

4/2 Solenoid Cartridge Valve, NG 8 / SAE 10

$Q_{\max} = 30 \text{ l/min (7.5 gpm)}$, $p_{\max} = 315 \text{ bar (4500 psi)}$
all ports seat-valve shut-off, direct acting
Series WS42GNA-8...



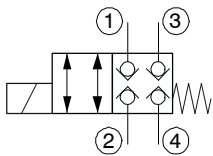
- All ports seat-valve shut-off
- Normally closed
- Compact construction
- For common cavities:
Fits: AT or C1040 – 7/8-14 UNF
- The functions of two 2/2 directional seat valves are integrated in one cartridge, but requires only one electrical connection
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated and replaced without opening the hydraulic envelope or removing the electronics
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body

1 Description

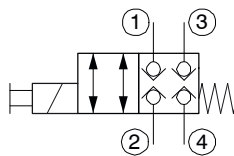
These 4/2 solenoid-operated directional valves are NG 8 / SAE 10, direct acting, high performance screw-in cartridges with a 7/8-14 UNF mounting thread. They are designed on the poppet/seat principle, and are therefore virtually leak-free in all flow directions. The function “de-energised closed” is available. These 4/2 solenoid cartridge valves are available with various manual override options. As well as the standard “O” model without manual override, an “P” model with a push-pin manual override and an “S” model with a screw-in manual override are available. The straight-forward design delivers an outstanding price/performance ratio. These screw-in cartridges 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. 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”.

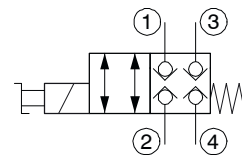
2 Symbol



WS42GNA-8O...



WS42GNA-8P...



WS42GNA-8S...

3 Technical data

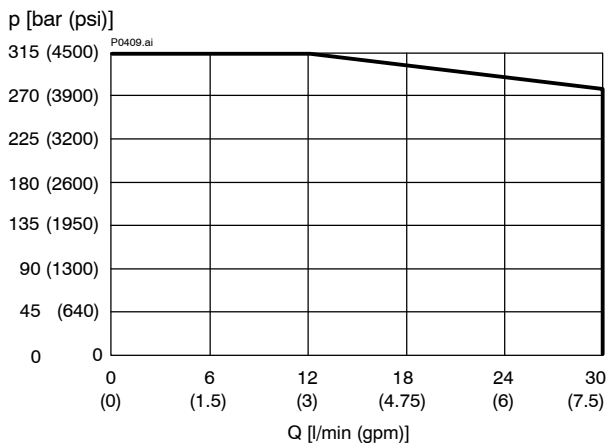
General characteristics	Description, value, unit
Designation	4/2 solenoid cartridge valve
Design	All ports seat-valve shut-off, direct acting
Mounting method	screw-in cartridge 7/8-14 UNF
Tightening torque	80 Nm ± 10 % (60 ft-lbs ± 10 %)
Size	nominal NG 8, cavity type AT SAE 10, cavity type C1040

General characteristics		Description, value, unit
Weight		0.74 kg (1.6 lbs)
Mounting attitude		unrestricted
Ambient temperature range		-25 °C ... +50 °C (-13 °F ... +122 °F)
Hydraulic characteristics		Description, value, unit
Maximum operating pressure		315 bar (4500 psi)
Maximum flow rate		30 l/min (7.5 gpm)
Leakage flow rate		< 0,2 cm ³ /min (max. 5 drops/min) with oil viscosity 33 mm ² /s (cSt)
Flow direction	- inlet - actuator	preferably to ports 2 and 4 preferably to ports 1 and 3
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 = 30...32 W / V AC = 31...32 W
Switching time		30 ... 250 ms (energising) 20 ... 70 ms (deenergising) <small>These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.</small>
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"

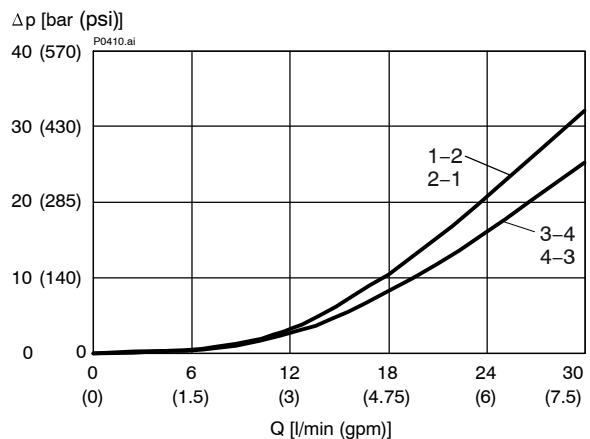
4 Performance graphs

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

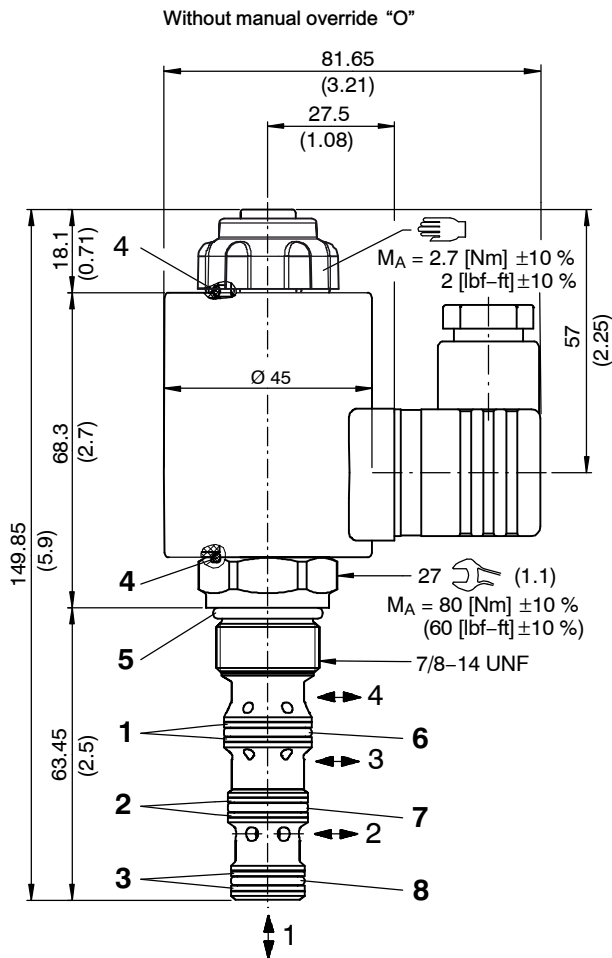
$p = f(Q)$ Performance limits



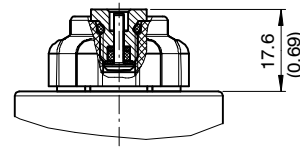
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic



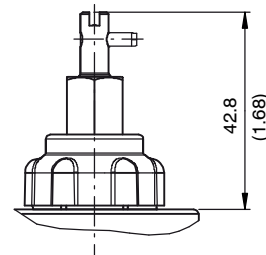
5 Dimensions & sectional view



With manual override "P"



With screw-in manual override "S"



NBR seal kit no. DS-463-N ³⁾

Item	Qty.	Description
1	2	Seal ring \varnothing 14,60 / 1,45 x 1,00
2	2	Seal ring \varnothing 12,00 / 1,45 x 1,00
3	2	Seal ring \varnothing 10,70 / 1,45 x 1,00
4	2	O-ring \varnothing 20,00 x 2,00 viton83
5	1	O-ring \varnothing 19,30 x 2,20 N90
6	1	O-ring no. 016 \varnothing 15,60 x 1,78 N90
7	1	O-ring no. 015 \varnothing 14,00 x 1,78 N90
8	1	O-ring no. 014 \varnothing 12,42 x 1,78 N90



IMPORTANT!

³⁾ Seal kit with FKM (Viton) seals, no. DS-463-V

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.



ATTENTION!

When used with a differential cylinder, port "1" should be connected to the head (full bore) end and port "3" to the rod (annulus) end. This will prevent pressure peaks during switchover.

7 Ordering code

Ex. W S 42G N A - 8 O _ - 1 24 D _

<p>W = directional valve</p> <p>S = seat-valve design (all ports seat-valve)</p> <p>42G = 4/2 function, normally closed</p> <p>N = solenoid operated</p> <p>A ... Q = standard model - see relevant data sheets</p> <p>Z ... R = special features - please contact BUCHER</p> <p>8 = nominal size 8 / SAE 10</p> <p>O = without manual override (standard)</p> <p>P = with manual override</p> <p>S = with screw-in manual override</p> <p>(blank) = NBR (Nitrile) seals (standard)</p> <p>V = FKM (Viton) seals (special seals - please contact BUCHER)</p> <p>1 ... 9 = design stage (omit when ordering new units)</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 with mating plug (standard, IP 65)</p> <p>M100 = DIN EN 175301-803 connection without mating plug</p> <p><i>for the following plug-variants, please consult Bucher:</i></p> <p>DT = Deutsch plug connection DT04-2P (with quenching diode, IP 67/69K)</p> <p>JT = Junior Timer radial plug connection (with quenching diode, IP 65)</p> <p>F = flying leads (600mm) (IP 65)</p>	<p>} mating plug not supplied</p>
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8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040205		Cavity type AT
520-P-000420		Cavity type C1040
400-P-120120		Coils for screw-in cartridge valves series D45/207
520-P-000421		Line- and manifold-mounting body, type 10-4-way

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Classification: 430.300.-.305.315.300