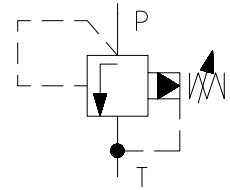


- Cartridge, modular and in-line design
- Five pressure ranges
- Two pressure adjustment options:
 - screw with internal hexagon
 - hand knob with arrestment



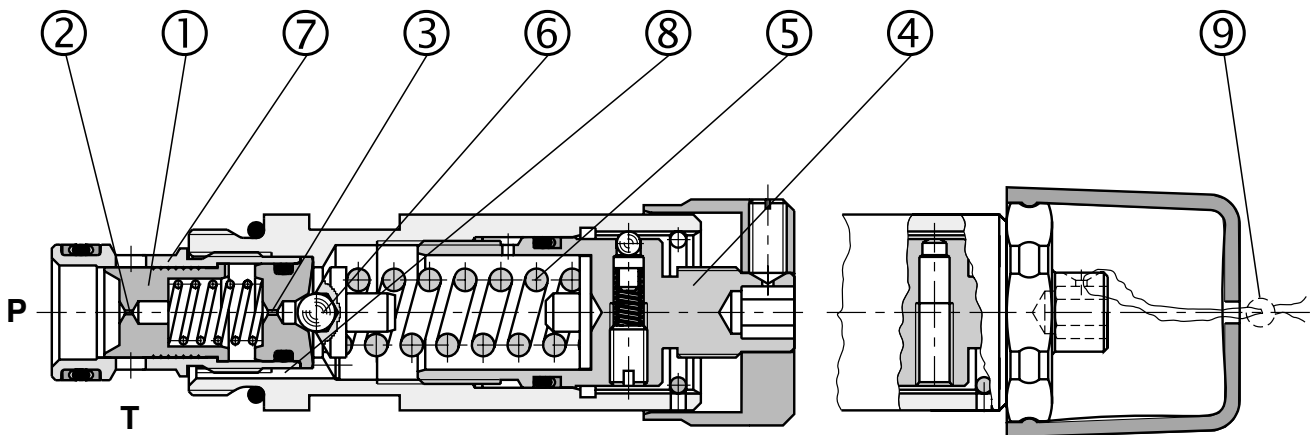
Functional Description

Pressure relief valves VPN1 are pilot operated pressure valves designed for system pressure limitation.

The pressure adjustment provides the adjustment screw (4). In its basic state, the valve is closed. The pressure acts on the face area of the control spool (1) and at the same time through orifice (2) on the control spool rear side, which is preloaded by a spring and further on through orifice (3) on the pilot valve ball (6). When the increasing system pressure reaches the value, which is preset by spring (5), the valve opens and

the control flow passes through the pilot valves. The spool area which is preloaded by the spring becomes relieved, the spool control edge opens the radial bores in bushing (7) and the fluid passes from port P to T. The control flow is routed through groove (8) to channel T. Valve adjustment can be lockwired (9).

The valve body and the adjustment screw are zinc coated. With models M and R the valve bodies are phosphate coated.



Ordering Code

VPN1-06/ -

Pilot operated pressure relief valve

Nominal size

Model

screw in cartridge
 modular valve, flow from A to T
 modular valve, flow from B to T
 modular valve, flow from P to T
 modular valve, flow from A to B and B to A
 modular valve, flow from A and B to T
 in-line valve, thread G3/8
 in-line valve, thread G1/2
 in-line valve, thread G3/8
 in-line valve, thread G1/2

S
MA
MB
MP
MC
MD
RA1
RA2
RB1
RB2

Sealing
 without designation
V
 NBR
 FPM (Viton)

S
R
Adjustment element
 screw with internal hexagon
 hand knob

Pressure range
 6 up to 63 bar
10 up to 100 bar
 16 up to 160 bar
21 up to 210 bar
32 up to 320 bar

FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE AND TABLE OF PREFERRED TYPES ON PAGE 10

Functional Symbols

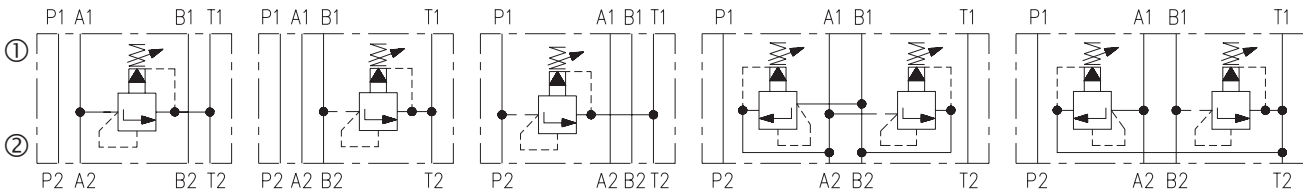
Model MA

Model MB

Model MP

Model MC

Model MD



- ① Valve side
- ② Subplate side

Ordering Numbers of Sandwich / Valve Bodies (without screw-in cartridge)

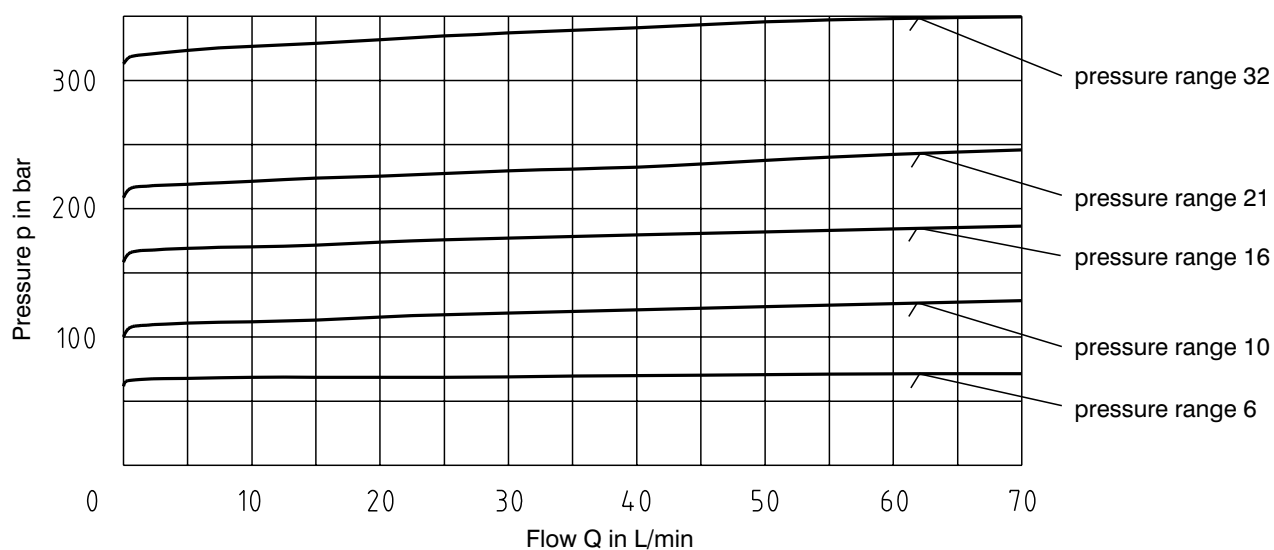
Valve body for modular valve - NBR	Ordering number	Valve body for modular valve - Viton	Ordering number
MA06-VP	556-0330	MA06-VP/V	556-0430
MB06-VP	556-0331	MB06-VP/V	556-0431
MP06-VP	556-0332	MP06-VP/V	556-0432
MC06-VP	556-0333	MC06-VP/V	556-0433
MD06-VP	556-0334	MD06-VP/V	556-0434
Valve body for in-line valve - NBR	Ordering number	Valve body for in-line valve - Viton	Ordering number
RA1-06-VP	556-0336	RA1-06-VP/V	556-0436
RA2-06-VP	556-0337	RA2-06-VP/V	556-0437
RB1-06-VP	556-0338	RB1-06-VP/V	556-0438
RB2-06-VP	556-0339	RB2-06-VP/V	556-0439

Technical Data

Nominal size	mm	06
Max. flow rate	L/min	70
Max. control flow	L/min	0.35
Max. input pressure (ports P, A, B)	bar	63; 100; 160; 210; 320
Max. output pressure (port T)	bar	320
Working pressure related to flow	bar	see p-Q characteristics
Hydraulic fluid	Hydraulic oils of power classes HM, HV to CETOP-RP 91H in viscosity classes ISO VG 32, 46 and 68.	
Fluid temperature range for standard sealing (NBR)	°C	-30 ... +80
Fluid temperature range for Viton sealing (FPM)	°C	-20 ... +80
Viscosity range	mm ² /s	20 ... 400
Max. degree of fluid contamination	Class 21/18/15 according to ISO 4406 (1999).	
Weight - model S		0.25
- models MA, MB, MP	kg	1.2
- models MC, MD		1.5
- models RA1, RA2, RB1, RB2		1.25
Mounting position	optional	

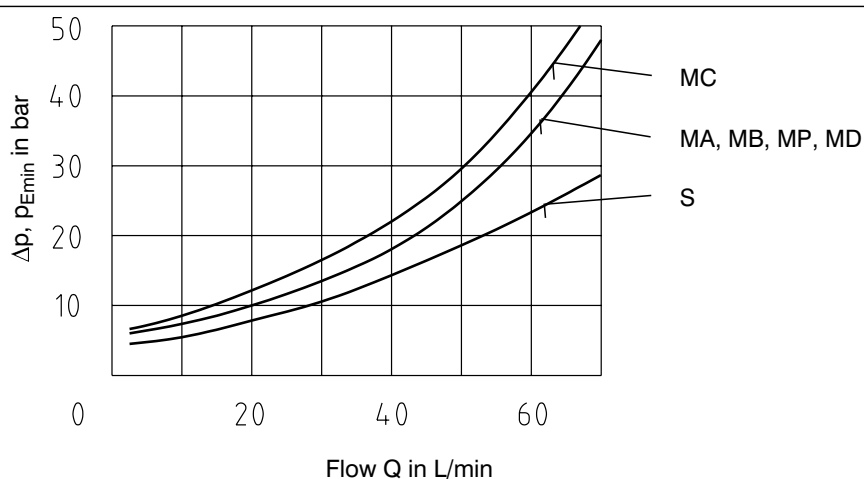
p-Q Characteristics for Model S

Measured at $v = 35 \text{ mm}^2/\text{s}$ and $t = 40 \text{ °C}$



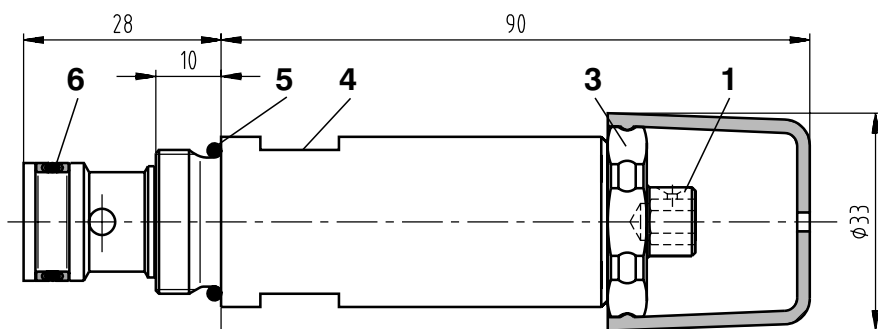
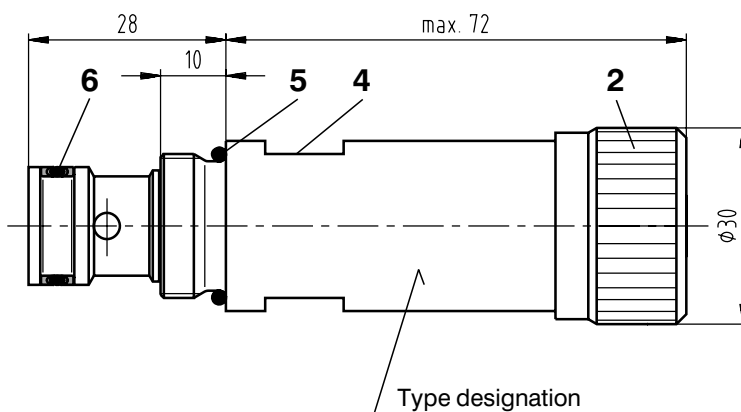
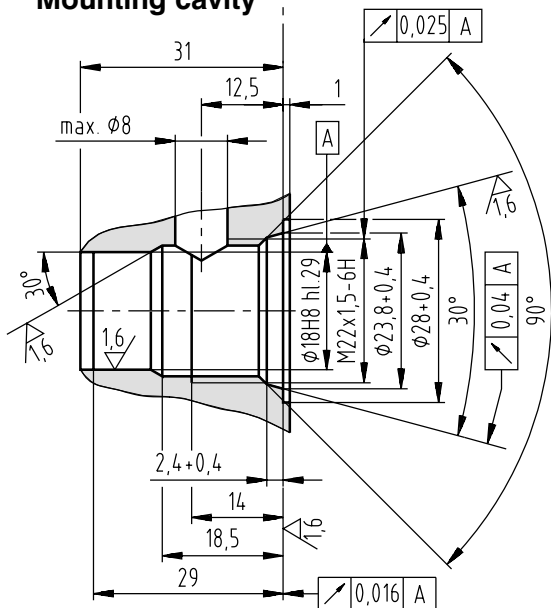
Δp -Q Characteristics

Measured at $v = 35 \text{ mm}^2/\text{s}$ and $t = 40 \text{ °C}$



Valve Dimensions

Dimensions in millimetres

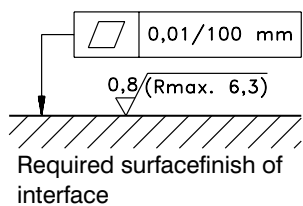
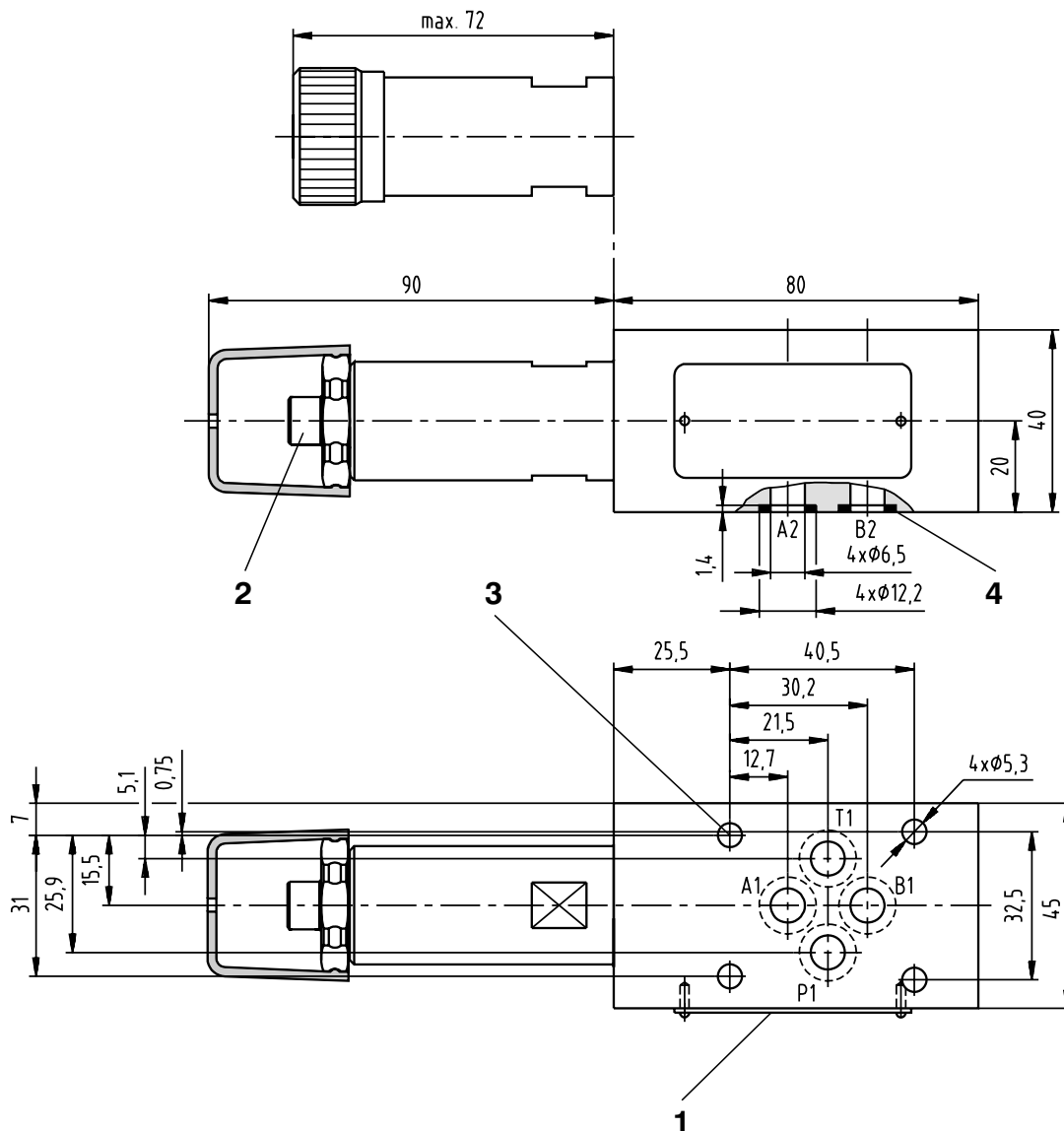
Model S**Mounting cavity**

- 1 Adjustment element (screw with internal hexagon 6 mm)
 - 2 Adjustment element R (hand knob)
- With all adjustment elements:
- clockwise rotation - pressure increase
 - anticlockwise rotation - pressure decrease
- 3 Locknut hex. 27 mm
 - 4 Wrench flats $s = 24$ mm - tightening torque 60 Nm
 - 5 O-ring 19.4 x 2.1 NBR 80 (1 pc.)
supplied with valve
 - 6 Combined sealing:
O-ring 14 x 1.78 NBR 90 (1 pc.)
Back-up ring BBP80B015-N9 14.73 x 17.43 x 1.14 (2 pcs.)
supplied with valve

Valve Dimensions

Dimensions in millimetres

Model MA

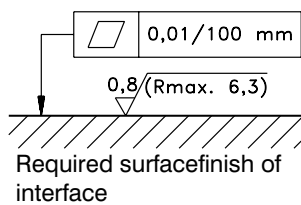
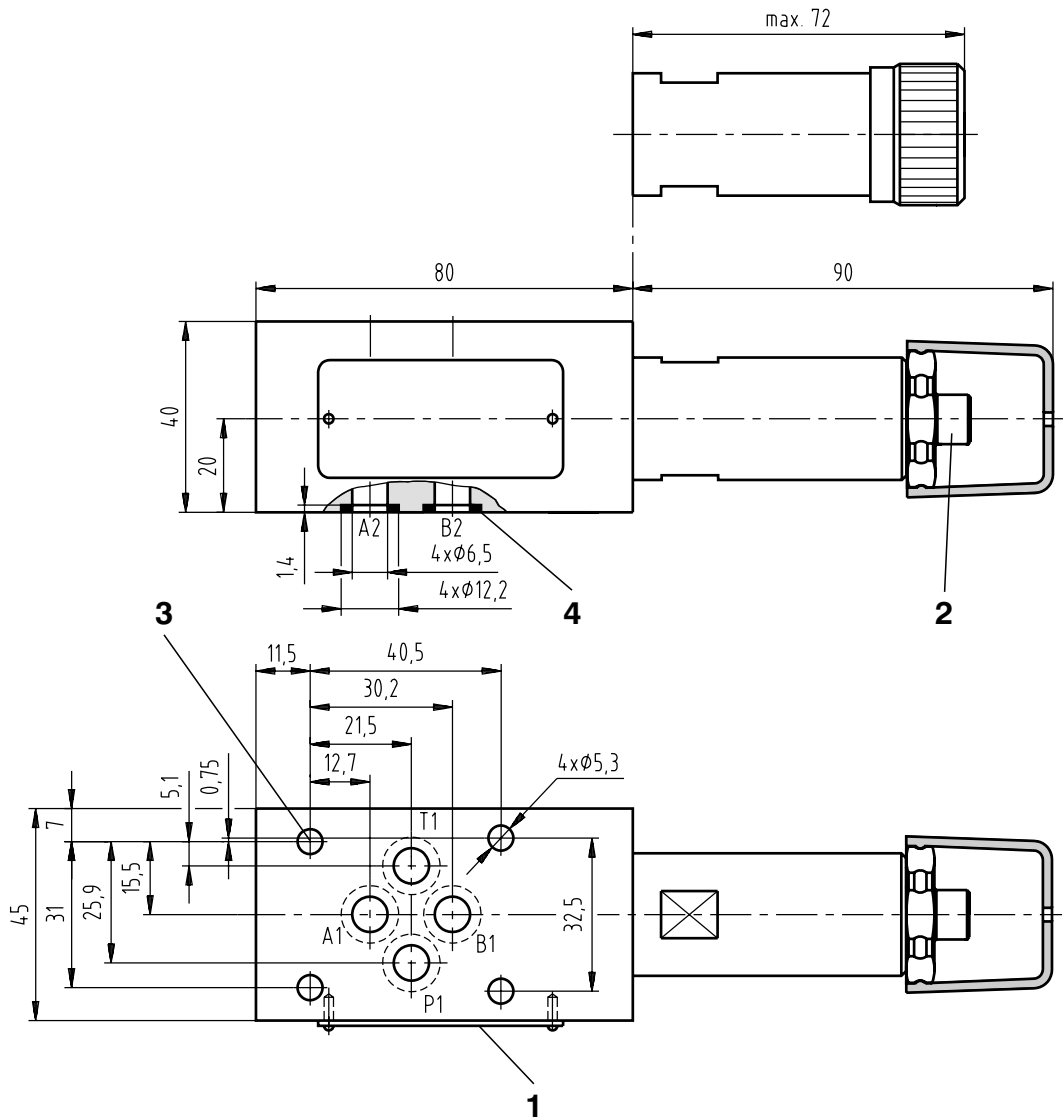


- 1 Name plate
- 2 Adjustment elements for pressure setting
- 3 4 through mounting holes
- 4 Square rings 9.25 x 1.68 (4 pcs.) supplied with valve

Valve Dimensions

Dimensions in millimetres

Models MB and MP

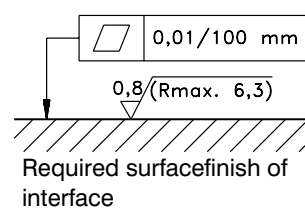
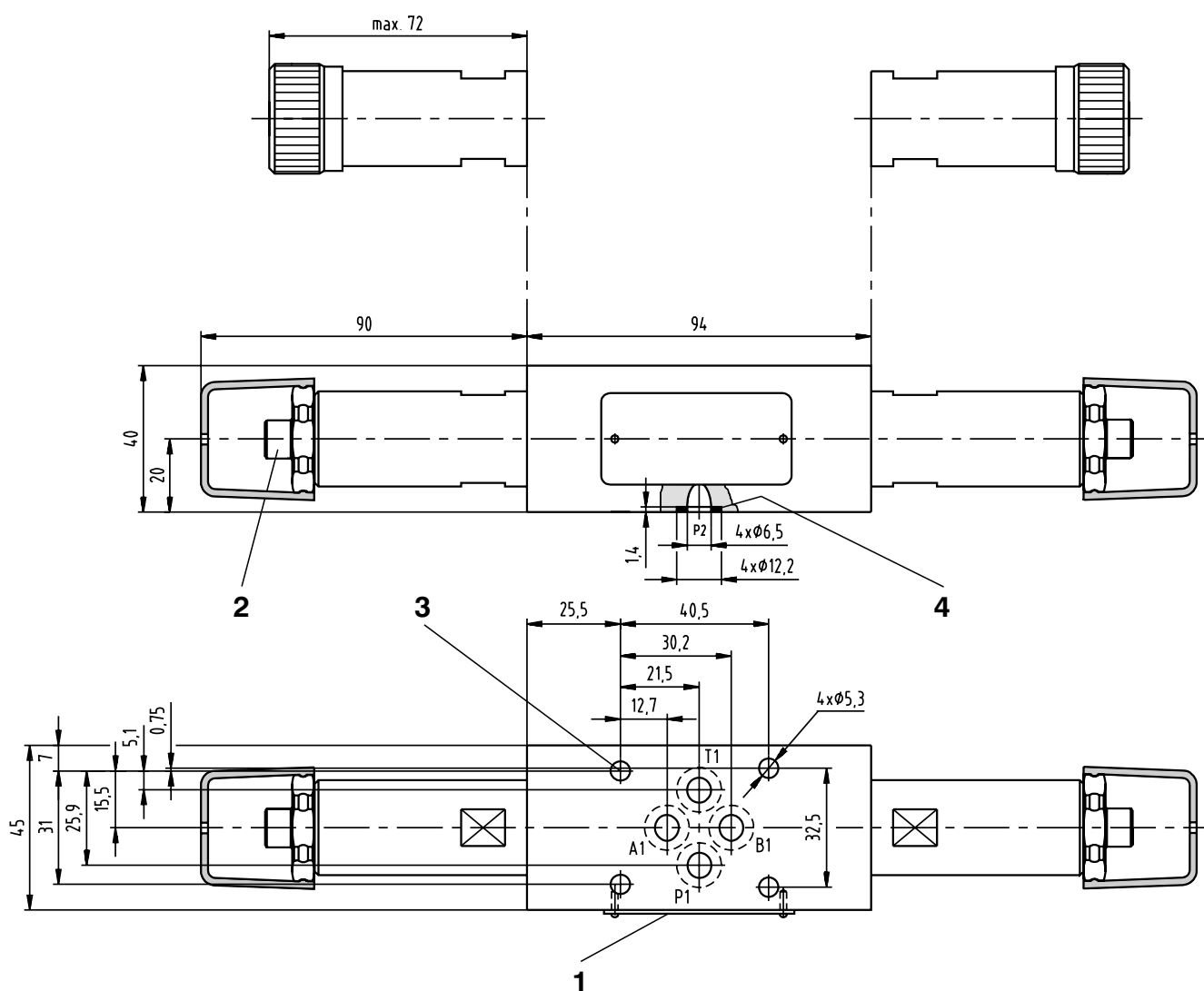


- 1 Name plate
- 2 Adjustment elements for pressure setting
- 3 4 through mounting holes
- 4 Square rings 9.25 x 1.68 (4 pcs.)
supplied with valve

Valve Dimensions

Dimensions in millimetres

Models MC and MD



- 1 Name plate
- 2 Adjustment elements for pressure setting
- 3 4 through mounting holes
- 4 Square rings 9.25 x 1.68 (4 pcs.) supplied with valve

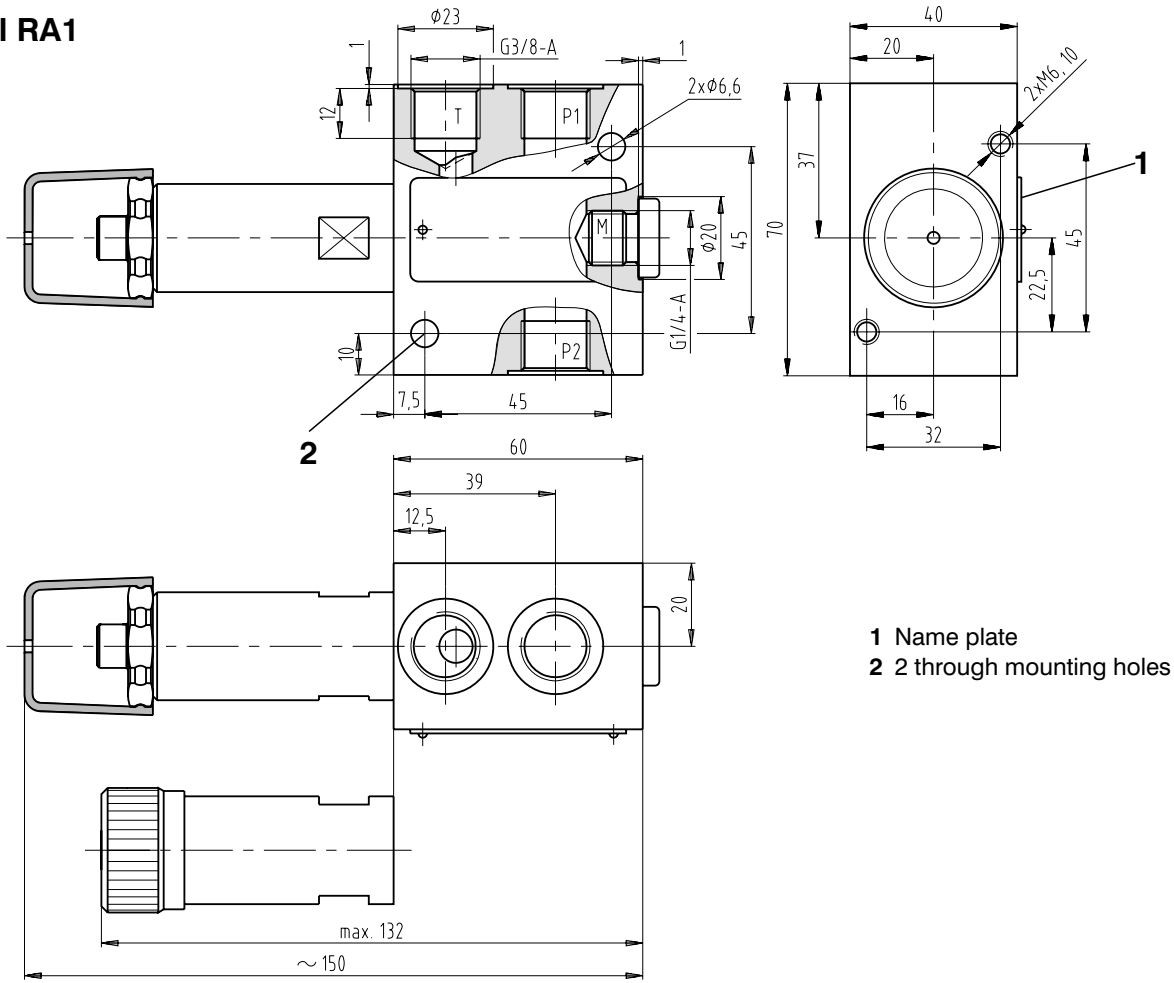
Caution!

- The packing foil is recyclable.
- The protecting plate can be returned to the manufacturer.
- Mounting studs must be ordered separately. Tightening torque is 8.9 Nm.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law

Valve Dimensions

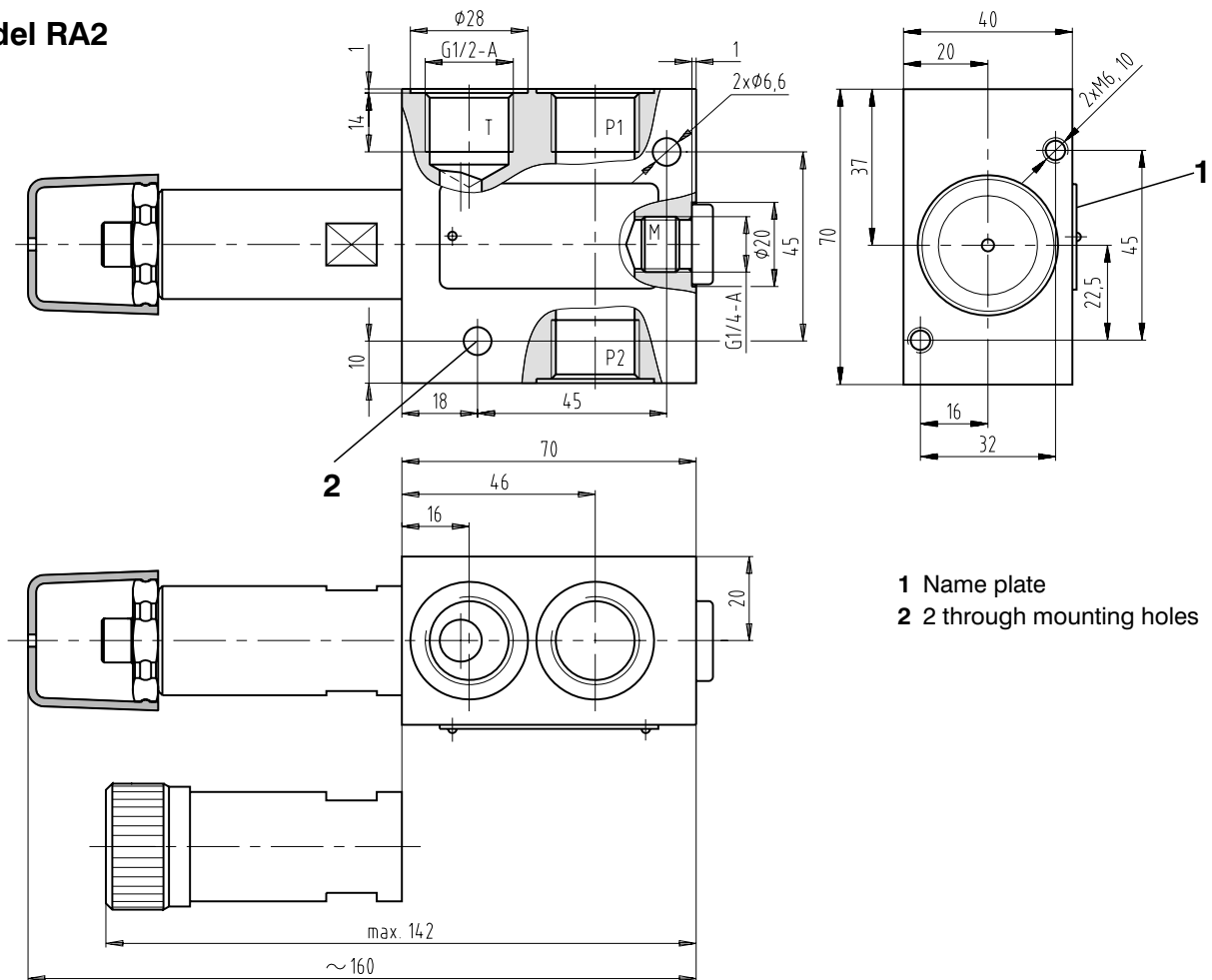
Dimensions in millimetres

Model RA1



- 1 Name plate
- 2 2 through mounting holes

Model RA2

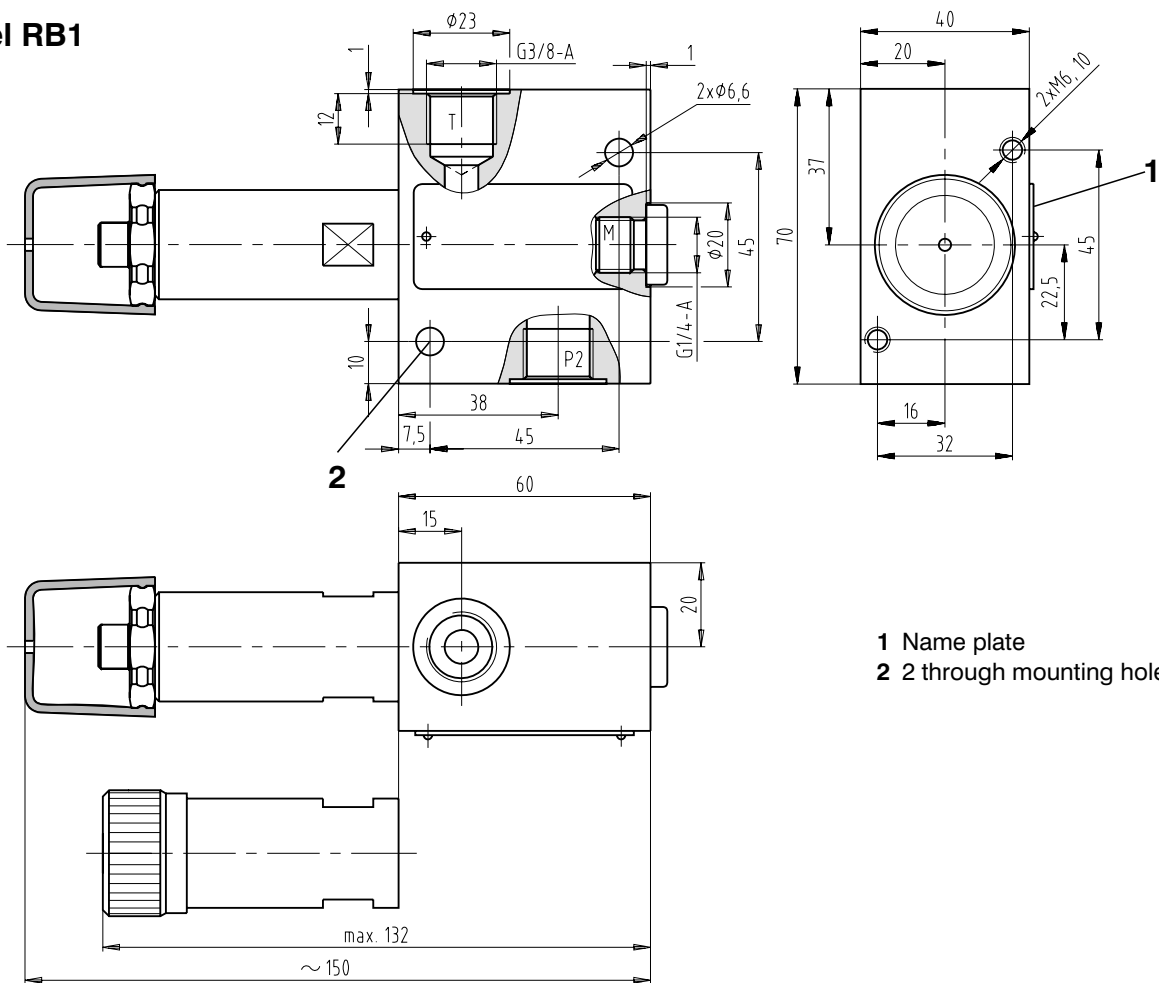


- 1 Name plate
- 2 2 through mounting holes

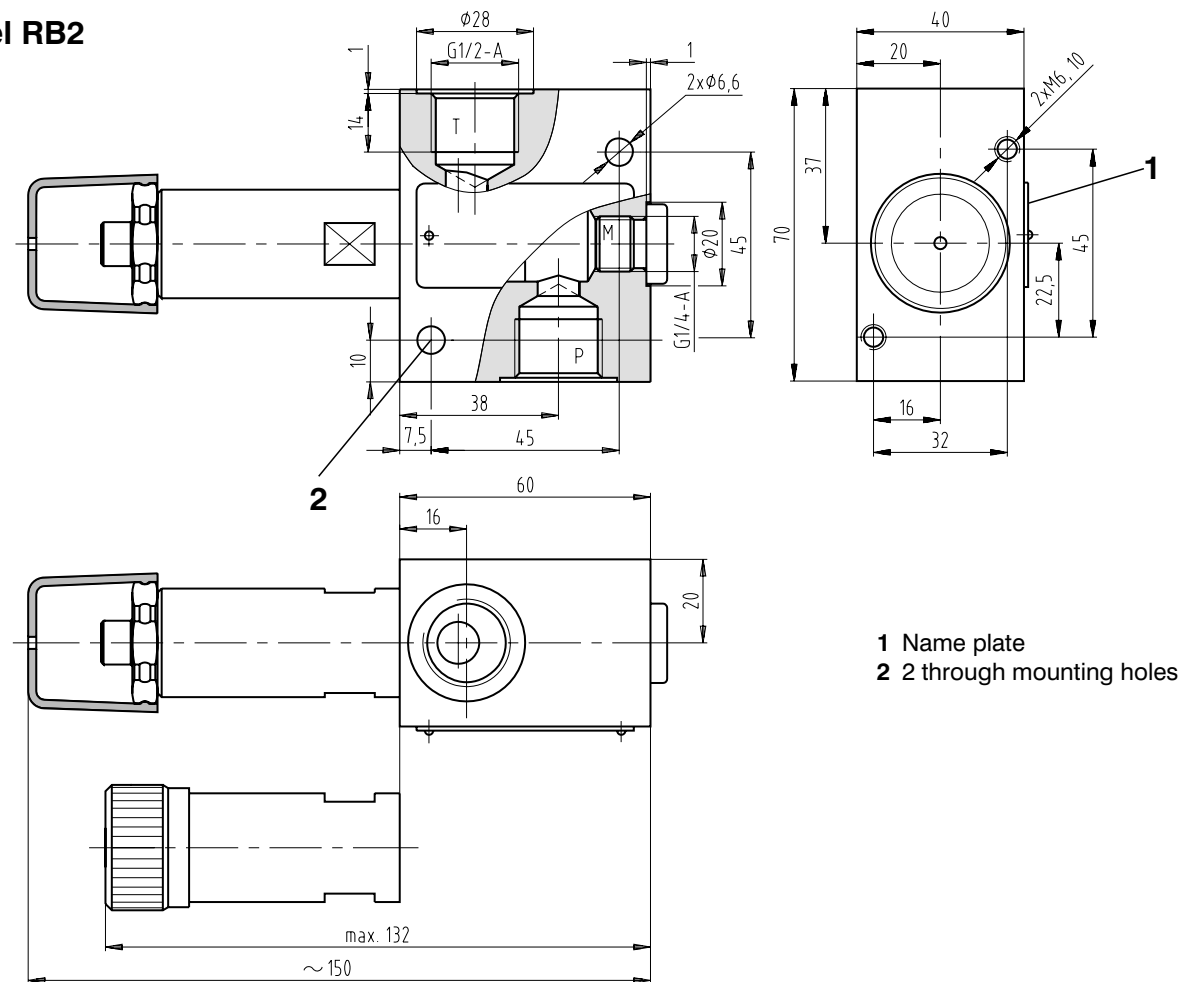
Valve Dimensions

Dimensions in millimetres

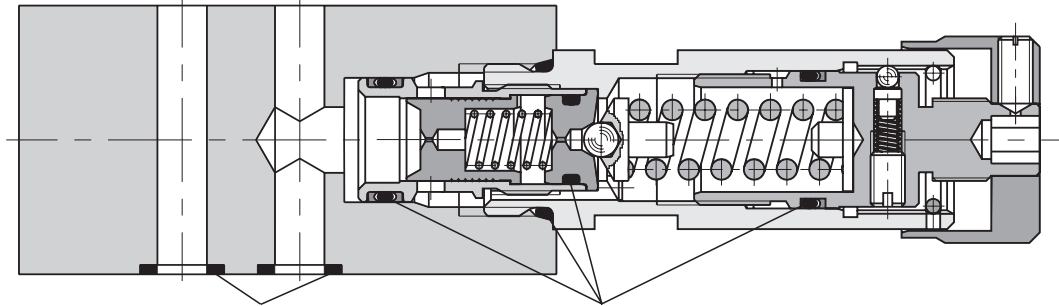
Model RB1



Model RB2



Spare Parts



Set of the seals for modular valve

Set of the seals for screw-in cartridge

Model	Dimensions, number	Ordering number
Screw-in cartridge - NBR	O-ring 14 x 1.78 NBR 90 (1 pc.)	556-0399
	O-ring 17 x 1.8 NBR 70 (1 pc.)	
	O-ring 19.4 x 2.1 NBR 80 (1 pc.)	
	O-ring 9.25 x 1.78 NBR 90 (1 pc.)	
	Back-up ring BBP80B015-N9 14.73 x 17.43 x 1.14 (2 pc.)	
	Back-up ring BBP80B016-N9 16.33 x 19.03 x 1.14 (1 pc.)	
Screw-in cartridge - Viton	O-ring 14 x 1.78 (1 pc.)	556-0398
	O-ring 17 x 1.8 (1 pc.)	
	O-ring 19.4 x 2.1 (1 pc.)	
	O-ring 9.25 x 1.78 (1 pc.)	
	Back-up ring BBP80B015 14.73 x 17.43 x 1.14 (2 pc.)	
	Back-up ring BBP80B016 16.33 x 19.03 x 1.14 (1 pc.)	

Model	Dimensions, number	Ordering number
Modular valve - NBR	Square ring 9.25 x 1.68 (4 pcs.)	556-0397
Modular valve - Viton	O-ring 9.25 x 1.78 (4 pcs.)	556-0396
Model	Typ, number	Ordering number
In-line valve RA1 - NBR	VSTI R1/4-ED (1 pc.)	556-0391
	VSTI R3/8-ED (1 pc.)	
In-line valve RA2 - NBR	VSTI R1/4-ED (1 pc.) VSTI R1/2-ED (1 pc.)	556-0393
In-line valve RB1 - NBR	VSTI R1/4-ED (1 pc.)	556-0395
In-line valve RB2 - NBR		
In-line valve RA1 - Viton	VSTI R1/4-ED - Viton (1 pc.)	556-0390
	VSTI R3/8-ED - Viton (1 pc.)	
In-line valve RA2 - Viton	VSTI R1/4-ED - Viton (1 pc.)	556-0392
	VSTI R1/2-ED - Viton (1 pc.)	
In-line valve RB1 - Viton	VSTI R1/4-ED - Viton (1 pc.)	556-0394
In-line valve RB2 - Viton		

Preferred Types of Valves

Type	Ordering number	Type	Ordering number
VPN1-06/S-10S	556-0301	VPN1-06/MP-32S	556-0424
VPN1-06/S-21S	556-0303	VPN1-06/RA2-10S	556-0561
VPN1-06/S-32S	556-0304	VPN1-06/RA2-21S	556-0563
VPN1-06/MP-10S	556-0421	VPN1-06/RA2-32S	556-0564
VPN1-06/MP-21S	556-0423		

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