Series 65.2

Main applications

Downstream pressure control and isolation valve for SEMI and FPD processes

Optimal for corrosive etching and cleaning processes

Ordering information

Valve with stepper motor and integrated pressure controller

DN		Ordering numbers											
		aluminum						aluminum, hard anodized					
mm	inch	ISO-F			JIS			ISO-F			JIS		
200	8	65246-PA	x	y	65246-JA	x	y	65246-PH	x	y	65246-JH	x	y
250	10	65248-PA	x	y	65248-JA	x	y	65248-PH	x	y	65248-JH	x	y

Controller configurations:

x

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 (±15 V DC power supply for sensor)

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

VC = Valve Cluster (for operating several valves synchronously)

y

Interface		Number of sensors
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: 65246-PAGG
= Aluminum valve with ISO-F DN 200 flanges, RS232 interface, for 1 sensor

Pressure controller: see pages 146 – 149

Features

Bodymaterial:
aluminum or
aluminum, hard anodized

Compact design

Very fast, virtually particle-free and shock-free operation

Purely electrical actuation

Integrated or external pressure controller

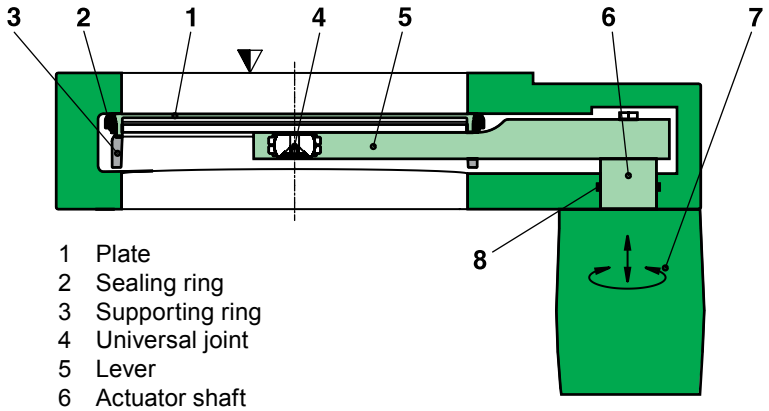
Conductance control to almost 0 ls^{-1}

Position indication

Service port for connecting a computer or a service box 2

Vulcanized seal (no dead volumes at the plate seal): see glossary

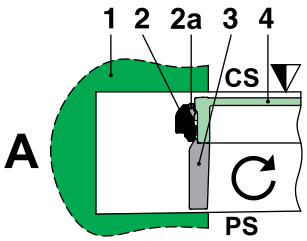
Functional principle



1 Plate
2 Sealing ring
3 Supporting ring
4 Universal joint
5 Lever
6 Actuator shaft
7 Two-axis actuator
8 Rotary feedthrough seal
▼ Valve seat side

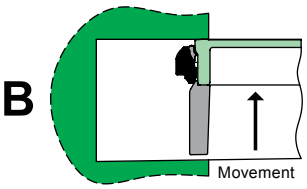
The plate acts, due to its pendulum and stroke movement, as a throttling element and varies the conductance of the valve opening. The pressure controller calculates the required plate position to achieve the setpoint pressure. See also principle drawing on page 280. Actuation is performed by a stepper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

For leaktight closing the sealing ring moves upwards. Opening and closing are performed by the second actuator axis.

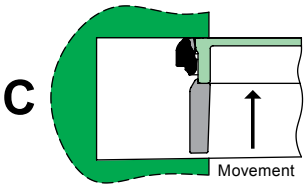


Pressure control:
sealing ring and plate relaxed

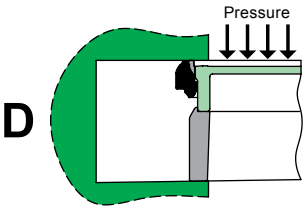
1 Valve body
2 Sealing ring
2a Seal
3 Supporting ring
4 Plate
▼ Valve seat side
CS Chamber side
PS Pump side



Pressure control:
valve almost closed
(conductance almost 0 ls^{-1},
plate touches body)



Valve closed:
no differential pressure or
differential pressure pump→chamber



Valve closed:
differential pressure chamber→pump

Technical data

Leak rate [1]: valve body	
– Aluminum	$1 \cdot 10^{-9}$ mbar ls^{-1}
– Aluminum, hard anodized	$1 \cdot 10^{-5}$ mbar ls^{-1}
Leak rate [1]: valve seat	
– Aluminum	$1 \cdot 10^{-9}$ mbar ls^{-1}
– Aluminum, hard anodized	$1 \cdot 10^{-4}$ mbar ls^{-1}
Pressure range [1]	
– Aluminum	$1 \cdot 10^{-8}$ mbar to 1.2 bar (abs)
– Aluminum, hard anodized	$1 \cdot 10^{-6}$ mbar to 1.2 bar (abs)
Cycles until first service [2]	
– Pressure control	2.5 million
– Closing / opening	20 000
Temperature [2]	
– Valve body	≤ 120 °C
– Ambient	≤ 50 °C
Material	
– Valve body	EN AW-6082 (3.2315)
– Plate	EN AW-6082 (3.2315), partly PTFE coated, EN AC-42100 (3.2371.62)
– Lever	EN AW-6082 (3.2315), AISI 304 (1.4301), hard-chrome plated
– Actuator shaft	AISI 304 (1.4301)
Seal: bonnet, plate, feedthrough	FKM (Viton®)
Feedthrough	rotary feedthrough
Mounting position	any [3]

[1] Unheated on delivery

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

[3] Valve seat on chamber side recommended

DN (nominal I. D.)		Conductance (molecular flow)	Minimum controllable conductance (molecular flow)	Max. differential pressure on the plate	Max. differential pressure during operation	Typical closing / opening time: Open → optically closed	Open → minimum conductance	Open → closed	Closed → open	Weight	
mm	inch	ls^{-1}	ls^{-1}	mbar	mbar	s	s	s	s	kg	lbs
200	8	12 000	0.20	1200	10	0.8	1.2	1.9	2.6	27	60
250	10	22 000	0.25	1200	10	0.9	1.3	2.2	3.1	34	75

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

Options

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

Actuator

– Controller with configurable PID parameters (adaptive, upstream, downstream, soft-pump)

– RS232 interface with 2 analog outputs

Valve

– Other sizes, e. g. DN 160, 320, 350

– O-ring seal in plate (standard: vulcanized seal)

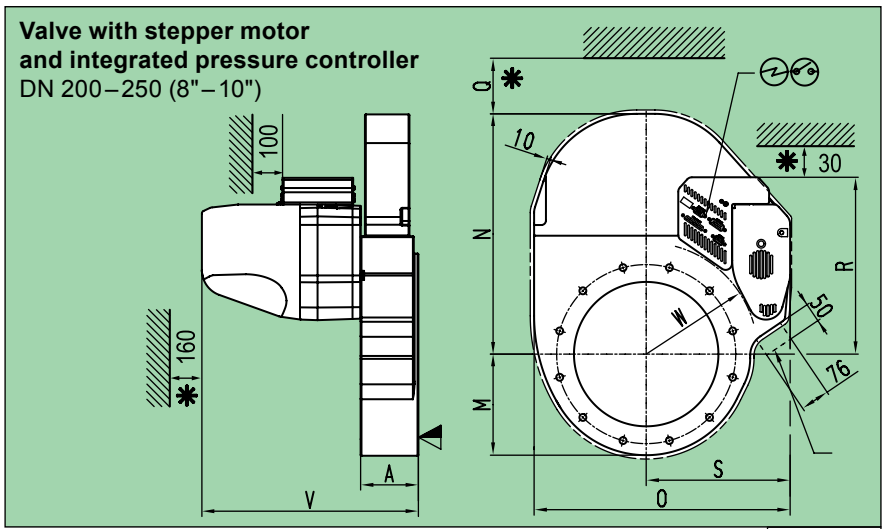
– Valve with external pressure controller

– Heater with insulation (picture) for valve temperatures up to 120 °C

Ordering information for options:
Ordering No. of valve-X (e. g. 65248-PAGH-X, X = valve with heater for 120 °C)

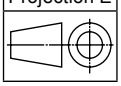
Main dimensions

Valve with stepper motor and integrated pressure controller
DN 200–250 (8"–10")



▼ Valve seat side ✳ Required for dismantling ⊖ Electrical connection ⊘ Position indicator

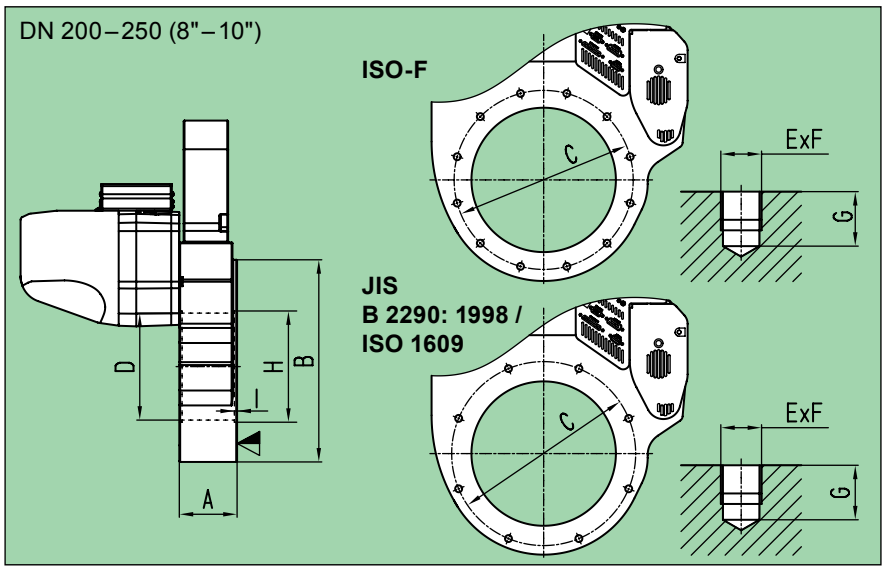
Projection E



DN			
	mm	200	250
	inch	8	10
A	mm	86	100
	inch	3.39	3.94
M	mm	150	175
	inch	5.91	6.89
N	mm	330	416
	inch	12.99	16.38
O	mm	384.50	443
	inch	15.14	17.44
Q	mm	20	20
	inch	0.79	0.79
R	mm	294	306
	inch	11.57	12.05
S	mm	223	249
	inch	8.78	9.80
V	mm	361	375
	inch	14.21	14.76
W	mm	165	195
	inch	6.50	7.68

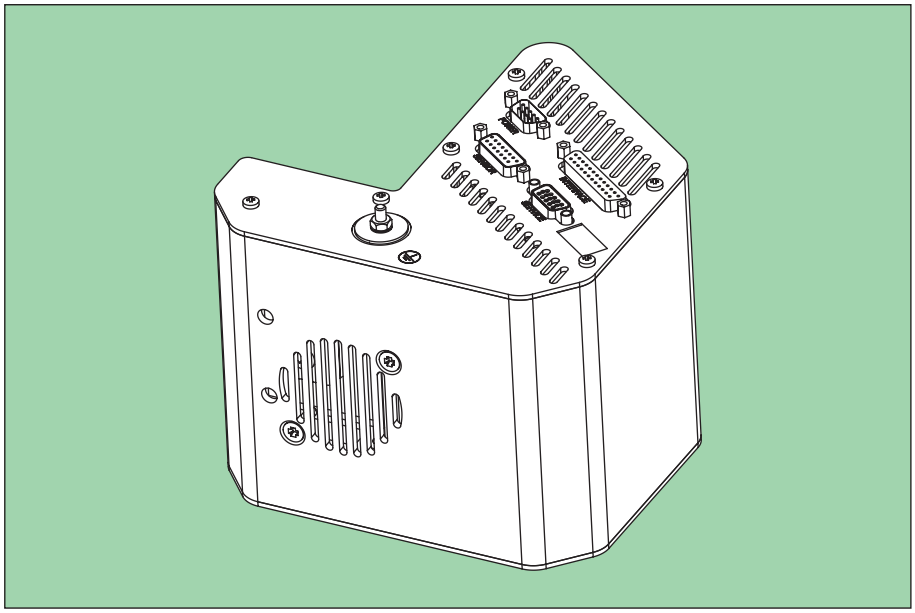
Flange dimensions

DN 200–250 (8"–10")



		ISO-F		JIS	
DN	mm	200	250	200	250
	inch	8	10	8	10
A	mm	86	100	86	100
	inch	3.39	3.94	3.39	3.94
B	mm	300	350	300	350
	inch	11.81	13.78	11.81	13.78
C	mm	260	310	270	320
	inch	10.24	12.20	10.63	12.60
D	mm	200	254	200	254
	inch	8	10	8	10
E × F		12 × M10	12 × M10	8 × M12	12 × M12
G	mm	15	16	15	16
	inch	0.59	0.63	0.59	0.63
H	mm	213.20	261	–	–
	inch	8.39	10.28		
I	mm	5	5	–	–
	inch	0.20	0.20		

Series 65.2



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

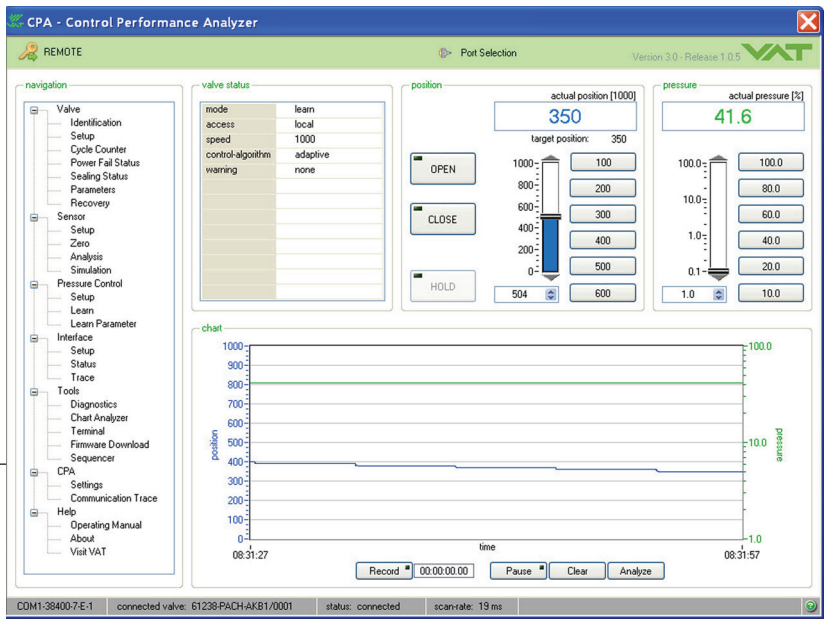
– **AC power supply unit** (input: 100 – 240 V AC, output: 24 V DC / 4 A)

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.**

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.** 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

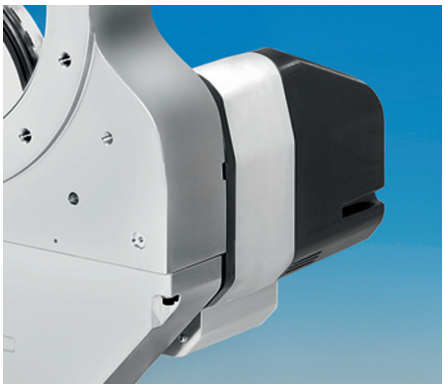
Options

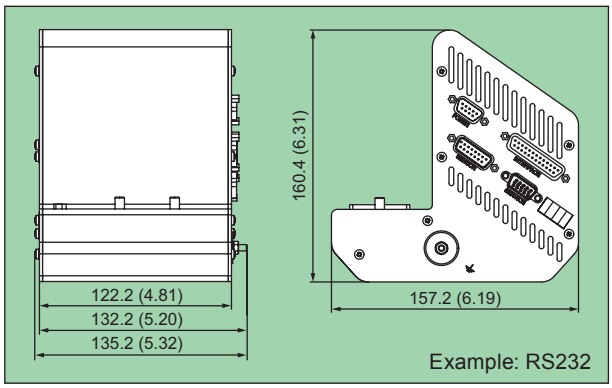
– **Sensor Power Supply (SPS)**
  ±15 V DC power supply for the sensor / sensors

– **Power Failure Option (PFO)**
  Valve closes / opens automatically at power failure

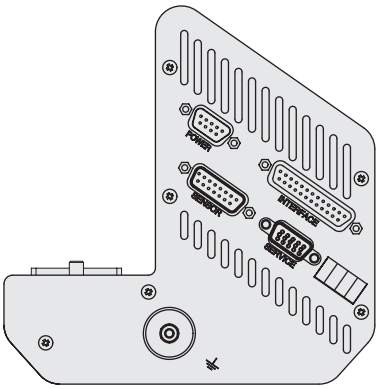
– **Valve Cluster (VC)**
  For operating several valves synchronously by means of a master valve and one or more slave valves.

Integrated controller: Series 65.2 (external controller available as an option)





Available interfaces:
- Logic
- RS232
- RS485
- DeviceNet®
- Ethernet
- Profibus
- CC-Link
- EtherCAT



Power consumption	max. +24 V DC (±10 %) @ 0.5 V pk-pk
– Controller + motor	max. 100 W
– Power failure option (PFO)	max. 10 W
– Sensor power supply (SPS)	max. 36 W
Sensor supply	24 V DC or ±15 V DC
Sensor input	
– Signal voltage	0 – 10 V DC linear with pressure
– Input resistance	Ri = 100 kΩ
– Resolution	0.23 mV
– Sampling rate	10 ms
Control accuracy	5 mV or 0.1% of setpoint [1]
Position resolution	≥ 100 000 (depending on nominal diameter)
Protective system	IP 20

[1] The higher value applies