



## Catálogo de Productos

2-way flow control valve, Type 2FRM

BEIJING HUADE HYDRAULIC INDUSTRIAL GROUP CO.,LTD.	<b>2-way flow control valve,Type 2FRM</b>			RE:28383/12.2004
	Size 10 and 16	up to 31.5MPa	up to 160 L/min	Replaces: RE28383/05.2001

#### Features:

- Porting pattern to DIN 24 340, from A,ISO 4401 and CETOP-RP 121H
- Pressure compensator stroke limiter, optional
- Mechanical operation
- Start-up jump reduction
- Flow control in both directions using a rectifier sandwich plate

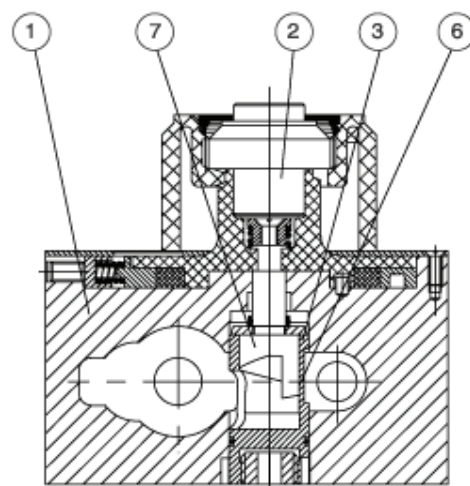
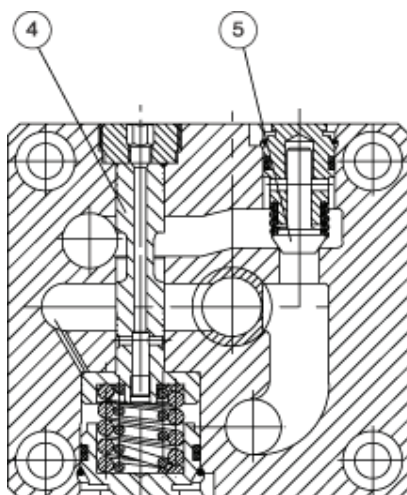


#### Functional, section

Flow control valves are 2-way flow control valves. They are used to maintain a flow constant independently of pressure and temperature.

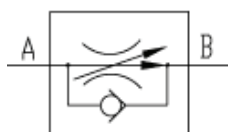
The valves basically consist of the housing (1), orifice bushing(3), pressure compensator (4) with optional stroke limiter, check valve(5), adjustment element (2).

The flow from channel A to channel B is throttle at the orifice (6). In order to maintain the flow across the orifice constant, a pressure compensator is connected upstream of the orifice (6). The flow is maintained largely independent of temperature due to the orifice design. Free return flow from channel B to channel A is directed via the check valve (5). The flow is only controlled from A to B. In order to control the flows in both directions a rectifier sandwich plate type Z4S can be installed below the flow control valve.

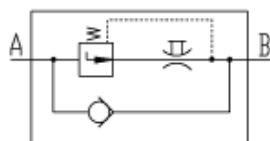


## Symbols: 2-way flow control valve

Simplified



Detailed



Rectifier sandwich plate



## Ordering code: 2-way flow control valve

		2FRM		-20	B	/				*		
Size10		=10								Further details in clear text		
Size16		=16										
Series 20 to 29(20 to 29: unchanged installation and connection dimensions)				= 20								
Technology of Beijing Huade Hydraulic				=B								
Size 10, linearity	to 2L/min		=2L		Flow range A → B							
	to 5L/min		=5L									
	to10L/min		=10L									
	to16L/min		=16L									
	to25L/min		=25L									
	to35L/min		=35L									
to50L/min		=50L										
Size 16, linearity	to 40L/min		=40L									
	to 60L/min		=60L									
	to 80L/min		=80L									
	to100L/min		=100L									
	to125L/min		=125L									
	to160L/min		=160L									

No code =	Mineral oil
V =	Phosphate ester
No code= Without pressure compensator stroke limiter	
B = With pressure compensator stroke limiter	

## Ordering code: Rectifier sandwich plate

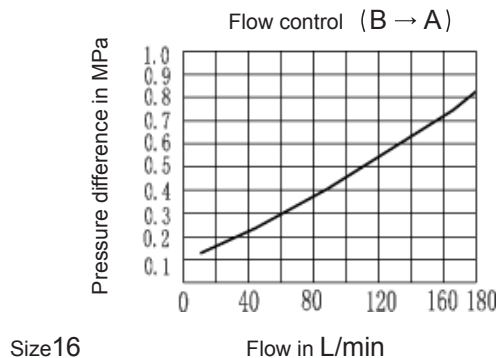
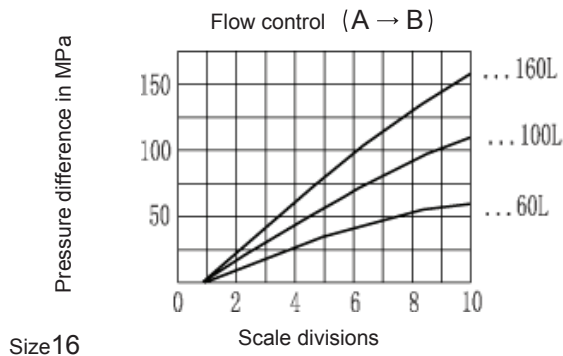
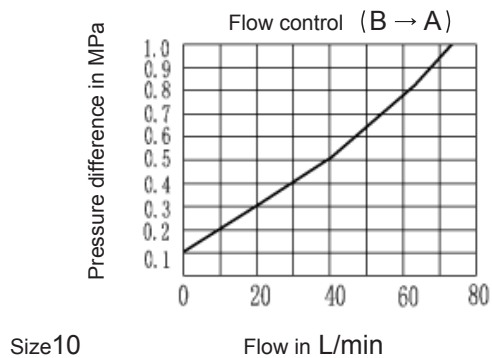
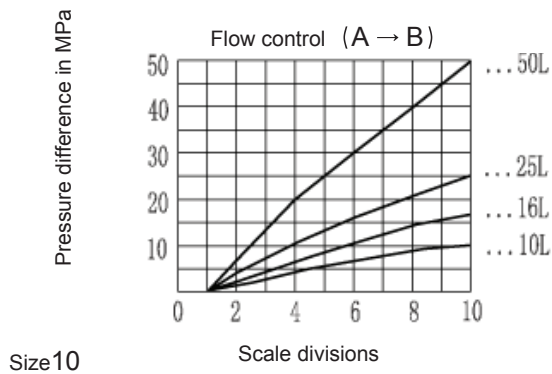
Z4S			-13	B	/		*
Size 10		= 10		Further details in clear text			
Size 16		= 16					
Series 10 to 19(10 to 19: unchanged installation and connection dimensions)		= 13		No code= Without pressure compensator stroke limiter B = With pressure compensator stroke limiter			
Technology of Beijing Huade Hydraulic		=B					

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

General		Rectifier sandwich plate		
Hydraulic fluid	Mineral oil(for NBR seal) or Phospate ester (for FPM seal)	Flow, max (L/min)	Size 10 up to 50	Size 16 up to 160
Temperature range (°C)	-30 to +80	Operating pressure (MPa)	up to 31.5	
Viscosity range (mm²/s)	10 to 800	Cracking pressure (MPa)	0.15	
		Weight (Kg)	Size10 3.2	Size16 9.3

Flow q <sub>v</sub> max (L/min)		Size10				Size16		
		10	16	25	50	60	100	160
Δp with free return flow B → A q <sub>v</sub> -dependent (MPa)		Size10				Size16		
		0.2	0.25	0.35	0.6	0.28	0.43	0.73
Flow control	temperature-stable (-20 to +80°C )	± 2% (q <sub>v</sub> max)						
	pressure-stable (up to Δp = 31.5 MPa)	± 2% (q <sub>v</sub> max)				± 5% (q <sub>v</sub> max)		
Operating pressure, max. - port A (MPa)		up to 31.5						
Minimum pressure differential range (MPa)		Size10				Size16		
		0.3...0.7				0.5...1.2		
Degree of contamination (μ m)		25 (q <sub>v</sub> < 5L/min) 10 (q <sub>v</sub> < 0.5L/min)						
Weight (Kg)		Size10				Size16		
		5.6				11.3		

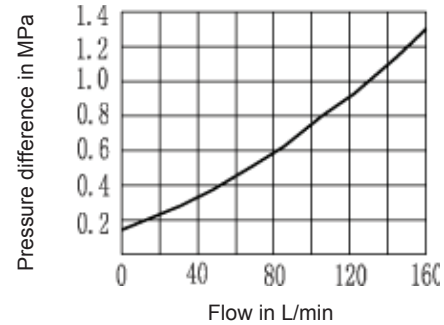
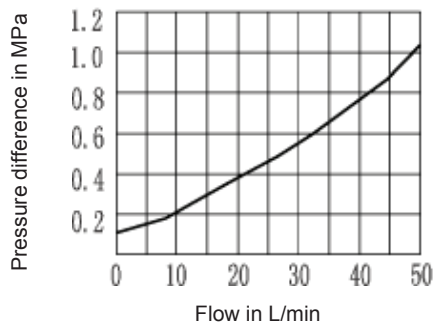
**Characteristic curves: 2-way flow control valve** (measured at v = 41 mm²/s and t = 50°C)



**Characteristic curves: Rectifier sandwich plate** (measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $t = 50^\circ\text{C}$ )

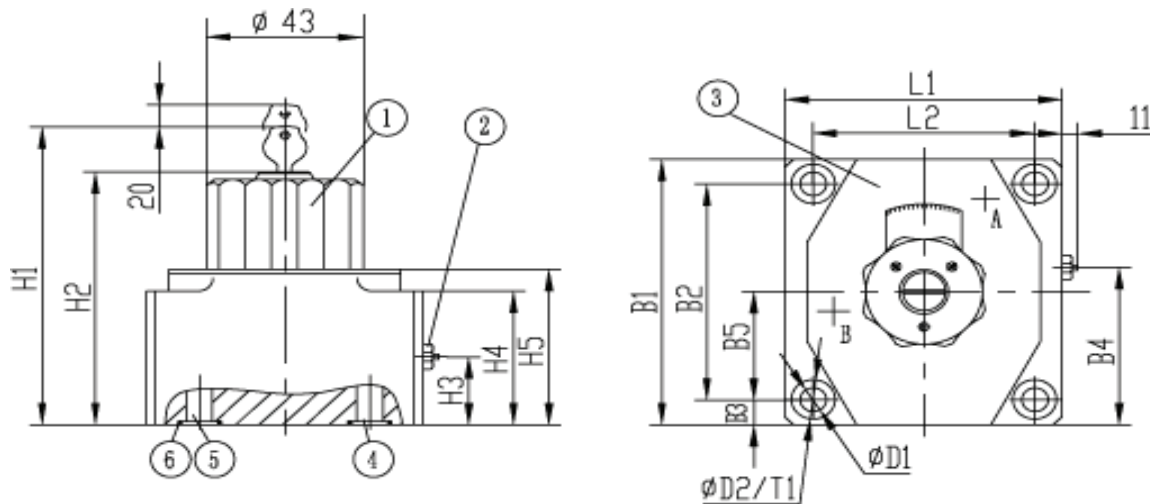
Pressure difference  $\Delta p$  is the same for both directions of flow

Flow  $q_v$  from A  $\rightarrow$  B (B  $\rightarrow$  A)



**Unit dimensions: 2-way flow control valve type 2FRM**

**(Dimensions in mm)**



1. Adjustment element, lockable rotary knob (may be locked in any position) Turning range  $300^\circ = 10$  scale divisions

$M_A = 0.7 \text{ Nm}$

2. Pressure compensator stroke limiter, optional

3. Nameplate

4. Input "A"

5. Output "B"

6. O-ring 18.66 x 3.53 (size 10)

O-ring 26 x 3 (size 16)

Subplates for: see page 69

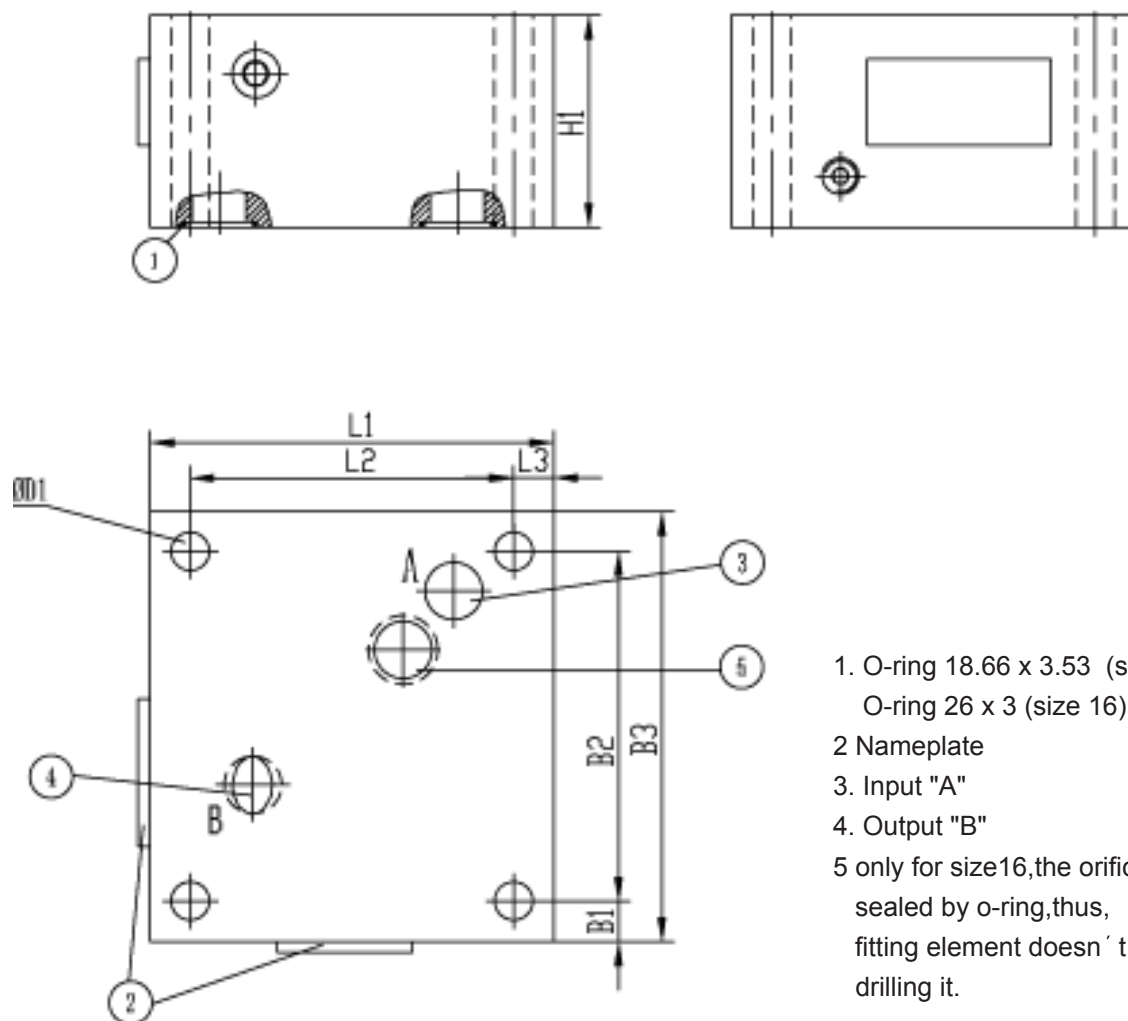
Size 10: G279/01 (G1/2") G279/02 (M22X1.5)

G280/01 (G3/4") G280/02 (M27X1.5)

Size 16: G281/01 (G1") G281/02 (M33X2)

G282/01 (G1 1/4") G282/02 (M42X1.5)

Size	B1	B2	B3	B4	B5	D1	D2	H1
10	101.5	82.5	9.5	68	35.5	9	15	125
16	123.5	101.5	11.0	81.5	41.5	11	18	147
Size	H2	H3	H4	H5	L1	L2	T1	
10	95	26	51	60	95	76	13	
16	117	34	72	82	123.5	101.5	12	



Valve fixing screws for:	Size10	4-M8x50-10.9 (GB/T70.1-2000)
	Size16	4-M8x80-10.9 (GB/T70.1-2000)
Valve fixing screws for inserting a rectifier sandwich plate between the flow control valve and subplate have to be ordered separately.		M8x100-10.9 (GB/T70.1-2000)
	Size10	4 fixing screws
	Size16	4 fixing screws M10x160-10.9 (GB/T70.1-2000)

Size	B1	B2	B3	$\phi$ D1	H1	L1	L2	L3
10	9.5	82.5	101.5	9	50	95	76	9.5
16	11	101.5	123.5	11	85	123.5	101.5	11

## Notice

1. The fluid must be filtered. Minimum filter fineness is 20  $\mu\text{m}$ .
2. The tank must be sealing up and an air filter must be installed on air entrance.
3. Products without subplate when leaving factory, if need them, please ordering specially.
4. Valve fixing screws must be high intensity level (class 10.9). Please select and use them according to the parameter listed in the sample book.
5. Roughness of surface linked with the valve is required to  $\frac{0.8}{\sqrt{\text{mm}}}$ .
6. Surface finish of mating piece is required to 0.01/100mm.

## **ANNOTATIONS :**

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