

86700/86710 2/2-way piston valves

- Port size: DN 8 ... 50, 1/4 ... 2 (ISO G/NPT)
- Valve operates without differential pressure
- Valve with PTFE piston guide rings
- Suitable for vacuum
- Damped operation
- International approvals



Technical features

Medium:
Neutral gases and liquids

Switching function:
Normally closed

Operation:
Solenoid actuated, with forced lifting

Mounting position:
Optional, preferably solenoid vertical on top

Flow direction:
Determined

Port size:
G1/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2
1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT, 1 NPT, 1 1/4 NPT, 1 1/2 NPT, 2 NPT

Operating pressure:
0 ... 25 bar (0 ... 362 psi)
(0 ... 40 bar (0 ... 580 psi))

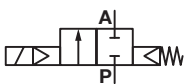
Fluid temperature:
–20 ... +90°C (–4 ... +194°F)

Ambient temperature:
–20 ... +50°C (–4 ... +122°F)

Material:
Body: Brass (CW617N)
Seat seal: NBR
Internal parts: Stainless steel, PTFE/Carbon, Brass

For contaminated fluids insertion of a strainer is recommended.

Technical data – standard models

| Symbol | Port size | Orifice (mm) | Flow kv value *1) (m ³ /h) | Operating pressure *2) | | Weight (kg) | Model | |
|---|-----------|-----------------|--|------------------------|-----------|----------------|--------------------|--------------------|
| | | | | (bar) | (psi) | | Solenoid in V d.c. | Solenoid in V a.c. |
|  | G1/4 | 8 | 2,2 | 0 ... 25 | 0 ... 362 | 1,5 | 8670000.8301.xxxxx | 8670000.8304.xxxxx |
| | 1/4 NPT | 8 | 2,2 | 0 ... 25 | 0 ... 362 | 1,5 | 8671000.8301.xxxxx | 8671000.8304.xxxxx |
| | G3/8 | 10 | 3,4 | 0 ... 25 | 0 ... 362 | 1,5 | 8670100.8301.xxxxx | 8670100.8304.xxxxx |
| | 3/8 NPT | 10 | 3,4 | 0 ... 25 | 0 ... 362 | 1,5 | 8671100.8301.xxxxx | 8671100.8304.xxxxx |
| | G1/2 | 12 | 4,4 | 0 ... 25 | 0 ... 362 | 1,6 | 8670200.8301.xxxxx | 8670200.8304.xxxxx |
| | 1/2 NPT | 12 | 4,4 | 0 ... 25 | 0 ... 362 | 1,6 | 8671200.8301.xxxxx | 8671200.8304.xxxxx |
| | G3/4 | 20 | 6,5 | 0 ... 25 | 0 ... 362 | 1,8 | 8670300.8301.xxxxx | 8670300.8304.xxxxx |
| | 3/4 NPT | 20 | 6,5 | 0 ... 25 | 0 ... 362 | 1,8 | 8671300.8301.xxxxx | 8671300.8304.xxxxx |
| | G1 | 25 | 10 | 0 ... 25 | 0 ... 362 | 2,2 | 8670400.8301.xxxxx | 8670400.8304.xxxxx |
| | 1 NPT | 25 | 10 | 0 ... 25 | 0 ... 362 | 2,2 | 8671400.8301.xxxxx | 8671400.8304.xxxxx |
| | G1 1/4 | 32 | 24 | 0 ... 25 | 0 ... 362 | 5,6 | 8670500.8401.xxxxx | 8670500.8404.xxxxx |
| | 1 1/4 NPT | 32 | 24 | 0 ... 25 | 0 ... 362 | 5,6 | 8671500.8401.xxxxx | 8671500.8404.xxxxx |
| | G1 1/2 | 40 | 25 | 0 ... 25 | 0 ... 362 | 5,4 | 8670600.8401.xxxxx | 8670600.8404.xxxxx |
| | 1 1/2 NPT | 40 | 25 | 0 ... 25 | 0 ... 362 | 5,4 | 8671600.8401.xxxxx | 8671600.8404.xxxxx |
| | G2 | 50 | 41 | 0 ... 25 | 0 ... 362 | 6,8 | 8670700.8401.xxxxx | 8670700.8404.xxxxx |
| | 2 NPT | 50 | 41 | 0 ... 25 | 0 ... 362 | 6,8 | 8671700.8401.xxxxx | 8671700.8404.xxxxx |

xxxxx Please insert voltage and frequency codes

*1) Cv-value (US) ≈ kv value x 1,2

*2) For gases and liquid fluids up to 40 mm²/s (cSt)

Option selector

867*****.*****

| | |
|---|------------|
| Thread form | Substitute |
| ISO G | 0 |
| NPT | 1 |
| Port size | Substitute |
| 1/4 | 0 |
| 3/8 | 1 |
| 1/2 | 2 |
| 3/4 | 3 |
| 1 | 4 |
| 1 1/4 | 5 |
| 1 1/2 | 6 |
| 2 | 7 |
| Valve options | Substitute |
| Normally open (NO), Mounting position: Solenoid vertical on top | 01 |
| Manual override, with solenoid 8400 | 02 |
| Seat seal FPM, Fluid temperature -10 ... +110°C (+14 ... +230°F) *1) | 03 |
| Seat seal PTFE, max. fluid temperature +110°C (+230°F) *1), G1/4 ... 1 with solenoid 8300 Operating pressure 25 bar | 06 |
| Seat seal EPDM, max. fluid temperature +110°C (+230°F) | 14 |
| Normally open (NO), Seat seal FPM, Fluid temperature -10 ... +110°C (+14 ... +230°F) *1), Mounting position: Solenoid vertical on top | 17 |

| | |
|---|------------|
| Frequency | Substitute |
| See table frequency codes | xx |
| Voltage | Substitute |
| See table voltage codes | xxx |
| Solenoid options | Substitute |
| G1/4 ... 1 Solenoid in V d.c. | 8301 |
| G1 1/4 ... 2 Solenoid in V d.c. | 8401 |
| G1/4 ... 1 Solenoid in V a.c. | 8304 |
| G1 1/4 ... 2 Solenoid in V a.c. | 8404 |
| Valve options | Substitute |
| Max. operating pressure 40 bar, with solenoid 8400 | 22 |
| Position indicator, with solenoid 8400 | 23 |
| Seat seal FPM, with larger bleed orifices in the piston, for fluids such as fuel and oil, viscosity max. 80 mm ² /s (cSt), Fluid temperature -10 ... +110°C (+14 ... +230°F) *1), with solenoid 8400 | 25 |
| Version for drinking water on request | |

Standard solenoid systems

| Voltage and Frequency Solenoid 8301/8304 | | | | | |
|--|-----------|----------------|--------------|-------------------|---------|
| Code | Code | Voltage | Frequency | Power consumption | |
| Voltage | Frequency | | | Inrush | Holding |
| 024 | 00 | 24 V d.c. | - | 22 W | 22 W |
| 024 | 49 | 24 V a.c. *3) | 40 ... 60 Hz | 25 VA | 25 VA |
| 110 | 49 | 110 V a.c. *3) | 40 ... 60 Hz | 25 VA | 25 VA |
| 120 | 49 | 120 V a.c. *3) | 40 ... 60 Hz | 25 VA | 25 VA |
| 230 | 49 | 230 V a.c. *3) | 40 ... 60 Hz | 25 VA | 25 VA |
| Voltage and Frequency Solenoid 8401/8404 | | | | | |
| 024 | 00 | 24 V d.c. | - | 40 W | 40 W |
| 024 | 49 | 24 V a.c. *3) | 40 ... 60 Hz | 45 VA | 45 VA |
| 110 | 49 | 110 V a.c. *3) | 40 ... 60 Hz | 45 VA | 45 VA |
| 120 | 49 | 120 V a.c. *3) | 40 ... 60 Hz | 45 VA | 45 VA |
| 230 | 49 | 230 V a.c. *3) | 40 ... 60 Hz | 45 VA | 45 VA |

*3) A.c. only with rectifier plug
Further versions on request!

Electrical details for all solenoid systems

| | |
|-------------------------|---|
| Design | DIN VDE 0580 |
| Voltage range | ±10% |
| Duty cycle | 100% ED |
| Protection class | EN 60529 IP65 |
| Socket | Form A acc. to DIN EN 175301-803 (included) |

According to DIN VDE 0580 at a solenoid temperature of +20°C.
At operating state temperature the input power of a coil decreases by up to ca. 30% due to physical reasons.

Additional solenoid systems for hazardous areas

| ATEX-category | ATEX-protection class | IP-protection class | Solenoid | Standard voltages |
|----------------|---|---------------------|----------|-----------------------------------|
| II 3G II 3D | Ex ec IIC T4 Gc Ex tc IIIC T130°C DC | IP65 | 8326 *4) | 24 V d.c. |
| II 3G II 3D | Ex ec IIC T4 Gc Ex tc IIIC T130°C DC | IP65 | 8426 *4) | 24 V d.c. |
| II 2G II 2D | Ex eb mb IIC T3 Gb Ex mb tb IIIB T135°C Db | IP66 | 6220 | 24 V d.c., 110 V a.c., 230 V a.c. |
| II 2G II 2D | Ex eb mb IIC T3 Gb Ex mb tb IIIB T140°C Db | IP66 | 6240 | 24 V d.c., 110 V a.c., 230 V a.c. |

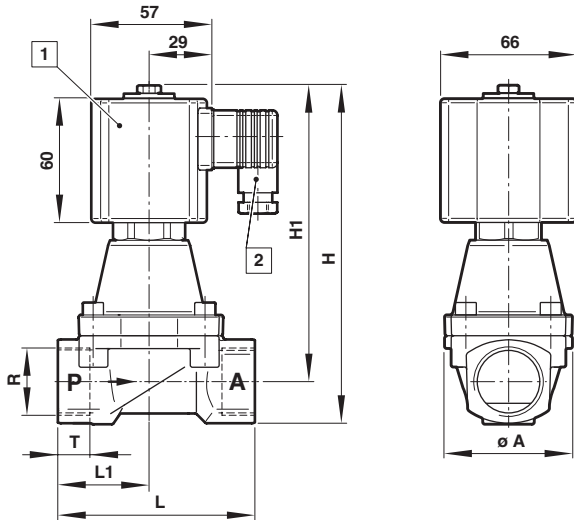
Attention!

The conditions imposed on the Ex approvals lead to reduction of the permissible standard temperature ranges in the cases of explosion protected solenoids.

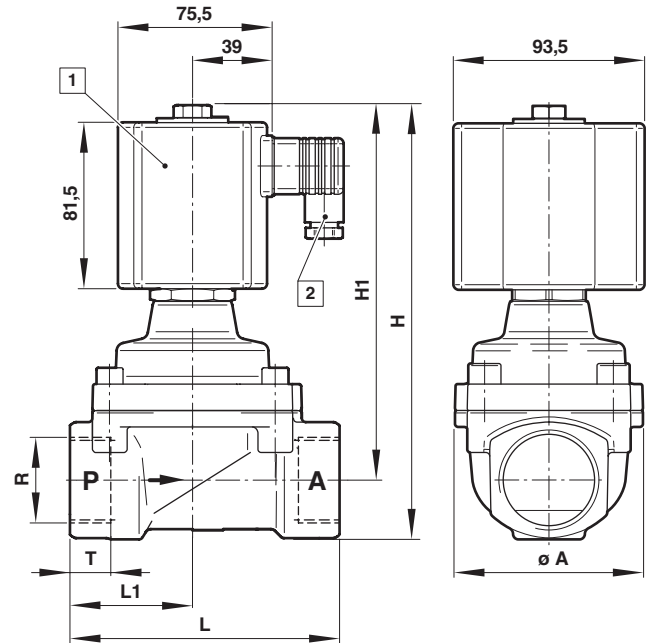
*4) Only d.c., for a.c. solenoids with design inspection certificate acc. to category 2, e.g. 6220 oder 6240

Dimensions

G1/4 ... 1
1/4 ... 1 NPT



G1 1/4 ... 2
1 1/4 ... 2 NPT



Dimensions in mm
Projection/first angle



1 Solenoid rotatable 360°
Socket turnable 4 x 90°
(Socket included)

| Port size R | ø A | H | H1 | L | L1 | T | Model |
|-------------|-----|-------|-------|-----|------|------|--------------------|
| G1/4 | 44 | 143 | 132 | 60 | 27,5 | 12 | 8670000.830x.xxxxx |
| 1/4 NPT | 44 | 143 | 132 | 60 | 27,5 | 10 | 8671000.830x.xxxxx |
| G3/8 | 44 | 143 | 132 | 60 | 27,5 | 12 | 8670100.830x.xxxxx |
| 3/8 NPT | 44 | 143 | 132 | 60 | 27,5 | 10,5 | 8671100.830x.xxxxx |
| G1/2 | 44 | 145 | 132 | 67 | 31 | 14 | 8670200.830x.xxxxx |
| 1/2 NPT | 44 | 145 | 132 | 67 | 31 | 13,5 | 8671200.830x.xxxxx |
| G3/4 | 50 | 154 | 137 | 80 | 35,5 | 16 | 8670300.830x.xxxxx |
| 3/4 NPT | 50 | 154 | 137 | 80 | 35,5 | 14 | 8671300.830x.xxxxx |
| G1 | 62 | 164 | 143,5 | 95 | 44 | 18 | 8670400.830x.xxxxx |
| 1 NPT | 62 | 164 | 143,5 | 95 | 44 | 17 | 8671400.830x.xxxxx |
| G1 1/4 | 92 | 212,5 | 183,5 | 132 | 60 | 20 | 8670500.840x.xxxxx |
| 1 1/4 NPT | 92 | 212,5 | 183,5 | 132 | 60 | 17 | 8671500.840x.xxxxx |
| G1 1/2 | 92 | 212,5 | 183,5 | 132 | 60 | 22 | 8670600.840x.xxxxx |
| 1 1/2 NPT | 92 | 212,5 | 183,5 | 132 | 60 | 17 | 8671600.840x.xxxxx |
| G2 | 109 | 226,5 | 192 | 160 | 74 | 24 | 8670700.840x.xxxxx |
| 2 NPT | 109 | 226,5 | 192 | 160 | 74 | 17,5 | 8671700.840x.xxxxx |

Note to Pressure Equipment Directive (PED):

The valves of this series up to and including DN 25 (G1) are according to Art. 4 § 3 of the Pressure Equipment Directive (PED) 2014/68/EU. This means interpretation and production are in accordance to engineers practice wellknown in the member countries. The CE-sign at the valve does not refer to the PED. Thus the declaration of conformity is not longer applicable for this directive.

For valves > DN 25 (G1) Art. 4 § (1) Letter d) applies:

The basic requirements of the Enclosure I of the PED must be fulfilled. The CE-sign at the valve includes the PED. A certificate of conformity of this directive will be available on request.

Note to Electromagnetic Compatibility Guideline (EEC):

The valves shall be provided with an electrical circuit which ensures the limits of the harmonised standards EN 61000-6-3 and EN 61000-6-1 are observed, and hence the requirements of the Electromagnetic Compatibility Guideline (2014/30/EU) satisfied.

Note to EAC marking:

The EAC-marked products comply with the applicable requirements stated in the technical regulations of the Eurasian Economic Union.