PENDULUM CONTROL VALVE, SERIES 65.2

Downstream pressure control and isolation valve for SEMI and FPD processes.
Optimal for corrosive etching and cleaning processes.

Blank aluminum

Hard anodized aluminum

Conductance control to almost 0 ls^{-1}

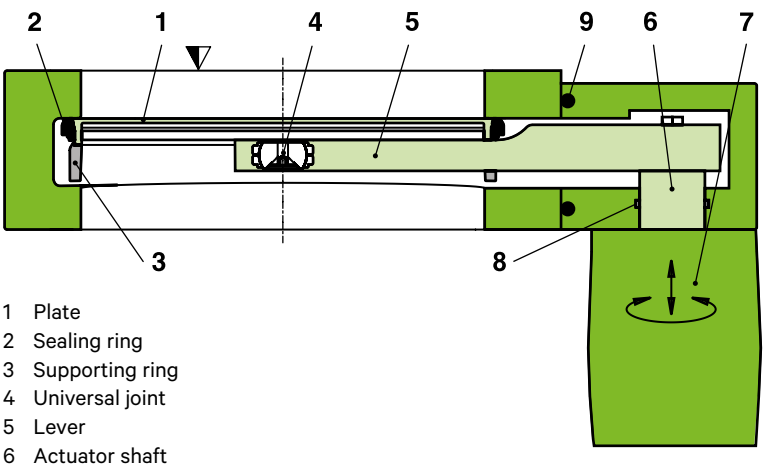
Excellent pressure control performance

Service port to connect a computer or a service box

MAIN FEATURES

Sizes	DN 200 – 250 mm (8" – 10")
Actuator	integrated pressure controller with stepper motor
Body material	blank or hard anodized aluminum
Feedthrough	rotary feedthrough
Standard flanges	ISO-F, JIS

FUNCTIONAL PRINCIPLE

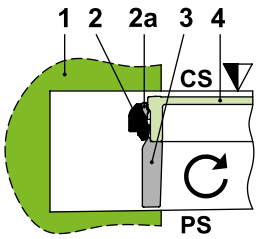


1 Plate
2 Sealing ring
3 Supporting ring
4 Universal joint
5 Lever
6 Actuator shaft
7 Two-axis actuator
8 Rotary feedthrough seal
9 Bonnet seal
▼ Valve seat side

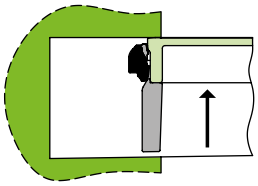
The plate acts, due to its pendulum and stroke movement, as a throttling element and varies the conductance of the valve opening. The pressure controller calculates the required plate position to achieve the setpoint pressure. See also principle drawing in the glossary, chapter «Pressure closed-loop control». 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.

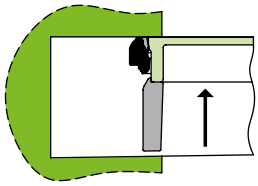
Pressure control:
sealing ring and plate relaxed



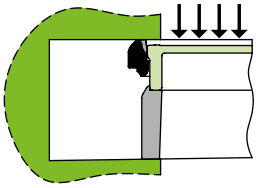
Pressure control:
valve almost closed
(conductance almost 0 ls^{-1},
plate touches body)



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



Valve closed:
differential pressure
chamber → pump



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

TECHNICAL DATA

Leak rate [1]	Valve body: blank aluminum hard anodized aluminum	$<1 \cdot 10^{-9}$ mbar ls^{-1} $<1 \cdot 10^{-5}$ mbar ls^{-1}
Leak rate [1]	Valve seat: blank aluminum hard anodized aluminum	$<1 \cdot 10^{-9}$ mbar ls^{-1} $<1 \cdot 10^{-4}$ mbar ls^{-1}
Pressure range [1]	Blank aluminum Hard anodized aluminum	$1 \cdot 10^{-8}$ mbar to 1.2 bar (abs) $1 \cdot 10^{-6}$ mbar to 1.2 bar (abs)
Cycles until first service [2]	Pressure control Closing / opening	2.5 million 20 000
Temperature [2]	Valve body Controller	≤ 120 °C max. 50 °C (≤ 35 °C recommended)
Material	Valve body Plate Lever Actuator shaft	EN AW-6082 (3.2315) EN AW-6082 (3.2315), partly PTFE coated, EN AC-42100 (3.2371.62) EN AW-6082 (3.2315), AISI 304 (1.4301) hard-chrome plated AISI 304 (1.4301)
Seal	Bonnet, plate, feedthrough	FKM (Viton®)
Feedthrough		rotary feedthrough
Mounting position		any [3]

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	0.80	1.20	1.90	2.60	27	60
250	10	22 000	0.25	1200	10	0.90	1.30	2.20	3.10	34	75

[1] Unheated on delivery.
[2] Maximum values: depending on operating conditions and sealing materials.
[3] Valve seat on chamber side recommended.

Technical data for pressure controller: see pages 184 – 189

OPTIONS, CUSTOMIZED SOLUTIONS

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

Pic. 1

ACTUATOR

– Special control algorithms (adaptive, fix PID, upstream, soft-pump)

VALVE

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

– Valve with external pressure controller

– Heater with insulation (Pic. 1) for valve temperatures up to 120 °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 32

ORDERING INFORMATION
FOR STANDARD VALVES

Valve with integrated pressure controller and stepper motor

DN		Ordering numbers			
		blank aluminum		hard anodized aluminum	
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
V	=	RS232 + analog output	1
W	=	RS232 + analog output	2
C	=	Logic (analog / digital)	1
E	=	Logic (analog / digital)	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 184 – 189

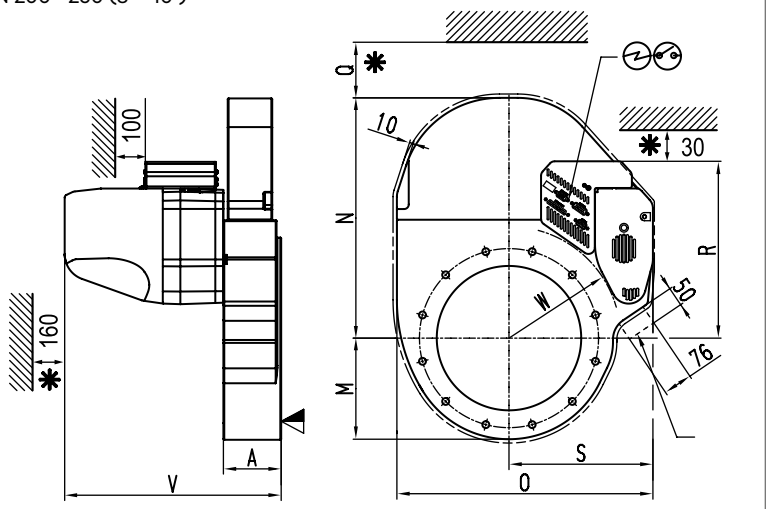
ORDERING INFORMATION
FOR VALVES WITH OPTIONS

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

Example: 65248-PAGH-X, X = valve with heater for 120 °C

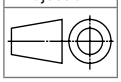
MAIN DIMENSIONS

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



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

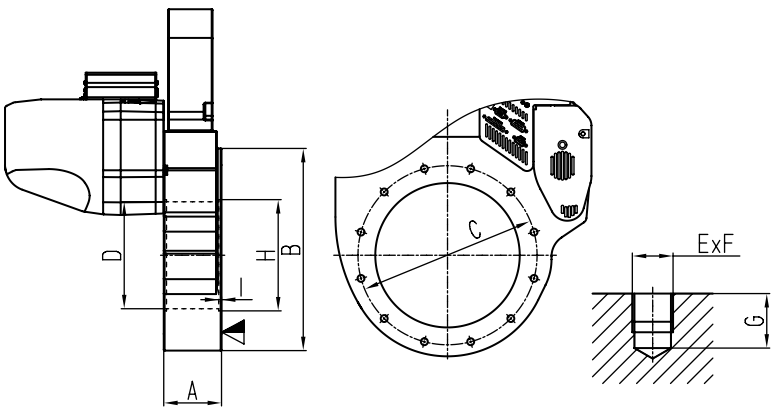
Projection E



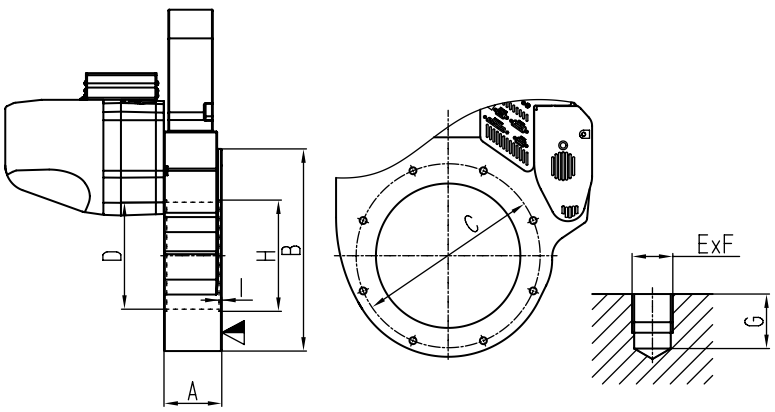
DN	mm inch	200 8	250 10
A	mm inch	86 3.39	100 3.94
M	mm inch	150 5.91	175 6.89
N	mm inch	330 12.99	416 16.38
O	mm inch	384.50 15.14	443 17.44
Q	mm inch	20 0.79	20 0.79
R	mm inch	294 11.57	306 12.05
S	mm inch	223 8.78	249 9.80
V	mm inch	361 14.21	375 14.76
W	mm inch	165 6.50	195 7.68

FLANGE DIMENSIONS

ISO-F
DN 200 – 250 (8" – 10")



JIS B 2290: 1998 / ISO 1609
DN 200 – 250 (8" – 10")



		ISO-F		JIS	
DN	mm inch	200 8	250 10	200 8	250 10
A	mm inch	86 3.39	100 3.94	86 3.39	100 3.94
B	mm inch	300 11.81	350 13.78	300 11.81	350 13.78
C	mm inch	260 10.24	310 12.20	270 10.63	320 12.60
D	mm inch	200 7.87	254 10	200 7.87	254 10
E × F		12 × M10	12 × M10	8 × M12	12 × M12
G	mm inch	15 0.59	16 0.63	15 0.59	16 0.63
H	mm inch	213.20 8.39	261 10.28	–	–
I	mm inch	5 0.20	5 0.20	–	–