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网址 (Web) : [www.sh-zeqi.com](http://www.sh-zeqi.com)

邮箱 (E-mail) : [shzeqi@sh-zeqi.com.cn](mailto:shzeqi@sh-zeqi.com.cn)

总部地址: 上海市嘉定区南翔镇静塘路988号

No. 988, Sedating Tang Road, Nanxiang, Jiading District, Shanghai

分部地址: 湖南省长沙市雨花区新兴路268号国际企业中心

International Enterprise Center, No. 268, Xinxing Road, Yuhua District, Changsha City, Hunan Province

分部地址: 辽宁省沈阳市和平区三好街79号

Branch address: No. 79 Sanhao Street, Heping District, Shenyang City, Liaoning Province, China

#### 分销中心 Distribution center:

名称: 上海晨起自动化工程有限公司

Zeqi Automation Engineering Co., Ltd

地址: 上海市金山区朱泾镇人民路360号2幢

Address: Building 2, No. 360 Renmin Road, Zhujing Town, Jinshan District, Shanghai

E-Mail: [lai.w@sh-zeqi.com.cn](mailto:lai.w@sh-zeqi.com.cn)



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行星  
减速机

晨奇科技(上海)有限公司

**JACKIE**<sup>®</sup>  
— 晨奇科技 —

# 产品综合目录

## 高精度行星减速机

HIGH PRECISION PLANETARY REDUCER

精密传动系统方案专业生产服务商



ZEQI TECHNOLOGY(SHANGHAI)GO.,LTD

晨奇科技(上海)有限公司



精密传动系统方案专业生产服务商

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# COMPANY PROFILE

## 公司简介

晟奇科技（上海）有限公司

ZEQI TECHNOLOGY(SHANGHAI)GO.,LTD



晟奇科技(上海)有限公司 是一家集研发、生产、销售、服务于一体的动力传动装置专业制造商。总部位于中国上海。一直坚持“想客户之所想，急客户之所急”的企业理念，致力于打造世界一流的中国传动品牌。

公司自主产品有:伺服电动缸、行星减速机、多自由度运动平台、HK线性模组等。公司始终视品质为生命,分工细致,职责明确,快速反应,衔接有序,严把质量关。从每个零件的最初进料到装配完成品的运转,都检测测试,以完全符合客户要求及公司的品质标准。

公司长期以来致力于动力传动行业的不断发展。并与众多知名品牌企业建立了良好、稳固的合作伙伴关系,形成了一个具有强大生命力,相互依存,共同发展的合作机制。信奉:“品质第一,顾客至上”的原则,凭借领先的技术、丰富的行业应用经验以及优良的产品品质、专业规范的售后服务与现代化的市场管理理念,迅速发展壮大。产品被广泛用于工业机器人、新能源、工程机械、印刷机械、医疗机械、纺织机械、包装机械、激光切割设备、汽车制造等领域。获得了各界广泛的认可。

让客户享受到质量可靠、性价比高、服务完善的传动装置产品是我们的奋斗目标,公司坚持以客户的需求为中心,持续改进,为客户提供经济、可靠的动力传动方案。让科技转化为生产力,用专业化的服务帮助客户创造更高的价值!

企业文化:创新、合作、共赢!

经营理念:以实为本,以诚取信,以技术为主,以服务取胜。

Zeqi Technology (Shanghai) Co., Ltd. is a professional manufacturer of power transmission devices that integrates research and development, production, sales, and service. The headquarters is located in Shanghai, China. We have always adhered to the corporate philosophy of "thinking about what customers want and being anxious about what customers need", and are committed to creating a world A first-class Chinese transmission brand.

The company's independent products include servo electric cylinders, planetary reducers, multi degree of freedom motion platforms, HK linear modules, etc. The company always regards quality as its life, with meticulous division of labor, clear responsibilities, quick response, orderly connection, and strict quality control. From the initial feeding of each component to the operation of the assembled product, testing is conducted to fully meet customer requirements and company quality standards.

The company has long been committed to the continuous development of the power transmission industry. And we have established good and stable partnerships with numerous well-known brand enterprises, forming a strong vitality, interdependence, and common development cooperation mechanism. Believing in the principle of "quality first, customer first", with leading technology, rich industry application experience, excellent product quality, professional and standardized after-sales service, and modern market management philosophy, we have rapidly developed and grown. The products are widely used in industrial robots, new energy, engineering machinery, printing machinery, medical machinery, textile machinery, packaging machinery, laser cutting equipment, automotive manufacturing and other fields. It has gained widespread recognition from all walks of life.

Our goal is to provide customers with reliable quality, cost-effective, and comprehensive service transmission products. The company adheres to customer-centered needs, continuous improvement, and provides customers with economical and reliable power transmission solutions. Transform technology into productivity, and use professional services to help customers create higher value!

Corporate culture: innovation, cooperation, and win-win situation!

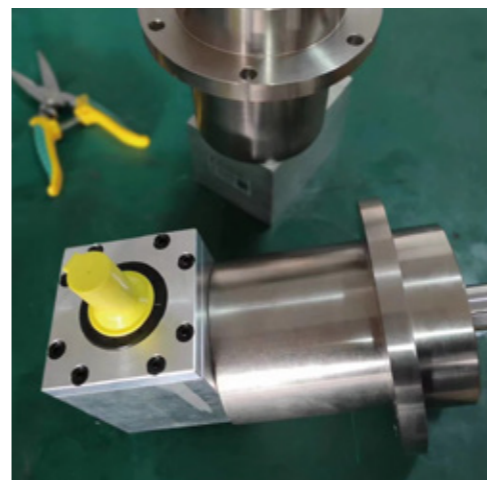
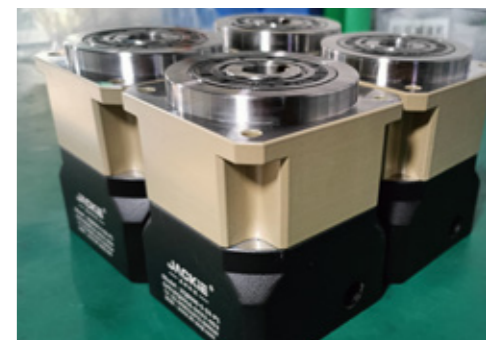
Business philosophy: Taking practicality as the foundation and honesty as the foundation: focusing on technology and winning through service.



# WORKSHOP 厂房车间



# PRODUCT PHOTOGRAPH 产品实拍



# APPLICATION FIELD

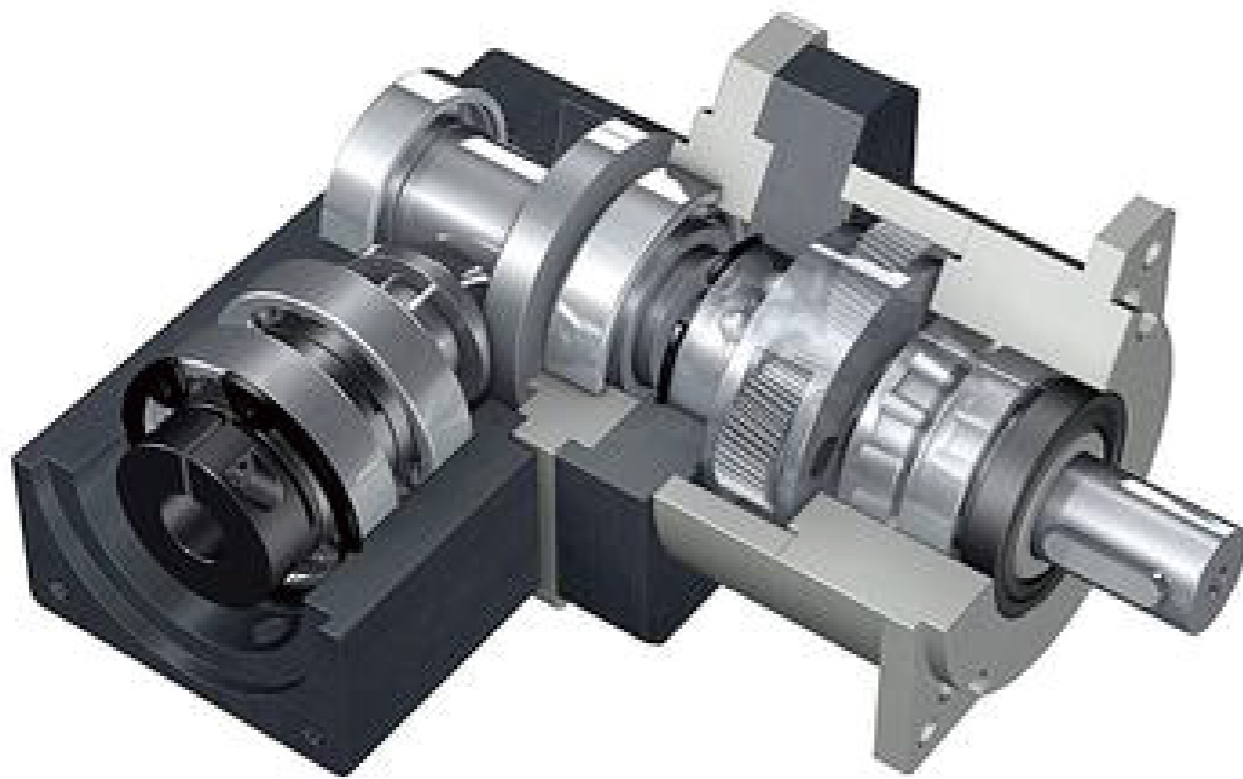
## 应用领域



# PRODUCT OVERVIEW

## 产品概述

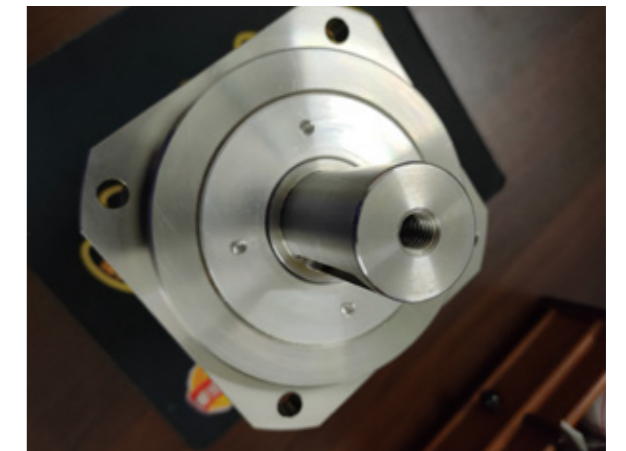
行星减速机是一种用途广泛的减速设备，可以降低电机的转速，同时增大输出转矩，提升载荷能力。



### ● 行星减速机优点

具有高精度、高刚性、高负载、高效率、高速比、高寿命、低惯性、低振动、低噪音、低温升、外观美、结构轻巧、安装方便、定位等特点，适用于交流伺服马达、直流伺服马达、步进马达、液压马达的增速与减速传动。行星减速机的传动效率一般的都在90%以上，可以达到95%以上，应用广泛。

Has high precision, high rigidity, high load, high efficiency, high speed ratio, high life, low inertia, low vibration, low noise, low temperature rise, appearance beautiful, light and small structure, easy installation, positioning and other characteristics, suitable for ac servo motor, dc servo motor, stepping motor, hydraulic motor of growth and slow down transmission. Planetary reducer general transmission efficiency of 90% or more, can reach more than 95%, widely used.



### 行星减速机主要传动结构：

行星轮，太阳轮，内齿圈，驱动电机，传动轴。

Main transmission structure is: planetary, solar wheel, gear ring, drive motor, drive shaft.

### 行星减速机用途：

行星减速机广泛应用于精密加工机床、航天工业、智能家居汽车制造、船舶工业、半导体设备、印刷机械，食品包装、自动化产业、工业机器人、医疗检验、精密测试仪器和自动化高精度的机电产品行业。

Planetary reducers are widely used in precision machining machine tools, aerospace industry, smart home automotive manufacturing, shipbuilding industry, semiconductor equipment, printing machinery, food packaging, automation industry, industrial robots, medical inspection, precision testing instruments, and high-precision automated mechanical and electrical product industries.

# PRODUCT FEATURES

## 行星减速机——产品特性

### | 齿轮

齿轮材质采用优质合金钢20CrmoTi，经碳-氮共渗处理，从而获得最佳的耐磨性和耐冲击韧性，全部磨齿，精度5-6级。

20 crmoti gear material adopt high quality alloy steel, carbon - nitrogen altogether permeability treatment, so as to get the best wear resistance and impact toughness, full gear grinding, precision grade 5 to 6.



### | 行星架

输出行星架采用优质合金钢42Crmo,一体式(双支撑)的结构设计，前后轴承大跨距分布于箱体内，形成稳定的一体式结构，以确保较高的扭转刚性和精度。

Output the planet carrier is made of high quality alloy steel 42 crmo, the structure design of the one-piece (double) before and after bearing large span distributed in the casing, forming stable one-piece structure, in order to ensure high torsional rigidity and accuracy.



### | 齿圈

齿圈与输出壳体采用一体化设计，材质采用优质合金钢42Crmo.经热锻成形，从而获得较高的材料密度，外观镀镍处理。一体化设计能保证所有几何尺寸一次性加工完成，与其它内嵌式、夹装式等结构相比具有更高的精度和强度。

The gear ring and output housing adopt an integrated design, and the material is high-quality alloy steel 42Crmo. After hot forging, high material density is obtained, and the appearance is nickel plated. The integrated design can ensure that all geometric dimensions are processed at once, and has higher accuracy and strength compared to other embedded, clamped, and other structures.



### | 输入轴

输入轴与锁紧装置采用一体化设计，材质采用优质合金钢40Cr,双螺栓对称分布，达到动平衡的同时，通过双螺栓的强力锁死，有效防止电机轴传动打滑，实现高精度零背隙的动力传送。

Input shaft and the locking device adopts body design, the material is made of high quality alloy steel 40 cr, double bolt symmetric distribution, to achieve the dynamic balance at the same time, through the strong double bolt lock, effectively prevent the motor shaft driving sliding, achieve high accuracy zero back lash power transmission.



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# PLANETARY REDUCER SELECTION 行星减速机的选型

选配行星减速机应该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、扭转刚性、背障等内在性能指标，也应充分考虑安装形式、工况条件、工作环境等外部因素。为方便实现快速准确的选型，请参照以下步骤。

Matching machine of decelerate of planet of applicability and economy should follow the principle of combining, is machine of decelerate of planet of the technical indicators can meet asked and can save the cost of the equipment. "A" and "less than" will result in cost waste. Improper selection is the main reason for the failure of the gearbox, accordingly. Correct choose planetary reducer is very important. Choose reducer should consider its structure type, bearing capacity, reduction ratio and the output rotational speed, axial force and radial force, torsional rigidity, back barrier, such as internal performance index, also should give full consideration to the installation form, working condition and the external factors such as work environment. For the convenience of rapid accurate selection, please refer to the following steps.

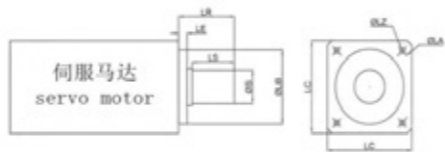
## Step1: 减速机规格的确定 Determination the reducer specifications

步骤	说明	代号	参数计算	参数计算				
				使用系数fs				
1	设备使用系数 Equipment using coefficient of	f1	负载类型 The load type	每小时启动次数(Z) Running per hour				
			均匀负载 Uniform load	每日运行时间 (h)				
			中等冲击负载 Medium impact load	h<4	4<h<8	8<h<12	12<h<16	16<h<24
			重冲击负载 Heavy impact load	0.85	0.95	1.00	1.20	1.60
				0.90	1.10	1.15	1.40	1.80
			1.00	1.20	1.30	1.60	2.00	
			1.00	1.20	1.30	1.60	2.00	
			1.10	1.35	1.45	1.80	2.20	
			1.20	1.45	1.60	2.00	2.40	
			1.20	1.45	1.60	2.00	2.40	
			1.30	1.55	1.75	2.20	2.50	
			1.40	1.65	1.90	2.40	2.80	
2	扭矩的确定	T2n	T2n>Tc2所选减速机的额定扭矩T2n必须大于计算扭矩Tc2: Tc2=Tr2/Fs(Tc2-计算扭矩 Tr2实际所需扭矩fs-使用系数)					
3	额定输入转速	n1	允许最大输出转速请参考减速机性能资料					
4	确定减速比	i	i=N1/N2					
5	减速机效率	η	L1≥95%、L2≥92%					
6	根据被驱动设备所需的扭矩或功率，计算减速机的输入功率	P1	P1=(T2×N1) / (9550×i×η)或P1×P2+η					
7	根据计算传动力表确定减速机的规格	T2n、P1n	T2n≥T3×F1×F2 P1n≥P1×F1×F2					
8	输出轴径向力、轴向力校核	Fr、Fa	根据【减速机性能资料表】对比应小于减速机最大径向力、轴向力，频繁启动-停止运转工况硬选择加强型					
9	确认使用环境		防护等级、工作温度、化学环境等					
10	根据空间确认安装方式		同轴安装、90°直角安装					
11	确认减速机型号		根据【减速机性能资料表】输入、输出方式等确定具体系列、型号、规格及附件					

## Step2: 确定电机 (包括生产厂商、规格型号、性能指标及外形尺寸)

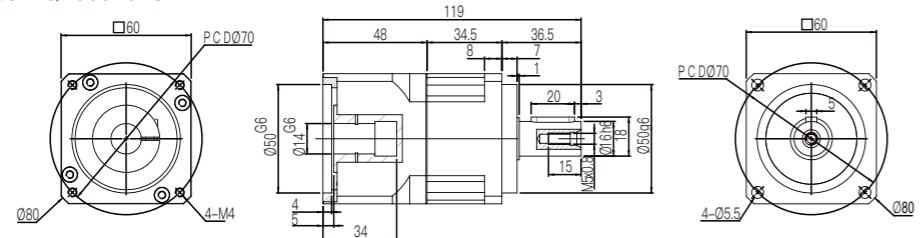
Determine motor (including manufacturers, specifications, performance and overall dimensions)

- 马达型号 The motor model: -----
- 输出功率 The output power: -----
- 额定力矩 The rated torque: -----
- 最大力矩 Maximum moment: -----
- 额定转速 Rated speed: -----
- 最大转速 Maximum speed: -----
- 转动惯量 The moment of inertia: -----
- 轴径 trunnion: -----
- 外径 Outer diameter: -----
- 凸缘 flange: -----
- 中心距 Center distance: -----



## Step3: 确定所订减速机规格型号及工厂提供的CAD或PDF图纸, 正确书写型号 例如: ZQB060-5-S2-P1

Determine the deceleration machine specifications and ordered factory provide cad or pdf drawings, correct writing models such as: ZQB060-5-S2-P1



速比	1.3-1:10	正常使用寿命	20000 h
额定扭矩	37-55Nm	传动效率	97%
最大扭矩	74-110Nm	噪音	60dB
额定输入转速	4000r/min	环境温度	-20°C - +90°C
最大输入转速	6000r/min	精度	
回程间隙	3-5arcmin	重量	

机型	ZQB060-L1 14-50-70-M4	绘制日期	2020.06.16	绘图	LEO	行星减速机外形图
图号	RG0114SW-050060-010					

# REDUCER SPECIAL NOUN EXPLANATION 减速机专用名词解释

- 减速比 Reduction ratio**  
输出转速比上输入转速  
The output speed than on the input speed
- 额定输入转速 Rated input speed**  
减速机的驱动速度，若减速机与电机直接相连，则转速值与电机转速相同。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转速n1。  
The driving speed of the gearbox, if directly connected to the motor, the speed value is the same as the motor speed. The rated input speed in this book is measured under an ambient temperature of 20 °C. Please reduce the speed n1 when the ambient temperature is high.
- 输出转速 N2[rpm]**  
The output speed  
输出转速按照此公式通过输入转速n1和传动比i计算出来: n2=n1/i  
Output rotational speed according to the formula by typing speed n1 and transmission ratio i calculated: n2 = n1 / i
- 段/级数 Section/series**  
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，优势需要两套或三套来满足用户对较大传动比的要求，减速比越大，段/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有所增加，效率会有所下降。  
Planetary gear units. Due to a set of planetary gear can't satisfy large transmission ratio, two or three sets of advantage needed to meet the requirements of users to communicate than larger, reduction ratio, the greater the period/series. Because to increase the number of planet gear, headphones or level 3 will increase the length of the speed reducer, efficiency will be decreased.
- 传动效率 Transmission efficiency**  
指定额定负载情况下，减速机的传输效率。减速比越大，级数越多，效率越低。  
Specify the rated load cases, the transmission efficiency of speed reducer. The reduction ratio, the greater the series, the more the lower the efficiency.
- 平均寿命 The average life span**  
指减速机在额定负载下，额定输入转速是减速机的连续工作时间。  
Refers to the speed reducer under the rated load, the rated input speed reducer is the continuous working time.
- 定位精度 Positioning accuracy**  
在高速机械往复运动中做到精确定位的关键在于尽量减小通过运动产生的角偏差。定位精度取决于两个值，一个是与加载有关的偏转角，涉及到回程间隙的扭转刚度；另一个是与转动控制有关的偏转角，涉及到同步偏差的问题。  
The key to achieving precise positioning in high-speed mechanical reciprocating motion is to minimize the angular deviation generated by the motion. The positioning accuracy depends on two values: one is the deflection angle related to loading, which involves the torsional stiffness of the return clearance; Another issue is the deflection angle related to rotational control, which involves synchronization deviation.
- 回程间隙背隙 back clearance**  
减速机输出轴与输入轴的最大偏差角，测量时先将齿轮输入轴固定住，然后在输出轴用力矩仪加载一定力矩(2%T2n)，以克服减速机内的摩擦力。  
The maximum deviation angle between the output shaft and input shaft of the reducer. When measuring, first fix the gear input shaft, and then load a certain torque (2% T2n) on the output shaft with a torque meter to overcome the frictional force inside the reducer.
- 迟滞曲线 Hysteresis curve**  
迟滞曲线是为了得出减速机的扭转刚度，通过检测得到迟滞曲线。检测时，先将减速机输入端固定住，然后在输出端的两个选择旋转方向分别持续的加载到T2B最大输出力矩，继而逐步卸载，用仪器记录下力矩的仿差角，得到的曲线是一条闭合曲线，从中可以计算出减速机回程间隙(jt)和扭转刚度(Ct21)。  
The hysteresis curve is used to determine the torsional stiffness of the gearbox, and is obtained through detection. When testing, first fix the input end of the reducer, then continuously load it to the maximum output torque of T2B in two selected rotation directions at the output end, and gradually unload it. Record the imitation angle of the torque with an instrument, and the obtained curve is a closed curve. From this, the return clearance (jt) and torsional stiffness (Ct21) of the reducer can be calculated.
- 转动惯性 Rotational inertia**  
本书中的该值均指输入端。表示一个物体尽力保持自己的转动状态（或禁止或转动）特征的一个值。  
Refers to the speed reducer under the rated load, the rated input speed reducer is the continuous working time.
- 惯量比 Inertia ratio**  
指负载惯量与传动系统惯量（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，各转动惯量差值越大，高动态的动作过程就越难精准控制，建议尽可能将λ值控制在<5，齿轮箱可以将负载惯量降低1/i2。  
The ratio between the inertia of the load and the inertia of the transmission system (motor plus reducer). This ratio determines the controllability of the system. λ The larger the value, the greater the difference in various moments of inertia, and the more difficult it is to accurately control the high dynamic action process. It is recommended to try to λ if the value is controlled within<5, the gearbox can reduce the load inertia by 1/i2.
- 噪音 The noise**  
单位是分贝 (dB)。此数值是在输入转速为3000转/分时，不带负载，距离减速机一米距离时测量的。  
The unit is decibels (dB). This value is measured at an input speed of 3000 rpm, without load, at a distance of one meter from the gearbox.
- 工作条件 The working conditions**

工作温度°C Working temperature °C	防护等级 Protection grade	润滑 Lubrication	安装方式 Installation
-10°C+90°C	IP54/IP65	长效润滑，整个试用期内无添加润滑剂	Any/任意

# REDUCER SPECIAL NOUN EXPLANATION

## 减速机专用名词解释

<b>额定输出扭矩</b> Rated output torque	指减速机长时间(连续工作制)可以加载的力矩(无磨损), 条件应满足负载均匀, 安全系数S=1,理论寿命为20000小时。 Refers to decelerate the captain time (continuously) can load torque (no wear), the condition should be meet the uniform load, the safety coefficient of S = 1, the theory of life for 20000 hours.
<b>加速扭矩</b> To speed up the torque	指工作周期每小时少于1000次时允许短时间加载到输出端的最大力矩。工作周期每小时大于1000次时, 须考虑使用因素。最大加速扭矩等于故障停止扭矩60%。 Refers to less than 1000 times per hour working period allowed a short period of time when loaded into the maximum torque on the output. When work cycle is more than 1000 times per hour, use factors must be taken into consideration. Maximum speed torque is equal to the failure to stop the torque by 60%.
<b>紧急制动扭矩<sub>[Nm]</sub></b> Emergency braking torque (Nm)	指减速机输出端所能加载的最大力矩, 这个力矩可在减速机寿命期内加载1000次, 绝对不能超过1000次。 The maximum torque that can be loaded at the output end of the gearbox. This torque can be loaded 1000 times during the lifespan of the gearbox, but must not exceed 1000 times.
<b>空载扭矩</b> No-load torque	指加载到减速机上的以克服减速机内摩擦力的力矩。 The torque applied to the gearbox to overcome the internal friction force.
<b>最大输出扭矩</b> Maximum output torque	指减速机在静态条件或频繁启动条件下所能承受的输出扭矩, 通常指峰值负载或启动负载。 Refers to the speed reducer under the condition of static conditions or frequent startup can inherit the output torque, usually refers to the peak load or start the load.
<b>实际所需扭矩</b> Actually the required torque	所需扭矩取决于应用场合的实际工况, 拟选减速机的额定扭矩T2N必须大于这个扭矩。 Required torque depends on the actual working condition of the applications to choose rated torque of the speed reducer T2N must be greater than the torque.
<b>计算用扭矩</b> Calculating the torque	在选择减速机时被用到, 可以由实际所需转矩T2和系数fs按一下公式得出Tcs=T2*Fs≤Tn In machine of decelerate of choice is used, the actual required torque T2 fs click the formula and coefficient of TCS = T2 * fs Tn or less
<b>侧倾扭矩</b> Roll torque	指轴向力和径向力作用于输出端轴承上径向受力点的力矩, 计算公式为: $M_{2kmax} = [F_a * y_2 + F_r * (X_2 + Z_2)] / 1000$ Refers to the axial force and radial force is used to output end bearing torque and radial stress points on the calculation formula is: $M_{2kmax} = [F_a * y_2 + F_r * (X_2 + Z_2)] / 1000$
<b>轴向力</b> Axial force	指平行于轴心的一个力, 它的作用点与输出轴端有一定的轴向偏差(Y2)时, 会形成一个额外的弯挠力矩。轴向力超过样本所示的额定值时, 须用联轴节来抵消弯挠力。 Refers to the parallel to the axis of a force, its point of application and the output shaft end has certain axial deviation (Y2), will schedule an additional bend torsion moment. Axial force than the sample shown in the rating, must be used to offset the bending flexure axis.
<b>径向力</b> Radial force	指垂直作用于轴向力的一个力, 它平行于输出轴, 它的作用点与轴端有一定的轴向距离(X2)这个点成一个杠杆点, 横向力形成一个弯挠力矩。 Refers to a vertical axial force acting on a force, it is parallel to the output shaft, and with it the point of a shaft end of the axial distance (X2) this point into a leverage point, lateral force form a bend torsion moment.
<b>轴伸径向载荷、轴向载荷</b> Axial radial load, axial load	选择减速机的附加依据是输出轴伸出端上的径向载荷和轴向载荷。轴的强度和轴承的承载能力决定了轴伸的径向载荷。样本中给出的最大允许值是指在最不利的方向作用在轴伸出端中点(即1/2处)的力。当作用力不在中点时, 越接近轴肩, 允许的径向载荷就越大; 相反, 作用点离轴肩越远, 允许的径向载荷就越小。 Select the additional is based on the output shaft speed reducer stretched out on the radial load and axial load. The strength of the shaft and bearing capacity determines the axial and radial load. Samples given in the direction of the maximum allowed is to point to in the most unfavorable effect on the shaft out end point (1/2 point). As hard is not in the middle, the closer it gets to the shoulder, allow the greater the radial load; On the contrary, the further away from the shoulder point, allowing the smaller radial load.
<b>安全系数S</b> Safety factor S	安全系数等于减速机的额定输入功率与电机功率的比值。 Safety factor is equal to the speed reducer of the ratio of the rated input power and motor power.
<b>使用系数f1</b> Using coefficient of f1	使用系数表现减速机的应用特征, 它考虑到减速机的负载类型和每日工作时间。 Using coefficient of performance of the reducer application characteristics, it considering the load reducer type and the daily working hours.
<b>扭转刚度</b> Torsional rigidity	由加载力矩和所产生的扭转角之间的比率来定义, $C_{t21} = \Delta T / \Delta$ 它说明需要用多大的力矩才能把输出轴转动一弧分。 Produced by the load torque and the ratio between the torsion Angle to define, $C_{t21} = \Delta T / \Delta$ that need to use how much torque to the output shaft rotational arc).

- 高精度 High precision
- 高刚性 Rigidity
- 高负载容量 High load capacity
- 高扭矩 High torque
- 使用寿命长 long service life

# SERIES ZQB

## ZQB系列行星减速机

型号	描述
ZQB042	ZQB042-3 8-30-46-M4
ZQB060	ZQB060-3 14-50-70-M4
ZQB090	ZQB090-3 19-70-90-M5
ZQB115	ZQB120-3 22-110-145-M8
ZQB142	ZQB142-3 5-114.3-200-M12
ZQB190	ZQB190-3 35-114.3-200-M12
ZQB220	ZQB220-3 35-114.3-200-M12
ZQB280	ZQB280-3 35-114.3-200-M12
ZQB340	ZQB340-3 55-250-300-M14
ZQB400	ZQB400-3 55-250-300-M14



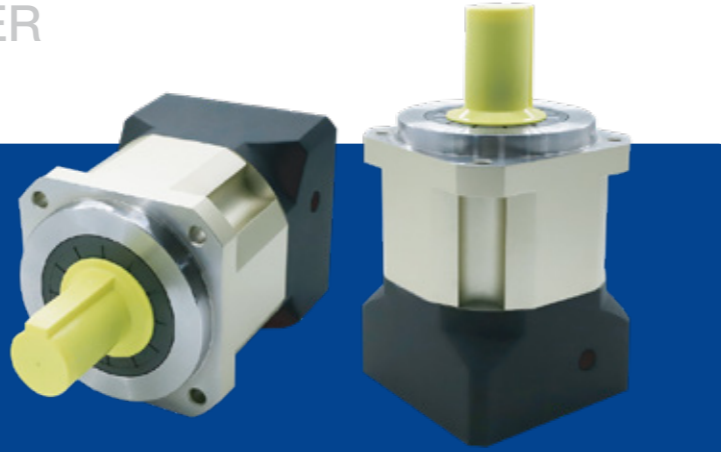
电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

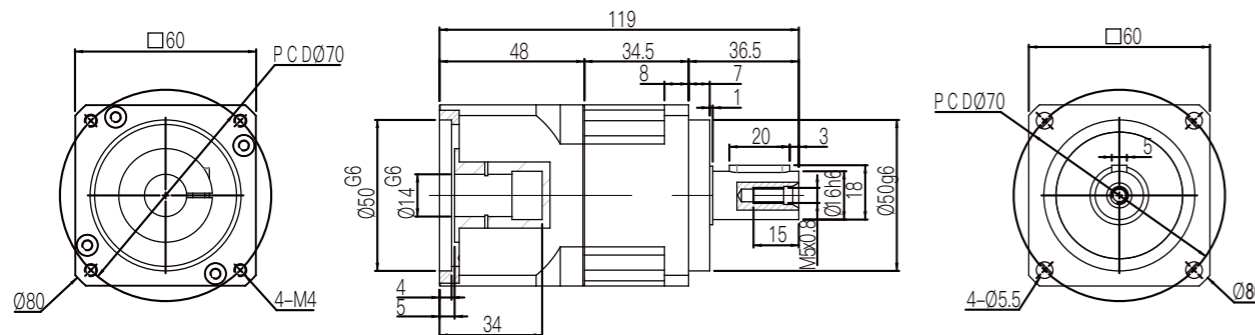
## HIGH PRECISION PLANETARY REDUCER

### 高精行星减速机

# ZQB系列



### 结构图 Structural Diagram



### 产品特点 Product Features

- ⊗ 高精度:齿隙低于3弧分。
- ⊗ 使用顶级超精密机床加工并结合全球领先的磨齿工艺, 齿轮精度可控制在ISO4级以下, 确保减速机高效, 长寿命。
- ⊗ 采用笼式行星支架结构, 与输出轴一体式设计, 实现高刚度和高精度。
- ⊗ 行星轮轴承采用不含保持架的满滚针轴承, 增大减速机输出扭矩和刚性。
- ⊗ 可适配全球任何品牌的伺服电机。
- ⊗ 使用合成润滑脂, 并采用IP65密封设计, 不泄漏, 免维护。
- ⊗ High precision: The backlash is less than 3 arc minutes.
- ⊗ Using top-notch ultra precision machine tools and combined with the world's leading gear grinding process, the gear accuracy can be controlled below ISO4 level, ensuring efficient and long service life of the reducer.
- ⊗ Adopting a cage planetary support structure and integrated design with the output shaft, achieving high stiffness and precision.
- ⊗ The planetary gear bearing adopts a full needle roller bearing without a cage to increase the output torque and rigidity of the reducer.
- ⊗ Suitable for servo motors of any brand worldwide.
- ⊗ Using synthetic grease and adopting IP65 sealing design, it is leak free and maintenance free.

### 型号说明 Model Specification

ZQB060	10	S2	P1	马达
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减速机系列 Reducer series	
ZQB042	ZQB190
ZQB060	ZQB220
ZQB090	ZQB280
ZQB115	ZQB340
ZQB142	ZQB400

减速比 Reduction Ratio	
单节	3.4.5.6.7.8.10
双节	9.12.15.16.20.25.28.30.35.40.50.70.100
三节	64.80.100.150.200.250.350.400.500.700.1000

输出轴键槽 Output Shaft Keyway	
S1	实心轴, 无键槽 Solid shaft, no keyway
S2	标准品, 有键槽 Standard, has a keyway
S3	输出为孔, (联系技术) Output as hole (contact technology)

背隙等级 Backgap level	
P0	超精密背隙 Ultra-precision back lash
P1	精密背隙 Precision back lash
P2	标准背隙 The standard back lash

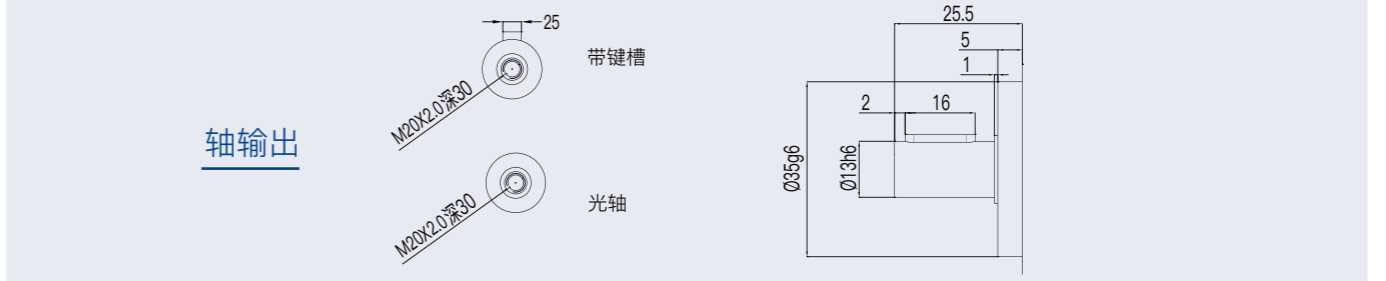
马达型号 Motor Model	
马达制造商及型号 Motor manufacturer and model	

## 型号说明 Model Specification

产品型号	单位	节数	减速比	ZQB42	ZQB060	ZQB090	ZQB115	ZQB142	ZQB190	ZQB220	ZQB280	ZQB340	ZQB400
额定输出力矩 Rated output torque	Nm	1	3		53	135	245	490	1320	1820	4230	8200	12500
			4	10	55	162	320	650	1650	2420	5620	9800	18800
			5	15	54	162	320	650	1650	2420	5620	9800	18800
			6		54	162	320	650	1650	2420	5620	9800	13000
			7		44	130	232	520	1250	1830	3520	9800	13000
			8		37	72	165	320	820	1150	2820	5000	6000
			10	10	37	72	165	320	820	1150	2820	5000	6000
			9		37	115	245	490	1320	1820	2700	3500	12500
		2	12		37	162	245	490	1320	1820	4230	8200	12500
			15		53	162	245	650	1650	2420	5620	8200	18800
			16	10	53	162	245	650	1650	2420	2620	9800	18800
			20	12.5	55	162	320	650	1650	2420	5620	9800	18800
			25	15	54	162	320	650	1650	2420	5620	9800	18800
			28		54	162	320	650	1650	2420	5620	9800	18800
			30		54	135	245	490	1320	1820	4230	9800	12500
			35		54	162	320	650	1650	2420	5620	9800	18800
			40	15		162	320	650	1650	2420	5620	9800	18800
			50	12.5	46	162	320	650	1650	2420	5620	9800	18800
		3	70		44	130	232	650	1320	1830	3520	5000	7600
			100	10	37	72	165	320	1650	1150	1820	2500	5000
			64		46.32	162	320	650	1650	2420	5620	9800	18800
			80		46.32	162	320	650	1650	2420	5620	9800	18800
			100		46.32	162	320	650	1650	2420	5620	9800	18800
			150		46.32	162	320	650	1650	2420	5620	9800	18800
			200		46.32	162	320	650	1650	2420	5620	9800	18800
			250		46.32	162	320	650	1650	2420	5620	9800	18800
			350		46.32	162	320	650	1650	2420	5620	9800	18800
			400		46.32	162	320	650	1650	2420	5620	9800	18800
500		46.32	162	320	650	1650	2420	5620	9800	18800			
700		38.9	130	232	520	1320	1830	3520	5000	7600			
1000		18.5	72	165	320	820	1150	1820	3500	5000			
最大额定扭矩 Max torque	Nm	1,2,3	二倍额定输出力矩 / Double rated output torque										
最大径向力 Max radial force	N	1,2,3	740	1550	3250	6700	9400	14500	50000	60000	70000	90000	
最大轴向力 Max axial force	N	1,2,3	370	775	1625	3350	4700	7250	25000	30000	95000	45000	
效率 efficiency	%	1	98										
		2	96										
		3	94										
重量 weight	KG	1	0.7	1.3	3.6	7.5	16	28	48	110	160	250	
		2	0.9	1.5	4.2	9.5	20	32	60	135	190	340	
		3	1.0	1.8	4.8	11.2	24	36	72	150	225	420	
背隙 Dorsal gap	arcmin	1	≤3										
		2	≤5										
		3	≤7										

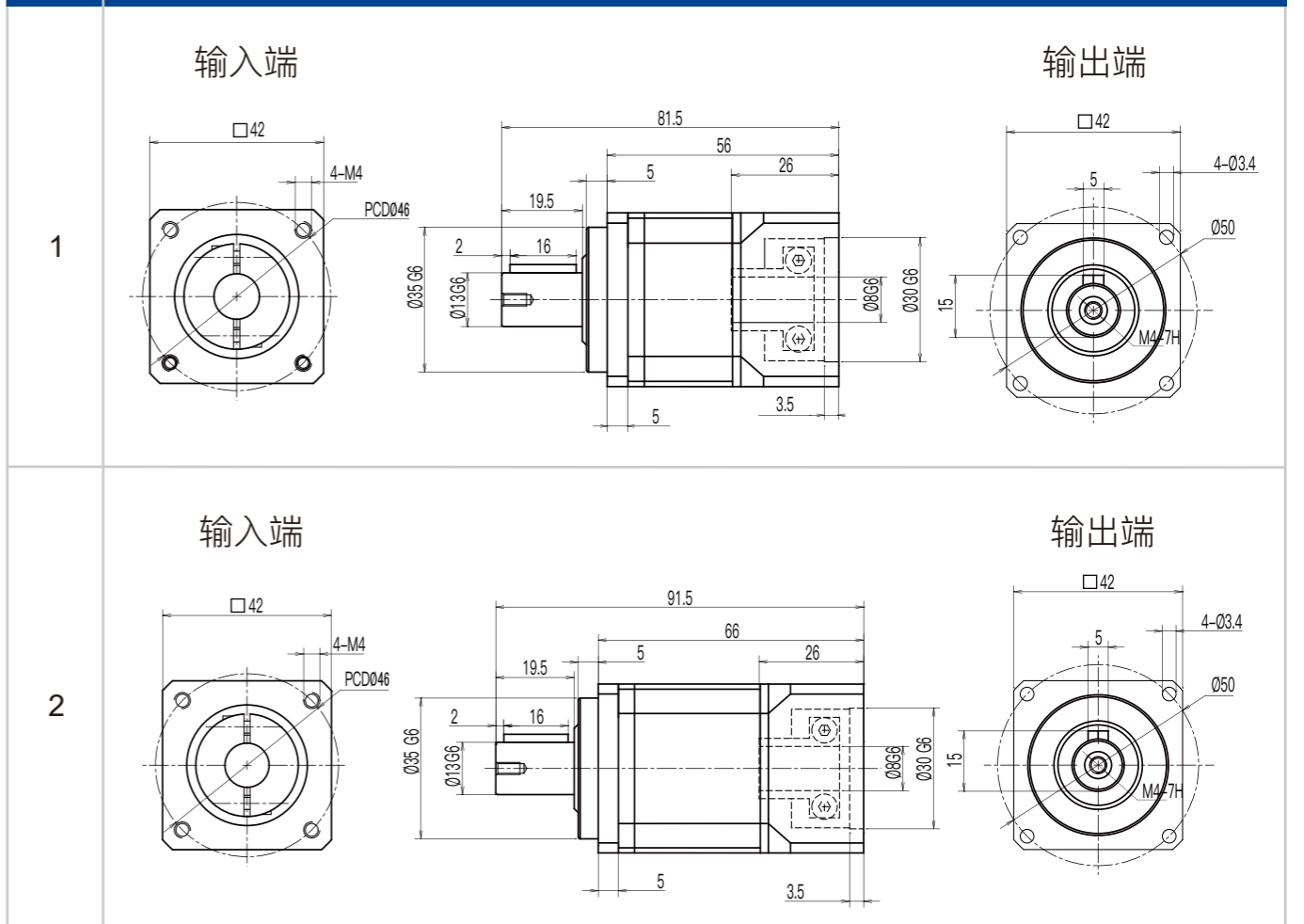
## ZQB42输出外形图

### 输出方式图形 / Output Method Graph



### 级数

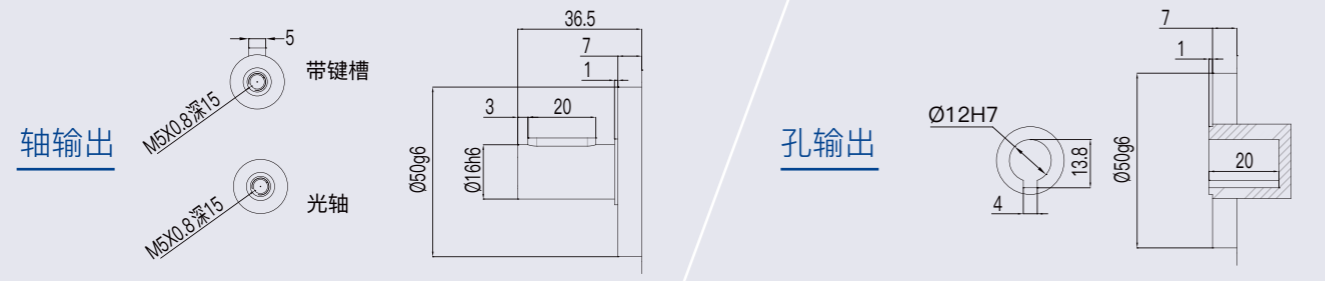
### 输出外形图 / Output Outline Drawing



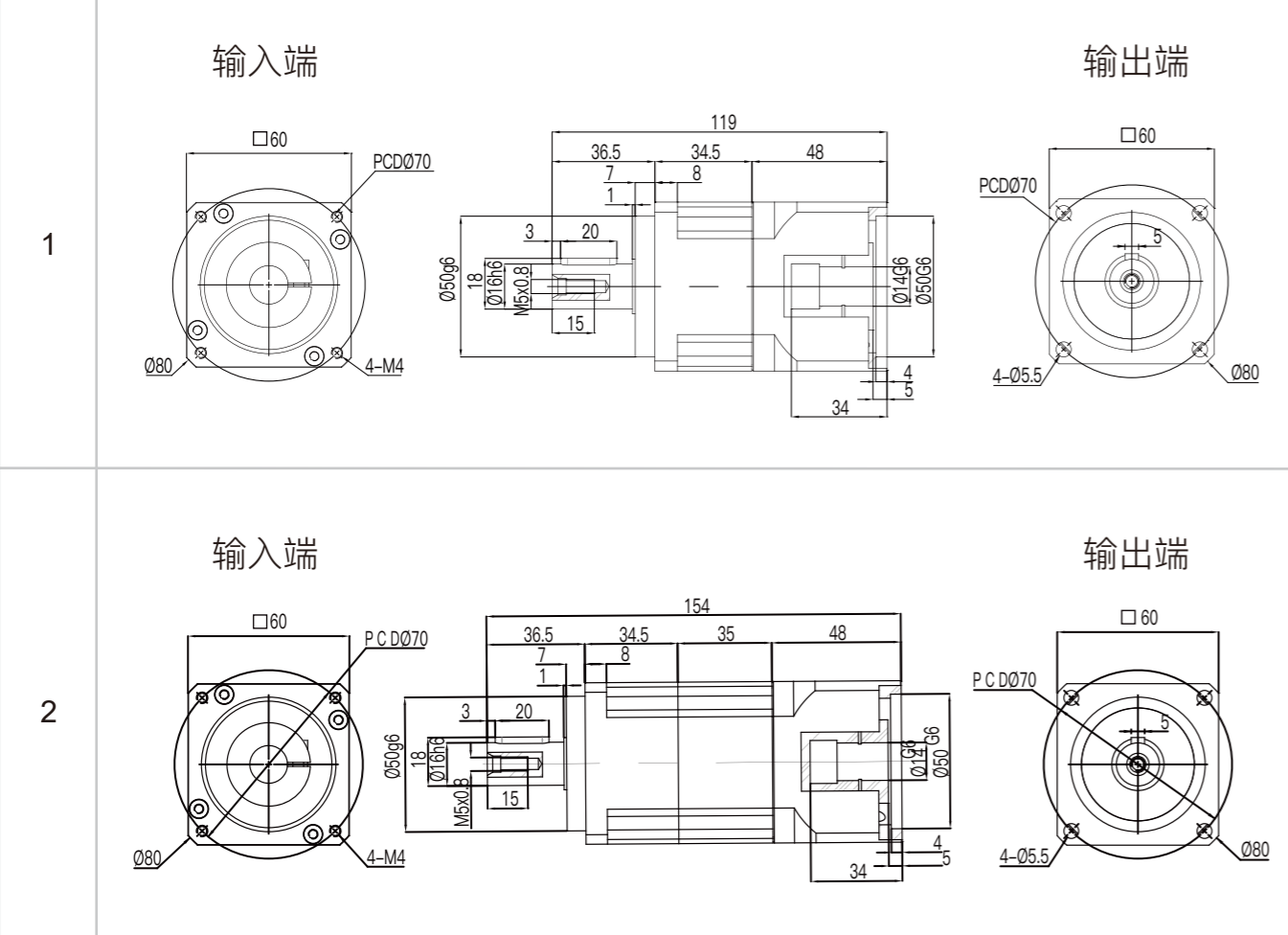
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB060输出外形图

输出方式图形 / Output Method Graph



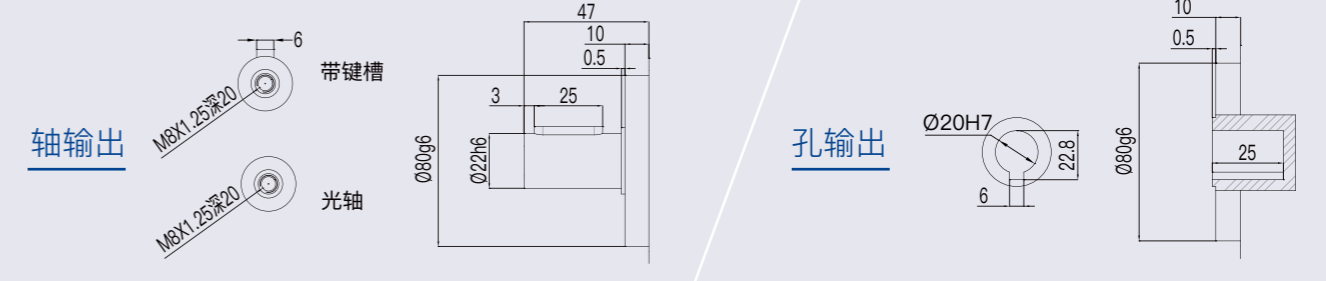
级数 输出外形图 / Output Outline Drawing



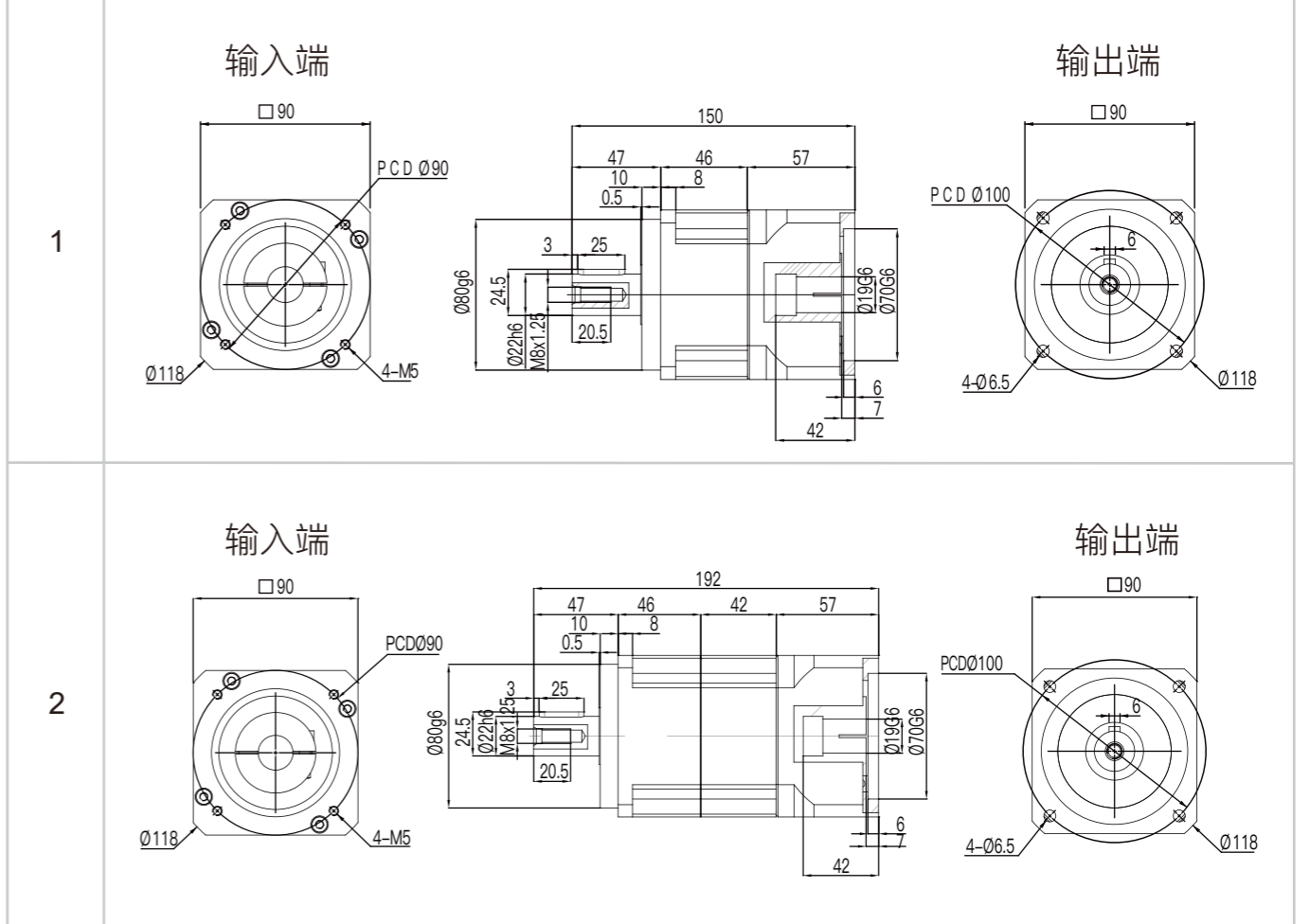
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB090输出外形图

输出方式图形 / Output Method Graph



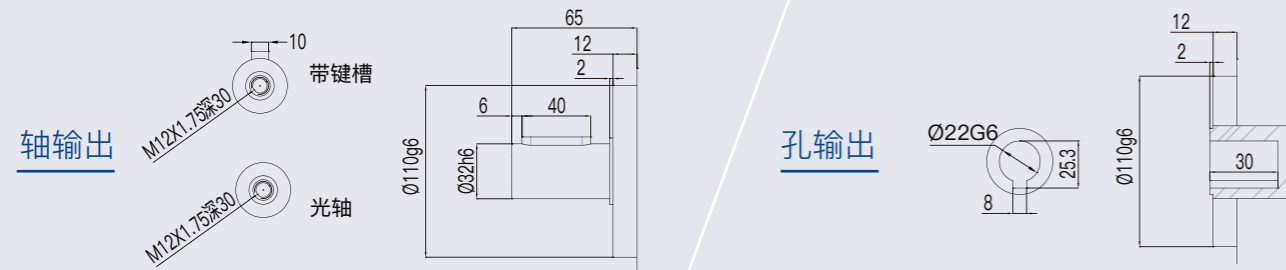
级数 输出外形图 / Output Outline Drawing



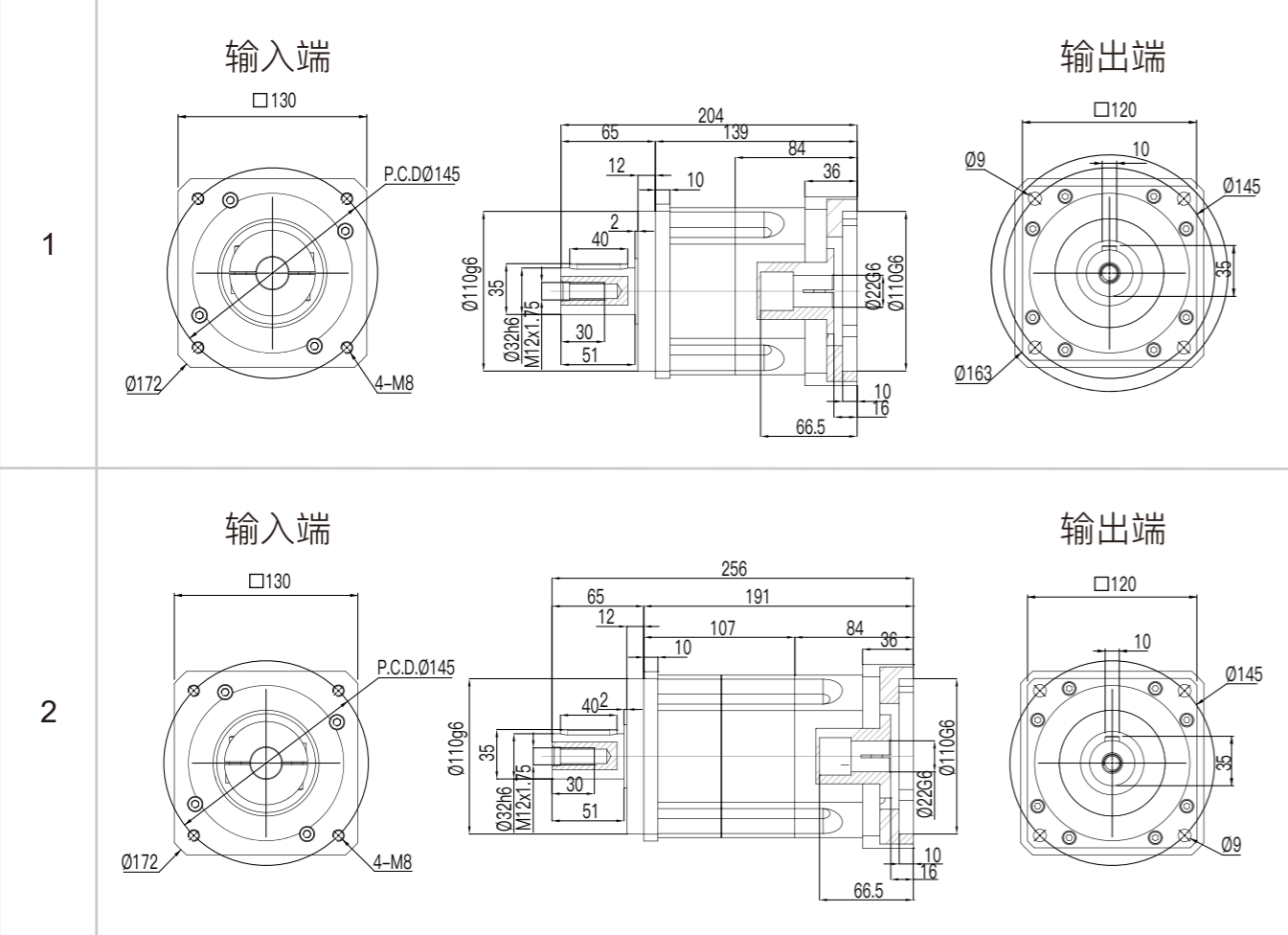
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB115输出外形图

输出方式图形 / Output Method Graph



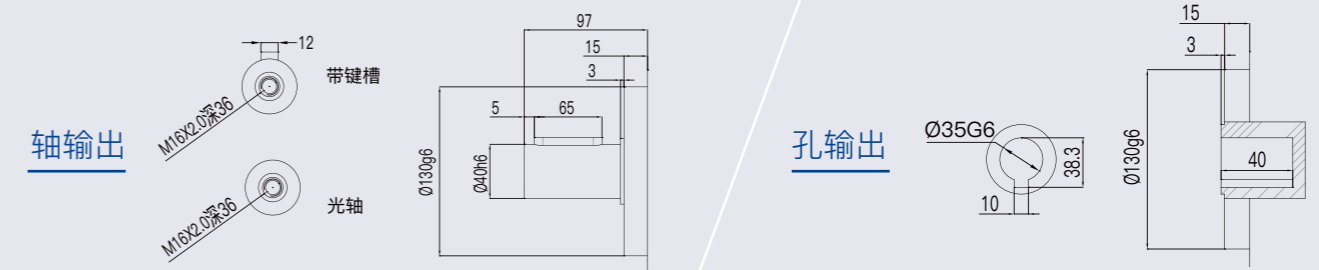
级数 输出外形图 / Output Outline Drawing



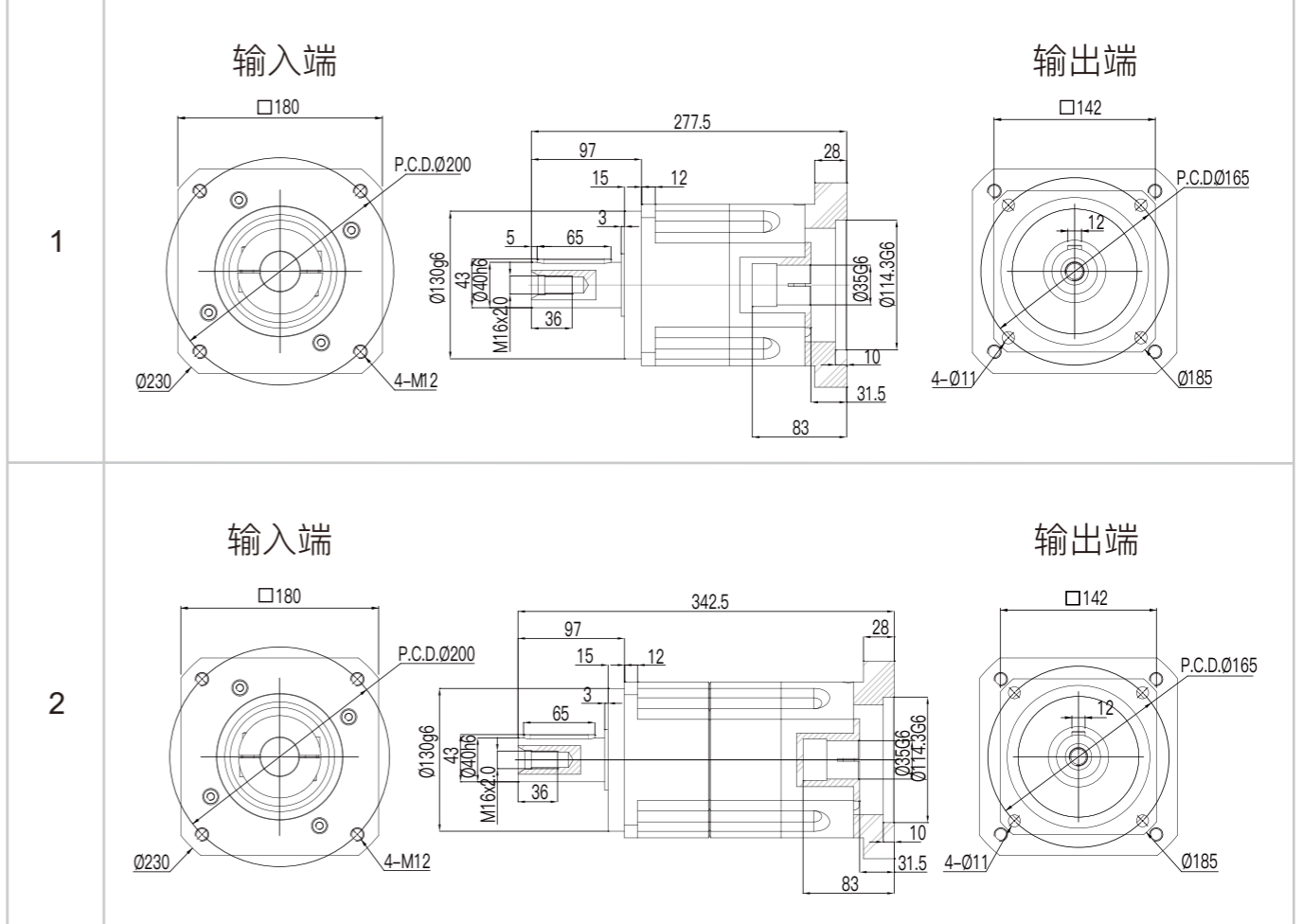
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB142输出外形图

输出方式图形 / Output Method Graph



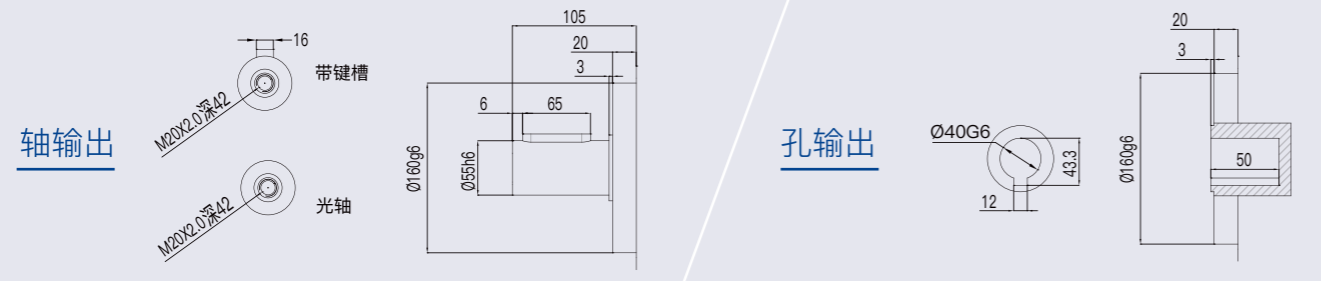
级数 输出外形图 / Output Outline Drawing



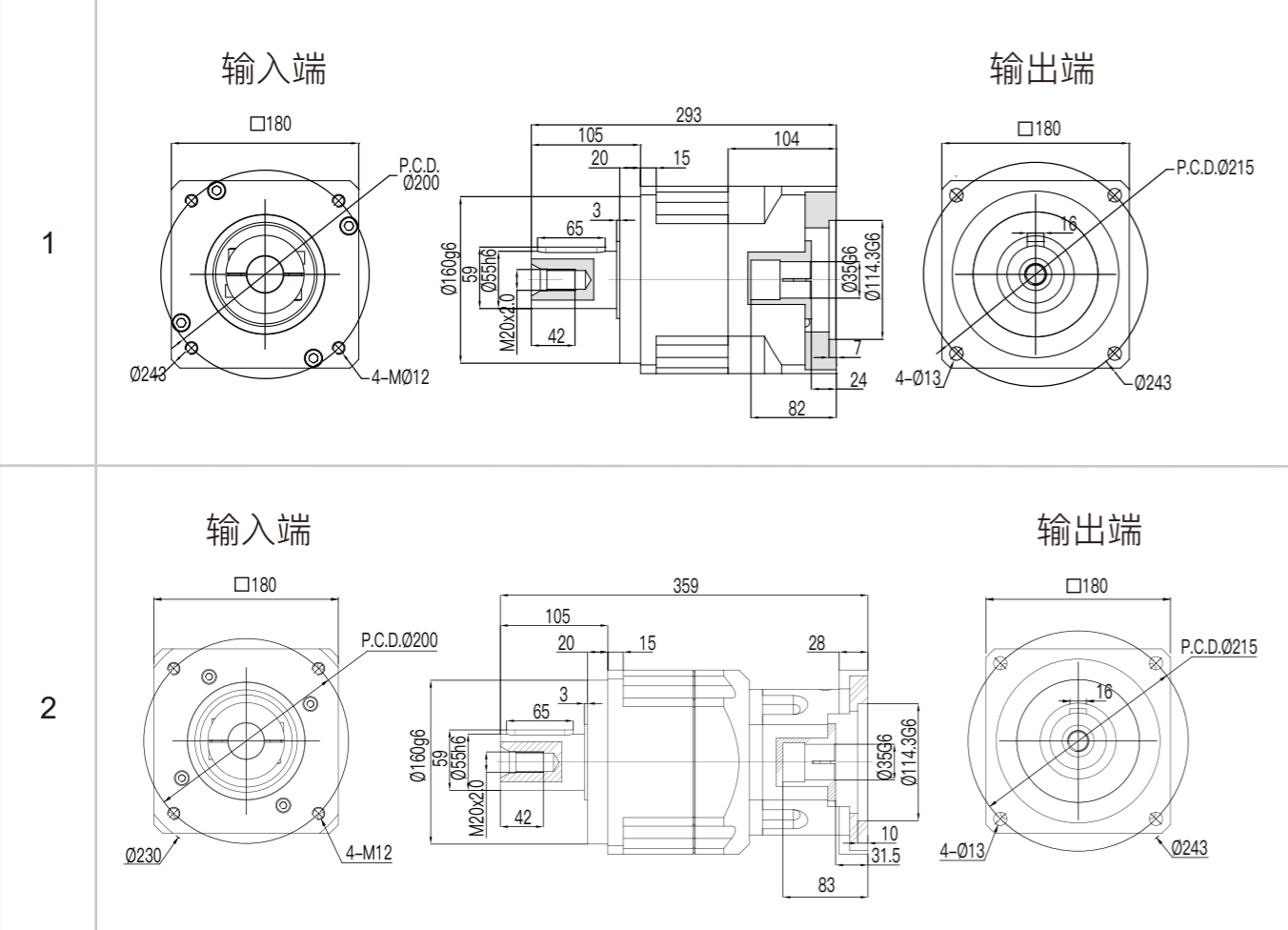
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB190输出外形图

输出方式图形 / Output Method Graph



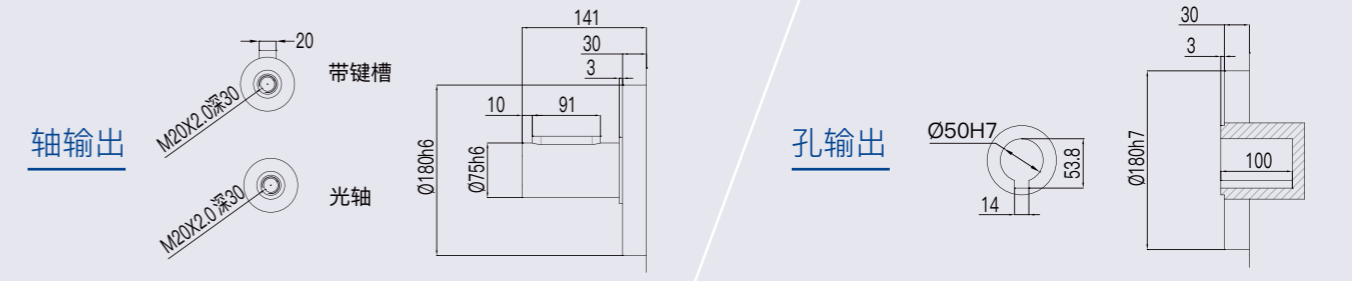
级数 输出外形图 / Output Outline Drawing



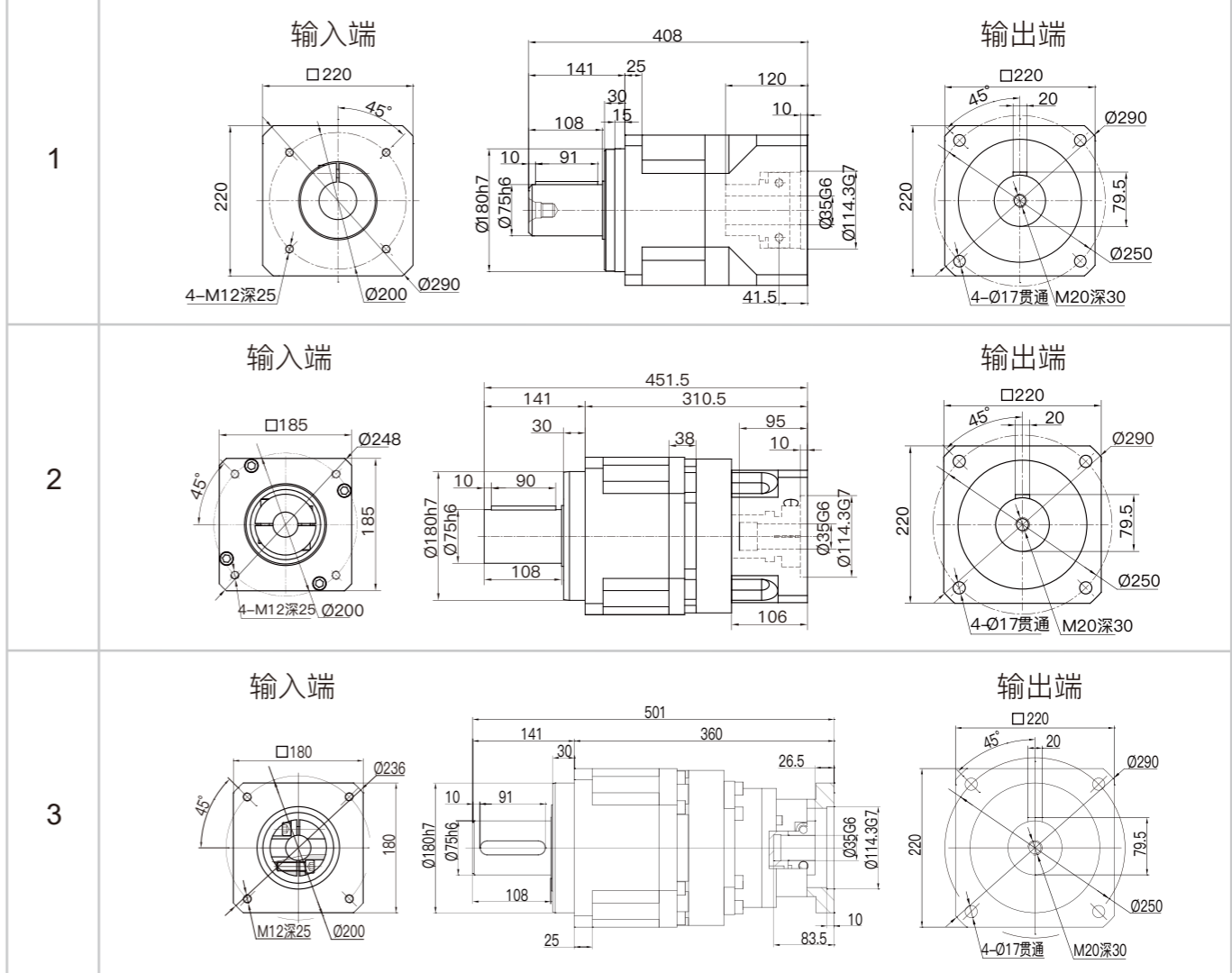
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB220输出外形图

输出方式图形 / Output Method Graph



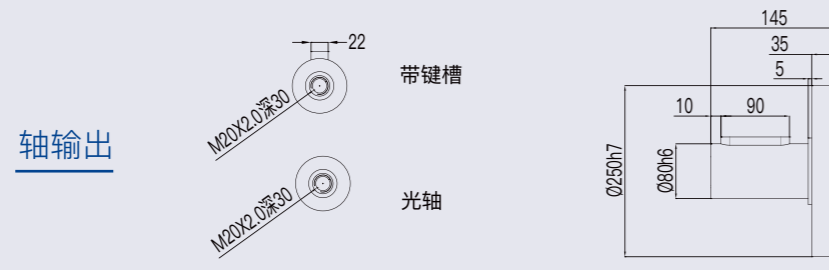
级数 输出外形图 / Output Outline Drawing



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB280输出外形图

输出方式图形 / Output Method Graph

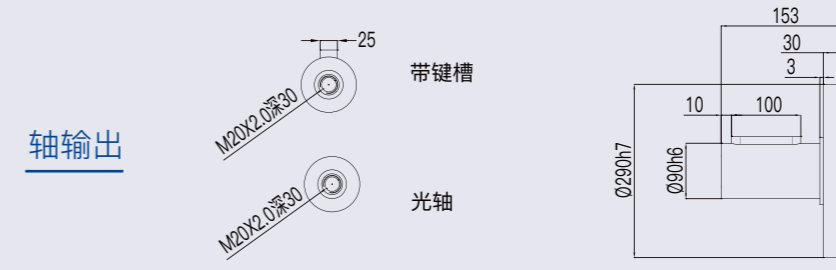


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQB340输出外形图

输出方式图形 / Output Method Graph



级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

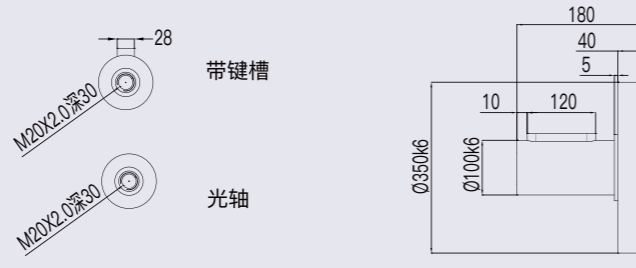
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



## ZQB400输出外形图

输出方式图形 / Output Method Graph

轴输出



级数

输出外形图 / Output Outline Drawing

级数	输入端	输出端
1		
2		
3		

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

高精度 High precision 高刚性 Rigidity

高负载容量 High load capacity

高扭矩 High torque

使用寿命长 long service life

# ZQBR

## SERIES

### ZQBR系列行星减速机

型号	描述
ZQBR060	ZQBR060-3 14-50-70-M4
ZQBR090	ZQBR090-3 19-70-90-M5
ZQBR115	ZQBR115-3 22-110-145-M8
ZQBR142	ZQBR142-3 35-114.3-200-M12
ZQBR190	ZQBR190-3 35-114.3-200-M12-FT



电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

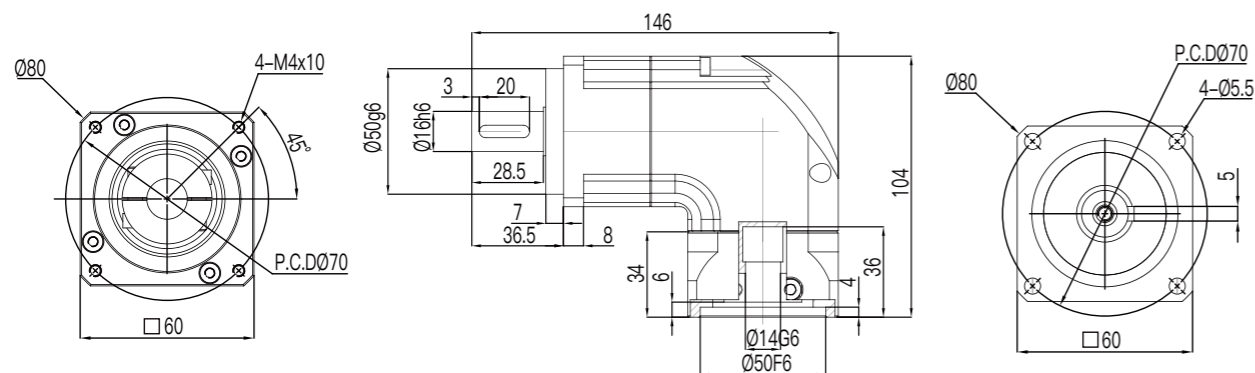
## HIGH PRECISION PLANETARY REDUCER

### 高精行星减速机

# ZQBR系列



## 结构图 Structural Diagram



## 产品特点 Product Features

- ☞ 高精度: 齿隙低于3弧分。
- ☞ 使用顶级超精密机床加工并结合全球领先的磨齿工艺, 齿轮精度可控制在ISO4级以下, 确保减速机高效, 长寿命。
- ☞ 采用笼式行星支架结构, 与输出轴一体式设计, 实现高刚度和高精度。
- ☞ 行星轮轴承采用不含保持架的满滚针轴承, 增大减速机输出扭矩和刚性。
- ☞ 可适配全球任何品牌的伺服电机。
- ☞ 使用合成润滑脂, 并采用IP65密封设计, 不泄漏, 免维护。
- ☞ High precision: The backlash is less than 3 arc minutes.
- ☞ Using top-notch ultra precision machine tools and combined with the world's leading gear grinding process, the gear accuracy can be controlled below ISO4 level, ensuring efficient and long service life of the reducer.
- ☞ Adopting a cage planetary support structure and integrated design with the output shaft, achieving high stiffness and precision.
- ☞ The planetary gear bearing adopts a full needle roller bearing without a cage to increase the output torque and rigidity of the reducer.
- ☞ Suitable for servo motors of any brand worldwide.
- ☞ Using synthetic grease and adopting IP65 sealing design, it is leak free and maintenance free.

## 型号说明 Model Specification

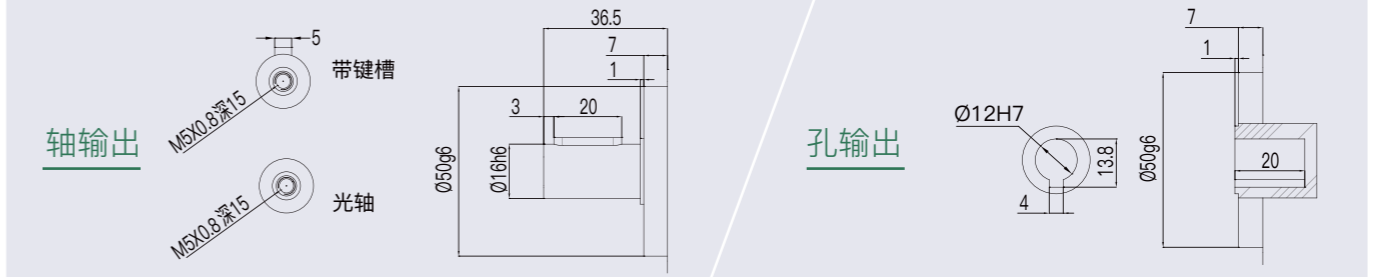


## 型号说明 Model Specification

产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQBR060	ZQBR090	ZQBR115	ZQBR142	ZQBR190		
额定输出力矩 Rated output torque	Nm	1	3	53	145	290	520	950		
			4	55	150	300	550	1000		
			5	54	140	290	530	1050		
			6		135	280	490			
			7	44	125	270	450	960		
			8		110	240	390			
			10	37	95	220	360	800		
			2	9		115	290	520	960	
				12		140	290	520	960	
				15	53	145	290	520	950	
		20		55	150	300	550	1000		
		25		54	140	290	530	1050		
		30		54	140	290	530	1050		
		40		54	140	290	530	1050		
		50		54	140	290	530	1050		
		60		46	135	280	490	1000		
		70		44	125	270	450	960		
		100	37	95	220	360	800			
		最大额定扭矩 Max torque	Nm	二倍额定输出力矩 / Double rated output torque						
		最大径向力 Max radial force	N	1,2		1010	1780	3420	5380	8330
最大轴向力 Max axial force	N	1,2		600	1500	2650	4670	6460		
效率 efficiency	%	1	98							
		2	96							
重量 weight	KG	1		1.3	3.5	7.8	16.1	27		
		2		2	5.6	9.5	19	34		
背隙 Dorsal gap	arcmin	1	≤4							
		2	≤6							

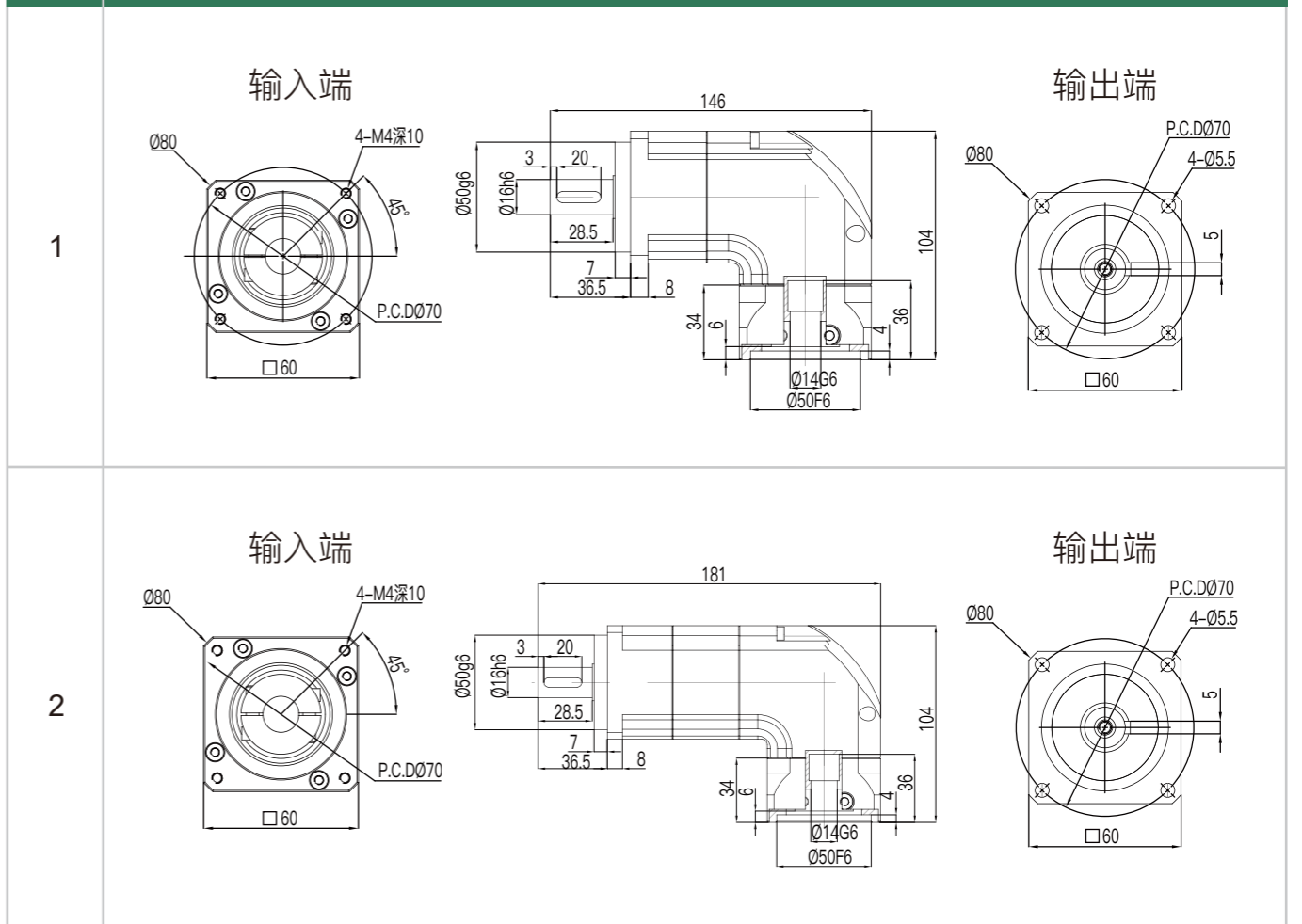
## ZQBR060输出外形图

### 输出方式图形 / Output Method Graph



### 级数

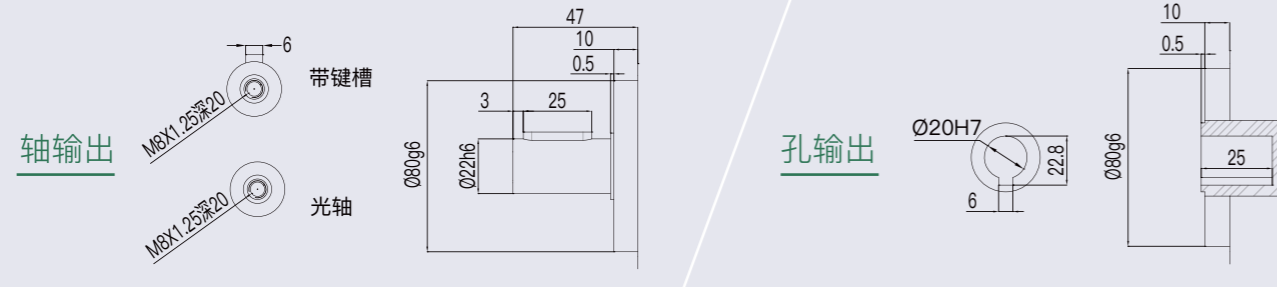
### 输出外形图 / Output Outline Drawing



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQBR090输出外形图

输出方式图形 / Output Method Graph

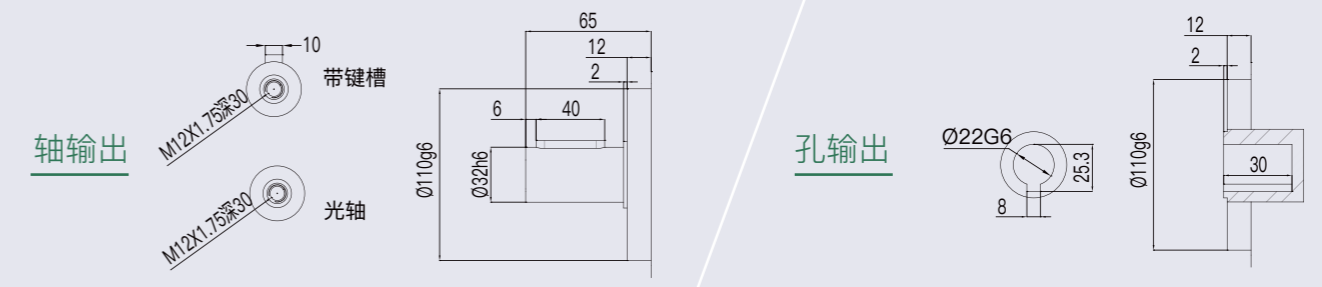


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQBR115输出外形图

输出方式图形 / Output Method Graph



级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



高精度 High precision 高刚性 Rigidity

高负载容量 High load capacity

高扭矩 High torque

使用寿命长 long service life

# ZQD SERIES

## ZQD系列行星减速机

型号	描述
ZQD060	ZQD060-3 14-50-70-M4
ZQD090	ZQD090-3 19-70-90-M5
ZQD110	ZQD110-3 22-110-145-M8 A1
ZQD140	ZQD140-3 35-114.3-200-M12



电机的功率不同，所配对的减速机也不同。  
输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies.  
The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

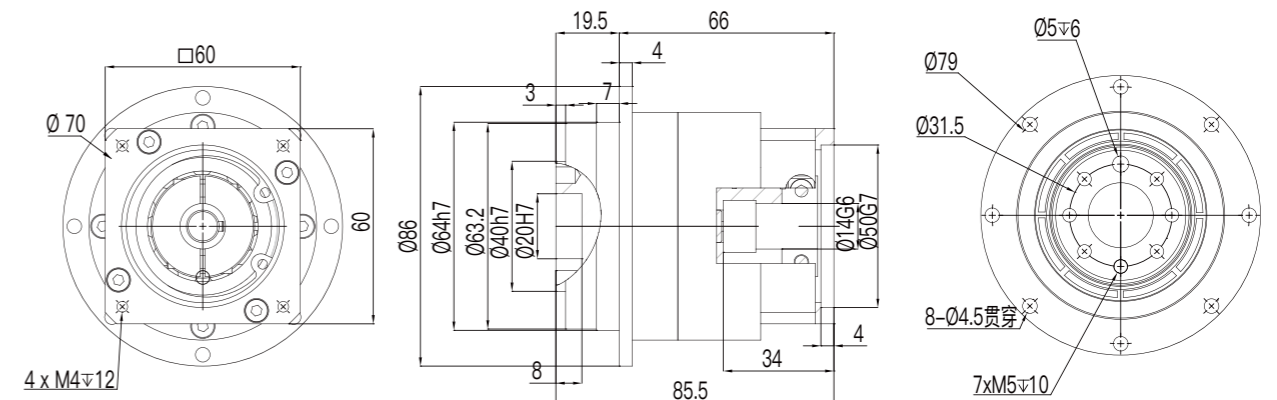
## HIGH PRECISION PLANETARY REDUCER

### 高精行星减速机



## ZQD系列

### 结构图 Structural Diagram



### 产品特点 Product Features

- ⊗ 高精度: 齿隙低于3弧分。
- ⊗ 使用顶级超精密机床加工并结合全球领先的磨齿工艺，齿轮精度可控制在ISO4级以下，确保减速机高效，长寿命。
- ⊗ 采用笼式行星支架结构，与输出轴一体式设计，实现高刚度和高精度。
- ⊗ 行星轮轴承采用不含保持架的满滚针轴承，增大减速机输出扭矩和刚性。
- ⊗ 可适配全球任何品牌的伺服电机。
- ⊗ 使用合成润滑脂，并采用IP65密封设计，不泄漏，免维护。
- ⊗ High precision: The backlash is less than 3 arc minutes.
- ⊗ Using top-notch ultra precision machine tools and combined with the world's leading gear grinding process, the gear accuracy can be controlled below ISO4 level, ensuring efficient and long service life of the reducer.
- ⊗ Adopting a cage planetary support structure and integrated design with the output shaft, achieving high stiffness and precision.
- ⊗ The planetary gear bearing adopts a full needle roller bearing without a cage to increase the output torque and rigidity of the reducer.
- ⊗ Suitable for servo motors of any brand worldwide.
- ⊗ Using synthetic grease and adopting IP65 sealing design, it is leak free and maintenance free.

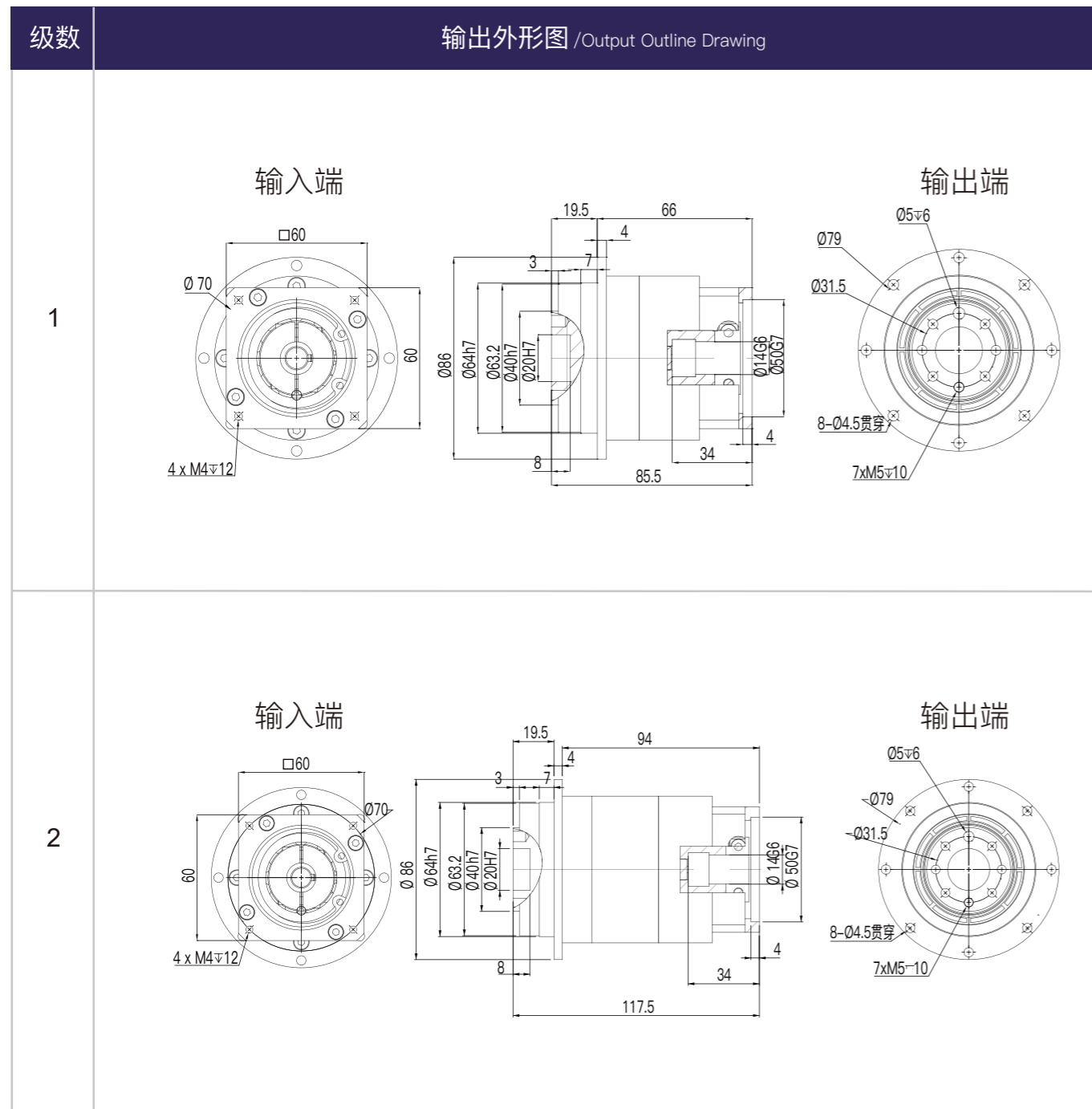
## 型号说明 Model Specification



## 型号说明 Model Specification

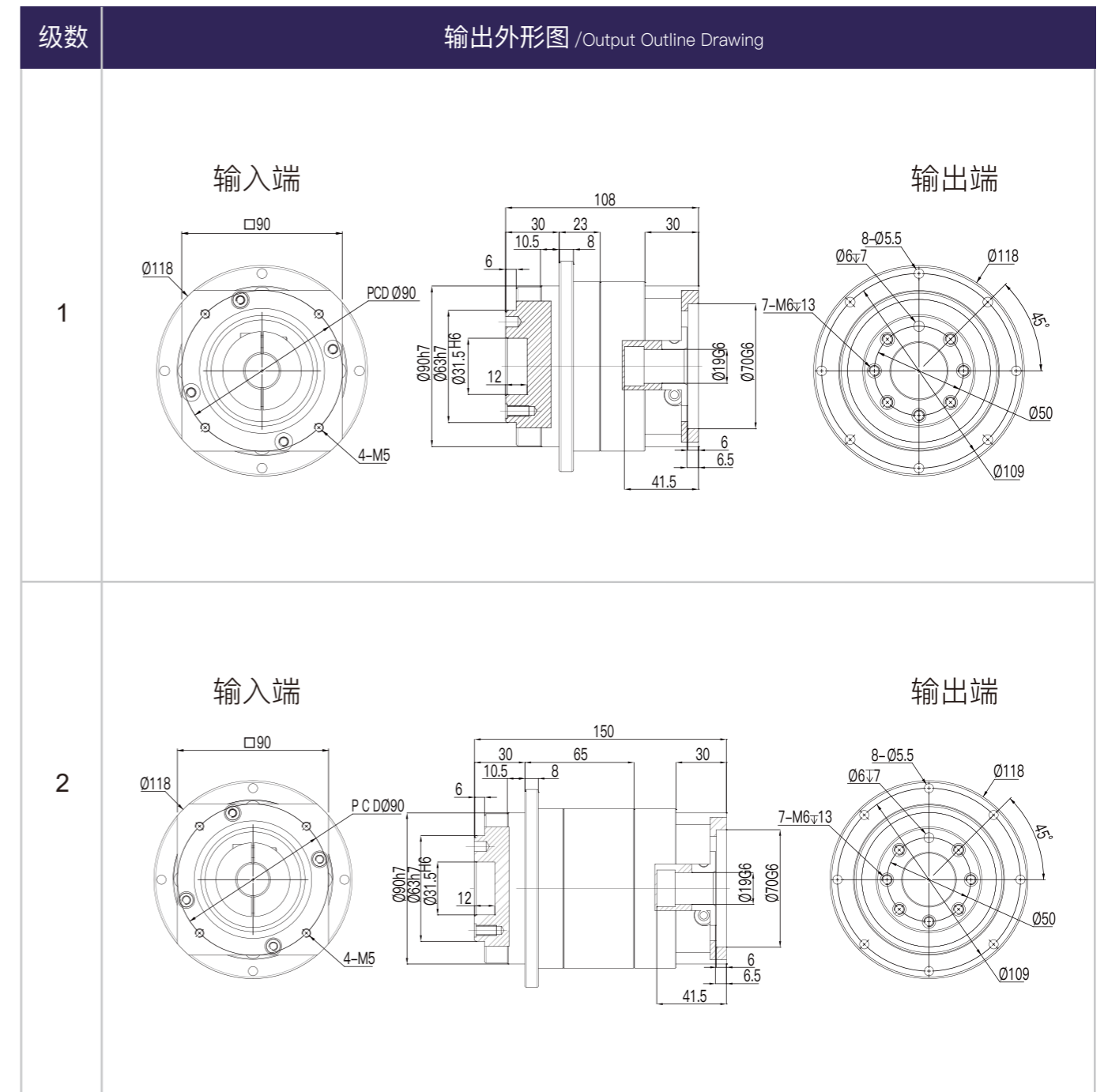
产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQD060	ZQD090	ZQD110	ZQD140	
额定输出力矩 Rated output torque	Nm	1	3	37	95	220	360	
			4	55	150	300	550	
			5	54	140	290	530	
			6	46	135	280	490	
			7	44	125	270	450	
			8	41	110	240	390	
			10	37	95	220	360	
		2	9	37	95	220	360	
			12	37	95	220	360	
			15	53	145	290	520	
			20	55	140	300	550	
			25	54	140	290	530	
			30	54	140	290	530	
			40	54	140	290	530	
			50	54	140	290	530	
			60	46	135	280	490	
			70	44	125	270	450	
			100	37	95	220	360	
			最大额定扭矩 Max torque	Nm	二倍额定输出力矩 / Double rated output torque			
最大径向力 Max radial force	N	1,2		1010	1780	3420	5380	
最大轴向力 Max axial force	N	1,2		600	1500	2650	4670	
效率 efficiency	%	1	98					
		2	96					
重量 weight	KG	1		1.3	3.5	7.8	16.1	
		2		2	5.6	9.5	19	
背隙 Dorsal gap	arcmin	1	≤5					
		2	≤7					

## ZQD060输出外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

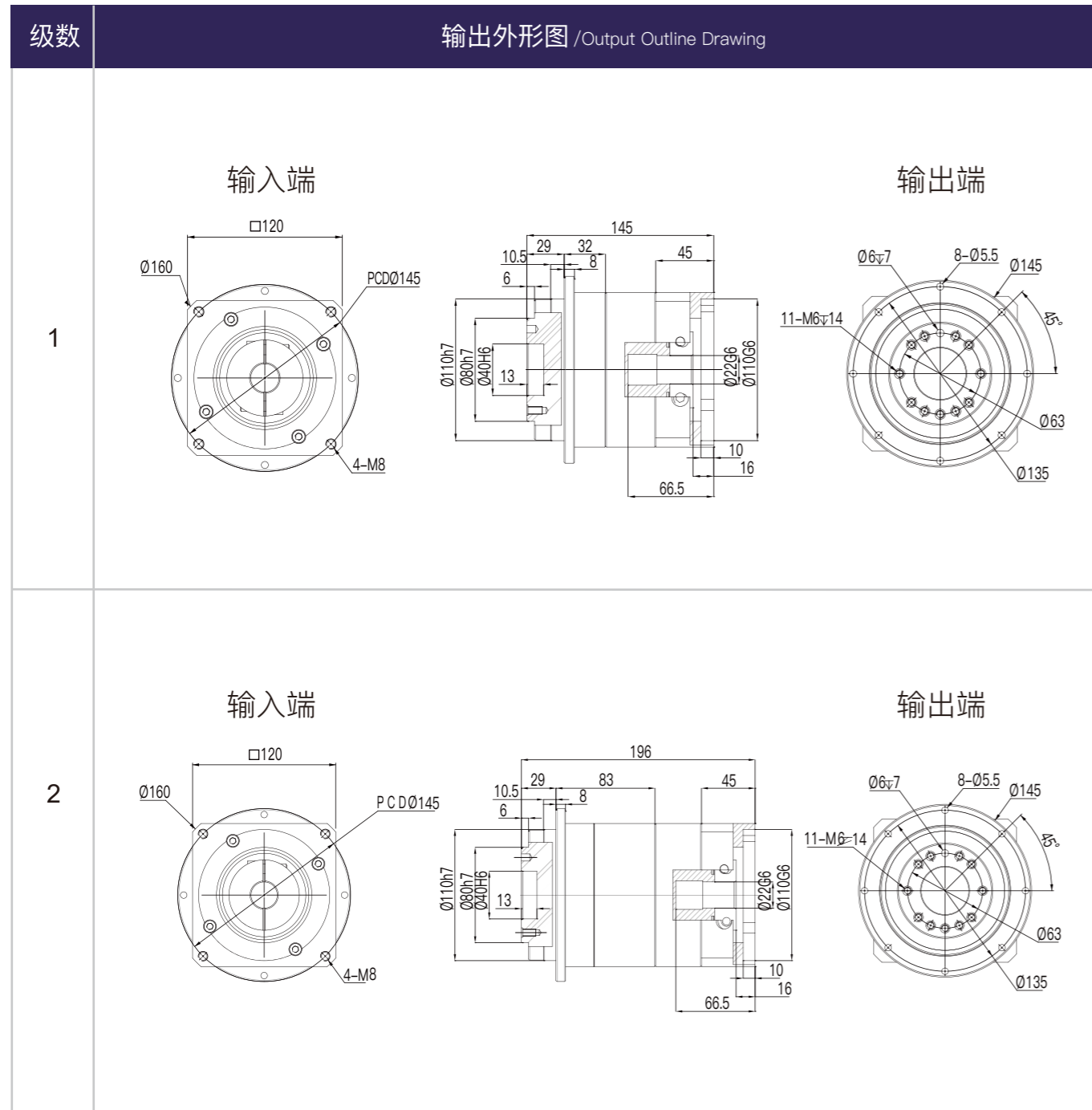
## ZQD090输出外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

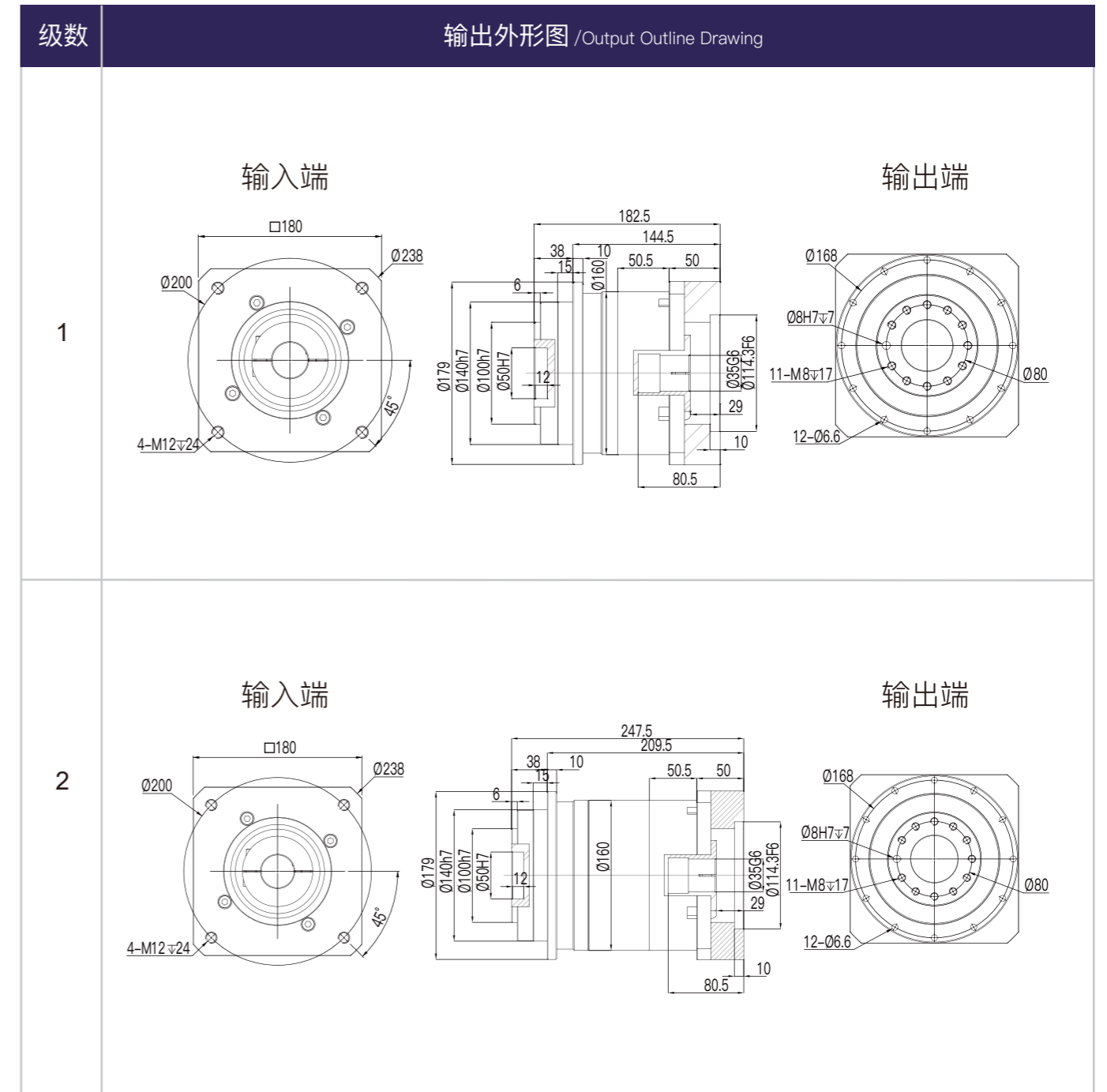


## ZQD110输出外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQD140输出外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

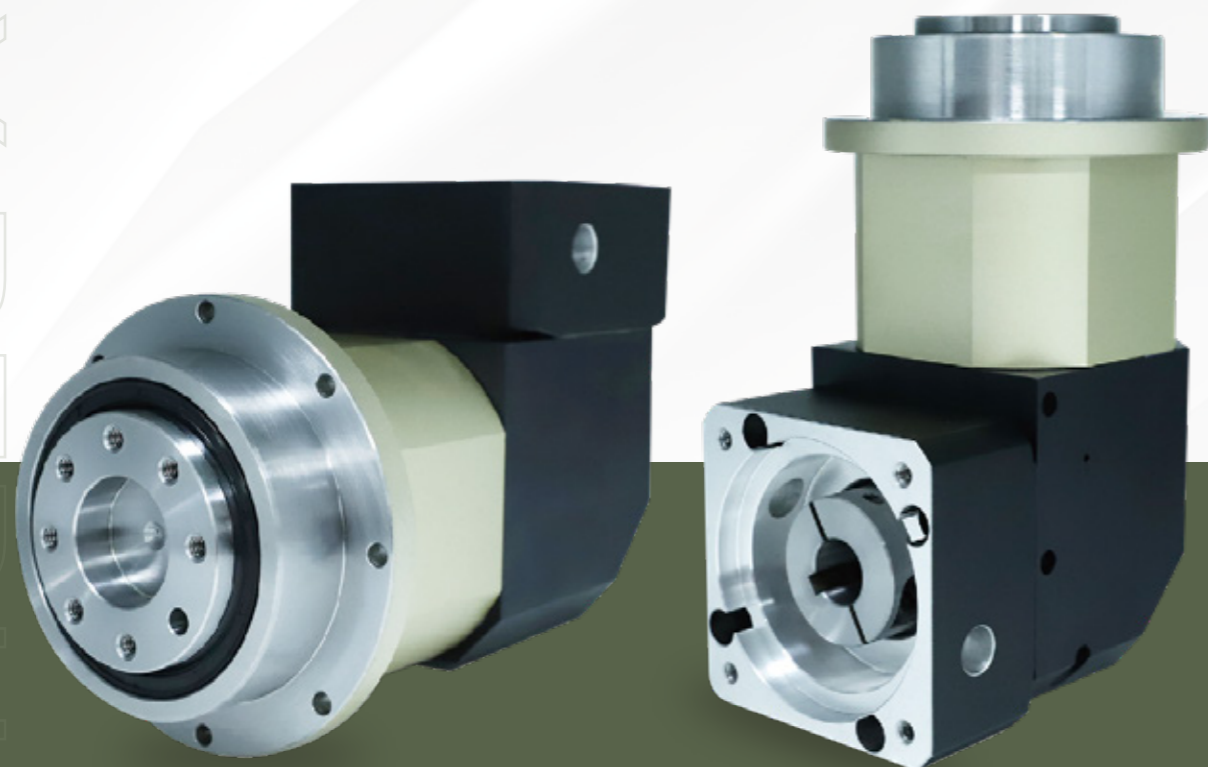
- 高精度 High precision
- 高刚性 Rigidity
- 高负载容量 High load capacity
- 高扭矩 High torque
- 使用寿命长 long service life

# ZQDR

## SERIES

ZQDR系列行星减速机

型号	描述
ZQDR060	ZQDR060-3 14-50-70-M4
ZQDR090	ZQDR090-3 19-70-90-M5
ZQDR120	ZQDR120-3 22-110-145-M8
ZQDR160	ZQDR160-3 35-114.3-200-M12



电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

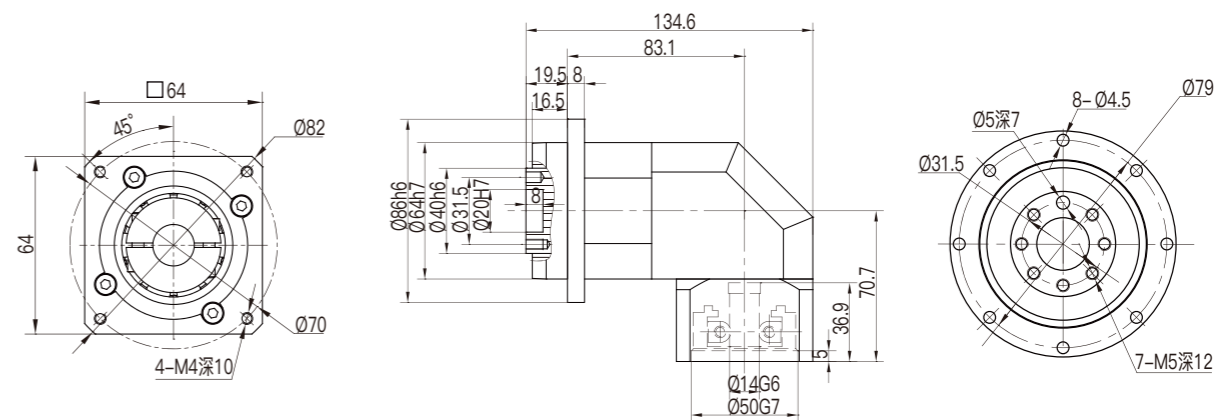
## HIGH PRECISION PLANETARY REDUCER

高精行星减速机

### ZQDR系列



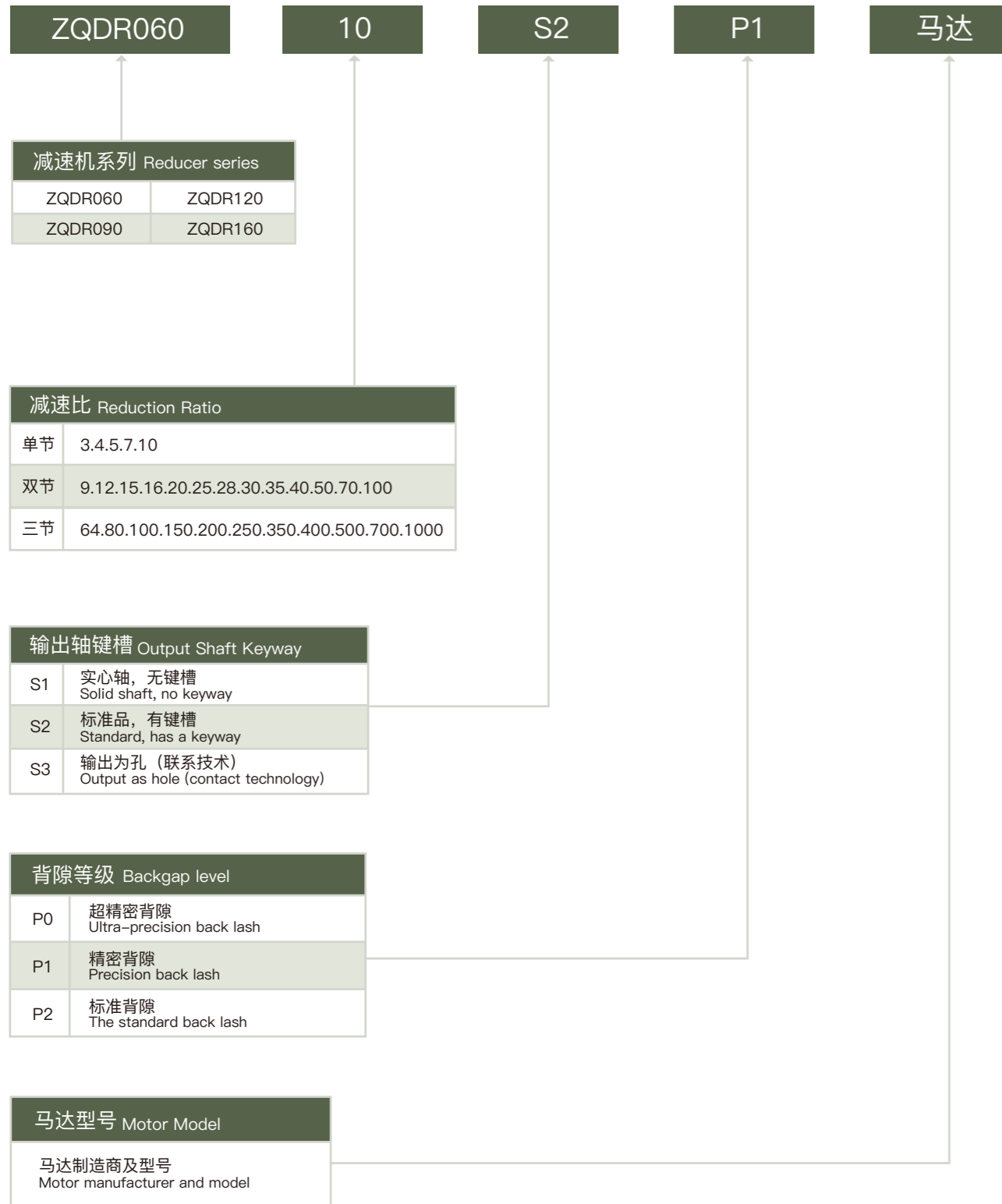
### 结构图 Structural Diagram



### 产品特点 Product Features

- 高精度: 齿隙低于3弧分。
- 使用顶级超精密机床加工并结合全球领先的磨齿工艺，齿轮精度可控制在ISO4级以下，确保减速机高效，长寿命。
- 采用笼式行星支架结构，与输出轴一体式设计，实现高刚度和高精度。
- 行星轮轴承采用不含保持架的满滚针轴承，增大减速机输出扭矩和刚性。
- 可适配全球任何品牌的伺服电机。
- 使用合成润滑脂，并采用IP65密封设计，不泄漏，免维护。
- High precision: The backlash is less than 3 arc minutes.
- Using top-notch ultra precision machine tools and combined with the world's leading gear grinding process, the gear accuracy can be controlled below ISO4 level, ensuring efficient and long service life of the reducer.
- Adopting a cage planetary support structure and integrated design with the output shaft, achieving high stiffness and precision.
- The planetary gear bearing adopts a full needle roller bearing without a cage to increase the output torque and rigidity of the reducer.
- Suitable for servo motors of any brand worldwide.
- Using synthetic grease and adopting IP65 sealing design, it is leak free and maintenance free.

## 型号说明 Model Specification



## 型号说明 Model Specification

产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQDR060	ZQDR090	ZQDR120	ZQDR160
额定输出力矩 Rated output torque	Nm	1	3	15	54	95	310
			4	42	142	280	585
			5	42	142	280	378
			7	33	92	198	310
		2	10	15	54	95	585
			9	15	54	95	585
			12	15	62	95	585
			15	42	142	280	585
			20	42	142	280	585
			25	42	142	280	585
			30	42	142	280	585
			40	42	142	280	585
			50	42	142	280	585
			70	33	92	198	378
			100	15	54	95	310
			3	64	42	142	280
		80		42	142	280	585
		100		42	142	280	585
		125		42	142	280	585
		140		42	142	280	585
175	42	142		280	585		
245	42	142		280	585		
350	42	142		280	585		
最大额定扭矩 Max torque	Nm	二倍额定输出力矩 / Double rated output torque					
		400	42	142	280	585	
		500	42	142	280	585	
		700	33	92	198	378	
1000	15	54	95	310			
最大径向力 Max radial force	N	1,2,3		680	1750	3100	6550
最大轴向力 Max axial force	N	1,2,3		340	875	1550	3270
效率 efficiency	%	1	98				
		2	96				
		3	94				
重量 weight	KG	1		1.4	3.0	7.2	21
		2		1.6	3.5	9.2	26
		3		1.8	4.0	11.2	31
背隙 Dorsal gap	arcmin	1	≤5				
		2	≤7				
		3	≤9				

## ZQDR060输出外形图

级数	输出外形图 / Output Outline Drawing
1	
2	
3	

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQDR090输出外形图

级数	输出外形图 / Output Outline Drawing
1	
2	
3	

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQDR120输出外形图

级数	输出外形图 / Output Outline Drawing
1	
2	
3	

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQDR160输出外形图

级数	输出外形图 / Output Outline Drawing
1	
2	
3	

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



## 型号说明 Model Specification

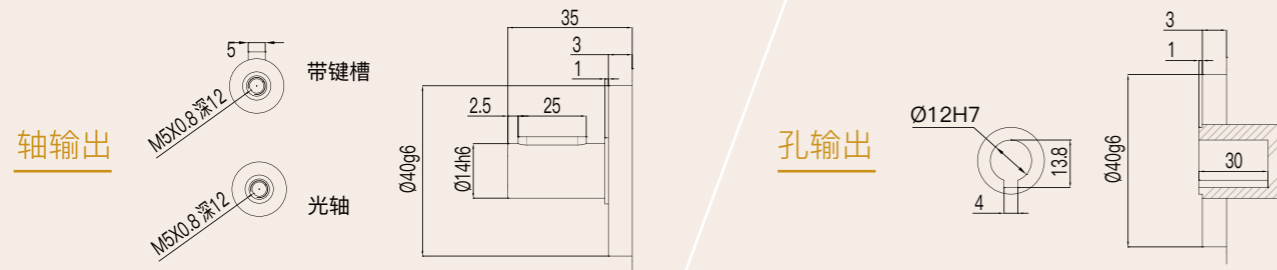


## 型号说明 Model Specification

产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQE060	ZQE080	ZQE0120	ZQE160	
额定输出力矩 Rated output torque	Nm	1	3	15	54	95	310	
			4	42	142	280	585	
			5	42	142	280	585	
			7	33	92	198	378	
		2	10	15	54	95	585	
			9	15	54	95	585	
			12	15	62	95	585	
			15	42	142	280	585	
			20	42	142	280	585	
			25	42	142	280	585	
			30	42	142	280	585	
			40	42	142	280	585	
			50	42	142	280	585	
			70	33	92	198	378	
			100	15	54	95	310	
			3	64	42	142	280	585
				80	42	142	280	585
				100	42	142	280	585
				125	42	142	280	585
				140	42	142	280	585
		175		42	142	280	585	
		245		42	142	280	585	
		350		42	142	280	585	
		4	400	42	142	280	585	
500	42		142	280	585			
700	33		92	198	378			
1000	15		54	95	310			
最大额定扭矩 Max torque	Nm	二倍额定输出力矩 / Double rated output torque						
最大径向力 Max radial force	N	1,2,3	680	1750	3100	6550		
最大轴向力 Max axial force	N	1,2,3	340	875	1550	3270		
效率 efficiency	%	1	98					
		2	96					
		3	94					
重量 weight	KG	1	1.4	3.0	7.2	21		
		2	1.6	3.5	9.2	26		
		3	1.8	4.0	11.2	31		
背隙 Dorsal gap	arcmin	1	≤5					
		2	≤7					
		3	≤9					

## ZQE060输出外形图

输出方式图形/Output Method Graph

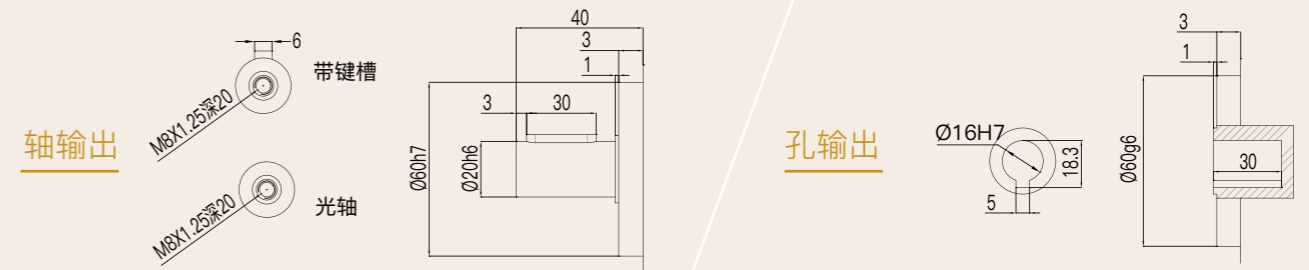


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p> <p>输出端</p>	
2	<p>输入端</p> <p>输出端</p>	
3	<p>输入端</p> <p>输出端</p>	

注: 电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQE080输出外形图

输出方式图形/Output Method Graph



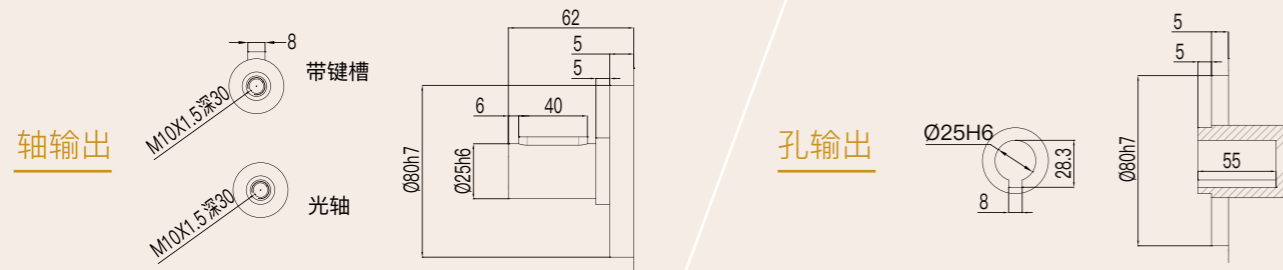
级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p> <p>输出端</p>	
2	<p>输入端</p> <p>输出端</p>	
3	<p>输入端</p> <p>输出端</p>	

注: 电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



## ZQE0120输出外形图

输出方式图形/Output Method Graph

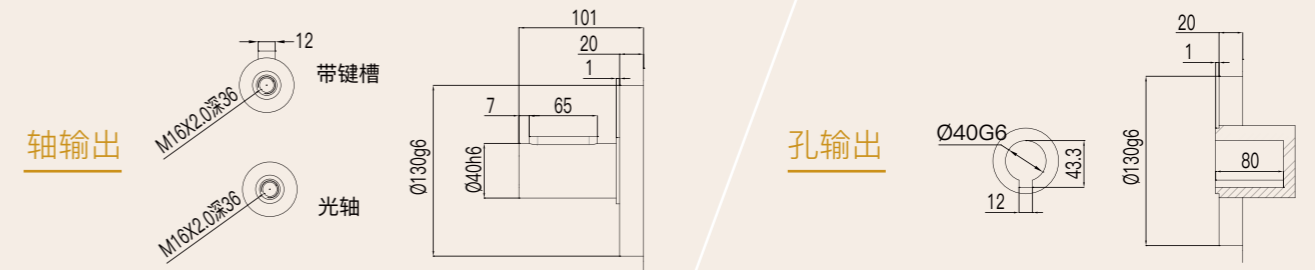


级数	输出外形图 / Output Outline Drawing	
1	<p><b>输入端</b></p> <p>尺寸: □120, M8, Ø145, 120</p>	<p><b>输出端</b></p> <p>尺寸: Ø100, 120, 45°, 4-M10, 28, 120</p>
2	<p><b>输入端</b></p> <p>尺寸: □120, M8, Ø145, 120</p>	<p><b>输出端</b></p> <p>尺寸: Ø100, 120, 45°, 4-M10, 28, 120</p>
3	<p><b>输入端</b></p> <p>尺寸: □120, M8, Ø145, 120</p>	<p><b>输出端</b></p> <p>尺寸: Ø100, 120, 45°, 4-M10, 28, 120</p>

注: 电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQE160输出外形图

输出方式图形/Output Method Graph



级数	输出外形图 / Output Outline Drawing	
1	<p><b>输入端</b></p> <p>尺寸: □180, 4-M12, Ø200, 180</p>	<p><b>输出端</b></p> <p>尺寸: M12, Ø145, 12, 43, M16</p>
2	<p><b>输入端</b></p> <p>尺寸: □180, 4-M12, Ø200, 180</p>	<p><b>输出端</b></p> <p>尺寸: M12, Ø145, 12, 43, M16</p>
3	<p><b>输入端</b></p> <p>尺寸: □180, Ø236, 180, 45°, 4-M12深25, Ø200</p>	<p><b>输出端</b></p> <p>尺寸: 12, 45°, Ø145, 43, 4-M12深25, M16深24</p>

注: 电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

- 高精度 High precision
- 高刚性 Rigidity
- 高负载容量 High load capacity
- 高扭矩 High torque
- 使用寿命长 long service life

PLANETARY REDUCER

# ZQER

## SERIES

ZQER系列行星减速机

型号	描述
ZQER060	ZQER060-3 14-50-70-M4
ZQER080	ZQER080-3 S2-P2-19-70-90-M6
ZQER0120	ZQER0120-3 S2-P2-22-110-145-M8
ZQER160	ZQER160-3 35-114.3-200-M12



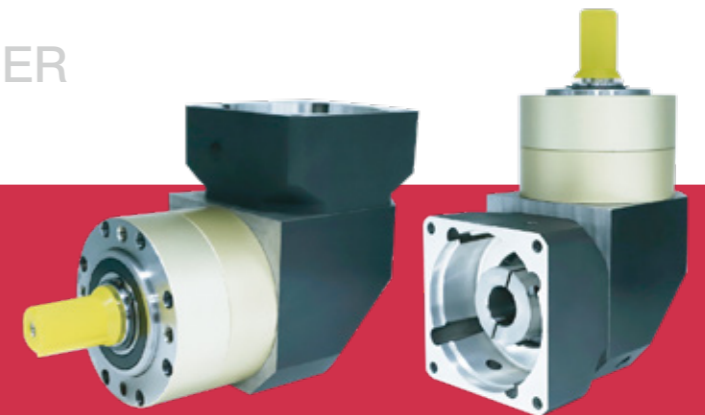
电机的功率不同，所配对的减速机也不同。  
输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies.  
The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

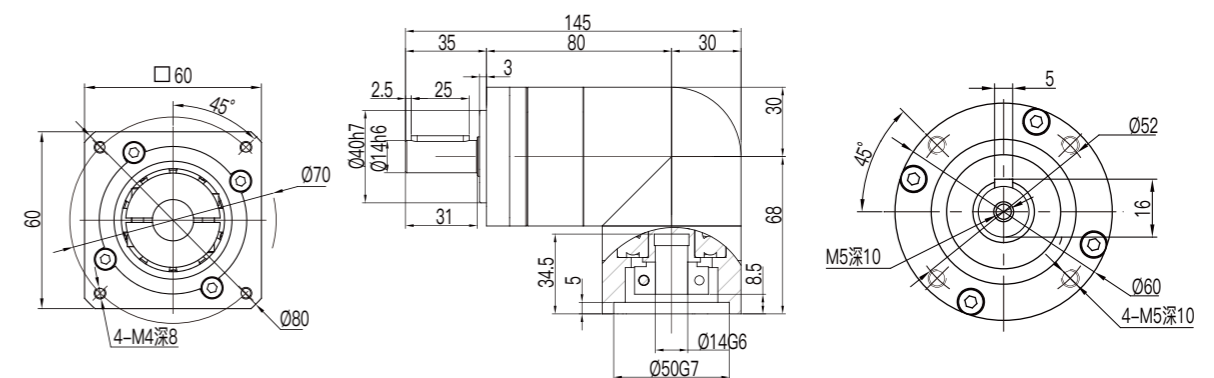
## HIGH PRECISION PLANETARY REDUCER

高精行星减速机

### ZQER系列



#### 结构图 Structural Diagram



#### 产品特点 Product Features

- ⊗ 高精度: 齿隙低于3弧分。
- ⊗ 使用顶级超精密机床加工并结合全球领先的磨齿工艺，齿轮精度可控制在ISO4级以下，确保减速机高效，长寿命。
- ⊗ 采用笼式行星支架结构，与输出轴一体式设计，实现高刚度和高精度。
- ⊗ 行星轮轴承采用不含保持架的满滚针轴承，增大减速机输出扭矩和刚性。
- ⊗ 可适配全球任何品牌的伺服电机。
- ⊗ 使用合成润滑脂，并采用IP65密封设计，不泄漏，免维护。
- ⊗ High precision: The backlash is less than 3 arc minutes.
- ⊗ Using top-notch ultra precision machine tools and combined with the world's leading gear grinding process, the gear accuracy can be controlled below ISO4 level, ensuring efficient and long service life of the reducer.
- ⊗ Adopting a cage planetary support structure and integrated design with the output shaft, achieving high stiffness and precision.
- ⊗ The planetary gear bearing adopts a full needle roller bearing without a cage to increase the output torque and rigidity of the reducer.
- ⊗ Suitable for servo motors of any brand worldwide.
- ⊗ Using synthetic grease and adopting IP65 sealing design, it is leak free and maintenance free.

## 型号说明 Model Specification

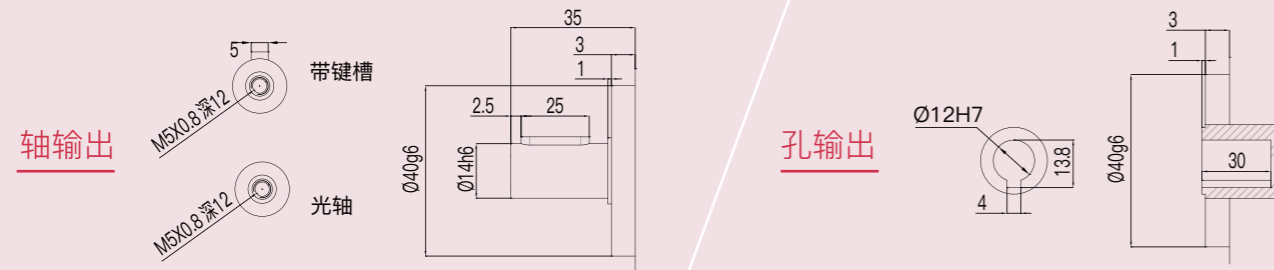


## 型号说明 Model Specification

产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQER060	ZQER080	ZQER0120	ZQER160
额定输出力矩 Rated output torque	Nm	1	3	15	54	95	310
			4	42	142	280	585
			5	42	142	280	585
			7	33	92	198	378
			10	15	54	95	585
		2	9	15	54	95	585
			12	15	62	95	585
			15	42	142	280	585
			20	42	142	280	585
			25	42	142	280	585
			30	42	142	280	585
			40	42	142	280	585
			50	42	142	280	585
			70	33	92	198	378
			100	15	54	95	310
		3	64	42	142	280	585
			80	42	142	280	585
			100	42	142	280	585
			125	42	142	280	585
			140	42	142	280	585
175	42		142	280	585		
245	42		142	280	585		
350	42		142	280	585		
400	42		142	280	585		
500	42		142	280	585		
700	33	92	198	378			
1000	15	54	95	310			
最大额定扭矩 Max torque	Nm		二倍额定输出力矩 / Double rated output torque				
最大径向力 Max radial force	N	1,2,3	680	1750	3100	6550	
最大轴向力 Max axial force	N	1,2,3	340	875	1550	3270	
效率 efficiency	%	1	98				
		2	96				
		3	94				
重量 weight	KG	1	2.1	5.0	8.8	26.4	
		2	2.7	6.0	10.8	28	
		3	3.3	7.0	12.8	33	
背隙 Dorsal gap	arcmin	1	≤5				
		2	≤7				
		3	≤9				

## ZQER060输出外形图

输出方式图形 / Output Method Graph

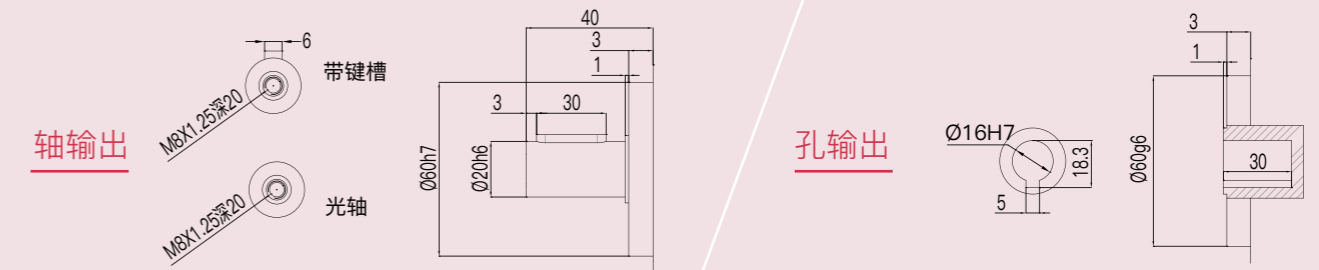


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQER080输出外形图

输出方式图形 / Output Method Graph

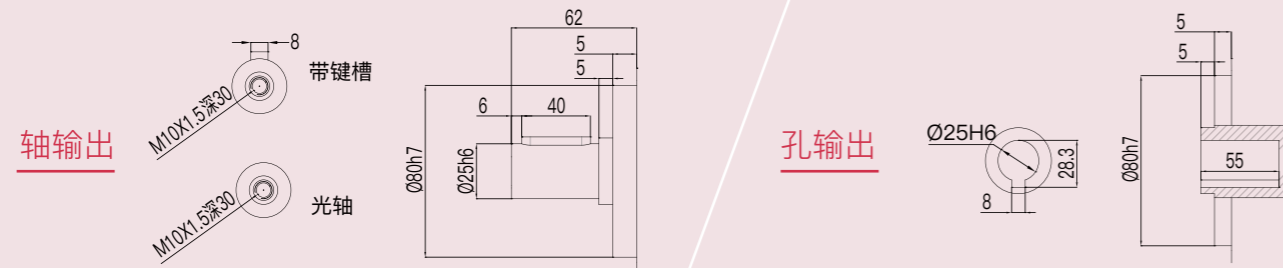


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQER0120输出外形图

输出方式图形 / Output Method Graph

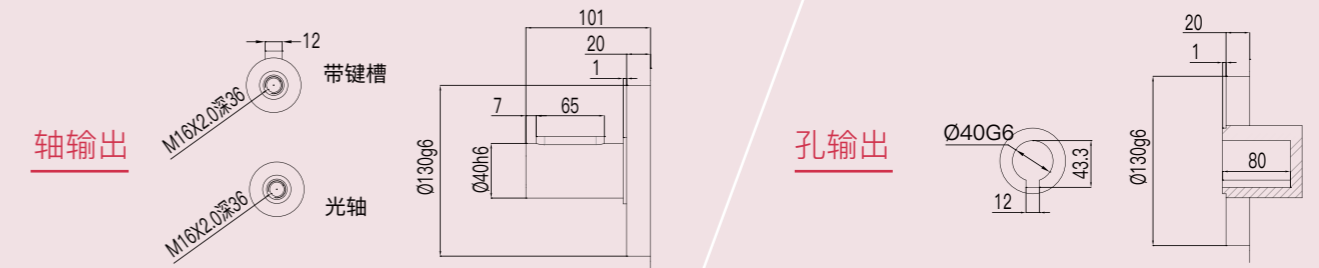


级数	输出外形图 / Output Outline Drawing		
1	<p>输入端</p>		<p>输出端</p>
2	<p>输入端</p>		<p>输出端</p>
3	<p>输入端</p>		<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQER160输出外形图

输出方式图形 / Output Method Graph



级数	输出外形图 / Output Outline Drawing		
1	<p>输入端</p>		<p>输出端</p>
2	<p>输入端</p>		<p>输出端</p>
3	<p>输入端</p>		<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

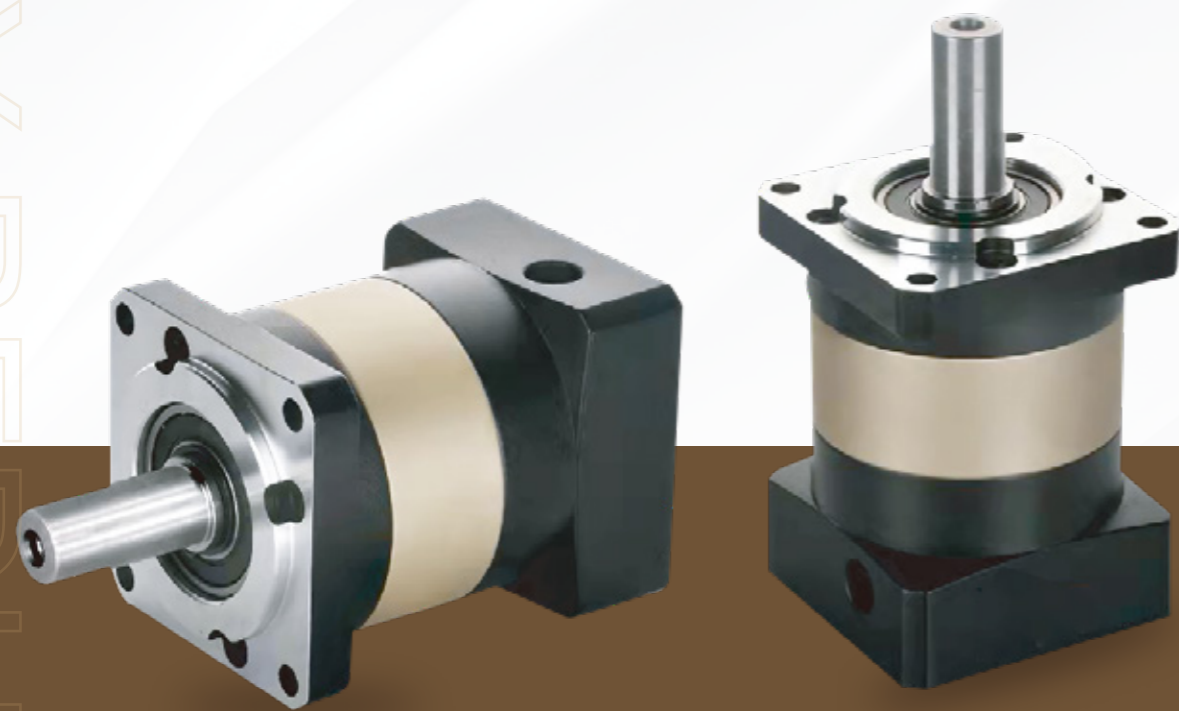
- 高精度 High precision
- 高刚性 Rigidity
- 高负载容量 High load capacity
- 高扭矩 High torque
- 使用寿命长 long service life

# ZQF

## SERIES

### ZQF系列行星减速机

型号	描述
ZQF060	ZQF060-3 S2-P2-14-50-70-M4
ZQF080	ZQF080-3 S2-P2-19-70-90-M6
ZQF0120	ZQF0120-3 S2-P2-22-110-145-M8
ZQF160	ZQF160-3 35-114.3-200-M12



电机的功率不同，所配对的减速机也不同。  
输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies.  
The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

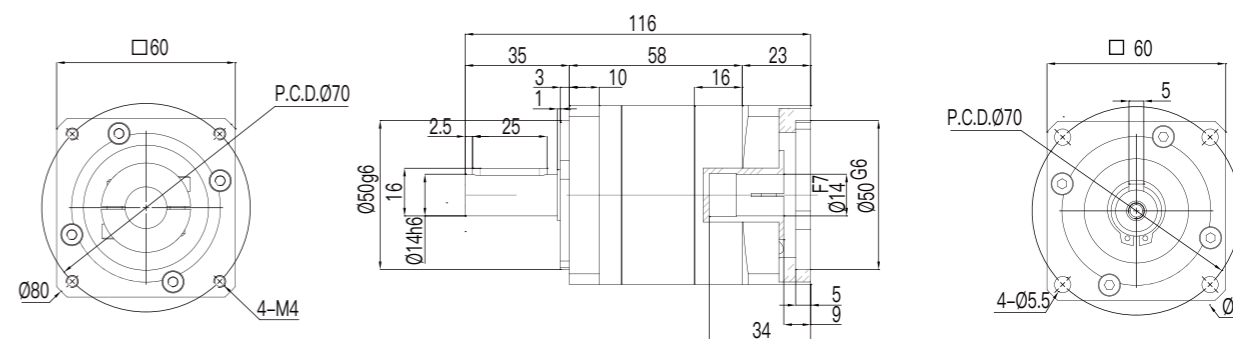
## PRECISION PLANETARY REDUCER

### 精密行星减速机



## ZQF系列

### 结构图 Structural Diagram



### 产品特点 Product Features

- 采用直齿齿轮转动，经过渗碳淬火处理，齿向齿阔修形处理，表面喷塑，设备运行平稳，噪音小。
- 结构简单，交货期快，可大批量生产。
- 减速机种类齐全，满足市场上大部分的应用工况。
- Adopting straight tooth gears for rotation, undergoing carburization and quenching treatment, tooth width adjustment treatment, surface spraying, stable equipment operation, and low noise.
- Simple structure, fast delivery time, and capable of mass production.
- The range of reducers is complete, meeting most of the application conditions in the market.

## 型号说明 Model Specification

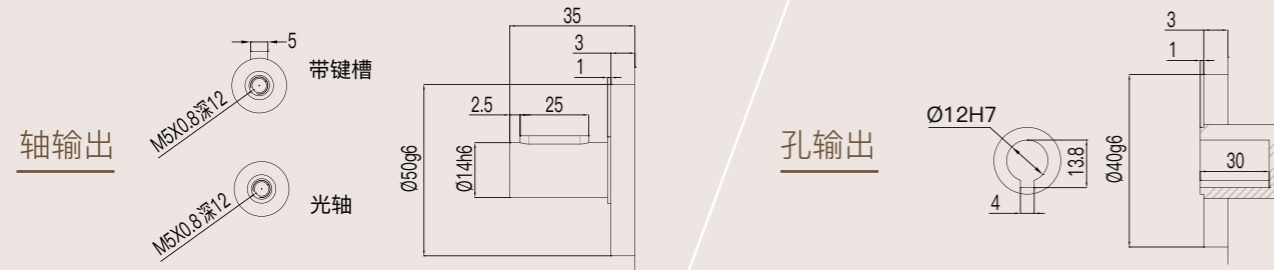


## 型号说明 Model Specification

产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQF060	ZQF080	ZQF0120	ZQF160
额定输出力矩 Rated output torque	Nm	1	3	15	54	95	310
			4	42	142	280	585
			5	42	142	280	585
			7	33	92	198	378
		2	10	15	54	95	585
			9	15	54	95	585
			12	15	62	95	585
			15	42	142	280	585
			20	42	142	280	585
			25	42	142	280	585
			30	42	142	280	585
			40	42	142	280	585
			50	42	142	280	585
			70	33	92	198	378
			100	15	54	95	310
			3	64	42	142	280
		80		42	142	280	585
		100		42	142	280	585
		125		42	142	280	585
		140		42	142	280	585
		175		42	142	280	585
		245		42	142	280	585
		350		42	142	280	585
		400	42	142	280	585	
500	42	142	280	585			
700	33	92	198	378			
1000	15	54	95	310			
最大额定扭矩 Max torque	Nm		二倍额定输出力矩 / Double rated output torque				
最大径向力 Max radial force	N	1,2,3	680	1750	3100	6550	
最大轴向力 Max axial force	N	1,2,3	340	875	1550	3270	
效率 efficiency	%	1	98				
		2	96				
		3	94				
重量 weight	KG	1	1.4	3.0	7.2	21	
		2	1.6	3.5	9.2	26	
		3	1.8	4.0	11.2	31	
背隙 Dorsal gap	arcmin	1	≤5				
		2	≤7				
		3	≤9				

## ZQF060输出外形图

输出方式图形 / Output Method Graph

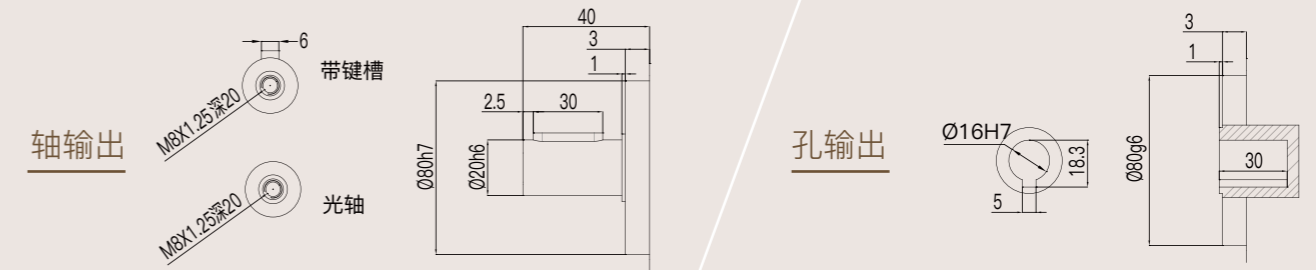


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQF080输出外形图

输出方式图形 / Output Method Graph



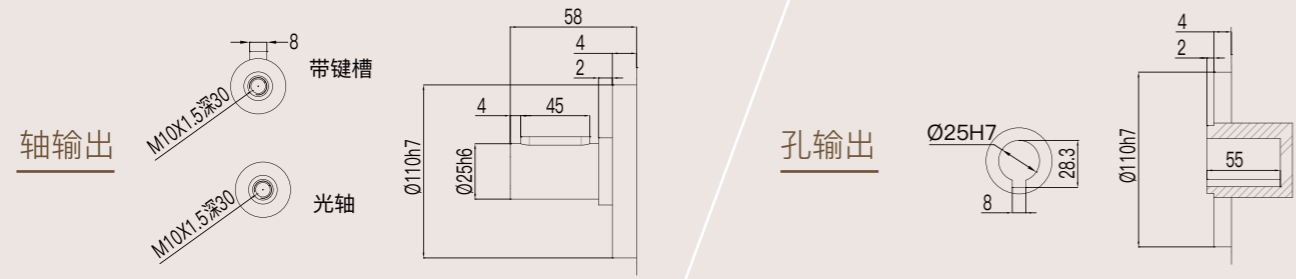
级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



## ZQF0120输出外形图

输出方式图形 / Output Method Graph

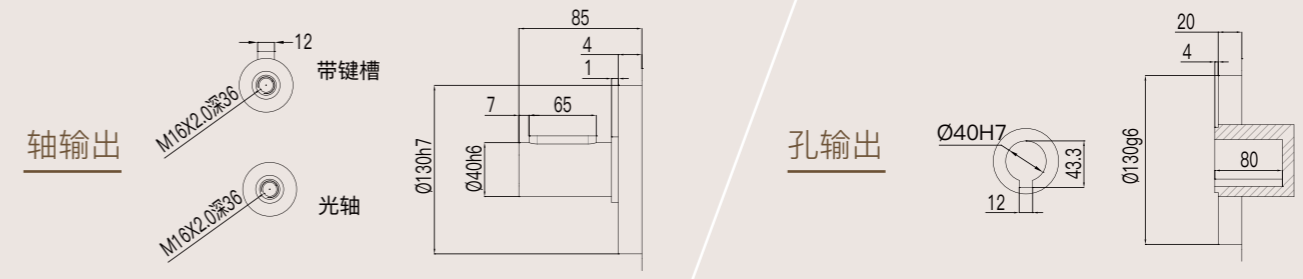


级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQF160输出外形图

输出方式图形 / Output Method Graph



级数	输出外形图 / Output Outline Drawing	
1	<p>输入端</p>	<p>输出端</p>
2	<p>输入端</p>	<p>输出端</p>
3	<p>输入端</p>	<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

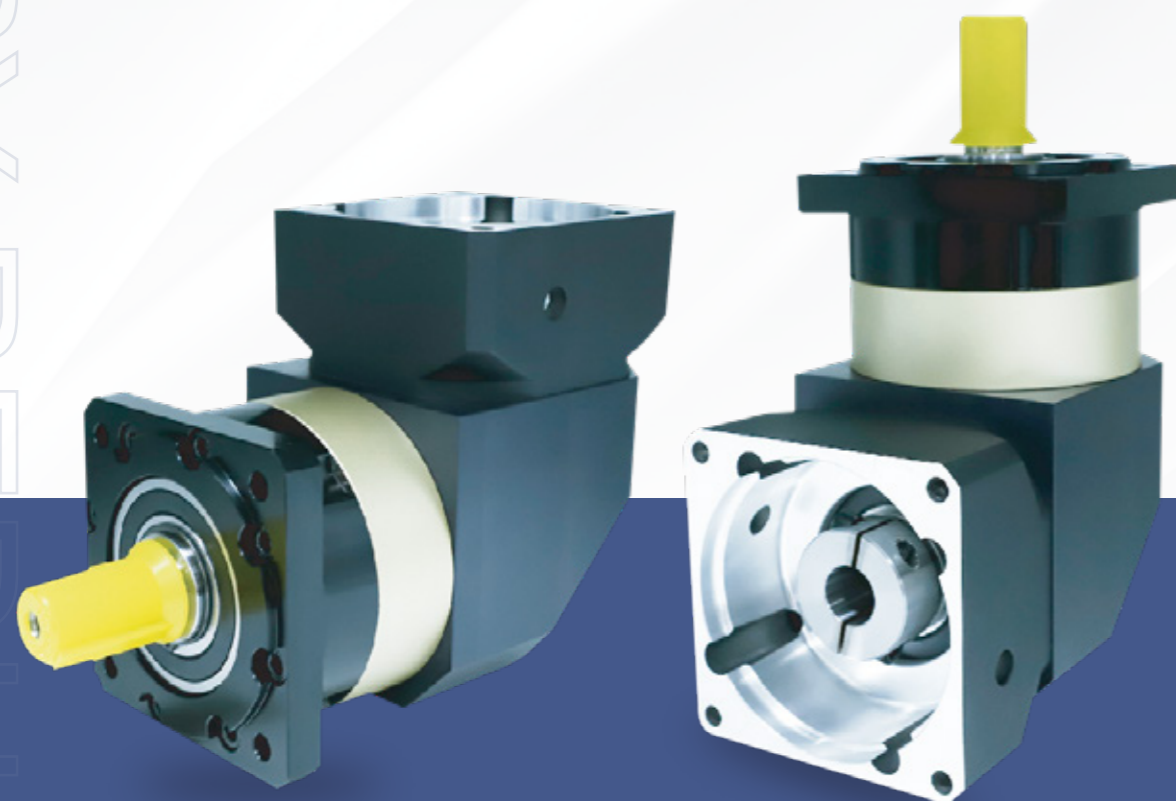
- 高精度 High precision
- 高刚性 Rigidity
- 高负载容量 High load capacity
- 高扭矩 High torque
- 使用寿命长 long service life

# ZQFR

## SERIES

ZQFR系列行星减速机

型号	描述
ZQFR060	ZQFR060-3 14-50-70-M4
ZQFR080	ZQFR080-3 S2-P2-19-70-90-M6
ZQFR0120	ZQFR0120-3 S2-P2-22-110-145-M8
ZQFR160	ZQFR160-3 35-114.3-200-M12



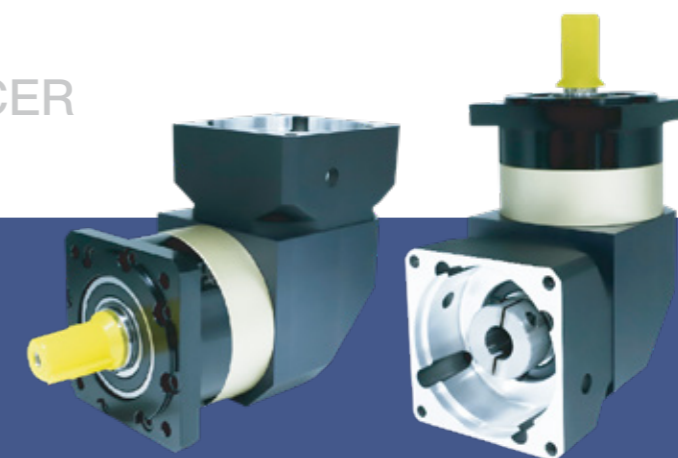
电机的功率不同，所配对的减速机也不同。  
输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies.  
The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

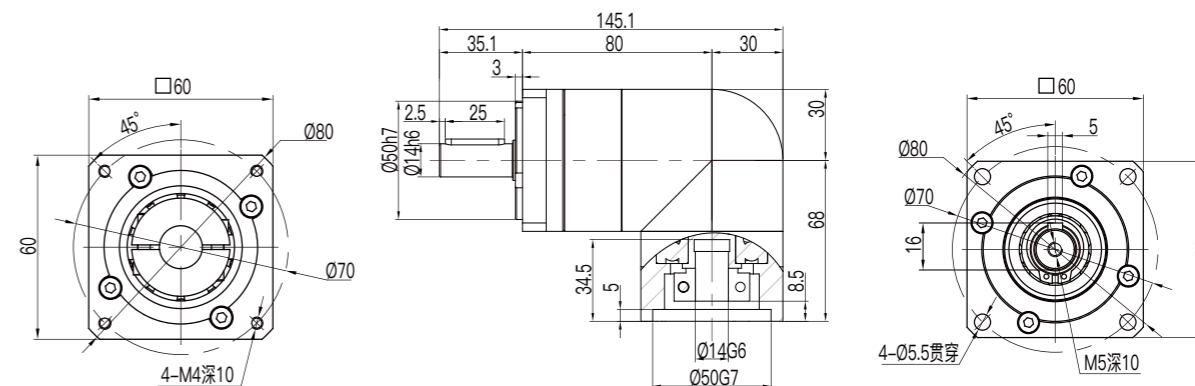
## PRECISION PLANETARY REDUCER

精密行星减速机

### ZQFR系列



#### 结构图 Structural Diagram



#### 产品特点 Product Features

- 采用直齿齿轮转动，经过渗碳淬火处理，齿向齿阔修形处理，表面喷塑，设备运行平稳，噪音小。
- 结构简单，交货期快，可大批量生产。
- 减速机种类齐全，满足市场上大部分的应用工况。
- Adopting straight tooth gears for rotation, undergoing carburization and quenching treatment, tooth width adjustment treatment, surface spraying, stable equipment operation, and low noise.
- Simple structure, fast delivery time, and capable of mass production.
- The range of reducers is complete, meeting most of the application conditions in the market.

## 型号说明 Model Specification

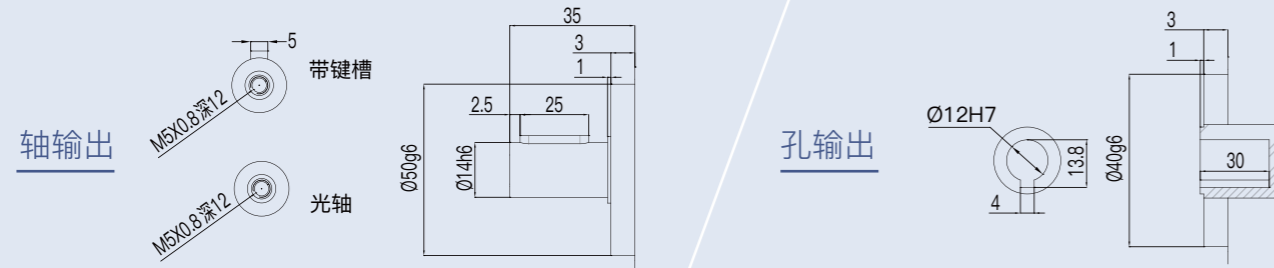


## 型号说明 Model Specification

产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQFR060	ZQFR080	ZQFR0120	ZQFR160
额定输出力矩 Rated output torque	Nm	1	3	15	54	95	310
			4	42	142	280	585
			5	42	142	280	585
			7	33	92	198	378
			10	15	54	95	585
		2	9	15	54	95	585
			12	15	62	95	585
			15	42	142	280	585
			20	42	142	280	585
			25	42	142	280	585
			30	42	142	280	585
			40	42	142	280	585
			50	42	142	280	585
			70	33	92	198	378
			100	15	54	95	310
		3	64	42	142	280	585
			80	42	142	280	585
			100	42	142	280	585
			125	42	142	280	585
			140	42	142	280	585
175	42		142	280	585		
245	42		142	280	585		
350	42		142	280	585		
400	42		142	280	585		
500	42		142	280	585		
700	33	92	198	378			
1000	15	54	95	310			
最大额定扭矩 Max torque	Nm		二倍额定输出力矩 / Double rated output torque				
最大径向力 Max radial force	N	1,2,3	680	1750	3100	6550	
最大轴向力 Max axial force	N	1,2,3	340	875	1550	3270	
效率 efficiency	%	1	98				
		2	96				
		3	94				
重量 weight	KG	1	2.1	5.0	8.8	26.4	
		2	2.7	6.0	10.8	28	
		3	3.3	7.0	12.8	33	
背隙 Dorsal gap	arcmin	1	≤5				
		2	≤7				
		3	≤9				

## ZQFR060输出外形图

输出方式图形 / Output Method Graph

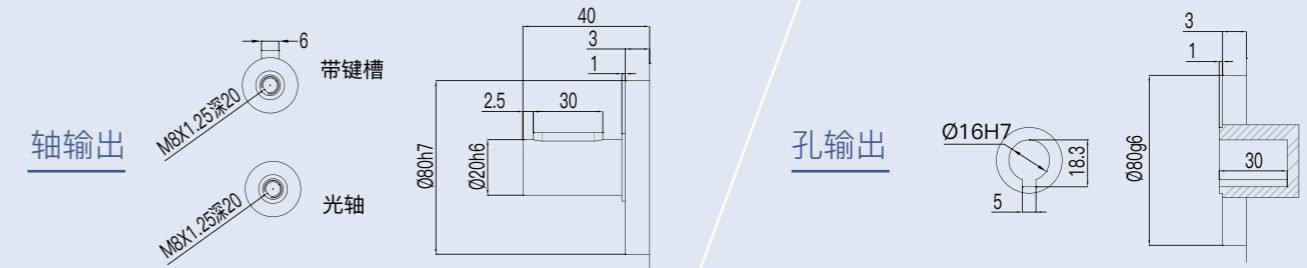


级数	输出外形图 / Output Outline Drawing		
1	<p>输入端</p> <p>输出端</p>		<p>输入端</p> <p>输出端</p>
2	<p>输入端</p> <p>输出端</p>		<p>输入端</p> <p>输出端</p>
3	<p>输入端</p> <p>输出端</p>		<p>输入端</p> <p>输出端</p>

注: 电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQFR080输出外形图

输出方式图形 / Output Method Graph

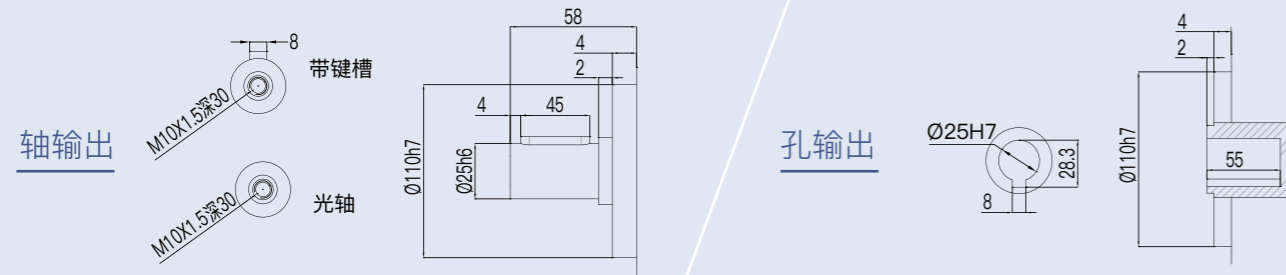


级数	输出外形图 / Output Outline Drawing		
1	<p>输入端</p> <p>输出端</p>		<p>输入端</p> <p>输出端</p>
2	<p>输入端</p> <p>输出端</p>		<p>输入端</p> <p>输出端</p>
3	<p>输入端</p> <p>输出端</p>		<p>输入端</p> <p>输出端</p>

注: 电机的功率不同, 所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQFR0120输出外形图

输出方式图形 / Output Method Graph

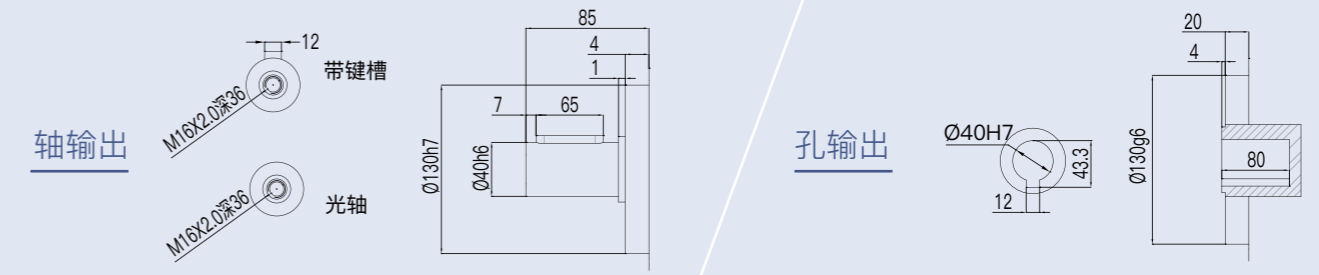


级数	输出外形图 / Output Outline Drawing		
1	<p>输入端</p>		<p>输出端</p>
2	<p>输入端</p>		<p>输出端</p>
3	<p>输入端</p>		<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQFR160输出外形图

输出方式图形 / Output Method Graph

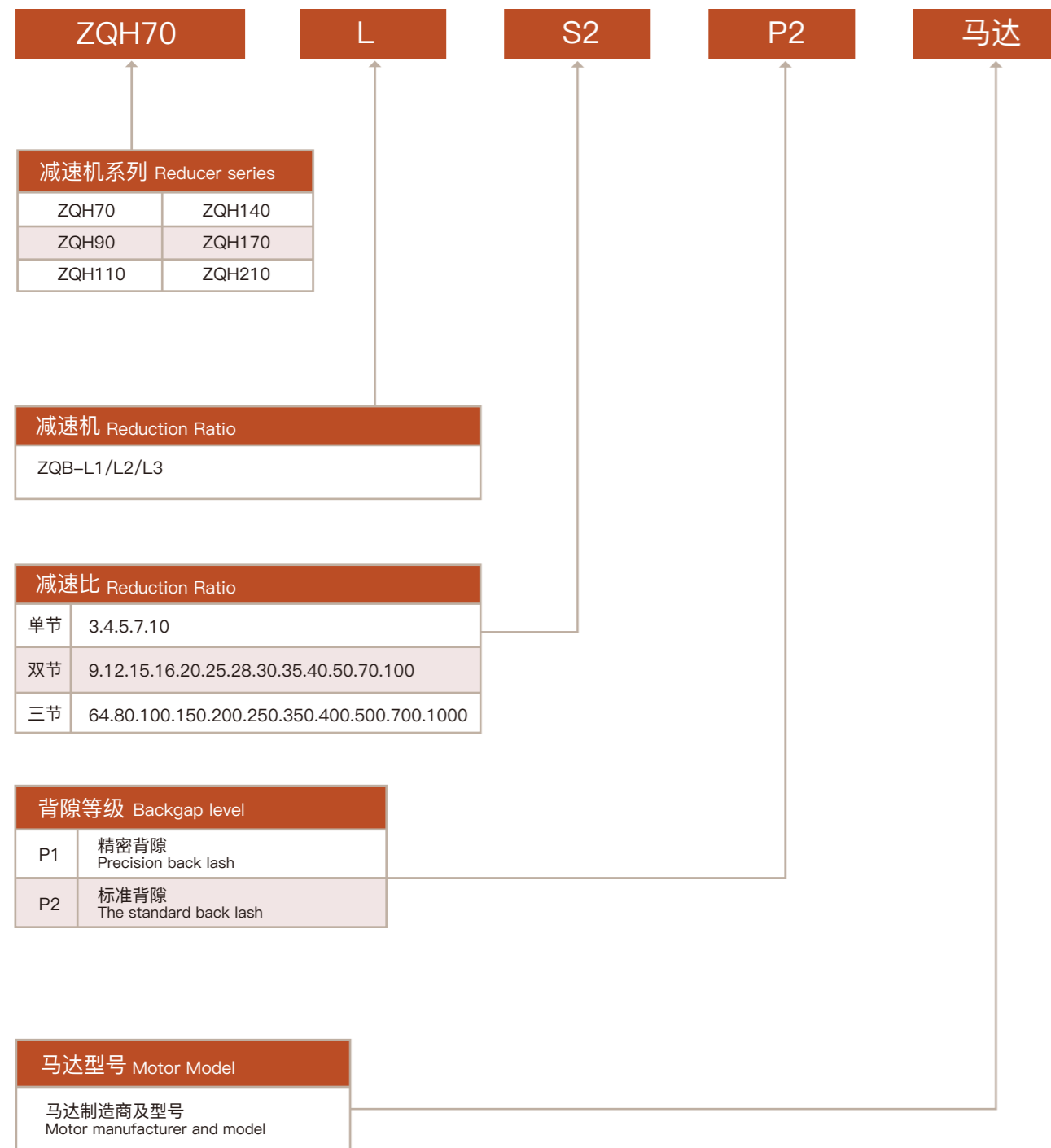


级数	输出外形图 / Output Outline Drawing		
1	<p>输入端</p>		<p>输出端</p>
2	<p>输入端</p>		<p>输出端</p>
3	<p>输入端</p>		<p>输出端</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



## 型号说明 Model Specification



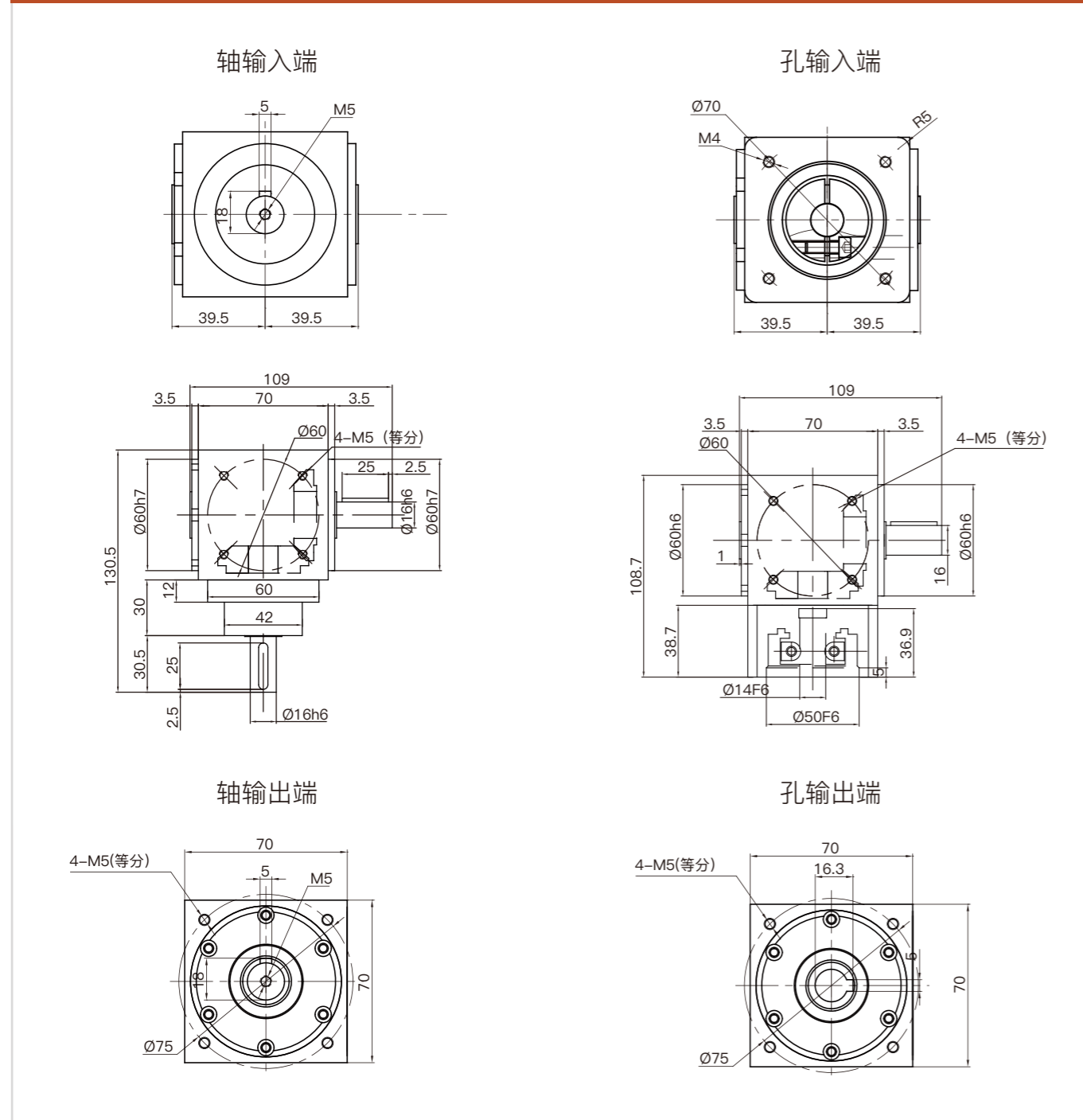
## 换向器规格表 Steering gear specification table

规格 Specifications	单位 Unit	ZQH70	ZQH90	ZQH110	ZQH140	ZQH170	ZQH210
外形尺寸 Overall dimensions	mm	70	90	110	140	170	210
额定扭矩 Rated torque	Nm	12	42	72	320	320	650
最大扭矩 Maximum torque	rpm	24	84	144	620	620	975
输入额定转速 Input rated speed	kg-cm <sup>2</sup>	1500	3000	3000	3000	3000	3000
输入最大转速 Input maximum speed	kg-cm <sup>2</sup>	2000	6000	6000	3000	6000	6000
本体减速比 Body reduction ratio		1:1/1:2	1:1/1:2	1:1/1:2	1:1/1:2	1:1	1:1
减速机L1 Reducer L1		3-10	3-10	3-10	3-10	3-10	3-10
减速机L2 Reducer L2		16-100	9-100	9-100	9-100	9-100	9-100
减速机L3 Reducer L3		64-1000	27-1000	27-1000	27-1000	27-1000	27-1000

备注：减速机参考前面ZQB参数

## ZQH外形图

ZQH70-1外形图 / ZQH70-1 Outline Drawing

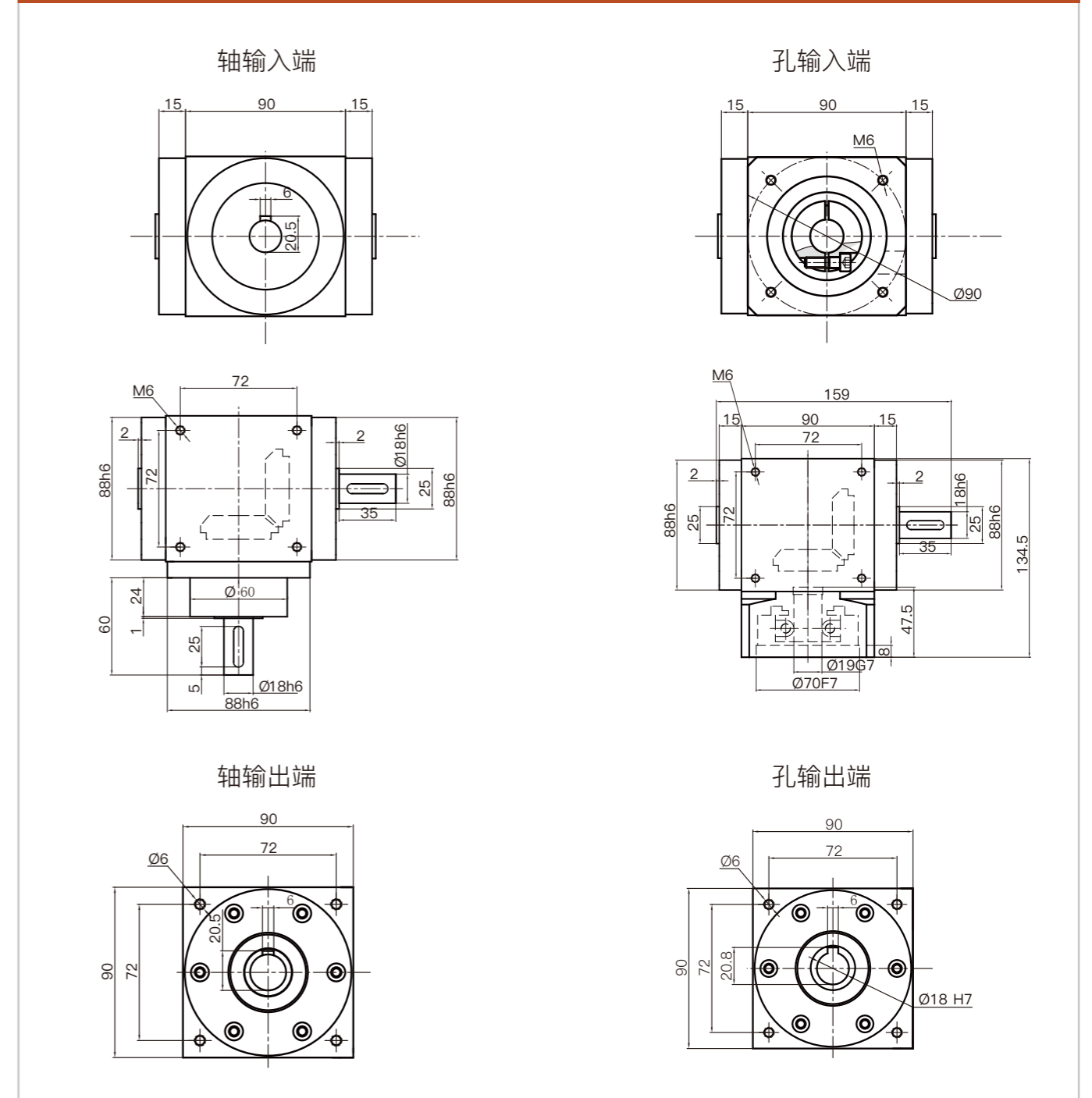


注：换向器可根据要求选择最多一种输入方式及两种输出方式，电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

Note: The commutator can choose up to one input method and two output methods according to requirements. The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQH外形图

ZQH90-1外形图 / ZQH90-1 Outline Drawing



注：换向器可根据要求选择最多一种输入方式及两种输出方式，电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

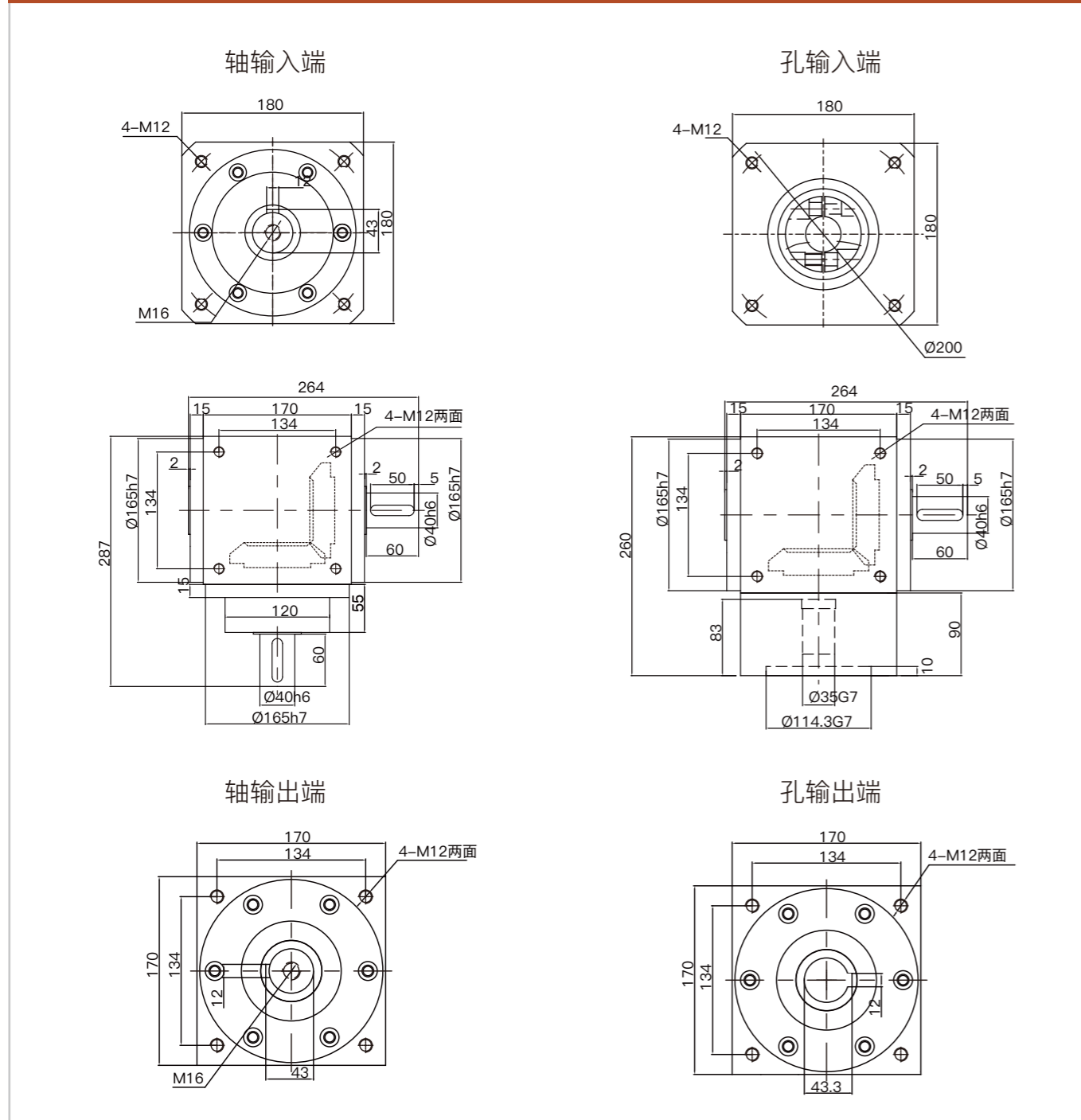
Note: The commutator can choose up to one input method and two output methods according to requirements. The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.





## ZQH外形图

ZQH170-1外形图 / ZQH170-1 Outline Drawing

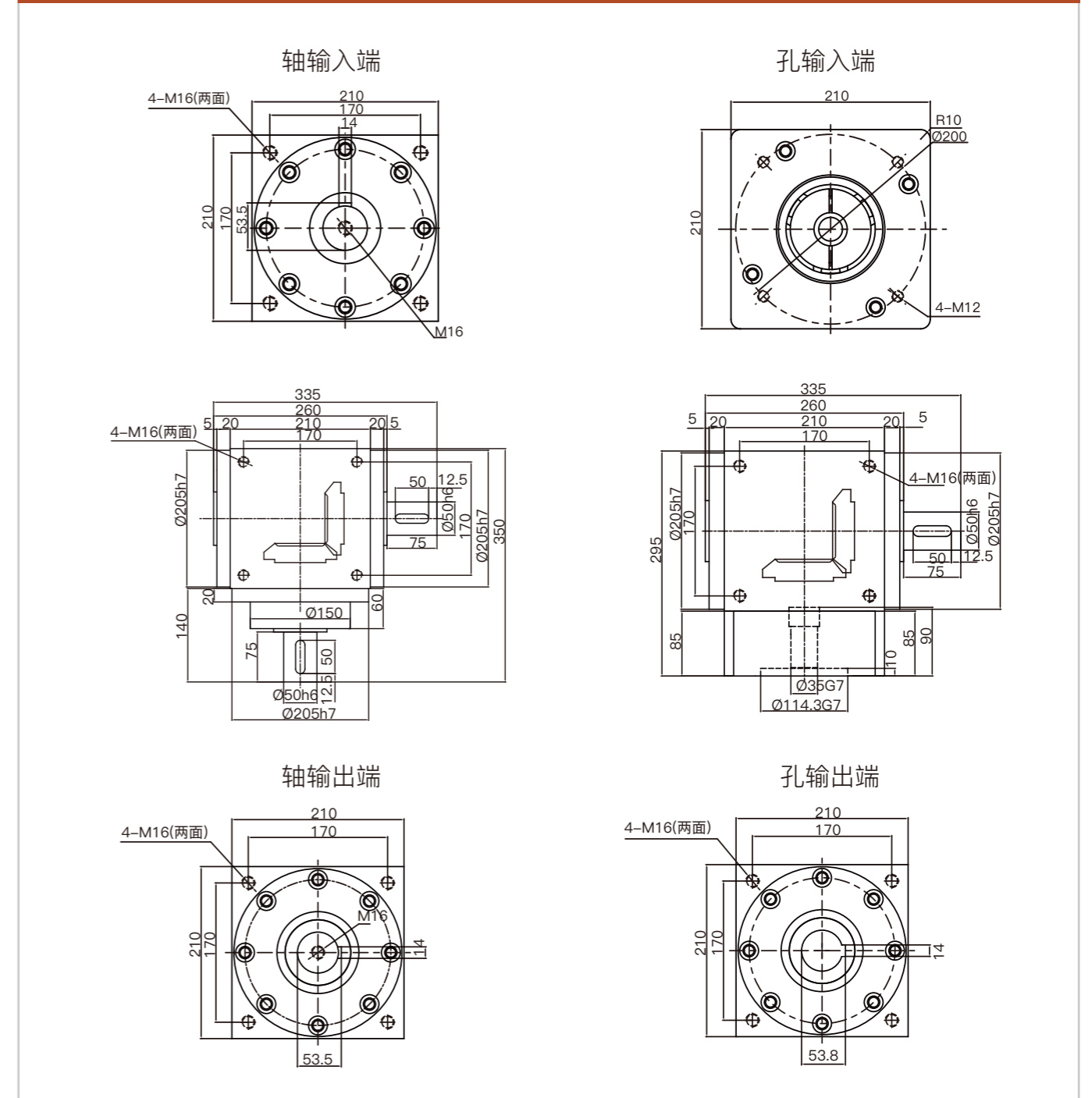


注：换向器可根据要求选择最多一种输入方式及两种输出方式，电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

Note: The commutator can choose up to one input method and two output methods according to requirements. The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQH外形图

ZQH210-1外形图 / ZQH210-1 Outline Drawing



注：换向器可根据要求选择最多一种输入方式及两种输出方式，电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

Note: The commutator can choose up to one input method and two output methods according to requirements. The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

高精度 High precision 高刚性 Rigidity

高负载容量 High load capacity

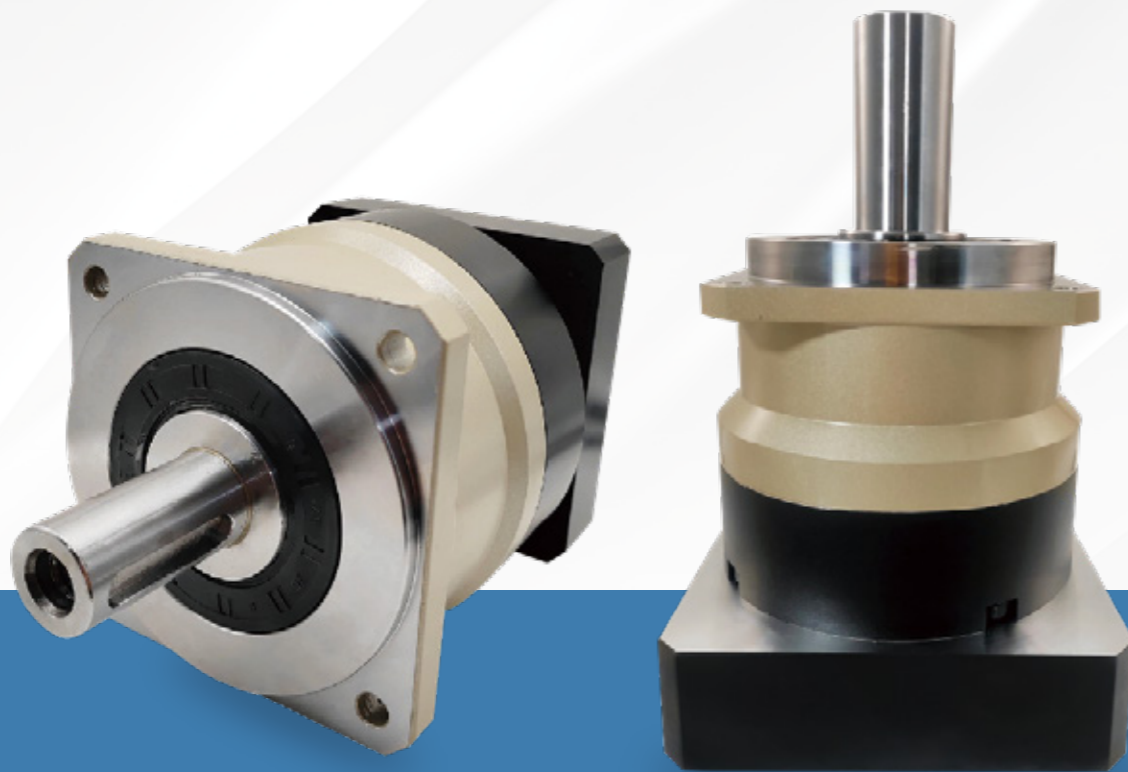
高扭矩 High torque

使用寿命长 long service life

# ZQT SERIES

## ZQT系列行星减速机

型号	描述
ZQT090	ZQT090-3 19-70-90-M6
ZQT115	ZQT115-3 22-110-145-M8
ZQT142	ZQT142-3 35-114.3-200-M12



电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

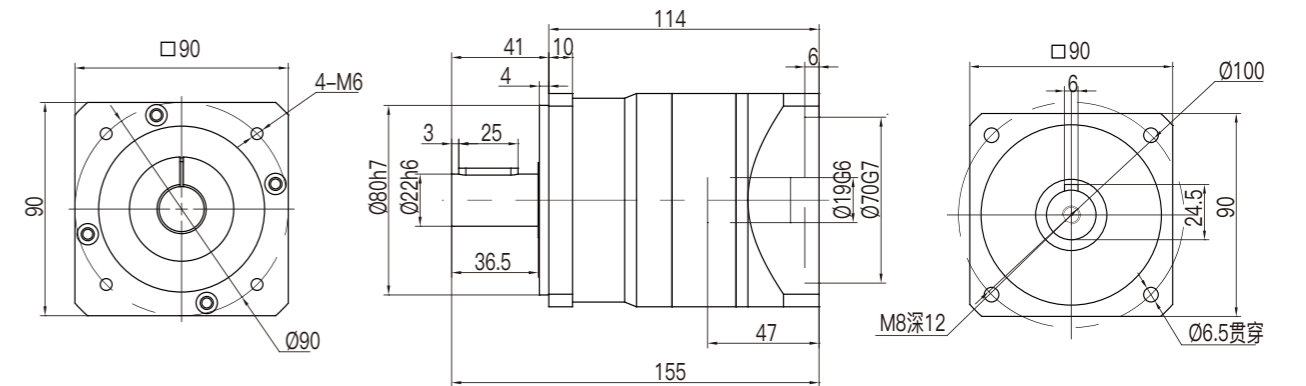
## HIGH PRECISION PLANETARY REDUCER

### 高精行星减速机



## ZQT系列

### 结构图 Structural Diagram



### 产品特点 Product Features

- ⊗ 高精度: 齿隙低于3弧分。
- ⊗ 使用顶级超精密机床加工并结合全球领先的磨齿工艺，齿轮精度可控制在ISO4级以下，确保减速机高效，长寿命。
- ⊗ 采用笼式行星支架结构，与输出轴一体式设计，实现高刚度和高精度。
- ⊗ 行星轮轴承采用不含保持架的满滚针轴承，增大减速机输出扭矩和刚性。
- ⊗ 可适配全球任何品牌的伺服电机。
- ⊗ 使用合成润滑脂，并采用IP65密封设计，不泄漏，免维护。
- ⊗ High precision: The backlash is less than 3 arc minutes.
- ⊗ Using top-notch ultra precision machine tools and combined with the world's leading gear grinding process, the gear accuracy can be controlled below ISO4 level, ensuring efficient and long service life of the reducer.
- ⊗ Adopting a cage planetary support structure and integrated design with the output shaft, achieving high stiffness and precision.
- ⊗ The planetary gear bearing adopts a full needle roller bearing without a cage to increase the output torque and rigidity of the reducer.
- ⊗ Suitable for servo motors of any brand worldwide.
- ⊗ Using synthetic grease and adopting IP65 sealing design, it is leak free and maintenance free.

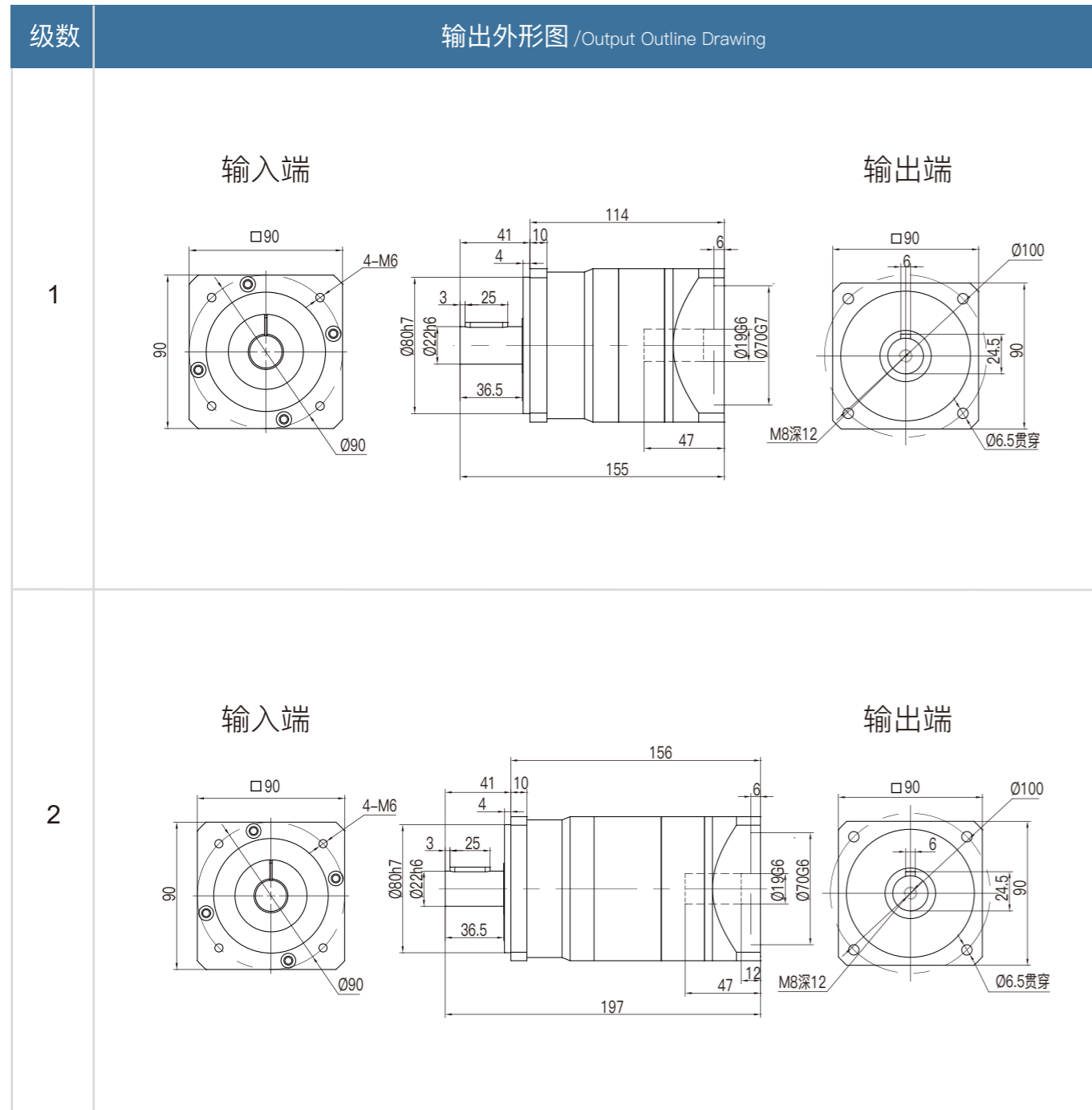
## 型号说明 Model Specification



## 型号说明 Model Specification

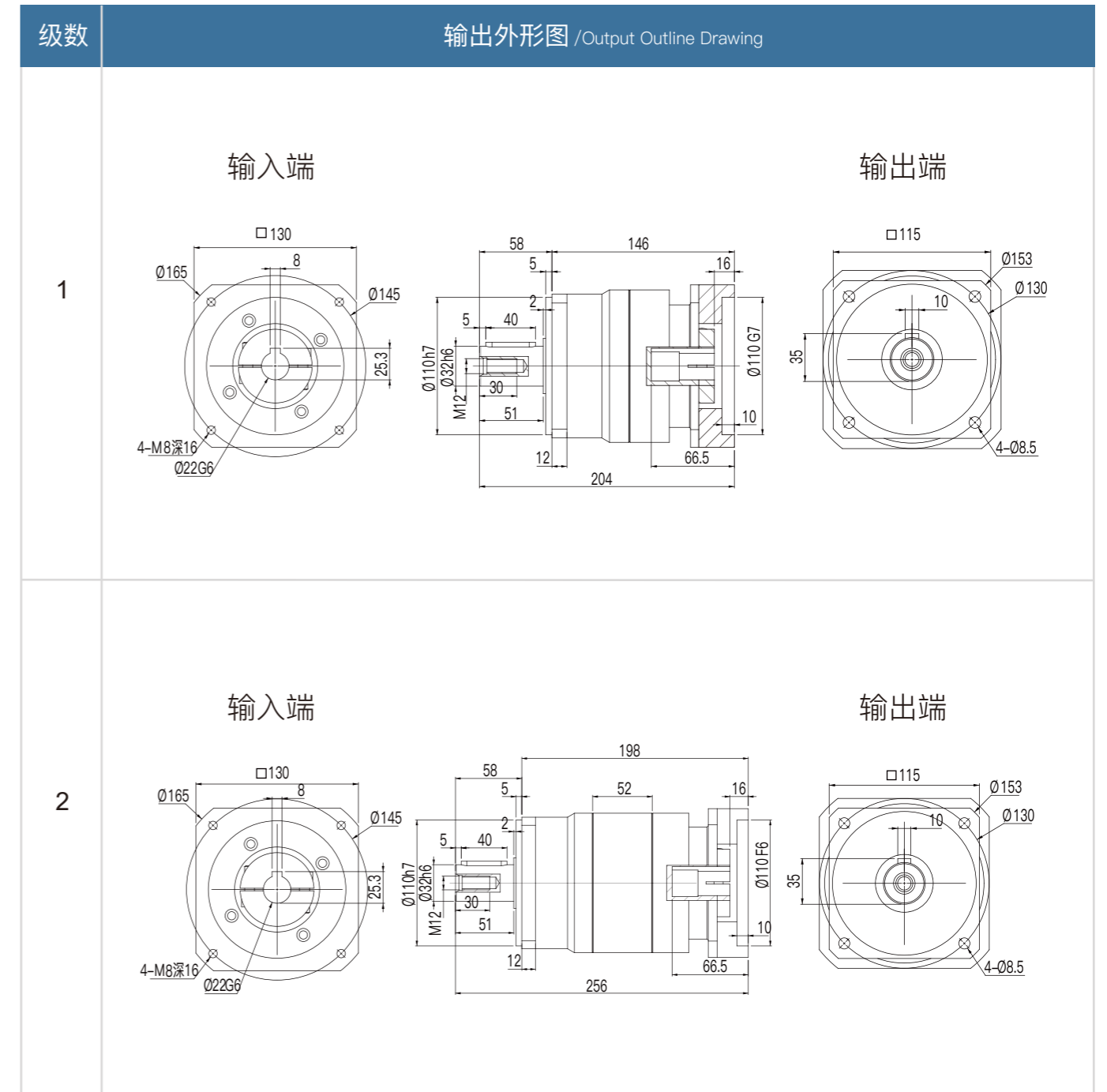
产品型号 Product model	单位 Unit	节数 Stage	减速比 Ratio	ZQT090	ZQT115	ZQT142
额定输出力矩 Rated output torque	Nm	1	3	145	290	520
			4	150	300	550
			5	140	290	530
			6	135	280	490
			7	125	270	450
			8	110	240	390
			10	95	220	360
		2	15	145	290	520
			20	150	300	550
			25	140	290	530
			30	140	290	530
			40	140	290	530
			50	140	290	530
			60	135	280	490
			70	125	270	450
			100	95	220	360
			最大额定扭矩 Max torque	Nm		二倍额定输出力矩 / Double rated output torque
最大径向力 Max radial force	N	1,2	1780	3420	5380	
最大轴向力 Max axial force	N	1,2	1500	2650	4670	
效率 efficiency	%	1	98			
		2	96			
重量 weight	KG	1	3.5	7.8	16.1	
		2	5.6	9.5	19	
背隙 Dorsal gap	arcmin	1	≤4			
		2	≤6			

ZQT090输出外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

ZQT115输出外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQT142输出外形图

级数	输出外形图 /Output Outline Drawing
1	<p>Technical drawing of the 1-stage ZQT142 reducer. It includes an input view (输入端) and an output view (输出端). The input view shows a square flange with a side length of 180 mm and a central bore of 200 mm. The output view shows a square flange with a side length of 142 mm and a central bore of 165 mm. A detailed side view shows the internal shaft and housing with various dimensions: total length 275 mm, input shaft diameter 130 mm, input shaft length 97 mm, output shaft diameter 114.3 mm, and output shaft length 178 mm. Other dimensions include 15, 12, 50, 5, 65, 3, 36, 79, 80.5, 10, 29, and 0.35 G6.</p>
2	<p>Technical drawing of the 2-stage ZQT142 reducer. It includes an input view (输入端) and an output view (输出端). The input view shows a square flange with a side length of 180 mm and a central bore of 200 mm. The output view shows a square flange with a side length of 142 mm and a central bore of 165 mm. A detailed side view shows the internal shaft and housing with various dimensions: total length 340 mm, input shaft diameter 130 mm, input shaft length 97 mm, output shaft diameter 114.3 mm, and output shaft length 243 mm. Other dimensions include 15, 12, 50, 5, 65, 3, 36, 79, 80.5, 10, 29, and 0.35 G6.</p>

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

中空结构 Hollowed areas 高刚性 Rigidity

高重复定位精度 High repetitive positioning accuracy

高旋转精度 High rotation accuracy

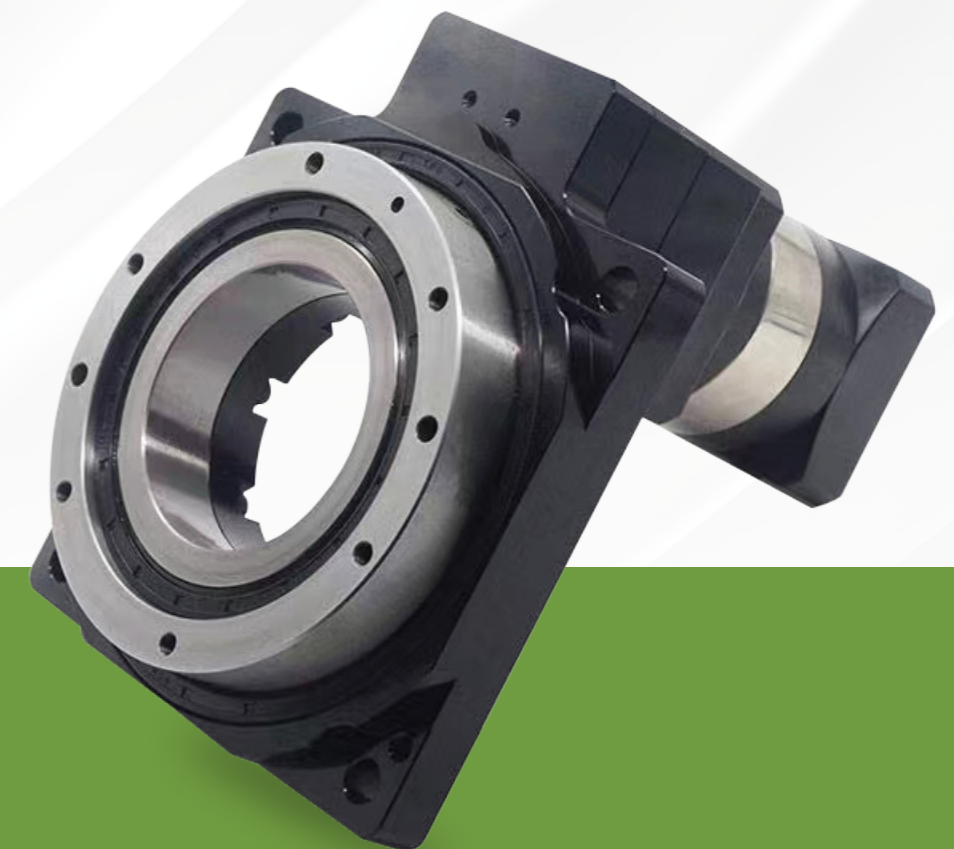
那达任意配置 Nada arbitrary configuration

# ZQK

## SERIES

### ZQK中空旋转平台减速机

型号	描述
ZQK62	ZQK62-10-40ZQ
ZQK85	ZQK85-10-57
ZQK130	ZQK130-10-60
ZQK200	ZQK200-10-86



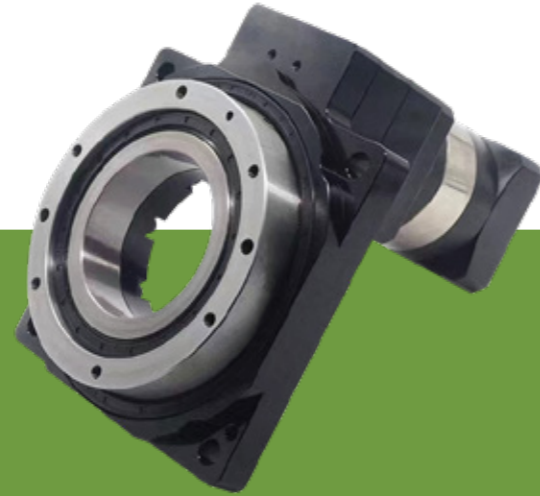
电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。

The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

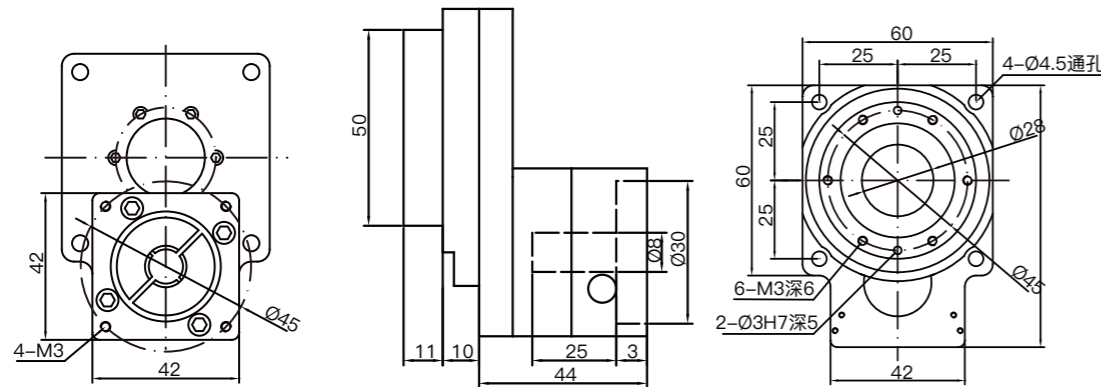
## HIGH PRECISION PLANETARY REDUCER

### 中空旋转平台减速机

# ZQK系列



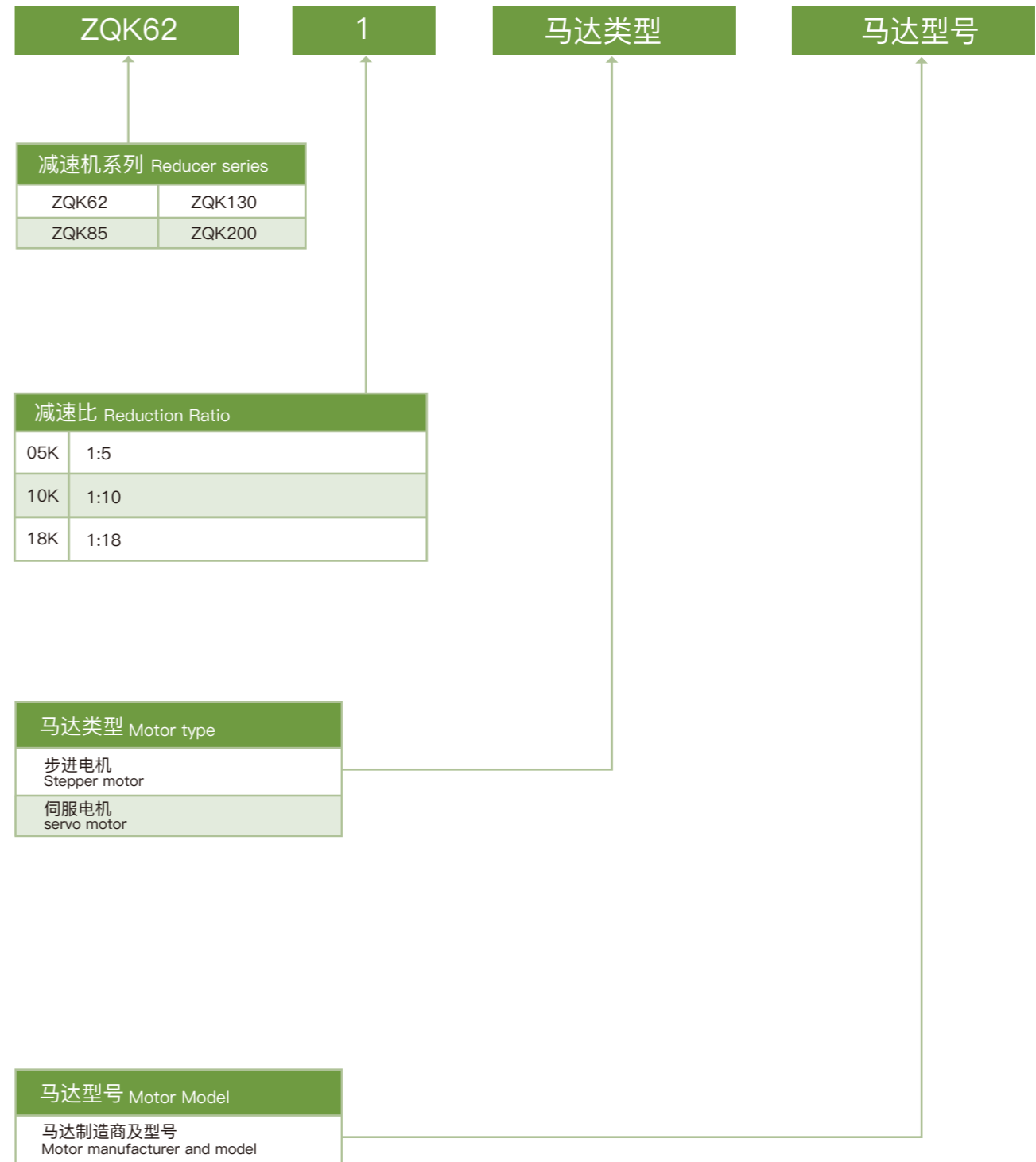
## 结构图 Structural Diagram



## 产品特点 Product Features

- ☞ 转盘为中空结构，电机连接在侧边，方便冶金中的气管、电线安装。
- ☞ 采用单级螺旋齿轮减速，增大电机的输出扭矩。空间极小，重复定位精度5弧秒以下。
- ☞ 转盘由精密交叉滚子轴承支撑，内外圈及滚子之间存在预紧力，可受径向、轴向、倾覆等各种力矩，刚性是传统轴承的10倍以上。
- ☞ 在组装完成后，再次对转盘的外径，端面进行磨削（精车级），保证高精度。
- ☞ 可定制法兰及输入轴孔，适合连接任意品牌的伺服电机、步进电机。
- ☞ The rotary table is of a hollow structure, with the motor connected on the side, facilitating the installation of gas pipes and wires in the smelting tool.
- ☞ Adopting a single stage helical gear reduction to increase the output torque of the motor. The space is extremely small, and the repeated positioning accuracy is less than 5 arc seconds.
- ☞ The rotary table is supported by precision cross roller bearings, and there is pre tension between the inner and outer rings and rollers. It can withstand various moments such as radial, axial, and overturning, and its rigidity is more than 10 times that of traditional bearings.
- ☞ After assembly, grind the outer diameter and end face of the rotary table again (precision turning level) to ensure high accuracy.
- ☞ Customizable flange and input shaft hole, suitable for connecting any brand of servo motor and stepper motor.

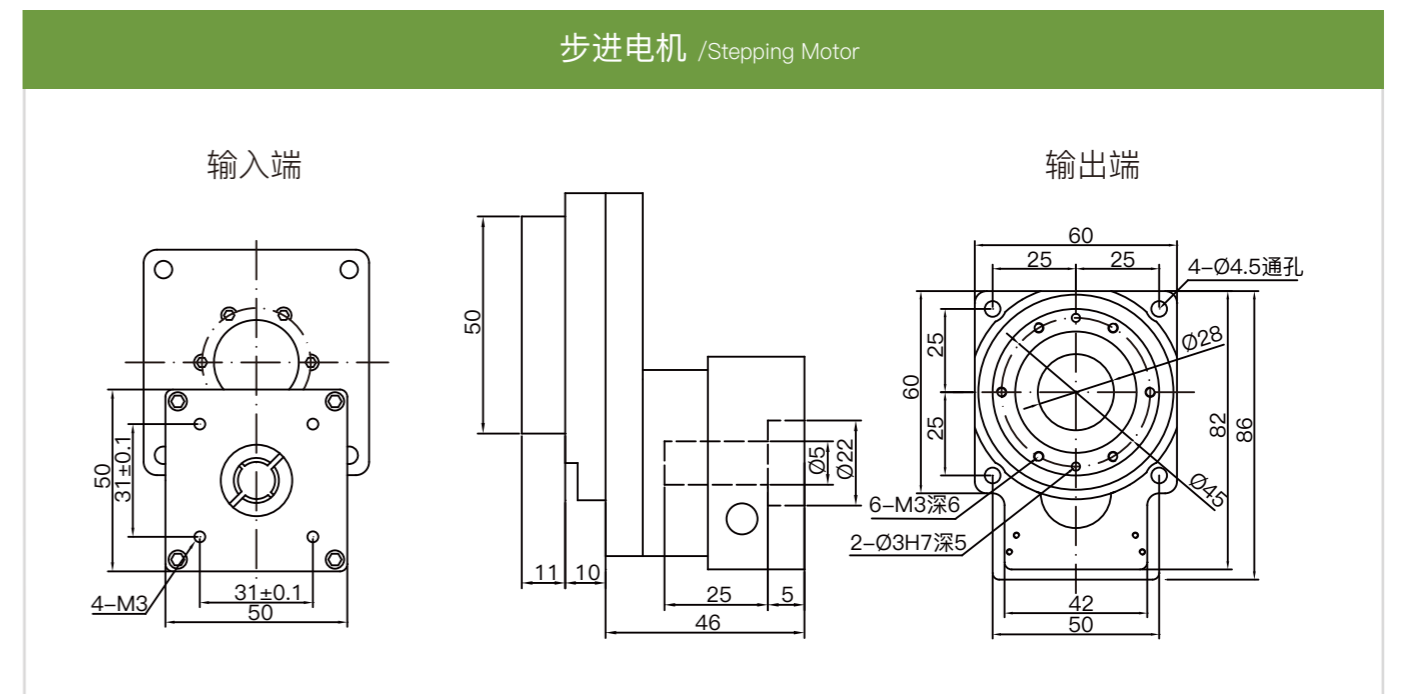
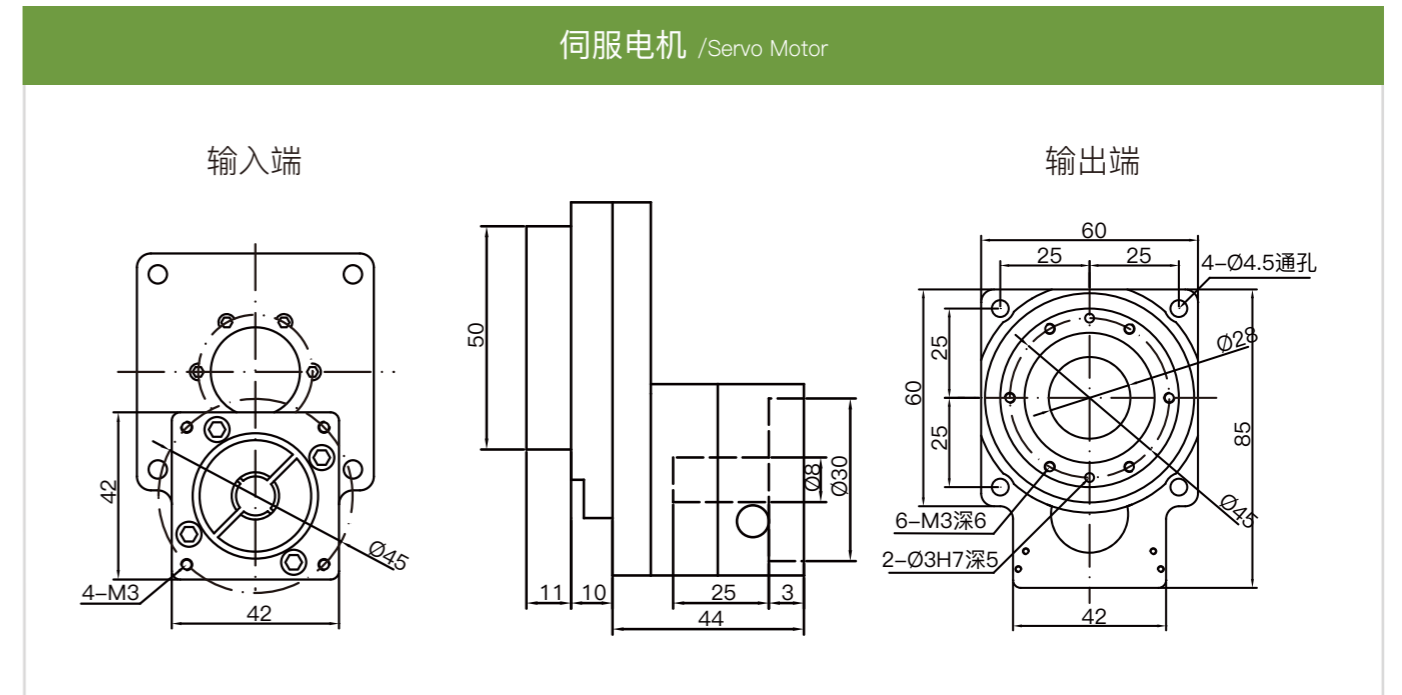
## 型号说明 Model Specification



## 性能参数 Model Specification

产品型号 Product model	单位 Unit	ZQK62	ZQK85	ZQK130	ZQFR200
旋转平台轴承 Rotating platform bearing		交叉滚子轴承			
额定输出扭矩 Rated output torque	Nm	6.5	20	50	90
容许惯性扭矩 Permissible inertia torque	Nm	13	40	100	180
减速比 Reduction ratio		20.24.36.50.60	25.50	25.30.50.60.100.120	30.50.60.100.120
转动惯量 Rotational inertia	kg.m <sup>2</sup>	4.5*0.0001kgm <sup>2</sup>	21*0.0001kgm <sup>2</sup>	110*0.0001kgm <sup>2</sup>	880*0.0001kgm <sup>2</sup>
最大径向力 Maximum radial force	N	1930	4800	8400	12500
最大轴向力 Maximum axial force	N.m	1930	4800	8400	12500
回转精度 Rotation accuracy	arcmin	±0.5	±0.5	±0.5	±0.5
重复定位精度 Repetitive positioning accuracy	sec	±5	±5	±5	±5
平台平行度 Platform parallelism	mm	±0.005	±0.015	±0.015	±0.015
最大输出转速 Maximum output speed	r/min	500	450	350	300
防护等级 Protection level	IP	IP50	IP50	IP50	IP50
精度寿命 Precision Life	H	25000h (间歇运转)	25000h (间歇运转)	25000h (间歇运转)	25000h (间歇运转)
重量 weight	KG	0.55	1.4	2.5	9.5

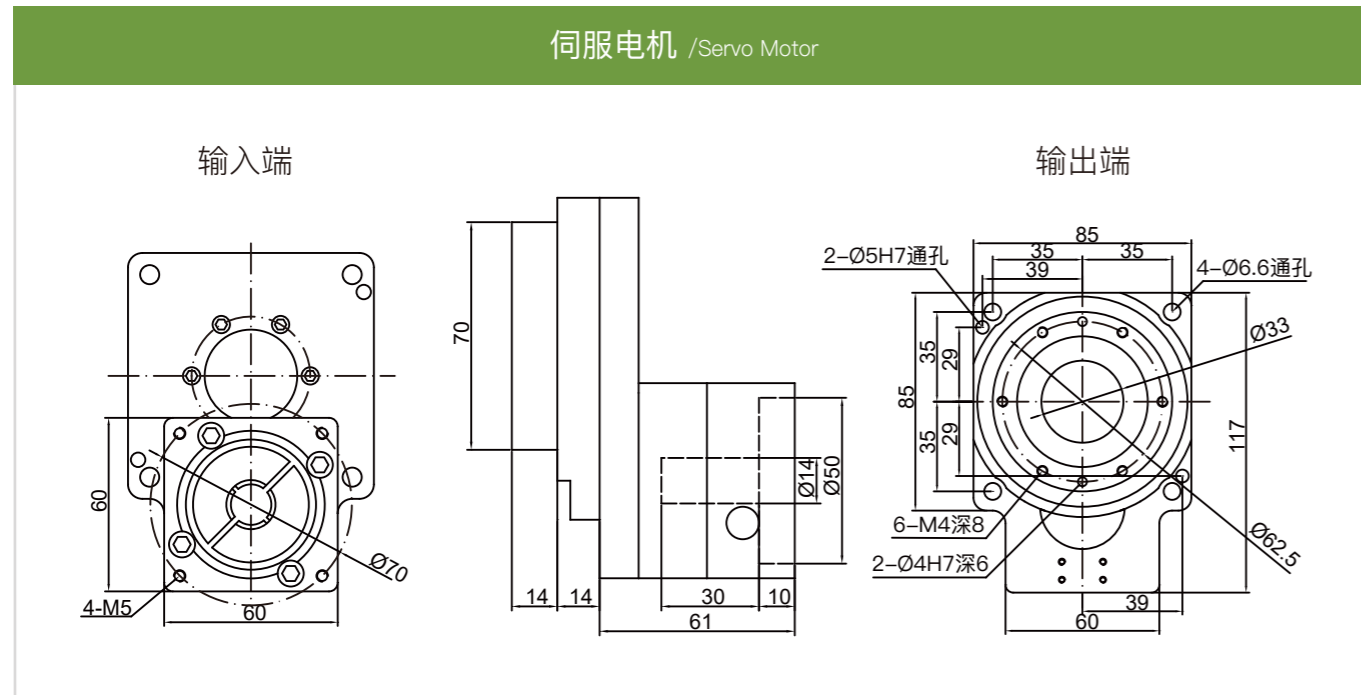
## ZQK62外形图



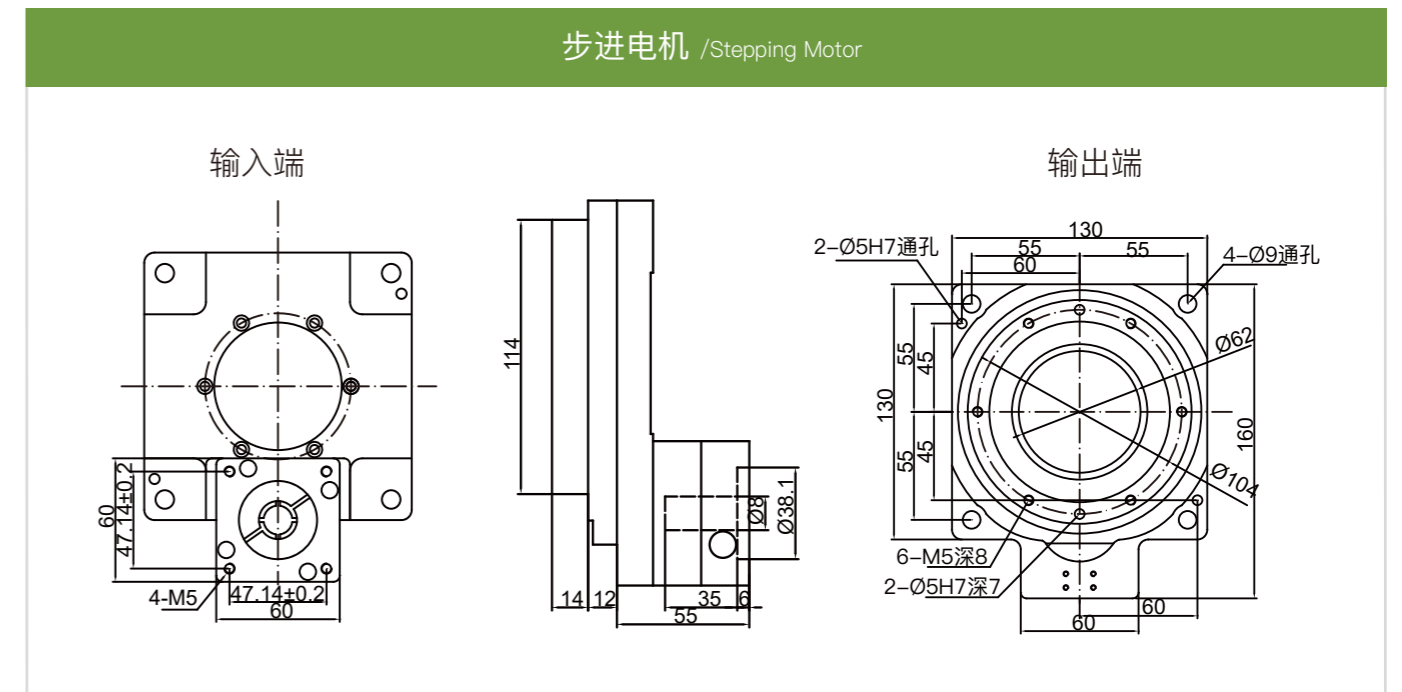
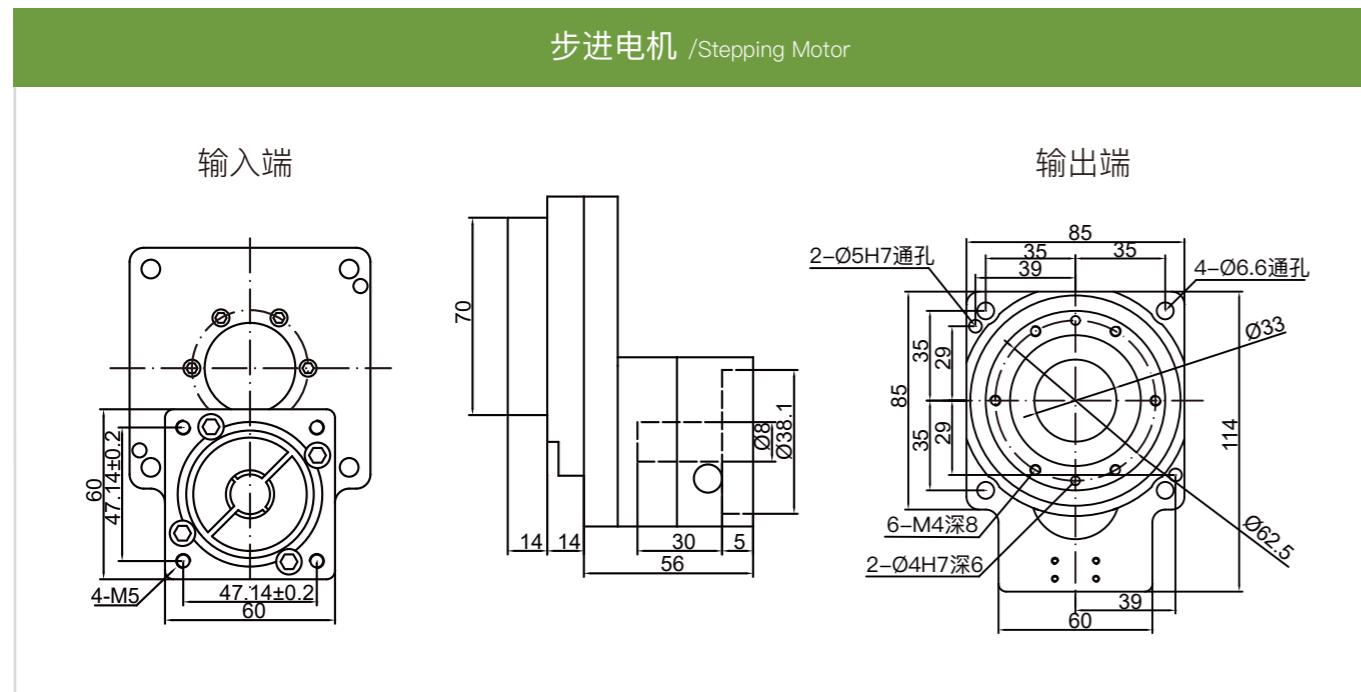
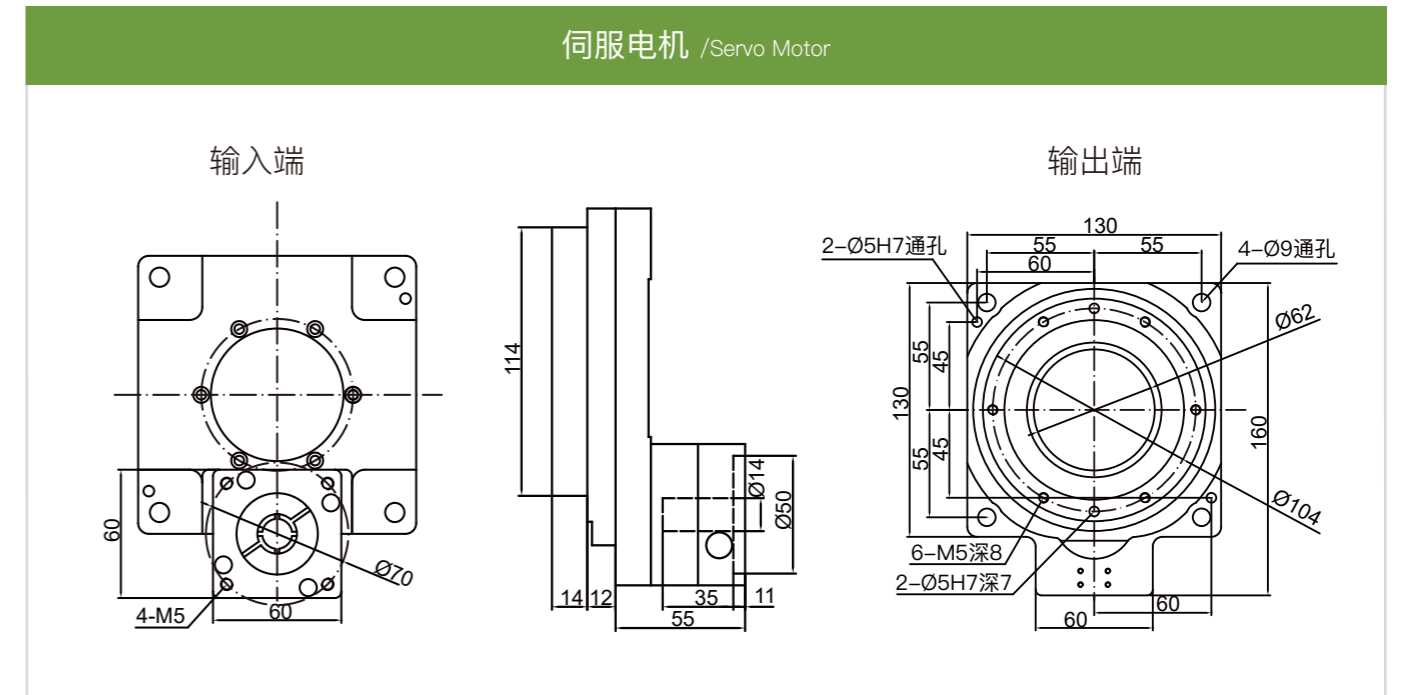
注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.



## ZQK85外形图



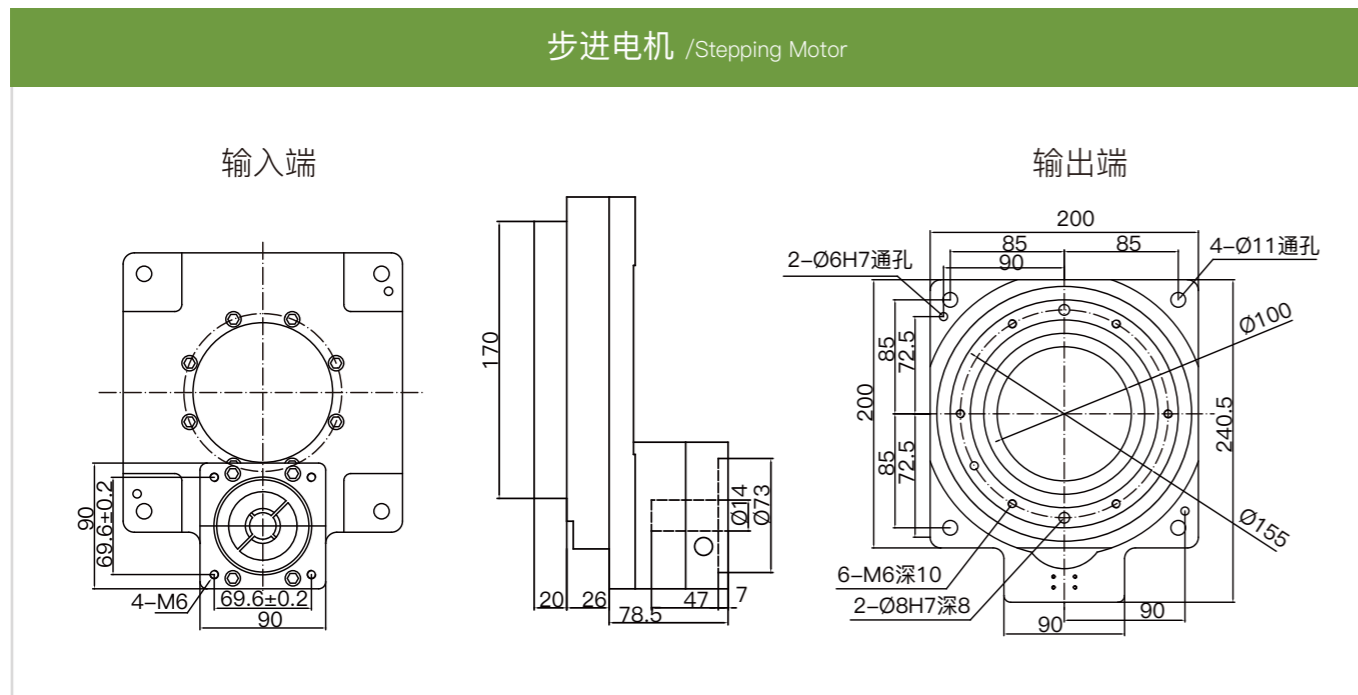
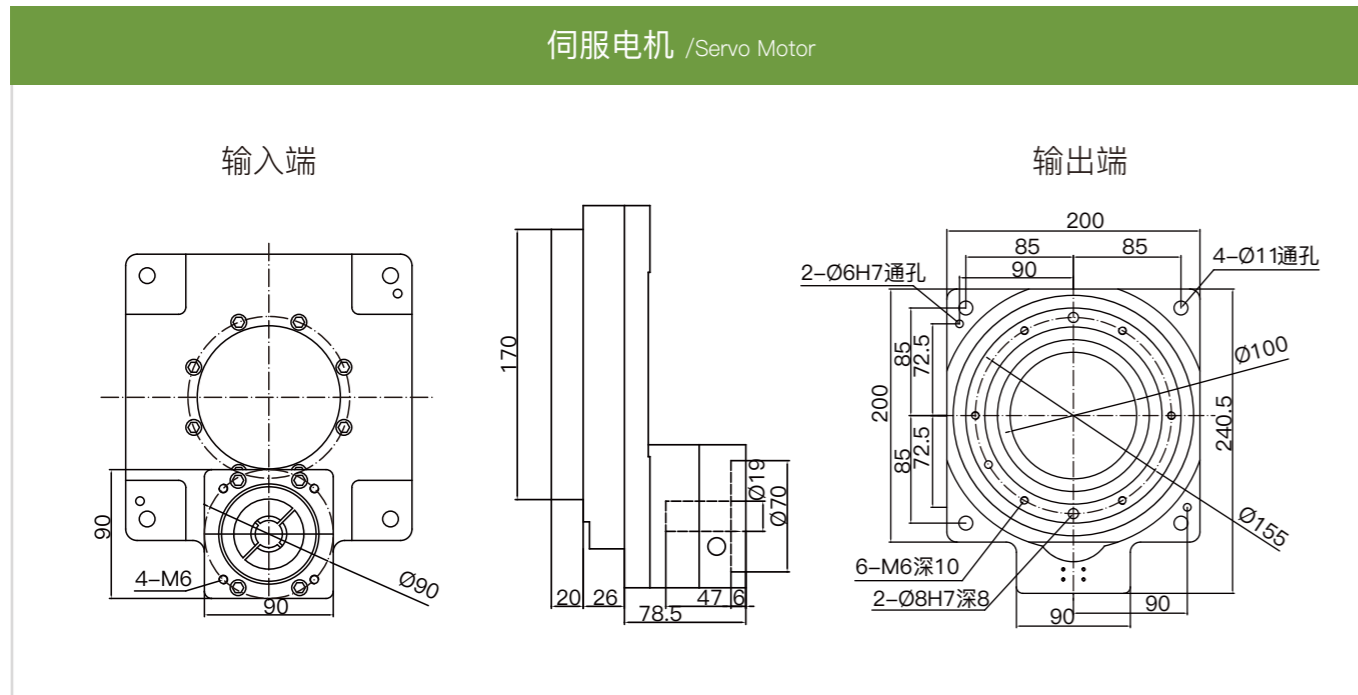
## ZQK130外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## ZQK200外形图



注：电机的功率不同，所配对的减速机也不同。输出轴径、输入马达连接板尺寸可根据客户要求定做。  
 Note: The power of the motor varies, and the paired reducer also varies. The output shaft diameter and input motor connection plate size can be customized according to customer requirements.

## 中空旋转平台选购要点 / Key shopping points

### ■ 计算负载/搬运物转动惯量 (Jw)

搬运物的转动惯量须以传动装置转动惯量的30倍一下为标准。

### ■ 计算加速转矩 (Ta) 参考以下公式

$$\text{加速转矩 } T_a [\text{N}\cdot\text{m}] = (J_M + J_A + J_w) * \frac{\pi}{30} * \frac{(N_2 - N_1)}{t_1}$$

$J_M$ : 马达转动惯量[ $\text{kg}\cdot\text{m}^2$ ]

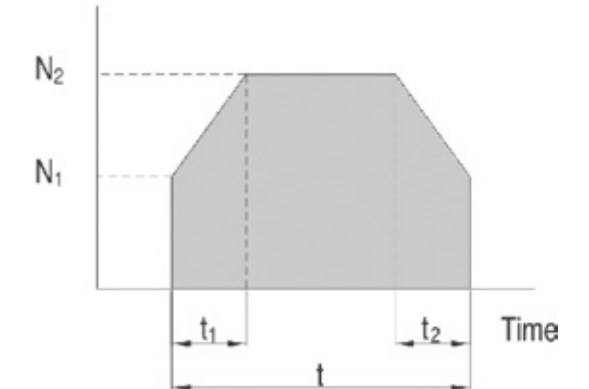
$J_A$ : 机械转动惯量[ $\text{kg}\cdot\text{m}^2$ ]

$J_w$ : 负载转动惯量[ $\text{kg}\cdot\text{m}^2$ ]

$N_2$ : 工作转速[r/min]

$N_1$ : 启动转速[r/min]

$t_1$ : 加速 (减速) 时间[S]



### ■ 计算所需转矩

所需的转矩是通过摩擦阻抗引起的负载转矩与转动惯量引起的加速转矩相加之和乘以安全系数计算得出的。

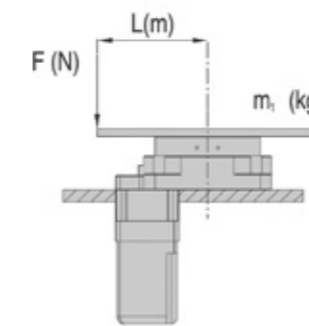
所需转矩  $I = (\text{负载转矩}[\text{N}\cdot\text{m}] + \text{加速转矩}[\text{N}\cdot\text{m}]) \times \text{安全系数}$

$$= (T_L + T_a) \times S$$

安全系数  $S$  大于 1.5。

### ■ 轴向负载，惯性力矩负荷的计算

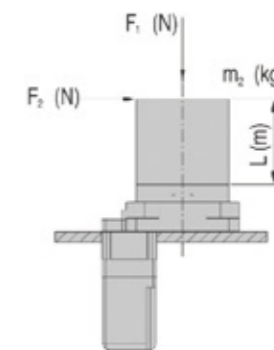
在中空旋转平台上按照如下所示施加负载时，请确保采用一下公式计算得出轴向负载和惯性力矩负荷处于规定范围内。



轴向负载 [N] :  $F_1 = F + m_1 \times g$

惯性力矩负荷 [N.m] :  $M = F \times L$

$g$  : 重力加速度  $9.807 [\text{m}/\text{s}^2]$



轴向负载 [N] :  $F_1 = F_2 + m_2 \times g$

惯性力矩负荷 [N.m] :  $M = F_2 \times (L + A)$

$g$  : 重力加速度  $9.807 [\text{m}/\text{s}^2]$

## 维护说明

减速机在使用过程中应定期检查油脂的质量，对于混入杂质或变质的油脂需及时更换。

一般情况下，对于长期连续工作的减速机，按运行20000小时更换油脂，间断使用的减速机，在重新运转之前应检查润滑脂的情况，再润滑可由专业厂家完成，根据运转情况决定再润滑的间隔和数量。如果旧的润滑脂不能完全被清除，则应该相应限制所注入润滑脂的数量，以避免过度润滑。如再润滑周期间隔较长，推荐对全部润滑脂进行彻底的更换。油脂添加量为内部空间1/3为宜，如输入转速较低可适当增加，但最多不能超过内部空间的1/2。

输出端回转部分采用唇形密封圈(TC型)密封，密封圈的更换一般以是否有油脂泄漏作为更换的依据。对于间断使用的减速机，在重新运转之前也应检查其密封情况，判断有无必要更换密封圈，更换密封圈时只需拆下相应密封圈座即可更换。

工作中当发现油温升温超过90度或产生不正常的噪音时，应停止使用，检查原因且排除故障后，方能继续运转。

During the use of the gearbox, the quality of the grease should be regularly checked, and any mixed impurities or deteriorated grease should be replaced in a timely manner.

In general, for reducers that operate continuously for a long time, the grease should be replaced after 20000 hours of operation. For reducers that are used intermittently, the condition of the grease should be checked before re operation. Re lubrication can be completed by a professional manufacturer, and the interval and quantity of re lubrication should be determined based on the operation situation. If the old grease cannot be completely removed, the amount of grease injected should be correspondingly limited to avoid excessive lubrication. If the interval between re lubrication cycles is long, it is recommended to thoroughly replace all lubricating grease. The appropriate amount of grease to be added is 1/3 of the internal space. If the input speed is low, it can be increased appropriately, but the maximum amount cannot exceed 1/2 of the internal space.

The rotating part of the output end is sealed with a lip shaped sealing ring (TC type), and the replacement of the sealing ring is generally based on whether there is grease leakage. For gear reducers that are intermittently used, the sealing condition should also be checked before restarting to determine whether it is necessary to replace the sealing ring. When replacing the sealing ring, simply remove the corresponding sealing ring seat to replace it.

When it is found that the oil temperature rises by more than 90 degrees or abnormal noise is generated during work, it should be stopped from use, the cause checked, and the fault eliminated before continuing to operate.



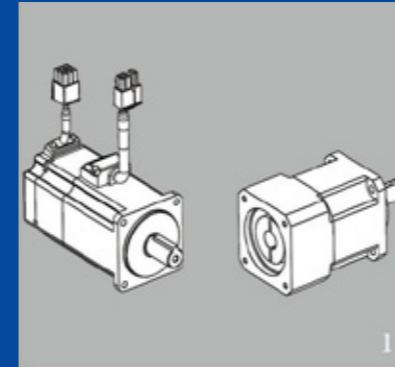
## 力矩表 / Torque table

	代表型号 Representative model	ZQB60/ZQBR60	ZQF80/ZQE90	ZQB90/ZQBR90	ZQB120/ZQBR120	ZQB142/ZQBR142
预紧力矩 Pre tightening torque	TA(Nm)	4.5	9	15	36	81
螺栓大小 Bolt size	SW(mm)	M4	M5	M6	M8	M10

## 安装说明

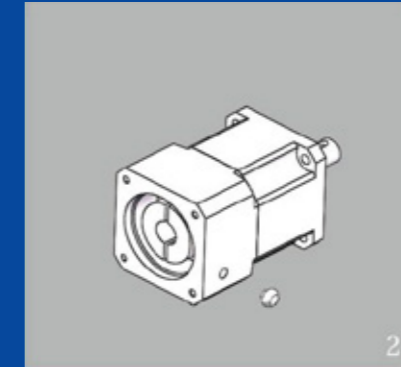
正确的安装、使用和维护减速机是保证机械设备正常运行的主要因素。因此，在您使用昺奇行星减速机的过程中，请务必安装安装步骤正确的安装和使用。

The correct installation, use, and maintenance of the gearbox are the main factors to ensure the normal operation of mechanical equipment. Therefore, during the process of using the Zeki planetary reducer, please ensure that the installation steps are correct for installation and use.



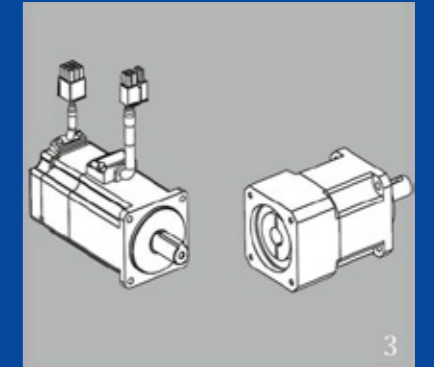
擦拭马达轴上的防锈油润滑脂等，并严格检查电机与减速机相连接的各部位尺寸是否匹配。

Wipe the rust proof oil and grease on the motor shaft, and strictly check whether the dimensions of each part connected to the motor and reducer match.



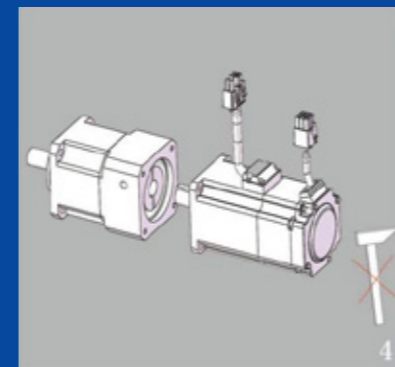
取下法兰外侧的防尘塞，调整输入轴弹性夹紧装置使紧固螺栓与孔位对齐，插入内六角扳手松开紧固螺栓。

Remove the dust plug on the outer side of the flange, adjust the input shaft elastic clamping device to align the fastening bolt with the hole position, and insert an Allen wrench to loosen the fastening bolt.



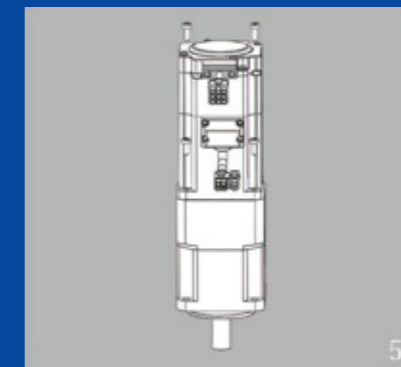
将电机轴缓缓插入减速机输入轴中，连接时必须保证减速机输入轴与电机输出轴同轴度致，且外侧法兰平行。同轴度不一致，会导致电机轴断或减速机齿轮磨损。

Slowly insert the motor shaft into the input shaft of the reducer. When connecting, the input shaft of the reducer must have the same coaxiality as the output shaft of the motor, and the outer flange must be parallel. Inconsistent coaxiality will lead to motor shaft breakage or gear wear reduction gear.



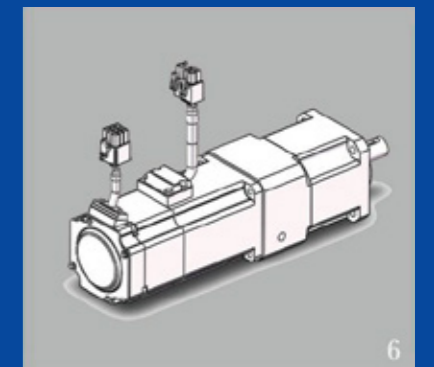
在安装时，严禁用铁锤等击打，防止轴向力或径向力过大损坏轴承或齿轮。

During installation, it is strictly prohibited to strike with a hammer or other tools to prevent excessive axial or radial force from damaging the bearings or teeth.



连接前，先将电机与减速机方位对齐，为保证受力均匀，先将任意一个对角的安装螺栓旋上，但不要旋紧，然后将另外一个对角的螺栓也旋上，最后逐个旋紧。

Before connecting, align the motor with the direction of the reducer. To ensure uniform force, first screw on any diagonal installation bolt, but do not tighten it. Then screw on the other diagonal bolt, and finally tighten it one by one.



最后，旋紧紧固螺栓。所有紧固螺栓均需用力矩扳手按标明的固定扭力矩数据进行固定和检查。

Finally, tighten the fastening bolts. All fastening bolts need to be fixed and inspected using a torque wrench according to the indicated fixed torque data.

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