Electro–hydraulic Directional Control Valve

Electro–hydraulic directional control valve is a control valve which can use the pressure of the hydraulic circuit to pull the spool and change the hydraulic oil direction.

Electro–hydraulic directional control valve is the combination of the electrical operated directional control valve and the hydraulic operated directional control valve. It uses the electrical operated directional control valve to control the hydraulic operated directional control valve, and change the hydraulic oil direction.

Electro–hydraulic directional control valve and hydraulic operated directional control valve are used mostly in hydraulic systems when electrical operated directional control valve can not afford the flow. It may control the movement of the power elements, or control the direction of the flowing oil.

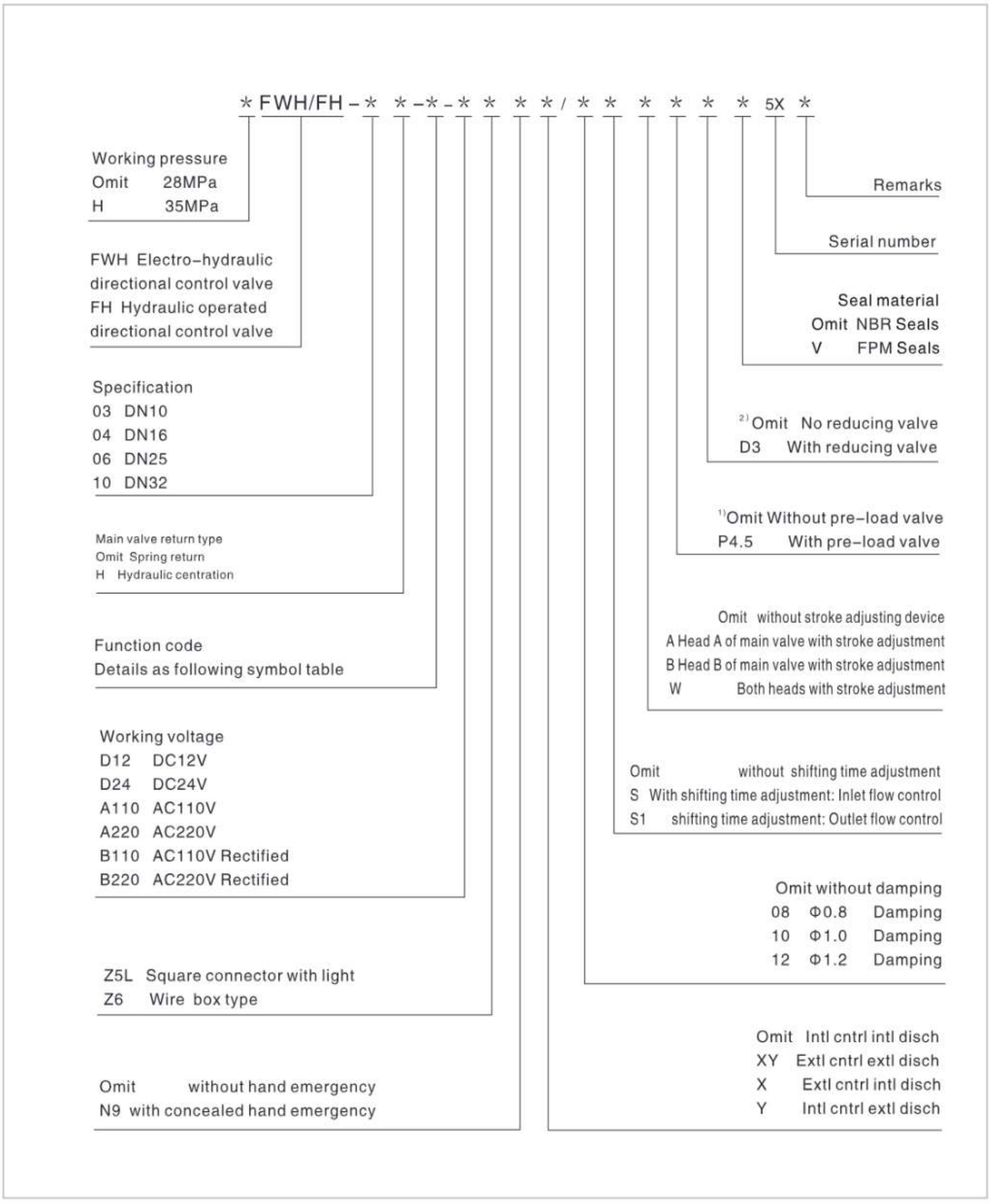
Technical specification

Specification		03		04		06		10	
Model		FWH–03	HFWH–03	FWH–04	HFWH–04	FWH–06	HFWH–06	FWH–16	HFWH–16
Max. Working pressure (MPa)	P、A、B Port	28	35	28	35	28	35	28	35
	T port (internal leakage of control oil)	10		10		10		10	
	Y port (external leakage of control oil)	10		10		10		10	
Minimum control pressure (MPa)		1.0 Spring–Return 4/3 valve 4/2 valve		1.2 Spring–Return 4/3 valve 4/2 valve		1.3 Spring–Return 4/3 valve 4/2 valve		0.8 Spring–Return 4/3 valve 4/2 valve	
Maximum control pressure (MPa)		to25							
Max. Flow (L/min)		160		300		650		1100	
Working fluid		Mineral oil;phosphate–ester							
Fluid temp. (℃)		–20~70							
Viscosity (mm^2/s)		2.8~380							
Cleanliness	The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638.It is suggested that the minimum filter rating should be β 10≥75.								

D.6.1

Electro-hydraulic Directional Control Valve

Model description



Explaination

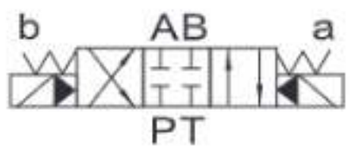
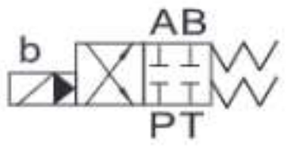
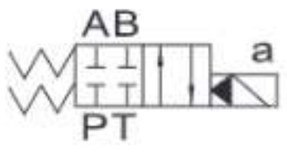
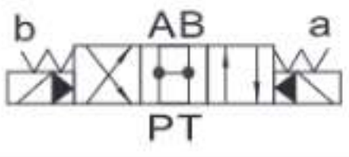
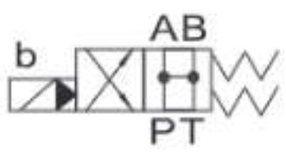
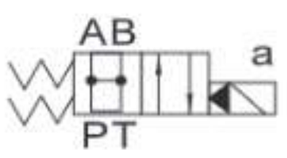
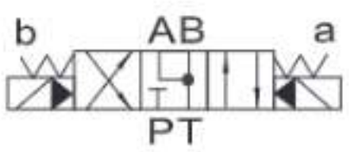
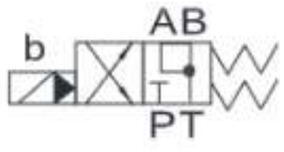
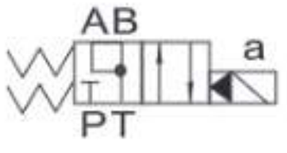
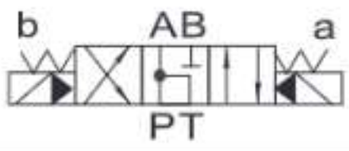
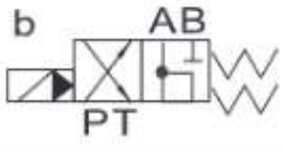
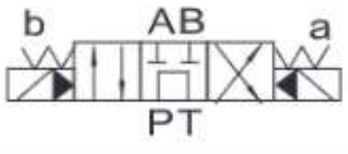
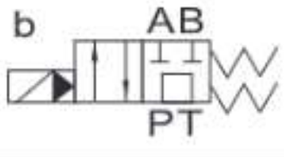
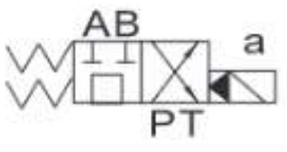
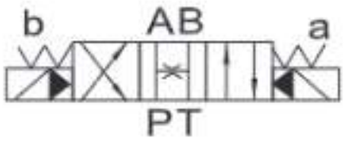
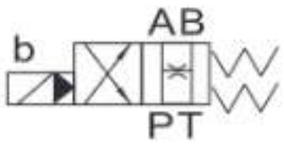
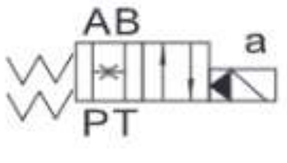
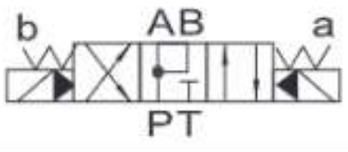
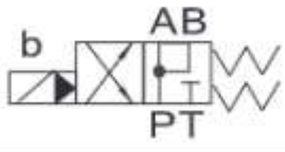
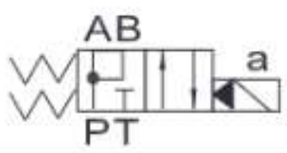
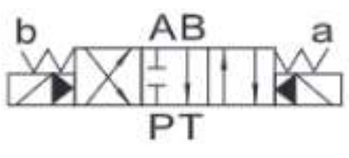
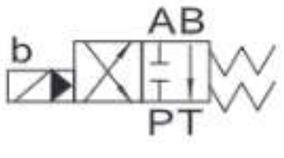
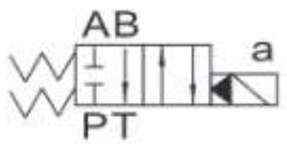
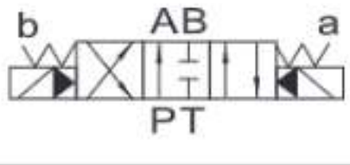
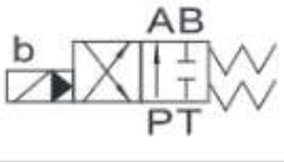
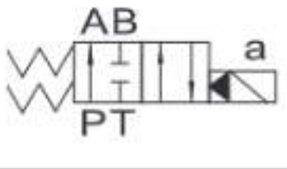
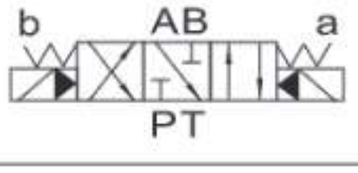
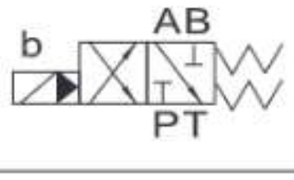
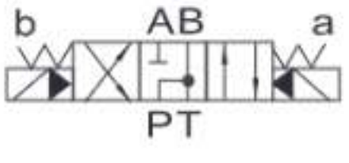
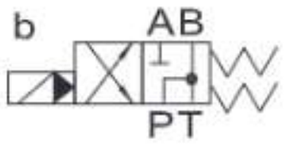
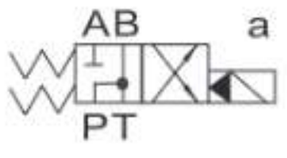
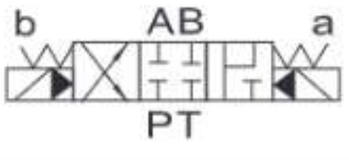
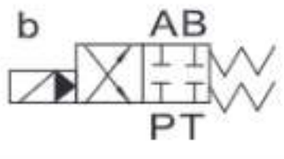
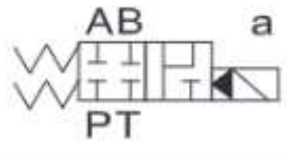
1. For neutral unloaded directional control valve it must be ordered separately.
   There is no model (FWH-03)Electro-hydraulic directional control valve NS10.
2. Only applied when the controlling pressure is higher than 25MPa

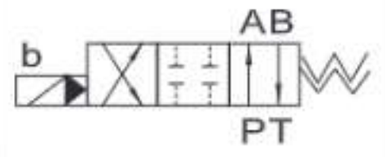
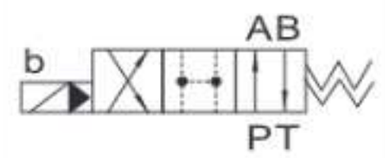
D.6.2

Electro–hydraulic Directional Control Valve

Code symbol

Spring return

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	
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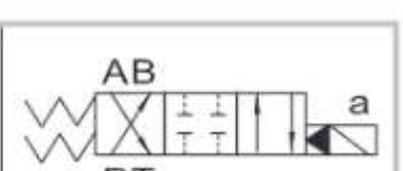
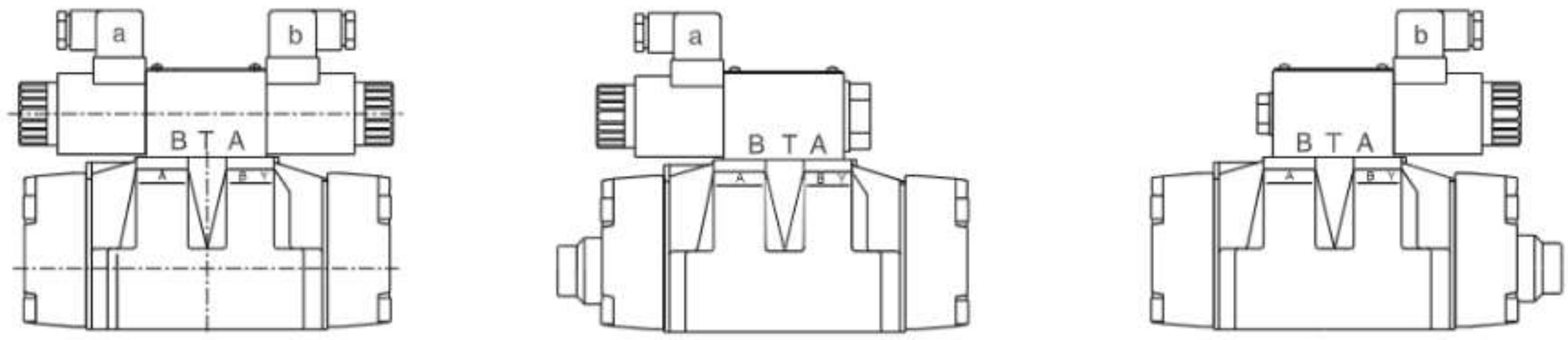
2B2L	
2B3L	
2B8L	

FWH-...	
FWH-... X/...	
FWH-... Y/...	
FWH-... XY/...	

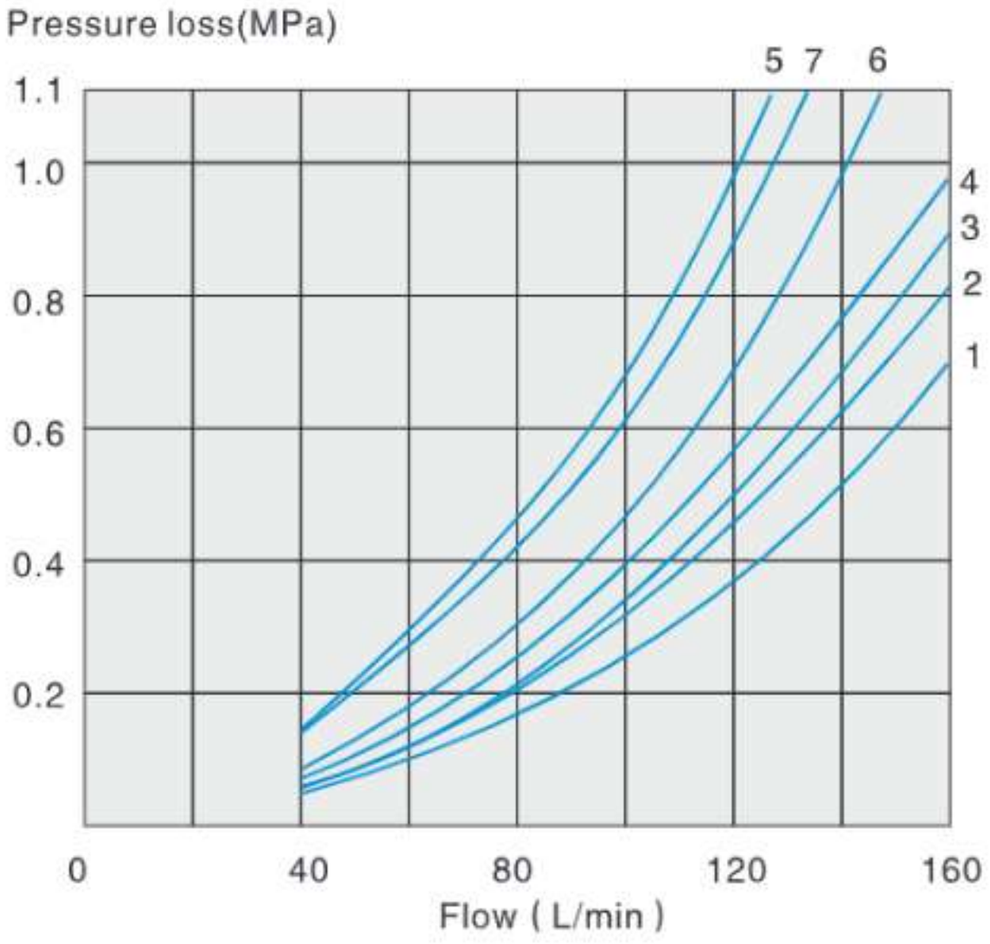
Electro-hydraulic Directional Control Valve

Name of solenoid



1. aWhen movement a, P→A B→T
2. bWhen movement b, P→B A→T
3. 3C6 Oil flow in the opposite direction with the above-mentioned movement.
   Foor 3C29, when solenoid "a" works , P → A,B

03 Specification Performance curve (Measured at υ =41mm²/s and t=50℃)



Function	Switching position			
Symbol	P→A	P→B	A→T	B→T
3C2	1	2	4	5
3C5	1	4	1	1
3C6	4	2	2	6
3C3	4	4	1	4
3C4	1	2	1	3
3C12	2	3	1	4
3C9	4	4	3	4
3C25	4	1	3	4
3C29	2	3	3	5
3C10	3	3	3	4
3C7	2	2	3	5

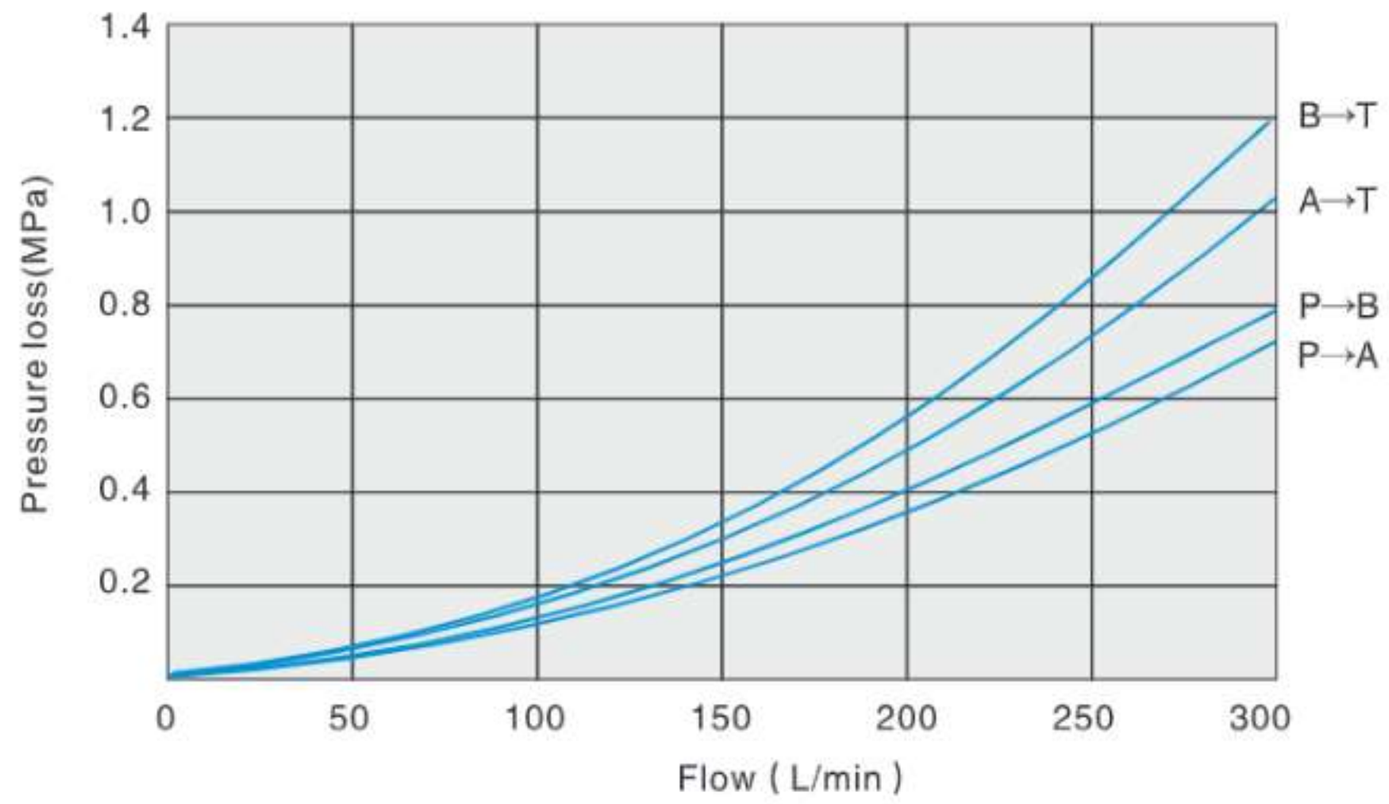
Function	Neutral		
	A→T	B→T	P→T
3C5	3	–	6
3C6	–	–	7
3C3	1	3	5
3C25	–	7	5

Function	Neutral		
	A→T	B→T	P→T
3C12	3	–	–
3C10	–	4	–

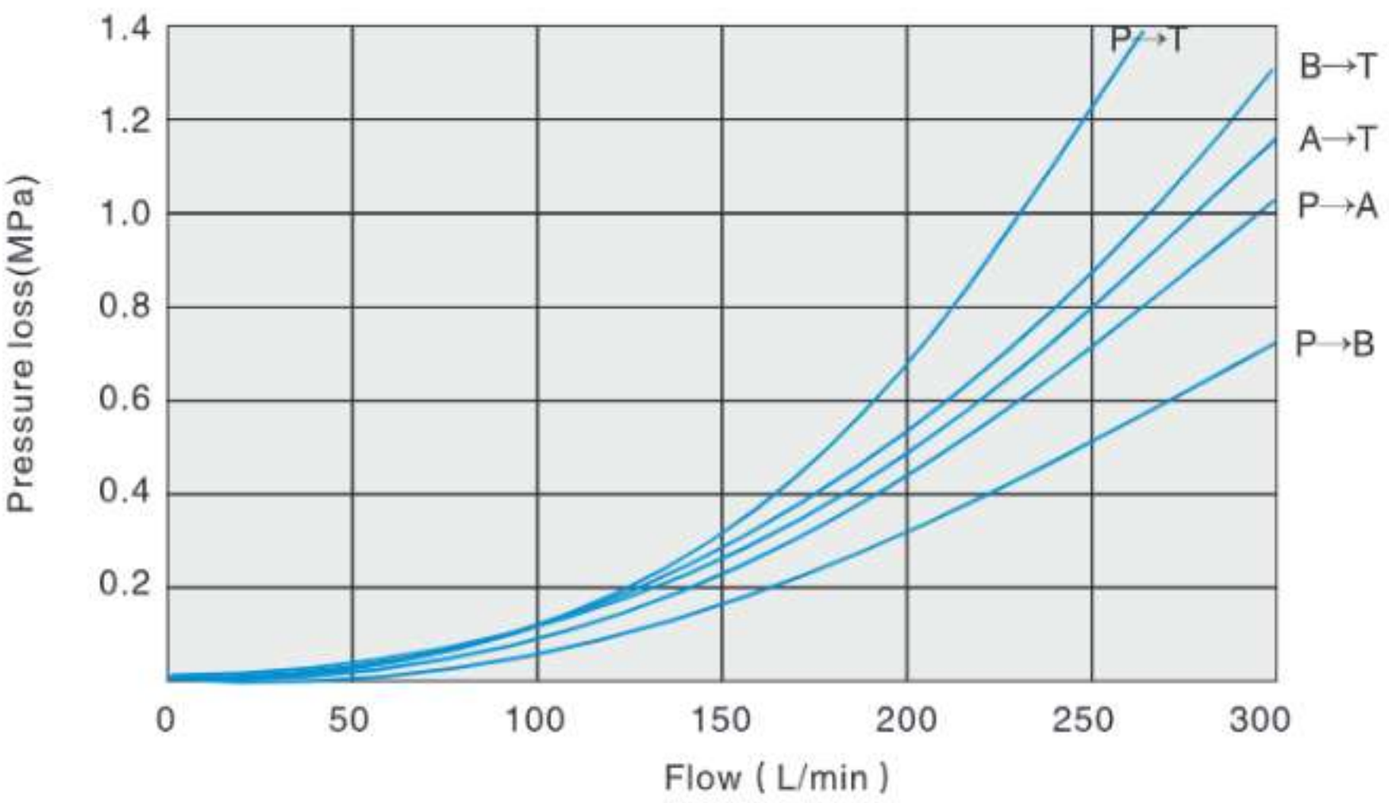
Electro-hydraulic Directional Control Valve

04 Specification Performance curve (Measured at υ =41mm²/s and t=50℃)

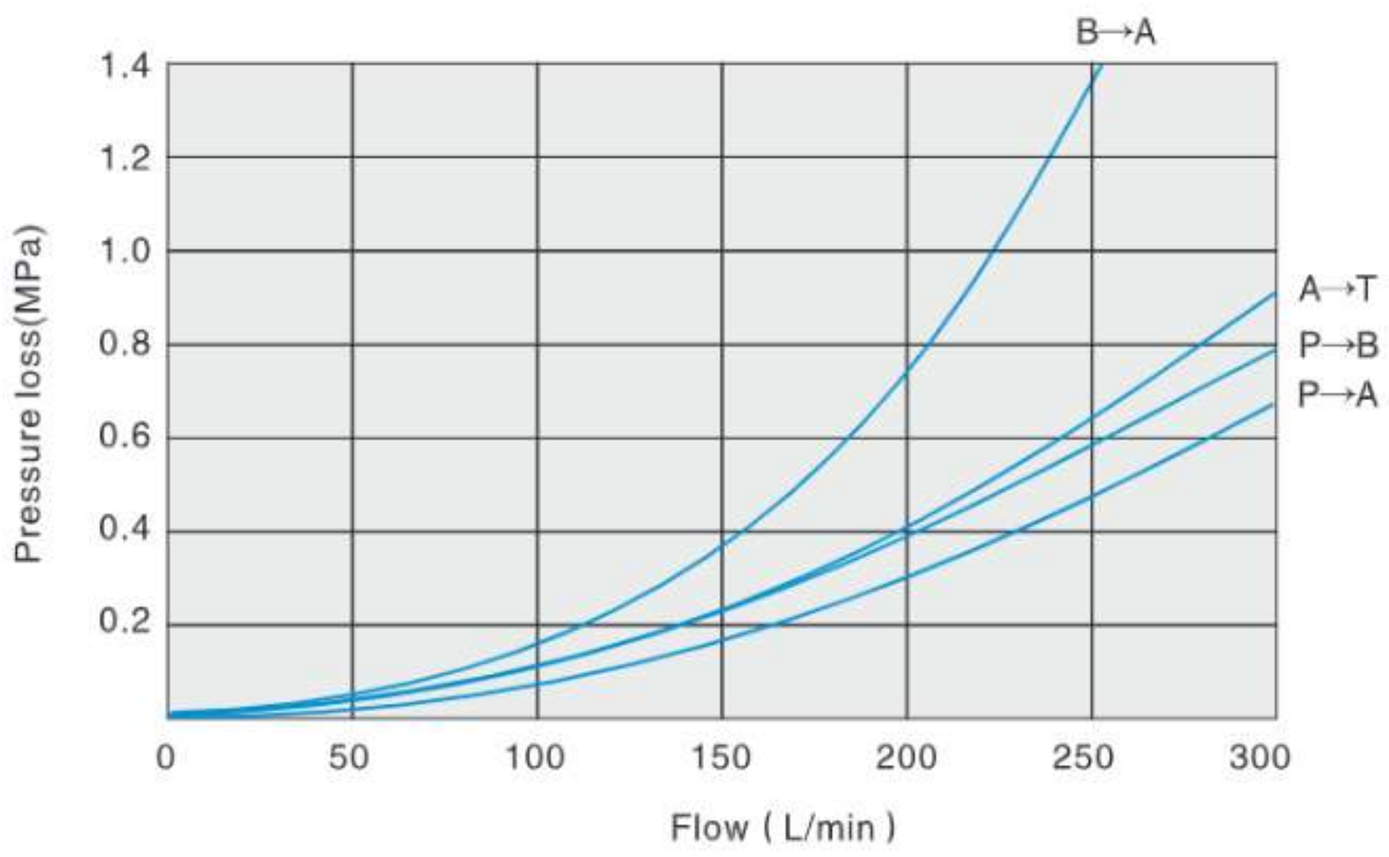
3C2



3C6

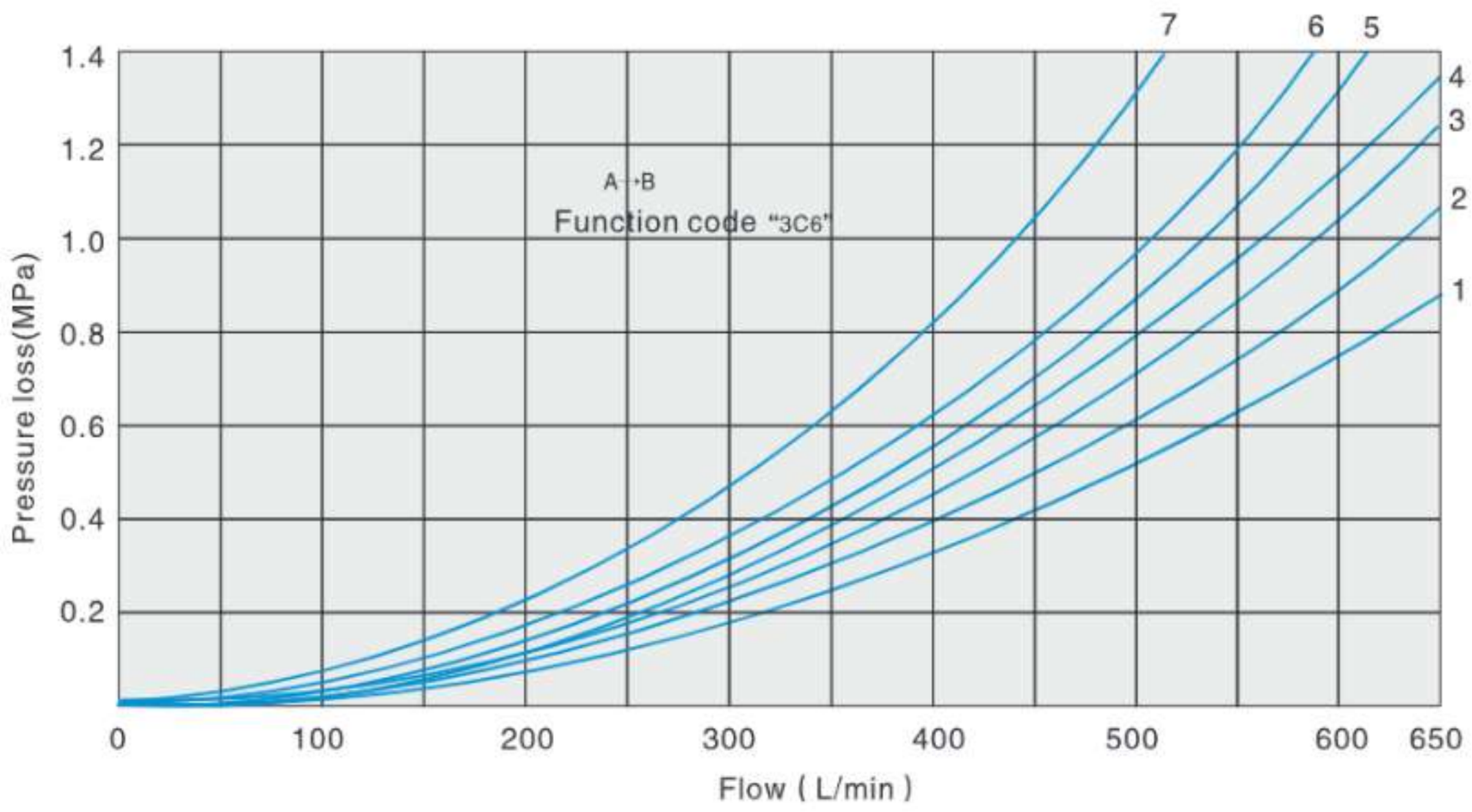


3C29



Electro-hydraulic Directional Control Valve

06 Specification Performance curve (Measured at υ=41mm²/s and t=50℃)



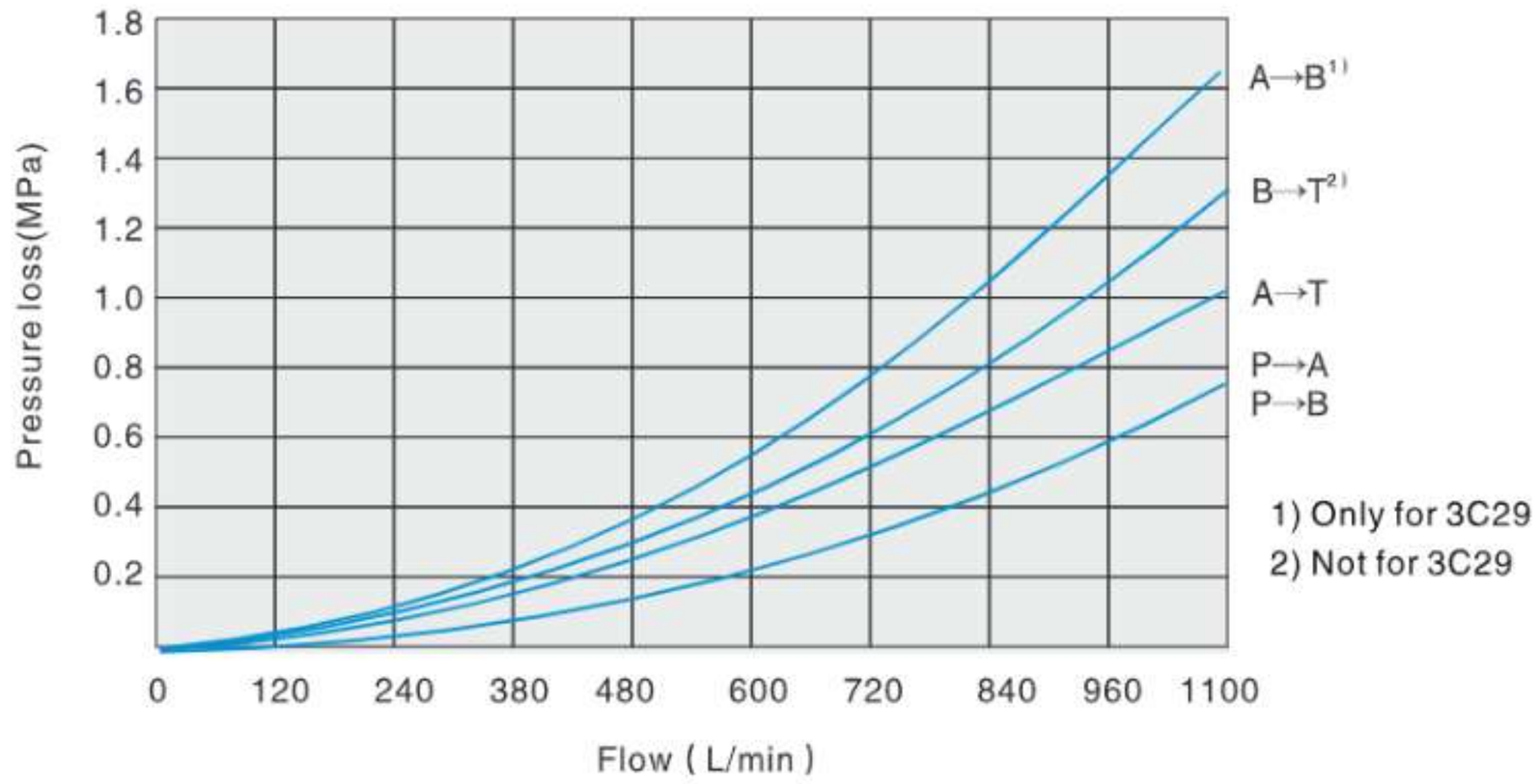
Function	Switching position			
	P→A	P→B	A→T	B→T
3C2	1	1	1	3
3C5	1	4	3	3
3C6	3	1	2	4
3C3	4	4	3	4
3C4	2	2	3	5
3C12	2	2	3	3
3C9	4	4	1	4
3C25	4	1	1	5
3C29	2	1	1	–
3C10	2	1	1	6
3C7	4	4	3	6

7.Function code "3C6" type, neutral position P→T
8.Function code "3C29" type, control position A→B

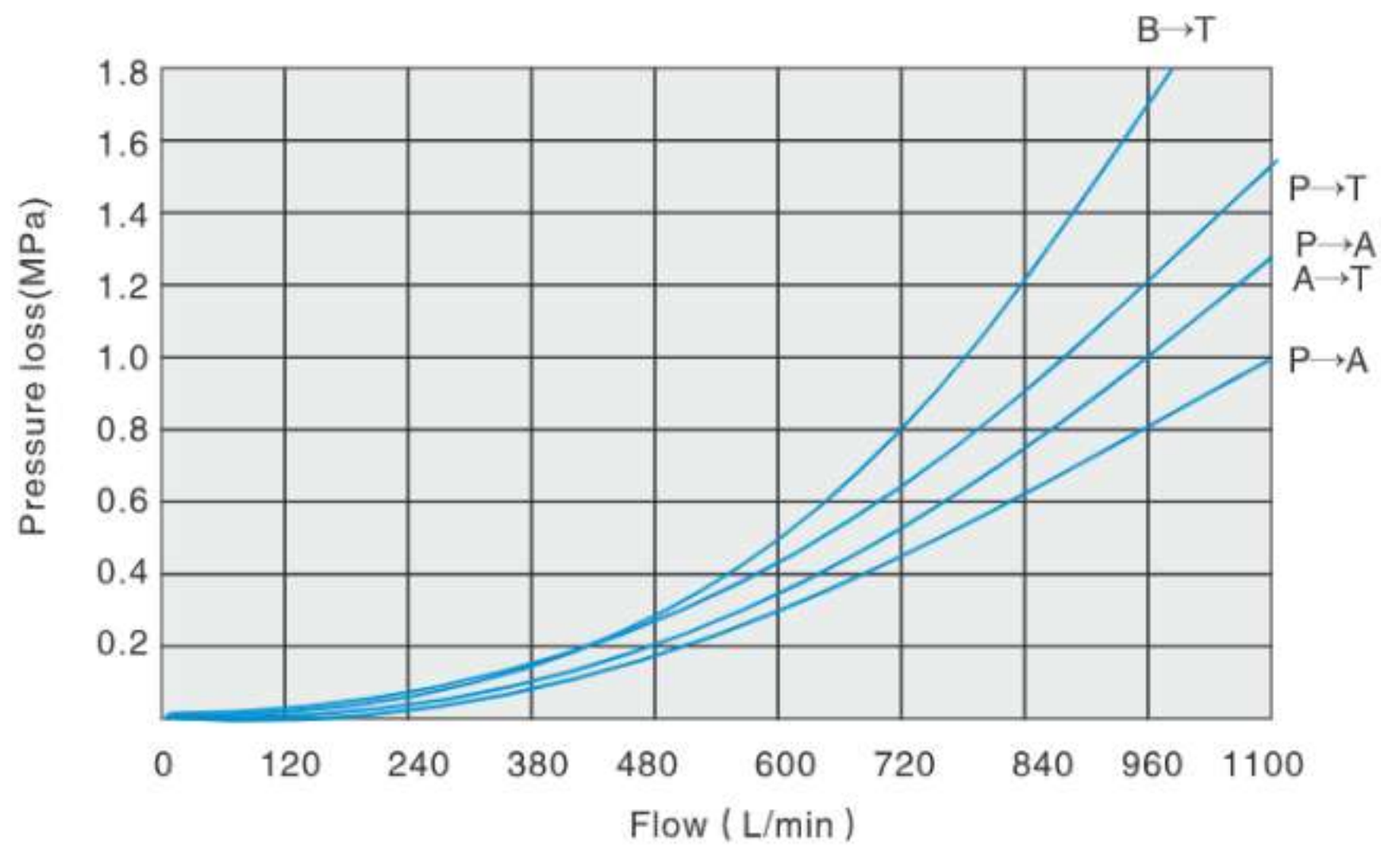
Electro-hydraulic Directional Control Valve

10 Specification Performance curve (Measured at υ =41mm²/s and t=50℃)

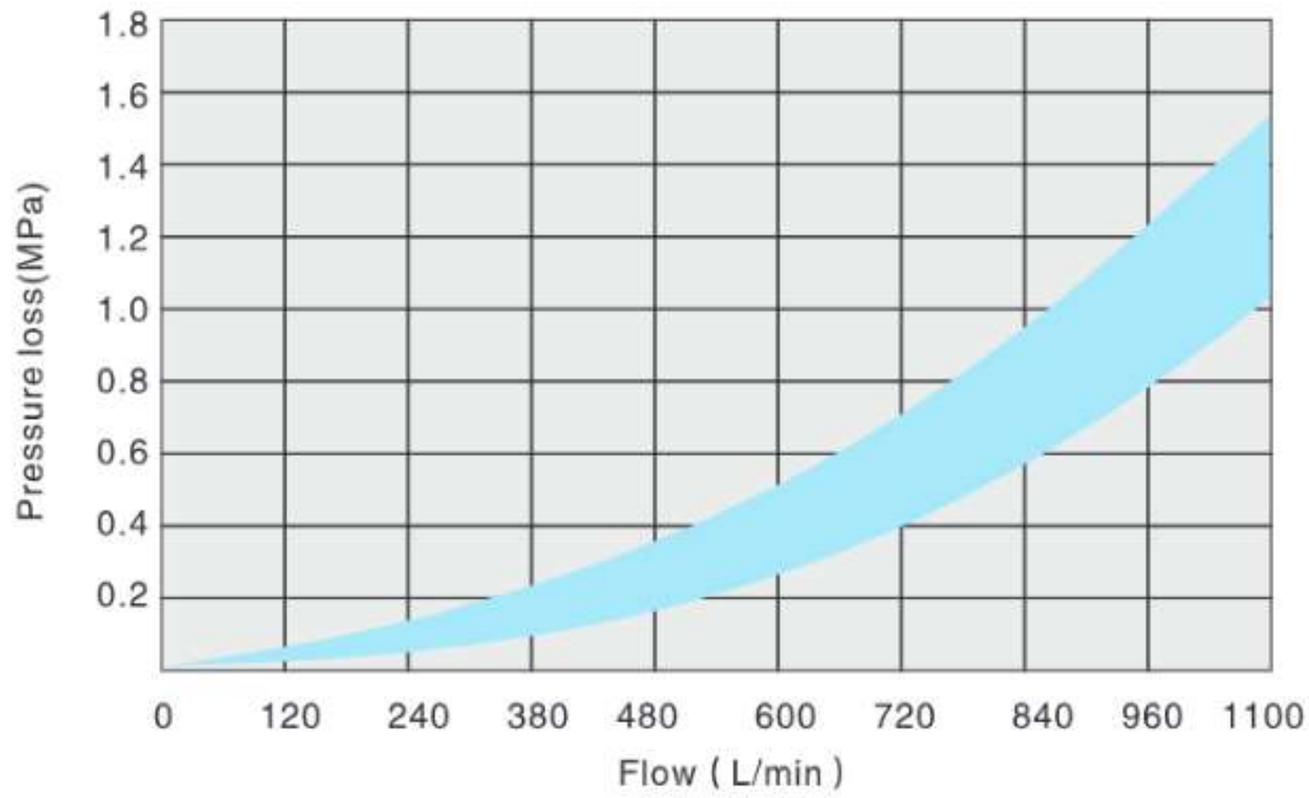
3C2、3C4、3C29



3C6

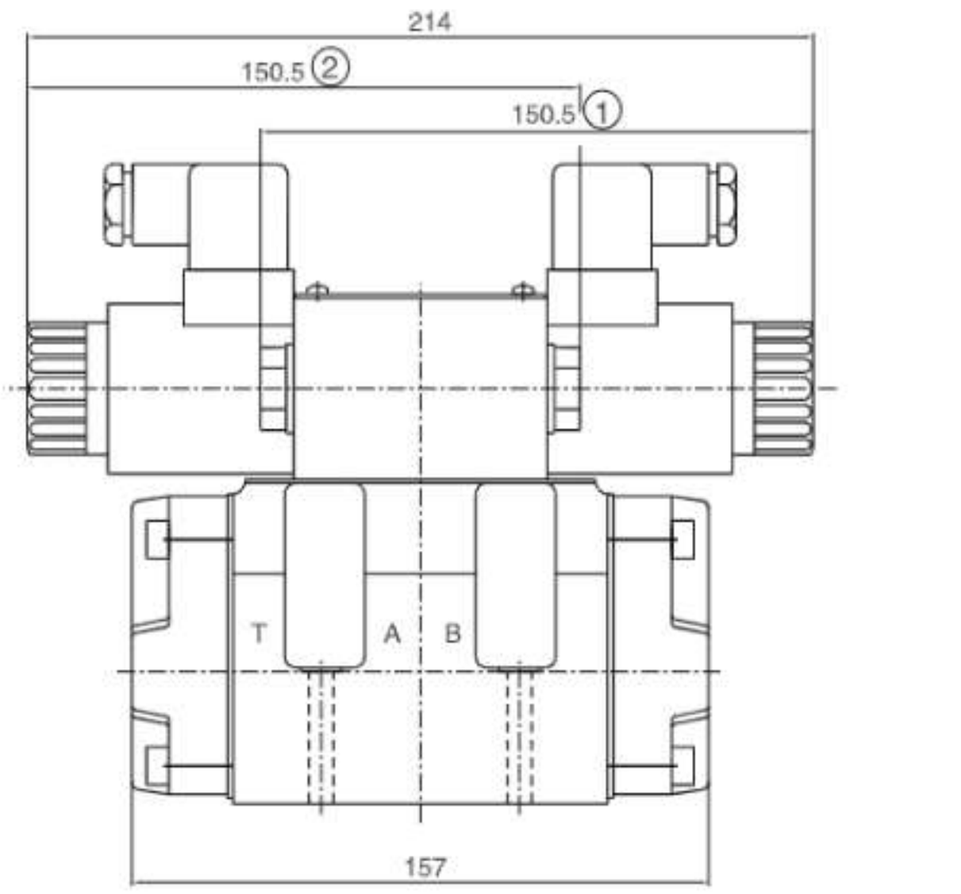


Other spool types



Electro-hydraulic Directional Control Valve

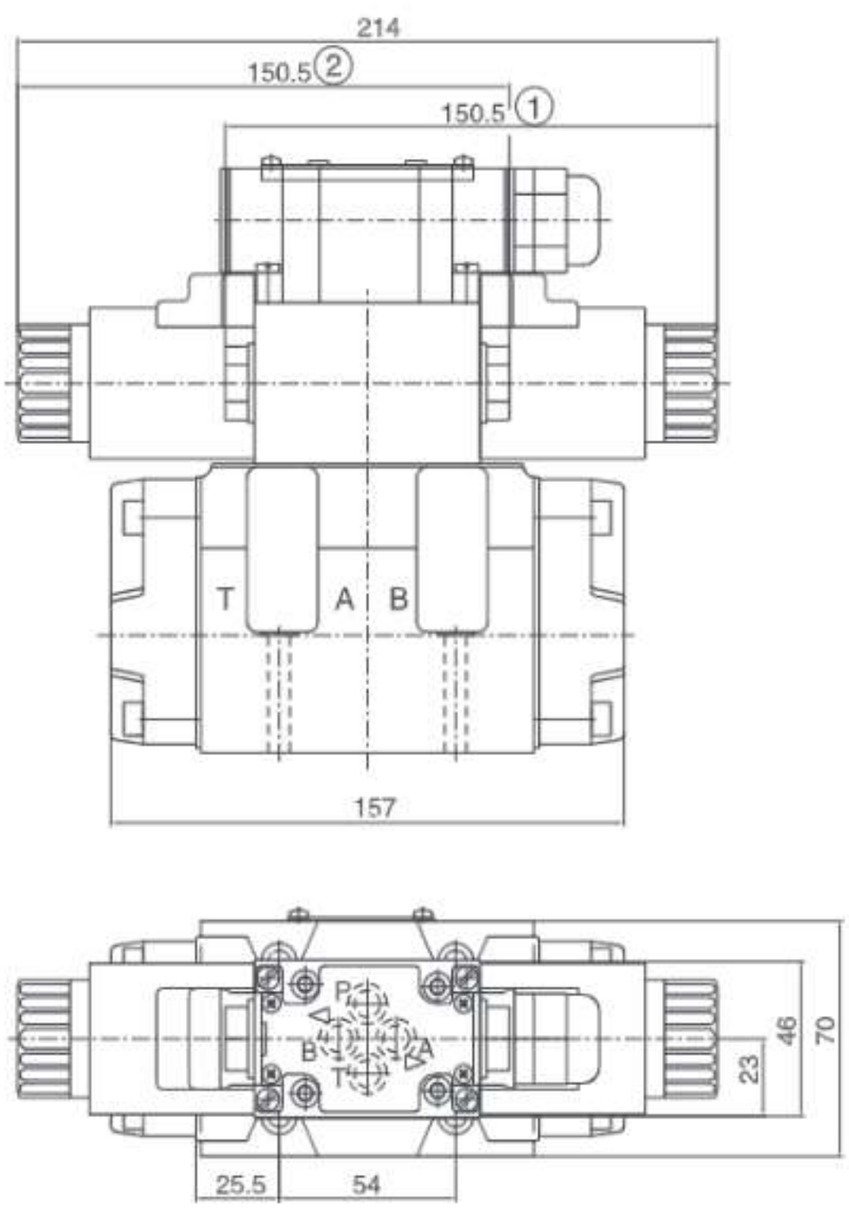
External dimensions (03 Direct current plug type)



① ②

4/2 solenoid valve

External dimensions (03 Direct current wire box type)

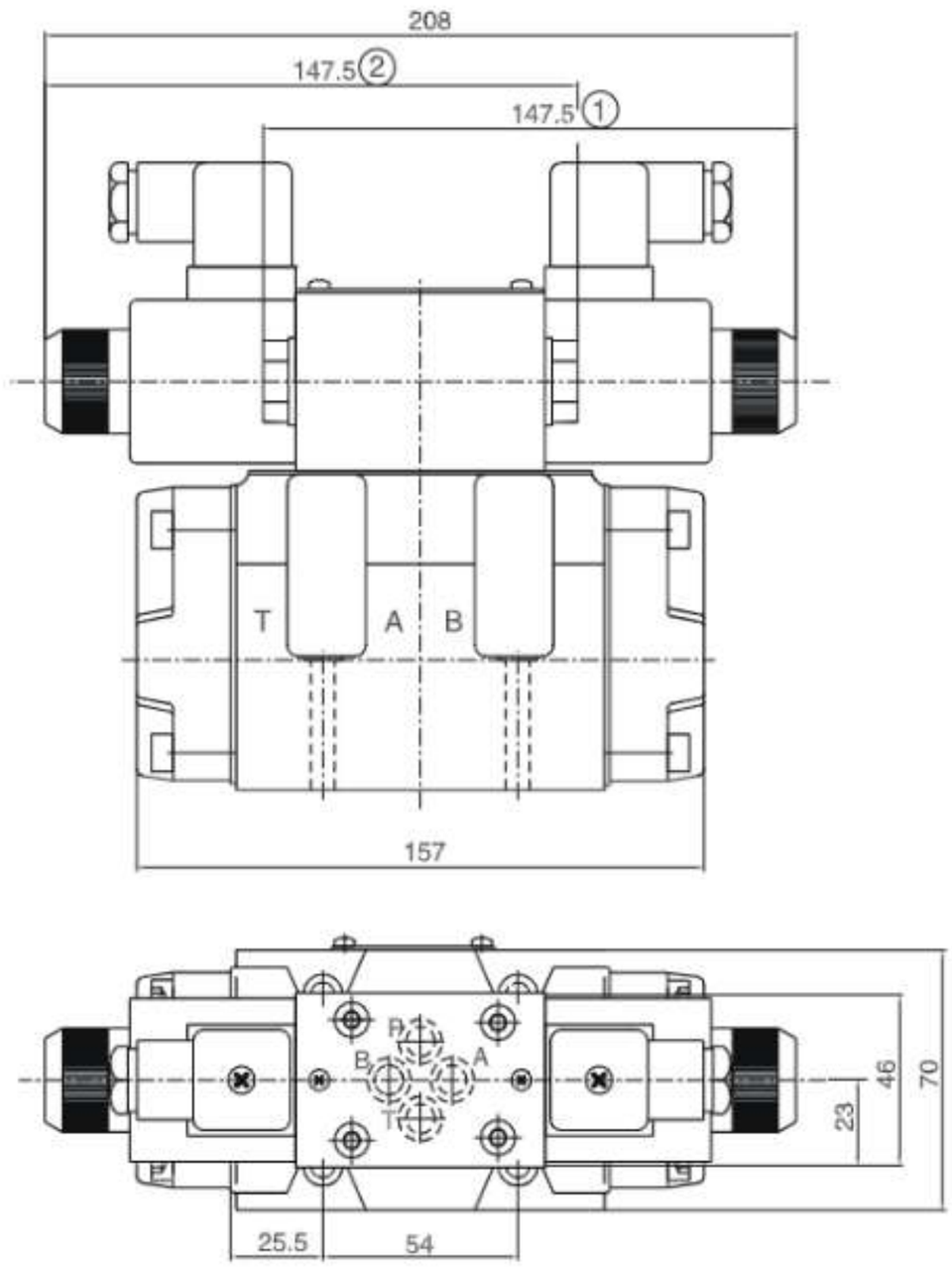


① ②

4/2 solenoid valve

Electro-hydraulic Directional Control Valve

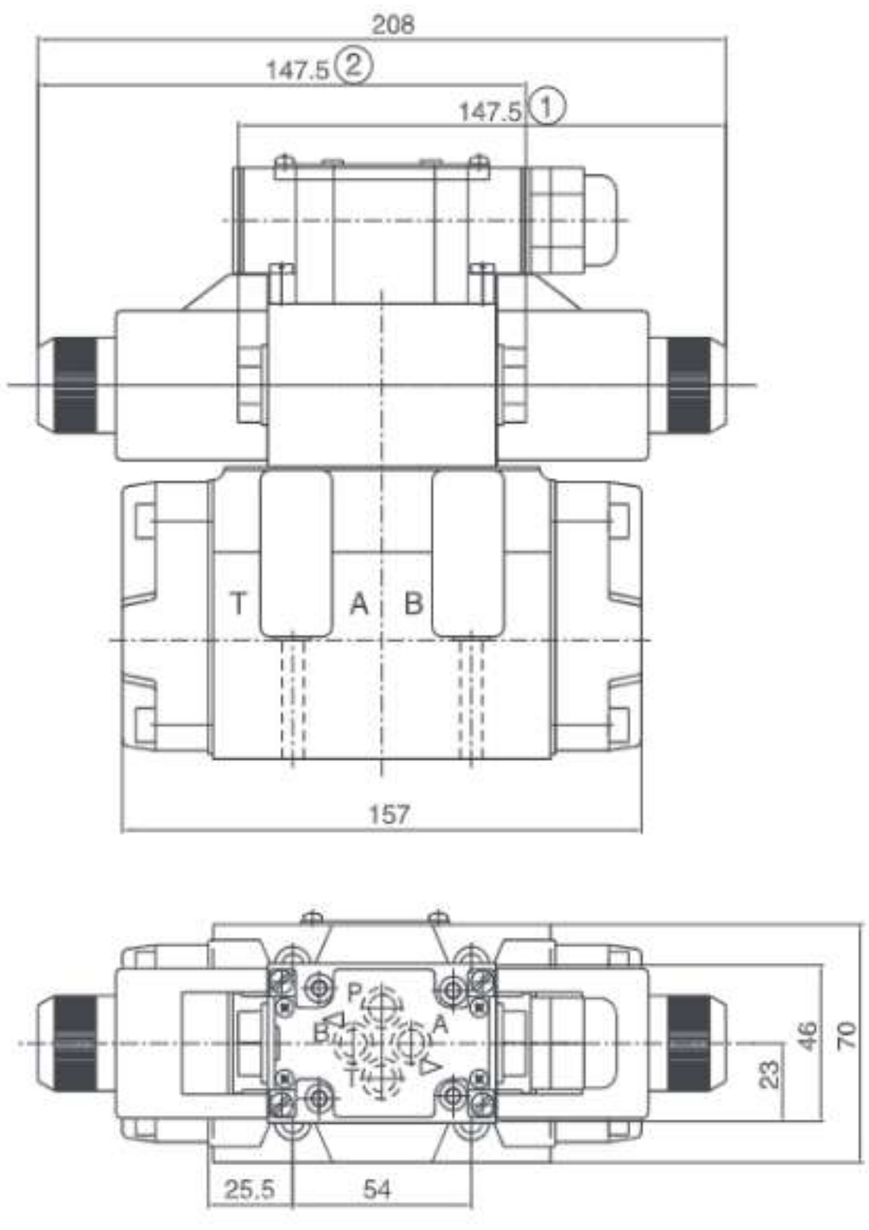
External dimensions (03 Alternating current plug type)



① ②

4/2 solenoid valve

External dimensions (03 Alternating current wire box type)

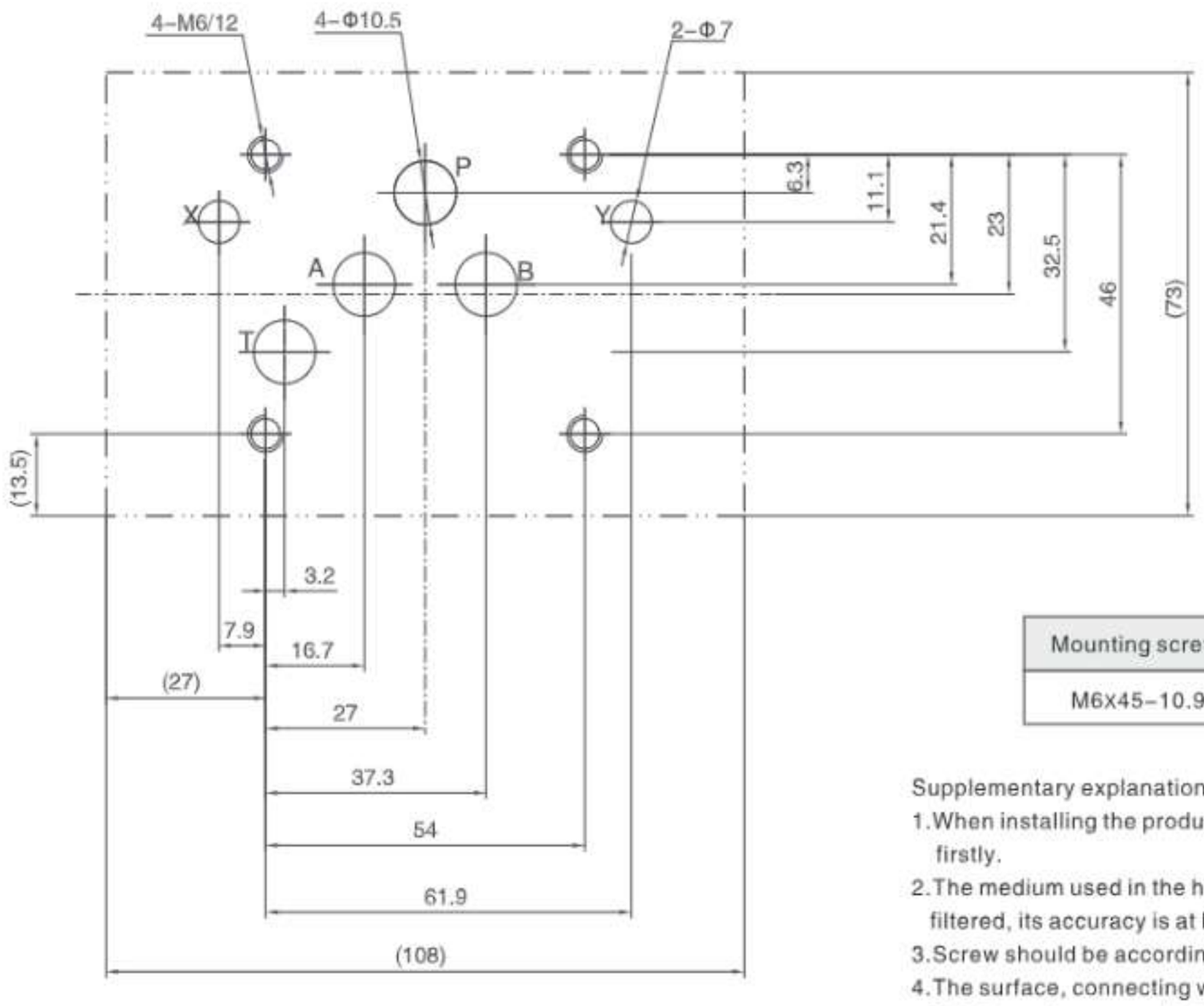


① ②

4/2 solenoid valve

Electro-hydraulic Directional Control Valve

03 Size of subplate oil port

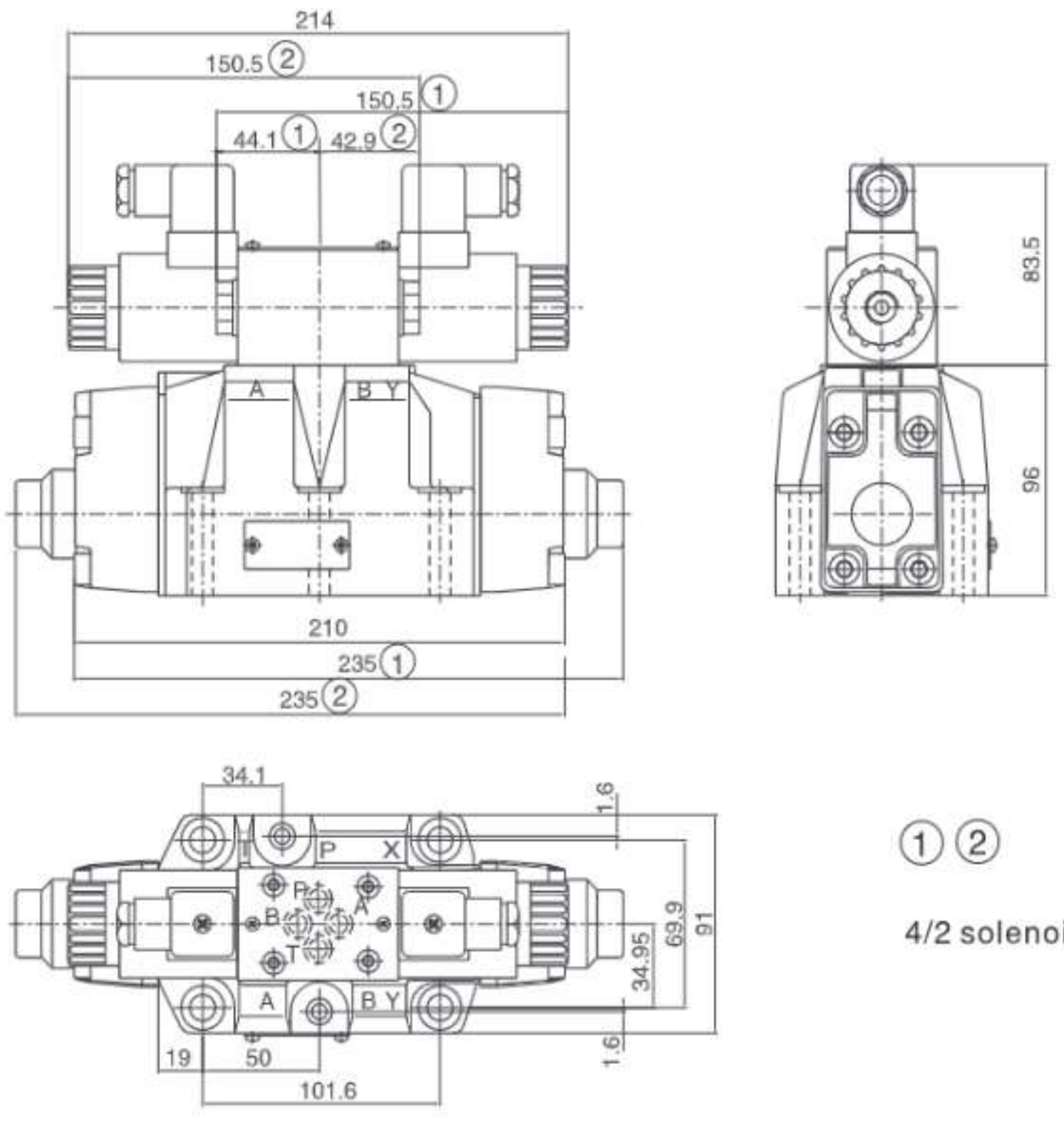


Mounting screw	Amount	Tighten torque
M6X45-10.9	4	15Nm

Supplementary explanation

1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

External dimensions (04 Direct current plug type)

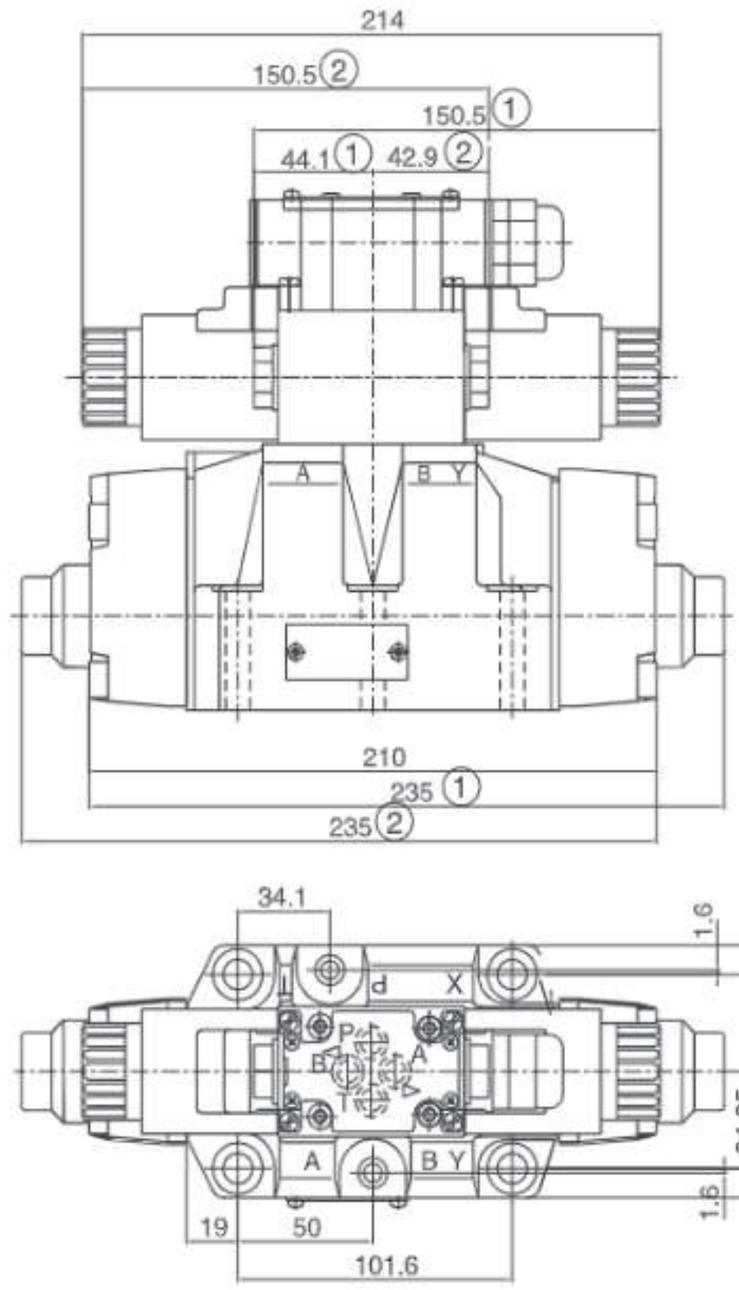


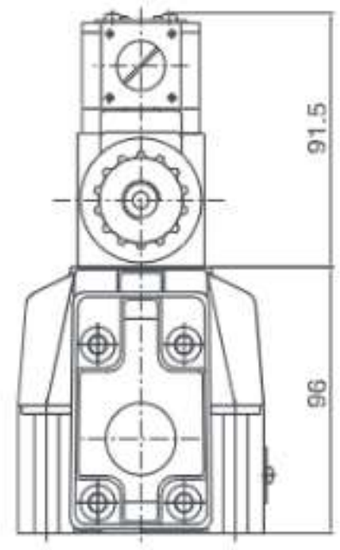
① ②

4/2 solenoid valve

Electro-hydraulic Directional Control Valve

External dimensions (04 Direct current wire box type)

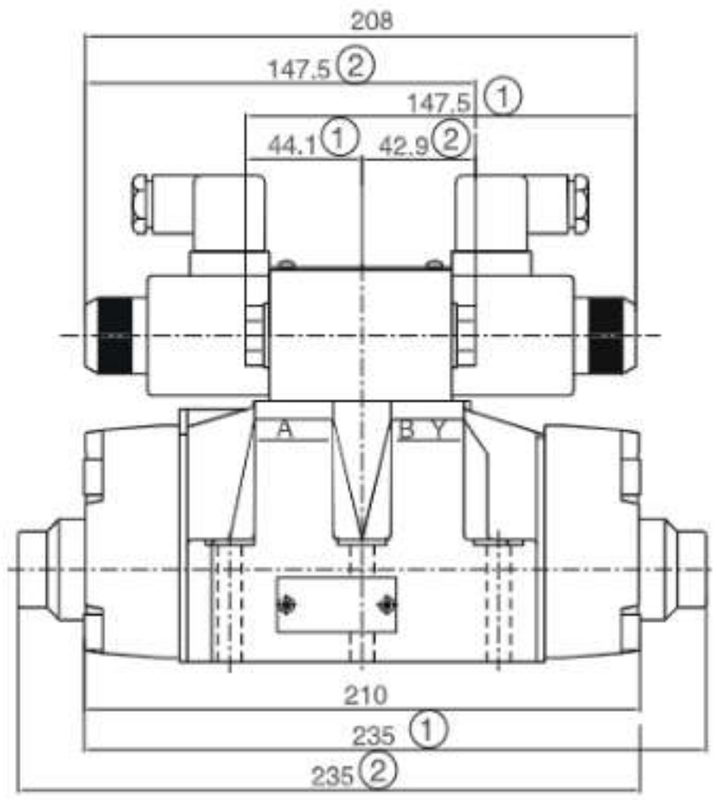


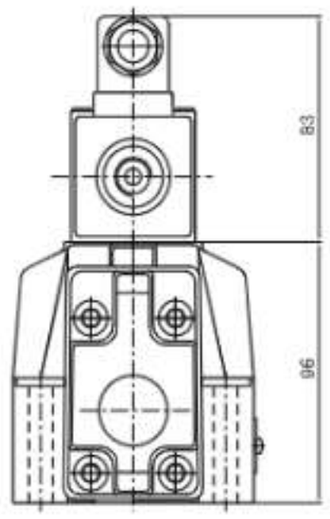


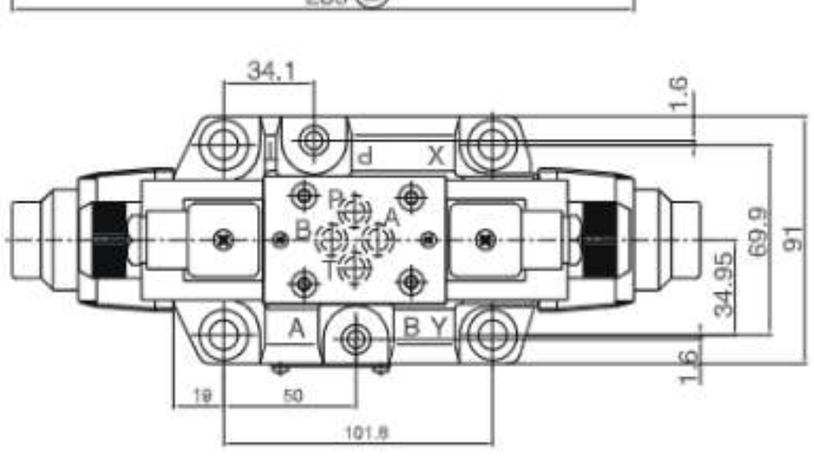
① ②

4/2 solenoid valve

External dimensions (04 Alternating current plug type)





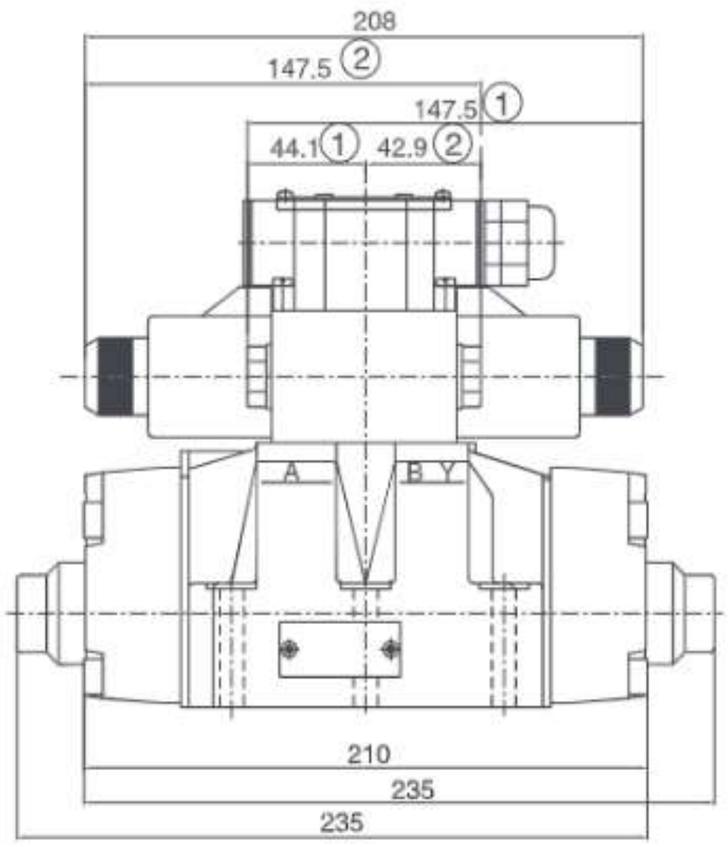


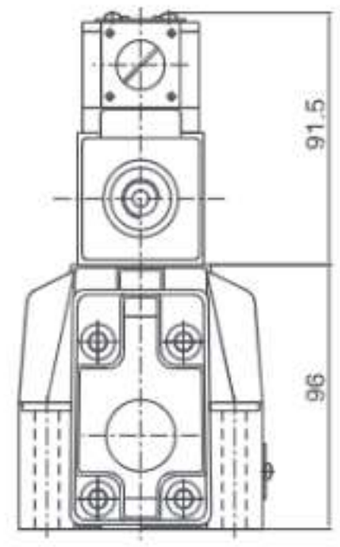
① ②

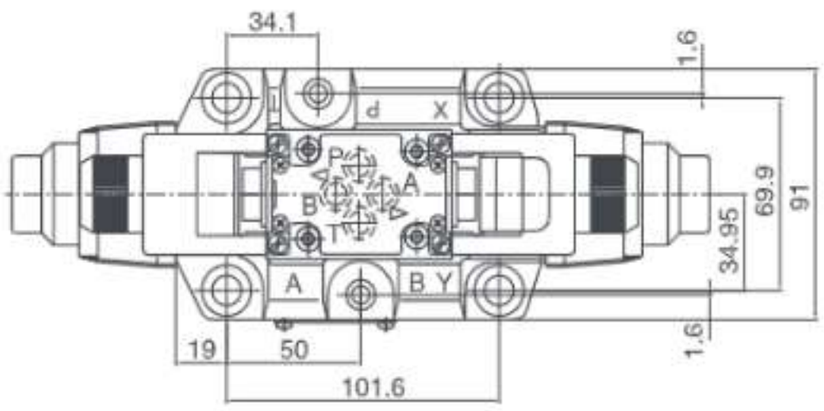
4/2 solenoid valve

Electro-hydraulic Directional Control Valve

External dimensions (04 Alternating current wire box type)

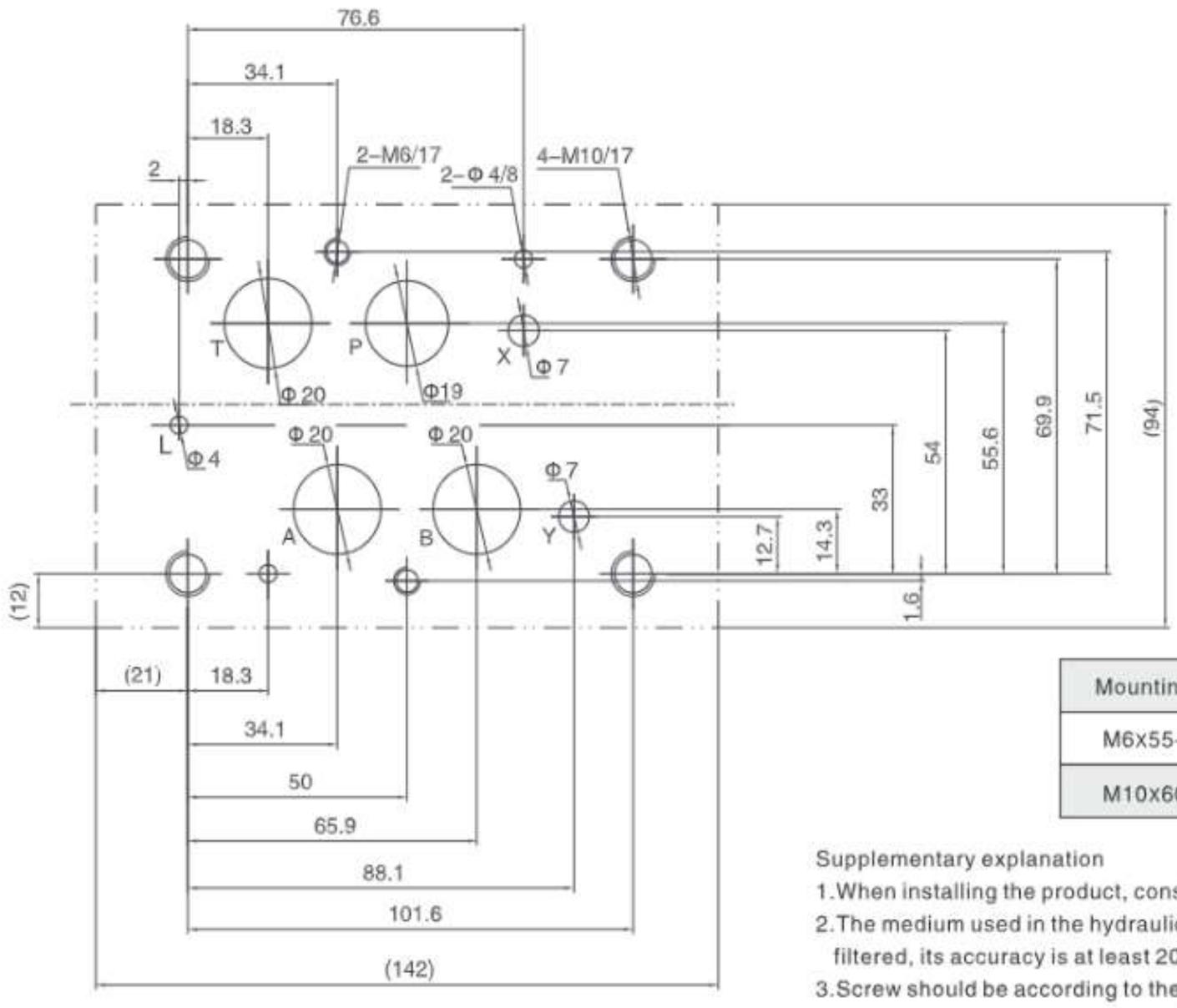






① ②
4/2 solenoid valve

04 Size of subplate oil port



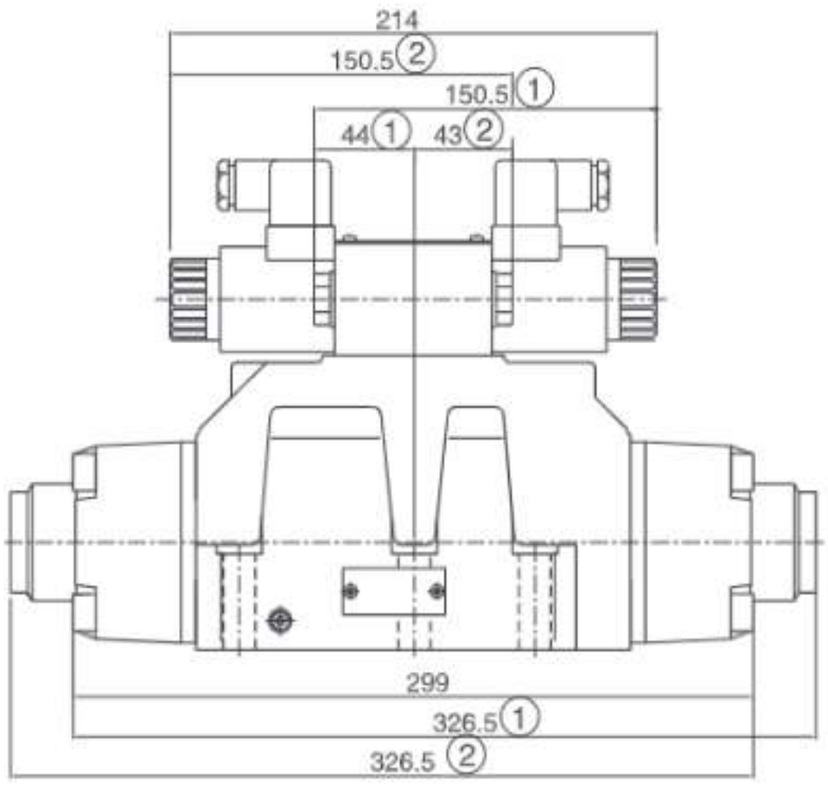
Mounting screw	Amount	Tighten torque
M6x55-10.9	2	15Nm
M10x60-10.9	4	75Nm

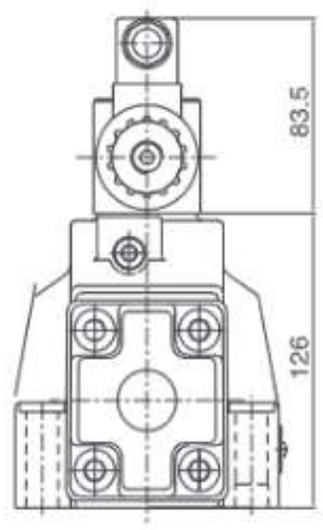
Supplementary explanation

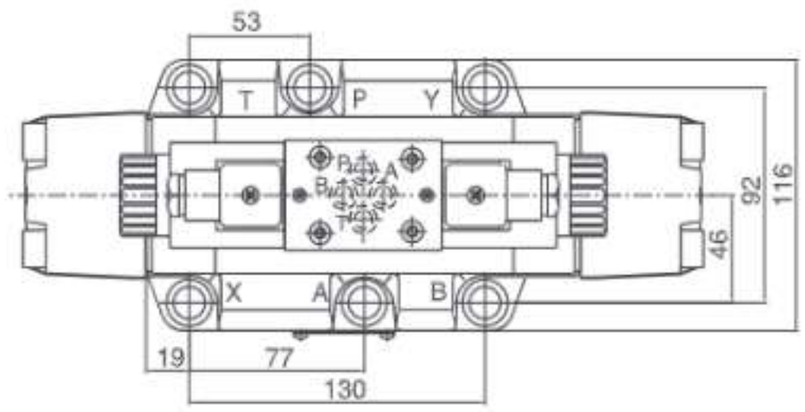
1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

Electro-hydraulic Directional Control Valve

External dimensions (06 Direct current plug type)



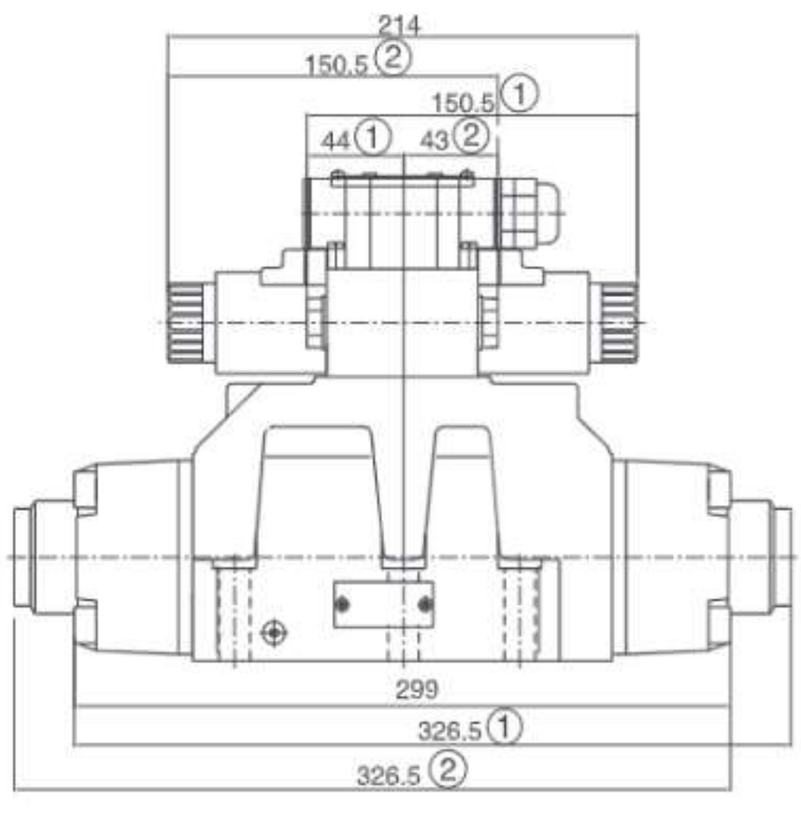


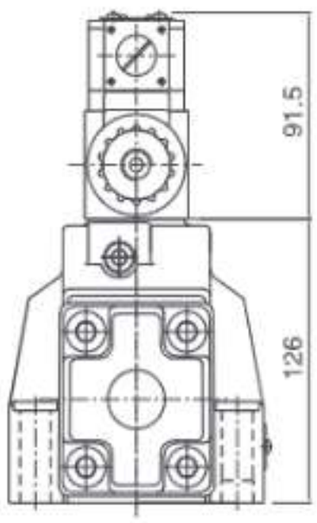


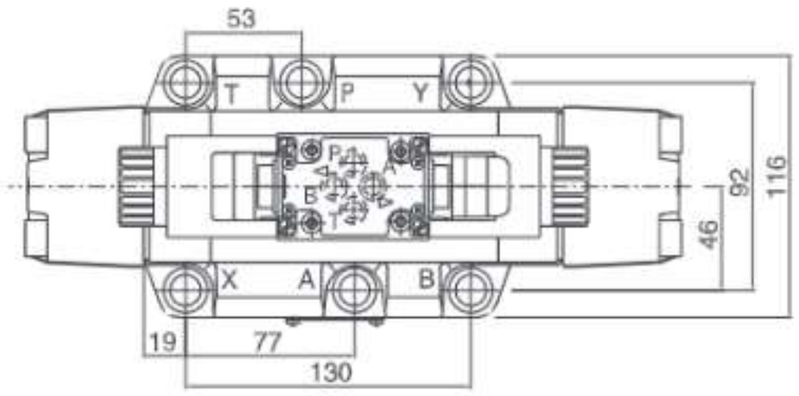
① ②

4/2 solenoid valve

External dimensions (06 Direct current wire box type)





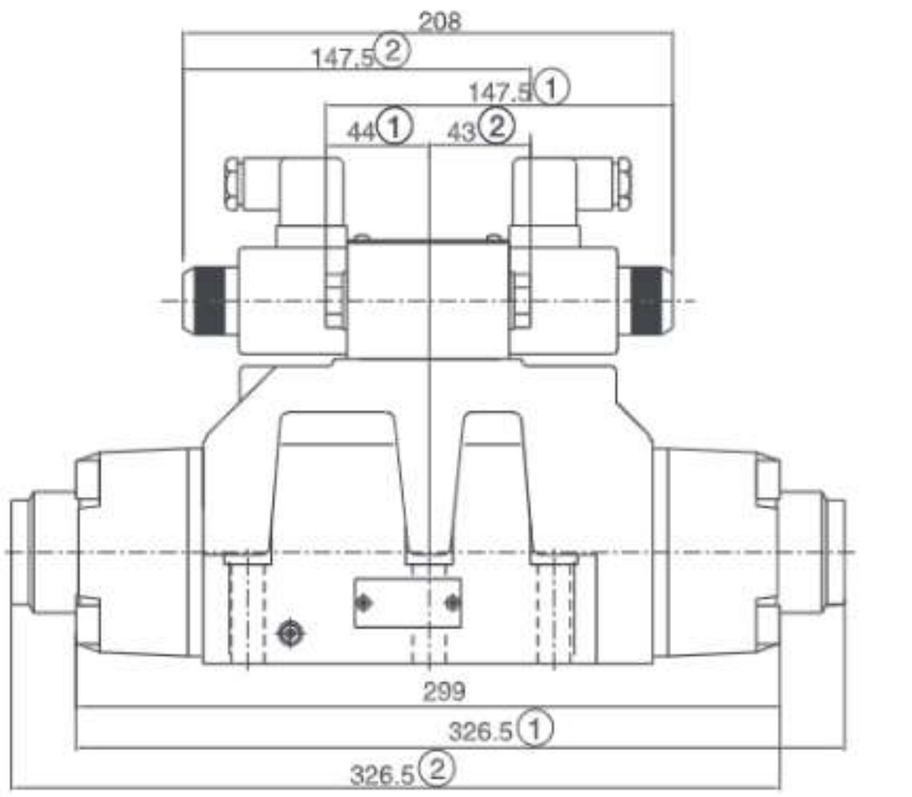


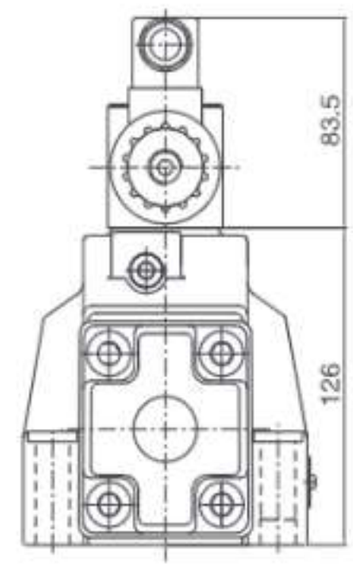
① ②

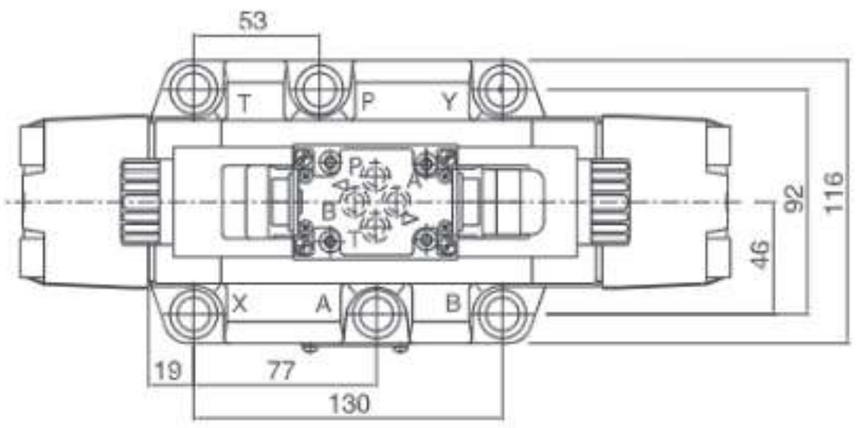
4/2 solenoid valve

Electro-hydraulic Directional Control Valve

External dimensions (06 Alternating current plug type)



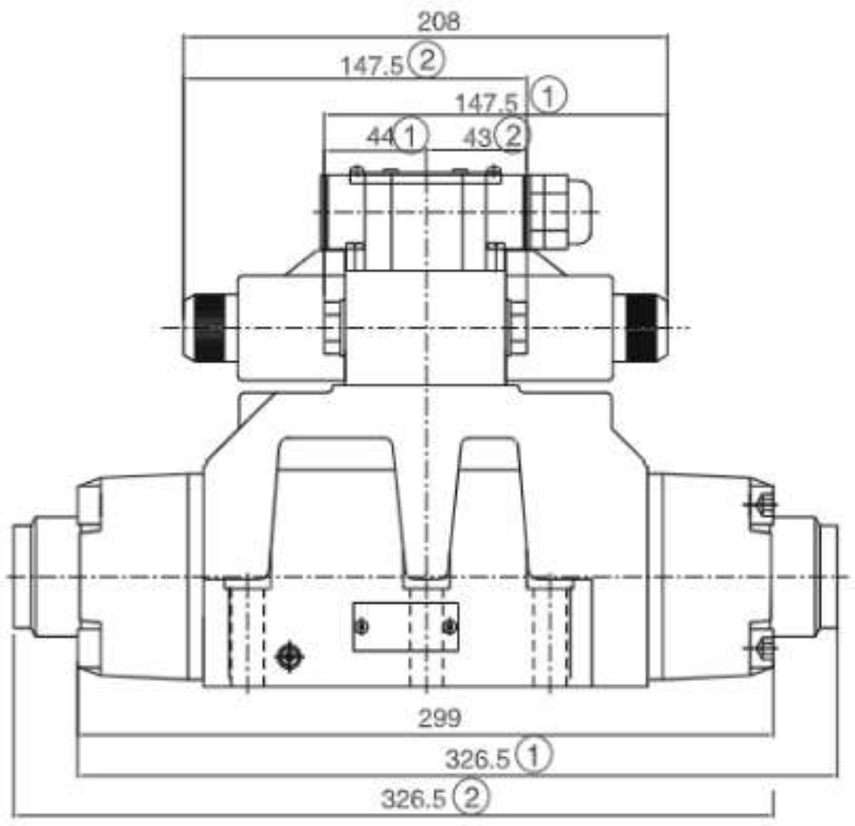


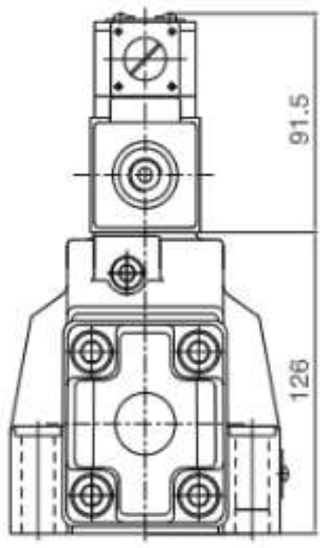


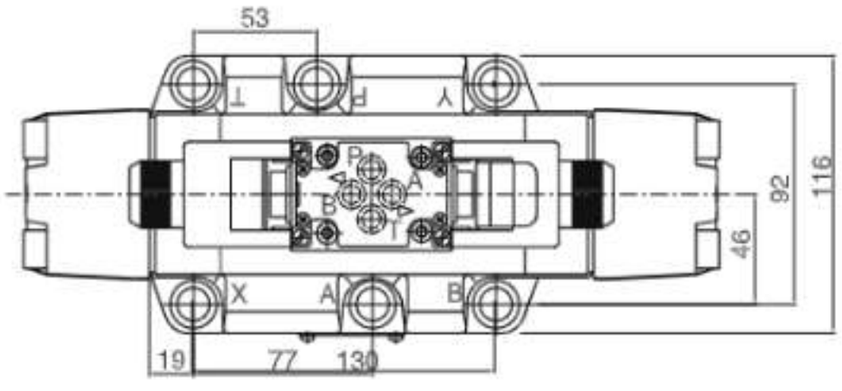
① ②

4/2 solenoid valve

External dimensions (06 Alternating current wire box type)





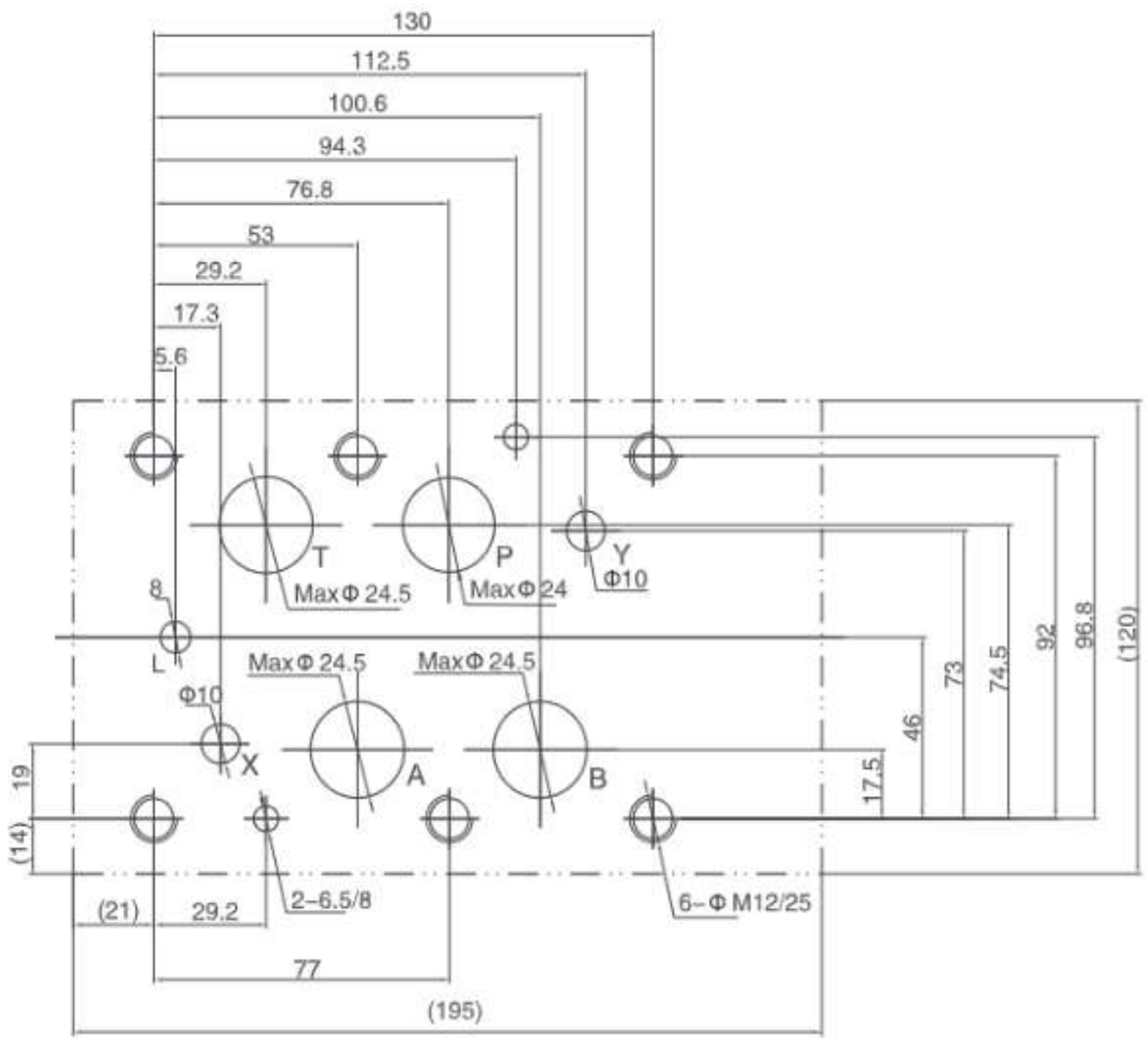


① ②

4/2 solenoid valve

Electro-hydraulic Directional Control Valve

06 Size of subplate oil port

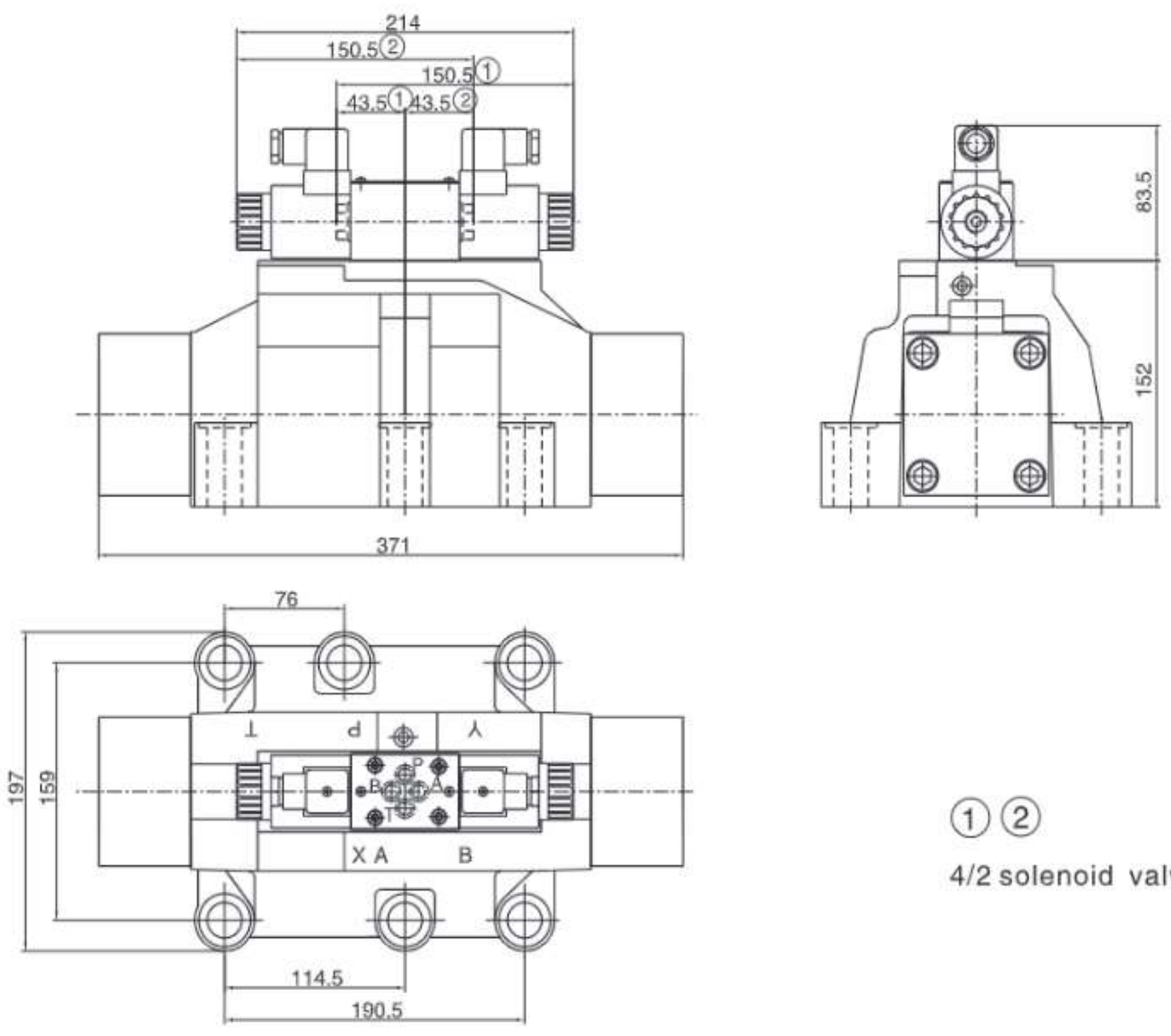


Mounting screw	Amount	Tighten torque
M12x60-10.9	6	130Nm

Supplementary explanation

1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

External dimensions （10 Direct current plug type）

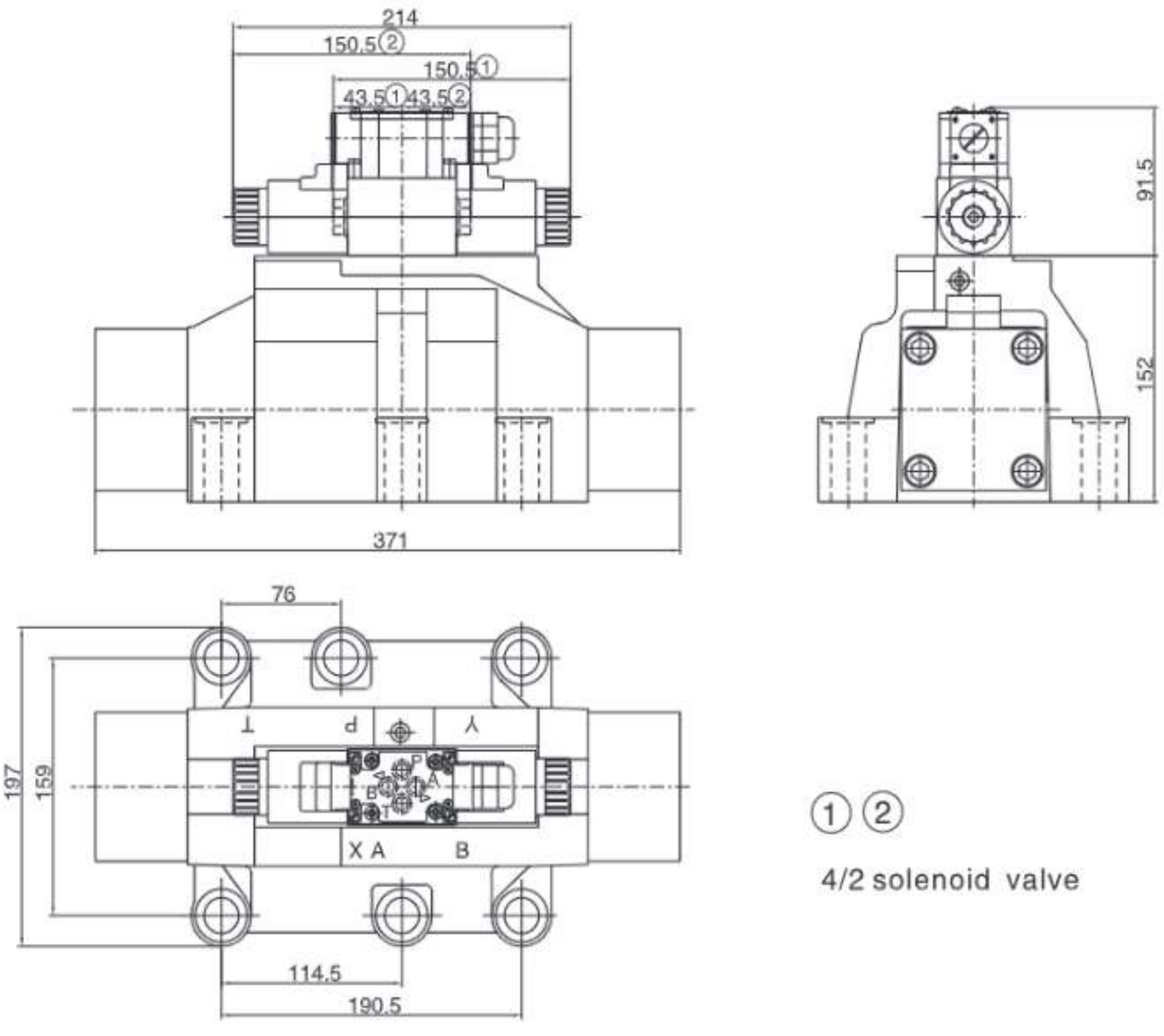


① ②

4/2 solenoid valve

Electro-hydraulic Directional Control Valve

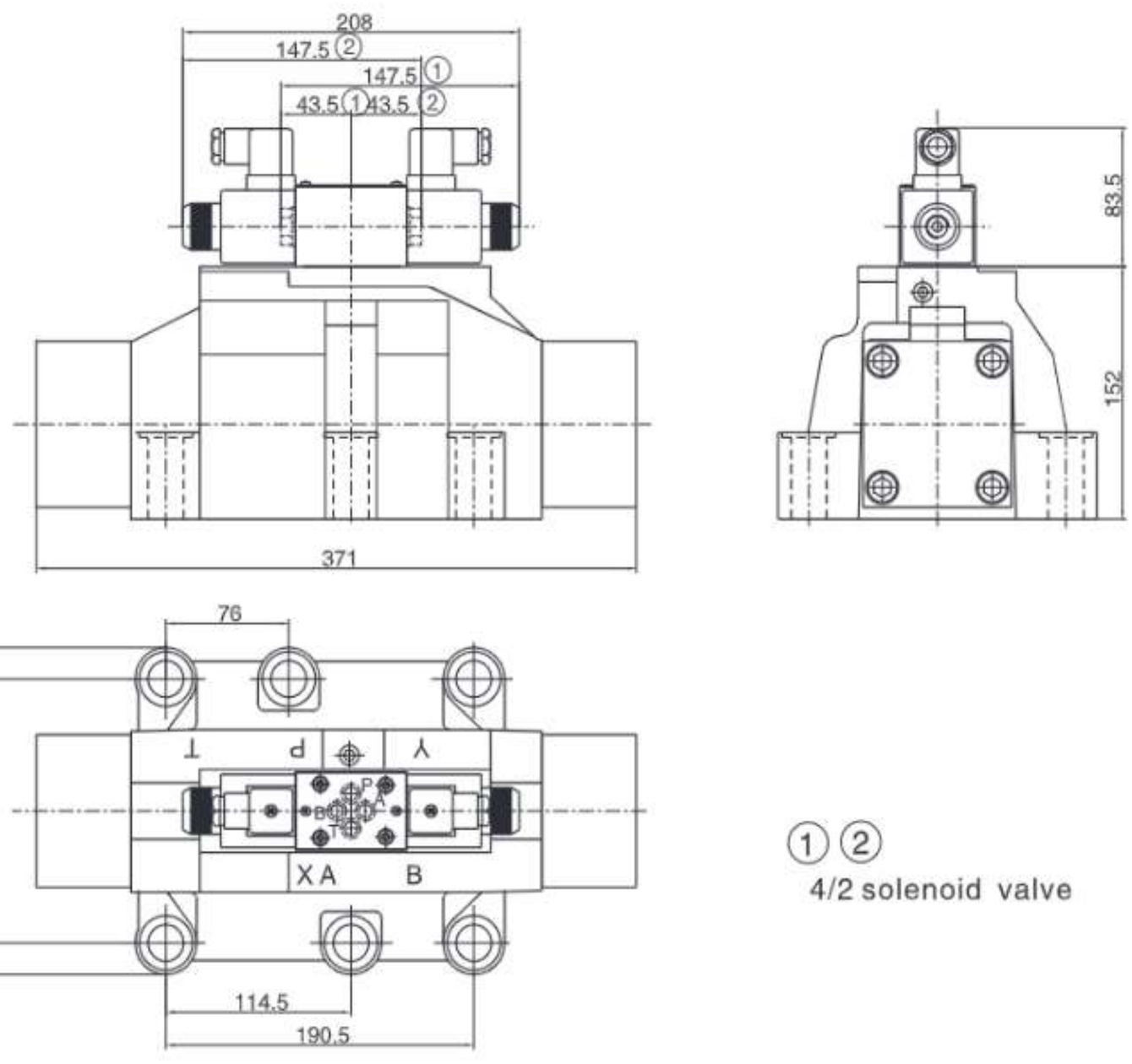
External dimensions (10 Direct current wire box type)



① ②

4/2 solenoid valve

External dimensions (10 Alternating current plug type)

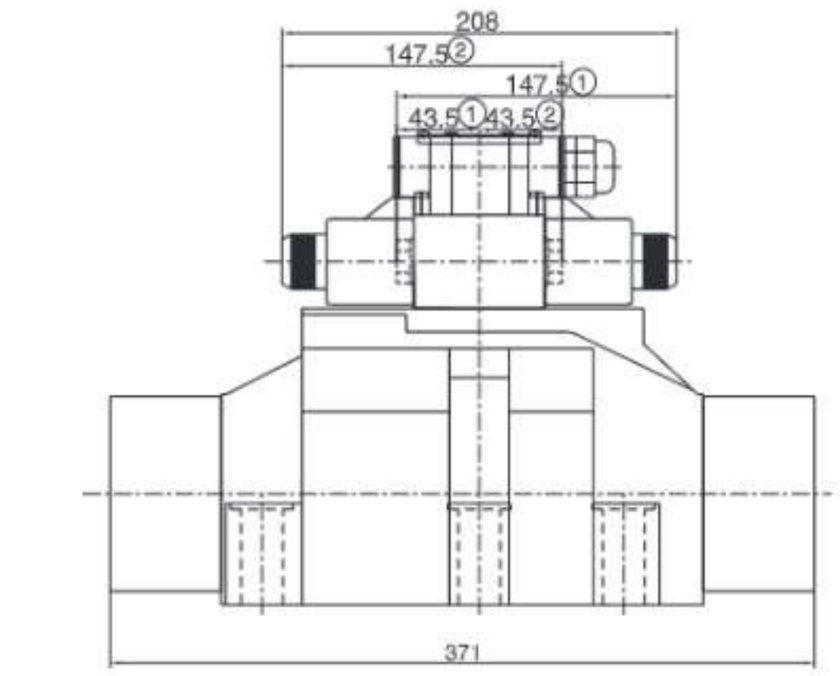


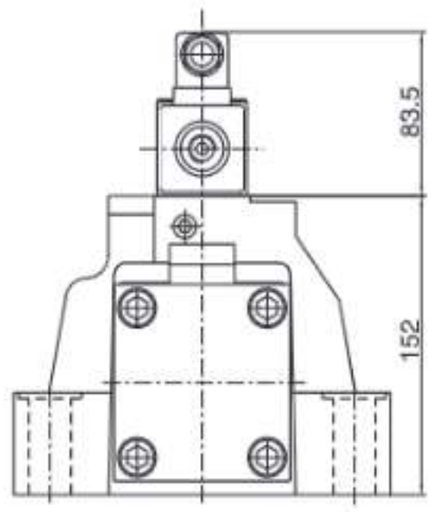
① ②

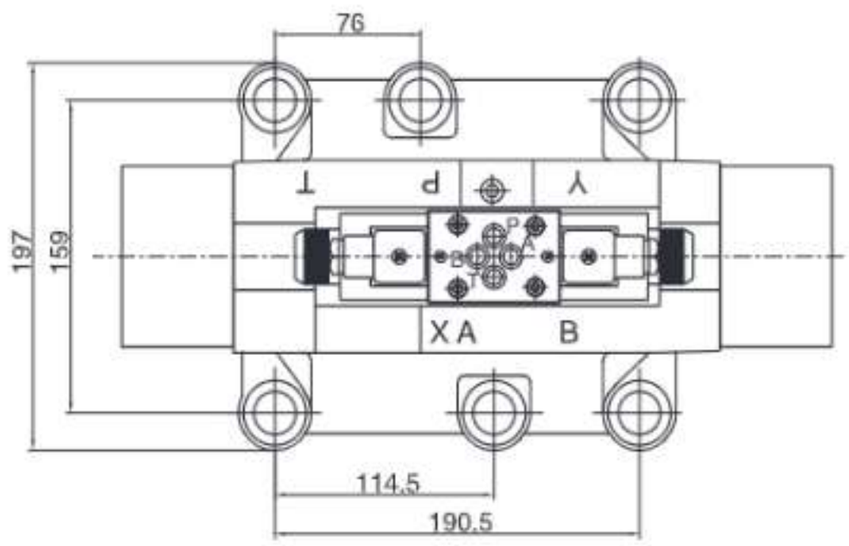
4/2 solenoid valve

Electro-hydraulic Directional Control Valve

External dimensions (10 Alternating current wire box type)

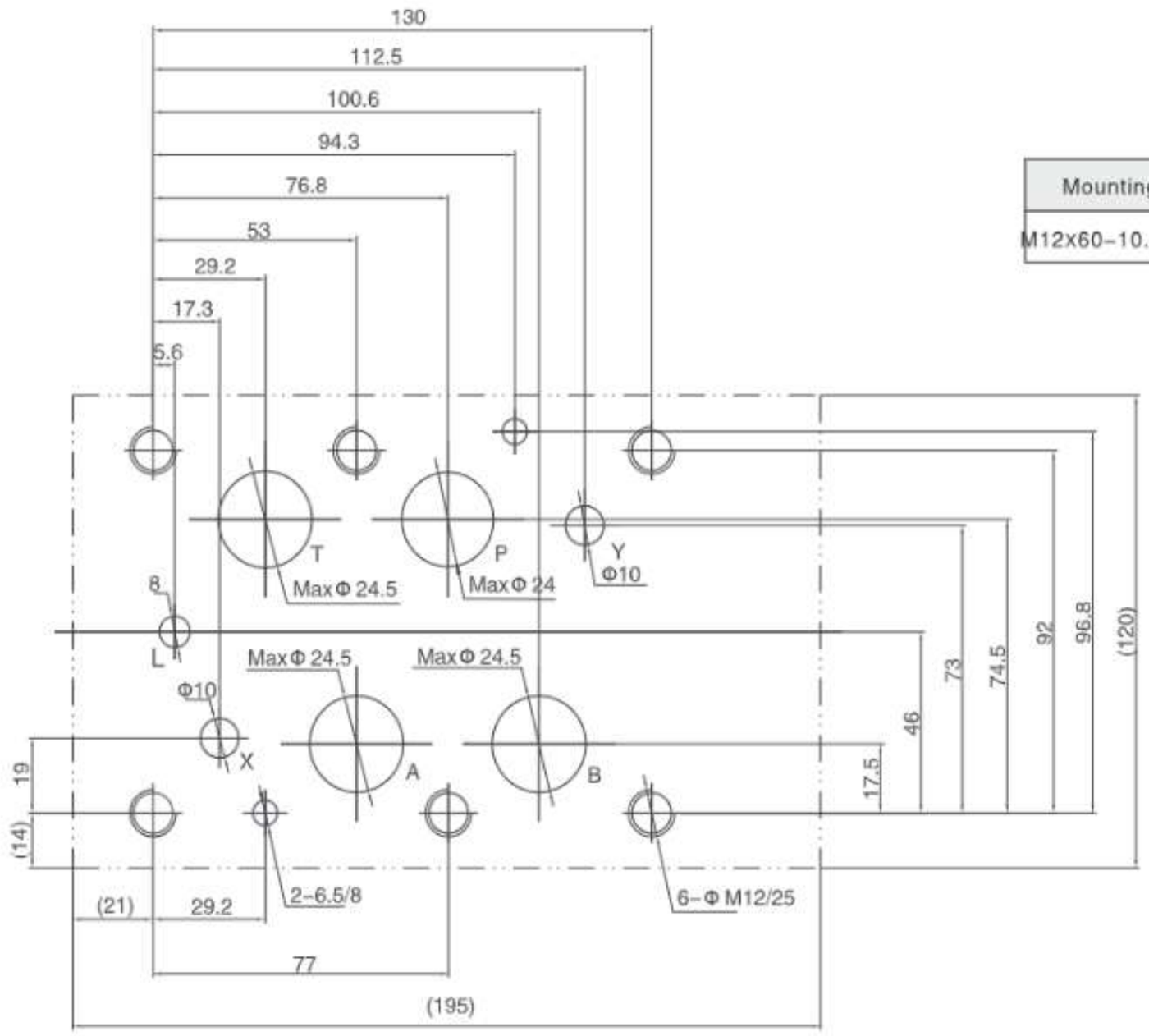






① ②
4/2 solenoid valve

10 Size of subplate oil port



Mounting screw	Amount	Tighten torque
M12x60-10.9	6	130Nm

Supplementary explanation

1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.