

## Data sheet

# Externally operated valves

## Type AV210



AV210 is an externally operated angle seat valve for use in demanding industrial applications. The valve can operate at very high medium temperatures and viscosities, and is insensitive to dirt particles in the medium; thus, it is often called a "troubleshooter" valve. The valve is available in bronze and stainless steel.

### Features

- For all fluids and gases
- Flow range: 0 – 234 m<sup>3</sup>/h
- Differential pressure: 0 – 16 bar
- Media temperature: -30 – 180 °C
- Ambient temperature: -30 – 60 °C
- Thread connection: G 3/8 - 2"
- DN: 15 - 50
- Viscosity: Up to 600 cSt
- Stainless steel version for neutral and aggressive liquid and gaseous media
- Unpressurized closed (NC) bidirectional versions and unpressurized opened (NO) version closing against the flow direction
- Operating pressure up to 16 bar, depending on valve type
- The valves can be used for rough vacuum
- Control connection G 1/8 and NAMUR
- Valves comply with P.E.D. 97/23/ EC group 1 & 2
- Bi-directional NC version - two flow directions
- Bronze version for water, oil and compressed air

Bronze valve body, NC



Connection ISO 228/1	Seal material	Orifice size [mm]	kv - value [m <sup>3</sup> /h]	Diameter control head [mm]	Control pressure [bar]	Differential pressure, min. to max. [bar] <sup>1)</sup>	Code number
G 3/8	PTFE	15	4.5	40 <sup>2)</sup>	4.2 – 10	0 – 16	<b>042N4400</b>
G 3/8	PTFE	15	4.9	50	4 – 10	0 – 16	<b>042N4401</b>
G 1/2	PTFE	15	5.3	40 <sup>2)</sup>	4.2 – 10	0 – 16	<b>042N4402</b>
G 1/2	PTFE	15	5.7	50	4 – 10	0 – 16	<b>042N4403</b>
G 3/4	PTFE	20	10	50	4 – 10	0 – 10	<b>042N4404</b>
G 3/4	PTFE	20	10	63	4 – 10	0 – 16	<b>042N4405</b>
G 1	PTFE	25	20	63	4 – 10	0 – 11	<b>042N4406</b>
G 1	PTFE	25	20	90	4 – 8	0 – 16	<b>042N4407</b>
G 1 1/4	PTFE	32	29	90	4 – 8	0 – 14	<b>042N4408</b>
G 1 1/2	PTFE	40	46	90	4 – 8	0 – 11	<b>042N4409</b>
G 1 1/2	PTFE	40	47	110	4 – 8	0 – 16	<b>042N4410</b>
G 2	PTFE	50	74	110	4 – 8	0 – 10	<b>042N4411</b>

<sup>1)</sup> Pressure range can be extended for use in rough vacuum, typically up to 99% vacuum (10mbar), depending on the application

<sup>2)</sup> Without NAMUR interface

Stainless steel valve body, NC



Connection ISO 228/1	Seal material	Orifice size [mm]	kv - value [m <sup>3</sup> /h]	Diameter control head [mm]	Control pressure [bar]	Differential pressure, min. to max. [bar] <sup>1)</sup>	Code number
G 3/8	PTFE	15	4.9	50	4 – 10	0 – 16	<b>042N4450</b>
G 1/2	PTFE	15	5.7	50	4 – 10	0 – 16	<b>042N4451</b>
G 3/4	PTFE	20	10	50	4 – 10	0 – 10	<b>042N4452</b>
G 3/4	PTFE	20	10	63	4 – 10	0 – 16	<b>042N4453</b>
G 1	PTFE	25	20	63	4 – 10	0 – 11	<b>042N4454</b>
G 1	PTFE	25	20	90	4 – 8	0 – 16	<b>042N4455</b>
G 1 1/4	PTFE	32	29	90	4 – 8	0 – 14	<b>042N4456</b>
G 1 1/2	PTFE	40	46	90	4 – 8	0 – 11	<b>042N4457</b>
G 1 1/2	PTFE	40	47	110	4 – 8	0 – 16	<b>042N4458</b>
G 2	PTFE	50	74	110	4 – 8	0 – 10	<b>042N4459</b>

<sup>1)</sup> Pressure range can be extended for use in rough vacuum, typically up to 99% vacuum (10mbar), depending on the application

**Mounting:** closing *against* or closing *with* the flow direction:

Closing *against* is recommended to avoid water hammer

**Bronze valve body, NO**



Connection ISO 228/1	Seal material	Orifice size [mm]	kv - value [m <sup>3</sup> /h]	Diameter control head [mm]	Pressure range <sup>1)</sup> [ bar]	Control pressure, [bar]		Code number
						min.	max.	
G 3/8	PTFE	15	4.9	50	See diagram, page 10	10	<b>042N4430</b>	
G 1/2	PTFE	15	5.7	50	See diagram, page 10	10	<b>042N4431</b>	
G 3/4	PTFE	20	10	50	See diagram, page 10	10	<b>042N4432</b>	
G 1	PTFE	25	20	63	See diagram, page 10	10	<b>042N4433</b>	
G 1 1/4	PTFE	32	29	63	See diagram, page 10	10	<b>042N4434</b>	
G 1 1/2	PTFE	40	46	90	See diagram, page 10	8	<b>042N4435</b>	
G 2	PTFE	50	74	110	See diagram, page 10	8	<b>042N4436</b>	

<sup>1)</sup> Pressure range can be extended for use in rough vacuum, typically up to 99% vacuum (10mbar), depending on the application

**Stainless steel valve body, NO**



Connection ISO 228/1	Seal material	Orifice size [mm]	kv - value [m <sup>3</sup> /h]	Diameter control head [mm]	Pressure range <sup>1)</sup> [ bar]	Control pressure, [bar]		Code number
						min.	max.	
G 3/8	PTFE	15	4.9	50	See diagram, page 10	10	<b>042N4480</b>	
G 1/2	PTFE	15	5.7	50	See diagram, page 10	10	<b>042N4481</b>	
G 3/4	PTFE	20	10	50	See diagram, page 10	10	<b>042N4482</b>	
G 1	PTFE	25	20	63	See diagram, page 10	10	<b>042N4483</b>	
G 1 1/4	PTFE	32	29	63	See diagram, page 10	10	<b>042N4484</b>	
G 1 1/2	PTFE	40	46	90	See diagram, page 10	8	<b>042N4485</b>	
G 2	PTFE	50	74	110	See diagram, page 10	8	<b>042N4486</b>	

<sup>1)</sup> Pressure range can be extended for use in rough vacuum, typically up to 99% vacuum (10mbar), depending on the application

**Mounting:** Always closing *against* the flow direction

**Technical data  
NC/NO**

Main type	50 – 63 mm control head. Closing with the flow direction	50 – 63 mm control head. Closing against the flow direction	90 – 110 mm control head. Closing with the flow direction	90 – 110 mm control head. Closing against the flow direction
Time to open [ms] <sup>1)</sup>	40 – 180	50 – 350	80 – 780	100 – 460
Time to close [ms] <sup>1)</sup>	160 – 500	120 – 350	580 – 1270	360 – 790

<sup>1)</sup>The times are indicative.

Type	AV210 NC/NO			
Design	Piston-operated; angle-seated			
Installation	Optional			
Tightness	Internally/ Externally:	Better than 0.4 mbar l/sec (25 ccm air per min.)		
Pressure range	See ordering			
Ambient temperature	-30 – 60 °C			
Medium temperature	-30 – 180 °C			
Viscosity	Max. 600 cSt			
Control medium	Air			
Materials	Valve body:	Bronze	RG 5	
		Stainless steel	AISI 316	
	Intermediate piece:	Bronze body:	Brass	W.no.2.0402
		Stainless steel body:	Stainless steel	AISI 316
	Seat control and nut:	Stainless steel		AISI 316
	Spindle:	Stainless steel		AISI 316
	Spindle gasket:	PTFE		–
	Gasket:	Graphite		–
Valve plate unit:	PTFE		–	
Control head:	PA66		–	

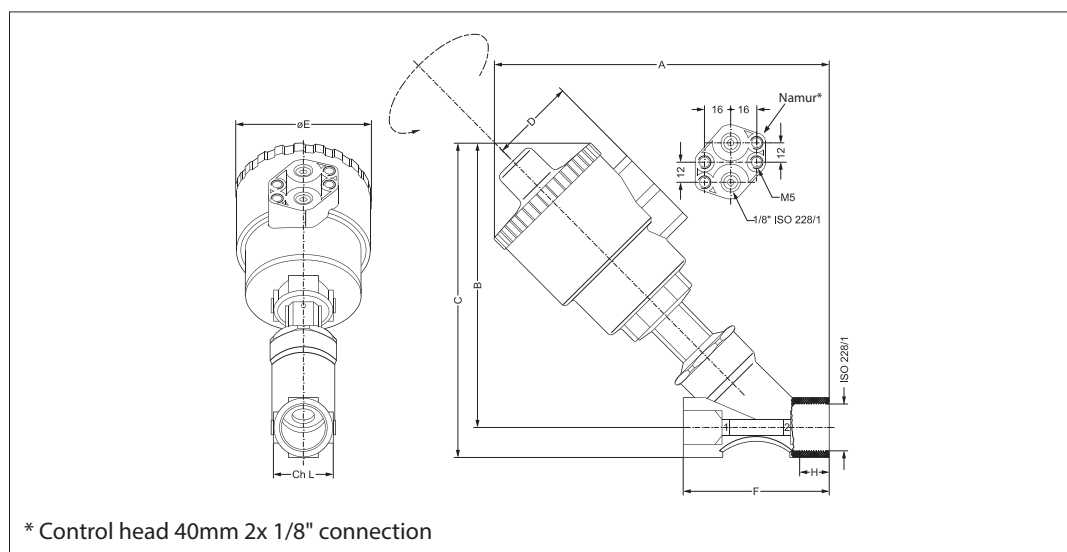
Type	Approval
AV210 15-25	The products are not allowed to carry CE mark, according to PED 97/23/EC
AV210 32 - 40 - 50 Bronze	CE marked and covered by PED 97/23/EC, fluid group 1, class I
AV210 32 - 40 SS	CE marked and covered by PED 97/23/EC, fluid group 1, class I
AV210 50 SS	CE marked and covered by PED 97/23/EC, fluid group 1, class II

**Dimensions and weight  
Bronze valve body**

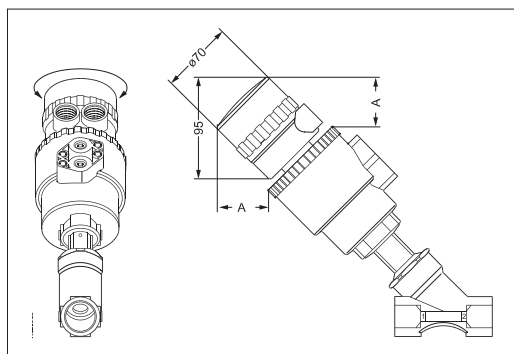
Connection ISO 228/1	Orifice size [mm]	Diameter control head [mm]	A [mm]	B [mm]	C [mm]	D [mm]	øE [mm]	F [mm]	H [mm]	ch.L [mm]	Weight [kg]
G 3/8	15	40	144	121	134	35	61	65	12	27	1.1
G 3/8	15	50	163	140	153	44	70	65	12	27	1.1
G 1/2	15	40	144	121	134	35	61	65	13	27	1.0
G 1/2	15	50	163	140	153	44	70	65	13	27	1.0
G 3/4	20	50	173	147	163	44	70	75	14.3	27.5	1.2
G 3/4	20	63	191	165	181	50.5	84.4	75	14.3	27.5	1.2
G 1	25	63	206	176	196	50.5	84.4	90	17.5	41	1.6
G 1	25	90	246	216	236	66.2	116.4	90	17.5	41	1.7
G 1 1/4	32	90	255	220	245	66.2	116.4	110	19	50	3.0
G 1 1/2	40	90	270	235	264	66.2	116.4	120	18	58	3.4
G 1 1/2	40	110	306	271	300	77.4	140.6	120	18	58	4.0
G 2	50	110	316	276	311	77.4	140.6	150	20	70	5.3

**Dimensions and weight  
Stainless steel valve body**

Connection ISO 228/1	Orifice size [mm]	Diameter control head [mm]	A [mm]	B [mm]	C [mm]	D [mm]	øE [mm]	F [mm]	H [mm]	ch.L [mm]	Weight [kg]
G 3/8	15	40	190	156	169	44	70	85	12	25	1.1
G 1/2	15	50	190	156	169	44	70	85	15	25	1.0
G 3/4	20	50	195	160	176	44	70	95	16.3	31	1.2
G 3/4	20	63	213	178	194.4	50.5	84.4	95	16.3	31	1.2
G 1	25	63	219	182	202	50.5	84.4	105	19.5	38	1.6
G 1	25	90	259	222	242	66.2	116.4	105	19.5	38	1.7
G 1 1/4	32	90	266	226	249	66.2	116.4	120	19	47	3.0
G 1 1/2	40	90	271	230	258	66.2	116.4	130	18	54	3.4
G 1 1/2	40	110	307	266	294	77.4	140.6	130	18	54	4.0
G 2	50	110	321	276	310	77.4	140.6	150	20	66	5.3



**Accessories**  
**Position indicator**



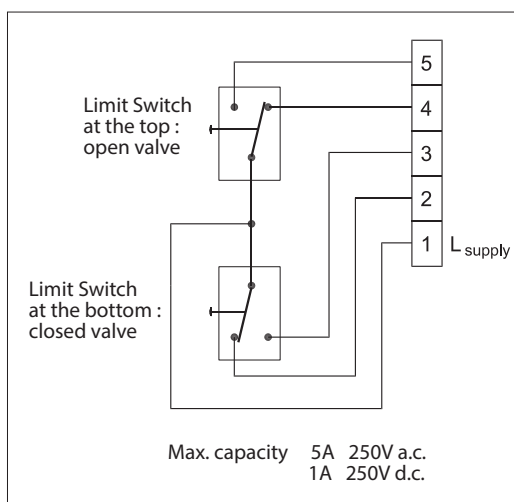
**Features**

The control box to check the open/closed positions with two mechanical limit switches is suitable for assembling on the whole range of valves.  
 Level of protection : IP65  
 Ambient temperature: from -20 °C – 70 °C  
 Access lead nr.2 PG11  
 Body material: polyamide(cap in Lexan/polycarbonate)

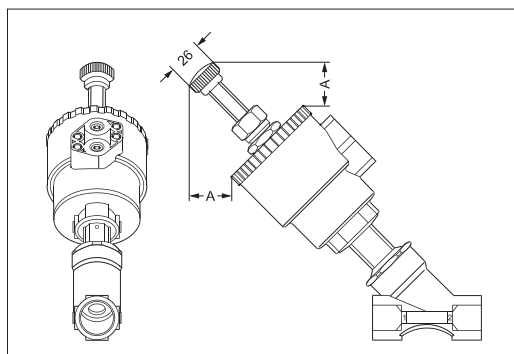
Actuator size [mm]	A [mm]	Code number
ø50	52.1	042N4820
ø63	47.5	042N4821
ø90	37.7	042N4822
ø110	29.5	042N4823

\* Limit Switch Box incl. 2 switches

**Wiring diagram**  
**for position indicator**



**Accessories**  
**Manual override**

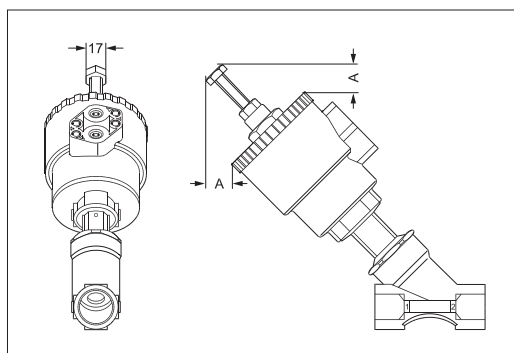


**Features**

It permits opening the valve in emergency cases (lack of pilot fluid, machinery damaged, lack of piloting signal).  
It is available on all NC versions.

Actuator size [mm]	A [mm]	Code number
ø50	35.8	042N4840
ø63	35.8	042N4841
ø90	29.5	042N4842
ø110	29.5	042N4843

**Manual capacity control**

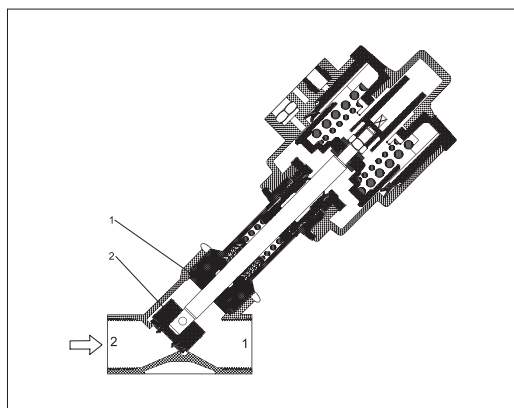


**Features**

It limits steplessly the movement of the spindle, thereby controlling the capacity of the valve.  
Available on all the versions. In NO versions it can be used as manual override.

Actuator size [mm]	A [mm]	Code number
ø50	25.5	042N4860
ø63	21.5	042N4861
ø90	5.2	042N4862
ø110	5.9	042N4863

Repair sets



Ordering  
Bronze/Stainless steel

Conne- ction ISO 228/1	Diameter control head [mm]	Material		Code number
		Valve plate unit	Gasket	
G 3/8	40	PTFE	Graphite	042N4800*
G 3/8	50	PTFE	Graphite	042N4801
G 1/2	40	PTFE	Graphite	042N4802*
G 1/2	50	PTFE	Graphite	042N4803
G 3/4	50 – 63	PTFE	Graphite	042N4804
G 1	63	PTFE	Graphite	042N4805
G 1	90	PTFE	Graphite	042N4806
G 1 1/4	90	PTFE	Graphite	042N4807
G 1 1/2	90 – 110	PTFE	Graphite	042N4808
G 2	110	PTFE	Graphite	042N4809

**The repair set contains :**

1 valve plate unit including mounting pin (2) and 2 gaskets (1).

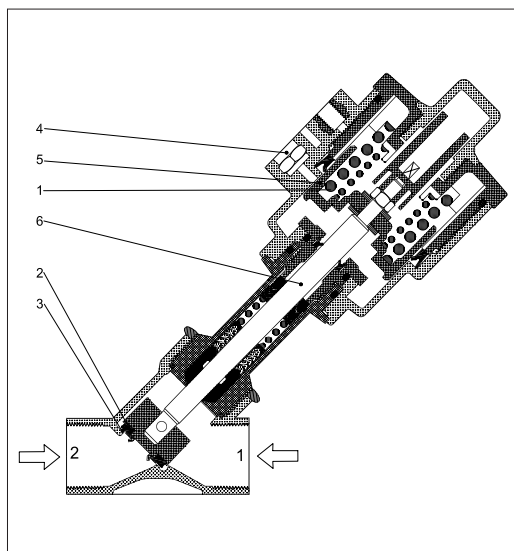
*Please note only one gasket shall be used. One is for Bronze, another is for Stainless Steel.*

\* On actuator size 40 (diameter control head) only one gasket included.



**Function, NC**

- 1. Spring
- 2. Seat gasket
- 3. Valve seat
- 4. Control connection
- 5. Control piston
- 6. Spindle

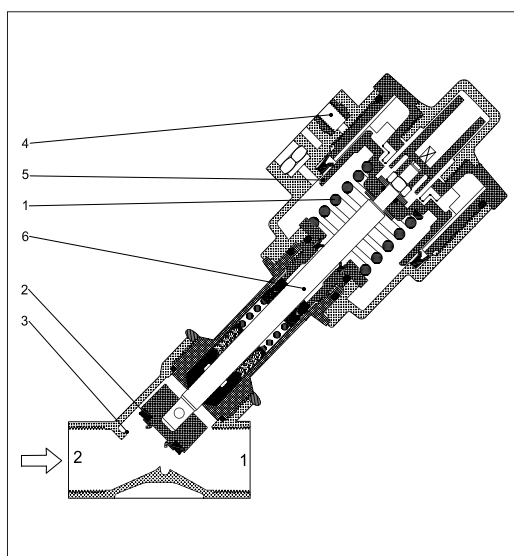


*AV210 unpressurized closed version (NC) bidirectional.*

The valve is kept closed by the spring (1), which presses the seat gasket (2) against the valve seat (3). When the pressure is applied to the control connection (4), the control piston (5), the spindle (6) and thus the seat gasket (2) are raised, and the valve opens with or against the pressure of the medium.

**Function, NO**

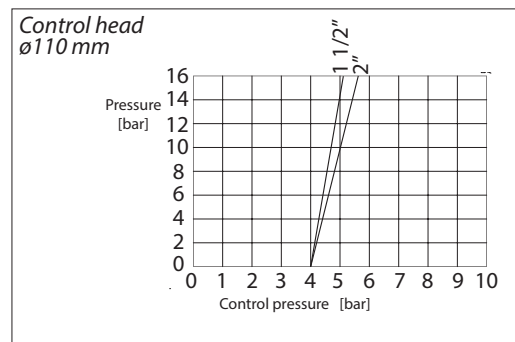
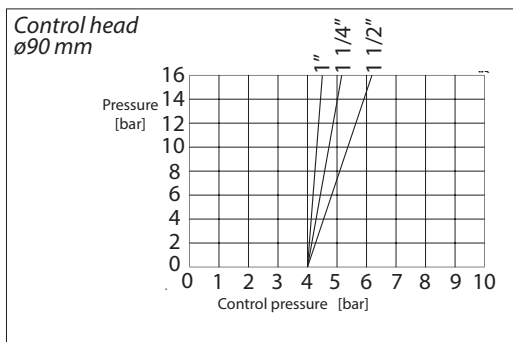
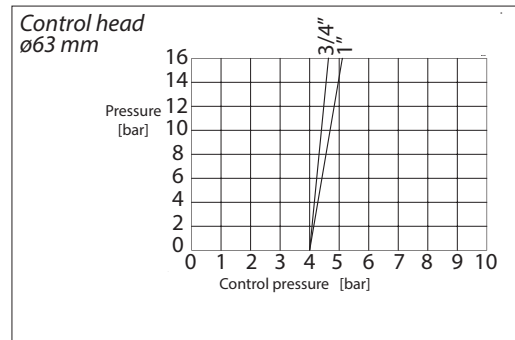
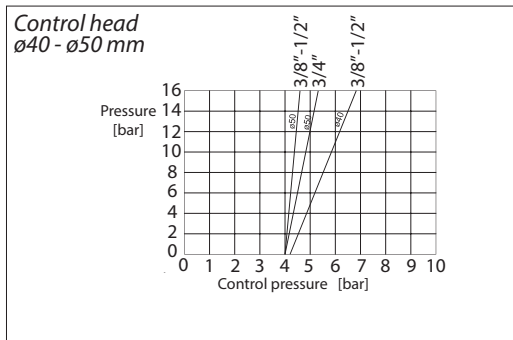
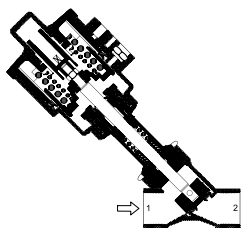
- 1. Spring
- 2. Seat gasket
- 3. Valve seat
- 4. Control connection
- 5. Control piston
- 6. Spindle



*AV210 unpressurized open version (NO):*

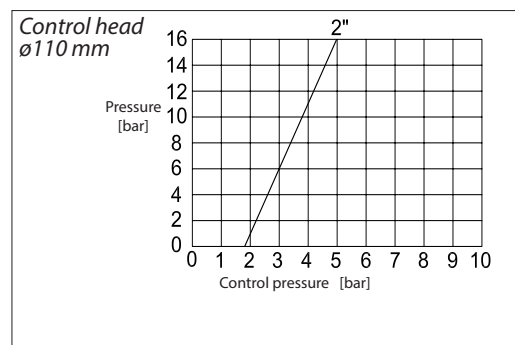
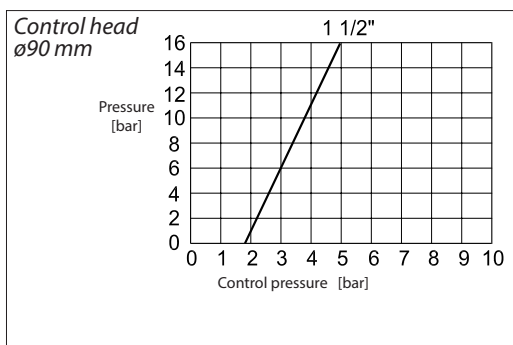
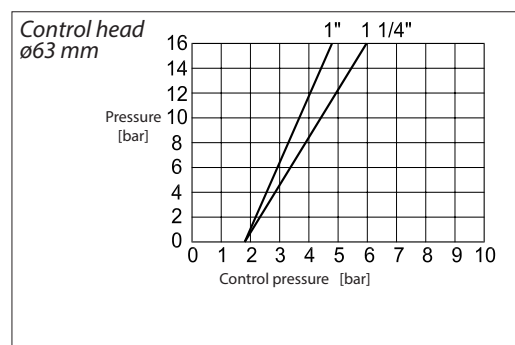
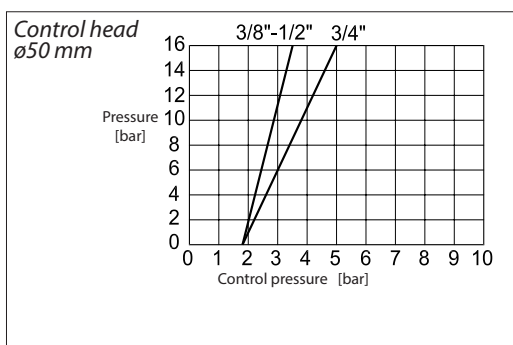
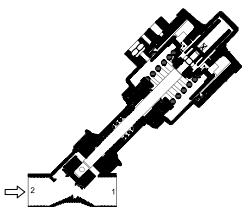
The valve is kept open by the spring (1), which keeps the seat gasket (2) away from the valve seat (3). When pressure is applied to the control connection (4), the control piston (5) and thus the seat gasket (2) are lowered, and the valve closes against the pressure of the medium.

Diagrams, NC

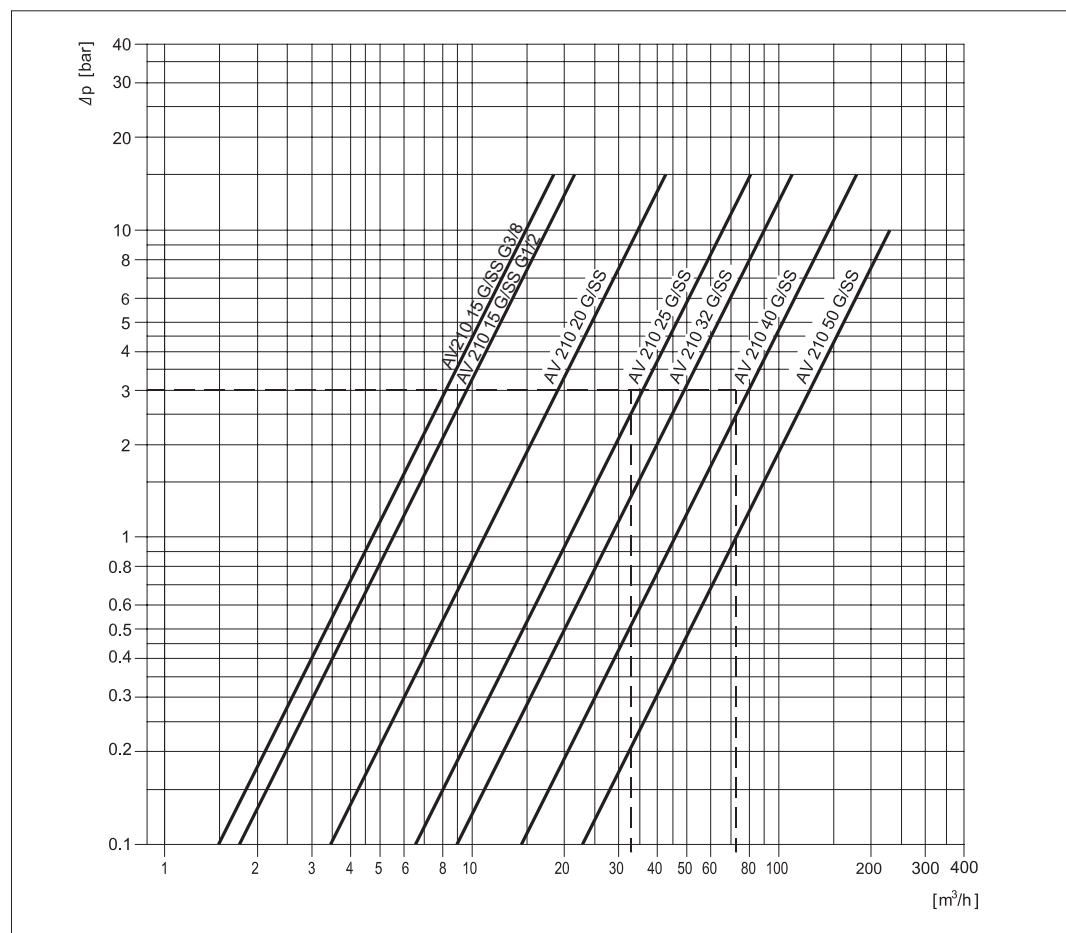


**Mounting:** closing *with* the flow direction  
Recommended only for compressible media for extended pressure range

Diagrams, NO



Capacity diagram, Water



Control valves, types EV310A and EV310B



- Valves for industrial applications
- Available in de-energized closed and de-energized open versions
- Available with or without manual operation

See separate data sheets regarding code numbers, technical data and coil options for Danfoss EV310A and EV310B valves.