

Pressure relief valve pilot operated

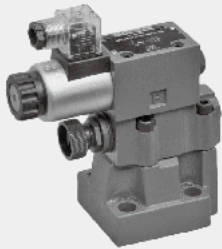
3.2

Type DB/DBW...L5X

Remote pressure adjusting valve

Type DBT

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



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Features

- For sub-plate mounting
- Porting pattern 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 (Only for DBW)

Function and configuration

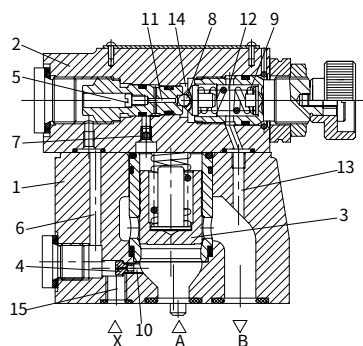
Types DB and DBW pressure valves are pilot operated pressure relief valves, used to limit (DB) or limit and unload (DBW) pressure via solenoid operation. The pressure relief valves consist of main valve (1) with main spool cartridge (3) and pilot operated valve (2) with pressure adjustment elements.

• Type DB pressure relief valves

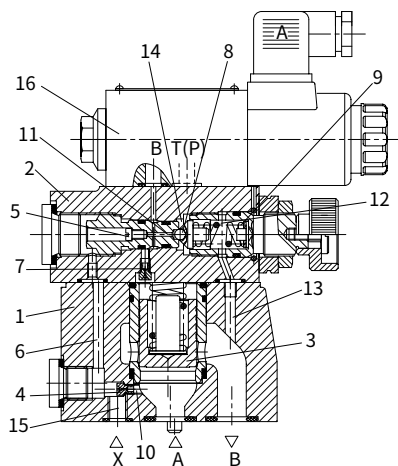
The pressure of channel A acts on the main spool (3), meanwhile, pressure is applied via control line (6) and (7) with orifice (4) and (5) on the spring loaded side of the main spool (3) and on the ball (8) in the pilot operated valve (2). If the pressure in channel A rises excess the setting value at 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). External drain - type DB...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 operational pressure setting maintained stable. The pressure relief valve may unload or shift the different pressure (second rated pressure value) in virtue of external control port X (15).

• Type DBW pressure relief valves

The 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).



Type DB pressure relief valves



Type DBW pressure relief valves

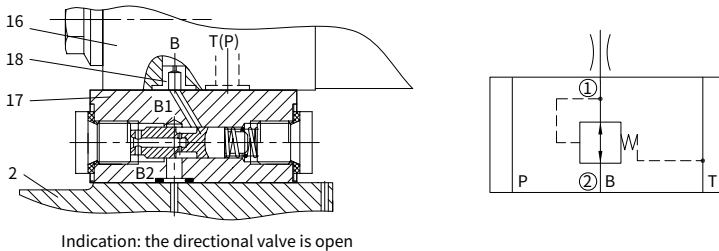
Function and configuration

• Pressure relief valves with switching shock damping (sandwich) , type DBW../..S..R12

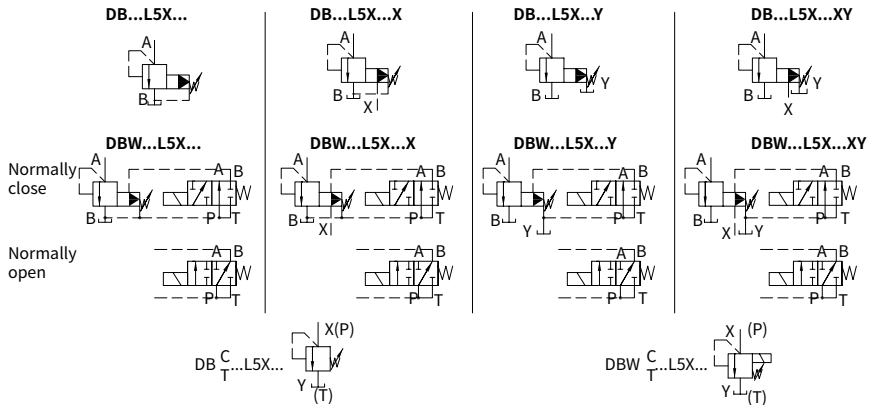
Switching shock damping (17), the connection from B2 to B1 opens with delay to avoid peak pressure spikes and decompression in the return line. It is fitted between pilot valve (2) and the directional valve (16).

The relief degree (decompression impact) is determined by the size of the orifice (18).

Orifice Ø1.2mm is recommended. (ordering detail:..R12 ..).



Symbols



Technical data

Fixing position				Optional				
Weight	Sub-plate mounting	DB	kg	DB...10	DB...15	DB...20	DB...25	DB...30
		DBW	kg	Approx.3	-	Approx.3.9	-	Approx.5.3
		DBC	kg	Approx.4.5	-	Approx.5.4	-	Approx.6.8
		DBC10 or 30	kg	Approx.1.2 (Type DBWC add 1.5)kg				
	Threaded connection	DB..G..	kg	Approx.1.5 (Type DBWC10 and 30 add 1.5)kg				
		DBW..G..	kg	Approx.5.3	Approx.5.2	Approx.5.1	Approx.5.9	Approx.5.8
	Switching shock damping		kg	Approx.6.8	Approx.6.7	Approx.6.6	Approx.7.4	Approx.7.3
Technical parameters of directional valve				Refer to the solenoid valvetype WE6,normally close use 3WE6A9,normally open use3WE6B9				
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: Class 9. NAS 1638 or 20/18/15 , ISO4406				
Max. operating pressure	Port A,B,X,P	bar		350				
	Port T (DB)	bar		315				
Max. back pressure	Port Y DB	bar		315				
	Port Y or T DBW	bar		AC up to 160, DC up to 210				
Max. setting pressure			bar	50;100;200;315;350				
Min. setting pressure			bar	Interrelated with Q(refer to the curve)				
Sizes				10	15	20	25	30
Max. flow-rate	sub-plate mounting	L/min		250	-	500	-	650
	threaded connection	L/min		250	500	500	500	650

Ordering code

DB					-L5X/			-			/	*
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Without directional

valve= No code

With directional valve=W

Pressure relief valve.

pilot operated = No code

Pilot operated valve = C

(without main spool cartridge,
no mark for nom. size)

Pilot operated valve with main
spool cartridge = C

(marked with size

Remote pressure

adjusting valve = T¹⁾

(no mark for nom. size)

Nominal size	Connection mode	
	sub-plate mounting	Threaded connection
	Marked	
10	=10	=10
15		=15
20	=20	=20
25		=25
32	=30	=30

For DBW:

Normally closed = A

(load breakaway, unload electrified)

Normally open = B

(contrary to the above)

Sub-plate mounting = -

Threaded connection = G

Rotary Knob = 1

Adjusting bolt with protective cap = 2

Series L50 to L59 =L5X

(L50 to L59: unchanged installation and connection dimensions)

Further details
in clear text

No code = NBR seals

V = FKM seals

Only for port Y1 in pilot valve of threaded connection or sub-plate mounting

No code = Inch thread
2= Metric thread

R12= Only DBW./...S... :
orifice Ø1.2 mm in port
B of directional valve

Only DBW:
Z4 = Electrical plug without lamp
Z5L = Electrical plug with lamp

Only DBW: N = With hand override

G24	=	Only DBW: 24V DC
W110R	=	Plug rectification 110V
W220	=	220V AC
W220R	=	Plug rectification 220V

(Other voltage refer to type WE6)

Only DBW:
6E= With high performance directional spool valve

No code = Without switching shock damping
S = With switching shock damping
(only with type DBW)

No code= Standard version
U = Valve for lower opening pressure
(not for version without main spool cartridge and not suitable for 350bar)

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

5 =	Pressure adjustable up to 50 bar
10 =	Pressure adjustable up to 100 bar
20 =	Pressure adjustable up to 200 bar
31.5 =	Pressure adjustable up to 315 bar
35 =	Pressure adjustable up to 350 bar

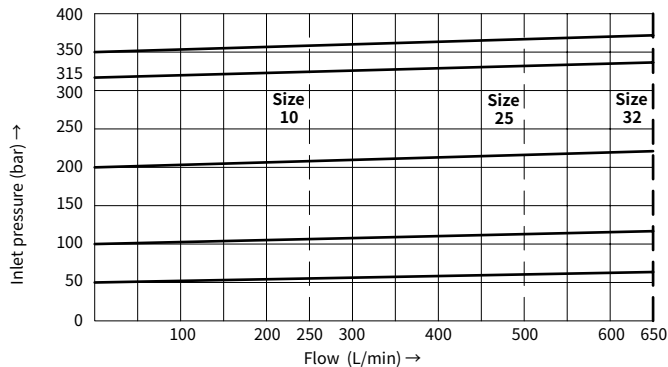
Notes:

1. The pilot relief valves may have lower starting pressure and higher flow, but have higher internal leakage, If lower leakage is required, such as safety valve, it is recommended to choose direct operated pressure relief valves, DBD type.
2. The integrative performance of pilot relief valves with 'U' is not good as the standard version, except lower opening pressure.

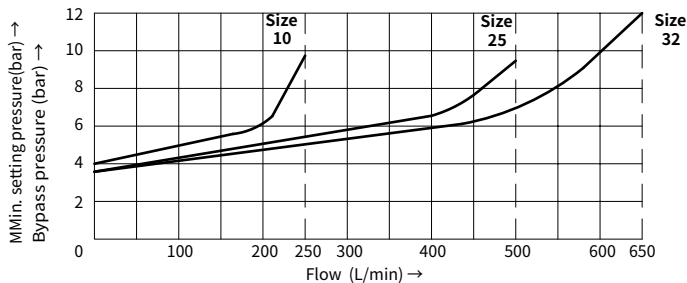
Performance curves (Measured at $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$, using HLP 46)

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.

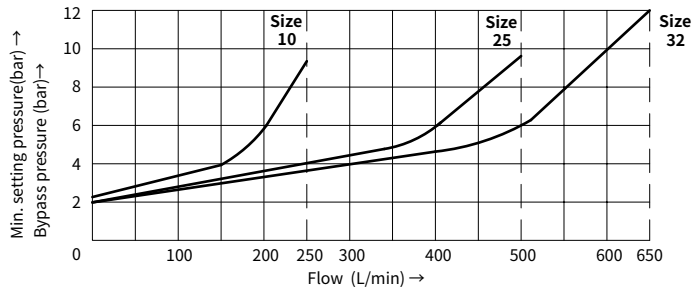
Inlet pressure in relation to the flow-rate



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



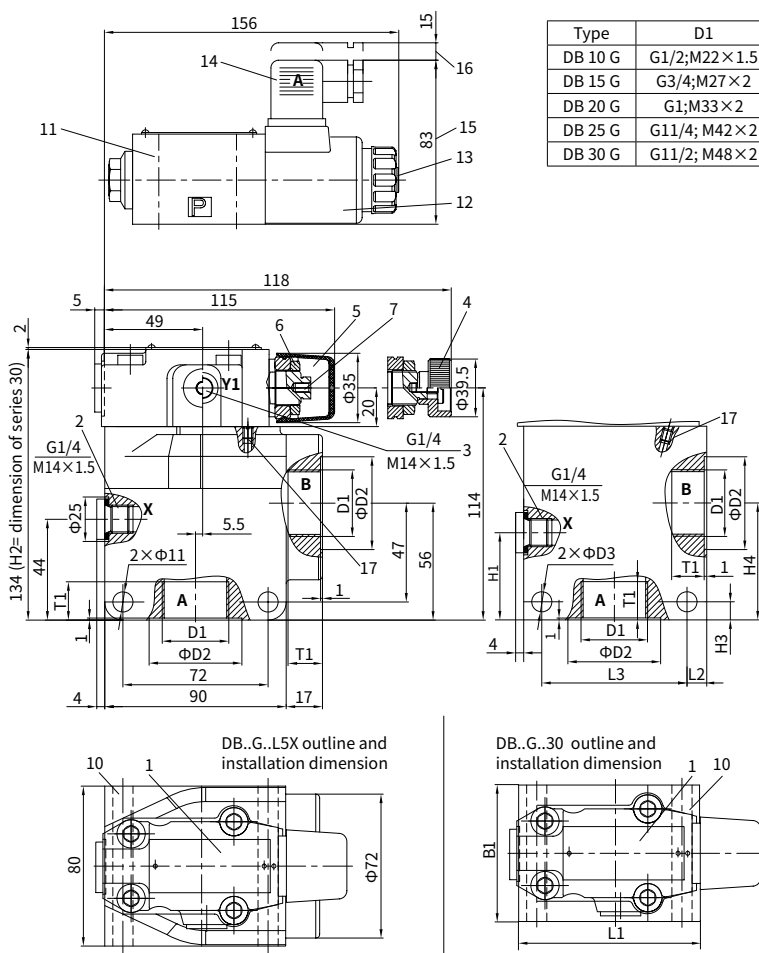
Minimum setting pressure and bypass pressure in relation to the flow-rate!
• Version "U"



03

- Threaded connection

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



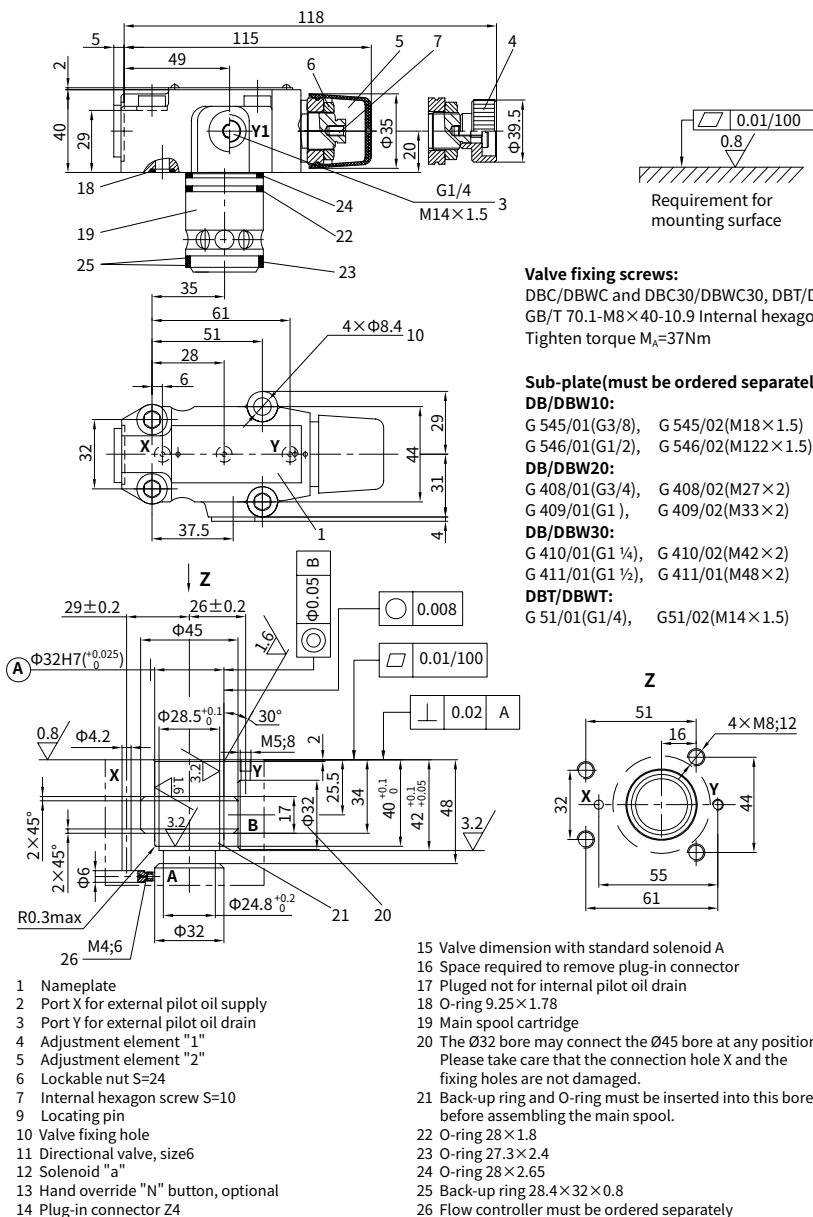
On threaded connection valve, series L5X and series 30 have different connection dimensions. If series 30 valves need to be replaced by series L5X ones, the pitch of installation holes and the position of external tapping shall be changed.

Type	B1	D3	H1	H2	H3	H4	L1	L2	L3
DB 10 G	63	9	27	125	10	62	85	14	62
DB 15 G									
DB 20 G						57			
DB 25 G	70	11	42	138	13	66	100	18	72
DB 30 G									

Unit dimensions

(Dimensions in mm)

• With main spool valve (DBC10 or 30) or without main spool valve (DBC, DBT)

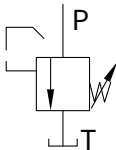


Remote pressure adjusting valve

• Ordering code

	DBT	G	1	L3X	/		
Remote pressure adjusting valve							
Threaded connection	=G					No code=	NBR seals
Adjusting handle	=1					V =	FKM seals
Series L30 to L39 (L30 to L39: unchanged installation and connection dimensions)			=L3X			10 =	Max. secondary pressure 100bar
						31.5 =	Max. secondary pressure 315bar

• Symbol



• Connection dimension

