Directional valve 4-way/2-position

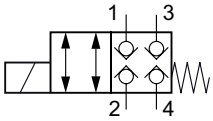
Q_{max} = 30 l/min, p_{max} = 315 bar
switching solenoid, direct acting, poppet type
Type series: WS42GNA-8...

- Screw-in cartridge valve
- For cavity AT/C1040
- All external parts with zinc-nickel plating according to\nDIN EN ISO 19598
- Fits common cavity according to ISO
- Closed in the non-operated condition
- Leak-free shut-off function
- Compact construction
- High pressure wet-armature solenoids
- Optional with manual override
- Various plug-connector systems and voltages are available
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Installation in threaded port body type GAT-12

Description

The 4-way/2-position solenoid-operated directional valves, series WS42GNA-8..., are size 8 / SAE 10, screw-in valves with a 7/8-14 UNF mounting thread. They are designed on the poppet/seat principle, and are therefore virtually leak-free. All external parts of the cartridge 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 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. For self-assembly, please refer to the section realted datasheets.

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, poppet type
Construction size	NG 8 / SAE 10
Thread size	7/8-14 UNF-2A
Mounting attitude	unrestricted
Weight	0.74 kg
Cavity acc. ISO	fits into ISO 17209: 7/8-04-0-13
Cavity acc. NFPA	fits into NFPA/T3.5.50: 0.875-04-0-09
Cavity acc. factory standard	For cavity AT/C1040
Tightening torque steel	80 Nm
Tightening torque aluminium	80 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-436-N / FKM-DS-436-V

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	315 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^2/s (cSt)
Recommended viscosity range	15 ... 250 mm^2/s (cSt)
Minimum fluid cleanliness\n(cleanlineless class according to ISO 4406:1999)	class 20/18/15

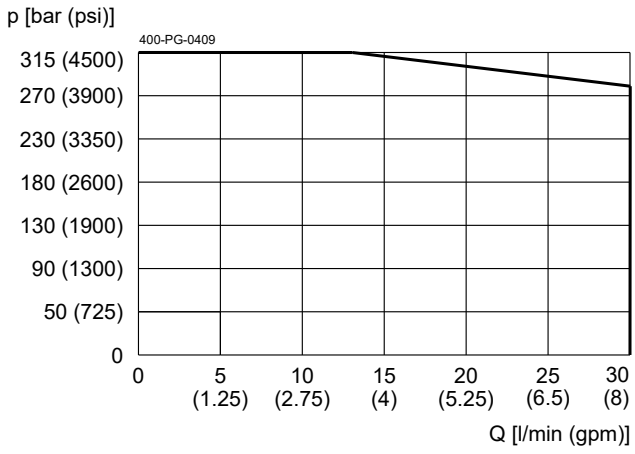
Electric characteristics	Description, value, unit
Actuator type	solenoid coil
Solenoid coils type	D45/207
Supply voltage DC	12/24 V DC
Supply voltage AC	115/230 (50 ... 60 Hz) V AC
Supply voltage tolerance	± 10 %
Nominal power consumption	VDC = 30...32 W / VAC = 31...32 W
Switching time	Switching time measured at: U_N; Δp = 250 bar; Q = 24 l/min; $T_{Ambient}$ = 20 °C; ϑ = 46 mm2/s / 250 ms (energizing) 50 ms (de-energizing)
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	IP 65 / IP 67 / IP 69K, see “Ordering code”\n(with appropriate mating connector and proper fitting and sealing)

NOTE!
The switching time can be strongly influenced by flow rate, pressure, viscosity, and the dwell period under pressure. In practice, the switching time may therefore deviate from the specified value range.

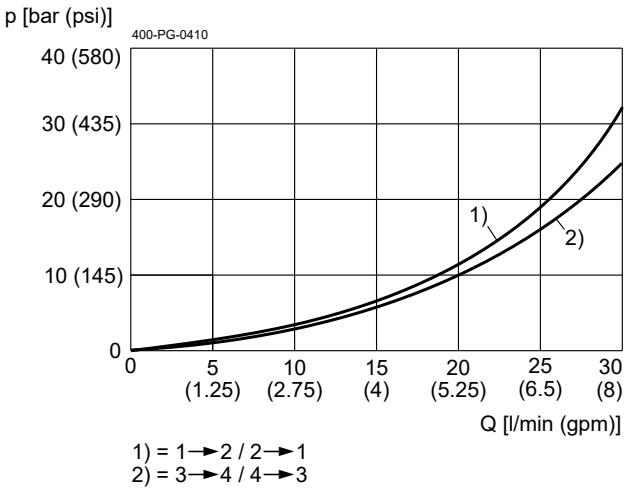
Performance graphs

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

p = f (Q) Performance limit



Δp = f (Q) Pressure drop-flow rate characteristic

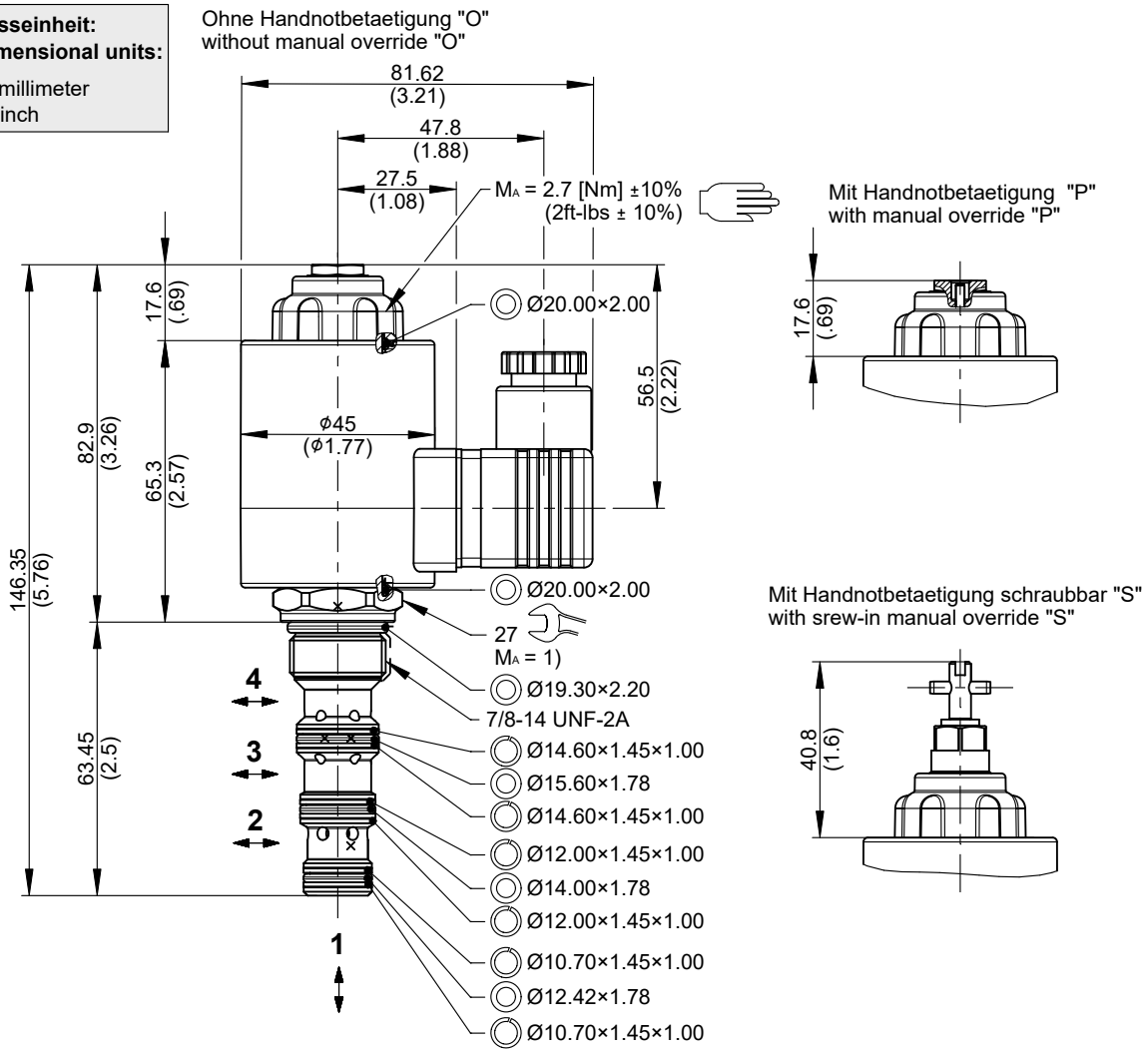


1) = 1→2 / 2→1
2) = 3→4 / 4→3

Dimensions and sectional view

Beispiel für die Masseinheit:
Exampel for the dimensional units:

0.79 = 0.79 mm millimeter
(.031) = 0.031" inch



Installation information

IMPORTANT!
1) When fitting the screw-in cartridge valve, use the specified tightening torque. The value 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.

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

Ordering code

Ex. W S 42G N A - 8 O - N - 3 24 D _

W	=	directional valve			
S	=	seat valve, direct acting			
42G	=	4-way/2-position, de-energized closed			
N	=	electrically operated, D45/207, 30...32 W			
A ... Q	=	standard model according to valid data sheet			
Z ... R	=	special model (on request)			
8	=	nominal size 8 / SAE 10			
O	=	without manual override **(standard)**			
P	=	with manual override			
S	=	with screwable manual override			
N	=	NBR (nitril-butadien-rubber / BUNA) seals **(standard)**			
V	=	FKM (fluorocarbon rubber / VITON) seals (special seals on request)			
1 ... 9	=	technical design no. (omit by ordering)			
…	=	voltage e.g. 24 (24 V)			
D	=	current DC			
A	=	current AC			
(blank)	=	DIN EN 175301-803 connection	3-pole 2 P+E **(standard)**	(IP 65)	with mating plug
T	=	DIN EN 175301-803 connection	3-pole 2 P+E, with protection diode	(IP 65)	with mating plug
M100	=	DIN EN 175301-803 connection	3-pole 2 P+E	(IP 65)	mating plug not supplied
J	=	Junior Timer plug connection	2-pole radial	(IP 65)	
JT	=	Junior Timer plug connection	2-pole radial, with protection diode	(IP 65)	
I	=	Junior Timer plug connection	2-polig axial	(IP 65)	
IT	=	Junior Timer plug connection	2-polig axial, with protection diode	(IP 65)	
D	=	Deutsch plug connection DT04-2P	2-pole 45°	(IP 67/69K)	
DT	=	Deutsch plug connection DT04-2P	2-pole 45°, with protection diode	(IP 67/69K)	
		other plug-variants, please consult BUCHER.			

IMPORTANT!
Not every combination of voltage values, current type and plug connections vailable.

Related data sheets

Reference	Description
400-P-040011	Form tools
400-P-040301	Cavity AT/C1040
400-P-120120	Solenoid coil D45/207
400-P-738131	Threaded port body GAT-12-...

info.ch@bucherhydraulics.com **www.bucherhydraulics.com**