

Chemical Butterfly Valve K 210

for applications in the harsh environment of the chemical industry



Advantages

DN 50 to DN 200

- double shaft seal
- O-ring as a flange seal contained in our scope of delivery

DN 250 to DN 600

- liner as a sealing element
- liner makes additional flange seals superfluous

Application

- chemical plants

Utilisation

- for shutting off pipeline systems

Flow media

- Neutral and aggressive fluid or gaseous media, provided that the valve components coming into contact with the media are resistant at the operating temperature according to the ASV resistance guide. Media containing solid particles impair the operating life of the valve.

Examinations

- Requirements and examinations acc. to DIN 3441, 3442, 8063, 16962/3. DIN EN 12266, leakage rate A tested.

Nominal pressure (H₂O, 20°C)

- DN 50 - DN 125 PN 10
- DN 150 - DN 350 PN 6
- DN 400 PN 5

Fluid temperature

- see pressure/temperature diagram

Operating pressure

- see pressure/temperature diagram

Size

- DN 50 - DN 400

Spindle

- stainless steel 1.4305

Body/Shut-off disc

DN 50 to DN 200

- PVC-U/PVC-U
- PP/PP
- PVDF/PVDF

DN 250 to DN 400

- PVC-U/PP
- PP/PP
- PVDF/PVDF

Bearing bushes

- PVDF

Sealing elements

- stirrup-type sealing element made of EPDM or FPM
- O-rings made of EPDM or FPM

Actuation

DN 50 to DN 200

- with hand notch lever, spring-loaded latch or engagement mechanism with 7 notches, each 15°

DN 250 to DN 400

- with manual gear

Connection

- intermediate flange construction according to DIN 2501 PN 10/16 between smooth flange adaptors or welding necks acc. to DIN/ISO

Mounting position

- preferably hand lever or actuator in upright position

Option

- electrical or pneumatical actuation

Colour

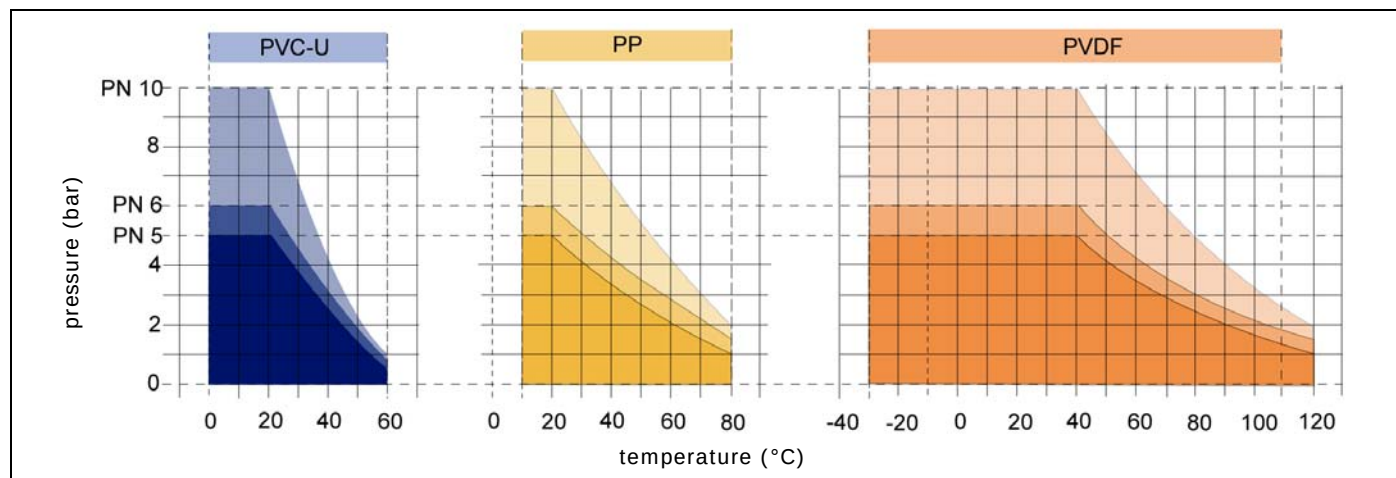
- body

PVC-U:	grey, RAL 7011
PP:	grey, RAL 7032
PVDF:	opaque, yellowish-white
- hand lever

PA:	orange, RAL 2005
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Chemical Butterfly Valve K 210

Pressure / temperature diagram



The pressure/temperature limits are applicable for the stated nominal pressures and a computed operating life factor of 25 years.

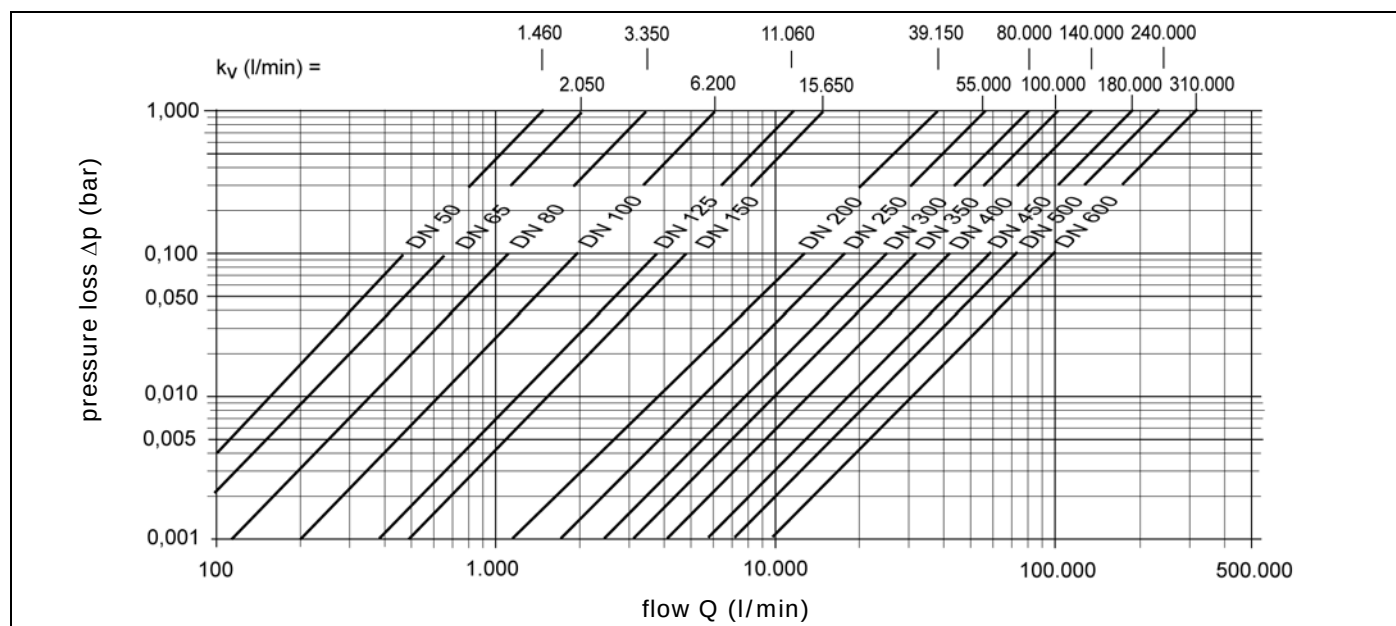
The values are a guide for harmless media (DIN 2403), to which the material of the valve is resistant.

For other media see the ASV resistance guide.

The durability of wear and tear parts depends on the operating conditions of the application.

For temperatures below 0°C (PP < +10°C) please specify the precise operating conditions of the application.

Pressure loss curve (reference values for H₂O, 20°C)



Pressure loss and k_v value

The diagram shows pressure loss Δp in relation to the flow Q.

For calculation:

$$c_v = k_v \times 0,07$$

$$f_v = k_v \times 0,0585$$

Units:

$$k_v \text{ [l/min]}$$

$$c_v \text{ [gal/min] US}$$

$$f_v \text{ [gal/min] GB}$$

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Torque Nm (reference value)

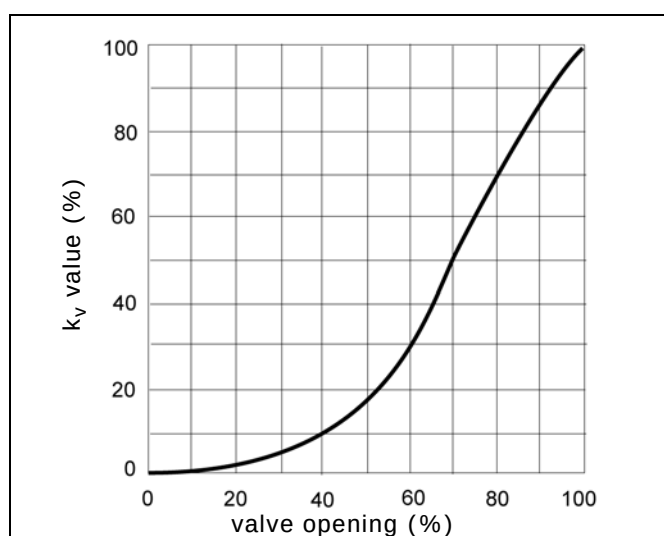
DN (mm)	50	65	80	100	125	150	200
MD (Nm)	15	19	28	38	52	65	82

DN (mm)	250	300	350	400	450	500	600
MD (Nm)	300	450	650	750	850	950	1100

The specified torques (without hand lever) are reference values.

These values can be higher or lower, depending on the fluid.

Flow and control characteristics



Bevel dimension for welding necks

d (mm)	63	75	90	110	140	160	225	280	315	355	400
DN (mm)	50	65	80	100	125	150	200	250	300	350	400
DN (inch)	2	2 1/2	3	4	5	6	8	10	12	14	16
A (mm) SDR17,6	55,8	66,4	79,8	97,4	124,0	141,8	199,4	248,2	279,2	314,8	354,6
q x β (mm x °)	-	-	3x45°	3x45°	3x45°	12x30°	18x30°	5x25°	10x25°	30x25°	15x25°
A (mm) SDR11	51,4	61,4	73,6	90,0	114,6	130,8	184,0	229,2	257,8	290,6	327,4
q x β (mm x °)	-	3x45°	8x35°	9x35°	11x35°	20x35°	31x30°	10x25°	25x30°	50x30°	35x30°

Max. flange torque (Nm)

d (mm)	63	75	90	110	140	160	225	280	315	355	400
PVC-flange	30	35	40	50	55	60	65	65	65	80	85
GFR-flange	32	37	40	50	60	60	75	65	65	80	85
PP/steel-flange	35	40	40	50	60	60	75	65	65	80	85

Operating instructions



Safe operation of the valve can only be ensured if it is properly installed, operated, serviced or repaired by qualified personnel according to its intended use while observing the accident prevention regulations, safety regulations, relevant standards and technical regulations or data sheets such as e.g. DIN, DIN EN, DIN ISO and DVS* for example.

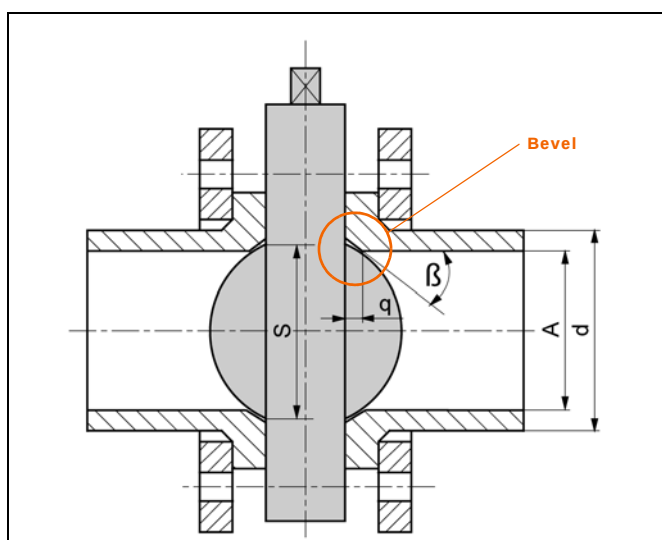
*DVS = German Welding Society

Installation advice

NOTE

Machine a bevel to welding necks according to the table, prior to installing the butterfly valve in the pipe. If different connection fittings/pressure stages are used, ensure that the shut-off disc has a perfect opening (machine a bevel, if necessary). Otherwise damage to the shut-off disc could occur. Leaks would result. ✓

Installation advice



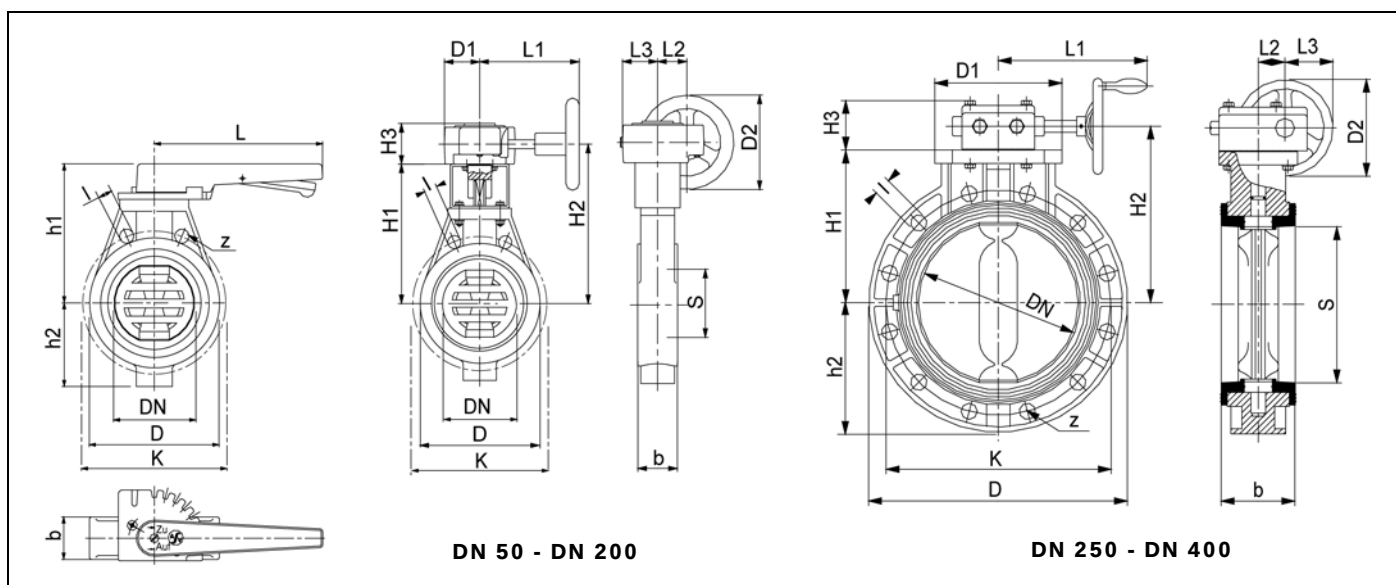
The intended use includes adhering to specified limit values for pressure and temperature as well as checking the chemical resistance with regard to the operating conditions.

For this purpose, ensure that all components coming into contact with the media are "resistant" in accordance with the ASV resistance guide.

Non-observance of the specified instructions and safety regulations may cause damage to health and/or damage to assets.

PVC-U valves may only be installed with PVC-U flange adapters. ✓

Chemical Butterfly Valve K 210 »manual«



Dimensions

d (mm)	63	75	90	110	140	160	225	280	315	355	400
DN (mm)	50	65	80	100	125	150	200	250	300	350	400
DN (inch)	2	2 1/2	3	4	5	6	8	10	12	14	16
PN	10	10	10	10	10	6	6	6	6	6	5
b	43,0	46,0	46,0	52,0	64,0	65,0	71,0	109,0	133,0	127	168
D	107	127	142	162	192	216	272	411	490	530	600
D1	48	48	48	48	48	61	61	200	236	236	300
D2	125	125	125	125	125	200	200	202	250	250	300
H1	162	172	180	190	215	227	280	242	302	300	350
H2	189	199	207	217	242	256	309	286	344	342	425
H3	55	55	55	55	55	60	60	77,5	76	78	120
h1	140	156	164	174	209	220	265	-	-	-	-
h2	81	88	96	106	133	145	180	205,5	245	265	300
K	125	145	160	180	210	240	295	350	400	460	515
L	170	210	210	210	300	300	400	-	-	-	-
L1	97	97	97	97	97	127	127	284,5	330	330	353
L2	39	39	39	39	39	47	47	60	60	60	81
L3	46	46	46	46	46	56	56	101	125	125	150
l	18	18	18	18	18	23	23	22	22	22	26
S	36	56	71	88	109	138	190	255	309,5	360	397,5
z	-	-	2	2	2	2	2	12	12	16	16

Weights (kg)

d (mm)	63	75	90	110	140	160	225	280	315	355	400
PVC-U hand lever	0,9	1,4	1,6	1,9	3,7	4,2	7,2	-	-	-	-
PVC-U hand gear	3,0	3,5	3,7	4,0	5,8	7,2	10,2	18,6	27,0	44,0	65,3
PP hand lever	0,7	1,0	1,2	1,5	2,9	3,2	5,6	-	-	-	-
PP hand gear	2,8	3,1	3,3	3,6	5,0	6,2	8,6	18,1	26,5	-	65,0
PVDF hand lever	1,0	1,6	1,8	2,2	4,2	4,8	8,3	-	-	-	-
PVDF hand gear	3,1	3,7	3,9	4,3	6,3	6,9	10,4	19,1	27,5	44,5	65,8

Dimension ≥ DN 400 on request!

Chemical Butterfly Valve K 210 »manual«

Ident No.

Body/housing: PVC-U

size	d (mm)	63	75	90	110	140	160	225	280	315	355	400
actuation	sealing											
hand lever	EPDM	46096	46097	46098	46099	46100	46101	46102	-	-	-	-
hand lever	FPM	46103	46104	46105	46106	46107	46108	46109	-	-	-	-
hand gear	EPDM	128304	128305	128306	128307	128308	128309	128310	119277	119278	137762	137763
hand gear	FPM	128312	128313	128314	128315	128316	128317	128318	118108	118109	137764	137765

Body/housing: PP

size	d (mm)	63	75	90	110	140	160	225	280	315	355	400
actuation	sealing											
hand lever	EPDM	46110	46111	46112	46113	46114	46115	46116	-	-	-	-
hand lever	FPM	46117	46118	46119	46120	46121	46122	46123	-	-	-	-
hand gear	EPDM	128320	128321	128322	128323	128324	128325	128326	118132	118245	137766	137767
hand gear	FPM	128328	128329	128330	128331	128332	128333	128334	119279	119280	137768	137769

Body/housing: PVDF

size	d (mm)	63	75	90	110	140	160	225	280	315	355	400
actuation	sealing											
hand lever	EPDM	64452	64453	64454	64455	64456	64457	64458	-	-	-	-
hand lever	FPM	64459	64460	64461	64462	64463	64464	64465	-	-	-	-
hand gear	EPDM	128336	128337	128338	128339	128340	128341	128342	137770	137771	137772	137773
hand gear	FPM	128344	128345	128346	128347	128348	128349	128350	137774	137775	137776	137777

Chemical Butterfly Valve K 210 »electric«

Voltage

- please refer to the technical data

Running time

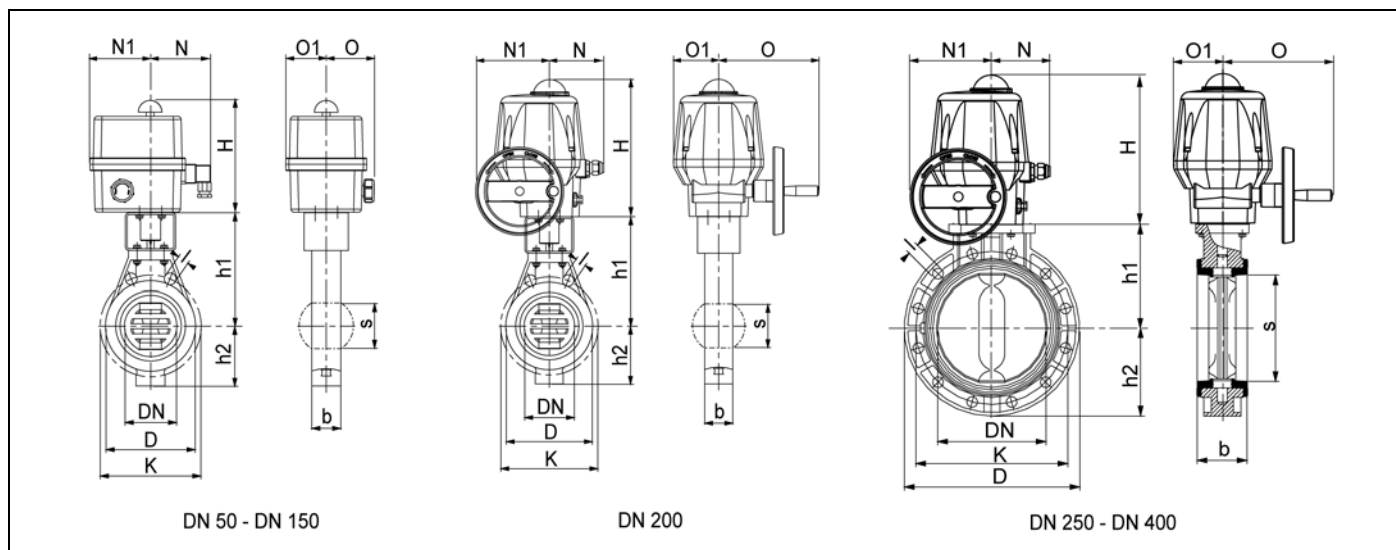
- please refer to the technical data

Mounting set / Coupling

- stainless steel 1.4571

Screws

- stainless steel 1.4301



Dimensions

d (mm)	63	75	90	110	140	160	225	280	315	355	400
DN (mm)	50	65	80	100	125	150	200	250	300	350	400
DN (inch)	2	2 1/2	3	4	5	6	8	10	12	14	16
PN	10	10	10	10	10	6	6	6	6	6	6
type	ER60	ER60	ER60	ER100	ER100	ER100	VS300	VT600	VT600	VT1000	VT1000
b	43,0	46,0	46,0	52,0	64,0	65,0	71,0	109,0	133,0	127	168
D	107	127	142	162	192	216	272	411	490	530	600
H	176	176	176	212	212	212	258	349	349	349	349
h1	162	172	180	190	215	227	280	242	302	300	350
h2	81	88	96	106	133	145	180	205,5	245	265	300
K	125	145	160	180	210	240	295	350	400	460	515
l	-	-	18	18	18	23	23	22	22	22	26
N	83,5	83,5	83,5	83,5	83,5	83,5	102	102	102	102	102
N1	110,5	110,5	110,5	110,5	110,5	110,5	140	140	140	140	140
O	64	64	64	64	64	64	190	228	228	228	228
O1	64	64	64	64	64	64	85	240	240	240	240
S	36	56	71	88	109	138	190	255	309,5	360	397,5
z	-	-	2	2	2	2	2	12	12	16	16

Weights (kg)

d (mm)	63	75	90	110	140	160	225	280	315	355	400
PVC-U	4,90	5,40	5,60	8,90	10,70	11,20	14,30	31,96	38,80	55,80	70,84
PP	4,70	5,00	5,20	8,50	9,90	10,20	12,70	31,96	38,80	55,80	70,84
PVDF	5,00	5,60	5,80	9,20	11,20	11,80	15,40	31,96	38,80	55,80	70,84

Chemical Butterfly Valve K 210 »electric«

Technical data

Possible actuator variants

Actuator type ER-line:	Actuator type V-line:
Manual emergency control	Manual emergency control
Visual position indicator	Visual position indicator
Protection type: IP 65	Protection type: IP 67
PG union	PG union
2 additional limit switches	2 additional limit switches
Torque limiter	Torque limiter
Duty cycle: 50% 230 V	Duty cycle: 50%
Duty cycle: 30% 24 V	Heating resistance: 3 W
Voltage: 230 V AC 50/60 Hz or	Voltage: 400 V AC 50/60 Hz or
Voltage: 115 V AC 50/60 Hz or	Voltage: 100 - 240 V AC 50/60 Hz or 120 - 350 V DC or
Voltage: 24 V AC/DC	Voltage: 24 V AC/DC
Running time: see »Technical Data«	Running time: see »Technical Data«
Options:	Options:
2 additional limit switches	2 additional limit switches
2 DIN 43650 plug connectors	Long hand lever
Long hand lever	Fail-safe rechargeable battery pack (internal/external)
Fail-safe rechargeable battery pack (internal/external)	Positioner
Heating resistor + thermal switch	Feedback: Potentiometer
Positioner	Feedback: 4...20 mA
Feedback: Potentiometer	Positioner: 4...20 mA/0...10 V
Feedback: 4...20 mA	ASI BUS connection
Positioner: 4...20 mA/0...10 V	ATEX version
ASI BUS connection	Duty cycle: 80%
Multivoltage:	
Voltage: 100 - 240 V AC 50/60 Hz or 120 - 350 V DC	

Technical data - ER line

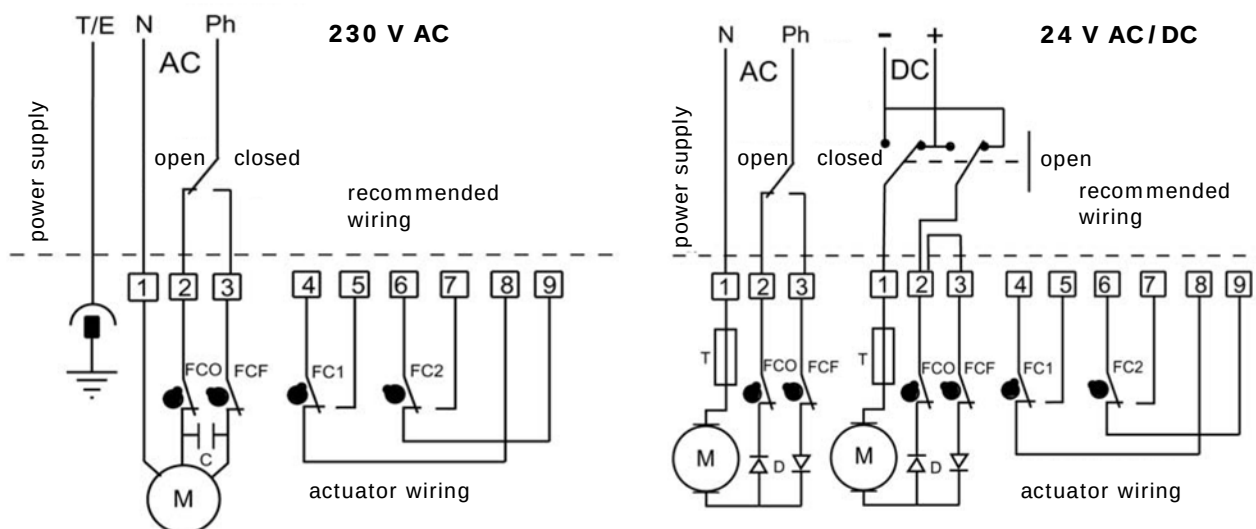
Type ER actuator	ER20			ER35			ER60			ER100		
Torque (Nm)	20			35			60			100		
Voltage (V)	12	24	230	12	24	230	12	24	230	12	24	230
Running time 90° (sec)	8	4 (20)	20	16	8 (35)	35	20	10 (60)	20	45	30 (100)	35
Rating (W)	15	26	15	15	26	15	15	26	24	15	26	24
Weight (kg)	1,5			3,0			3,0			6,0		
Duty cycle (%)	50			50			50			50		
Type of protection	IP65			IP65			IP65			IP65		
Temperature (°C)	-10 to +55			-10 to +55			-10 to +55			-10 to +55		

Technical data - V line

Type VS actuator	VS300			VT600		VT1000	
Torque (Nm)	300			600		1000	
Voltage (V)	24	100-240	400	230	400	230	400
Running time 90° (sec)	50	50	35	38	38	38	38
Rating (W)	85	85	135	250	250	250	250
Weight (kg)	5,6			17,1		17,1	
Duty cycle (%)	50			50		50	
Type of protection	IP67			IP67		IP67	
Temperature (°C)	-20 to +70			-20 to +70		-20 to +70	

Chemical Butterfly Valve K 210 »electric«

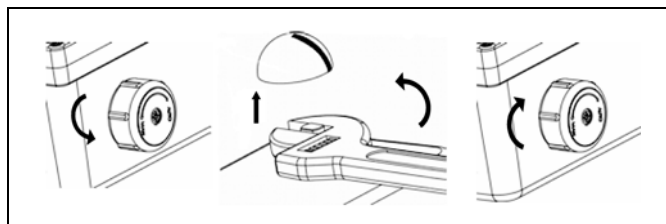
Electrical connection, type ER



- FCO limit switch OPEN
- FCF limit switch CLOSED
- FC1 additional limit switch 1
- FC2 additional limit switch 2
- M motor
- T thermal fuse
- D diodes
- C capacitor

further wiring diagrams on request

Emergency manual control, ER



Manual emergency control

The valve can be manually operated in the event of an interruption of the power supply.

To allow manual emergency control, turn the coupling switch from »AUTO« to »MAN« and hold in the »MAN« position.

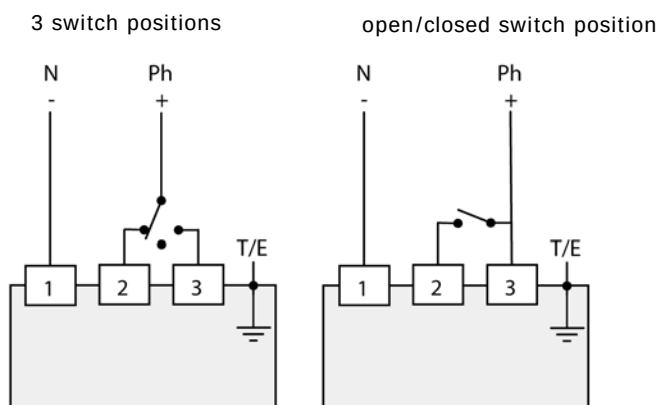
Turn the actuator shaft with the aid of an adjustable spanner.

Release the coupling switch to re-engage the gearing.

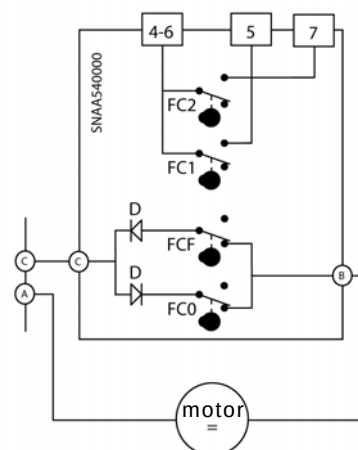
Chemical Butterfly Valve K 210 »electric«

Electrical connection type VR/VS/VT

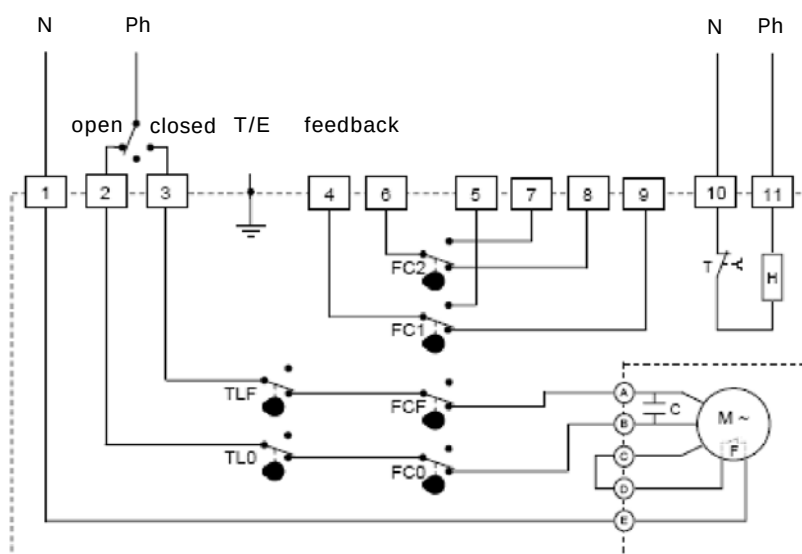
recommended wiring VR/VS line



feedback



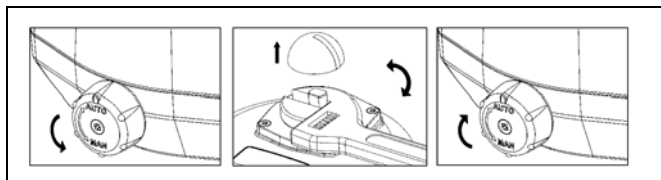
recommended wiring VT line



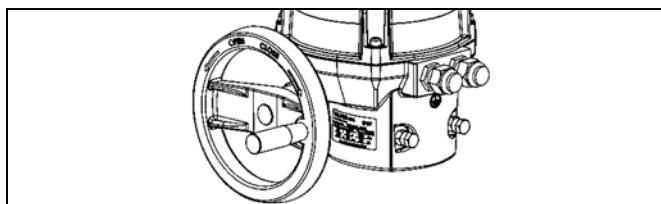
- FC0 limit switch OPEN
- FCF limit switch CLOSED
- FC1 additional limit switch 1
- FC2 additional limit switch 2

further wiring diagrams on request

Emergency manual control VR series



Emergency manual control VS/VT series



Manual emergency control

The valve can be manually operated in the event of an interruption of the power supply.

To allow manual emergency control, turn the coupling switch from »AUTO« to »MAN« and hold in the »MAN« position.

Turn the actuator shaft with the aid of an adjustable spanner.

Release the coupling switch to re-engage the gearing.

Manual emergency control VS/VT series

Before manual operation ensure the interruption of the power supply. Disengagement is not necessary, turning the handwheel is sufficient.

Chemical Butterfly Valve K 210 »pneumatic«

Control pressure

- 6 bar

Standard

- visual position indicator

Control functions

- NC (normally closed)
- NO (normally open)
- DA (double acting)

Mounting set

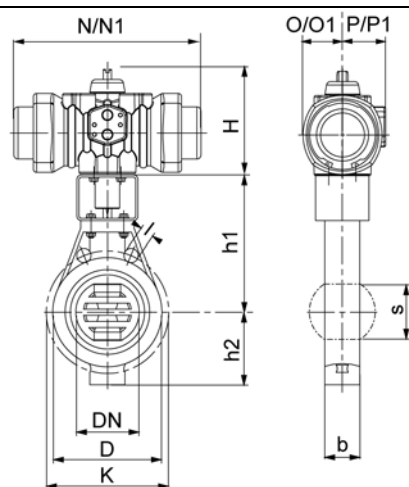
- stainless steel 1.4571

Coupling

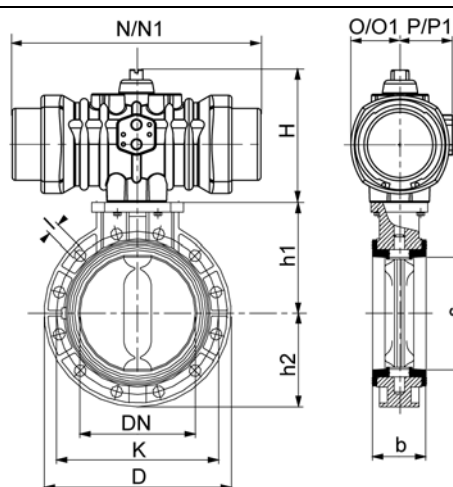
- square 1.4301
- adapter aluminium

Screws

- stainless steel 1.4301



DN 50 - DN 200



DN 250 - DN 400

Dimensions

d (mm)		63	75	90	110	140	160	225	280	315	355	400
DN (mm)		50	65	80	100	125	150	200	250	300	350	400
DN (inch)		2	2 1/2	3	4	5	6	8	10	12	14	16
PN		10	10	10	10	10	6	6	6	6	6	5
NC-NO		PP20S	PP20S	PP20S	PP20S	P25S	P25S	P30S	P40S	P50S	P50S	P50S
DA		PP10	PP10	PP10	PP10	PP20	P25	P25	P30	P40	P40	P40
b		43,0	46,0	46,0	52,0	64,0	65,0	71,0	109,0	133,0	127,0	168,0
D		107,0	127,0	142,0	162,0	192,0	216,0	272,0	411,0	490,0	530,0	600,0
H	NC-NO	162,0	162,0	162,0	162,0	191,0	211,0	211,0	272,0	313,0	313,0	313,0
H	DA	128,0	128,0	128,0	128,0	162,0	191,0	191,0	211,0	272,0	272,0	272,0
h1		162,0	172,0	180,0	190,0	215,0	227,0	280,0	242,0	302,0	300,0	350,0
h2		81,0	88,0	96,0	106,0	133,0	145,0	180,0	205,5	245,0	265,0	300,0
K		125,0	145,0	160,0	180,0	210,0	240,0	295,0	350,0	400,0	460,0	515,0
l		-	-	18,0	18,0	18,0	23,0	23,0	22,0	22,0	22,0	26,0
N	NC-NO	304,0	304,0	304,0	304,0	362,0	479,0	479,0	598,0	694,0	694,0	694,0
N1	DA	182,0	182,0	182,0	182,0	233,0	276,0	276,0	349,0	444,0	444,0	444,0
O	NC-NO	60,0	60,0	60,0	60,0	74,0	83,0	83,0	106,0	122,5	122,5	122,5
O1	DA	49,0	49,0	49,0	49,0	60,0	74,0	74,0	83,0	106,0	106,0	106,0
P	NC-NO	65,0	65,0	65,0	65,0	78,0	94,0	94,0	120,0	135,0	135,0	135,0
P1	DA	53,0	53,0	53,0	53,0	65,0	78,0	78,0	94,0	120,0	120,0	120,0
S		36,0	56,0	71,0	88,0	109,0	138,0	190,0	255,0	309,5	360,0	397,5
NC/NO	A	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
DA	B	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
z		-	-	2	2	2	2	2	12	12	16	16

Chemical Butterfly Valve K 210 »pneumatic«

Weights (kg)

d (mm)		63	75	90	110	140	160	225	280	315	355	400
PVC-U	NC-NO	6,85	7,35	7,55	7,85	13,90	14,40	24,60	51,26	80,10	97,10	112,14
PP	NC-NO	6,65	6,95	7,15	7,45	13,10	13,40	23,00	51,26	80,10	97,10	112,14
PVDF	NC-NO	6,95	7,55	7,75	8,15	14,40	15,00	25,70	51,26	80,10	97,10	112,14
PVC-U	DA	3,31	3,81	4,01	4,31	7,64	11,10	14,60	23,96	39,30	56,30	71,34
PP	DA	3,11	3,41	3,61	3,91	6,84	10,10	13,00	23,96	39,30	56,30	71,34
PVDF	DA	3,41	4,01	4,21	4,61	8,14	11,70	15,70	23,96	39,30	56,30	71,34

Technical data

Actuator: single acting NC/NO

type	torque (Nm) at 6 bar		air volume (L)		running time (sec)		air connection	weight (kg)
	start	end	opening	closing	opening	closing		
PP20S	103,3	64,2	0,80	-	0,5	0,5	1/4	4,95
P25S	177,6	118,4	1,50	-	0,8	0,8	1/4	9,20
P30S	273,7	179,9	2,05	-	1,2	1,2	1/4	15,90
P40S	766,9	491,6	5,30	-	2,0	2,0	1/4	36,40
P50S	1343,8	861,4	10,50	-	6,0	6,0	1/4	58,40

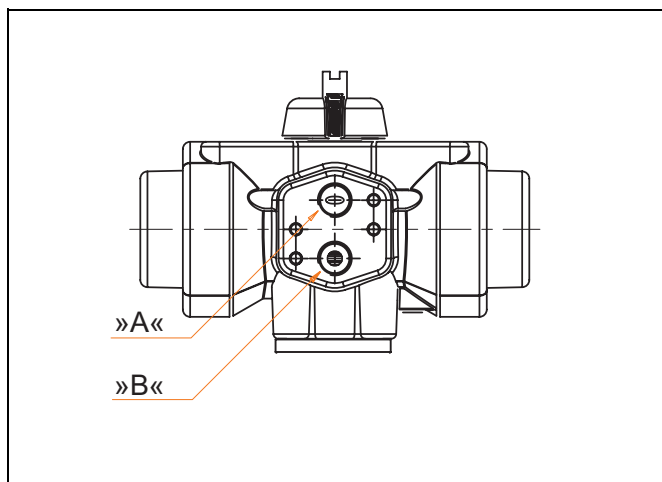
Actuator: double acting DA

type	torque (Nm) at 6 bar		air volume (L)		running time (sec)		air connection	weight (kg)
	start	end	opening	closing	opening	closing		
PP10	71,0	-	0,35	0,32	0,25	0,25	1/4	1,41
PP20	165,5	-	0,80	0,70	0,40	0,40	1/4	2,94
P25	290,0	-	1,50	1,20	0,50	0,50	1/4	5,90
P30	469,2	-	2,05	1,90	0,60	0,60	1/4	9,10
P40	1179,9	-	5,30	5,30	1,20	1,20	1/4	17,60

Application conditions

control medium	temperature range	max. pressure	body
filtered, dry compressed air, non-corrosive medium	-32°C to +90°C	8 bar	Type PP: PA, glass fibre reinforced Type P: aluminium

Compressed air connection



Single acting actuators

- compressed air to connection »B«

Double acting actuators

- compressed air to connection »A« (closes)
- compressed air to connection »B« (opens)

Control

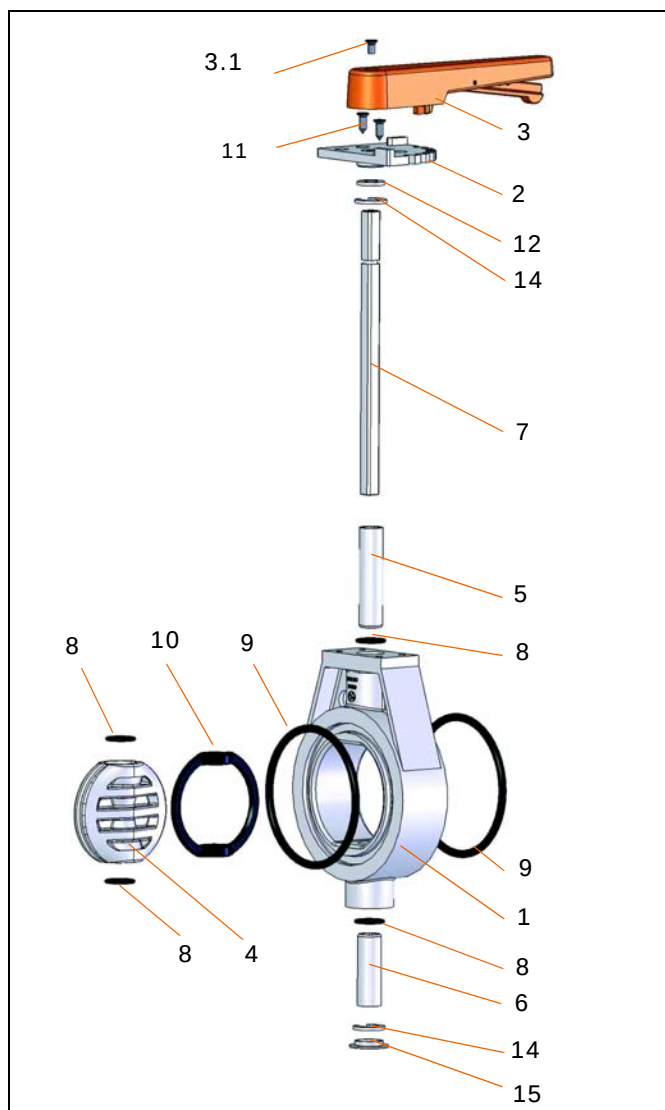
- 3/2-way solenoid valves for NC/NO actuators
- 5/2-way solenoid valves for DA actuators

Options

- micro switches or proximity switches as directly mounted variant or as variant in limit switch box
- positioner
- handwheel
- ASI Bus
- pilot solenoid valve

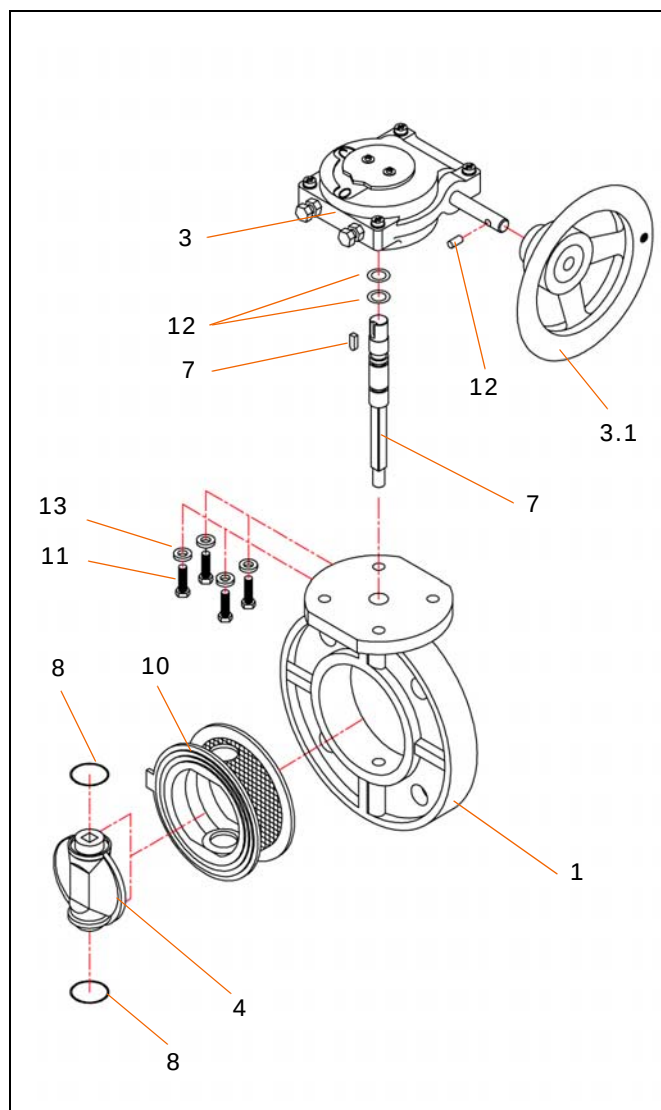
Chemical Butterfly Valve K 210

Exploded drawing DN 50 - DN 200



item	qty.	designation
1	1	body
2	1	engagement disc
3	1	hand lever
3.1	1	screw
4	1	butterfly valve
5	1	bearing bush
6	1	bearing bush
7	1	shaft
8	4	round sealing rings
9	2	round sealing rings
10	1	sealing element (stirrup)
11	2	screws
12	1	disc
13	-	-
14	2	locking ring
15	1	closing cap

Exploded drawing DN 250 - DN 400



item	qty.	designation
1	1	body
2	-	-
3	1	hand gear
3.1	1	handwheel
4	1	butterfly valve
5	-	-
6	-	-
7	1	shaft
8	2	round sealing rings
9	-	-
10	1	sealing element (liner)
11	4	screws
12	2	disc
13	4	washer
14	-	-
15	-	-

Chemical Butterfly Valve K 210

Ident No. for automated valves

9

Ident No. manual valve

Actuated valve

Line

	0
ER-line (electric)	1
V-line (electric)	2
	3
	4
PA (pneumatic)	5
Alu (pneumatic)	6
Steel (pneumatic)	7

Version

12 V DC	0
24 V AC/DC	1
115 V AC	2
230 V AC	3
400 V AC	4
100-240 V AC/120-350 V DC	5
NC	6
NO	7
DA	8

Option (electric)

Standard version	0
DIN connector	1
Additional limit switch	2
Rechargeable battery pack	3
Heating resistor	4
Positioner	5
Feedback: Potentiometer	6
Feedback: 4...20 mA	7
ASI BUS	8

Option (pneumatic)

Standard version	0
Handwheel (for DA)	1
Micro switch	2
Proximity switches	3
Limit switch box with micro switches	4
Limit switch box with proximity switches	5
Safety spring	6
Pilot valve	7
ASI BUS	8

Example:

1

2

8

3

0

7

9

1

3

2

Type: K 210, DN 100

Body/housing: PVC-U

Sealing: EPDM

Connection: Intermediate flange

Actuator: ER-line, 230 V AC, additional limit switches



Notizen / notes



Notizen / notes



Notizen / notes

Subject to technical modifications