

# 手动换向阀 Manual Operated Directional Control Valve



## 功能说明 Function Instruction

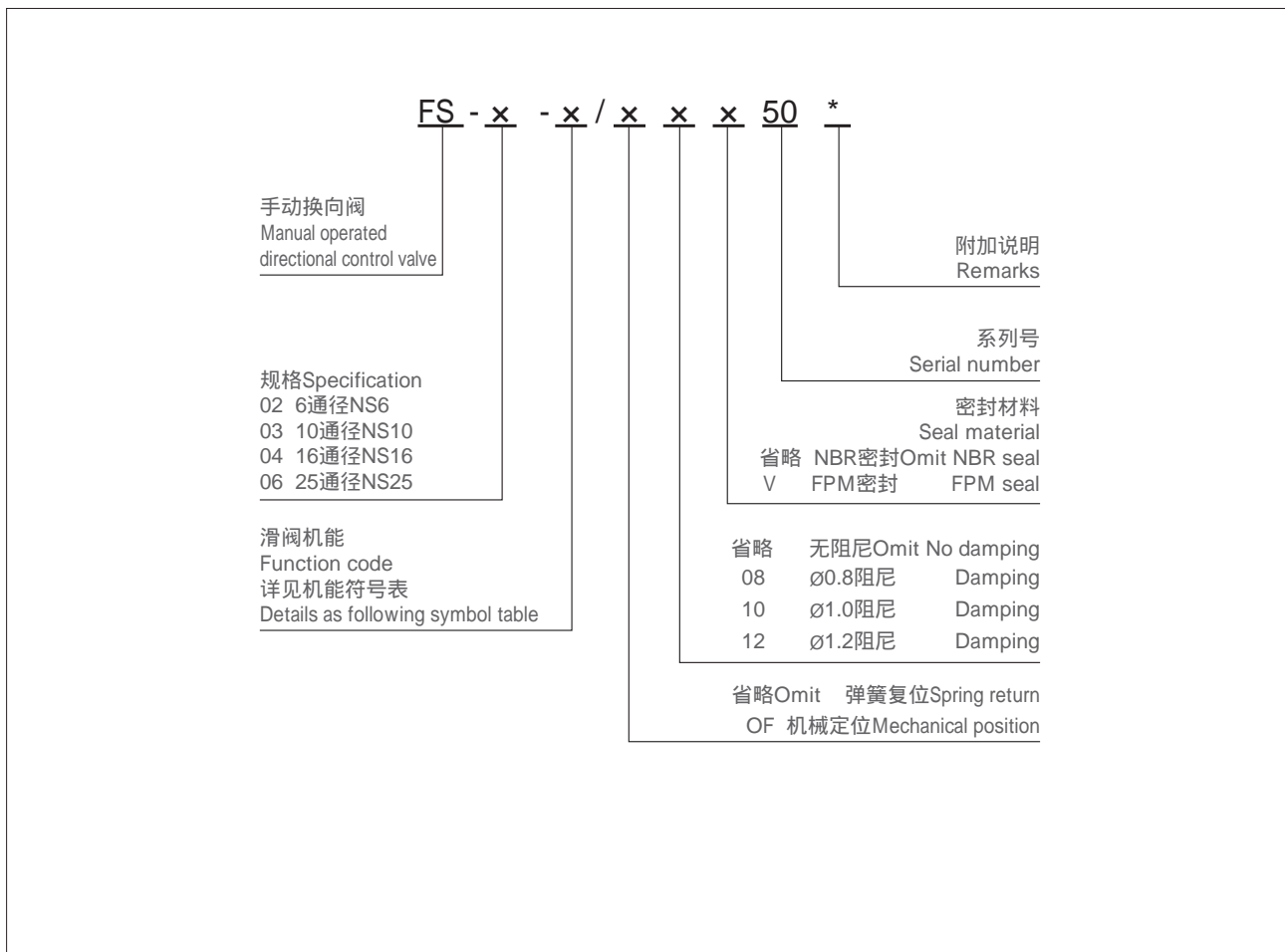
手动换向阀是依靠手动杠杆的作用力驱动阀芯运动来实现油路通断或切换的方向控制阀。

手动换向阀在液压系统中所起的作用与电磁换向阀相同。操作简便，工作可靠，又无需电力。

Manual operated directional control valve is a directional control valve, by operating the handle, the spool moves in the axial direction to achieve oil loop switching.

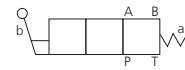
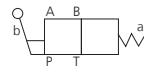
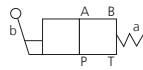
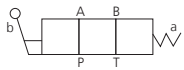
Manual operated directional control valve and electrical operated directional control valve are played the same role in the hydraulic system. Easy operation, reliable work, and without the need for electricity.

## 型号说明 Model description

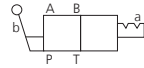
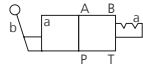
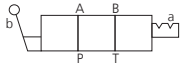


# 机能符号 Code symbol

## 弹簧复位Spring return



## 机械定位Mechanical position



3C2		2B2B		2B2BL	
3C3		2B3B		2B3BL	
3C4		2B4B		2B4BL	
3C5		2B5B		2B5BL	
3C6		2B6B		2B6BL	
3C7		2B7B		2B7BL	
3C9		2B9B		2B9BL	
3C10		2B10B		2B10BL	
3C11		2B11B		2B11BL	
3C12		2B12B		2B12BL	
3C25		2B25B		2B25BL	
3C29		2B29B		2B29BL	

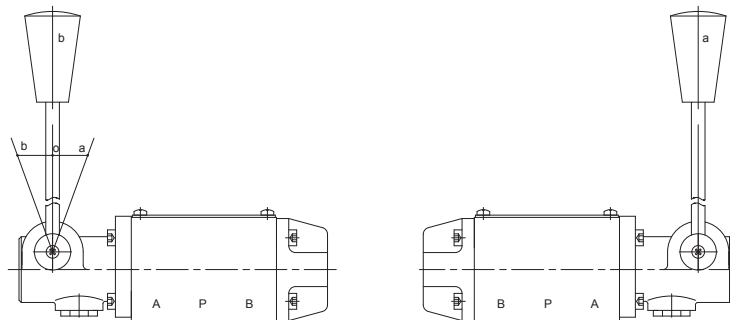
2B2	
2B3	
2B8	



2B2L	
2B3L	
2B8L	

## 手柄位置与油液流通方向关系

The relationship between the location of the handle and the direction of the oil flow.



1. 手柄名称如图所示
2. 手柄到b位置时P B A T
3. 手柄到a位置时P A B T
4. 02/03:3C5,3C6油液通状况与上述方向相反  
04/06:3C6油液通状况与上述方向相反
5. 03/04/06手动阀的手柄所在位置, 根据机能不同, 或在A油口侧或在B油口侧, 详见外形图。

1. The name of the handle as shown in the picture
2. When the handle is on position b P B A T
3. When the handle is on position a P A B T
4. Oil flow in the opposite direction with the above-mentioned movement.  
Oil flow in the opposite direction with the above-mentioned movement.
5. The location of the handle is different according to the function. It may be at A or B. Details outline.

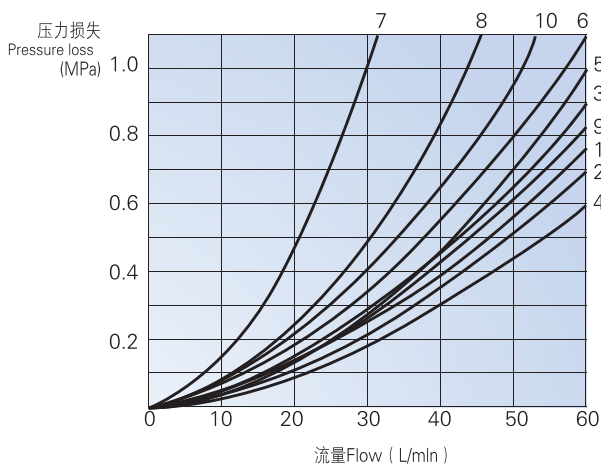
## 技术参数 Technical specification

规格Specification	02	03	04	06
工作压力 ( MPa ) Maximum working pressure	油口PAB Oil port PAB	31.5		
	油口T Oil port T	10		
最大流量Maximum flow ( L/min )	60	100	300	450
工作介质Working fluid	矿物质液压油、磷酸酯Mineral oil, phosphate-ester			
介质温度范围Fluid temp ( °C )	-20 ~ 70			
介质粘度范围Viscosity ( mm <sup>2</sup> /s )	2.8 ~ 380			
重量Weight ( Kg )	约1.4	约3.3	约8	约17

### 02规格 D03 Specification

#### 特性曲线Performance curve

(在  $v=41\text{mm}^2/\text{s}$  和  $t=50^\circ\text{C}$  下测得) Test under  $v=41\text{mm}^2/\text{s}$  and  $t=50^\circ\text{C}$



滑阀机能 Function code	流向Direction			
	P→A	P→B	A→T	B→T
2B8	3	3	-	-
2B8L	3	3	-	-
2B3	1	1	3	1
2B2	5	5	3	3
3C2	3	3	1	1
3C5	1	3	1	1
3C6	6	6	9	9
3C3	2	4	2	2
3C4	1	1	2	1
3C12	3	3	4	9
3C9	2	4	3	3
3C25	3	1	1	1
3C29	5	5	4	-
3C10	3	3	9	4
3C7	1	2	1	1
2B2L	5	5	3	3

7. 阀芯型式“3C29”处于控制位置A至B

Spool type “3C29” located in the control position A to B

8. 阀芯型式“3C6”处于中位置P至T

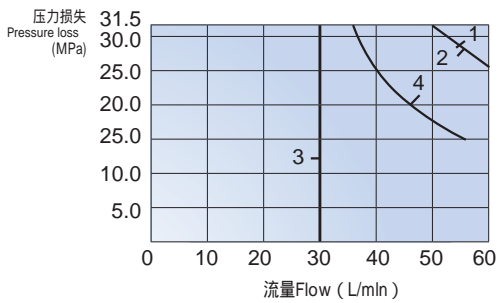
Spool symbol 3C6 in the median position P ~ T

#### 工作极限Working limit

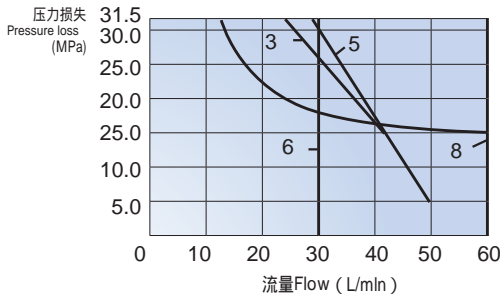
由于堵塞，阀的切换功能与过滤有关。为了获得所示最大流量，推荐采用20um的全流量过滤。作用在阀上各种力也影响流量特性。对于四通阀，所示流量数据是按正常使用二个流动方向下得到的（即P至A,同时B至T回油）见表。如果只需一个方向流动，例如将四通阀的A口或B口堵死作为三通阀用时，则在严重情况下其最大流量将大大下降。

As the plug, the switch function of the valve can be related with the filter. In order to reach the largest flow as shown, we suggest to use full-flow filter 20um. Every force on the valve can also affect the flow. With regard to four-way valve, the normal flow data as shown is get from the regular use of two directions of the flow (e.g.P to A,and at the same time oil return from B to T ). See Tables. If only one flow direction is needed, for example: When four port valve which is closed up port A or port B, used as three-way valve, the Maximum flow may be very small in the serious condition.

不带定位器 Without positioner



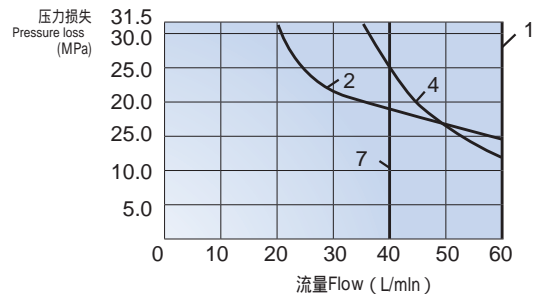
带定位器 With positioner



4. 阀芯型式“3C6”处于中位置P至T  
7. 阀芯型式“3C29”处于控制位置A至B

特性曲线 Performance curve	滑阀机能	特性曲线 Performance curve	滑阀机能
Without positioner 不带定位器	1	With positioner 带定位器	1
	2		2
	3		3
	4		4
	3C2 3C3 2B3 2B2 3C9 3C10 3C6 3C4 3C12 3C29 2B2L		3C9 3C3 2B3 2B2 2B2L 3C2 3C4 3C12 3C10 2B8 2B8L
	2B8 2B8L		3C6
	3C7		3C5
	3C5 3C25		3C7
			3C25
			3C29

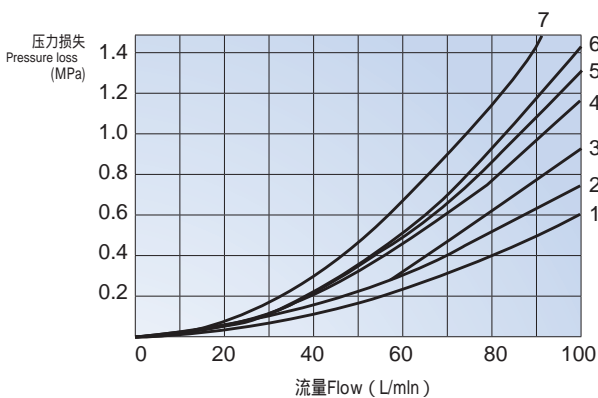
带定位器 With positioner



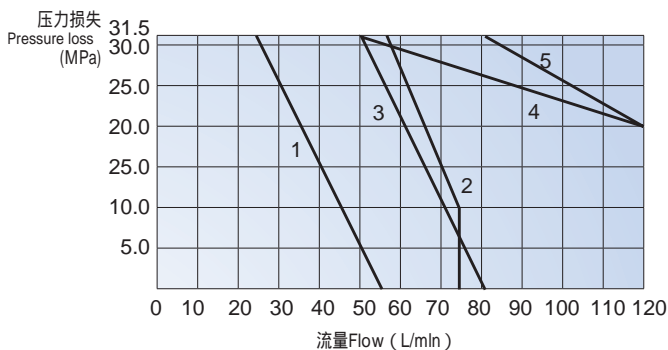
4. Spool symbol 3C6 in the shifting position P ~ T  
7. Spool symbol 3C29 in the median position A ~ B

## 03规格 D03 Specification

### 特性曲线 Performance curve



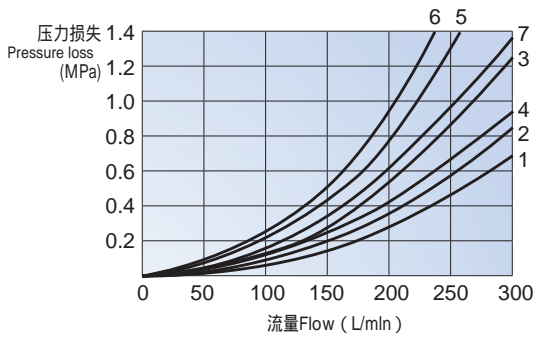
### 工作极限 Working limit



6. 阀芯型式“3C6”处于中位置P至T  
Spool symbol 3C6 in the median position P ~ T

滑阀机能 Function code	流向 Direction			
	P A	P B	A T	B T
2B8	2	2	-	-
2B8L	2	2	-	-
2B3	2	2	3	3
2B2	2	2	3	3
3C2	2	2	4	4
3C5	2	3	3	5
3C6	3	3	4	6
3C3	1	1	4	5
3C4	2	2	3	3
3C12	2	2	3	5
3C9	1	1	5	5
3C25	3	2	5	3
3C29	2	4	3	-
3C10	2	2	3	5
3C7	2	2	4	4
2B2L	2	2	5	3

特性曲线 performance curve	滑阀机能 Function code
1	2B8 2B8L
2	3C3
3	3C5 3C6 3C25 3C29
4	3C4 3C12 3C10
5	2B2 2B3 3C2 3C9 3C7 2B2L



### 工作极限 Working limit

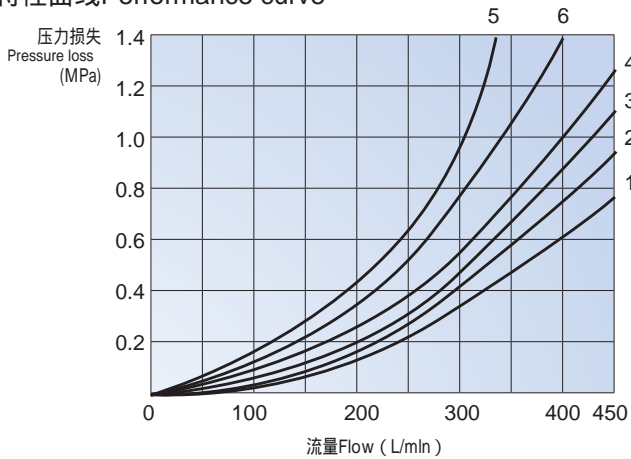
二位阀 2 way valve : 不带定位器 Without positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
2B3	300	300	300	260	220
2B2	300	300	210	190	160
三位阀 3 way valve : 不带定位器 Without positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
3C2 3C3 3C4 3C12 3C9 3C29 3C10	300	300	300	300	300
3C5 3C25	300	300	210	190	170
3C6	300	300	220	210	180
3C7	300	260	200	180	170

滑阀机能 Function code	流向 Direction				
	P A	P B	A T	B T	
3C2 2B2 2B2L	1	1	1	3	
3C5	2	2	3	3	
3C6	5	1	3	7	
3C3 2B3	2	2	3	3	
3C7	2	2	3	3	
3C4 3C12	1	1	3	3	
3C29	2	2	4	-	
3C10	2	2	4	-	
3C	1	1	4	7	

二位阀 2 way valve : 带定位器 With positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
2B2 2B3	300	300	300	260	220
三位阀 3 way valve : 带定位器 With positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
3C2 3C3 3C4 3C12 3C9 3C29 3C10	300	300	300	300	300
3C5 3C25	300	300	280	230	230
3C6	300	300	230	230	230
3C7	300	300	250	230	230

## 06规格 D08 Specification

### 特性曲线 Performance curve



### 工作极限 Working limit

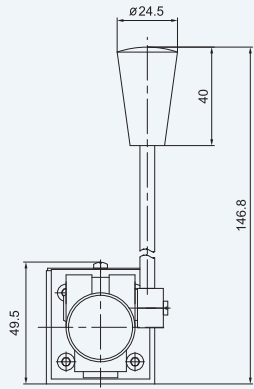
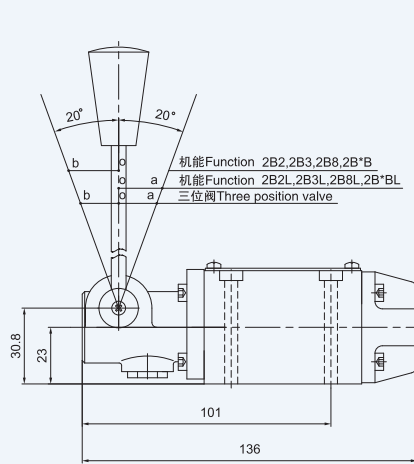
二位阀 2 way valve : 不带定位器 Without positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
2B3	450	300	250	200	180
2B2	350	300	275	250	200
三位阀 3 way valve : 不带定位器 Without positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
3C2 3C4 3C12 3C9 3C29 3C10	450	450	450	450	450
3C5	450	250	200	135	110
3C6	450	330	290	230	180
3C3	450	450	400	400	350
3C25	450	310	240	215	150
3C7	450	310	280	270	200

阀芯型式 Spool type	流向 Direction				
	P A	P B	A T	B T	
3C2	2	2	1	4	
3C5	1	2	1	2	
3C6	2	2	2	4	
3C3	2	2	1	3	
3C4	2	2	1	3	
3C12	2	2	1	2	
3C9	2	2	1	4	
3C25	2	2	1	4	
3C29	1	2	1	-	
3C10	2	2	1	4	
3C7	2	2	1	4	

4. 阀芯型式“3C12”处于A至T
6. 阀芯型式“3C10”处于B至T
4. Spool symbol 3C12 in the median position A ~ T
6. Spool symbol 3C10 in the median position B ~ T

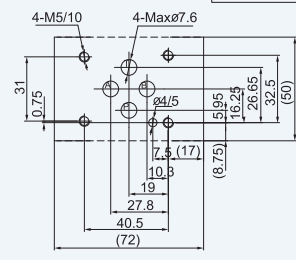
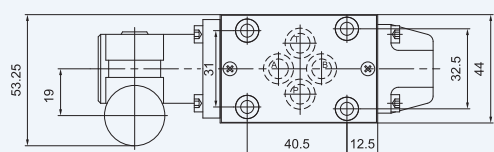
二位阀 2 way valve : 带定位器 With positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
C, D, K, Z	450	450	450	450	450
三位阀 3 way valve : 带定位器 With positioner					
流量 Flow (L/min)	工作压力 Working pressure (Mpa)				
滑阀机能 Function code	7	14	21	28	35
3C2 3C5 3C6 3C3 3C4 3C10 3C9 3C25 3C29 3C12	450	450	450	450	450
3C7	450	450	400	350	300

## 外型尺寸02 D03 External dimensions

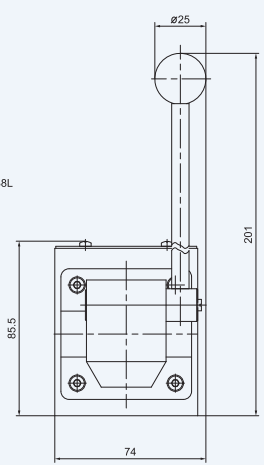
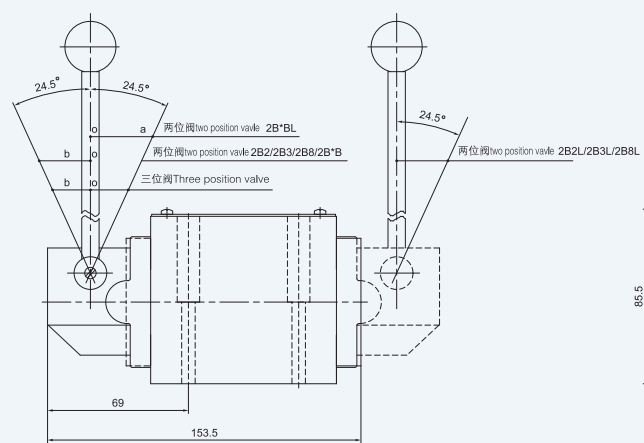


底板油口位置尺寸  
Size of subplate oil port

规格 Specification	数量 Amount	拧紧扭矩 Tighten torque moment
M5X50-10.9	4	9Nm

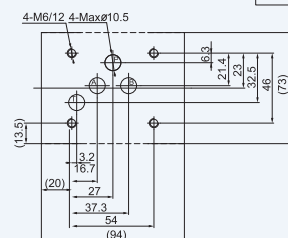
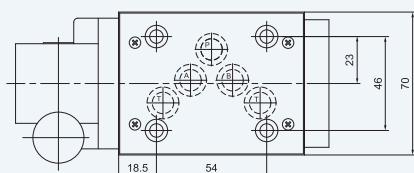


## 外型尺寸03 D05 External dimensions

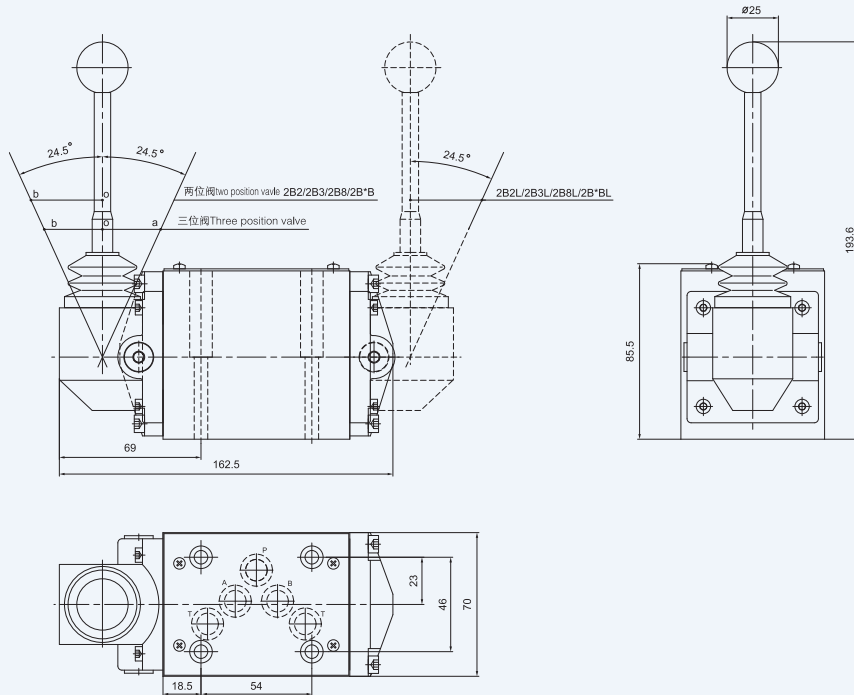


底板油口位置尺寸  
Size of subplate oil port

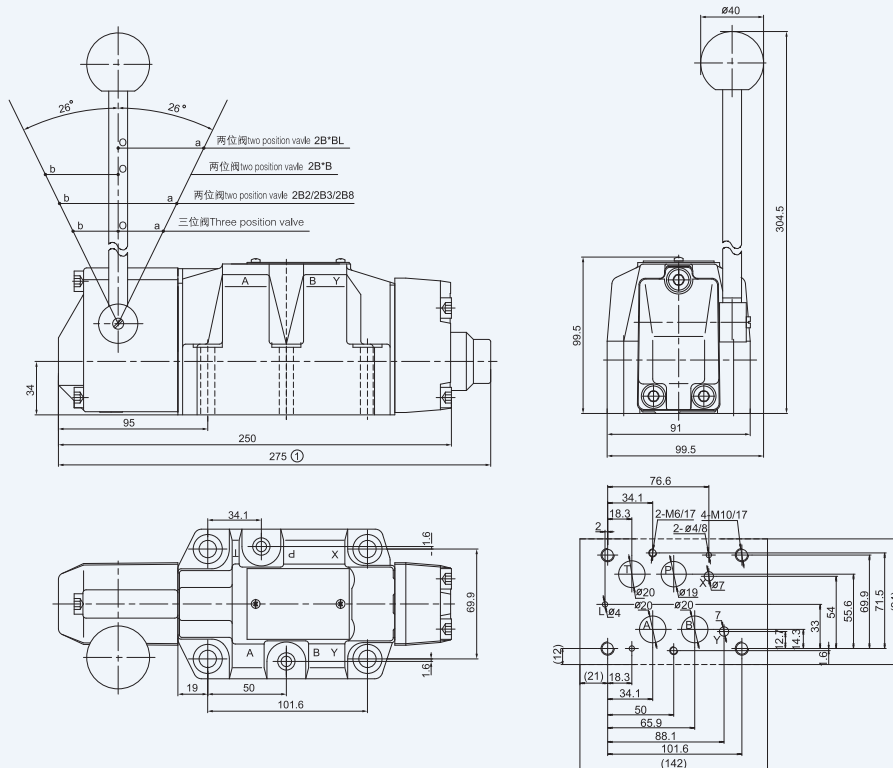
规格 Specification	数量 Amount	拧紧扭矩 Tighten torque moment
M6X50-10.9	4	15Nm



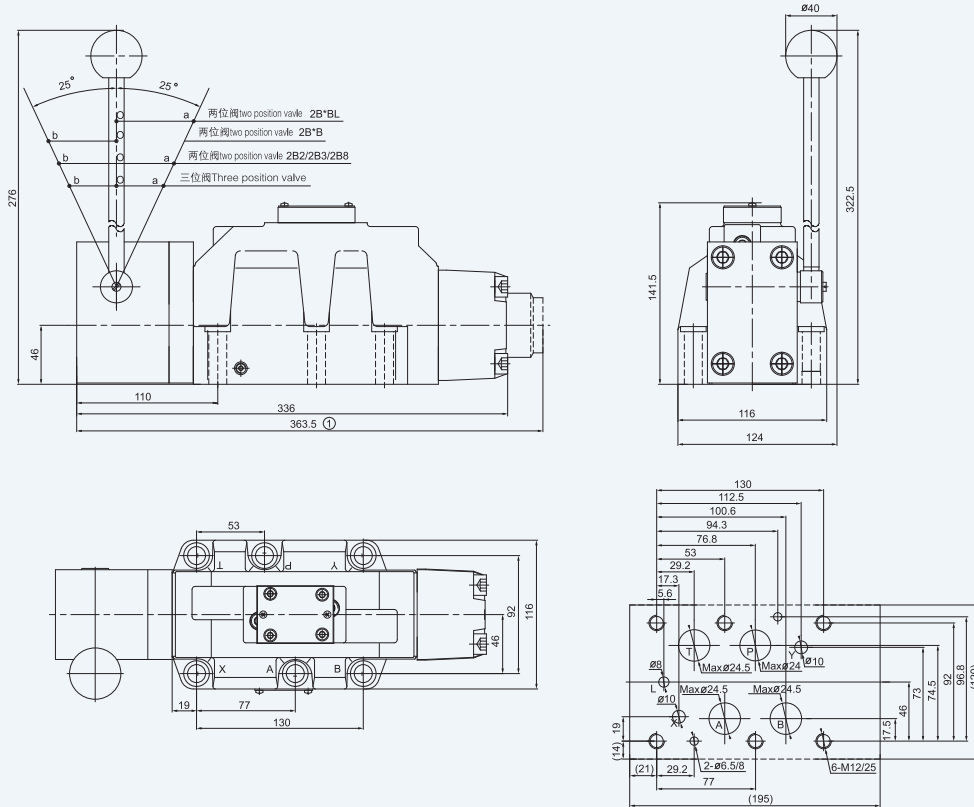
## 外型尺寸03/OF 05/OF External dimensions



## 外型尺寸04 D07 External dimensions



## 外型尺寸06 D08 External dimensions



### 说明事项 supplementary explanation

1. 产品可任意安装，优先考虑水平位置。  
When Installing the product, considering horizontal position firstly.
2. 液压系统所用介质必须过滤，过滤精度至少  $20\ \mu\text{m}$ 。  
The medium used in the hydraulic system must be filtered, its accuracy at least  $20\ \mu\text{m}$ .
3. 固定螺钉请按样本中所列参数选用。  
Screw should be according to the parameters in catalogue.
4. 与阀连接的表面，粗糙度要求  $Ra0.8$ ，平面度要求  $0.01/100\text{mm}$ 。  
The surface, connecting with the valve, should be  $Ra0.8$  roughness, and  $0.01/100\text{mm}$  flatness.