

Extracted from RE 28155/11.02

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Issue: 06.06

2-way flow control valve,
Model 2 FRM . K

Nominal sizes 6 and 10

Series 1X

Max. pressure up to 315 bar (4500 PSI)

Max. flow 60 l/min (15.85 GPM)

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



Model 2FRM 6 K2-1X/6QRV

Ordering details, preferred types

	2FRM		K	2	1X	/	R	V	*	
2-way flow control valve										Further details in clear text
Nominal size 6		= 6						V =		FKM seals (other seals on request)
Nominal size 10		= 10								
Cartridge valve			= K							⚠ Attention! The compatibility of the seals and pressure fluid has to be taken into account!
Adjustment element				= 2						
Internal hexagon								R =		With check valve
Series 10 to 19					= 1X					Flow (A → B)
(10 to 19: unchanged installation and connection dimensions)										6Q = Up to 6.0 L/min (1.59 GPM) – nom. size 6 32Q = Up to 32.0 L/min (8.45 GPM) – nom. size 6 60Q = Up to 60.0 L/min (15.85 GPM) – nom. size 10

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

General			NS 6		NS 10	
Installation			Optional			
Ambient temperature range			°C (°F)		–20 to +50 (–4 to +122)	
Weight			kg (lbs.)		0.19 (0.42)0.6 (1.32)	
Hydraulic						
Maximum operating pressure, port A			bar (PSI)		315 (4500)210 (3045)	
Pressure differential Δp for free return flow B → A			bar (PSI)		See characteristic curves on page 3	
Minimum pressure differential			bar (PSI)		18 (261)18 (261)	
Pressure stable up to Δp = 315 / 210 bar (4500 / 3045 PSI)			%		±3(pV max)±3(pV min)	
Flow			pV maxL/min (GPM)		6.0 (1.59)32 (8.45)60 (15.85)	
			pV mincm³/min (in³/min)		50 (3.05)250 (15.25)500 (30.51)	
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524; Fast bio degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil); HEPG (polyglycols); HEES (synthetic ester); other pressure fluids on request			
Pressure fluid temperature range			°C (°F)		–20 to +80 (–4 to +176)	
Viscosity range			mm²/s (SUS)		10 to 800 (46 to 3712)	
Cleanliness class to ISO code			Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/151			

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.

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**Flow control valve,
Model Z2FRM**

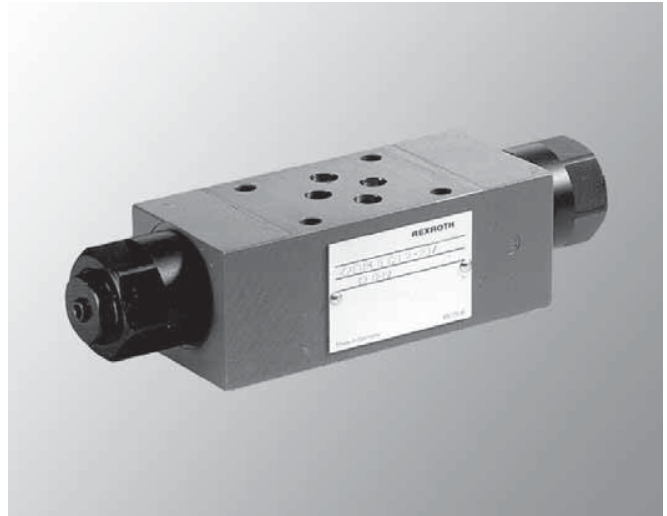
Nominal sizes 6

Series 2X

Max. pressure up to 315 bar (4500 PSI)

Max. flow 32 l/min (8.45 GPM)

- Sandwich plate valve
- Porting pattern to DIN 24 340 Form A, **without** locating pin hole (standard)
- Porting pattern to ISO 4401 and CETOP-RP 121 H, **with** locating pin hole, (ordering code .../60 at the end of the valve type code)
- With 1 or 2 flow control cartridges
- Adjustment element with internal hexagon



Model Z2FRM 6 CB2-2X/32QRV

Ordering details

Z	2FRM	6		B	2 - 2X /		R	V		*
Sandwich plate	= Z									Further details in clear text
2-way flow control valve										No code = Without locating pin hole
Nominal size 6		= 6								/60 ²⁾ = With locating pin hole
Flow control function (meter-out control) in										V =
Port										FKM seals
Port B										(other seals on request)
Ports A and B										Attention!
Port T ¹⁾										The compatibility of the seals and pressure fluid has to be taken into account!
Without closing of the pressure compensator				= B						R =
Adjustment element with internal hexagon					= 2					With check valve
Series 20 to 29						= 2X				Flow
(20 to 29: unchanged installation and connection dimensions)										6Q = Up to 6.0 L/min (1.59 GPM)
										32Q = Up to 32.0 L/min (8.45 GPM)

¹⁾ By rotating through the longitudinal axis a flow control function in port P is achieved (meter-in control), also see page 7.

²⁾ Locating pin 3 x 8 DIN EN ISO 8752, Material No. **R900005694** (separate order)

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

General

Connection type		– Porting pattern to DIN 24 340 Form A, without locating pin hole (standard) – Porting pattern to ISO 4401 and CETOP-RP121H, with locating pin hole, (ordering code .../60 at the end of the valve type code)
Ambient temperature range	°C (°F)	–20 to +50 (–4 to +122)
Weight	kg (lbs.)	1.3 (2.87) – flow control function in ports A, B or T
		1.4 (3.09) – flow control function in ports A and B

Hydraulic

Nominal pressure	bar (PSI)	315 (4500)
Minimum pressure differential	At $q_{V \max}$ bar (PSI)	18 (260)
	At $q_{V \min}$ bar (PSI)	7 (100)
Pressure stable up to $\Delta p = 315$ bar (4500 PSI)	%	± 3 ($q_{V \max}$)
Flow range	$q_{V \max}$ L/min (GPM)	6 (1.59); 32 (8.45)
	$q_{V \min}$ cm ³ /min (in ³ /min)	50 (3.05); 250 (15.25)
Pressure fluid		Mineral oil (HL, HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil); HEPG (polyglycols); HEES (synthetic ester); Other pressure fluids on request
Pressure fluid temperature range	°C (°F)	–20 to +80 (–4 to +176)
Viscosity range	mm ² /s (SUS)	10 to 800 (46 to 3712)
Cleanliness class to ISO code		Maximum permissible degree of contamination of the pressure fluid is 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.

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Issue: 01.01

See Section 16 for applicable
Preferred/Spotlight part numbers
and unit price.**2-way flow control valves,
pressure compensated
Model 2FRM...**

Sizes 10 and 16

Series 3X

Maximum operating pressure 315 bar (4600 PSI)

Maximum flow 160 L/min (42.5 GPM)

- Pressure compensated flow control
- Anti-lunge adjustment option on hydrostat, for smooth initial motion of the actuator
- Freewheeling, key lockable handknob adjustment, Model 2FRM
- Mounts on standard ISO 6263-06-2, 07-2, NFPA T3.5.1 MR1 2 FO 6, 2 FO 7 interface, for subplates see RA 45 066
- Linear adjustment characteristics with scale for frequent adjustment reference



Model 2FRM 10 -3X/..

Ordering code

2		FR	M	- 3X			/	*
2-Way		= 2						
Flow control valve, Pressure compensated		= FR						
Manual lockable hand-knob adjustment		= M						
Size 10 (2 F0 6)			= 10					
Size 16 (2 F0 7)			= 16					
Series 30 to 39 (30 to 39: externally interchangeable)				= 3X				
Flow range A → B								
Size 10, linear								
up to 10 L/min (2.64 GPM)				= 10L				
up to 16 L/min (4.23 GPM)				= 16L				
up to 25 L/min (6.6 GPM)				= 25L				
up to 50 L/min (13.21 GPM)				= 50L				
Size 16, linear								
up to 60 L/min (15.85 GPM)				= 60L				
up to 100 L/min (26.42 GPM)				= 100L				
up to 160 L/min (42.27 GPM)				= 160L				
Without anti-lunge adjustment				= no code				
With anti-lunge adjustment				= B				

Further details to be written in clear text

no code = NBR seals suitable for petroleum oils (HM, HL, HLP)

V = FPM seals suitable for phosphate ester fluids (HFD-R)

Further details to be written in clear text

no code = NBR seals suitable for petroleum oils
(HM, HL, HLP)V = FPM seals suitable for phosphate ester fluids
(HFD-R)

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Issue: 01.01

 See Section 16 for applicable
 Preferred/Spotlight part numbers
 and unit price.

Technical data
General

Weight (approx.)		Size 10	Size 16
Model 2FRM	kg (lbs.)	5.6 (12.3)	11.3 (24.9)
Mounting pos.	Model 2FRM	Optional	

2FRM...

		Size 10 (2 FO 6)				Size 16 (2 FO 7)		
Flow $q_{V \max} A \rightarrow B$	L/min (GPM)	10 (2.64)	16 (4.23)	25 (6.60)	50 (13.21)	60 (15.85)	100 (26.42)	160 (42.27)
Dp with reverse free flow B \rightarrow A across check valve q_V -related	bar (PSI)	2.0 (29)	2.5 (36.3)	3.5 (50.8)	6.0 (87)	2.8 (40.6)	4.3 (62.4)	7.3 (106)
Flow	• temperature-stability:	-20 to 70 °C (- 4 to 158 °F)		$\pm 2\%$ ($q_{V \max}$)				
	• pressure-stability:	$\Delta p = 315$ bar (4600 PSI)		$< \pm 5\%$ ($q_{V \max}$)				
Operating pressure, port A		bar (PSI)		up to 315 (4600)				
Minimum pressure drop		bar (PSI)		3 to 7 (44 to 102)			5 to 12 (73 to 175)	