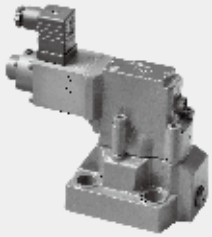
6.4

# Proportional pressure relief valve

## Type DBE(E)/DBEM(E)...30

Sizes 10, 25 and 32
Up to 315 bar
Up to 600 L/min



## Contents



## Features

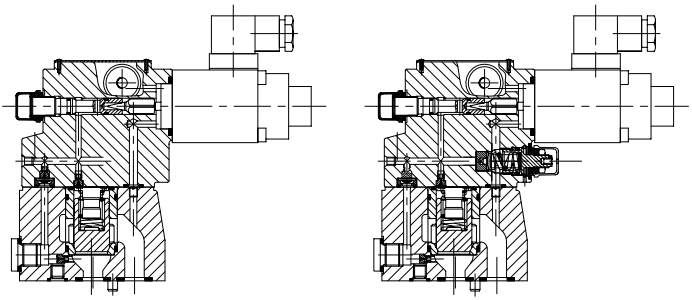
-Sub-plate mounting:
- Porting pattern to DIN 24 340 form E and ISO 6264
- For installation in manifolds
- 4 pressure ratings
- Max. pressure limitation , optional
- Ampli f er type VT-2000 (must be ordered separately)

## Function and configuration

DBE valves are pilot operated pressure relief valves. They are used to continuously set the pressure in hydraulic systems by electrical signal.
Basically these valves consist of a pilot valve (1) with proportional solenoid (2) and the main valve (3) with main spool insert (4).

**Type DBE...**
The pressure limit is in relation to the electrical current value and set by the proportional solenoid (2). The system pressure is applied to the main spool (4). At the same time the pressure is applied to the spring loaded side of the main spool (4) and the pilot poppet (6) via orifce (5) at the pilot valve (1). If the hydraulic force exceeds the solenoid force, the pilot poppet (6) opens. Pilot fuid can fow back to tank and pressure drop caused by the orifces efects the main spool (4). Then main spool (4) opens the channel from pump to tank.

**Type DBEM···**
Optionally the valve can be supplied with an additional spring loaded pilot control valve (7) for maximum pressure safety (redundant pressure safety).



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## Ordering code

DBE | | | | – 30 / | | G24 | / / | | *

Without maximum pressure safety =No code
With maximum pressure safety =M

Pilot operated =No code
Pilot operated valve with main spool ( enter nom. size 30) =C
Pilot operated valve without main spool ( do not enter nom. size) =C
Pilot operated valve for remote controlling =T

For external control electronics =No code
With integrated electronics (OBE) =E

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

Series 30 = 30

Max. pressure 50 bar = 50
Max. pressure 100 bar = 100
Max. pressure 200 bar = 200
Max. pressure 315 bar = 315

Y= Pilot oil supply internal and drain external
Not for DBE(M)(E)C and DBE(M)(E)T without main spool
XY= Pilot oil supply external and drain external (only for with the pilot valve and main spool)

For type DBE(M)E, Supply voltage:
G24= +24VDC

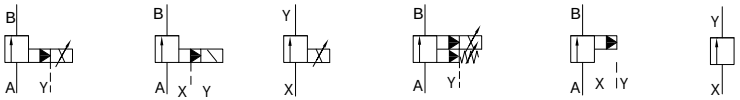
For type DBE(M)E:
A1= Command/ actual value 0 to 10V
F1= Command/ actual value 4 to 20 mA

Pilot oil drain port Y
No code= Inch threaded
2 = Metric threaded

V= FKM seals
No code=NBR seals

Further information in plain text

## Symbols

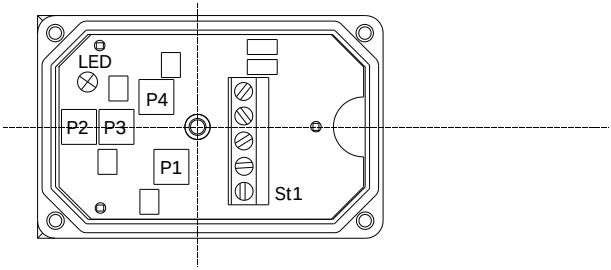


## Technical data

| | | | | |
|---|---|---|---|---|
| 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 | $mm^2/s$ | 2.8 to 380 | | |
| Degree of contamination | | Maximum permissible degree of fuid contamination:<br>Class 9. NAS 1638 or 20/18/15, ISO4406 | | |
| Max.operating pressure<br>Port A, B, X | bar | 315 | | |
| Max.setting pressure | bar | 50; 100; 200; 315 | | |
| Min.setting pressure | | In relation to Flow (Q), see characteristic curves | | |
| Pressure at zero command value | | = min.setting pressure | | |
| Return oil pressure port Y | bar | Separate and at zero pressure to tank | | |
| Max. pressure safety<br>(infnitely adjustable) | | setting pressure | Pressure range under Max. safety pressure | |
| | | 50 bar | 10-60$^{+20}$ bar | |
| | | 100 bar | 10-120$^{+20}$ bar | |
| | | 200 bar | 10-220$^{+20}$ bar | |
| | | 315 bar | 10-340$^{+20}$ bar | |
| Max. pressure safety<br>setting condition | | When rated pressure is 50 bar, between 60 bar and 80 bar | | |
| | | When rated pressure is 100 bar, between120 bar and 140 bar | | |
| | | When rated pressure is 200 bar, between 220 bar and 240 bar | | |
| | | When rated pressure is 315 bar, between 340 bar and 360 bar | | |
| Nominal size | | 10 | 25 | 32 |
| Max. fow-rate | L/min | 200 | 400 | 600 |
| Pilot oil (for pilot valve) | L/min | 0.7 to 2 | | |
| Linearity | | ± 3.5% | | |
| Repeatability | | < ± 2% | | |
| Hysteresis | | with shimmy | | without shimmy |
| | | ± 1.5% P max<br>(200Hz, amplitude 200mAssl) | | ± 4.5% P max |
| Shifting time | | 30~150ms (undependent with the system) | | |

| **Electrical** | | |
|---|---|---|
| Power source | | DC |
| Min. solenoid current | mA | 100 |
| Max. solenoid current | mA | 800 |
| Coil resistance | | 19.5Ω at 20 , Max. warm value : 28.8Ω |
| Working status | | Continuous |
| Max. working enviromental temperature | | +50 |
| Electrical connection | | Plug-in connector to DIN EN 175301-803/ISO 4400 |
| Insulation to DIN 40 050 | | IP 65 |
| Ampilfer | | VT2000 |

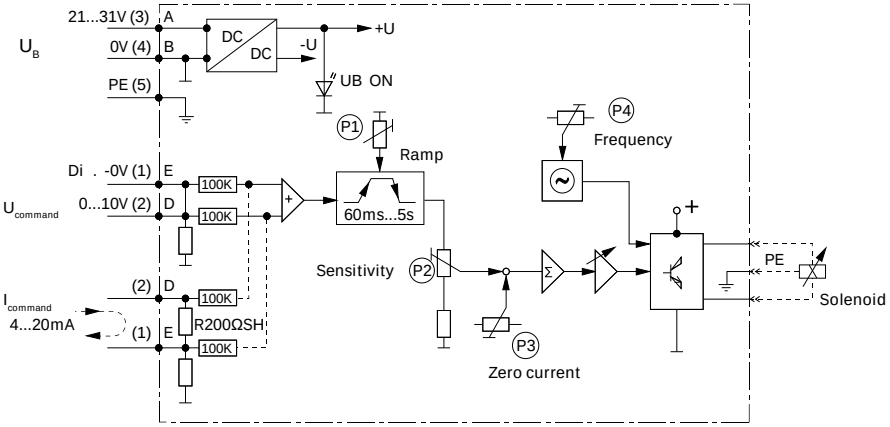
## **Proportional amplifier** (Can be ordered separately)




## **Electrical connections, plug-in connectors**

# Electrical connections, plug-in connectors

## · Block diagram and pin assignment

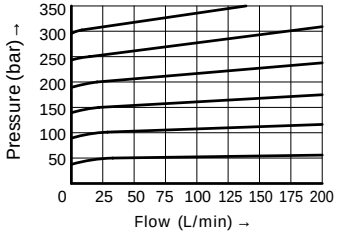



Version with 0...+10 V signal
Version with 4...20 mA signal

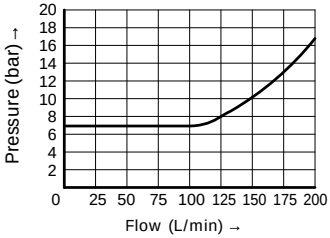
## Characteristic curves (Measured at $\vartheta_{oil}$ =40 ± 5 , using HLP46)

Operating pressure in relation to the flow

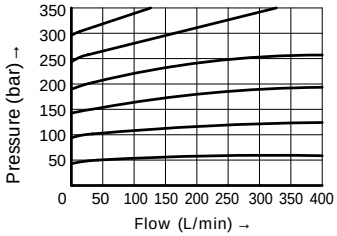
**DBE10**

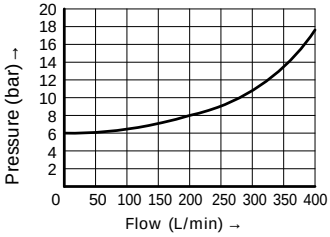



Min. setting pressure in relation to the flow

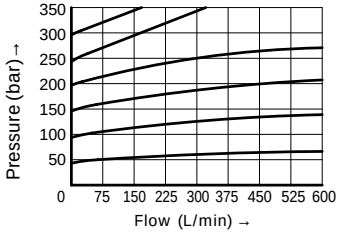


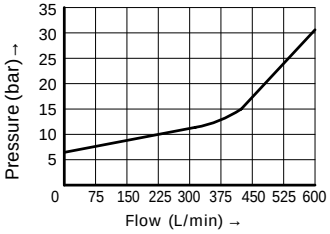

**DBE20**




**DBE30**

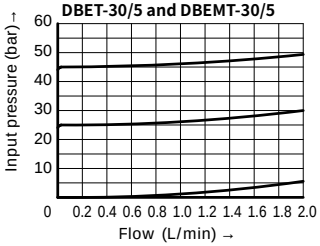


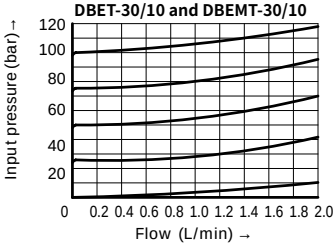
## Characteristic curves

(Measured at $\vartheta_{oil}$=40 ± 5 , using HLP46)

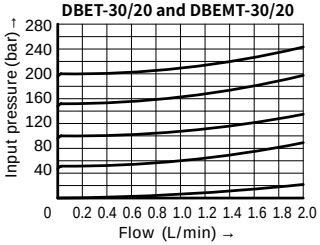
**DBET-30/5 and DBEMT-30/5**



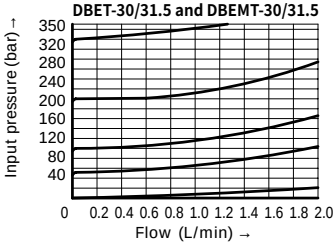

**DBET-30/10 and DBEMT-30/10**



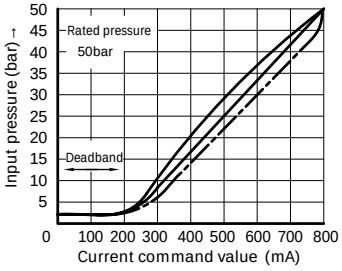

**DBET-30/20 and DBEMT-30/20**

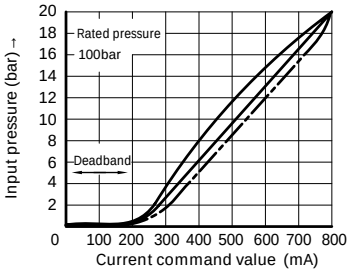


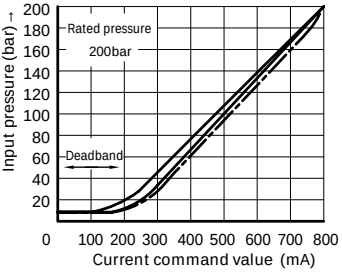

**DBET-30/31.5 and DBEMT-30/31.5**

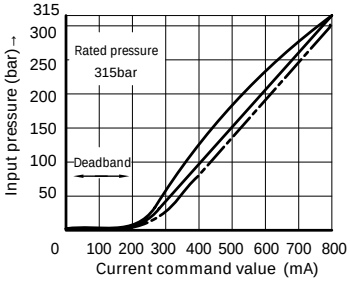



**Inputting pressure/current demand curve type DBE10, 20 and 30/DBET**



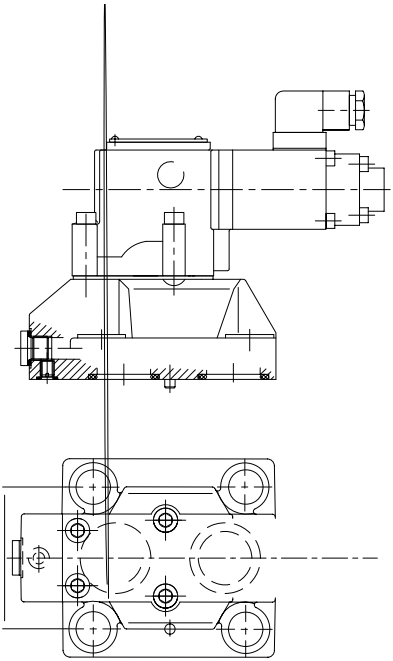

Measured under f ow 27L/min of type DBE10, 20 and 30.
Measured under f ow 0.8L/min of type DBET.

**Note:** To get min. preset pressure,
pilot current is not permitted to exceed 100mA .

**Hysteresis**

Without shimmy ————

With shimmy —·—·—



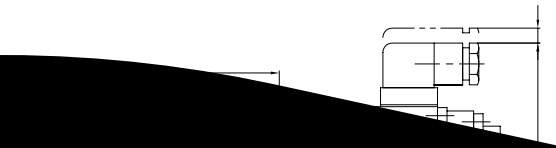


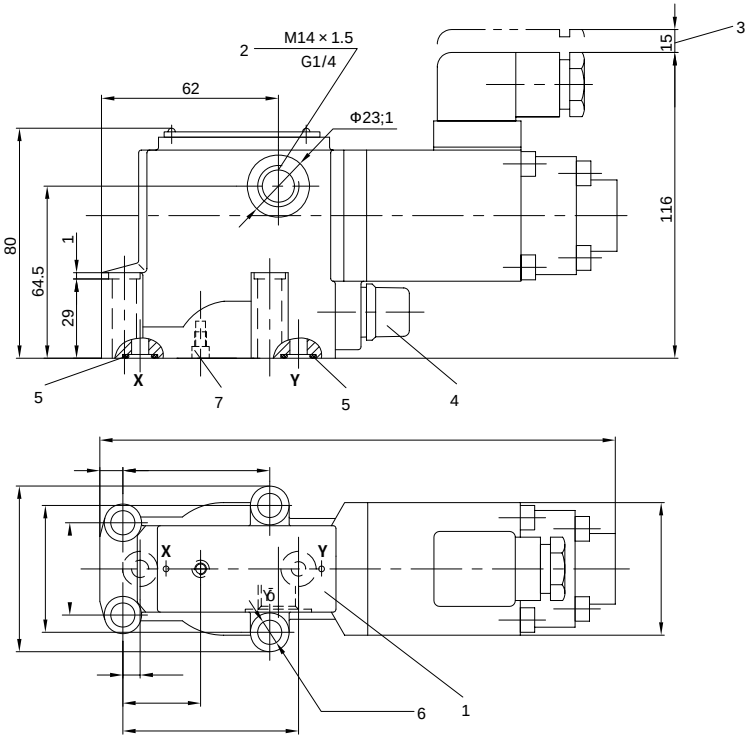
Valve fixing screw hole

Locating pin hole

Dimensions of Mounting surface

mounting sur ace2.21/100mm2.829 2.2




M14 × 1.5
G1/4
2
3
15
62
Φ23;1
80
64.5
1
29
116
X
Y
5
7
5
4
6
1