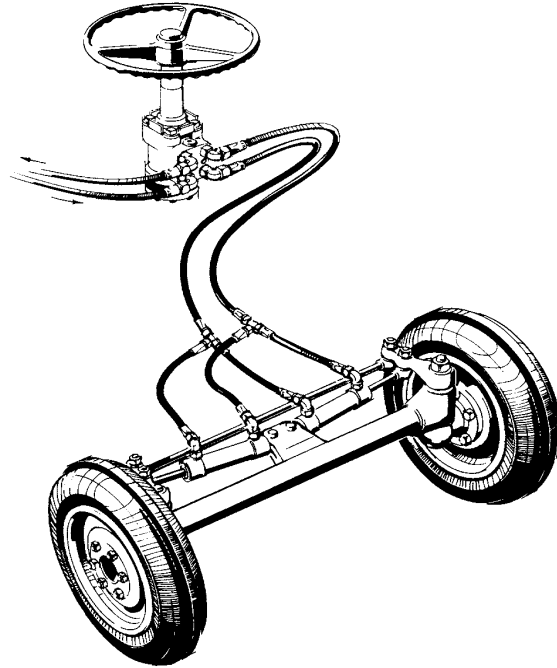




BZZ 系列全液压转向器

BZZ Series Hydraulic Steering Control Units (SCU)



全液压转向器广泛用于工程车辆转向和船舶操舵。驾驶人员通过它可以用较小的操纵力，实现较大的转向力控制，并且在性能上安全、可靠，操纵上轻便、灵活。

BZZ1、BZZ2、BZZ3系列全液压转向器具有下列特点：

消除机械式连动装置，可降低主机成本，提供可靠轻便的结构；

- 操作灵活省力；
- 在发动机熄火时，可实现应急人力转向；
- 可用很小的力矩进行连续无级控制转动；
- 提供给控制回路以及主机尺寸广泛的选择面；
- 能和多种转向油泵及液压转向系统连接。

BZZ5系列负荷传感全液压转向器除具有上述特点外，还具备下述特点：

- 无论负荷压力大小、方向盘转速快慢，均能按转向油路要求，优先分配相应流量，保证转向可靠、灵敏、轻便；
- 油泵输出的流量，除向转向系统供给所需的流量外，剩余部分可供辅助油路使用，从而消除转向油路供油过多而造成的功率损失，提高了系统效率。

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.



BZZ 系列全液压转向器

BZZ Series Hydraulic Steering Control Units (SCU)

通用资料 General Description

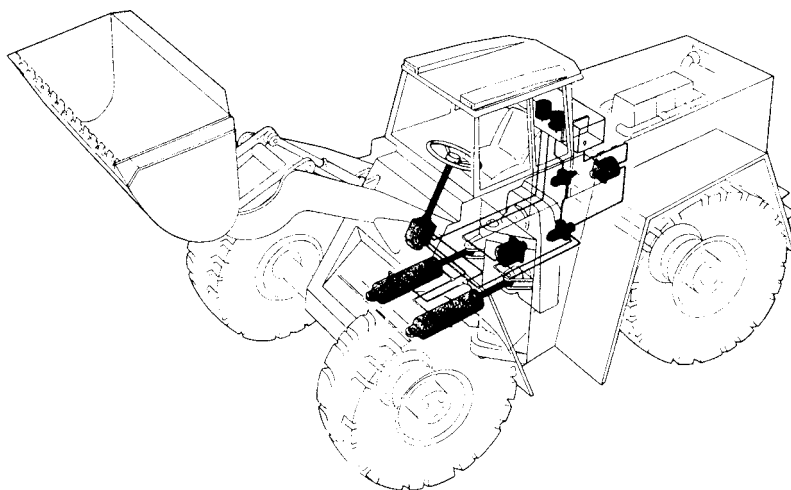
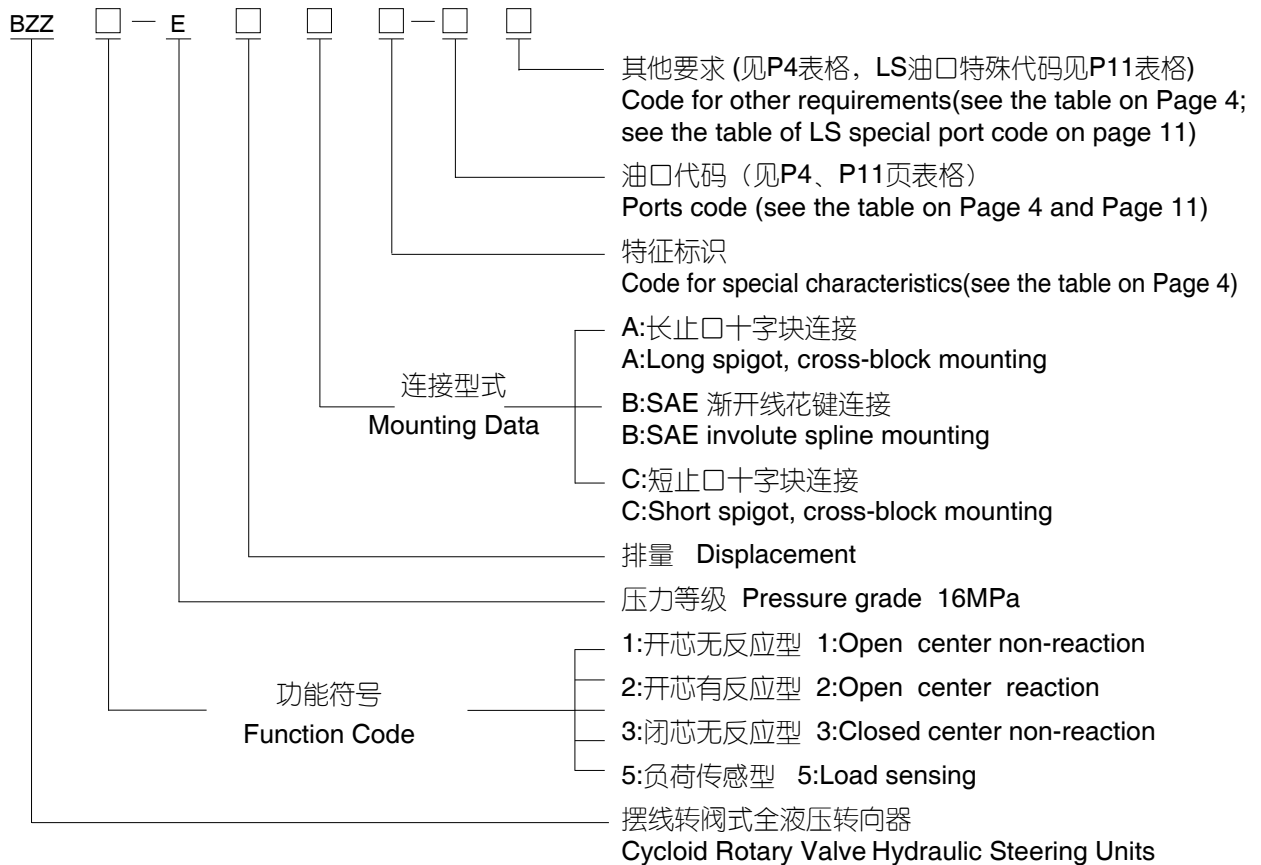
<p>BZZ 系列转向器的功能 BZZ Series Function</p>	<p>BZZ系列全液压转向器由一对旋转阀组和一对转定子啮合副组成。通过转向柱使转向器连接到车辆的方向盘上，当方向盘转动时，从转向系统供油泵来的油经旋转阀和转定子副流到油缸的左或右腔(取决于转动方向)。 转定子副排出的油与方向盘的转角成正比。如果从转向系统供油泵来的油太少，该转向器则可当手动泵看待。</p> <p>BZZ series hydraulic steering unit is consisted of one pair of rotary valve and one pair of gerotor. Via 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>开芯系统 In open center system</p>	<p>释放方向盘，转向器中的旋转阀处于中位时，油泵和油箱之间是连通的。在中位开芯型转向系统中，一般使用定量油泵。</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>闭芯系统 In closed center system</p>	<p>释放方向盘，转向器中的旋转阀处于中位时，转向器的进油端是关闭的。在中位闭芯型转向系统中，一般使用变量油泵。</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>对转向柱的配备要求 Technical requirement for steering column</p>	<p>转向柱的结构必须能保证不传递轴向负载到转向器的输入轴上，安装转向柱时应该使转向器在完成操纵动作以后，能自动回到中位位置。</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>转向柱上的操纵力 Steering torque of the steering column</p>	<p>在正常操纵条件下，动力单元的油泵供给足够的液压油，方向盘的最大输入扭矩不会超过5N·m，如果动力单元的供油泵不能供油或供油量太少，转向器将自动切换成手动泵，在手动转向(即人力转向)状态下，方向盘的输入扭矩将会明显大于5N·m，但最大输入扭矩请勿大于120N·m，否则将会导致转向器内部部分零件损坏。</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>



BZZ 系列全液压转向器

BZZ Series Hydraulic Steering Control Units (SCU)

型号说明 Order Code





BZZ 系列全液压转向器

BZZ Series Hydraulic Steering Control Units (SCU)

类别 Category	符号 Code	含义 Definition	备注 Remark	
特征标识 Characteristic Code	(缺省) (omit)	普通型 Common Type	适合各类转向系统, 例如: 拖拉机、装载机、压路机等。 Fit various steering system, e.g. tractor, loader, and road roller, etc. mainly used in china.	
	D	输入扭矩: Input torque 1.6N·m~2.4 N·m	适合平坦路面的转向系统, 例如: 叉车。 fit steering system of vehicles that driving on flat road, such as forklift.	
	C	输入扭矩: Input torque ≤1.6N·m		
	其他性能特征要求的标识 (协议确定) Codes for the requirement of other performance characteristics (should be confirmed in an agreement)		例如: 人力转向、终点感、噪音、回位性能等方面, 或综合要求。 e.g. manual steering, lower terminal steering feeling, noise and back-to-the-neutral-position function etc., or comprehensive requirement.	
油口代码 Ports Code	代码 Code	P、T、A、B油口 Ports P, T, A, B	连接螺纹C Column Mounting C	连接螺纹V Valve Mounting V
	(缺省) (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	
其他要求 Other Requirements	主要指协议规定的外观、油漆颜色等方面, 协议确定代码。 Mainly refers to the appearance, paint color etc. specified by agreement; the code will be listed in the agreement.			

注1: 油口P、T、A、B的深度14 mm, 连接螺纹C、V的深度16 mm。

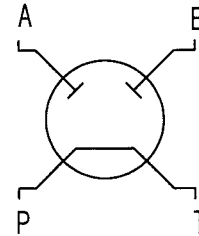
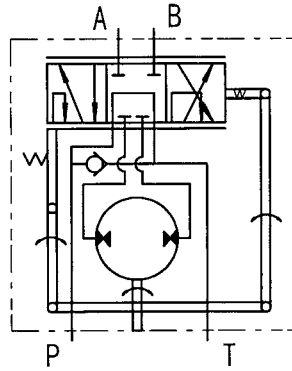
Note 1: Ports P, T, A, B Depth : 14 mm; Column Mounting C & V Depth: 16 mm.



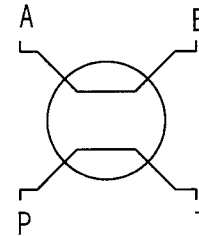
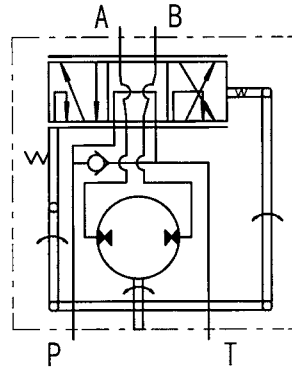
BZZ1、BZZ2、BZZ3 系列全液压转向器
BZZ1, BZZ2, BZZ3 Series Hydraulic Steering Control Units (SCU)

功能符号 Function Code

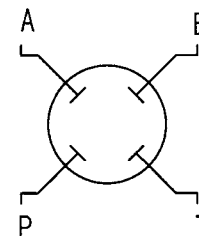
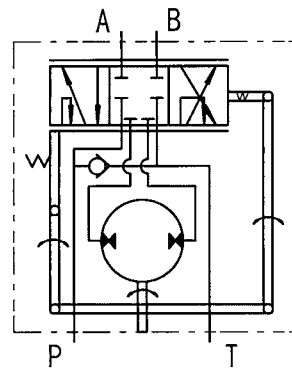
BZZ1
开芯无反应型
Open center non-reaction



BZZ2
开芯有反应型
Open center reaction



BZZ3
闭芯无反应型
Closed center non-reaction





BZZ1、BZZ2、BZZ3 系列全液压转向器
BZZ1, BZZ2, BZZ3 Series Hydraulic Steering Control Units (SCU)

主要技术参数 Main Specification

型号 Type	排量 Displacement (mL/r)	流量 Flow (L/min)	最大入口压力 Max.input pressure (MPa)	最大连续背压 Max. cont. back pressure (MPa)	重量 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

注1: □ 为功能符号; 其中BZZ2型转向器有50~200ml/r可供选择, BZZ1型和BZZ3型转向器有50~1000ml/r可供选择。

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.

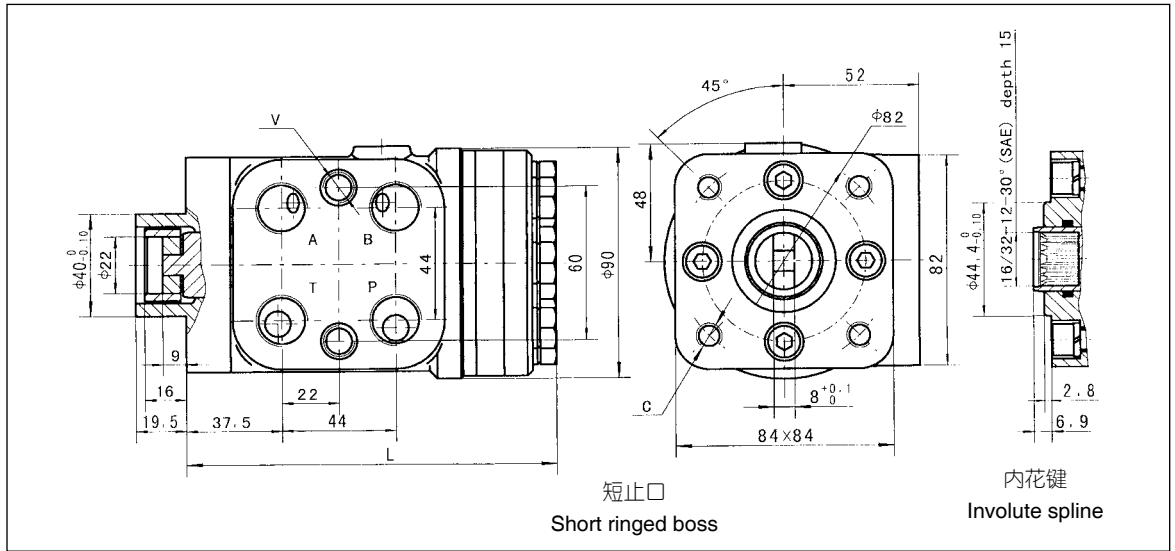
注2: “流量”是方向盘转速为60r/min的1.25倍时的流量, 当系统设计不满足上述条件, 允许适量调整。

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.



BZZ1、BZZ2、BZZ3 系列全液压转向器
BZZ1, BZZ2, BZZ3 Series Hydraulic Steering Control Units (SCU)

连接尺寸 Mounting Data



注1: 图示短止口联接形式, 长止口联接形式分别将图示 9、16 和 19.5 变为 18、25 和 30.5;
 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.
 注2: 油口尺寸标识选择符合P4“油口代码”。
 Note 2: please check Page 4 for the port code .

型号 Type	长度 Length 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

注1: □为功能符号; BZZ2型转向器有50~200ml/r可供选择, BZZ1型和BZZ3型转向器有50~1000ml/r可供选择。

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.



BZZ5 系列全液压转向器

BZZ5 Series Hydraulic Steering Control Units (SCU)

在负荷传感型的转向系统中，转向系统和工作系统通过优先阀可使用同一个油泵供油或实现系统合流。同时，若使用带负载感应的油泵，负荷传感系统将会体现明显的节能效果。

负荷传感型转向器有一个LS口必须连接到优先阀或负载感应油泵的LS口，使转向器的转向负载压力信号经油管(推荐管道长度≤2m)传送到优先阀或负载感应油泵，用以控制系统供给转向器的供油量。

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 ≤ 2 m), to control the oil volume supplied to steering unit by the control system.

主要技术参数 Main Specification

型号 Type	排量 Displacement (mL/r)	长度 Length L(mm)	方向盘允许最高转速 Max. input speed (rpm)	最大入口压力 Max. input pressure (MPa)	最大连续背压 Max. cont. back pressure (MPa)	最大动力转向扭矩 Max. power steering torque (N·m)
BZZ5-E 50*	50	140	100	16	1.6	≤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				
BZZ5-E 280*	280	169	75			
BZZ5-E 315*	315	174				
BZZ5-E 400*	400	184				
BZZ5-E 500*	500	197	60			
BZZ5-E 630*	630	216				
BZZ5-E 800*	800	236				
BZZ5-E 1000*	1000	262				

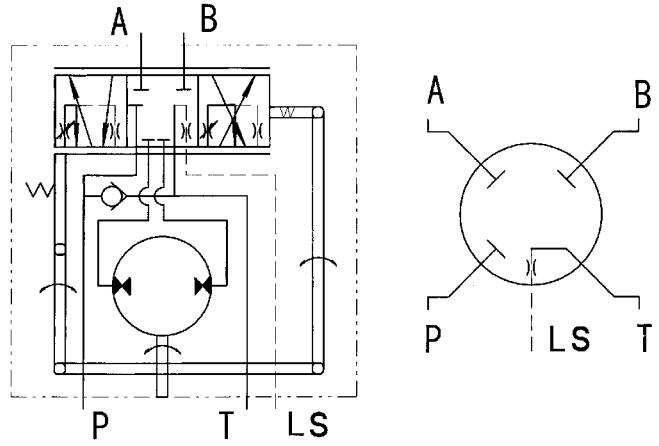


BZZ5 系列全液压转向器

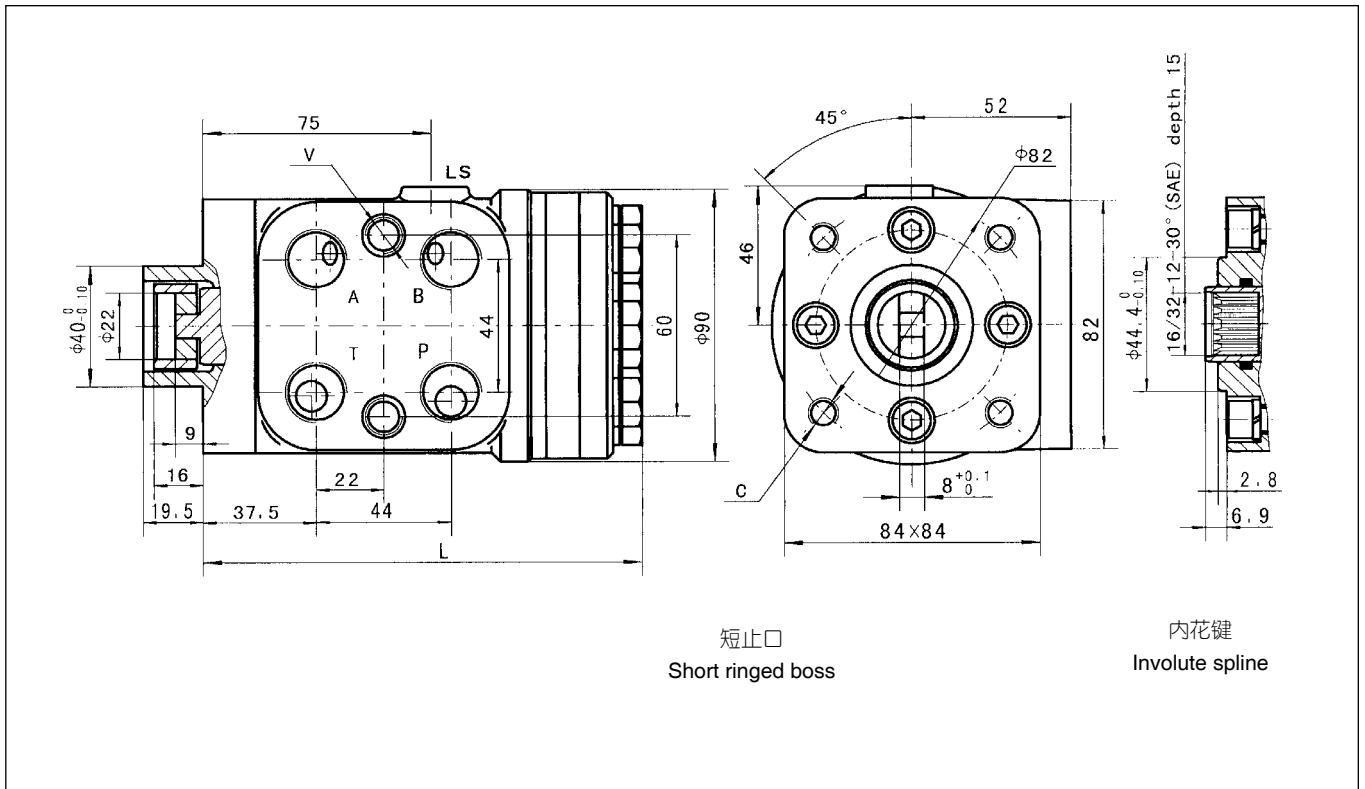
BZZ5 Series Hydraulic Steering Control Units (SCU)

功能符号 Function Code

BZZ5
负荷传感型
Load sensing



连接尺寸 Mounting Data





BZZ5 系列全液压转向器

BZZ5 Series Hydraulic Steering Control Units (SCU)

油口代码

Ports Code

类别 Category	代码 Code	P、T、A、B油口 Ports P,T,A,B	连接螺纹C Column Mounting C	连接螺纹V Valve Mounting V	LS油口 Port LS
油口代码 Ports Code	(缺省) (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	

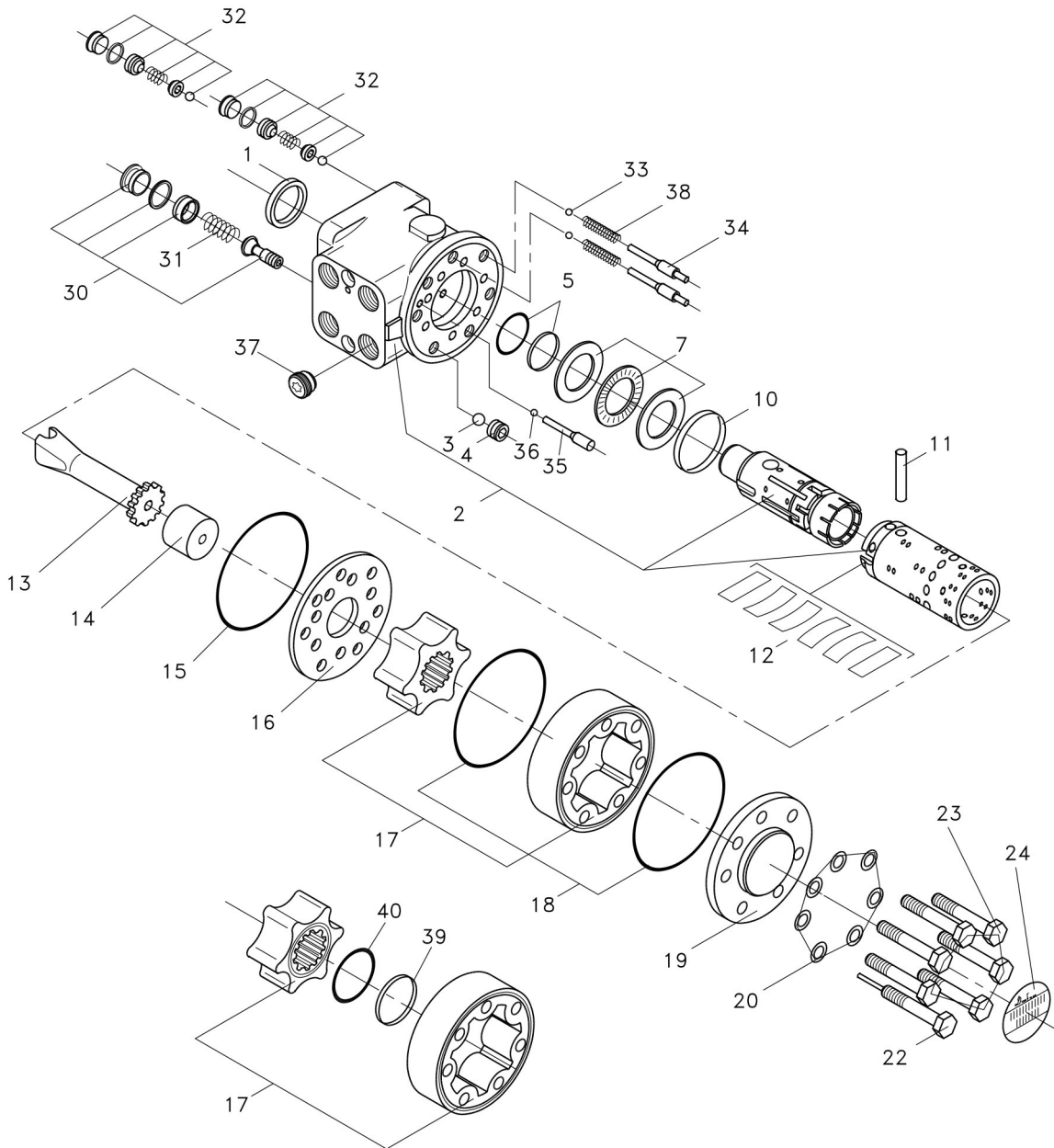
注1: 油口P、T、A、B的深度14 mm, 连接螺纹C、V的深度16 mm, 油口LS的深度12 mm。

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

当LS油口尺寸不符合上述表格中规定时, 在油口代码后面加“-”, 按照下面表格选择LS代码。

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.

油口代码 Ports Code	LS油口 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



- | | | | | | |
|----|---|----|-------------------|----|------------------------|
| 1 | Dust seal ring | 14 | Spacer | 24 | Name plate |
| 2 | Housing, spool and sleeve.
Check valve and the seats for relief
and shock valves are locktited. | 13 | Cardan shaft | 30 | Complete relief valve |
| 3 | Ball 8.5 mm [0.33 in] | 12 | Set of springs | 31 | Spring wire |
| 4 | Thread bushing | 15 | O-ring | 32 | Complete shock valve |
| 5 | O-ring used with kin-ring (item 6) | 16 | Distributor plate | 33 | Ball $\frac{3}{16}$ in |
| 6 | Kin-ring | 17 | Gearwheel set | 34 | Spring |
| 7 | Bearing assembly | 18 | O-ring | 35 | Roller pin |
| 10 | Ring | 19 | End cover | 36 | Bushing |
| 11 | Cross pin | 20 | Washer | 37 | Ball |
| | | 22 | Special screw | 38 | Kin ring |
| | | 23 | Screw | 39 | O-ring |
| | | | | 40 | |

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