



Planetx  
Casting Planetary Reducer



# COMPANY PROFILE

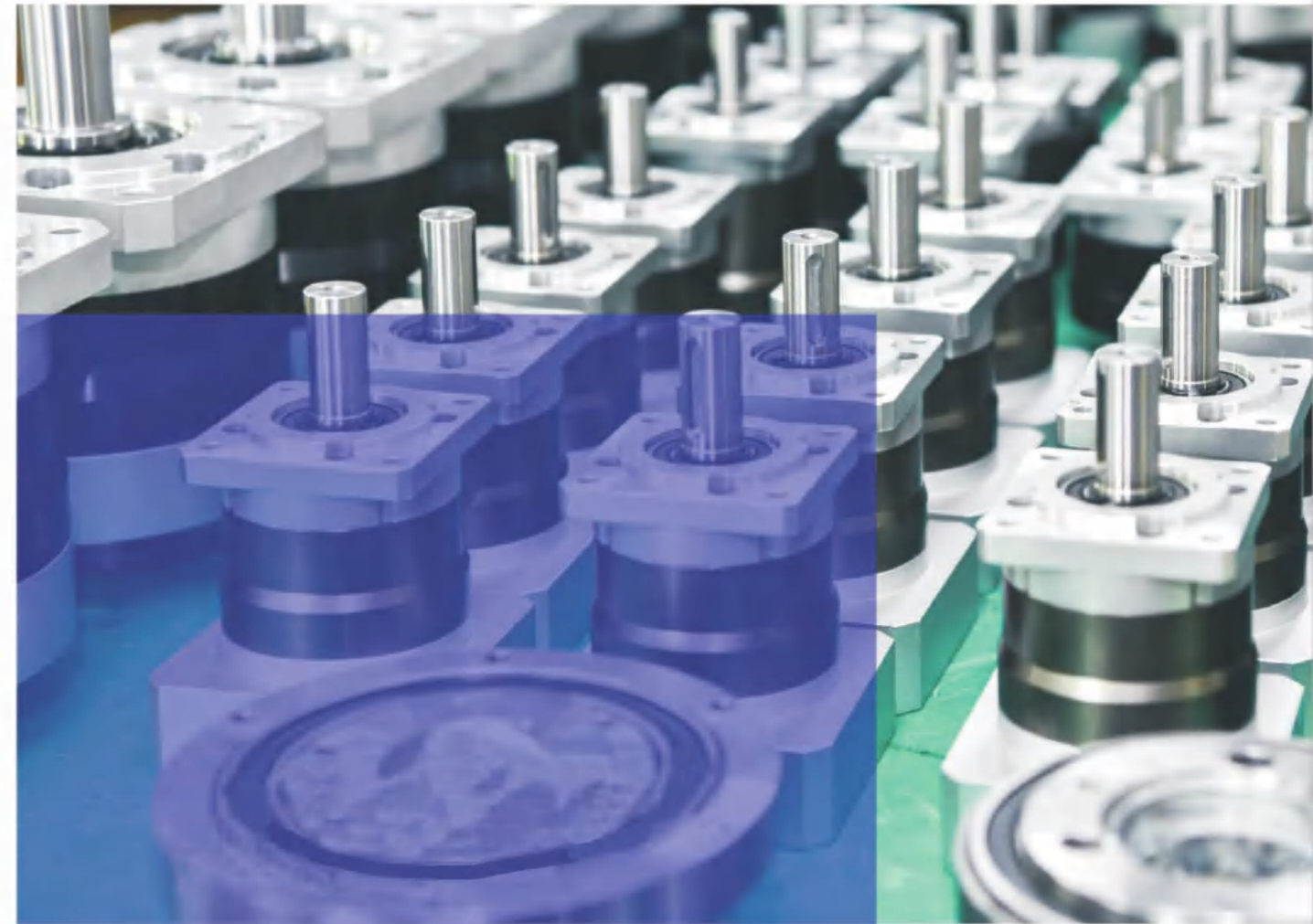


Our manufacturing center is located in China, which is known as "the factory of the world". We are specialized in developing, producing and selling high-precision planetary gear reducers, high-precision platform gear reducers and special gear reducers. Our team specializes in a variety of internal and external gear processing and solutions, we concluded a set of "internal quality management system" to ensure the relative accuracy of the parts after assembly, for the entire machine factory to provide high qualified rate, high efficiency guarantee. We use advanced computer software design and demonstration, combined with years of experience in mechanical transmission and Motion Control, to provide global motion and control solutions. Quality is the survival of the enterprise, we provide stable high-quality products for the market, provide more optimized automation solutions. Always "user needs" as the business purpose of the company, "scientific and technological innovation" as the fundamental development of the company, the ISO quality management system implementation

innovation" as the foundation of the company's development, and implement the ISO quality management system to all aspects of the company. Our products are characterized by high precision, large load bearing torque, long life, low noise, smooth operation, versatility and maintenance-free. Our products are widely used in aerospace, CNC machine tools, cutting and welding equipment, textile printing and dyeing machinery, packaging machinery, food machinery, ships, radar, data communication systems, robots, robotic arms, composite materials equipment, precision testing equipment, testing Machines, plastic machinery, glass machinery, coal mining machinery, lifting machinery, metallurgical machinery, engineering machinery and other fields. Our process of pursuing success is the process of continuous sublimation with you. The company's success is inseparable from the long-term support and help of many customers and friends. We will serve you more for the future. will go hand in hand with you to create brilliant!

# PRODUCTION CENTER

We continue to introduce foreign advanced production technology and assimilate, integration into their own products technology which achieve the ability of independent innovation, improve product competitiveness efforts to maintain market leadership.

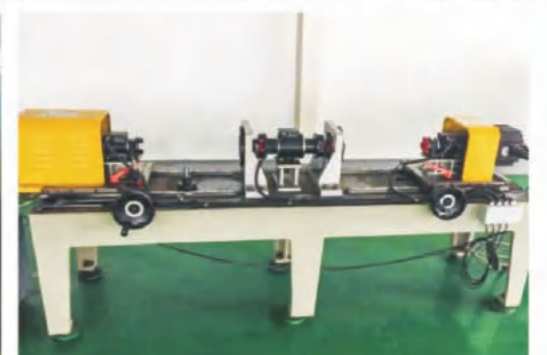


We strive to be meticulous in every process and perfect in every detail. Integrate the production management system, testing system and quality control system into the production process of all products, widely apply advanced technology, production and inspection equipment, and truly achieve high quality and high standard service to customers at home and abroad.



# MACHINING CENTER

Every process, the better the requirements.  
Every product, are all carefully make.



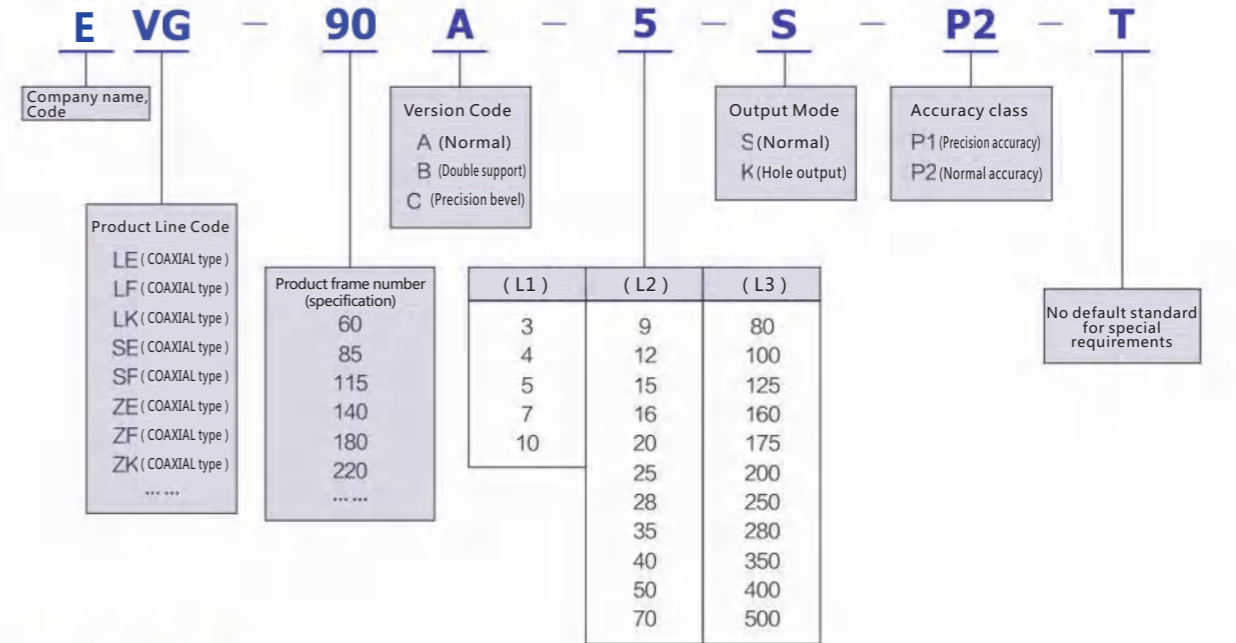
# PORTFOLIO SHOW



## Introduction of product series

Structure	Graphics	Model	Dimensions	ratio	Page	Structure	Graphics	Model	Dimensions	ratio	Page
A款		PLE	Φ48~Φ160	3~1000	01			PZE	Φ48~Φ160	3~1000	02
		PLF	□60~□140	3~1000	02	A款		PZF	□60~□140	3~1000	01
		PLK	□60~□140	3~1000	03			PZK	□60~□140	3~1000	03
		PSE	Φ62~Φ160	3~1000	04	定制款		AGV		3~60 (可定制)	07
B款		PLF	□60~□140	3~1000	05	B款		PZF	□60~□140	3~1000	04
旋转平台系列		RPA	□60~□200	5~18	05	旋转平台系列		RPD	□120~□240	30	05

## Model description of planetary gear reducer



## Technical parameter

Model	Unit	Evg70 Fvg70	Evg90 Fvg90	Evg120 Fvg120	Ratios(i)	Stages
TN Nominal torque TN	Nm	16.5	63.0	155.0	3	1-stages
		26.0	90.0	230.0	4	
		28.0	100.0	245.0	5	
		20.0	68.0	165.0	7	
		12.5	43.0	95.0	10	
		19.5	75.0	185.0	9	2-stages
		31.5	110.0	275.0	12	
		31.5	110.0	275.0	16	
		31.5	110.0	275.0	20	
		33.5	120.0	290.0	25	
		31.5	110.0	275.0	28	
		33.5	120.0	290.0	35	
		31.5	110.0	275.0	40	
		33.5	120.0	290.0	50	
		24.0	81.0	195.0	70	
		37.5	130.0	335.0	80	
		37.5	130.0	335.0	100	
		40.0	145.0	355.0	125	
		37.5	130.0	335.0	140	
		40.0	145.0	355.0	175	
		37.5	130.0	335.0	200	
		40.0	145.0	355.0	250	
		37.5	130.0	335.0	280	
		40.0	145.0	355.0	350	
		37.5	130.0	335.0	400	
		40.0	145.0	355.0	500	
		28.0	95.0	230.0	700	
		18.0	62.0	135.0	1000	

Max.output torque T2N	Nm	2* Nominal torque					Stages
		<4	<4	<4	<4	P1	
Backlash	arcemin	<8	<8	<8	<8	P2	1-stages
		<8	<8	<8	<8	P1	
		<12	<12	<12	<12	P2	2-stages
		<10	<10	<10	<10	P1	
		<14	<14	<14	<14	P2	3-stages
		0.18	0.6	1.1	2.5		
NO-load torque	Nm	0.17	0.55	1.0	2.2	1-stages	
		0.16	0.5	0.9	2.0	2-stages	
						3-stages	
Rated input speed	rpm	3000	3000	3000	2500		
Max.input speed	rpm	7000	6000	5000	4200		
Noise	dB	≤58	≤60	≤62	≤65		

Note: 1. The return clearance is measured under 2% of the rated output torque T2N;  
2. The noise value is measured at a distance of 1 m from the measured machine body and under the condition of no load at the rated input speed.

## Technical parameter

Model	Unit	PLE/PLF/ PLK/PLS	Stages
lifetime <sup>①</sup>	h	20000	
Min.operating temp	°C	-25	
Max.operating temp	°C	+90	
Degree of protection	IP	IP65	
Mounting position		Life lubrication	
Mounting position		Any	
Direction of rotation		Same direction	
Maximum efficiency	%	94%	1-stages
		92%	2-stages
		88%	3-stages

Model	Unit	Evg70 Fvg70	Evg90 Fvg90	Evg120 Fvg120	Stages
Max.radial force	N	400	1050	2200	1-stages
		500	1300	2600	2-stages
		800	1500	2900	3-stages
Max.axial force <sup>②</sup>	N	300	850	1600	1-stages
		390	1100	2100	2-stages
		700	1300	2600	3-stages
Torsional stiffness	Nm/arcmin	3.2	8.5	17.5	

Model	Unit	PLK60A	PLK85A	PLK115A	Stages
Max.radial force <sup>②</sup>	N	800	2100	4400	1-stages
		1000	2600	5200	2-stages
		1600	3000	5800	3-stages
Max.axial force <sup>②</sup>	N	400	1000	1700	1-stages
		520	1300	2400	2-stages
		850	1800	3000	3-stages
Torsional stiffness	Nm/arcmin	3.2	8.2	18.5	

Model	Unit	Evg70B Fvg70B	Evg90B Fvg90B	Evg120B Fvg120B	Stages
Max.radial force <sup>②</sup>	N	732	1660	2630	1-stages
		920	2120	3310	2-stages
		1590	5510	8300	3-stages
Max.axial force <sup>②</sup>	N	460	2000	1420	1-stages
		620	2700	1920	2-stages
		1280	5500	3850	3-stages
Torsional stiffness	Nm/arcmin	3.6	8.2	19.0	

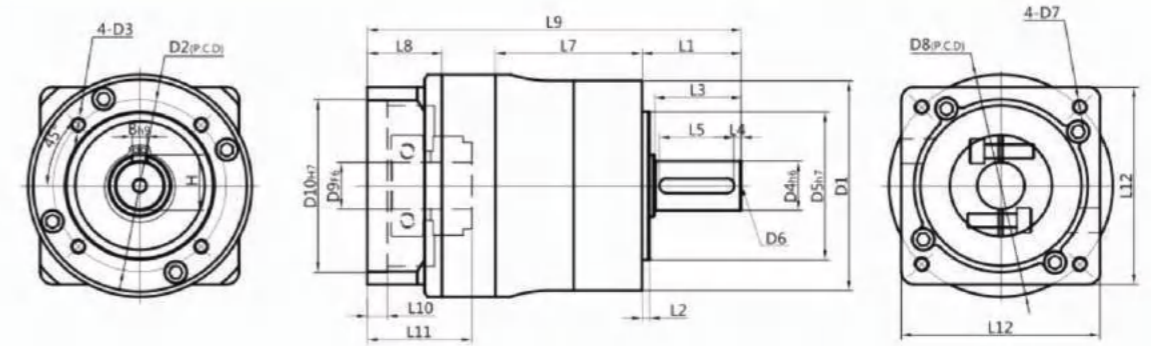
Note: 1. The service life is the time of continuous operation under rated load;  
2. The maximum allowable radial force/axial force means the measured allowable radial force and axial force acting on the central position of the output shaft (at 1/2 of the shaft length) when the output speed of the single-stage is 100rpm, when the output speed of two -stage is 50rpm and when the output speed of the three-stage is 10rpm;  
3. The maximum allowable radial force/axial force means the measured allowable radial force and axial force acting on the outer end face of the output shaft when the output speed of the single-stage is 50rpm and when the output speed of the three-stage is 10rpm; if there are other special requirements, please contact PLT technician.

EVG70  
EVG90  
EVG120

# EVG SERIES



## Reducer size

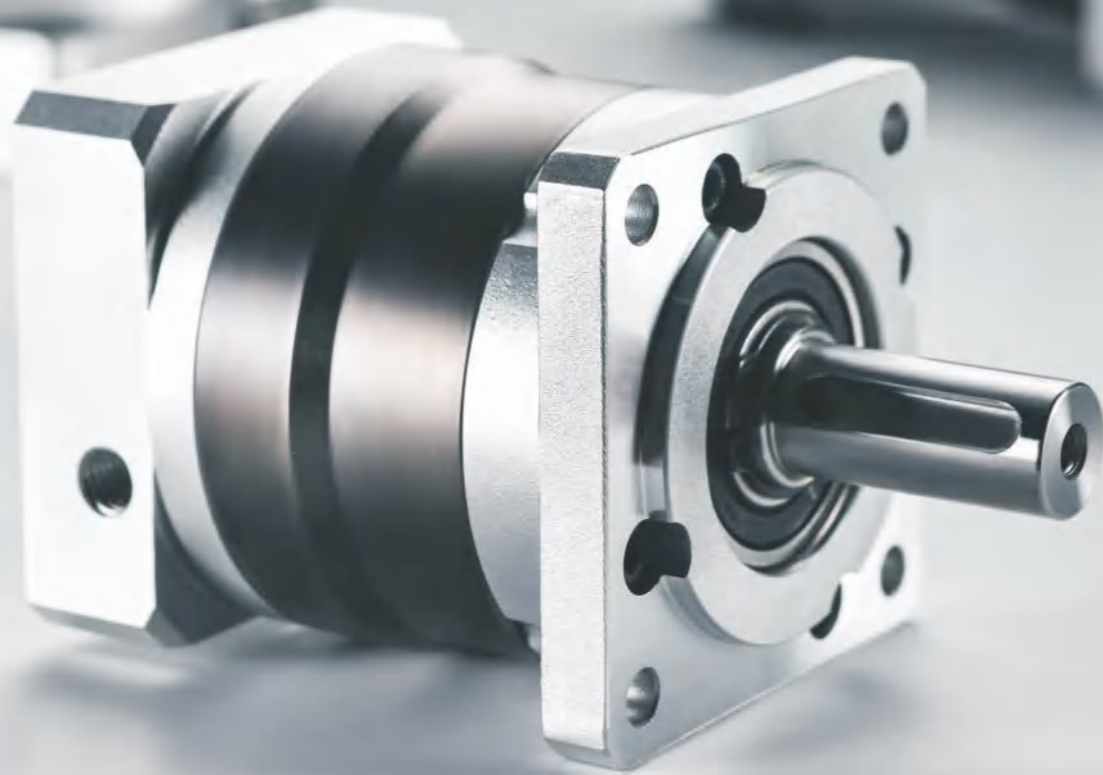


		Evg70			Evg90			Evg120		
Diameter of output flange	D1	Φ70			Φ90			Φ120		
Pitch circle of output mounting hole	D2	Φ62			Φ80			Φ108		
Output mounting screw hole	D3	M5 ↓ 10			M6 ↓ 12			M10 ↓ 20		
Output shaft diameter	D4	Φ16			Φ22			Φ32		
Output mounting boss	D5	Φ52			Φ68			Φ90		
End face screw of output shaft	D6	M5 ↓ 10			M6 ↓ 12			M10 ↓ 20		
Output length (including boss)	L1	35			46			70		
Output boss length	L2	3			6			7		
Length of output shaft (excluding boss)	L3	31			36			61		
Distance from key to end face	L4	3			3			5		
Key length	L5	25			30			40		
Length of reducer body	L7	50.5	66.5	82.5	59.0	82.0	105.0	74.5	104.5	134.5
Key width	B	5			6			8		
Key height	H	16			22.5			28		
A (Adaptive servo motor)	Provided for the motor	400W Motor			750W Motor			1500W Motor		
	D7	M4/M5			M5/M6			M8		
	D8	Φ70			Φ90			Φ145		
	D9	Φ14			Φ19			Φ22/Φ24		
	D10	Φ50			Φ70			Φ110		
	L8	26.5			30.0			43.0		
	L9	112.0	128.0	144.0	150.0	173.5	196.5	198.0	228.0	258.0
	L10	5			8			8		
	L11	31.5			42			60		
L12	60			80			130			
B (Adaptive stepping motor)	Provided for the motor	57 Stepper Motor			86 Stepper Motor			110 Stepper Motor		
	D7	M4			M5			M8		
	D8	Φ66.67			Φ98.57			Φ125.87		
	D9	Φ8			Φ14			Φ19		
	D10	Φ38.1			Φ73			Φ55.5		
	L8	26.5			30.0			43.0		
	L9	112.0	128.0	144.0	150.5	173.5	196.5	198.0	228.0	258.0
	L10	5			8			8		
	L11	31.5			42			60		
L12	60			86			120			
C (Cross-stage matching motor)	Provided for the motor	750W Motor			1500W Motor			2000W Motor		
	D7	M5/M6			M8			M10		
	D8	Φ90			Φ145			Φ165		
	D9	Φ19			Φ22			Φ32		
	D10	Φ70			Φ110			Φ130		
	L8	31.5			45.0			43.0		
	L9	117.0	133.0	149.0	165.5	188.5	211.5	198.0	228.0	258.0
	L10	5			8			8		
	L11	36.5			57			60		
L12	80			130			142			

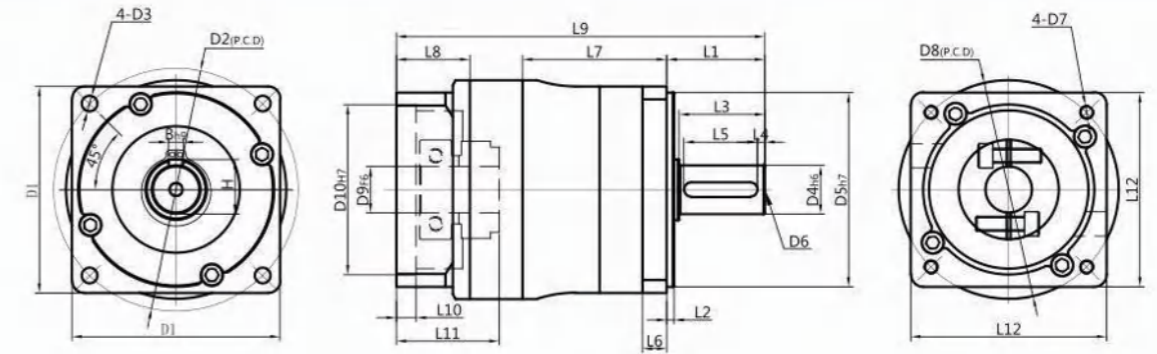


FVG70  
FVG90  
FVG120

# FVG SERIES



## Reducer size



型号	Fvg70			Fvg90			Fvg120			
Diameter of output flange D1	70			90			120			
Pitch circle of output mounting hole D2	70			Φ100			Φ130			
Output mounting screw hole D3	Φ5.5			Φ6.5			Φ8.5			
Output shaft diameter D4	Φ16			Φ22			Φ32			
Output mounting boss D5	Φ50			Φ80			Φ110			
End face screw of output shaft D6	M5 ↓ 10			M6 ↓ 12			M10 ↓ 20			
Output length (including boss) L1	35			40			55			
Output boss length L2	3			3			4			
Length of output shaft (excluding boss) L3	31			35			49			
Distance from key to end face L4	3			3			5			
Key length L5	25			30			40			
Thickness of mounting flange L6	8			10			14			
Length of reducer body L7	50.5	66.5	82.5	59.0	82.0	105.0	74.5	104.5	134.5	
Key width B	5			6			8			
Key height H	16.0			22.5			28.0			
A (Adaptive servo motor)	Provided for the motor	400W Motor			750W Motor			1500W Motor		
	D7	M4/M5			M5/M6			M8		
	D8	Φ70			Φ90			Φ145		
	D9	Φ14			Φ19			Φ22/Φ24		
	D10	Φ50			Φ70			Φ110		
	L8	26.5			30.0			43.0		
	L9	112.0	128.0	144.0	150.0	173.5	196.5	198.0	228.0	258.0
	L10	5			8			8		
	L11	31.5			42			60		
	L12	60			80			130		
B (Adaptive stepping motor)	Provided for the motor	57 Stepper Motor			86 Stepper Motor			110 Stepper Motor		
	D7	M4			M5			M8		
	D8	Φ66.67			Φ98.57			Φ125.87		
	D9	Φ8			Φ14			Φ19		
	D10	Φ38.1			Φ73			Φ55.5		
	L8	26.5			30.0			43.0		
	L9	112.0	128.0	144.0	150.5	173.5	196.5	198.0	228.0	258.0
	L10	5			8			8		
	L11	31.5			45			60		
	L12	60			86			120		
C (Cross-stage matching motor)	Provided for the motor	750W Motor			1500W Motor			2000W Motor		
	D7	M5/M6			M8			M10		
	D8	Φ90			Φ145			Φ165		
	D9	Φ19			Φ22			Φ32		
	D10	Φ70			Φ110			Φ130		
	L8	31.5			45.0			43.0		
	L9	117.0	133.0	149.0	165.5	188.5	211.5	198.0	228.0	258.0
	L10	5			8			8		
	L11	36.5			57			60		
	L12	80			130			142		

## Our characteristics

1. The external gear is made of high-quality 20CrMnTi/20CrMo/SCM415 material, controllable carburizing and quenching, the tooth surface hardness is as high as HRC60±2, and the tooth surface fine rolling/grinding accuracy is 5 to 6 grades; the tooth profile and direction are modified, It has the characteristics of stable operation, low noise, high load torque and low backlash;
2. The internal teeth are processed by multiple broaching or spiral cutting methods commonly used in Taiwan and Japan;
3. The input end and the motor are connected with a double-opening, double-screw collet type locking mechanism to ensure dynamic balance at high input speed, concentricity of the joint surface and zero backlash power transmission.
4. The modular design of the input shaft of the reducer is suitable for motors of any manufacturer and model; the rear transition flange of the reducer is made of magnesium-aluminum alloy material, with surface treatment, beautiful appearance, light weight and good heat dissipation;
5. All reducer models are equipped with skeleton oil seals to prevent oil leakage when the reducer is running at high speed; standard parts such as bearings and oil seals adopt international and domestic famous brand products.
6. The shaft is made of alloy steel and undergoes quenching and tempering process to meet the requirements of strength and toughness during use.

## Our features

1. Unique appearance design, curved and straight combination, strong universal connection performance;
2. Large motors can be equipped with small reducers. When the reduction is relatively small and meets the requirements of sufficient torque, small reducers can be used, which is economical and affordable;
3. The external gear and the internal gear ring are uniformly produced by professional Taiwan and Japanese professional enterprises, and are inspected, classified and assembled;
4. The output installation dimensions of the entire series of products are consistent with the "Newcaster" and "Alpha" reducers;
5. Change the bearing type of the reducer to meet the demands of greater axial and radial load;
6. Shipment of reducer adopts full inspection method;
7. Fast delivery time, standard delivery within 2 days;

## Explanation of special terms for reducer

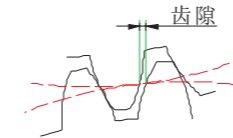
**Positioning accuracy:** The key to achieve precise positioning in high-speed mechanical reciprocating motion is to minimize the angular deviation generated by the motion. The positioning accuracy depends on two values, one is the deflection angle related to the load, which involves the return clearance and torsional stiffness, and the other One is the deflection angle related to motion control, which involves the problem of synchronization deviation.

**Moment of inertia J[Kgcm<sup>2</sup>]:** A value representing the characteristic of an object trying its best to maintain its rotating state (or stationary or rotating). The values in the sample refer to the input.

**Inertia ratio  $\lambda$ :** It refers to the ratio between load inertia and transmission system inertia (motor plus reducer). This ratio determines the controllability of the system. The larger the  $\lambda$  value, that is, the larger the difference between the moments of inertia, the more difficult it is to accurately control the high dynamic action process. It is recommended to control the  $\lambda$  value as much as possible to  $<5$ . The gear box can reduce the load inertia by  $1/i^2$ .

**Arc minutes [Arcmin]:** One degree is divided into 60 arc minutes (=60 Arcmin=60'). For example, when the return clearance is marked as 1 Arcmin, it means that the gearbox rotates once and the angular deviation of the output end is  $1/60^\circ$ . In practical applications, this angular deviation is related to the shaft diameter  $b=2\cdot\pi\cdot r\cdot a^\circ/360^\circ$ . That is to say, when the output radius is 500mm and the gearbox accuracy is  $jt=3'$ , the deviation of one revolution of the gearbox is  $b=0.44\text{mm}$ .

**Return gap  $jt$  [Arcmin]:** Refers to the maximum deviation angle between the output shaft of the reducer and the input end. When measuring, first fix the gear input end, and then load a certain torque (2% T2B) on the output end with a torque meter to overcome the friction in the reducer.



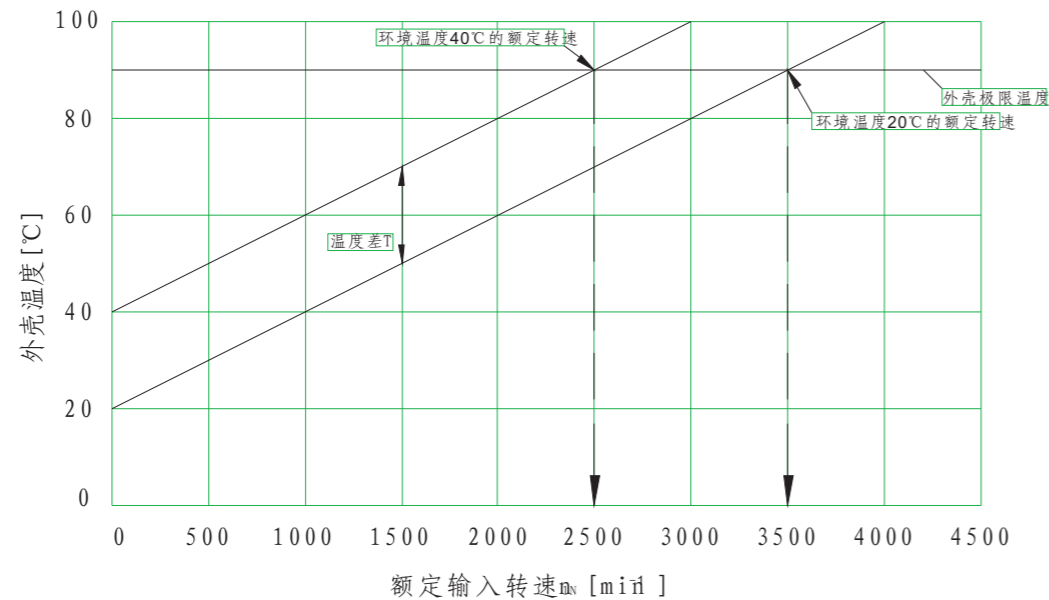
**Synchronization deviation:** Refers to the deviation between the input speed and the output speed measured when the output shaft makes one revolution. This deviation is caused by gear machining tolerances, resulting in small angular differences and speed ratio differences.

**Speed ratio  $i$ :** represents the value of the three main parameter values of a certain movement that the reducer changes, that is, the speed, torque and moment of inertia are changed by the speed ratio of the reducer.

**Noise[dB]:** The use of low-noise reducers for the complete set of equipment is helpful to environmental protection and health protection. **Speed** ratio and speed directly affect the noise level. Generally, the higher the speed, the greater the noise; the larger the speed ratio, the lower the noise. The value in the sample is measured when the input speed is 3000rpm/min, without load, and one meter away from the reducer.

**Average life span[h]:** Refers to the continuous working time of the reducer under rated load and rated input speed.

**Rotating speed(n):** The two speeds that must be considered when selecting the reducer are the maximum input speed and the rated input speed. When selecting the reducer for the intermittent duty system, consider that the maximum input speed  $n_{1\text{max}}$  should not be exceeded. When selecting a reducer for continuous duty, it must be considered that the maximum rated speed  $n_{1N}$  cannot be exceeded. The rated speed is limited by the temperature of the reducer housing, and this temperature cannot exceed  $90^\circ\text{C}$ . As can be seen from the figure below, when the ambient temperature is higher, the temperature of the reducer also reaches the rated temperature earlier. In other words, the speed must be reduced when the ambient temperature is high.



**Rated input speed  $n_1$ [rpm]:** The drive speed of the reducer, if the reducer is directly connected to the motor, the speed value is the same as the motor speed. The rated input speed in this book is measured at an ambient temperature of 20°C. When the ambient temperature is high, please reduce the speed  $n_1$ .

**Output speed  $n_2$ [rpm]:** The output speed is calculated by the input speed  $n_1$  and the transmission ratio  $i$  according to the following formula.  $n_2 = \frac{n_1}{i}$

**Transmission efficiency  $\eta$ :** The loss due to friction always makes the effective rate less than 1, that is, less than 100%. The efficiency on the sample is that the gearbox is at full load. The transmission efficiency of the reducer in the case of movement.

**Rated output torque  $T_N$ [Nm]:** refers to the torque (without wear) that the reducer can load for a long time (continuous work system), and the conditions should meet the uniform load, Safety factor  $S=1$ , theoretical life is 20,000 hours;  $T_N$  value complies with ISO DP 6336 gear standard and ISO 281 bearing standard.

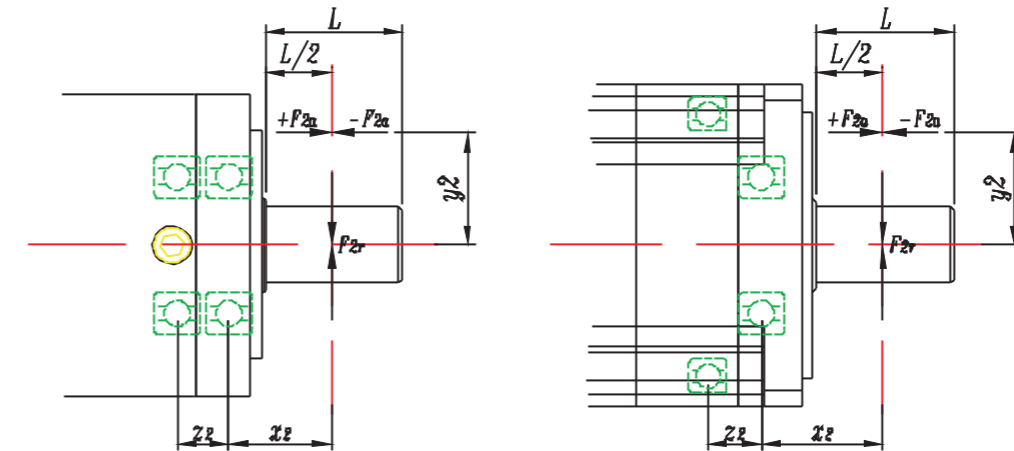
**No-load torque  $T_{O12}$ [Nm]:** refers to the torque loaded on the reducer to overcome the friction in the gearbox. The marked value of the sample is measured at a rotation speed of 3000 rpm and an ambient temperature of 20°C.

**Maximum torque  $T_{2max}$ [Nm]:** refers to the output torque that the reducer can withstand under static conditions or high start-stop operation conditions. Usually refers to peak load or start Dynamic load.

**Maximum torque  $T_{2max}$ [Nm]:** The required torque depends on the actual working conditions of the application. The rated torque  $T_N$  of the reducer to be selected must Greater than this torque.

**To Calculation torque  $T_{c2}$ [Nm]:** Will be used when selecting the reducer. It can be obtained from the actual required torque  $T_{r2}$  and coefficient  $f_s$  according to the following formula:  $T_{c2} = T_{r2} * f_s \leq T_n$

**Axial force  $F_{2Amax}$ [N]:** refers to a force parallel to the axis. It is parallel to the output shaft. Its point of action has a certain axial deviation from the output shaft end(Y2), an additional bending moment will be formed. When the axial force exceeds the rated value shown in the catalog, a coupling must be used to offset this bending force.[Such as]



**Radial force  $F_{2Rmax}$ [N]:** refers to a force acting perpendicular to the axial force. Its point of action has a certain axial distance ( $x_2$ ) from the shaft end, this point becomes A leverage point. The lateral force forms a bending moment.

**Shaft extension radial load and axial load:** The additional basis for selecting the reducer is the radial load and axial load on the extension end of the output shaft. The strength of the shaft and the bearing capacity of the bearing determine the allowable radial load of the shaft extension. The maximum allowable value given in the product catalog refers to the force acting on the midpoint of the shaft extension end (ie  $1/2L$ ) in the most unfavourable direction. When the acting force is not at the midpoint, the closer to the shaft shoulder, the greater the allowable radial load; on the contrary, the farther the acting point is from the shaft shoulder, the smaller the allowable radial load.

**Safety factor S:** The safety factor is equal to the ratio of the rated input power of the reducer to the motor power.

**Safety factor S:** The use factor expresses the application characteristics of the reducer, which takes into account the load type and daily working time of the reducer. (There are detailed data)

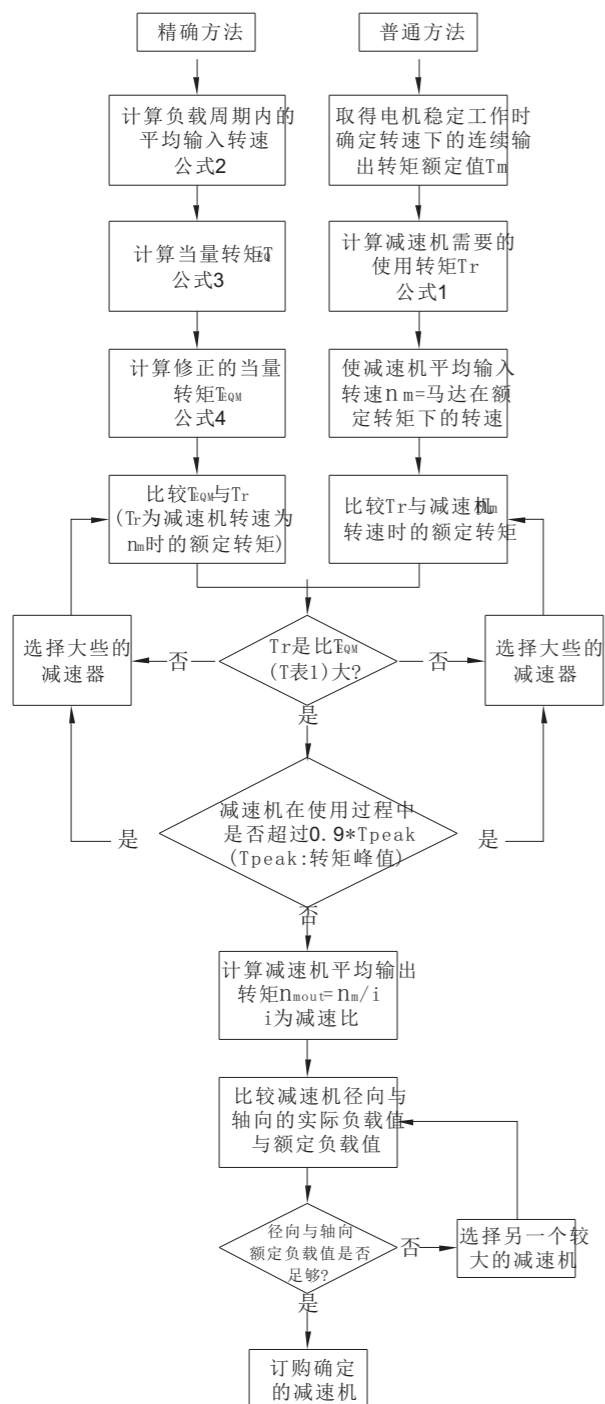
**Installation torque [N]:** There are torque requirements for the assembly of the reducer and the connection and installation of the motor and the reducer. It is recommended to use a torque wrench to complete the installation steps. It is suitable for the requirement of flexible coupling for the input shaft.

工作温度 / Operating temp	° C	(-40) -25bis/to+90(+120)
保护等级 / Degree of protection		IP65
润滑 / Lubrication		长效润滑 / Life time lubrication
安装方式 / Mounting position		任意 / Any
法兰标准 / Motor flange precision		Din 42955-N

## Reducer selection

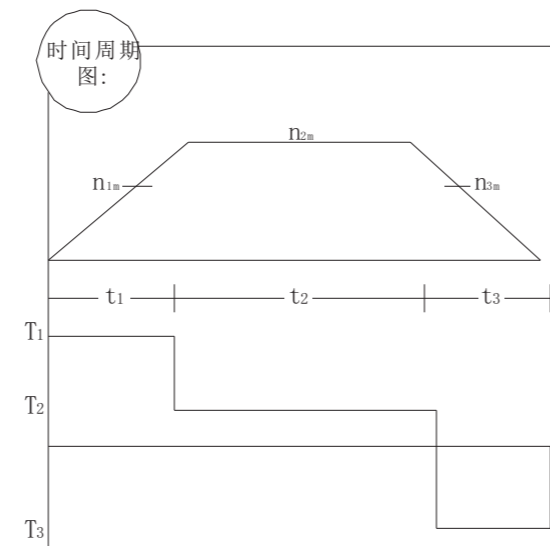
### 减速机的选择

第一步:选择减速机的精度等级(回程间隙)  
第二步:使用精确的方法或普通方法选择合适的减速机



需要的减速机转矩计算公式:  $T_r$  公式1

(1)  $T_r = T_m * i * e$   
 $T_m$  = 马达连续输出的转矩  
 $i$  = 减速机的速比  
 $e$  = 减速机的效率  
 \*因为许多马达具有由于延长长度而输出超过额定连续转矩的能力,  $T_m$ 值仅提供了选择减速机的起始点, 只有当马达没有超过连续的额定值才能使用普通方法。



$t_n$  = 时间周期  
 $n_{m}$  = 时间周期内的平均转速  
 $T_m$  = 时间周期内的转矩

平均输入转速  $n_m$  公式2

$$(2) n_m = \frac{n_{1m}t_1 + n_{2m}t_2 + n_{3m}t_3 + \dots + n_{im}t_i}{t_1 + t_2 + t_3 + \dots + t_i}$$

当量转矩:  $T_{EQ}$  公式3

$$(3) T_{EQ} = \sqrt{\frac{T_1^2 n_{1m} t_1 + T_2^2 n_{2m} t_2 + T_3^2 n_{3m} t_3 + \dots + T_i^2 n_{im} t_i}{n_m t}}$$

修正的当量转矩:  $T_{EQM}$  公式4

$$(4) T_{EQM} = T_{EQ} / Q$$

Q	周期数 (小时)
1	> 0
0.9	> 1000
0.7	> 2500
0.5	> 5000

## Installation

To ensure the correct and reliable operation of the reducer, the following installation guidelines need to be observed. The criteria listed here can be used as a guide for the selection of reducers.

### 1. Installation guidelines

Our sales department provides a manual for the installation, use and maintenance of the reducer. Following the guidelines in the manual, the installation can be carried out correctly and effectively.

### 2. Fixed

Place the reducer on a sufficiently hard surface, and the joint surface needs to be processed flat. It is especially important to install the reducer with large flange, spline and hollow output. In applications where there is a high radial load on the output end, flange mounting is recommended, because the dual guide diameters of these reducers are beneficial to this type of installation. Ensure that the reducer is suitable for the requirements of the installation location. Use 8.8 or higher grade bolts to ensure the safety of the reducer. Tighten the bolts to the rated value specified by the standard. When the transmitted torque is greater than or equal to the given torque and when the steering is frequently changed, use the lowest grade 10.9 bolts. Some reducers can be fastened with bolts and pins.

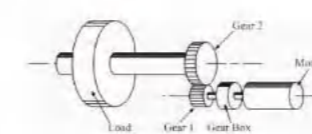
### 3. Link relationship

Assemble the transmission parts to the reducer. It is forbidden to hit with a hammer or similar tools. To press in the part, screws and threads on the shaft end can be used. Be sure to wipe off the grease or rust inhibitor on the shaft before assembling.

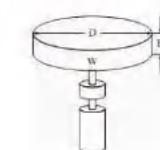
### 4. General use type of reducer

Assemble the transmission parts to the reducer. It is forbidden to hit with a hammer or similar tools. To press in the part, screws and threads on the shaft end can be used. Be sure to wipe off the grease or rust inhibitor on the shaft before assembling.

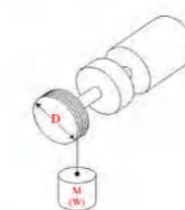
1. Gear drive



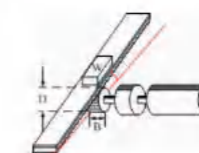
2. Direct drive



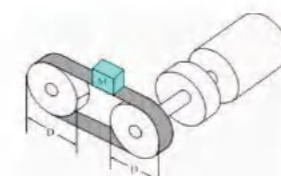
3. Lifting drive



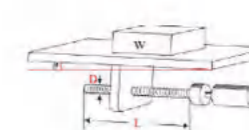
4. Gear and rack drive



5. Belt drive

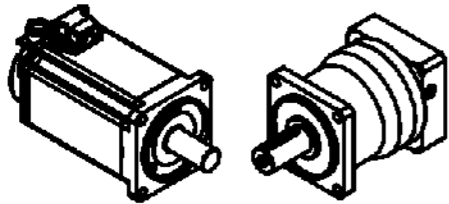


6. Ball screw rod



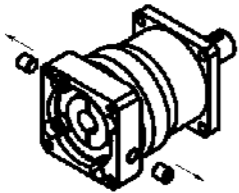
# Gearboxes instruction

**First**  
Right motor? Right gear?



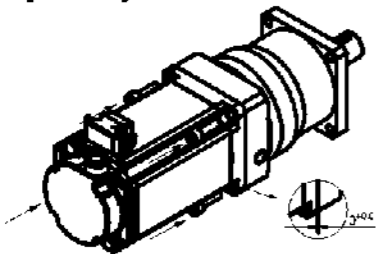
Before installation, confirm whether the motor and reducer are intact, and strictly check whether the sizes of the parts connecting the motor and the reducer match, mainly including the size of the boss of the motor and the reducer groove and the matching tolerance.

**Third**  
Remove cover screw adjust position of clamping screw



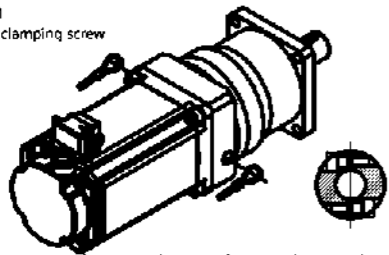
Remove the dust cover on the process hole outside the reducer flange, adjust the elastic clamping device of the reducer input shaft to align the fastening bolt with the process hole, and insert the hexagon wrench. This step is suitable for clamp type locking mechanism connection.

**Fifth**  
Try connecting and installing screws



Before connecting the motor and the reducer, please align the locking screw of the reducer with the process hole to facilitate the wrench intervention.

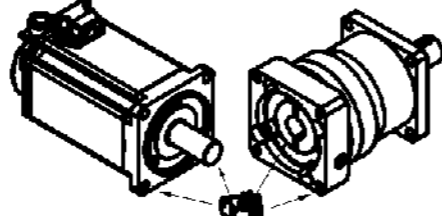
**Seventh**  
Install the clamping screw



Model	Series 60	Series 85	Series 115	Series 160
Clamping screw	M5	M6	M8	M10
Clamping screw length	9.5	16.5	40	60

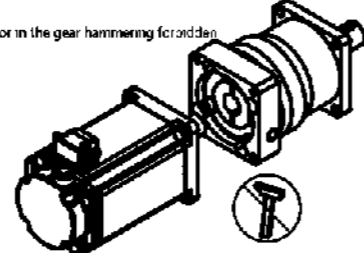
There are two clamping screws for the reducer. Please step up the force and lock them evenly.

**Second**  
Clean grease free rectify any damages



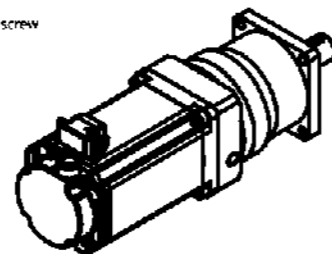
Wipe the anti-rust oil on the motor output shaft, positioning boss and reducer connecting parts with gasoline or zinc sodium water to ensure the tightness and flexibility of the connection and prevent unnecessary wear.

**Fourth**  
Fit the motor in the gear hammering forbidden



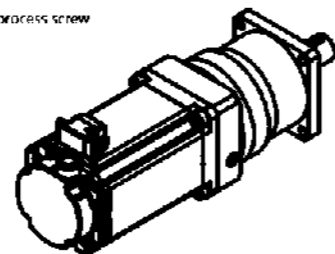
The coaxiality of reducer output shaft and motor input shaft must be consistent, and the outer flange of the two should be parallel. If the axial degree is inconsistent, the motor shaft will be broken or the gear of reducer will be worn. In addition, during installation, it is strictly forbidden to strike with hammer to prevent bearing or gear from being damaged due to excessive axial or radial force.

**Sixth**  
Locking screw



In order to ensure uniform stress, please screw on the installation screws at any diagonal position first, but do not tighten them, then screw on the other two installation screws at diagonal positions, and finally tighten the four installation screws one by one.

**Seventh**  
Mounting process screw



The installation of process screw can better achieve the protection level.



# HITECH