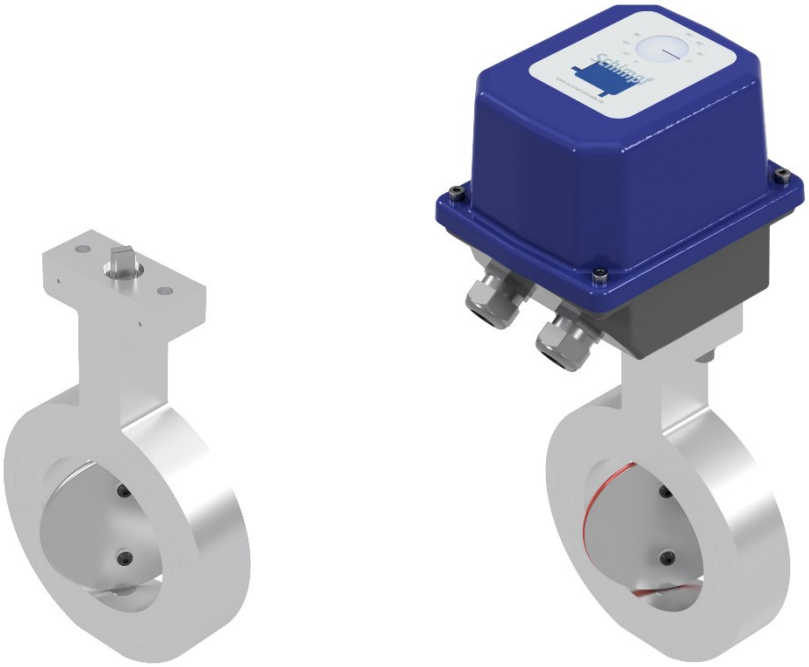
Installation and operating instructions

control valves SVA, SVH, SVHT



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This documentation includes specifications for the relevant products but does not guarantee that they have any particular properties. We reserve the right to make changes to reflect technological advances.

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Liability and guarantee

Antriebs- & Regeltechnik Schimpf GmbH accepts no liability or guarantee whatsoever in the event of the improper installation or use of the control valves. The technical specifications and safety instructions provided by us must be observed.

Safety instructions for maintenance and installation

- **The control valve may only be installed, maintained and commissioned by qualified specialists!**

- **Before installing or maintaining the control valve, all affected devices/machines/systems must be switched off! The air/medium supply must be disconnected!**

- **Before switching off devices/machines/systems, it is important to check that it is safe to do so.**

- **Make sure that no danger to people, the environment and devices/machines/systems can result from installation or maintenance work!**

- **Make sure that there is no risk of crushing between the valve housing and the valve blade!**

- **The control valve may only be repaired by the manufacturer.**

- Shutdowns may only be carried out after prior consultation with the plant manager, shift supervisor or safety engineer!

- Malfunctions must be reported immediately to the plant manager, shift supervisor or safety engineer in order to avoid danger!

- When installing or maintaining the control valve, the applicable safety and accident prevention regulations of the employers' liability insurance association must be observed!

- Before installing an actuating drive, check that the control valve is moving freely!

- Before installing/maintaining the control valve, make sure that the safety devices are functioning correctly!

- After completing the installation, check whether the settings on the drive correspond to the mechanical position of the control valve! This applies in particular to the end positions!

- Permissible settings for the control valve must be implemented in accordance with the operating instructions of the gas consumption device.

- **A leak test and function check must be carried out after any work on the control valve.**

Device safety

- **In order to keep the control valve in a safe condition, it is imperative that installers/users strictly adhere to the manufacturer's instructions in this documentation and have the appropriate professional qualifications.**

- The control valves may only be used for their intended purpose!

- The control valve may only be operated with an actuating mechanism intended for this purpose (actuator, hand lever, etc.).

- The control valve may only be operated in accordance with the values specified in the technical specifications!

- The control valve must not be installed, commissioned or adjusted on damaged supply lines or flanged system parts! The same requirements apply to damaged actuating drives!

- **Take care when touching the surfaces of the control valve. Danger of burns or frostbite.** Depending on the permissible media temperature, the surfaces of the control valves can become hot or very cold. **The operator must ensure that the necessary protection against contact is provided.**

Function and intended use

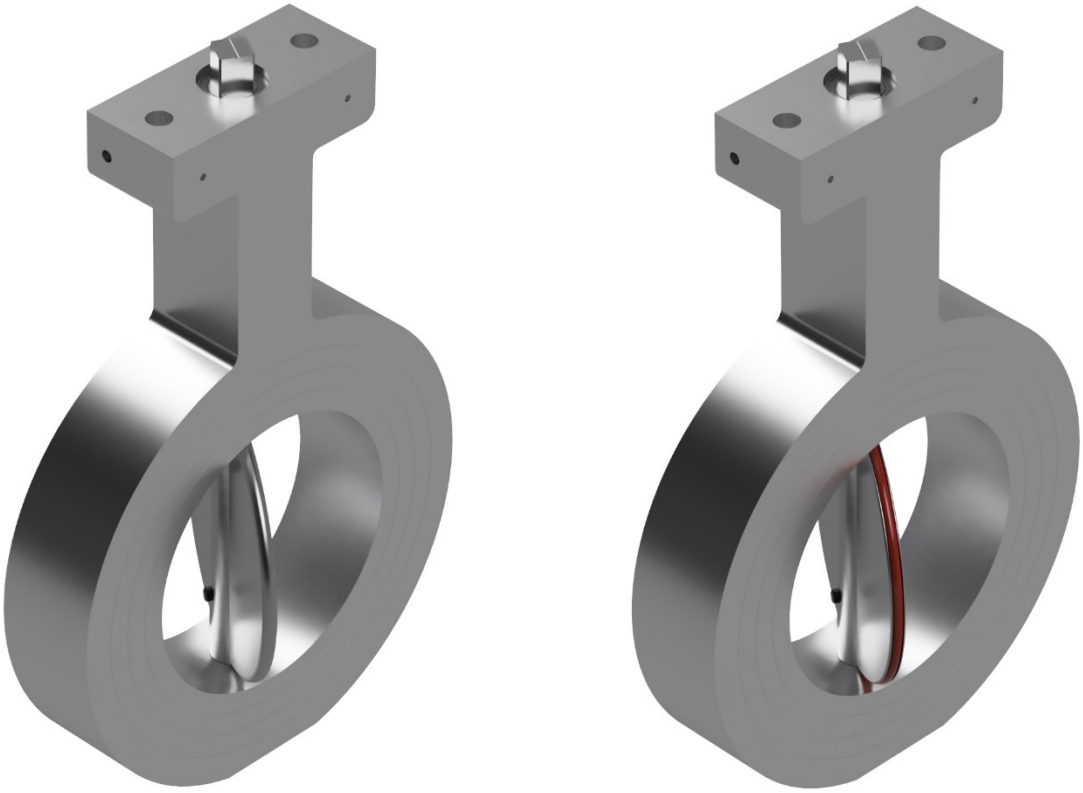
The control valves are used to adjust the volume of cold/hot air supplied to air-consuming devices and to throttle flue gas at flue gas ducts.

The control valves in the SVA series are suitable for air up to 100 °C. The control valves in the SVH and SVHT series are for hot air and flue gas. The SVH control valve is suitable for applications up to 450°C. The SVHT can be used for media temperatures up to 650°C.

The control valves in the SVA, SVH and SVHT series are not approved for use with gaseous fuels according to EU Regulation 2016/426. Control valves in the SVG series must be used for this purpose.

For greater accuracy, the SVA and SVHT control valves can be used with reduced nominal width (reduced by one or two nominal widths). This removes the need for reducers.
The desired flow rate is set by setting the opening angle of the valve between 0°and 90°.
The control valves contain a smooth-running, swing-through valve disc. The valve disc of SVA and SVHT is also available with an optional swing-through sealing system to reduce the minimum flow rate when the valve is closed.

Important: ***The control valves are not designed to securely stop the medium supply.***



control valve without or with sealing system

Installation

Steps

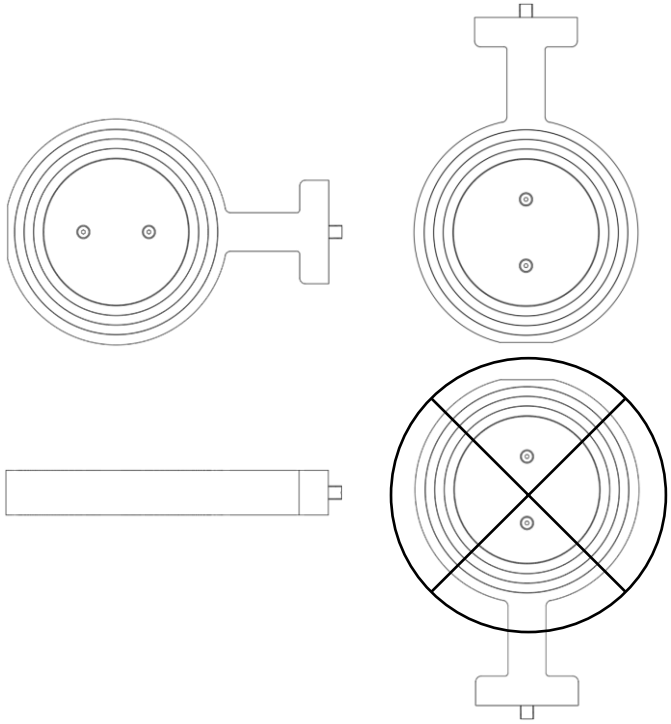
Important: ***The "Safety instructions for maintenance and installation" and the "Installation instructions" listed in this document must be observed when installing the control valve.***

1. **Before installing the control valve, all affected devices/machines/systems must be switched off and, if necessary, disconnected from mains power! The medium supply must be disconnected!**
2. Insert lower stud bolts (SVA, PN 10-40: use plastic sleeves)
3. Insert flange gaskets
4. Insert control valve. Install in a permitted position
5. Insert remaining stud bolts
6. Tighten all bolts properly
    - Tighten bolts crosswise (select tightening torques according to the relevant standards and guidelines for flange connections)
    - Ensure the control valve is installed centrally
    - Ensure that no mechanical stress is applied during installation
    - Observe the relevant standards and guidelines for flange connections as well as the installation instructions for the flange connections/flange gaskets used.
7. A leak test and function check must be carried out after the installation of the control valve.

Follow the **instructions of the relevant manufacturer** when connecting and installing the actuating drive. The valve position must be checked.

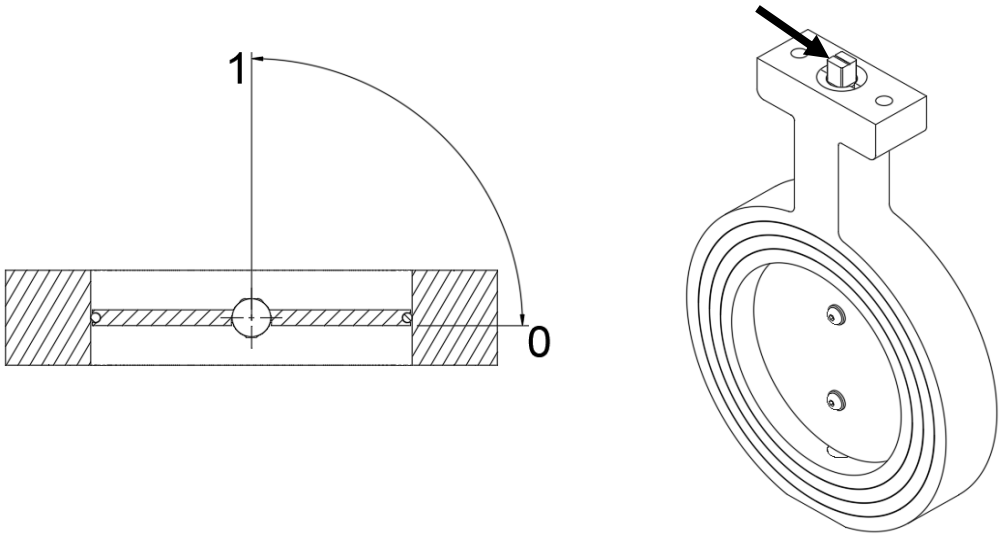
Installation instructions

- **Avoid direct contact between the control valve and masonry, concrete walls or floors.**
- **Make sure that the control valve is installed in a position which is not exposed to vibrations.**
- **Permissible installation positions (the requirements for the actuating drive must also be observed):**

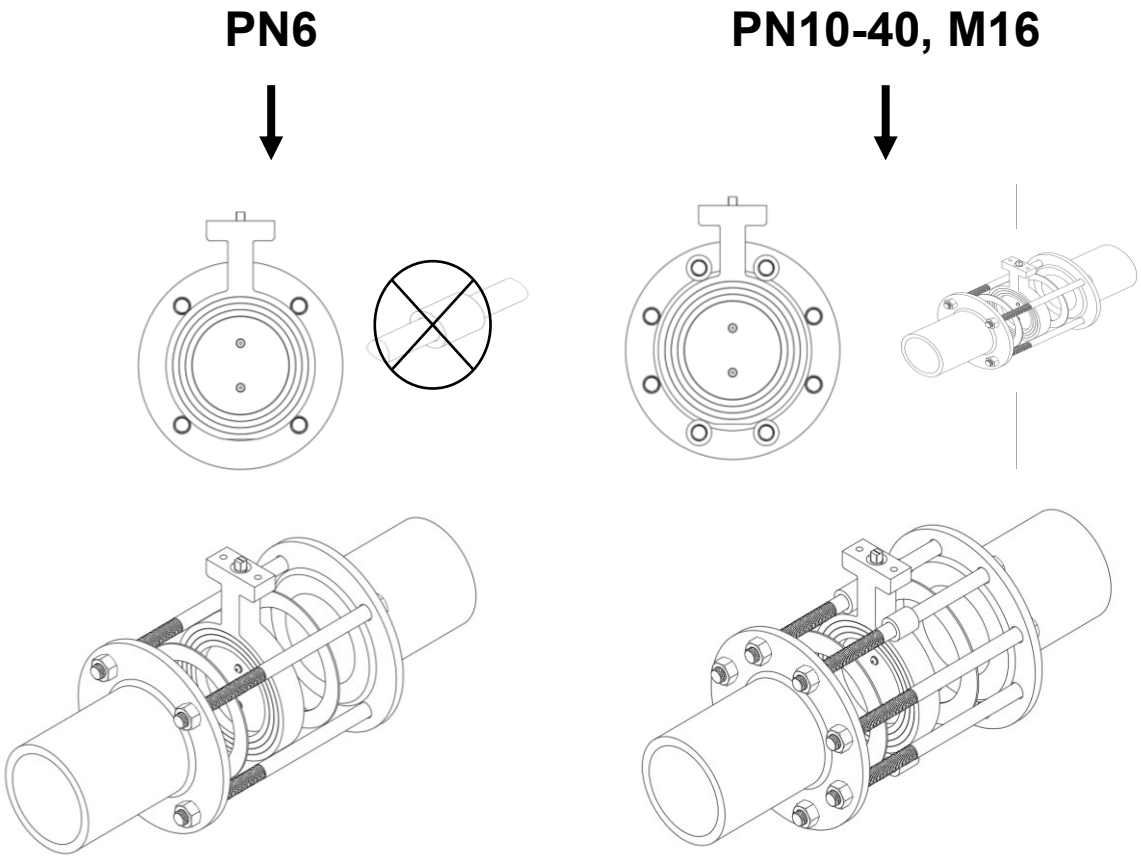


- **When using hot air, install the control valve so that the drive is not surrounded by rising hot air. Always position the drive to the side of the duct.**

- **Observe the valve position by means of the marking on the square spindle:**

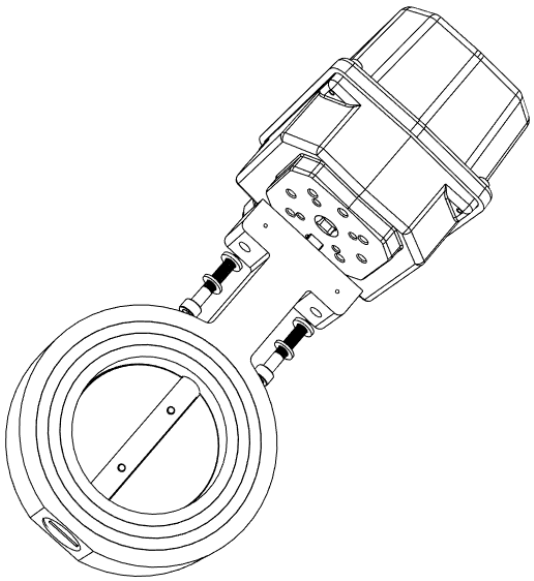


- **Using the centring aids (plastic sleeves) (only for PN10 - PN40 and M16 screws):**



- **SVH and SVHT must always be installed without plastic sleeves due to the material's susceptibility to high temperatures.**

- **Installation of a Schimpf actuating drive:**



To mount a Schimpf drive on the control valve, insert the square spindle at end of the valve shaft into the square socket of the drive. Make sure that the square socket of the drive and the square spindle of the valve are the same size. The valve is fixed in place using the two hexagon socket screws supplied with the valve. When installing, make sure that the drive is in the correct position relative to the valve (open or closed).

Flow rate

Selection of the nominal size

The appropriate nominal size can be determined either by calculation using the k_V values from the following table or with the aid of the following diagrams.

The following formula should be used for the calculation (subcritical flow):

$$Q_N = 514 \bullet k_V \bullet \sqrt{\frac{\Delta p \bullet p_2}{\rho_N \bullet T}}$$

Q_N = flow rate in m^3/h
k_V = flow coefficient in m^3/h
Δp = differential pressure across valve in bar
p2 = pressure after valve in bar, absolute
ρ_N = standard density of the gas in kg/m^3
T = gas temperature in kelvin

When selecting a valve, the leakage rate with the valve closed (0°) must also be taken into account. The maximum permissible parameters for operating pressure and differential pressure must also be observed. For optimum control, a differential pressure greater than 10 mbar should be maintained.
The data provided here were obtained on the basis of laboratory measurements (medium: air, 15°, 1013 mbar). Actual values may differ, depending on the on-site conditions.

k_V values

Data in m^3/h

Inner diameter matches nominal diameter, non-sealing

Type	Inner-diameter	valve position									
	(mm)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40	40	0,2	1,1	3,4	8,2	14,0	23,3	36,9	55,1	68,2	75,2
DN50	50	0,3	1,7	5,5	12,8	23,9	41,0	65,0	101,1	132,9	155,0
DN65	65	0,5	2,9	10,3	22,9	43,0	73,4	115,9	183,2	250,8	305,0
DN80	80	0,8	4,4	17,1	36,9	67,3	113,1	177,3	280,9	393,5	491,1
DN100	100	1,1	6,8	29,3	61,5	107,8	177,2	275,6	435,5	622,5	795,7
DN125	125	1,5	10,4	49,6	102,0	171,3	275,4	424,7	668,0	970,8	1267,0
DN150	150	1,8	14,9	75,5	153,2	249,1	393,6	602,9	944,2	1388,2	1839,0
DN200	200	2,5	26,0	144,2	287,8	447,7	689,9	1047,0	1627,3	2429,9	3285,0

Inner diameter matches nominal diameter, sealing

Type	Inner-diameter	valve position									
	(mm)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40	40	0,02	0,4	3,1	6,0	11,3	19,8	32,0	49,7	62,6	69,6
DN50	50	0,02	0,7	4,1	10,6	21,8	37,7	59,5	94,6	125,2	146,3
DN65	65	0,03	1,4	7,5	20,9	41,7	70,8	110,3	175,8	240,6	292,1
DN80	80	0,04	2,2	13,2	35,0	66,6	111,1	172,5	273,6	381,8	474,7
DN100	100	0,05	3,7	24,4	59,8	107,5	176,2	273,1	430,1	610,0	775,5
DN125	125	0,06	6,1	44,0	100,4	171,1	275,8	427,5	667,5	959,5	1243,7
DN150	150	0,08	9,2	69,9	151,8	248,6	395,5	613,5	951,4	1380,4	1814,2
DN200	200	0,10	17,2	140,7	286,8	444,9	695,7	1080,7	1658,9	2436,3	3262,4

Single reduction in nominal width, non-sealing*

Type	Inner-diameter	valve position									
	(mm)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40/32	40	0,1	1,0	2,9	5,4	10,2	16,9	24,9	32,9	38,8	42,5
DN50/40	50	0,2	1,2	3,8	7,9	17,3	29,3	42,2	53,6	61,5	66,4
DN65/50	65	0,2	1,6	5,9	14,0	30,1	49,7	70,6	89,0	101,9	109,9
DN80/65	80	0,4	2,4	9,9	29,9	57,5	90,5	127,0	162,3	187,6	203,5
DN100/80	100	0,5	4,3	21,4	53,5	94,2	143,6	200,2	259,6	303,2	331,0
DN125/100	125	0,8	8,2	45,0	97,2	158,0	233,4	323,7	426,7	504,0	553,7
DN150/125	150	1,1	15,2	87,6	171,5	261,6	376,3	519,9	695,8	830,0	917,0
DN200/150	200	1,5	24,4	144,8	267,6	391,7	553,3	762,6	1031,7	1239,3	1374,5

Single reduction in nominal width, sealing*

Type	Inner-diameter	valve position									
	(mm)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40/32	40	0,02	0,4	2,1	4,2	8,4	14,3	21,6	29,7	35,6	39,2
DN50/40	50	0,02	0,5	2,8	6,5	15,8	27,0	38,7	49,8	58,7	65,1
DN65/50	65	0,03	0,8	4,3	12,8	29,1	47,9	67,1	85,1	98,7	107,8
DN80/65	80	0,04	1,2	7,6	28,3	56,6	89,0	123,5	157,6	183,1	199,5
DN100/80	100	0,04	2,4	17,8	52,0	93,5	143,0	198,4	255,9	298,1	324,5
DN125/100	125	0,05	4,8	39,9	95,8	157,5	232,5	320,8	424,4	499,1	542,9
DN150/125	150	0,06	9,4	81,1	170,0	260,9	374,8	515,3	685,9	816,3	899,0
DN200/150	200	0,06	16,1	141,2	266,6	389,5	550,5	758,8	1027,8	1227,8	1347,5

Two reductions in nominal width, non-sealing*

Type	Inner-diameter	valve position									
	(mm)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40/25	40	0,1	0,3	1,3	2,7	4,9	7,6	10,7	13,4	15,4	16,7
DN50/32	50	0,1	0,6	2,0	4,1	7,5	12,6	19,2	25,8	30,7	33,9
DN65/40	65	0,2	0,9	3,6	7,7	13,8	22,4	33,5	45,1	53,4	58,6
DN80/50	80	0,2	1,5	6,8	15,2	26,2	40,7	58,5	76,9	89,6	97,0
DN100/65	100	0,3	2,5	14,2	32,5	54,6	80,9	110,5	140,7	160,2	170,6
DN125/80	125	0,4	3,8	24,7	57,3	94,7	136,2	180,0	223,8	250,4	263,2
DN150/100	150	0,6	5,9	43,5	101,8	166,5	233,7	300,0	364,6	401,0	416,2
DN200/125	200	0,7	9,2	74,8	175,9	285,6	393,4	493,8	588,9	638,1	655,0

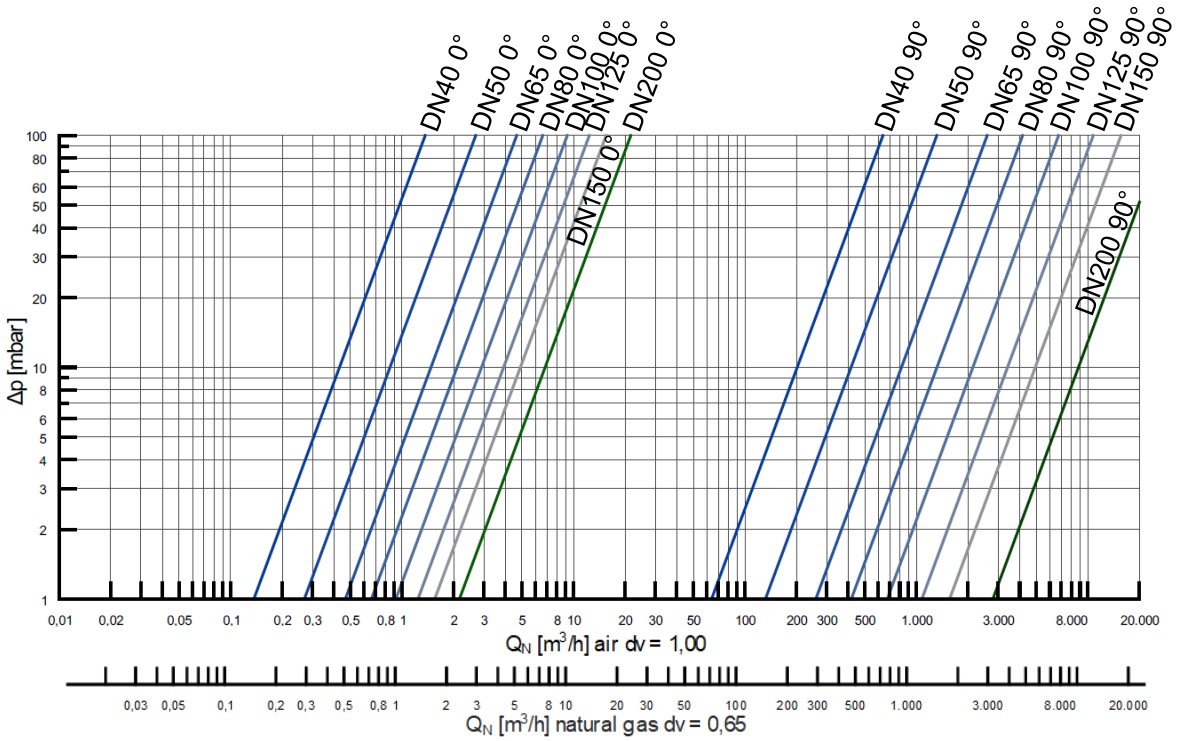
Two reductions in nominal width, sealing*

Type	Inner-diameter	valve position									
	(mm)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN40/25	40	0,01	0,1	1,0	2,0	4,0	6,4	9,3	12,0	14,4	16,4
DN50/32	50	0,02	0,2	1,5	3,4	6,9	11,6	17,6	24,0	29,2	33,2
DN65/40	65	0,02	0,4	2,6	7,0	13,3	21,6	31,9	43,1	51,6	57,4
DN80/50	80	0,03	0,7	5,3	14,4	25,8	40,0	56,8	74,7	87,3	95,1
DN100/65	100	0,04	1,4	11,8	31,6	54,3	80,5	109,5	138,8	157,4	167,3
DN125/80	125	0,04	2,2	21,9	56,4	94,6	135,6	178,4	222,7	247,7	258,0
DN150/100	150	0,05	3,7	40,3	100,9	166,4	232,6	297,3	359,6	394,1	408,0
DN200/125	200	0,06	6,1	73,0	175,3	284,6	391,3	491,4	587,1	631,5	642,1

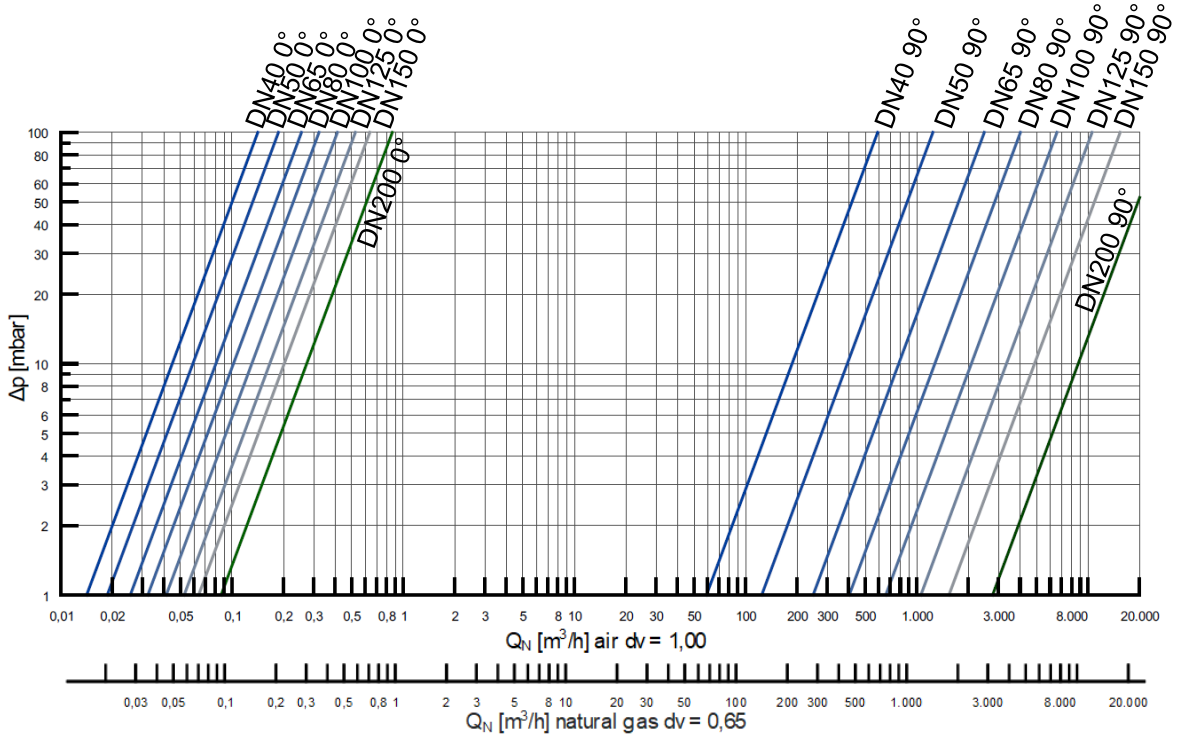
*** reduction only available for SVA and SVHT**

Flow curves

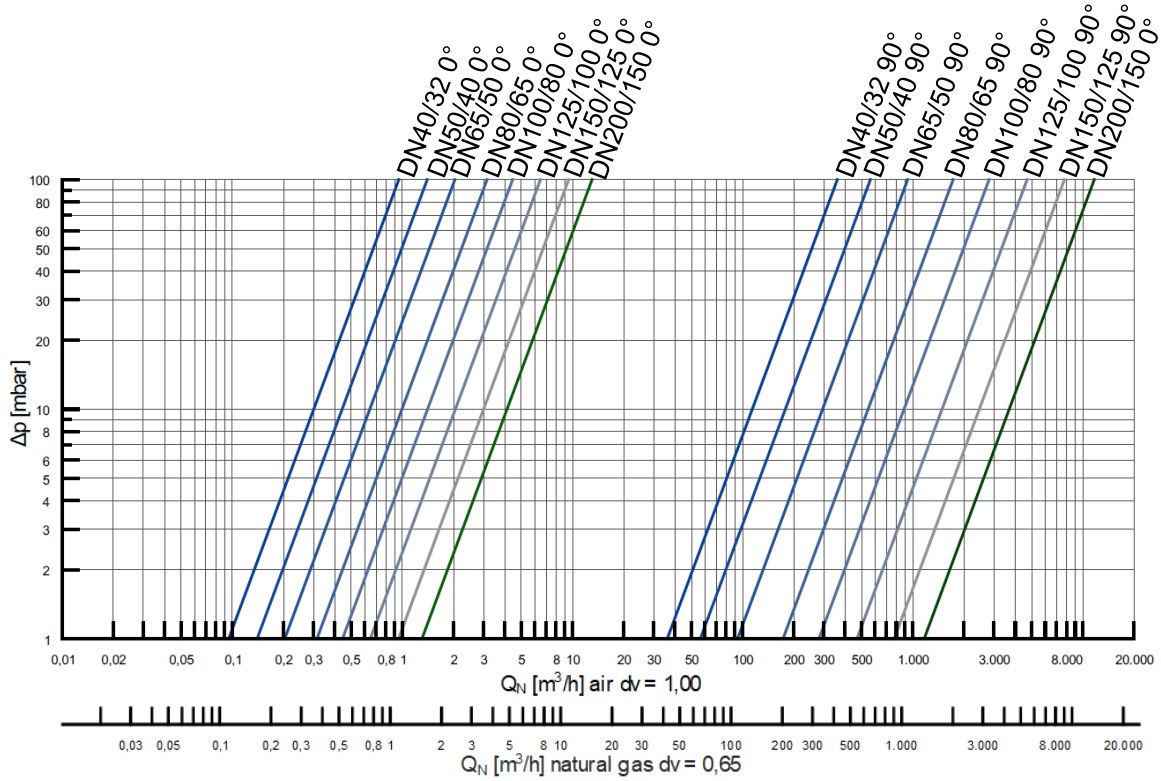
Inner diameter matches nominal size, non-sealing



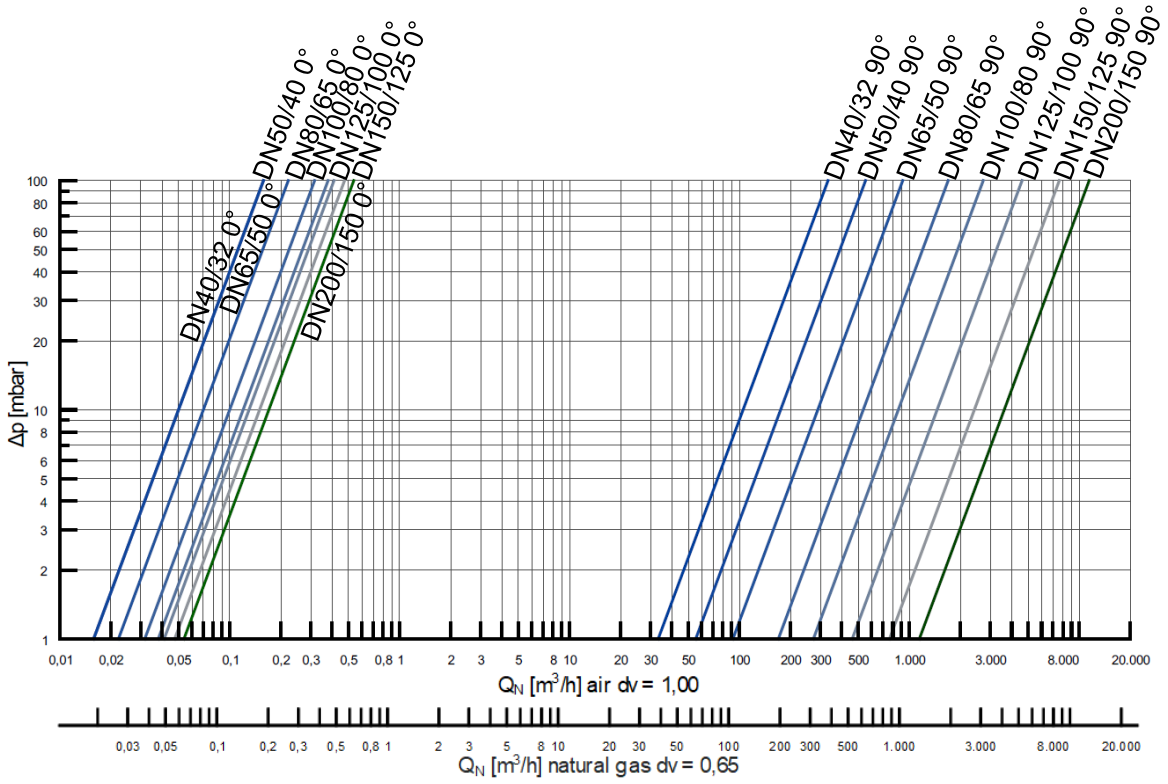
Inner diameter matches nominal diameter, sealing



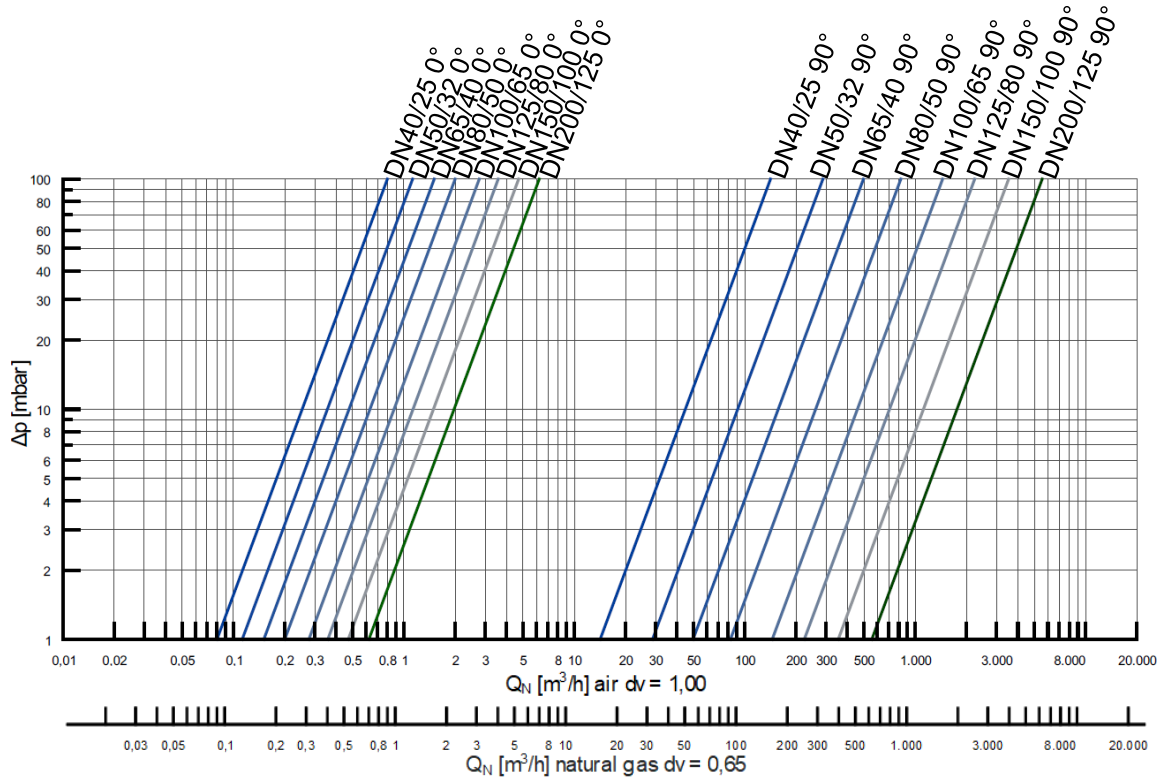
Single reduction in nominal width, non-sealing



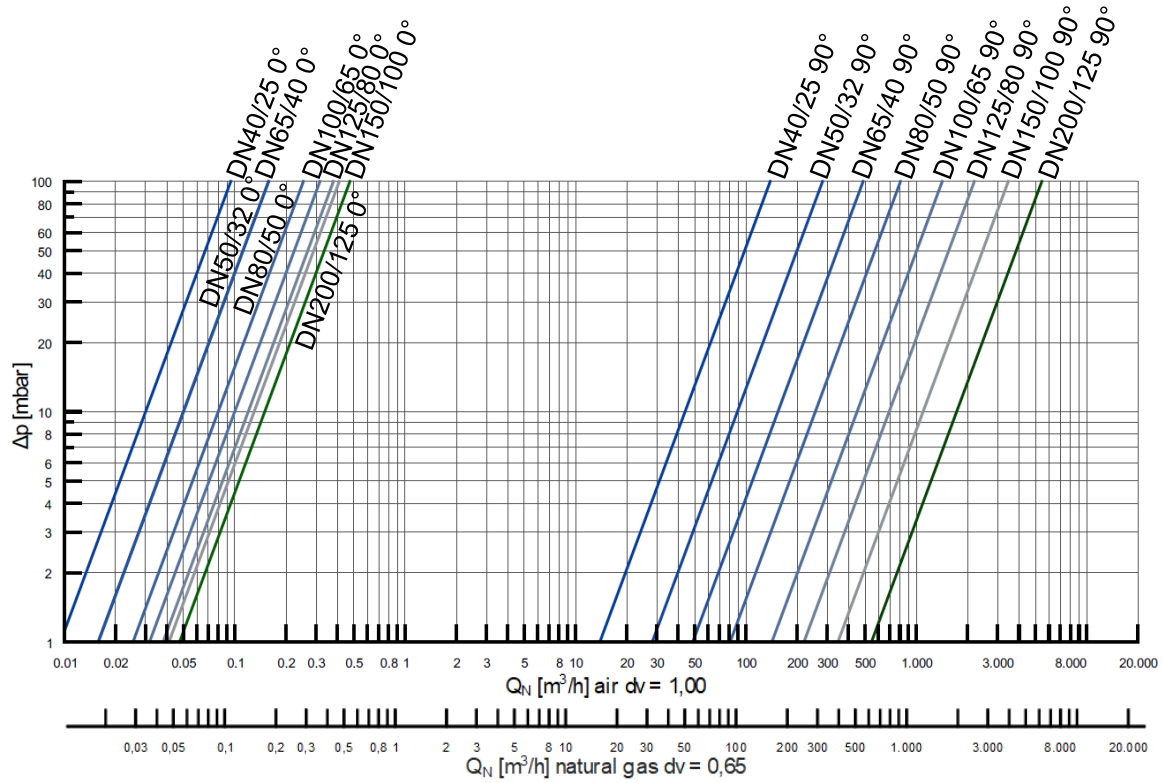
Single reduction in nominal width, sealing



Two reductions in nominal width, non-sealing



Two reductions in nominal width, sealing



Selection

Options

Valve disc

The valve disc of all valves is a swing-through type. To reduce the minimum flow rate when the valve is closed, the valve disc is also available with an integrated sealing system.

Actuation

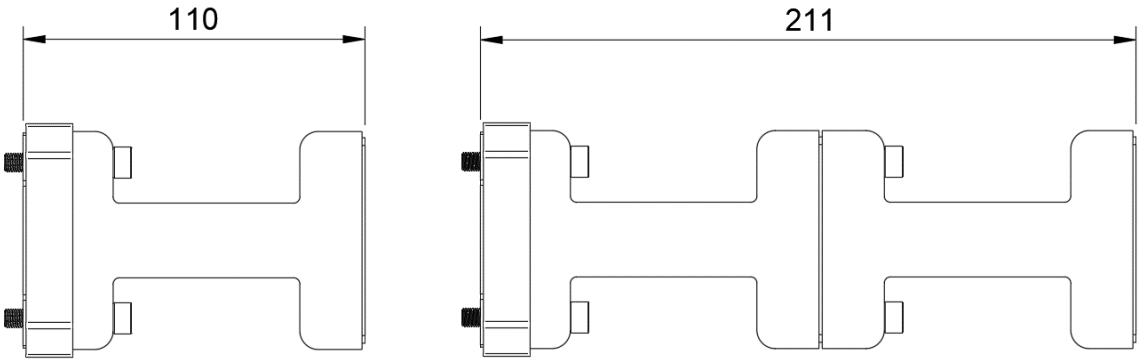
All valves are equipped with an external square for easy mounting of a Schimpf actuator or a hand lever.

By means of an optional **hand lever**, volumetric flows of 0°-90° can be continuously adjusted and fixed. The setting angle can be read off a scale.

Customised shaft end forms and adapter sets for other actuators are also available.

Thermal console

For thermal decoupling at higher media temperatures, a thermal console can be used between the damper and the actuator. The thermal console is available in a standard version and in a version with double the length. For media temperatures greater than 100°C, the use of a standard thermal console is recommended. For media temperatures greater than 450°C up to 650°C, the double-length thermal console should be used.



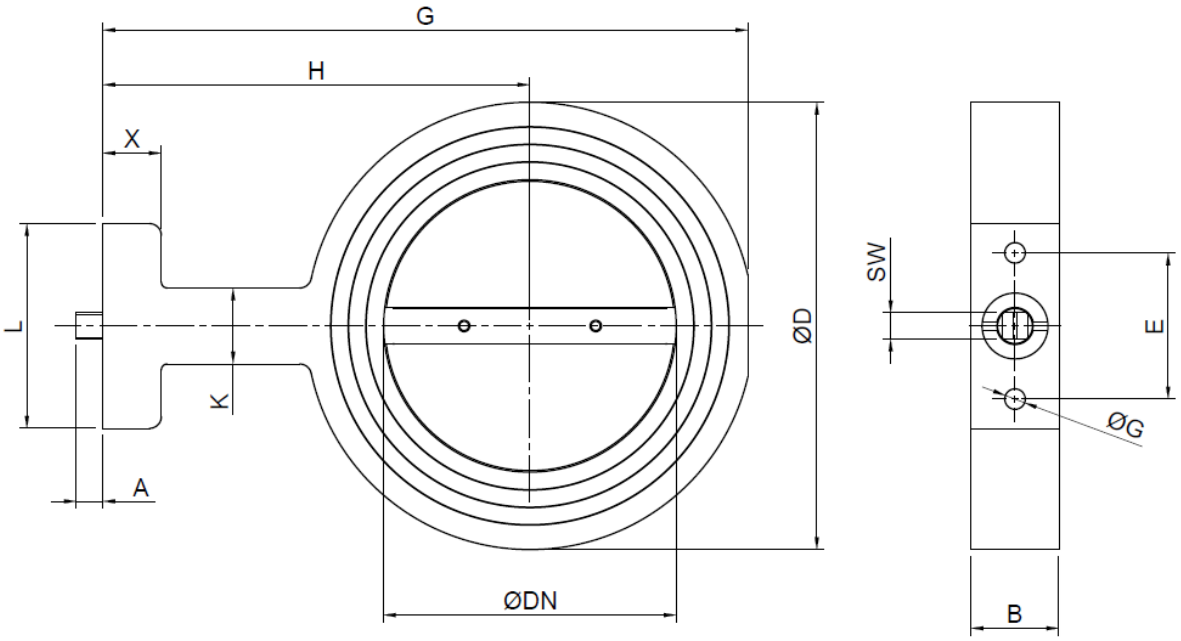
Overall length

All valves in the SVA and SVHT series in the size range of DN 40 to DN 150 are available in overall lengths of 30 mm and 40 mm. For the SVH and SVHT series, the overall length depends on the size.

Protective earth

The valves in the SVA and SVHT series can be supplied with a screw connection (M4) on the connector for a protective conductor.

SVA / SVHT dimensions



Type	DN40 mm	DN50 mm	DN65 mm	DN80 mm	DN100 mm	DN125 mm	DN150 mm	DN200 mm
ØDN – Inner diameter*	40 (32/25)*	50 (40/32)*	65 (50/40)*	80 (65/80)*	100 (80/65)*	125 (100/80)*	150 (125/100)*	200 (150/125)*
ØD - Outer diameter	87	97	117	133	153	183	208	263
G - Overall height	155	165	182,5	200,5	220,5	248	273	325,5
H - Centre of fitting to top of neck	113,5	118,5	126	136	146	158,5	171	196
X - Connector height	20	20	20	20	20	20	20	20
L - Connector width	70	70	70	70	70	70	70	70
K - Central bar width	26	26	26	26	26	26	26	26
B - Overall length**	30/40	30/40	30/40	30/40	30/40	30/40	30/40	40
A - Height of square spindle	9	9	9	9	9	9	9	9***
SW - Width across flats of square spindle	9	9	9	9	9	9	9	9***
E - Hole spacing	50	50	50	50	50	50	50	50
ØG - Hole diameter	7	7	7	7	7	7	7	7

* Inner diameter can be reduced by one or two nominal diameters
** SVA: DN 40 - DN 150: length 30 or 40 mm possible; DN 200: overall length 40 mm
SHT: DN 40 - DN 150: overall length 30 mm; DN 200: overall length 40 mm
*** DN200 also with square spindle 11*11mm available

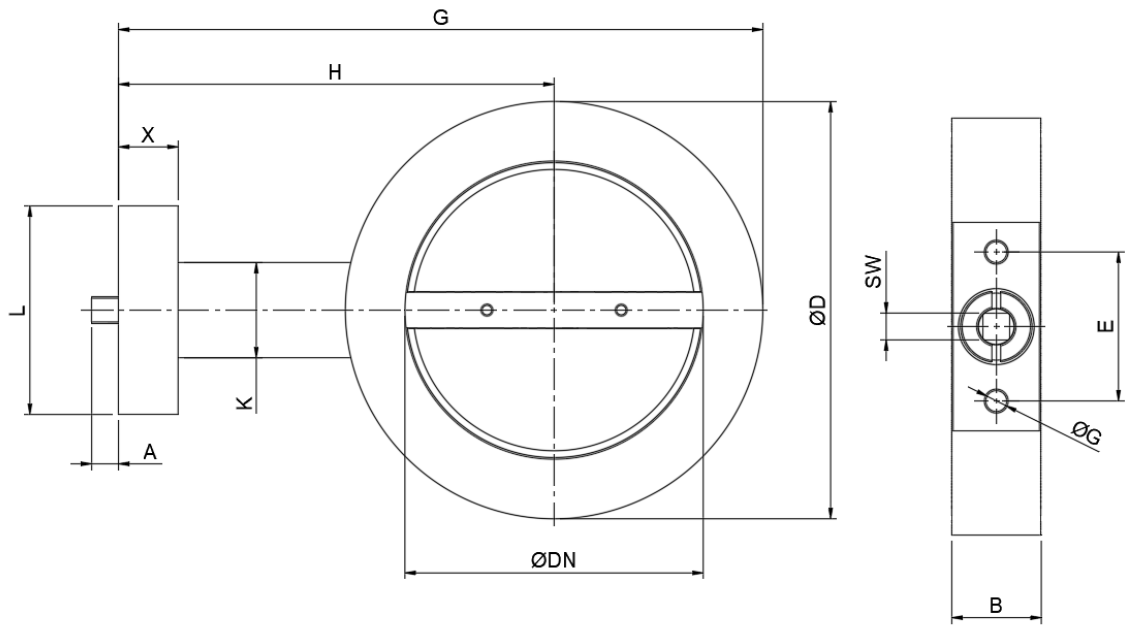
Weight of SVA

Type	DN40 ~ kg	DN50 ~ kg	DN65 ~ kg	DN80 ~ kg	DN100 ~ kg	DN125 ~ kg	DN150 ~ kg	DN200 ~ kg
Standard Overall length 30 mm	0,7	0,8	1	1,2	1,45	1,9	2,3	-
Single reduction in nominal width Overall length 30 mm	0,75	0,82	1,1	1,3	1,55	2,05	2,5	-
Two reductions in nominal width Overall length 30 mm	0,8	0,85	1,15	1,3	1,6	2,15	2,7	-
Standard Overall length 40 mm	0,85	1	1,25	1,5	1,8	2,3	2,75	4,4
Single reduction in nominal width Overall length 40 mm	0,9	1,05	1,4	1,6	1,9	2,6	3	6,2
Two reductions in nominal width Overall length 40 mm	1	1,1	1,45	1,7	2	2,75	3,4	6,7

Weight of SVHT

Type	DN40 ~ kg	DN50 ~ kg	DN65 ~ kg	DN80 ~ kg	DN100 ~ kg	DN125 ~ kg	DN150 ~ kg	DN200 ~ kg
Standard Overall length 30 mm	1,75	2	2,5	3	3,4	4,4	5,2	-
Single reduction in nominal width Overall length 30 mm	1,8	2,1	2,8	3,25	3,85	5,2	6,1	-
Two reductions in nominal width Overall length 30 mm	1,95	2,2	2,9	3,5	4,2	5,8	7	-
Standard Overall length 40 mm	-	-	-	-	-	-	-	10,1
Single reduction in nominal width Overall length 40 mm	-	-	-	-	-	-	-	16,9
Two reductions in nominal width Overall length 40 mm	-	-	-	-	-	-	-	19

SVH dimensions



Type	DN40 mm	DN50 mm	DN65 mm	DN80 mm	DN100 mm	DN125 mm	DN150 mm	DN200 mm
ØDN – Inner diameter*	40	50	65	80	100	125	150	200
ØD - Outer diameter	77	87	105	122	140	170	196	256
G - Overall height	152	162	178,5	197	216	243,5	269	324
H - Centre of fitting to top of neck	113,5	118,5	126	136	146	158,5	171	196
X - Connector height	20	20	20	20	20	20	25	25
L - Connector width	70	70	70	70	70	70	70	70
K - Central bar width	32	32	32	32	32	32	36	36
B - Overall length**	30	30	30	30	30	35	40	40
A - Height of square spindle	9	9	9	9	9	9	9	9*
SW - Width across flats of square spindle	9	9	9	9	9	9	9	9*
E - Hole spacing	50	50	50	50	50	50	50	50
ØG - Hole diameter	7	7	7	7	7	7	7	7

*DN200 also with square spindle 11*11mm available

Weight of SVH

Type	DN40 ~ kg	DN50 ~ kg	DN65 ~ kg	DN80 ~ kg	DN100 ~ kg	DN125 ~ kg	DN150 ~ kg	DN200 ~ kg
Standard	1,5	1,7	2	2,5	2,75	3,85	5,5	8,5

Type code

Code	Description
SVA	Control valve for air up to 100°C
SVH	Control valve for air, hot air and flue gas up to 450°C
SVHT	Control valve for air, hot air and flue gas up to 650°C
40-200	Nominal size DN
/25-/150	Reduced to nominal size DN
D	Sealing
H	Stainless steel housing
V	With manual adjustment
K	Valve neck extension
2K	Valve neck double extension
B30/B40	Overall length 30 or 40 mm***

* The inside diameter of the SVA and SVHT series can be reduced by two nominal diameters.
** A sealing valve disc is only available as an option for the SVA and SVHT series.
*** A choice of overall lengths between 30 and 40 mm is only possible for the nominal sizes DN40-DN150 and only for the SVA series. All other models have a fixed nominal size. For details, see the sections on construction dimensions.

Example for SVA valve DN 65, reduced to DN 50, sealing with square, overall length 30 mm: **SVA 65/50 D V B30**

Maintenance and service life

Important: ***The "Safety instructions for maintenance and installation" must be observed during all maintenance work.***

The SVA, SVH, and SVHT control valves requires little maintenance but must be checked regularly by qualified personnel to ensure it is working properly. We recommend inspecting the control valve once a year to check the tightness of the seal and determine whether the valve is functioning as intended. The intervals for regular inspections must be set by the operator depending on the operating conditions.

The SVA, SVH, and SVHT control valves is designed to have a service life of 10 years.

When this period is over, the control valve must be inspected in detail by qualified specialists, serviced by the manufacturer or replaced.

Technical specifications

SVA

DN:	40 to 200, reduction by 2 nominal sizes possible.
Gas type:	Air
Housing:	Aluminium
Shaft:	Stainless steel
Valve disc:	Stainless steel
Seals:	NBR
Operating pressure:	Max. 50 kPa (500 mbar)
Drive adaptation:	square spindle 9*9 mm, others available on request
Flange:	EN 1092-1
Ambient temperature:	-20 to +70°C
Medium temperature:	-20 to +100°C

SVH

DN:	40 to 200
Gas type:	Air and flue gas
Housing:	Grey cast iron
Shaft:	Stainless steel
Valve disc:	Stainless steel
Seals:	Graphite
Operating pressure:	Max. 50 kPa (500 mbar)
Drive adaptation:	square spindle 9*9 mm, others available on request
Flange:	EN 1092-1
Ambient temperature:	-20 to +70°C
Medium temperature:	-20 to +450°C

SVHT

DN:	40 to 200, reduction by 2 nominal sizes possible.
Gas type:	Air and flue gas
Housing:	Stainless steel
Shaft:	Stainless steel
Valve disc:	Stainless steel
Seals:	Graphite, Silicate fabric / tungsten shell
Operating pressure:	Max. 50 kPa (500 mbar)
Drive adaptation:	square spindle 9*9 mm, others available on request
Flange:	EN 1092-1
Ambient temperature:	-20 to +70°C
Medium temperature:	-20 to +650°C