

## RF ALL-METAL GATE VALVE, SERIES 47.1/47.2

Sector valve for storage rings in accelerators and synchrotrons.  
Isolation valve in microwave transmission lines.



Pneumatic  
with compact actuator

Pneumatic  
with extended actuator

«Hard on hard» sealing

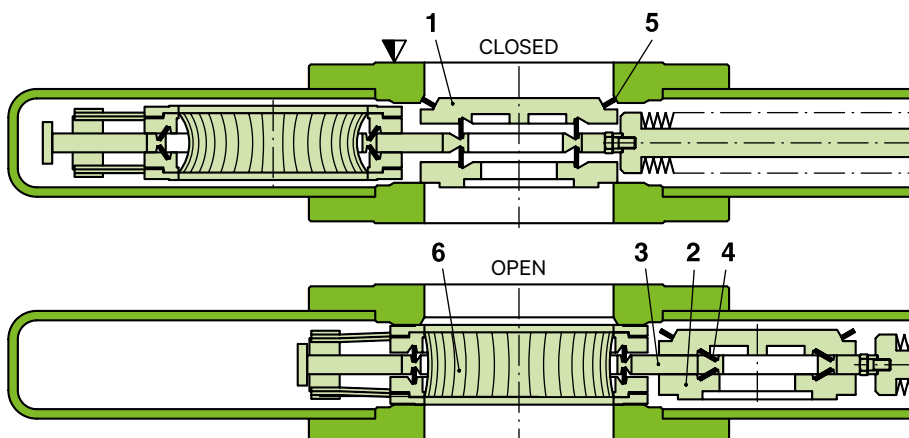
The reliable standard

Field-proven technology

### MAIN FEATURES

Sizes	DN 40 – 200 mm (1" – 8")
Actuators	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 Support
- 5 VATRING
- 6 RF contact
- ▼ Valve seat side

## TECHNICAL DATA

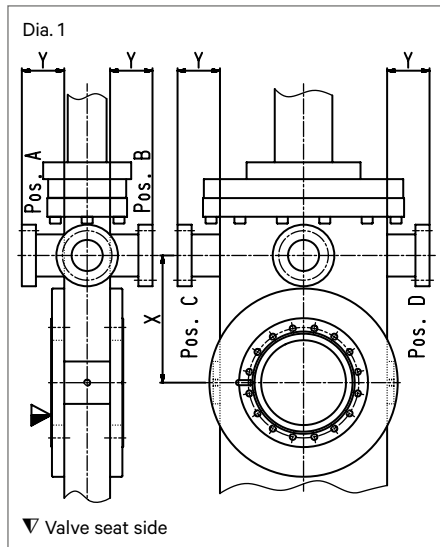
Leak rate	Valve body, valve seat	$<1 \cdot 10^{-10}$ mbar ls <sup>-1</sup>
Pressure range		XHV to 2 bar (abs)
Differential pressure on the gate		≤ 1 bar
Differential pressure at opening		≤ 500 mbar <sup>1)</sup>
Cycles until first service	DN 40 – 160	10 000
	DN 200	5 000
Bake-out temperature <sup>2)</sup>	Valve body	≤ 300 °C
	Pneumatic actuator	≤ 200 °C
	Solenoid valve	≤ 80 °C
	Position indicator	≤ 80 °C (Option: 200 °C)
Heating and cooling rate	DN 40 – 160	≤ 50 °C h <sup>-1</sup>
	DN 200	≤ 25 °C h <sup>-1</sup>
Material	Valve body, mechanism	AISI 316L (1.4404, 1.4435)
	Bellows	AISI 316L (1.4435)
	RF contact	AISI 301 (1.4310), thermoresistant silver-coated
Seal	Bonnet, gate	metal
Feedthrough		bellows
Mounting position		beam line horizontal, otherwise any
Solenoid valve		24 V DC, 2.5 W (others on request)
Position indicator: contact rating	Voltage	≤ 50 V AC/DC
	Current	80 °C: ≤ 1.2 A / 200 °C: ≤ 1 A
Valve position indication		visual (mechanical)

DN (nominal I.D.)		Conductance (molecular flow)	Compressed air min. – max. overpressure		Volume of pneumatic actuator		Closing or opening time	Weight	
mm	inch		bar	psi	l	ft <sup>3</sup>		kg	lbs
40	1½	100	4 – 8	58 – 116	0.3	0.011	2	15	33
63	2½	400	4 – 8	58 – 116	0.7	0.024	2	21	46
100	4	1400	4 – 8	58 – 116	1.7	0.060	4	36	80
160	6	3700	4 – 8	58 – 116	5	0.180	9	59	130
200	8	6100	4 – 8	58 – 116	9.7	0.340	18	148	326

<sup>1)</sup> 1 bar with reduced number of cycles.

<sup>2)</sup> Maximum values: depending on operating conditions and sealing materials.

## OPTIONS, CUSTOMIZED SOLUTIONS



### ACTUATOR

- Removable actuator
- Solenoid valve for impulse actuation: last valve position is maintained at power failure
- Other solenoid valve voltage (standard 24VDC)
- Bakeable position indicator:
  - pneumatic actuator bakeable to max. 200 °C<sup>1)</sup> (standard: 80 °C)
- Double position indicator (2 switches each for the positions «open» and «closed»)
- Pneumatic actuator (compact or extended): radiation resistant to 10<sup>6</sup> Gy, bakeable to 140 °C<sup>1)</sup>
- Pneumatic actuator for hot zone: radiation resistant to 10<sup>8</sup> Gy, bakeable to 200 °C<sup>1)</sup>
- Non-greased spindle drive actuator for little number of actuations
- Manual actuator bakeable to 140 °C or 200 °C<sup>1)</sup>
- Position indicator for manual actuator bakeable to 80 °C or 200 °C<sup>1)</sup>

### 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	40 1½	63 2½	100 4	160 6	200 8
Recommended port CF-F		16 %	16 %	40 1½	40 1½	40 1½
X	mm inch	95 3.74	115 4.53	135 5.31	220 8.66	280 11.02
Y	mm inch	20 0.79	20 0.79	50 1.97	50 1.97	50 1.97
Other ports on request						

- Customer-specific RF aperture
- RF contact «finger type» made of CuBe
- RF contact «comb type» made of OFHC copper
- Waveguide

<sup>1)</sup> Maximum values: depending on operating conditions and sealing materials.

## SPECIAL VERSION



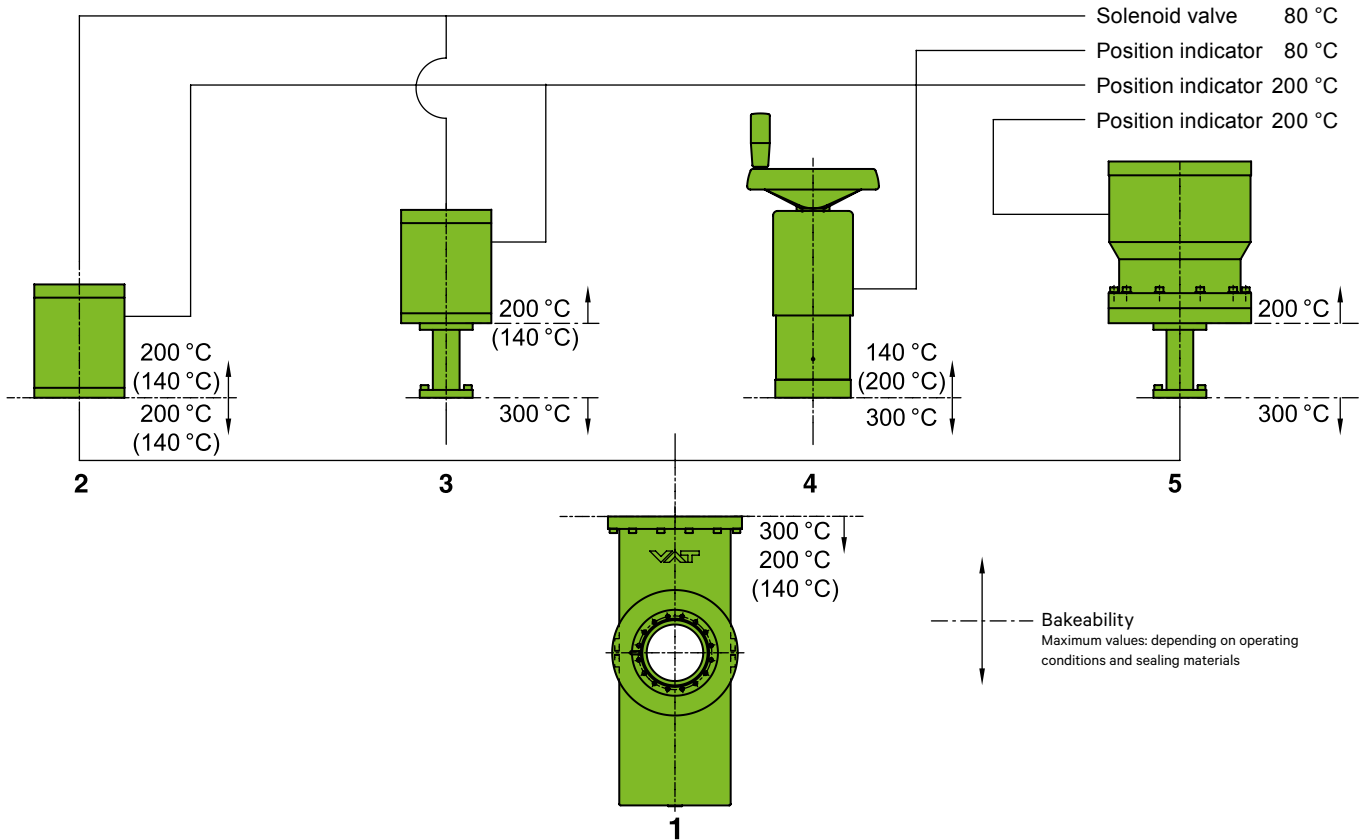
### RF-UHV GATE VALVE WITH GATE SEAL MADE OF FKM (Viton®)

Leak rate	Valve body Valve seat	< 5 · 10 <sup>-10</sup> mbar ls <sup>-1</sup> < 1 · 10 <sup>-9</sup> mbar ls <sup>-1</sup>
Pressure range		UHV to 1 bar (abs)
Differential pressure on the gate		≤ 1 bar
Cycles until first service		10 000
Bake-out temperature <sup>1)</sup>	Valve body Pneumatic actuator Solenoid valve Position indicator	≤ 200 °C ≤ 200 °C ≤ 80 °C ≤ 80 °C (Option: 200 °C)
Seal	Bonnet Gate	metal FKM (Viton®)
Further details		on request

<sup>1)</sup> Maximum values: depending on operating conditions and sealing materials.

## BODY AND ACTUATORS

### MODULAR SELECTION



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

DN		Ordering numbers	
		CF-F	
		with compact actuator, valve bakeable to 200 °C	
mm	inch	without solenoid valve with position indicator 80 °C	with solenoid valve with position indicator 80 °C
40	1½	47232-CE72	47232-CE74 <sup>‡</sup>
63	2½	47236-CE72	47236-CE74 <sup>‡</sup>
100	4	47240-CE72	47240-CE74 <sup>‡</sup>
160	6	47244-CE72	47244-CE74 <sup>‡</sup>
200	8	47146-CE72	47146-CE74 <sup>‡</sup>

<sup>‡</sup>specify control voltage

DN		Ordering numbers	
		CF-F	
		with extended actuator, valve bakeable to 300 °C	
mm	inch	without solenoid valve with position indicator 80 °C	with solenoid valve with position indicator 80 °C
40	1½	47232-CE24	47232-CE44 <sup>‡</sup>
63	2½	47236-CE24	47236-CE44 <sup>‡</sup>
100	4	47240-CE24	47240-CE44 <sup>‡</sup>
160	6	47244-CE24	47244-CE44 <sup>‡</sup>
200	8	47146-CE24	47146-CE44 <sup>‡</sup>

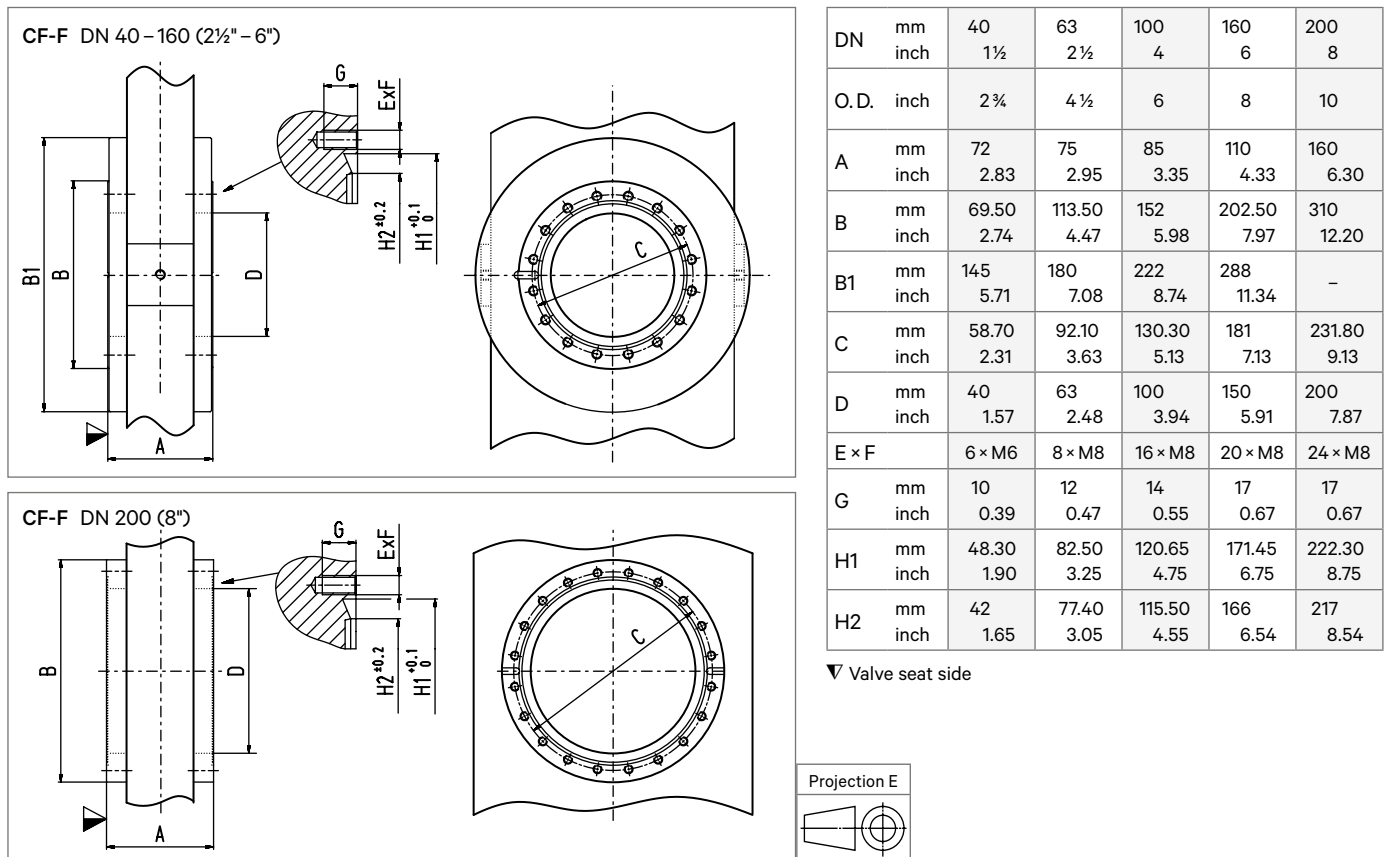
<sup>‡</sup>specify control voltage

## ORDERING INFORMATION FOR VALVES WITH OPTIONS

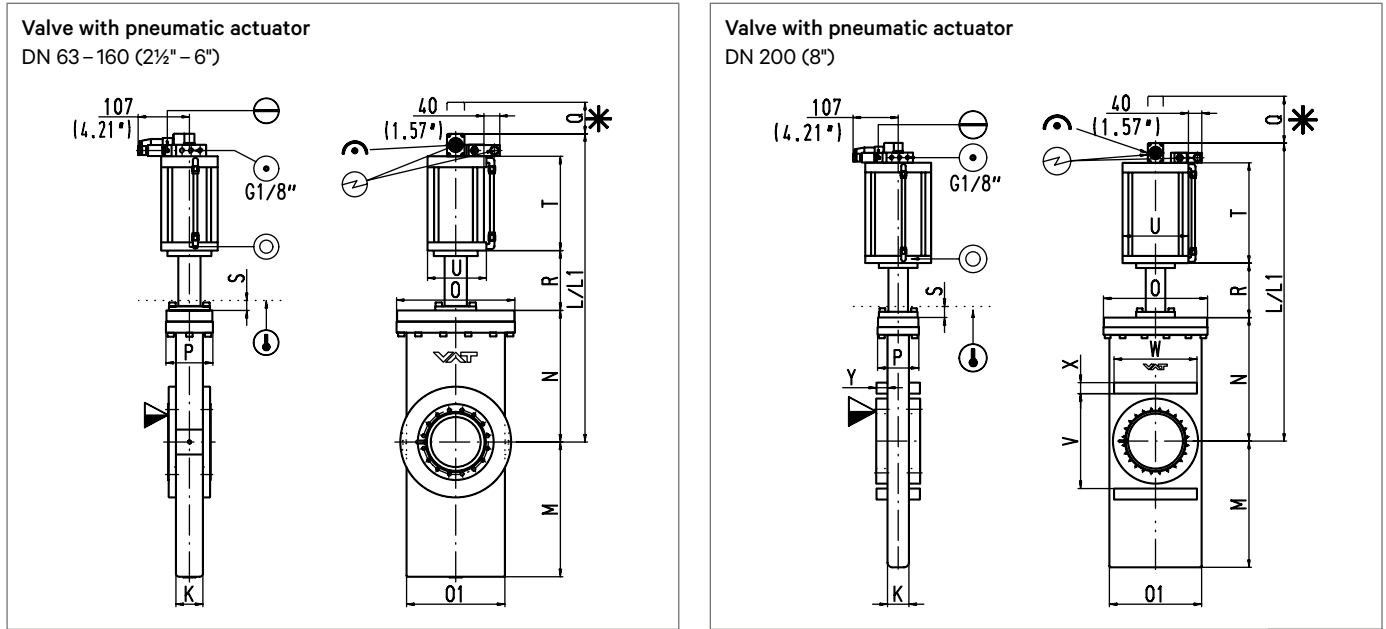
Basic ordering number plus «-X»: -X to be specified

Example: 47240-CE44-X, X = solenoid valve for impulse actuation 220 V 50 Hz

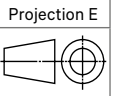
## FLANGE DIMENSIONS



### MAIN DIMENSIONS



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



<sup>1)</sup> Extended actuator

DN	mm	40	63	100	160	200
	inch	1½	2½	4	6	8
K	mm	48	46	54	70	78
	inch	1.89	1.81	2.13	2.76	3.07
L	mm	353	459	537	702	851
	inch	13.89	18.07	21.14	27.64	33.50
L1 <sup>1)</sup>	mm	439	583	661	826	975
	inch	17.28	22.95	26.02	32.52	38.39
M	mm	165	215	272	356	460
	inch	6.50	8.45	10.70	14.02	18.11
N	mm	177	231	264	370	443
	inch	6.97	9.09	10.39	14.57	17.44
O	mm	158	189	237	287	372
	inch	6.22	7.44	9.33	11.30	14.65
O1	mm	125	156	197	253	336
	inch	4.92	6.14	7.76	9.96	13.23
P	mm	82	77	94	93	114
	inch	3.23	3.03	3.70	3.66	4.49
Q	mm	340	420	520	700	880
	inch	13.39	16.54	20.47	27.56	34.65
R <sup>1)</sup>	mm	86	124	124	124	124
	inch	3.39	4.88	4.88	4.88	4.88
S	mm	20	20	20	20	20
	inch	0.79	0.79	0.79	0.79	0.79
T	mm	131	183	228	287	363
	inch	5.16	7.20	8.98	11.30	14.29
U	mm	90	104	135	190	230
	inch	3.54	4.09	5.31	7.48	9.06
V	mm	-	-	-	-	346
	inch	-	-	-	-	10.24
W	mm	-	-	-	-	302
	inch	-	-	-	-	14.89
X, Y	mm	-	-	-	-	40
	inch	-	-	-	-	1.57