declaration of the contamination fixed **outside!!** on the packing

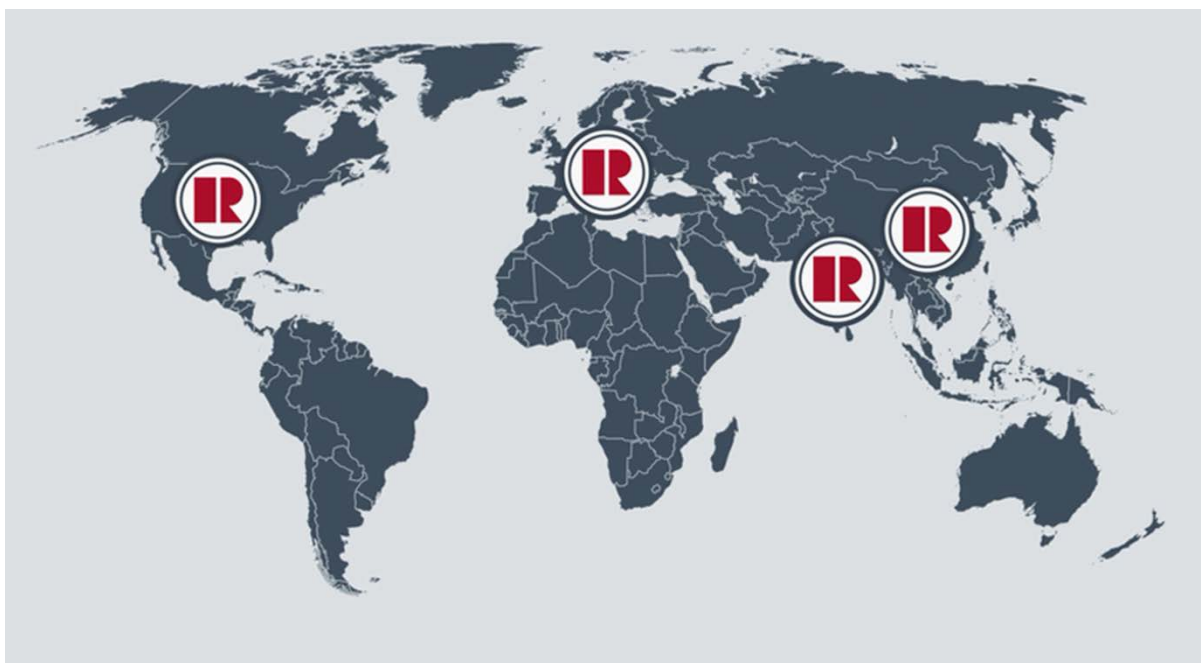
RICHTER
Process Pumps & Valves

Every aggregate has to have it's own declaration.

Contractor/dep./institute :		Reason for transmitting * Please mark the applicable	
Street :		Repair: ☐ subject to fee ☐ Warranty	
Postcode, city :		Austausch: ☐ subject to fee ☐ Warranty ☐ Exchange/ Replacement already initiated/received	
Contact person :		Return: ☐ Leasing ☐ Loan ☐ for credit note	
Phone : Fax :			
End user :			
A. Details of Richter-product:		Failure description:	
Classification:			
Article number:			
Serial number:			
B. Condition of the Richter-product:			
	no ¹⁾	yes	no
Was it in operation ?	☐	☐	☐
Drained (product/operating supply item) ?	☐	☐	☐
All openings hermetically locked!	☐	☐	☐
Cleaned ?	☐	☐	☐
If yes, with which cleaning agent: and with which cleaning method:			
1) if "no", then forward to D. 2) Aggregates, which are contaminated with microbiological or explosive substances, are only accepted with documented evidence of an approved cleaning. 3) Aggregates, which are contaminated with radioactive substances, are not accepted in principle.			
C. Details of the discharged materials (must be filled out imperatively)			
1. With which materials did the aggregate come into contact ? Trade name and/or chemical designation of operational funds and discharged materials, material properties, e.g. as per safety data sheet (e.g. toxic, inflammable, caustic)			
X Trade name:	Chemical designation:		
a)			
b)			
c)			
d)			
2. Are the materials specified above harmful to health ?			
	no	yes	
	☐	☐	
3. Dangerous decomposition products during thermal load ?			
	☐	☐	
If yes, which ones?			

Name of the authorized person
(in block letters):

Company stamp



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 These installation and operating instructions must be kept!

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