2-way flow control valve

RE 28155/11.10 1/8
Replaces: 11.02

Type 2FRM

Sizes 6 and 10
Component series 1X
Maximum operating pressure 315 bar
Maximum flow 60 l/min

H5012

Overview of contents

Features

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

Ordering code

2FRM		K	2	–1X/		R	V	*

2-way flow control valve

Size 6 **= 6**
Size 10 **= 10**

Cartridge valve **= K**

Adjustment element
Internal hexagon **= 2**

Series 10 to 19 **= 1X**
(10 to 19: unchanged installation and connection dimensions)

Further details in clear text

Seal material
V = FKM seals
(Other seals on request)
Attention!
Observe compatibility of seals with hydraulic fluid used!

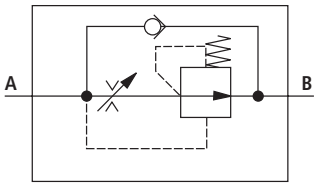
R = With check valve

Flow (A → B)
6Q = up to 6.0 l/min (size 6)
32Q = up to 32.0 l/min (size 6)
60Q = up to 60.0 l/min (size 10)

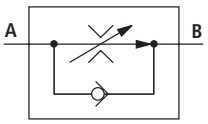
Preferred types and standard components can be found in the EPS (Standard Price List).

Symbols (detailed and simplified)

Detailed



Simplified



Function, section

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.

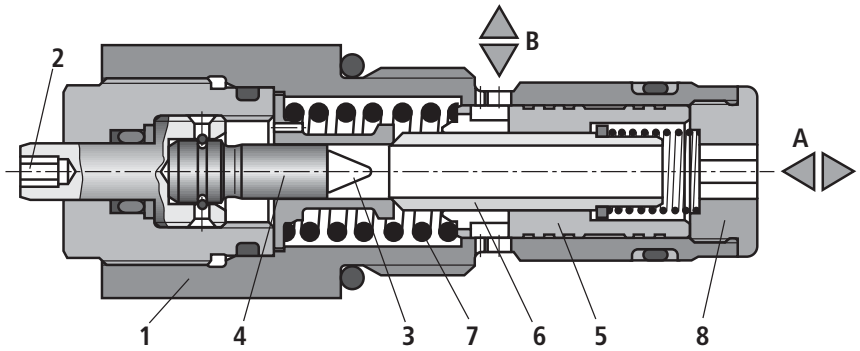
The valve basically consists of the housing (1), adjustment element (2), throttling area (3), throttle bolt (4), pressure compensator (5) and check valve (6).

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).



Technical data (for applications outside these parameters, please consult us!)

General

Size		NG6		NG10
Weight	kg	0.19		0.6
Installation		Optional		
Ambient temperature range	°C	–20 to +50		

Hydraulic

Maximum operating pressure – Port A		bar	315		210
Pressure differential Δp for free return flow B → A		bar	See characteristic curves on page 5		
Minimum pressure differential		bar	18		
Pressure stable up to Δp = 315 bar / 210 bar		%	±3 ($p_{V\,max}$)		
Flow	– $p_{V\,max}$	l/min	6.0	32	60
	– $p_{V\,min}$	cm³/min	50	250	500
Pressure fluid			Mineral oil (HL, HLP) to DIN 51524; Fast bio-degradable pressure fluids to VDMA 24568 (also see data sheet 90221); HETG (rape seed oil); HEPG (polyglycols); HEES (synthetic ester); Other pressure fluids on request		
Pressure fluid temperature range		°C	–20 to +80		
Viscosity range		mm²/s	10 to 800		
Permissible max. degree of contamination of the hydraulic fluid - cleanliness class to ISO 4406 (c)			Class 20/18/15 [1]		

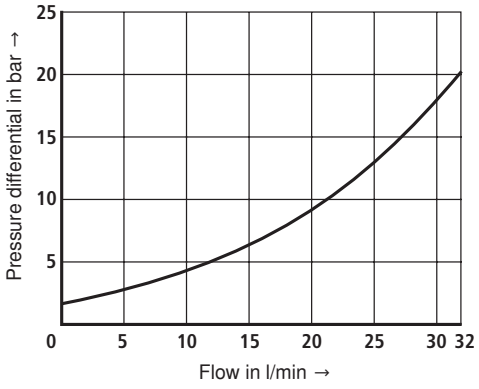
[1] The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

For the selection of the filters see www.boschrexroth.com/filter.

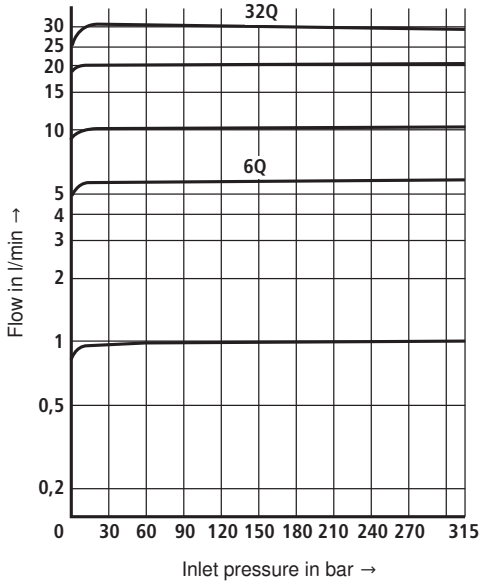
Characteristic curves (measured with HLP46, ϑ_{oil} = 40 °C ±5 °C)

Size 6

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

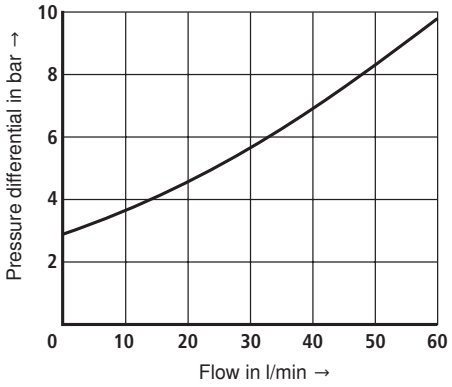


Flow q_V in relation to the inlet pressure p

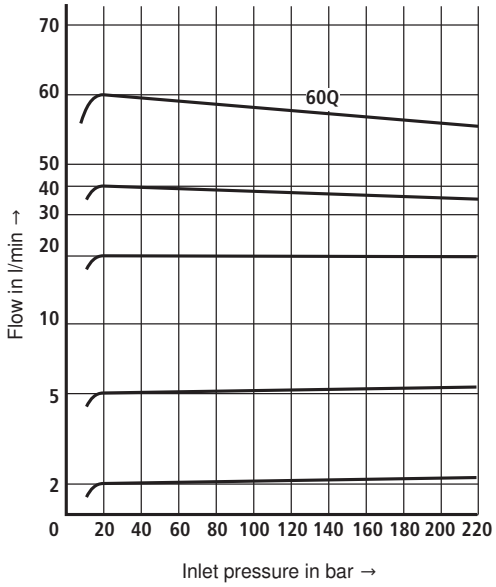


Size 10

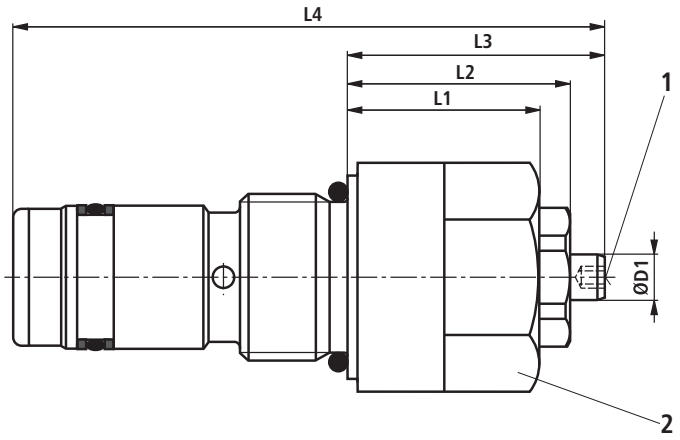
Δp-q_V-characteristic curve via the check valve (B → A) Orifice closed



Flow q_V in relation to the inlet pressure p



Dimensions (dimensions in mm)

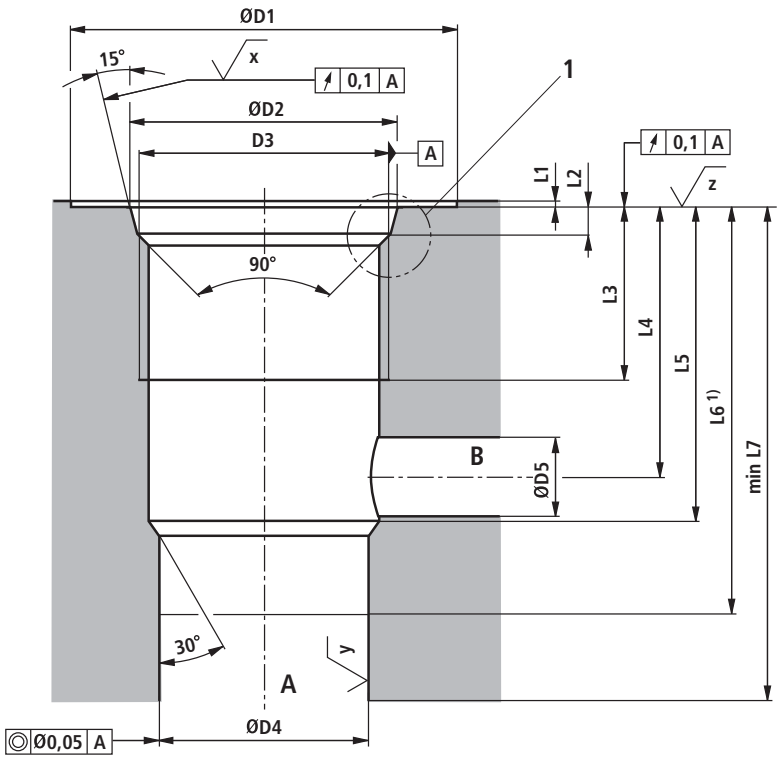


Size	L1	L2	L3	L4	ØD1
6	25	29	33,5	77	6
10	36	41	45,5	109	6

1 Internal hexagon 3A/F

2 – NG6: Hexagon 27A/F; M_A = 40 Nm
– NG10: Hexagon 41A/F; M_A = 120 Nm

Cavities to DIN ISO 7789 (dimensions in mm)



Size	L1	L2	L3	L4	L5	L6 [1]	L7	ØD1	ØD2	D3	ØD4	ØD5
6	0,5	$2,4^{+0,4}$	17	24_{-4}	$28^{\pm 0,1}$	38,5	$45^{+0,2}$	34	$23,8^{\pm 0,1}$	M22 x 1,5	19H7	7
10	0,5	$3,1^{+0,4}$	23	32_{-4}	$39^{+0,4}$	55	65	46	$35,4^{\pm 0,1}$	M33 x 2	29H8	11

1 to DIN 3852-W

[1] Depth of fit

Size 6

$\sqrt{x}$ = $\sqrt{\text{Rmax } 8}$

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

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

Size 10

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

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

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

Notes