



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 | 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 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

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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 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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