



恒裕航动力科技有限公司

HENGYUHANG POWER TECHNOLOGY CO., LTD



ULTRA HIGH PRESSURE GEAR PUMP

超高压全铸铁齿轮泵

DESIGN FOR FUTURE.

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ULTRA HIGH PRESSURE GEAR PUMP

SERIES 4PTF

超高压齿轮泵 4PTF 系列

PRODUCT FEATURES

产品优势



- Heavy duty special DU bearing with long working life
使用喷涂特殊专利涂层的 DU 轴承可在重负载下具有长久的工作寿命
- Max working pressure up to 4568 PSI/ 31.5Mpa
极限工作压力可达 4568 磅力/平方英寸 (31.5 兆帕)
- Displacement from 8 to 92 cc/rev
可选排量范围从每转 8 毫升直到每转 92 毫升
- High strength cast iron body with special designed structure
采用自主研发专利设计的内部结构，并采用高强度的蠕墨铸铁材质壳体
- High precision carburizing&quenching gears with extra hardness
高精度齿轮，特殊材质经过渗碳淬火达到超高硬度
- Copper pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
铜质双金属压力平衡补偿板可在工作寿命内持续保证高容积效率
- 100% factory tested
产品出厂前 100%进行性能检测和跑合试验
- Customized mounting size and oil ports
安装尺寸和进出油口可根据客户需要定制生产

TECHNICAL SPECIFICATIONS

技术参数

Model 型号	Displacement 排量	Flow rate	Pressure			Rotate Speed		Input power
		流量	压力			转速		@250bar
		@1500RPM	P1	P2	P3	Max 最高	Min 最低	&1500rpm 25MPa/1500 转时 的输入功率
cm³/rev		l/min	bar			rpm		kW
4PTF.08	8	12	200	230	250	3000	350	5.7
4PTF.10	10	15	200	230	250	3000	350	7.1
4PTF.13	13	19.5	200	230	250	3000	350	9.2
4PTF.16	16	24	200	230	250	3000	350	11.4
4PTF.18	18	27	200	230	250	3000	350	12.8
4PTF.20	20	30	230	250	280	3000	350	14.2
4PTF.25	25	37.5	230	250	280	3000	350	17.8
4PTF.29	29	43.5	230	250	280	3000	350	20.6
4PTF.32	32	48	250	275	300	3000	350	22.7
4PTF.36	36	54	275	290	315	3000	350	25.6
4PTF.40	40	60	275	290	315	3000	350	28.4

TECHNICAL SPECIFICATIONS

技术参数

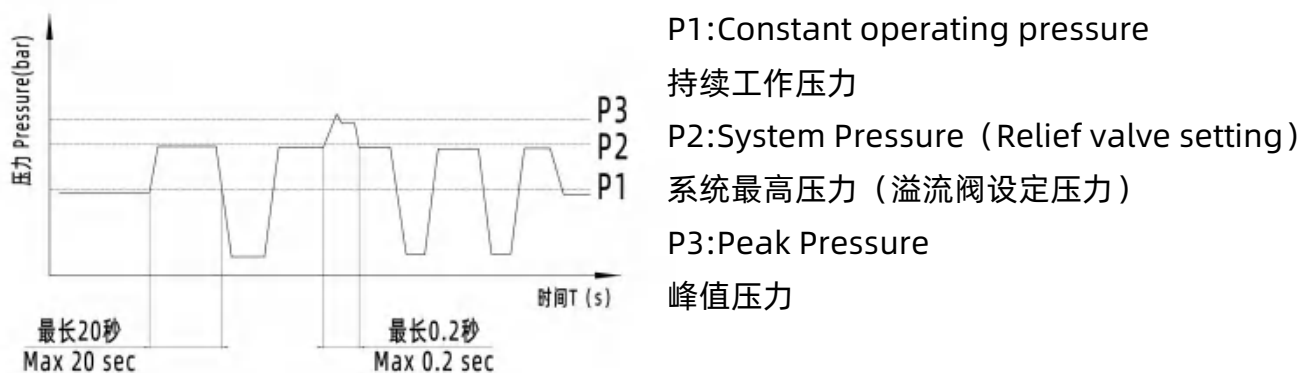
Model 型号	Displacement 排量	Flow rate 流量 @1500RPM	Pressure 压力			Rotate Speed 转速		Input power @250bar &1500rpm
			P1	P2	P3	Max	Min	25MPa/1500 转时 的输入功率
						最高	最低	
cm³/rev		l/min	bar			rpm		kW
4PTF.45	45	67.5	275	290	315	3000	350	32
4PTF.51	51	76.5	250	275	300	3000	350	36.2
4PTF.55	55	82.5	230	250	280	3000	350	39.6
4PTF.63	63	94.5	230	250	280	3000	350	44.7
4PTF.72	72	108	200	230	250	3000	350	51.1
4PTF.81	81	121.5	200	230	250	3000	350	57.5
4PTF.92	92	138	160	180	210	3000	350	65.3



For special displacement requirement,
please consult our pre-sales department.
如有其他特殊排量需求，请咨询我公司售前部门

DEFINATION OF PRESSURES

关于压力的定义



The peak of pressure is the max pressure allowed and it corresponds to the overshoot^① of the relief valve.

Please note that both relief valve setting and overshoot must be lower than their limits.

If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Avenir limit.

For high frequency applications please consult our pre-sales department.

峰值压力是系统允许的最大压力，它对应的是溢流阀过载压力^①。

请注意，溢流阀设定压力和过载压力都必须低于泵的压力极限。

如果溢流的设定压力符合要求，但是超载压力高于泵的压力极限，那么必须降低溢流阀的压力设置，直到超载压力符合我公司的标准限定。

对于工作频率比较高的应用场景，请咨询我们的售前部门。

① Overshoot: The actual pressure reading when a relief valve first opens to bypass fluid. (It can be up to twice the actual pressure setting.)

①过载压力：当溢流阀刚开始开启时的瞬时压力（此压力有可能会比实际的设定压力高一倍以上）

FORMULAS USED FOR CALCULATION

液压系统计算公式

$$Q = \frac{V \cdot \eta_v \cdot n / 1000}{V \cdot \eta_v \cdot n / 231} \quad \begin{matrix} [\text{l/min}] \\ [\text{Gal/min}] \end{matrix}$$

$$M = \frac{\frac{\Delta p \cdot V}{62.83 \cdot \eta_m}}{\frac{\Delta p \cdot V}{2 \cdot 3.14 \cdot \eta_m}} \quad \begin{matrix} [\text{Nm}] \\ [\text{lbf.in}] \end{matrix}$$

$$P = \frac{\frac{\Delta p \cdot V \cdot n}{600 \cdot 1000 \cdot \eta_t}}{\frac{\Delta p \cdot V \cdot n}{395934 \cdot \eta_t}} \quad \begin{matrix} [\text{kW}] \\ [\text{HP}] \end{matrix}$$

$$\eta_v = \frac{Q_{\text{act.}}}{Q_{\text{theor.}}}$$

$Q_{\text{act.}}$: Actual flow rate 实际流量
 $Q_{\text{theor.}}$: theoretical flow rate 理论流量

It determines the amount of flow losses. Its value is $\eta_v = 0.92 \sim 0.98$ (depending on rotation speed, oil temperature, viscosity of working liquid and outlet pressure).

容积效率决定了泵的内泄漏量，数值一般取 0.92~0.98
(实际数值取决于转速，油温，油液粘性，工作压力等)

$$\eta_m = \frac{M_{\text{theo}}}{M_{\text{act.}}}$$

$M_{\text{theo.}}$: theoretical torque 理论扭矩
 $M_{\text{act.}}$: Actual torque 实际扭矩

It determines mechanical losses. Its value is about $\eta_m = 0.85$

机械效率决定了泵的机械损失，数值一般取 0.85

$$\eta_t = \eta_v \cdot \eta_m = \frac{P_{\text{theo}}}{P_{\text{act.}}}$$

$P_{\text{theo.}}$: Theoretical input power 理论输入功率

$P_{\text{act.}}$: Actual input power 实际输入功率

It is defined as product of η_v and η_m and determines difference between theoretical and actual required input power

总效率是容积效率和机械效率的乘积，他决定了理论输入功率和实际需要的输入功率的差别

Conversion factor 单位换算

SI units 国际单位制	US units 美国单位制
1 l/min	0.2641 US Gal/min
1 Nm	8.851 in-lbs
1 Nm	0.7375 ft-lbs
1 N	0.2248 lbs
1 kW	1.34 HP
1 cm ³ /rev	0.061 in ³ /rev
1 bar	14.5 psi
1 mm	0.0394 in
1 kg	2.205 lbs

Variables 参数

Q : FLOW RATE 流量	[l/min] [Gal/min]
M : Torque 扭矩	[Nm] [lbf.in]
P : Power 功率	[kW] [HP]
V : Displacement 排量	[cm ³ /rev] [in ³ /rev]
n: Speed 转速	[min ⁻¹]

η_v : Volumetric efficiency 容积效率

η_m : Mechanical efficiency 机械效率

η_t : Overall efficiency 总效率

WORKING LIQUID

工作介质

- Mineral oils for hydraulic drives
用于液压驱动的矿物油
- Hydraulic liquids based on plant oils suitable for hydraulic drives
用于液压驱动的植物基-液压油

LIQUID TEMPERATURE

工作油温

- $t = -20^{\circ}\text{C} \sim +80^{\circ}\text{C}$ (with NBR seals) (当密封件选用丁腈橡胶材质时)
- $t = 0^{\circ}\text{C} \sim +200^{\circ}\text{C}$ (with FKM seals) (当密封件选用氟橡胶材质时)
- $t = -50^{\circ}\text{C} \sim +120^{\circ}\text{C}$ (with HNBR seals) (当密封件选用氢化丁腈橡胶材质时)

CINEMATIC VISCOSITY

运动粘度

- Recommended (during continuous operation):
推荐粘度 (持续工作工况下) $v = 20 \sim 80 \text{ [mm}^2/\text{s]}$
- Maximum (cold starting, at viscosity >1000 , operating pressure $<10 \text{ bar}$ is permissible, speed $<1500 \cdot \text{min}^{-1}$):
最大可用粘度 (允许在粘 >1000 , 工作压力 $<10\text{bar}$, 转速 $<1500\text{r/min}$ 时冷启动) $v = 1200 \text{ [mm}^2/\text{s]}$
- Minimum (operating mode at 10 up 20 should be consulted with manufacturer):
最小可用粘度 (如果在 10~20 的粘度下工作, 请咨询我公司技术部门) $v = 10 \text{ [mm}^2/\text{s]}$

Filtration coefficient β_α

过滤系数

- $\beta_{25} 75 \geq$ (for pressure $p_2 < 200$ bar)
 $\beta_{25} 75 \geq$ (当 p_2 压力 < 200 bar 时)
- $\beta_{10} 75 \geq$ (for pressure $p_2 > 200$ bar)
 $\beta_{10} 75 \geq$ (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to ISO 4406

ISO4406 油液污染度等级

- 21/18/15 (for pressure $p_2 < 200$ bar)
21/18/15 (当 p_2 压力 < 200 bar 时)
- 20/17/14 (for pressure $p_2 > 200$ bar)
20/17/14 (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to NAS 1638

NAS1638 油液污染度等级

- LEVEL 10 (for pressure $p_2 < 200$ bar)
10 级 (当 p_2 压力 < 200 bar 时)
- LEVEL 8 (for pressure $p_2 > 200$ bar)
8 级 (当 p_2 压力 > 200 bar 时)

DIRECTION OF ROTATION

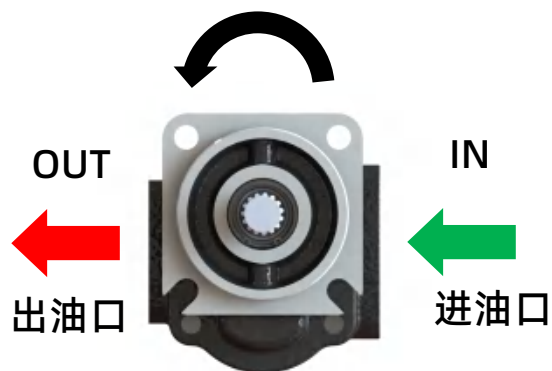
旋 向

Determine direction of rotation by looking at the drive shaft.

The pump can only be used in the specified direction of rotation.

从轴端方向的视角来判断泵的旋向。泵只能在其相应旋向下工作

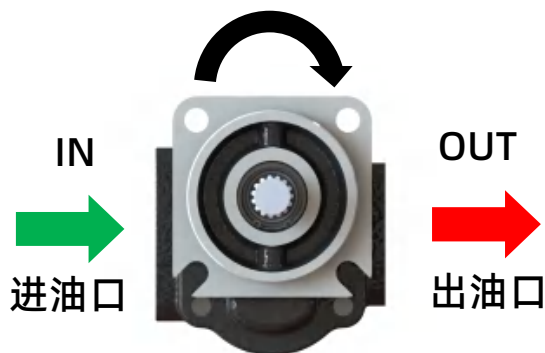
COUNTER-CLOCKWISE 逆时针旋转



LEFT ROTATION

左 旋

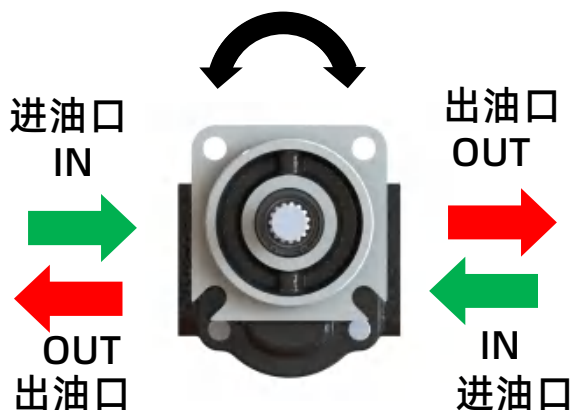
CLOCKWISE 顺时针旋转



RIGHT ROTATION

右 旋

DUAL-ROTATION 双向旋转



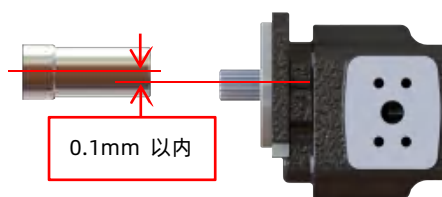
BI-DIRECTION

双 向

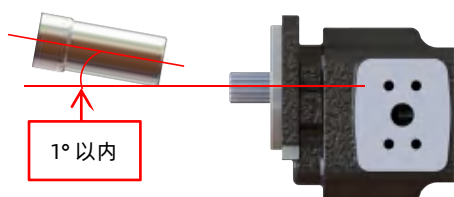
INSTALLATION PRECAUTIONS

安装注意事项

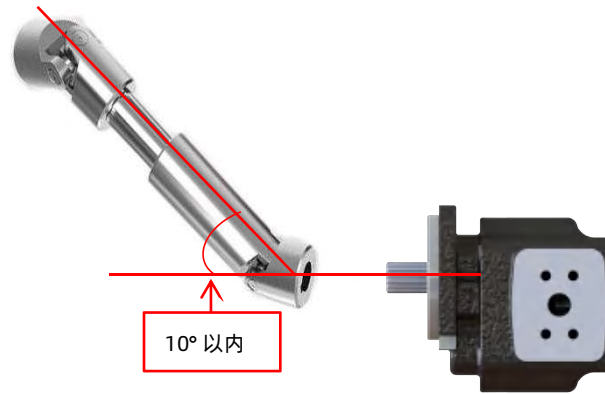
- Please use flexible coupling connection between engine shaft and pump shaft
电机与驱动轴的连接部分请使用柔性联轴器
- The coupling may cause noise, please choose the coupling with elastic material like rubber
联轴器有时会成为噪音源，建议使用橡胶等弹性材料组成的联轴器
- Axial force and radial force is not allow towards the pump shaft, if cannot avoid force, please choose the special bearing type of pump
请勿对泵的轴端施加轴向力和径向力，如无法避免，请选择带有前置轴承的型号
- Bad coaxiality will lead to pump's damage
泵轴与驱动轴的同轴度较差，会导致齿轮泵损坏
Coaxiality deviation should below 0.1mm
同轴度偏差不得超过 0.1mm



- Angle deviation should below 1°
角度偏差不得超过 1°



- Angle deviation when use universal joint should below 10°
万向节传动，角度偏差不得超过 10°



OUTBOARD BEARING OPTIONS

前置轴承选项

A



Version for applications without radial and axial load on the driveshaft

泵的轴端无轴向力和径向力时，选择此方案。

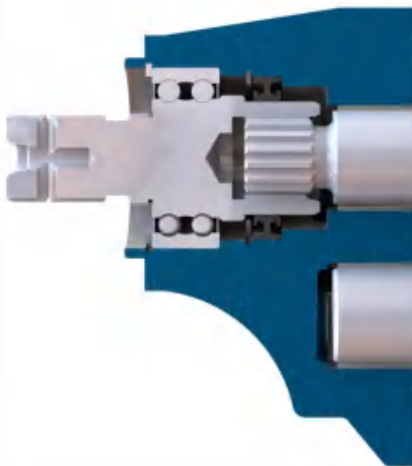
B



Version for applications with low radial load and without axial load on the drive shaft.

泵的轴端有轻微径向力，但无轴向力时，选择此方案。

C



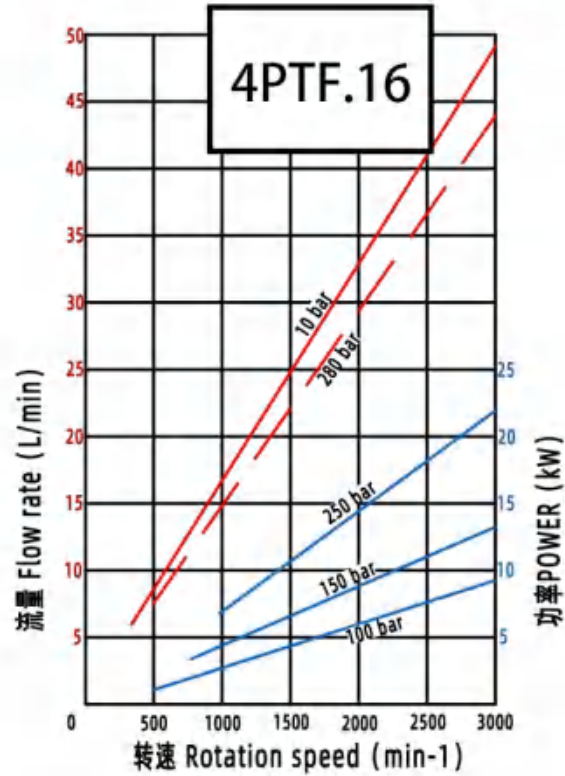
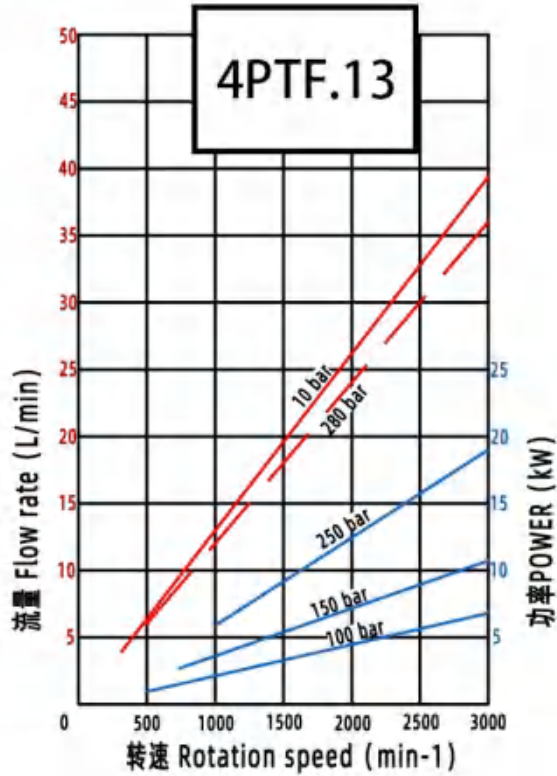
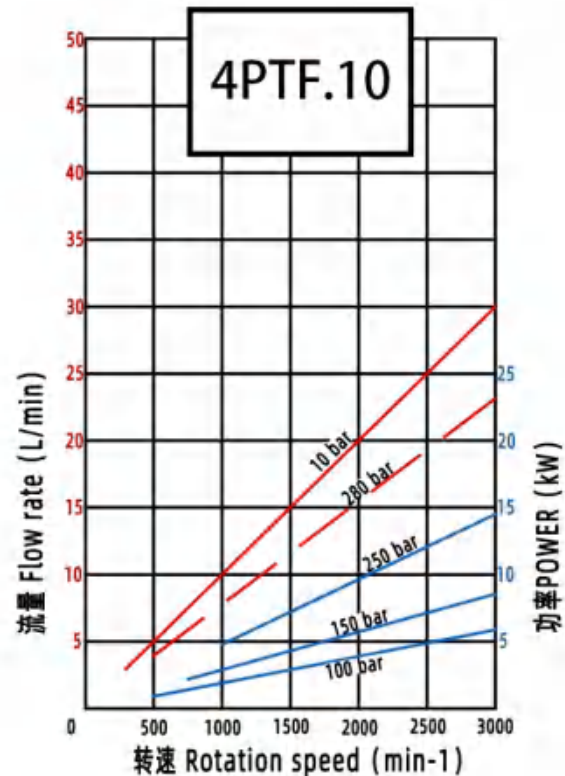
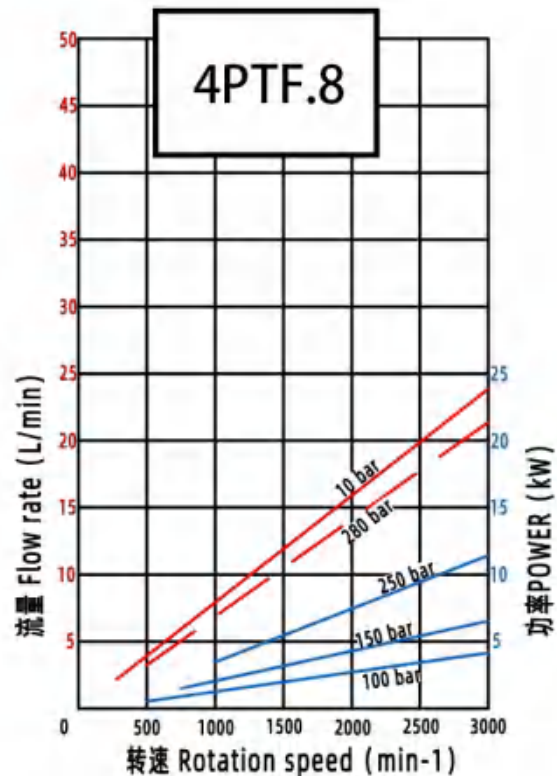
Version for applications with radial and axial load on the drive shaft

泵的轴端有径向力和轴向力时，选择此方案。

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power

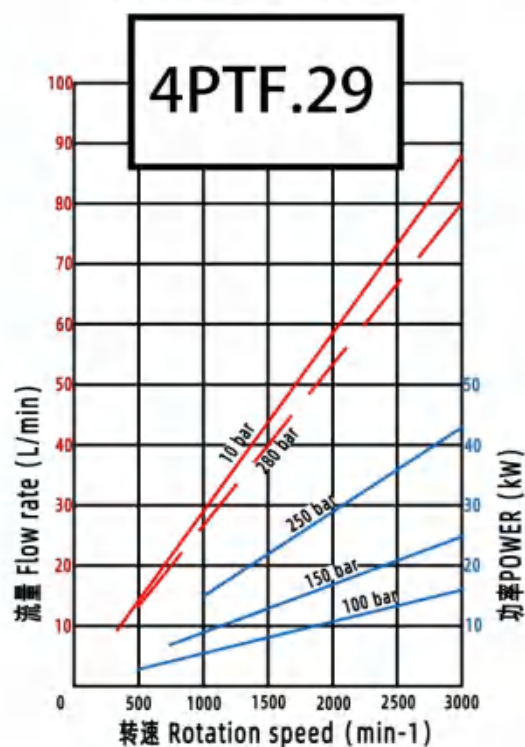
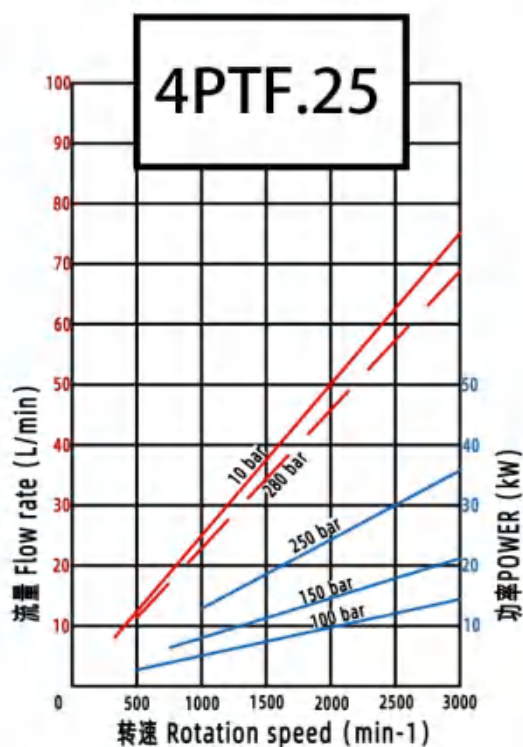
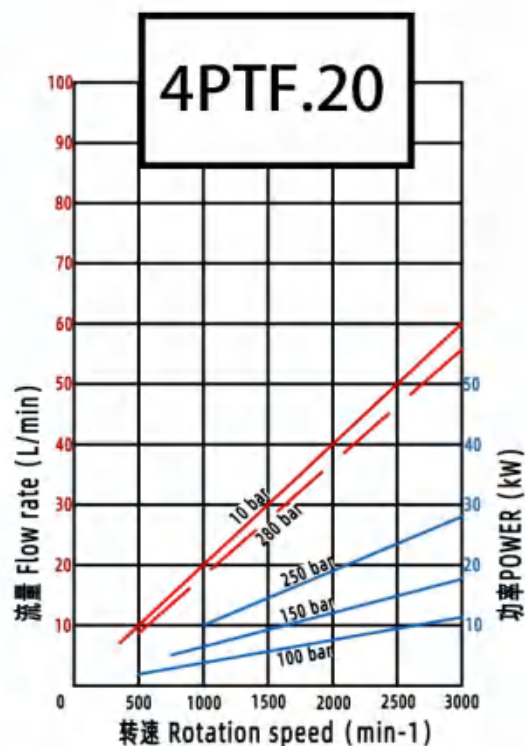
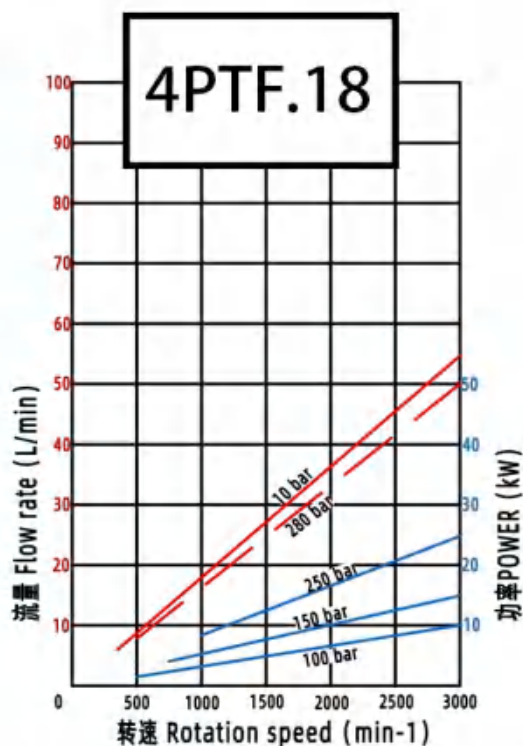


This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



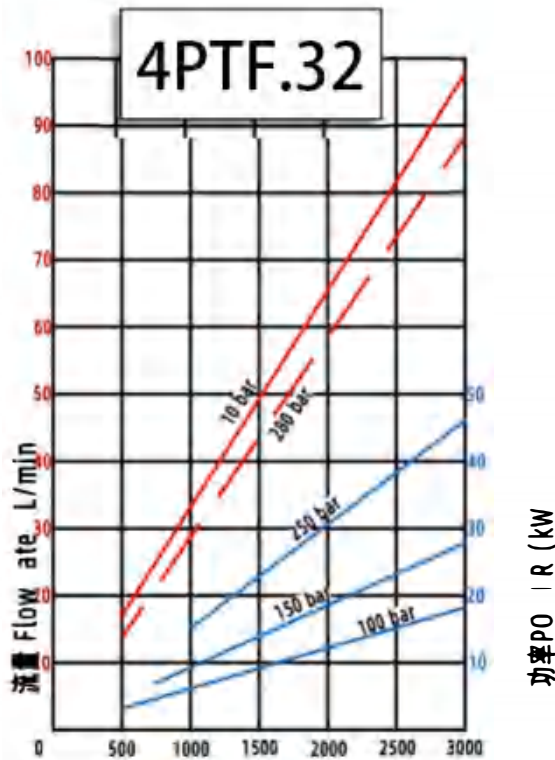
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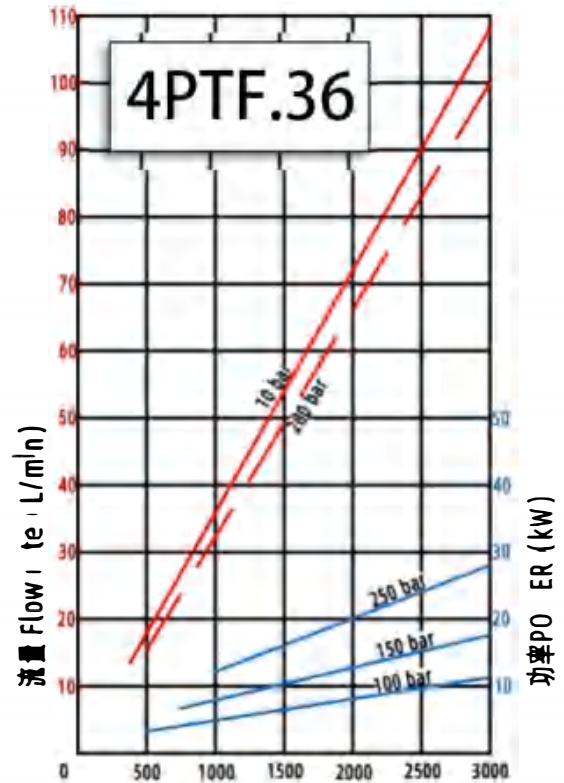
PERFORMANCE CURVES

性能曲线

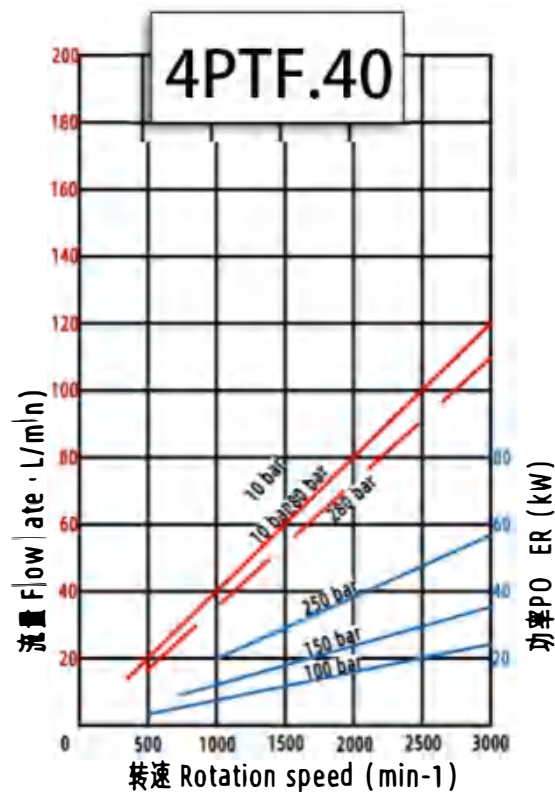
- 空载流量 Flow rate unload
- ... 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



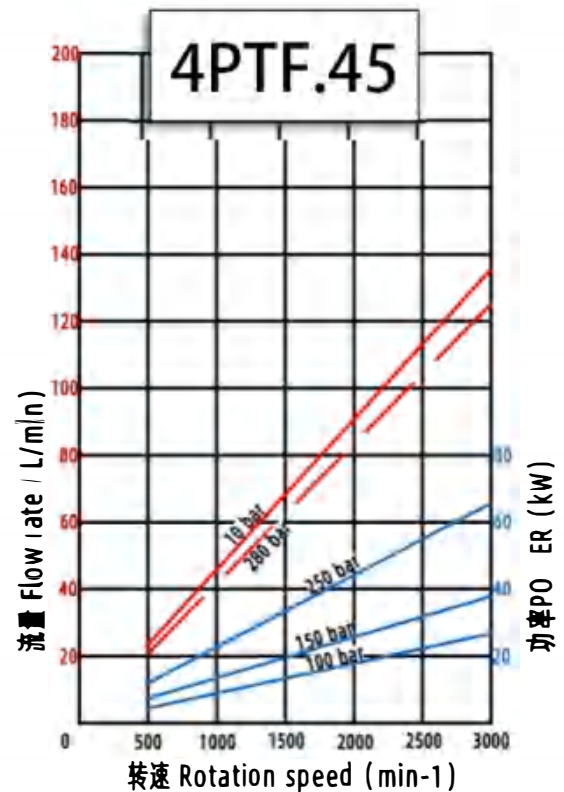
转速 Rotation speed (min-1)



转速 Rotation speed (min-1)



转速 Rotation speed (min-1)



转速 Rotation speed (min-1)

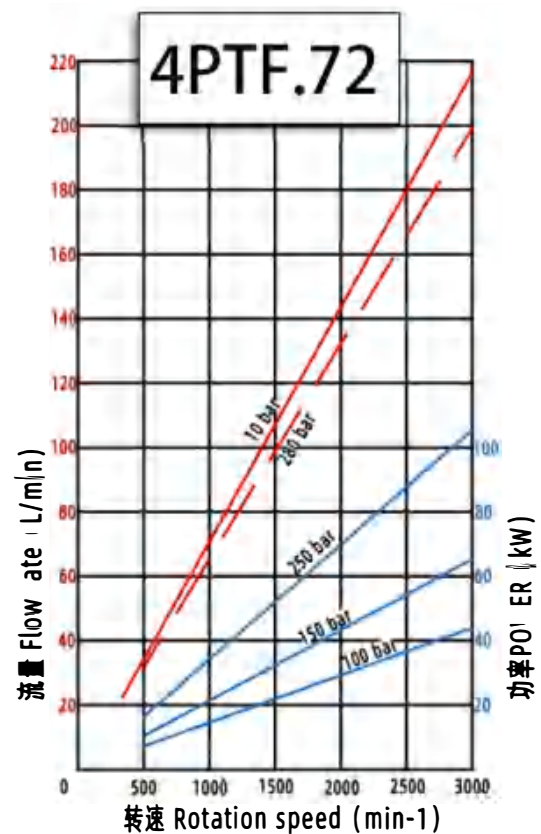
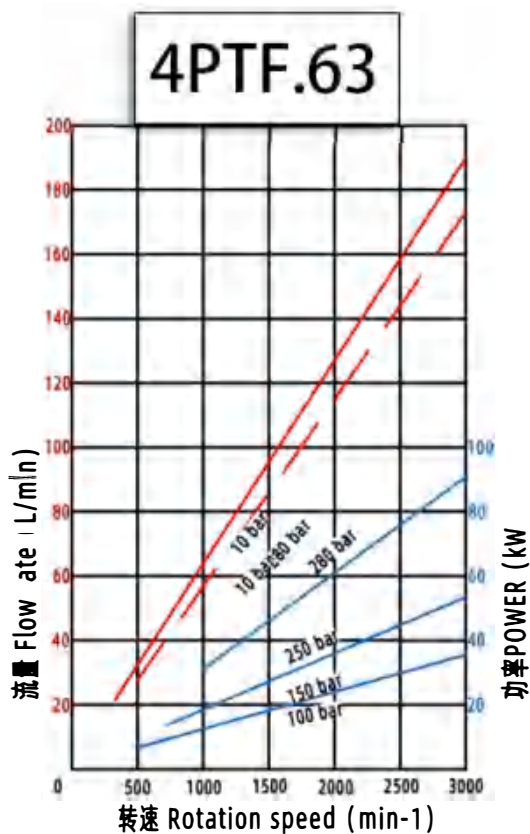
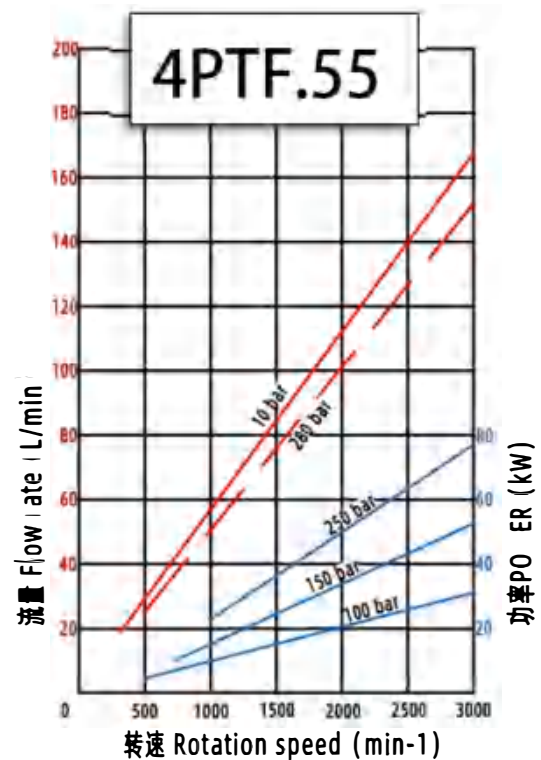
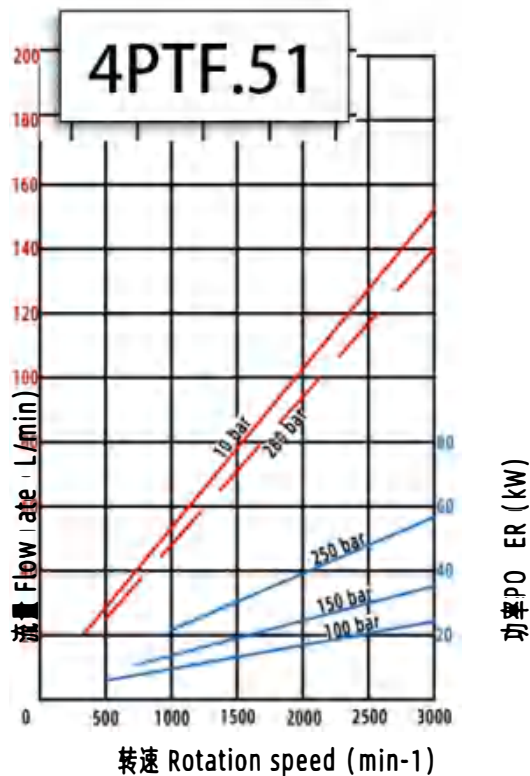
This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)

此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



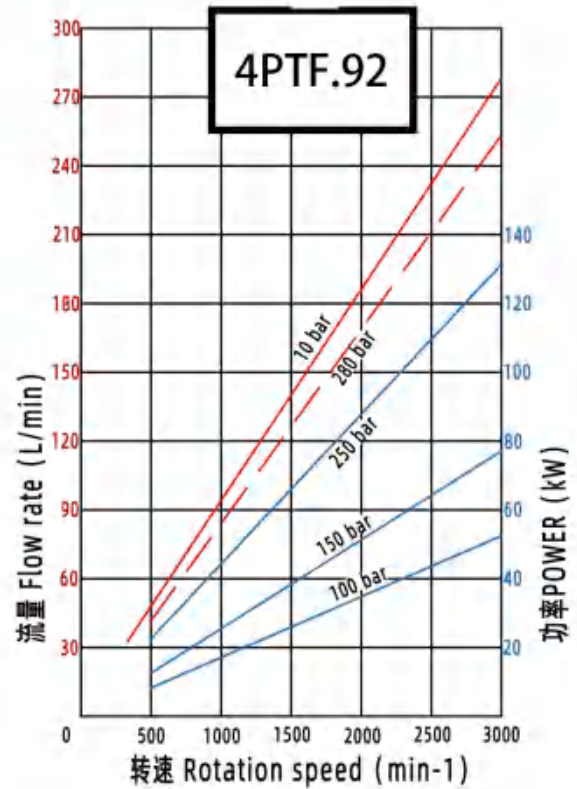
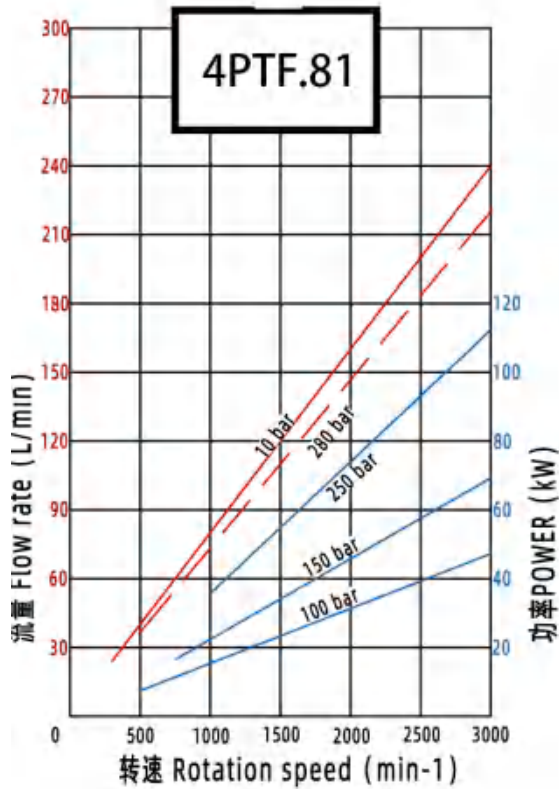
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此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
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This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)

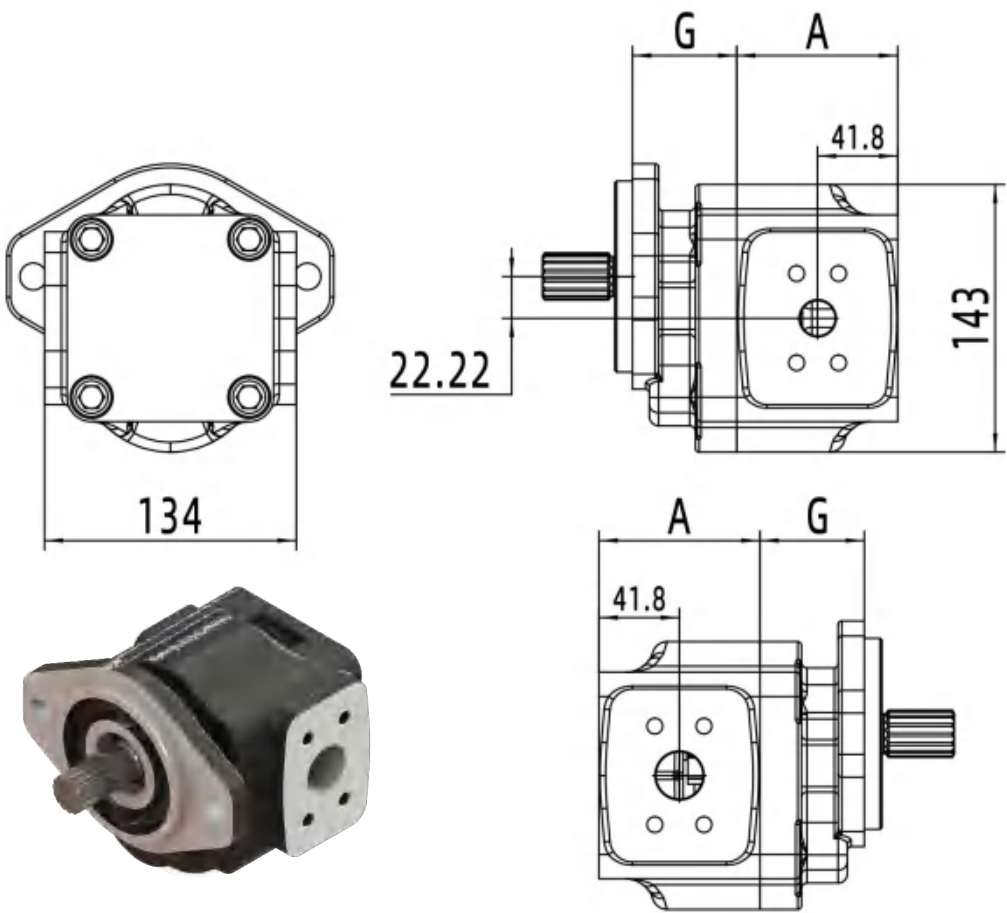
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

DIMENSIONS

外形尺寸

4PTF SINGLE PUMP

4PTF 单泵



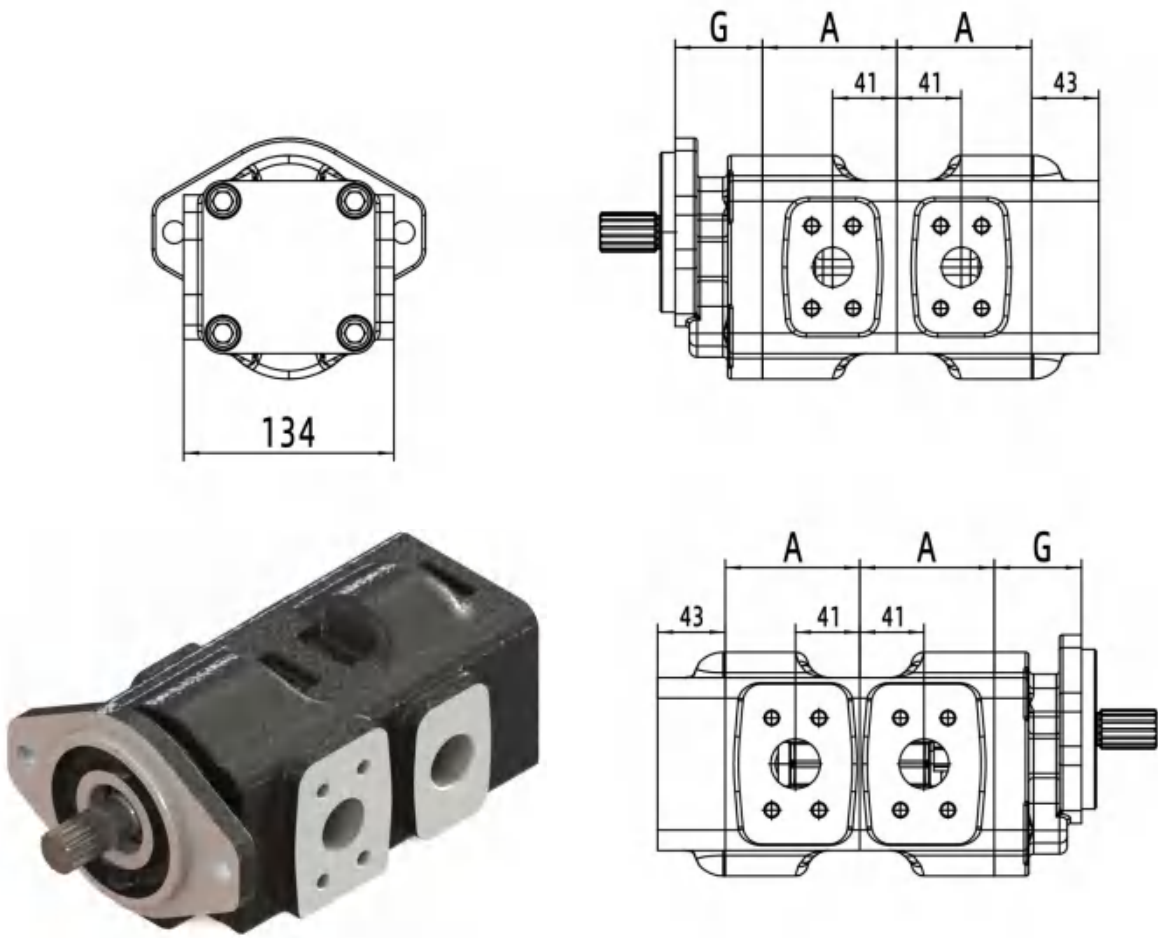
4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	70	71.5	73.5	75.5	77	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5
4PTF	55	63	72	81	92								
A	103.5	109.5	116.5	121.5	129.5								

DIMENSIONS

外形尺寸

4PTF TANDEM PUMP

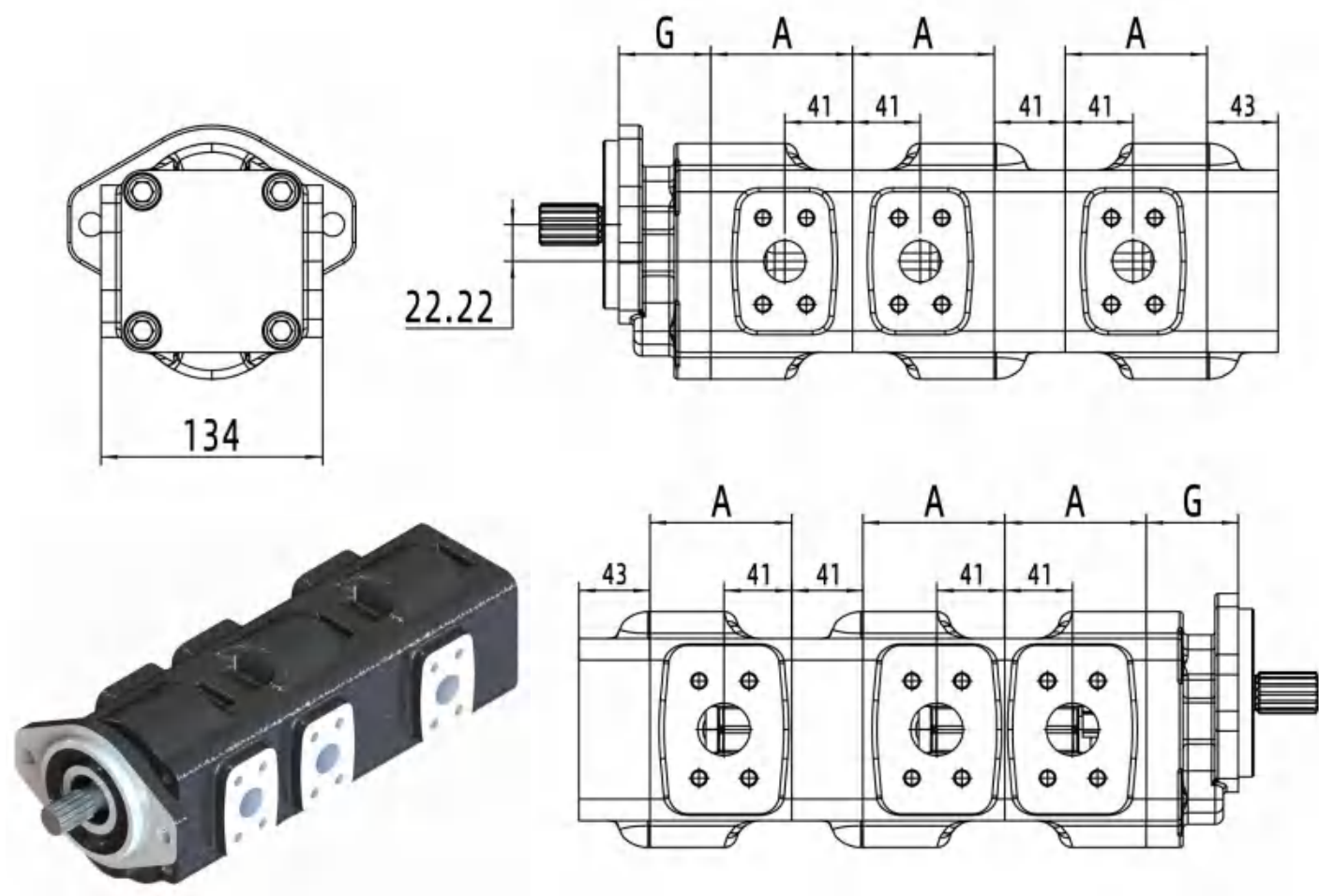
4PTF双联泵



4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	69.2	70.7	72.7	74.7	76.2	77.7	81.7	83.7	86.7	88.7	92.2	95.7	99.7
4PTF	55	63	72	81	92								
A	102.7	108.7	115.7	120.7	128.7								

DIMENSIONS
外形尺寸

4PTF TRIPLE PUMP
4PTF 三联泵



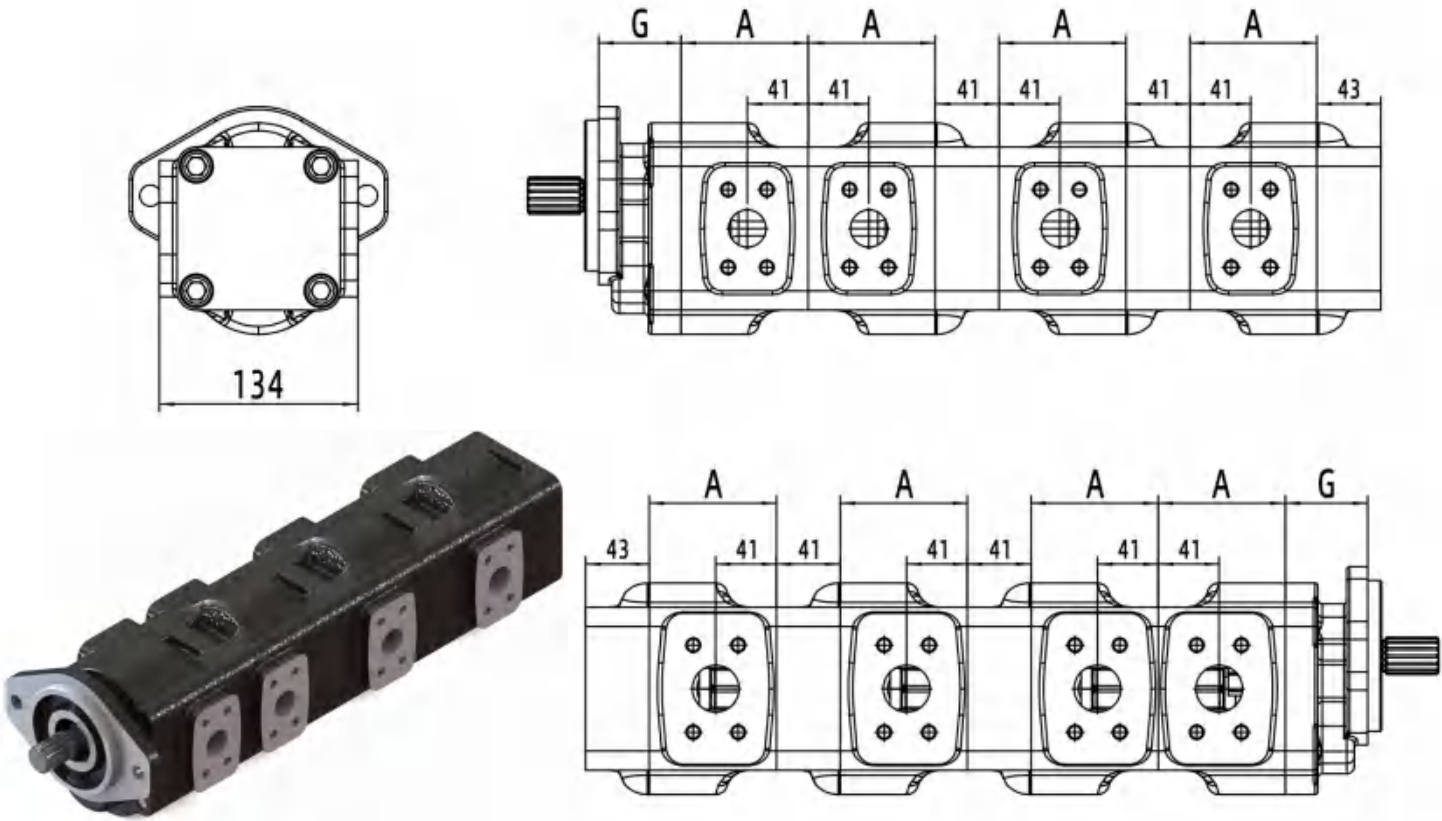
4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	69.2	70.7	72.7	74.7	76.2	77.7	81.7	83.7	86.7	88.7	92.2	95.7	99.7
4PTF	55	63	72	81	92								
A	102.7	108.7	115.7	120.7	128.7								

DIMENSIONS

外形尺寸

4PTF QUADRUPLE PUMP

4PTF 四联泵



4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	69.2	70.7	72.7	74.7	76.2	77.7	81.7	83.7	86.7	88.7	92.2	95.7	99.7
4PTF	55	63	72	81	92								
A	102.7	108.7	115.7	120.7	128.7								

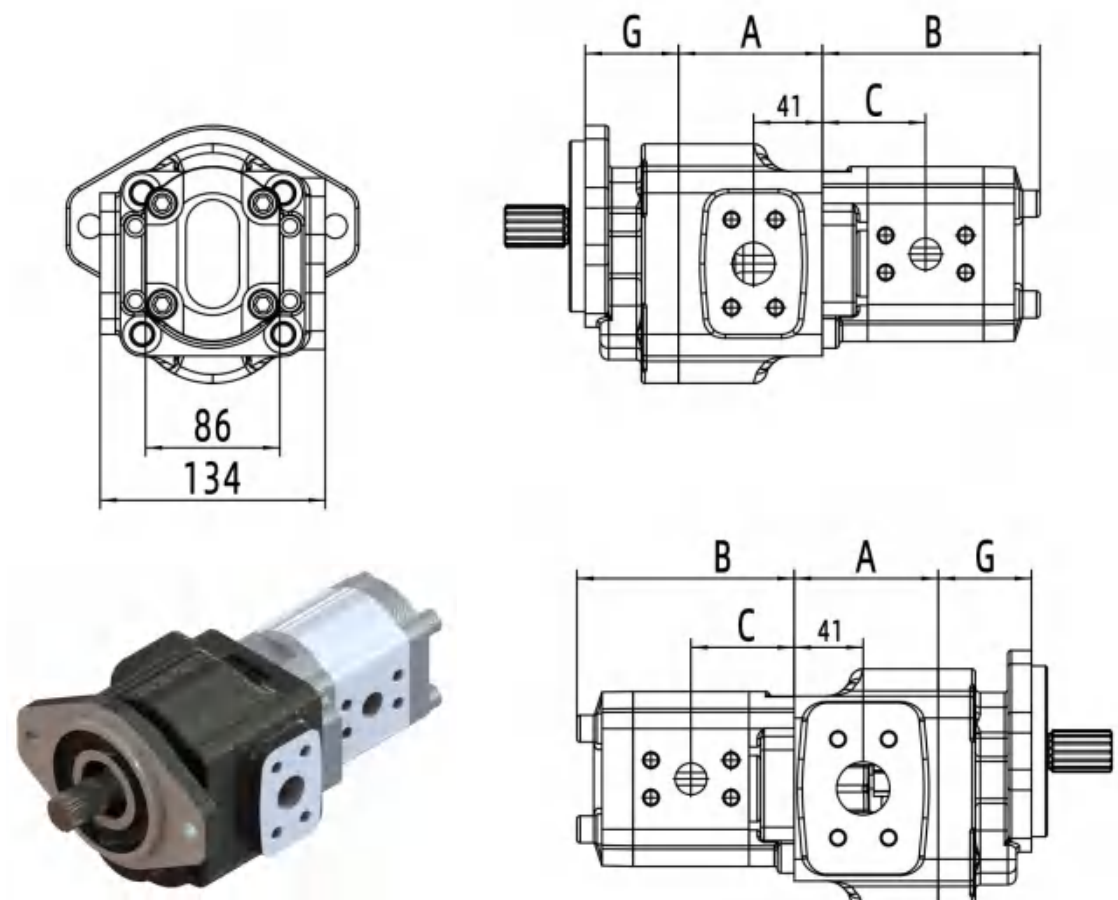
The “G” dimension please see page 25
G 尺寸请参考第 25 页

DIMENSIONS

外形尺寸

4PTF/2PDF TANDEM PUMP

4PTF/2PDF 双联泵



4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	69.2	70.7	72.7	74.7	76.2	77.7	81.7	83.7	86.7	88.7	92.2	95.7	99.7
4PTF	55	63	72	81	92								
A	102.7	108.7	115.7	120.7	128.7								
2PDF	06	10	16	20	25								
B	114.5	120.5	129.5	136.5	143.5								
C	54	57	61.5	65	68.5								

The “G” dimension please see page 25
G 尺寸请参考第 25 页

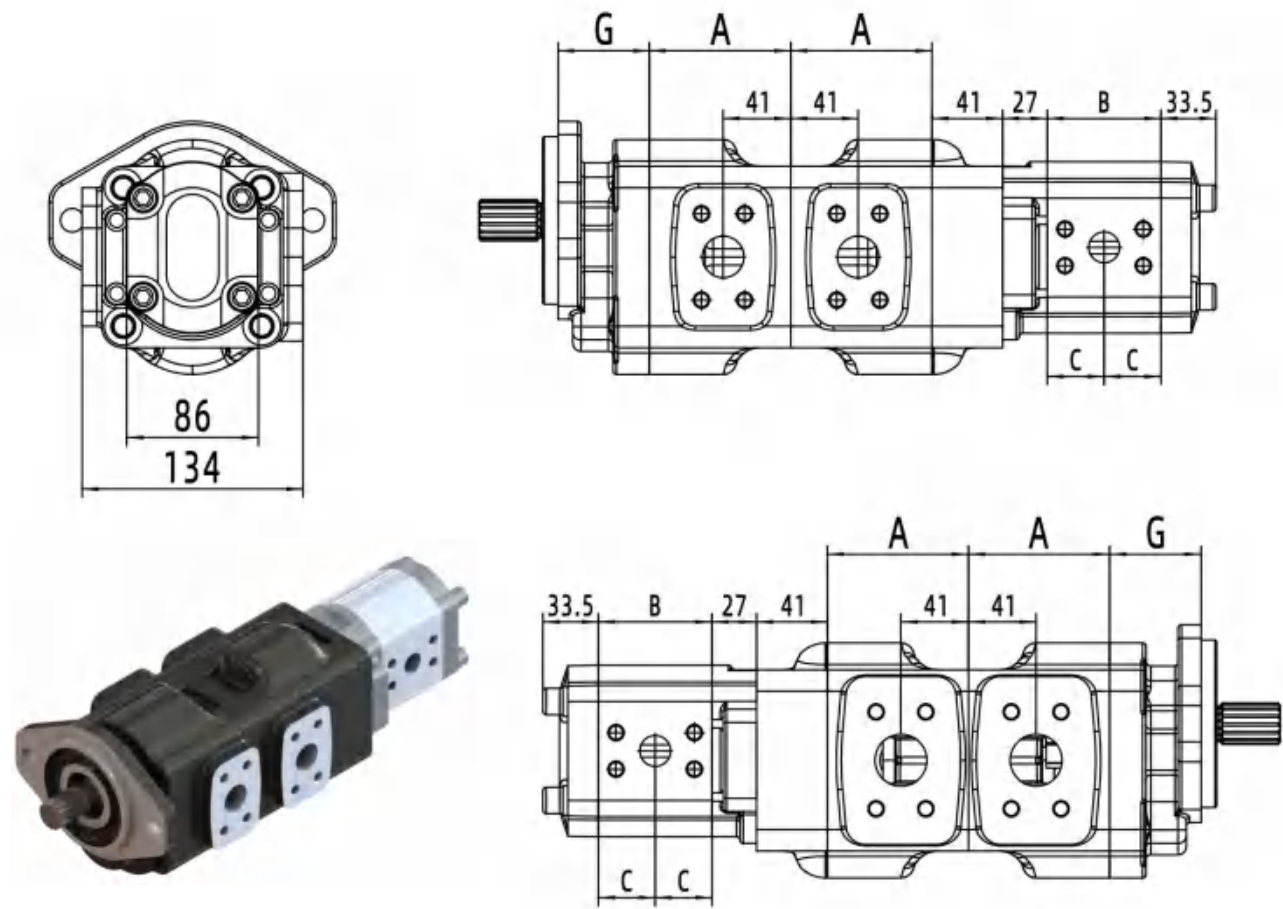
DIMENSIONS

外形尺寸

4PTF/2PDF

TRIPLE PUMP

4PTF/2PDF 三联泵



4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	69.2	70.7	72.7	74.7	76.2	77.7	81.7	83.7	86.7	88.7	92.2	95.7	99.7
4PTF	55	63	72	81	92								
A	102.7	108.7	115.7	120.7	128.7								
2PDF	06	10	16	20	25								
B	54	60	69	76	83								
C	27	30	34.5	38	41.5								

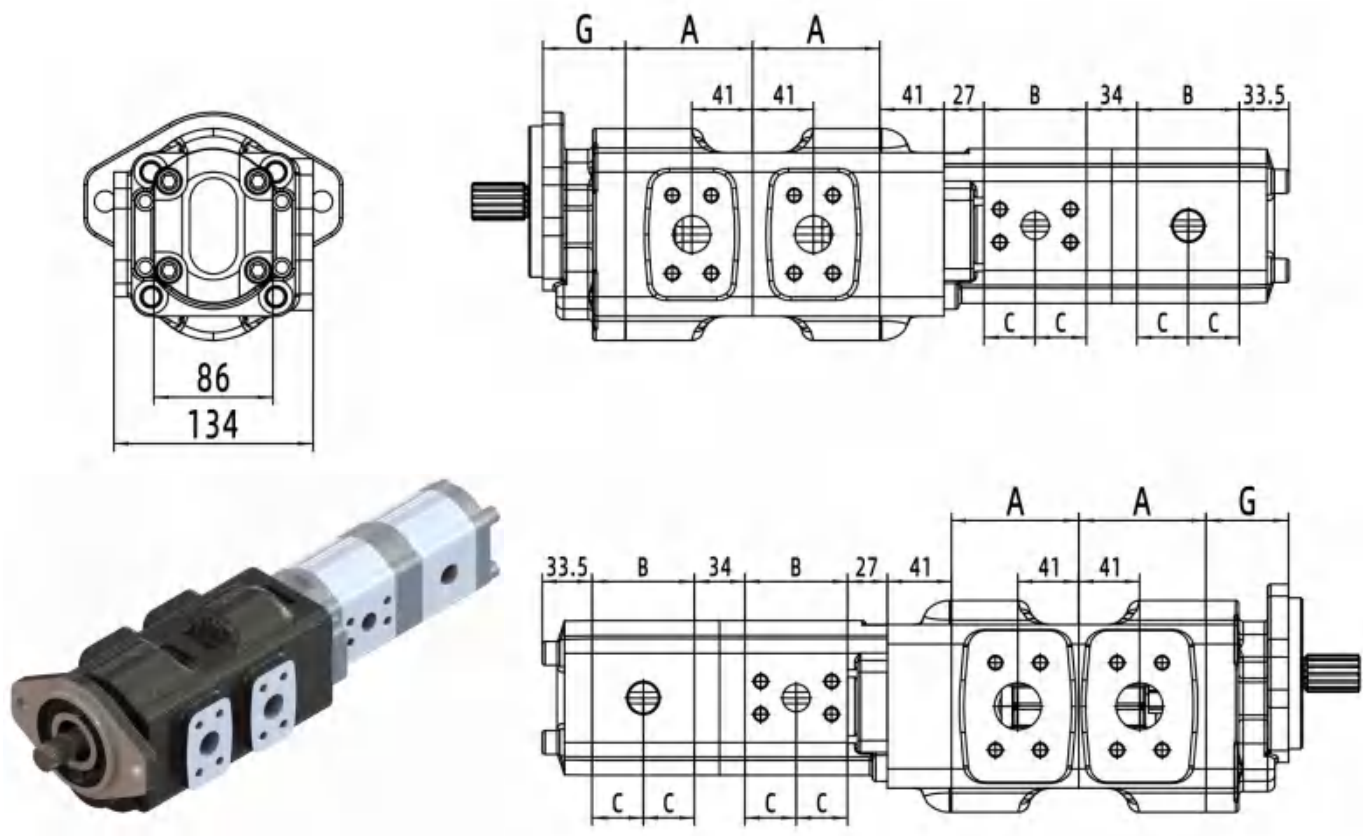
The “G” dimension please see page 25
G 尺寸请参考第 25 页

DIMENSIONS

4PTF/2PDF QUADRUPLE PUMP

外形尺寸

4PTF/2PDF 四联泵



4PTF	08	10	13	16	18	20	25	29	32	36	40	45	51
A	69.2	70.7	72.7	74.7	76.2	77.7	81.7	83.7	86.7	88.7	92.2	95.7	99.7

4PTF	55	63	72	81	92
A	102.7	108.7	115.7	120.7	128.7

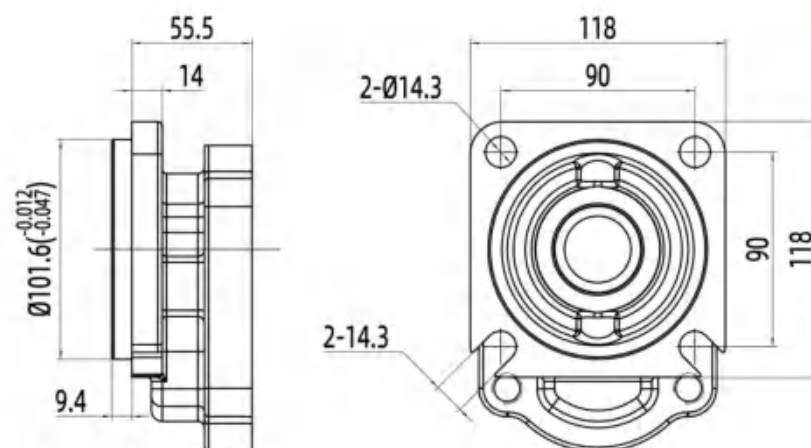
2PDF	06	10	16	20	25
B	54	60	69	76	83
C	27	30	34.5	38	41.5

The “G” dimension please see page 25
G 尺寸请参考第 25 页

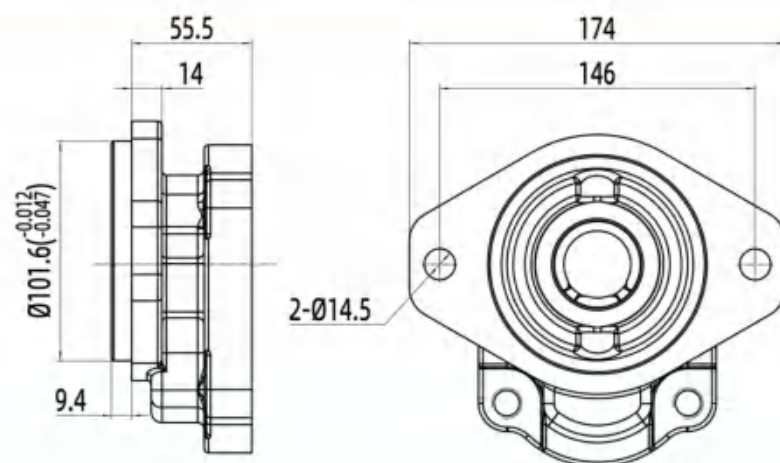
FRONT COVER

前盖

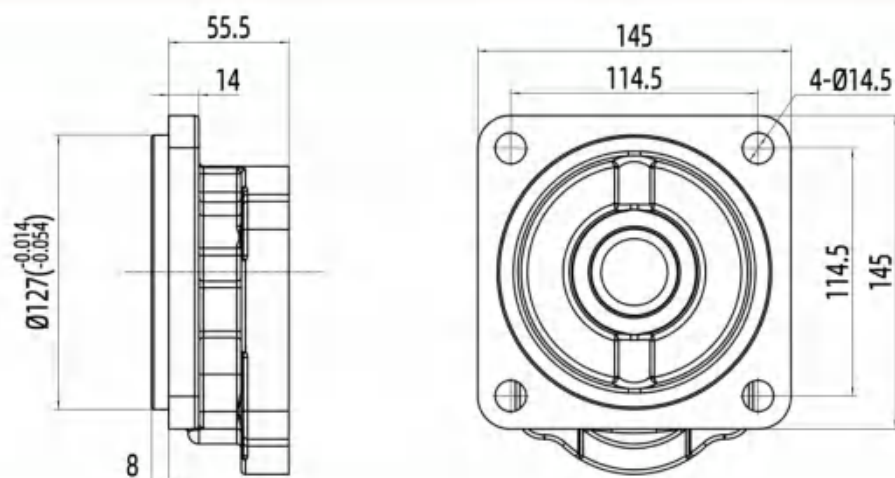
00



01



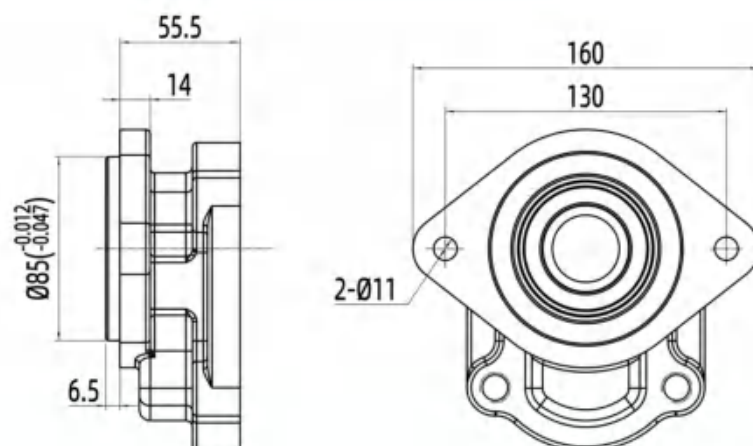
02



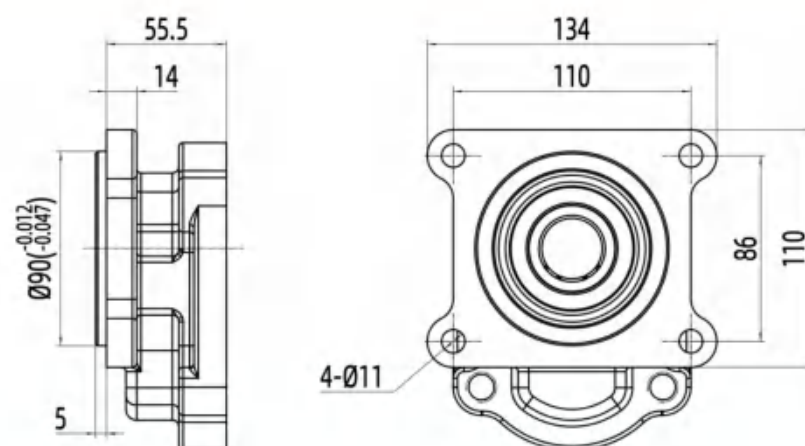
FRONT COVER

前盖

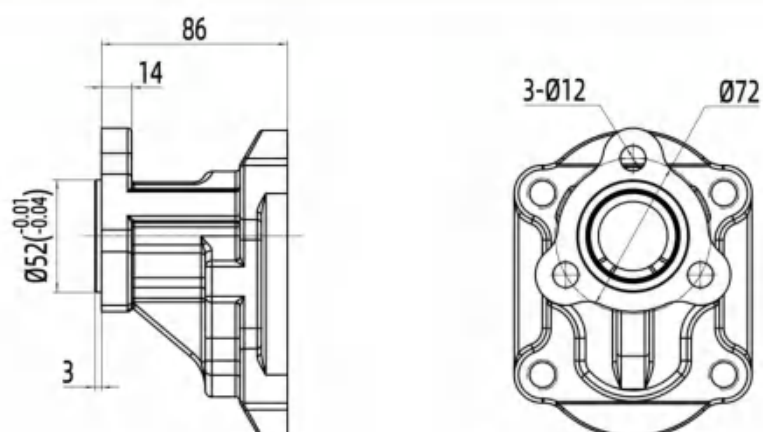
03



04



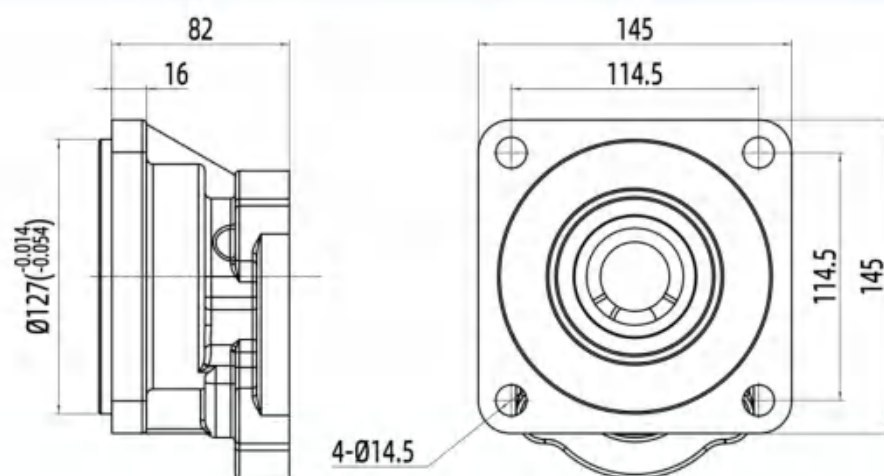
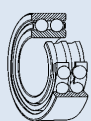
05



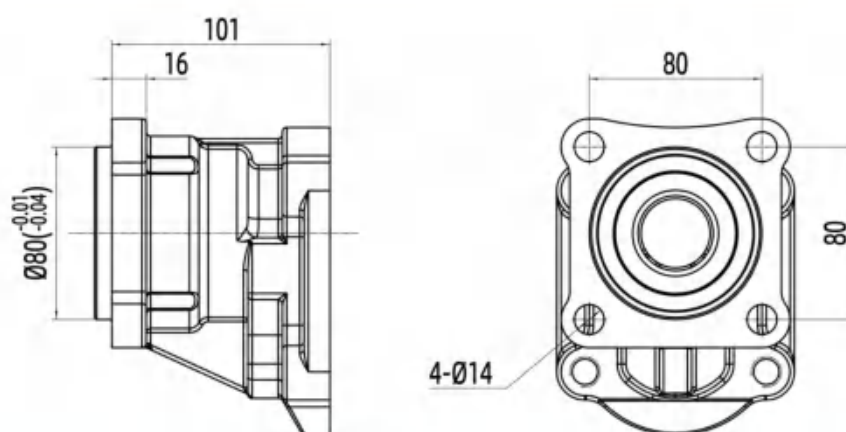
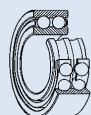
FRONT COVER

前盖

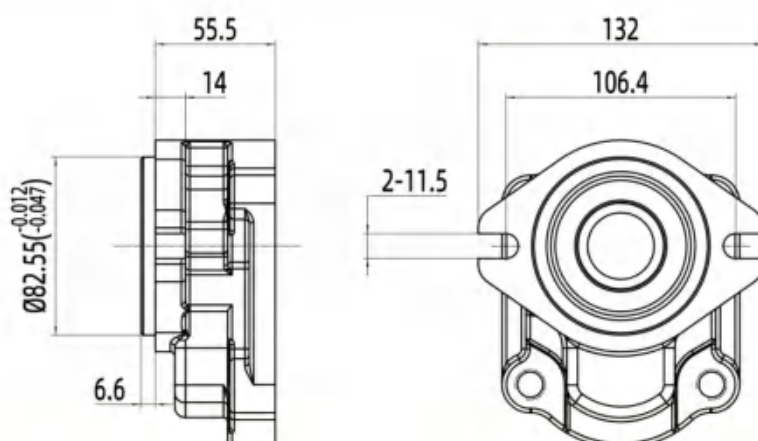
06



07



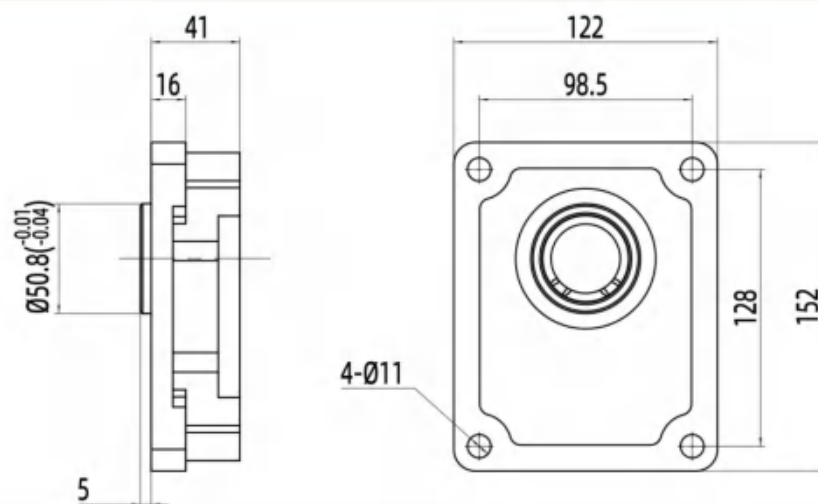
08



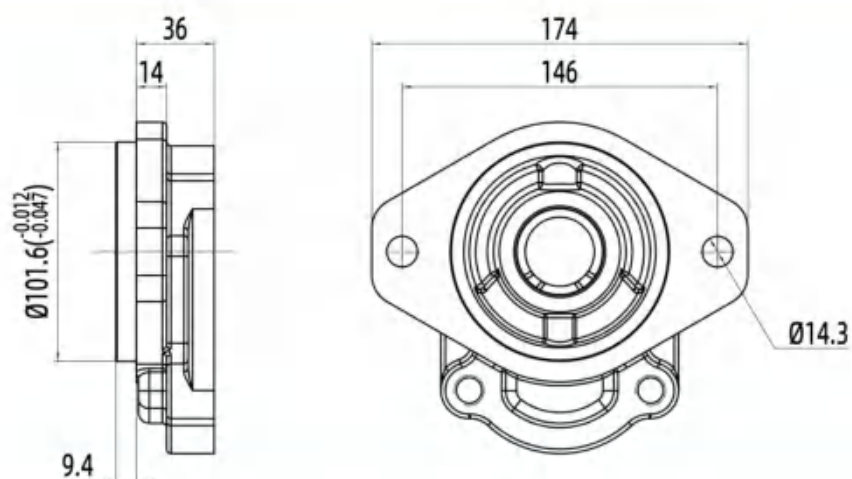
FRONT COVER

前盖

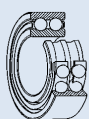
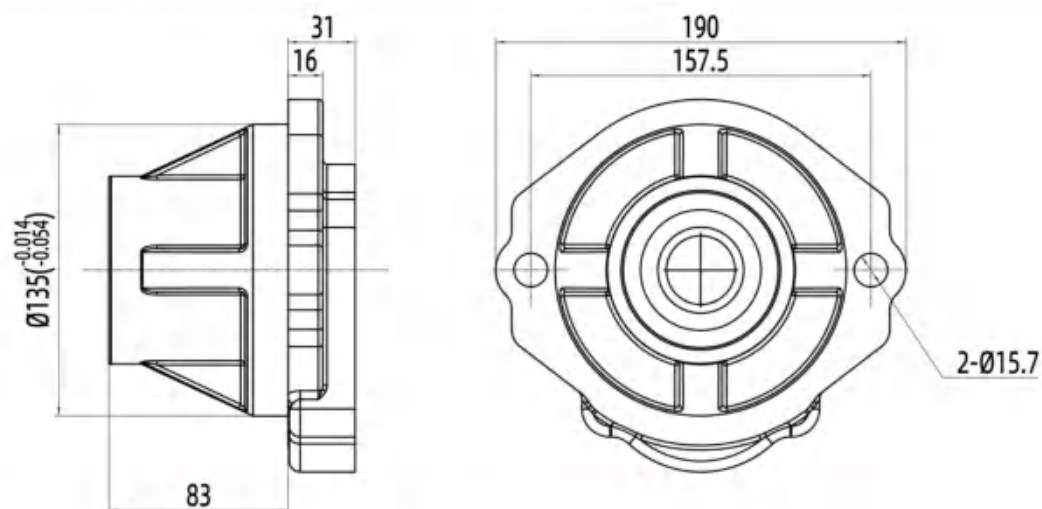
09



10



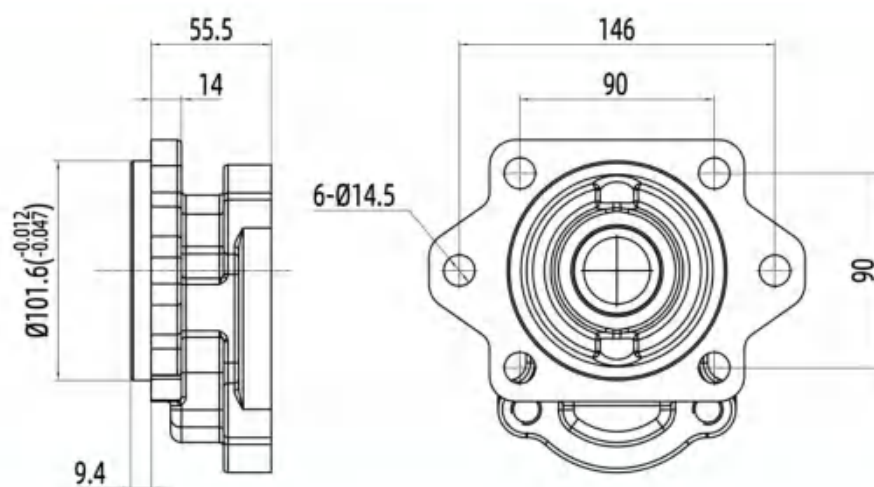
11



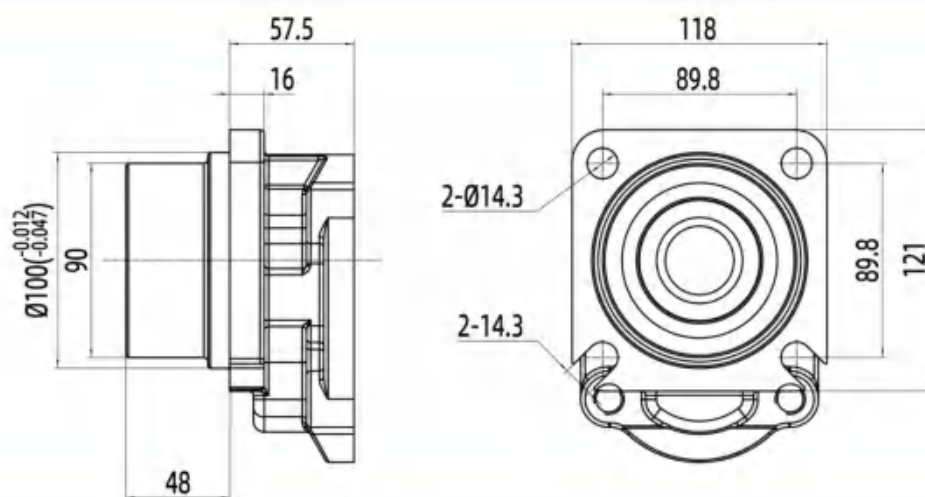
FRONT COVER

前盖

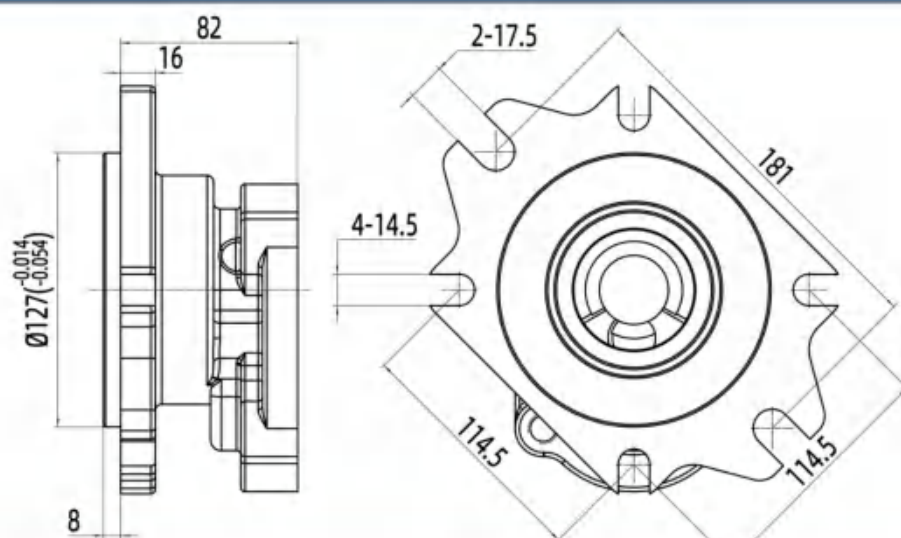
12



13



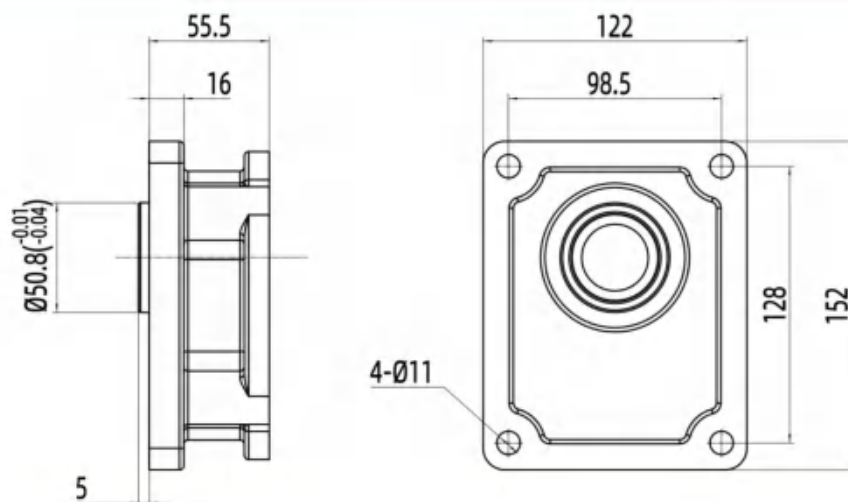
14



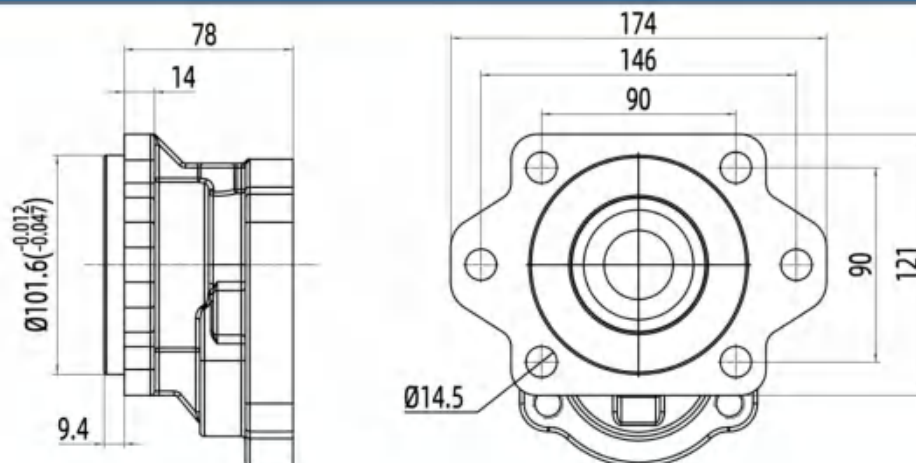
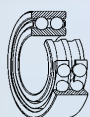
FRONT COVER

前盖

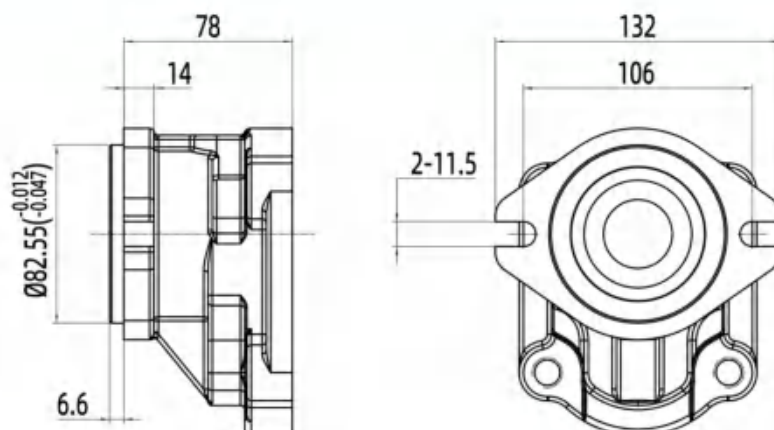
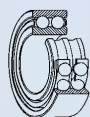
15



16



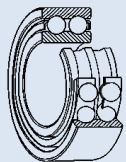
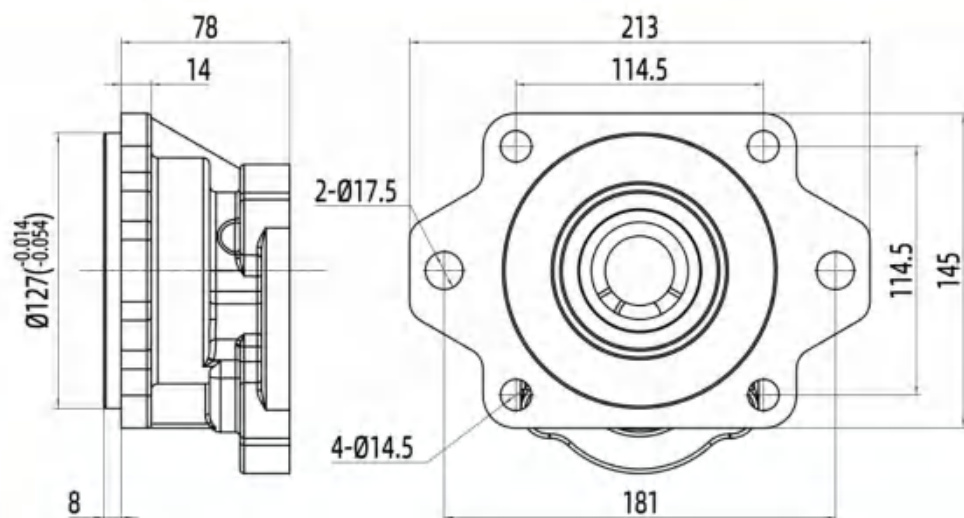
17



FRONT COVER

前盖

18



This mark means the front cover is only for "C" type outboard bearing option
Please refer to PAGE 11

带此标记的前盖只能用在"C"类的轴承形式产品中
详见第 11 页

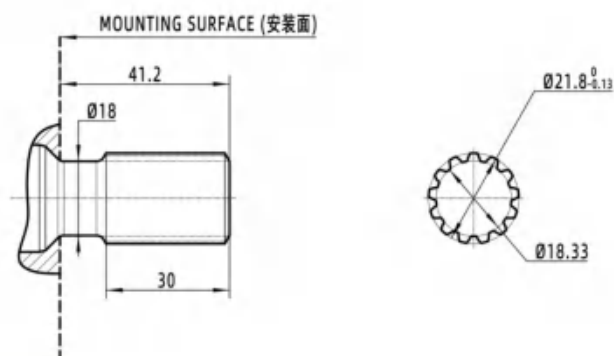


For other front cover requirement please contact our pre-sale department.
如有其他前盖尺寸的需求, 请联系我公司售前部门。

GEAR SHAFT

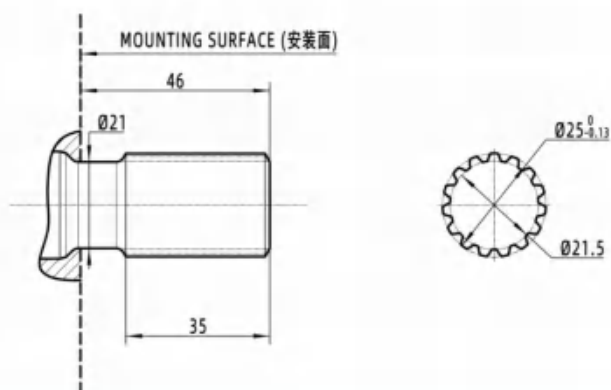
轴/花键

01



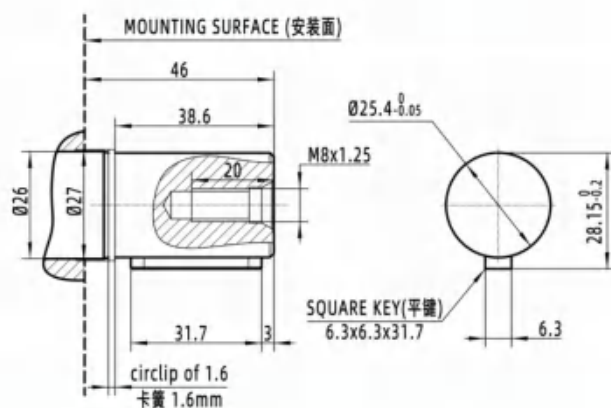
SAE INVOLUTE SPLINE
13 TEETH 16/32 PITCH
13 齿 Ø21.8 渐开线花键

02



SAE INVOLUTE SPLINE
15 TEETH 16/32 PITCH
15 齿 Ø25 渐开线花键

03

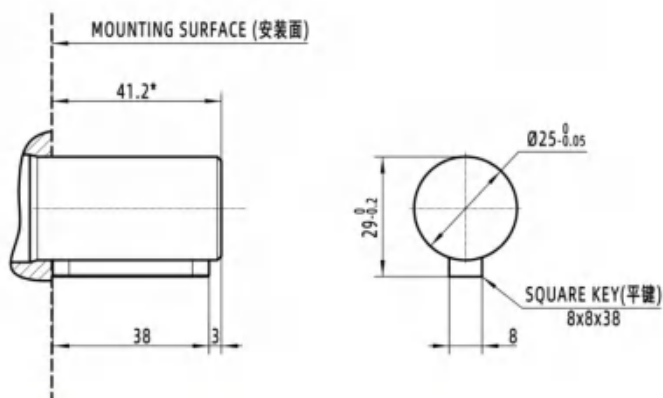


SAE- 1 inch STRAIGHT SHAFT
Ø25.4 平键

GEAR SHAFT

轴/花键

04

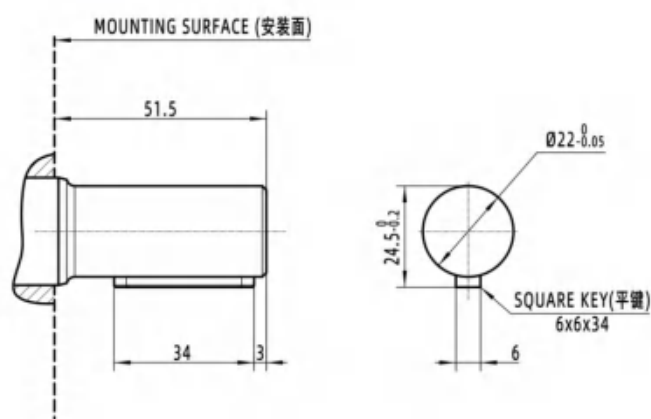


Φ25 STRAIGHT SHAFT
Φ25 平键

* optional for 50.5mm

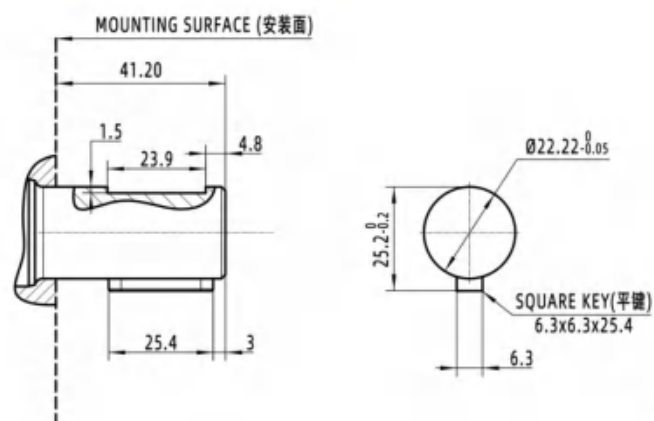
* 可选 50.5mm

05



Φ22 STRAIGHT SHAFT
Φ22 平键

06

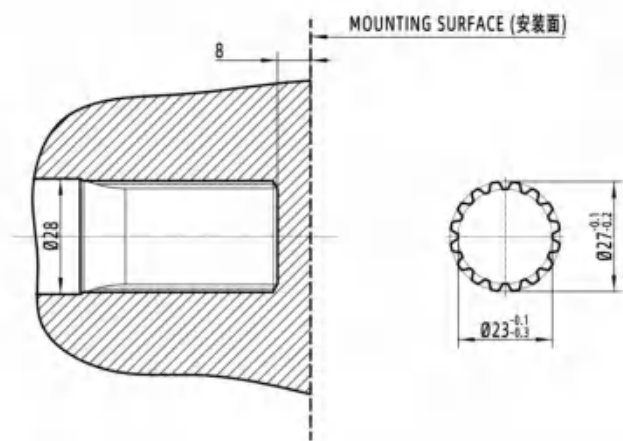


SAE-7/8 inch STRAIGHT SHAFT
Φ22.22 平键

GEAR SHAFT

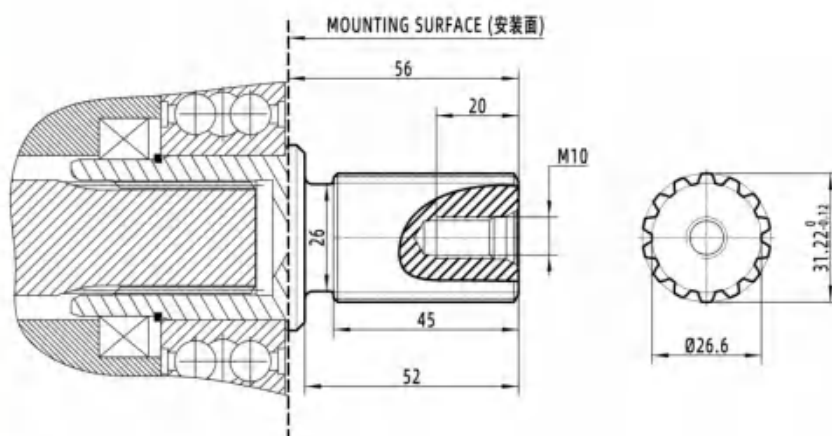
轴/花键

07

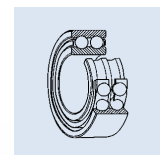


SAE INVOLUTE SPLINE
16 TEETH 16/32 PITCH
16 齿 Ø27 开线花键

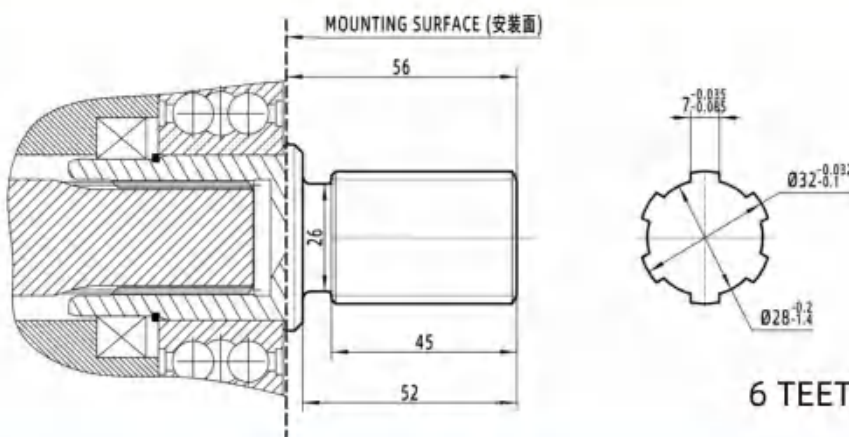
07.00



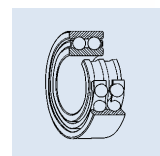
SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿 Ø31.2 渐开线花键



07.03

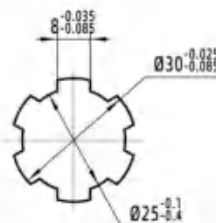
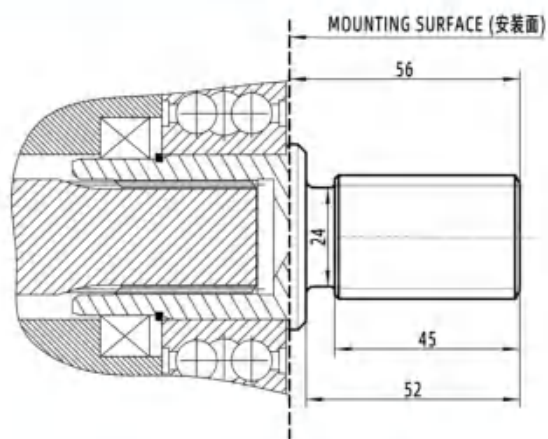


6 TEETH Ø32 RECTANGLE SPINE
6 齿矩形花键-Ø32

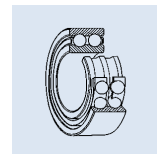


GEAR SHAFT

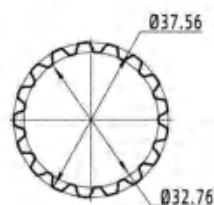
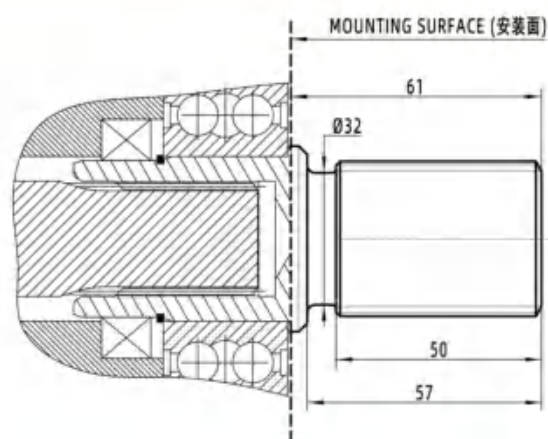
轴/花键



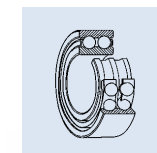
07.04



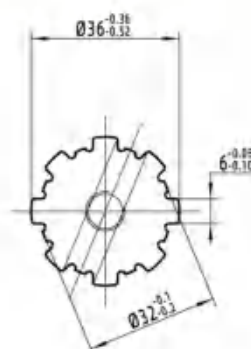
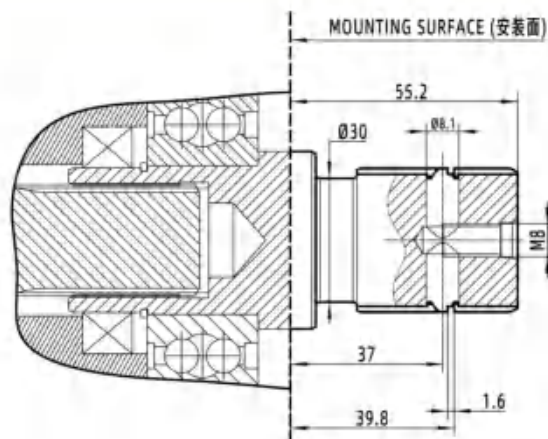
6 TEETH Ø30 RECTANGLE SPINE
6 齿矩形花键-Ø30



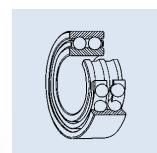
07.05



SAE INVOLUTE SPLINE
17 TEETH 12/24 PITCH
17 齿Ø37.56 渐开线花键



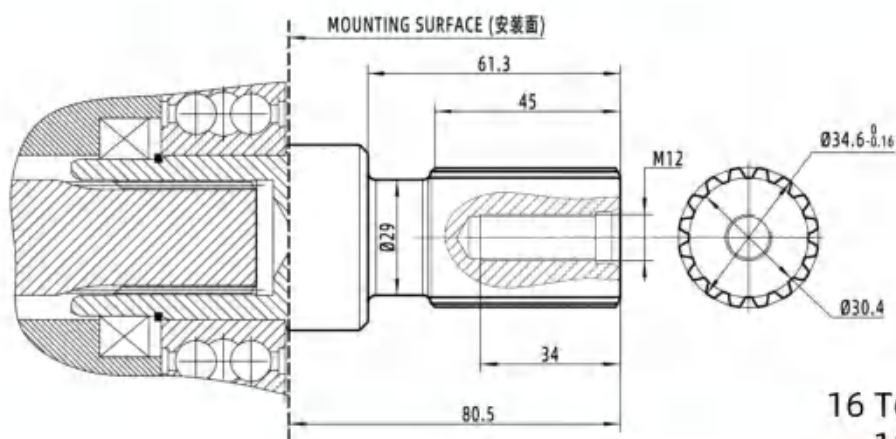
07.07



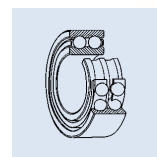
ISO STANDARD
A8x32x36x6 DIN5462
ISO 8 齿矩形花键

GEAR SHAFT

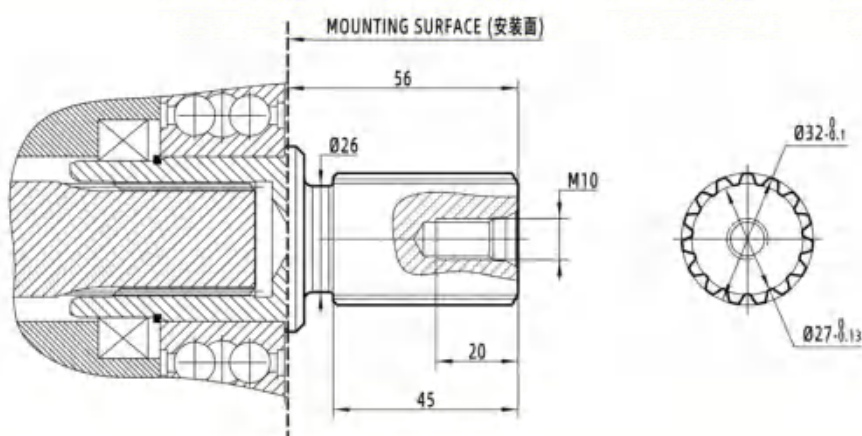
轴/花键



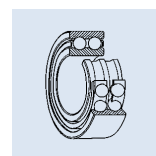
07.09



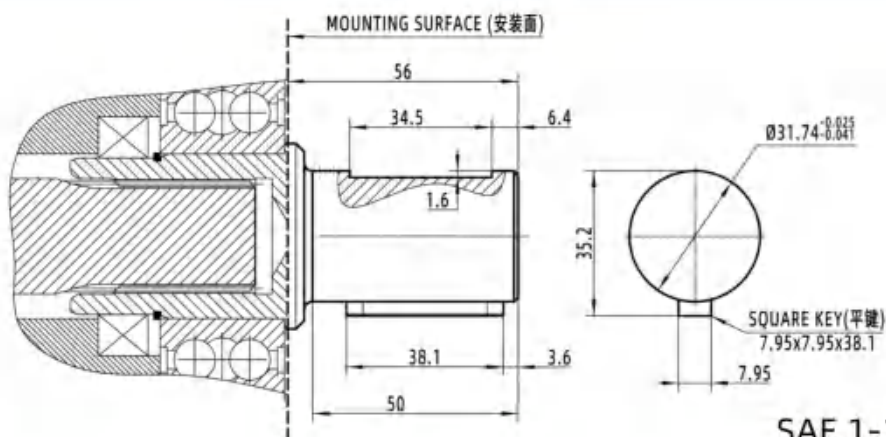
16 Teeth Modulus 2 spline
16 齿Φ34.6 渐开线花键



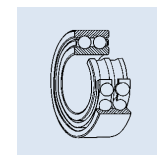
07.10



15 Teeth SPLINE
15 齿Φ32 花键



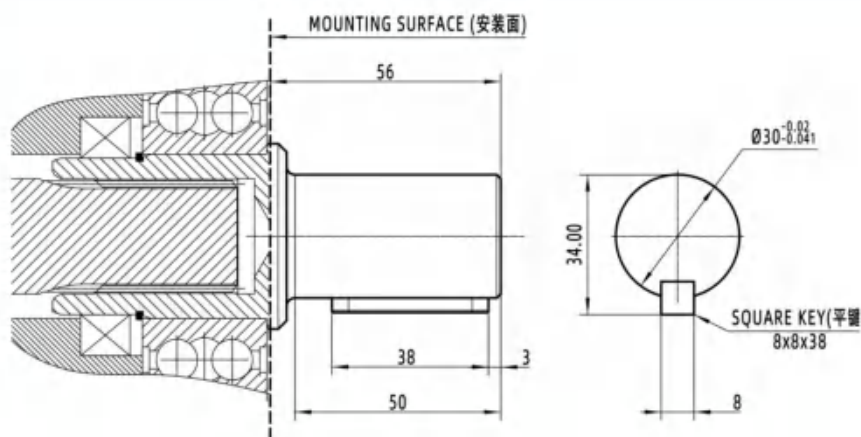
07.11



SAE 1-1/4" STRAIGHT SHAFT
Φ31.75 平键

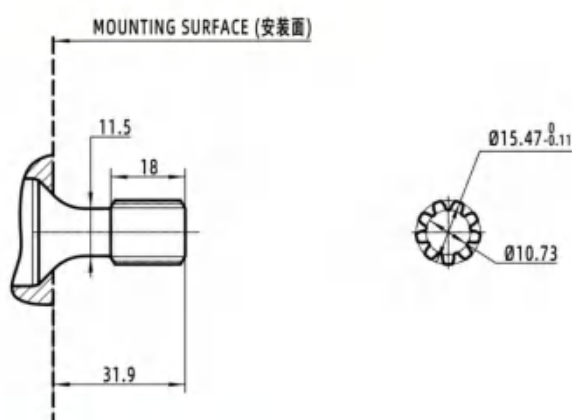
GEAR SHAFT

轴/花键



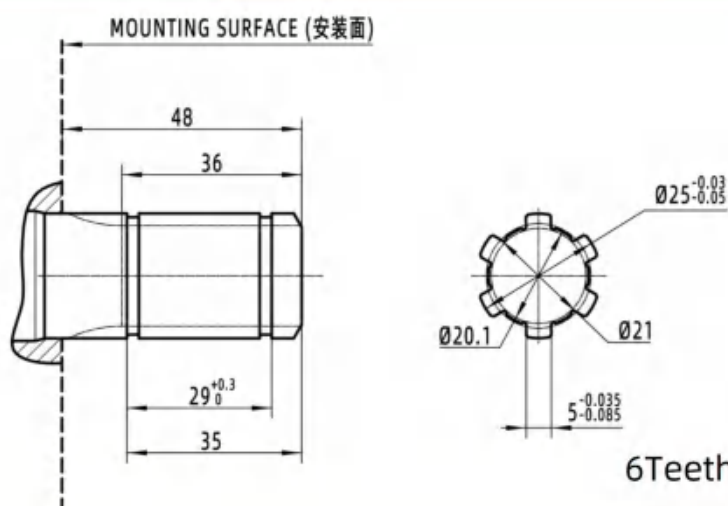
07.12

Φ30 STRAIGHT SHAFT
Φ30 平键



08

SAE INVOLUTE SPLINE
9 TEETH 16/32 PITCH
9 齿Φ15.47 渐开线花键



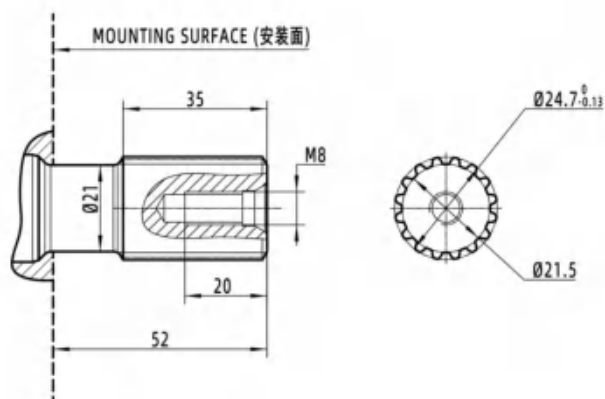
09

6Teeth Φ25 RECTANGLE SPLINE
6 齿矩形花键-Φ25

GEAR SHAFT

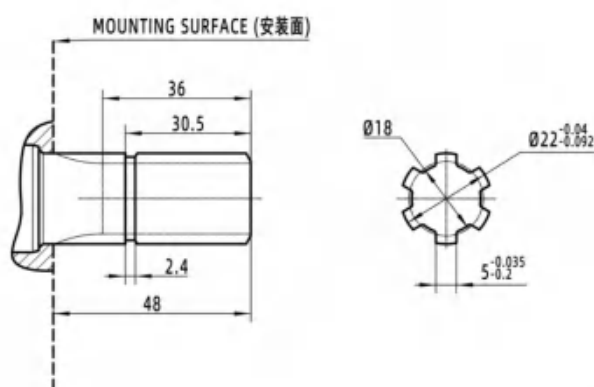
轴/花键

10



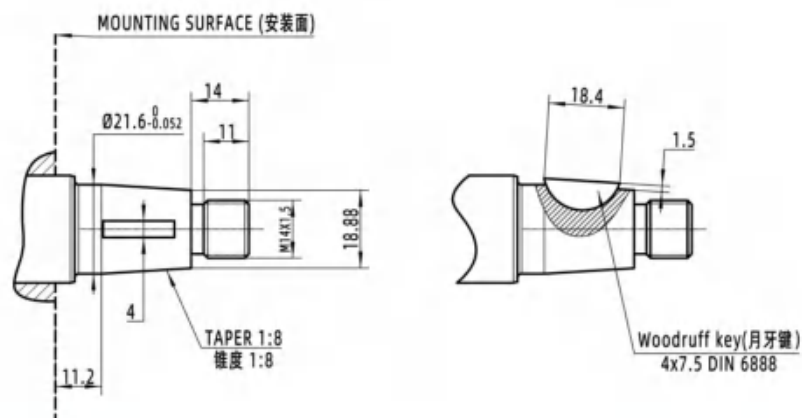
GOST 6033 standard
16 Teeth Russia spline
16 齿 $\Phi 24.7$ 渐开线花键

11



6 Teeth $\Phi 22$ RECTANGLE SPLINE
6 齿矩形花键- $\Phi 22$

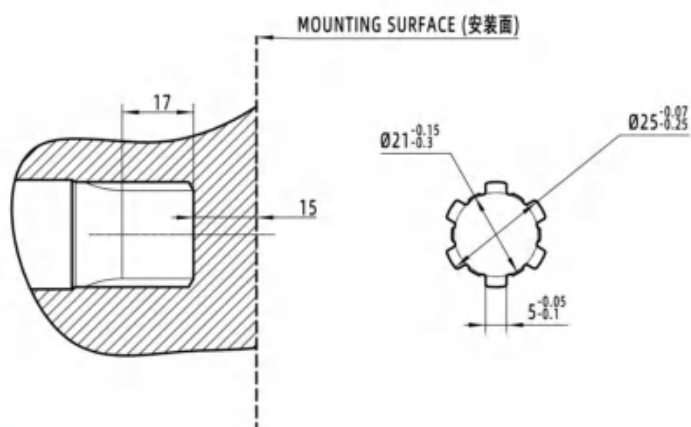
12



1:8 CONE SHAFT
1:8 锥度轴

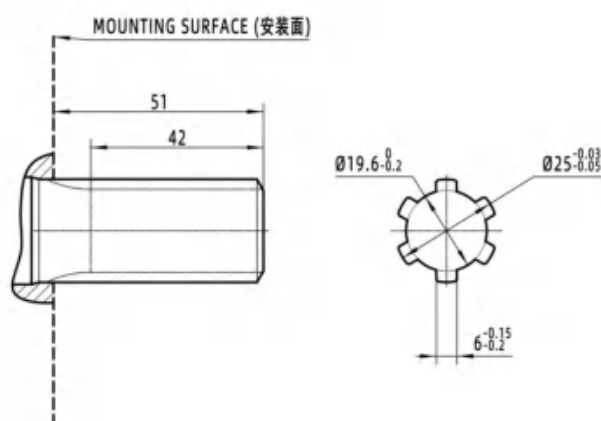
GEAR SHAFT

轴/花键



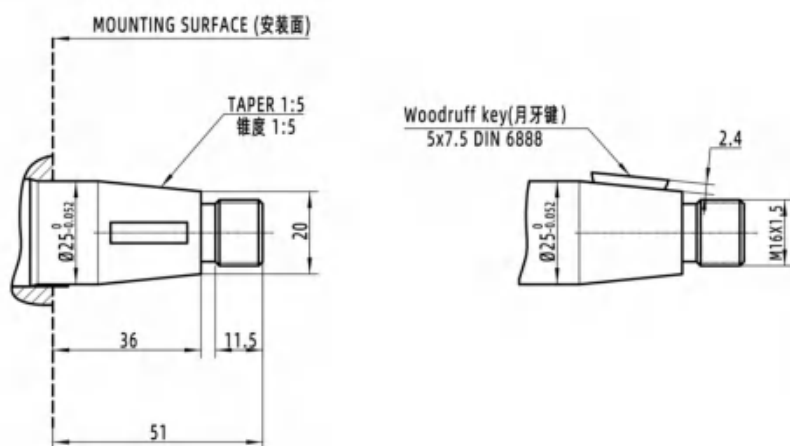
13

UNI 221 RECTANGLE SPLINE
6 齿矩形花键-Φ25



14

6 Teeth Φ25 RECTANGLE SPLINE
6 齿矩形花键-Φ25



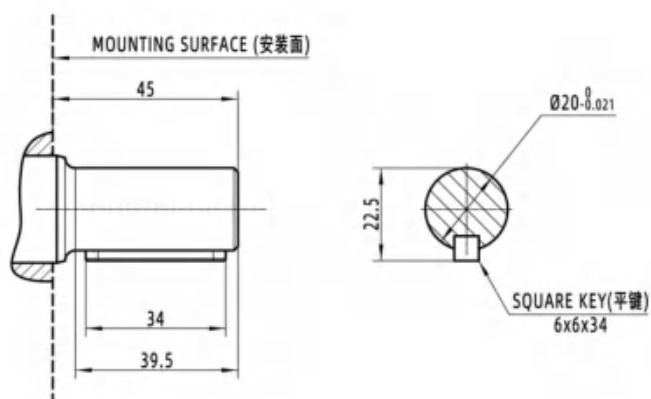
16

1:5 CONE SHAFT
1:5 锥度轴

GEAR SHAFT

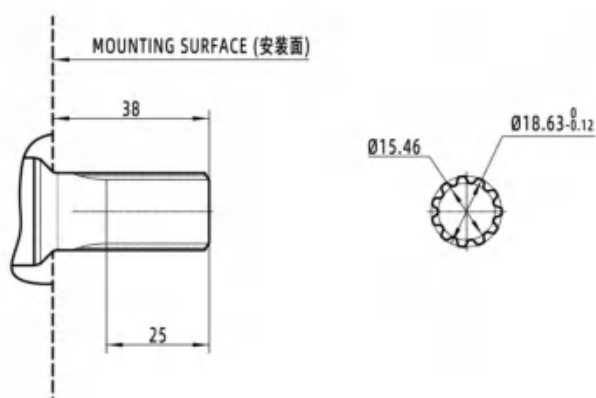
轴/花键

17



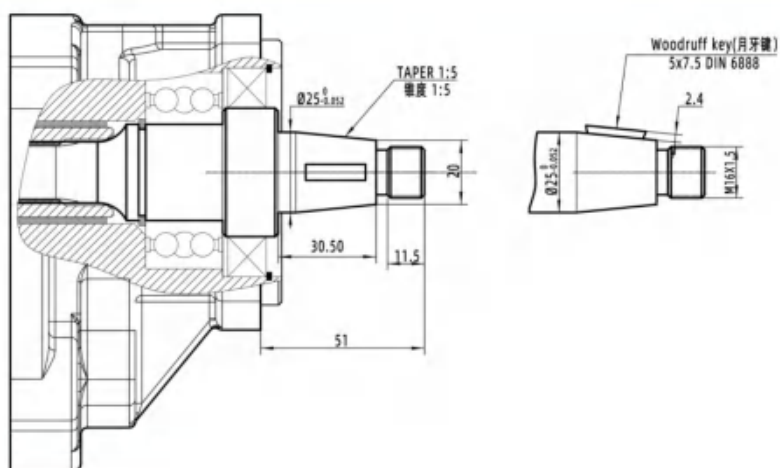
Φ30 STRAIGHT SHAFT
Φ30 平键

18

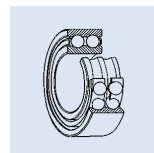


SAE INVOLUTE SPLINE
11 TEETH 16/32 PITCH
11 齿Φ18.63 渐开线花键

00.13

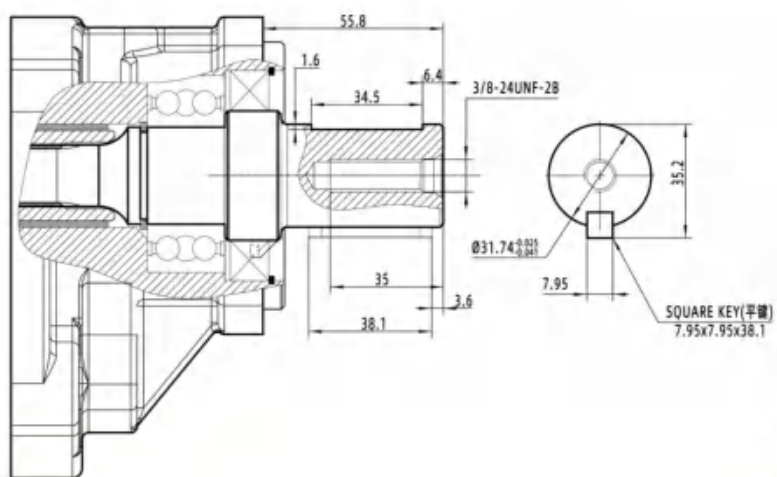


1:5 CONE SHAFT
1:5 锥度轴

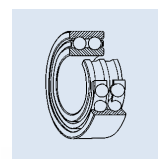


GEAR SHAFT

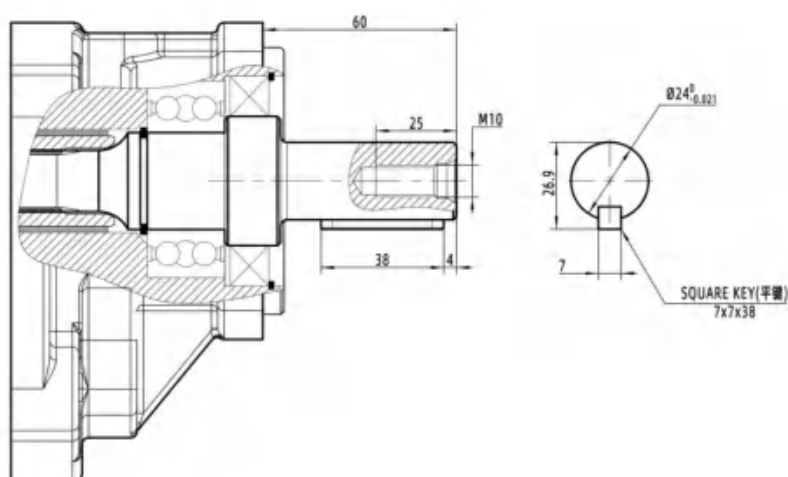
轴/花键



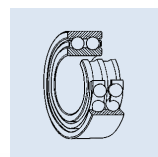
00.15



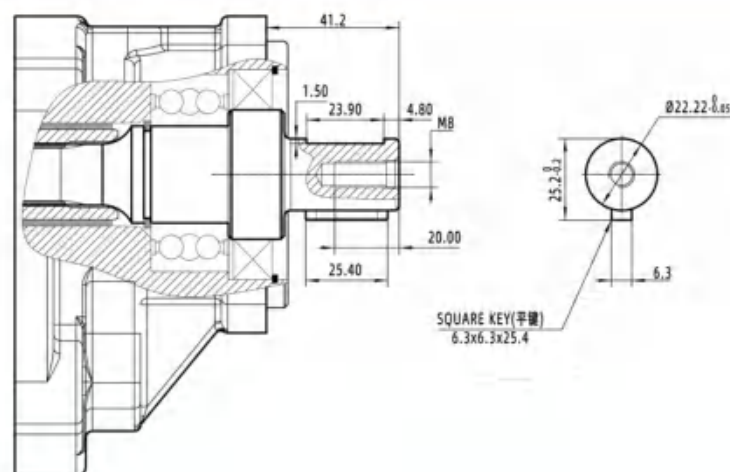
SAE 1-1/4" STRAIGHT SHAFT
 $\Phi 31.75$ 平键



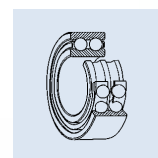
00.16



$\Phi 24$ STRAIGHT SHAFT
 $\Phi 24$ 平键



00.17

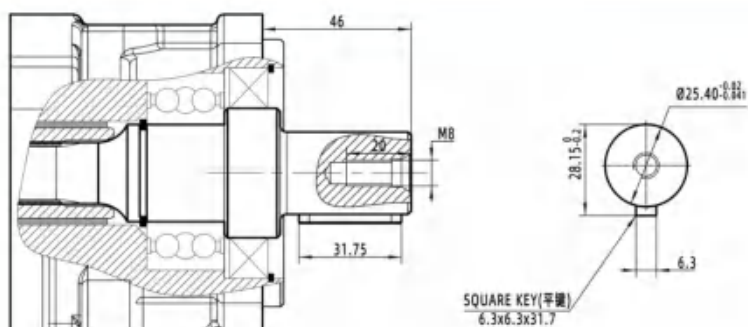


$\Phi 22.22$ STRAIGHT SHAFT
 $\Phi 22.22$ 平键

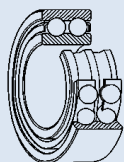
GEAR SHAFT

轴/花键

00.19



SAE-1" STRAIGHT SHAFT
Φ25.4 平键



This mark means the front cover is only for "C" type outboard bearing option

Please refer to PAGE 11

带此标记的前盖只能用在 "C" 类的轴承形式产品中

详见第 11 页



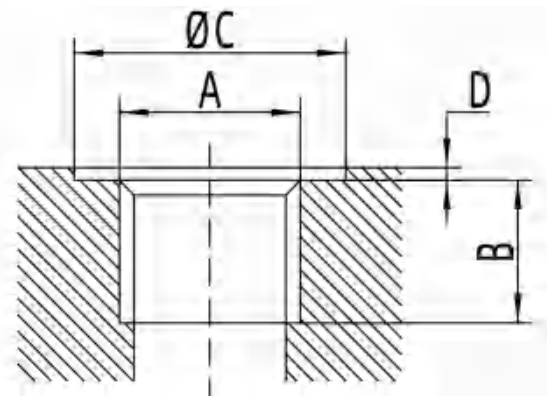
For other gear shaft requirement please contact our pre-sale department.

如有其他轴/花键尺寸的需求，请联系我公司售前部门。

OIL PORT SIZE

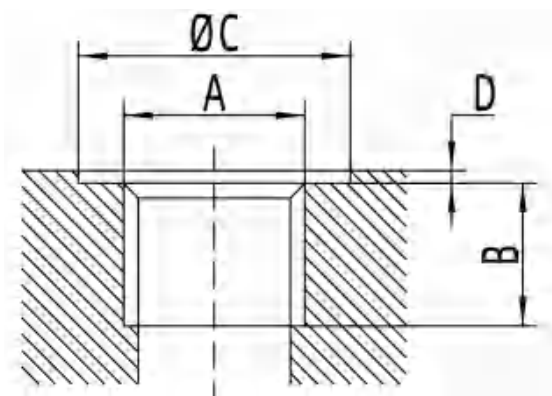
油口尺寸

Metric thread according to ISO 6149
公制螺纹 ISO 6149



	A	B	C	D
M01	M10x1	10	20	1
M02	M12x1.5	11.5	23	1.5
M03	M14x1.5	11.5	25	1.5
M04	M16x1.5	13	28	1.5
M05	M18x1.5	14.5	30	2
M06	M22x1.5	15.5	33	2
M07	M24x1.5	19	34	2
M08	M27x1.5	19	40	2
M09	M27x2	19	40	2
M10	M30x2	19	44	2
M11	M33x1.5	19	49	2.5
M12	M33x2	19	49	2.5
M13	M36x2	19.5	53	2.5
M14	M42x2	19.5	58	2.5
M15	M48x2	22	63	2.5
M16	M60x2	27.5	74	2.5

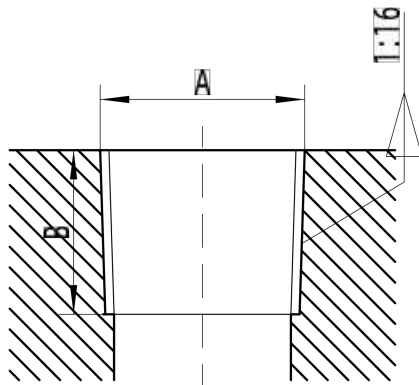
BSPP pipe thread according to ISO 228-1
英制 G 螺纹 ISO 228-1



CODE	A	B	C	D
G01	G1/4	13	20	1 Max
G02	G3/8	21	33	1 Max
G03	G1/2	21	33	1 Max
G04	G3/4	21	39	1 Max
G05	G1	21	45	1 Max
G06	G1-1/4	21	58	1 Max
G07	G1-1/2	26	64	1 Max
G08	G2	26	78	1 Max
G09	G2-1/2	26	85	1 Max

BSPT 55° pipe thread according to ISO 228-1

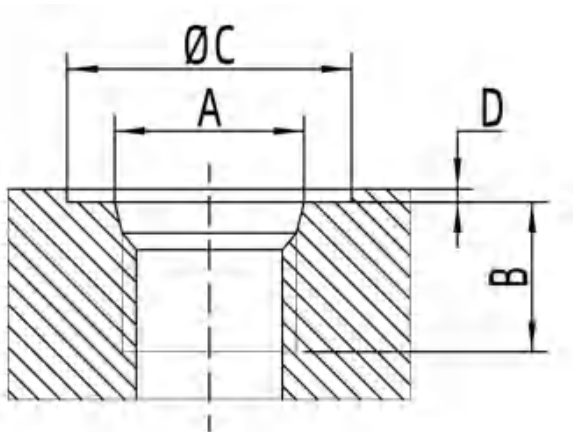
英制 ZG 螺纹 ISO 228-1



CODE	A	B
Z01	ZG1/4	13.157
Z02	ZG3/8	21
Z03	ZG1/2	21
Z04	ZG3/4	21
Z05	ZG1	21
Z06	ZG1-1/4	21
Z07	ZG1-1/2	26
Z08	ZG2	26
Z09	ZG2-1/2	26

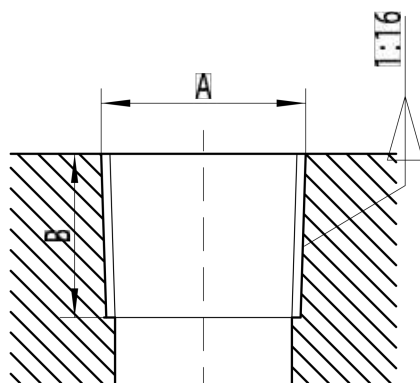
UNF thread according to SAE

美制螺纹



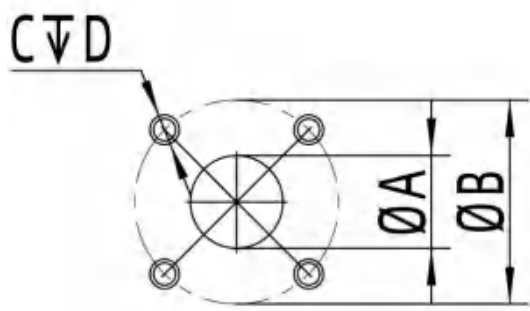
CODE	A	B	C	D
U01	7/16-20 UNF	13	21	1Max
U02	9/16-18 UNF	13	25	1 Max
U03	3/4-16 UNF	13	30	1 Max
U04	7/8-14 UNF	17	34	1 Max
U05	1-1/16-12 UNF	19	41	1 Max
U06	1-5/16-12UNF	23	49	1 Max
U07	1-5/8-12UN	23	58	1 Max
U08	1-7/8-12UN	23	65	1 Max

NPT thread according to SAE 美制锥螺纹



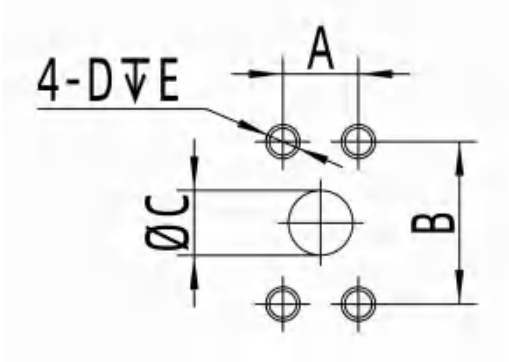
CODE	A	B
N01	NPT 1/4	13.157
N02	NPT 3/8	21
N03	NPT 1/2	21
N04	NPT 3/4	21
N05	NPT 1	21
N06	NPT 1-1/4	21
N07	NPT 1-1/2	26
N08	NPT 2	26
N09	NPT 2-1/2	26

Flanged fittings according to DIN 8901/8902 欧标法兰



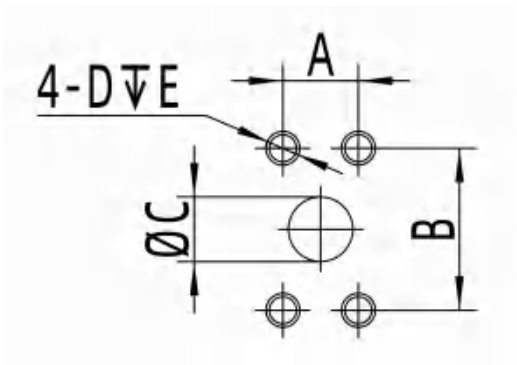
CODE	A	B	C	D
H01	8	26	M5	12
H02	10	26	M5	12
H03	8	30	M6	12
H04	12	30	M6	12
H05	15	35	M6	13
H06	20	40	M6	13
H07	13.5	30	M8	16
H08	20	40	M8	16
H09	18	55	M8	16
H10	25	55	M8	16
H11	26	51	M10	16

Flanged fittings according to METRIC 公制法兰



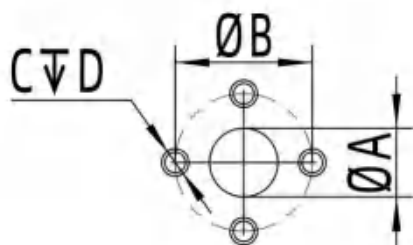
CODE	A	B	C	D	E
E01	17.5	38.1	13	M8	16
E02	22.2	47.6	19	M10	21
E03	26.2	52.4	25.4	M10	21
E04	30.2	58.7	31.8	M10	21
E05	35.7	69.8	38.1	M12	21
E06	42.9	77.8	50.8	M12	21
E07	50.8	88.9	63.5	M12	21

Flanged fittings according to SAE 美制法兰



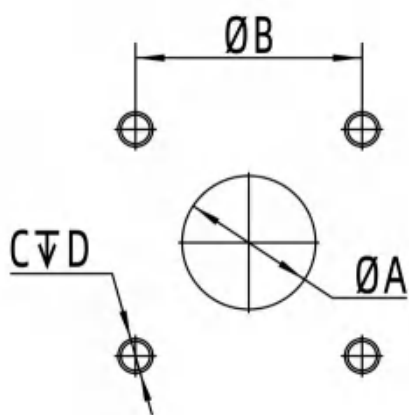
CODE	A	B	C	D	E
A01	17.5	38.1	13	5/16-18 UNC	16
A02	22.2	47.6	19	3/8-16 UNC	21
A03	26.2	52.4	25.4	3/8-16 UNC	21
A04	30.2	58.7	31.8	7/16-14 UNC	21
A05	35.7	69.8	38.1	1/2-13 UNC	21
A06	42.9	77.8	50.8	1/2-13 UNC	21
A07	50.8	88.9	63.5	1/2-13 UNC	21

Flanged fittings - "cross" 十字安装法兰



CODE	A	B	C	D
K01	13.5	30	M6	13
K02	20	40	M8	16
K03	18	40	M8	16
K04	26	51	M10	18
K05	18	55	M8	16
K06	25	55	M8	16
K07	14	38	M8	16
K08	19	38	M8	16

Flanged fittings - "square" 方形安装法兰



CODE	A	B	C	D
S03	60	78	M12	24
S04	46	78	M12	24
S05	22	48	M10	22
S06	30	48	M10	22
S08	19	54	M10	22
S09	27	54	M10	22
S10	16	46	M8	20
S11	23.5	46	M8	20



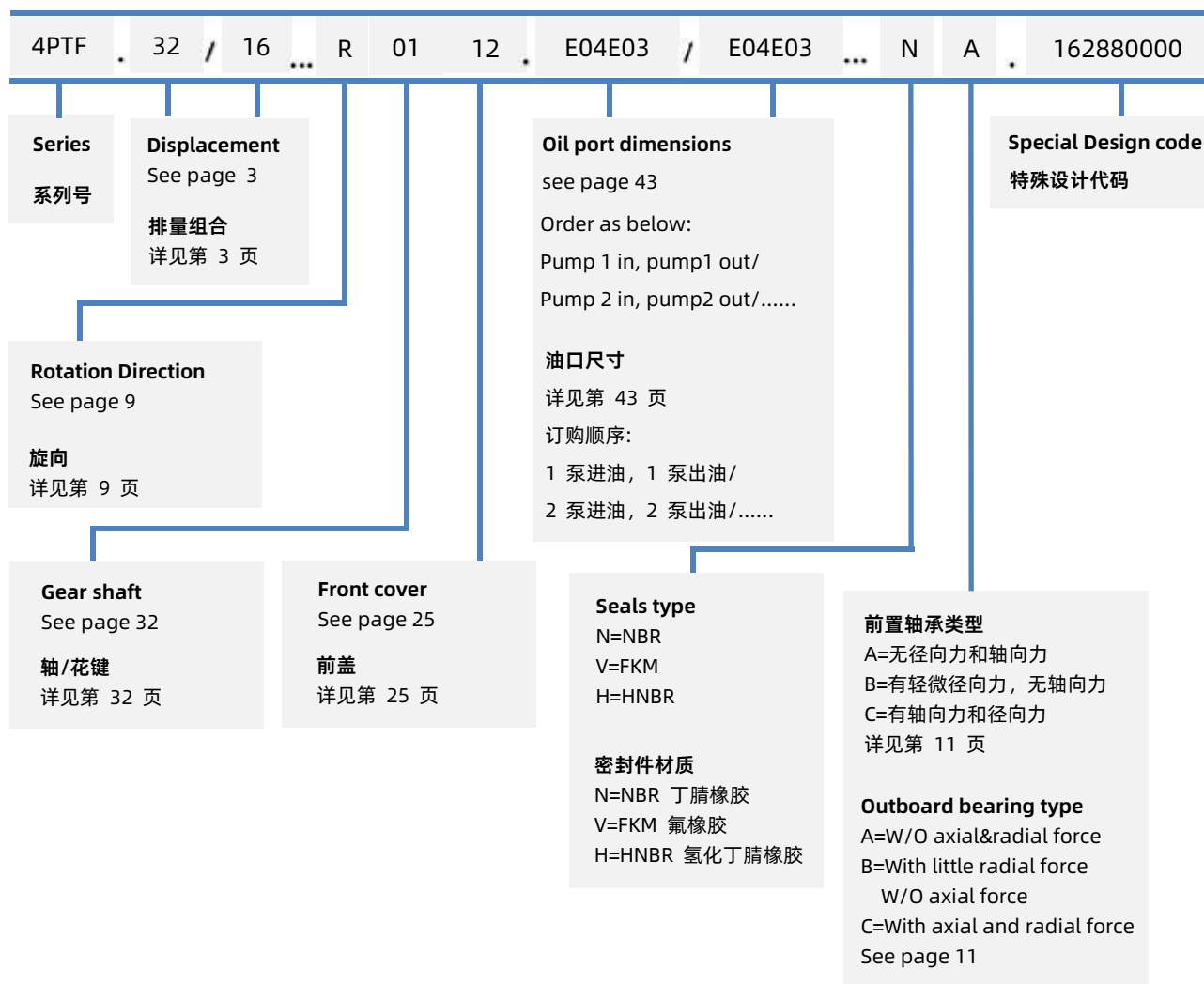
For other oil port requirement please contact our pre-sale department.
如有其他油口尺寸的需求，请联系我公司售前部门。

ORDER KEY

如何订购

4PTF SERIES

4PTF 系列



For any other dimensions or technical requirement,
please feel free to contact us!
如有任何尺寸或者技术需求, 欢迎随时联系我们!



ULTRA HIGH PRESSURE GEAR PUMP

SERIES 5PTF

超高压齿轮泵 5PTF 系列

PRODUCT FEATURES

产品优势



- Heavy duty special DU bearing with long working life
使用喷涂特殊专利涂层的 DU 轴承可在重负载下具有长久的工作寿命
- Max working pressure up to 4568 PSI/ 31.5Mpa
极限工作压力可达 4568 磅力/平方英寸 (31.5 兆帕)
- Displacement from 25 to 125cc/rev
可选排量范围从每转 15 毫升直到每转 125 毫升
- High strength cast iron body with special designed structure
采用自主研发专利设计的内部结构，并采用高强度的蠕墨铸铁材质壳体
- High precision carburizing&quenching gears with extra hardness
高精度齿轮，特殊材质经过渗碳淬火达到超高硬度
- Copper pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
铜质双金属压力平衡补偿板可在工作寿命内持续保证高容积效率
- 100% factory tested
产品出厂前 100%进行性能检测和跑合试验
- Custimized mounting size and oil ports
安装尺寸和进出油口可根据客户需要定制生产

TECHNICAL SPECIFICATIONS

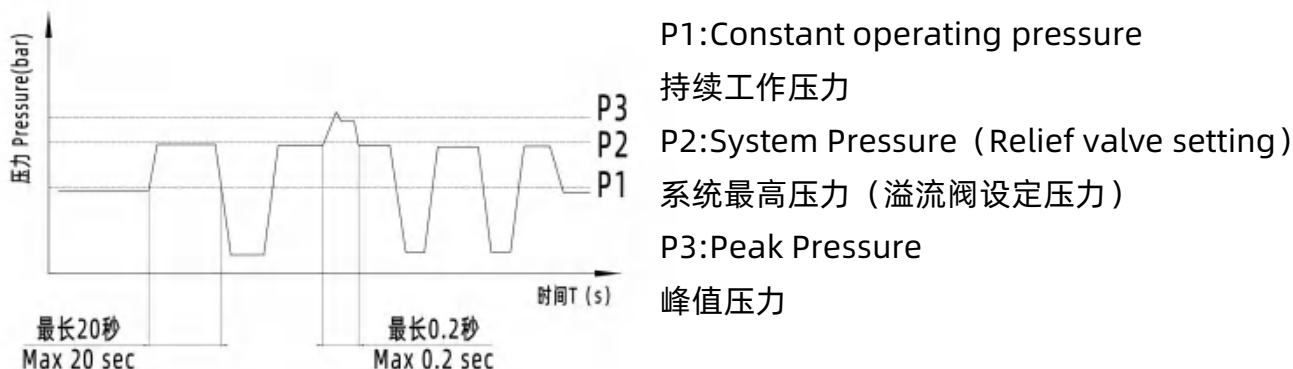
技术参数

Model 型号	Displacement 排量	Flow rate 流量	Pressure 压力			Rotate Speed 转速		Input power @250bar &1500rpm 25MPa/1500 转 时的输入功率
		@1500RPM				Max 最高	Min 最低	
			P1	P2	P3			
	cm ³ /rev	l/min	bar			rpm		kW
5PTF.15	15	22.5	200	230	250	3000	350	9
5PTF.25	25	37.5	200	230	250	3000	350	15
5PTF.35	35	52.5	230	270	290	3000	350	21
5PTF.45	45	67.5	230	270	290	3000	350	27
5PTF.55	55	82.5	230	270	290	3000	350	33
5PTF.65	65	97.5	250	280	315	3000	350	39
5PTF.75	75	112.5	250	280	315	3000	350	45
5PTF.85	85	127.5	250	280	315	3000	350	51
5PTF.95	95	142.5	250	280	315	3000	350	57
5PTF.105	105	157.5	250	280	315	3000	350	63
5PTF.115	115	172.5	230	250	280	3000	350	69
5PTF.125	125	187.5	200	230	250	3000	350	75



For special displacement requirement,
please consult our pre-sales department.
如有其他特殊排量需求，请咨询我公司售前部门。

关于压力的定义



The peak of pressure is the max pressure allowed and it corresponds to the overshoot^① of the relief valve.

Please note that both relief valve setting and overshoot must be lower than their limits.

If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Avenir limit.

For high frequency applications please consult our pre-sales department.

峰值压力是系统允许的最大压力，它对应的是溢流阀过载压力^①。

请注意，溢流阀设定压力和过载压力都必须低于泵的压力极限。

如果溢流的设定压力符合要求，但是超载压力高于泵的压力极限，那么必须降低溢流阀的压力设置，直到超载压力符合 Avenir 的标准限定。

对于工作频率比较高的应用场景，请咨询我们的售前部门。

① Overshoot: The actual pressure reading when a relief valve first opens to bypass fluid. (It can be up to twice the actual pressure setting.)

过载压力：当溢流阀刚开始开启时的瞬时压力（此压力有可能会比实际的设定压力高一倍以上）

FORMULAS USED FOR CALCULATION

液压系统计算公式

$$Q = \frac{V \cdot \eta_v \cdot n / 1000}{V \cdot \eta_v \cdot n / 231} \quad \begin{matrix} [\text{l/min}] \\ [\text{Gal/min}] \end{matrix}$$

$$M = \frac{\frac{\Delta p \cdot V}{62.83 \cdot \eta_m}}{\frac{\Delta p \cdot V}{2 \cdot 3.14 \cdot \eta_m}} \quad \begin{matrix} [\text{Nm}] \\ [\text{lbf.in}] \end{matrix}$$

$$P = \frac{\frac{\Delta p \cdot V \cdot n}{600 \cdot 1000 \cdot \eta_t}}{\frac{\Delta p \cdot V \cdot n}{395934 \cdot \eta_t}} \quad \begin{matrix} [\text{kW}] \\ [\text{HP}] \end{matrix}$$

$$\eta_v = \frac{Q_{\text{act.}}}{Q_{\text{theor.}}}$$

$Q_{\text{act.}}$: Actual flow rate 实际流量
 $Q_{\text{theor.}}$: theoretical flow rate 理论流量

It determines the amount of flow losses. Its value is $\eta_v = 0.92 \sim 0.98$ (depending on rotation speed, oil temperature, viscosity of working liquid and outlet pressure).

容积效率决定了泵的内泄漏量，数值一般取 0.92~0.98
(实际数值取决于转速，油温，油液粘性，工作压力等)

$$\eta_m = \frac{M_{\text{theo}}}{M_{\text{act.}}}$$

$M_{\text{theo.}}$: theoretical torque 理论扭矩
 $M_{\text{act.}}$: Actual torque 实际扭矩

It determines mechanical losses. Its value is about $\eta_m = 0.85$

机械效率决定了泵的机械损失，数值一般取 0.85

$$\eta_t = \eta_v \cdot \eta_m = \frac{P_{\text{theo}}}{P_{\text{act.}}}$$

$P_{\text{theo.}}$: Theoretical input power 理论输入功率

$P_{\text{act.}}$: Actual input power 实际输入功率

It is defined as product of η_v and η_m and determines difference between theoretical and actual required input power

总效率是容积效率和机械效率的乘积，他决定了理论输入功率和实际需要的输入功率的差别

Conversion factor 单位换算

SI units 国际单位制	US units 美国单位制
1 l/min	0.2641 US Gal/min
1 Nm	8.851 in-lbs
1 Nm	0.7375 ft-lbs
1 N	0.2248 lbs
1 kW	1.34 HP
1 cm ³ /rev	0.061 in ³ /rev
1 bar	14.5 psi
1 mm	0.0394 in
1 kg	2.205 lbs

Variables 参数

Q : FLOW RATE 流量	[l/min] [Gal/min]
M : Torque 扭矩	[Nm] [lbf.in]
P : Power 功率	[kW] [HP]
V : Displacement 排量	[cm ³ /rev] [in ³ /rev]
n: Speed 转速	[min ⁻¹]

η_v : Volumetric efficiency 容积效率

η_m : Mechanical efficiency 机械效率

η_t : Overall efficiency 总效率

WORKING LIQUID

工作介质

- Mineral oils for hydraulic drives
用于液压驱动的矿物油
- Hydraulic liquids based on plant oils suitable for hydraulic drives
用于液压驱动的植物基-液压油

LIQUID TEMPERATURE

工作油温

- $t = -20^{\circ}\text{C} \sim +80^{\circ}\text{C}$ (with NBR seals) (当密封件选用丁腈橡胶材质时)
 $t = 0^{\circ}\text{C} \sim +200^{\circ}\text{C}$ (with FKM seals) (当密封件选用氟橡胶材质时)
 $t = -50^{\circ}\text{C} \sim +120^{\circ}\text{C}$ (with HNBR seals) (当密封件选用氢化丁腈橡胶材质时)

CINEMATIC VISCOSITY

运动粘度

- Recommended (during continuous operation):
推荐粘度 (持续工作工况下) $v = 20 \sim 80 \text{ [mm}^2/\text{s]}$
- Maximum (cold starting, at viscosity >1000 , operating pressure $<10 \text{ bar}$ is permissible, speed $<1500 \cdot \text{min}^{-1}$):
最大可用粘度 (允许在粘 >1000 , 工作压力 $<10\text{bar}$, 转速 $<1500\text{r/min}$ 时冷启动) $v = 1200 \text{ [mm}^2/\text{s]}$
- Minimum (operating mode at 10 up 20 should be consulted with manufacturer):
最小可用粘度 (如果在 10~20 的粘度下工作, 请咨询我公司技术部门) $v = 10 \text{ [mm}^2/\text{s]}$

Filtration coefficient β_α

过滤系数

- $\beta_{25} 75 \geq$ (for pressure $p_2 < 200$ bar)
 $\beta_{25} 75 \geq$ (当 p_2 压力 < 200 bar 时)
- $\beta_{10} 75 \geq$ (for pressure $p_2 > 200$ bar)
 $\beta_{10} 75 \geq$ (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to ISO 4406

ISO4406 油液污染度等级

- 21/18/15 (for pressure $p_2 < 200$ bar)
21/18/15 (当 p_2 压力 < 200 bar 时)
- 20/17/14 (for pressure $p_2 > 200$ bar)
20/17/14 (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to NAS 1638

NAS1638 油液污染度等级

- LEVEL 10 (for pressure $p_2 < 200$ bar)
10 级 (当 p_2 压力 < 200 bar 时)
- LEVEL 8 (for pressure $p_2 > 200$ bar)
8 级 (当 p_2 压力 > 200 bar 时)

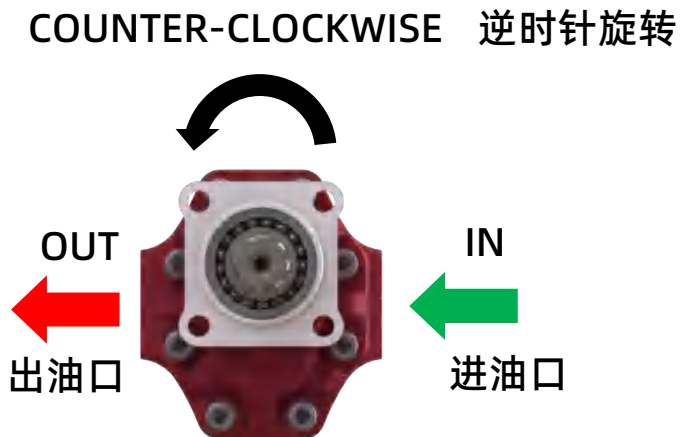
DIRECTION OF ROTATION

旋 向

Determine direction of rotation by looking at the drive shaft.

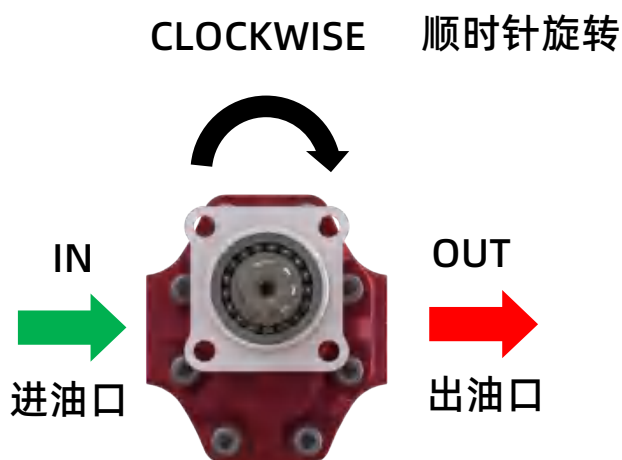
The pump can only be used in the specified direction of rotation.

从轴端方向的视角来判断泵的旋向。泵只能在其相应旋向下工作



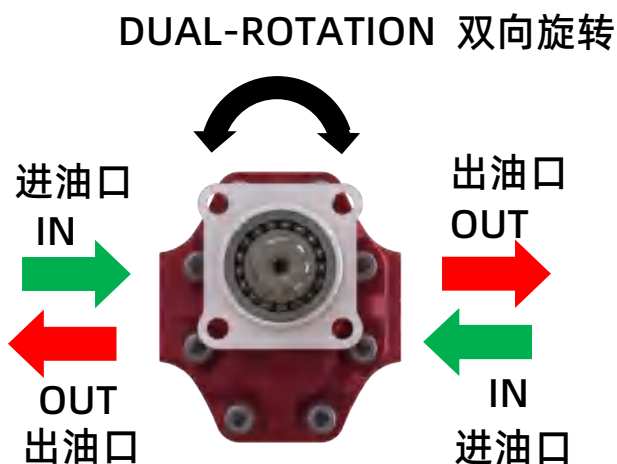
LEFT ROTATION

左 旋



RIGHT ROTATION

右 旋



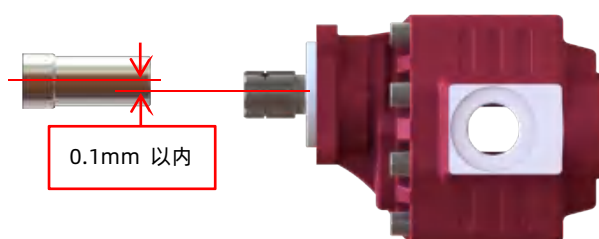
BI-DIRECTION

双 向

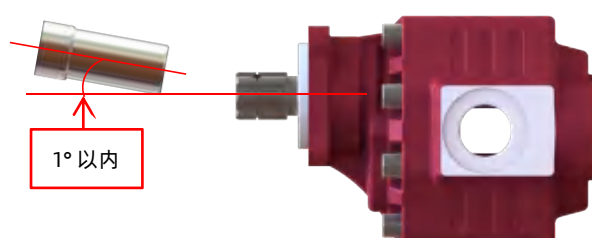
INSTALLATION PRECAUTIONS

安装注意事项

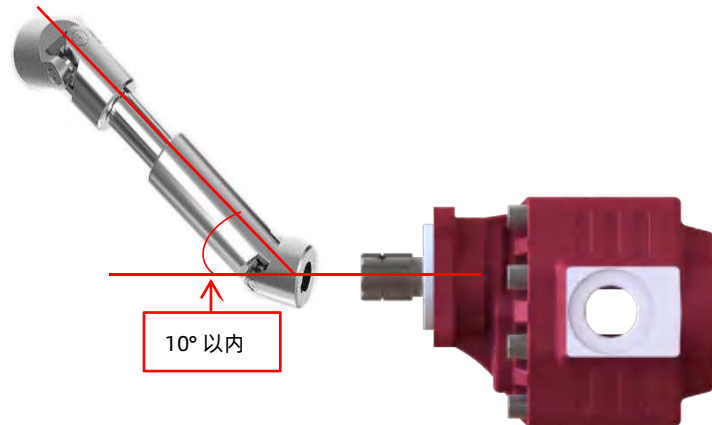
- Please use flexible coupling connection between engine shaft and pump shaft
电机与驱动轴的连接部分请使用柔性联轴器
- The coupling may cause noise, please choose the coupling with elastic material like rubber
联轴器有时会成为噪音源，建议使用橡胶等弹性材料组成的联轴器
- Axial force and radial force is not allow towards the pump shaft, if cannot avoid force, please choose the special bearing type of pump
请勿对泵的轴端施加轴向力和径向力，如无法避免，请选择带有前置轴承的型号
- Bad coaxiality will lead to pump's damage
泵轴与驱动轴的同轴度较差，会导致齿轮泵损坏
Coaxiality deviation should below 0.1mm
同轴度偏差不得超过 0.1mm



- Angle deviation should below 1°
角度偏差不得超过 1°



- Angle deviation when use universal joint should below 10°
万向节传动，角度偏差不得超过 10°



OUTBOARD BEARING OPTIONS

前置轴承选项

A



Version for applications without radial and axial load on the driveshaft

泵的轴端无轴向力和径向力时，选择此方案。

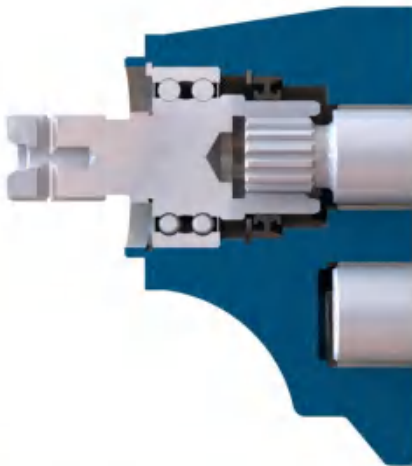
B



Version for applications with low radial load and without axial load on the drive shaft.

泵的轴端有轻微径向力，但无轴向力时，选择此方案。

C



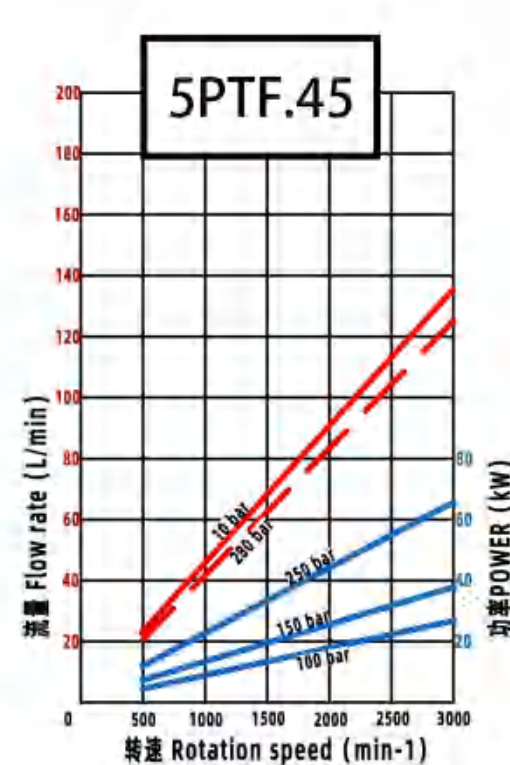
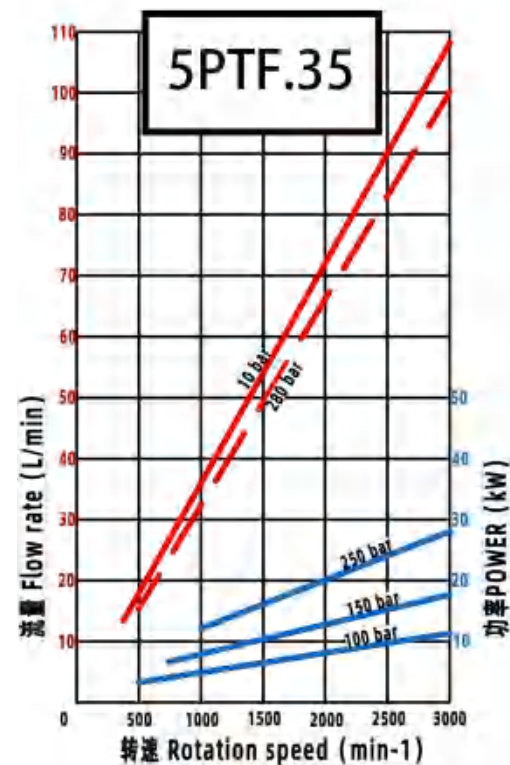
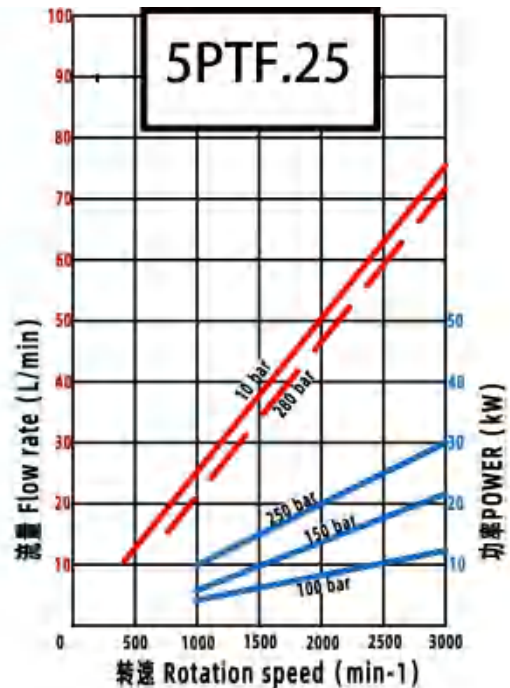
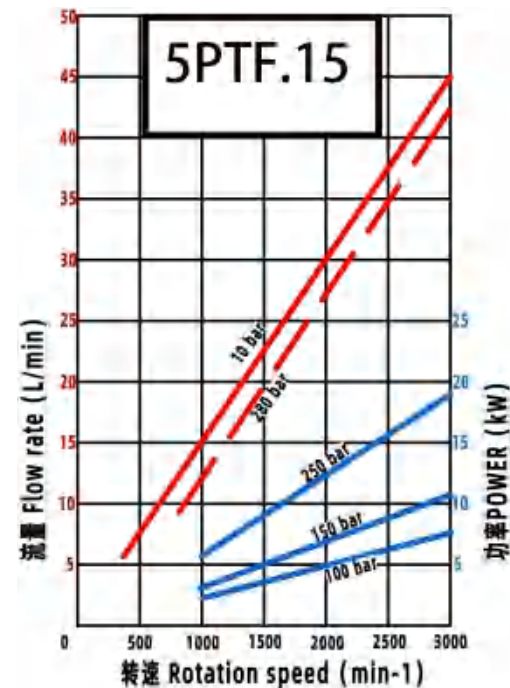
Version for applications with radial and axial load on the drive shaft

泵的轴端有径向力和轴向力时，选择此方案。

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power

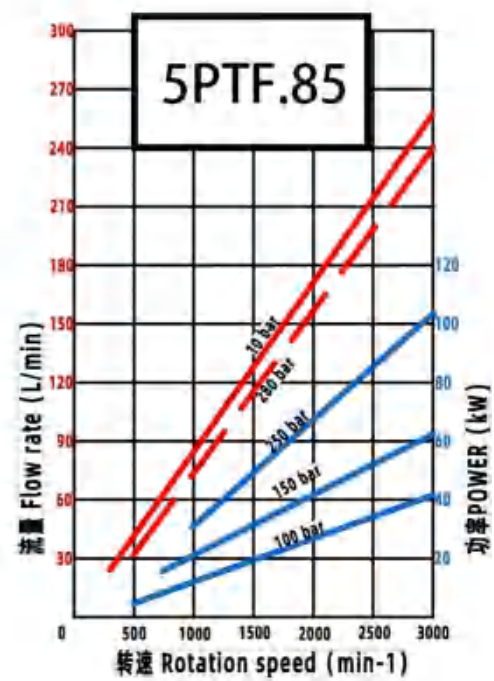
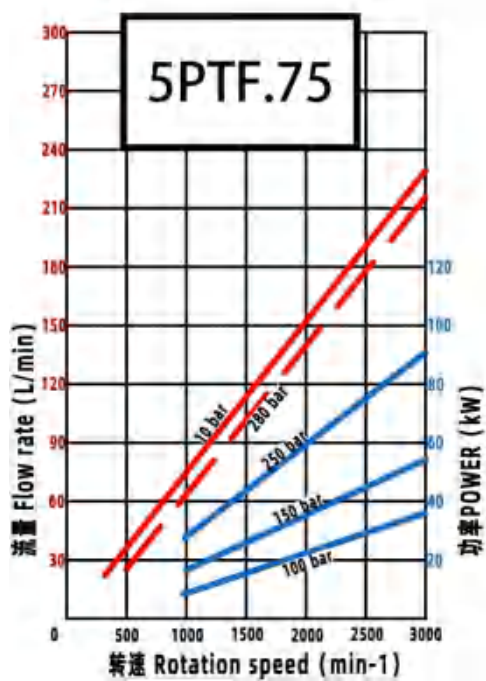
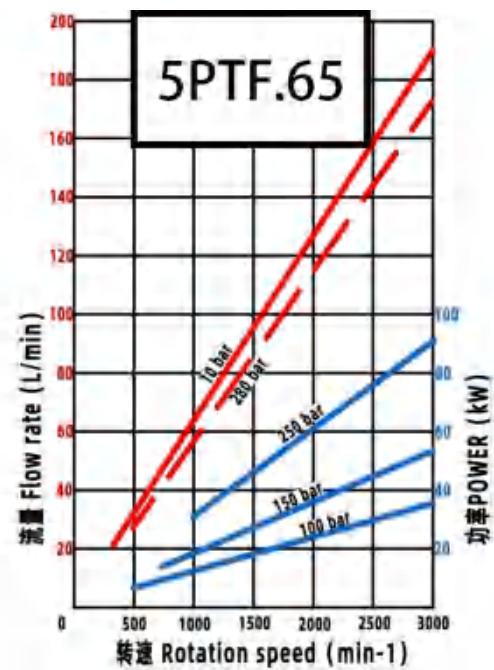
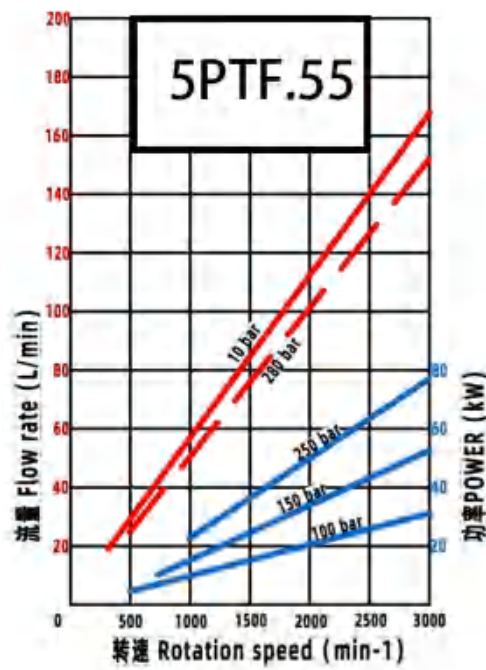


This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power

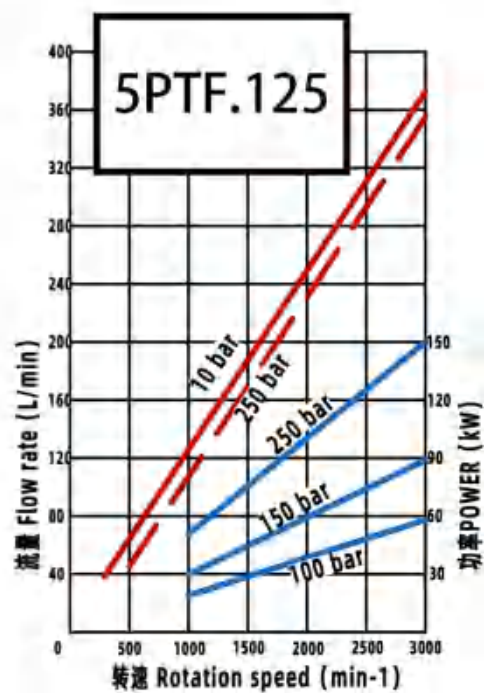
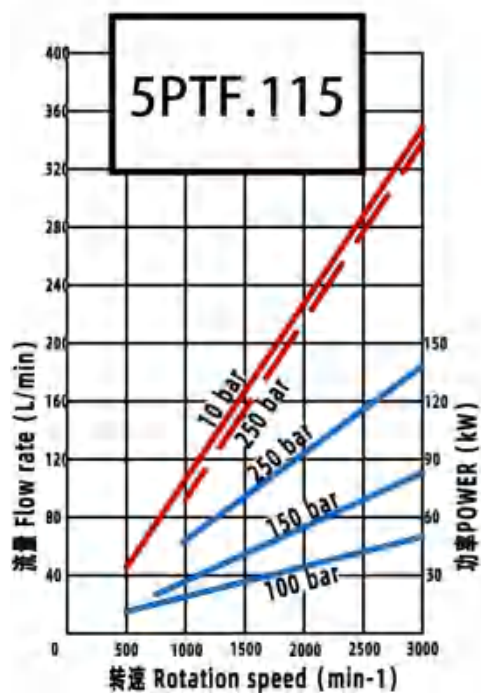
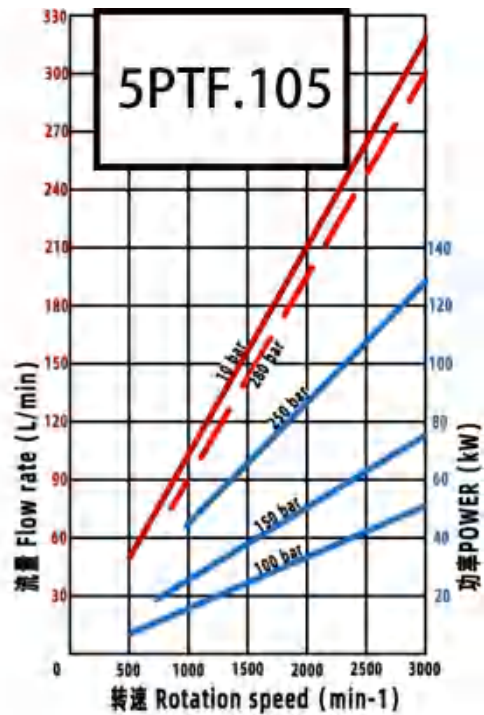
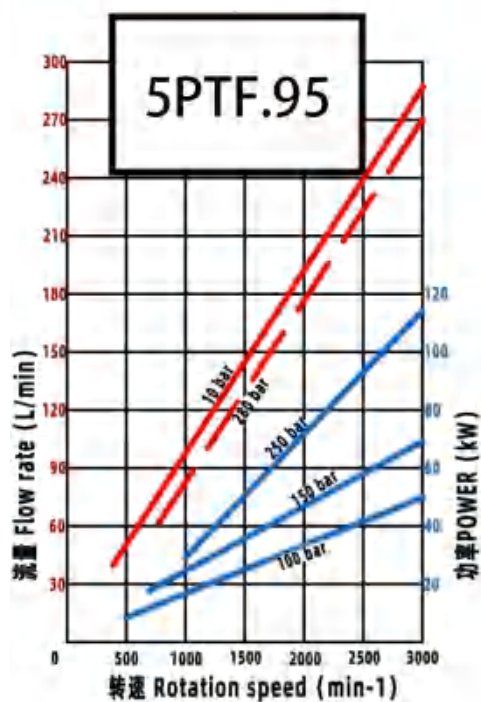


This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)

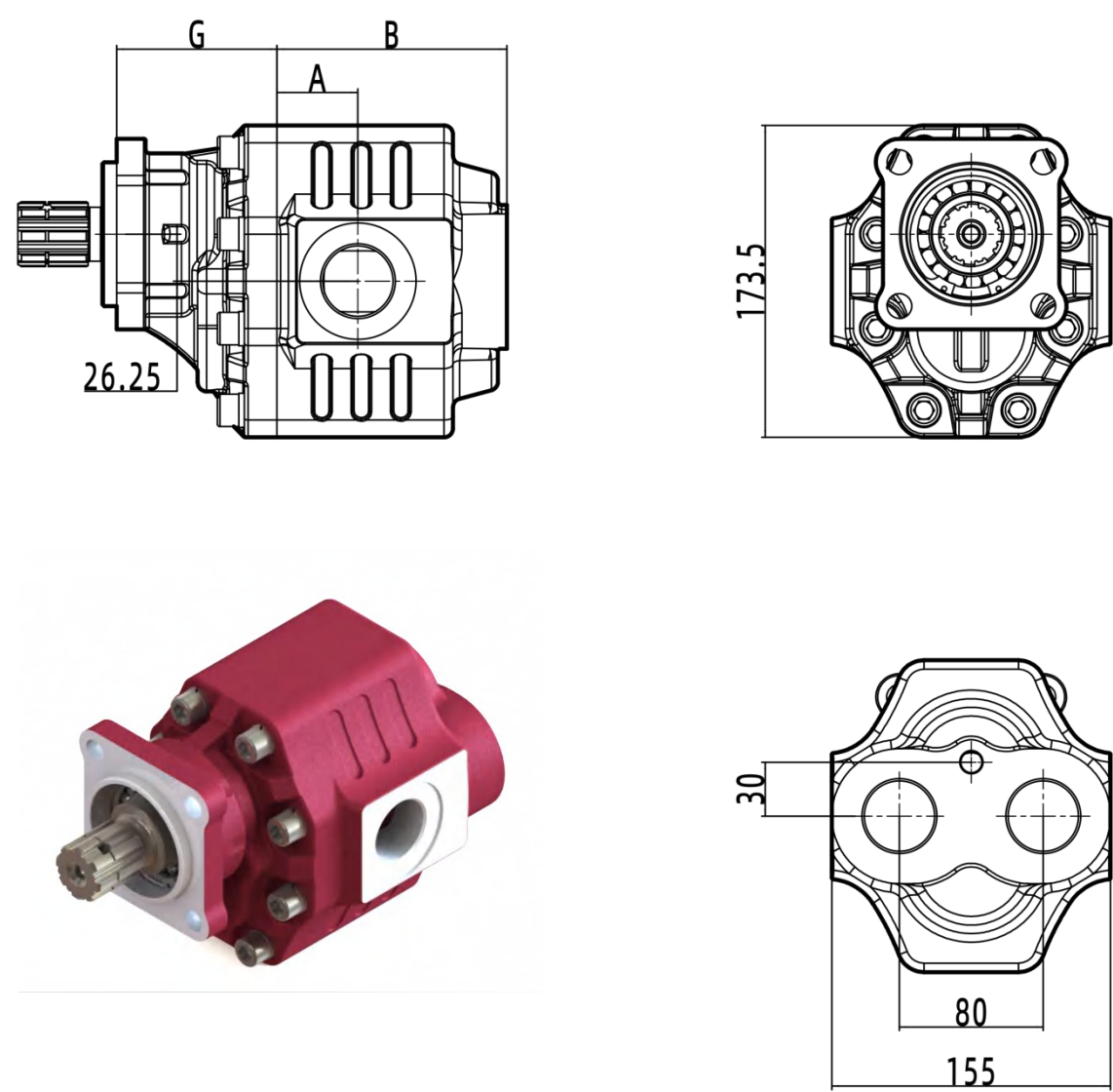
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

DIMENSIONS

外形尺寸

5PTF SINGLE PUMP

5PTF 单泵



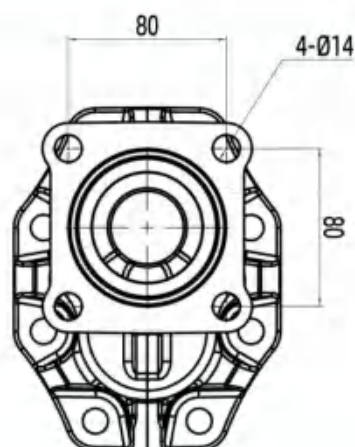
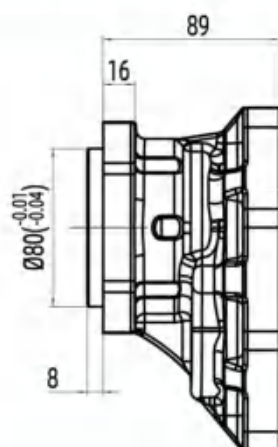
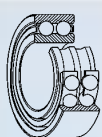
5PTF	15	25	35	45	55	65	75	85	95	105	115	125
A	22.5	25	27.5	30	32.5	35	37.5	40	42.5	45	47.5	50
B	82	87	92	97	103	108	113	118	123	128	133	138

The “G” dimension please see page 64
G 尺寸请参考第 64 页

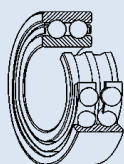
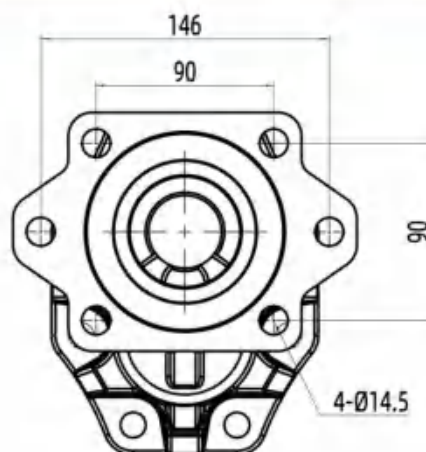
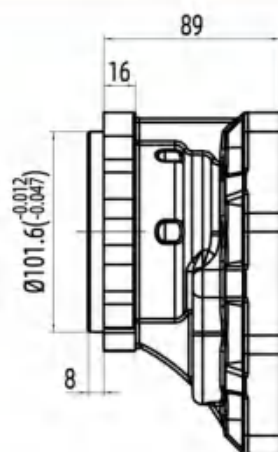
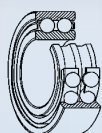
FRONT COVER

前盖

00



01



This mark means the front cover is only for "C" type outboard bearing option

Please refer to PAGE 58

带此标记的前盖只能用在" C" 类的轴承形式产品中

详见第 58 页



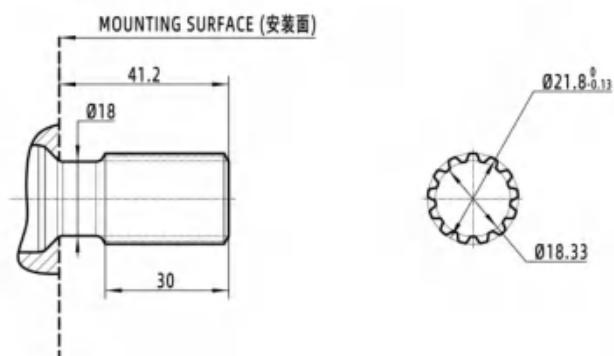
For other front cover requirement please contact our pre-sale department.

如有其他前盖尺寸的需求，请联系我公司售前部门。

GEAR SHAFT

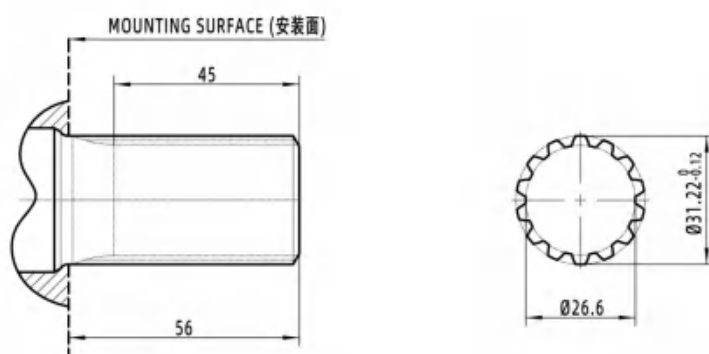
轴/花键

01



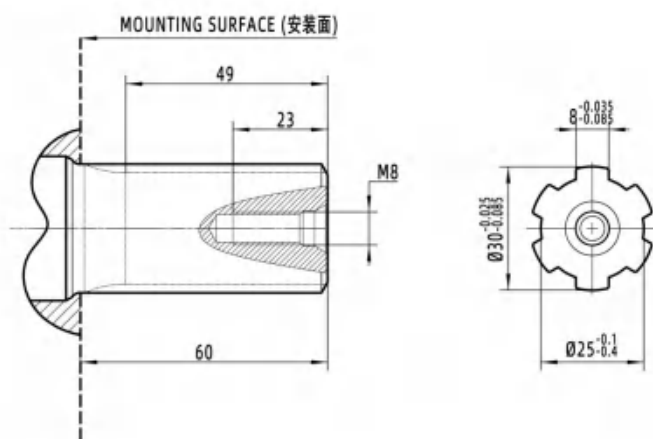
SAE INVOLUTE SPLINE
13 TEETH 16/32 PITCH
13 齿 Ø21.8 渐开线花键

02



SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿 Ø31.2 渐开线花键

03

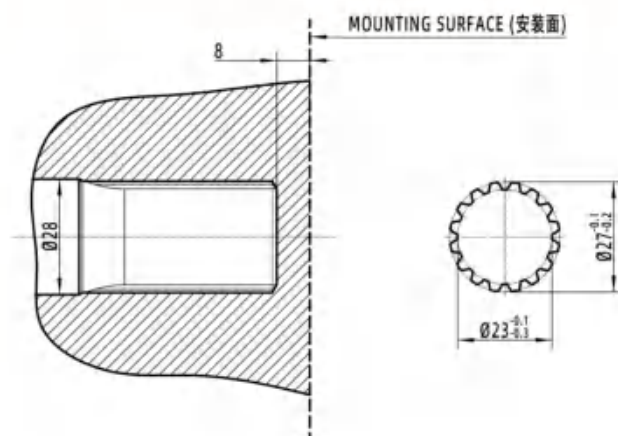


Φ30 RECTANGLE SPLINE
6 齿矩形花键-Φ30

GEAR SHAFT

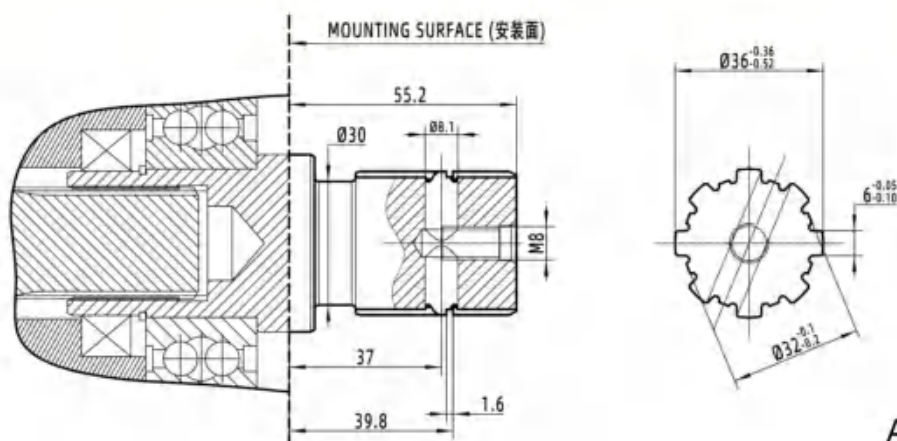
轴/花键

04

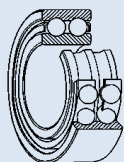


SAE INVOLUTE SPLINE
16 TEETH 16/32 PITCH
16 齿 Ø27 开线花键

04.00



ISO STANDARD
A8x32x36x6 DIN5462
ISO 8 齿矩形花键



This mark means the front cover is only for "C" type outboard bearing option
Please refer to PAGE 58

带此标记的前盖只能用在 "C" 类的轴承形式产品中
详见第 58 页



For other gear shaft requirement please contact our pre-sale department.

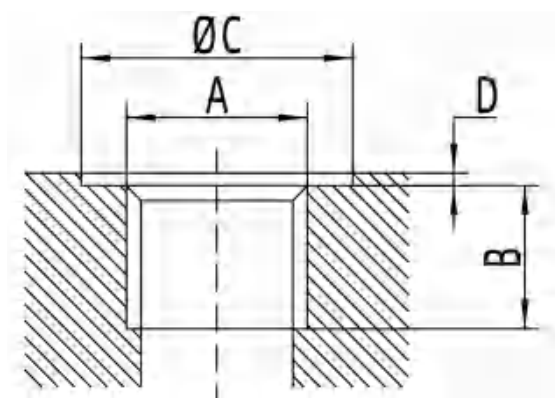
如有其他轴/花键尺寸的需求, 请联系我公司售前部门。

OIL PORT SIZE

油口尺寸

Metric thread according to ISO 6149

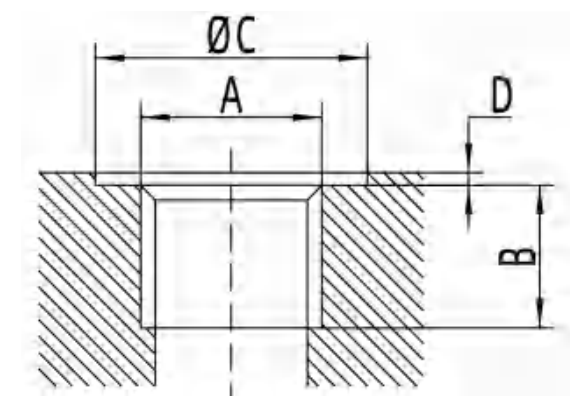
公制螺纹 ISO 6149



	A	B	C	D
M01	M10x1	10	20	1
M02	M12x1.5	11.5	23	1.5
M03	M14x1.5	11.5	25	1.5
M04	M16x1.5	13	28	1.5
M05	M18x1.5	14.5	30	2
M06	M22x1.5	15.5	33	2
M07	M24x1.5	19	34	2
M08	M27x1.5	19	40	2
M09	M27x2	19	40	2
M10	M30x2	19	44	2
M11	M33x1.5	19	49	2.5
M12	M33x2	19	49	2.5
M13	M36x2	19.5	53	2.5
M14	M42x2	19.5	58	2.5
M15	M48x2	22	63	2.5
M16	M60x2	27.5	74	2.5

BSPP pipe thread according to ISO 228-1

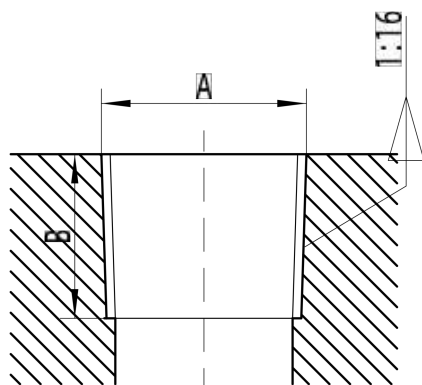
英制 G 螺纹 ISO 228-1



CODE	A	B	C	D
G01	G1/4	13	20	1 Max
G02	G3/8	21	33	1 Max
G03	G1/2	21	33	1 Max
G04	G3/4	21	39	1 Max
G05	G1	21	45	1 Max
G06	G1-1/4	21	58	1 Max
G07	G1-1/2	26	64	1 Max
G08	G2	26	78	1 Max
G09	G2-1/2	26	85	1 Max

BSPT 55° pipe thread according to ISO 228-1

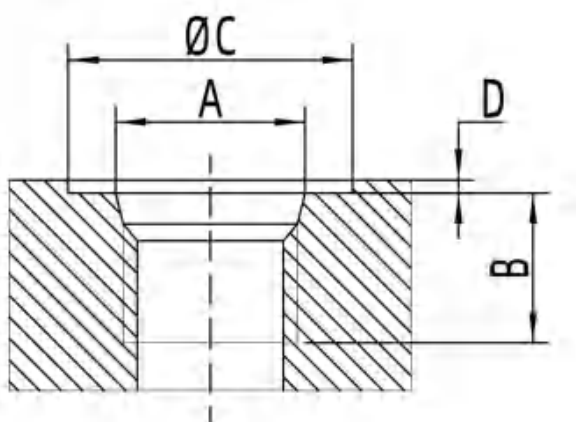
英制 ZG 螺纹 ISO 228-1



CODE	THREAD	A	B
Z01	ZG1/4	13.157	16
Z02	ZG3/8	16.662	16
Z03	ZG1/2	20.955	21
Z04	ZG3/4	26.441	21
Z05	ZG1	33.249	21
Z06	ZG1-1/4	41.910	21
Z07	ZG1-1/2	47.803	21
Z08	ZG2	59.614	21
Z09	ZG2-1/2	75.184	21

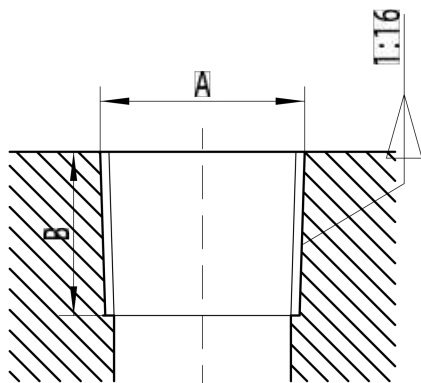
UNF thread according to SAE

美制螺纹



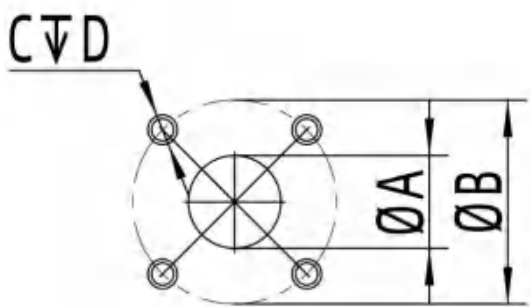
CODE	A	B	C	D
U01	7/16-20 UNF	13	21	1Max
U02	9/16-18 UNF	13	25	1 Max
U03	3/4-16 UNF	13	30	1 Max
U04	7/8-14 UNF	17	34	1 Max
U05	1-1/16-12 UNF	19	41	1 Max
U06	1-5/16-12UNF	23	49	1 Max
U07	1-5/8-12UN	23	58	1 Max
U08	1-7/8-12UN	23	65	1 Max

NPT thread according to SAE 美制锥螺纹



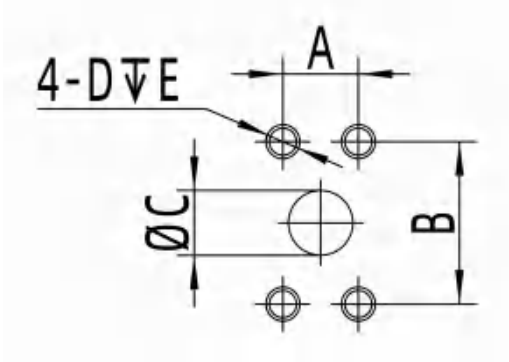
CODE	THREAD	A	B
N01	NPT 1/4	13.616	16
N02	NPT 3/8	17.055	16
N03	NPT 1/2	21.223	21
N04	NPT 3/4	26.568	21
N05	NPT 1	33.228	21
N06	NPT 1-1/4	41.985	21
N07	NPT 1-1/2	46.287	21
N08	NPT 2	60.092	21
N09	NPT 2-1/2	72.699	21

Flanged fittings according to DIN 8901/8902 欧标法兰



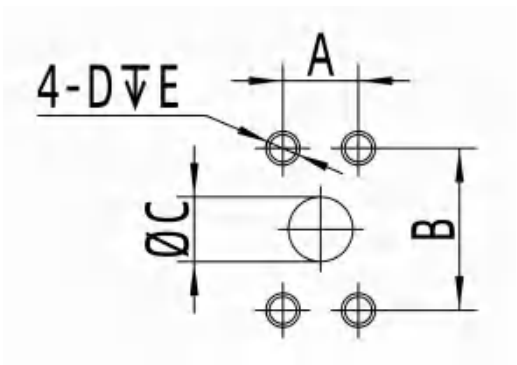
CODE	A	B	C	D
H01	8	26	M5	12
H02	10	26	M5	12
H03	8	30	M6	12
H04	12	30	M6	12
H05	15	35	M6	13
H06	20	40	M6	13
H07	13.5	30	M8	16
H08	20	40	M8	16
H09	18	55	M8	16
H10	25	55	M8	16
H11	26	51	M10	16

Flanged fittings according to METRIC 公制法兰



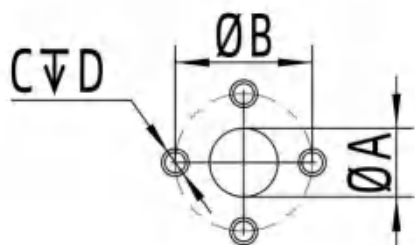
CODE	A	B	C	D	E
E01	17.5	38.1	13	M8	16
E02	22.2	47.6	19	M10	21
E03	26.2	52.4	25.4	M10	21
E04	30.2	58.7	31.8	M10	21
E05	35.7	69.8	38.1	M12	21
E06	42.9	77.8	50.8	M12	21
E07	50.8	88.9	63.5	M12	21

Flanged fittings according to SAE 美制法兰



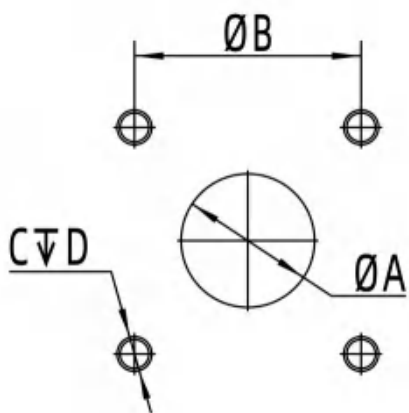
CODE	A	B	C	D	E
A01	17.5	38.1	13	5/16-18 UNC	16
A02	22.2	47.6	19	3/8-16 UNC	21
A03	26.2	52.4	25.4	3/8-16 UNC	21
A04	30.2	58.7	31.8	7/16-14 UNC	21
A05	35.7	69.8	38.1	1/2-13 UNC	21
A06	42.9	77.8	50.8	1/2-13 UNC	21
A07	50.8	88.9	63.5	1/2-13 UNC	21

Flanged fittings - “cross” 十字安装法兰



CODE	A	B	C	D
K01	13.5	30	M6	13
K02	20	40	M8	16
K03	18	40	M8	16
K04	26	51	M10	18
K05	18	55	M8	16
K06	25	55	M8	16
K07	14	38	M8	16
K08	19	38	M8	16

Flanged fittings - “square” 方形安装法兰



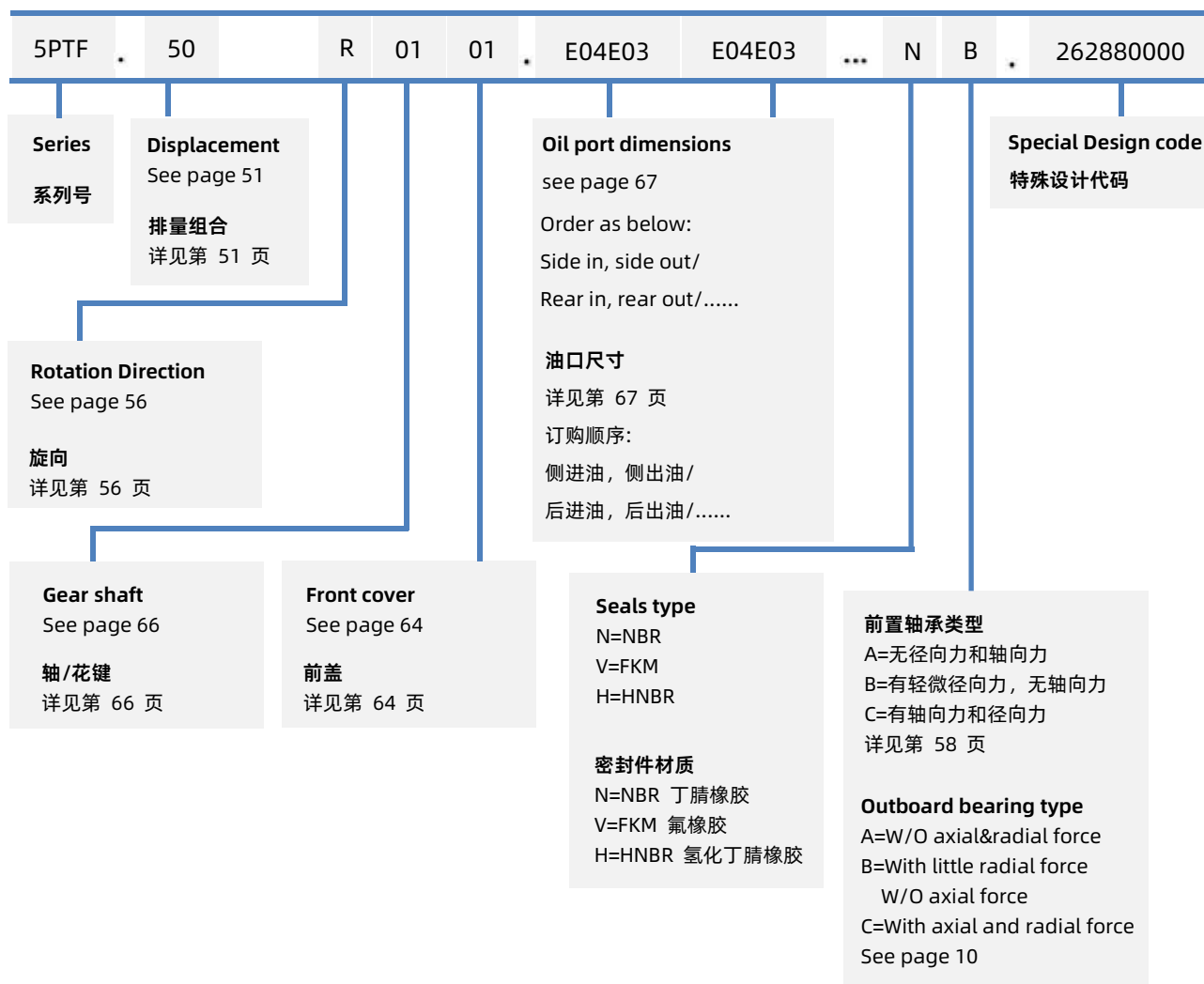
CODE	A	B	C	D
S03	60	78	M12	24
S04	46	78	M12	24
S05	22	48	M10	22
S06	30	48	M10	22
S08	19	54	M10	22
S09	27	54	M10	22
S10	16	46	M8	20
S11	23.5	46	M8	20

ORDER KEY

如何订购

5PTF SERIES

5PTF 系列



For any other dimensions or technical requirement, please feel free to contact us!
如有任何尺寸或者技术需求, 欢迎随时联系我们!



ULTRA HIGH PRESSURE GEAR PUMP

SERIES 6 P T F

超高压齿轮泵 6 P T F 系列

PRODUCT FEATURES

产品优势



- Heavy duty special DU bearing with long working life
使用喷涂特殊专利涂层的 DU 轴承可在重负载下具有长久的工作寿命
- Max working pressure up to 5076PSI/ 35Mpa
极限工作压力可达 5076 磅力/平方英寸 (35 兆帕)
- Displacement from 25 to 135cc/rev
可选排量范围从每转 25 毫升直到每转 135 毫升
- High strength cast iron body with special designed structure
采用自主研发专利设计的内部结构，并采用高强度的蠕墨铸铁材质壳体
- High precision carburizing&quenching gears with extra hardness
高精度齿轮，特殊材质经过渗碳淬火达到超高硬度
- Copper pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
铜质双金属压力平衡补偿板可在工作寿命内持续保证高容积效率
- 100% factory tested
产品出厂前 100%进行性能检测和跑合试验
- Custimized mounting size and oil ports
安装尺寸和进出油口可根据客户需要定制生产

TECHNICAL SPECIFICATIONS

技术参数

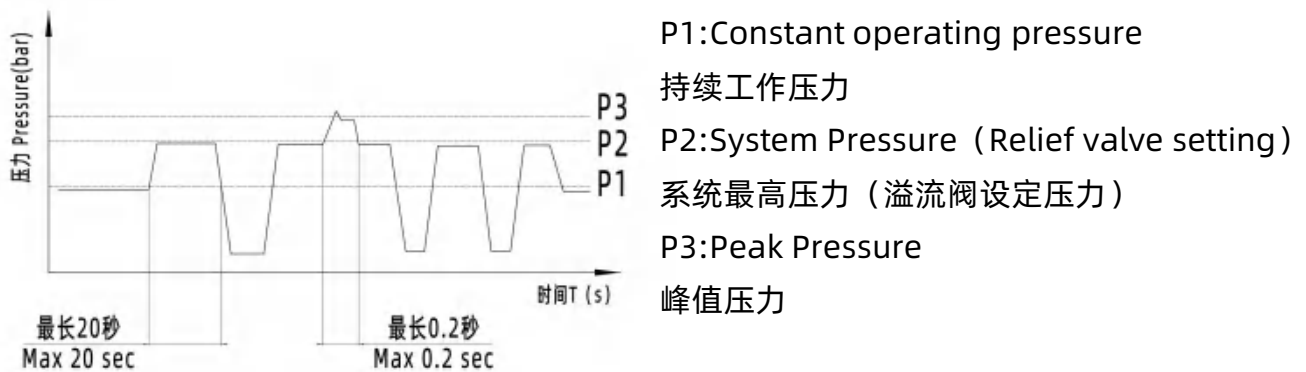
Model 型号	Displacement 排量	Flow rate	Pressure			Rotate Speed		Input power
		流量	压力			转速		@250bar
		@1500RPM	P1	P2	P3	Max 最高	Min 最低	&1500rpm 25MPa/1500 转 时的输入功率
cm³/rev		l/min	bar			rpm		kW
6PTF.20	20	30	200	230	250	3000	350	11
6PTF.25	25	37.5	200	230	250	3000	350	14
6PTF.32	32	48	250	270	290	3000	350	17
6PTF.40	40	60	250	270	290	3000	350	22
6PTF.45	45	67.5	250	270	290	3000	350	25
6PTF.50	50	75	280	315	350	3000	350	28
6PTF.63	63	94.5	280	315	350	3000	350	35
6PTF.70	70	105	280	315	350	3000	350	40
6PTF.80	80	120	280	315	350	3000	350	45
6PTF.90	90	135	280	315	350	3000	350	50
6PTF.100	100	150	280	315	350	3000	350	56
6PTF.112	112	168	280	315	350	3000	350	63
6PTF.125	125	185	280	315	350	3000	350	70
6PTF.135	135	200	250	270	290	3000	350	75



For special displacement requirement,
please consult our pre-sales department.
如有其他特殊排量需求，请咨询我公司售前部门。

DEFINATION OF PRESSURES

关于压力的定义



The peak of pressure is the max pressure allowed and it corresponds to the overshoot^① of the relief valve.

Please note that both relief valve setting and overshoot must be lower than their limits.

If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Avenir limit.

For high frequency applications please consult our pre-sales department.

峰值压力是系统允许的最大压力，它对应的是溢流阀过载压力^①。

请注意，溢流阀设定压力和过载压力都必须低于泵的压力极限。

如果溢流的设定压力符合要求，但是超载压力高于泵的压力极限，那么必须降低溢流阀的压力设置，直到超载压力符合 Avenir 的标准限定。

对于工作频率比较高的应用场景，请咨询我们的售前部门。

① Overshoot: The actual pressure reading when a relief valve first opens to bypass fluid. (It can be up to twice the actual pressure setting.)

过载压力：当溢流阀刚开始开启时的瞬时压力（此压力有可能会比实际的设定压力高一倍以上）

FORMULAS USED FOR CALCULATION

液压系统计算公式

$$Q = \frac{V \cdot \eta_v \cdot n / 1000}{V \cdot \eta_v \cdot n / 231} \quad \begin{matrix} [\text{l/min}] \\ [\text{Gal/min}] \end{matrix}$$

$$M = \frac{\frac{\Delta p \cdot V}{62.83 \cdot \eta_m}}{\frac{\Delta p \cdot V}{2 \cdot 3.14 \cdot \eta_m}} \quad \begin{matrix} [\text{Nm}] \\ [\text{lbf.in}] \end{matrix}$$

$$P = \frac{\frac{\Delta p \cdot V \cdot n}{600 \cdot 1000 \cdot \eta_t}}{\frac{\Delta p \cdot V \cdot n}{395934 \cdot \eta_t}} \quad \begin{matrix} [\text{kW}] \\ [\text{HP}] \end{matrix}$$

$$\eta_v = \frac{Q_{\text{act.}}}{Q_{\text{theor.}}}$$

$Q_{\text{act.}}$: Actual flow rate 实际流量
 $Q_{\text{theor.}}$: theoretical flow rate 理论流量

It determines the amount of flow losses. Its value is $\eta_v = 0.92 \sim 0.98$ (depending on rotation speed, oil temperature, viscosity of working liquid and outlet pressure).

容积效率决定了泵的内泄漏量，数值一般取 0.92~0.98
(实际数值取决于转速，油温，油液粘性，工作压力等)

$$\eta_m = \frac{M_{\text{theo}}}{M_{\text{act.}}}$$

$M_{\text{theo.}}$: theoretical torque 理论扭矩
 $M_{\text{act.}}$: Actual torque 实际扭矩

It determines mechanical losses. Its value is about $\eta_m = 0.85$

机械效率决定了泵的机械损失，数值一般取 0.85

$$\eta_t = \eta_v \cdot \eta_m = \frac{P_{\text{theo}}}{P_{\text{act.}}}$$

$P_{\text{theo.}}$: Theoretical input power 理论输入功率

$P_{\text{act.}}$: Actual input power 实际输入功率

It is defined as product of η_v and η_m and determines difference between theoretical and actual required input power

总效率是容积效率和机械效率的乘积，他决定了理论输入功率和实际需要的输入功率的差别

Conversion factor 单位换算

SI units 国际单位制	US units 美国单位制
1 l/min	0.2641 US Gal/min
1 Nm	8.851 in-lbs
1 Nm	0.7375 ft-lbs
1 N	0.2248 lbs
1 kW	1.34 HP
1 cm ³ /rev	0.061 in ³ /rev
1 bar	14.5 psi
1 mm	0.0394 in
1 kg	2.205 lbs

Variables 参数

Q : FLOW RATE 流量	[l/min] [Gal/min]
M : Torque 扭矩	[Nm] [lbf.in]
P : Power 功率	[kW] [HP]
V : Displacement 排量	[cm ³ /rev] [in ³ /rev]
n: Speed 转速	[min ⁻¹]

η_v : Volumetric efficiency 容积效率

η_m : Mechanical efficiency 机械效率

η_t : Overall efficiency 总效率

WORKING LIQUID

工作介质

- Mineral oils for hydraulic drives
用于液压驱动的矿物油
- Hydraulic liquids based on plant oils suitable for hydraulic drives
用于液压驱动的植物基-液压油

LIQUID TEMPERATURE

工作油温

- $t = -20^{\circ}\text{C} \sim +80^{\circ}\text{C}$ (with NBR seals) (当密封件选用丁腈橡胶材质时)
 $t = 0^{\circ}\text{C} \sim +200^{\circ}\text{C}$ (with FKM seals) (当密封件选用氟橡胶材质时)
 $t = -50^{\circ}\text{C} \sim +120^{\circ}\text{C}$ (with HNBR seals) (当密封件选用氢化丁腈橡胶材质时)

CINEMATIC VISCOSITY

运动粘度

- Recommended (during continuous operation):
推荐粘度 (持续工作工况下) $v = 20 \sim 80 \text{ [mm}^2/\text{s]}$
- Maximum (cold starting, at viscosity >1000 , operating pressure $<10 \text{ bar}$ is permissible, speed $<1500 \cdot \text{min}^{-1}$):
最大可用粘度 (允许在粘 >1000 , 工作压力 $<10\text{bar}$, 转速 $<1500\text{r/min}$ 时冷启动) $v = 1200 \text{ [mm}^2/\text{s]}$
- Minimum (operating mode at 10 up 20 should be consulted with manufacturer):
最小可用粘度 (如果在 10~20 的粘度下工作, 请咨询我公司技术部门) $v = 10 \text{ [mm}^2/\text{s]}$

Filtration coefficient β_α

过滤系数

- $\beta_{25} 75 \geq$ (for pressure $p_2 < 200$ bar)
 $\beta_{25} 75 \geq$ (当 p_2 压力 < 200 bar 时)
- $\beta_{10} 75 \geq$ (for pressure $p_2 > 200$ bar)
 $\beta_{10} 75 \geq$ (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to ISO 4406

ISO4406 油液污染度等级

- 21/18/15 (for pressure $p_2 < 200$ bar)
21/18/15 (当 p_2 压力 < 200 bar 时)
- 20/17/14 (for pressure $p_2 > 200$ bar)
20/17/14 (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to NAS 1638

NAS1638 油液污染度等级

- LEVEL 10 (for pressure $p_2 < 200$ bar)
10 级 (当 p_2 压力 < 200 bar 时)
- LEVEL 8 (for pressure $p_2 > 200$ bar)
8 级 (当 p_2 压力 > 200 bar 时)

DIRECTION OF ROTATION

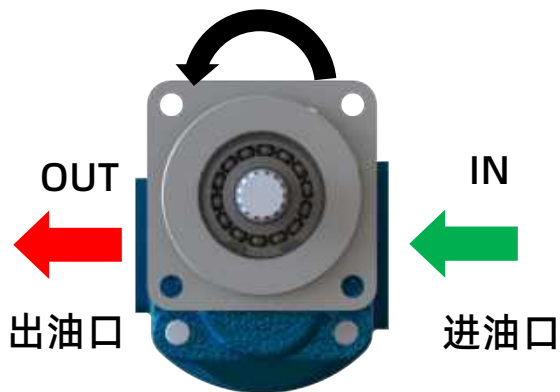
旋 向

Determine direction of rotation by looking at the drive shaft.

The pump can only be used in the specified direction of rotation.

从轴端方向的视角来判断泵的旋向。泵只能在其相应旋向下工作

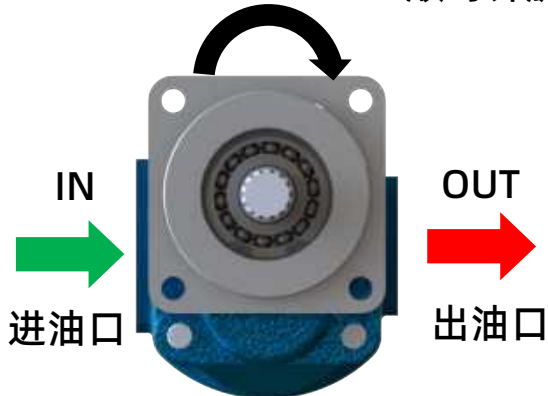
COUNTER-CLOCKWISE 逆时针旋转



LEFT ROTATION

左 旋

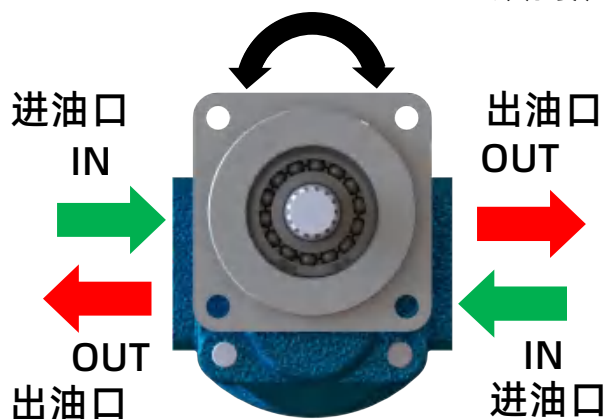
CLOCKWISE 顺时针旋转



RIGHT ROTATION

右 旋

DUAL-ROTATION 双向旋转



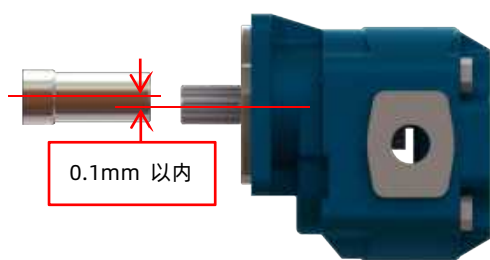
BI-DIRECTION

双 向

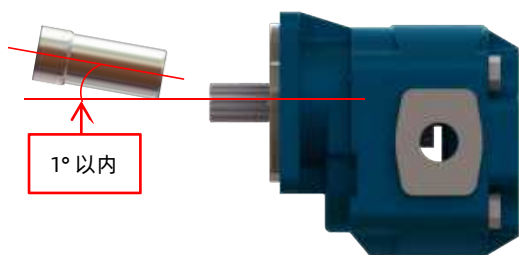
INSTALLATION PRECAUTIONS

安装注意事项

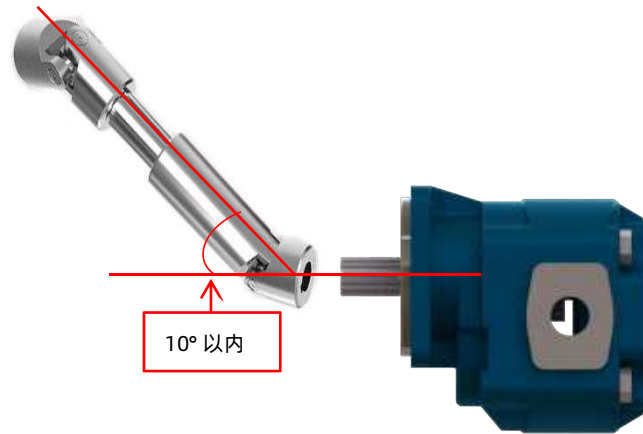
- Please use flexible coupling connection between engine shaft and pump shaft
电机与驱动轴的连接部分请使用柔性联轴器
- The coupling may cause noise, please choose the coupling with elastic material like rubber
联轴器有时会成为噪音源，建议使用橡胶等弹性材料组成的联轴器
- Axial force and radial force is not allow towards the pump shaft, if cannot avoid force, please choose the special bearing type of pump
请勿对泵的轴端施加轴向力和径向力，如无法避免，请选择带有前置轴承的型号
- Bad coaxiality will lead to pump's damage
泵轴与驱动轴的同轴度较差，会导致齿轮泵损坏
Coaxiality deviation should below 0.1mm
同轴度偏差不得超过 0.1mm



- Angle deviation should below 1°
角度偏差不得超过 1°



- Angle deviation when use universal joint should below 10°
万向节传动，角度偏差不得超过 10°



OUTBOARD BEARING OPTIONS

前置轴承选项

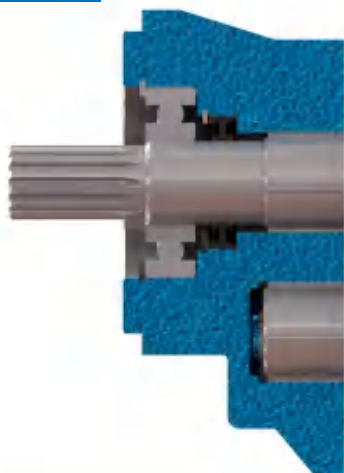
A



Version for applications without radial and axial load on the driveshaft

泵的轴端无轴向力和径向力时，选择此方案。

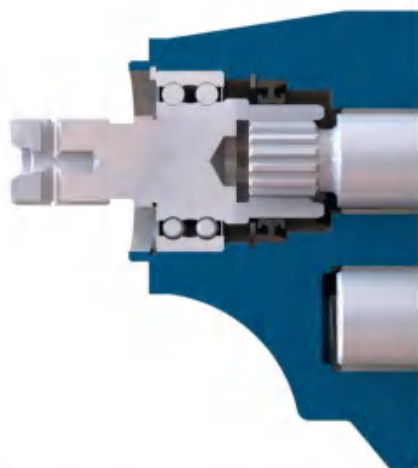
B



Version for applications with low radial load and without axial load on the drive shaft.

泵的轴端有轻微径向力，但无轴向力时，选择此方案。

C



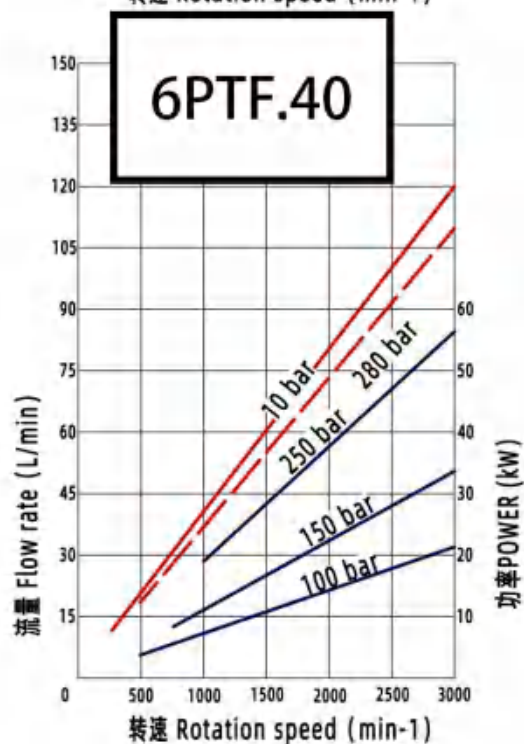
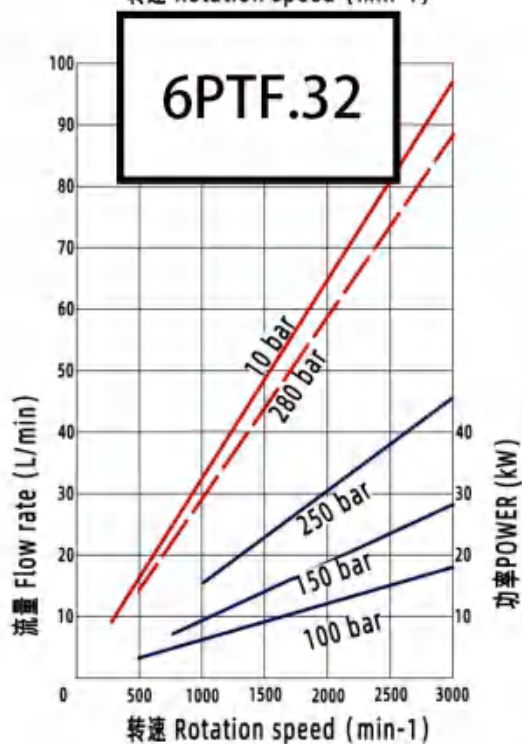
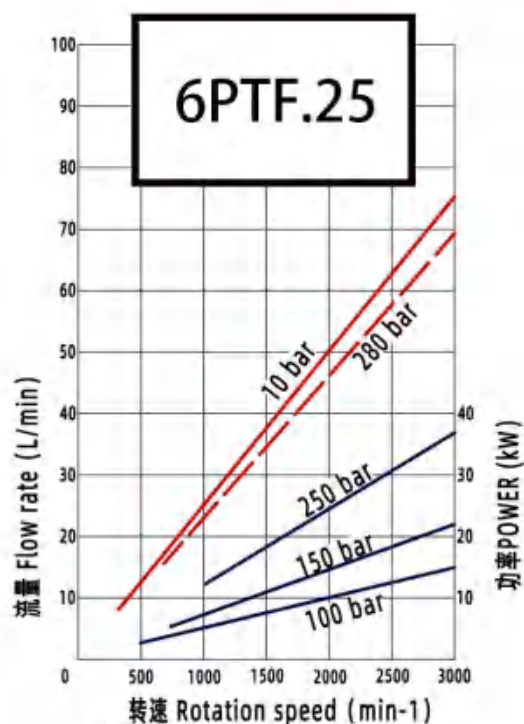
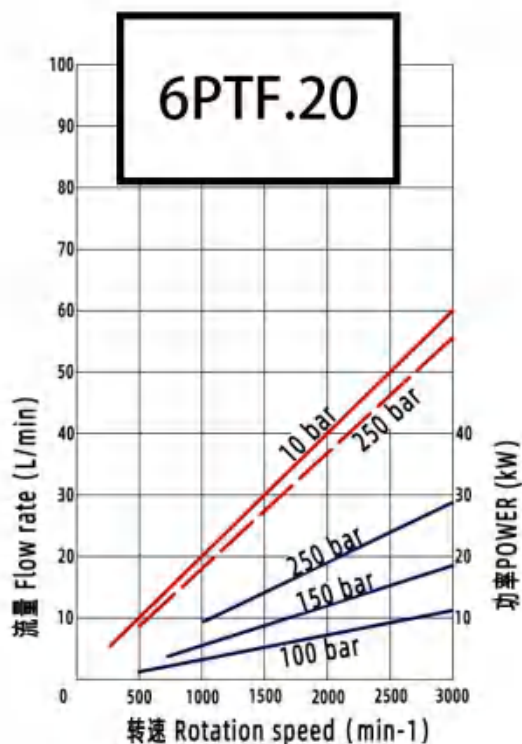
Version for applications with radial and axial load on the drive shaft

泵的轴端有径向力和轴向力时，选择此方案。

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



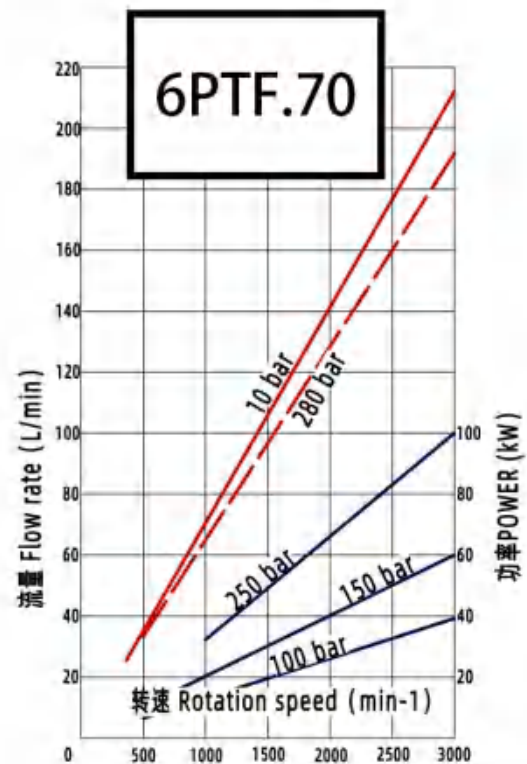
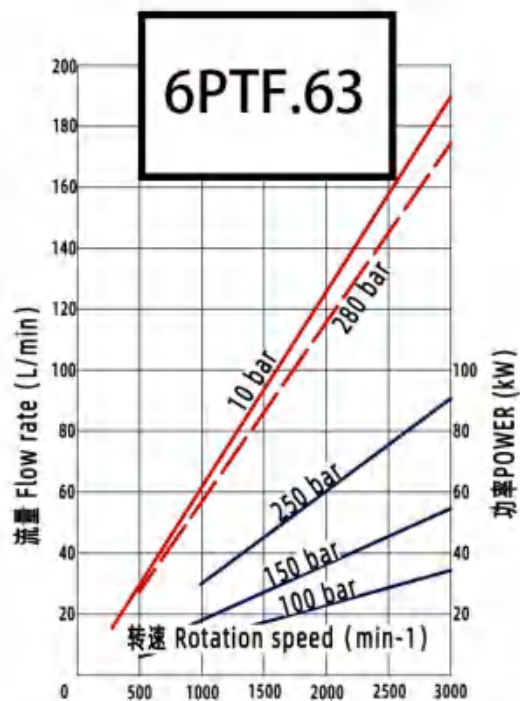
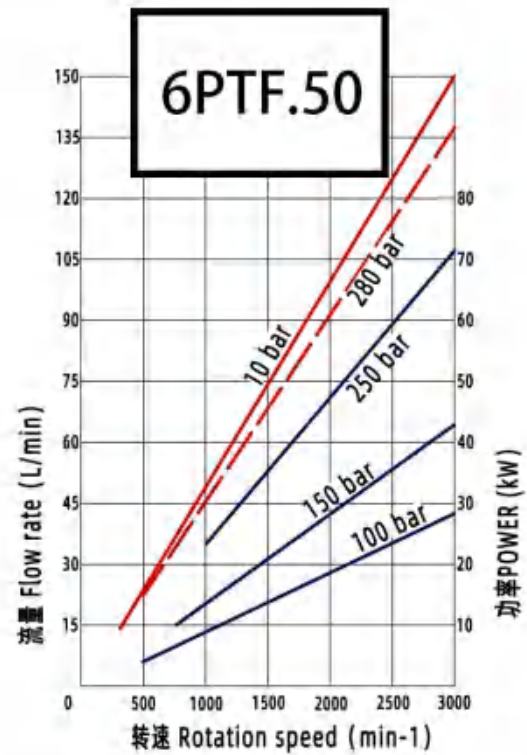
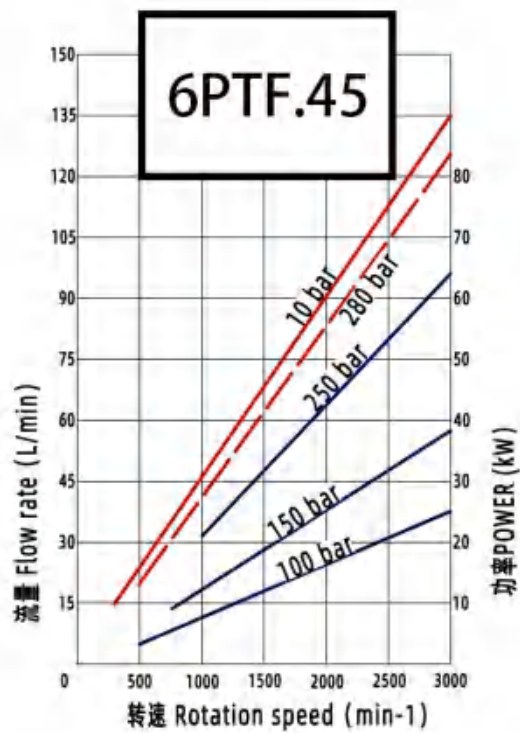
This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)

此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power

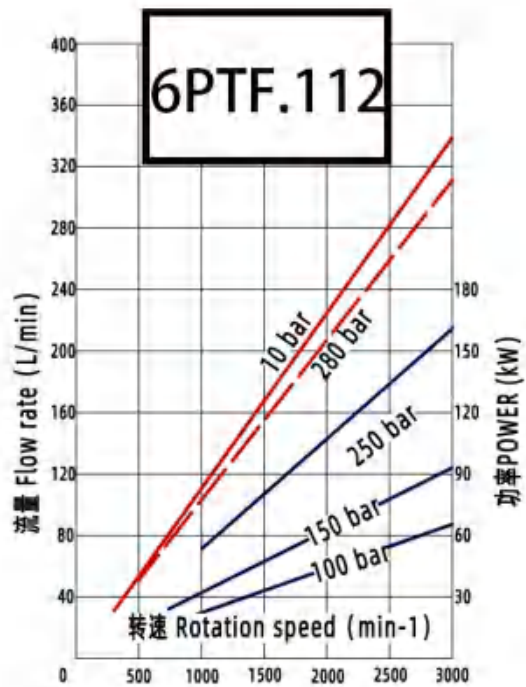
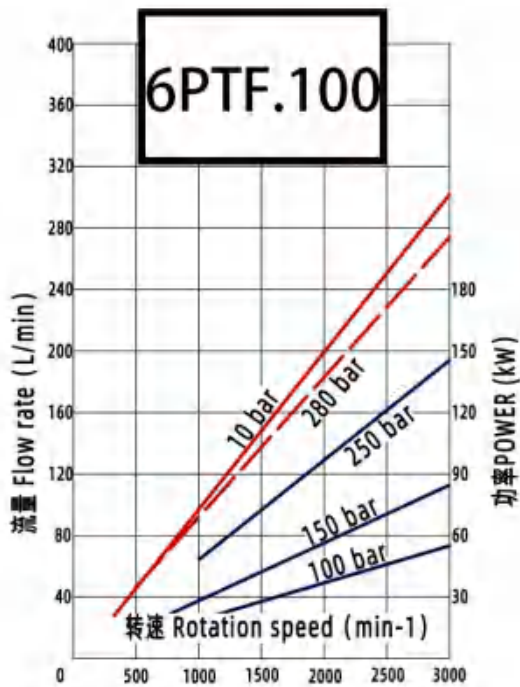
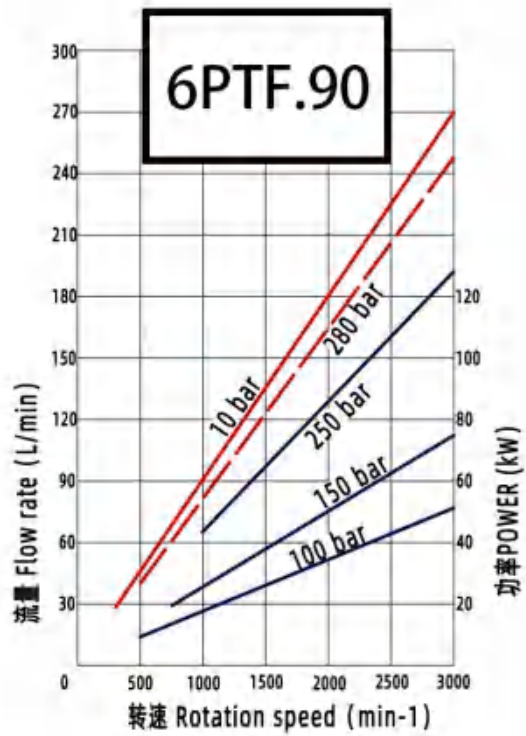
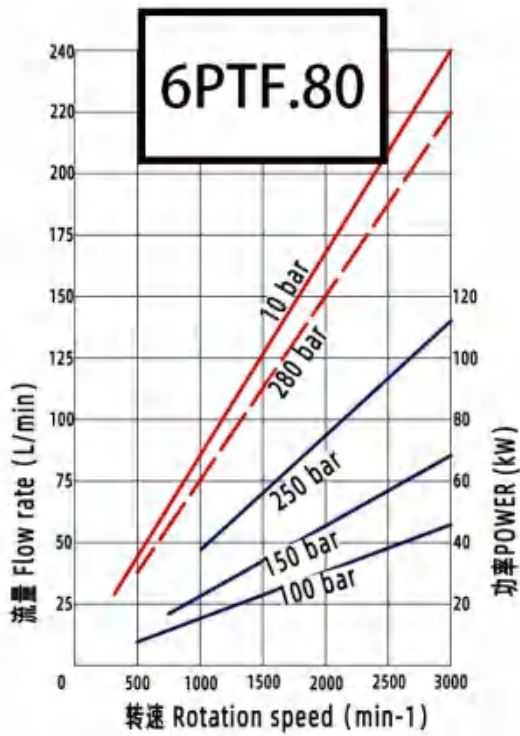


This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power

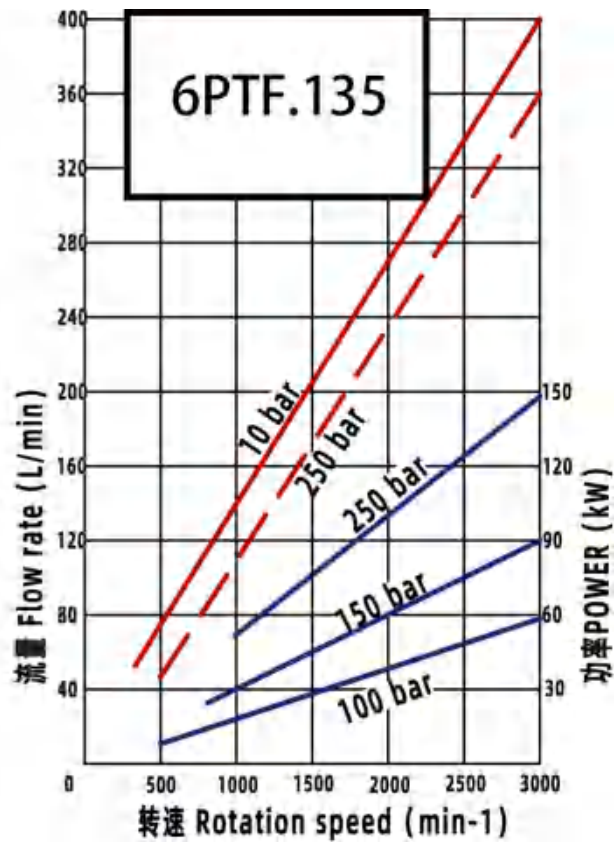
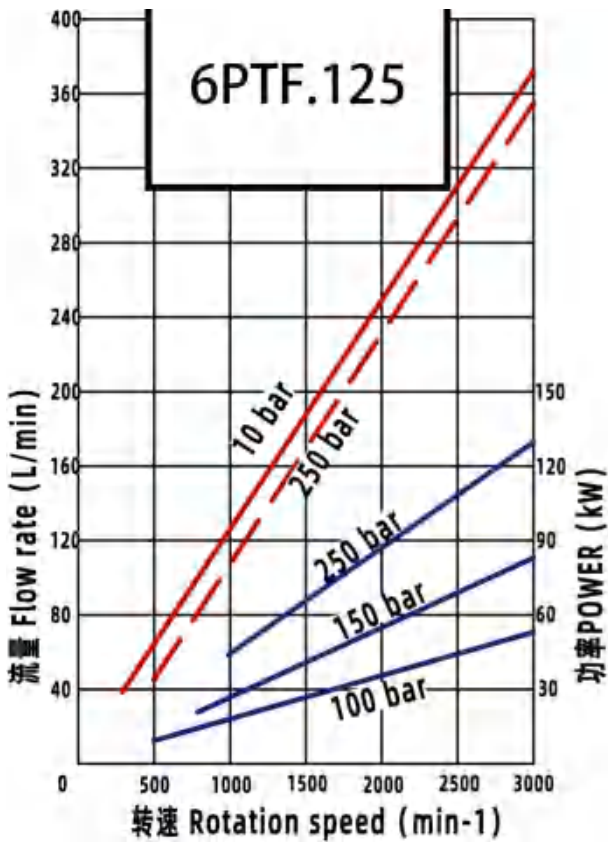


This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



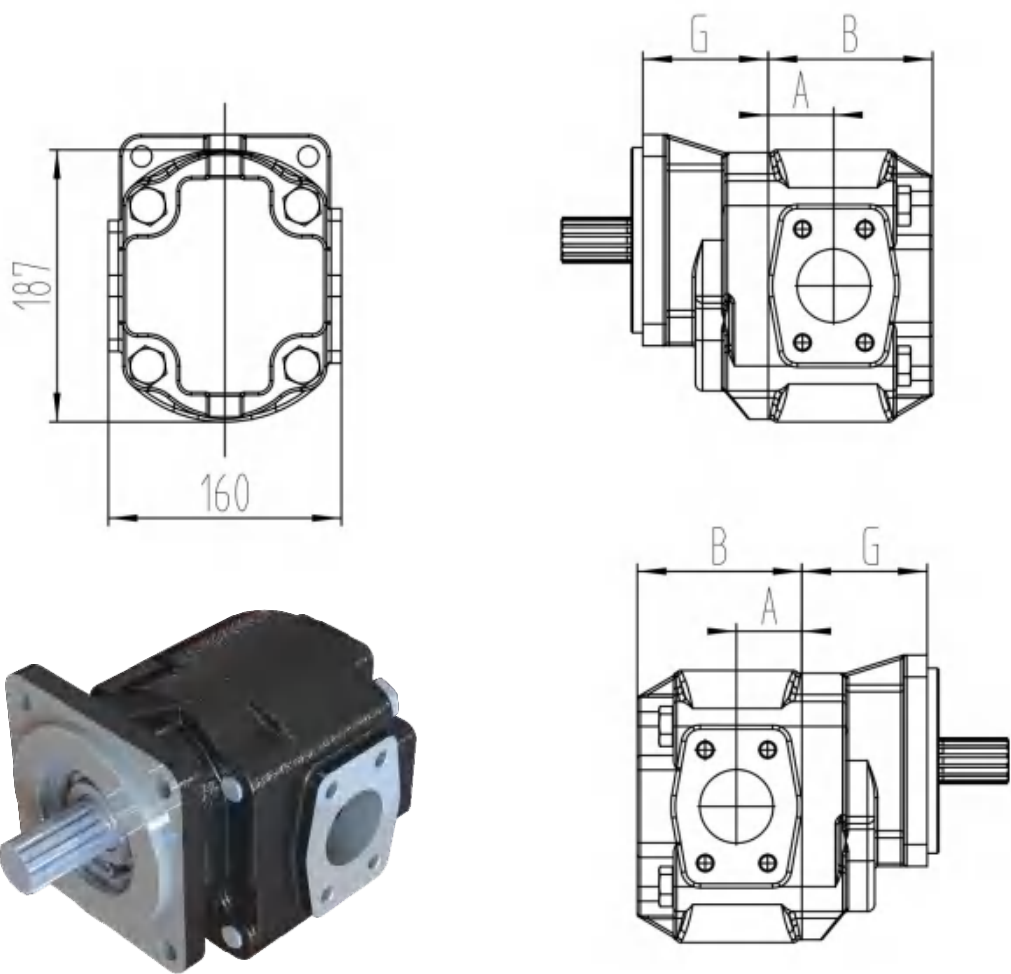
This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

DIMENSIONS

外形尺寸

6PTF SINGLE PUMP

6PTF 单泵



6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125
A	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5
B	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133

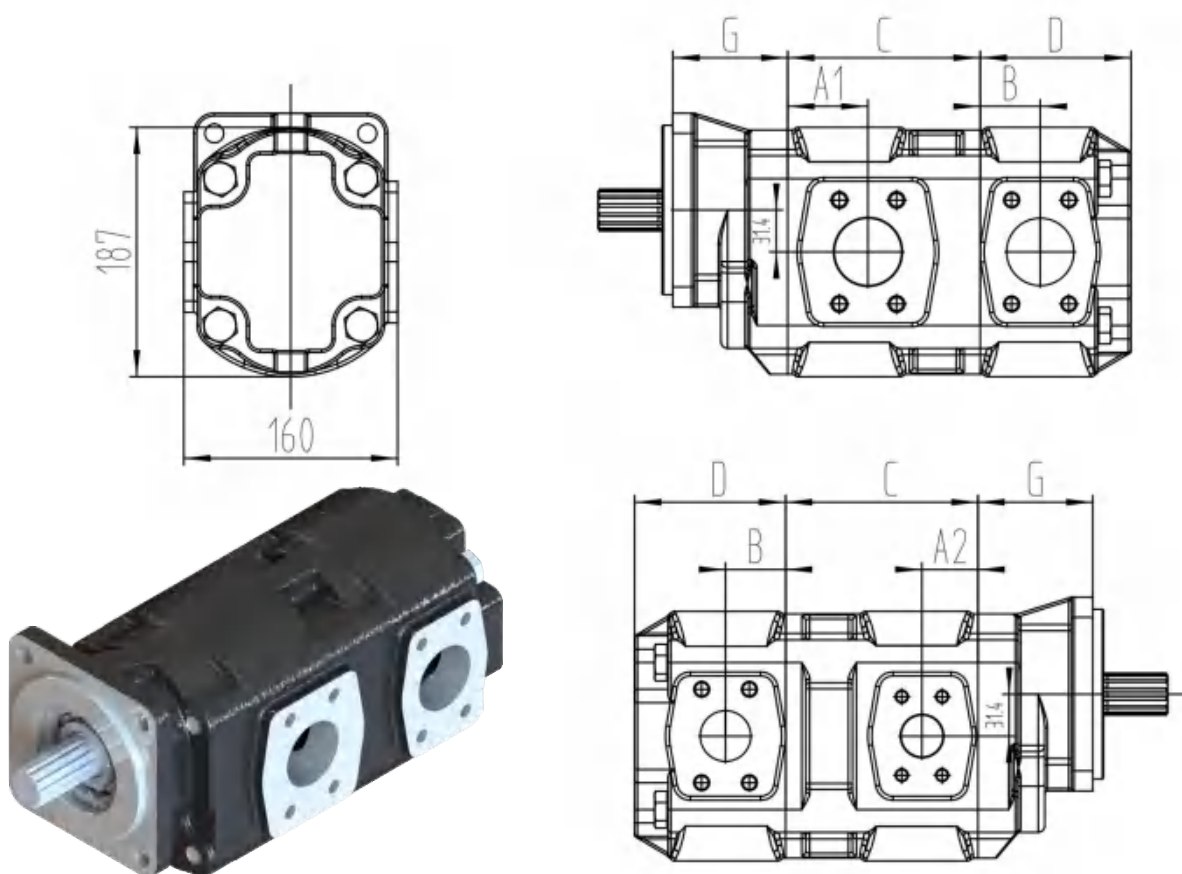
The “G” dimension please see page 95
 G 尺寸请参考第 95 页

DIMENSIONS

外形尺寸

6PTF TANDEM PUMP

6PTF 双联泵



6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125
A1	-	57.2	60	56.5	58	60	60	56	60	57	60	54.8	60
A2	-	34	37	35.5	36	38	42	38	42	39	42	42	42
B	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5
C	-	119	121.8	125.5	128	130	136	140	144	150	153	158.8	164
D	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133

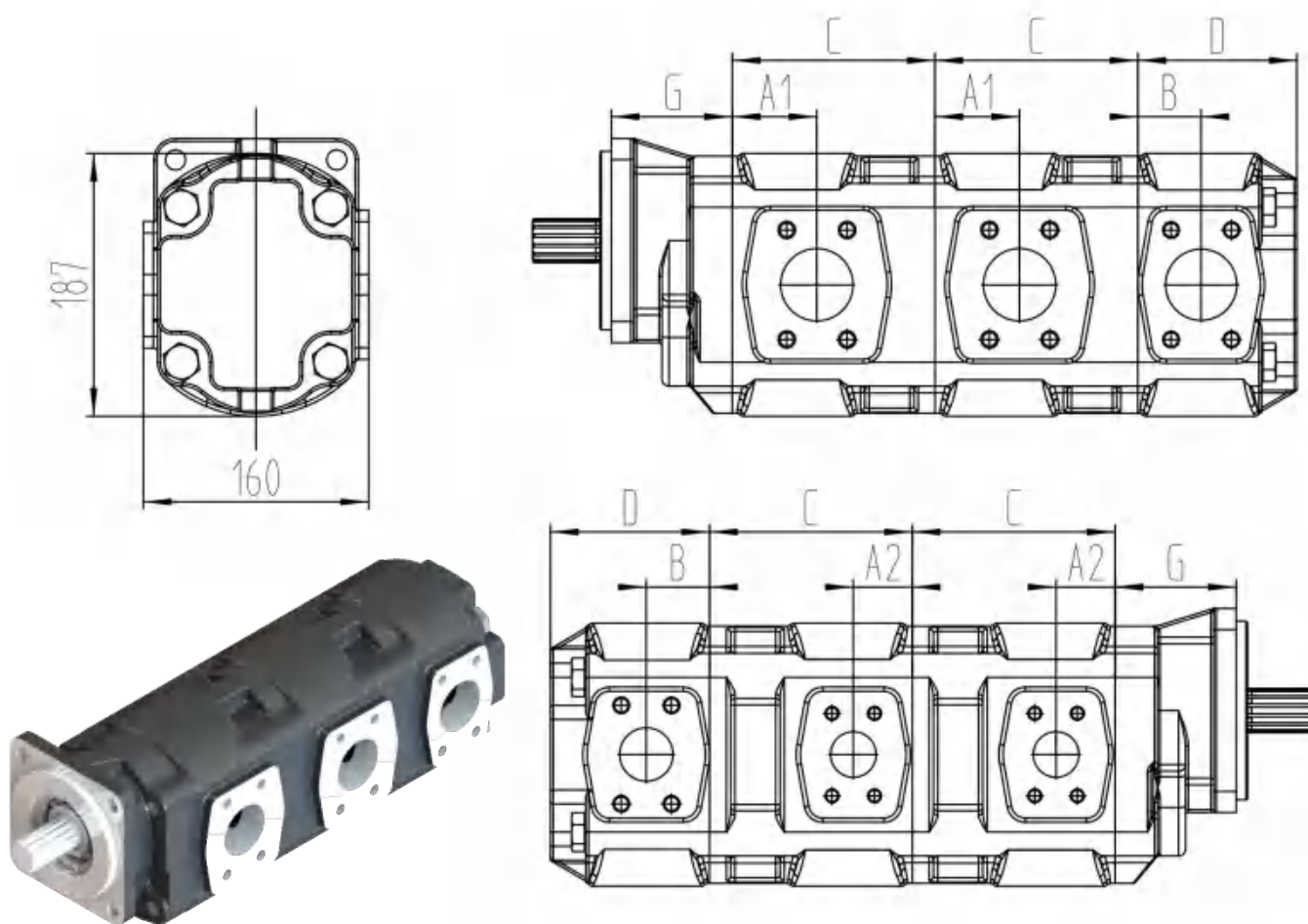
The "G" dimension please see page 95
G 尺寸请参考第 95 页

DIMENSIONS

外形尺寸

6PTF TRIPLE PUMP

6PTF 三联泵



6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125
A1	-	57.2	60	56.5	58	60	60	56	60	57	60	54.8	60
A2	-	34	37	35.5	36	38	42	38	42	39	42	42	42
B	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5
C	-	119	121.8	125.5	128	130	136	140	144	150	153	158.8	164
D	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133

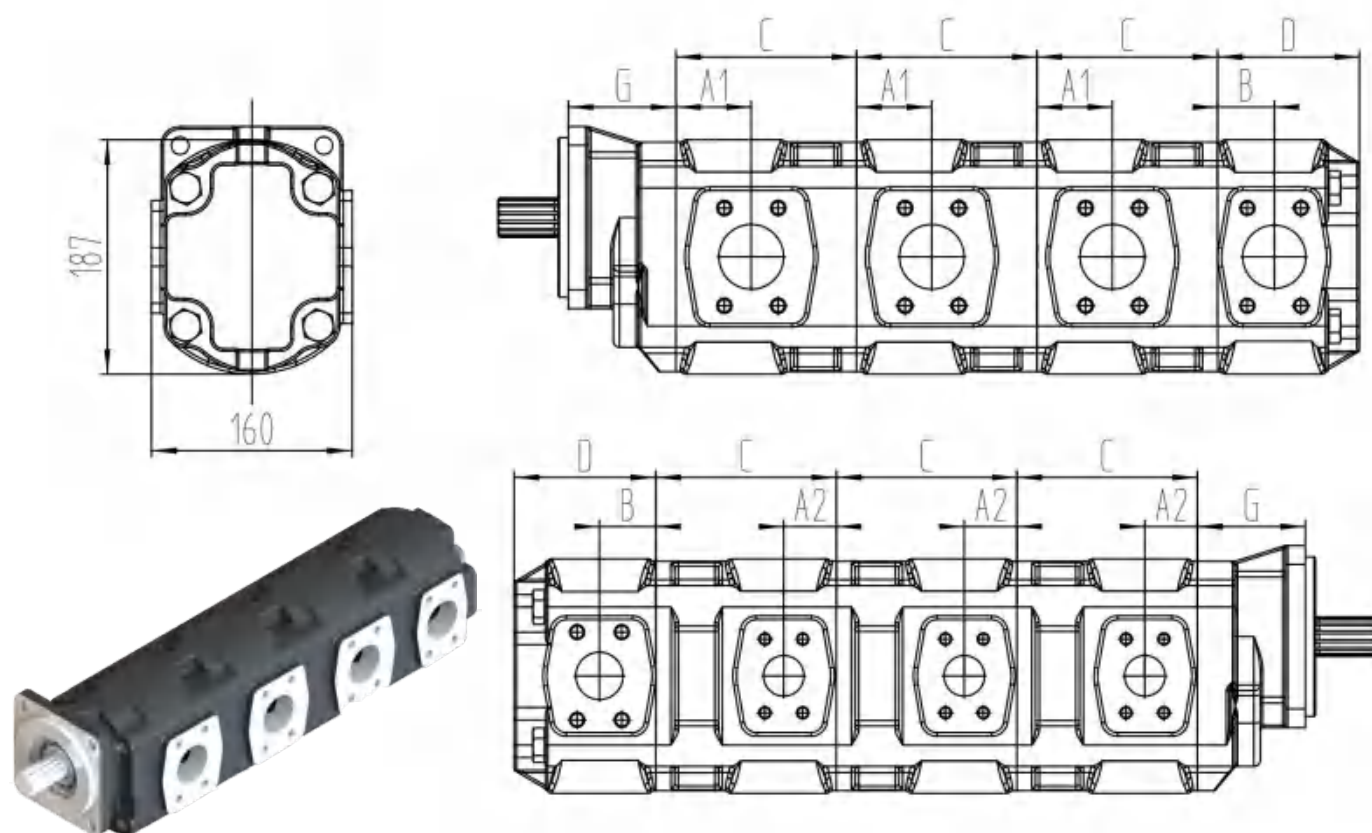
The "G" dimension please see page 95
G 尺寸请参考第 95 页

DIMENSIONS

6PTF QUADRUPLE PUMP

外形尺寸

6PTF 四联泵



6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125
A1	-	57.2	60	56.5	58	60	60	56	60	57	60	54.8	60
A2	-	34	37	35.5	36	38	42	38	42	39	42	42	42
B	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5
C	-	119	121.8	125.5	128	130	136	140	144	150	153	158.8	164
D	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133

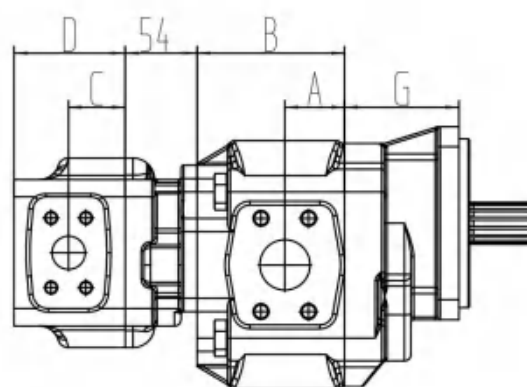
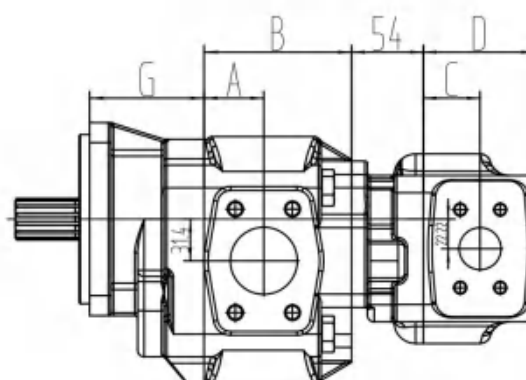
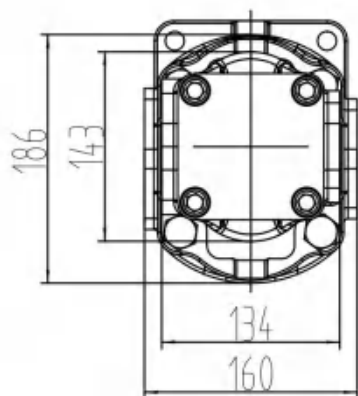
The "G" dimension please see page 95
G 尺寸请参考第 95 页

DIMENSIONS

外形尺寸

6PTF/4PDF TANDEM PUMP

6PTF/4PDF 双联泵



6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125			
A	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5			
B	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133			
4PDF	08	10	13	16	20	25	29	32	36	40	45	51	55	63	72	80
C	28.2	29.7	31.7	33.7	36.7	40.7	42.7	45.7	47.7	51.2	54.7	58.7	61.7	67.7	74.7	79.7
D	70	71.5	73.5	75.5	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5	103.5	109.5	116.5	121.5

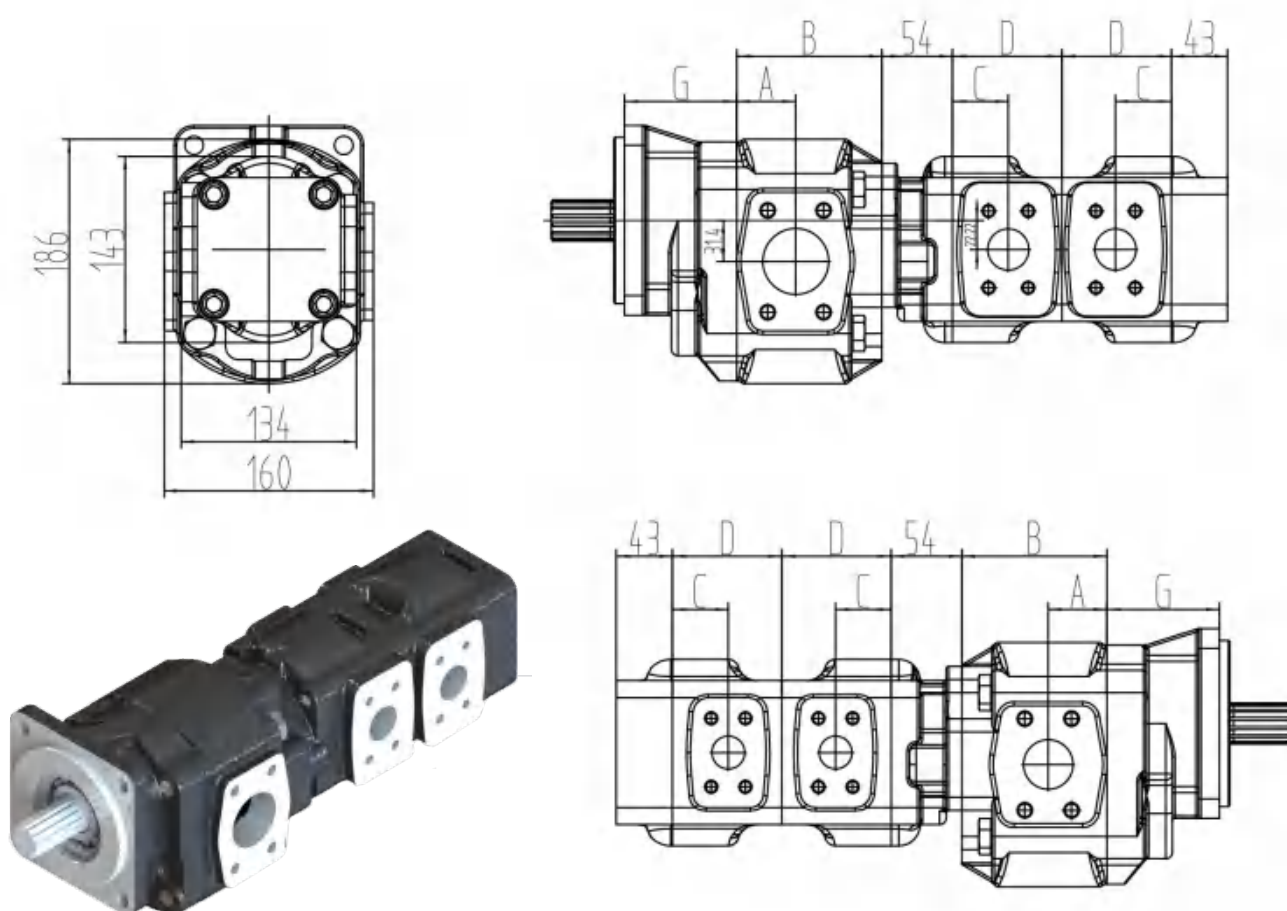
The "G" dimension please see page 95
G 尺寸请参考第 95 页

DIMENSIONS

外形尺寸

6PTF/4PDF TRIPLE PUMP

6PTF/4PDF 三联泵



6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125			
A	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5			
B	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133			
4PDF	08	10	13	16	20	25	29	32	36	40	45	51	55	63	72	80
C	28.2	29.7	31.7	33.7	36.7	40.7	42.7	45.7	47.7	51.2	54.7	58.7	61.7	67.7	74.7	79.7
D	70	71.5	73.5	75.5	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5	103.5	109.5	116.5	121.5

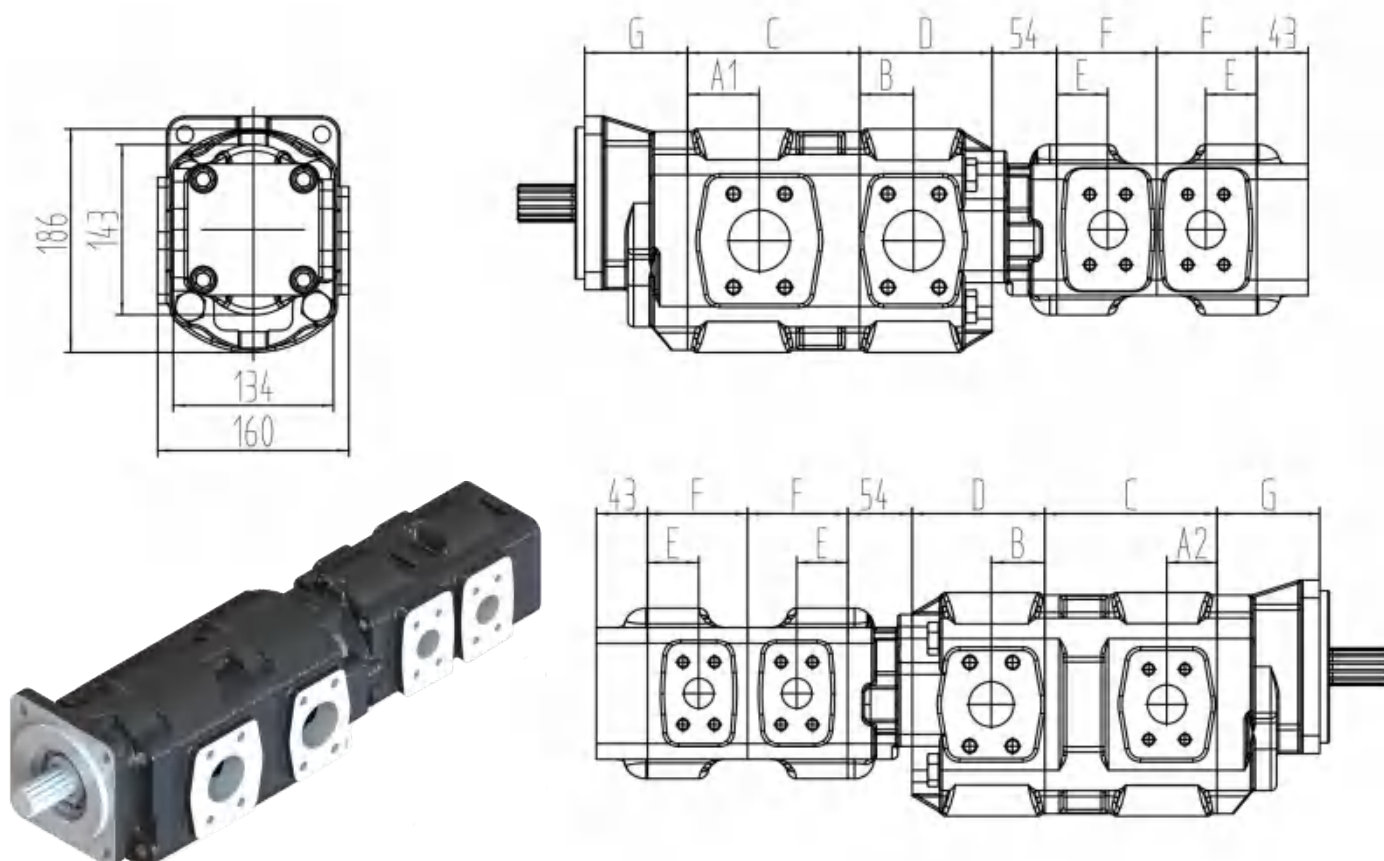
The "G" dimension please see page 95
G 尺寸请参考第 95 页

DIMENSIONS

外形尺寸

6PTF/4PDF QUADRUPLE PUMP

6PTF/4PDF 四联泵



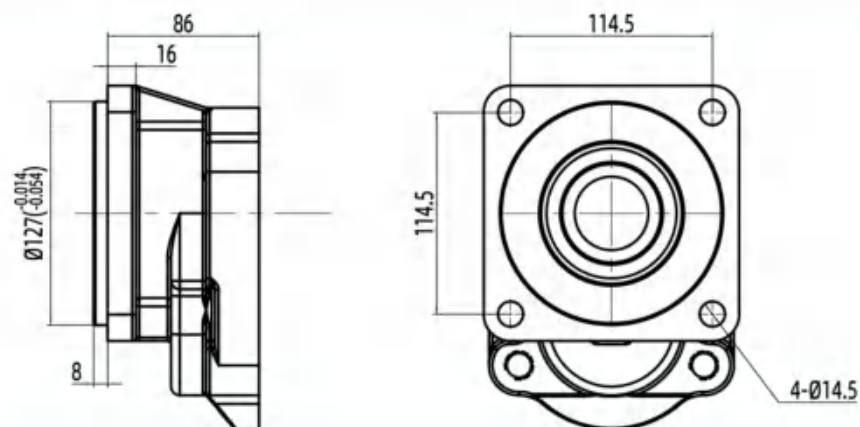
6PTF	20	25	32	40	45	50	63	70	80	90	100	112	125			
A1	-	57.2	60	56.5	58	60	60	56	60	57	60	54.8	60			
A2	-	34	37	35.5	36	38	42	38	42	39	42	42	42			
B	32	34	36.8	37	36	38	41	41	45	48	51	52.5	52.5			
C	-	119	121.8	125.5	128	130	136	140	144	150	153	158.8	164			
D	89.5	91.5	94.3	94.5	97	99	105	105	113	119	122	127.8	133			
4PDF	08	10	13	16	20	25	29	32	36	40	45	51	55	63	72	80
C	28.2	29.7	31.7	33.7	36.7	40.7	42.7	45.7	47.7	51.2	54.7	58.7	61.7	67.7	74.7	79.7
D	70	71.5	73.5	75.5	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5	103.5	109.5	116.5	121.5

The "G" dimension please see page 95
G 尺寸请参考第 95 页

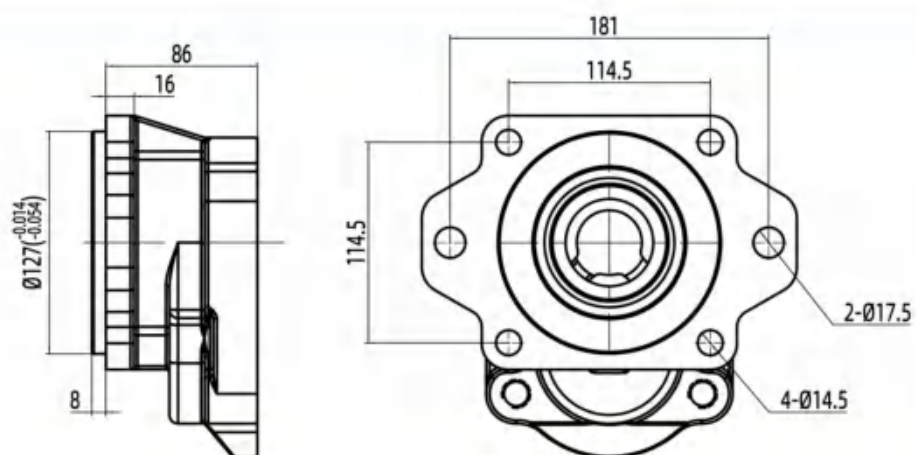
FRONT COVER

前盖

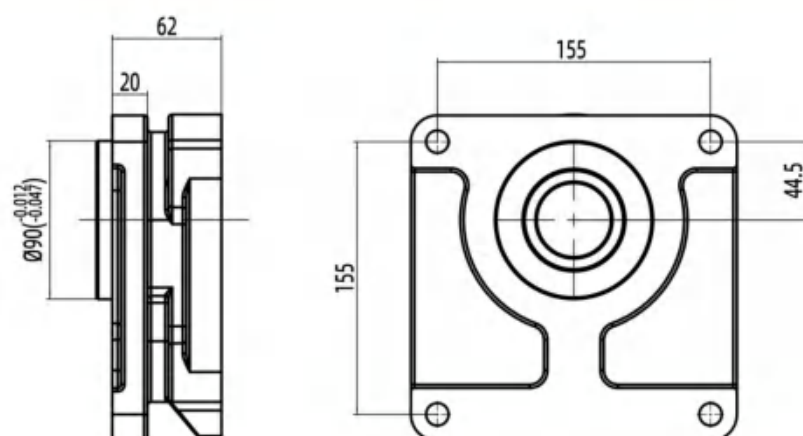
0H



00



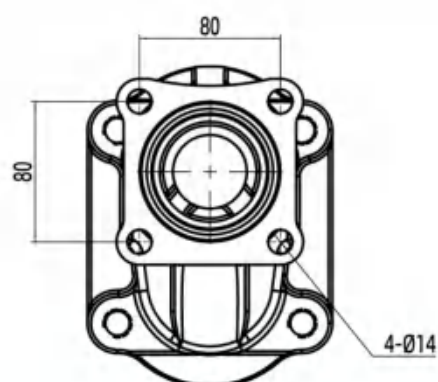
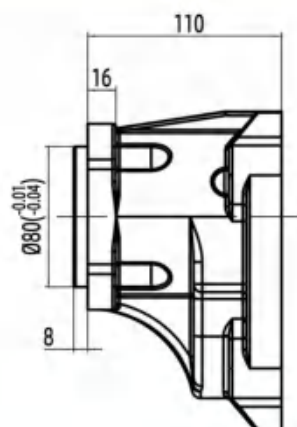
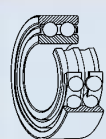
01



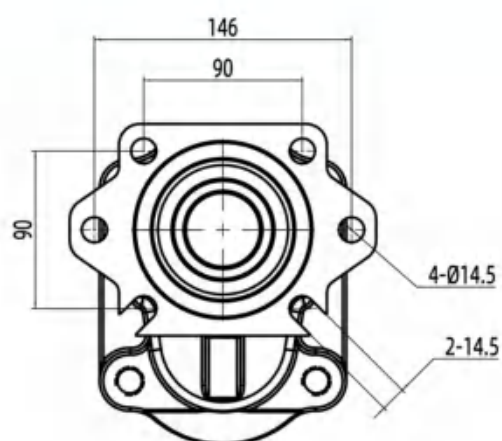
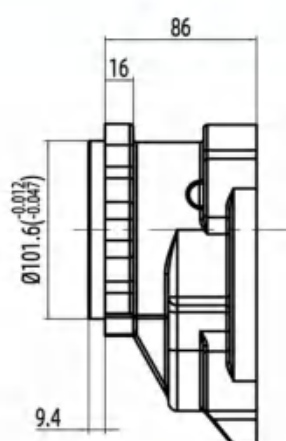
FRONT COVER

前盖

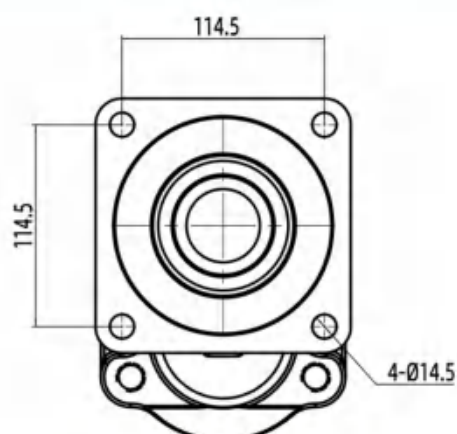
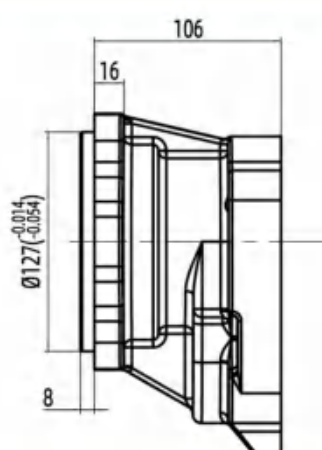
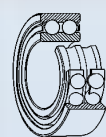
02



03



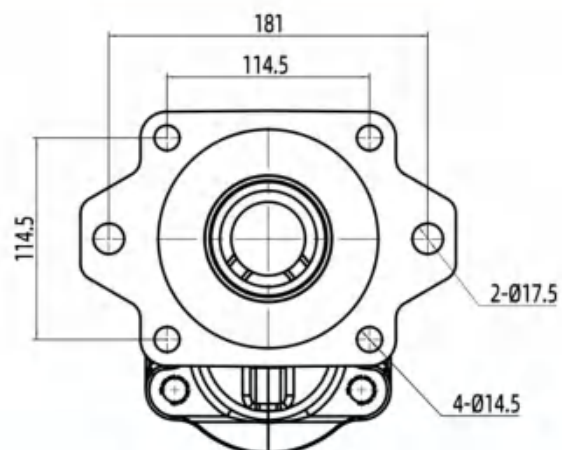
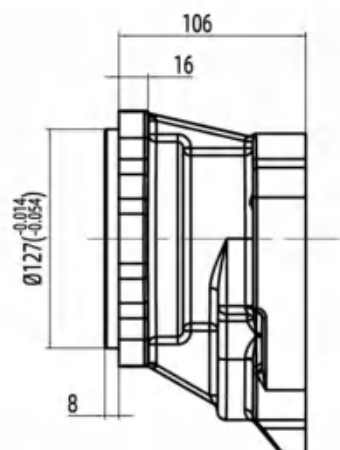
04



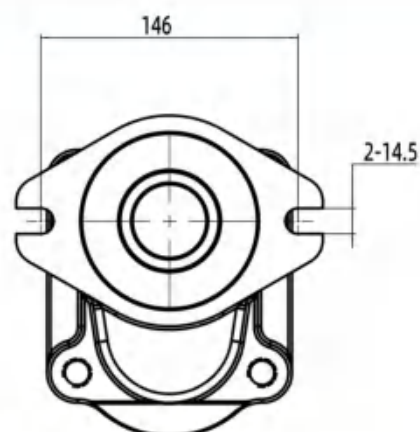
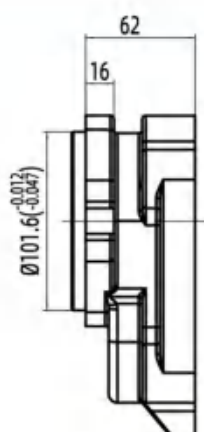
FRONT COVER

前盖

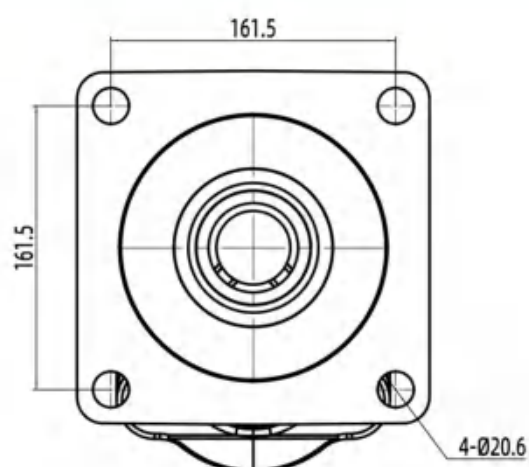
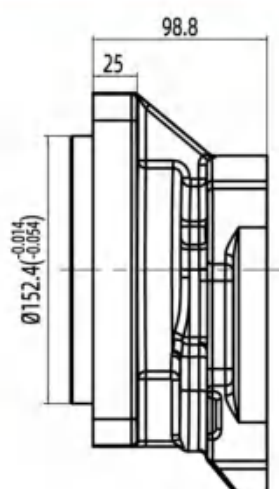
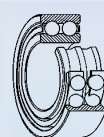
05



06



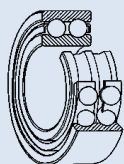
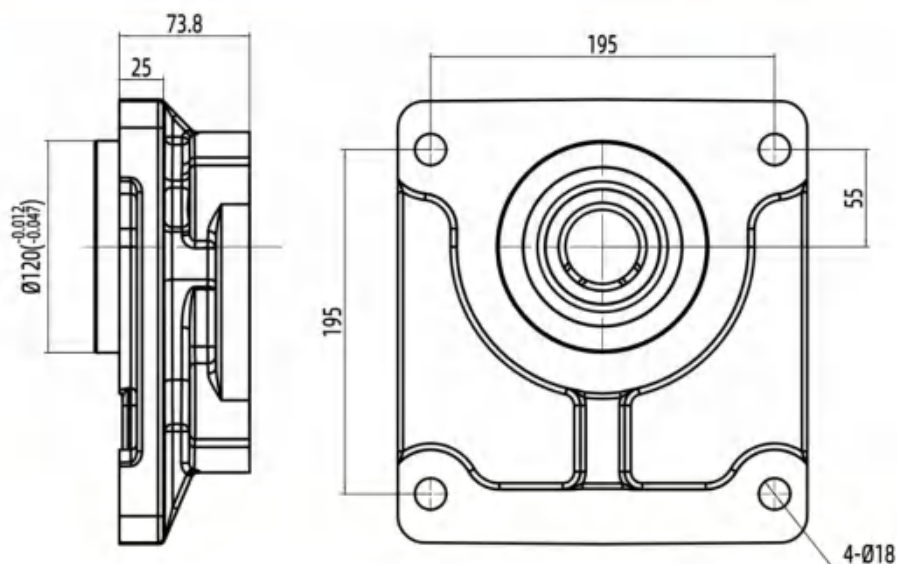
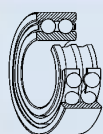
07



FRONT COVER

前盖

08



This mark means the front cover is only for "C" type outboard bearing option
Please refer to PAGE 82

带此标记的前盖只能用在" C" 类的轴承形式产品中
详见第 82 页

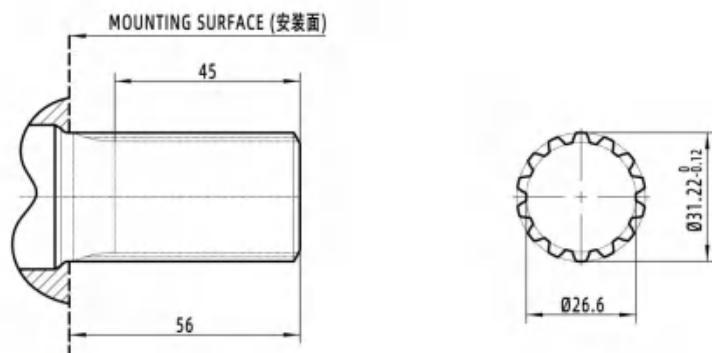


For other front cover requirement please contact our pre-sale department.
如有其他前盖尺寸的需求, 请联系我公司售前部门。

GEAR SHAFT

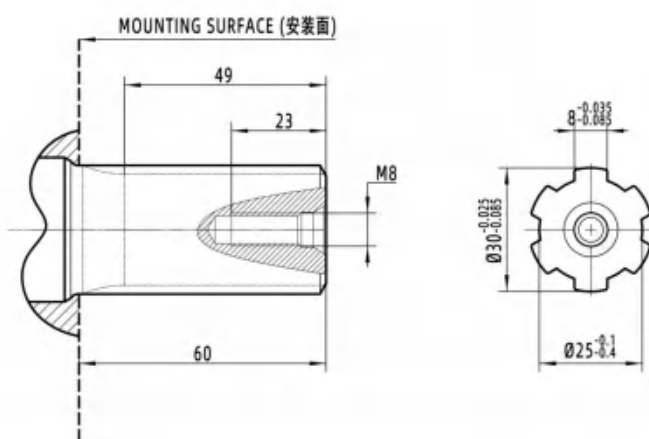
轴/花键

01



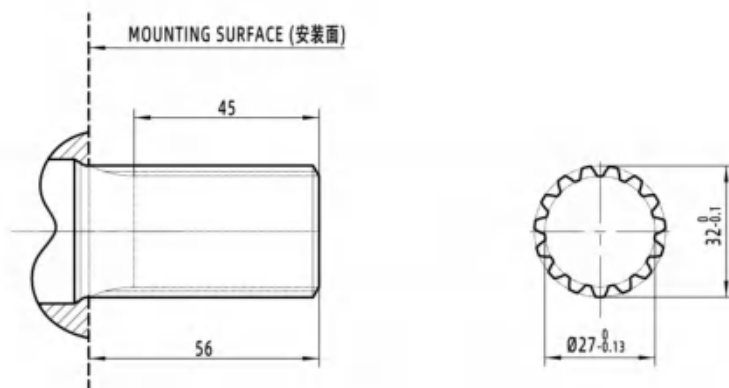
SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿 Φ 31.2 渐开线花键

02



Φ 30 RECTANGLE SPLINE
6 齿矩形花键- Φ 30

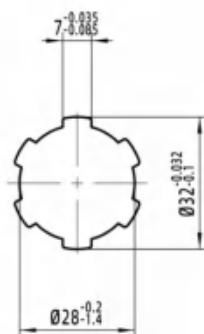
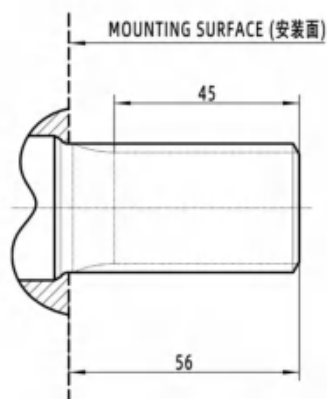
03



INVOLUTE SPLINE
15 TEETH M-2
15 齿 Φ 32 渐开线花键

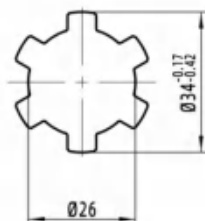
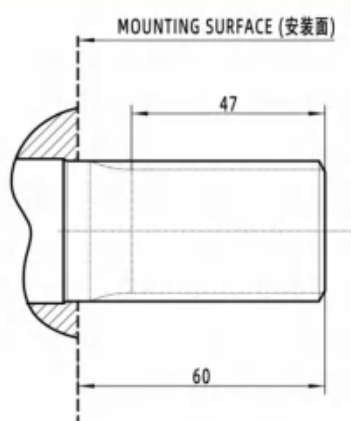
GEAR SHAFT

轴/花键



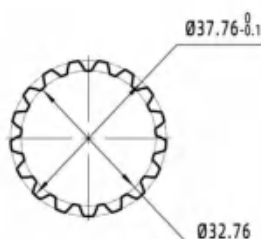
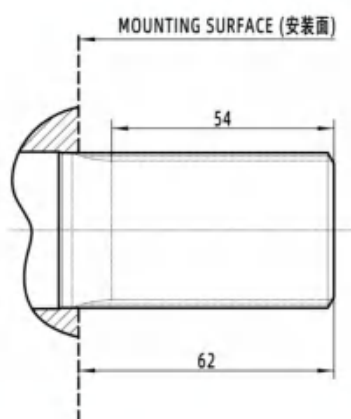
04

RECTANGLE SPLINE
6 齿矩形花键-Φ32



05

RECTANGLE SPLINE
6 齿矩形花键-Φ34

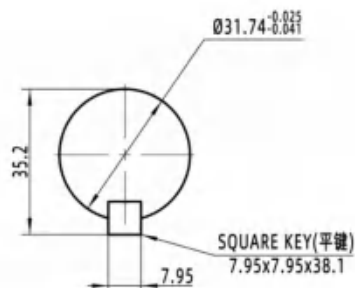
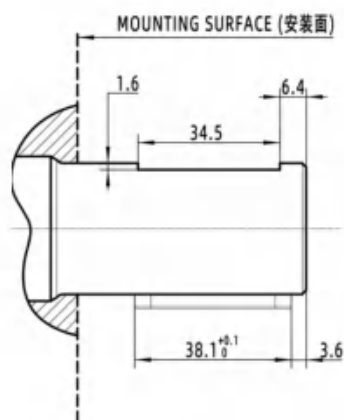


06

SAE INVOLUTE SPLINE
17 TEETH 12/24 PITCH
17 齿Φ37.76 渐开线花键

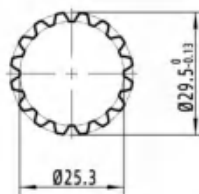
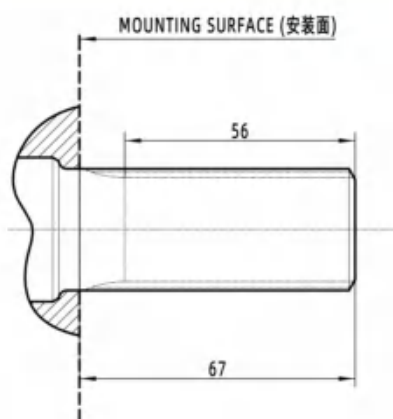
GEAR SHAFT

轴/花键



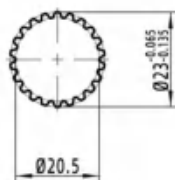
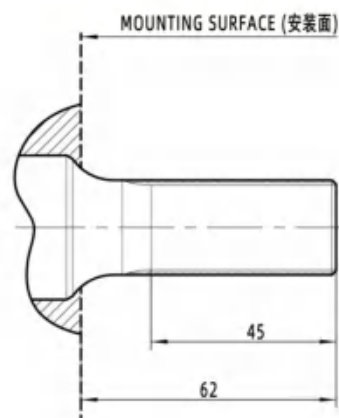
SAE-" C" 1-1/4 KEYED SHAFT
Φ31.75 平键

07



SAE INVOLUTE SPLINE
16 TEETH M1.75
16 齿Φ29.5 渐开线花键

08

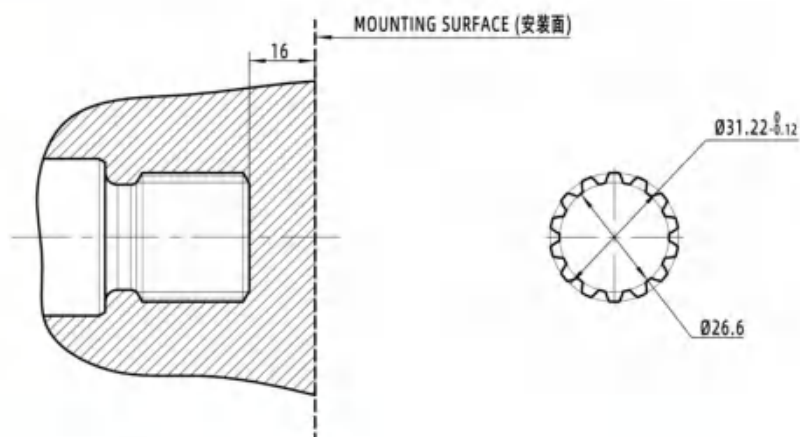


SAE INVOLUTE SPLINE
21 TEETH 24/48 PITCH
21 齿Φ23 渐开线花键

09

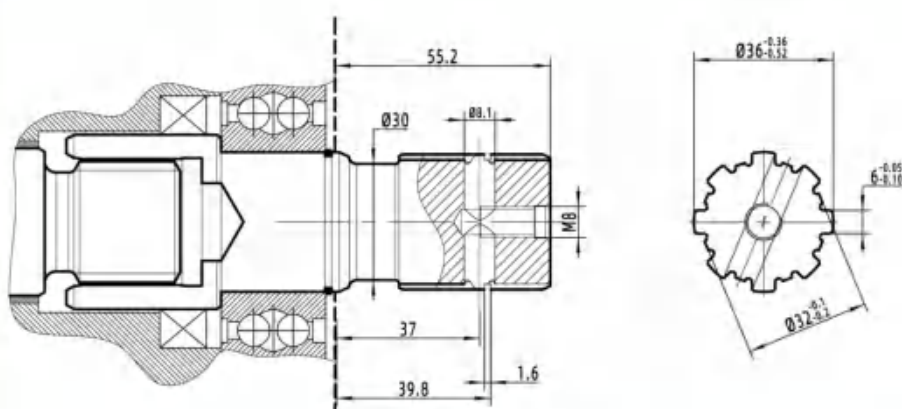
GEAR SHAFT

轴/花键



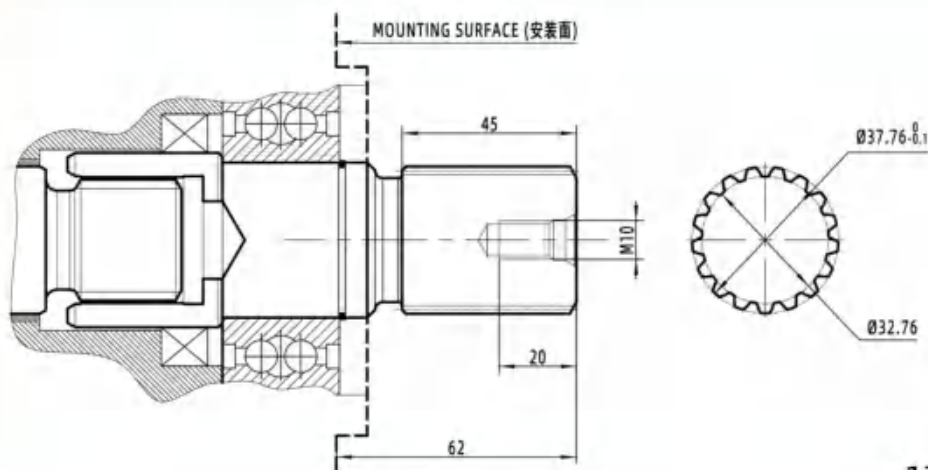
10

SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿 $\varnothing 31.2$ 渐开线花键



10.00

ISO STANDARD
A8x32x36x6 DIN5462
ISO 8 齿矩形花键

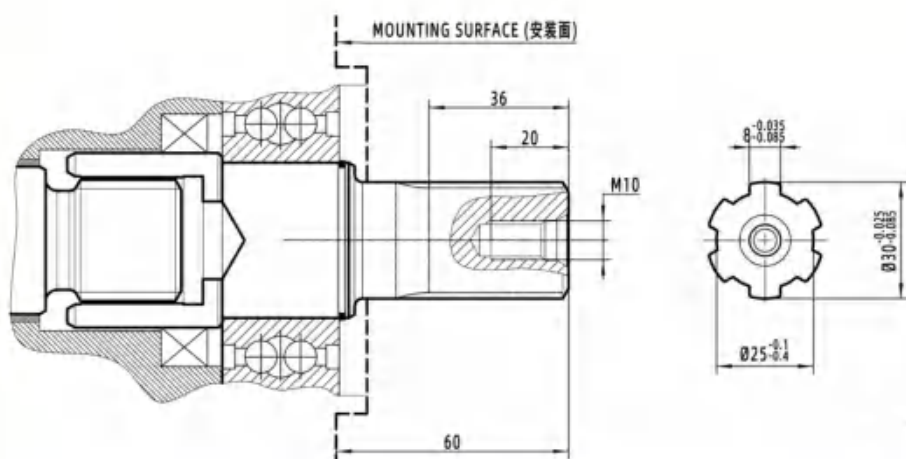


10.02

SAE INVOLUTE SPLINE
17 TEETH 12/24 PITCH
17 齿 $\varnothing 37.76$ 渐开线花键

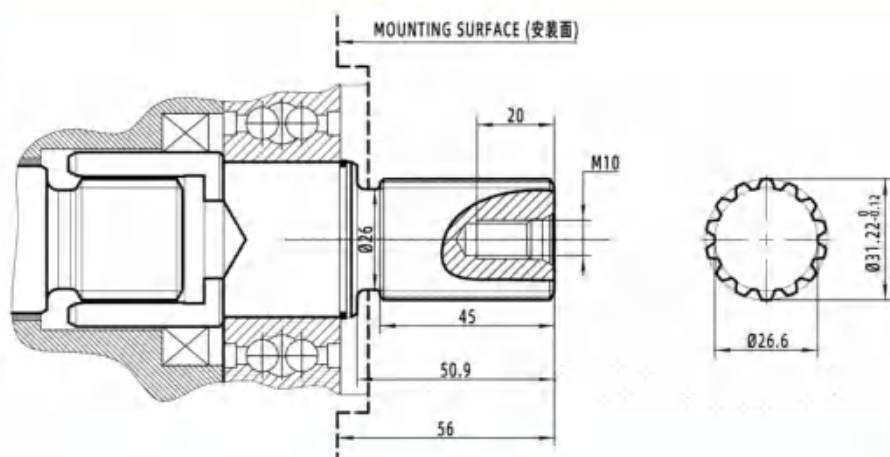
GEAR SHAFT

轴/花键



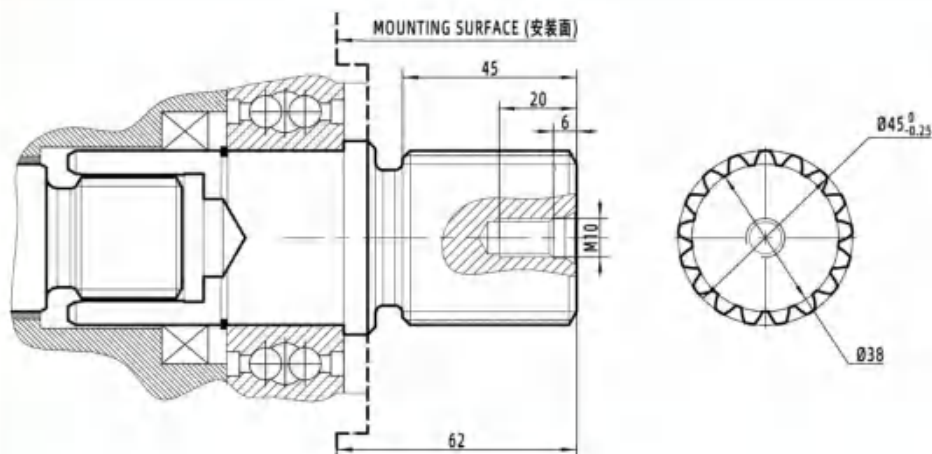
10.03

Φ30 RECTANGLE SPLINE
6 齿矩形花键-Φ30



10.05

SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿Φ31.2 渐开线花键



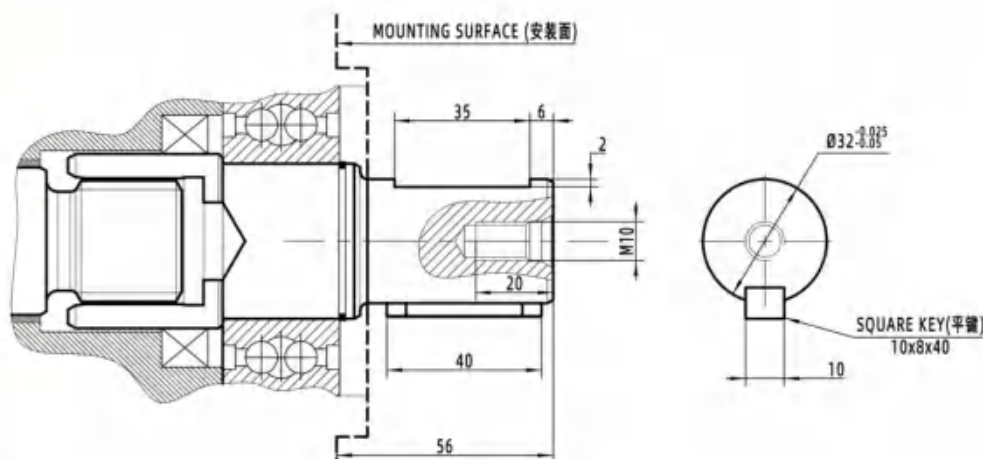
10.06

INVOLUTE SPLINE
17 TEETH M2.5
17 齿Φ45 渐开线花键

GEAR SHAFT

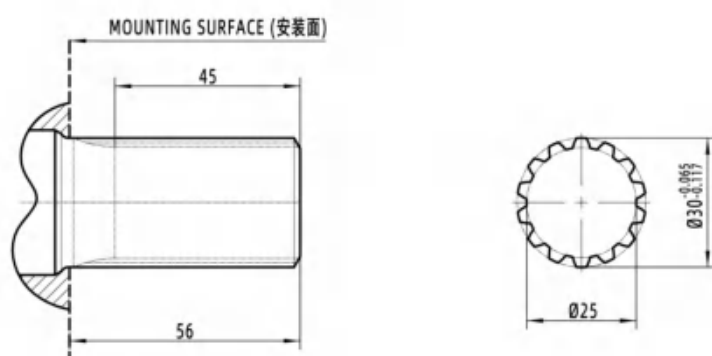
轴/花键

10.07

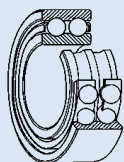


Φ32 KEYED SHAFT
Φ32 平键

11



INVOLUTE SPLINE
14 TEETH M2
14 齿Φ30 渐开线花键



This mark means the front cover is only for "C" type outboard bearing option
Please refer to PAGE 82

带此标记的前盖只能用在 "C" 类的轴承形式产品中
详见第 82 页

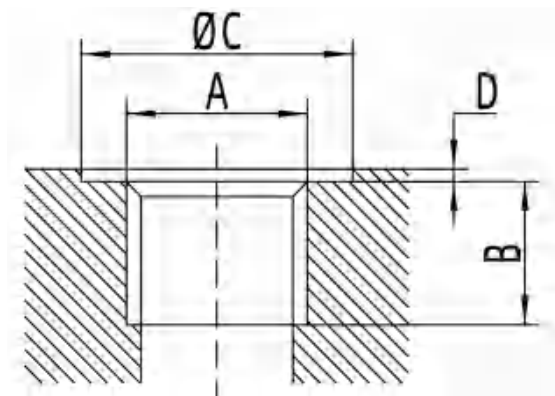


For other gear shaft requirement please contact our pre-sale department.
如有其他轴/花键尺寸的需求, 请联系我公司售前部门。

OIL PORT SIZE

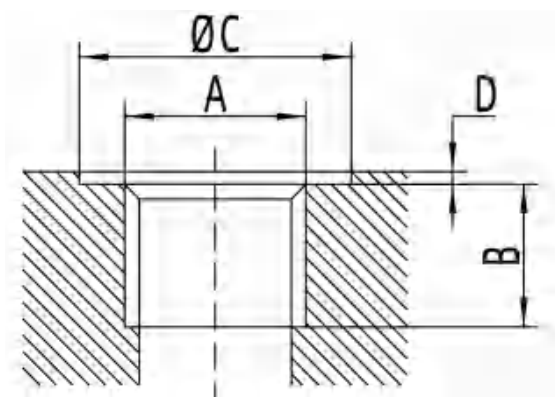
油口尺寸

Metric thread according to ISO 6149
公制螺纹 ISO 6149



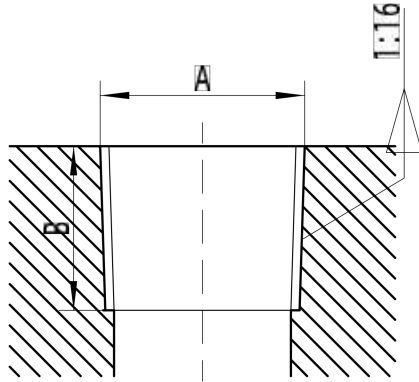
	A	B	C	D
M01	M10x1	10	20	1
M02	M12x1.5	11.5	23	1.5
M03	M14x1.5	11.5	25	1.5
M04	M16x1.5	13	28	1.5
M05	M18x1.5	14.5	30	2
M06	M22x1.5	15.5	33	2
M07	M24x1.5	19	34	2
M08	M27x1.5	19	40	2
M09	M27x2	19	40	2
M10	M30x2	19	44	2
M11	M33x1.5	19	49	2.5
M12	M33x2	19	49	2.5
M13	M36x2	19.5	53	2.5
M14	M42x2	19.5	58	2.5
M15	M48x2	22	63	2.5
M16	M60x2	27.5	74	2.5

BSPP pipe thread according to ISO 228-1
英制 G 螺纹 ISO 228-1



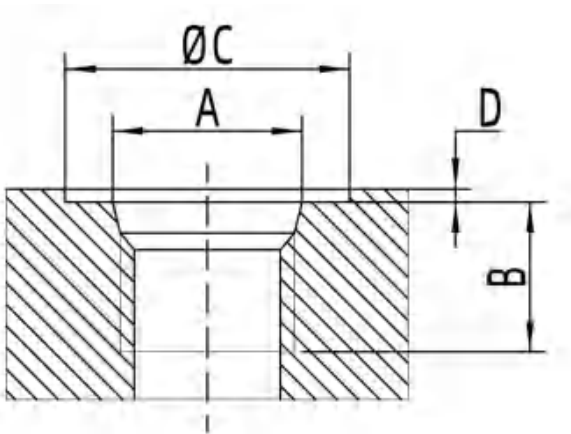
CODE	A	B	C	D
G01	G1/4	13	20	1 Max
G02	G3/8	21	33	1 Max
G03	G1/2	21	33	1 Max
G04	G3/4	21	39	1 Max
G05	G1	21	45	1 Max
G06	G1-1/4	21	58	1 Max
G07	G1-1/2	26	64	1 Max
G08	G2	26	78	1 Max
G09	G2-1/2	26	85	1 Max

BSPT 55° pipe thread according to ISO 228-1
英制 ZG 螺纹 ISO 228-1



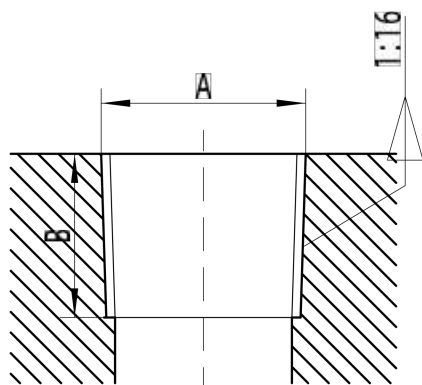
CODE	THREAD	A	B
Z01	ZG1/4	13.157	16
Z02	ZG3/8	16.662	16
Z03	ZG1/2	20.955	21
Z04	ZG3/4	26.441	21
Z05	ZG1	33.249	21
Z06	ZG1-1/4	41.910	21
Z07	ZG1-1/2	47.803	21
Z08	ZG2	59.614	21
Z09	ZG2-1/2	75.184	21

UNF thread according to SAE
美制螺纹



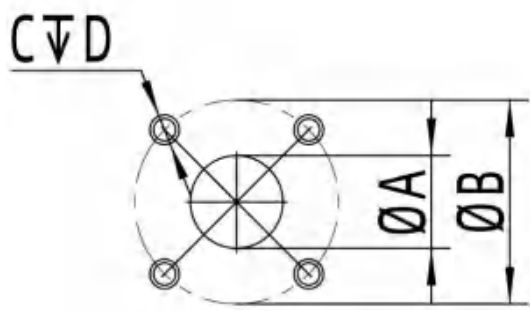
CODE	A	B	C	D
U01	7/16-20 UNF	13	21	1Max
U02	9/16-18 UNF	13	25	1 Max
U03	3/4-16 UNF	13	30	1 Max
U04	7/8-14 UNF	17	34	1 Max
U05	1-1/16-12 UNF	19	41	1 Max
U06	1-5/16-12UNF	23	49	1 Max
U07	1-5/8-12UN	23	58	1 Max
U08	1-7/8-12UN	23	65	1 Max

NPT thread according to SAE 美制锥螺纹



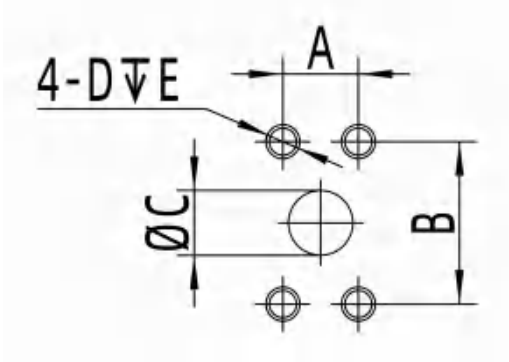
CODE	THREAD	A	B
N01	NPT 1/4	13.616	16
N02	NPT 3/8	17.055	16
N03	NPT 1/2	21.223	21
N04	NPT 3/4	26.568	21
N05	NPT 1	33.228	21
N06	NPT 1-1/4	41.985	21
N07	NPT 1-1/2	46.287	21
N08	NPT 2	60.092	21
N09	NPT 2-1/2	72.699	21

Flanged fittings according to DIN 8901/8902 欧标法兰



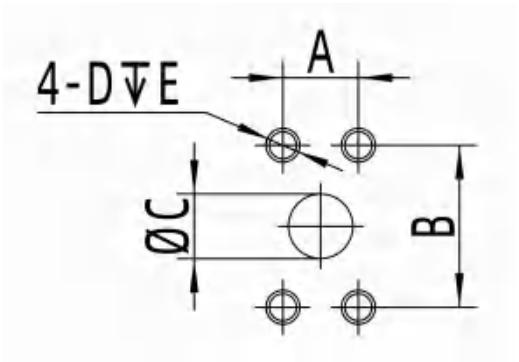
CODE	A	B	C	D
H01	8	26	M5	12
H02	10	26	M5	12
H03	8	30	M6	12
H04	12	30	M6	12
H05	15	35	M6	13
H06	20	40	M6	13
H07	13.5	30	M8	16
H08	20	40	M8	16
H09	18	55	M8	16
H10	25	55	M8	16
H11	26	51	M10	16

Flanged fittings according to METRIC 公制法兰



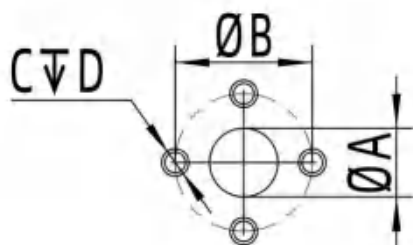
CODE	A	B	C	D	E
E01	17.5	38.1	13	M8	16
E02	22.2	47.6	19	M10	21
E03	26.2	52.4	25.4	M10	21
E04	30.2	58.7	31.8	M10	21
E05	35.7	69.8	38.1	M12	21
E06	42.9	77.8	50.8	M12	21
E07	50.8	88.9	63.5	M12	21

Flanged fittings according to SAE 美制法兰



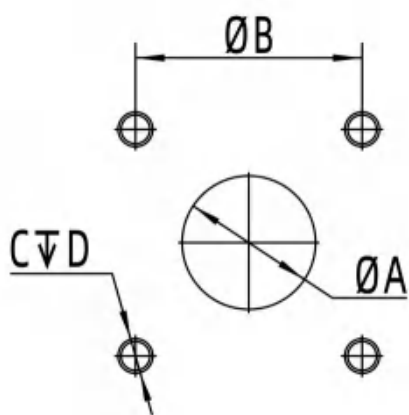
CODE	A	B	C	D	E
A01	17.5	38.1	13	5/16-18 UNC	16
A02	22.2	47.6	19	3/8-16 UNC	21
A03	26.2	52.4	25.4	3/8-16 UNC	21
A04	30.2	58.7	31.8	7/16-14 UNC	21
A05	35.7	69.8	38.1	1/2-13 UNC	21
A06	42.9	77.8	50.8	1/2-13 UNC	21
A07	50.8	88.9	63.5	1/2-13 UNC	21

Flanged fittings - "cross" 十字安装法兰



CODE	A	B	C	D
K01	13.5	30	M6	13
K02	20	40	M8	16
K03	18	40	M8	16
K04	26	51	M10	18
K05	18	55	M8	16
K06	25	55	M8	16
K07	14	38	M8	16
K08	19	38	M8	16

Flanged fittings - "square" 方形安装法兰



CODE	A	B	C	D
S03	60	78	M12	24
S04	46	78	M12	24
S05	22	48	M10	22
S06	30	48	M10	22
S08	19	54	M10	22
S09	27	54	M10	22
S10	16	46	M8	20
S11	23.5	46	M8	20



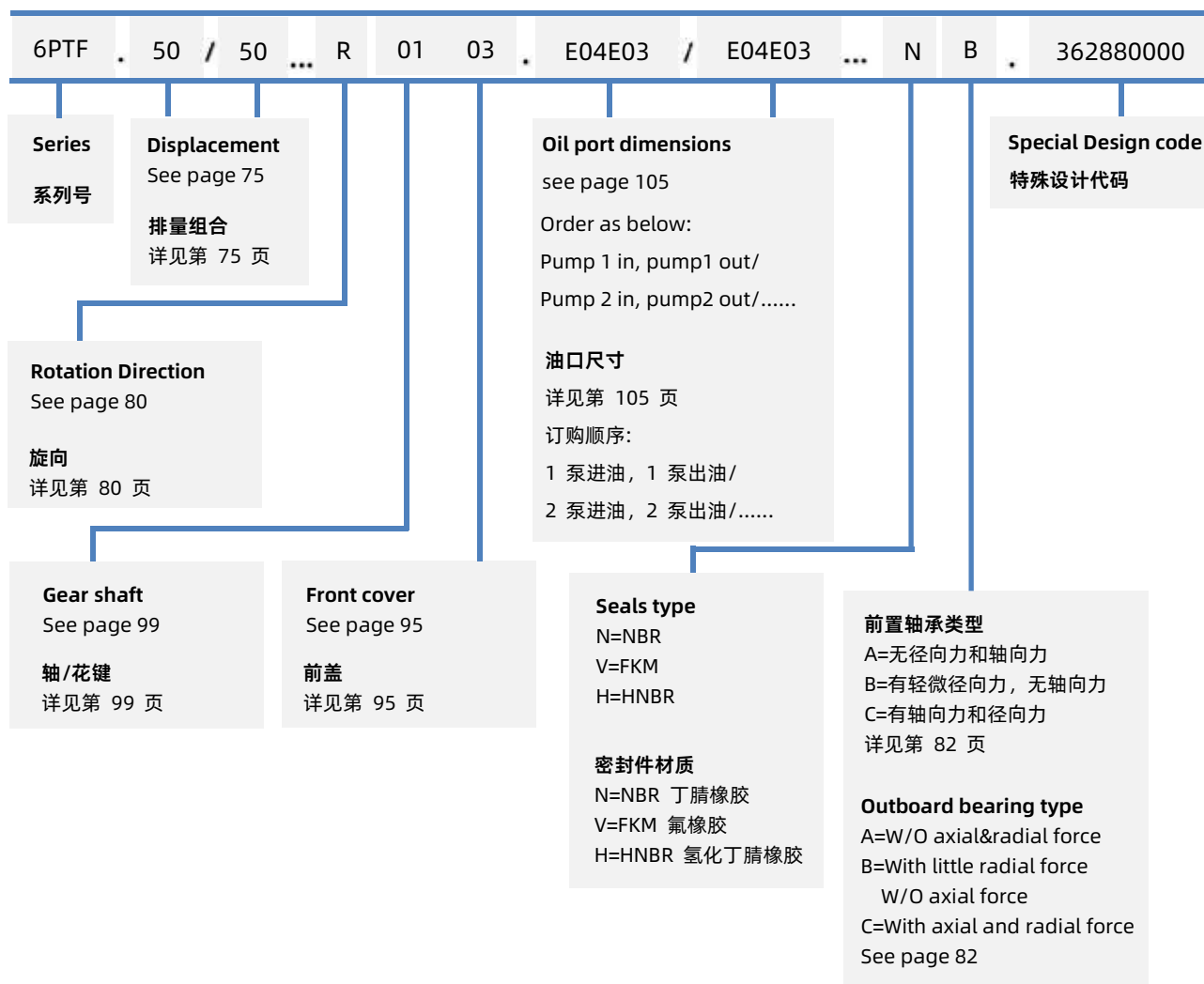
For other oil port requirement please contact our pre-sale department.
如有其他油口尺寸的需求，请联系我公司售前部门。

ORDER KEY

如何订购

6PTF SERIES

6PTF 系列



For any other dimensions or technical requirement, please feel free to contact us!
如有任何尺寸或者技术需求, 欢迎随时联系我们!



ULTRA HIGH PRESSURE GEAR PUMP

SERIES 6 . 5 P T F

超高压齿轮泵 6 . 5 P T F 系列

PRODUCT FEATURES

产品优势



- Heavy duty special DU bearing with long working life
使用喷涂特殊专利涂层的 DU 轴承可在重负载下具有长久的工作寿命
- Max working pressure up to 5500 PSI/ 38Mpa
极限工作压力可达 5500 磅力/平方英寸 (38 兆帕)
- Displacement from 125 to 250 cc/rev
可选排量范围从每转 125 毫升直到每转 250 毫升
- High strength cast iron body with special designed structure
采用自主研发专利设计的内部结构，并采用高强度的蠕墨铸铁材质壳体
- High precision carburizing&quenching gears with extra hardness
高精度齿轮，特殊材质经过渗碳淬火达到超高硬度
- Copper pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
铜质双金属压力平衡补偿板可在工作寿命内持续保证高容积效率
- 100% factory tested
产品出厂前 100%进行性能检测和跑合试验
- Custimized mounting size and oil ports
安装尺寸和进出油口可根据客户需要定制生产

TECHNICAL SPECIFICATIONS

技术参数

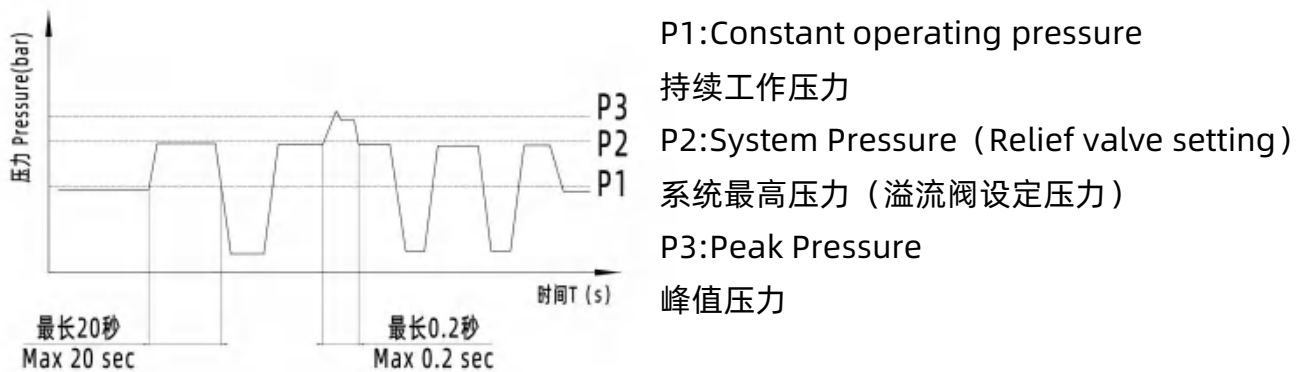
Model 型号	Displacement 排量	Flow rate	Pressure			Rotate Speed		Input power
		流量	压力			转速		@250bar
		@1500RPM	P1	P2	P3	Max 最高	Min 最低	&1500rpm 25MPa/1500 转 时的输入功率
	cm³/rev	l/min	bar			rpm		kW
6.5PTF.125	125	187.5	280	350	380	3000	350	88.78
6.5PTF.140	140	210	280	350	380	3000	350	99.43
6.5PTF.150	150	225	280	350	380	3000	350	106.53
6.5PTF.160	160	240	250	315	350	3000	350	113.64
6.5PTF.180	180	270	250	315	350	3000	350	127.84
6.5PTF.200	200	300	230	280	315	3000	350	142.05
6.5PTF.220	220	330	230	280	315	3000	350	156.25
6.5PTF.250	250	375	200	250	280	3000	350	177.56



For special displacement requirement,
please consult our pre-sales department.
如有其他特殊排量需求，请咨询我公司售前部门。

DEFINATION OF PRESSURES

关于压力的定义



The peak of pressure is the max pressure allowed and it corresponds to the overshoot^① of the relief valve.

Please note that both relief valve setting and overshoot must be lower than their limits.

If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Avenir limit.

For high frequency applications please consult our pre-sales department.

峰值压力是系统允许的最大压力，它对应的是溢流阀过载压力^①。

请注意，溢流阀设定压力和过载压力都必须低于泵的压力极限。

如果溢流的设定压力符合要求，但是超载压力高于泵的压力极限，那么必须降低溢流阀的压力设置，直到超载压力符合 Avenir 的标准限定。

对于工作频率比较高的应用场景，请咨询我们的售前部门。

① Overshoot: The actual pressure reading when a relief valve first opens to bypass fluid. (It can be up to twice the actual pressure setting.)

过载压力：当溢流阀刚开始开启时的瞬时压力（此压力有可能会比实际的设定压力高一倍以上）

FORMULAS USED FOR CALCULATION

液压系统计算公式

$$Q = \frac{V \cdot \eta_v \cdot n / 1000}{V \cdot \eta_v \cdot n / 231} \quad \begin{matrix} [\text{l/min}] \\ [\text{Gal/min}] \end{matrix}$$

$$M = \frac{\frac{\Delta p \cdot V}{62.83 \cdot \eta_m}}{\frac{\Delta p \cdot V}{2 \cdot 3.14 \cdot \eta_m}} \quad \begin{matrix} [\text{Nm}] \\ [\text{lbf.in}] \end{matrix}$$

$$P = \frac{\frac{\Delta p \cdot V \cdot n}{600 \cdot 1000 \cdot \eta_t}}{\frac{\Delta p \cdot V \cdot n}{395934 \cdot \eta_t}} \quad \begin{matrix} [\text{kW}] \\ [\text{HP}] \end{matrix}$$

$$\eta_v = \frac{Q_{\text{act.}}}{Q_{\text{theor.}}}$$

$Q_{\text{act.}}$: Actual flow rate 实际流量
 $Q_{\text{theor.}}$: theoretical flow rate 理论流量

It determines the amount of flow losses. Its value is $\eta_v = 0.92 \sim 0.98$ (depending on rotation speed, oil temperature, viscosity of working liquid and outlet pressure).

容积效率决定了泵的内泄漏量，数值一般取 0.92~0.98 (实际数值取决于转速，油温，油液粘性，工作压力等)

$$\eta_m = \frac{M_{\text{theo}}}{M_{\text{act.}}}$$

$M_{\text{theo.}}$: theoretical torque 理论扭矩
 $M_{\text{act.}}$: Actual torque 实际扭矩

It determines mechanical losses. Its value is about $\eta_m = 0.85$

机械效率决定了泵的机械损失，数值一般取 0.85

$$\eta_t = \eta_v \cdot \eta_m = \frac{P_{\text{theo}}}{P_{\text{act.}}}$$

$P_{\text{theo.}}$: Theoretical input power 理论输入功率

$P_{\text{act.}}$: Actual input power 实际输入功率

It is defined as product of η_v and η_m and determines difference between theoretical and actual required input power

总效率是容积效率和机械效率的乘积，他决定了理论输入功率和实际需要的输入功率的差别

Conversion factor 单位换算

SI units 国际单位制	US units 美国单位制
1 l/min	0.2641 US Gal/min
1 Nm	8.851 in-lbs
1 Nm	0.7375 ft-lbs
1 N	0.2248 lbs
1 kW	1.34 HP
1 cm ³ /rev	0.061 in ³ /rev
1 bar	14.5 psi
1 mm	0.0394 in
1 kg	2.205 lbs

Variables 参数

Q : FLOW RATE 流量	[l/min] [Gal/min]
M : Torque 扭矩	[Nm] [lbf.in]
P : Power 功率	[kW] [HP]
V : Displacement 排量	[cm ³ /rev] [in ³ /rev]
n: Speed 转速	[min ⁻¹]

η_v : Volumetric efficiency 容积效率

η_m : Mechanical efficiency 机械效率

η_t : Overall efficiency 总效率

WORKING LIQUID

工作介质

- Mineral oils for hydraulic drives
用于液压驱动的矿物油
- Hydraulic liquids based on plant oils suitable for hydraulic drives
用于液压驱动的植物基-液压油

LIQUID TEMPERATURE

工作油温

- $t = -20^{\circ}\text{C} \sim +80^{\circ}\text{C}$ (with NBR seals) (当密封件选用丁腈橡胶材质时)
 $t = 0^{\circ}\text{C} \sim +200^{\circ}\text{C}$ (with FKM seals) (当密封件选用氟橡胶材质时)
 $t = -50^{\circ}\text{C} \sim +120^{\circ}\text{C}$ (with HNBR seals) (当密封件选用氢化丁腈橡胶材质时)

CINEMATIC VISCOSITY

运动粘度

- Recommended (during continuous operation):
推荐粘度 (持续工作工况下) $v = 20 \sim 80 \text{ [mm}^2/\text{s]}$
- Maximum (cold starting, at viscosity >1000 , operating pressure $<10 \text{ bar}$ is permissible, speed $<1500 \cdot \text{min}^{-1}$):
最大可用粘度 (允许在粘 >1000 , 工作压力 $<10\text{bar}$, 转速 $<1500\text{r/min}$ 时冷启动) $v = 1200 \text{ [mm}^2/\text{s]}$
- Minimum (operating mode at 10 up 20 should be consulted with manufacturer):
最小可用粘度 (如果在 10~20 的粘度下工作, 请咨询我公司技术部门) $v = 10 \text{ [mm}^2/\text{s]}$

Filtration coefficient β_α

过滤系数

- $\beta_{25} 75 \geq$ (for pressure $p_2 < 200$ bar)
 $\beta_{25} 75 \geq$ (当 p_2 压力 < 200 bar 时)
- $\beta_{10} 75 \geq$ (for pressure $p_2 > 200$ bar)
 $\beta_{10} 75 \geq$ (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to ISO 4406

ISO4406 油液污染度等级

- 21/18/15 (for pressure $p_2 < 200$ bar)
21/18/15 (当 p_2 压力 < 200 bar 时)
- 20/17/14 (for pressure $p_2 > 200$ bar)
20/17/14 (当 p_2 压力 > 200 bar 时)

Liquid contamination class according to NAS 1638

NAS1638 油液污染度等级

- LEVEL 10 (for pressure $p_2 < 200$ bar)
10 级 (当 p_2 压力 < 200 bar 时)
- LEVEL 8 (for pressure $p_2 > 200$ bar)
8 级 (当 p_2 压力 > 200 bar 时)

DIRECTION OF ROTATION

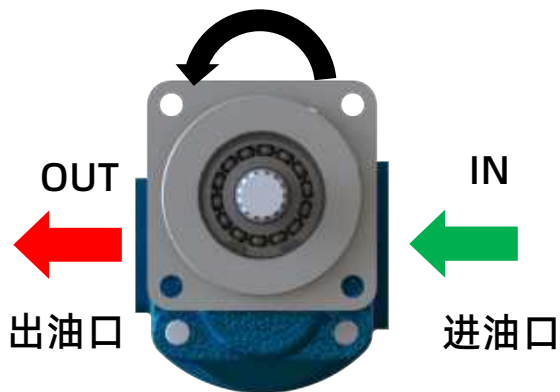
旋 向

Determine direction of rotation by looking at the drive shaft.

The pump can only be used in the specified direction of rotation.

从轴端方向的视角来判断泵的旋向。泵只能在其相应旋向下工作

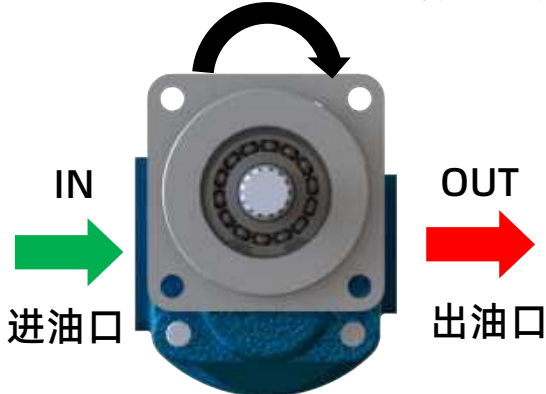
COUNTER-CLOCKWISE 逆时针旋转



LEFT ROTATION

左 旋

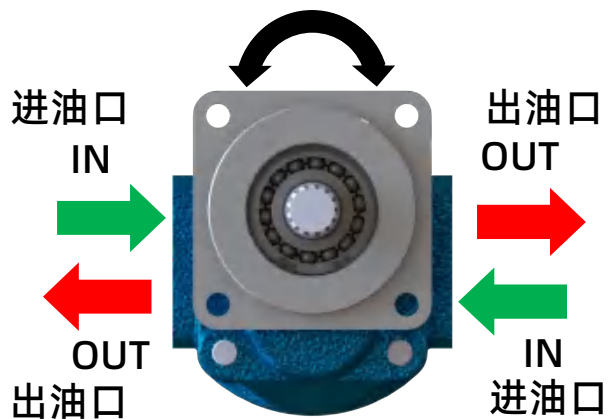
CLOCKWISE 顺时针旋转



RIGHT ROTATION

右 旋

DUAL-ROTATION 双向旋转



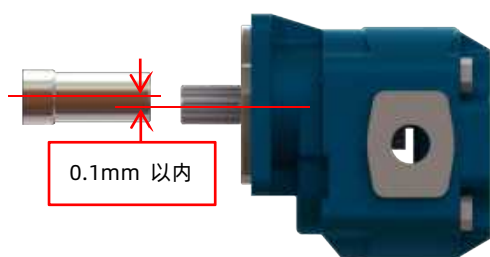
BI-DIRECTION

双 向

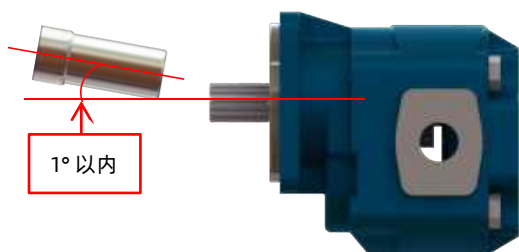
INSTALLATION PRECAUTIONS

安装注意事项

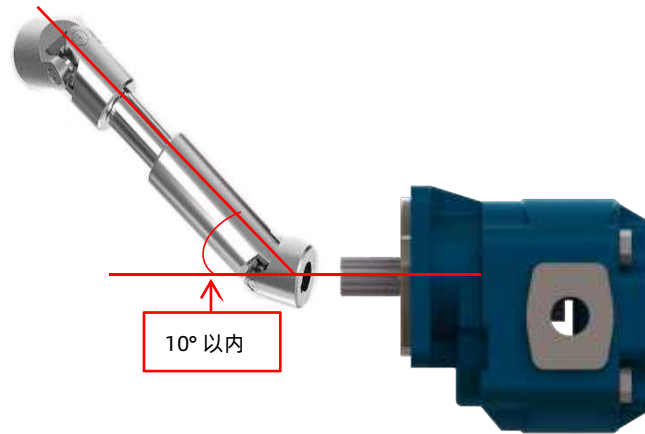
- Please use flexible coupling connection between engine shaft and pump shaft
电机与驱动轴的连接部分请使用柔性联轴器
- The coupling may cause noise, please choose the coupling with elastic material like rubber
联轴器有时会成为噪音源，建议使用橡胶等弹性材料组成的联轴器
- Axial force and radial force is not allow towards the pump shaft, if cannot avoid force, please choose the special bearing type of pump
请勿对泵的轴端施加轴向力和径向力，如无法避免，请选择带有前置轴承的型号
- Bad coaxiality will lead to pump's damage
泵轴与驱动轴的同轴度较差，会导致齿轮泵损坏
Coaxiality deviation should below 0.1mm
同轴度偏差不得超过 0.1mm



- Angle deviation should below 1°
角度偏差不得超过 1°



- Angle deviation when use universal joint should below 10°
万向节传动，角度偏差不得超过 10°



OUTBOARD BEARING OPTIONS

前置轴承选项

A



Version for applications without radial and axial load on the driveshaft

泵的轴端无轴向力和径向力时，选择此方案。

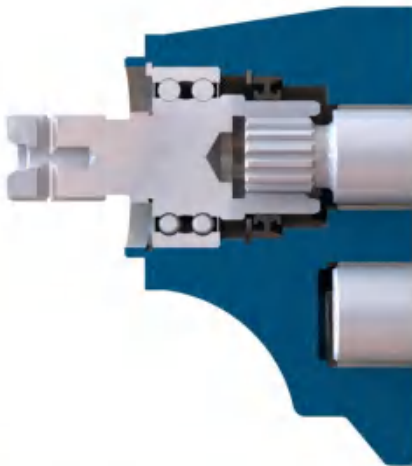
B



Version for applications with low radial load and without axial load on the drive shaft.

泵的轴端有轻微径向力，但无轴向力时，选择此方案。

C



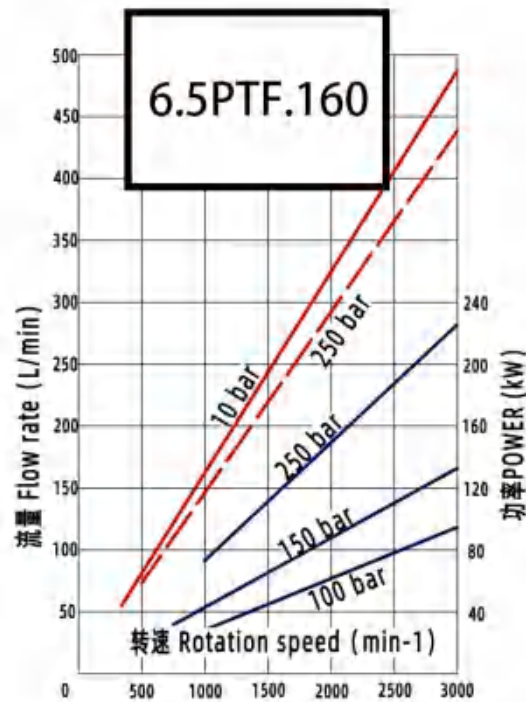
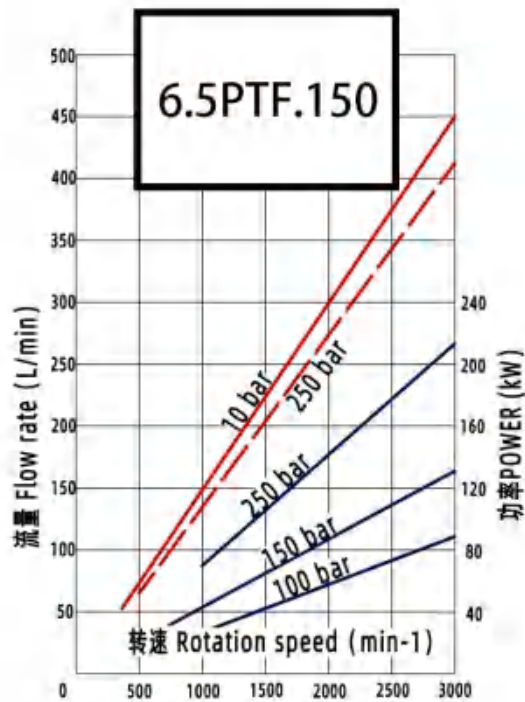
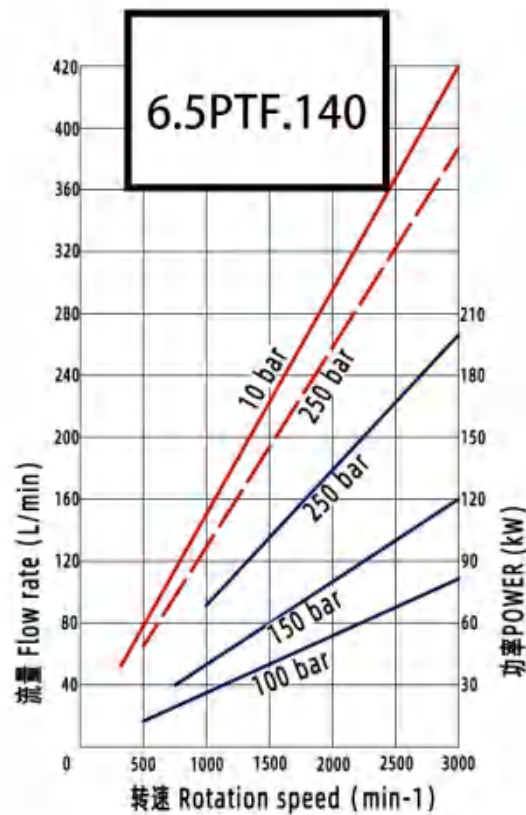
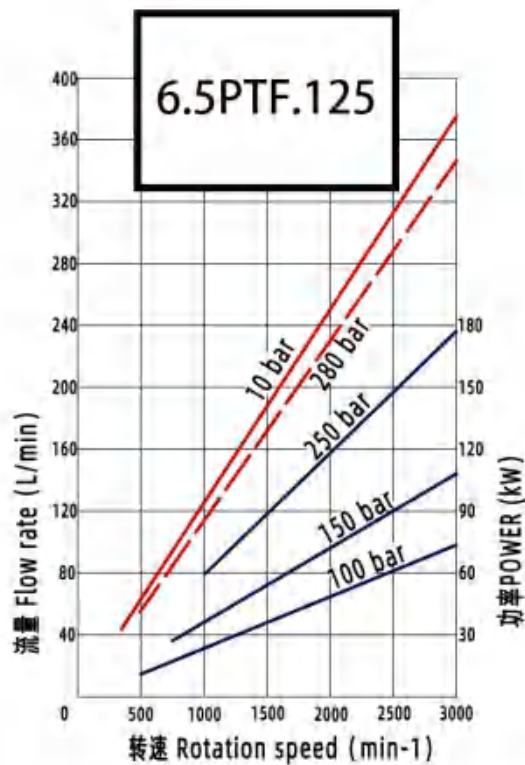
Version for applications with radial and axial load on the drive shaft

泵的轴端有径向力和轴向力时，选择此方案。

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power

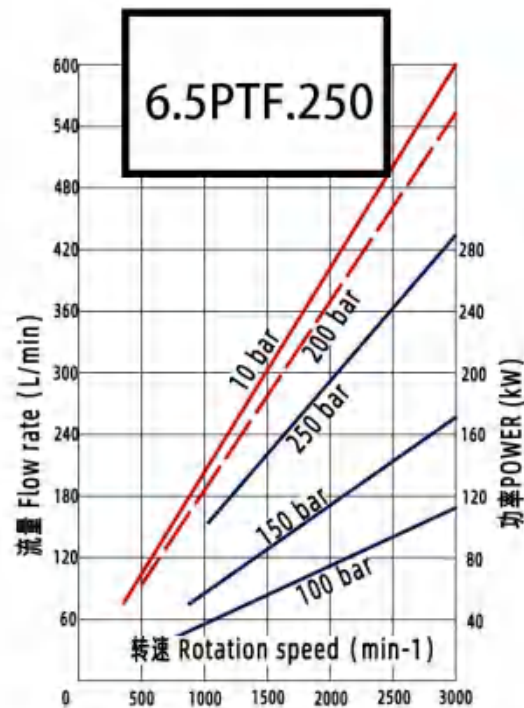
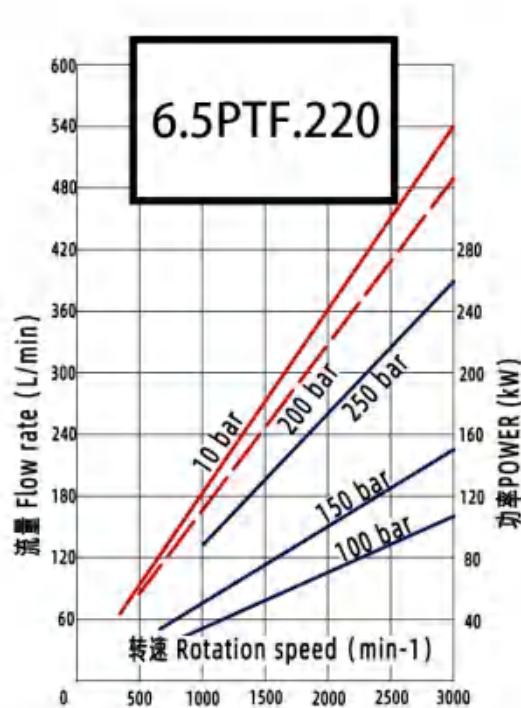
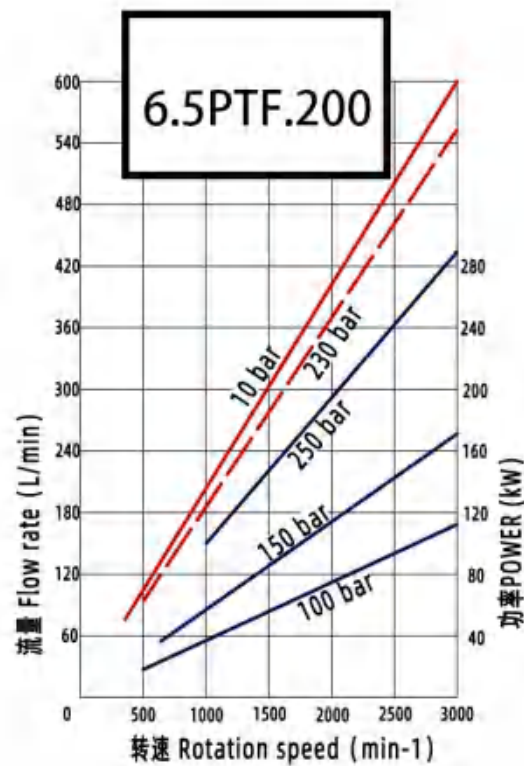
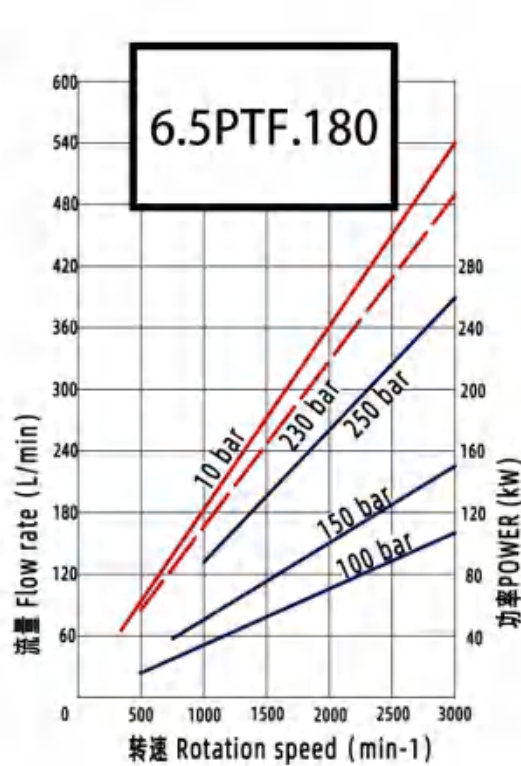


此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

PERFORMANCE CURVES

性能曲线

- 空载流量 Flow rate unload
- 额定压力下的流量 Flow rate loaded
- 输入功率 Input power



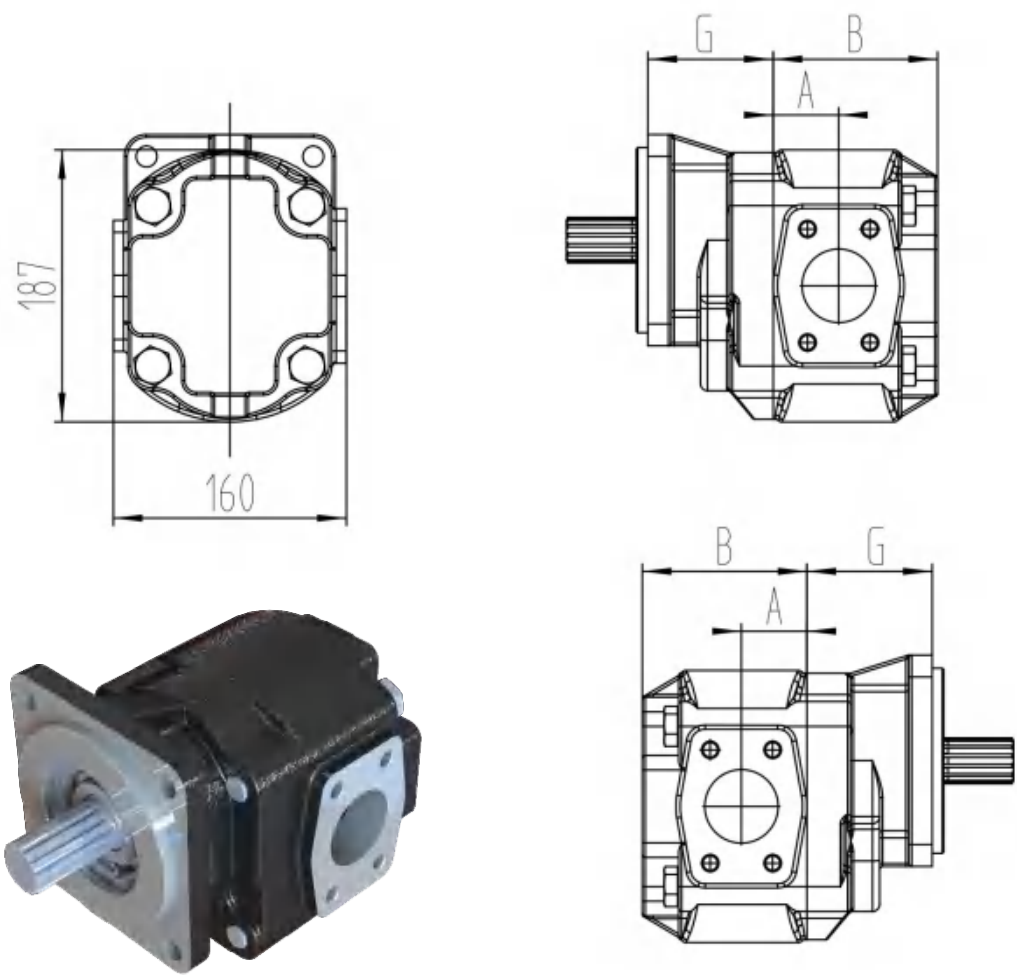
This curve is tested under 50°C (122 °F) using oil with viscosity 30 cSt (137 SSU)
此曲线是在 50 摄氏度油温下，使用粘度为 30 cSt 液压油为介质测得

DIMENSIONS

外形尺寸

6.5PTF SINGLE PUMP

6.5PTF 单泵



6.5PTF	125	140	150	160	180	200	220	250
A	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4
B	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9

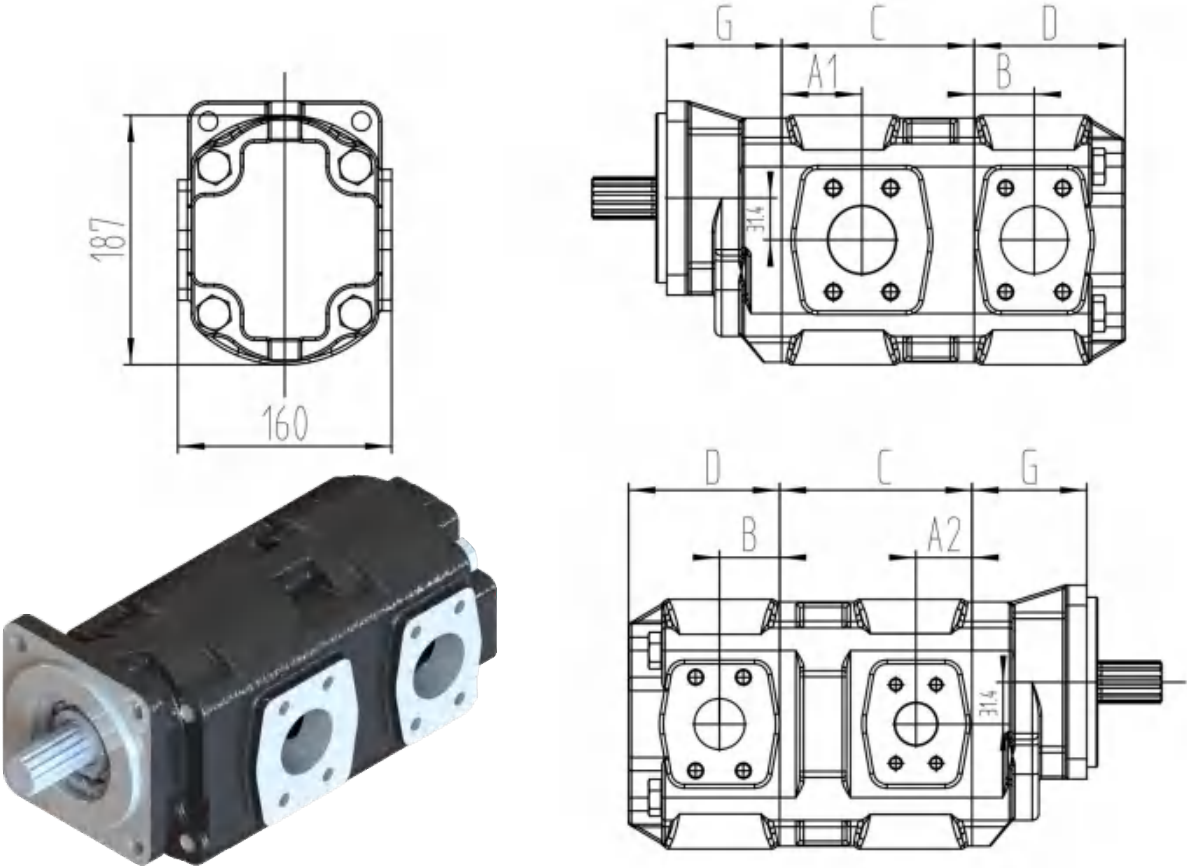
The “G” dimension please see page 131
 G 尺寸请参考第 131 页

DIMENSIONS

外形尺寸

GP65 TANDEM PUMP

GP65 双联泵

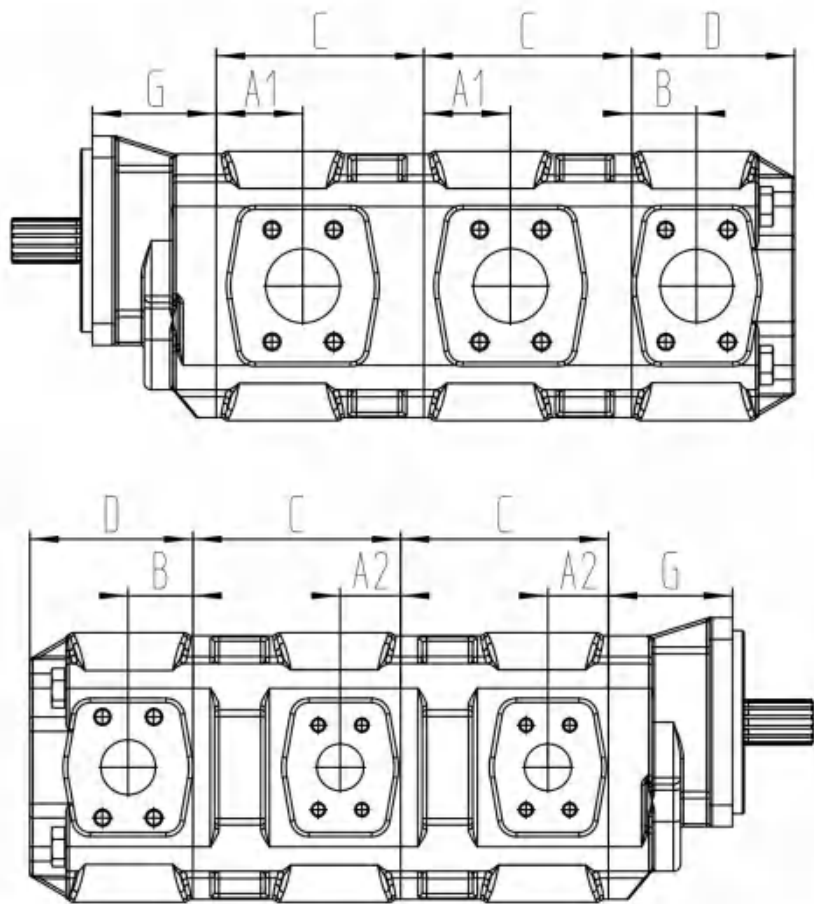
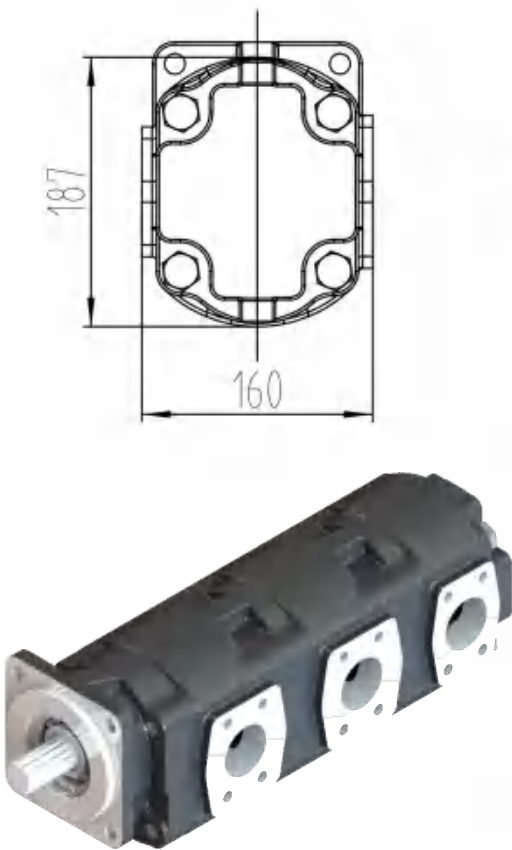


6.5PTF	125	140	150	160	180	200	220	250
A1	60.8	52.7	55.6	60	60	60	60	60
A2	42.8	40	38	42	42	42	42	42
B	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4
C	164.8	167.7	170.6	176.4	181.4	188.1	195.1	205.9
D	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9

The “G” dimension please see page 131
 G 尺寸请参考第 131 页

DIMENSIONS
外形尺寸

6.5PTF
TRIPLE PUMP
6.5PTF 三联泵



6.5PTF	125	140	150	160	180	200	220	250
A1	60.8	52.7	55.6	60	60	60	60	60
A2	42.8	40	38	42	42	42	42	42
B	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4
C	164.8	167.7	170.6	176.4	181.4	188.1	195.1	205.9
D	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9

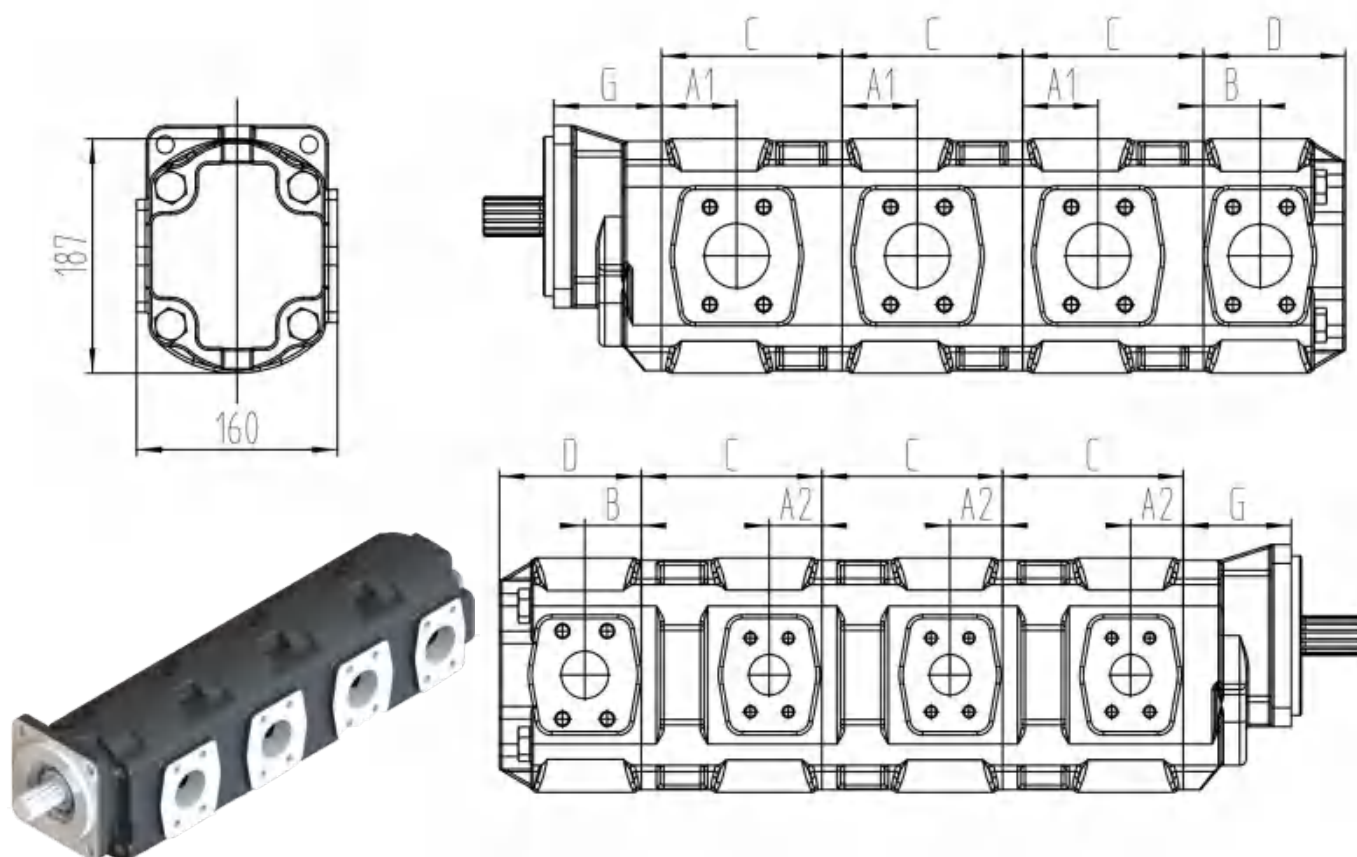
The “G” dimension please see page 131
G 尺寸请参考第 131 页

DIMENSIONS

外形尺寸

6.5PTF QUADRUPLE PUMP

6.5PTF 四联泵



6.5PTF	125	140	150	160	180	200	220	250
A1	60.8	52.7	55.6	60	60	60	60	60
A2	42.8	40	38	42	42	42	42	42
B	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4
C	164.8	167.7	170.6	176.4	181.4	188.1	195.1	205.9
D	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9

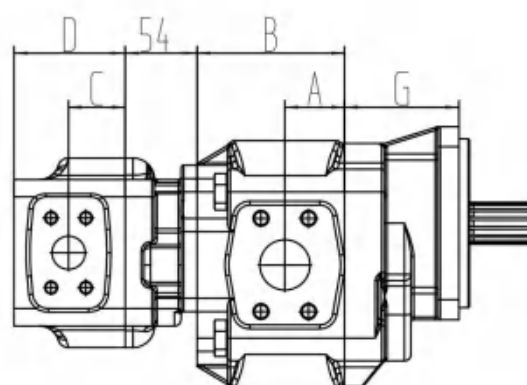
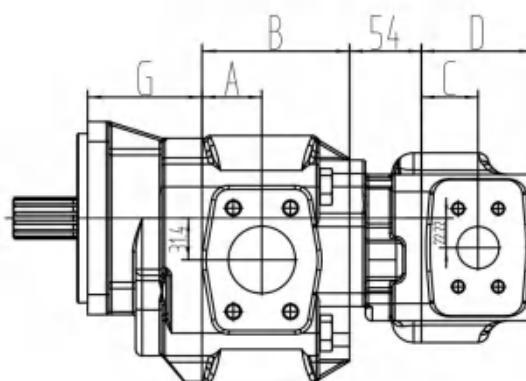
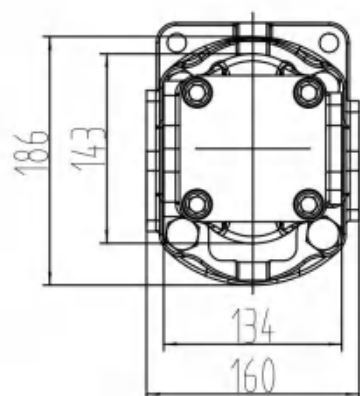
The "G" dimension please see page 131
G 尺寸请参考第 131 页

DIMENSIONS

外形尺寸

6.5PTF/4PDF TANDEM PUMP

6.5PTF/4PDF 双联泵



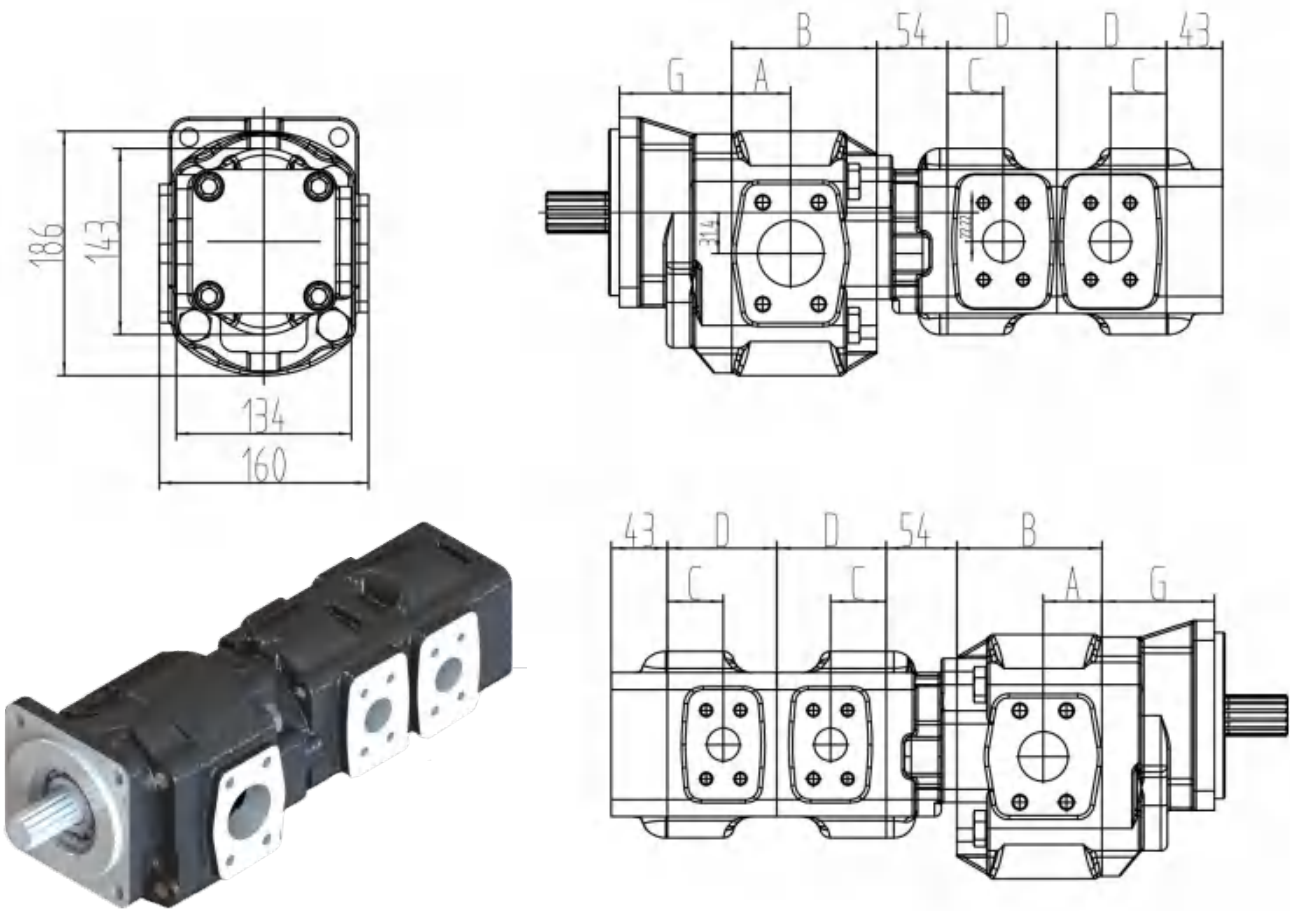
6.5PTF	125	140	150	160	180	200	220	250								
A	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4								
B	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9								
4PDF	08	10	13	16	20	25	29	32	36	40	45	51	55	63	72	80
C	28.2	29.7	31.7	33.7	36.7	40.7	42.7	45.7	47.7	51.2	54.7	58.7	61.7	67.7	74.7	79.7
D	70	71.5	73.5	75.5	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5	103.5	109.5	116.5	121.5

The "G" dimension please see page 131
G 尺寸请参考第 131 页

DIMENSIONS

外形尺寸

GP65/GP40 三联泵



6.5PTF	125	140	150	160	180	200	220	250
A	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4
B	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9

4PDF	08	10	13	16	20	25	29	32	36	40	45	51	55	63	72	80
C	28.2	29.7	31.7	33.7	36.7	40.7	42.7	45.7	47.7	51.2	54.7	58.7	61.7	67.7	74.7	79.7
D	70	71.5	73.5	75.5	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5	103.5	109.5	116.5	121.5

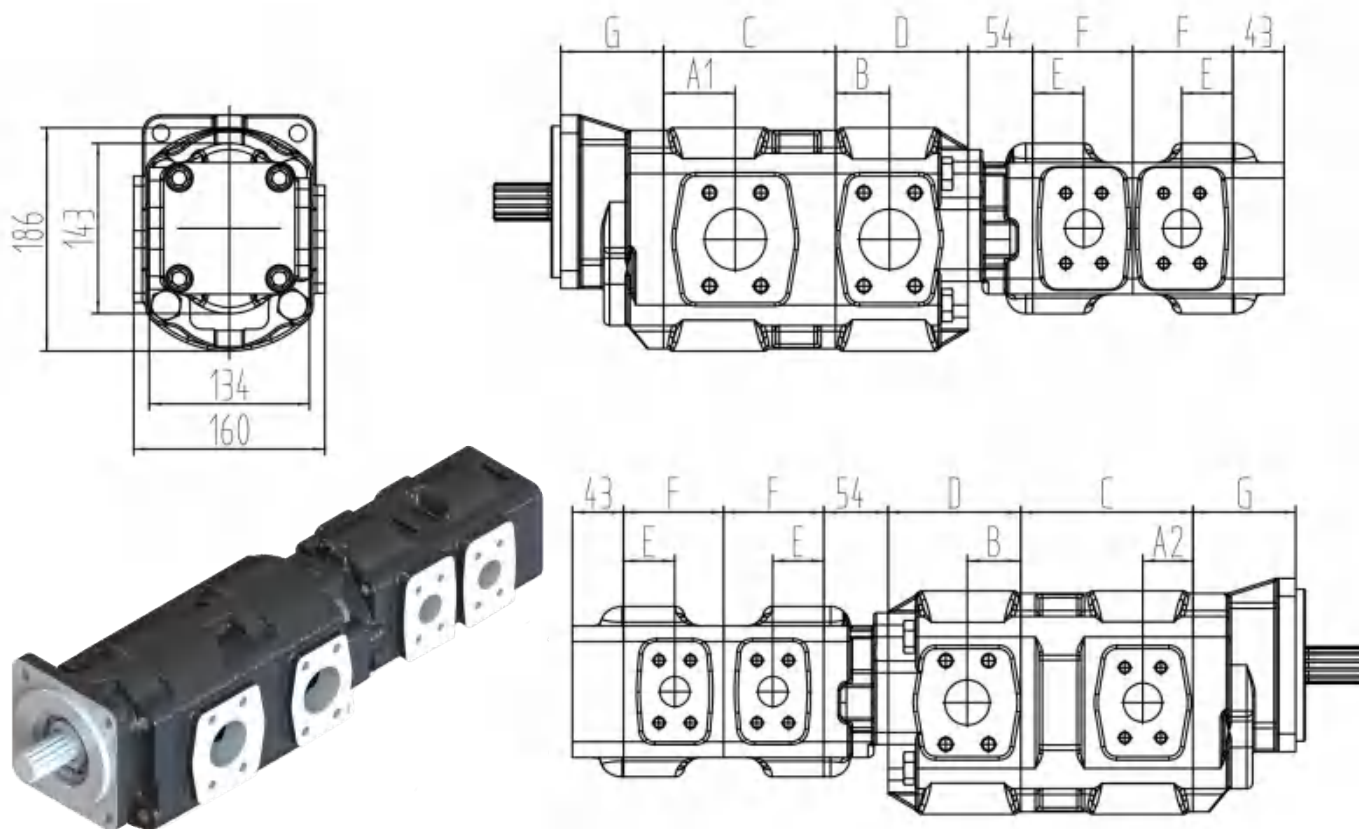
The “G” dimension please see page 131
G 尺寸请参考第 131 页

DIMENSIONS

外形尺寸

6.5PTF/4PDF QUADRUPLE PUMP

6.5PTF/4PDF 四联泵



6.5PTF	125	140	150	160	180	200	220	250								
A1	60.8	52.7	55.6	60	60	60	60	60								
A2	42.8	40	38	42	42	42	42	42								
B	51.8	53.3	54.7	57.6	60.1	63.5	70	72.4								
C	164.8	167.7	170.6	176.4	181.4	188.1	195.1	205.9								
D	122.8	125.7	128.6	134.4	139.4	146.1	153.1	163.9								
4PDF	08	10	13	16	20	25	29	32	36	40	45	51	55	63	72	80
C	28.2	29.7	31.7	33.7	36.7	40.7	42.7	45.7	47.7	51.2	54.7	58.7	61.7	67.7	74.7	79.7
D	70	71.5	73.5	75.5	78.5	82.5	84.5	87.5	89.5	93	96.5	100.5	103.5	109.5	116.5	121.5

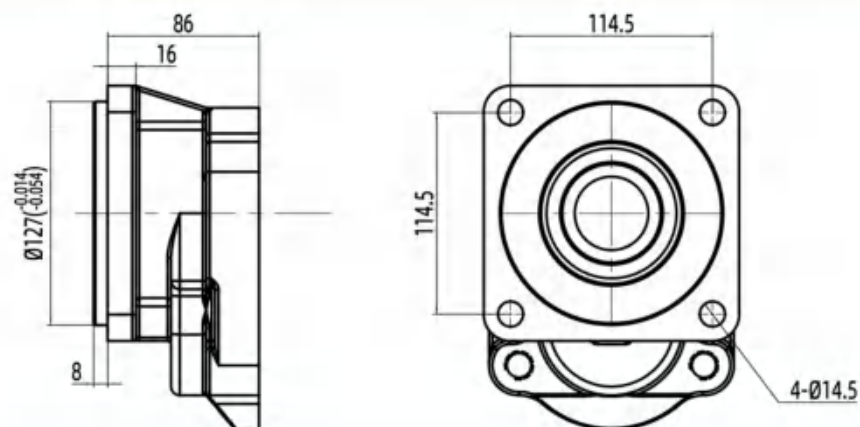
The "G" dimension please see page 131

G 尺寸请参考第 131 页

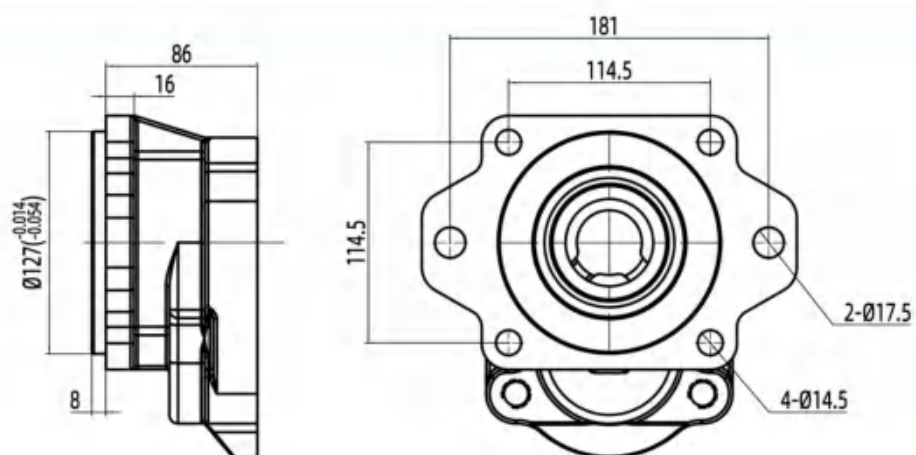
FRONT COVER

前盖

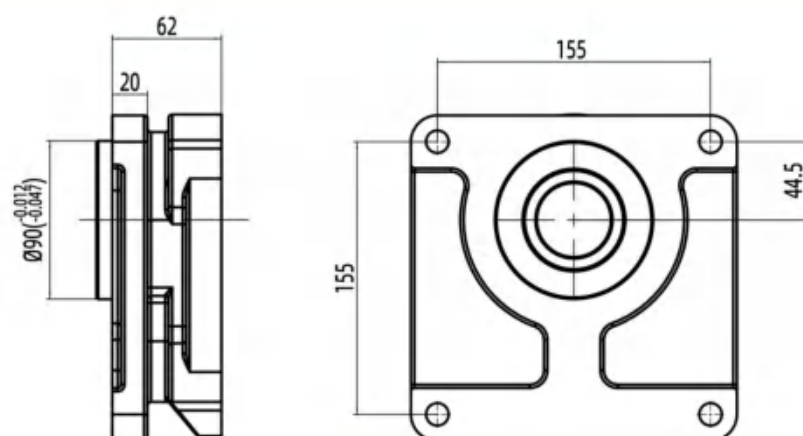
0H



00



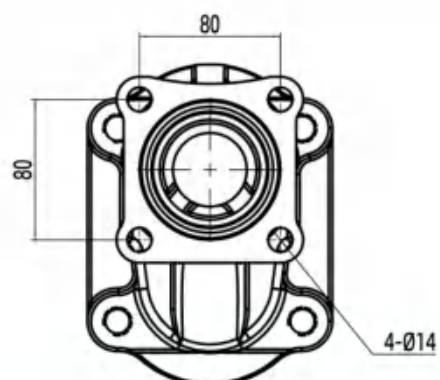
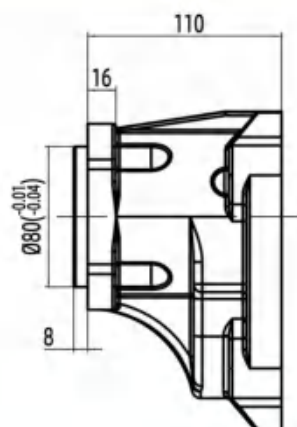
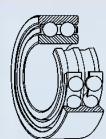
01



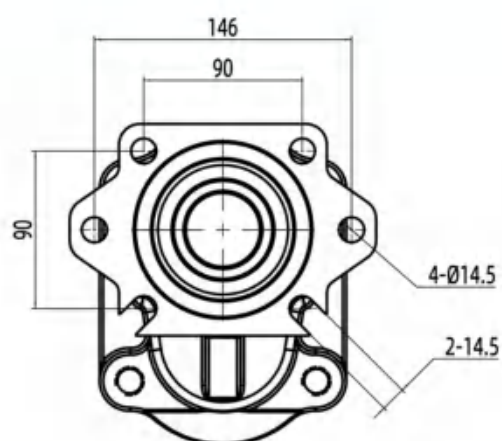
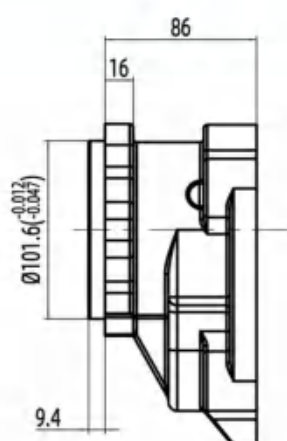
FRONT COVER

前盖

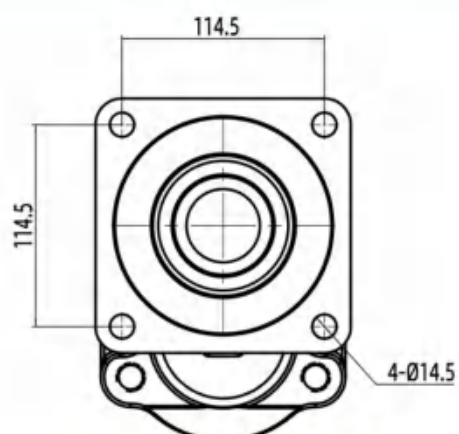
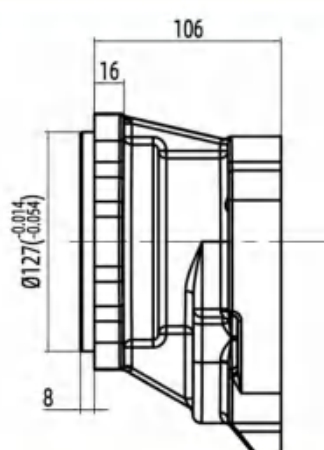
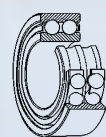
02



03



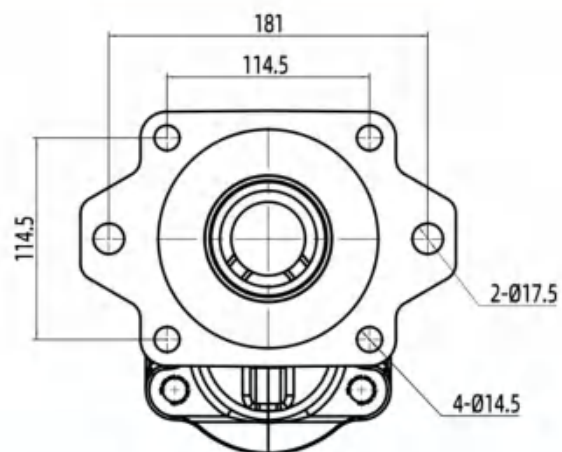
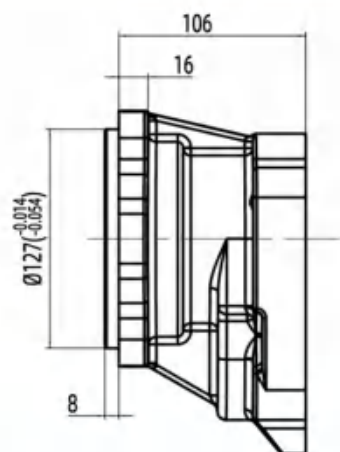
04



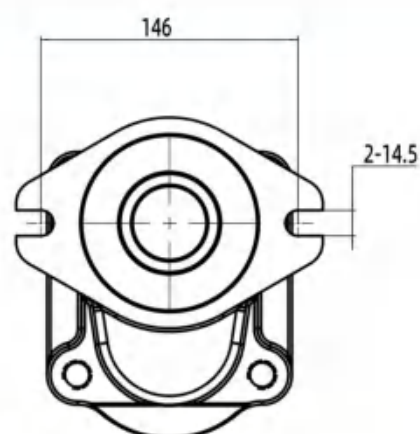
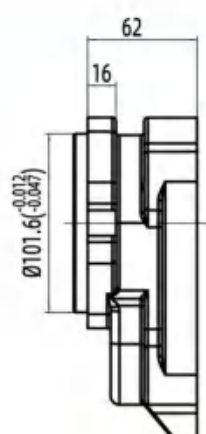
FRONT COVER

前盖

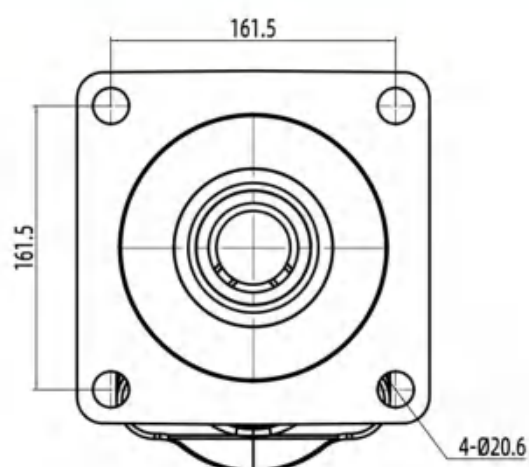
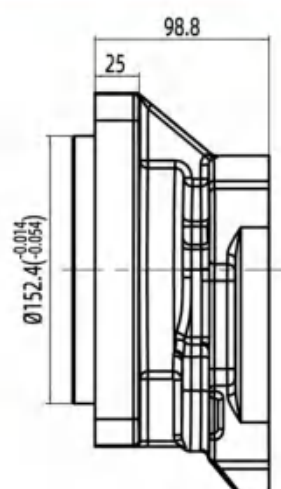
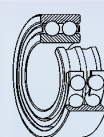
05



06



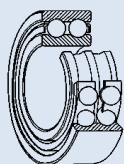
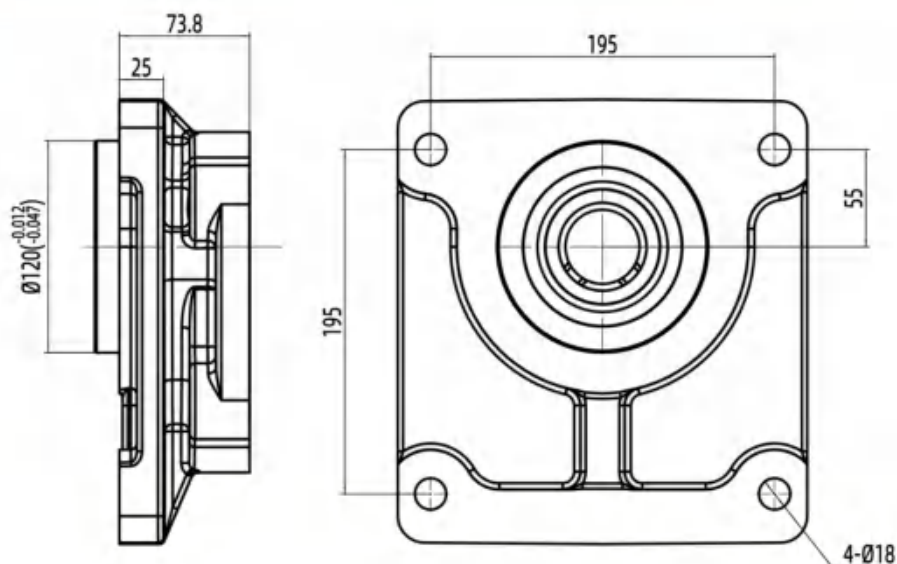
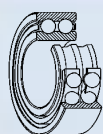
07



FRONT COVER

前盖

08



This mark means the front cover is only for "C" type outboard bearing option
Please refer to PAGE 120

带此标记的前盖只能用在" C" 类的轴承形式产品中
详见第 120 页

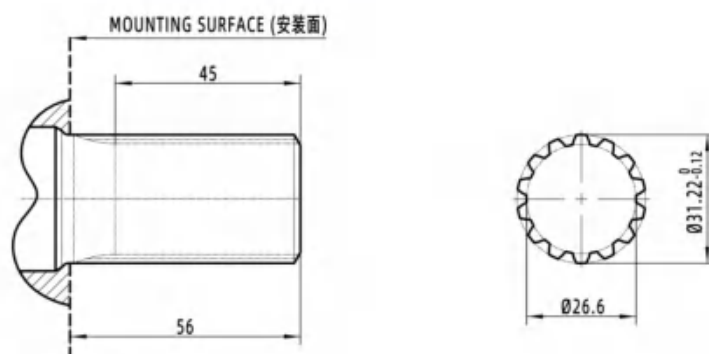


For other front cover requirement please contact our pre-sale department.
如有其他前盖尺寸的需求, 请联系我公司售前部门。

GEAR SHAFT

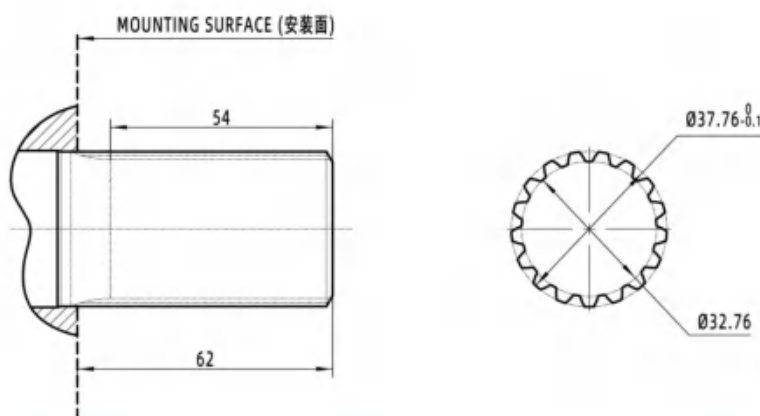
轴/花键

01



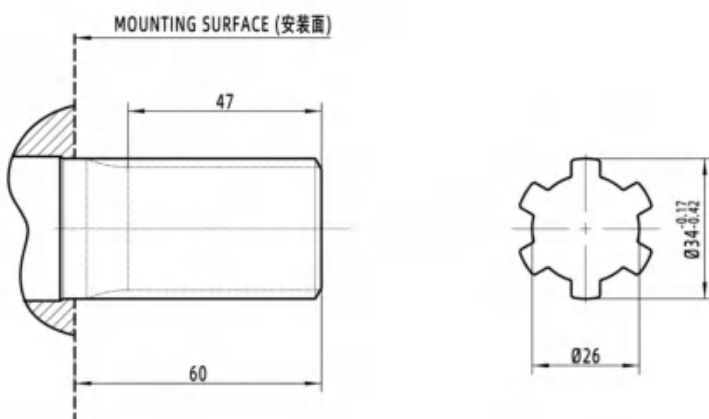
SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿 $\Phi 31.2$ 渐开线花键

02



SAE INVOLUTE SPLINE
17 TEETH 12/24 PITCH
17 齿 $\Phi 31.2$ 渐开线花键

03

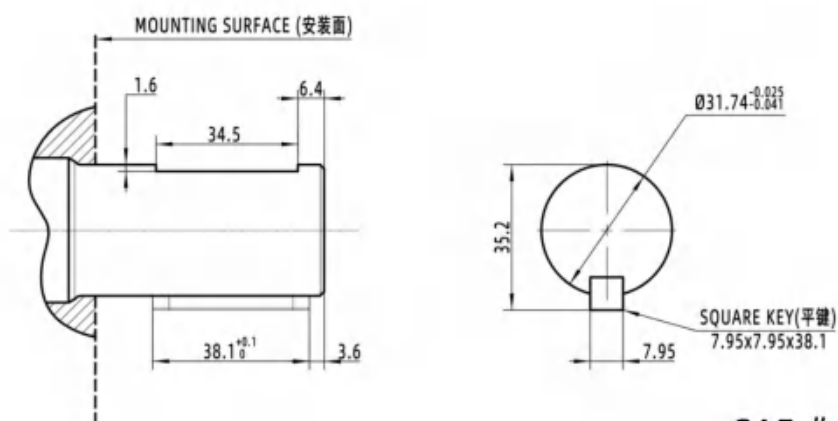


RECTANGLE SPLINE
6 齿矩形花键- $\Phi 34$

GEAR SHAFT

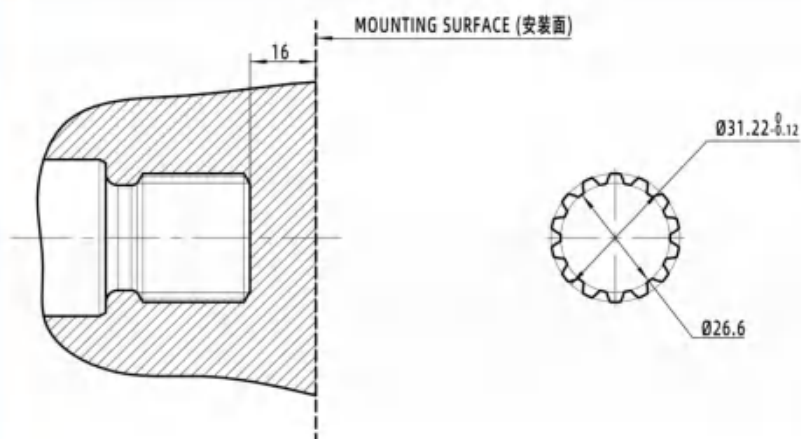
轴/花键

04



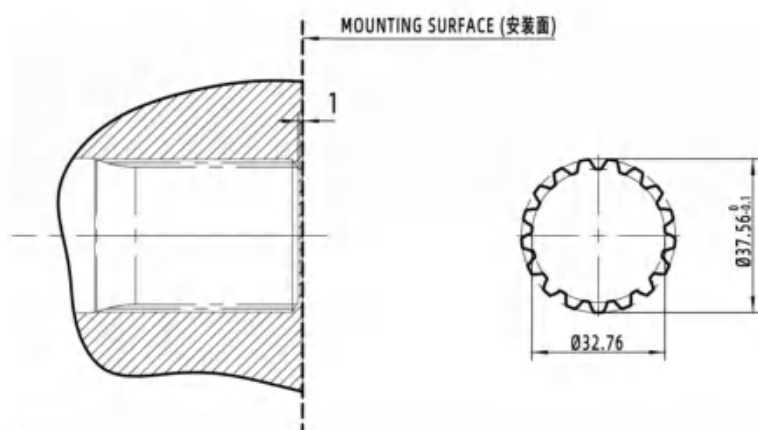
SAE-1/4 C 1-1/4 KEYED SHAFT
Φ31.75 平键

05



SAE INVOLUTE SPLINE
14 TEETH 12/24 PITCH
14 齿Φ31.2 渐开线花键

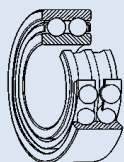
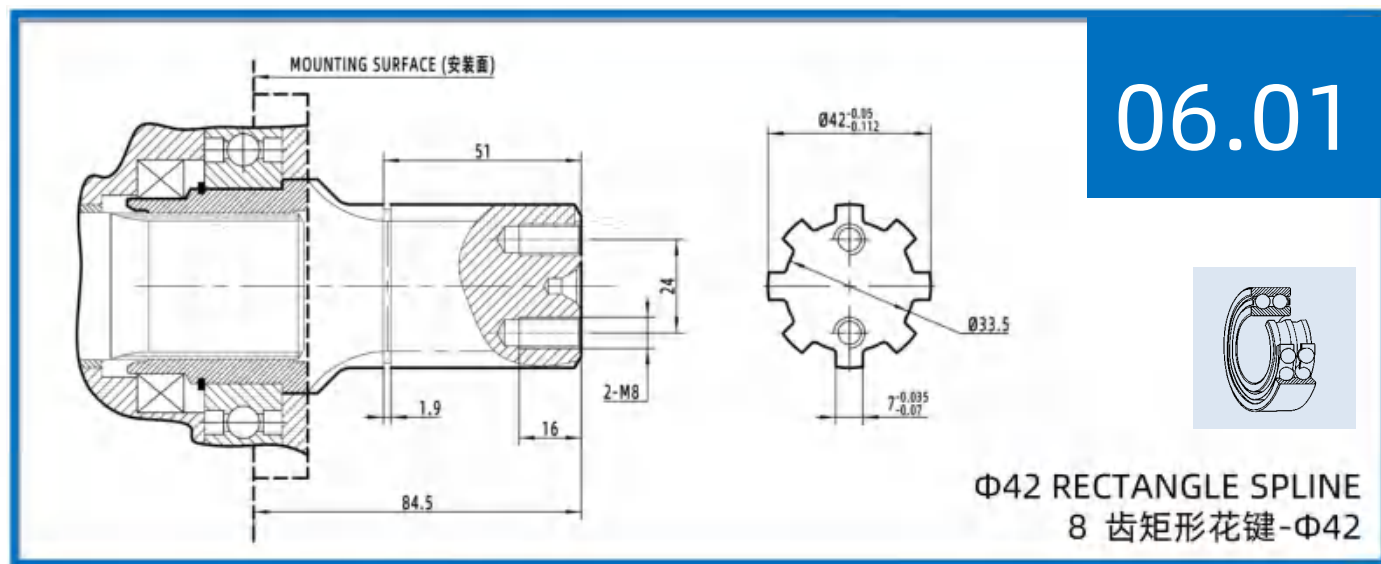
06



SAE INVOLUTE SPLINE
17 TEETH 12/24 PITCH
17 齿Φ31.2 渐开线花键

GEAR SHAFT

轴/花键



This mark means the front cover is only for "C" type outboard bearing option
Please refer to PAGE 120

带此标记的前盖只能用在 "C" 类的轴承形式产品中
详见第 120 页



For other gear shaft requirement please contact our pre-sale department.

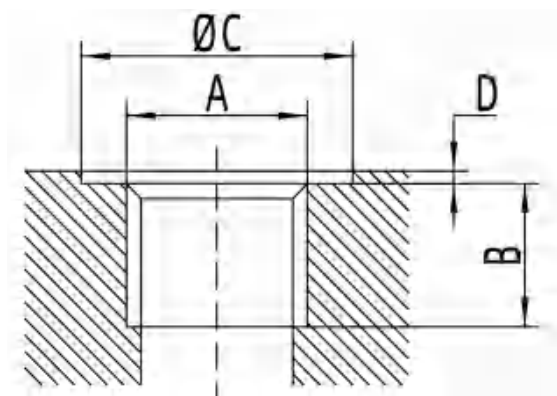
如有其他轴/花键尺寸的需求，请联系我公司售前部门。

OIL PORT SIZE

油口尺寸

Metric thread according to ISO 6149

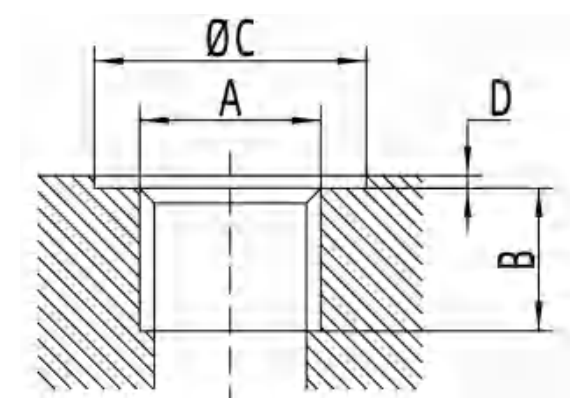
公制螺纹 ISO 6149



	A	B	C	D
M01	M10x1	10	20	1
M02	M12x1.5	11.5	23	1.5
M03	M14x1.5	11.5	25	1.5
M04	M16x1.5	13	28	1.5
M05	M18x1.5	14.5	30	2
M06	M22x1.5	15.5	33	2
M07	M24x1.5	19	34	2
M08	M27x1.5	19	40	2
M09	M27x2	19	40	2
M10	M30x2	19	44	2
M11	M33x1.5	19	49	2.5
M12	M33x2	19	49	2.5
M13	M36x2	19.5	53	2.5
M14	M42x2	19.5	58	2.5
M15	M48x2	22	63	2.5
M16	M60x2	27.5	74	2.5

BSPP pipe thread according to ISO 228-1

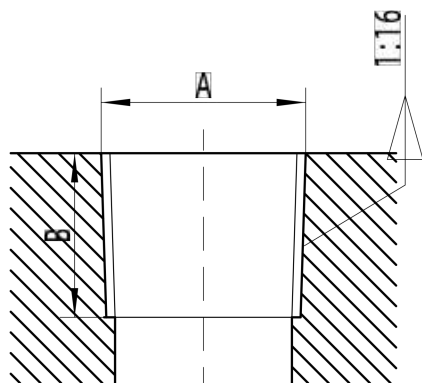
英制 G 螺纹 ISO 228-1



CODE	A	B	C	D
G01	G1/4	13	20	1 Max
G02	G3/8	21	33	1 Max
G03	G1/2	21	33	1 Max
G04	G3/4	21	39	1 Max
G05	G1	21	45	1 Max
G06	G1-1/4	21	58	1 Max
G07	G1-1/2	26	64	1 Max
G08	G2	26	78	1 Max
G09	G2-1/2	26	85	1 Max

BSPT 55° pipe thread according to ISO 228-1

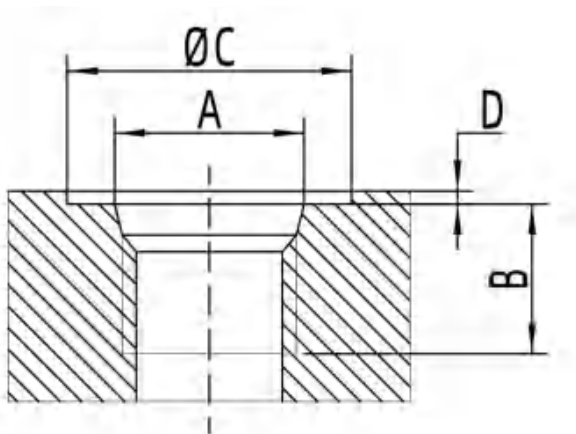
英制 ZG 螺纹 ISO 228-1



CODE	THREAD	A	B
Z01	ZG1/4	13.157	16
Z02	ZG3/8	16.662	16
Z03	ZG1/2	20.955	21
Z04	ZG3/4	26.441	21
Z05	ZG1	33.249	21
Z06	ZG1-1/4	41.910	21
Z07	ZG1-1/2	47.803	21
Z08	ZG2	59.614	21
Z09	ZG2-1/2	75.184	21

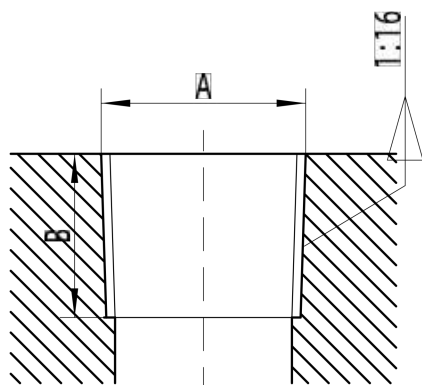
UNF thread according to SAE

美制螺纹



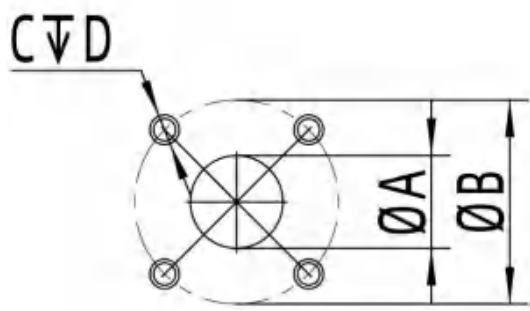
CODE	A	B	C	D
U01	7/16-20 UNF	13	21	1Max
U02	9/16-18 UNF	13	25	1 Max
U03	3/4-16 UNF	13	30	1 Max
U04	7/8-14 UNF	17	34	1 Max
U05	1-1/16-12 UNF	19	41	1 Max
U06	1-5/16-12UNF	23	49	1 Max
U07	1-5/8-12UN	23	58	1 Max
U08	1-7/8-12UN	23	65	1 Max

NPT thread according to SAE 美制锥螺纹



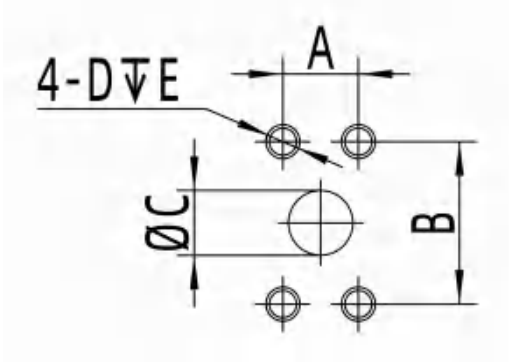
CODE	THREAD	A	B
N01	NPT 1/4	13.616	16
N02	NPT 3/8	17.055	16
N03	NPT 1/2	21.223	21
N04	NPT 3/4	26.568	21
N05	NPT 1	33.228	21
N06	NPT 1-1/4	41.985	21
N07	NPT 1-1/2	46.287	21
N08	NPT 2	60.092	21
N09	NPT 2-1/2	72.699	21

Flanged fittings according to DIN 8901/8902 欧标法兰



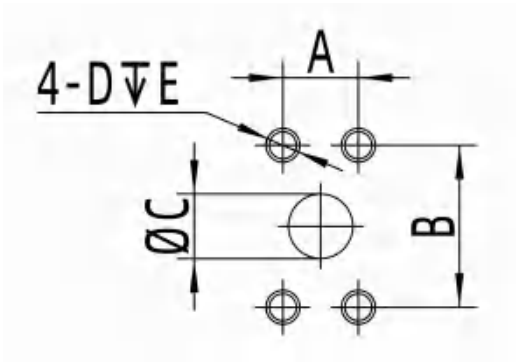
CODE	A	B	C	D
H01	8	26	M5	12
H02	10	26	M5	12
H03	8	30	M6	12
H04	12	30	M6	12
H05	15	35	M6	13
H06	20	40	M6	13
H07	13.5	30	M8	16
H08	20	40	M8	16
H09	18	55	M8	16
H10	25	55	M8	16
H11	26	51	M10	16

Flanged fittings according to METRIC 公制法兰



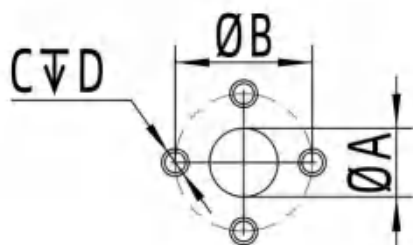
CODE	A	B	C	D	E
E01	17.5	38.1	13	M8	16
E02	22.2	47.6	19	M10	21
E03	26.2	52.4	25.4	M10	21
E04	30.2	58.7	31.8	M10	21
E05	35.7	69.8	38.1	M12	21
E06	42.9	77.8	50.8	M12	21
E07	50.8	88.9	63.5	M12	21

Flanged fittings according to SAE 美制法兰



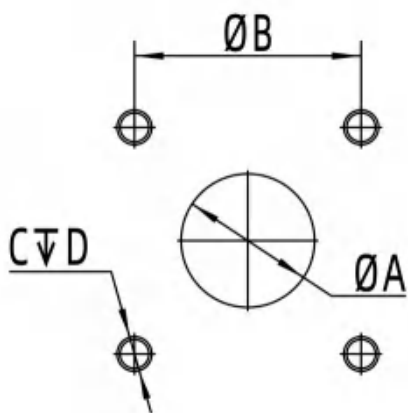
CODE	A	B	C	D	E
A01	17.5	38.1	13	5/16-18 UNC	16
A02	22.2	47.6	19	3/8-16 UNC	21
A03	26.2	52.4	25.4	3/8-16 UNC	21
A04	30.2	58.7	31.8	7/16-14 UNC	21
A05	35.7	69.8	38.1	1/2-13 UNC	21
A06	42.9	77.8	50.8	1/2-13 UNC	21
A07	50.8	88.9	63.5	1/2-13 UNC	21

Flanged fittings - “cross” 十字安装法兰



CODE	A	B	C	D
K01	13.5	30	M6	13
K02	20	40	M8	16
K03	18	40	M8	16
K04	26	51	M10	18
K05	18	55	M8	16
K06	25	55	M8	16
K07	14	38	M8	16
K08	19	38	M8	16

Flanged fittings - “square” 方形安装法兰



CODE	A	B	C	D
S03	60	78	M12	24
S04	46	78	M12	24
S05	22	48	M10	22
S06	30	48	M10	22
S08	19	54	M10	22
S09	27	54	M10	22
S10	16	46	M8	20
S11	23.5	46	M8	20



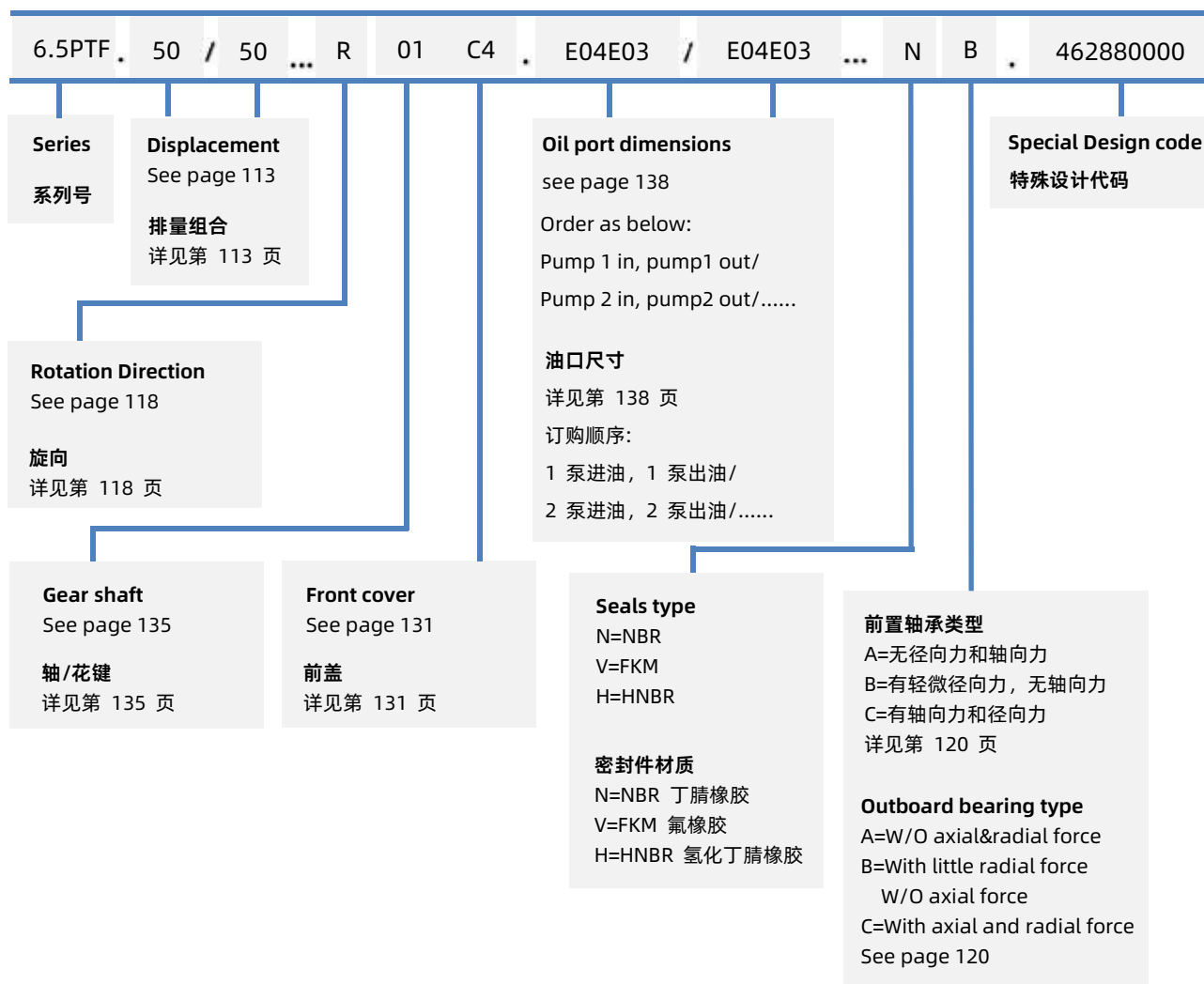
For other oil port requirement please contact our pre-sale department.
如有其他油口尺寸的需求，请联系我公司售前部门。

ORDER KEY

如何订购

6.5PTF SERIES

6.5PTF 系列



For any other dimensions or technical requirement, please feel free to contact us!
如有任何尺寸或者技术需求, 欢迎随时联系我们!