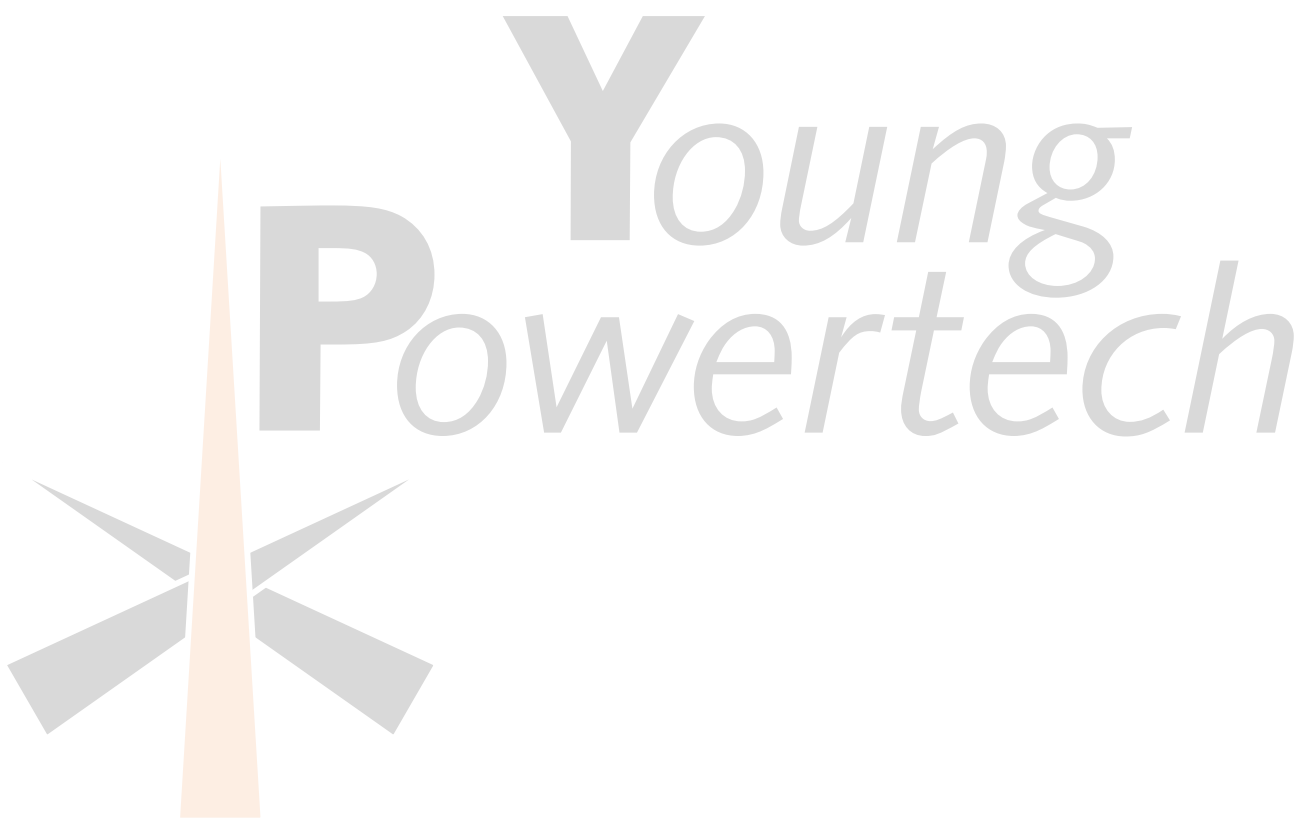




**HYDRAULIC STEERING UNIT**

A large, stylized version of the Young Powertech logo, featuring a central orange and grey starburst shape with the text 'Young Powertech' overlaid in a light grey, sans-serif font.

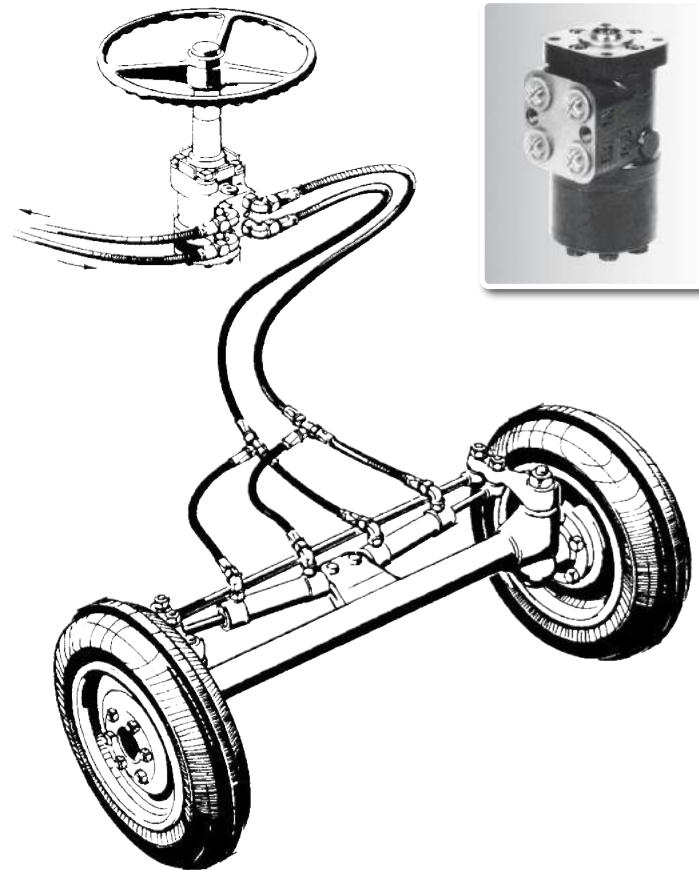
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## BZZ Series Hydraulic Steering Control Units (SCU)

Hydraulic steering control unit(SCU) is widely used both in the steering system of vehicles and the marine rudder. The operator can obtain bigger steering control force with less steering force, and its function is more safety and reliable, its operation is more smooth and flexible. BZZ1, BZZ2, BZZ3 series SCU offers the advantages as follows:

This kind of SCU series can help you reduce the machinery cost without mechanical linkage device, and can offer reliable and light structure.

This kind of SCU series can operate more flexible with light steering torque.

This kind of SCU series can offer emergent manual steering in case of engine failure.

This kind of SCU series can be steering at the continuous speed with less steering torque.

This kind of SCU series can offer various hydraulic system and different mounting choice.

This kind of SCU series can link various steering pump and hydraulic steering system.

In addition to the advantages mentioned above, BZZ5 series SCU has the features as follows: BZZ5 series SCU can supply priority relative flow to ensure reliable, sensitive and flexible steering according to the

requirement of hydraulic steering system, whether the load pressure is big or small, or the steering wheel rotates quick or slow.

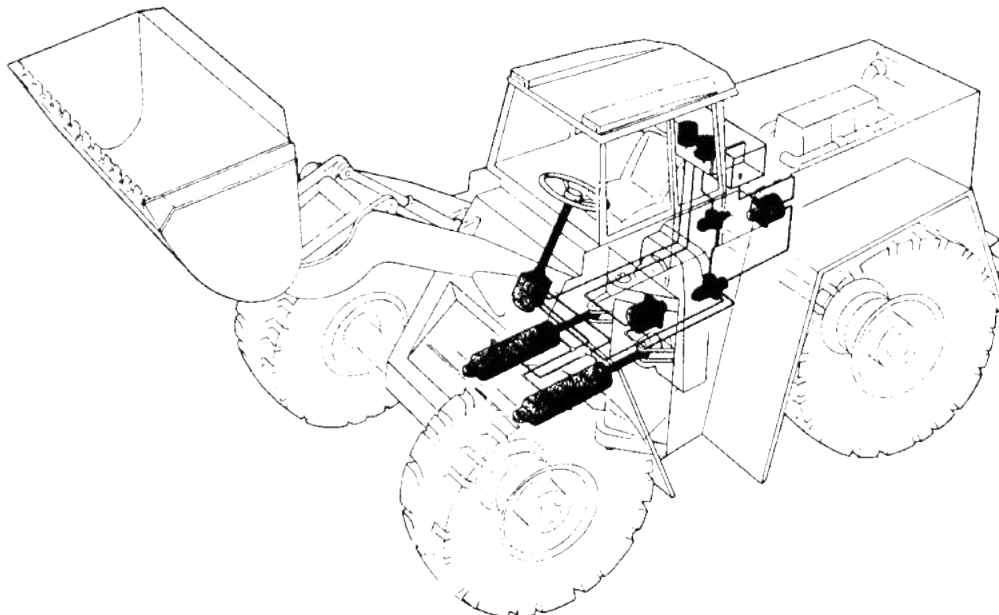
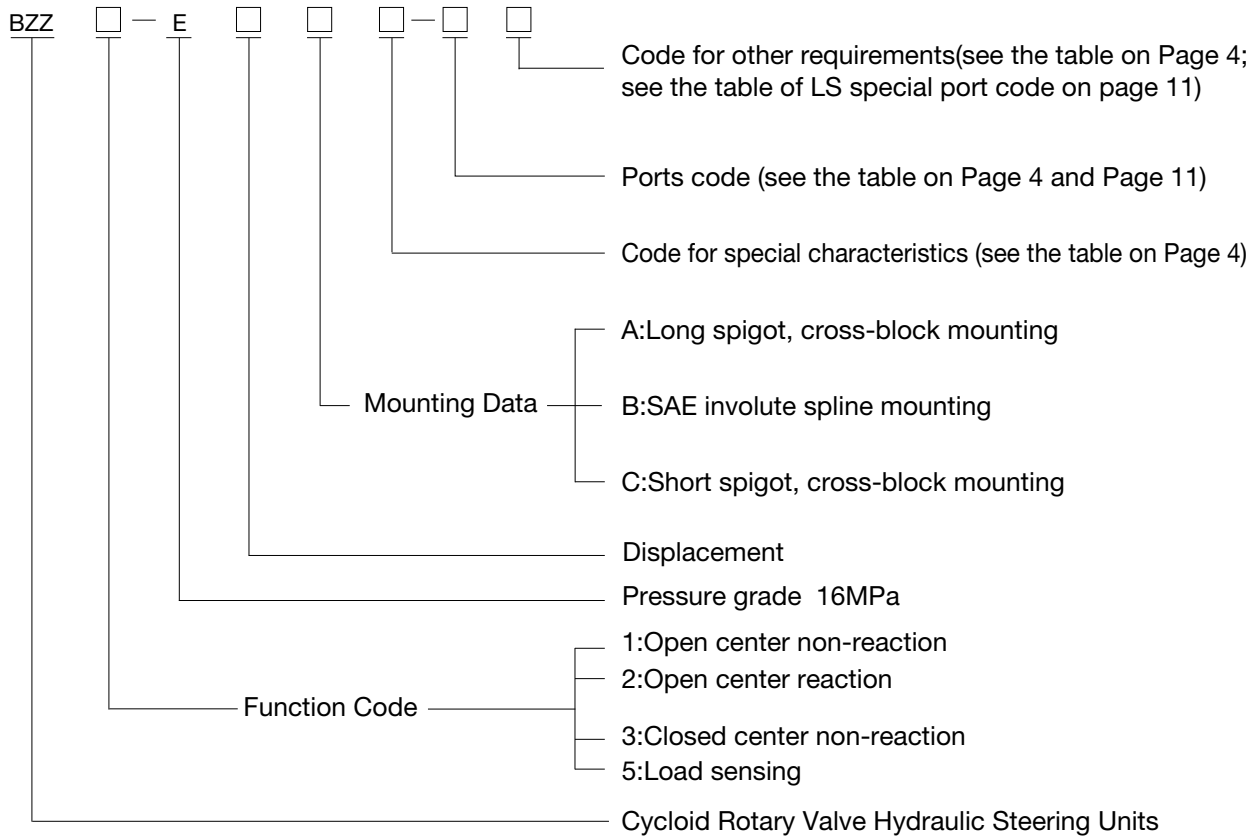
In addition to the necessary flow supply to the steering system, the remaining flow out of the pump can be supplied to subsidiary flow system, so that the system can avoid the power loss caused by surplus flow out of the steering flow system, and the system efficiency can be increased.

## GENERAL DESCRIPTION



<p><b>BZZ Series Function</b></p>	<p>BZZ series hydraulic steering unit is consisted of one pair of rotary valve and one pair of gerotor. Via the steering column, the steering unit links the steering wheel, when the steering wheel rotates, the oil flows out of the supply pump of the steering system , through the rotary valve and the gerotor , to the cylinder's port left or right ( depend upon the rotation direction). The gerotor supplies the oil to the steering cylinder in proportion to the angular rotation of the steering wheel. If the oil flow out of the supply pump of the steering system is too small, the steering unit can work as the manual pump.</p>
<p><b>In open center system</b></p>	<p>Release the steering wheel, the rotary valve stays in the neutral position, the pump and the tank is linked in open circuit. The constant pump is normally used in the open center steering system when the valve stays in the neutral position.</p>
<p><b>In closed center system</b></p>	<p>Release the steering wheel, the rotary valve stays in the neutral position,the input port is closed. The variable pump is normally used in the close center steering system when the valve stays in the neutral position.</p>
<p><b>Technical requirement for steering column</b></p>	<p>The structure of the steering column must ensure not to transfer the axial load to the output shaft of the steering unit. While the steering column is mounted, the steering unit should be able to return to the neutral position after its steering operation.</p>
<p><b>Steering torque of the steering column</b></p>	<p>Under the normal steering, the pump of the power unit supply enough oil, the max. torque of the steering wheel is no more than 5 N.m. If the pump fails to supply oil or supply insufficient oil, hydraulic steering unit will automatically change into manual steering.Under manual steering, the steering torque is obviously more than 5 N.m. However the max. torque cant be bigger than 120 N.m. or it will cause some damages inside the parts of steering unit.</p>

## ORDER CODE



## PORTS CODE



### BZZ Series Hydraulic Steering Control Units (SCU)

Category	Code	Definition	Remark	
Characteristic Code	(omit)	Common Type	Fit various steering system, e.g. tractor, loader, and road roller, etc. mainly used in china.	
	D	1.6 N·m~2.4 N·m	fit steering system of vehicles that driving on flat road , such as forklift.	
	C	≤1.6 N·m		
	Codes for the requirement of other performance characteristics (should be confirmed in an agreement)		e.g. manual steering, lower terminal steering feeling, noise and back-to-the-neutral-position function etc., or comprehensive requirement.	
Ports Code	Code	Ports P, T, A, B	Column Mounting C	Valve Mounting V
	(omit)	M20×1.5	M10	M12
	A	M18×1.5	M10	M12
	B	G1/2	M10	M10×1
	C	3/4-16UNF O-ring	3/8-16UNC	3/8-24UNF
	D	M20×1.5 O-ring	M10	M12
	E	M18×1.5 O-ring	M10	M12
	G	M22×1.5	M10	M12
	Q	M22×1.5 O-ring	M10	M12
	U	G1/2 O-ring	M10	M10×1
	M	3/4-16UNF O-ring	M10	M12
	I	3/4-16UNF O-ring	M10	M10
	N	3/4-16UNF O-ring	M10×1.25	M10
R	P, T : M22×1.5 A, B : M18×1.5	M10	M12	
S	P, T : M22×1.5 O-ring A, B : M18×1.5 O-ring	M10	M12	
Other Requirements	Mainly refers to the appearance, paint color etc. specified by agreement; the code will be listed in the agreement.			

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm



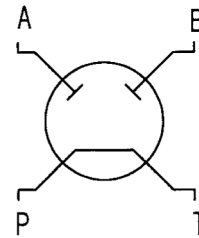
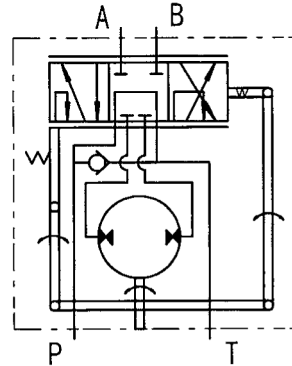
# BZZ1-BZZ2-BZZ3

## FUNCTION CODE

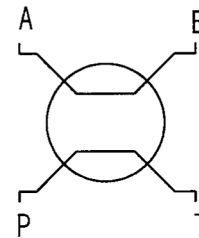
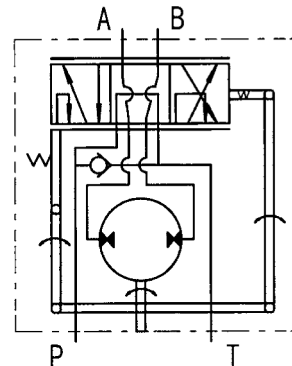


### BZZ1, BZZ2, BZZ3 Series Hydraulic Steering Control Units (SCU)

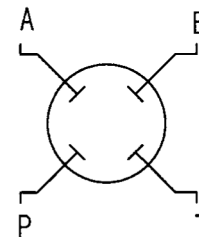
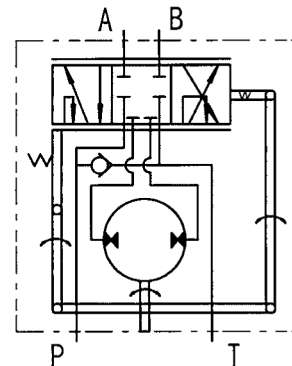
**BZZ1**  
Open center Non-reaction



**BZZ2**  
Open center reaction



**BZZ3**  
Open center Non-reaction



# BZZ1-BZZ2-BZZ3



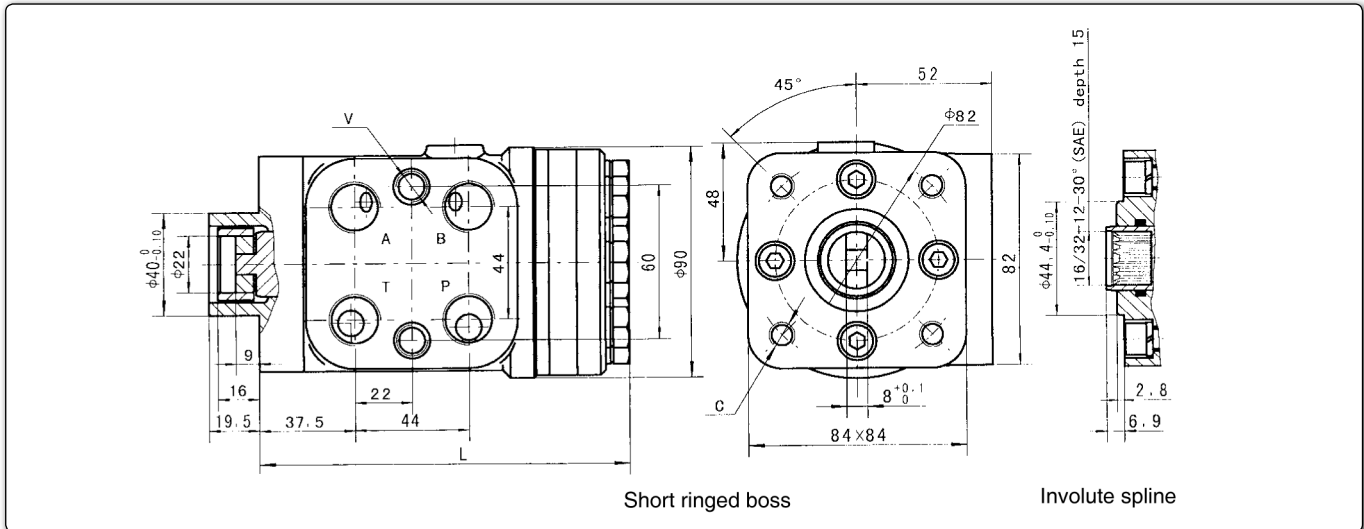
## MAIN SPECIFICATIONS

Type	Displacement (mL/r)	Flow (L/min)	Max. input pressure (MPa)	Max. cont. back pressure (MPa)	Weight (kg)
BZZ □ -E50*	50	4	16	2.5	4.72
BZZ □ -E63*	63	5			4.85
BZZ □ -E80*	80	6			5.00
BZZ □ -E100*	100	7.5			5.27
BZZ □ -E125*	125	9.5			5.43
BZZ □ -E160*	160	12			5.75
BZZ □ -E200*	200	15			6.08
BZZ □ -E250*	250	19			6.48
BZZ □ -E280*	280	21			6.78
BZZ □ -E315*	315	24			7.13
BZZ □ -E400*	400	30			7.78
BZZ □ -E500*	500	38			8.67
BZZ □ -E630*	630	48			9.72
BZZ □ -E800*	800	60			11.18
BZZ □ -E1000*	1000	75			12.80

Note 1: □ represents Function Code, BZZ2 can be chosen for SCU with the displacement of 50-200mL/r. BZZ1 or BZZ3 can be chosen for SCU with the displacement of 50-1000mL/r.

Note 2: "Flow" that we suggest to use is the flow of 1.25 times as much as that at the steering wheel's rotation speed of 60 r/min. If the design of the system can't meet the requirements, the flow is allowed to be adjusted a little bit.

## MOUNTING DATA



Note1: Above is for short ringed boss connection dimension. When dimension is 18, 25, 30.5, instead of 9,16,19.5 long ringed boss connection is available for reference above.

Note 2: please check Page 4 for the port code .

Type	L (mm)
BZZ□ -E50 *	140
BZZ□ -E63 *	141
BZZ□ -E80 *	142.5
BZZ□ -E100 *	145
BZZ□ -E125 *	148
BZZ□ -E160 *	153
BZZ□ -E200 *	158
BZZ□ -E250 *	164
BZZ□ -E280 *	169
BZZ□ -E315 *	174
BZZ□ -E400 *	184
BZZ□ -E500 *	197
BZZ□ -E630 *	216
BZZ□ -E800 *	236
BZZ□ -E1000 *	262

Note 1: □ represents Function Code, BZZ2 can be chosen for SCU with the displacement of 50-200mL/r . BZZ1 or BZZ3 can be chosen for SCU with the displacement of 50-1000mL/r.

# BZZ1-BZZ3

## MAIN SPECIFICATIONS

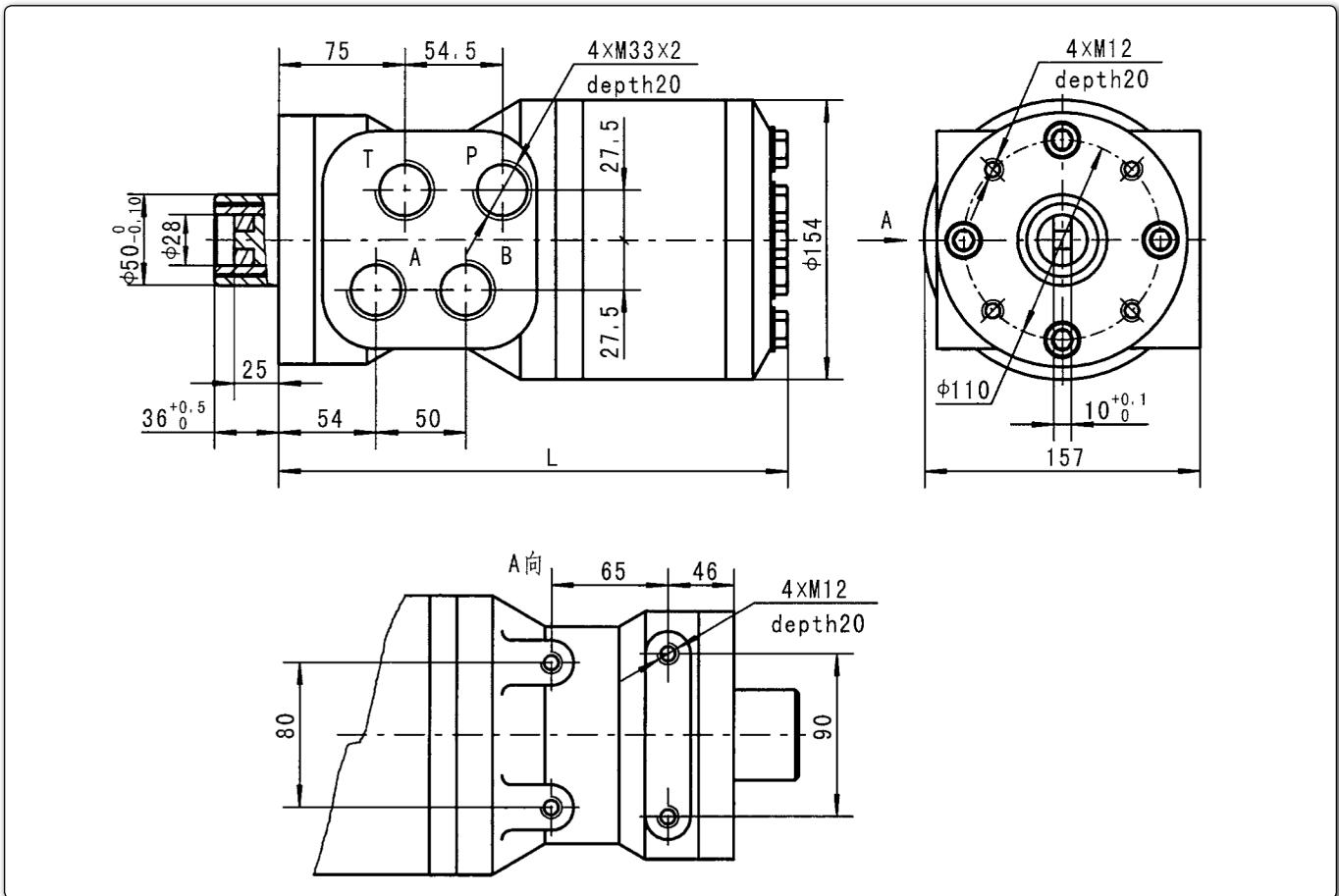


### BZZ1-BZZ3 Series Hydraulic Steering Units (SCU) with Super Displacement

Type	Displacement (mL/r)	Flow (L/min)	Max. input pressure (MPa)	Max. cont. back pressure (MPa)	Length L(mm)	Weight (kg)
BZZ □-E1000	1000	60	16	2.5	249	24.5
BZZ □-E1250	1250	75			261.5	25.5
BZZ □-E1600	1600	96			279	27.5
BZZ □-E2000	2000	120			299	28.5
BZZ □-E2500	2500	150			324	30

Note: □ represents Function Code, BZZ1 & BZZ3 can be chosen . please check Page 5 for Function Code explanation.

## MOUNTING DATA



## MAIN SPECIFICATIONS



### BZZ5 Series Hydraulic Steering Control Units (SCU)

As for load sensing steering system, the steering system and the operational system may use the same pump through the priority valve or the load sensing system can distribute the surplus oil of the steering system into the operational system. Meanwhile, if the pump with load sensing is used, the load sensing will have obviously productive results.

The LS port of the load sensing steering unit has to connect with priority valve or LS port of load sensing pump, so that the signal of the steering load pressure of the steering unit can be transferred to priority valve or load sensing pump through oil hose (we suggest that the length of the hose is  $\leq 2$  m), to control the oil volume supplied to steering unit by the control system.

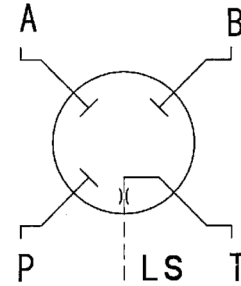
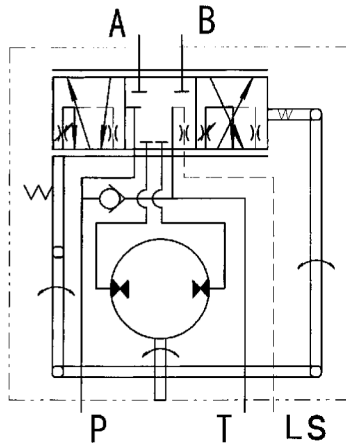
Type	Displacement (mL/r)	Length L(mm)	Max. input speed (rpm)	Max. input pressure (MPa)	Max. cont. back pressure (MPa)	Max. power steering torque (N·m)
BZZ5-E 50*	50	140	100	16	1.6	$\leq 5$
BZZ5-E 63*	63	141				
BZZ5-E 80*	80	142.5				
BZZ5-E 100*	100	145				
BZZ5-E 125*	125	148				
BZZ5-E 160*	160	153				
BZZ5-E 200*	200	158				
BZZ5-E 250*	250	164	75	16	1.6	$\leq 5$
BZZ5-E 280*	280	169				
BZZ5-E 315*	315	174				
BZZ5-E 400*	400	184	60	16	1.6	$\leq 5$
BZZ5-E 500*	500	197				
BZZ5-E 630*	630	216				
BZZ5-E 800*	800	236				
BZZ5-E 1000*	1000	262				

## FUNCTION CODE

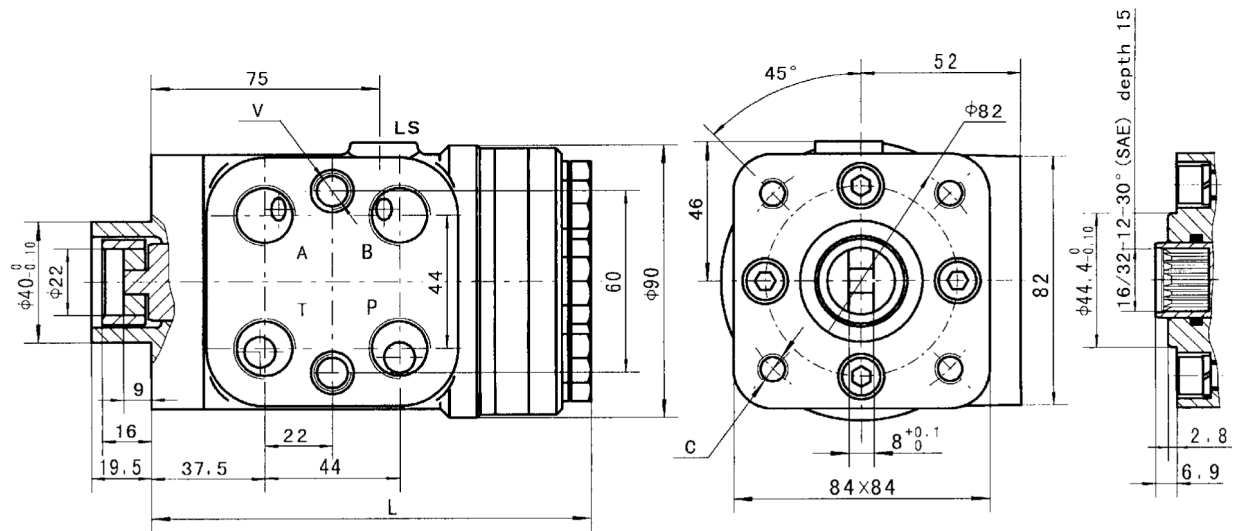


### BZZ5 Series Hydraulic Steering Control Units (SCU)

BZZ Load sensing



## MOUNTING DATA



Short ringed boss

Involute spline

## PORTS CODE



### BZZ5 Series Hydraulic Steering Control Units (SCU)

Category	Code	Ports P, T, A, B	Column Mounting C	Valve Mounting V	Port LS
Ports Code	(omit)	M20×1.5	M10	M12	M12×1.5
	A	M18×1.5	M10	M12	M12×1.5
	B	G1/2	M10	M10×1	G1/4
	C	3/4-16UNF O-ring	3/8-16UNC	3/8-24UNF	7/16-20UNF O-ring
	D	M20×1.5 O-ring	M10	M12	M12×1.5 O-ring
	E	M18×1.5 O-ring	M10	M12	M12×1.5 O-ring
	G	M22×1.5	M10	M12	M12×1.5
	Q	M22×1.5 O-ring	M10	M12	M12×1.5 O-ring
	U	G1/2 O-ring	M10	M10×1	G1/4 O-ring
	M	3/4-16UNF O-ring	M10	M12	7/16-20UNF O-ring
	I	3/4-16UNF O-ring	M10	M10	7/16-20UNF O-ring
	N	3/4-16UNF O-ring	M10×1.25	M10	7/16-20UNF O-ring
	R	P, T : M22×1.5 A, B : M18×1.5	M10	M12	M12×1.5
S	P, T : M22×1.5 O-ring A, B : M18×1.5 O-ring	M10	M12	M12×1.5	

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm; Port LS Depth: 12mm.

If the dimension of LS port don't comply with the specifications in the above form, add—" " after the port code and then choose LS code according to the following form.

Ports Code	Port LS
1	M12×1.5 O-ring
3	G1/4
5	7/16-20UNF O-ring
6	G1/4 O-ring
7	M12×1.5



### Hydraulic Steering Units 10 Series

Hydraulic Steering Unit 10 series is integral hydraulic steering unit, the valve body of rotary valve is integral structure, then the steering unit can integrate with cartridge valve, such as the pressure control valve of the integral system.

Hydraulic Steering Unit 10 series is widely used in the steering control system of different kinds of engineering vehicles, such as the steering system of many kinds of industrial and agricultural mobile machinery forklift, loader, road roller, tractor, combine harvester, and the ship helm etc. The steering unit can control the steering cylinder with bigger resistance force by inputting minor force; It's easier, flexible and reliable; The integral check valve can prevent the system pressure oil from anti-vibration , and prevent from "hit-hand" during the steering operation; Integral pressure control valve can control the operation pressure and the shock pressure of the steering system.

The mounting dimensions of Hydraulic Steering Unit 10 series are consistent with the international standard. According to the structure of gerotor set, Hydraulic Steering Unit 10 series can be divided into 2 series: 6/7 teeth structure steering unit and 4/5 teeth structure steering unit.

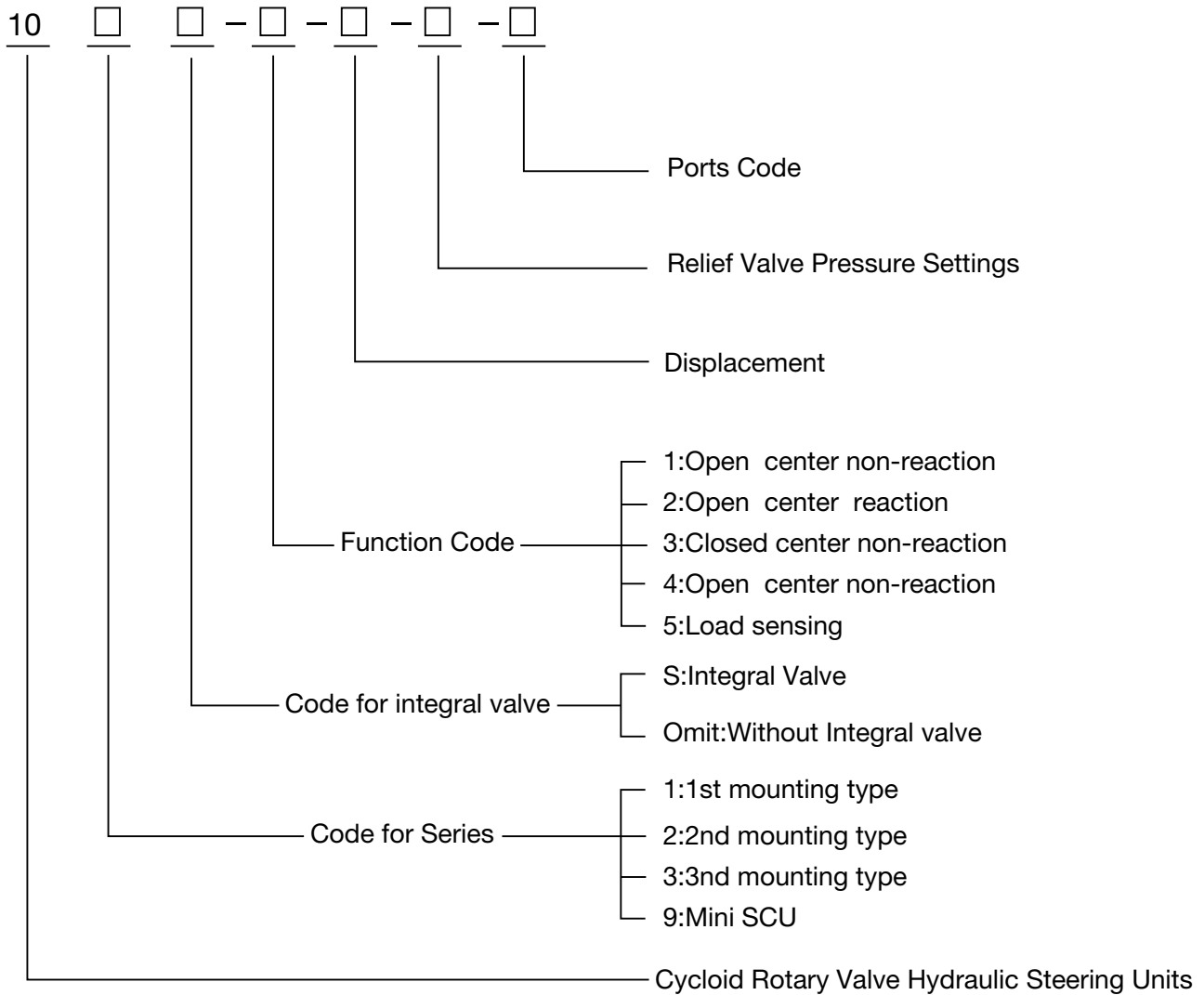
Hydraulic steering unit with 6/7 teeth structure: according to the size, this series may be divided into 101,102,103 series ( among these series, the mounting dimension of 102 series is consistent with that of BZZ series; ) Hydraulic steering unit with 4/5 teeth structure: it's defined as 109 series; according to special requirement of special customers, then we develop 119 and 129 series on the base of 109 series.

10 series SCU integrate inlet check Valve;Each series may be divided into 2 series according to the steering unit integrating cartridge valve or not, SCU without valve and SCU with S,SCU without valve doesn't integrate pressure valve,SCU with s integrates pressure valve As for open center non reaction steering unit,"1" represents the SCU with relief valve and shock valves,"4"represents the SCU with relief valve.

Please consult P13 for the introduction of 101 series,102 and 103 series, while P47 for 109 series.



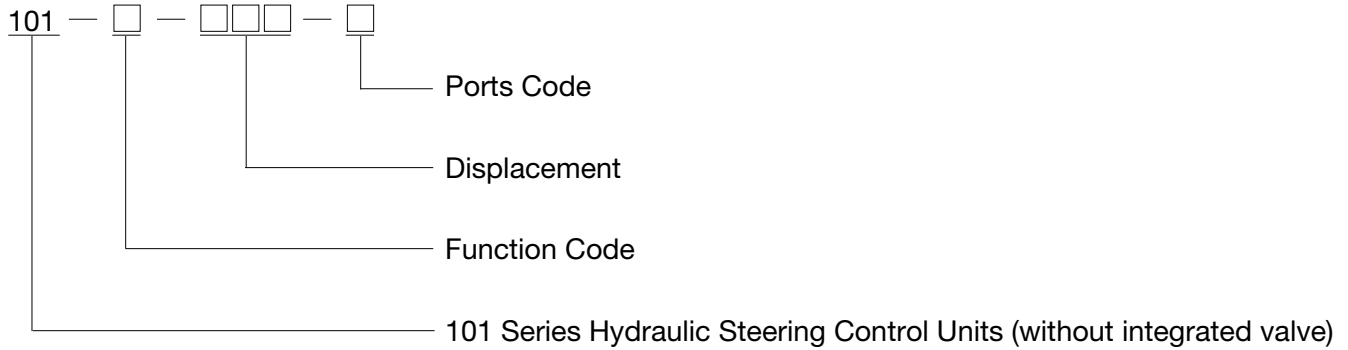
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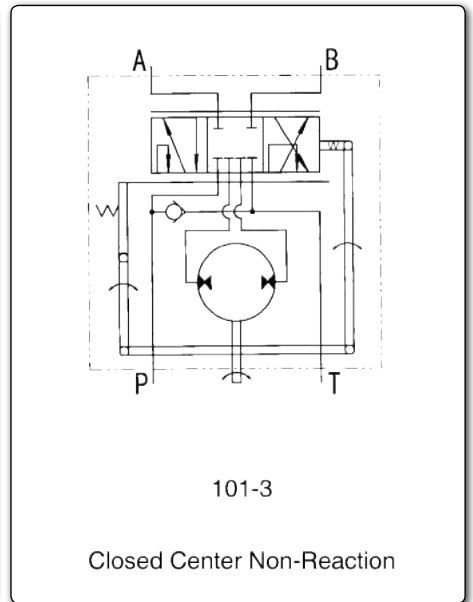
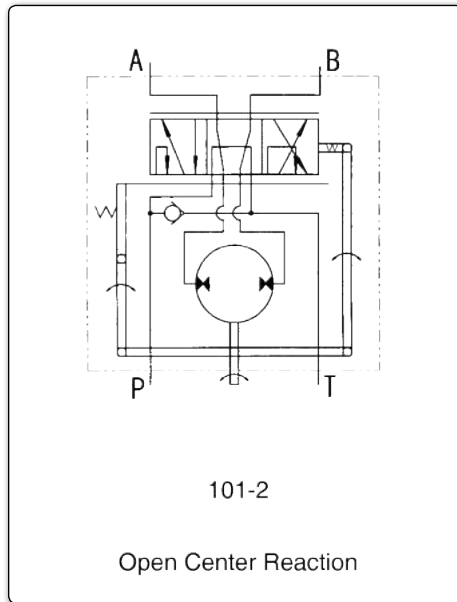
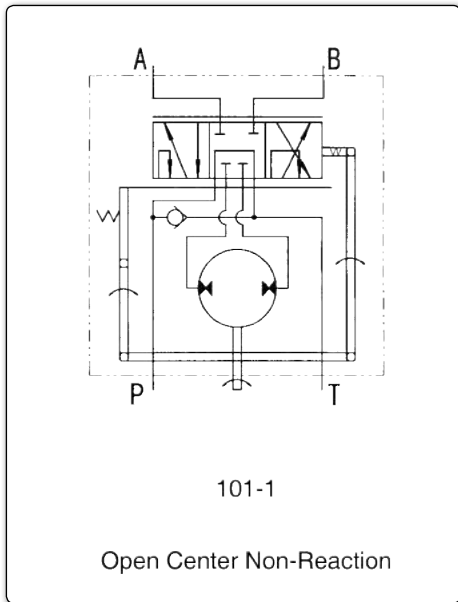
## ORDER CODE



### 101-1,2,3 Series Hydraulic Steering Control Units (SCU)



## FUNCTION CODE



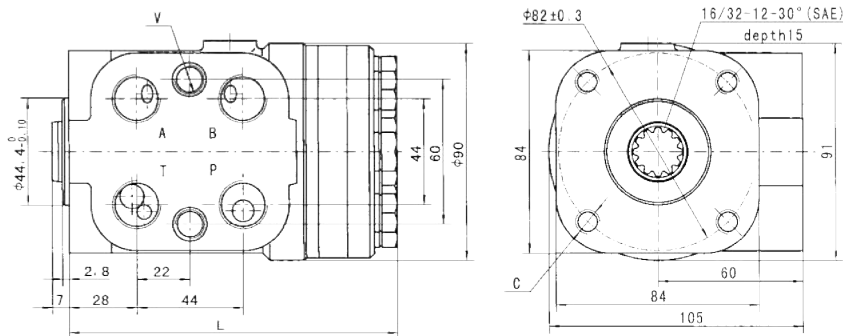
## MAIN SPECIFICATIONS



### 101-1,2,3 Series Hydraulic Steering Control Units (SCU)

Parameters	Type 101-*-*-* -*										
	1,2,3							1,3			
Function Code	1,2,3							1,3			
Displacement(mL/r)	50	63	80	100	125	160	200	250	280	315	400
Rated flow (L/min)	5	6	8	10	12.5	16	20	25	28	31.5	40
Max. input pressure (MPa)	17.5										
Max. cont. back pressure (MPa)	2.5										
Weight (kg)	5.70	5.76	5.84	5.91	6.05	6.25	6.45	6.68	6.86	7.06	7.45
Dimension L (mm)	130	132	134	137	140	145	150	156	161	166	176

## MOUNTING DATA



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Valve Mounting V	
A	M20×1.5	M10	M12	
B	M20×1.5 O-ring			
C	M18×1.5			
D	M18×1.5 O-ring			
E	G1/2		M10×1	
U	G1/2 O-ring			
G	M22×1.5		M12	
Q	M22×1.5 O-ring			
M	3/4-16UNF O-ring		3/8-16 UNC	3/8-24 UNF
F			M10	M10
I		M10×1.25		
N				

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm

Note 2: The code of other ports dimensions will be listed in an agreement.



### 101-1,2,3 Series Hydraulic Steering Control Units (SCU)

	Pos.1		Pos.2		Pos.3	
101	-	*	-	***	-	*

Pos.1 - Function Code

- 1: Open Center Non-Reaction
- 2: Open Center Reaction
- 3: Closed Center Non-Reaction

Pos.2 - Displacement mL/r

50, 63, 80, 100, 125, 160, 200, 250, 280, 315, 400

Pos.3 - Ports Code

A, B, C, D, E, U, G, Q, M, F, I, N

For example:

Order code

101-1 - 125 - E

Ports: P, T, A, B G1/2; Column  
Mounting Thread-C M10  
Displacement: 125 mL/r  
Open Center Non-Reaction

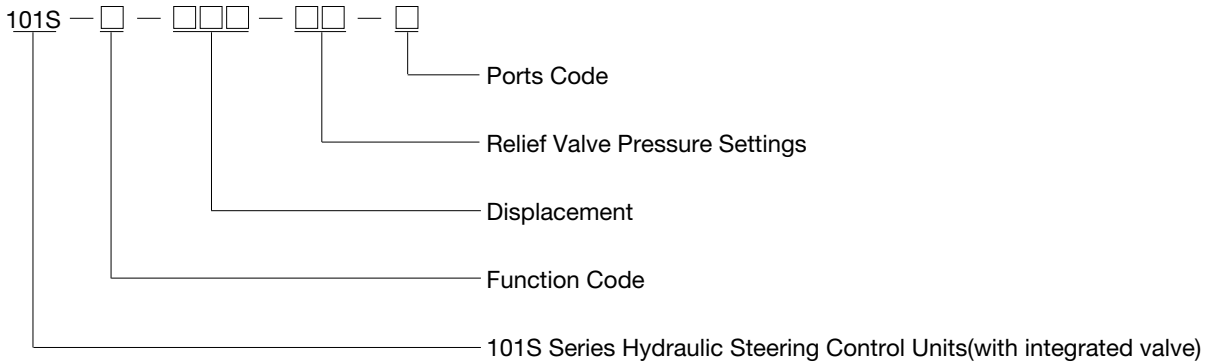
## GENERAL DESCRIPTION



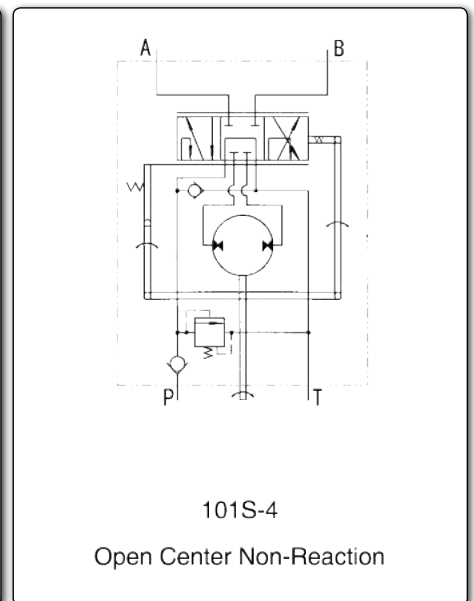
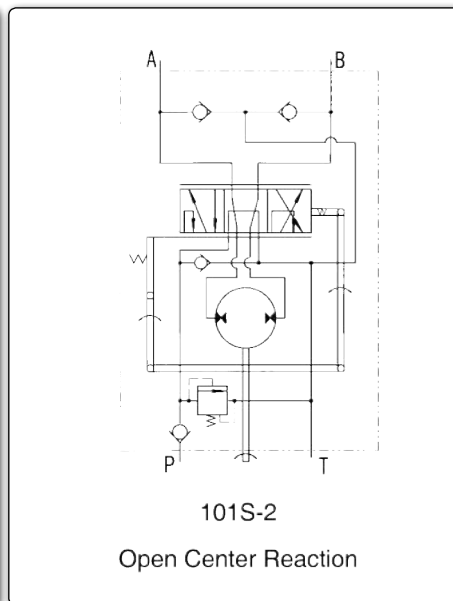
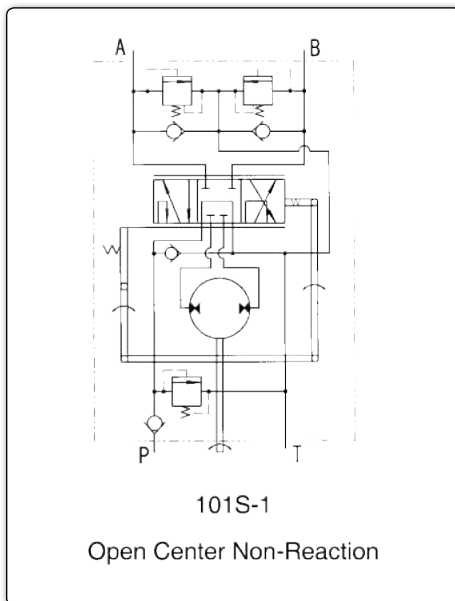
### 101S-1,2,4 Series Hydraulic Steering Control Units (SCU)

SCU 101S-1,2,4 series inherits the steering function of 101 series both in the structure and in the principle. The feature of 101S series is to have the following valves functions incorporated inside one housing as follows: the relief valve, the shock valves, the suction valves and the check valve according to the different requirement upon the base of the 101 series. This kind of structure is more compact, and it's more convenient in operation.

## ORDER CODE



## FUNCTION CODE



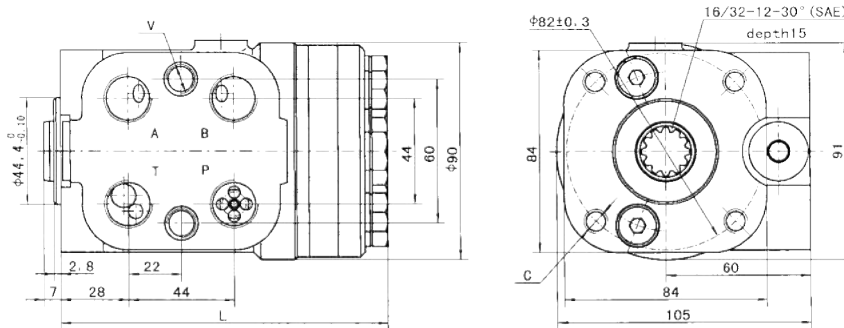
## MAIN SPECIFICATIONS



### 101S-1,2,4 Series Hydraulic Steering Control Units (SCU)

Parameters	Type 101S-* -*** -** -*										
Function Code	1,2,4							1,4			
Displacement(mL/r)	50	63	80	100	125	160	200	250	280	315	400
Rated flow (L/min)	5	6	8	10	12.5	16	20	25	28	32	40
Max. input pressure (MPa)	17.5										
Relief Valve Pressure Settings (MPa)	06, 07, 08, 10, 12, 14, 15, 16, 17.5										
Shock Valves Pressure Settings (MPa)	12, 13, 14, 16, 18, 20, 21, 22, 23.5										
Max. cont. back pressure (MPa)	2.5										
Weight (kg)	5.75	5.81	5.89	5.96	6.1	6.3	6.5	6.73	6.91	7.1	7.5
Dimension L (mm)	130	132	134	137	140	145	150	156	161	166	176

## MOUNTING DATA



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Valve Mounting V	
A	M20×1.5	M10	M12	
B	M20×1.5 O-ring			
C	M18×1.5			
D	M18×1.5 O-ring		M10×1	
E	G1/2			
U	G1/2 O-ring		3/8-24 UNF	
M	3/4-16UNF O-ring			M12
F				3/8-16 UNC
I				M10
N		M10×1.25	M10	

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm.

Note 2: The code of other ports dimensions will be listed in an agreement.

## GENERAL DESCRIPTION



### 101S-1,2,4 Series Hydraulic Steering Control Units (SCU)

	Pos.1	Pos.2	Pos.3	Pos.4
101S	-	*	-	**

Pos.1 - Function Code

- 1:Open Center Non-Reaction
- 2:Open Center Reaction
- 4:Open Center Non-Reaction

Pos.2 - Displacement mL/r

50、 63、 80、 100、 125、 160、 200、 250、 280、 315、 400

Pos.3 - Integrated Valve Parameter

Relief valve pressure settings (MPa):06、 07、 08、 10、 12、 14、 15、 16、 17.5  
Shock valves pressure settings is 6 MPa higher than relief valve

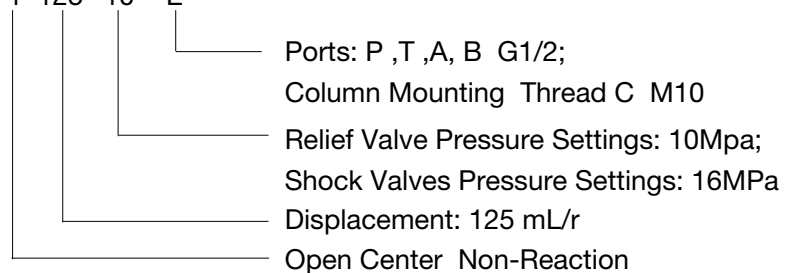
Pos.4 - Ports Code

A、 B、 C、 D、 E、 U、 M、 F、 I、 N

For example:

Order code

101S-1-125-10 - E



## GENERAL DESCRIPTION



### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

SCU 101(S)-5(T)(TE)(L)(E)(TX) series is used in the load sensing steering system.

SCU 101S-5,101S-5L,101S-5E series adopt modularity mounting type and can only be used with PVF\* type priority valve via modularity mounting.

SCU 101S-5L series guides the pressure signal of port LS out of port LL and transfers the pressure signal to the electrical control system.

SCU 101S-5E series guides the pressure signal of port A or B out of port EL.and then supplies the pressure signal to the electrical control system.

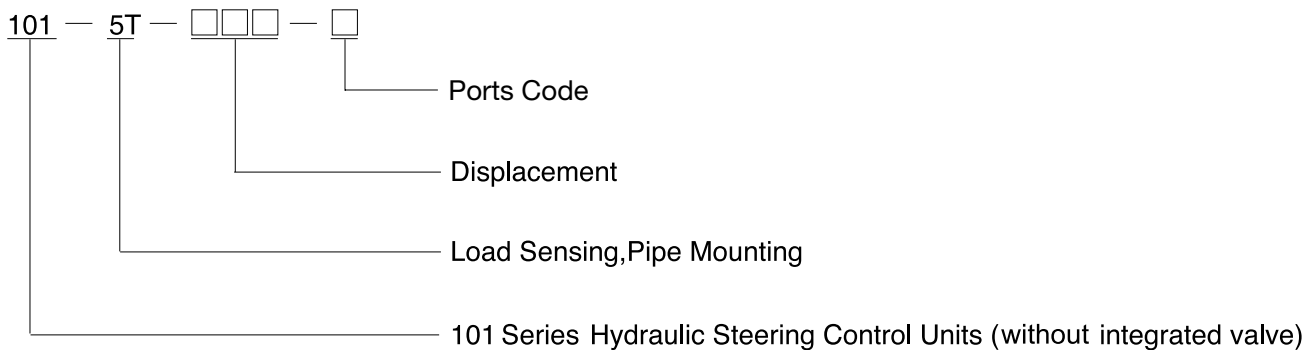
SCU 101S-5T,101S-5TE series adopts Pipe mounting and via pipe mounting can be used with PVL\* or DYXL,YXL type priority valve.

SCU 101S-5TE series guides the pressure signal of the port A or B out of port EL.and then supplies the pressure signal to the electrical control system.

SCU 101-5T series adopts the pipe mounting it can be used only after the pipe mounted with the DYXL,YXL type priority valve and the relief valve is integrated in the priority valve.

When the 101-5TX series SCU is in neutral position, both of its left and right cavity are connected with T port. This kind of SCU are used with LFA,LFB type flow amplifiers.

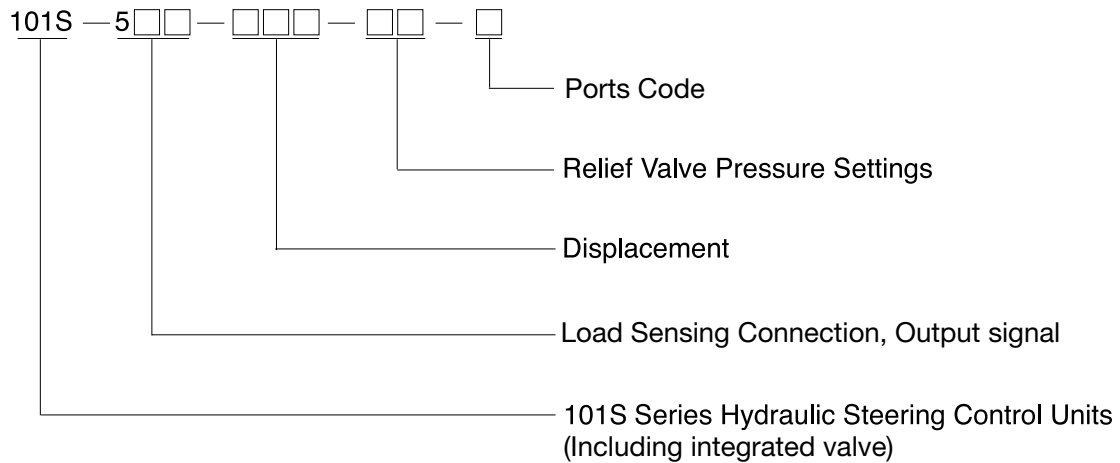
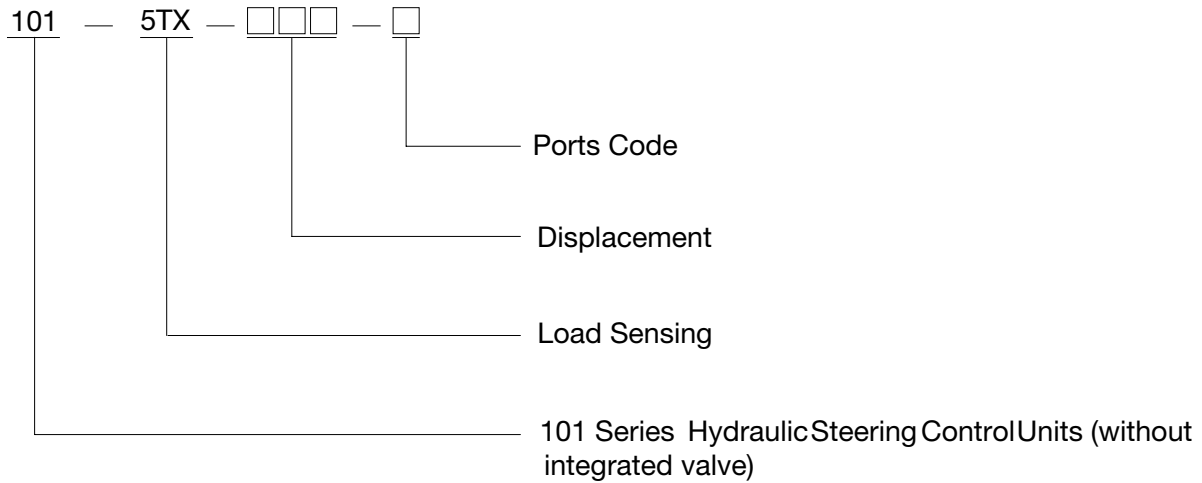
## ORDER CODE





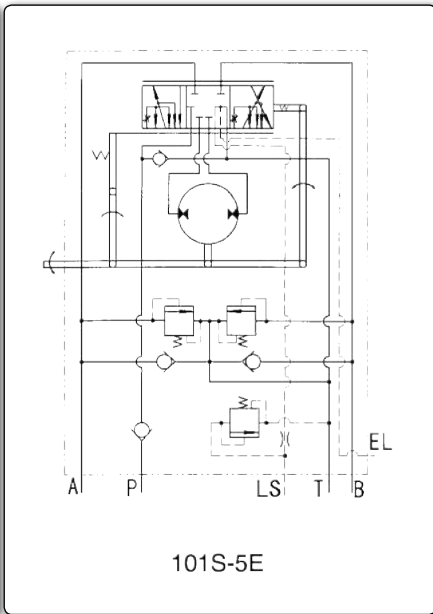
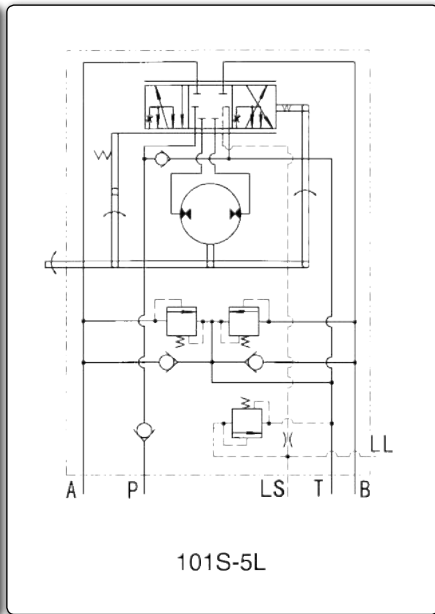
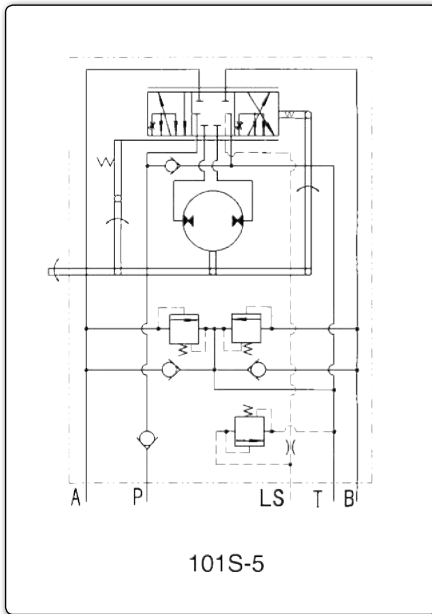


### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

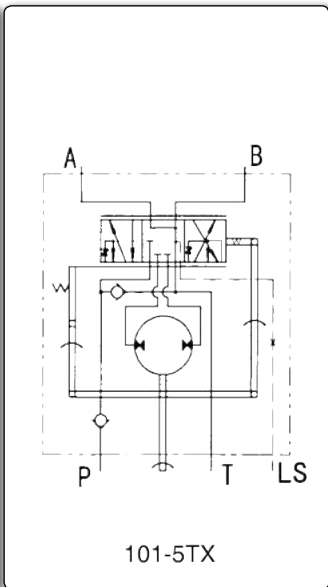
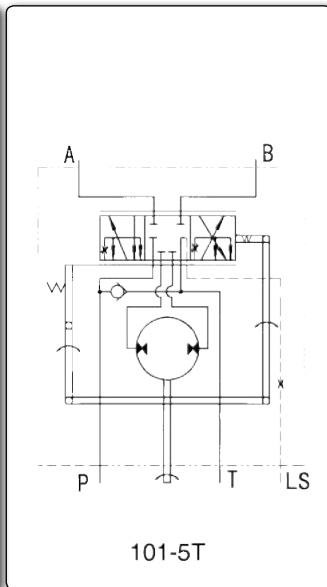
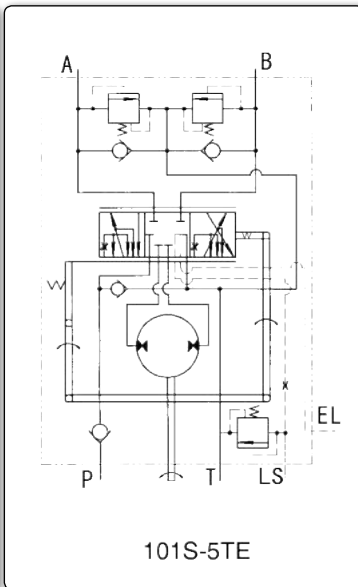
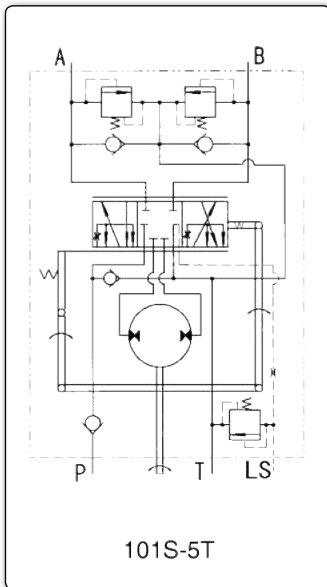




### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)



### Modulary Mounting



### Pipe Mounting

# 101-5T

## MAIN SPECIFICATIONS

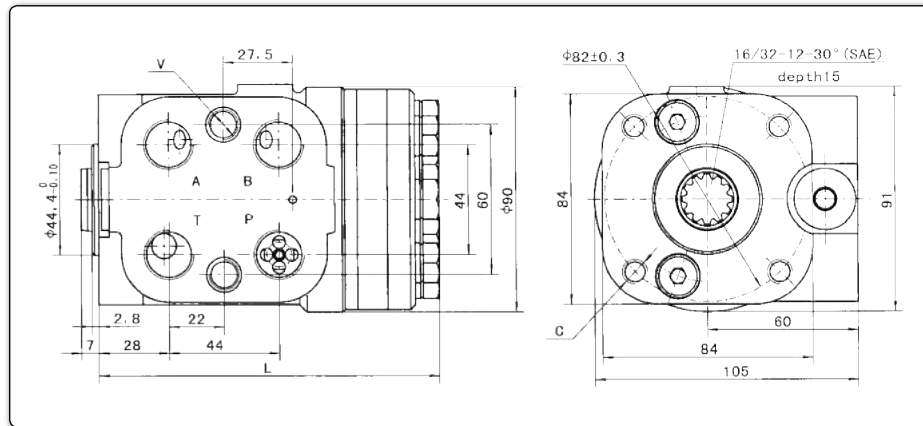


### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

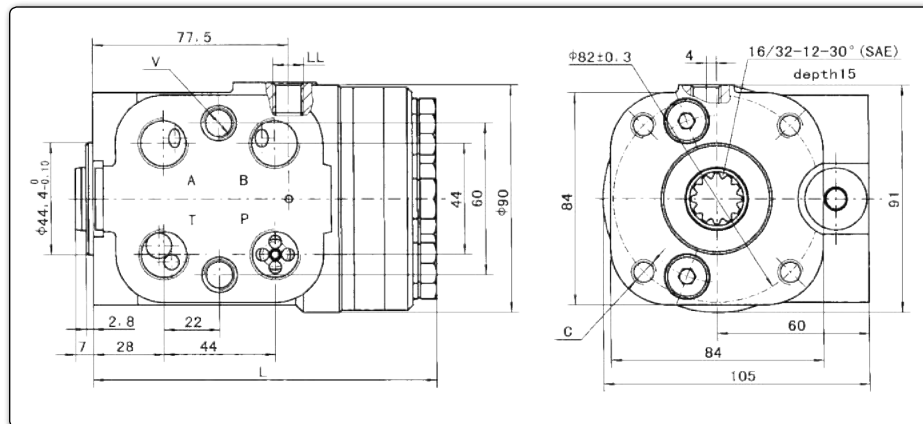
Parameters	Type 101-5T(TX)-***-*, 101S-5(T)(TE)(L)(E)-***-**-*											
	50	63	80	100	125	160	200	250	280	315	400	
Displacement(mL/r)	50	63	80	100	125	160	200	250	280	315	400	
Max. input speed (rpm)	100								75			
Max. input pressure (MPa)	17.5											
Relief Valve Pressure Settings (MPa)	06, 07, 08, 10, 12, 14, 15, 16, 17.5											
Shock Valves Pressure Settings (MPa)	12, 13, 14, 16, 18, 20, 21, 22, 23.5											
Max. Cont. Back pressure (MPa)	2.5											
Weight (kg)	5.75	5.81	5.89	5.93	6.1	6.3	6.5	6.73	6.91	7.1	7.5	
Dimension L (mm)	130	132	134	137	140	145	150	156	161	166	176	

## MOUNTING DATA

101S-5



101S-5L

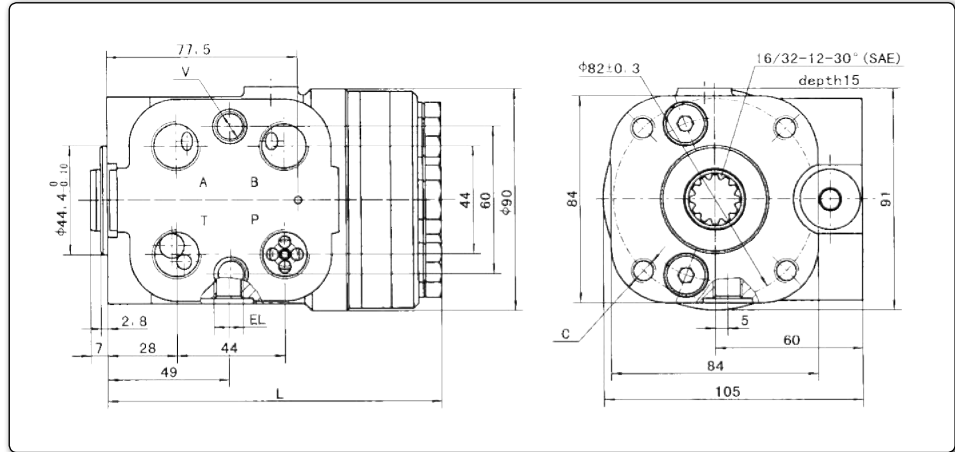


## MOUNTING DATA

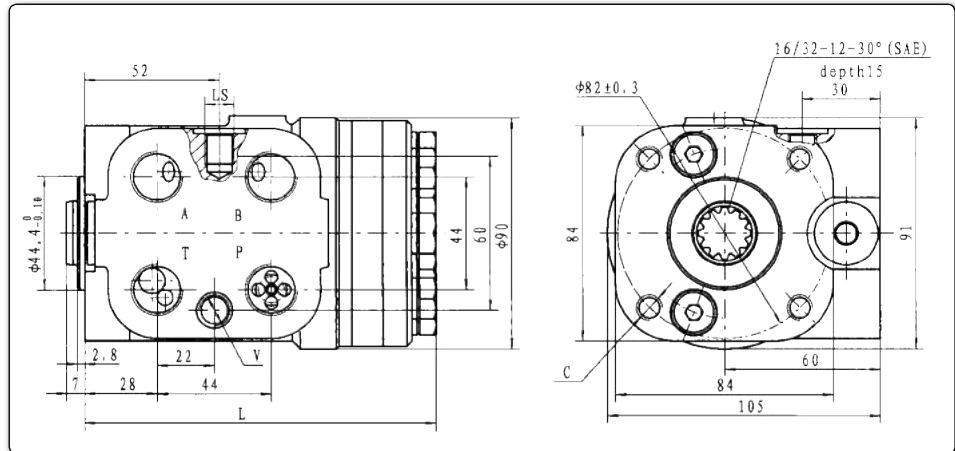


### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

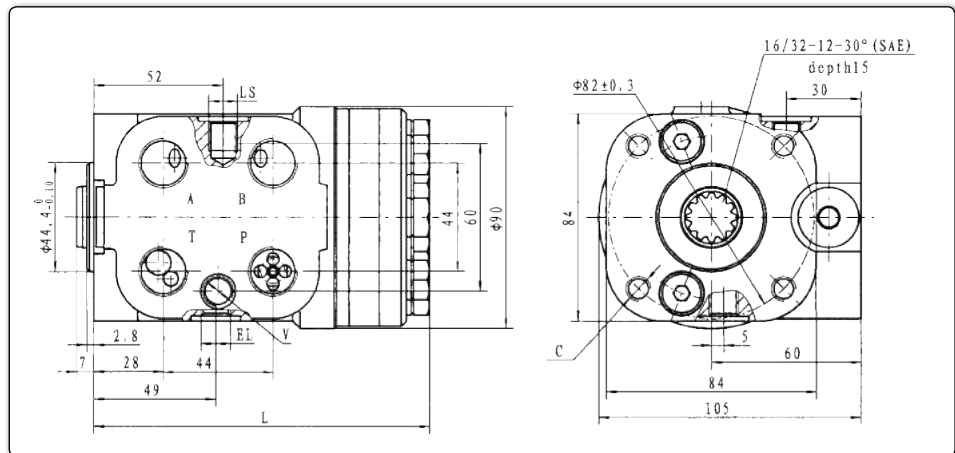
101S-5E



101S-5T



101S-5TE



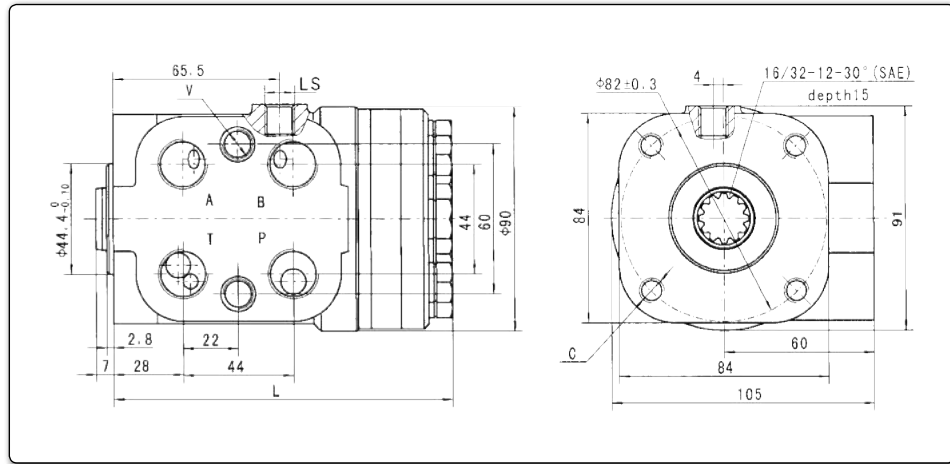
# 101-5T

## MOUNTING DATA



### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

**101-5T**  
**101-5TX**



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Column Mounting V	Post LS	Ports LL, EL	
A	M20×1.5	M10	M12	M12×1.5		
B	M20×1.5 O-ring			M12×1.5 O-ring		
C	M18×1.5			M12×1.5		
D	M18×1.5 O-ring			M12×1.5 O-ring		
E	G1/2			M10×1	G1/4	M10×1
U	G1/2 O-ring				G1/4 O-ring	M10×1 O-ring
M	3/4-16UNF O-ring	3/8-16 UNC	3/8-24 UNF	7/16-20UNF O-ring		
F						
I		M10				
N		M10×1.25				
W	Ø 18.5	M10	M12	M12×1.5		
H	Ø 18.5	M10	M10	M12×1.5		

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm, LS, LL, EL Depth: 12 mm.

Note 2: The code of other ports dimensions will be listed in an agreement.



### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

#### 101-5T Order Code

		Pos.1	Pos.2		Pos.3		Pos.4
101	-	5	T	-	***	-	*

Pos.1 -

5:Load Sensing Type

Pos.2 -

T:Pipe Mounting

Pos.3 -

50、 63、 80、 100、 125、 160、 200、 250、 280、 315、 400

Pos.4 -

A、 B、 C、 D、 E、 U、 M、 F、 I、 N

#### 101-5TX Order Code

		Pos.1	Pos.2	Pos.3		Pos.4		Pos.5
101	-	5	T	X	-	***	-	*

Pos.1 -

5:Load Sensing Type

Pos.2 -

T:Pipe Mounting

Pos.3 -

X: When the 101-5TX series SCU is in neutral position, both of its left and right cavity are connected with T port.

Pos.4 -

50、 63、 80、 100、 125、 160、 200、 250、 280、 315、 400

Pos.5 -

A、 B、 C、 D、 E、 U、 M、 F、 I、 N

## ORDER CODE



### 101(S)-5(T)(TE)(L)(E)(TX) Series Hydraulic Steering Control Units(SCU)

#### 101S-5 Order Code

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6
101S	-	5		***	-	**

Pos.1 -

5:Load Sensing Type

Pos.2 -

Omit : Modulary Mounting  
T:Pipe Mounting

Pos.3 -

Omit : No electrohydraulic signal.  
L:The pressure signal atLS connection drawn forth from the LL connection.  
E:The pressure signal at the port A or B drawn forth from the EL connection.

Pos.4 -

50、63、80、100、125、160、200、250、280、315、400

Pos.5 -

Relief valve pressure settings (MPa):06、07、08、10、12、14、15、16、17.5  
Shock valves pressure settings is 6 MPa higher than relief valve

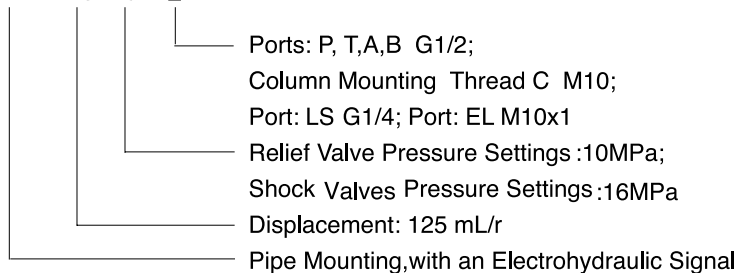
Pos.6 -

A、B、C、D、E、U、M、F、I、N、W、H

For example:

Order code

101S-5TE - 125 - 10 - E



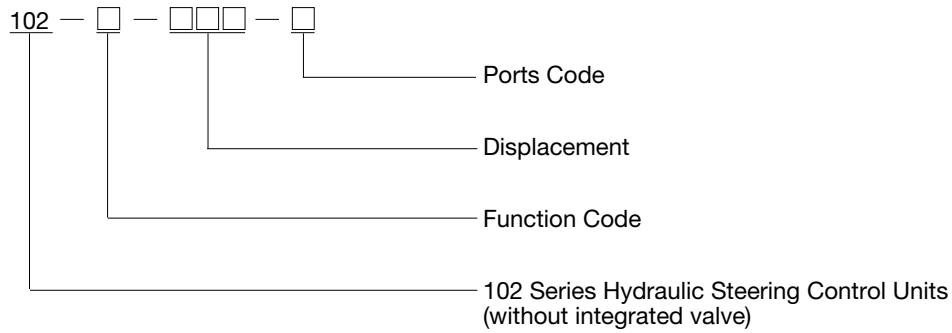
## GENERAL DESCRIPTION



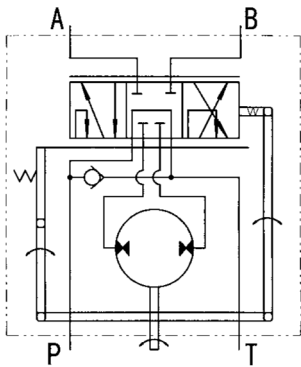
### 102-1,2,3 Series Hydraulic Steering Control Units (SCU)

SCU 102-1,2,3 series have the same dimension as BZZ series on flange and ports, but different connection compared with 101 series.

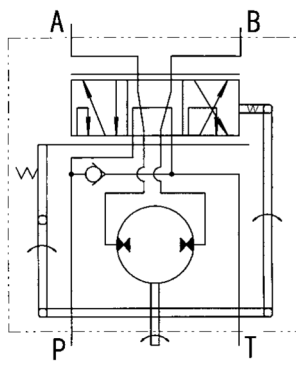
## ORDER CODE



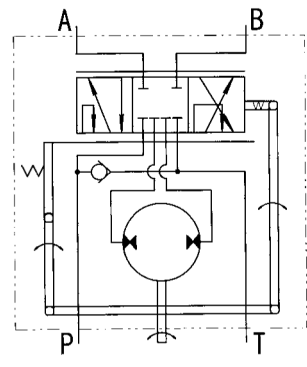
## FUNCTION CODE



102-1  
Open Center Non-Reaction



102-2  
Open Center Reaction



102-3  
Closed Center Non-Reaction



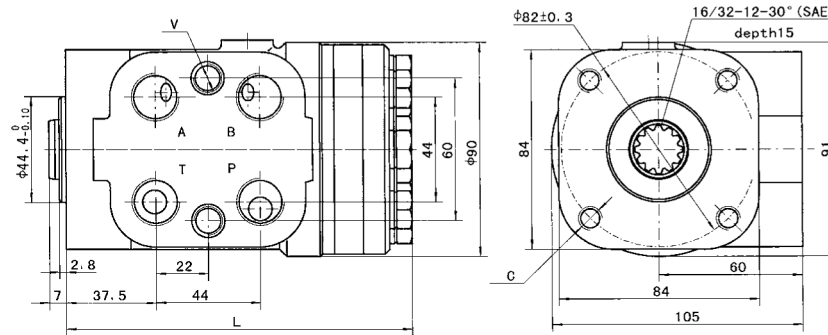
## MAIN SPECIFICATIONS



### 102-1,2,3 Series Hydraulic Steering Control Units (SCU)

Parameters	Type 102-*_*** -*										
	1,2,3							1,3			
Function Code	1,2,3							1,3			
Displacement(mL/r)	50	63	80	100	125	160	200	250	280	315	400
Rated flow (L/min)	5	6	8	10	12.5	16	20	25	28	32	40
Max. input pressure (MPa)	17.5										
Max. cont. back pressure (MPa)	2.5										
Weight (kg)	5.94	6.0	6.08	6.18	6.3	6.5	6.7	6.9	7.1	7.29	7.79
Dimension L (mm)	140	142	144	146	149	154	159	165	170	175	185

## MOUNTING DATA



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Valve Mounting V		
A	M20×1.5	M10	M12		
B	M20×1.5 O-ring				
C	M18×1.5				
D	M18×1.5 O-ring				
E	G1/2		M10×1		
U	G1/2 O-ring				
G	M22×1.5		M12		
Q	M22×1.5 O-ring				
M	3/4-16UNF O-ring			3/8-16 UNC	3/8-24 UNF
F				M10	M10
I		M10×1.25			
N					

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm.

Note 2: The code of other ports dimensions will be listed in an agreement.

## ORDER CODE



### 102-1,2,3 Series Hydraulic Steering Control Units (SCU)

		Pos.1		Pos.2		Pos.3
102	-	*	-	***	-	*

Pos.1 -

- 1:Open Center Non-Reaction
- 2:Open Center Reaction
- 3:Closed Center Non-Reaction

Pos.2 -

- 50、 63、 80、 100、 125、 160、 200、 250、 280、 315、 400

Pos.3 -

- A、 B、 C、 D、 E、 F、 U、 G、 Q、 M、 N、 I

For example:

Order code

102-1 - 125 - E

- Ports: P, T, A, B G1/2 ;
- Column Mounting Thread C M10
- Displacement: 125 mL/r
- Open Center Non-Reaction

## GENERAL DESCRIPTION



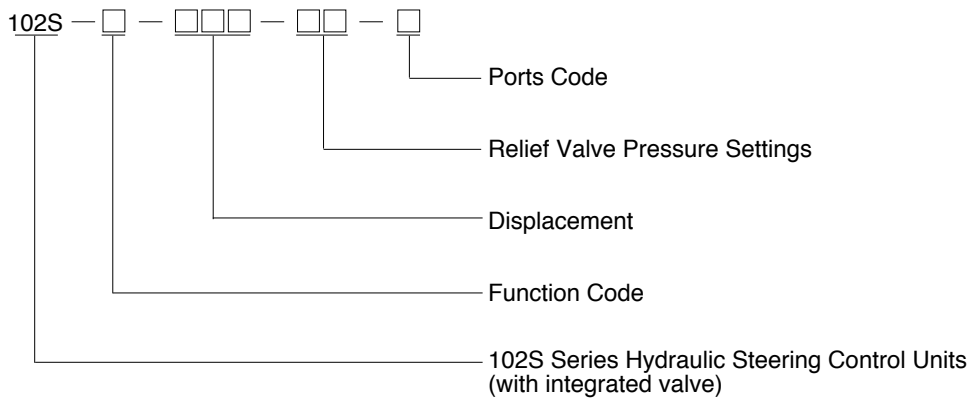
### 102S-1,2,4 Series Hydraulic Steering Control Units (SCU)

102S-1,2,4 series hydraulic steering control unit inherit the function of 102 series both in its structure and working principle.

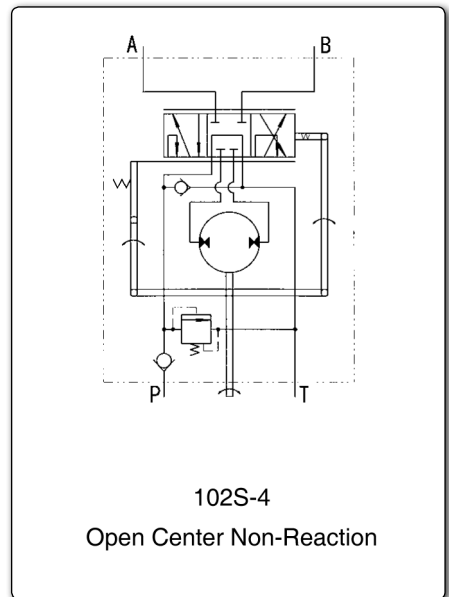
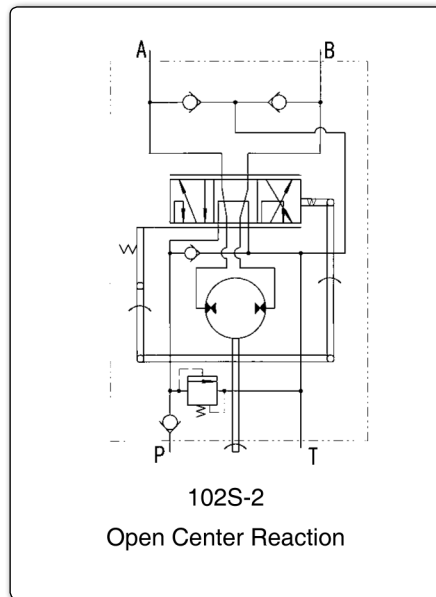
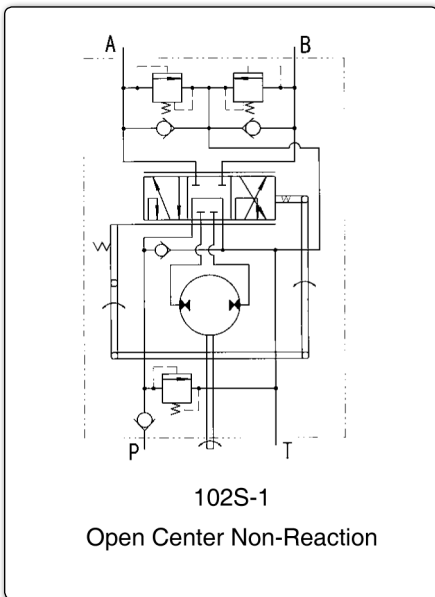
On the basis feature of 102 series SCU, 102S series SCU is to incorporate the relief valve, shock valves, suction valves and the inlet check valve inside the housing of SCU according to different requirement. This kind of structure is more compact with easier operation.

The dimension of 102S-1,2,4 series such as port and flang is as the same as BZZ series SCU, but different from 101 series SCU in connection dimensions.

## ORDER CODE



## FUNCTION CODE



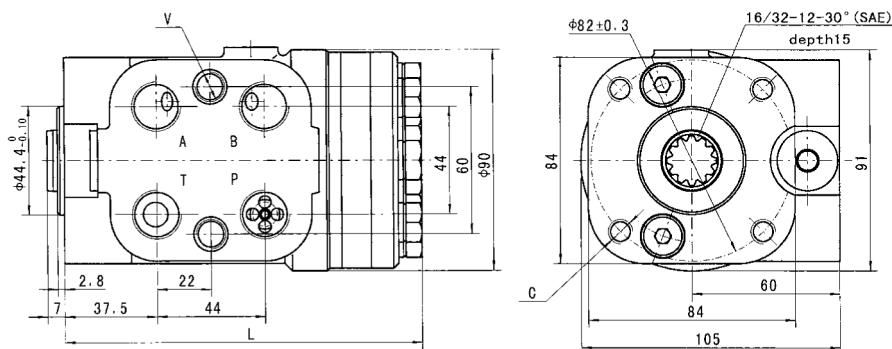
## MAIN SPECIFICATIONS



### 102S-1,2,4 Series Hydraulic Steering Control Units (SCU)

Parameters	Type 102S-* -*** -** -*										
	1,2,4							1,4			
Function Code											
Displacement(mL/r)	50	63	80	100	125	160	200	250	280	315	400
Rated flow (L/min)	5	6	8	10	12.5	16	20	25	28	31.5	40
Max. input pressure (MPa)	16										
Relief Valve Pressure Settings (MPa)	06, 07, 08, 10, 12, 14, 15, 16, 17.5										
Shock Valves Pressure Settings (MPa)	12, 13, 14, 16, 18, 20, 21, 22, 23.5										
Max. cont. back pressure (MPa)	2.5										
Weight (kg)	6.04	6.09	6.18	6.27	6.4	6.6	6.79	7.02	7.2	7.39	7.89
Dimension L (mm)	140	142	144	146	149	154	159	165	170	175	185

## MOUNTING DATA



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Valve Mounting V
A	M20×1.5	M10	M12
B	M20×1.5 O-ring		
C	M18×1.5		
D	M18×1.5 O-ring		M10×1
E	G1/2		
U	G1/2 O-ring		
M	3/4-16UNF O-ring	3/8-16 UNC	M12
F			M10
I		M10×1.25	
N			

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm.

Note 2: The code of other ports dimensions will be listed in an agreement.

## ORDER CODE



### 102S-1,2,4 Series Hydraulic Steering Control Units (SCU)

	Pos.1	Pos.2	Pos.3	Pos.4
102S	-	*	-	***

Pos.1 -

- 1: Open Center Non-Reaction
- 2: Open Center Reaction
- 4: Open Center Non-Reaction

Pos.2 -

50、63、80、100、125、160、200、250、280、315、400

Pos.3 -

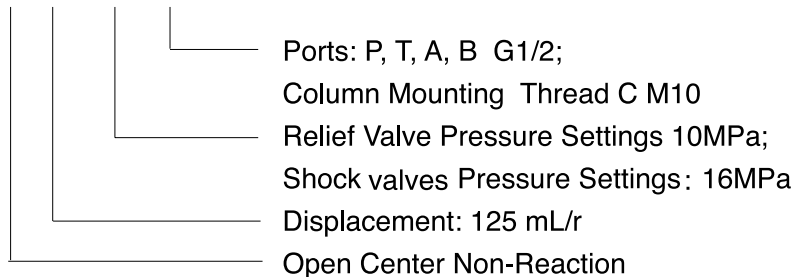
Relief valve pressure settings (MPa):06、07、08、10、12、14、15、16、17.5  
Shock valves pressure settings is 6 MPa higher than relief valve.

Pos.4 -

A、B、C、D、E、U、M、F、I、N

For example:  
Order code

102S-1-125-10 - E



## GENERAL DESCRIPTION



### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)

SCU 102(S)-5(T)(TE)(L)(E) series is used in the load sensing steering system.

SCU 102S-5,102S-5L,102S-5E series adopt modular mounting type and can only be used with PVF\* type priority valve via modular mounting.

SCU 102S-5L series guides the pressure signal of port LS out of port LL and transfers the pressure signal to the electrical control system.

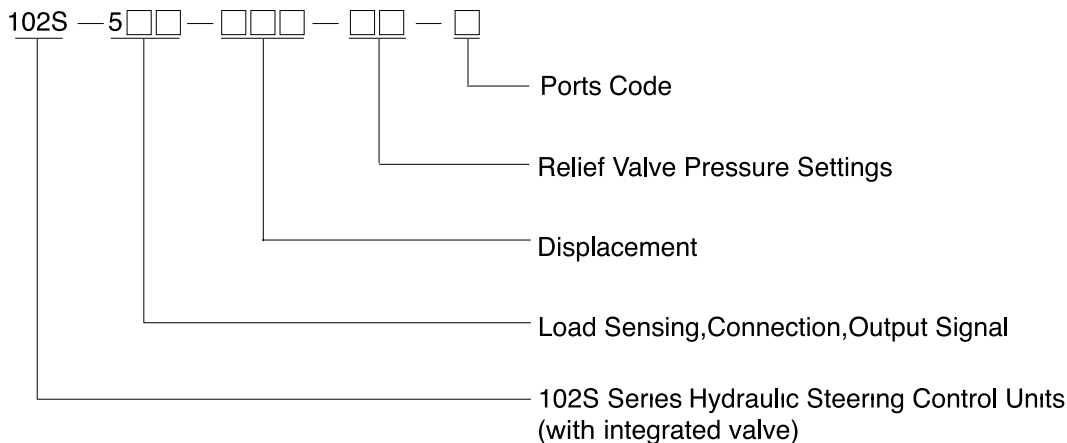
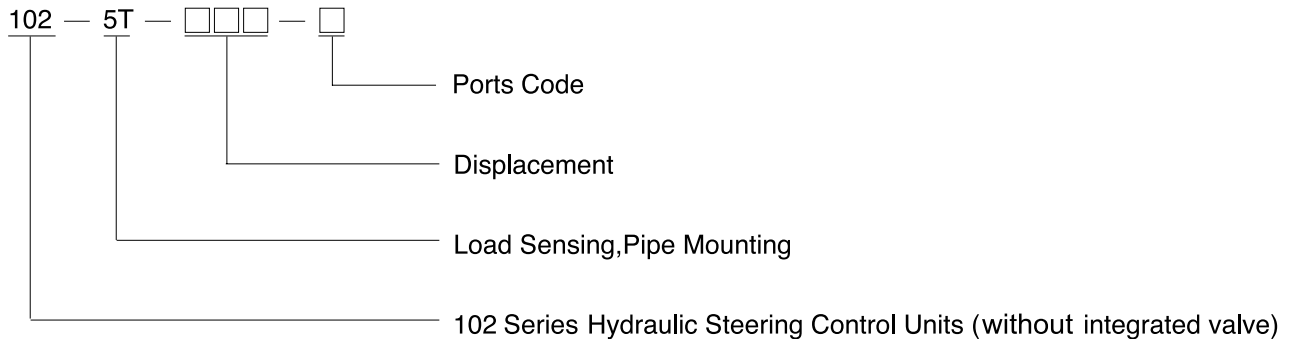
SCU 102S-5E series guides the pressure signal of port A or B out of port EL, and then supplies the pressure signal to the electrical control system.

SCU 102S-5T,102S-5TE series adopts the Pipe mounting and via pipe mounting can be used with PVL\* or DYXL,YXL type priority valve.

SCU 102S-5TE series guides the pressure signal of the port A or B out of port EL and then supplies the pressure signal to the electrical control system.

SCU 102-5T series adopts the pipe mounting it can be used only after the pipe mounted with the DYXL,YXL type priority valve and the relief valve is integrated in the priority valve.

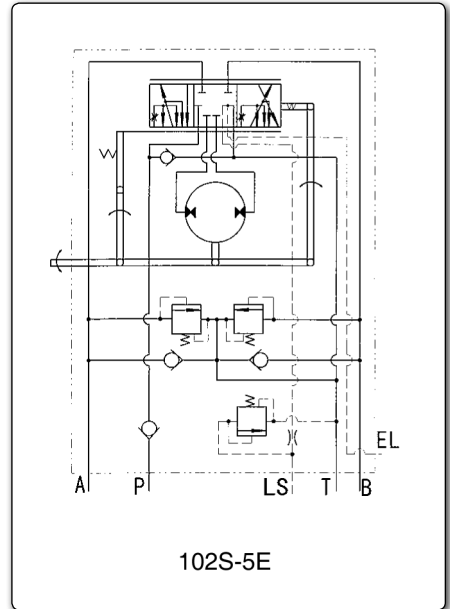
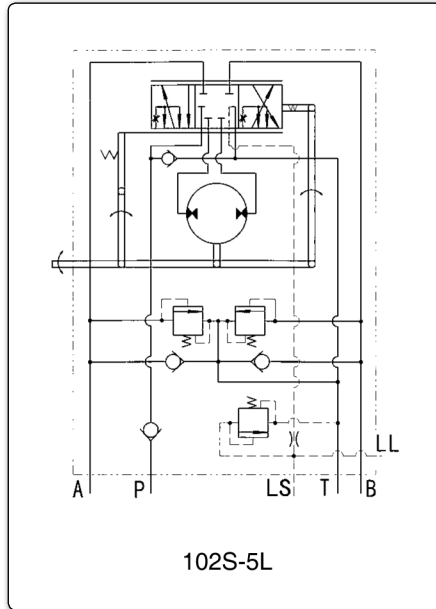
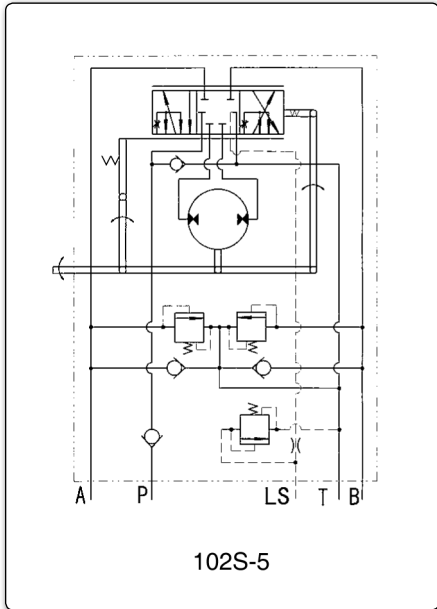
## ORDER CODE



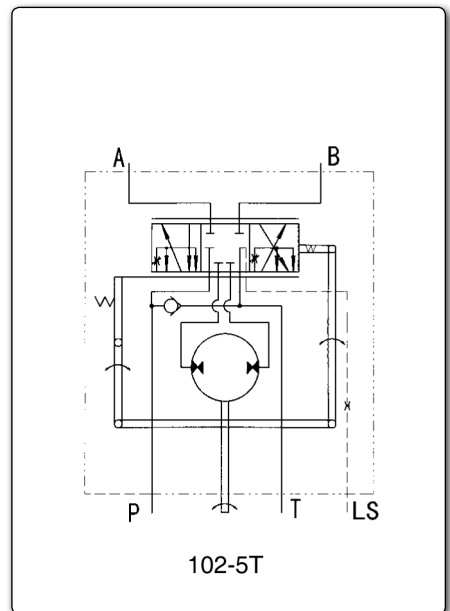
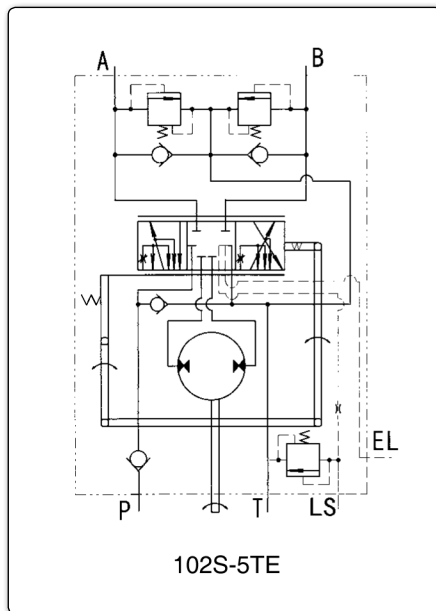
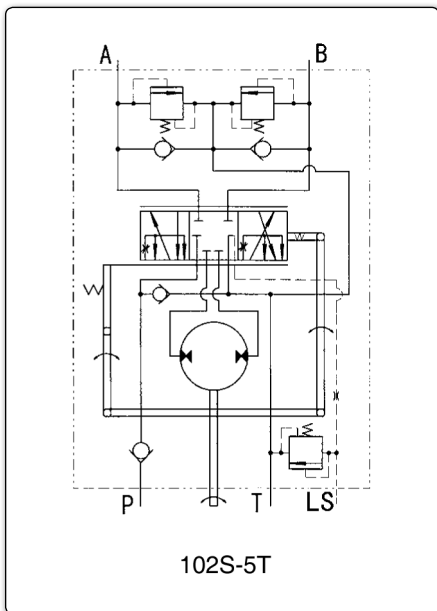
## FUNCTION CODE



### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)



### Modulary Mounting



### Pipe Mounting

## MAIN SPECIFICATIONS

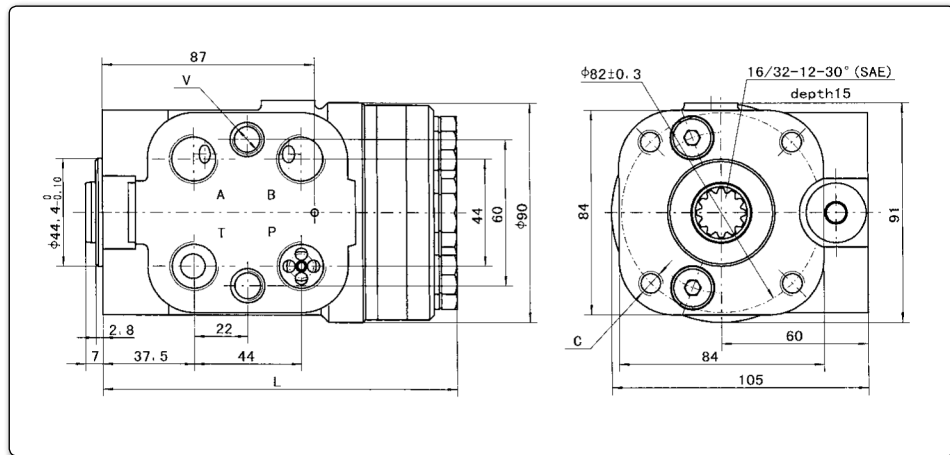


### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)

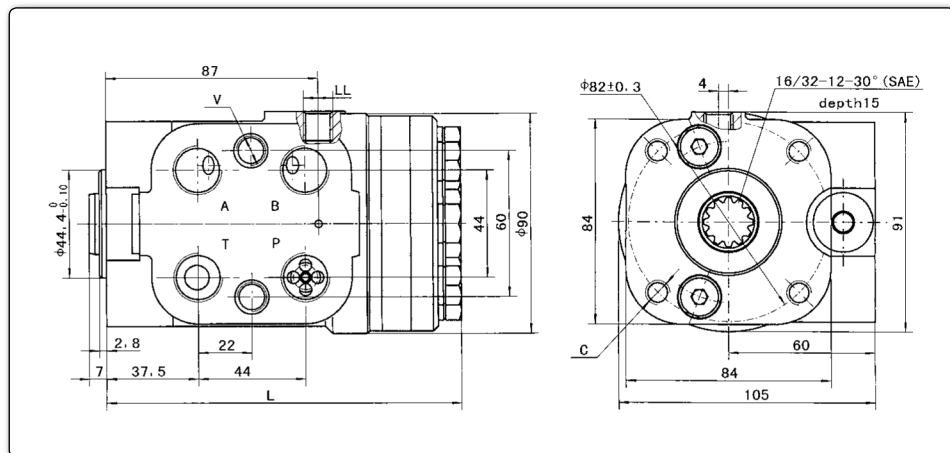
Parameters	Type 102-5T-*** -*, 102S-5(T)(TE)(L)(E)- *** -* -*											
	50	63	80	100	125	160	200	250	280	315	400	
Displacement(mL/r)	50	63	80	100	125	160	200	250	280	315	400	
Max. input speed (rpm)	100								75			
Max. input pressure (MPa)	17.5											
Relief Valve Pressure Settings (MPa)	06, 07, 08, 10, 12, 14, 15, 16, 17.5											
Shock Valves Pressure Settings (MPa)	12, 13, 14, 16, 18, 20, 21, 22, 23.5											
Max. Cont. Back pressure (MPa)	2.5											
Weight (kg)	6.04	6.09	6.18	6.27	6.4	6.6	6.79	7.02	7.2	7.39	7.89	
Dimension L (mm)	140	142	144	146	149	154	159	165	170	175	185	

## MOUNTING DATA

102S-5



102S-5L



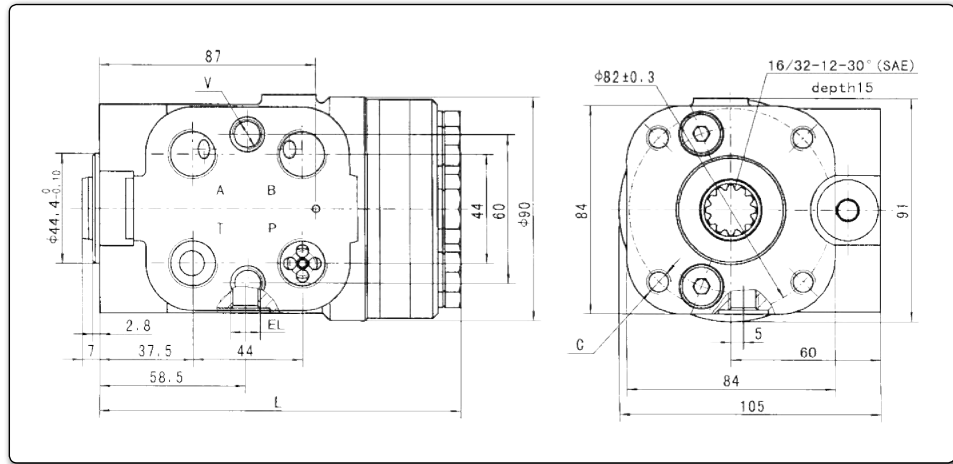


## MOUNTING DATA

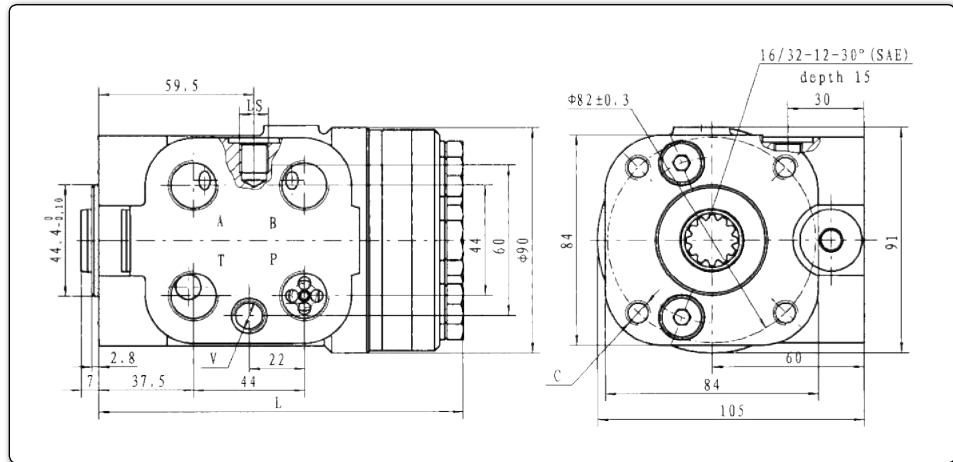


### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)

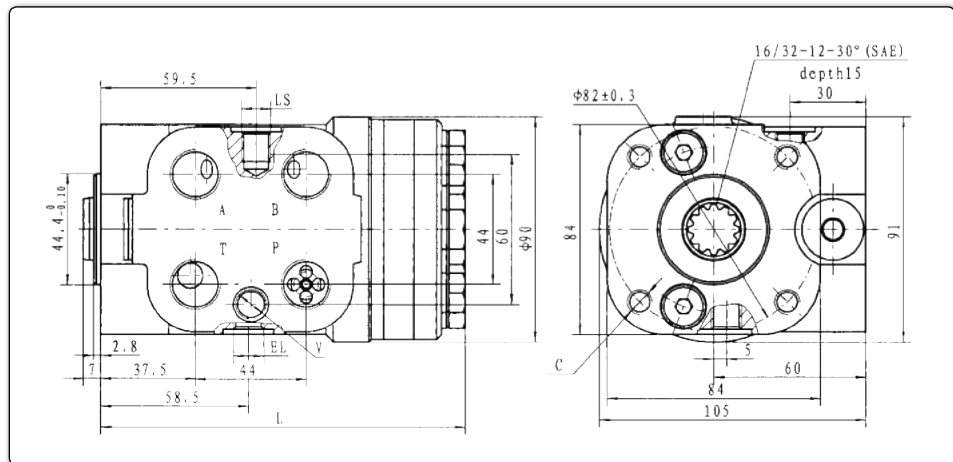
**102S-5E**



**102S-5T**



**102S-5TE**

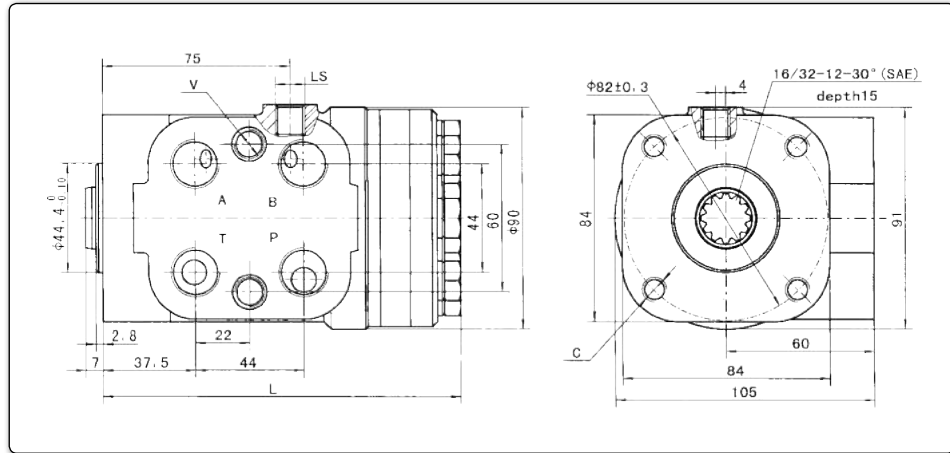


## MOUNTING DATA



### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)

102-5T



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Column Mounting V	Port LS	Ports LL, EL	
A	M20×1.5	M10	M12	M12×1.5		
B	M20×1.5 O-ring			M12×1.5 O-ring		
C	M18×1.5			M12×1.5		
D	M18×1.5 O-ring			M12×1.5 O-ring		
E	G1/2			G1/4	M10×1	
U	G1/2 O-ring		M10×1	G1/4 O-ring	M10×1 O-ring	
M	3/4-16UNF O-ring	M12	M10	7/16-20UNF O-ring		
F		3/8-16 UNC				3/8-24 UNF
I		M10				
N		M10×1.25				
W	Ø 18.5	M10	M12	M12×1.5		
H	Ø 18.5	M10	M10	M12×1.5		

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm; LS, LL, EL Depth: 12 mm.  
 Note 2: The code of other ports dimensions will be listed in an agreement.

## ORDER CODE



### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)

#### 102-5T Order Code

		Pos.1	Pos.2		Pos.3		Pos.4
102	-	5	T	-	***	-	*

Pos.1 -

5:Load sensing type

Pos.2 -

T:Pipe Mounting

Pos.3 -

50、 63、 80、 100、 125、 160、 200、 250、 280、 315、 400

Pos.4 -

A、 B、 C、 D、 E、 U、 M、 F、 I、 N

## MAIN SPECIFICATIONS



### 102(S)-5(T)(TE)(L)(E) Series Hydraulic Steering Control Units (SCU)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6
102S	-	5		-	***	-

Pos.1 -

5:Load Sensing Type

Pos.2 -

Omit: Modulary Mounting  
T: Pipe Mounting

Pos.3 -

Omission: No electrohydraulic signal.  
L:The pressure signal at LS connection is drawn forth from LL connection.  
E:The pressure signal at the port A or B is drawn forth from EL connection.

Pos.4 -

50、63、80、100、125、160、200、250、280、315、400

Pos.5 -

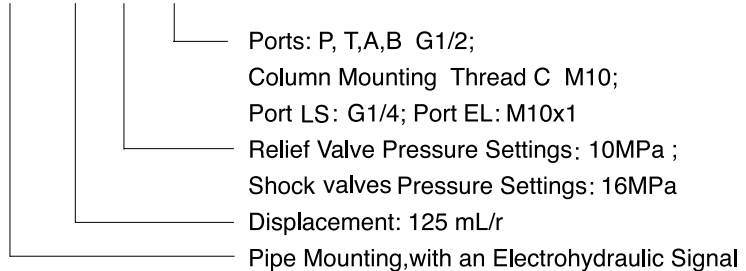
Relief valve pressure settings (MPa):06、07、08、10、12、14、15、16、17.5  
Shock valves pressure settings is 6 MPa higher than relief valve

Pos.6 -

A、B、C、D、E、U、W、M、F、I、N、H

For example:  
Order code

102S-5TE -125 -10 - E



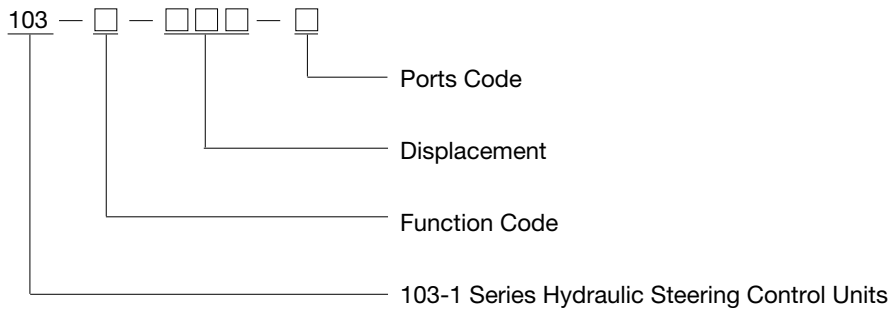
## GENERAL DESCRIPTION



### 103-1 Series Hydraulic Steering Control Units(SCU)

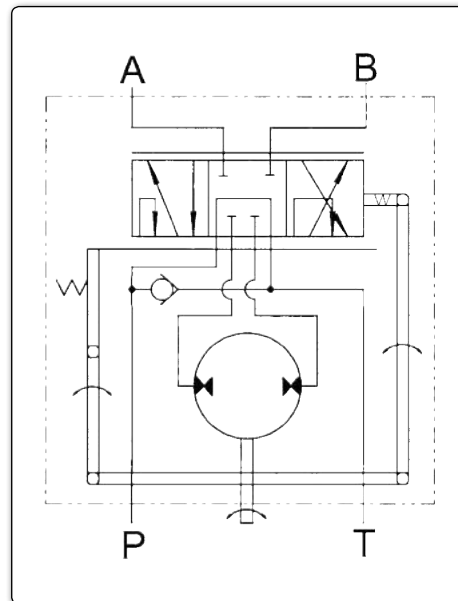
The structure of 103-1 series Hydraulic SCU is more compact and its connection dimension conforms to the international standard, while it is different from 101 and 102 series which are suitable for assembly in the narrow space. It's widely used in the low-speed vehicles, steering control system, such as forklift, tractor, combined harvester, engineering or road construction machinery, and the marine rudder, etc. It can obtain more powerful output steering force through the input force and it operates easily, flexibly and reliably.

## ORDER CODE



## FUNCTION CODE

**103-1**  
Open center Non-reaction



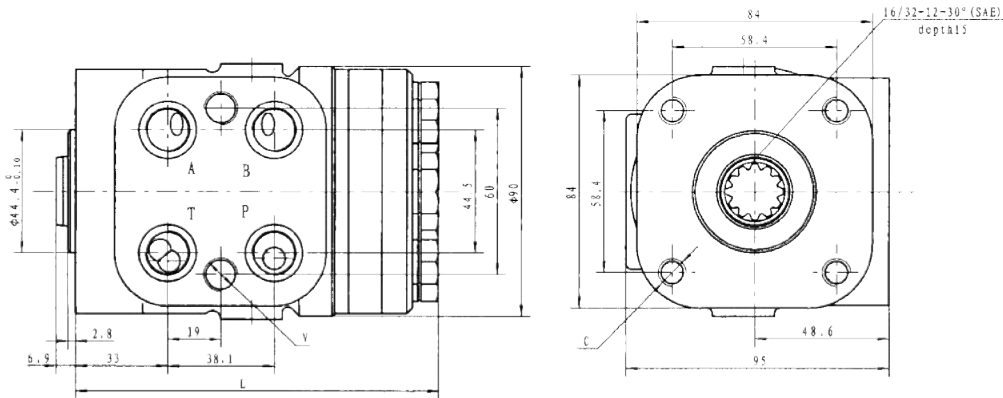
## MAIN SPECIFICATIONS



### 103-1 Series Hydraulic Steering Control Units(SCU)

Parameters	Type 103-1-***-*							
Function Code	1	1	1	1	1	1	1	1
Displacement(mL/r)	50	63	80	100	125	160	200	250
Rated Flow (L/min)	5	6	8	10	12.5	16	20	25
Max.Input Pressure (MPa)	17.5							
Max.Cont.Back Pressure	2.5							
Weight (kg)	3.85	4.0	4.05	4.10	4.25	4.4	4.6	4.8
Dimension L (mm)	123	125	127	130	133	138	143	149

## MOUNTING DATA



## PORTS THREADS

Code	Ports P , T, A, B	Column Mounting	Valve Mounting
A	G3/8-19 O-ring	M10×1.25	M10
B	9/16-18UNF O-ring		
C	M18×1.5	M10	M12
D	M18×1.5 O-ring		
M	3/4-16UNF O-ring	3/8-16UNC	3/8-24UNF
F		M10	M10
I		M10	
N		M10×1.25	

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm.

Note 2: The code of other ports dimensions will be listed in an agreement.

## ORDER CODE



### 103-1 Series Hydraulic Steering Control Units(SCU)

		Pos.1		Pos.2		Pos.3
103	-	1	-	***	-	*

Pos.1 -

1: Open Center Non-Reaction

Pos.2 -

50、 63、 80、 100、 125、 160、 200、 250

Pos.3 -

A、 B、 C、 D、 F、 M、 I、 N

For example:

Order code

103-1 - 125 - C

Ports : P, T , A , B M18x1.5;  
 Column Mounting Thread C M10;  
 Valve Mounting Thread V M12  
 Displacement : 125 mL/r  
 Open Center Non-Reaction

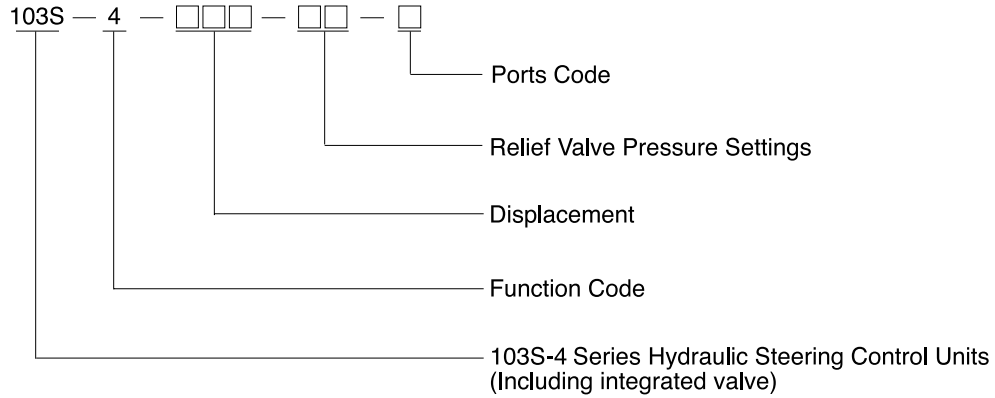
## GENERAL DESCRIPTION



### 103S-4 Series Hydraulic Steering Control Units (SCU)

103S-4 series steering unit contains, in addition to the function of 103-1 series steering unit, also function of relief valve and inlet check valve.

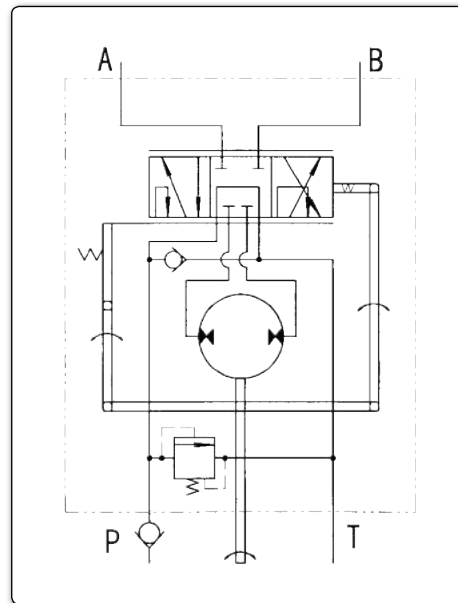
## ORDER CODE



## FUNCTION CODE

**103S-4**

**Open center Non-reaction**





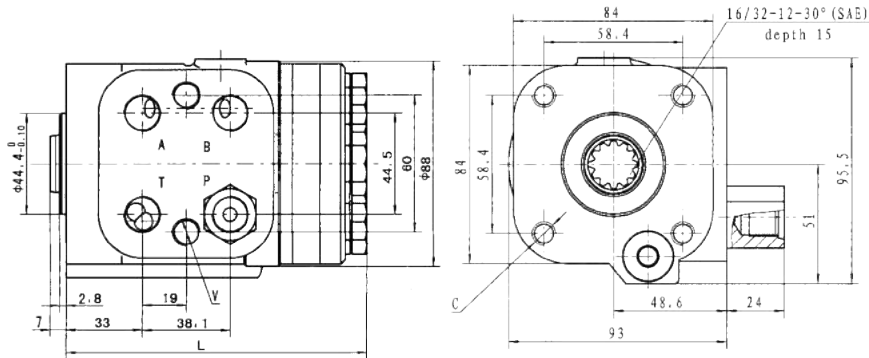
## MAIN SPECIFICATIONS



### 103S-4 Series Hydraulic Steering Control Units (SCU)

Parameters	Type 103S-4-*** -** -*							
Displacement(mL/r)	50	63	80	100	125	160	200	250
Rated flow (L/min)	5	6	8	10	12.5	16	20	25
Max. input pressure (MPa)	17.5							
Relief valve pressure settings (Mpa)	06, 07, 08, 10, 12, 14, 15, 16, 17.5							
Max. cont. back pressure (MPa)	2.5							
Weight (kg)	4.75	4.81	4.89	4.96	5.1	5.3	5.5	5.73
Dimension L (mm)	123	125	127	130	133	138	143	149

## MOUNTING DATA



## PORTS THREADS

Code	Ports P, T, A, B	Column Mounting C	Column Mounting V
A	G3/8-19 O-ring	M10×1.25	M10
B	9/16-18UNF O-ring		
C	M18×1.5	M10	M12
D	M18×1.5 O-ring		
M	3/4-16UNF O-ring	3/8-16 UNC	3/8-24 UNF
F		M10	M10
I			
N		M10×1.25	

Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm.  
 Note 2: The code of other ports dimensions will be listed in an agreement.



### 103S-4 Series Hydraulic Steering Control Units (SCU)

	Pos.1	Pos.2	Pos.3	Pos.4
103S	-	4	-	**

Pos.1 -

4:Open Center Non-Reaction

Pos.2 -

50、63、80、100、125、160、200、250

Pos.3 -

06、07、08、10、12、14、15、16、17.5

Pos.4 -

A、B、C、D、F、M、I、N

For example:

Order code

103S-4 - 125- 10 - A

Ports: P, T, A, B G3/8;  
Column Mounting Thread C M10x1.25;  
Valve Mounting Thread V M10x1.5  
Relief Valve Pressure Settings: 10MPa  
Displacement: 125 mL/r  
Open Center Non-Reaction

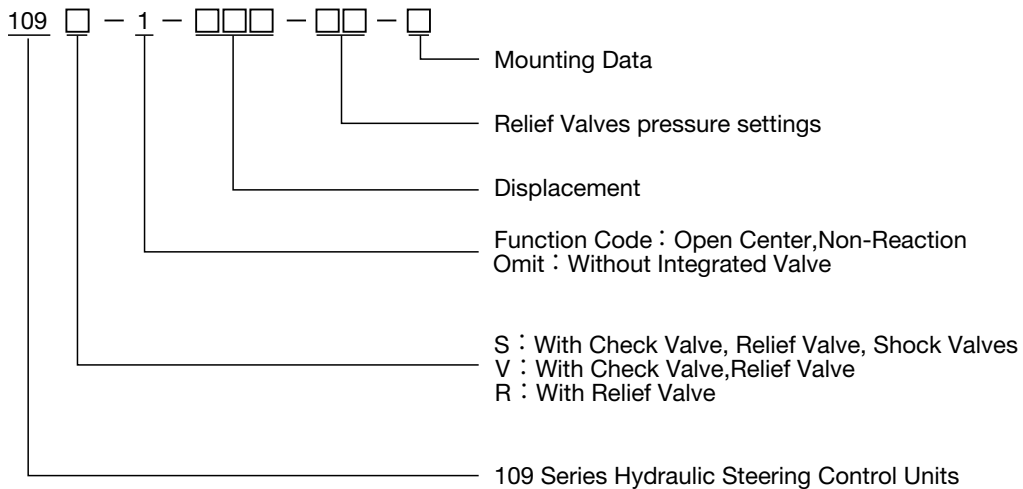
## GENERAL DESCRIPTION



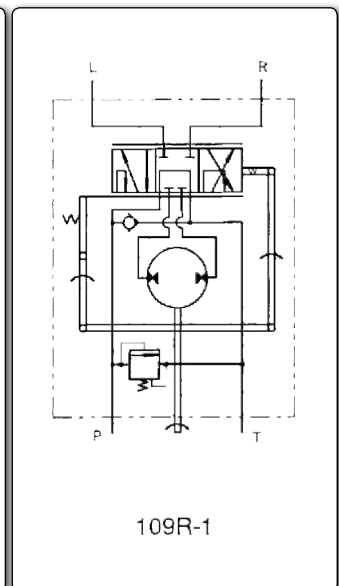
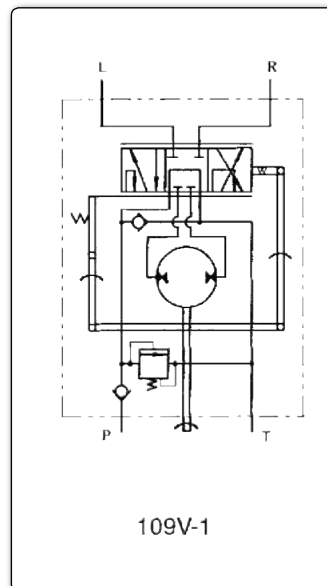
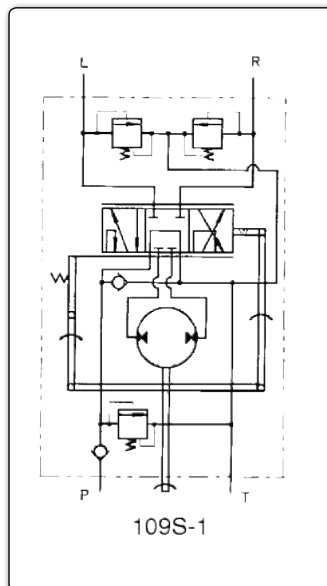
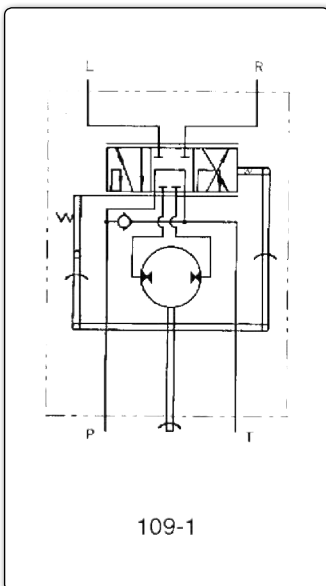
### 109 Series Hydraulic Steering Control Units (SCU)

109 series hydraulic steering unit is an integrated orbital steering unit with 4/5 tooth structure. This kind of steering unit has a small and exquisite structure with integrated check valve, relief valve and shock valves and its mounting dimension conforms to international standard. This kind of steering unit is widely used in mini vehicles, such as mini forklift, mini tractor (and other agricultural machinery), mini earthmoving machinery, mini municipal vehicle, etc. It can obtain more steering output torque through input of less power, with features of easy, flexible and reliable operation.

## ORDER CODE



## FUNCTION CODE



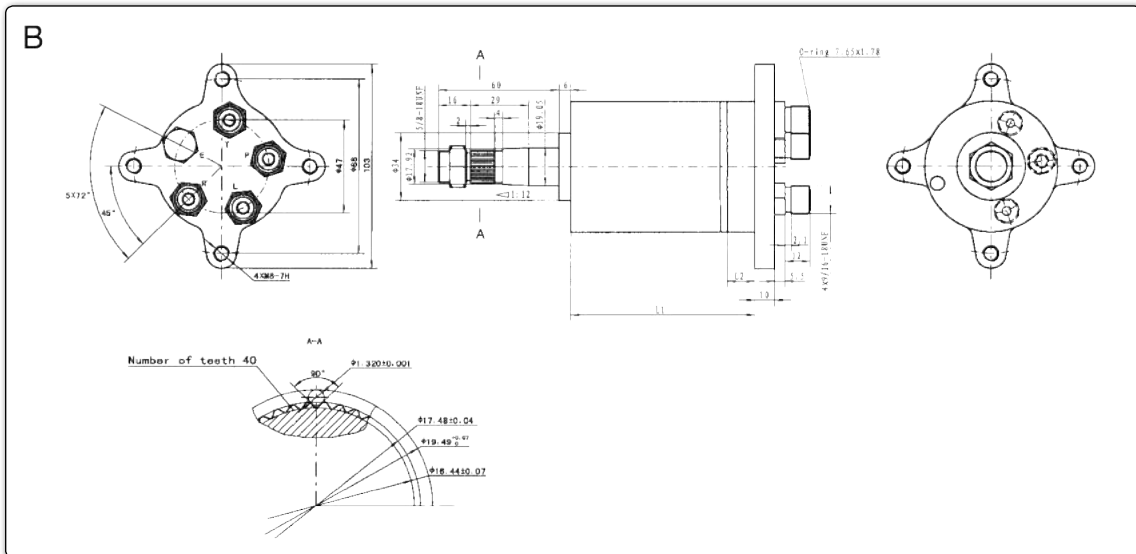
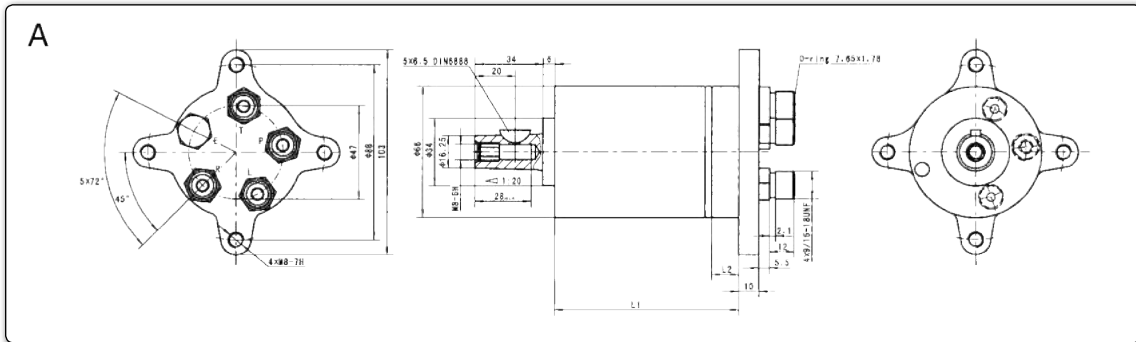
## MAIN SPECIFICATIONS



### 109 Series Hydraulic Steering Control Units (SCU)

Parameters	Type 109* - 1-***-**-*					
	20	32	40	50	63	80
Displacement (mL/r)	20	32	40	50	63	80
Rated flow (L/min)	3~20					
Rated Pressure (MPa)	12.5					
Relief Valve Pressure Settings (MPa)	06,07,08,09,10					
Shock Valves Pressure Settings (MPa)	12,13,14,15,16					
Steering Torque (N-m)	≤ 1.8					
Max. Cont. Pressure in Line T-P <sub>T</sub> (MPa)	1					
Dimension L (mm)	87	92	96	100	105	113

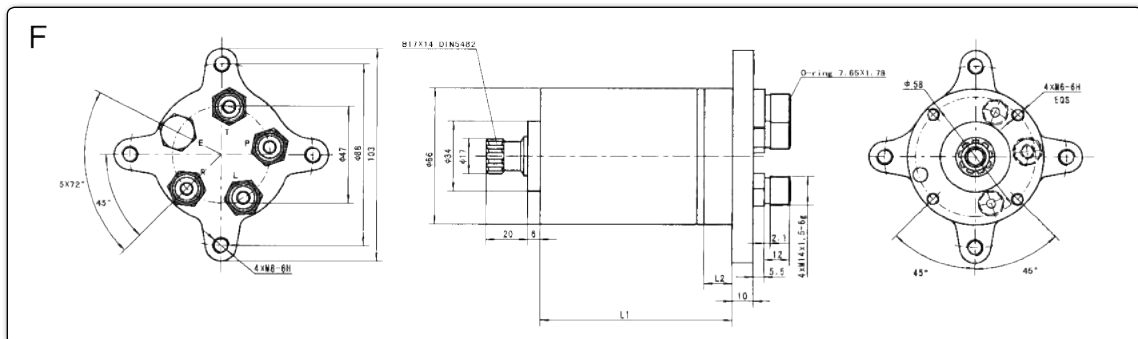
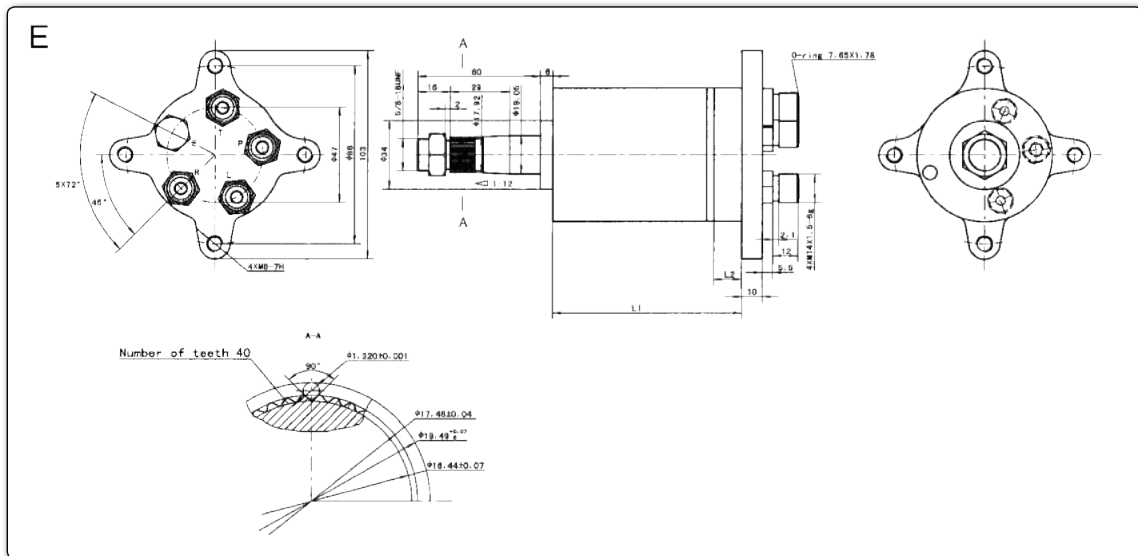
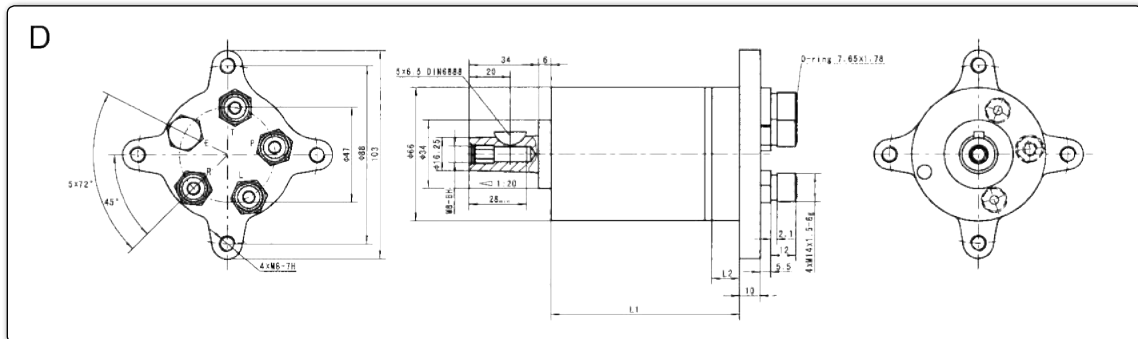
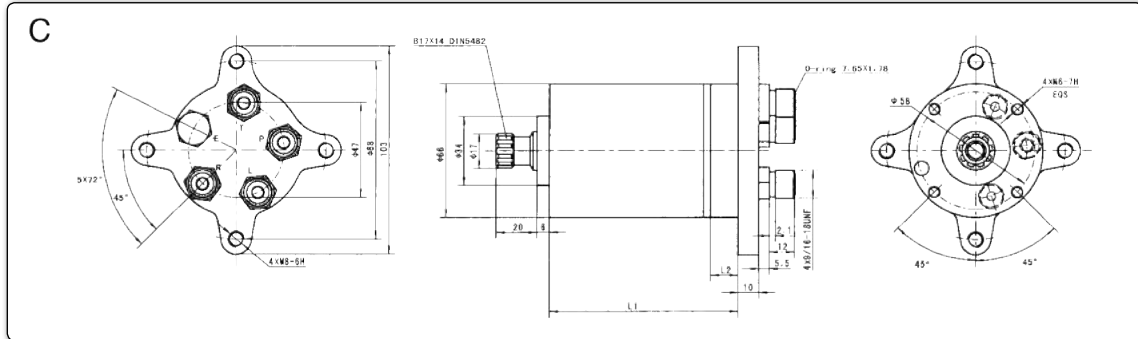
## MOUNTING DATA



## MOUNTING DATA



### 109 Series Hydraulic Steering Control Units (SCU)





### 109 Series Hydraulic Steering Control Units (SCU)

	Pos.1		Pos.2		Pos.3		Pos.4		Pos.5
109	*	-	1	-	***	-	**	-	*

Pos.1 - Integrated Valve Parameter

Omit : Without valve  
 S : With Relief Valve, Check Valve, Shock Valves  
 V : With Relief Valve, Check Valve  
 R : With Relief Valve

Pos.2 - Function Code

1: Open Center Non-Reaction

Pos.3 - Displacement mL/r

20、 32、 40、 50、 63、 80

Pos.4 - Integrated Valve Parameter

Relief Valve Pressure Settings(MPa): 06、 07、 08、 09、 10  
 Shock Valves Pressure Settings is 6 MPa Higher Than Relief Valve.

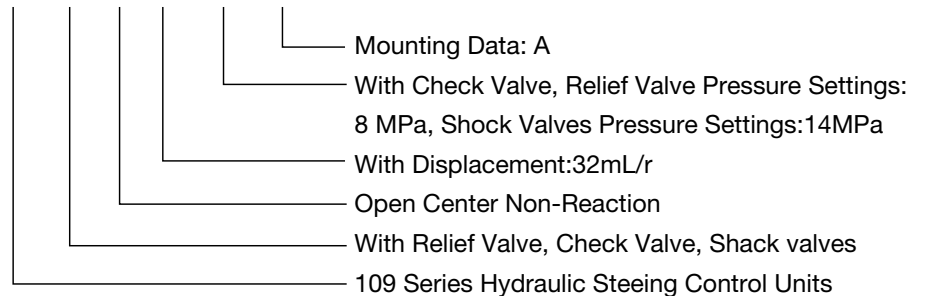
Pos.5 - Mounting Data

A : Tapered 1:20, Key 5x6.5, Ports: 9/16-18UNF ;  
 B : Tapered 1:12, With 11/16 In-40 Serrations and 5/8-18UNF, Ports: 9/16-18UNF;  
 C : DIN 5482 B17x14, Ports: 9/16-18UNF;  
 D : Tapered 1:20, Key 5x6.5, Ports: M14x1.5;  
 E : Tapered 1:12, With 11/16 In-40 Serrations and 5/8-18UNF, Ports: M14x1.5;  
 F : DIN 5482 B17x14, Ports: M14x1.5

For example:

Order code

109 S - 1 - 32 - 08 - A



## GENERAL DESCRIPTION



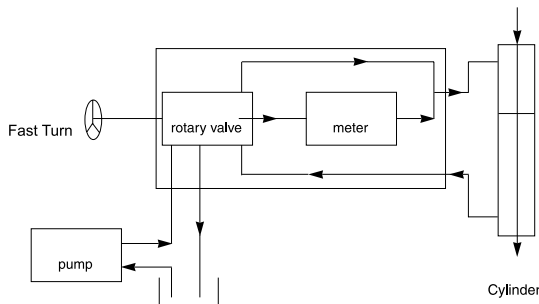
### TLF Type Coaxial Flow Amplifying Steering Units

TLF type coaxial flow amplifying steering unit and BZZ5 type load sensing steering unit belong to the load sensing steering control unit. In the load sensing steering system, only if the displacement of these two models is the same, and then they can be replaced by each other. But when TLF type coaxial flow amplifying steering unit works as steering control unit, its steering displacement is changeable as the steering wheel's input rotation speed under the low speed rotation (rotation speed of the steering wheel less than 10 rpm), the effective displacement of the steering unit is the same as the metering displacement. When the steering wheel's input speed increases (the steering wheel's rotation speed range : 10-40rpm), its effective displacement increases as the steering wheel's rotation speed increases. When the steering wheel's rotation speed is more than 40 rpm, the steering unit's effective displacement is basically rated on its constant volume. Such kind of feature has special advantages while it's used in the steering of the industrial vehicles, such as loader, grader, wood trolley, tractor and various mini vehicles.

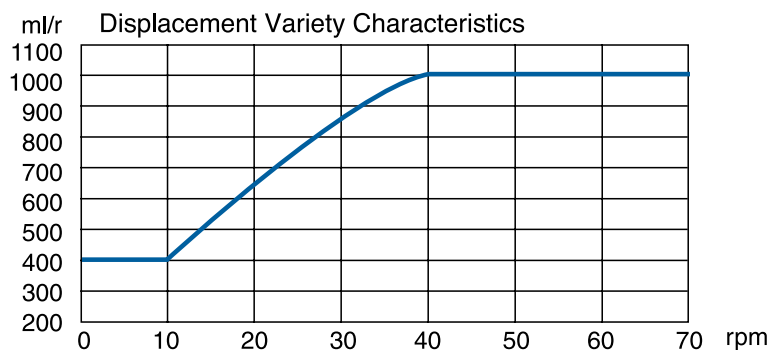
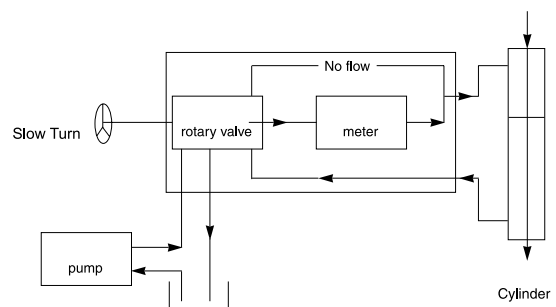
By using TLF type amplifying steering unit, when the vehicle is driving, it will not cause over-correction of the steering to rotate slowly the steering wheel. When the driving vehicle needs to change the direction quickly, the direction can be changed quickly as well, by increasing the steering wheel's rotation speed and the steering flow.

## STEERING FUNCTION

TLF Steering Function-high speed



TLF Steering Function-low speed



## GENERAL DESCRIPTION



### TLF1 Type Coaxial Flow Amplifying Steering Units

TLF1 type coaxial flow amplifying steering unit is a hydrostatic steering unit with flow amplifying ability. It can be supplied by various flow suppliers, and composed various load sensing hydraulic steering systems with priority valves, crossover anticavitation relief valves and other elements, which have light operation, sensitive and smooth features, and used in large and medium loaders, bulldozers, tractors, architectural machinery, engineering machinery, lifting machinery and other off-the-highway vehicles as well as hydraulic rudder of ship. It also provides the following features:

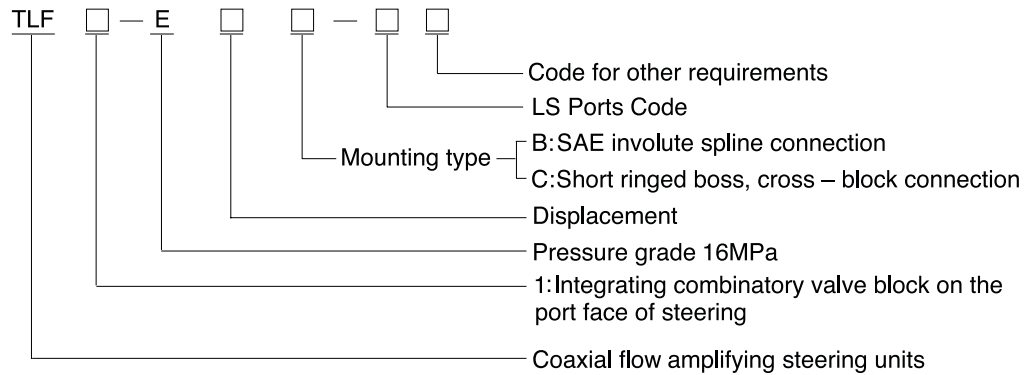
Compact volume and light weight

Good adjusting characteristic and small pressure loss

Convenient mounting and reasonable price

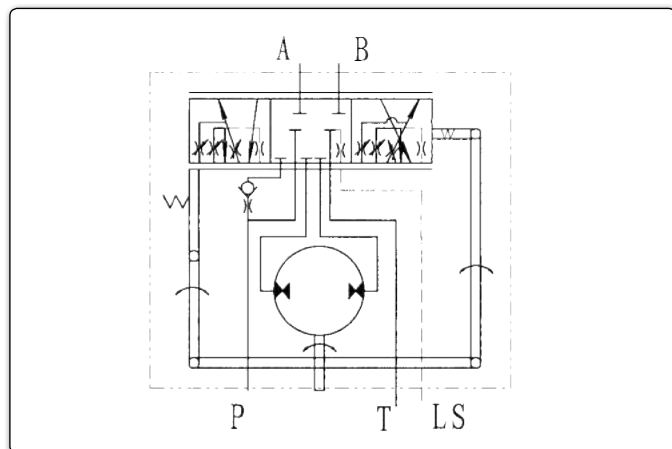
Instead of load sensing steering unit in same displacement without changing construction and exchanging other elements.

## ORDER CODE



## FUNCTION CODE

TLF1





## MAIN SPECIFICATIONS

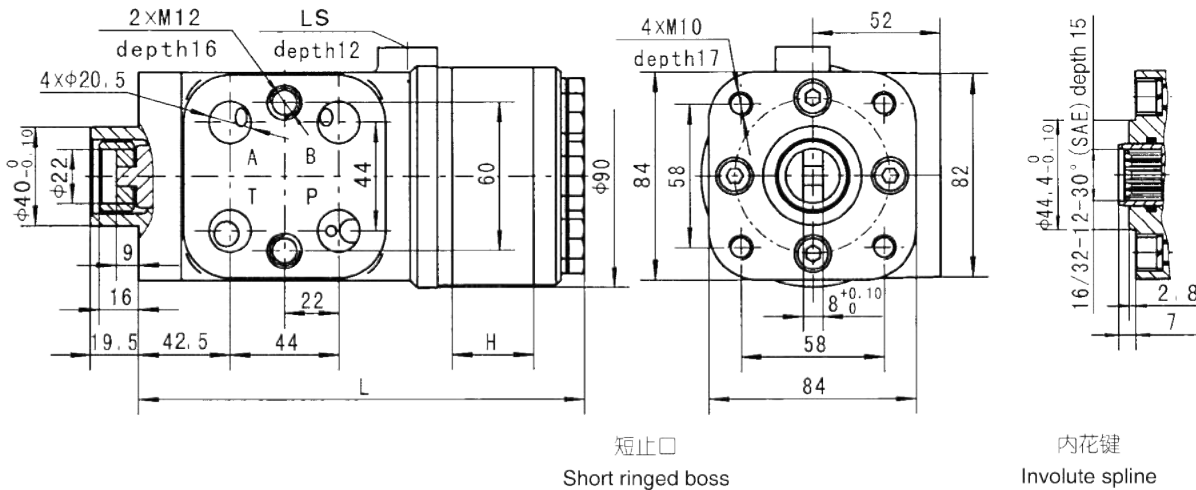


### TLF1 Type Coaxial Flow Amplifying Steering Units

Type	Displacement (mL/r)	Max. speed (rpm)	Max. input pressure (MPa)	Max. cont. back pressure (MPa)	Power steering torque (N·m)	Length
TLF1-E1000 □	1000	60	16	1.6	≤ 5	199.5
TLF1-E1250 □	1250					212.5

Note: mounting type, only C or B for choice, please see P52 for reference.

## MOUNTING DATA



## LS PORT CODE

Ports Code	Port LS
omit	M12×1.5
1	M12×1.5 O-ring
3	G1/4
5	7/16-20UNF O-ring
6	G1/4 O-ring

## GENERAL DESCRIPTION



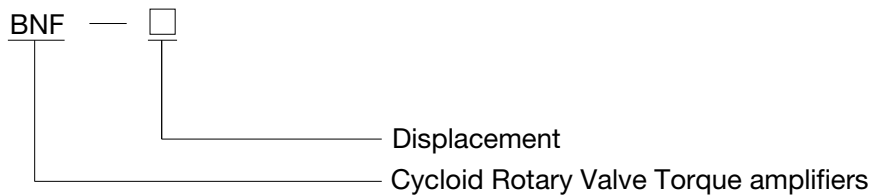
### BNF Type Torque Amplifiers

BNF type torque amplifier is one of the hydraulic element, which can get high output torque with low input torque. It contains a distributor valve, cycloid pin pair, and a pressure relief valve with the features of comfortable operation, compact volume and easy installation. It can be used in the fields of wheeled vehicle, large manual gate as well as other machineries required high torque.

Distributor valve is open center and the power stream fluid circulates through the unit back to the tank at very low pressure when the system is not being steered. When the steering wheel is turned, fluid is led from the steering system pump via the distributor valve to the hydraulic energy (pressure, oil flow) into mechanical energy (torque, speed).

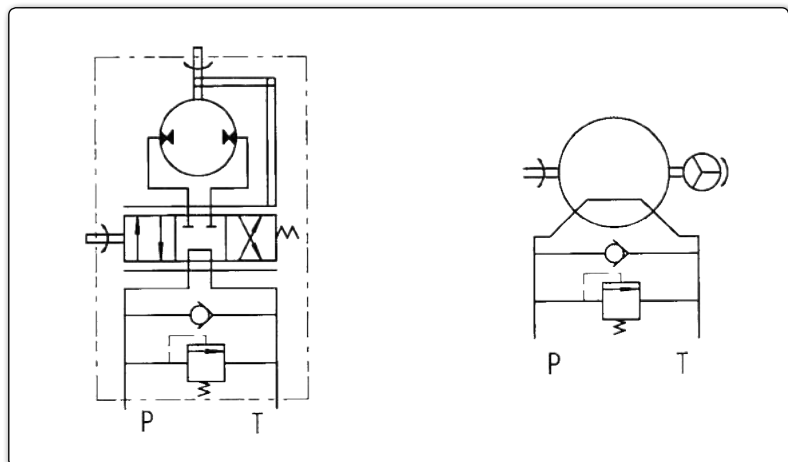
The speed is controlled by the rate of rotation of the steering wheel. The torque on the output shaft is the sum of the manual input torque and the torque from the cycloid pin pair. When the steering wheel been stopped rotating, the distributor valve cuts off the fluid to the cycloid pin pair, and torque amplification is stopped.

## ORDER CODE



## FUNCTION CODE

BNF



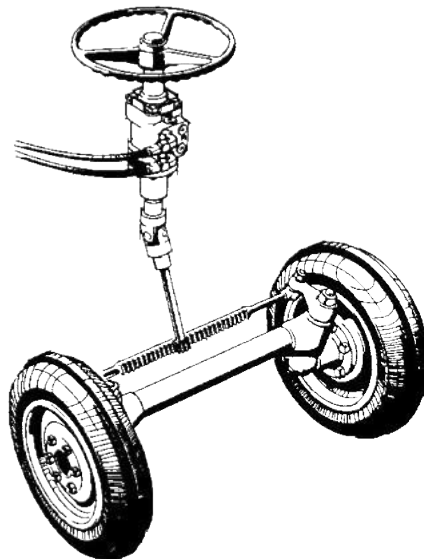
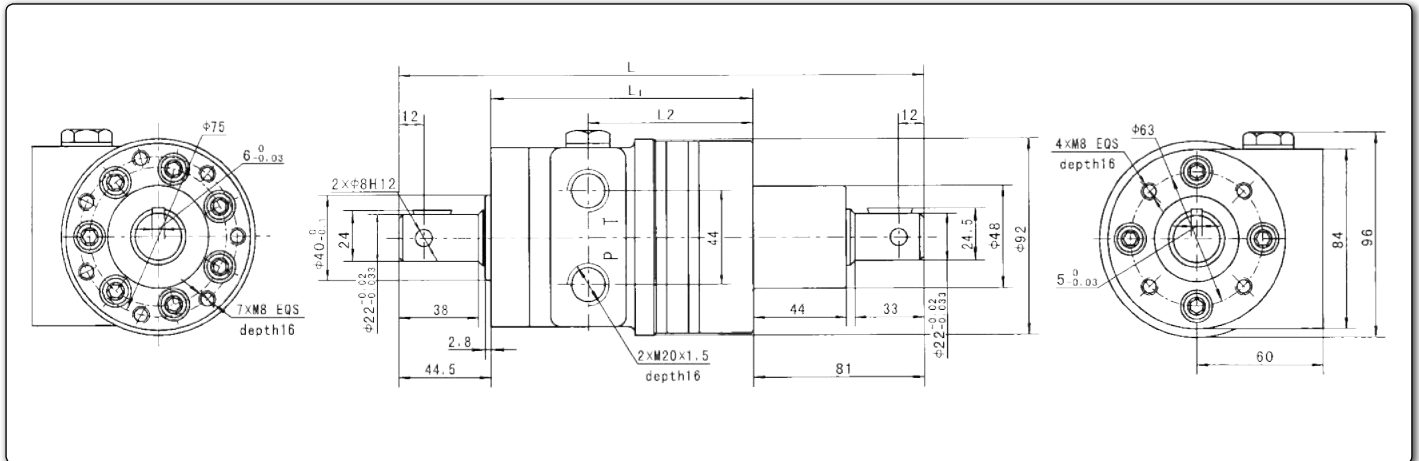
## MAIN SPECIFICATIONS



### BNF Type Torque Amplifiers

Displacement (mL/r)	Input torque (N·m)	Output torque (N·m)	Relief valve pressure settings (MPa)	Rated flow (L/min)	Max. speed (rpm)	Max. output torque (N·m)	Max. back pressure (MPa)	Length		
								L1	L2	L
80	3~5	70	6.3~12.5	10	125	150	0.5	125	78.5	249.5
100		85		10	100			127.5	81	252
125		100		12	100			130.5	84	255
160		120		16	100			135.5	89	260

## MOUNTING DATA



## GENERAL DESCRIPTION

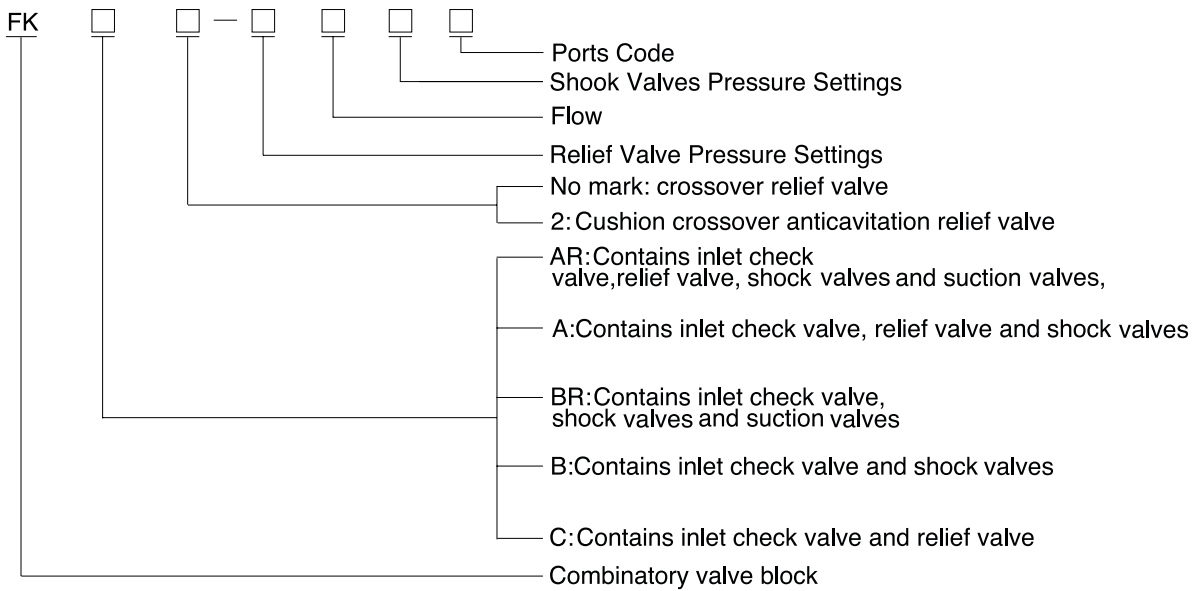


### FK Type Combinatory Valve Blocks

FKA, FKB, FKC, FKAR, FKBR type crossover relief valves and FKA2, FKB2, FKC2 type cushion crossover anticavitation relief valves. Being a combinatory valve, it can bolt directly to the port face of BZZ type steering unit to form a complete set, contains dual shock valves to protect the steering unit, hoses and steering cylinder from excessive system pressure due to sudden shock forces at the vehicle wheels and prevent such forces from being transmitted to the steering wheel, it also contains suction valves to help prevent cavitation at the low pressure side of the cylinder, an inlet check valve prevents reversed flow load circuit, a relief valve is the protection of the pump.

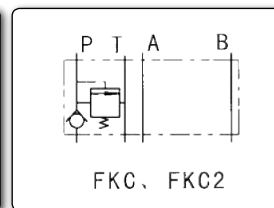
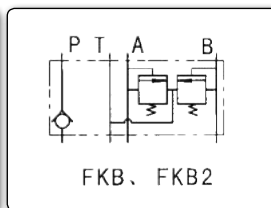
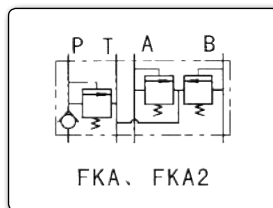
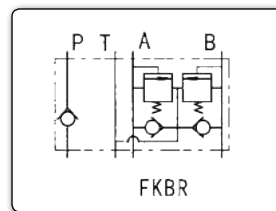
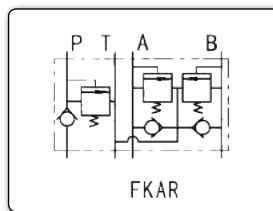


## ORDER CODE



## FUNCTION CODE

FK



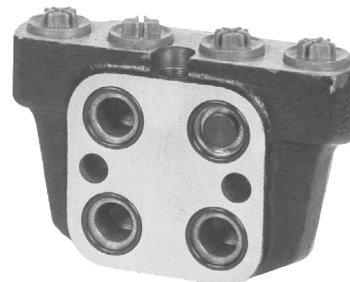
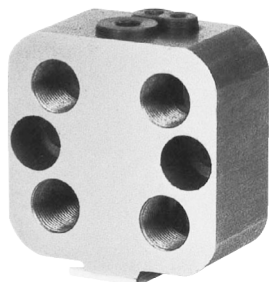
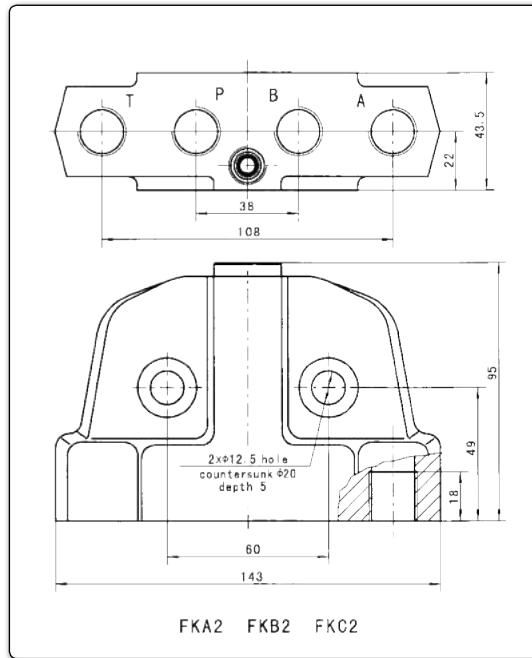
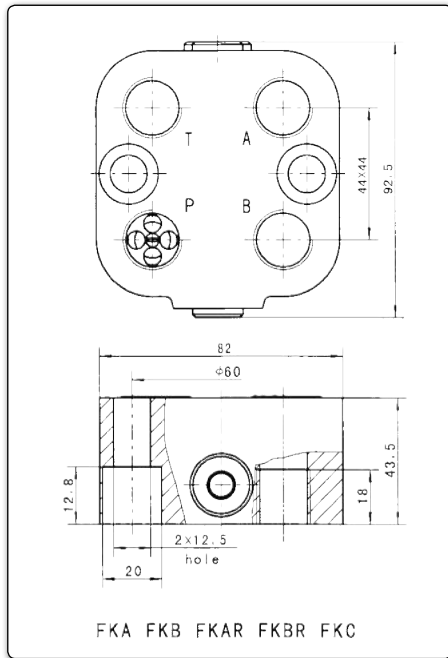
## MAIN SPECIFICATIONS



### FK Type Combinatory Valve Blocks

Type	Rated flow (L/min)	Inlet check valve open pressure (MPa)	Relief valve pressure range (MPa)	Shock valves pressure range (MPa)	Suction valves open pressure (MPa)	
FKAR FKA FKA2	30/60	0.1	2.5 ~ 16	6.3 ~ 22	0.05	
FKBR FKB FKB2	30		—	6.3 ~ 22	—	
FKC FKC2	30/60		2.5 ~ 16	—	—	
						—
						—
						—

## MOUNTING DATA



## PORTS THREADS

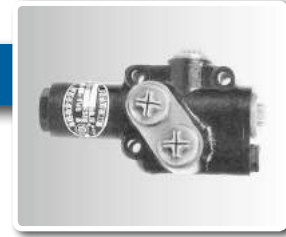


### FK Type Combinatory Valve Blocks

Type	Code	Ports P, T, A, B
FK Type Valves	omit	M20×1.5
	A	M18×1.5
	B	G1/2
	C	3/4-16UNF O-ring
	D	M20×1.5 O-ring
	E	M18×1.5 O-ring
	R	P, T : M20×1.5 A, B : M18×1.5
	S	P, T : M20×1.5 O-ring A, B : M18×1.5 O-ring
	G	M22×1.5
	Q	M22×1.5 O-ring
U	G1/2 O-ring	
FK Type Parallel Port Valves	omit	M18×1.5
	A	M20×1.5
	B	G1/2
	C	3/4-16UNF O-ring
	D	M20×1.5 O-ring
	E	M18×1.5 O-ring
U	G1/2 O-ring	

Note: The code of other ports dimensions will be listed in an agreement.

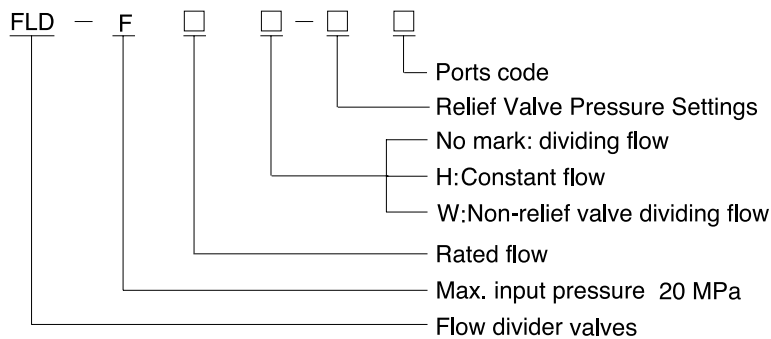
## GENERAL DESCRIPTION



### FLD Type Flow Divider Valves

The FLD type flow divider valve is used to form a complete set of BZZ type steering control units. Under such conditions of variety oil volume or/and different pressure in steering system, FLD type can provide constant flow for the steering unit so as to meet the requirement of hydraulic steering performance of vehicle. FLD type not only can control steering system, but also it helps pump to divide flow so that to reduce cost and simplify system design.

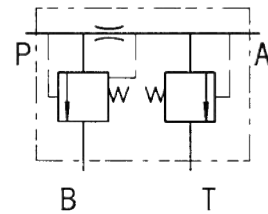
## ORDER CODE



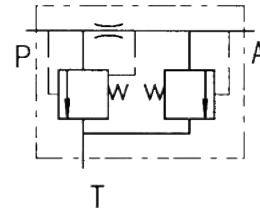
## FUNCTION CODE

**FLD**

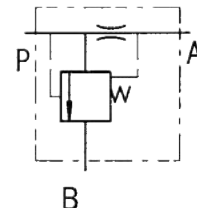
dividing flow



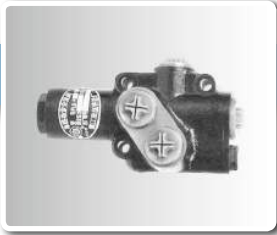
constant flow



non-relief valve  
dividing flow



## MAIN SPECIFICATIONS

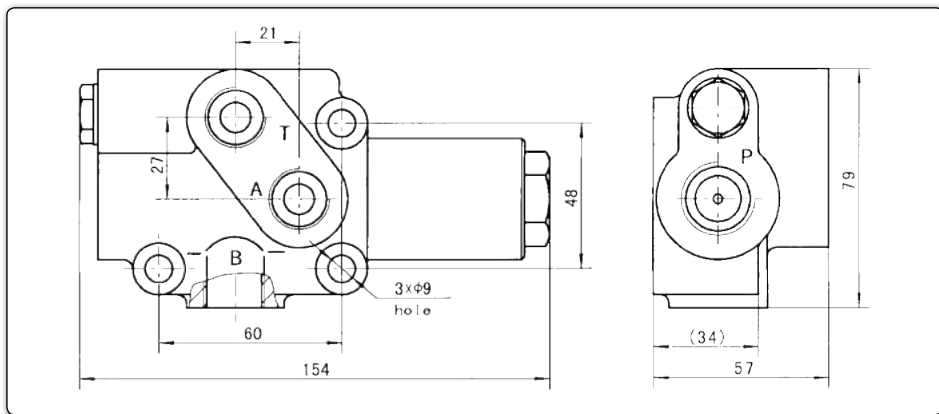


**FLD Type Flow Divider Valves**

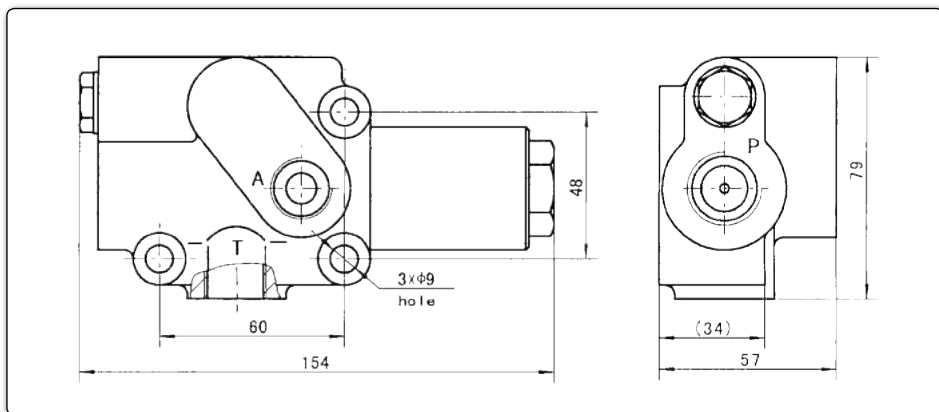
Type	Rated Flow (L/min)	Max. input flow (L/min)	Max. input pressure (MPa)	Adjusting pressure range (MPa)	Variation of flow (%)	Fit with steering unit
FLD-F4 *	4	45	20	6.3~16	15	BZZ1-E50
FLD-F5 *	5					BZZ1-E63
FLD-F6 *	6					BZZ1-E80
FLD-F7.5 *	7.5					BZZ1-E100
FLD-F9.5 *	9.5					BZZ1-E125
FLD-F12 *	12					BZZ1-E160
FLD-F15 *	15					BZZ1-E200
FLD-F19 *	19	60	20	6.3~16	20	BZZ1-E250
FLD-F21 *	21	75				BZZ1-E280
FLD-F24 *	24	75				BZZ1-E315
FLD-F30 *	30	90				BZZ1-E400
FLD-F38 *	38	120				BZZ1-E500
FLD-F48 *	48					BZZ1-E630
FLD-F60 *	60	200				BZZ1-E800
FLD-F75 *	75					BZZ1-E1000

## MOUNTING DATA

**FLD-F4~15**

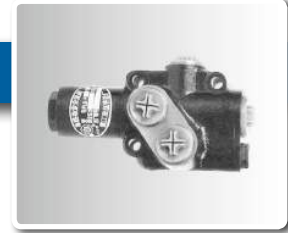


**FLD-F4~15H**



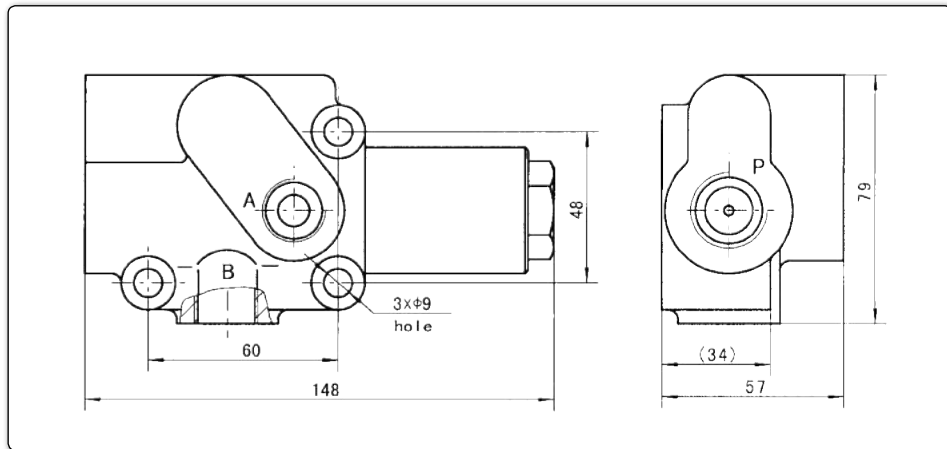


## MOUNTING DATA

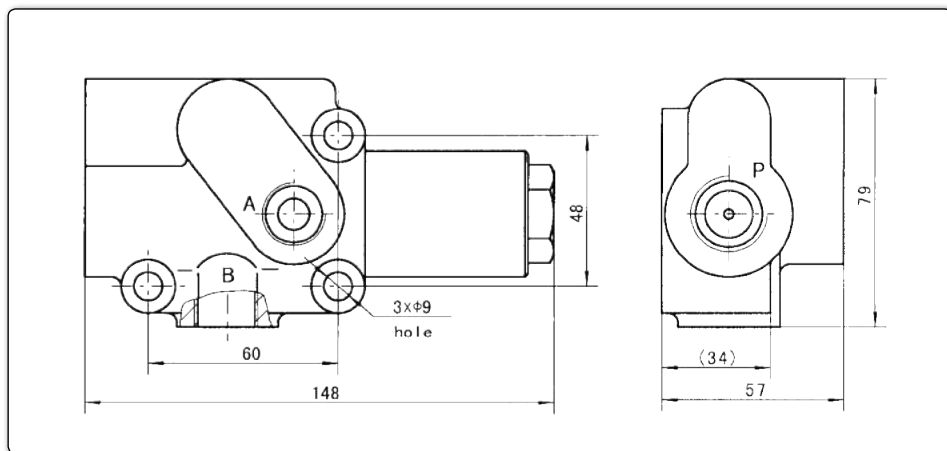


### FLD Type Flow Divider Valves

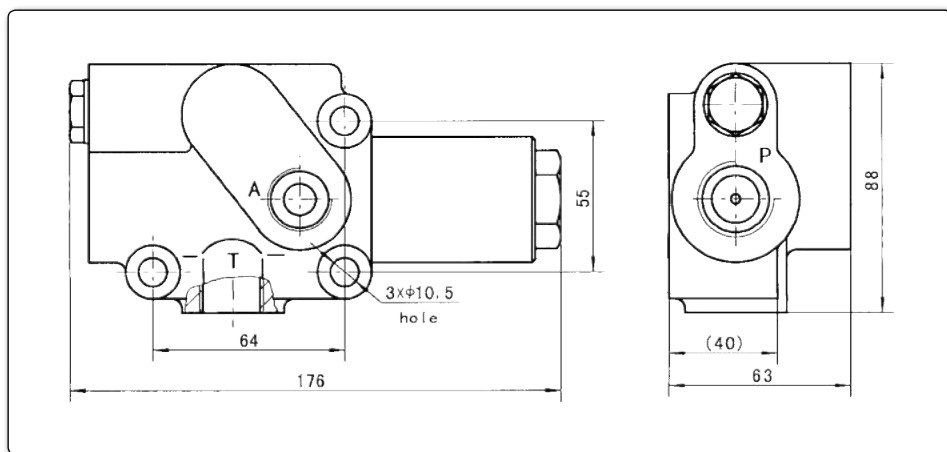
**FLD-F4~15W**



**FLD-F19~30**



**FLD-F19~30H**

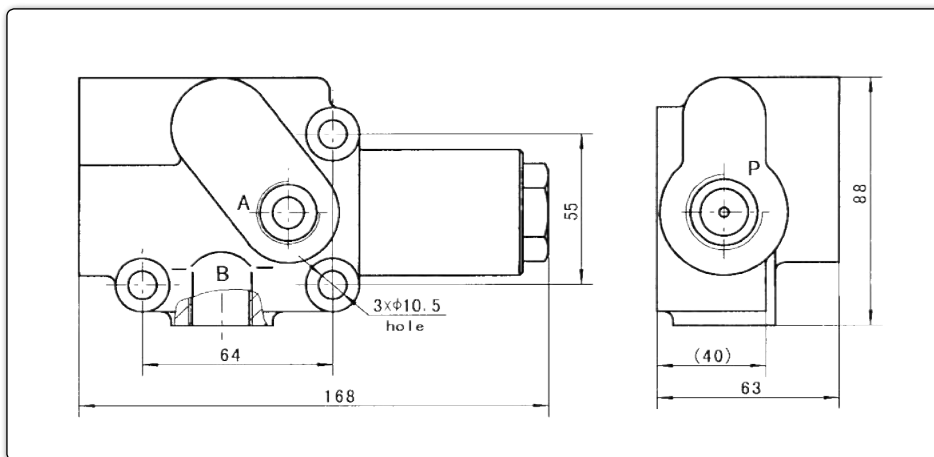


## MOUNTING DATA

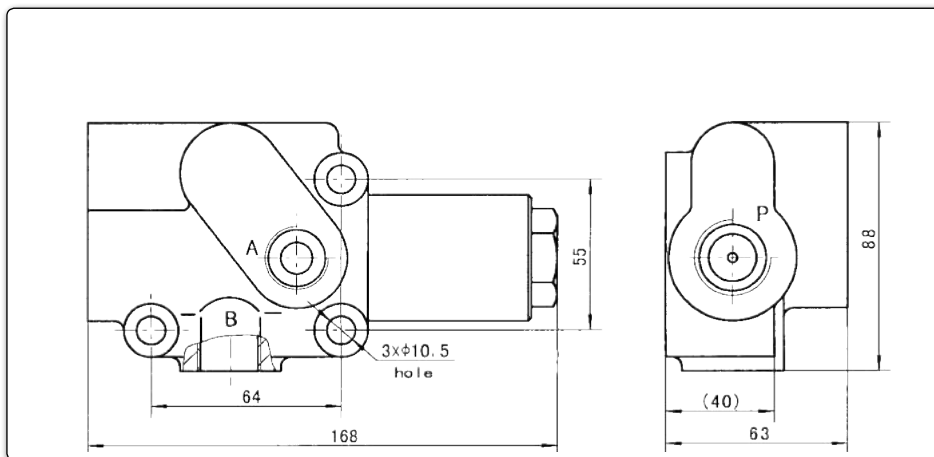


### FLD Type Flow Divider Valves

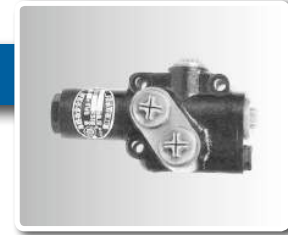
**FLD-F4~15**



**FLD-F4~15H**



## PORTS THREADS



### FLD Type Flow Divider Valves

**FLD4~15**  
**FLD4~15H**  
**FLD4~15W**

code	port P	ports A, (B), (T)
omit	M24×1.5 Depth16	M20×1.5 Depth16
D	M24×1.5 O-ring Depth16	M20×1.5 O-ring Depth16
C	7/8-14UNF O-ring Depth16	3/4-16UNF O-ring Depth16

**FLD19~30**  
**FLD19~30H**  
**FLD19~30W**

code	port P	ports A, (B), (T)
omit	M27×1.5 Depth16	M24×1.5 Depth16
D	M27×1.5 O-ring Depth16	M24×1.5 O-ring Depth16
C	1 1/16-16UN O-ring Depth16	7/8-14UNF O-ring Depth16

**FLD38~75W**

code	port P	ports A, (B)
omit	M27×1.5 Depth16	M27×1.5 Depth16
D	M27×1.5 O-ring Depth16	M27×1.5 O-ring Depth16
C	1 1/16-16UN O-ring Depth16	1 1/16-16UN O-ring Depth16

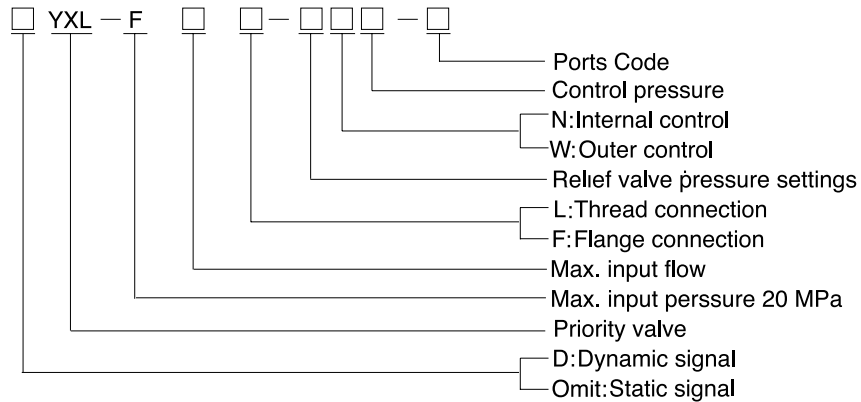


## GENERAL DESCRIPTION

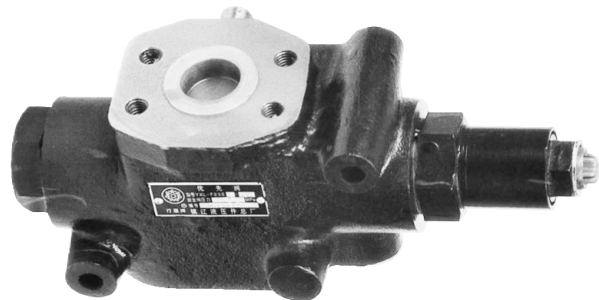
### DYXL,YXL Type Priority Valves

The DYXL,YXL type priority valve is used with BZZ5 type load sensing steering control unit or with TLF1 type coaxial flow amplifying steering unit, to form a load sensing power steering system, providing metered priority flow to the SCU.

## ORDER CODE

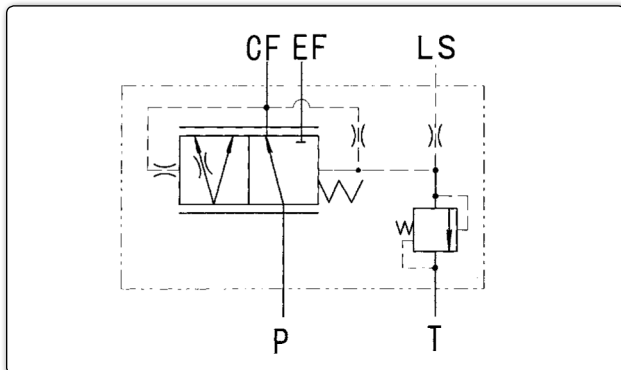


(D)YXL-F40 (D)YXL-F80 (D)YXL-F160

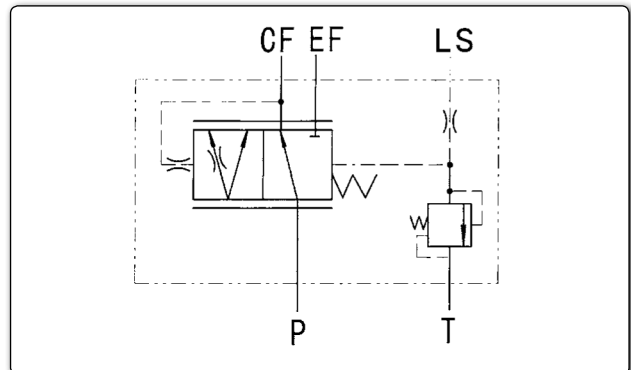


(D)YXL-F250

## FUNCTION CODE



Dynamic Signal



Static signal

## MAIN SPECIFICATIONS



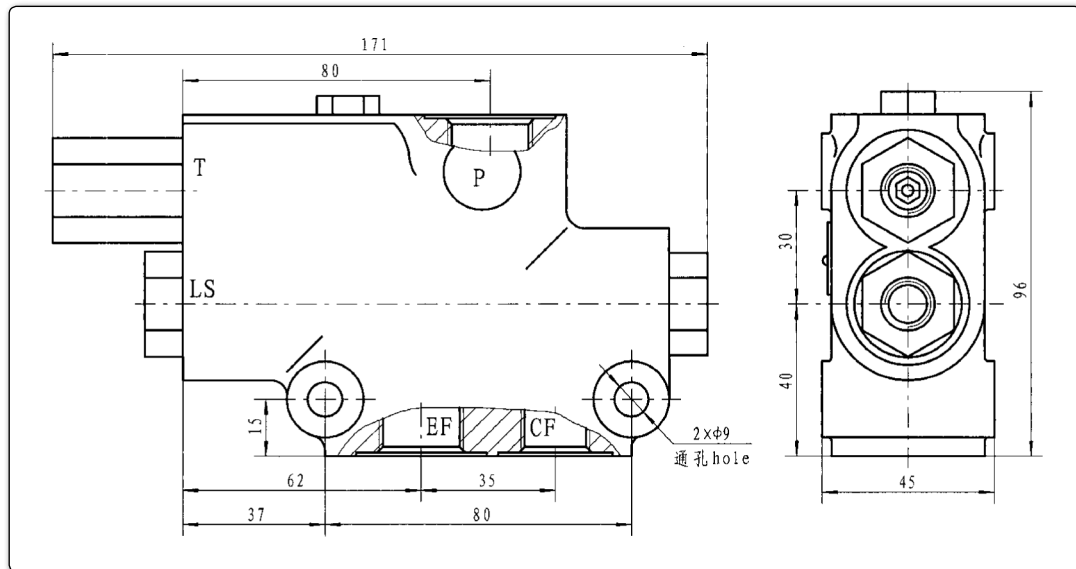
### DYXL, YXL Type Priority Valves

Type	Control pressure (bar)	Max. input flow (L/min)	Max. input pressure (MPa)	Relief valve pressure range (MPa)
<input type="checkbox"/> YXL-F40L- <input type="checkbox"/> <input type="checkbox"/> 4.5- <input type="checkbox"/>	4.5	40	20	6.3~17.5 adjusted by customer's requirement
<input type="checkbox"/> YXL-F40L- <input type="checkbox"/> <input type="checkbox"/> 7- <input type="checkbox"/>	7			
<input type="checkbox"/> YXL-F40L- <input type="checkbox"/> <input type="checkbox"/> 10.5- <input type="checkbox"/>	10.5			
<input type="checkbox"/> YXL-F80L- <input type="checkbox"/> <input type="checkbox"/> 4.5- <input type="checkbox"/>	4.5	80		
<input type="checkbox"/> YXL-F80L- <input type="checkbox"/> <input type="checkbox"/> 7- <input type="checkbox"/>	7			
<input type="checkbox"/> YXL-F80L- <input type="checkbox"/> <input type="checkbox"/> 10.5- <input type="checkbox"/>	10.5			
<input type="checkbox"/> YXL-F160L- <input type="checkbox"/> <input type="checkbox"/> 4.5- <input type="checkbox"/>	4.5	160		
<input type="checkbox"/> YXL-F160L- <input type="checkbox"/> <input type="checkbox"/> 7- <input type="checkbox"/>	7			
<input type="checkbox"/> YXL-F160L- <input type="checkbox"/> <input type="checkbox"/> 10.5- <input type="checkbox"/>	10.5			
<input type="checkbox"/> YXL-F250 <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> 7- <input type="checkbox"/>	7	250		
<input type="checkbox"/> YXL-F250 <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> 10.5- <input type="checkbox"/>	10.5			

Note:  Please see page 64 for reference

## MOUNTING DATA

YXL-F40L  
DYXL-F40L  
YXL-F80L  
DYXL-F80L



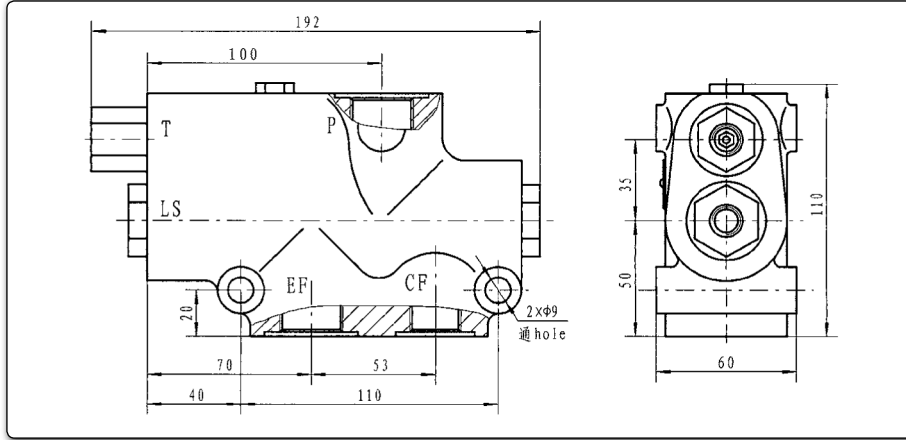
Code	Ports P, EF		Port CF		Ports Ls, T	
	Thread	Depth(mm)	Thread	Depth(mm)	Thread	Depth(mm)
A	M22x1.5	16	M18x1.5	16	M12x1.5	14
B	G1/2		G3/8		G1/4	
C	7/8-14UNF O-ring		3/4-16UNF O-ring		7/16-20UNF O-ring	
D	M22x1.5 O-ring		M18x1.5 O-ring		M12x1.5 O-ring	
E	G1/2 O-ring		G3/8 O-ring		G1/4 O-ring	

## MOUNTING DATA



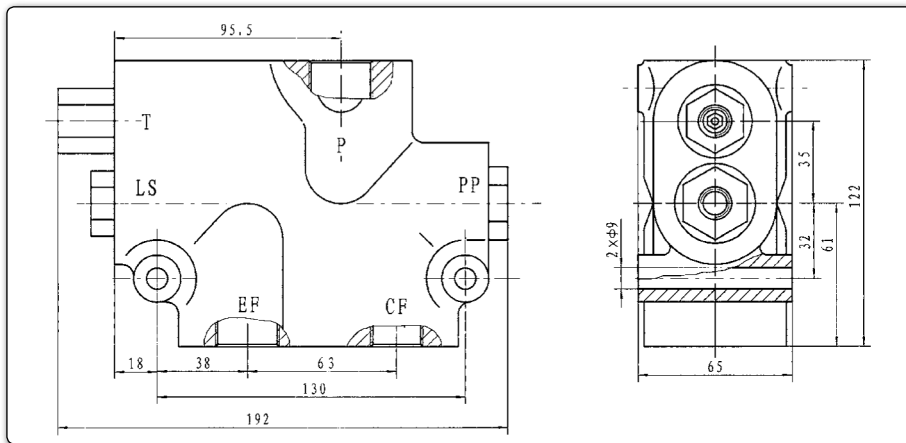
**DYXL, YXL Type Priority Valves**

**YXL-F160L**



Code	Ports P, EF		Port CF		Ports LS, T	
	Thread	Depth(mm)	Thread	Depth(mm)	Thread	Depth(mm)
A	M27x2	22	M22x1.5	18	M12x1.5	14
B	G3/4		G1/2			
C	1 1/16-12UN O-ring		3/4-16UNF O-ring			
D	M27x2 O-ring		M22x1.5 O-ring			
E	G3/4 O-ring		G1/2 O-ring			

**DYXL-F160L**



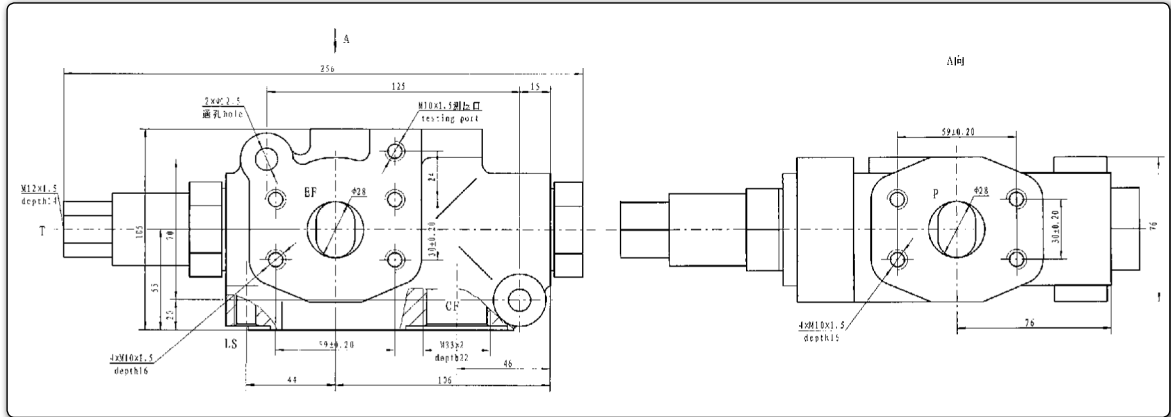
Code	Ports P, EF		Port CF		Ports LS, T	
	Thread	Depth(mm)	Thread	Depth(mm)	Thread	Depth(mm)
A	M27x2	22	M22x1.5	18	M12x1.5	14
B	G3/4		G1/2			
C	1 1/16-12UN O-ring		3/4-16UNF O-ring			
D	M27x2 O-ring		M22x1.5 O-ring			
E	G3/4 O-ring		G1/2 O-ring			

## MOUNTING DATA



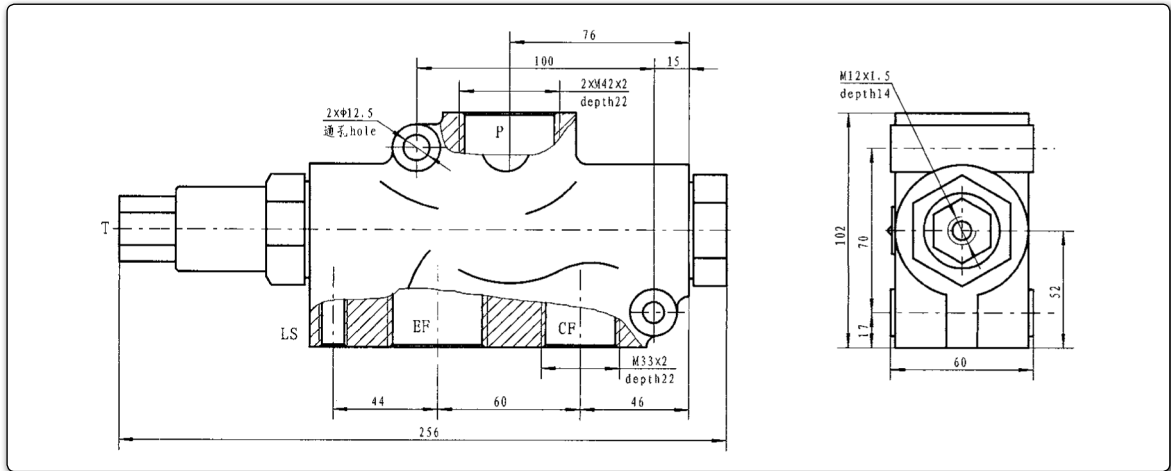
### DYXL, YXL Type Priority Valves

**YXL-F250F  
DYXL-F250F**



Code	Ports P,EF		Port CF		Ports LS,T	
	Aperture Size	Thread	Depth(mm)	Thread	Depth(mm)	
A	Ø 28	M33x2	22	M12x1.5	14	
D	Ø 28	M33x2 O-ring	22	M12x1.5 O-ring	14	

**YXL-F250L  
DYXL-F250L**



Code	Ports P,EF		Port CF		Ports LS,T	
	Thread	Depth(mm)	Thread	Depth(mm)	Thread	Depth(mm)
A	M42x2	22	M33x2	22	M12x1.5	14
D	M42x2 O-ring	22	M33x2 O-ring	22	M12x1.5 O-ring	14



### DYXL, YXL Type Priority Valves

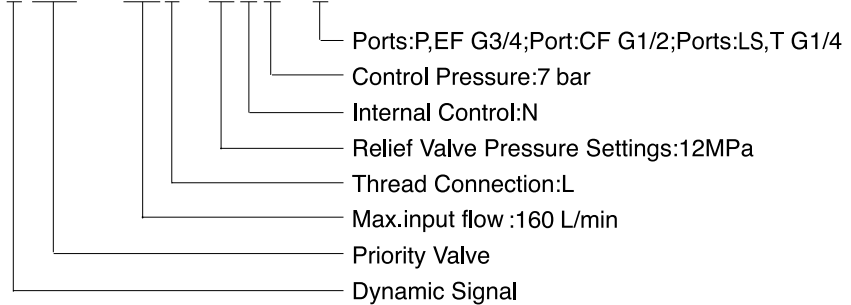
Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
*	YXL	-	F	***	*	-

Pos.1	-	Signal Model
		Omit: Static Signal D: Dynamic Signal
Pos.2	-	Max. input flow (L/min)
		40、80、160、250
Pos.3	-	Mounting type
		L: Thread connection F: Flange connection
Pos.4	-	Relief valve pressure settings (MPa)
		08、10、12、14、15、16、17.5
Pos.5	-	Control type
		N: Internal control W: Outer control
Pos.6	-	Control pressure (bar)
		4.5、7、10.5
Pos.7	-	Ports Code
		A、B、C、D、E

For example:

Order code

D YXL - F 160 L - 12 N 7 - B





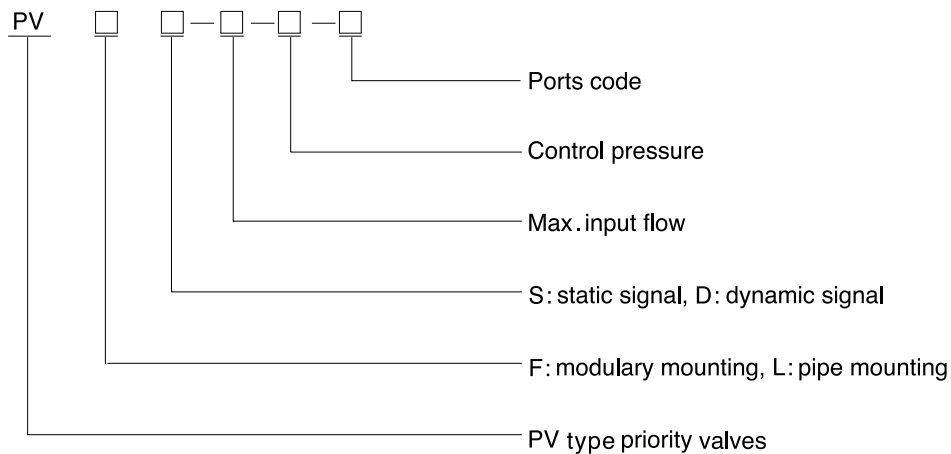
## GENERAL DESCRIPTION



### PV Type Priority Valves

PV\*\*-40,60,80 type priority valve is matched with the load sensing steering unit. When the hydraulic oil flow to the priority valve, and the load or revolution changed, PVP\*-40,60,80 type priority valves is modular design matched with the 101S-5(L)(E) or 102(S)-5(L)(E)SCU; PVP\*-40,60,80 priority valve has 2 kind signals: PVFS-40,60,80 static signal, PVFD-40,60,80 dynamic signals. PVL\*-40,60,80 type priority valve is pipe design, matched with the 101(S)-5T(TE) or 102(S)-5T(TE) SCU, PVL-40,60,80 type priority valve has 2 kind signals: PVLS- 40,60,80 static signal, PVL D-40,60,80 dynamic signals PV\*\*-40,60,80 type priority valve is not interchanged with the LS inlet pressure control relief valve, the relief valve integrated in the SCU.

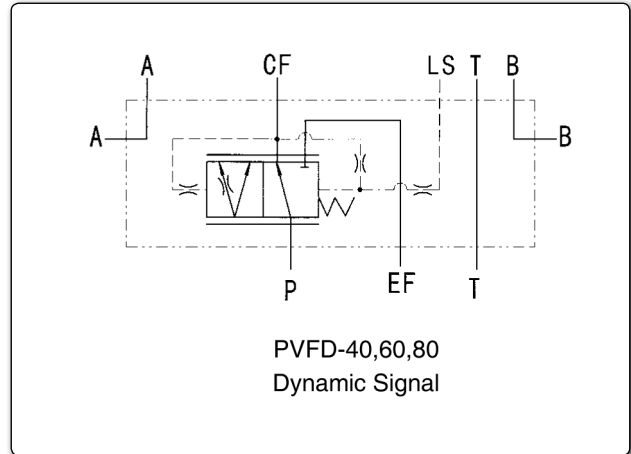
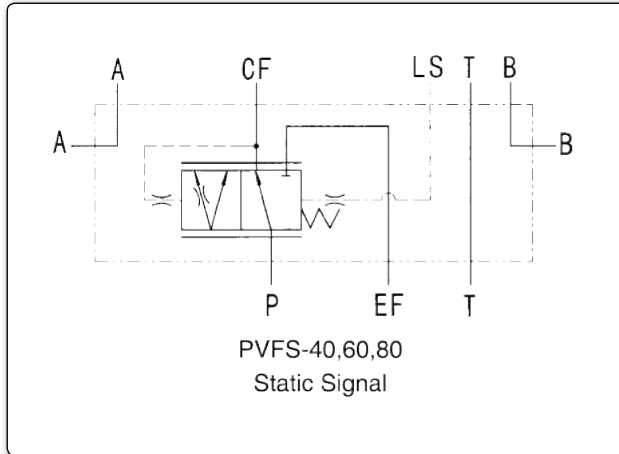
## ORDER CODE



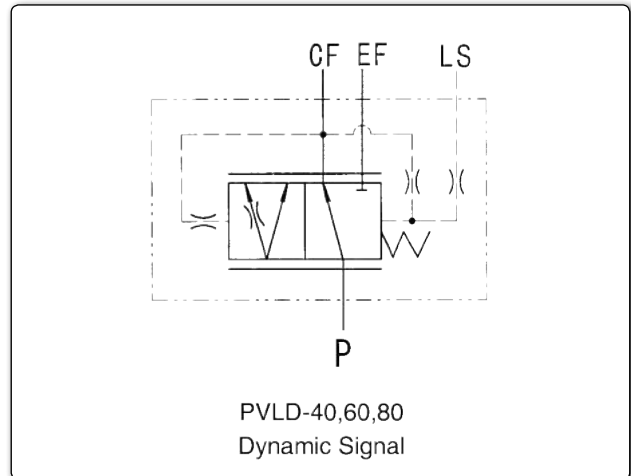
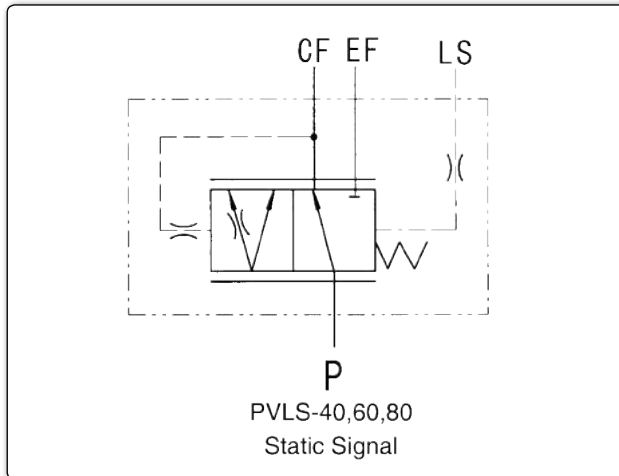
## FUNCTION CODE



### PV Type Priority Valves



### Modularity Mounting



### Pipe Mounting

## MAIN SPECIFICATIONS

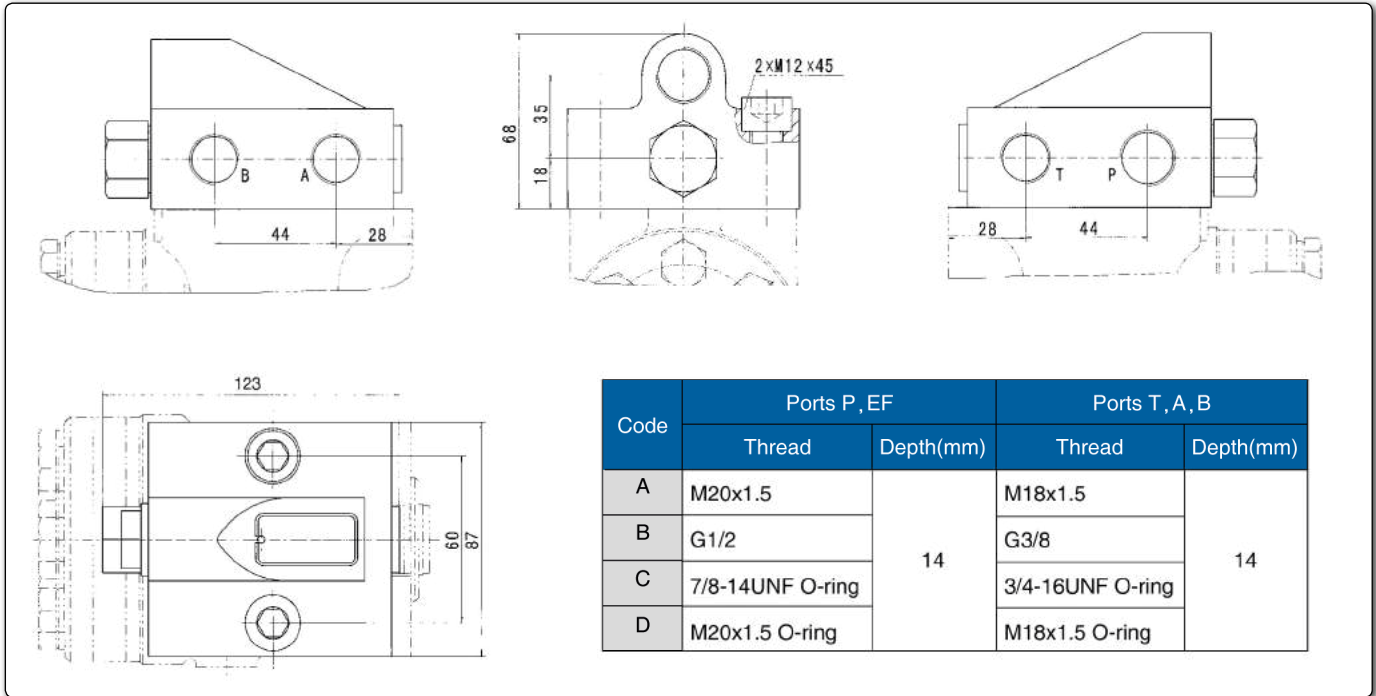
Parameters	Type PVFS(D) , PVLS(D)
Max. Input Flow (L/min)	40,60,80
Control Pressure (MPa)	0.45, 0.7, 1.05
Max. Pressure in Oil: P, EF (MPa)	20
Max. Pressure in Oil: LS, CF (MPa)	16

## MOUNTING DATA

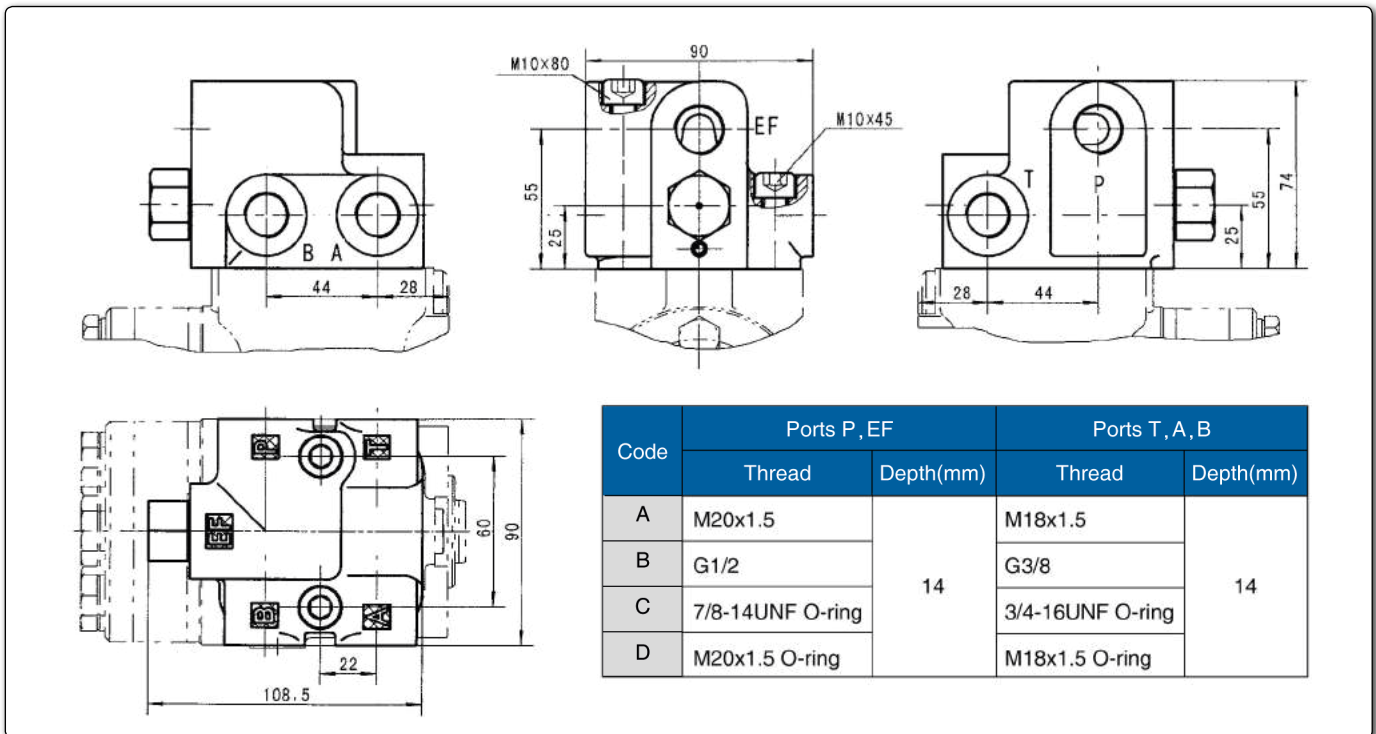


### PV Type Priority Valves

#### PVFS(D)-40, 60



#### PVFaS(D)-60

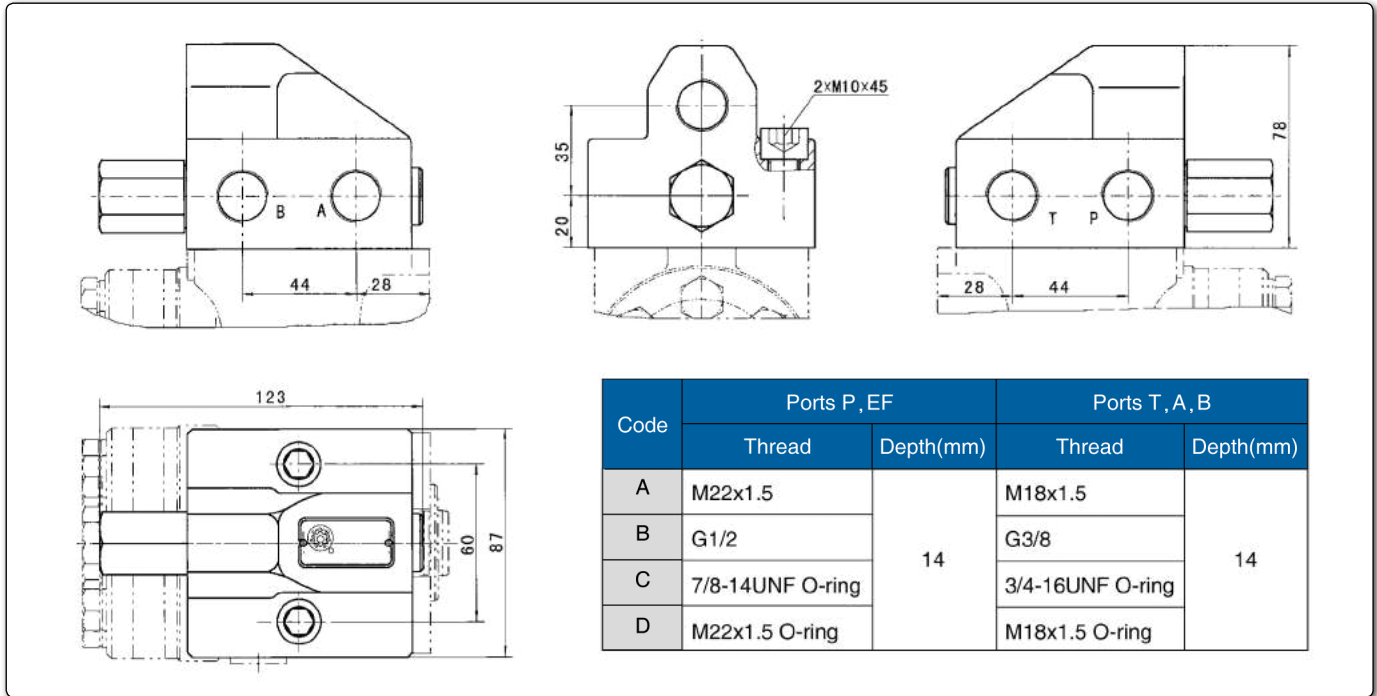


## MOUNTING DATA

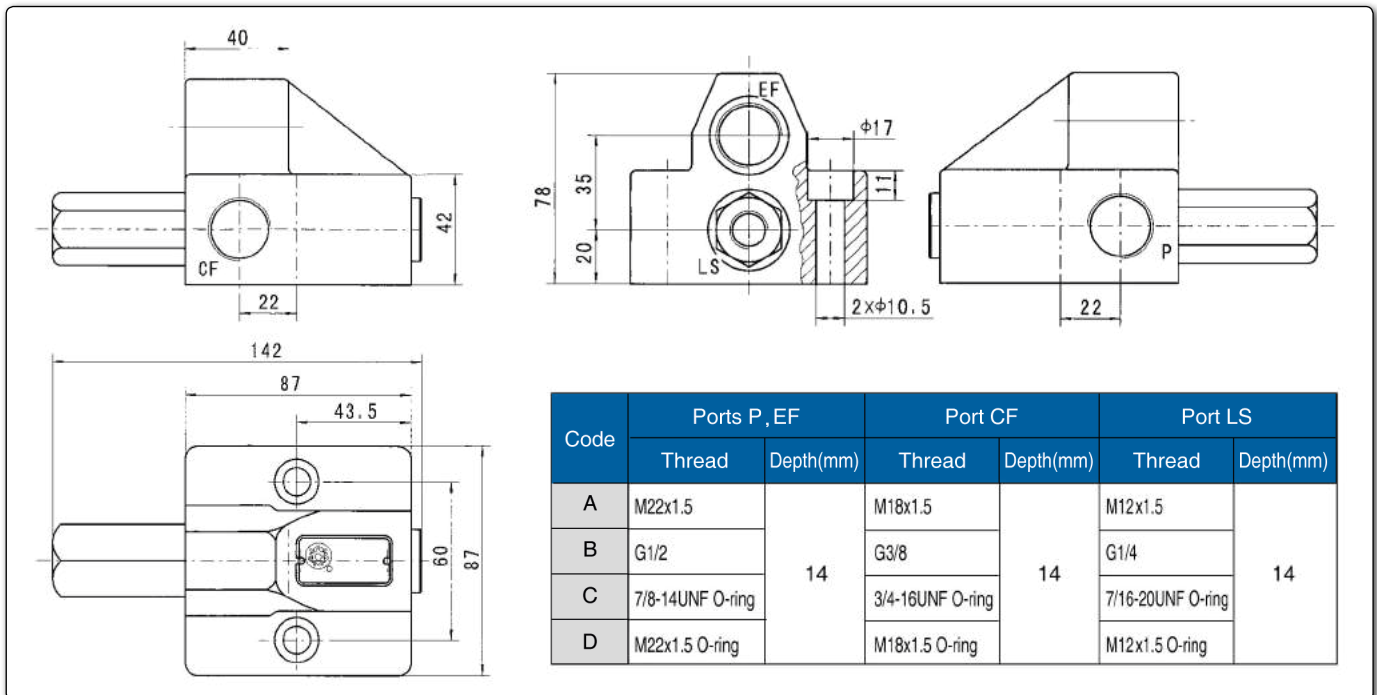


### PV Type Priority Valves

#### PVFS(D)-80



#### PVLS(D)-80



## ORDER CODE



### PV Type Priority Valves

	Pos.1	Pos.2		Pos.3		Pos.4		Pos.5
PV	*	*	-	**	-	***	-	*

Pos.1 -

F: Modulary Mounting  
L: Pipe Mounting

Pos.2 -

S: Static Signal  
D: Dynamic Signal

Pos.3 -

40、 60、 80

Pos.4 -

0.45、 0.7、 1.05

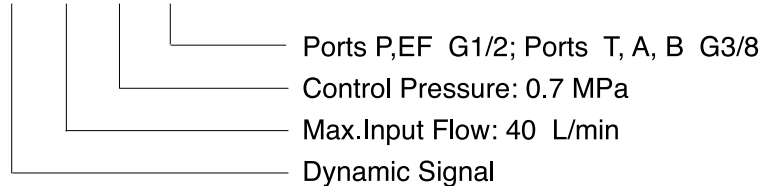
Pos.5 -

A、 B、 C、 D

For example:

Order code

PVF D - 40 - 0.7 - B



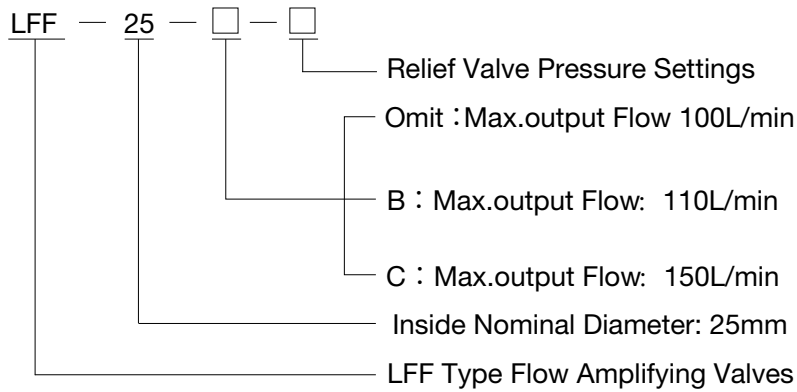


## GENERAL DESCRIPTION

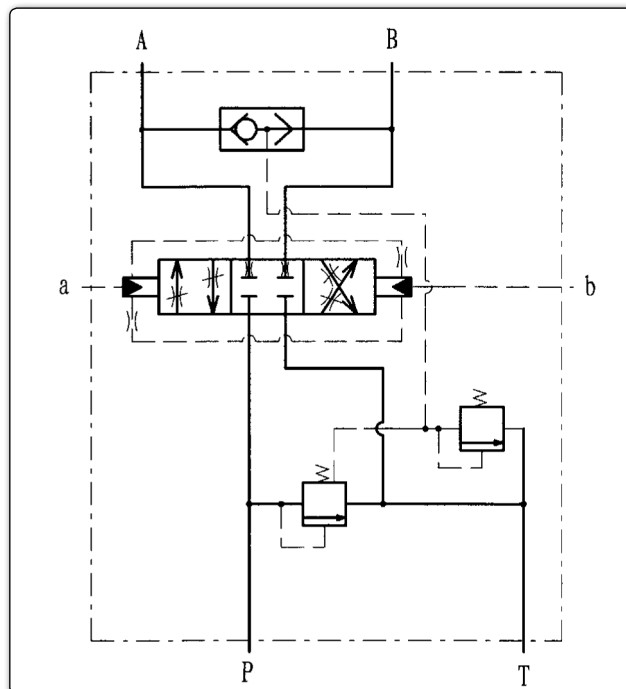
### LFF Type Flow Amplifying Valves

The LFF-25 Flow amplifying valve is a kind of hydraulic directional valve which can use low pressure and small flow to control high pressure and big flow. It can be used with BZZ3 type steering unit as hydraulic steering system. Through adopting pressure compensation device, the flow amplifier supplies oil flow for steering cylinder. The oil flow won't vary with the loading as to ensure steering reliability and energy saving. With the features of high steering power and flexible steering, this type Flow amplifying valve is applicable to steering system in large wheeled vehicles and marine rudder.

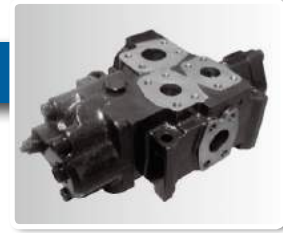
## ORDER CODE



## FUNCTION CODE



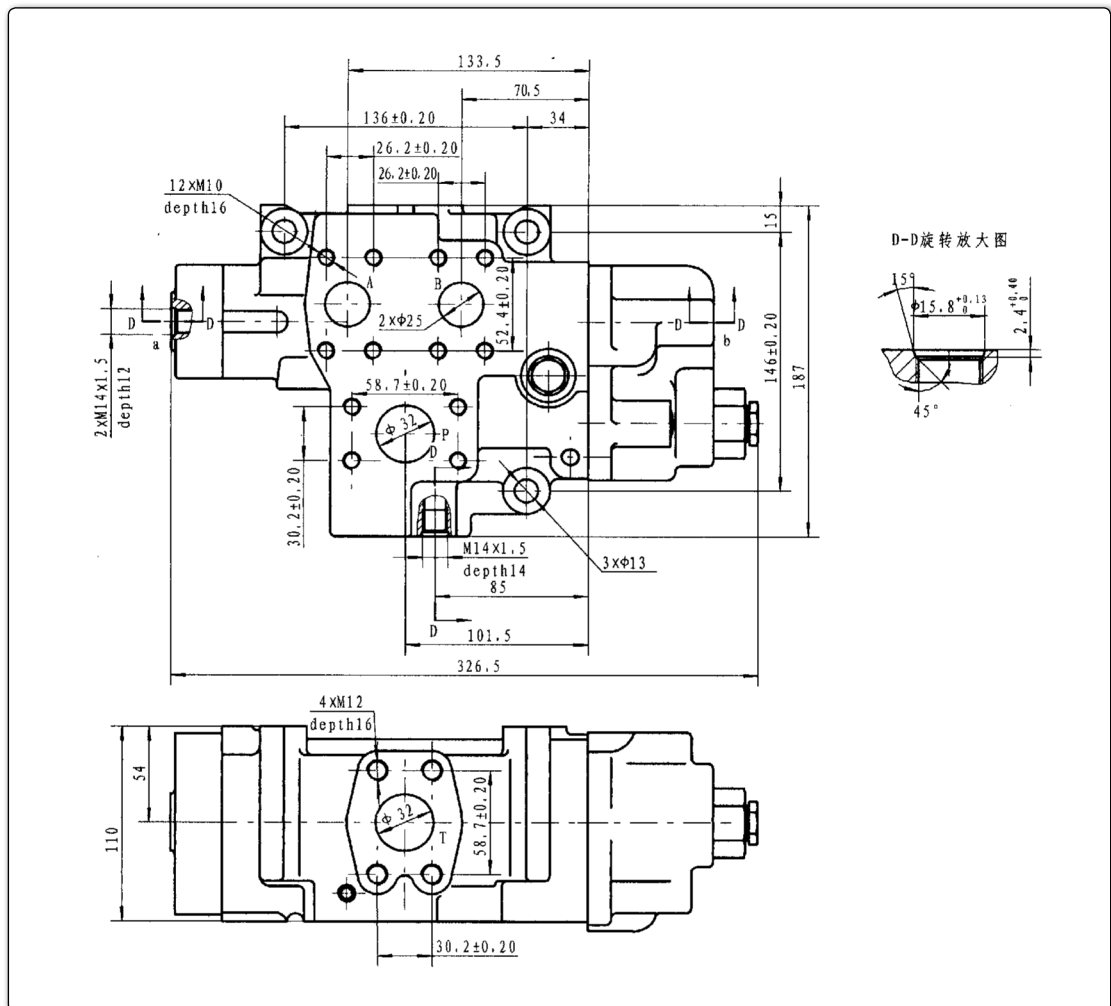
## MAIN SPECIFICATIONS



### LFF Type Flow Amplifying Valves

Type	Nominal pressure (MPa)	Nominal flow (L/min)	Max.output flow (L/min)	Relief valve pressure setting range (MPa)	Unloading Pressure (MPa)	Max.back pressure (MPa)
LFF-25	20	160	100±5	6.3 ~ 16	0.5	2
LFF-25B			110±10			
LFF-25C			150±10			

## MOUNTING DATA



LFF

# LFA - LFB

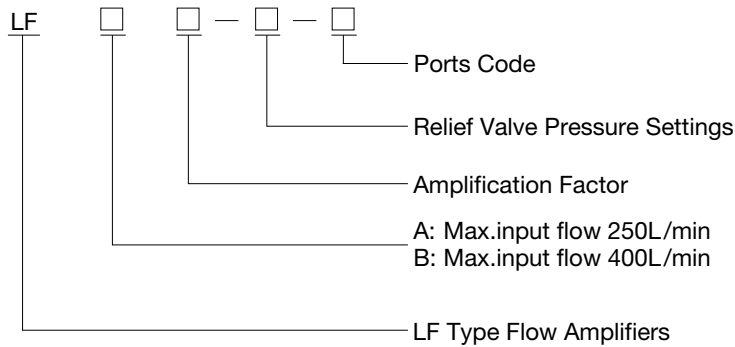


## GENERAL DESCRIPTION

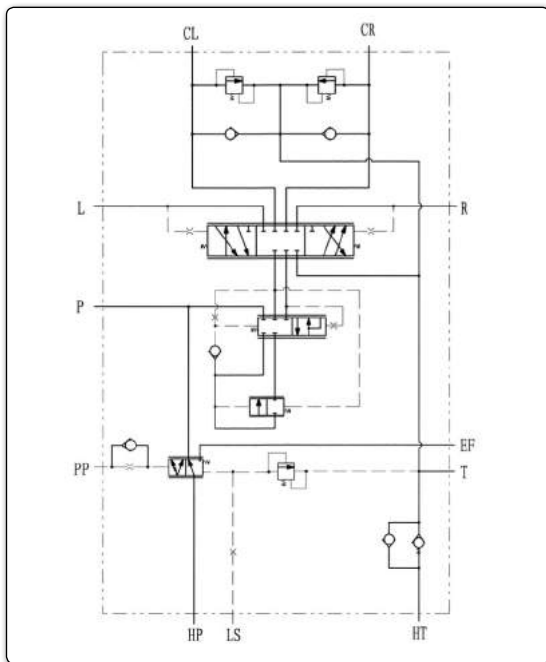
### LFA, LFB Type Flow Amplifiers

The LFA and LFB flow amplifiers mainly contain a priority valve, a directional valve, an amplification valve, shock valves, suction valves and etc, and they can be used with 101-5TX type steering unit as a loading sensing steering system. Through adopting proportional flow amplification special structure, the flow amplifier amplifies the oil flow from steering unit by a fixed amplification factor to steering cylinder. The amplified flow is proportional to the revolution speed of steering wheel. With the features of high steering power, flexible steering and manual steering in case of engine failure stops, this type steering system are applicable to large wheeled vehicles and marine rudder.

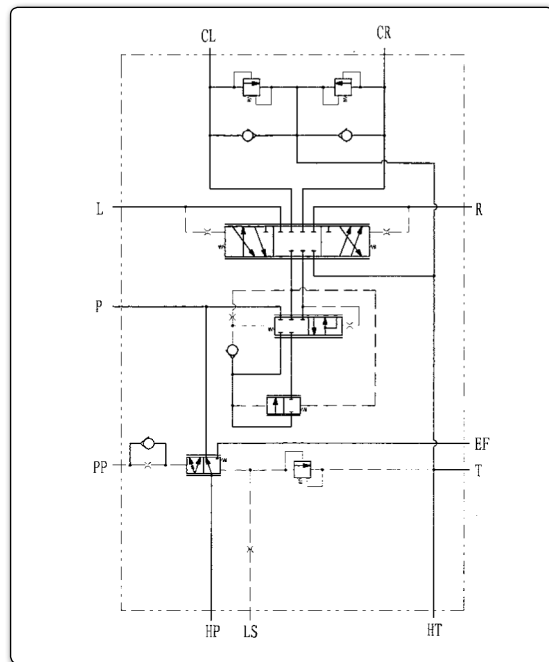
## ORDER CODE



## FUNCTION CODE



LFA



LFB



## MAIN SPECIFICATIONS



### LFA, LFB Type Flow Amplifiers

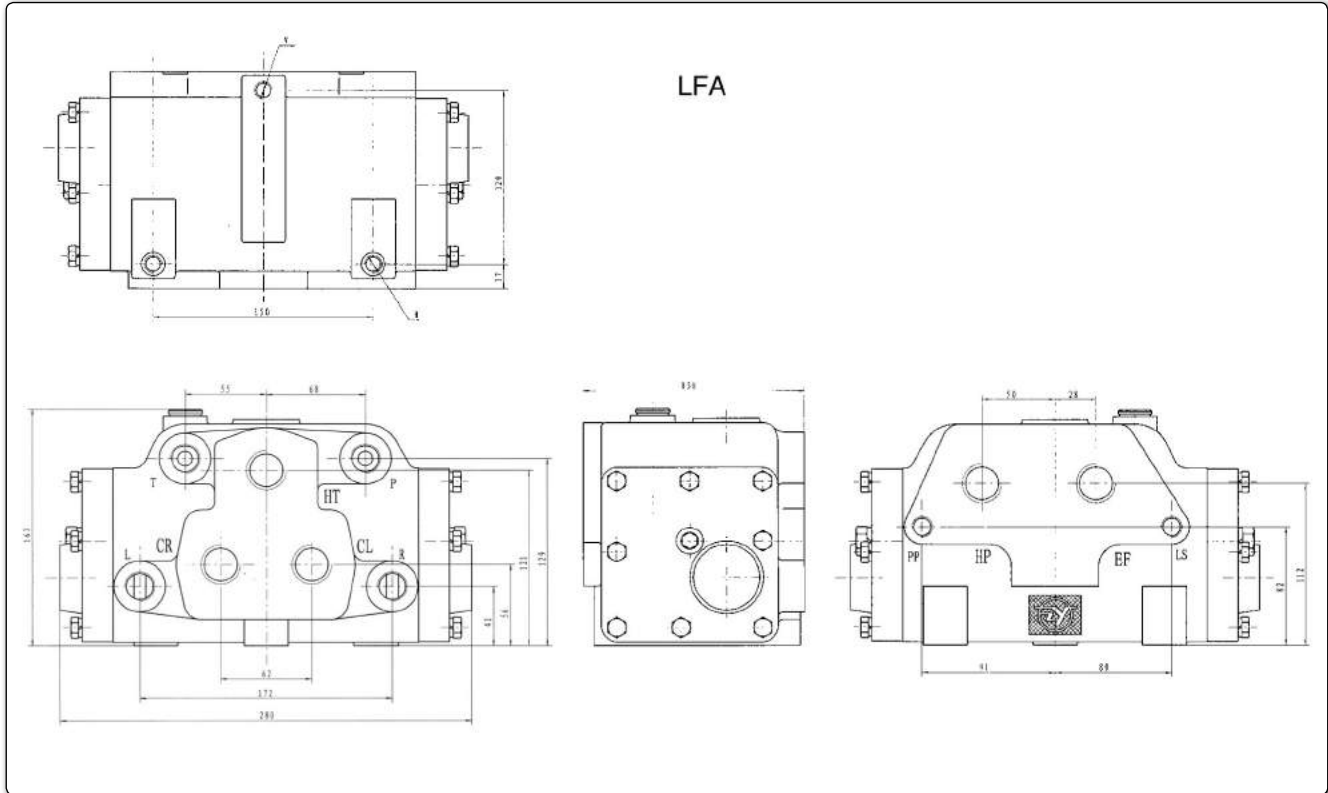
Flow Amplifiers	Amplification Factor	Displacement of 101-5TX Type				
		160 mL/r	200 mL/r	250 mL/r	315 mL/r	400 mL/r
LFA	5	800	1000	1250	1575	2000
LFA	8	1280	1600	2000	-	-
LFB	5	800	1000	1250	1575	2000
LFB	8	1280	1600	2000	2520	3200

Type	Amplification Factor	Max. input Flow (L/min)	Max. input Pressure (MPa)	Relief Valve Pressure Range (MPa)	Shock Valves Pressure Range (MPa)	Control Spring Pressure (MPa)	Back Valve Opening Pressure (MPa)			
LFA5	5	250	25	10~17.5	16~25	0.7	-			
LFA8	8									
LFB5	5	400	25				10~17.5	16~25	0.7	0.5
LFB8	8									

## MOUNTING DATA



**LFA Type Flow Amplifiers**



**Thread connection**

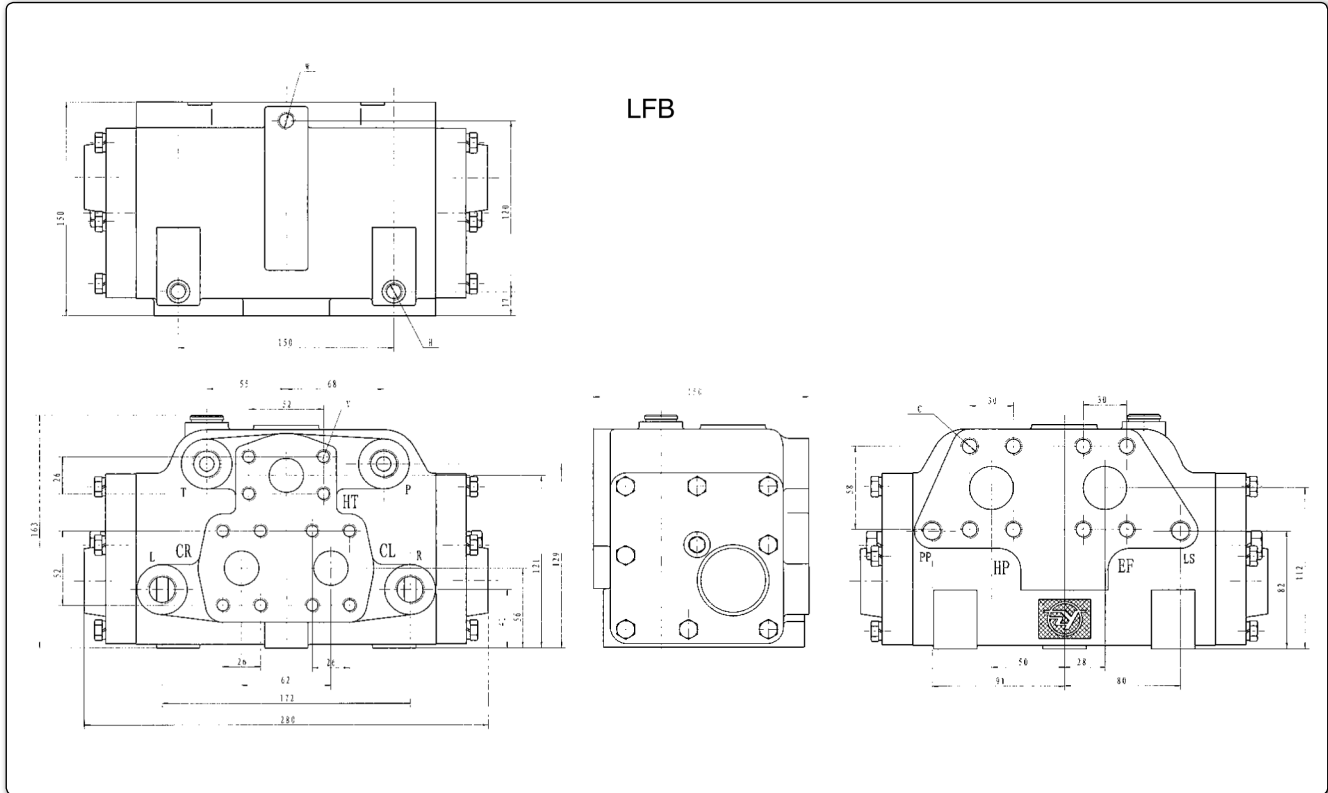
## PORTS THREADS

Code	Ports HP , EF	Ports HT , CL, CR	Ports P , T, L, R	Ports PP , LS	Mounting W	Mounting H
A	M27x2 Depth 20	M27x2 Depth 20	M20x1.5 Depth 20	M12x1.5 Depth 14	M10x1.5 Depth 16	M10x1.5 Depth 20
B	G3/4 Depth 20	G3/4 Depth 20	G1/2 Depth 20	G1/4 Depth 14	M10x1.5 Depth 16	M10x1.5 Depth 20
C	1 1/16-12UN Depth 20	1 1/16-12UN Depth 20	3/4-16UNF Depth20	7/16-20UNF Depth 14	7/16-14UNC Depth 16	7/16-14UNC Depth 20

## MOUNTING DATA



### LFB Type Flow Amplifiers



Flange connection

## PORTS THREADS

Code	Ports HP, EF	Ports HT, CL, CR	Ports P, T, L, R	Ports PP, LS	Mounting C	Mounting V	Mounting W	Mounting H
A	Ø 30	Ø 24	M20×1.5 Depth 20	M12×1.5 Depth 14	M12 Depth 14	M10 Depth 14	M10×1.5 Depth 16	M10×1.5 Depth 20
B	Ø 30	Ø 24	G1/2 Depth 20	G1/4 Depth 14	7/16-14UNC Depth 14	3/8-16UNC Depth 14	M10×1.5 Depth 16	M10×1.5 Depth 20
C	Ø 30	Ø 24	3/4-16UNF Depth 20	7/16-20UNF Depth 14	7/16-14UNC Depth 14	3/8-16UNC Depth 14	7/16-14UNC Depth 16	7/16-14UNC Depth 20

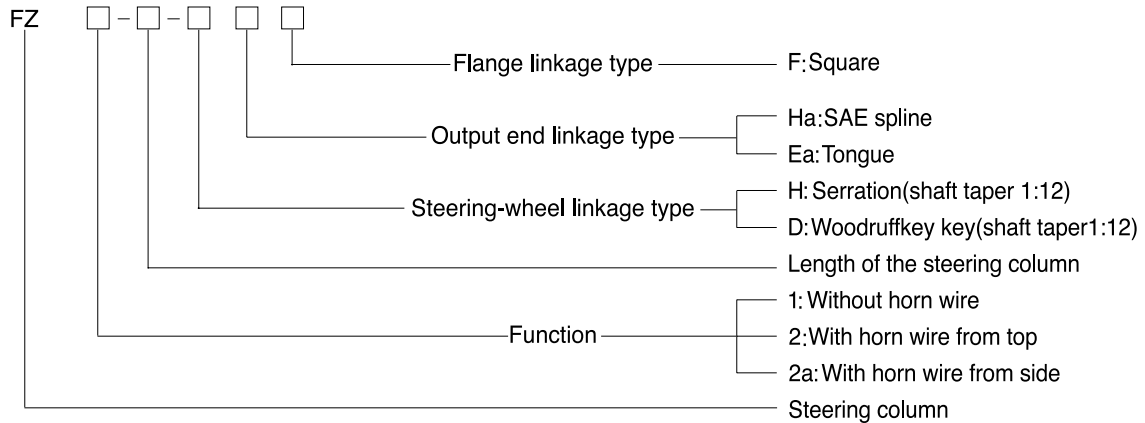
## GENERAL DESCRIPTION



### FZ Type Steering Columns

FZ Type steering column suits all type of steering units.  
We offer a wide range of specifications which are available to customers.

## ORDER CODE

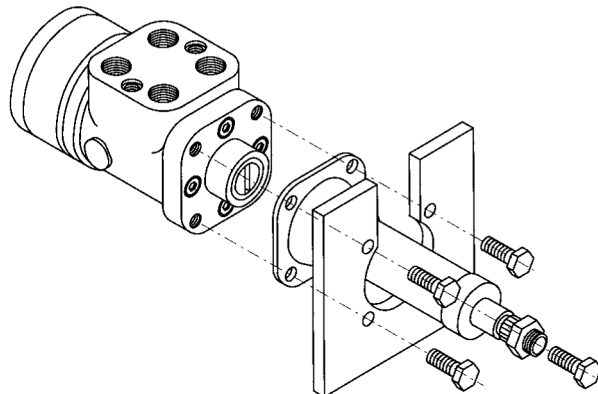


## MAIN SPECIFICATIONS

Type	Length series (mm)	Max. permissible load (N·m)	
		dynamic	static
FZ1, FZ2, FZ2a	140 200 225 250 275 300 325 350 375 400 425 450 475 500 550 600 650 700 750 800 850 900 950 1000 1100 1200	80	300

### Recommendable Mounting Example

No other parts be mounted between steering unit and steering column

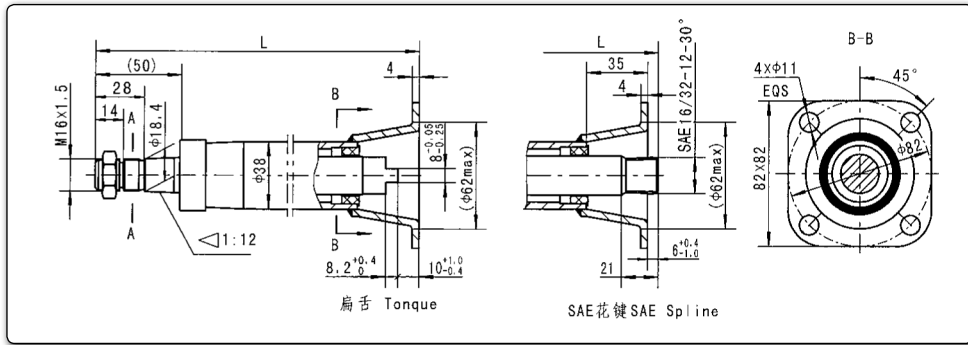


## MOUNTING DATA

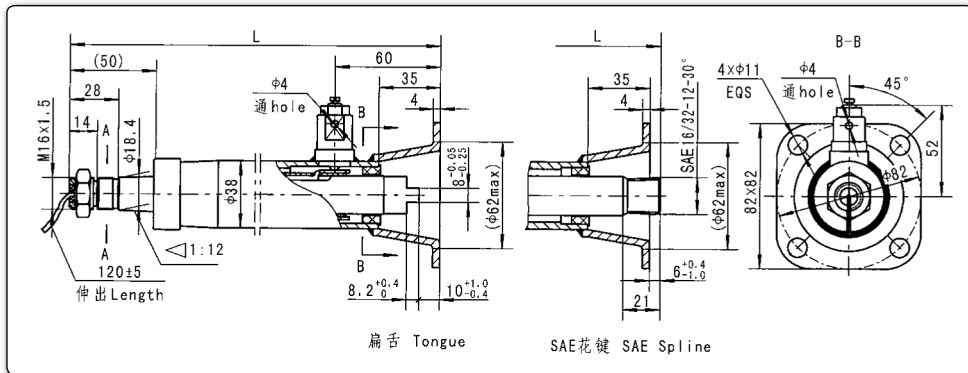


### FZ Type Steering Columns

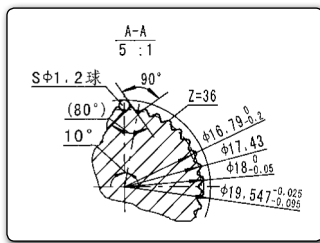
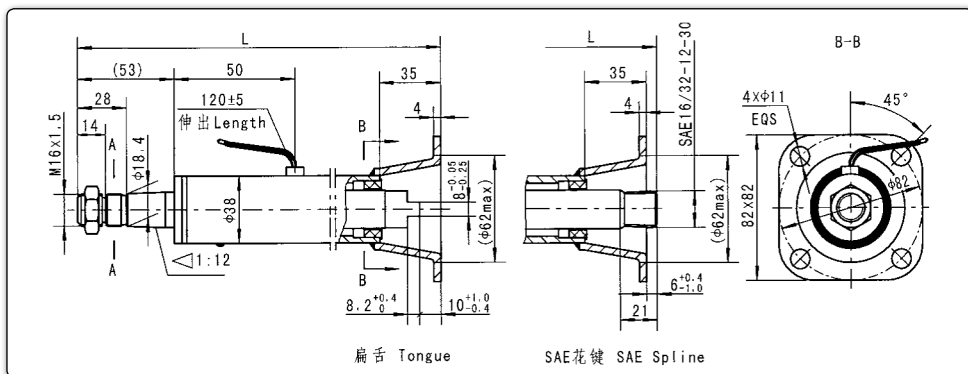
FZ1



FZ2



FZ2a



- NOTE: 1- All above is provided from our factory.  
 2- Please contact us if any require differs from this catalog offerings.  
 3- Due to improvement of product, please forgive us if we change at any time without notice.



Young Powertech  
3060 Plaza Drive  
Garnet Valley PA 19060  
Tel: (610) 558-0760  
Fax: (610) 558-0762  
e-mail: [info@youngpowertech.com](mailto:info@youngpowertech.com)  
[www.youngpowertech.com](http://www.youngpowertech.com)

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