

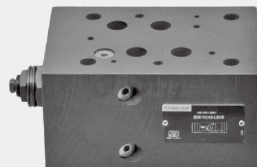


3.8

# Pilot operated pressure relief valve

## Type ZDB /Z2DB..V...L3X

Sizes 16 and 22  
up to 315bar  
up to 200 /400L/min



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### Features

- Sandwich plate valve
- Porting pattern to DIN 24 340 form A and ISO4401
- For threaded connection, and sub-plate mounting
- 4 pressure ratings
- 5 circuit options
- With one or two pressure relief cartridges
- 1 adjustment elements:
  - Adjustable bolt with protective cap

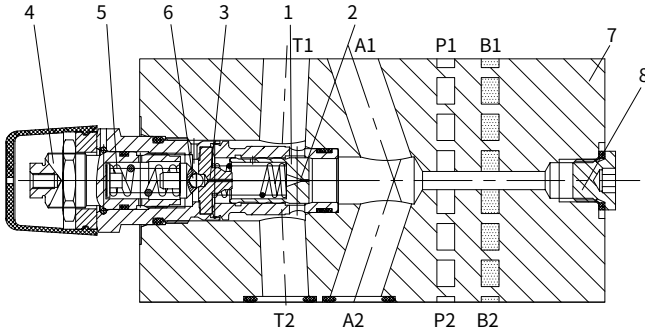
## Function and configuration

Pressure relief valve types ZDB and Z2DB are pilot operated and sandwich structure. They are used to limit the pressure in a hydraulic system.

They basically consist of the housing (7), together with one or two pressure relief valve cartridges. The system pressure is set by means of 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. The pressure drop moves spool (1) to open the connection from A to T, while the setting pressure at spring (5) is maintained. Pilot oil returns from the two spring chambers via port T externally. Pressure tapping (8) can measure the pressure.

### Type ZDB16VA2-L3X/...

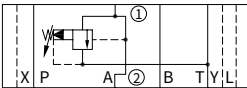


#### Notes:

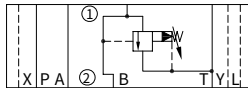
The pilot relief valves have more internal leakage, if lower leakage is demanded, such as safety valve, it is recommended to choose direct operated pressure relief valves, Z2DB type.

## Symbols

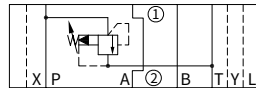
### Type ZDB..VA..



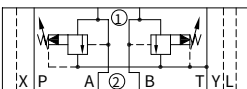
### Type ZDB..VB..



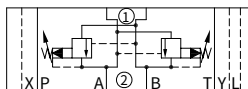
### Type ZDB..VP..



### Type Z2DB..VC..



### Type Z2DB..VD..



Notes: only size 16 has port L

① = valve side ② = sub-plate side

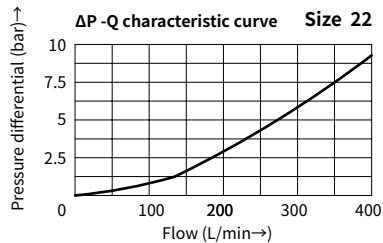
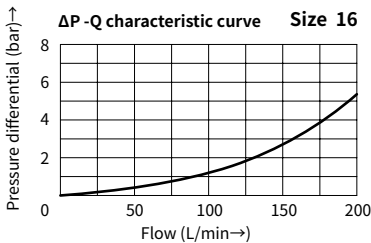
## Ordering code

	Z		DB			L3X		*
Sandwich plate	= Z							Further details in clear text
Only applies to versions VC and VD: With 2 pressure relief valve cartridges	= 2							No code = NBR seals V = FKM seals
Pressure relief valve	= DB							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
Nominal size 16	= 16							L3X = Series L30 to L39 (L30 to L39: unchanged installation and connection dimensions)
Nominal size 22	= 22							
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	
								Regulation form: 2= Adjustable bolt with protective cap

## 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 <sup>2</sup> /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
	Type Z2DB	kg	Approx.11.8
			Approx.10.3

## Characteristic curves ( Measured at $\vartheta_{oil} = 40^{\circ}C \pm 5^{\circ}C$ , using HLP46)

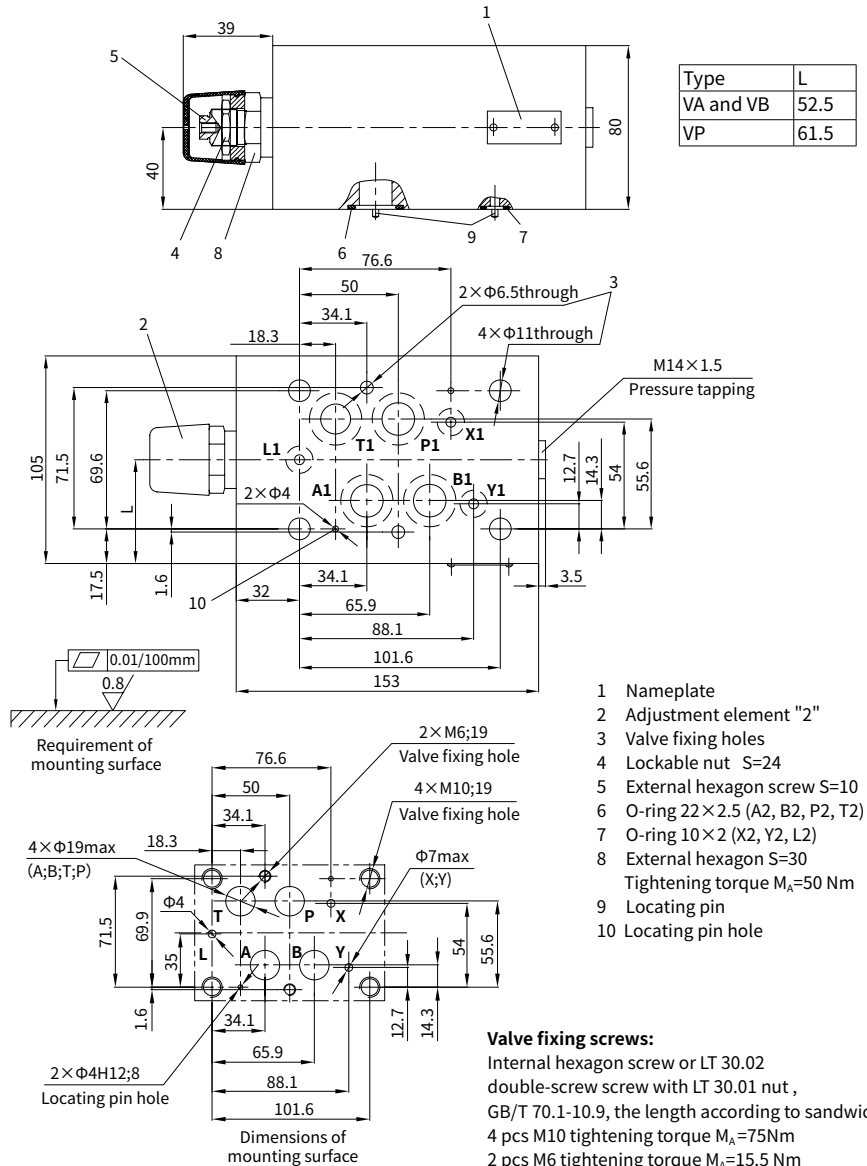


# Unit dimensions

(Dimensions in mm)

Type ZDB16VA...L3X/..    Type ZDB16VB...L3X/..    Type ZDB16VP...L3X/..

Type	L
VA and VB	52.5
VP	61.5



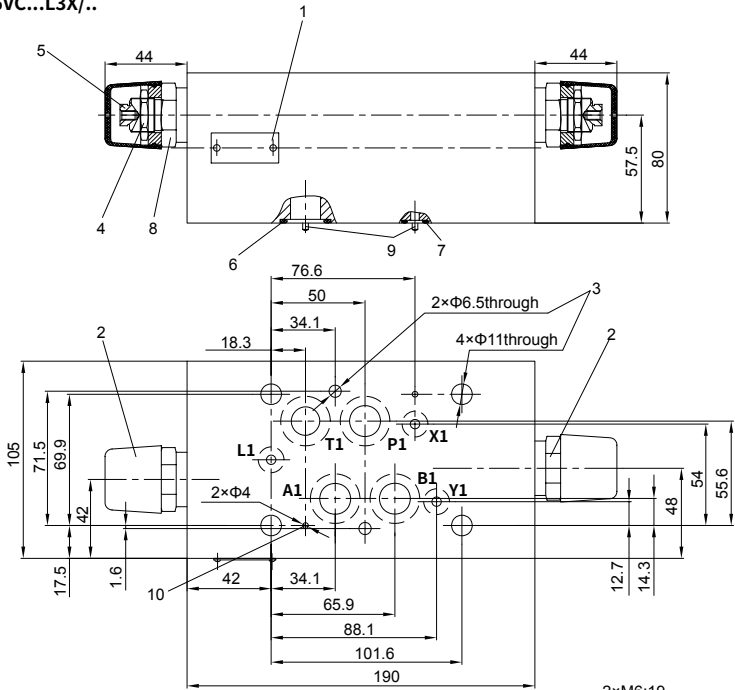
- 1 Nameplate
- 2 Adjustment element "2"
- 3 Valve fixing holes
- 4 Lockable nut S=24
- 5 External hexagon screw S=10
- 6 O-ring 22x2.5 (A2, B2, P2, T2)
- 7 O-ring 10x2 (X2, Y2, L2)
- 8 External hexagon S=30  
Tightening torque  $M_A=50$  Nm
- 9 Locating pin
- 10 Locating pin hole

**Valve fixing screws:**  
 Internal hexagon screw or LT 30.02 double-screw screw with LT 30.01 nut, GB/T 70.1-10.9, the length according to sandwich, 4 pcs M10 tightening torque  $M_A=75$  Nm  
 2 pcs M6 tightening torque  $M_A=15.5$  Nm must be ordered separately.

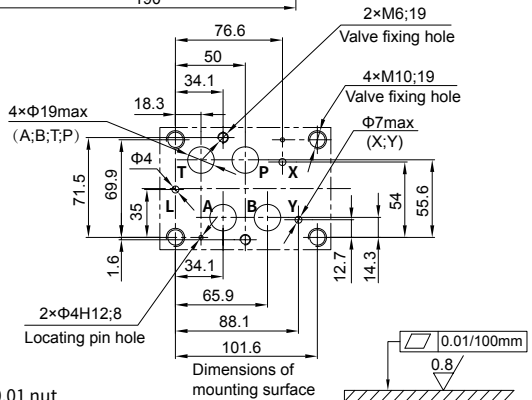
# Unit dimensions

(Dimensions in mm)

## Type Z2DB16VC...L3X/..

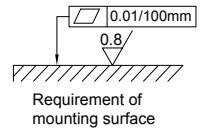


- 1 Nameplate
- 2 Adjustment element "2"
- 3 Valve fixing holes
- 4 Lockable nut S=24
- 5 External hexagon bolt S=10
- 6 O-ring 22×2.5 (A2, B2, P2, T2)
- 7 O-ring 10×2 (X2, Y2, L2)
- 8 External hexagon S=30  
Tightening torque  $M_A=50$  Nm
- 9 Locating pin
- 10 Locating pin hole



### Valve fixing screws:

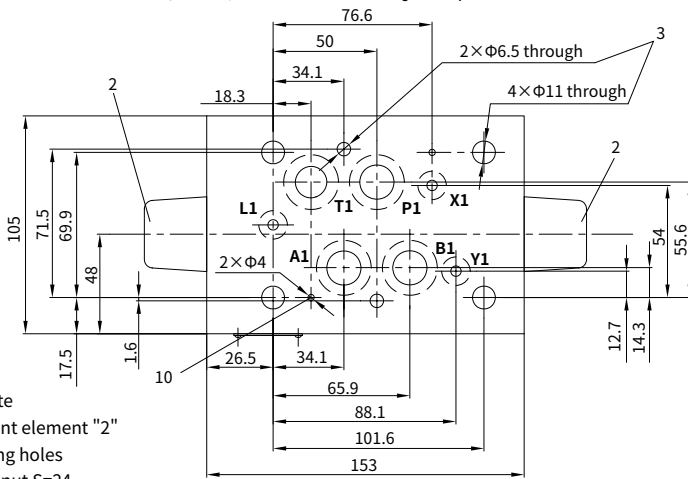
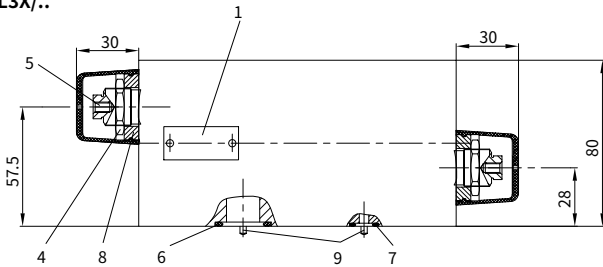
Internal hexagon screw or  
 LT 30.02 double-screw bolt with LT 30.01 nut  
 GB/T 70.1-10.9, the length according to sandwich,  
 4 pcs M10 tightening torque  $M_A=75$  Nm  
 2 pcs M6 tightening torque  $M_A=15.5$  Nm,  
 must be ordered separately.



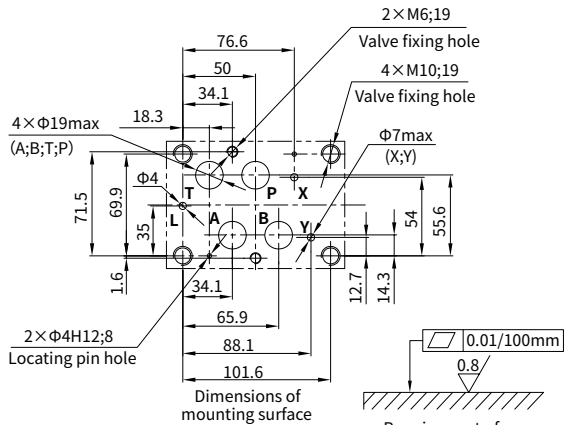
## Unit dimensions

(Dimensions in mm)

### Type Z2DB16VD...L3X/..



- 1 Nameplate
- 2 Adjustment element "2"
- 3 Valve fixing holes
- 4 Lockable nut S=24
- 5 External hexagon screw S=10
- 6 O-ring 22×2.5 (A2,B2,P2,T2)
- 7 O-ring 10×2 (X2,Y2,L2)
- 8 External hexagon S=30  
Tightening torque  $M_A=50$  Nm
- 9 Locating pin
- 10 Space locating pin hole



### Valve fixing screws:

Internal hexagon screw or  
LT 30.02 double-screw bolt  
with LT 30.01 nut  
GB/T 70.1-10.9, the length  
according to sandwich,

4 pcs M10 tightening torque  $M_A=7.5$  Nm

2 pcs M6 tightening torque  $M_A=15.5$  Nm,  
must be ordered separately.

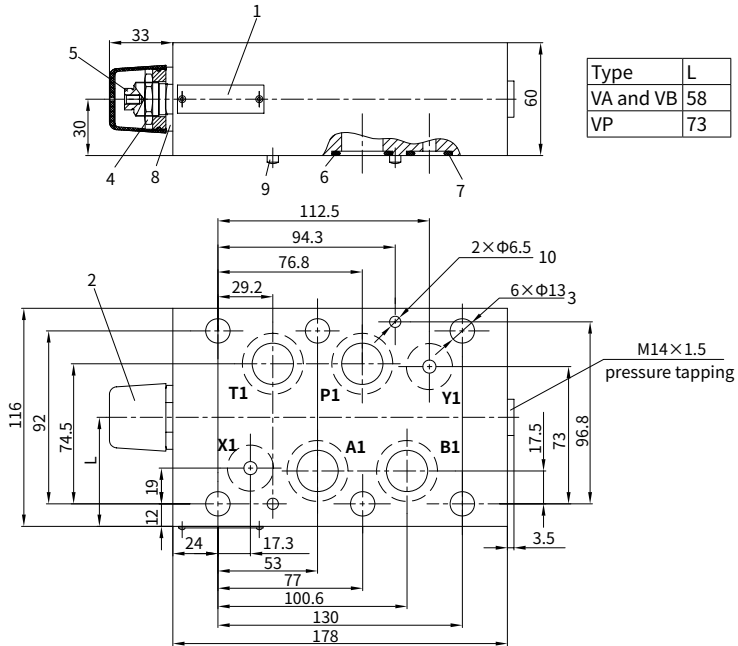
# Unit dimensions

(Dimensions in mm)

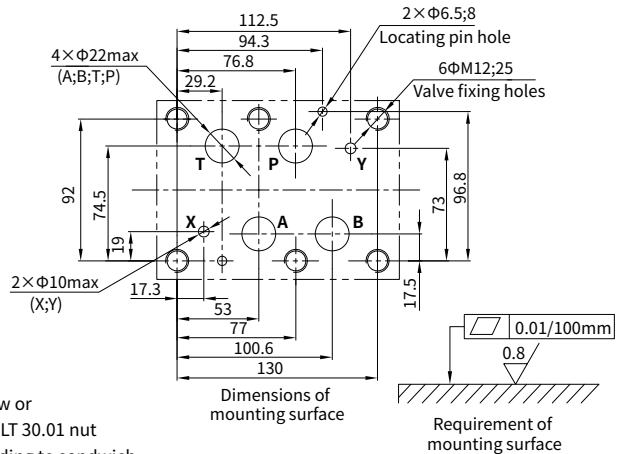
Type ZDB22VA...L3X/..

Type ZDB22VB...L3X/..

Type ZDB22VP...L3X/..



- 1 Nameplate
- 2 Adjustment element "2"
- 3 Valve fixing holes
- 4 Lockable nut S=24
- 5 External hexagon screw S=10
- 6 O-ring 27×3 (A2,B2,P2,T2)
- 7 O-ring 19×3 (X2,Y2,L2)
- 8 External hexagon S=30  
Tightening torque  $M_A = 50\text{Nm}$
- 9 Locating pin
- 10 Locating pin hole



**Valve fixing screws:**

6 pcs M12 internal hexagon screw or LT 30.02 double-screw bolt with LT 30.01 nut GB/T 70.1-10.9, the length according to sandwich, Tightening torque  $M_A = 130\text{Nm}$ , must be ordered separately.

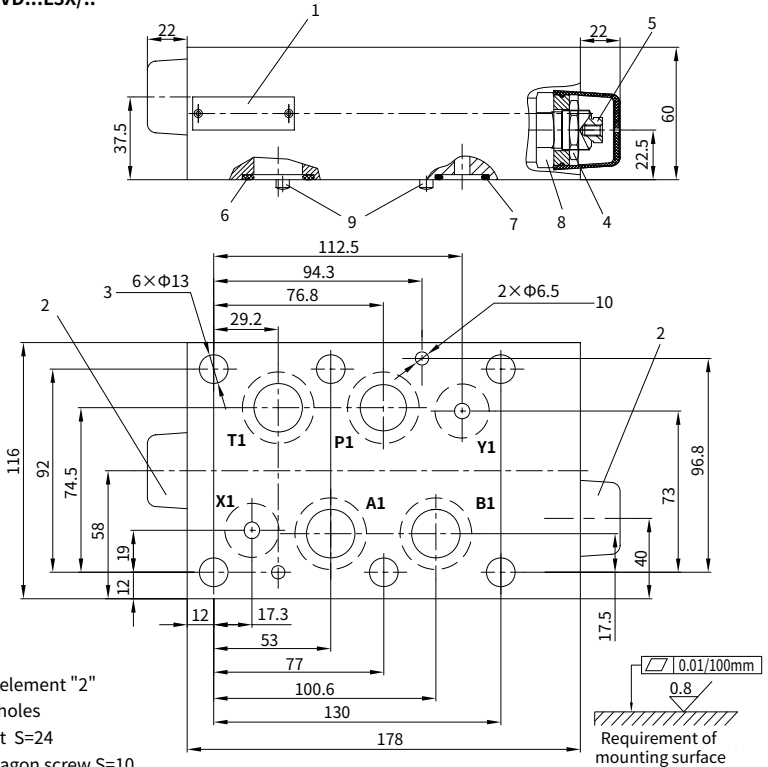




# Unit dimensions

(Dimensions in mm)

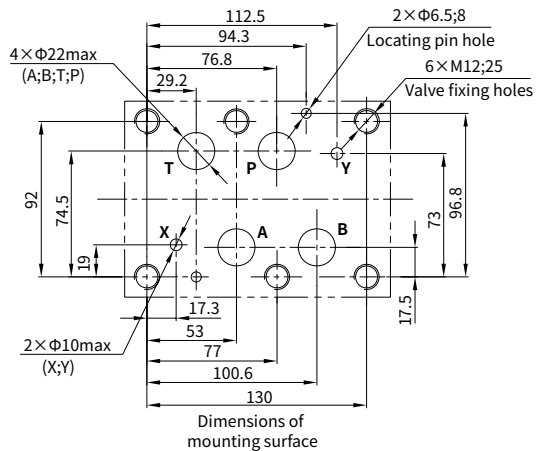
## Type Z2DB22VD...L3X/..



- 1 Nameplate
- 2 Adjustment element "2"
- 3 Valve fixing holes
- 4 Lockable nut S=24
- 5 External hexagon screw S=10
- 6 O-ring 27×3 (A2,B2,P2,T2)
- 7 O-ring 19×3(X2,Y2,L2)
- 8 External hexagon S=30  
Tightening torque  $M_A=50Nm$
- 9 Locating pin
- 10 Space locating pin hole

### Valve fixing screws:

6 pcs M12 internal hexagon screw or  
 LT 30.02 double-screw bolt  
 LT 30.01 nut GB/T 70.1-10.9,  
 the length according to sandwich,  
 Tightening torque  $M_A=130Nm$ ,  
 must be ordered separately.



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