

**MANNESMANN
REXROTH****Pilot Operated Pressure Relief Valves
Type DBG****RE
29 139/01.00**

Replaces : 10.83

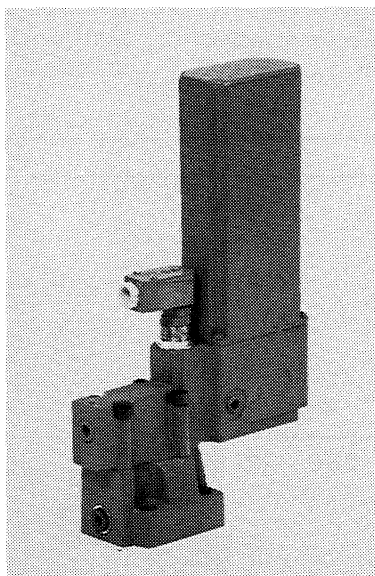
Sizes 8 – 32

up to 315 bar

up to 600 l/min

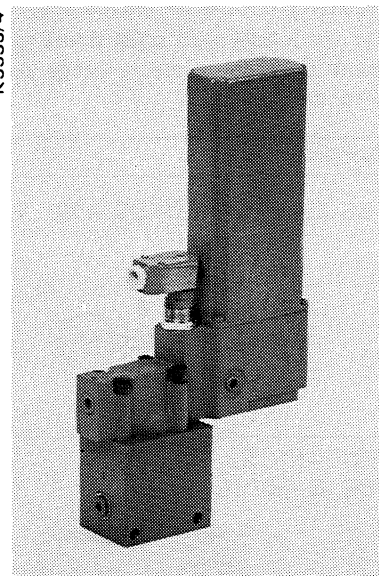
- subplate mounting
- threaded connections
- manifold mounting
- operation by DC motor with reduction gear
- actual value potentiometer or limit switch
- optional limit switch
- self-locking if power fails (model with limit switch - system pressure constant)

K3333/7



DBG 10-10/..

K3333/4



DBG 10 G-10/..

Description of Function, Section

Pressure control valves type DBG are pilot operated pressure relief valves. They serve to limit system pressure and comprise pilot valve with el. motor as pressure adjustment element and main valve with main spool insert.

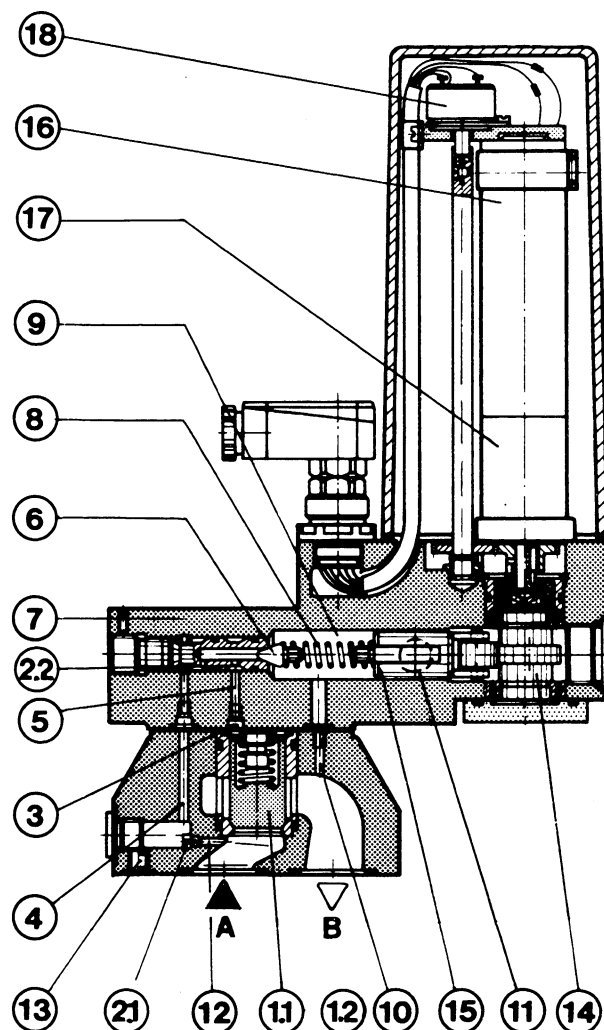
System pressure is adjusted by means of a DC motor (16) with reduction gear (17). The drive shaft of the reduction gear (17) rotates the cam (14) which changes the tension of the spring (8) by means of the spring retainer (15), and thus causes pressure to change.

Pressure in line A affects the main spool (1.1). At the same time, pressure acts, via pilot lines (4) and (5) fitted with jets (2.1, 2.2) and (3), on the spring loaded side of the main spool (1.1) and on the pilot poppet (6) in the pilot valve (7).

If system pressure exceeds the value set at the spring (8), the pilot poppet (6) opens. The signal for this comes internally - on type DBG..-10/.. from line A via control lines (12) and (4); or externally - on type DBG..-10/..X (XY) via port (13) and control line (4). Oil now flows via jet (2.1), control line (4), jet (2.2) and pilot poppet (6) into the spring chamber (9). From here it is fed internally - on type DBG..-10/.. via control line (10), or externally - on type DBG..-10/..Y (XY) via control line (11) to tank.

In closing direction, the pressure spring (1.2) affects the main spool (1.1), i.e. a pressure drop occurs between side "A" and the spring loaded side of the main spool (1.1). The oil flow is determined by the diameter of the jets (2.1, 2.2) and the pressure drop at the main spool (1.1). If, compared to the cracking pressure at the pilot poppet (1.1), pressure in "A" has risen by the amount of pressure drop at the main spool (1.1), the main spool (1.1) opens from "A" to "B". Oil now flows from line "A" to line "B" while the set operating pressure is maintained.

The position of the cam (14) is monitored by the feedback potentiometer (18).



Technical Data

general

Hydraulic medium	mineral oils, phosphate ester					
Fluid temperature range (°C)	- 20 ... + 70					
Viscosity range (cSt)	2,8 ... 380					
Size	8	10	16	20	25	32
Max. flow	threaded conns. (L/min)	100	200	400	400	600
	subplate mounting (L/min)	—	200	—	—	400
Max. flow DBGT (L/min)	12					
Control oil (L/min)	1					
Operating pressure	— ports A, X (bar)	up to 315				
	— port B (bar)	up to 10 (for internal pilot drain)				
		up to 315 (for external pilot drain)				
Backpressure — port Y (bar)	up to 10					
Pressure setting (max.) (bar)	50	100	200	315	400	
	50	100	200	315	400	
Lowest pressure setting (related to flow)	see curve page 4					

drive motor

Type of voltage	DC	
Supply voltage (V—)	24	
Nominal power (W)	18 (with limit switch)	24 (with actual value potentiometer)
Electrical connection	plug-in connection, 6 pin + SL	
Insulation	IP 65	
Max. ambient temperature (°C)	+ 50	

Adjustment during Inching Operation with Limit Switch: Desig. Letter E1

Adjustment time $p_{min} - p_{max}$ (sec)	12					
Type of limit switch: micro switch	30 V — 2 A					
El. loading (A)	250 V ~ 5 A					
Pressure lag: pressure rating (bar)	50	100	200	315	400	
	— without short circuiting bridge (bar)	1	2,5	5	7,5	10
	— with short circuiting bridge (bar)	0,5	1	1,5	2	2,5

Control with feedback (actual valve) potentiometer (code P2)

Adjustment time $p_{min} - p_{max}$ (sec)	0,65	
Potentiometer	— resistance (kΩ)	5
	-- power (W)	1,75

Adjustment Hysteresis: Pressure Build-Up — Deviation > 20 bar from Nominal Pressure

Pressure rating (bar)	50	100	200	315	400
Hysteresis (bar)	< 0,5	< 1	< 2,5	< 4	< 5

Adjustment Hysteresis: Pressure Build-Up — Deviation > 20 bar from Nominal Pressure

Pressure rating (bar)	50	100	200	315	400
Hysteresis (bar)	< 0,3	< 0,5	< 1	< 1,5	< 2

Repetition accuracy (bar)	< 0,5	< 1	< 1,3	< 1,7	< 2
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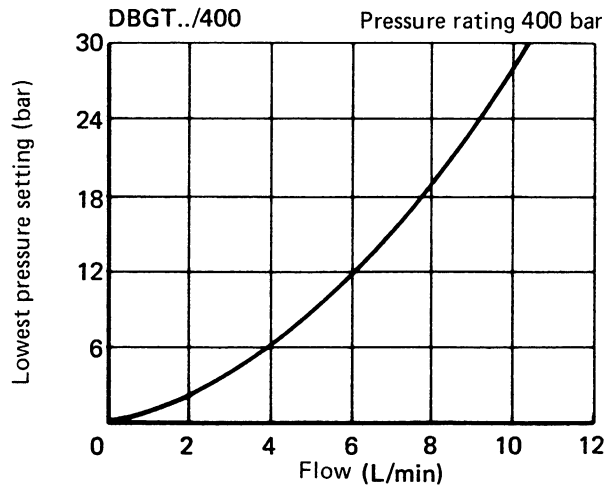
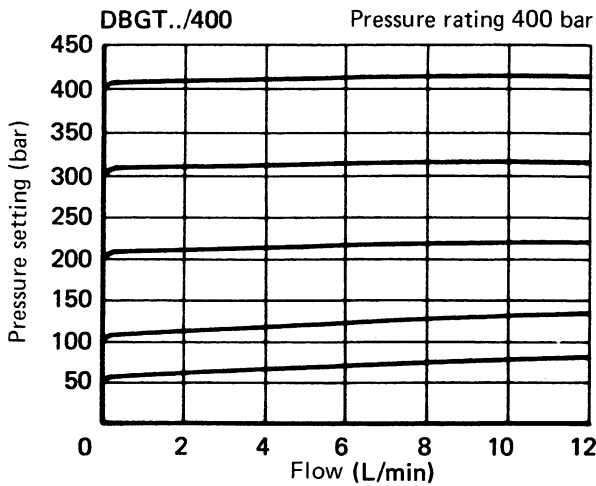
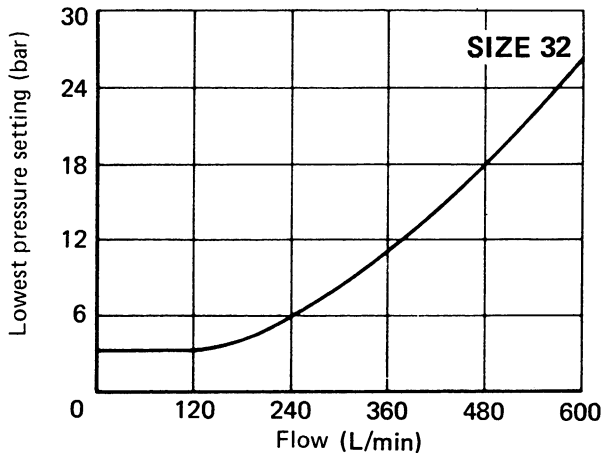
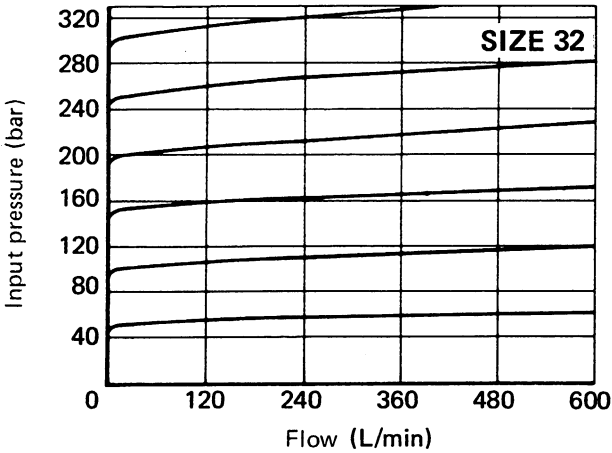
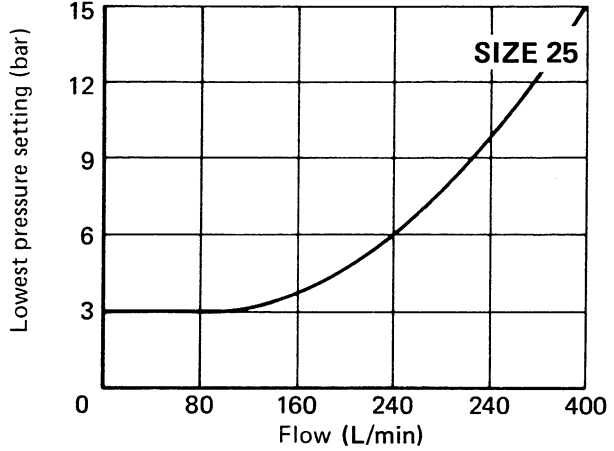
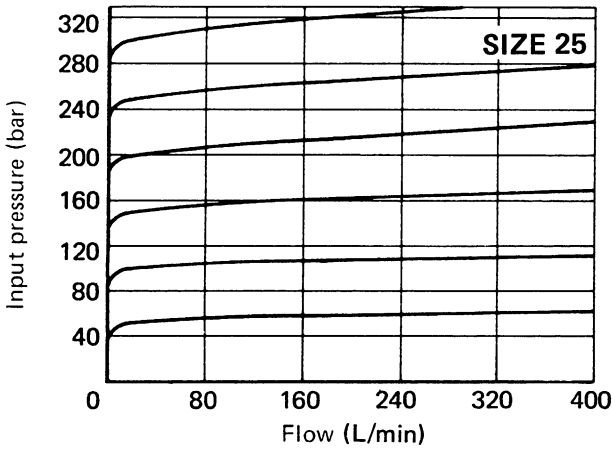
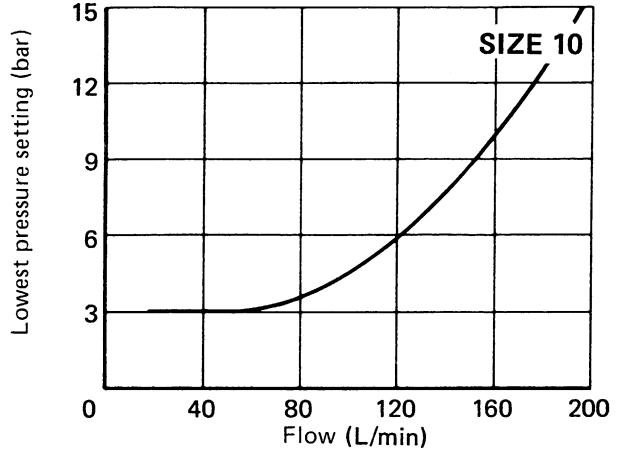
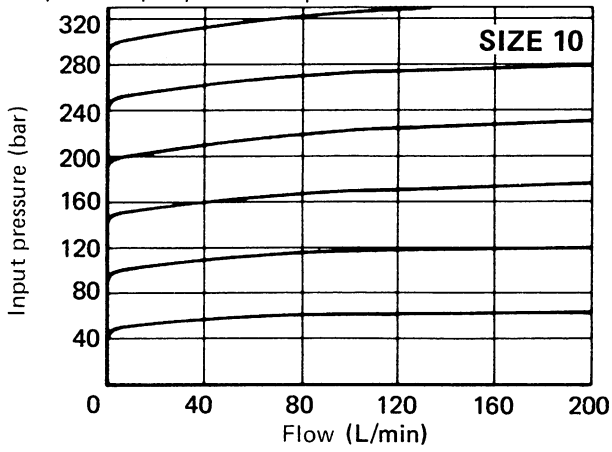
Electrical Amplifier: Control Unit KE 1.20; Mains Unit UN 85/45, see RE 29 900

For applications to other specifications, please consult us!

NB: Pressure rating 400 bar for model DBGT only.

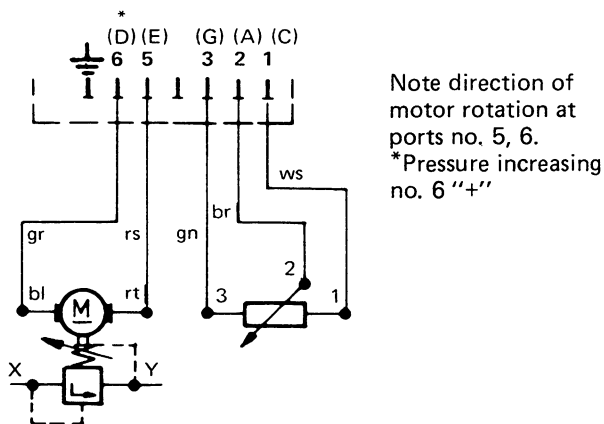
Performance Curves (measured at $\nu = 36 \text{ cSt}$ and $t = 50^\circ \text{ C}$)

The curves were measured at external oil return without pressure. With internal oil return, input pressure increases by the output pressure at port B.

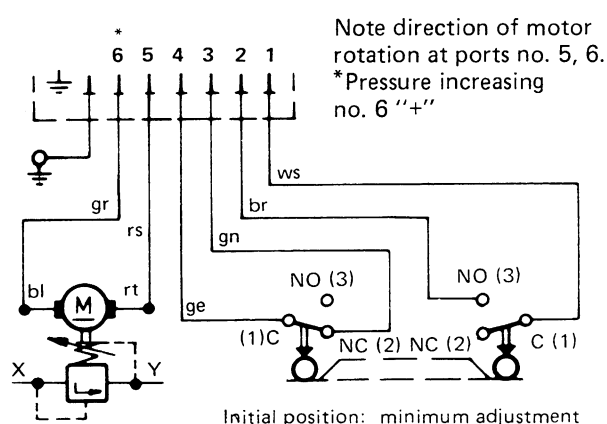


Electrical Connection

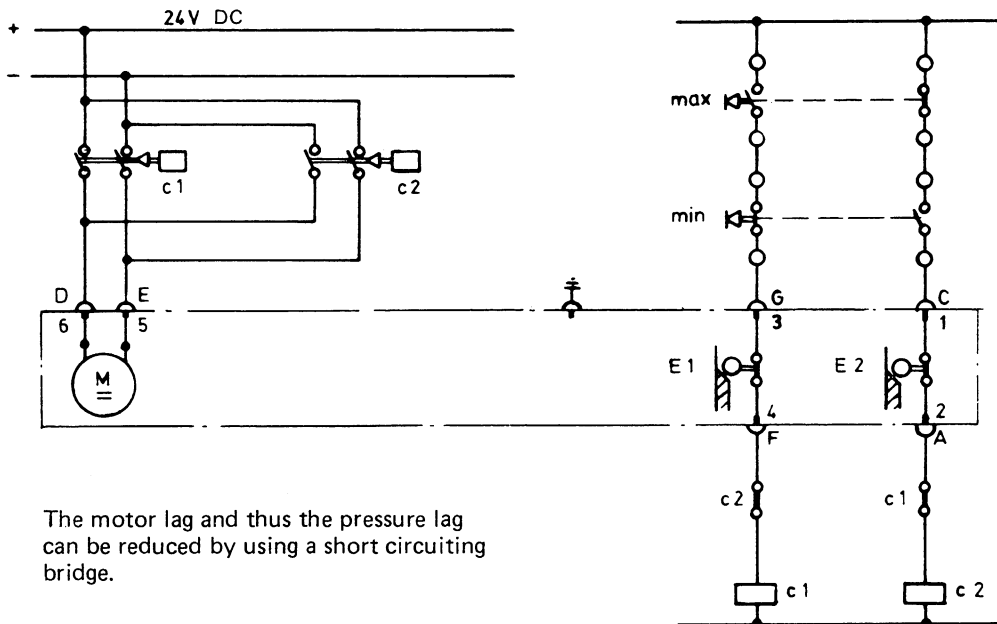
Plug connection at DBG valve with actual value potentiometer



Plug connection at DBG valve with limit switch

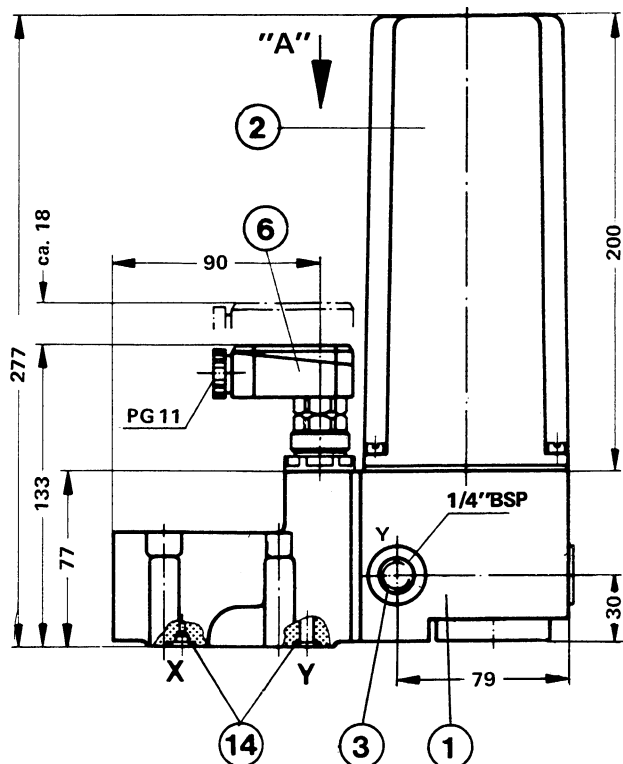


Switching Example: DBG Valve with Limit Switch



Pressure Relief Valve as Remote Control Valve

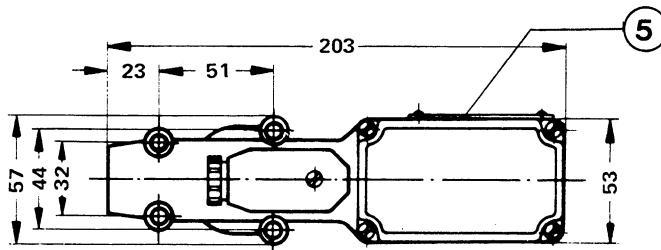
(dimensions in mm)



Subplates to catalogue sheet RE 45 064 and valve fixing screws must be ordered separately.

Subplates
G 51/01 (G 1/4)
Valve fixing screws
M8 x 50 DIN 912-10.9; Tt = 20 Nm

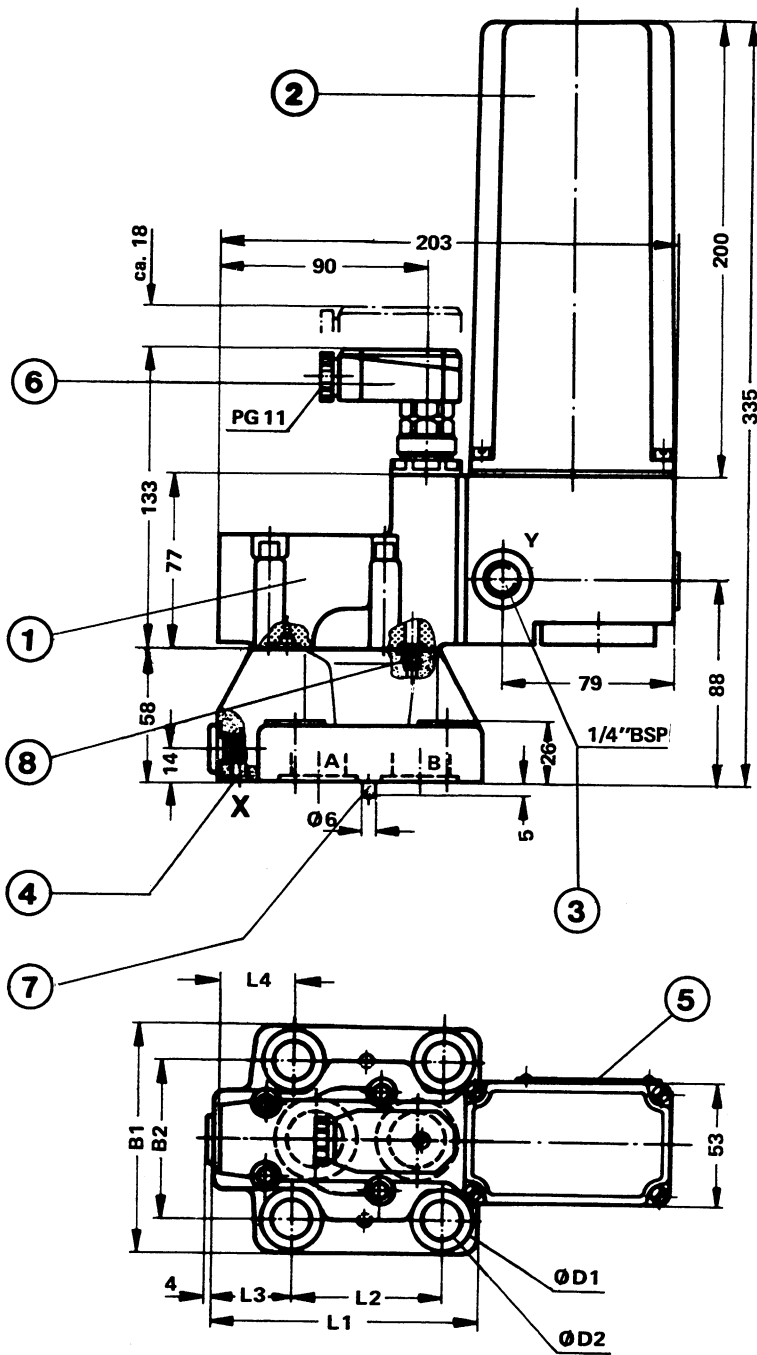
- 1 Pilot valve
- 2 DC motor
- 3 Port "Y" for external pilot drain
- 5 Nameplate
- 6 Plug-in connector
- 14 O-ring 9.25 x 1.78



View "A"

Pressure Relief Valve for Subplate Mounting

(dimensions in mm)



Subplates to catalogue sheet RE 45 064 and valve fixing screws must be ordered separately.

Subplates

Size 10:

- G 545/01 (3/8" BSP)
- G 546/01 (1/2" BSP)
- G 565/01 (3/4" BSP)

Size 25:

- G 408/01 (3/4" BSP)
- G 409/01 (1" BSP)

Size 32:

- G 410/01 (1 1/4" BSP)
- G 411/01 (1 1/2" BSP)

Valve fixing screws

Size 10:

M12 x 55 DIN 912-10.9; Tt = 120 Nm

Size 25:

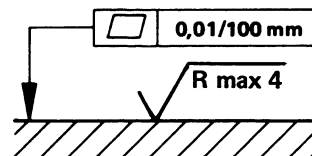
M16 x 50 DIN 912-10.9; Tt = 295 Nm

Size 32:

M18 x 50 DIN 912-10.9; Tt = 405 Nm

- | | |
|--------------------------------------|--------------------------------|
| 1 Pilot valve | 5 Nameplate |
| 2 DC motor | 6 Plug-in connector |
| 3 Port "Y" for external pilot drain | 7 Locating pin |
| 4 Port "X" for external pilot supply | 8 not for internal pilot drain |

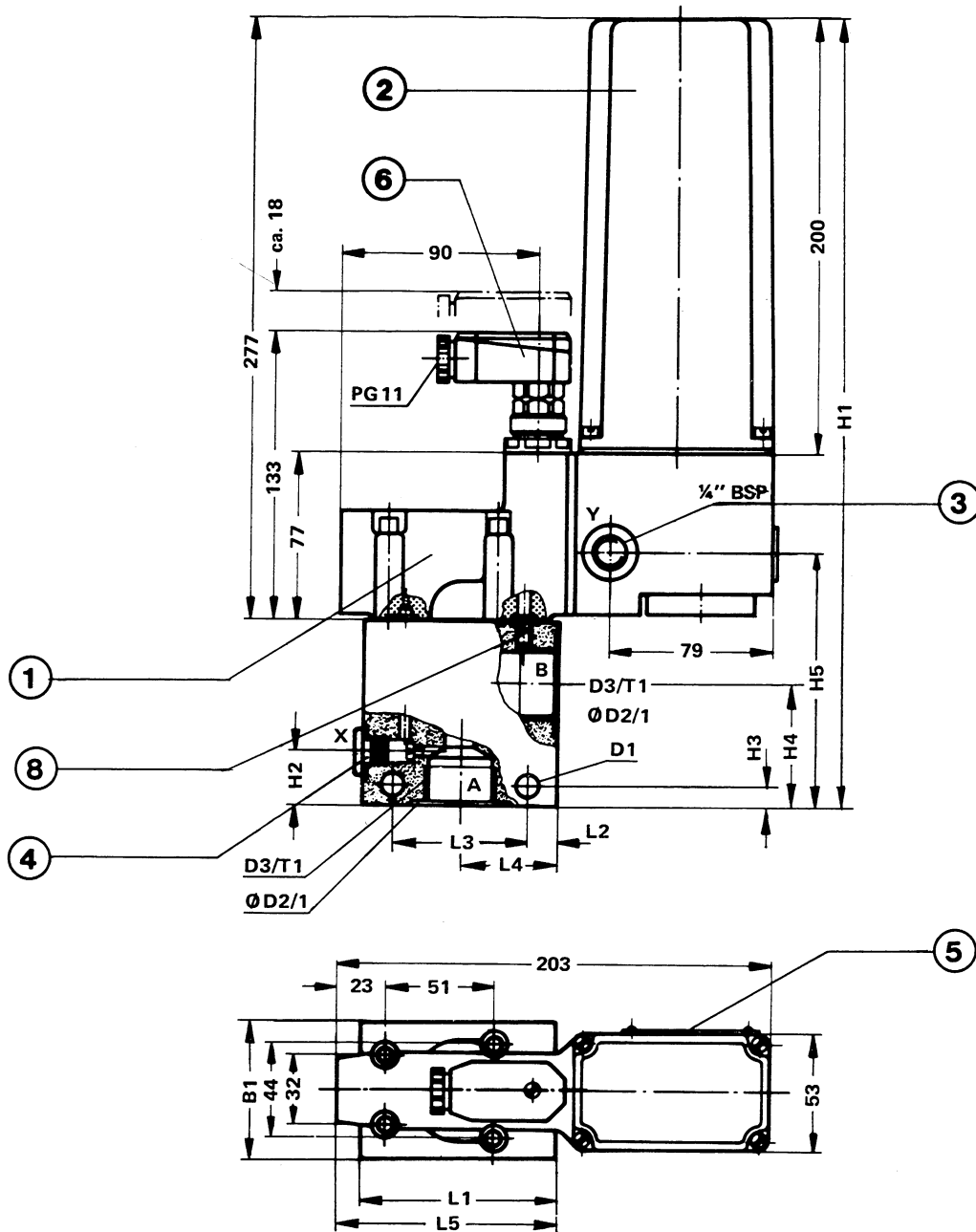
Required surface quality of mating piece when fitting valve without subplate.



Size	B1	B2	D1	D2	L1	L2	L3	L4	Weight	O-ring port X	O-ring ports A, B
10	78	54	20	14	90	54	23,5	37	7,4	9,25 x 1,78	17,12 x 2,62
25	100	69,8	26	18	117	66,7	34	34	8,1	9,25 x 1,78	28,17 x 3,53
32	115	82,5	30	20	148	89	41,5	31,5	9,4	9,25 x 1,78	34,52 x 3,53

Pressure Relief Valve, Threaded Connections

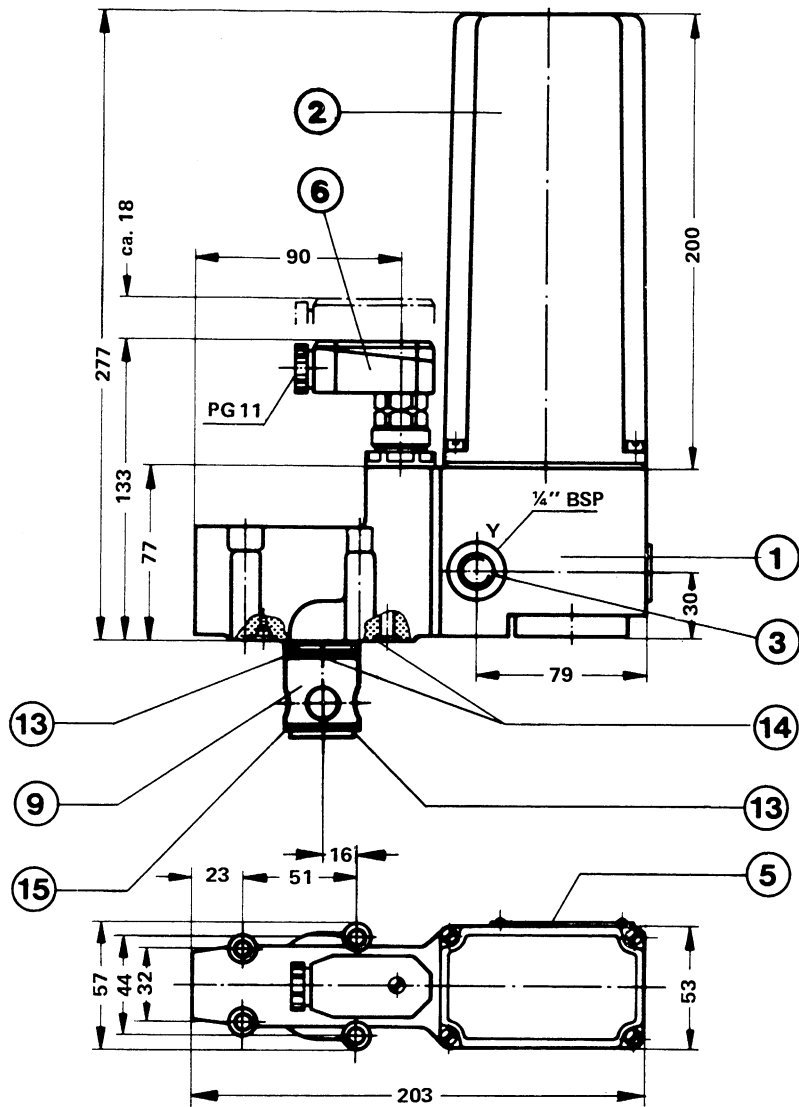
(dimensions in mm)



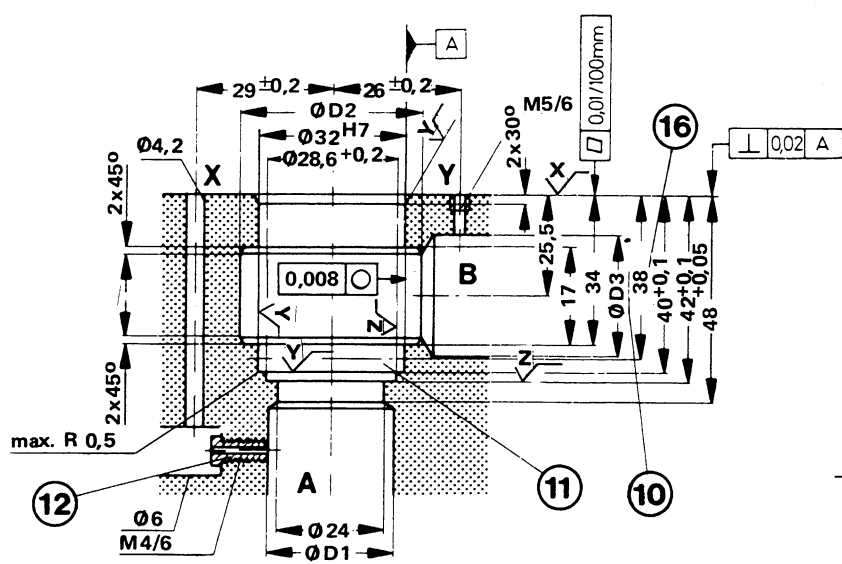
- 1 Pilot valve
- 2 DC motor
- 3 Port "Y" for external pilot drain
- 4 Port "X" for remote control
- 5 Nameplate
- 6 Plug-in connector
- 8 Not for internal pilot drain

Size	B1	D1	D2	D3	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	T1	Weight
8	63	9	28	3/8" BSP	362	27	10	62	115	85	14	62	45	100	12	8,5
10			34	1/2" BSP											14	
16			42	3/4" BSP				16								
20			47	1" BSP				18							8,3	
25	70	11	56	1 1/4" BSP	375	42	13	57	128	100	18	72	54	109	20	9,8
32			61	1 1/2" BSP				22							9,5	

Pressure Relief Valve, Manifold Mounting (dimensions in mm)



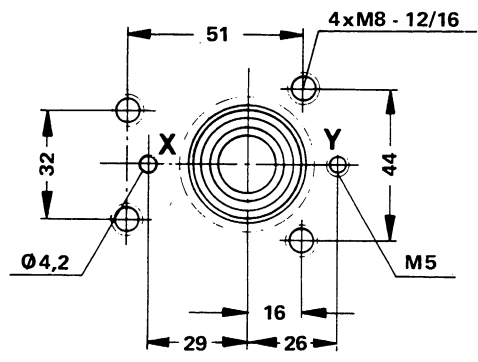
- 1 Pilot valve
- 2 DC motor
- 3 Port "Y" for external pilot drain
- 5 Nameplate
- 6 Plug-in connector
- 9 Main spool insert
- 10 Hole dia. D3 can touch hole dia. D2 at any position. However, port X and the fixing hole must not be damaged.
- 11 Support ring and o-ring must be placed in the hole before assembly of the main valve
- 12 Cartridge assembly includes jet and main spool assembly.
- 13 O-ring 27.3 x 2.4
- 14 O-ring 9.25 x 1.78
- 15 Support ring .32/28.4 x 0.8
- 16 Depth of fit



$$x \sqrt{\quad} = \sqrt{\quad} R \text{ max } 4$$

$$y \sqrt{\quad} = \sqrt{\quad} R_z 8$$

$$z \sqrt{\quad} = \sqrt{\quad} R_z 16$$



Size	D1	D2	D3	Weight	Valve fixing screws	Md (Nm)	Part N ^o . Perbunan	Cartridge assembly Viton
10	10	40	10	5,3 kg	4 off M8 x 50 DIN 912-10.9	20		
32	32	45	32				301 868	301 869

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