



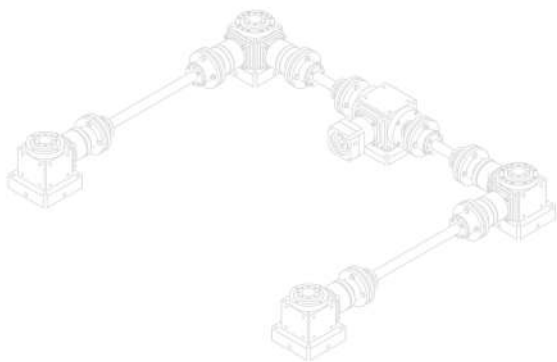
德宝精工科技（苏州）有限公司

苏州德宝精工技术服务中心

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产品系列简介 / PRODUCT SERIES INTRODUCTION

PA Series



7种可选尺寸		42mm~220mm
额定输出力矩		14Nm~2000Nm
减速比	单级	3/4/5/6/7/8/10
	双级	12/15/20/25/30/35 40/50/60/70/80/100
背隙	单级	≤1, ≤3, ≤5 arcmin
	双级	≤3, ≤5, ≤7 arcmin

PAR Series



7种可选尺寸		42mm~220mm
额定输出力矩		14Nm~2000Nm
减速比	单级	3/4/5/6/7/8/10/14/20
	双级	12/15/20/25/30/35/40/50/60 70/80/100/120/140/160/200
背隙	单级	≤2, ≤4, ≤6 arcmin
	双级	≤4, ≤7, ≤9 arcmin

PL Series



10种可选尺寸		40mm~160mm
额定输出力矩		14Nm~650Nm
减速比	单级	3/4/5/6/7/8/10
	双级	12/15/20/25/30 35/40/50/60/70/80/100
背隙	单级	≤8 arcmin
	双级	≤10 arcmin

PLR Series



4种可选尺寸		60mm~160mm
额定输出力矩		40Nm~650Nm
减速比	单级	3/4/5/6/7/8/10/14/20
	双级	12/15/20/25/30/35 40/50/60/70/80/100 120/140/160/200
背隙	单级	13 arcmin
	双级	15 arcmin

PD Series



7种可选尺寸		47mm~255mm
额定输出力矩		14Nm~2000Nm
减速比	单级	4/5/6/7/8/10
	双级	20/25/35/40/50/60 70/80/100
背隙	单级	≤1, ≤3, ≤5 arcmin
	双级	≤3, ≤5, ≤7 arcmin

PDR Series



7种可选尺寸		47mm~255mm
额定输出力矩		14Nm~2000Nm
减速比	单级	4/5/6/7/8/10/14/20
	双级	20/25/35/40/50/60/70 80/100/120/140/160/200
背隙	单级	≤2, ≤4, ≤6 arcmin
	双级	≤4, ≤7, ≤9 arcmin

PLA Series



10种可选尺寸		40mm~160mm
额定输出力矩		14Nm~650Nm
减速比	单级	3/4/5/6/7/8/10
	双级	12/15/20/25/30 35/40/50/60/70/80/100
背隙	单级	≤8 arcmin
	双级	≤10 arcmin

PLAR Series



4种可选尺寸		60mm~160mm
额定输出力矩		40Nm~650Nm
减速比	单级	3/4/5/6/7/8/10/14/20
	双级	12/15/20/25/30/35 40/50/60/70/80/100 120/140/160/200
背隙	单级	13 arcmin
	双级	15 arcmin

PB Series



7种可选尺寸		42mm~220mm
额定输出力矩		14Nm~2000Nm
减速比	单级	3/4/5/6/7/8/10
	双级	12/15/20/25/30/35 40/50/60/70/80/100
背隙	单级	≤5 arcmin
	双级	≤7 arcmin

PBR Series



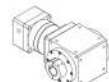
4种可选尺寸		60mm~142mm
额定输出力矩		40Nm~650Nm
减速比	单级	3/4/5/6/7/8/10/14/20
	双级	12/15/20/25/30/35 40/50/60/70/80/100 120/140/160/200
背隙	单级	10 arcmin
	双级	12 arcmin

KXW/KTM-AS Series



20种可选尺寸		43.5mm~245mm
额定输出力矩		9.5Nm~2150Nm
减速比	单级	2/6/8/10/14/16/20
	双级	24/30/52/40/50/60 70/80/100/140/160/200
背隙	单级	≤3 arcmin ~ 5 arcmin
	双级	≤5 arcmin ~ 12 arcmin

KXW/KT-A



22种可选尺寸		66mm~165mm
额定输出力矩		13Nm~1200Nm
减速比	单级	1/3/4/5/7/8/10
	双级	12/15/16/20/21/25/30 35/40/50/70/80/100
背隙	单级	≤3 arcmin ~ 5 arcmin
	双级	≤5 arcmin ~ 8 arcmin

PE Series



6种可选尺寸		70mm~235mm
额定输出力矩		40Nm~2000Nm
减速比	单级	3/4/5/6/7/8/10
	双级	12/15/20/25/30/35 40/50/60/70/80/100
背隙	单级	≤5 arcmin
	双级	≤7 arcmin

PER Series



4种可选尺寸		70mm~155mm
额定输出力矩		40Nm~650Nm
减速比	单级	3/4/5/6/7/8/10/14/20
	双级	12/15/20/25/30/35/40/50/60 70/80/100/120/140/160/200
背隙	单级	10 arcmin
	双级	12 arcmin

KB-AS/A



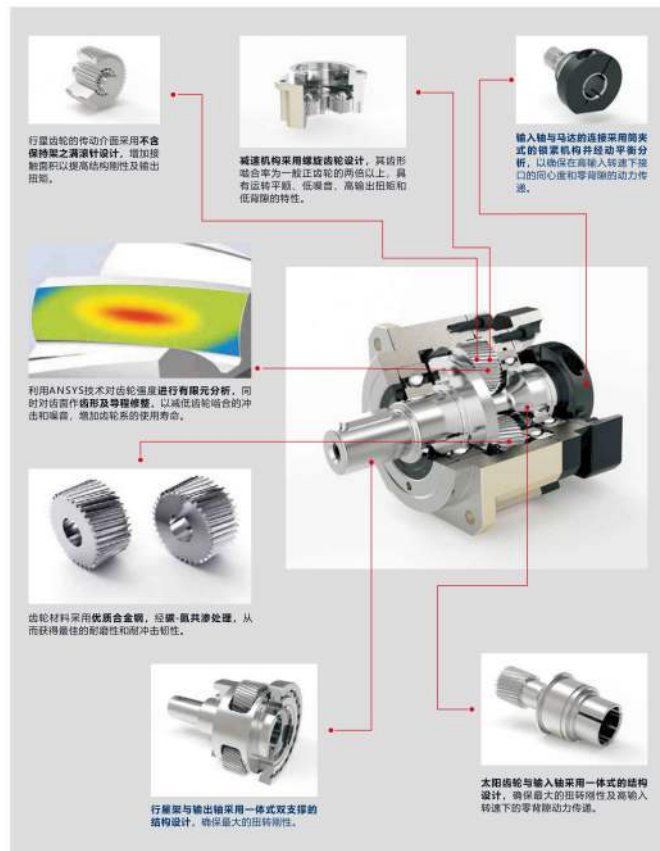
10种可选结构		蜗轮
额定输出力矩		30Nm~2150Nm
减速比	单级	1/3/4/5/6/7/8/10
	双级	12/14/20/25/30/35 40/50
背隙	单级	≤3 arcmin
	双级	≤5 arcmin

GEAR RACK



齿条8种可选尺寸		19mm~79mm
齿轮	齿条	5/6/8/10
	齿条	5/6/8/10
精度等级	齿条	5/6/8/10
	齿条	5/6/8/10
外圆	齿条	本色/发黑
	齿条	本色/发黑

产品特性 / PRODUCTS FEATURES



产品概述 / PRODUCTS OVERVIEW

产品特点/products features

精密行星齿轮减速机是我公司自主研发的新一代实用性产品, 融合了国内外先进的技术, 具有以下一些主要特点:

1. 低噪音: 低于65db.
2. 低背隙: 单级可达1弧分内, 双级可达3弧分内.
3. 高效率: 单段式在95%以上, 双段式在92%以上.
4. 高输入转速: 可达8000RPM.
5. 高扭矩: 比一般标准行星减速机扭矩高.
6. 高稳定性: 采用高强度合金钢材, 整颗齿轮经硬化处理, 非只有表面硬化, 确保使用寿命及长期使用仍保持最初的精密度.
7. 高减速比: 采用模组化设计, 行星齿箱可相互连结, 速比可达1/1000以上.

Precision planetary gear reducer is a new-generation of product developed by our company, with a compromise of advanced technology both at home and abroad, its main features are as follows:

1. Low Noise: Under 65db.
2. Low Backlash: Backlash is under 3 arcmin. Backlash for 2-stage speed reduction is within 5 arcmin.
3. High Efficiency: Efficiency for 1-stage model exceeds 95%, For 2-stage model exceeds 92%.
4. High Input Speed: Input speed allows for up to 8000 RPM.
5. High Torque: Higher torque output than that of conventional planetary gear reducers.
6. High Stability: Employs high tensile strength alloy steel. Gear hardening is made for the entire gear instead of only surface hardening, which extends gear service life and maintain high accuracy as new after a long period of operation.
7. High Speed Reduction Ratio: The gear reducer is a modular design. The planetary gear box can be connected. Speed reduction ratio is over 1/1000.

产品用途/Precision usage

精密行星齿轮减速机被广泛应用于以下领域:

1. 航空航天、军事产业.
2. 医疗卫生、电子信息技术产业.
3. 工业机器人、生产自动化、数控机床制造产业.
4. 汽车制造、纺织、印刷、食品、冶金、环保工程、仓储物流等产业.

Precision Planetary Gear Reducer is widely used in the following domain:

1. Aerospace, military industry.
2. Medical health, electronic information industry.
3. Industrial robots, Production automation, CNC machine tool manufacturing industry.
4. Motor, textile, printing, food, metallurgical, environmental protection engineering, warehouse logistics industry.

減速機の选用及注意事項 / GEAR UNIT SELECTION & ANNOUNCEMENTS

行星减速机的选型/ Planetary reducer selection

选配行星减速机应遵循适用性和经济性相结合的原则,就是说行星减速机的各项技术指标,既能满足设备的要求又能节约成本。‘过’与‘不及’都会带来成本浪费,选型不当是减速机出现故障的主要原因,因此正确选用行星减速机非常重要。

选用减速机应考虑其结构类型、承载能力、减速比、输出转速、轴向力、径向力、扭转刚度、背隙等内在性能指标，也应充分考虑安装形式、工况条件、工作环境等外部因素。为方便起见，请参考以下步骤，实现准确快速选型。

Step1: 减速机规格的确定

序号	说明	代号	参数计算	
		Loading classification 设备类型	Running per hour 每小时运行时间	Using % 使用系数
			Running per day (h) 每日运行时间 (h)	
			Running per day (h) 每日运行时间 (h)	
1	设备使用系数	η	$\eta = \frac{1}{16} \times \frac{16}{16} = 1.00$	$16 \times \frac{16}{16} = 1.00$
		Uniform	1.00	1.00
		Medium shock	1.20	1.20
		Heavy shock	1.40	1.40
2	额定功率	T_N	$T_N = 1.00 \times 1.00 = 1.00$	$T_N = 1.00 \times 1.00 = 1.00$
3	额定电压	U_N	$U_N = 1.00 \times 1.00 = 1.00$	$U_N = 1.00 \times 1.00 = 1.00$
4	额定电流	I_N	$I_N = 1.00 \times 1.00 = 1.00$	$I_N = 1.00 \times 1.00 = 1.00$
5	额定功率因数	$\cos \varphi_N$	$\cos \varphi_N = 1.00 \times 1.00 = 1.00$	$\cos \varphi_N = 1.00 \times 1.00 = 1.00$
6	以额定功率所需额定功率因数	$\cos \varphi_{N1}$	$\cos \varphi_{N1} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N1} = 1.00 \times 1.00 = 1.00$
7	额定功率因数所需额定功率因数	$\cos \varphi_{N2}$	$\cos \varphi_{N2} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N2} = 1.00 \times 1.00 = 1.00$
8	额定功率因数所需额定功率因数	$\cos \varphi_{N3}$	$\cos \varphi_{N3} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N3} = 1.00 \times 1.00 = 1.00$
9	额定功率因数所需额定功率因数	$\cos \varphi_{N4}$	$\cos \varphi_{N4} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N4} = 1.00 \times 1.00 = 1.00$
10	额定功率因数所需额定功率因数	$\cos \varphi_{N5}$	$\cos \varphi_{N5} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N5} = 1.00 \times 1.00 = 1.00$
11	额定功率因数所需额定功率因数	$\cos \varphi_{N6}$	$\cos \varphi_{N6} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N6} = 1.00 \times 1.00 = 1.00$
12	额定功率因数所需额定功率因数	$\cos \varphi_{N7}$	$\cos \varphi_{N7} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N7} = 1.00 \times 1.00 = 1.00$
13	额定功率因数所需额定功率因数	$\cos \varphi_{N8}$	$\cos \varphi_{N8} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N8} = 1.00 \times 1.00 = 1.00$
14	额定功率因数所需额定功率因数	$\cos \varphi_{N9}$	$\cos \varphi_{N9} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N9} = 1.00 \times 1.00 = 1.00$
15	额定功率因数所需额定功率因数	$\cos \varphi_{N10}$	$\cos \varphi_{N10} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N10} = 1.00 \times 1.00 = 1.00$
16	额定功率因数所需额定功率因数	$\cos \varphi_{N11}$	$\cos \varphi_{N11} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N11} = 1.00 \times 1.00 = 1.00$
17	额定功率因数所需额定功率因数	$\cos \varphi_{N12}$	$\cos \varphi_{N12} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N12} = 1.00 \times 1.00 = 1.00$
18	额定功率因数所需额定功率因数	$\cos \varphi_{N13}$	$\cos \varphi_{N13} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N13} = 1.00 \times 1.00 = 1.00$
19	额定功率因数所需额定功率因数	$\cos \varphi_{N14}$	$\cos \varphi_{N14} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N14} = 1.00 \times 1.00 = 1.00$
20	额定功率因数所需额定功率因数	$\cos \varphi_{N15}$	$\cos \varphi_{N15} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N15} = 1.00 \times 1.00 = 1.00$
21	额定功率因数所需额定功率因数	$\cos \varphi_{N16}$	$\cos \varphi_{N16} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N16} = 1.00 \times 1.00 = 1.00$
22	额定功率因数所需额定功率因数	$\cos \varphi_{N17}$	$\cos \varphi_{N17} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N17} = 1.00 \times 1.00 = 1.00$
23	额定功率因数所需额定功率因数	$\cos \varphi_{N18}$	$\cos \varphi_{N18} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N18} = 1.00 \times 1.00 = 1.00$
24	额定功率因数所需额定功率因数	$\cos \varphi_{N19}$	$\cos \varphi_{N19} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N19} = 1.00 \times 1.00 = 1.00$
25	额定功率因数所需额定功率因数	$\cos \varphi_{N20}$	$\cos \varphi_{N20} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N20} = 1.00 \times 1.00 = 1.00$
26	额定功率因数所需额定功率因数	$\cos \varphi_{N21}$	$\cos \varphi_{N21} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N21} = 1.00 \times 1.00 = 1.00$
27	额定功率因数所需额定功率因数	$\cos \varphi_{N22}$	$\cos \varphi_{N22} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N22} = 1.00 \times 1.00 = 1.00$
28	额定功率因数所需额定功率因数	$\cos \varphi_{N23}$	$\cos \varphi_{N23} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N23} = 1.00 \times 1.00 = 1.00$
29	额定功率因数所需额定功率因数	$\cos \varphi_{N24}$	$\cos \varphi_{N24} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N24} = 1.00 \times 1.00 = 1.00$
30	额定功率因数所需额定功率因数	$\cos \varphi_{N25}$	$\cos \varphi_{N25} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N25} = 1.00 \times 1.00 = 1.00$
31	额定功率因数所需额定功率因数	$\cos \varphi_{N26}$	$\cos \varphi_{N26} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N26} = 1.00 \times 1.00 = 1.00$
32	额定功率因数所需额定功率因数	$\cos \varphi_{N27}$	$\cos \varphi_{N27} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N27} = 1.00 \times 1.00 = 1.00$
33	额定功率因数所需额定功率因数	$\cos \varphi_{N28}$	$\cos \varphi_{N28} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N28} = 1.00 \times 1.00 = 1.00$
34	额定功率因数所需额定功率因数	$\cos \varphi_{N29}$	$\cos \varphi_{N29} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N29} = 1.00 \times 1.00 = 1.00$
35	额定功率因数所需额定功率因数	$\cos \varphi_{N30}$	$\cos \varphi_{N30} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N30} = 1.00 \times 1.00 = 1.00$
36	额定功率因数所需额定功率因数	$\cos \varphi_{N31}$	$\cos \varphi_{N31} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N31} = 1.00 \times 1.00 = 1.00$
37	额定功率因数所需额定功率因数	$\cos \varphi_{N32}$	$\cos \varphi_{N32} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N32} = 1.00 \times 1.00 = 1.00$
38	额定功率因数所需额定功率因数	$\cos \varphi_{N33}$	$\cos \varphi_{N33} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N33} = 1.00 \times 1.00 = 1.00$
39	额定功率因数所需额定功率因数	$\cos \varphi_{N34}$	$\cos \varphi_{N34} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N34} = 1.00 \times 1.00 = 1.00$
40	额定功率因数所需额定功率因数	$\cos \varphi_{N35}$	$\cos \varphi_{N35} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N35} = 1.00 \times 1.00 = 1.00$
41	额定功率因数所需额定功率因数	$\cos \varphi_{N36}$	$\cos \varphi_{N36} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N36} = 1.00 \times 1.00 = 1.00$
42	额定功率因数所需额定功率因数	$\cos \varphi_{N37}$	$\cos \varphi_{N37} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N37} = 1.00 \times 1.00 = 1.00$
43	额定功率因数所需额定功率因数	$\cos \varphi_{N38}$	$\cos \varphi_{N38} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N38} = 1.00 \times 1.00 = 1.00$
44	额定功率因数所需额定功率因数	$\cos \varphi_{N39}$	$\cos \varphi_{N39} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N39} = 1.00 \times 1.00 = 1.00$
45	额定功率因数所需额定功率因数	$\cos \varphi_{N40}$	$\cos \varphi_{N40} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N40} = 1.00 \times 1.00 = 1.00$
46	额定功率因数所需额定功率因数	$\cos \varphi_{N41}$	$\cos \varphi_{N41} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N41} = 1.00 \times 1.00 = 1.00$
47	额定功率因数所需额定功率因数	$\cos \varphi_{N42}$	$\cos \varphi_{N42} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N42} = 1.00 \times 1.00 = 1.00$
48	额定功率因数所需额定功率因数	$\cos \varphi_{N43}$	$\cos \varphi_{N43} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N43} = 1.00 \times 1.00 = 1.00$
49	额定功率因数所需额定功率因数	$\cos \varphi_{N44}$	$\cos \varphi_{N44} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N44} = 1.00 \times 1.00 = 1.00$
50	额定功率因数所需额定功率因数	$\cos \varphi_{N45}$	$\cos \varphi_{N45} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N45} = 1.00 \times 1.00 = 1.00$
51	额定功率因数所需额定功率因数	$\cos \varphi_{N46}$	$\cos \varphi_{N46} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N46} = 1.00 \times 1.00 = 1.00$
52	额定功率因数所需额定功率因数	$\cos \varphi_{N47}$	$\cos \varphi_{N47} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N47} = 1.00 \times 1.00 = 1.00$
53	额定功率因数所需额定功率因数	$\cos \varphi_{N48}$	$\cos \varphi_{N48} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N48} = 1.00 \times 1.00 = 1.00$
54	额定功率因数所需额定功率因数	$\cos \varphi_{N49}$	$\cos \varphi_{N49} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N49} = 1.00 \times 1.00 = 1.00$
55	额定功率因数所需额定功率因数	$\cos \varphi_{N50}$	$\cos \varphi_{N50} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N50} = 1.00 \times 1.00 = 1.00$
56	额定功率因数所需额定功率因数	$\cos \varphi_{N51}$	$\cos \varphi_{N51} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N51} = 1.00 \times 1.00 = 1.00$
57	额定功率因数所需额定功率因数	$\cos \varphi_{N52}$	$\cos \varphi_{N52} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N52} = 1.00 \times 1.00 = 1.00$
58	额定功率因数所需额定功率因数	$\cos \varphi_{N53}$	$\cos \varphi_{N53} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N53} = 1.00 \times 1.00 = 1.00$
59	额定功率因数所需额定功率因数	$\cos \varphi_{N54}$	$\cos \varphi_{N54} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N54} = 1.00 \times 1.00 = 1.00$
60	额定功率因数所需额定功率因数	$\cos \varphi_{N55}$	$\cos \varphi_{N55} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N55} = 1.00 \times 1.00 = 1.00$
61	额定功率因数所需额定功率因数	$\cos \varphi_{N56}$	$\cos \varphi_{N56} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N56} = 1.00 \times 1.00 = 1.00$
62	额定功率因数所需额定功率因数	$\cos \varphi_{N57}$	$\cos \varphi_{N57} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N57} = 1.00 \times 1.00 = 1.00$
63	额定功率因数所需额定功率因数	$\cos \varphi_{N58}$	$\cos \varphi_{N58} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N58} = 1.00 \times 1.00 = 1.00$
64	额定功率因数所需额定功率因数	$\cos \varphi_{N59}$	$\cos \varphi_{N59} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N59} = 1.00 \times 1.00 = 1.00$
65	额定功率因数所需额定功率因数	$\cos \varphi_{N60}$	$\cos \varphi_{N60} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N60} = 1.00 \times 1.00 = 1.00$
66	额定功率因数所需额定功率因数	$\cos \varphi_{N61}$	$\cos \varphi_{N61} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N61} = 1.00 \times 1.00 = 1.00$
67	额定功率因数所需额定功率因数	$\cos \varphi_{N62}$	$\cos \varphi_{N62} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N62} = 1.00 \times 1.00 = 1.00$
68	额定功率因数所需额定功率因数	$\cos \varphi_{N63}$	$\cos \varphi_{N63} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N63} = 1.00 \times 1.00 = 1.00$
69	额定功率因数所需额定功率因数	$\cos \varphi_{N64}$	$\cos \varphi_{N64} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N64} = 1.00 \times 1.00 = 1.00$
70	额定功率因数所需额定功率因数	$\cos \varphi_{N65}$	$\cos \varphi_{N65} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N65} = 1.00 \times 1.00 = 1.00$
71	额定功率因数所需额定功率因数	$\cos \varphi_{N66}$	$\cos \varphi_{N66} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N66} = 1.00 \times 1.00 = 1.00$
72	额定功率因数所需额定功率因数	$\cos \varphi_{N67}$	$\cos \varphi_{N67} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N67} = 1.00 \times 1.00 = 1.00$
73	额定功率因数所需额定功率因数	$\cos \varphi_{N68}$	$\cos \varphi_{N68} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N68} = 1.00 \times 1.00 = 1.00$
74	额定功率因数所需额定功率因数	$\cos \varphi_{N69}$	$\cos \varphi_{N69} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N69} = 1.00 \times 1.00 = 1.00$
75	额定功率因数所需额定功率因数	$\cos \varphi_{N70}$	$\cos \varphi_{N70} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N70} = 1.00 \times 1.00 = 1.00$
76	额定功率因数所需额定功率因数	$\cos \varphi_{N71}$	$\cos \varphi_{N71} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N71} = 1.00 \times 1.00 = 1.00$
77	额定功率因数所需额定功率因数	$\cos \varphi_{N72}$	$\cos \varphi_{N72} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N72} = 1.00 \times 1.00 = 1.00$
78	额定功率因数所需额定功率因数	$\cos \varphi_{N73}$	$\cos \varphi_{N73} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N73} = 1.00 \times 1.00 = 1.00$
79	额定功率因数所需额定功率因数	$\cos \varphi_{N74}$	$\cos \varphi_{N74} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N74} = 1.00 \times 1.00 = 1.00$
80	额定功率因数所需额定功率因数	$\cos \varphi_{N75}$	$\cos \varphi_{N75} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N75} = 1.00 \times 1.00 = 1.00$
81	额定功率因数所需额定功率因数	$\cos \varphi_{N76}$	$\cos \varphi_{N76} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N76} = 1.00 \times 1.00 = 1.00$
82	额定功率因数所需额定功率因数	$\cos \varphi_{N77}$	$\cos \varphi_{N77} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N77} = 1.00 \times 1.00 = 1.00$
83	额定功率因数所需额定功率因数	$\cos \varphi_{N78}$	$\cos \varphi_{N78} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N78} = 1.00 \times 1.00 = 1.00$
84	额定功率因数所需额定功率因数	$\cos \varphi_{N79}$	$\cos \varphi_{N79} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N79} = 1.00 \times 1.00 = 1.00$
85	额定功率因数所需额定功率因数	$\cos \varphi_{N80}$	$\cos \varphi_{N80} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N80} = 1.00 \times 1.00 = 1.00$
86	额定功率因数所需额定功率因数	$\cos \varphi_{N81}$	$\cos \varphi_{N81} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N81} = 1.00 \times 1.00 = 1.00$
87	额定功率因数所需额定功率因数	$\cos \varphi_{N82}$	$\cos \varphi_{N82} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N82} = 1.00 \times 1.00 = 1.00$
88	额定功率因数所需额定功率因数	$\cos \varphi_{N83}$	$\cos \varphi_{N83} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N83} = 1.00 \times 1.00 = 1.00$
89	额定功率因数所需额定功率因数	$\cos \varphi_{N84}$	$\cos \varphi_{N84} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N84} = 1.00 \times 1.00 = 1.00$
90	额定功率因数所需额定功率因数	$\cos \varphi_{N85}$	$\cos \varphi_{N85} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N85} = 1.00 \times 1.00 = 1.00$
91	额定功率因数所需额定功率因数	$\cos \varphi_{N86}$	$\cos \varphi_{N86} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N86} = 1.00 \times 1.00 = 1.00$
92	额定功率因数所需额定功率因数	$\cos \varphi_{N87}$	$\cos \varphi_{N87} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N87} = 1.00 \times 1.00 = 1.00$
93	额定功率因数所需额定功率因数	$\cos \varphi_{N88}$	$\cos \varphi_{N88} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N88} = 1.00 \times 1.00 = 1.00$
94	额定功率因数所需额定功率因数	$\cos \varphi_{N89}$	$\cos \varphi_{N89} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N89} = 1.00 \times 1.00 = 1.00$
95	额定功率因数所需额定功率因数	$\cos \varphi_{N90}$	$\cos \varphi_{N90} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N90} = 1.00 \times 1.00 = 1.00$
96	额定功率因数所需额定功率因数	$\cos \varphi_{N91}$	$\cos \varphi_{N91} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N91} = 1.00 \times 1.00 = 1.00$
97	额定功率因数所需额定功率因数	$\cos \varphi_{N92}$	$\cos \varphi_{N92} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N92} = 1.00 \times 1.00 = 1.00$
98	额定功率因数所需额定功率因数	$\cos \varphi_{N93}$	$\cos \varphi_{N93} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N93} = 1.00 \times 1.00 = 1.00$
99	额定功率因数所需额定功率因数	$\cos \varphi_{N94}$	$\cos \varphi_{N94} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N94} = 1.00 \times 1.00 = 1.00$
100	额定功率因数所需额定功率因数	$\cos \varphi_{N95}$	$\cos \varphi_{N95} = 1.00 \times 1.00 = 1.00$	$\cos \varphi_{N95} = 1.00 \times 1.00 = 1.00$

说明: n_1 、 P_1 为被驱动设备的转速和功率; $P_1=P_2$ 为被驱动设备所需的功率和扭矩; P_{1H} 、 T_{1H} 为实际减速机所需功率和扭矩

Step2：确定电机。电机生产厂商、规格型号、性能指标及外形尺寸确定

马达型号 Motor Model: MHMD-082G1U

輸出功率	Output	0.75	kw
額定力矩	Rated Torque	2.4	Nm
最大力矩	Max.Torque	7.1	Nm
額定轉速	Rated Speed	3000	RPM
最大轉速	Max.Speed	4500	RPM
转动惯量	Inertia	6.6kg	cm ²
轴径	Shaft Dia	Ø19	mm
外径	Diameter	Ø80	mm
轴径		Ø70	mm
轴孔距		Ø90	mm



Notice for ordering 订购须知

Motor's type & measurement
配用电动机品牌及规格尺寸
Planetary gear box's type:
行星减速机系列及规格型号:
Torque:

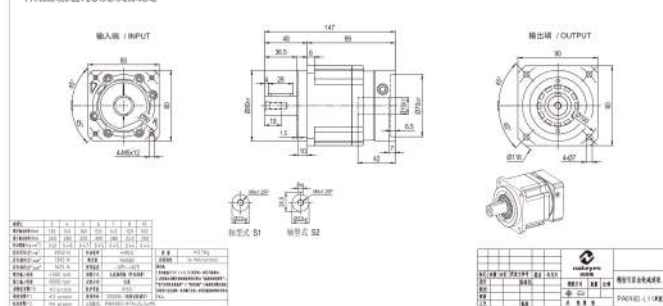
田 堀：
Ratio：
減速比：
Mounting position/holders
外形及安裝方式內置型機座

Backfast:

实际地址：

Step3:确定所订行星减速机规格型号及工厂给出的CAD或PDF图纸, 正确书写型号 例如: PA090D-005-S2-P2/MHMD 082GIU

PA-0900-(6-52-P2-314-37)-06-M5-02



减速机的选用及注意事项 / GEAR UNIT SELECTION & ANNOUNCEMENTS

与选型有关的基本概念/Base concepts of precision planetary gear boxes

Ratio/速比 额定输入转速 n₁[rpm] 输出转速 n₂[rpm] Poles /极数 Efficiency /传动效率 Average lifetime /平均寿命 Precise positioning /定位精度 Backlash /回程间隙	Input speed/Output speed 输出转速比上输入转速 减速机的传动速比，若减速机与电机直接相连，则速比值与电机转速相同。本书中的额定输入转速是在环境温度20°C的条件下测得的，环境温度较高时请降低速比。 输出转速按下列公式通过输入转速n_1和传动比计算出来：$n_2=n_1/i$ The number of set of planetary gear. Owing to one set planetary gear can't satisfy bigger transmission ratio,two or three sets can meet users' requirements of bigger transmission ratio. Since increasing the quantity,the length of two or three poles motor will increase accordingly,of course,the efficiency will reduce accordingly. 行星齿轮的套数。由于一套行星齿轮无法满足较大的传动比，有时需要两套或三套来满足用户对较大传动比的要求，也就相应，减速机体积/级数越多。由于增加了行星齿轮的数量，所以二级或三级减速机的长度会相应增加，效率会有所下降。 If refers to the gearing efficiency of the gearboxes in the case of the largest load. 指在额定负载情况下，减速机传动效率。速比越大，级数越多，效率越低。 Refers to the continuous working time of the gearboxes of the highest input torque. 指减速机在额定负载下，额定输入转矩是减速机的连续工作时间。 In high-speed reciprocating mechanical movement achieve precise positioning is the key to minimizing the movement through the angular deviation,positioning accuracy depends on the two values,with a the deflection of angle involving a return to space with torsion stiffness, and the other of control of the movement and rotation angle,involve part synchronization the problem worse. 在高速往复运动中实现精确定位的关键在于尽量减少通过运动产生的角偏差。定位精度取决于两个值，一个量与轴有关的偏角输出，涉及回程与回背误差；另一个是与运动有关的偏角，涉及到同步步距问题。
	减速机输入轴与输入轴的最大差角，测量时先将输入轴固定住，然后在输出轴扭矩上加一一定力矩（$2\%T_n$），以克服减速机内的摩擦力。 backlash 逆背曲线是为了得出减速机的运转精度，通过它得到逆背曲线。检测时，先将减速机输入轴固定住，然后在输出轴的两个旋转方向分别持续地加扭矩ΔT测大输出力矩，继而逐步卸载，用仪器记录下力矩的差角，得到的曲线便是一条逆背曲线，从它可以计算出减速机回程间隙（μ）和运转精度（min/Cm）。
	Moment of the rotary inertia(when said this description refers to that at the input terminal.Said an object strive to maintain its rotational state) a stationary of rotating/characteristics of a value. 本项时刻J的值与输入轴有关。表示一个物体保持其静止已转动状态（或阻止其转动）特征的一个值。
	Refer to the ration of load inertia and inertia device(system/motor with gearbox).This ratio determines the controllability of the λ value,the greater is the moment of inertia gear margin,high-dynamic action on the more difficult process of precision control.The values can be control in 5 ,gearboxes can be used to reduce load $1/5$. 是指负载惯量与传动装置惯量（电机加上减速机）之间的比值。这个比值决定了系统的可控性。λ值越大，也就是各转动惯量越大，运动的动态过程就越难精确控制，建议λ还可将电机负载$1/5$，以减轻电机与负载惯量降低$1/5$。
	The unit is decibel(dB). The value is measured when the input rev is 3000m/r and at the distance of one meter from the gearboxes. 单位是分贝（dB）。此数值是在输入转速为3000转/分，不带负载，距减速机一米处测量时测得的。
Operating conditions /工作条件	Operating temp/工作温度$^{\circ}\text{C}$ -10$^{\circ}\text{C}$~+90$^{\circ}\text{C}$
	Degree of protection/防护等级 IP54/IP65
	Lubrication/润滑 Life time lubrication/长效润滑、整个试用期无需润滑加润滑油
Mounting position/安装方式	Any任意
	Any任意

PL/PLA SERIES

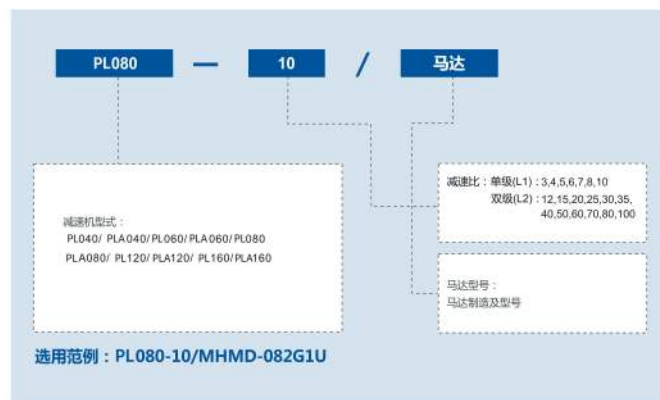


DAPO

DAPO POWER GEARS

PL/PLA 系列

型号说明 / MODEL ILLUMINATE



减速机性能资料 / GEAR BOX PERFORMANCE INFORMATION

规格	级数	减速比 ¹	PL040 PLA040	PL060 PLA060	PL080 PLA080	PL120 PLA120	PL160 PLA160
额定输出转矩 T_{out}	1	3	20	55	130	208	342
		4	19	50	140	290	542
		5	22	60	160	330	650
		6	20	55	150	310	600
		7	19	50	140	300	550
		8	17	45	120	280	500
		10	14	40	100	230	450
		12	20	55	130	208	342
		15	20	55	130	208	342
		20	19	50	140	290	542
	2	25	22	60	160	330	650
		30	22	55	130	208	342
		35	22	60	160	330	650
		40	22	50	140	290	542
		50	22	60	160	330	650
		60	20	55	150	310	600
		70	19	50	140	300	550
		80	17	45	120	280	500
		100	14	40	100	230	450
最大输出转矩 T_{out}	Nm	1.2	3~100	3倍额定输出转矩	4,000	4,000	3,000
额定输入转速	rpm	1.2	3~100	5,000	8,000	8,000	6,000
最大输入转速 n_{in}	rpm	1.2	3~100	10,000	10,000	8,000	6,000
背隙	arcmin	1	3~10	≤8	≤8	≤8	≤8
保持刚性	Nm/rad	2	12~100	≤10	≤10	≤10	≤10
容许径向力 F_{ra} ²	N	1.2	3~100	780	1,530	3,250	6,700
容许轴向力 F_{ax} ²	N	1.2	3~100	350	630	1,300	3,000
容许轴向力 F_{ax} ²	N	1.2	3~100	390	765	1,625	3,350
使用寿命	hr	1	3~100	20,000*	≥97%	≥94%	≥94%
效率 η	%	2	12~100	≥97%	≥94%	≥94%	≥94%
重量	kg	1	3~10	0.5	1.3	3.7	7.8
使用温度	°C	2	12~100	0.8	1.9	4.1	9
使用湿度	%	1.2	3~100	1.2	3~100	1.2	3~100
防护等级		1.2	3~100	IP65	IP65	IP65	IP65
安装方向		1.2	3~100	任意方向	任意方向	任意方向	任意方向
噪音值 ($n=3000$ rpm)	dB	1.2	3~100	≤56	≤58	≤60	≤63

减速机转动惯量

规格	级数	减速比 ¹	PL040 PLA040	PL060 PLA060	PL080 PLA080	PL120 PLA120	PL160 PLA160
转动惯量 J	1	3	0.03	0.16	0.61	3.25	9.21
		4	0.03	0.14	0.48	2.74	7.54
		5	0.03	0.13	0.47	2.71	7.42
		6	0.03	0.13	0.45	2.65	7.25
		7	0.03	0.13	0.45	2.62	7.14
		8	0.03	0.13	0.44	2.58	7.07
		10	0.03	0.13	0.44	2.57	7.03
		12	0.03	0.03	0.13	0.47	2.71
		15	0.03	0.03	0.13	0.47	2.71
		20	0.03	0.03	0.13	0.47	2.71
	2	25	0.03	0.03	0.13	0.47	2.71
		30	0.03	0.03	0.13	0.47	2.71
		35	0.03	0.03	0.13	0.47	2.71
		40	0.03	0.03	0.13	0.47	2.71
		50	0.03	0.03	0.13	0.44	2.57
		60	0.03	0.03	0.13	0.44	2.57
		70	0.03	0.03	0.13	0.44	2.57
		80	0.03	0.03	0.13	0.44	2.57
		100	0.03	0.03	0.13	0.44	2.57

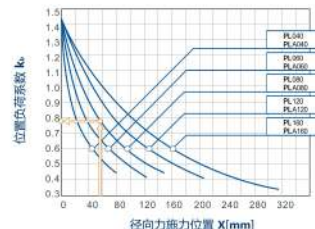
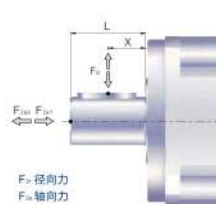
1. 减速比 ($i = N_1/N_{out}$)

* 连续运转降低使用寿命二分之一。

2. 输出转矩 100rpm 时，作用于输出轴中心位置。

减速机输出轴之容许径向力及轴向力

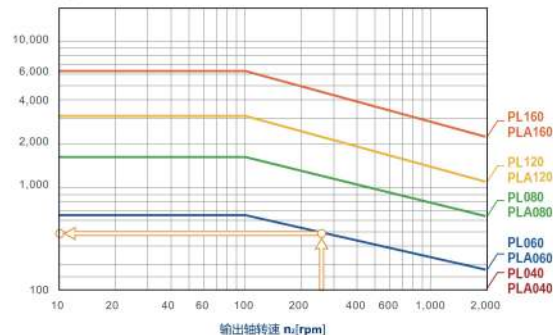
REDUCER OUTPUT SHAFT OF THE PERMISSIBLE RADIAL FORCE AND SHAFT FORCE



减速机输出轴所能承受之最大径向力及轴向力端视内部支撑轴承之设计。

当径向力 F_{ra} 施力不在轴中心位置，越靠近减速机即 $X < 1/2 \times L$ ，所能承受之容许径向力变大；越远离减速机即 $X > 1/2 \times L$ ，所能承受之容许径向力变小。藉由上图，依减速机规格及径向施力位置 X ，可查出位置负荷系数 k_0 。

容许径向力 F_{ra} [N] 施力于轴中心位置

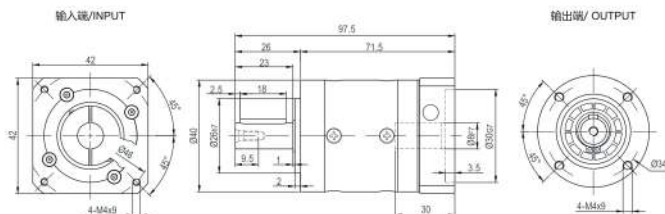


当径向力 F_{ra} 施力于轴中心位置，即 $X = 1/2 \times L$ 时，不同之减速机在不同输出转速运用下，使用寿命为 20,000* 小时，所能承受之容许径向力，请参阅上图。

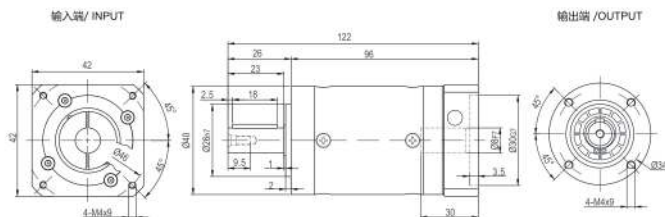
* 连续运转(S1)下之使用寿命降低50%。

外形尺寸图表 / OUTLINE DIMENSION SHEET

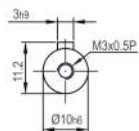
PL-040-L1



PL-040-L2



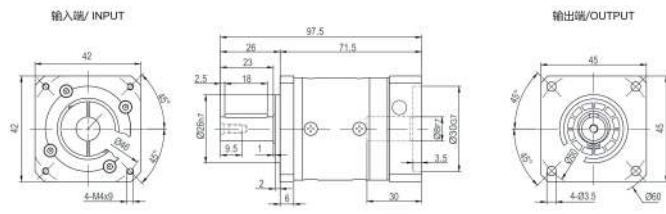
输出轴径/Output Diameter



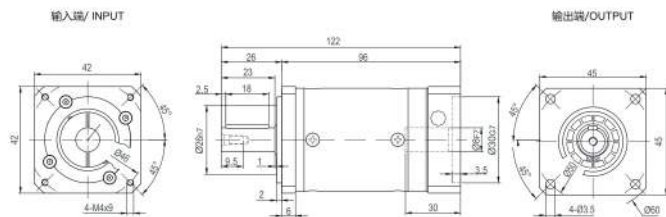
*输入马达连接板之尺寸,可根据客户要求单独定做。
*The input motor specific dimensions could be customised.

外形尺寸图表 / OUTLINE DIMENSION SHEET

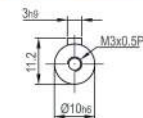
PLA-040-L1



PLA-040-L2



输出轴径/Output Diameter

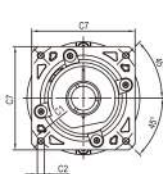


*输入马达连接板之尺寸,可根据客户要求单独定做。
*The input motor specific dimensions could be customised.

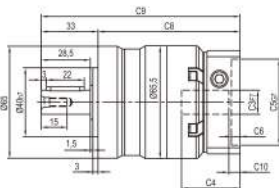
外形尺寸图表 / OUTLINE DIMENSION SHEET

PL-060D(M1)-L1

输入轴/INPUT

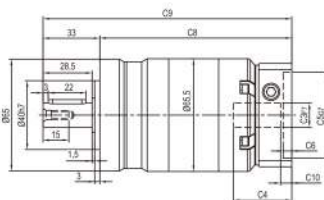
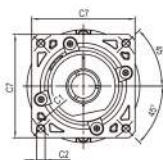


输出轴/OUTPUT

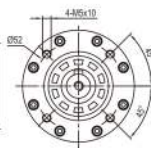


PL-060D(M1)-L2

输入轴/INPUT



输出轴/OUTPUT



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PL-060D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	82.5	115.5	5.5
PL-060D-L2								111.5	144.5	5.5
PL-060D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	82.5	115.5	5.5
PL-060D-L2								111.5	144.5	5.5
PL-060M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	88	122	12
PL-060M1-L2								118	151	12

* C1-C7是公制标准马达连接板之尺寸,可根据客户要求单独定制。

* C1-C7are motor(metric standard) specific dimensions, which could be customised,

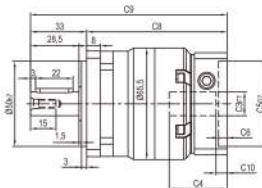
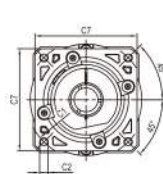
• D: 常规孔, M1: 极限孔。

• D: Conventional Hole, M1: Limit Hole

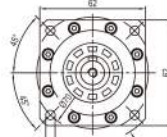
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLA-060D(M1)-L1

输入轴/INPUT

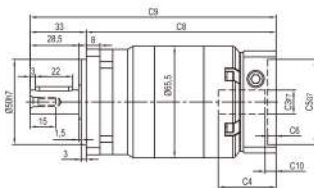
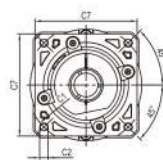


输出轴/OUTPUT

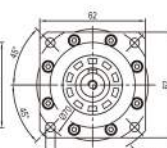


PLA-060D(M1)-L2

输入轴/INPUT



输出轴/OUTPUT



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PLA-060D-L1	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	82.5	115.5	5.5
PLA-060D-L2								111.5	144.5	5.5
PLA-060D-L1	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	82.5	115.5	5.5
PLA-060D-L2								111.5	144.5	5.5
PLA-060M1-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	88	122	12
PLA-060M1-L2								118	151	12

* C1-C7是公制标准马达连接板之尺寸,可根据客户要求单独定制。

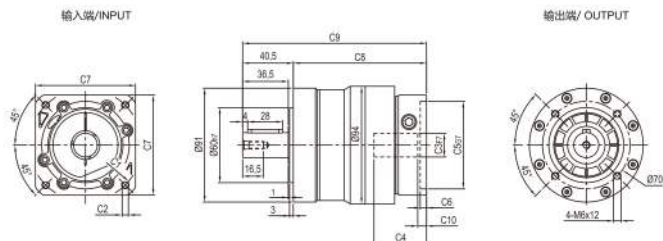
* C1-C7are motor(metric standard) specific dimensions, which could be customised,

• D: 常规孔, M1: 极限孔。

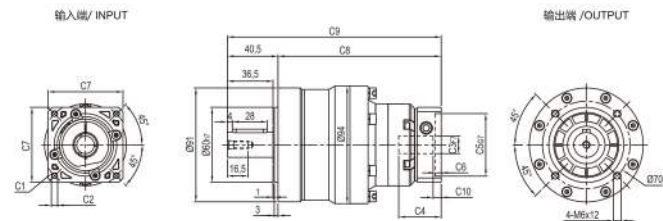
• D: Conventional Hole, M1: Limit Hole

外形尺寸图表 / OUTLINE DIMENSION SHEET

PL-080D(M1)-L1



PL-080D(M1)-L2



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PL-080D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	106.5	147	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	106.5	147	6
PL-080M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	122	162.5	16.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	124.5	165	19
PL-080D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	130.5	171	5.5
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	130.5	171	5.5
PL-080M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	137	177.5	12
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	137	177.5	11

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定做。

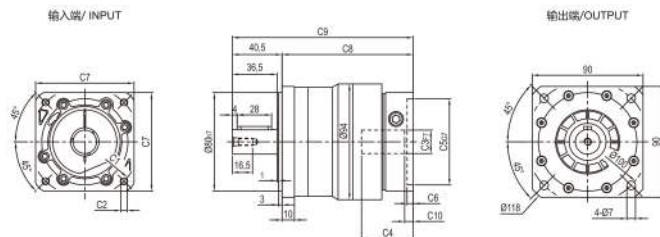
* C1-C7are motor(metric standard) specific dimensions, which could be customised.

• D: 常规孔, M1: 极限孔

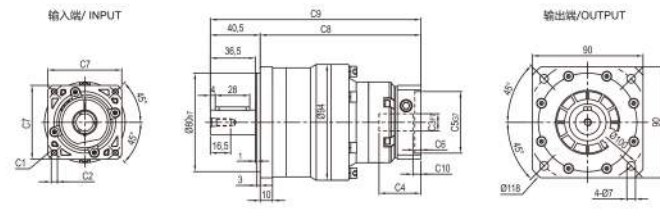
• D: Conventional Hole, M1: Limit Hole

外形尺寸图表 / OUTLINE DIMENSION SHEET

PLA-080D(M1)-L1



PLA-080D(M1)-L2



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PLA-080D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	106.5	147	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	106.5	147	6
PLA-080M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	122	162.5	16.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	124.5	165	19
PLA-080D-L2	Ø66.7	4-M4x10	Ø8	34	Ø38.1	5	60	130.5	171	5.5
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	34	Ø50	5	60	130.5	171	5.5
PLA-080M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	137	177.5	12
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	137	177.5	11

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定做。

* C1-C7are motor(metric standard) specific dimensions, which could be customised.

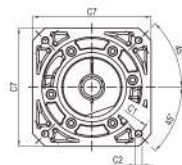
• D: 常规孔, M1: 极限孔

• D: Conventional Hole, M1: Limit Hole

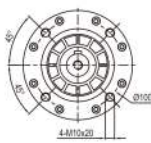
外形尺寸图表 / OUTLINE DIMENSION SHEET

PL-120D(M1)-L1

输入端/INPUT



输出端/ OUTPUT

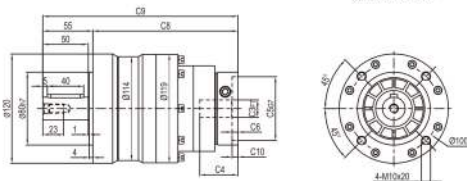


PL-120D(M1)-L2

输入端/ INPUT



输出端/ OUTPUT



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PL-120D-L1	Ø145	4-M8x20	Ø19.022.024	64	Ø110	10	130	143	198	19.5
PL-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	160.5	215.5	28
PL-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	159.5	214.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	159.5	214.5	6
PL-120M1-L2	Ø115	4-M8x20	Ø19.022	56.5	Ø95	8	100	175	230	16.5
	Ø145	4-M8x20	Ø19.022.024	59	Ø110	11	130	177.5	232.5	19

* C1~C7是公制标准马达连接板之尺寸,可根据客户需求单独定制。

* C1~C7are motor(metric standard) specific dimensions, which could be customised.

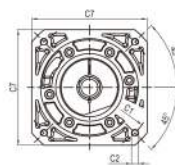
• D: 标准孔, M1: 极限孔

• D: Conventional Hole, M1: Limit Hole

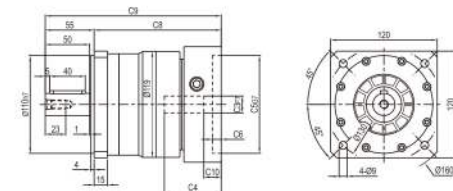
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLA-120D(M1)-L1

输入端/ INPUT

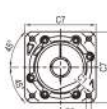


输出端/OUTPUT

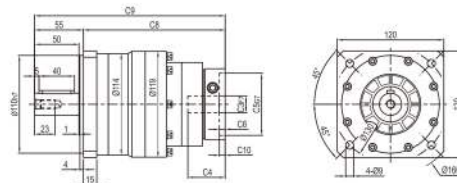


PLA-120D(M1)-L2

输入端/ INPUT



输出端/OUTPUT



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PLA-120D-L1	Ø145	4-M8x20	Ø19.022.024	64	Ø110	10	130	143	198	19.5
PLA-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	160.5	215.5	28
PLA-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42	Ø70	6.5	80	159.5	214.5	7
	Ø100	4-M6x14	Ø16	42	Ø80	6.5	86	159.5	214.5	6
PLA-120M1-L2	Ø115	4-M8x20	Ø19.022	56.5	Ø95	8	100	175	230	16.5
	Ø145	4-M8x20	Ø19.022.024	59	Ø110	11	130	177.5	232.5	19

* C1~C7是公制标准马达连接板之尺寸,可根据客户需求单独定制。

* C1~C7are motor(metric standard) specific dimensions, which could be customised.

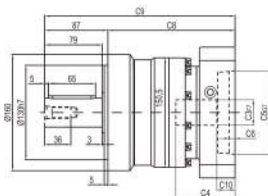
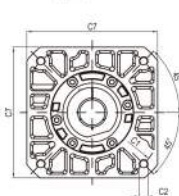
• D: 标准孔, M1: 极限孔

• D: Conventional Hole, M1: Limit Hole

外形尺寸图表 / OUTLINE DIMENSION SHEET

PL-160D(M1)-L1

输入端/INPUT

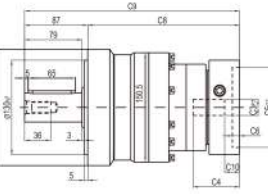
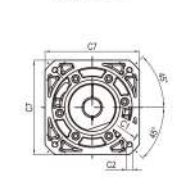


输出端/OUTPUT

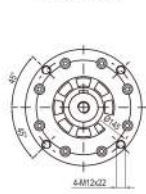


PL-160D(M1)-L2

输入端/INPUT



输出端/OUTPUT



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PL-160D-L1	Ø145	4-M8x20	Ø22.024	72	Ø110	11	130	165	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	175	262	25
PL-160D-L2	Ø145	4-M8x20	Ø19.022, Ø24	64	Ø110	10	130	209	296	19.5
PL-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	226.5	313.5	28

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定做。

* C1-C7are motor(metric standard) specific dimensions, which could be customised,

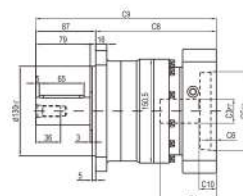
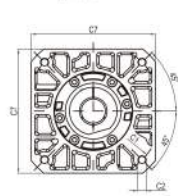
D-常规孔, M1: 极限孔

D: Conventional Hole, M1: Limit Hole

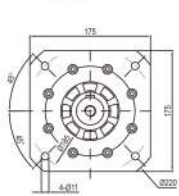
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLA-160D(M1)-L1

输入端/INPUT

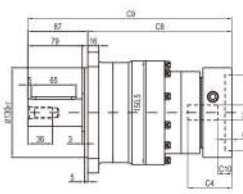
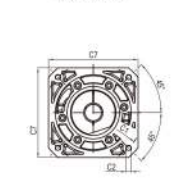


输出端/OUTPUT

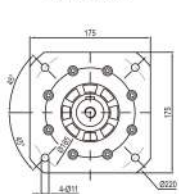


PLA-160D(M1)-L2

输入端/INPUT



输出端/OUTPUT



输出轴径/Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
PLA-160D-L1	Ø145	4-M8x20	Ø22.024	72	Ø110	11	130	165	252	19.5
	Ø200	4-M12x28	Ø35	81.5	Ø114.3	8	180	175	262	25
PLA-160D-L2	Ø145	4-M8x20	Ø19.022, Ø24	64	Ø110	10	130	209	296	19.5
PLA-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	226.5	313.5	28

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定做。

* C1-C7are motor(metric standard) specific dimensions, which could be customised,

D-常规孔, M1: 极限孔

D: Conventional Hole, M1: Limit Hole

PLR/PLAR

SERIES



DAPO

DAPO POWER GEARS

PLR/PLAR 系列

型号说明 / MODEL ILLUMINATE

PLR080

10

马达

减速机型式：

PLR060/ PLAR060/ PLR080/ PLAR080
PLR120/ PLAR120/ PLR160/ PLAR160

减速比：单级(L1)：3,4,5,6,7,8,10,14,20
双级(L2)：12,15,20,25,30,35,
40,50,60,70,80,100,
120,140,160,200

马达型号：
马达制造及型号

选用范例：PLR080-10/MHMD-082G1U

减速机性能资料 / GEAR BOX PERFORMANCE INFORMATION

规格	级数	减速比 ¹	PLR060 PLAR060	PLR080 PLAR080	PLR120 PLAR120	PLR160 PLAR160
额定输出扭矩 T _{2N}	1	3	55	130	208	342
		4	50	140	290	542
		5	60	160	330	650
		6	55	150	310	600
		7	50	140	300	550
		8	50	140	290	542
		10	60	160	330	650
		14	50	140	300	550
		20	40	100	230	450
		12	55	130	208	342
	2	15	55	130	208	342
		20	50	140	290	542
		25	60	160	330	650
		30	55	130	208	342
		35	60	160	330	650
		40	60	140	290	542
		50	60	160	330	650
		60	55	150	310	600
		70	60	160	330	650
		80	50	140	290	542
最大输出扭矩 T _{2S}	Nm	1.2	3-200	4,000	3,000	3,000
额定输入转速 n ₁	rpm	1.2	3-200	10,000	8,000	6,000
最大输入转速 n _{1max}	rpm	1.2	3-200	10,000	8,000	6,000
背隙	arcmin	1	3-20	≤13	≤13	≤13
扭转变形	Nm/arcmin	1.2	3-200	≤15	≤15	≤15
容许径向力 F _r ²	N	1.2	3-200	1,530	3,250	6,700
容许轴向力 F _a ²	N	1.2	3-200	530	1,300	3,000
容许轴向力 F _a ²	N	1.2	3-200	765	1,625	3,350
使用寿命	hr	1.2	3-200	765	1,625	3,350
效率 η	%	1	3-20	≤95%	≤95%	≤95%
重量	kg	1	3-20	2.1	5.4	13
使用温度	°C	1.2	3-200	2.5	7.8	14.2
润滑		1.2	3-200		-10°C ~ +90°C	合成润滑油
防护等级		1.2	3-200		IP65	
安装方向		1.2	3-200		任意方向	
噪音值 (n=3000rpm)	dB	1.2	3-200	≤63	≤65	≤68

减速机转动惯量

规格	级数	减速比 ¹	PLR060 PLAR060	PLR080 PLAR080	PLR120 PLAR120	PLR160 PLAR160
转动惯量 J	1	3-7	0.35	2.25	6.84	23.4
		8-10	0.07	1.87	6.25	21.8
		14-20	0.07	1.87	6.25	21.8
		12-40	0.09	0.35	2.25	6.84
	2	50	0.09	0.31	1.87	6.25
		60	0.09	0.35	2.25	6.84
		70-100	0.09	0.31	1.87	6.25
		120-200	-	0.31	1.87	6.25

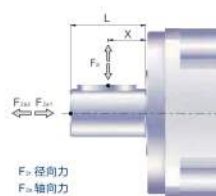
1. 减速比 (i=N₁/N₂)

* 连续运转使用寿命二分之一。

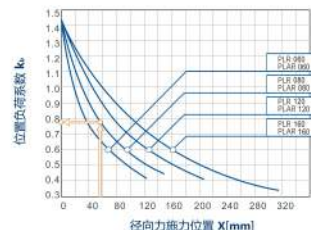
2. 输出转速 100rpm 时，作用于轴中心位置。

减速机输出轴之容许径向力及轴向力

REDUCER OUTPUT SHAFT OF THE PERMISSIBLE RADIAL FORCE AND SHAFT FORCE



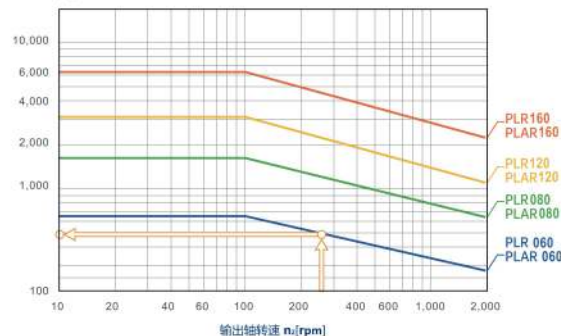
F_r 径向力
F_a 轴向力



减速机输出轴所能承受之最大径向力及轴向力端视内部支撑轴承之设计。

当径向力 F_r 施力不在轴中心位置，越靠近减速机即 X < 1/2xL，所能承受之容许径向力变大；越远离减速机即 X > 1/2xL，所能承受之容许径向力变小。藉由上图，依减速机规格及径向施力位置 X，可查出位置负荷系数 K_x。

容许径向力 F_r [N] 施力于轴中心位置



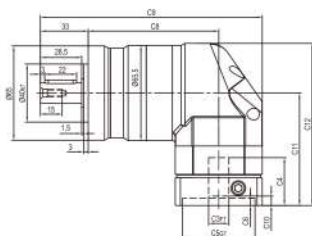
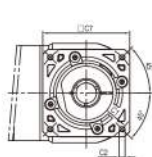
当径向力 F_r 施力于轴中心位置，即 X = 1/2xL 时，不同之减速机在不同输出转速运用下，使用寿命为 20,000* 小时，所能承受之容许径向力，请参照上图。

* 连续运转(S1)下之使用寿命降低50%。

外形尺寸图表 / OUTLINE DIMENSION SHEET

PLR-060D(M1)-L1

输入端 / INPUT

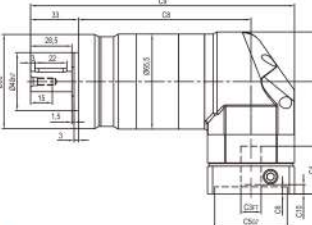
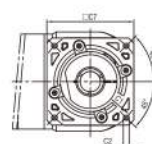


输出端 / OUTPUT

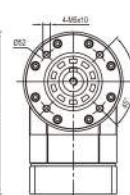


PLR-060D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



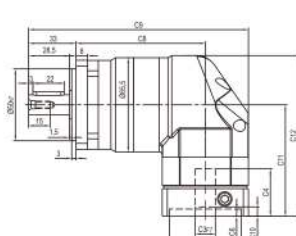
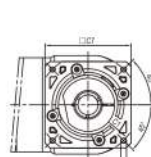
尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLR-060D-L1	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	90	153	5.5	77.5	111.75
PLR-060D-L2	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	90	153	5.5	77.5	111.75
PLR-060M-L1	Ø70	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	90	163	12	87	121.25
PLR-060M-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	90	163	12	87	121.25

- * C1~C7是公制标准马达连接板之尺寸, 可根据客户要求单独定做。
- * C1~C7 are motor (metric standard) specific dimensions, which could be customised.
- * D: 常规孔, M1: 极限孔
- * D: Conventional Hole, M1: Limit Hole

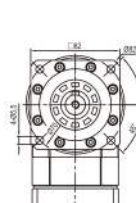
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLAR-060D(M1)-L1

输入端 / INPUT

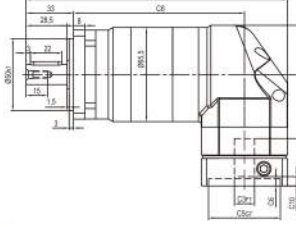
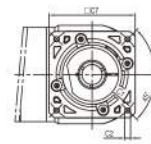


输出端 / OUTPUT



PLAR-060D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



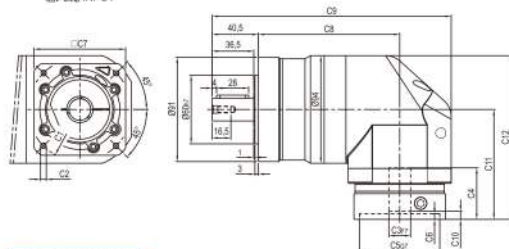
尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLAR-060D-L1	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	90	153	5.5	77.5	111.75
PLAR-060D-L2	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	90	153	5.5	77.5	111.75
PLAR-060M-L1	Ø70	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	90	163	12	87	121.25
PLAR-060M-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	90	163	12	87	121.25

- * C1~C7是公制标准马达连接板之尺寸, 可根据客户要求单独定做。
- * C1~C7 are motor (metric standard) specific dimensions, which could be customised.
- * D: 常规孔, M1: 极限孔
- * D: Conventional Hole, M1: Limit Hole

外形尺寸图表 / OUTLINE DIMENSION SHEET

PLR-080D(M1)-L1

输入端 / INPUT

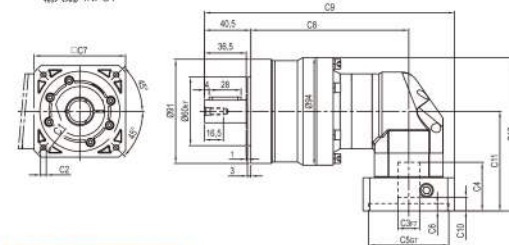


输出端 / OUTPUT



PLR-080D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLR-080D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	123.5	209	7	96	143
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	123.5	209	6	96	143
PLR-080M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	123.5	214	16.5	117.5	164.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	123.5	229	19	120	167
PLR-080D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	138	208.5	5.5	77.5	124.5
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	138	208.5	5.5	77.5	124.5
PLR-080M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	138	218.5	12	87	134
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	138	221.5	11	87	134

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定制。

* C1-C7are metric standard specific dimensions, which could be customised.

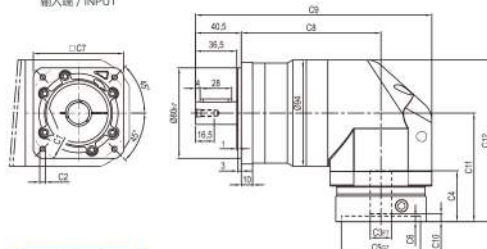
D: 常规孔, M1: 极限孔

* D: Conventional Hole, M1: Limit Hole

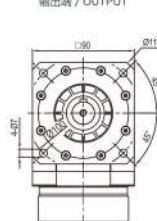
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLAR-080D(M1)-L1

输入端 / INPUT

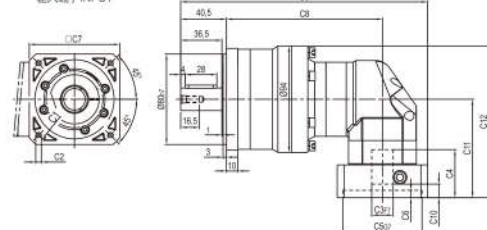


输出端 / OUTPUT

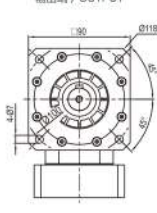


PLAR-080D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLAR-080D-L1	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	123.5	209	7	96	143
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	123.5	209	6	96	143
PLAR-080M1-L1	Ø115	4-M8x20	Ø19, Ø22	56.5	Ø95	8	100	123.5	214	16.5	117.5	164.5
	Ø145	4-M8x20	Ø19, Ø22, Ø24	59	Ø110	11	130	123.5	229	19	120	167
PLAR-080D-L2	Ø66.7	4-M4x10	Ø8	33	Ø38.1	5	60	138	208.5	5.5	77.5	124.5
	Ø70	4-M4x10, 4-M5x12	Ø11, Ø14	33	Ø50	5	60	138	208.5	5.5	77.5	124.5
PLAR-080M1-L2	Ø90	4-M5x12, 4-M6x14	Ø19	42.5	Ø70	6.5	80	138	218.5	12	87	134
	Ø100	4-M6x14	Ø16	42.5	Ø80	6.5	86	138	221.5	11	87	134

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定制。

* C1-C7are metric standard specific dimensions, which could be customised.

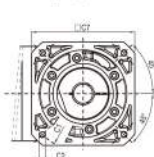
D: 常规孔, M1: 极限孔

* D: Conventional Hole, M1: Limit Hole

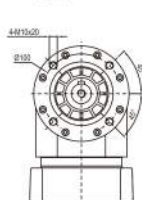
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLR-120D(M1)-L1

输入端 / INPUT

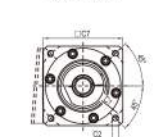


输出端 / OUTPUT

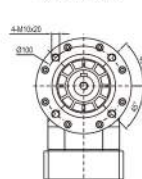


PLR-120D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



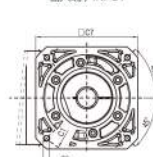
尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLR-120D-L1	Ø145	4-M8x20	Ø19,022,024	64	Ø110	10	130	146.5	266.5	19.5	135.5	195.5
PLR-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	146.5	291.5	28	152.5	212.5
PLR-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	176.5	276.5	7	96	156
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	176.5	276.5	8	96	156
PLR-120M1-L2	Ø115	4-M8x20	Ø19,022	56.5	Ø95	8	100	176.5	281.5	16.5	117.5	177.5
	Ø145	4-M8x20	Ø19,022,024	59	Ø110	11	130	176.5	296.5	19	120	180

- * C1-C7是公制标准马达连接板之尺寸,可根据客户要求单独定做。
- * C1-C7are motor(metric standard) specific dimensions, which could be customised.
- * D-常规孔, M1-极限孔
- * D: Conventional Hole, M1: Limit Hole

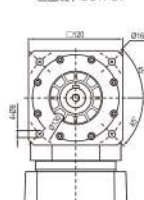
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLAR-120D(M1)-L1

输入端 / INPUT

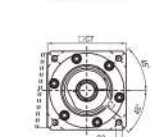


输出端 / OUTPUT

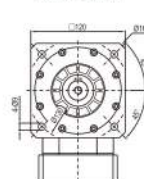


PLAR-120D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



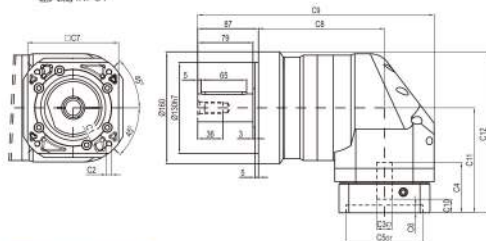
尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLAR-120D-L1	Ø145	4-M8x20	Ø19,022,024	64	Ø110	10	130	146.5	266.5	19.5	135.5	195.5
PLAR-120M1-L1	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	146.5	291.5	28	152.5	212.5
PLAR-120D-L2	Ø90	4-M5x12, 4-M6x14	Ø19	45	Ø70	6.5	80	176.5	276.5	7	96	156
	Ø100	4-M6x14	Ø16	45	Ø80	6.5	86	176.5	276.5	8	96	156
PLAR-120M1-L2	Ø115	4-M8x20	Ø19,022	56.5	Ø95	8	100	176.5	281.5	16.5	117.5	177.5
	Ø145	4-M8x20	Ø19,022,024	59	Ø110	11	130	176.5	296.5	19	120	180

- * C1-C7是公制标准马达连接板之尺寸,可根据客户要求单独定做。
- * C1-C7are motor(metric standard) specific dimensions, which could be customised.
- * D-常规孔, M1-极限孔
- * D: Conventional Hole, M1: Limit Hole

外形尺寸图表 / OUTLINE DIMENSION SHEET

PLR-160D(M1)-L1

输入端 / INPUT

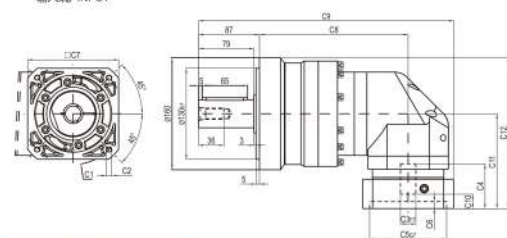


输出端 / OUTPUT

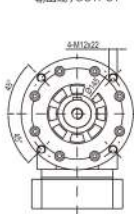


PLR-160D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLR-160D-L1	Ø145	4-M16x20	Ø22, Ø24	72	Ø110	11	130	180	338	19.5	150	230
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	180	357	25	160	240
PLR-160D-L2	Ø145	4-M16x20	Ø19, Ø22, Ø24	64	Ø110	10	130	212.5	364.5	19.5	135.5	215.5
PLR-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	212.5	389.5	28	152.5	232.5

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定制。

* C1-C7 are motor (metric standard) specific dimensions, which could be customised.

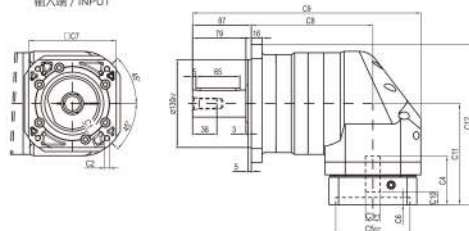
• D-常规孔, M1-极限孔。

• D: Conventional Hole, M1: Limit Hole

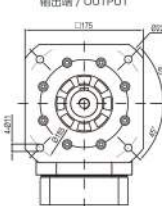
外形尺寸图表 / OUTLINE DIMENSION SHEET

PLAR-160D(M1)-L1

输入端 / INPUT

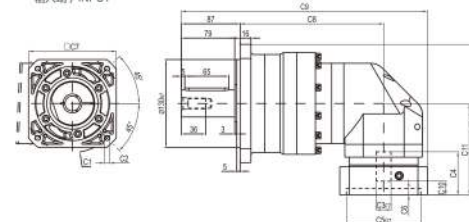


输出端 / OUTPUT

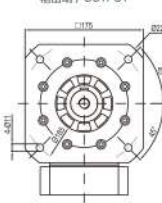


PLAR-160D(M1)-L2

输入端 / INPUT



输出端 / OUTPUT



输出轴径 / Output Diameter



尺寸	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
PLAR-160D-L1	Ø145	4-M16x20	Ø22, Ø24	72	Ø110	11	130	180	338	19.5	150	237.5
	Ø200	4-M12x28	Ø35	82	Ø114.3	8	180	180	357	25	160	247.5
PLAR-160D-L2	Ø145	4-M16x20	Ø19, Ø22, Ø24	64	Ø110	10	130	212.5	364.5	19.5	135.5	223
PLAR-160M1-L2	Ø200	4-M12x28	Ø35	81	Ø114.3	10	180	212.5	389.5	28	152.5	240

* C1-C7是公制标准马达连接板之尺寸, 可根据客户要求单独定制。

* C1-C7 are motor (metric standard) specific dimensions, which could be customised.

• D-常规孔, M1-极限孔。

• D: Conventional Hole, M1: Limit Hole