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):

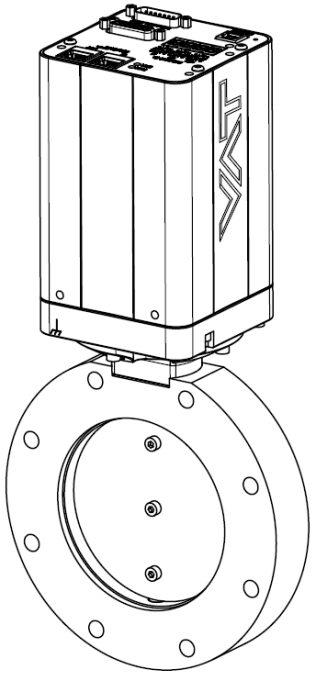
DN		Ordering numbers											
		aluminum						**stainless steel**					
mm	inch	ISO-KF			ISO-F			ISO-KF			ISO-F		
25	1	61328-KA	x	y				61328-KE	x	y			
40	1 ½	61332-KA	x	y				61332-KE	x	y			
50	2	61334-KA	x	y				61334-KE	x	y			
63	2 ½				61336-PA	x	y				61336-PE	x	y
80	3				61338-PA	x	y				61338-PE	x	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:

x

		y	Interface	Sensor inputs
G =	basic version	H =	RS232	2
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

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

2 Technical data

2.1 Valve unit

Pressure range at 20°C (unheated on delivery) - Aluminum (613 . . - . **A**. . - . . . .) - Aluminum hard anodized (613 . . - . **H**. . - . . . .) - Aluminum nickel coated (613 . . - . **I**. . - . . . .) - Stainless steel (613 . . - . **E**. . - . . . .)			 1 × 10E-8 mbar to 1.2 bar (abs) 1 × 10E-6 mbar to 1.2 bar (abs) 1 × 10E-8 mbar to 1.2 bar (abs) 1 × 10E-8 mbar to 1.2 bar (abs)								
Leak valve body, valve seat at 20°C (unheated on delivery) - Aluminum (613 . . - . **A**. . - . . . .) - Aluminum hard anodized (613 . . - . **H**. . - . . . .) - Aluminum nickel coated (613 . . - . **I**. . - . . . .) - Stainless steel (613 . . - . **E**. . - . . . .)			 1 × 10E-9 mbar ls^{-1} 1 × 10E-5 mbar ls^{-1} 1 × 10E-9 mbar ls^{-1} 1 × 10E-9 mbar ls^{-1}								
Cycles until first service (unheated and under clean conditions)			2'000'000								
Admissible operating temperature • Valve body • Ambient			while temperature of valve body and valve plate should be kept on about same level 10°C to 150°C ≤ 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

2.2 Control unit

Power supply input	connector	D-Sub, DA-15, male
	supply voltage	+24 VDC (±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 kΩ
	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

2.3 Interface

2.3.1 Power Connector

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

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

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 input resistance	0 … 10V 100 kOhm
Analog outputs	number of outputs	2
	voltage range load	0 … 10V 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)

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)