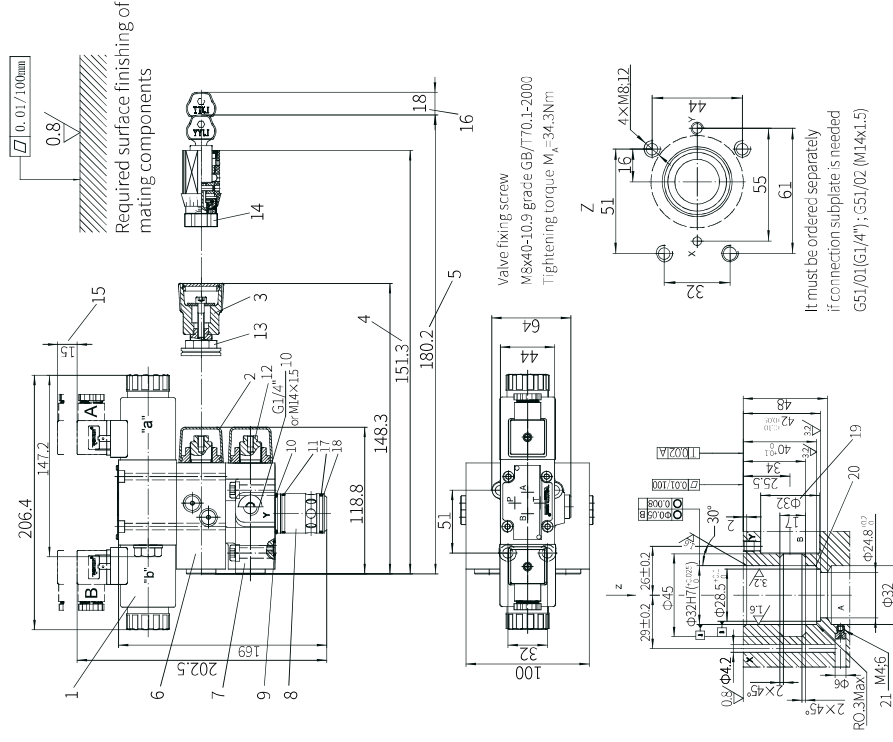


Component size

with (DBC3U10 or 30) or without (DBC3U)

Size unit: mm



- 1 Solenoid directional valve (type H, type D, optional)
- 2 Adjustment form "2"
- 3 Adjustment form "1"
- 4 Adjustment form "3"
- 5 Adjustment form "7"
- 6 Secondary or tertiary pilot 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 Space required to remove the plug
- 16 Space required to remove the key
- 17 O ring 27.3x2.4
- 18 Retainer ring 32x28.4x0.8
- 19 The $\phi 32$ hole can intersect $\phi 45$ hole at any position
- 20 The retainer ring and O-ring should be installed in this hole before install main spool
- 21 Throttle must be ordered separately

Pilot Relief Valve/ Solenoid Pilot Relief Valve
Model: DB/DBW...5XJ



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

Contents

- Function description, sectional drawing 02-03
- Models and specifications 04-05
- Functional symbols 06
- Technical parameters 07
- Characteristic curve 08
- Component size 09-11

Features

- Subplate mounting: size 10/20/30
- Threaded connection: size 10/15/20/25/32
- Setting pressure: 5MPa/10MPa/20MPa/31.5bar/35MPa
- Flow rate: 250L/min (for size 10 only)
500L/min (for size 15, 20, 25)
650L/min (for size 32 only)

Function description, sectional drawing

The DB and DBW pressure control valves are pilot operated relief valves.

They are used to limit (DB), or to limit and unload by solenoids (DBW) of working pressure.

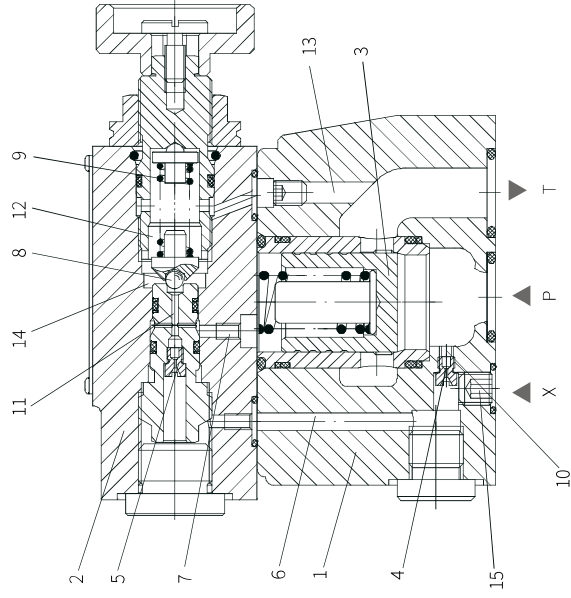
Pilot relief valve Model DB

This 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, it flows internally via control line (13) into the tank for model DB, or flows externally via control line (14) into the tank for model DB...Y. Because of throttle (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.



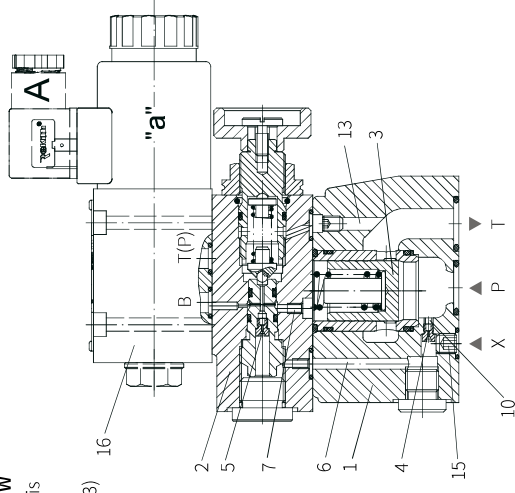
Model DB10-1-5XJ/J

Function description, sectional drawing

Solenoid pilot relief valve Model DBW

In principle, the function of this valve is same with model DB.

But the unloading of the main spool (3) is achieved by operating the built-on directional valve (16).



Model DBW10-1-5XJ/J

Solenoid pilot relief valve with switching shock damping (sandwich), model 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 $\varnothing 1.2\text{mm}$ is used as standard size (ordering code...R12...).

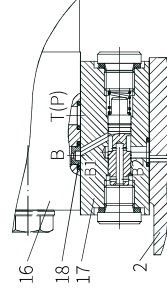


Illustration: directional valve opened

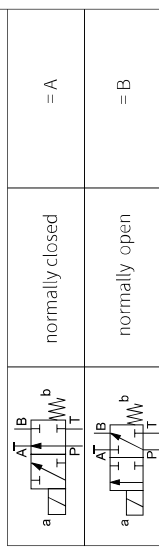
- The unloading function (directional valve function of DBW) cannot be used as safety function!
- When power off or cable breakage, Model DBW... B.. 5XJ/... should use the minimum setting pressure (circulation pressure).
- When power off or cable breakage, the pressure relief function of model DBW...A...5XJ/...is 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.

Models and specifications

Models and specifications

without directional valve with solenoid directional valve =No code =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

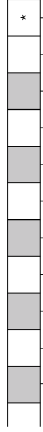
size	subplate mounting "no code"	threaded connection "G"
10	=10	=10(G1/2)/M22*1.5
16		=15(G3/4)/M27*2
20	=20	=20(G1)/M33*2
25		=25(G1 1/4)/M42*2
32	=30	=30(G1 1/2)/M48*2



normally closed = A
 normally open = B
 for subplate and multiway mounting for threaded connection =no code =G
 adjustment element for pressure adjustment
 rotary knob =1
 inner hexagon screw with protective cap =2
 lockable rotary knob with scale =3
 rotary knob with scale =7

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

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



more information in text sealing material

No code=
 V= NBR seals
 FKW seals
 (consult for other seals)

No code=
 2= G thread
 metric thread
 (Except for external remote control port X, port X is inch thread G1/4)

R12= damping ϕ 1.2mm in port B of directional valve (only for DBW.../S...)

Z4= standard plug
 Z5L= right angle lamp plug large
 DL= connection box with lamp

N9= with hidden manual emergency operation
 No code= no manual emergency operation

G24= 24V DC
 W220-50= AC 220V-50HZ
 W220R= 220V AC solenoid with rectifier (others see WEE)

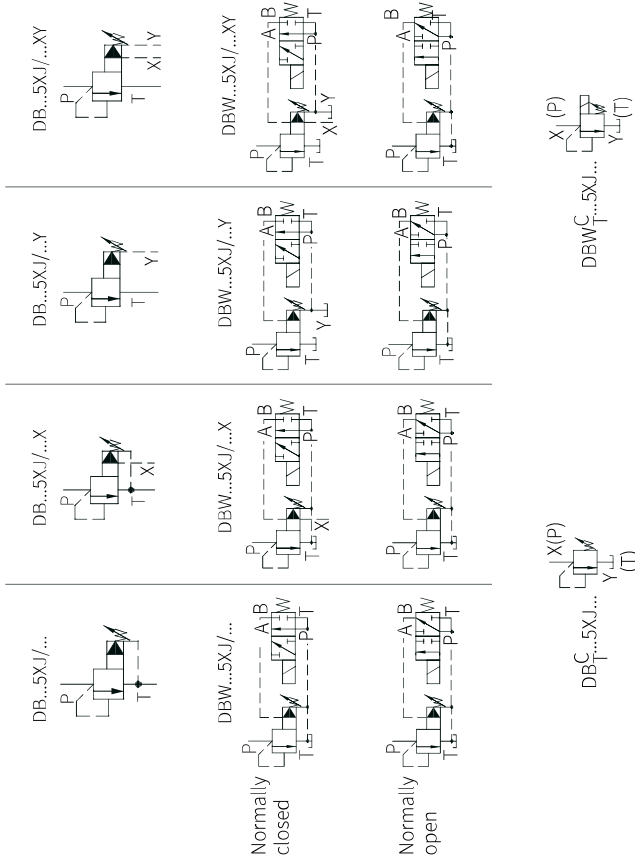
No code= without directional valve
 C= with detachable solenoid directional valve size 6

No code= without switching shock damping
 S= with switching shock damping (only DBW)

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

Functional symbols



Technical parameters

Size	Size 10 DB...10	Size 15 DB...15G	Size 20 DB...20	Size 25 DB...25G	Size 32 DB...30
Weight Subplate mounting	-DB... Kg 2.6	-	-	-	-
	-DBW... Kg 4.05	-	3.5	-	4.4
	-DBC... Kg 1.2	-	4.95	-	5.85
	-DBWC... Kg 2.65	-	-	-	-
	-DBC10 or 30... Kg 1.5	-	-	-	-
	-DBWC10 or 30 ... Kg 2.95	-	-	-	-
Threaded connection	-DB...G Kg 5.3	5.2	5.1	5.0	4.8
	-DBW...G Kg 6.75	6.65	6.55	6.45	6.25
Installation position	optional				
Environment temperature range	-DB... °C	-30 to +50 (NBR seal) -20 to +50 (FRM seal)			
	-DBW... °C	-30 to +50 (NBR seal) -20 to +50 (FRM seal)			
Minimum strength of valve body material (use for subplate mounting and DBC.../DBWC...valves)	The selection of valve body material has been included in the safety factor in all condition (e.g. referenced pressure strength, thread strength and tightening torques.)				
Hydraulic					
Maximum working pressure	- Oil port P, X MPa 35.0				
	- Oil port T MPa 31.5				
Maximum back pressure	- Oil port Y (DB) MPa 31.5				
	- Oil port Y, T (DBW) MPa 21.0 (DC solenoid) 16.0 (AC solenoid)				
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) ²⁾ ; HEPG(Polyethylene glycol) ²⁾ ; HEES(synthetic ester) ³⁾ ;				
Oil temperature range	°C	-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				

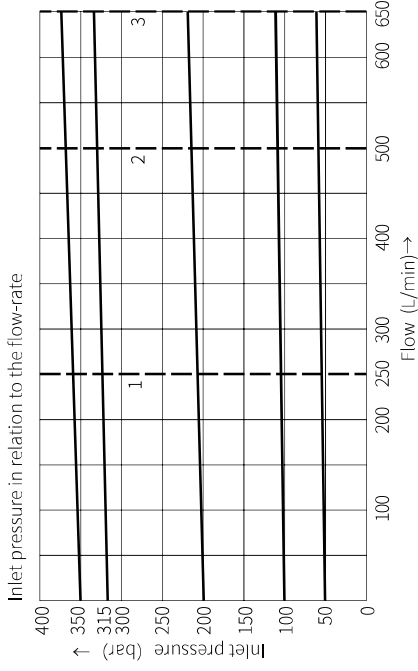
1)For NBR seal and FKM seal

2)Only for FKM seal

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

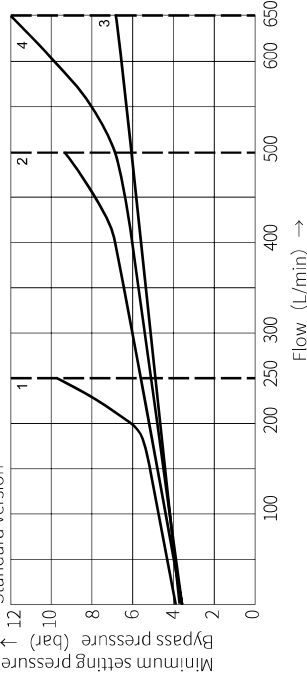
Characteristic curve

(Measured when using HLP46, $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)



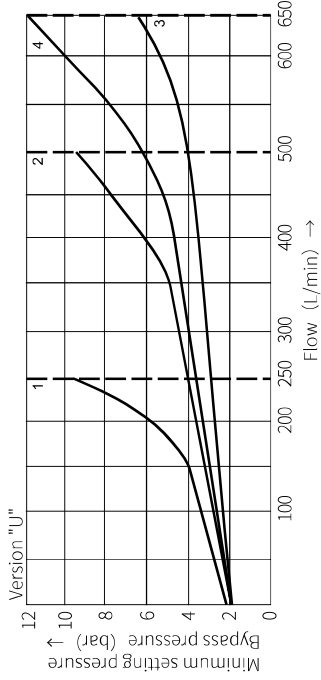
- 1 Size 10
- 2 Size 25
- 3 Size 32

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



- 1 Size 10
- 2 Size 25
- 3 Size 32(N)
- 4 DBC 30
DBWC 30

Minimum setting pressure and bypass pressure in relation to the flow-rate¹⁾
Version "U"

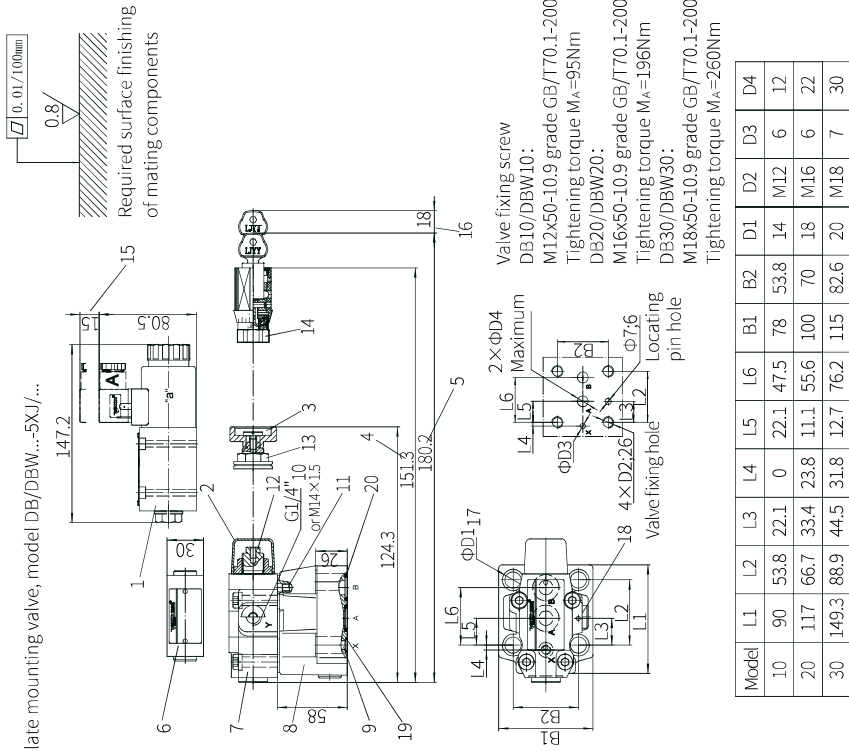


- 1 Size 10
- 2 Size 25
- 3 Size 32(N)
- 4 DBC 30
DBWC 30

Component size

Size unit: mm

Subplate mounting valve, model DB/DBW...5XJ/...



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 drain

12 External hexagon screw S=10

13 Hexagon nut S=24

14 External hexagon screw S=24

15 Space required to remove the plug

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)

20 DB/DBW10:

O-ring 17.12x2.62 (for port A, B)

DB/DBW20:

O-ring 28.17x3.53 (for port A, B)

DB/DBW30:

O-ring 34.52x3.53 (for port A, B)

It must be ordered separately if connection subplate is needed.

Subplate model:

DB10/DBW10:

G545/01(G3/8"); G545/02(M18x1.5)

G546/01(G1/2"); G546/02(M22x1.5)

DB20/DBW20:

G408/01(G3/4"); G408/02(M27x2)

G409/01(G1"); G409/02(M33x2)

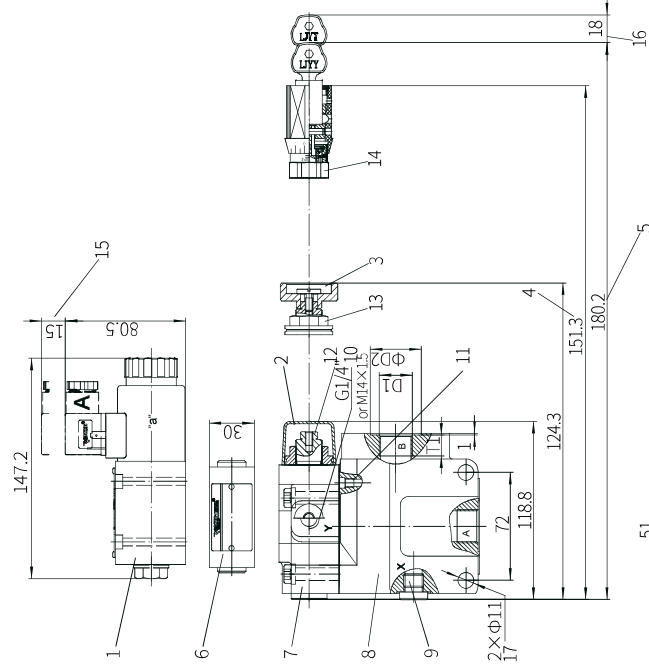
DB30/DBW30:

G410/01(G1 1/4"); G410/02(M42x2)

G411/01(G1 1/2"); G411/02(M48x2)

Component size

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

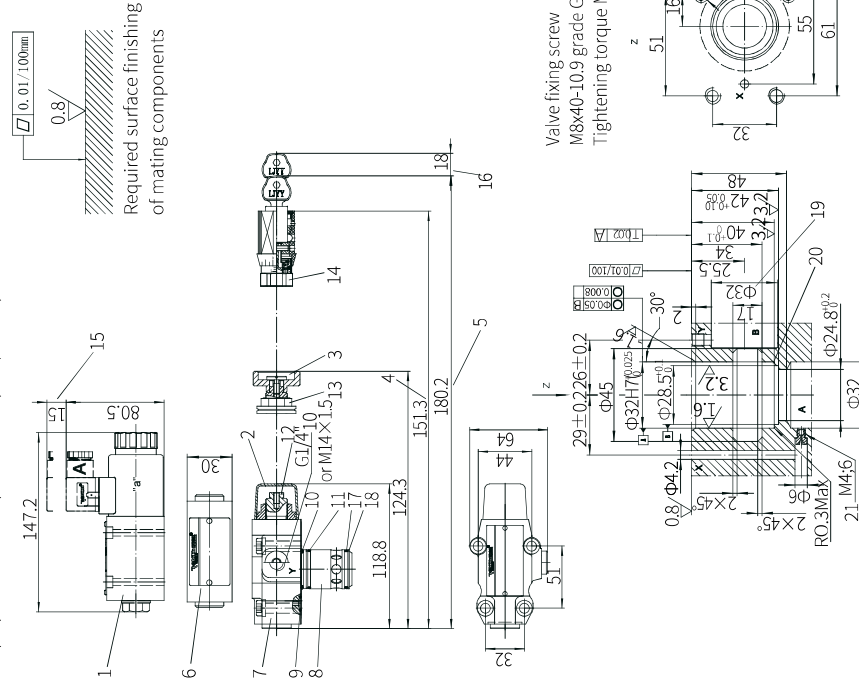


Model	D1	D2	T1
DB10G	G1/2; M22 X 1.5	34	14
DB15G	G3/4; M27 X 2	42	16
DB20G	G1; M33 X 2	47	18
DB25G	G1 1/4; M42 X 2	58	20
DB30G	G1 1/2; M48 X 2	65	22

- Solenoid valve
- Adjustment form "2"
- Adjustment form "1"
- Adjustment form "3"
- Adjustment form "7"
- With switching shock damping valve, optional
- Primary pilot valve
- Main valve
- Port X for external pilot oil supply
- Port Y for external pilot oil drain (G1/4" and M14x1.5 optional)
- Omitted with internal pilot oil drain
- External hexagon screw S=10
- Hexagon nut S=24
- External hexagon screw S=24
- Space required to remove the plug
- Space required to remove the key
- Valve screw fixing holes

Component size

Valve with (DB/DBWC10 or 30) or without (DBC/DBWC)



Valve fixing screw
M8x40-10.9 grade GB/T70.1-2000
Tightening torque $M_{ts}=34.3\text{Nm}$

- Solenoid valve
- Adjustment form "2"
- Adjustment form "1"
- Adjustment form "3"
- Adjustment form "7"
- With switching shock damping valve, optional
- Primary pilot valve
- Main spool
- O-ring 9.25x1.78
- O-ring 28x2.65
- O-ring 28x1.8
- External hexagon screw S=10
- Hexagon nut S=24
- External hexagon screw S=24
- Space required to remove the plug
- Space required to remove the key
- O-ring 27.3x2.4
- Retainer ring 32x28.4x0.8
- The $\varnothing 32$ hole can intersect $\varnothing 45$ hole at any position. Be careful not to damage oil port X and fixing holes.
- The retainer ring and O-ring should be installed in this hole before installing main spool.
- Throttle must be ordered separately.

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