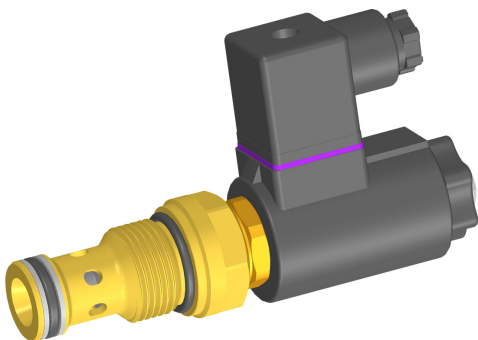


## 2/2 Solenoid Cartridge Valve, Size 10

$Q_{\max} = 140 \text{ l/min}$ ,  $p_{\max} = 350 \text{ bar}$   
Bidirectional Seat-Valve Shut-Off, Two-Stage  
Series WS22GNH..., WS22ONH...



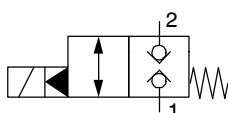
- With bidirectional seat-valve shut-off
- No external pilot drain required
- Compact construction for cavity type DH to ISO 7789-27-01-0-07
- High flow rates
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body

### 1 Description

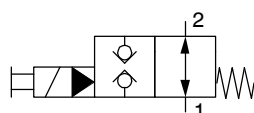
These 2/2 solenoid-operated directional valves are size 10, two stage, high performance screw-in cartridges with an M27 x 2 mounting thread. The main and pilot stages are both designed on the poppet/seat principle, and they are therefore virtually leak-free in both directions of flow (bidirectional seat-valve shut-off). 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 to DIN 50 979 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



WS22GNH...-10...



WS22ONH...-10...

### 3 Technical data

General characteristics	Description, value, unit
Designation	2/2 solenoid cartridge valve
Design	bidirectional seat-valve shut-off, two-stage
Mounting method	screw-in cartridge M27 x 2
Tightening torque	80 Nm ± 10 %
Size	nominal size 10, cavity type DH
Weight	0.52 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

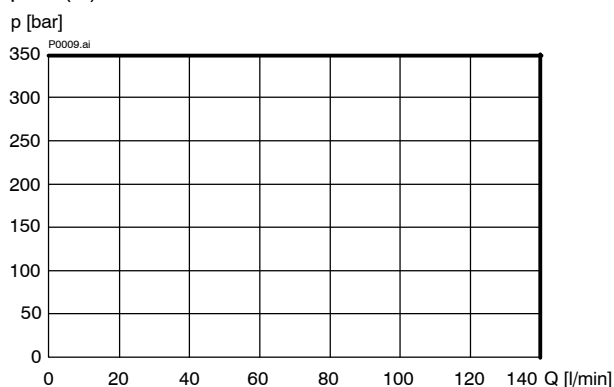
Hydraulic characteristics	Description, value, unit
Maximum operating pressure	350 bar
Maximum flow rate	140 l/min
Flow direction	2 → 2 / 2 → 1, see symbols
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-25 °C ... +80 °C
Viscosity range	10...500 mm <sup>2</sup> /s (cSt), recommended 15...250 mm <sup>2</sup> /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
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	3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

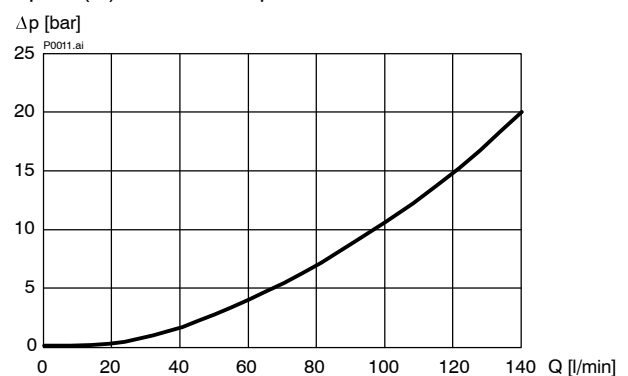
## 4 Performance graphs

measured with oil viscosity 33 mm<sup>2</sup>/s (cSt), coil at steady-state temperature and 10 % undervoltage

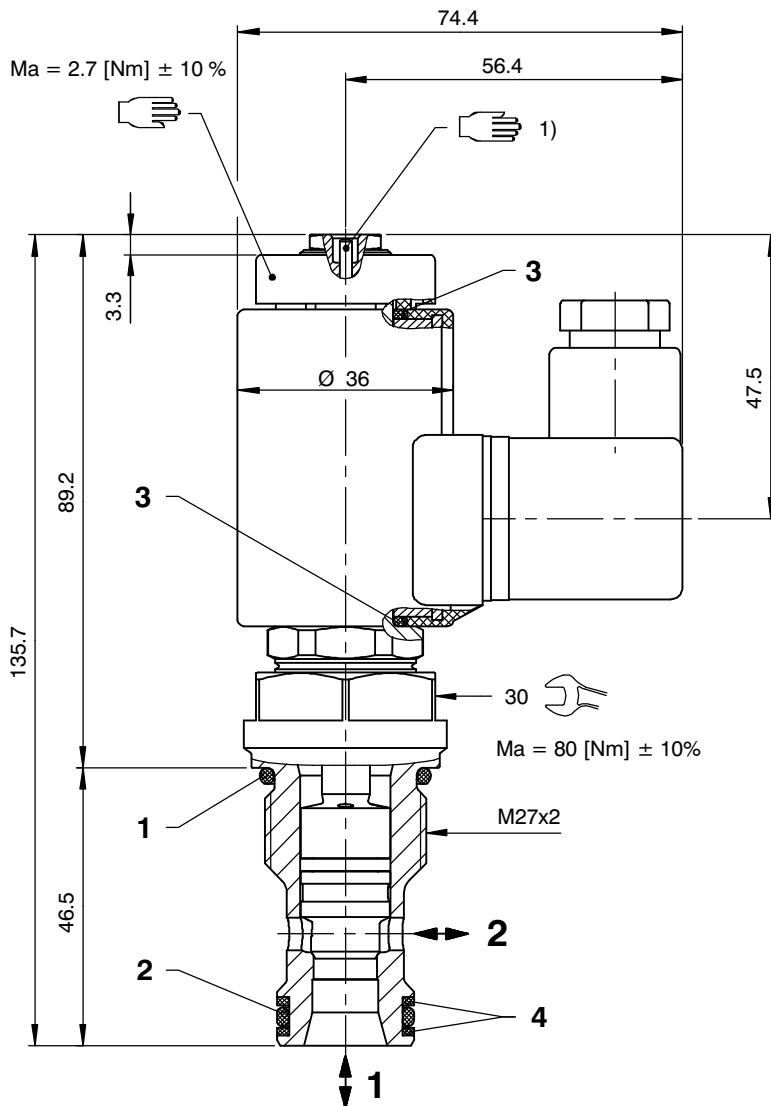
$p = f(Q)$  Performance limits



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



## 5 Dimensions & sectional view



**IMPORTANT!:**

- 1) WS22GNH... without manual override  
WS22ONH... with manual override

## 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.

Seal kit NBR no. DS-367-N <sup>1)</sup>

Item	Qty.	Description
1	1	O-ring no. 119 $\varnothing$ 23.47 x 2.62 N90
2	1	O-ring no. 116 $\varnothing$ 18.72 x 2.62 N90
3	2	O-ring $\varnothing$ 16.00 x 2.00 FKM
4	1	Backup ring $\varnothing$ 17.10 x 2.00 x 1.40 FI0751



**IMPORTANT!**

- 1) Seal kit with FKM (Viton) seals, no. DS-367-V

### 7 Ordering code

Ex. **W S 22G N H A** - **10** - **1** **24 VDC** - **—**

- W = directional valve
- S = seat-valve design (bidirectional shut-off)
- 22G = 2/2 function, normally closed
- 22O = 2/2 function, normally open
- N = solenoid operated, V DC = 27 W / V AC = 25 W
- H = cavity type DH
- A ... Q = standard model - see relevant data sheets
- Z ... R = special features - please consult BUCHER
- 10 = nominal size 10
- (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)
- (blank) = ISO 4400 / DIN 43 650 connection with mating plug (standard, IP 65)
- M100 = ISO 4400 / DIN 43 650 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 DT04-2P (IP 67/69K)
- DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)
- 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	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-060171		Cavity type DH to ISO 7789-27-01-0-07
400-P-120110		Coils for screw-in cartridge valves
400-P-740161		Line mounting body, type GCDHA (G 3/4")

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Classification: 430.300.-.305.320.300