



高精度旋转平台

HIGH PRECISION ROTARY TABLE

Catalog No. CN/EN-25-05



GSE 系列高精度旋转平台

• 中空大速比 • 高定位精度 • 高弯曲、扭转刚度

GSE Series High Precision Rotary Table

• Hollow & Large Ratio • High Positioning Accuracy
• High Moment & Torsional Rigidity

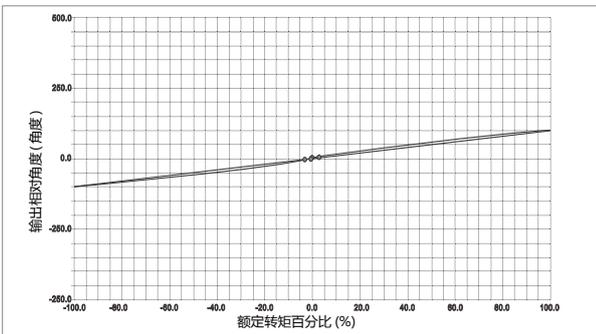
产品优势 Product Advantages



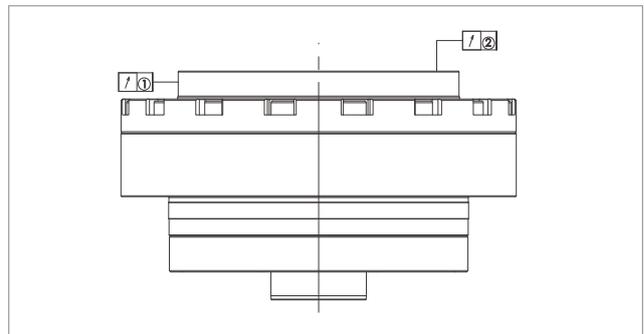
扁平中空大速比：少齿差传动，扁平形状轻易实现大速比
Flat, Hollow, Large Ratio: Small teeth number difference between two ring gears can bring large gear ratio easily with flat shape.



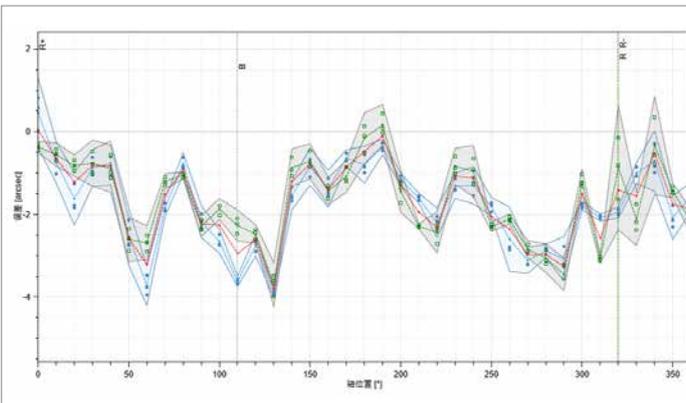
超强弯曲刚度：一体式转台轴承加持，弯曲刚度翻倍级提升，高负载抗形变，支撑更稳固。
Ultra-high Moment Rigidity: One-piece slewing bearing, improves a doubling in bending rigidity, resists deformation under high loads, and provides exceptionally stable and reliable support.



超强扭转刚度：高硬度斜齿轮加持，扭转刚度翻倍级提升，高负载不变形，精密传动更稳定。
Ultra-high Torsional Rigidity: Hardened helical gears, double the torsional rigidity to prevent deformation under high loads and ensure precision transmission stability.



超高机械精度：一体式转台轴承，端跳和径跳最高可达0.002mm
Ultra-high Machining Accuracy: One-piece slewing bearing, radial runout and axial runout can reach 0.002mm.



CTC - 分析功能

名称	(+) arcsec	(-) arcsec	(Bidir) arcsec
精度 (A)	5.5	5.1	5.5
重复精度 (R)	1.7	3.0	3.0
系统偏差 (E)	4.4	3.9	4.4

CTC - 分析功能

名称	值 (arcsec)
反向误差 (B)	1.4
平均反向误差 (B Mean)	-0.1
平均偏差 (M)	3.9

超高定位精度：自消除系统，定位精度最高可达5角秒

Ultra-high Positioning Accuracy: Self-eliminating backlash system, positioning error can be less than 5 arcsec.

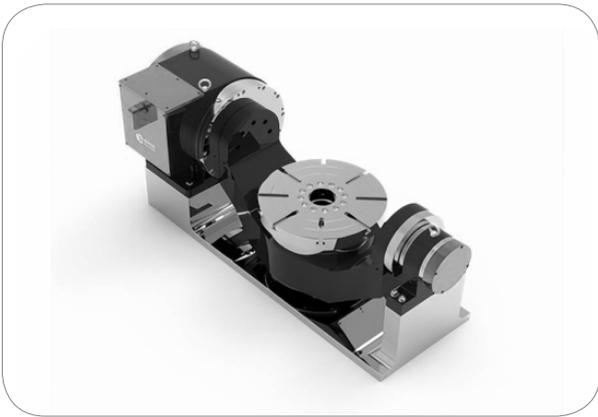
■ 产品应用案例 Product Applications



精密测量设备
Precision Measure Machine



激光切割摆头
5-axis Laser Cutting Head



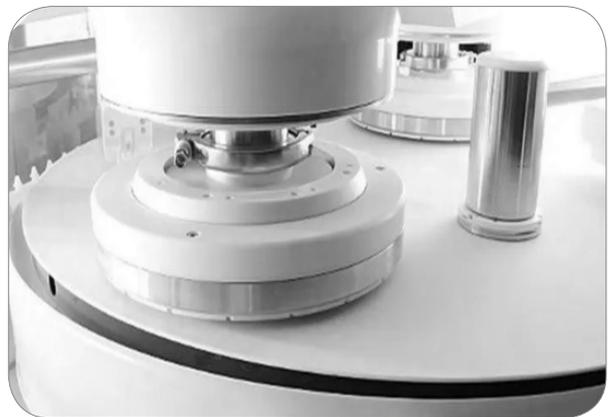
机床转台
Machine Tool Rotary Table



机床摆头
Machine Tool Milling Head



FPD 制程设备
FPD(Flat Panel Display) Manufacturing Equipment



半导体制程设备
Semiconductor Manufacturing Equipment

■ 型号命名 Model Naming

GSE	110T	-	74K	-	SV1
系列代码 Series	规格 Size		减速比 Ratio		马达规格 Motor
GSE	110T		74K		
	145T		77K		
	145Z		90K		
	190T		77K		
	220T		92K		
	250T		92K		

订货代码范例 1/Order Code Example 1 : GSE110T-74K-SV1

订货代码范例 2/Order Code Example 2 : GSE220T-92K-(35-114.3-200-M12)

■ 技术参数 Parameters

技术参数 Parameters	型号规格 /Model						
	GSE110T-74K	GSE145T-77K	GSE145Z-90K	GSE190T-77K	GSE220T-92K	GSE250T-92K	
旋转平台轴承 Bearing of Rotary Table	一体转台轴承 One-piece Slewing Bearing						
容许转矩 Allowable Torque	N.m	100	180	180	420	800	1100
容许惯性力矩 Allowable Moment of Inertia	N.m	320	1030	300	2170	3470	4150
容许盘面转速 Allowable Table Speed	rpm	60	60	40	60	45	45
减速比 Ratio		74	77	90	77	92	92
重复定位精度 Repeatability	arc-sec	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
定位精度 Positioning Accuracy	arc-sec	≤ 25	≤ 20	≤ 30	≤ 20	≤ 20	≤ 20
容许轴向负载 Allowable Axial Load	N	1000	3000	2500	6000	13000	16000
旋转平台平面度 Table Flatness	mm	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.01
旋转平台同心度 Table Concentricity	mm	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.01	≤ 0.01
保护等级 Ingress Grade	IP	54	54	54	54	54	54
重量 Weight	KG	2.6	5.8	12.5	12	17	25

注 1 : 马达规格 /Note 1: Motor Type

GSE110T-74K	GSE145T-77K/GSE145Z-90K	GSE190T-77K	GSE220T-92K/GSE250T-92K								
适配各品牌 200~400W AC 伺服马达 SV1 : 伺服 Ø14 PCD70,M4 SV2 : 伺服 Ø14 PCD70,M5 SV3 : 伺服 Ø11 PCD70,M4 Suit for 200~400W AC Servo Motor SV1: Servo Ø14 PCD70,M4 SV2: Servo Ø14 PCD70,M5 SV3: Servo Ø11 PCD70,M4	适配各品牌 750W AC 伺服马达 SV1 : 伺服 Ø19 PCD90,M5 SV2 : 伺服 Ø19 PCD90,M6 Suit for 750W AC Servo Motor SV1: Servo Ø19 PCD90,M5 SV2: Servo Ø19 PCD90,M6	适配各品牌 1000W AC 伺服马达 SV1 : 伺服 Ø22 PCD145,M8 SV2 : 伺服 Ø24 PCD145,M8 Suit for 1000W AC Servo Motor SV1: Servo Ø22 PCD145,M8 SV2: Servo Ø24 PCD145,M8	(a - b - c - d) <table border="1"> <tr> <td>a</td> <td>马达输出轴直径 Motor output shaft diameter</td> </tr> <tr> <td>b</td> <td>马达止口直径 Motor spigot diameter</td> </tr> <tr> <td>c</td> <td>马达安装孔 PCD Motor mounting hole PCD</td> </tr> <tr> <td>d</td> <td>马达安装螺纹孔 Motor mounting threaded hole</td> </tr> </table> 依据马达连接尺寸确认 According to motor mounting size 例 /e.g.: (35-114.3-200-M12)	a	马达输出轴直径 Motor output shaft diameter	b	马达止口直径 Motor spigot diameter	c	马达安装孔 PCD Motor mounting hole PCD	d	马达安装螺纹孔 Motor mounting threaded hole
a	马达输出轴直径 Motor output shaft diameter										
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c	马达安装孔 PCD Motor mounting hole PCD										
d	马达安装螺纹孔 Motor mounting threaded hole										

产品性能 Product Performance

		扭转刚度 (弹簧常数) / Torsional Rigidity (Elastic Constants)				
区间	型号 Model	GSE110T-74K	GSE145T-77K GSE145Z-90K	GSE190T-77K	GSE220T-92K	GSE250T-92K
K1	*10 ⁴ Nm/rad	7.2	23.4	49	70	107
	kgfm/arc min	2.1	6.9	15	21	32
	Nm/arc min	21	68	142	205	310
K2	*10 ⁴ Nm/rad	11	32.7	65	98	155
	kgfm/arc min	3.3	9.7	19	29	46
	Nm/arc min	32	95	190	285	450
K3	*10 ⁴ Nm/rad	13	41	83	131	186
	kgfm/arc min	3.9	12	24	39	55
	Nm/arc min	46	120	240	380	540

* 本表数值仅作参考值，下限值约为参考值的 80%

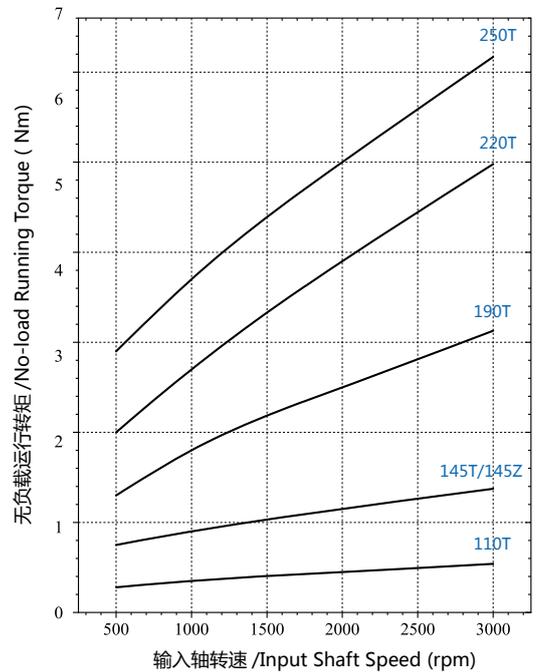
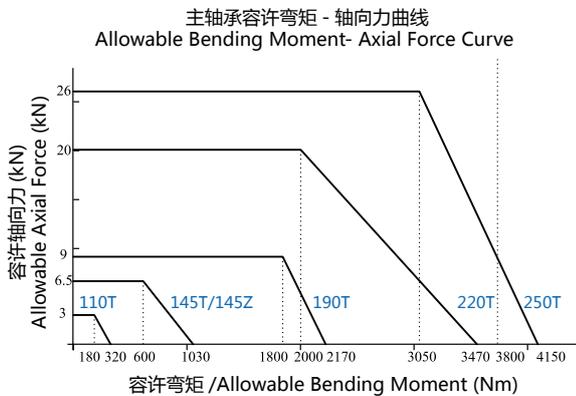
* The values in this table are for reference only, and the lower limit is approximately 80% of the indicated value.

型号规格 Model		GSE110T-74K	GSE145T-77K	GSE145Z-90K	GSE190T-77K	GSE220T-92K	GSE250T-92K
启动扭矩 Start Torque	N.m	0.7	1	0.6	1.6	2.7	3.9

- 测试条件：无负载/Test Condition: No Load
- 环境温度：+20°C/Environment Temperature: +20°C
- 润滑条件：脂润滑/Lubrication Condition: Grease

主轴承 / Main Bearing							
项目		型号 Model	110T	145T 145Z	190T	220T	250T
弯曲刚度 Bending Rigidity	Nm/arc min		280	820	2250	3800	5500
容许弯矩 Allowable Bending Moment	Nm		320	1030	2170	3470	4150
容许轴向力 Allowable Axial Force	kN		3	6.5	9	20	26

- 弯曲刚度 ±20%/Bending Rigidity±20



- 测试条件：无负载/Test Condition: No Load
- 环境温度：+20°C/Environment Temperature: +20°C
- 润滑条件：脂润滑/Lubrication Condition: Grease

■术语说明 Terminology Explanation

- **额定扭矩**：输出转速为额定输出转速时的容许连续负载扭矩。
- **定位精度 (A+/A-)**：根据 ISO230-2(GB/T 17421.2) 所表示的精度测定方法。减速机输出端每 15° x24 个点，通过连续五次正转 / 反转重复测得，单方向的定位精度。
- **重复定位精度 (R+/R-)**：根据 ISO230-2(GB/T 17421.2) 所表示的精度测定方法。减速机输出端每 15° x24 个点，通过连续五次正转 / 反转重复测得，单方向的重复定位精度。

● 扭转刚度、空程、滞回

固定减速机的输入轴，给输出轴施加扭矩，则会产生相应的扭曲，并画出刚度滞回曲线。

- **扭转刚度**：刚度滞回曲线的倾斜程度即表述为扭转刚度（也叫弹簧常数）。单位为 Nm/arc min。

按照施加的扭矩不同，分为三个区间。分别表述为 K1,K2,K3

K1... 扭矩从 0 到 15% 额定扭矩的扭转刚度。

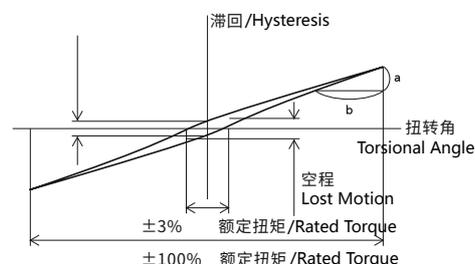
K2... 扭矩从 15% 额定扭矩到 50% 额定扭矩的扭转刚度。

K3... 扭矩从 50% 额定扭矩到 100% 额定扭矩的扭转刚度。

- **空程**：指在额定扭矩的 ±3% 处滞回曲线宽度的中间点的扭转角。

- **滞回**：指滞回曲线的扭矩为“0”处的扭转角。也被称为滞后损失。

- 刚度滞回曲线/Rigidity Hysteresis Curve



- **Rated Torque**: The allowable continuous load torque at the rated output speed.

- **Positioning Accuracy (A+/A-)** : The accuracy measurement method is based on ISO 230-2 (GB/T 17421.2). Measured at 24 points every 15° at the reducer output end through five consecutive forward/reverse repetitions. Represents the positioning accuracy in a single direction.

- **Repeatability (R+/R-)** : The accuracy measurement method is based on ISO 230-2 (GB/T 17421.2). Measured at 24 points every 15° at the reducer output end through five consecutive forward/reverse repetitions. Represents the repeat positioning accuracy in a single direction.

● Torsional Rigidity、Lost Motion、Hysteresis

Fix the input shaft of the speed reducer and apply torque to the output shaft. This will induce corresponding torsional deformation, and a stiffness hysteresis curve can be plotted.

- **Torsional Rigidity**: The slope of the rigidity hysteresis curve is defined as torsional rigidity (also referred to as elastic constants). Unit: Nm/arc min.

It is divided into three ranges based on the applied torque, denoted as K1, K2, and K3.

K1... Torsional rigidity from 0 to 15% of rated torque.

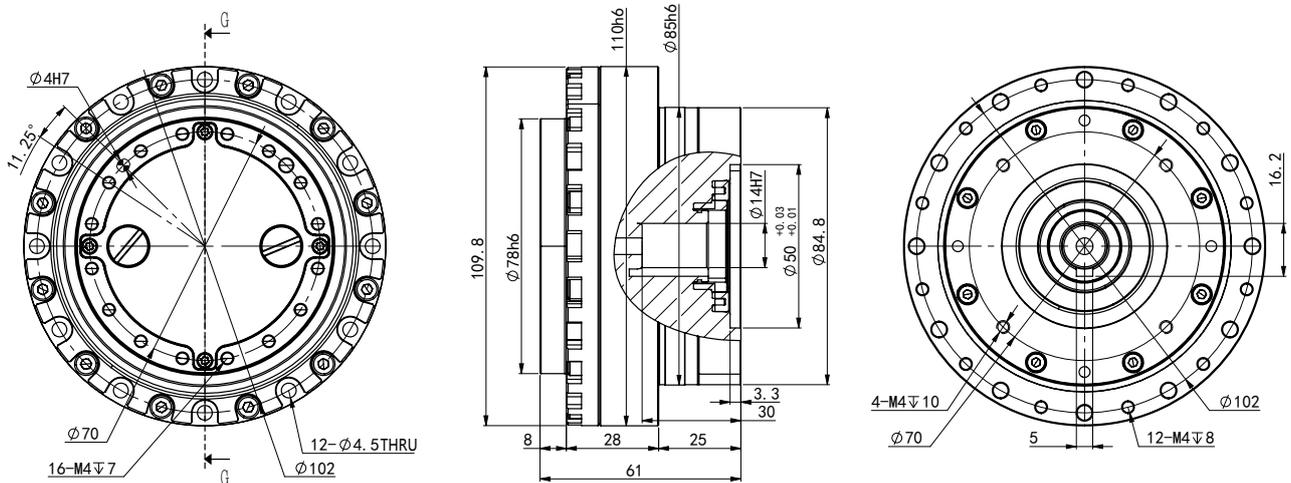
K2... Torsional rigidity from 15% to 50% of rated torque.

K3... Torsional rigidity from 50% to 100% of rated torque.

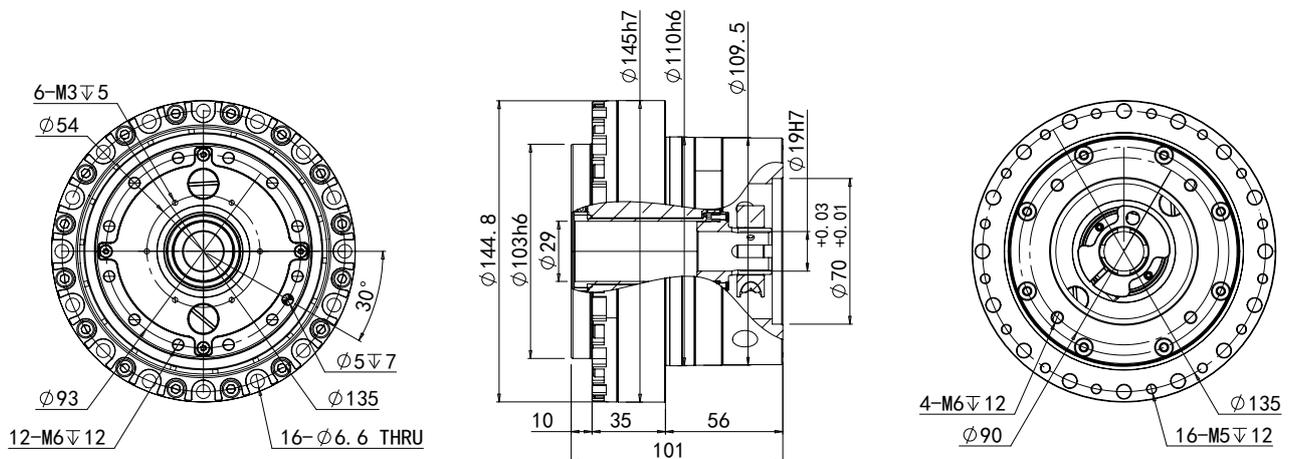
- **Lost Motion** : The torsional angle at the midpoint of the hysteresis curve width at ±3% of the rated torque.

- **Hysteresis**: The angular deflection at zero torque on the hysteresis curve. Also referred to as hysteresis loss.

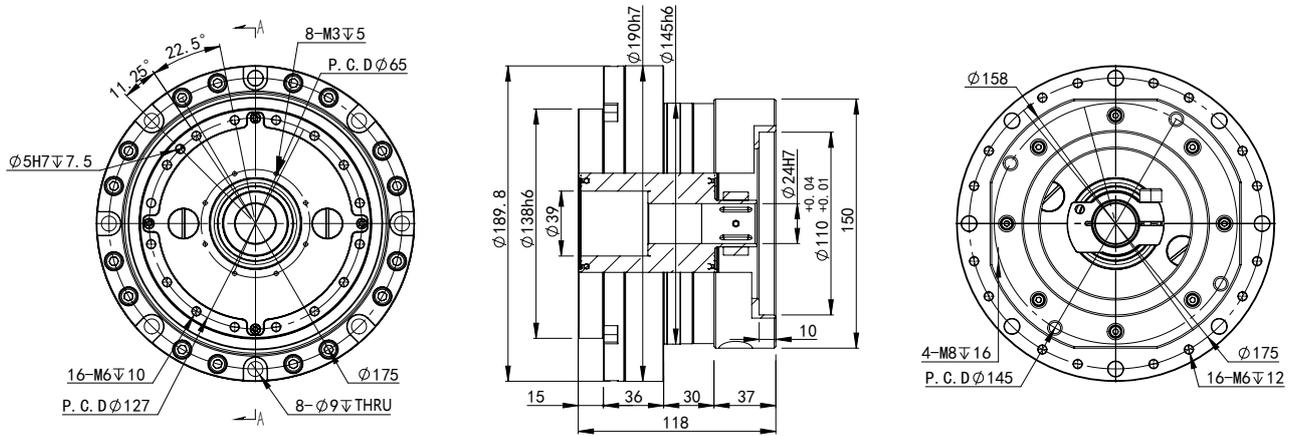
■ GSE110T-74K



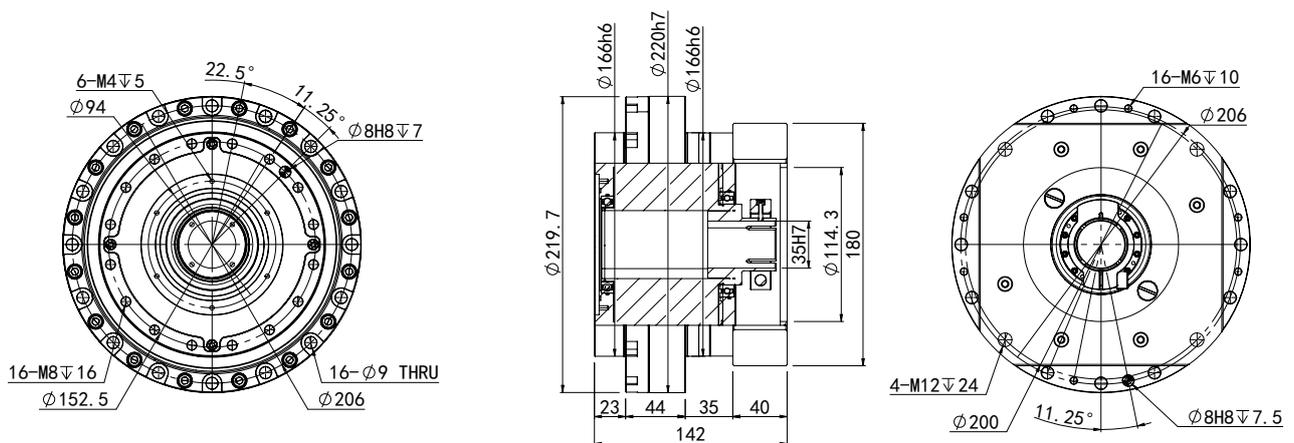
■ GSE145T-77K



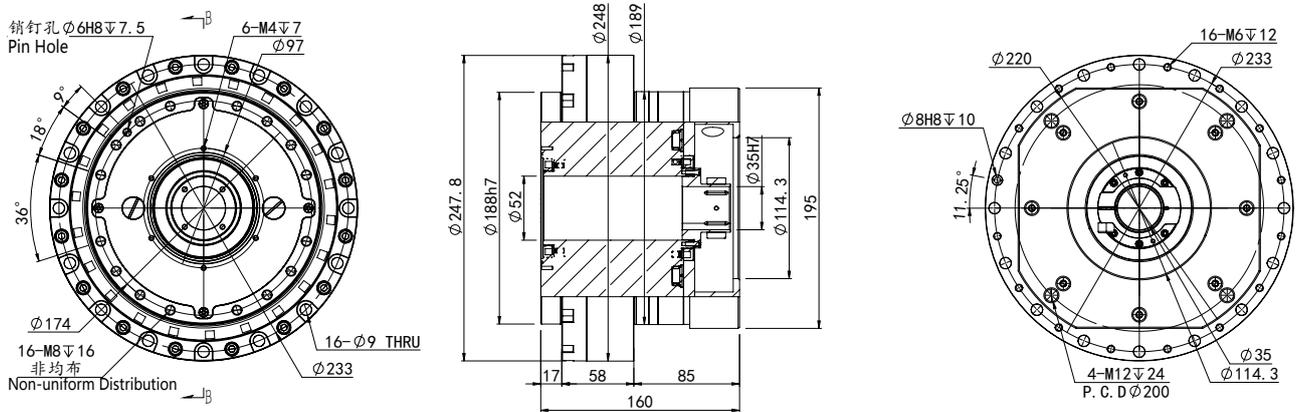
■ GSE190T-77K



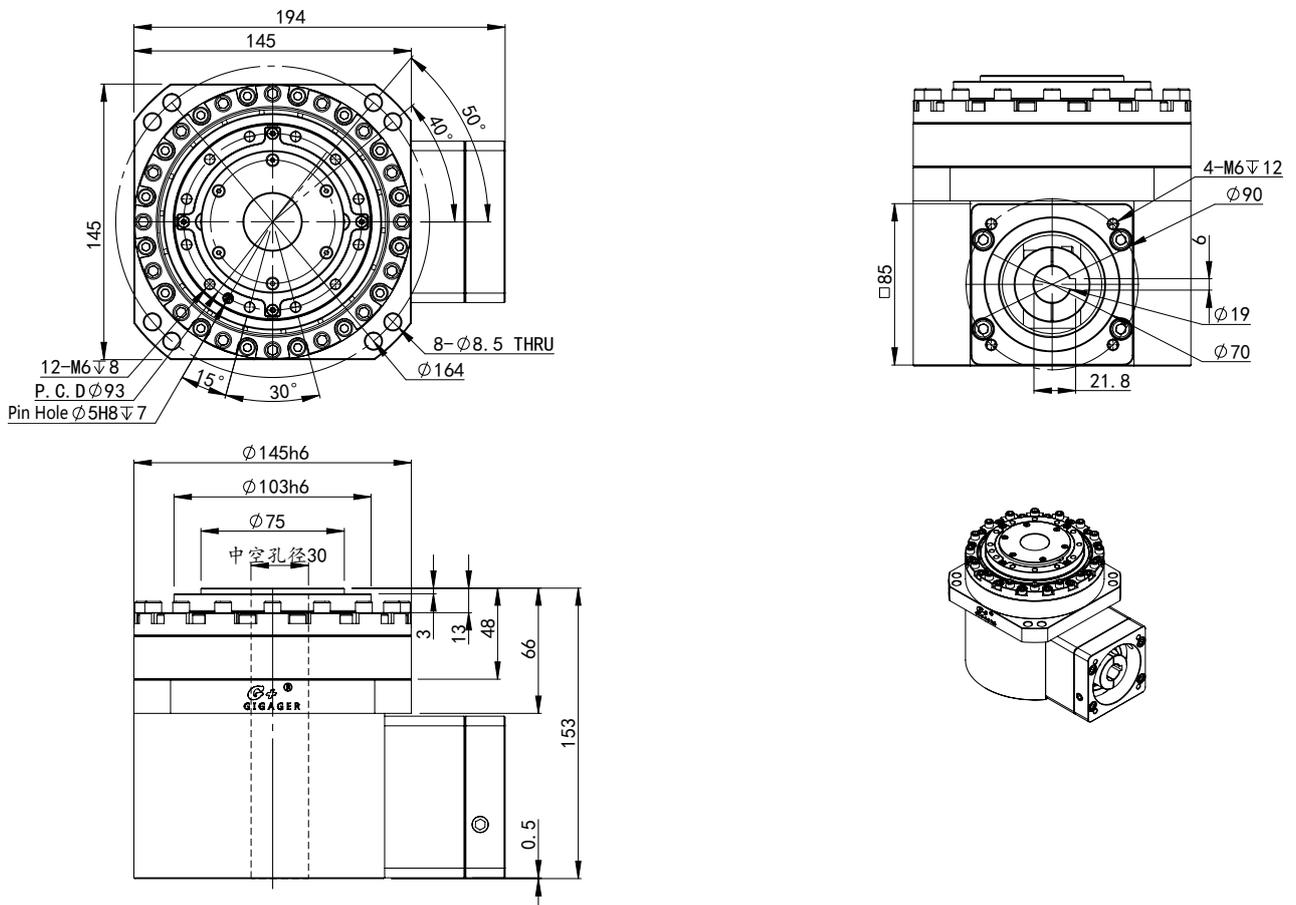
■ GSE220T-92K



■ GSE250T-92K



■ GSE145Z-90K



■使用须知 User Manual

- 关于手册中记载的技术参数：

本手册中的所有数据、图表及介绍均根据公司内部评价方法得出，后续可能有个别之处的更新，如有不明之处请与本公司人员联系确定是否符合应用需求。

- 请在规定环境下使用减速器：

- 1> 环境温度：-10° C-40° C
- 2> 无腐蚀性、爆炸性气体
- 3> 无金属粉等灰尘
- 4> 不溅到水、油等

- 请勿随意拆解或改变产品部件：

本公司产品的各部件是配套加工而成，实施拆解后重新组装或混同其他套件使用时，无法保证其能够发挥原有性能。

- 请根据建议的安装方法和安装精度进行安装：

- 1> 请正确设计、组装各种部件，确保其能够达到本手册中的推荐安装精度。
- 2> 拧紧方法（使用螺栓等），请遵守本手册建议。
- 3> 如未正确组装，运转时可能会导致振动、缩短使用寿命、精度下降、损坏等故障。
- 4> 请勿暴力组装和拆卸本产品，勿使用锤子等用力敲打。

- 维修与保养

润滑脂被污染或在恶劣的环境下使用时，需定期检查润滑油脂老化、被污染的情况。

- 保管方法：

使用后，请将其密封好，防止灰尘，水分等混入。请在背阴处保存，避免阳光直射。同时，建议做好产品表面的防锈措施，必要时涂防锈剂等。

- Regarding the technical parameters documented in this manual:

All data, charts, and descriptions in this manual are based on the company's internal evaluation methods. They may be subject to partial updates in the future. Please contact our team for clarification if any information is unclear

- Work environmental conditions:

- 1> Working temperature: -10° C-40° C
- 2> No corrosive or explosive gas
- 3> No metal powder or other dust
- 4> Do not splash water, oil, etc

- Do not disassemble or alter product components arbitrarily:

To ensure optimal performance, please note that product components are precision-machined as matched sets. Disassembling and reassembling, or interchanging parts between sets, may affect performance and deviation from original specifications.

- Follow the recommended methods and precision standards:

- 1> Design and assemble all components correctly to ensure they meet the recommended installation accuracy in this manual.
- 2> Follow the tightening methods (using bolts, etc.) recommended in this manual.
- 3> Improper assembly may lead to malfunctions during operation, such as vibration, reduced service life, accuracy degradation, or damage.
- 4> Do not assemble or disassemble this product violently, and do not hit it with force using a hammer or other tools

- Maintenance and Servicing:

When grease is contaminated or used in harsh environments. Regularly checking the grease for ageing and contamination.

- Storage Method:

Well sealed after usage, to prevent the dust and moisture. Store in a cool, dry, indirect sunlight environment. Take some rust-proof measures and apply a rust inhibitor if necessary



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