



VAT Vakuumventile AG
CH-9469 Haag, Schweiz

PRODUCT DATA SHEET

Series 613, DN 25 - 320 mm (I.D. 1" - 12")

Ordering No. 613..-....-....

1 Description

This product is a Butterfly control valve for conductance control in vacuum systems.

This Product Data Sheet is valid for the valve ordering number(s):

DN		Ordering numbers									
mm	inch	aluminum					stainless steel				
		ISO-KF		ISO-F			ISO-KF		ISO-F		
25	1	61328-KA	x y				61328-KE	x y			
40	1 ½	61332-KA	x y				61332-KE	x y			
50	2	61334-KA	x y				61334-KE	x y			
63	2 ½			61336-PA	x y				61336-PE	x y	
80	3			61338-PA	x y				61338-PE	x y	
100	4			61340-PA	x y				61340-PE	x y	
160	6			61344-PA	x y				61344-PE	x y	
200	8			61346-PA	x y				61346-PE	x y	
250	10			61348-PA	x y				61348-PE	x y	
320	12			61350-PA	x y						

Controller configurations:

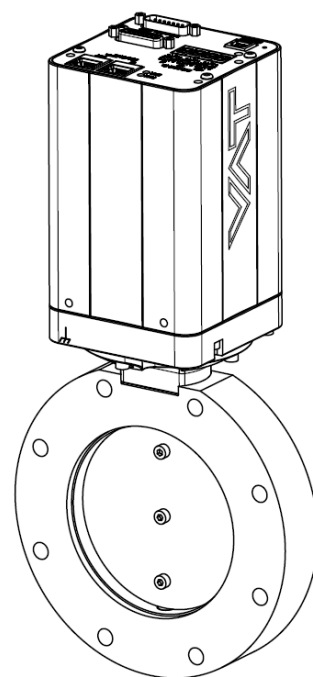
G = basic version
 A = with SPS
 H = with PFO
 C = with SPS and PFO

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

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

Interface
 H = RS232
 E = Logic (A/D)
 Q = DeviceNet®
 F = Profibus
 K = RS485
 N = CC-Link
 X = EtherCAT
 F = Ethernet

Sensor
 inputs
 2
 2
 2
 2
 2
 2
 2



Sample picture only. Specified product may differ in size, flange and options.

Example: 61340-PAGH = aluminum valve with ISO-F DN 100 flange, RS232 interface, 2 sensor inputs

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2 Technical data

2.1 Valve unit

Pressure range at 20°C (unheated on delivery)											
- Aluminum (613 ... A ...)				1 × 10E-8 mbar to 1.2 bar (abs)							
- Aluminum hard anodized (613 ... H ...)				1 × 10E-6 mbar to 1.2 bar (abs)							
- Aluminum nickel coated (613 ... I ...)				1 × 10E-8 mbar to 1.2 bar (abs)							
- Stainless steel (613 ... E ...)				1 × 10E-8 mbar to 1.2 bar (abs)							
Leak valve body, valve seat at 20°C (unheated on delivery)											
- Aluminum (613 ... A ...)				1 × 10E-9 mbar ls ⁻¹							
- Aluminum hard anodized (613 ... H ...)				1 × 10E-5 mbar ls ⁻¹							
- Aluminum nickel coated (613 ... I ...)				1 × 10E-9 mbar ls ⁻¹							
- Stainless steel (613 ... E ...)				1 × 10E-9 mbar ls ⁻¹							
Cycles until first service (unheated and under clean conditions)				2'000'000							
Admissible operating temperature				while temperature of valve body and valve plate should be kept on about same level							
• Valve body				10°C to 150°C							
• Ambient				≤ 50°C							
Mounting position				any (DN63...250) Control unit for ISO-KF version needs support when mounted on horizontal piping and control unit does not hang. (DN25...50)							
Process side materials			body / plate		Aluminum - EN AW-6082 (3.2315) (A, H, I) Stainless steel: AISI 316L (1.4404 or 1.4435) (E)						
			shaft / plate screws		Stainless steel: AISI 316L (1.4404 or 1.4435)						
			shaft bearing		Iglidur® X						
Seals			rotary feed through		FKM (e.g. Viton®)						
DN (nominal I. D.)	[mm]	25	40	50	63	80	100	160	200	250	320
	[inch]	1	1½"	2"	2½"	3"	4"	6"	8"	10"	12"
Max. differential pressure on plate (close position)	[mbar]	1000	1000	1000	1000	1000	800	300	150	100	75
Typical closing or opening time	Aluminum [ms]	90	90	90	90	90	90	110	140	180	290
	Steel [ms]	90	90	90	90	90	110	140	180	290	na
Min. controllable conductance (N ₂ molecular flow)	[ls ⁻¹]	0.15	0.25	0.3	0.45	0.65	0.85	1.70	2.80	5	6
Max. conductance (N ₂ molecular flow)	[ls ⁻¹]	22	80	150	360	850	1'400	3'800	7'800	15'000	27'000
Weight (approx.) Aluminum valve	Aluminum [kg]	2.2	2.3	2.6	2.8	3.0	3.2	4.4	4.9	5.9	10.6
	Aluminum [lbs]	4.9	5.1	5.8	6.2	6.7	7.1	9.8	10.9	13.0	23.5
Weight (approx.) Stainless steel valve	Steel [kg]	2.7	2.8	3.2	4.3	4.9	5.2	7.4	10.2	12.5	n.a
	Steel [lbs]	6.0	6.2	7.1	9.5	10.9	11.5	16.4	22.6	27.6	n.a

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2.2 Control unit

Power supply input	connector	D-Sub, DA-15, male
	supply voltage	+24 VDC ($\pm 10\%$) @ 0.5 V pk-pk max.
Power consumption	(control / drive)	40 W (max.) with optional SPS + 40 W with optional PFO + 10 W 3 W max. (from DeviceNet® to DeviceNet® Interface board of valve)
Ambient	temperature	0 °C to +50 °C max. (<35 °C recommended)
	humidity	0 to 95% RH, non-condensing
Interface	remote	Refer to chapter 2.3
	service port	USB-B (USB 2.0)
Sensor	connector	D-Sub, DA-15, female
	number of inputs	2
	signal voltage	-10 ... +10 V
	input resistance	100 k Ω
	ADC resolution	0.1 mV
	sampling rate	2 ms
	power supply (output)	+24 VDC / 1.5 A max. or ± 15 VDC / 1.2 A max. (with SPS option)
Position resolution		5000 (90° angle)
Actuator type		servo control
Actuator backlash		< 0.02°
Pressure control accuracy		5 mV or 0.1% of setpoint, the higher value applies
Ingress Protection		IP 40

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2.3 Interface

2.3.1 Power Connector

Connector		D-Sub, DA-15, male
Digital inputs	input 1	interlock open (adjustable with CPA 4.0)
	input 2	interlock close (adjustable with CPA 4.0)
	voltage control contact control	12 ... 24V / 4 ... 8 mA 24V / 8 mA
Digital outputs	output 1	valve closed (adjustable with CPA 4.0)
	output 2	valve opened (adjustable with CPA 4.0)
	load	max. 70 V / 0.1 A

2.3.2 EtherCAT

Connector		2 x RJ45, 8-pin (socket), IN and OUT
Communication	protocol	Protocol specialized for EtherCAT
	node address	Explicit device identification or station alias, set by switches
	physical layer	100BASE-Tx (IEEE 802.3)
Cable		shielded Ethernet CAT5e or higher

2.3.3 DeviceNet

Connector		microstyle, 5-pin, male
Communication	protocol	DeviceNet, group 2 slave only
	data rate	125, 250, 500 kbaud by switch or network programmable
	MAC ID	address 00 - 63 by switch or network programmable
	profiles	Generic "C" default, Process Control Device (ODVA)
Supply voltage	transceiver at microstyle connector	24 V _{nom} , 11 ... 25V; max. 0.5 W

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2.3.4 RS232

Connector		D-Sub, DB-25, female
Communication settings	baud rate data bits stop bits parity bit	1200,2400,4800,9600,19200,38400,57600,115200 7 or 8 1 or 2 even, odd, none
Digital inputs	number of inputs	2
	voltage control	5 ... 24V / 2 ... 10 mA
	contact control	3.3V / 2 mA
Digital outputs	number of outputs	2
	load	max. 70 V / 0.1 A
Analog outputs	number of outputs	2
	voltage range	0 ... 10V
	load	max. 1 mA

2.3.5 RS485

Connector		D-Sub, DB-25, female
Communication settings	baud rate data bits stop bits parity bit topology network adress range	1200,2400,4800,9600,19200,38400,57600,115200 7 or 8 1 or 2 even, odd, none half duplex, full duplex point to point, multiple devices 0 ... 255
Digital inputs	number of inputs	2
	voltage control	5 ... 24V / 2 ... 10 mA
	contact control	3.3V / 2 mA
Digital outputs	number of outputs	2
	load	max. 70 V / 0.1 A
Analog outputs	number of outputs	2
	voltage range	0 ... 10V
	load	max. 1 mA

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2.3.6 Logic

Connector		D-Sub, DB-25, female
Digital inputs	number of inputs	8
	voltage control	5 ... 24V / 2 ... 10 mA
	contact control	3.3V / 2 mA
Digital outputs	number of outputs	4
	load	max. 70 V / 0.1 A
Analog input	number of inputs	1
	voltage range	0 ... 10V
	input resistance	100 kOhm
Analog outputs	number of outputs	2
	voltage range	0 ... 10V
	load	max. 1 mA

2.3.7 Profibus

Connector		D-Sub, DE-9, female
Communication	protocol	Profibus DP-V1, DP-V0
	data rate	9.6, 19.2, 45.45, 93.75, 187.5, 500 kbps, 1.5, 3, 6, 12 Mbps The baud rate is detected automatically or may be configured
	node address	SW configurable (0 – 125)

2.3.8 CC-Link

Connector		D-Sub, DE-9, female
Communication	protocol	CC-Link V2
	data rate	156, 625, 500 kbps, 2.5, 5, 10 Mbps SW configurable
	station number	SW configurable (1– 64)

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2.3.9 Ethernet

Connector		2 x RJ45, 8-pin (socket), IN and OUT
Communication	protocol	Telnet
	node address	IP Address (DHCP or static)
	physical layer	100BASE-Tx (IEEE 802.3)
Cable		shielded Ethernet CAT5e or higher

2.4 General data

Weight	refer to chapter: 2.1
Dimensional drawing	Refer to dimensional drawing of specific valve ordering number (available on request)

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