

PLANET行星®

杭州行星传动设备有限公司

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品质行星 恒久动力
High-quality Planetary, Long-lasting power
ISO9001 CERTIFICATION

PLANET行星® 精密行星齿轮减速机
PRECISION PLANETARY GEAR BOXES



杭州行星传动设备有限公司
HANGZHOU PLANETARY TRANSMISSION EQUIPMENT CO., LTD.





公司使命：精密传动、创新发展。

Company mission: Precision transmission, innovation development.

公司价值观：专业、创新、激情、包容。

Company values: Professional, innovation, passion and tolerance.

HIGH-QUALITY PLANETARY LONG-LASTING POWER

品质行星 恒久动力

杭州行星传动设备有限公司位于杭州钱塘新区，毗邻杭州萧山国际机场和沪杭甬、杭浦高速公路，是一家专业研发设计、制造和销售高精度行星减速机的科技型企业。公司主要生产“行星”、“PLANET”品牌的PL/WPL、PF/WPF、PBL/WPBL、PBF/WPBF、HAB等系列高精度行星减速机，广泛应用于工业机器人、机械手、数控机床、印刷机械、包装机械、自动控制设备、半导体设备、纺织设备以及航天航空等领域。

公司拥有国际先进的生产和检测设备，集聚了一批齿轮行业的优秀人才，公司已通过ISO9001质量体系认证。我们立足于推动中国精密传动机械的发展为己任，致力于工业自动化和智能化领域精密传动的研发和制造。

为您提供高品质的产品和服务是我们不断前行的动力。

让我们携手合作，共同实现中国精密传动机械赶超世界先进水平和打造具有核心价值中国企业之目标。

Hangzhou Planetary Transmission Equipment Co., Ltd., located in Hangzhou Qiantang New District, Adjacent to Hangzhou Xiaoshan International Airport and Shanghai-Hangzhou-Ningbo highway, Hangpu highway, is a scientific and technological enterprise which is professional in researching, designing, manufacturing and selling high precision planetary reducer. PL/WPL, PF/WPF, PBL/WPBL, PBF/WPBF and HAB series high precision planetary reducers of "PLANET" brand are the main products of our company, widely used in the fields of industrial robots, CNC machine tools, printing machinery, packaging machinery, automatic control equipment, semiconductor equipment, textile equipment, aerospace, etc.

We have owned international advanced production and testing equipment and gathered a group of gear transmissions industry talents. Up to now, we have obtained ISO9001 certification. We base ourselves on promoting the development of China precision transmission machinery and devote ourselves to designing and manufacturing precision transmission equipment in the field of industrial automation and intelligent development.

Providing you with products and services of high quality is the motivation for us to move forward.

Let's cooperate with each other to achieve our dreams.

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行星减速机选型表格 Precision planetary gearbox selection table

选型需要的基本信息 Selection of basic information need

项目 Project	指标 Indicators	参数 Parameter
1.电机信息 The motor information		
*电机型号 Motor model (1)		
*电机功率 Motor power (2)		
*电机转速 Motor speed (2)		
2.对行星减速机的要求 Claim to the planetary reducer		
*减速比 Ratio (3)	3~512	
*背隙 Backlash (4)	标准或精密Standard or Precidion	
*使用扭矩 Usage torque (5) (6)	≤额定扭矩Rated torque	
*减速机机座号 Planetary gearbox frame code (7)		
*减速机系列号 Gearboxes code (8)		
径向力 Permitted radial load	标准或自定义Standard or custom	
轴向力 Permitted axial load	标准或自定义Standard or custom	
3.工作环境 The work environment		
每分钟正反转次数 CW & CCW rotation per minute	标准或自定义Standard or custom	
工作环境温度 Working environment temperature	标准或自定义Standard or custom 标准Standard(-25~+90)℃	
防护等级 Protection grade	标准Standard IP54(PL/PF), IP65(HAB)	
4. 其它要求 Other requirements		
输出和输入要求可参考P06, P29, P49中“5”“6”或按要求定制。 Output and input requirements can be a reference P06, P29, P49 in “5”“6” or according to the requirements.		
5. 确定行星减速机型号 Determine the planetary reduction model number		
*行星减速机型号 (9) *Planetary reduction model number (9)		

- 由“*”号标出项是必填项 Marked by “*” item is must fill in
- (1)：用于查询电机输出端尺寸，使能与减速比输入尺寸相匹配。
- (2)：根据P07、P30、P50推荐电机选型对照表来选型。也要用于使用扭矩计算。
- (3)：减速比=n1/n2，若无相应速比可选择最相近速比使用。
- (4)：根据使用要求而定，单向运行可以免除。
- (5)：根据使用的设备需要多少额定扭矩保证运行和电机轴直径使用范围，由此确定减速机机座号和减速机系列号。
- (6)：或由（电机额定扭矩*减速比*效率=使用扭矩）确定，根据P07、P30、P50推荐电机选型对照表来选型和电机轴直径使用范围，由此确定减速机机座号和减速机系列号。
- (7)：根据安装方式来确定，具体可以参考各系列外形尺寸图或P04目录中图样。
- (8)：系列号有60、80、90、115、120、145、160等分别根据产品精度、使用扭矩、刚性来确定，具体可以参考各系列性能参数。
- (9)：根据以上内容即可确定减速机的具体型号，具体编号可参考各系列中P06，P29，P49确定。
- (1)：For checking motor output dimensions, make it matching with gearbox's input
- (2)：Selecting P07, P30, P50 type according to motor selection table, also use for calculating the usage torque.
- (3)：Ratio =n1/n2, if no exactly same ratio, choose the similar one.
- (4)：In accordance with the usage requirements.
- (5)：According to the actual needed rated torque of the equipment and motor shaft diameters range, to determined gearbox's frame size and series number.
- (6)：Or determined by motor rated torque* ratio* efficiency, According to P07, P30, P50 recommended motor selection table and motor shaft diameter range to confirm the gearbox's frame size and series number.
- (7)：With assemble way determined, refer to outline dimensions or P04 for details.
- (8)：Series number 60, 80, 90, 115, 120, 145, 160 determined by products accuracy, usage torque, rigidity. Refer to performance parameter for details.
- (9)：The gearbox's specific type can be determined by above information, refer to P06, P29, P49 for details code.

PL/PF系列代号标识 PL/PF Series Code Identification



PL

80

-

40

P2

S2

OP1

①

②

③

④

⑤

⑥

① 减速机机座代号 Planetary Gearbox Frame Code:

PL: 圆形法兰输出系列 Round flange mounting series

WPL: 直角圆形法兰输出系列 Right-angle round flange mounting series

PF: 方形法兰输出系列 Square flange mounting series

WPF: 直角方形法兰输出系列 Right-angle square flange mounting series

② 减速机系列代号 Gearboxes Code:

60、80、120、160

③ 减速比 Ratio:

一段1- stage: 3、4、5、8、10

二段2- stage: 9、12、15、16、20、25、32、40、64

三段3- stage: 60、80、100、120、160、200、256、320、512

④ 背隙 Backlash:

P1: 精密Precision

P2: 标准Standard

⑤ 输出轴形式 Output shaft type:

S1: 光轴输出轴 Shaft without key

S2: 带键输出轴 Shaft with key

T: 用户定制输出轴 Special require

⑥ 联轴器形式 Input shaft type: (1)

OP1: 整体式紧箍夹壳联轴器 Integral Hoop clamp coupling

OP2: 分体式紧箍夹壳联轴器 Split type Hoop clamp coupling

OP3: 带键槽整体式紧箍夹壳联轴器 Integral Hoop clamp coupling with keyway

OP4: 加强型整体式紧箍夹壳联轴器 (频繁正反转) Reinforcement Integral Hoop clamp coupling (suitable for frequently CW and CCW)

OP5: 只有键槽连接联轴器 Only keyway connect coupling

OP6: 其它方式适配联轴器 Other type connect coupling

(1) : 联轴器标准配置为OP1。
(1) : Coupling standard configure OP1 .

PL/PF系列按伺服电机功率选型推荐表 (输入转速为3000rpm)
PL/PF Series according to the servo motor power selection recommendation table
(Input speed 3000rpm)

功率 Power	PL/PF60--速比 (2) PL/PF60-Ratio (2)	PL/PF80--速比 (2) PL/PF80-Ratio (2)	PL/PF120--速比 (2) PL/PF120-Ratio (2)	PL/PF160--速比 (2) PL/PF160-Ratio (2)
50W	64、160、200、256			
100W	3、4、5、8、10、9、12、15、16、20、25、32、40、60、80、100、120	64、160、200、256、320		
200W	3、4、5、8、10、9、12、15、16、20、25、32、40、60	80、100、120、160		
400W	3、4、5、8、10、9、12、15、16、20、25	32、40、60、80	64、100、120、160	
750W	(3、4、5、9、12、16)	3、4、5、8、10、9、12、15、16、20、25、32、40	60、80、100	64、120、160、200、256
1000W		(3、4、5、8、9、12、15、16、20、25、32)	3、4、5、8、10、9、12、15、16、20、25、32、40、60	64、80、100、120、160、200、256
1500W		(3、4、5、8、9、12、15、16、20)	3、4、5、8、10、9、12、15、16、20、25、32、40	64、60、80、100、120、160
2000W			3、4、5、8、10、9、12、15、16、20、25、32	40、60、80、100
2500W			3、4、5、8、9、12、15、16、20、25	(3、4、5、8、10、9、12、15、16、25)、32、40、60、80、100
3000W			(3、4、5、8、9、12、15、16、20)	3、4、5、8、10、9、12、15、16、25、32、40、60、80
3500W			(3、4、5、8、9、12、15、16)	3、4、5、8、10、9、12、15、16、20、25、32、40、60
4500W				3、4、5、8、10、9、12、15、16、20、25、32、40
5500W				3、4、5、8、10、9、12、15、16、20、25、32
7500W				3、4、5、8、9、12、15、16、20、25

- (1) : 对照表中 “ () ” 为次选速比。 “ () ” is second-choice ratio。
- (2) : 减速机使用≤扭矩额定扭矩时，可选择相同机座中的相应速比。
When Gearbox' operation torque≤Rated torque, select the ratio accordingly in same frame.
- (3) : 减速机适用电机的轴径范围，见下列表格 Suitable motor shaft range, see below table:

减速机系列 Planetary gearbox series	PL/PF	PL/PF 60	PL/PF 80	PL/PF 120	PL/PF 160
电机轴径 Motor shaft dianeter	mm	6≤d≤19	8≤d≤22	14≤d≤35	19≤d≤42

PL/PF(60)系列性能参数表 PL/PF(60) Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	30	60	0.135	400	500	400 (3)	1000	3.67
	4	40	80	0.093	400	500	400 (3)	750	4.89
	5	37	74	0.078	400	500	400 (3)	600	6.11
	8	18	36	0.065	400	500	400 (3)	375	9.78
	10	13	26	0.054	400	500	400 (3)	300	12.22
2	9	30	60	0.131	400	500	400 (3)	333.33	10.77
	12	30	60	0.093	400	500	400 (3)	250	14.36
	15	30	60	0.078	400	500	400 (3)	200	17.95
	16	40	80	0.088	400	500	400 (3)	187.5	19.15
	20	40	80	0.075	400	500	400 (3)	150	23.94
	25	37	74	0.075	400	500	400 (3)	120	29.92
	32	40	80	0.064	400	500	400 (3)	93.75	38.30
	40	37	74	0.064	400	500	200 (3)	75	23.94
3	64	18	36	0.064	400	500	50 (3)	46.87	9.58
	60	40	80	0.130	400	500	200 (3)	50	34.38
	80	40	80	0.075	400	500	100 (3)	37.5	22.92
	100	40	80	0.075	400	500	100 (3)	30	28.65
	120	37	74	0.64	400	500	100 (3)	25	34.38
	160	40	80	0.064	400	500	50 (3)	18.75	18.75
	200	37	74	0.064	400	500	50 (3)	15	28.65
	256	40	80	0.064	400	500	50 (3)	11.72	36.67
	320	37	74	0.064	400	500	(3)	9.37	≤37
	512	18	36	0.064	400	500	(3)	5.86	≤18

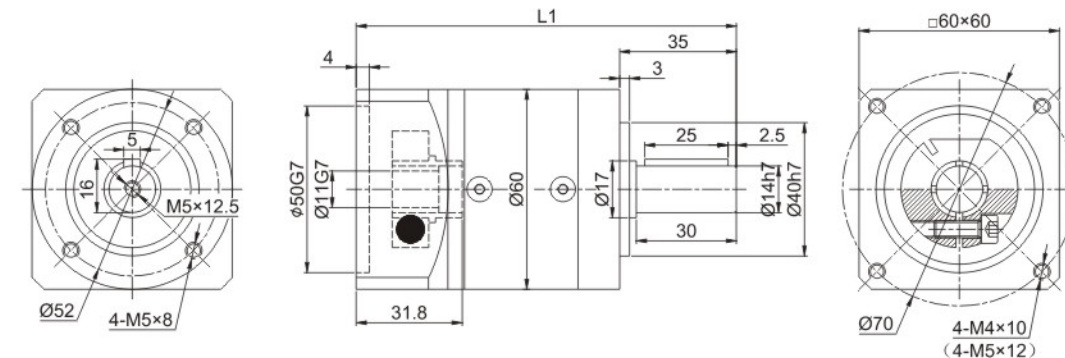
段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤58dB(A) (5)		≤8arcmin	2,0000h	η ≥96%	2.3 N.m/arcmin	IP54	0.9 Kg
2			≤12arcmin		η ≥94%			1.1 Kg
3			≤15arcmin		η ≥90%			1.3 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机选型依据的, 见P07的PL/PF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PL/PF selection table in P07.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

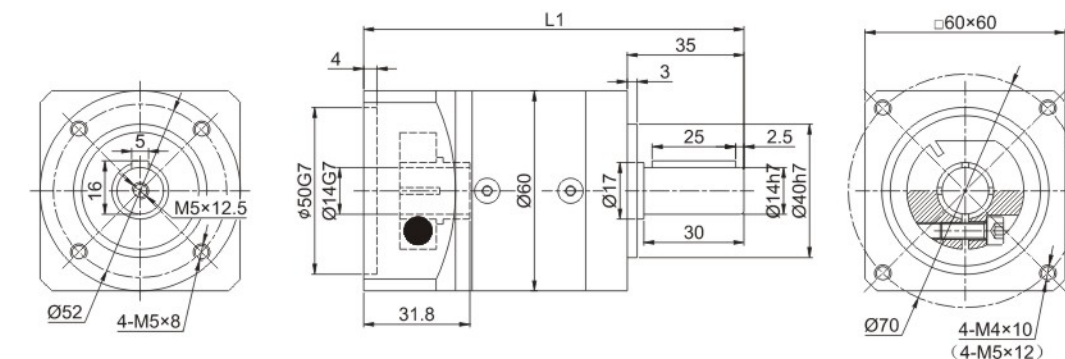
PL60系列外形尺寸图 PL60 Series Outline Dimensions

200W外形尺寸图 Outline dimensions



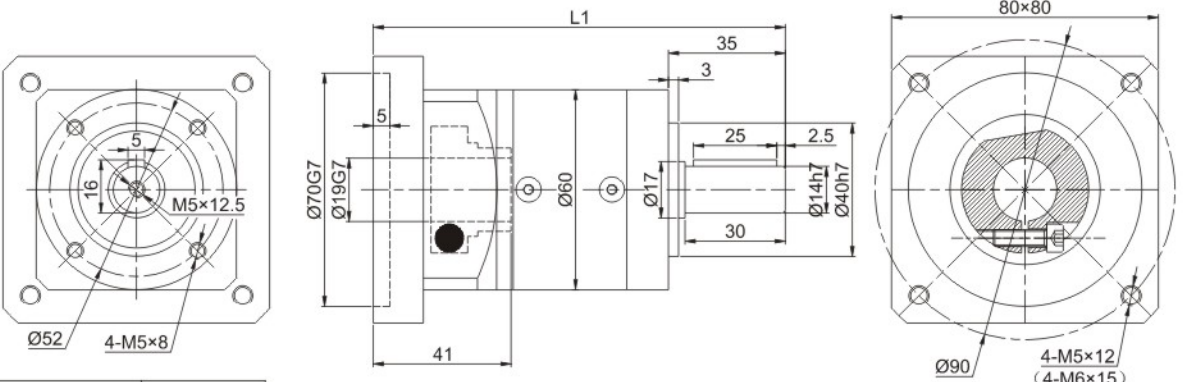
总长 Total length	1-Stage	2-Stage	3-Stage
L1	114	127	139.5

400W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage	3-Stage
L1	114	127	139.5

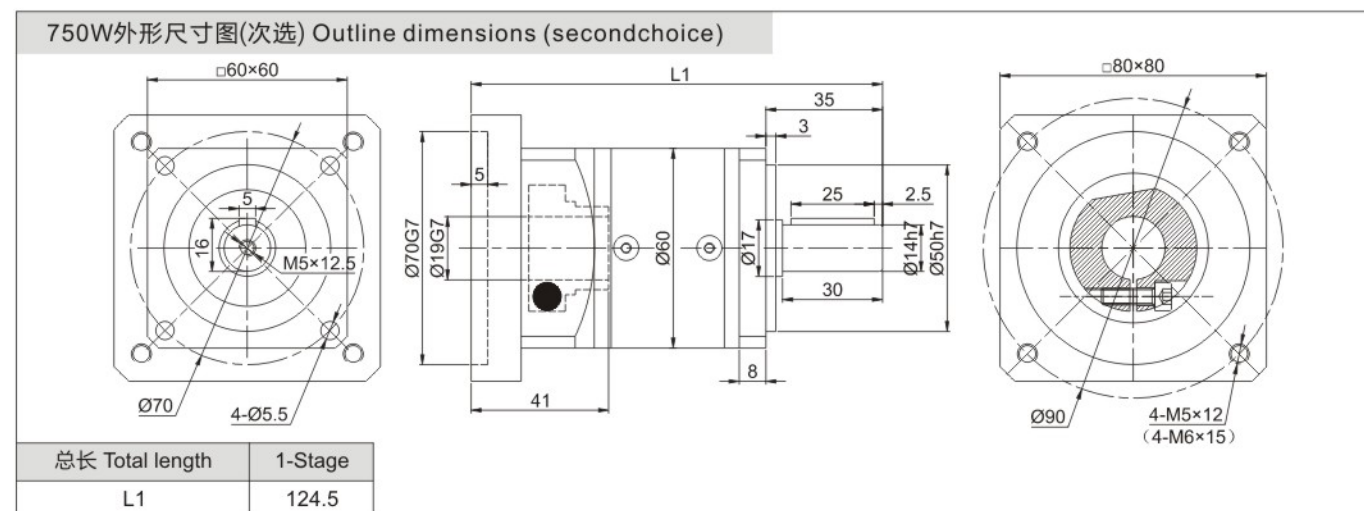
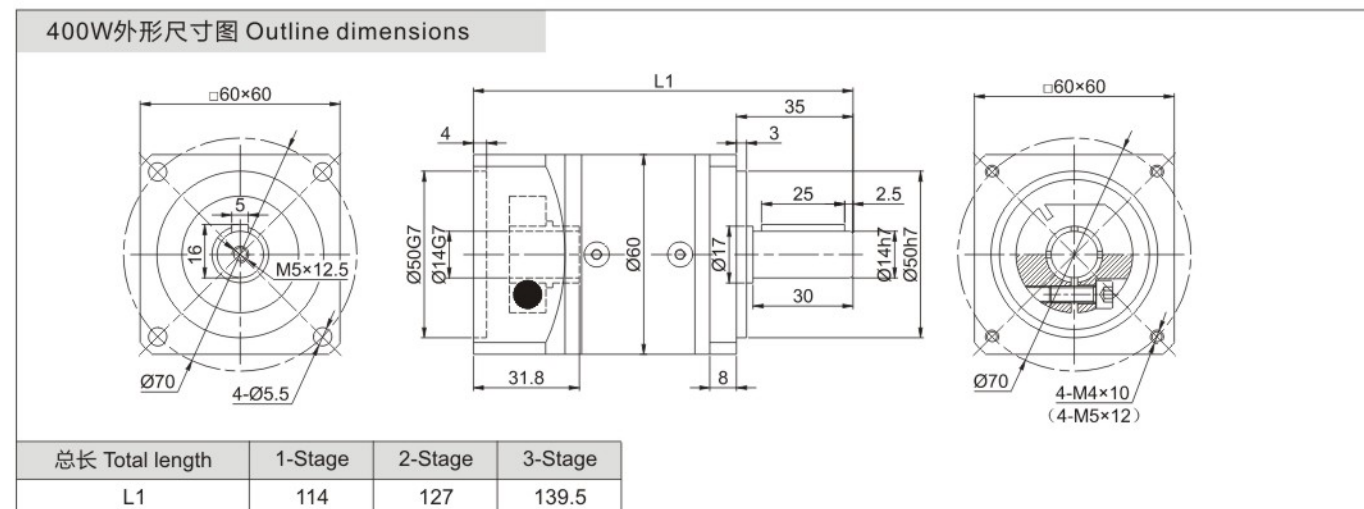
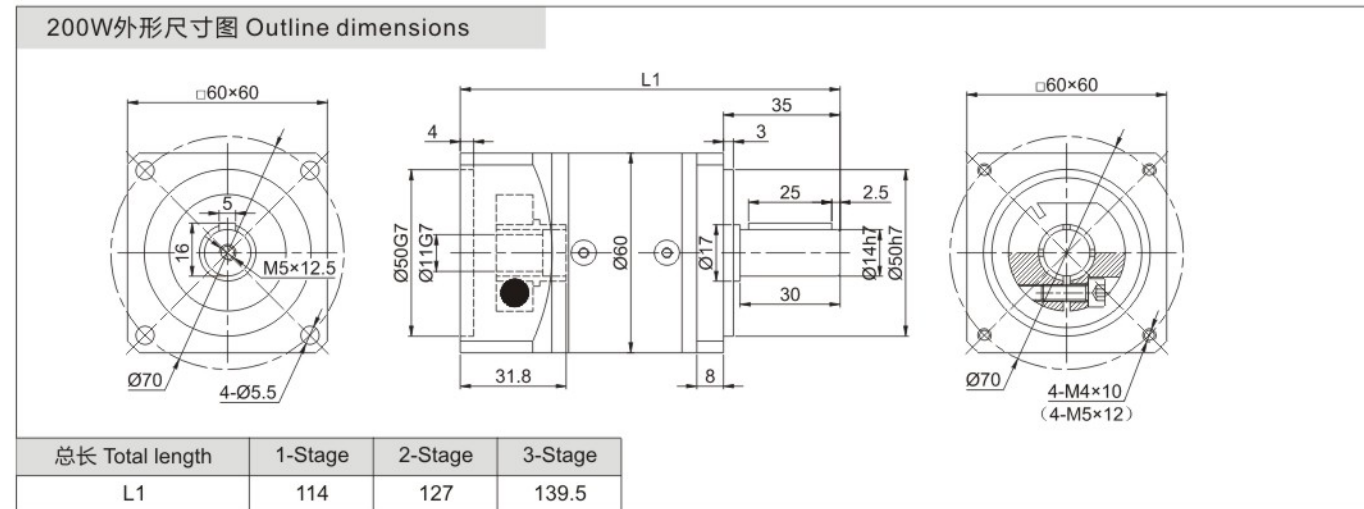
750W外形尺寸图(次选) Outline dimensions (secondchoice)



总长 Total length	1-Stage
L1	124.5

- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

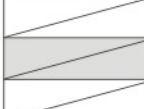
PF60系列外形尺寸图 PF60 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型为依据, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PL/PF(80)系列性能参数表 PL/PF(80) Series Performance Parameter Table

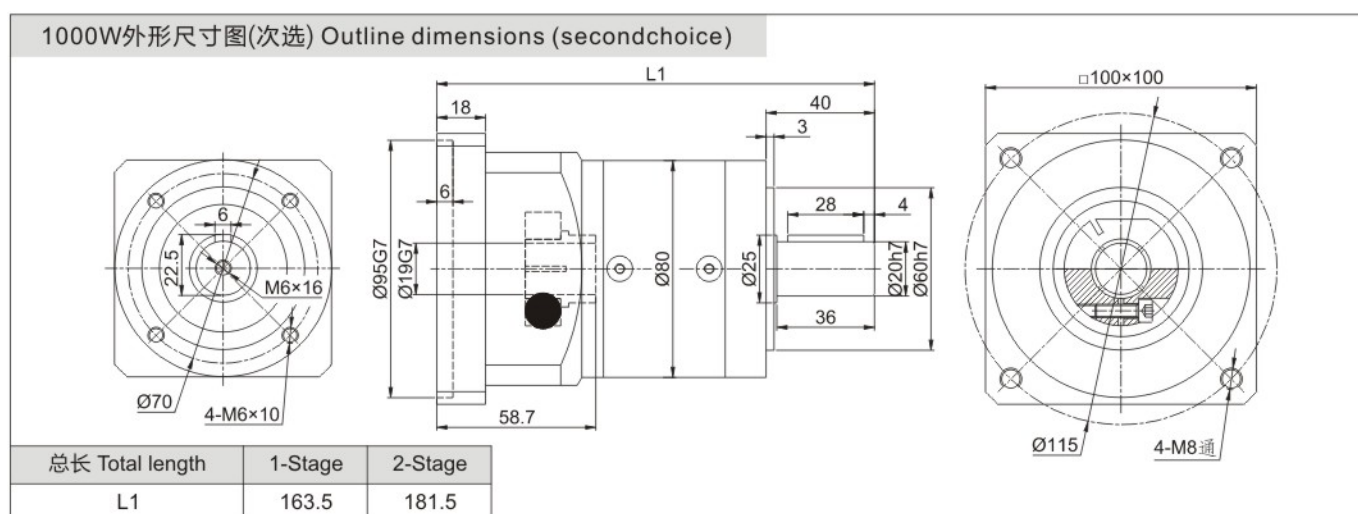
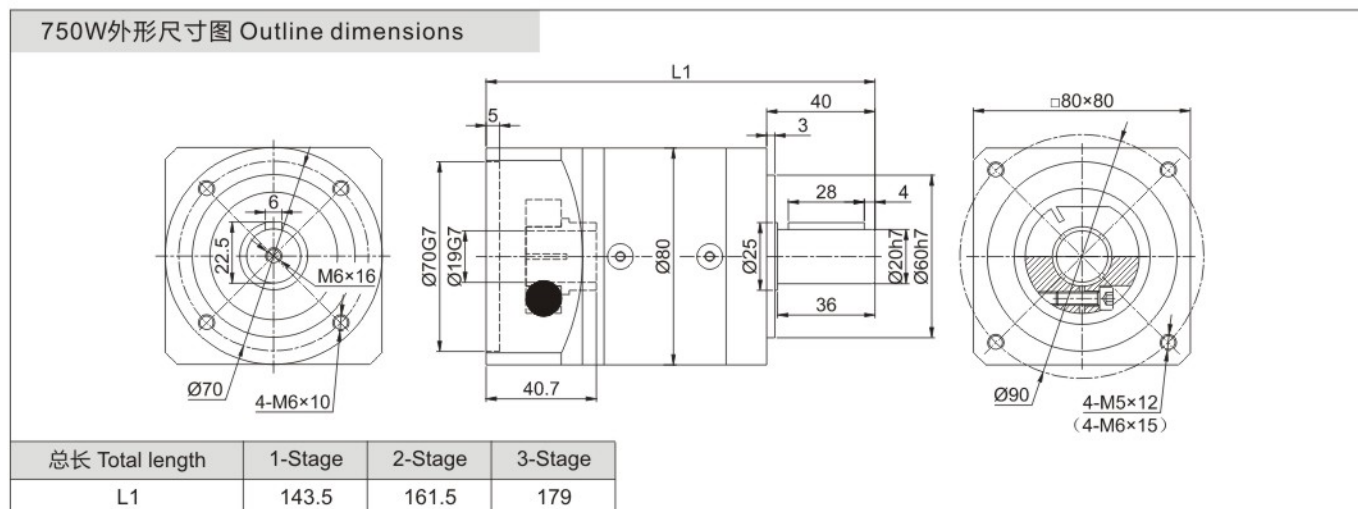
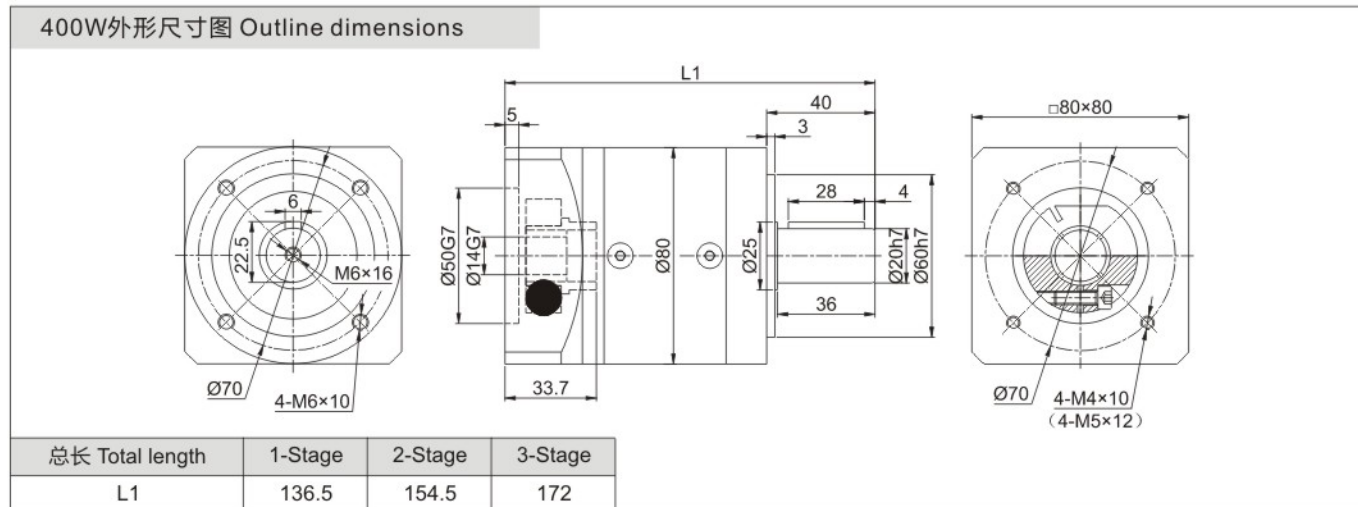
减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	70	140	0.77	750	1000	750 (3)	1000	6.88
	4	110	220	0.52	750	1000	750 (3)	750	9.17
	5	105	210	0.45	750	1000	750 (3)	600	11.46
	8	43	86	0.39	750	1000	750 (3)	375	18.34
	10	27	54	0.34	750	1000	750 (3)	300	22.92
2	9	70	140	0.74	750	1000	750 (3)	333.33	20.20
	12	70	140	0.52	750	1000	750 (3)	250	26.93
	15	70	140	0.45	750	1000	750 (3)	200	33.66
	16	110	220	0.50	750	1000	750 (3)	187.5	35.91
	20	110	220	0.44	750	1000	750 (3)	150	44.89
	25	105	210	0.44	750	1000	750 (3)	120	56.11
	32	110	220	0.39	750	1000	750 (3)	93.75	71.82
	40	105	210	0.39	750	1000	750 (3)	75	89.77
	64	43	86	0.39	750	1000	200 (3)	46.87	38.30
	60	110	220	0.70	750	1000	400 (3)	50	68.76
3	80	110	220	0.50	750	1000	400 (3)	37.5	91.68
	100	110	220	0.44	750	1000	200 (3)	30	57.30
	120	105	210	0.39	750	1000	200 (3)	25	68.76
	160	110	220	0.39	750	1000	200 (3)	18.75	91.68
	200	105	210	0.39	750	1000	100 (3)	15	57.30
	256	110	110	0.39	750	1000	100 (3)	11.72	73.34
	320	105	105	0.39	750	1000	100 (3)	9.37	91.68
	512	43	86	0.39	750	1000	(3)	5.86	≤43

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤60dB(A) (5)		≤8arcmin	2,0000h	η ≥ 96%	5.8 N.m/arcmin	IP54	2.2 Kg
2			≤12arcmin		η ≥ 94%			2.7 Kg
3			≤15arcmin		η ≥ 90%			3.2 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机选型为依据, 见P07的PL/PF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

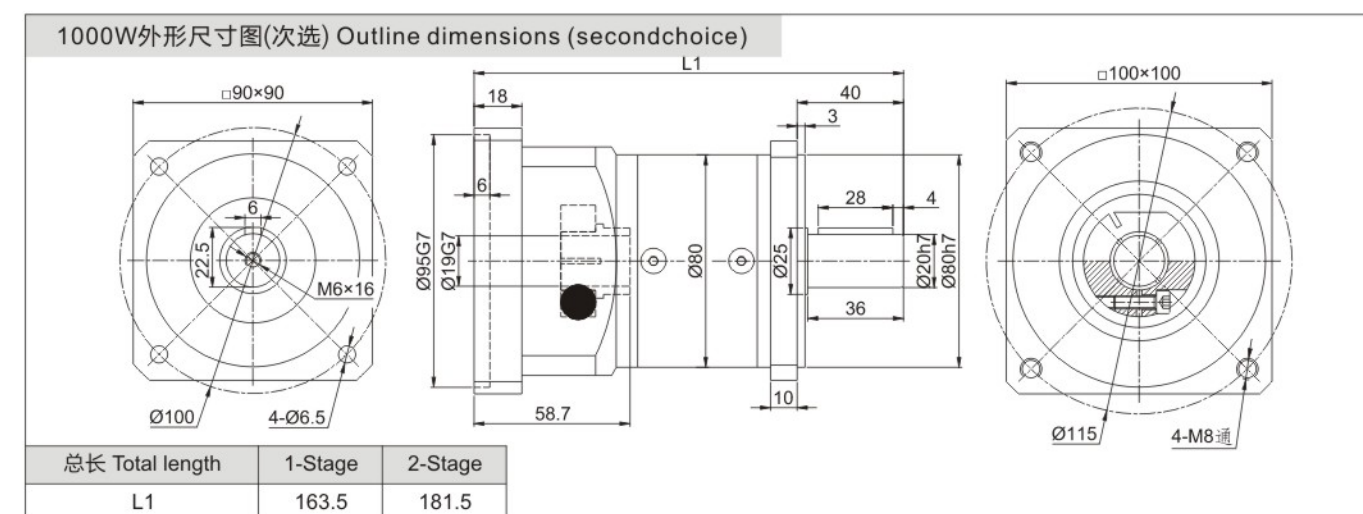
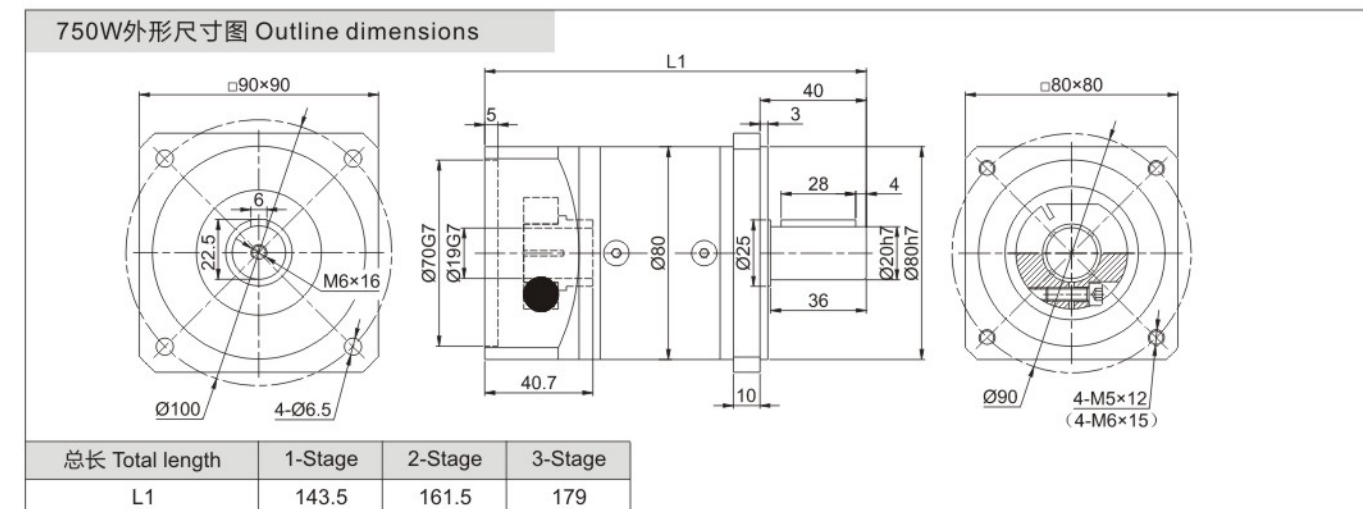
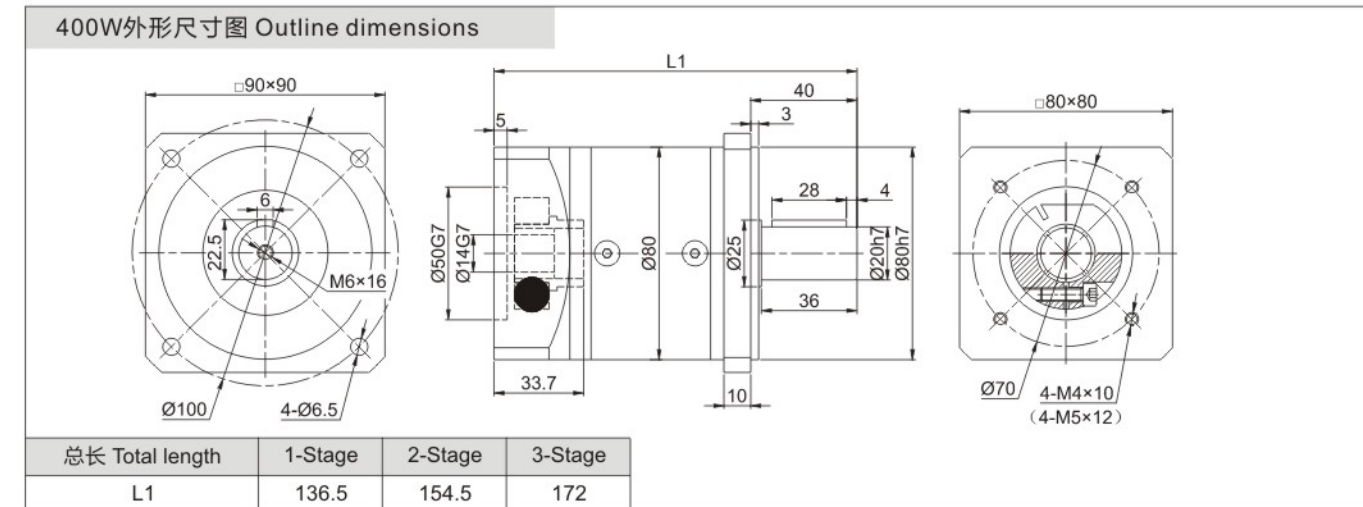
- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PL/PF selection table in P07.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

PL80系列外形尺寸图 PL80 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PF80系列外形尺寸图 PF80 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PL/PF(120)系列性能参数表 PL/PF(120) Series Performance Parameter Table

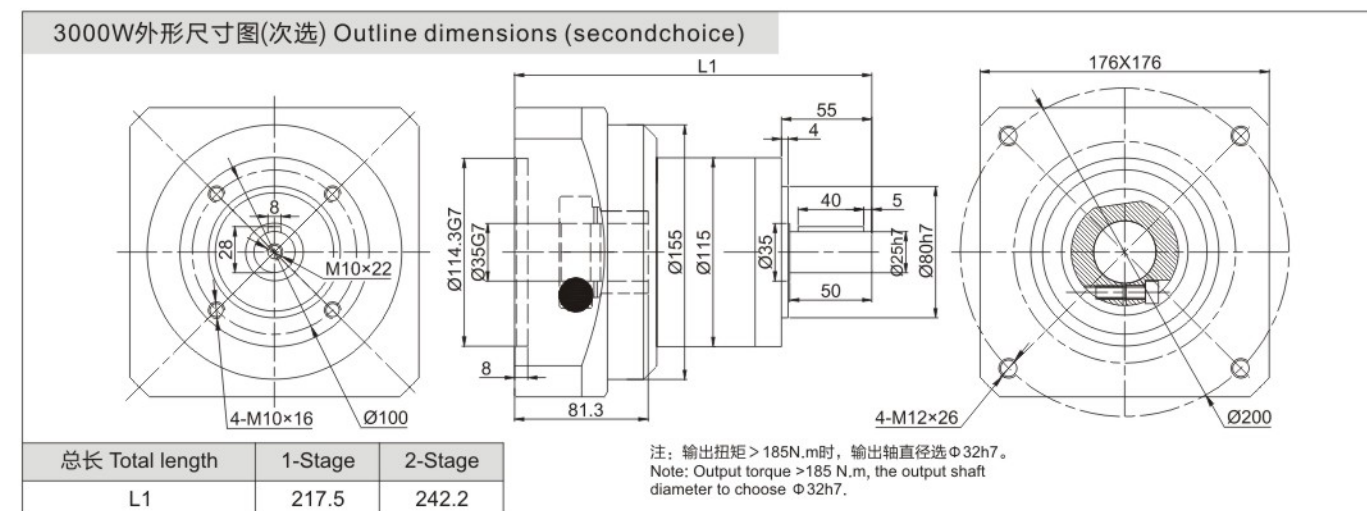
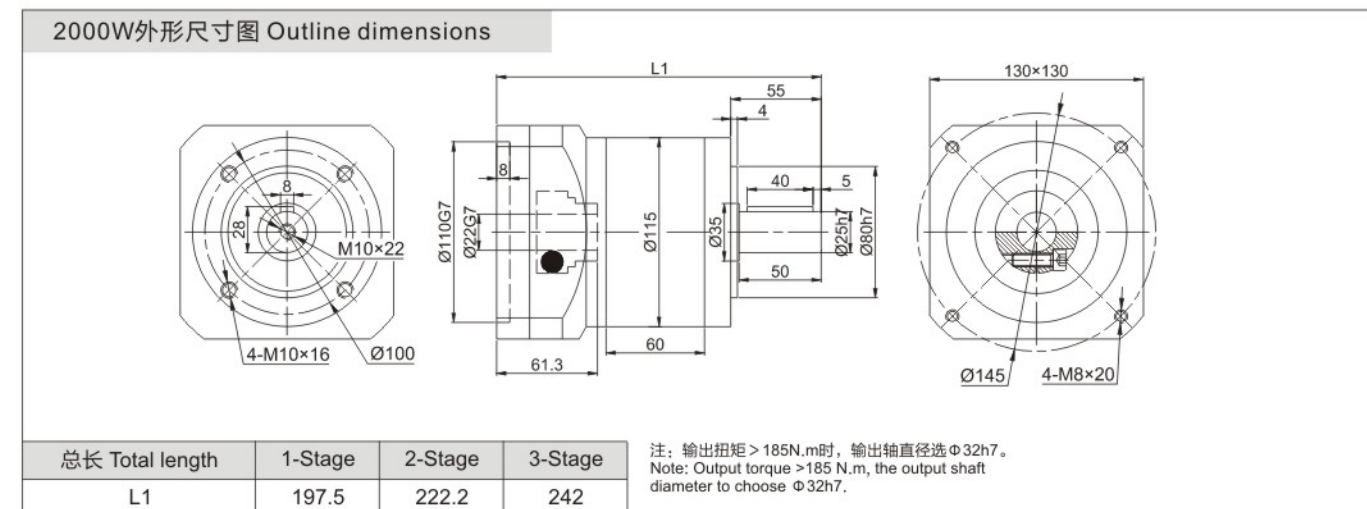
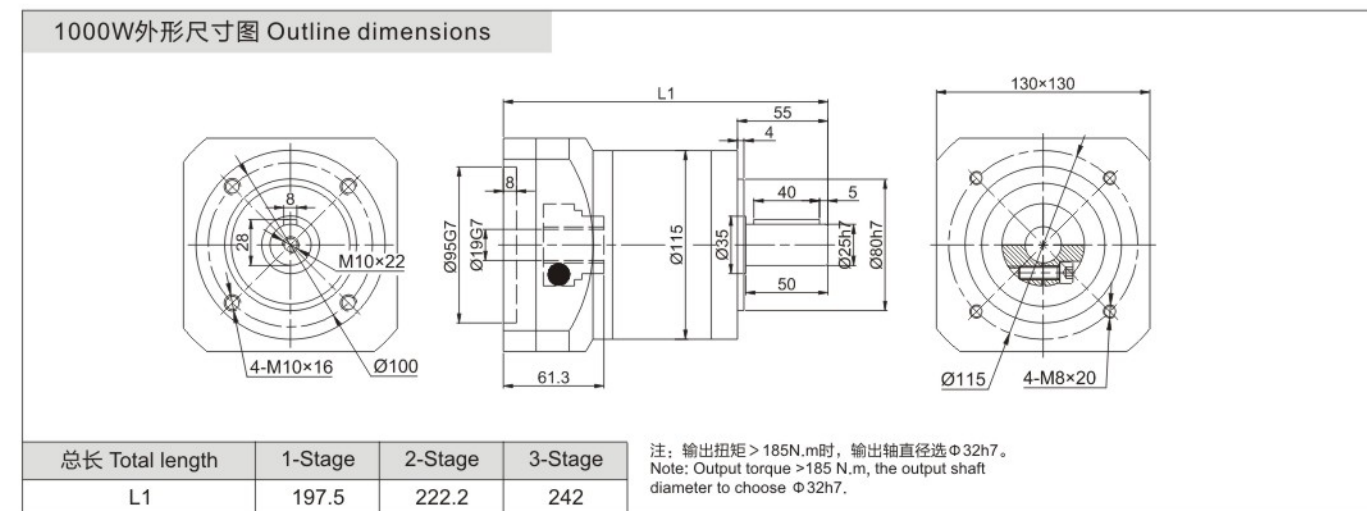
减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	马达功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	150	300	2.63	1750	2500	2000 (3)	1000	18.34
	4	220	440	1.79	1750	2500	2000 (3)	750	24.45
	5	185	370	1.53	1750	2500	2000 (3)	600	30.56
	8	100	200	1.32	1750	2500	2000 (3)	375	48.90
	10	63	126	1.14	1750	2500	2000 (3)	300	61.12
2	9	150	300	2.56	1750	2500	2000 (3)	333.33	53.86
	12	220	440	2.53	1750	2500	2000 (3)	250	71.82
	15	185	370	2.53	1750	2500	2000 (3)	200	89.77
	16	220	440	1.50	1750	2500	2000 (3)	187.5	95.75
	20	220	440	1.49	1750	2500	2000 (3)	150	119.69
	25	185	370	1.49	1750	2500	2000 (3)	120	149.62
	32	220	440	1.30	1750	2500	2000 (3)	93.75	191.51
	40	185	370	1.30	1750	2500	1500 (3)	75	179.54
3	64	100	200	1.30	1750	2500	400 (3)	46.87	76.6
	60	220	440	2.57	1750	2500	1000 (3)	50	171.9
	80	220	440	1.50	1750	2500	750 (3)	37.5	171.9
	100	220	440	1.49	1750	2500	750 (3)	30	214.88
	120	185	370	1.30	1750	2500	400 (3)	25	137.52
	160	220	440	1.30	1750	2500	400 (3)	18.75	183.36
	200	185	370	1.30	1750	2500	(3)	15	≤185
	256	220	440	1.30	1750	2500	(3)	11.72	≤220
	320	185	370	1.30	1750	2500	(3)	9.37	≤185
	512	100	200	1.30	1750	2500	(3)	5.86	≤100

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Tosional stiffness	防护等级 Degree of protection	重量 Weirht
1	≦65dB(A) (5)	≦5arcmin	≦8arcmin	2,0000h	η ≧96%	14.5 N.m/arcmin	IP54	7.6 Kg
2		≦8arcmin	≦12arcmin		η ≧94%			9.0 Kg
3		≦10arcmin	≦15arcmin		η ≧90%			10.4 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机选型依据的, 见P07的PL/PF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许可力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

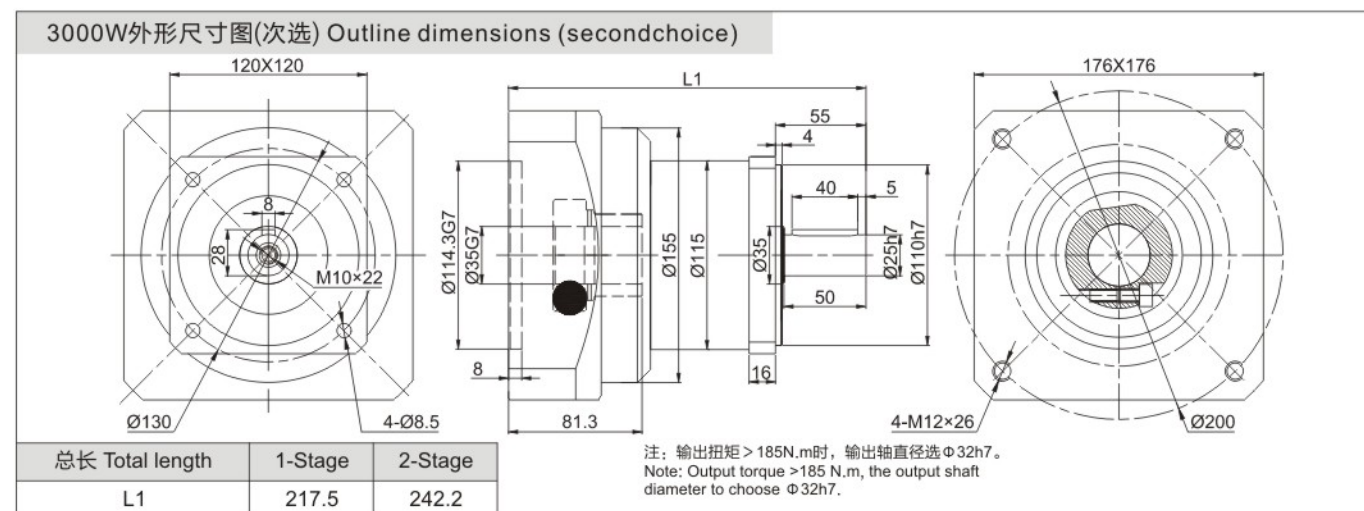
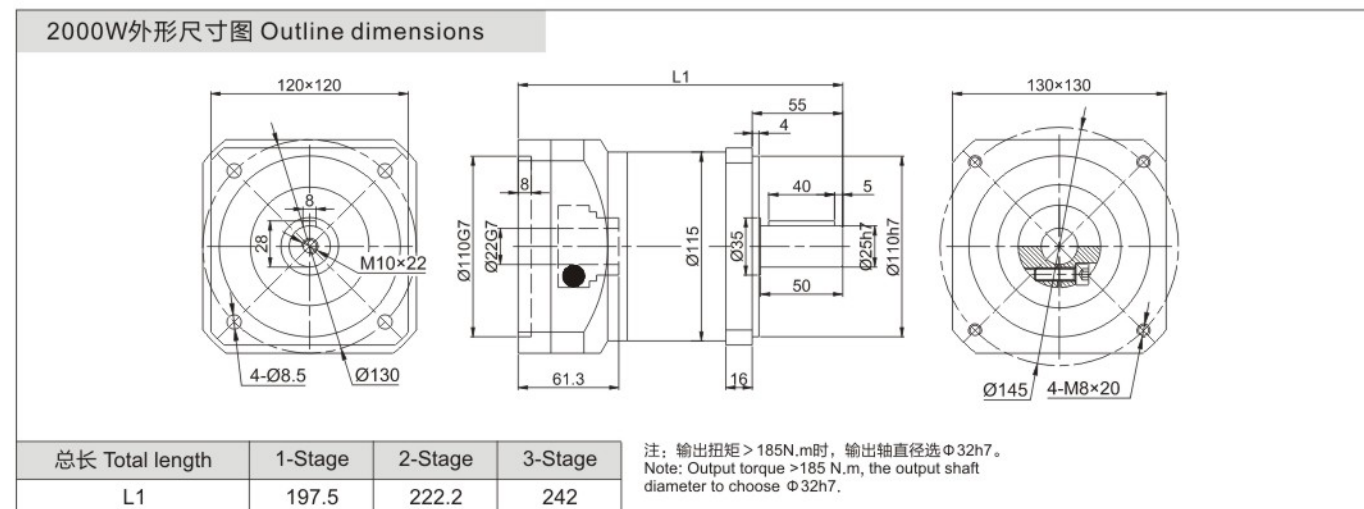
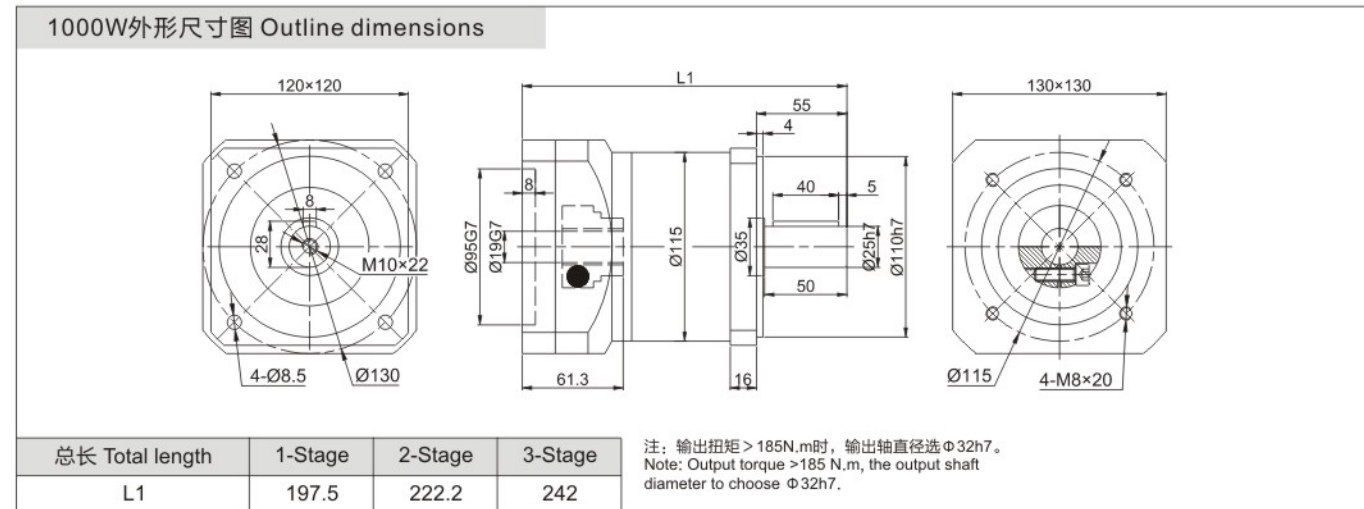
- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PL/PF selection table in P07.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

PL120系列外形尺寸图 PL120 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PF120系列外形尺寸图 PF120 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号，图纸以外形尺寸图确认为准。
(2): 具体以电机选型为依据，见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PL/PF(160)系列性能参数表 PL/PF(160) Series Performance Parameter Table

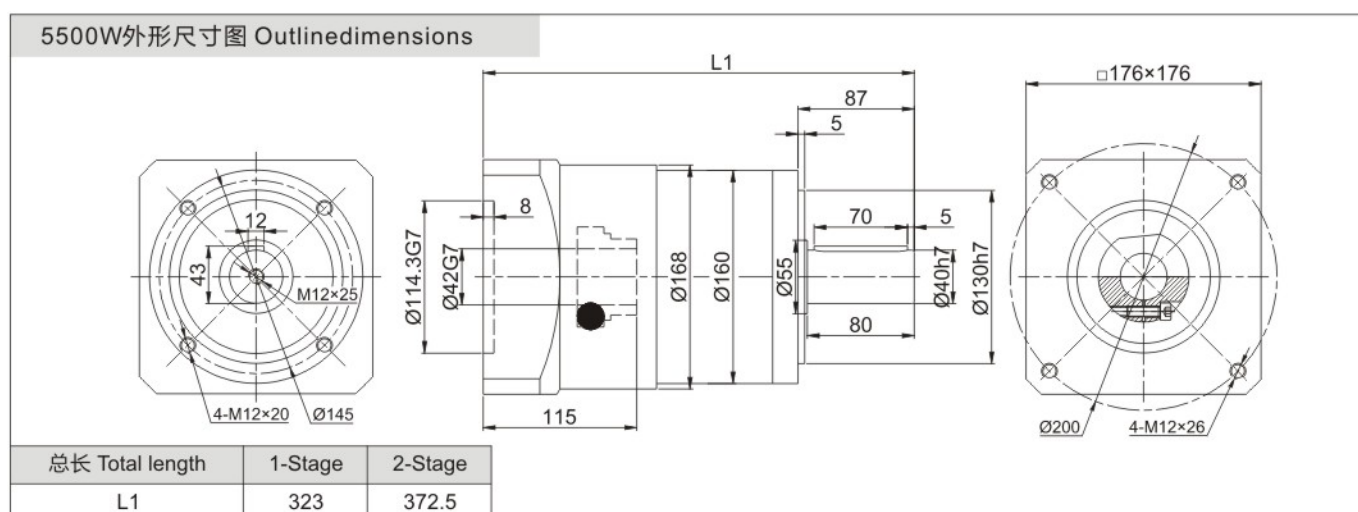
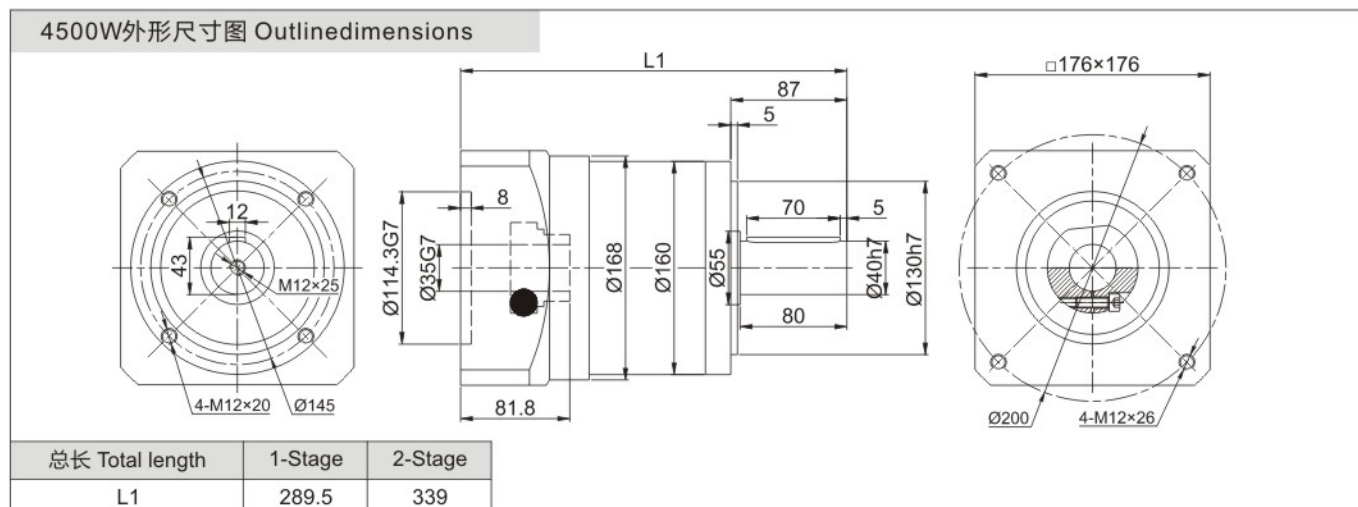
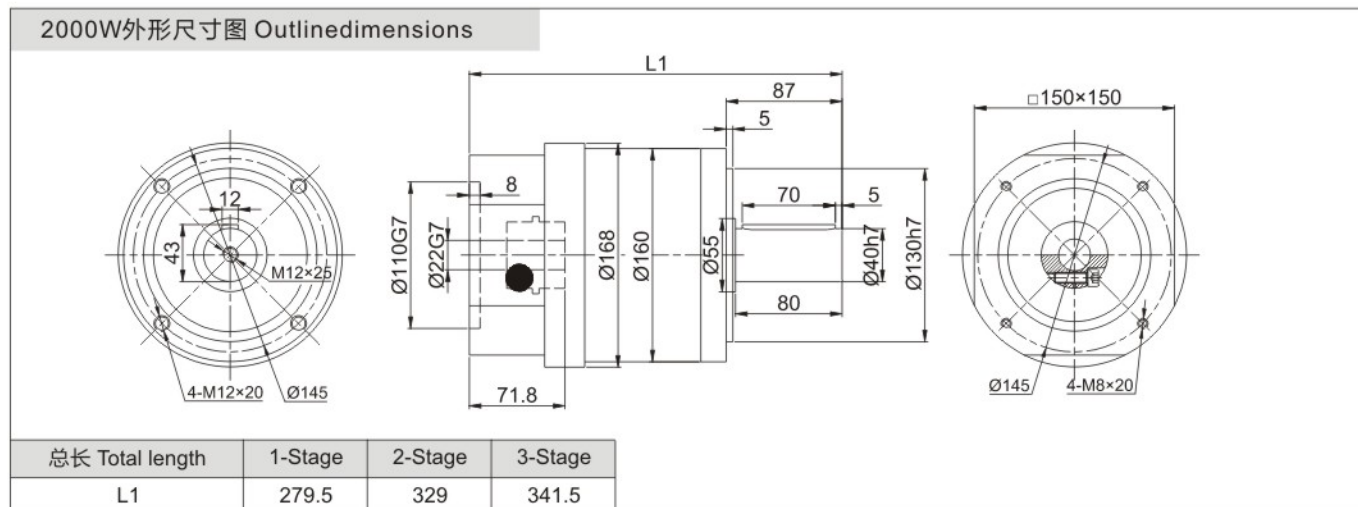
减速机性能参数 Planetary gearbox performance parameter							适配电机（输入转速3000rpm）时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	540	1080	12.14	5000	7000	4500 (3)	1000	41.26
	4	720	1440	7.78	5000	7000	4500 (3)	750	55.01
	5	600	1200	6.07	5000	7000	4500 (3)	600	68.76
	8	320	640	4.63	5000	7000	4500 (3)	375	110.02
	10	200	400	3.52	5000	7000	4500 (3)	300	137.52
2	9	540	1080	12.14	5000	7000	4500 (3)	333.33	121.19
	12	720	1440	12.14	5000	7000	4500 (3)	250	161.59
	15	600	1200	12.14	5000	7000	4500 (3)	200	201.98
	16	720	1440	7.47	5000	7000	4500 (3)	187.5	215.45
	20	720	1440	6.65	5000	7000	4500 (3)	150	269.31
	25	600	1200	5.81	5000	7000	4500 (3)	120	336.64
	32	720	1440	4.5	5000	7000	4500 (3)	93.75	430.90
	40	600	1200	4.5	5000	7000	4500 (3)	75	538.62
	64	320	640	4.5	5000	7000	1500 (3)	46.87	287.26
	60	720	1440	12.14	5000	7000	3500 (3)	50	601.65
3	80	720	1440	6.07	5000	7000	3000 (3)	37.5	687.60
	100	720	1440	6.07	5000	7000	2500 (3)	30	716.25
	120	600	1200	4.5	5000	7000	1500 (3)	25	515.70
	160	720	1440	4.5	5000	7000	1500 (3)	18.75	687.60
	200	600	1200	4.5	5000	7000	1000 (3)	15	573.00
	256	720	1440	4.5	5000	7000	750 (3)	11.72	550.08
	320	600	1200	4.5	5000	7000	(3)	9.37	≤600
	512	320	640	4.5	5000	7000	(3)	5.86	≤320

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional sitffness	防护等级 Degree of protection	重量 Weirht
1	≦70dB(A) (5)	≦5arcmin	≦8arcmin	2,0000h	η ≧96%	37.5 N.m/arcmin	IP54	23 Kg
2		≦8arcmin	≦12arcmin		η ≧94%			29.5 Kg
3		≦10arcmin	≦15arcmin		η ≧90%			36 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩，具体以电机选型为依据，见P07的PL/PF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时，距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

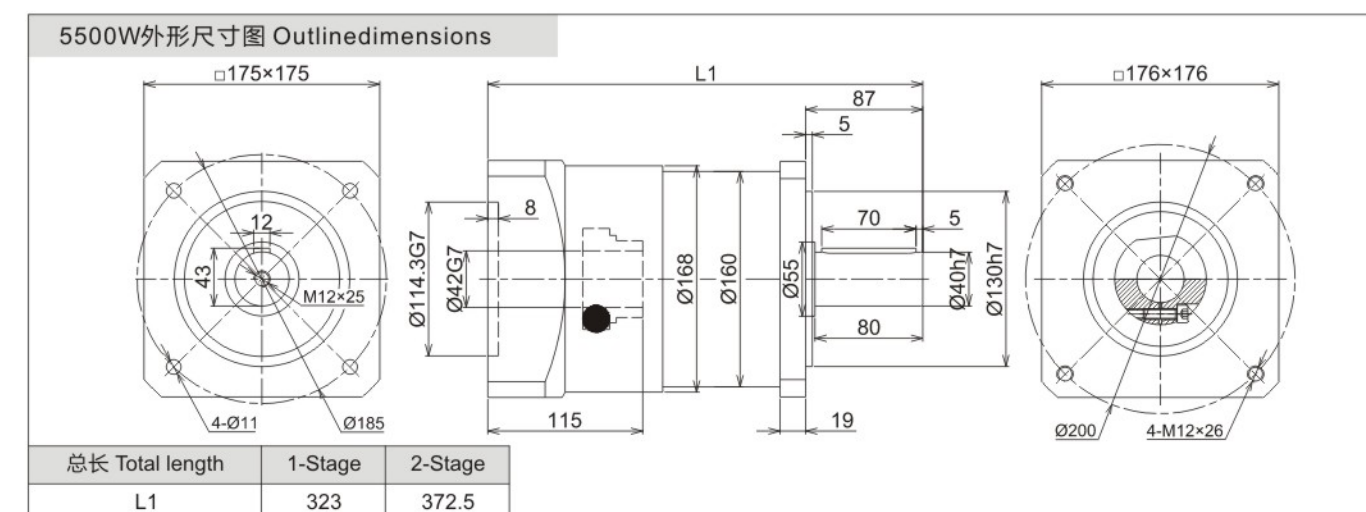
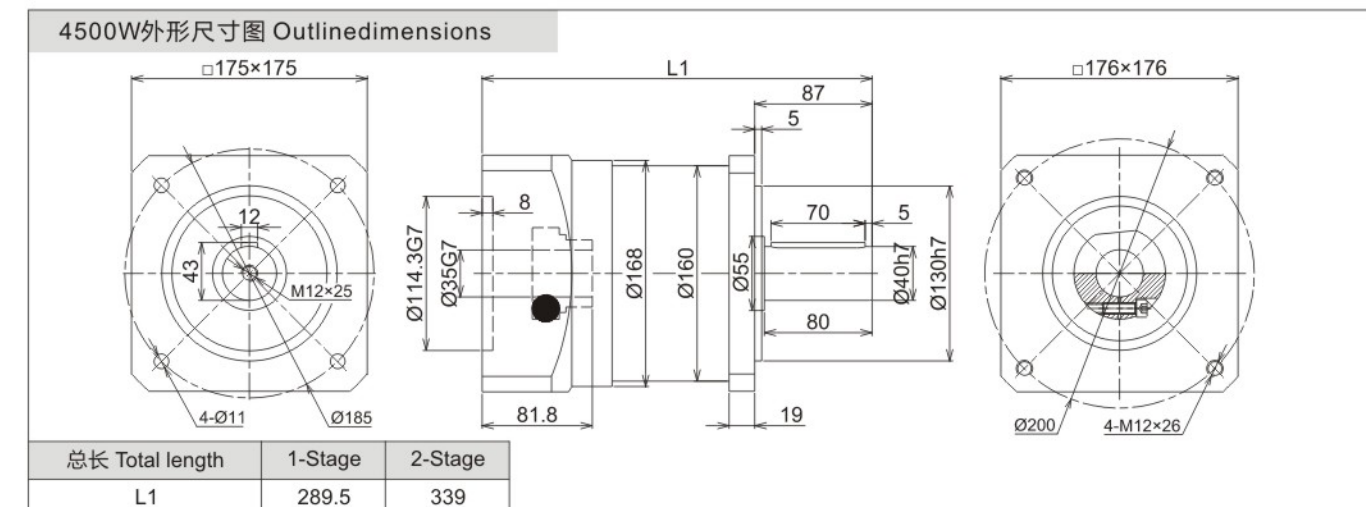
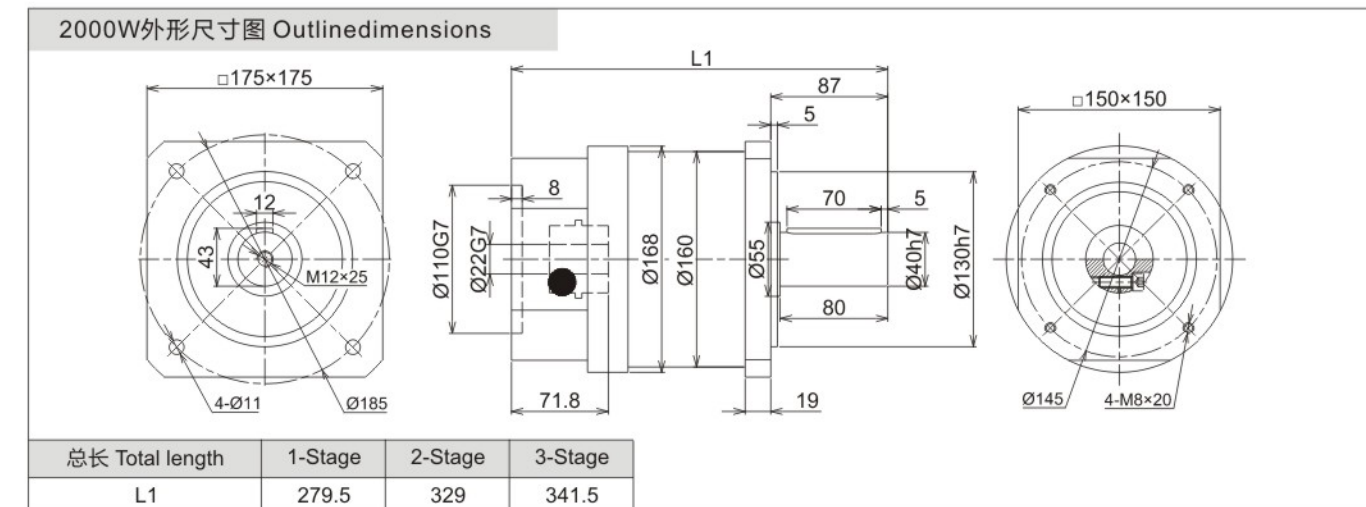
- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PL/PF selection table in P07.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

PL160系列外形尺寸图 PL160 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PF160系列外形尺寸图 PF160 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

减速机性能参数 Planetary gearbox performance parameter							适配电机（输入转速3000rpm）时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	30	60	0.246	400	500	400 (3)	1000	3.67
	4	40	80	0.204	400	500	400 (3)	750	4.89
	5	37	74	0.189	400	500	400 (3)	600	6.11
	8	18	36	0.176	400	500	400 (3)	375	9.78
	10	13	26	0.175	400	500	400 (3)	300	12.22
2	9	30	60	0.242	400	500	400 (3)	333.33	10.77
	12	30	60	0.238	400	500	400 (3)	250	14.36
	15	30	60	0.189	400	500	400 (3)	200	17.95
	16	40	80	0.199	400	500	400 (3)	187.5	19.15
	20	40	80	0.186	400	500	400 (3)	150	23.94
	25	37	74	0.186	400	500	400 (3)	120	29.92
	32	40	80	0.175	400	500	400 (3)	93.75	38.30
	40	37	74	0.175	400	500	200 (3)	75	23.94
	64	18	36	0.175	400	500	50 (3)	46.87	9.58
3	60	40	80	0.187	400	500	200 (3)	50	34.38
	80	40	80	0.186	400	500	100 (3)	37.5	22.92
	100	40	80	0.175	400	500	100 (3)	30	28.65
	120	37	74	0.175	400	500	100 (3)	25	34.38
	160	40	80	0.175	400	500	50 (3)	18.75	18.75
	200	37	74	0.175	400	500	50 (3)	15	28.65
	256	40	80	0.175	400	500	50 (3)	11.72	36.67
	320	37	74	0.175	400	500	(3)	9.37	≤37
	512	18	36	0.175	400	500	(3)	5.86	≤18

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weirht
1	≤70dB(A) (5)		≤16arcmin	2,0000h	η ≥94%	2.3 N.m/arcmin	IP54	1.7 Kg
2			≤20arcmin		η ≥92%			1.9 Kg
3			≤23arcmin		η ≥88%			2.1 Kg

(1) : Stage
(2) : Ratio
(3) : When Gearbox' operation torque $\leq$ Rated torque, type-selection is based on motor parameter. See PL/PF selection table in P07.
(4) : Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5) : Noise level is tested based on input speed 3000rpm and 1m distance.
(6) : Backlash is test by 2% of rated torque.

200W外形尺寸图 Outline dimensions

Technical drawing of the 200W motor showing front, side, and rear views with dimensions.

- Front View:** Shows a circular motor body with a diameter of $\varnothing 52$. The total width is 60 mm and the total height is 88.5 mm. The mounting flange has four M5x8 screws. The central shaft has a diameter of $\varnothing 16$ mm and a length of 5 mm. The motor body has a diameter of $\varnothing 50G7$ and a mounting hole of $\varnothing 11G7$.
- Side View:** Shows the motor body with a diameter of $\varnothing 60$ and a total length of L1. The mounting flange has a diameter of $\varnothing 17$ and a length of 35 mm. The motor body has a diameter of $\varnothing 14H7$ and a length of 25 mm. The mounting flange has a diameter of $\varnothing 40H7$ and a length of 30 mm.
- Rear View:** Shows the motor body with a diameter of $\varnothing 70$ and a total length of L1. The mounting flange has a diameter of $\varnothing 17$ and a length of 35 mm. The motor body has a diameter of $\varnothing 14H7$ and a length of 25 mm. The mounting flange has a diameter of $\varnothing 40H7$ and a length of 30 mm.

总长 Total length	1-Stage	2-Stage	3-Stage
L1	147	160	172.5

400W外形尺寸图 Outline dimensions

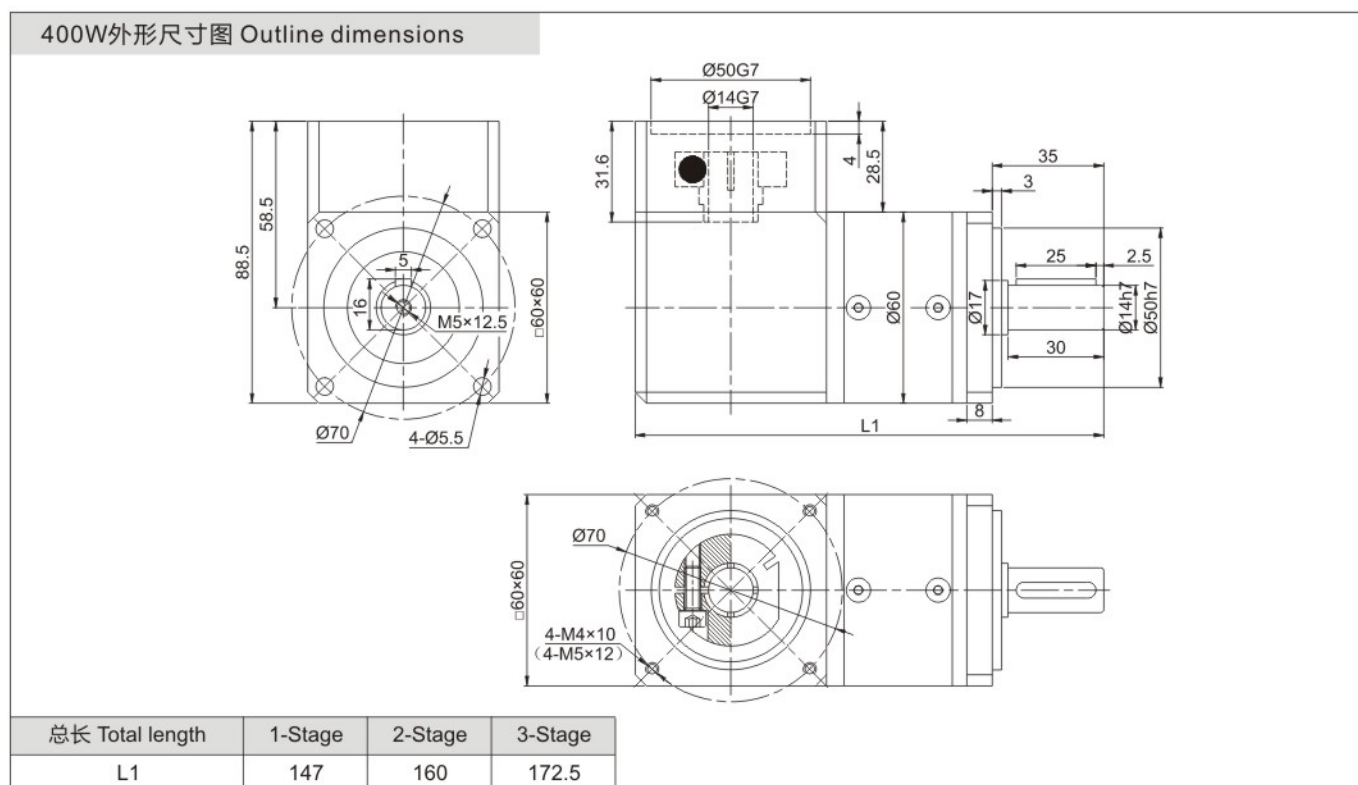
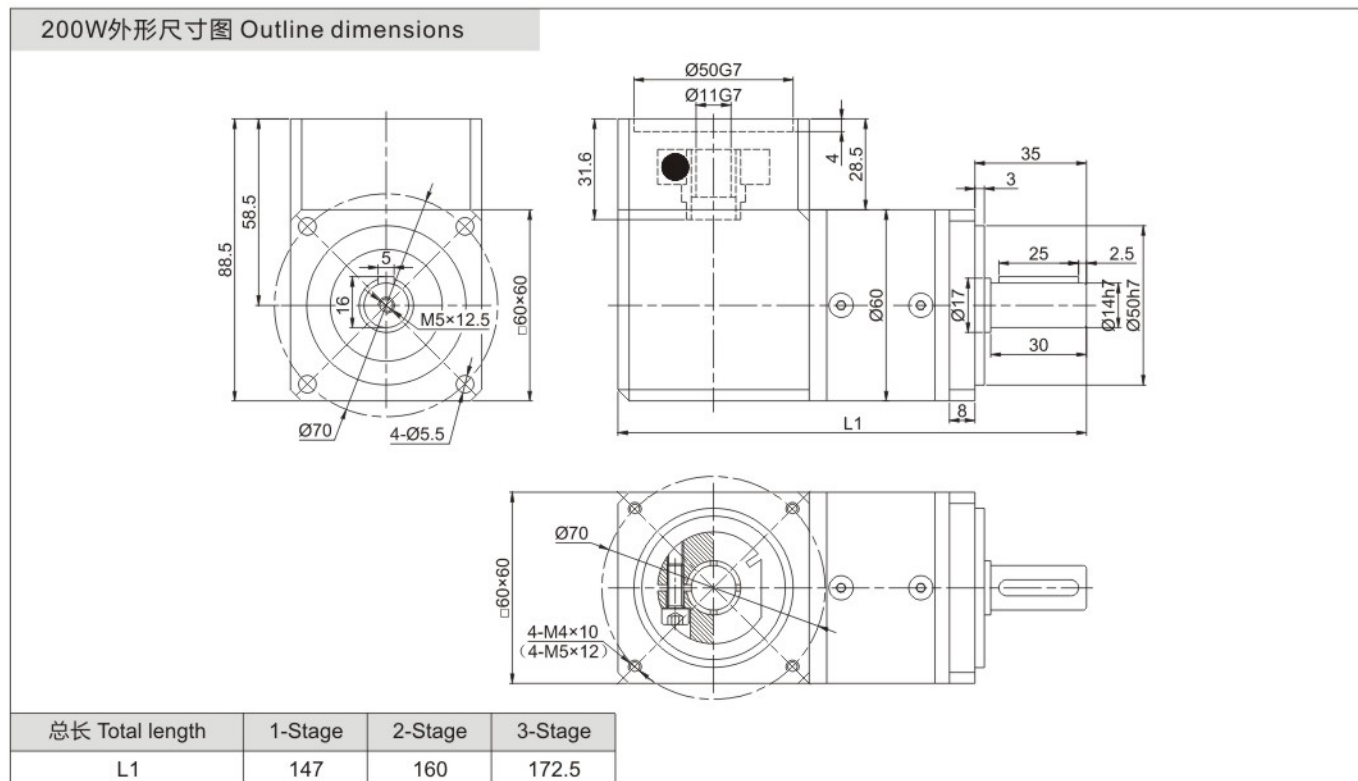
Technical drawing of the 400W motor showing front, side, and rear views with dimensions.

- Front View:** Shows a circular motor body with a diameter of $\varnothing 52$. The total width is 60 mm and the total height is 88.5 mm. The mounting flange has four M5x8 screws. The central shaft has a diameter of $\varnothing 16$ mm and a length of 5 mm. The motor body has a diameter of $\varnothing 50G7$ and a mounting hole of $\varnothing 14G7$.
- Side View:** Shows the motor body with a diameter of $\varnothing 60$ and a total length of L1. The mounting flange has a diameter of $\varnothing 17$ and a length of 35 mm. The motor body has a diameter of $\varnothing 14H7$ and a length of 25 mm. The mounting flange has a diameter of $\varnothing 40H7$ and a length of 30 mm.
- Rear View:** Shows the motor body with a diameter of $\varnothing 70$ and a total length of L1. The mounting flange has a diameter of $\varnothing 17$ and a length of 35 mm. The motor body has a diameter of $\varnothing 14H7$ and a length of 25 mm. The mounting flange has a diameter of $\varnothing 40H7$ and a length of 30 mm.

总长 Total length	1-Stage	2-Stage	3-Stage
L1	147	160	172.5

(1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

WPF60系列外形尺寸图 WPF60 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

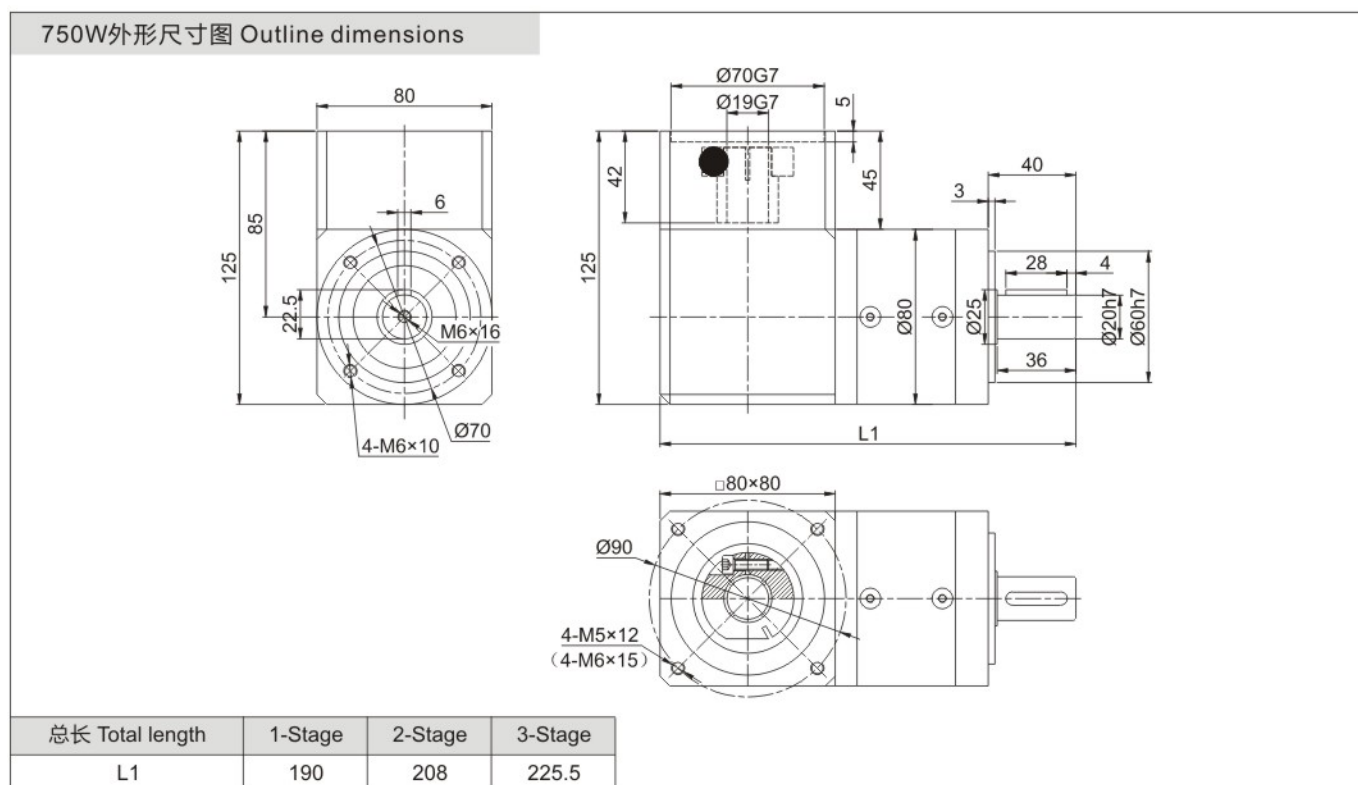
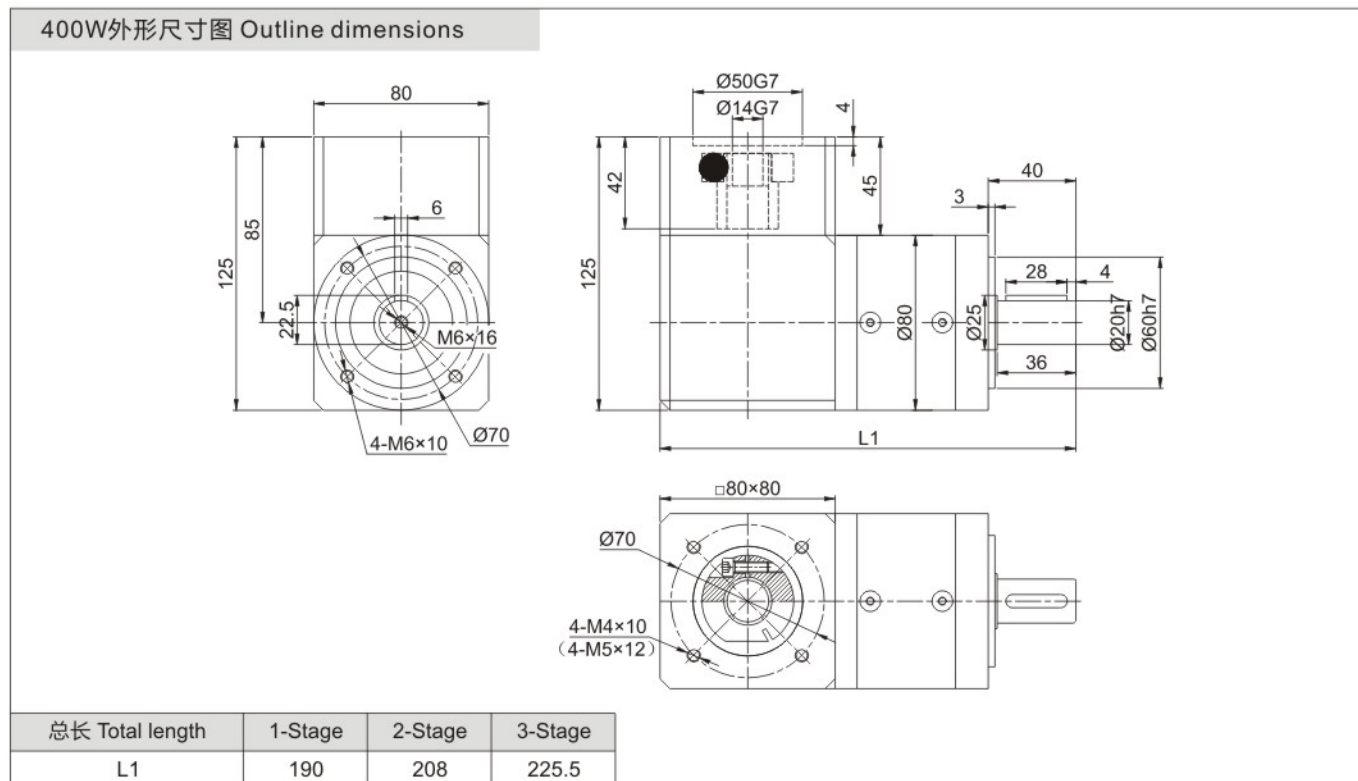
WPL/WPF(80)系列性能参数表 WPL/WPF(60) Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	70	140	1.19	750	1000	750 (3)	1000	6.88
	4	110	220	0.94	750	1000	750 (3)	750	9.17
	5	105	210	0.87	750	1000	750 (3)	600	11.46
	8	43	86	0.81	750	1000	750 (3)	375	18.34
	10	27	54	0.81	750	1000	750 (3)	300	22.92
2	9	70	140	1.16	750	1000	750 (3)	333.33	20.20
	12	70	140	1.14	750	1000	750 (3)	250	26.93
	15	70	140	1.13	750	1000	750 (3)	200	33.66
	16	110	220	0.92	750	1000	750 (3)	187.5	35.91
	20	110	220	0.86	750	1000	750 (3)	150	44.89
	25	105	210	0.86	750	1000	750 (3)	120	56.11
	32	110	220	0.81	750	1000	750 (3)	93.75	71.82
	40	105	210	0.81	750	1000	750 (3)	75	89.77
	64	43	86	0.81	750	1000	200 (3)	46.87	38.30
	60	110	220	0.93	750	1000	400 (3)	50	68.76
3	80	110	220	0.92	750	1000	400 (3)	37.5	91.68
	100	110	220	0.86	750	1000	200 (3)	30	57.30
	120	105	210	1.12	750	1000	200 (3)	25	68.76
	160	110	220	0.81	750	1000	200 (3)	18.75	91.68
	200	105	210	0.81	750	1000	100 (3)	15	57.30
	256	110	110	0.81	750	1000	100 (3)	11.72	73.34
	320	105	105	0.81	750	1000	100 (3)	9.37	91.68
	512	43	86	0.81	750	1000	(3)	5.86	≤43

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤73dB(A) (5)		≤16arcmin	2,0000h	η ≥94%	5.8 N.m/arcmin	IP54	4.4 Kg
2			≤20arcmin		η ≥92%			5 Kg
3			≤23arcmin		η ≥88%			5.5 Kg

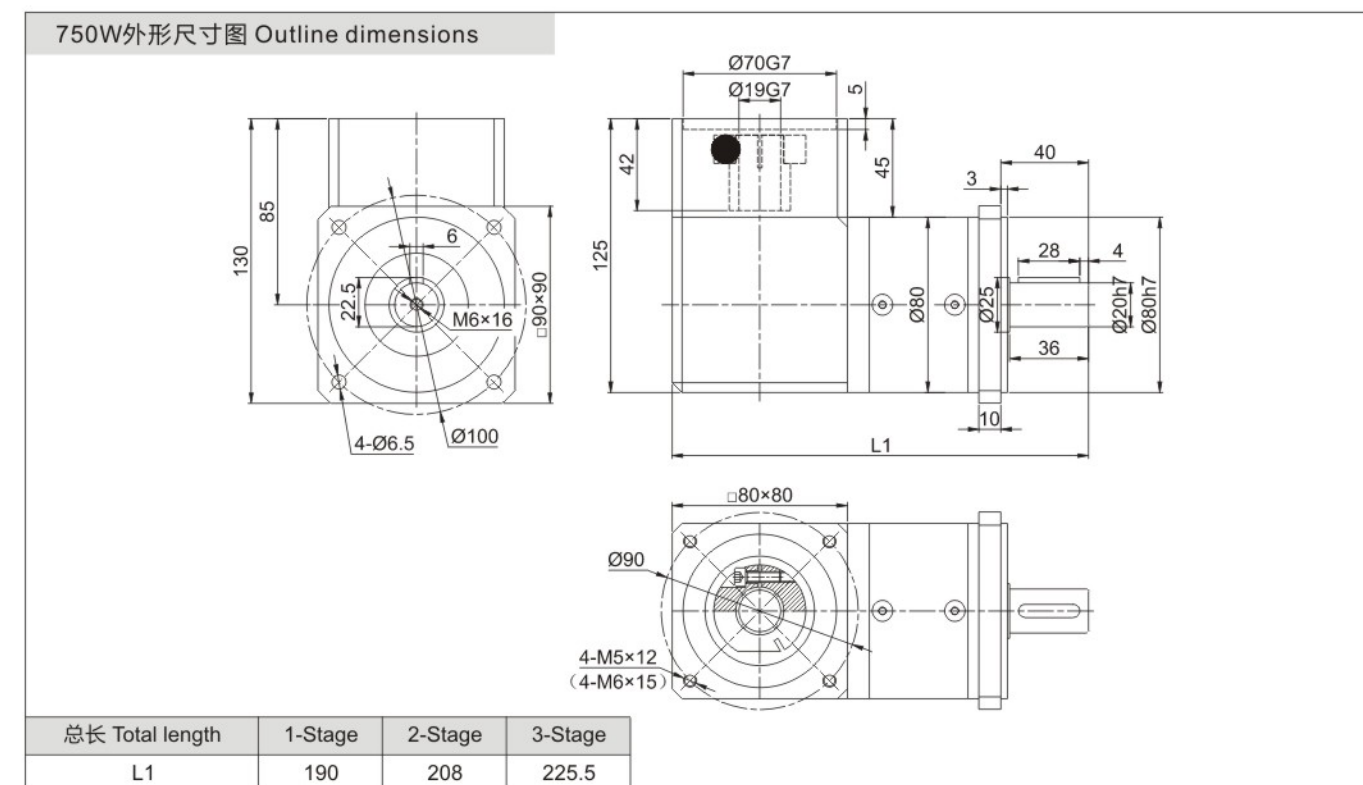
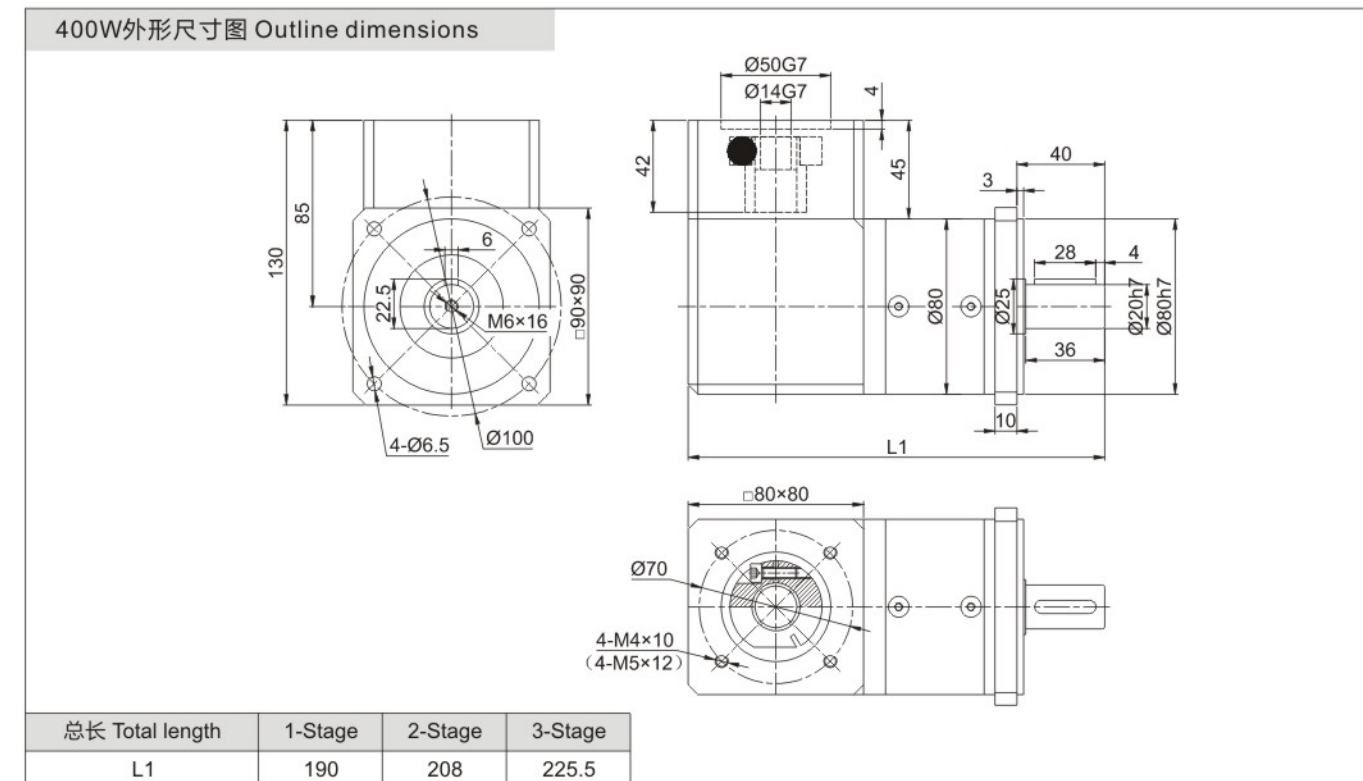
- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。
(1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PL/PF selection table in P07.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

WPL80系列外形尺寸图 WPL80 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

WPF80系列外形尺寸图 WPF80 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

WPL/WPF(120)系列性能参数表 WPL/WPF(120) Series Performance Parameter Table

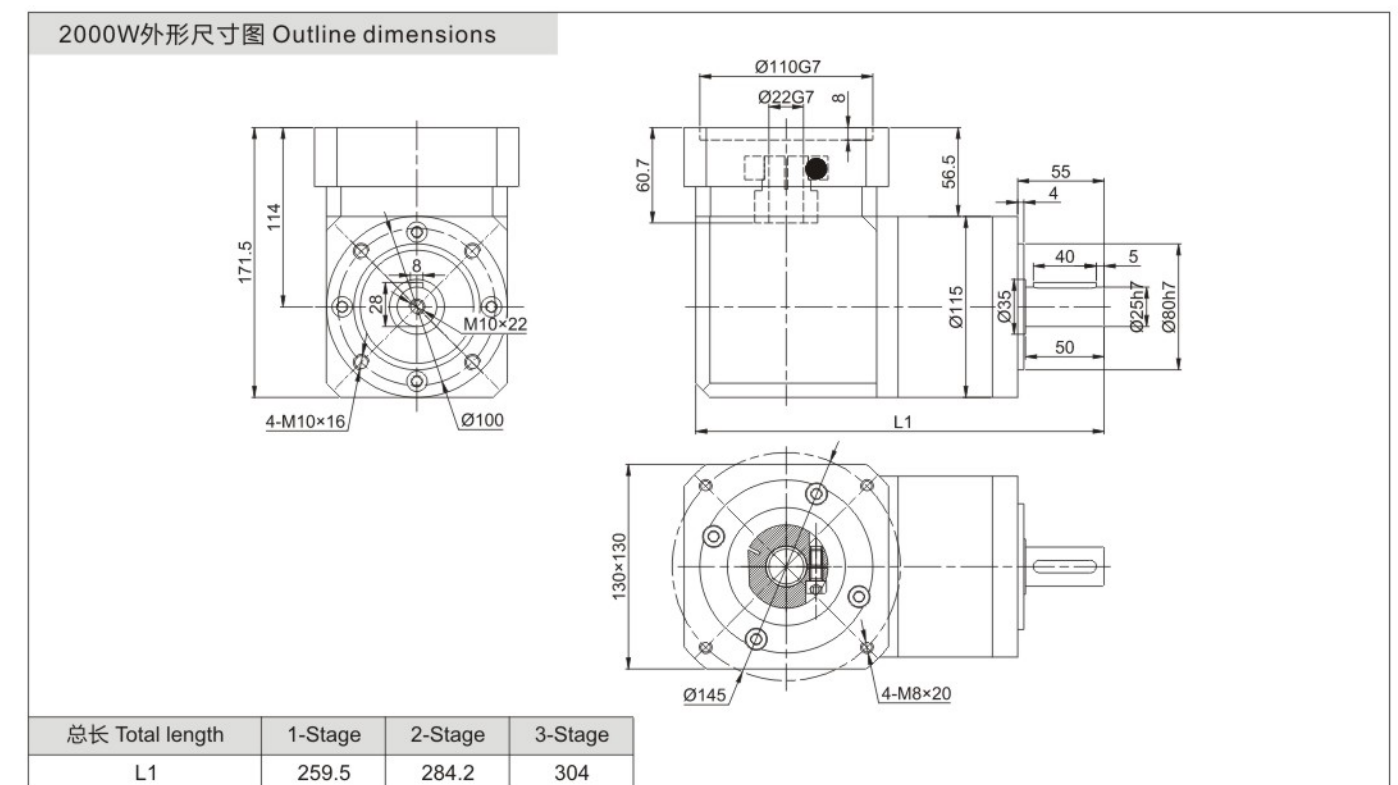
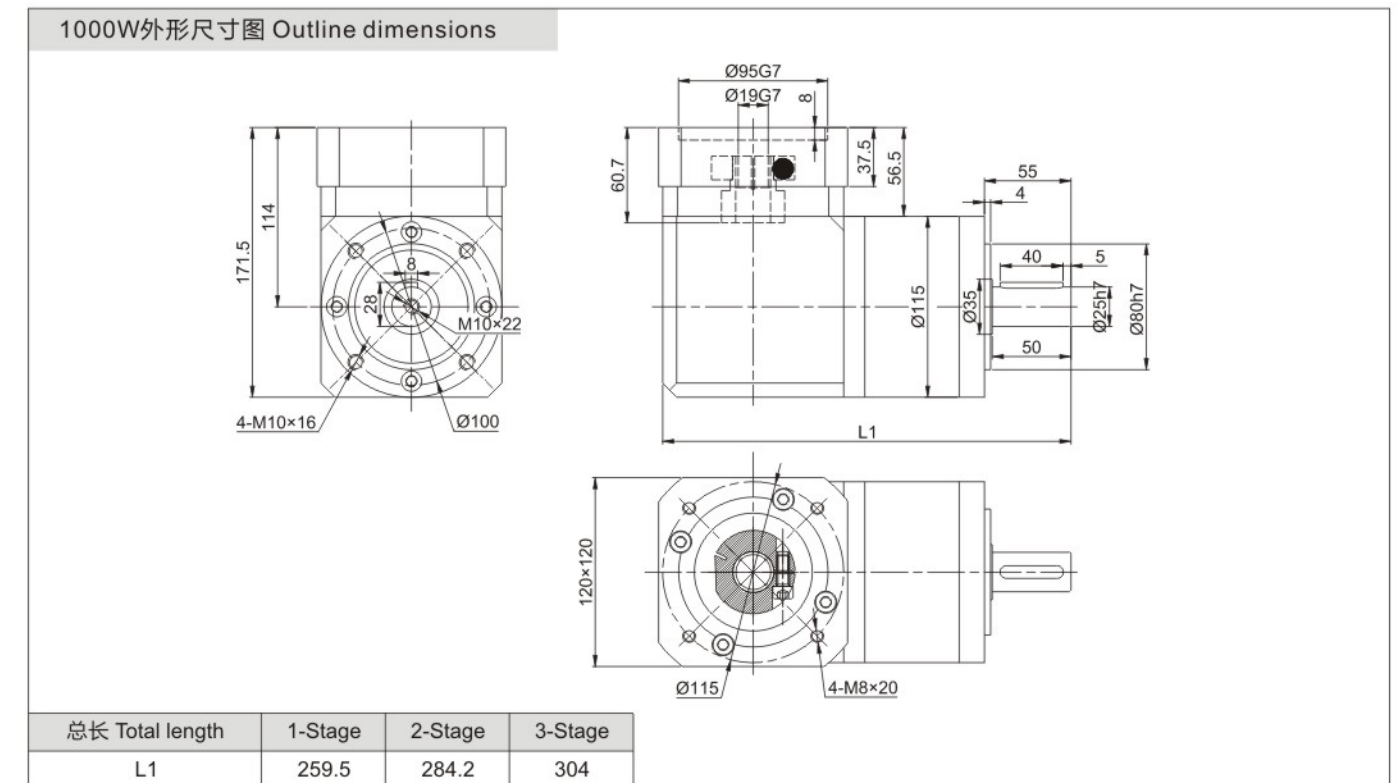
减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	150	300	5.75	1750	2500	2000 (3)	1000	18.34
	4	220	440	3.91	1750	2500	2000 (3)	750	24.45
	5	185	370	3.35	1750	2500	2000 (3)	600	30.56
	8	100	200	2.89	1750	2500	2000 (3)	375	48.90
	10	63	126	2.85	1750	2500	2000 (3)	300	61.12
2	9	150	300	5.75	1750	2500	2000 (3)	333.33	53.86
	12	220	440	5.60	1750	2500	2000 (3)	250	71.82
	15	185	370	5.53	1750	2500	2000 (3)	200	89.77
	16	220	440	3.83	1750	2500	2000 (3)	187.5	95.75
	20	220	440	3.28	1750	2500	2000 (3)	150	119.69
	25	185	370	3.26	1750	2500	2000 (3)	120	149.62
	32	220	440	2.84	1750	2500	2000 (3)	93.75	191.51
	40	185	370	2.84	1750	2500	1500 (3)	75	179.54
	64	100	200	2.84	1750	2500	400 (3)	46.87	76.6
3	60	220	440	5.62	1750	2500	1000 (3)	50	171.9
	80	220	440	3.28	1750	2500	750 (3)	37.5	171.9
	100	220	440	2.84	1750	2500	750 (3)	30	214.88
	120	185	370	5.47	1750	2500	400 (3)	25	137.52
	160	220	440	2.84	1750	2500	400 (3)	18.75	183.36
	200	185	370	2.84	1750	2500	(3)	15	≤ 185
	256	220	440	2.84	1750	2500	(3)	11.72	≤ 220
	320	185	370	2.84	1750	2500	(3)	9.37	≤ 185
	512	100	200	2.84	1750	2500	(3)	5.86	≤ 100

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤75dB(A) (5)		≤13arcmin	2,0000h	η ≥ 94%	14.5 N.m/arcmin	IP54	12 Kg
2			≤16arcmin		η ≥ 92%			14 Kg
3			≤20arcmin		η ≥ 88%			16 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PL/PF selection table in P07.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

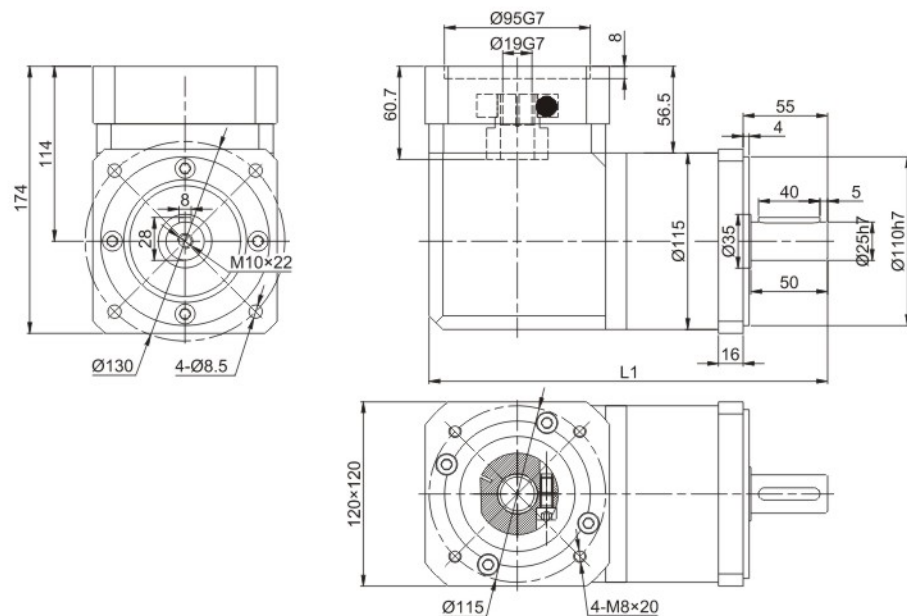
WPL120系列外形尺寸图 WPL120 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

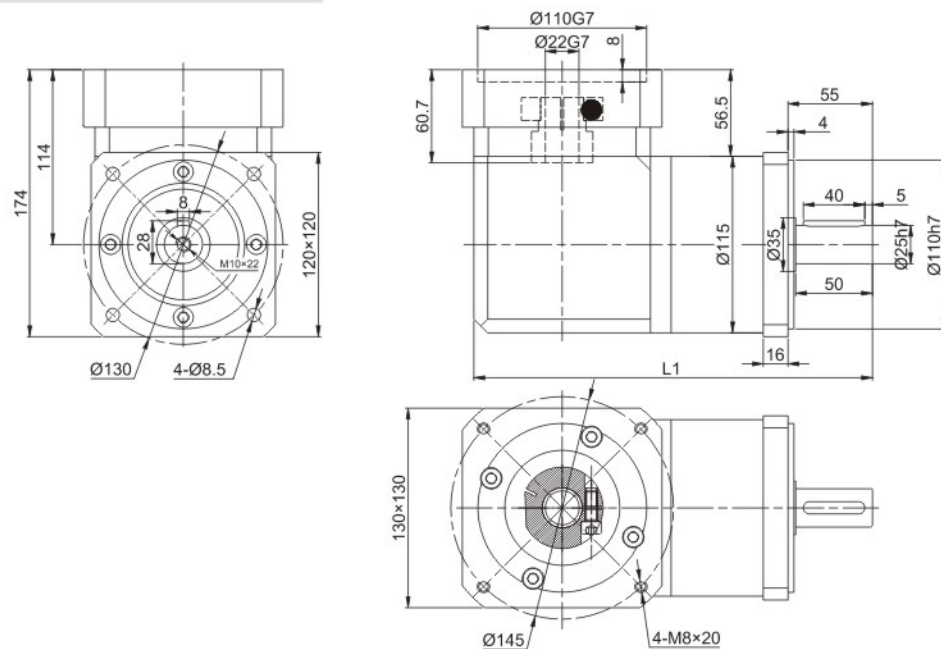
WPF120系列外形尺寸图 WPF120 Series Outline Dimensions

1000W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage	3-Stage
L1	259.5	284.2	304

2000W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage	3-Stage
L1	259.5	284.2	304

- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P07的PL/PF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PL/PF selection table in P07.

PBL/PBF系列代号标识 PBL/PBF Series Code Identification



PBL 70 - 40 P2 S2 OP2
① ② ③ ④ ⑤ ⑥

① 减速机机座代号 Planetary Gearbox Frame Code:

PBL: 圆形法兰输出系列 Round flange mounting series

WPBL: 直角圆形法兰输出系列 Right-angle round flange mounting series

PBF: 方形法兰输出系列 Square flange mounting series

WPBF: 直角方形法兰输出系列 Right-angle square flange mounting series

② 减速机系列代号 Gearboxes Code:

70、90、120

③ 减速比 Ratio:

一段1- stage: PBL70(3、4、5、7、8、9、10)

PBL90/120(3、4、5、7、9、10)

二段2- stage: PBL70 (12、15、16、20、25、28、32、35、40、50、70、80、90、100)

PBL90/120 (12、15、16、20、25、28、35、40、50、70、90、100)

④ 背隙 Backlash:

P1: 精密Precision

P2: 标准Standard

⑤ 输出轴形式 Output shaft type:

S1: 光轴输出轴 Shaft without key

S2: 带键输出轴 Shaft with key

T: 用户定制输出轴 Special require

⑥ 联轴器形式 Input shaft type: (1)

OP1: 整体式紧箍夹壳联轴器 Integral Hoop clamp coupling

OP2: 分体式紧箍夹壳联轴器 Split type Hoop clamp coupling

OP3: 带键槽整体式紧箍夹壳联轴器 Integral Hoop clamp coupling with keyway

OP5: 只有键槽连接联轴器 Only keyway connect coupling

OP6: 其它方式适配联轴器 Other type connect coupling

(1): 联轴器标准配置为OP2。

(1): Coupling standard configure OP2.

PBL/PBF系列按伺服电机功率选型推荐表（输入转速为3000rpm）
PBL/PBF Series according to the servo motor power selection recommendation table
(Input speed 3000rpm)

功率 Power	PBL/PBF70--速比 (2) PBL/PBF70-Ratio (2)	PBL/PBF90--速比 (2) PBL/PBF90-Ratio (2)	PBL/PBF120--速比 (2) PBL/PBF120-Ratio (2)
50W	100		
100W	70、80、90		
200W	3、4、5、7、8、9、12、10、15、16、20、25、28、32、35、40、50	90、100	
400W	3、4、5、7、8、9、12、10、15、16、20、25、28、32、35	3、4、5、7、9、10、12、15、16、20、25、28、35、40、50、70	90、100
750W	(3、4、5、7、8、9、12)	3、4、5、7、9、10、12、15、16、20、25、28、35、40、50	3、4、5、7、9、10、12、15、16、20、25、28、35、40、70
1000W		3、4、5、7、9、10、12、15、16、20、25、28	3、4、5、7、9、10、12、15、16、20、25、28、35、40
1500W		3、4、5、7、9、10、12、15、16、20、25、28	3、4、5、7、9、10、12、15、16、20、25、28、35
2000W		(3、4、5、7、9、10、16、20)	3、4、5、7、9、10、12、15、16、20、25、28、35
2500W			3、4、5、7、9、10、12、15、16、20、25、28
3000W			(3、4、5、7、9、10、12、15、16、20、25、28)
3500W			(3、4、5、7、9、10、12、15、16、20)

- (1)：对照表中“()”为次选速比。“()” is second-choice ratio。
- (2)：减速机使用≤扭矩额定扭矩时，可选择相同机座中的相应速比。
When Gearbox' operation torque≤Rated torque, select the ratio accordingly in same frame.
- (3)：减速机适用电机的轴径范围，见下列表格 Suitable motor shaft range, see below table:

减速机系列 Planetary gearbox series	PBL/PBF	PBL/PBF 70	PBL/PBF 90	PBL/PBF 120
电机轴径 Motor shaft dianeter	mm	6≤d≤19	8≤d≤22	14≤d≤35

PBL/PBF(70)系列性能参数表 PBL/PBF(70) Series Performance Parameter Table

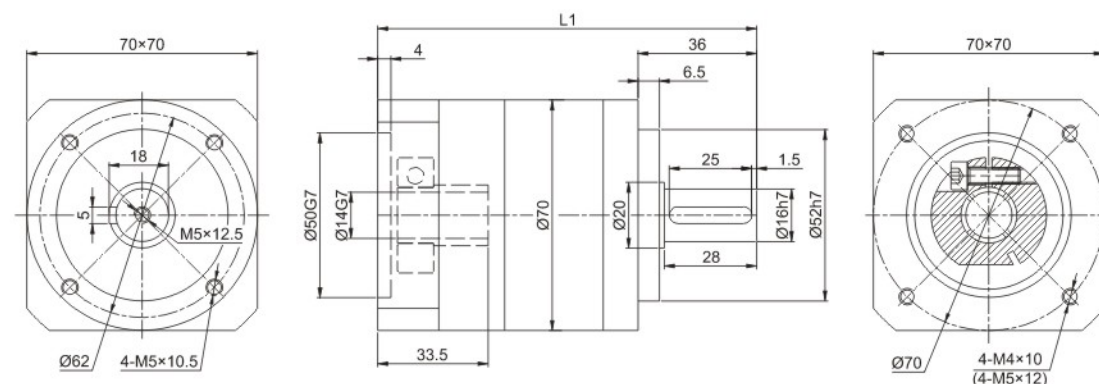
减速机性能参数 Planetary gearbox performance parameter							适配电机（输入转速3000rpm）时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	35	105	0.16	1000	500	750 (3)	1000	6.87
	4	50	150	0.14	1000	500	750 (3)	750	9.16
	5	50	150	0.13	1000	500	750 (3)	600	11.45
	7	40	120	0.13	1000	500	750 (3)	428.57	16.03
	8	35	105	0.13	1000	500	750 (3)	375	18.32
	9	35	105	0.13	1000	500	750 (3)	333.33	20.61
	10	22	66	0.13	1000	500	400 (3)	300	12.2
2	12	35	105	0.14	1000	500	750 (3)	250	27.48
	15	35	105	0.13	1000	500	400 (3)	200	18.3
	16	50	150	0.14	1000	500	400 (3)	187.5	19.52
	20	50	150	0.13	1000	500	400 (3)	150	24.4
	25	50	150	0.13	1000	500	400 (3)	120	30.5
	28	50	150	0.13	1000	500	400 (3)	107.14	34.16
	32	50	150	0.13	1000	500	400 (3)	93.75	39.04
	35	50	150	0.13	1000	500	400 (3)	85.71	42.7
	40	50	150	0.13	1000	500	200 (3)	75	24.44
	50	50	150	0.13	1000	500	200 (3)	60	30.55
	70	40	120	0.13	1000	500	100 (3)	42.85	21.39
	80	35	105	0.13	1000	500	100 (3)	37.5	24.45
	90	35	105	0.13	1000	500	100 (3)	33.33	27.5
	100	22	66	0.13	1000	500	50 (3)	30	15.28

段数 Stage	噪音 Noise	精密背隙 Precidion Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Tosional sitffness	防护等级 Degree of protection	重量 Weirht
1	≤58dB(A) (5)		≤5arcmin	2,0000h	η ≥96%	7 N.m/arcmin	IP65	1.1 Kg
2			≤8arcmin		η ≥94%			1.5 Kg

- (1)：段数。
(2)：减速比。
(3)：减速机使用扭矩≤额定扭矩，具体以电机为选型依据的，见P30的PBL/PBF系列选型对照表。
(4)：径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5)：噪音值是输入转速3000rpm时，距离1m测量。
(6)：背隙是由额定扭矩的2%测量。
- (1)：Stage
(2)：Ratio
(3)：When Gearbox' operation torque ≤Rated torque, type-selection is based on motor parameter, See PBL/PBF selection table in P30.
(4)：Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5)：Noise level is tested based on input speed 3000rpm and 1m distance.
(6)：Backlash is test by 2% of rated torque.

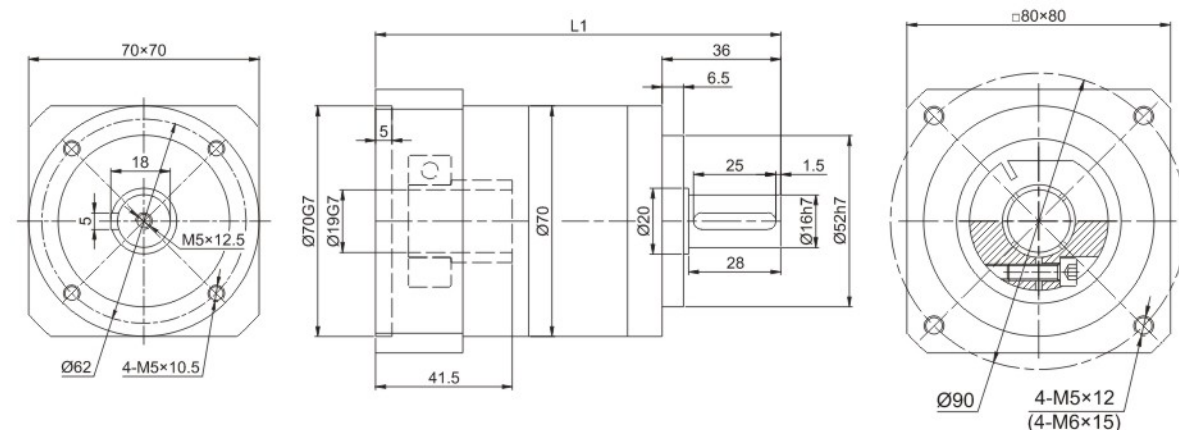
PBL70系列外形尺寸图 PBL70 Series Outline Dimensions

400W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	115	137.5

750W外形尺寸图 Outline dimensions

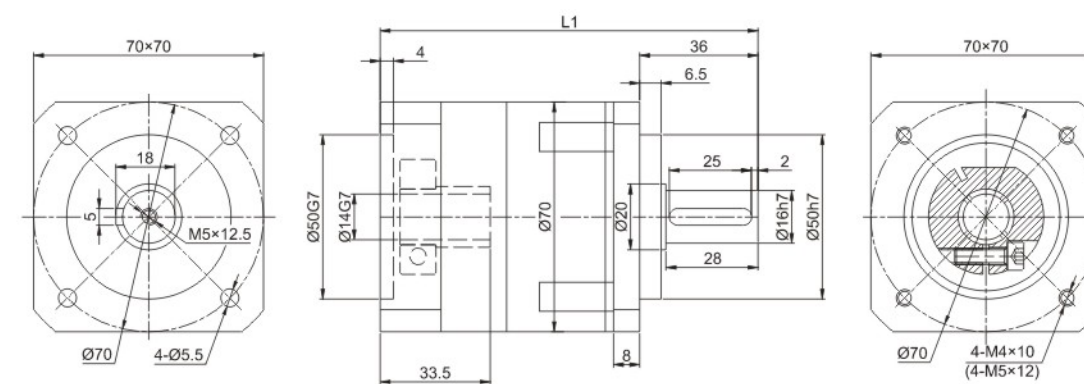


总长 Total length	1-Stage	2-Stage
L1	123	145.5

- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

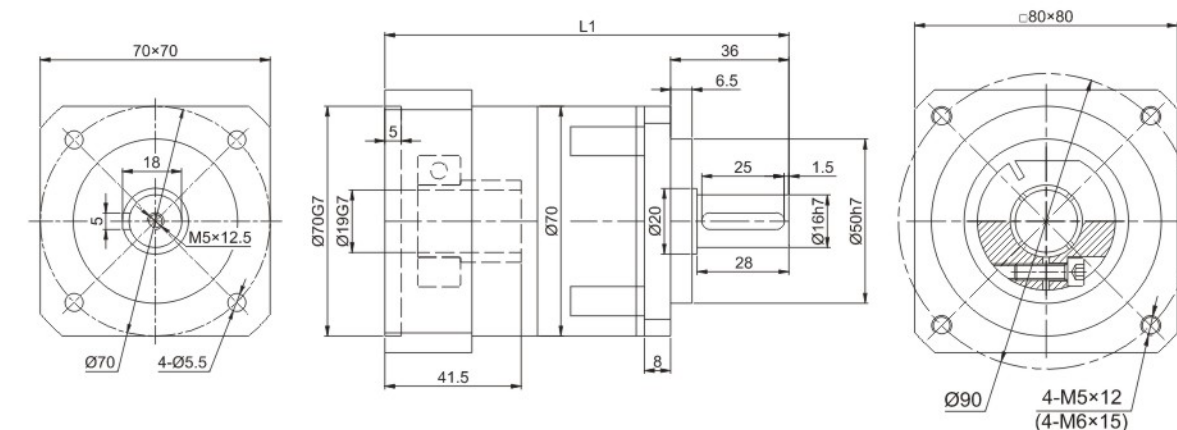
PBF70系列外形尺寸图 PBF70 Series Outline Dimensions

400W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	115	137.5

750W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	123	145.5

- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

PBL/PBF(90)系列性能参数表 PBL/PBF(90) Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机（输入转速3000rpm）时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	85	255	0.61	1600	800	1500 (3)	1000	13.74
	4	135	405	0.48	1600	800	1500 (3)	750	18.32
	5	130	390	0.47	1600	800	1500 (3)	600	22.9
	7	105	315	0.45	1600	800	1500 (3)	428.57	32.06
	9	75	225	0.44	1600	800	1500 (3)	333.33	41.22
	10	70	210	0.44	1600	800	1500 (3)	300	45.8
2	12	85	255	0.48	1600	800	1500 (3)	250	53.81
	15	85	255	0.47	1600	800	1500 (3)	200	67.26
	16	135	405	0.48	1600	800	1500 (3)	187.5	71.75
	20	135	405	0.48	1600	800	1500 (3)	150	89.69
	25	130	390	0.47	1600	800	1500 (3)	120	112.11
	28	135	405	0.45	1600	800	1500 (3)	107.14	125.56
	32	135	405	0.45	1600	800	750 (3)	93.75	71.75
	35	130	390	0.45	1600	800	750 (3)	85.71	78.48
	40	130	390	0.45	1600	800	750 (3)	75	89.69
	50	130	390	0.44	1600	800	750 (3)	60	112.11
	56	105	315	0.45	1600	800	400 (3)	53.57	66.90
	70	105	315	0.45	1600	800	400 (3)	42.85	83.3
	90	75	225	0.44	1600	800	200 (3)	33.33	53.55
	100	70	210	0.44	1600	800	200 (3)	30	59.5

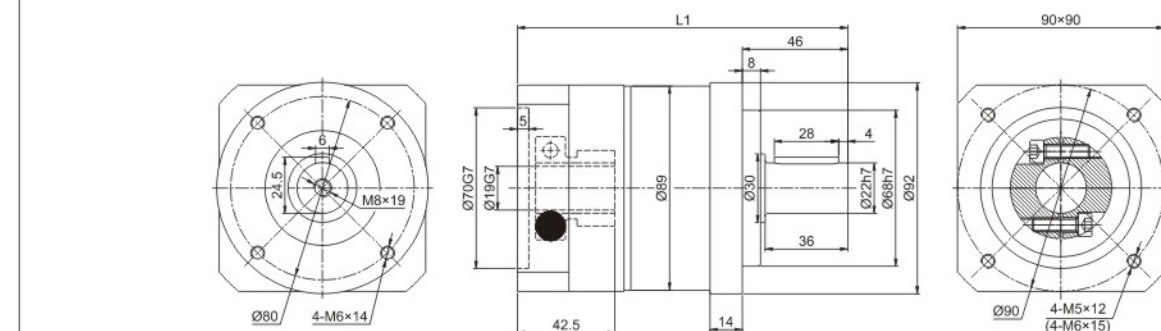
段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤60dB(A) (5)		≤5arcmin	2,0000h	η ≥96%	14 N.m/arcmin	IP65	2.7 Kg
2			≤8arcmin		η ≥94%			3.3 Kg

- (1) : 段数。
(2) : 减速比。
(3) : 减速机使用扭矩 ≤ 额定扭矩，具体以电机选型依据的，见P30的PBL/PBF系列选型对照表。
(4) : 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5) : 噪音值是输入转速3000rpm时，距离1m测量。
(6) : 背隙是由额定扭矩的2%测量。

- (1) : Stage
(2) : Ratio
(3) : When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PBL/PBF selection table in P30.
(4) : Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5) : Noise level is tested based on input speed 3000rpm and 1m distance.
(6) : Backlash is test by 2% of rated torque.

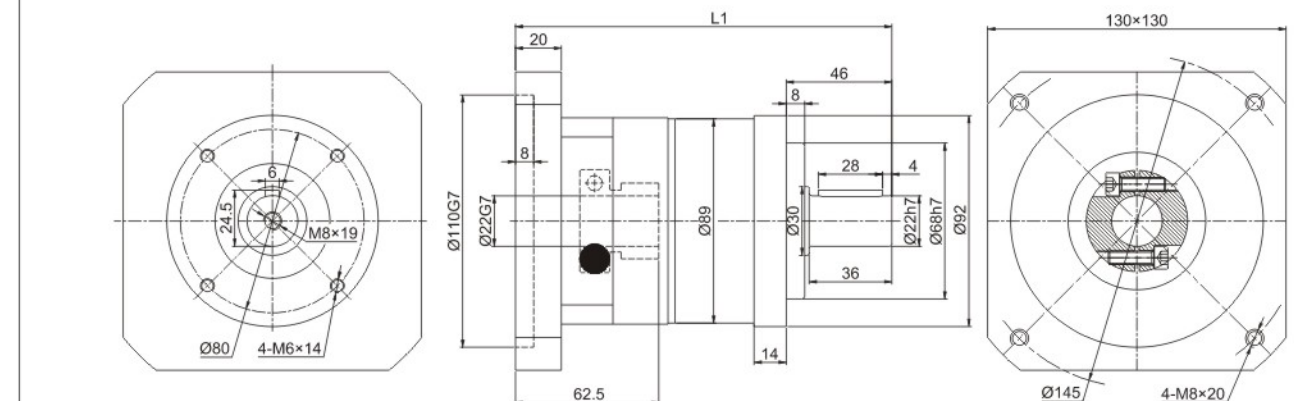
PBL90系列外形尺寸图 PBL90 Series Outline Dimensions

750W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	144	180

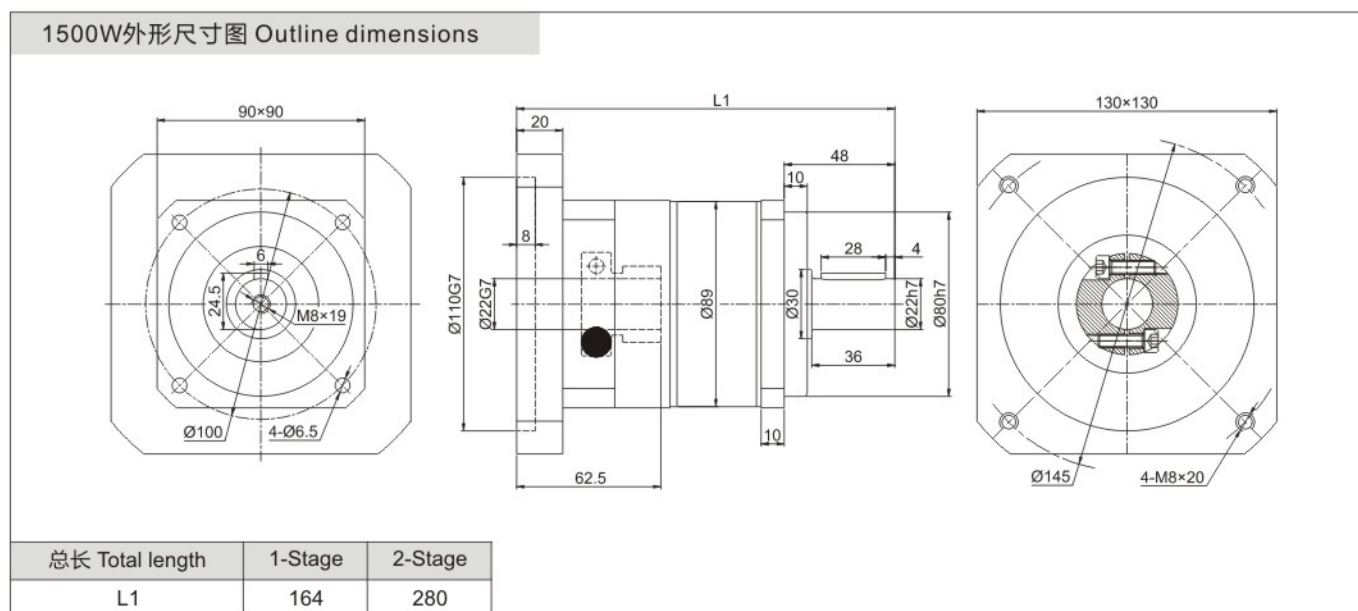
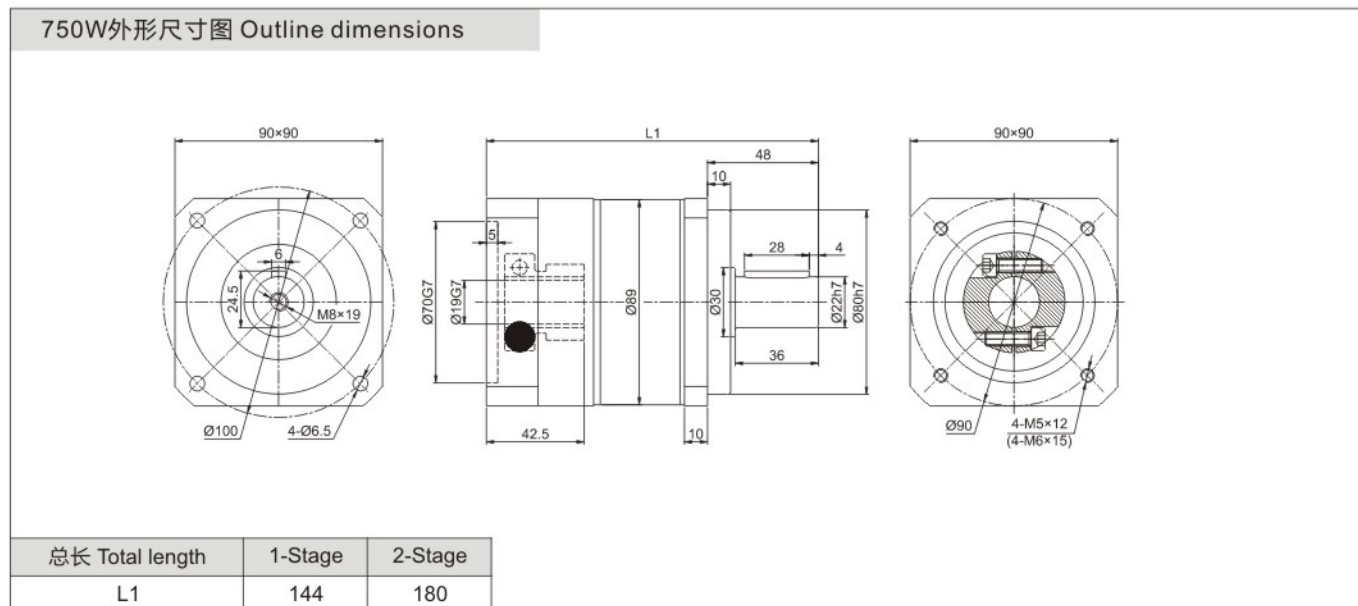
1500W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	164	280

- (1) : 订购时请告知详细的电机型号，图纸以外形尺寸图确认为准。
(2) : 具体以电机选型依据的，见P30的PBL/PBF系列选型对照表。
(1) : Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2) : If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

PBF90系列外形尺寸图 PBF90 Series Outline Dimensions



- (1) : 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2) : 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(1) : Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2) : If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

PBL/PBF(120)系列性能参数表 PBL/PBF(120) Series Performance Parameter Table

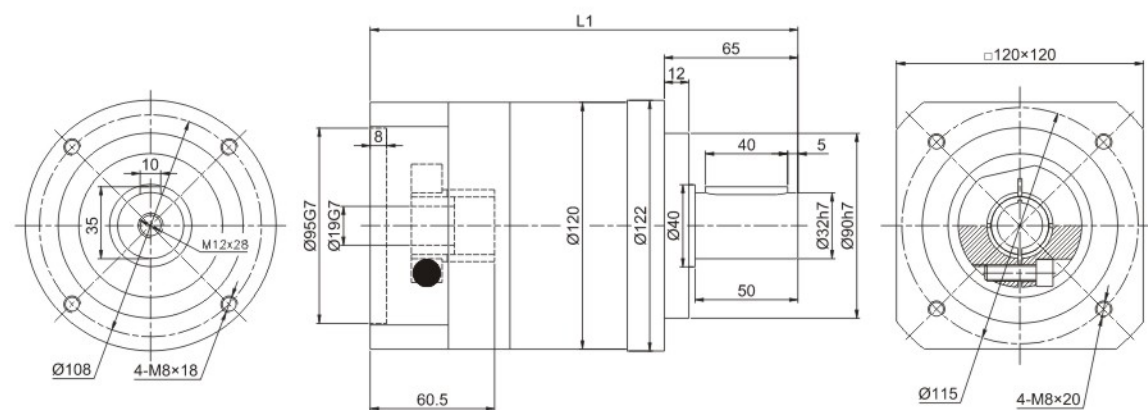
减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	200	600	3.25	4100	2050	2000 (3)	1000	18.33
	4	280	840	2.74	4100	2050	2000 (3)	750	24.44
	5	250	750	2.71	4100	2050	2000 (3)	600	30.56
	7	170	510	2.57	4100	2050	2000 (3)	428.57	42.78
	9	135	405	2.57	4100	2050	2000 (3)	333.33	55
	10	125	375	2.57	4100	2050	2000 (3)	300	61.12
2	12	200	600	2.74	4100	2050	2000 (3)	250	73.34
	15	200	600	2.71	4100	2050	2000 (3)	200	91.68
	16	280	840	2.74	4100	2050	2000 (3)	187.5	97.79
	20	280	840	2.71	4100	2050	2000 (3)	150	122.24
	25	250	750	2.71	4100	2050	2000 (3)	120	152.8
	28	280	840	2.57	4100	2050	2000 (3)	107.14	171.13
	32	280	840	2.57	4100	2050	2000 (3)	93.75	195.58
	35	250	750	2.57	4100	2050	2000 (3)	85.71	213.92
	40	250	750	2.57	4100	2050	1000 (3)	75	122.24
	50	250	750	2.57	4100	2050	1000 (3)	60	152.8
	70	170	510	2.57	4100	2050	750 (3)	42.85	160.44
	90	135	405	2.57	4100	2050	400 (3)	33.33	110.01
	100	125	375	2.57	4100	2050	(3)	30	≤125

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤63dB(A) (5)		≤5arcmin	2,000h	η ≥96%	25 N.m/arcmin	IP65	7.3 Kg
2			≤8arcmin		η ≥94%			9.6 Kg

- (1) : 段数。
(2) : 减速比。
(3) : 减速机使用扭矩 ≤ 额定扭矩, 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(4) : 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5) : 噪音值是输入转速3000rpm时, 距离1m测量。
(6) : 背隙是由额定扭矩的2%测量。
- (1) : Stage
(2) : Ratio
(3) : When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PBL/PBF selection table in P30.
(4) : Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5) : Noise level is tested based on input speed 3000rpm and 1m distance.
(6) : Backlash is test by 2% of rated torque.

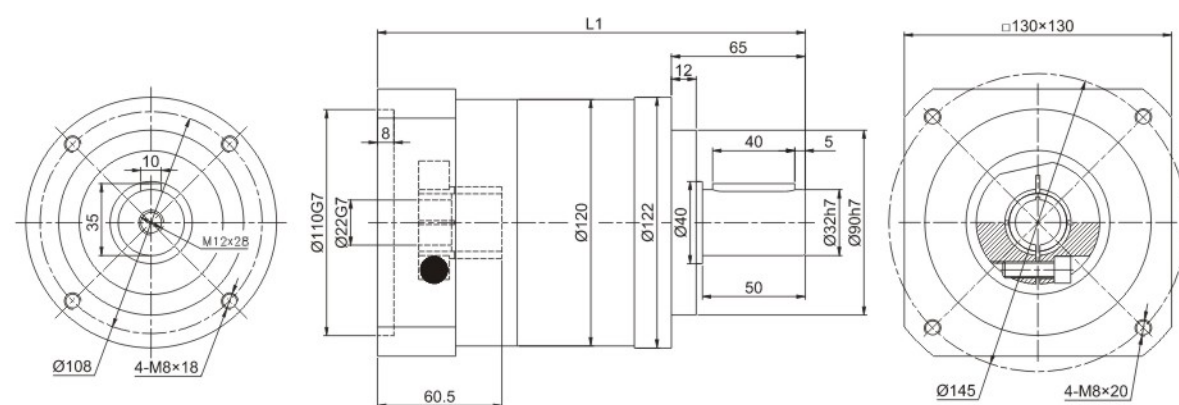
PBL120系列外形尺寸图 PBL120 Series Outline Dimensions

1000W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	208	252

2000W外形尺寸图 Outline dimensions

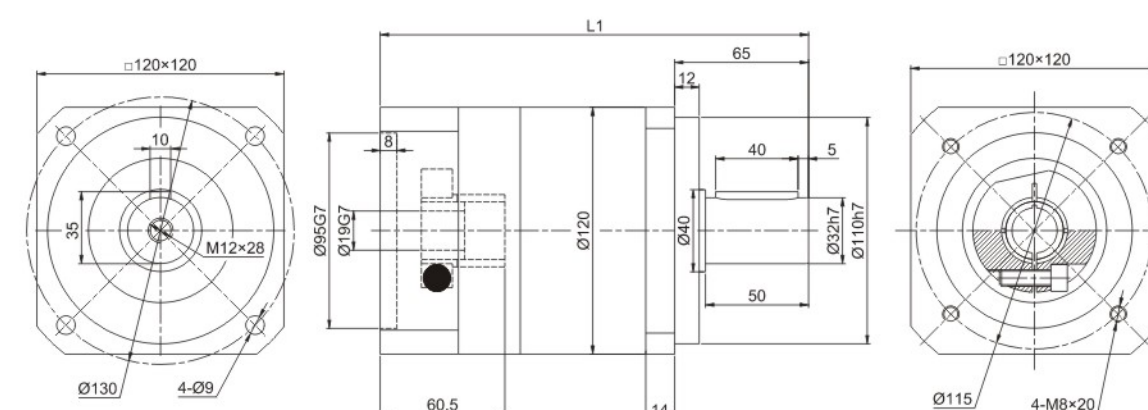


总长 Total length	1-Stage	2-Stage
L1	208	252

- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

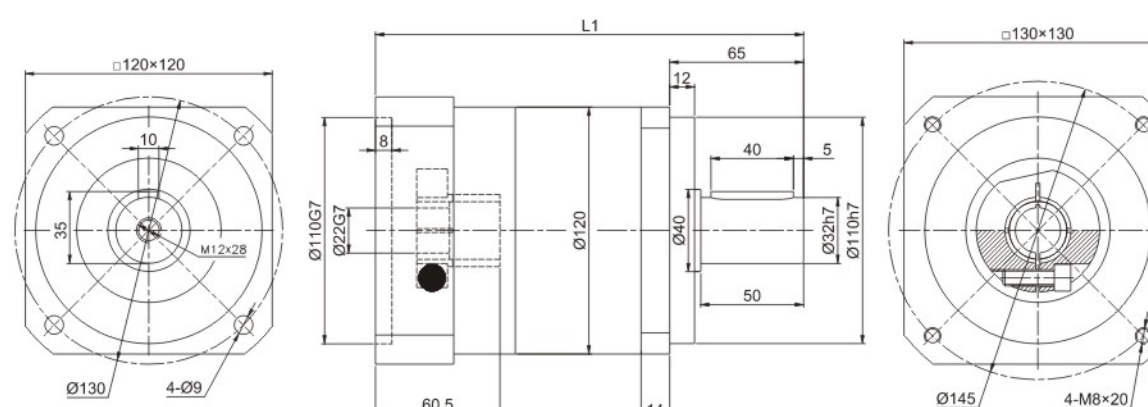
PBF120系列外形尺寸图 PBF120 Series Outline Dimensions

1000W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	208	252

2000W外形尺寸图 Outline dimensions



总长 Total length	1-Stage	2-Stage
L1	208	252

- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

WPBL/WPBF(70)系列性能参数表
WPBL/WPBF(70) Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter						适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)			
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	35	105	0.36	1000	500	750 (3)	1000	6.87
	4	50	150	0.36	1000	500	750 (3)	750	9.16
	5	50	150	0.36	1000	500	750 (3)	600	11.45
	7	40	120	0.36	1000	500	750 (3)	428.57	16.03
	8	35	105	0.36	1000	500	750 (3)	375	18.32
	9	35	105	0.36	1000	500	750 (3)	333.33	20.61
	10	22	66	0.36	1000	500	400 (3)	300	12.2
2	12	35	105	0.36	1000	500	750 (3)	250	27.48
	15	35	105	0.36	1000	500	400 (3)	200	18.3
	16	50	150	0.36	1000	500	400 (3)	187.5	19.52
	20	50	150	0.36	1000	500	400 (3)	150	24.4
	25	50	150	0.36	1000	500	400 (3)	120	30.5
	28	50	150	0.36	1000	500	400 (3)	107.14	34.16
	32	50	150	0.36	1000	500	400 (3)	93.75	39.04
	35	50	150	0.36	1000	500	400 (3)	85.71	42.7
	40	50	150	0.36	1000	500	200 (3)	75	24.44
	50	50	150	0.36	1000	500	200 (3)	60	30.55
	70	40	120	0.36	1000	500	100 (3)	42.85	21.39
	80	35	105	0.36	1000	500	100 (3)	37.5	24.45
	90	35	105	0.36	1000	500	100 (3)	33.33	27.5
	100	22	66	0.36	1000	500	50 (3)	30	15.28

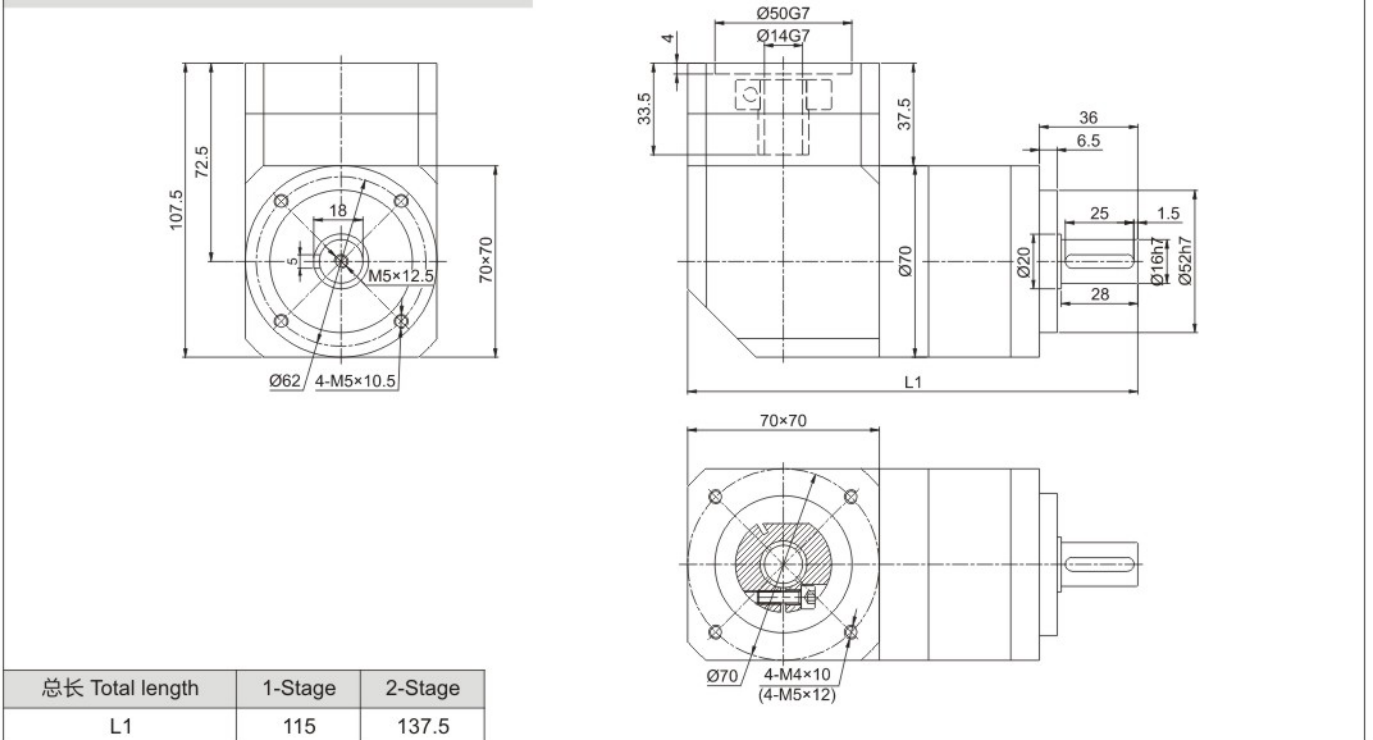
段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤65dB(A) (5)		≤8arcmin	2,000h	η ≥96%	7 N.m/arcmin	IP65	2.3 Kg
2			≤10arcmin		η ≥94%			2.8 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机选型为依据, 见P30的PBL/PBF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

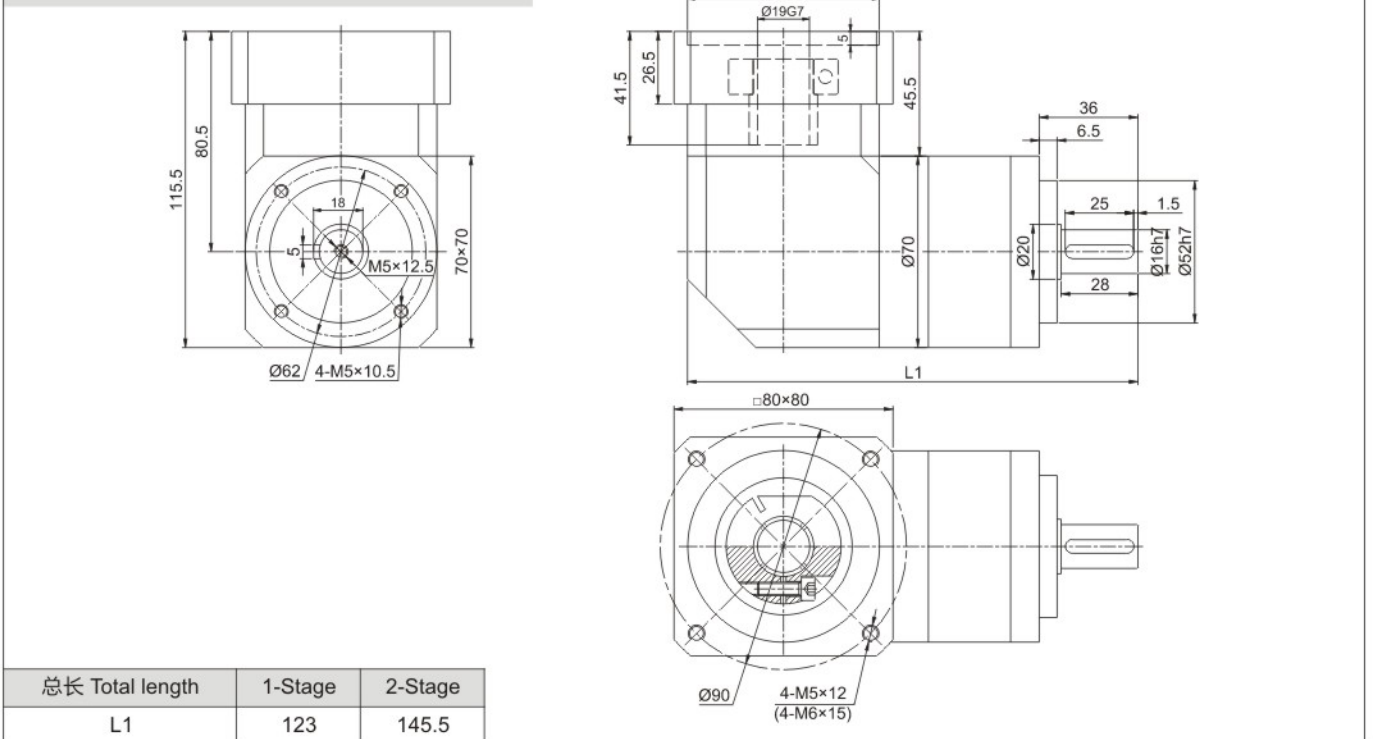
- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PBL/PBF selection table in P30.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

WPBL70系列外形尺寸图 WPBL70 Series Outline Dimensions

400W外形尺寸图 Outline dimensions

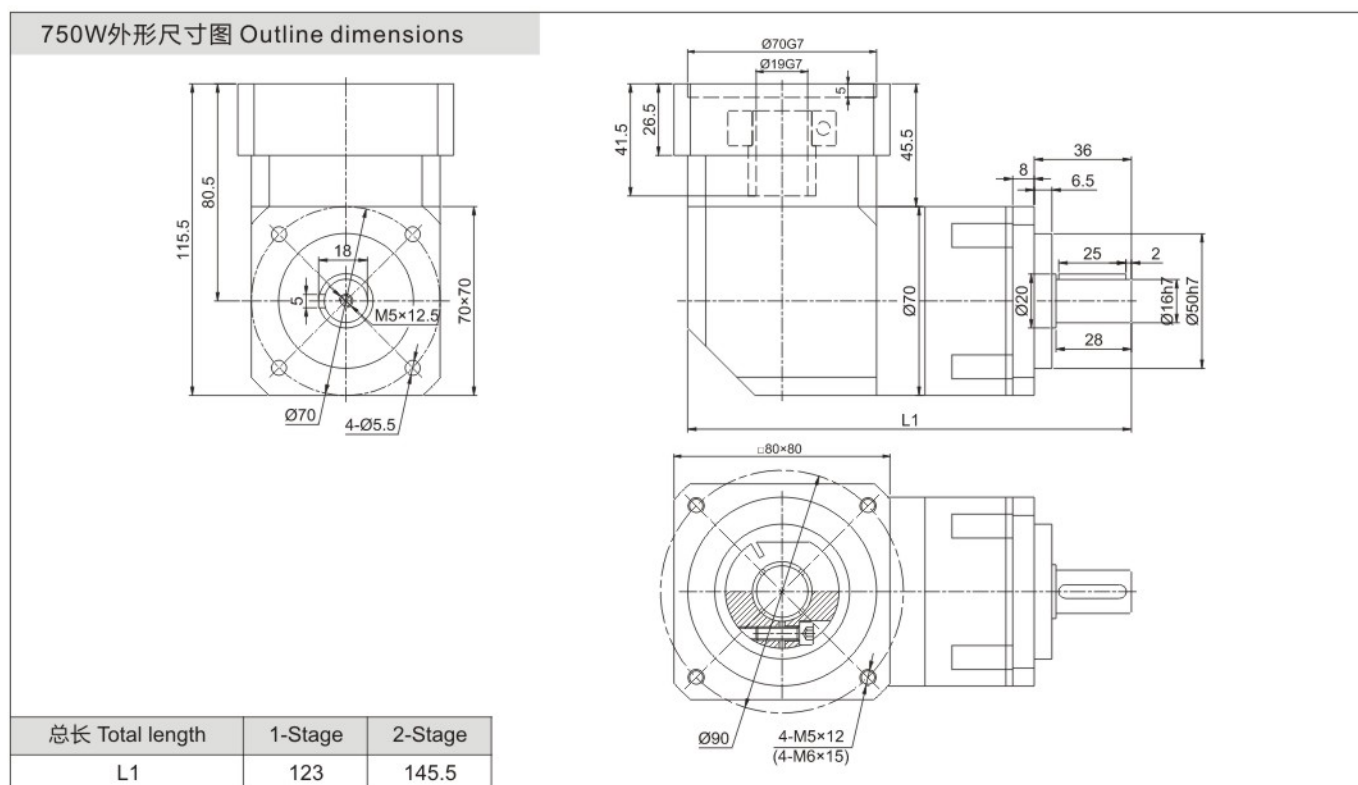
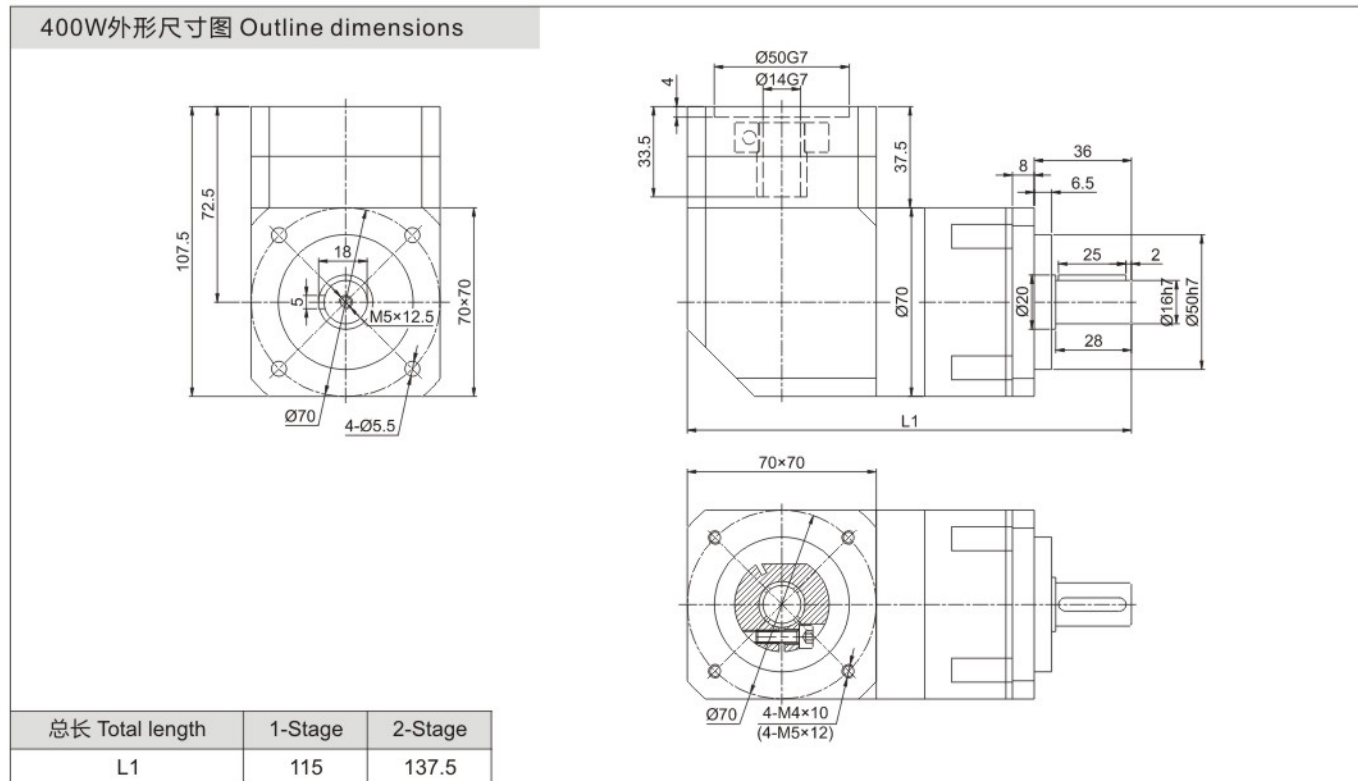


750W外形尺寸图 Outline dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型为依据, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

WPBF70系列外形尺寸图 WPBF70 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

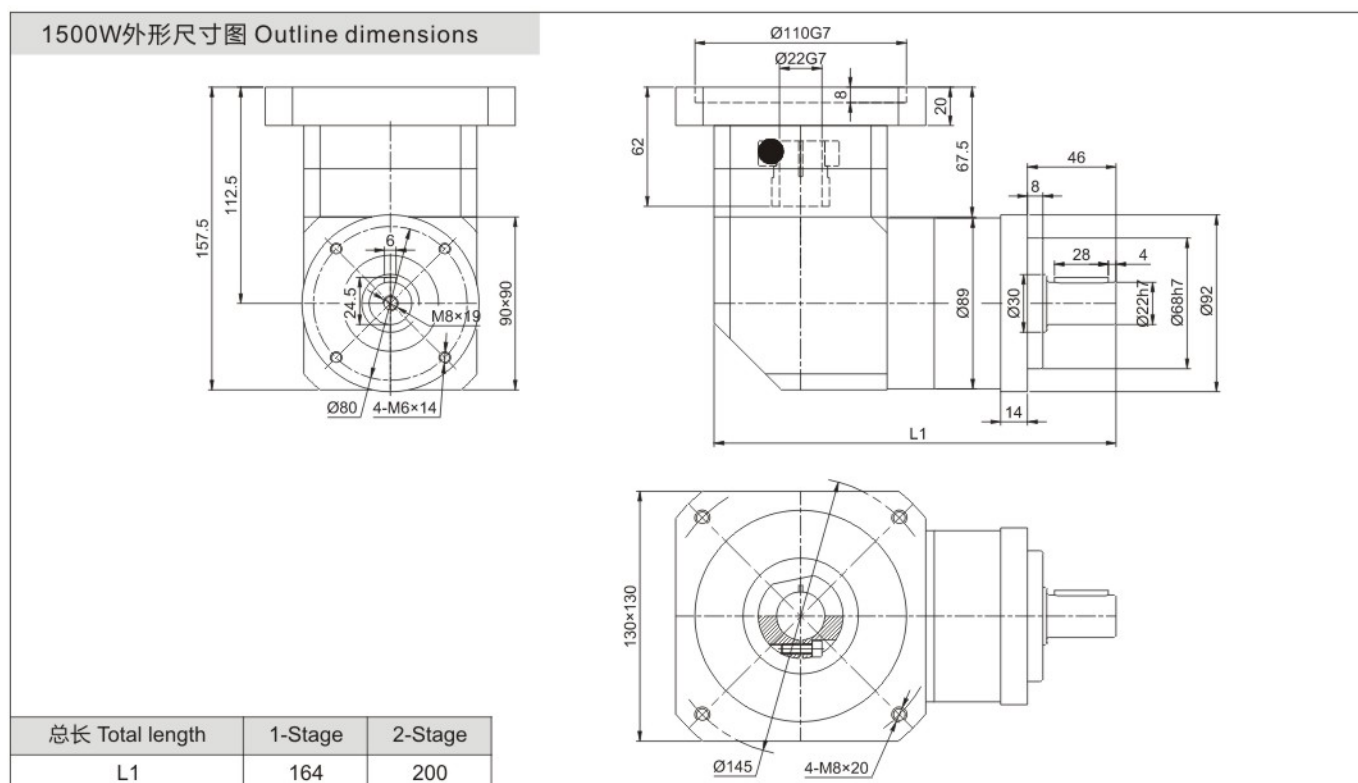
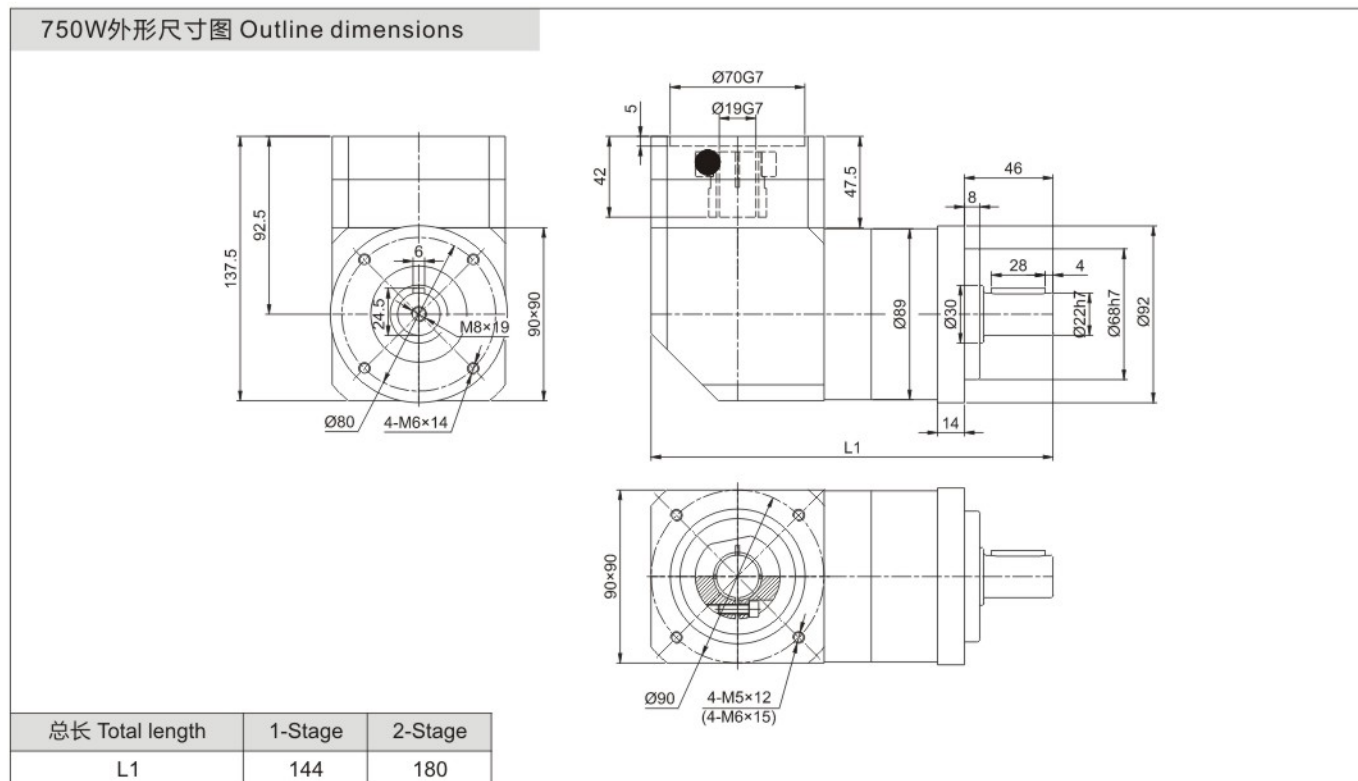
WPBL/WPBF(90)系列性能参数表 WPBL/WPBF(90) Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	85	255	2.28	1600	800	1500 (3)	1000	13.74
	4	135	405	2.28	1600	800	1500 (3)	750	18.32
	5	130	390	2.28	1600	800	1500 (3)	600	22.9
	7	105	315	2.28	1600	800	1500 (3)	428.57	32.06
	9	75	225	2.28	1600	800	1500 (3)	333.33	41.22
	10	70	210	2.28	1600	800	1500 (3)	300	45.8
2	12	85	255	2.28	1600	800	1500 (3)	250	53.81
	15	85	255	2.28	1600	800	1500 (3)	200	67.26
	16	135	405	2.28	1600	800	1500 (3)	187.5	71.75
	20	135	405	2.28	1600	800	1500 (3)	150	89.69
	25	130	390	2.28	1600	800	1500 (3)	120	112.11
	28	135	405	2.28	1600	800	1500 (3)	107.14	125.56
	32	135	405	2.28	1600	800	750 (3)	93.75	71.75
	35	130	390	2.28	1600	800	750 (3)	85.71	78.48
	40	130	390	2.28	1600	800	750 (3)	75	89.69
	50	130	390	2.28	1600	800	750 (3)	60	112.11
	56	105	315	2.28	1600	800	400 (3)	53.57	66.90
	70	105	315	2.28	1600	800	400 (3)	42.85	83.3
	90	75	225	2.28	1600	800	200 (3)	33.33	53.55
	100	70	210	2.28	1600	800	200 (3)	30	59.5

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤68dB(A) (5)		≤8arcmin	2,0000h	η ≥96%	14 N.m/arcmin	IP65	5.5 Kg
2			≤10arcmin		η ≥94%			6.1 Kg

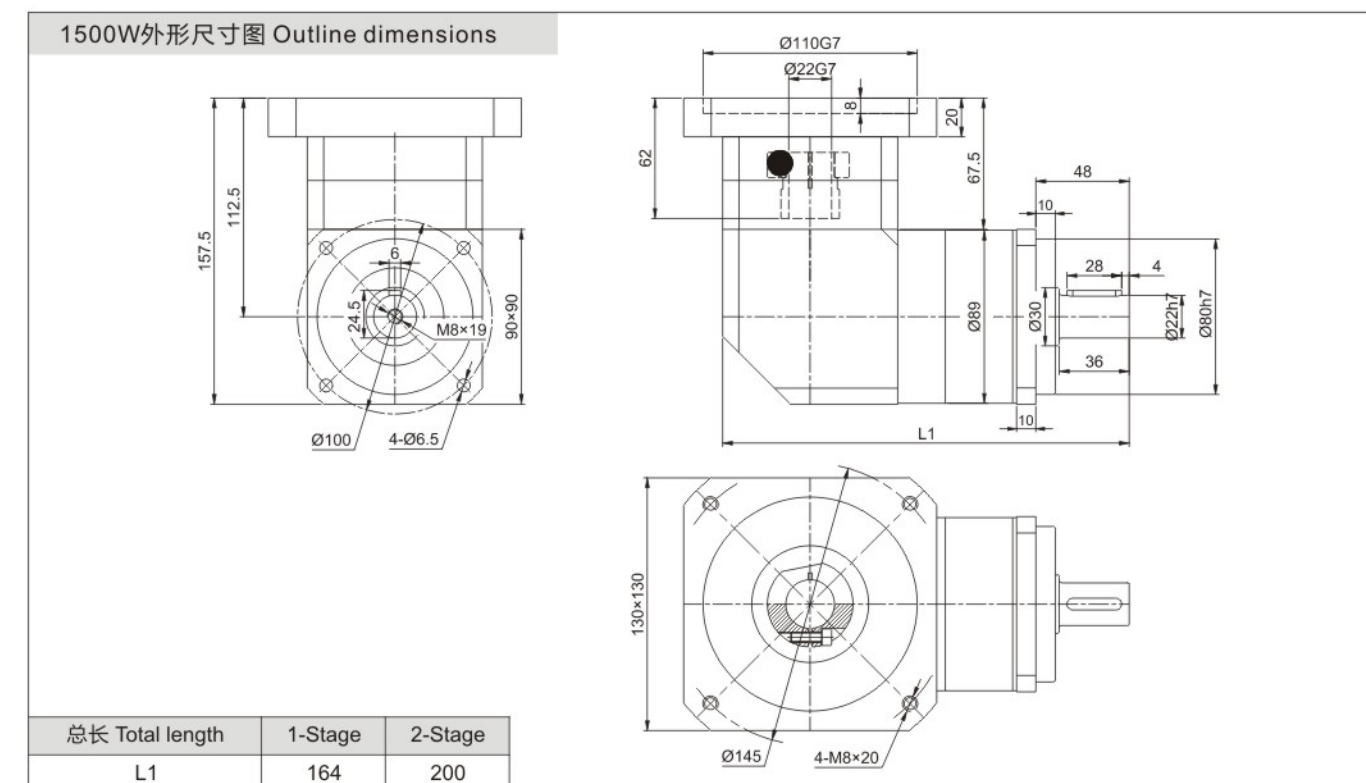
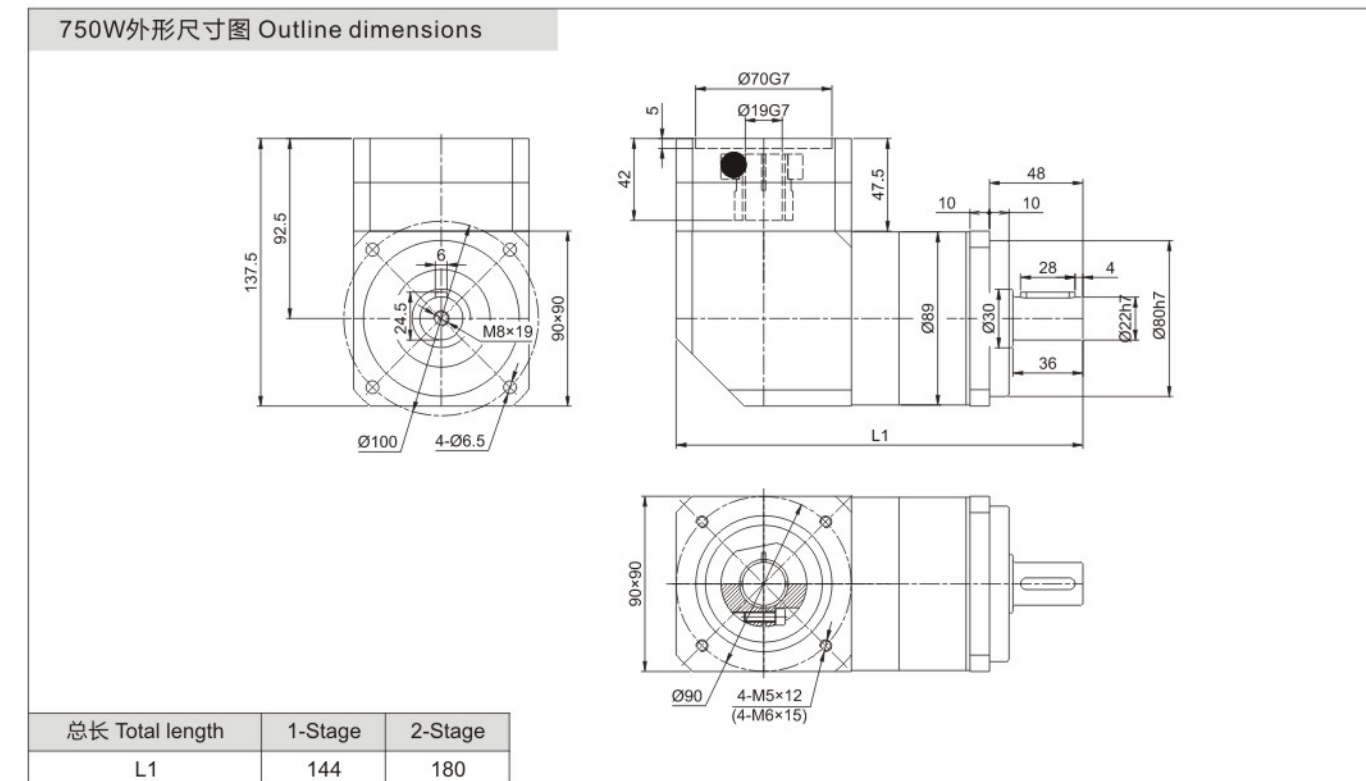
- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。
(1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PBL/PBF selection table in P30.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

WPBL90系列外形尺寸图 WPBL90 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

WPBF90系列外形尺寸图 WPBF90 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

WPBL/WPBF(120)系列性能参数表
WPBL/WPBF(120) Series Performance Parameter Table

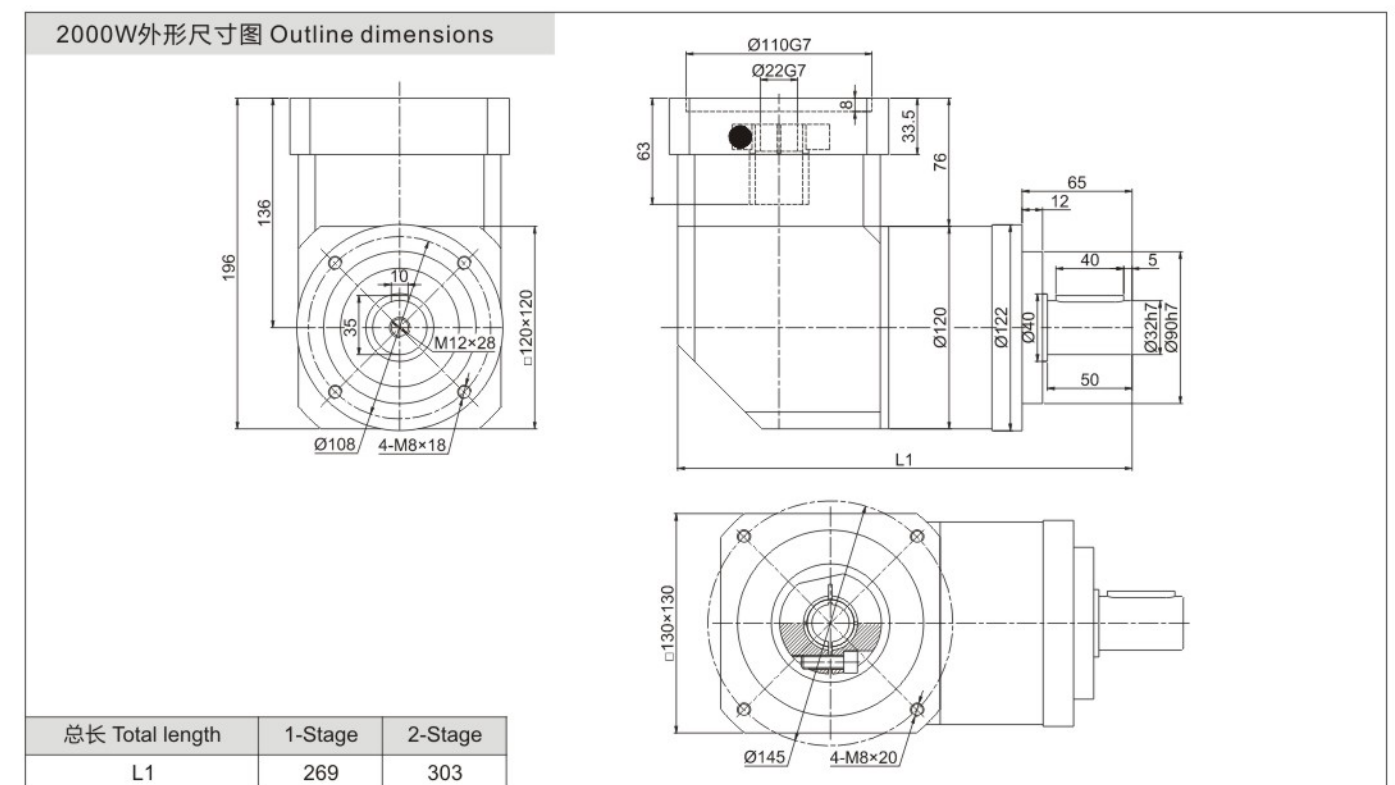
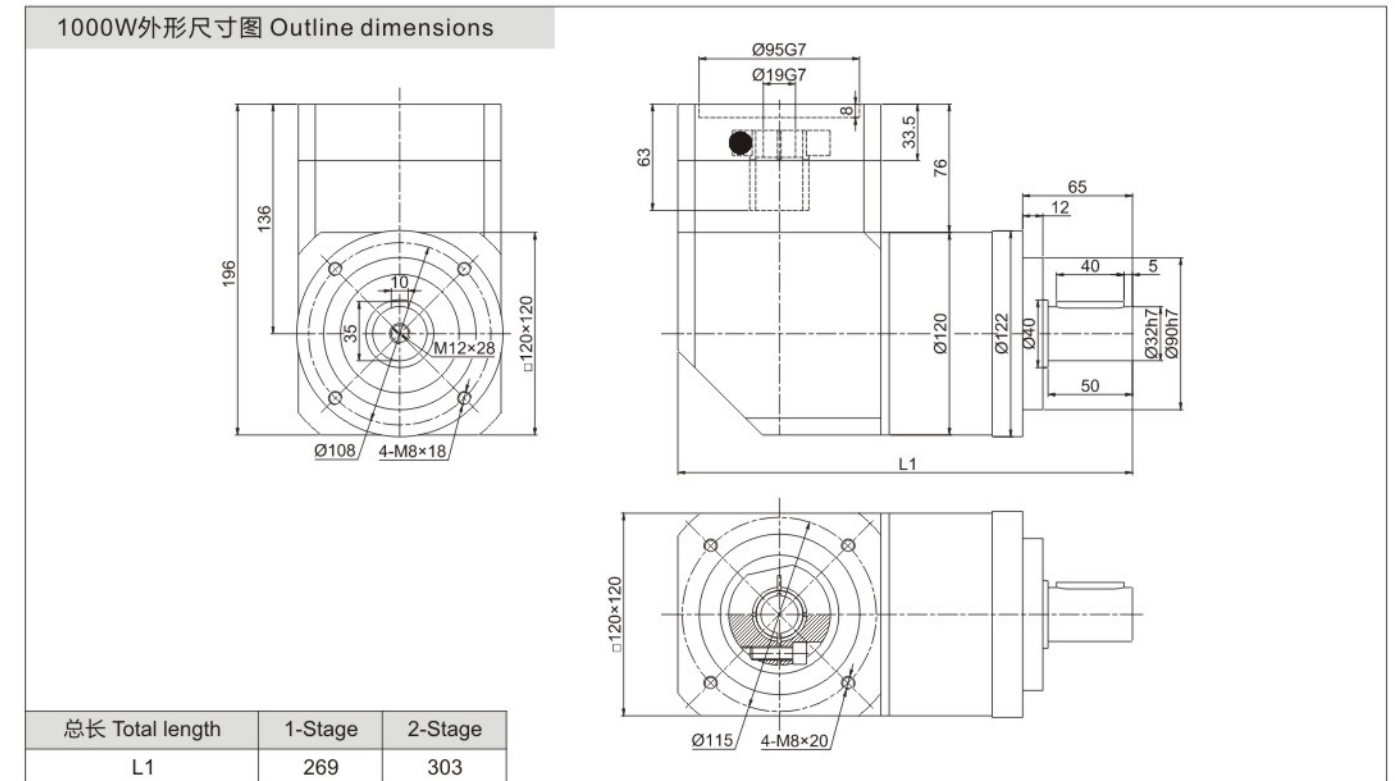
减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted Radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	200	600	7.08	4100	2050	2000 (3)	1000	18.33
	4	280	840	5.97	4100	2050	2000 (3)	750	24.44
	5	250	750	5.91	4100	2050	2000 (3)	600	30.56
	7	170	510	5.60	4100	2050	2000 (3)	428.57	42.78
	9	135	405	5.60	4100	2050	2000 (3)	333.33	55
	10	125	375	5.60	4100	2050	2000 (3)	300	61.12
2	12	200	600	5.97	4100	2050	2000 (3)	250	73.34
	15	200	600	5.91	4100	2050	2000 (3)	200	91.68
	16	280	840	5.97	4100	2050	2000 (3)	187.5	97.79
	20	280	840	5.91	4100	2050	2000 (3)	150	122.24
	25	250	750	5.91	4100	2050	2000 (3)	120	152.8
	28	280	840	5.60	4100	2050	2000 (3)	107.14	171.13
	32	280	840	5.60	4100	2050	2000 (3)	93.75	195.58
	35	250	750	5.60	4100	2050	2000 (3)	85.71	213.92
	40	250	750	5.60	4100	2050	1000 (3)	75	122.24
	50	250	750	5.60	4100	2050	1000 (3)	60	152.8
	70	170	510	5.60	4100	2050	750 (3)	42.85	160.44
	90	135	405	5.60	4100	2050	400 (3)	33.33	110.01
	100	125	375	5.60	4100	2050	(3)	30	≤125

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤70dB(A) (5)		≤8arcmin	2,000h	η ≥96%	25 N.m/arcmin	IP65	15 Kg
2			≤10arcmin		η ≥94%			17 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

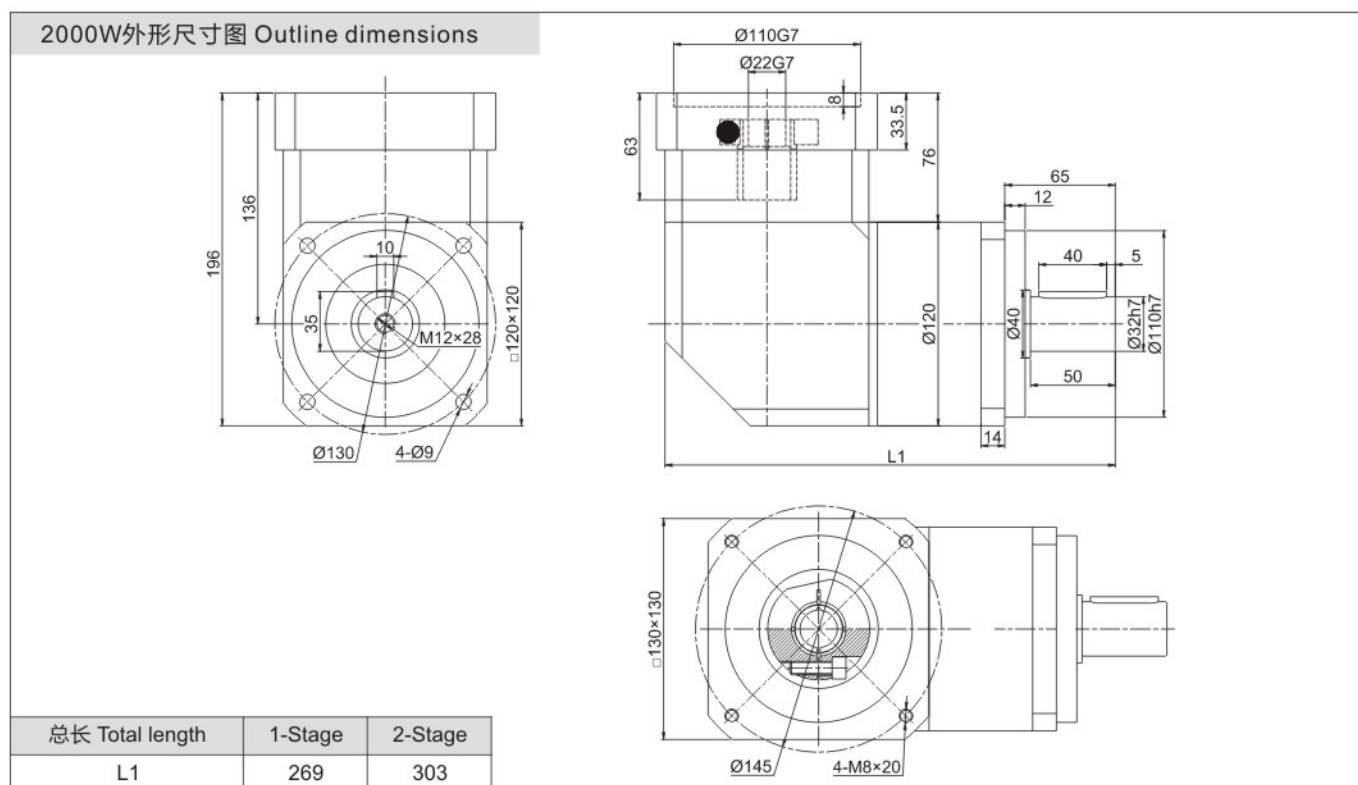
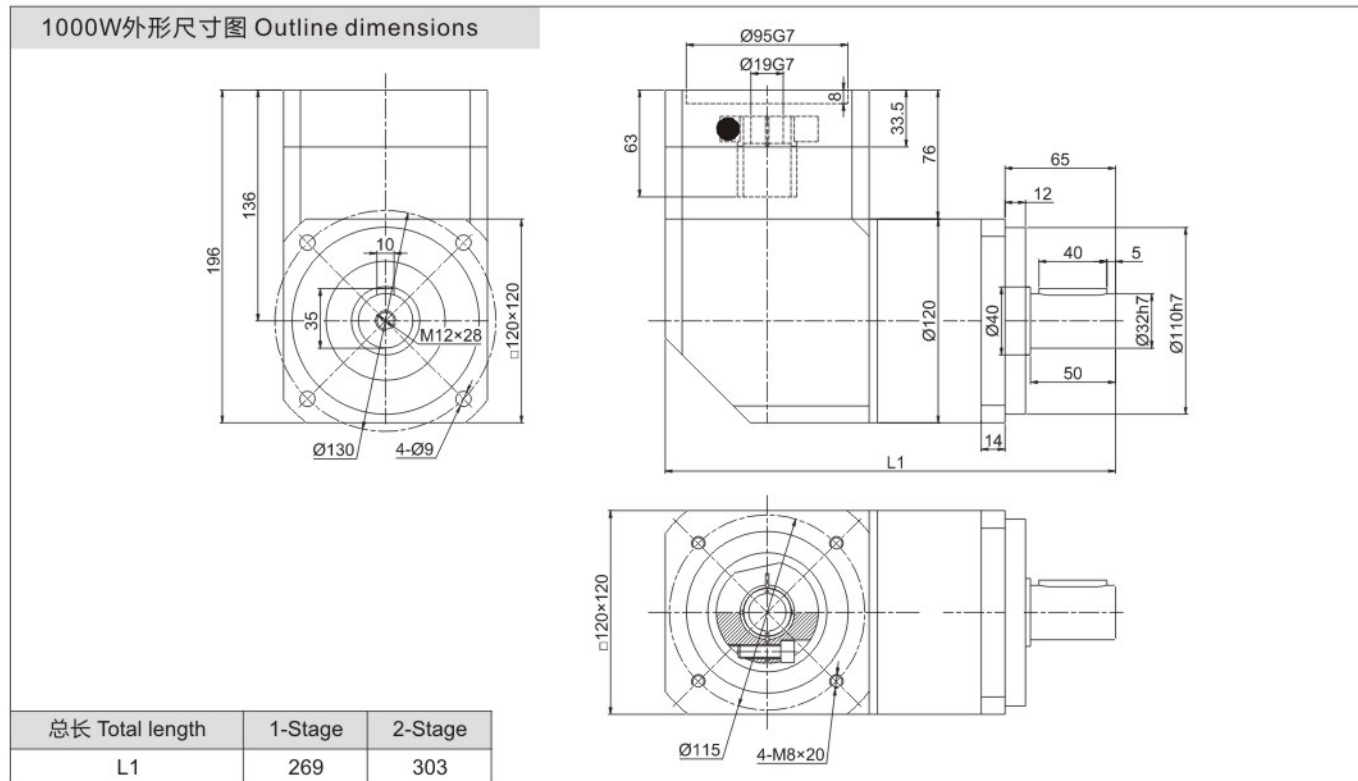
- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See PBL/PBF selection table in P30.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

WPBL120系列外形尺寸图 WPBL120 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

WPBF120系列外形尺寸图 WPBF120 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P30的PBL/PBF系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see PBL/PBF selection table in P30.

HAB系列代号标识 HAB Series Code Identification



HAB	90	-	40	P2	S2	OP2
①	②	③	④	⑤	⑥	
① 减速机机座代号 Planetary Gearbox Frame Code:						
HAB: 高刚性高精度方箱体系列 High rigidity high precision square housing series						
② 减速机系列代号 Gearboxes Code:						
60、90、115、145						
③ 减速比: Ratio:						
一段1- stage: HAB60/145(3、4、5、8、10)						
HAB90/115(3、4、5、6、7、8、9、10)						
二段2- stage: HAB60/145 (12、15、16、20、25、32、40、64)						
HAB90/115(15、20、25、30、35、40、50、60、70、80、90、100)						
④ 背隙Backlash:						
P1: 精密Precision						
P2: 标准Standard						
⑤ 输出轴形式Output shaft type:						
S1: 光轴输出轴Shaft without key						
S2: 带键输出轴Shaft with key						
T: 用户定制输出轴Special require						
⑥ 联轴器形式Input shaft type:						
OP1: 整体式紧箍夹壳联轴器Integral Hoop clamp coupling						
OP2: 分体式紧箍夹壳联轴器Split type Hoop clamp coupling						
OP3: 带键槽整体式紧箍夹壳联轴器Integral Hoop clamp coupling with keyway						
OP4: 加强型整体式紧箍夹壳联轴器 (频繁正反转) Reinforcement Integral Hoop clamp coupling(suitable for frequently CW and CCW)						
OP5: 只有键槽连接联轴器Only keyway connect coupling						
OP6: 其它方式适配联轴器Other type connect coupling						

- (1): 联轴器标准配置为OP2
(1): Coupling standard configure OP2

HAB系列按伺服电机功率选型推荐表（输入转速为3000rpm）
HAB series according to the servo motor power selection recommendation table
(Input speed 3000rpm)

功率 Power	HAB60--速比(2) HAB60- Ratio(2)	HAB90--速比(2) HAB90- Ratio(2)	HAB115--速比(2) HAB115- Ratio(2)	HAB145--速比(2) HAB145- Ratio(2)
100W	3、4、5、8、10、9、12、 15、16、20、25、32、 40、50、64、80	90、100		
200W	3、4、5、8、10、9、12、 15、16、20、25、32、 40、50	60、70、80、90、100		
400W	3、4、5、8、10、9、12、 15、16、20、25、32、 40	50、60、70	64、80、100	
750W	(3、4、5、8、9、12、15、 16、20)	3、4、5、6、7、8、9、10、 15、20、25、30、35、40、50	60、70、80	
1000W		3、4、5、6、7、8、9、10、 15、20、25、30、40	(3、4、5、6、7、8、9、10、 15、20、25、30、)35、50、 60、70	64、80
1500W		(3、4、5、6、7、8、9、10、 15、20、25)	3、4、5、6、7、8、9、10、 15、20、25、30、35、40、 45、50、60	(3、4、5、8、10、9、12、15、 16、20、25、32、50、) 64
2000W		(3、4、5、6、7、8、9、10、 15、20)	3、4、5、6、7、8、9、10、 15、20、25、30、35、40、 45、50	(3、4、5、8、10、9、12、15、 16、20、25、32、50)
2500W			3、4、5、6、7、8、9、10、 15、20、25、30、40	(3、4、5、8、10、9、12、15、 16、20、25、)32、50
3000W			(3、4、5、6、7、8、9、10、 15、20、25)	3、4、5、8、10、9、12、15、 16、20、25、32、40、50
3500W			(3、4、5、6、7、8、9、10、 15、20)	3、4、5、8、10、9、12、15、 16、20、25、32、40、50
4500W				3、4、5、8、10、9、12、15、 16、20、25、32、40
5500W				3、4、5、8、10、9、12、15、 16、20、25、32
7500W				3、4、5、8、9、12、15、16、 20、25、

- (1)：对照表中“()”为次选速比。“()” is second-choice ratio。
(2)：减速机使用≤扭矩额定扭矩时，可选择相同机座中的相应速比。
When Gearbox' operation torque≤Rated torque, select the ratio accordingly in same frame.
(3)：减速机适用电机的轴径范围，见下列表格
Suitable motor shaft range, see below table:

减速机系列 Planetary gearbox series	HAB	HAB60	HAB90	HAB115	HAB145
电机轴径 Motor shaft dianeter	mm	8≤d≤19	9≤d≤24	14≤d≤35	19≤d≤42

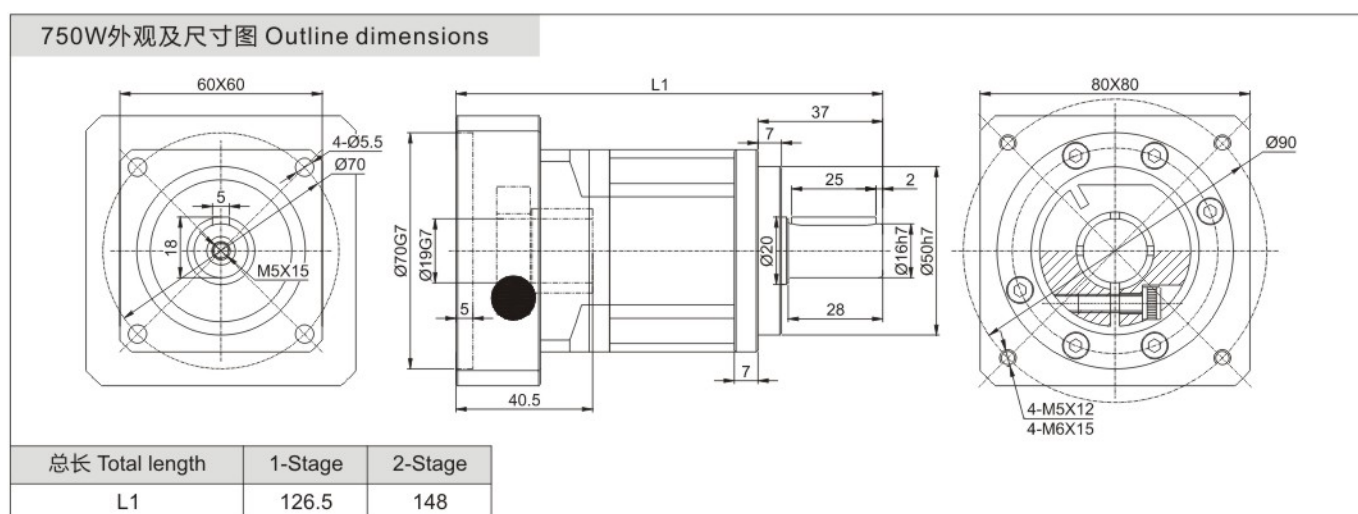
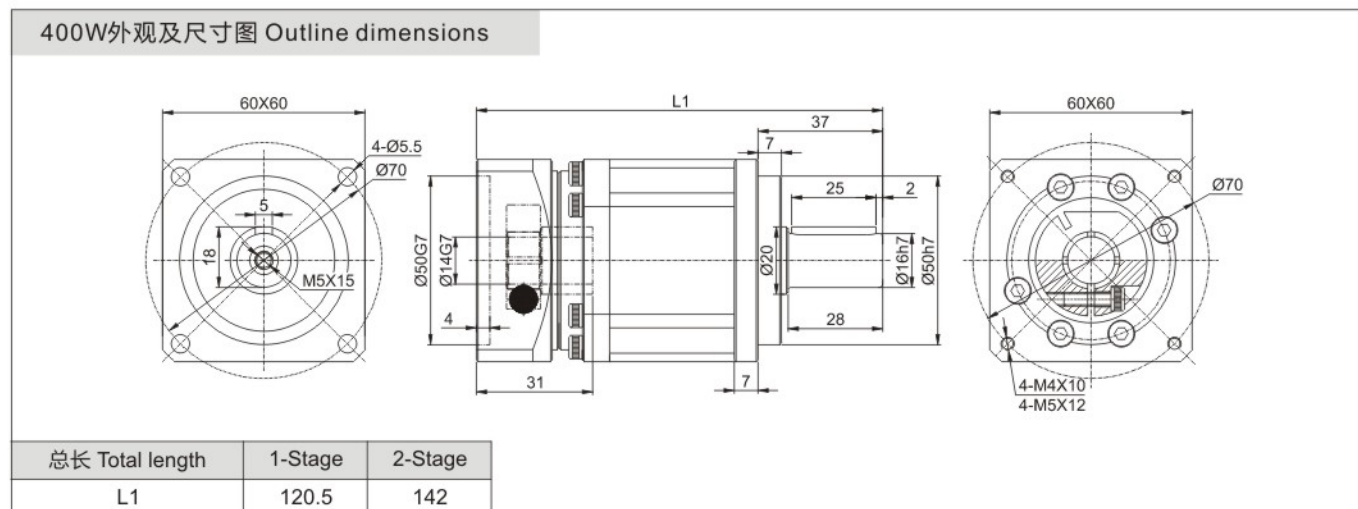
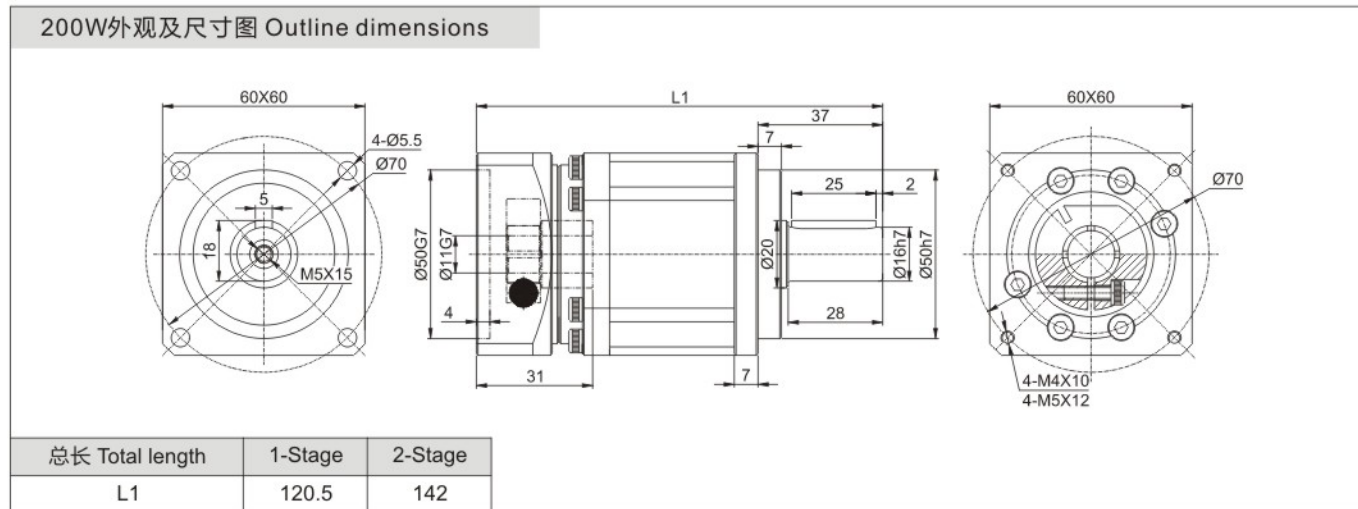
HAB60系列性能参数表 HAB60 Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机（输入转速3000rpm）时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	41	100	0.16	1300	600	400 (3)	1000	3.71
	4	60	160	0.14	1300	600	400 (3)	750	4.94
	5	50	135	0.13	1300	600	400 (3)	600	6.18
	8	35	112	0.13	1300	600	400 (3)	375	7.41
	10	21	63	0.13	1300	600	400 (3)	300	12.35
2	9	41	100	0.16	1300	600	400 (3)	333.33	11.12
	12	60	160	0.16	1300	600	400 (3)	250	14.36
	15	50	135	0.16	1300	600	400 (3)	200	17.95
	16	60	160	0.14	1300	600	400 (3)	187.5	19.15
	20	60	160	0.13	1300	600	400 (3)	150	23.94
	25	50	135	0.13	1300	600	400 (3)	120	29.92
	32	60	160	0.13	1300	600	400 (3)	93.75	38.30
	40	50	135	0.13	1300	600	400 (3)	75	47.88
	50	50	135	0.13	1300	600	200 (3)	60	29.92
	64	35	112	0.13	1300	600	100 (3)	46.87	19.15
	80	35	112	0.13	1300	600	100 (3)	37.5	23.94
	100	21	63	0.13	1300	600	(3)	30	≤21

段数 Stage	噪音 Noise	精密背隙 Precidion Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Tosional sitffness	防护等级 Degree of protection	重量 Weirht
1	≤60dB(A) (5)	≤3arcmin	≤5arcmin	2,000h	η ≥96%	7 N.m/arcmin	IP65	1.3 Kg
2		≤5arcmin	≤8arcmin		η ≥94%			1.5 Kg

- (1)：段数。
(2)：减速比。
(3)：减速机使用扭矩≤额定扭矩，具体以电机选型依据的，见P50的HAB系列选型对照表。
(4)：径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。容许最大径向负载（轴向负载为0时）=1530N。
容许最大轴向负载（径向负载为0时）=1200N。
(5)：噪音值是输入转速3000rpm时，距离1m测量。
(6)：背隙是由额定扭矩的2%测量。
(1)：Stage.
(2)：Ratio.
(3)：When Gearbox' operation torque≤Rated torque, type-selection is based on motor parameter, See HAB selection table in P50.
(4)：Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
Maximum radial load(at axial load of 0)=1530N. Maxmum axial load(at radial load of 0)=1200N.
(5)：Noise level is tested based on input speed 3000rpm and 1m distance.
(6)：Backlash is test by 2% of rated torque.

HAB60系列外观尺寸图 HAB60 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型依据的, 见P50的HAB系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see HAB selection table in P50.

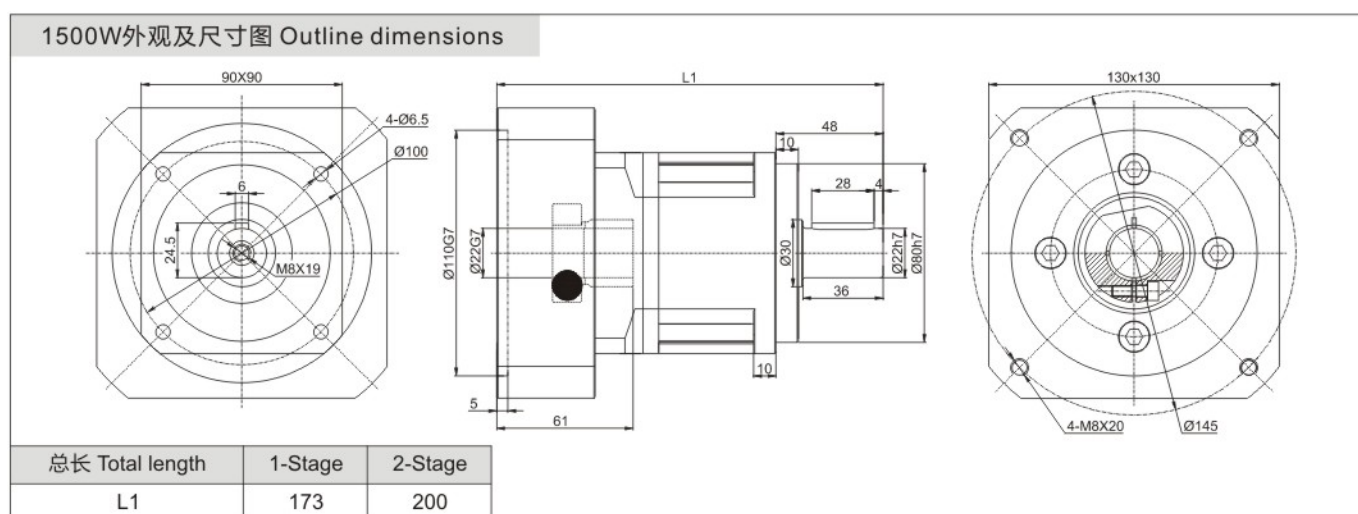
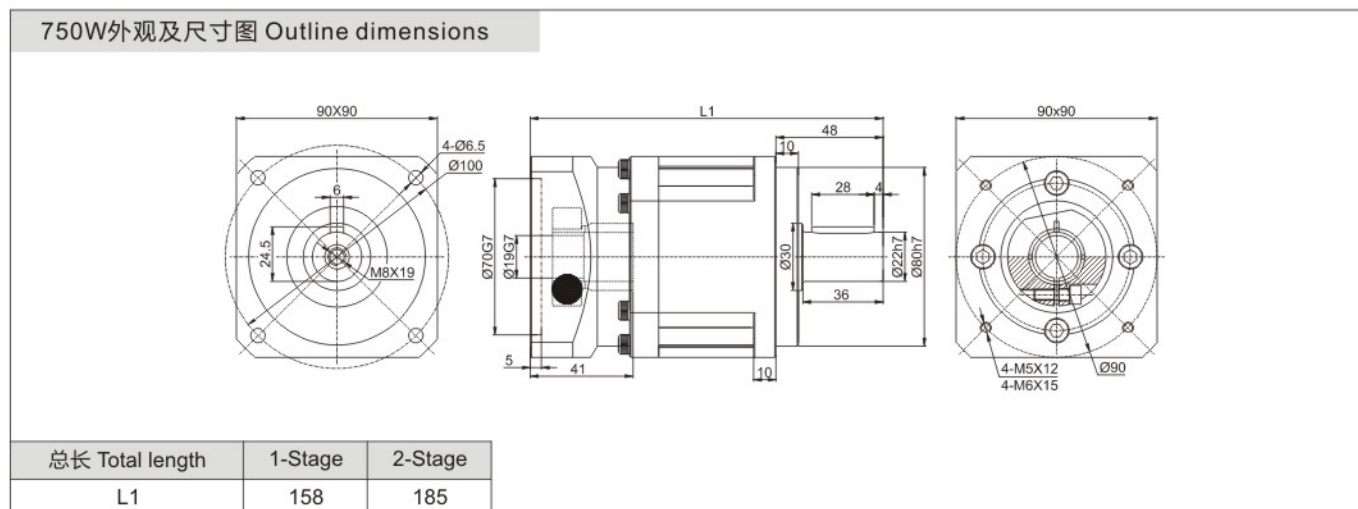
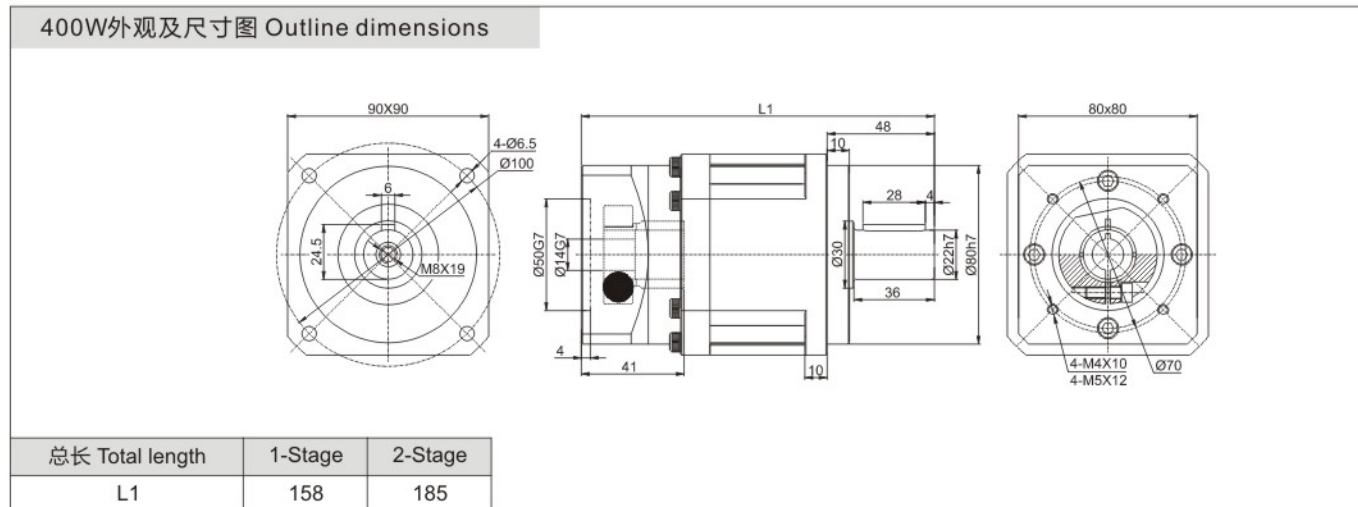
HAB90系列性能参数表 HAB90 Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	115	230	0.61	2200	1000	750 (3)	1000	6.95
	4	150	308	0.48	2200	1000	750 (3)	750	9.26
	5	135	310	0.47	2200	1000	750 (3)	600	11.58
	6	102	270	0.45	2200	1000	750 (3)	500	13.90
	7	100	270	0.45	2200	1000	750 (3)	428.57	16.21
	8	90	216	0.44	2200	1000	750 (3)	375	18.53
	9	77	180	0.44	2200	1000	750 (3)	333.33	20.84
	10	72	177	0.44	2200	1000	750 (3)	300	23.16
2	15	115	230	0.47	2200	1000	750 (3)	200	33.66
	20	150	308	0.47	2200	1000	750 (3)	150	44.89
	25	135	310	0.47	2200	1000	750 (3)	120	56.11
	30	102	270	0.47	2200	1000	750 (3)	100	67.33
	35	100	270	0.47	2200	1000	750 (3)	85.71	78.55
	40	135	310	0.44	2200	1000	750 (3)	75	89.77
	50	135	310	0.44	2200	1000	750 (3)	60	112.21
	60	102	270	0.44	2200	1000	400 (3)	50	71.82
	70	100	270	0.44	2200	1000	400 (3)	42.86	83.79
	80	90	216	0.44	2200	1000	200 (3)	37.5	47.88
	90	77	180	0.44	2200	1000	200 (3)	33.33	53.86
	100	72	177	0.44	2200	1000	200 (3)	30	59.85

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Tosional sitffness	防护等级 Degree of protection	重量 Weirht
1	≤63dB(A) (5)	≤3arcmin	≤5arcmin	2,0000h	η ≥96%	14 N.m/arcmin	IP65	3.7 Kg
2		≤5arcmin	≤8arcmin		η ≥94%			4.1 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机选型依据的, 见P50的HAB系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。容许最大径向负载 (轴向负载为0时) = 3100N。容许最大轴向负载 (径向负载为0时) = 1950N。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。
(1): Stage
(2): Ratio
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See HAB selection table in P50.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm. Maximum radial load (at axial load of 0) = 3100N. Maximum axial load (at radial load of 0) = 1950N.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

HAB90系列外观尺寸图 HAB90 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P50的HAB系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see HAB selection table in P50.

HAB115系列性能参数表 HAB115 Series Performance Parameter Table

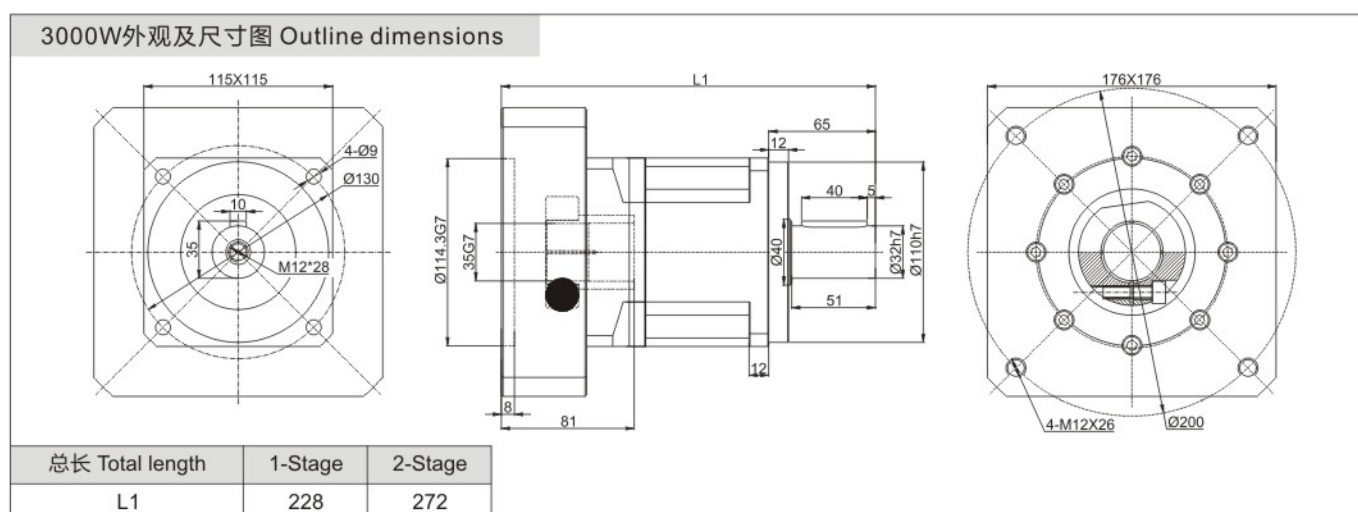
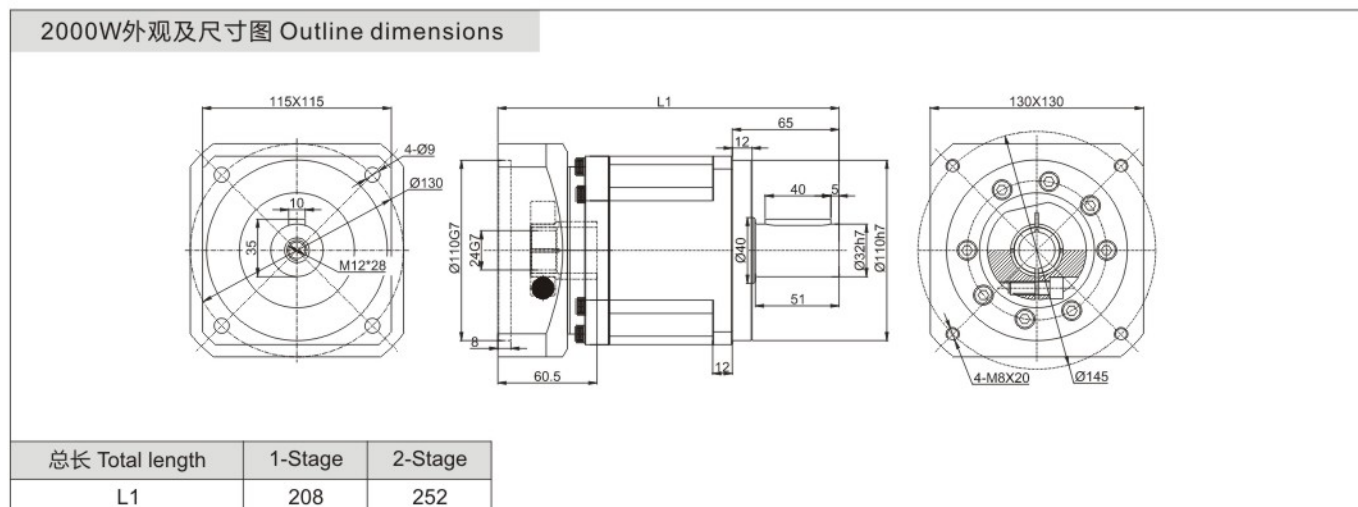
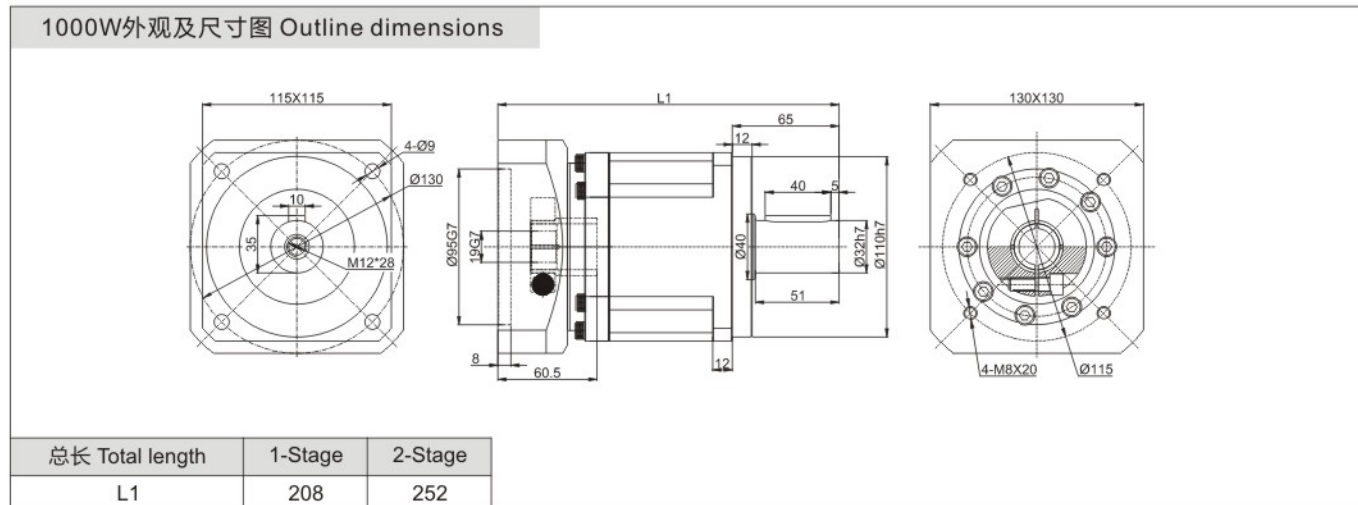
减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal Output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
1	3	250	600	3.25	4850	2000	2000 (3)	1000	18.53
	4	350	750	2.74	4850	2000	2000 (3)	750	24.70
	5	310	650	2.71	4850	2000	2000 (3)	600	30.88
	6	240	600	2.65	4850	2000	2000 (3)	500	37.05
	7	210	500	2.52	4850	2000	2000 (3)	428.57	43.23
	8	200	500	2.58	4850	2000	2000 (3)	375	49.41
	9	170	400	2.57	4850	2000	2000 (3)	333.33	55.58
	10	170	400	2.57	4850	2000	2000 (3)	300	61.76
2	15	250	600	2.71	4850	2000	2000 (3)	200	89.77
	20	350	750	2.71	4850	2000	2000 (3)	150	119.69
	25	310	650	2.71	4850	2000	2000 (3)	120	149.62
	30	240	600	2.71	4850	2000	2000 (3)	100	179.54
	35	210	500	2.71	4850	2000	2000 (3)	85.71	209.46
	40	310	650	2.58	4850	2000	2000 (3)	75	239.39
	50	310	650	2.57	4850	2000	2000 (3)	60	299.23
	60	240	600	2.57	4850	2000	1000 (3)	50	179.54
	70	210	500	2.57	4850	2000	1000 (3)	42.86	209.46
	80	200	500	2.57	4850	2000	750 (3)	37.5	179.54
	90	170	400	2.57	4850	2000	400 (3)	33.33	107.72
	100	170	400	2.57	4850	2000	400 (3)	30	119.69

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Torsional stiffness	防护等级 Degree of protection	重量 Weight
1	≤65dB(A) (5)	≤3arcmin	≤5arcmin	2,0000h	η ≥96%	25 N.m/arcmin	IP65	8.6 Kg
2		≤5arcmin	≤8arcmin		η ≥94%			12.5 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩≤额定扭矩, 具体以电机为选型依据的, 见P50的HAB系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。容许最大径向负载(轴向负载为0时)=3100N。容许最大轴向负载(径向负载为0时)=1950N。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。

- (1): Stage
(2): Ratio
(3): When Gearbox' operation torque≤Rated torque, type-selection is based on motor parameter, See HAB selection table in P50.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm. Maximum radial load(at axial load of 0)=3100N. Maximum axial load(at radial load of 0)=1950N.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

HAB115系列外观尺寸图 HAB115 Series Outline Dimensions



- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机为选型依据的, 见P50的HAB系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see HAB selection table in P50.

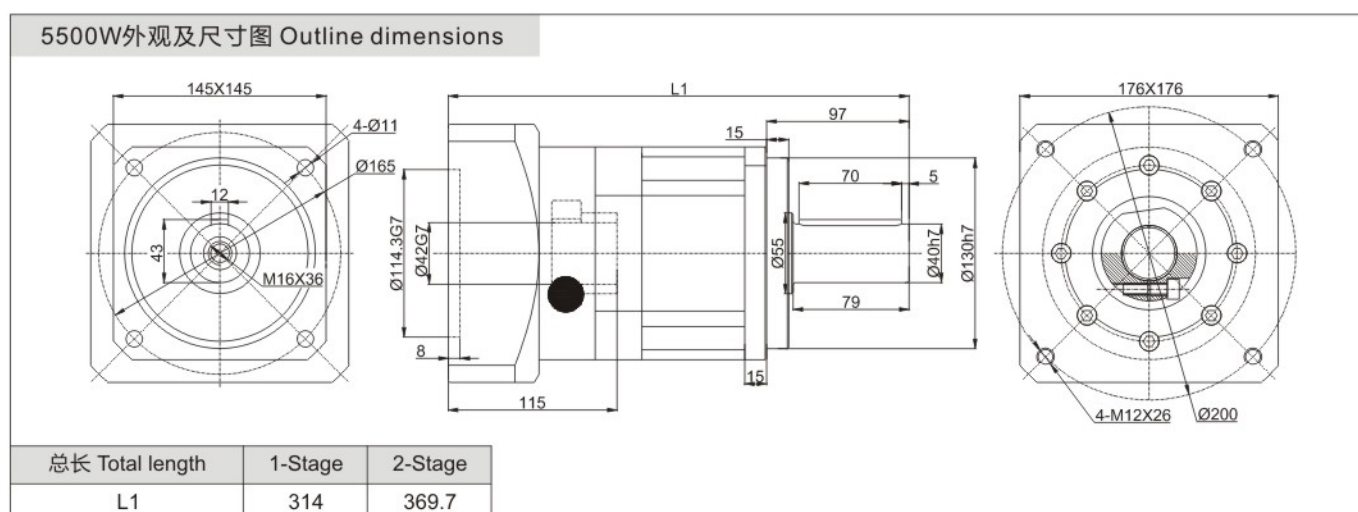
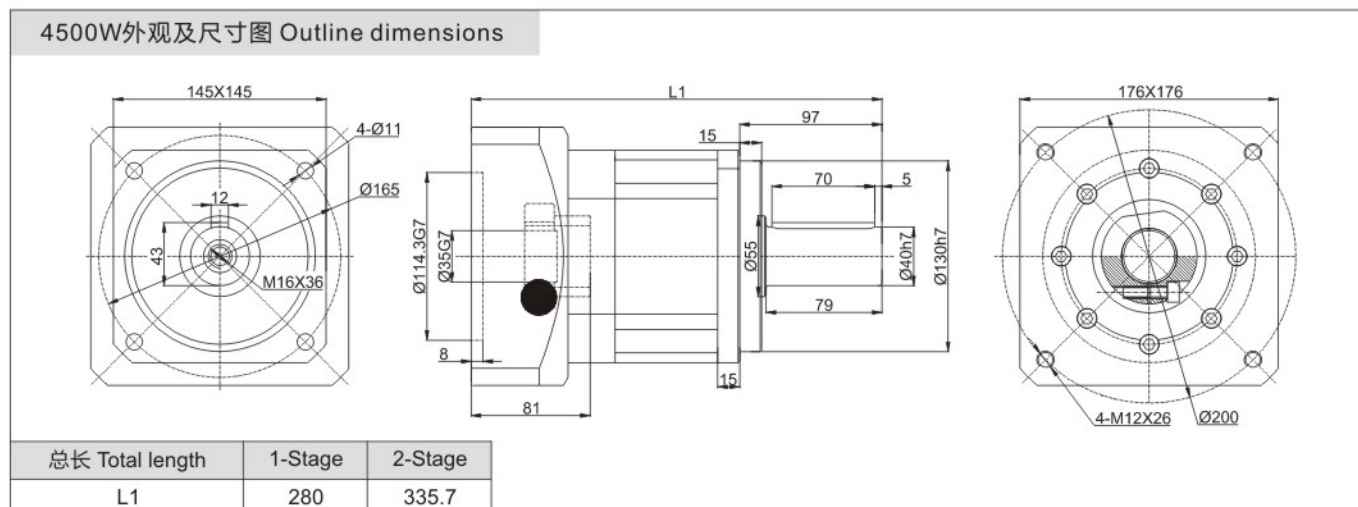
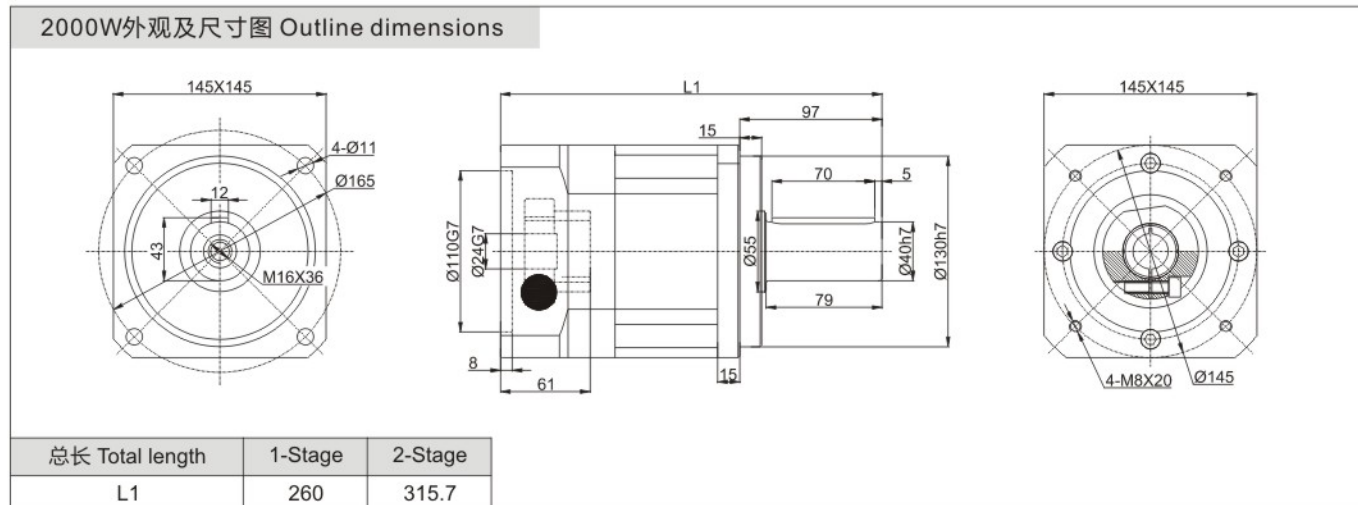
HAB145系列性能参数表 HAB145 Series Performance Parameter Table

减速机性能参数 Planetary gearbox performance parameter							适配电机 (输入转速3000rpm) 时的性能参数 Suitable for motor (input speed 3000 rpm)		
S (1)	i (2)	额定扭矩 Nominal output torque	急停扭矩 Emergency stop torque	转动惯量 Moment of inertia	径向负荷 Permitted radial load	轴向负荷 Permitted axial load	电机功率 The motor power	输出转速 Output speed	输出扭矩 Output torque
		N.m (3)	N.m	Kgcm ²	N (4)	N (4)	W (3)	rpm	N.m (3)
一段	3	540	1080	12.14	8850	4500	4500 (3)	1000	41.69
	4	720	1440	7.78	8850	4500	4500 (3)	750	55.58
	5	600	1200	6.07	8850	4500	4500 (3)	600	69.48
	8	320	640	4.63	8850	4500	4500 (3)	375	111.16
	10	200	400	3.52	8850	4500	4500 (3)	300	138.95
二段	9	540	1080	12.14	8850	4500	4500 (3)	333.33	125.06
	12	720	1440	12.14	8850	4500	4500 (3)	250	161.59
	15	600	1200	12.14	8850	4500	4500 (3)	200	201.98
	16	720	1440	7.47	8850	4500	4500 (3)	187.5	215.45
	20	720	1440	6.65	8850	4500	4500 (3)	150	269.31
	25	600	1200	5.81	8850	4500	4500 (3)	120	336.64
	32	720	1440	4.5	8850	4500	4500 (3)	93.75	430.90
	40	600	1200	4.5	8850	4500	4500 (3)	75	538.62
	50	600	1200	3.52	8850	4500	3500 (3)	60	523.66
	64	320	640	4.5	8850	4500	1500 (3)	46.87	287.26
	80	320	640	3.52	8850	4500	1000 (3)	37.5	269.31
	100	200	400	3.52	8850	4500	(2)	30	≤200

段数 Stage	噪音 Noise	精密背隙 Precision Backlash	标准背隙 Standard Backlash	寿命 Life time	效率 Efficiency	抗扭刚性 Tosional stiffness	防护等级 Degree of protection	重量 Weirht
1	≤70dB(A) (5)	≤3arcmin	≤5arcmin	2,0000h	η ≥96%	50 N.m/arcmin	IP65	14.5 Kg
2		≤5arcmin	≤8arcmin		η ≥94%			17.5 Kg

- (1): 段数。
(2): 减速比。
(3): 减速机使用扭矩 ≤ 额定扭矩, 具体以电机为选型依据的, 见P50的HAB系列选型对照表。
(4): 径向力和轴向力是在输出转速100rpm时作用于输出轴中心位置的许用力。
(5): 噪音值是输入转速3000rpm时, 距离1m测量。
(6): 背隙是由额定扭矩的2%测量。
(1): Stage.
(2): Ratio.
(3): When Gearbox' operation torque ≤ Rated torque, type-selection is based on motor parameter, See HAB selection table in P50.
(4): Radial force and axial force are the permissible force on output distance position when output speed 100rpm.
(5): Noise level is tested based on input speed 3000rpm and 1m distance.
(6): Backlash is test by 2% of rated torque.

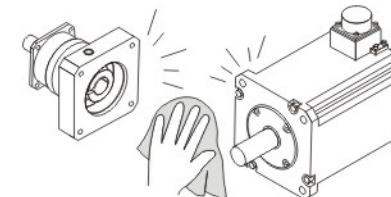
HAB145系列外观尺寸图 HAB145 Series Outline Dimensions



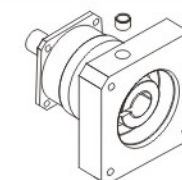
- (1): 订购时请告知详细的电机型号, 图纸以外形尺寸图确认为准。
(2): 具体以电机选型为依据, 见P50的HAB系列选型对照表。
(1): Provide specific motor type when ordering, the dimensions are subject to final outline drawing.
(2): If type-selection is based on motor parameter, see HAB selection table in P50.

电机安装步骤 Mounting Procedure To The Motor

- 1 擦拭减速机和马达安装接合面上的防锈剂、润滑脂等。
Wipe off anti-rust agent and oil on the motor shaft.

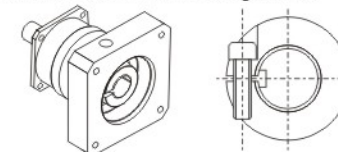


- 2 取下橡皮塞头。
Remove the plug.

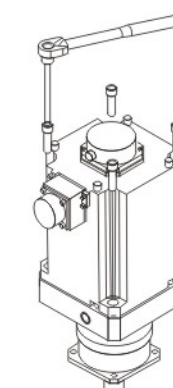


- 3 旋转输入轴使紧固螺栓的头对准塞头孔。
此时, 请确认紧固螺栓是松开的。
Turn the input shaft until the cap screw is seen.
Make sure the cap screw is loosened.

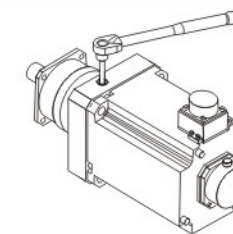
如带有轴套, 安装方法如图所示。
In case the bushing has been attached,
Please fix it to the reducer as the drawing below.



- 4 将减速机垂直放置在平坦的地方, 使减速机的马达安装面朝上侧。
将马达轴慢慢地插入输入轴, 注意避免撞击到输入轴, 请确认马达的法兰面紧靠减速机的法兰面。按指定的紧固扭矩拧紧马达安装螺栓。(参考表1)
Please place reducer vertically on the flat surface so the motor mounting part faces up. Carefully insert the motor shaft into the input shat. (It should be inserted smoothly) Make sure the motor flange is perfectly fit to the reducer's flange.
Tighten the motor installing bolts to the proper torque.
(See table 1)



- 5 使用转矩扳手等按照指定的紧固扭矩拧紧紧固螺钉。(参考表1)。
Tighten the clamping bolt of the input shaft with torque wrench to the proper torque.(See table 1).



- 6 安装橡胶塞头, 完成安装。
Reinstall the plug. The procedure is done.

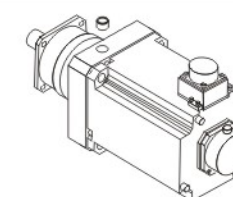


表1 Table 1

螺栓尺寸 Bolt size	马达安装螺栓 Motor installing bolts		紧固螺钉 Clamping bolts	
	Nm	kgfm	Nm	kgfm
M3	1.1	0.11	1.9	0.18
M4	2.5	0.26	4.3	0.44
M5	5.1	0.52	8.7	0.89
M6	8.7	0.89	15	1.5
M8	21	2.1	36	3.7
M10	42	4.3	71	7.2
M12	42	7.3	125	13
M16	134	14	-	-

减速机的安装 Reducer installation

要等减速机安装到设备上时, 请先确认安装面平坦且没有毛边等, 然后使用转矩扳手等按照指定的紧固扭矩拧紧螺栓。(参考表2)
After confirming the installation surface is flat and clean, tighten the bolt using a torque wrench to the proper torque.(See table 2)

表2 Table 2

螺栓尺寸 Bolt size	紧固扭矩 Tightening torque	
	Nm	kgfm
M3	1.9	0.18
M4	4.3	0.44
M5	8.7	0.89
M6	15	1.5
M8	36	3.7
M10	71	7.2
M12	125	13
M16	310	32
M20	603	62

※推荐螺栓: 强度12.9以上。
※Recommended bole: Strength 12.9.