

3.5

# Pressure relief valve pilot operated

## Type DB20K...L1X

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



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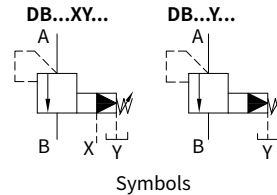
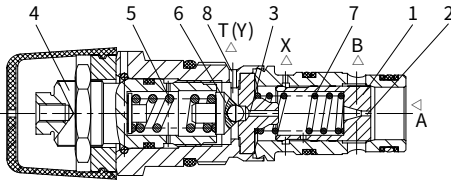
### Features

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

## Function and configuration

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



## Ordering code

DB	20	K	/	L1X	/			*
Pressure relief valve =DB								Further details in clear text
Nominal size 20 =20								No code = NBR seals V = FKM seals
Cartridge =K								Y = Pilot oil supply internal and drain external
Rotary knob =1								XY = Pilot oil supply and drain external
Adjustable bolt with protective cap =2								
Lockable rotary knob with scale =3								
Rotary knob with scale =7								
Series L10 to L19 (L10 to L19 : unchanged installation and connection dimensions) =L1X								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

### 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.

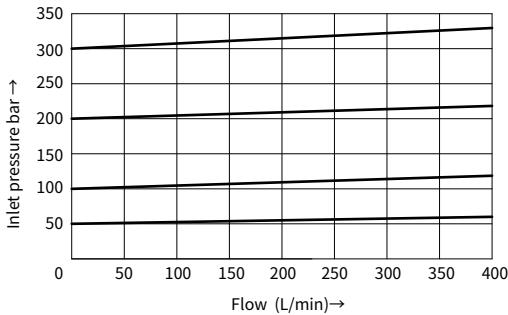
## Technical data

Fluid	Mineral oil suitable for NBR and FKM seal Phosphate ester for FKM seal		
Fluid temperature range	°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	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

03

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

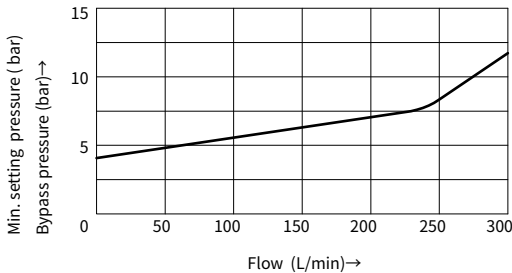
### Inlet pressure in relation to the flow-rate



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.

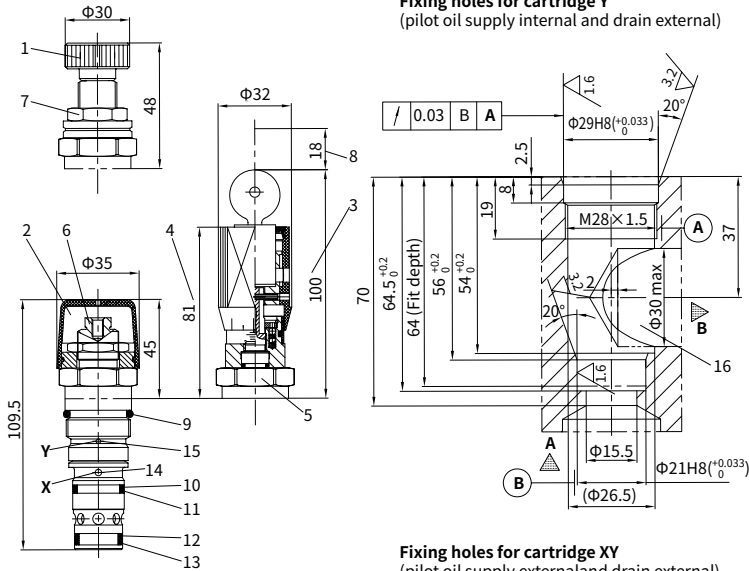
### Min. setting pressure and bypass pressure in relation to the flow-rate



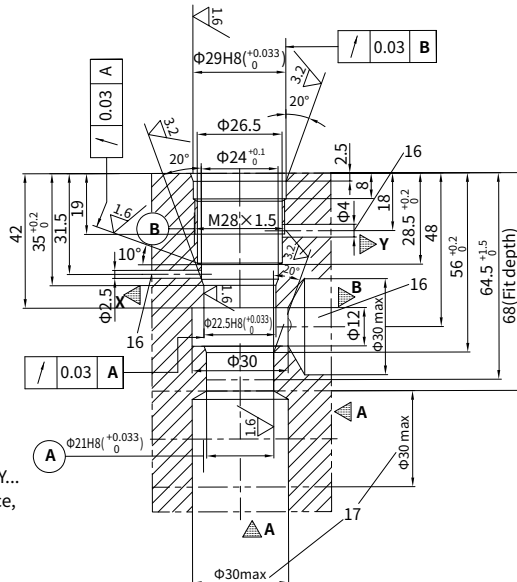
The curves are valid for outlet pressure PB=0

## Unit dimensions

(Dimensions in mm)



**Fixing holes for cartridge XY**  
(pilot oil supply external and drain external)



- 1 Adjustment element "1"
- 2 Adjustment element "2"
- 3 Adjustment element "3"
- 4 Adjustment element "7"
- 5 Nut for locking S=22
- 6 Internal hexagon screw S=10
- 7 External hexagon S=30  
Tightening torque  $M_A = 50 \text{ Nm}$
- 8 Space required to remove the key
- 9 O-ring  $25 \times 2.65$
- 10 O-ring  $17 \times 1.8$
- 11 Back-ring  $22.5 \times 19.7 \times 1.1$
- 12 2 Back-ring  $21 \times 16.2 \times 1.1$
- 13 O-ring  $18 \times 1.8$
- 14 Port X used only for DB20K...L1X/XY...
- 15 Port Y used for DB20K...L1X/XY... and DB20K...L1X/Y...
- 16 Port X, T and B arranged around circumference used for DB20K...L1X/XY...  
Port B arranged around circumference, used for DB20K...L1X/Y...
- 17 Hole A, optional