

XSV-12



- Modular assembly system, suitable for 'Build Program'.
- Maximum operating pressure 315 Bar / 4568 PSI.
- Different spool types up to 120 L/min / 26,4 GPM.
- Compact sandwich design, suitable for mobile applications.
- Pressure compensated for simultaneous multi users.
- **Post compensated valve for automatic flow-sharing function.**
- Unique signal amplification and dynamic filtering with patent.
- Optimised structural design with low pressure loss, high efficiency and energy save.
- Several inlet plate types available for different types of pumps.
- Operating control in any combination (Electric-, Hydraulic and manual).
- With possibilities of functions, e.g. flow regeneration, load retention, straight walking, etc.
- Several user port option functions.
- Designed for mass production and strong competitive in the market.

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Overview

The XSV12 load-sensing multi-way valve uses post-valve pressure compensation and is based on a modular design that provides mobile machine manufacturers with a system solution that allows customers to integrate/change various functions in a simple, flexible and cost-effective manner. In the case of actuator load pressure changes, the actuator flow can be maintained at a constant value.

When the total flow required by each actuator is less than the total flow that the pump can provide, multiple actuators operate at the same time, and each actuator can be independently executed according to different speeds and different pressures, independent of each other, and does not affect each other.

Inlet plate

The inlet plate can be used for fixed displacement pump and variable pump systems.

- Pressure reducing valve
- Median unloading valve
- Main safety valve
- Lc dynamic damping
- Ls pressure tap
- Electromagnetic reversing valve (Electronic control matching)

Work section

The working connection can be up to 10 joints, and the commutation flow can be adjusted by the stroke adjustment lever.

- Hydraulic proportional control
- Electro-hydraulic proportional control
- Manual proportional control
- Overload replenishing valve
- With load retention
- Main spool travel limit
- Flow regeneration valve

End plate

- Ls overflow valve
- Ls dynamic damping
- Lc dynamic damping
- Ls feedback one-way damping
- Pilot pressure reducing valve (Electronic control)
- L oil port (Electronic control)
- V oil port (Electronic control)



Technical Parameters

Rated flow		120L/min
Maximum pressure		315bar
Rated pressure		280bar
Back pressure		30bar
Pressure setting range		25~280bar
Compensator pressure difference	Hydraulic control	17bar
	Electronic control	12bar、16bar
Internal pilot pressure reducing valve rated pressure		28bar
Pilot pressure range		6~20bar
Spool stroke		8.45mm
Spool coverage		1.7mm
Hydraulic oil		mineral oil, conform DIN51524 and DIN51525(HL/HLP)
Hydraulic oil temperature range		- 30 ... + 80°C
Maximum allowable contamination of hydraulic fluid		ISO4406 18/16/13 level NAS 1638 8 level
Assembly position		random
Connection Type		
Port		BSPP
P		G3/4 “
T		G3/4 “
A/B		G 1/2 “
Ls		G1/4 “
Lc		G1/4 “
a/b		G1/4 “
L		G1/4 “
V		G1/4 “
MLs		G1/4 “
MLc		G1/4 “
Solenoid valve connector		Deutsch DT04-2P
Electrical parameter		
Rated voltage		12 VDC or 24 VDC
Rated current	12 VDC = 1300 mA	
	24 VDC = 650 mA	
Coil resistance	12 VDC = 5.3 ± 5% Ω	
	24 VDC = 21.2 ± 5% Ω	
Recommended flutter frequency		100 Hz
Protection level		IP65
Duty cycle		100%
Hysteresis		3%



Inlet section

Inlet plate are available for Fixed displacement pump, load-sensitive variable pump, a dynamic damping function, a main safety valve function, and an oil inlet with an electromagnetic reversing valve action cut-off function are available.

Suitable for the fixed displacement pump

The inlet plate applicable to the fixed displacement pump mainly includes pressure reducing valve and medium unloading valve. When the system is not working, the flow of the pump overflows through the neutral unloading valve at a pressure of about 14 bar; when the system is working, the load pressure is fed back to the spring chamber of the neutral unloading valve through Ls, and the excess flow of the pump is higher than Load 14 bar pressure overflow.

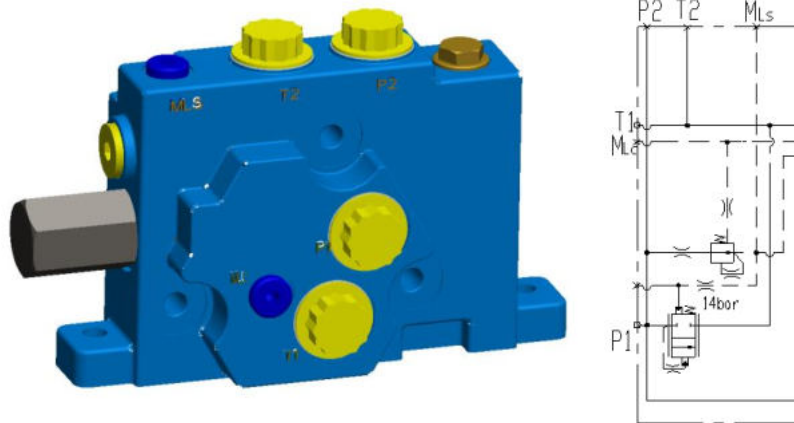


Figure 1

Suitable for variable pump

The inlet plate applicable to the variable pump mainly includes pressure reducing valve and medium unloading valve. The neutral unloading valve sets the pressure to 25 bar. When the system is not working, the pump flow overflows through the neutral unloading valve at a pressure of about 25 bar. When the system is working, the load pressure is fed back to the neutral unloading valve spring through Ls. The chamber, the neutral unloading valve is not open, and the pump only outputs the flow required by the mechanism.

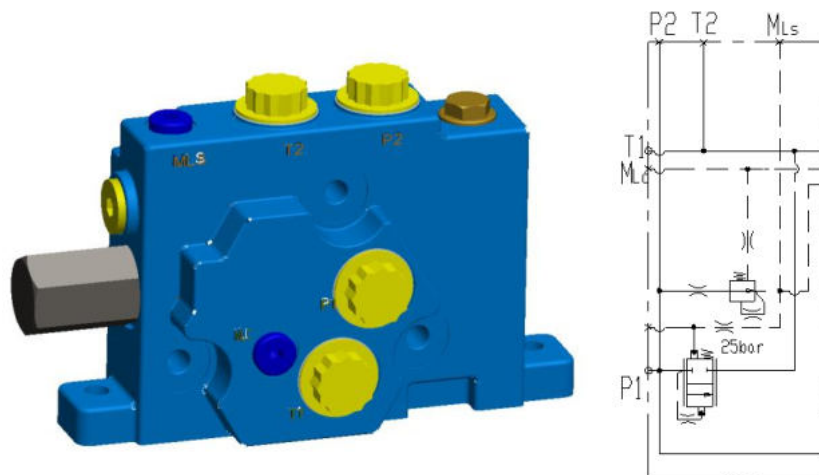


Figure 2



With main relief valve

The Inlet plate with main relief valve function provides a safety valve between the P port and the T port, which can avoid the excessive pressure of the oil inlet during the working process and lead to the damage of the components.

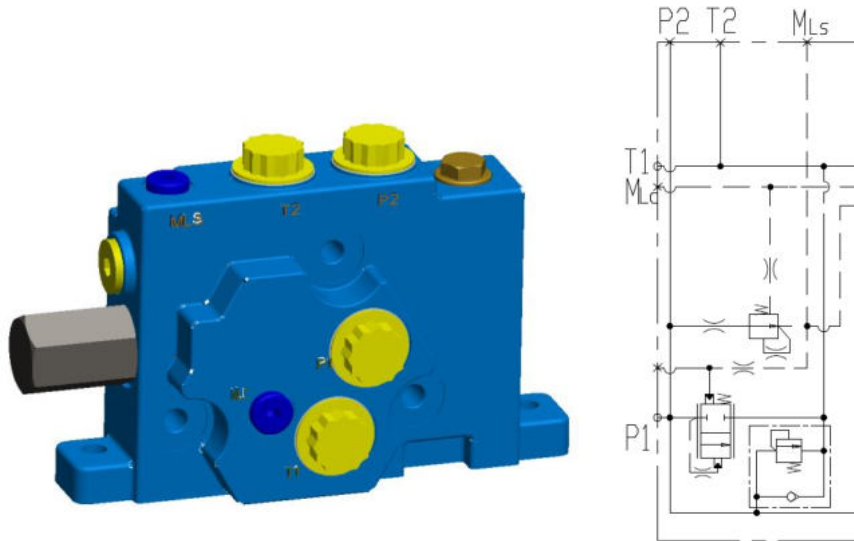


Figure 3

With electromagnetic reversing valve

The inlet plate with the action switch function of the electromagnetic reversing valve is provided with an electromagnetic reversing valve between the Lc oil passage and the return oil passage, the electromagnetic reversing valve is not charged, the Lc oil passage is connected with the T, and the pump port flow is passed. The unloading valve overflows, the whole machine has no action; the electromagnetic reversing valve is charged, the Lc oil circuit is cut off with T, and the whole machine works.

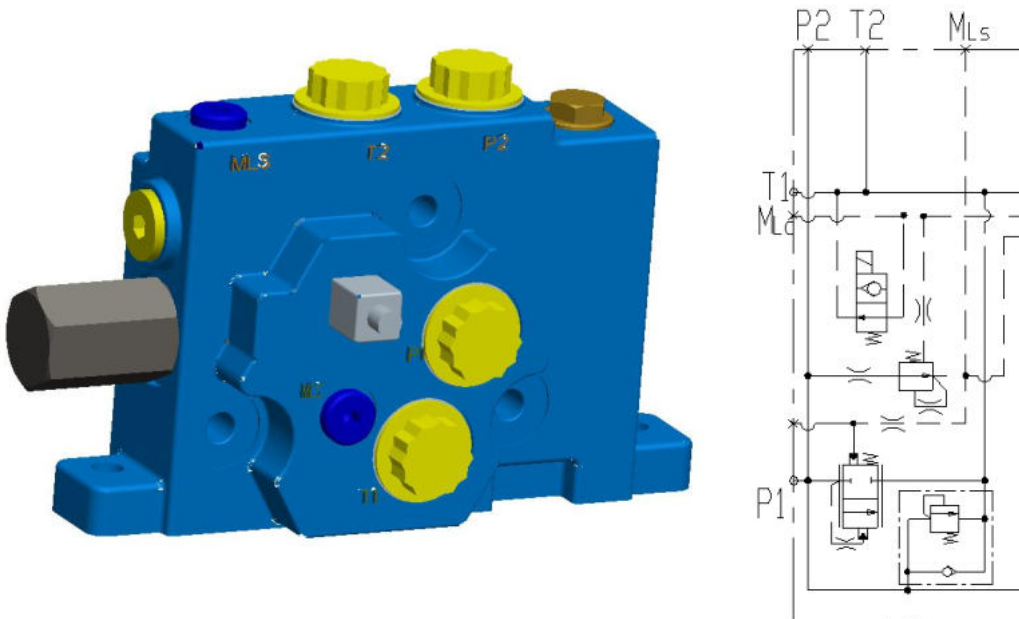


Figure 4



Work section

The working section can distribute pressure oil to different actuators, consists of a reversing valve core, a pressure compensating valve. And can add two overload replenishing valves, a load holding valve, one or two stroke limit mechanisms, and a flow regenerative valve according to different functions. To choose work section need confirm control form, work function and median function. There are three control forms and four different work functions and three median functions shown as follows:

With load holding valve function

The working union with a load holding valve function, a load holding valve is provided between the working port and the spool to achieve zero leakage between the working port and the spool.

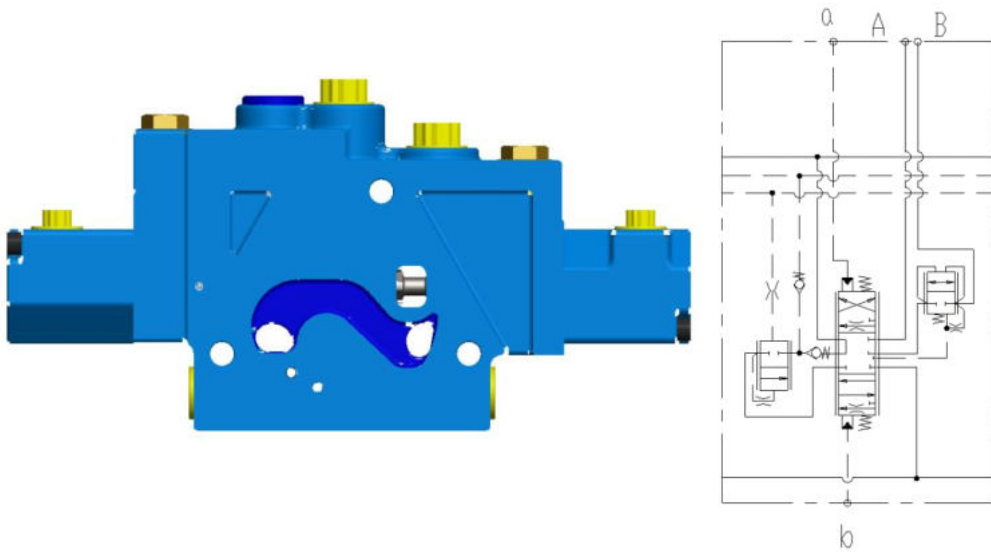


Figure 5

Without load holding valve function

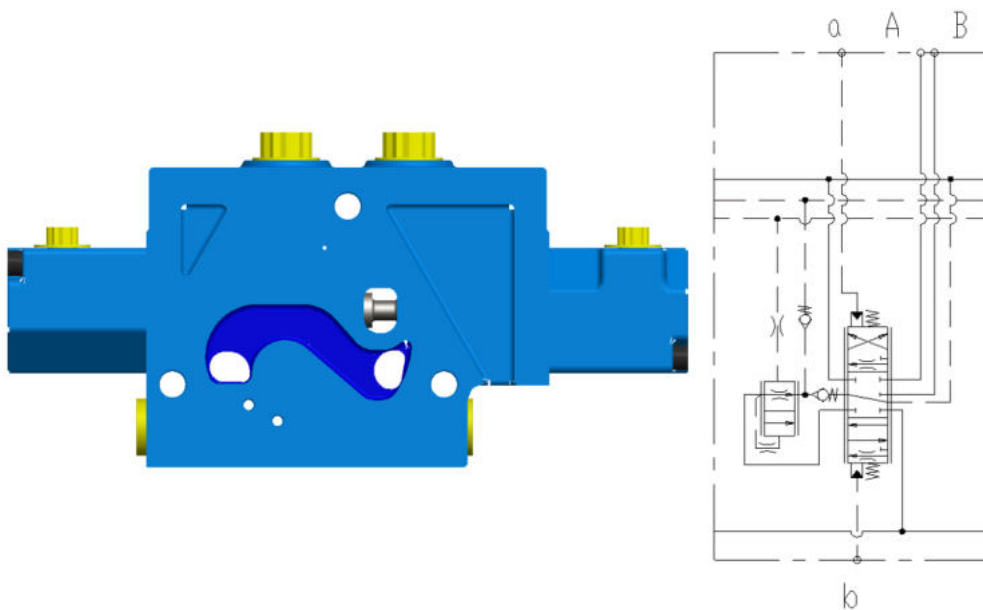


Figure 6



Provide three different control methods of work sections, appearances are shown below:

Pilot control form

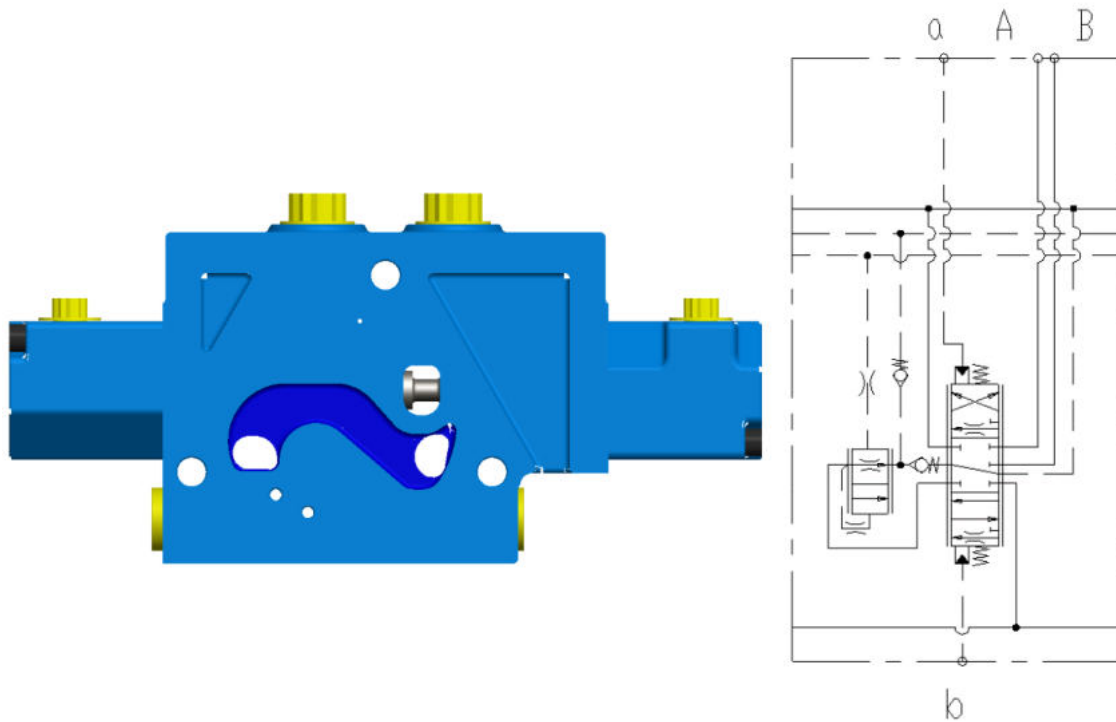


Figure 7

Electro-hydraulic proportional control form

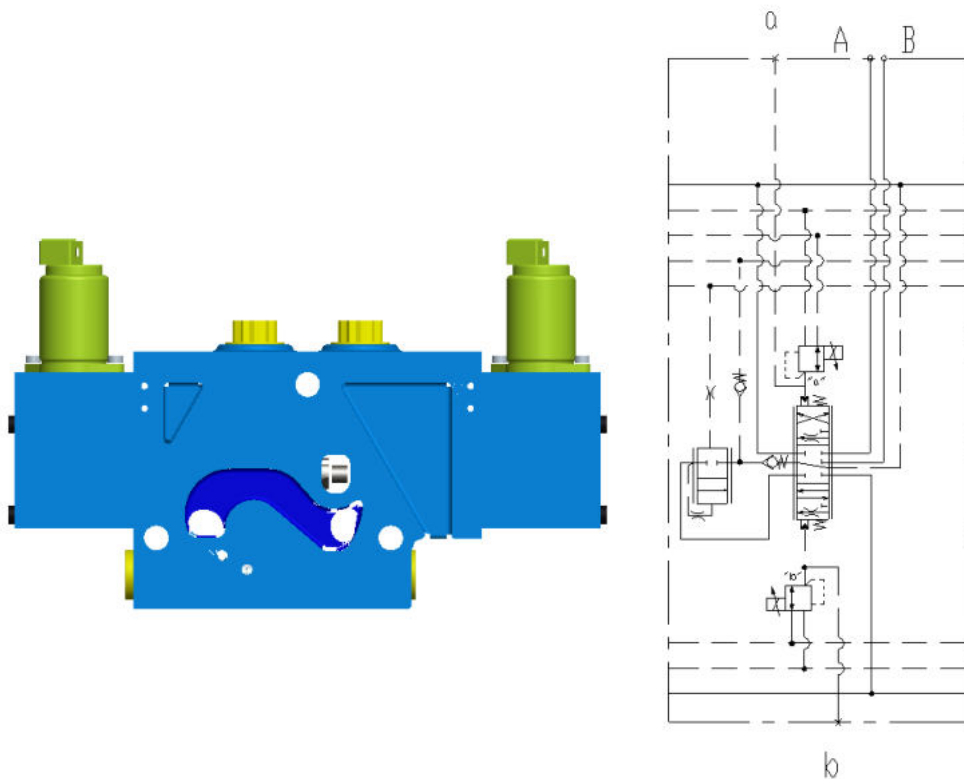


Figure 8



Manual control form

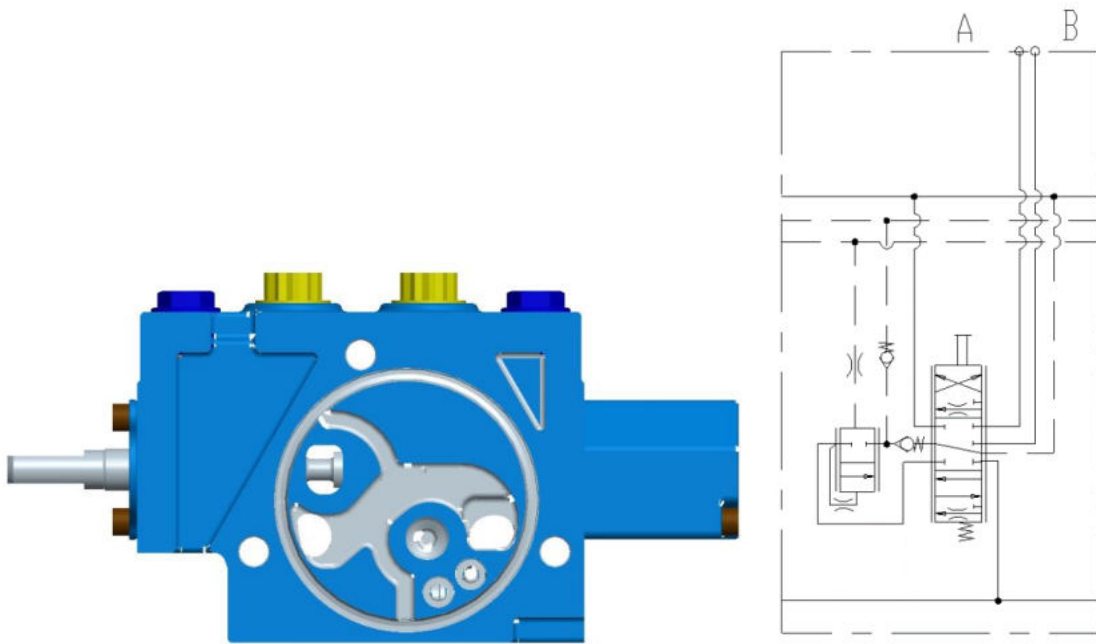


Figure 9

With overload charge valve function

The working union with the function of the overload replenishing valve is provided with an overload replenishing valve between the working oil path of the A and B and the returning oil circuit, which can regulate the overflow when the working port is overloaded, and replenish the oil when the working port is emptied.

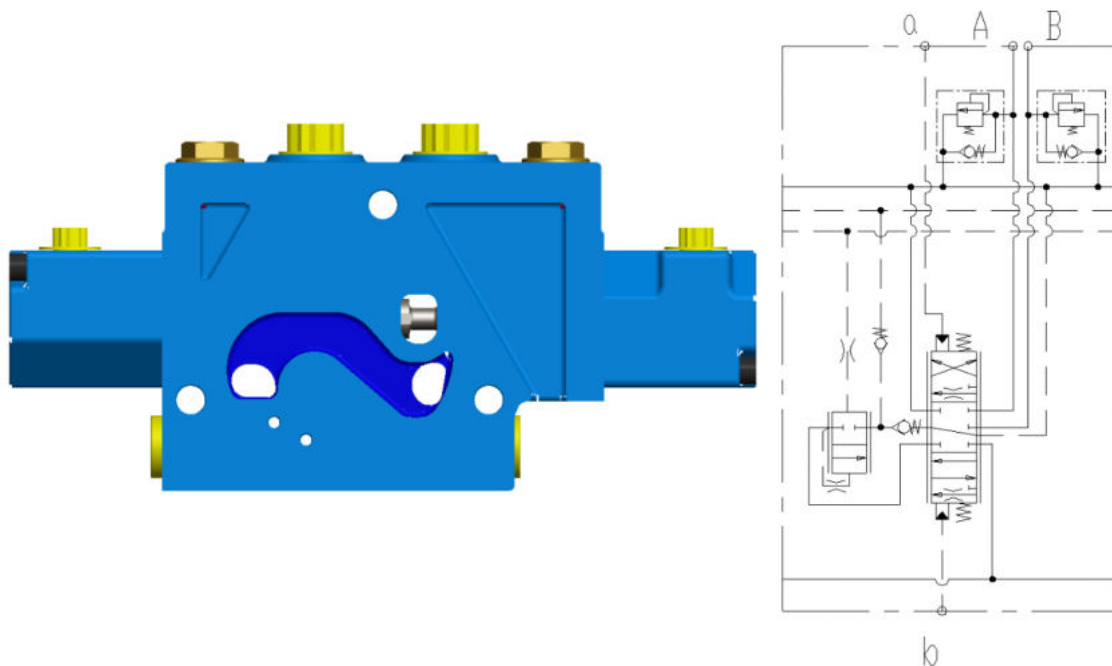


Figure 10



With spool travel limit

The working union with the spool stroke limit function sets the stroke limit mechanism on the pilot end cover to adjust the spool stroke to meet different flow requirements.

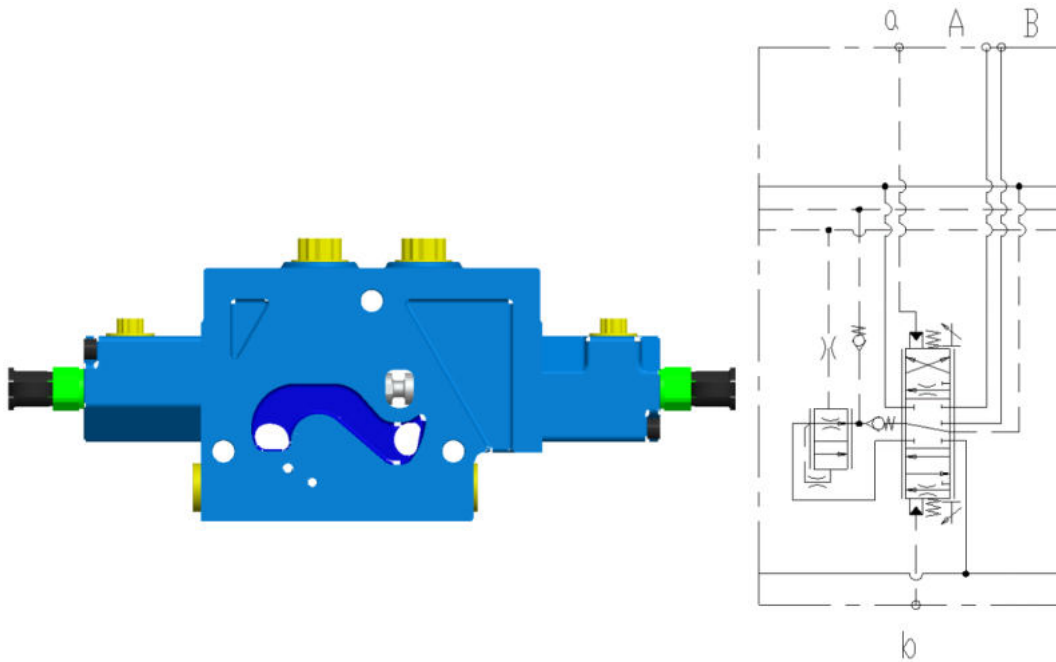


Figure 11

With flow regeneration

The working union with the flow regeneration function is provided with a one-way valve between the spool return throttle groove and the working orifice throttle groove, so that the oil can be replenished from the oil return port to the working port under the condition that the working port pressure is low, thereby satisfying Anti-air suction and energy saving needs.

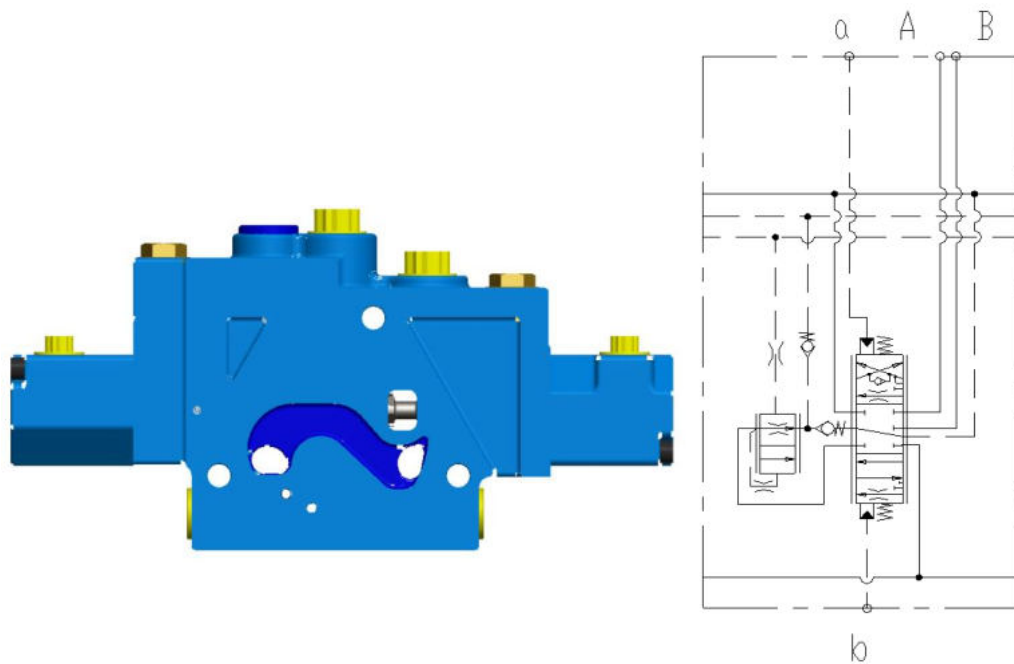
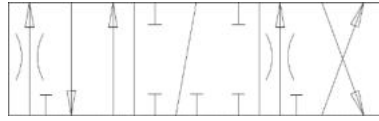


Figure 12



Median function of spool

O type



XS-1220-114 85-75E:



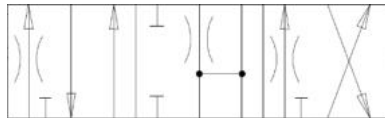
XS-1220-124 60-60E:



XS-1220-134 45-45E:



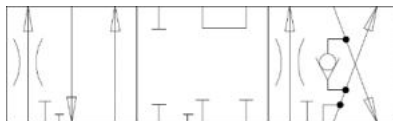
H type



XS-1220-115 55-55J



O type with regeneration



XS-1220-116 25-90Q



XS-1220-126 100-90Q



End plate

Provide an end plate with Ls relief valve, Ls dynamic damping, Lc dynamic damping, Ls feedback unidirectional damping and pilot decompression function as follows:

With Ls overflow function

The end plate with Ls overflow function is provided with an overflow valve between the Ls oil passage and the return oil passage to limit the maximum working pressure of the system and prevent the system from being overloaded.

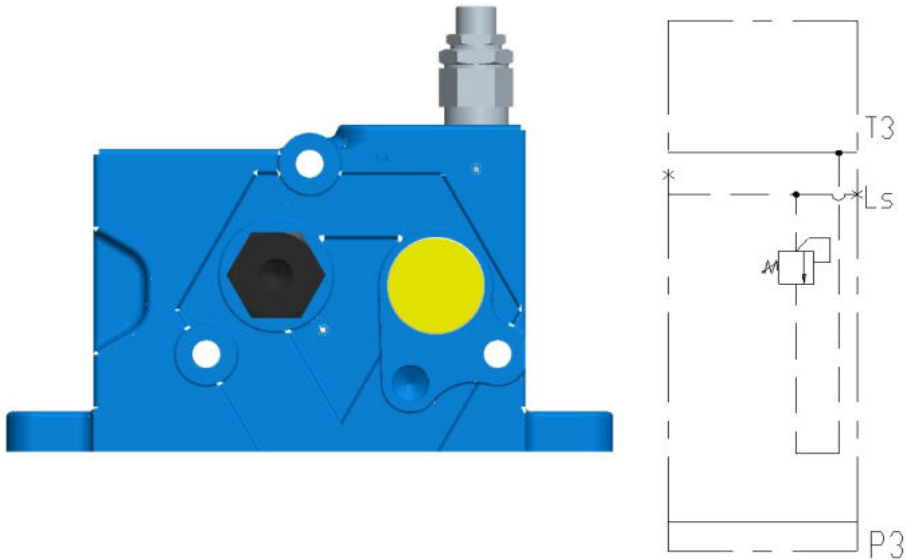


Figure 13

With Ls dynamic damping

The end plate with Ls dynamic damping function provides dynamic damping between the Ls oil circuit and the return oil circuit, which can eliminate the jitter of the Ls pressure during the working process and unload the Ls pressure when the system is not working.

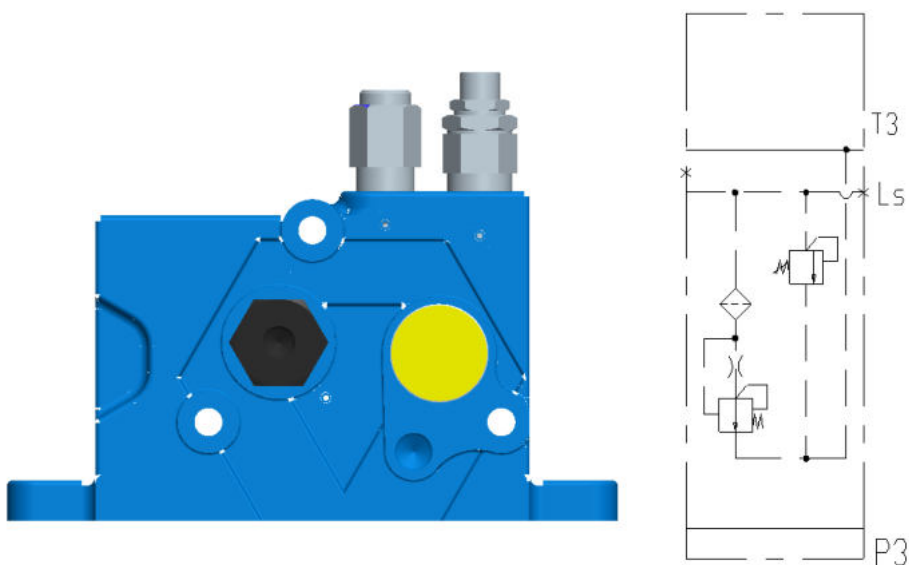


Figure 14



With Lc dynamic damping

The end plate with Lc dynamic damping function provides dynamic damping between the Lc oil circuit and the return oil circuit, which can eliminate the jitter of the Lc pressure during the working process and unload the Lc pressure when the system is not working.

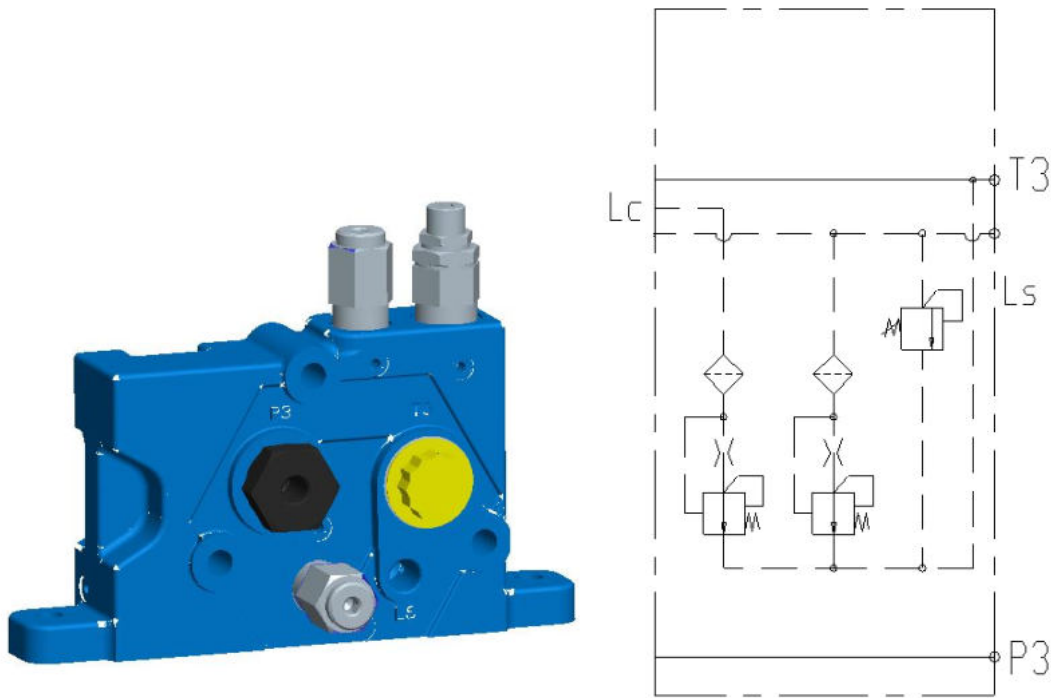


Figure 15

With Ls feedback unidirectional damping

The end plate with Ls feedback one-way damping function provides one-way damping between the Ls oil circuit and the variable pump control oil circuit, which can prevent high pressure on the pump side and low pressure feedback on the multi-way valve when the high and low loads are frequently switched. The signal has an effect and keeps the system stable.

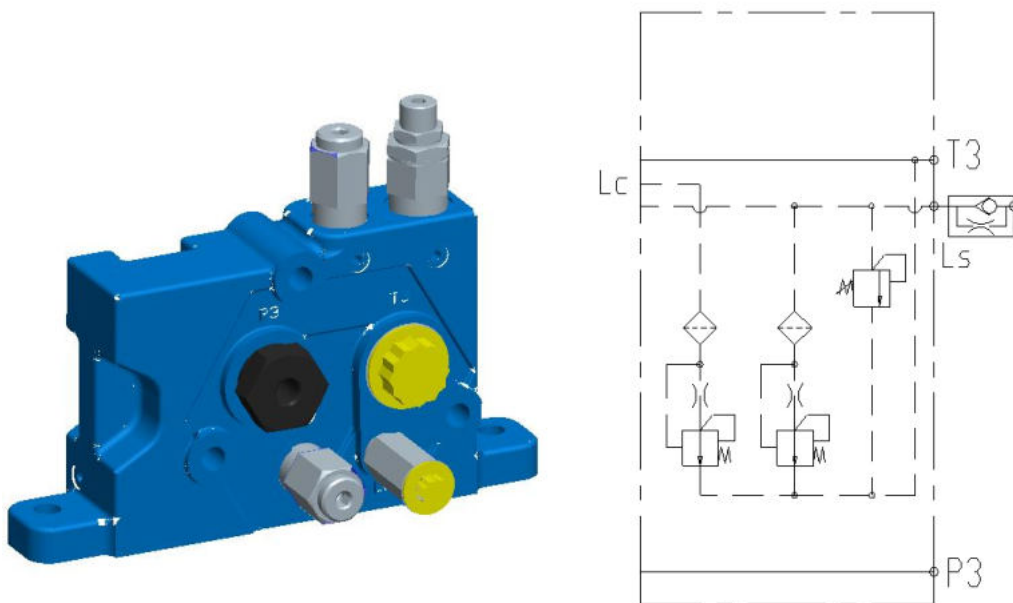


Figure 16



With pilot decomposition

The end plate with the pilot decomposition function, the pressure reducing valve is set between the P port oil inlet and the pilot control oil circuit, and the P port pressure can be reduced to the pilot pressure to meet the spool reversing pressure demand.

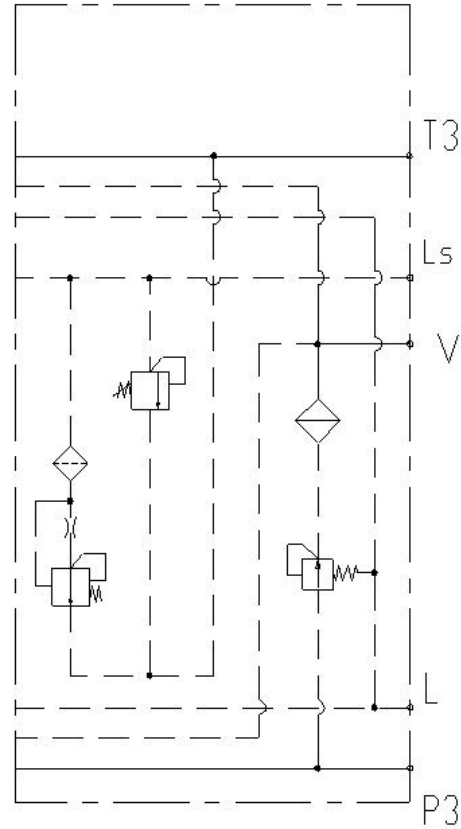
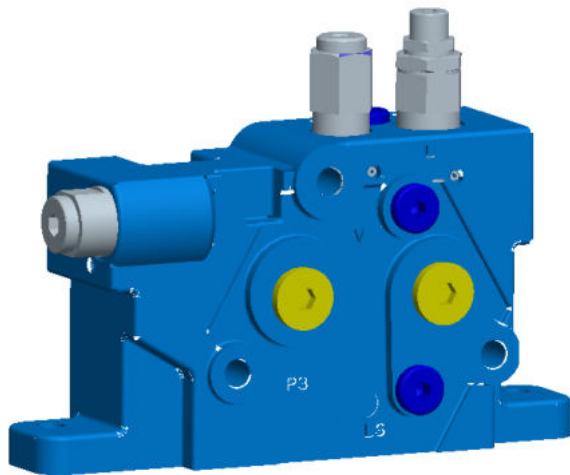
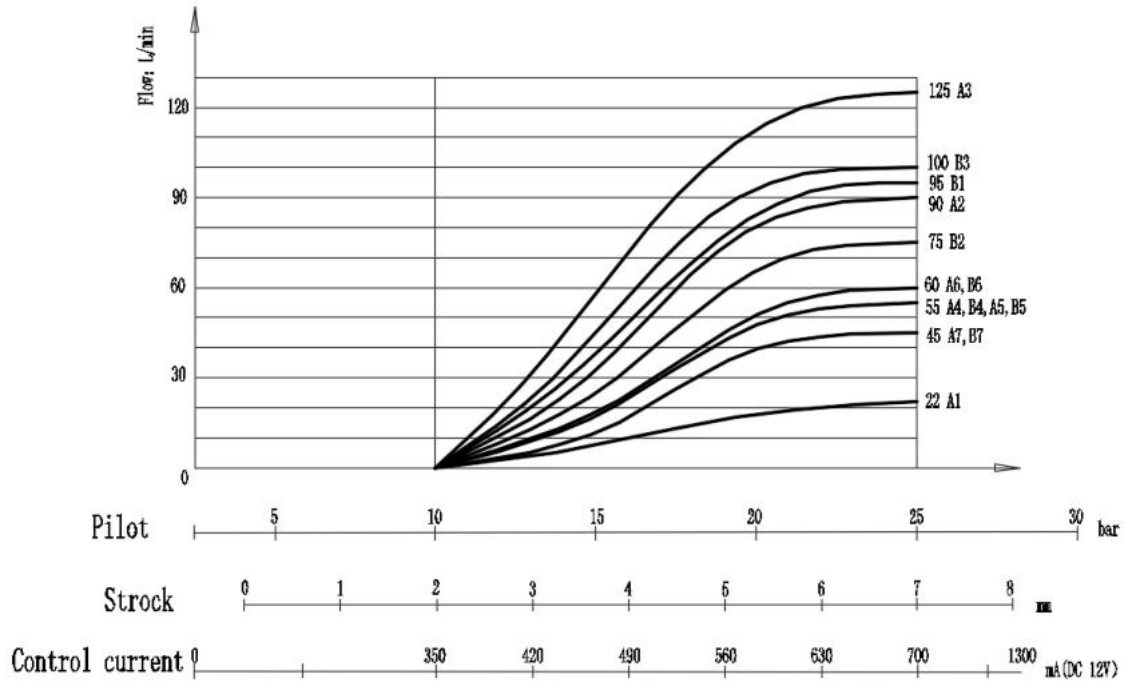


Figure 17

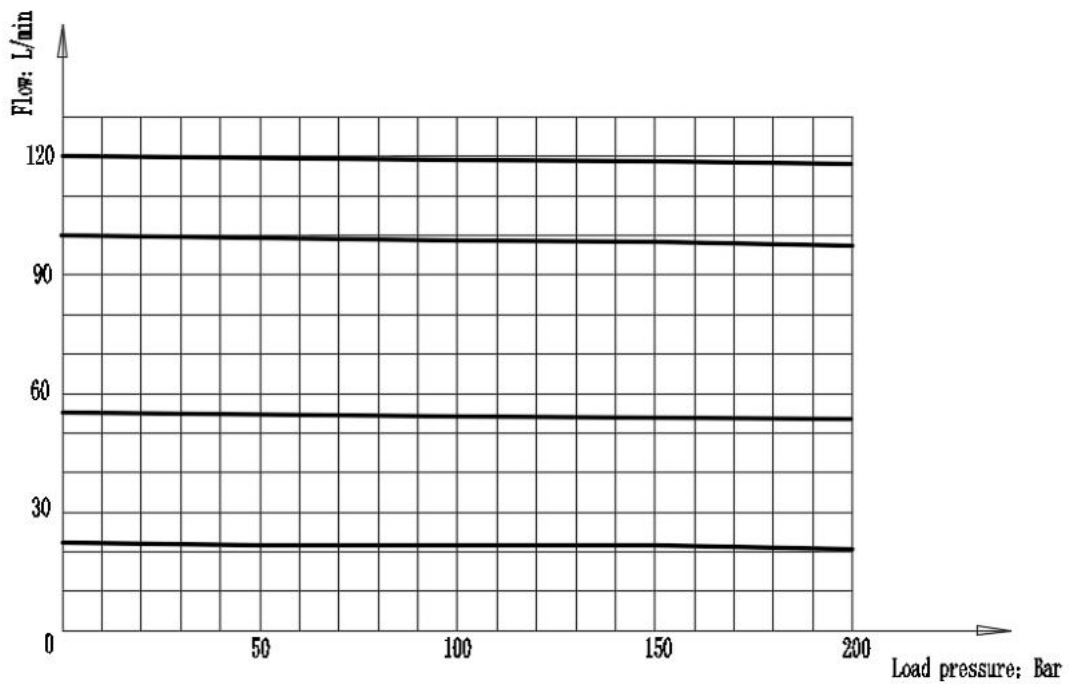


Performance curves

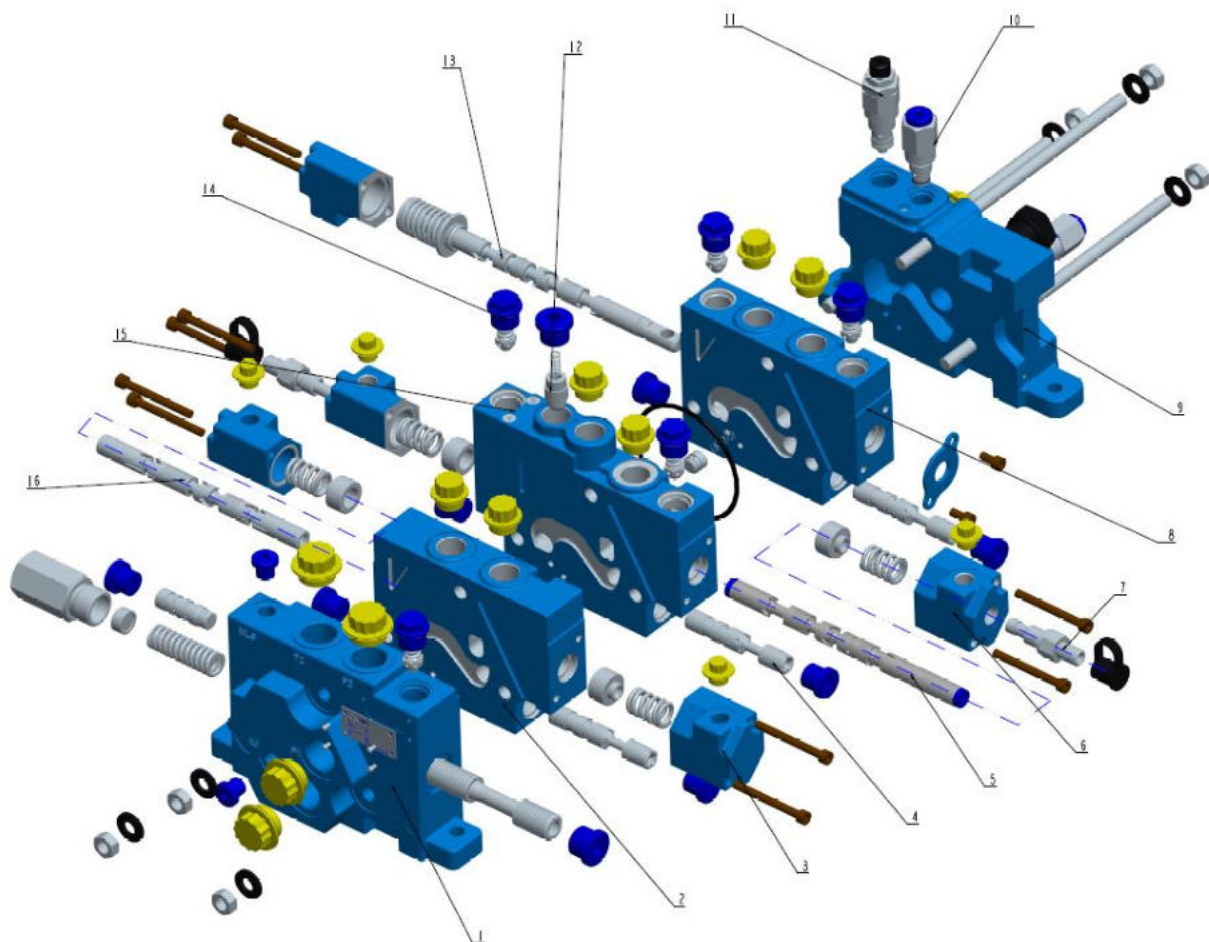
Pilot/strook/control current-Flow curve



Load pressure-Flow curve



Exploded view



1 Inlet plate

2 Work plate

3 Pilot controlling cover

4 Spool

5 Spool with regeneration

6 Cover with travel limit

7 Travel limitation

8 Work plate with load charge valve

9 End plate

10 One-way damping valve

11 Ls relief valve

12 Holding valve

13 Manual control spool

14 Load charge valve

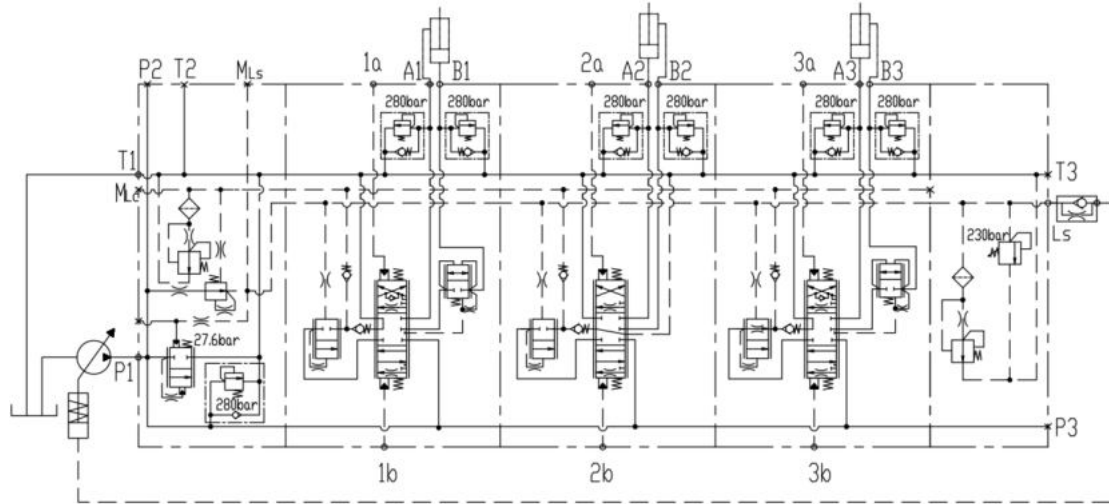
15 Work plate with holding valve

16 Pilot controlling valve

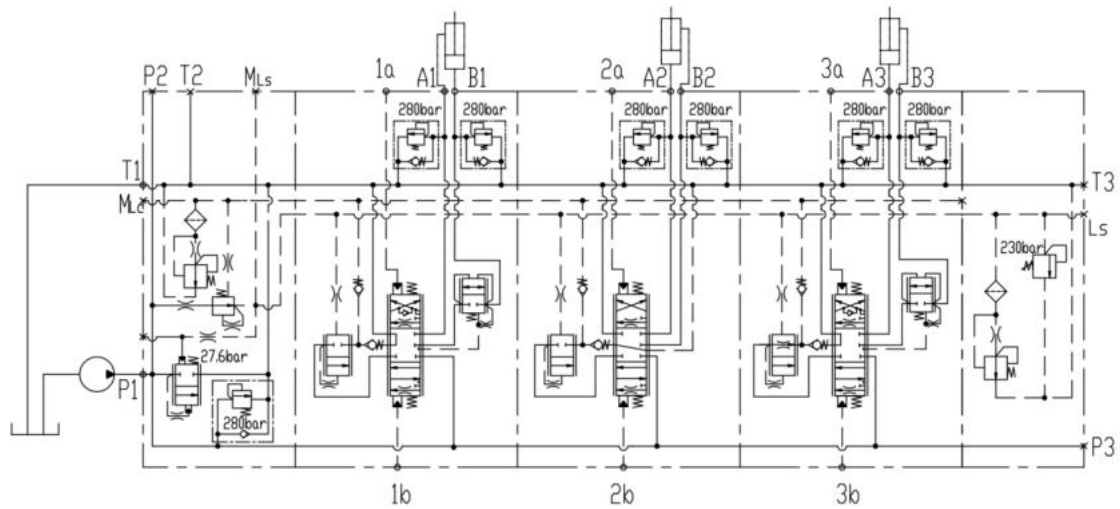


Typical application

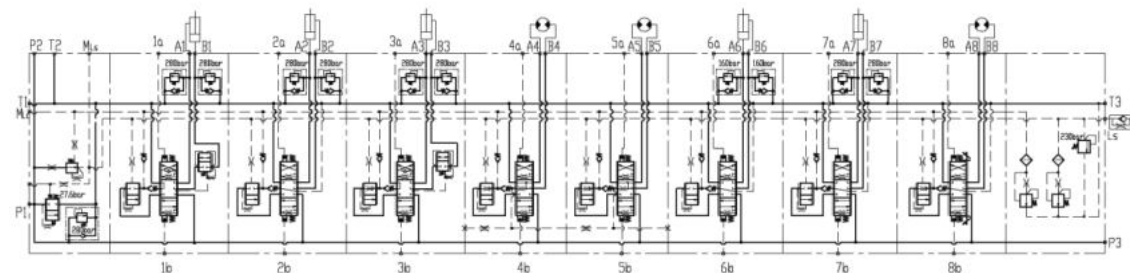
Application schematic of multi-way valve in variable pump system



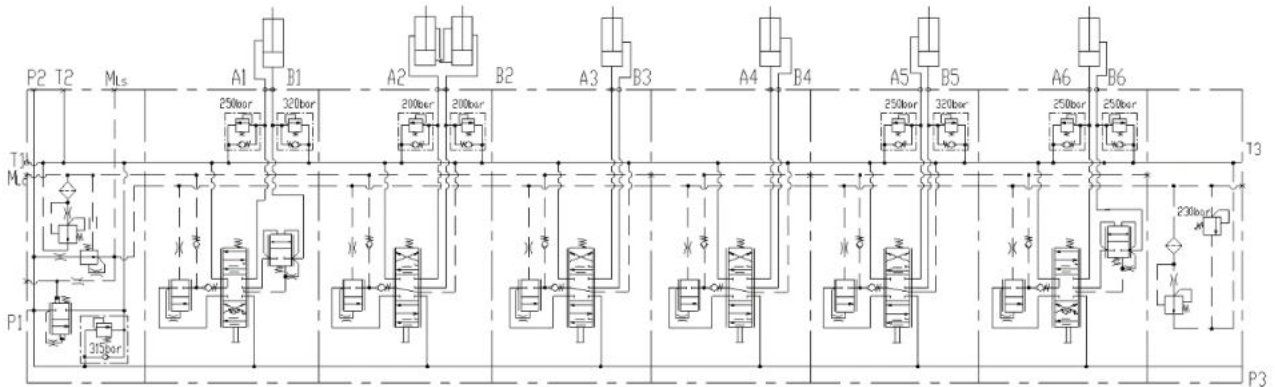
Application schematic of multi-way valve in Fixed displacement pump system



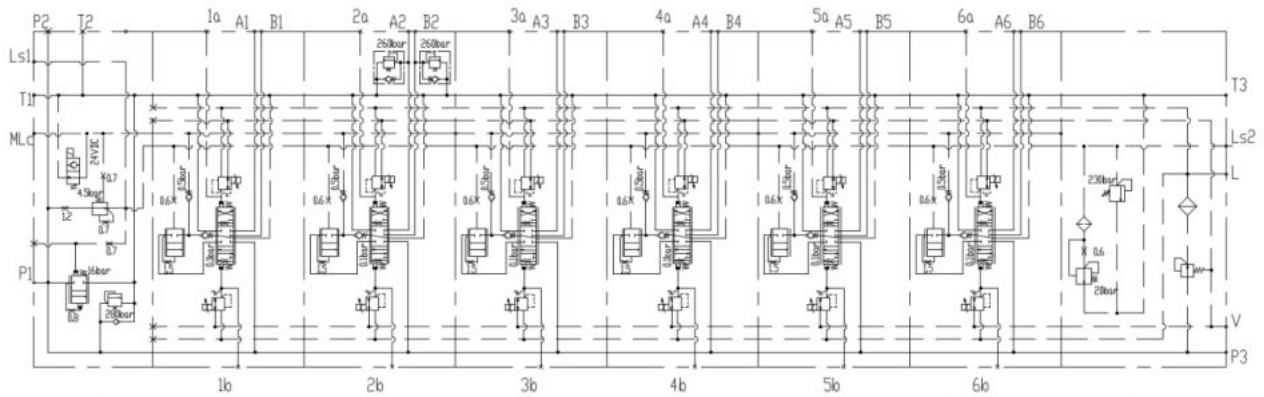
Application of multi-way valve in hydraulic control system of small excavator



Application of multi-way valve in manual control system of backhoe loader

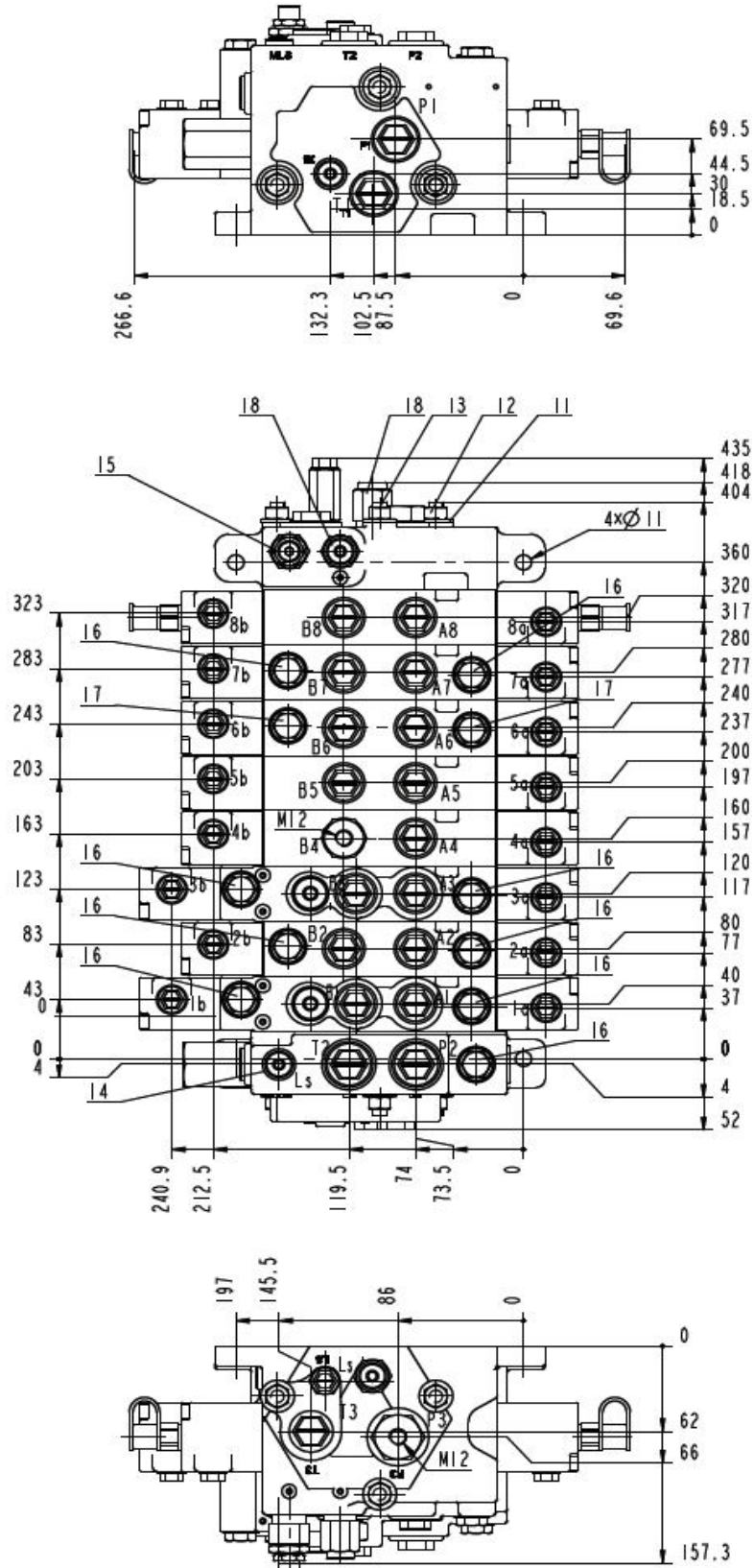


Application of multi-way valve in electric control system of telescopic handler

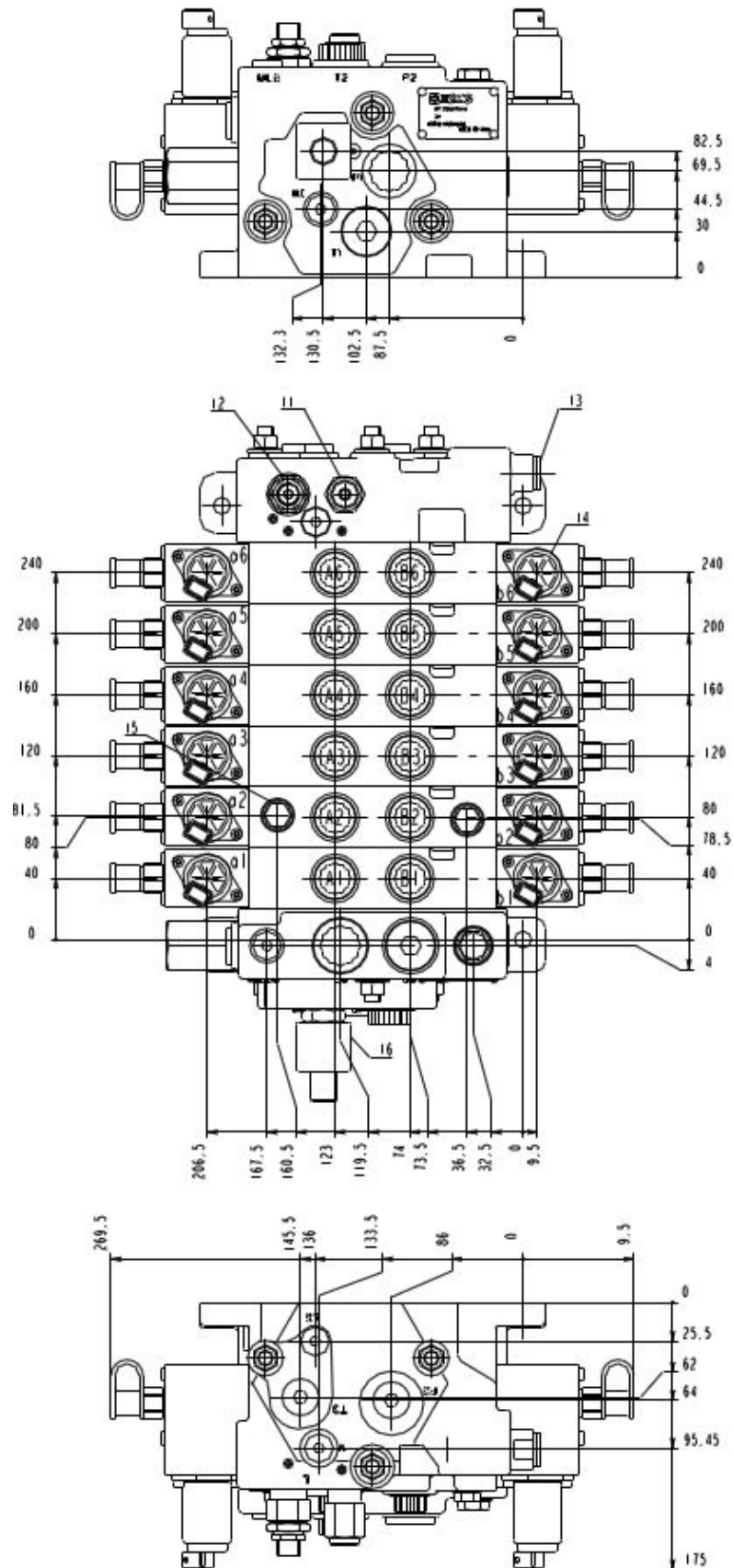


Component dimension

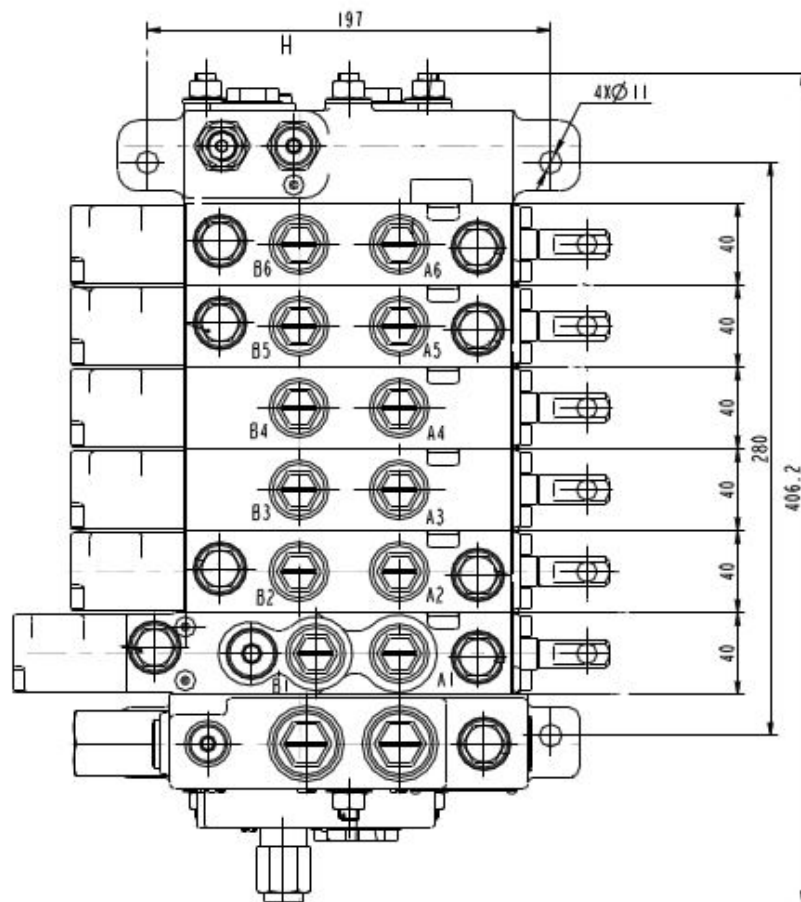
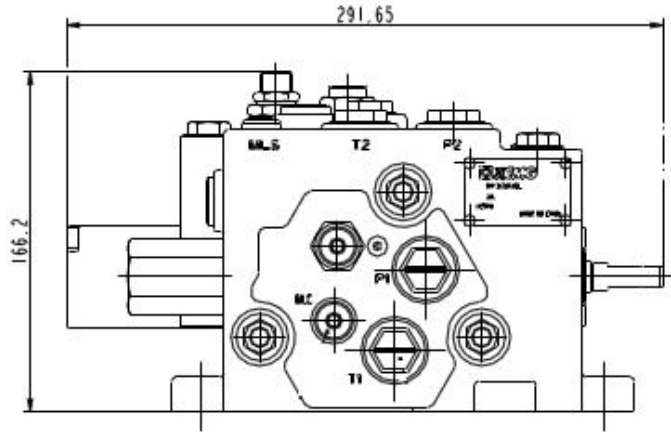
Hydraulic pilot control (mm)



Electro-hydraulic proportional control (mm)

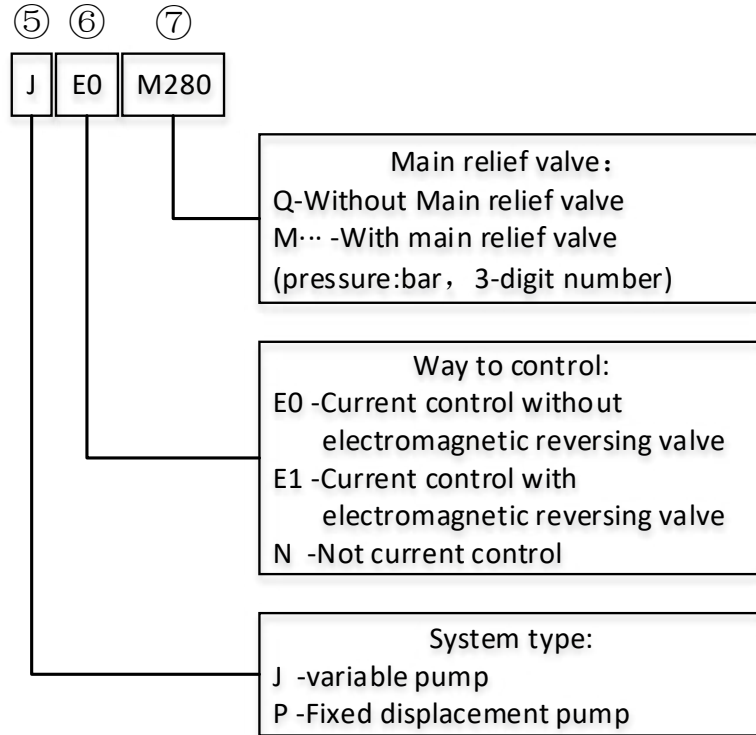


Manual control (mm)

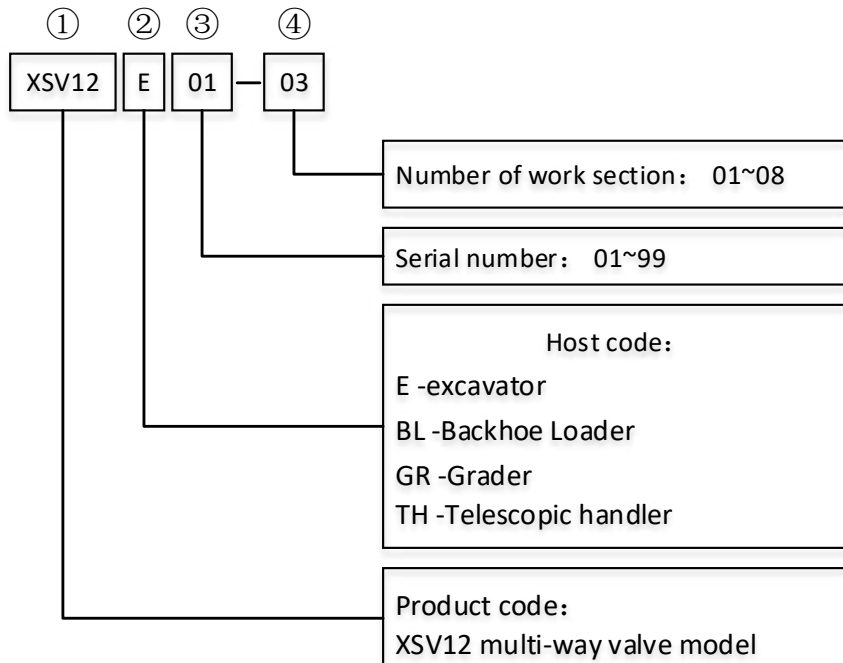


Model Description

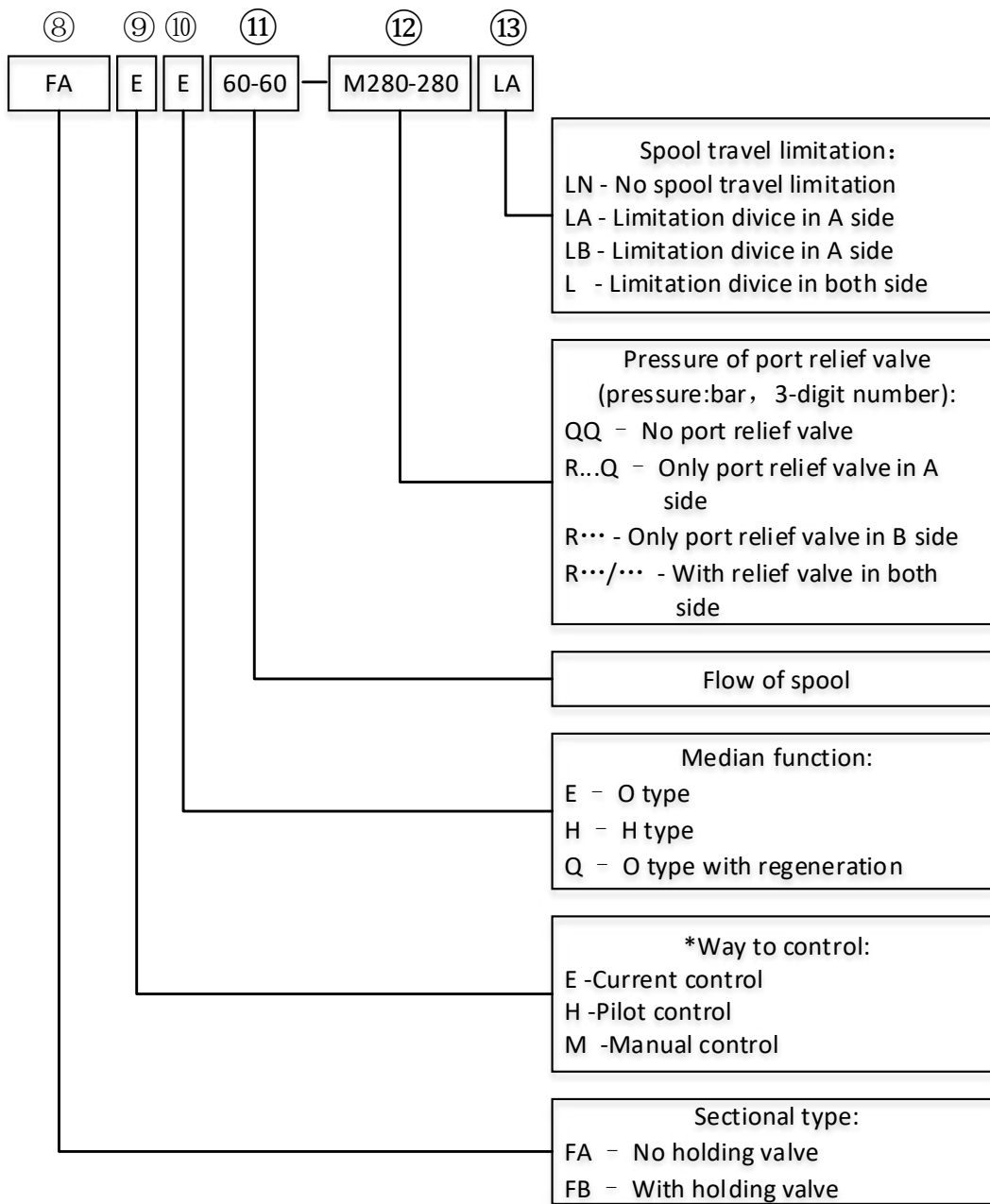
Basic mode:



Inlet plate:



Work section:



Description

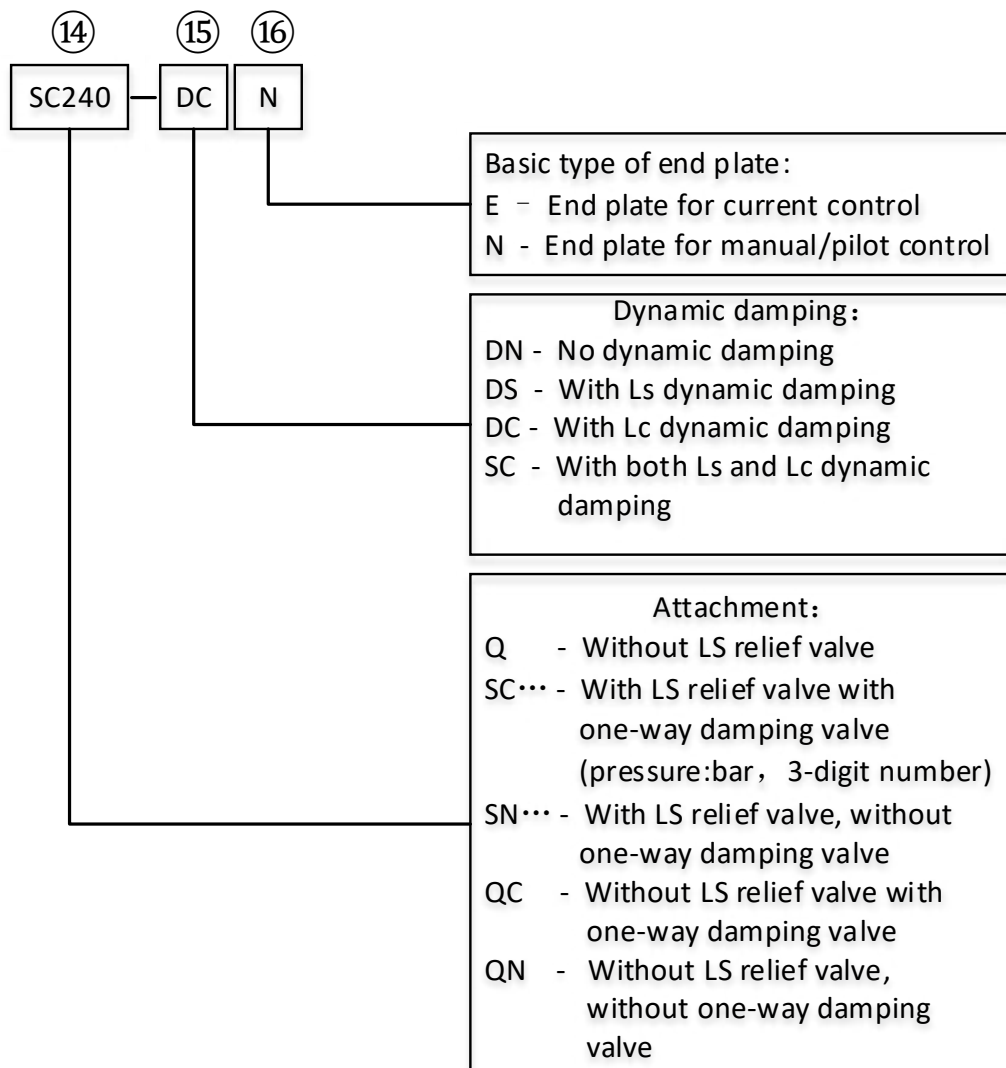
Actuator port A, B pressure set value (overload charge valve)			
050=50bar	140=140bar	210=210bar	300=300bar
063=63bar	150=150bar	230=230bar	310=310bar
080=80bar	160=160bar	240=240bar	330=330bar
100=100bar	175=175bar	250=250bar	350=350bar
125=125bar	190=190bar	240=240bar	280=280bar

= Preferred model

Preferred spool type (flow unit L/min, other flow can be set on the travel limiter)			
125	100	95	90
75	60	45	25



End plate:



*Note:**-The pilot pressure comes from end plate if there is work section with current control in the multi-way valve. So if there are current control sections and manual/pilot control sections, the current control section must be the last several sections next to the end plate.

****-If there is one work section with current control, end must be the E type.





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