

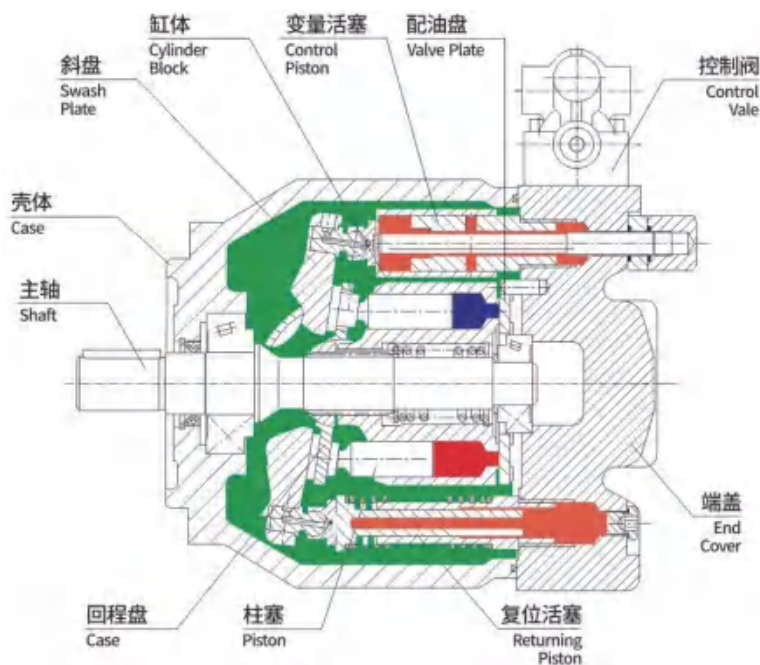
TA10V(S)O/31系列变量柱塞泵

Variable Displacement Piston Pump TA10V(S)O/31

概述 Overview

TA10V(S)O/31系列变量柱塞泵均为斜盘式轴向柱塞变量泵，分别为工业用和行走机械用设计，都是专为开式回路液压驱动设计的，采用通轴结构，额定工作压力可达28MPa。

TA10V(S)O/31 series variable displacement piston pump swash plate axial plunger variable pump, respectively for industrial use and for mobile machinery design, is designed for open loop hydraulic driven design, adopts a shaft structure, rated working pressure up to 28MPa.



特点

- ※ 泵的流量正比于泵的转速和排量，通过调节斜盘摆角调节排量，实现无级变量；
- ※ 有多种变量控制形式，控制响应时间短；
- ※ 允许连续运行的工作压力可达28MPa；
- ※ 有两个壳体泄油口；※ 高的功率/重量比；
- ※ 驱动轴能承受轴向及径向负载；
- ※ 采用通轴结构，可形成组合泵；

Features

- ※ The capacity of the pump is in proportion to its rotating speed and displacement; the stepless adjustment of the displacement can be materialized by regulating the swivel angle of its swash plate.
- ※ There are many variable control forms, Fast control response;
- ※ Allows for continuous operating pressures up to 28MPa;
- ※ There are two shell discharge ports;
- ※ High power/weight ratio;
- ※ The drive shaft is able to bear the axial and radial load;
- ※ With through-shaft structure, able to form combination pump;

型号标识 Type Code

T		A10VS	O	28	DR	/	31	R	—	V	P	A	12	KB3
	1	2	3	4	5		6	7		8	9	10	11	12

1-工作介质 Operating Medium

矿物油 Mineral oil (无代号 No Code)	
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2-结构分类 Machinery Classification

轴向柱塞，斜盘式，可变量，工业用 Axial piston, swash plate design, variable, used in industry	A10VS
轴向柱塞，斜盘式，可变量，行走机械用 Axial piston, swash plate design, variable, used in industry	A10V

3-运行模式 Operational Mode

开式回路 Open circuit	O
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4-规格 Size

公称排量 Nominal displacement mL/r	18	28	45	71	88	100	140	
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5-控制机构 Control Devices

直接控制，两位调节 Two point control, directly operated DG	●	●	●	●	●	●	●	DG
压力控制 Pressure Control DR	●	●	●	●	●	●	●	DR
远程压力控制 Remote pressure control DRG	●	●	●	●	●	●	●	DRG
压力流量控制 Pressure and flow control DFR	●	●	●	●	●	●	●	DFR
压力流量控制 Pressure and flow control DFR1	●	●	●	●	●	●	●	DFR1
压力功率控制 Pressure and power control DLR	●	●	●	●	●	●	●	DLR
压力流量功率控制 Pressure and flow and power control DFLR	●	●	●	●	●	●	●	DFLR

6-系列 Series

	31
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7-旋转方向（从轴端看） Rotating Direction (View on Shaft End)

顺时针 Clockwise	R
逆时针 Counterclockwise	L

8-密封 Seals

丁腈橡胶 NBR, 轴封氟橡胶 Shaftseal FKM	P
氟橡胶 Viton FKM	V

图表说明 Chart shows: ●=可以供货 Available, ○=在准备中 In preparation, —=无 Not available

9-轴伸 Shaft End

	18	28	45	71	88	100	140	
平键轴伸Keyedshaft DIN6885	●	●	●	●	●	●	●	P
英制平键轴伸Parallelshaft SAE withkey J744(ISO3019-1)	●	●	●	●	●	●	●	K
花键轴伸Splinedshaft ANSIB92.1a, standard shaft	3/4"	7/8"	1"	1 1/4"	1 1/4"	1 1/2"	3/4"	S
花键轴伸Similart shaft S 较高通轴驱动转矩	3/4"	7/8"	1"	1 1/4"	1 1/4"	-	-	R
花键轴伸Splinedshaft to SAE J744, reduced diameter 不适用于通轴驱动not for through drive	3/8"	3/4"	7/8"	1"	1"	1 1/4"	-	U
花键轴伸Splinedshaft SAE	-	-	-	-	-	1 1/4"	-	W

10-安装法兰MountingFlange

	18	28	45	71	88	100	140	
ISO 2孔	●	●	●	●	●	●	-	A
SAE 2孔	●	●	●	●	●	●	-	C
ISO 4孔	-	-	-	-	-	-	●	B
SAE 4孔	-	-	-	-	-	-	●	D

11-工作油口 Service Line Ports

	18	28	45	71	88	100	140	
吸油口S和压力油口B在两侧, SAE法兰, 公制螺纹 Port S and port B at opposite sides,SAE flanged ,metric	●	●	●	●	●	●	●	12
	-	-	-	●	●	-	-	42
吸油口S和压力油口B在两侧, SAE法兰, 英制螺纹 Port S and port B at opposite sidesSAE flanged, UNC mounting bolts	●	●	●	●	●	●	●	62
	-	-	-	●	●	-	-	92

12-通轴驱动Through Drive

	18	28	45	71	88	100	140	
无通轴驱动 Without through drive	●	●	●	●	●	●	●	N00
带通轴驱动,从泵连接尺寸如下 With through drive, the second pump connection dimension as follows								
安装法兰 Mounting flange	轴伸 Splined shaft		可接受的从泵 The second pump					
SAE82,2孔	U轴5/8in9T16/32DP		TA10VS018/31		●	●	●	K01
SAE82, 2孔	S轴3/4in11T16/32DP		TA10VS018/31		●	●	●	K52
SAE101,2孔	S轴7/8in13T16/32DP		TA10VO28/31		●	●	●	K68
SAE101,2孔	S轴7/8in13T16/32DP		TA10VO28/31		●	●	●	K02
SAE101,2孔	S轴1in15T16/32DP		TA10VO45/31		●	●	●	K04
SAE127,2孔	S轴1 1/4in14T12/24DP		TA10V071/31		●	●	●	K07
SAE127,2孔	S轴1 1/2in17T12/24DP		TA10V0100/31		●	●	●	K24
SAE152,4孔	S轴1 3/4in13T8/16DP		TA10VO140/31		●	●	●	K17
SO80, 2孔	S轴3/4in11T16/32DP		TA10VSO18/31		●	●	●	KB2
SO100,2孔	S轴7/8in13T16/32DP		TA10VSO28/31		●	●	●	KB3
ISO100,2孔	S轴1in15T16/32DP		TA10VSO45/31		●	●	●	KB4
SO125,2孔	S轴1 1/4in14T12/24DP		TA10VSO71/31		●	●	●	KB5
ISO125,2孔	S轴1 1/2in17T12/24DP		TA10VSO100/31		●	●	●	KB6
ISO180,4孔	S轴1 3/4in13T8/16DP		TA10VSO140/31		●	●	●	KB7
ISO 80,2孔	平键轴 φ 18		TA10VS018/31		●	●	●	K51
SAE82,2孔	平键轴 φ 19.05		TA10VS018/31		●	●	●	K40
SAE100,2孔	平键轴 φ 19.05		TA10VS028/31		●	●	●	K25

			18	28	45	71	88	100	140	
无通轴驱动 Without through drive			●	●	●	●	●	●	●	N00
带通轴驱动,从泵连接尺寸如下 With through drive, the second pump connection dimension as follows										
安装法兰 Mounting flange	轴伸 Spline shaft	可接受的从泵 The second pump								
SAE101,2孔	平键轴中22.225	TA10VSO28/31	-	●	●	●	●	●	●	K03
ISO 100,2孔	平键轴中25	TA10VSO45/31	-	-	●	●	●	●	●	K26
SAE101,2孔	平键轴 中25.4	TA10VSO45/31	-	-	●	●	●	●	●	K05
ISO 125,2孔	平键轴中32	TA10VSO71/31	-	-	-	●	●	●	●	K27
SAE127,2孔	平键轴中31.75	TA10VSO71/31	-	-	-	●	●	●	●	K08
ISO 125,2孔	平键轴中40	TA10VSO100/31	-	-	-	-	-	●	●	K37
SAE127,2孔	平键轴中38.1	TA10VSO100/31	-	-	-	-	-	●	●	K38
ISO 180,4	平键轴中45	TA10VSO140/31	-	-	-	-	-	-	●	K59
SAE152,4孔	平键轴中44.45	TA10VSO140/31	-	-	-	-	-	-	●	K21

组合泵说明：两台泵首尾串联，即以通轴形式装配成一体，称为组合泵，串联的第二台泵称为从泵。

如果订购组合泵，组合泵的型号为第一台泵的型号+第二台泵的型号号。

Description of combination pump: Two pumps can be connected in series by their head and end, namely integrated to be a combination pump. by the means of through-shaft, and the second pump of the series combination is called the subordinate pump.

In case of placing an order, the combination pump model equals to the model of the first pump + the model of the second.

组合泵型号示例 Illustration of combination pump model: OS4VSO45 DR/31R-PPA12KB3+OS10VSO28DR/31R-PSA12N00

技术参数 Technical Data

■ 参数表 Parameters Table

规格Size				18	28	45	71	88	100	140
排量Displacement	V_{gmax}	mL/r		18	28	45	71	88	100	140
吸入口S压力(绝对压力) Pressure at suction port S (Absolute pressure)	最低压力 Minimum pressure	P_{smin}	bar	0.8						
	最低压力 Minimum pressure	P_{smax}	bar	10						
出油口B压力(绝对压力) Pressure at Outlet port B (Absolute pressure)	额定压力 Rated pressure	P_N	bar	280						
	峰值压力 Peak pressure	P_{max}	bar	350						
	最小压力 Minimum pressure		bar	10						
压力变化速率 Rate of pressure change		R_A	bar/s	16000						
泄油口L、L ₁ 压力(绝对压力) Drain port L, L ₁ pressure (Absolute pressure)		P_L	bar	≤ 2						
最大转速 ¹⁾ Max. speed	$V_g = V_{gmax}$ 时	n_{0max}	r/min	3300	3000	2600	2200	2100	2000	1800
$P_s = 1bar$	$V_g = V_{gmax}$ 时		r/min	3900	3600	3100	2600	2500	2400	2100
最大流量 Max. flow	$n = n_{0max}$ 时	$Q_{vo max}$	L/min	59.4	84	117	156	185	200	252
	$n = 1500$ r/min 时		L/min	27	42	68	107	132	150	210

规格Size				18	28	45	71	88	100	140	
排量Displacement			V _{g max}	mL/r	18	28	45	71	88	100	140
最大功率 Maximum power (△p = 280 bar)	n = n _{0 max} 时	P _{omax}	kW	27.7	39	55	73	86	93	118	
	n = 1500 r/min 时		kW	12.6	20	32	50	62	70	98	
扭矩 Torque (V _g = V _{g max})	△ p=280 bar 时	T _{max}	Nm	80.1	125	200	316	392	445	623	
	△ p=100 bar 时	T	Nm	28.6	45	72	113	140	159	223	
旋转刚度 Torsional stiffness	轴伸 P Shaft extension P		Nm/rad	13158	25656	41232	80627	80627	132335	188406	
	轴伸 S Shaft extension S		Nm/rad	11087	22317	37500	71884	71884	121142	169537	
	轴伸 R Shaft extension R		Nm/rad	14850	26360	41025	76545	76545	—	—	
	轴伸 U Shaft extension U		Nm/rad	8090	16695	30077	52779	52779	91903	—	
	轴伸 K Shaft extension K		Nm/rad	13340	26189	43905	82112	82112	135303	196844	
旋转总成转动惯量 Moment of inertia of the rotating assembly			J	kgm ²	0.00093	0.0017	0.0033	0.0083	0.0083	0.0167	0.0242
最大角加速度 Max. angular acceleration				rad/s ²	6800	5500	4000	3300	3300	2700	2700
壳体容积 Volume of case				L	0.4	0.7	1.0	1.6	1.6	2.2	3.0
重量 Weight				kg	12	15	21	33	33	45	60
驱动轴的允许负载 Drive shaft Allowable load	最大轴向力 Max. axial force		N	700	1000	1500	2400	2400	4000	4800	
	最大径向力		N	350	1200	1500	1900	1900	2300	2800	

1) $V_g = V_{g\max}$ 时的数值适用于吸油口S的进口压力为 $P_s = 1 \text{ bar}$ (绝对压力) 时的情况, 当进口压力 P_s 增加或排量减小, 则转速可增加, 当进口压力为 $P_{s\min} = 0.8 \text{ bar}$ 时, 转速应减小至90%。 $V_g < V_{g\max}$ 时的数值为转速极限。

1) Once $V_g = V_{g\max}$, the value is applicable to the inlet pressure at suction port S is $P_s = 1 \text{ bar}$ (absolute pressure), when the inlet pressure P_s increase or decrease the displacement, the speed can be increased, when the inlet pressure $P_{s\min} = 0.8 \text{ bar}$, the speed should be reduced to 90%. $V_g < V_{g\max}$ value when the speed limit.

技术参数 Technical Data

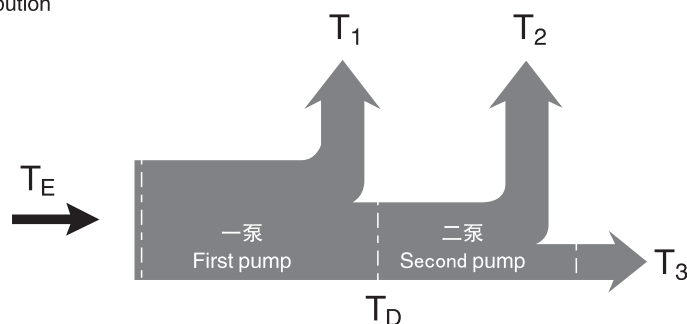
■ 允许的输入扭矩和通轴驱动扭矩 Permissible input torque and through drive torque

规格 Size				18	28	45	71	88	100	140	
扭矩 Torque (V 且 ΔP=280 bar时)			T _{max}	Nm	80	125	200	316	392	445	623
最大输入扭矩 ¹⁾ Max . input torque ¹⁾	轴伸 Shaft P	T _E max	Nm	88	137	200	439	439	857	1206	
		φ	mm	18	22	25	32	32	40	45	
	轴伸 Shaft S	T _E max	Nm	124	198	319	626	626	1104	1620	
		φ	in	3/4	7/8	1	1 1/4	1 1/4	1 1/2	1 3/4	

规格 Size				18	28	45	71	88	100	140
扭矩 Torque ($V_{g\max}$ 且 $\Delta P=280$ bar时)		$T_{\max}$	Nm	80	125	200	316	392	445	623
最大输入扭矩 ¹⁾ Max . input torque ¹⁾	轴伸 Shaft R	$T_{E\max}$	Nm	160	250	400	644	644	—	—
		ϕ	mm	3/4	7/8	1	1 1/4	1 1/4	—	—
	轴伸 Shaft K	$T_{E\max}$	Nm	104	145	212	433	433	750	1186
		ϕ	in	3/4	7/8	1	1 1/4	1 1/4	1 1/2	1 3/4
最大通轴驱动扭矩 Max . Through drive torque	轴伸 Shaft S	$T_{D\max}$	Nm	108	160	319	492	492	778	1266
	轴伸 Shaft R	$T_{D\max}$	Nm	120	176	365	548	548	—	—
	轴伸 Shaft K	$T_{E\max}$	Nm	104	145	212	433	433	750	1186

1) 适用于无径向力作用的传动轴 For drive shaft free of radial load

扭矩分布 Torque Distribution



■ 液压油 Hydraulic oil

工作粘度范围 Operating viscosity range

为了获得最佳效率和使用寿命，我们建议在以下最佳范围内选择工作粘度（工作温度下）

For optimum efficiency and service life, we recommend that the operating viscosity in the range of the following best (at operating temperature)

最佳工作粘度

Optimum operating viscosity $V_{opt} = 16 \sim 36 \text{ mm}^2/\text{s}$

粘度范围限制 Limits of viscosity range

在临界工作条件下，适用以下数值：

Under critical operating conditions the following values apply:

$V_{\min} = 10 \text{ mm}^2/\text{s}$ 短时间 Short time ($t \leq 1 \text{ min}$)

最高允许壳体泄油温度为 90°C

Max. permissible case drain temperature of 90°C

$V_{\max} = 1000 \text{ mm}^2/\text{s}$ 短时间 Short time ($t \leq 1 \text{ min}$)

$p \leq 30 \text{ bar}$, $n \leq 1000 \text{ r/min}$, $\theta \geq -25^\circ\text{C}$

选择液压油的注意事项

Selection Considerations of hydraulic oil

为了选择正确的液压油，必须确定环境温度下油箱内的工作温度（开式回路）。在工作温度范围内选择液压油，以获得最佳粘度范围，建议选择相应情况下较高的粘度等级。壳体泄油温度受压力和输入速度的影响，并且始终高于油箱温度。但是，柱塞泵任何部位的温度均不得超过 90°C 。轴承区域的油液温度一般比壳体平均泄油温度高 5°C 左右。

In order to select the correct hydraulic oil, it must be determined at ambient temperature within the tank temperature (open circuit). Select the hydraulic fluid in the working temperature range for optimum viscosity range, it recommended to choose where relevant, the higher viscosity grade.

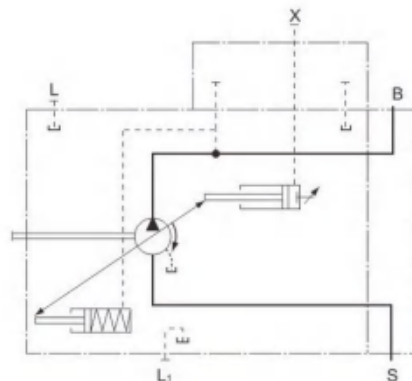
The case drain temperature is influenced by pressure and input speed and is always higher than the tank temperature. However, any part of the piston temperature shall not exceed 90°C . The fluid temperature in the bearing area is generally higher than the average case drain oil temperature high around 5°C

控制装置 Control Devices

1、直接控制DG Direct Control DG

通过在油口X施加一个外部切换压力使变量泵达到最小摆角。
控制油可直接供给控制活塞，需要的最小压力为50bar。变量泵只能在 V_{gmax} 与 V_{gmin} 之间切换。
注意：油口X所需的切换压力与压力油口B的实际工作压力直接相关。

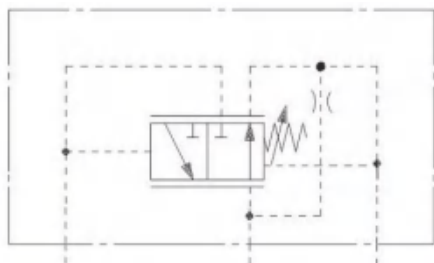
An external switching pressure can be applied to Port X to minimize the swivel angle of the variable pump. Control oil can be supplied directly for the control piston under the necessary minimum pressure of 50 bar. The variable pump can only be shifted between V_{gmax} and V_{gmin} .
Note: the switching pressure needed at Port X is in direct correlation with the actual working pressure of Pressure Port B.



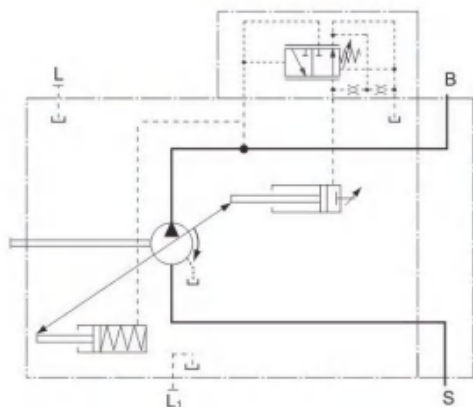
2、压力控制DR Pressure Control DR

压力控制使泵的出口压力保持恒定，因此变量泵只提供液压系统的执行元件所需的液压油流量。出口压力可在控制阀上无级设定。
The pressure control will keep the outlet pressure constant. Therefore, the variable pump only delivers as much fluid as required by the actuator elements of the hydraulic system. The outlet pressure can be set through stepless adjustment on the control valve.

规格 140



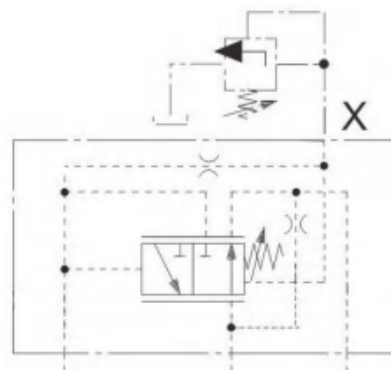
规格 18 ~ 100



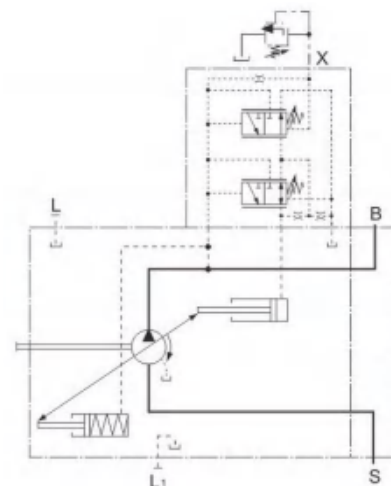
3、远程压力控制DRG Remote Pressure Control DRG

恒压控制的功能及装置与DR相同。可在外部将一个溢流阀与油口X相连来实现远程控制。
溢流阀不包括在DRG控制的供货范围内。
The function and equipment of constant control is similar to that of DR. The remote control can be realized by connecting an external relief valve with Port X. Relief valve is not included in the scope of supply for DRG control.

规格 140



规格 18 ~ 100



控制装置 Control Devices

4、压力流量控制DFR/DFR1

Pressure and Flow Control DFR/DFR1

除了压力控制功能之外，泵的输出流量可通过安装于供油管线上的节流阀上的压差进行调节，变量泵提供液压系统的执行元件实际需要的流量，不受工作压力变化的影响。压力控制优先于流量控制。

节流阀不包括在DFR/DFR1控制的供货范围之内。

DFR1控制阀的油口X与泵腔之间的节流孔被封闭。

In addition to the pressure control function, the outlet flow of the pump can be adjusted by the differential pressure of the throttle valve installed on the oil supply pipe. The variable pump delivers the fluid needed by the actuator elements of the hydraulic system and is free from the influence of the changes in actual working pressure. Pressure control takes precedence over flow control.

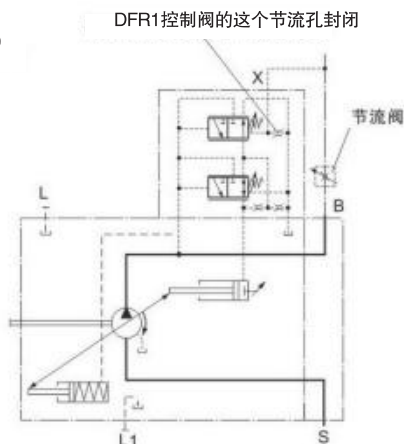
Relief valve is not included in the scope of supply for DFR/DFR1 control.

The throttle orifice between Port X of DFR1 control valve and the pump chamber is enclosed.

规格 140



规格 18~100



5、压力流量功率控制DFLR

Pressure and Flow and Power Control DFLR

为了在工作压力变化的工况下获得恒定的驱动扭矩，通过改变输出流量，使流量和压力的乘积保持恒定，即泵的输出功率保持恒定。

流量控制只能在恒功率控制曲线以下进行。

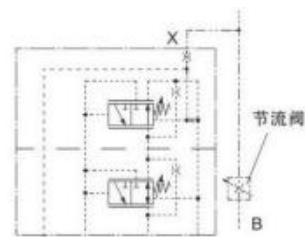
节流阀不包括在DFLR控制的供货范围之内。

In order to gain constant driving torque under the working conditions with changeable working pressure, the output flow can be changed to keep the product of flow and pressure constant, namely to keep the output power of the pump constant.

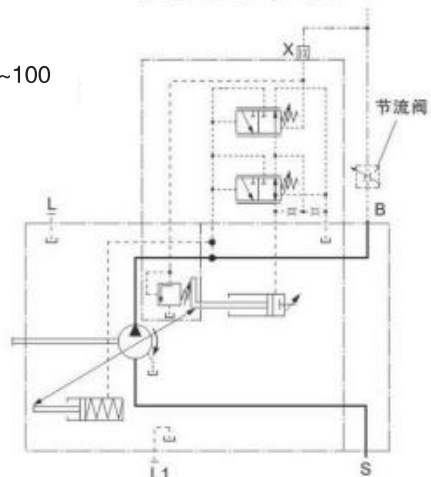
Flow control can only be conducted below the constant power control curve.

Relief valve is not included in the scope of supply for DFLR control.

规格 140



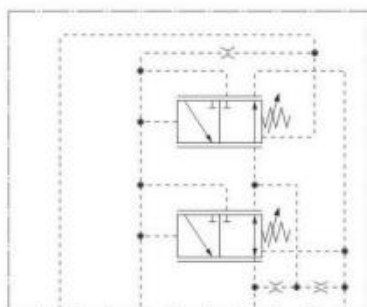
规格 28~100



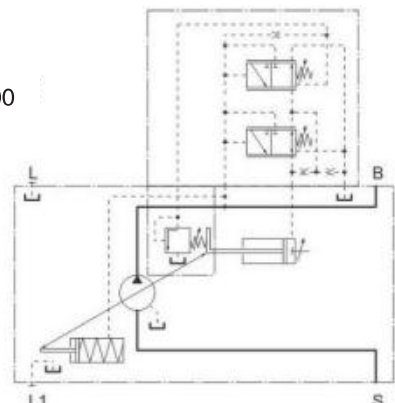
6、压力功率控制 Pressure and Power control DLR

这种控制方式没有流量控制。The control unit no flow control.

规格 140

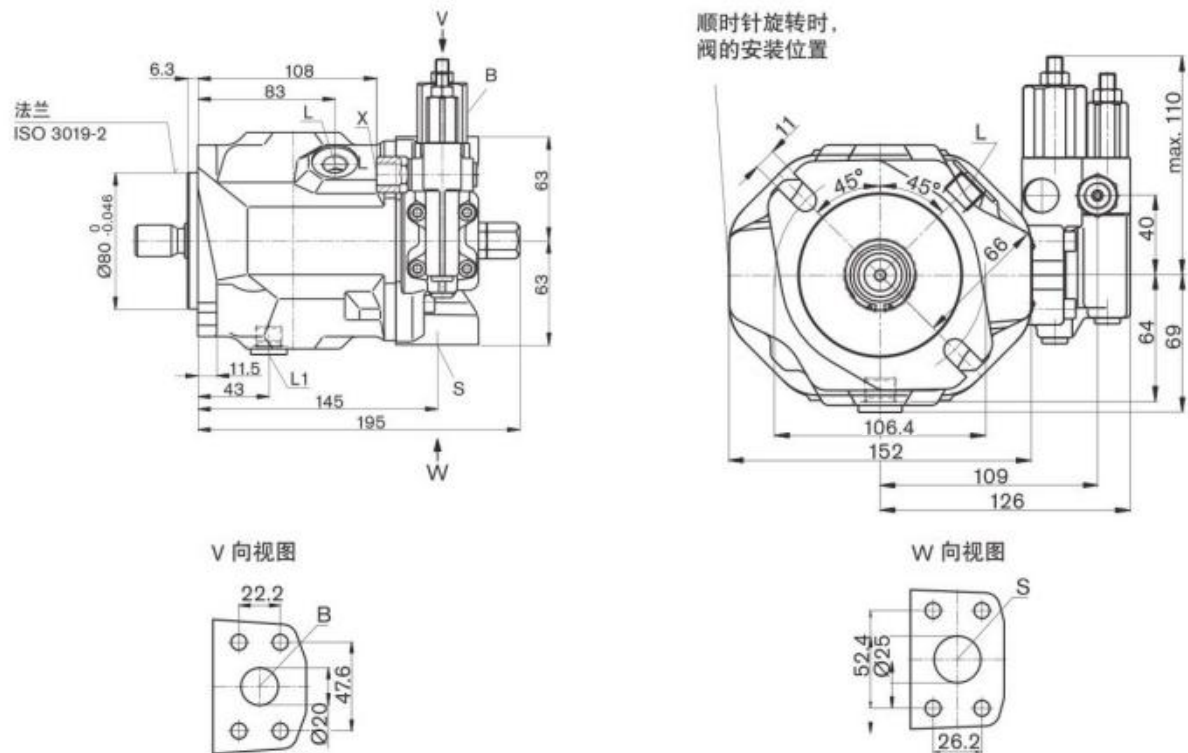


规格 28~100



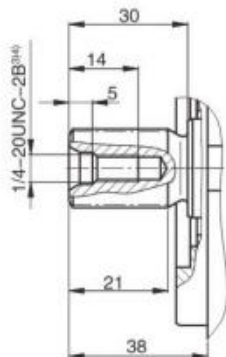
外形尺寸规格18 A型法兰 (控制机构DR、DRG、DFR/DFR1)

Dimensions size 18 Flange A (Control devices DR, DRG, DFR/DFR1)

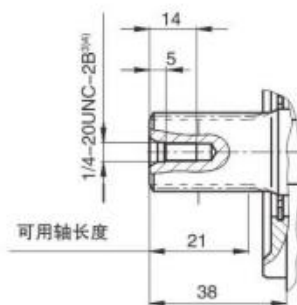


轴伸 Shaft

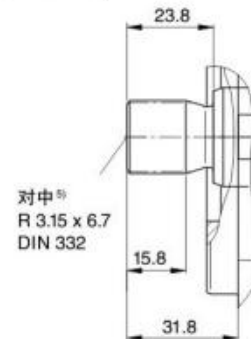
S 花键轴, 3/4 in 11T 16/32DP⁽¹⁾
(SAE J744)



R 花键轴, 3/4 in 11T 16/32DP⁽¹⁾⁽²⁾
(SAE J744)



U 花键轴, 5/8 in 9T 16/32DP⁽¹⁾⁽²⁾
(SAE J744)



油口 Ports

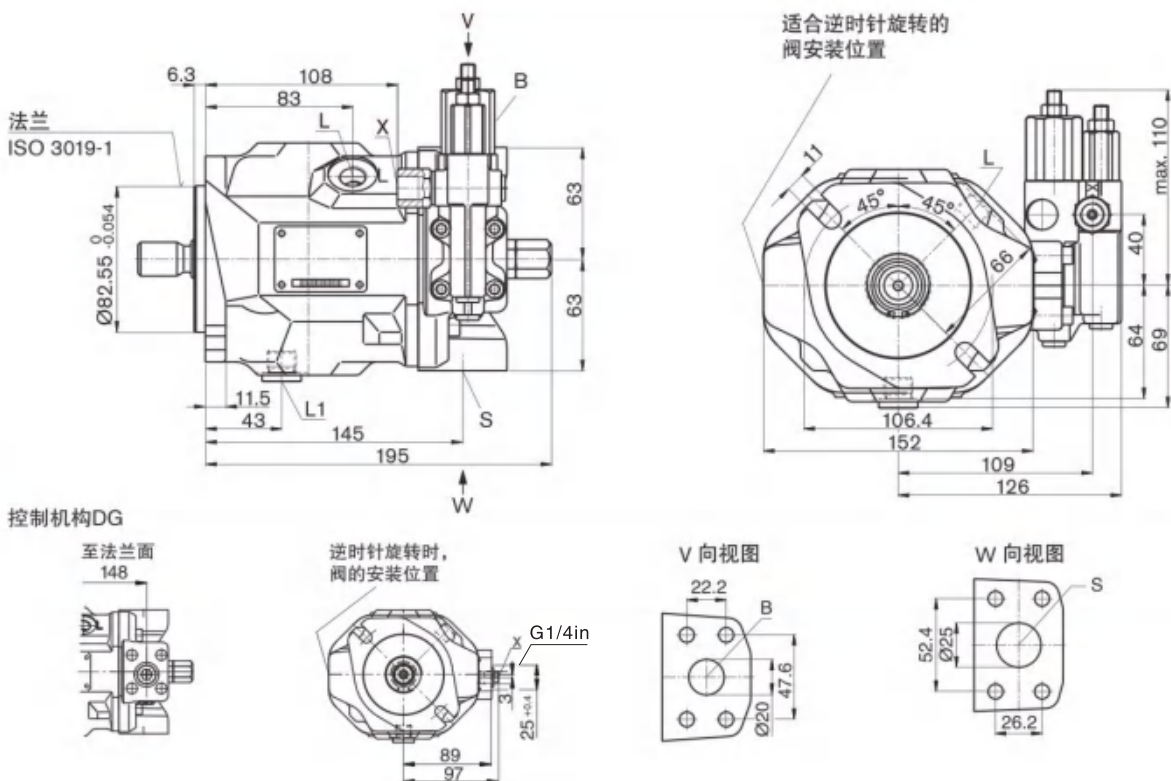
B	出油口 Outlet port	法兰Flange SAE J518 3/4in (标准系列Standardseries) 螺钉孔Fixing thread M10深17
S	吸油口 Suction port	法兰Flange SAE J518 1in (标准系列Standard series) 螺钉孔Fixing thread M10深17
L	泄油口 Drain port	M16 x 1.5深12
L1	泄油口 Drain port	M16 x 1.5深12
X	控制油口 Control pressure	M14 x 1.5深12
X1	控制油口 Control pressure	G1/4深12用于DG控制 For DG Control

注: 根据安装位置选择L口或L1口, 必须连接油箱。

Dependent on the installation position, port L or port L1 must be connected.

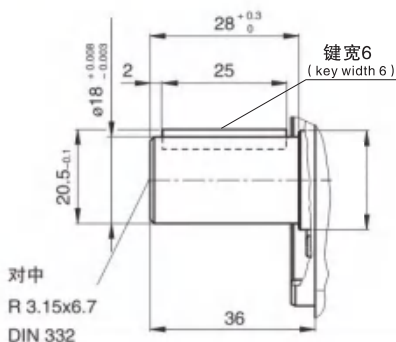
外形尺寸规格18 C型法兰(控制机构DR、DRG、DFR/DFR1)

Dimensions size 18 Flange C (Control devices DR, DRG, DFR/DFR1)

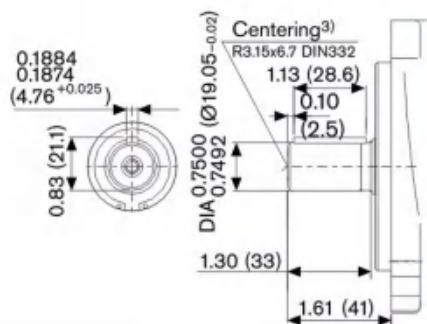


轴伸 Shaft

P 平键轴 DIN6885, A6 × 6 × 25



K 平键轴, Parallel with key
ISO 3019-1 22-1



油口 Ports

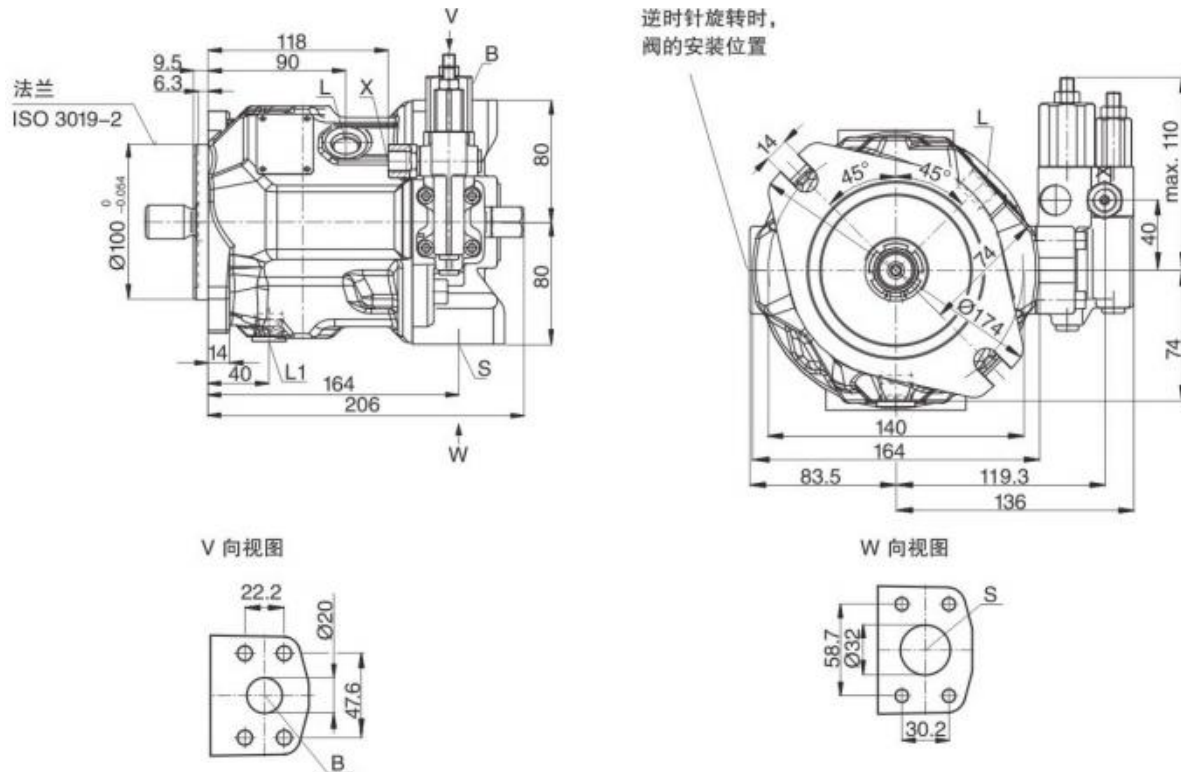
B	出油口 Outlet port	法兰Flange SAE J518 3/4in (标准系列Standardseries) 螺钉孔Fixing thread 3/8–16UNC;20 deep
S	吸油口 Suction port	法兰Flange SAE J518 1in (标准系列Standard series) 螺钉孔Fixing thread 3/8–16UNC;20 deep
L	泄油口Drain port	M16 x 1.5深12
L1	泄油口Drain port	9/16–18UNF–2B深12
X	控制油口Control pressure	M14 x 1.5深12
X1	控制油口Control pressure	G1/4深12用于DG控制For DG Control

注：根据安装位置选择L口或L1口，必须连接油箱。

Dependent on the installation position, port L or port L1 must be connected.

外形尺寸 规格28 A型法兰 (控制机构DR、DRG、DFR/DFR1)

Dimensions size 28 Flange A (Control devices DR, DRG, DFR/DFR1)

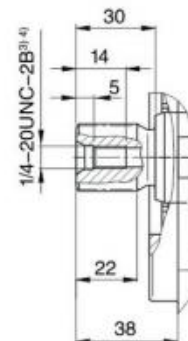
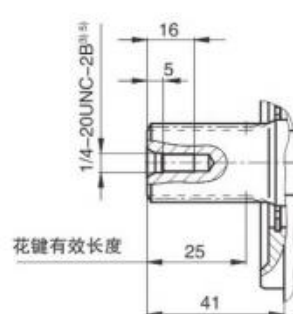
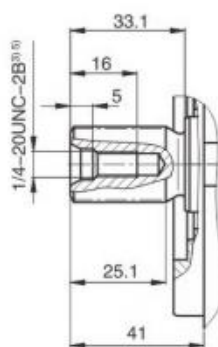


轴伸 Shaft

S 花键轴, 7/8 in 13T 16/32DP⁽¹⁾
(SAE J744)

R 花键轴, 7/8 in 13T 16/32DP⁽¹⁾⁽²⁾
(SAE J744)

U 花键轴, 3/4 in 11T 16/32DP⁽¹⁾
(SAE J744)



油口 Ports

B	出油口 Outlet port	法兰Flange SAE J518 3/4in (标准系列Standardseries) 螺钉孔Fixing thread M10深17
S	吸油口 Suction port	法兰Flange SAE J518 1 1/4in (标准系列Standard series) 螺钉孔Fixing thread M10深17
L	泄油口 Drain port	M18 x 1.5深12
L1	泄油口 Drain port	M18 x 1.5深12
X	控制油口 Control pressure	M14 x 1.5深12
X1	控制油口 Control pressure	G1/4深12用于DG控制 For DG Control

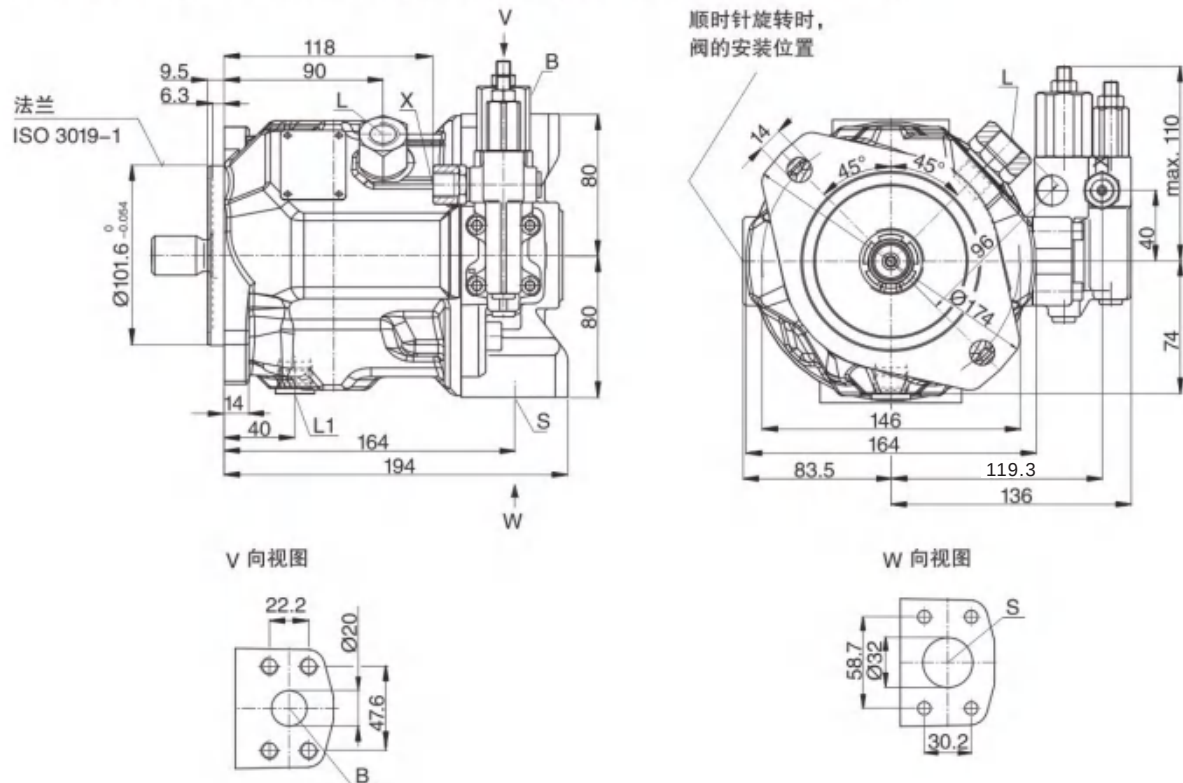
注: 根据安装位置选择L口或L1口, 必须连接油箱。

Dependent on the installation position, port L or port L1 must be connected.

外形尺寸 规格28 C型法兰 (控制机构DR、DRG、DFR/DFR1)

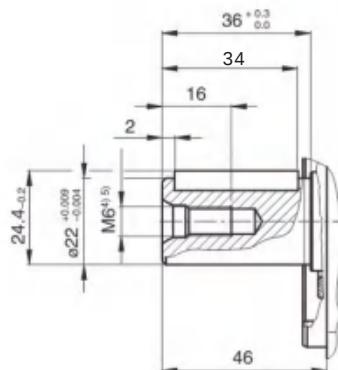
Dimensions size 28 Flange C (Control devices DR, DRG, DFR/DFR1)

工作油口12 (控制机构DG、DFLR、DLR) Port 11 (Control devices DG, DFLR, DLR)

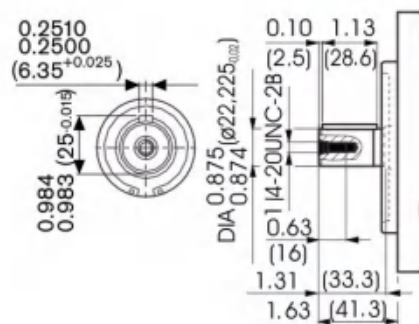


轴伸 Shaft

P 平键轴 DIN6885, A6 × 6 × 32



K 平键轴, Parallel with key ISO 3019-1 22-1



油口 Ports

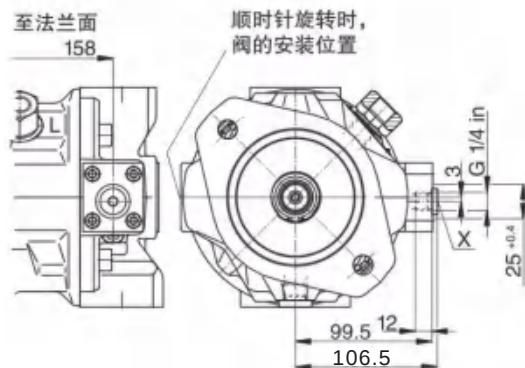
B	出油口 Outlet port	法兰Flange SAE J518 3/4in (标准系列Standardseries) 螺钉孔Fixing thread 3/8-16UNC;20 deep
S	吸油口 Suction port	法兰Flange SAE J518 1 1/4in (标准系列Standard series) 螺钉孔Fixing thread 7/16-14UNC;24 deep
L	泄油口Drain port	M18 x 1.5深12
L1	泄油口Drain port	3/4-16UNF-2B深14
X	控制油口Control pressure	M14 x 1.5深12
X1	控制油口Control pressure	G1/4深12用于DG控制For DG Control

注: 根据安装位置选择L口或L1口, 必须连接油箱。

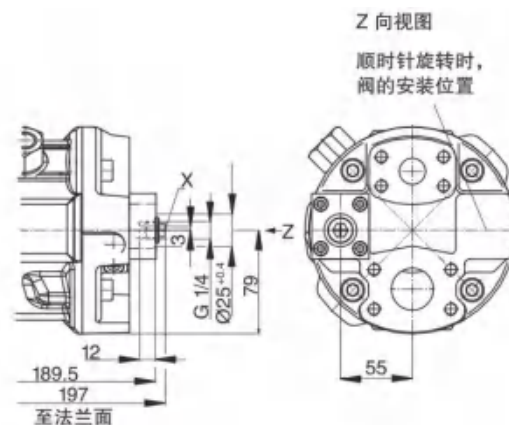
Dependent on the installation position, port L or port L1 must be connected.

外形尺寸 规格28 Dimensions size 28

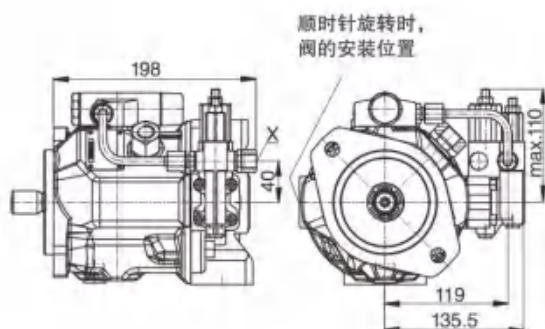
控制型式DG 工作油口12
Control devices DG port 12



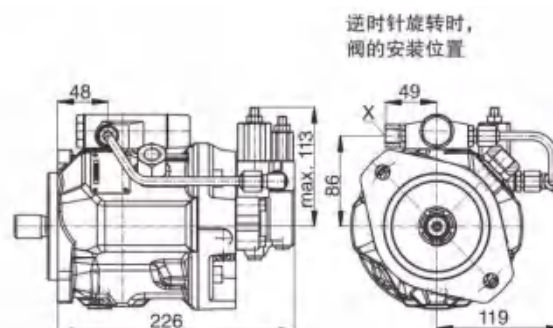
控制型式DG 工作油口11
Control devices DG port 11



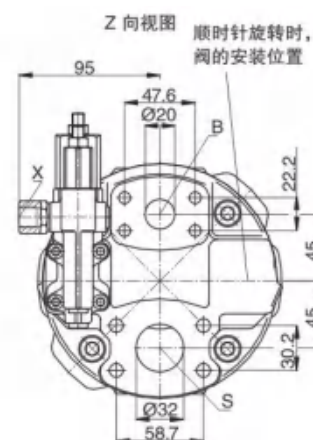
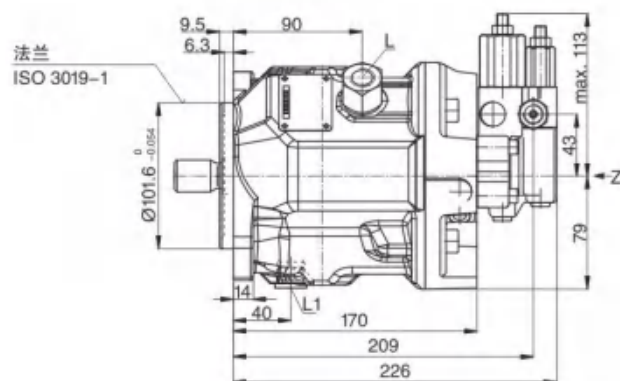
控制型式DFLR、DLR 工作油口12
Control devices DFLR, DLR port 12



控制型式DFLR、DLR 工作油口11
Control devices DFLR, DLR port 11

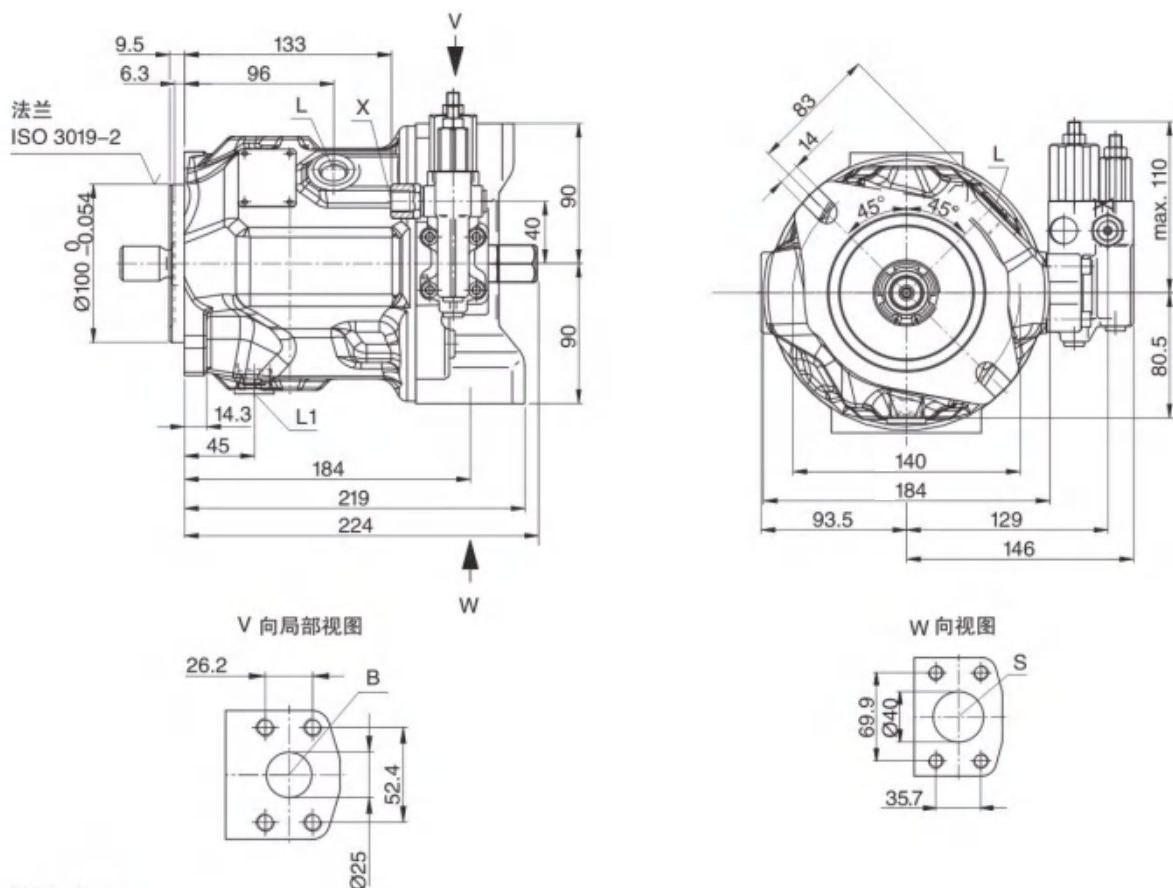


工作油口11 (控制机构DG、DFLR、DLR) port 11 (Control devices DG,DFLR, DLR)



外形尺寸规格45 A型法兰 (控制机构DR、DRG、DFR/DFR1)

Dimensions size 45 Flange A (Control devices DR, DRG, DFR/DFR1)

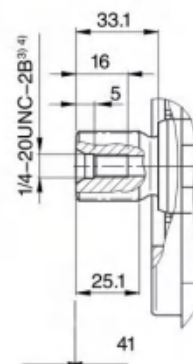
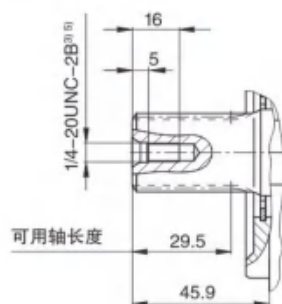
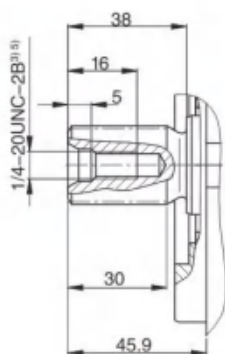


轴伸 Shaft

S 花键轴, 1 in 15T 16/32DP⁽¹⁾
(SAE J744)

R 花键轴, 1 in 15T 16/32DP⁽¹⁾⁽²⁾
(SAE J744)

U 花键轴, 7/8 in 13T 16/32DP⁽¹⁾
SAE J744



油口 Ports

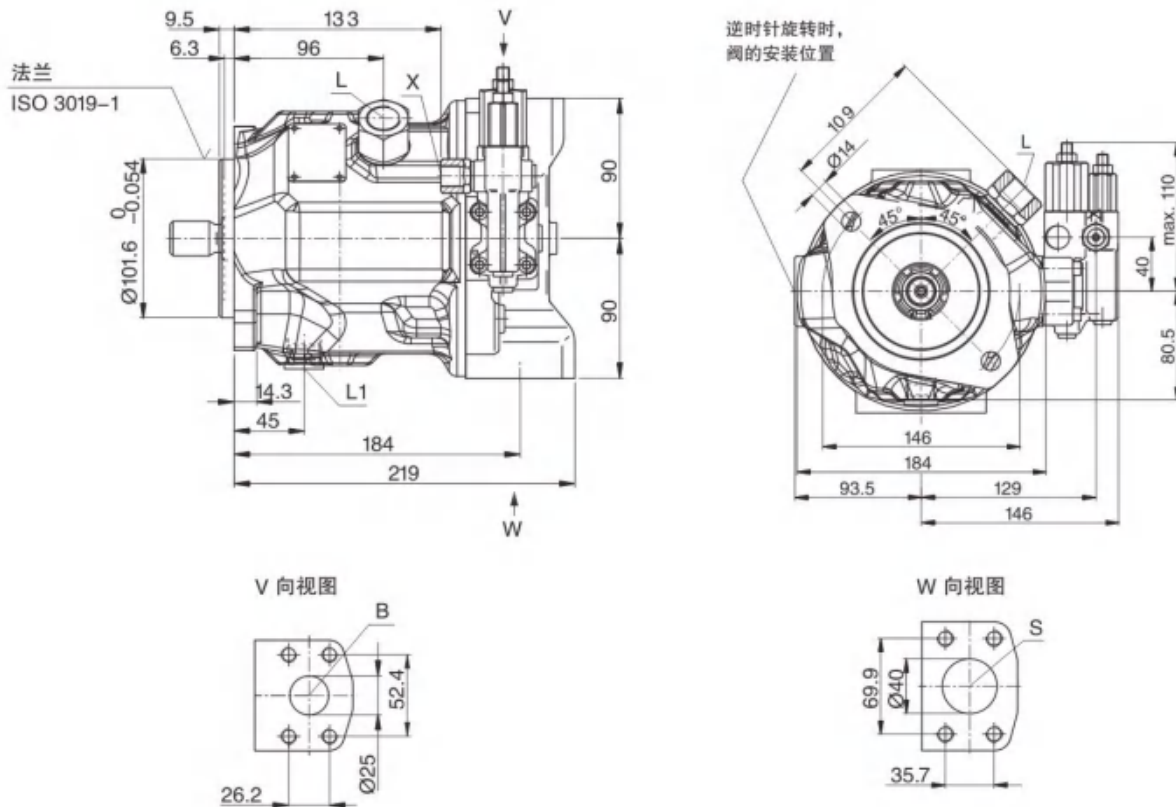
B	出油口 Outlet port	法兰Flange SAE J518 1in (标准系列Standardseries) 螺钉孔Fixing thread M10深17
S	吸油口 Suction port	法兰Flange SAE J518 1 1/4in (标准系列Standard series) 螺钉孔Fixing thread M12深20
L	泄油口 Drain port	M22 x 1.5深14
L1	泄油口 Drain port	M22 x 1.5深14
X	控制油口 Control pressure	M14 x 1.5深12
X1	控制油口 Control pressure	G1/4深12用于DG控制 For DG Control

注: 根据安装位置选择L口或L1口, 必须连接油箱。

Dependent on the installation position, port L or port L1 must be connected.

外形尺寸规格45 C型法兰 (控制机构DR、DRG、DFR/DFR1) Dimensions size 45 Flange C (Control devices DR, DRG, DFR/DFR1)

工作油口12 (控制机构DG、DFLR、DLR) Port 12 (Control devices DG, DFLR, DLR)



轴伸 Shaft

P 平键轴 DIN6885, A8 × 7 × 36

K 平键轴, Parallel with key ISO 3019-1 25-1



油口 Ports

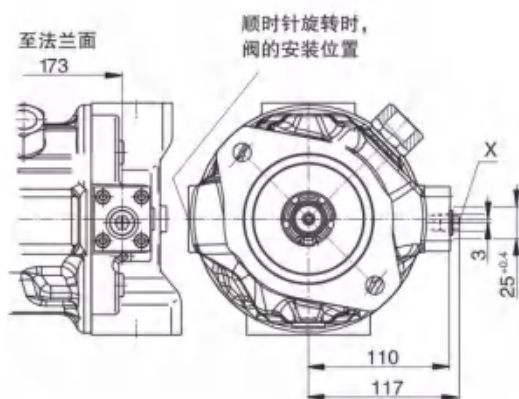
B	出油口 Outlet port	法兰Flange SAE J518 1in (标准系列Standardseries) 螺钉孔Fixing thread 3/8-16UNC;18 deep
S	吸油口 Suction port	法兰Flange SAE J518 1 1/2in (标准系列Standard series) 螺钉孔Fixing thread 1/2-13UNC;22 deep
L	泄油口Drain port	M22 x 1.5深14
L1	泄油口Drain port	7/8-14unf-2B深16
X	控制油口Control pressure	M14 x 1.5深12
X1	控制油口Control pressure	G1/4深12用于DG控制For DG Control

注: 根据安装位置选择L口或L1口, 必须连接油箱。

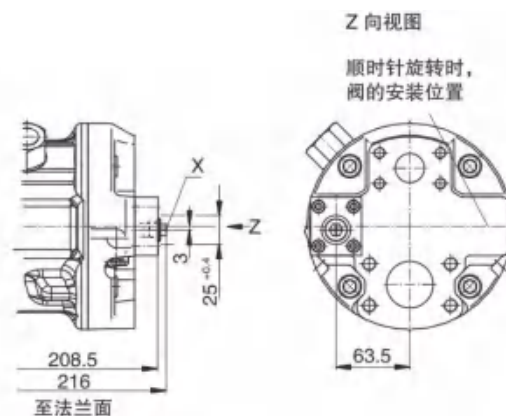
Dependent on the installation position, port L or port L1 must be connected.

外形尺寸 Dimensions

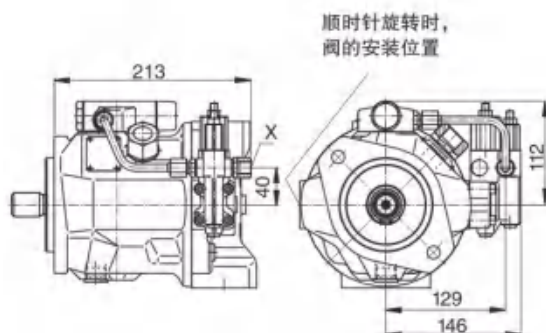
控制型式DG 工作油口12
Control device DG port 12



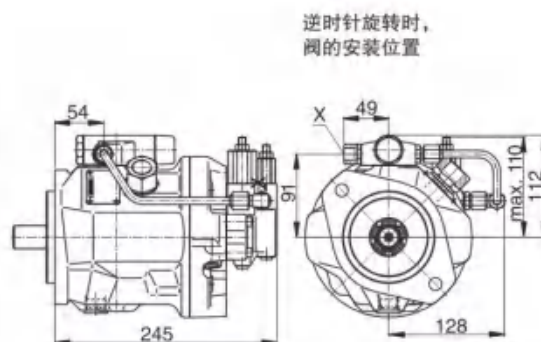
控制型式DG 工作油口11
Control device DG port 11



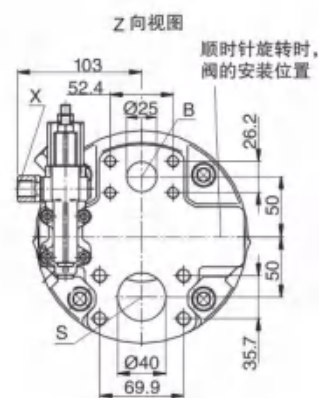
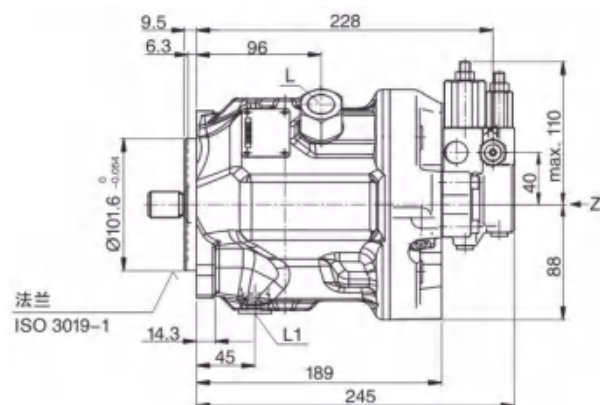
控制型式DFLR、DLR 工作油口12
Control device DFLR, DLR port 12



控制型式DFLR、DLR 工作油口11
Control device DFLR, DLR port 11

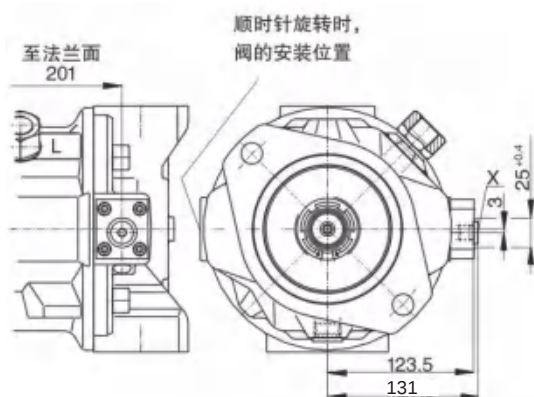


工作油口11 (控制机构DG、DFLR、DLR) port 11 (Control devices DG, DFLR, DLR)

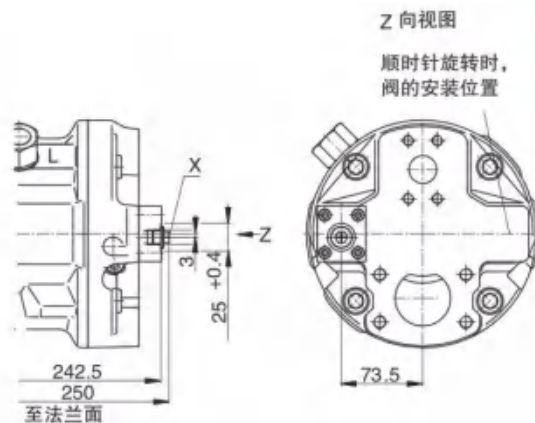


外形尺寸 规格71 Dimensions size 71

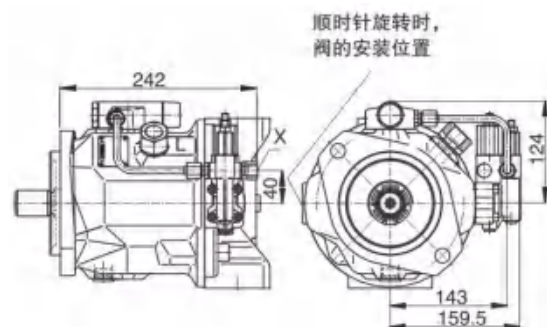
控制型式DG 工作油口42
Control device DG port 42



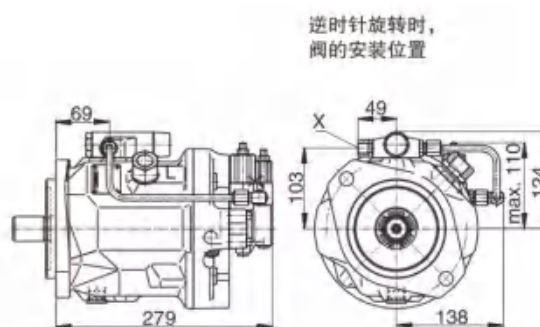
控制型式DG 工作油口41
Control device DG port 41



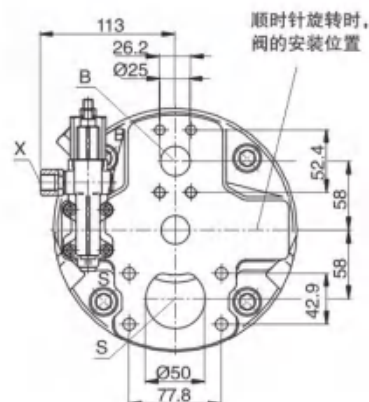
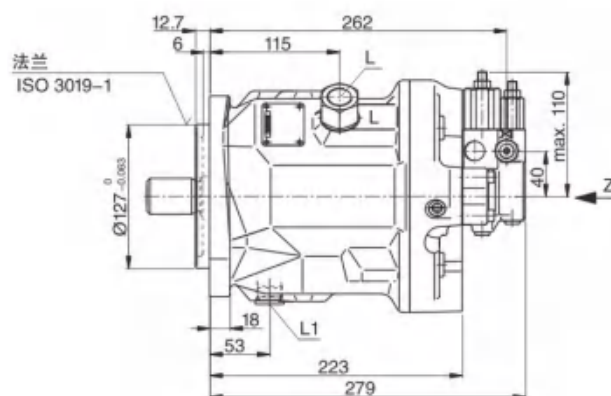
控制型式DFLR、DLR 工作油口42
Control device DFLR, DLR port 42



控制型式DFLR、DLR 工作油口41
Control device DFLR, DLR port 41

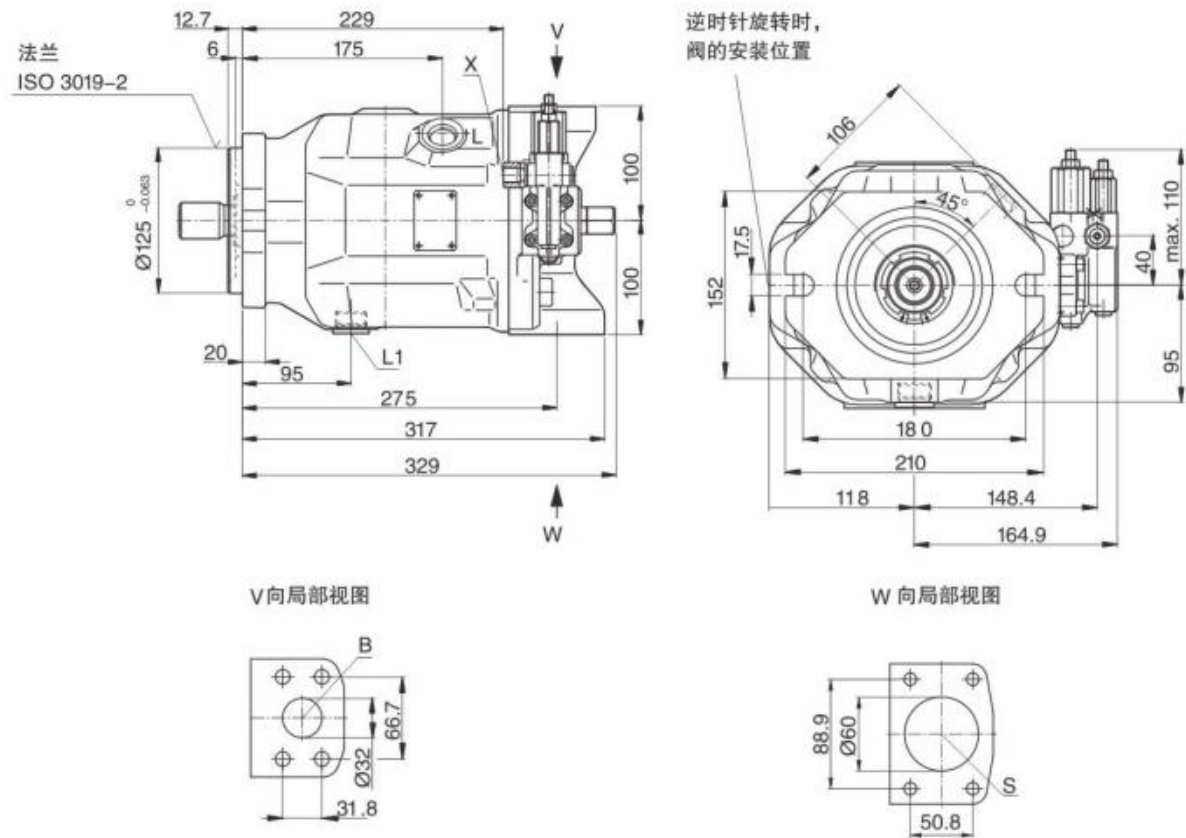


工作油口41 (控制机构DG、DFLR、DLR) port 11 (Control devices DG, DFLR, DLR)



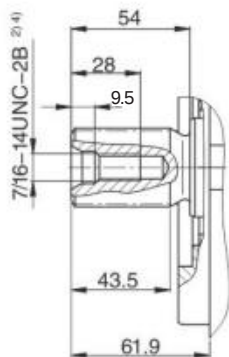
外形尺寸规格100 A型法兰 (控制机构DR、DRG、DFR/DFR1)

Dimensions size 100 Flange A (Control devices DR, DRG, DFR/DFR1)

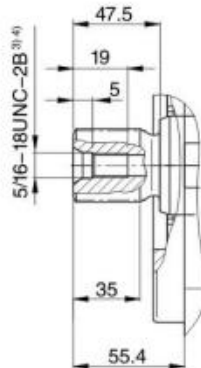


轴伸 Shaft

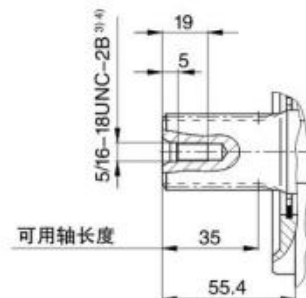
S 花键轴, 1 1/2 in 17T 12/24DP⁽¹⁾
(SAE J744)



U 花键轴, 1 1/4 in 14T 12/24DP⁽¹⁾
(SAE J744)



W 花键轴, 1 1/4 in 14T 12/24DP⁽¹⁾⁽²⁾
(SAE J744)



油口 Ports

B 出油口 Outlet port

S 吸油口 Suction port

L 泄油口 Drain port

L1 泄油口 Drain port

X 控制油口 Control pressure

X1 控制油口 Control pressure

法兰 Flange SAE J518 1 1/4in (高压系列 High-pressure series) 螺钉孔 Fixing thread M14 深 19

法兰 Flange SAE J518 2 1/2in (标准系列 Standard series) 螺钉孔 Fixing thread M12 深 17

M27 x 2 深 16

M22 x 2 深 16

M14 x 1.5 深 12

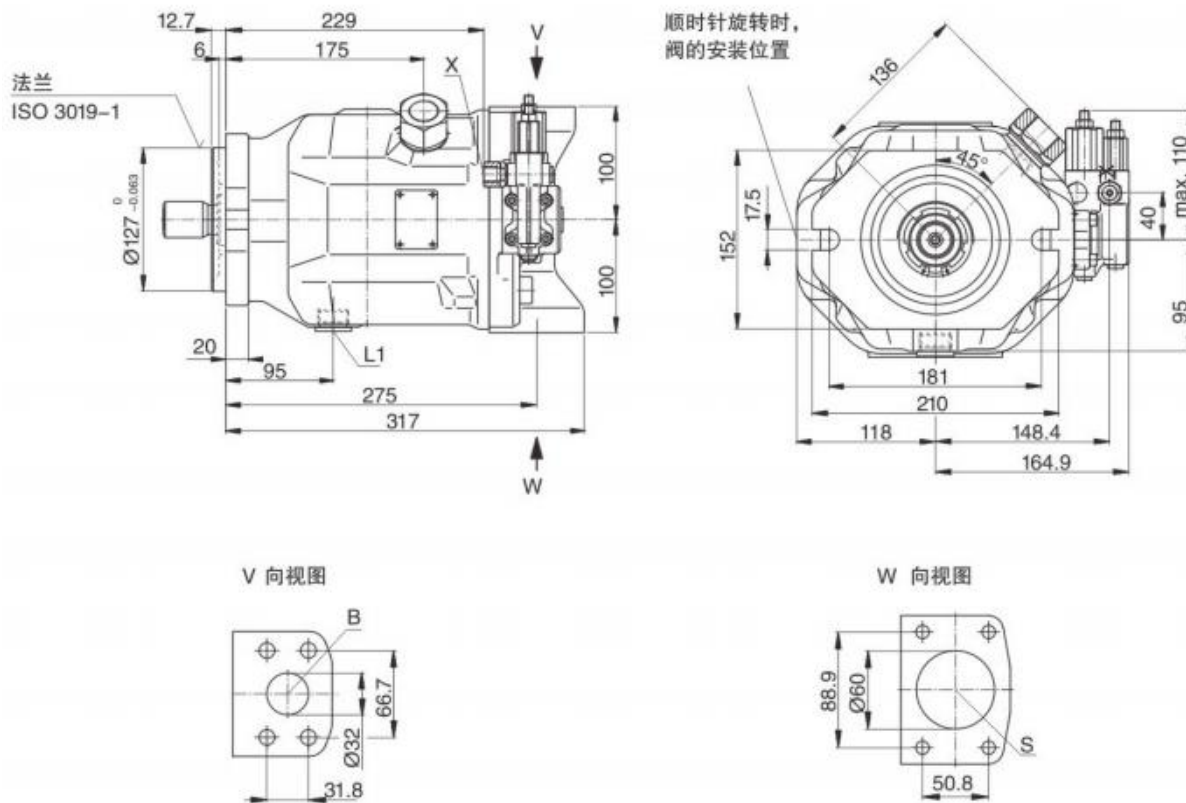
G1/4 深 12 用于 DG 控制 For DG Control

注: 根据安装位置选择 L 口或 L1 口, 必须连接油箱。

Dependent on the installation position, port L or port L1 must be connected.

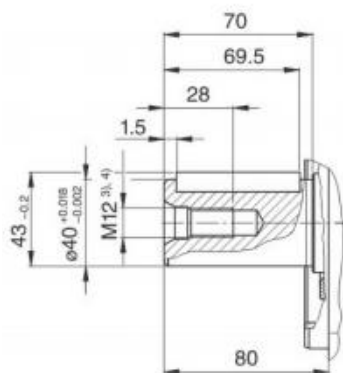
外形尺寸规格100 C型法兰 (控制机构DR、DRG、DFR/DFR1) Dimensions size 100 Flange C (Control devices DR, DRG, DFR/DFR1)

工作油口12 (控制机构DG、DFLR、DLR) Port 12 (Control devices DG, DFLR, DLR)

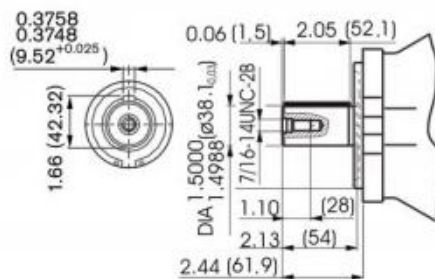


轴伸 Shaft

P 平键轴 DIN6885, A12 × 8 × 68



K 平键轴, Parallel with key ISO 3019-1 38-1



油口 Ports

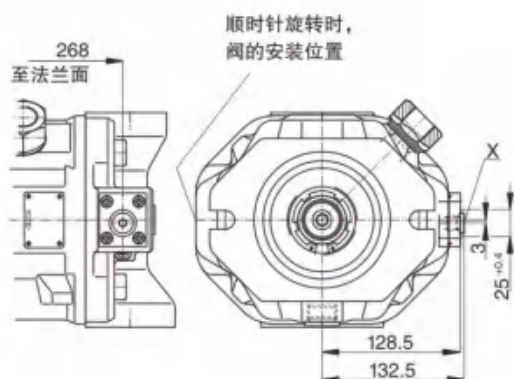
B	出油口 Outlet port	法兰Flange SAE J518 1 1/4in (高压系列High-pressure series) 螺钉孔Fixing thread 1/2-13UNC;19 deep
S	吸油口 Suction port	法兰Flange SAE J518 2 1/2in (标准系列Standard series) 螺钉孔Fixing thread 1/2-13UNC;27 deep
L	泄油口 Drain port	M22 x 1.5深14
L1	泄油口 Drain port	7/8-14unf-2B深16
X	控制油口 Control pressure	M14 x 1.5深12
X1	控制油口 Control pressure	G1/4深12用于DG控制 For DG Control

注：根据安装位置选择L口或L1口，必须连接油箱。

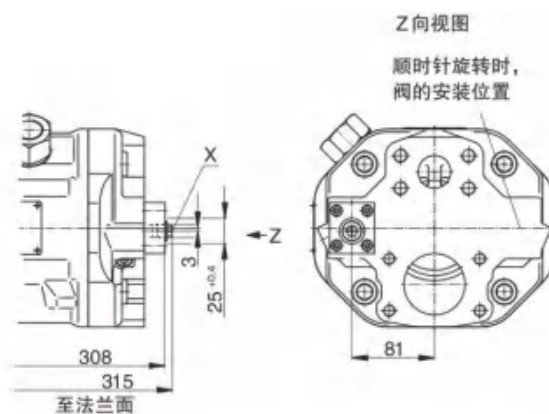
Dependent on the installation position, port L or port L1 must be connected.

外形尺寸 规格100 Dimensions size 100

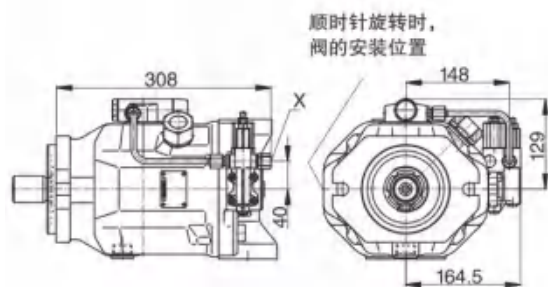
控制型式DG 工作油口12
Control device DG port 12



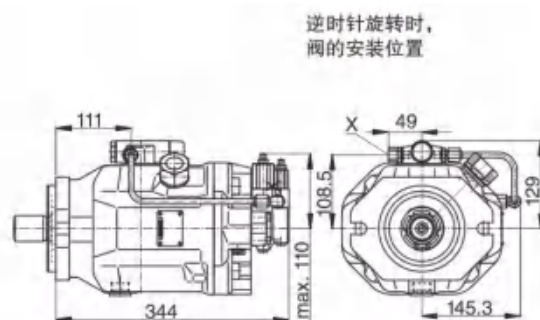
控制型式DG 工作油口11
Control device DG port 11



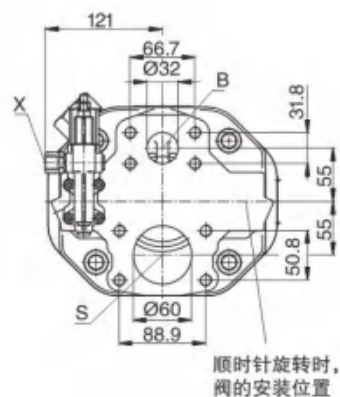
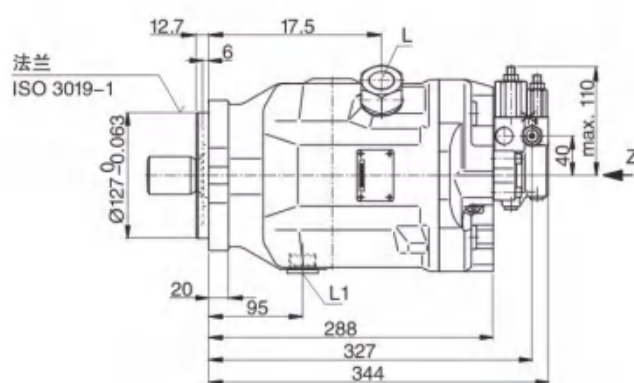
控制型式DFLR、DLR 工作油口12
Control device DFLR, DLR port 12



控制型式DFLR、DLR 工作油口11
Control device DFLR, DLR port 11

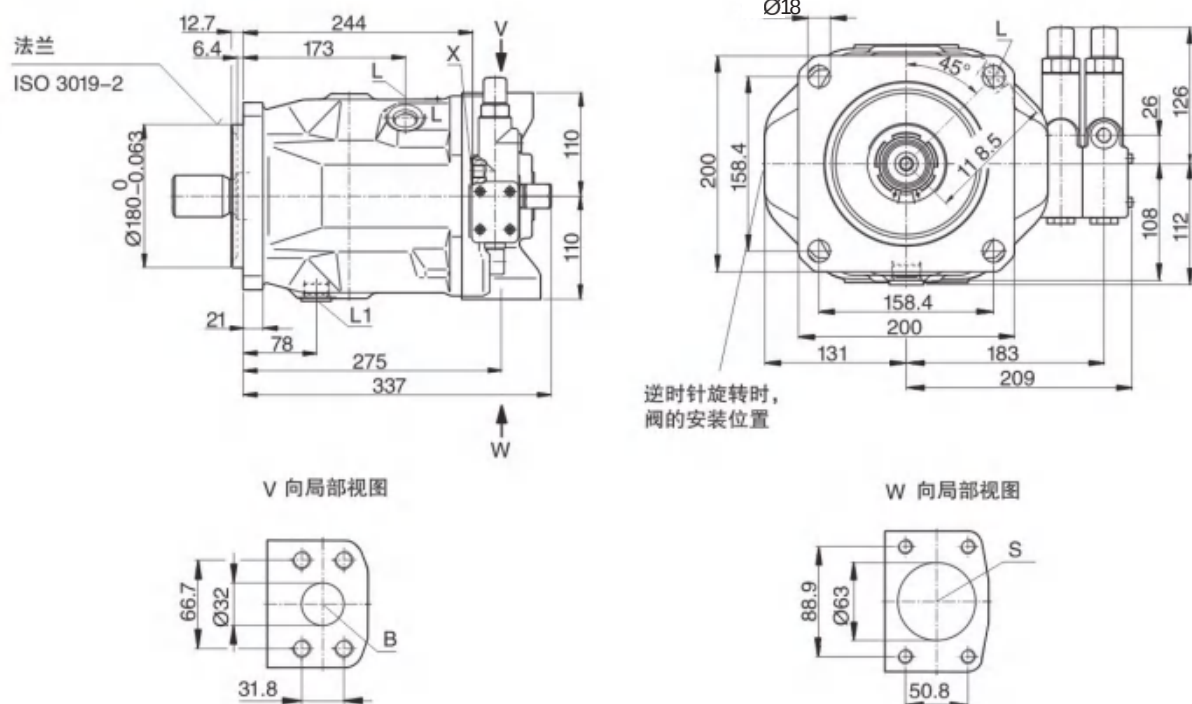


工作油口11 (控制机构DG、DFLR、DLR) port 11 (Control devices DG, DFLR, DLR)



外形尺寸规格140 B型法兰 (控制机构DR、DRG、DFR/DFR1)

Dimensions size 140 Flange B (Control devices DR, DRG, DFR/DFR1)

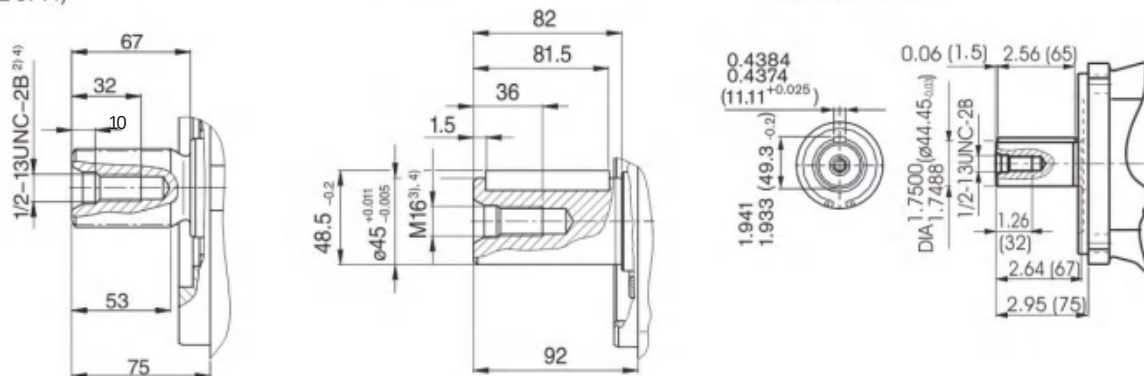


轴伸 Shaft

S 花键轴, 1 3/4 in 13T 8/16DP¹⁾
(SAE J744)

P 平键轴 DIN6885, A14 × 9 × 80

K 平键轴 Parallel with key
ISO 3019-1 44-1



油口 Ports

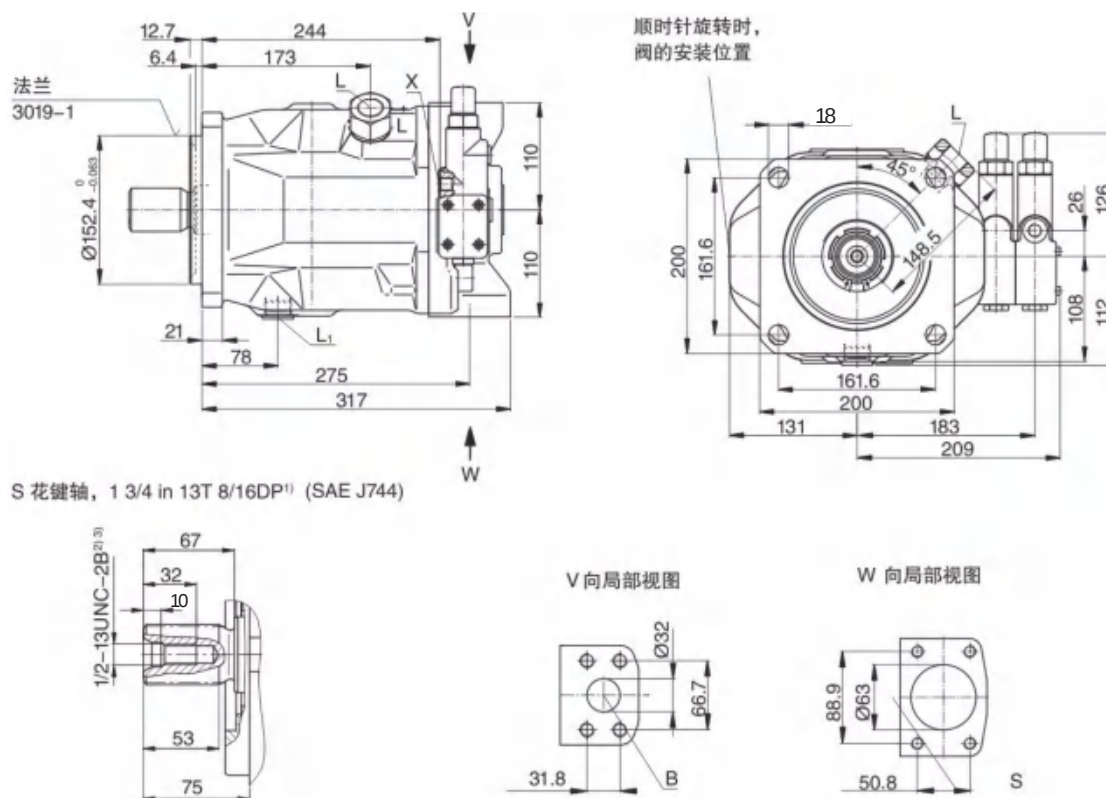
B	出油口 Outlet port	法兰 Flange SAE J518 1 1/4in (高压系列 High-pressure series) 螺钉孔 Fixing thread M14 深 19
S	吸油口 Suction port	法兰 Flange SAE J518 2 1/2in (标准系列 Standard series) 螺钉孔 Fixing thread M12 深 17
L	泄油口 Drain port	M27 x 2 深 16
L1	泄油口 Drain port	M27 x 2 深 16
X	控制油口 Control pressure	M14 x 1.5 深 12
X1	控制油口 Control pressure	G1/4 深 12 用于 DG 控制 For DG Control

注: 根据安装位置选择 L 口或 L1 口, 必须连接油箱。

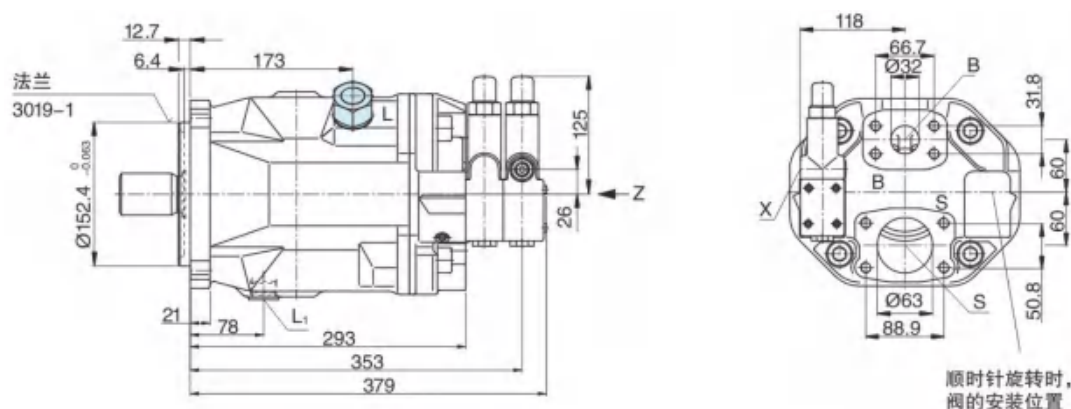
Dependent on the installation position, port L or port L1 must be connected.

外形尺寸规格140 D型法兰 (控制机构DR、DRG、DFR/DFR1) Dimensions size 140 Flange D (Control devices DR, DRG, DFR/DFR1)

工作油口12 (控制机构DG、DR、DFLR、DLR) port 12 (Control devices DG,DR,DFLR, DLR)



工作油口11 (控制机构DG、DR、DFLR、DLR) port 11 (Control devices DG,DR,DFLR, DLR)



油口 Ports

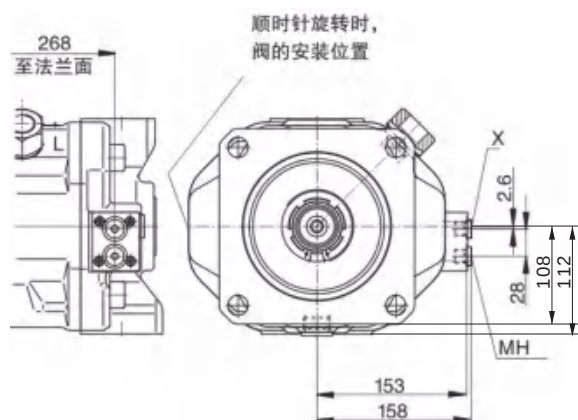
B	出油口 Outlet port	法兰Flange SAE J518 1 1/4in (高压系列High-pressure series) 螺钉孔Fixing thread 1/2-13UNC;24 deep
S	吸油口 Suction port	法兰Flange SAE J518 2 1/2in (标准系列Standard series) 螺钉孔Fixing thread 1/2-13UNC;24 deep
L	泄油口 Drain port	M27 x 2深16
L1	泄油口 Drain port	1 1/16-12UNF-2B深18
X	控制油口 Control pressure	M14 x 1.5深12
X1	控制油口 Control pressure	M14 x 1.5深12用于DG控制 For DG Control

注: 根据安装位置选择L口或L1口, 必须连接油箱。

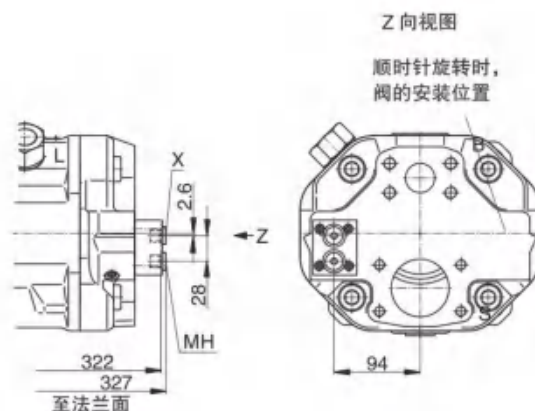
Dependent on the installation position, port L or port L1 must be connected.

外形尺寸 规格140 Dimensions size 140

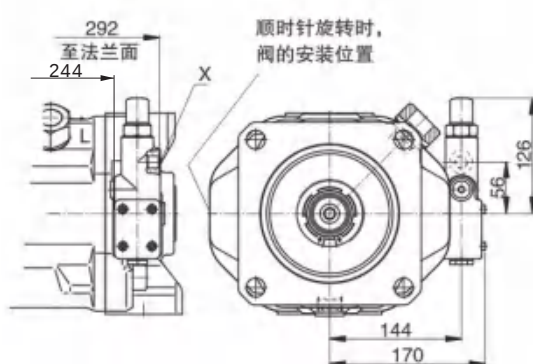
控制型式DG 工作油口12
Control device DG port 12



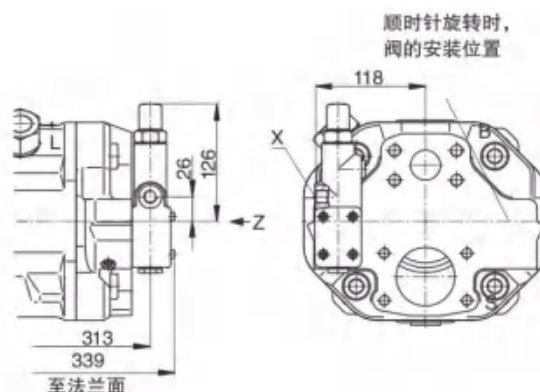
控制型式DG 工作油口11
Control device DG port 11



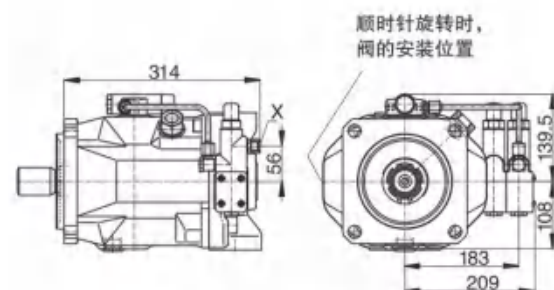
控制型式DR、DRG 工作油口12
Control device DR, DRG port 12



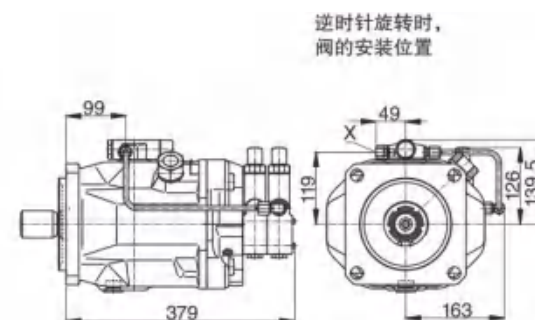
控制型式DR、DRG 工作油口11
Control device DR, DRG port 11



控制型式DFLR、DLR 工作油口12
Control device DFLR, DLR port 12



控制型式DFLR、DLR 工作油口11
Control device DFLR, DLR port 11

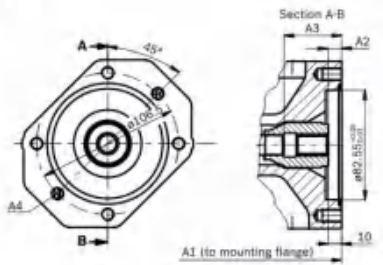


通轴尺寸 Dimensions,, through drive

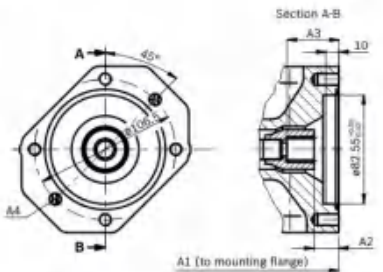
法兰Flange ISO 3019-1(SAE) 直径Diameter Symbol			花键Hub for splined shaft ¹⁾ 直径Diameter		适用型号 Availability over sixes							代号
					18	28	45	71	88	100	140	Code
82-2	(A)		5/8 in	9T 16/32DP	●	●	●	●	●	●	●	K01
			3/4 in	11T 16/32DP	●	●	●	●	●	●	●	K52

● = Available - = Not available

▼ 82-2



▼ 82-2



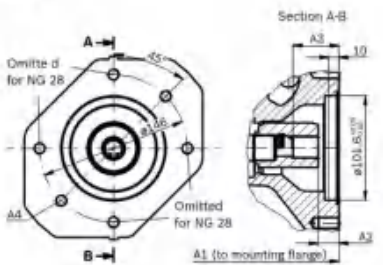
K01	NG	A1	A2	A3	A4 ²⁾
(SAE J744 16-4(A))	18	182	10	43.3	M10x1.5;14,5 deep
	28	204	10	33.7	M10x1.5;16 deep
	45	229	10.7	53.4	M10x1.5;16 deep
	71	267	11.8	61.3	M10x1.5;20 deep
	88	267	11.8	61.3	M10x1.5;20 deep
	100	338	10.5	65	M10x1.5;16 deep
	140	350	10.8	77.3	M10x1.5;16 deep

K52	NG	A1	A2	A3	A4 ²⁾
(SAE J744 19-4(A-B))	18	182	18.8	38.7	M10x1.5;14,5 deep
	28	204	18.8	38.7	M10x1.5;16 deep
	45	229	18.9	38.7	M10x1.5;16 deep
	71	267	21.3	41.4	M10x1.5;20 deep
	88	267	21.3	41.4	M10x1.5;20 deep
	100	338	19	38.9	M10x1.5;16 deep
	140	350	18.9	38.6	M10x1.5;16 deep

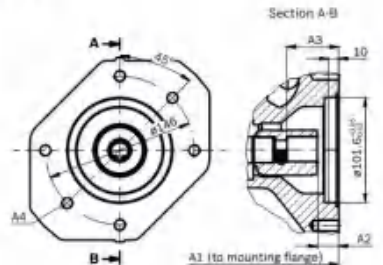
法兰Flange ISO 3019-1(SAE) 直径DiameterSymbol			花键Hub for splined shaft ¹⁾ 直径Diameter		适用型号		Availability over sixes					代号
					18	28	45	71	88	100	140	Code
101-2	(A)		7/8 in	13T 16/32DP	—	●	●	●	●	●	●	K68
			1 in	15T 16/32DP		—	●	●	●	●	●	K04

● = Available - = Not available

▼ 101-2



▼ 101-2



K68	NG	A1	A2	A3	A4 ²⁾
(SAEJ744 22-4(B))	28	204	17.8	41.7	M12x1.75
	45	229	17.9	41.7	M12x1.75;18 deep
	71	267	20.3	44.7	M12x1.75;20 deep
	88	267	20.3	44.7	M12x1.75;20 deep
	100	338	18	41.9	M12x1.75;20 deep
	140	350	17.8	41.6	M12x1.75;20 deep

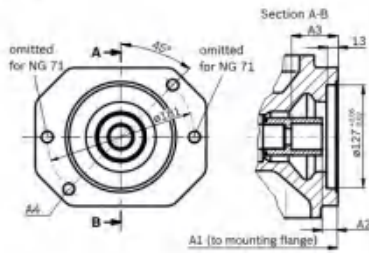
K04	NG	A1	A2	A3	A4 ²⁾
(SAEJ744 25-4(B-B))	45	229	18.4	46.7	M12x1.75;18 deep
	71	267	20.8	49.1	M12x1.75;20 deep
	88	267	20.8	49.1	M12x1.75;20 deep
	100	338	18.2	46.6	M12x1.75;20 deep
	140	350	18.3	45.9	M12x1.75;20 deep

1)30° 压力角, 平齿根, 侧面配合, 公差等级5 According to ANSI B92.1a,30° pressure angle, flat root, side fit,tolerance class 5
2)符合DIN13的螺纹 Thread according to DIN 13

法兰Flange ISO 3019-1(SAE) 直径DiameterSymbol			花键Hub for splined shaft ¹⁾ 直径Diameter		适用型号 Availability over sizes							代号 Code
					18	28	45	71	88	100	140	
127-2	(C)	ϕ_{∞}	1 1/4in	14T 12/24DP	-	-	-	●	●	●	●	K07
			1 1/2 in	17T 12/24DP	-	-	-	-	-	●	●	K24

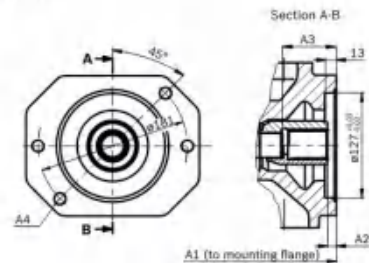
● = Available - = Not available

▼ 127-2



K07	NG	A1	A2	A3	A4 ²⁾
(SAE J744 32-4(C))	71	267	21.8	58.6	M16x2
	88	267	21.8	58.6	M16x2
	100	338	19.5	56.4	M16x2
	140	350	19.3	56.1	M16x2;24 deep

▼ 127-2

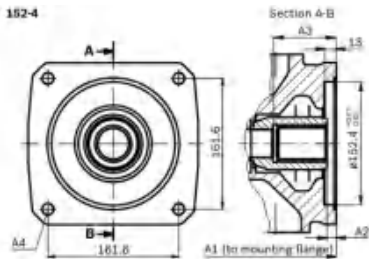


K24	NG	A1	A2	A3	A4 ²⁾
(SAE J744 38-4(C-C))	100	338	10.5	65	M16x2
	140	350	7.9	73.3	M16x2;32 deep

法兰Flange ISO 3019-1(SAE) 直径DiameterSymbol			花键Hub for splined shaft ¹⁾ 直径Diameter		适用型号 Availability over sizes							代号 Code
					18	28	45	71	88	100	140	
152-4 63-4	(A)	33	1 3/4in	13T 8/16DP	-	-	-	-	-	-	●	K17
		33	Metric keyed shaft $\phi 25$		-	●	●	●	●	●	●	K57

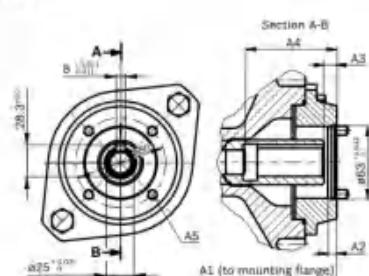
● = Available - = Not available

▼ 152-4



K17	NG	A1	A2	A3	A4 ²⁾
(SAE J744 44-4(D))	140	350	11	77.3	M16x2

▼ 63-4 metric¹⁾



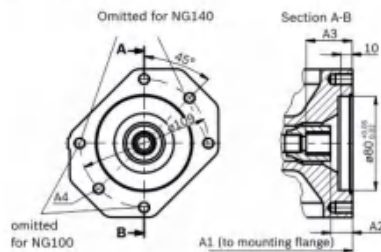
K57	NG	A1	A2	A3	A4	A5
(4-hole flange)	28	232	8	10.6	58.4	M8
	45	257	8	11	81	M8
	71	283	8	12.5	77	M10
	88	283	8	12.5	77	M10
	100	354	8	10.5	81	M10
	140	366	8	11	93	M8

1)30° 压力角, 平齿根, 侧面配合, 公差等级5 According to ANSI B92.1a,30° pressure angle, flat root, side fit, tolerance class 5
2)符合DIN13的螺纹 Thread according to DIN 13

法兰Flange ISO 3019-1 (SAE) 直径DiameterSymbol			花键Hub for splined shaft ¹⁾ 直径Diameter		适用型号 Availability over sixes							代号 Code
					18	28	45	71	88	100	140	
80 100	2-hole 2-hloe		3/4 in	11T 16/32DP	●	●	●	●	●	●	●	KB2
			7/8 in	13T 16/32DP	-	●	●	●	●	●	●	KB3
			1 in	15T 16/32DP	-	-	●	●	●	●	●	KB4

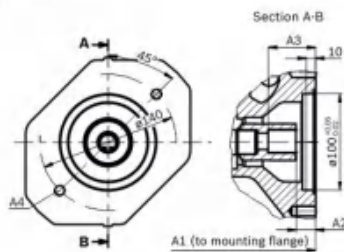
● = Available - = Not available

▼ 80, 2-hole



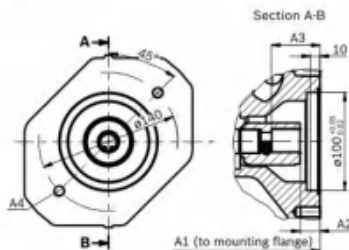
KB2	NG	A1	A2	A3	A4 ²⁾
(SAE J744 19-4(A-B))	18	182	18.8	38.7	M10x1.5;14.5 deep
	28	204	18.8	38.7	M10x1.5;16 deep
	45	229	18.9	38.7	M10x1.5;16 deep
	71	267	21.3	41.4	M10x1.5;20 deep
	88	267	21.3	41.4	M10x1.5;20 deep
	100	338	19	38.9	M10x1.5;20 deep
	140	350	18.9	38.6	M10x1.5;20 deep

▼ 100, 2-hole



KB3	NG	A1	A2	A3	A4 ²⁾
(SAE J744 22-4(B))	28	204	17.8	41.7	M12x1.5;
	45	229	17.9	41.7	M12x1.5;
	71	267	20.3	44.1	M12x1.5;20 deep
	88	267	20.3	44.1	M12x1.5;20 deep
	100	338	18	41.9	M12x1.5;20 deep
	140	350	17.8	41.6	M12x1.5;20 deep

▼ 100, 2-hole



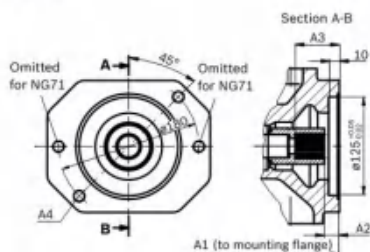
KB4	NG	A1	A2	A3	A4 ²⁾
(SAE J744 25-4(B-B))	45	229	18.4	46.7	M12x1.75
	71	267	20.8	49.1	M12x1.75;20 deep
	88	267	20.8	49.1	M12x1.75;20 deep
	100	338	18.2	46.6	M12x1.75;20 deep
	140	350	18.3	45.9	M12x1.75;20 deep

1)30° 压力角, 平齿根, 侧面配合, 公差等级5 According to ANSI B92.1a,30° pressure angle, flat root, side fit,tolerance class 5
2)符合DIN13的螺纹 Thread according to DIN 13

法兰Flange ISO 3019-1 (SAE) 直径DiameterSymbol			花键Hub for splined shaft ¹⁾ 直径Diameter		适用型号 Availability over sizes							代号 Code
					18	28	45	71	88	100	140	
125 180	2-hole 2-hloe	$\phi\infty$	1 1/4 in	14T 12/24DP	-	-	-	●	●	●	●	KB5
			1 1/2 in	17T 12/24DP	-	-	-	-	-	●	●	KB6
		ϕ	1 3/4 in	13T 8/16DP	-	-	-	-	-	-	●	KB7

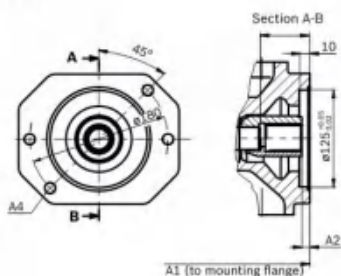
● = Available - = Not available

▼ 125, 2-hole



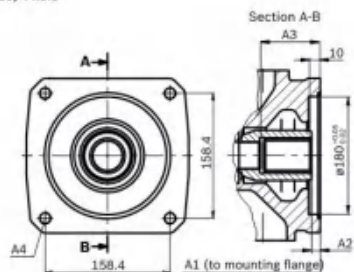
KB5	NG	A1	A2	A3	A4 ²⁾
(SAE J744 32-4(C))	71	267	21.8	58.6	M16x2
	88	267	21.8	58.6	M16x2
	100	338	19.5	56.4	M16x2
	140	350	19.3	56.1	M16x2;24 deep

▼ 125, 2-hole



KB6	NG	A1	A2	A3	A4 ²⁾
(SAE J744 38-4(C-C))	100	338	10.5	65	M16x2
	140	350	7.9	73.3	M16x2;32 deep

▼ 180, 4-hole



KB7	NG	A1	A2	A3	A4 ²⁾
(SAE J744 44-4(D))	140	350	11.3	77.3	M16x2 ²⁾

1)30° 压力角, 平齿根, 侧面配合, 公差等级5 According to ANSI B92.1a,30° pressure angle, flat root, side fit,tolerance class 5
2)符合DIN13的螺纹 Thread according to DIN 13