

Directional valve 3-way/2-position

$Q_{\max} = 10 \text{ gpm}$, $p_{\max} = 4500 \text{ psi}$
switching solenoid, direct acting, poppet type
Type series: W1P32G-UA-8...



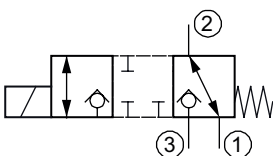
- Screw-in cartridge valve
- For cavity AU/C1030
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Fits common cavity according to ISO and NFPA
- High pressure wet-armature solenoids
- Various plug-connector systems and voltages are available
- Guided valve spool and poppet
- With or without manual override
- Low head loss
- Installation in threaded port body type GAU-12

Description

The 3-way/2-position solenoid operated directional seat valves, series W1N..., are size NG 8 / SAE 10, direct acting, pressure balanced, screw-in valves with a 7/8-14 UNF mounting thread. They are designed on the poppet/seat principle and in the normal condition (de-energized), flow in port 3 is shut off without leakage. The guide spool has a seal. This version is the underlapped spool model. This model features a closed crossover characteristic i.e. during the valve's switching period (in the crossover position), there is no connection between ports 3, 2, and 1 and therefore only a minimal loss of flow/pressure occurs. See separate data sheet for the overlapped spool model.

These valves are also available with or without manual override. All external parts of the screw-in valves are zinc-nickel plated and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. These valves are predominantly used in certain mobile and industrial applications where leak-tight shut-off functions are crucially important. Examples are where loads, tensions, or clamping forces must be held without leakage. For self-assembly, please refer to the section related data sheets.

Symbol



Technical data

| General characteristics | Description, value, unit |
|------------------------------|---|
| Function group | Directional valve |
| Function | 3-way/2-position |
| Design | Screw-in cartridge valve |
| Controls | switching solenoid |
| Characteristic | direct acting, poppet type |
| MTTFd value | 150 years |
| Construction size | NG 8 / SAE 10 |
| Thread size | 7/8-14 UNF-2A |
| Mounting attitude | unrestricted |
| Weight | 1.5 lbs |
| Cavity size acc. ISO | fits into ISO 17209: 7/8-03-0-13 |
| Cavity acc. NFPA | fits into NFPA/T3.5.50: 0.875-03-0-09 |
| Cavity acc. factory standard | For cavity AU/C1030 |
| Tightening torque steel | 44 ft·lb |
| Tightening torque tolerance | ± 10 % |
| Minimum ambient temperature | - 13 °F |
| Maximum ambient temperature | + 122 °F |
| Surface protection | All external parts with zinc-nickel plating according to DIN EN ISO 19598 |
| Sealing material | see ordering code |
| Seal kit order number | NBR: DS-507-N / FKM: DS-507-V |



IMPORTANT!

The less favorable values from the general, hydraulic and electrical characteristics determine the temperature range of the whole valve.

| Hydraulic characteristics | Description, value, unit |
|--|--|
| Maximum operating pressure | 4500 psi |
| Maximum flow rate | 10 gpm |
| Flow direction | see symbol |
| Hydraulic fluid | HL and HLP mineral oil according to DIN 51 524; other fluids on request! |
| Minimum fluid temperature | - 13 °F |
| Maximum fluid temperature | + 176 °F |
| Viscosity range | 10 ... 500 mm ² /s (cSt) |
| Recommended viscosity range | 15 ... 250 mm ² /s (cSt) |
| Minimum fluid cleanliness (cleanliness class according to ISO 4406:1999) | class 20/18/15 |

| Electric characteristics | Description, value, unit |
|--|---|
| Actuator type | solenoid coil |
| Solenoid coils type | D45/207 |
| Supply voltage DC | 12/24 V DC |
| Supply voltage AC | 115/230 (50 ... 60 Hz) V AC |
| Supply voltage tolerance | ± 10 % |
| Maximum permissible power consumption | 30 ... 32 W |
| Switching time | Flow direction 3 to 2: 17 ... 109 (energizing), 7 ... 198 (de-energizing) / Flow direction 1 to 2: 22 ... 150 (energizing), 6 ... 60 (de-energizing) / Flow direction 2 to 1: 23 ... 117 (energizing), 10 ... 72 (de-energizing) / Flow direction 2 to 3: 25 ... 138 (energizing), 7 ... 10 (de-energizing) |
| Relative duty cycle | 100 % |
| Electrical connection coil | DIN EN 175301-803, 3-pole 2 P+E (IP 65) |
| Protection class solenoid coil to ISO 20 653 / EN 60 529 | IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing) |

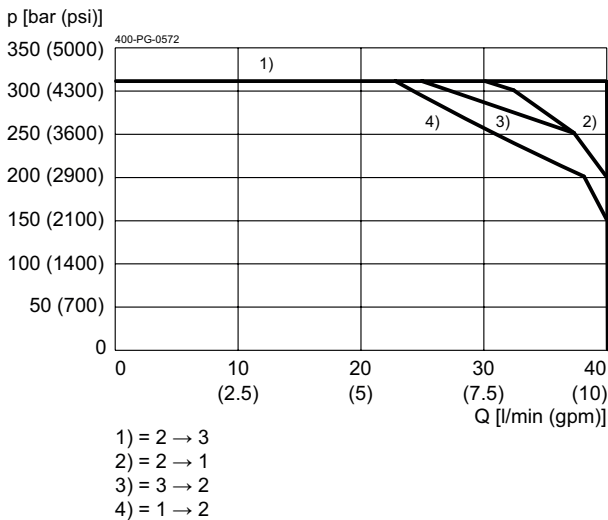
i NOTE!
To ensure the performance data is not compromised, it is imperative to use coils D45/207 according to data sheet 400-P-120120.

i NOTE!
The switching time can be strongly dependent on flow rate, pressure, oil viscosity and the dwell time under pressure. In practice, the switching time may therefore deviate from the specified value range.

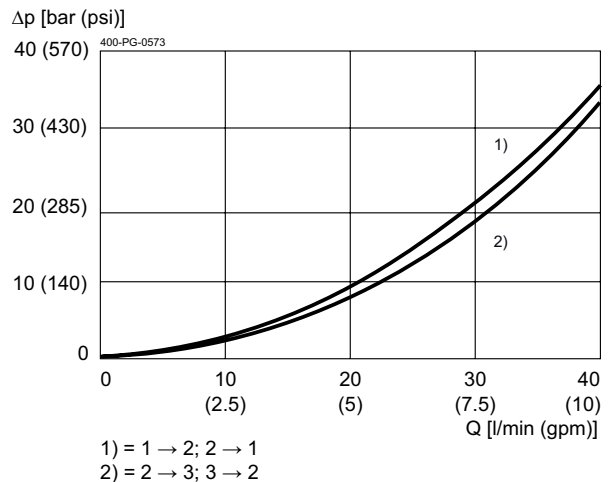
Performance graphs

measured with oil viscosity 33.0 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

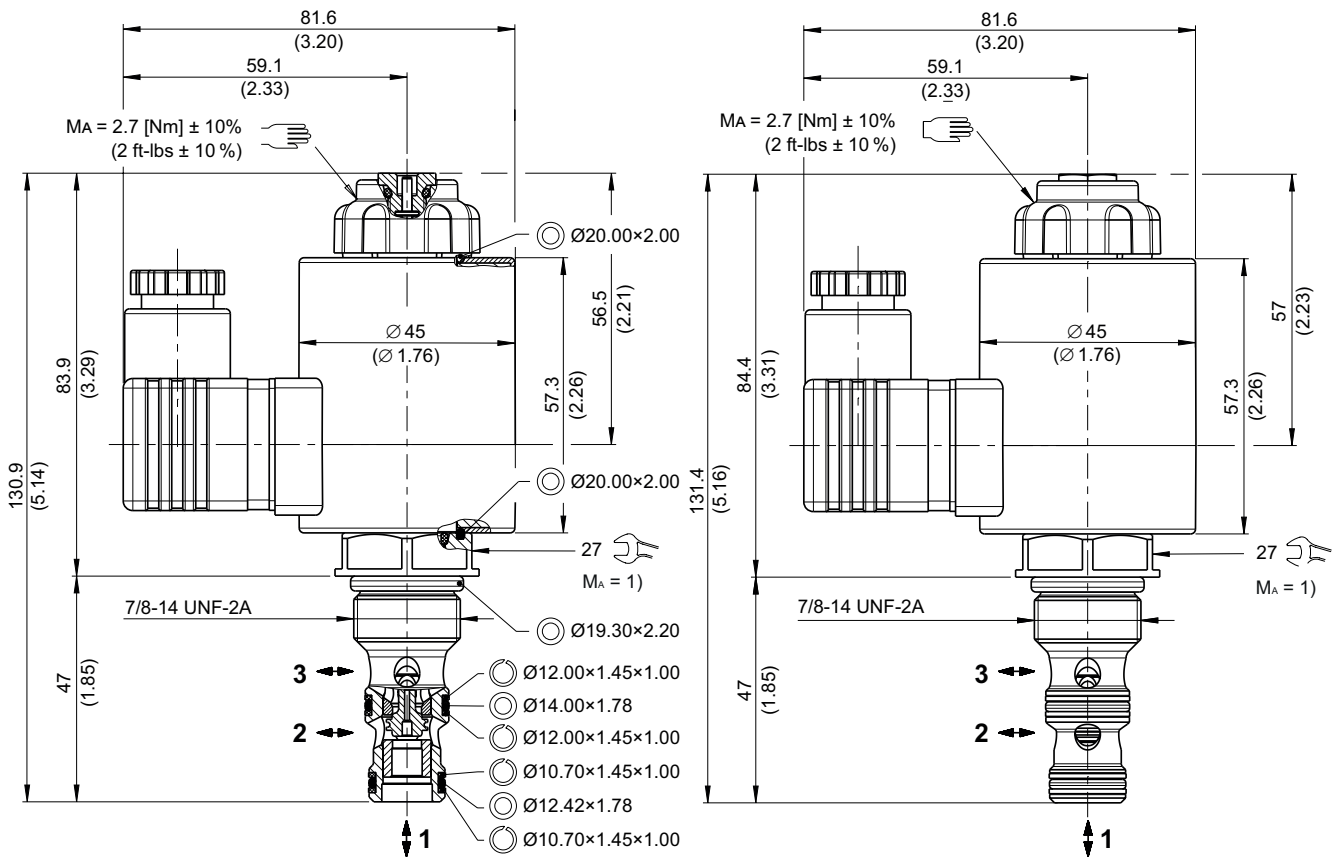
$p = f(Q)$ Performance limit



$\Delta p = f(Q)$ Pressure drop-flow rate characteristic



Dimensions and sectional view



Installation information



NOTE!

1) When fitting the screw-in cartridge valve, use the specified tightening torque. The value can be found in the chapter "Technical data".



NOTE!

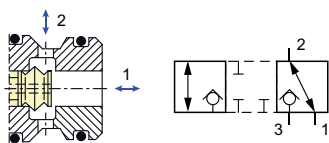
The seals are not available individually. The seal kit order number can be found in the chapter "Technical data".



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Functional principle / Spool variants



The "overlapped spool" model features a closed cross-over characteristic i.e. during the valve's switching period, there is no connection between ports 3, 2, and 1 and therefore only a minimal loss of flow/pressure occurs. This is a very important benefit in small-volume circuits, and in accumulator- and clamping systems.

Ordering code

Ex.

| | | | | | | | | | | | | | | | |
|----|---|----|---|---|---|---|---|---|---|---|---|----|---|---|---|
| W1 | P | 32 | G | I | U | A | - | 8 | O | - | 1 | 24 | D | - | - |
|----|---|----|---|---|---|---|---|---|---|---|---|----|---|---|---|

- W1 = directional valve
- P = positive overlap
- 32 = 3-way/2-position
- G = spool de-energized closed
- I = electrically operated, D45/207, 30...32W
- U = cavity AU/C1030
- A ... Q = standard model - see relevant data sheets
- R ... Z = special features - please consult BUCHER
- 8 = nominal size 8
- O = without override (**standard**)
- P = push override
- (blank) = NBR (Nitrile) seals (**standard**)
- V = FKM (Viton) seals
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering new units)
- ... = voltage e.g. **24** (24 V)
- D = current DC
- A = current AC
- (blank) = DIN EN 175301-803 connection with mating plug (**standard, IP 65**)
- M100 = DIN EN 175301-803 connection with mating plug
for the following plug-variants [mating plug not supplied], please consult BUCHER:
- DT = Deutsch plug connection DT04-2P (with quenching diode, IP 67/69K)
- JT = Junior Timer radial plug connection (with quenching diode, IP 65)
- F = flying leads (600mm) (IP 65)

Related data sheets

| Reference | Description |
|--------------|-----------------------------------|
| 400-P-040011 | Form tools |
| 400-P-120120 | Solenoid coil D45/207 |
| 400-P-040291 | Cavity AU/C1030 |
| 400-P-738121 | Threaded port body GAU-12-... |
| 400-P-010101 | MTTFD Values for Hydraulic Valves |

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