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

Features:

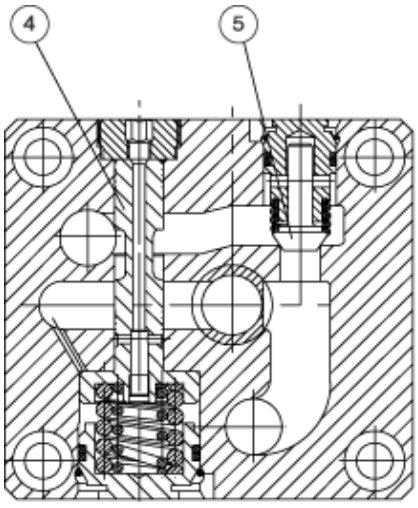
- Porting pattern to DIN 24 340, from A,ISO 4401 and CETOP-RP 121H
- Pressure compensator stroke limiter, optional
- Mechanical operation
- Start-up jump reduction
- Flow control in both directions using a rectifier sandwich plate

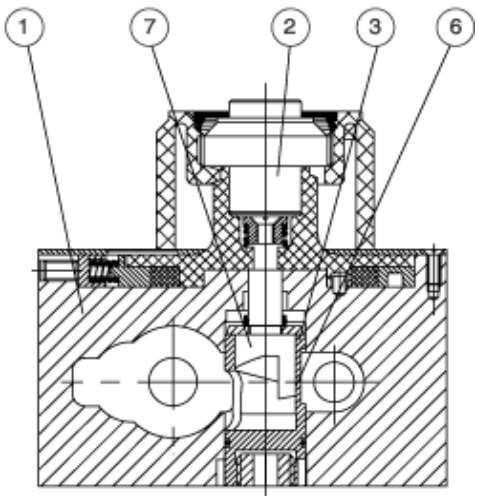
Functional, section

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).

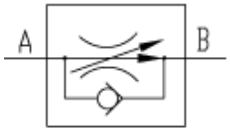
The flow from channel A to channel B is throttle at the orifice (6).In order to maintain the flow across the orifice constant, a pressure compensator is connected upstream of the orifice (6). The flow is maintained largely independent of temperature due to the orifice design.Free return flow from channel 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.



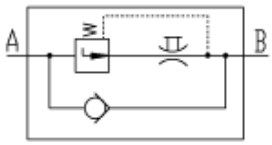


Symbols: 2-way flow control valve

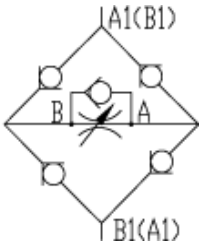
Simplified



Detailed



Rectifier sandwich plate



Ordering code: 2-way flow control valve

2FRM		-20	B	/			*

Size10 =10
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 to 5L/min =5L to10L/min =10L to16L/min =16L to25L/min =25L to35L/min =35L to50L/min =50L	Flow range A → B
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= Without pressure compensator stroke limiter
B = With pressure compensator stroke limiter

No code = Mineral oil
V = Phospate ester

Further details in clear text

Ordering code: Rectifier sandwich plate

Z4S		-13	B	/		*

Size 10 = 10
Size 16 = 16

Series 10 to 19(10 to 19: unchanged installation and connection dimensions) = 13

Technology of Beijing Huade Hydraulic =B

No code= Without pressure compensator stroke limiter
B = With pressure compensator stroke limiter

Further details in clear text

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

General

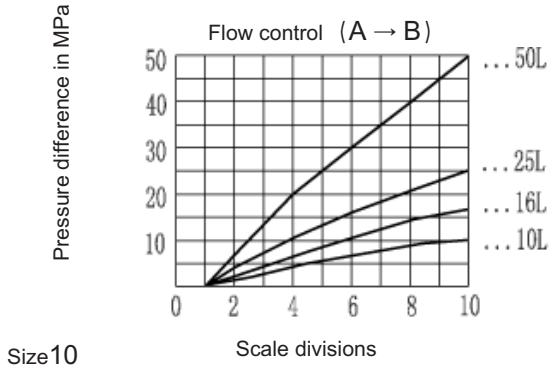
Hydraulic fluid	Mineral oil(for NBR seal) or Phospate ester (for FPM seal)
Temperature range (℃)	-30 to +80
Viscosity range (mm^2/s)	10 to 800

Rectifier sandwich plate

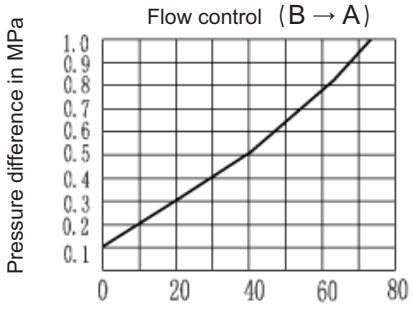
Flow, max (L/min)	Size 10	Size 16
	up to 50	up to 160
Operating pressure (MPa)	up to 31.5	
Cracking pressure (MPa)	0.15	
Weight (Kg)	Size10	Size16
	3.2	9.3

Flow q_V max (L/min)	Size10				Size16		
	10	16	25	50	60	100	160
Δp with free return flow B → A, q_V-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℃)	± 2% (q_v max)						
Flow control: pressure-stable (up to Δp = 31.5 MPa)	± 2% (q_v max)				± 5% (q_v 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 (μm)	25 (q_v < 5L/min) 10 (q_v < 0.5L/min)						
Weight (Kg)	Size10				Size16		
	5.6				11.3		

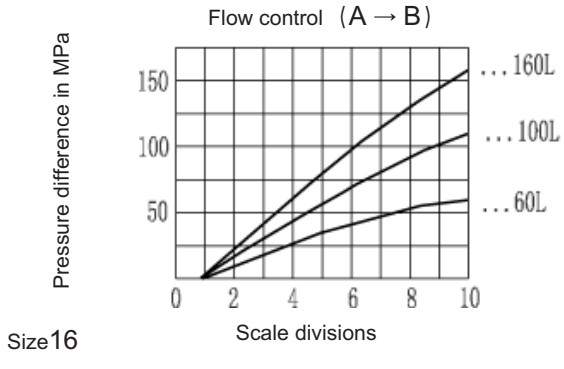
Characteristic curves: 2-way flow control valve (measured at v = 41 mm^2/s and t = 50℃)



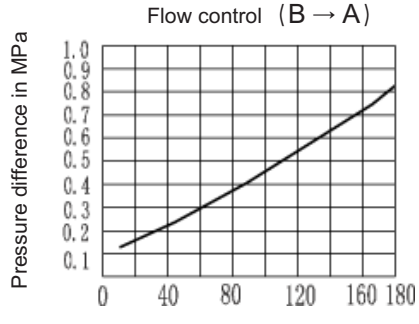
Size10



Size10



Size16

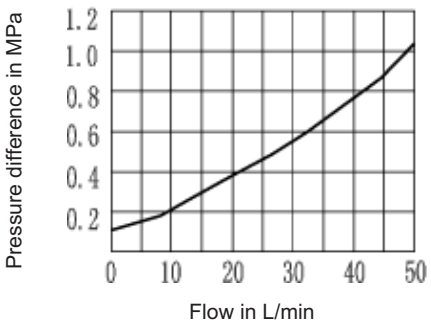


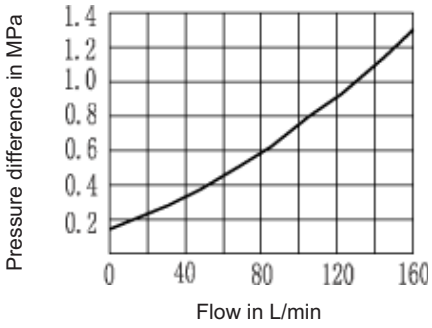
Size16

Characteristic curves: Rectifier sandwich plate (measured at v = 41 mm²/s and t = 50℃)

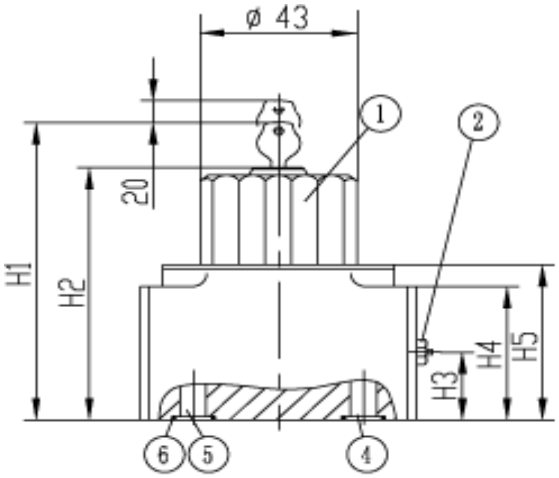
Pressure difference △p is the same for both directions of flow

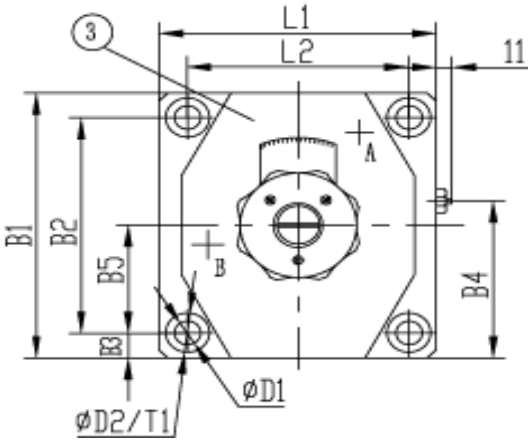
Flow q_V from A → B (B → A)





Unit dimensions: 2-way flow control valve type 2FRM **(Dimensions in mm)**





1.Adjustment element,lockable rotary knob(may be locked in any positionTurning range 300° = 10 scale divisions
M A =0.7 Nm
2.Pressure compensator stroke limiter, optional
3.Nameplate
4. Input "A"
5. Output "B"

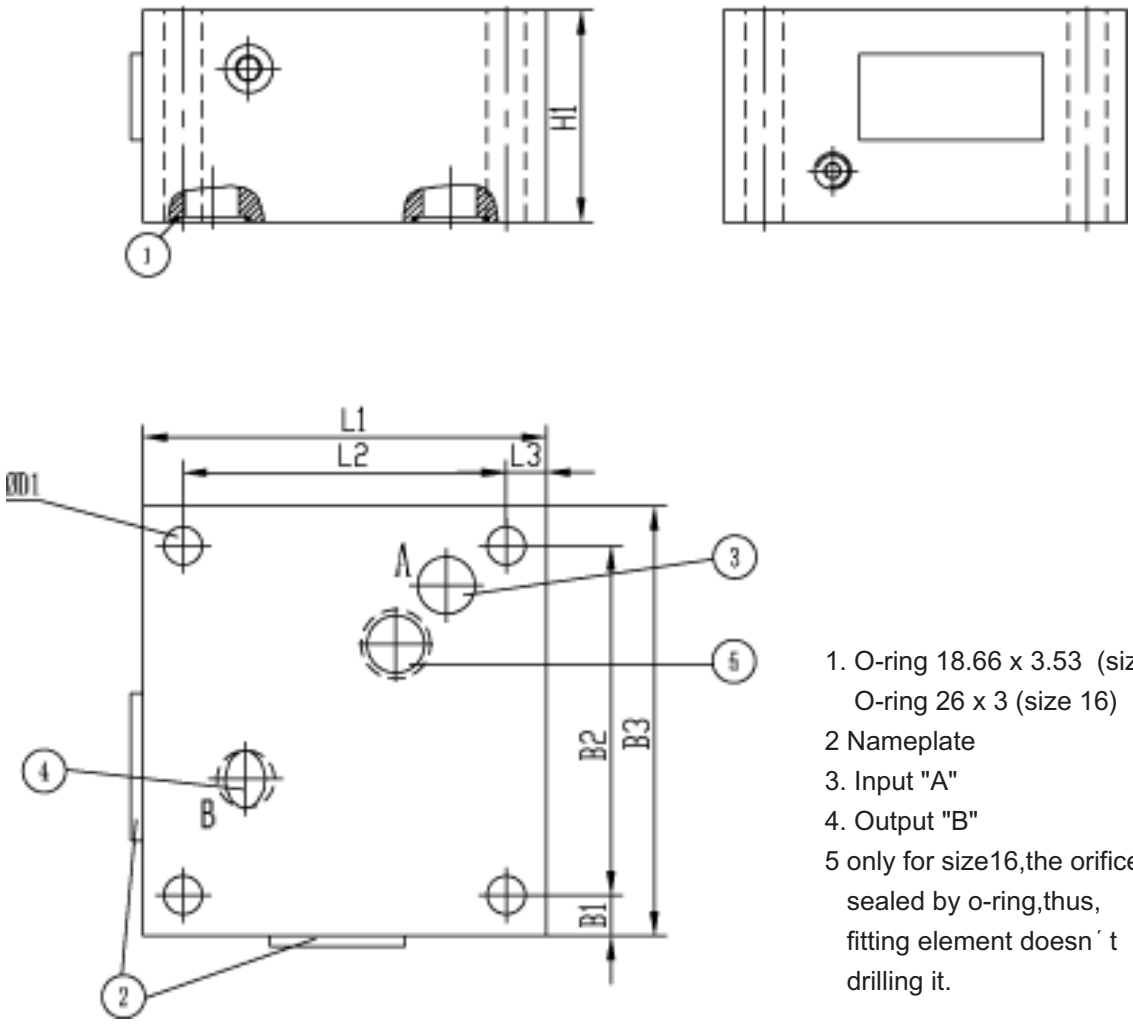
6. O-ring 18.66 x 3.53 (size 10)
O-ring 26 x 3 (size 16)

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 (G11/4") 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	

Unit dimensions: Rectifier sandwich plate **(Dimensions in mm)**



1. O-ring 18.66 x 3.53 (size 10)
   O-ring 26 x 3 (size 16)
2 Nameplate
3. Input "A"
4. Output "B"
5 only for size16,the orifice is sealed by o-ring,thus, fitting element doesn´t drilling it.

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	ϕ 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 μm.**
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** 

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6. **Surface finish of mating piece is required to 0.01/100mm.**