

Main applications

Isolation valve for vacuum applications in extreme UHV, high temperature or aggressive media



Ordering information

Valve with manual actuator
handwheel

DN		Ordering numbers		
mm	inch	CF-F		
		without position indicator	with position indicator 80 °C	with position indicator 200 °C
16	5/8	48124-CE01	48124-CE08	48124-CE05
40	1 1/2	48132-CE01	48132-CE08	48132-CE05
63	2 1/2	48236-CE01	48236-CE08	48236-CE05
100	4	48240-CE01	48240-CE08	48240-CE05
160	6	48244-CE01	48244-CE08	48244-CE05
200	8	48146-CE01	48146-CE08	48146-CE05

Valve with pneumatic actuator
double acting
with solenoid valve
with position indicator 80 °C

DN		Ordering numbers (specify control voltage)	
mm	inch	CF-F	
		compact actuator: valve bakeable to 200 °C	extended actuator: valve bakeable to 300 °C
16	5/8	–	48124-CE44
40	1 1/2	–	48132-CE44
63	2 1/2	48236-CE74	48236-CE44
100	4	48240-CE74	48240-CE44
160	6	48244-CE74	48244-CE44
200	8	48146-CE74	48146-CE44
250	10	48148-CE74	48148-CE44
320	12	48150-XE74 X = customer specific	48150-XE44 X = customer specific

without solenoid valve, with position indicator 80 °C: compact actuator 48 E72
extended actuator 48 E24

Other versions: see pages 112 + 113

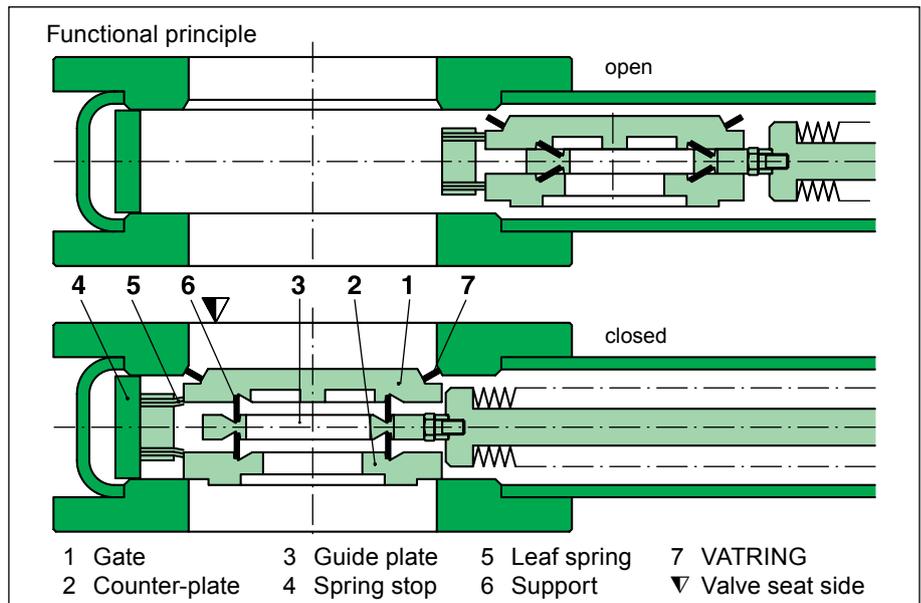
Bake-out jacket

See page 270: ordering information and technical data on request

To control the heating process we recommend using commercial controllers with settable heating rate and temperature limiting device. Our bake-out jackets are supplied without thermocouples and thermostats.

Features

- Body material: stainless steel
- VATRING configuration: see glossary
- Sealing surfaces are only elastically deformed
- Mechanically locked in closed position
- Radiation resistant
- Bakeable to 300 °C in open and closed position



Technical data

Leak rate: valve body, valve seat	$< 1 \cdot 10^{-10}$ mbar ls ⁻¹
Pressure range	XHV to 2 bar (abs)
Differential pressure on the gate	≤ 2 bar
Differential pressure at opening	
– DN 16– 40	≤ 1 bar
– DN 63–250	≤ 500 mbar ¹⁾
– DN 320	≤ 500 mbar ²⁾
Cycles until first service	
– DN 16–200	20 000
– DN 250–320	5 000
Bake-out temperature ³⁾	
– Valve body	≤ 300 °C
– Manual actuator	≤ 140 °C (option: 200 °C)
– Pneumatic actuator	≤ 200 °C
– Solenoid valve	≤ 80 °C
– Position indicator	≤ 80 °C (option: 200 °C)
Heating and cooling rate	
– DN 16	≤ 80 °C h ⁻¹
– DN 40–160	≤ 50 °C h ⁻¹
– DN 200–320	≤ 25 °C h ⁻¹
Material	
– Valve body, mechanism	AISI 316L (1.4435, 1.4404)
– Bellows	AISI 316L (1.4435)
Seal: bonnet, gate	metal
Feedthrough	bellows
Mounting position: DN 16–250 / DN 320	any / on request
Solenoid valve	24 VDC, 2.5 W (others on request)
Position indicator: contact rating	
– Voltage	≤ 50 VAC / DC
– Current	80 °C: ≤ 1.2 A / 200 °C: ≤ 1 A
Valve position indication	visual (mechanical)

¹⁾ 1 bar with reduced number of cycles

²⁾ Reduced number of cycles

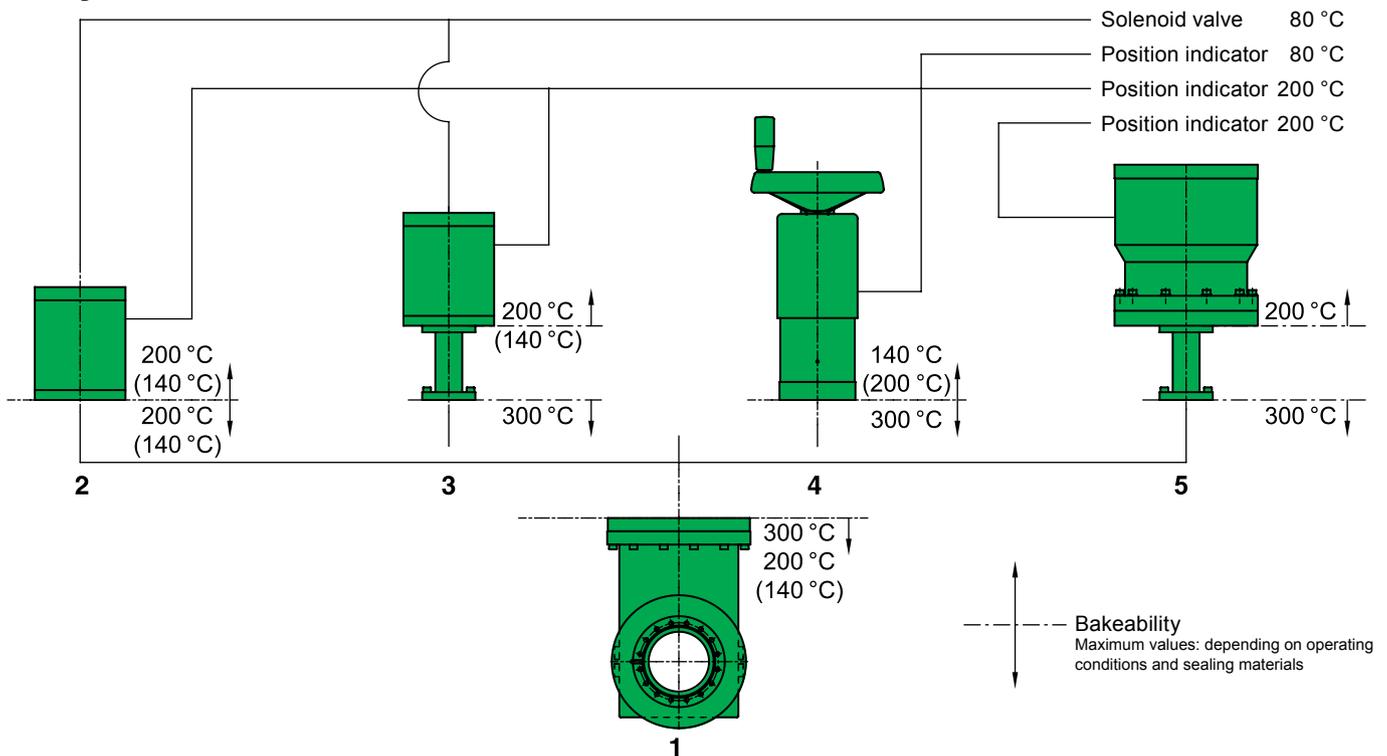
³⁾ Maximum values: depending on operating conditions and sealing materials

Further technical data on next page →

Continued Technical data

DN (nominal I. D.)		CF-F flange	Conductance (molecular flow)	Valve with manual actuator			Valve with pneumatic actuator						
				Turns per stroke	Weight		Compressed air min. – max. overpressure		Volume of pneumatic actuator		Closing or opening time	Weight	
mm	inch	O. D.	ls ⁻¹	n	kg	lbs	bar	psi	l	ft ³	s	kg	lbs
16	5/8	1 1/8	10	19	3.0	6.6	4–8	58–116	0.1	0.004	1	3.8	8.4
40	1 1/2	2 3/4	100	21	5.5	12	4–8	58–116	0.27	0.010	1.5	7.2	16
63	2 1/2	4 1/2	400	32	16	35	4–8	58–116	0.5	0.018	2	17.3	38
100	4	6	1400	46	23.5	52	4–8	58–116	1.4	0.049	4	27	60
160	6	8	4200	66	39	85	4–8	58–116	4.3	0.152	9	45	100
200	8	10	6900	63	74.5	164	4–8	58–116	8.3	0.293	15	88	194
250	10	12	12700	–	–	–	4–8	58–116	10.7	0.378	20	156	344
320	12	X	23500	–	–	–	4–8	58–116	12.9	0.456	20	230	507

Body and actuators: modular selection



- 1 Valve body, mechanism, bellows : 10⁸ Gy, bakeable to 300 °C
- 2 Pneumatic actuator: compact : 10⁵ Gy, bakeable to 200 °C Option: 10⁶ Gy, bakeable to 140 °C
- 3 Pneumatic actuator: extended : 10⁵ Gy, bakeable to 200 °C Option: 10⁶ Gy, bakeable to 140 °C
- 4 Manual actuator : 10⁵ Gy, bakeable to 140 °C or 200 °C
- 5 Special pneumatic actuator for hot zone : 10⁵ Gy, bakeable to 200 °C

Spare parts

- Seals
on request (specify fabrication number of valve)

Accessories

- Flexible bake-out jacket: see page 270
- Flange connections
for installation of the valve: see series 33

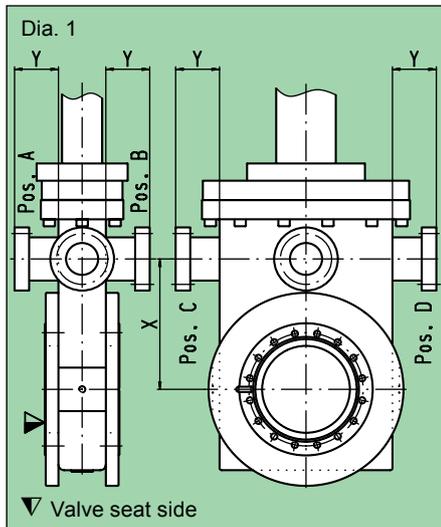
Options

Actuator

- Solenoid valve for impulse actuation:
last valve position is maintained at power failure
- Other solenoid valve voltage (standard: 24 VDC)
- Solenoid valve radiation resistant to 10^6 Gy (standard: 10^4 Gy)
- Position indicator for manual and pneumatic actuator bakeable to $200\text{ }^\circ\text{C}$ ¹⁾ (standard: $80\text{ }^\circ\text{C}$)
- Double position indicator
(2 switches each for the positions «open» and «closed»)
- Accessory for pneumatic actuator for faster closing
- Pneumatic actuator (compact or extended):
radiation resistant to 10^6 Gy, bakeable to $140\text{ }^\circ\text{C}$ ¹⁾
- Pneumatic actuator for hot zone:
radiation resistant to 10^8 Gy, bakeable to $200\text{ }^\circ\text{C}$ ¹⁾
- Manual actuator bakeable to $200\text{ }^\circ\text{C}$ ¹⁾

Valve

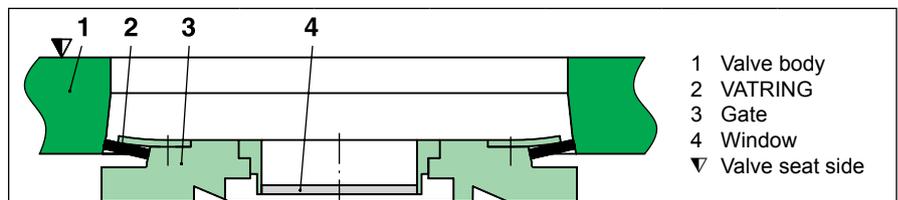
- Customer specified flanges
- Larger nominal diameters
- Antimagnetic version with defined permeability:
see glossary
- Ports for roughing (by-pass), venting or for gauges (Dia. 1), possible in positions A, B, C and D



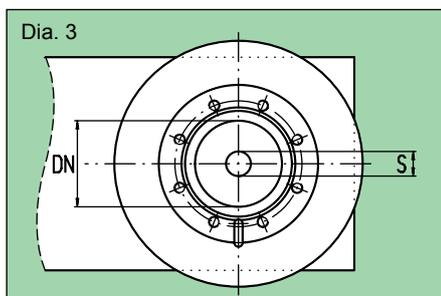
DN valve	mm	16	40	63	100	160	200	250	320
	inch	$\frac{5}{8}$	$1\frac{1}{2}$	$2\frac{1}{2}$	4	6	8	10	12
Recommended port CF-F	mm	16	16	16	40	40	40	40	40
	inch	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
X	mm	40	70	115	135	220	280	365	440
	inch	1.57	2.76	4.53	5.31	8.66	11.02	14.37	17.32
Y	mm	18	18	20	50	50	50	50	50
	inch	0.71	0.71	0.79	1.97	1.97	1.97	1.97	1.97
Other ports on request									



- Window in gate with DN 40, 63, 100, 160, 200 only (Pic. 2, Dia. 3):
window welded into gate, window material: sapphire



DN valve	mm	40	63	100	160	200
	inch	$1\frac{1}{2}$	$2\frac{1}{2}$	4	6	8
Optically free diameter «S»	mm	12	18	34	34	34
	inch	0.47	0.71	1.34	1.34	1.34
Thickness of glass	mm	2	2	2	2	2
	inch	0.08	0.08	0.08	0.08	0.08
Options:	<ul style="list-style-type: none"> - Special glass qualities - Other materials (e. g. berillium) - Other window sizes 					

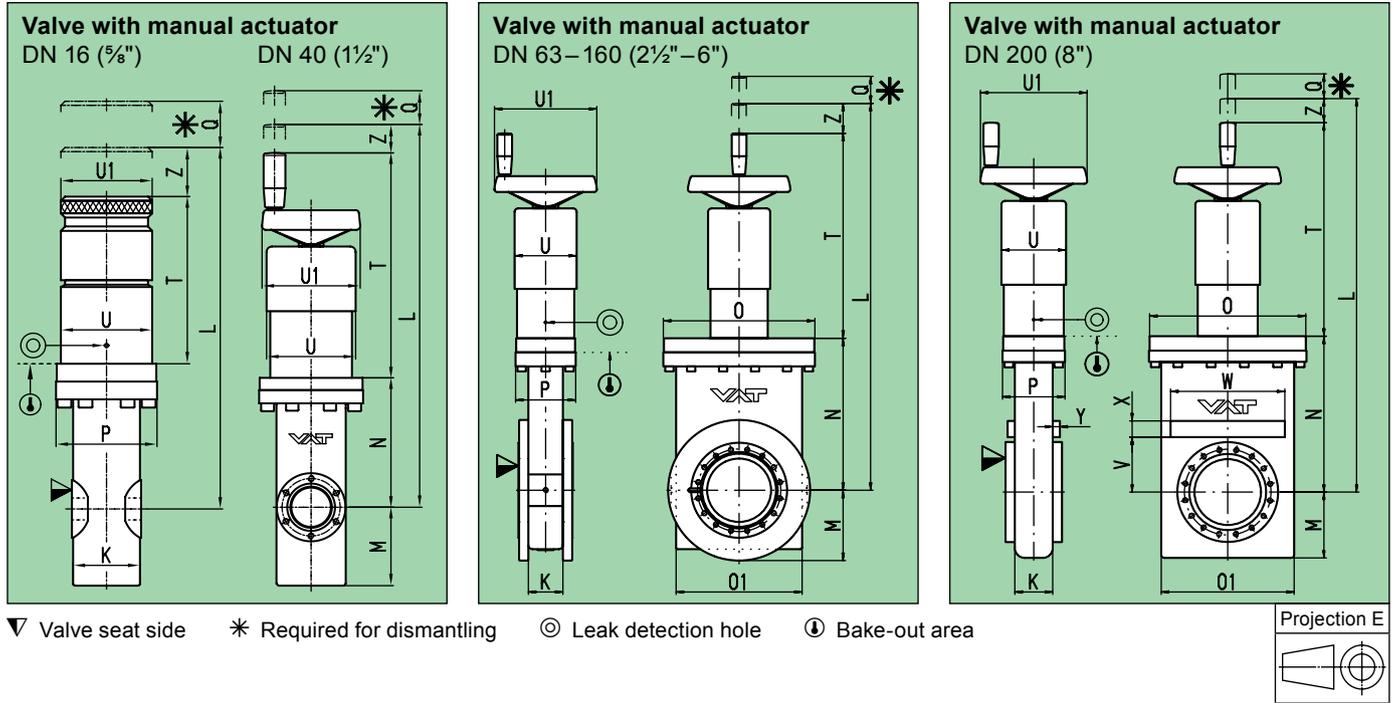


¹⁾ Maximum values: depending on operating conditions and sealing materials

Ordering information for options:

Ordering No. of valve-X (e. g. 48240-CE44-X, X = port CF-F 40 in position A)

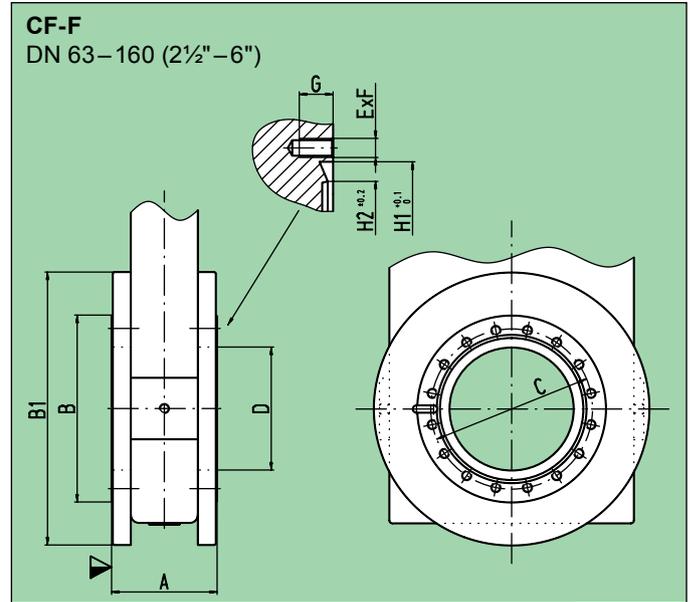
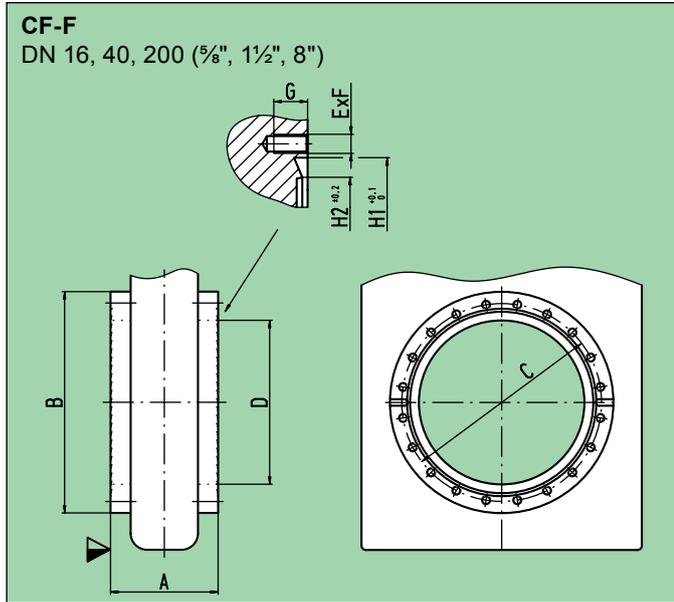
Main dimensions



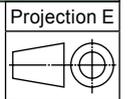
Flange dimensions: see page 115

DN	mm inch	16 5/8	40 1 1/2	63 2 1/2	100 4	160 6	200 8
K	mm inch	48.50 1.91	70 2.76	46 1.81	54 2.13	58 2.28	78 3.07
L	mm inch	261 10.28	414 16.30	554 17.13	678 26.69	873 34.37	1101 43.33
M	mm inch	56 2.20	80 3.15	90 3.54	111 4.37	144 5.67	161 6.34
N	mm inch	106 4.17	132 5.20	209 8.23	240 9.45	329 12.95	410 16.14
O	mm inch	-	-	189 7.44	237 9.33	287 11.30	352 13.86
O1	mm inch	-	-	156 6.14	197 7.76	253 9.96	316 12.44
P	mm inch	73 2.87	105 4.13	77 3.03	94 3.70	93 3.66	114 4.49
Q	mm inch	150 5.90	200 7.87	280 11.02	320 12.60	450 17.72	570 22.44
T	mm inch	122 4.80	230 9.06	266 8.90	324 12.76	378 14.88	473 18.62
U	mm inch	66 2.60	90 3.54	97 3.81	97 3.81	97 3.81	97 3.81
U1	mm inch	66 2.60	100 3.70	100 3.94	160 6.30	160 6.30	200 7.87
V	mm inch	-	-	-	-	-	155 6.10
W	mm inch	-	-	-	-	-	277 10.91
X	mm inch	-	-	-	-	-	40 1.57
Y	mm inch	-	-	-	-	-	30 1.18
Z	mm inch	33 1.30	52 2.05	79 3.11	114 4.49	166 6.54	218 8.58

Flange dimensions

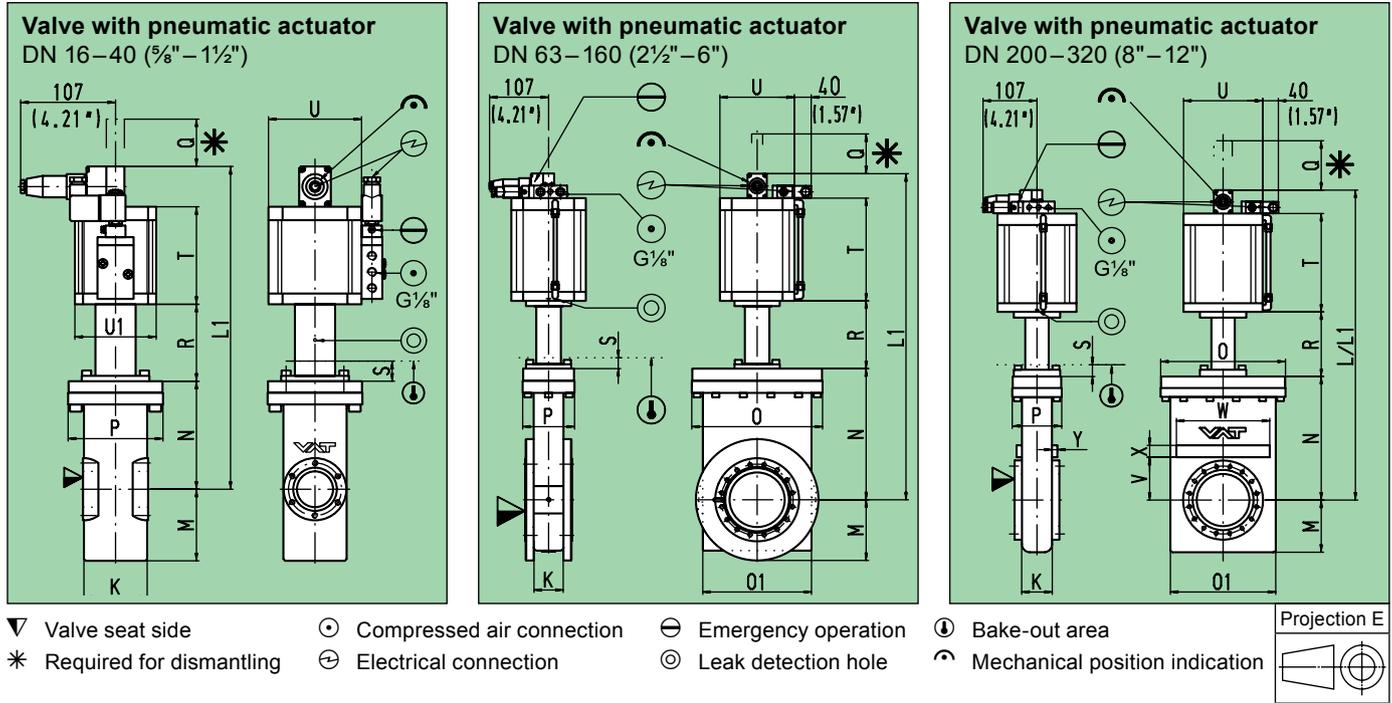


▽ Valve seat side



DN	mm inch	16 5/8"	40 1 1/2"	63 2 1/2"	100 4"	160 6"	200 8"
O.D.	inch	1 1/8"	2 3/4"	4 1/2"	6"	8"	10"
A	mm inch	50 1.97	72 2.83	75 2.95	85 3.35	97.50 3.84	140 5.51
B	mm inch	42 1.65	69.50 2.73	113.50 4.47	152 5.98	202.50 7.97	277 10.90
B1	mm inch	–	–	180 7.08	222 8.74	288 11.34	–
C	mm inch	27 1.06	58.70 2.31	92.10 3.63	130.30 5.13	181 7.13	231.80 9.13
D	mm inch	16 0.63	40 1.57	63 2.48	100 3.94	150 5.91	200 7.87
E × F	mm inch	6 × M4	6 × M6	8 × M8	16 × M8	20 × M8	24 × M8
G	mm inch	8 0.31	10 0.39	12 0.47	14 0.55	16 0.63	17 0.67
H1	mm inch	21.40 0.84	48.30 1.90	82.50 3.25	120.65 4.75	171.45 6.75	222.30 8.75
H2	mm inch	18.50 0.72	42 1.65	77.40 3.05	115.50 4.55	166 6.54	217 8.54

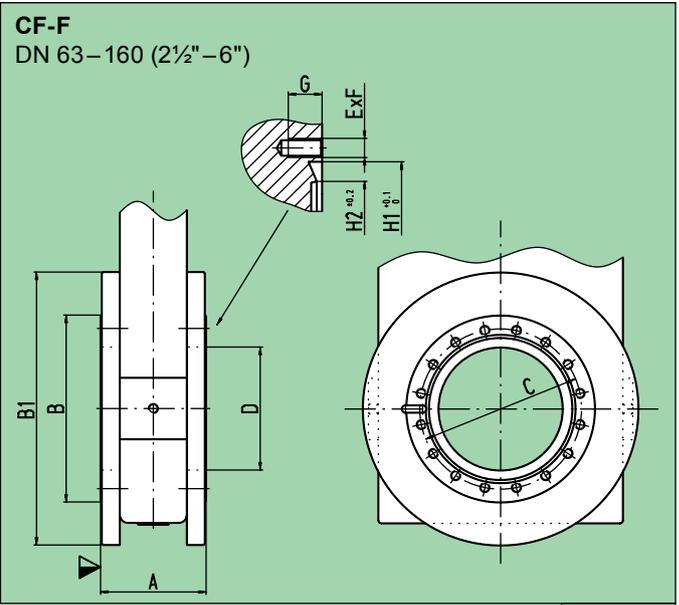
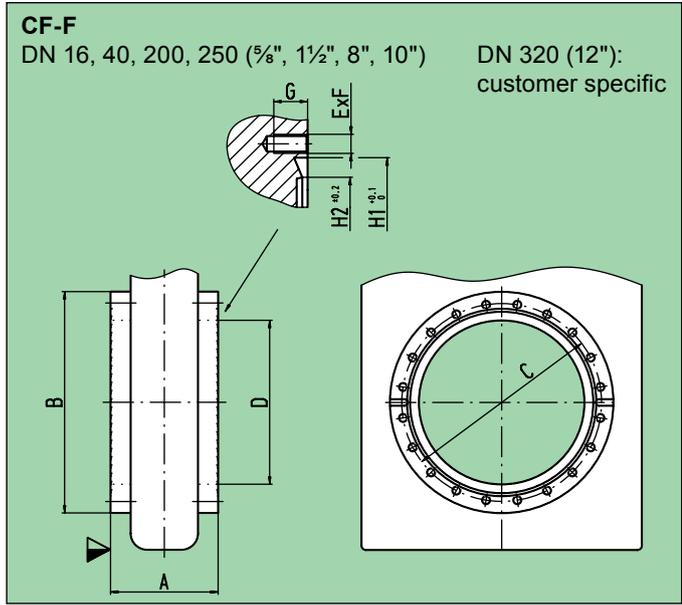
Main dimensions



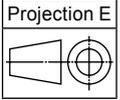
L1 and R for extended actuator / flange dimensions: see page 117

DN	mm inch	16 5/8	40 1½	63 2½	100 4	160 6	200 8	250 10	320 12
K	mm inch	48.50 1.91	70 2.76	46 1.81	54 2.13	58 2.28	78 3.07	90 3.54	105 4.13
L	mm inch	–	–	403 15.87	473 18.62	616 24.25	770 30.31	947 37.28	1114 43.86
L1	mm inch	312 12.28	372 14.65	527 20.75	597 23.50	740 29.13	894 35.20	1071 42.17	1238 48.74
M	mm inch	56 2.20	80 3.15	90 3.54	111 4.37	144 5.67	161 6.34	205 8.07	240 9.45
N	mm inch	106 4.17	132 5.20	209 8.23	240 9.45	329 12.95	410 16.14	525 20.67	632 24.88
O	mm inch	–	–	189 7.44	237 9.33	287 11.30	352 13.86	446 17.56	516 20.32
O1	mm inch	–	–	156 6.14	197 7.76	253 9.96	316 12.44	410 16.14	480 18.89
P	mm inch	73 2.87	105 4.13	77 3.03	94 3.70	93 3.66	114 4.49	126 4.96	141 5.55
Q	mm inch	150 5.90	200 7.87	280 11.02	320 12.60	450 17.72	535 21.06	675 26.57	800 31.50
R	mm inch	64 2.52	86 3.39	124 4.88	124 4.88	124 4.88	124 4.88	124 4.88	124 4.88
S	mm inch	15 0.59	20 0.79	20 0.79	20 0.79	20 0.79	20 0.79	20 0.79	20 0.79
T	mm inch	90 3.54	109 4.29	149 5.87	188 7.40	242 9.53	315 12.40	377 14.84	438 17.24
U	mm inch	83 3.27	103 4.06	98 3.86	135 5.31	190 5.91	230 9.06	230 9.06	230 9.06
U1	mm inch	70 2.76	90 3.54	–	–	–	–	–	–
V	mm inch	–	–	–	–	–	155 6.10	210 8.27	245 9.65
W	mm inch	–	–	–	–	–	277 10.91	441 17.36	511 20.12
X×Y	mm inch	–	–	–	–	–	40×30 1.57×1.18	50×50 1.97×1.97	60×60 2.36×2.36

Flange dimensions



▽ Valve seat side



DN	mm inch	16 5/8	40 1 1/2	63 2 1/2	100 4	160 6	200 8	250 10	320 12
O. D.	inch	1 3/8	2 3/4	4 1/2	6	8	10	12	–
A	mm inch	50 1.97	72 2.83	75 2.95	85 3.35	97.50 3.84	140 5.51	150 5.91	170 6.69
B	mm inch	42 1.65	69.50 2.73	113.50 4.47	152 5.98	202.50 7.97	277 10.90	380 14.96	444 17.48
B1	mm inch	–	–	180 7.08	222 8.74	288 11.34	–	–	–
C	mm inch	27 1.06	58.70 2.31	92.10 3.63	130.30 5.13	181 7.13	231.80 9.13	284 11.18	–
D	mm inch	16 0.63	40 1.57	63 2.48	100 3.94	150 5.91	200 7.87	250 9.84	320 12.60
E x F	mm inch	6 x M4	6 x M6	8 x M8	16 x M8	20 x M8	24 x M8	32 x M8	–
G	mm inch	8 0.31	10 0.39	12 0.47	14 0.55	16 0.63	17 0.67	17 0.67	–
H1	mm inch	21.40 0.84	48.30 1.90	82.50 3.25	120.65 4.75	171.45 6.75	222.30 8.75	273.15 10.75	–
H2	mm inch	18.50 0.72	42 1.65	77.40 3.05	115.50 4.55	166 6.54	217 8.54	267 10.51	–