

# Directional valve 2-way/2-position

$Q_{\max} = 350 \text{ l/min}$ ,  $p_{\max} = 420 \text{ bar}$

switching solenoid, pilot operated, poppet type

Type series: WR22O\_BA-16...



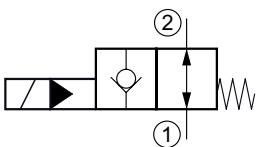
- Screw-in cartridge valve
- For cavity EB
- All external parts with zinc-nickel coating according to DIN EN ISO 19598
- Installation in threaded port body type GEBAA
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- High pressure wet-armature solenoids
- Various plug-connector systems and voltages are available
- "Low watt" version
- Seat tight shut-off
- No external pilot drain required
- High flow rates
- Also available as stack valve

## Description

The 2-way/2-position solenoid operated spool valves, series WR22\_B... are size 16, two stage, high-performance screw-in valves with an M42x2 mounting thread. The main stage as well as the pilot stage are designed on the proven poppet seat design, which ensures that the cartridges are leak-tight from 2 to 1. The straightforward design delivers an outstanding price/performance ratio and good pressure loss/volume flow ratings. 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 mainly used in mobile and industrial applications where leak-tight shut-off functions are crucially important. Examples are loads, tensions, or clamping forces that 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	2-way/2-position
Design	Screw-in cartridge valve
Controls	switching solenoid
Characteristic	pilot operated, poppet type
Construction size	nominal size 16
Thread size	M42×2
Mounting attitude	unrestricted
Weight	1.20 kg
Cavity acc. ISO	fits into ISO 7789: 42-06-0-07
Cavity acc. factory standard	For cavity EB
Tightening torque steel	200 Nm
Tightening torque aluminium	200 Nm
Tightening torque tolerance	± 10 %
Minimum ambient temperature	- 25 °C
Maximum ambient temperature	+ 50 °C
Surface protection	All external parts with zinc-nickel coating according to DIN EN ISO 19598
Available seal types	several seal types available, see ordering code
Seal kit order number	NBR: DS-351-N / FKM: DS-351-V

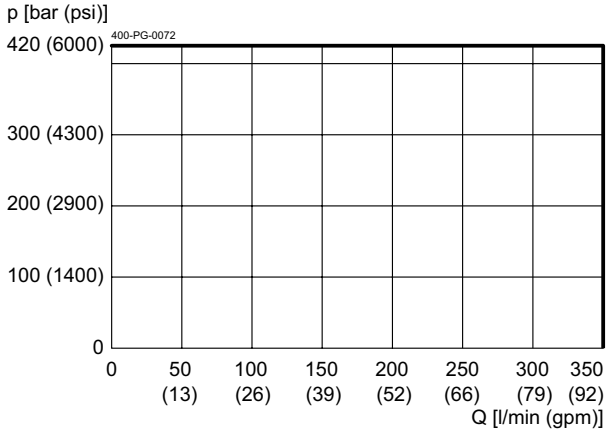
Hydraulic Characteristics	Description, value, unit
Maximum operating pressure	420 bar
Maximum flow rate	350 l/min
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil according to DIN 51 524; other fluids on request!
Minimum fluid temperature	- 25 °C
Maximum fluid temperature	+ 80 °C
Viscosity range	10 ... 500 mm <sup>2</sup> /s (cSt)
Recommended viscosity range	15 ... 250 mm <sup>2</sup> /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	D36
Supply voltage DC	12/24 V DC
Supply voltage AC	115/230 V AC (50 ... 60 Hz) V AC
Supply voltage tolerance	± 10 %
Maximum permissible power consumption	Version "N": V DC = 27 W / V AC = 25 W Version "L": V DC = 8 W
Relative duty cycle	100 %
Electrical connection coil	several connection types available, see ordering code
Protection class solenoid coil to ISO 20 653 / EN 60 529	several classes of protection available, see ordering code (with appropriate mating connector and proper fitting and sealing)

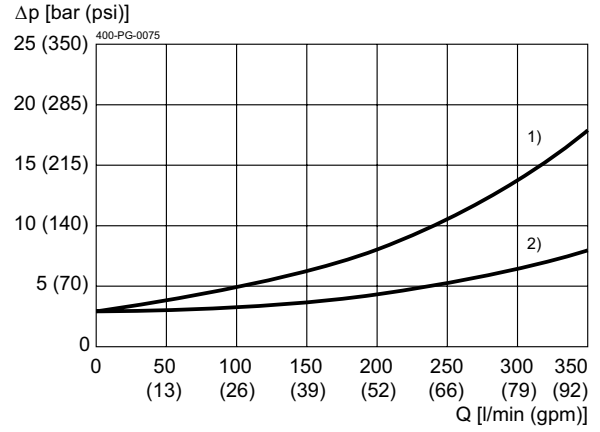
Performance graphs

measured with oil viscosity 33.0 mm<sup>2</sup>/s (cSt), coil at steady-state temperature and 10 % undervoltage

$p = f(Q)$  Performance limit



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

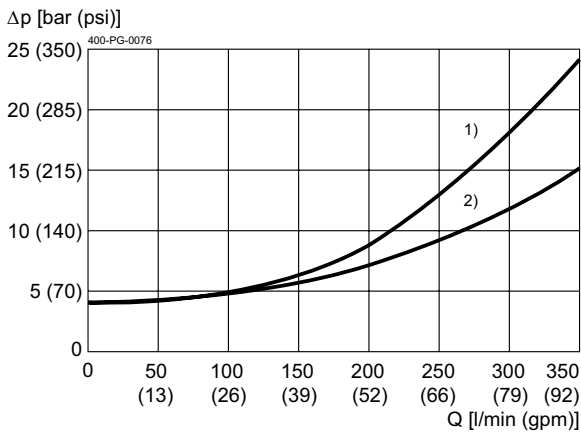


cavity type EB with annular groove

1) 1 → 2

2) 2 → 1

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



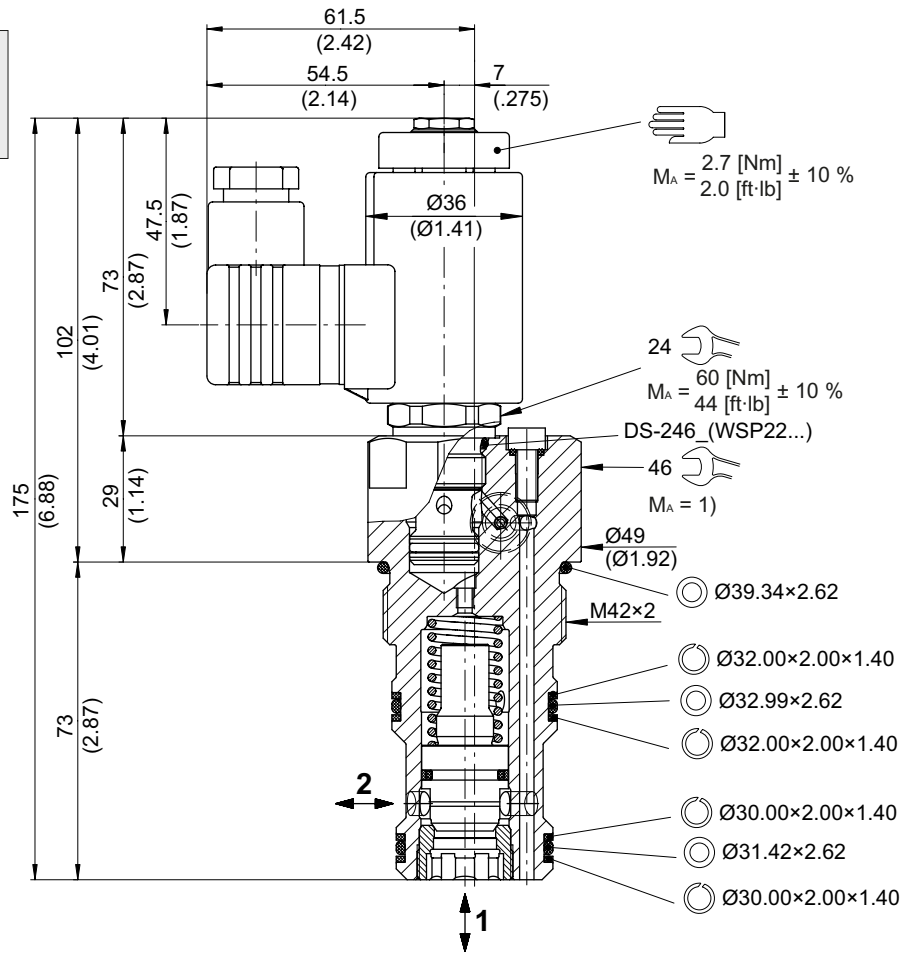
cavity type EB without annular groove

1) 1 → 2

2) 2 → 1

Dimensions and sectional view

**Beispiel für die Masseinheit:**  
**Example for the dimensional units:**  
0.79 = 0.79 mm millimeter  
(.031) = 0.031" inch



Installation information

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

**i 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.

Ordering code

Ex. **W** **R** **22O** **N** **B** **A** - **16** - **4** **24** **D** -

- W = directional valve
  - R = check valve function, pilot operated
  - 22O = 2-way/2-position, normally open
  - N = electrically operated, V DC = 27 W / V AC = 25 W (standard)
  - L = electrically operated, V DC = 8 W
  - B = cavity type EB
  - A ... Q = standard model according to valid data sheet (standard)
  - Z ... R = special model after consultation
  - 16 = nominal size 16
  - (blank) = NBR (nitril-butadien-rubber / BUNA) seals (standard)
  - V = FKM (fluorocarbon rubber / VITON) seals (special seals - please consult BUCHER)
  - 1 ... 9 = technical design no. (omit when ordering)
  - ... = voltage e.g. 24 (24 V)
  - D = current DC
  - A = current AC
  - (blank) = DIN EN 175301-803 connection, 3-pole 2 P+E with mating plug (IP 65) (standard)
  - M100 = DIN EN 175301-803 connection, 3-pole 2 P+E
  - C = Kostal plug connection (IP 65)
  - JT = Junior Timer radial plug connection (with protection diode, IP 65)
  - IT = Junior Timer axial plug connection (with protection diode, IP 65)
  - D = Deutsch plug connection 45° DT04-2P (IP 67/69K)
  - DT = Deutsch plug connection 45° DT04-2P (with protection diode, IP 67/69K)
  - F = flying leads (500 mm)
- } mating plug not supplied

Related data sheets

Reference	Description
400-P-040011	Forming tools
400-P-080111	Cavity EB (according to ISO 7789: 42-06-0-07)
400-P-750115	Threaded port body GEBAA
400-P-120110	Solenoid coil D36