

采购途径：泉州恒裕航动力科技有限公司
联系方式：19918575358
负责人：夏经理

安装说明

在系统启动进行连续工作之前，我们建议采取如下简单的预防措施：

- 检查泵的转向是否与传动轴的转向一致，切勿逆向旋转。
- 检查泵的主轴与电动机的主轴是否对中，必须保证连接不产生轴向和径向负载。
- 检查主轴与油封之间是否清洁，将进出油口连接法兰处的脏物、杂屑和外来物清除干净，颗粒物会导致油封快速磨损和泄漏加剧。
- 确保吸油口和回油口管端总是位于油面以下，并且相互之间尽量远离。
- 安装时应给泵注油，用手转动泵。
- 当启动泵时，卸开泵的泄油口，将管路中的空气排出。
- 为了保证泵的使用寿命，应避免或限制带负载工况下启动。

液压油

请使用具有以下良好性能的液压油：

抗氧化、抗气泡（快速使气泡破裂）、耐磨损、耐腐蚀以及有润滑特性。油液同时应该遵循DIN 51525和VDMA24317标准，及通过FZG的11级测试。

对于标准型，油液温度应该在-10℃至80℃之间，其运动粘度范围如下：

许用范围	allowed range	6...500 cSt
推荐范围	recommended range	10...100 cSt
启动时允许值	value allowed at startup	...2000 cSt

进油口压力

在标准工况下，吸油管路的压力低于大气压，工作时进油口压力应在0.7至3.0bar之间（指绝对压力）。

INSTALLATION NOTES

Before starting the system on a continuous basis, we suggest to adopt as follows simple precautions.

- Check for the direction of rotation of the pump to be consistent with the drive shaft one, being sure not reversion revolving.
- Check for the proper alignment of pump shaft and motor shaft, it is necessary that the connection does not induce axial or radial loads.
- Check if contact area between seal ring and shaft is clean, remove all dirt, chips and all foreign bodies form flanges connecting inlet and delivery ports, dust could provoke quicker wear and leakage.
- Ensure that intake and return pipes ends are always below fluid level and as far from each other as possible.
- Fill the pump with fluid, and turn it by hand.
- Disconnect pump drain during startup to bleed air off the circuit.
- Always avoid or limit load starting for pump longer life.

HYDRAULIC FLUIDS

Use specific mineral oil based hydraulic fluids having good antioxidant, anti-foaming(rapid de-aeration), anti-wear, anti-corrosion and lubricating properties, Fluids should also comply with DIN 51525 and VDMA 24317 standards and get through 11th stage of FZG test.

For the standard models, the temperature of the fluid should not be between -10℃ and +80℃.

Fluid kinematic viscosity ranges are the following:

INLET PRESSURE

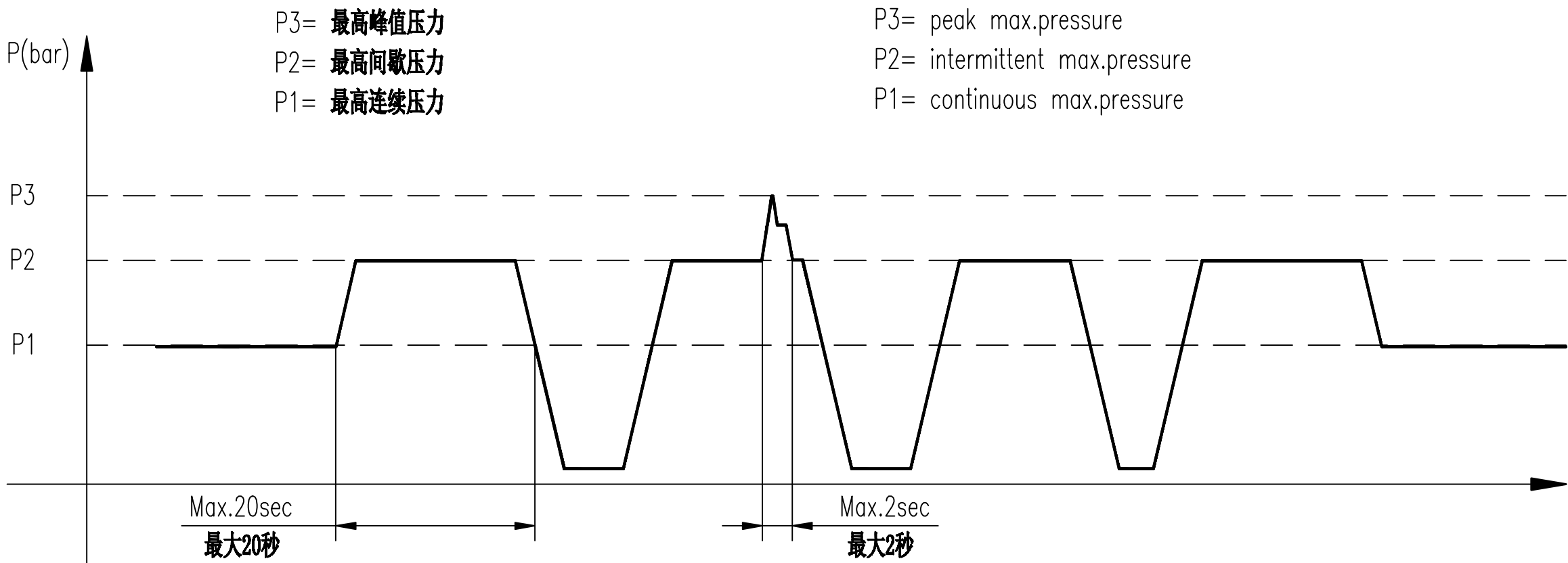
Under standard working conditions, intake pipe pressure is lower than atmospheric pressure. The operating inlet pressure should range between 0.7 and 3 bars (absolute).

过滤建议

大量事实说明，多数齿轮泵的过早失效都是由于油液的污染引起的。
由于我们的质量保证并不包括由于系统中颗粒所造成的磨损，所以我们建议对油液进行过滤，以便将油液中的污染粒子的尺寸及浓度降低到允许的最低值。
过滤系统应该一直保证污染度等级不要超过下表所示的值：

工作压力	Pressure	<140 bar	140...210 bar	>210 bar
NAS 1638 污染等级	NAS 1638 Class	10	9	8
ISO 4406 污染等级	ISO 4406 Class	19/16	18/15	17/14
过滤比 $\beta_x = 75$	Ratio $\beta_x = 75$	25–40 μ m	12–15 μ m	6–12 μ m

压力定义



进油管 and 出油管

液压系统的管路不应突然变向、急弯及断面突然变化。管路不要太长或不成比例，管路断面处应有足够的尺寸，以便油液流速不要超过推荐值。
建议认真考虑进出油管法兰接头处通径的缩减量。
流速参考值如下表

进油管	Intake line	0.5...1.6 m/s
出油管	Delivery line	2...6 m/s
回油管	Return line	1.6...3 m/s

FILTER RECOMMENDATION

It is widely known that most pumps early failures are due to contaminated fluids. As a warranty cannot be issued for dirt-related wear, we recommend a filter be used, which can reduce the degree of contamination to a permissible dimension in terms of the size and concentration of dirt particles.
The filtering system shall always ensure contamination levels not exceeding the values indicated below:

PRESSURE DEFINITION

INLET AND DELIVERY LINES

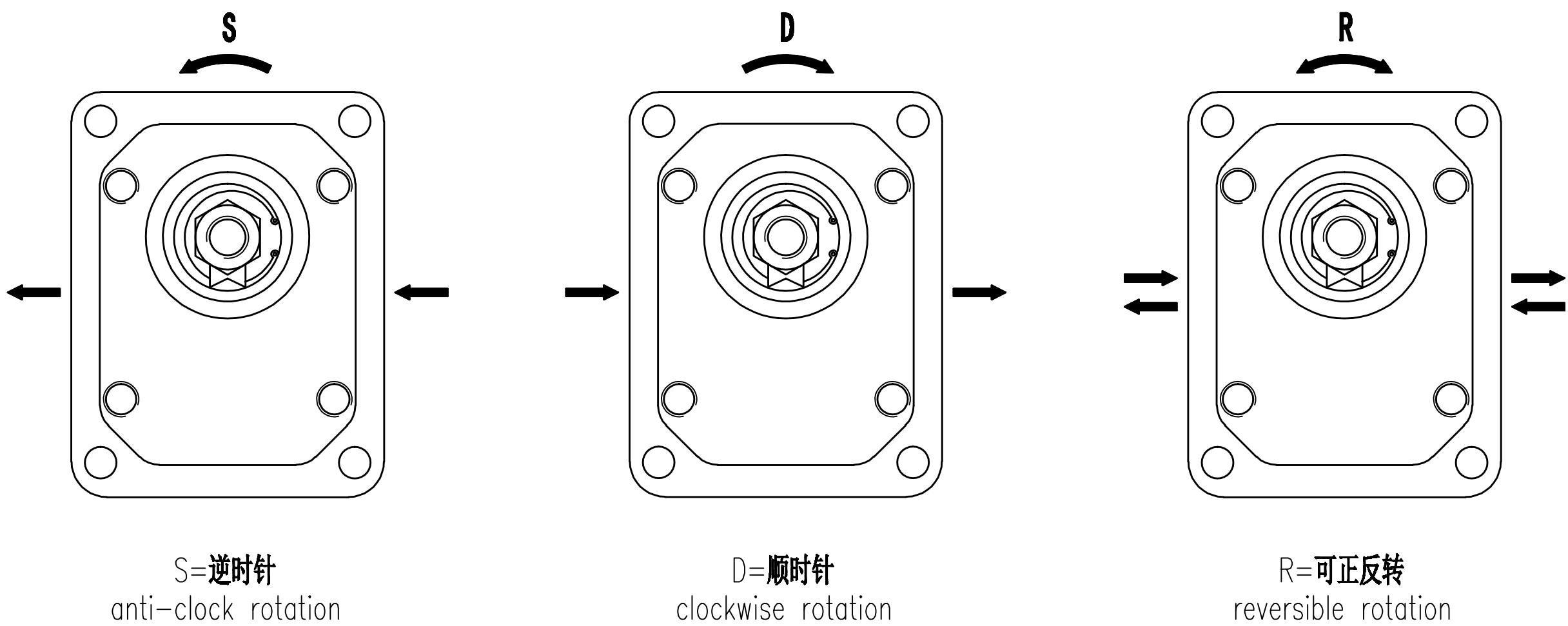
Hydraulic system pipes should show no sudden changes of direction, sharp bends and sudden differences in cross-section. They should not be too long or out of proportion.
Pipe cross-section should be sized so that fluid velocity does not exceed recommended values.
It is advisable to carefully consider the possible diameter reduction of the inlet or outlet pipes fitted on flange fittings.
Reference values are the following:

旋转方向

旋转方向定义：站在泵的前面，其传动轴面对自己，泵顺时针旋转时，为右旋，用“D”表示，反之，即泵逆时针旋转时，为左旋，用“S”表示。

ROTATION DIRECTION

Rotation direction of definition: when standing before the pump with driving shaft up with its projecting end towards the observer, the pump is rotating clockwise in case of right-hand rotation "D". The contrary will happen with left-hand pumps "S", keeping the same point of view.



泵的设计计算

DESIGN CALCULATIONS FOR PUMP

流量	Flow	Q	L/min
扭矩	Torque	M	Nm
功率	Power	P	kW
转速	Speed	n	r/min
压力	Pressure	ΔP	bar
排量	Displacement	V	cm ³ /rev

容积效率	Volumetric efficiency	$\eta_v = \eta_v(V, \Delta P, n)$	≈ 0.93
机械效率	Mechanical efficiency	$\eta_{hm} = \eta_{hm}(V, \Delta P, n)$	≈ 0.85
总效率	Total efficiency	$\eta_t = \eta_v \cdot \eta_{hm}$	≈ 0.80

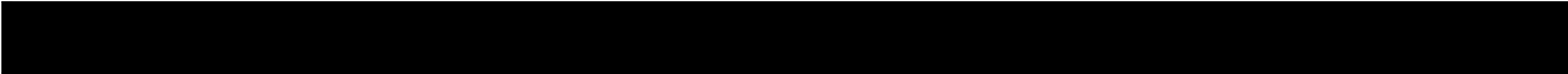
$Q = V \cdot n \cdot \eta_v \cdot 10^{-3}$	[L/min]
$M = (\Delta P \cdot V) / (62.83 \cdot \eta_{hm})$	[Nm]
$P = (\Delta P \cdot Q) / (612 \cdot \eta_t)$	[kW]

如何订购/ HOW TO ORDER

<u>Q</u>	<u>P</u>	<u>UF</u>	规格 Size	旋向 Rotation		轴伸 Shaft	前盖 Front cover	油口 Ports	油口位置 Ports position	油封 Seals	可选项 Options	
组别 Group	P- 齿轮泵 Pump	系列号 Series	0.19	D	顺时针转 Clockwise		<u>Q1</u>					
			0.26		S		逆时针转 Counter clockwise					<u>Q3</u>
			0.38				R					可正反转 Reversible
			0.50	<u>A2</u>								
			0.65									
			0.75									
			0.88									
			1.00									
			1.25									
			1.50									
1.75												
2.00												
可选项 / Options V-方向阀 V-Directional valves												
排油管 / Drain Q0-内部排油 / internal drain Q1-外部排油 / external drain ø5 Q2-外部排油 / external drain G1/8												

油口位置	Ports position
省略-侧进侧出	Omit-Side inlet and side outlet
A-前进前出	A-Front inlet and front outlet
B-后进前出	B-Back inlet and front outlet
C-后进侧出	C-Back inlet and side outlet
D-侧进前出	D-Side inlet and front outlet
R-后进后出	R-Back inlet and back outlet

油封	Seals
省略-温度范围在-10℃~+80℃ ,进油口最高绝对压力为3bar。	Omit-Range between -10℃ and +80℃,inlet pressure up to max. 3 bar absolute.
V-适用于高温介质，温度范围在-10℃~+120℃。	V-Version suitable for fluid at hi-temperatures, range between -10℃ and +120℃.
H-适用于低温介质，温度范围在-40℃~+80℃。	H-Version suitable for fluid at low-temperatures, range between -40℃ and +80℃.
T-适用于进油口最大绝对压力3~6bar。	T-Version suitable for inlet pressure up to max. 3 and 6 bar absolute.
N-适用于进油口最大绝对压力3~10bar。	N-Version suitable for inlet pressure up to max. 3 and 10 bar absolute.

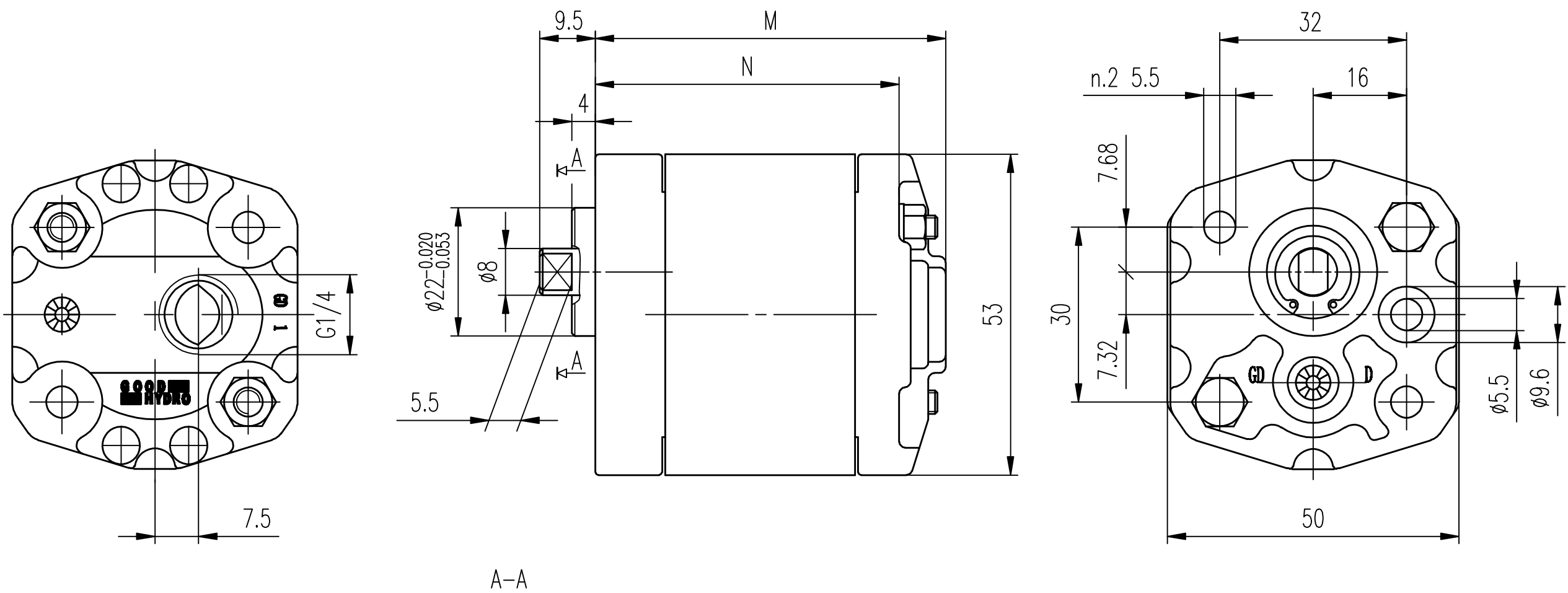


后盖: G1/4 螺纹深 12.
安装泵时, n.2 M5 螺钉扭矩设定为
5.4±0.5 Nm.

End cover: G1/4 thread depth 12.
To mount the pump, n.2 M5 screws,
with a torque wrench setting fixed
at 5.4±0.5 Nm.

进油口
INLET

出油口
OUTLET



规格 Type	排量 Displacement	最大压力 Max pressure			最高转速 Max. speed	最低转速 Min. speed	尺寸 Dimensions	
		P1	P2	P3			M	N
	(cm ³ /rev)	bar	bar	bar	(r/min)	(r/min)	mm	mm
OPUF-0.19-D*Q1	0.19	200	230	250	7000	1000	60	51
OPUF-0.26-D*Q1	0.26	200	230	250	7000	1000	60.5	51.5
OPUF-0.38-D*Q1	0.38	200	230	250	7000	1000	61.5	52.5
OPUF-0.50-D*Q1	0.50	200	230	250	7000	1000	62.5	53.5
OPUF-0.65-D*Q1	0.65	200	230	250	7000	1000	63.5	54.5
OPUF-0.75-D*Q1	0.75	200	230	250	7000	1000	64.5	55.5
OPUF-0.88-D*Q1	0.88	200	230	250	7000	1000	65.5	56.5
OPUF-1.00-D*Q1	1.00	200	230	250	6000	850	66.5	57.5
OPUF-1.25-D*Q1	1.25	200	230	250	5000	700	68.5	59.5
OPUF-1.50-D*Q1	1.50	200	230	250	4000	600	70.5	61.5
OPUF-1.75-D*Q1	1.75	180	210	230	4000	600	72.5	63.5
OPUF-2.00-D*Q1	2.00	160	190	210	3000	500	74.5	65.5



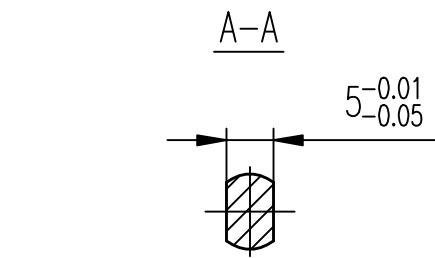
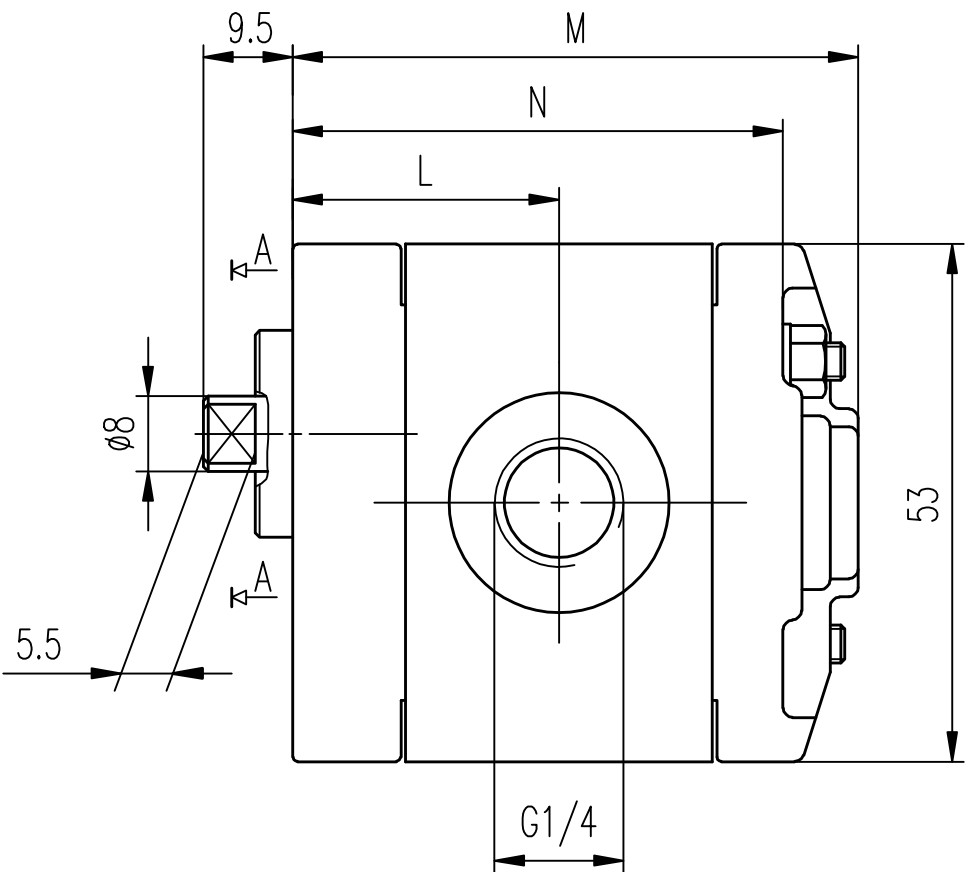
G1/4 螺纹深 9.

安装泵时，n.2 M5 螺钉扭矩设定为
5.4±0.5 Nm.

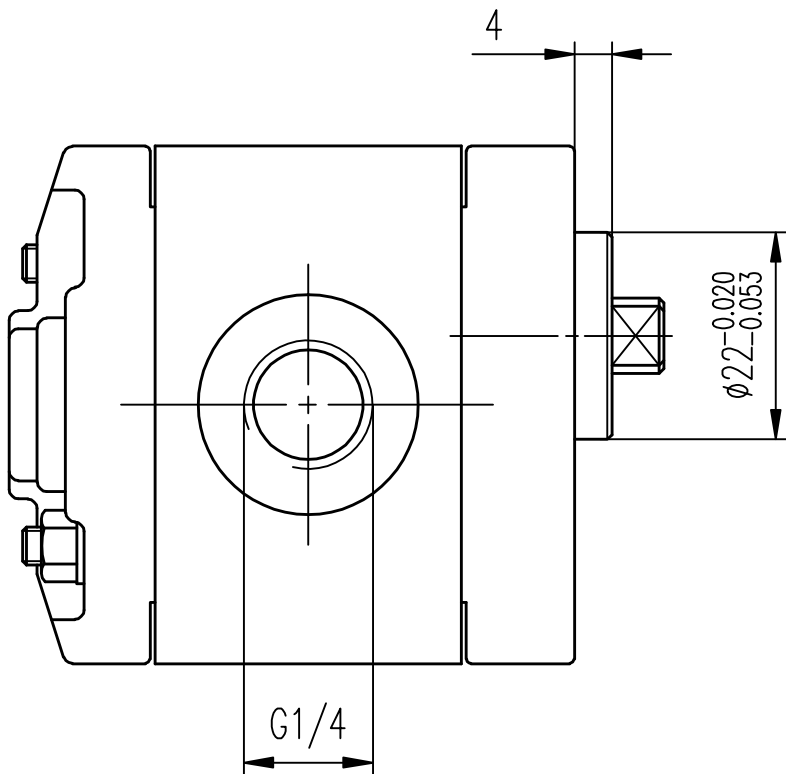
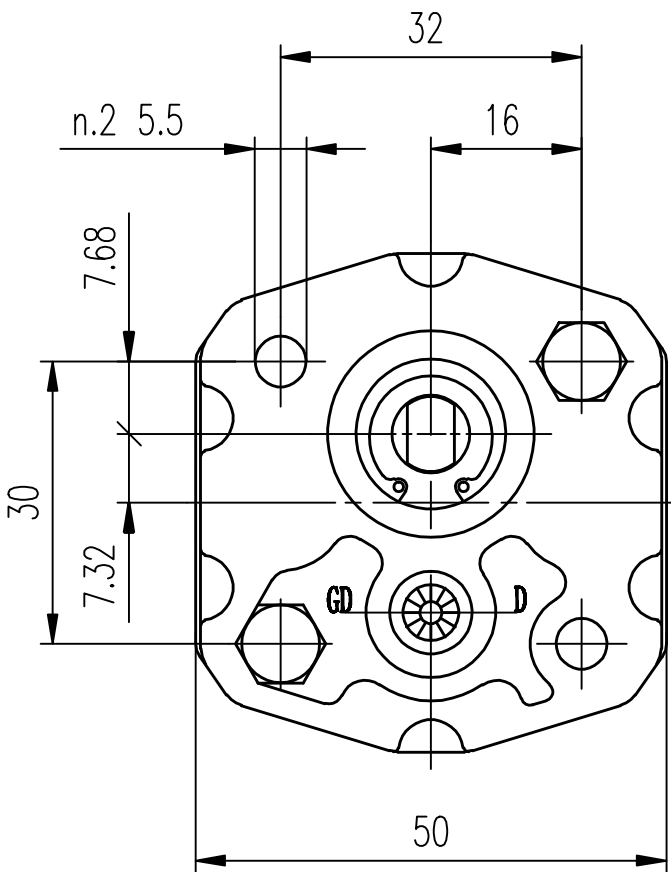
G1/4 thread depth 9.

To mount the pump, n.2 M5 screws,
with a torque wrench setting fixed
at 5.4±0.5 Nm.

出油口
OUTLET



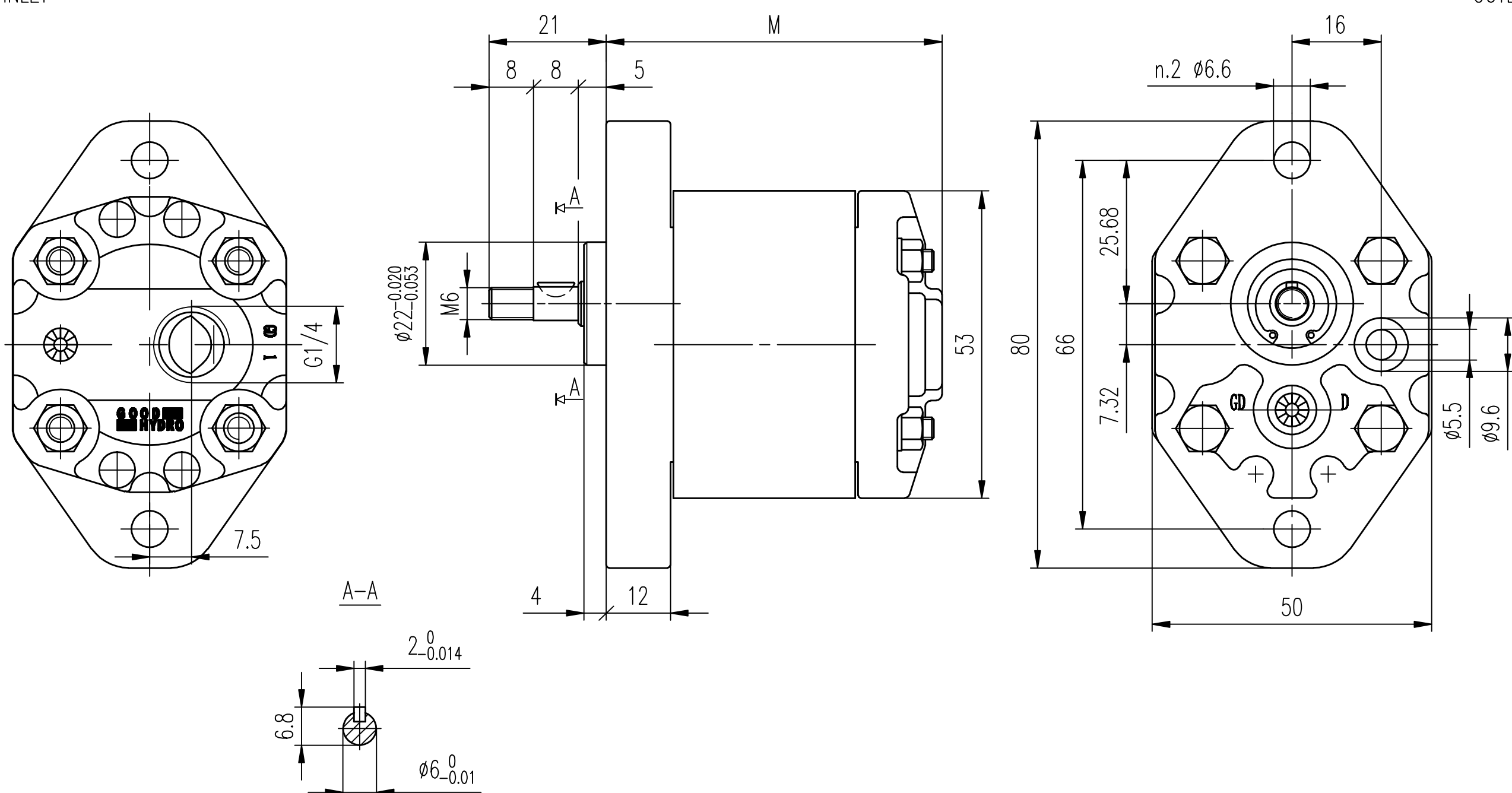
进油口
INLET



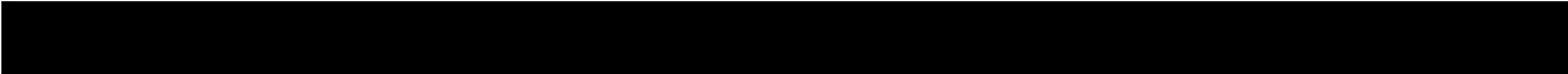
规格 Type	排量 Displacement	最大压力 Max pressure			最高转速 Max. speed	最低转速 Min. speed	尺寸 Dimensions		
		P1	P2	P3			M	N	L
	(cm ³ /rev)	bar	bar	bar	(r/min)	(r/min)	mm	mm	mm
OPUF-0.19-D*Q3	0.19	200	230	250	7000	1000	60	51	27.2
OPUF-0.26-D*Q3	0.26	200	230	250	7000	1000	60.5	51.5	27.5
OPUF-0.38-D*Q3	0.38	200	230	250	7000	1000	61.5	52.5	28
OPUF-0.50-D*Q3	0.50	200	230	250	7000	1000	62.5	53.5	28.5
OPUF-0.65-D*Q3	0.65	200	230	250	7000	1000	63.5	54.5	29
OPUF-0.75-D*Q3	0.75	200	230	250	7000	1000	64.5	55.5	29.5
OPUF-0.88-D*Q3	0.88	200	230	250	7000	1000	65.5	56.5	30
OPUF-1.00-D*Q3	1.00	200	230	250	6000	850	66.5	57.5	30.5
OPUF-1.25-D*Q3	1.25	200	230	250	5000	700	68.5	59.5	31.5
OPUF-1.50-D*Q3	1.50	200	230	250	4000	600	70.5	61.5	32.5
OPUF-1.75-D*Q3	1.75	180	210	230	4000	600	72.5	63.5	33.5
OPUF-2.00-D*Q3	2.00	160	190	210	3000	500	74.5	65.5	34.5

轴伸 M6 螺母扭矩设定为 7 Nm.

Shaft M6 nut, with a torque wrench setting fixed at 7 Nm.



规格 Type	排量 Displacement	最大压力 Max pressure			最高转速 Max. speed	最低转速 Min. speed	尺寸 Dimensions
		P1	P2	P3			
	(cm ³ /rev)	bar	bar	bar	(r/min)	(r/min)	mm
OPUF-0.19-D*A1	0.19	200	230	250	7000	1000	60
OPUF-0.26-D*A1	0.26	200	230	250	7000	1000	60.5
OPUF-0.38-D*A1	0.38	200	230	250	7000	1000	61.5
OPUF-0.50-D*A1	0.50	200	230	250	7000	1000	62.5
OPUF-0.65-D*A1	0.65	200	230	250	7000	1000	63.5
OPUF-0.75-D*A1	0.75	200	230	250	7000	1000	64.5
OPUF-0.88-D*A1	0.88	200	230	250	7000	1000	65.5
OPUF-1.00-D*A1	1.00	200	230	250	6000	850	66.5
OPUF-1.25-D*A1	1.25	200	230	250	5000	700	68.5
OPUF-1.50-D*A1	1.50	200	230	250	4000	600	70.5
OPUF-1.75-D*A1	1.75	180	210	230	4000	600	72.5
OPUF-2.00-D*A1	2.00	160	190	210	3000	500	74.5



G1/4 螺纹深 9.

安装泵时, n.4 M5 螺钉扭矩设定为
5.4±0.5 Nm.

轴伸 M6 螺母扭矩设定为 7 Nm.

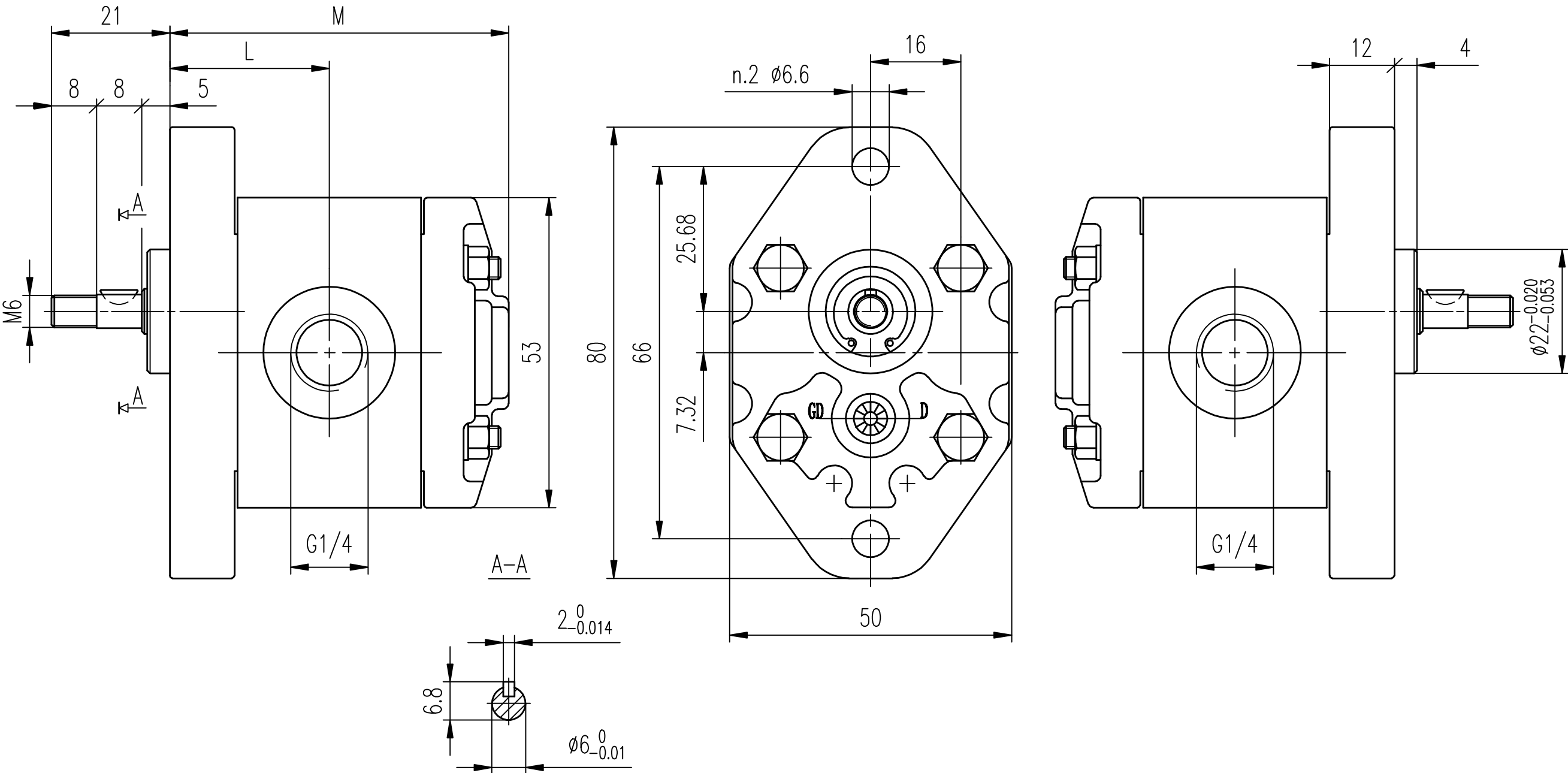
G1/4 thread depth 9.

To mount the pump, n.4 M5 screws,
with a torque wrench setting fixed
at 5.4±0.5 Nm.

Shaft M6 nut, with a torque wrench
setting fixed at 7 Nm.

出油口
OUTLET

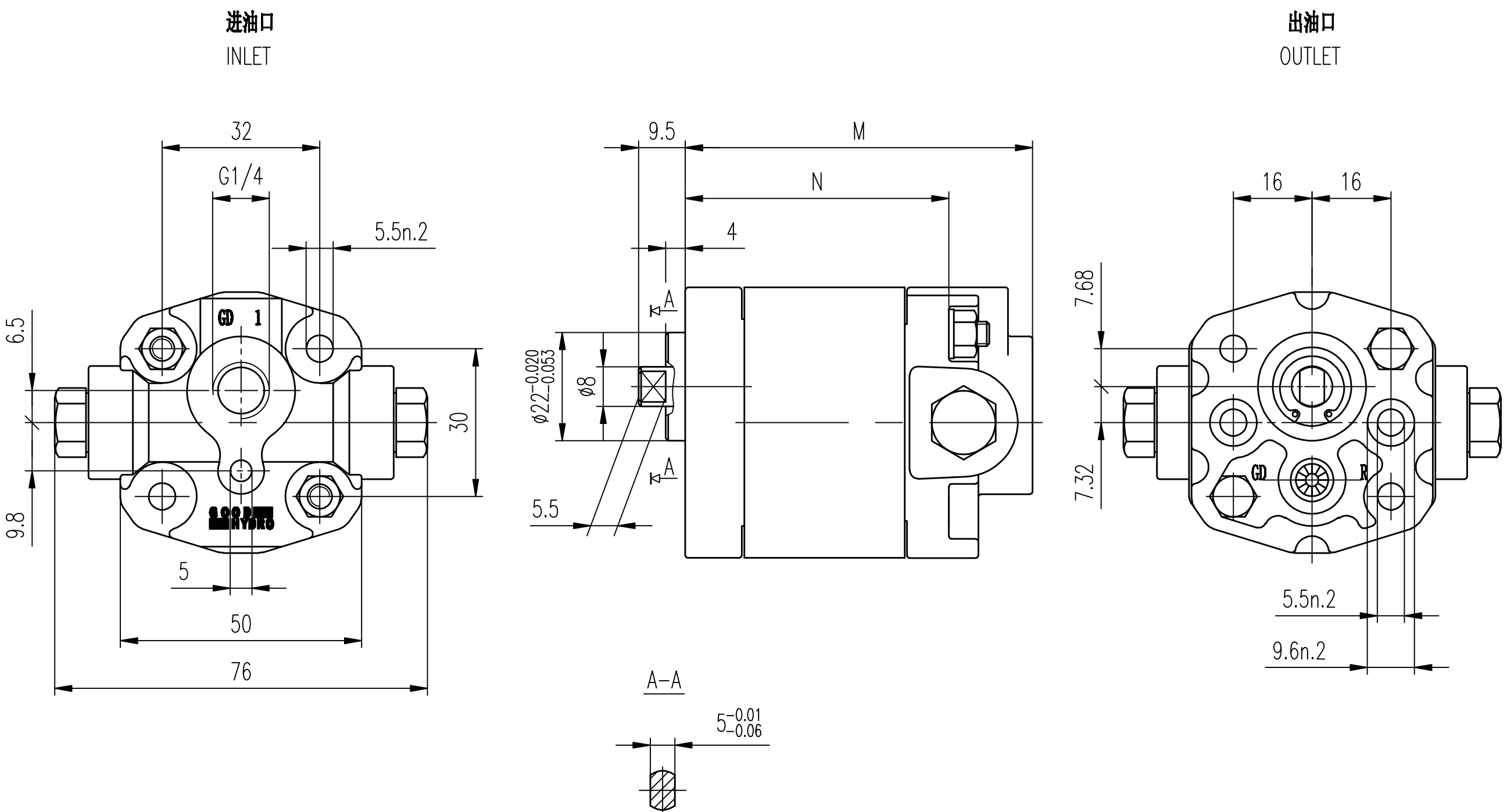
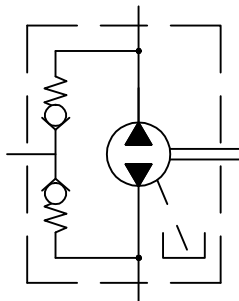
进油口
INLET



规格 Type	排量 Displacement	最大压力 Max pressure			最高转速 Max. speed	最低转速 Min. speed	尺寸 Dimensions	
		P1	P2	P3			M	L
	(cm ³ /rev)	bar	bar	bar	(r/min)	(r/min)	mm	mm
OPUF-0.19-D*A2	0.19	200	230	250	7000	1000	60	27.2
OPUF-0.26-D*A2	0.26	200	230	250	7000	1000	60.5	27.5
OPUF-0.38-D*A2	0.38	200	230	250	7000	1000	61.5	28
OPUF-0.50-D*A2	0.50	200	230	250	7000	1000	62.5	28.5
OPUF-0.65-D*A2	0.65	200	230	250	7000	1000	63.5	29
OPUF-0.75-D*A2	0.75	200	230	250	7000	1000	64.5	29.5
OPUF-0.88-D*A2	0.88	200	230	250	7000	1000	65.5	30
OPUF-1.00-D*A2	1.00	200	230	250	6000	850	66.5	30.5
OPUF-1.25-D*A2	1.25	200	230	250	5000	700	68.5	31.5
OPUF-1.50-D*A2	1.50	200	230	250	4000	600	70.5	32.5
OPUF-1.75-D*A2	1.75	180	210	230	4000	600	72.5	33.5
OPUF-2.00-D*A2	2.00	160	190	210	3000	500	74.5	34.5

后盖: G1/4 螺纹深 12.
安装泵时, n.2 M5 螺钉扭矩设定为
5.4±0.5 Nm.

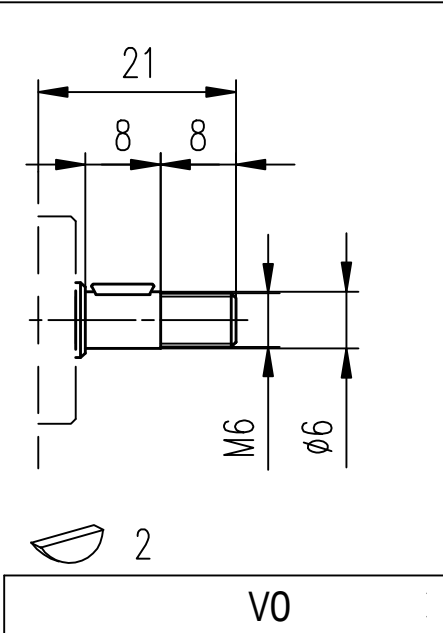
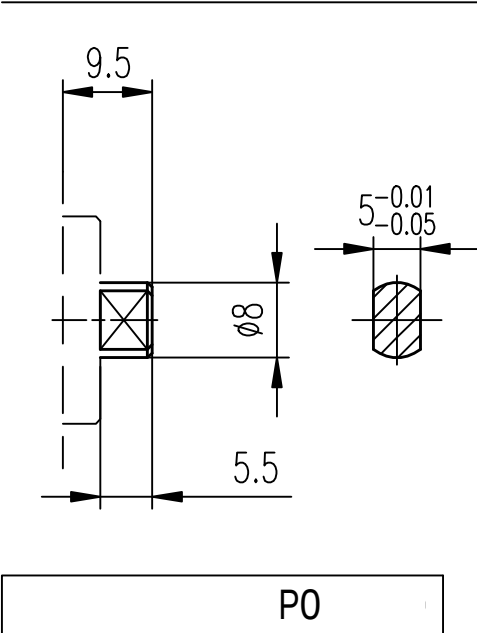
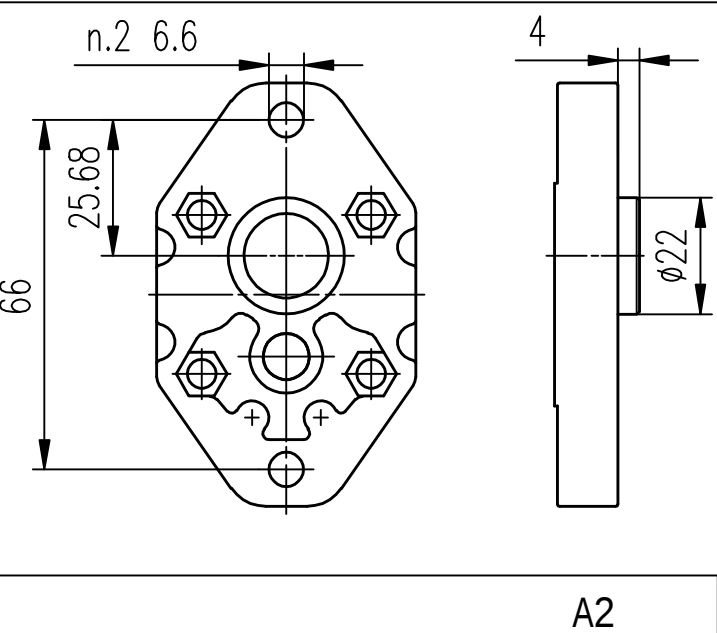
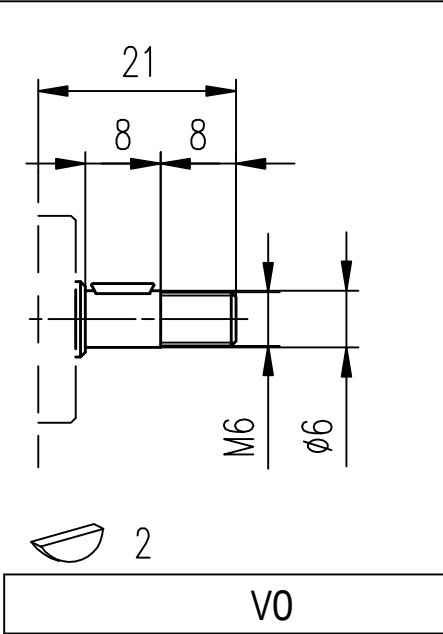
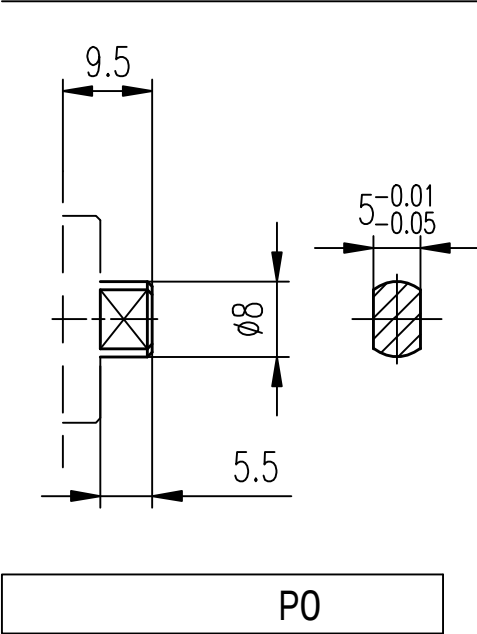
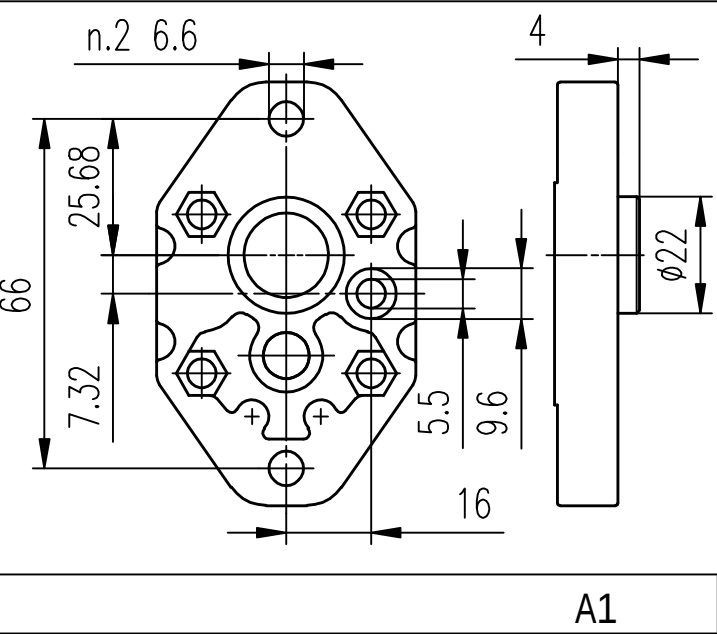
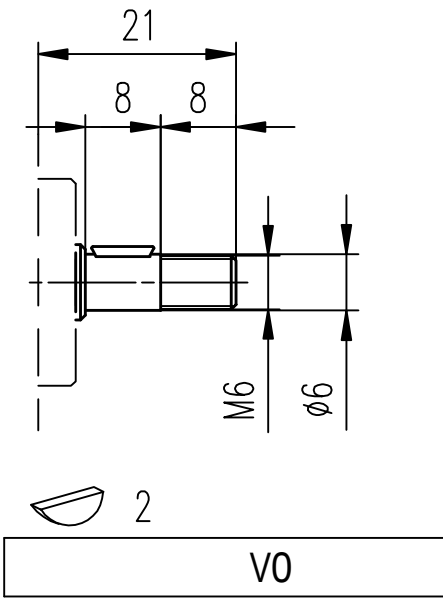
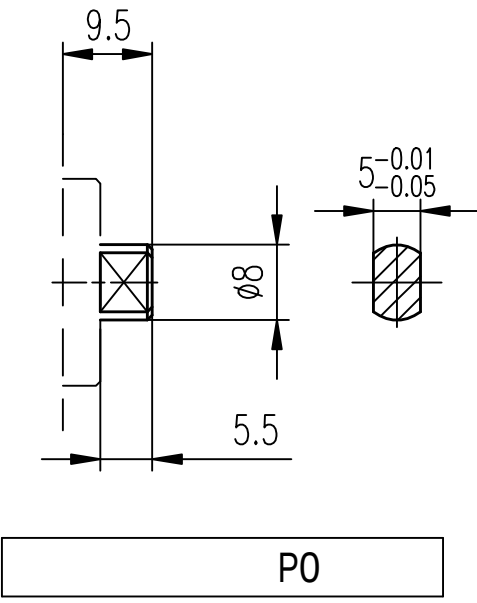
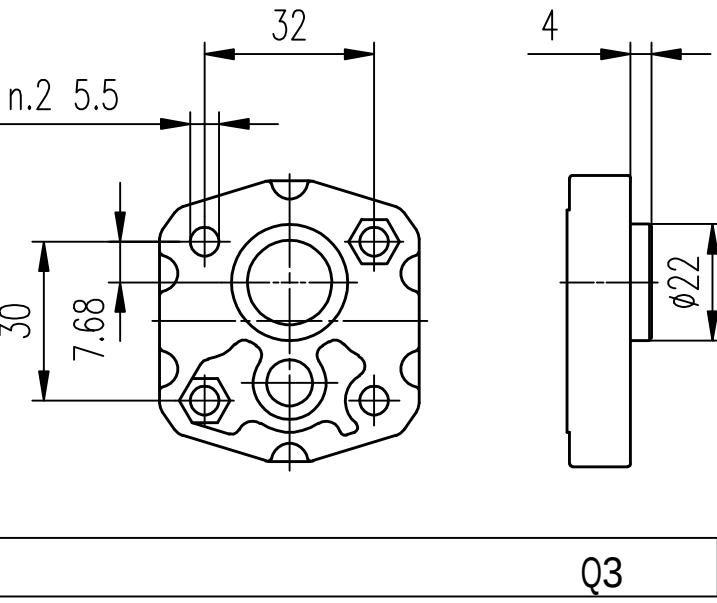
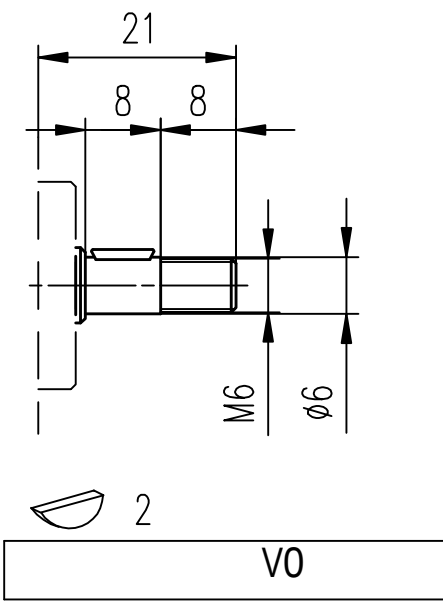
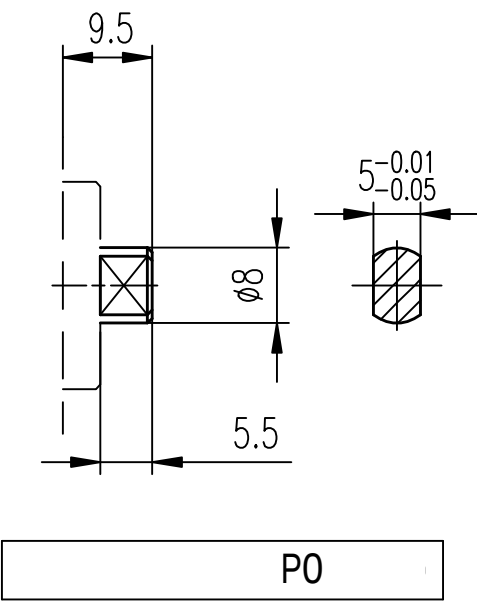
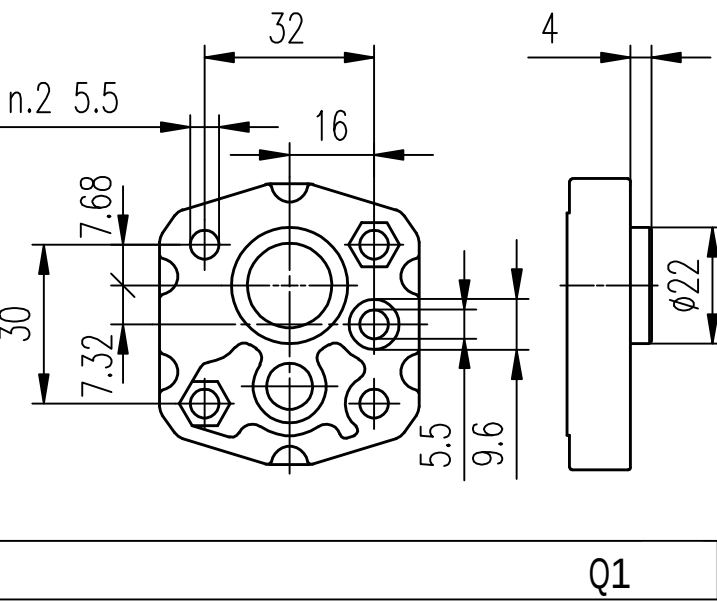
End cover: G1/4 thread depth 12.
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with a torque wrench setting fixed
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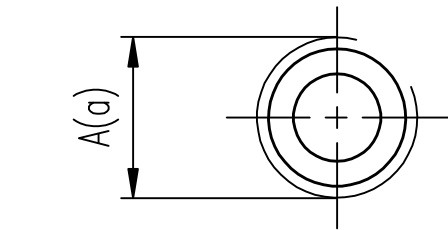
规格 Type	排量 Displacement	最大压力 Max pressure			最高转速 Max. speed	最低转速 Min. speed	尺寸 Dimensions	
		P1	P2	P3			M	N
	(cm ³ /rev)	bar	bar	bar	(r/min)	(r/min)	mm	mm
OPUF-0.19R*B4-Q1	0.19	150	170	190	7000	1000	68	51
OPUF-0.26R*B4-Q1	0.26	150	170	190	7000	1000	68.5	51.5
OPUF-0.38R*B4-Q1	0.38	150	170	190	7000	1000	69.5	52.5
OPUF-0.50R*B4-Q1	0.50	150	170	190	7000	1000	70.5	53.5
OPUF-0.65R*B4-Q1	0.65	150	170	190	7000	1000	71.5	54.5
OPUF-0.75R*B4-Q1	0.75	150	170	190	7000	1000	72.5	55.5
OPUF-0.88R*B4-Q1	0.88	150	170	190	7000	1000	73.5	56.5
OPUF-1.00R*B4-Q1	1.00	150	170	190	6000	850	74.5	57.5
OPUF-1.25R*B4-Q1	1.25	150	170	190	5000	700	76.5	59.5
OPUF-1.50R*B4-Q1	1.50	150	170	190	4000	600	78.5	61.5
OPUF-1.75R*B4-Q1	1.75	150	170	190	4000	600	80.5	63.5
OPUF-2.00R*B4-Q1	2.00	150	170	190	3000	500	82.5	65.5

前盖/Front cover

轴伸/shafts

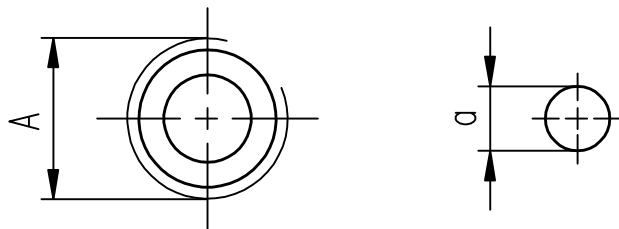


油口/PORTS



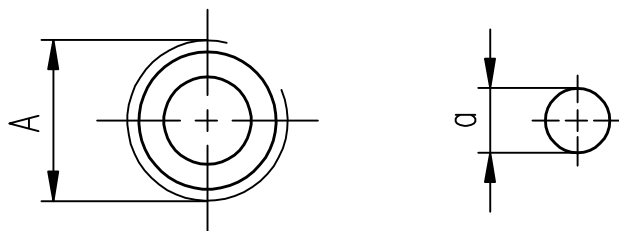
M1

规格 TYPE	进油口 INLET	出油口 OUTLET
	A	a
OPUF..0.19-OPUF..2.00	M10x1	M10x1



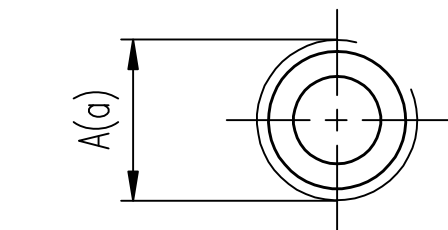
G0

规格 TYPE	进油口 INLET	出油口 OUTLET
	A	a
OPUF..0.19-OPUF..2.00	G1/4	ø5.5



G1

规格 TYPE	进油口 INLET	出油口 OUTLET
	A	a
OPUF..0.19-OPUF..2.00	G3/8	ø5.5



G2

规格 TYPE	进油口 INLET	出油口 OUTLET
	A	a
OPUF..0.19-OPUF..2.00	G1/4	G1/4