

DBE(E)/DBEM(E)...type Proportional Relief Valve



DBE(E)/DBEM(E)...7XJ...type

Sizes 10, 25, 32
Max. Working Pressure: 315 bar
Max. Flow: 700 L/min

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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
- Amplifier type VT-2000

Function and configuration

DBE valve is a pilot operated pressure relief valve. It is used to continuously set the pressure in hydraulic systems by electrical signal.

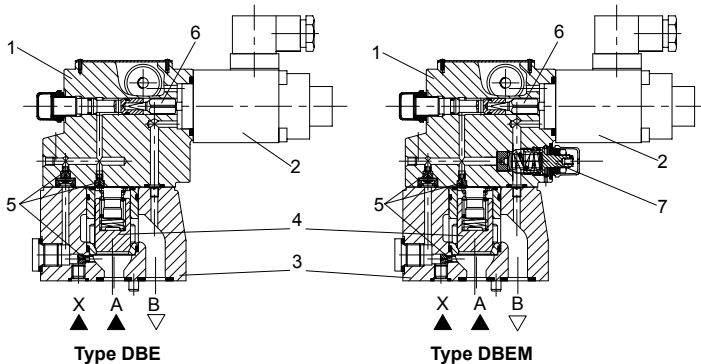
The valve consists of a pilot valve (1) with proportional solenoid (2) and the main valve (3) with main spool insert (4).

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 orifice (5) at the pilot valve (1). If the hydraulic force exceeds the solenoid force, the pilot poppet (6) opens. Pilot fluid can flow back to tank and pressure drop caused by the orifices effects 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).



Ordering code

| | | | | | | | | | | |
|-----|--|--|--|--------|--|-----|---|---|--|---|
| DBE | | | | -7XJ / | | 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 70J to 79J = 7XJ

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

Further information in plain text

V= FKM seals
 No code=NBR seals
 Pilot oil drain port Y
 No code= Inch threaded
 2= Metric threaded

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

For type DBE(M)E:
 K31 = With component plug,
 Without plug-in connector
 Z31 = With component plug
 and plug-in connector

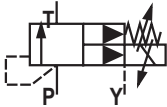
For type DBE(M)E, Supply voltage:
 G24= +24VDC

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)

Symbols

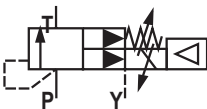
For external control electronics:

Type DBEM...-7XJ/...Y...

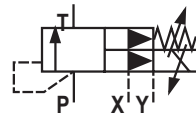


With integrated electronics:

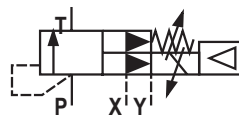
Type DBEME...-7XJ/...Y...



Type DBEM...-7XJ/...XY...



Type DBEM...-7XJ/...XY...



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 | 2.8 to 380 | | |
| 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 | | |
| 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 (infinitely 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 setting condition | When rated pressure is 50 bar, between 60 bar and 80 bar | | | |
| | When rated pressure is 100 bar, between 120 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. flow-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 (200Hz, amplitude 200mAssl) | | ±4.5% P max | |
| Shifting time | 30~150ms (independent with the system) | | | |

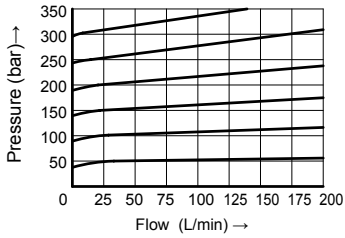
Electrical data

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

Characteristic curves

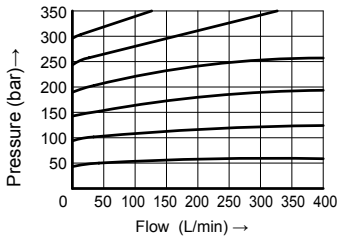
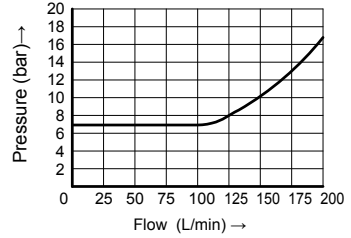
(Measured at $\vartheta_{oil} = 40^{\circ}\text{C} \pm 5^{\circ}\text{C}$, using HLP46)

Operating pressure in relation to the flow

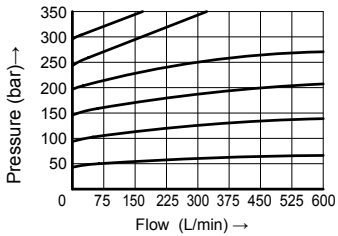
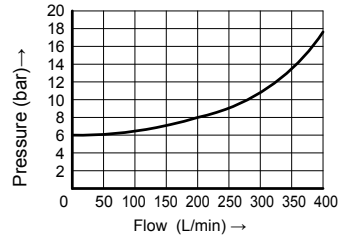


DBE10

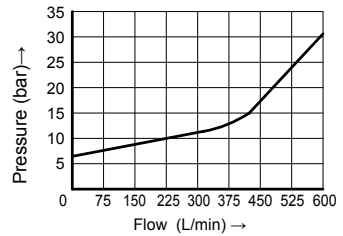
Min. setting pressure in relation to the flow



DBE20



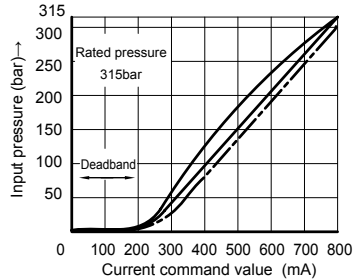
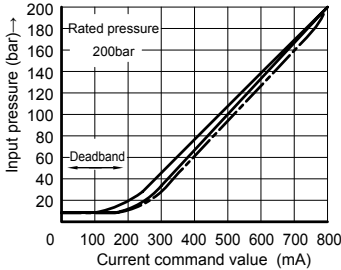
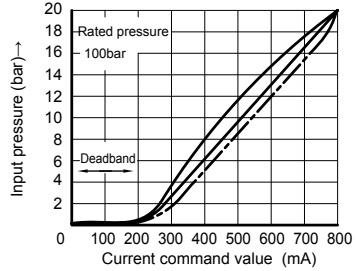
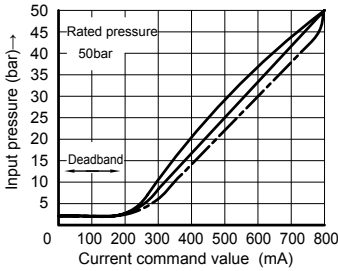
DBE30



Characteristic curves

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

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



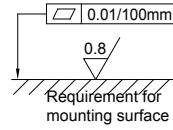
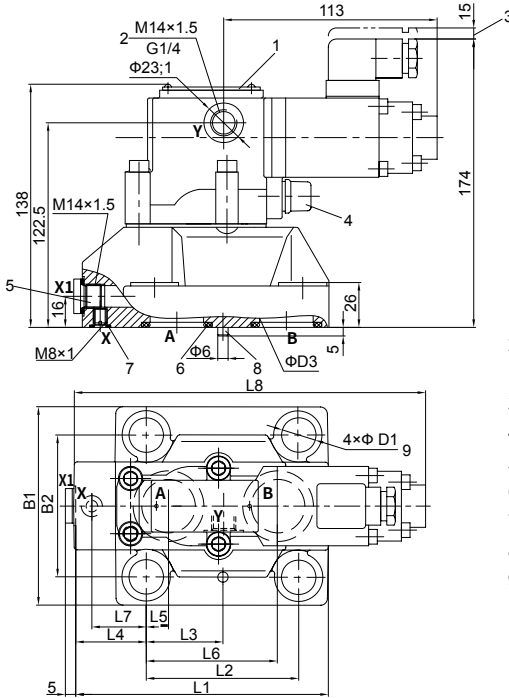
Measured under flow 27L/min of type DBE10, 20 and 30.
Measured under flow 0.8L/min of type DBET.

— With shimmy
- - - Without shimmy

Unit dimensions

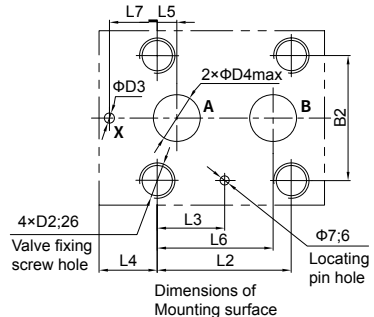
(Dimensions in mm)

Pressure relief valve of type DBE/DBEM



- 1 Name plate
- 2 (Port Y) pilot oil drain always external and separate to tank at zero pressure.
- 3 Space required to remove plug-in connector.
- 4 Max. pressure limitation
- 5 External pilot supply (X and X1, optional)
- 6 O-ring (port A and B)
- 7 O-ring 9.25×1.78(port X)
- 8 Locating pin
- 9 Fixing screw hole

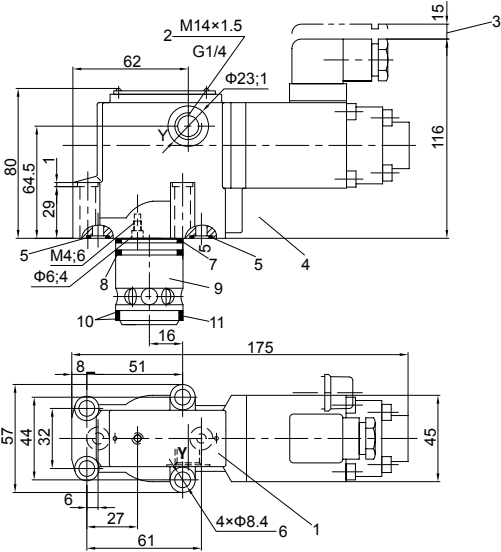
| Type | B1 | B2 | Weight | O-ring (Port A and port B) | | |
|-------------|-------|-------|--------|----------------------------|------|------|
| DBEM DBE 10 | 78 | 53.8 | 4.4kg | 17.12×2.62 | | |
| DBEM DBE 20 | 100 | 70 | 4.8kg | 28.17×3.53 | | |
| DBEM DBE 30 | 115 | 82.6 | 7.1kg | 34.52×3.53 | | |
| Type | L1 | L2 | L3 | L4 | L5 | L6 |
| DBEM DBE 10 | 91 | 53.8 | 22.1 | 27.5 | 22.1 | 47.5 |
| DBEM DBE 20 | 116 | 66.7 | 33.4 | 33.3 | 11.1 | 55.6 |
| DBEM DBE 30 | 147.5 | 88.9 | 44.5 | 41 | 12.7 | 76.2 |
| Type | L7 | L8 | D1 | D2 | D3 | D4 |
| DBEM DBE 10 | 0 | 176.5 | 14 | M12 | 6 | 12 |
| DBEM DBE 20 | 23.8 | 190 | 18 | M16 | 6 | 22 |
| DBEM DBE 30 | 31.8 | 200 | 20 | M18 | 7 | 30 |



Unit dimensions

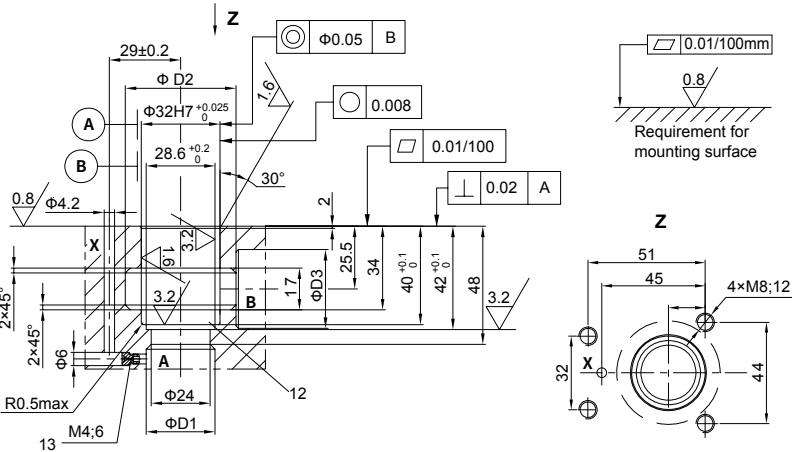
(Dimensions in mm)

Plug-in valve



- 1 Name plate
- 2 (Port Y) pilot oil drain always External and separate to tank at zero pressure
- 3 Space required to remove plug-in connector
- 4 Max. pressure limitation
- 5 O-ring 9.25×1.78(port X and Y)
- 6 Fixing screw hole
- 7 O-ring 28×2.65
- 8 O-ring 28×1.8
- 9 Main spool assembly
- 10 Retaining ring 28.4×32×0.8
- 11 O-ring 27.3×2.4
- 12 Retaining ring and O-ring shall be fixed onto the hole before fixing the main spool
- 13 The throttle shall be ordered separately

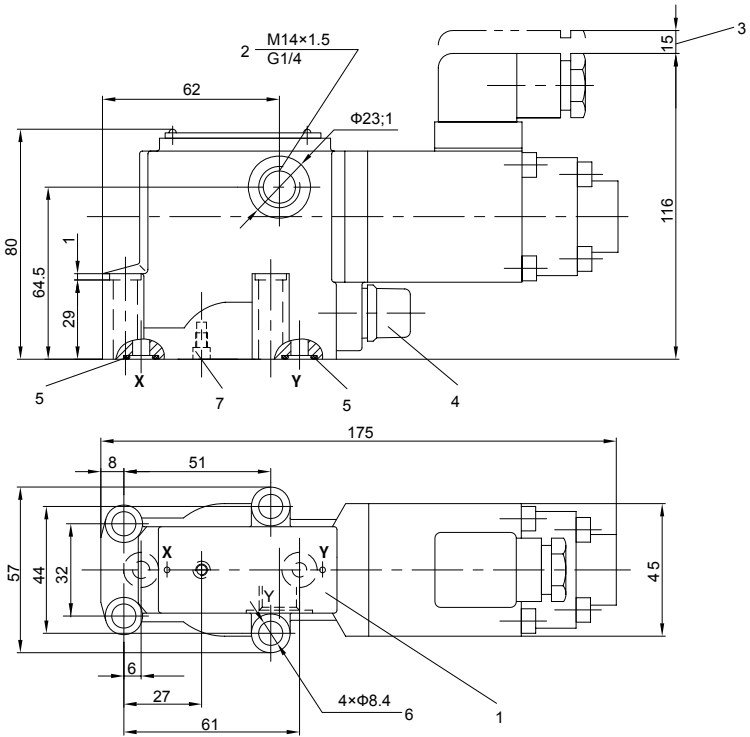
| Size | D1 | D2 | D3 | Main spool assembly code | | Valve fixing screw | Tighting touque | Weight |
|------|----|----|----|--------------------------|--------------|--|-----------------|--------|
| 10 | 10 | 40 | 10 | 307341 (NBR) | 307342 (FKM) | 4-M8×40 internal hexagon GB/T70.1-10.9 | 20Nm | 2.9kg |
| 20 | 25 | 45 | 25 | | | | | |
| 30 | 32 | 45 | 32 | | | | | |



Unit dimensions

(Dimensions in mm)

Pressure relief valve as remote controller of valve type DBET/DBEMT Pilot valve without main spool assembly of valve type DBEC/DBEMC



- 1 Name plate
- 2 Pilot oil drain port, optional
- 3 Space required to remove plug-in connector
- 4 Max. pressure limitation
- 5 O-ring 9.25x1.78 (port X and Y)
- 6 Fixing screw hole
- 7 Blocked up in valve type DBET/DBEMT
Fixed with throttle hole in valve type DBEC/DBEMC
- 8 Pilot oil drain port, optional

