Series 61.5

Main applications

Downstream pressure control and isolation valve for SEMI, FPD, PV, SOLAR and industrial processes

Optimal for fast and demanding processes, e. g. CVD

Ordering information

Valve with stepper motor and integrated pressure controller

DN		Ordering numbers			
		aluminum, hard anodized		stainless steel	
mm	inch	ISO-KF	ISO-F	ISO-KF	ISO-F
40	1½	61532-KH x y		61532-KE x y	
50	2	61534-KH x y		61534-KE x y	
63	2½		61536-PH x y		61536-PE x y
80	3		61538-PH x y		61538-PE x y
100	4		61540-PH x y		61540-PE 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: 61534-KHGE
= Aluminum valve, hard anodized, with ISO-KF DN 50 flanges, Logic interface, for 2 sensors

Pressure controller: see pages 146 – 149

Features

Body material:
aluminum, hard anodized
or stainless steel

Compact design

Fast operation

Integrated pressure controller

Extremely short control response times

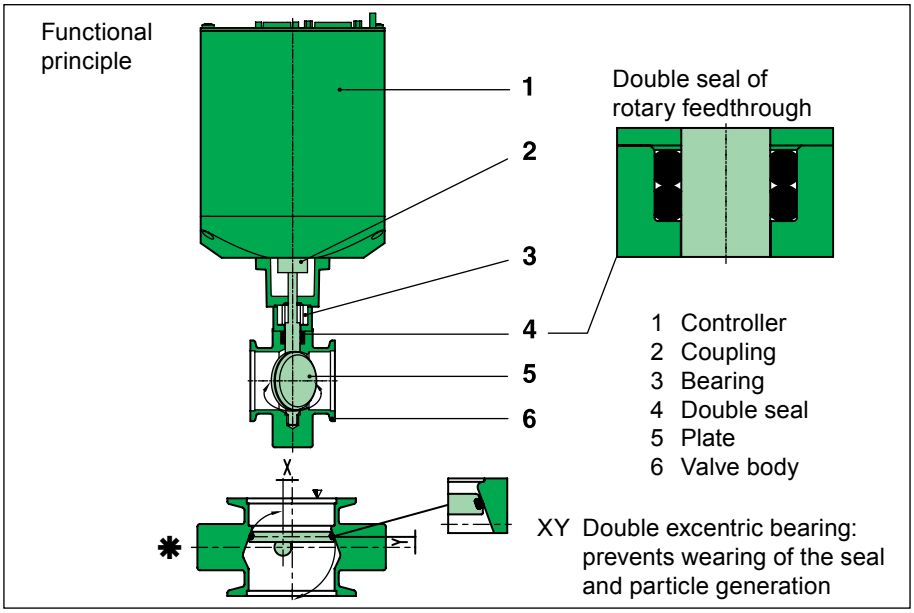
Automatic service signal (contamination)

Position indication

Service port for connecting a computer or a service box 2

Accurate pressure control at high pressures and low flows

Easy maintenance



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 even in very demanding processes with high pressures and low flows.

The seal which is attached to the plate reduces the minimum controllable conductance and allows leak tight closing of the valve. In closed position, the seal is pressed on the body. See detail ✱ in above drawing.

Technical data

Leak rate [1]: valve body	
– Aluminum, hard anodized	$1 \cdot 10^{-5}$ mbar ls^{-1}
– Stainless steel	$1 \cdot 10^{-9}$ mbar ls^{-1}
Leak rate [1]: valve seat	
– Aluminum, hard anodized	$1 \cdot 10^{-4}$ mbar ls^{-1}
– Stainless steel	$1 \cdot 10^{-9}$ mbar ls^{-1}
Pressure range [1]	
– Aluminum, hard anodized	$1 \cdot 10^{-6}$ mbar to 1.2 bar (abs)
– Stainless steel	$1 \cdot 10^{-8}$ mbar to 1.2 bar (abs)
Cycles until first service [2]	
– Pressure control	2 million
– Closing/opening	
- DN 40 – 50	250 000
- DN 63 – 100	100 000
Temperature [2]	
– Valve body	≤ 120 °C
– Ambient	≤ 50 °C

[1] Unheated on delivery

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

Further technical data on next page

Continued Technical data

Material	
– Valve body, plate	
- aluminum	EN AW-6082 (3.2315)
- stainless steel	AISI 316L (1.4404 or 1.4435)
– Shaft	AISI 316L (1.4404 or 1.4435)
– Other parts	iglidur®X, AISI 316L (1.4404 or 1.4435)
Seal: plate, feedthrough	FKM (Viton®)
Feedthrough	rotary feedthrough
Mounting position	valve seat towards chamber

DN (nominal I.D.)		Conductance (molecular flow)	Minimum controllable conductance (molecular flow)	Max. differential pressure on the plate	Operating time for throttling	Typical closing or opening time	Weight			
							Aluminum valve		Stainless steel valve	
mm	inch	ls^{-1}	ls^{-1}	mbar	s	s	kg	lbs	kg	lbs
40	1½	60	0.05	1000	0.5	0.6	2.5	5.5	3.3	7.3
50	2	120	0.1	1000	0.5	0.6	2.7	6	3.6	7.9
63	2½	220	0.15	1000	0.5	0.6	3.8	8.4	5.9	13
80	3	360	0.2	1000	0.5	0.6	4.8	10.6	8.8	19.4
100	4	600	0.25	1000	0.5	0.6	5.2	11.5	9.7	21.4

Technical data for pressure controller: see pages 146 – 149

Options

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

Actuator

– Ultra fast actuator (0.18 / 0.2 s)

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

– RS232 interface with 2 analog outputs

Valve

– Other flanges, e. g. JIS, ASA-LP, CF-F

– Customer specified flanges

– Other sealing materials

– Heater (picture) for valve temperatures up to 120 °C (DN 40 and 50 with insulation)

Ordering information for options:
Ordering No. of valve-X (e. g. 61534-KHGG-X, X = valve with heater for 120 °C)

Spare parts

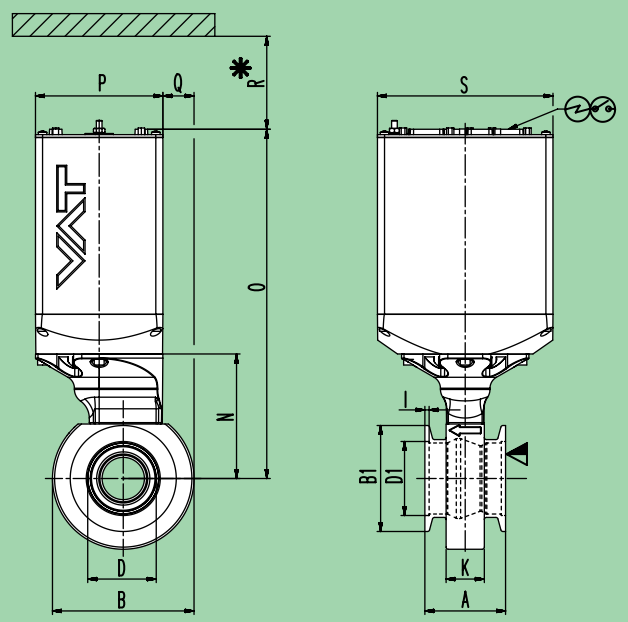
– **Seals**
on request (specify fabrication number of valve)

Accessories

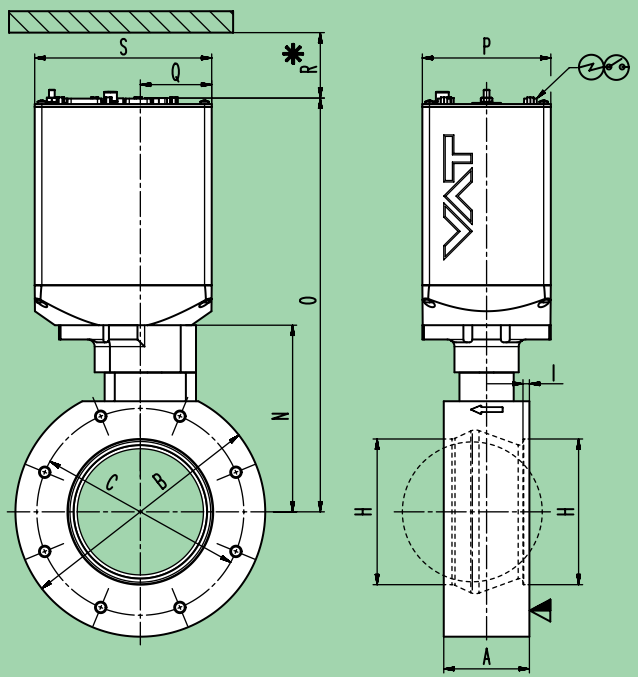
– **Flange connections**
for installation of the valve: see series 31 and 32

Dimensions

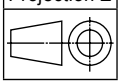
Valve with stepper motor and integrated pressure controller DN 40–50 (1½"–2") ISO-KF



Valve with stepper motor and integrated pressure controller DN 63–100 (2½"–4") ISO-F



Projection E

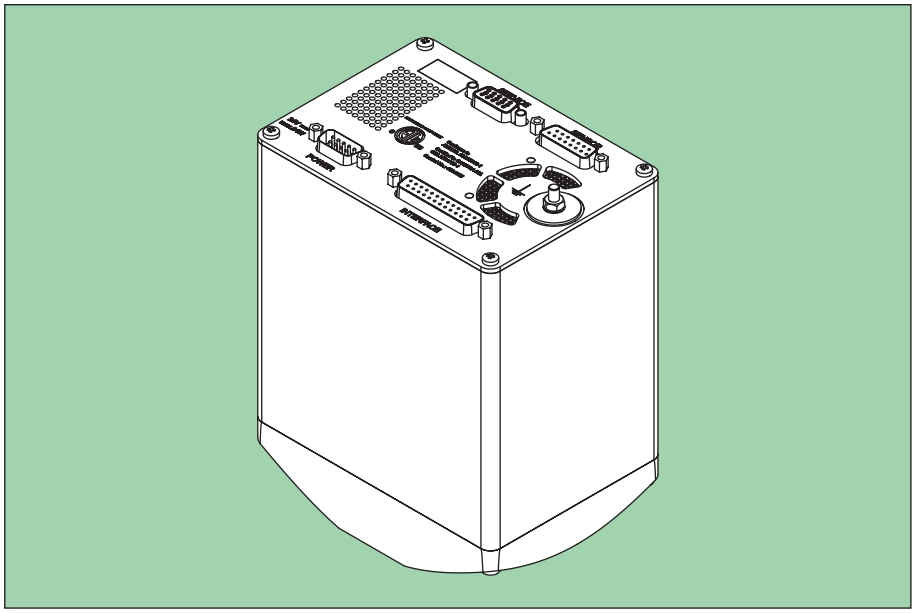


▼ Valve seat side
✳ Required for dismantling
⊖ Electrical connection
⊖ Position indicator

DN		40	50	
	mm	40	50	
	inch	1½	2	
A	mm	57	57	
	inch	2.24	2.24	
B	mm	90	100	
	inch	3.54	3.94	
B1	mm	54.90	74.90	
	inch	2.16	2.95	
D	mm	40	50	
	inch	1.57	1.97	
D1	mm	41.30	52.30	
	inch	1.63	2.06	
I	mm	3	3	
	inch	0.12	0.12	
K	mm	27	27	
	inch	1.06	1.06	
N	mm	83	88	
	inch	3.27	3.46	
O	mm	242	247	
	inch	9.53	9.72	
P	mm	90	90	
	inch	3.54	3.54	
Q	mm	18	22	
	inch	0.71	0.87	
R	mm	70	70	
	inch	2.76	2.76	
S	mm	124	124	
	inch	4.88	4.88	

DN		63	80	100
	mm	63	80	100
	inch	2½	3	4
A	mm	40	50	60
	inch	1.57	1.97	2.36
B	mm	130	165	175
	inch	5.12	6.50	6.89
C	mm	110	125	145
	inch	4.33	4.92	5.71
H	mm	70	83	102.10
	inch	2.76	3.27	4.02
I	mm	4.50	4.50	4.50
	inch	0.18	0.18	0.18
N	mm	108	126	131
	inch	4.25	4.96	5.16
O	mm	267	285	290
	inch	10.51	11.22	11.42
P	mm	90	90	90
	inch	3.54	3.54	3.54
Q	mm	46	48	50
	inch	1.81	1.89	1.97
R	mm	70	70	70
	inch	2.76	2.76	2.76
S	mm	124	124	124
	inch	4.88	4.88	4.88

Series 61.5



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

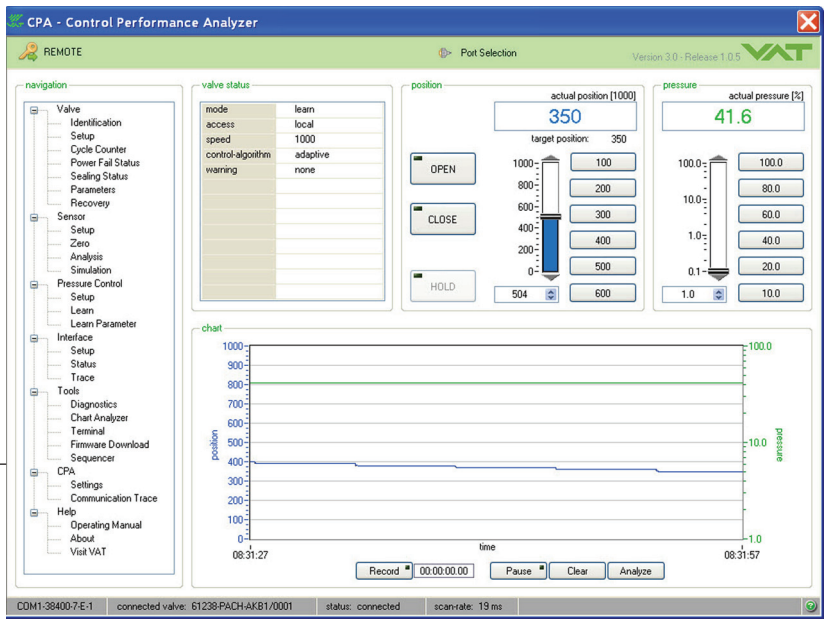
– **AC power supply unit** (input: 100 – 240 V AC, output: 24 V DC / 4 A)

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

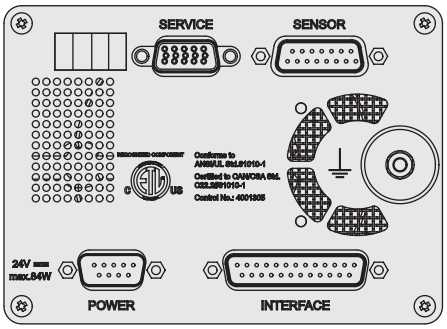
Options

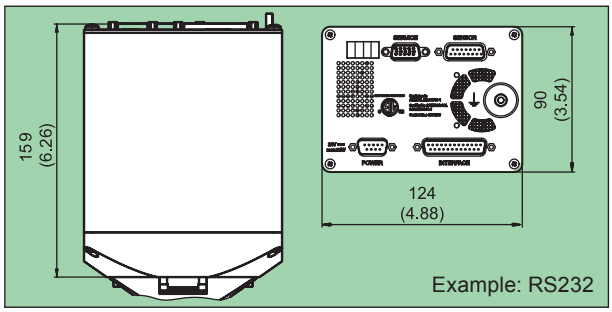
– **Sensor Power Supply (SPS)**
  ±15 V DC power supply for the sensor / sensors

– **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 61.5





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. 38 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	≥ 20 000 (depending on valve type)
Protective system	IP 30

[1] The higher value applies