

# Directional valve 4-way/2-position

$Q_{\max} = 30 \text{ l/min}$ ,  $p_{\max} = 250 \text{ bar}$   
direct acting, spool type, switching solenoid  
Type series: WK42AD\_A5...



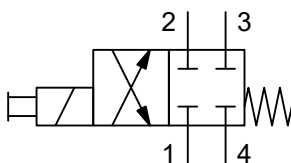
- Screw-in cartridge valve
- For cavity AN
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- Installation in threaded port body type GANA
- With manual override
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- High pressure wet-armature solenoids
- Various plug-connector systems and voltages are available

## Description

The 4-way/2-position solenoid operated spool valves, series WK42AD\_A5..., are size 5, direct acting, pressure balanced screw-in valves with a 3/4-16 UNF-2A mounting thread. The straightforward design delivers an outstanding price/performance ratio. 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 primarily used in mobile and industrial applications as pilot valves for controlling the travel direction of actuators such as hydraulic motors and cylinders. For self-assembly, please refer to the section related data sheets.

## Symbol



## Technical data

General characteristics	Description, value, unit
Function group	Directional valve
Function	4-way/2-position
Design	Screw-in cartridge valve
Controls	switching solenoid
Characteristic	direct acting, spool type
Construction size	NG 5
Thread size	3/4-16 UNF-2A
Mounting attitude	unrestricted
Weight	0.40 kg
Cavity acc. factory standard	For cavity AN
Tightening torque steel	40 Nm
Tightening torque aluminium	40 Nm
Tightening torque tolerance	± 10 %
Minimum ambient temperature	- 30 °C
Maximum ambient temperature	+ 50 °C
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-248-N / FKM: DS-248-V

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	250 bar
Maximum flow rate	30 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	- 30 °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 (50 ... 60 Hz) V AC
Supply voltage tolerance	± 10 %
Nominal power consumption	Version "N": V DC = 27 W / V AC = 25 W Version "E": V DC = 17 W / V AC = 17 W

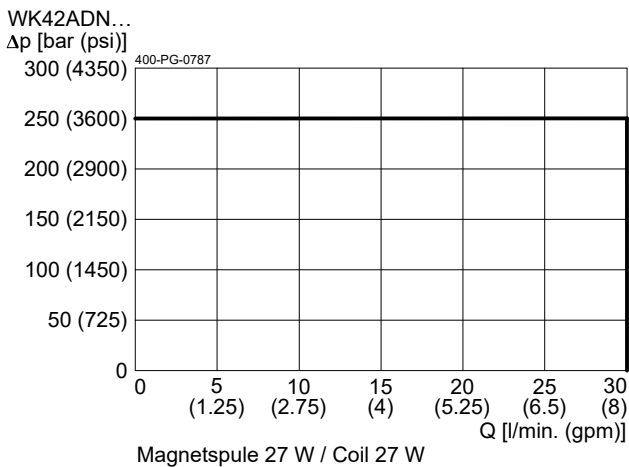
Electric characteristics	Description, value, unit
Switching time	Version "N": 32...80 ms (energized) 15...60 ms (de-energized) Version "E": 45...80 ms (energized) 20...60 ms (de-energized)
Relative duty cycle	100 %
Electrical connection coil	several connection types available, see ordering code
Protection 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)

**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.

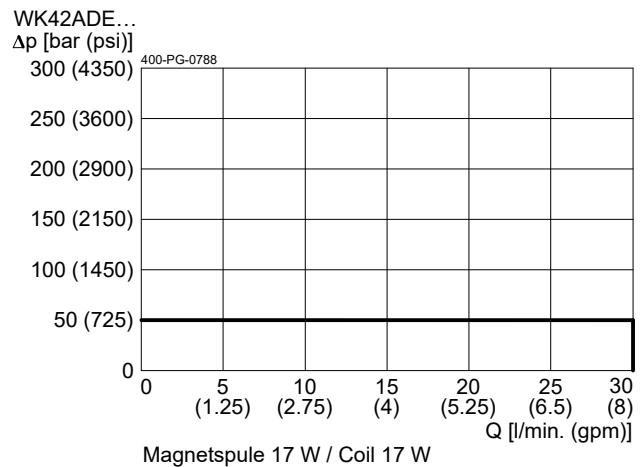
### Performance graphs

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

$p = f(Q)$  Performance limit



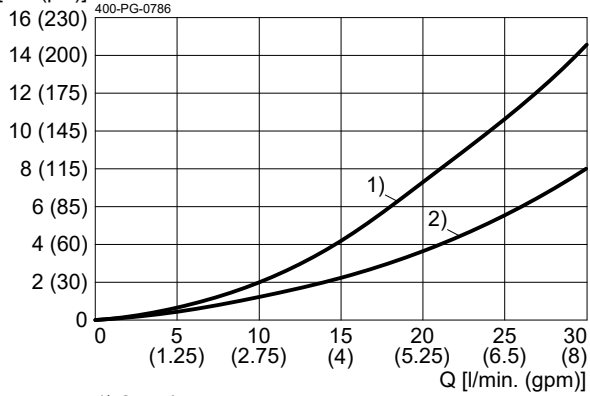
$p = f(Q)$  Performance limit



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

WK42ADN... / WK42ADE...

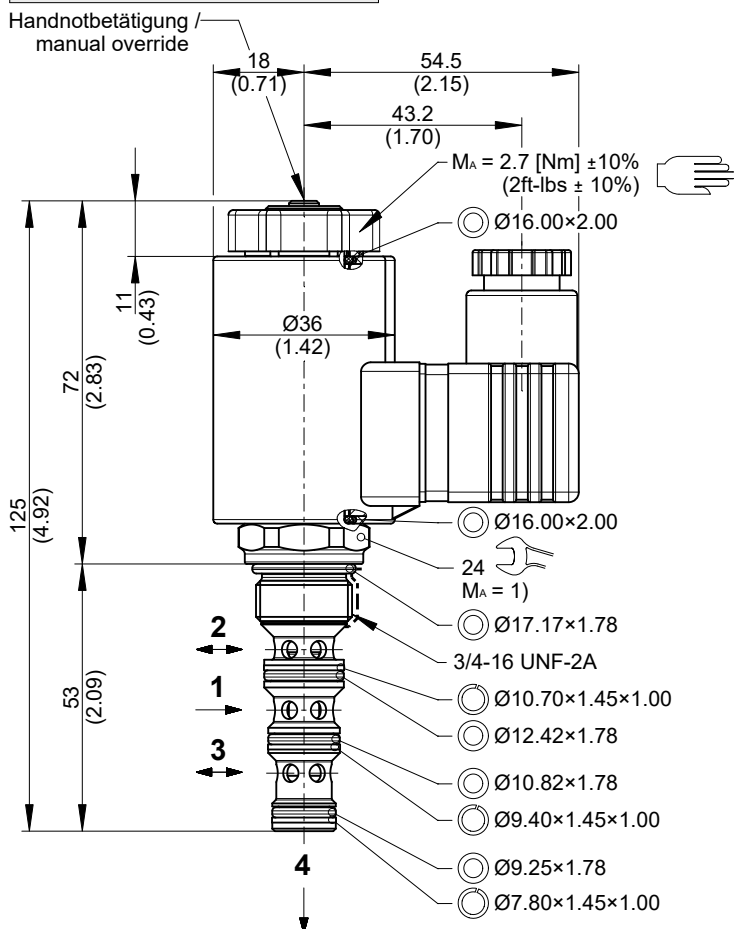
$\Delta p$  [bar (psi)]



1) 2 → 4  
2) 1 → 3

## 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



### 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.

## Ordering code

Ex. 

W	K	42AD	N	A	5	_	-	2	24	D	_
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<p>W = directional valve</p> <p>K = spool-type</p> <p>42AD = 4-way/2-position, spooltype AD</p> <p>N = electrically operated, V DC = 27 W / V AC = 25 W <b>(standard)</b></p> <p>E = electrically operated, V DC = 17 W / V AC = 17 W</p> <p>A ... Q = standard model according to valid data sheet</p> <p>Z ... R = special model (on request)</p> <p>5 = nominal size 5</p> <p>(blank) = NBR (nitril-butadien-rubber / BUNA) seals <b>(standard)</b></p> <p>V = FKM (fluorocarbon rubber / VITON) seals (special seals on request)</p> <p>1 ... 9 = technical design no. (omit by ordering)</p> <p>... = voltage e.g. 24 (24 V)</p> <p>D = current DC</p> <p>A = current AC</p>	<p>(blank) = DIN EN 175301-803 connection      3-pole 2 P+E <b>(standard)</b>      (IP 65)      with mating plug</p> <p>T = DIN EN 175301-803 connection      3-pole 2 P+E, with protection diode      (IP 65)      with mating plug</p> <p>M100 = DIN EN 175301-803 connection      3-pole 2 P+E      (IP 65)</p> <p>J = Junior Timer plug connection      2-pole radial      (IP 65)</p> <p>JT = Junior Timer plug connection      2-pole radial, with protection diode      (IP 65)</p> <p>I = Junior Timer plug connection      2-pole axial      (IP 65)</p> <p>IT = Junior Timer plug connection      2-pole axial, with protection diode      (IP 65)</p> <p>D = Deutsch plug connection DT04-2P      2-pole 45°      (IP 67/69K)</p> <p>DT = Deutsch plug connection DT04-2P      2-pole 45°, with protection diode      (IP 67/69K)</p> <p>other plug-variants, please consult BUCHER.</p>	<p>} mating plug not supplied</p>
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### IMPORTANT!

Not every combination of voltage values, current type and plug connections available.

## Related data sheets

Reference	Description
<a href="#">400-P-040011</a>	Form tools
<a href="#">400-P-040191</a>	Cavity AN
<a href="#">400-P-720121</a>	Threaded port body GANA
<a href="#">400-P-120110</a>	Solenoid coil D36

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