



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:

<table border="0"> <tr> <td style="border: none;">G = basic version</td> <td style="border: none;">H = RS232</td> <td style="border: none;">Sensor inputs</td> </tr> <tr> <td style="border: none;">A = with SPS</td> <td style="border: none;">E = Logic (A/D)</td> <td style="border: none;">2</td> </tr> <tr> <td style="border: none;">H = with PFO</td> <td style="border: none;">Q = DeviceNet®</td> <td style="border: none;">2</td> </tr> <tr> <td style="border: none;">C = with SPS and PFO</td> <td style="border: none;">F = Profibus</td> <td style="border: none;">2</td> </tr> <tr> <td></td> <td style="border: none;">K = RS485</td> <td style="border: none;">2</td> </tr> <tr> <td></td> <td style="border: none;">N = CC-Link</td> <td style="border: none;">2</td> </tr> <tr> <td></td> <td style="border: none;">X = EtherCAT</td> <td style="border: none;">2</td> </tr> <tr> <td></td> <td style="border: none;">F = Ethernet</td> <td style="border: none;">2</td> </tr> </table>	G = basic version	H = RS232	Sensor inputs	A = with SPS	E = Logic (A/D)	2	H = with PFO	Q = DeviceNet®	2	C = with SPS and PFO	F = Profibus	2		K = RS485	2		N = CC-Link	2		X = EtherCAT	2		F = Ethernet	2	<table border="0"> <tr> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> </tr> <tr> <td style="border: none;">└───x───┐</td> <td style="border: none;">└─y─┐</td> <td style="border: none;">Interface</td> </tr> </table>				└───x───┐	└─y─┐	Interface	
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SPS = Sensor Power Supply (±15VDC power supply for sensor)
PFO = Power Failure Option (valve closes / opens automatically at power failure)



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 <sup>-1</sup>									
- Aluminum hard anodized (613...H.....)		1 × 10E-5 mbar ls <sup>-1</sup>									
- Aluminum nickel coated (613...I.....)		1 × 10E-9 mbar ls <sup>-1</sup>									
- Stainless steel (613...E.....)		1 × 10E-9 mbar ls <sup>-1</sup>									
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 <sub>2</sub> molecular flow)	[ls <sup>-1</sup> ]	0.15	0.25	0.3	0.45	0.65	0.85	1.70	2.80	5	6
Max. conductance (N <sub>2</sub> molecular flow)	[ls <sup>-1</sup> ]	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 <sup>®</sup> to DeviceNet <sup>®</sup> 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 $\Omega$
	ADC resolution	0.1 mV
	sampling rate	2 ms
	power supply (output)	+24 VDC / 1.5 A max. or $\pm 15$ 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 Vnom, 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 contact control	5 ... 24V / 2 ... 10 mA 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 load	0 ... 10V 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 contact control	5 ... 24V / 2 ... 10 mA 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 load	0 ... 10V 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 contact control	5 ... 24V / 2 ... 10 mA 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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