3 Pressure valves

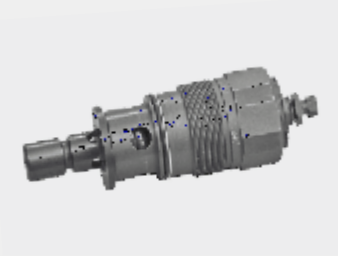
Contents

3.1

Pressure relief valve direct operated

Type DBD...10

Sizes 6 to 30
up to 400 bar
up to 330 L/min

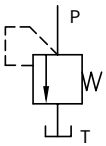


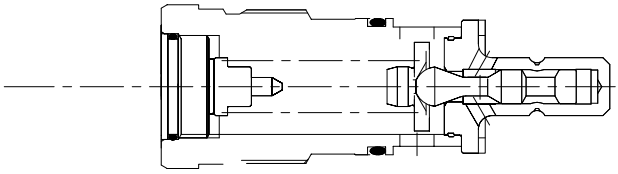
Contents

Features

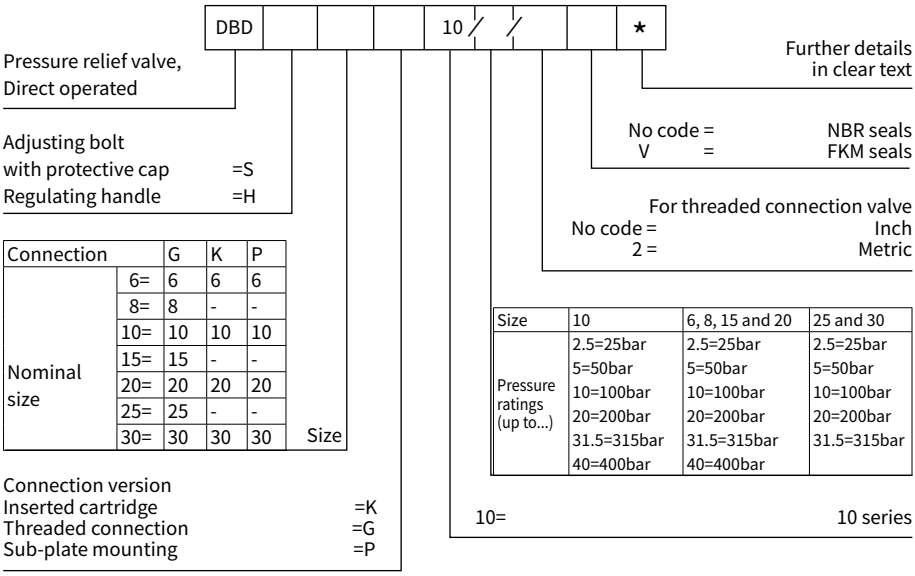
- 3 connected versions
  Inserted cartridge
  Threaded connection
  Sub-plate mounting
- 6 pressure ratings
  25, 50, 100, 200, 315, 400 bar
- 2 adjustment versions
  Adjusting bolt with protective cap
  Regulating handle

Symbol





Ordering code



Connection		G	K	P
Nominal size	6=	6	6	6
	8=	8	-	-
	10=	10	10	10
	15=	15	-	-
	20=	20	20	20
	25=	25	-	-
	30=	30	30	30

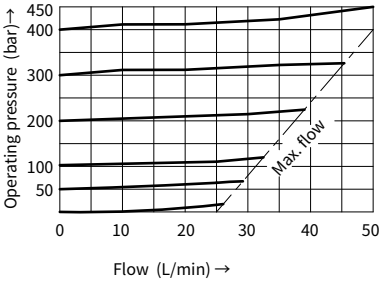
Size	10	6, 8, 15 and 20	25 and 30
Pressure ratings (up to...)	2.5=25bar	2.5=25bar	2.5=25bar
	5=50bar	5=50bar	5=50bar
	10=100bar	10=100bar	10=100bar
	20=200bar	20=200bar	20=200bar
	31.5=315bar	31.5=315bar	31.5=315bar
	40=400bar	40=400bar	

Technical data

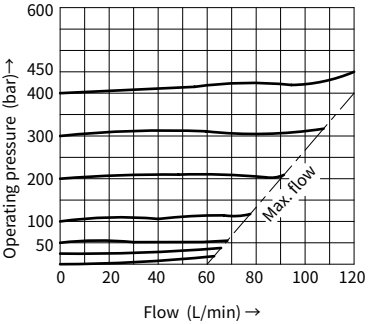
Fluid	Mineral oil suitable for NBR and FKM seal				
	Phosphate ester for FKM seal				
Fluid temperature rangeFKMtempera	and er ospha☒ ☒ emperaturFKMtempera				

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

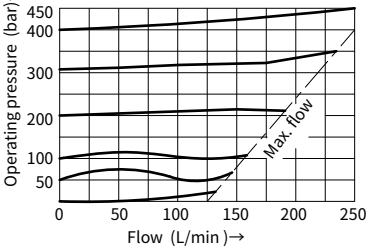
Size 6



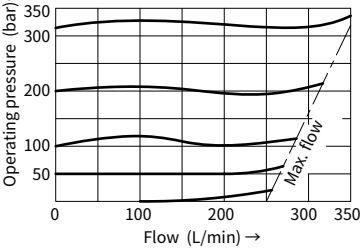
Sizes 8 and 10

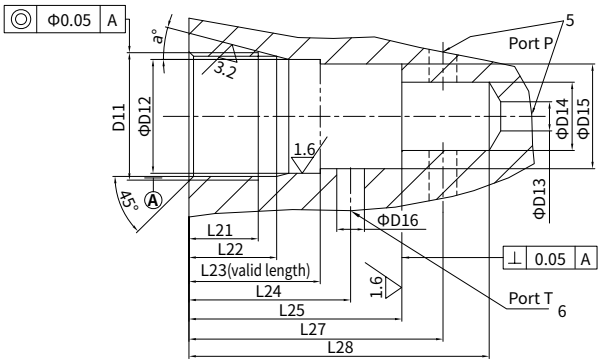


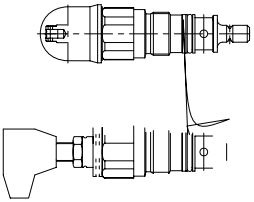
Sizes 15 and 20



Sizes 25 and 30



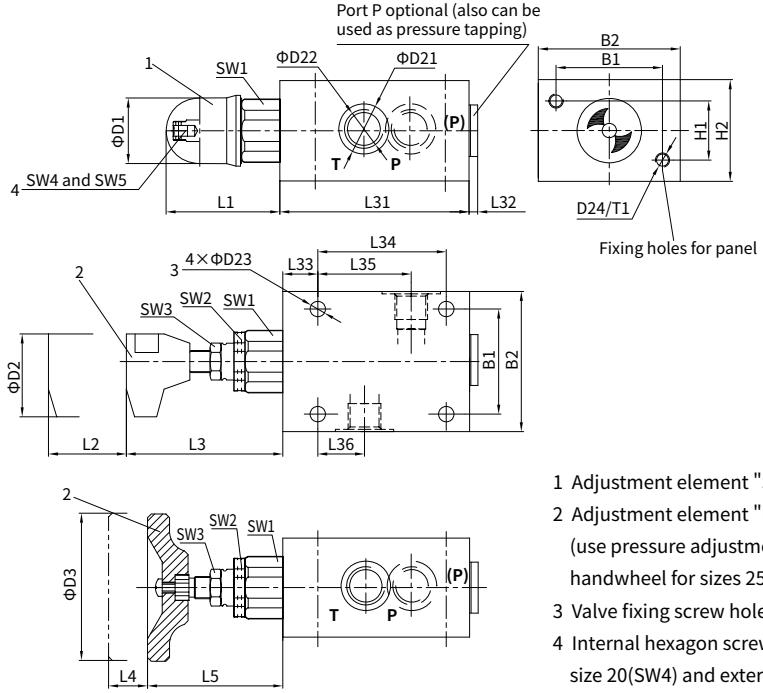

Φ0.05 A
a°
3.2
D11
ΦD12
1.6
45°
A
5
Port P
ΦD14
ΦD15
ΦD13
ΦD16
L21
L22
L23(valid length)
L24
L25
L27
L28
1.6
0.05 A
Port T
6



Unit dimensions

(Dimensions in mm)

· Threaded connection valve



1 Adjustment element "S"
2 Adjustment element "H" (use pressure adjustment handwheel for sizes 25 and 30)
3 Valve fixing screw hole
4 Internal hexagon screw S=6 for under size 20(SW4) and external hexagon S=13 for above size 25 (SW5)

Size	Weight(kg)	B1	B2	D1	D2	D3	D21	D22	D23	D24
6	Approx. 1.6	45	60	34	60	-	25	G1/4; M14×1.5	6.6	M6
(8)+10	Approx. 3.7	60	80	38			(28) 34	G3/8 M18×1.5; G1/2 M22×1.5	9	M8
(15)+20	Approx. 6.9	70	100	48			(42) 47	G3/4 M27×2; G1 M33×2		
(25)+30	Approx. 15.2	100	130	63	-	80	(56) 61	G1 1/4 M42×2; G1 1/2 48×2	11	M10

Size	L1	L2	L3	L4	L5	L31	L32	L33	L34	L35	L36	SW1	SW2	SW3	SW4	SW5	H1	H2	T1
6	72	11	83	-	-	80	2	15	55	40	20	32	30	19	6	-	25	40	10
(8)+10	68		79			100	(2) 3	20	70	49	21	36					40	60	20
(15)+20	65		77			135	(3) 4		100	65	34	46	36				50	70	
(25)+30	83	-	-	11	56	180	4	25	130	85	35	60	46		-	13	60	90	25

China
+86 400 101 8889

America
+01 630 995 3674

Germany
+49 172 3683463

Japan
+81 03 6809 1696

3.2

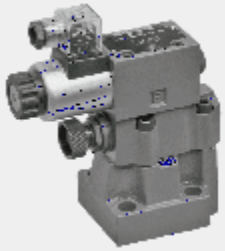
Pressure relief valve pilot operated

Type DB/DBW...L5X

Remote pressure adjusting valve

Type DBT

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



Contents

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

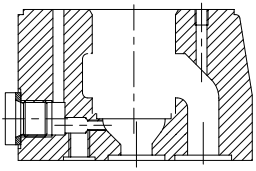
Types DB and DBW pressure valves are pilot operated pressure relief valves, used to limit (DB) or limit and unload (DBW) pressure via solenoid operation. The pressure relief valves consist of main valve (1) with main spool cartridge (3) and pilot operated valve (2) with pressure adjustment elements.

· 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 theoperational 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).



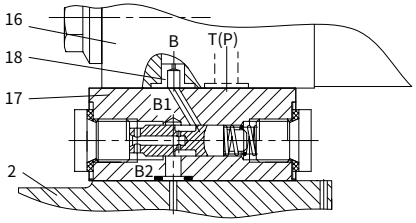
Function and configuration

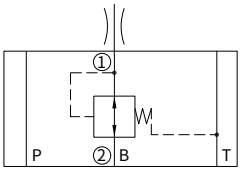
· Pressure relief valves with switching shock damping (sandwich) , type DBW../..S..R12

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 ..).





Indication: the directional valve is open

	DB...L5X...	**DB...L5X...X**	**DB...L5X...Y**	**DB...L5X...XY**
				
	DBW...L5X...	**DBW...L5X...X**	**DBW...L5X...Y**	**DBW...L5X...XY**
Normally close				
Normally open..			0.	V

DB $\frac{C}{T}$...L5X... DBW $\frac{C}{T}$..L5X...

Technical data

Fixing position				Optional					
Weight				DB...10	DB...15	DB...20	DB...25	DB...30	
	Sub-plate mounting	DB	kg	Approx.3	-	Approx.3.9	-	Approx.5.3	
		DBW	kg	Approx.4.5	-	Approx.5.4	-	Approx.6.8	
		DBC	kg	Approx.1.2 (Type DBWC add 1.5)kg					
		DBC10 or 30	kg	Approx.1.5 (Type DBWC10 and 30 add 1.5)kg					
	Threaded connection	DB..G..	kg	Approx.5.3	Approx.5.2	Approx.5.1	Approx.5.9	Approx.5.8	
		DBW..G..	kg	Approx.6.8	Approx.6.7	Approx.6.6	Approx.7.4	Approx.7.3	
	Switching shock damping		kg	Approx.0.6					
Techinical 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

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

Only DBW../...S... :
R12= 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

Only DBW:
G24 = 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

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 10 or 30)
Remote pressure adjusting valve =T [1]
(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)

1) DBT/DBWT are the same as DBC/DBWC, except that the small hole against the main valve hole is plugged.

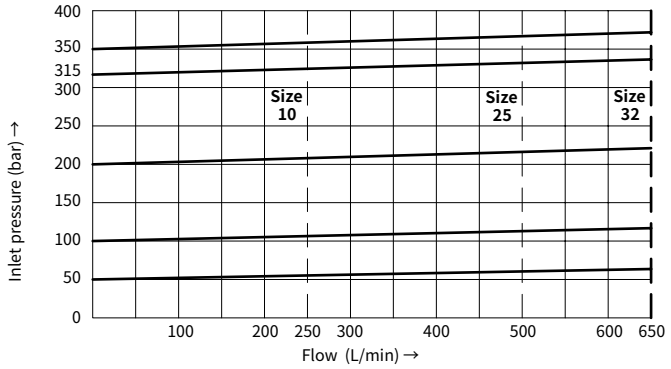
Notes:

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.

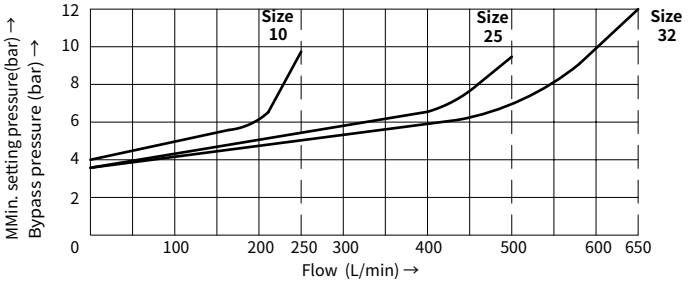
Performance curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP 46)

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.

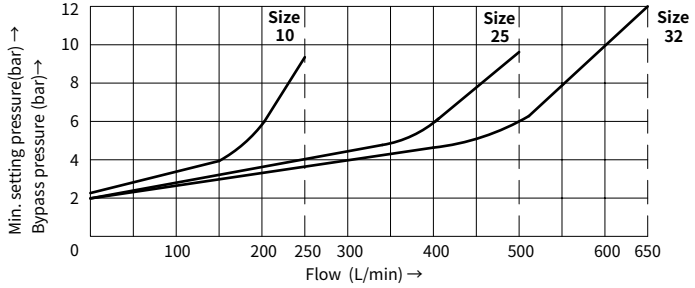
Inlet pressure in relation to the flow-rate



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



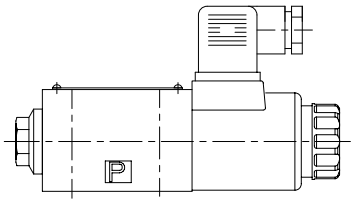
Minimum setting pressure and bypass pressure in relation to the flow-rate!
·Version "U"

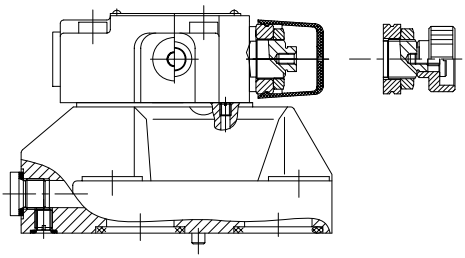


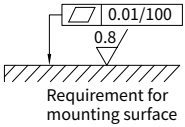
Unit dimensions

(Dimensions in mm)

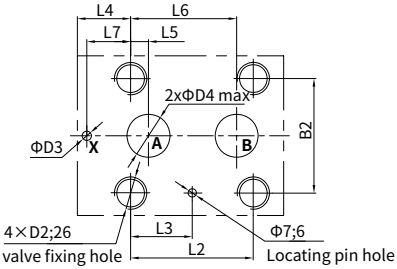
·Sub-plate mounting







Requirement for mounting surface

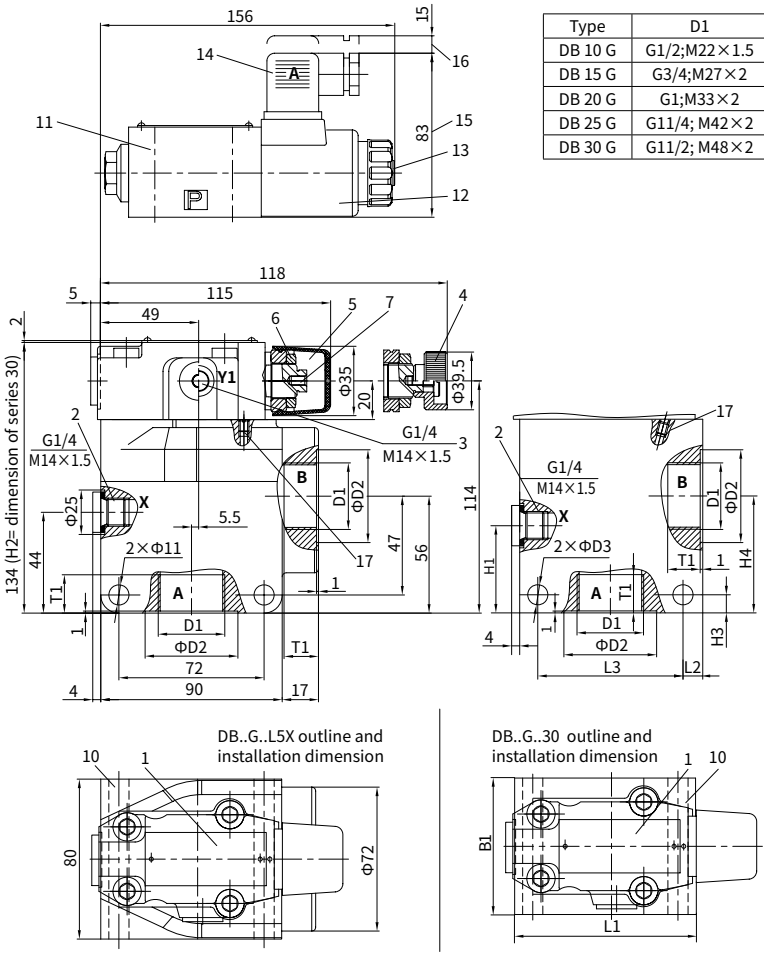


Dimensions of mounting surface

Unit dimensions

(Dimensions in mm)

·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	G11/4; M42×2	58	20
DB 30 G	G11/2; M48×2	65	22

DB..G..L5X outline and installation dimension

DB..G..30 outline and installation dimension

Note:
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.

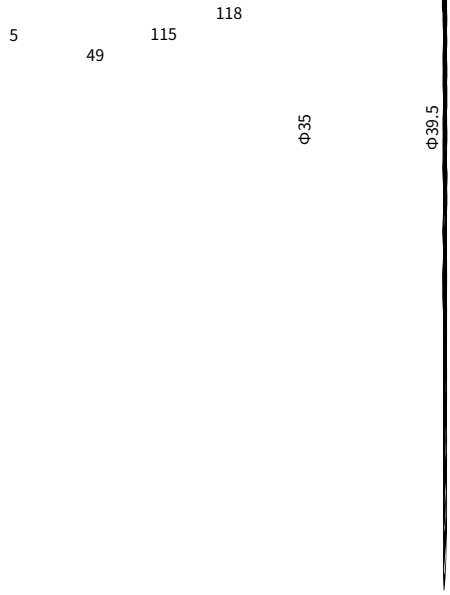
Outline and installation dimension of series 30 threaded connection valve:

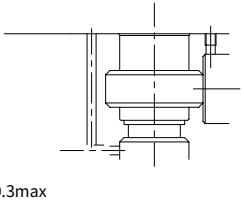
Type	B1	D3	H1	H2	H3	H4	L1	L2	L3
DB 10 G	63	9	27	125	10	62	85	14	62
DB 15 G									
DB 20 G						57			
DB 25 G	70	11	42	138	13	66	100	18	72
DB 30 G									

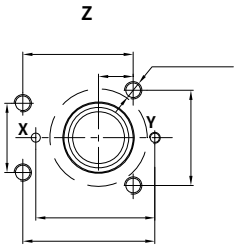
Unit dimensions

(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

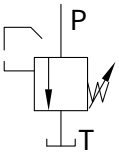
Adjusting handle =1

Series L30 to L39 =L3X
(L30 to L39: unchanged installation and connection dimensions)

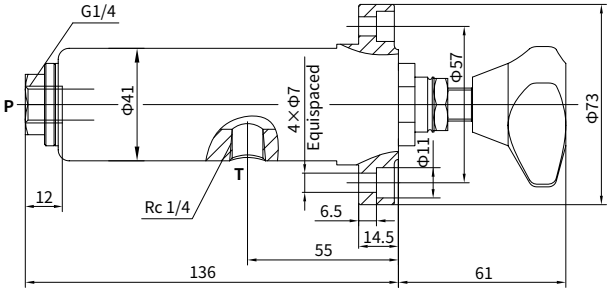
No code= NBR seals
V = FKM seals

10 = Max. secondary pressure 100bar
31.5 = Max. secondary pressure 315bar

·Symbol



·Connection dimension



3.3

Pressure relief valve pilot operated

Type DB...K...L4X

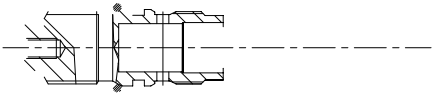
Sizes 6 and 10
up to 315 bar
up to 100L/min

Contents

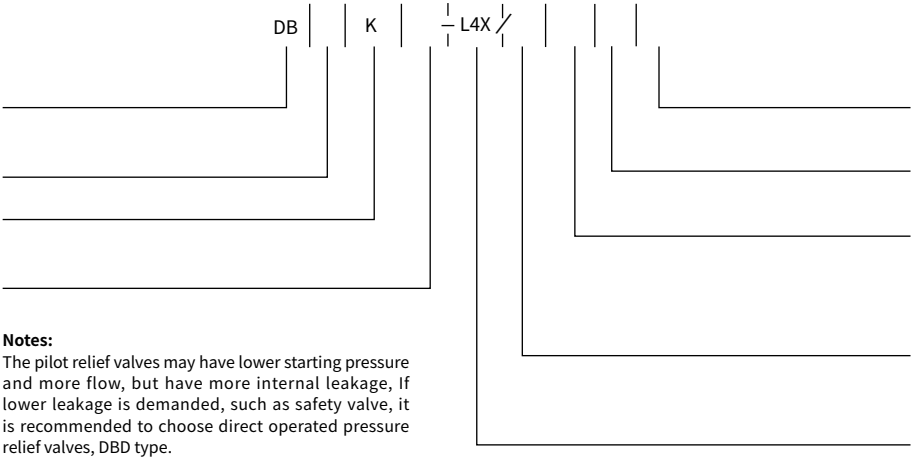
Features

- Cartridge valve
- 4 pressure ratings
- 2 adjustment elements:
  - Rotary knob
  - Adjustable bolt with protective cap

Pressure relief valves type DB..K.. are pilot operated pressure relief valves for installation in manifolds. They are used to limit the pressure in a hydraulic system. The system pressure is set via adjustment element (4). At static position, the valves are closed. Pressure in port A acts on the spool (1). Pressure fluid flows through orifice (2) to the spring loaded side of the spool (1) and through orifice (3) to the pilot poppet (6). If the pressure in port A rises beyond the value setting at spring (5), the pilot poppet (6) opens. Fluid can flow from the spring loaded side of spool (1), orifice (3),and channel (8) into port T(Y). The pressure drop moves spool (1) to open the connection from A to B, while the setting pressure at spring (5) is maintained. Pilot oil returns from the two spring chambers via port T(Y) externally.



Ordering code



Notes:
The pilot relief valves may have lower starting pressure and more flow, but have more internal leakage, If lower leakage is demanded, such as safety valve, it is recommended to choose direct operated pressure relief valves, DBD type.

Technical data

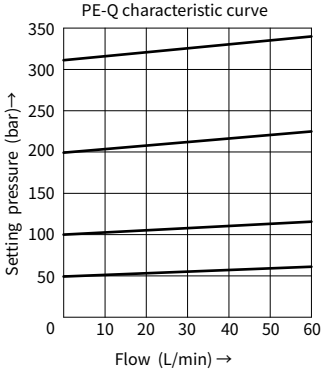
Size		6	10
Fluid		Mineral oil suitable for NBR and FKM seal	
		Phosphate ester for FKM seal	
Fluid temperature range	°C	-30 to +80 (NBR seal)	
		-20 to +80 (FKM seal)	
Viscosity range	mm^2/s	10 to 800	
Degree of contamination		Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15 , ISO4406	
Max.operating pressure	bar	315	
Max.setting pressure	bar	50; 100; 200; 315	
Max. flow-rate	L/min	to 60	to 100
Weight	kg	Approx. 0.22	Approx. 0.3

03

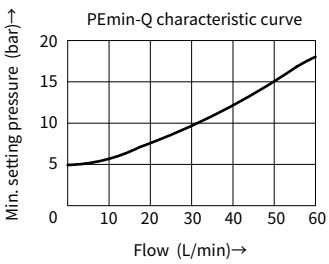
Characteristic curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

Size 6

PE-Q characteristic curve

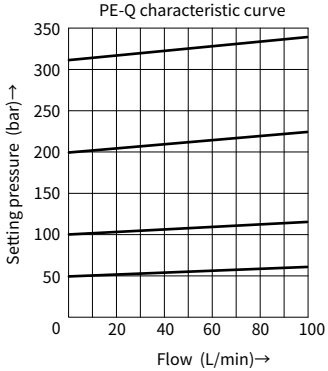


PEmin-Q characteristic curve

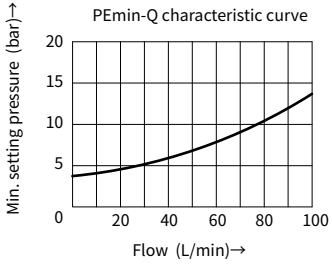


Size 10

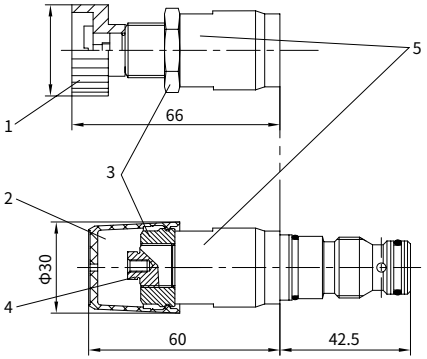
PE-Q characteristic curve

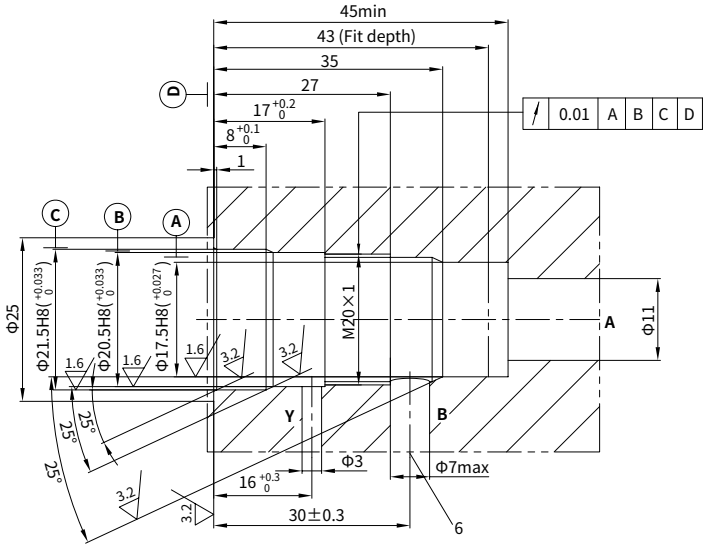


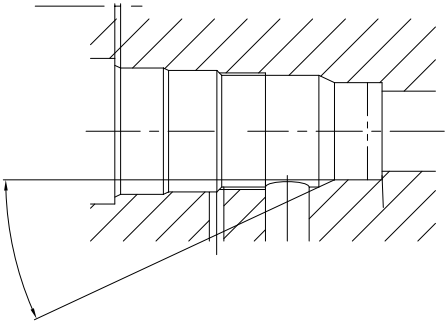
PEmin-Q characteristic curve



The curves are measured at zero back pressure.


1
2
3
4
5
66
Φ30
60
42.5


45min
43 (Fit depth)
35
27
17 +0.2 0
8 +0.1 0
1
D
0.01 A B C D
C
B
A
Φ25
Φ21.5H8(+0.033 0)
Φ20.5H8(+0.033 0)
Φ17.5H8(+0.027 0)
M20×1
Φ11
1.6
3.2
Y
B
25°
Φ3
Φ7max
16 +0.3 0
30±0.3
6



China
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3.4

Pressure relief valve pilot operated

Type DB20K...L1X

Size 20
up to 315bar
up to 400L/min

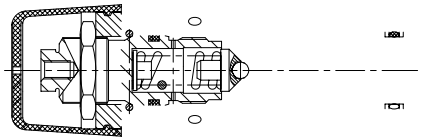
Contents

Features

-Cartridge valve
-4 pressure ratings
-2 adjustment elements:
• Rotary knob
• Adjustable bolt with protective cap

Pressure relief valves type DB..K.. are pilot operated pressure relief valves for installation in manifolds. They are used to limit the pressure in a hydraulic system. The system pressure is set via adjustment element (4). At static position, the valves are closed. Pressure in port A acts on the spool (1). Pressure fluid flows through orifice (2) to the spring loaded side of the spool (1) and through orifice (3) to the pilot poppet (6). If the pressure in port A rises beyond the value setting at spring (5), the pilot poppet (6) opens. Fluid can flow from the spring loaded side of spool (1), orifice (3), and channel (8) into port T(Y). The pressure drop moves spool (1) to open the connection from A to B, while the setting pressure at spring (5) is maintained. Pilot oil returns from the two spring chambers via port T(Y) externally.

DB20K2-L1X/...XY



DB...XY... **DB...Y...**

Symbols

Ordering code

Notes:

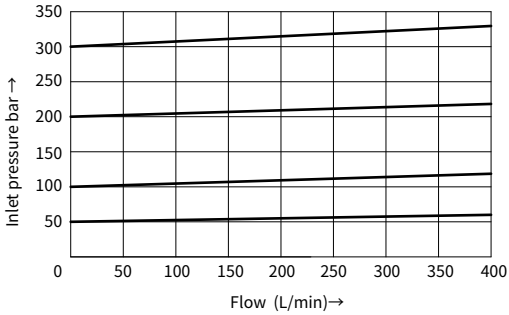
The pilot relief valves may have lower starting pressure and more flow, but have more internal leakage, If lower leakage is demanded, such as safety valve, it is recommended to choose direct operated pressure relief valves, DBD type.

Technical data

Fluid			Mineral oil suitable for NBR and FKM seal
			Phosphate ester for FKM seal
Fluid temperature range		℃	-30 to +80 (NBR 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		bar	315
Max. back pressure	Port Y	bar	250
Max.adjustable pressure		bar	50; 100; 200; 315
Max. flow-rate		L/min	To 400
Weight		kg	Approx. 0.35

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

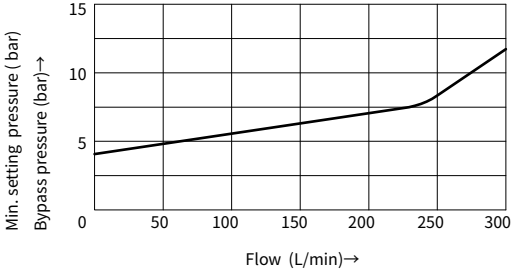
Inlet pressure in relation to the flow-rate



The curves are measured with external pilot oil drain at zero pressure.

With internal pilot oil drain the inlet pressure will increase with pressure at port B.

Min. setting pressure and bypass pressure in relation to the flow-rate



The curves are valid for outlet pressure PB=0

Φ29H8( )

03

Φ21H8( )

Φ29H8( )

3.5

Pilot operated pressure relief valve

Type ZDB/ Z2DB 6V..L4X

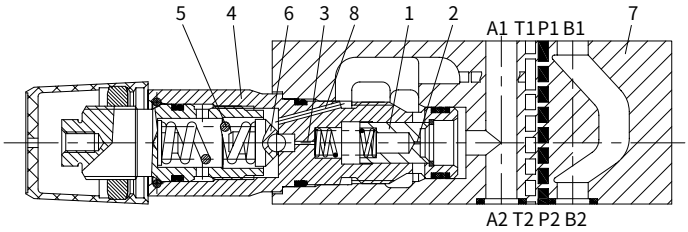
Size 6
up to 315bar
up to 60 L/min

Contents

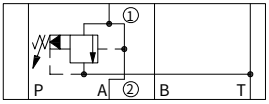
Features

- Sandwich plate valve
- Porting pattern to DIN 24 340 form A and ISO 4401
- For threaded connection and sub-plate mounting
- 4 pressure ranges
- 5 circuit options
- 2 adjustment elements:
  - Rotary knob
  - Adjustable bolt with protective cap

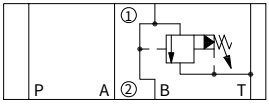
Pressure relief valve typez typez alve alve



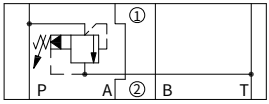
Type ZDB6VA...



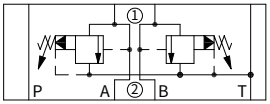
Type ZDB6VB...



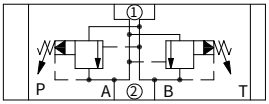
Type ZDB6VP...



Type ZDB6VC...



Type ZDB6VD...



Ordering code

Z | | DB | 6 | | – L4X / | | ★

Sandwich plate = Z

Only applies to versions VC and VD:
With 2 pressure relief valve cartridges =2

Pressure relief valve = DB

Nominal size 6 =6

Relief function from → to:
A → T =VA
P → T =VP
B → T =VB
A → T and B → T =VC
A → B and B → A =VD

Further details in clear text

No code = NBR seals
V = FKM seals

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

L4X = Series L40 to L49
(L40 to L49: unchanged installation and connection dimensions)

1= Rotary knob
2= Adjustable bolt with protective cap

03

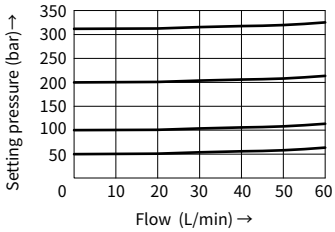
Technical data

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	10 to 800
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15 , ISO4406
Max.operating pressure		bar	to 315
Max.adjustable pressure		bar	50;100;200;315
Max. flow-rate		L/min	60
Weight	Type ZDB6	kg	Approx.1.2
	Type Z2DB6	kg	Approx.1.9

Characteristic curves

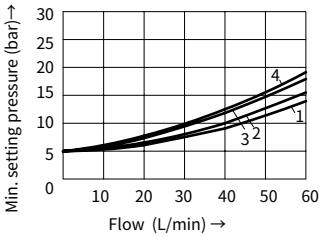
(Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

PE-Q characteristic curve



The curves are measured at zero back pressure.

PEmin-Q characteristic curve

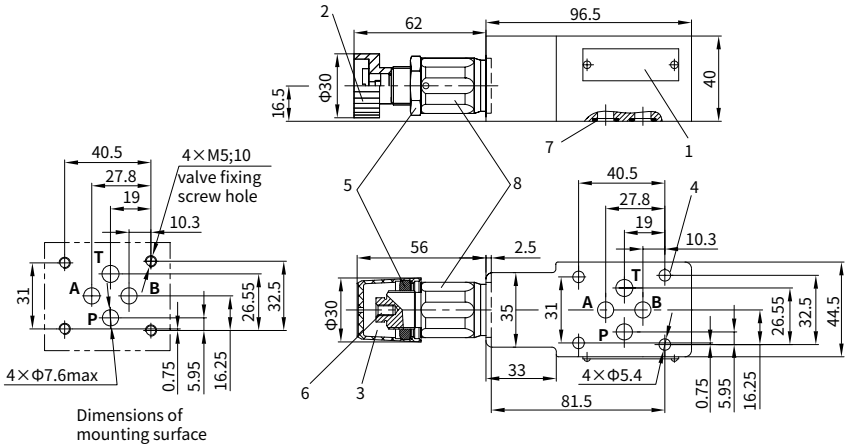


1. VD(A to B)
2. VA
3. VB and VC
4. VP and VD (B to A)

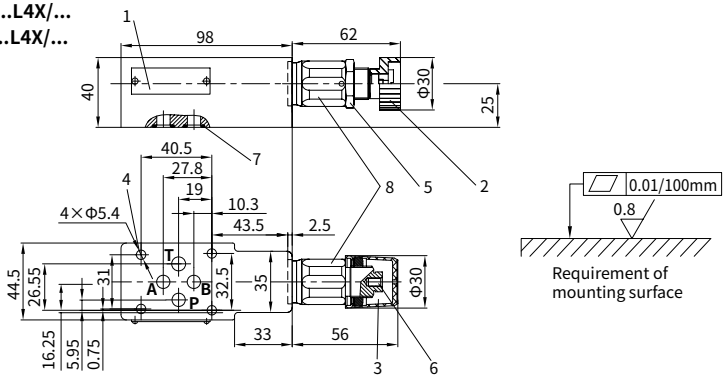
Unit dimensions

(Dimensions in mm)

Type ZDB6VA...L4X/...

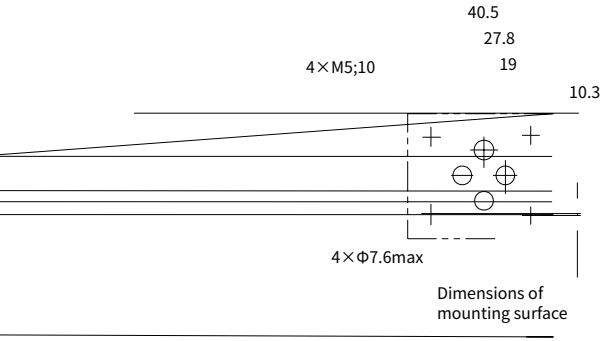


Type ZDB6VB...L4X/...
Type ZDB6VP...L4X/...



1 Nameplate
2 Adjustment element "1"
3 Adjustment element "2"
4 Valve fixing holes
5 Nut for locking S=24
6 External hexagon screw S=10
7 O-ring 9.25×1.78 (A2, B2, P2, T2)
8 External hexagon S=24
Tightening torque M_A =50 Nm

Valve fixing screws:
M5 according to GB/T 70.1-10.9,
the length according to sandwich,
tightening torque M_A =8.9 Nm,
must be ordered separately.


40.5
27.8
4×M5;10
19
10.3
4×Φ7.6max
Dimensions of
mounting surface

China
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Japan
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Pilot operated pressure relief valve

Type ZDB / Z2DB 10V..L4X

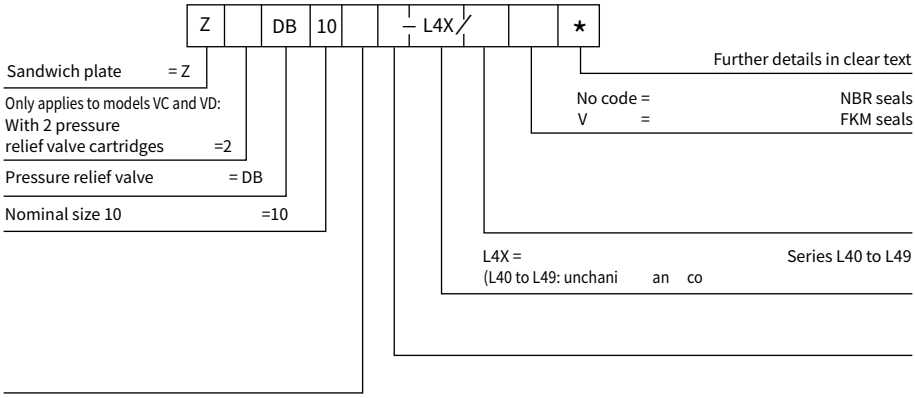
Size 10
up to 315bar
up to 100 L/min

Contents

Features

- Sandwich plate valve
- Porting pattern to DIN 24 340 form A and ISO 4401
- For threaded connection, and sub-plate mounting
- 4 pressure ratings
- 6 circuit options
- With one or two pressure relief cartridges
- 2 adjustment elements:
  - Rotary knob
  - Adjustable bolt with protective cap

Ordering code



03

Technical data

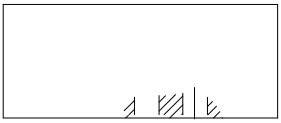
Characteristic curves

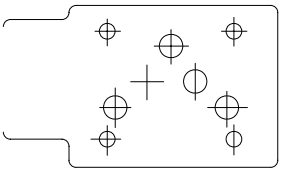
(Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

Unit dimensions

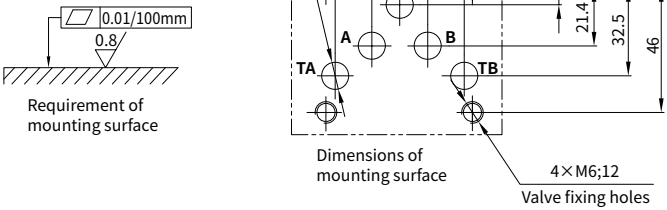
(Dimensions in mm)

Type ZDB10VA...L4X/.. **Type ZDB10VP...L4X/..** **Type ZDB10VT...L4X/..**

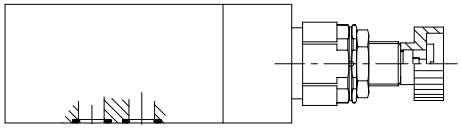


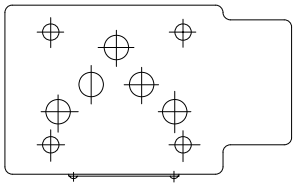


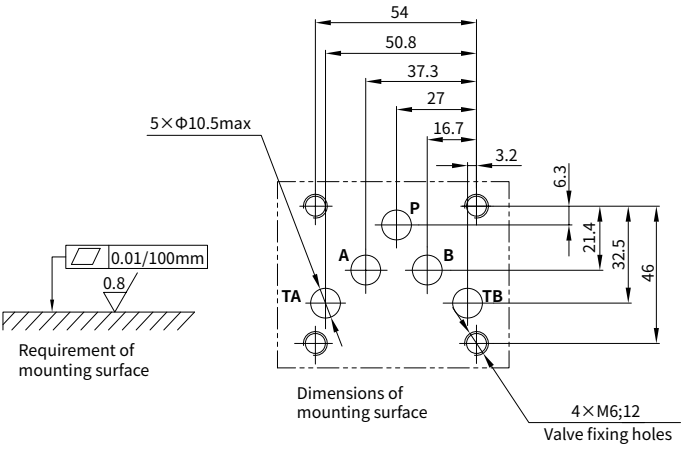
1 Nameplate
2 Adjustment element "1"
3 Adjustment element "2"
4 Valve fixing holes
5 Lockable nut S=24
6 External hexagon screw S=10
7 O-ring 12×2 (A2, B2, P2, TA2, TB2)
8 Type ZDB10 VA and VP version
9 Type ZDB10 VT version
10 External hexagon S=30
Tightening torque M_A=50Nm



Valve fixing screws:
M6 according to GB/T 70.1-10.9,
the length according to sandwich,
tightening torque M_A=15.5 Nm,
must be ordered separately.



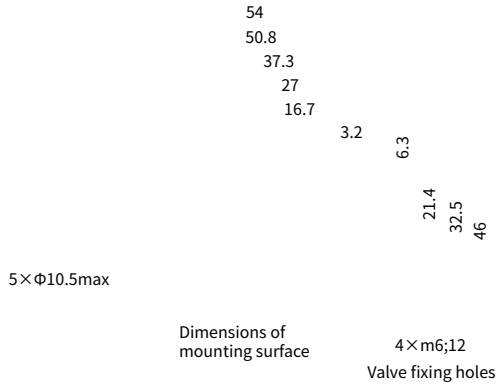



54
50.8
37.3
27
16.7
3.2
6.3
5×Φ10.5max
P
A
B
TA
TB
21.4
32.5
46
0.01/100mm
0.8
Requirement of
mounting surface
Dimensions of
mounting surface
4×M6;12
Valve fixing holes

Unit dimensions

(Dimensions in mm)

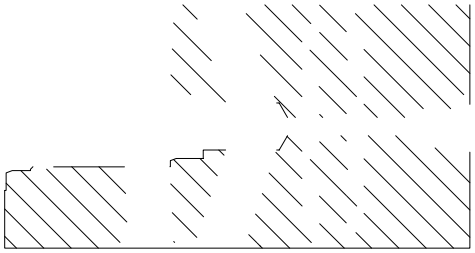
Type Z2DB10VC...L4X/..
Type Z2DB10VD...L4X/..



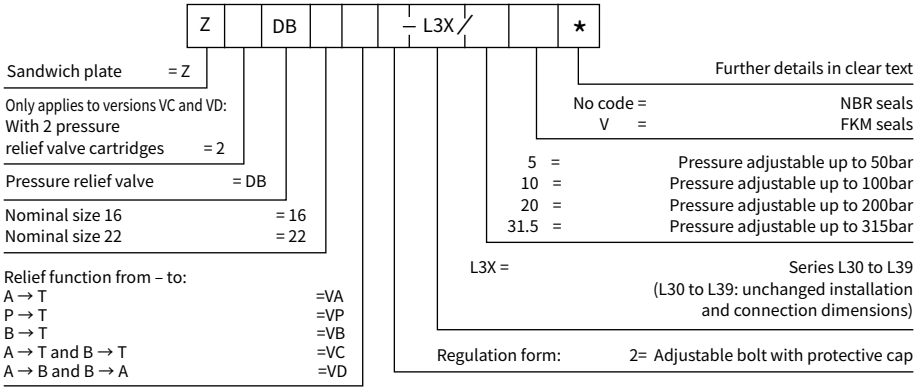
1 Nameplate
2 Adjustment element "1"
3 Adjustment element "2"
4 Valve fixing holes
5 Lockable nut S=24
6 External hexagon bolt S=10
7 O-ring 12×2 (A2, B2, P2, TA2, TB2)
8 External hexagon S=30
Tightening torque M_A =50 Nm

Valve fixing screws:
M6 according to GB/T 70.1-10.9,
the length according to sandwich,
tightening torque M_A=15.5 Nm,
must be ordered separately.

-Sandwich plate valve
-Porting pattern to DIN 24 340 form A and ISO4401
-For threaded connection, and sub-plate mounting
-4 for thread sub-pla A



Ordering code

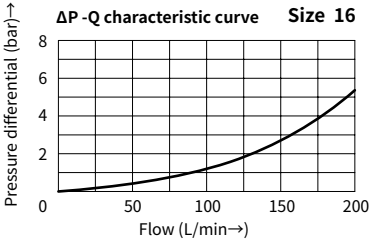


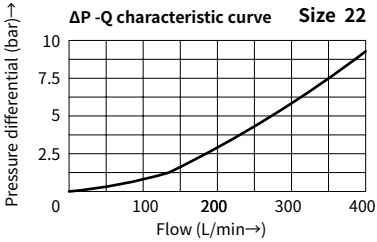
Technical data

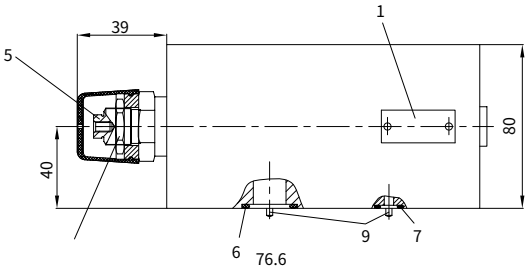
Fluid			Mineral oil suitable for NBR and FKM seal	
			Phosphate ester for FKM seal	
Fluid temperature range		°C	-30 to +80 (NBR seal)	
			-20 to +80 (FKM seal)	
Viscosity range		mm^2/s	10 to 800	
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15 , ISO4406	
Max.operating pressure		bar	to 315	
Max.adjustable pressure		bar	50; 100; 200; 315	
Size			16	22
Max. flow-rate		L/min	200	400
Weight	Type ZDB	kg	Approx. 9.4	Approx. 9.2
	Type Z2DB	kg	Approx. 11.8	Approx. 10.3

Characteristic curves

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







50

34.1

2×Φ6.5through

18.3

4×Φ11through

Pressure tapping

105 71.5 69.6 12.7 14.3 54 55.6

17.5 1.6 34.1 32 65.9 88.1 101.6 153 0

2×M6;19

76.6

50

4×M10;19

34.1

4×Φ19max
(A;B;T;P)

18.3

Φ7max

Φ4

71.5 69.9 35 54 55.6

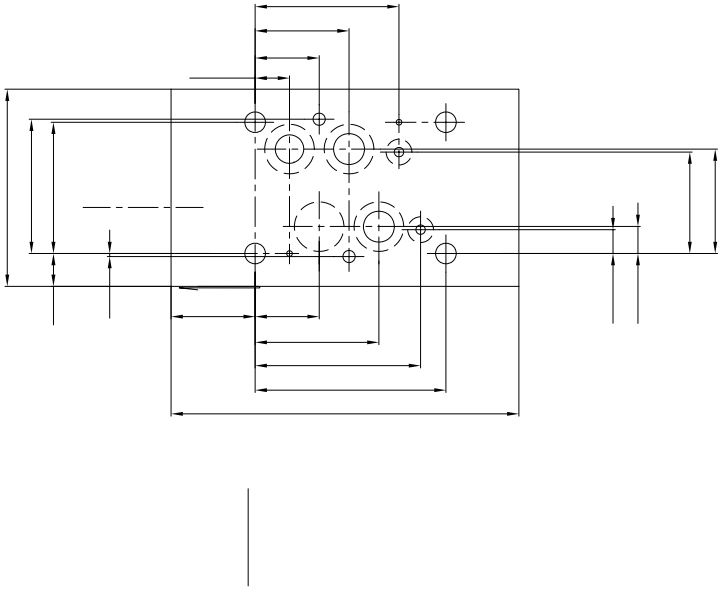
1.6 34.1 12.7 14.3

65.9

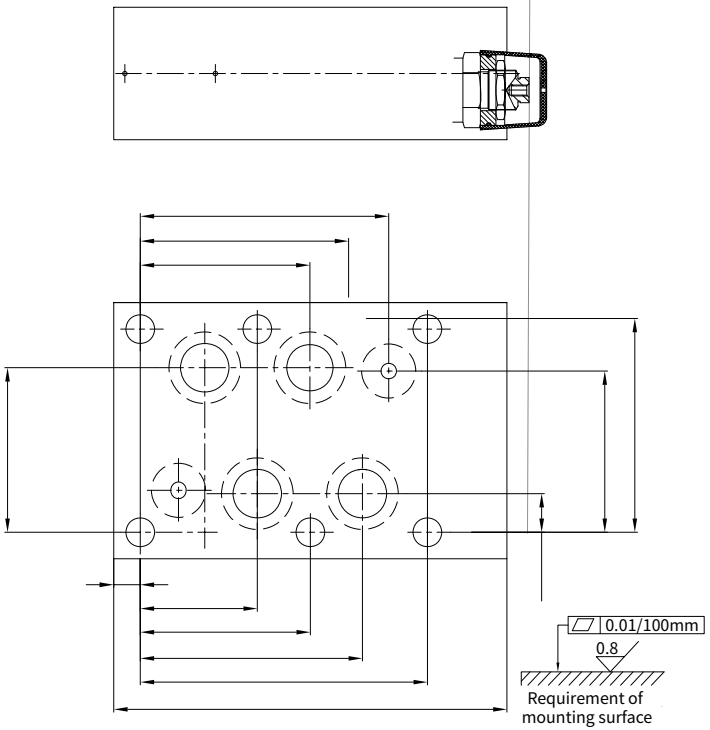
2×Φ4H12;8

88.1

101.6




10
3



73
96.8

17.5

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Japan
+81 03 6809 1696

3.8

Direct operated pressure relief valve

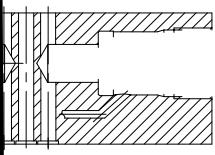
Type ZDBD...L1X

Sizes 6 to 32
up to 315bar
up to 250 L/min

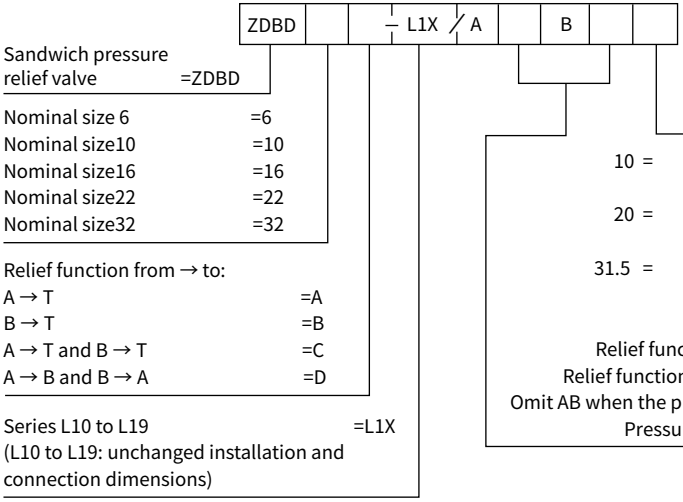
Contents

Features

- Sandwich plate valve
- Porting pattern to DIN 24 340 form A and ISO 4401
- Threaded connection, sub-plate mounting
- 3 pressure ratings
- 4 circuit options
- With one or two pressure relief cartridges
- 1 adjustment element:
  ·Adjustable bolt with protective cap



Ordering code



03

Technical data

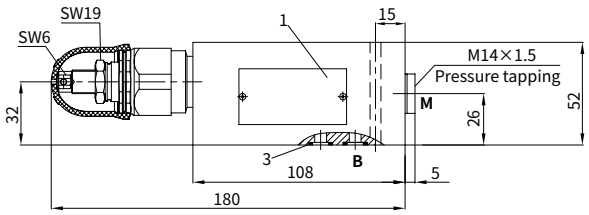
Fluid		Mineral oil suitable for NBR and FKM seal																		
		Phosphate ester for FKM seal																		
Fluid temperature range	°C	-30 to +80 (NBR seal)																		
		-20 to +80 (FKM seal)																		
Viscosity range	mm^2/s	10 to 800																		
Degree of contamination		Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15 , ISO4406																		
Max.operating pressure	bar	To 315																		
Max.adjustable pressure	bar	50; 100; 200; 315																		
Size		6				10				16				22				32			
Max. flow-rate	L/min	30				80				160				250				250			
Weight	Relief function	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
	kg	2	3	4		4	6	9		13	16	12		25	32	29		47	55	57	53

Unit dimensions (A, B and C)

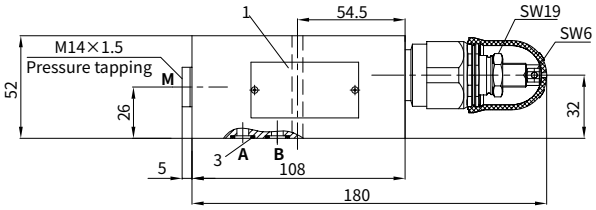
(Dimensions in mm)

Size 6

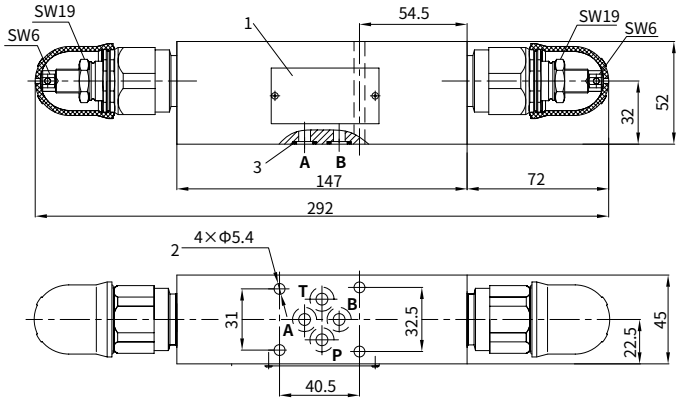
·Type ZDBD6A-L1X/...



·Type ZDBD6B-L1X/...

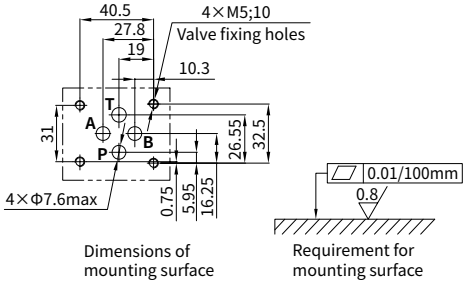


·Type ZDBD6C-L1X/...



1 Nameplate
2 Valve fixing holes
3 O-ring 9.25×1.78(A,B,P,T)

Valve fixing screws:
M5 according to GB/T 70.1-10.9,
the length according to sandwich,
Tightening torque M_A= 8.9 Nm,
must be ordered separately.

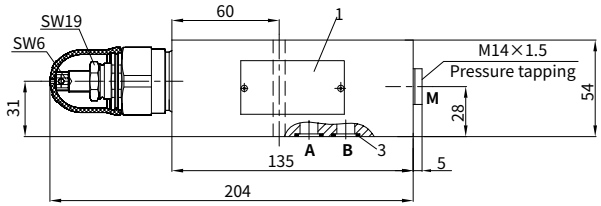


Unit dimensions (A, B and C)

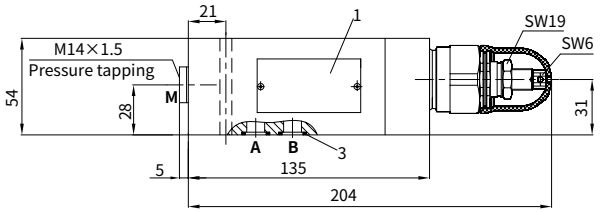
(Dimensions in mm)

Size 10

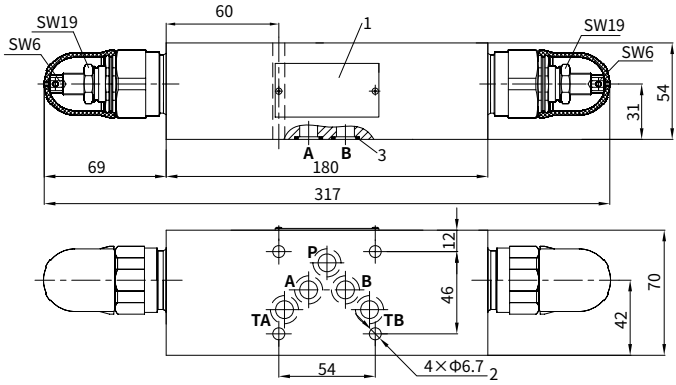
·Type ZDBD10A-L1X/...



·Type ZDBD10B-L1X/...

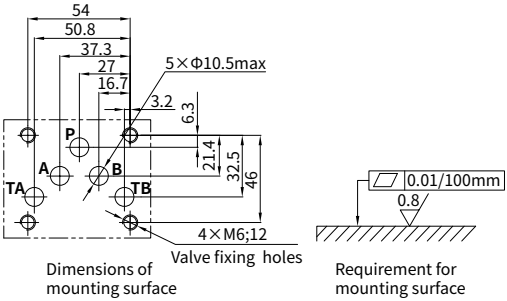


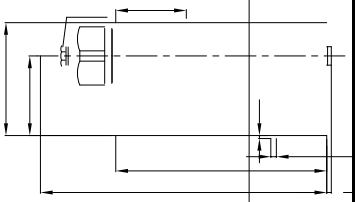
·Type ZDBD10C-L1X/...



1 Nameplate
2 Valve fixing holes
3 O-ring 12×2 (A, B, P, A, TB)

Valve fixing screws:
M6 according to GB/T 70.1-10.9,
the length according to sandwich,
Tightening torque M_A=15.5 Nm,
must be ordered separately.



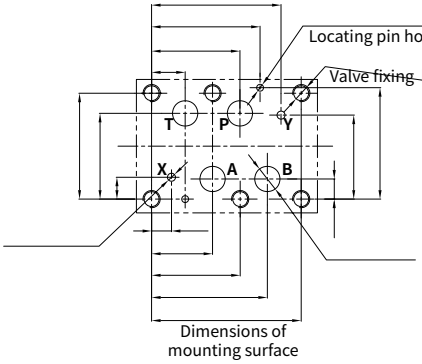


M

4**B**

31

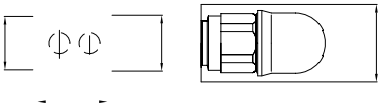
5

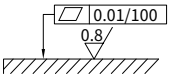


0.01/100mm

0.8

56.5 SW19





Requirement for
mounting surface

Unit dimensions (D)

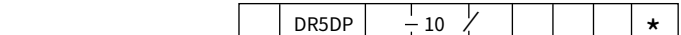
(Dimensions in mm)

The valve type DR5DP is a 3-way direct operated pressure reducing valve with a pressure relief function on the secondary side.
It is used to reduce the system pressure. The secondary pressure is set by the pressure adjustment element (4).
At static position, the valve is normally open and the pressure fluid flows unhindered from port P to port A. The pressure in port A acts at the spool area opposite to the compression spring (3) via the control line (6) and the spray nozzle(7). When the pressure in port A get the value setting at compression spring (3), the control spool (2) moves into the control position and keeps the setting pressure in port A constant. The internal control oil is taken from port A, or from external by port X. If the pressure in port A still increases due to external forces on the actuator, the control spool (2) moves still further towards the compression spring (3).This causes a flow path to be opened via control land(8) on the control spool (2). Sufficient fluid then flows back to tank to prevent any further pressure rise.
Fluid in spring chamber always drained to tank externally via port Y. For free return flow from port A to port P an optional check valve(5) can be fitted.

Symbols

Version YM	Version XYM	Version Y	Version XY
Pilot oil supply internal and drain external	Pilot oil supply external and drain external	Pilot oil supply internal and drain external	Pilot oil supply external and drain external

Ordering code



Without plate fixing flange
(Standard version)=No code
With plate fixing flange =F

Direct operated pressure
reducing valve nominal size 5

Rotary knob =1
Adjustable bolt with protective cap =2

Series 10 = 10

Notes :315bar only for version without check valve

Further details in
clear text

No code = NBR seals
V = FKM seals

No code = With check valve
M = Without check valve

Y = Pilot oil supply internal
Oil drain external

XY = Pilot oil supply external
Oil drain external

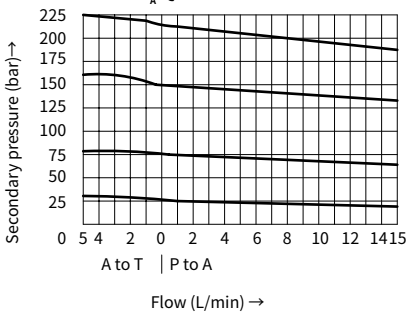
2.5 = Max. secondary pressure 25 bar
7.5 = Max. secondary pressure 75 bar
15 = Max. secondary pressure150 bar
21 = Max. secondary pressure 210 bar
31.5 = Max. secondary pressure 315 bar

Technical data

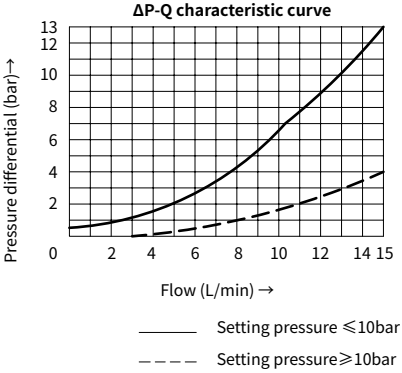
Fluid			Mineral oil suitable for NBR and FKM seal
			Phosphate ester for FKM seal
Fluid temperature range		°C	-30 to +80 (NBR seal)
			-20 to +80 (FKM seal)
Viscosity range		mm^2/s	10 to 800
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406
Max.operating pressure	Port P	bar	315
Max.secondary pressure	Port A	bar	25; 75; 150; 210; 315 (without check valve)
Max.backing pressure	PortT(Y)	bar	60
Max. flow-rate		L/min	15
Weight		kg	Approx.1.4

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

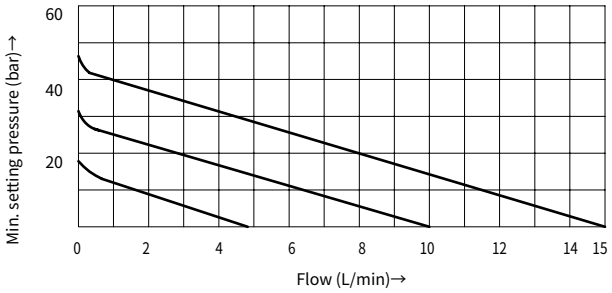
P_A-Q characteristic curve



ΔP-Q characteristic curve



P_{Amin}-Q characteristic curve

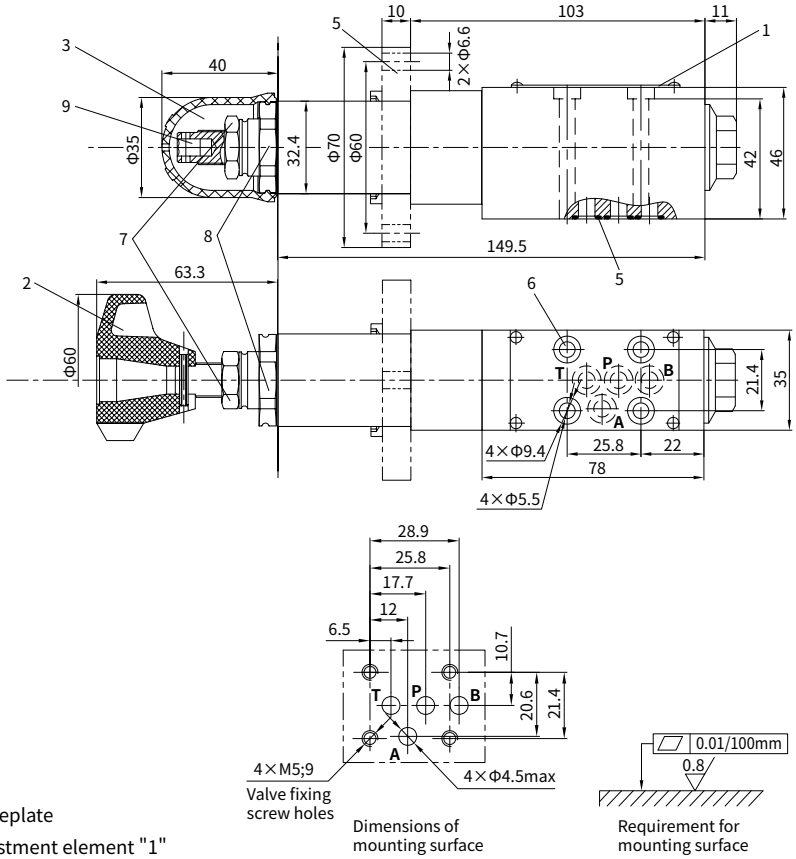


P_{Amin}-Q Characteristic curve shows the flow-rate in relation to the adjustable min. pressure rating from P to A.

For instance:
pressure is 25 bar and flow-rate is 10L/min,
adjusts the pressure of port A to 20bar,
when the secondary pressure increases to 23bar,
the flow-rate trends to zero.

Unit dimensions

(Dimensions in mm)



1 Nameplate
2 Adjustment element "1"
3 Adjustment element "2"
4 Plate fixing flange
5 O-ring 7×1.5 (P, T, A, B)
6 Valve fixing holes
7 Lockable nut S=19
8 External hexagon screw S=30
9 Internal hexagon screw S=6

It must be ordered separately, if connection plate is needed
Type: G 115/01A (G1/4) G 115/02A (M14×1.5)

Valve fixing screws:
GB/T 70.1-M5×50 -10.9, internal hexagon screw
Tightening torque M_A =9Nm

China
+86 400 101 8889

America
+01 630 995 3674

Germany
+49 172 3683463

Japan
+81 03 6809 1696

Hengli

Pressure reducing valve direct operated

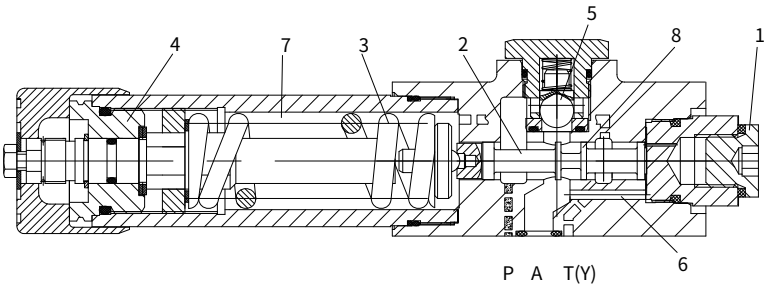
Type DR6DP...L5X

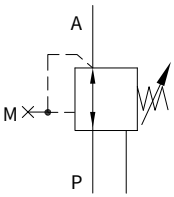
Size 6
up to 315 bar
up to 60 L/min

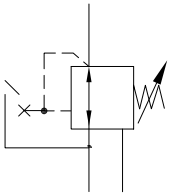
Contents

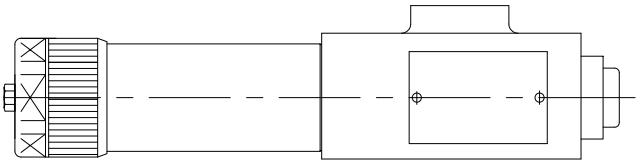
Features

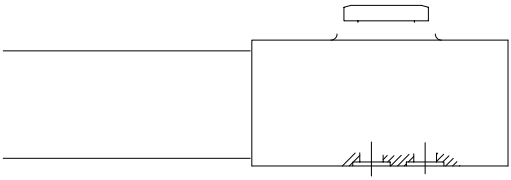
- Direct operated structure
- Porting pattern to DIN 24 340 form A, ISO4401
- 5 pressure ratings
- 2 adjustment elements:
  · Rotary knob
  · Adjustable bolt with protective cap
- With pressure gauge connection
- Check valve, optional

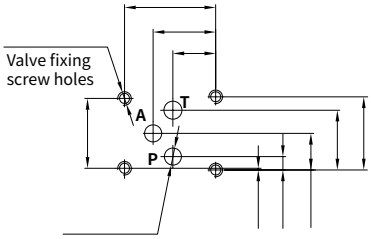

5
4
7
3
2
8
1
6
P A T(Y)


A
M
P








Valve fixing
screw holes
A
T
P
Dimensions of
mounting surface

China
+86 400 101 8889

America

Pressure reducing valve direct operated

Type DR10DP...L4X

Size 10
up to 210 bar
up to 80 L/min

Contents

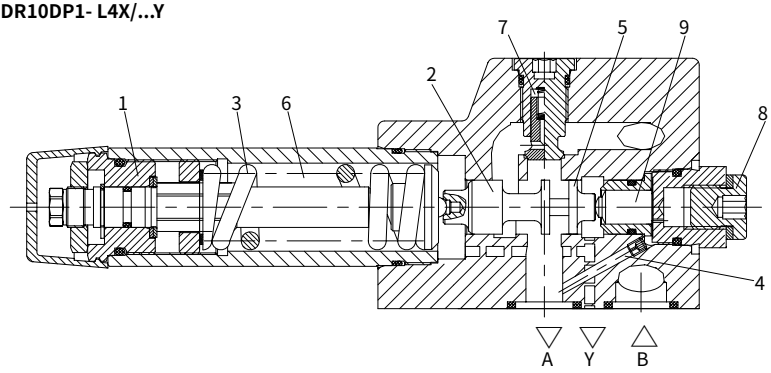
Features

- Direct operated structure
- Porting pattern conforms to DIN 24 340 form D and ISO5781
- 4 pressure ratings
- 2 adjustment elements:
  · Rotary knob
  · Adjustable bolt with protective cap
- With pressure gauge connection
- Check valve, optional

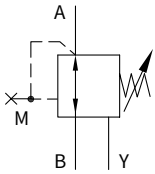
Function and configurations

The valve type DR10DP is a 3-way direct operated pressure reducing valve with a pressure relief function on the secondary side. It is used to reduce the system pressure.
The secondary pressure is set by the pressure adjustment element (1).
At static position, the valve is normally open and the pressure fluid flows unhindered from port B to port A. The pressure in port A acts at the small spool(9) area opposite to the compression spring (3) via the control line (4). When the pressure in port A get the value setting at the compression spring (3), the small spool(9) pushes the control spool (2) into the control position and keeps the setting pressure in port A constant. The internal control oil is taken from port A via the control line (4). If the pressure in port A still increases due to external forces on the actuator, a flow path is to be opened via control land(5) on the control spool (2) . Port Y is open and sufficient fluid then flows back to tank to prevent any further pressure rise.
Fluid in spring chamber (6) always drained to tank externally via port Y.
For free return flow from port A to port B an optional check valve(7) can be fitted.
One pressure gauge connection (8) used for monitoring the secondary pressure at the valve.

Type DR10DP1- L4X/...Y

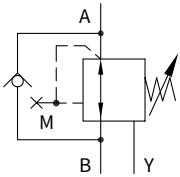


Symbols



Version "YM"
Pilot oil supply internal
oil drain external

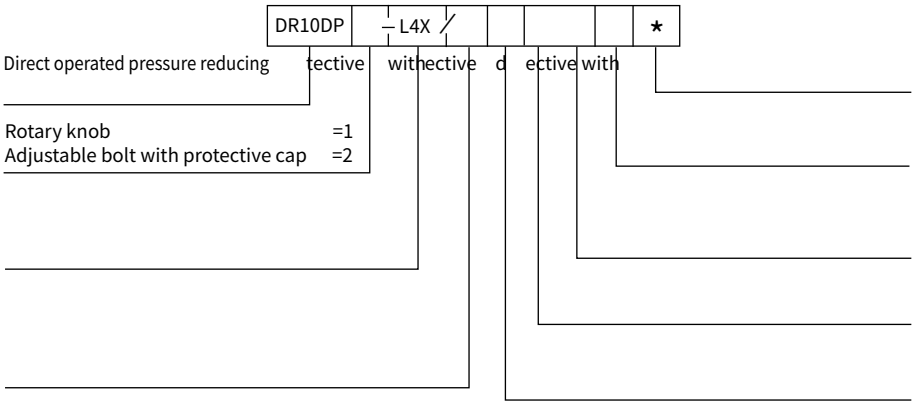
Without check valve



Version "Y"
Pilot oil supply internal
oil drain external

With check valve

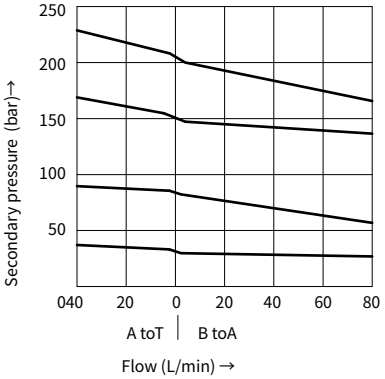
Ordering code



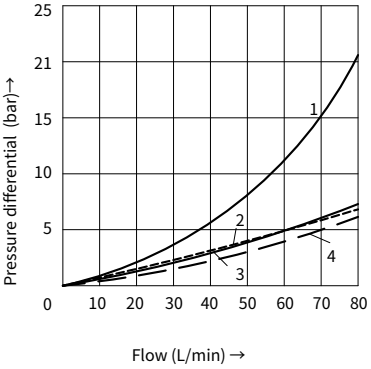
Technical data

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

P_A-Q characteristic curve



ΔP-Q characteristic curve

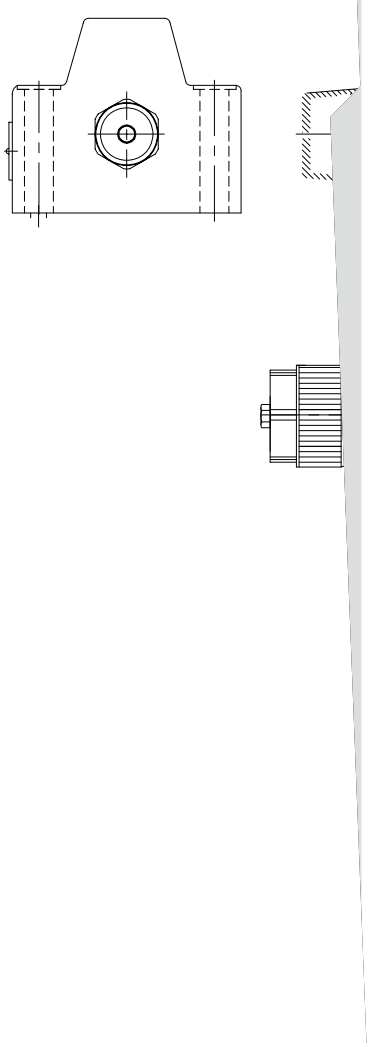


Notes:

The curve characteristics remain in a certain pressure range, with a low setting pressure.

The characteristic curves for the pressure relief function are valid when the back pressure is zero!

1 A to Y (pressure differential)
2 B to A (Y) (min. pressure differential)
3 Pressure differential) only over the check valve
4 Pressure differential) over the check valve and fully opened control cross section



China
+86 400 101 8889

America
+01 630 995 3674

Germany
+49 172 3683463

Japan
+81 03 6809 1696

Hengli

Pilot operated pressure reducing valves

Type DR...L5X

Sizes 10 to 32
up to 350 bar
up to 400L/min

Contents

Features

- Sub-plate mounting
- Porting pattern conforms to DIN 24 340, form D and ISO 5781
- Threaded connections
- Installation in manifolds
- 5 pressure ratings
- 4 adjustment elements
  · Rotary knob
  · Adjustable bolt with protective cap
- Check valve ,optional
  (only for sub-plate mounting)

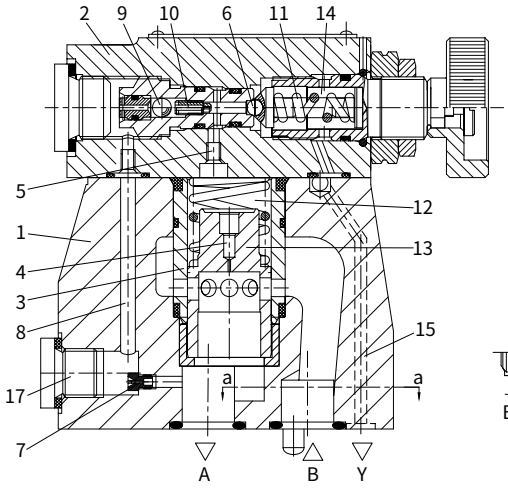
Function and configurations

Pressure control valves type DR series L5X are pilot operated pressure reducing valves. They are used to control secondary circuit in a system. They consist mainly of the main valve (1) with main spool assembly (3) and pilot valve (2) with pressure adjustment element.

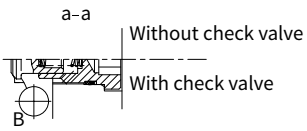
At static state, the valves are normally open, fluid flows free from port B to port A via the main spool (3). Pressure at port A acts on the underside of main spool(3) and its spring-loaded side via throttle orifice(4). Fluid also acts on the ball valve(6) of the pilot valve(2) via the channel (5). Meanwhile, pressure fluid flows via throttle orifice (7), control line (8),check valve (9) and throttle orifice (10) to the ball valve(6). Based on the setting value of the spring (11), control piston(13) keeps open, then fluid can flow free from port B to port A, until pressure at port A exceed the setting value of spring(11), and then ball valve (6) is opened. Control piston (13) moves to close position. When pressure at port A is balanced with setting value at spring, pressure reducing is achieved as expected. Control oil returns from spring chamber(14) to tank via channel (15).

A check valve(16) can be fitted optionally to give free return flow from line A to B.

Pressure gauge connection(17), used for monitoring the reduced pressure at the port A.

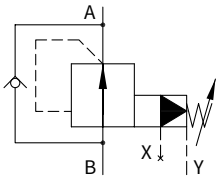


Type DR...-4-L5X/...Y

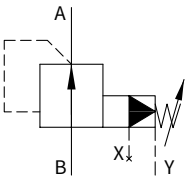


Symbols

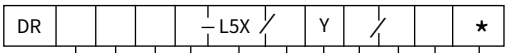
DR...L5X/...Y



DR...L5X/...YM



Ordering code



Pressure reducing valve,
pilot operated =No code
Pilot operated valve
Without main spool assembly
(No mark for size) =C
Pilot operated valve
With main spool assembly
(Marked with size 30)=C

Size	Connection	
	sub-plate mounting	threaded connection
10	=10	=10
15		=15
20	=20	=20
25		=25
32	=30	=30

Sub-plate mounting = -
Threaded connection =G

Regulating element:
Rotary knob =4
Adjustable bolt with protective cap =5

L5X= Series L50 to L59
(L50 to L59 series: unchanged installation andconnection dimensions)

5 = Max. secondary pressure 50bar
10 = Max. secondary pressure 100bar
20 = Max. secondary pressure 200bar
31.5 = Max. secondary pressure 315bar
35 = Max. secondary pressure 350bar
(350bar only for the version without check valve)

Y = Pilot oil drain external

No code = With check valve
(only for sub-plate mounting)
M = Without check valve

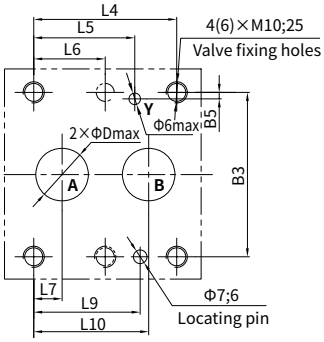
Only for Port X1 and Y1 of threaded connection valves and sub-plate mounting valves
No code = Inch thread
2 = Metric thread

No code = NBR seals
V = FKM seals

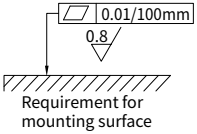
Further details in clear text

Technical data

Fluid				Mineral oil suitable for NBR and FKM seal				
				Phosphate ester for FKM seal				
Fluid temperature range			℃	-30 to +80 (NBR 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 B	bar	350				
Operating pressure range		Port A	bar	10 to 350				
Max.backing pressure		Port Y	bar	350 (only for without check valve); 315 (with check valve)				
Adjustable pressure		Max.	bar	50; 100; 200; 315; 350				
		Min.	bar	Related with flow-rate (refer to the curves)				
Size				DR10	DR15	DR20	DR25	DR30
Max. flow-rate		Sub-plate mounting	L/min	150	-	300	-	400
		Threaded connection	L/min	150	300	300	400	400
Fixing position				Optional				
Size				DR10	DR15	DR20	DR25	DR30
Weight	Sub-plate mounting	DR	kg	Approx.3.6	-	Approx.5.3	-	Approx.8.2
	Threaded connection	DR...G	kg	Approx.5.3	Approx.5.5	Approx.5.1	Approx.5.0	Approx.5.0
		DRC	kg	Approx.1.2				
		DRC30	kg	Approx.1.5				



Dimensions of mounting surface



Requirement for mounting surface

3.13

Pressure reducing valve pilot operated

Type 3DR10P...L6X

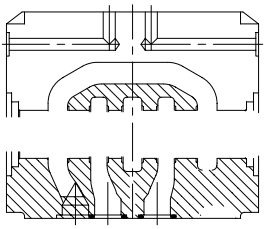
Size 10
up to 315 bar
up to 120 L/min

Contents

Features

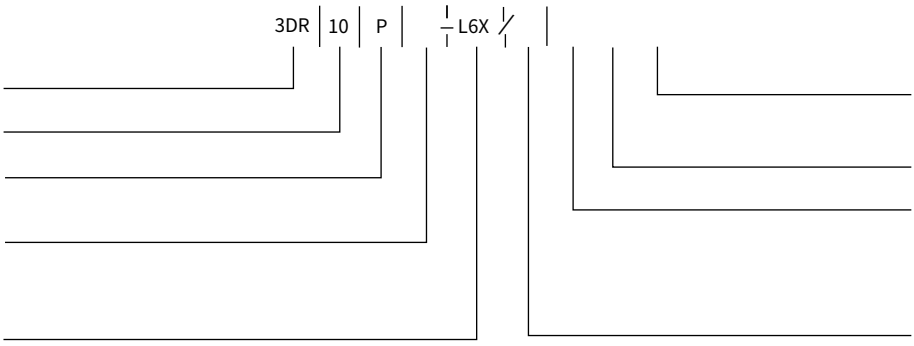
-Porting pattern conforms to DIN 24 340 form A and ISO 4401
-4 pressure ratings
-2 adjustment elements
·Rotary knob
·Adjustable bolt with protective cap
-Pressure gauge fitting

The pressure valve type 3DR10P is a pilot operated 3-way pressure reducing valve with pressure limitation in the secondary circuit. It is used for reducing pressure in a hydraulic system.
The pressure reducing valve consists mainly of main valve (1) , control spool (2) and pilot control valve (3) with pressure adjustment element (10).
At static state, the valves are normally open, fluid flows free from port P to port A. The pressure in port A is applied via the channel (4) to the spool area opposite to the compression spring (9). Fluid also acts on the ball valve (7) of the pilot valve (3) via the throttle orifice (6) and channel (5). Based on the setting value of the spring (11), control piston keeps open, then fluid can flow free from port P to port A, until pressure at port A exceed the setting value of spring (11), and then ball valve (7) is opened. Control piston (2) moves to close position. When pressure at port A is balanced with setting value at spring (11), pressure reducing is achieved as expected.
If the pressure in port A continuously increases due to external forces, the control spool (2) is moved still further against the compression spring (9). Thus port A is connected to port T via the control lands (8) at the control spool (2). Enough fluid flows to tank to ensure that the pressure does not rise any further.
The pilot oil returns from spring chamber (12) to tank without back pressure via control line (13) to port Y.
A pressure gauge connection(14) makes it possible to monitor the reduced pressure in port A.



Type 3DR10P5-L6X/...

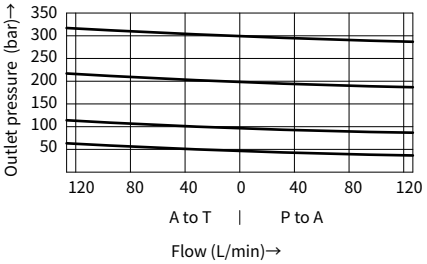
Ordering code



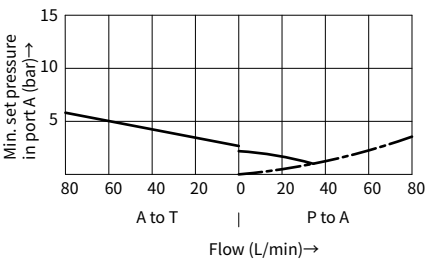
Technical data

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

P_A-Q Characteristic curve

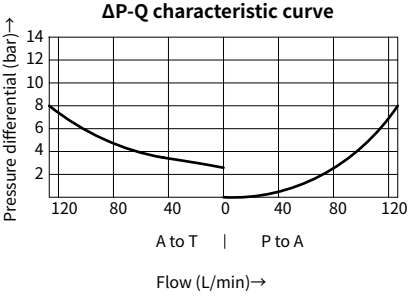


P_{min}-Q characteristic curve

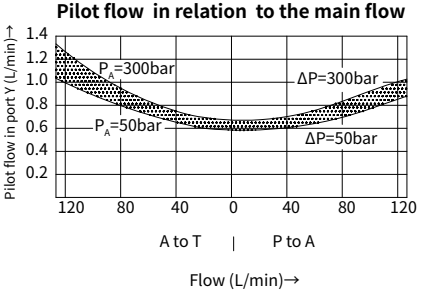


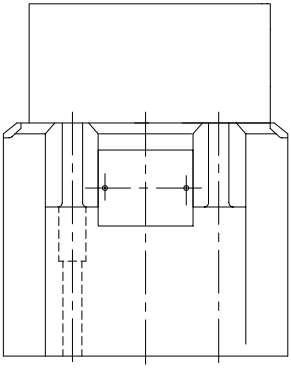
03

ΔP-Q characteristic curve



Pilot flow in relation to the main flow





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3.14

Pressure Reducing Valve Pilot Operated

Type 3DR16P...L7X

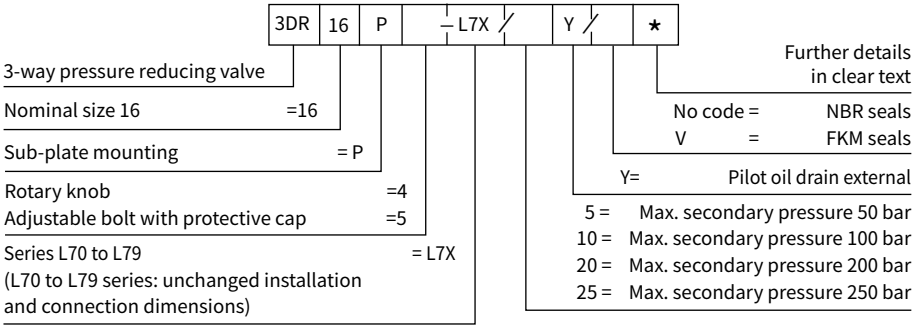
Size 16
up to 250bar
up to 220 L/min

Contents

Features

- Porting pattern to DIN 24 340 form A and ISO 4401
- 4 pressure ratings
- 2 adjustment elements
  - Rotary knob
  - Adjustable bolt with protective cap
- Pressure gauge fitting

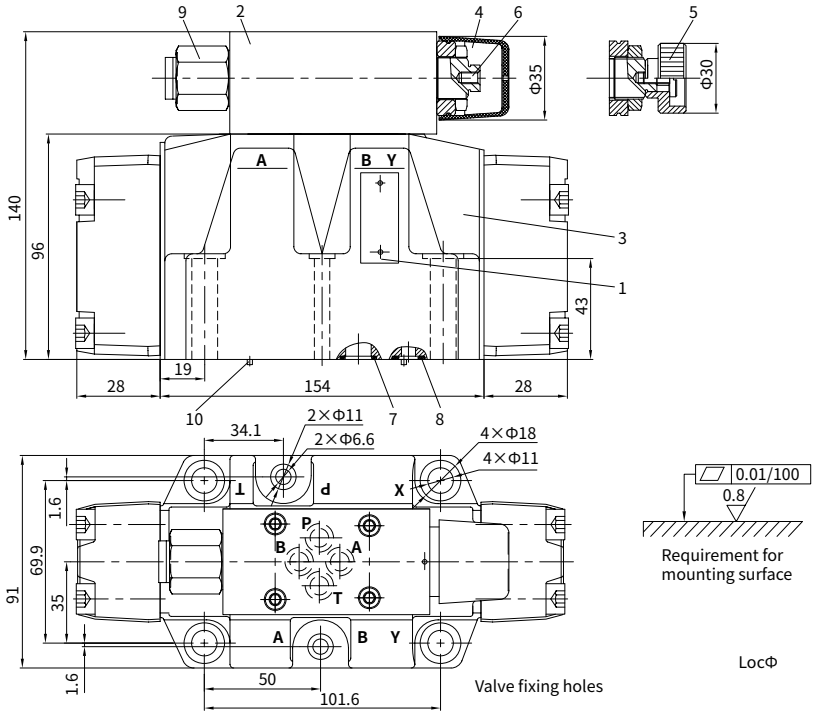
Ordering code



03

Technical data

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	10 to 800
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15 , ISO4406
Nominal pressure		bar	315
Max.operating pressure	port P	bar	315
Max.operating pressure	port A	bar	250
Max.operating pressure	port Y	bar	Separate and at zero pressure to tank
Setting pressure	Min.	bar	Dependent on the flow (see curves on page 04/06)
	Max.	bar	50; 100; 200; 250
Max. flow-rate		L/min	220
Weight		kg	Approx.8.8


9
2
4
6
5
Φ35
Φ30
140
96
A
B Y
3
1
43
19
28
154
28
10
7
8
2×Φ11
2×Φ6.6
34.1
4×Φ18
4×Φ11
1.6
69.9
35
91
1.6
50
101.6
P
B
A
T
A
B Y
d
X
0.01/100
0.8
Requirement for
mounting surface
LocΦ
Valve fixing holes

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Hengli

3.15

Pressure Reducing Valve Direct Operated

Type ZDR6D...L4X

Size 6
Up to 210 bar
Up to 50L/min

Contents

Features

- Sandwich plate design
- Mounting face meeting requirements for DIN24340 A and ISO4401
- 4 pressure ranges
- 2 adjustment forms
  Rotary Knob
  Adjusting screw with protective cover
- Connector with pressure gauge
- Selectable one-way valve

Function and configuration

Pressure reducing valves type ZDR6D.. are 3-way direct operated, sandwich plate design with a pressure reducing function on the secondary side. It is used to reduce the system pressure. The pressure reducing valve basically consists of the housing (1), the control spool (2), two compression springs (3) and the adjustment element (4) as well as with an optional check valve.

Model DA:

At static state, the valve is normally open, and fluid can flow freely from port P2 to port P1 (version "DP") or from port A1 to port A2 (version "DA"). Pressure in port P1 acts at the spool area via control line (5) and is balanced with the setting value of the compression spring (3).

When the pressure in port P1 exceeds the setting value of the spring (3), the control spool (2) moves further towards the compression spring (3), the opening aperture at port P is getting smaller until fluid at port P1 flows back to the tank through the orifice (6) of the control spool (2) to prevent any further rise in pressure. The leakage oil in spring chamber (7) is always drained to tank through port T (Y).

A check valve can be fitted optionally in version "DA" for free flow from ports A2 to ports A1 .

A pressure gauge connection (8) permits the secondary pressure to be monitored.

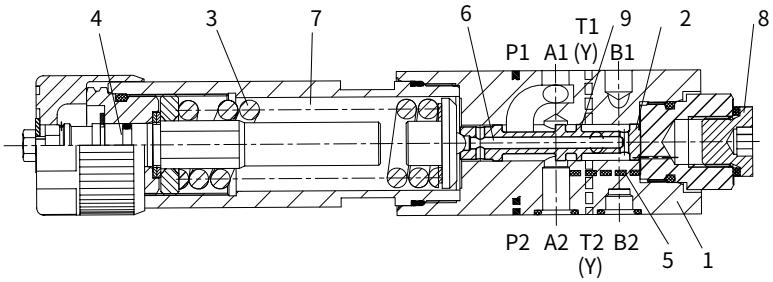
In model DA, one-way valve can only be mounted with the oil port from A2 to A1 to make the flow passage smooth.

Model DP and DB:

In model DP, oil port P1 is pressure reduced; signal and control oil is provided from the inside of oil port P1.

In model DB, oil port P1 is pressure reduced; but control oil is from oil port B.

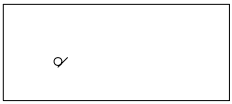
Type: ZDR6DA1-L4X/...YM...

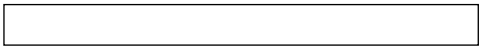


Note:

1. In model DB, when directional valve is in position from P to A, please make sure the pressure of oil port B is no more than the set value, otherwise, the pressure of oil port A is reduced.

2. For internal leakage, superposition relief value for in pair with superposition (hydraulic controlled) one-way valve shall be installed between the superposition (hydraulic control) one-way valve and the directional change valve.

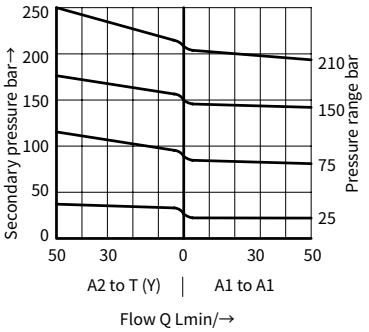




Characteristic curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

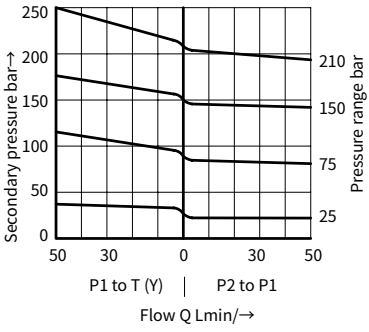
Type ZDR6DA

p_A-q_v Characteristic curves



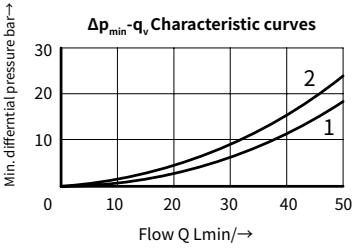
Type ZDR6DP and ZDR6DB

p_A-q_v Characteristic curves

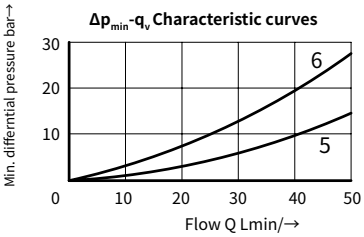


Note: if the set pressure is low, the performance curve is within the corresponding pressure level range.

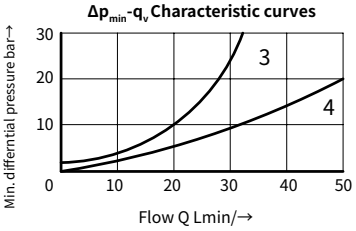
Δp_{min}-q_v Characteristic curves



Δp_{min}-q_v Characteristic curves



Δp_{min}-q_v Characteristic curves



This work curve is effective to the relief function in case of outlet pressure = 0 within the overall range.

1 A1 to A2
2 A2 to T(Y) (the third flow route)
3 Flow from A2 to A1 just goes through one-way valve.
4 Flow from A2 to A1 just goes through one-way valve and fully-open main valve.
5 P2 to P1
6 P1 to T(Y) (the third flow route)

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3.16

Pressure reducing valve direct operated

Type ZDR10D...L5X

Size 10
up to 210 bar
up to 80 L/min

Contents

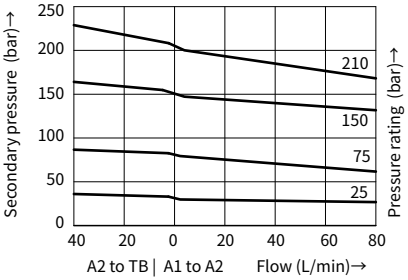
Features

- Sandwich plate structure
- Porting pattern to DIN 24 340, form A and ISO 4401
- 4 pressure ratings
- 2 adjustment elements:
  - Rotary knob
  - Adjustable bolt with protective cap
- Pressure reduction in ports A, B or P
- Check valve, optional

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

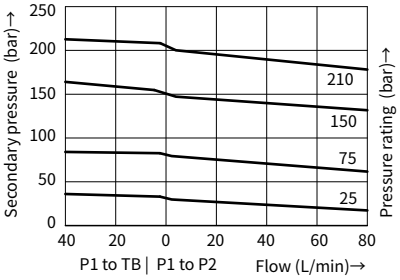
Type ZDR 10 DA..–L5X/...

p_A-q_V characteristic curves



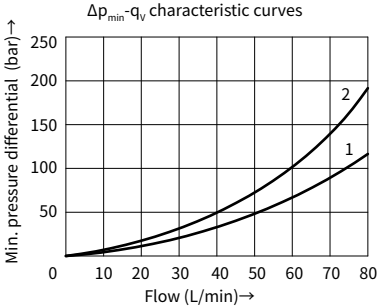
Type ZDR 10 DP..–L5X/... and
Type ZDR 10 DB..–L5X/...

p_A-q_V characteristic curves

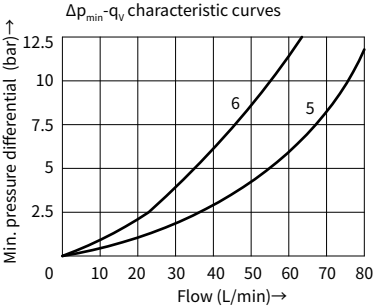


Note:
The curve characteristics remain, with low set pressures, the same in relation to the pressure rating.

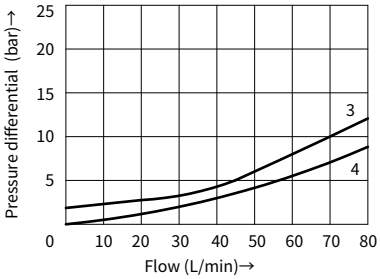
Δp_{min}-q_V characteristic curves



Δp_{min}-q_V characteristic curves

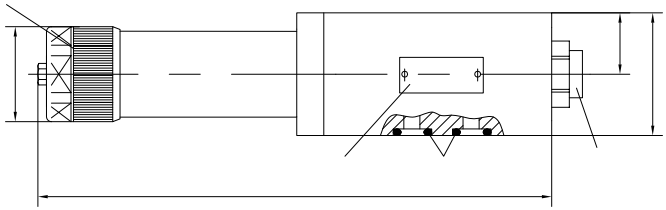


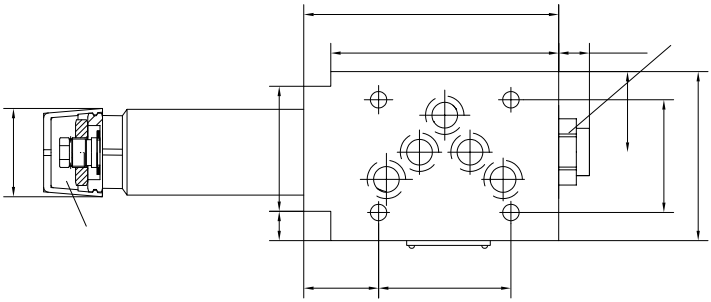
Δp-q_V characteristic curves

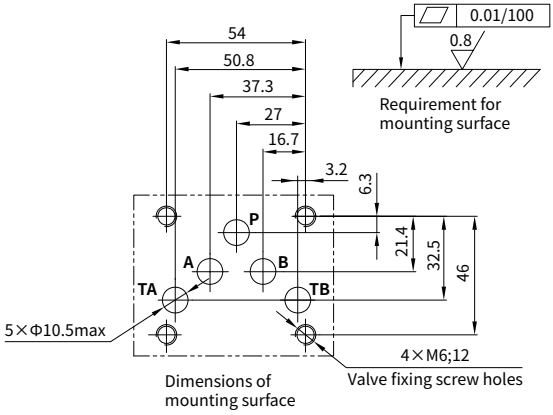


1 A1 to A2
2 A2 to TB (3rd. flow path)
3 A2 to A1 flow via check valve only
4 A2 to A1 flow via check valveand fully open controlcross section
5 P2 to P1
6 P1 to TB (3rd. flow path)

The characteristic curves for the pressure relief function are valid for the outlet pressure = 0bar over the entireflow range!






0.01/100
0.8
Requirement for
mounting surface
54
50.8
37.3
27
16.7
3.2
6.3
P
A
B
TA
TB
21.4
32.5
46
5×Φ10.5max
4×M6;12
Dimensions of
mounting surface
Valve fixing screw holes

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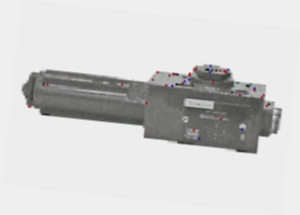
3.17

Pressure sequence valve direct operated

Type DZ6DP...L5X

Size 6
up to 315 bar
up to 60 L/min



Contents

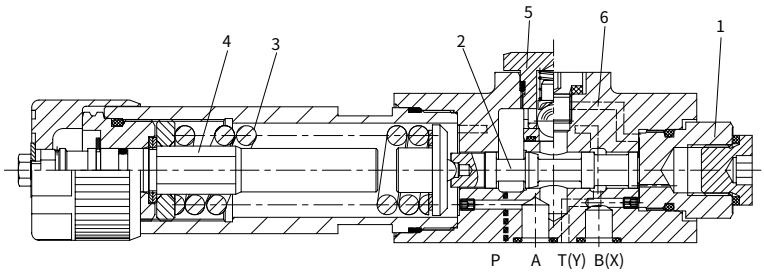
Features

- Direct operated
- Porting pattern to DIN 24 340, form A and ISO 4401
- 5 pressure ratings
- 2 adjustment elements:
  • Rotary knob
  • Adjustable bolt with protective cap
- Pressure gauge connection
- Check valve, optional

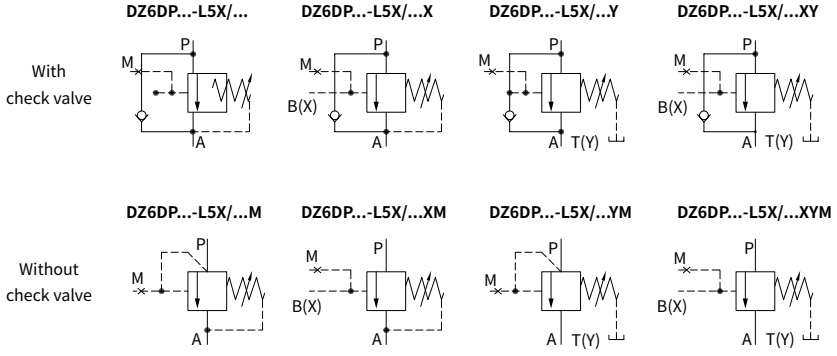
Function and configuration

The valve type DZ6DP is a direct operated pressure sequence valve. It is used for the switching over for pressure dependent connection of a secondary system. The sequence pressure is setting via the adjusting element(4).
The spring (3) holds the control spool (2) in the neutral position, the valve is blocked. The pressure in channel P is acting at the end surface of the control spool (2) opposite the spring (3) via the control line (6). If the pressure in channel P reaches the setting value of the spring(3), the control spool (2) is moved to the left and the connection P to A is opened. In this case, fluid flows from channel P to A without pressure drop in channel P.
The control signal is adopted internally via the control line (6) from channel P or externally via port B (X).
Depending on the use of the valve the leakage oil drain is externally via port T (Y) or internally via A.

Type DZ6DP1-L5X/...



Symbols



Ordering code

DZ6DP – L5X / / / ★

Direct operated pressure sequence valve nominal size 6

Rotary knob =1
Adjustable bolt with protective cap =2

Series L50 to L59 = L5X
(L50 to L59 series: unchanged installation and connection dimensions)

Max. secondary pressure 25 bar =2.5
Max. secondary pressure 75 bar =7.5
Max. secondary pressure150 bar =15
Max. secondary pressure 210 bar =21
Max. secondary pressure 315 bar =31.5 (Note 1)

Pilot oil supply internal, oil drain internal: No code
Pilot oil supply external, oil drain internal: X
Pilot oil supply internal, oil drain external: Y
Pilot oil supply external, oil drain external: XY

With check valve: No code
Without check valve: M

Pressure tapping thread
Incha thread: No code
Metric thread: 2

NBR seals: No code
FKM seals: V

Further details in clear text

Notes 1: 315bar only for adjustment form "2"and without check valve .

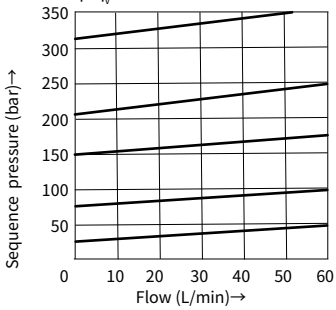
03

Technical data

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	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 P, A, B(X)	bar	315
	Port T(Y)	bar	160
Max. adjustable sequence pressure		bar	25; 75; 150; 210; 315
Max. flow-rate		L/min	60
Weight		kg	Approx. 1.6

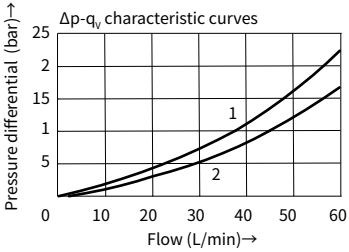
Characteristic curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

p-q_v characteristic curves

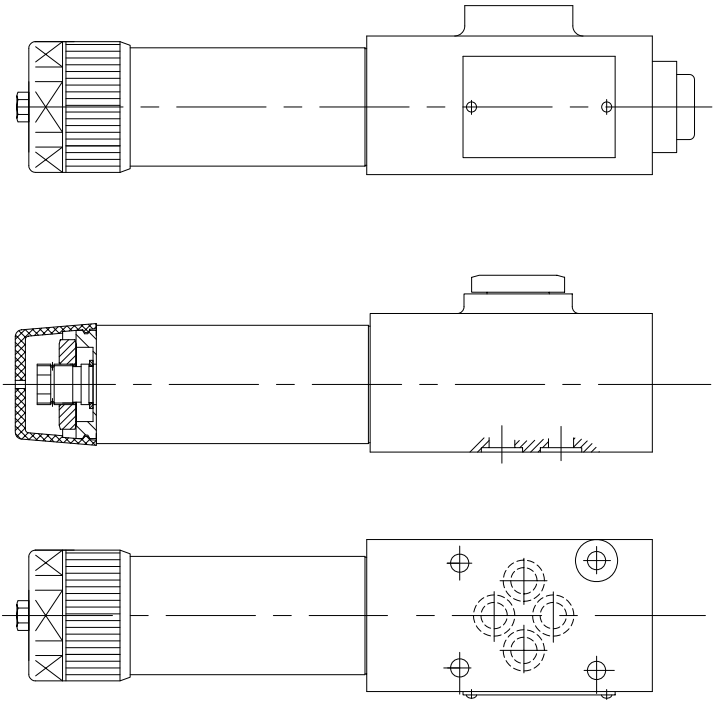


1. Δp-qV characteristic curves A to P via check valve
2. Δp-qV characteristic curves P to A

Δp-q_v characteristic curves



The characteristic curves are valid for output pressure = zero in the complete flow range.



3.18

Pressure sequence valve direct operated

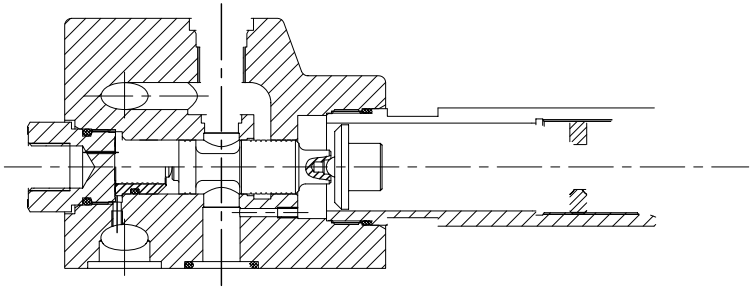
Type DZ10DP...L4X

Size (NG)10
Up to 210 bar
Up to 80 L/min

Contents

Features

- Direct-acting structure
- Mounting face meeting requirements for DIN24340 A and ISO4401
- 4 pressure ranges
- 2 adjustment forms Knob
  · Knob
  · Adjusting screw with protective cover
- Connector with pressure gauge
- Selectable one-way valve



Ordering code

DZ10DP | — L4X | / | | / | | *

Direct-acting relief valve diameter 10

Knob =1
Hex bolt with protective cover =2

Series L40 to L49 =L4X
(L40 to L49: unchanged installation and connection dimensions)

Max. secondary pressure 25 bar =2.5
Max. secondary pressure 75 bar =7.5
Max. secondary pressure 150 bar =15
Max. secondary pressure 210 bar =21

Further details in clear text

No code = NBR seals
V = FKM seals

Pressure measurement port thread
No mark = Inch thread G1/4
2 = Metric thread M14×1.5

No mark = With one-way valve
M = Without one-way valve

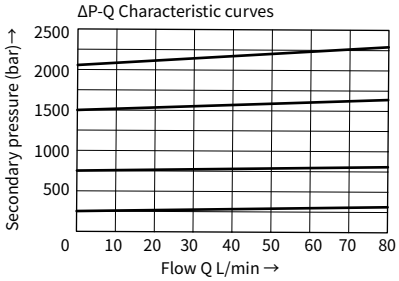
No mark= Control oil supplied from inside and drained to the inside
X= Control oil supplied from outside and drained to the inside
Y= Control oil supplied from inside and drained to the outside
XY=Control oil supplied from outside and drained to the outside

03

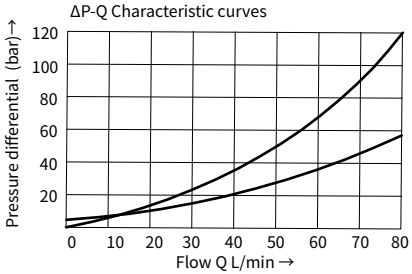
Technical data

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	10 to 800
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406
Max. operation pressure	oil port P, A, B(X)	bar	210
	Oil port T(Y)	bar	160
Max sequence pressure set (adjustable) with port B		bar	25; 75; 150; 210
Max flow		L/min	80
Weight		kg	About 3

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



Note:
This work curve is effective to the relief function in case of outlet pressure = 0 within the overall range.



ΔP-Q- characteristic curve, flowing via one-way valve B to A.

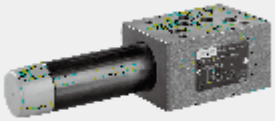
ΔP-Q characteristic curve, A to B

3.19

Pressure sequence valve direct operated

Type ZDZ6DP-L1X

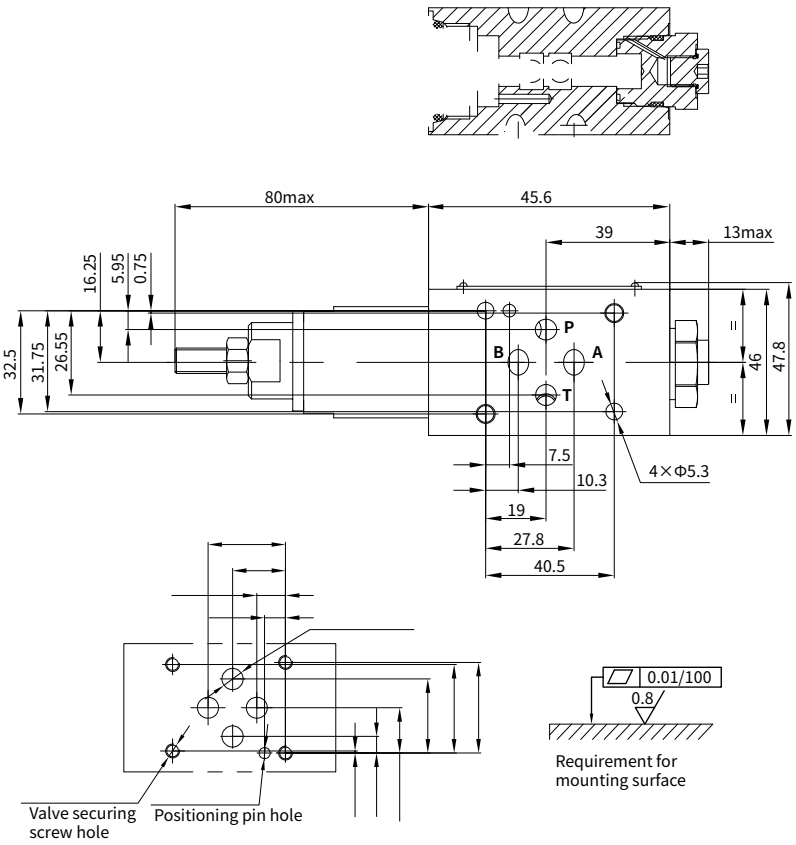
Size (NG) 6
Up to 250 bar
Up to 60 L/min



Contents

Features

- Sub-plate mounting
- Mounting face conforms to DIN24340 A and ISO4401
- Poit option pressure gauge


80max
45.6
39
13max
16.25
5.95
0.75
32.5
31.75
26.55
P
B
A
T
46
47.8
7.5
10.3
19
27.8
40.5
4×Φ5.3
0.01/100
0.8
Requirement for mounting surface
Valve securing screw hole
Positioning pin hole

China
+86 400 101 8889

America
+01 630 995 3674

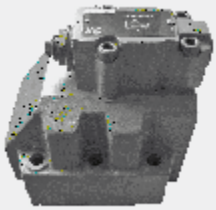
Germany
+49 172 3683463

Japan
+81 03 6809 1696

Pressure sequence valve pilot operated

Type DZ...L5X

Sizes 10 to 32
Up to 315bar
Up to 600 L/min



Contents

Features

- Sub-plate mounting
- Conforms to DIN 24 340, form D, and ISO 5781
- Manifold plate mounting
- 4 pressure ratings
- 2 adjustment elements:
  • Rotary knob
  • Adjustable bolt with protective cap
- Check valve, optional

·Type DZ..-.-L5X/.....
(Control lines 4.1, 12 and 13 open;
control lines 4.2, 14 and 15 plugged)
The pressure in port A acts on the pilot spool (5) of the pilot valve (2) via the control line (4.1). At the same time it acts on the spring loaded side of the main spool (7) via orifice(6). When the pressure exceeds the setting value of spring (8), the pilot spool (5) is moved against the spring (8). The fluid on the spring loaded side of the main spool (7) flows to port B via orifice (9), control land (10) and control lines (11) and (12). There is now a pressure drop at main spool (7), the connection from port A to port B opens to maintain the pressure set by spring (8). The leakage oil at pilot spool (5) is led to port B internally via control line (13). An optional check valve (3) can be fitted for free flow from port B to A.

·Sequence valveType DZ..-.-L5X/...X..
(Control lines 4.2, 12 and 13 open;
control lines 4.1, 14 and 15 plugged)
The function of this valve is principally the same as valve DZ..-.-L5X/....However, on pressure sequence valve type DZ..-.-L5X/...X.. the signal is achieved externally by means of control line (4.2).

·Sequence valve Type DZ..-.-L5X/...Y..
(Control lines 4.1, 12 and 14 or 15 open;
control lines 4.2, and 13 plugged)
The function of this valve is principally the same as valve type DZ..-.-L5X/....However, for type DZ..-.-L5X/...Y.. leakage at pilot spool(5) must be drained to tank without pressure via line (14) or (15) . Pilot oil is fed to port B via line (12) .

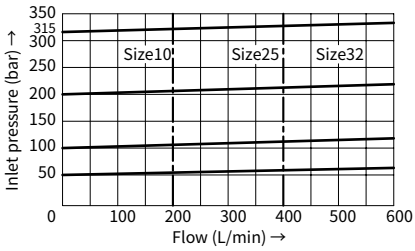
·Bypass valve Type DZ..-.-L5X/...XY..
(Control lines 4.2 14 or 15 open;
control lines 4.1, 12 and 13 plugged)
Pressure in port X acts on the pilot spool (5) in the pilot valve (2) via control line (4.2). At the same time pressure in port A acts on the spring loaded side of the main spool (7) via orifice (6). When the pressure in port X exceeds the setting value of the spring (8), the pilot spool(5) is moved against the spring (8), fluid can flow from the spring loaded side of the main spool (7) intomain loaded(7) main mainspring(7) mainthespringof the (7)the the loaded(7) of the

Technical data

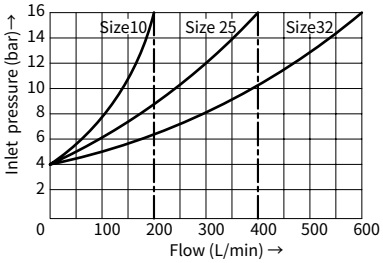
Fluid			Mineral oil suitable for NBR and FKM seal		
			Phosphate ester for FKM seal		
Fluid temperature range		℃	-30 to +80 (NBR seal)		
			-20 to +80 (FKM seal)		
Viscosity range		mm^2/s	10 to 800		
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406		
Max.operating pressure	Port A, B, X	bar	315		
	Port Y	bar	315		
Adjustable pressure	Max.	bar	50;100;200;315		
	Min.	bar	Interrelated to the flow (refer to the characteristic curve)		
Size			DZ10	DZ20	DZ30
Max. flow-rate		L/min	200	400	600
Fixing position			Optional		
Size			DZ10	DZ20	DZ30
Weight	sub-plate mounting DZ	kg	Approx.3.6	Approx.5.5	Approx.8.2
	DZC	kg	Approx.1.2		
	DZC30	kg	Approx.1.5		

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

Inlet pressure in relation to flow (A → B)

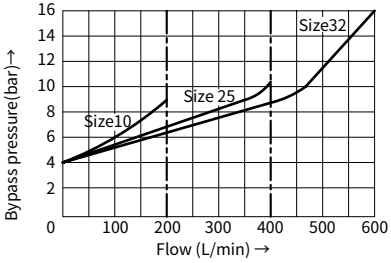


Minimum inlet pressure in relation to flow (A → B)
(= bypass pressure model "..X..")



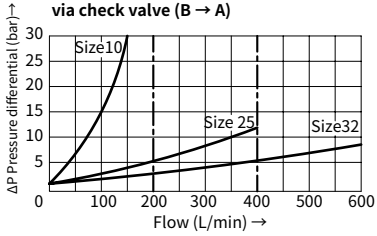
The curves are valid for outlet pressure PB=0 for the complete flow range

Bypass pressure in relation to flow (A → B)
(only for version "...XY...")



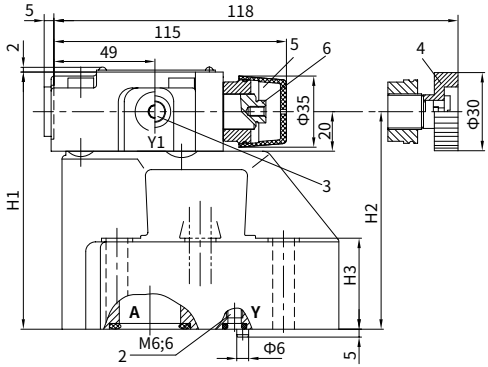
The curves are valid for outlet pressure PB=0 for the complete flow range

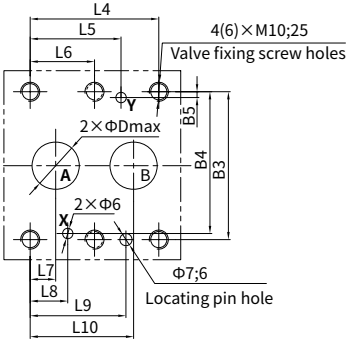
ΔP-Q Characteristic curves via check valve (B → A)



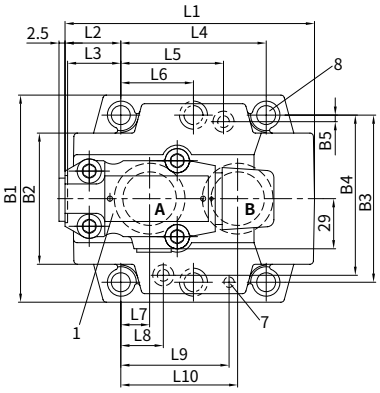
Unit dimensions

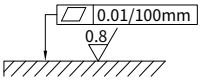
(Dimensions in mm)





Dimensions of mounting surface





Requirement for mounting surface

1 Nameplate
2 Port Y used for control oil drain external for use as bypass valve
3 Port Y1(G1/4;12) for control external drain when used as bypass valve, for unloading of spring chamber when used as sequence valve
4 Adjustment element "1"
5 Adjustment element "2"
6 Internal hexagon screw S=10
7 Locating pin
8 Valve fixing holes 4pcs (DZ10, DZ20); 6pcs(DZ30)

Valve fixing screws:
Internal hexagon screw
DZ10:GB/T 70.1-M10×50-10.9
DZ20:GB/T 70.1-M10×60-10.9
DZ30:GB/T 70.1-M10×70-10.9
Tightening torque M_A=75 Nm

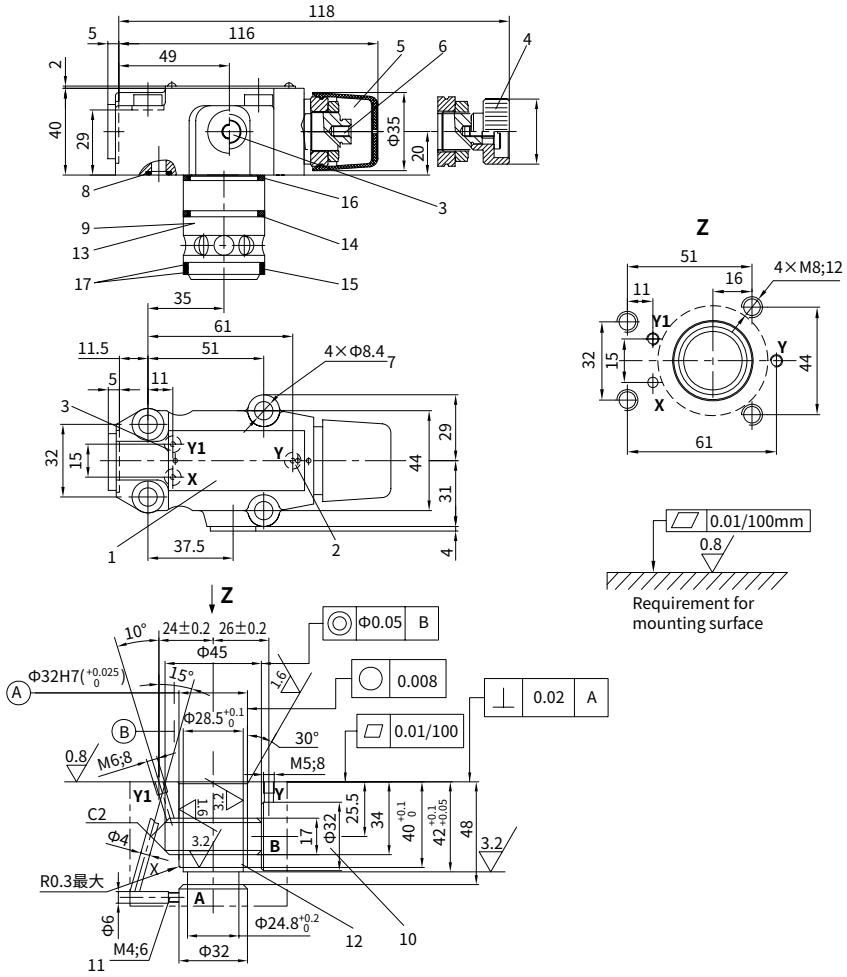
It must be ordered separately, if connection plate is needed. Type:
DZ10: G 460/01(G3/8) G 460/02(M18×1.5)
G 461/01(G1/2) G 461/02(M22×1.5)
DZ20: G 412/01(G3/4) G 412/02 (M27×2)
G 413/01(G1) G 413/02 (M33×2)
DZ30: G 414/01(G1 1/4) G 414/02 (M42×2)
G 415/01(G1 1/2) G 415/02 (M48×2)

Type	B1	B2	B3	B4	B5	O-ring(PortA,B)				O-ring(PortX,Y)			D
DZ10	85	50	66.7	58.8	7.9	17.12×2.62				9.25×1.78			13
DZ20	102	59.5	79.4	73	6.4	28.17×3.53				9.25×1.78			22
DZ30	120	76	96.8	92.8	3.8	34.52×3.53				9.25×1.78			30
Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	H1	H2	H3
DZ10	96	35.5	33	42.9	21.5	-	7.2	21.5	31.8	35.8	112	92	28
DZ20	116	37.5	35.4	60.3	39.7	-	11.1	20.6	44.5	49.2	122	102	38
DZ30	145	33	29.8	84.2	59.5	42.1	16.7	24.6	62.7	67.5	130	110	46

Unit dimensions

(Dimensions in mm)

With (DZC 30) or without (DZC) main spool insert



1 Nameplate
2 Port Y for control oil external drain when used as byp for inin

Pressure shut-off valve pilot operated

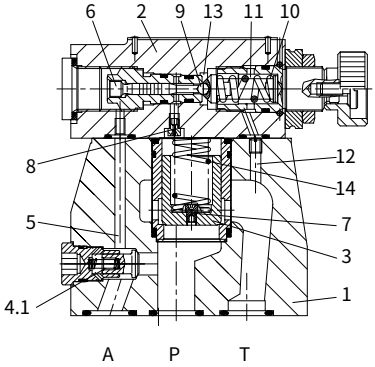
Type DA/DAW...L5X

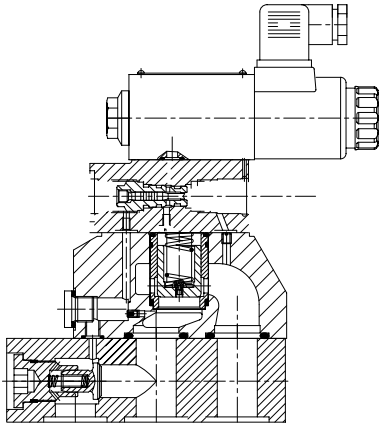
Sizes 10 to 32
Up to 315 bar
Up to 240 L/min

Contents

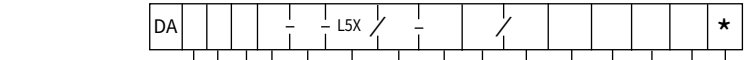
Features

- Sub-plate mounting
- Porting pattern conforms to DIN 24 340, form D, and ISO 5781
- Manifold plate mounting
- 4 pressure ratings
- 2 adjustment elements:
  • Rotary knob
  • Adjustable bolt with protective cap
- Solenoid unloading valve


6
2
9
13
11
10
8
12
14
5
7
3
4.1
1
A
P
T



Ordering code



Without directional valve = No code
With directional valve=W

Pilot operated valve=No code
Pilot valve without main spool assembly = C
(No mark for nominal size)
Pilot valve with main spool assembly = C
(Marked with size 30)

Nominal size 10 =10
Nominal size 25 =20
Nominal size 32 =30

For DAW:
Normally closed
(load when breakaway, unload when electrified) =A
Normally open
(unload when breakaway, load when electrified) =B

Rotary knob =1
Adjustable bolt with protective c =2

Series L50 to L59 = L5X
(L50 to L59 series : unchanged installation and connection dimensions)

Further details in clear text

No code= NBR seals
V = FKM seals

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

Only DAW:
N= With hand override

Only DAW:
G24 = 24V DC
W220 = 220V AC
W220R = 220V AC rectification
W110 = 110V AC
(Other voltage refer to type WE6)

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

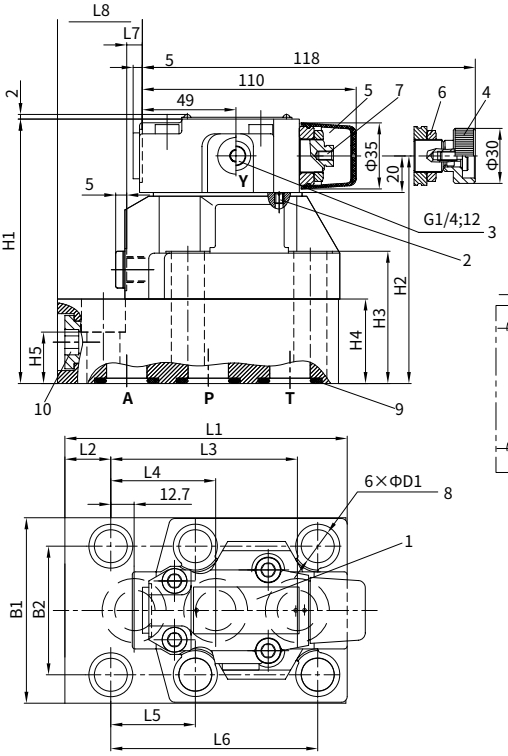
No code= Internal pilot oil drain
Y = external pilot oil drain

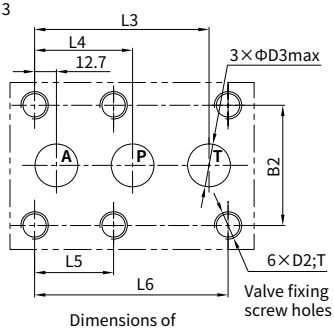
Switching pressure differential (P → A)
17 = In the mid range 17 %

5 = Pressure adjustable 0~ 50bar
10 = Pressure adjustable 50~100bar
20 = Pressure adjustable 100~200bar
31.5 = Pressure adjustable 200~315bar

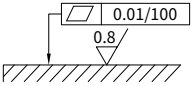
Technical data

Size			10	25	32
Fluid			Mineral oil suitable for NBR and FKM seal		
			Phosphate ester for FKM seal		
Fluid temperature range		℃	-30 to +80 (NBR 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	bar	315		
Max. setting pressure		bar	50, 100, 200, 315		
Max. flow-rate		L/min	60	120	240
Solenoid technical data			Refer to version WE6, normally close chooses 3WE6A9, normally open choose 3WE6B9		
Installation			Optional		
weight	DA	kg	Approx.3.8	Approx.7.9	Approx.12.3
	DAW	kg	Approx.5.3	Approx.9.4	Approx.13.8
	DAC	kg	Approx.1.2 (If version DAWC, add 1.5 kg)		
	DAC30	kg	Approx.1.5 (If version DAWC30, add 1.5 kg)		

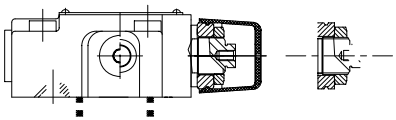


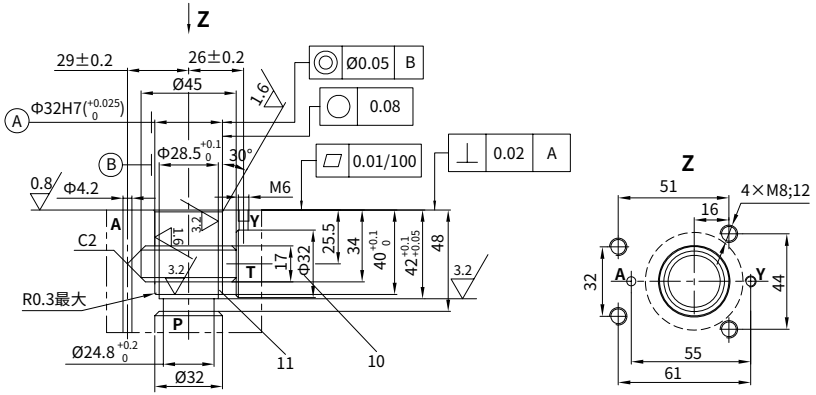


Dimensions of mounting surface



Requirement for mounting surface



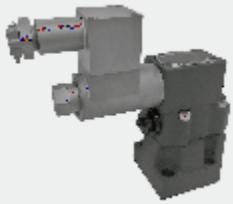

Z
29±0.2
26±0.2
Ø45
Φ32H7(+0.025 0)
Φ28.5 +0.1 0
Φ4.2
0.8
1.6
30°
M6
Ø0.05 B
0.08
0.01/100
0.02 A
A
B
C2
R0.3最大
Ø24.8 +0.2 0
Ø32
P
T
Y
3.2
9T
17
Φ32
25.5
34
40 +0.1 0
42 +0.1 +0.05
48
11
10
Z
51
16
4×M8;12
32
44
55
61

3.22

Explosion-proof pilot perated pressure relief valve

Type G...DBW

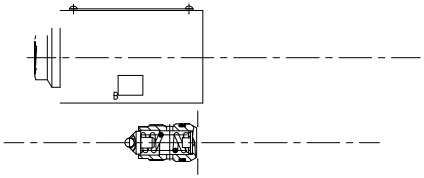
Sizes 10 to 32
Up to 350 bar
Up to 650L/min

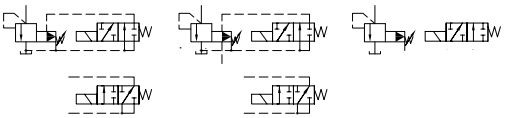


Contents

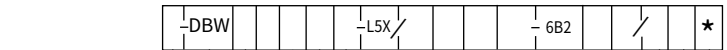
Features

- 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





Ordering code



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

Relief valve,
pilot operated withbuilt-on
directional valve = DBW

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 10 or 30)

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 =No code
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

Used for threaded junction valve or Y1 on the pilot valve of plate-type junction valve only
No code = Inch thread
2 = Metric thread

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

Voltage:
G12= DC12V
G24= DC24V
G36= DC36V
G110= DC110V

6B2= Threaded Explosion proofvalve

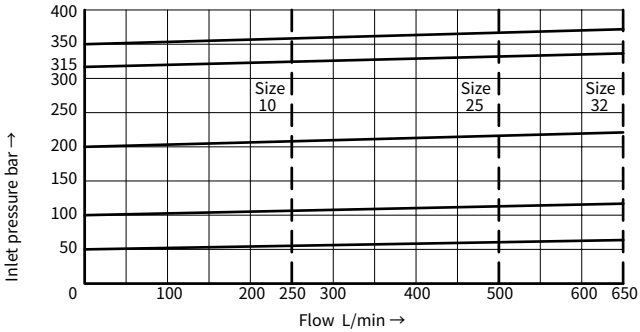
No code = Without switching shock damping
S = With switching shock damping

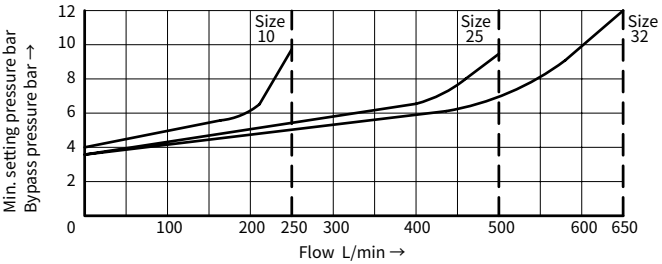
No code= Standard version
U = Valve for lower opening pressure (not for version without main spool cartridge and not suitable for 350bar)

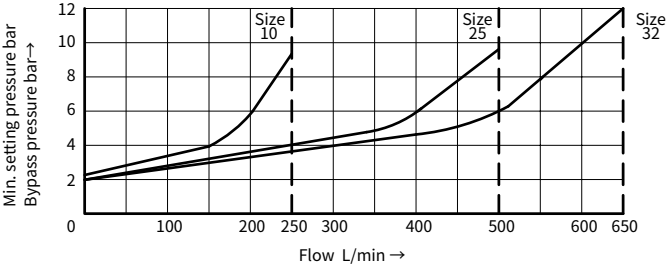
No code= Pilot oil supply and drain internal
X = Pilot oil supply external and drain internal
Y = Pilot oil supply internal and drain external
XY = Pilot oil supply and drain external

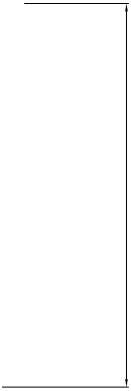
5 = Pressure adjustable up to 50bar
10 = Pressure adjustable up to 100bar
20 = Pressure adjustable up to 200bar
31.5 = Pressure adjustable up to 315bar
35 = Pressure adjustable up to 350bar

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


Inlet pressure bar →
400
350
315
300
250
200
150
100
50
0
Size 10
Size 25
Size 32
100
200
250
300
400
500
600
650
Flow L/min →


Min. setting pressure bar
Bypass pressure bar →
12
10
8
6
4
2
0
Size 10
Size 25
Size 32
100
200
250
300
400
500
600
650
Flow L/min →

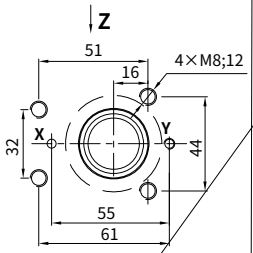

Min. setting pressure bar
Bypass pressure bar→
12
10
8
6
4
2
0
Size 10
Size 25
Size 32
100
200
250
300
400
500
600
650
Flow L/min →

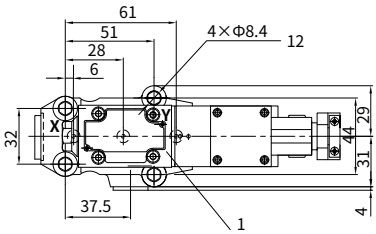


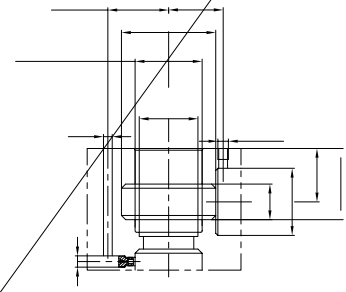
Unit dimensions

(Dimensions in mm)

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







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