PONAR wadowice

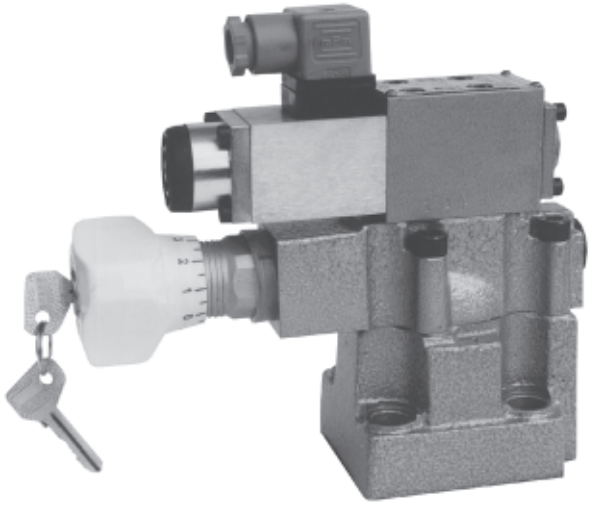
PILOT OPERATED PRESSURE RELIEF VALVE TYPE DB/DBW

WK 460 860

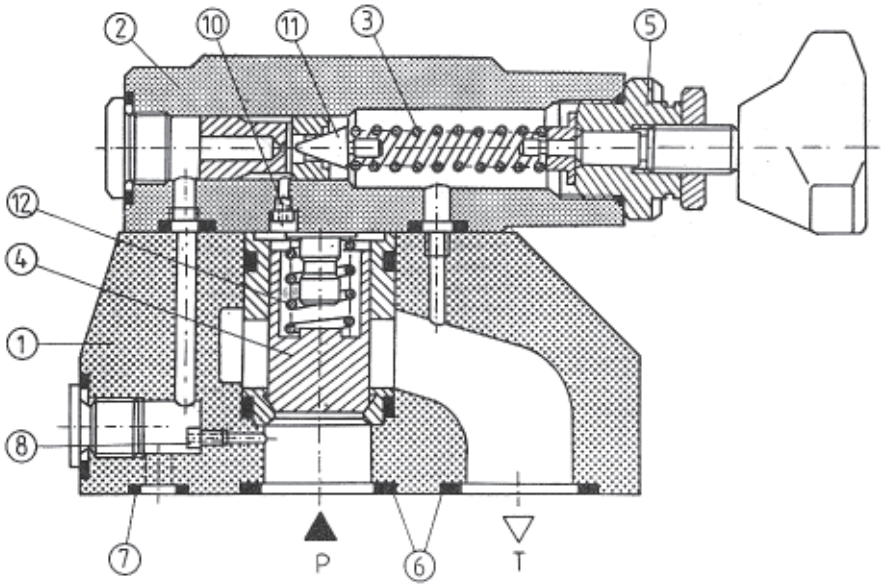
04.1999r.

Size 10, 20, 30	31,5 MPa	up to 600 dm³/min.

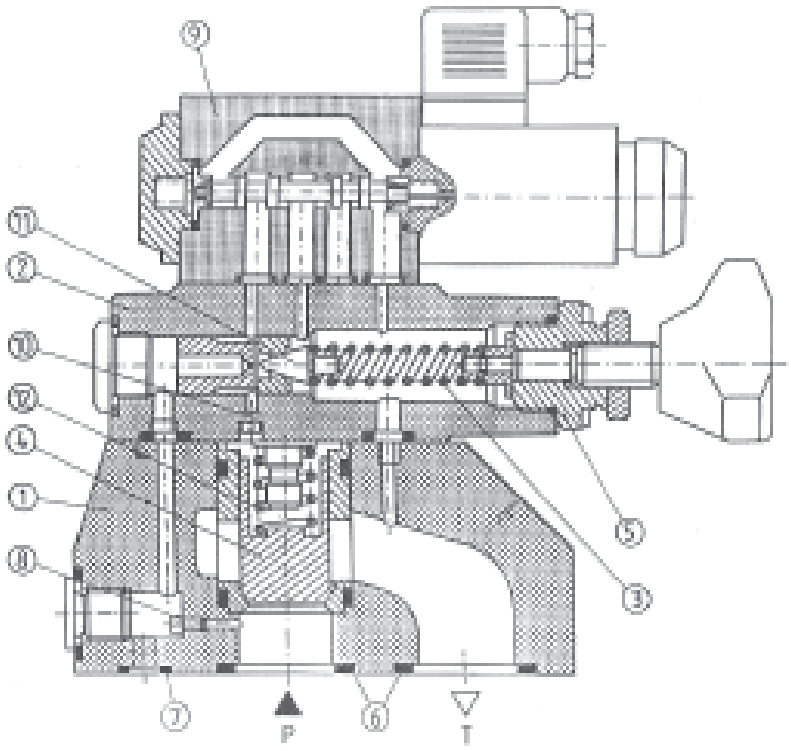
Pressure relief valves type DB... serve to limit pressure in a hydraulic system or in its part. Version DBW... is also used to unload pressure in a system. Application example :
- DB... for setting up maximum pressure in a system
- DBW... for actuation a pump without pressure



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.



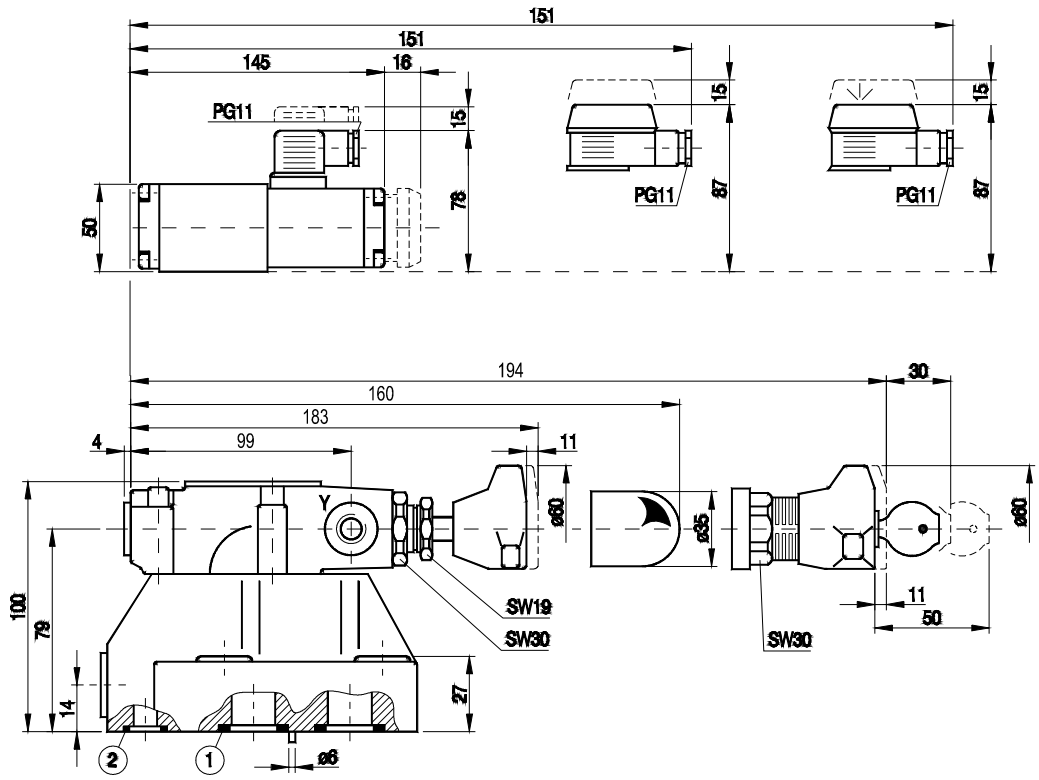
Pressure relief valve is also available with directional valve unloading. In the starting position, directional control valve as a pilot valve closes the return line in front of the pilot poppet . The valve operates as already described. In the switched position, the directional valve connects the spring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

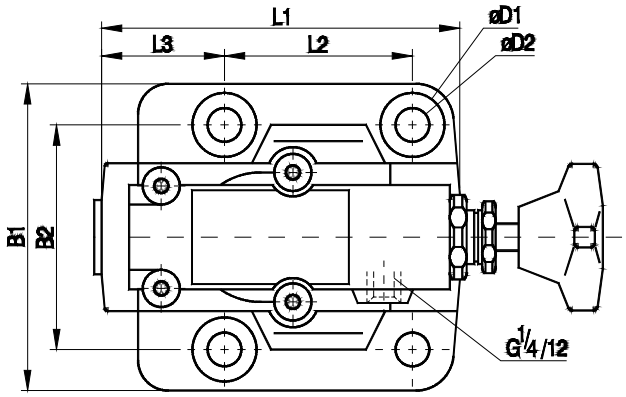
TECHNICAL DATA

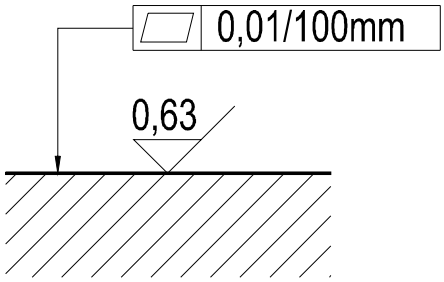
Hydraulic fluid	Mineral oil or phosphate ester		
Nominal fluid viscosity	37 mm^2/s at the temperature of 328 K		
Viscosity range	2.8 to 380 mm^2/s		
Optimum working temperature(fluid in a tank)	313 - 328 K		
Fluid temperature range	253 - 343 K		
Required fluid filtration	16 μm		
Recommended fluid filtration	10 μm		
Maximum operating pressure	31.5 MPa		
Pressure at port Y	up to 31.5 MPa		
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





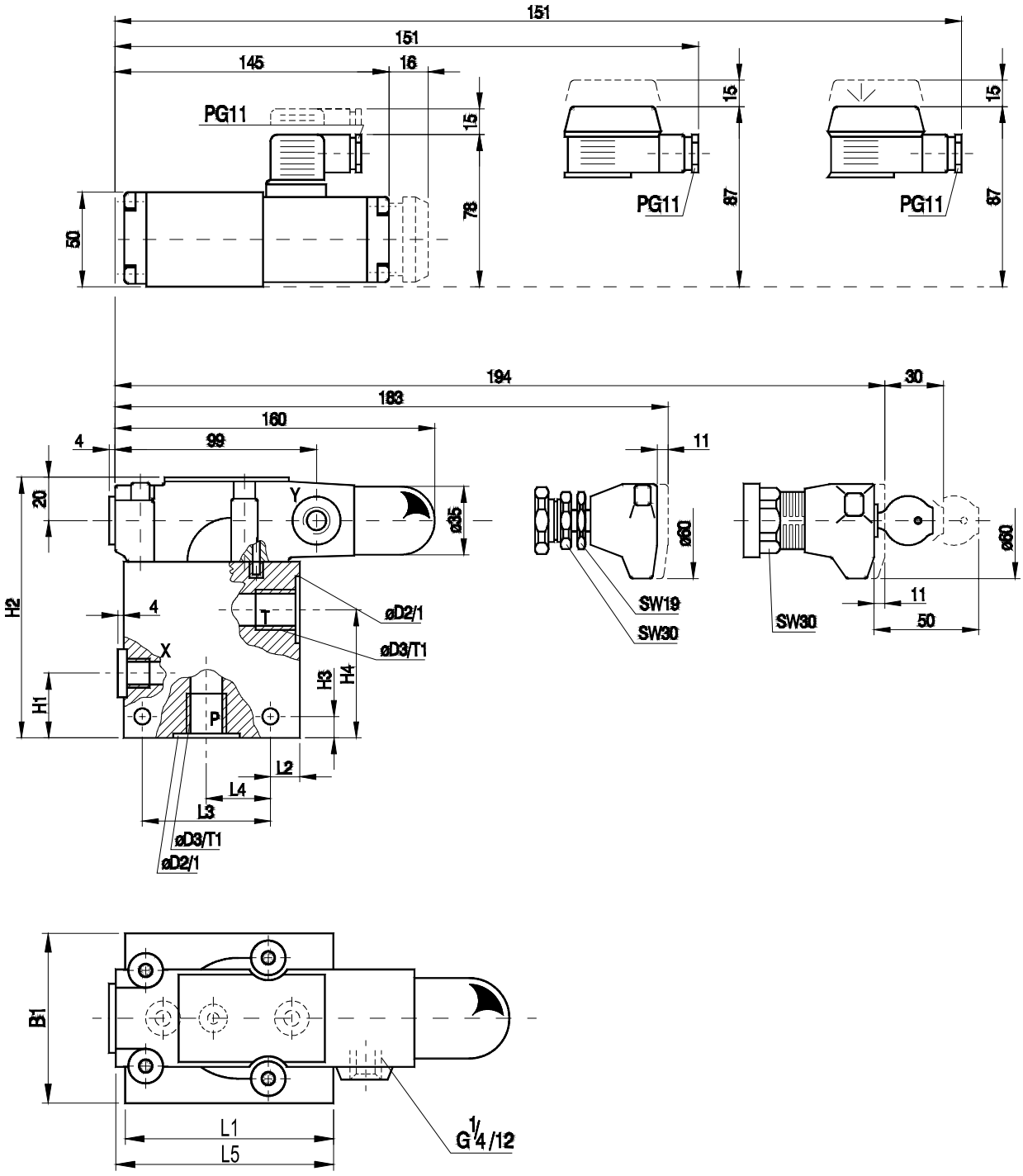


1 - o-ring
- size 10 - 17,1 × 2,6 2 pieces
- size 20 - 28,2 × 3,5 2 pieces
- size 30 - 34,5 × 3,5 2 pieces

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

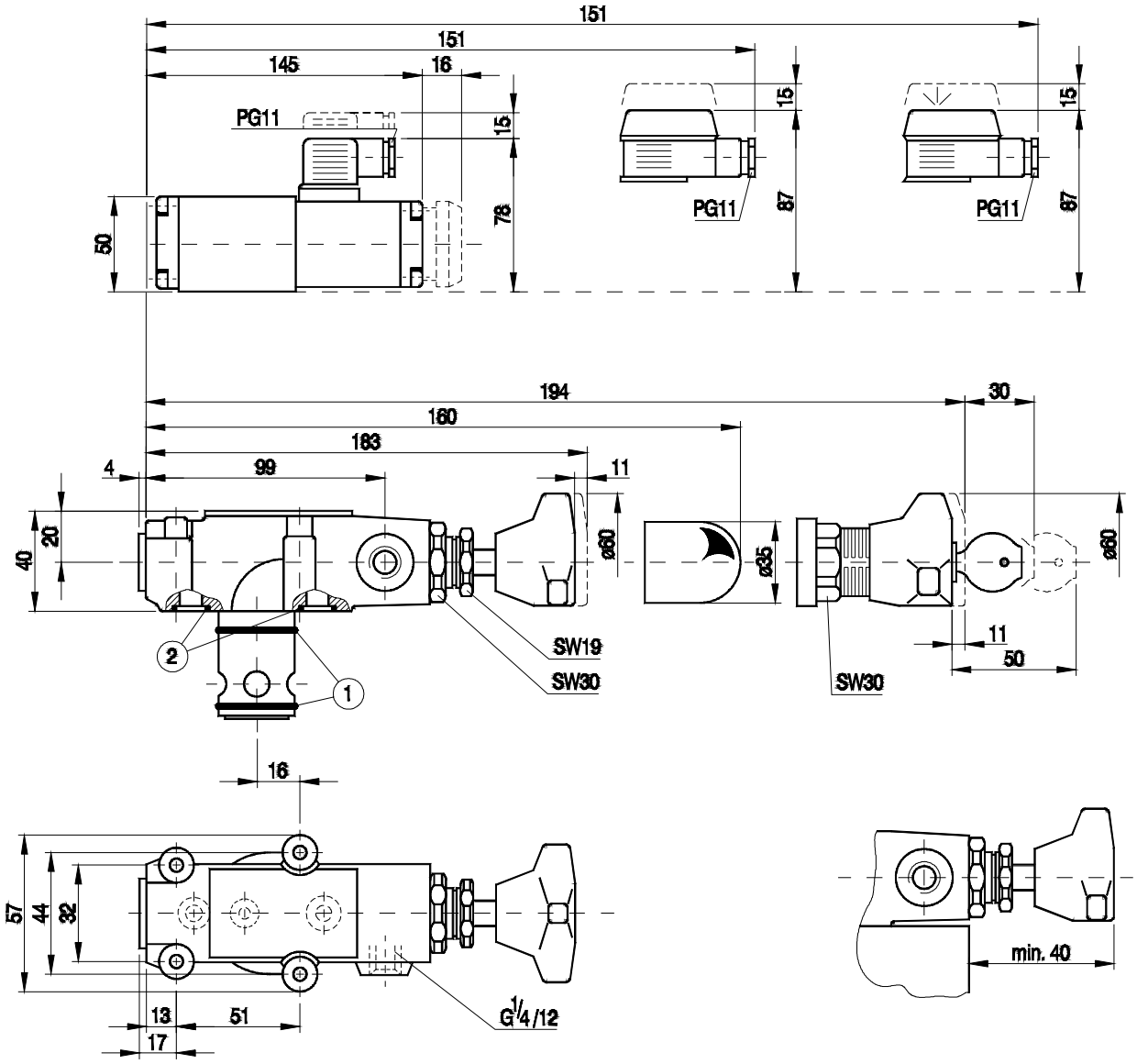
Admissible surface roughness and flatness deviation for a subplate face.

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	4
NG20	100	70	26	18	117	67	34	107	3,5	4,6
NG30	115	82,5	29	20	148	89	41,5	128	4,4	5,5



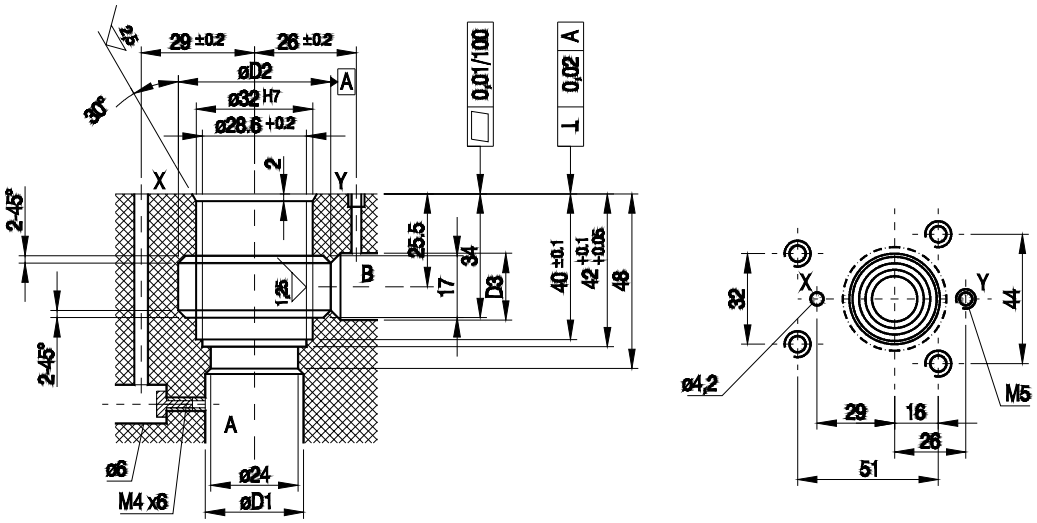
Valve	B1	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	L4	L5	T1	Weight DB [kg]	Weight DBW [kg]
Size 10	63	9	34	G½	27	125	10	57	85	14	62	31	90	14	4.8	5.9
Size 20	63	9	47	G1	27	125	10	57	85	14	62	31	90	18	4.6	5.7
Size 30	70	11	61	G1½	42	138	13	64	10	18	72	36	99	22	5.3	6.4

Pressure relief valve for mounting in manifold blocks.



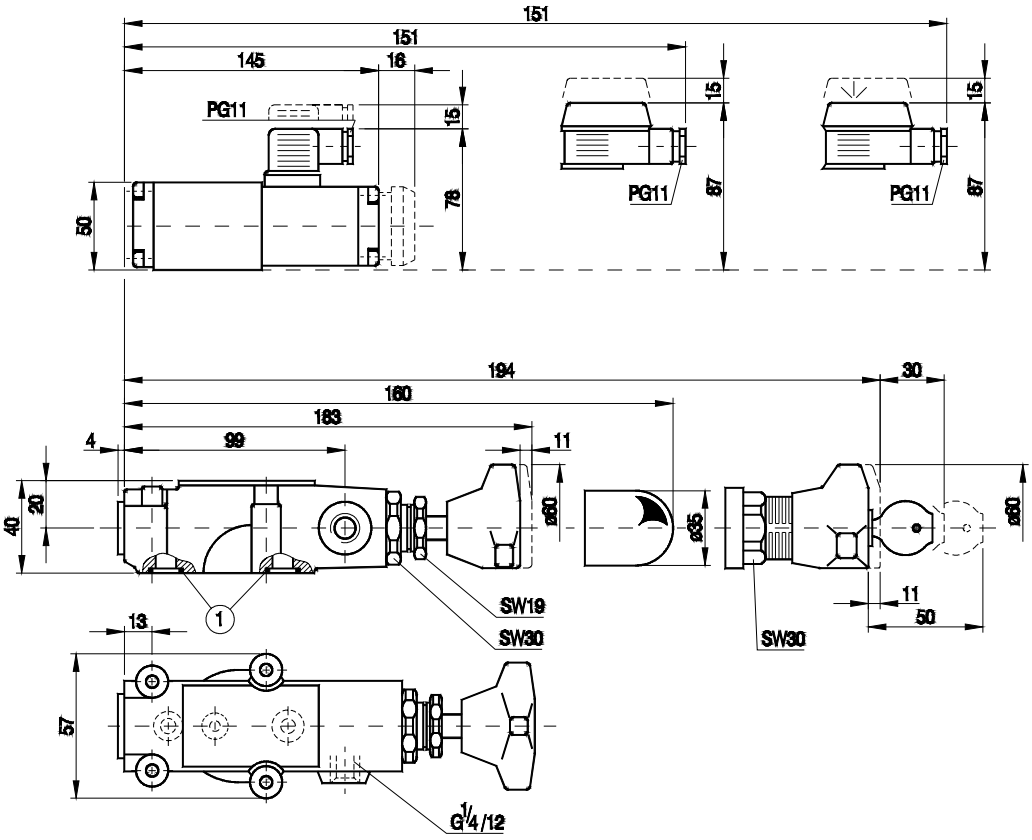
1 - o-ring 27.3 × 2.4 - 2 pieces
2 - o-ring 9.2 × 1.8 - 2 pieces

Valve seat for manifold mounting



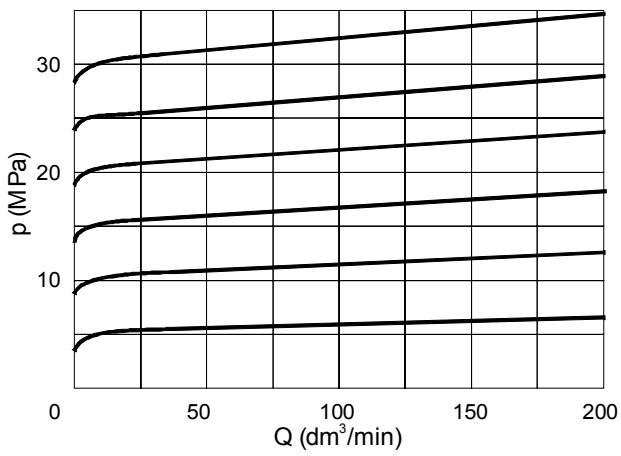
Seat	D1	D2	D3	Weight DBC [kg]	Seat	D1	D2	D3	Weight DBC [kg]
Size 10	10	40	10	1.4	Size 10	10	40	10	1.4
Size 20	20	45	20	1.4	Size 20	20	45	20	1.4
Size 30	30	45	30	1.4	Size 30	30	45	30	1.4

Pressure relief valve as remote control valve type DBT



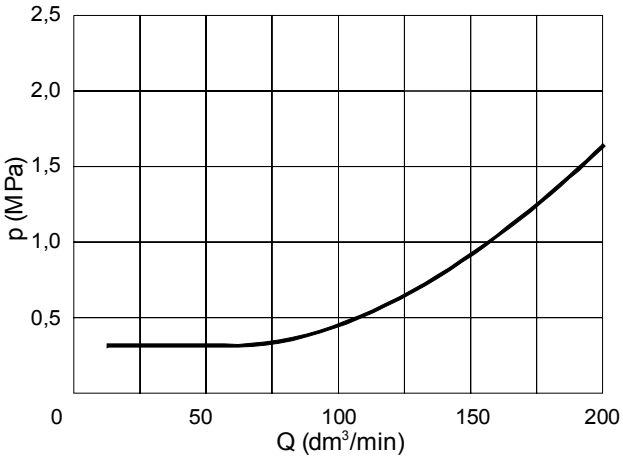
1 - o-ring 9.2 × 1.8 - 2 pieces

PERFORMANCE CURVES, measured at ν = 41 mm²/s and T = 323 K



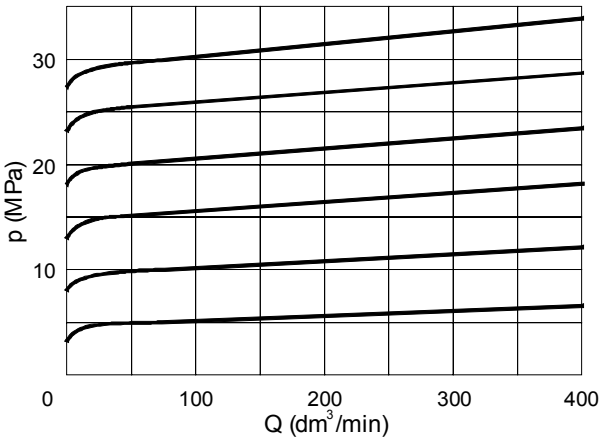
NG 10

Operating pressure in relation to flow rate

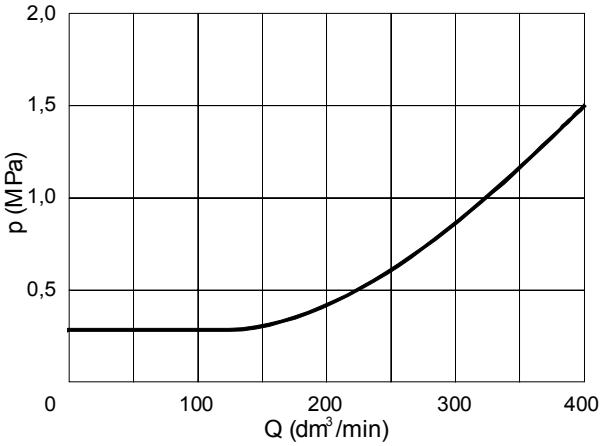


NG 10

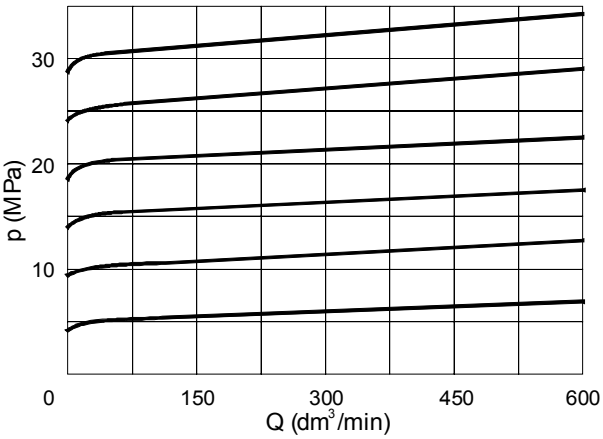
Minimum set pressure in relation to flow rate



NG 20

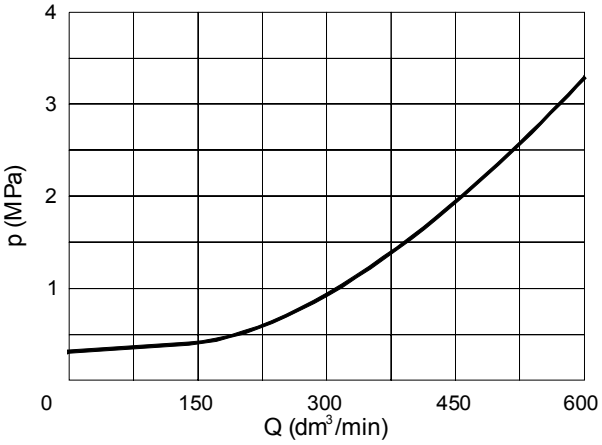


NG 20



NG 30

Operating pressure in relation to flow rate

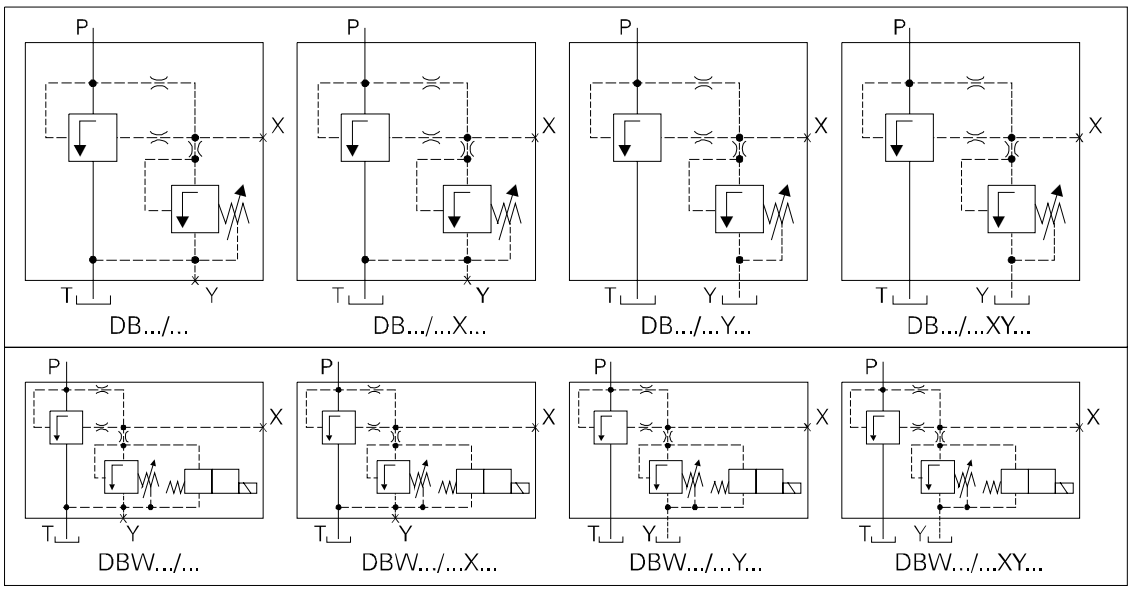


NG 30

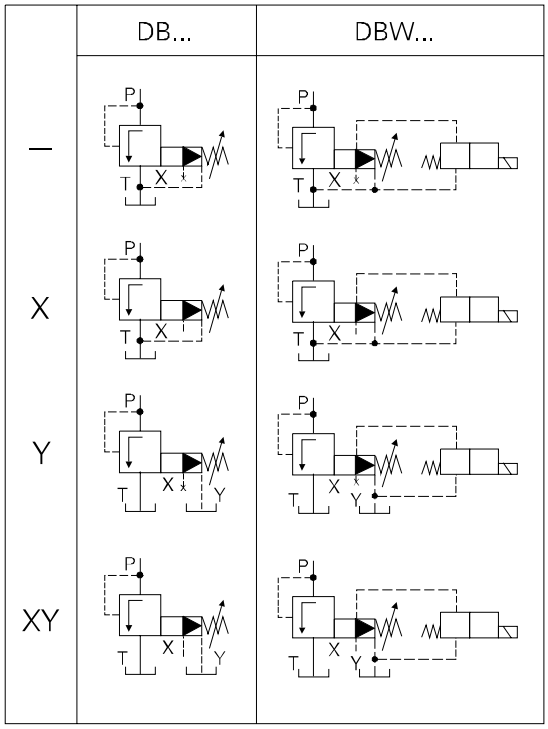
Minimum set pressure in relation to flow rate

SCHEMES

Detailed

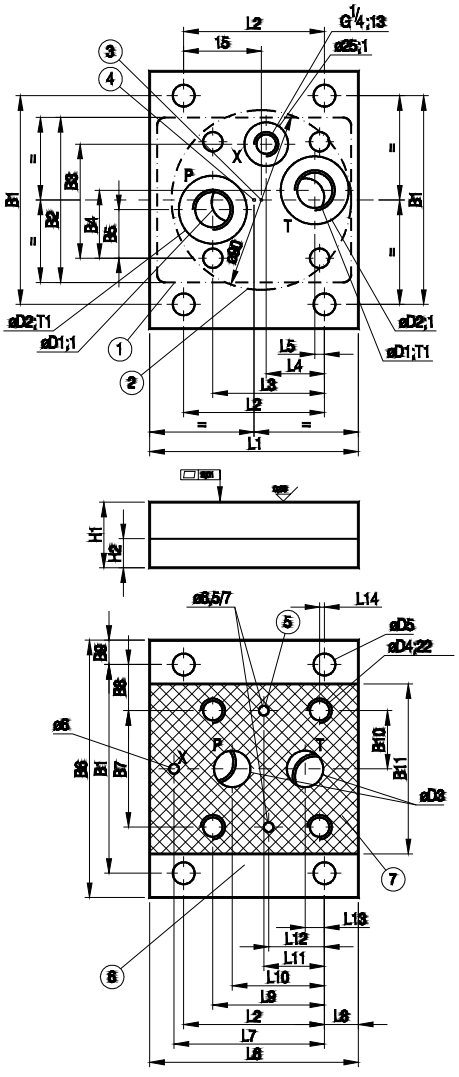


Simplified



Mounting dimensions for subplate

Subplate for valves must be ordered sepatately



1 - Recess in subplate face for sizes 20 and 30
2 - Recess in subplate face for size 10
3 - Reference point for the recess in subplate face size 10
4 - Reference poin for the recess in subplate face sizes 20 and 30
5 - Hole for lackating pin for size 10
6 - Hole for lackating pin for sizes 20 and 30
7 - Mounting face

Size	Bolts mounting the valve to subplate per PN-74/M-82302 (DIN 912)	Torqu (Nm)
10	4 x M12 x 50 - 10.9	120
20	4 x M16 x 50 - 10.9	310
30	4 x M18 x 50 - 10.9	430

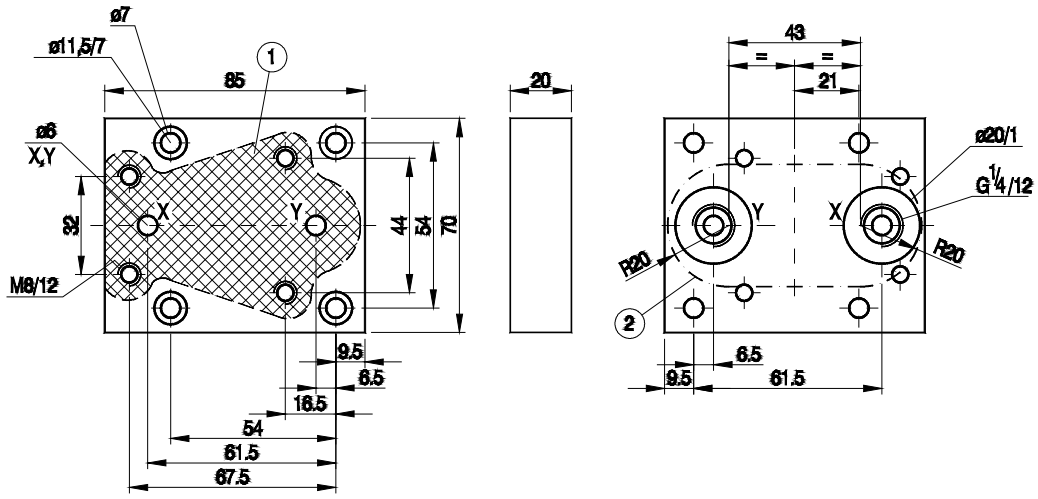
Note : Mounting bolts have to be ordered separately

Nominal size	Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
10	G406/01 G407/01	106.5	-	52.6	32	22	130	64	26.2	11.8	27
20	G408/01 G409/01	127	100	70	35	35	154	70	28.5	13.5	35
30	G410/01 G411/01	146	120	86	41.3	41.3	174	82.5	31.8	13.9	41.3

B11	D1	D2	D3	D4	D5	H1	H2	L1	L2	L3	L4
85	G3/8 G1/2	28 34	12	M12	9.5	30	10	-	43	43	32
102	G3/4 G1	42 47	24	M16	14	40	10	120	85.5	66	90.5
120	G11/4 G11/2	58 65	30	M18	14	48	10	146	114	93.5	117.5

L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	T1	T2
7	100	57.5	20	57.5	35.5	35.5	-	9.9	3.5	13 15	9
11	128	90.5	20	67	55.5	-	33.5	11	-	17 19	8
20.5	158	120.6	22	89	76	-	44.5	12.5	-	21 23	14

Subplate for mounting the valve DBC (not included with the valve)



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

Bolts mounting the valve to subplate	Torque [Nm]	Subplat type	Weigh
4 x M8 x 40 - 10.9 PN - 74/M - 8230 ((DIN 912)	37	G51/01	1 kg

Note : Mounting 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	- with no code
With unloading	- W

Type

Complete valve	- with no code
Pilot valve with main spool (for sizes 10 and 30 only)	- C
Pilot valvewithout main spool (do not quote nominal size)	- C
Pilot valve of remote control (do not quote nominal size)	- T

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	= with no code
For threaded connection	= G

Adjustment

Handknob	= 1
Set screw with internal hexagon	= 2
Lockable handknob	= 3

Series number

31	= 31

(30 - 39) - installation and connection dimensions remain unchanged

Coding example : DB10G2 - 31 / 100 U

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

Sealing

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

Electrical connection

Plug-in connector	= Z4
Large plug-in connector	= Z5
Large plug-in connector with light	= Z5L

Hand emergency

Without hand emergency	= with 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 circut by schemes

Cracking pressure for main valve

Standard	= with no code
Low	= U

(for DBC and DBT versions do not quote U)

Pressure setting

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

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