

Main applications

Control and isolation valve for SEMI, FPD and industrial processes

Optimal for sputtering and etching processes



Ordering information

Valve with stepper motor and integrated pressure controller

DN		Ordering numbers									
mm	inch	ISO-F	CF-F metric threads	CF-F UNF threads	ASA-LP (T) ASA (A)	JIS					
63	2 ½	64236-PE x y	64236-CE x y	64236-UE x y	64236-TE x y	64236-JE x y					
80	3	64238-PE x y	64238-CE x y	64238-UE x y	64238-TE x y	64238-JE x y					
100	4	64240-PE x y	64240-CE x y	64240-UE x y	64240-TE x y	64240-JE x y					
160	6	64244-PE x y	64244-CE x y	64244-UE x y	64244-TE x y	64244-JE x y					
200	8	64246-PE x y	64246-CE x y	64246-UE x y	64246-TE x y	64246-JE x y					
250	10	64248-PE x y	64248-CE x y	64248-UE x y	64248-TE x y	64248-JE x y					
320	12	64250-PE x y	on request	on request	64250-TE x y	64250-JE x y					
350	14	–	–	–	–	64251-JE x y					
400	16	64252-PE x y	on request	on request	64252-AE x y	64252-JE x y					

Controller configurations:

- G = basic version
- A = with SPS
- H = with PFO
- C = with SPS and PFO
- T = basic version with VC master
- V = with SPS and VC master
- U = with PFO and VC master
- W = with SPS, PFO and VC master

SPS = Sensor Power Supply
(±15VDC power supply for sensor)

PFO = Power Failure Option
(valve closes/opens automatically at power failure)

VC = Valve Cluster
(for operating several valves synchronously)

Interface

- G = RS232 1
- H = RS232 2
- C = Logic 1
- E = Logic 2
- P = DeviceNet® 1
- Q = DeviceNet® 2
- D = Profibus 1
- F = Profibus 2
- J = RS485 1
- K = RS485 2
- Y = Ethernet 1
- Z = Ethernet 2
- L = CC-Link 1
- N = CC-Link 2
- I = EtherCAT 1
- X = EtherCAT 2
- S = VC slave (without interface)

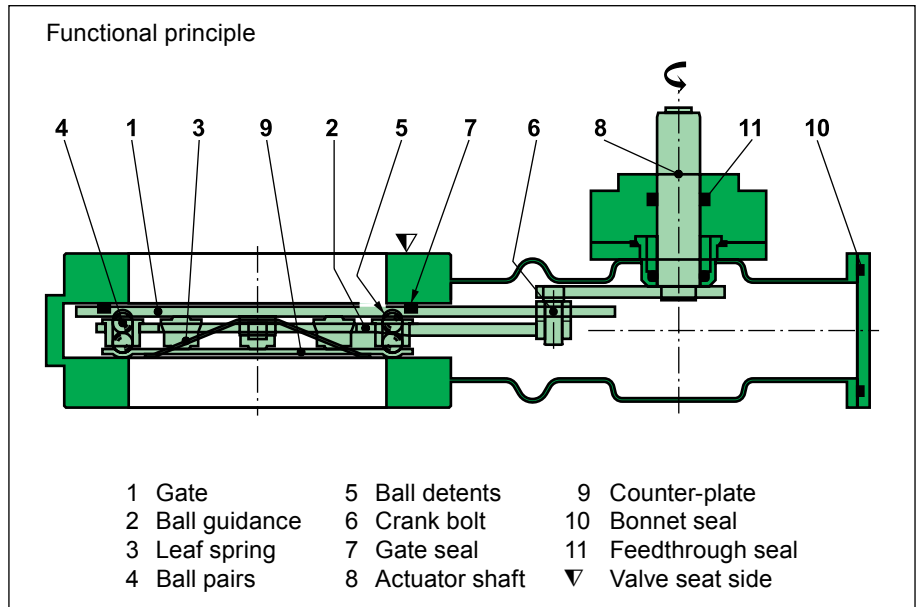
Example: 64240-PEGG
= Valve with ISO-F DN 100 flanges, RS232 interface, for 1 sensor

Further ordering information on next page →

Pressure controller: see pages 146–149

Features

- Body material: stainless steel
- Compact design
- Integrated or external pressure controller
- Extremely short control response times
- Position indication
- Service port for connecting a computer or a service box 2



B

The plate acts as a throttling element and varies the conductance of the valve opening. The pressure controller calculates the required plate position to achieve the setpoint pressure. See also principle drawing on page 280. Actuation is performed by a stepper motor. An encoder monitors the position. This principle ensures fast and accurate process pressure control.

For leaktight closing the VATLOCK configuration is applied. For details see page 282.

Continued Ordering information

Valve with stepper motor (external pressure controller)

DN		Ordering numbers				
mm	inch	ISO-F	CF-F metric threads	CF-F UNF threads	ASA-LP (T) ASA (A)	JIS
63	2½	64236-PE52	64236-CE52	64236-UE52	64236-TE52	64236-JE52
80	3	64238-PE52	64238-CE52	64238-UE52	64238-TE52	64238-JE52
100	4	64240-PE52	64240-CE52	64240-UE52	64240-TE52	64240-JE52
160	6	64244-PE52	64244-CE52	64244-UE52	64244-TE52	64244-JE52
200	8	64246-PE52	64246-CE52	64246-UE52	64246-TE52	64246-JE52
250	10	64248-PE52	64248-CE52	64248-UE52	64248-TE52	64248-JE52
320	12	64250-PE52	on request	on request	64250-TE52	64250-JE52
350	14	–	–	–	–	64251-JE52
400	16	64252-PE52	on request	on request	64252-AE52	64252-JE52

Pressure controller: see pages 146–149

Technical data

Leak rate ¹⁾ : valve body, valve seat	1 · 10 ⁻⁹ mbar ls ⁻¹
Pressure range ¹⁾	
– DN 63–200	1 · 10 ⁻⁸ mbar to 2.0 bar (abs)
– DN 250–400	1 · 10 ⁻⁸ mbar to 1.2 bar (abs)
Differential pressure on the gate	
– Valve closed DN 63–200	≤ 2.0 bar
DN 250–400	≤ 1.2 bar
– During closing/opening	≤ 30 mbar
Cycles until first service ²⁾	
– Pressure control	1 million
– Closing/opening	200 000
Temperature ²⁾	
– Valve body	≤ 150 °C
– Ambient	≤ 50 °C
Material	
– Valve body, plate	AISI 304 (1.4301)
– Mechanism	AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034), AISI 420D (1.4037), AISI 430 (1.4016)
Seal: bonnet, gate, feedthrough	FKM (Viton®)
Feedthrough	rotary feedthrough
Mounting position	
– DN 63–350	any ³⁾
– DN 400	horizontal only ⁴⁾
Valve position indication	visual (mechanical and on controller)

¹⁾ Unheated on delivery

²⁾ Maximum values: depending on operating conditions and sealing materials

³⁾ Seat side towards chamber

⁴⁾ Vertical mounting position: see «Options»

DN (nominal I.D.)		Standard flanges	Conductance (molecular flow)	Minimum controllable conductance (molecular flow)	Operating time for throttling	Typical closing or opening time	Weight	
mm	inch						kg	lbs
63	2 ½	See pages 132 – 133	440	0.65	3	4	14	31
80	3		800	0.8	3	4	14	31
100	4		1700	1	3	6	17	37
160	6		5000	1.6	5	6	28	62
200	8		12000	2	5	6	34	75
250	10		22000	2.5	9	10	62	136
320	12		30000	3.2	9	10	112	246
350	14		40000	3.5	9	10	120	264
400	16		50000	4	9	10	155	340

Technical data for pressure controller: see pages 146–149

Spare parts

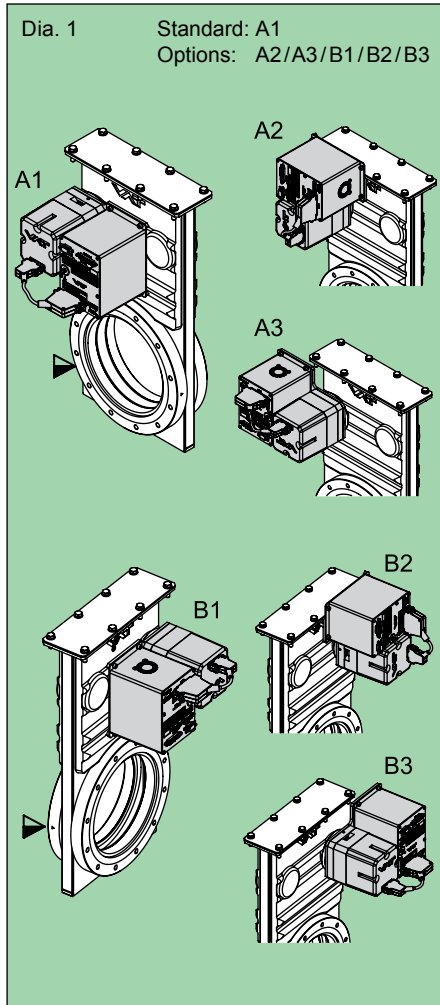
- **Seals**
on request (specify fabrication number of valve)

Accessories

- **Flange connections**
for installation of the valve: see series 32 and 33

Options

Certain options are not available for some nominal diameters or cannot be combined. Moreover, options can affect the general technical data.



Actuator

- Stepper motor with integrated controller mountable in 6 positions (Dia. 1):
 - position A1, A2, A3 on A-side (valve seat side): to be specified with order
 - position B1, B2, B3 on B-side (rear side): to be specified with order
- Valve with external pressure controller (Dia. 2), ordering No. ...52, see page 127 (controller and cable must be ordered in addition)
- Actuator for mounting the valve DN 400 in vertical position (extended closing time, fewer cycles)
- Controller with configurable PID parameters (adaptive, upstream, downstream, soft-pump)
- RS232 interface with 2 analog outputs

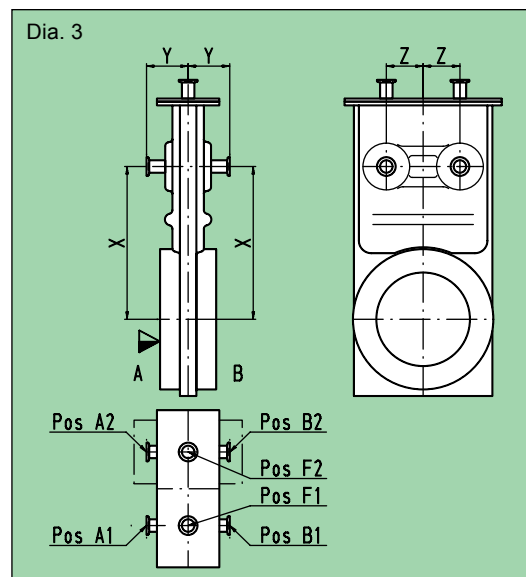
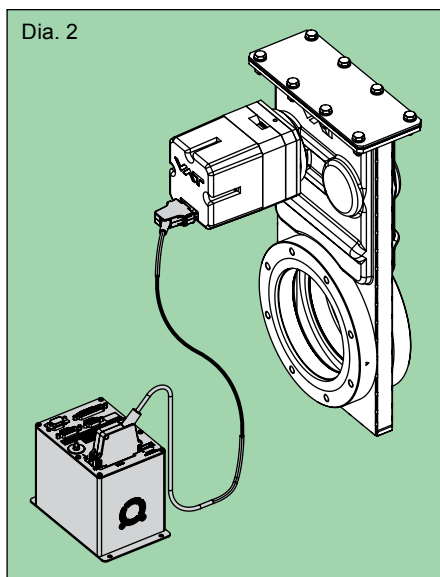
Valve

- Customer specified flanges with /without watercooling
- Other sealing materials
- Intermediate pumping of the rotary feedthrough
- Ports for roughing (by-pass), venting or for gauges, possible in positions A1, A2, B1, B2, F1 and F2 (Dia. 3)

DN valve	mm	63	80	100	160	200	250	320	350	400
	inch	2½	3	4	6	8	10	12	14	16
Recommended port ISO-KF or CF-F		16	16	40	40	40	40	40	40	40
X	mm	146	146	185	245	304.40	387.30	482	482	415
	inch	5.75	5.75	7.28	9.65	11.98	15.25	18.98	18.98	16.34
Y	mm	30	30	20	20	20	20	20	20	20
	inch	1.18	1.18	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Z	mm	30	30	47.50	59	85	100	135	135	140
	inch	1.18	1.18	1.87	2.32	3.35	3.94	5.31	5.31	5.51
Other ports on request										

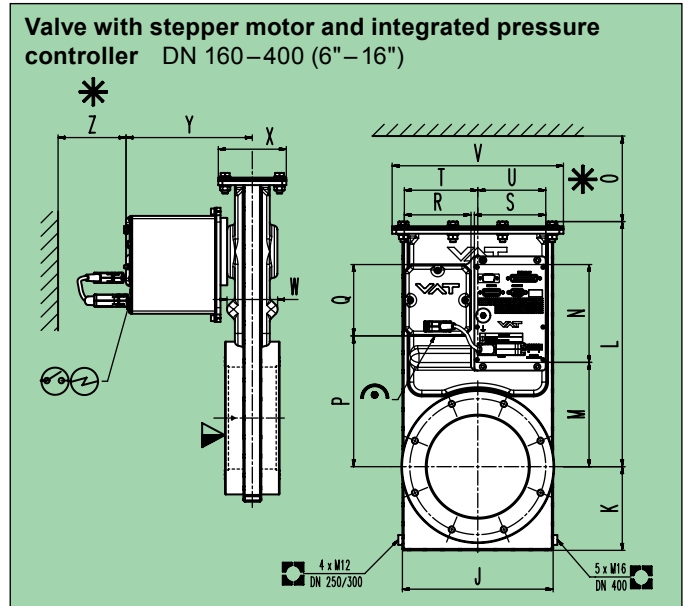
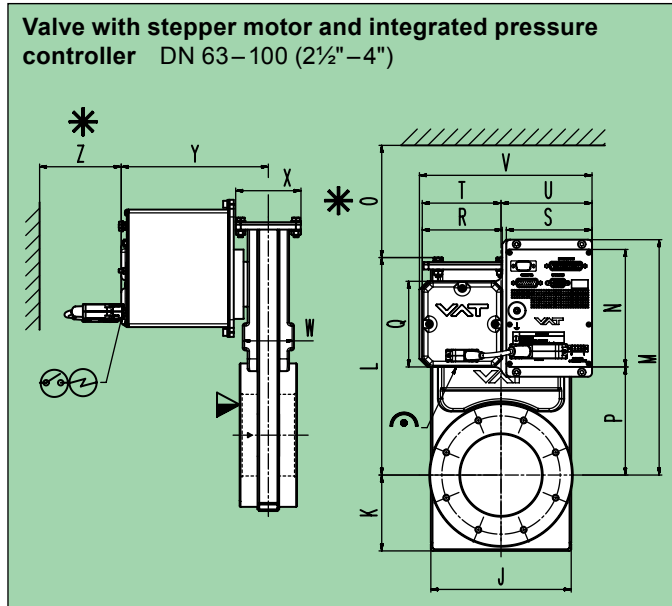
Ordering information for options:

Ordering No. of valve-X (e. g. 64244-PEGH-X, X = port ISO-KF 40 in position F2)



▼ Valve seat side

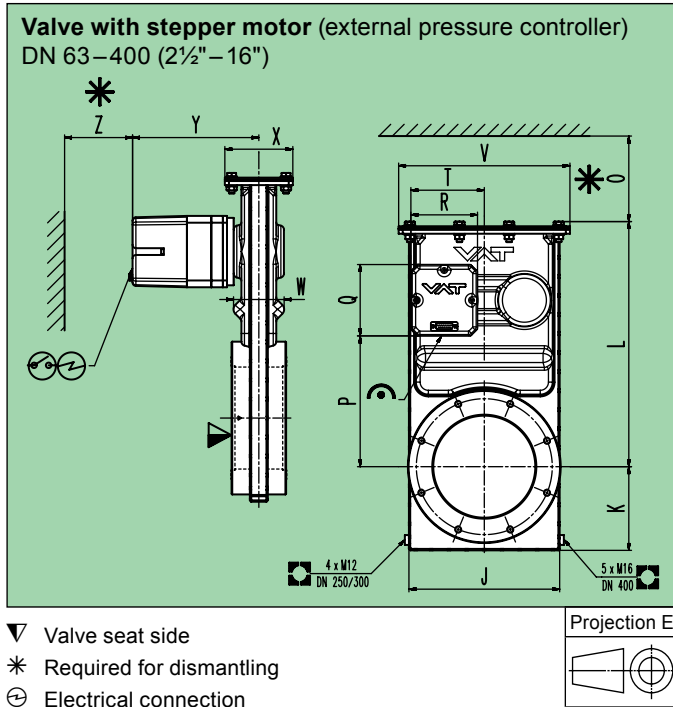
Main dimensions



Flange dimensions: see pages 132–133

DN	mm inch	63 2½	80 3	100 4	160 6	200 8	250 10	320 12	350 14	400 16
J	mm inch	134 5.28	134 5.28	172 6.77	222 8.74	274 10.79	355 13.98	420 16.54	420 16.54	474 18.66
K	mm inch	73 2.87	73 2.87	93 3.66	123 4.84	148 5.83	177 6.97	214 8.43	214 8.43	232 9.13
L	mm inch	208 8.19	208 8.19	267 10.51	361 14.21	438 17.24	570 22.44	688 27.09	688 27.09	787 30.98
M	mm inch	250 9.84	250 9.84	228 8.98	154 6.06	213 8.39	298 11.73	393 15.47	393 15.47	479 18.86
N	mm inch	144 5.67	144 5.67	144 5.67	144 5.67	144 5.67	144 5.67	144 5.67	144 5.67	144 5.67
O	mm inch	180 7.09	180 7.09	220 8.66	300 11.81	350 13.78	450 17.72	550 21.65	550 21.65	600 23.62
P	mm inch	94 3.70	94 3.70	132 5.20	192 7.56	252 9.92	320 12.60	415 16.34	415 16.34	501 19.72
Q	mm inch	105 4.13	105 4.13	105 4.13	105 4.13	105 4.13	134 5.28	134 5.28	134 5.28	134 5.28
R	mm inch	98 3.86	98 3.86	98 3.86	98 3.86	98 3.86	134 5.28	134 5.28	134 5.28	134 5.28
S	mm inch	105 4.13	105 4.13	105 4.13	105 4.13	105 4.13	105 4.13	105 4.13	105 4.13	105 4.13
T	mm inch	79 3.11	79 3.11	96 3.78	108 4.25	134 5.28	167 6.57	202 7.95	202 7.95	207 8.15
U	mm inch	129 5.08	129 5.08	112 4.41	100 3.94	74 2.91	77 3.03	42 1.65	42 1.65	36 1.42
V	mm inch	212 8.35	212 8.35	212 8.35	252 9.92	304 11.97	400 15.75	475 18.70	475 18.70	520 20.47
W	mm inch	51 2.01	51 2.01	63 2.48	75 2.95	75 2.95	97 3.82	120 4.72	120 4.72	130 5.12
X	mm inch	80 3.15	80 3.15	80 3.15	100 3.94	100 3.94	138 5.43	138 5.43	138 5.43	138 5.43
Y	mm inch	180 7.09	180 7.09	180 7.09	186 7.32	186 7.32	221 8.70	221 8.70	221 8.70	226 8.90
Z	mm inch	100 3.94	100 3.94	100 3.94	100 3.94	100 3.94	100 3.94	100 3.94	100 3.94	100 3.94

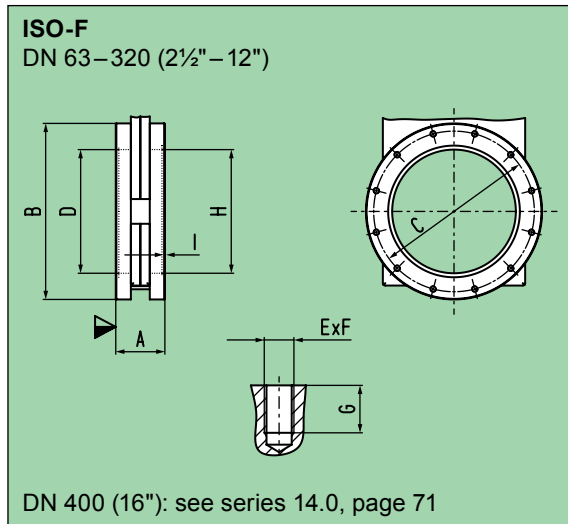
Main dimensions



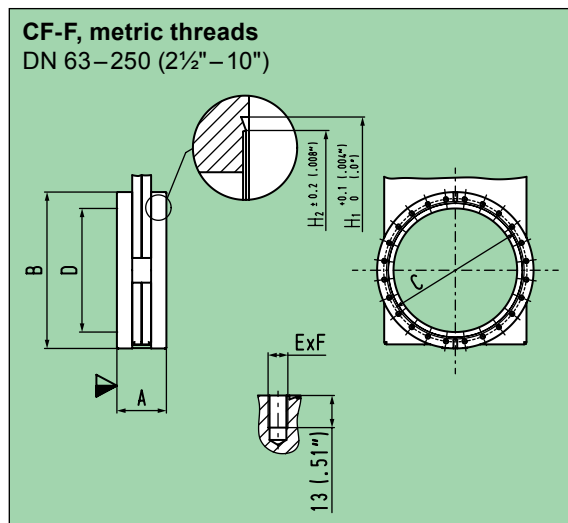
Flange dimensions: see pages 132–133

DN	mm	63	80	100	160	200	250	320	350	400
	inch	2½	3	4	6	8	10	12	14	16
J	mm	134	134	172	222	274	355	420	420	474
	inch	5.28	5.28	6.77	8.74	10.79	13.98	16.54	16.54	18.66
K	mm	73	73	93	123	148	177	214	214	232
	inch	2.87	2.87	3.66	4.84	5.83	6.97	8.43	8.43	9.13
L	mm	208	208	267	361	438	570	688	688	787
	inch	8.19	8.19	10.51	14.21	17.24	22.44	27.09	27.09	30.98
O	mm	180	180	220	300	350	450	550	550	600
	inch	7.09	7.09	8.66	11.81	13.78	17.72	21.65	21.65	23.62
P	mm	94	94	132	192	252	320	415	415	501
	inch	3.70	3.70	5.20	7.56	9.92	12.60	16.34	16.34	19.72
Q	mm	105	105	105	105	105	134	134	134	134
	inch	4.13	4.13	4.13	4.13	4.13	5.28	5.28	5.28	5.28
R	mm	98	98	98	98	98	134	134	134	134
	inch	3.86	3.86	3.86	3.86	3.86	5.28	5.28	5.28	5.28
T	mm	79	79	96	108	134	167	202	202	207
	inch	3.11	3.11	3.78	4.25	5.28	6.57	7.95	7.95	8.15
V	mm	212	212	212	252	304	400	475	475	520
	inch	8.35	8.35	8.35	9.92	11.97	15.75	18.70	18.70	20.47
W	mm	51	51	63	75	75	97	120	120	130
	inch	2.01	2.01	2.48	2.95	2.95	3.82	4.72	4.72	5.12
X	mm	80	80	80	100	100	138	138	138	138
	inch	3.15	3.15	3.15	3.94	3.94	5.43	5.43	5.43	5.43
Y	mm	180	180	180	186	186	221	221	221	226
	inch	7.09	7.09	7.09	7.32	7.32	8.70	8.70	8.70	8.90
Z	mm	100	100	100	100	100	100	100	100	100
	inch	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94

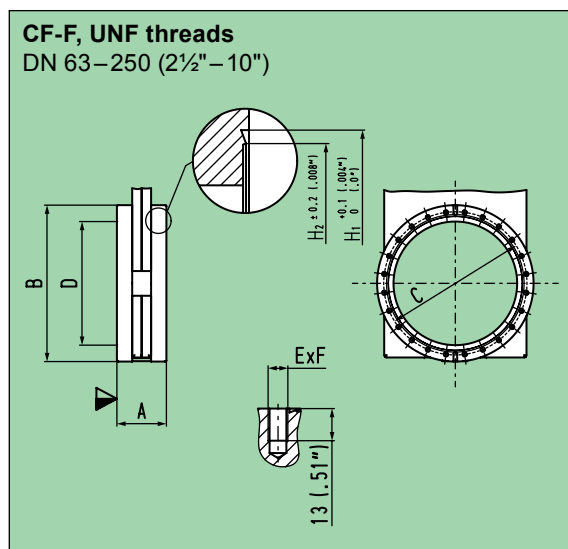
Flange dimensions



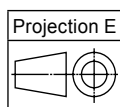
DN	mm inch	63 2½	80 3	100 4	160 6	200 8	250 10	320 12
A	mm inch	70 2.76	70 2.76	70 2.76	70 2.76	80 3.15	100 3.94	120 4.72
B	mm inch	130 5.12	145 5.71	165 6.50	225 8.86	285 11.22	350 13.78	425 16.73
C	mm inch	110 4.33	125 4.92	145 5.71	200 7.87	260 10.24	310 12.20	395 15.55
D	mm inch	70 2.76	76 2.99	100 3.94	150 5.91	200 7.87	261 10.28	306 12.05
E × F		4 × M8	8 × M8	8 × M8	8 × M10	12 × M10	12 × M10	12 × M12
G	mm inch	13 0.51	13 0.51	13 0.51	15 0.59	15 0.59	15 0.59	18 0.71
H	mm inch	–	83 3.27	102 4.02	153 6.02	213 8.39	–	318 12.52
I	mm inch	–	3 0.12	3 0.12	5 0.20	5 0.20	–	5 0.20



DN	mm inch	63 2½	80 3	100 4	160 6	200 8	250 10	
O. D.	inch	4½	4⅝	6	8	10	12	
A	mm inch	70 2.76	70 2.76	70 2.76	70 2.76	80 3.15	100 3.94	
B	mm inch	113.50 4.47	117.50 4.63	151.60 5.97	202.40 7.97	253.20 9.97	350 13.78	
C	mm inch	92.10 3.63	102.40 4.03	130.20 5.13	181 7.13	231.80 9.13	284 11.18	
D	mm inch	70 2.76	76 2.99	100 3.94	150 5.91	200 7.87	254 10	
E × F		8 × M8	10 × M8	16 × M8	20 × M8	24 × M8	32 × M8	
H1	mm inch	82.50 3.25	91.65 3.61	120.70 4.75	171.45 6.75	222.40 8.76	273.15 10.75	
H2	mm inch	77.40 3.05	86.30 3.40	115.50 4.55	166 6.54	217 8.54	267 10.51	



DN	mm inch	63 2½	80 3	100 4	160 6	200 8	250 ¹⁾ 10	250 ¹⁾ 10
O. D.	inch	4½	4⅝	6	8	10	12	13¼
A	mm inch	70 2.76	70 2.76	70 2.76	70 2.76	80 3.15	100 3.94	100 3.94
B	mm inch	113.50 4.47	117.50 4.63	151.60 5.97	202.40 7.97	253.20 9.97	350 13.78	350 13.78
C	mm inch	92.10 3.63	102.40 4.03	130.20 5.13	181 7.13	231.80 9.13	284 11.18	306.30 12.06
D	mm inch	70 2.76	76 2.99	100 3.94	150 5.91	200 7.87	254 10	254 10
E × F		8 × 5/16" 24 UNF	10 × 5/16" 24 UNF	16 × 5/16" 24 UNF	20 × 5/16" 24 UNF	24 × 5/16" 24 UNF	32 × 5/16" 24 UNF	30 × 3/8" 24 UNF
H1	mm inch	82.50 3.25	91.65 3.61	120.70 4.75	171.45 6.75	222.40 8.76	273.15 10.75	294.64 11.60
H2	mm inch	77.40 3.05	86.30 3.40	115.50 4.55	166 6.54	217 8.54	267 10.51	288.30 11.35



▼ Valve seat side

¹⁾ O. D. 12" VAT standard, O. D. 13¼" option

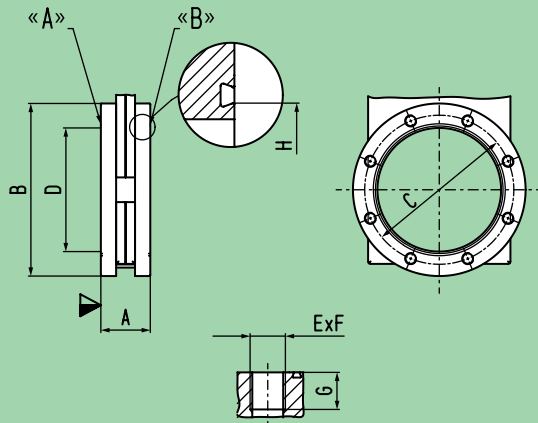
Ordering information for option: O. D. 13¼"
Ordering No. of valve-X (e. g. 64248-UE . . -X, X = O. D. 13¼")

Flange dimensions

ASA-LP

DN 63–320 (2½"–12")
with or without O-ring groove

For orders with O-ring groove specify:
«A», «B» or «A+B»

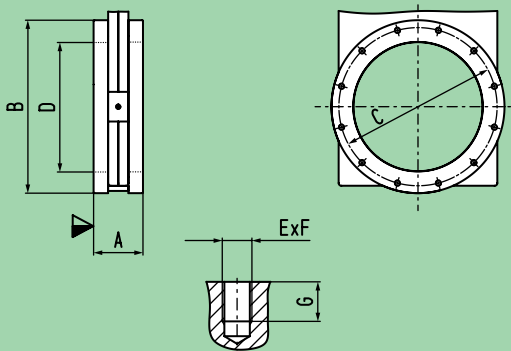


DN 400 (16"): see series 14.0, page 71

DN	mm inch	63 2½	80 3	100 4	160 6	200 8	250 10	320 12
ASA-LP		2	–	3	4	6	8	10
A	mm inch	70 2.76	70 2.76	70 2.76	70 2.76	80 3.15	100 3.94	120 4.72
B	mm inch	152.40 6	177.80 7	190.50 7.50	225 8.86	279.40 11	350 13.78	425 16.73
C	mm inch	120.70 4.75	139.70 5.50	152.40 6	190.50 7.50	241.30 9.50	298.50 11.75	362 14.25
D	mm inch	70 2.76	76 2.99	100 3.94	150 5.91	200 7.87	254 10	300 11.81
E × F		4 × ⅜" 16 UNC	4 × ⅜" 16 UNC	4 × ⅜" 16 UNC	8 × ⅜" 16 UNC	8 × ⅜" 10 UNC	8 × ⅜" 10 UNC	12 × ⅜" 10 UNC
G	mm inch	15 0.59	15 0.59	15 0.59	15 0.59	19 0.75	19 0.75	19 0.75
H	mm inch	88.90 3.50	88.90 3.50	120.65 4.75	158.75 6.25	206.40 8.13	266.70 10.50	317.50 12.50
O-ring I.D. × d	mm inch	88.49 × 3.53 3.48 × .139	88.49 × 3.53 3.48 × .139	120.24 × 3.53 4.73 × .139	158.34 × 3.53 6.23 × .139	202.79 × 3.53 7.98 × .139	266.29 × 3.53 10.48 × .139	316.87 × 7.00 12.47 × .275

JIS B 2290: 1998 / ISO 1609

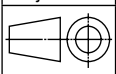
DN 65–300 (2½"–12")



DN 400 (16"): see series 14.0, page 71

DN	mm inch	65 2½	80 3	100 4	150 6	200 8	250 10	300 12
A	mm inch	70 2.76	70 2.76	70 2.76	70 2.76	80 3.15	100 3.94	120 4.72
B	mm inch	136 5.35	165 6.50	185 7.28	235 9.25	300 11.81	350 13.78	425 16.73
C	mm inch	120 4.72	135 5.31	160 6.30	210 8.27	270 10.63	320 12.60	370 14.57
D	mm inch	70 2.76	76 2.99	100 3.94	150 5.91	200 7.87	261 10.28	306 12.05
E × F		4 × M10	8 × M10	8 × M10	8 × M10	8 × M12	12 × M12	12 × M12
G	mm inch	12 0.47	12 0.47	12 0.47	12 0.47	15 0.59	15 0.59	16 0.63

Projection E

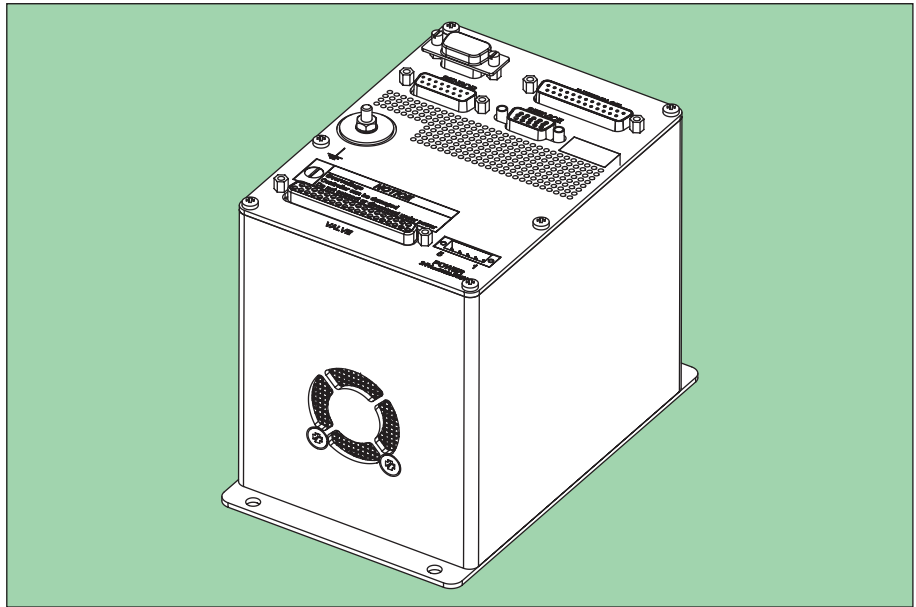


▼ Valve seat side

Series 64.2

Features

- Integrated or external pressure controller, depending on valve type
- Automatic learning of system parameters
- Extremely short control response times
- Fast and accurate pressure control
- Valve position control
- Remote control or local operation
- Input for pressure sensor
- Information display



Function

By operating the LEARN function – needs to be done only once at start-up – the system parameters are automatically determined. Due to the adaptive algorithm the controller continuously adapts to the process conditions (species of gas, gas flow) and thus ensures optimum pressure control at any time.

In position control mode the valve plate can be moved to any position. Status and position are displayed by means of 4 digits.

The valve can be controlled by a computer via Logic, RS232, RS485, DeviceNet®, Ethernet, Profibus, CC-Link or EtherCAT interface.

The RS232 interface and the field busses also have digital inputs to close and open the valve. In addition, digital outputs are available for «open» and/or «closed».

Control via Logic interface performs via digital and analog inputs and outputs.

Electrical connections

	Connection	Type
POWER	Power input	DB-9 male or Weidmüller SL 3.50 male
SENSOR	Sensor input Sensor power supply	DB-15 female
INTERFACE	Logic, RS232, RS485	DB-25 female
	Ethernet	RJ 45
	DeviceNet® with Logic I/O	Micro-style M12 male
	Profibus with Logic I/O	DB-9 female
	CC-Link with Logic I/O	5-pole terminal screw
	EtherCAT with Logic I/O	2 × RJ 45
	Logic I/O	Binder M8 female

Accessories

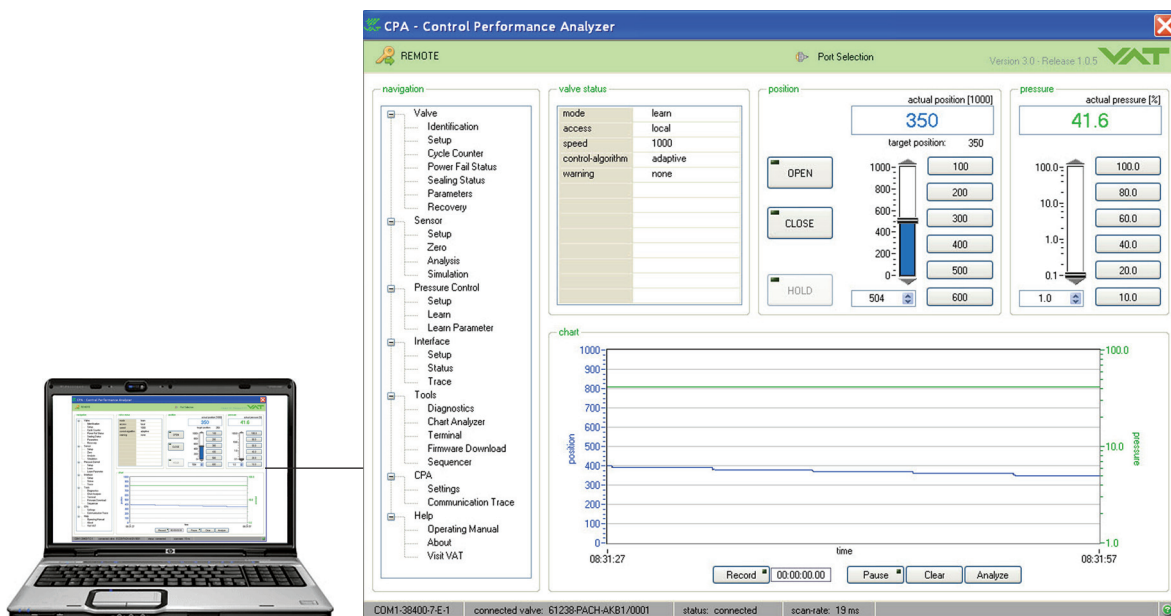
- CPA software (see «Operation»)
- Service box, control panel (see «Operation»)
- Connector kits for the various interfaces
- AC power supply unit (input: 100–240 VAC, output: 24 VDC/4A)

Operation

Remote control via computer

Control via computer by using the CPA software developed by VAT offers comfortable functions such as

- Setup
- Operation
- Monitoring
- Diagnostics
- Graphical illustration of the pressure behavior
- Programming and recording of sequences
- Several possibilities for data analysis and process optimization



The software –Control Performance Analyzer (CPA)– may be downloaded for free from our website: [www.vatvalve.com/Customer Service/Information and downloads/Control Performance Analyzer](http://www.vatvalve.com/Customer_Service/Information_and_downloads/Control_Performance_Analyzer).

For connecting the computer to the valve, a special cable designed by VAT is required. The diagram for the cable is available on our website: [www.vatvalve.com/Customer Service/Information and downloads/Cable description](http://www.vatvalve.com/Customer_Service/Information_and_downloads/Cable_description). The cable and the software «Control Performance Analyzer (CPA)» can also be ordered from VAT.

Local operation by means of a service box or control panel



Standard service box 2 with cable



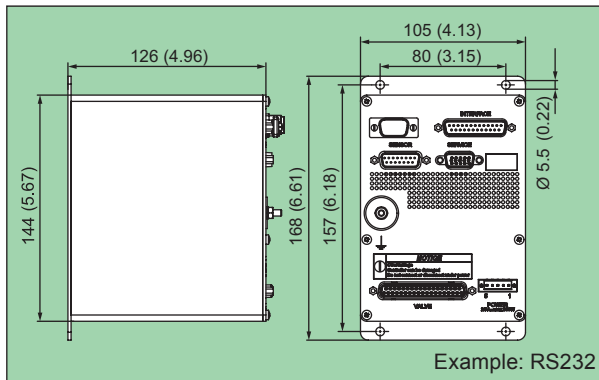
Control panel with cable for integration into a 19" rack

Options

- **Sensor Power Supply (SPS)**
±15VDC power supply for the sensor/sensors
- **Power Failure Option (PFO)**
Valve closes/opens automatically at power failure
- **Valve Cluster (VC)**
For operating several valves synchronously by means of a master valve and one or more slave valves.

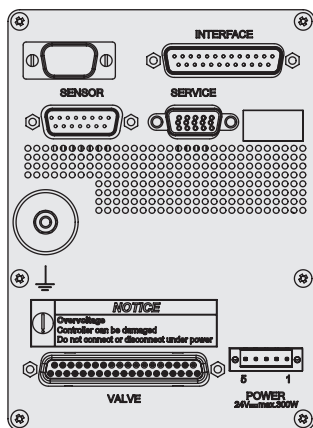
Integrated controller: Series 64.2

External controller: (for series 64.2 and 65.2 available as an option)



Available interfaces:

- Logic
- RS232
- RS485
- DeviceNet®
- Ethernet
- Profibus
- CC-Link
- EtherCAT



Power consumption	max. +24 VDC (±10%) @ 0.5 V pk-pk
- Controller + motor	max. 55 W (S62, 64.2), max. 100 W (S67)
- Power failure option (PFO)	max. 10 W
- Sensor power supply (SPS)	max. 36 W
Sensor supply	24 VDC or ±15 VDC
Sensor input	0–10 VDC linear with pressure
- Signal voltage	Ri = 100 kΩ
- Input resistance	0.23 mV
- Resolution	10 ms
- Sampling rate	5 mV or 0.1% of setpoint ¹⁾
Control accuracy	depending on valve type
Position resolution	IP 20
Protective system	

¹⁾ The higher value applies