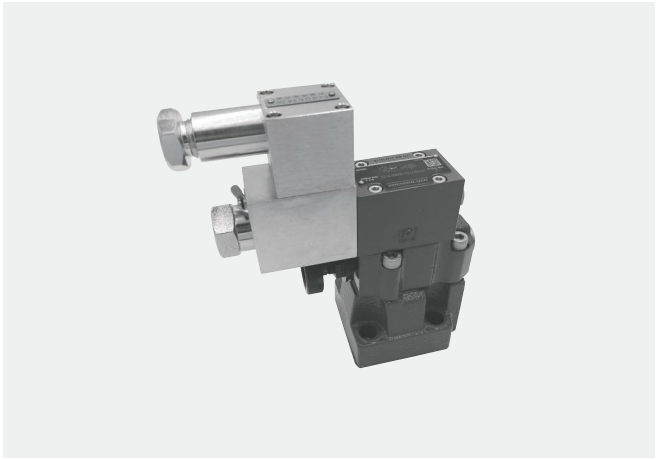
Explosion-proof Solenoid Pilot Relief Valve

Model: G-DBW...5X



- ◆ Size 10 to 32
- ◆ Maximum working pressure 350 bar
- ◆ Maximum flow rate 650 L/min

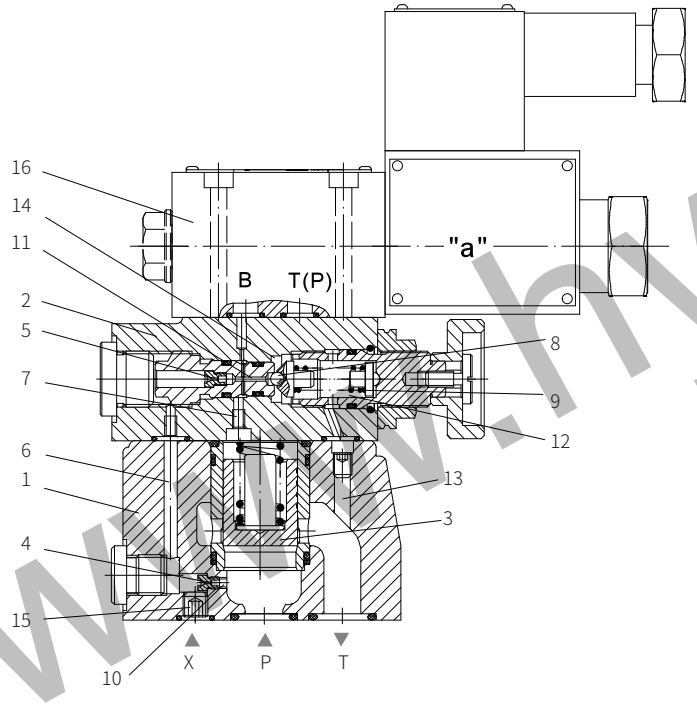
Contents

Features

- ● Subplate mounting, threaded connection, manifolds installation
- ● 5 setting pressure ranges
- ● Pressure adjusting elements:
  Rotary knob
  Inner hexagon screw with protective cap

Function description, sectional drawing

The G-DBW pressure control valve is pilot operated relief valve, it is used to limit and unload working pressure by solenoids.
The valve is basically composed of main valve (1) with main spool inserted (3) and pilot valve (2) with pressure adjustment element.
The pressure of port P acts on the main spool (3), meanwhile, the pressure is applied via control lines (6) and (7) with orifices (4) and (5) to the spring loaded side of the main spool (3) and on the ball (8) in the pilot valve (2). When the pressure in port P rises excess the spring setting pressure, the ball (8) overcomes the spring pressure (9) to open the pilot valve.
The signal is obtained internally via the control channels (10) and (6) from port P. The oil fluid on the spring loaded side of the main spool (3) flows into spring chamber (12) via control line (7), throttle (11) and ball (8). Thus, hydraulic oil external drain via control line (14) into the tank for model DBW...Y. Because of throttles (4) and (5), the pressure drop occurs at the main spool (3) and the connection from port P to port T is opened. The fluid flows from port P to port T while the setting working pressure is no changing. The pressure relief valve can unload or shift the different pressure (second pressure stage) by "X" port.



Model G-DBW10-1-5XJ/

Function description, sectional drawing

Solenoid pilot relief valve with switching shock damping(sandwich), model G-DBW.../..S...R12
The connection from B2 to B1 opens with delay when switching shock damping valve (17) used, it can prevent pressure peaks and unloading shocks in the return line. The valve is installed between pilot valve and directional control valve (16). The degree of damping (unloading shock) depends on the size of throttle (18). Throttle Ø1.2mm is used as standard size (ordering code...R12...).

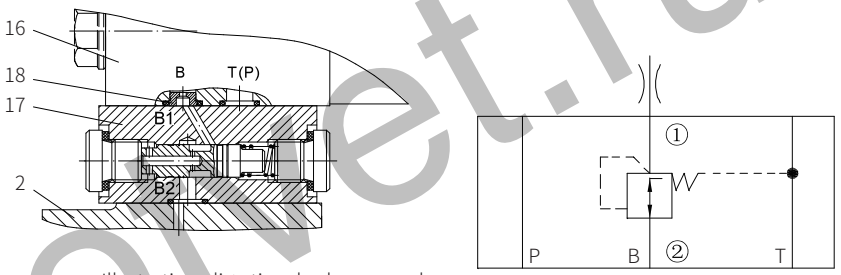


Illustration: directional valve opened

- The unloading function (directional valve function of DBW) cannot be used as safety function!
- When power off or cable breakage, Model DBW... B.. 5XJ/... should use the minimum setting pressure (circulation pressure).
- When power off or cable breakage, the pressure relief function of model DBW...A...5XJ/...is launched.
- The back pressure of pilot oil internal drain in port T or external drain in port Y is 1:1 added in pilot control pressure.

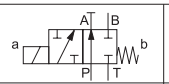
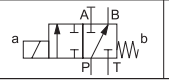
DB ___ ___ ___ ___ ___ - 5X / ___

explosion-proof class I =G1
explosion-proof class II =G2

with directional valve =W

pilot operated valve (complete) =No code
pilot valve without main spool insert (do not enter size) =C
pilot valve with main spool insert (remark valve size 10 or 30) =C

size	Connection mode	
	subplate mounting "no code"	threaded connection "G"
10	=10	=10(G1/2)/M22x1.5
16		=15(G3/4)/M27x2
25	= 20	= 20(G1)/M33x2
25		= 25(G1 1/4)/M42x2
32	=30	=30(G1 1/2)/M48x2

	normally closed	=A
	normally open	=B

for subplate and multi-way mounting =No code
for threaded connection =G

adjustment element for pressure adjustment
rotary knob =1
inner hexagon screw with protective cap =2
lockable rotary knob with scale =3

50 to 59 series =5X
(50 to 59 series: installation and connection size unchanged)

pressure setting up to 50 bar =50
pressure setting up to 100 bar =100
pressure setting up to 200 bar =200
pressure setting up to 315 bar =315
pressure setting up to 350 bar =350

___ / ___ ___ ___ ___ ___ *

more information in text

sealing material
No code= NBR seals
V= FKM seals
(consult for other seals)

No code= G thread
2= metric thread
(G1/4)

R12= damping Φ1.2mm in port B of directional valve

G24= 24V DC
B36= AC rectified 36V
B127= AC rectified 127V
B220= AC rectified 220V

C= with solenoid directional valve size 6

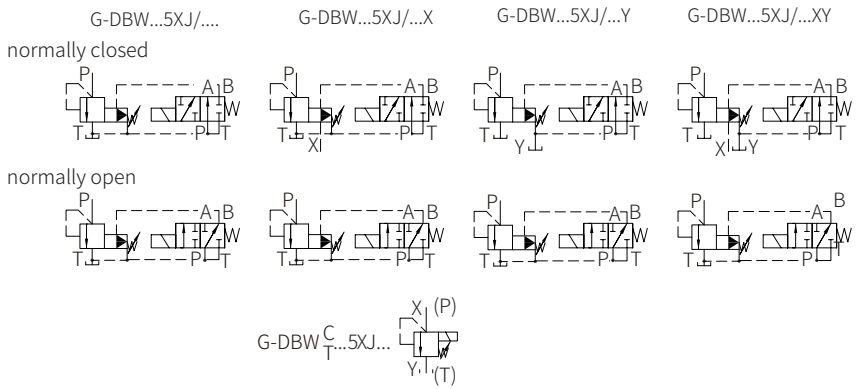
No code= without switching shock damping
S= with switching shock damping

No code= standard valve
U= minimum setting pressure, see characteristic curves

No code= pilot oil supply and drain internal
X= pilot oil supply external and drain internal
Y= pilot oil supply internal and drain external
XY= pilot oil supply and drain external

Note:
G1 explosion-proof grade EXD I
G2 explosion-proof grade EXD II CT4

Functional symbols



Technical parameters

Installation position			Optional				
			G-DBW...10	G-DBW...15	G-DBW...20	G-DBW...25	G-DBW...30
Weight	Subplate mounting G-DBW	kg	About 5.6	-	About 6.5	-	About 7.9
	Threaded connection G-DBW..G..	kg	About 7.9	About 7.8	About 7.7	About 8.5	About 8.4
	Switching shock damping	kg	About 0.6				
Technical parameters of directional valve			Directional valve is explosion- proof solenoid directional valve. G-3WE6A for normally closed type; G-3WE6B for normally open type				

Hydraulic							
Maximum working pressure	port P, X	MPa	35.0				
	port T	MPa	21				
Maximum setting pressure		MPa	5.0; 10.0; 20.0; 31.5; 35.0				
Minimum setting pressure		MPa	Interrelated with flow (see the curve)				
Maximum flow	Subplate mounting	L/min	250	-	500	-	650
	Threaded connection	L/min	250	500	500	500	650
Oil fluid			Mineral oil (HL, HLP)[1] in accordance with DIN 51524; Fast living organisms degraded oil according to VDMA 24568; HETG (Rapeseed oil)[1]; HEPG(Polyethyleneglycol)[2] ; HEES (Synthetic Fats)[2]				
Oil temperature range		℃	-30 to +80 (NBR seal) -20 to +80 (FRM seal)				
Viscosity range		mm^2/s	10 to 800				
Cleanliness of oil[3]			The maximum allowable pollution level of oil is ISO4406 Class 20/18/15				

1) For NBR seal and FKM seal.

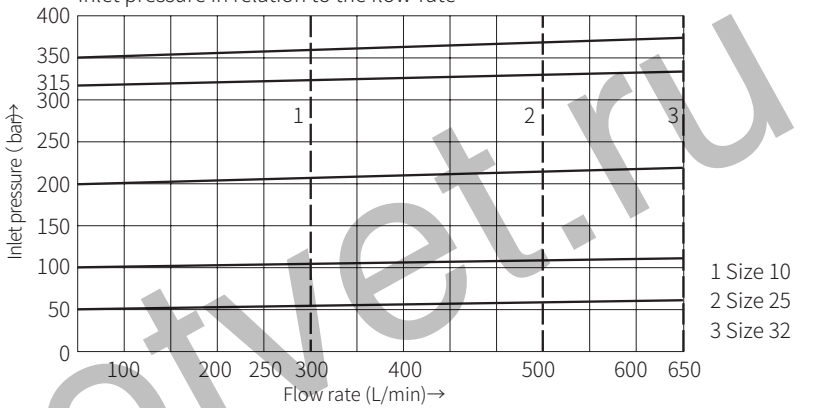
2) Only for FKM seal.

3) The oil must meet the cleanliness degree requested by the components in the hydraulic system.
Effective oil filtration can prevent failure and increase the service life of the components.

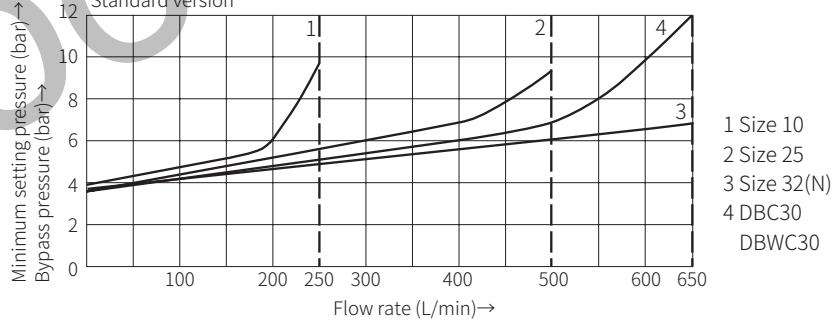
Characteristic curve

(Measured when using HLP46, ϑ_{oil}=40°C ± 5°C)

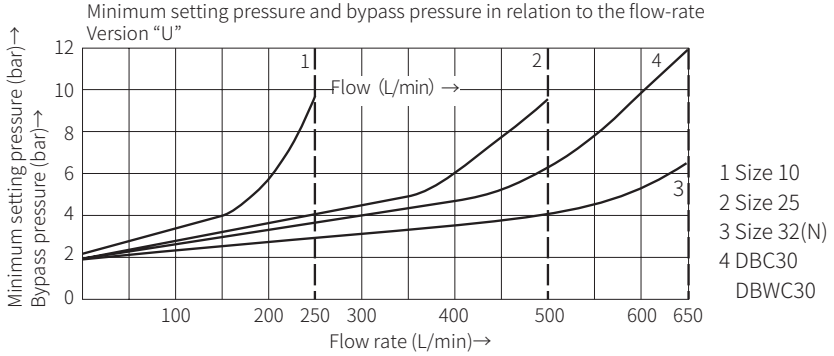
Inlet pressure in relation to the flow-rate



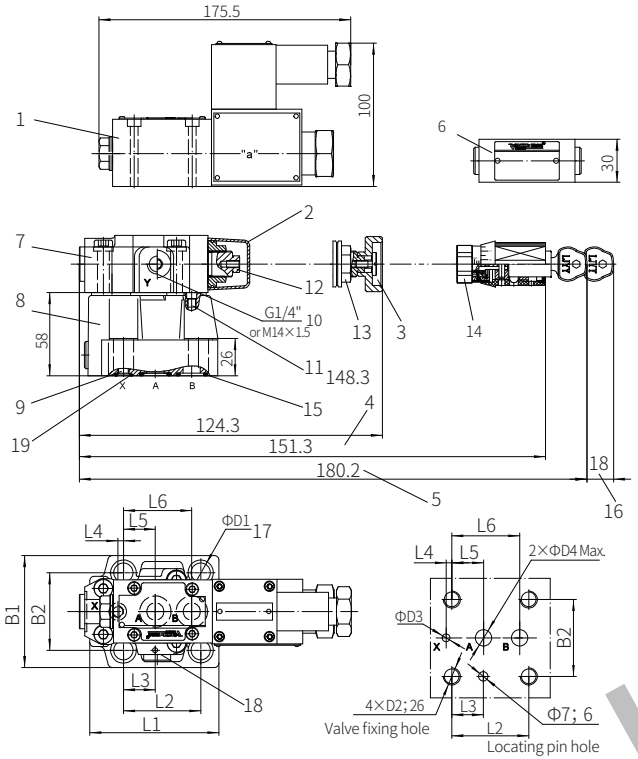
Minimum setting pressure and bypass pressure in relation to the flow-rate
Standard version



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



Subplate mounting valve, model G-DBW...-5XJ/...



Valve fixing screw
NG10:
M12x50-10.9 grade
GB/T70.1-2000
Tightening torque M_A=95Nm
NG25:
M16x50-10.9 grade
GB/T70.1-2000
Tightening torque M_A=196Nm
NG32:
M18x50-10.9 grade
GB/T70.1-2000
Tightening torque M_A=260Nm

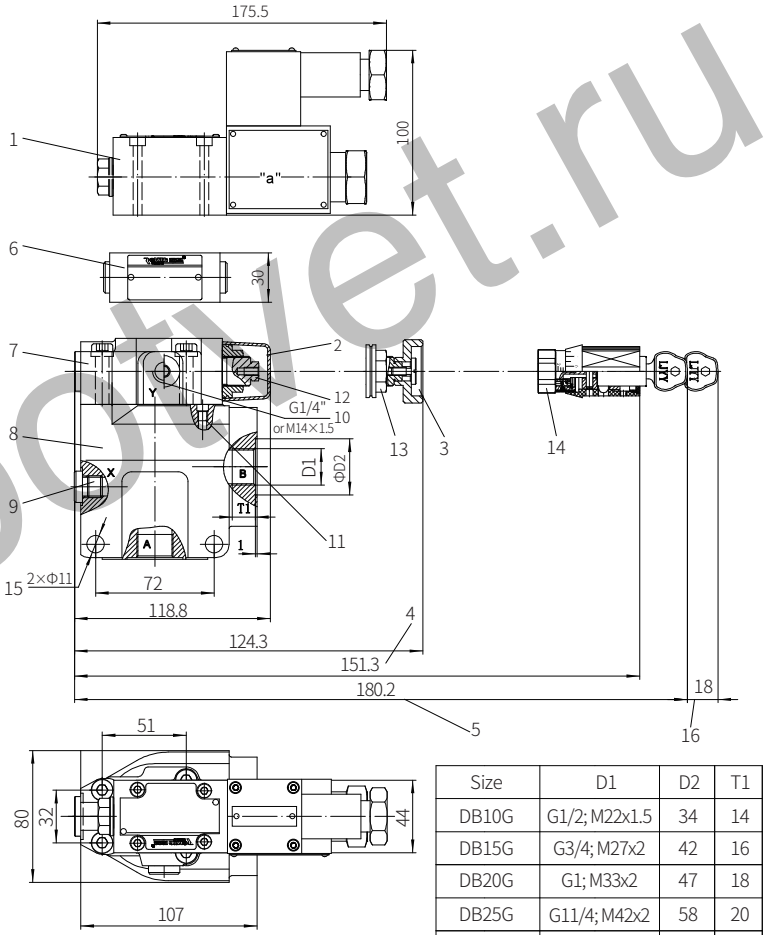
Size	L1	L2	L3	L4	L5	L6	B1	B2	D1	D2	D3	D4
10	90	53.8	22.1	0	22.1	47.5	78	53.8	14	M12	6	12
20	117	66.7	33.4	23.8	11.1	55.6	100	70	18	M16	6	22
30	149.3	88.9	44.5	31.8	12.7	76.2	115	82.6	20	M18	7	30

1 Solenoid valve
2 Adjustment form“2”
3 Adjustment form“1”
4 Adjustment form“3”
5 Adjustment form“7”
6 With switching shock damping valve, optional
7 Pilot valve
8 Main valve
9 Port X for external pilot oil supply
10 Port Y for external pilot oil drain (G1/4"and M14x1.5 optional)
11 Omitted with internal pilot oil drain
12 External hexagon screw S=10
13 Hexagon nut S=24
14 External hexagon screw S=24
15 O-ring 17.12x2.62 (for port A, B)
16 Space required to remove the key
17 Valve screw fixing holes
18 Locating pin hole
19 O-ring 9.25x1.78 (for port X)

It must be ordered separately if connection subplate is needed.
NG10 subplate model:
G545/01 (G3/8") ; G545/02 (M18x1.5)
G546/01 (G1/2") :G546/02 (M22x1.5)
NG25 subplate model:
G408/01 (G3/4") ; G408/02 (M27x2)
G409/01 (G1") ; G409/02 (M33x2)
NG32 subplate model:
G410/01 (G11/4") ; G410/02 (M42x2)
G411/01 (G11/2") ; G411/02 (M48x2)

Component size Size unit: mm

Threaded connection valve, model G-DBW...-5XJ/...



Size	D1	D2	T1
DB10G	G1/2; M22x1.5	34	14
DB15G	G3/4; M27x2	42	16
DB20G	G1; M33x2	47	18
DB25G	G11/4; M42x2	58	20
DB30G	G11/2; M48x2	65	22

1 Solenoid valve
2 Adjustment form“2”
3 Adjustment form“1”
4 Adjustment form“3”
5 Adjustment form“7”
6 With switching shock damping valve, optional
7 Pilot valve
8 Main valve
9 Port X for external pilot oil supply
10 Port Y for external pilot oil drain (G1/4"and M14x1.5 optional)
11 Omitted with internal pilot oil drain
12 External hexagon screw S=10
13 Hexagon nut S=24
14 External hexagon screw S=24
15 Valve screw fixing holes
16 Space required to remove the key

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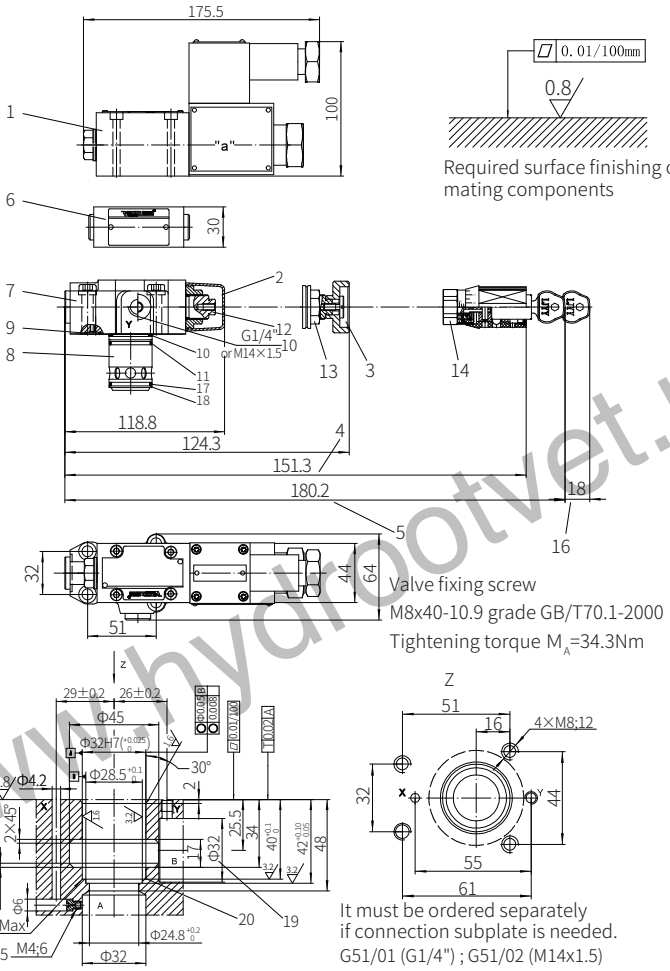
With(G-DBWC10 or 30) or without (G-DBWC)



Required surface finishing of mating components

Valve fixing screw
M8x40-10.9 grade GB/T70.1-2000
Tightening torque M_A=34.3Nm

It must be ordered separately if connection subplate is needed.
G51/01 (G1/4") ; G51/02 (M14x1.5)

1 Solenoid valve
2 Adjustment form“2”
3 Adjustment form“1”
4 Adjustment form“3”
5 Adjustment form“7”
6 With switching shock damping valve
7 Primary pilot valve
8 Main spool
9 O ring 9.25x1.78
10 O ring 28x2.65
11 O ring 28x1.8
12 External hexagon screw S=10
13 Hexagon nut S=24
14 External hexagon screw S=24
15 Throttle must be ordered separately
16 Space required to remove the key
17 O ring 27.3x2.4
18 Retainer ring 32x28.4x0.8
19 The Ø32 hole can intersect Ø45 hole at any position. Be careful not to damage oil port X and fixing holes.
20 The retainer ring and O-ring should be installed in this hole before install main spool.