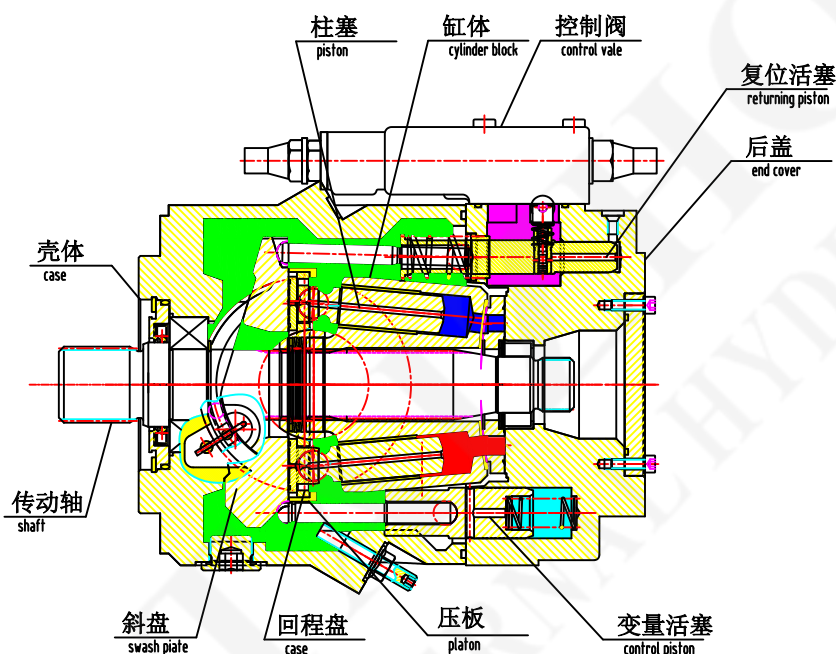


概述 Overview

A11VSO/10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35MPa。

A11V(S)O/10 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 35Mpa.



特点

- ※斜盘结构轴向柱塞变量泵，用于开式回路液压系统中的静液压传动。
- ※主要为行走作业机械应用而设计。
- ※在油箱加压或使用选装内置加注泵(叶轮)的条件下，泵在自动启动注油状态下操作。
- ※提供满足各种应用要求的各种控制选装件。
- ※功率控制选装件在外部可调，即使当泵运行时也能进行。
- ※通轴驱动适合加入的齿轮泵和轴向柱塞泵。
- ※输出流量与驱动速度成比例并且可以在 $q_{v\max}$ 和 $q_{v\min}=0$ 之间无级变化。

Features

- ※ Variable pump with axial piston rotary group of swash-plate design for hydrostatic drives in open circuit.
- ※ Designed primarily for the use of walking machines.
- ※ When the mailbox is pressurized or when an optional built-in impeller is used The pump is operated under the condition of automatic start-up and oil injection.
- ※ Provide a variety of optional control parts to meet the requirements of various applications.
- ※ Power control optional parts are externally adjustable, even when the pump is running.
- ※ Through shaft drive is suitable for adding gear pump and axial piston pump.
- ※ The output flow rate is proportional to the driving speed and can vary freely between $q_{v\max}$ and $q_{v\min}=0$

型号标识 Type Code

A11V	O	/	1	—	N													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			

1-轴向柱塞元件 Axial piston unit

斜盘设计、变量、公称压力 350 bar、最大压力 400 bar Swashplate design, variable, nominal pressure 350 bar, maximum pressure 400 bar	A11V
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2-加注泵(叶轮) Charge pump (impeller)

	95	130	145	190	
不带加注泵 (没有代码) without charge pump (no code)	●	●	●	●	
带有加注泵 with charge pump	—	●	●	●	L

3-运转 Operation

泵, 开式回路 Pump, open circuit	O
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4-规格 Size

≈ 排量 $V_{g\max}(\text{cm}^3)$ ≈ Displacement $V_{g\max}$ in cm^3	95	130	145	190	
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5-控制机构 Control unit

功率控制 Power control	●	●	●	●	LR
带压力切断功率控制 with pressure cut-off and Power control	●	●	●	●	LRD
带有压力切断和负载感应的功率控制 with pressure cut-off and with load sensing Power control	●	●	●	●	LRDS
带行程限位功率控制 with stroke limiter and Power control	●	●	●	●	LRDU2
压力控制 Pressure control	●	●	●	●	DR
带负载敏感压力控制 with load sensing and Power control	●	●	●	●	DRS
电比例控制 Electric control with proportional solenoid	●	●	●	●	EP2D

6-系列 Series

	1
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7-索引 Index

规格 95 130	0
规格 145 190	1

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

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

顺时针 Clockwise	R
逆时针 Counterclockwise	L

9-密封 Seals

丁腈橡胶NBR, 轴封氟橡胶Shaftseal FKM	N
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10-轴端 Shaft end

		95	130	145	190	
用于单级泵和组合泵的花键轴 DIN 5480S splined shaft DIN 5480 for single and combination pump		●	●	●	●	Z
平键轴, 符合 DIN 6885 Parallel keyed shaft DIN 6885		●	●	●	●	P
花键轴 ANSI B92.1a-1976 Splined shaft ANSI B92.1a-1976	用于单级泵 for single pump	●	●	●	●	S
	用于组合泵 for combination pump	-	-	-	●	T

11-安装法兰 Mounting flange

SAE J744- 4 孔 Hole	●	●	●	●	D
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12-工作管路油口 Service line ports

SAE 侧压力与吸油口, 对侧(带有公制紧固螺纹) Pressure and suction port SAE, at side, opposite side(with metric fastening threads)	●	●	●	●	12
---	---	---	---	---	----

13-通轴驱动 Through drive

法 兰 SAE J744	花键轴联轴器						
-	-			●	●	●	N00
82-2 (A)	5/8in	9T 16/32DP	(A)	●	●	●	K01
	3/4in	11T 16/32DP	(A-B)	●	●	●	K52
101-2 (B)	7/8in	13T 16/32DP	(B)	●	●	●	K02
	1 in	15T 16/32DP	(B-B)	●	●	●	K04
	W35	2x30x16x9g		●	●	●	K79
127-2 (C) ⁴⁾	1 1/4in	14T 12/24DP	(C)	●	●	●	K07
	1 1/2in	17T 12/24DP	(C-C)	●	●	●	K24
	W30	2x30x14x9g		●	●	●	K80
	W35	2x30x16x9g		●	●	●	K61
152-4 (D)	1 1/4in	14T 12/24DP	(C)	●	●	●	K86
	1 3/4in	13T 8/16DP	(D)	-	●	●	K17
	W40	2x30x18x9g		●	●	●	K81
	W45	2x30x21x9g		●	●	●	K82
	W50	2x30x24x9g		-	●	●	K83
165-4 (E)	1 3/4in	13T 8/16DP	(D)	-	-	●	K72
	W50	2x30x24x9g		-	-	●	K84

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

技术参数 Technical Data

数据表 (理论值, 不包括系数和公差; 近似值) Table of values (theoretical values, without efficiency and tolerances; values rounded)

规格 Size	A11VO		95	130	145	190
排量 Displacement	$V_{g \max}$	cm ³	93.5	130	145	193
	$V_{g \min}$	cm ³	0	0	0	0
转速 Speed $V_{g \max}^{(1)}$ 时的最大值	$n_{\max}$	rpm	2350	2100	2200	2100
$V_g \leq V_{g \max}^{(3)}$ 时的最大值	$n_{\max 1}$	rpm	2780	2500	2500	2100
$n_{\max}$ 和 $V_{g \max}$ 时的流量	$q_{v \max}$	L/min	220	273	319	405
$q_{v \max}$ 和 $\Delta p = 350$ bar 时的功率	$P_{\max}$	kW	128	159	186	236
$V_{g \max}$ 和 $\Delta p = 350$ bar 时的扭矩	$T_{\max}$	Nm	521	724	808	1075
转动刚度 Rotary stiffness	Z 轴	Nm/rad	199601	302495	302495	346190
	P 轴	Nm/rad	196435	312403	312403	383292
	S 轴	Nm/rad	173704	236861	236861	259773
	T 轴	Nm/rad	—	—	—	301928
转子组的转动惯量 Moment of inertia for rotary group	J_{rw}	kgm ²	0.0173	0.0318	0.0341	0.055
最大角加速度 ⁽¹⁾ Angular acceleration, max. ⁽¹⁾	a	rad/s ²	13000	10500	9000	6800
加注容量 Filling capacity	V	L	2.1	2.9	2.9	3.8
质量 (近似值) Mass (approx)	m	kg	53	66	76	95

规格 Size	A11VO (带有加注泵)		130	145	190
排量 Displacement	$V_{g \max}$	cm ³	130	145	193
	$V_{g \min}$	cm ³	0	0	0
转速 Speed $V_{g \max}^{(2)}$ 时的最大值	$n_{\max}$	rpm	2500	2500	2500
$V_g \leq V_{g \max}^{(3)}$ 时的最大值	$n_{\max 1}$	rpm	2500	2500	2500
$n_{\max}$ 和 $V_{g \max}$ 时的流量	$q_{v \max}$	L/min	325	363	483
$q_{v \max}$ 和 $\Delta p = 350$ bar 时的功率	$P_{\max}$	kW	190	211	281
$V_{g \max}$ 和 $\Delta p = 350$ bar 时的扭矩	$T_{\max}$	Nm	724	808	1075
转动刚度 Rotary stiffness	Z 轴	Nm/rad	302495	302495	346190
	P 轴	Nm/rad	312403	312403	383292
	S 轴	Nm/rad	236861	236861	259773
	T 轴	Nm/rad	—	—	301928
转子组的转动惯量 Moment of inertia for rotary group	J_{rw}	kgm ²	0.0337	0.036	0.0577
最大角加速度 ⁽¹⁾ Angular acceleration, max. ⁽¹⁾	a	rad/s ²	10500	9000	6800
加注容量 Filling capacity	V	L	2.9	2.9	3.8
质量 (近似值) Mass (approx)	m	kg	72	73	104

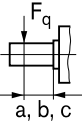
- 1) 数值适用于绝对压力 (p_{abs}) 1 bar 下的吸油口 S 和矿物质液压流体。
 - 2) 数值适用于绝对压力 (p_{abs}) 至少 0.8 bar 下的吸油口 S 和矿物质液压流体。
 - 3) 数值适用于 $V_g \leq V_{g \max}$ 或吸油口 S 的入口压力 p_{abs} 增加情况下 (参见第 6 页的图表)
 - 4) - 有效区域在 0 和最大允许转速之间。
- 它适用于外部激励 (例如发动机转动频率为原来 2-8 倍, 万向节轴转动频率为原来两倍)。
- 极限值仅适用于单级泵。
 - 必须考虑连接件上的负载。

小心: 超过允许的限值可能导致轴向柱塞元件功能损失、使用寿命缩短或部件损坏。允许值可以通过计算确定。

技术参数 Technical Data

传动轴的允许轴向和径向负载 Permissible radial and axial loading on drive shaft
所述数值为最大值，不允许用于连续运行。

The values stated are maximum data and not permissible for continuous operation

规格 Size			规格 Size	95	130	145	190
最大径向力， 距离为a、b、c (距轴肩) Radial force, max. at distance a, b, c(from shaft collar)		$F_{q \max}$	N	8000	11000	11000	16925
		a	mm	20	22.5	22.5	26
		$F_{q \max}$	N	6334	8594	8594	13225
		B	mm	35	40	40	46
		$F_{q \max}$	N	5242	7051	7051	10850
		c	mm	50	57.5	57.5	66
最大轴向力 Axial force, max.		$\pm F_{ax \max}$	N	3500	4800	4800	6000

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

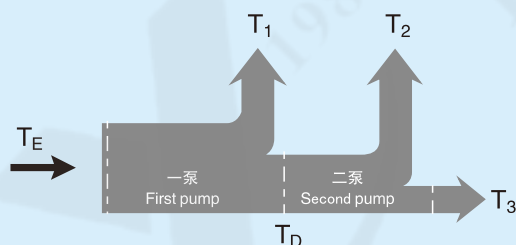
规格 Size		规格 Size	95	130	145	190
扭矩 Torque (在 $V_g \max$ 和 $\Delta p = 350 \text{ bar}^{1)}$)	$T_{\max}$	Nm	521	724	808	1075
最大输入扭矩 ²⁾ 在 P 轴端轴键 DIN 6885 Input torque, max. ²⁾ at shaft end P Shaft key DIN 6885	$T_{E \text{ perm}}$	Nm	1044	1448	1448	2226
			$\phi 45$	$\phi 50$	$\phi 50$	$\phi 55$
在 Z 轴端 DIN 5480 at Z shaft end DIN 5480	$T_{E \text{ perm}}$	Nm	2190	3140	3140	3140
			W45	W50	W50	W50
在 S 轴端 at S shaft end ANSI B92.1a-1976 (SAE J744)	$T_{E \text{ perm}}$	Nm	1640	1640	1640	1640
			1 3/4 in	1 3/4 in	1 3/4 in	1 3/4 in
在 T 轴端 at T shaft end ANSI B92.1a-1976 (SAE J744)	$T_{E \text{ perm}}$	Nm	—	—	—	2670
			—	—	—	2 in
最大通轴驱动扭矩 ³⁾ Through drive torque, max. ³⁾	$T_{D \text{ perm}}$	Nm	822	1110	1110	1760

1) 没有考虑效率 Efficiency not considered

2) 用于没有径向力的驱动轴 For drive shafts with no radial force

3) 注意轴 S 的最大输入扭矩 Observe max. input torque for shaft S

扭矩分布 Torque Distribution



确定公称值

$$\text{流量 } q_v = \frac{V_g \cdot n \cdot \eta_v}{1000} \quad \text{l/min}$$

$$\text{扭矩 } T = \frac{V_g \cdot \Delta p}{20 \cdot \pi \cdot \eta_{mh}} \quad \text{Nm}$$

$$\text{功率 } P = \frac{2 \pi \cdot T \cdot n}{60,000} = \frac{q_v \cdot \Delta p}{600 \cdot \eta_t} \quad \text{kW}$$

V_g = 每转排量 (cm³)

Δp = 压差 (bar)

n = 转速 (rpm)

η_v = 容积效率

η_{mh} = 机械 - 液压效率

η_t = 总效率 ($\eta_t = \eta_v \cdot \eta_{mh}$)

LR- 功率控制 Power Control

功率控制器根据工作压力调节泵的排量，从而在恒定传动速度下不会超过规定的驱动功率。
The power control regulates the displacement of the pump depending on the operating pressure so that a given drive power is not exceeded at constant drive speed.

$$p_B \cdot V_g = \text{常数 Constant}$$

$$p_B = \text{工作压力 operating pressure}$$
$$V_g = \text{排量 displacement}$$

使用双曲线特性的精确控制能够实现可用功率的最佳利用。
The precise control with a hyperbolic control characteristic, provides an optimum utilization of available power.

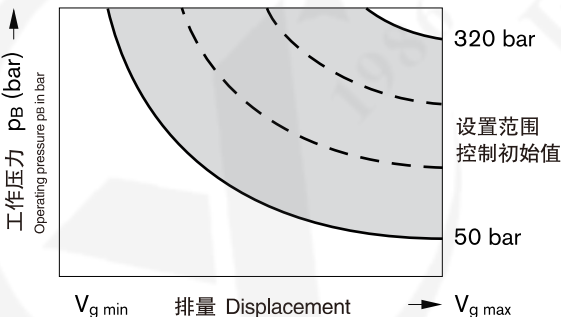
工作压力通过测量活塞作用于摇杆。外部可调的弹簧力与此相抵消，它决定功率设置。
The operating pressure acts on a rocker via a measuring piston. An externally adjustable spring force counteracts this, it determines the power setting.

如果工作压力超过弹簧的设置力，摇杆驱动控制阀且泵转回(朝向 $V_{g \min}$)。摇杆长度缩短，工作压力的增加量与排量的降低量相同，同时不会超过驱动功率 ($p_B \cdot V_g = \text{常数}$)。
If the operating pressure exceeds the set spring force, the control valve is actuated by the rocker, the pump swivels back (direction $V_{g \min}$). The lever length at the rocker is shortened and the operating pressure can increase at the same rate as the displacement decreases without the drive powers being exceeded ($p_B \cdot V_g = \text{constant}$).

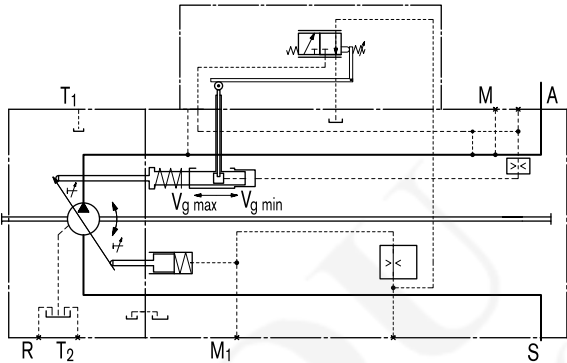
液压输出功率 (LR 特性) 受泵效率的影响。
The hydraulic output power (characteristic LR) is influenced by the efficiency of the pump.

按顺序用明文说明 State in clear text in the order:
– 驱动功率 P (kW) – drive power P in kW
– 传动速度 n (rpm) – drive speed n in rpm
– 最大流量 $q_{v \max}$ (l/min) – max. flow $q_v \max$ in l/min

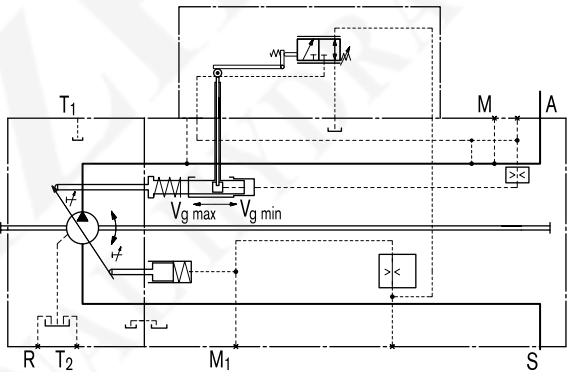
注明详细要求后，我们的电脑可生成功率图。
After clarifying the details a power diagram can be created by our computer.



Lr油路图 Circuit diagram LR
规格 Size 40……145



规格 Size 190……260



LR- 功率控制 Power Control

LRD 带有压力切断的功率控制 LRD Power control with pressure cut-off

当达到压力设置时，压力切断对应将泵排量调节回 $V_{g\min}$ 的压力控制。

The pressure cut-off corresponds to a pressure control which adjusts the pump displacement back to $V_{g\min}$, when the pressure setting is reached.

该功能越权控制功率控制，即低于预置压力值时，功率功能生效。

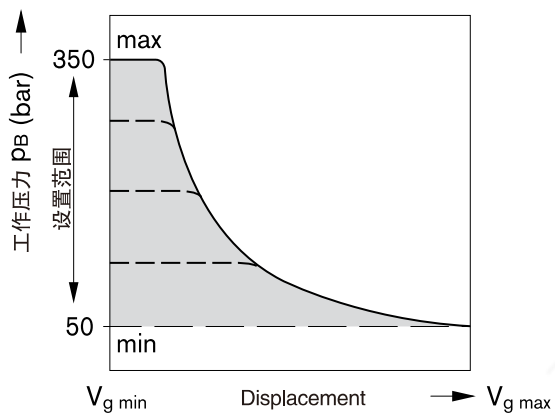
This function overrides the power control, i.e. below the preset pressure value, the power function is effective.

压力切断功能集成在泵控制模块中，并在出厂前预置到规定值。

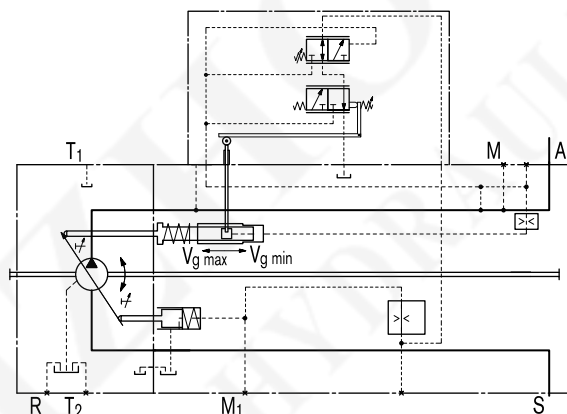
The pressure cut-off function is integrated into the pump control module and is preset to a specified value at the factory.

设置范围从 50 到 350 bar Setting range from 50 to 350 bar

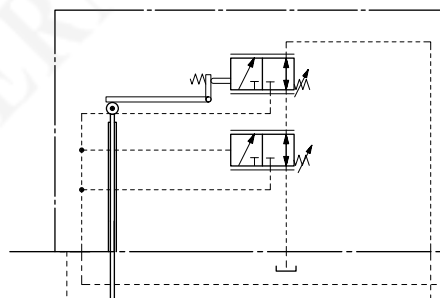
LRD 特性 Characteristic LRD



LR油路图 CIRCUIT DIAGRAM LR
规格 SIZE 40……145



规格 SIZE 190……260



LR- 功率控制 Power Control

LRDS 带有压力切断和负载感应的功率控制

LRDS Power control with pressure cut-off and load sensing

负载感应控制器是一个作为负载压力函数运行的流量控制选项，以根据执行机构流量需求调节泵排量。

The load sensing control is a flow control option that operates as a function of the load pressure to regulate the pump displacement to match the actuator flow requirement.

该流量取决于安装在泵出口和执行机构之间的外部感应节流孔 (1) 的横截面。该流量与低于功率曲线和压力切断设置以及泵控制范围内的负载压力无关。

The flow depends here on the cross section of the external sensing orifice (1) fitted between the pump outlet and the actuator. The flow is independent of the load pressure below the power curve and the pressure cut-off setting and within the control range of the pump.

感应节流孔通常为一个单独布置的负载感应方向阀 (控制块) 方向阀活塞的位置决定了感应节流孔的开口横截面，从而决定了泵的流量。

The sensing orifice is usually a separately arranged load sensing directional valve (control block). The position of the directional valve piston determines the opening cross section of the sensing orifice and thus the flow of the pump.

负载感应控制比较感应节流孔前后的压力，并维持通过孔的压降 (压差 Δp)，从而使泵流量保持恒定。

The load sensing control compares pressure before and after the sensing orifice and maintains the pressure drop across the orifice (differential pressure Δp) and with it the pump flow constant.

如果感应孔处的压差 Δp 增大，泵则转回 (朝向 $V_{g \min}$)，而如果压差 Δp 减小，则泵转出 (朝向 $V_{g \max}$)，直到阀内感应孔上的压降恢复。

If the differential pressure Δp increases at the sensing orifice, the pump is swivelled back (towards $V_{g \min}$), and, if the differential pressure Δp decreases, the pump is swivelled out (towards $V_{g \max}$) until the pressure drop across the sensing orifice in the valve is restored.

$$\Delta p_{\text{孔}} = p_{\text{泵}} - p_{\text{执行器}} \quad \Delta p_{\text{orifice}} = p_{\text{pump}} - p_{\text{actuator}}$$

Δp 的设置范围在 14 bar 和 25 bar 之间。

The setting range for Δp is between 14 bar and 25 bar.

标准压差设置为 18 bar。(订购时，请以明文形式注明)。

The standard differential pressure setting is 18 bar. (Please state in clear text when ordering).

零行程运行 (感应节流孔堵上) 时的备用压力略高于 Δp 设置值。

The stand-by pressure in zero stroke operation (sensing orifice plugged) is slightly above the Δp setting.

在标准 LS 系统中，压力切断装置集成在泵控制器中。在 LUDV (流量共用) 系统中，压力切断装置内置在 LUDV 控制模块中。

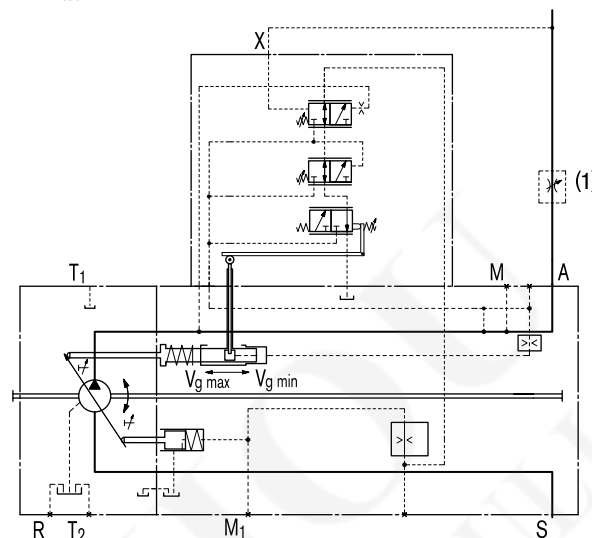
In a standard LS system the pressure cut-off is integrated in the pump control. In a LUDV (flow sharing) system the pressure cut-off is integrated in the LUDV control block.

(1) 感应节流孔 (控制块) 不在泵供应范围内。

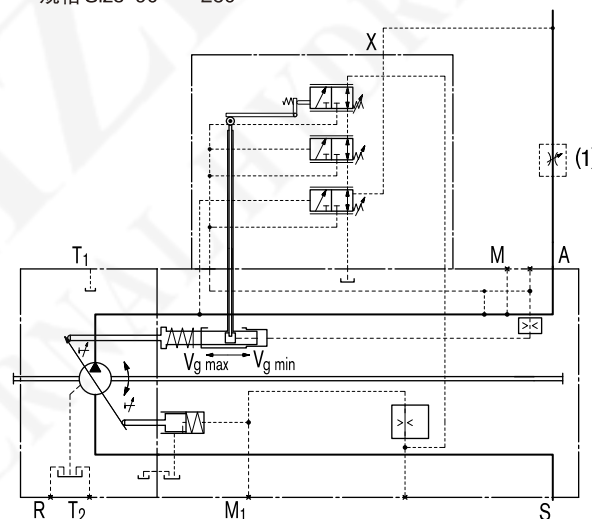
(1) The sensing orifice (control block) is not included in the pump supply.

LR油路图 Circuit diagram LR

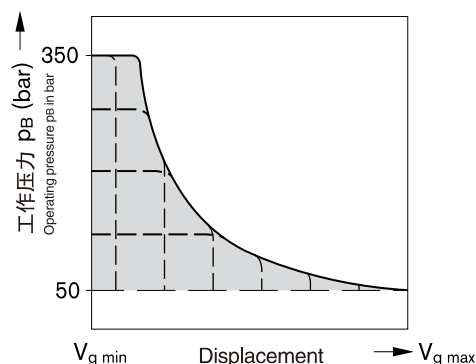
规格 Size 40.....145



规格 Size 90.....260



特性 LRDS Characteristic LRDS



LR- 功率控制 Power Control

LR... 带行程限位器的功率控制 Power control with stroke limiter

行程限位器可用于在整个控制范围上连续改变或限制泵排量。排量使用作用至油口 Y 的先导压力 p_{st} (最大 40 bar) 在 LRH 中或通过作用至比例电磁铁的控制电流在 LRU 中设置。需要 12 V (U1) 或 24 V (U2) 的直流电来控制比例电磁铁。The stroke limiter can be used to vary or limit the displacement of the pump continuously over the whole control range. The displacement is set in LRH with the pilot pressure p_{st} (max. 40 bar) applied to port Y or in LRU by the control current applied to the proportional solenoid. A DC current of 12V (U1) or 24V (U2) is required to control the proportional solenoid.

功率控制超越行程限位器控制进行越权控制，即低于双曲线功率特性时，排量由控制电流或先导压力控制。当设置流量或负载压力超过功率特性时，功率控制越权控制并遵循双曲线特性减小排量。The power control overrides the stroke limiter control, i.e. below the hyperbolic power characteristic, the displacement is controlled by the control current or pilot pressure. When exceeding the power characteristic with a set flow or load pressure, the power control overrides and reduces the displacement following the hyperbolic characteristic.

为了允许泵排量控制从其起始位置 $V_{g\ max}$ 到 $V_{g\ min}$ 操作，电子行程限位器 LRU1/2 和液压行程限位器 LRH2/6 需要 30 bar 的最小控制压力。

To permit operation of the pump displacement control from its starting position $V_{g\ max}$ to $V_{g\ min}$, a minimum control pressure of 30 bar is required for the electric stroke limiter LRU1/2 and the hydraulic stroke limiter LRH2/6.

所需控制压力来自负载压力或外部施加给 G 油口的控制压力。The required control pressure is taken either from the load pressure, or from the externally applied control pressure at the G port.

为了确保在低工作压力下行程限位器也能工作，必须为油口 G 提供大约 30 bar 的外部控制压力。To ensure functioning of the stroke limiter even at low operating pressure, port G must be supplied with external control pressure of approx. 30 bar.

注意 Note:

如果没有在 G 处连接外部控制压力，应该拆卸梭阀。
If no external control pressure is connected at G, the shuttle valve must be removed.

注意 Note:

控制器中的弹簧复位装置并非安全设备

The spring return feature in the controller is not a safety device

控制器中的滑阀可能会被内部异物 (液压油杂质、系统组件磨损或沉积物) 卡在不确定位置。从而，轴向柱塞元件无法再供应操作员指定的流量。

The spool valve inside the controller can get stuck in an undefined position by internal contamination (contaminated hydraulic fluid, abrasion or residual contamination from system components). As a result, the axial piston unit can no longer supply the flow specified by the operator.

检查是否需要在您的机器上采取补救措施，以将驱动执行器移至安全位置 (如紧急停机)。

Check whether your application requires that remedial measures be taken on your machine in order to bring the driven consumer into a safe position (e.g. immediate stop).

DR – 压力控制 Pressure Control

即使在流量变化情况下，压力控制也能在其控制范围内保持液压系统内的压力稳定。变量泵只提供执行器所需的液压油。如果工作压力超过在内置压力控制阀中设置的设定点，泵排量自动摆回，直到压力偏差得到校正。

The pressure control keeps the pressure in a hydraulic system constant within its control range even under varying flow conditions.

The variable pump only moves as much hydraulic fluid as is required by the actuators. If the operating pressure exceeds the setpoint set at the integral pressure control valve, the pump displacement is automatically swivelled back until the pressure deviation is corrected.

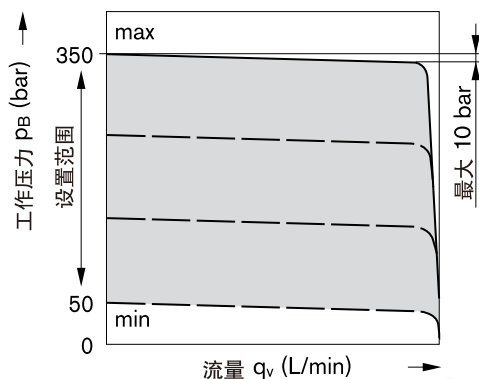
卸压状态的起始位置: $V_{g \max}$

Starting position in depressurized state: $V_{g \max}$

设置范围从 50 到 350 bar。

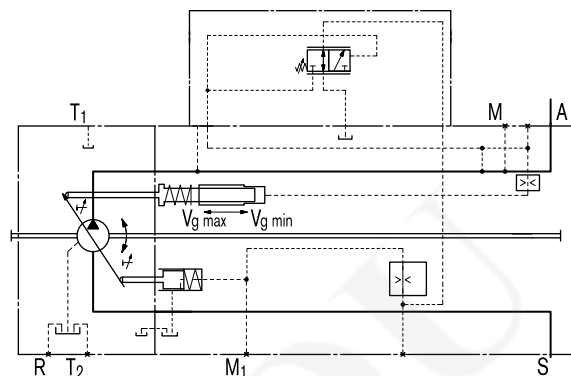
Setting range from 50 to 350 bar.

特性: DR Characteristic: DR

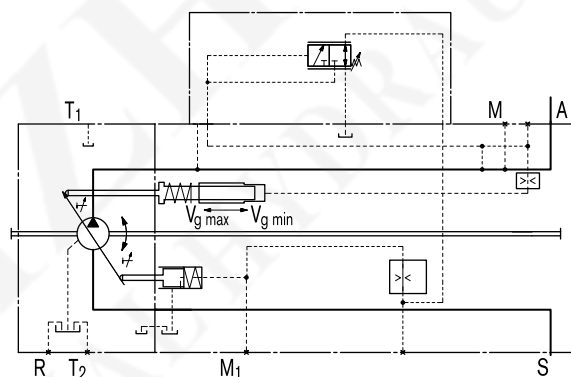


DR Circuit diagram DR

规格 Size 40……145



规格 Size 190……260



DR- 功率控制 Power Control

DRS 带负载感应的压力控制
DRS Pressure control with load sensing

负载感应控制器是一个作为负载压力函数运行的流量控制选项，以根据执行机构流量需求调节泵排量。
The load sensing control is a flow control option that operates as a function of the load pressure to regulate the pump displacement to match the actuator flow requirement.

该流量取决于安装在泵出口和执行机构之间的外部感应节流孔 (1) 的横截面。该流量与低于压力切断设置以及泵控制范围内的负载压力无关。
The flow depends here on the cross section of the external sensing orifice (1) fitted between the pump outlet and the actuator. The flow is independent of the load pressure below the pressure cut-off setting and within the control range of the pump.

感应节流孔通常为一个单独布置的负载感应方向阀 (控制块) 方向阀活塞的位置决定了感应节流孔的开口横截面，从而决定了泵的流量。
The sensing orifice is usually a separately arranged load sensing directional valve (control block). The position of the directional valve piston determines the opening cross section of the sensing orifice and thus the flow of the pump.

负载感应控制比较感应节流孔前后的压力，并维持通过孔的压降 (压差 Δp)，从而使泵流量保持恒定。
The load sensing control compares pressure before and after the sensing orifice and maintains the pressure drop across the orifice (differential pressure Δp) and with it the pump flow constant.

如果感应孔处的压差 Δp 增大，泵则转回 (朝向 $V_{g\ min}$)，而如果压差 Δp 减小，则泵转出 (朝向 $V_{g\ max}$)，直到阀内感应孔上的压降恢复。
If the differential pressure Δp increases at the sensing orifice, the pump is swivelled back (towards $V_{g\ min}$), and, if the differential pressure Δp decreases, the pump is swivelled out (towards $V_{g\ max}$) until the pressure drop across the sensing orifice in the valve is restored.

$\Delta p_{孔} = p_{泵} - p_{执行器}$ $\Delta p_{orifice} = p_{pump} - p_{actuator}$

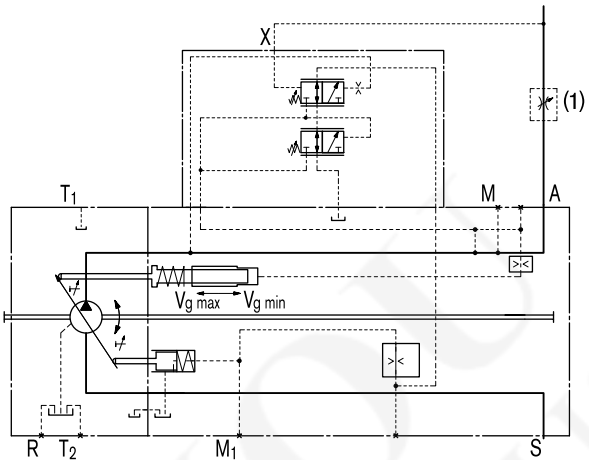
Δp 的设置范围在 14 bar 和 25 bar 之间。
The setting range for Δp is between 14 bar and 25 bar.

标准压差设置为 18 bar。(订购时，请以明文形式注明)。
The standard differential pressure setting is 18 bar. (Please state in clear text when ordering).

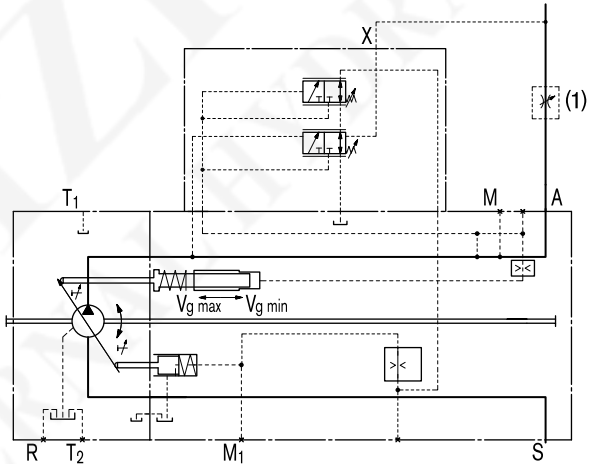
零行程运行 (感应节流孔堵上) 时的备用压力略高于 Δp 设置值。
The stand-by pressure in zero stroke operation (sensing orifice plugged) is slightly above the Δp setting.

(1) 感应节流孔 (控制块) 不在泵供应范围内。
(1) The sensing orifice (control block) is not included in the pump supply.

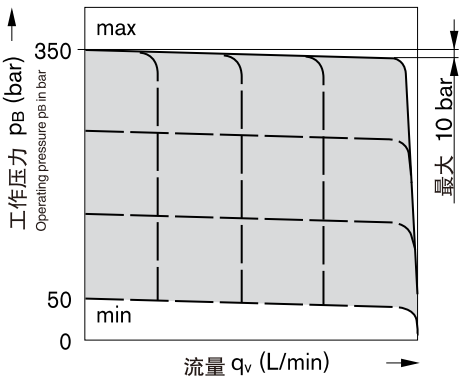
LR油路图 Circuit diagram LR
规格 Size 40.....145



规格 Size 190.....260



特性: DRS Characteristic DRS



DR – 压力控制 Pressure Control

DRG 远程压力控制

DRG Pressure control, remote controlled

远程控制压力切断调节器可以通过远程安装的压力阀 (1) 调节压力设置。此阀的先导流量通过控制模块中的固定节流孔提供。

The remote control pressure cut-off regulator permits the adjustment of the pressure setting by a remotely installed pressure relief valve (1). Pilot flow for this valve is provided by a fixed orifice in the control module.

设置范围从 50 到 350 bar。

Setting range from 50 to 350 bar.

此外，通过外部安装的 2/2 路方向阀 (2) 可以将泵卸载到备用压力状态。

In addition the pump can be unloaded into a standby pressure condition by an externally installed 2/2-way directional valve (2).

两个功能可以单独使用或组合使用 (参见油路图)。

Both functions can be used individually or in combination (see circuit diagram).

外部阀没有随泵一起供应。

The external valves are not included in the pump supply.

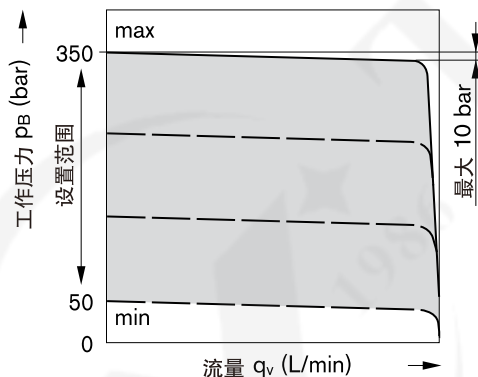
作为独立的压力阀 (1)，我们推荐：

DBDH 6 (手动控制)，参见 RC 25402

As a separate pressure relief valve (1) we recommend:

DBDH 6 (manual control), see RE 25402

特性: DRG Characteristic: DRG

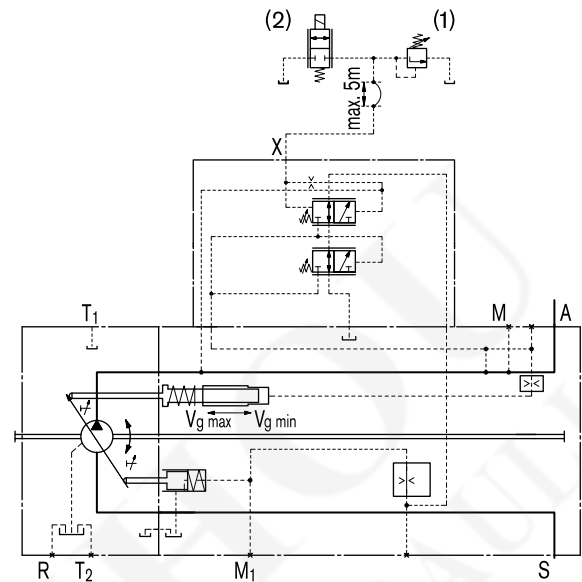


注意：远程控制压力切断也可以与 LR、HD 和 EP 组合。

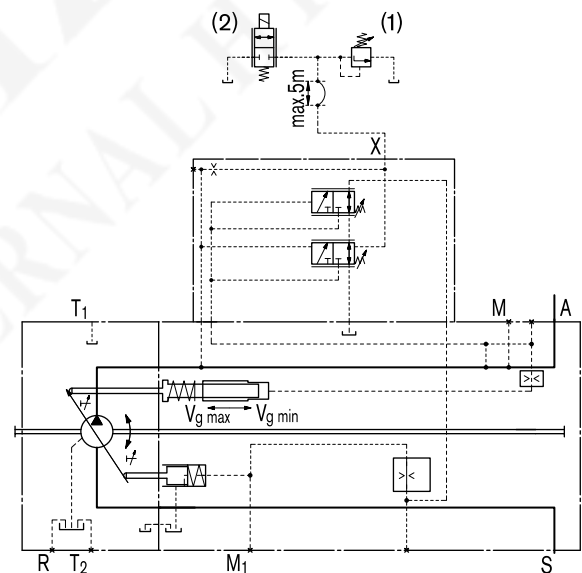
Note: The remote controlled pressure cut-off is also possible in combination with LR, HD and EP.

DRG Circuit diagram DRG

规格 Size 40……145



规格 Size 190……260



EP – 带比例电磁铁的电气控制
EP – Electric Control with Proportional Solenoid

通过带有比例电磁铁的电子控制，与电磁铁电流成比例调节泵排量，从而产生磁控制力，直接作用到先导泵控制柱塞的控制阀心上。
With the electric control with proportional solenoid, the pump displacement is adjusted proportionally to the solenoid current, resulting in a magnetic control force, acting directly onto the control spool that pilots the pump control piston.

从 $V_{g\min}$ 至 $V_{g\max}$ 的控制 Control from $V_{g\min}$ to $V_{g\max}$

随着控制电流的增加，泵调节至较大排量。
With increasing control current the pump swivels to a higher displacement.

- 不带控制信号的起始位置(控制电流):
- 在工作压力和外部控制压力 < 30 bar 时: $V_{g\max}$
 - 在工作压力或外部控制压力 > 30 bar 时: $V_{g\min}$
- Starting position without control signal (control current):
- at operating pressure and external control pressure < 30 bar: $V_{g\max}$
 - at operating pressure or external control pressure > 30 bar: $V_{g\min}$

将泵从其初始位置 $V_{g\max}$ 移至 $V_{g\min}$ 需要 30 bar 的控制压力。
A control pressure of 30 bar is required to swivel the pump from its starting position $V_{g\max}$ to $V_{g\min}$.

所需控制压力来自负载压力或外部施加给 G 油口的控制压力
为了确保即使在低工作压力 (< 30 bar) 下也可进行控制，必须对油口 G 施加约 30 bar 的外部控制压力。
The required control pressure is taken either from the load pressure, or from the externally applied control pressure at port G. To ensure the control even at low operating pressure < 30 bar the port G must be supplied with an external control pressure of approx. 30 bar.

注意 Note:
如果在 G 没有连接外部控制压力，应该拆卸梭阀。
If no external control pressure is connected at G, the shuttle valve must be removed.

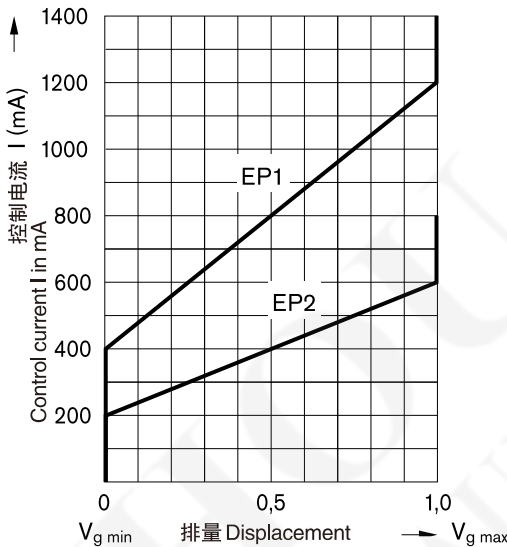
注意 Note:
只有当使用矿物液压油和油箱中的油温为最大 80℃ 时才能在油箱中安装带有 EP 控制的泵。
Install pump with EP control in the oil tank only when using mineral hydraulic oils and an oil temperature in the tank of max. 80℃.

提供下列电子控制单元和放大器来启动比例电磁铁(也可参见 www.boschrexroth.com/mobileelektronik):
The following electronic control units and amplifiers are available for actuating the proportional solenoids (see also www.boschrexroth.com/mobileelektronik):

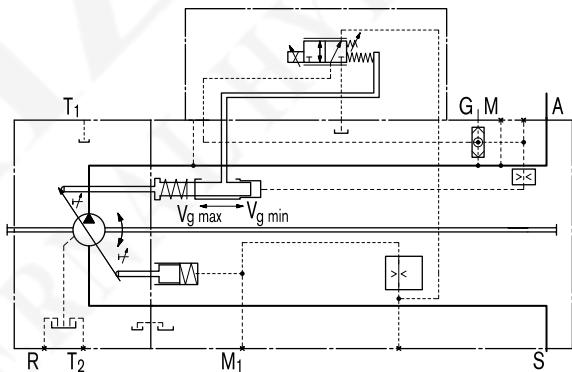
– BODAS 控制器 RC BODAS controller RC
系列 Series 20 _____ RD 95200
系列 Series 21 _____ RD 95201
系列 Series 22 _____ RD 95202
系列 Series 30 _____ RD 95203
和应用软件 and application software

– 模拟放大器 RA Analog amplifier R _____ RC 95230

EP1/2 特性 Characteristic EP1/2



EP1/2 油路图 Circuit diagram EP1/2
规格 Size 40 ... 260



技术数据，EP1、EP2 处的电磁铁
Technical data, solenoid at EP1, Ep2

	EP1	EP2
电压 Voltage	12 V (± 20 %)	24 V (± 20 %)
控制电流 Control current		
排量为 $V_{g\min}$ 时的控制初始值 Start of control at $V_{g\min}$	400mA	200mA
控制终止值(排量为 $V_{g\max}$ 时) End of control at $V_{g\max}$	1200mA	600mA
限制电流 Limiting current	1.54A	0.77A
公称电阻 (20℃ 时) Nominal resistance (at 20° C)	5.5Ω	22.7Ω
抖动频率 Dither frequency	100Hz	100Hz
启动时间 Actuated time	100%	100%

EP-带比例电磁铁的电气控制

EP - Electric Control with Proportional Solenoid

EP.D 带有压力切断的电子控制

EP.D Electric control with pressure cut-off

当达到压力设置时，压力切断对应将泵排量调节回 $V_{g\ min}$ 的压力控制。

The pressure cut-off corresponds to a pressure control which adjusts the pump displacement back to $V_{g\ min}$ when the pressure setting is reached.

该功能越权控制 EP 控制，即与排量控制有关的控制电流在低于设置压力下工作。

This function overrides the EP control, i.e. the control current related displacement control is functional below the pressure setting.

压力切断阀集成在控制壳体中，并在出厂前设置至固定的规定压力值。

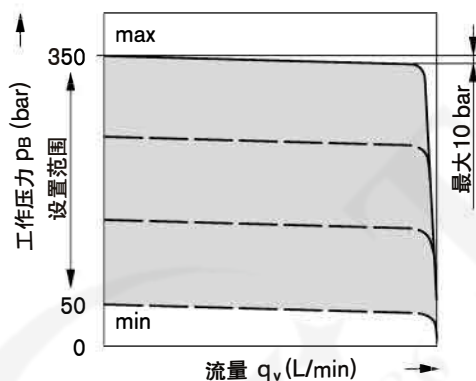
The valve for the pressure cut-off is integrated in the control case and is set to a fixed specified pressure value at the factory.

设置范围从 50 到 350 bar

Setting range from 50 to 350 bar

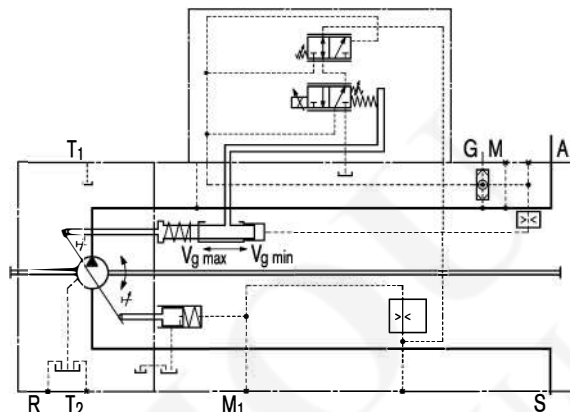
压力切断特性 D

Pressure cut-off characteristic D

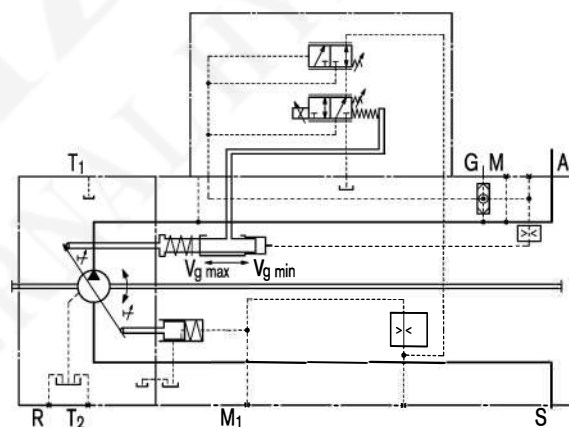


EP.D 油路图 Circuit diagram EP.D

规格 Size 40 ... 145



规格 Size 190.....260

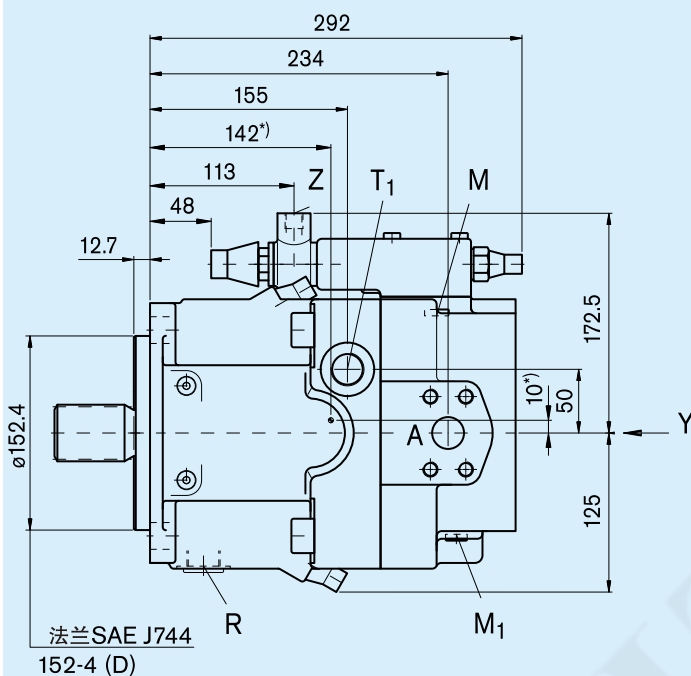


外形尺寸 规格 95 Dimensions size 95

LRDCS

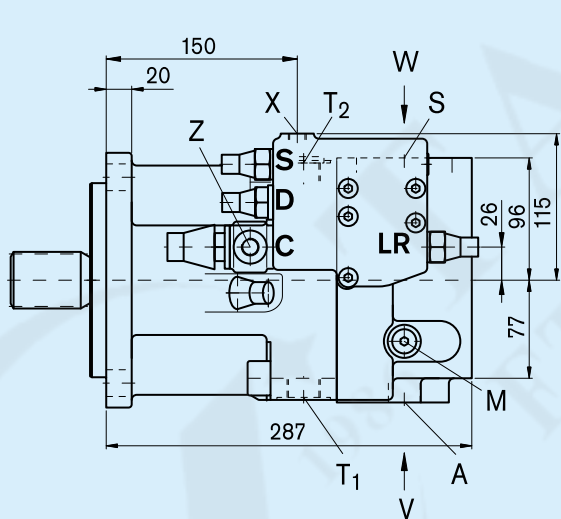
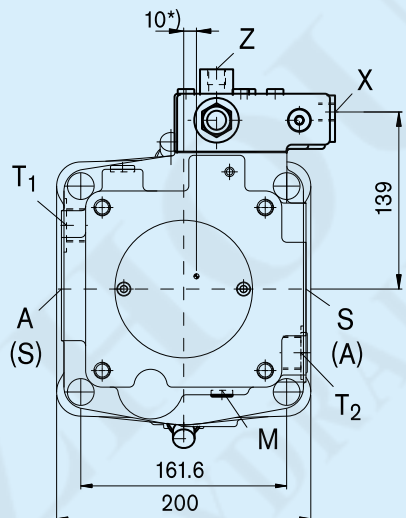
带有压力切断 D、交叉感应控制 C 和负载感应控制 S 的功率控制 LR

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S

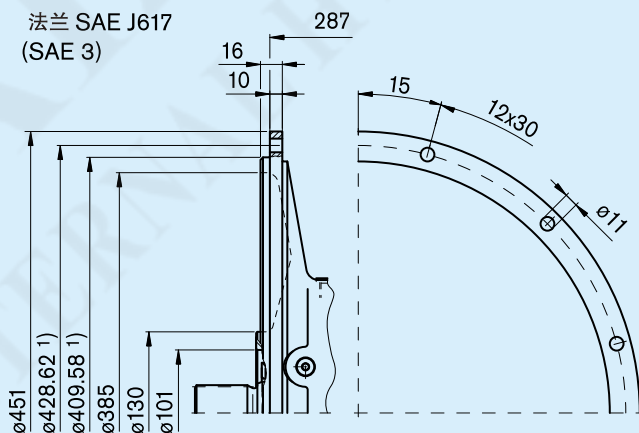


*) 重心
*) Center of gravity

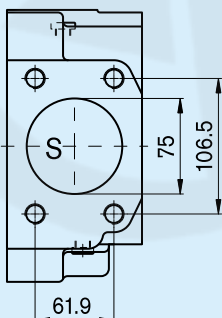
视图 Y View Y
顺时针旋转 clockwise rotation
(逆时针旋转) (counter-clockwise rotation)



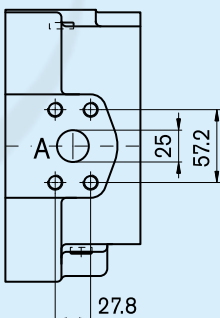
法兰 SAE J617
(SAE 3)



W 向局部视图



V 向局部视图



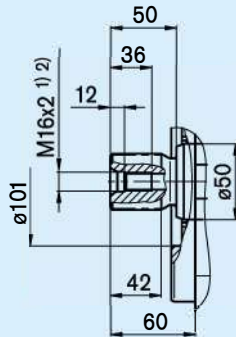
1) 符合 SAE J617-No. 3 的尺寸, 用于连接至内燃机的飞轮壳体

1) Dimensions according to SAE J617-No. 3, for connection to the flywheel case of the combustion engine

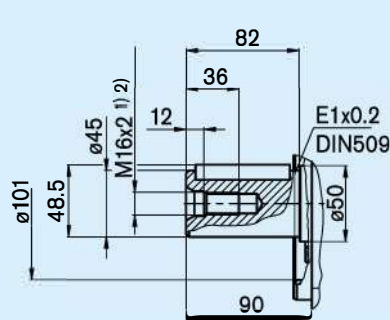
外形尺寸 规格 95 Dimensions size 95

轴端 Shaft ends

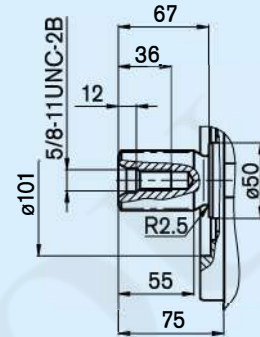
Z 符合 DIN 5480 的花键轴
W45x2x30x21x9g



P 符合 DIN 6885 的平键轴 -
As 14x9x80



S 花键轴 SAE J744
1 3/4 in, 13T 8/16DP³⁾



油口 Ports	标准 Standard	规格 Size ²⁾	最大压力(bar) ⁴⁾	状态 State
A 工作管路油口 Service line port 固定螺纹 Fixing thread	SAE J518 DIN 13	1 in M12x1.75; 17 (深)	400	O
S 吸油口 Suction port 固定螺纹 Fixing thread	SAE J518 DIN 13	3 in M16x2; 24 (深)	30	O
T ₁ T ₂ 回油口 Tank port	DIN 3852	M26x1.5; 16 (深)	10	5)
R 排气口 Air bleed	DIN 3852	M26x1.5; 16 (深)	10	X
M ₁ 测量点, 定位腔体 Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 (深)	400	X
M 测量点, 工作管路油口 Measurement point, service line port	DIN 3852	M12x1.5; 12 (深)	400	X
X 先导压力油口 在带有负载感应 (S) 和远程控制 压力 切断 (G) 的型号中	DIN 3852	M14x1.5; 12 (深)	400	O
Y 先导压力油口 在带有行程限位器 (H...), 2 级 压力 切断 (E) 和 HD 的型号中	DIN 3852	M14x1.5; 12 (深)	40	O
Z 先导压力油口 在带有交叉感应 (C) 和 功率越权控制 (LR3) 功率越权控制 (LG1) 的型号中	DIN 3852	M14x1.5; 12 (深)	400 40	O
G 控制压力 (控制器) 油口 在带有行程限位器 (H..., U2)、带 有螺纹管接头 GE10 - PLM 的 HD 和 EP 的型号中 (否则关闭)	DIN 3852	M14x1.5; 12 (深)	40	O

1) 符合 DIN 332 标准的中心孔 (符合 DIN 13 标准的螺纹)

2) 有关最大紧固扭矩, 具体情况请参见第140 页上的一般说明

3) ANSI B92.1a-1976, 30° 压力角, 平齿根, 侧面配合, 公差等级 5

4) 根据调节数据和工作压力

5) 根据安装位置的不同, 必须连接 T1 或 T2

O = 打开, 必须连接 (交付时已堵上)

X = 关闭 (在正常运行中)

1) Center bore according to DIN 332 (thread acc. to DIN 13)

2) For max. tightening torque, please refer to general notes on page 140

3) ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

4) Depending on adjustment data and operating pressure

5) Depending on installation position, T1 or T2 must be connected

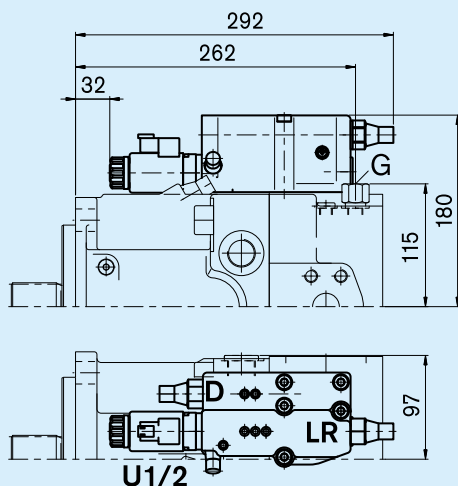
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

外形尺寸 规格 95 Dimensions size 95

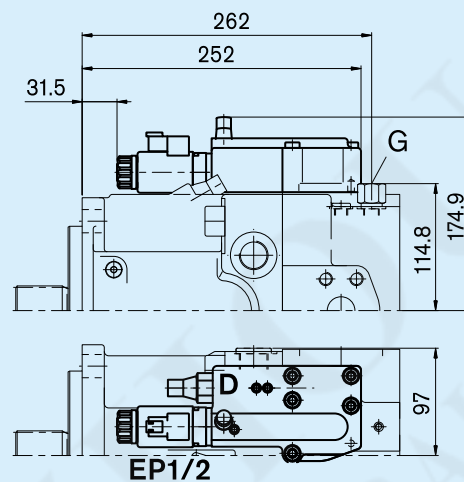
LRDU1/LRDU2

带有压力切断和电子行程限位器的功率控制 (正极特性)
Power control with pressure cut-off and electric stroke limiter (positive characteristic)



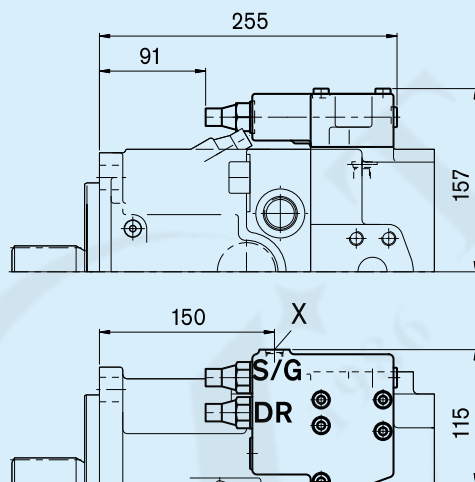
EP1D/EP2D

带有比例电磁铁和压力切断的电子控制
Electric control with proportional solenoid and pressure cut-off



DRS/DRG

带有负载感应控制的压力控制远程压力控制
Pressure control with load sensing control
Pressure control remote controlled



外形尺寸 规格 130/145 Dimensions size 130/145

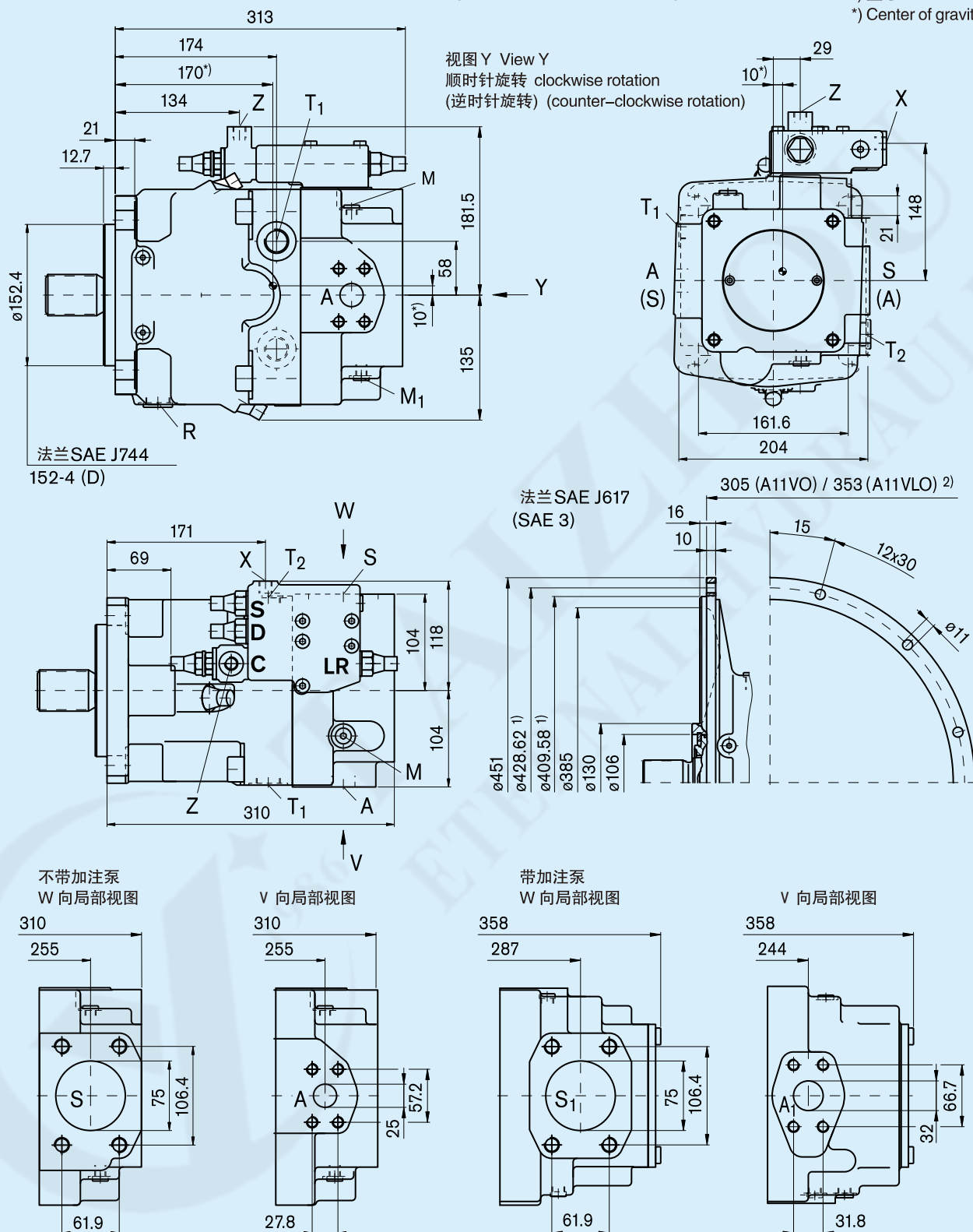
LRDCS

带有压力切断 D、交叉感应控制 C 和负载感应控制 S 的功率控制 LR

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S

*) 重心

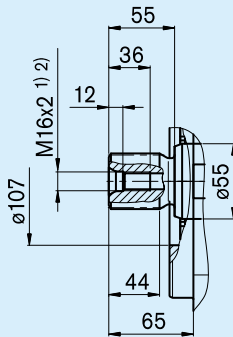
*) Center of gravity



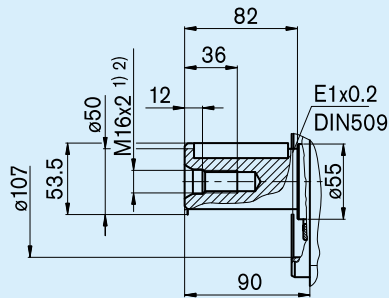
外形尺寸 规格 130/145 Dimensions size 130/145

轴端 Shaft ends

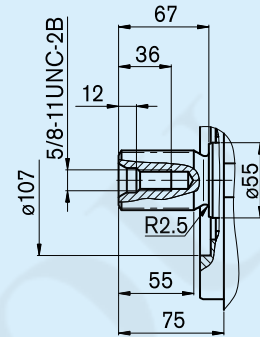
Z 符合 DIN 5480 的花键轴
W50x2x30x24x9g



P 符合 DIN 6885 的平键轴
AS14x9x80



S 花键轴 SAE J744
1 3/4 in, 13T 8/16DP³⁾



油口 Ports	标准 Standard	规格 Size ²⁾	最大压力(bar) ⁴⁾	状态 State
A 工作管路油口 Service line port 固定螺纹 Fixing thread	SAE J518 DIN 13	1 in M12x1.75; 17 (深)	400	O
A ₁ 工作管路油口 Service line port 固定螺纹 Fixing thread	SAE J518 DIN 13	1 1/4 in M14x2; 19 (深)	400	O
S 吸油口 Suction port S ₁ 固定螺纹 Fixing thread	SAE J518 DIN 13	3 in M16x2; 24 (深)	30 2 ⁶⁾	O
T ₁ T ₂ 回油口 Tank port	DIN 3852	M26x1.5; 16 (深)	10	5)
R 排气口 Air bleed	DIN 3852	M26x1.5; 16 (深)	10	X
M ₁ 测量点, 定位腔体 Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 (深)	400	X
M 测量点, 工作管路油口 Measurement point, service line port	DIN 3852	M12x1.5; 12 (深)	400	X
X 先导压力油口 在带有负载感应 (S) 和远程控制 压力 切断 (G) 的型号中	DIN 3852	M14x1.5; 12 (深)	400	O
Y 先导压力油口 在带有行程限位器 (H...), 2 级 压力 切断 (E) 和 HD 的型号中	DIN 3852	M14x1.5; 12 (深)	40	O
Z 先导压力油口 在带有交叉感应 (C) 和 功率越权控制 (LR3) 功率越权控制 (LG1) 的型号中	DIN 3852	M14x1.5; 12 (深)	400 40	O
G 控制压力 (控制器) 油口 在带有行程限位器 (H..., U2)、带 有螺纹管接头 GE10 – PLM 的 HD 和 EP 的型号中 (否则关闭)	DIN 3852	M14x1.5; 12 (深)	40	O

1) 符合 DIN 332 标准的中心孔 (符合 DIN 13 标准的螺纹)

2) 有关最大紧固扭矩, 具体情况请参见第140 页上的一般说明

3) ANSI B92.1a-1976, 30° 压力角, 平齿根, 侧面配合, 公差等级 5

4) 根据调节数据和工作压力

5) 根据安装位置的不同, 必须连接 T1 或 T2

6) 带加注泵

O = 打开, 必须连接 (交付时已堵上)

X = 关闭 (在正常运行中)

1) Center bore according to DIN 332 (thread acc. to DIN 13)

2) For max. tightening torque, please refer to general notes on page 140

3) ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

4) Depending on adjustment data and operating pressure

5) Depending on installation position, T1 or T2 must be connected with charge pump

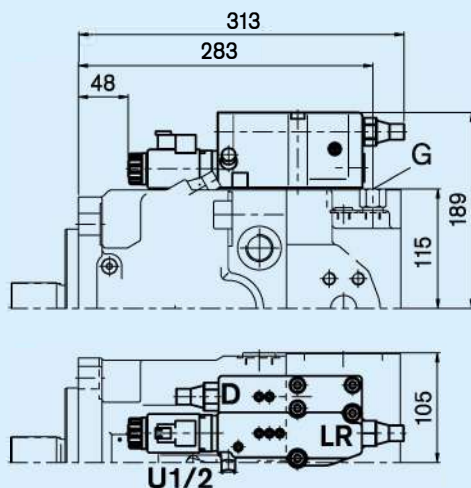
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

外形尺寸 规格 130/145 Dimensions size 130/145

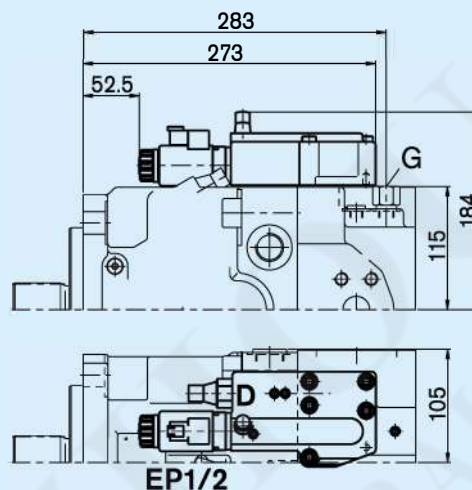
LRDU1/LRDU2

带有压力切断和电子行程限位器的功率控制 (正极特性)
Power control with pressure cut-off and electric stroke limiter
(positive characteristic)



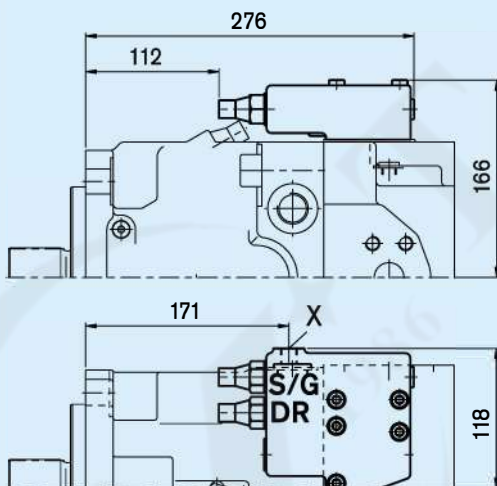
EP1D/EP2D

带有比例电磁铁和压力切断的电子控制
Electric control with proportional solenoid and pressure
cut-off



DRS/DRG

带有负载感应控制的压力控制远程压力控制
Pressure control with load sensing control
Pressure control remote controlled



外形尺寸 规格 190 Dimensions size 190

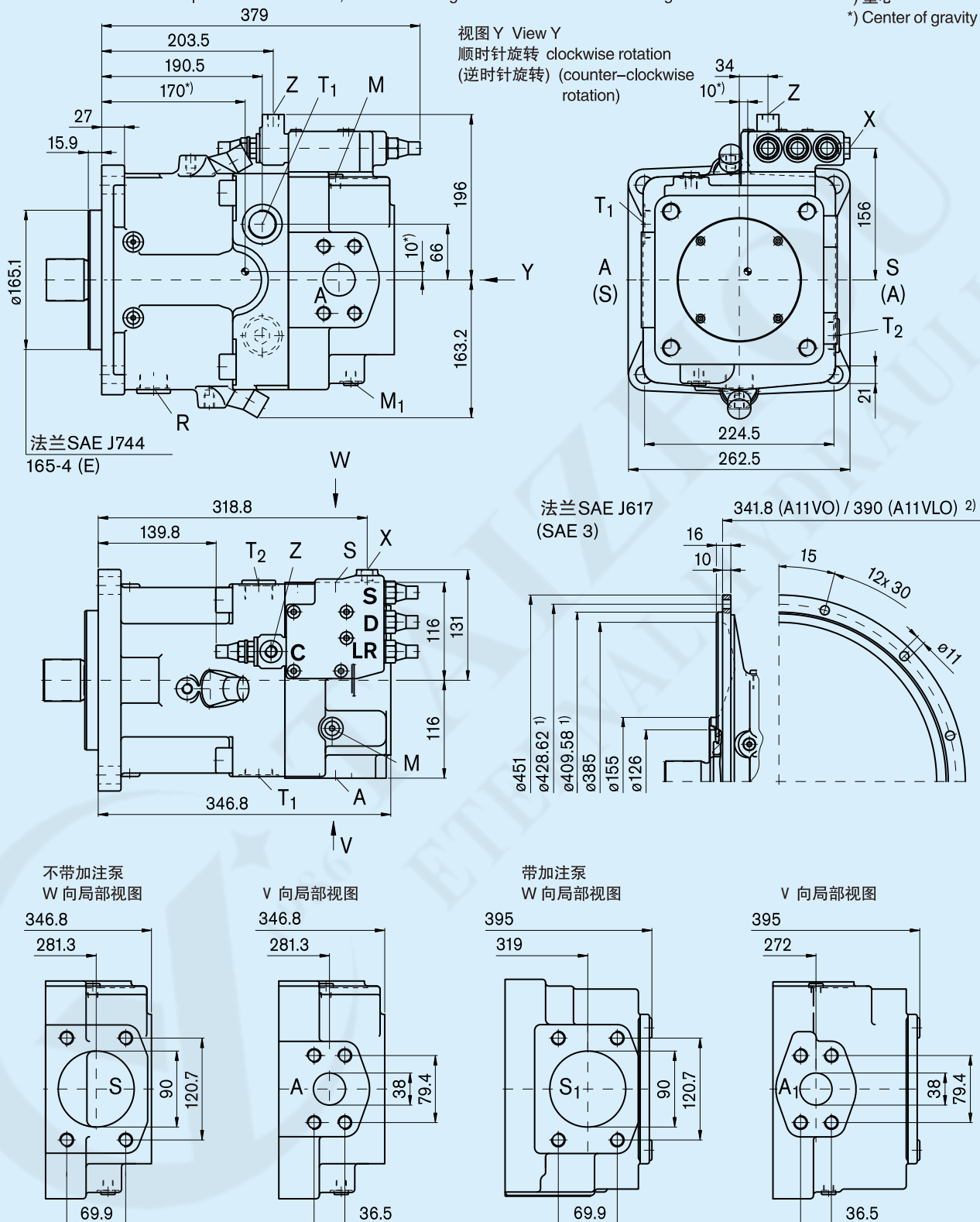
LRDCS

带有压力切断 D、交叉感应控制 C 和负载感应控制 S 的功率控制 LR

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S

*) 重心

*) Center of gravity



1) 符合 SAE J617-No. 3 的尺寸, 用于连接至内燃机的飞轮壳体

2) 带有法兰 SAE 3 的壳体或长度尺寸比标准壳体短 5 mm。

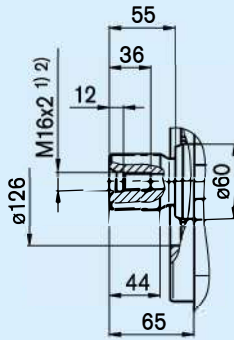
1) Dimensions according to SAE J617-No. 3, for connection to the flywheel case of the combustion engine

2) The case or length dimension with flange SAE 3 is 5 mm shorter than the standard case.

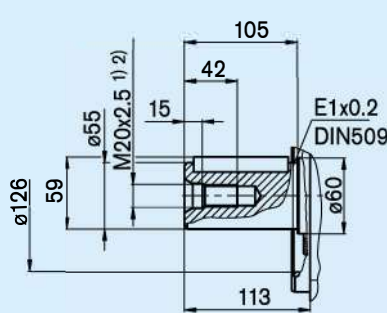
外形尺寸 规格 190 Dimensions size 190

轴端 Shaft ends

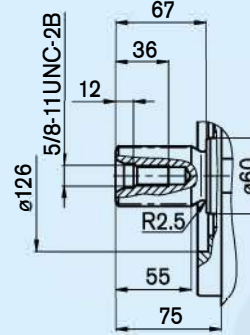
Z 符合 DIN 5480 的花键轴
W50x2x30x24x9g



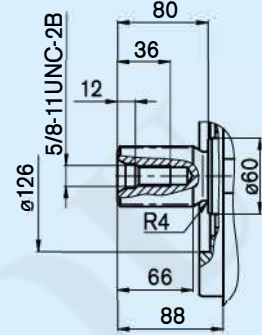
P 符合 DIN 6885 的平键轴,
AS16x10x100



S 花键轴 SAE J744
1 3/4 in, 13T 8/16DP



T 花键轴 SAE J744
2 in, 15T 8/16DP³⁾



油口 Ports	标准 Standard	规格 Size ²⁾	最大压力(bar) ⁴⁾	状态 State
A 工作管路油口 Service line port A ₁ 固定螺纹 Fixing thread	SAE J518 DIN 13	1 1/2 in M16x2; 21 (深)	400	O
S 吸油口 Suction port S ₁ 固定螺纹 Fixing thread	SAE J518 DIN 13	3 1/2 in M16x2; 24 (深)	30 2 ⁶⁾	O
T ₁ T ₂ 回油口 Tank port	DIN 3852	M33x2; 18 (深)	10	5)
R 排气口 Air bleed	DIN 3852	M33x2; 18 (深)	10	X
M ₁ 测量点, 定位腔体 Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 (深)	400	X
M 测量点, 工作管路油口 Measurement point, service line port	DIN 3852	M12x1.5; 12 (深)	400	X
X 先导压力油口 在带有负载感应 (S) 和远程控制 压力 切断 (G) 的型号中	DIN 3852	M14x1.5; 12 (深)	400	O
Y 先导压力油口 在带有行程限位器 (H...), 2 级 压力 切断 (E) 和 HD 的型号中	DIN 3852	M14x1.5; 12 (深)	40	O
Z 先导压力油口 在带有交叉感应 (C) 和 功率越权控制 (LR3) 功率越权控制 (LG1) 的型号中	DIN 3852	M14x1.5; 12 (深)	400 40	O
G 控制压力 (控制器) 油口 在带有行程限位器 (H..., U2)、带 有螺纹管接头 GE10 - PLM 的 HD 和 EP 的型号中 (否则关闭)	DIN 3852	M14x1.5; 12 (深)	40	O

1) 符合 DIN 332 标准的中心孔 (符合 DIN 13 标准的螺纹)

2) 有关最大紧固扭矩, 具体情况请参见第 140 页上的一般说明

3) ANSI B92.1a-1976, 30° 压力角, 平齿根, 侧面配合, 公差等级 5

4) 根据调节数据和工作压力

5) 根据安装位置的不同, 必须连接 T1 或 T2

6) 带加注泵

O = 打开, 必须连接 (交付时已堵上)

X = 关闭 (在正常运行中)

1) Center bore according to DIN 332 (thread acc. to DIN 13)

2) For max. tightening torque, please refer to general notes on page 140

3) ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

4) Depending on adjustment data and operating pressure

5) Depending on installation position, T1 or T2 must be connected

6) with charge pump

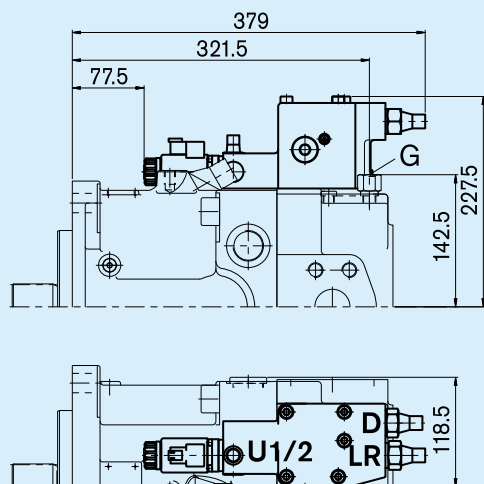
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

外形尺寸 规格 190 Dimensions size 190

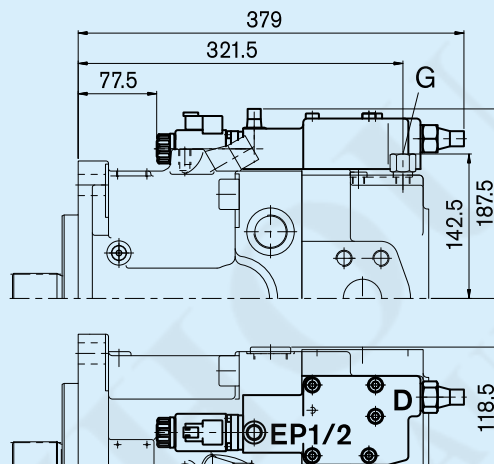
LRDU1/LRDU2

带有压力切断和电子行程限位器的功率控制 (正极特性)
Power control with pressure cut-off and electric stroke limiter
(positive characteristic)



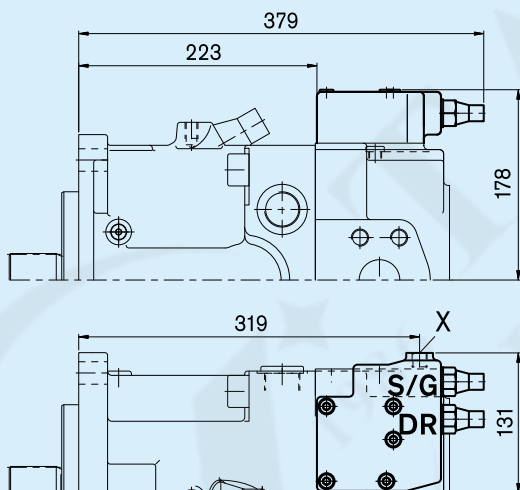
EP1D/EP2D

带有比例电磁铁和压力切断的电子控制
Electric control with proportional solenoid and pressure
cut-off



DRS/DRG

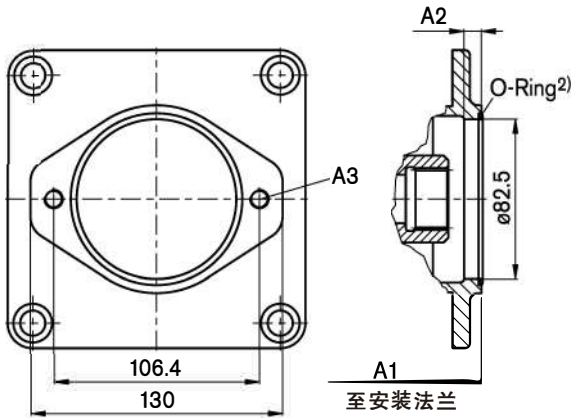
带有负载感应控制的压力控制远程压力控制
Pressure control with load sensing control
Pressure control remote controlled



通轴驱动尺寸 Through Drive Dimensions

法兰 SAE J744 - 82-2 (A)

用于花键轴的联轴器, 符合 ANSI B92.1a-1976



5/8 in, 9T 16/32 DP¹⁾ (SAE J744 - 16-4 (A))

K01

3/4 in, 11T 16/32 DP¹⁾ (SAE J744 - 19-4 (A-B))

K52

规格 Size	A1		A2	A3 ³⁾
	K01	K52		
40	240	240	8	M10x1.5; 15 (深)
60	257	257	-	M10x1.5; 15 (深)
75	275	275	-	M10x1.5; 15 (深)
95	306	306	-	M10x1.5; 12.5 (深)
130/145	329	329	-	M10x1.5; 12.5 (深)
130/145*	363	363	-	M10x1.5; 12.5 (深)
190	359.8	359.8	-	M10x1.5; 13 (深)
190*	394	394	-	M10x1.5; 13 (深)
260	385	385	-	M10x1.5; 13 (深)
260*	427.3	427.3	-	M10x1.5; 13 (深)

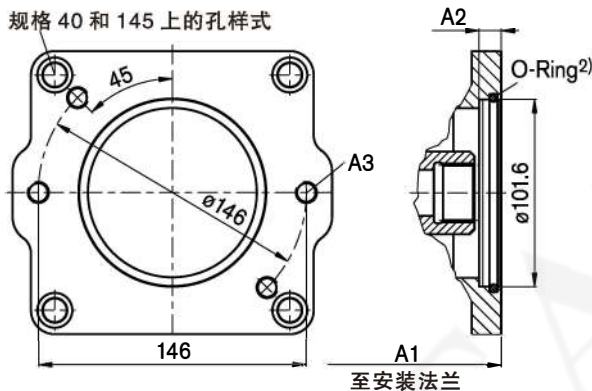
*) 带有加注泵的型号

法兰 SAE J744 - 101-2 (B)

用于花键轴的联轴器, 符合 ANSI B92.1a-1976

用于花键轴的联轴器, 符合 DIN 5480

规格 40 和 145 上的孔样式



在规格 190 和 260 中, 孔样板被逆时针转动 45°。

7/8 in, 13T 16/32 DP¹⁾ (SAE J744 - 22-4 (B))

K02

1 in, 15T 16/32 DP¹⁾ (SAE J744 - 25-4 (B-B))

K04

W35x2x30x16x9g

K79

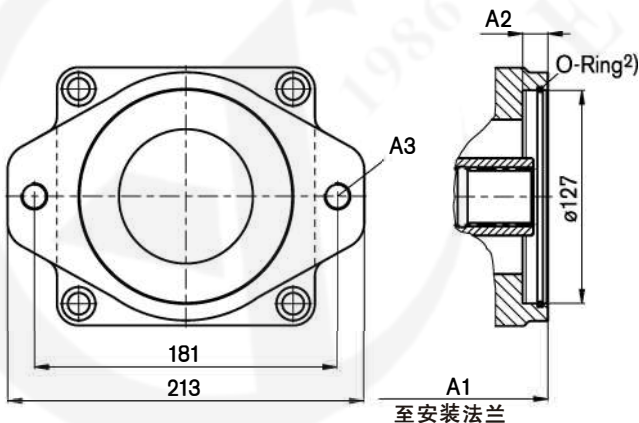
规格 Size	A1		A2	A3 ³⁾
	K02	K04	K79	
40	244	244	10	M12x1.75; 19 (深)
60	261	261	10	M12x1.75; 19 (深)
75	279	279	10	M12x1.75; 19 (深)
95	303	303	10	M12x1.75; 16 (深)
130/145	326	326	10	M12x1.75; 16 (深)
130/145*	360	360	10	M12x1.75; 16 (深)
190	371.8	369.8	361.8	M12x1.75; 15 (深)
190*	404	404	394	M12x1.75; 15 (深)
260	395	395	395	M12x1.75; 15 (深)
260*	437.5	437.5	437.5	M12x1.75; 15 (深)

*) 带有加注泵的型号

法兰 SAE J744 - 127-2 (C)

用于花键轴的联轴器, 符合 ANSI B92.1a-1976

用于花键轴的联轴器, 符合 DIN 5480



1 1/4 in, 14T 12/24 DP¹⁾ (SAE J744 - 32-4 (C))

K07

1 1/2 in, 17T 12/24 DP¹⁾ (SAE J744 - 38-4 (C-C))

K24

W30x2x30x14x9g

K80

W35x2x30x16x9g

K61

规格 Size	A1		A2	A3 ³⁾
	K07	K24	K80	K61
60	272	-	265	265
75	290	-	283	283
95	318	318	318	318
130/145	330	330	330	330
130/145*	364	364	364	364

*) 带有加注泵的型号

注意 Note:

安装法兰可以转动 90°。标准位置如图所示。如果需要请以明文形式注明。

The mounting flange may be turned through 90°. Standard position as illustrated. Please state in clear text if required.

1) 30° 压力角, 平齿根, 侧面配合, 公差等级 5 30° pressure angle, flat root, side fit, tolerance class 5

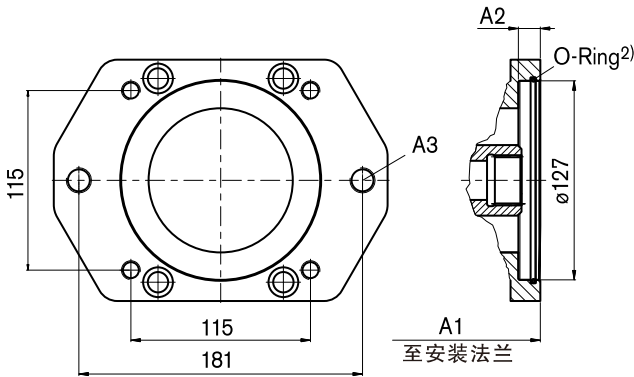
2) O 形环, 包含在交货范围内 O-ring included in the delivery contents

3) DINB, 有关最大紧固扭矩, 具体情况请参见第 140 页上的一般说明

DINB, For max. tightening torque, please refer to general notes on page 140

通轴驱动尺寸 Through Drive Dimensions

法兰 SAE J744-127-2+4 (A)
花键轴联轴器, 符合 ANSI B92.1a-1976
花键轴联轴器, 符合 DIN 5480

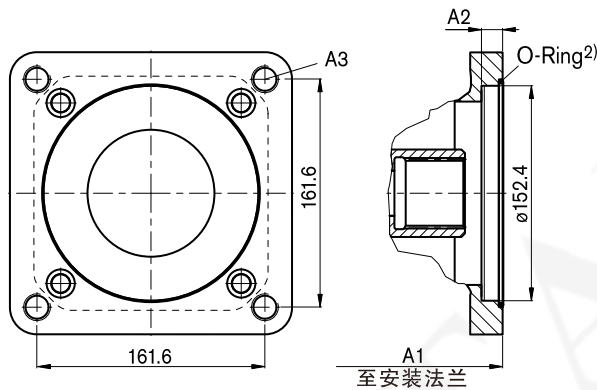


1 1/4 in, 14T 12/24 DP¹⁾ (SAE J744 - 32-4 (C)) K07
1 1/2 in, 17T 12/24 DP¹⁾ (SAE J744 - 38-4 (C-C)) K24
W30x2x30x14x9g K80
W35x2x30x16x9g K61

规格 Size	A1					A2	A3 ³⁾
	K07	K24	K80	K61			
190	367.8	367.8	367.8	367.8	13		M16x2; 19 (深)
190*	400	400	400	400	13		M16x2; 19 (深)
260	391.5	391.5	391.5	391.5	13		M16x2; 19 (深)
260*	433.5	433.5	433.5	43.5	13		M16x2; 19 (深)

*) 带有加注泵的类型

法兰 SAE J744-152-4 (D)
花键轴联轴器, 符合 ANSI B92.1a-1976
花键轴联轴器, 符合 DIN 5480

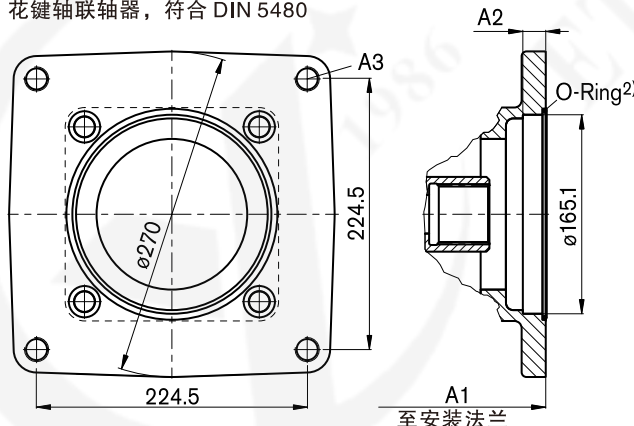


1 1/4 in, 14T 12/24 DP¹⁾ (SAE J744 - 32-4 (C)) K86
1 3/4 in, 13T 8/16 DP¹⁾ (SAE J744 - 44-4 (D)) K17
W40x2x30x18x9g K81
W45x2x30x21x9g K82
W50x2x30x24x9g K83

规格 Size	A1						A2	A3 ³⁾
	K86	K17	K81	K82	K83			
75	290	-	290	-	-	13		M20x2.5; 28 (深)
95	317	327	317	317	-	30		M20x2.5; 25 (深)
130/145	340	350	340	340	340	30		M20x2.5; 25 (深)
130/145*	374	384	374	374	374	30		M20x2.5; 25 (深)
190	392	392	392	392	392	13		M20x2.5; 22 (深)
190*	424	424	424	424	424	13		M20x2.5; 22 (深)
260	417	417	417	417	417	13		M20x2.5; 22 (深)
260*	459	459	459	459	459	13		M20x2.5; 22 (深)

*) 带有加注泵的类型

法兰 SAE J744-101-2 (E)
花键轴联轴器, 符合 ANSI B92.1a-1976
花键轴联轴器, 符合 DIN 5480



1 3/4 in, 13T 16/32 DP¹⁾ (SAE J744 - 32-4 (C)) K72
W50x2x30x24x9g K84
W60x2x30x28x9g K67

规格 Size	A1				A2	A3 ³⁾
	K72	K84	K67			
190	376.8	376.8	-	19		M20x2.5; 20 (深)
190*	409	409	-	19		M20x2.5; 20 (深)
260	417	400	400	19		M20x2.5; 20 (深)
260*	459	442.5	442.5	19		M20x2.5; 20 (深)

*) 带有加注泵的类型

注意 Note:

安装法兰可以转动 90°。标准位置如图所示。如果需要请以明文形式注明。

The mounting flange may be turned through 90°. Standard position as illustrated. Please state in clear text if required.

1) 30° 压力角, 平齿根, 侧面配合, 公差等级 5 30° pressure angle, flat root, side fit, tolerance class 5

2) O 形环, 包含在交货范围内 O-ring included in the delivery contents

3) DINB, 有关最大紧固扭矩, 具体情况请参见第140 页上的一般说明

DINB, For max. tightening torque, please refer to general notes on page 140

A11V(L)O 附件概述 Overview of Attachments for A11V(L)O

通轴驱动 法兰	A11VO 花键轴 联轴器	代码	附件 - 二泵							通轴驱动 可供货 用于规格
			A11VO 规格 (轴)	A10V(S) O/31 规格 (轴)	A10V(S) O/53 规格 (轴)	A4FO 规格 (轴)	A4VG 规格 (轴)	A10VG 规格 (轴)	外啮合 齿轮泵	
82-2 (A)	5/8 in	K01	—	18 (U)	10 (U)	—	—	—	机座大小 F 规格 4-22 ¹⁾	40...260
	3/4 in	K52	—	18 (S)	10 (S)	—	—	—	—	40...260
101-2 (B)	7/8 in	K02	—	28 (S, R) 45 (U)	28 (S, R) 45 (U, W)	16、22、28 (S)	—	18 (S)	机座大小 N 规格 20-32 ¹⁾ 机座大小 G 规格 38-45 ¹⁾	40...260
	1 in	K04	40 (S)	45 (S, R)	45 (S, R) 60 (U, W)	—	28 (S)	28、45 (S)	—	40...260
	W35	K79	40 (Z)	—	—	—	—	—	—	40...260
	—	—	—	—	—	—	—	—	—	—
127-2 (C)	1 1/4 in	K07	60 (S)	71 (S, R) 100 (U)	60 (S) ²⁾ 85 (U)	—	40、56 71 (S)	63 (S)	—	60...260
	1 1/2 in	K24	—	100 (S)	85 (S)	—	—	—	—	95...260
	W30	K80	—	—	—	—	40、56 (Z)	—	—	60...260
	W35	K61	60 (Z)	—	—	—	40、56 (A) 71 (Z)	—	—	60...260
152-4 (D)	1 1/4 in	K86	75 (S)	—	—	—	—	—	—	75...260
	1 3/4 in	K17	95、130 145 (S)	140 (S)	—	—	90、 125 (S)	—	—	130...260
	W40	K81	75 (Z)	—	—	—	125 (Z)	—	—	75...260
	W45	K82	95 (Z)	—	—	—	90、 125 (A)	—	—	95...260
	W50	K83	130、145 (Z)	—	—	—	—	—	—	130...260
165-4 (E)	1 3/4 in	K72	190、260 (S)	—	—	—	180、 250 (S)	—	—	190...260
	W50	K84	190 (Z)	—	—	—	180 (Z)	—	—	190...260
	W60	K67	260 (Z)	—	—	—	—	—	—	260

1) Rexroth 推荐特殊型号齿轮泵。具体情况请咨询。

2) 仅带有 4 孔安装法兰的 A10VO 可以安装至 A11V(L)O 190 和 260。

1) Rexroth recommends special versions of the gear pumps. Please ask.

2) Only A10VO with 4-hole mounting flange can be mounted to A11V(L)O 190 and 260.

组合泵 A11VO + A11VO Combination Pumps A11VO + A11VO

总长度 A¹⁾

A11VO	二泵									
一泵	规格 40	规格 60	规格 75	规格 95	规格 130/145	规格 130/145 ²⁾	规格 190	规格 190 ²⁾	规格 260	规格 260 ²⁾
规格 40	—	—	—	—	—	—	—	—	—	—
规格 60	490	507	—	—	—	—	—	—	—	—
规格 75	—	525	550	—	—	—	—	—	—	—
规格 95	528	560	577	604	—	—	—	—	—	—
规格 130/145	551	572	600	627	650	698	—	—	—	—
规格 130/145 ²⁾	585	606	634	661	684	732	—	—	—	—
规格 190	586.8	609.8	652	679	702	750	723.6	772.3	—	—
规格 190 ²⁾	619	642	684	711	734	782	755.8	804.5	—	—
规格 260	620	633.5	677	704	727	775	746.8	795.5	772	828
规格 260 ²⁾	662.5	675.5	719	746	769	817	789.3	838	814.5	870.5

1) 当使用用于连接泵 (二泵) 的 Z 轴 (花键轴 DIN 5480) 时

1) When using the Z shaft (splined shaft DIN 5480) for the attached pump (2nd pump)

2) 带有加注泵的型号 Version with charge pump

当订购组合泵时，

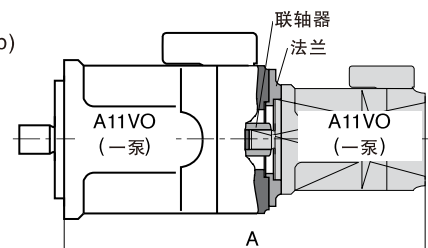
一泵和二泵的型号名称必须用 “+” 连接。

一泵订货代码 + 二泵订货代码

When ordering combination pumps, the type designations of the 1st and 2nd pumps must be connected by a "+".

Ordering code 1st pump + Ordering code 2nd pump

订货示例 Ordering example: A11VO130LRDS/10R-NZD12K61 + A11VO60LRDS/10R-NZC12N00



安装注意事项 Installation Notes

安全说明 General

在调试和运行过程中，轴向柱塞元件必须始终充满液压油并排放空气。在停用时间相对较长时，也应遵守上述注意事项，因为系统可能通过液压管路排空。

During commissioning and operation, the axial piston unit must be filled with hydraulic fluid and air bled. This is also to be observed following a relatively long standstill as the system may empty via the hydraulic lines.

外壳内的壳体泄油必须通过最高油箱油口 (T1、T2) 排放到油箱。油口 S 处的最小吸入压力不得降低到 0.8 bar 绝对压力 (不带加注泵) 或 0.6 bar (带有加注泵) 以下。

The case drain in the case interior must be directed to the tank via the highest tank port (T1, T2). The minimum suction pressure at port S must not fall below 0.8 bar absolute (without charge pump) or 0.6 bar (with charge pump).

在所有工况下，吸油管路和壳体泄油管路必须通入油箱中最低油位以下的位置。

In all operational conditions, the suction line and case drain line must flow into the tank below the minimum fluid level.

安装位置 Installation position

请参见以下示例。其它安装位置可应要求提供。

See examples below. Additional installation positions are available upon request.

在油箱下方安装 (标准)

泵低于油箱的最低油位。

建议的安装位置：1 和 2。

Below-tank installation (standard)

Pump below the minimum fluid level of the tank.

Recommended installation positions: 1 and 2.

在油箱上方安装

泵高于油箱的最低油位。

遵守最大允许吸油高度

$h_{s \max} = 800 \text{ mm}$ 。

型号 A11VLO (带有加注泵) 不是为安装在油箱上方而设计。

安装位置 7 建议 (轴朝上)：箱体泄油管路中的单向阀 (开启压力 0.5 bar) 可以防止壳体内部排放。

对于带有压力控制、排量限制器、HD 和 EP 控制的控制选装件，最小排量设置必须为 $V_g \geq 5\% V_{g \max}$ 。

Above-tank installation

Pump above the minimum fluid level of the tank.

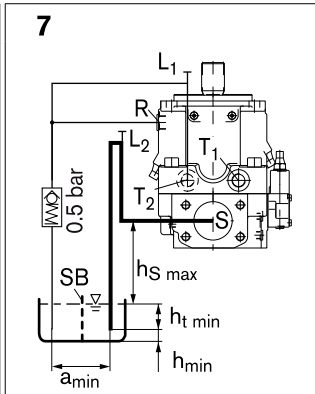
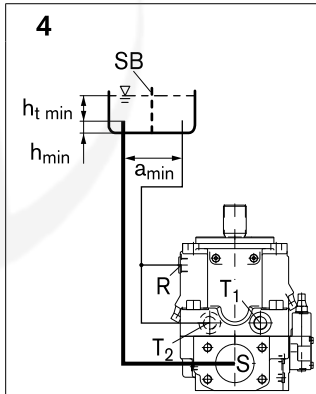
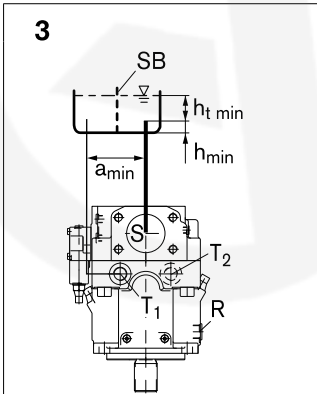
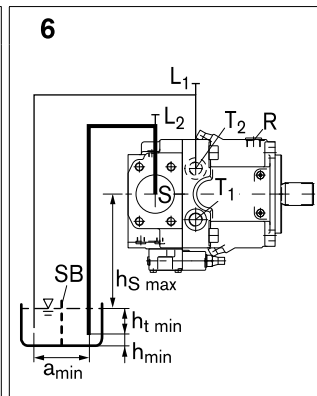
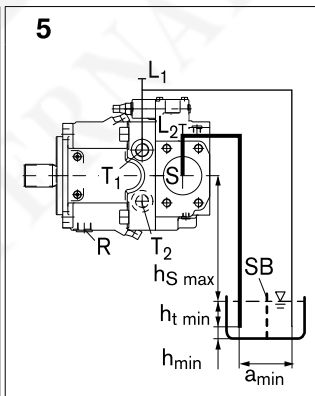
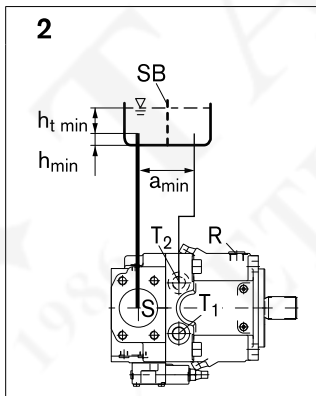
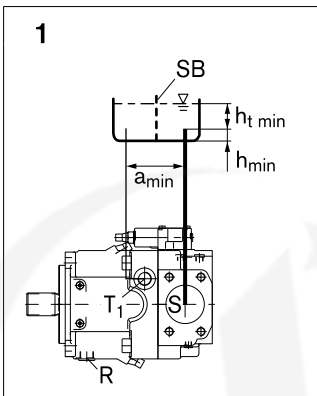
Observe the maximum permissible suction height

$h_{s \max} = 800 \text{ mm}$.

The version A11VLO (with charge pump) is not designed for installation above the tank.

Recommendation for installation position 7 (shaft up): A check valve in the case drain line (opening pressure 0.5 bar) can prevent the case interior from draining.

For control options with pressure control, displacement limiters, HD and EP control, the minimum displacement setting must be $V_g \geq 5\% V_{g \max}$.



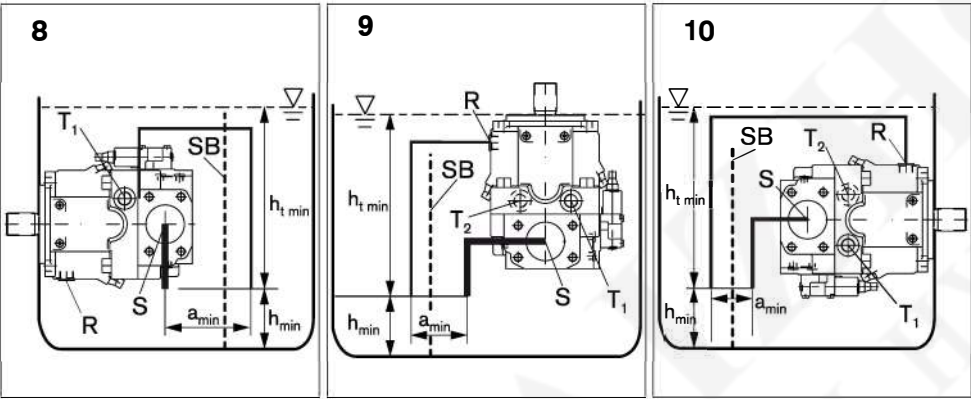
$h_{s\max} = 800\text{ mm}$ 、 $h_{t\min} = 200\text{ mm}$ 、 $h_{\min} = 100\text{ mm}$ 、SB = 消声器板 (挡板) Silencer plate (baffle plate)
当设计油箱时，确保吸油管路和箱体泄油管路之间有足够的空间 $a_{\min}$ ，以防经过加热的回流液压油被直接从后面吸出。
When designing the tank, ensure adequate space $a_{\min}$ between the suction line and the case drain line to prevent the heated, returned fluid from being directly drawn back out.

安装位置 Installation position	排气 Air bleeding	注油 Filling
1	T ₁	S + T ₁
2	R	S + T ₂
3	T ₁ /T ₂	S + T ₁ /T ₂
4	R	S + T ₁ /T ₂

安装位置 Installation position	排气 Air bleeding	注油 Filling
5	L ₁ + L ₂	L ₂ (S) + L ₁ (T ₁)
6	R + L ₂	L ₂ (S) + L ₁ (T ₂)
7	L ₁ + L ₂	L ₂ (S) + L ₁ (T ₁ /T ₂)

安装注意事项 Installation Notes

油箱安装 Tank installation
泵低于油箱的最低油位。 Pump below the minimum fluid level in the tank.



$h_{s\max} = 800\text{ mm}$ 、 $h_{t\min} = 200\text{ mm}$ 、 $h_{\min} = 100\text{ mm}$.
SB = 消声器板 (挡板) Silencer plate (baffle plate)
当设计油箱时，确保吸油管路和箱体泄油管路之间有足够的空间 $a_{\min}$ ，以防经过加热的返回液压油被直接从后面吸出。
When designing the tank, ensure adequate space $a_{\min}$ between the suction line and the case drain line to prevent the heated, returned fluid from being directly drawn back out.

安装位置 Installation position	排气 Air bleeding	注油 Filling
8	T ₁	通过所有开口 T ₁ 、T ₂ 、 R 和 S 油口自动进行， 槽位置低于液压油位
9	R	
10	R	

安全说明 General Notes

A11VO 泵设计用于开式回路中。The A11VO pump is designed to be used in open circuits.

轴向柱塞元件的项目规划、组装和调试必须由合格人员进行。

Project planning, assembly and commissioning of the axial piston unit require the involvement of qualified personnel.

工作管路油口和功能油口仅设计用于液压管路。The service line ports and function ports are only designed to accommodate hydraulic lines.

运行期间及运行后不久, 轴向柱塞元件 (特别是电磁铁) 可能存在造成灼伤的风险。应采取适当的安全措施 (例如穿着防护服)。

During and shortly after operation, there is a risk of burns on the axial piston unit and especially on the solenoids. Take appropriate safety measures (e. g. by wearing protective clothing).

根据轴向柱塞元件的不同工作状态 (工作压力、油液温度), 特性可能会改变。

Depending on the operational state of the axial piston unit (operating pressure, fluid temperature), the characteristic may shift.

压力油口 Pressure ports:

油口和固定螺纹设计用于最大规定压力。机器或系统制造商必须确保连接元件和管路的安全系数满足规定的工作条件 (压力、流量、液压油、温度)。

The ports and fixing threads are designed for the specified maximum pressure. The machine or system manufacturer must ensure that the connecting elements and lines correspond to the specified operating conditions (pressure, flow, hydraulic fluid, temperature) with the necessary safety factors.

此处包含的数据和说明必须遵循。The data and notes contained herein must be adhered to.

采用以下紧固扭矩 The following tightening torques apply:

轴向柱塞元件的螺纹孔 Threaded hole for axial piston unit:

最大允许紧固扭矩 $M_{G\max}$ 对于螺纹孔是最大值, 不得超过该值。有关数值, 请参见下表。

The maximum permissible tightening torques $M_{G\max}$ are maximum values for the threaded holes and must not be exceeded. For values, see the following table.

接头 Fittings:

关于所用接头的紧固扭矩, 请参见制造商说明。

Observe the manufacturer's instruction regarding the tightening torques of the used fittings.

固定螺钉 Fixing screws:

有关满足 DIN 13 的固定螺钉, 我们建议根据 VDI 2230 对其紧固扭矩进行单独检查。

For fixing screws according to DIN 13, we recommend checking the tightening torque individually according to VDI 2230.

锁紧螺钉 Locking screws:

对于轴向柱塞元件附带提供的金属锁紧螺钉, 施加锁紧螺钉所需的紧固扭矩 M_V 。有关数值, 请参见下表。

For the metal locking screws supplied with the axial piston unit, the required tightening torques of locking screws M_V apply. For values, see the following table.

该产品部件没有按照 DIN EN ISO 13849 的通用机器安全概念进行认证批准。

The product is not approved as a component for the safety concept of a general machine according to DIN EN ISO 13849.

螺纹尺寸 Thread size		螺纹的最大允许紧固扭矩 Max. permissible tightening torque of the screw thread $M_{G\max}$	锁紧螺钉所需的紧固扭矩 Required tightening torque for locking screws M_V	WAF 内六角 Hexagon socket
M12x1.5	DIN 3852	50 Nm	25 Nm	6 mm
M14x1.5	DIN 3852	80 Nm	35 Nm	6 mm
M22x1.5	DIN 3852	210 Nm	80 Nm	10 mm
M26x1.5	DIN 3852	230 Nm	120 Nm	12 mm
M33x2	DIN 3852	540 Nm	310 Nm	17 mm