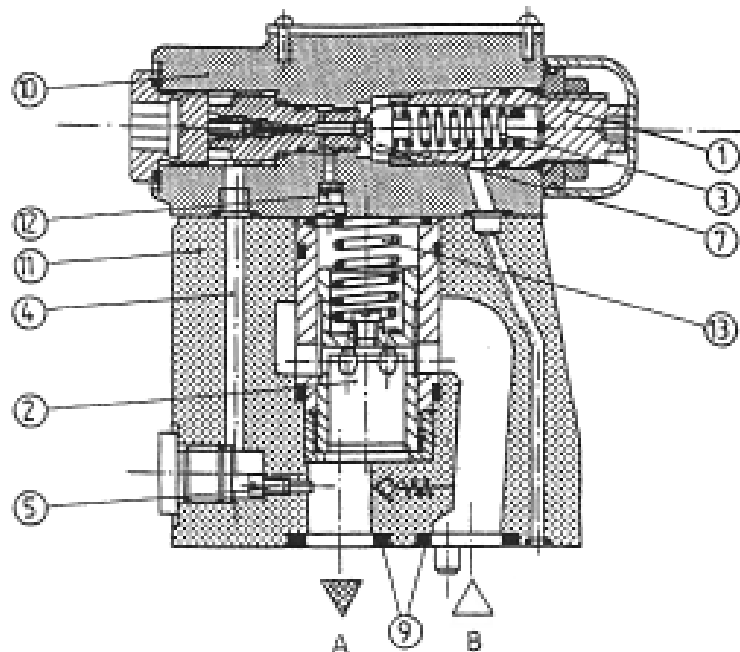


Pilot operated pressure reducing valves type DR are used to reduce pressure in hydraulic systems with large flows.

**DESCRIPTION OF OPERATION**



Pilot operated pressure reducing valve consists of a pilot valve 10 and main valve 11. The pilot valve is a direct operated pressure relief valve type DBC. The valve has a spool 2 allowing free flow from port B to port A in neutral position. The desired output pressure is set by means of the adjustment 1 by changing the tension of the spring 1 of the pilot valve. Pressure at port A affects the underside of the spool. At the same time it acts on the pilot poppet 7 and the spring

loaded upper side of the main spool via the control line 4 with the jets 5 and 6.

The main spool is kept open by the spring 13 as long as the input pressure is less than the set pressure. As the set pressure is reached in port A, the pilot valve opens and pilot oil drains. The pressure drop occurs allowing the main spool to travel towards the closed position.

## TECHNICAL DATA

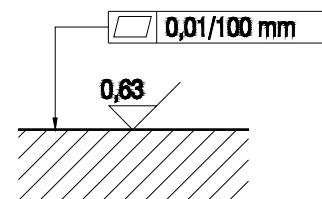
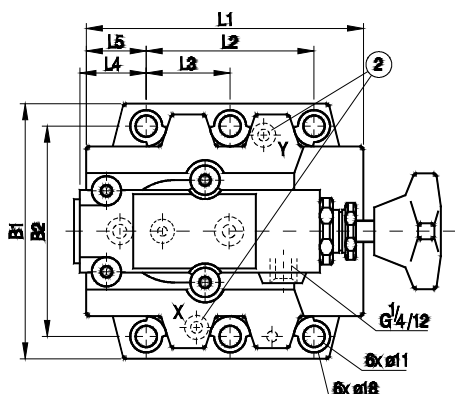
Hydraulic fluid	Mineral oil or phosphate ester		
Nominal fluid viscosity	37 mm <sup>2</sup> /s at the temperature of 328 K		
Viscosity range	2.8 to 380 mm <sup>2</sup> /s		
Optimum working temperature ( fluid in a tank )	313 - 328 K		
Fluid temperature range	253 - 343 K		
Required fluid filtration	16 μm		
Recommended fluid filtration	10 μm		
Maximum operating pressure	31.5 MPa		
Input pressure at port B	up to 31.5 MPa		
Output pressure at port A	Size 10	Sizes 20 and 30	
	0.3 - 31.5 MPa	1 - 31.5 MPa	
Max allowable backpressure at port Y	31.5 MPa		
Max allowable flow rate	Size 10	Size 20	Size 30
	80 dm <sup>3</sup> /min	200 dm <sup>3</sup> /min	300 dm <sup>3</sup> /min

## OVERALL AND CONNECTION DIMENSIONS

Pressure reducing valve for subplate mounting

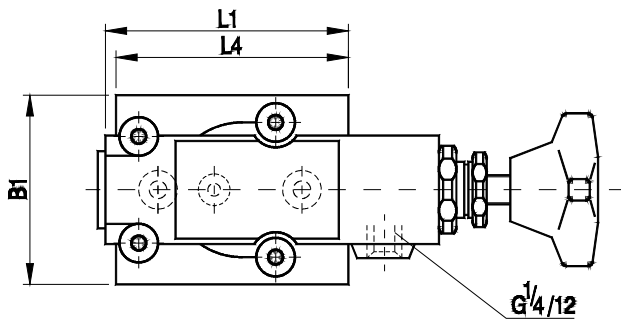
- 1 - O-ring for size 10 - 17.1 × 2.6 - 2 pcs  
for size 20 - 28.2 × 3.5 - 2 pcs  
for size 30 - 34.5 × 3.5 - 2 pcs
- 2 - O-ring for sizes 10, 20, 30 - 9.2 × 1.8

Valve	B1	B2	H1	H3	H4	L1	L2	L3	L4	L5	Weigh [kg]
Size 10	85	66.	112	28	72	96	42.	-	34.	35.	3.6
Size 20	102	79.	122	38	82	11	60.	-	36.	33.	5.5



Admissible surface roughness and flatness deviation for a subplate face.

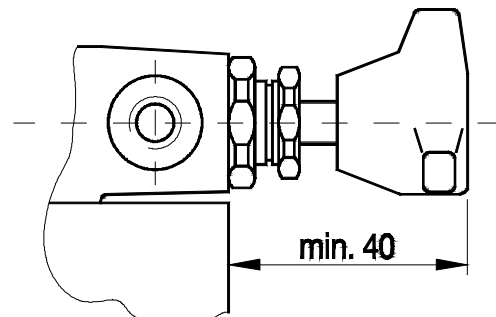
Pressure reducing valve for threaded connections



Valve	B1	D1	D2	D3	H1	H2
Size 10	63	9	G 1/2	34	125	105
Size 20	63	9	G 1	47	125	105
Size 30	70	11	G 1 1/2	61	138	118

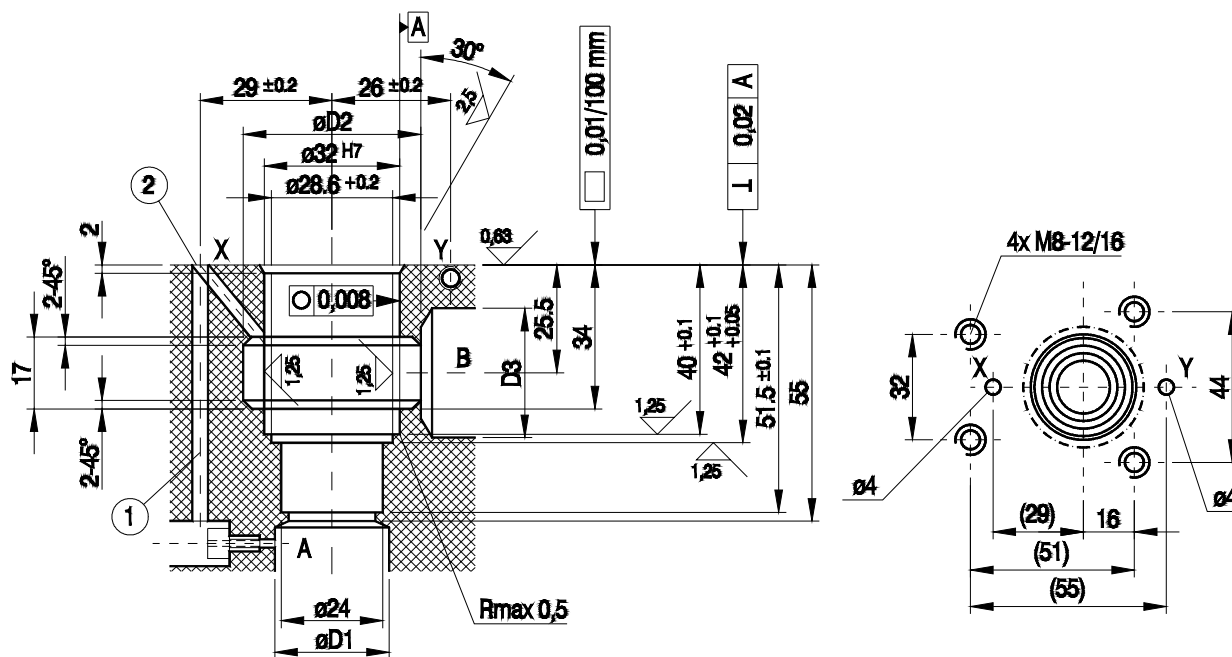
H3	H4	L1	L2	L3	L4	T1	Weight [kg]
28	75	90	40	62	85	14	4.8
28	75	90	40	62	85	18	4.6
34	85	99	46	72	100	22	5.3

Pressure reducing valve for manifold mounting



- 1 - O-ring 27.3 × 2.4 - 2 pcs
- 2 - O-ring 9.2 × 1.8 - 2 pcs

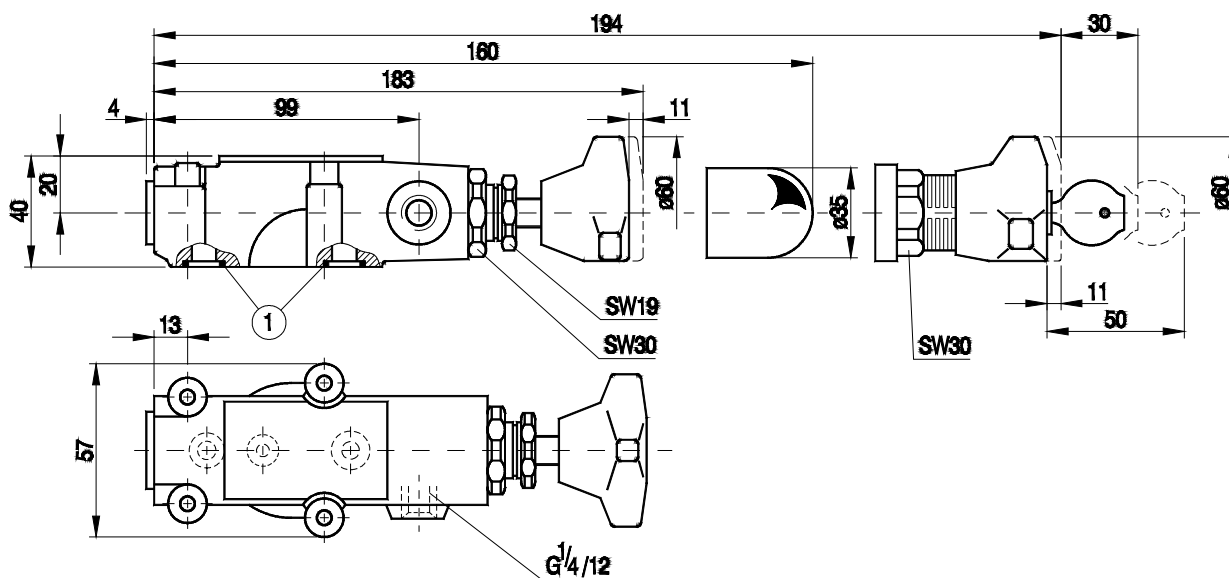
Valve seat for manifold mounting



1 - Control line for size 10  
 2 - Control line for sizes 20, 30

Valve	D1	D2	D3	Weight [kg]	Bolts mounting the valve to subpate	Torque [Nm]
Size 10	10	40	10	1.4	4 x M8 x 40 - 10.9 PN - 74/M82302 ( DIN 912 )	37
Size 20	20	45	20			
Size 30	30	45	30			

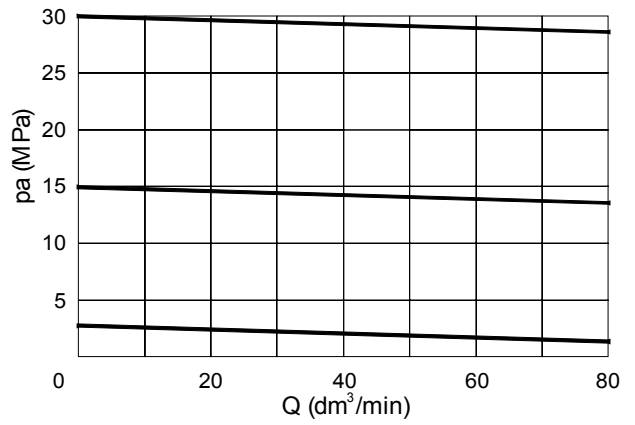
Pressure reducing valve as remote control valve



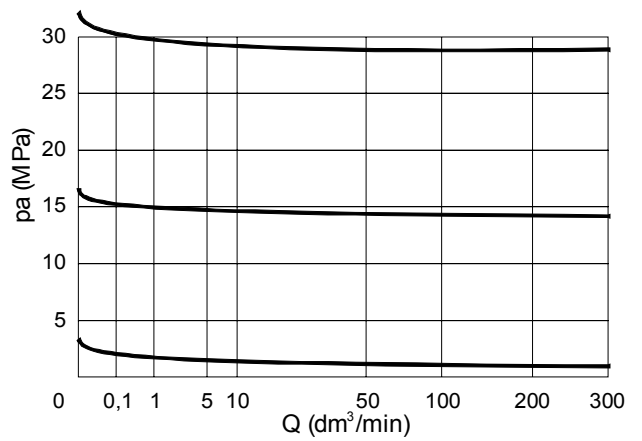
1 - O-ring 9.2 x 1.8 - 2 pcs

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

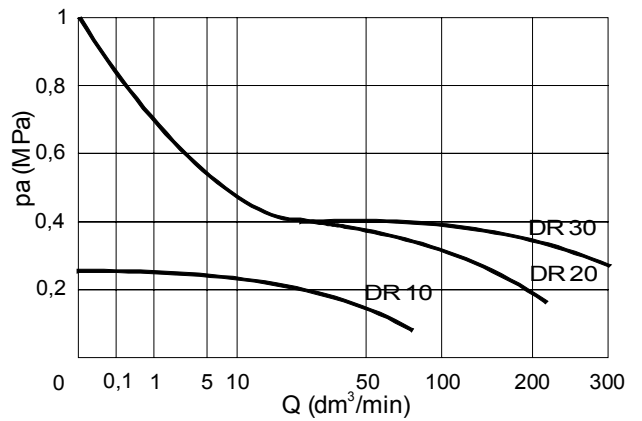
Output pressure in relation to flow for size 10



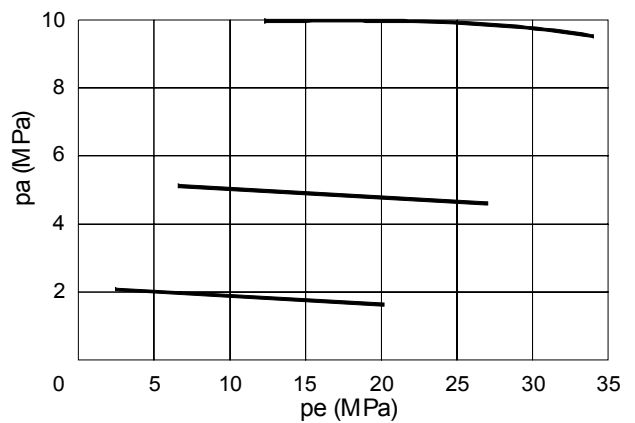
Output pressure in relation to flow for sizes 20 and 30



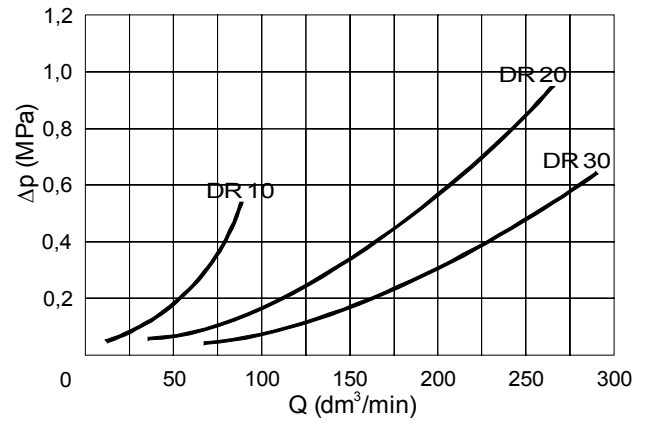
Lowest pressure setting in relation to flow at output pressure 5 MPa



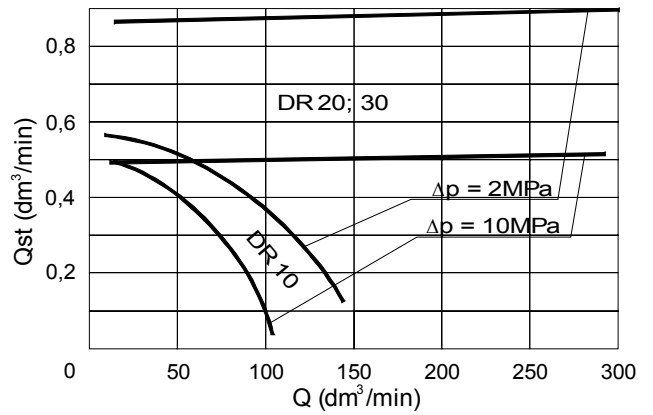
Output pressure in relation to inlet pressure at flow rate of 50 dm³/min



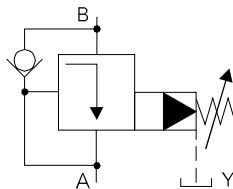
Pressure drop in relation to flow



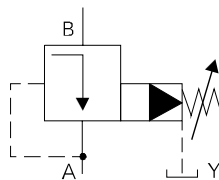
Pilot fluid flow in relation to flow at pressure difference between inlet and outlet 2 MPa or 10 MPa



## SCHEMES



Pressure reducing valve with check valve (for subplate version only)

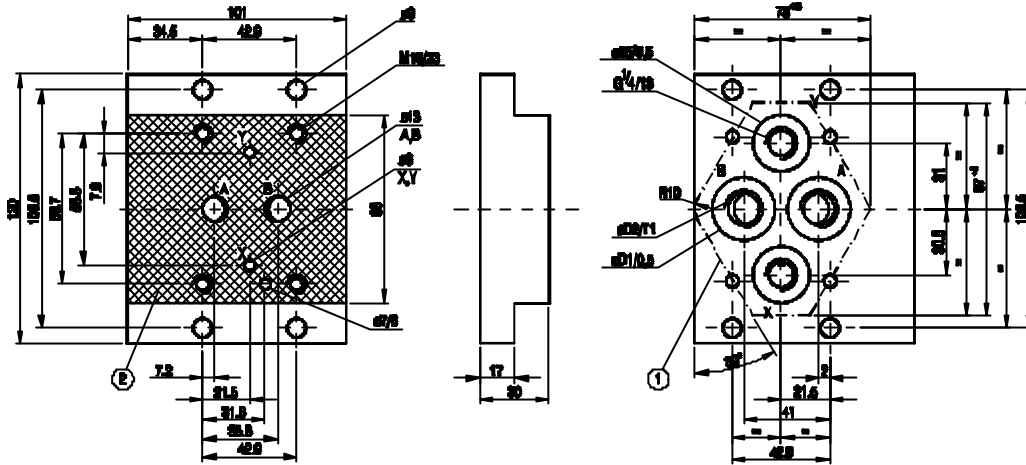


Pressure reducing valve without check valve



## CONNECTION DIMENSIONS FOR SUBPLATE

Subplates for pressure reducing valves ( must be ordered separately )



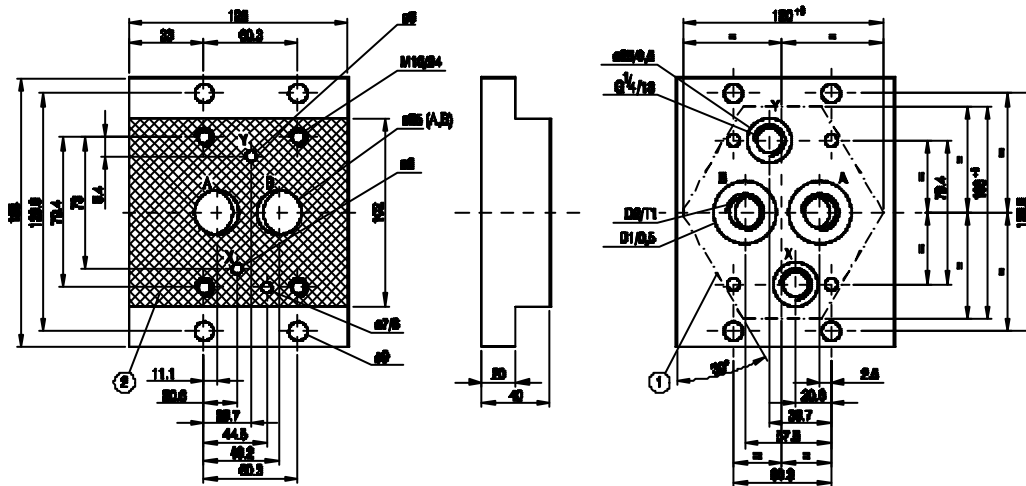
1 - Recess in subplate face  
2 - Mounting surface

Valve	Subplate	D1	D2	T1	Bolts mounting the valve to subplate	Torque [Nm]	Weight [kg]
Size 10	G 460/01	28	G 3/8	13	4 x M10 x 50 - 10.9 PN - 87/M-82302 (DIN 912 )	73	1.7
	G 461/01	34	G 1/2	15			

Note : Fixing bolts have to be ordered separately

Nominal size 20.

1 - Recess in subplate face  
2 - Mounting face

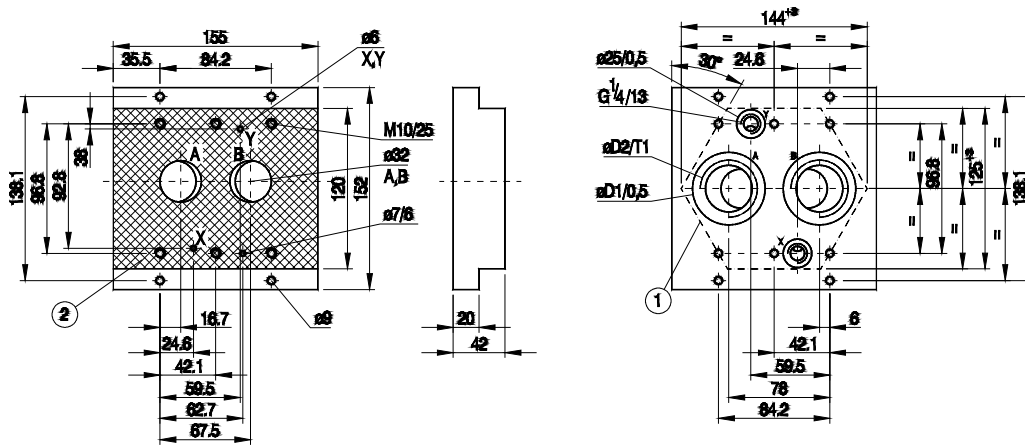


Valve	Subplate	D1	D2	T1	Bolts mounting the valve to subplate	Torque [Nm]	Weight [kg]
Size 20	G 412/01	42	G 3/4	17	4 x M10 x 60 - 10.9 PN - 87/M-82302 (DIN 912 )	73	3.3
	G 413/01	47	G 1	20			

Note : Fixing bolts have to be ordered separately

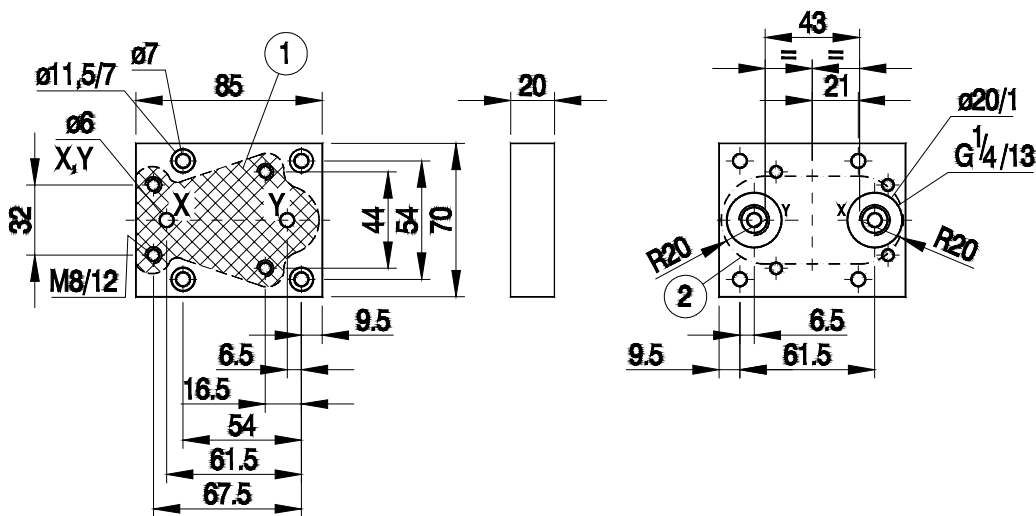
Nominal size 30

- 1 - Recess in subplate face
- 2 - Mounting face



Valve	Subplate	D1	D2	T1	Bolts mounting the valve to subplate	Torque [Nm]	Weight [kg]
Size 30	G 414/01	56	G 1 1/4	21	6 x M10 x 70 - 10.9 PN - 87/M-82302 (DIN 912)	73	5
	G 415/01	61	G 1 1/2	23			

Note : Fixing bolts have to be ordered separately



Subplate for remote controlled valve ( not included )

- 1- Mounting surface
- 2 - Recess in subplate face

Subplate type	Bolts mounting the valve to subplate	Torque [Nm]	Weight [kg]
G 51/01	4 x M8 x 40 - 10.9 PN - 87/M-82302 (DIN 912)	37	1.2

Note : Fixing bolts have to be ordered separately

PONAR WADOWICE S.A.  
ul. Wojska Polskiego 29  
34-100 Wadowice  
tel. 033/ 823 39 43, 823 30 41  
fax 033/ 873 48 80  
e-mail: [ponar@ponar-wadowice.pl](mailto:ponar@ponar-wadowice.pl)

