

2-way flow control valve Type 2FRM



- ▶ Sizes 6 and 10
- ▶ Series 1X
- ▶ Maximum working pressure 315 bar
- ▶ Maximum flow 60 l/min

Features

- ▶ Cartridge valve
- ▶ Adjustment element with internal hexagon
- ▶ With built-in check valve
- ▶ Low start-up jump

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Information on available spare parts:
www.boschrexroth.com/spc

2 **2FRM** | 2-way flow control valve
Type code

Type code

01	02	03	04	05	06	07	08	09	
2FRM		K	2	-	1X	/	R	V	*

Valve type

01	2-way flow control valve	2FRM
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Size

02	Size 6	6
	Size 10	10

03	Cartridge valve	K
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Adjustment element

04	Grub screw with internal hexagon	2
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Series

05	Series 10 to 19 (unchanged installation and connection dimensions)	1X
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Flow (A → B)

06	Size 6	Up to 6.0 l/min	6Q
		Up to 16.0 l/min	16Q
		Up to 32.0 l/min	32Q
	Size 10	Up to 60.0 l/min	60Q

Check valve

07	With check valve	R
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Sealing material

08	FKM (fluoroelastomer) (Other seals on request.)	V
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09	Further details in clear text	*
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Note

Preferred types and standard components can be found in the EPS (Standard Price List).

Functional description

General

Flow control valves type 2FRM.K are 2-way flow control valves suitable for fitting into manifold systems. They are used for maintaining a constant flow, independent of pressure and temperature.

The valve basically consists of the housing (1), adjustment element (2), throttling area (3), throttle bolt (4), pressure compensator (5) and check valve (6).

Function

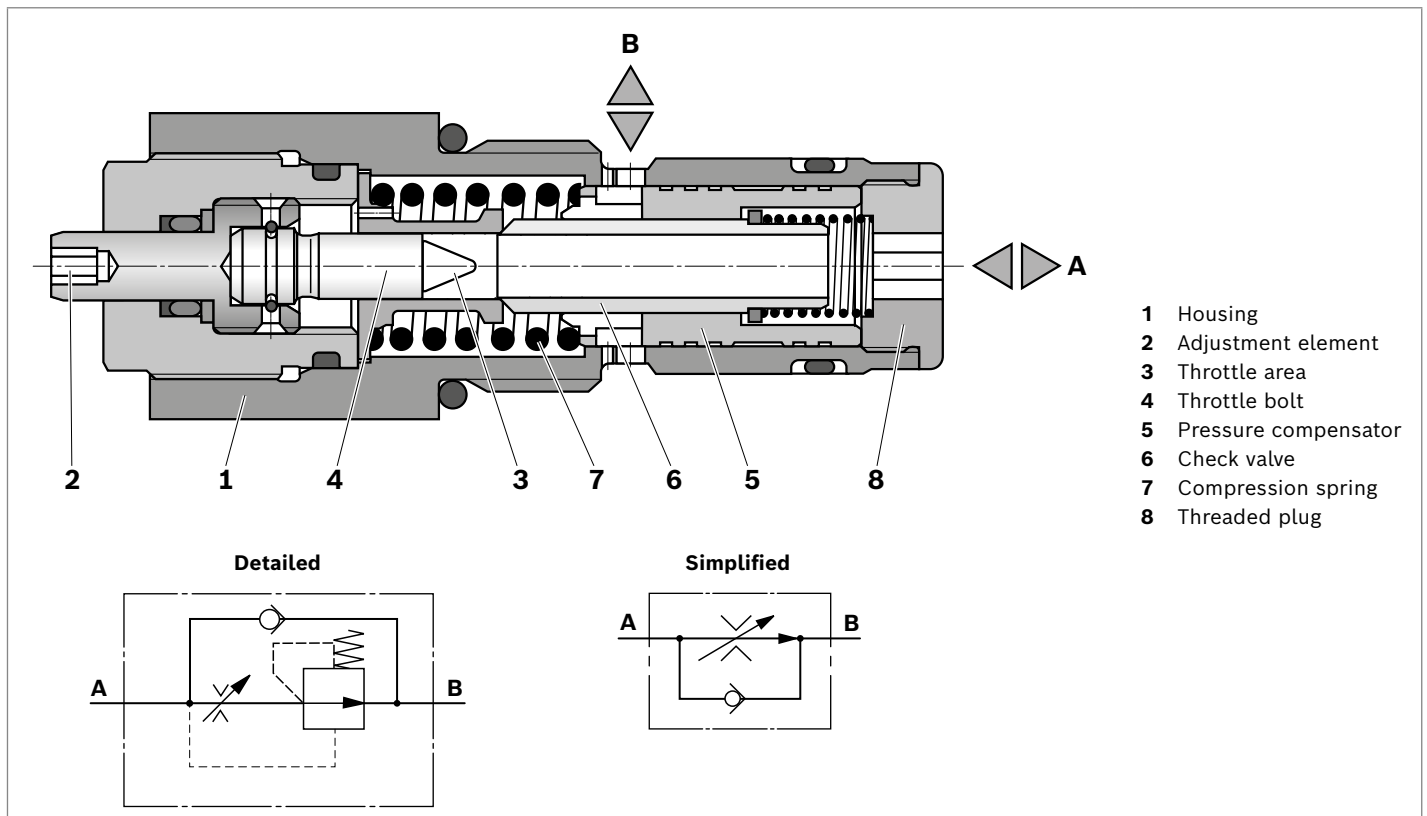
Throttling of the flow from port **A** to port **B** occurs at the throttle area (3). The throttle cross-section is changed by turning the adjustment element (2). This takes place between the throttle area (3) and the throttle bolt (4).

In order to hold the flow constant, independent from the pressure, in port **B** a pressure compensator (5) is fitted downstream of the throttle area (3).

The pressure compensator (5) is pressed against the plug (8) by the compression spring (7) and so stays in the open position as long as there is no flow through the valve. When flow takes place through the valve the pressure, which is present in port **A**, applies a force onto the pressure compensator (5). The pressure compensator moves into the compensating position until the forces are balanced. If the pressure increases in port **A**, then the pressure compensator (5) moves towards its closed position until the forces are balanced. Due to this continuous compensating action a constant flow is obtained.

Free return flow from port **B** to port **A** is obtained via the check valve (6).

▼ Cross-section and symbol 2FRM



Technical data

General		Size	6	10
Weight		kg	0.19	0.6
Installation position			Any	
Ambient temperature range		°C	-20 to +50	

Hydraulics		Size	6	10			
Maximum working pressure	Port A	p	bar	315	210		
Pressure differential Δp for free return flow	B → A	Δp	bar	See characteristic curves on page 5			
Minimum pressure differential			bar	18			
Pressure stable up to $\Delta p = 315$ bar / 210 bar			%	$\pm 3 (q_{V \max})$			
Flow		$q_{V \max}$	l/min	6	16	32	60
		$q_{V \min}$	cm ³ /min	50	150	250	500
Hydraulic fluid				See table below			
Hydraulic fluid temperature range		ϑ	°C	-20 to +80 (FKM-Dichtung)			
Viscosity range		ν	mm ² /s	10 to 800			
Maximum admissible degree of contamination of hydraulic fluid (cleanliness level) according to ISO 4406 (c)				Class 20/18/15 ¹⁾			

Note

Please contact us if the unit will be used outside the specified range of values.

Hydraulic fluid

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP	FKM	DIN 51524	90220
Biodegradable	insoluble in water	HEES	ISO 15380	90221
	soluble in water	HEPG	ISO 15380	90221

Note

- ▶ Further information and details on using other hydraulic fluids are available in the above data sheets or on request.
- ▶ Restrictions are possible with the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.).
- ▶ The flash point of the hydraulic fluid used must be 40 K above the maximum solenoid surface temperature.
- ▶ **Biodegradable:** When using biodegradable hydraulic fluids that are also zinc-solvent, zinc may accumulate in the fluid.

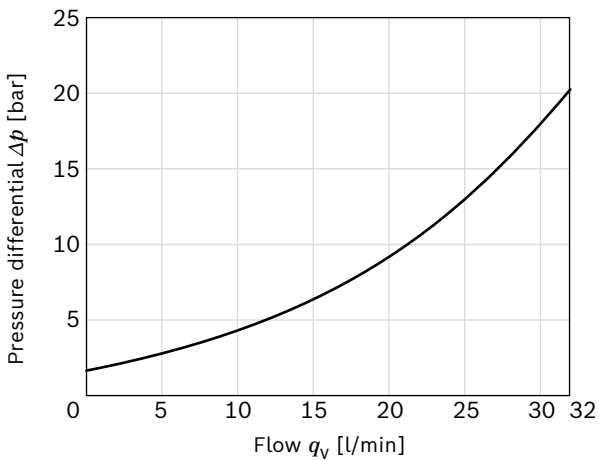
¹⁾ The cleanliness classes stated for the components has to be maintained in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

For the selection of the filters see www.boschrexroth.com/filter. We recommend using a filter with a minimum retention rate of $\beta_{10} \geq 75$.

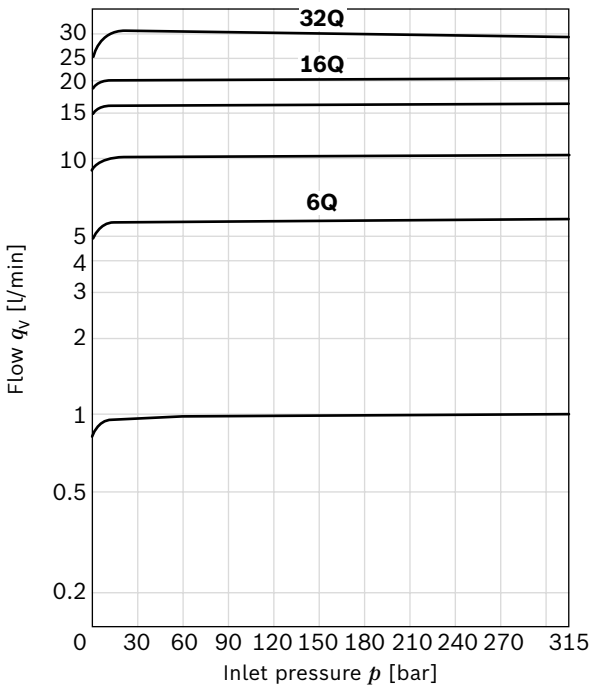
Characteristic curves

Size 6

▼ Δp - q_V -characteristic curve via the check valve (B → A)
Orifice closed

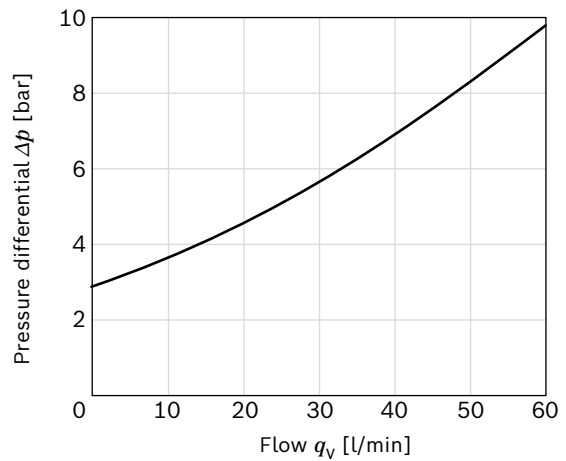


▼ Flow q_V in relation to the inlet pressure p

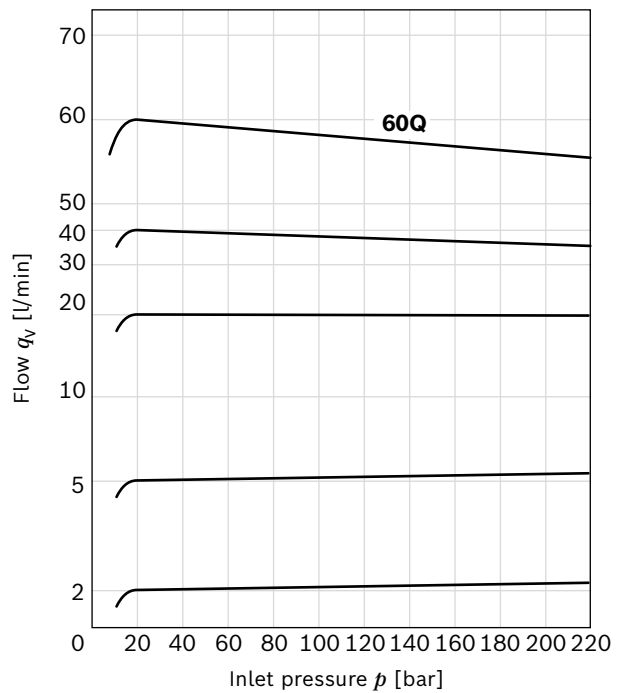


Size 10

▼ Δp - q_V -characteristic curve via the check valve (B → A)
Orifice closed



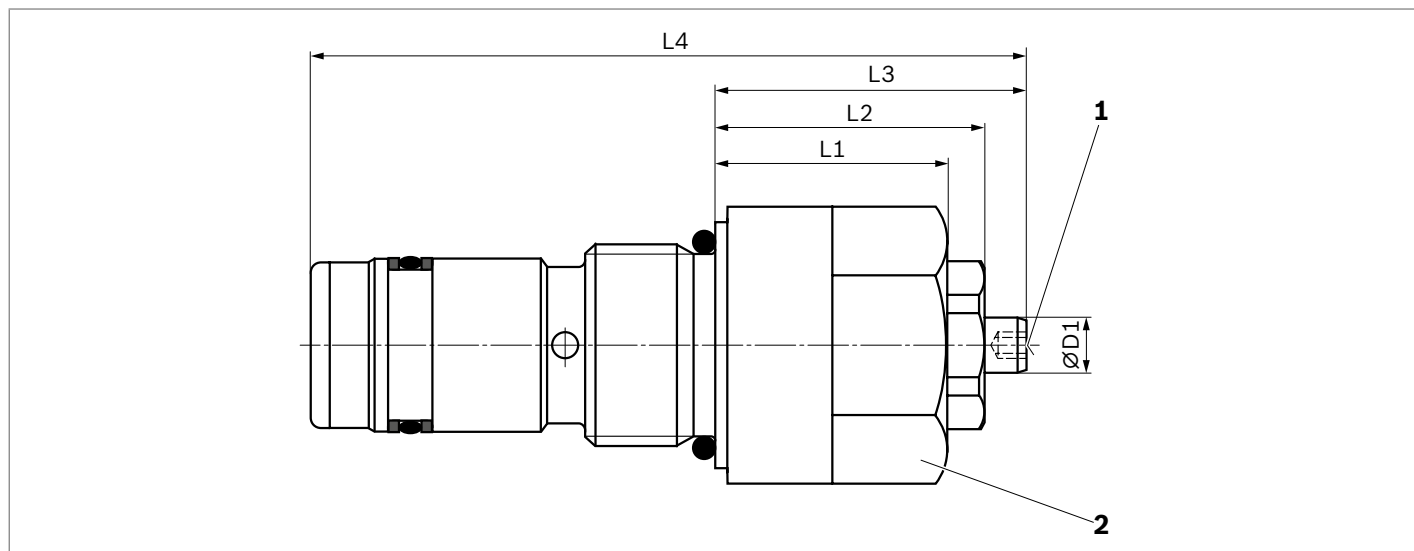
▼ Flow q_V in relation to the inlet pressure p



Note

Characteristic curves measured with HLP46,
 $\vartheta_{oil} = 40 \pm 5 \text{ } ^\circ\text{C}$.

Dimensions

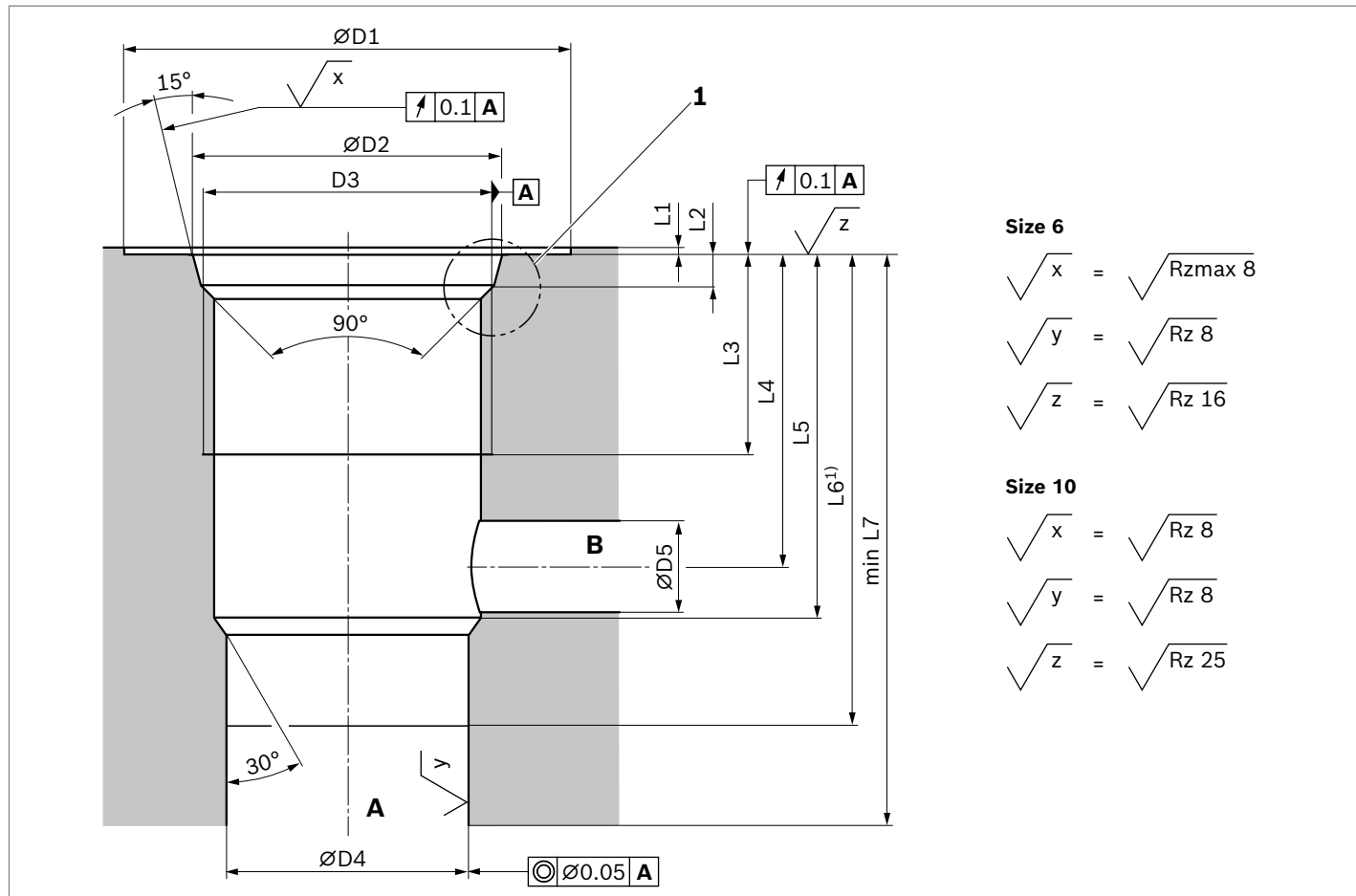


- 1** Internal hexagon SW3
- 2** External hexagon
 - Size 6: WAF27; $M_A = 40$ Nm
 - Size 10: WAF41; $M_A = 120$ Nm

Size	L1	L2	L3	L4	ØD1
6	25	29	33.5	77	6
10	36	41	45.5	109	6

Mounting cavity

▼ Version according to DIN ISO 7789



Size 6

$$\sqrt{x} = \sqrt{Rz_{max} 8}$$

$$\sqrt{y} = \sqrt{Rz 8}$$

$$\sqrt{z} = \sqrt{Rz 16}$$

Size 10

$$\sqrt{x} = \sqrt{Rz 8}$$

$$\sqrt{y} = \sqrt{Rz 8}$$

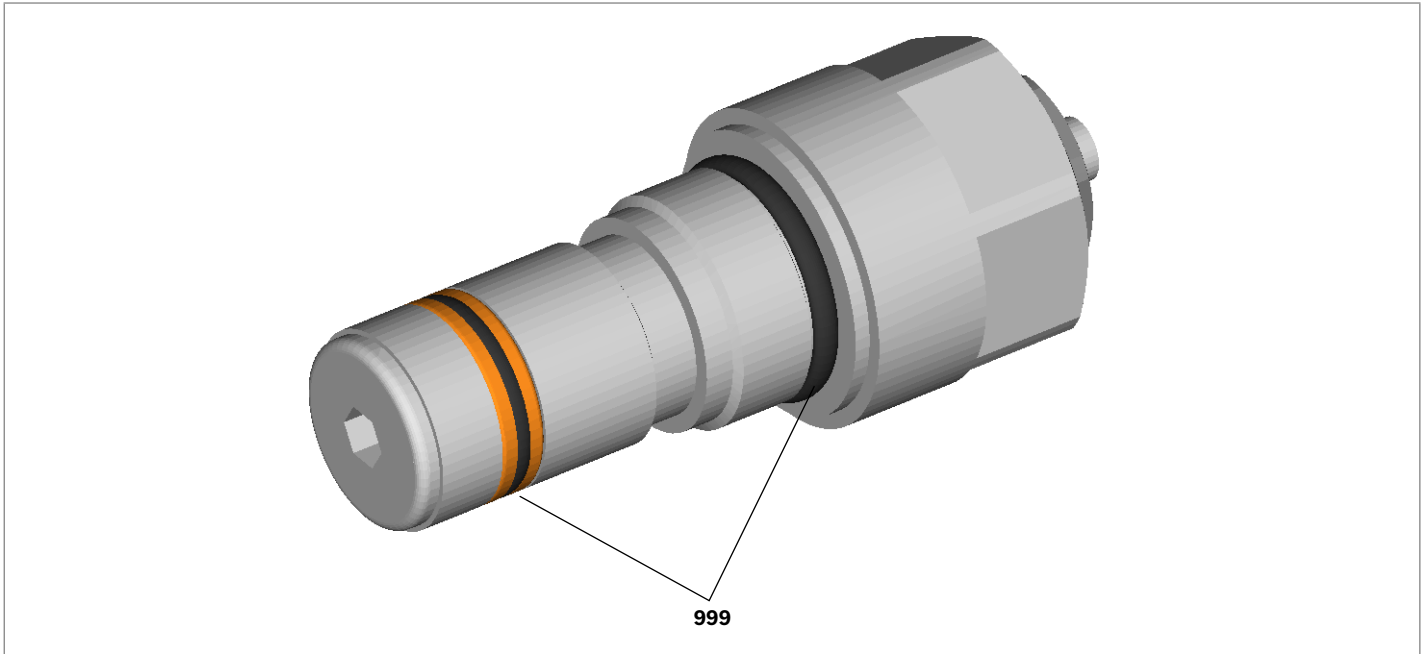
$$\sqrt{z} = \sqrt{Rz 25}$$

1 According to DIN 3852-W

Size	L1	L2	L3	L4	L5	L6 ¹⁾	L7	ØD1	ØD2	D3	ØD4	ØD5
6	0.5	2.4 ^{+0.4}	17	24 ₋₄	28±0.1	38.5	45 ^{+0.2}	34	23.8±0.1	M22 × 1.5	19H7	7
10	0.5	3.1 ^{+0.4}	23	32 ₋₄	39 ^{+0.4}	55	65	46	35.4±0.1	M33 × 2	29H8	11

1) Depth of fit

Available individual components



Item	Designation	Sealing material	Material No.
999	Seal kit of the valve for size 6	FKM	R961000741
	Seal kit of the valve for size 10	FKM	R961000742

Related documentation

- ▶ Electronic controls:
 - Analog amplifier Type RA... Data sheet 95230
 - BODAS controller Type RC... Data sheet 95204, 95205, 95206
- ▶ Mineral oil-based hydraulic fluids Data sheet 90220
- ▶ Environmentally acceptable hydraulic fluids Data sheet 90221
- ▶ Filter selection www.boschrexroth.com/filter
- ▶ MTTF_D values Data sheet 90294

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