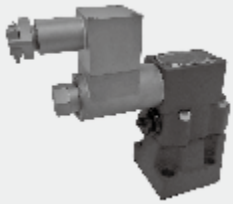
3.22

Explosion-proof pilot perated pressure relief valve

Type G...DBW

Sizes 10 to 32
Up to 350 bar
Up to 650L/min



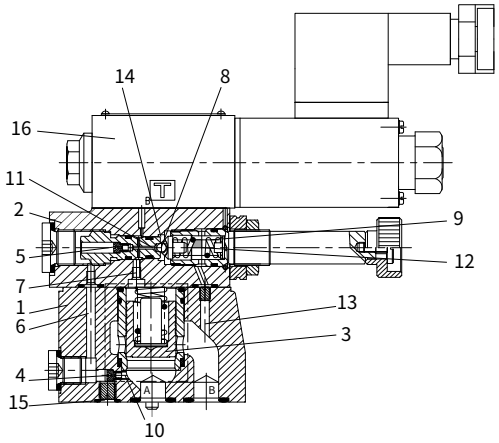
Contents

Features

- For sub-plate mounting
- Porting pattern conforms to DIN 24 340 form E and ISO 6264
- For threaded connection and installation in manifolds
- 5 pressure ratings
- Unloading operation via a built-on solenoid directional valve
- 2 adjustment versions
  - Knob
  - Adjusting bolt with protective cap
- Optional switching shock damping

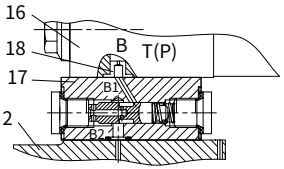
Function and configuration

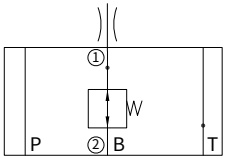
G...DBW type Explosion-proof operated relief valve is used for restricting and discharging system pressure. It mainly consists of main valve (1) with plug-in (3), pilot valve (2) with pressure regulating element and magnetic exchange valve (16).
The pressure of channel A acts on the main spool (3), meanwhile, pressure is applied via control line (6) and (7) with orifice (4) and (5) on the spring loaded side of the main spool (3) and on the ball (8) in the pilot operated valve(2). If the pressure in channel A rises excess the setting value at the spring (9), the ball (8) opens against the spring (9). As for the internal control forms, signal is given by control oil (10) and (6) supplied by channel A. The oil from the spring loaded side of the main spool (3), via control line (7), orifice(11), and ball (8), then flows into spring chamber (12). About internal drain - type DBW..L5X..Y-, oil flows via control line(14) into the tank. In virtue of the orifice (4) and (5), the pressure drop arises at the main spool (3), and the connection from port A to port B is open while the setting operation pressure maintain invariable. The pressure relief valve may unload or shift the different pressure (second rated pressure value) in virtue of external control port X (15).
The basis function of pressure relief valve type DBW is the same with pressure relief valve type DB, the difference is that valve type DBW operates unloading via a built-on directional valve(16).



Pressure relief valves with switching shock damping (sandwich)
Type DBW../..S..R12

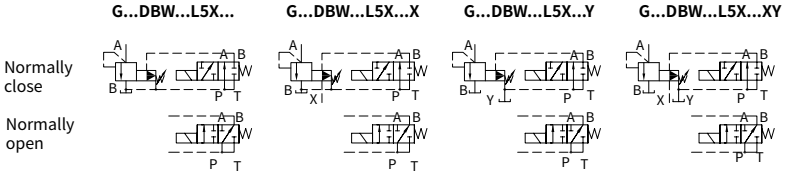
Due to switching shock damping (17), the connection from B2 to B1 opens delayed to avoid the impact of the peak pressure and decompression in the return line. It is fitted between pilot valve (2) and the directional valve (16).
The relief degree (decompression impact) is determined by the size of the orifice (18). OrificeØ1.2mm is recommended. (ordering detail: ..R12 ..).





Indication: the directional valve is open

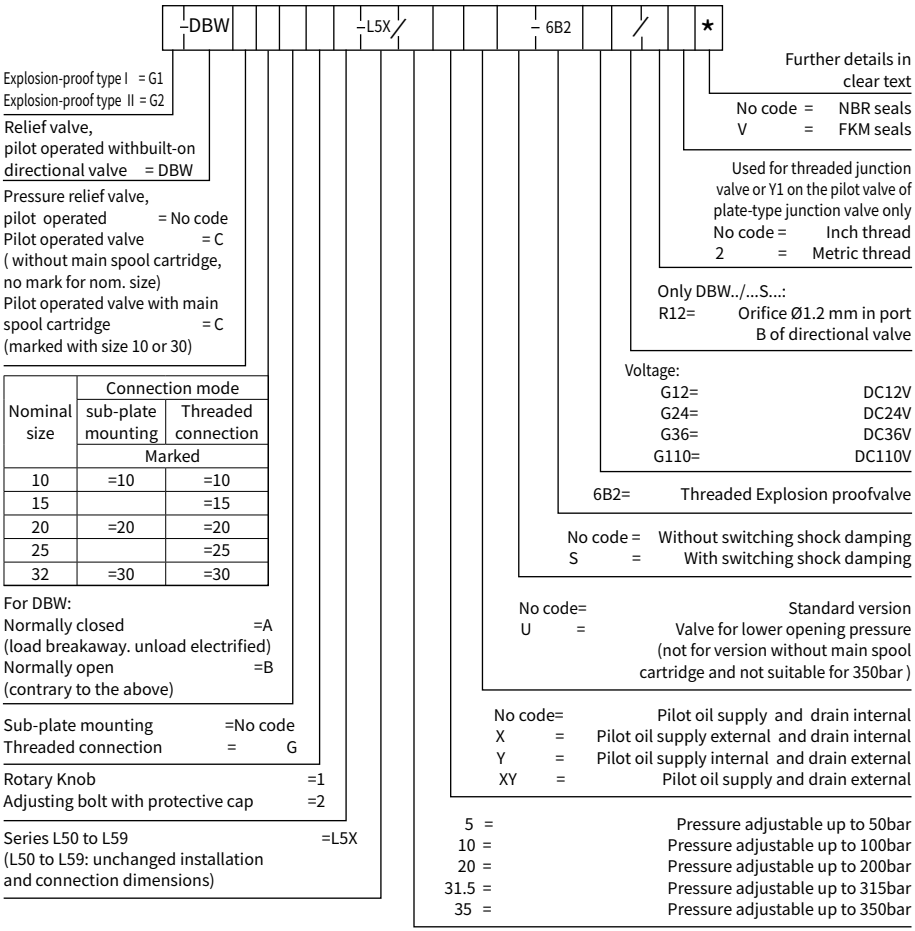
Symbols



Technical data

Fixing position			Optional				
Weight			G...DBW...10	G...DBW...15	G...DBW...20	G...DBW...25	G...DBW...30
	Sub-plate mounting G...DBW	kg	Approx.5.6	-	Approx.6.5	-	Approx.7.9
	Threaded connection G...DBW..G..	kg	Approx.7.9	Approx.7.8	Approx.7.7	Approx.8.5	Approx.8.4
	Switching shock damping	kg	Approx.0.6				
Techinical parameters of directional valve			See G...WE6 type Explosion-proof magnetic exchange valve, G...3WE6A9 is used as the normally closed type, G...3WE6B9 is used as the normally opened type.				
Fluid			Mineral oil - suitable for NRB and FRMseal				
			phosphate ester-suitable for FKM seal				
Fluid temperature range		°C	-30 to + 80 (NRB seal)				
			-20 to + 80 (FKM seal)				
Viscosity range		mm^2/s	10 to 800				
Degree of contamination			Maximum permissible degree of fluid contamination: Class9. NAS 1638 or 20/18/15, ISO4406.				
Max.operating pressure	PortA, B, X, P	bar	350				
	PortY or T DBW	bar	210				
Max. back pressure		bar	50; 100; 200; 315; 350				
Min.		bar	Interrelated with Q (refer to the curve)				
Sizes			10	15	20	25	30
Max. flowrate	sub-plate mounting	L/min	250	-	500	-	650
	threaded connection	L/min	250	500	500	500	650

Ordering code

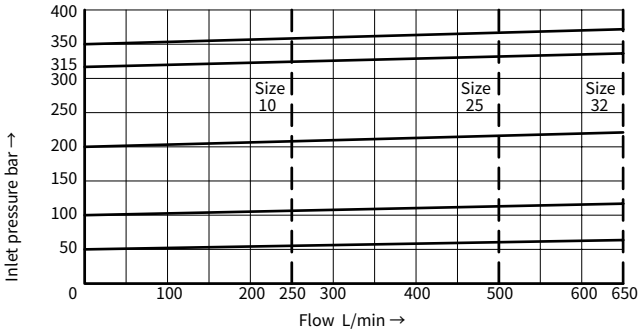


Note: G1 Explosion-proof grade EX d I Mb
G2 Explosion-proof grade EX d II C T4 Gb

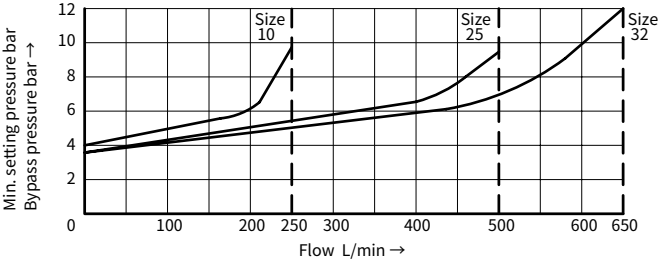
Characteristic curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP 46)

The characteristic curves are measured with external pilot oil drain at zero pressure. With internal pilot oil drain, the inlet pressure at port B should be added to the value presented as curves.

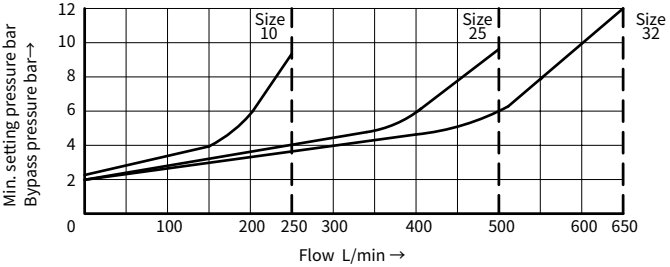
Inlet pressure in relation to the flow-rate



Minimum setting pressure and bypass pressure in relation to the flow-rate Standard version



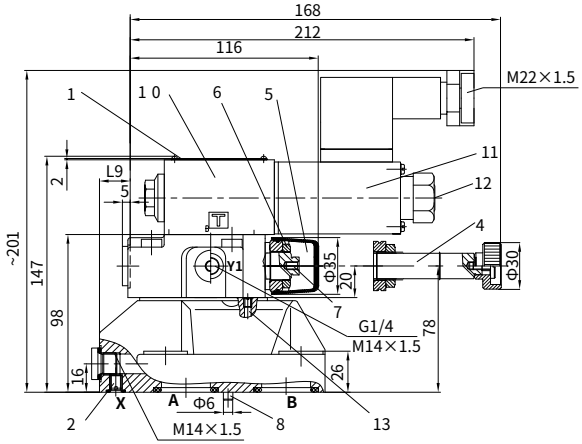
Minimum setting pressure and bypass pressure in relation to the flow-rate Version "U"



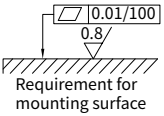
Unit dimensions

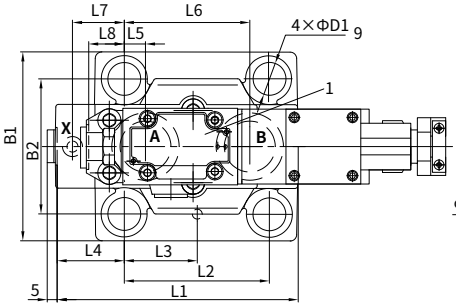
(Dimensions in mm)

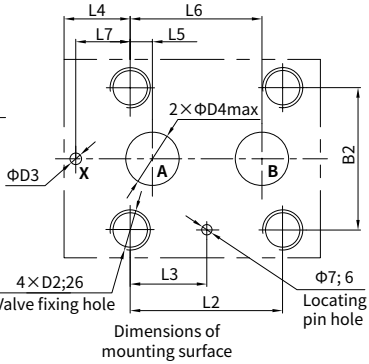
Sub-plate mounting



Valve fixing screws:
G...DBW10:
GB/T 70.1-M12×50-10.9
Internal hexagon screw
Tighten torque M_A =130Nm
G...DBW20:
GB/T 70.1-M16×50-10.9
Internal hexagon screw
Tighten torque M_A=310Nm
G...DBW30:
GB/T 70.1-M18×50-10.9
Internal hexagon screw
Tighten torque M_A=430Nm







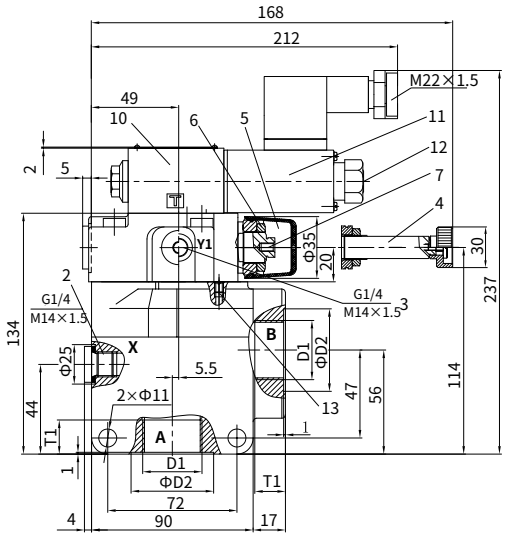
Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	B1	B2	D1	D2	D3	D4	O-ring(A, B)	O-ring(X)
G...DBW 10	91	53.8	22.1	27.5	22.1	47.5	0	25.5	2	78	53.8	14	M12	6	12	17.12×2.62	9.25×1.78
G...DBW 20	116	66.7	33.4	33.3	11.1	55.6	23.8	22.8	10.5	100	70	18	M16	6	22	28.17×3.53	9.25×1.78
G...DBW 30	147.5	88.9	44.5	41	12.7	76.2	31.8	20	21	115	82.6	20	M18	7	30	34.52×3.53	9.25×1.78

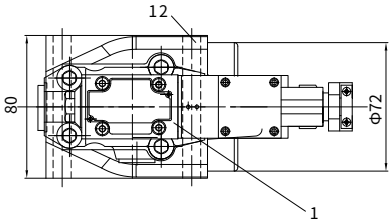
Unit dimensions

(Dimensions in mm)

Threaded connection

Type	D1	D2	T1
G...DBW 10 G	G1/2; M22×1.5	34	14
G...DBW 15 G	G3/4; M27×2	42	16
G...DBW 20 G	G1; M33×2	47	18
G...DBW 25 G	G1 1/4; M42×2	58	20
G...DBW 30 G	G1 1/2; M48×2	65	22





1 Nameplate
2 Port X for external pilot oil supply
3 Port Y for external pilot oil drain
4 Adjustment element "1"
5 Adjustment element "2"
6 Lockable nut S=24
7 Internal hexagon screw S=10
8 Locating pin
9 Valve fixing hole
10 Directional valve, size6
11 Solenoid "a"

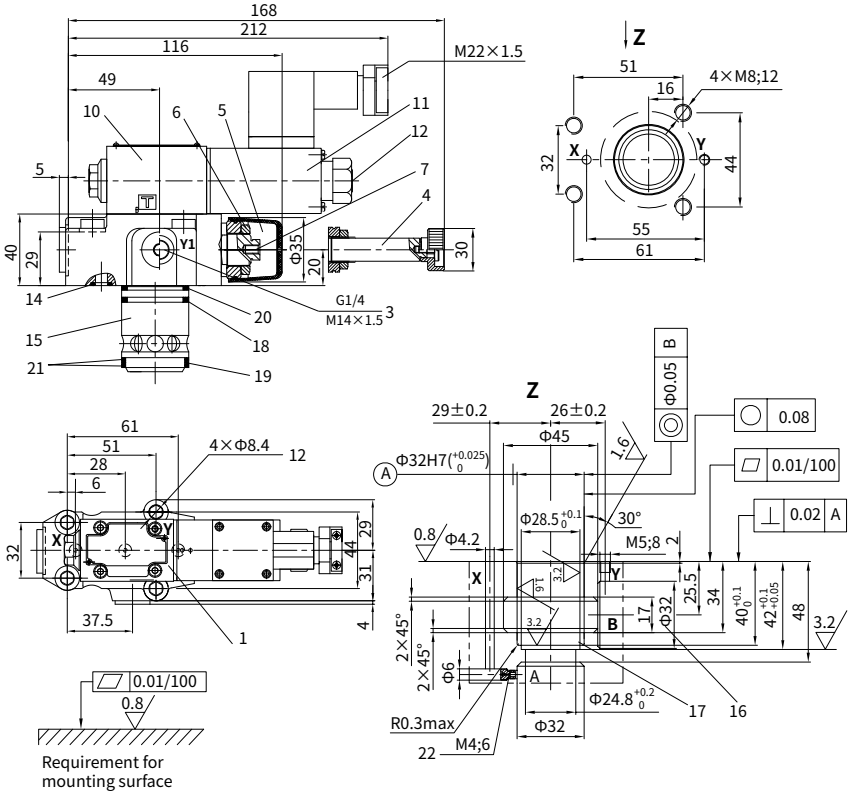
Sub-plate(must be ordered separately):

G...DBW10: G 545/01(G 3/8), G 545/02 (M18×1.5) G 546/01(G 1/2), G 546/02 (M22×1.5)
G...DBW20: G 408/01(G 3/4), G 408/02 (M27×2) G 409/01(G1), G 409/02 (M33×2)
G...DBW30: G 410/01(G1 1/4), G 410/02 (M42×2) G 411/01(G1 1/2), G 411/02 (M48×2)

Unit dimensions

(Dimensions in mm)

With main spool valve(G...DBWC10or30)
or without main spool valve(G...DBWC)



12 Hand override "N" button, optional
13 Used for internal control of oil drainage
14 O-ring 9.25×1.78
15 Main spool cartridge
16 The Ø32 bore may connect the Ø45bore at any position.Please take care that the connection hole X and the fixing holes are not damaged.
17 In the installation of the main spool, and the O-ring should be put into the hole.
18 O-ring 28×1.8
19 O-ring 27.3×2.4
20 O-ring 28×2.65
21 Back-up ring 28.4×32×0.8
22 Flow controller must be ordered separately

Valve fixing screws:
G...DBWCand G...DBWC30,
GB/T 70.1-M8×40-10.9 Internal hexagon screw
Tighten torque M =37Nm