

3/2 Cartridge Seat Valve, Size 5

$Q_{\max} = 22 \text{ l/min (5.5 gpm)}$, $p_{\max} = 250 \text{ bar (3600 psi)}$
 with solenoid operation, seat-valve shut-off, direct acting
 Series WS32GNA5...



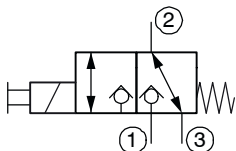
- Compact construction for cavity type AM – 3/4-16-UNF 2B
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body

1 Description

These direct acting 3/2 solenoid operated directional seat valves, series WS32GNA5..., are size 5, pressure balanced screw-in cartridges with a 3/4-16 UNF-2A mounting thread. They are designed on the poppet/seat principle, and are therefore virtually leak-free. "De-energised closed" function is available. The straightforward design delivers an outstanding price/performance ratio. These 3/2 solenoid operated seat valves are primarily used as pilot valves 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. All external parts of the cartridge are zinc-nickel plated according to DIN EN ISO 19 598 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°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

2 Symbol



3 Technical data

General characteristics		Description, value, unit	
Designation		3/2 cartridge seat valve	
Design		seat-valve shut-off, with solenoid operation, direct acting	
Mounting method		screw-in cartridge 3/4-16 UNF-2A	
Tightening torque		50 Nm ± 10 %	(35 ft-lbs ± 10 %)
Size		Size 5, cavity type AM	3/4-16-UNF 2B
Weight		0.38 kg	(0.84 lb)
Mounting attitude		unrestricted	
Ambient temperature range		-25 °C ... +50 °C	(-13 °F ... +122 °F)
Hydraulic characteristics		Description, value, unit	
Maximum operating pressure	- all 3 ports	250 bar	(3600 psi)
Maximum flow rate		22 l/min	(5.5 gpm)

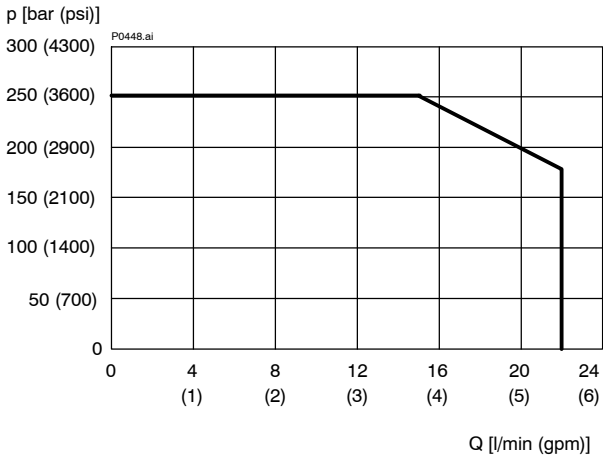
Reference: 400-P-121200-EN-02

Hydraulic characteristics	Description, value, unit
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-25 °C ... +80 °C (-13 °F ... +176 °F)
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15
Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance	± 10 %
Nominal power consumption	V DC = 27 W V AC = 25 W
Switching time	34 ... 300 ms (energising) 10 ... 30 ms (de-energising) Depending on pressure, flow rate and viscosity as well as dwell time under pressure, the switching times may vary from the the stated values.
Relative duty cycle	100 %
Protection class 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)
Electrical connection	DIN EN 175301-803, 3-pin 2 P+E (standard) for other connectors, see "Ordering code"

4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

$p = f(Q)$ Performance limits



IMPORTANT!

Permissible pressures are dependent on the volume flow direction.

Direction 1 to 2 and 2 to 3:

250 bar at port 1 and 2

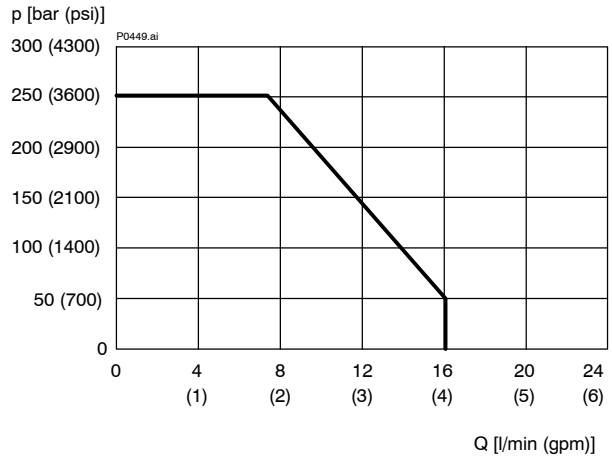
20 bar at port 3

Direction 3 to 2 and 2 to 1:

250 bar at port 2 and 3

20 bar at port 1

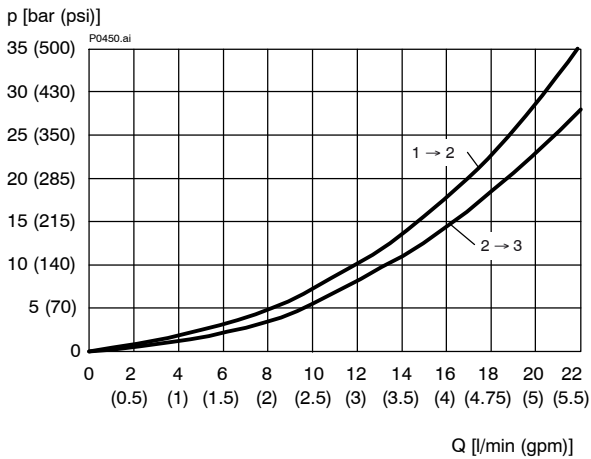
$p = f(Q)$ Performance limits



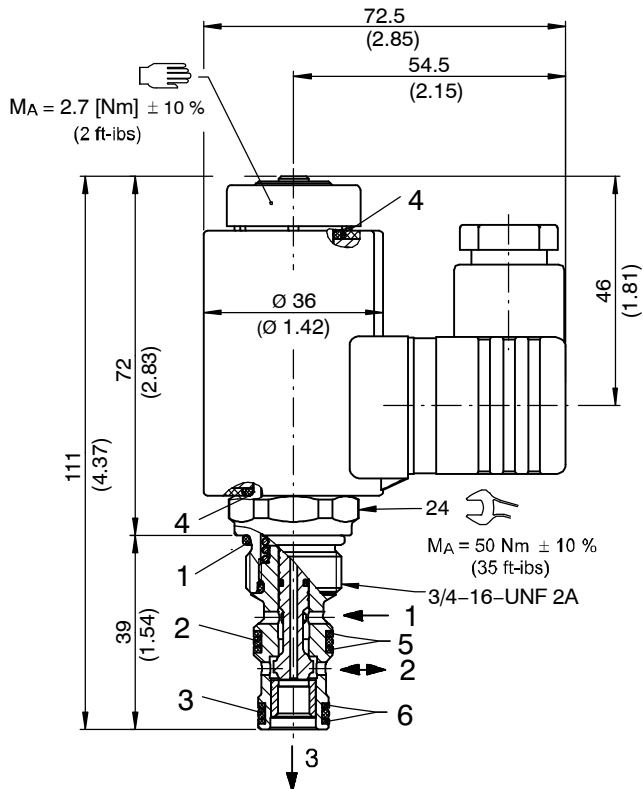
IMPORTANT!

The max. operating pressure of 250 bar applies to all volume flow directions.

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



5 Dimensions & sectional view



6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



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.

NBR seal kit no. DS-247-N ¹⁾

Item	Qty.	Description
1	1	O-ring no. 017 Ø 17,17 x 1,78 N90
2	1	O-ring no. 014 Ø 12,42 x 1,78 N90
3	1	O-ring no. 013 Ø 10,82 x 1,78 N90
4	2	O-ring Ø 16,00 x 2,00 Viton
5	2	Backup ring Ø 10,70 x 1,45 x 1,00 FI0751
6	2	Backup ring Ø 9,40 x 1,45 x 1,00 FI0751



IMPORTANT!

¹⁾ Seal kit with FKM (Viton) seals, no. DS-247-V

7 Ordering code

Ex.

W	S	32G	N	A	5	_	-	1	24	D	_
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W = directional valve
 S = seat valve, direct acting
 32G = 3/2 function, de-energised closed
 N = electrically operated, V DC = 27 W / V AC = 25 W
 A ... Q = standard model - with thread 3/4-16-UNF 2A
 Y ... R = special features - please consult BUCHER
 5 = size 5
 (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 without mating plug
 C = Kostal plug connection (IP 65)
 JT = Junior Timer radial plug connection (with protection diode, IP65)
 IT = Junior Timer axial plug connection (with protection diode, IP65)
 D = Deutsch plug connection 45° DT04-2P (IP67/69K)
 DT = Deutsch plug connection 45° DT04-2P (with protection diode, IP67/69K)
 S = AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection
 F = flying leads (500 mm)

} mating plug not supplied

8 Related data sheets

Reference	Description
400-P-040011	The form-tool hire programme
400-P-040181	Cavity type AM
400-P-120100	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	Coils for screw-in cartridge valves
400-P-720111	Line-mounting body, type GAMA (G 3/8")

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Classification: 430.300.-.305.310.300