

Medium-controlled valves

Explanations

The scope of medium can be restricted within the product data sheets. When making an inquiry or placing an order please indicate the medium of each project. Should you have any questions, do not hesitate to contact our application engineers.



Potable water products



In general our products are subject to the statutory warranty period of two years from the day of delivery by Hawle. Due to the high quality of Hawle products we are able to offer you an extended warranty period of 5 years for our products. Further information on „5 years Hawle warranty extension“: www.hawle.de/en/warranty-extension



Further information of „10 years quality warranty“ for potable water products:
www.hawle.de/en/10-years-quality-warranty



You can receive the latest information via our free newsletter. Simply register at www.hawle.de/newsletter

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, ...) 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



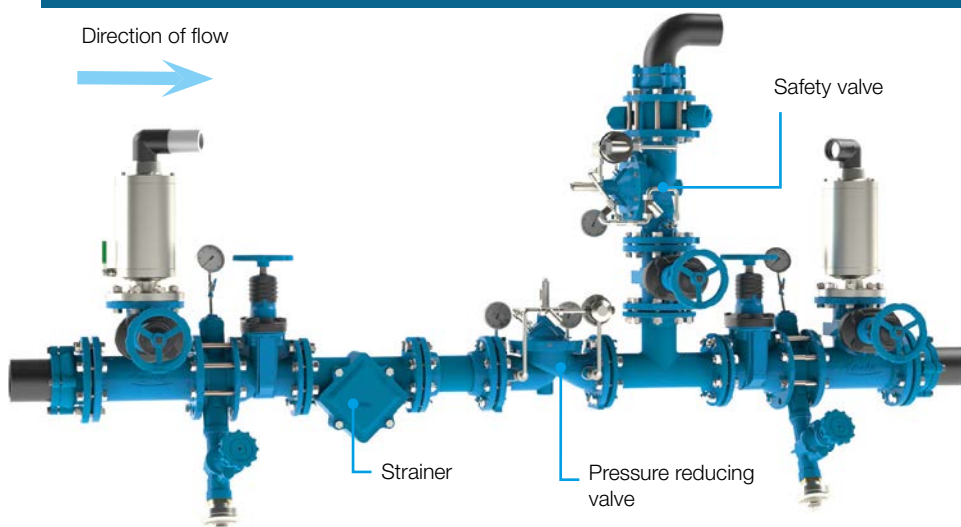
On/off valve for electric actuation,
step-by-step operation -
closed at zero current ,
model no.: 017-95

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

Technical details

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, brass Diaphragms, gaskets: EPDM in line with DVGW W 270 Pilot valves: red brass, stainless steel
Body form:	Straight valve, service valve

Warranty of functional reliability:

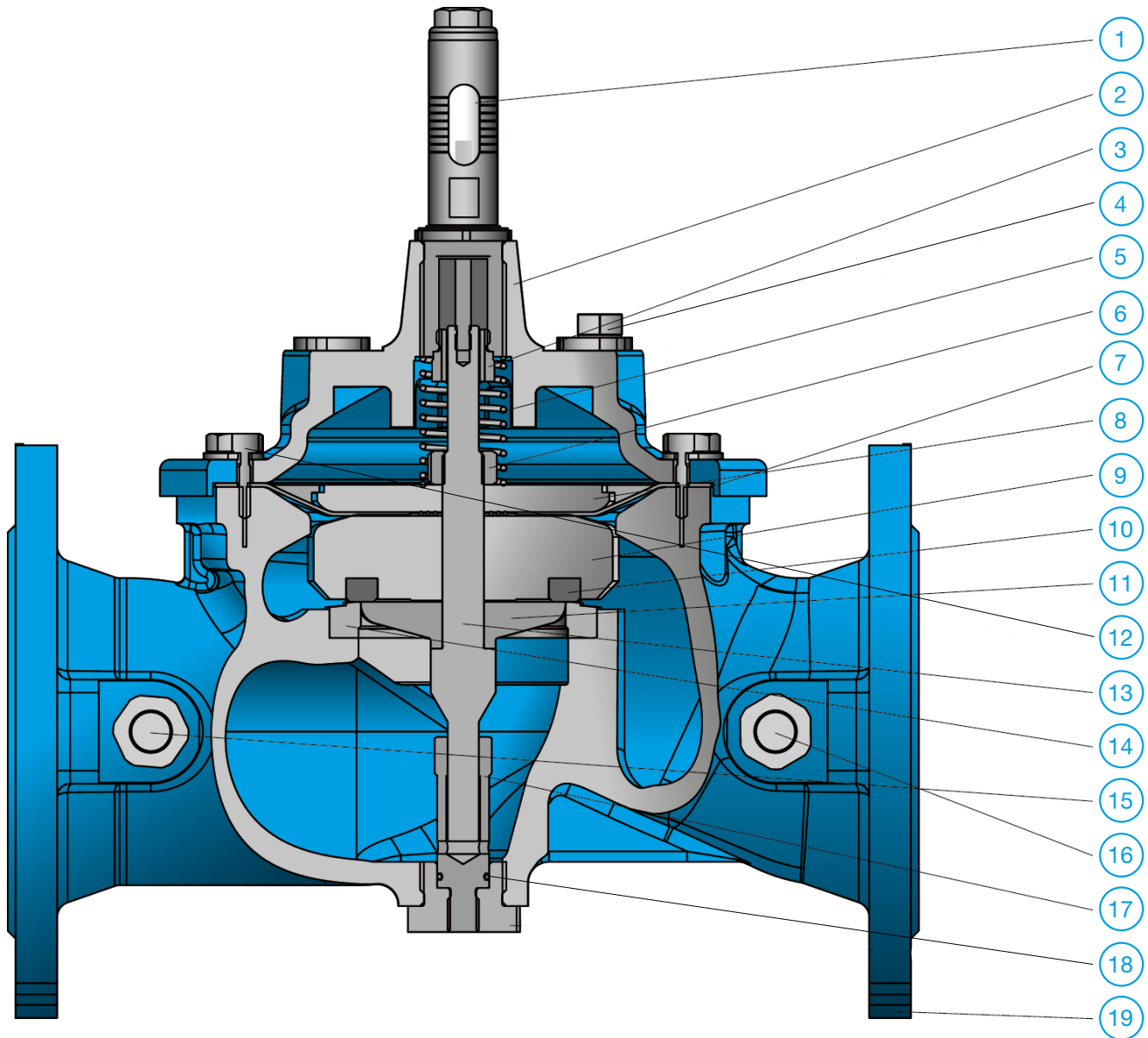
Ensuring functional safety

- 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)

Valve Structure

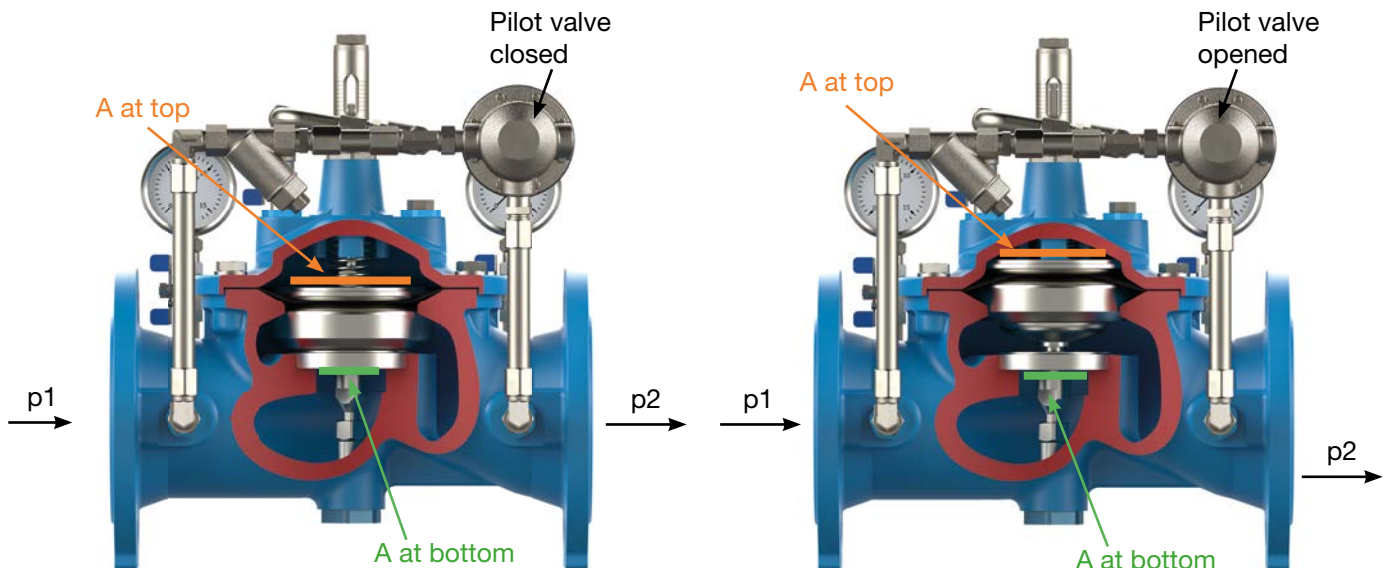


Components

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

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:
 $p1 \times A \text{ at top}$ (= closing force) $>$ $p1 \times A \text{ at bottom}$ (= opening force)

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

—————▶ Main valve closed

Pilot valve opened:
 $p1 \times A \text{ at top}$ (= closing force) $<$ $p1 \times A \text{ at bottom}$ (= 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:

- $A \text{ at top} > A \text{ at bottom}$
- 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:

$A \text{ at top}$ = diaphragm surface in the pilot chamber

$A \text{ at bottom}$ = surface in the lower seat area

$p1$ = inlet pressure

$p2$ = outlet pressure

Warranty of functional reliability:

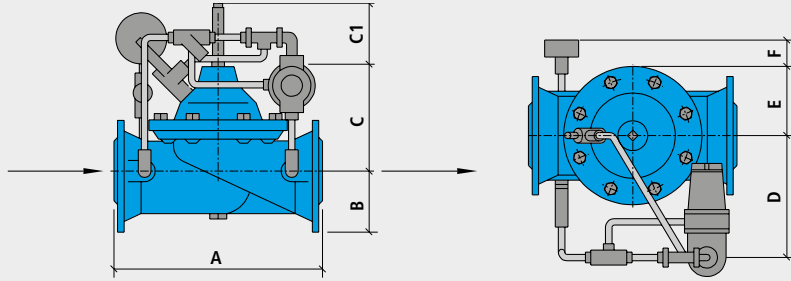
- Annual function testing
- Major maintenance every 4 to 5 years including exchange of wear parts

Control valve servicing:

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

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	10/16/25	40	75	80	90	100	110	125	140	170	200	235
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 indicator

C1	10/16/25	85	85	85	85	85	85	112	112	112	112	135
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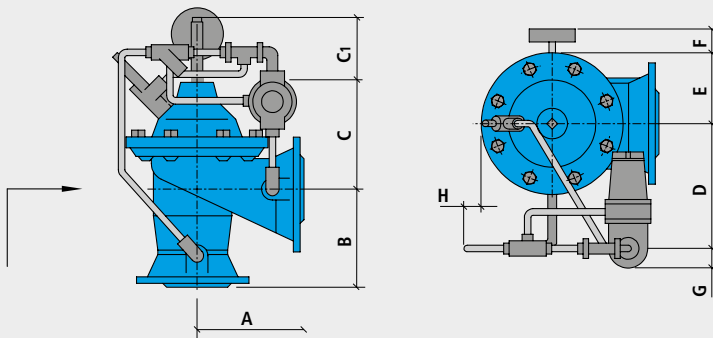
Valve with electric position indicator

C1	10/16/25	138	138	138	138	138	138	164	164	164	180	180
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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 indicator

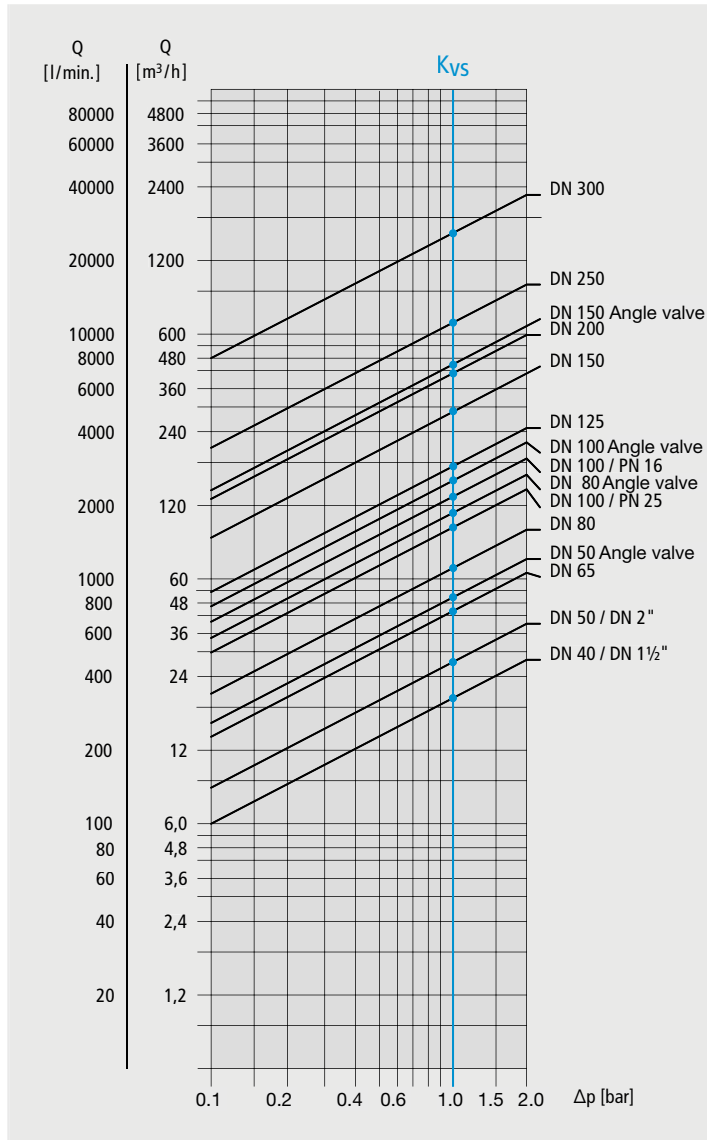
C1	10/16/25	80	80	80	135
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Valve with electric position indicator

C1	10/16/25	138	138	138	180
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Pressure Drop Diagram & Kvs Values

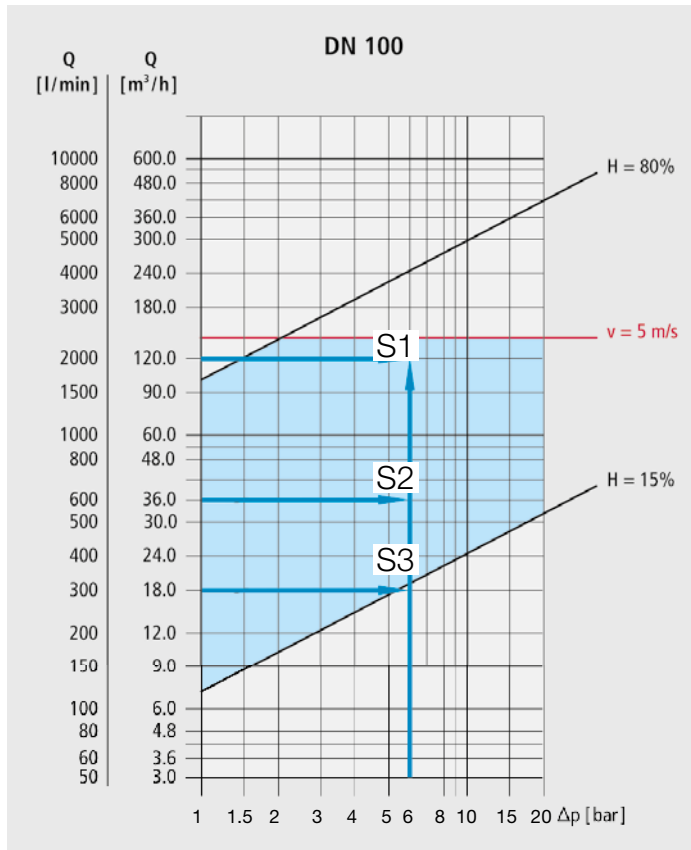
Pressure drop Δp as a function of flow rate Q and the nominal width DN of the valve



Flow coefficient Kvs in m³/h and l/min at $\Delta p = 1$ bar

DN	Kvs straight valve		DN	Kvs angle valve	
	m ³ /h	l/min.		m ³ /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			

Determining the Dimension of the Main Valve (Example)



Parameters

- Q = flow rate in m³/h and l/min
- Δp = pressure difference between inlet and outlet pressure in bar
- H = degree of opening in % of max. valve opening
- v = 5 m/s: max. admissible flow rate (permitted for a short time)
- = optimum control range

Beispiel:

- Δp: 6 bar
- Q max: 120 m³/h -----> point of intersection S1 within optimum control range
- Q Ø: 36 m³/h -----> point of intersection S2 within optimum control range
- Q min: 18 m³/h -----> point of intersection S3 at the threshold to the optimum control range

Result: Main valve DN 100 = optimum dimension

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

See also DVGW (German Association for Gas and Water) process sheet W335:

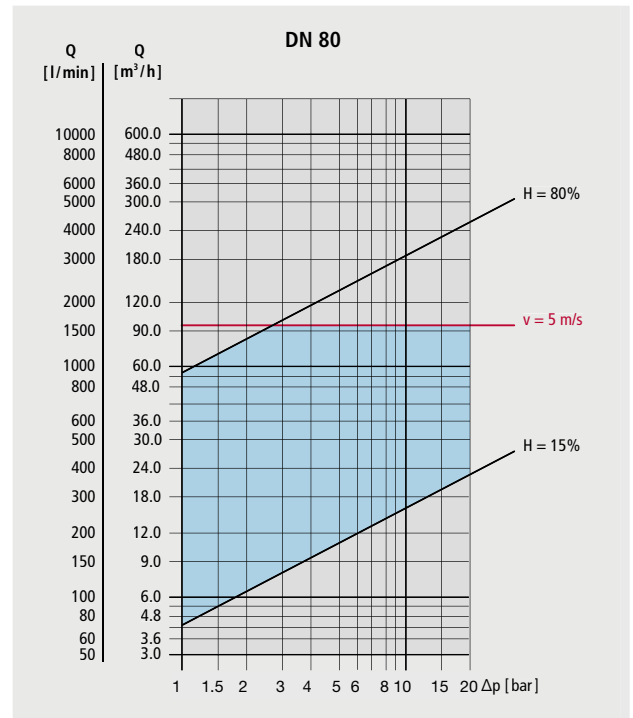
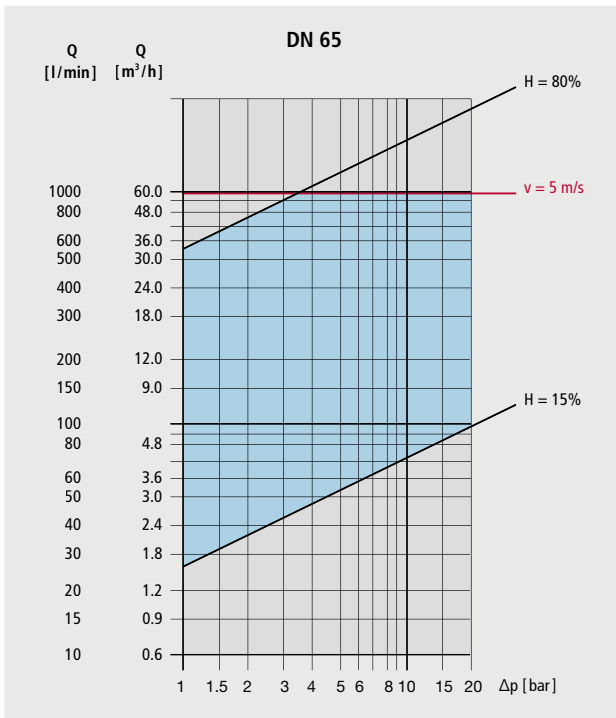
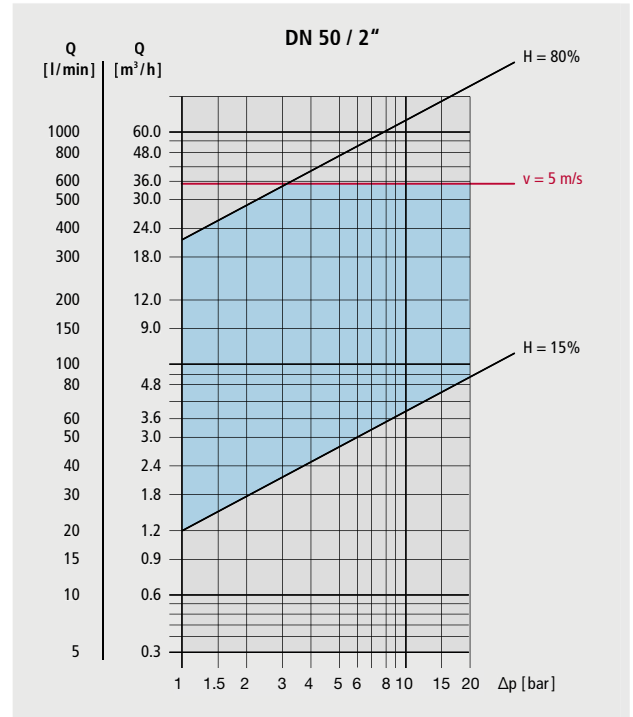
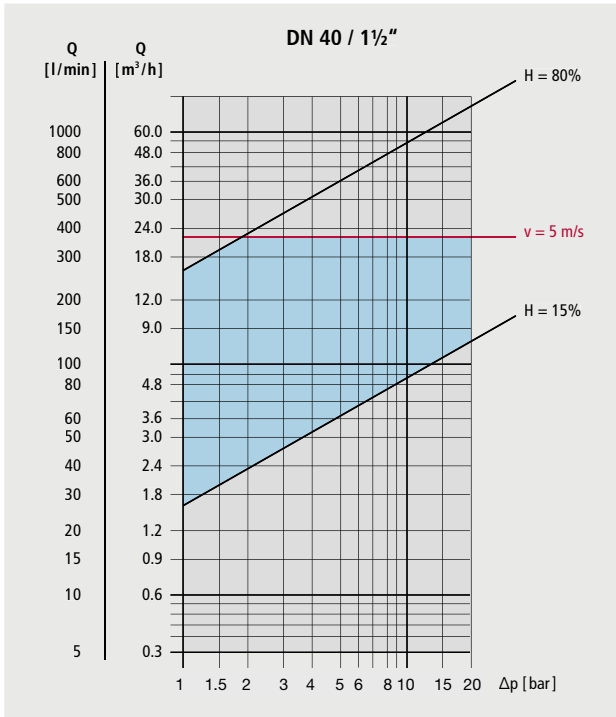
“The dimensioning of the control valves is carried out by the manufacturer under consideration of the data provided and allowing for possible cavitation.”

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

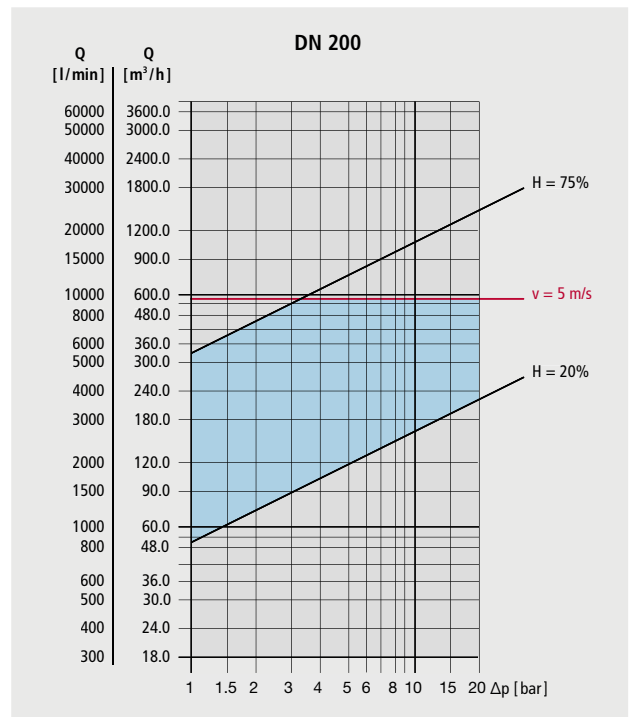
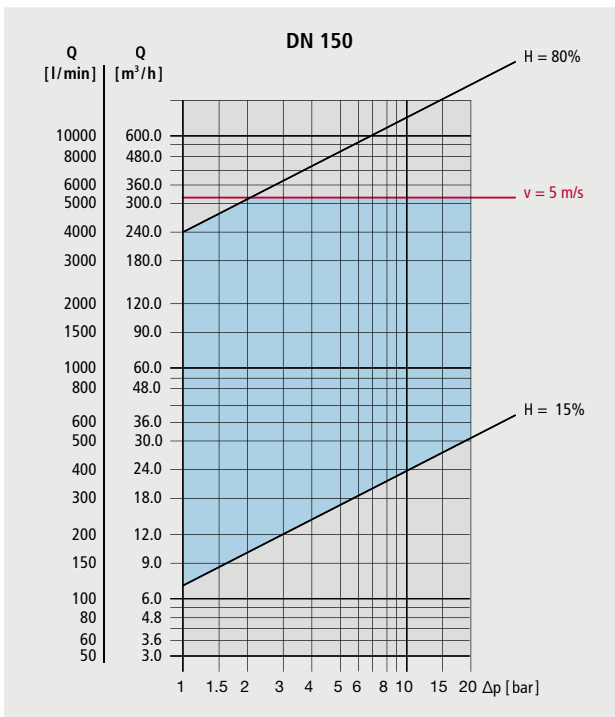
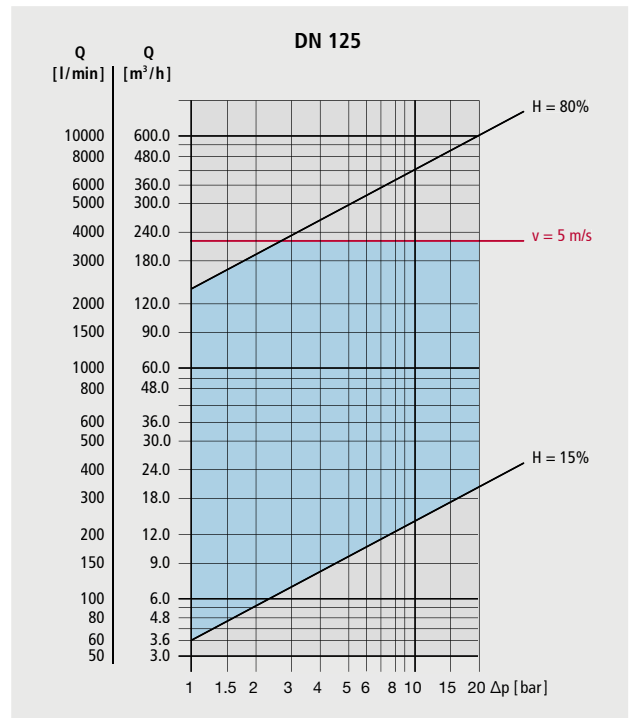
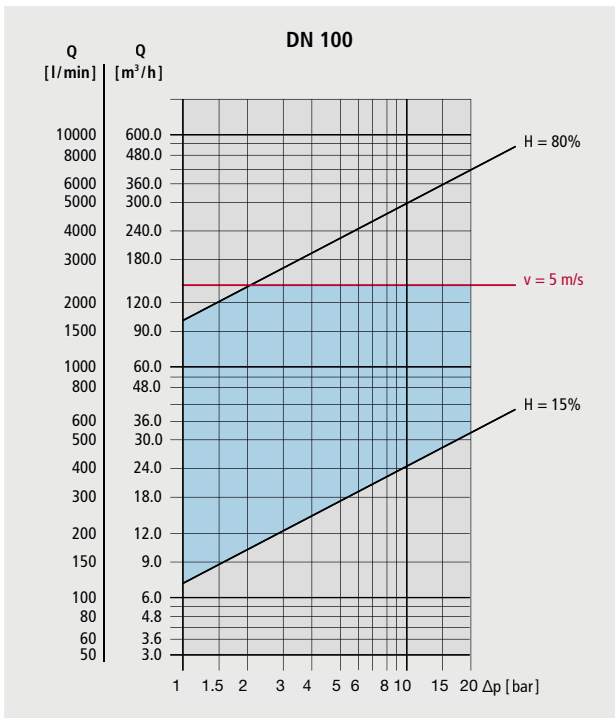
Performance Charts for Straight Valves DN 250 - DN 300 from Year of Manufacture 03/2008

The area between the limits of the degree of opening $H = 15\%$ and $H = 80\%$ is the optimum operating range (colored area) of the Hawle control valves. If the established value is below the minimum or above the maximum value, please contact us. The maximum flow velocity of 5 m/s must also be observed.



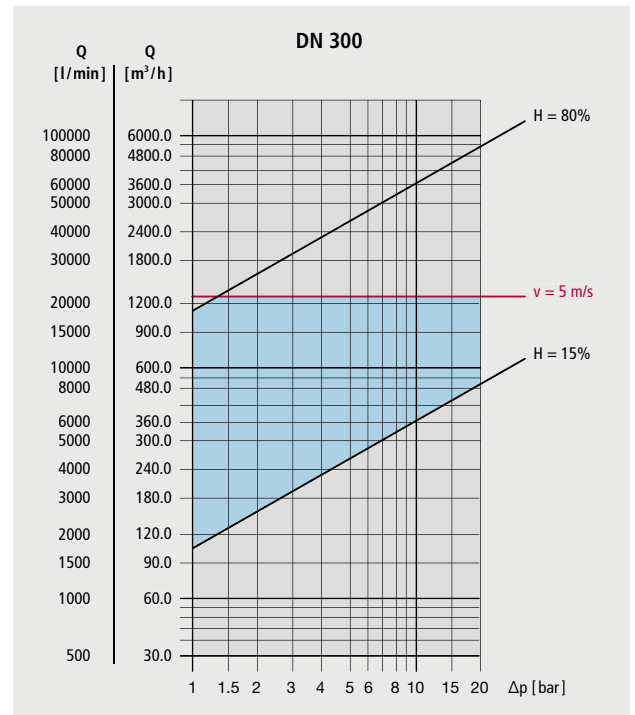
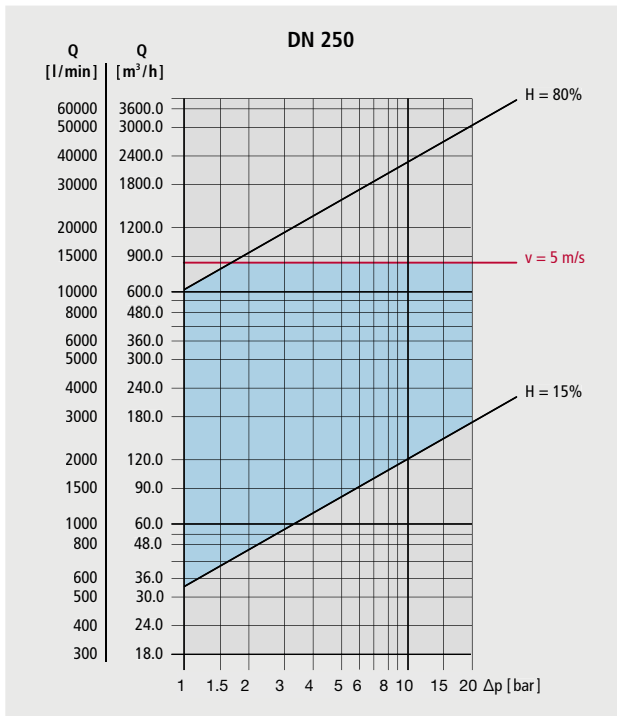
Performance Charts for Angle Valves DN 50, DN 80, DN 100, DN 150 from Year of Manufacture 03/2008

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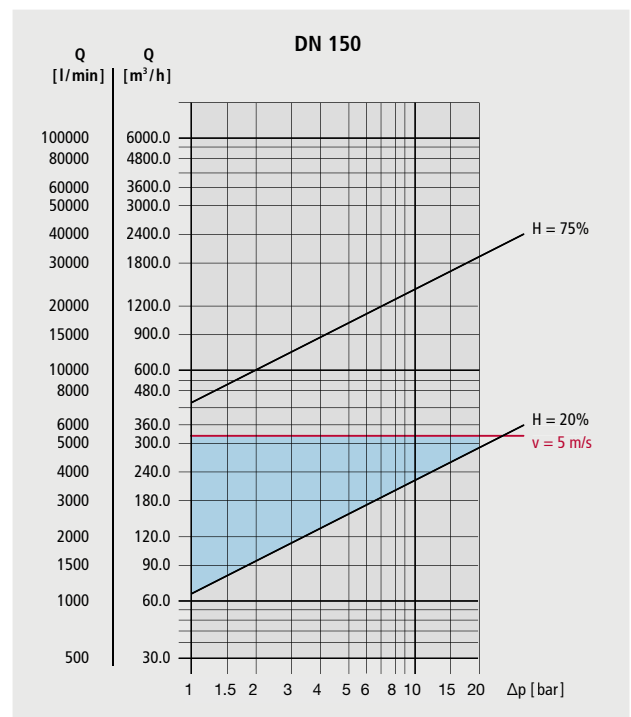
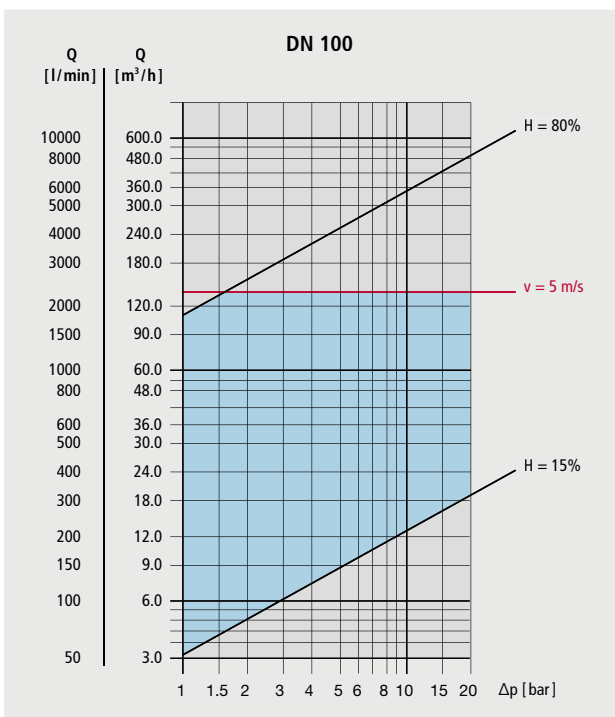
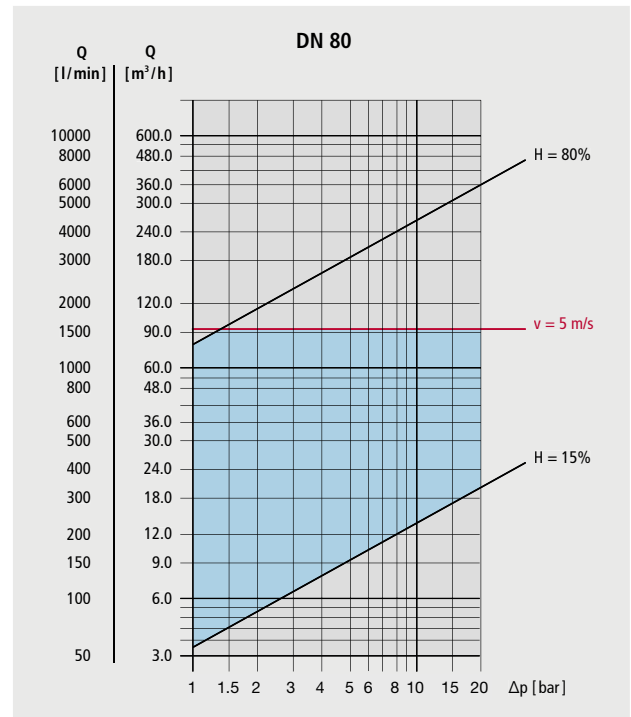
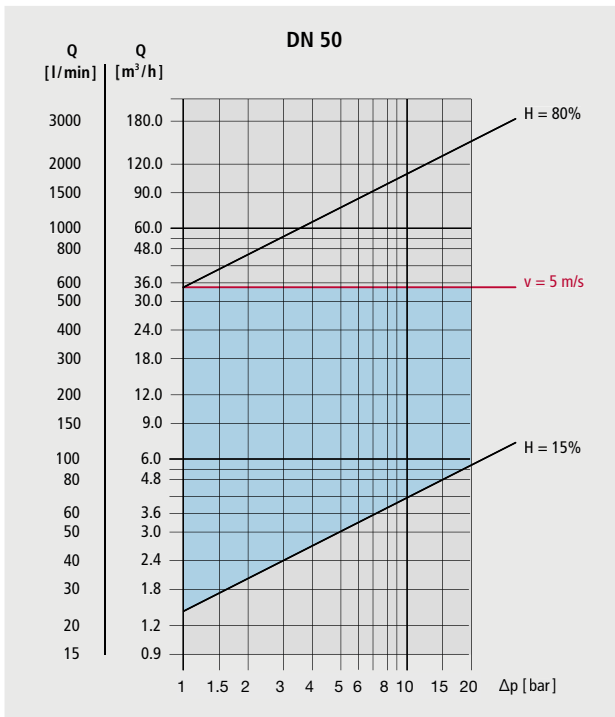
Performance Charts for Angle Valves DN 50, DN 80, DN 100, DN 150 from Year of Manufacture 03/2008

The area between the limits of the degree of opening $H = 15\%$ and $H = 80\%$ is the optimum operating range (colored area) of the Hawle control valves. If the established value is below the minimum or above the maximum value, please contact us. The maximum flow velocity of 5 m/s must also be observed.




Leistungsdiagramme für Eckventile DN 50, DN 80, DN 100, DN 150 ab Baujahr 03/2008

The area between the limits of the degree of opening $H = 15\%$ and $H = 80\%$ is the optimum operating range (colored area) of the Hawle control valves. If the established value is below the minimum or above the maximum value, please contact us. The maximum flow velocity of 5 m/s must also be observed.



Medium-Controlled Valve




 **013-00**
Flow control / limiting valve




 **014-00**
Safety / pressure retention valve




 **015-00**
Pressure reducing valve




 **016-00**
Float valve for open/close control



 **017-03**
On/off valve for electric actuation -
closed at zero current

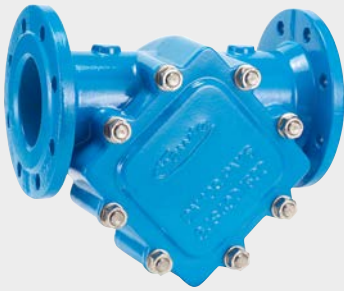


 **017-95**
On/off valve for electric actuation,
step-by-step operation - closed at
zero current

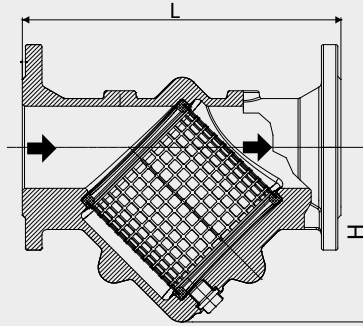
No:	Description	Dimension
013-00	Flow control / limiting valve	IG 1 1/2" - DN 300
014-00	Safety / pressure retention valve	IG 1 1/2" - DN 300
015-00	Pressure - reducing valve	IG 1 1/2" - DN 300
016-00	Float valve for open/close control	IG 1 1/2" - DN 300
017-03	On/off valve for electric actuation - closed at zero current	IG 1 1/2" - DN 300
017-95	On/off valve for electric actuation, step-by-step operation - closed at zero current	IG 1 1/2" - DN 300

For details of further models, please refer to our homepage: www.hawle.de/regelventile

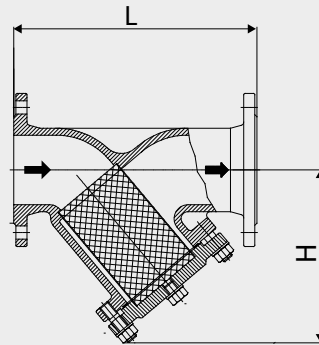
Strainer



019-00
Strainer, lateral cover



019-01
Strainer with angle seat



No:	Description	Dimension
019-00	Strainer, lateral cover	DN 50 - 200
019-01	Strainer with angle seat	DN 40 - 300

Accessories



011-00
Optical position indicator



011-01
Electric position indicator with sensor



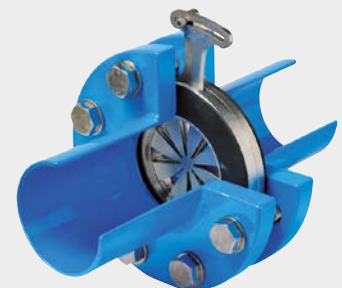
011-02
Analog position indicator



013-07
Opening limiter



013-08
Float protection tube including assembly set



013-09
Orifice plate, adjustable

No:	Description	Dimension
011-00	Optical position indicator	For use with: IG 1 1/2" - DN 300
011-01	Electric position indicator with sensor	For use with: IG 1 1/2" - DN 300
011-02	Analog position indicator	For use with: IG 1 1/2" - DN 300
013-07	Opening limiter	IG 1 1/2" - DN 300
013-08	Float protection tube including assembly set	-
013-09	Orifice plate, adjustable	DN 40 - 200

Accessories



No:	Description	Dimension
013-10	Adjustment tool for orifice plate	-
011-03	Power limitation module / plug-in module PLMV 24 V DC or 48-230 V DC/AC	-

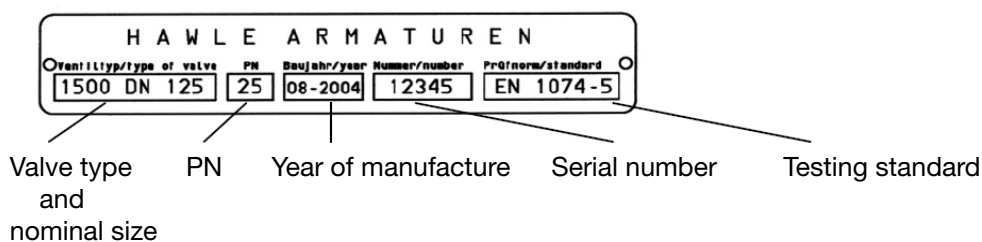
Requesting spare parts:

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

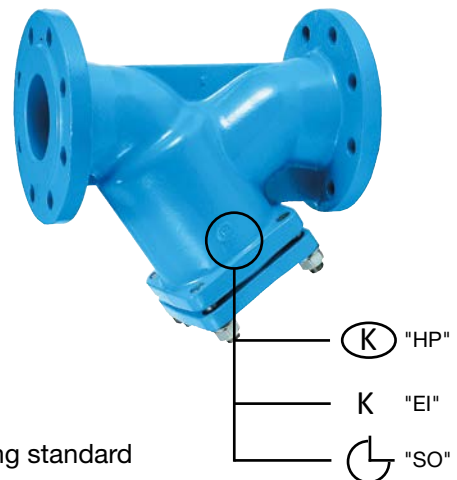
- the data shown on the type plate
- 2 - 3 photos of the control valve to be serviced + indication of DN and PN

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

Example of type plate:



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:



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



The sustainable all-in-one solution for your construction project

Hawle Kunststoff GmbH, with headquarters in Wiehl, Germany, produces and supplies plastic pipe and shaft systems, as well as suitable pipe fittings and connecting pieces for private and municipal potable water supply and wastewater disposal. Our extensive product portfolio includes plastic solutions made of PP and HDPE for use in potable water, wastewater, industrial and landfill technology.

Plastic filament-wound section pipes form the basis of our complete systems. They can be manufactured with a smooth or profiled exterior in nominal sizes of DN 300 to DN 3500. Shafts made of polypropylene or polyethylene have an enormously long service life of at least 100 years.



The advantages of plastic structures

- ▶ Prefabricated at the factory
- ▶ Short delivery times
- ▶ Extremely quick to install
- ▶ Low weight
- ▶ Durable material
- ▶ Completely corrosion-free
- ▶ Completely leak-proof



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