General information

Control valves - Technical features

The medium-controlled Hawle control valve is a hydraulically operated diaphragm valve consisting of a main valve, a pilot circuit, a pilot valve, and accessories. The function of the control valve (pressure reduction, pressure maintenance, level regulation, etc.) is determined via the control line and the pilot valve. The dimension of the main valve depends on the pressure conditions and the flow rates. The Hawle control valve can be used for various applications. A broad range of both standard and special functions are available.

Types:

Operating mode: hydraulic

Pressure reducing valve, model no.: 015-00

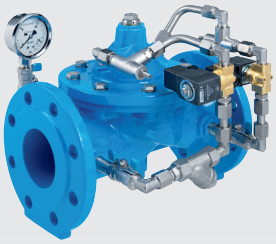
Float valve for open/close control, model no.: 016-00

Standard functions, purely hydraulic:

- Pressure reduction
- Pressure retention and/or pressure relief
- Float control
- Level control
- Backflow prevention
- Pipe-break protection

Operating mode: hydraulic + control current

On/off valve for electric actuation - closed at zero current, model no.: 017-03



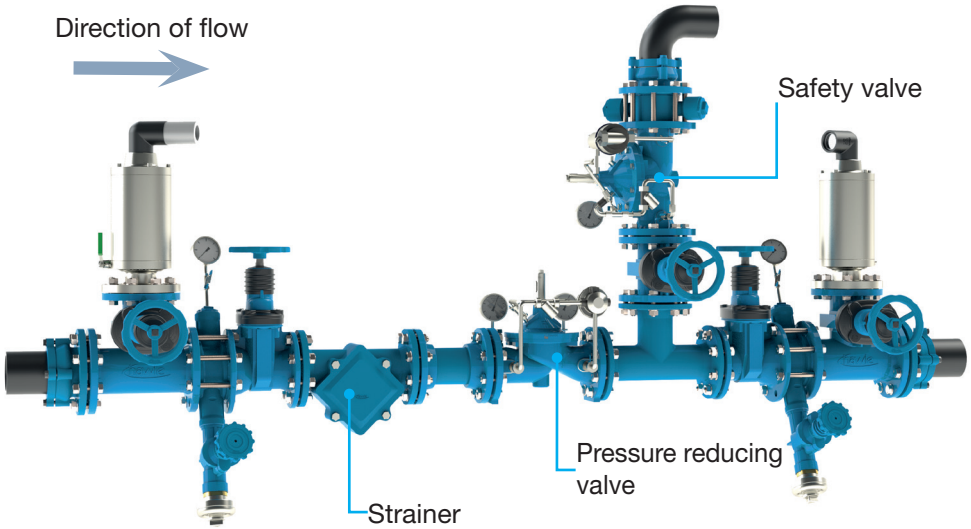
On/off valve for electric actuation, step-by-step operation - closed at zero current, model no.: 017-95

Standard functions, hydraulic and control current:

- Electric open/close function
- Electric volume control
- Pump protection valves

Special functions, e.g.: pressure reduction with inlet pressure control, pressure retention valve for electric actuation

Installation situation:



Technical features

Medium:	Potable water
Max. operating pressure:	16 bar (standard) 25 bar (on request)
Dimension:	Flange DN 40 to DN 300 Female thread 1½“ - 2“
Basis for development and tests:	DVGW W363, DIN EN 1074-1, DIN EN 1074-5, UBA KTW, DVGW W 270
Material:	Body parts: GJS-400, Hawle epoxy powder coated Control line: stainless steel Diaphragms, gaskets: EPDM in line with KTW-BWGL for water Pilot valves: red brass, stainless steel
Body form:	Straight valve, angle valve

Warranty of functional reliability:

Ensuring functional safety
- Annual performance test
- Primary maintenance every 4 to 5 years with replacement of wear parts

Control valve maintenance:
- Can be carried out by Hawle Service (www.hawle-service.de)
- Maintenance agreement (on request) for regular servicing (info@hawle-kunststoff.de)

Dimensioning

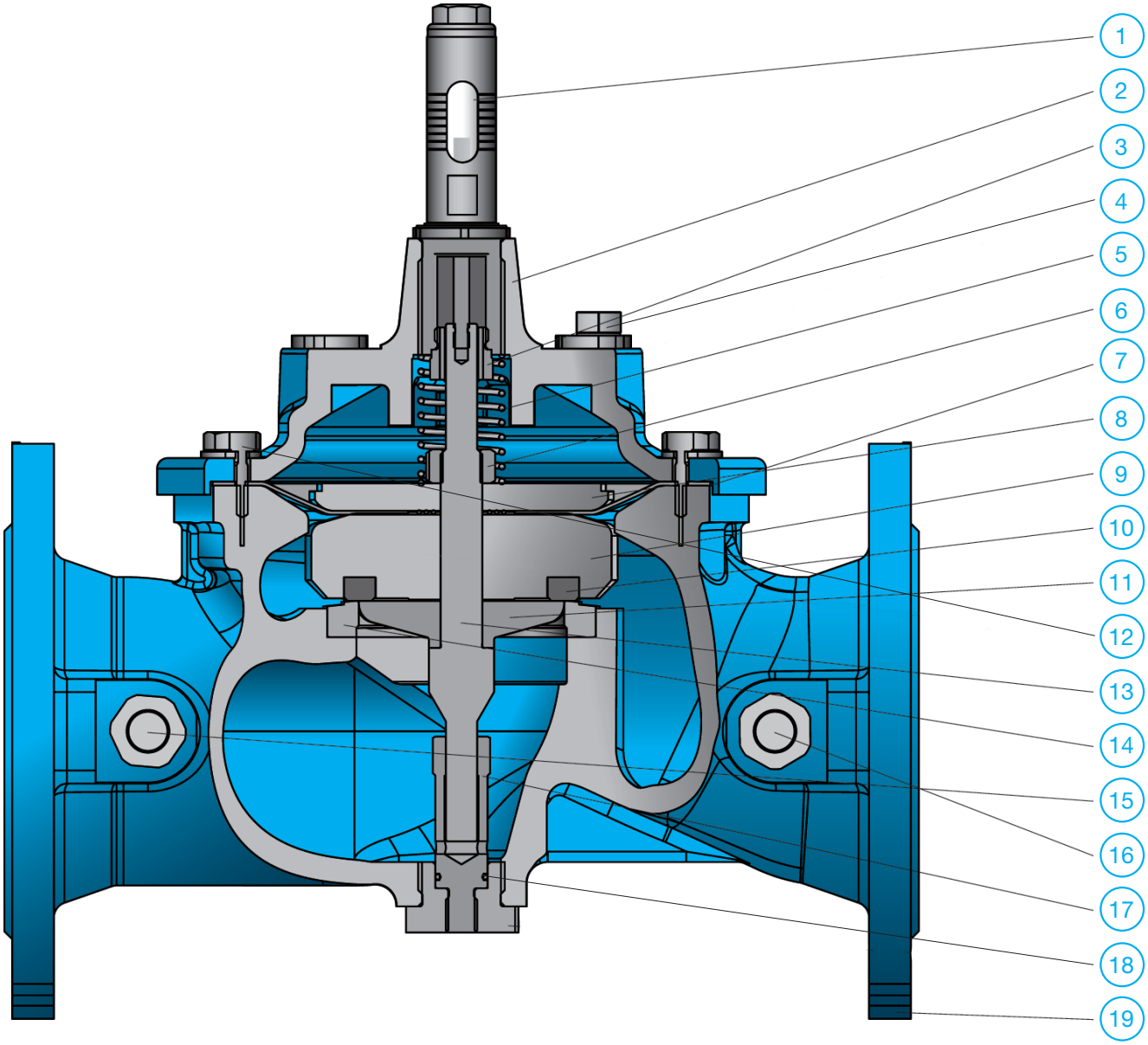
Generally, we recommend that dimensioning is carried out by Hawle Armaturen GmbH.

See also DVGW (German Association for Gas and Water) process sheet W335:
“The dimensioning of the control valves is carried out by the manufacturer under consideration of the data provided and allowing for possible cavitation.”

To calculate the nominal size, the following necessary information must be provided:

- Description of the control task
- Inlet pressure (static, dynamic)
- Outlet pressure
- Minimum flow rate
- Average flow rate
- Maximum flow rate required
- Quantity of extinguishing agent
- Installation conditions
- Power supply
- Tank size

Control valves - Valve structure

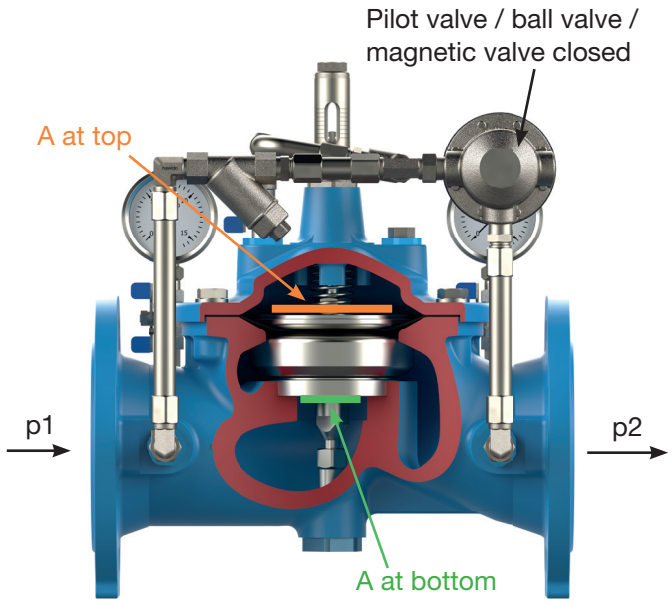


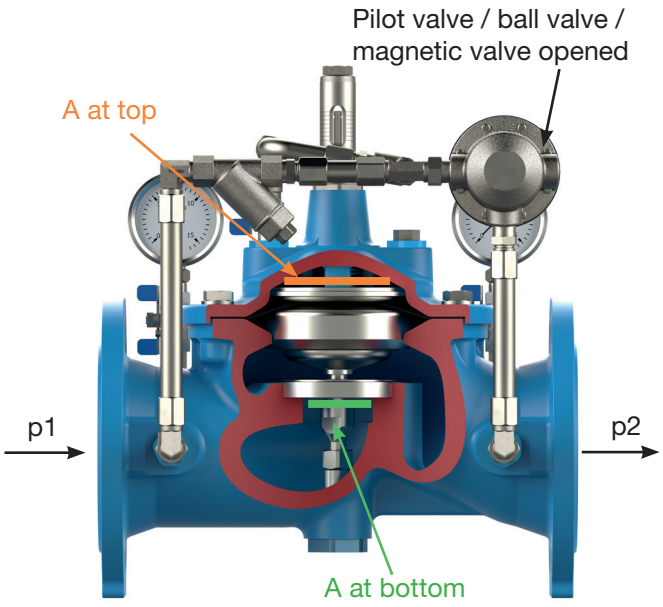
Components

1. Optical position indicator
2. Cover
3. Spindle guide, cover
4. Connection control line, cover
5. Spring
6. Nut
7. Diaphragm
8. Thrust washer
9. Gasket carrier
10. Seat sea
11. Opposing seat
12. Hexagon head screw
13. Spindle
14. Seat
15. Connection control line, body (inlet)
16. Connection control line, body (outlet)
17. Spindle guide, body
18. O-ring
19. Body

Control valves - Functional principle

Medium-controlled control valves do not need any external energy to functioning. The desired function is accomplished purely hydraulically. Only a few control valve types will require control current to trigger hydraulic operation.





Pilot valve closed:

p1 x A at top (= closing force) **>** p1 x A at bottom (= opening force)

Inlet pressure p1 acts on the diaphragm A at top thus generating the closing force

→ Main valve closed

Pilot valve opened:

p1 x A at top (= closing force) **<** p1 x A at bottom (= opening force)

When the pilot valve is opened, pressure is released from the pilot chamber to p2. Inlet pressure p2 acts on A at bottom and main valve will be opened

→ Main valve opened

Functional requirement:

- A at top > A at bottom
- Minimum inlet pressure p: 1 bar
- Minimum pressure difference between inlet and outlet pressure: 1 bar
- Potable water and/or service water with the degree of purity of potable water

Caption:

A oben = diaphragm surface in the pilot chamber
A unten = surface in the lower seat area
p1 = inlet pressure
p2 = outlet pressure

Warranty of functional reliability

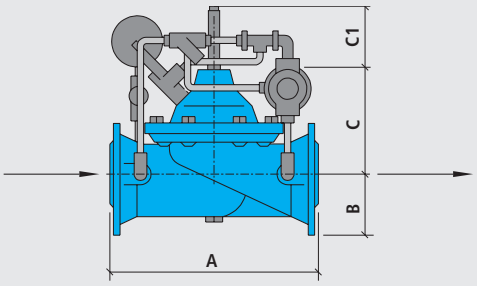
- Annual function testing
- Major maintenance every 4 to 5 years including exchange of wear parts

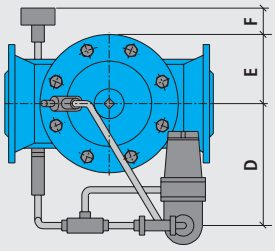
Control valve servicing:

- Servicing can be performed by Hawle (www.hawle-service.de)
- Maintenance agreement (on request) for regular servicing

Control Valves - Measurement tables

Straight valve - measurement tables



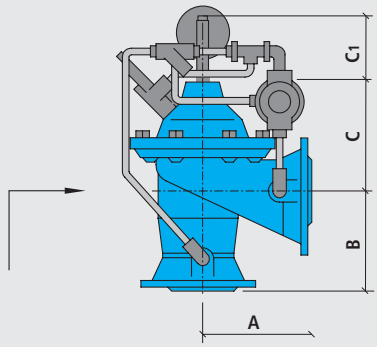


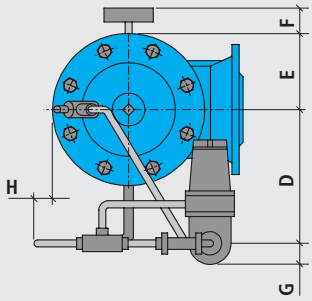
Face-to-face dimensions acc. to DIN EN 558
Flange mating dimensions acc. to DIN EN 1092-2

	PN [bar]	1) 1 1/2“ - 2“ [mm]	DN 40 [mm]	DN 50 [mm]	DN 65 [mm]	DN 80 [mm]	DN 100 [mm]	DN 125 [mm]	DN 150 [mm]	DN 200 [mm]	DN 250 [mm]	DN 300 [mm]
A	10/16/25	210	200	230	290	310	350	400	480	600	730	850
B	10/16	40	75	80	90	100	110	125	140	170	200	235
	25	40	75	80	90	100	115	135	150	180	-	-
C	10/16/25	130	130	130	150	160	195	245	278	330	405	365
D	10/16/25	160	160	160	170	180	190	205	220	250	275	740
E	10/16/25	65	70	70	85	105	115	145	160	200	250	740
F 2)	10/16/25	-	80	80	65	65	65	45	40	20	-	-
Valve with optical position inidicator												
C1	10/16/25	85	85	85	85	85	85	112	112	112	112	135
Valve with electric position indicator												
C1	10/16/25	138	138	138	138	138	138	164	164	164	180	180

1) with threaded outlet
2) reference value depending on valve type

Control valves, angle valves, measurement tables



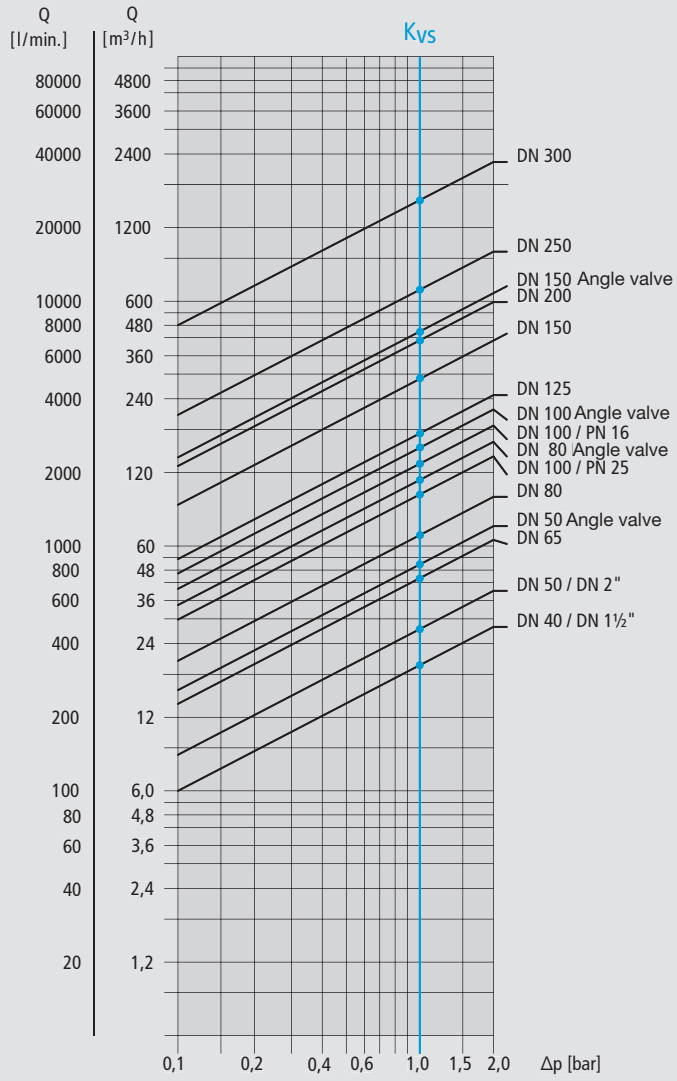


Face-to-face dimensions acc. to DIN EN 558
Flange mating dimensions acc. to DIN EN 1092-2

	PN [bar]	DN 50 [mm]	DN 80 [mm]	DN 100 [mm]	DN 150 [mm]
A	10/16/25	125	155	190	250
B	10/16/25	125	155	175	225
C	10/16/25	145	195	225	320
D	10/16/25	170	160	220	250
E	10/16/25	85	115	145	200
F	10/16/25	56	70	55	55
G	10/16/25	40	40	40	40
H	10/16/25	30	-	-	-
Valve with optical position inidicator					
C1	10/16/25	80	80	80	135
Valve with electric position indicator					
C1	10/16/25	138	138	138	180

Pressure drop diagram & Kvs values

Pressure drop Δp as a function of flow rate Q and the nominal width DN of the valve



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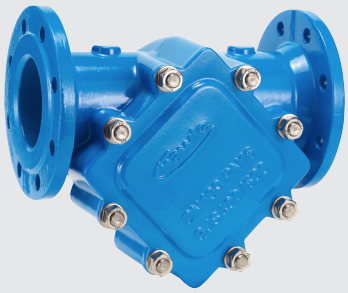
Flow coefficient Kvs in m³/h and l/min at Δp = 1 bar

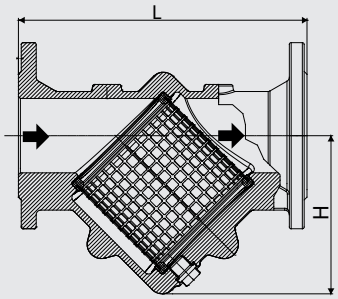
DN	Kvs straight valve		DN	Kvs angle valve	
	m³/h	l/min.		m³/h	l/min.
40	19	315			
50	27	460	50	51	850
65	48	725			
80	68	1140	80	111	1850
100	129	2150	100	156	2600
125	177	2955			
150	297	4960	150	432	7200
200	415	6925			
250	681	11360			
300	1476	24600			

Strainer

The strainer protects pipelines and valves against soiling with "foreign matter" (wood, stones, drilling chips, etc.). Generally, we recommend installing a strainer upstream of each control valve, measuring device or aggregate to ensure its proper function.

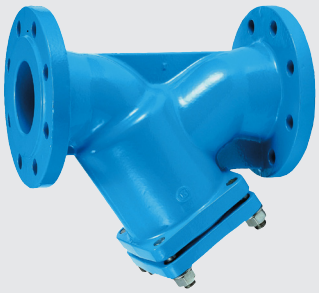


019-00
Strainer,
lateral cover

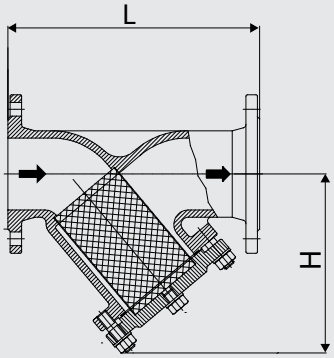


Strainers with lateral cover are designed for installation in horizontal pipelines. In doing so it should be noted that the cover when seen in the direction of flow is installed on the right side. Installation in inclined and vertical pipelines is permissible if the direction of flow is from top to bottom (notice direction of arrow on the body).

Caution: For inspection works a clear working area of at least 30 cm must be provided on the side of the cover.



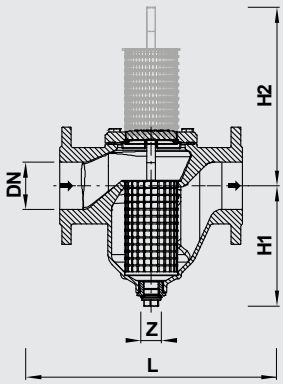
019-01
Strainer with angle seat



Strainers with angle seats are designed for installation in horizontal pipelines. Installation in inclined and vertical pipelines is permissible if the direction of flow is from top to bottom (notice direction of arrow on the body).

Caution: For inspection works (removal of the screen) an adequate working area of 2 H below the strainer from the tubular axle to the upper edge of the chamber bottom must be planned for.

019-02
Strainer
top cover



Strainers with top cover are designed for installation in horizontal pipelines. Installation in inclined and vertical pipelines is permissible if the direction of flow is from top to bottom (notice direction of arrow on the body).

Caution: For inspection works (removal of the screen) an adequate working area of H2 must be provided above the strainer, from pipe axis to the top of the shaft.

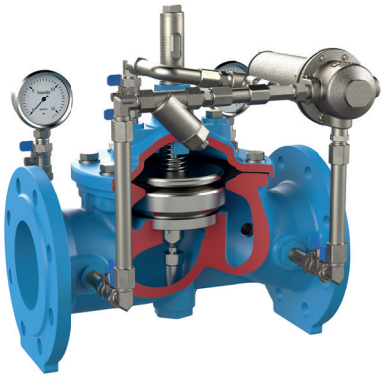
Maintenance / Control Valve Servicing

In accordance with DVGW W 392-2, safety valves and pressure reducing valves must undergo an annual functional check and periodic maintenance, during which gaskets have to be replaced. Hawle control valves are scheduled for maintenance every 4 - 5 years.

If required, we will be pleased to provide you with a maintenance agreement. In this case, a service engineer from Hawle Kunststoff & Service GmbH will carry out the maintenance.

The medium-controlled valves are tested in accordance with DVGW W 400-3-B1 and W 491-1 / 2.

Further information is available at www.hawle-service.de



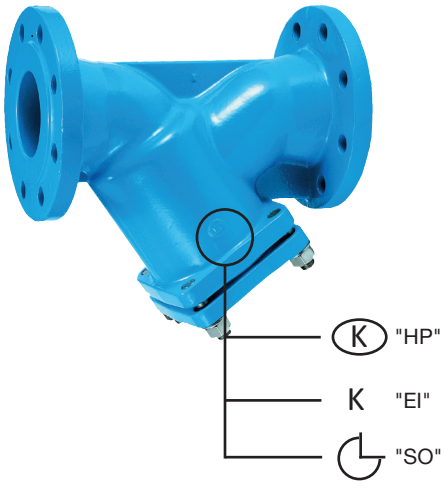
Requesting spare parts:

To determine which repair kits and appropriate spare parts are necessary, please provide us with:

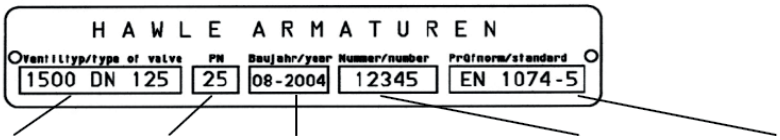
- the data shown on the type plate
- 2 - 3 photos of the control valve to be serviced + indication of DN and PN

Please send your inquiries in writing by e-mail to anfragen@hawle.de

In the case of Y-shaped strainers, please inform us of the casting symbol on the strainer in question.
Possible symbols are shown in the illustration below:



Example of type plate:



Valve type and nominal size | PN | Year of manufacture | Serial number | Testing standard