LARGE GATE VALVES, SERIES 19.0 / 19.1 / 19.2

19.0 vacuum / 19.1 HV / 19.2 UHV isolation valve
for research and industrial applications requiring large DN sizes.
Especially suited to space simulation systems.

19.0: Vacuum

19.1: HV / 19.2: UHV

Damped opening and closing

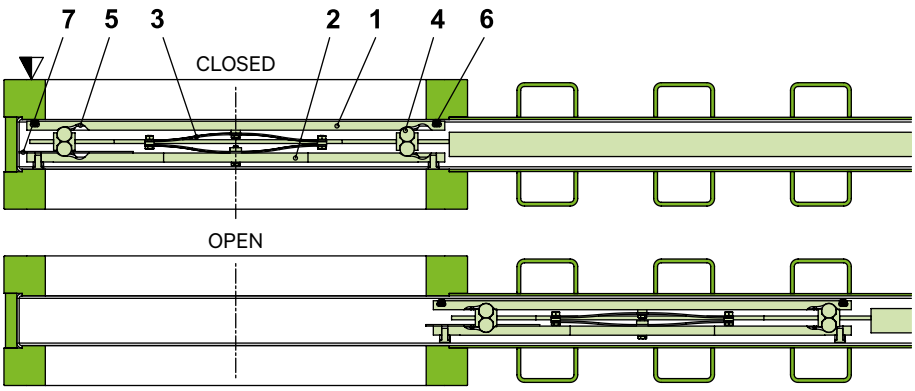
Differential pressure possible on either side

From DN 900 with split body for convenient maintenance

MAIN FEATURES

Sizes	DN 400 – 2000 mm (16" – 78")
Actuator	pneumatic: double acting
Body material	stainless steel
Feedthrough	19.0: shaft feedthrough 19.1 / 19.2: bellows
Standard flanges	ISO-F
Sealing technology	VATLOCK (see glossary)

FUNCTIONAL PRINCIPLE



1 Gate
2 Counter-plate
3 Leaf springs
4 Ball pairs
5 Ball detents
6 Gate seal
7 Spring stop
▼ Valve seat side

TECHNICAL DATA

Leak rate	Valve body 19.0 / 19.1 19.2 Valve seat 19.0 / 19.1 / 19.2		$< 1 \cdot 10^{-9}$ mbar ls^{-1} $< 5 \cdot 10^{-10}$ mbar ls^{-1} $< 1 \cdot 10^{-9}$ mbar ls^{-1}
Pressure range	19.0 19.1 19.2		$1 \cdot 10^{-7}$ mbar to 1 bar (abs) $1 \cdot 10^{-8}$ mbar to 1 bar (abs) $1 \cdot 10^{-10}$ mbar to 1 bar (abs)
Differential pressure on the gate			≤ 1 bar
Differential pressure at opening	DN 400 – 500 DN 630 – 2000		≤ 20 mbar ≤ 10 mbar
Cycles until first service	19.0 19.0 19.1 / 19.2 19.0 / 19.1 / 192	DN 400 – 500 DN 630 DN 400 – 630 DN 800 – 2000	100 000 20 000 20 000 10 000
Temperature [1]	Valve body Actuator, position indicator Solenoid valve		≤ 150 °C ≤ 80 °C ≤ 50 °C
Heating and cooling rate	DN 400 – 630 DN 800 – 1250		≤ 30 °C h^{-1} ≤ 5 °C h^{-1}
Material	Valve body Mechanism (main components) Bellows (19.1, 19.2 only)		AISI 304 (1.4301) EN AW-6082 (3.2315), AISI 304 (1.4301), AISI 316L (1.4435) or AISI 304L (1.4306)
Seal	Bonnet 19.0 / 19.1 19.2 Gate 19.0 / 19.1 / 19.2		FKM (Viton®) metal FKM (Viton®)
Feedthrough	19.0 19.1 / 19.2		shaft feedthrough bellows
Mounting position	DN 400 – 800 DN 900 – 2000		any to be specified with request for offer
Solenoid valve			24 V DC, 2 W (others on request)
Position indicator: contact rating		19.0 Voltage Current	19.1 / 19.2 10 – 30 V DC ≤ 250 V AC ≤ 50 V DC ≤ 0.2 A ≤ 2 A ≤ 1.2 A
Valve position indication	19.0 19.1 / 19.2		LED visual (mechanical)

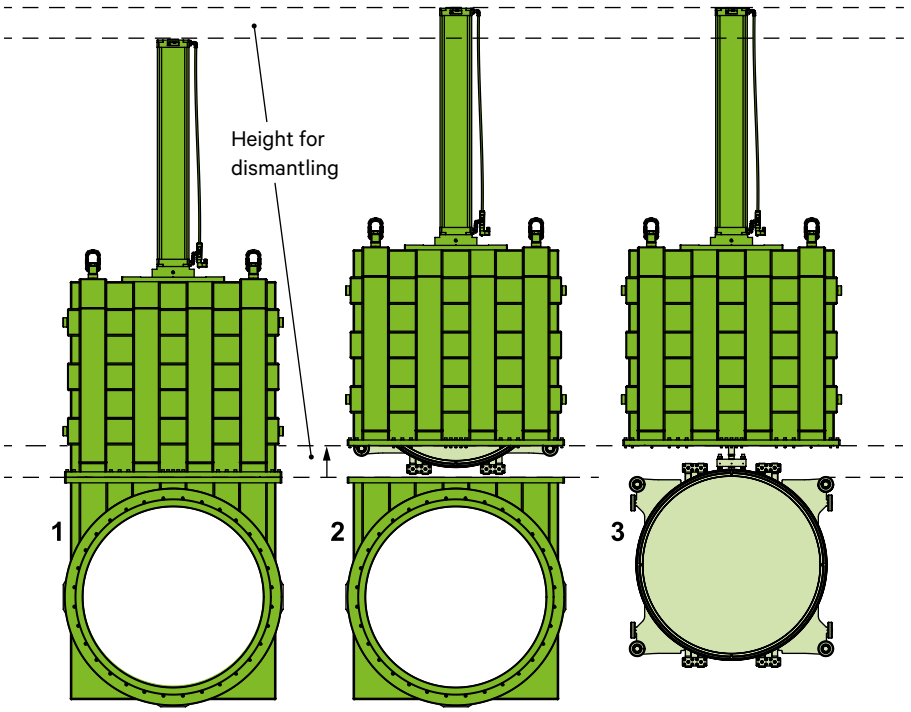
DN (nominal I.D.)		Conductance (molecular flow)	Compressed air min. – max. overpressure				Volume of pneumatic actuator				Closing or opening time		Weight			
			19.0		19.1 / 19.2		19.0		19.1 / 19.2		19.0	19.1 / 19.2	19.0		19.1 / 19.2	
mm	inch	ls^{-1}	bar	psi	bar	psi	l	ft^3	l	ft^3	s	s	kg	lbs	kg	lbs
400	16	52 000	5 – 7	73 – 102	5 – 9	73 – 131	5.9	0.208	2.1	0.074	8	10	140	309	160	353
500	20	90 000	5 – 7	73 – 102	5 – 9	73 – 131	6.9	0.244	2.7	0.095	8	10	200	441	235	518
630	25	187 000	5 – 7	73 – 102	6 – 9	87 – 131	8.8	0.311	4.8	0.170	10	14	350	772	385	849
800	32	283 000	5 – 7	73 – 102	6 – 9	87 – 131	17.9	0.632	11	0.388	21	35	580	1279	730	1609
900	36	435 000	5 – 7	73 – 102	6 – 9	87 – 131	20.8	0.735	[2]	[2]	23	[2]	760	1676	[2]	[2]
1000	40	509 000	5 – 7	73 – 102	6 – 9	87 – 131	22.6	0.798	18.8	0.664	25	50	1000	2205	1300	2866
1250	50	953 000	5 – 7	73 – 102	6 – 9	87 – 131	43.6	1.540	25.9	0.915	30	70	1700	3748	2100	4630
1600	63	1666 000	5 – 7	73 – 102	[2]	[2]	111.1	3.923	[2]	[2]	35	[2]	2800	6173	[2]	[2]
2000	78	2793 000	5 – 7	73 – 102	[2]	[2]	217.4	7.677	[2]	[2]	55	[2]	5050	11133	[2]	[2]

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

[2] on request

EASY MAINTENANCE

DN 900 – 2000 with split body



1 Put valve to the open position
2 Unscrew actuator part and lift it off (flange part remains in the system)
3 Move gate assembly out of body and carry out maintenance work

OPTIONS, CUSTOMIZED SOLUTIONS

ACTUATOR

- Solenoid valve for impulse actuation:
  last valve position is maintained at power failure
- Solenoid valve for impulse actuation and nonreturn valve:
  last valve position is maintained at power failure and compressed air failure
- Solenoid valve separate, for external mounting
- Other solenoid valve voltage (standard 24VDC)
- 3-position pneumatic actuator
- Mechanical position indicator for 19.0
- Lockable actuator

VALVE

- ISO, ASA, ASA-LP, JIS flanges
- Customer specified flanges with / without watercooling
- Ports for roughing (by-pass), venting or for gauges
- Protective ring
- Heat protection shield
- Leaf springs made of Nimonic
- Other sizes

PROJECTS FOR SPECIAL VERSIONS

Our business units are experienced in developing special requirements concerning material, stability, heaters, etc. On customer request, we can perform special test programs, bake-out and provision of customer specific hand-over quality documentation.

ACCEPTANCE TESTS

are conducted for large special projects and are prepared by our engineers.

REFERENCES

Large VAT gate valves have proved their reliability in various large systems all over the world. Reference list available on request.

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

– Bake-out equipment
– Blank-off flanges for testing and bake-out

ORDERING INFORMATION
FOR STANDARD VALVES

Valve with pneumatic actuator
double acting
with solenoid valve
with position indicator

DN		Ordering numbers (specify control voltage)		
mm	inch	19.0: Vacuum ISO-F	19.1: HV ISO-F	19.2: UHV ISO-F
400	16	19052-PE44	19152-PE44	19252-PE44
500	20	19054-PE44	19154-PE44	19254-PE44
630	25	19056-PE44	19156-PE44	19256-PE44
800	32	19058-PE44	19158-PE44	19258-PE44
900 *)	36	19059-PE44	19159-PE44	19259-PE44
1000	40	19060-PE44	19160-PE44	19260-PE44
1250 *)	50	19062-PE44	19162-PE44	19262-PE44
1600 *)	63	19064-PE44	19164-PE44	19264-PE44
2000 *)	78	19066-PE44	19166-PE44	19266-PE44
Other sizes on request				

without solenoid valve, without position indicator: 19 . . . -PE**1**4
without solenoid valve, with position indicator: 19 . . . -PE**2**4
with solenoid valve, without position indicator: 19 . . . -PE**3**4 (specify control voltage)

*) customer-specific

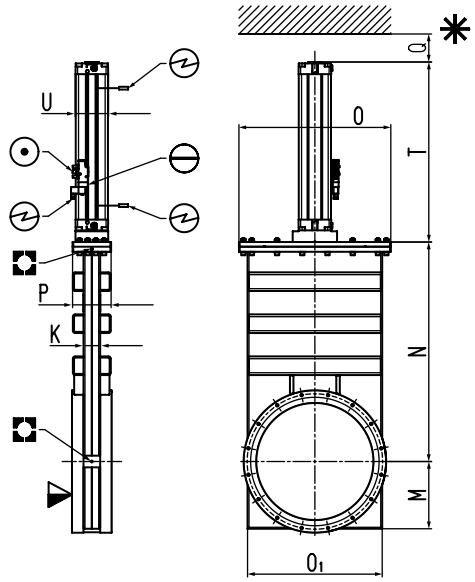
ORDERING INFORMATION
FOR VALVES WITH OPTIONS

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

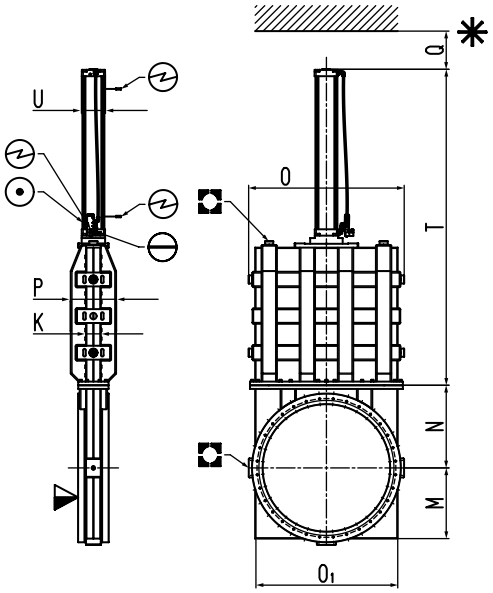
Example: 19254-PE44-X, X = port as per enclosed dimensional drawing

MAIN DIMENSIONS

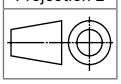
19.0
Vacuum valve with pneumatic actuator
DN 400 – 800 (16" – 32")



19.0
Vacuum valve with pneumatic actuator
DN 900 – 2000 (36" – 78")



Projection E

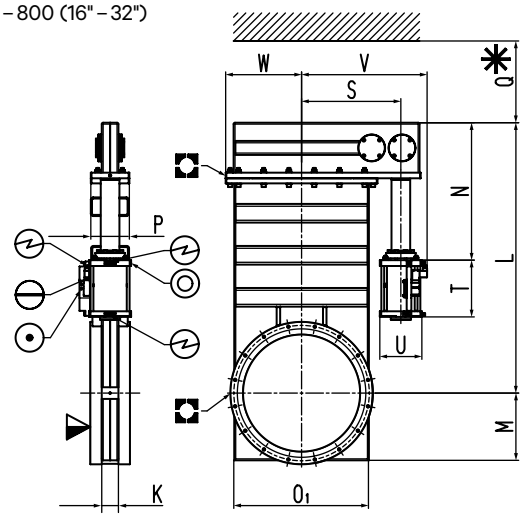


▼ Valve seat side
✳ Required for dismantling
⊙ Compressed air connection
⊖ Electrical connection
⊖ Emergency operation
◘ For attachment

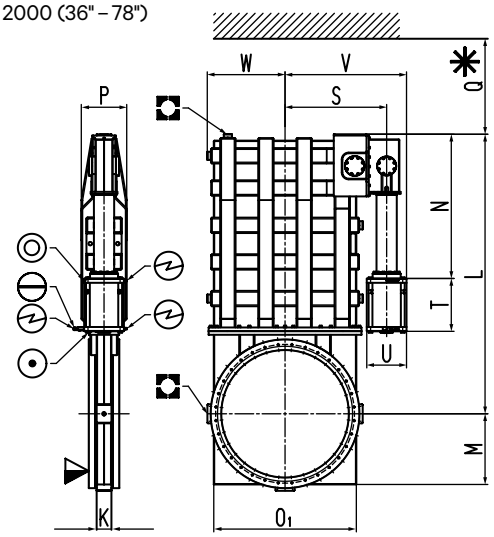
DN		400	500	630	800	900 *)	1000	1250 *)	1600 *)	2000 *)
	mm	400	500	630	800	900	1000	1250	1600	2000
	inch	16	20	25	32	36	40	50	63	78
K	mm	67	72	75	87	87	116	116.80	125	145
	inch	2.64	2.83	2.95	3.43	3.43	4.57	4.60	4.92	5.71
M	mm	233	288	363	455	512	555	709	884	1134.50
	inch	9.17	11.34	14.29	17.91	20.16	21.85	27.91	34.80	44.67
N	mm	792	940	1195	1410	600	649	827	1017	1218
	inch	31.18	37.01	47.05	55.51	23.62	25.55	32.56	40.04	47.95
O	mm	525	650	806	1010	1091	1221	1521	1869	2349
	inch	20.67	25.59	31.73	39.76	42.95	48.07	59.88	73.58	92.48
O1	mm	467	577	732	911	1010	1119	1419	1769	2169
	inch	18.39	22.72	28.82	35.87	39.76	44.06	55.87	69.65	85.39
P	mm	147	165	241	336	212	356	356	365	553
	inch	5.79	6.50	9.49	13.23	8.35	14.02	14.02	14.37	21.77
Q	mm	617	699	844	1032	133	176	210	252	200
	inch	24.29	27.52	33.23	40.63	5.24	6.93	8.27	9.92	7.87
T	mm	690	771	926	1170	2338	2515	3058	3832	4751
	inch	27.17	30.35	36.46	46.06	92.05	99.02	120.39	150.87	187.05
U	mm	140	136	136	186	186	186	224	224	280
	inch	5.51	5.35	5.35	7.32	7.32	7.32	8.82	8.82	11.02

MAIN DIMENSIONS

19.1 / 19.2
HV / UHV valve with pneumatic actuator
DN 400 – 800 (16" – 32")



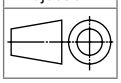
19.1 / 19.2
HV / UHV valve with pneumatic actuator
DN 900 – 2000 (36" – 78")



DN		400	500	630	800	1000	1250 *)
	mm	16	20	25	32	40	50
	inch						
K	mm	67	72	75	87	116	116.80
	inch	2.64	2.83	2.95	3.43	4.57	4.60
L	mm	957	1158	1434	1748	2196	2744
	inch	37.68	45.59	56.46	68.82	86.46	108.03
M	mm	233	288	363	455	555	709
	inch	9.17	11.34	14.29	17.91	21.85	27.91
N	mm	486	589	683	1047	1123	1353
	inch	19.13	23.19	26.89	41.22	44.21	53.27
O1	mm	467	577	732	911	1119	1419
	inch	18.39	22.72	28.82	35.87	44.06	55.87
P	mm	147	165	240	336	356	356
	inch	5.79	6.50	9.45	13.23	14.02	14.02
Q	mm	603	700	896	1052	140	182
	inch	23.74	27.56	35.28	41.42	5.51	7.17
S	mm	340	425	503	626	798	929
	inch	13.39	16.73	19.80	24.65	31.42	36.57
T	mm	225	255	260	373	436	536
	inch	8.86	10.04	10.24	14.69	17.17	21.10
U	mm	180	180	220	262	312	312
	inch	7.09	7.09	8.66	10.31	12.28	12.28
V	mm	448	533	630	733	954	1085
	inch	17.64	20.98	24.80	28.86	37.56	42.72
W	mm	263	325	403	505	611	760
	inch	10.35	12.80	15.87	19.88	24.06	29.92

*) customer-specific
Dimensions for DN 900, 1600, 2000 on request

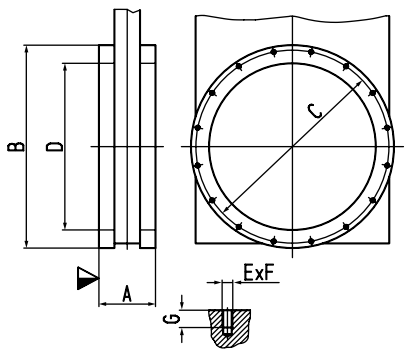
Projection E



▼ Valve seat side
✳ Required for dismantling
⊙ Compressed air connection
⊖ Electrical connection
⊖ Emergency operation
◎ Leak detection hole
◘ For attachment

FLANGE DIMENSIONS

ISO-F



▼ Valve seat side

DN		400	500	630	800	900 *)	1000	1250 *)	1600 *)	2000 *)
	mm	16	20	25	32	36	40	50	63	78
	inch									
A	mm	150	170	180	220.50	204	240	250	300	340
	inch	5.90	6.69	7.09	8.66	8.03	9.45	9.84	11.81	13.40
B	mm	510	610	780	960	1060	1168	1500	1850	2232
	inch	20.08	24.02	30.71	37.80	41.70	46	59.05	72.83	87.80
C	mm	480	580	720	890	990	1090	1370	1760	2121
	inch	18.90	22.83	28.35	35.04	38.90	42.91	53.94	29.30	83.50
D	mm	400	501	651	800	900	1000.50	1250	1600	1982
	inch	15.75	19.72	25.63	31.50	35.40	39.37	49.21	63	78
E × F		16 × M12	16 × M12	20 × M12	24 × M12	28 × M12	32 × M12	32 × M16	40 × M24	36 × ¾"
G	mm	20	20	20	20	20	20	25	36	34
	inch	0.79	0.79	0.79	0.79	0.79	0.79	0.98	1.42	1.33

Dimensions for other flanges on request

*) customer-specific