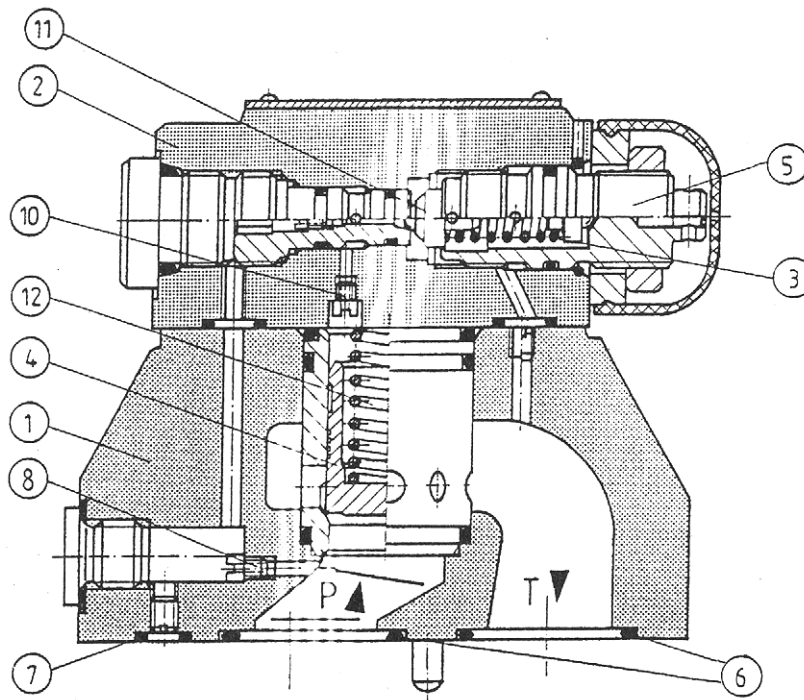


Pressure relief valves type DB... serve to limit pressure in a hydraulic system or in its part. Version DBW... is also used to unload pressure in a system. Application example :
 - DB... for setting up maximum pressure in a system
 - DBW... for actuation a pump without pressure

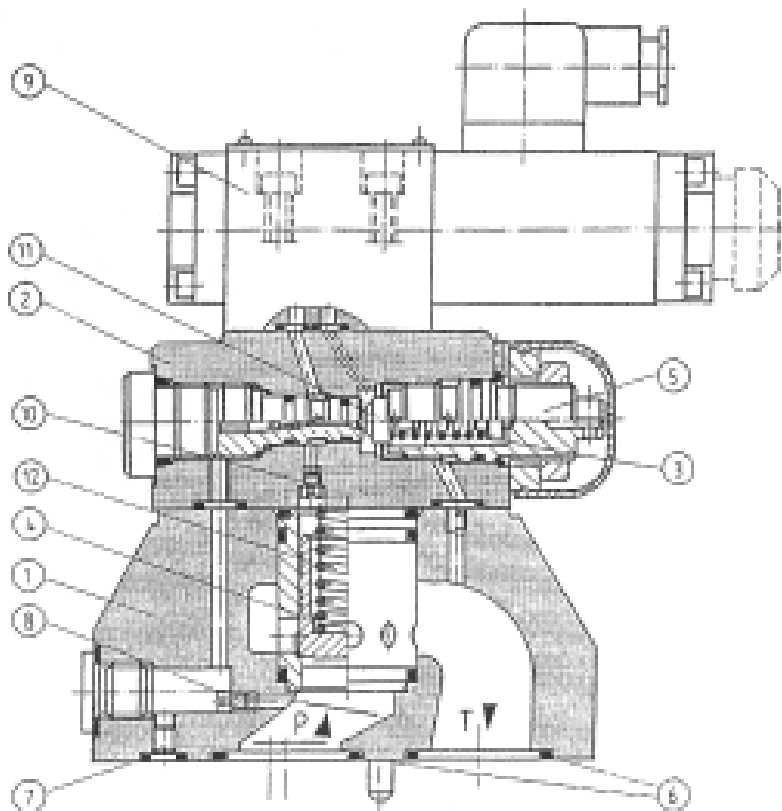


DESCRIPTION OF OPERATION



Pilot operated pressure relief valve (DB...) consists of a pilot valve 2 and main valve 1. Pressure in the system affects the main spool end via port P and at the same time the spring loaded side of the main spool and the poppet of the pilot valve 11 via jets 8, 10. At standstill, the pressure is equal on both sides of the spool. The spring 12 holds the main spool in the starting position. Ports P and T are separated from each other. If pressure in

the system reaches the value set by the position of the adjustment 5 and the spring 3 in the pilot valve, the fluid flows via the jet and the pilot poppet into the tank. A pressure drop occurs at the jet, which also affects both main spool surfaces. The main spool is thus pushed up allowing the excess fluid to drain out of the system into the tank. In subplate version, o-rings 6, 7 are fitted to secure sealing.



Pressure relief valve is also available with directional valve unloading. In the starting position, directional control valve as a pilot valve closes the return line in front of the pilot poppet . The valve operates as already described. In the switched position, the directional valve connects the spring

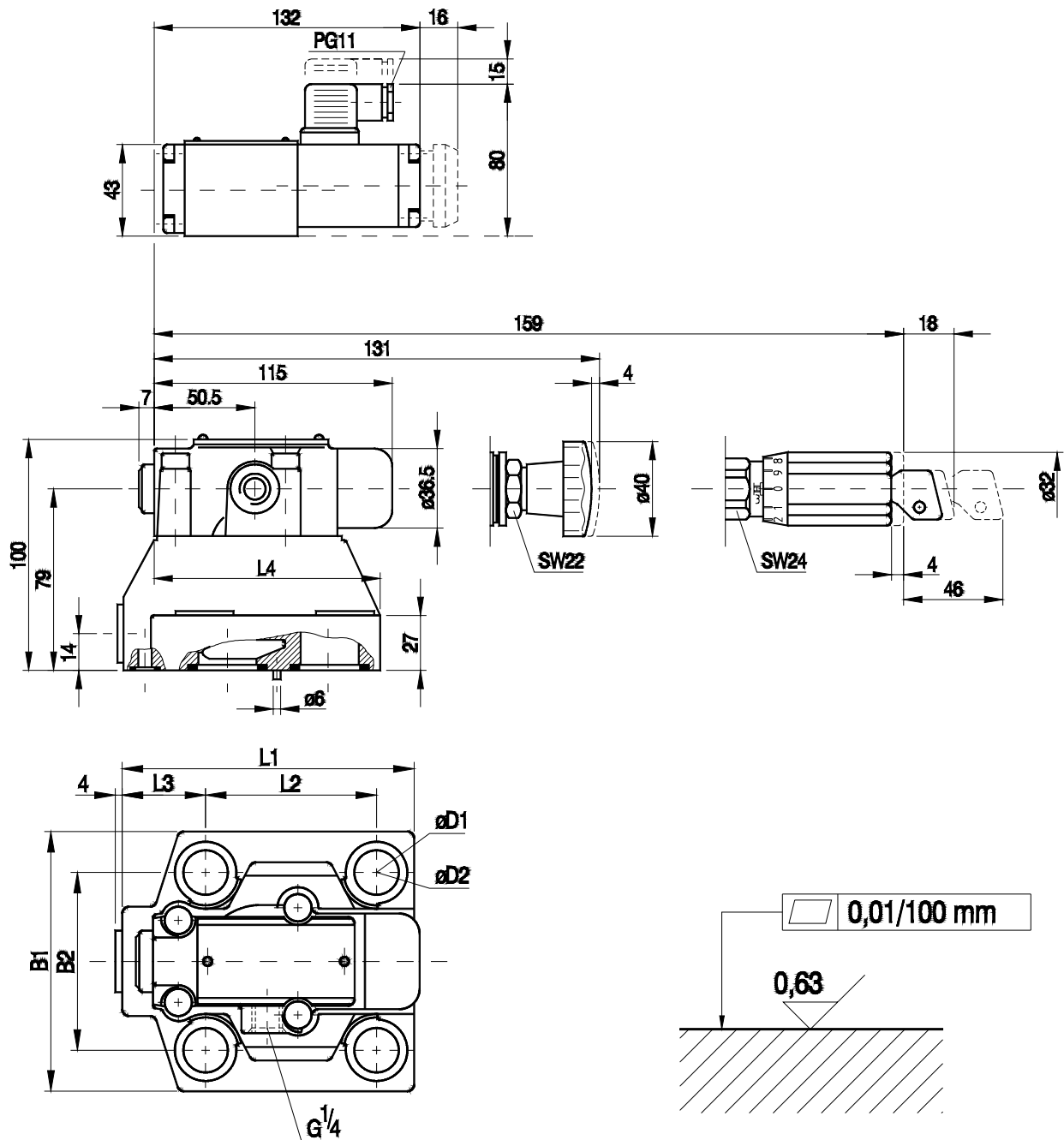
side of the main spool with the tank. This side of the spool is thus unloaded and moving along opens the connection from P to T. The valve is available in two versions : in de-energized position normally closed or normally open.

TECHNICAL DATA

Hydraulic fluid	Mineral oil or phosphate ester		
Nominal fluid viscosity	37 mm ² /s at the temperature of 328 K		
Viscosity range	2.8 to 380 mm ² /s		
Optimum working temperature (fluid in a tank)	313 - 328 K		
Fluid temperature range	253 - 343 K		
Required fluid filtration	16 μm		
Recommended fluid filtration	10 μm		
Maximum operating pressure	31.5 MPa		
Pressure at port Y	up to 31.5 MPa - DB ; up to 6 MPa - DBW		
Minimum set pressure	0.5 MPa		
Maximum set pressure	31.5 MPa		
Max allowable flow rate	Size 10	Size 20	Size 30
	200	400	600

OVERALL AND CONNECTION DIMENSIONS

Valve for subplate mounting

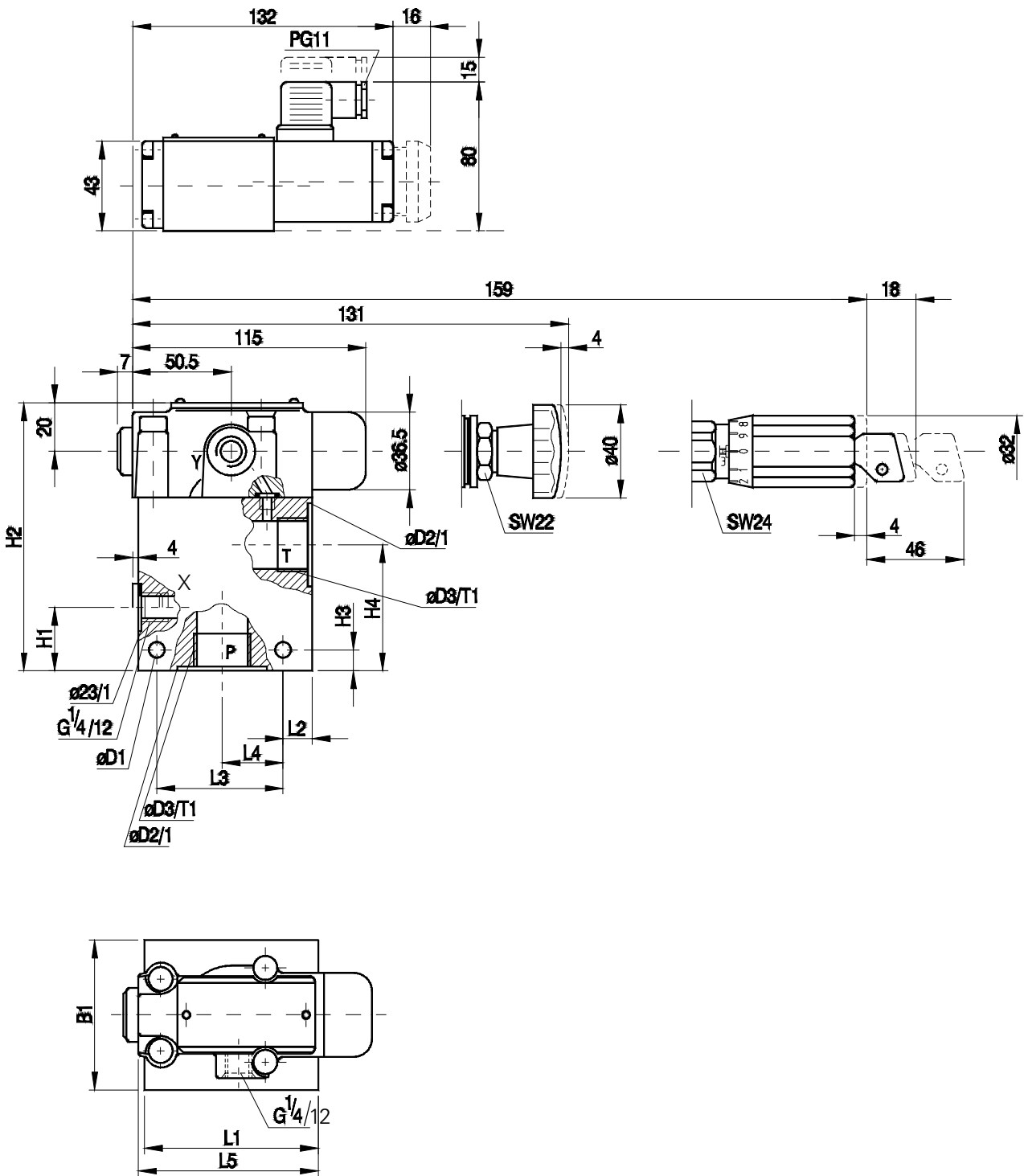


- 1 - o-ring size 10 - 17.1 × 2.6 2 pieces
- size 20 - 28.2 × 3.5 2 pieces
- size 30 - 34.5 × 3.5 2 pieces
- 2 - o-ring size 10 - 8.3 × 2.4 1 piece
- size 20 - 8.3 × 2.4 1 piece
- size 30 - 8.3 × 2.4 1 piece

Admissible surface roughness and flatness deviation for a subplate face.

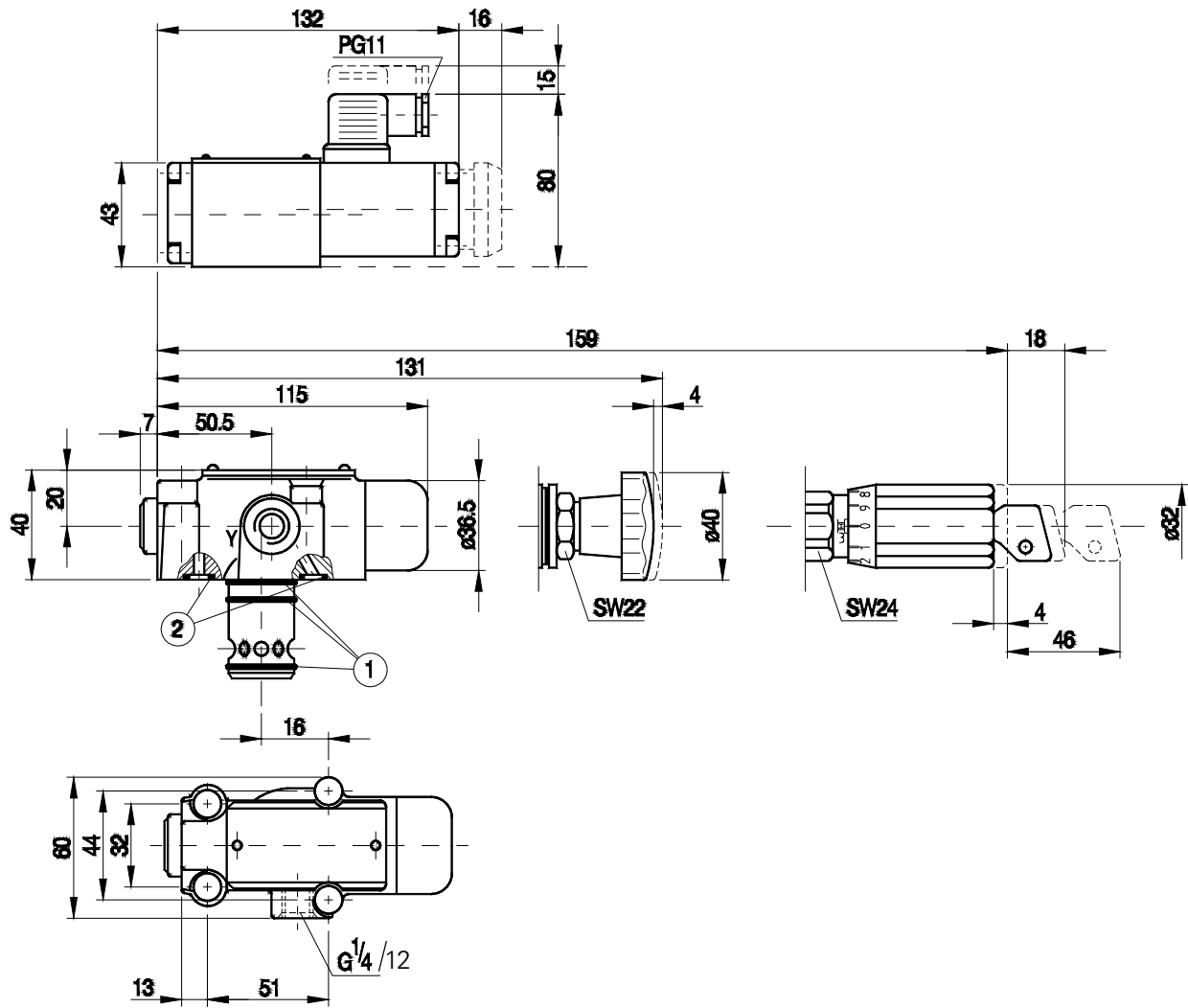
Valve	B1	B2	D1	D2	L1	L2	L3	L4	Weight of DB [kg]	Weight of DBW [kg]
NG10	78	54	20	14	90	54	23,5	93,5	2,9	3,8
NG20	100	70	26	18	117	67	34	107	3,8	4,7
NG30	115	82,5	29	20	148	89	41,5	128	4,7	5,6

Pressure relief valve for threaded connections



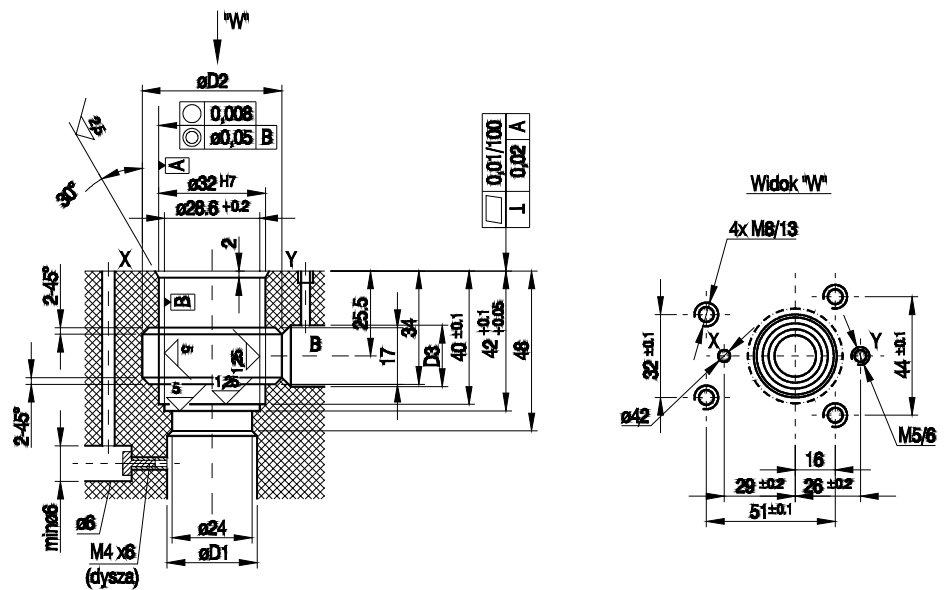
Valve	B1	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	Weight DB [kg]	Weight DBW [kg]
Size 10	63	9	34	G½	27	125	10	57	85	14	62	31	90	14	4.8	5.9
Size 20	63	9	47	G1	27	125	10	57	85	14	62	31	90	18	4.6	5.7
Size 30	70	11	61	G1½	42	138	13	64	10	18	72	36	99	22	5.3	6.4

Pressure relief valve for mounting in manifold blocks.



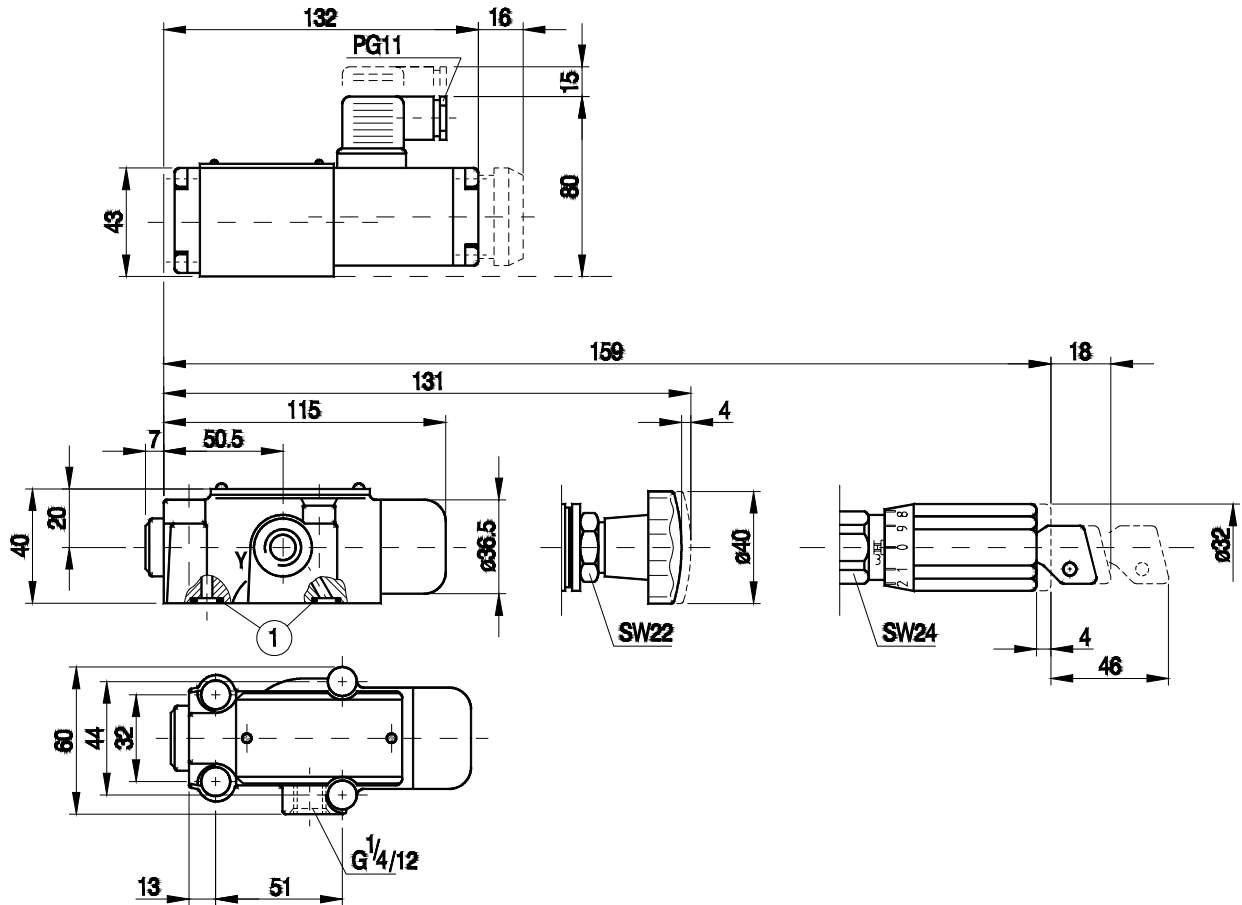
- 1 - o-ring 27.3 × 2.4 - 2 pieces
- 2 - o-ring 9.2 × 1.8 - 2 pieces

Valve seat for manifold mounting



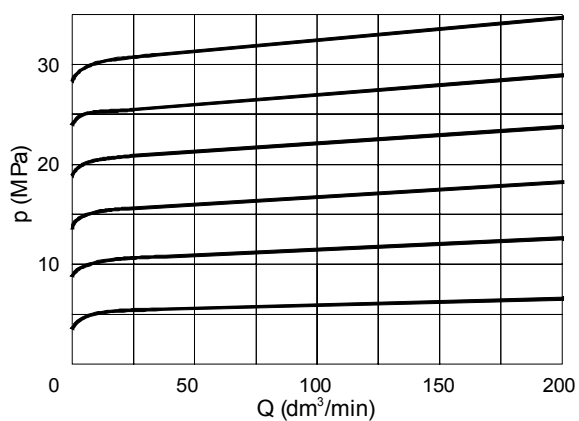
Seat	D1	D2	D3	Weight DBC [kg]
Size 10	10	40	10	1.4
Size 20	20	45	20	1.4
Size 30	30	45	30	1.4

Pressure relief valve as remote control valve type DBT

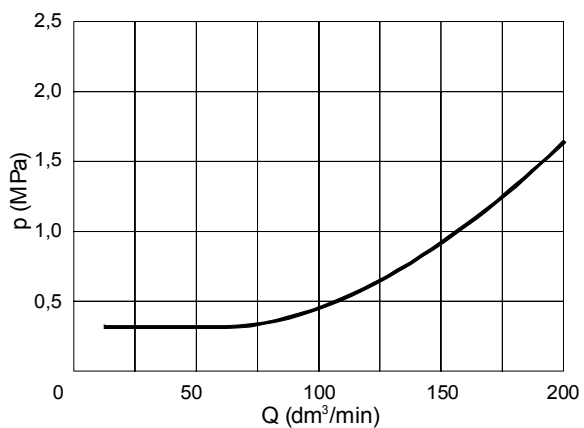


PERFORMANCE CURVES, measured at $v = 41 \text{ mm}^2/\text{s}$ and $T = 323 \text{ K}$

NG 10

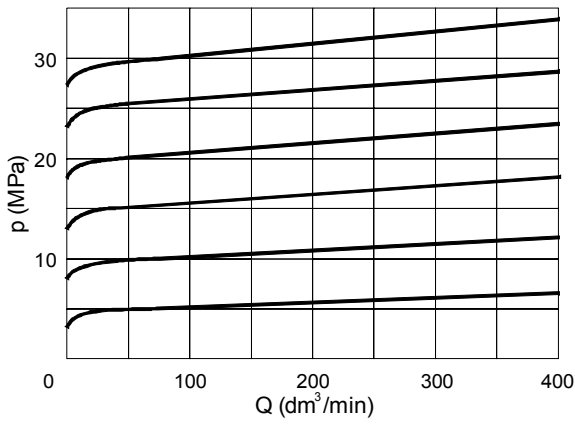


Operating pressure in relation to flow rate

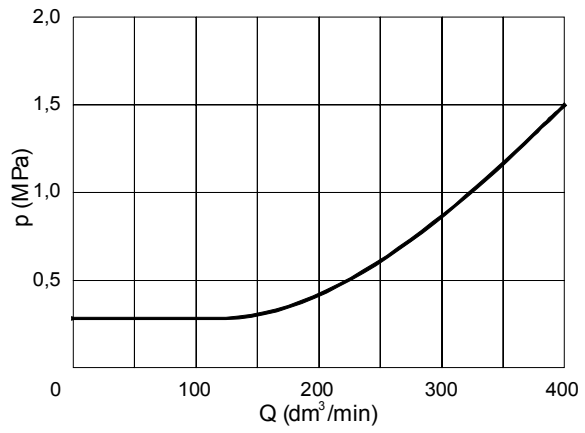


Minimum set pressure in relation to flow rate

NG 20

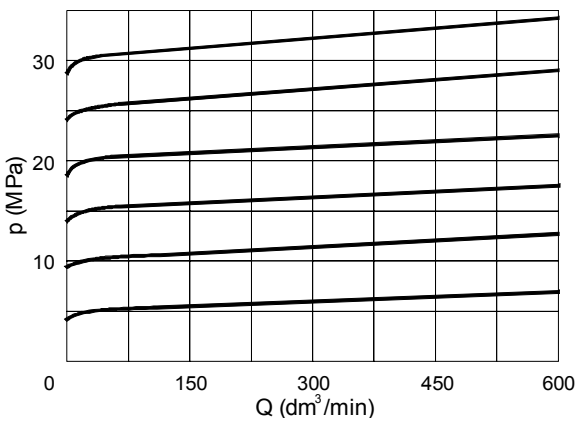


Operating pressure in relation to flow rate

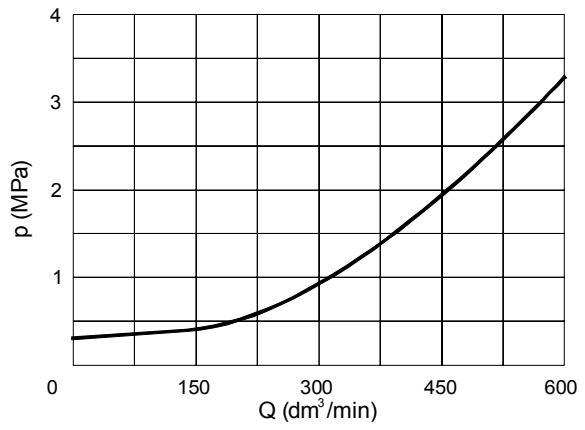


Minimum set pressure in relation to flow rate

NG 30



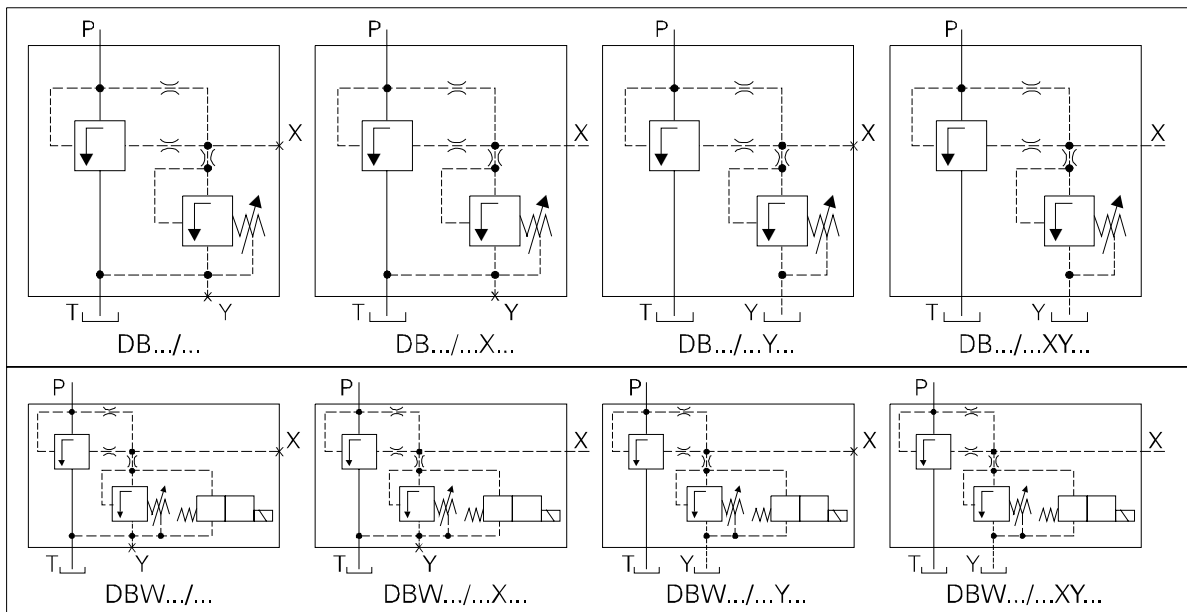
Operating pressure in relation to flow rate



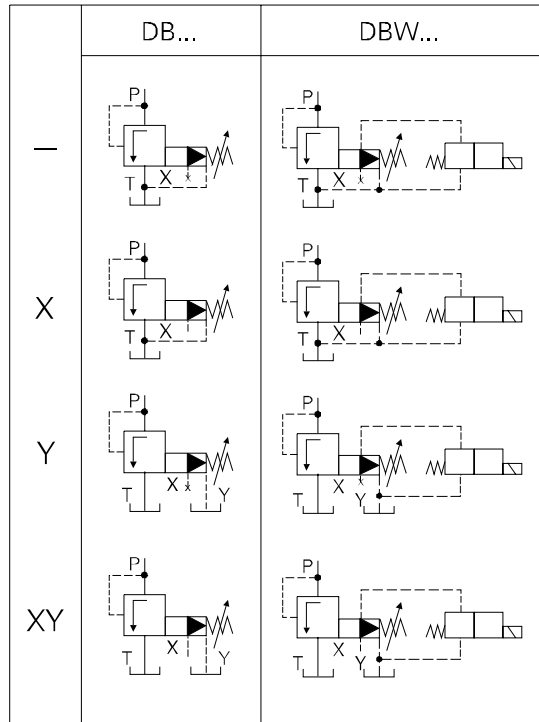
Minimum set pressure in relation to flow rate

SCHEMES

Detailed



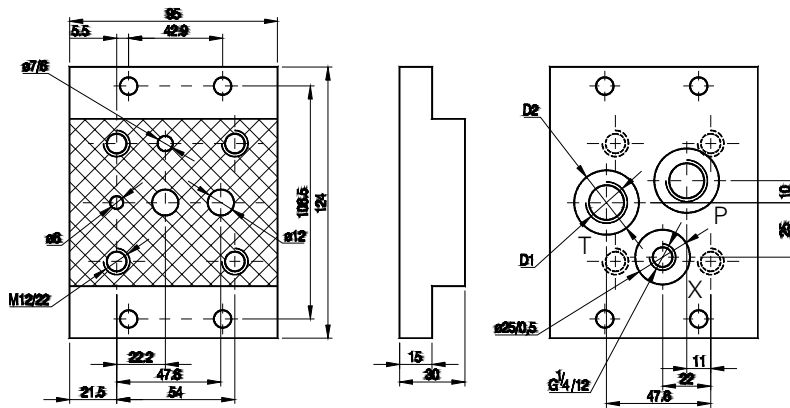
Simplified



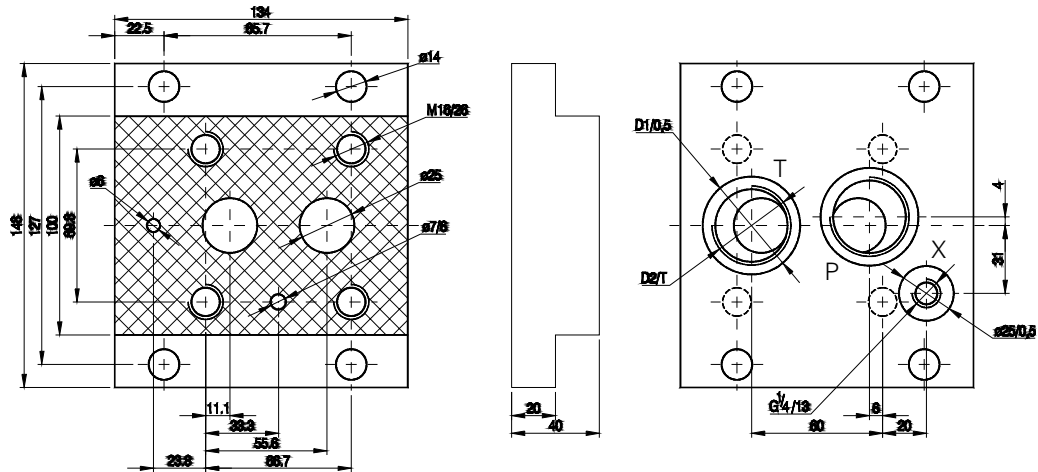
Dimensions of subplates

Subplate for valves must be ordered separately

NG10

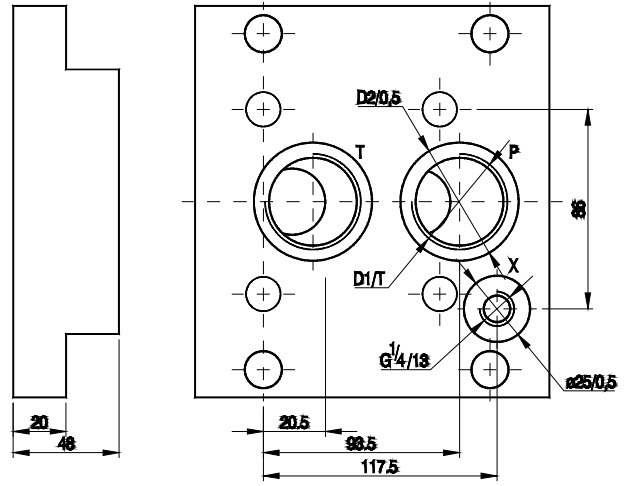
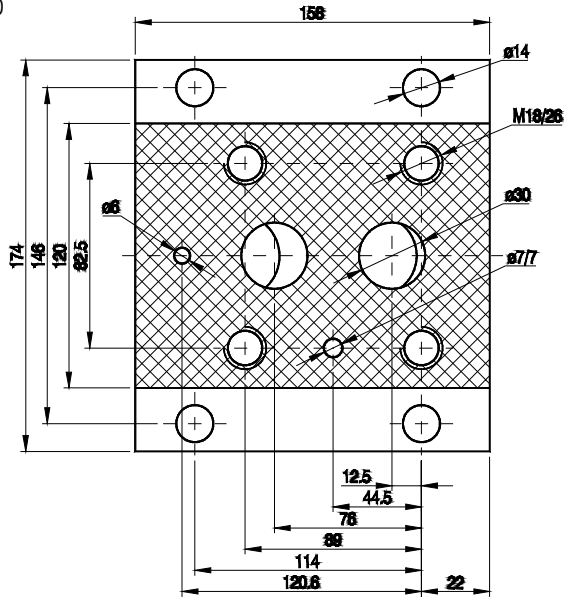


NG20



Fixing bolts have to be ordered separately

NG30



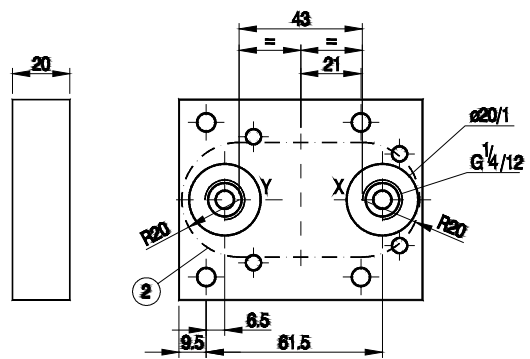
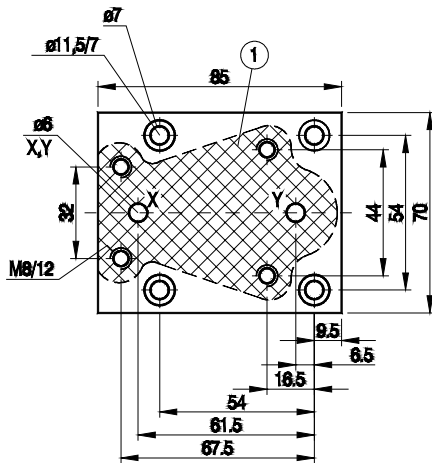
Nominal size of valve

Subplate type

Bolts fixing the valve to subplate

Weight

Mounting bolts and subplate for valve DBC (not included with the valve)



Bolts fixing the valve to subplate

Subplate type

Weight

- 1 - Mounting face of the valve
- 2 - Recess in subplate face

Fixing bolts have to be ordered separately.

HOW TO ORDER

Orders coded in the way showed below should be forwarded to the manufacturer.



Version Without unloading - no code With unloading - W						
Type Complete valve - no code Pilot valve with main spool - C (for sizes 10 and 30 only) Pilot valvewithout main spool - C (do not quote nominal size) Pilot valve of remote control - T (do not quote nominal size)						
Nominal size Size 10 = 10 Size 20 = 20 Size 30 = 30						
Directional control valve (for DBW only) In de-energized position closed = A In de-energized position open = B						
Mounting method For subplate mounting = no code For threaded connection = G						
Adjustment Handknob = 1 Set screw with internal hexagon = 2 Lockable handknob = 3 Note: Adjustment 1 and 3 not available for valve version with unloading W.						
Series number 4X =4X (40 - 49) - installation and connection dimensions remain unchanged						

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Further requirements in clear text (to be agreed upon with the manufacturer)

Sealing
 Fluids on mineral oil base = no code
 Fluids on phosphate-ester base = V

Electrical connection
 Plug-in connector = Z4
 Plug-in connector with light = Z4L

Hand emergency
 Without hand emergency = no code
 With hand emergency = N

Control voltage for solenoids (for DBW only)
 AC 220 V, 50 Hz = W220-50
 AC 110 V, 50 Hz = W110-50
 DC 24 V = G24
 DC 110 V = G110

Piloting type
 Pilot fluid flow as per diagrams in pages 7, 8

Cracking pressure for main valve
 Standard = no code
 Low = U

Pressure setting
 up to 5 MPa = 50
 up to 10 MPa = 100
 up to 20 MPa = 200
 up to 31.5 MPa = 315

Coding example : DB10G2 - 4X / 100 U

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