2.16

# 4/3, 4/2 and 3/2 explosion-proof solenoid directional valve

## Type G...WE6...L6X

Size (NG) 6
Up to 350 bar
Up to 80 L/min

### Contents



### Features

-Directly operated type explosion protection directional valve is used as the standard type
-DIN24 340 A type on the mounting surface ISO 4401 and CETOP-RP 121H
-Wet-type DC explosion protection solenoid
-90° rotatable explosion protection solenoid
-Pressure-tight chamber does not need to be opened when coil is to be replaced

## Function and configuration

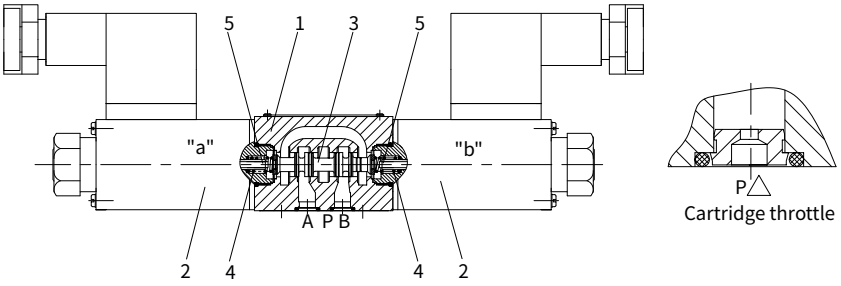
GWE type directional control valve is the directional valve of explosion protection solenoid used to control start, stop and flow direction of oil fluid.
The directional control valves consist of housing (1), one or two solenoids (2), the control spool(3), and one or two return springs (4).
In the de-energised condition the control spool (3) is held in the neutral or initial position by means of return springs (4) (except for pulse spools). The control spool (3) is actuated via wet pin solenoids (2).
To guarantee satisfactory operation care should be taken to ensure that the solenoid pressure chamber is filled with oil.
The control spool(3) is moved to the expected position by solenoid(2) and pushing rod(5), and this gives free flow from P to A and B to T or P to B and A to T.
When the explosion protection solenoid(2) is powered off, control valve element (3) is pushed to the initial position by reset spring (4).



**Type G4WE6...L6X/OB2...**
**(limited to functions A, C and D).**
This type contains 2 switching positions and 2 directional control valves without locating mechanism explosion protection solenoid.

**Type G4WE6...L6X/OFB2... pulse valve**
**(limited to functions A, C and D).**
It contains 2 switching positions, 2 explosion protection solenoids and 1 directional control valve with locating mechanism. 2 switching positions are fixed separately, so it is unnecessary to continuously electrify explosion protection solenoid.

**Cartridge throttle**
The cartridge throttle is necessary since the actual flow may be larger than the performance limits of the valve during switching process.This cartridge throttle is inserted in the P channel of the directional control valve.



## Ordering code

| – | WE | 6 | – L6X / | B2 | / | | ★ |
|---|---|---|---|---|---|---|---|

Explosion-resistant type I =G1
Explosion-resistant type II =G2

3 ways(For spool A , B ) =3
4 ways =4

Directional valve with wet pin solenoids

Nominal size 6 =6

Symbols e.g. C, E etc.

Serial number =L6X
(L60-L69 have the same interior structures and mounting dimensions)

Return spring = No code
Without return spring = O
Without return spring, and with detent = OF

Threaded explosion protection solenoid =B2

Further details in clear text

No code = NBR seals
V = FKM seals

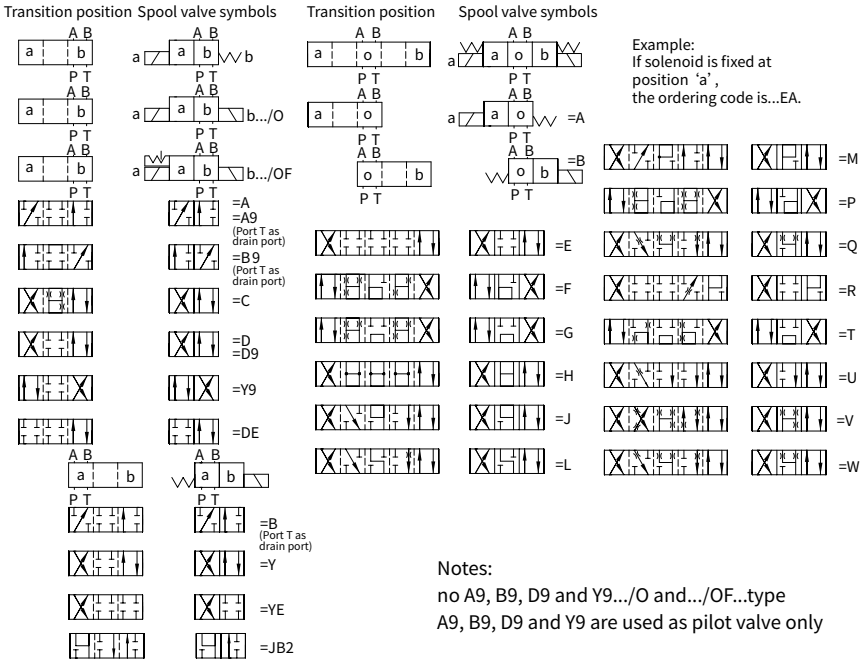
| | |
|---|---|
| No code = | Wthout cartridge throttle |
| B08 = | Throttle - Φ0.8 mm |
| B10 = | Throttle - Φ1.0 mm |
| B12 = | Throttle - Φ1.2 mm |
| B15 = | Throttle - Φ1.5 mm |
| B20 = | Throttle - Φ2.0 mm |
| B25 = | Throttle - Φ2.5 mm |
| B30 = | Throttle - Φ3.0 mm |

Voltage

| | |
|---|---|
| G12 = | 12VDC |
| G24 = | 24VDC |
| G36 = | 36VDC |
| G110 = | 110VDC |

**Note:** G1 Explosion protection grade EX d I Mb; G2 Explosion protection grade EX d II C T4 Gb

## Spool symbols




Notes:
no A9, B9, D9 and Y9.../O and.../OF...type
A9, B9, D9 and Y9 are used as pilot valve only

## Technical data

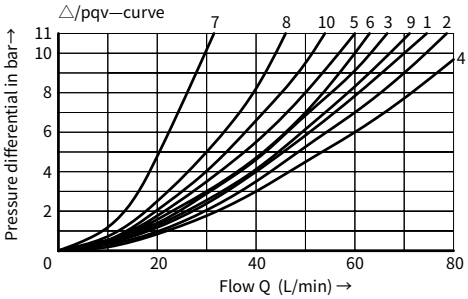
| | | | |
|---|---|---|---|
| Fixing position | | | Optional |
| Environment temperature range | | °C | -30 to +50 (NBR seal) |
| | | | -20 to +50 (FKM seal) |
| Weight | Single solenoid | kg | 2.6 |
| | Double solenoids | kg | 4.3 |
| Max.operating pressure | Port P, A, B | bar | 350 |
| | Port T | bar | 210 |
| | | | when the operating pressure exceeds the permission value, spool symbol A and B must make the port T for draining |
| Max. flow-rate | | L/min | 80 |
| Flow cross section (switching neutral position ) | VersionQ | $mm^2$ | About 6% of nominal area |
| | VersionW | $mm^2$ | About 3% of nominal area |
| Fluid | | | Mineral oil suitable for NBR and FKM seal |
| | | | Phosphate ester for FKM seal |
| Fluid temperature range | | °C | -30 to +80 (NBR seal) |
| | | | -20 to +80 (FKM seal) |
| Viscosity range | | $mm^2/s$ | 2.8 to 500 |
| Degree of contamination | | | Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406 |

## Electrical data

| | | | |
|---|---|---|---|
| Type of voltage | | | DC |
| Available voltage | | V | 12, 24, 36, 110 |
| Permissible voltage (deviation) | | % | -15 to +10 |
| Input power | | W | 30 |
| Operation mode of solenoid | | | Continuous working |
| Switched time | ON | ms | 25 to 45 |
| Accord with ISO 6403 | OFF | ms | 10 to 25 |
| Switched frequency | | times/h | To 15000 |
| Max. coils tamperature | | °C | +150 |

**Caution:** with electrical connections the protective conductor (PE ⏚) must be connected according to the relevant regulations.

## Characteristic curves (Measured at $\vartheta_{oil}$=40°C ±5°C , using HLP46)



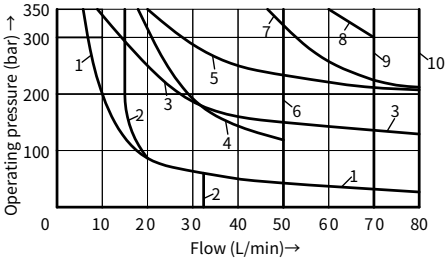

7 Function "R" of valve element is at switching position B → A
8 Function "G" and "T" of valve element is at neutral position P → T
9 Function "H" of valve element is at neutral position P → T

| Spool symbol | Flow direction | | | |
|---|---|---|---|---|
| | P → A | P → B | A → T | B → T |
| A B | 3 | 3 | - | - |
| C | 1 | 1 | 3 | 1 |
| D Y | 5 | 5 | 3 | 3 |
| E | 3 | 3 | 1 | 1 |
| F | 1 | 3 | 1 | 1 |
| T | 10 | 10 | 9 | 9 |
| H | 2 | 4 | 2 | 2 |
| J Q | 1 | 1 | 2 | 1 |
| L | 3 | 3 | 4 | 9 |
| M | 2 | 4 | 3 | 3 |
| P | 3 | 1 | 1 | 1 |
| R | 5 | 5 | 4 | - |
| V | 1 | 2 | 1 | 1 |
| W | 1 | 1 | 2 | 2 |
| U | 3 | 3 | 9 | 4 |
| G | 6 | 6 | 9 | 9 |

02

## Performance limits (Measured at $\vartheta_{oil}$=40°C ±5°C , using HLP46)

The Performance limited is measured when the solenoids under working temperature, the voltage is below 15% of the standard voltage and T is free from back pressure.
The working limit given is used for flow in two directions only (such as P → A flow of B → T backflow).
Due to the flow forces acting within the valves, the permissible switching power limits may be considerably lower with only one direction of flow (e.g. P → A while port B is blocked)
(In such cases, please consult us!)
The switching power limit was established while the solenoids were at operating temperature, at 10 % under voltage and without tank pre-loading.

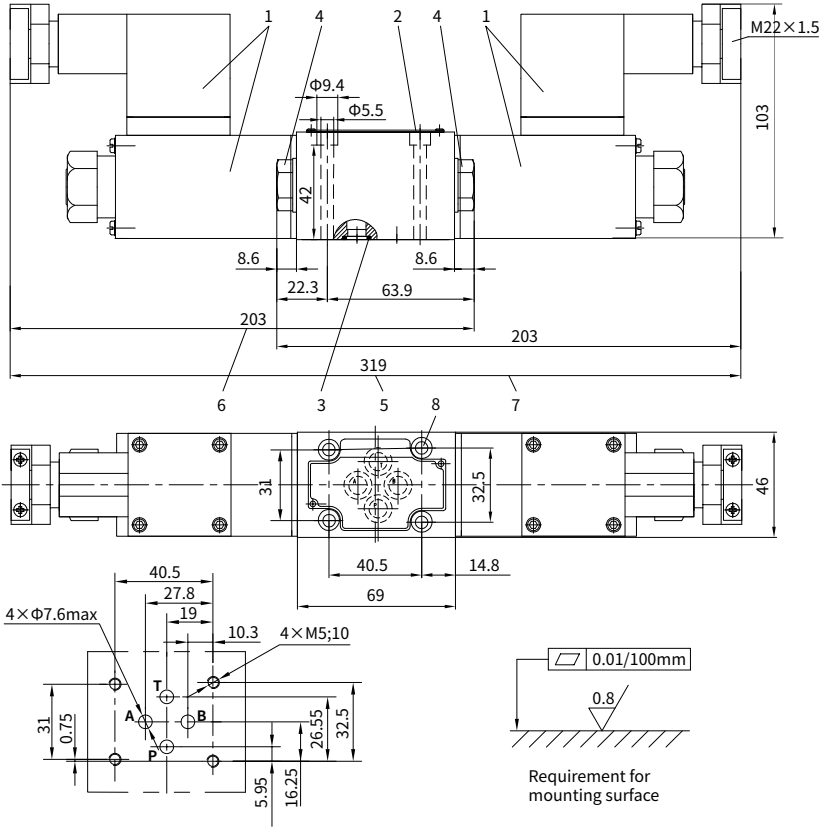



| Curve | Spool symbol |
|---|---|
| 1 | A, $B_{1)}$ |
| 2 | V |
| 3 | A, B |
| 4 | F, P |
| 5 | J |
| 6 | G, H, T |
| 7 | A/O, A/OF, L, U |
| 8 | C, D, Y |
| 9 | M |
| 10 | E, $R_{2)}$, C/O, C/OF |
| | D/O, D/OF, Q, W |

Note: 1) Flow back to the fuel tank from the executive component

## Unit dimensions

(Dimensions in mm)




1 Explosion protection solenoid
2 Copper nameplate
3 R-ring 9.81×1.5×1.78 or O-ring 9.25×1.78
4 End cap used for 1 electrosolenoid valve
5 Dimensions of 3-position valve
6 Dimensions of 2-position valve, solenoids at end A
7 Dimensions of 2-position valve, solenoids at end B
8 **Valve fixing screws:** M5×50 GB/T70.1-10.9 Tightening torque, $M_A$=8.9Nm must be ordered separately.

**It must be ordered separately, if connection plate is needed .Type:**
G341/01(G1/4); G341/02(M14×1.5)
G342/01(G3/8); G342/02(M18×1.5)
G502/01(G1/2); G502/02(M22×1.5)