

| | | | | |
|--|---|----------------|-----------------|------------------------------|
| BEIJING HUADE HYDRAULIC INDUSTRIAL GROUP CO.,LTD. | Proportional pressure relief valve Type DBE/DBEM | | | RC29160/9.2006 |
| | Size 10 ,25 ,32 | up to 31.5 MPa | up to 600 L/min | Replaces: RC29160/08.2000 |

Features:

- For subplate mounting:
- Encased in block
- Optional additional maximum pressure limitation by means of a spring loaded pilot control valve
- Valve and electronic control form one source



Functional , section

These valves basically consist of the pilot control valve (1) with proportional solenoid (2) and the main valve (3) with main spool insert (4).

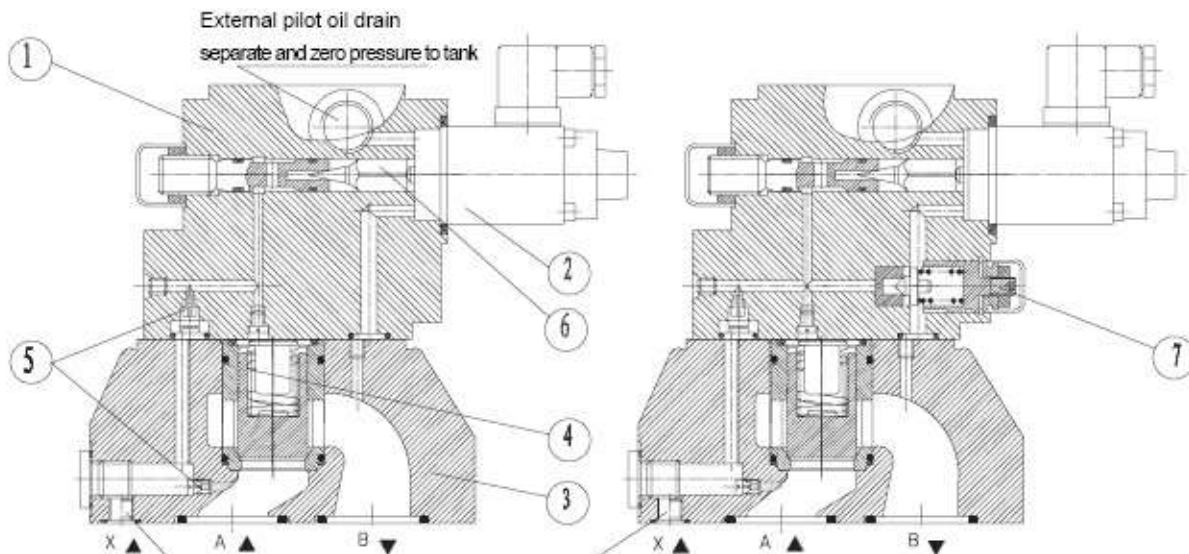
Type DBE:

The adjustment of the pressure is command value dependent via a proportional solenoid (2). The pressure present in port A acts on the underside of the main spool (4). At the same time this pressure acts on the spring loaded side of the main spool (4) via orificies (5). The hydraulic force acts on the pilot

poppet (6) When the hydraulic force over comes the solenoid force then the pilot poppet (6) opens. Due to the fact that the pilot oil can now flow to tank via port Y, a pressure drop occurs at the main spool (4) which acts on the main spool and lifts it against the force of the return spring . The connection from A to B is opened and there is no longer any increase in pressure.

Type DBEM:

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



Type DBE

Port "X" is blocked when internal pilot oil supply

Type DBEM

Symbols

| | | | | | |
|--|--------------------------|----------------------------|---|--------------------------|-----------------------------|
| | | | | | |
| 10 DBE 20- ..Y 30 DBEC30- ..Y | 10 DBE 20- ..XY 30 | DBE C T .. DBEC- ..Y | 10 DBE 20- ..Y 30 DBEMC30- ..Y | 10 DBEM20- ..XY 30 | DBE C T .. DBEMC- ..Y |

Ordering details

DBE + 30 B / *

Without maximum Pressure limitation = No code
With maximum pressure limitation = M

Further details in clear text

M= mineral oils
V= phosphate ester

Pilot pressure relief valve =No code
Insert pressure relief valve =C
(sign size 10 or 30)
Pilot pressure relief valve without the main spool (signless size) =C
Pilot pressure relief valve use as remote control=T

Y= pilot oil supply, internal drain external
XY= pilot oil supply, external drain external

Size 10 = 10
Size 25 = 20
Size 32 = 30

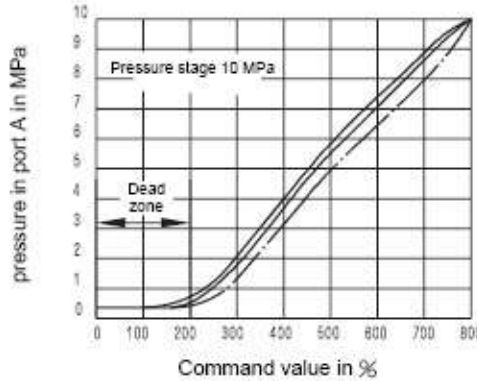
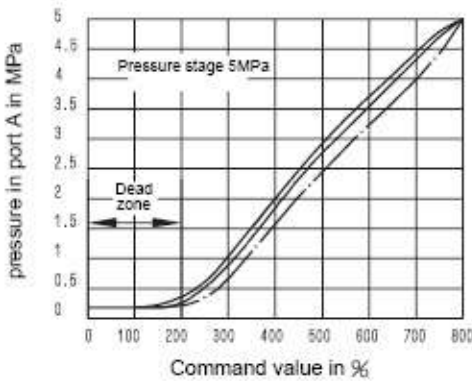
Pressure stage
50= Up to 5.0 MPa
100= Up to 10.0 MPa
200= Up to 20.0 MPa
315= Up to 31.5 MPa

Series 30 to 39 = 30
(30 to 39: unchanged installation and connection dimensions)

Technology of Beijing Huade Hydraulic =B

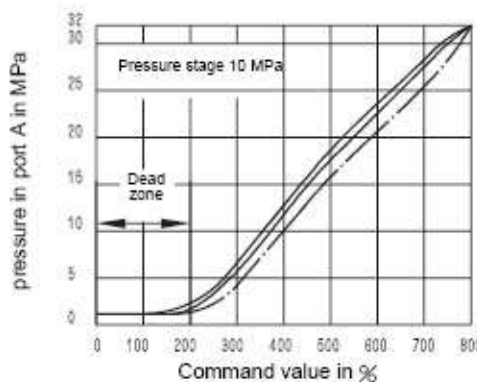
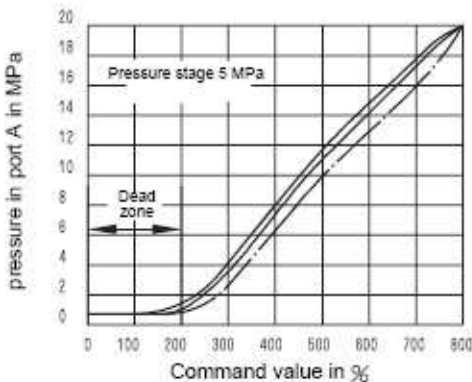
Characteristic curves:(measured at $v=36 \times 10^{-6} \text{m}^2/\text{S}$ $t=50^\circ\text{C}$)

Type DBE10, 20, 30/DBET input pressure/current curves



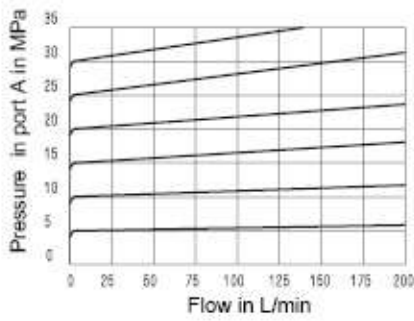
Type DBE10, 20 and 30 (measured at a flow of 27 L/min)
Type DBET (measured at a flow of 0.8 L/min)

Hysteresis
With surge _____
Without surge - - - - -

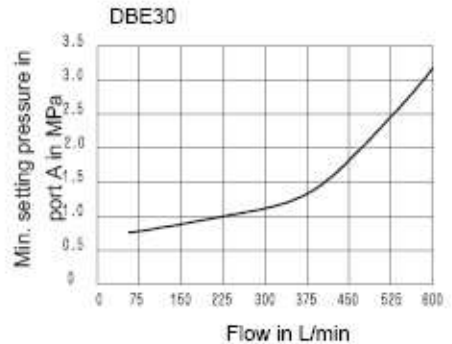
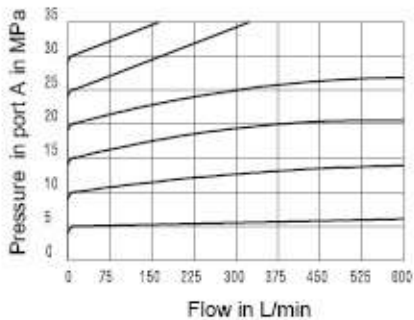
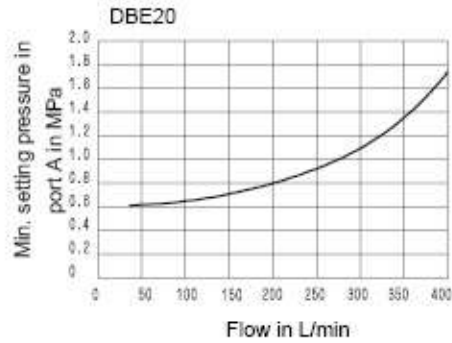
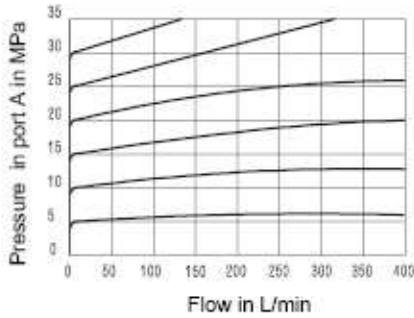
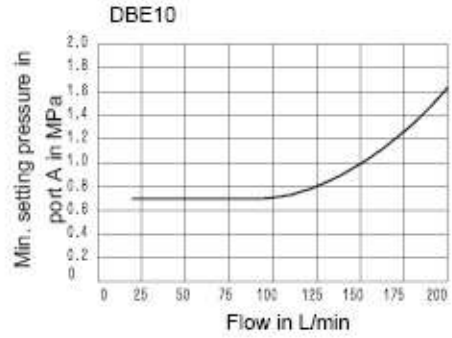


Note: So that the minimum settable pressure can be achieved the bias current must not exceed 100 mA.

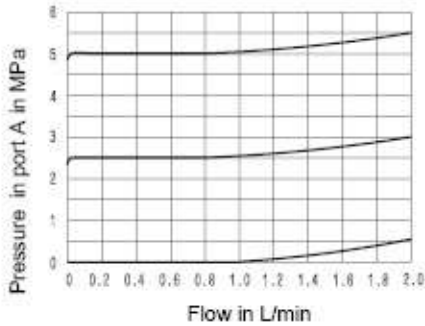
Settable Pressure in relation to the flow



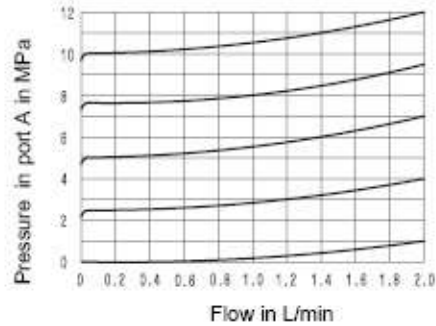
Min. settable pressure in relation to flow



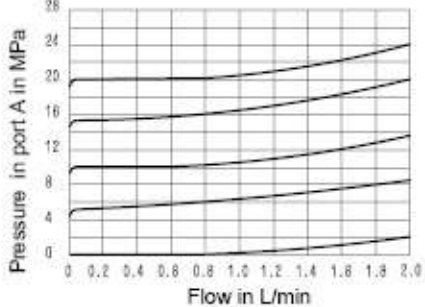
DBET-30/50 and DBEMT-30/50



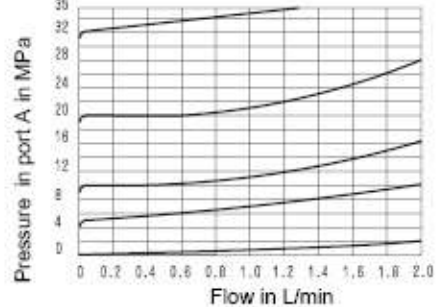
DBET-30/100 and DBEMT-30/100



DBET-30/200 and DBEMT-30/200



DBET-30/315 and DBEMT-30/315



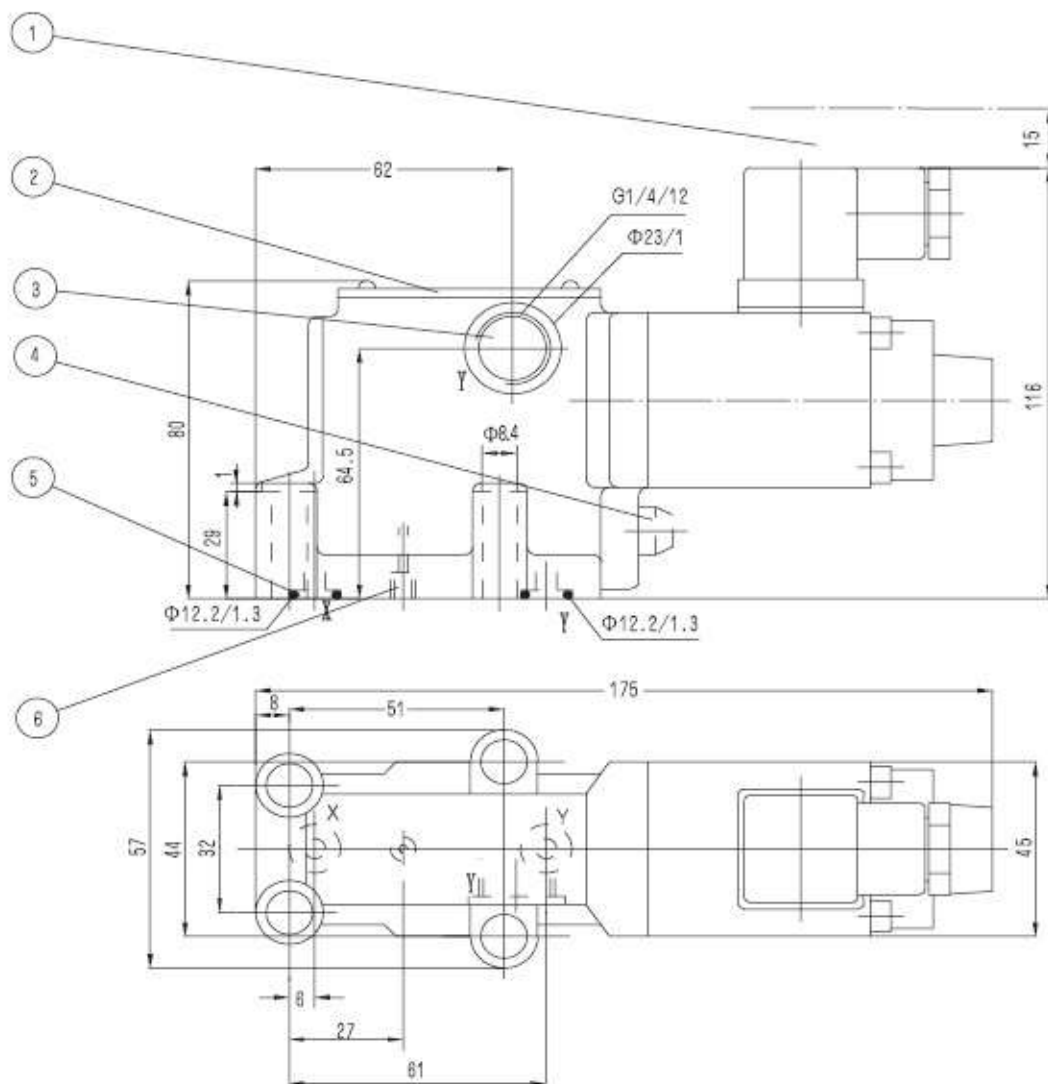
Technical data

Hydraulic data

| | | | | | | |
|--|------------------|----------------------|---|------------------------|------------------------|------------------------|
| Max. operating pressure | Ports A, B and X | (MPa) | 31.5 | | | |
| Return pressure | | (MPa) | Port Y, separate and at zero pressure to tank | | | |
| Max. settable pressure | | (MPa) | 5, 10, 20, 31.5, same as pressure stage | | | |
| Min. settable pressure | | (MPa) | see characteristic curves | | | |
| Max. pressure safety | | (MPa) | settable pressure | | | |
| | | | 5 | 10 | 20 | 31.5 |
| | | | 1 to 6 ^{1/2} | 1 to 12 ^{1/2} | 1 to 22 ^{1/2} | 1 to 34 ^{1/2} |
| Max. pressure safety Adjustable pressure range | | (MPa) | rated pressure | | | |
| | | | 5 | 10 | 20 | 31.5 |
| | | | 6 to 8 | 12 to 14 | 22 to 24 | 34 to 36 |
| Max. flow | | (L/min) | 10 | 20 | 30 | |
| | | | 200 | 400 | 600 | |
| Pilot flow | | (L/min) | 0.7 to 2 | | | |
| Linearity | | (%) | ± 3.5 | | | |
| Repeatability | | (%) | < ± 2 | | | |
| Typical variation | | (%) | < ± 2 Max. pressure | | | |
| Hysteresis | | (%) | With surge ± 1.5 of Max.pressure, Without surge ± 4.5 of Max.pressure | | | |
| Switching time | | (ms) | 30 to 150 | | | |
| Pressure fluid | | | Mineral oil(for NBR seal),Phosphate ester (for FPM seal) | | | |
| Viscosity range | | (mm ² /s) | 2.8 to 380 | | | |
| Pressure fluid temperature range | | (°C) | -20 to +70 | | | |
| Degree of contamination | | (μm) | ≤ 20(recommendation 10) | | | |

Electrical technical data

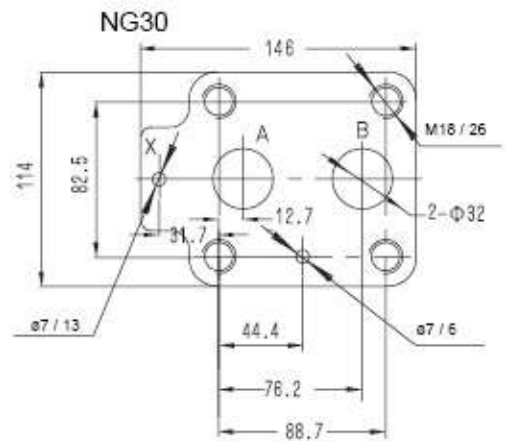
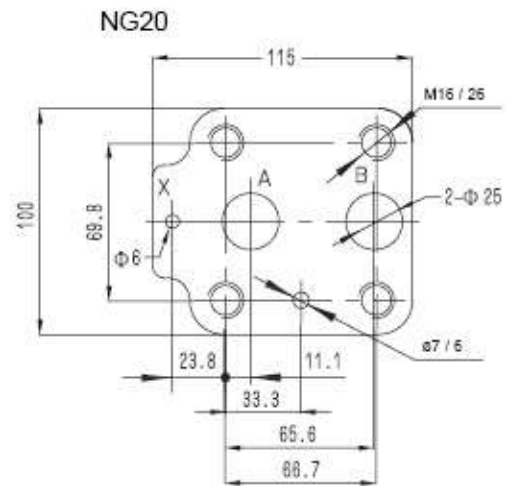
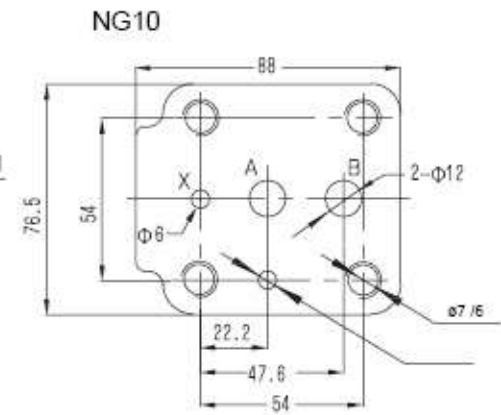
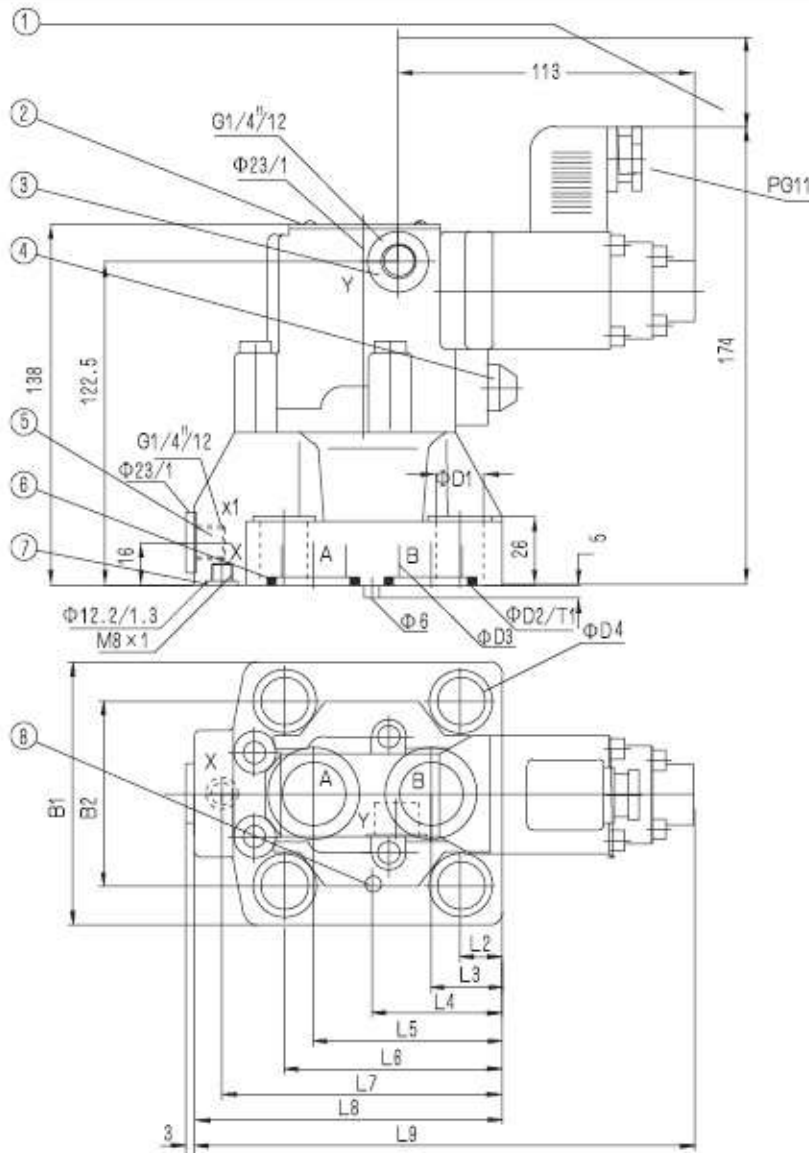
| | | | | | | |
|----------------------------------|--|------|---|--|--|--|
| Amplifier | | | VT-200 3/40 supplied with valve together | | | |
| Supply voltage | | | DC | | | |
| Min. control current | | (A) | 0.1 | | | |
| Max. control current | | (A) | 0.8 | | | |
| Coil resistance | | (Ω) | Cold value at 20°C is 19.5; Max. warm value is 28.8 | | | |
| Pressure fluid temperature range | | (°C) | +50 | | | |
| Working state | | | Continue | | | |
| Valve protection | | | IP65 | | | |
| Electrical connections | | | plug | | | |



1. Space required to remove plug-in connector
2. Nameplate
3. Port for pilot oil drain external
4. Maximum pressure limitation
5. O-ring 9.25X1.78 (for ports X and Y)
6. The hole is blocked in DBET/DBEMT and fix throttle in DBEC/DBEMC
SubplateG51/01, see page 87

Unit dimensions (type DBE/DBEM)

(Dimensions in mm)



- 1. Space required to remove plug-in connector
- 2. Nameplate
- 3. Pilot oil drain, external
- 4. Maximum pressure limitation
- 5. Pilot oil supply external (optionally at port X or X1)
- 6. O-ring (for ports A, B)
- 7. O-ring 9.25X1.78 (for port X)
- 8. Locating pin

Subplates (see page 89);

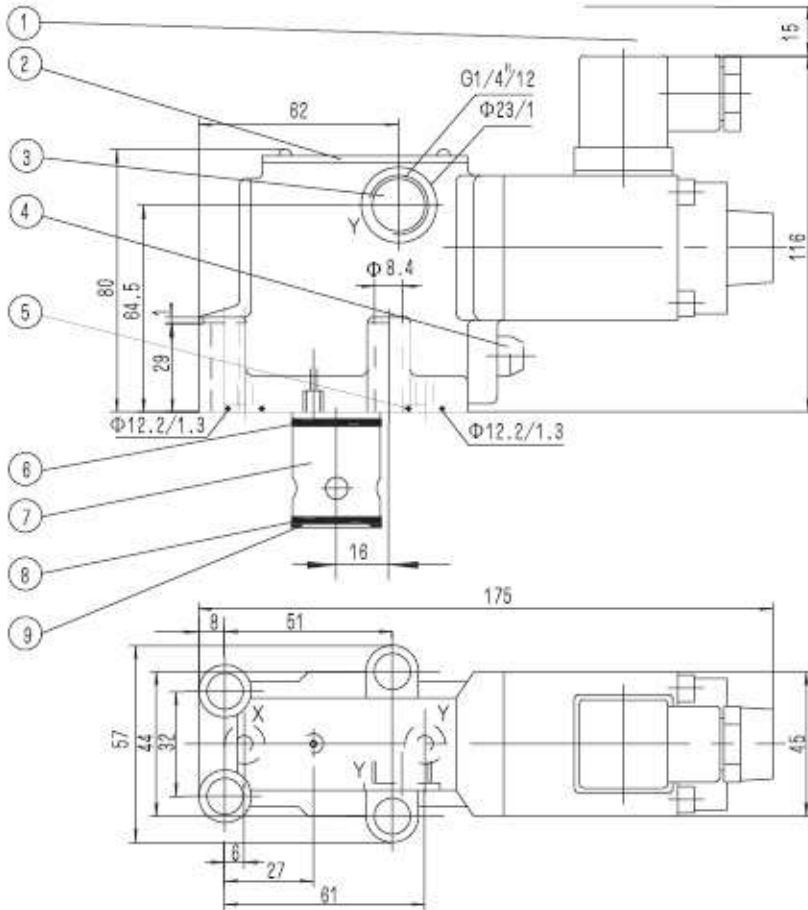
| | | | |
|---------|---------|---------|---------|
| NG10 | NG20 | NG30 | |
| G545/01 | G408/01 | G410/01 | G410/01 |
| G546/02 | G409/01 | G411/01 | G411/01 |

| Size | B1 | B2 | Φ D1 | Φ D2 | Φ D3 | Φ D4 | O-ring (ports A and B) | Valve fixing screws: |
|------|-----|------|------|------|------|------|------------------------|---------------------------------------|
| 10 | 78 | 54 | 18 | 21.8 | 12 | 14 | 17.12 × 2.62 | M12 × 50-10.9, M _A = 84Nm |
| 20 | 100 | 70 | 24 | 34.8 | 24 | 18 | 28.17 × 3.53 | M16 × 50-10.9, M _A = 206Nm |
| 30 | 115 | 82.5 | 28 | 41 | 30 | 20 | 34.25 × 3.53 | M18 × 50-10.9, M _A = 267Nm |

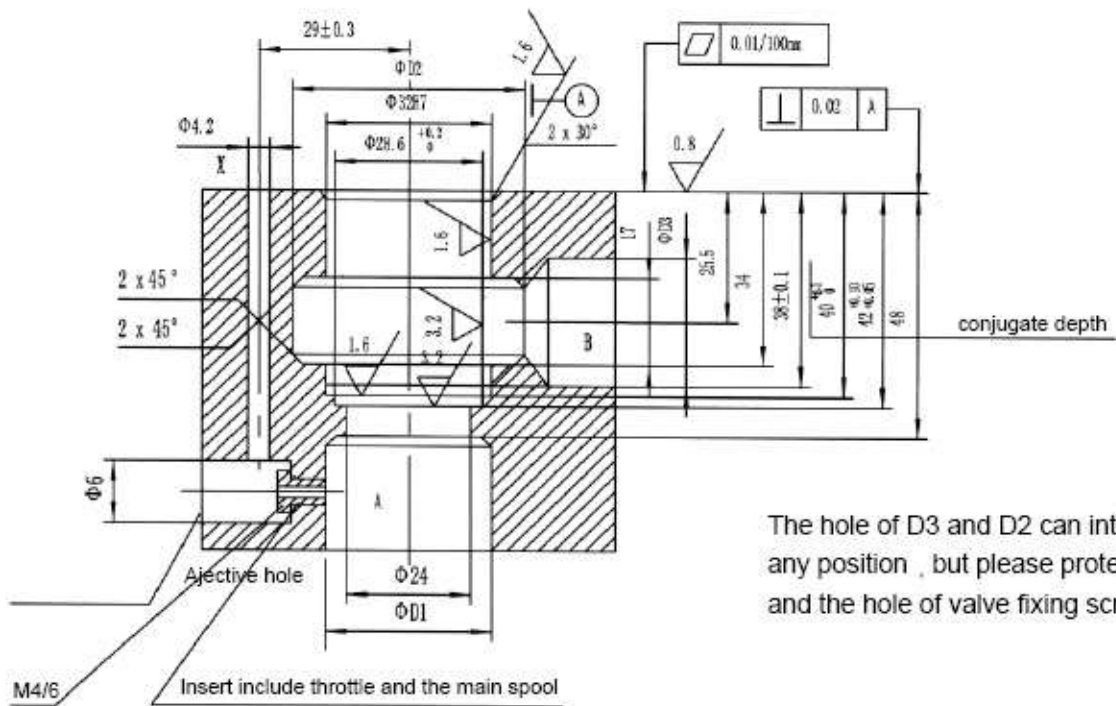
| Size | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | T1 | Weight (Kg) |
|------|------|------|------|------|-------|-------|-----|-------|-----|-------------|
| 10 | 12.5 | 18.9 | 44.3 | 44.3 | 66.5 | 66.5 | 90 | 176.5 | 2 | 4.1 |
| 20 | 16 | 27.1 | 49.4 | 71.6 | 82.5 | 106.5 | 117 | 190 | 2.9 | 4.5 |
| 30 | 17.5 | 61.9 | 30 | 93.7 | 106.4 | 138.2 | 148 | 200 | 2.9 | 6 |

Unit dimensions

(Dimensions in mm)



1. Space required to remove plug-in connector
 2. Nameplate
 3. Pilot oil drain external(port Y)
 4. Maximum pressure safety
 5. O-ring 9.25X1.78
 6. O-ring 27.3X2.4 (*)
 7. The main spool
 9. Retainer ring 32/28.4X0.8 (*)
- (*) This kind of ring should be installed before installing insert housing



The hole of D3 and D2 can intersect at any position, but please protect port X and the hole of valve fixing screw

| Size | The ordering code of the main spool | | Φ D1 | Φ D2 | Φ D3 | Valve fixing screw | MA | Weight (kg) |
|------|-------------------------------------|--------|-----------|-----------|-----------|--|------|-------------|
| 10 | | | 25 | 40 | 10 | M8 × 40-10.9 | | |
| 20 | 207341 | 307342 | 32 | 45 | 25 | (GB/T70.1-2000) must be ordered separately | 20Nm | 1.5 |
| 30 | (NBR) | (FPM) | | | 32 | | | |

NOTICE

1. The fluid must be filtered. Minimum filter fineness is 20 μm .
2. The tank must be sealing up and an air filter must be installed on air entrance.
3. Products without subplate when leaving factory, if need them, please ordering specially.
4. Valve fixing screws must be high intensity level (class 10.9). Please select and use them according to the parameter listed in the sample book.
5. Roughness of surface linked with the valve is required to $\sqrt{0.6}$.
6. Surface finish of mating piece is required to 0.01/100mm.