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ANDANTEX

精密控制谐波减速器
选型技术资料

Technical Data On The Selection Of
Precision-Controlled Harmonic Drives



HARMONIC DRIVE
谐波减速器

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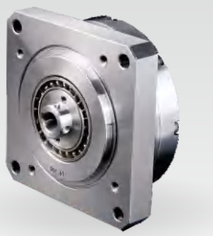
系列产品图
Series product picture



CS-I



CD-I



FS-I



LFB-I



ST-I



ST-III



ST-IV



SD-I



YT-I



YC-I

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PRINCIPLE OF HARMONIC GEAR REDUCER
谐波传动原理

> 谐波传动是由美国发明家C.Walt Musser马瑟于上世纪50年代发明创造的
>
> Harmonic drive was invented by American inventor C. Walt Musser in mid-1950s

1 谐波传动装置的组成
Composition of harmonic gearbox

谐波传动装置主要由三个基本零部件构成，即波发生器、柔轮和刚轮。

波发生器：由柔性轴承与椭圆形凸轮组成，波发生器通常安装在减速器输入端，柔性轴承内圈固定在凸轮上，外圈通过滚珠实成弹性变形成椭圆形。

柔轮：带有外齿圈的柔性薄壁弹性体零件，通常安装在减速器输出端。

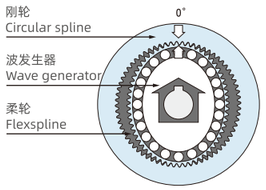
刚轮：带有内齿圈的刚性圆环状零件，一般比柔轮多两个轮齿，通常固定在减速器机体上。

Harmonic gearbox has three basic components: a wave generator , a flexspline and a circular spline .

Wave generator : it is made up of a ball bearing and an elliptical cam . The wave generator is usually attached to the input end , the inner ring of the bearing is fixed around the cam causing the outer ring of the bearing deforms to an elliptical shape .

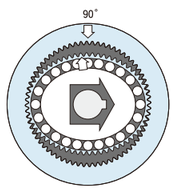
Fexspline : it is an elastic thin-walled component with gear teeth on outer surface . It is usually fitted to output end.

Circular spline : it is a rigid steel ring with internal teeth . It usually has two more teeth than the flexspline , and generally mounted onto a housing .



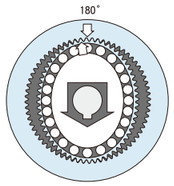
柔轮被波发生器弯曲成椭圆状。因此，在长轴部分刚轮和齿轮啮合，在短轴部分则完全与齿轮呈脱离状态。

The flexspline is forced into an elliptical shape by the wave generator causing the flexspline teeth to engage with the tooth profile of the circular spline along the major axis of the ellipse, with the teeth completely disengaged across the minor axis of the ellipse.



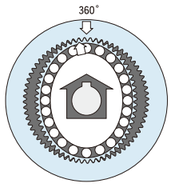
固定刚轮，使波发生器按顺时针方向旋转后，柔轮发生弹性形变，与刚轮啮合的齿齿轮位置顺次移动。

As the wave generator rotates clockwise with the circular spline fixed, the flexspline is subiected to elastic deformation and its tooth engagement position moves turning relative to the circular spline.



波发生器向顺时针方向旋转180度后，柔轮仅向逆时针方向移动一齿。

As the wave generator rotates 180 degrees clockwise, the flexspline moves counterclockwise by one tooth relative to the circular spline.



波发生器旋转一周（360度）后，由于比刚轮减少2齿，因此柔轮向逆时针方向移动2齿。一般将该动作作为输出执行。

For every one full rotation clockwise (360 degrees)of the wave generator, the flexspline moves counterclockwise by two teeth relative to the circular spline because the flexspline has two fewer teeth than there are on the circular spline. In general, this movement is treated as output performing.

2 谐波传动特点
Characteristics of harmonic gearbox

- 精度高：多齿在两个180度对称位置同时啮合，因此齿轮齿距误差和累积齿距误差对旋转精度的影响较为平均，可得到极高的位置精度和旋转精度。
- 传动比大：单级谐波齿轮传动的传动比可达i=30~500，且结构简单，三个在同轴上的基本零部件就可实现高减速比。
- 承载能力高：谐波传动中，齿与齿的啮合是面接触，加上同时啮合齿数比较多，因而单位面积载荷小，承载能力较其他传动形式高。
- 体积小、重量轻：相比普通的齿轮装置，体积和重量可以大幅降低，实现小型化、轻量化。
- 传动效率高、寿命长。
- 传动平稳、无冲击，噪音小。

- High accuracy: a good percentage of its teeth are meshed at all times, and are engaged at two zones 180 degrees apart. This means influences of tooth pitch errors and accumulated pitch errors on rotational accuracy are neutralized, which assures high positional and rotational accuracy.
- High speed reduction ratio: a harmonic gearbox has high single-stage reduction ratios of 1/30-1/500. Three basic components along same axle without complex structures can provide high reduction ratios.
- High torque capacity: each tooth is subjected to a negligible amount of force yet provides a high torque capacity because of the way the teeth come into contact with each other and because a good percentage of the teeth in the flexspline are engaged at all times.
- Small-sized and light weight: while being less the size of conventional gearing mechanisms and less the weight, the harmonic gearbox provides the same levels of torque and speed reduction ratios as its conventional counterparts enabling machinery and equipment to be made smaller and lighter.
- Superior efficiency and long life time.
- Quiet and minimal vibration operation.

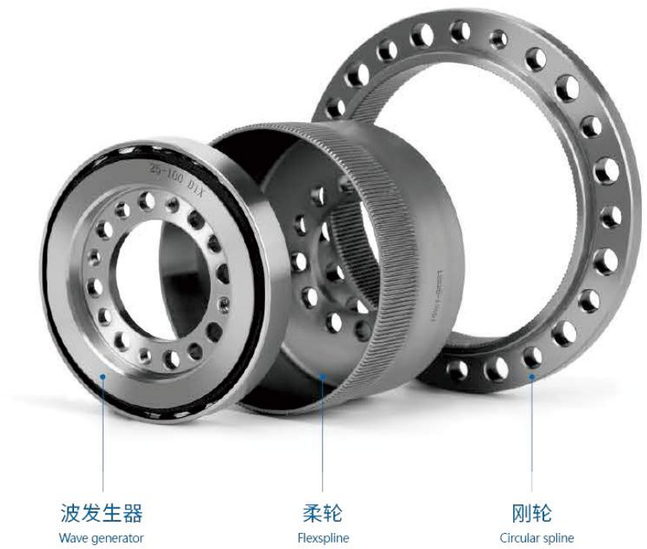
3 谐波减速原理
Principle of harmonic gearbox

谐波作为减速器使用，通常采用波发生器主动、刚轮固定、柔轮输出形式。

当波发生器装入柔轮内圆时，迫使柔轮产生弹性变形而呈椭圆状，使其长轴处柔轮轮齿插入刚轮的轮齿槽内，成为完全啮合状态；而其短轴处两轮轮齿完全不接触，处于脱开状态。由啮合到脱开的过程之间则处于啮出或啮入状态。当波发生器连续转动时，迫使柔轮不断生产变形，使两轮轮齿在进行啮入、啮合、啮出、脱出的过程中不断改变各自的工作状态，产生了所谓的错齿运动，从而实现了主动波发生器与柔轮的运动传递。

As a reducer, the harmonic gearbox is often in a status as: the wave generator drives, the circular spline is fixed. the flexspline is output end.

When the wave generator is put inside of the flexspline, the flexspline is forced into an elliptical shape causing the flexspline teeth to engage with the tooth profile of the circular spline along the major axis of the ellipse, with the teeth completely disengaged across the minor axis of the ellipse. The rotation of the wave generator makes the flexspline deform continuously, the teeth change operating state in the process of engagement and disengagement, thus the motion transmission between wave generator and flexspline is realized.



TOOTH PROFILE
齿形介绍

15%
承载能力提高15%
Gear toothing capacity increased by 15%

15000 hours
寿命超过15000小时
Service time exceeded 15000 hours

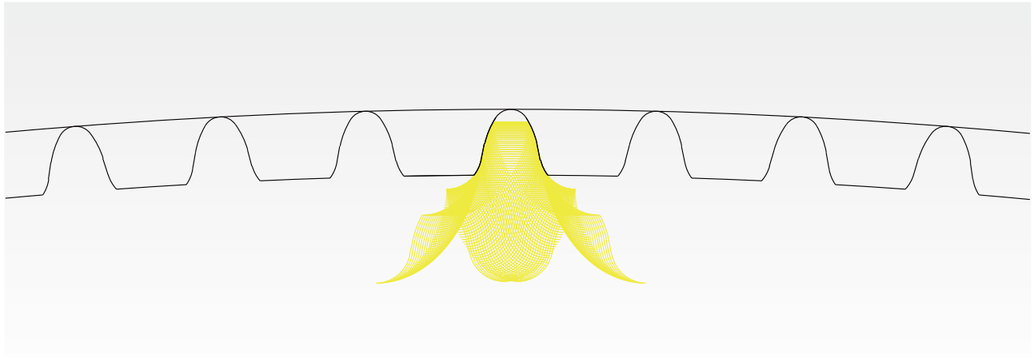
8-10℃
温升降低8-10℃
Temperature rise decreased by 8-10 degrees

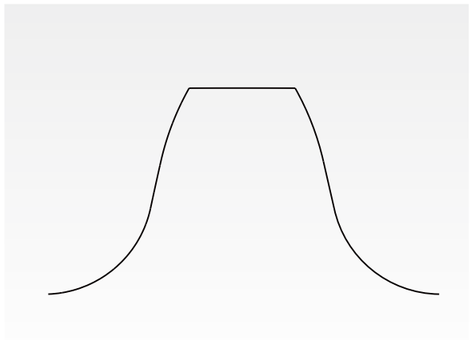
接触面积
减小齿轮疲劳点蚀接触面积
Reduced gear fatigue pitting contact area

关于 C齿形
About C tooth profile

将传统理论上的双圆弧齿形进一步优化，由原有的两段曲率连续的圆弧曲线所形成的齿形优化为多段曲率连续的圆弧曲线，保证减速器齿轮的正确啮合同时通过降低相对滑动摩擦来保护润滑脂极压后油脂失效的风险。基于δ齿形的产品，承载能力提高15%，温升降低8-10℃，齿轮疲劳点蚀接触面积减小30%以上，连续跑合使用寿命超过15000小时，提高了谐波减速器的综合性能。

We have made some upgrades based on the traditional theoretical double arc profile. The tooth profile formed by the original two curve continuous arc curve is optimized as a continuous arc curve with multiple segments of curvature. To ensure that the gears of reducer are properly meshed, while protecting the risk of grease failure after grease is squeezed by reducing relative sliding friction. Based on the δ tooth shape， the load capacity is increased by 15%，the temperature rise is reduced by 8-10 degrees. the gear fatigue pitting contact area is reduced by more than 30%, continuous running and service life is over 15000 hours, which improves the overall performance of the harmonic gearbox.





在开发过程当中，柔轮齿型的形成可根据发生器的径向位移量来确定，不同的减速比可拟合出多种的齿型配合，同时可以方便的根据实际情况调整啮合背隙，使减速器始终处于最佳的工作状态。

During development, the formation of the soft tooth profile can be determined by the radial displacement of the genera tor. Different gear reduction ratios can be fitted with various tooth profiles and the mesh backlash can be conveniently adjusted according to actual conditions. Keep the gearbox in the best working condition.

NAMING RULES
命名规则

CS - 14 - 100 - U/C - I

机型名称 Series	规格 Type	减速比 注① Reduction ratio(Note1)						结构代码 Structure code	I：简易标准型 I：Simple standard type
CS CN CG CD FS	11	50	80	100	-	-	-	U：整机 C：部件 U：Completely unit C：Component	I：简易标准型 I：Simple Standard type
	14	50	80	100	120	-	-		
	17	50	80	100	120	-	-		
	20	50	80	100	120	160	-		
	25	50	80	100	120	-	-		
	32	50	80	100	120	-	-		
	40	50	80	100	120				

注①:减速比表示的是输入：波发生器，固定：刚轮，输出：柔轮时的情况。
Note 1：Reduction ratio indicates of wave generator as inputting , fixing circular spline , and flexspline as outputting.

SEAL RING'S SIZE DESCRIPTION
密封圈尺寸说明

单位unit： mm

型号 Series	规格 Model	刚轮侧 Circular spline		柔轮侧 Flexspline	
		密封圈尺寸 Seal ring size	开槽尺寸 Slot size	密封圈尺寸 Seal ring size	开槽尺寸 Slot size
ST-I	14	36.5*0.6	$\Phi36.5_{-0.1}^{0}$ * $\Phi38^{+0.1}_{0}$ * $0.45^{+0.1}_{0}$	53*1.5	$\Phi53_{-0.1}^{0}$ * $\Phi56.8^{+0.1}_{0}$ * $1.15^{+0.1}_{0}$
	17	45*1	$\Phi45.5_{-0.1}^{0}$ * $\Phi48^{+0.1}_{0}$ * $0.75^{+0.1}_{0}$	64*1	$\Phi64_{-0.1}^{0}$ * $\Phi66.6^{+0.1}_{0}$ * $0.75^{+0.1}_{0}$
	20	54*1	$\Phi53.8_{-0.1}^{0}$ * $\Phi56.2^{+0.1}_{0}$ * $0.75^{+0.1}_{0}$	73*1.5	$\Phi73_{-0.1}^{0}$ * $\Phi76.8^{+0.1}_{0}$ * $1.15^{+0.1}_{0}$
	25	68*1	$\Phi68_{-0.1}^{0}$ * $\Phi70.6^{+0.1}_{0}$ * $0.75^{+0.1}_{0}$	90*1.5	$\Phi90_{-0.1}^{0}$ * $\Phi94.2^{+0.1}_{0}$ * $1.15^{+0.1}_{0}$
	32	88*1.5	$\Phi88_{-0.1}^{0}$ * $\Phi92^{+0.1}_{0}$ * $1.15^{+0.1}_{0}$	119*1.5	$\Phi119_{-0.1}^{0}$ * $\Phi123.1^{+0.1}_{0}$ * $1.15^{+0.1}_{0}$
	40	108*1.75	$\Phi108_{-0.1}^{0}$ * $\Phi113^{+0.1}_{0}$ * $1.5^{+0.1}_{0}$	143*2	$\Phi142.6_{-0.1}^{0}$ * $\Phi148^{+0.1}_{0}$ * $1.5^{+0.1}_{0}$

※ 为了充分发挥 ST-I型的优良性能，请确保如下图所示的推荐精度。
In order to give full play to the excellent performance of ST-I, please ensure the recommended accuracy as shown in the figure.

TERMS AND DEFINITIONS
额定用语表

术语和定义
Terms And Definitions

启动扭矩
Starting torque

能使用谐波减速器空载启动时，输入端需施加的最小力矩

It is the minimum torque value applied to the input end at which the harmonic gearbox first starts to rotate with no load

背隙
Backlash

柔轮齿廓与刚轮齿廓之间的间隙

The clearance between flexspline tooth profile and circular spline tooth profile

输出额定转矩
Rated torque

谐波减速器在保持其正常的性能指标下，能长时间运行的输出扭矩

It indicates allowable continuous output torque at rated input speed

启动停止时的容许峰值转矩
Permissible peak torque at start and stop

启动停止时的容许峰值转矩指的是谐波减速器在启动或停止时的最大冲击转矩

It's the maximum torque as a result of the moment of inertia of the output load during acceleration and deceleration

容许最大平均负载转矩
Permissible maximum value for average load torque

容许最大平均负载转矩指的是谐波减速器能长时间工作的最大转矩

It's the maximum torque when the harmonic gearbox keeps continuous operation

容许最大瞬时转矩
Permissible maximum momentary torque

容许最大瞬时转矩指的是谐波减速器短时能承受的最大转矩

It is the momentary peak torque the harmonic gearbox may be subjected to the event of a collision or emergency stop

容许最大输入转速
Permissible maximum input rotational speed

容许最大输入转速指的是谐波减速器容许输入转速的最大值

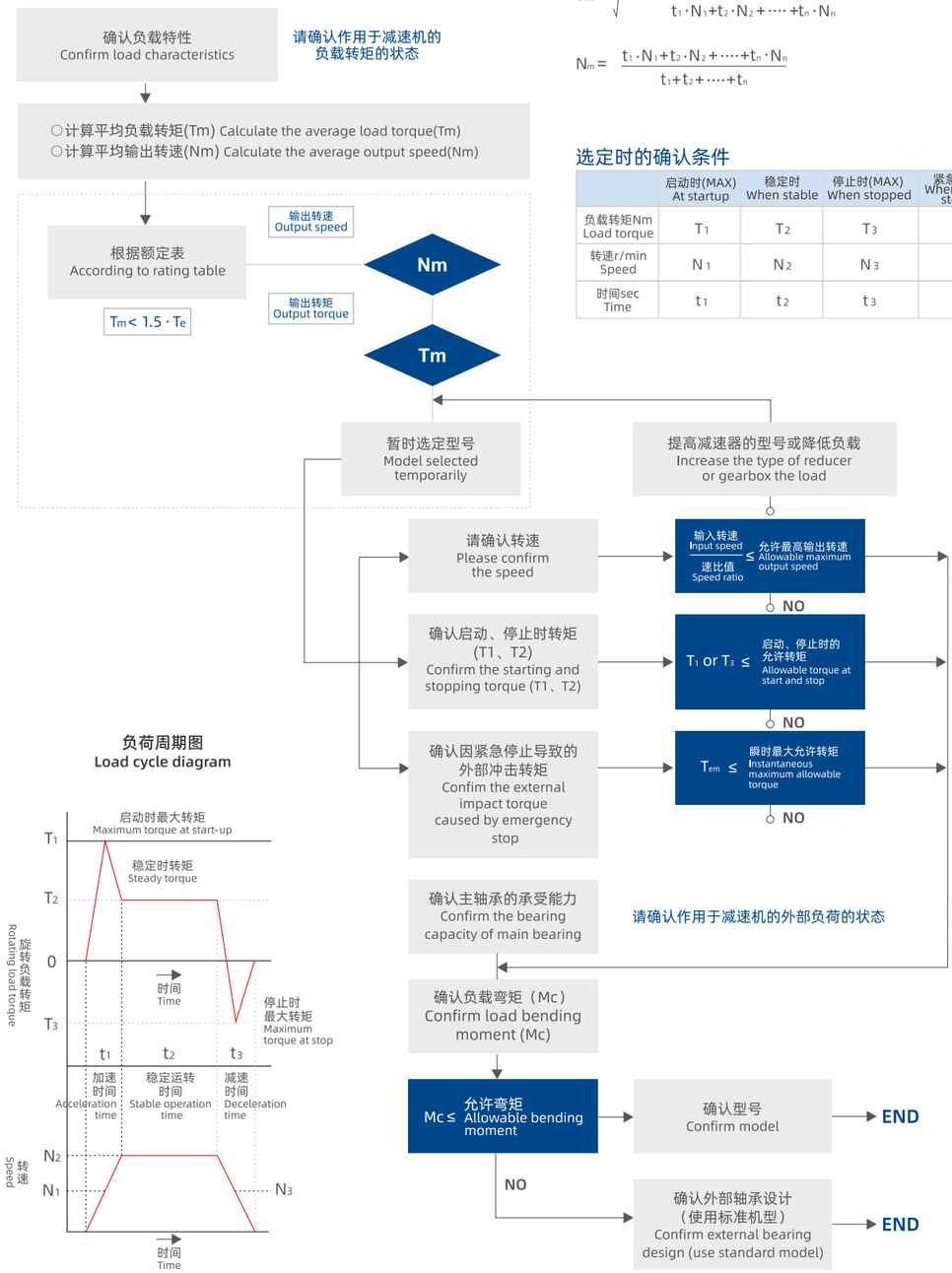
Don't exceed the permissible rating

容许平均输入转速
Permissible average input rotational speed

容许平均输入转速指的是谐波减速器输入转速的平均值

It's the average value of input speed

SELECTION PROCESS
选型流程



$$T_m = \sqrt[10/3]{\frac{t_1 \cdot N_1 \cdot T_1^{10/3} + t_2 \cdot N_2 \cdot T_2^{10/3} + \cdots + t_n \cdot N_n \cdot T_n^{10/3}}{t_1 \cdot N_1 + t_2 \cdot N_2 + \cdots + t_n \cdot N_n}}$$

$$N_m = \frac{t_1 \cdot N_1 + t_2 \cdot N_2 + \cdots + t_n \cdot N_n}{t_1 + t_2 + \cdots + t_n}$$

选定时的确认条件

	启动时(MAX) At startup	稳定时 When stable	停止时(MAX) When stopped	紧急停止冲击时 When emergency stop impact
负载转矩Nm Load torque	T_1	T_2	T_3	T_{em}
转速r/min Speed	N_1	N_2	N_3	N_{em}
时间sec Time	t_1	t_2	t_3	t_{em}

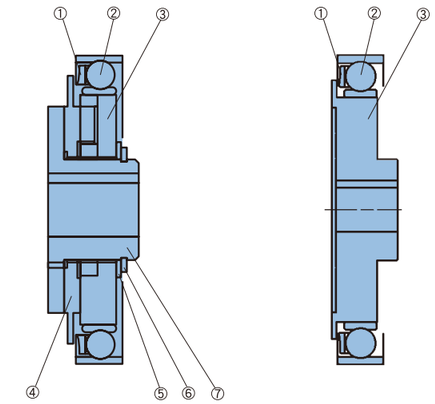
负荷周期图
Load cycle diagram

WAVE GENERATOR
波发生器

波发生器包括带自调心结构的欧式联轴节的结构和不带自动调心结构的一体型两种类型，根据各系列的不同也有所差异。详情请参照各系列的外形图。

The wave generator includes a structure of a European-style coupling with a self-aligning structure and an integrated type without an automatic self-aligning structure, and varies depending on the series. For details, please refer to the outline drawing of each series.

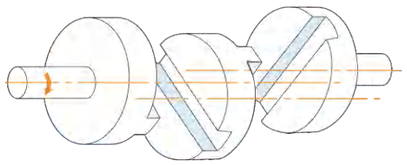
波发生器的基本结构及形状如下所示:
Basic structure and shape of wave generator shown as below



十字滑块型
Cross slider block type

一体式
Unibody

十字滑块型结构——采用欧式联轴节的结构:
Structure of cross sliding block type-using European coupling structure



❶ 柔性轴承保持架	Holder of flexible bearing
❷ 柔性轴承	Flexible baring
❸ 波发生器	Wave generator
❹ 十字滑块	Cross sliding block
❺ 垫圈	Gasket
❻ 轴用挡圈	Ring-shield
❼ 动力输入轴	Power input shaft

波发生器的轴向力与轴的固定
Axial force and axial fixation of wave generator

由于柔轮的弹性形变，运转中波发生器上的轴向力发生运动。
作为减速器使用时的轴向力向柔轮内部方向运动。
作为增速器使用时的轴向力与减速时的方向相反。
无论在何种使用条件下，都需要采用阻止波发生器轴向力的设计。

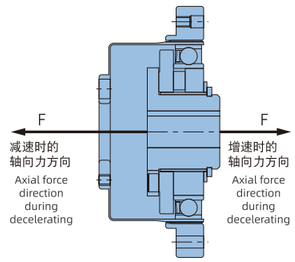
The axial force on wave generator begins to work due to elastic deformation of flexspline.

When used as a reducer. the axial force moves towards to the inside of the flexspline.

When used as a speed increaser, the axial forces movement is opposite to the direction of the deceleration. The design of prevent axial force of wave generator shall be adopted under any conditions of usage.

※在波发生器上设置止动螺钉并与输入轴固定时，请务必咨询授权代理商。
※ Please make sure to consult with the authorized distributor when setting the stop screw and fixing it to the input axial on the wave generator.

波发生器的轴向力方向
Axial force direction of the wave generator



一体式波发生器的最大孔径尺寸
Maximum aperture size of the unibody wave generator

波发生器的标准孔径如各外形尺寸图所示，但可以在表上所示的最大尺寸范围内进行变更。此时的键槽尺寸推荐使用GB规格。键的有效长度尺寸，请设计成可以完全承受传达转矩的值。

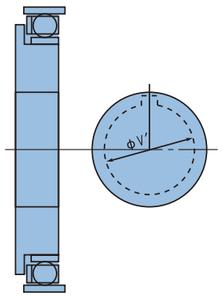
The standard aperture of the wave generator has shown in the outline drawing, the alteration can be made within maximum size range shown in the table.

We suggest to use GB standard for keyway size. The key's effective length dimension should be designed to fully withstand the value of the transmitted torque.

波发生器的孔径
Wave generator aperture

单位unit：mm

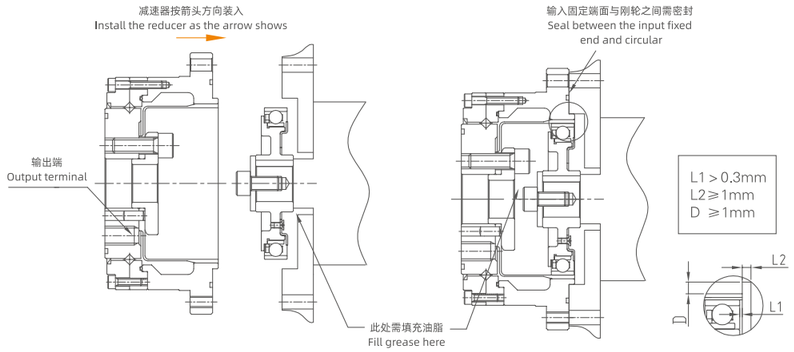
型号 Model	标准尺寸(H7) Standards size(H7)	最小尺寸 Minimum size	最大尺寸 Maximum size
11	5	-	-
14	6	3	8
17	8	4	10
20	9	5	13
25	11	6	15
32	14	6	15
40	14	10	20



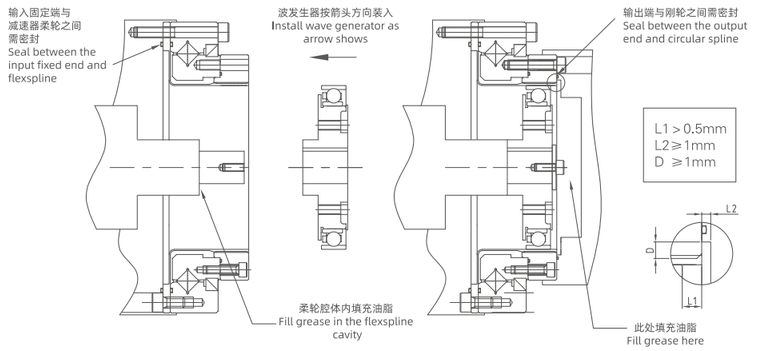
※波发生器的孔径可根据客户要求来进行定制，需要变更请与授权经销商提前进行沟通。
※ The aperture of the wave generator can be customized according to customer requirements. Please contact with the authorized distributor in case of any changes in the table.

INSTALLATION PROCEDURE
安装步骤

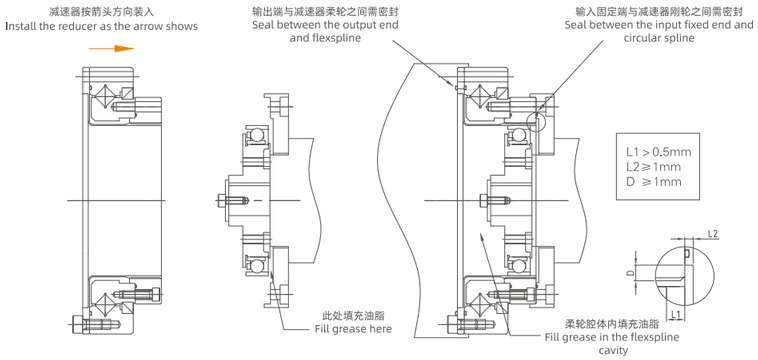
HC系列安装方式 Installation of HC series



HS系列安装方式一 The first method of installation for HS series



HS系列安装方式二 The second method of installation for HS series

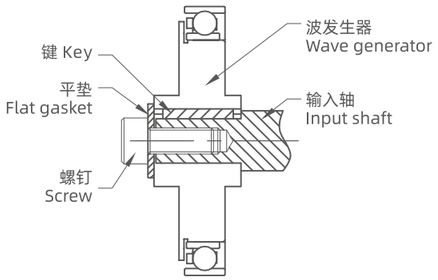


INSTALLATION PROCEDURE
安装步骤

波发生器常用连接固定方式 The connecting and fixing method of wave generator

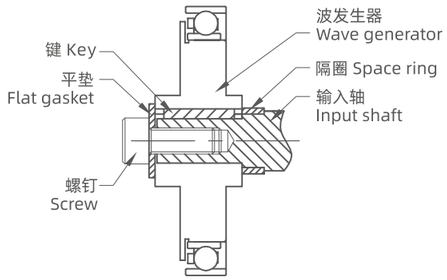
1 输入轴与波发生器直接连接输入轴有轴肩，可以与波发生器直接连接固定。如图

Input shaft has a shaft shoulder, it can be connected with wave generator directly. As shown in the figure.



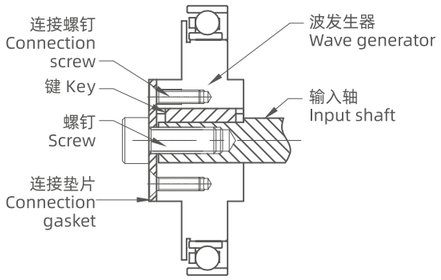
2 输入轴加隔圈后与波发生器连接输入轴有轴肩，但长度过长，可以在轴上加一个隔圈（该隔圈两面平行度需在0.01mm以内）后再与波发生器连接固定。如图

Input shaft has a shaft shoulder, but it 's too long. You can add a space ring on the shaft(the parallelism of space ring should be within 0.01mm),then connect and fix with the wave generator. As shown in the figure.



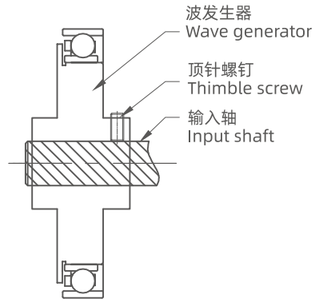
3 用连接垫片固定在波发生器上后与输入轴连接输入轴无轴肩，需用一个连接垫片先固定在波发生器上后再与输入轴连接固定。如图

Input shaft has no shaft shoulder. Fix a connection gasket on the wave generator, then connect and fix with the input shaft. As shown in the figure.



4 此固定方式适用于小机型，光轴输入，输入轴插入波发生器后，通过波发生器上的顶针螺钉将输入轴连接固定。如图

This fixing method is suitable for small models, optical axis input. Input shaft inserted into the wave generator, then connect and fix it through the thimble screw on wave generator. As shown in the figure.



ASSEMBLY CONSIDERATIONS
组装注意事项

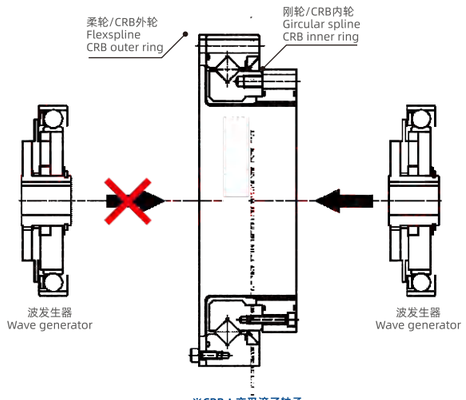
组装步骤
Assembly procedure

将刚轮和柔轮组合安装到装置上后，再组装上波发生器。若使用其他方法进行组装，可能出现齿轮偏移状态。下实施组装或损伤面等情况。请充分注意。

Install the circular spline and flexspline on the device, and then install the wave generator. Otherwise it may cause stuffing damage to the gear teeth or improper eccentric gear mesh, Please pay close attention to it.

正确组装步骤
Correct assembly steps

柔轮/CRB外轮
Flexspline/CRB outer ring



※CRB：交叉滚子轴承
※Cross roller Bearlng

组装注意事项
Precautions on installation

由于组装时的错误，在运转时可能发生震动、异响等。请遵守下述注意事项实施组装。

The improper assembly may cause vibration and noise during operation. Please assembly base on the following precautions.

波发生器的注意事项
Precautions on wave generator

1.请在组装时避免向波发生器轴承部位施加过度的力。可通过使波发生器旋转顺畅地实施插入。

2.使用无欧氏联轴节结构的波发生器时，请特别注意把中心偏移、歪斜的影响控制在推荐值内。

1.Please avoid applying undue force to the bearing on wave generator during assembly. We suggest to rotate the wave generator while inserting, it will ease the process.

2.If the wave generator does not have an oldham coupling, extra care must be given to ensure that concentricity and inclination are within the specified limits.

刚轮的注意事项
Precautions on circular spline

1.确认安装面的平坦度是否良好、是否有歪斜。

2.确认螺钉孔部是否隆起、有残余毛边或有异物啮入。

3.确认是否对壳体组装部实施了倒角加工以及避让加工，以避免与刚轮干涉。

4.当刚轮组装至外壳后，确认其是否能够旋转，是否有些部位存在干涉，卡紧。

5.朝安装用螺栓孔插入螺栓时，确认螺栓孔的位置是否正确、是否由于螺栓孔歪斜加工等原因致使螺栓与刚轮发生接触，使螺栓旋转变沉重。

6.请不要一次性按照规定转矩拧紧螺栓。请先使用约为规定转矩1/2的力实施暂时拧紧，然后再按照规定转矩拧紧。此外，通常请按照对角线顺序依次拧紧螺栓。

7.向刚轮打销子可能造成旋转精度低下，因此请尽可能避免。

1.Mounting surfaces need to have adequate flatness, smoothness, and no distortion.

2.Especially in the area of the screw holes, burrs or foreign matter should not be present.

3.Please make sure the chamfering and avoidance machining are performed on the housing assembly, to avoid the interference with the circular spline.

4.The circular spline should be rotatable within the housing. Be sure there is no interference and it does not catch on anything.

5. When mounting the bolt, make sure the bolt hole is correct and aligned Bolts should rotate freely when tightening and should not have any irregularity due to the bolt hole being misaligned or oblique.

6. Don't tighten the bolts with the specified torque all at once. Tighten the bolts temporarily with about half the specified torque, and then tighten them with the specified torque. Tighten them in an even, crisscross pattern.

7. Avoid pinning the circular spline if possible as it can reduce the rotational precision and smoothness of operation.

柔轮的注意事项
Precautions on flexspline

1.确认安装面的平坦度是否良好、是否有歪斜。

2.确认螺钉孔部是否隆起、有残余毛边或有异物啮入。

3.确认是否对壳体组装部实施了倒角加工以及避让加工，以避免与柔轮干涉。

4.朝安装用螺栓孔插入螺栓时，确认螺栓孔的位置是否正确、是否由于螺栓孔歪斜加工等原因致使螺栓与柔轮发生接触，使螺栓旋转变沉重。

5.请不要一次性按照规定转矩拧紧螺栓。请先使用约为规定转矩1/2的力实施暂时拧紧，然后再按照规定转矩拧紧。此外，通时，可能是由于两个部件发生中心偏移或歪斜。

6.确认与刚轮组合时，是否存在极端的单侧啮合。发生单侧偏移。

1.Mounting surfaces need to have adequate flatness, smoothness, and no distortion.

2.Especially in the area of the screw holes, burrs or foreign matter should not be present.

3.Please make sure the chamfering and avoidance machining are performed on the housing assembly, to avoid the interference with the circular splin.

4.When mounting the bolt, make sure the bolt hole is correct and aligned. Bolts should rotate freely when tightening and should not have any irregularity due to the bolt hole being misaligned or oblique.

5.Don't tighten the bolts with the specified torque all at once. Tighten the bolts temporarily with about half the specified torque, and then tighten them with the specified torque. Tighten them in an even, crisscross pattern.

6.Avoid unilateral meshing and deviation when assembling with circular spline.

关于防锈措施
Rust prevention

组合型的表面没有实施防锈处理。需要实施防锈时请向表面涂抹防锈剂。此外，需要本公司实施表面防锈处理时，请咨询授权代理商。

The complete assembly unit has no rust prevention on surface.

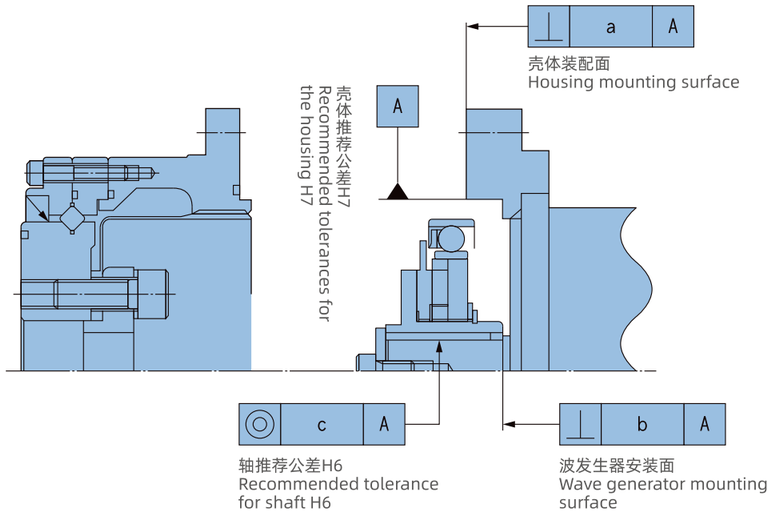
Please daub anti-rust if needed Besides, if an anti-rust product is needed, please contact with the authorized distributor.

PRECAUTIONS ON INSTALLATION
安装时注意事项

HC系列组装精度 Assembly accuracy of HC series

在安装设计时，为充分发挥组合型所具备的优良性能，请确保使用如下图表精度。

To make sure　CS series play its excellent performance when assemble, please make sure to use the following accuracy.



组装壳体的推荐精度 Recommended accuracy of the assembled housing

单位unit：mm

符号 Symbol / 型号 Model	14	17	20	25	32
a	0.011	0.015	0.017	0.024	0.026
b	0.017	0.020	0.020	0.024	0.024
	(0.008)	(0.010)	(0.010)	(0.012)	(0.012)
c	0.030	0.034	0.044	0.047	0.050
	(0.016)	(0.018)	(0.019)	(0.022)	(0.022)

※b、c为盘式发生器（I型）与十字滑块波发生器（II型）的数值。其中（）内的数值是为盘式发生器（I型）的数值。

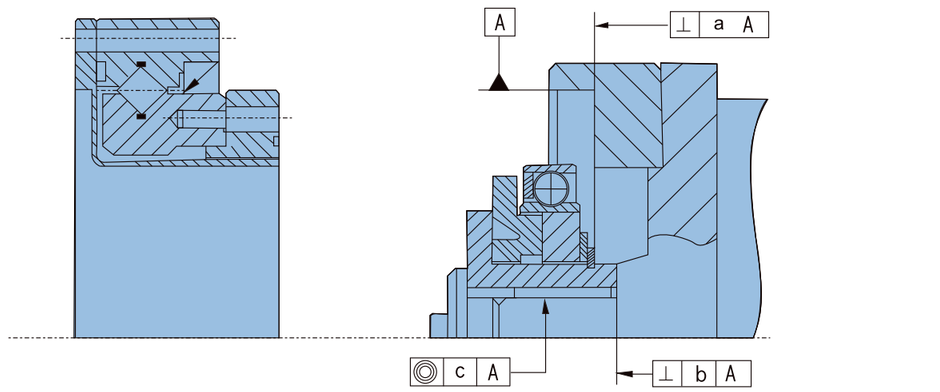
※b.c is the value of the unibody generator(I series)and the cross slider generator(II series). The value in( )is the value of the unibody generator(I series).

PRECAUTIONS ON INSTALLATION
安装时注意事项

HS系列组装精度 Assembly accuracy of HS series

为了充分发挥　ST-I型的优良性能，请确保如下图表所示的推荐精度。

To make sure　ST-I series play its excellent performance when assemble, please make sure to use the following accuracy.



组装壳体的推荐精度 Recommended accuracy of the assembled housing

单位unit：mm

符号 Symbol / 型号 Model	14	17	20	25	32	40
a	0.011	0.015	0.017	0.024	0.026	0.026
b	0.017	0.020	0.020	0.024	0.024	0.032
	(0.008)	(0.010)	(0.010)	(0.012)	(0.012)	(0.012)
c	0.030	0.034	0.044	0.047	0.047	0.050
	(0.016)	(0.018)	(0.019)	(0.022)	(0.022)	(0.024)

※b、c为盘式发生器（I型）与十字滑块波发生器（II型）的数值。其中（）内的数值是为盘式发生器（I型）的数值。

※b.c is the value of the unibody generator(I series)and the cross slider generator(II series). The value in( )is the value of the unibody generator(I series).

LUBRICANT INFORMATION
润滑剂

润滑剂的使用 Grease

Sumiplex MP HW-1（深圳市鸿汇科技有限公司）
Sumiplex MP HW-1 (Shenzhen Homwing Technology Co., Ltd.)

使用温度范围：0 ~ 40℃（环境温度）
Operating temperature range：0-40℃(ambient temperature)

润滑剂的涂抹 Grease application

按照以下要求在减速机各部位涂抹润滑剂。
Please apply grease according to the table below.

润滑剂涂抹量 Grease application

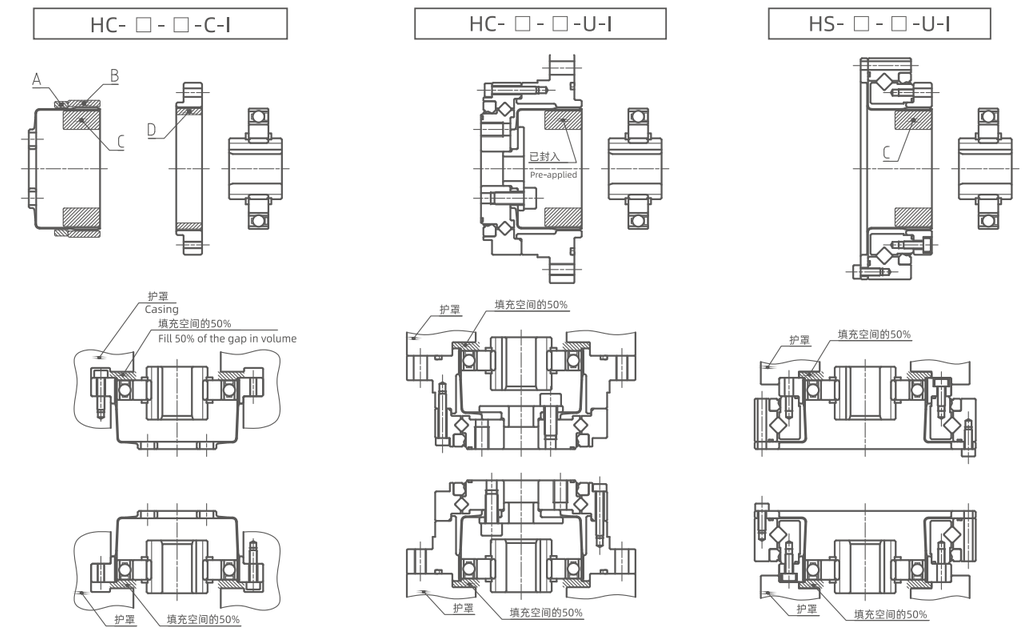
- 根据减速机的安装方向（输出侧为横向、向上、向下）不同，变更涂抹部位C的涂抹量。（已封入润滑油的组合类型，填充了C（横向）的润滑油量。）
- 减速机为向上、向下时，请填充输入ASSY～护罩内壁空间的50%的润滑剂。
- 由于护罩设计造成润滑剂不足时，请咨询本公司。

- The quantity of grease applied to C should be adjusted depending on the mounting direction. C of the unit type product is already filled with the same quantity of grease as horizontal mounting.
- For vertical up/down, 50% of the space between input assy and casing inner wall should be filled with grease.
- If the amount of grease is not sufficient due to case design, please contact us.

（g）

尺寸 Size	涂抹部位 Applied part					
	A	B	C（横向）Horizontal	C（向上）Vertical up	C（向下）Vertical down	D
14	0.3	0.3	6	8	9	0.3
17	0.5	0.5	10	12	14	0.5
20	0.8	0.8	16	18	21	0.8
25	1.5	1.5	30	35	40	1.5
32	3.0	3.0	60	70	80	3.0

润滑剂涂抹部位 Grease application location



TRANSMITTING TORQUE
传导力矩

安装螺丝 Bolting

螺丝紧固力矩如下表所示。
通过螺丝个数及紧固力矩调整，可传导力矩存在差异，所以请注意确认。

Please refer to the table below for the bolt tightening torque.
Please be noted that the transmittable torque varies depending on the bolt count and tightening torque.

螺丝紧固力矩
Tightening torque for bolts

螺丝尺寸	Bolt size	M3	M4	M5	M6	M8	M10
紧固力矩 [Nm]	Tightening torque	1.9	4.3	8.7	15	36	71

建议螺丝：强度区分12.9以上
Recommended bolt :
Strength rating above 12.9

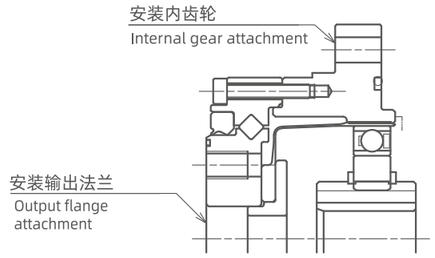
传导力矩（封闭型、组合型）
Bolt specifications and Transmitting torque (Closed type, Unit)

安装输出法兰 Output flange attachment

尺寸	Size	14	17	20	25	32
螺丝尺寸	Bolt size	M4	M5	M6	M8	M10
螺丝个数	Bolt count	6	6	8	8	8
安装PCD [mm]	Bolt PCD	23	27	32	42	55
紧固力矩 [Nm]	Tightening torque	4.3	8.7	15	36	71
传导力矩 [Nm]	Transmitting torque	56	106	238	566	1177

安装内齿轮 Internal Gear Attachment

尺寸	Size	14	17	20	25	32
螺丝尺寸	Bolt size	M4	M4	M5	M5	M6
螺丝个数	Bolt count	8	8	8	10	12
安装PCD [mm]	Bolt PCD	65	71	82	96	125
紧固力矩 [Nm]	Tightening torque	4.3	4.3	8.7	8.7	15
传导力矩 [Nm]	Transmitting torque	210	230	430	629	1392



TRANSMITTING TORQUE
传导力矩

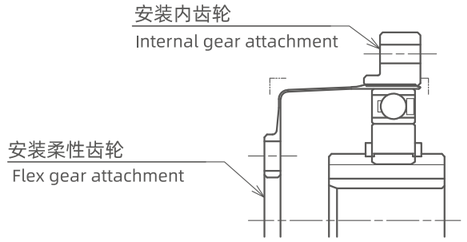
传导力矩（封闭型、部件型）
Bolt specifications and Transmitting torque (Closed type, Component)

安装柔性齿轮 Flex Gear Attachment

尺寸	Size	14	17	20	25	32
螺丝尺寸	Bolt size	M4	M5	M5	M6	M8
螺丝个数	Bolt count	6	6	8	8	8
安装PCD [mm]	Bolt PCD	17	19	24	30	40
紧固力矩 [Nm]	Tightening torque	4.3	8.7	8.7	15	36
传导力矩 [Nm]	Transmitting torque	41	75	126	223	539

安装内齿轮 Internal Gear Attachment

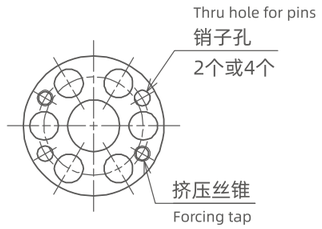
尺寸	Size	14	17	20	25	32
螺丝尺寸	Bolt size	M3	M3	M3	M4	M5
螺丝个数	Bolt count	8	16	16	16	16
安装PCD [mm]	Bolt PCD	44	54	62	75	100
紧固力矩 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
传导力矩 [Nm]	Transmitting torque	82	200	230	485	1048



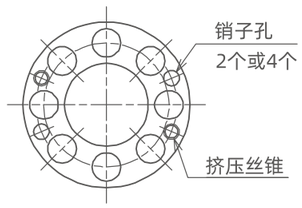
销子孔的追加
Reinforcement

柔性齿轮安装的传导力矩未满足要求时，请同时使用销子。
销子孔可根据需求追加。

Pins can be added if the transmittable torque at the flex gear interface is not sufficient.
As an option, holes can be added.



HC 14,17



HC 20,25,32

TRANSMITTING TORQUE
传导力矩

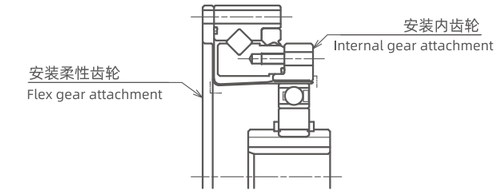
传导力矩（开放型）
Bolt specifications and Transmitting torque (Open type)

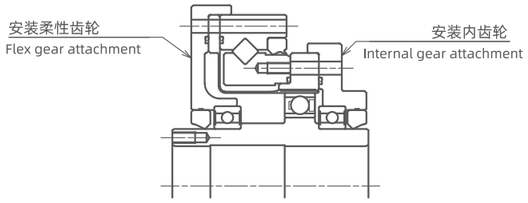
安装柔性齿轮 Flex Gear Attachment

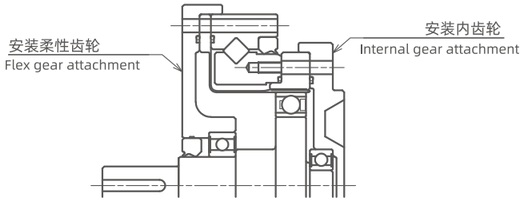
尺寸	Size	14	17	20	25	32
螺丝尺寸	Bolt size	M3	M3	M3	M4	M5
螺丝个数	Bolt count	8	12	12	12	12
安装PCD [mm]	Bolt PCD	64	74	84	102	132
紧固力矩 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
传导力矩 [Nm]	Transmitting torque	119	206	234	495	1037

安装内齿轮 Internal Gear Attachment

尺寸	Size	14	17	20	25	32
螺丝尺寸	Bolt size	M3	M3	M3	M4	M5
螺丝个数	Bolt count	8	16	16	16	16
安装PCD [mm]	Bolt PCD	44	54	62	77	100
紧固力矩 [Nm]	Tightening torque	1.9	1.9	1.9	4.3	8.7
传导力矩 [Nm]	Transmitting torque	82	200	230	498	1048







SPECIFICATION OF MAIN BEARING
主轴承的规格

HC/ YC系列规格表 Specification of HC/ YC series

每个产品都组装有精密交叉滚子轴承用于直接支撑外部负载（输出法兰部）。

Each product is assembled with precise cross roller bearing for supporting external loading(Output flange).

系列 Series	型号 Type	基本额定负载 Basic rated load				容许静力矩Mc Allowable static moment Mc		重量 Weight
		基本额定动负载Cr Basic rated dynamic load Cr		基本额定静负载Cr Basic rated static load Cr				
		KN	kgf	KN	kgf	Nm	Kgfm	kg
HC series	14	4.7	480	6.07	620	41	4.2	0.22
	17	5.3	540	7.55	770	64	6.5	0.3
	20	5.8	590	9.0	920	91	9.3	0.38
	25	9.6	980	15.1	1540	156	16	0.6
	32	15	1530	25.0	2550	313	32	1.1
YC series	20	5.8	590	9.0	920	91	9.3	0.38
	25	9.6	980	15.1	1540	156	16	0.6
	32	15	1530	25.0	2550	313	32	1.1

※基本额定动负载是指，使轴承的基本动态额定寿命达到100万转的一定的静止径向负载。
※基本额定静负载是指，在承受最大负载的转动体和轨道的接触部中央位置，施加一定水平的接触应力（4kN/mm²）的静态负载。
※容许静力矩是指，对输出轴承可能施加最大的力矩载荷，如在此范围内，能够保持基本性能并可工作的数值。

※Basic rated dynamic load refers to static radial load that makes dynamic rated life of bearing reach up to 1 million rotations.
※Basic rated static load refers to static load that exerts a certain level of contact stress(4K/mm²) on the central location between rotor of bearing maximum load and contact part of pathway.
※Allowable static moment refers to the value of the maximum torque exerting on output bearing, within the scope of which, it's workable and the basic performance is possible.

HC/ YC系列启动转矩 Starting torgue of HC/ YC series

单位unit：cNm

减速比 Reduction ratio \ 型号 Type	HC series						YC series		
	11	14	17	20	25	32	20	25	32
50	2.0	4.1	6.1	7.8	15	31	7.8	15	31
80	1.8	2.8	4	4.9	9.2	19	4.9	9.2	19
100	1.5	2.5	3.4	4.3	8	18	4.3	8	18
120	-	2.3	3.1	3.8	7.3	15	3.8	7.3	15
160	-	-	-	3.3	-	-	3.3	-	-

HS/ YT系列规格表 Specification of HS/ YT series

型号 Type	基本额定负载 Basic rated load				容许静力矩Mc Allowable static moment Mc		重量 Weight
	基本额定动负载Cr Basic rated dynamic load Cr		基本额定静负载Cr Basic rated static load Cr				
	KN	kgf	KN	kgf	Nm	Kgfm	kg
14	5.8	590	8.6	880	74	7.6	0.39
17	10.4	1060	16.3	1670	124	12.6	0.56
20	14.6	1490	22	2250	187	19.1	0.73
25	21.8	2230	35.8	3660	258	26.3	1.23
32	38.2	3900	65.4	6680	580	59.1	2.54
40	43.3	4410	81.6	8330	849	86.6	7.2

※基本额定动负载是指，使轴承的基本动态额定寿命达到100万转的一定的静止径向负载。
※基本额定静负载是指，在承受最大负载的转动体和轨道的接触部中央位置，施加一定水平的接触应力（4kN/mm²）的静态负载。
※容许静力矩是指，对输出轴承可能施加最大的力矩载荷，如在此范围内，能够保持基本性能并可工作的数值。

※Basic rated dynamic load refers to static radial load that makes dynamic rated life of bearing reach up to 1 million rotations.
※Basic rated static load refers to static load that exerts a certain level of contact stress(4K/mm²) on the central location between rotor of bearing maximum load and contact part of pathway.
※Allowable static moment refers to the value of the maximum torque exerting on output bearing, within the scope of which, it's workable and the basic performance is possible.

SPECIFICATION OF MAIN BEARING
主轴承的规格

中空型(HS-III)启动转矩 Starting torgue of hollow type(HS-III)

单位unit：cNm

减速比 Reduction ratio \ 型号 Type	14	17	20	25	32	40
50	8.8	27	36	56	85	136
80	7.5	25	33	50	74	117
100	6.9	24	32	49	72	112
120	6.9	24	31	48	68	110
160	-	-	31	-	-	-

中空型(HS-III)同步带紧张力矩推荐值 Hollow type(HS-III) timing belt tension torque recommended value

单位unit：Nm

发生器承载扭矩 Generator load torque	型号 Model	14	17	20	25	32	40
最大Maximum	HS-III	25	25	52	52	87	87

轴输入型(HS-IV)启动转矩 Starting torque of input axial type(HS-IV)

单位unit：cNm

减速比 Reduction ratio \ 型号 Type	14	17	20	25	32	40
50	5.7	9.7	14	22	41	72
80	4.4	7.2	11	15	29	52
100	3.7	6.5	9.9	14	27	47
120	3.4	6.2	9.3	13	24	44
160	-	-	8.6	-	-	-

输轴入型(HS-IV)同步带紧张力矩推荐值 Axial input(HS-IV)timing belt tension torgue recommended value

单位unit：Nm

发生器承载扭矩 Generator load torque	型号 Model	14	17	20	25	32
最大Maximum	HS-IV	13	19	25	25	52

MOMENT LOAD TABLE
弯矩负载表

CS/ CN/ CG/ YC系列谐波减速器弯矩负载表 Moment load table

型号 Model	设计值 Design value	启动停止允许值 Permissible value at start and stop	瞬间允许值 Instant permissible value
CS/ CN/ CG-14	M b di 20Nm	M b peak 40Nm	M b max 80Nm
	F t di 180N	F t peak 320N	F t max 560N
	F a di 180N	F a peak 320N	F a max 560N
CS/ CN/ CG-17	M b di 30Nm	M b peak 60Nm	M b max 120Nm
	F t di 230N	F t peak 400N	F t max 700N
	F a di 230N	F a peak 400N	F a max 700N
CS/ CN/ CG/ YC-20	M b di 42Nm	M b peak 80Nm	M b max 168Nm
	F t di 270N	F t peak 480N	F t max 830N
	F a di 270N	F a peak 480N	F a max 830N
CS/ CN/ CG/ YC-25	M b di 80Nm	M b peak 160Nm	M b max 313Nm
	F t di 440N	F t peak 770N	F t max 1320N
	F a di 440N	F a peak 770N	F a max 1320N
CS/ CN/ CG/ YC-32	M b di 220Nm	M b peak 440Nm	M b max 890Nm
	F t di 900N	F t peak 1600N	F t max 2700N
	F a di 900N	F a peak 1600N	F a max 2700N
CS/ CN/ CG/-40	M b di 320Nm	M b peak 650Nm	M b max 1260Nm
	F t di 1000N	F t peak 1750N	F t max 3000N
	F a di 1000N	F a peak 1750N	F a max 3000N

ST/ SN/ SG/ YT系列谐波减速器弯矩负载表 Moment load table

型号 Model	设计值 Design value	启动停止允许值 Permissible value at start and stop	瞬间允许值 Instant permissible value
ST/ SN/ SG/ YT-14	M b di 41Nm	M b peak 80Nm	M b max 160Nm
	F t di 270N	F t peak 490N	F t max 830N
	F a di 270N	F a peak 490N	F a max 830N
ST/ SN/ SG/ YT-17	M b di 72Nm	M b peak 140Nm	M b max 290Nm
	F t di 400N	F t peak 700N	F t max 1200N
	F a di 400N	F a peak 700N	F a max 1200N
ST/ SN/ SG/ YT-20	M b di 140Nm	M b peak 280Nm	M b max 560Nm
	F t di 650N	F t peak 1150N	F t max 1980N
	F a di 650N	F a peak 1150N	F a max 1980N
ST/ SN/ SG/ YT-25	M b di 243Nm	M b peak 480Nm	M b max 974Nm
	F t di 900N	F t peak 1600N	F t max 2800N
	F a di 900N	F a peak 1600N	F a max 2800N
ST/ SN/ SG/ YT-32	M b di 460Nm	M b peak 900Nm	M b max 1860Nm
	F t di 1350N	F t peak 2300N	F t max 4000N
	F a di 1350N	F a peak 2300N	F a max 4000N
ST/ SN/ SG/ YT-40	M b di 600Nm	M b peak 1200Nm	M b max 3000Nm
	F t di 2000N	F t peak 3500N	F t max 6000N
	F a di 2000N	F a peak 3500N	F a max 6000N

备注：输出端负载M b——弯矩，F t—径向力，F a——轴向力
Note: Output load M b-bending moment, F t-radial force, F a-axial force

MOMENT LOAD TABLE
弯矩负载表

CD系列谐波减速器弯矩负载表 Moment load table of CD series

型号 Model	设计值 Design value	启动停止允许值 Permissible value at start and stop	瞬间允许值 Instant permissible value
CD-14	M b di 20Nm	M b peak 40Nm	M b max 80Nm
	F t di 180N	F t peak 320N	F t max 560N
	F a di 180N	F a peak 320N	F a max 560N
CD-17	M b di 30Nm	M b peak 60Nm	M b max 120Nm
	F t di 230N	F t peak 400N	F t max 700N
	F a di 230N	F a peak 400N	F a max 700N
CD-20	M b di 42Nm	M b peak 80Nm	M b max 168Nm
	F t di 270N	F t peak 480N	F t max 830N
	F a di 270N	F a peak 480N	F a max 830N
CD-25	M b di 80Nm	M b peak 160Nm	M b max 313Nm
	F t di 440N	F t peak 770N	F t max 1320N
	F a di 440N	F a peak 770N	F a max 1320N
CD-32	M b di 220Nm	M b peak 440Nm	M b max 890Nm
	F t di 900N	F t peak 1600N	F t max 2700N
	F a di 900N	F a peak 1600N	F a max 2700N

SD系列谐波减速器弯矩负载表 Moment load table of SD series

型号 Model	设计值 Design value	启动停止允许值 Permissible value at start and stop	瞬间允许值 Instant permissible value
SD-14	M b di 41Nm	M b peak 800Nm	M b max 160Nm
	F t di 270N	F t peak 490N	F t max 830N
	F a di 270N	F a peak 490N	F a max 830N
SD-17	M b di 59Nm	M b peak 140Nm	M b max 239Nm
	F t di 330N	F t peak 570N	F t max 990N
	F a di 330N	F a peak 570N	F a max 990N
SD-20	M b di 117Nm	M b peak 230Nm	M b max 468Nm
	F t di 550N	F t peak 975N	F t max 1680N
	F a di 550N	F a peak 975N	F a max 1680N
SD-25	M b di 213Nm	M b peak 420Nm	M b max 855Nm
	F t di 790N	F t peak 1400N	F t max 2450N
	F a di 790N	F a peak 1400N	F a max 2450N
SD-32	M b di 400Nm	M b peak 800Nm	M b max 1600Nm
	F t di 1240N	F t peak 2100N	F t max 3680N
	F a di 1240N	F a peak 2100N	F a max 3680N
SD-40	M b di 600Nm	M b peak 1200Nm	M b max 2520Nm
	F t di 1530N	F t peak 2670N	F t max 4600N
	F a di 1530N	F a peak 2670N	F a max 4600N

备注：输出端负载M b——弯矩，F t—径向力，F a——轴向力
Note: Output load M b-bending moment, F t-radial force, F a-axial force

C SERIES

C系列谐波减速器
C series harmonic reducer

低噪音 Low noise
大扭力 Large torque
高精度 High-precision
耐磨耐用 Wear resistance and durability
使用寿命长 Long service life





SERIES INTRODUCTION
系列介绍

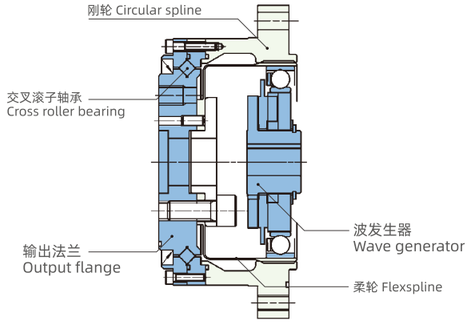


应用领域
Application

- 工业机器人 Industrial robot
- 服务机器人 Service robots
- 金属机床 Metal machine tools
- 医疗器械 Medical Devices
- 测定、分析、试验设备 Analysis, Test, Equipmen
- 能源相关设备 Energy Related equipment
- 造纸设备 Papermaking Equipment

CS/ CN-I系列组合型结构
Combinative structure of CS/ CN-I series

标准型（ CS/ CN-I） Standard type (CS/ CN-I)



CS 系列Series

易于操作的组合化产品。每个型号都有用于支撑外部负载，具有高刚性的交叉滚子轴承。

A combination product which is easy to operate. Each model has a cross-roller bearing that with high rigidity to support externa loads.

CN 系列Series

轻量型产品，在不改变性能的前提下，相比标准品，重量减少了30%。

A light weight product . Compare with standard product that with the same performance , CN series is 30% lighter .

CS/ CN-I系列额定参数表 Rated parameter table of CS/ CN-I series

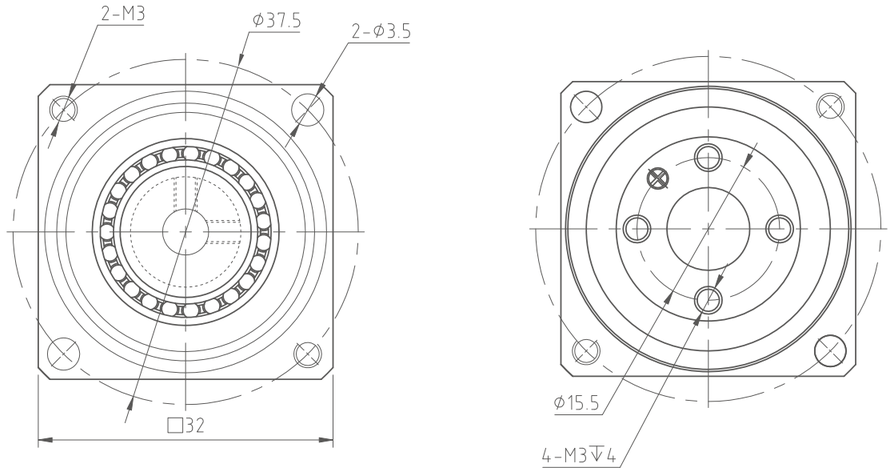
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input	起动停止时的容许峰值转矩 Permissible peak torque at start and stop	平均负载转矩的容许最大值 Permissible maximum value for average load torque	瞬间容许最大转矩 Permissible maximum momentary torque	容许最高输入转速(脂润滑) Permissible maximum input rotational speed (Grease)	容许平均输入转速(脂润滑) Permissible average input rotational speed (Greaae)	转动惯量 Moment of inertia
		Nm	Nm	Nm	Nm	r/min	r/min	$kgcm^2$
8	50	1.8	3.3	2.3	6.6	8500	3500	$1.4x10^{-2}$ $1.2x10^{-2}$
	100	2.4	4.8	3.3	9.0			
11	50	3.5	8.3	5.5	17.0	8500	3500	
	80	4.5	9.9	8.0	22.5			
	100	5.0	11	8.9	25.0			

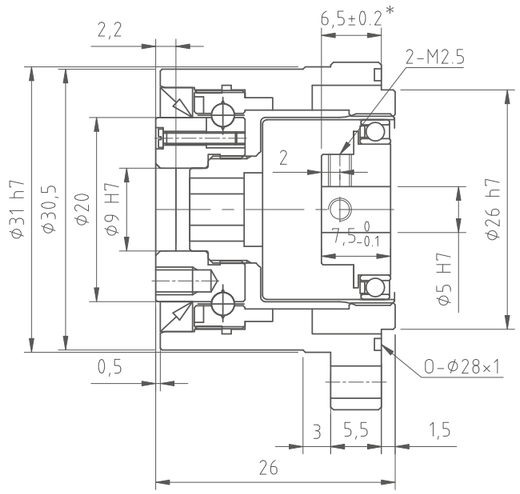
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速(脂润滑) Permissible maximum input rotational speed (Grease)	容许平均输入转速(脂润滑) Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	5.4	0.55	18	1.8	6.9	0.70	35	3.6	8500	3500	≤20	10000
	80	7.8	0.80	23	2.4	11	1.1	47	4.8				15000
	100	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
	120	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
17	50	16	1.6	34	3.5	26	2.6	70	7.1	7300	3500	≤20	10000
	80	22	2.2	43	4.4	27	2.7	87	8.9				15000
	100	24	2.4	54	5.5	39	4.0	108	11				15000
	120	24	2.4	54	5.5	39	4.0	86	8.8				15000
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	≤20	10000
	80	34	3.5	74	7.5	47	4.8	127	13				15000
	100	40	4.1	82	8.4	49	5.0	147	15				15000
	120	40	4.1	87	8.9	49	5.0	147	15				15000
	160	40	4.1	92	9.4	49	5.0	147	15				15000
25	50	39	4.0	98	10	55	5.6	186	19	5600	3500	≤20	10000
	80	63	6.4	137	14	87	8.9	255	26				15000
	100	67	6.8	157	16	108	11	284	29				15000
	120	67	6.8	167	17	108	11	304	31				15000
32	50	76	7.8	216	22	108	11	382	39	4800	3500	≤20	10000
	80	118	12	304	31	167	17	568	58				15000
	100	137	14	333	34	216	22	647	66				15000
	120	137	14	353	36	216	22	686	70				15000
40	50	137	14	402	41	196	20	686	70	4000	3000	≤20	10000
	80	206	21	519	53	284	29	980	100				15000
	100	265	27	568	58	372	35	1080	110				15000
	120	294	30	617	63	451	46	1180	120				15000

CS/ CN-8-XX-U-I

8型谐波减速器 8 harmonic reducer

结构图 STRUCTURE CHART

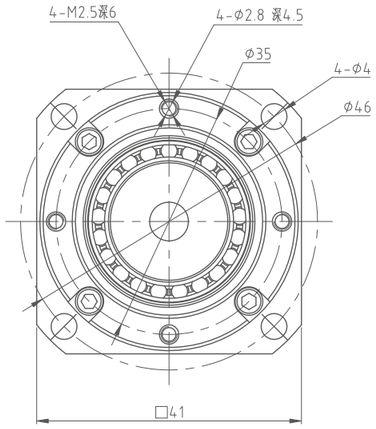


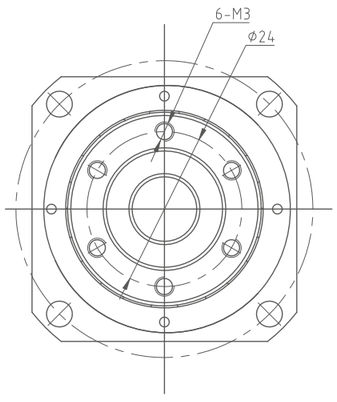


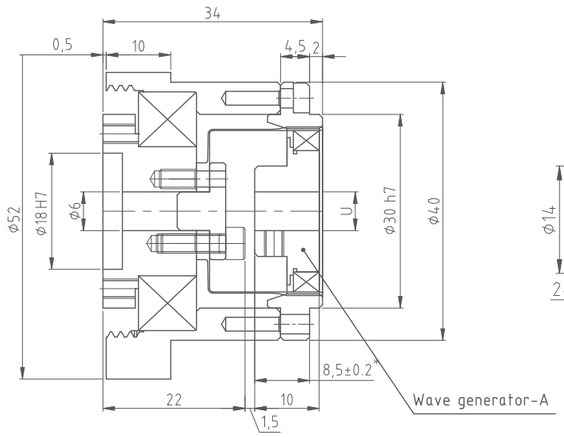
CS/ CN-11-XX-U-I

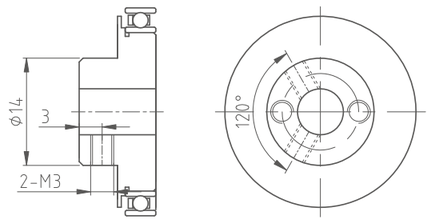
11型谐波减速器 11 harmonic reducer

结构图 STRUCTURE CHART







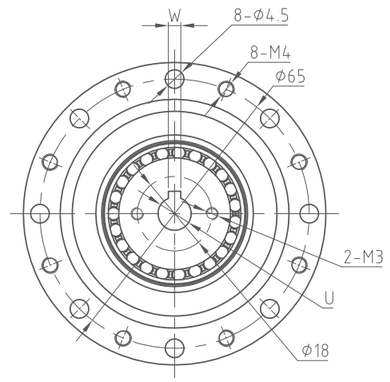


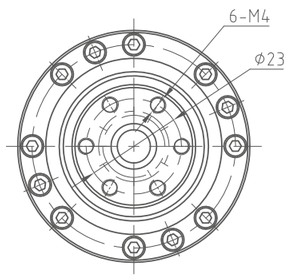
型号/MODEL	U	T	W
Wave generator-A φ5	φ5H7		
Wave generator-A φ6	φ6H7		

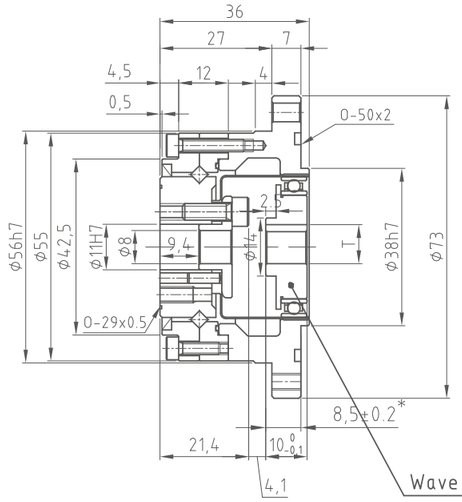
CS/ CN-14-XX-U-I

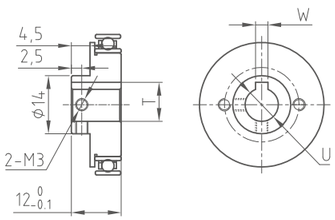
14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART







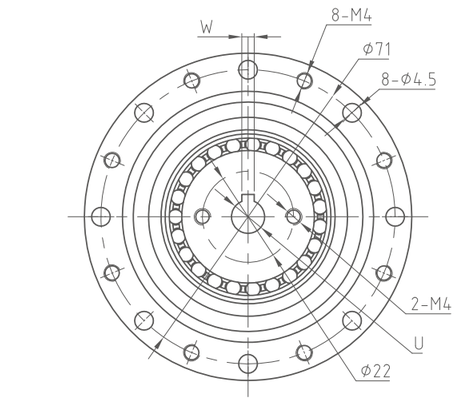


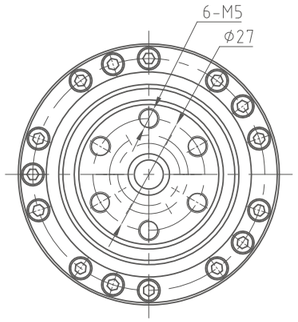
型号/MODEL	U	T	W
Wave generator-A φ6	φ6H7	7 +0.1 0	2JS9/P9
Wave generator-A φ8	φ8H7	9.4 +0.1 0	3JS9/P9

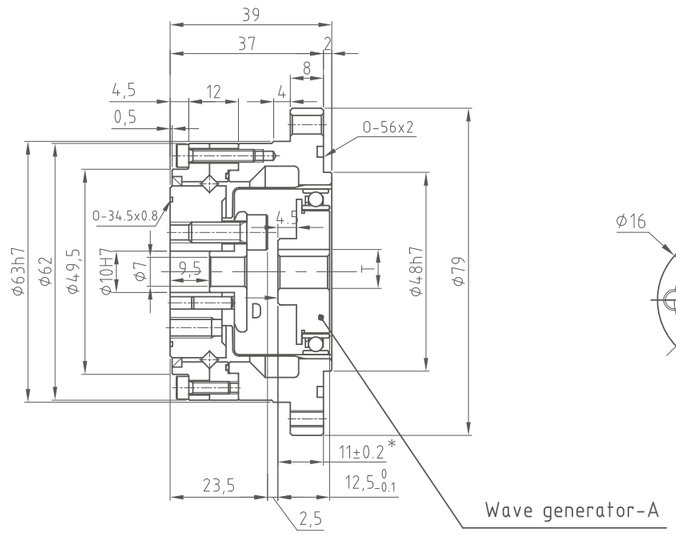
CS/ CN-17-XX-U-I

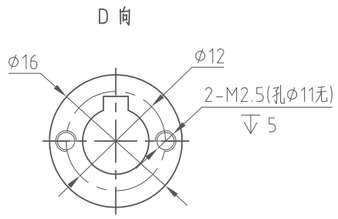
17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART







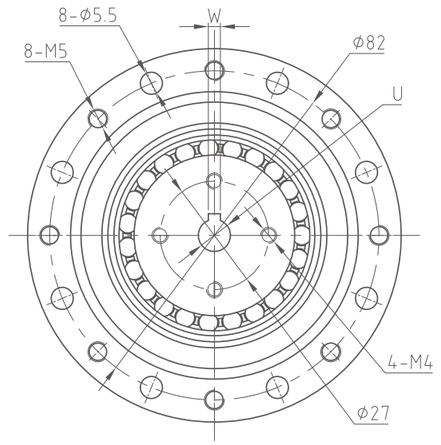


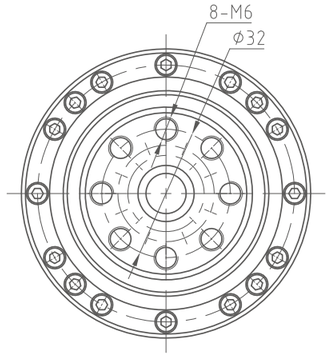
型号/MODEL	U	T	W
Wave generator-A φ8	φ8H7	9.4 +0.1 0	3JS9/P9
Wave generator-A φ11	φ11H7	12.8 +0.1 0	4JS9/P9

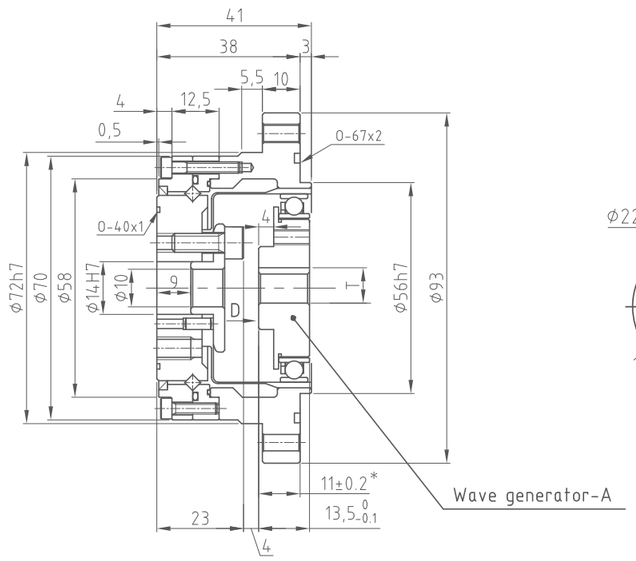
CS/ CN-20-XX-U-I

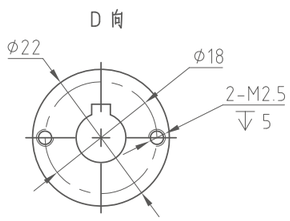
20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART







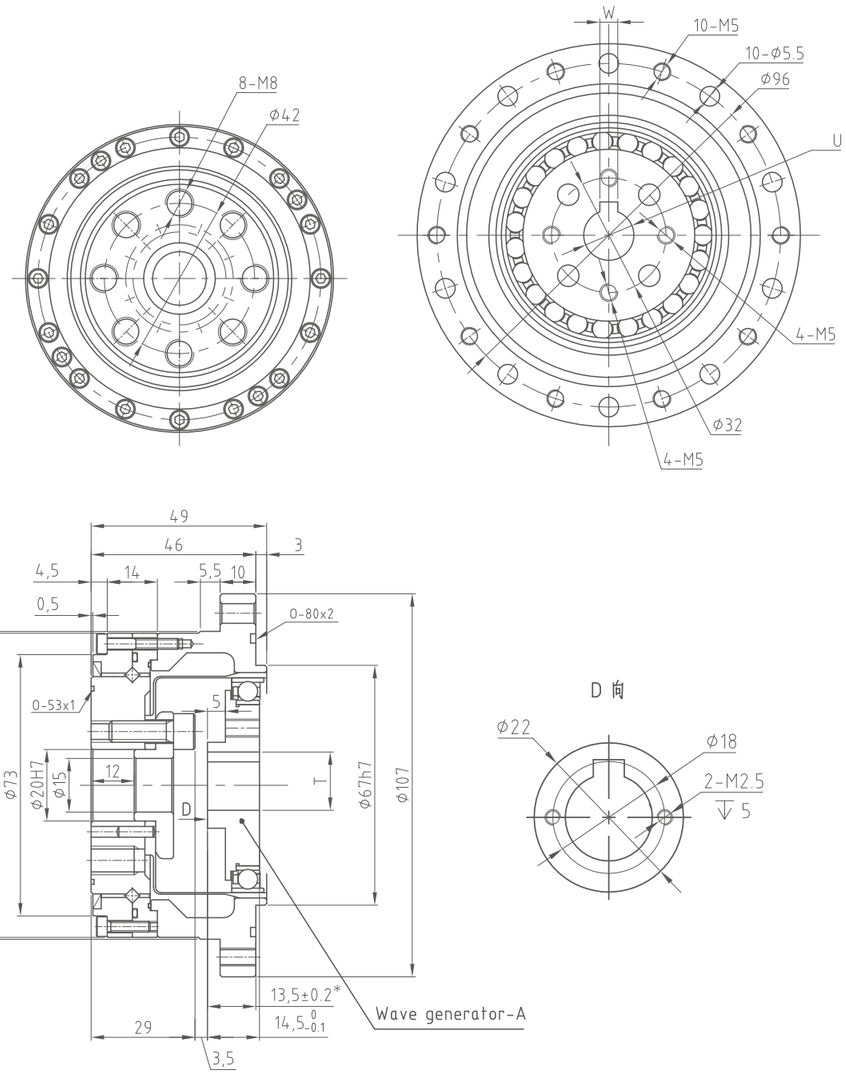


型号/MODEL	U	T	W
Wave generator-A φ8	φ8H7	9.4 +0.1 0	3JS9/P9
Wave generator-A φ11	φ11H7	12.8 +0.1 0	4JS9/P9
Wave generator-A φ14	φ14H7	16.3 +0.1 0	5JS9/P9

CS/ CN-25-XX-U-I

25型谐波减速器 25 harmonic reducer

结构图 STRUCTURE CHART

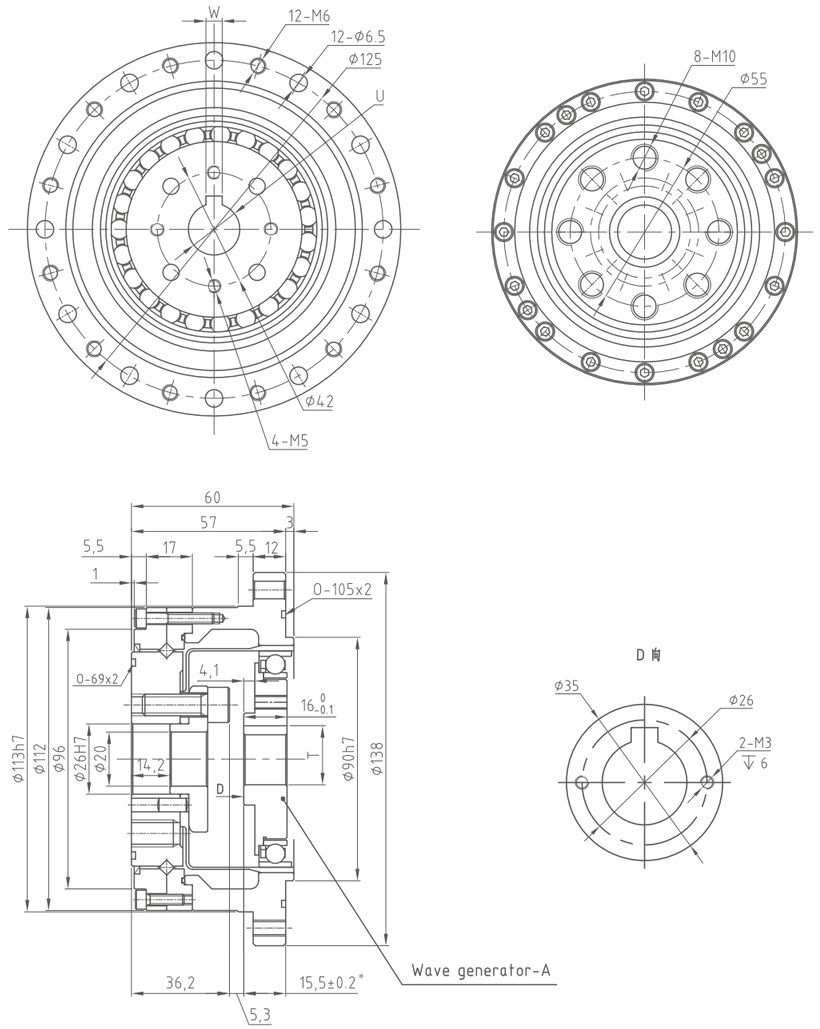


型号/MODEL	U	T	W
Wave generator-A Φ11	Φ11H7	12.8 +0.1 0	4JS9/P9
Wave generator-A Φ14	Φ14H7	16.3 +0.1 0	5JS9/P9

CS/ CN-32-XX-U-I

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART

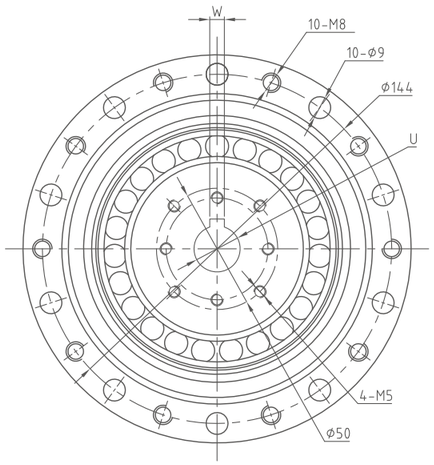


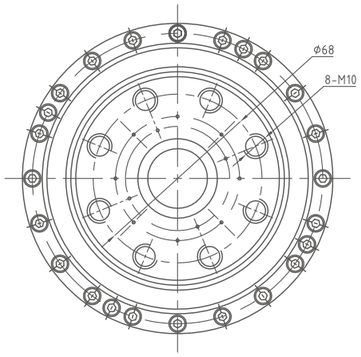
型号/MODEL	U	T	W
Wave generator-A Φ14	Φ14H7	16.3 +0.1 0	5JS9/P9
Wave generator-A Φ19	Φ19H7	21.8 +0.1 0	6JS9/P9
Wave generator-A Φ22	Φ22H7	24.8 +0.1 0	6JS9/P9
		25.3 +0.1 0	8JS9/P9

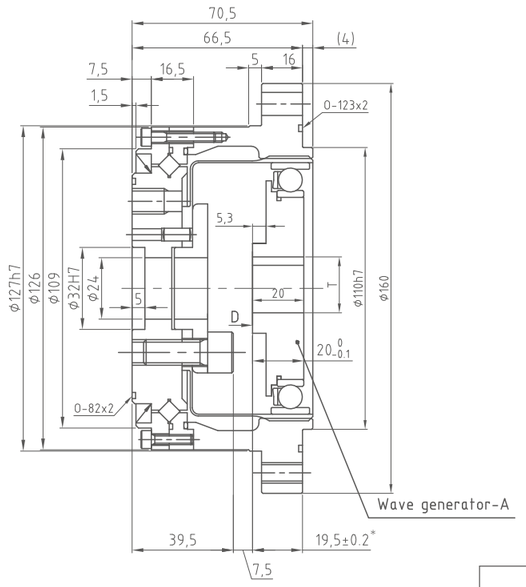
CS/ CN-40-XX-U-I

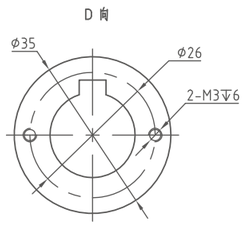
40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART







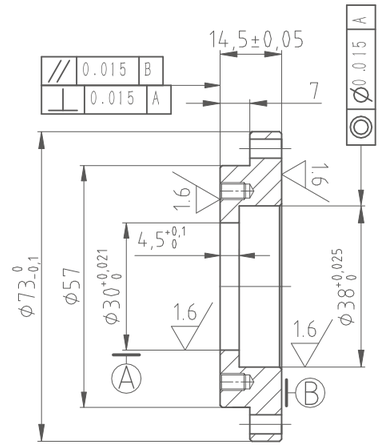


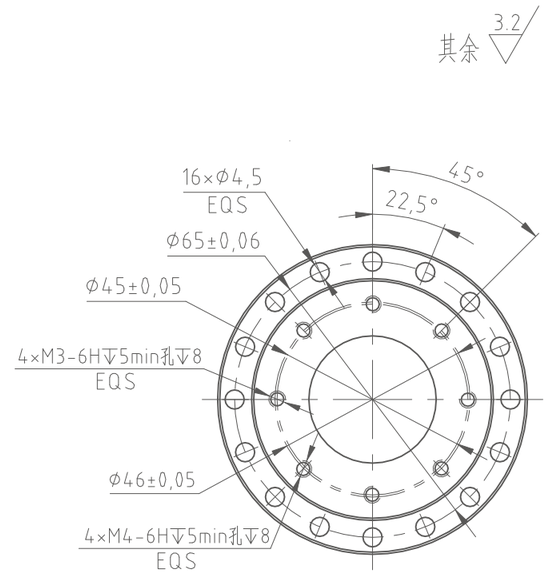
型号/MODEL	U	T	W
Wave generator-A φ14	φ14H7	16.3 +0.1 0	5JS9/P9
Wave generator-A φ19	φ19H7	21.8 +0.1 0	6JS9/P9
Wave generator-A φ22	φ22H7	24.8 +0.1 0	6JS9/P9
		25.3 +0.1 0	8JS9/P9

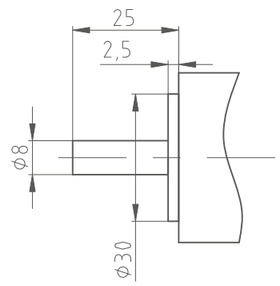
CS/ CN-14-01

法兰板图纸 Flange plate drawing

结构图 STRUCTURE CHART



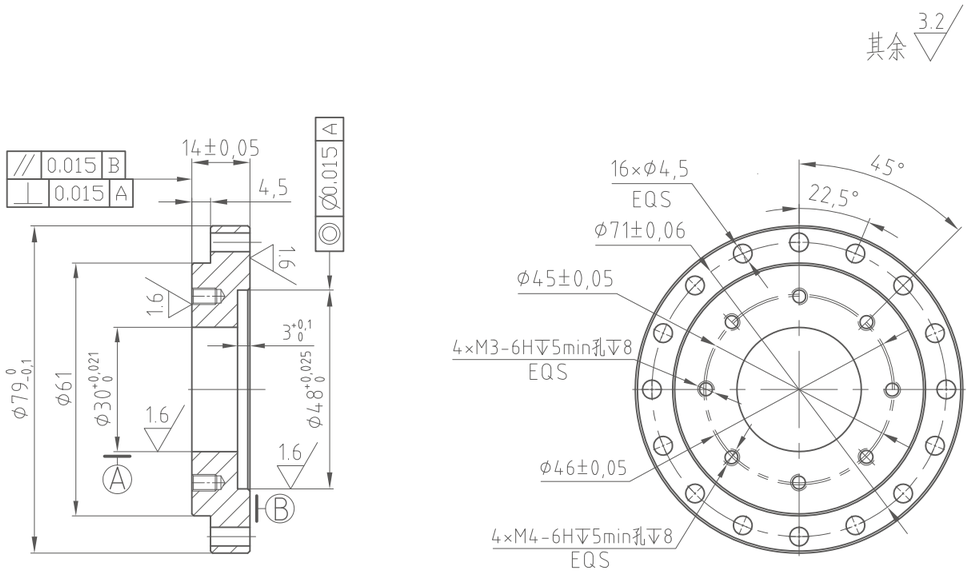


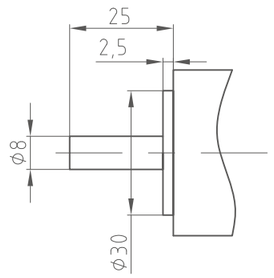


CS/ CN-17-01

法兰板图纸 Flange plate drawing

结构图 STRUCTURE CHART

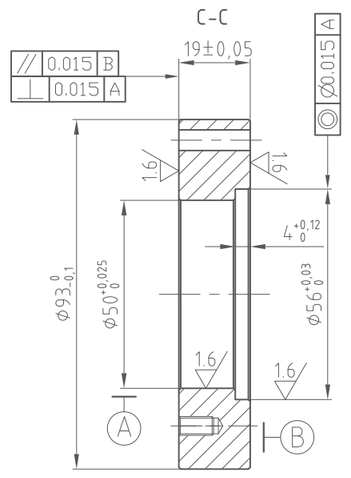


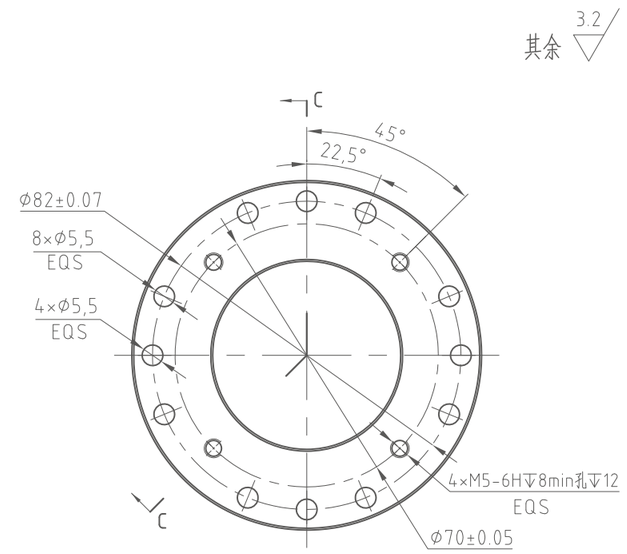


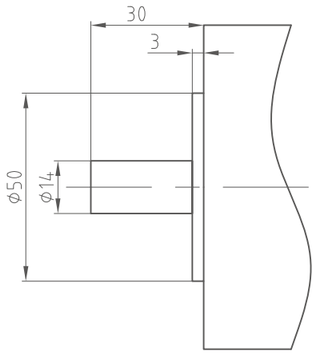
CS/ CN-20-01

法兰板图纸 Flange plate drawing

结构图 STRUCTURE CHART



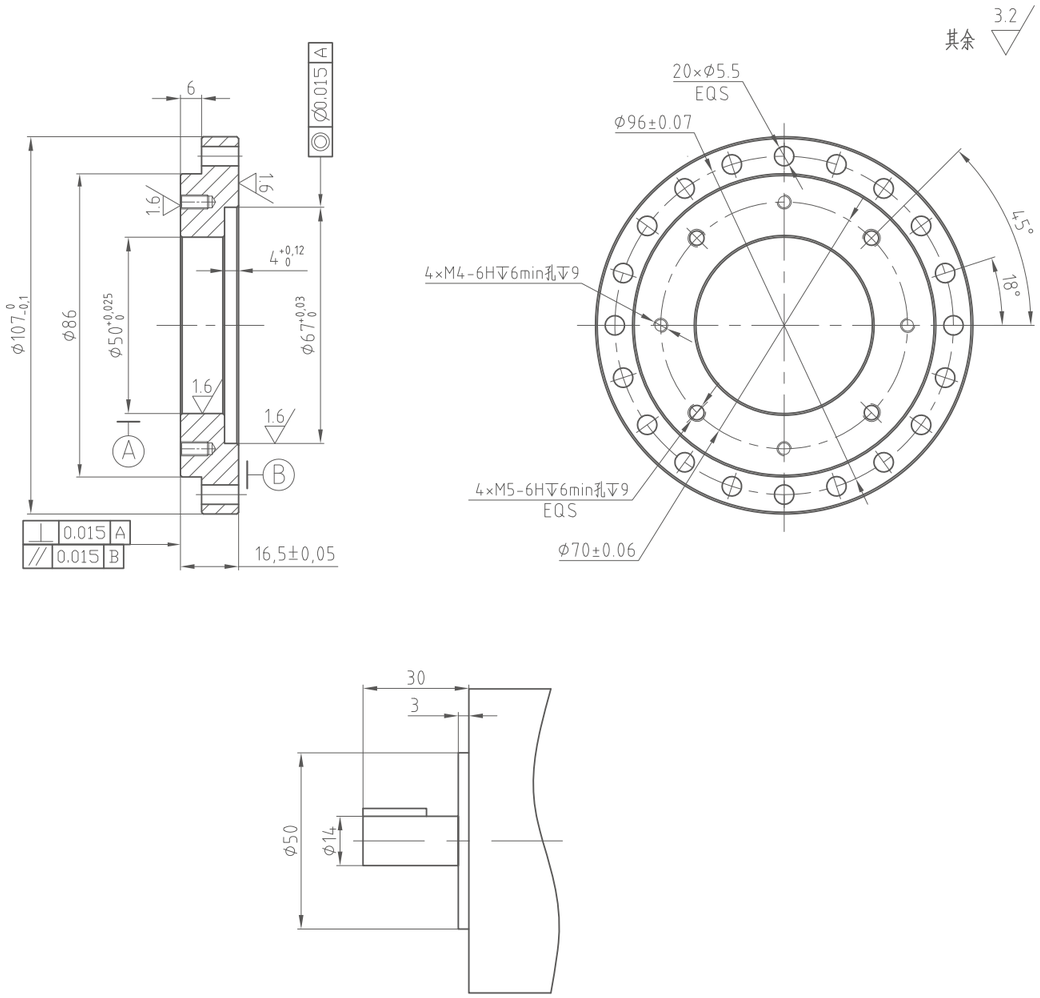




CS/ CN-25-01

法兰板图纸 Flange plate drawing

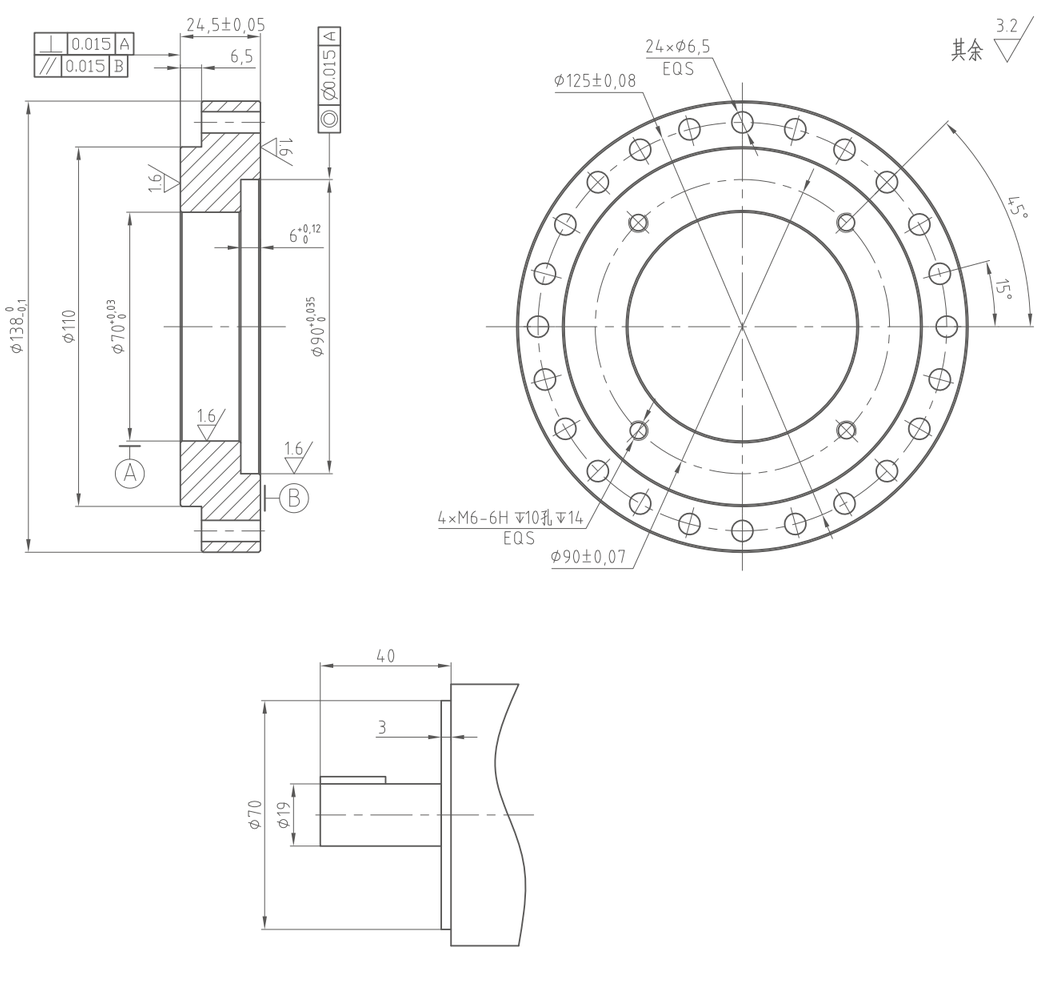
结构图 STRUCTURE CHART



CS/ CN-32-01

法兰板图纸 Flange plate drawing

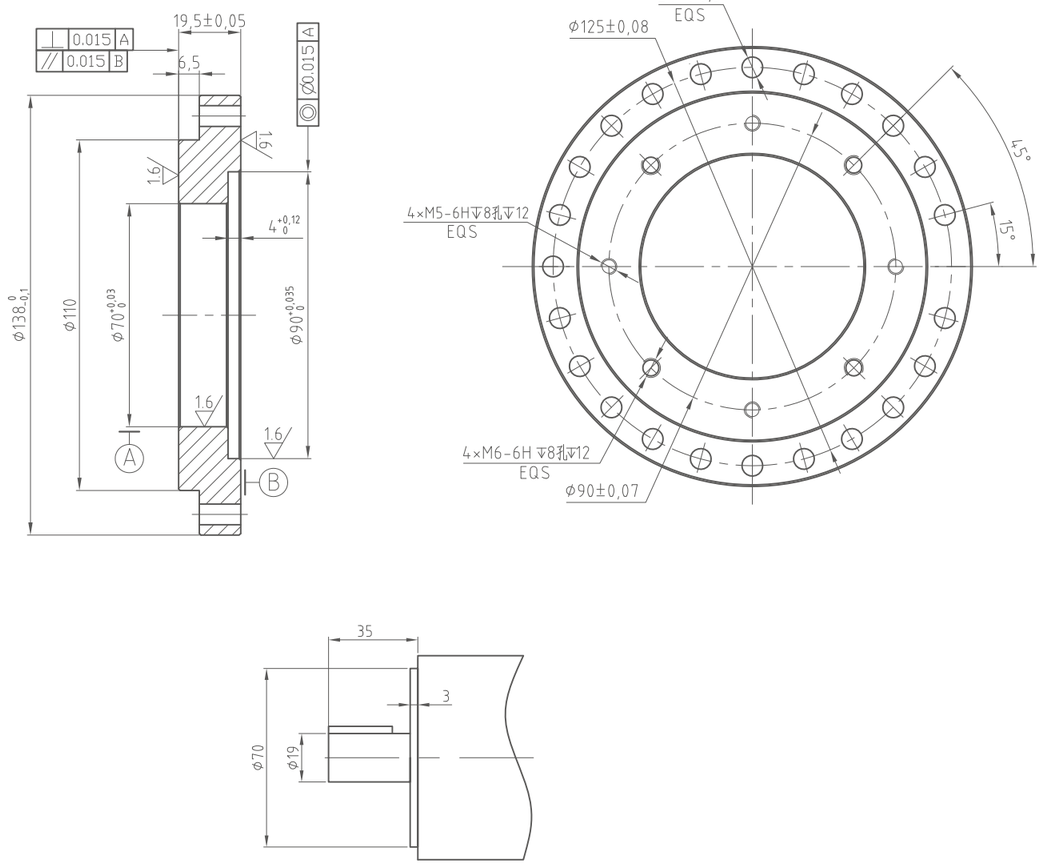
结构图 STRUCTURE CHART



CS/ CN-32-02

法兰板图纸 Flange plate drawing

结构图 STRUCTURE CHART

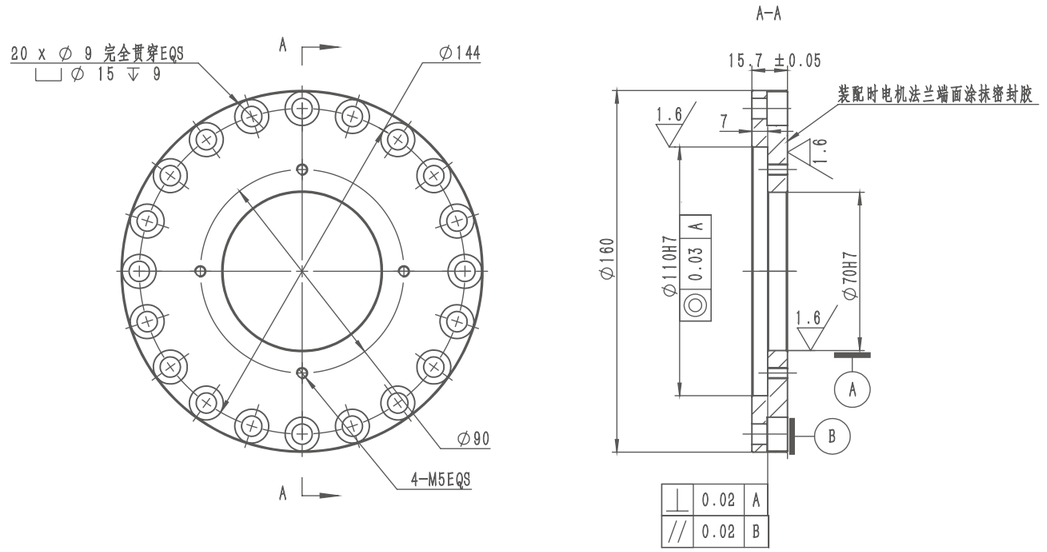


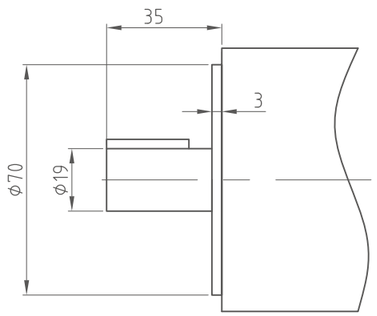
CS/ CN-40-01

法兰板图纸 Flange plate drawing

结构图 STRUCTURE CHART

松下750W电机

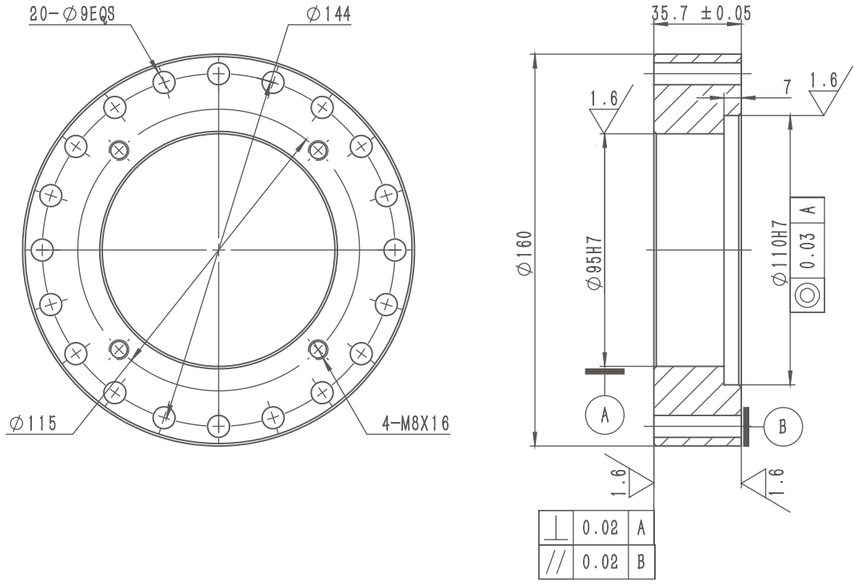


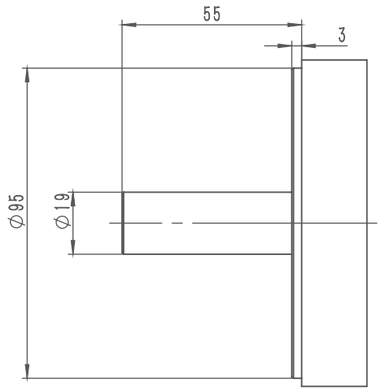


CS/ CN-40-02

法兰板图纸 Flange plate drawing

结构图 STRUCTURE CHART







杯型高扭矩
Cup type high torque(CG-I)

SERIES INTRODUCTION
系列介绍

CG-I 系列Series

高转矩用，转矩容量比标准产品提升30%，使用寿命提高43%，追求高负载容量，高可靠性。

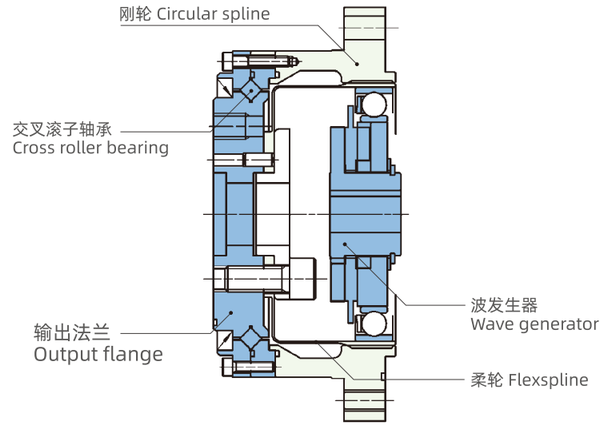
High torque . Compare with standard products， CG series torque capacity is 30% higher. And the service life is increased by 43% , with high load capacity and high reliability.

应用领域 Application

- 工业机器人 Industrial robot
- 服务机器人 Service robots
- 金属机床 Metal machine tools
- 医疗器械 Medical Devices
- 测定、分析、试验设备 Analysis, Test, Equipmen
- 能源相关设备 Energy Related equipment
- 造纸设备 Papermaking Equipment

CG-I系列组合型结构 Combinative structure of CG-I series

标准型（ CG-I）
Standard type (CG-I)



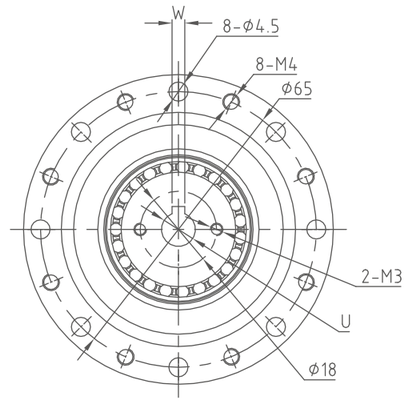
CG-I高扭矩性能参数表 Performance parameter table of CG-I high torque series

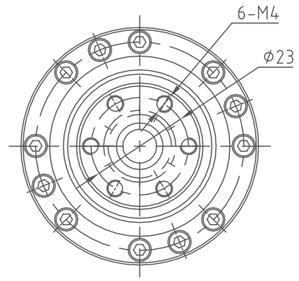
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	7	0.7	23	2.3	9	0.9	46	4.7	8500	3500	≤20	10000
	80	10	1.0	30	3.1	14	1.4	61	6.2				15000
	100	10	1.0	36	3.7	14	1.4	70	7.2				15000
	120	10	1.0	36	3.7	14	1.4	70	7.2				15000
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	≤20	10000
	80	29	2.9	56	5.7	35	3.6	113	12				15000
	100	31	3.2	70	7.2	51	5.2	143	15				15000
	120	31	3.2	70	7.2	51	5.2	112	11				15000
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	≤20	10000
	80	44	4.5	96	9.8	61	6.2	165	17				15000
	100	52	5.3	107	10.9	64	6.5	191	20				15000
	120	52	5.3	113	11.5	64	6.5	191	20				15000
	160	52	5.3	120	12.2	64	6.5	191	20				15000
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	≤20	10000
	80	82	8.4	178	18	113	12	332	34				15000
	100	87	8.9	204	21	140	14	369	38				15000
	120	87	8.9	217	22	140	14	395	40				15000
32	50	99	10	281	29	140	14	497	51	4800	3500	≤20	15000
	80	153	16	395	40	217	22	738	75				15000
	100	178	18	433	44	281	29	841	86				15000
	120	178	18	459	47	281	29	892	91				15000
40	50	178	18	523	53	255	26	892	91	4000	3000	≤20	10000
	80	268	27	675	69	369	38	1270	130				15000
	100	345	35	738	75	484	49	1400	143				15000
	120	382	39	802	82	586	60	1530	156				15000

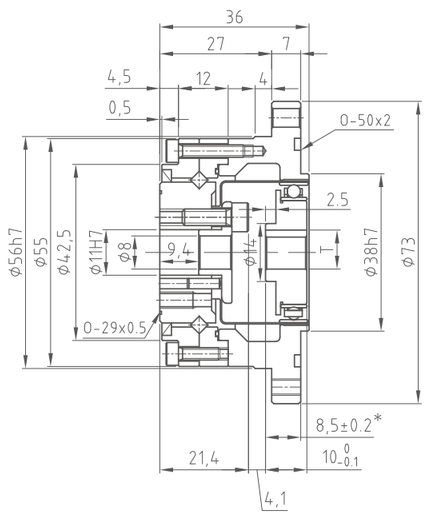
CG-14-XX-U-I

14型谐波减速器 14 harmonic reducer

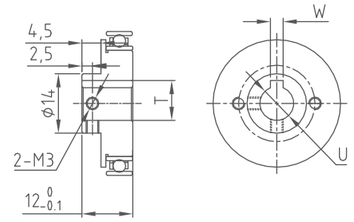
结构图 STRUCTURE CHART







Wave generator-B

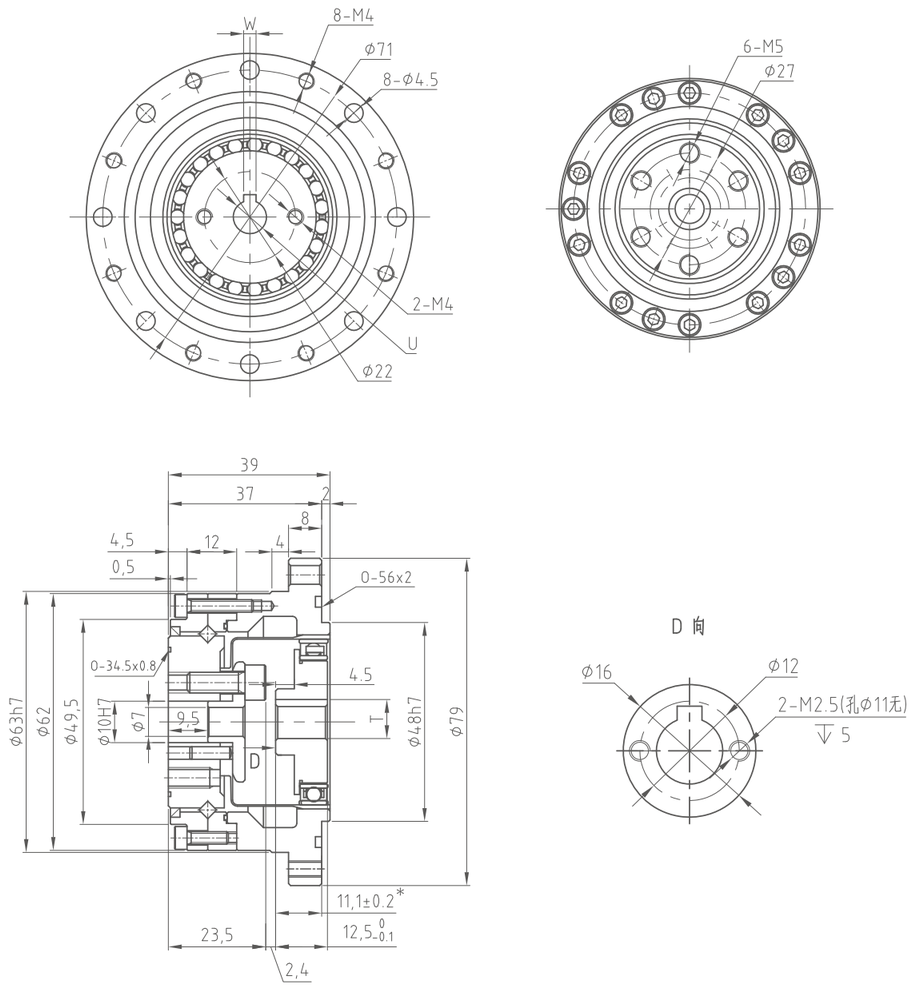


型号/MODEL	U	T	W
Wave generator-A/B φ6	φ6H7	7 +0.1 0	2JS9/P9
Wave generator-A/B φ8	φ8H7	9.4 +0.1 0	3JS9/P9

CG-17-XX-U-I

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART

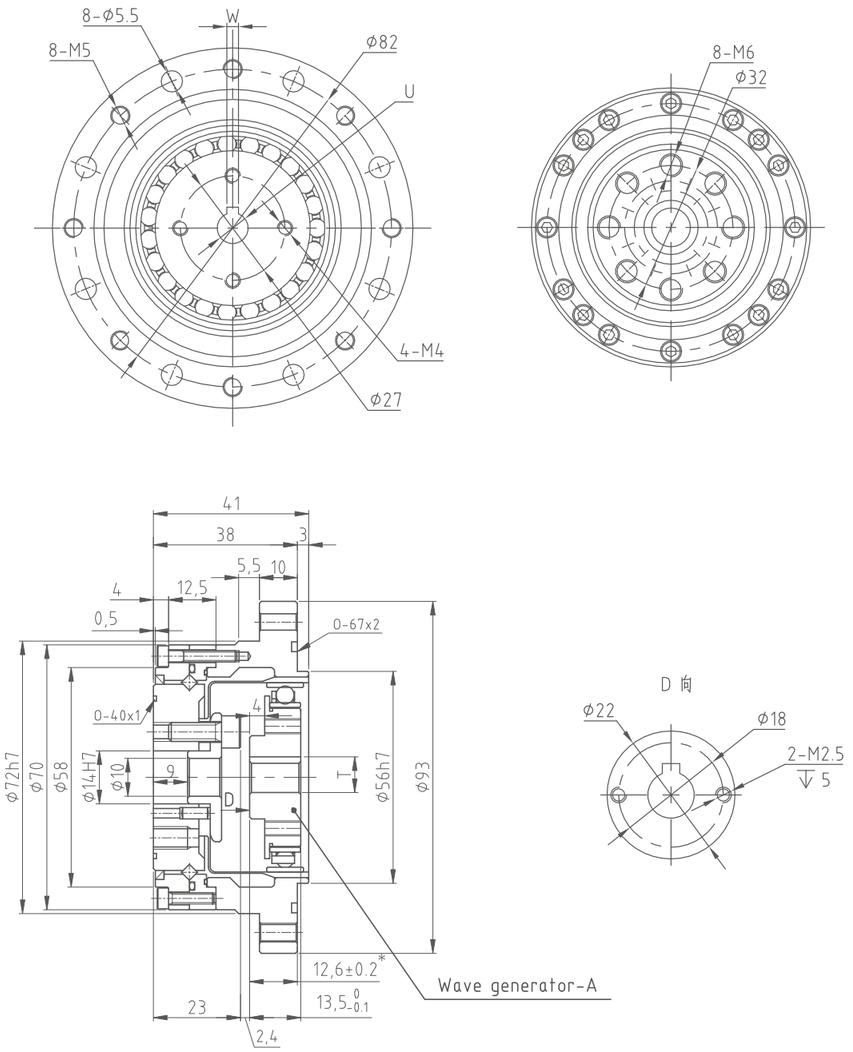


型号/MODEL	U	T	W
Wave generator-A φ8	φ8H7	9.4 +0.1 0	3JS9/P9
Wave generator-A φ11	φ11H7	12.8 +0.1 0	4JS9/P9

CG-20-XX-U-I

20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART

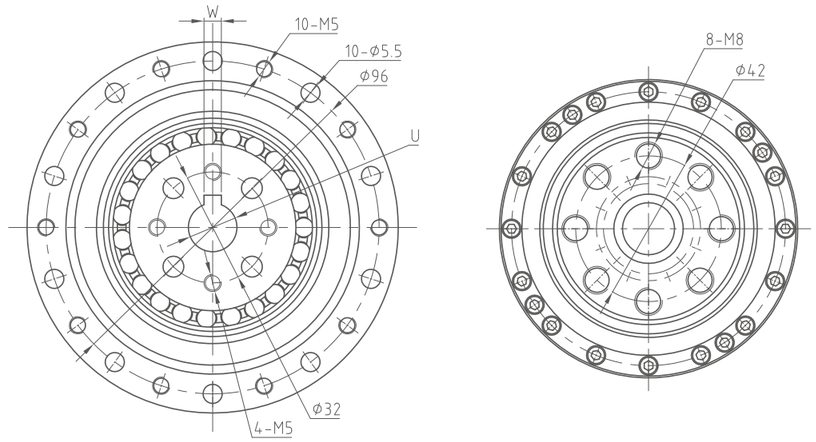


型号/MODEL	U	T	W
Wave generator-A φ8	φ8H7	9.4 +0.1 0	3JS9/P9
Wave generator-A φ11	φ11H7	12.8 +0.1 0	4JS9/P9
Wave generator-A φ14	φ14H7	16.3 +0.1 0	5JS9/P9

CG-25-XX-U-I

25型谐波减速器 25 harmonic reducer

结构图 STRUCTURE CHART

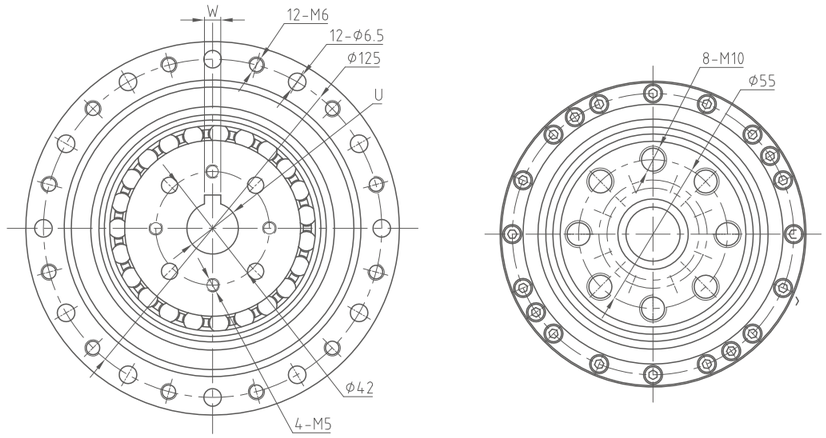


型号/MODEL	U	T	W
Wave generator-A Φ11	Φ11H7	$12.8^{+0.1}_{0}$	4JS9/P9
Wave generator-A Φ14	Φ14H7	$16.3^{+0.1}_{0}$	5JS9/P9

CG-32-XX-U-I

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART

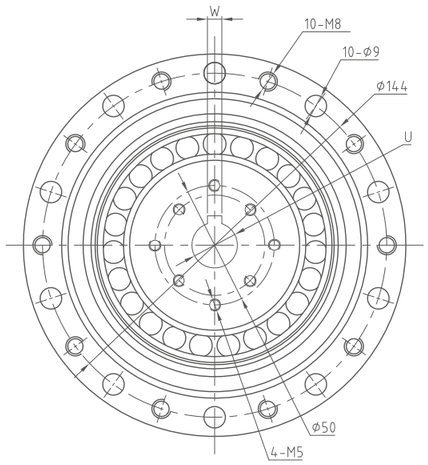


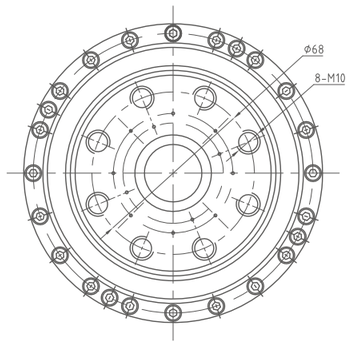
型号/MODEL	U	T	W
Wave generator-A Φ14	Φ14H7	$16.3^{+0.1}_{0}$	5JS9/P9
Wave generator-A Φ19	Φ19H7	$21.8^{+0.1}_{0}$	6JS9/P9
Wave generator-A Φ22	Φ22H7	$24.8^{+0.1}_{0}$	6JS9/P9
		$25.3^{+0.1}_{0}$	8JS9/P9

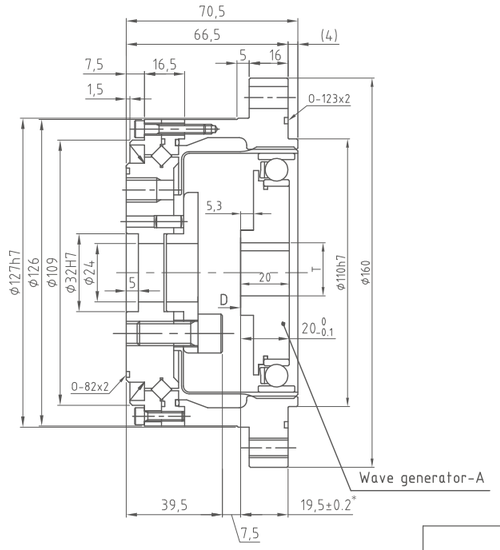
CG-40-XX-U-I

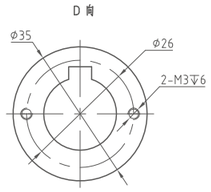
40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART









型号/MODEL	U	T	W
Wave generator-A φ14	φ14H7	16.3 +0.1 0	5JS9/P9
Wave generator-A φ19	φ19H7	21.8 +0.1 0	6JS9/P9
Wave generator-A φ22	φ22H7	24.8 +0.1 0	6JS9/P9
		25.3 +0.1 0	8JS9/P9

LFB SERIES

低噪音 Low noise　大扭力 Large torque

高精度 High-precision

耐磨耐用 Wear resistance and durability

使用寿命长 Long service life

LFB系列谐波减速器

LFB series harmonic reducer



SERIES INTRODUCTION
系列介绍



LFB 系列Series

运用小型号实现轻便型组件化产品，超扁平采用交叉滚子轴承。

研发了与高性能小型电机组合而成的减速机，相同齿轮条件下，拥有最高的输入特性。

A combination product that with light weight, ultra-flat. Using cross-roller bearing.

Combined gearbox reducer with the high-performance small motor, with the highest input characteristics under the same gear conditions.

应用领域 Application

工业机器人 Industrial robots

服务机器人 Service robots

医疗器械设备 Medical Devices

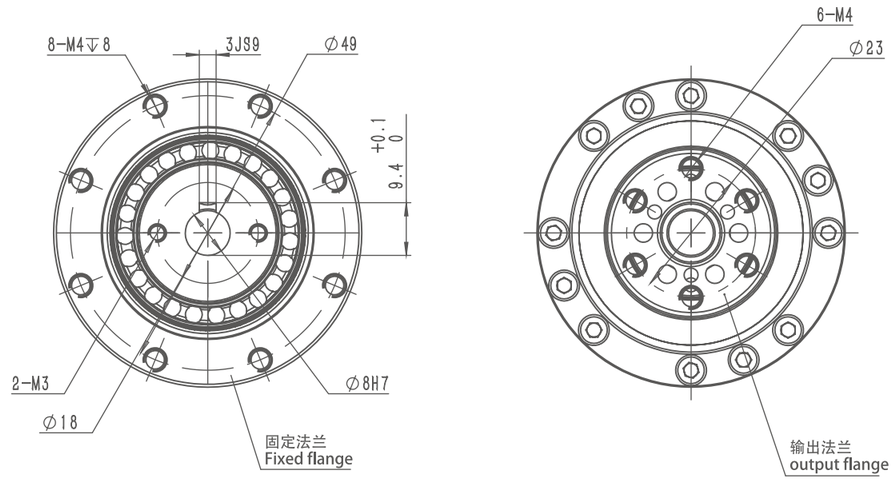
自动化及特种设备 Automation and special equipment

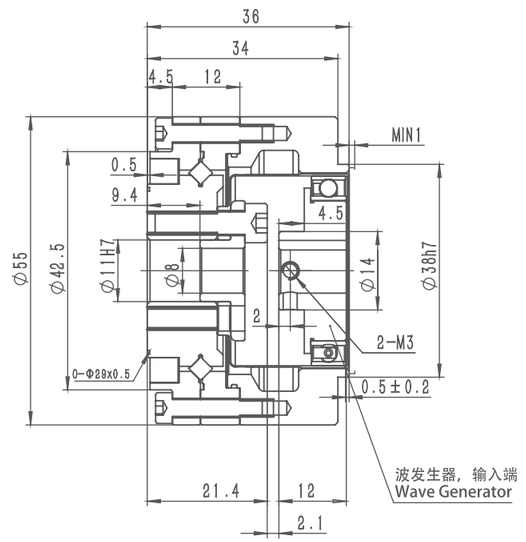
LFB系列额定参数表 Rated parameter table of LFB series

型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	5.4	0.55	18	1.8	6.9	0.70	35	3.6	8500	3500	≤20	10000
	80	7.8	0.80	23	2.4	11	1.1	47	4.8				15000
	100	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
	120	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
17	50	16	1.6	34	3.5	26	2.6	70	7.1	7300	3500	≤20	10000
	80	22	2.2	43	4.4	27	2.7	87	8.9				15000
	100	24	2.4	54	5.5	39	4.0	108	11				15000
	120	24	2.4	54	5.5	39	4.0	86	8.8				15000

LFB-14-XX-U-I

谐波减速器 harmonic reducer　　结构图 STRUCTURE CHART

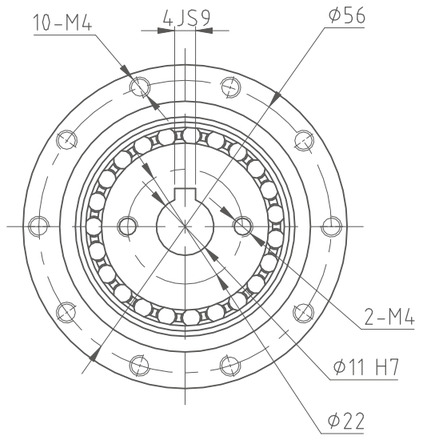


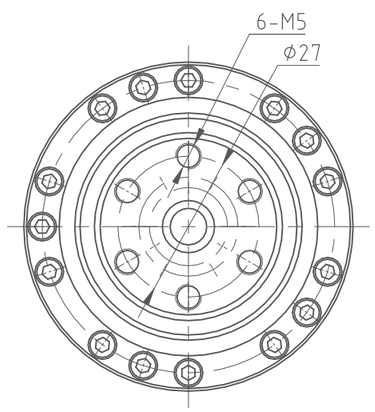


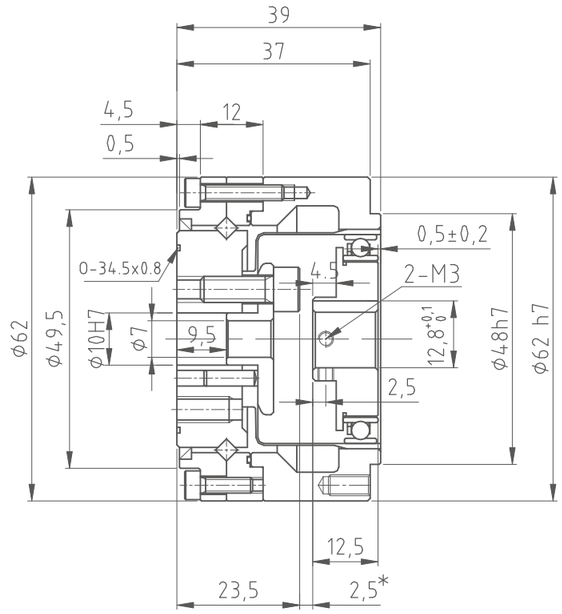
LFB-17-XX-U-I

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART







CD SERIES

CD系列谐波减速器
CD series harmonic reducer

低噪音 Low noise
大扭力 Large torque
高精度 High-precision
耐磨耐用 Wear resistance and durability
使用寿命长 Long service life





SERIES INTRODUCTION
系列介绍

CD 系列Series

CD系列是根据市场化需求而研发的小型化产品， CD系列相比转矩容量相同的 CS系列，更为紧凑，薄壁结构，在不改变性能的状态下，追求小型号，并把“小而美”发挥的淋漓尽致。

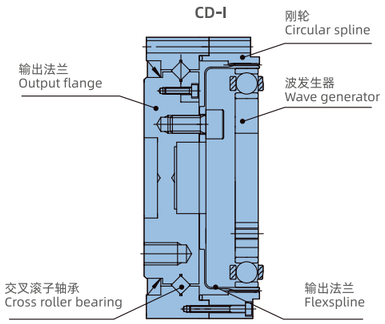
This miniaturized product was developed according to the marketing demand. Compare with CS series that with the same torque capacity, CD series is more compact and thin-walled, smaller size.

应用领域 Application

- 工业机器人 Industrial robots
- 服务机器人 Service robots
- 金属机床 Metal machine tools
- 印刷电路制造设备 Printed circuit manufacturing equipment
- 木材、轻金属、塑料机床 Wood, light metal, plastic machine tools



CD系列组合型结构
Combinative structure of CD series



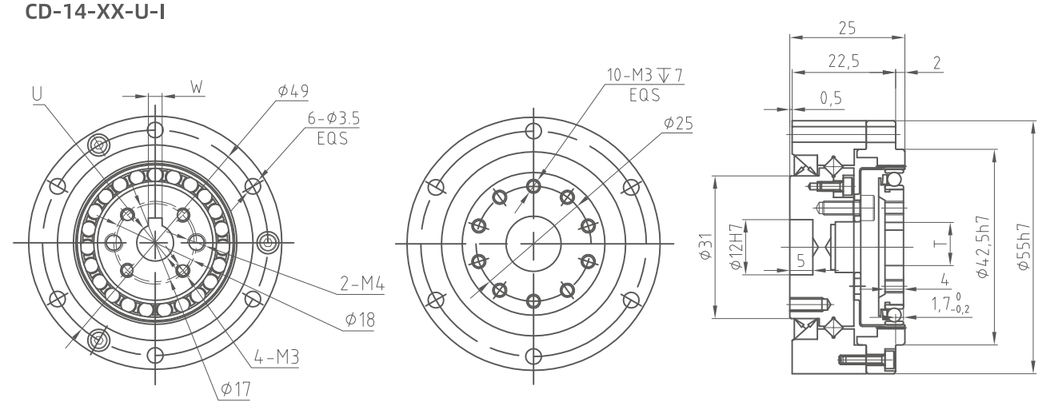
CD系列额定参数表 Rated parameter table of CD series

型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	3.7	0.38	12	1.2	4.8	0.49	24	2.4	8500	3500	≤20	9000
	80	4.2	0.43	16	1.6	5.9	0.6	31	3.1				10000
	100	5.4	0.55	19	1.9	7.7	0.79	35	3.6				10000
17	50	11	1.1	23	2.3	18	1.9	48	4.9	7300	3500	≤20	9000
	80	14	1.4	30	0.3	21	2.1	58	5.9				10000
	100	16	1.6	37	3.8	27	2.8	71	7.2				10000
20	50	17	1.7	39	4	24	2.4	69	7	6500	3500	≤20	9000
	80	21	2.1	46	4.7	30	3.1	81	0.8				10000
	100	28	2.9	57	5.8	34	3.5	95	9.7				10000

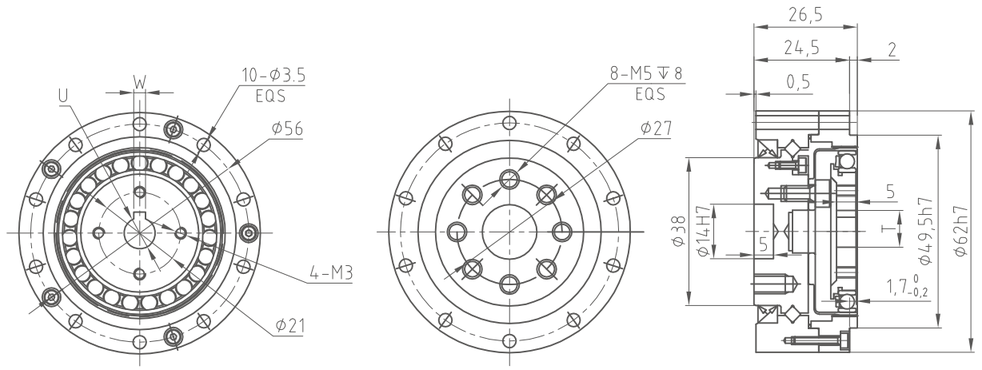
CD-I

结构图 STRUCTURE CHART

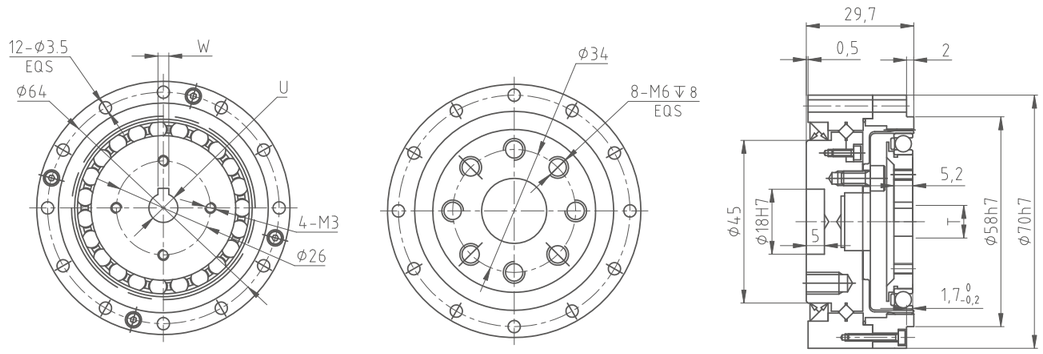
CD-14-XX-U-I



CD-17-XX-U-I



CD-20-XX-U-I



FS SERIES

低噪音 Low noise　大扭力 Large torque
高精度 High-precision
耐磨耐用 Wear resistance and durability
使用寿命长 Long service life

FS系列谐波减速器
FS series harmonic reducer



SERIES INTRODUCTION
系列介绍





FS-I 系列 Series

运用小型号实现轻便型组件化产品，超扁平采用交叉滚子轴承。

A combination product that with light weight, ultra-flat. Using cross-roller bearing.

FS 一体机 Integrated series

研发了与高性能小型电机组合而成的减速机，相同齿轮条件下，拥有最高的输入特性。

Combined gearbox reducer with the high-performance small motor, with the highest input characteristics under the same gear conditions.

应用领域 Application

工业机器人 Industrial robots
服务机器人 Service robots
医疗器械设备 Medical Devices
自动化及特种设备 Automation and special equipment

FS系列额定参数表 Rated parameter table of FS series

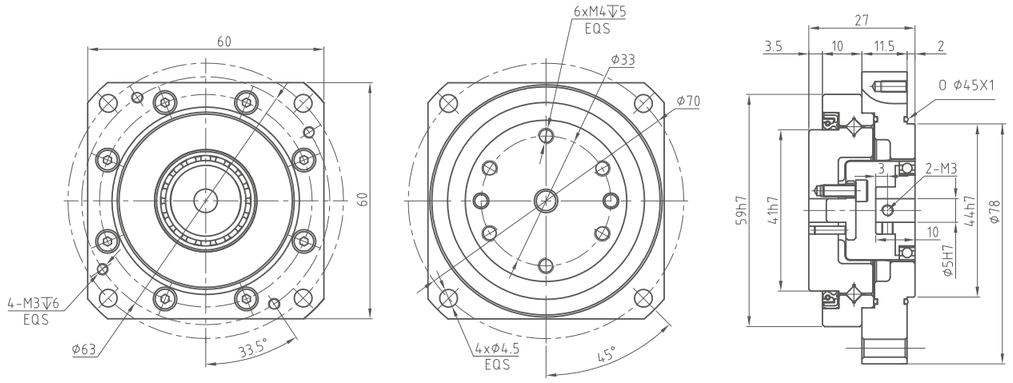
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
11	80	4.5	0.5	9.9	1.0	8	0.8	22.5	2.3	8500	3500	≤20	7000
	100	5	0.5	11	1.1	8.9	0.9	25	2.5				7000
14	50	5.4	0.55	18	1.8	6.9	0.7	35	3.6	8500	3500	≤20	10000
	80	7.8	0.8	23	2.4	11	1.1	47	4.8				10000
	100	7.8	0.8	28	2.9	11	1.1	54	5.5				10000

FS-I

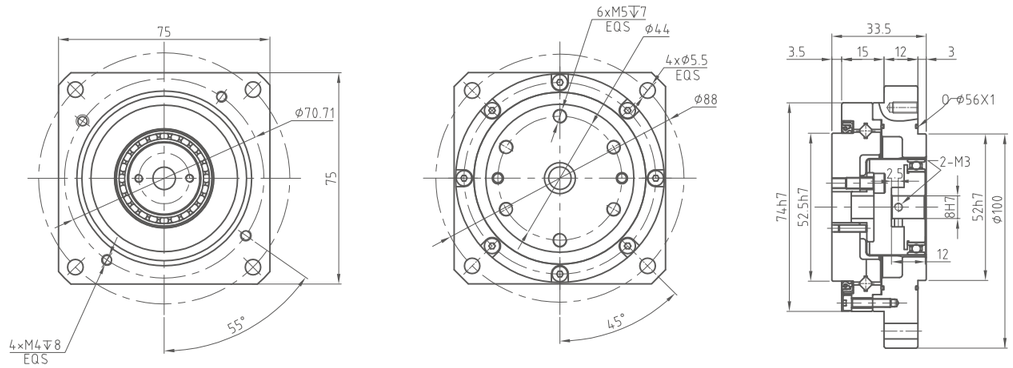
谐波减速器 harmonic reducer

结构图 STRUCTURE CHART

FS-11-XX-U-I



FS-14-XX-U-I



S SERIES

低噪音 Low noise　大扭力 Large torque

高精度 High-precision

耐磨耐用 Wear resistance and durability

使用寿命长 Long service life

S系列谐波减速器

S series harmonic reducer





简易型
Simple type(ST/ SN-I)

SERIES INTRODUCTION
系列介绍

ST-I 系列Series
大口径中空孔扁平形状，易于操作的组合化产品。

A combination product that with large diameter hollow hole, flat shape, which is easy to operate.

SN-I 系列Series
轻量型产品，相比标准品，重量减少了20%。

Light weight product, 20% lighter than standard products.

应用领域 Application

工业机器人 Industrial robots

服务机器人 Service Robots

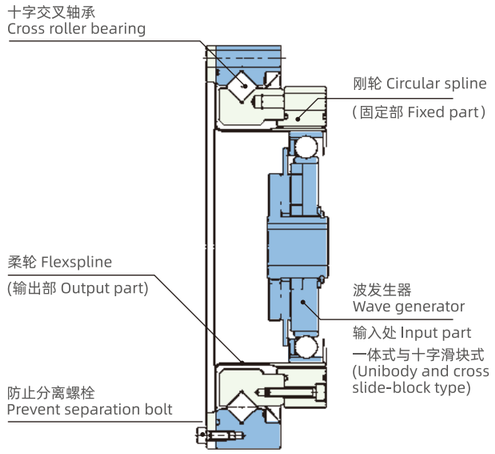
医疗器械设备 Medical Devices

印刷电路制造设备 Printed circuit manufacturing equipment

自动化及特种设备 Automation and special equipment

ST/ SN-I系列组合型结构 Combinative structure of ST/ SN-I series

简易型Simple type (ST/ SN-I)



ST/ SN-I额定参数表 Rated parameter table of ST/ SN-I series

型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速(脂润滑) Permissible maximum input rotational speed (Grease)	容许平均输入转速(脂润滑) Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	5.4	0.55	18	1.8	6.9	0.70	35	3.6	8500	3500	≤20	10000
	80	7.8	0.80	23	2.4	11	1.1	47	4.8				15000
	100	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
	120	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
17	50	16	1.6	34	3.5	26	2.6	70	7.1	7300	3500	≤20	10000
	80	22	2.2	43	4.4	27	2.7	87	8.9				15000
	100	24	2.4	54	5.5	39	4.0	110	11				15000
	120	24	2.4	54	5.5	39	4.0	86	8.8				15000
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	≤20	10000
	80	34	3.5	74	7.5	47	4.8	127	13				15000
	100	40	4.1	82	8.4	49	5.0	147	15				15000
	120	40	4.1	87	8.9	49	5.0	147	15				15000
	160	40	4.1	92	9.4	49	5.0	147	15				15000
25	50	39	4.0	98	10	55	5.6	186	19	5600	3500	≤20	10000
	80	63	6.4	137	14	87	8.9	255	26				15000
	100	67	6.8	157	16	108	11	284	29				15000
	120	67	6.8	167	17	108	11	304	31				15000
32	50	76	7.8	216	22	108	11	382	39	4800	3500	≤20	10000
	80	118	12	304	31	167	17	568	58				15000
	100	137	14	333	34	216	22	647	66				15000
	120	137	14	353	36	216	22	686	70				15000
40	50	137	14	402	41	196	20	686	70	4000	3000	≤20	10000
	80	206	21	519	53	284	29	980	100				15000
	100	265	27	568	58	372	38	1080	110				15000
	120	294	30	617	63	451	46	1180	120				15000

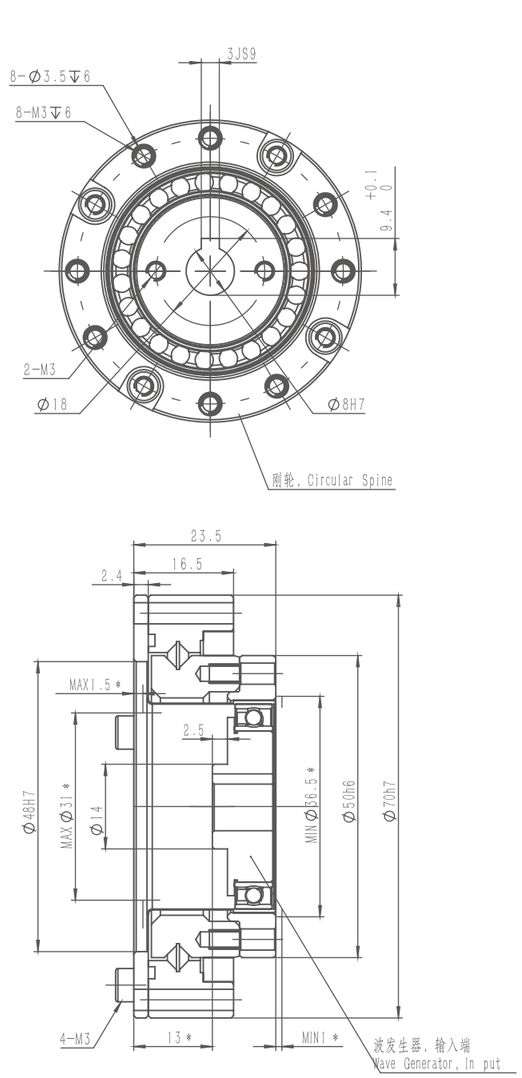
ST/ SN-I型密封圈、槽尺寸 ST/ SN-I Seal Ring and Slot Size

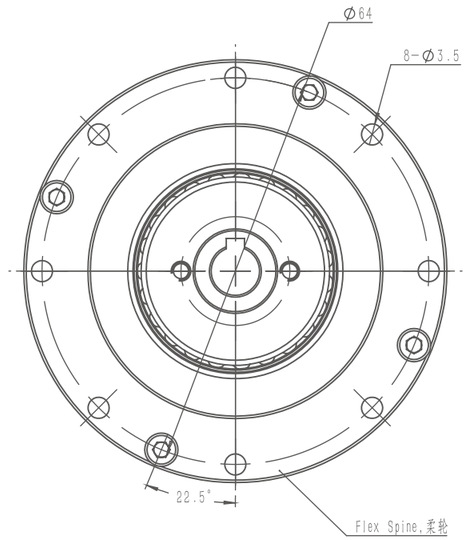
型号 Series	上壳体 Upper shell				下壳体 Lower shell				备注 Remarks
	大径 Big diameter	小径 Small diameter	深度 Depth	密封圈尺寸 Seal Ring Size	大径 Big diameter	小径 Small diameter	深度 Depth	密封圈尺寸 Seal Ring Size	
14	$39.6^{+0.1}_{0}$	$37^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	37*1	$56.8^{+0.1}_{0}$	$53^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	53*1.5	
17	$49.1^{+0.1}_{0}$	$46.5^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	46.5*1	$66.6^{+0.1}_{0}$	$64^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	64*1	
20	$57.6^{+0.1}_{0}$	$55^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	55*1	$76.86^{+0.1}_{0}$	$73^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	73*1.5	
25	$70.6^{+0.1}_{0}$	$68^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	68*1	$94.2^{+0.1}_{0}$	$90^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	90*1.5	
32	$92^{+0.1}_{0}$	$88^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	88*1.5	$123.1^{+0.1}_{0}$	$119^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	120*1.5	

ST/ SN-14-XX-U-I

14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART



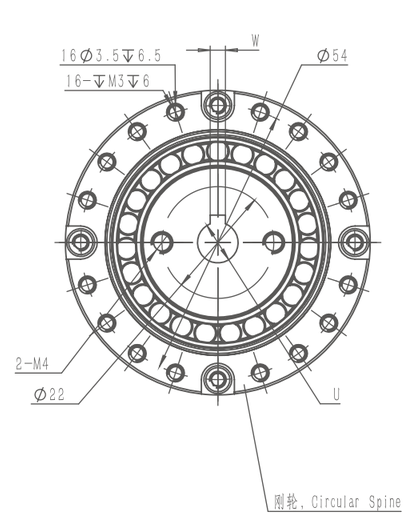


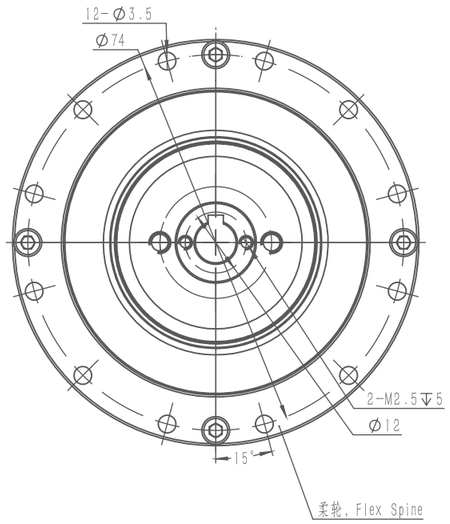
型号/MODEL	U	T	W
Wave Generator	Φ6H7	7 +0.1 0	2P9/JS9
Wave Generator	Φ8H7	9.4 +0.1 0	3P9/JS9

ST/ SN-17-XX-U-I

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART



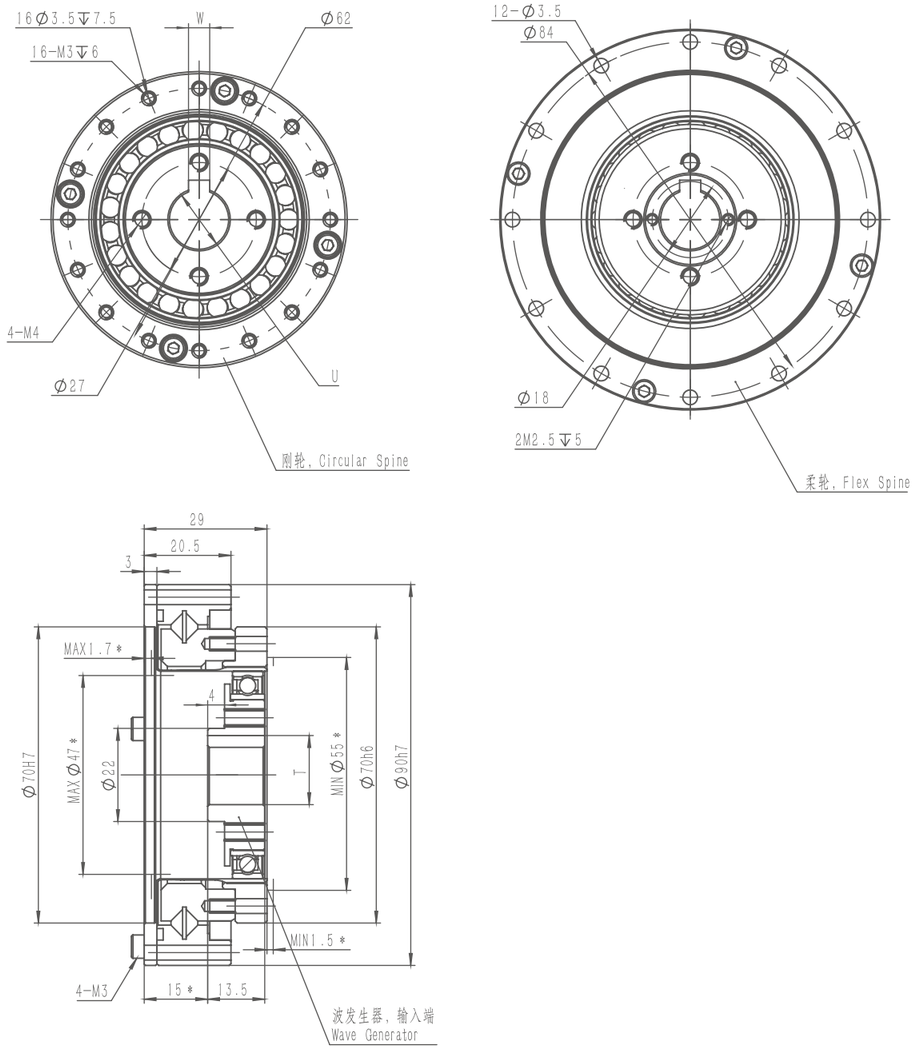


型号/MODEL	U	T	W
Wave Generator	Φ8H7	9.4 +0.1 0	3P9/JS9
Wave Generator	Φ11H7	12.8 +0.1 0	4P9/JS9

ST/ SN-20-XX-U-I

20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART

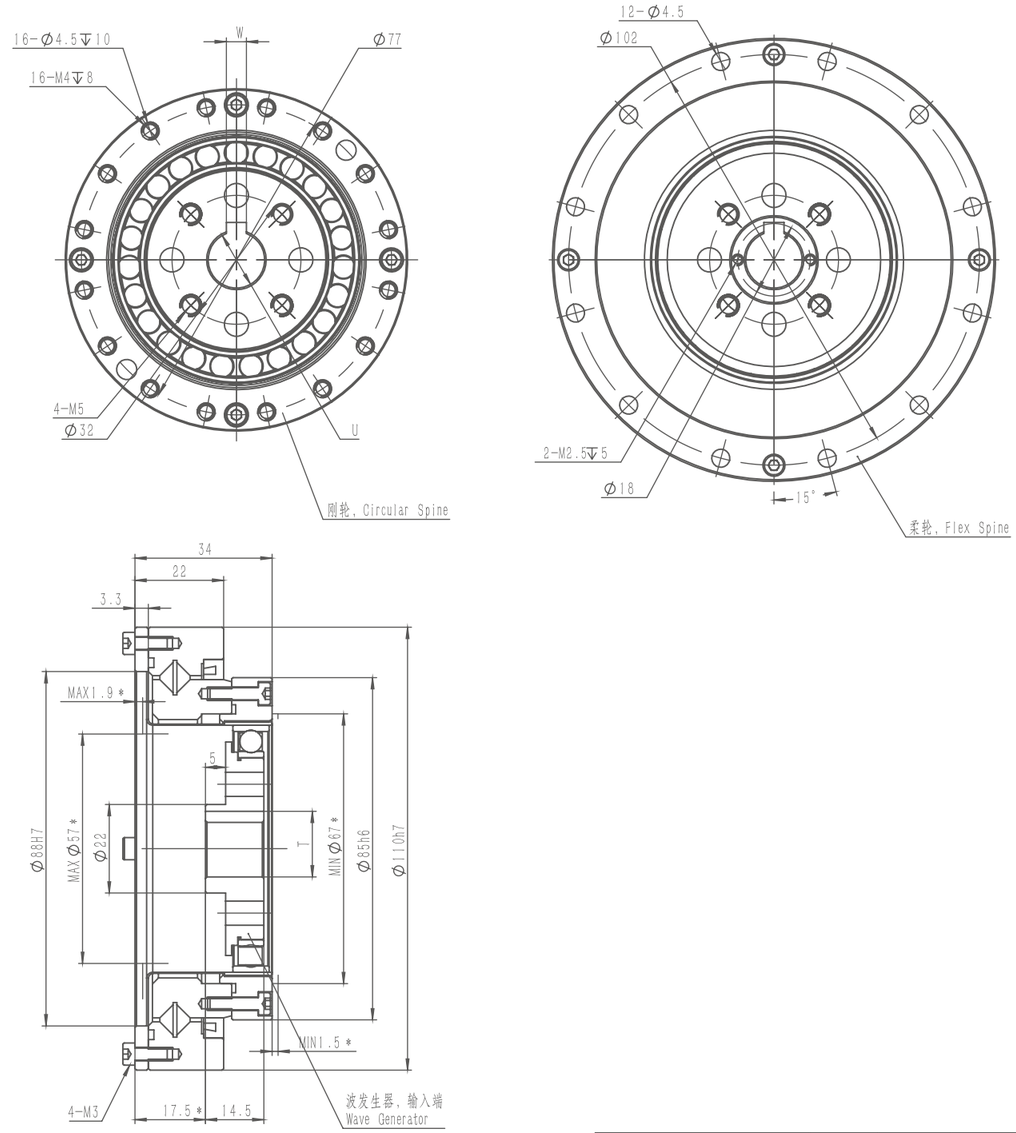


型号/MODEL	U	T	W
Wave Generator	Φ8H7	9.4$^{+0.1}_{0}$	3P9/JS9
Wave Generator	Φ11H7	12.8$^{+0.1}_{0}$	4P9/JS9
Wave Generator	Φ14H7	16.3$^{+0.1}_{0}$	5P9/JS9

ST/ SN-25-XX-U-I

25型谐波减速器 25 harmonic reducer

结构图 STRUCTURE CHART

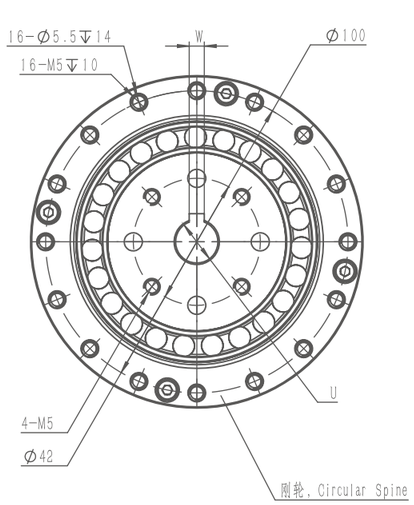


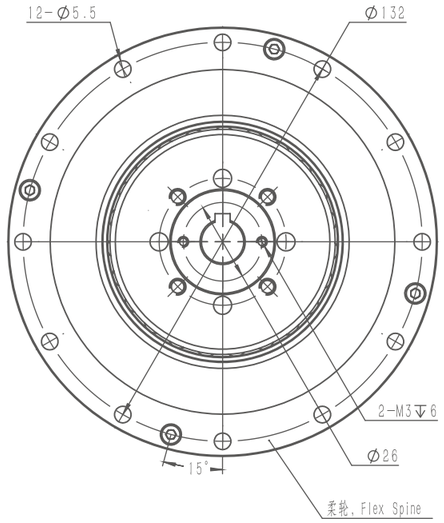
型号/MODEL	U	T	W
Wave Generator	Φ11H7	12.8$^{+0.1}_{0}$	4P9/JS9
Wave Generator	Φ14H7	16.3$^{+0.1}_{0}$	5P9/JS9

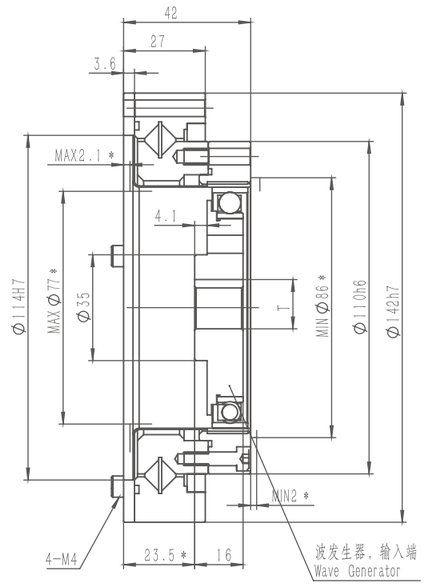
ST/ SN-32-XX-U-I

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART





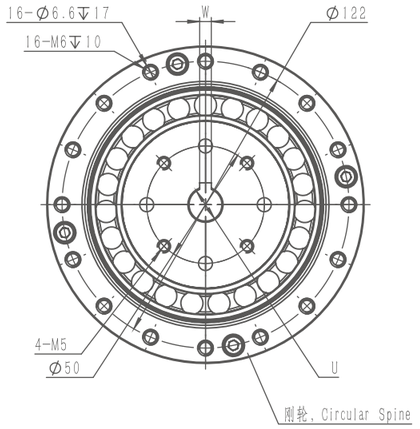


型号/MODEL	U	T	W
Wave Generator	Φ14H7	16.3	5P9/JS9
Wave Generator	Φ19H7	21.8	6P9/JS9
Wave Generator	Φ22H7	25.3	8P9/JS9

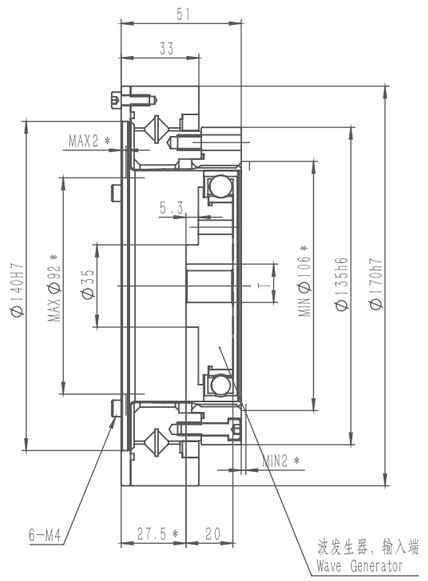
ST/ SN-40-XX-U-I

40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART







型号/MODEL	U	T	W
Wave Generator	Φ14H7	16.3	5P9/JS9
Wave Generator	Φ19H7	21.8	6P9/JS9
Wave Generator	Φ22H7	25.3	8P9/JS9



中空型
Hollow type(ST/ SN-III)

SERIES INTRODUCTION
系列介绍

ST-III 系列Series
大口径中空孔扁平形状，易于操作的组合化产品。

A combination product that with large diameter hollow hole, flat shape, which is easy to operate.

SN-III 系列Series
轻量型产品，相比标准品，重量减少了20%。

Light weight product, 20% lighter than standard products.

应用领域 Application

工业机器人 Industrial robots

服务机器人 Service Robots

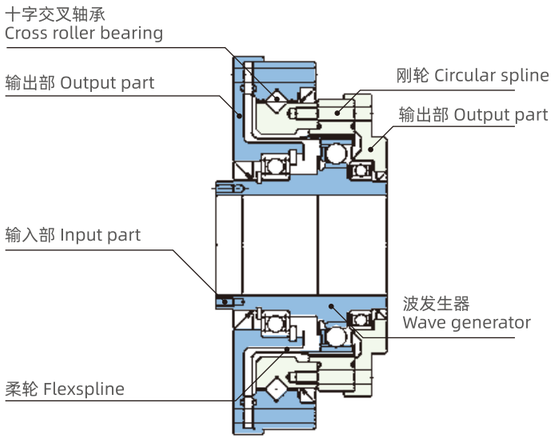
医疗器械设备 Medical Devices

印刷电路制造设备 Printed circuit manufacturing equipment

自动化及特种设备 Automation and special equipment

ST/ SN-III系列组合型结构 Combinative structure of ST/ SN-III series

中空型 Hollow type
(ST/ SN-III)



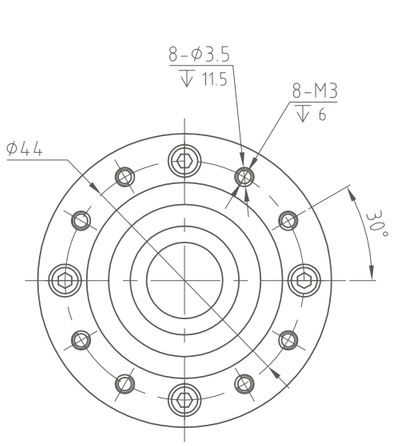
ST/ SN-III额定参数表 Rated parameter table of ST/ SN-III series

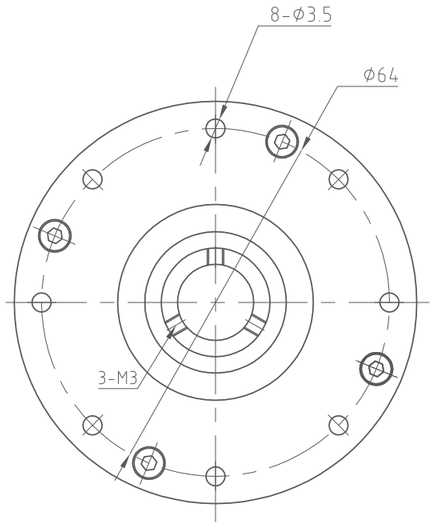
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	5.4	0.55	18	1.8	6.9	0.70	35	3.6	8500	3500	≤20	10000
	80	7.8	0.80	23	2.4	11	1.1	47	4.8				15000
	100	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
	120	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
17	50	16	1.6	34	3.5	26	2.6	70	7.1	7300	3500	≤20	10000
	80	22	2.2	43	4.4	27	2.7	87	8.9				15000
	100	24	2.4	54	5.5	39	4.0	110	11				15000
	120	24	2.4	54	5.5	39	4.0	86	8.8				15000
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	≤20	10000
	80	34	3.5	74	7.5	47	4.8	127	13				15000
	100	40	4.1	82	8.4	49	5.0	147	15				15000
	120	40	4.1	87	8.9	49	5.0	147	15				15000
	160	40	4.1	92	9.4	49	5.0	147	15				15000
25	50	39	4.0	98	10	55	5.6	186	19	5600	3500	≤20	10000
	80	63	6.4	137	14	87	8.9	255	26				15000
	100	67	6.8	157	16	108	11	284	29				15000
	120	67	6.8	167	17	108	11	304	31				15000
32	50	76	7.8	216	22	108	11	382	39	4800	3500	≤20	10000
	80	118	12	304	31	167	17	568	58				15000
	100	137	14	333	34	216	22	647	66				15000
	120	137	14	353	36	216	22	686	70				15000
40	50	137	14	402	41	196	20	686	70	4000	3000	≤20	10000
	80	206	21	519	53	284	29	980	100				15000
	100	265	27	568	58	372	38	1080	110				15000
	120	294	30	617	63	451	46	1180	120				15000

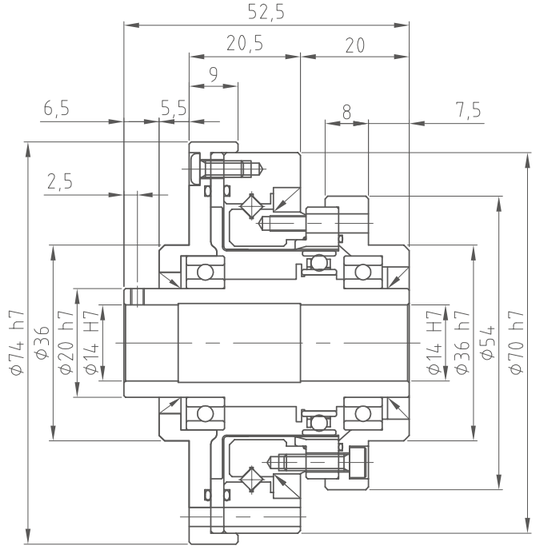
ST/ SN-14-XX-U-III

14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART



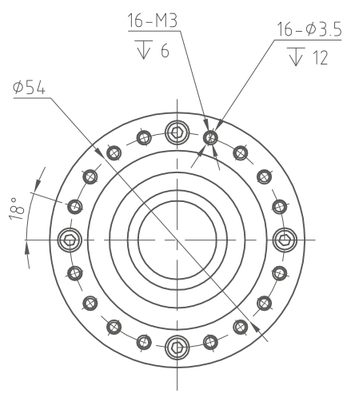


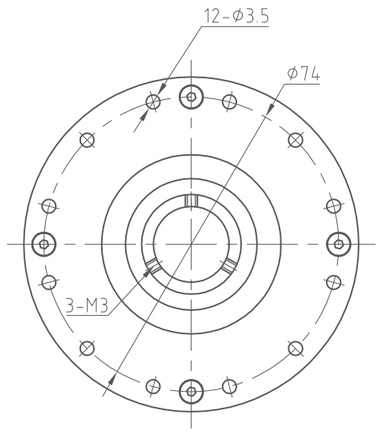


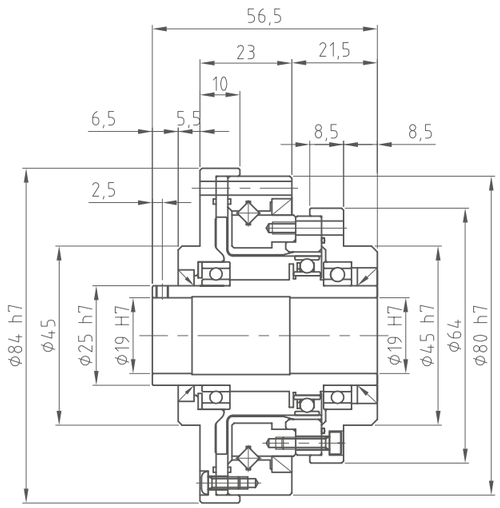
ST/ SN-17-XX-U-III

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART



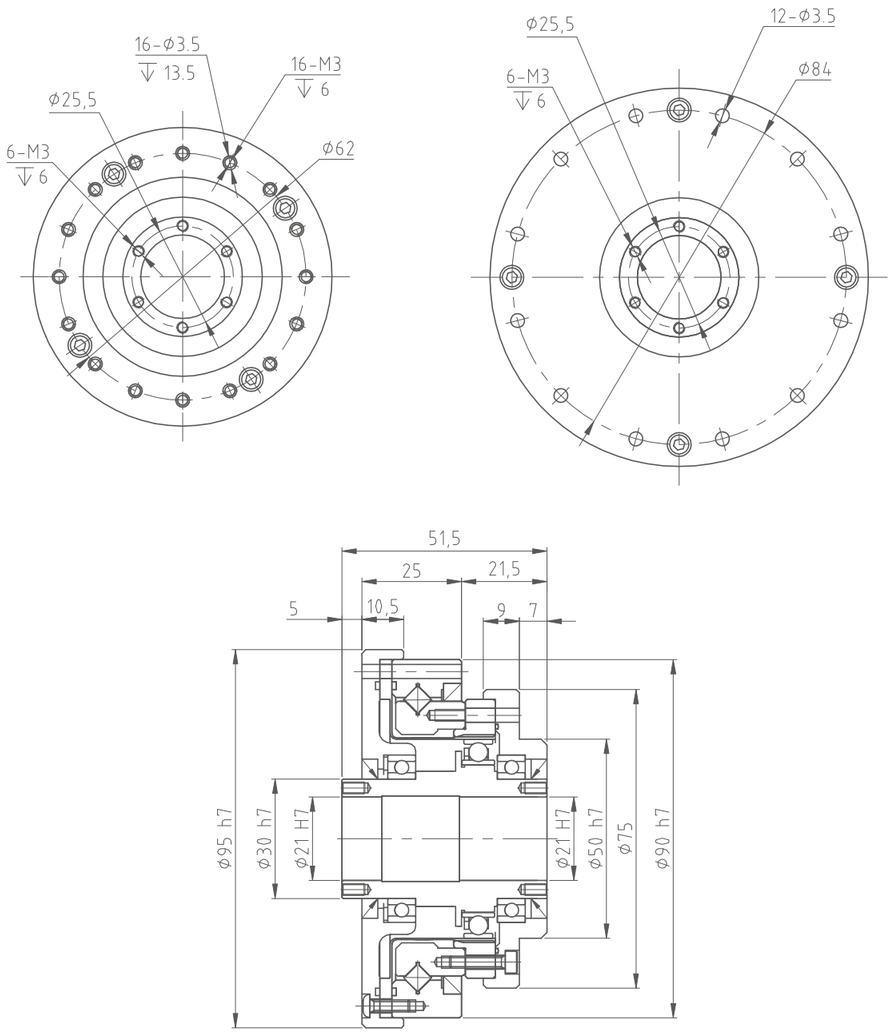




ST/ SN-20-XX-U-III

20型谐波减速器 20 harmonic reducer

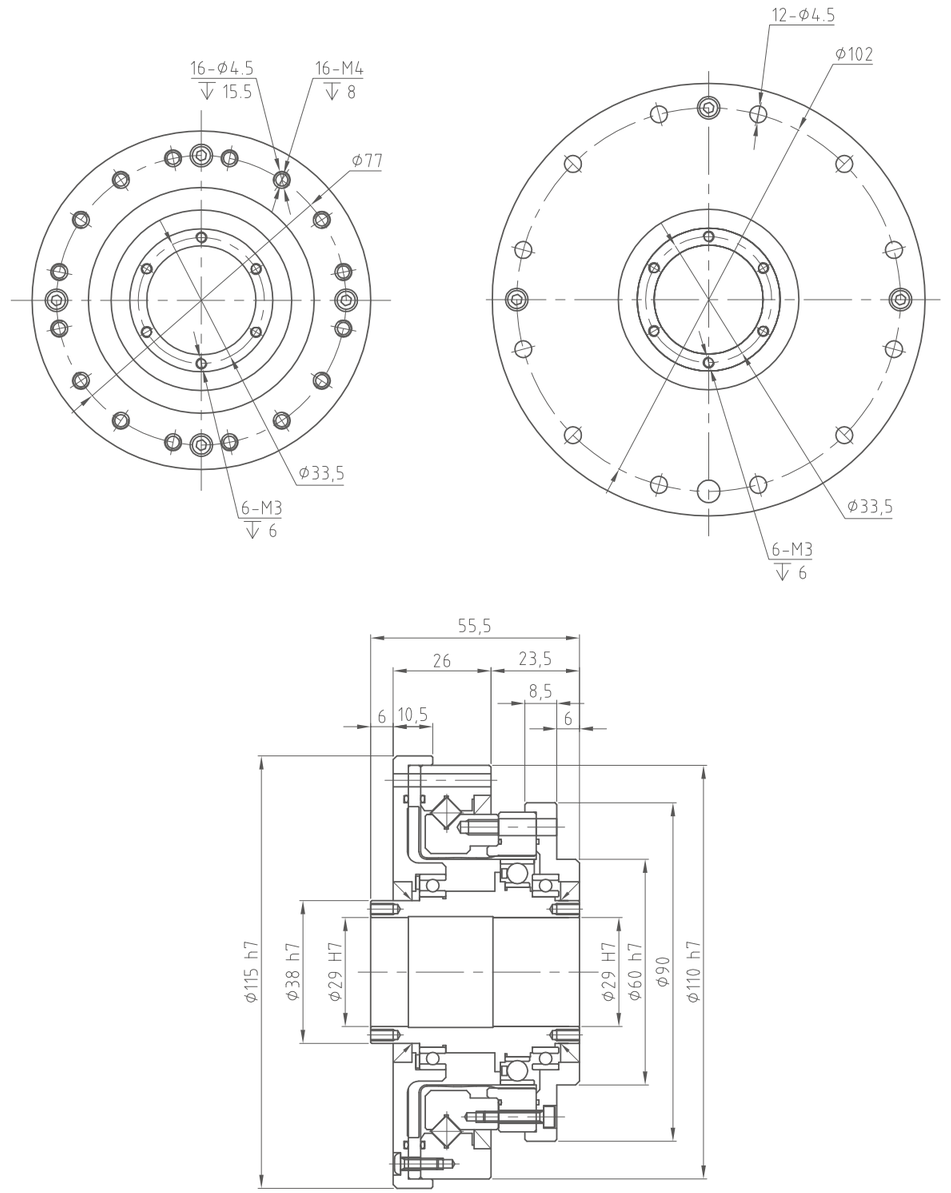
结构图 STRUCTURE CHART



ST/ SN-25-XX-U-III

25型谐波减速器 25 harmonic reducer

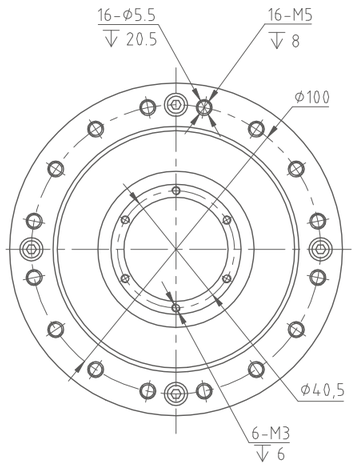
结构图 STRUCTURE CHART

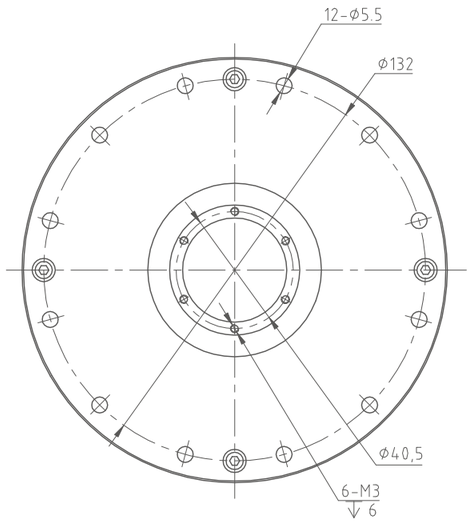


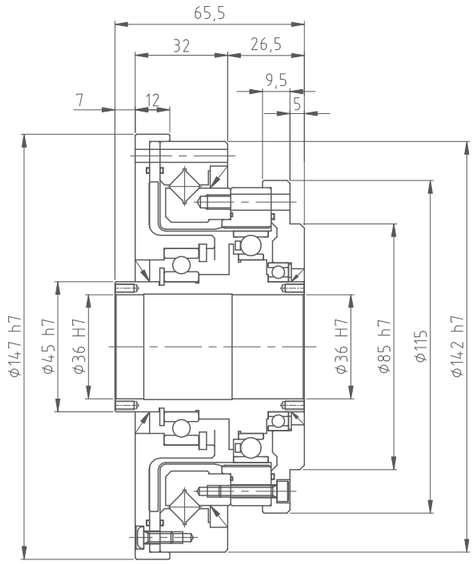
ST/ SN-32-XX-U-III

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART



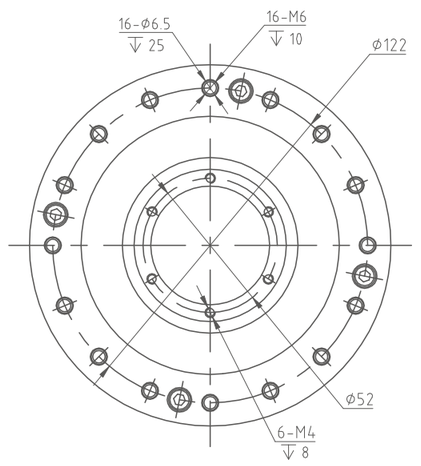


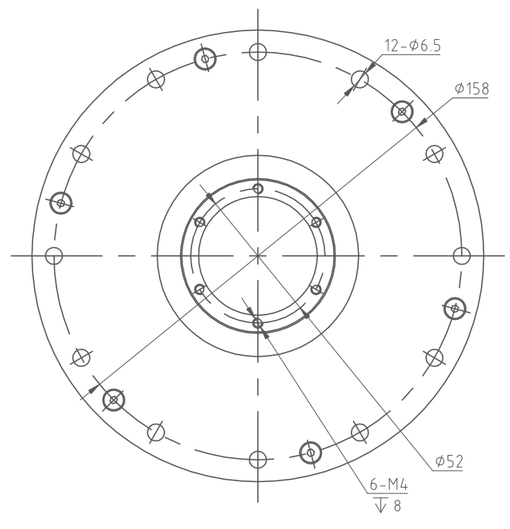


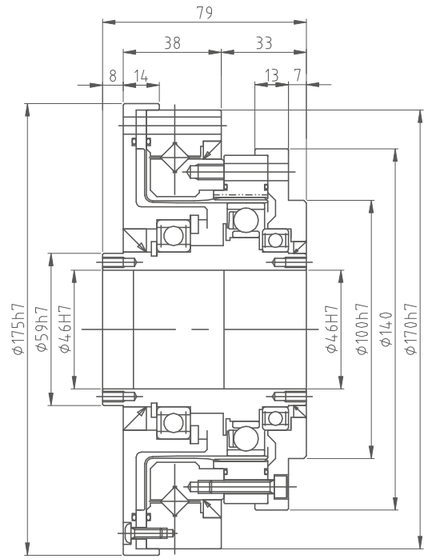
ST/ SN-40-XX-U-III

40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART









输入轴型
Input axial type(ST/ SN-IV)

SERIES INTRODUCTION
系列介绍

ST-IV 系列Series
大口径中空孔扁平形状，易于操作的组合化产品。

A combination product that with large diameter hollow hole, flat shape, which is easy to operate.

SN-IV 系列Series
轻量型产品，相比标准品，重量减少了20%。

Light weight product, 20% lighter than standard products.

应用领域 Application

工业机器人 Industrial robots

服务机器人 Service Robots

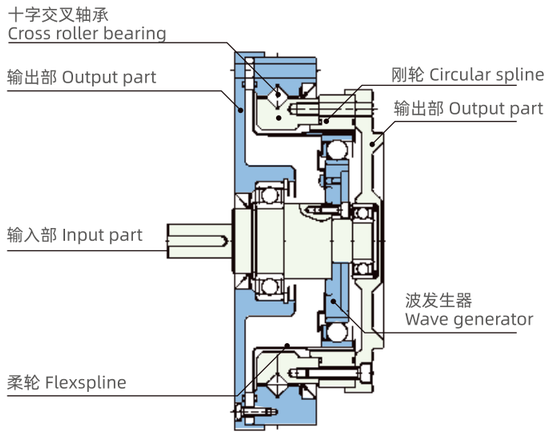
医疗器械设备 Medical Devices

印刷电路制造设备 Printed circuit manufacturing equipment

自动化及特种设备 Automation and special equipment

ST/ SN-IV系列组合型结构 Combinative structure of ST/ SN-IV series

输入轴型 Input axial type (ST/ SN-IV)



ST/ SN-IV额定参数表 Rated parameter table of ST/ SN-IV series

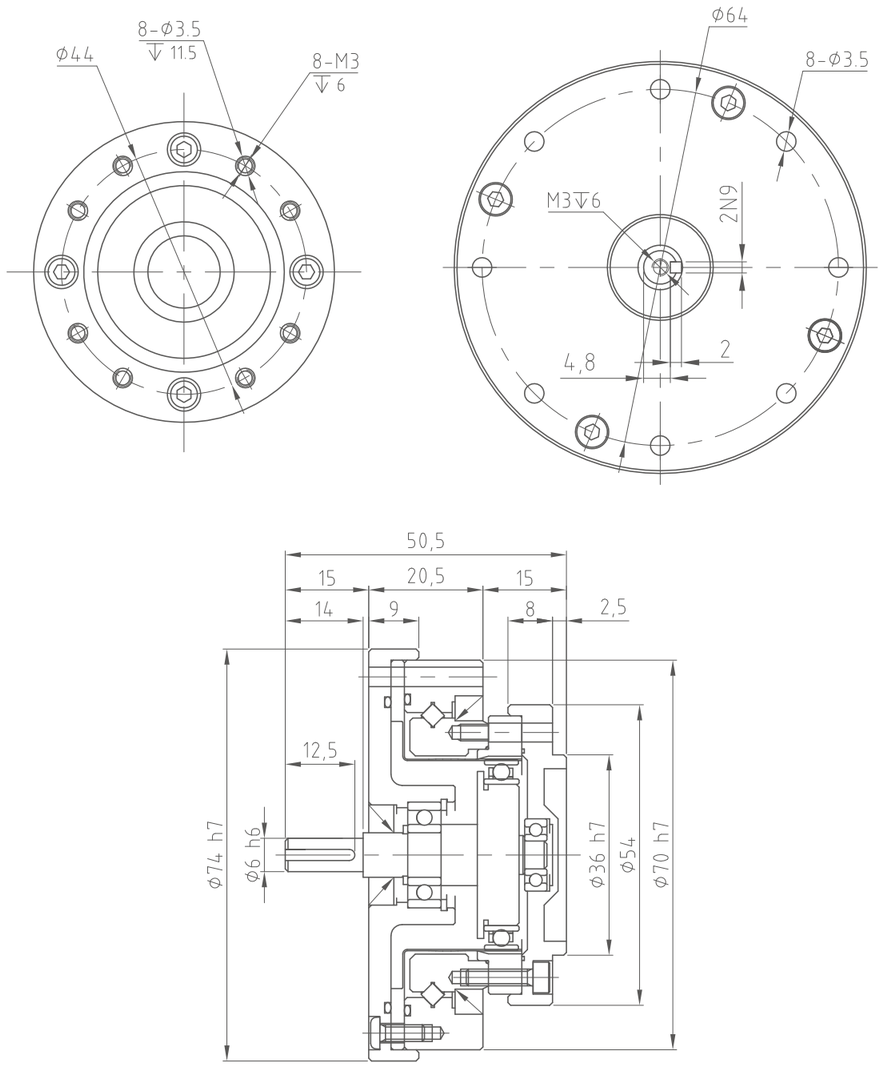
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	5.4	0.55	18	1.8	6.9	0.70	35	3.6	8500	3500	≤20	10000
	80	7.8	0.80	23	2.4	11	1.1	47	4.8				15000
	100	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
	120	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
17	50	16	1.6	34	3.5	26	2.6	70	7.1	7300	3500	≤20	10000
	80	22	2.2	43	4.4	27	2.7	87	8.9				15000
	100	24	2.4	54	5.5	39	4.0	110	11				15000
	120	24	2.4	54	5.5	39	4.0	86	8.8				15000
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500	≤20	10000
	80	34	3.5	74	7.5	47	4.8	127	13				15000
	100	40	4.1	82	8.4	49	5.0	147	15				15000
	120	40	4.1	87	8.9	49	5.0	147	15				15000
	160	40	4.1	92	9.4	49	5.0	147	15				15000
25	50	39	4.0	98	10	55	5.6	186	19	5600	3500	≤20	10000
	80	63	6.4	137	14	87	8.9	255	26				15000
	100	67	6.8	157	16	108	11	284	29				15000
	120	67	6.8	167	17	108	11	304	31				15000
32	50	76	7.8	216	22	108	11	382	39	4800	3500	≤20	10000
	80	118	12	304	31	167	17	568	58				15000
	100	137	14	333	34	216	22	647	66				15000
	120	137	14	353	36	216	22	686	70				15000
40	50	137	14	402	41	196	20	686	70	4000	3000	≤20	10000
	80	206	21	519	53	284	29	980	100				15000
	100	265	27	568	58	372	38	1080	110				15000
	120	294	30	617	63	451	46	1180	120				15000

ST/ SN-14-XX-U-IV

14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART

有键槽槽（Keyway）

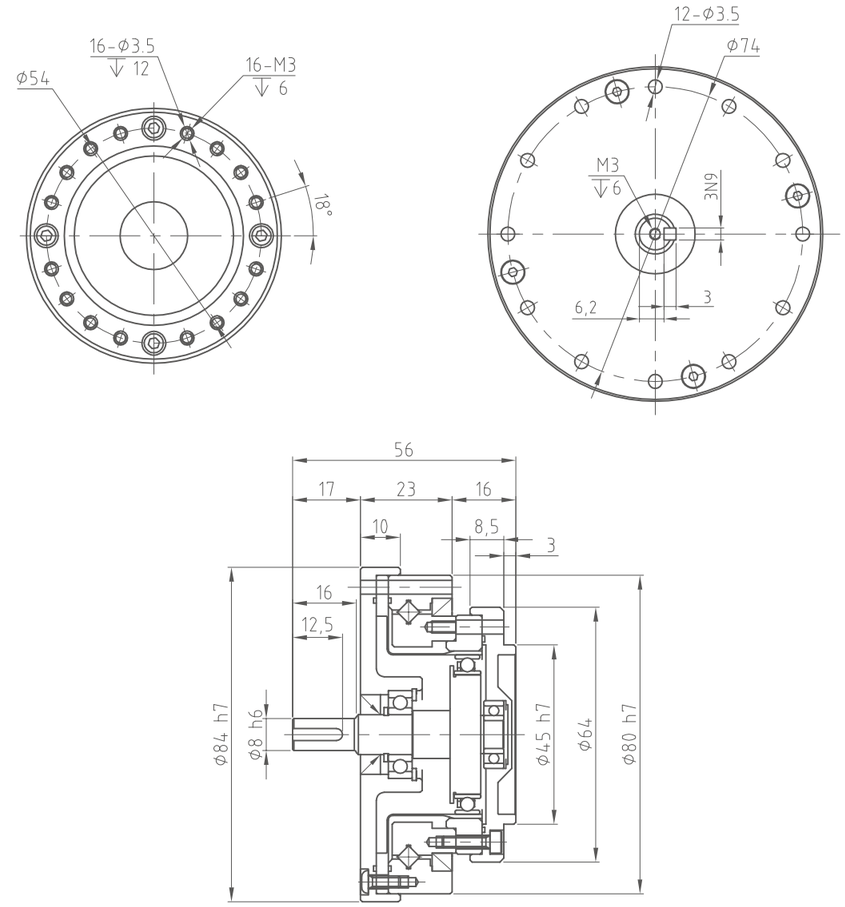


ST/ SN-17XX-U-IV

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART

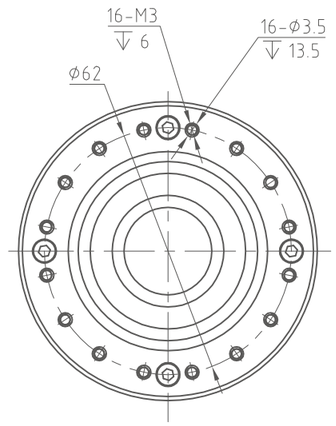
有键槽槽（Keyway）

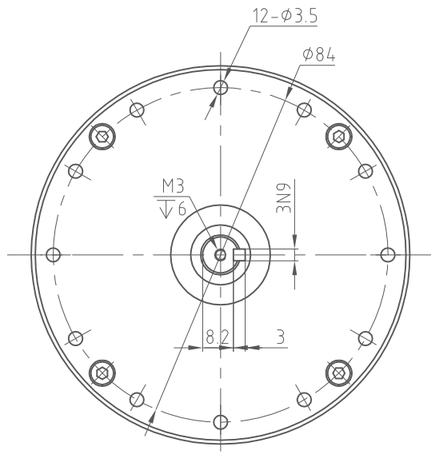


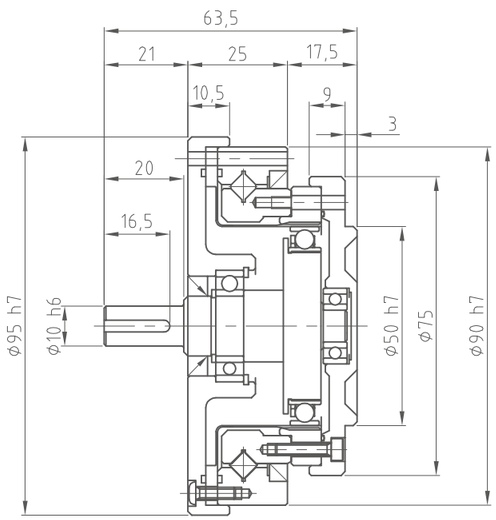
ST/ SN-20-XX-U-IV

20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART



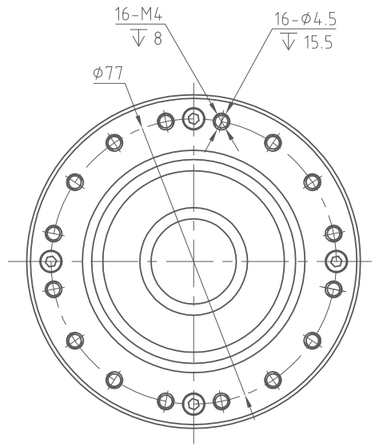


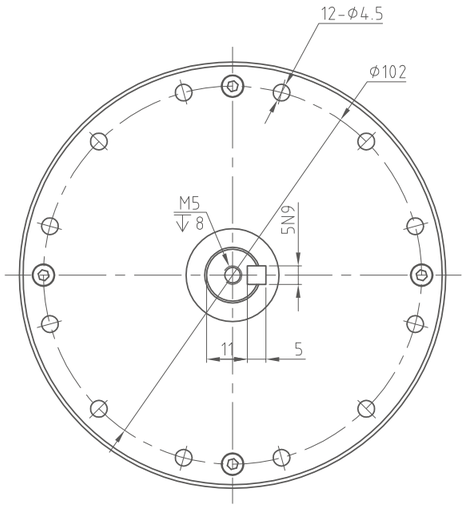


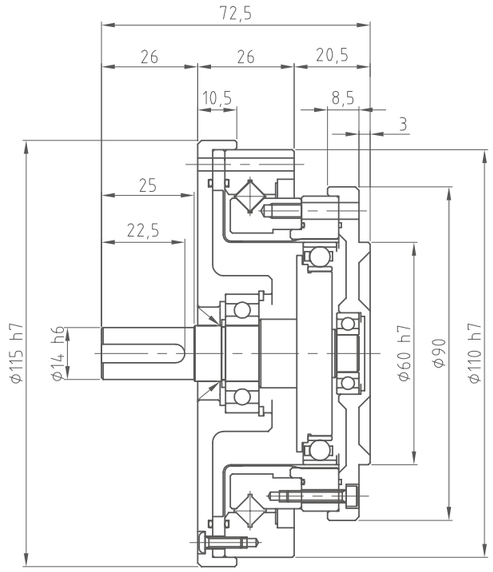
ST/ SN-25-XX-U-IV

25型谐波减速器 25 harmonic reducer

结构图 STRUCTURE CHART



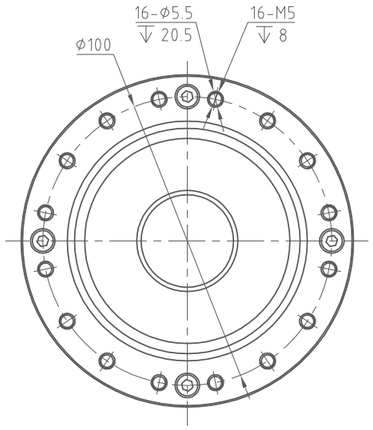


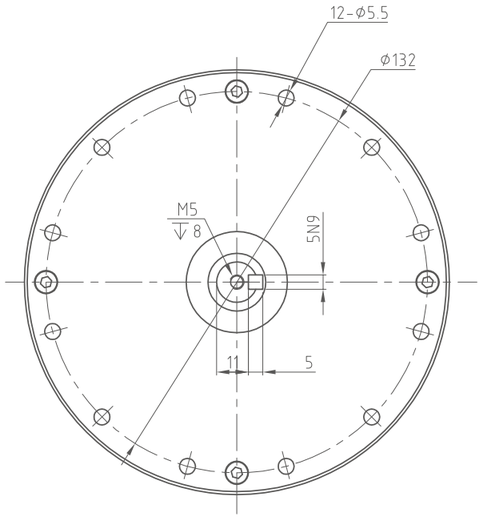


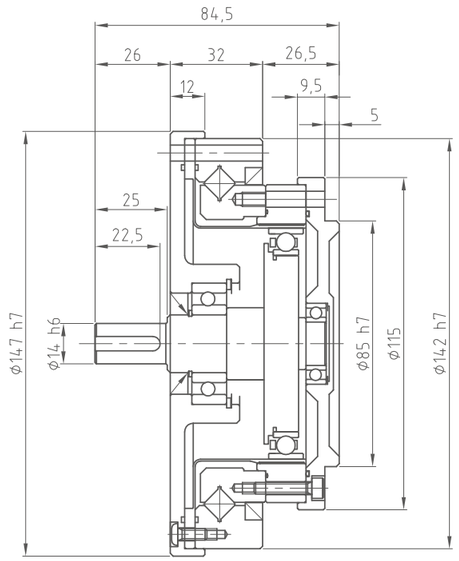
ST/ SN-32-XX-U-IV

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART



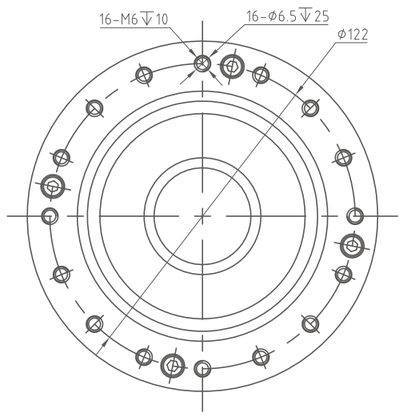


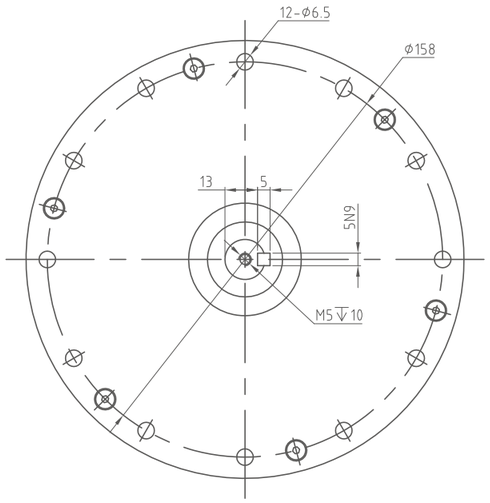


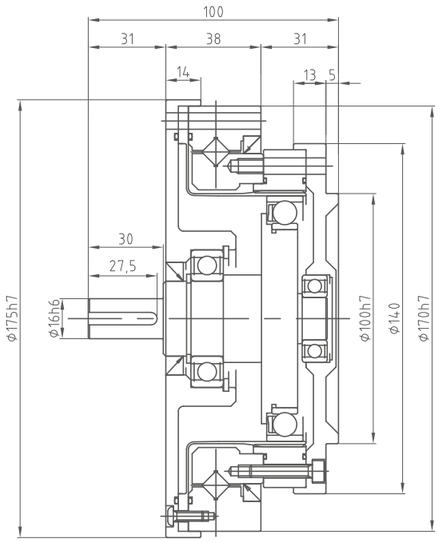
ST/ SN-40-XX-U-IV

40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART







SG SERIES

低噪音 Low noise　大扭力 Large torque

高精度 High-precision

耐磨耐用 Wear resistance and durability

使用寿命长 Long service life

SG高扭矩系列谐波减速器
SG high torque series harmonic reducer









简易型
Simple type(SG-I)

SERIES INTRODUCTION
系列介绍

SG-I 系列Series

高转矩用，转矩容量比标准产品提升30%，使用寿命提高43%，追求高负载容量，高可靠性。

High torque. Compare with standard products, SG series torque capacity is 30%higher and the service life is increased by 43%, with high load capacity and high reliability.

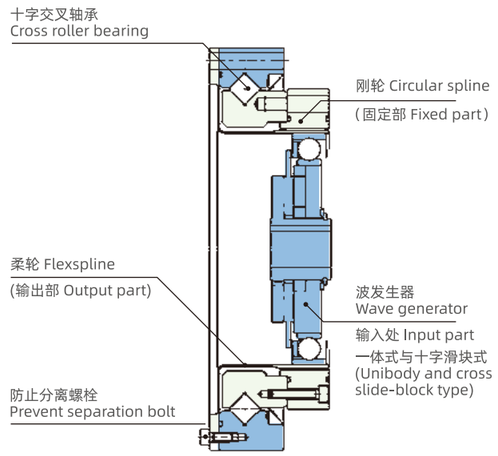
应用领域 Application

- 工业机器人 Industrial robots
- 服务机器人 Service Robots
- 医疗器械设备 Medical Devices
- 印刷电路制造设备 Printed circuit manufacturing equipment
- 自动化及特种设备 Automation and special equipment

SG系列 SG series

SG-I系列组合型结构 Combinative structure of SG-I series

简易型Simple type
(SG-I)



SG-I高扭矩性能参数表 Performance parameter table of SG-I high torque series

型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速(脂润滑) Permissible maximum input rotational speed (Grease)	容许平均输入转速(脂润滑) Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	7	0.7	23	23	9	0.9	46	4.7	8500	3500	≤20	10000
	80	10	1.0	30	3.1	14	1.4	61	6.2				15000
	100	10	1.0	36	3.7	14	1.4	70	7.2				15000
	120	10	1.0	36	3.7	14	1.4	70	7.2				15000
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	≤20	10000
	80	29	2.9	56	5.7	35	3.6	113	12				15000
	100	31	3.2	70	7.2	51	5.2	143	15				15000
	120	31	3.2	70	7.2	51	5.2	112	11				15000
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	≤20	10000
	80	44	4.5	96	9.8	61	6.2	165	17				15000
	100	52	5.3	107	10.9	64	6.5	191	20				15000
	120	52	5.3	113	11.5	64	6.5	191	20				15000
	160	52	5.3	120	12.2	64	6.5	191	20				15000
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	≤20	10000
	80	82	8.4	178	18	113	12	332	34				15000
	100	87	8.9	204	21	140	14	369	38				15000
	120	87	8.9	217	22	140	14	395	40				15000
32	50	99	10	281	29	140	14	497	51	4800	3500	≤20	10000
	80	153	16	395	40	217	22	738	75				15000
	100	178	18	433	44	281	29	841	86				15000
	120	178	18	459	47	281	29	892	91				15000
40	50	178	18	523	53	255	26	892	91	4000	3000	≤20	10000
	80	268	27	675	69	369	38	1270	130				15000
	100	345	35	738	75	484	49	1400	143				15000
	120	382	39	802	82	586	60	1530	156				15000

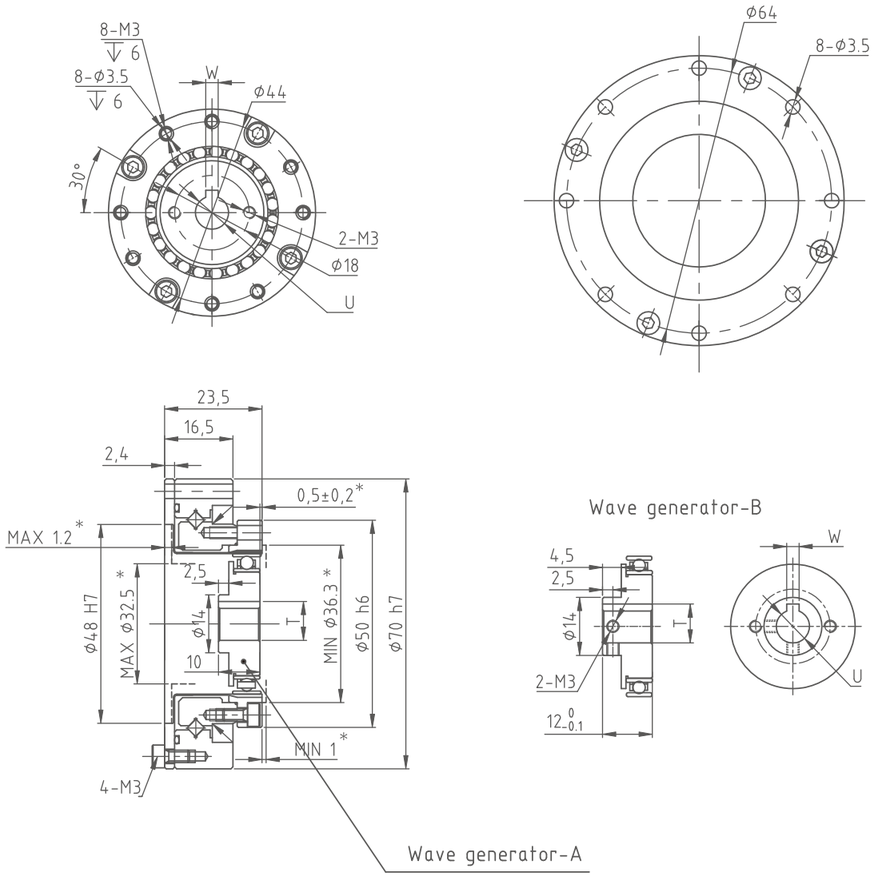
SG-I型密封圈、槽尺寸 SG-I Seal Ring and Slot Size

型号 Series	上壳体 Upper shell				下壳体 Lower shell				备注 Remarks
	大径 Big diameter	小径 Small diameter	深度 Depth	密封圈尺寸 Seal Ring Size	大径 Big diameter	小径 Small diameter	深度 Depth	密封圈尺寸 Seal Ring Size	
14	$39.6^{+0.1}_{0}$	$37^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	37*1	$56.8^{+0.1}_{0}$	$53^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	53*1.5	
17	$49.1^{+0.1}_{0}$	$46.5^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	46.5*1	$66.6^{+0.1}_{0}$	$64^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	64*1	
20	$57.6^{+0.1}_{0}$	$55^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	55*1	$76.86^{+0.1}_{0}$	$73^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	73*1.5	
25	$70.6^{+0.1}_{0}$	$68^{0}_{-0.1}$	$0.75^{+0.1}_{0}$	68*1	$94.2^{+0.1}_{0}$	$90^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	90*1.5	
32	$92^{+0.1}_{0}$	$88^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	88*1.5	$123.1^{+0.1}_{0}$	$119^{0}_{-0.1}$	$1.15^{+0.1}_{0}$	120*1.5	

SG-14-XX-U-I

14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART

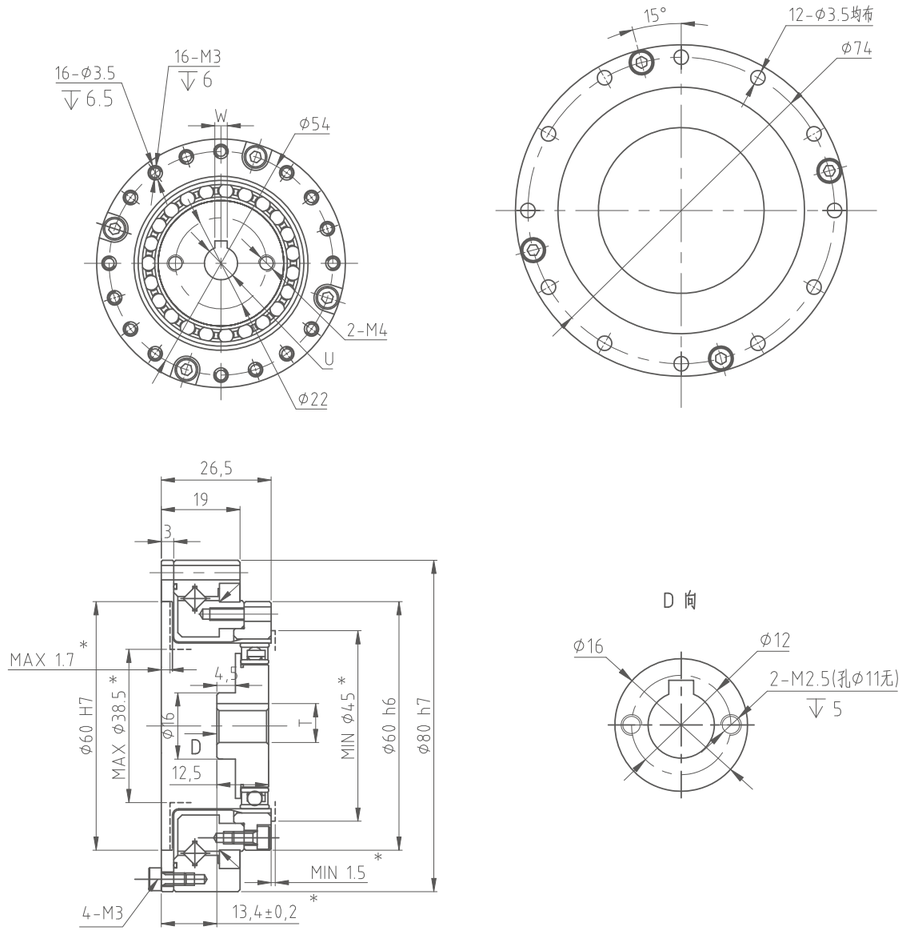


型号/MODEL	U	T	W
Wave generator-A φ6	φ6H7	$7^{+0.1}_{0}$	2JS9/P9
Wave generator-A φ8	φ8H7	$9.4^{+0.1}_{0}$	3JS9/P9

SG-17-XX-U-I

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART

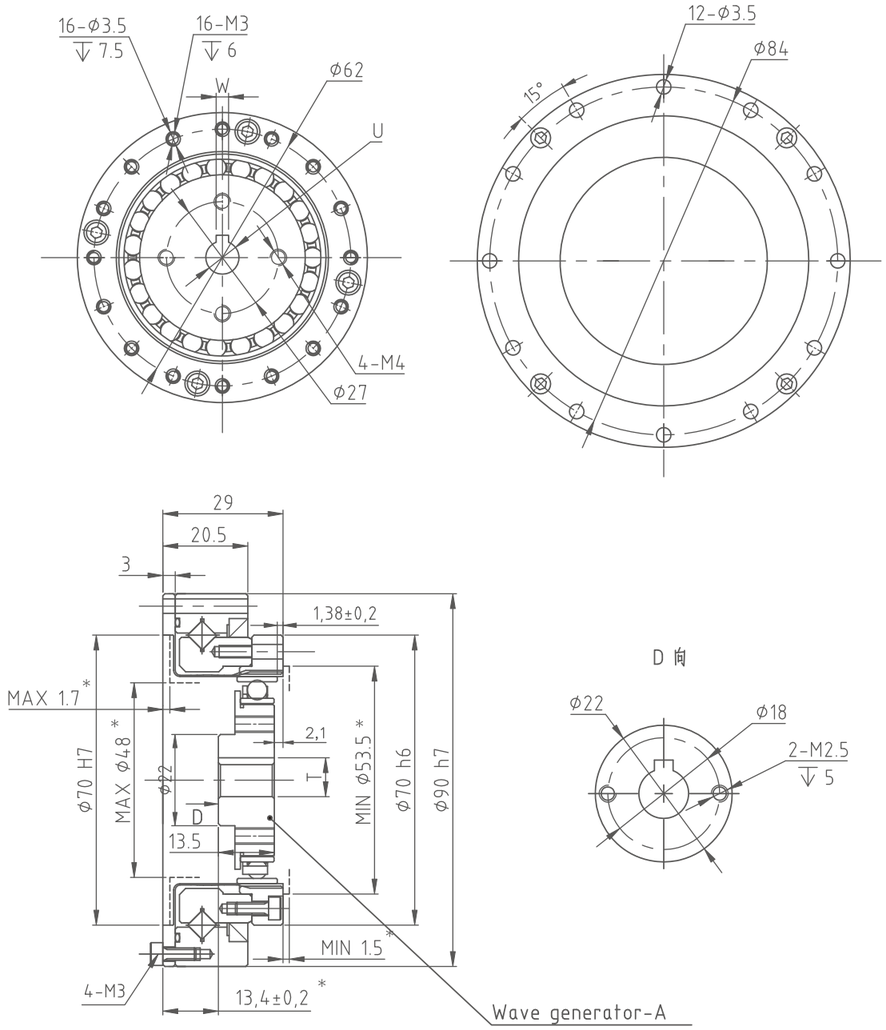


型号/MODEL	U	T	W
Wave generator-A φ8	φ8H7	$9.4^{+0.1}_{0}$	3JS9/P9
Wave generator-A φ11	φ11H7	$12.8^{+0.1}_{0}$	4JS9/P9

SG-20-XX-U-I

20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART

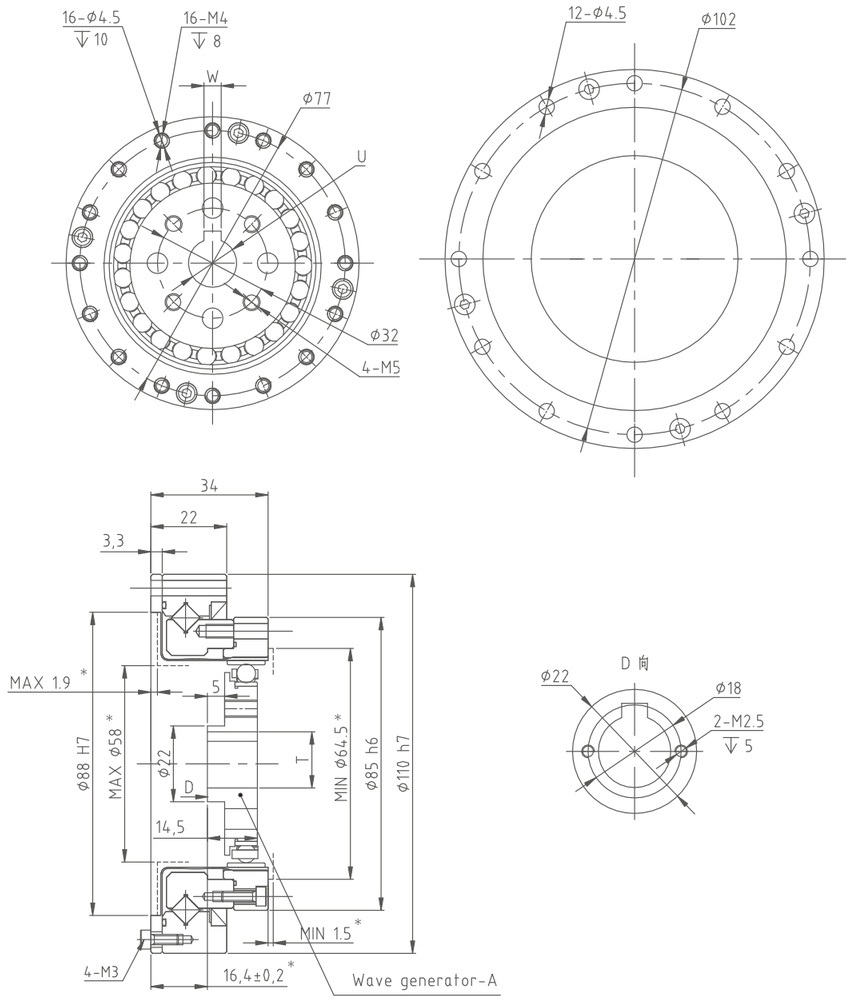


型号/MODEL	U	T	W
Wave generator-A φ8	φ8H7	$9.4^{+0.1}_{0}$	3JS9/P9
Wave generator-A φ11	φ11H7	$12.8^{+0.1}_{0}$	4JS9/P9
Wave generator-A φ14	φ14H7	$16.3^{+0.1}_{0}$	5JS9/P9

SG-25-XX-U-I

25型谐波减速器 25 harmonic reducer

结构图 STRUCTURE CHART

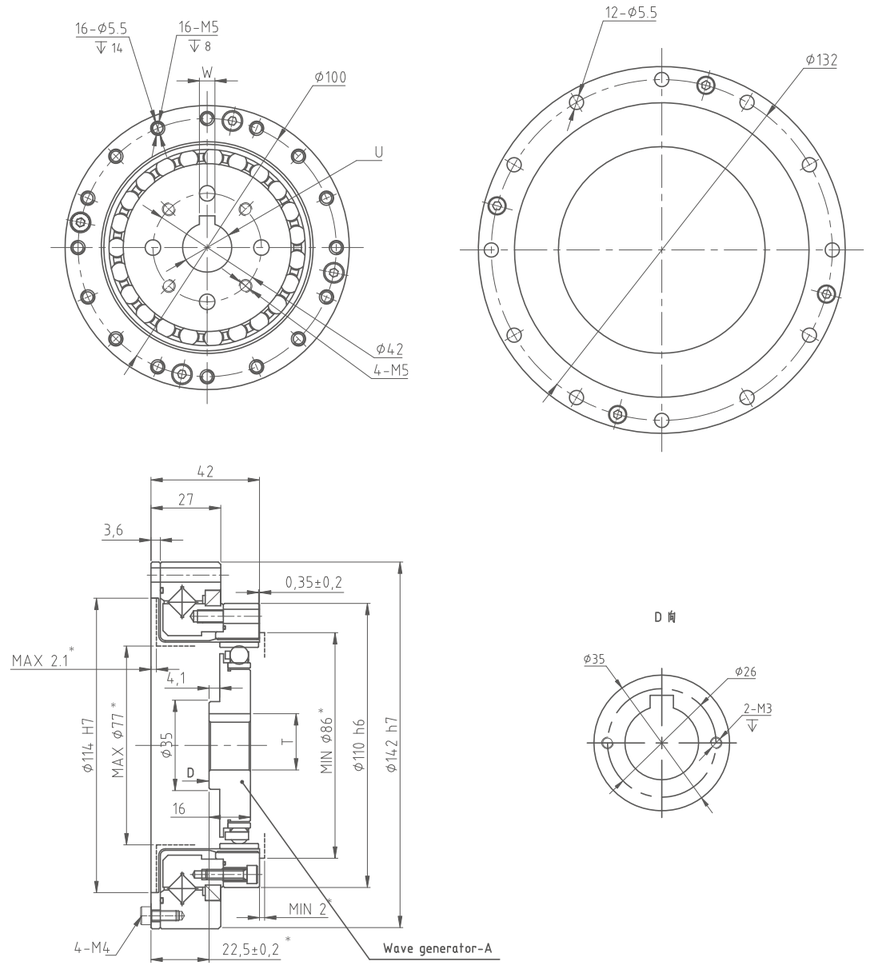


型号/MODEL	U	T	W
Wave generator-A φ11	φ11H7	$12.8^{+0.1}_{0}$	4JS9/P9
Wave generator-A φ14	φ14H7	$16.3^{+0.1}_{0}$	5JS9/P9

SG-32-XX-U-I

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART

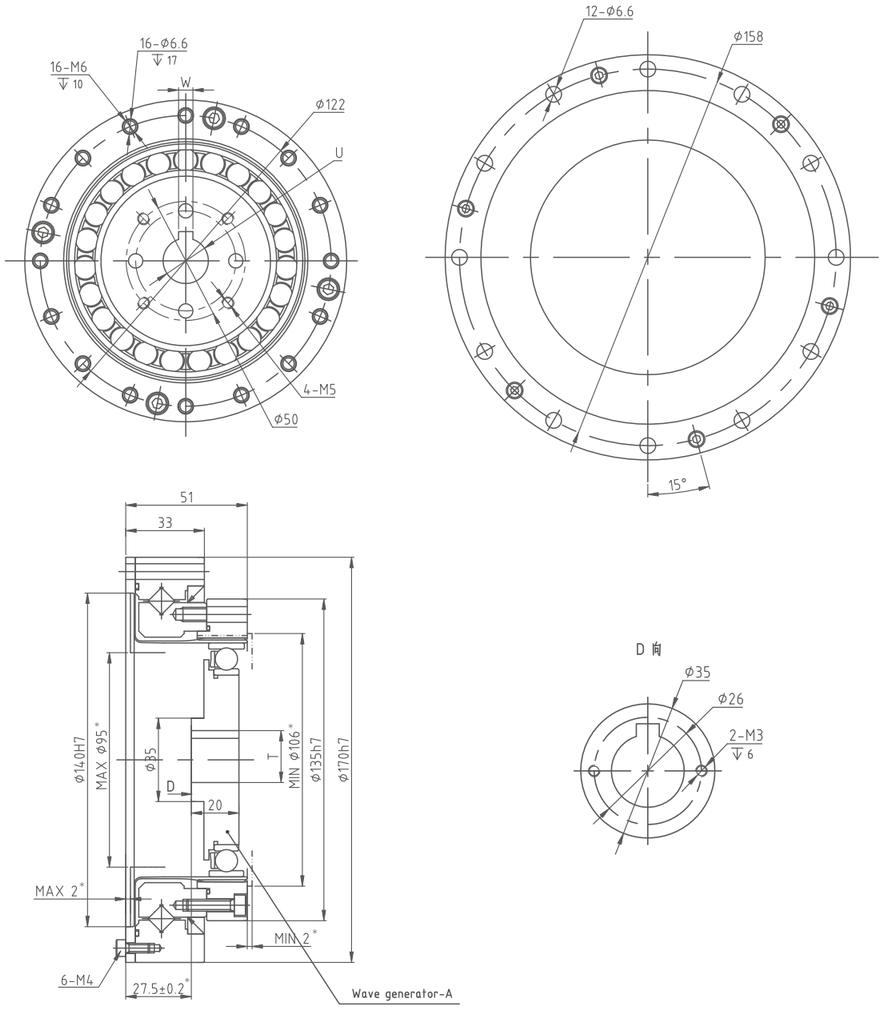


型号/MODEL	U	T	W
Wave generator-A φ14	φ14H7	$16.3^{+0.1}_{0}$	5JS9/P9
Wave generator-A φ19	φ19H7	$21.8^{+0.1}_{0}$	6JS9/P9
Wave generator-A φ22	φ22H7	$24.8^{+0.1}_{0}$	6JS9/P9
		$25.3^{+0.1}_{0}$	8JS9/P9

SG-40-XX-U-I

40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART



型号/MODEL	U	T	W
Wave generator-A Φ14	Φ14H7	$16.3^{+0.1}_{0}$	5JS9/P9
Wave generator-A Φ19	Φ19H7	$21.8^{+0.1}_{0}$	6JS9/P9
Wave generator-A Φ22	Φ22H7	$24.8^{+0.1}_{0}$	6JS9/P9
		$25.3^{+0.1}_{0}$	8JS9/P9



中空型
Hollow type(SG-III)

SERIES INTRODUCTION
系列介绍

SG-III 系列Series

高转矩用，转矩容量比标准产品提升30%，使用寿命提高43%，追求高负载容量，高可靠性。

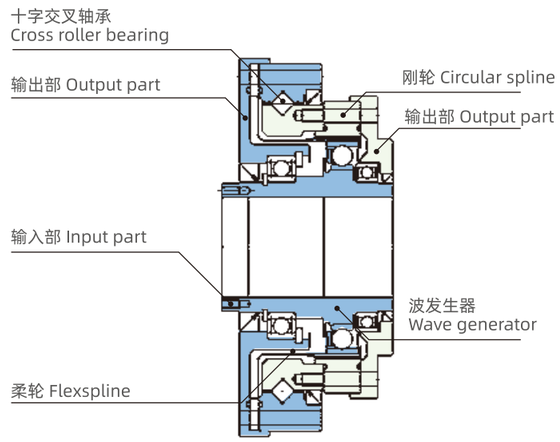
High torque. Compare with standard products, SG series torque capacity is 30%higher and the service life is increased by 43%, with high load capacity and high reliability.

应用领域 Application

- 工业机器人 Industrial robots
- 服务机器人 Service Robots
- 医疗器械设备 Medical Devices
- 印刷电路制造设备 Printed circuit manufacturing equipment
- 自动化及特种设备 Automation and special equipment

SG-III系列组合型结构 Combinative structure of SG-III series

中空型 Hollow type (SG-III)



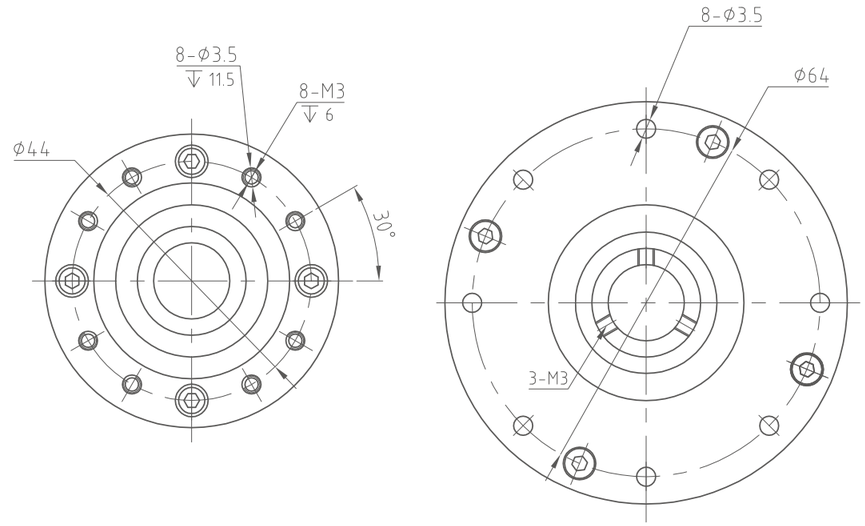
SG-III高扭矩性能参数表 Performance parameter table of SG-III high torque series

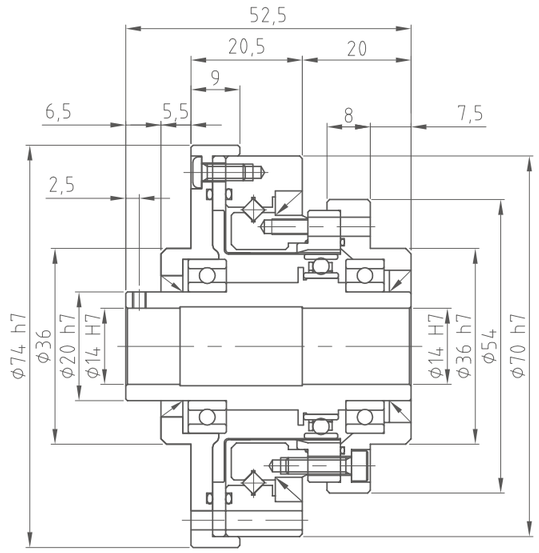
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速(脂润滑) Permissible maximum input rotational speed (Grease)	容许平均输入转速(脂润滑) Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	7	0.7	23	23	9	0.9	46	4.7	8500	3500	≤20	10000
	80	10	1.0	30	3.1	14	1.4	61	6.2				15000
	100	10	1.0	36	3.7	14	1.4	70	7.2				15000
	120	10	1.0	36	3.7	14	1.4	70	7.2				15000
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	≤20	10000
	80	29	2.9	56	5.7	35	3.6	113	12				15000
	100	31	3.2	70	7.2	51	5.2	143	15				15000
	120	31	3.2	70	7.2	51	5.2	112	11				15000
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	≤20	10000
	80	44	4.5	96	9.8	61	6.2	165	17				15000
	100	52	5.3	107	10.9	64	6.5	191	20				15000
	120	52	5.3	113	11.5	64	6.5	191	20				15000
	160	52	5.3	120	12.2	64	6.5	191	20				15000
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	≤20	10000
	80	82	8.4	178	18	113	12	332	34				15000
	100	87	8.9	204	21	140	14	369	38				15000
	120	87	8.9	217	22	140	14	395	40				15000
32	50	99	10	281	29	140	14	497	51	4800	3500	≤20	10000
	80	153	16	395	40	217	22	738	75				15000
	100	178	18	433	44	281	29	841	86				15000
	120	178	18	459	47	281	29	892	91				15000
40	50	178	18	523	53	255	26	892	91	4000	3000	≤20	10000
	80	268	27	675	69	369	38	1270	130				15000
	100	345	35	738	75	484	49	1400	143				15000
	120	382	39	802	82	586	60	1530	156				15000

SG-14-XX-U-III

14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART

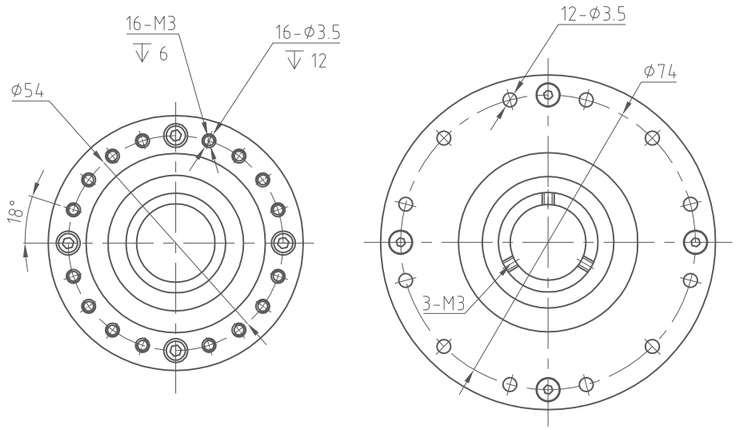


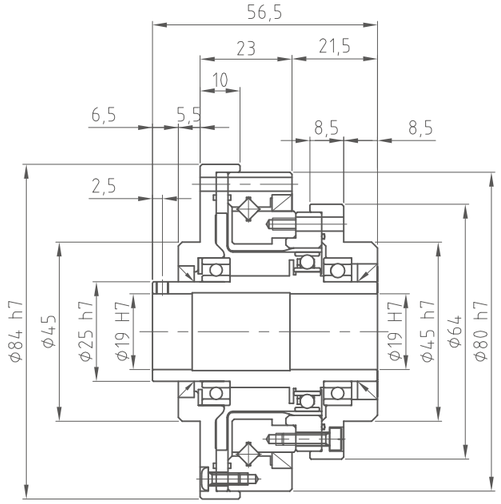


SG-17-XX-U-III

17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART

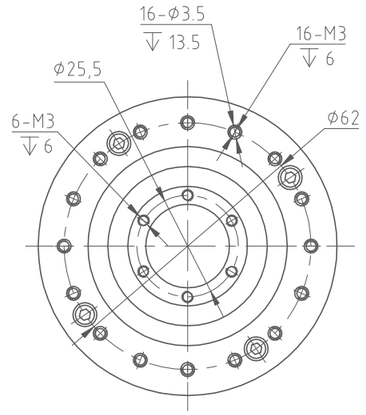


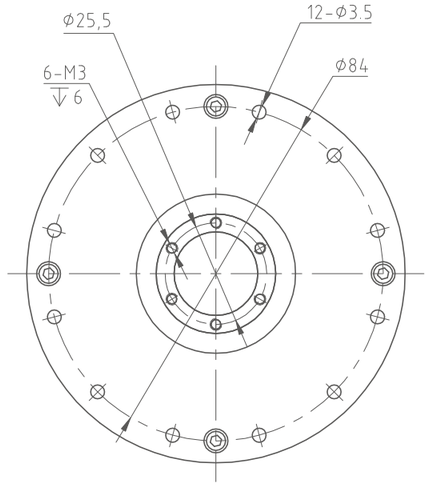


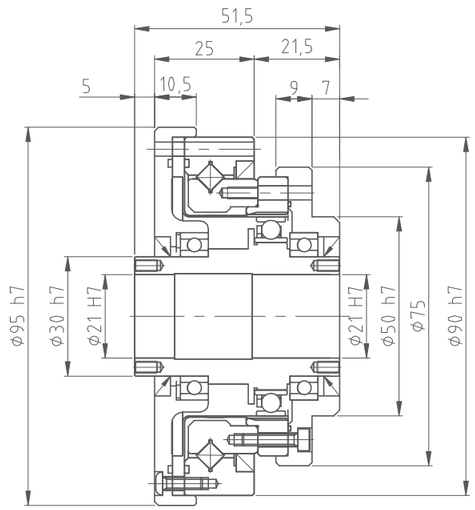
SG-20-XX-U-III

20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART



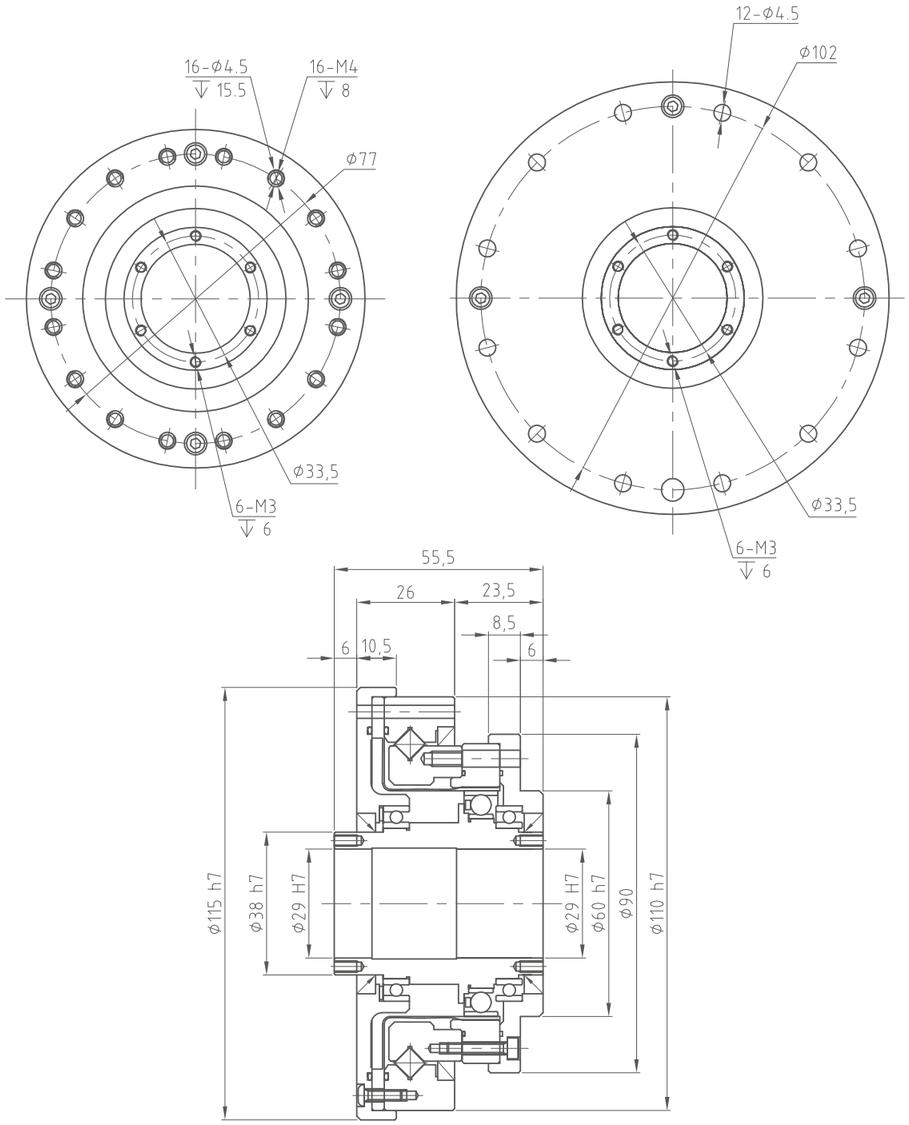




SG-25-XX-U-III

25型谐波减速器 25 harmonic reducer

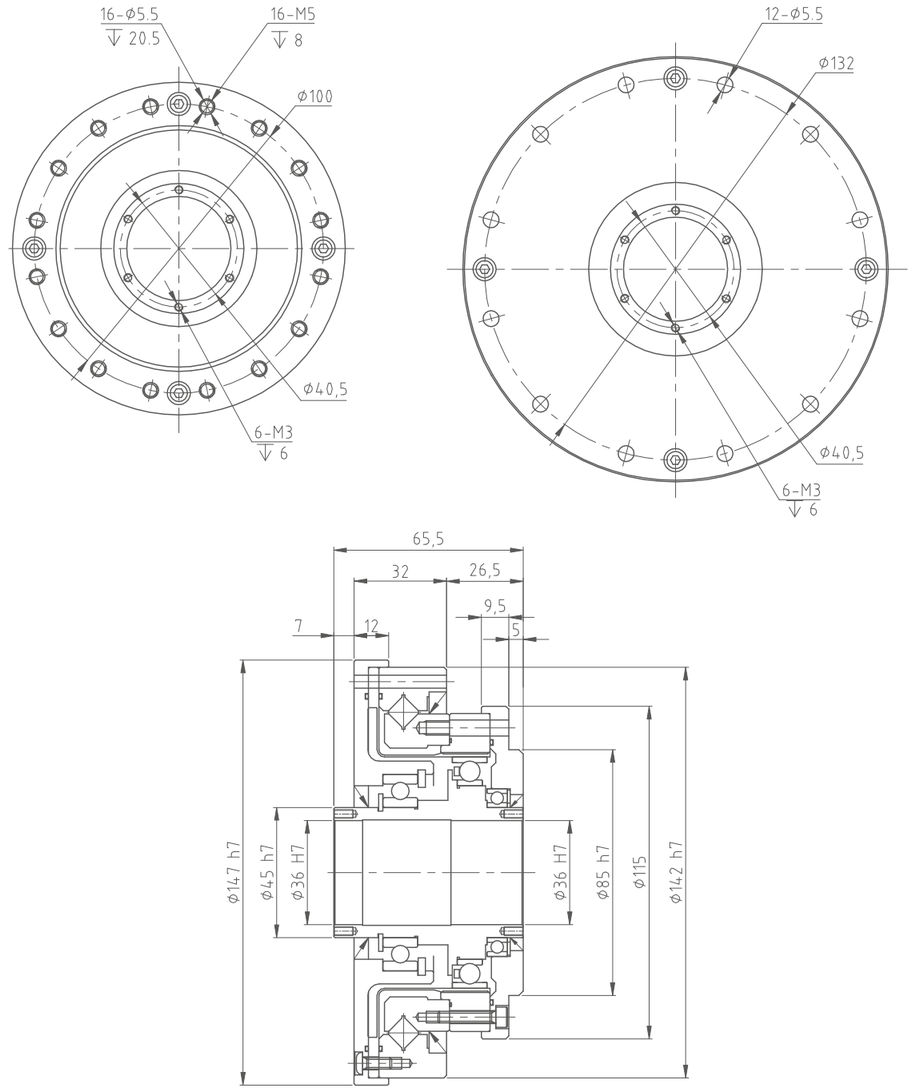
结构图 STRUCTURE CHART



SG-32-XX-U-III

32型谐波减速器 32 harmonic reducer

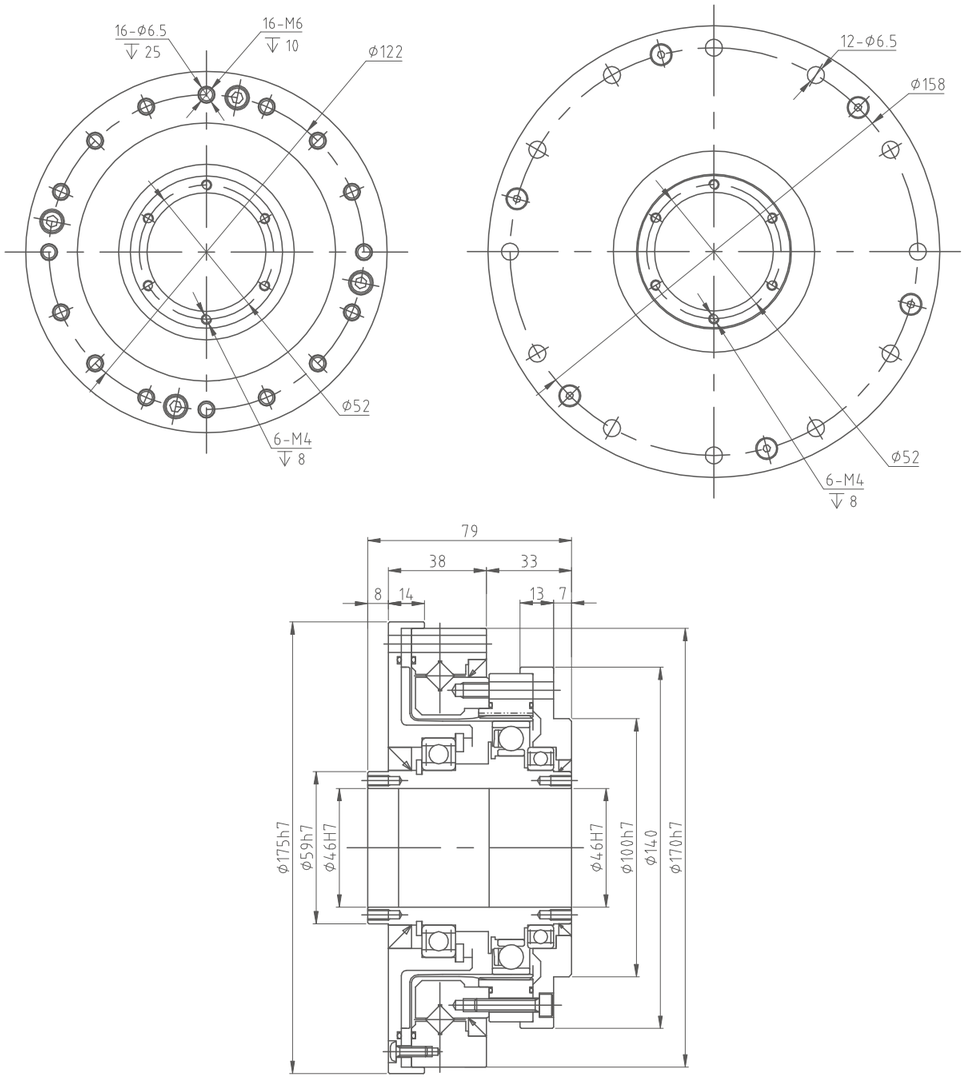
结构图 STRUCTURE CHART



SG-40-XX-U-III

40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART





输入轴型
Input axial type(SG-IV)

SERIES INTRODUCTION
系列介绍

SG-IV 系列Series

高转矩用，转矩容量比标准产品提升30%，使用寿命提高43%，追求高负载容量，高可靠性。

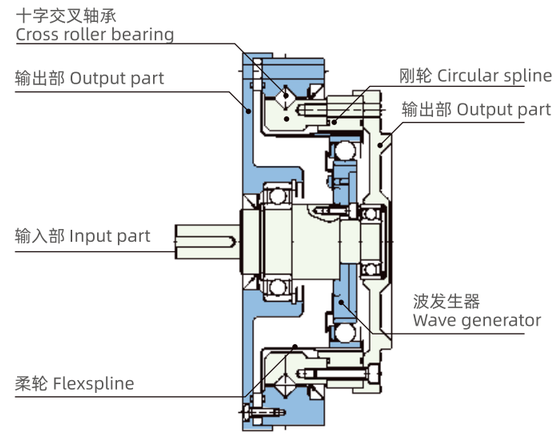
High torque. Compare with standard products, SG series torque capacity is 30%higher and the service life is increased by 43%, with high load capacity and high reliability.

应用领域 Application

- 工业机器人 Industrial robots
- 服务机器人 Service Robots
- 医疗器械设备 Medical Devices
- 印刷电路制造设备 Printed circuit manufacturing equipment
- 自动化及特种设备 Automation and special equipment

SG-IV系列组合型结构 Combinative structure of SG-IV series

输入轴型 Input axial type (SG-IV)



SG-IV高扭矩性能参数表 Performance parameter table of SG-IV high torque series

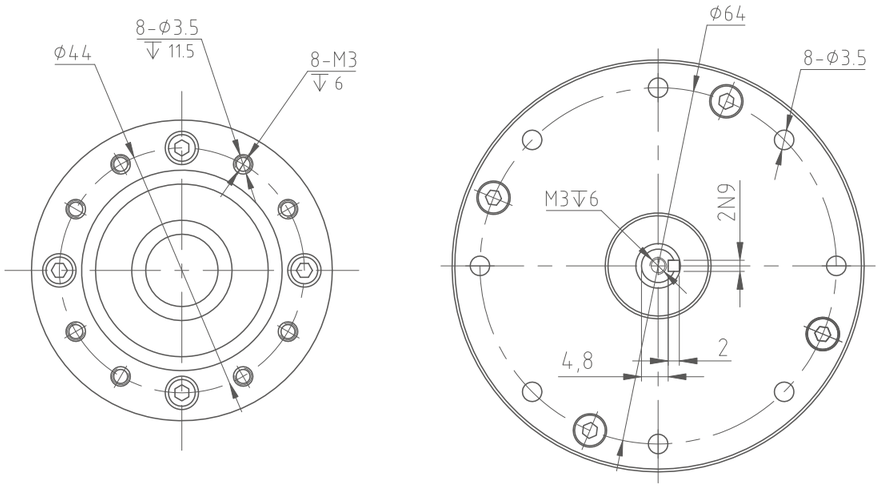
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	50	7	0.7	23	23	9	0.9	46	4.7	8500	3500	≤20	10000
	80	10	1.0	30	3.1	14	1.4	61	6.2				15000
	100	10	1.0	36	3.7	14	1.4	70	7.2				15000
	120	10	1.0	36	3.7	14	1.4	70	7.2				15000
17	50	21	2.1	44	4.5	34	3.4	91	9	7300	3500	≤20	10000
	80	29	2.9	56	5.7	35	3.6	113	12				15000
	100	31	3.2	70	7.2	51	5.2	143	15				15000
	120	31	3.2	70	7.2	51	5.2	112	11				15000
20	50	33	3.3	73	7.4	44	4.5	127	13	6500	3500	≤20	10000
	80	44	4.5	96	9.8	61	6.2	165	17				15000
	100	52	5.3	107	10.9	64	6.5	191	20				15000
	120	52	5.3	113	11.5	64	6.5	191	20				15000
	160	52	5.3	120	12.2	64	6.5	191	20				15000
25	50	51	5.2	127	13	72	7.3	242	25	5600	3500	≤20	10000
	80	82	8.4	178	18	113	12	332	34				15000
	100	87	8.9	204	21	140	14	369	38				15000
	120	87	8.9	217	22	140	14	395	40				15000
32	50	99	10	281	29	140	14	497	51	4800	3500	≤20	10000
	80	153	16	395	40	217	22	738	75				15000
	100	178	18	433	44	281	29	841	86				15000
	120	178	18	459	47	281	29	892	91				15000
40	50	178	18	523	53	255	26	892	91	4000	3000	≤20	10000
	80	268	27	675	69	369	38	1270	130				15000
	100	345	35	738	75	484	49	1400	143				15000
	120	382	39	802	82	586	60	1530	156				15000

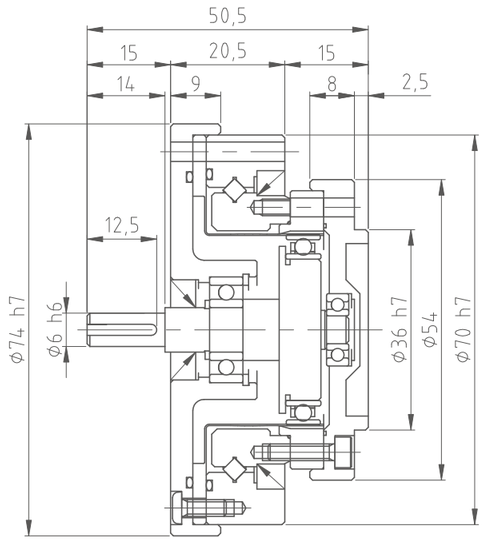
SG-14-XX-U-IV

14型谐波减速器 14 harmonic reducer

结构图 STRUCTURE CHART

有键槽槽（Keyway）



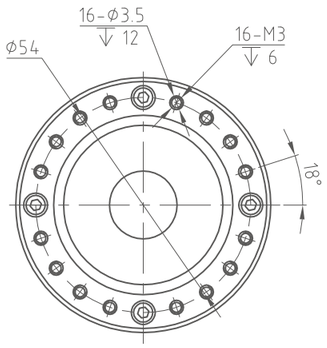


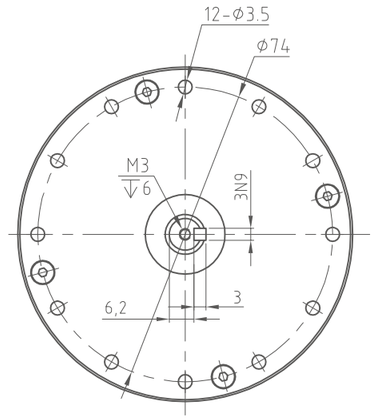
SG-17-XX-U-IV

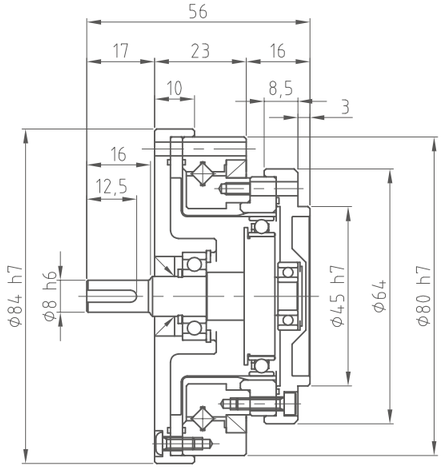
17型谐波减速器 17 harmonic reducer

结构图 STRUCTURE CHART

有键槽槽（Keyway）



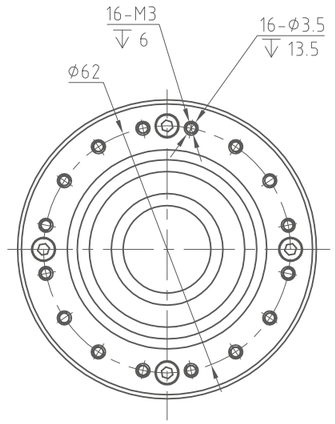


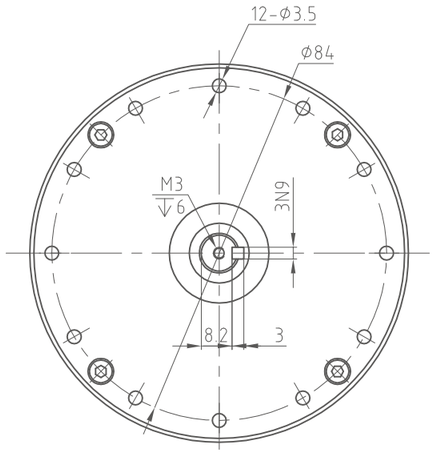


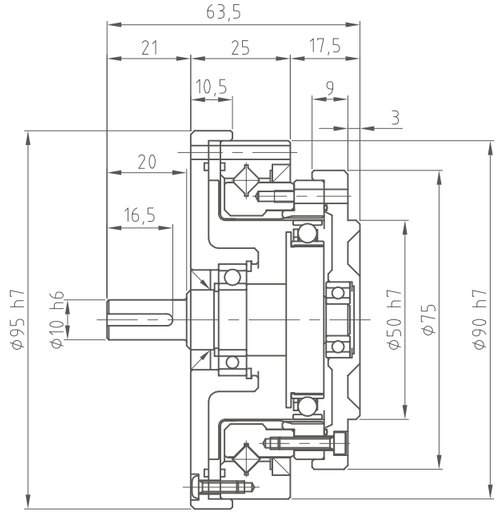
SG-20-XX-U-IV

20型谐波减速器 20 harmonic reducer

结构图 STRUCTURE CHART



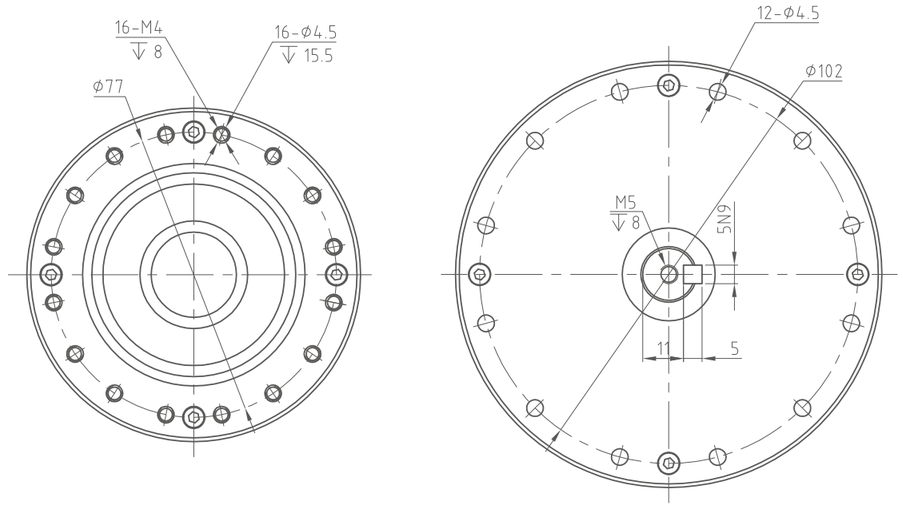


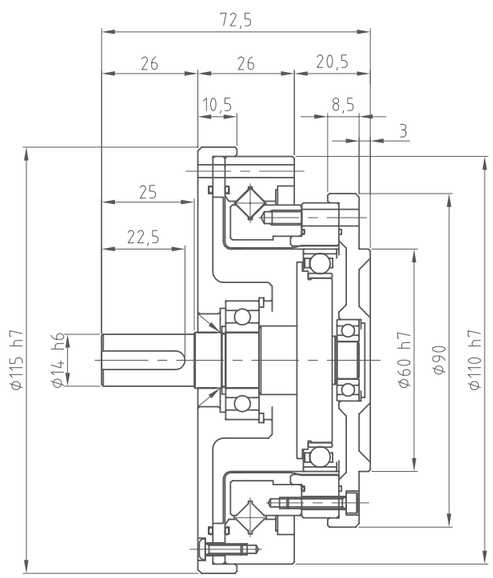


SG-25-XX-U-IV

25型谐波减速器 25 harmonic reducer

结构图 STRUCTURE CHART

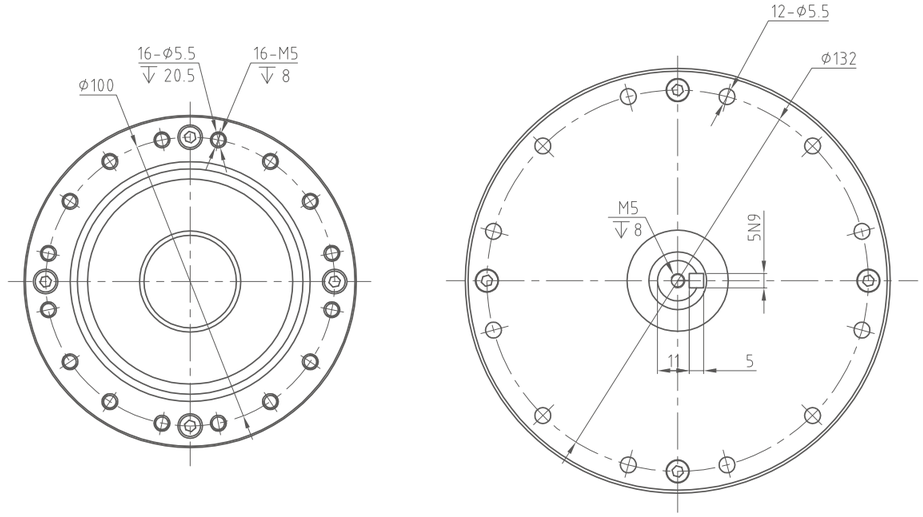


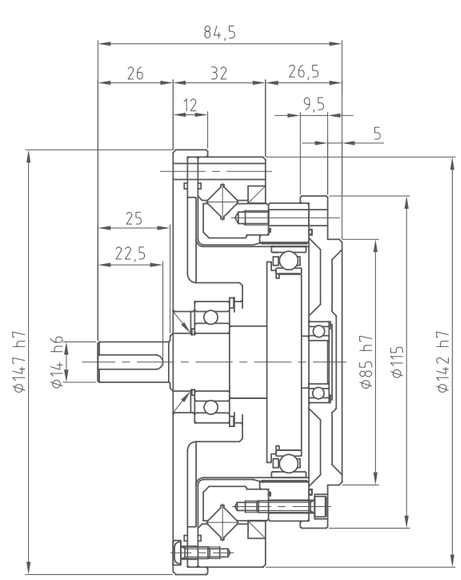


SG-32-XX-U-IV

32型谐波减速器 32 harmonic reducer

结构图 STRUCTURE CHART

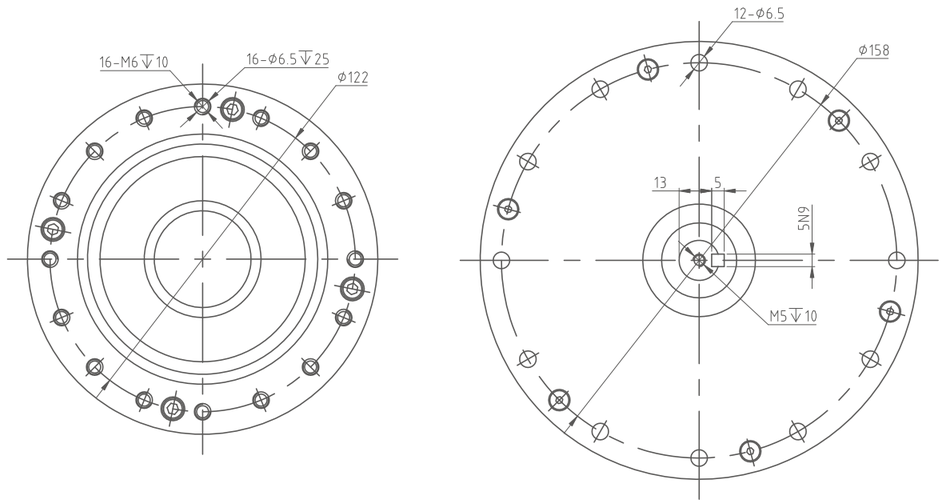


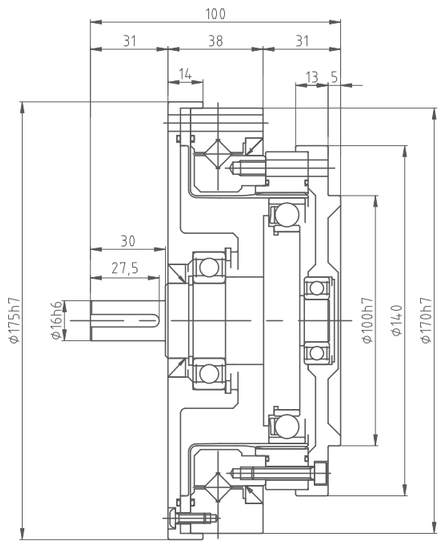


SG-40-XX-U-IV

40型谐波减速器 40 harmonic reducer

结构图 STRUCTURE CHART





SD SERIES

低噪音 Low noise　大扭力 Large torque

高精度 High-precision

耐磨耐用 Wear resistance and durability

使用寿命长 Long service life

SD系列谐波减速器

SD series harmonic reducer



SERIES INTRODUCTION
系列介绍

SD 系列 Series

SD系列柔轮为翻边型超短筒结构，既可采用刚轮端固定，柔轮端输出的连接方式使用;也可采用柔轮端固定，刚轮端输出的连接方式使用。

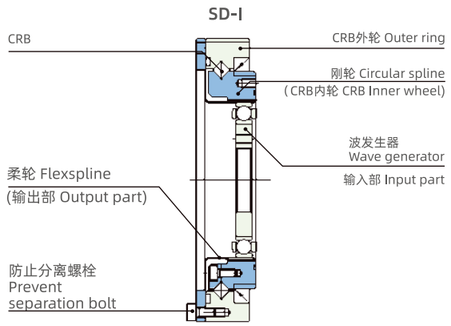
SD series flexspline with flanaing ultra short tube structure. Which can be used when circular spline fixed, and the flexspline as end output, It can also used to fix the flexspline, and the circular spline as end output.

应用领域 Application

- 工业机器人 Industrial robots
- 人型机器人 Humanoid robots
- FPD制造设备 FPD manufacturing equipment
- 宇宙用设备 Space equipment
- 半导体制造设备 Semiconductor manufacturing equipment



SD系列组合型结构
Combinative structure of SD series



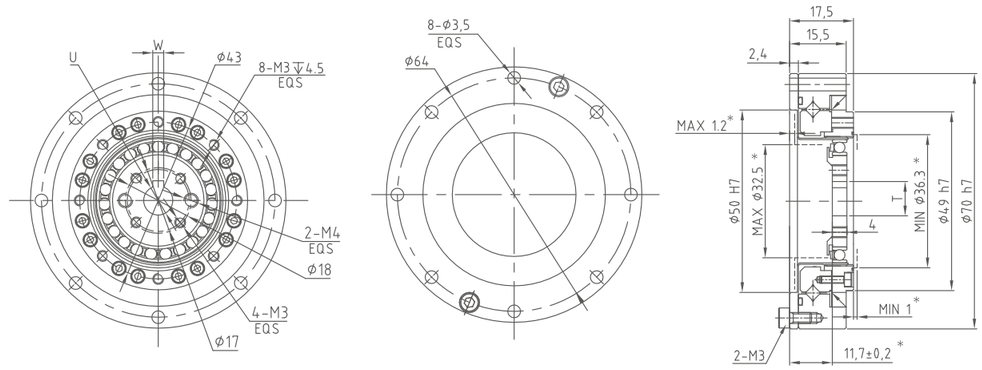
SD额定参数表 Rated parameter table of SD series

型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input	起动停止时的容许峰值转矩 Permissible peak torque at start and stop	平均负载转矩的容许最大值 Permissible maximum value for average load torque	瞬间容许最大转矩 Permissible maximum momentary torque	容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Desian life
		Nm	Nm	Nm	Nm	r/min	r/min	Arc Sec	Hour
14	50	3.7	12	4.8	23	8500	3500	≤20	9000
	80	5.1	15	6.2	29				10000
	100	5.4	19	7.7	35				10000
17	50	11	23	18	48	7300	3500	≤20	9000
	80	14	29	21	54				10000
	100	16	37	27	71				10000
20	50	17	39	24	69	6500	3500	≤20	9000
	80	23	49	28	78				10000
	100	28	57	34	95				10000

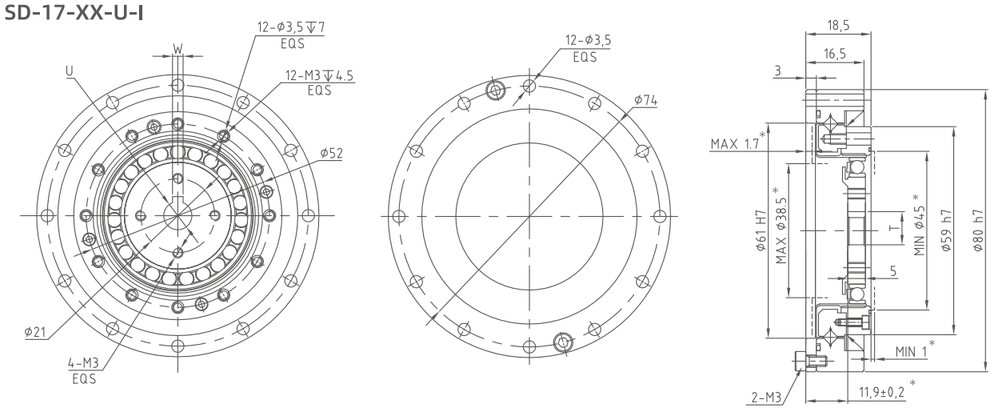
SD-I

结构图 STRUCTURE CHART

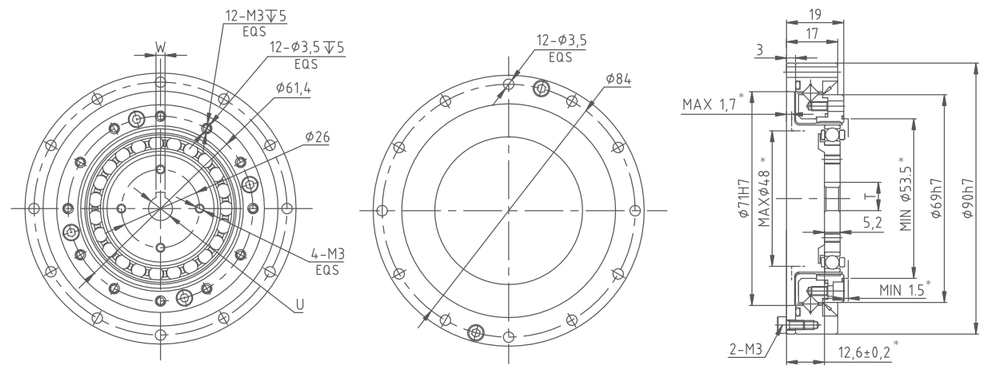
SD-14-XX-U-I



SD-17-XX-U-I



SD-20-XX-U-I



YT SERIES

YT系列谐波减速器
YT series harmonic reducer

低噪音 Low noise
大扭力 Large torque
高精度 High-precision
耐磨耐用 Wear resistance and durability
使用寿命长 Long service life



SERIES INTRODUCTION
系列介绍

YT 系列Series

YT系列是根据市场化需求而研发的小型化产品， YT系列相比转矩容量相同的 CS系列，更为紧凑，薄壁结构，在不改变性能的状态下，追求小型号，并把“小而美”发挥的淋漓尽致。

This miniaturized product was developed according to the marketing demand. Compare with CS series that with the same torque capacity, YT series is more compact and thin-walled, smaller size.

高刚性，直接与伺服电机匹配

High rigidity, directly matched to servo motors

应用领域 Application

- 工业机器人 Industrial robots
- 服务机器人 Service robots
- 医疗器械设备 Medical Devices
- 自动化及特种设备 Automation and special equipment

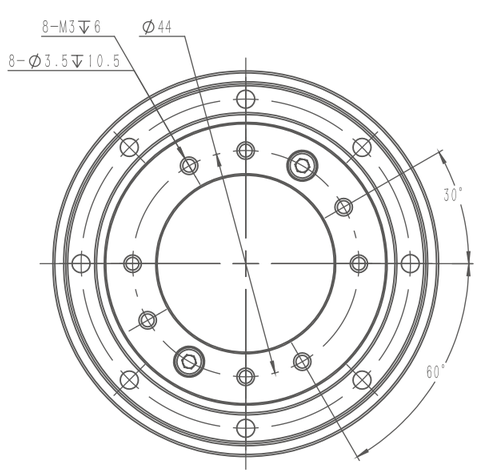
YT额定参数表 Rated parameter table of YT series

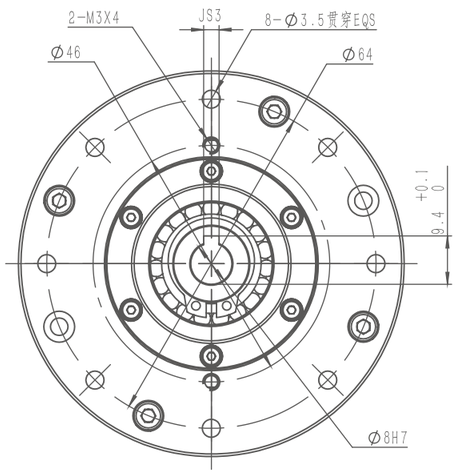
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Design life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
14	31	4.0	0.41	9.0	0.92	6.8	0.69	17	1.7	8500	3500	≤20	10000
	51	5.4	0.55	18	1.8	6.9	0.70	35	3.6				10000
	81	7.8	0.80	23	2.4	11	1.1	47	4.8				15000
	101	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
	121	7.8	0.80	28	2.9	11	1.1	54	5.5				15000
17	31	8.8	0.90	16	1.6	12	1.2	30	3.1	7300	3500	≤20	10000
	51	16	1.6	34	3.5	26	2.6	70	7.1				10000
	81	22	2.2	43	4.4	27	2.7	87	8.9				15000
	101	24	2.4	54	5.5	39	4.0	110	11				15000
	121	24	2.4	54	5.5	39	4.0	86	8.8				15000
20	31	15	1.5	27	2.8	20	2.0	50	5.1	6500	3500	≤20	10000
	51	25	2.5	56	5.7	34	3.5	98	10				10000
	81	34	3.5	74	7.5	47	4.8	127	13				15000
	101	40	4.1	82	8.4	49	5.0	147	15				15000
	121	40	4.1	87	8.9	49	5.0	147	15				15000
	161	40	4.1	92	9.4	49	5.0	147	15				15000
25	31	27	2.8	50	5.1	38	3.9	95	9.7	5600	3500	≤20	10000
	51	39	4.0	98	10	55	5.6	186	19				10000
	81	63	6.4	137	14	87	8.9	255	26				15000
	101	67	6.8	157	16	108	11	284	29				15000
	121	67	6.8	167	17	108	11	304	31				15000
32	31	54	5.5	100	10	75	7.7	200	20	4800	3500	≤20	10000
	51	76	7.8	216	22	108	11	382	39				10000
	81	118	12	304	31	167	17	568	58				15000
	101	137	14	333	34	216	22	647	66				15000
	121	137	14	353	36	216	22	686	70				15000
40	51	137	14	402	41	196	20	686	70	4000	3000	≤20	10000
	81	206	21	519	53	284	29	980	100				15000
	101	265	27	568	58	372	38	1080	110				15000
	121	294	30	617	63	451	46	1180	120				15000

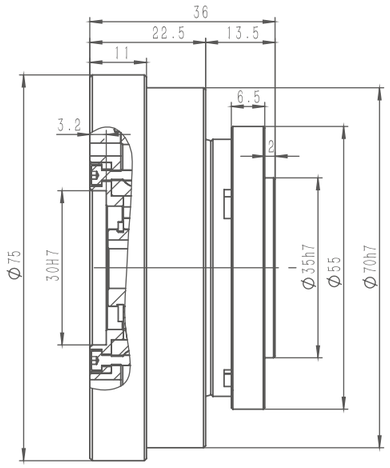
YT-14-XX-U-I

结构图 STRUCTURE CHART

帽型14谐波一体机 Hat type 14-Integratives structure harmonic drive



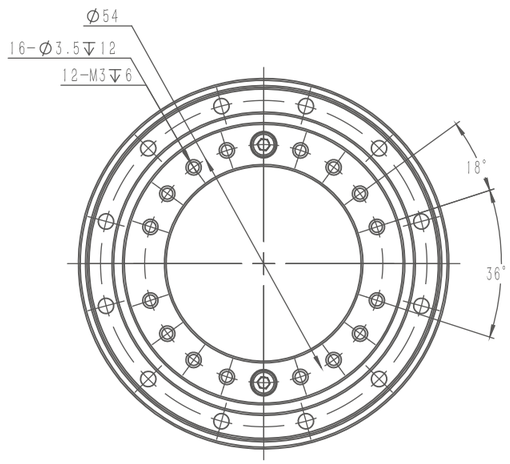


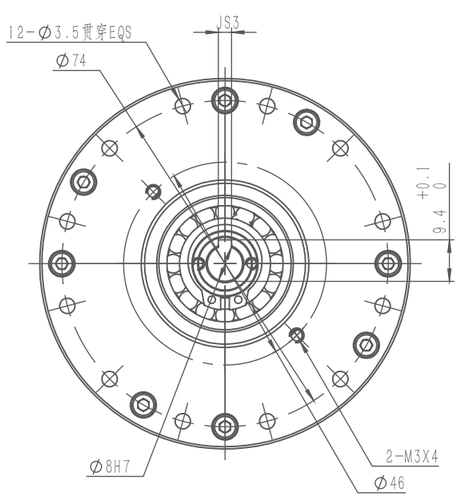


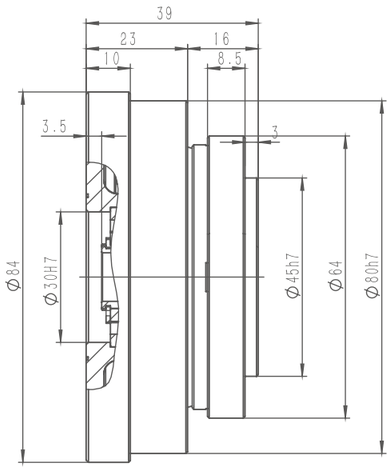
YT-17-XX-U-I

结构图 STRUCTURE CHART

帽型17谐波一体机 Hat type 17-Integratives structure harmonic drive



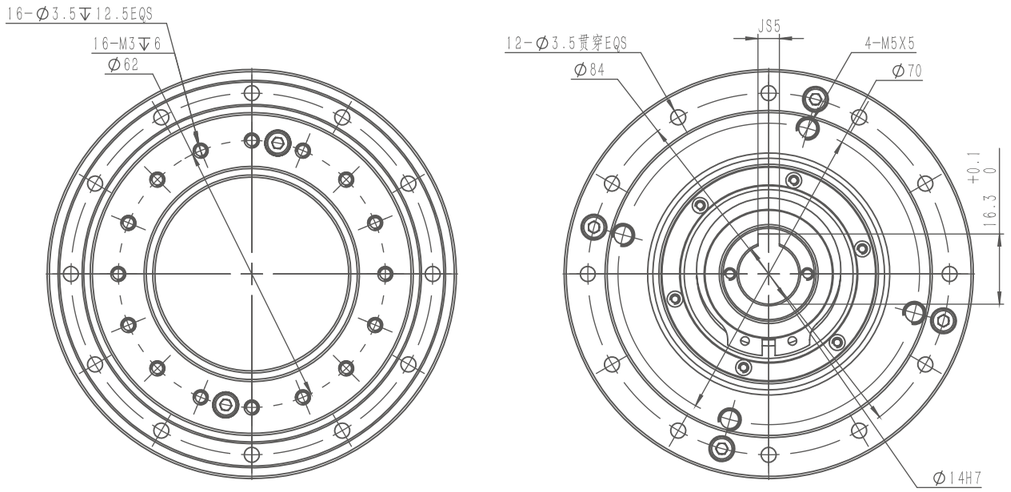


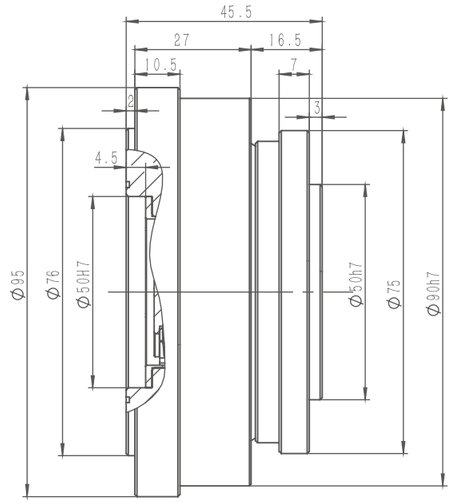


YT-20-XX-U-I

结构图 STRUCTURE CHART

帽型20谐波一体机 Hat type 20-Integratives structure harmonic drive

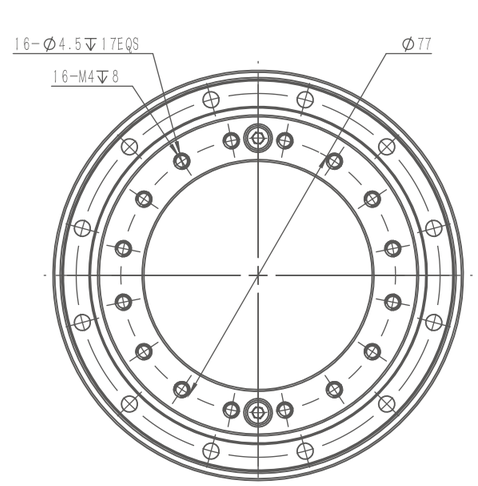


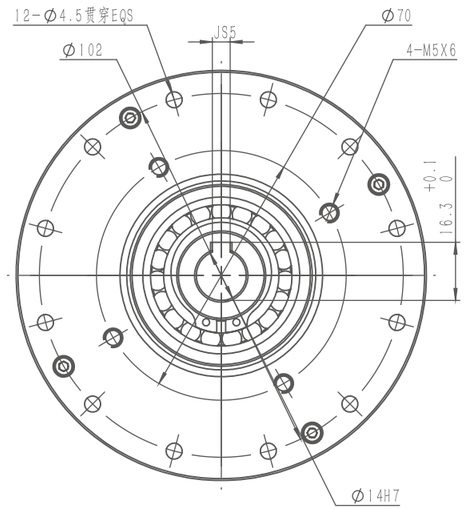


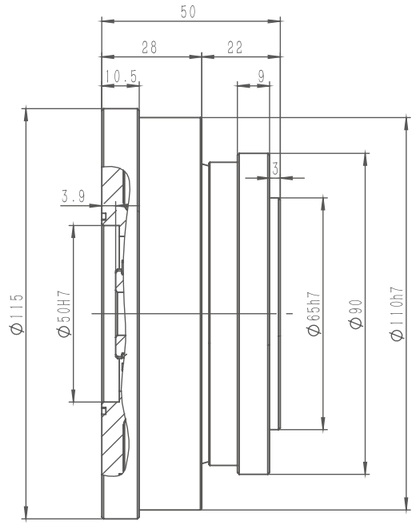
YT-25-XX-U-I

结构图 STRUCTURE CHART

帽型25谐波一体机 Hat type 25-Integratives structure harmonic drive



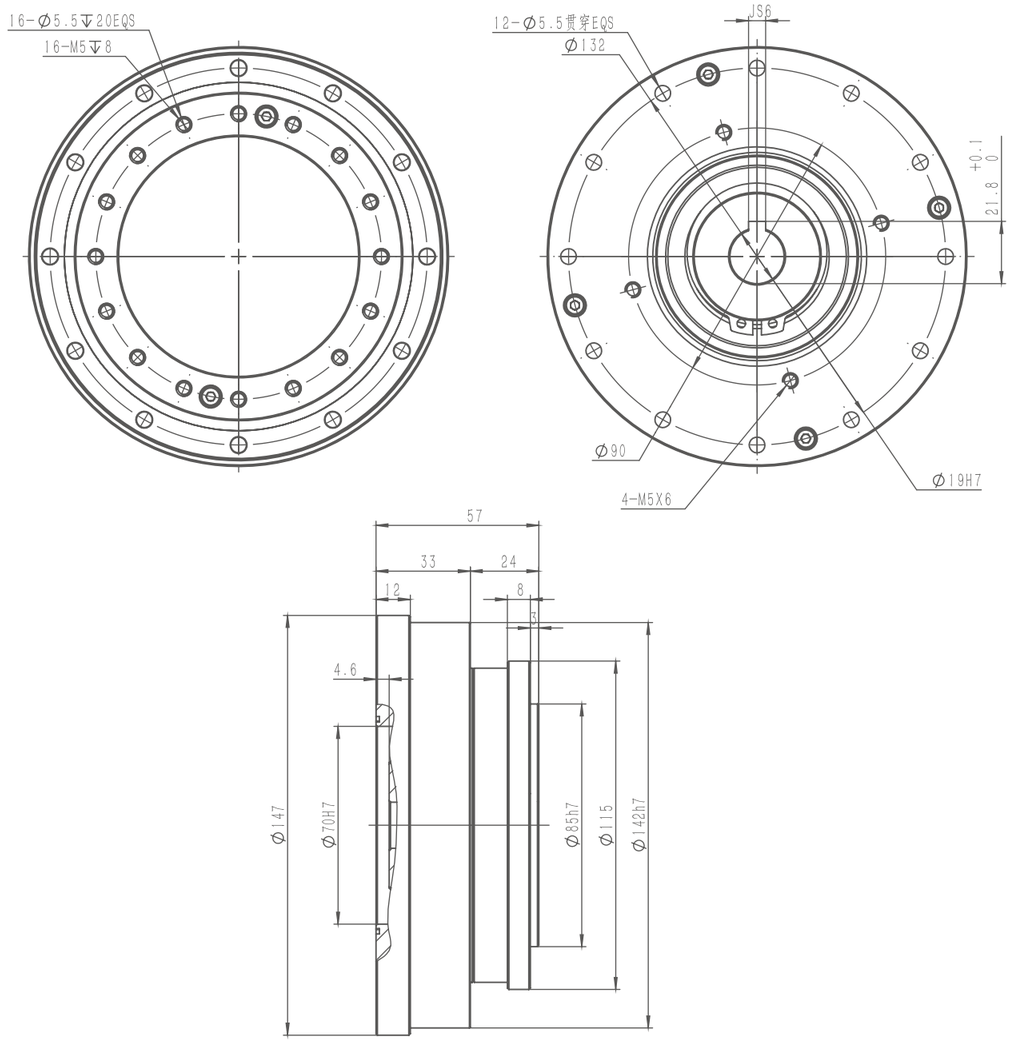




YT-32-XX-U-I

结构图 STRUCTURE CHART

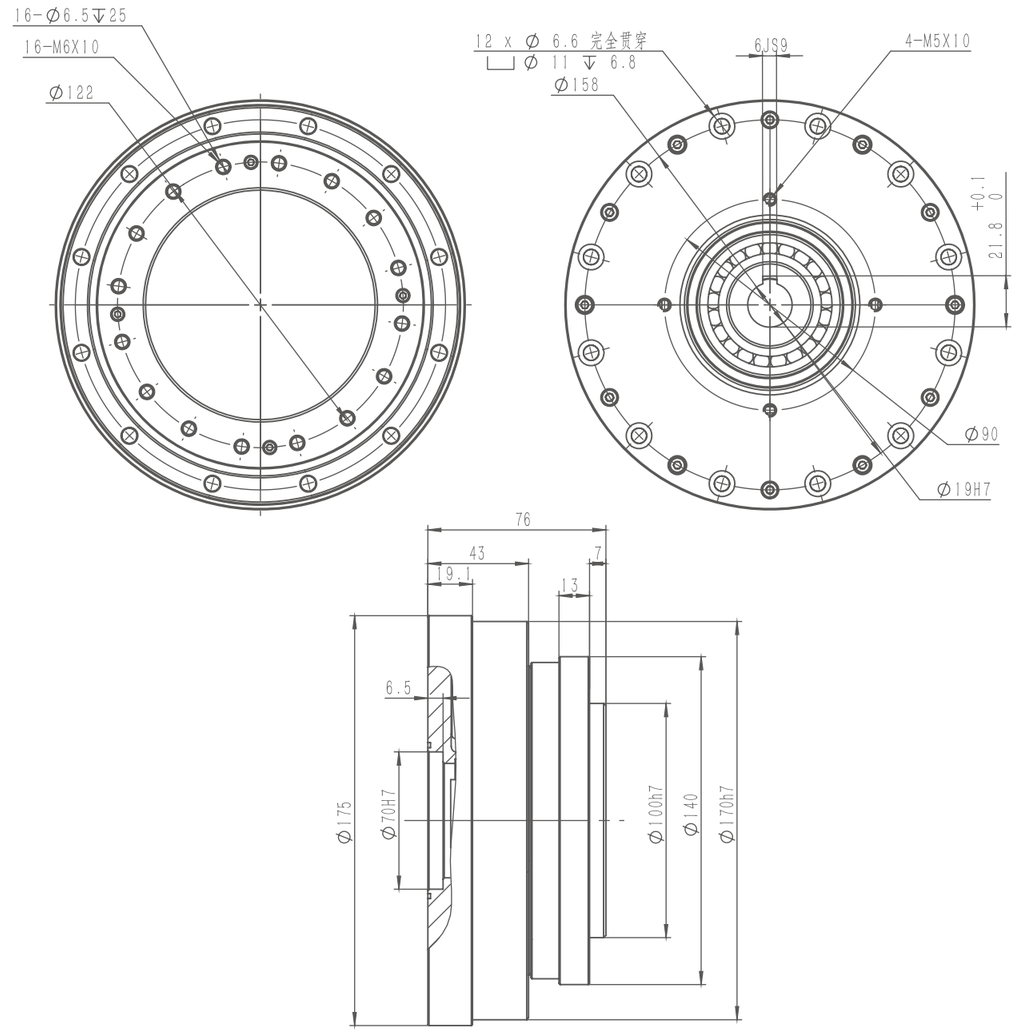
帽型32谐波一体机 Hat type 32-Integratives structure harmonic drive



YT-40-XX-U-I (YT-40-80-19K)

结构图 STRUCTURE CHART

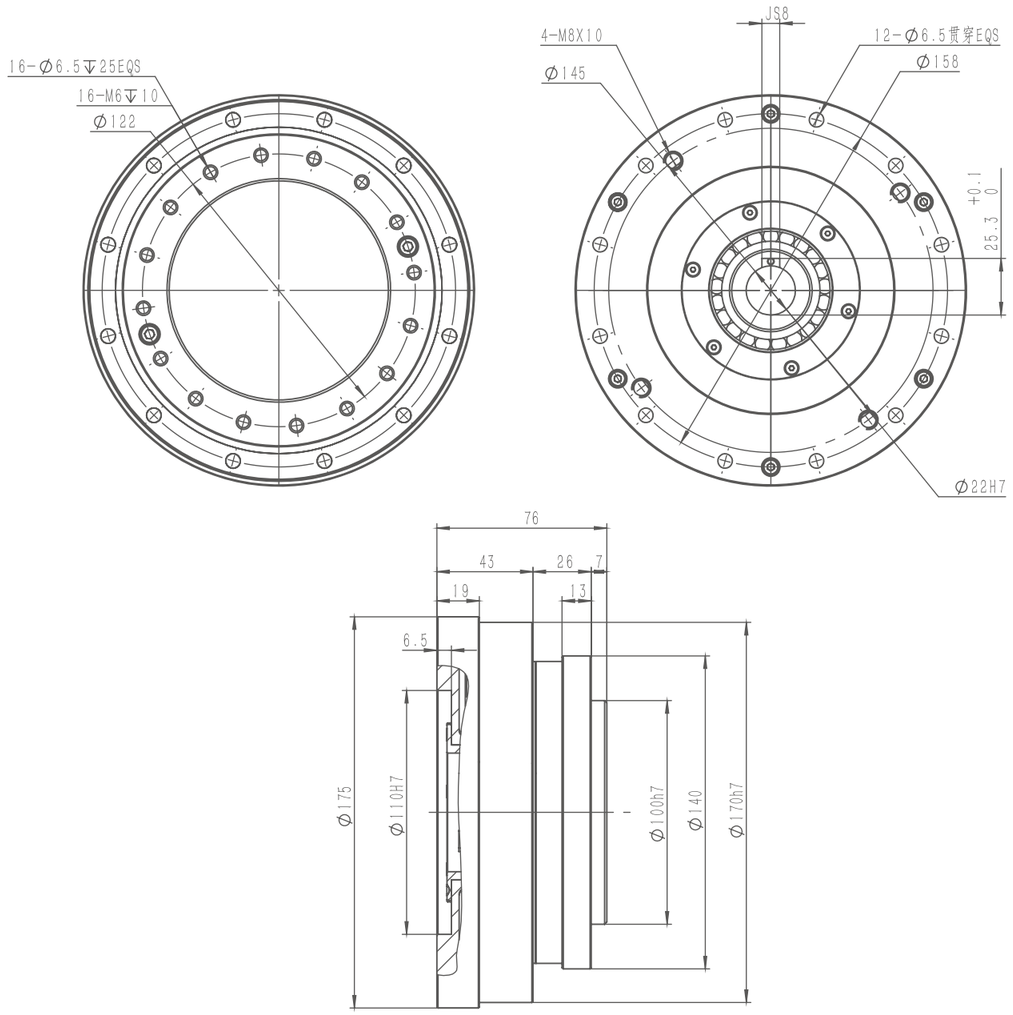
帽型40谐波一体机 Hat type 40-Integratives structure harmonic drive



YT-40-XX-U-I (YT-40-130-22K)

结构图 STRUCTURE CHART

帽型40谐波一体机 Hat type 40-Integratives structure harmonic drive



YC SERIES

低噪音 Low noise
大扭力 Large torque
高精度 High-precision
耐磨耐用 Wear resistance and durability
使用寿命长 Long service life

YC系列谐波减速器
YC series harmonic reducer





SERIES INTRODUCTION
系列介绍

YC 系列Series

YC是基于HC系列开发的产品，每个型号都有用于支撑外部负载，具有高刚性的交叉滚子轴承。每个型号都有相对应的伺服电机法兰，直接与减速机相连。

YC is a product developed based on the HC series, each model has cross roller bearings with high rigidity for supporting external loads. Each model has a corresponding servo motor flange, which is directly connected to the gearbox.

应用领域 Application

工业机器人 Industrial robots

服务机器人 Service robots

医疗器械设备 Medical Devices

自动化及特种设备 Automation and special equipment

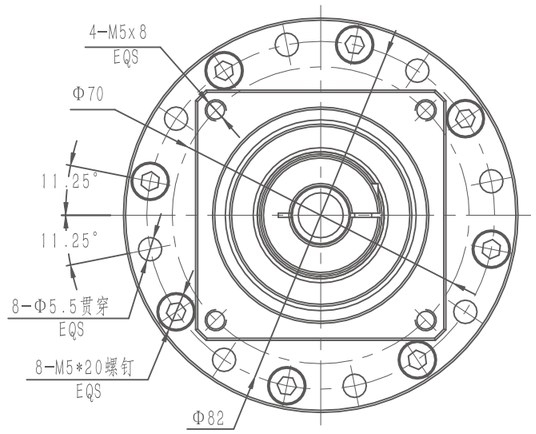
YC系列额定参数表 Rated parameter table of YC series

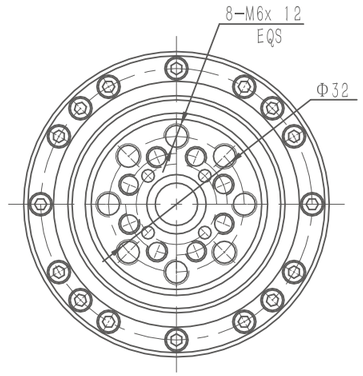
型号 Model	速比 Reduction ratio	输入2000r/min时的额定转矩 Rated torque at 2000r/min input		起动停止时的容许峰值转矩 Permissible peak torque at start and stop		平均负载转矩的容许最大值 Permissible maximum value for average load torque		瞬间容许最大转矩 Permissible maximum momentary torque		容许最高输入转速（脂润滑） Permissible maximum input rotational speed (Grease)	容许平均输入转速（脂润滑） Permissible average input rotational speed (Greaae)	背隙 Backlash	设计寿命 Design life
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm	r/min	r/min	Arc Sec	Hour
20	30	15	1.5	27	2.8	20	2.0	50	5.1	6500	3500	≤20	10000
	50	25	2.5	56	5.7	34	3.5	98	10				10000
	80	34	3.5	74	7.5	47	4.8	127	13				15000
	100	40	4.1	82	8.4	49	5.0	147	15				15000
	120	40	4.1	87	8.9	49	5.0	147	15				15000
	160	40	4.1	92	9.4	49	5.0	147	15				15000
25	30	27	2.8	50	5.1	38	3.9	95	9.7	5600	3500	≤20	10000
	50	39	4.0	98	10	55	5.6	186	19				10000
	80	63	6.4	137	14	87	8.9	255	26				15000
	100	67	6.8	157	16	108	11	284	29				15000
	120	67	6.8	167	17	108	11	304	31				15000
32	30	54	5.5	100	10	75	7.7	200	20	4800	3500	≤20	10000
	50	76	7.8	216	22	108	11	382	39				10000
	80	118	12	304	31	167	17	568	58				15000
	100	137	14	333	34	216	22	647	66				15000
	120	137	14	353	36	216	22	686	70				15000

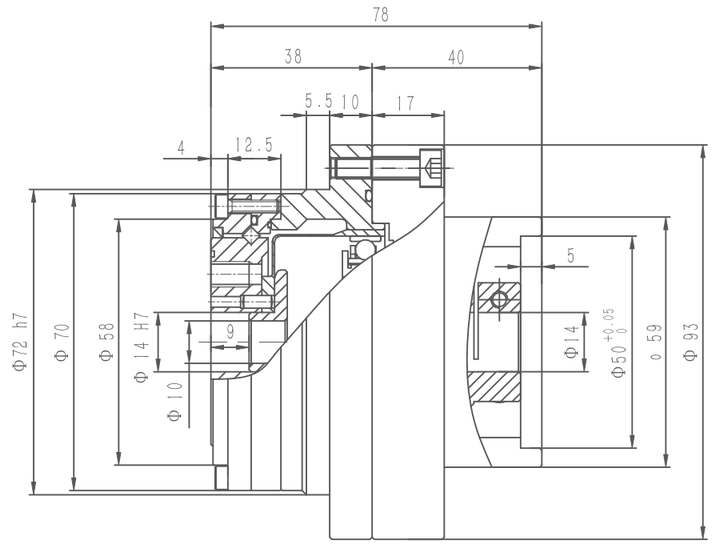
YC-20-XX-U-I

结构图 STRUCTURE CHART

20谐波一体机 Hat type 20-Integratives structure harmonic drive



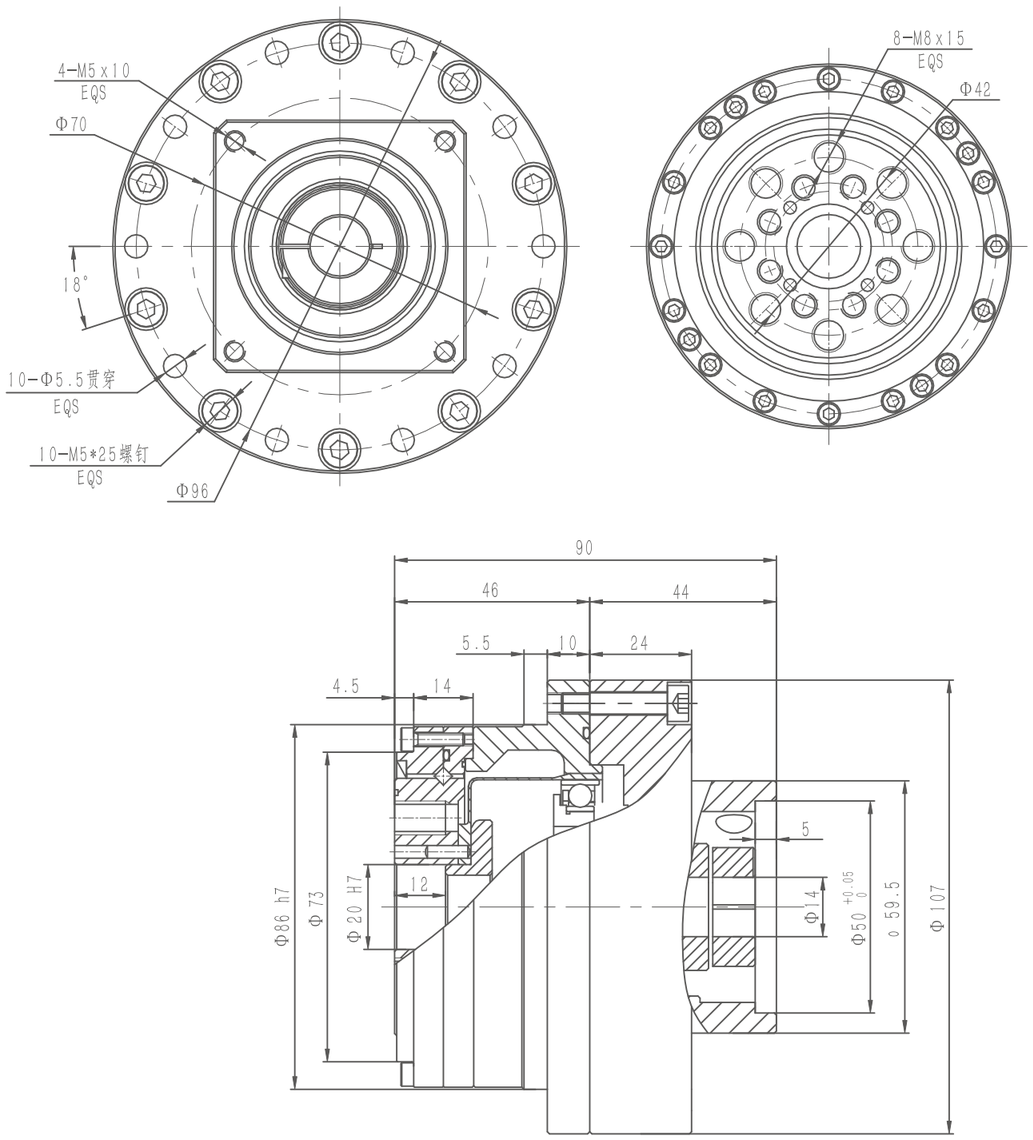




YC-25-XX-U-I

结构图 STRUCTURE CHART

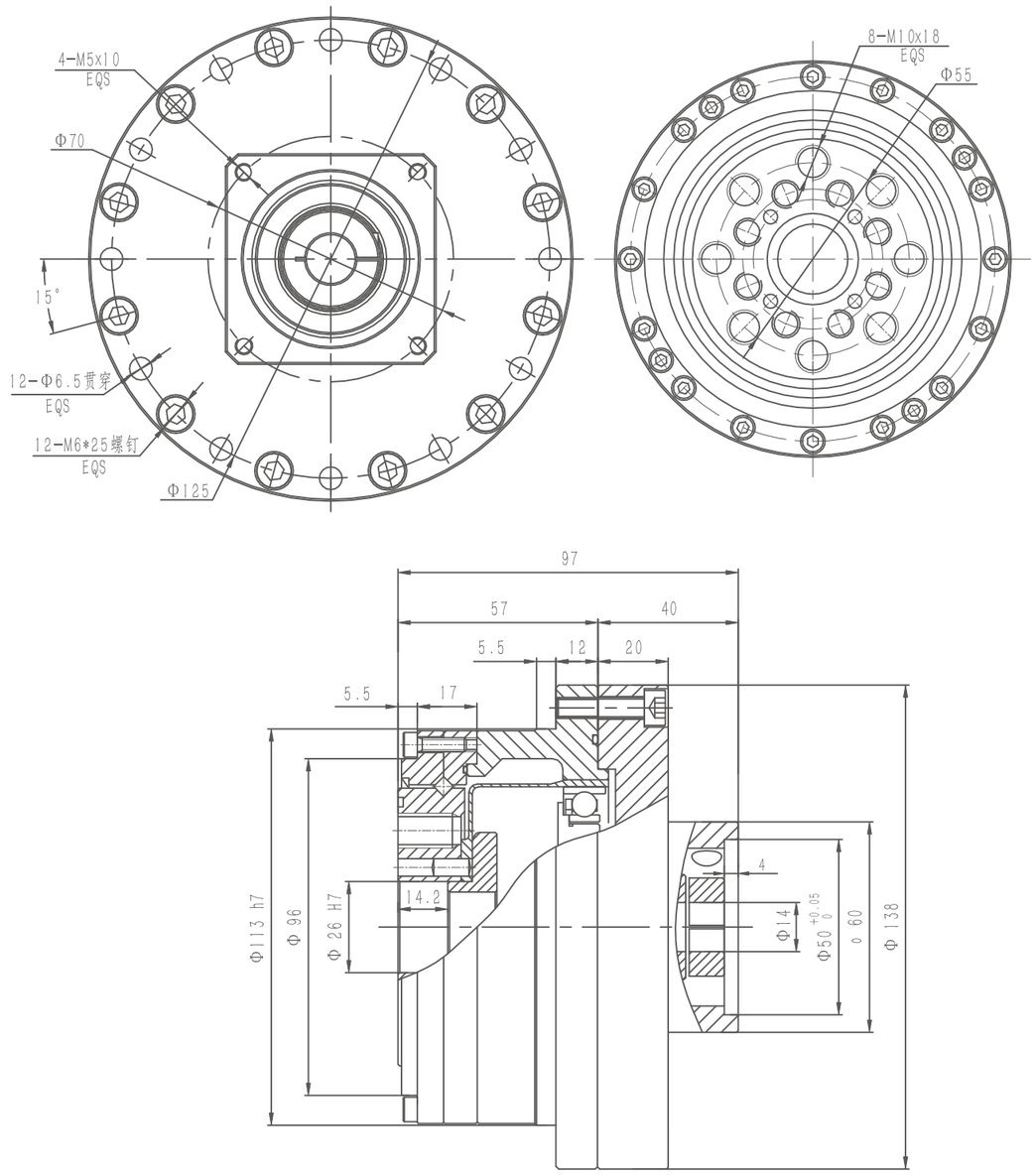
25谐波一体机 Hat type 25-Integratives structure harmonic drive



YC-32-XX-U-400W

结构图 STRUCTURE CHART

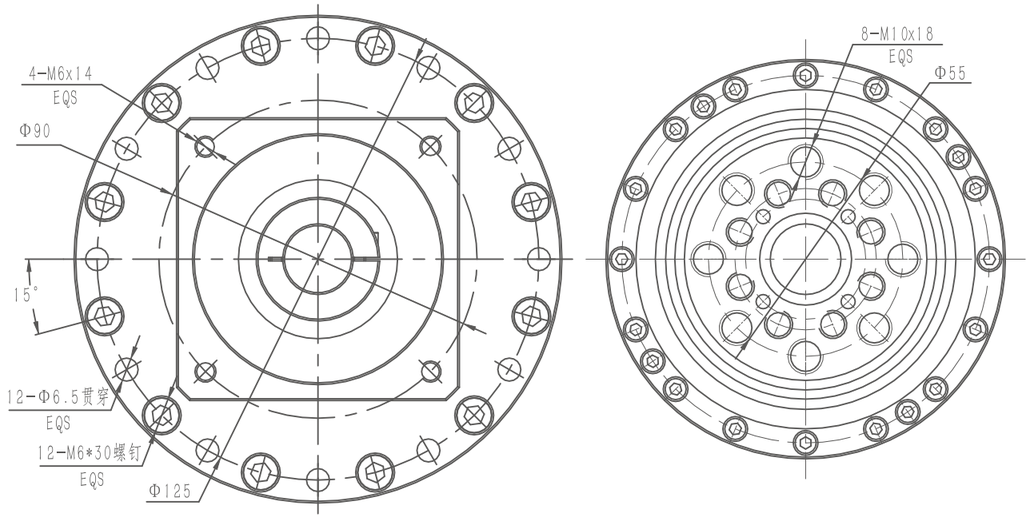
32谐波一体机 Hat type 32-Integratives structure harmonic drive

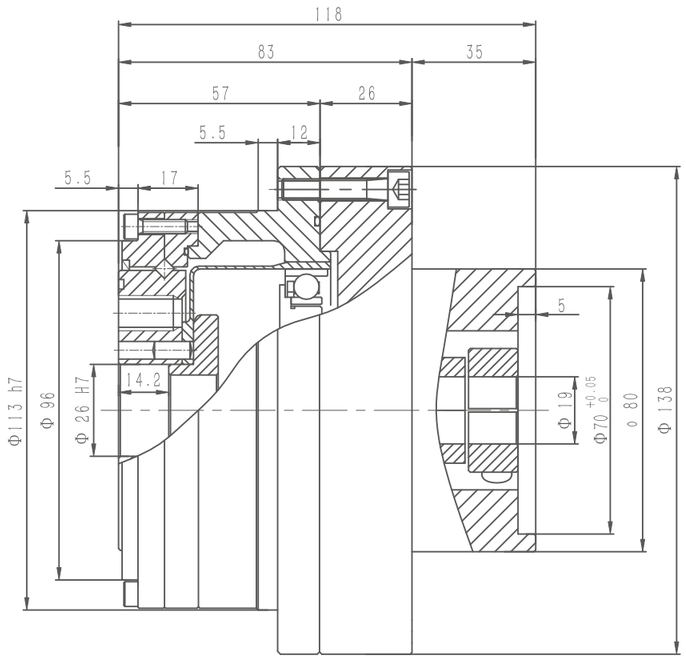


YC-32-XX-U-750W

结构图 STRUCTURE CHART

32谐波一体机 Hat type 32-Integratives structure harmonic drive





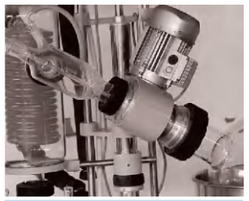
APPLICATION 主要采用市场



金属机床
Metal Working Machine



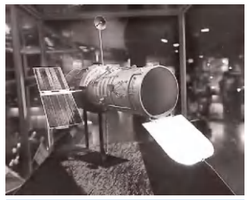
金属加工机械
Processing Machines



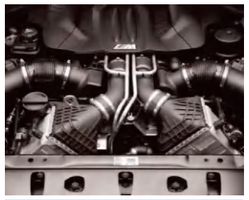
测定·分析·试验设备
Measurement, Analytical and Test Systems



医疗机械
Medical Equipment



望远镜
Telescopes



能量相关
Energy



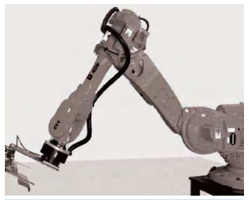
通信设备
Communication Equipment



包装·装箱设备
Crating and Packaging Machines



航天设备
Space Equipment



机器人
Robots



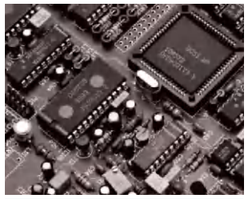
人型机器人
Humanoid Robots



玻璃·陶瓷制造装置
Glass and Ceramic Manufacturing Systems



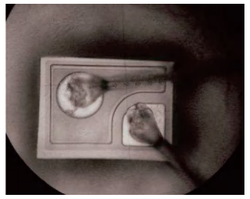
印刷·装订·纸品加工机械
Printing, Bookbinding and Paper



印刷电路制造装置
Printed Cirauit Board Manufacturing Machines



航空器相关
Aircraft



半导体制造装置
Semiconductor Manufacturing Systems



FPD制造装置
Flat Panel Display Manufacturing Systems



木材·轻金属·塑料加工机床
Wood, Light Metal and Plastic Machine Tools



制造机械
Paper-making Machines



光学相关机械
Optical Machines

SAFETY PRECAUTIONS
安全使用注意

警告 Warning

表示操作错误可能会导致人员死亡或重伤

Means that improper use or handling could result in a risk of death or serious injury

注意 Caution

表示操作错误可能会导致人员受伤及财产损失

Means that improper use or handling could result in personal injury or loss of property.

用途限制：
Application restriction

本产品不能用于以下用途 This product cannot be used for the following applications:

- ✶ 航天设施 Space flight facility
- ✶ 航空设施 Aircraft equipment
- ✶ 原子能设施 Nuclear power equipment
- ✶ 家庭电器、设备 Equipment and apparatus used in domestic homes
- ✶ 真空设备 Vacuum equipment
- ✶ 汽车设备 Automotive equipment
- ✶ 游戏设施 Personal recreation equipment
- ✶ 直接作用于人体的设备 Equipment that directly works on human bodies
- ✶ 以运送人为目的的设备 Equipment for transport of humans
- ✶ 特殊环境用设备 Equipment for use in a special environment

- 用于以上用途时，请预先咨询授权代理商。
- 将本产品用于与人的生命相关的设备及可能会产生重大损失的设备时，请安装即使因破坏而导致不能控制临输出端，也不会发生事故的安全装置。
- Please consult with our authorized distributor in advance for applications mentioned above.
- Fail-safe devices that prevent an accident must be designed into the equipment when the products are used in any equipment that could result in personal injury or damage to property in the event of product failure.

设计注意事项：进行设计时，请务必阅读产品目录 Be certain to read the catalog when designing the equipment

注意 Caution

请在规定环境下使用。
Use only in the proper environment.

使用时，请遵守以下条件：

Please ensure to comply with the following environmental Conditions:

- 环境温度：0～40℃;
- 不溅到水、油等;
- 无腐蚀性、爆炸性气体;
- 无金属粉等灰尘。
- Ambient temperature 0-40℃.
- No splashing of water or oil.
- Do not expose to corrosive or explosive gas.
- No dust such as metal powder.

注意 Caution

请使用规定的方法进行安装：
Install the equipment properly:

- 组装方法、顺序，请按产品目录正确实施;
- 拧紧方法（使用螺栓等），请遵守本公司建议;
- 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。
- Carry out the assembly and installation precisely as specified in the catalog.
- Observe our recommended fastening methods(including bolts used and tightening torques).
- Improper assembly may cause problems such as vibration,reduction in life,deterioration of precision and product failure in operation.

SAFETY PRECAUTIONS
安全使用注意

设计注意事项：进行设计时，请务必阅读产品目录 Be certain to read the catalog when designing the equipment

注意 Caution

请根据规定精度实施安装：
Install the equipment with the required precision:

- 请正确设计、组装各种部件，确保其能够达到产品目录中的推荐安装精度;
- 达不到规定精度可能会导致振动、缩短使用寿命、精度下降、损坏等故障。
- Please design and assemble parts correctly, to ensure the recommended installation accuracy in the catalog.
- Failure to hold the recommended tolerances may cause problems such as vibration, reduction in life, deterioration of precision and product failure.

注意 Caution

请使用规定的润滑剂：
Use the specified lubricant:

- 不使用本公司推荐的润滑剂，可能会缩短产品的使用寿命。此外，请按规定的条件更换润滑剂。
- 组合型产品已预先封入润滑脂，请不要混入其它润滑脂。
- Do not use the lubricant recommended by the company, can reduce the life of the product. Replace the lubricant as recommended.
- The complete units are factory lubricated. Do not mix with other kinds of grease.

使用注意事项：执行运转时，请务必阅读产品目录 Precautions for use: Be sure to read the catalog when operating

注意 Caution

请小心取用产品及部件。
Please take the product and parts carefully

- 请勿使用锤子等用力敲打各部件及组合单元。此外，请确保不会因坠落等原因导致裂纹、瘪痕等，否则会导致产品破损。
- 在破损状态下使用时，无法保证其性能，还可能会导致损坏等故障。
- Please do not use a hammer etc to strike all parts and assembly units forcefully. In addition, please make sure fissure and scars won't be taken place because of falling down etc. Otherwise it will lead to damage.
- The performance cannot be guaranteed when is used under the condition of damage. It might lead to failures like damage etc.

注意 Caution

使用时，请勿超出容许转矩。
Please take the product and parts carefully

- 施加转矩请不要超出瞬间容许最大转矩，否则可能会出现拧紧部螺栓松动、产生晃动、破坏等，导致产品故障。
- 如果输出轴直接连接关节臂等，有可能因关节臂碰撞而导致破损，输出轴不能控制。
- Please do not exceed allowable maximum torque of fist moment when exerting torque. Otherwise untight bolt, waggle and damage of buck-up part might be occurred which will lead to malfunction.
- If output shaft is directly linked to articulated arm etc, theres 's a chance that it might be damaged because of collision of articulated arm, which the output shaft cannot not be controlled.

注意 Caution

请勿变更部件配套。
Please do not alter matching components.

- 本产品的各部件是配套加工而成。
- 混同其它套件使用时，无法保证其能够发挥特定性能。
- All components of the product is made out of processing a complete set.
- Specified properties cannot be guaranteed when using it with other sets.

注意 Caution

请勿拆解组合型产品。
Please do not disassemble combo products

- 严禁对组合型产品实施拆解、重新组装。否则，将无法恢复其原有性能。
- Disassembling and reassembling the combo product are strictly prohibited. Otherwise, there is no way to regain its original performance.

SAFETY PRECAUTIONS
安全使用注意

润滑剂的使用 Usage of lubricating grease

注意 Caution

安装注意事项：
Installation notes:

- 溅入眼睛可能会引起炎症。操作时，请佩戴防护眼镜等，连免溅入眼睛。
- 接触皮肤可能会引起炎症。操作时，请佩戴防护手套等，避免接触到皮肤。
- 请勿吞食（会引起腹泻、呕吐等）。
- 打开容器时，请注意不要划伤手指。请戴好防护手套。
- 请放在儿童够不到的地方。

- An inflammation may be caused if it splashes into eyes .Please wear protective glasses etc when operation in order to keep it from the eyes.
- An inflammation may be caused if it touches the skin.
- Please do not devour(diarrhea and vomit etc will be caused).
- Please note do not cut your finger when opening the container. Please wear protective gloves well.
- Please keep it away from children.

注意 Caution

废油、废容器的处理：
Treatment of waste oil and container:

- 法令规定了使用者有义务实施的处理方法，请按照相关法律法规进行正确处理。不清楚时，请先咨询授权代理商，然后再做处理。
- 请勿对空的容器施加压力。施加压力可能会导致其破裂。
- 请勿对容器进行焊接、加热、开孔或裁切。否则，可能会发生里面的残留物会起火燃烧。

- Regulations require the user is in duty bound to carry out treatment method. Please handle it properly according to relevant laws and regulations. When in doubt, please consult the authorized agent first, then handle it correctly.
- Please do not exert pressure to an empty container. By doing this may cause it fracture.
- Please do not weld, heat, trepan or trim to the container. Otherwise, it may burn up the residue inside.

注意 Caution

应急处理：
Emergency management:

- 万一溅入眼睛，请立即使用清水冲洗15分钟，并接受医生的治疗。
- 万一接触到皮肤，请使用水及肥皂充分清洗。
- 万一发生吞食，请不要用力让其呕吐，应立即接受医生的治疗。

- Once it splashes into eyes, please wash it for 15 minutes with clean water immediately and receive treatment.
- Once it touches the skin, please use the water and soap to wash it fully.
- Once it's being swallowed, please do not try hard vomiting but immediately receive the doctor's treatment.

注意 Caution

保管方法：
Storage methods:

- 使用后，请将其密封好，防止灰尘、水分等混入。请在背阴处避免阳光直射。
- 对于长期库存的产品，建议确认性能及防锈是否做好。
- 表面处理的详情请参阅交货图。

- Please seal it tight after used, in order to prevent dusts and moisture etc from mixing in. Avoid direct sunlight.
- As to products with long-term inventory, make sure performance and rust protection.
- For surface treatment, please refer to the delivery figure.

关于报废 About scrapping

注意 Caution

请按工业废弃物标准进行处理。
Disposal should be carried out in accordance with the industrial waste standard.

- 报废时，请按工业废弃物进行处理。
- Please process it in accordance with industrial waste when scrapping.