

ALL-METAL GATE VALVE, SERIES 48.1/48.2

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

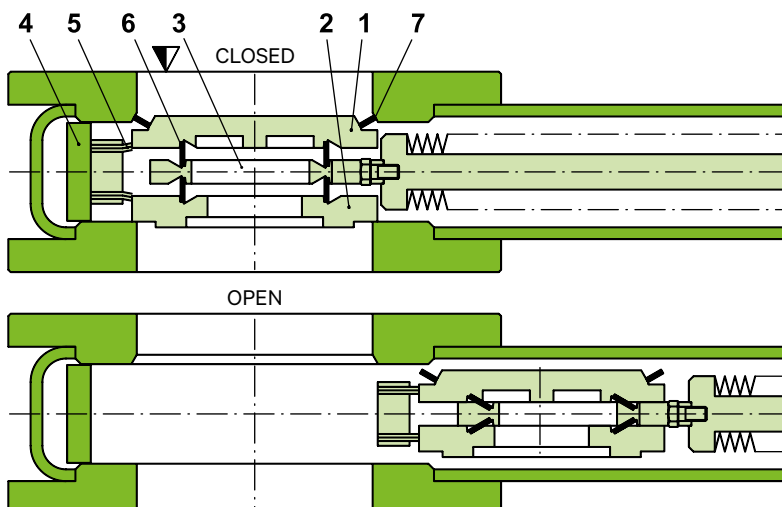


«Hard on hard» sealing
 The reliable standard
 Field-proven technology

MAIN FEATURES

Sizes	DN 16 – 320 mm (5/8" – 12")
Actuators	manual pneumatic: double acting
Body material	stainless steel
Feedthrough	bellows
Standard flanges	CF-F
Sealing technology	VATRING (see glossary)

FUNCTIONAL PRINCIPLE



- 1 Gate
- 2 Counter-plate
- 3 Guide plate
- 4 Spring stop
- 5 Leaf spring
- 6 Support
- 7 VATRING
- ▼ Valve seat side

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 DN 63 – 250 DN 320	≤ 1 bar ≤ 500 mbar ¹⁾ ≤ 500 mbar ²⁾
Cycles until first service	DN 16 – 200 DN 250 – 320	20 000 5 000
Bake-out temperature ³⁾	Valve body Manual actuator Pneumatic actuator Solenoid valve Position indicator	≤ 300 °C ≤ 140 °C (Option: 200 °C) ≤ 200 °C ≤ 80 °C ≤ 80 °C (Option: 200 °C)
Heating and cooling rate	DN 16 DN 40 – 160 DN 200 – 320	≤ 80 °C h ⁻¹ ≤ 50 °C h ⁻¹ ≤ 25 °C h ⁻¹
Material	Valve body, mechanism Bellows	AISI 316L (1.4404, 1.4435) AISI 316L (1.4435)
Seal	Bonnet, gate	metal
Feedthrough		bellows
Mounting position	DN 16 – 250 DN 320	any on request
Solenoid valve		24 V DC, 2.5 W (others on request)
Position indicator: contact rating	Voltage Current	≤ 50 V AC/DC 80 °C: ≤ 1.2 A / 200 °C: ≤ 1 A
Valve position indication		visual (mechanical)

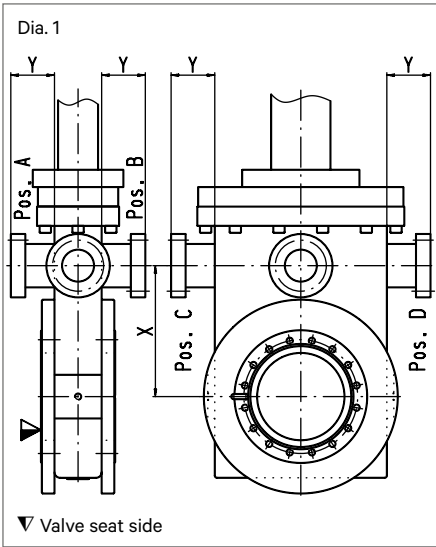
DN (nominal I.D.)		Conductance (molecular flow)	Valve with manual actuator				Valve with pneumatic actuator					
			Turns per stroke	Weight		Compressed air min. – max. overpressure		Volume of pneumatic actuator		Closing or opening time	Weight	
mm	inch	ls ⁻¹		n	kg	lbs	bar	psi	l		ft ³	s
16	5/8	10	19	3.0	6.6	4 – 8	58 – 116	0.1	0.004	1	3.8	8.4
40	1½	100	21	5.5	12	4 – 8	58 – 116	0.27	0.010	1.5	7.2	16
63	2½	400	32	16	35	4 – 8	58 – 116	0.5	0.018	2	17.3	38
100	4	1400	46	23.5	52	4 – 8	58 – 116	1.4	0.049	4	27	60
160	6	4 200	66	39	85	4 – 8	58 – 116	4.3	0.152	9	45	100
200	8	6 900	63	74.5	164	4 – 8	58 – 116	8.3	0.293	15	88	194
250	10	12 700	–	–	–	4 – 8	58 – 116	10.7	0.378	20	156	344
320	12	23 500	–	–	–	5 – 8	63 – 116	12.9	0.456	20	230	507

¹⁾ 1 bar with reduced number of cycles.

²⁾ Reduced number of cycles.

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

OPTIONS, CUSTOMIZED SOLUTIONS



ACTUATOR

- Solenoid valve for impulse actuation:
last valve position is maintained at power failure
- Other solenoid valve voltage (standard 24VDC)
- Bakeable position indicator:
manual and pneumatic actuator bakeable to max. 200 °C¹⁾ (standard: 80 °C)
- Double position indicator (2 switches each for the positions «open» and «closed»)
- Pneumatic actuator (compact or extended): radiation resistant to 10⁶ Gy, bakeable to 140 °C¹⁾
- Pneumatic actuator for hot zone: radiation resistant to 10⁸ Gy, bakeable to 200 °C¹⁾
- Manual actuator bakeable to 200 °C¹⁾

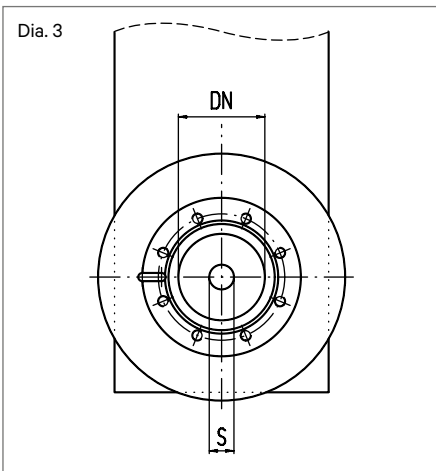
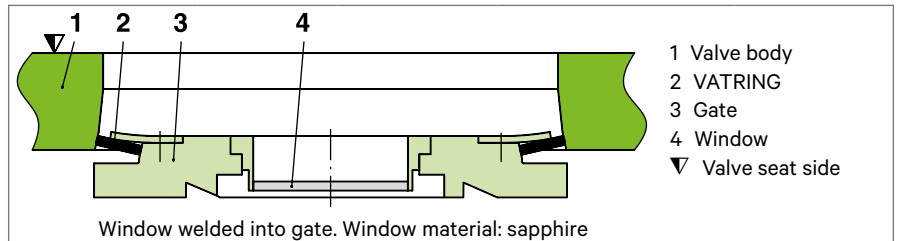
VALVE

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



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

- Window in gate with DN 40, 63, 100, 160, 200 only (Pic. 2, Dia. 3)



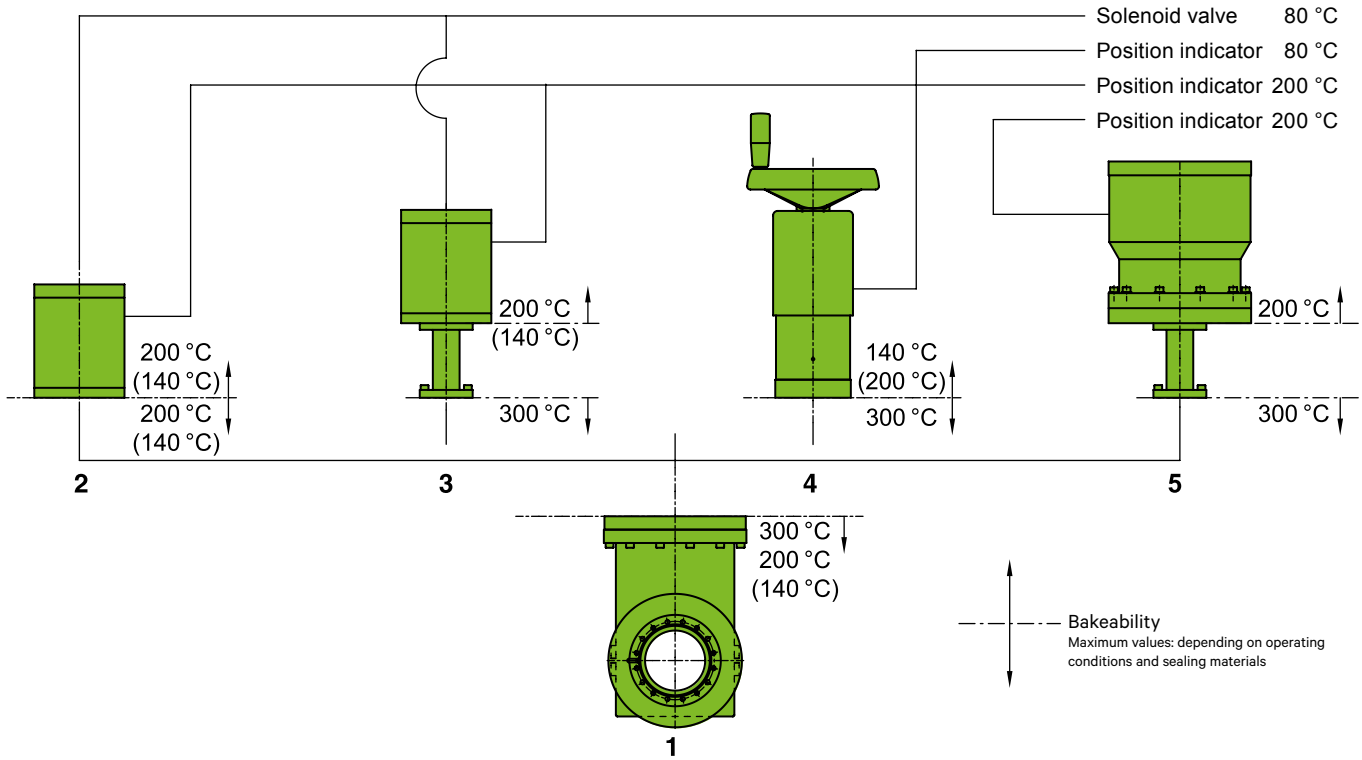
DN valve	mm inch	40 1 1/2	63 2 1/2	100 4	160 6	200 8
Optically free diameter «S»	mm inch	12 0.47	18 0.71	34 1.34	34 1.34	34 1.34
Thickness of glass	mm inch	2 0.08	2 0.08	2 0.08	2 0.08	2 0.08

- Options:
- Special glass qualities
 - Other materials (e. g. berillium)
 - Other window sizes

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

BODY AND ACTUATORS

MODULAR SELECTION



- | | | |
|---|--|--|
| 1 Valve body, mechanism, bellows | : 10 ⁸ Gy, bakeable to 300 °C | |
| 2 Pneumatic actuator: compact | : 10 ⁵ Gy, bakeable to 200 °C | Option: 10 ⁶ Gy, bakeable to 140 °C |
| 3 Pneumatic actuator: extended | : 10 ⁵ Gy, bakeable to 200 °C | Option: 10 ⁶ Gy, bakeable to 140 °C |
| 4 Manual actuator | : 10 ⁵ Gy, bakeable to 140 °C or 200 °C | |
| 5 Special pneumatic actuator for hot zone | : 10 ⁸ Gy, bakeable to 200 °C | |

SPARE PARTS

We can offer a wide variety of spare parts. Please contact us for details and an offer.

Thank you for specifying the fabrication number of the valve indicated on the identification tag when asking for spare parts.

ACCESSORIES

- Flange connections for installation of the valve: see series 33
- Bake-out jackets

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. Technical details and ordering information on request.

ORDERING INFORMATION FOR STANDARD VALVES

Valve with manual actuator handwheel

DN		Ordering numbers		
mm	inch	CF-F without position indicator	CF-F with position indicator 80 °C	CF-F with position indicator 200 °C
16	¾	48124-CE01	48124-CE08	48124-CE05
40	1½	48132-CE01	48132-CE08	48132-CE05
63	2½	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

DN		Ordering numbers (specify control voltage)	
mm	inch	CF-F with compact actuator, valve bakeable to 200 °C	
		without solenoid valve with position indicator 80 °C	with solenoid valve with position indicator 80 °C
63	2½	48236-CE72	48236-CE74 ¹⁾
100	4	48240-CE72	48240-CE74 ¹⁾
160	6	48244-CE72	48244-CE74 ¹⁾
200	8	48146-CE72	48146-CE74 ¹⁾
250	10	48148-CE72	48148-CE74 ¹⁾
320	12	48150-XE72 X = customer specific	48150-XE74 ¹⁾ X = customer specific

¹⁾ specify control voltage

DN		Ordering numbers (specify control voltage)	
mm	inch	CF-F with extended actuator, valve bakeable to 300 °C	
		without solenoid valve with position indicator 80 °C	with solenoid valve with position indicator 80 °C
16	¾	48124-CE24	48124-CE44 ¹⁾
40	1½	48132-CE24	48132-CE44 ¹⁾
63	2½	48236-CE24	48236-CE44 ¹⁾
100	4	48240-CE24	48240-CE44 ¹⁾
160	6	48244-CE24	48244-CE44 ¹⁾
200	8	48146-CE24	48146-CE44 ¹⁾
250	10	48148-CE24	48148-CE44 ¹⁾
320	12	48150-XE24 X = customer specific	48150-XE44 ¹⁾ X = customer specific

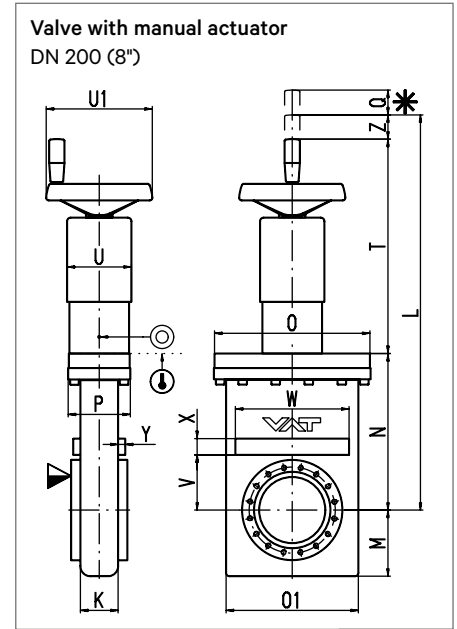
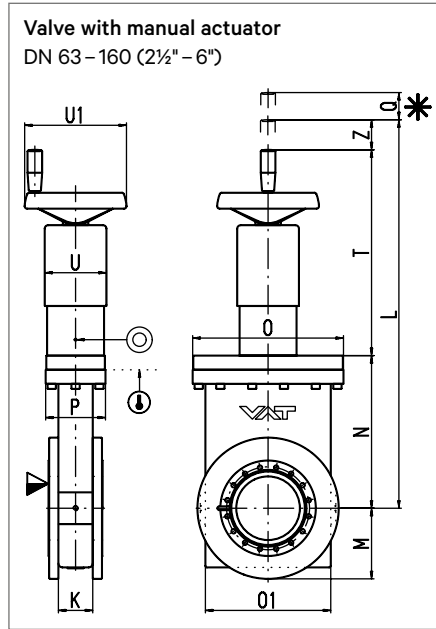
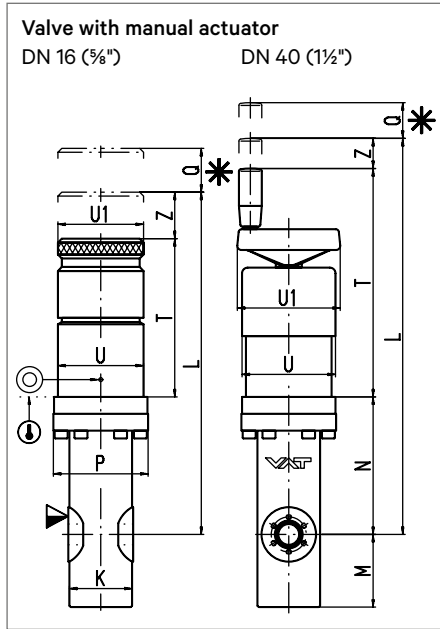
¹⁾ specify control voltage

ORDERING INFORMATION FOR VALVES WITH OPTIONS

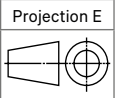
Basic ordering number plus «-X»: -X to be specified

Example: 48240-CE44-X, X = port CF-F 40 in position A

MAIN DIMENSIONS



▼ Valve seat side * Required for dismantling © Leak detection hole ① Bake-out area



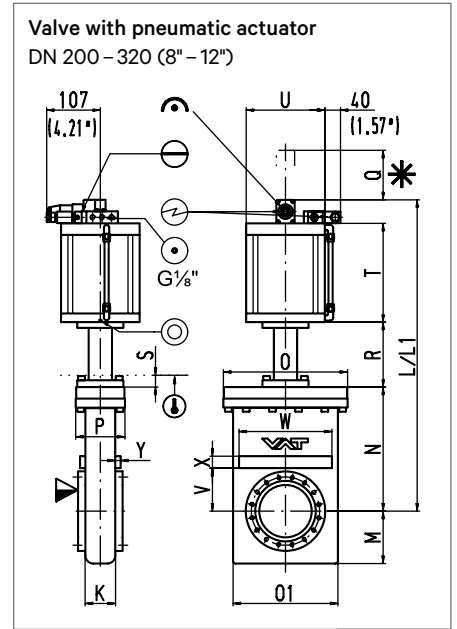
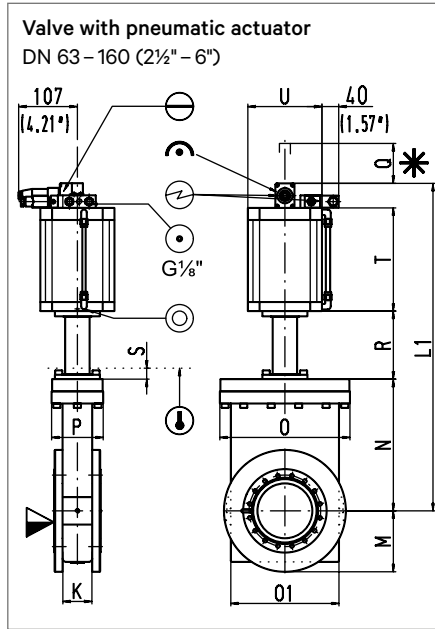
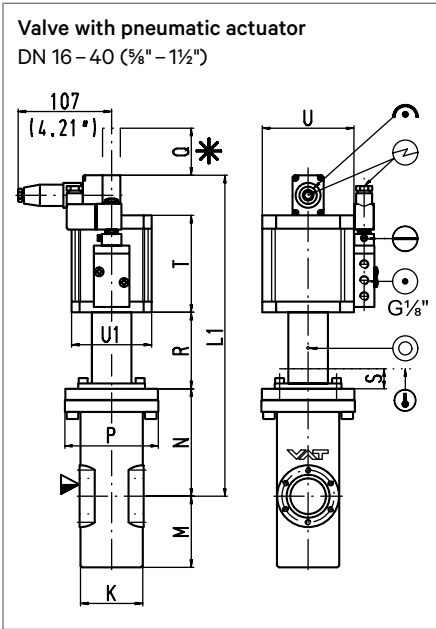
DN	mm inch	16 5/8"	40 1½"
K	mm inch	48.50 1.91	70 2.76
L	mm inch	261 10.28	414 16.30
M	mm inch	56 2.20	80 3.15
N	mm inch	106 4.17	132 5.20
P	mm inch	73 2.87	105 4.13
Q	mm inch	150 5.90	200 7.87
T	mm inch	122 4.80	230 9.06
U	mm inch	66 2.60	90 3.54
U1	mm inch	66 2.60	100 3.70
Z	mm inch	33 1.30	52 2.05

DN	mm inch	63 2½"	100 4"	160 6"
K	mm inch	46 1.81	54 2.13	58 2.28
L	mm inch	554 17.13	678 26.69	873 34.37
M	mm inch	90 3.54	111 4.37	144 5.67
N	mm inch	209 8.23	240 9.45	329 12.95
O	mm inch	189 7.44	237 9.33	287 11.30
O1	mm inch	156 6.14	197 7.76	253 9.96
P	mm inch	77 3.03	94 3.70	93 3.66
Q	mm inch	280 11.02	320 12.60	450 17.72
T	mm inch	266 8.90	324 12.76	378 14.88
U	mm inch	97 3.81	97 3.81	97 3.81
U1	mm inch	100 3.94	160 6.30	160 6.30
Z	mm inch	79 3.11	114 4.49	166 6.54

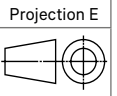
DN	mm inch	200 8"
K	mm inch	78 3.07
L	mm inch	1101 43.33
M	mm inch	161 6.34
N	mm inch	410 16.14
O	mm inch	352 13.86
O1	mm inch	316 12.44
P	mm inch	114 4.49
Q	mm inch	570 22.44
T	mm inch	473 18.62
U	mm inch	97 3.81
U1	mm inch	200 7.87
V	mm inch	155 6.10
W	mm inch	277 10.91
X	mm inch	40 1.57
Y	mm inch	30 1.18
Z	mm inch	218 8.58

Flange dimensions: see page 121

MAIN DIMENSIONS



- ▼ Valve seat side ⊕ Compressed air connection ⊖ Emergency operation ⊕ Bake-out area
 * Required for dismantling ⊕ Electrical connection ⊕ Leak detection hole ⊕ Mechanical position indication



DN	mm	16	40
	inch	¾	1½
K	mm	48.50	70
	inch	1.91	2.76
L1 ¹⁾	mm	312	372
	inch	12.28	14.65
M	mm	56	80
	inch	2.20	3.15
N	mm	106	132
	inch	4.17	5.20
P	mm	73	105
	inch	2.87	4.13
Q	mm	150	200
	inch	5.90	7.87
R ¹⁾	mm	64	86
	inch	2.52	3.39
S	mm	15	20
	inch	0.59	0.79
T	mm	90	109
	inch	3.54	4.29
U	mm	83	103
	inch	3.27	4.06
U1	mm	70	90
	inch	2.76	3.54

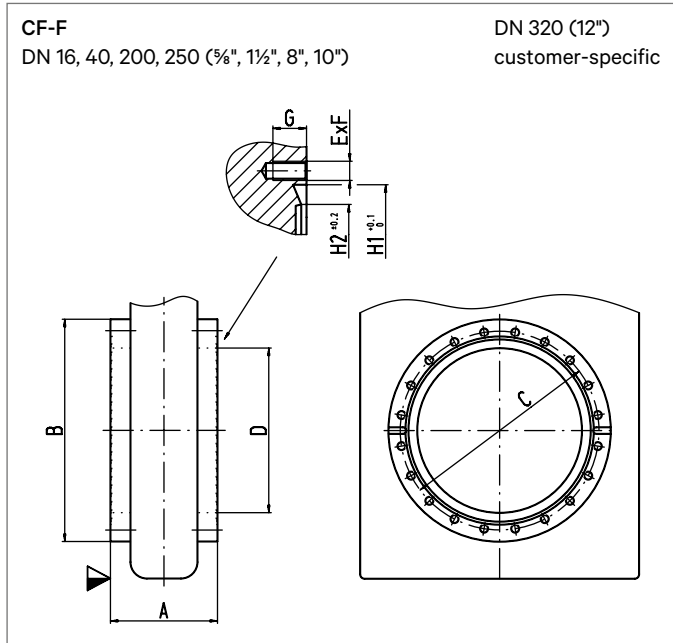
¹⁾ Extended actuator

DN	mm	63	100	160
	inch	2½	4	6
K	mm	46	54	58
	inch	1.81	2.13	2.28
L	mm	403	473	616
	inch	15.87	18.62	24.25
L1 ¹⁾	mm	527	597	740
	inch	20.75	23.50	29.13
M	mm	90	111	144
	inch	3.54	4.37	5.67
N	mm	209	240	329
	inch	8.23	9.45	12.95
O	mm	189	237	287
	inch	7.44	9.33	11.30
O1	mm	156	197	253
	inch	6.14	7.76	9.96
P	mm	77	94	93
	inch	3.03	3.70	3.66
Q	mm	280	320	450
	inch	11.02	12.60	17.72
R ¹⁾	mm	124	124	124
	inch	4.88	4.88	4.88
S	mm	20	20	20
	inch	0.79	0.79	0.79
T	mm	149	188	242
	inch	5.87	7.40	9.53
U	mm	98	135	190
	inch	3.86	5.31	7.48

DN	mm	200	250	320
	inch	8	10	12
K	mm	78	90	105
	inch	3.07	3.54	4.13
L	mm	770	947	1114
	inch	30.31	37.28	43.86
L1 ¹⁾	mm	894	1071	1238
	inch	35.20	42.17	48.74
M	mm	161	205	240
	inch	6.34	8.07	9.45
N	mm	410	525	632
	inch	16.14	20.67	24.88
O	mm	352	446	516
	inch	13.86	17.56	20.32
O1	mm	316	410	480
	inch	12.44	16.14	18.89
P	mm	114	126	141
	inch	4.49	4.96	5.55
Q	mm	535	675	800
	inch	21.06	26.57	31.50
R ¹⁾	mm	124	124	124
	inch	4.88	4.88	4.88
S	mm	20	20	20
	inch	0.79	0.79	0.79
T	mm	315	377	438
	inch	12.40	14.84	17.24
U	mm	230	230	230
	inch	9.06	9.06	9.06
V	mm	155	210	245
	inch	6.10	8.27	9.65
W	mm	277	441	511
	inch	10.91	17.36	20.12
X × Y	mm	40 × 30	50 × 50	60 × 60
	inch	1.57 × 1.18	1.97 × 1.97	2.36 × 2.36

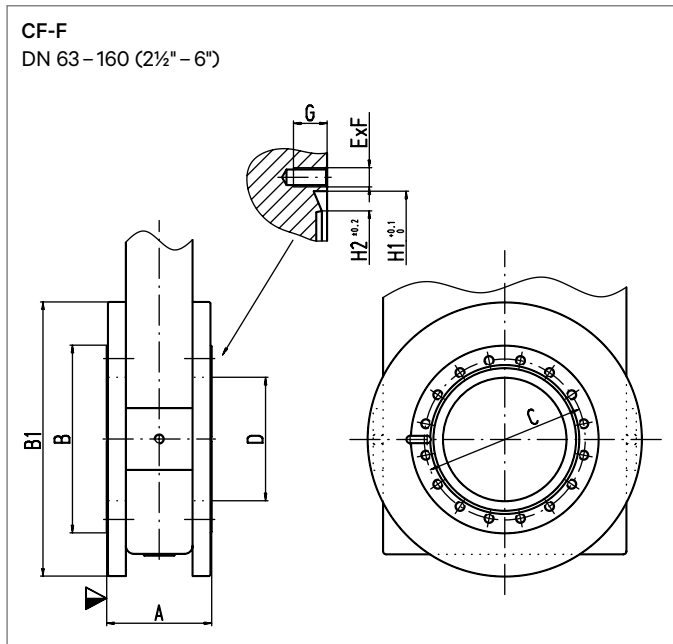
Flange dimensions: see page 121

FLANGE DIMENSIONS



DN	mm inch	16 5/8	40 1 1/2	200 8	250 10	320 ¹⁾ 12
O.D.	inch	1 1/8	2 3/8	10	12	-
A	mm inch	50 1.97	72 2.83	140 5.51	150 5.91	170 6.69
B	mm inch	42 1.65	69.50 2.73	277 10.90	380 14.96	444 17.48
C	mm inch	27 1.06	58.70 2.31	231.80 9.13	284 11.18	-
D	mm inch	16 0.63	40 1.57	200 7.87	250 9.84	320 12.60
E x F		6 x M4	6 x M6	24 x M8	32 x M8	-
G	mm inch	8 0.31	10 0.39	17 0.67	17 0.67	-
H1	mm inch	21.40 0.84	48.30 1.90	222.30 8.75	273.15 10.75	-
H2	mm inch	18.50 0.72	42 1.65	217 8.54	267 10.51	-

¹⁾ Customer-specific



DN	mm inch	63 2 1/2	100 4	160 6
O.D.	inch	4 1/2	6	8
A	mm inch	75 2.95	85 3.35	97.50 3.84
B	mm inch	113.50 4.47	152 5.98	202.50 7.97
B1	mm inch	180 7.08	222 8.74	288 11.34
C	mm inch	92.10 3.63	130.30 5.13	181 7.13
D	mm inch	63 2.48	100 3.94	150 5.91
E x F		8 x M8	16 x M8	20 x M8
G	mm inch	12 0.47	14 0.55	16 0.63
H1	mm inch	82.50 3.25	120.65 4.75	171.45 6.75
H2	mm inch	77.40 3.05	115.50 4.55	166 6.54

▼ Valve seat side

Projection E

