

Vacuum safety system for protection of storage rings or accelerators

Detection of pressure rise in milliseconds

Closure to a small leak in milliseconds



Body material

stainless steel

Slot shutter with pneumatic actuator

double acting

DN		○ circular opening		Ordering numbers
mm	inch	mm	inch	
40	1½	Ø 40	Ø 1½	77332-CE44

DN		▬ slot opening	D x D1 (height x width)	Ordering numbers
mm	inch	mm	inch	
63	2½	35 x 50	1.38 x 1.97	77336-CE44
100	4	35 x 80	1.38 x 3.15	77340-CE44
160	6	35 x 130	1.38 x 5.12	77344-CE44

Flap shutter with pneumatic actuator

double acting

DN		○ circular opening		Ordering numbers
mm	inch	mm	inch	
63	2½	Ø 63	Ø 2½	77136-CE44
100	4	Ø 100	Ø 4	77140-CE44
160	6	Ø 160	Ø 6	77144-CE44

Controller including accessories

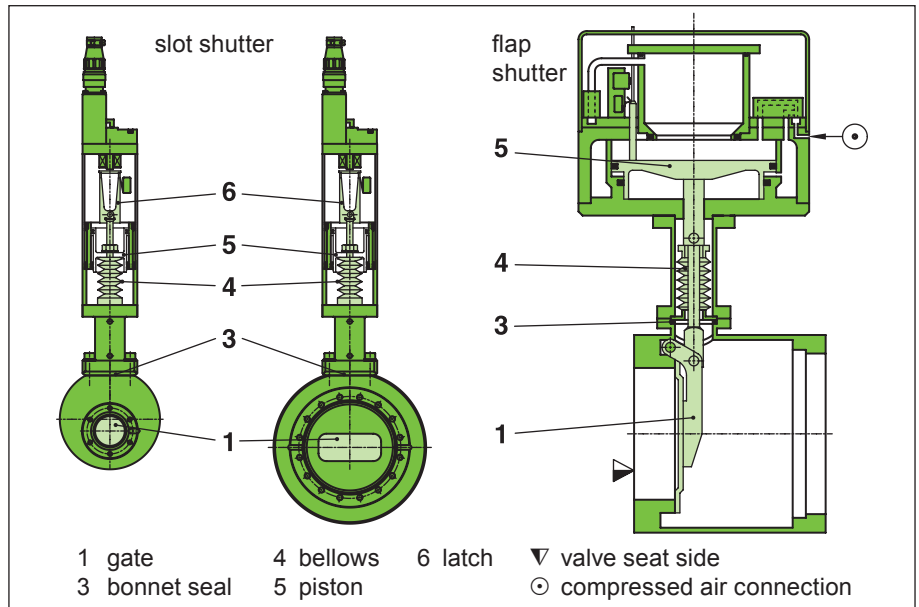
See «Controller for fast closing system Series 77», page 194

Sealing material

Bonnet: metal

Feedthrough

Bellows



Features

Closing by releasing a latch (slot shutter) or fast venting/evacuation of the pneumatic cylinder (flap shutter)

Pneumatic dampening during closing

Opening by compressed air

Technical data

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Leak rate		
- Body		< 1 · 10 ⁻¹⁰ mbar Is ⁻¹
- Valve seat Series 773		< 1 mbar Is ⁻¹
- Valve seat Series 771		< 30 mbar Is ⁻¹
Pressure range		UHV to 1.2 bar (abs)
Differential pressure		see table on next page
Cycles until first service		
- Slot shutter		5000 at 5 bar compressed air pressure
- Flap shutter		2000 at 5 bar compressed air pressure
Temperature ¹⁾		
- Shutter body		≤ 300°C
- Actuator		≤ 50°C
Radiation resistance		
- Shutter body		10 ⁸ Gy
- Actuator		10 ⁴ Gy
Material		
- Shutter body	DN 40	AISI 304 (1.4301)
	DN 63 - 160	AISI 316L (1.4435, 1.4404)
- Mechanism	DN 40	AISI 304 (1.4301)
	DN 63 - 160	AISI 316L (1.4435, 1.4404)
- Bellows		AISI 304L (1.4306)
- Gate		Titanium
Seal		
- Bonnet		metal
Mounting position		shutter side marked ▽ in opposite direction of air inrush

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

Options

- Customer specified flanges
- Special slot dimensions

Ordering information for options:

Ordering No. of valve-X (e. g. 77340-CE44-X, X = ISO-F flanges)

Seal kit

Bonnet seal

Ordering No.: see operating manual or price list

Technical data

Slot shutter

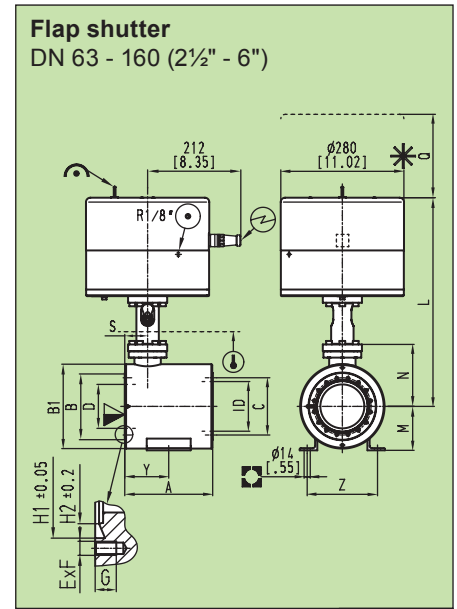
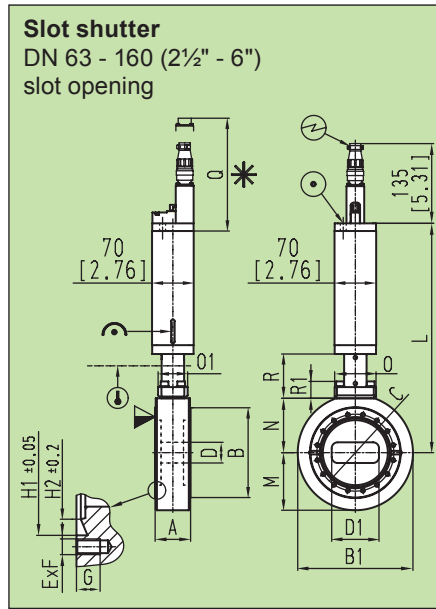
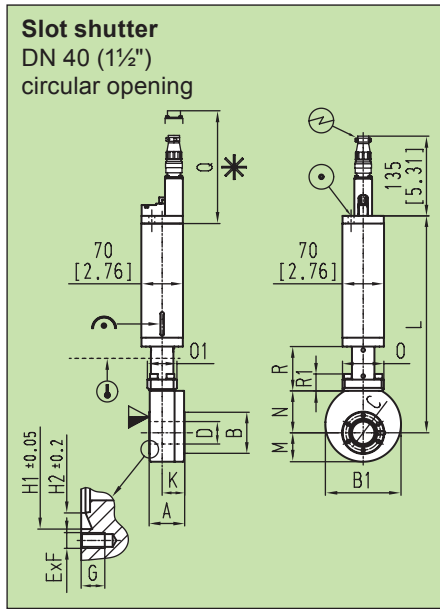
*) from sensor signal to closed shutter

DN (nominal I. D.)		standard flanges CF-F	molecular flow conductance	differential pressure: shutter closed		differential pressure at opening		compressed air pressure min. - max. overpressure		volume of air cylinder		total closing time *)	opening time	weight	
mm	inch	O.D.	ls ⁻¹	in closing direction	in opening direction	in closing direction	in opening direction	bar	psi	l	ft ³	ms	s	kg	lbs
40	1½	2¾	110	≤1.2	≤1.2	≤300	≤300	4 - 6	55 - 85	0.032	0.001	< 10	9	8.1	18
63	2½	4½	240	≤1.2	≤1.2	≤200	≤200	4 - 6	55 - 85	0.1	0.0033	< 10	9	11	24
100	4	6	450	≤1.2	≤1.2	≤150	≤150	4 - 6	55 - 85	0.24	0.008	< 10	9	14	30
160	6	8	830	≤1.2	≤1.2	≤100	≤100	4 - 6	55 - 85	0.72	0.025	< 10	9	20	44

Flap shutter

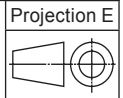
DN (nominal I. D.)		standard flanges CF-F	molecular flow conductance	differential pressure: shutter closed		differential pressure at opening		compressed air pressure min. - max. overpressure		volume of air cylinder		total closing time *)	opening time	weight	
mm	inch	O.D.	ls ⁻¹	in closing direction	in opening direction	in closing direction	in opening direction	bar	psi	l	ft ³	ms	s	kg	lbs
63	2½	4½	200	≤2	≤1.2	≤600	≤1	5 - 8	70 - 110	1.77	0.06	13	7	25	55
100	4	6	700	≤2	≤1.2	≤180	≤1	5 - 8	70 - 110	1.77	0.06	15	7	29	64
160	6	8	1700	≤2	≤0.5	≤50	≤1	5 - 8	70 - 110	1.77	0.06	23	7	36	80

Dimensions



▽ valve seat side ⊕ electrical connection
 * required for dismantling
 ⊙ compressed air connection

⤴ mechanical position indication ⊕ bake-out area



DN	mm	40		
	inch	1 1/2		
A	mm	60		
	inch	2.36		
B	mm	69.5		
	inch	2.74		
B1	mm	128		
	inch	5.04		
C	mm	58.7		
	inch	2.31		
D	mm	38		
	inch	1.5		
E x F		6 x M6		
G	mm	12		
	inch	0.47		
H1	mm	48.35		
	inch	1.9		
H2	mm	42		
	inch	1.65		
L	mm	367		
	inch	14.45		
M	mm	49		
	inch	1.93		
N	mm	71		
	inch	2.8		
O	mm	70		
	inch	2.76		
O1	mm	50		
	inch	1.97		
Q	mm	195		
	inch	7.68		
R	mm	75		
	inch	2.95		
R1	mm	29		
	inch	1.14		

DN	mm	63	100	160
	inch	2 1/2	4	6
A	mm	60	60	60
	inch	2.36	2.36	2.36
B	mm	113.5	152	202.5
	inch	4.47	5.98	7.97
B1	mm	158	195	245
	inch	6.22	7.67	9.65
C	mm	92.1	130.3	181
	inch	3.63	5.13	7.13
D	mm	35	35	35
	inch	1.38	1.38	1.38
D1	mm	50	80	130
	inch	1.97	3.15	5.12
E x F		8 x M8	16 x M8	20 x M8
G	mm	12	12	12
	inch	0.47	0.47	0.47
H1	mm	82.55	120.7	171.5
	inch	3.25	4.75	6.75
H2	mm	77.4	115.5	166
	inch	3.05	4.55	6.54
L	mm	369	388	414
	inch	14.52	15.28	16.3
M	mm	79	97.5	122.5
	inch	3.11	3.84	4.82
N	mm	73	92	118
	inch	2.87	3.62	4.65
O	mm	70	70	70
	inch	2.76	2.76	2.76
O1	mm	50	50	50
	inch	1.97	1.97	1.97
Q	mm	195	195	195
	inch	7.68	7.68	7.68
R	mm	75	75	75
	inch	2.95	2.95	2.95
R1	mm	29	29	29
	inch	1.14	1.14	1.14

DN	mm	63	100	160
	inch	2 1/2	4	6
A	mm	150	200	250
	inch	5.91	7.87	9.84
B	mm	113.5	152	202.5
	inch	4.47	5.98	7.97
B1	mm	154	192	242
	inch	6.06	7.56	9.53
C	mm	92.1	130.3	181
	inch	3.63	5.13	7.13
D	mm	63	100	150
	inch	2.48	3.94	5.91
E x F		8 x M8	16 x M8	20 x M8
G	mm	12	12	12
	inch	0.47	0.47	0.47
H1	mm	82.55	120.65	171.5
	inch	3.25	4.75	6.75
H2	mm	77.4	115.5	166
	inch	3.05	4.55	6.54
ID	mm	76	113	164
	inch	2.99	4.45	6.47
L	mm	456	475	500
	inch	17.95	18.7	19.69
M	mm	80	100	125
	inch	3.15	3.94	4.92
N	mm	122	141	166
	inch	4.8	5.55	6.54
Q	mm	83	83	83
	inch	3.27	3.27	3.27
S	mm	52	52	52
	inch	2.05	2.05	2.05
Y	mm	75	100	125
	inch	2.95	3.94	4.92
Z	mm	120	160	160
	inch	4.72	6.3	6.3

Controller for operating
- fast closing valves, Series 75
- fast closing shutters, Series 77

Processing of the sensor signals and triggering the closing or opening movement of the fast closing valve or shutter



Construction

Basic device VF-2 fitted with various modules

Basic device VF-2

Ordering number see price list

- 19" rack insert with Power Supply
- Storage spaces for max. 10 modules
- Mains voltage: 100 - 240 V $\pm 10\%$, 50/60 Hz, max. 150 VA
- Key switch for «LOCAL», «LOCKED», «REMOTE»
- Ambient temperature 0 - 50°C
- Dimensions (w x h x d):
 - 19" rack insert, 3 height units
 - 445 x 132.5 x 300 mm (17.5" x 5.2" x 11.8")
 - Depth with plugs 410 mm (16.1")
- Weight: 11 kg (24 lbs)

Modules for basic device VF-2

Ordering number see price list

CONTROL module

- Storage space for 1 module required
- System control module for max. 6 sensors and 4 fast closing valves / shutters
- External trigger
- 8-pole plug for «REMOTE» control
- LED display «READY», «EXTERNAL TRIGGER»
- Push button «RESET»

FV-SENSOR module

- Storage space for 1 module required
- Connection of a fine vacuum sensor by a Triax connector (LEMO)
- Sensor voltage 3.5 kV
- LED display «READY», «INRUSH», «EXT. SIGNAL», «INTERLOCK»
- 8-pole plug for «REMOTE» control

HV-SENSOR module

- Storage space for 2 modules required
- Connection of a high vacuum sensor by a Triax connector (LEMO)
- Sensor voltage 3.5 kV
- LED display for pressure
- Trigger pressure adjustable between $2 \cdot 10^{-8}$ and $8 \cdot 10^{-4}$ mbar
- Trigger time adjustable between 1 and 7 msec
- 8-pole plug for «REMOTE» control

- VALVE module**
 - Storage space for 1 module required
 - Connection of a fast closing valve or shutter
 - LED display «READY», «TRIGGERED», «READY TO OPEN», «INTERLOCK»
 - Push buttons «OPEN», «CLOSE», «INTERLOCK»
 - 19-pole plug for connecting the valve / shutter
 - 12-pole plug for «REMOTE» control

- 1-GATE module**
 - Storage space for 1 module required
 - Connection of an isolation valve
 - LED display «READY»
 - Push buttons «OPEN», «CLOSE»
 - 12-pole plug for connecting the isolation valve
 - 19-pole plug for «REMOTE» control

- 2-GATE module**
 - Storage space for 1 module required
 - Connection of two isolation valves
 - LED display «READY» for each isolation valve
 - Push buttons «OPEN», «CLOSE» for each isolation valve
 - 2 x 12-pole plug for connecting the isolation valves
 - 19-pole plug for «REMOTE» control

- LINK module**
 - Storage space for 1 module per rack required
 - To link two basic devices if the 9 storage spaces of one basic device are insufficient

Cable

Ordering number see price list

Sensor – SENSOR module	max. 300 m, Triax cable 3.5 mm ²
Valve/shutter – VALVE module	max. 150 m, 12-pole cable 0.75 mm ²
Isolation valve – GATE module	max. 200 m, 7-pole cable 0.75 mm ²

Vacuum sensor

Ordering number see price list

Trigger pressure:	FV	approx. $1 \cdot 10^{-2}$ mbar
	HV	10^{-8} to 10^{-3} mbar adjustable
Response time:	FV	approx. 1 ms
	HV	2 ms (air inrush 1 bar)
Radiation resistance:	FV	10^8 Gy (10^{10} rad)
	HV	10^7 Gy (10^9 rad)
Flange		CF-F 40
Weight		approx. 1 kg (2 lbs)

Fine vacuum sensor (FV)
glow discharge



High vacuum sensor (HV)
cold cathode

