



产品样本

Product Catalogue



马鞍山统力回转支承有限公司
Tongli slewing ring co., Ltd.

公司简介

马鞍山统力回转支承有限公司是集设计、开发、制造于一体的专业化回转支承生产公司，拥有马鞍山精一工程机械有限公司、蚌埠统力回转支承有限公司两家全资子公司，秉承“专业敬业、成就事业”的企业精神，致力于以精湛技术、卓越品质、完善服务满足客户需求，创造为之满意和尊重的产品服务。

公司技术实力雄厚，荣获国家火炬计划重点高新技术企业。拥有一支代表国内一流技术水平的研发队伍，其中包括上世纪70/80年代起就从事回转支承生产设计工作的技术骨干、四名回转支承标准起草人和荣获国家科技进步奖的项目负责人。设有专门的科研与产品开发机构——回转支承研究所。自主创新成果显著，获得多项专利。

公司三大产品系列包括：回转支承、回转机构、回转立轴，已形成年产60000套、直径达4000毫米的生产能力，以及各种结构型式回转支承、3000余种规格，除广泛为国内各类挖掘机、汽车吊、塔吊、随车吊、高空作业车、环保机械、轻工机械、风力发电设备、太阳能发电设备等主机配套外，还批量出口欧洲、美洲、亚洲等地，出口比例为50%。各类进口和国产挖掘机、汽车吊用回转支承也为广大用户和配件商提供了有力支持。

先进生产设备、精良加工工艺、完善检测手段、富有活力的团队，将助力公司成功打造“中国一流、世界知名”品牌。

Company Introduction

Tongli Slewing Ring Co.,Ltd is a specialized slewing ring manufacturer, has Ma'anShan Jingyi Engineering Machinery Co., Ltd. and Bengbu Tongli Slewing Ring Co.,Ltd. capable of designing, developing and manufacturing all types of slewing rings. With deep rooted company culture that 'professionism and commitment lead to successes', Tongli strives to offer customer satisfaction with superior technology, excellent product quality and superb service.

Till 2008, Tongli has a manufacturing capacity of making 60,000 pieces of slewing rings per year, up to 4,000 mm in diameter for different structures. The products cover 2,000 different sizes and internal structures. With batches of products exported to Europe, America and Asia, Tongli Slewing Ring is a well known national brand foot-printing all over the world.

Tongli slewing rings are widely used by OEMs in all types of excavators, mobile cranes, tower cranes, rail cranes, water treatment equipments, and machine tools etc.. The replacement slewing rings for different models of excavators, wind mills, solar system and mobile cranes provide the end users and distributors with more options.

We believe that innovations create superior products, science enhances our brand. Tongli is a high-tech company, with strongly research and development capacity delivered by our own Institute of Slewing Ring Research. Four of the leading experts in the R&D were involved in drafting the national slewing ring standards (JB2300-78 and JJ36) since 1970s and 1980s, all having over 25 years of experience in slewing ring designing and manufacturing. The Institute has delivered numerous innovations and product improvements, generated a number of patents and other intellectual properties.

Advanced equipment,superb technics, perfect measuring,vigorous team sucessfully formed our commitment to be top-rank in China,well-known to the World.

- 第十三届中国专利优秀奖—椭圆滚道回转支承
- 获国家重点产业振兴和技术改造新增中央预算内投资
- 《液压挖掘机》一书回转支承章节由我公司编著
- 马鞍山市风电支承工程技术研究中心
- 马鞍山市回转支承出口基地
- 十余篇回转支承专业论文在国家核心期刊上发表
- 与合肥工业大学、安徽工业大学开展技术合作，进行回转支承基础理论研究

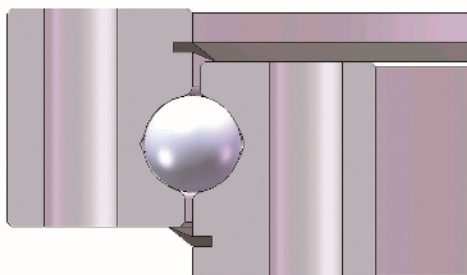
- The 13th Chinese patent Excellence Award - elliptical raceway slewing ring
- Has obtain the goverment special subsidy for development of national key industry and the technical reform
- Compilling of Chapter Slewing Ring in Hydraulic Excavator
- Maanshan Engineering and Technological Research Center for wind mill slewing rings
- “Maanshan Slewing Ring Export Base” is confirmed by city bureau of commerce
- More than 10 papers on slewing ring are published by national key periodicals
- Technological cooperation with Hefei University of Technology, Anhui University of Technology, focus on slewing ring basic theory study.

**只要您提供外负荷和限制条件，
其它的事由我们来做！**

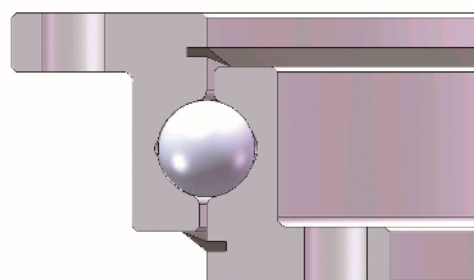
**Provide us with your load requirements and
key specifications, we will do the else !**



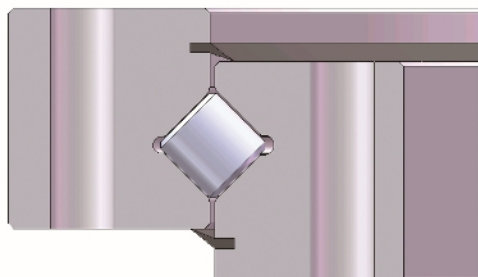
单排球式
Single-row ball



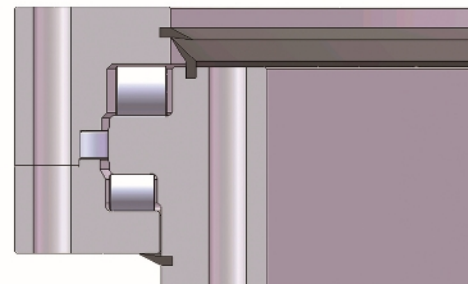
L型单排球式
L single-row ball



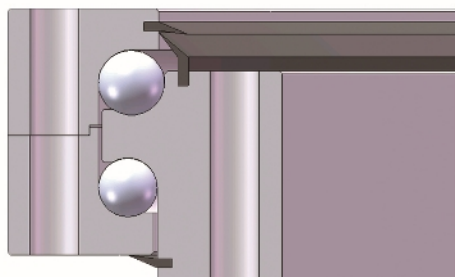
交叉滚柱式
Cross-roller



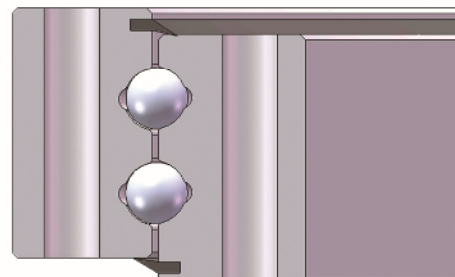
三排柱式
Three-row roller



双排异径球式
Double-row different diameter ball



双排八点接触球式
Double-row eight point contact ball



一、JB/T 10839-2008 (JJ36.1-91)

$\frac{\times}{(1)}$	$\frac{\times}{(2)}$	$\frac{\times}{(3)}$	$\frac{\times}{(4)}$	$\frac{\times}{(5)}$	$\frac{\times}{(6)}$	$\frac{\times}{(7)}$
(1)---回转支承结构型式	Type of slewing ring					
Q: 单排球式	Q: Single-row ball					
S: 三排柱式	S: 3-row roller					
(2)---传动型式代号	Code of driven type					
W: 外齿式	Outer gear					
N: 内齿式	Inner gear					
U: 无齿式	No gear					
(3)---安装孔型式代号	Code of installation hole type					
A: 内、外圈安装孔均为通孔	Both rings with bolt holes					
B: 内、外圈安装孔均为螺孔	Both rings with screw holes					
C: 外圈安装孔为螺孔, 内圈为通孔	Outer ring with screw holes, inner ring with bolt holes					
D: 外圈安装孔为通孔, 内圈为螺孔	Outer ring with bolt holes, inner ring with screw holes					
(4)---(上排) 滚道中心直径, mm	(Upper row) Diameter of track center					
(5)---(上排) 滚动体直径, mm	(Upper row) Diameter of rolling element					
(6)---齿轮模数分类代号	Classification code No. of gear module					
A: 表示大模数, 不带A表示小模数	A: Bigger module, without A: normal					
(7)---精度等级分类	Classification of precision grade					
G: 精密级, 不带G表示普通级	G: High precision, without G: normal					

型号标记示例:

单排球式, 大模数外齿, 外圈螺孔内圈通孔连接, 滚道中心直径1250mm, 滚动体直径40mm, 普通级的回转支承, 产品型号标记如下: 回转支承QWC1250.40A JB/T10839-2008

For example:

Single-row ball, bigger module, outer gear, outer ring with screw holes, inner ring with bolt holes, diameter of track center 1250mm, diameter of ball 40mm, normal precision, type of the product sign as follows: slewing ring QWC1250.40A JB/T10839-2008

二、JB/T 2300-1999

$\frac{\times}{(1)}$	$\frac{\times}{(2)}$	$\frac{\times}{(3)}$	$\frac{\times}{(4)}$	$\frac{\times}{(5)}$	$\frac{\times}{(6)}$
(1)---回转支承结构型式	Type of slewing ring				
01: 单排球式	01: Single-row ball				
02: 双排异径球式	02: Double-row different diameter ball				
11: 单排交叉滚柱式	11: Single cross-roller				
13: 三排滚柱式	13: 3-row roller				
(2)---传动型式代号	Code of gear driven type				
0: 无齿式	No gear				
1: 小模数外齿式	Normal, outer gear				
2: 大模数外齿式	Bigger module, outer gear				
3: 小模数内齿式	Normal, inner gear				
4: 大模数内齿式	Bigger module, inner gear				
(3)---(上排) 滚动体直径, mm	(Upper row) Diameter of rolling element				
(4)---(上排) 滚道中心直径, mm	(Upper row) Diameter of track center				
(5)---安装配合型式代号	Code of installation fitting type				
0: 标准型无止口	No fitting circle				
1: 标准型有止口	With fitting circle				
2: 特殊型	Special type				
(6)---安装孔型式代号	Code of installation hole type				
0: 内、外圈安装孔均为通孔	Both rings with bolt holes				
1: 内、外圈安装孔均为螺孔	Both rings with screw holes				
2: 外圈安装孔为通孔, 内圈为螺孔	Outer ring with bolt holes, inner ring with screw holes				
3: 外圈安装孔为螺孔, 内圈为通孔	Outer ring with screw holes, inner ring with bolt holes				

型号标记示例:

单排球式, 大模数内齿, 滚动体直径40mm, 滚道中心直径1000mm, 标准型有止口, 内、外圈安装孔均为通孔连接, 产品型号标记如下: 回转支承014.40.1000.10 JB/T 2300-1999

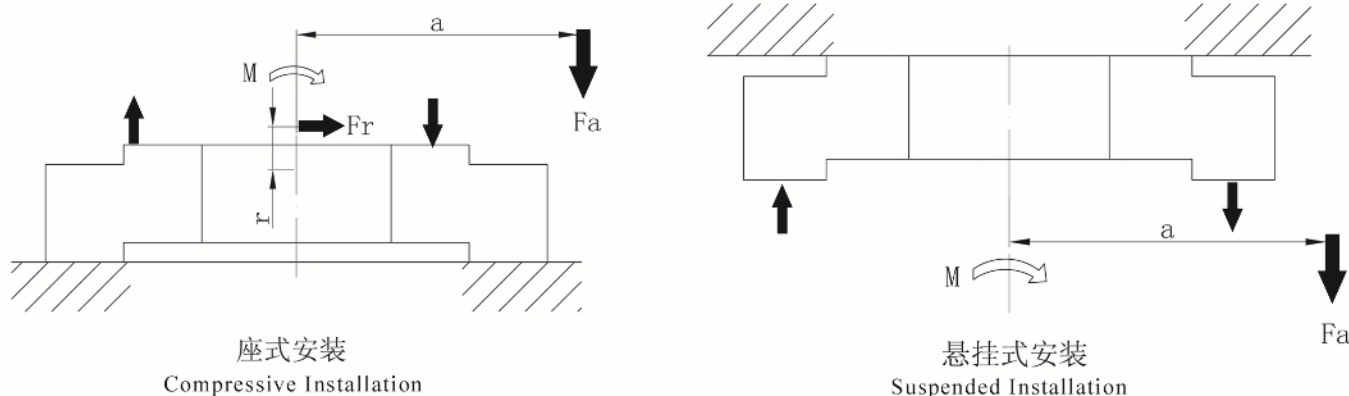
For example:

Single-row ball, bigger module, inner gear, diameter of ball 40mm, diameter of track center 1000mm, with fitting circle, both rings with bolt holes, type of the product sign as follows: slewing ring 014.40.1000.10 JB/T 2300-1999

一、回转支承承载 Supporting Load of Slewing Ring

回转支承在使用过程中，一般要承受轴向力 F_a ，径向力 F_r 以及倾覆力矩 M 的共同作用，对不同的应用场合，由于主机的工作方式及结构型式不同，上述三种载荷的作用组合情况将有所变化，有时可能是两种载荷的共同作用，有时也有可能仅仅是一个载荷的单独作用。

通常，回转支承的安装方式有以下两种型式——座式安装和悬挂式安装。两种安装形式支承承受的载荷示意图如下：



客户在选型时，若所用回转支承为座式安装，可按下面的选型计算来进行选型；若所用回转支承为悬挂式安装或其他安装形式，请与我公司技术部联系。

If the slewing ring is compressive installation, the customer could select and calculate as follows; if the slewing ring is suspended installation, please contact our Engineering Department for assistance.

二、回转支承的选型 Selection of Slewing Ring

1、结构型式的选择 Selection of Structure

常用回转支承的结构型式有四种：单排球式、交叉滚柱式、双排异径球式、三排球式。

根据我们的经验和计算,有以下结论：

- $Do \leq 2000$ 时，单排球式为首选型式； $Do > 2000$ 时，优先选用三排球式回转支承。
- 相同外形尺寸的回转支承，单排球式的承载能力高于交叉滚柱式和双排异径式。
- Q系列单排球式回转支承，尺寸更紧凑，重量更轻，具有更好的性价比，为单排球式的首选系列。

Common structure of slewing ring have four kinds: single row ball slewing ring, cross-roller slewing ring, double-row different diameter ball slewing ring, three-row roller slewing ring.

Based our experience and calculation, we have follow conclusion:

- $Do \leq 2000$, single row ball slewing ring first; $Do > 2000$, three-row roller slewing ring first.
- For the slewing ring have the same figure size, the load capacity of single row ball slewing ring is more than the cross roller and double-row different diameter slewing ring.
- Single row ball slewing ring of Q-series have higher compact structure, less weight and more economically. They are the first chose of single row ball slewing ring.

2、用算法选择产品规格 Select Product Type by Calculation

(1) 单排球式回转支承的选型计算 Calculation of single-row ball slewing ring

① 计算额定静容量

Calculation of rated static capacity

$$C_0 = 0.6 \times Do \times do^{0.5}$$

式中： C_0 —— 额定静容量， kN

Rated static capacity

Do —— 滚道中心直径， mm

Diameter of track center

do —— 钢球公称直径， mm

Diameter of ball

② 根据组合后的外载荷，计算当量轴向载荷

Equivalent load calculation according outside compound load

$$C_p = F_a + 4370M/Do + 3.44F_r$$

式中: C_p —— 当量轴向载荷, kN
 M —— 倾覆力矩, $kN \cdot m$
 F_a —— 轴向力, kN
 F_r —— 径向力, kN

Equivalent axial load
 Overturning moment
 Axial force
 Radial force
 Safety factor

③ 安全系数

$$f_s = C_o / C_p \geq f_o$$

f_o 值可按下表选取

See the following table

(2) 三排柱式回转支承的选型计算 Calculation of 3-row roller slewing ring

① 计算额定静容量

Calculation of rated static capacity

$$C_o = 0.534 \times D_o \times d_o^{0.75}$$

式中: C_o —— 额定静容量, kN

Rated static capacity

D_o —— 滚道中心直径, mm

Diameter of track center

d_o —— 上排滚柱直径, mm

Upper row roller diameter

② 根据组合后的外载荷, 计算当量轴向载荷

Equivalent load calculation according outside compound load

$$C_p = F_a + 4500M/D_o$$

式中: C_p —— 当量轴向载荷, kN

Equivalent axial load

M —— 倾覆力矩, $kN \cdot m$

Overturning moment

F_a —— 轴向力, kN

Axial force

③ 安全系数

Safety factor

$$f_s = C_o / C_p \geq f_o$$

f_o 值可按下表选取

See the following table

回转支承安全系数 f_o Safety Factor of Slewing Ring f_o

工作类型 Working condition	工作特性 Characteristic	机械举例 Example	f_o
轻型 Light duty	不经常满负荷, 回转平稳冲击小 Not often full load, smooth slewing, small impact	堆取料机、汽车起重机、非港口用轮式起重机 Stacker, truck cranes, non-port wheeled cranes	1.00~1.15
中型 Middle duty	不经常满负荷, 回转较快, 有冲击 Not often full load, slewing quickly, impact	塔式起重机、船用起重机、履带起重机 Tower cranes, marine cranes, crawler cranes	1.15~1.30
重型 Heavy duty	经常满负荷, 回转冲击大 Often full load, heavy impact	抓斗起重机、港口起重机、单斗挖掘机、集装箱起重机 Clamshell grabbing cranes, harbour cranes, single bucket excavator, container cranes	1.30~1.45
特重型 Extremely heavy duty	满负荷, 冲击大或工作场所条件恶劣 Full load, heavy impact or working condition badly	斗轮式挖掘机、隧道挖掘机、冶金起重机、海上作业平台起重机 Bucker wheel excavators, tunnelling machines, metallurgical cranes, offshore work platform cranes	1.45~1.70

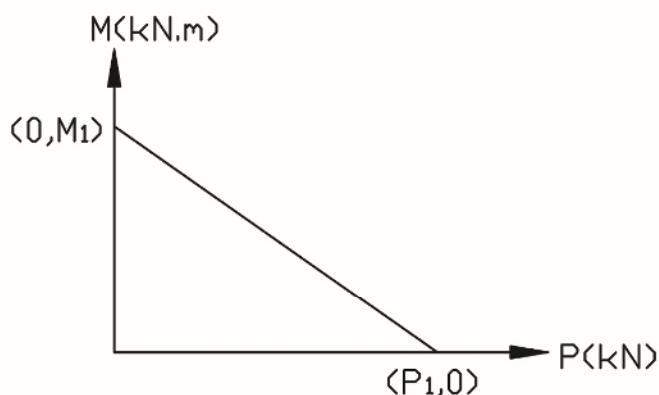
3、用静态承载曲线选择产品规格 Select Product Type Use Static Load Curve

静态承载曲线表示回转支承保持静止状态时所能承受的最大负荷。产品样本中每一型号回转支承都对应一个承载能力曲线图, 曲线图可帮助用户初步地选择回转支承。

① 绘制静态承载曲线。客户先将欲选择的回转支承根据其型号绘制静态承载曲线, 如下:

Static load curve show the maximum load of slewing ring when in the static state. Each type of the slewing ring in this specimen has a corresponding load capacity curve. Load capacity curve can help customer to make an elementary chose of slewing ring.

Draw the static load curve. Customer draw the static load curve based on the type which wanted to be selected. See as follows:



图中: $P_1 = C_o$

$M_1 = C_o \cdot D_o / 4370$ (三排柱式: $M_1 = C_o \cdot D_o / 4500$)

② 静态工况下计算出来的总轴向力 F_a 和总倾覆力矩 M 分别乘以安全系数后的交点, 应落在静态承载曲线的下方。

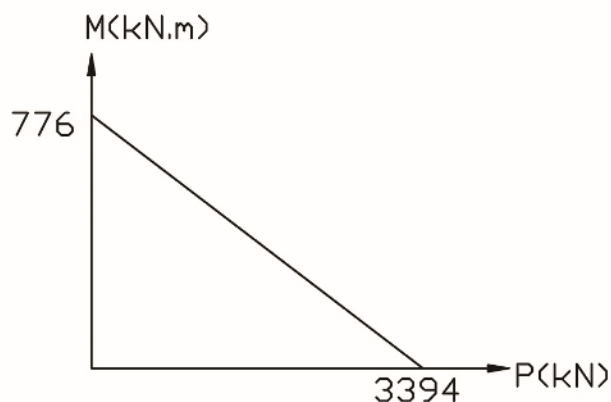
The point which total axial force F_a and total overturning moment M multiply the safety factor respectively should located below the static load curve.

③ 实例: 绘制 QUA1000.32 的静载曲线。 Example: Draw the static load curve of QUA1000.32

$P_1 = C_o = 0.6 \cdot 1000 \cdot 32^{0.5} = 3394 \text{ kN}$

$M_1 = C_o \cdot D_o / 4370 = 3394 \cdot 1000 / 4370 = 776 \text{ kN} \cdot \text{m}$

其静载曲线图如下: Static load curve see as following:



4、回转支承选型所需技术参数 Technical Parameter of Slewing Ring Selection

客户进行初步选型后, 可与我公司技术部共同确认, 也可向我公司提供回转支承相关信息, 由我公司进行设计选型时, 请索取《马鞍山统力回转支承选型技术参数表》, 并详细填写, 以便我们能尽快向您提交准确而经济实用的回转支承选型方案。

After making an elementary chose of slewing ring, customer could confirm the selecting result together with our Engineering Department or provide some informations about slewing ring to our company. When the selection is made by our company, please filling 'Technical References Concerned for Selection of Slewing Ring of Maanshan Tongli Slewing Ring CO.,LTD' in detail, so as to provide you economical and suitable selection of the slewing ring as soon as we can.

马鞍山统力回转支承有限公司 Maanshan Tongli Slewing Ring CO.,LTD		回转支承选型参数表 Technical References Concerned for Selection of Slewing Ring			
公司名称Name of company: 姓名Contactor: 电话Telephone:		地址Address: 部门Department: 传真Fax:			
应用场合: (主机型号、名称) Using condition (Model of Main Machine)		支承安装方式: (座式或悬挂) Installing type (Compression or suspension)			
齿形要求: (内齿、外齿、无齿或不限) Requiriement of gear shape: (inner teeth, outer teeth, no teeth or no restrict)		应用性质: Application character 仅定位用: Only positioning 间歇转动: Intermittent rotation 连续转动: Continuous rotation		每分钟转速 (rpm) : Revolution per minute 正常: Normal 最大: Maximum	
载荷数据 Value of Load					
载荷类型 Type of Load	最大工作载荷 Maximum Working Load	最大试验载荷 Maximum Testing Load	灾难性载荷 Destroy Load		
轴向载荷 (kN) Axial Load					
径向载荷 (kN) Radial Load					
倾翻力矩 (kNm) Overturning Moment					
回转支承所受驱动扭矩 (kNm) : 正常 _____ 最大 _____ 驱动小齿轮个数: _____ Load driving torque : Normal _____ Maximum _____ No. of Drive Pinion: _____					
特殊说明: (例: 特殊工况、温度、配合尺寸、外形尺寸限制等) Special requirement: special situation, temperature, fit size, figure size limit etc.					
载荷工况详细描述 Detailed load condition	轴向载荷 (kN) Axial load	径向载荷 (kN) Radial load	倾翻力矩 (kNm) Overturning moment	转速 (rpm) Revolution per minute	工作时间 (%) Working time
1)					
2)					
3)					
4)					
5)					
....					
					100%
连续运转工况 Continue working condition 寿命: 在平均转速为 _____ rpm时, 最少 _____ 小时 Life: Under the mean speed of _____ rpm, work at least _____ hours					
间歇运转工况 Intermittent working condition 需要的工作寿命: 在角度+/- _____ 度时, 最少 _____ 循环 Required life: Under angular of +/- _____ degree, work at least _____ hours					
请完整填写好该表, 以便能尽快向您提交准确而经济实用的回转支承选型方案 Please fill this table thoroughly so as to provide you economical and suitable selection of the slewing ring as soon as we can.					
签名Signature:			日期Date:		

附：回转支承外载荷的确定 Appendix:Confirmation of the Load Outside the Slewing Ring

客户在选型时，首先要确定回转支承上的外载荷，单排球式回转支承上的外载荷是组合后的总载荷，包括：

- a. 倾覆力矩M，N·mm；
- b. 总轴向力 Fa，N；
- c. 总倾覆力矩M作用平面的总径向力Fr，N。

机械的外力组合成外载荷时，应按机械的工作类型，在M、Fa、Fr计算过程中考虑工作条件系数K。下面以起重机和挖掘机为例，说明回转支承外载荷的确定（所列出的计算位置不一定代表最恶劣的计算工况，用户应按实际最大工况计算）。

When selecting the slewing ring, customer first to confirm the outside load of the slewing ring. The outside load of single row ball slewing ring is the total load after combination which include:

- a. overturning moment M, N·mm
- b. total axial force Fa, N
- c. total radial force Fr of the fuctional surface of total overturning moment M

When the outside mechanical force composing the outside load, customer should put working condition factor K into consideration which based on the working type of the machine. The following are examples of crane and excavator which explain the confirmation of outside load.(The listed calculational position not always represent the abominable condition of working condition, customer should calculate according to the maximum working condition.

1、起重机（见图1） Crane(see figure 1)

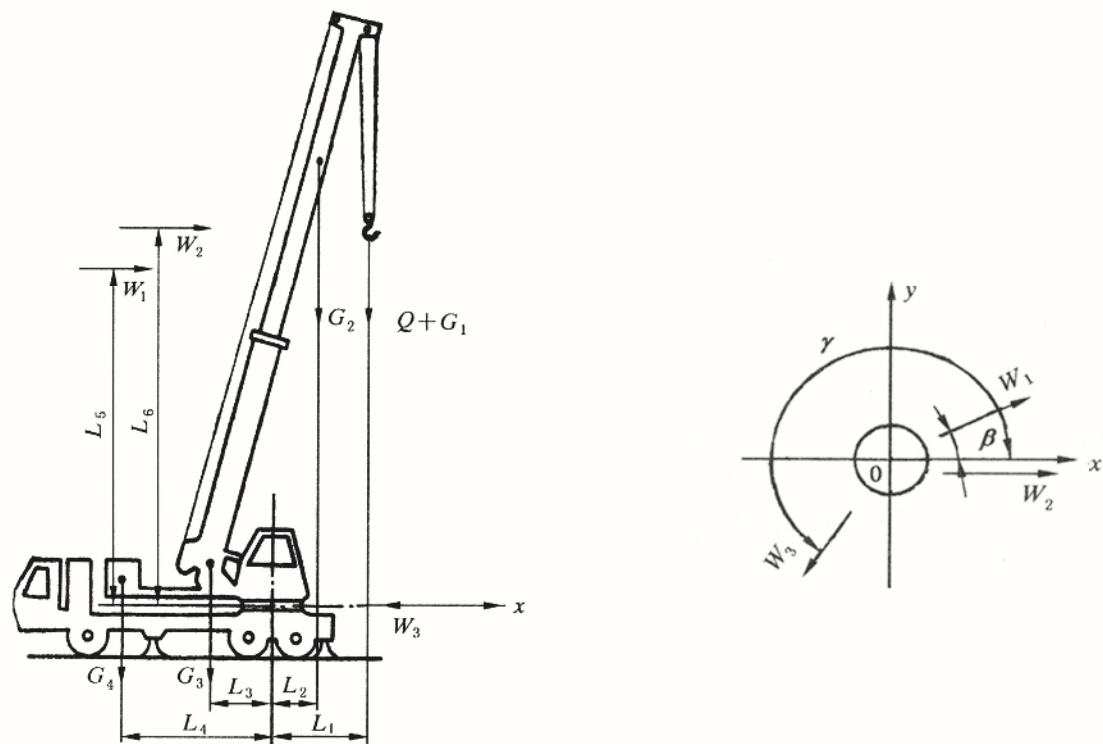


图 1 起重机计算简图

Figure of Crane Calculation

$$Fa=[K\cdot(Q+G_1)+G_2+G_3+G_4]\cdot g$$
$$M=[K\cdot(Q+G_1)\cdot L_1+G_2\cdot L_2+G_3\cdot L_3+G_4\cdot L_4]\cdot g+W_1\cdot L_5\cdot \cos\beta+W_2\cdot L_6$$
$$Fr=W_1\cdot \cos\beta+W_2\cdot \cos\gamma$$

式中：Q——该计算工况下的最大额定起重量，KG Maximum rated lifting weight under this working condition, kg;
G₁——吊具质量，kg； Weight of hoist tool
G₂——变幅部分质量，kg； Weight of amplitude part
G₃——转台部分质量，kg； Weight of turntable
G₄——配重质量，kg； Balance weight

W_1 ——水平惯性力, N;	Horizontal force of inertia
W_2 ——风力, N;	Wind force
W_3 ——齿轮啮合力, N;	Meshing force of gear
L_1 ——该工况的工作幅度, mm;	Working amplitude
L_2 ——变幅部分质量 G_2 到回转中心的水平距离, mm;	Horizontal distance from gravity of amplitude part G_2 to slewing center
L_3 ——转台部分质量 G_3 到回转中心的水平距离, mm;	Horizontal distance from gravity of turntable G_3 to slewing center
L_4 ——配重重心到回转中心的水平距离, mm;	Horizontal distance from gravity center of balance weight to slewing center
L_5 ——水平惯性力 W_1 作用点到回转支承的垂直距离, mm;	Vertical distance from point of horizontal force of inertia W_1 to slewing ring
L_6 ——风力 W_2 作用点到回转支承的垂直距离, mm;	Vertical distance from point of wind force W_2 to slewing ring
g ——重力加速度, $g \approx 9.8\text{m/s}^2$;	Gravity acceleration
β ——水平惯性力 W_1 与M作用平面的夹角, ($^\circ$)	Angle between horizontal force of inertia W_1 and M surface
γ ——齿轮啮合力 W_3 与M作用平面的夹角, ($^\circ$)	Angle between meshing force of gear W_3 and M surface
K ——工作条件系数, 由表1确定。	Working condition factor, decide by table 1.

2、挖掘机 (见图2) Excavator(see figure 2)

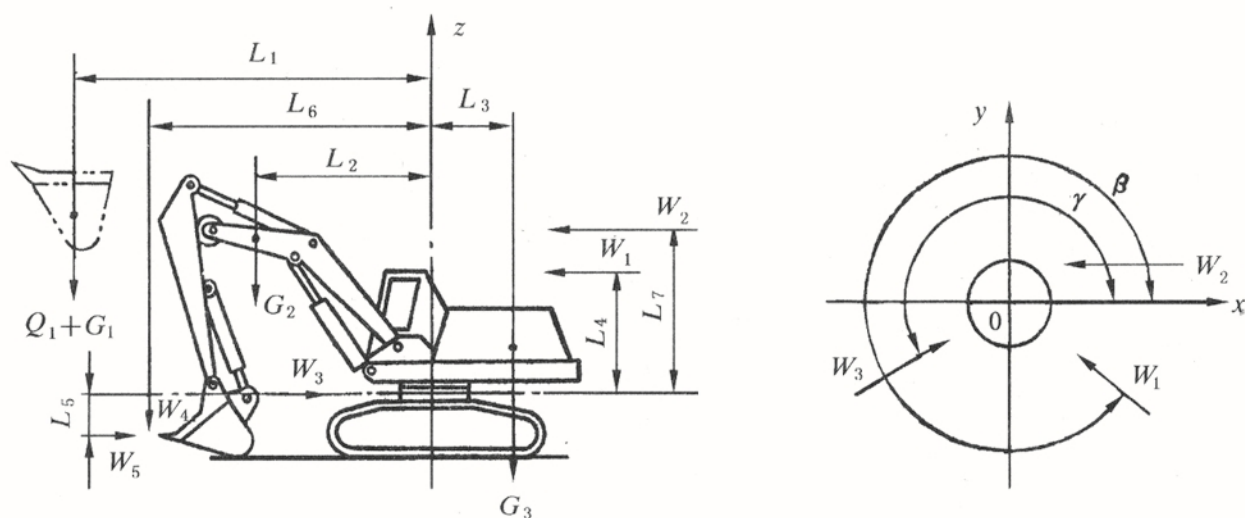


图2 挖掘机计算简图

Figures of Excavator Calculation

2.1 满斗回转工况 Full Bucket Revolution Condition

$$Fa = [k \cdot (Q + G_1) + G_2 + G_3] \cdot g$$

$$M = [k \cdot (Q + G_1) \cdot L_1 + G_2 \cdot L_2 - G_3 \cdot L_3] \cdot g + W_1 \cdot L_4 \cdot \cos \beta + W_2 \cdot L_7$$

$$Fr = W_1 \cdot \cos \beta + W_2 + W_3 \cdot \cos \gamma$$

2.2 挖掘工况 Excavate Condition

$$Fa = k \cdot W_4 + [k \cdot (Q + G_1) + G_2 + G_3] \cdot g$$

$$M = k \cdot W_4 \cdot L_6 + [K \cdot (Q + G_1) \cdot L_1 + G_2 \cdot L_2 - G_3 \cdot L_3] \cdot g + K \cdot W_5 \cdot L_5 + W_2 \cdot L_7$$

$$Fr = W_2 + W_3 \cdot \cos \gamma - W_5$$

- 式中：Q ——满斗时斗中物料质量，kg；
G₁ ——铲斗质量，kg；
G₂ ——变幅部分质量，kg；
G₃ ——转台部分非变幅部分质量，kg；
W₁ ——回转工况的水平惯性力，N；
W₂ ——风力，N；
W₃ ——齿轮啮合力，N；
W₄ ——垂直挖掘力，N；
W₅ ——水平挖掘力，N；
L₁ ——铲斗及铲斗中物料质量到回转中心的水平距离，mm；
L₂ ——变幅部分质量G₂到回转中心的水平距离，mm；
L₃ ——转台部分非变幅部分质量G₃到回转中心的水平距离，mm；
L₄ ——回转时水平惯性力W₁到回转支承的垂直距离，mm；
L₅ ——水平挖掘力W₅到回转支承的垂直距离，mm；
L₆ ——垂直挖掘力W₄到回转中心的水平距离，mm；
L₇ ——风力W₂作用点到回转支承的垂直距离，mm；
β ——水平惯性力W₂与M作用平面的夹角，(°)
γ ——齿轮啮合力W₃与M作用平面的夹角，(°)
K ——工作条件系数，由表1确定。
- Material mass in full bucket condition
Bucket weight
Weight of amplitude part
Weight of non-amplitude part of turntable
Horizontal force of inertia in revolution condition
Wind force
Meshing force of gear
Vertical excavate force
Horizontal excavate force
Horizontal distance from gravity of bucket and material to slewing center
Horizontal distance from gravity of amplitude part G₂ to slewing center
Horizontal distance from gravity of non-amplitude part of turntable G₃ slewing center
Vertical distance from horizontal force of inertia in revolution W₁ to slewing ring
Vertical distance from horizontal excavate force W₅ to slewing ring
Horizontal distance from vertical excavate force W₄ to slewing center
Vertical distance from point of wind force W₂ to slewing ring
Angle between horizontal force of inertia W₂ and M surface
Angle between meshing force of gear W₃ and M surface
Working condition factor, decide by table 1.

表1 工作条件系数K Table 1 working condition factor K

工作类型 Working condition	机械举例 Example	K
轻型 Light duty	堆料机、汽车起重机、非港口用轮胎起重机 Stocker, truck cranes, non-port wheeled cranes,	1. 10~1. 25
中型 Middle duty	塔式起重机、船用起重机、履带起重机 Tower cranes, marine crane, scrawler cranes	1. 20~1. 35
重型 Heavy duty	抓斗起重机、港口起重机、集装箱起重机 Clamshell grabbing cranes, harbour cranes, container cranes	1. 30~1. 50
	单斗挖掘机、挖泥船、海上作业平台起重机 Single bucket excavator, dredger, offshore work platform cranes	1. 40~1. 70
特重型 Extremely heavy duty	斗轮式挖掘机、隧道掘进机、冶金用起重机 Bucker wheel excavators, tunnelling machines, metallurgical cranes	1. 60~2. 00

一、回转支承安装使用要求 Requirement of Installation and Usage

1. 齿圈回火带（外部标记“S”处）及设有钢球装卸孔堵塞处应置于非负荷区、非经常负荷区或轻负荷区。

2. 安装平台必须清洁、平整，不得有铁屑、毛边或其他杂物，其平面度应符合表2的规定。

1. The soft zone (shown by a letter 'S' stamped on a surface of the gear ring) and the loading plug should be located at non-loading area, non-always loading area or slightly loading area.

2. The mounting surface must keep clean and flat, and should not have scrape, burr formation and other extraneous material on it. The flatness of mounting surface should accord with table 2.

表2 包含角偏差在内的平面度许可值 The permissible flatness values including angle deviation

滚道中心直径 Diameter of track center	安装支架平面度 The flatness of supporting bracket		
	单排四点接触式 Four point contact of single row	双排球式 Double-row ball	滚柱式 Roller
D_t (mm)			
~1000	0.15	0.20	0.10
>1000~1500	0.19	0.25	0.12
>1500~2000	0.22	0.30	0.15
>2000~2500	0.25	0.35	0.17
>2500~4000	0.30	0.40	0.20

3. 安装平台必须有足够的刚度，以防止回转支承安装因支架刚度不够产生变形，导致回转支承不能正常工作。在额定负荷作用下，其支架平面最大挠度应符合表3的规定。

3. The mounting platform should have enough rigidity to avoid the slewing rings failure of work due to the deformation of slewing rings installation which caused by lacking rigidity installing frame. The maximum deformation should accord with table 3 under rated load.

表3 最大允许负荷下的挠度 Deflection under permissible maximum load

滚道中心直径 (D) Diameter of track center	~1000	>1000~1500	>1500~2000	>2000~2500	>2500~3000	>3000~3500	>3500~4000
支架平面最大挠度 Max (mm) The maximum deflection of frame's flat surface	0.6	0.8	1.0	1.2	1.5	2.0	2.5

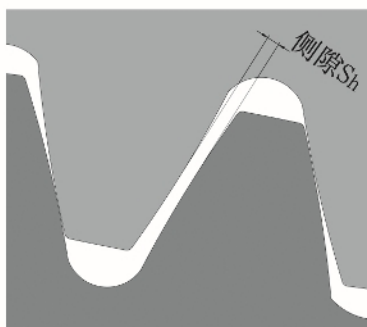
4. 齿轮安装注意事项： Notice of gear installation:

① 外啮合型式：回转支承齿轮与小齿轮间的齿侧间隙应不小于0.03m(m为齿轮模数)。

External gearing: The backlash between gear and pinion should not less than 0.03m(m is module).

② 内啮合型式：回转支承齿轮与小齿轮间的齿侧间隙应不小于0.06m(m为齿轮模数)。

Internal gearing: The backlash between gear and pinion should not less than 0.06m(m is module).



二. 回转支承用螺栓的选择与安装注意事项 Notice of Selection and Installation of Bolt

- 1、螺栓按 GB 3098.1和 GB 5782 选用，亦可自行设计大六角头螺栓。性能等级为8.8级、10.9级和12.9级。
对于一般建筑机械，建议采用10.9级螺栓。
对于额定载荷下螺栓静强度要求和最大载荷下螺栓屈服强度要求很高，而对于疲劳强度要求不严格时，可选用12.9级螺栓。
对于载荷频繁多变，螺栓疲劳强度要求极为严格的场合，可选用8.8级螺栓。
- 2、紧固螺母按 GB 3098.2 和 GB 6175 选用或自行设计大六角头螺母。其性能等级应与螺栓相配。
- 3、不应采用弹簧垫圈防松。建议采用具有双面防松齿纹并经淬硬的平垫圈防松或双螺母防松。当采用双螺母防松时，两螺母采用可选用 GB 6170 规定的两个螺母；也可选用 GB 6175 规定的一个厚螺母，GB 6172 规定的一个薄螺母，外螺母为厚螺母，内螺母为薄螺母。两螺母材料相同。
- 4、拧紧螺栓时，应在螺栓的螺纹及螺母端面涂润滑油，并用扭矩扳手在180° 方向对称均匀多次拧紧。如图3所示：

1. You can select the bolt of GB3098.1 and GB5782, and also could design the hexagon head blot by yourself. The performance classification include 8.8, 10.9 and 12.9.
It is usually use 10.9 level of bolt in the commonly construction machine.
If there is a strictly requirement on bolt static strength under rated load and bolt yield strength under maximum load but not rigid on fatigue strength, you can use 12.9 level bolt.
In the condition that load change frequently and have extreme demand on bolt fatigue strength, you'd better choose 8.8 level bolt.

2. Tightening nut have GB3098.2, GB6175 and also could design the hexagon head nut by yourself. The performance classification should accord with the bolt.

3. The use of any type of elasticwasher is forbidden. It is advised to use quenched and tempered flat washers which has lockvein on double-face or use double nuts. When use double nuts, two nuts can select from GB6170; or seclect one thick outside nut from GB6175 and one thin inside nut from GB6172. The material of two nuts must use the same one.

4. When tightening the bolt, the screw thread and nut should be greased and using torque wrench symmetrically tightening bolt several times along the 180°direction. See figure 3:

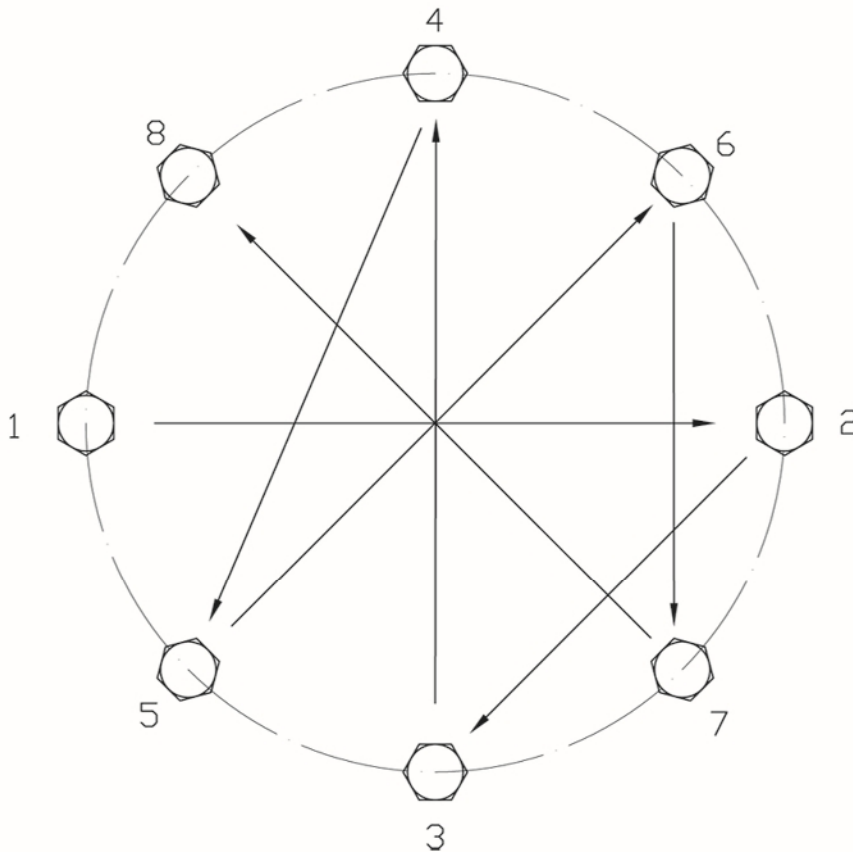


图3 figure 3

5、螺栓必须有足够的预紧力，其预紧力在螺栓上产生的预紧应力应符合表4的规定。

5.Bolt must have enough pre-tighten force, and the produced pre-tighten stress on it should accord with table 4.

表4 螺栓的预紧扭矩或预紧力 Pre-tightening torque or forces of bolts

螺栓规格 Specifications of bolts	螺栓强度等级 (GB/T3098.1-2000) Bolt's strength class		
	8.8	10.9	12.9
	预紧扭矩 Pre-tightening torque $M_A(N \cdot m)$		
M10	44	62	75
M12	77.5	110	130
M14	120	170	210
M16	190	265	320
M18	260	365	435
M20	370	520	620
M22	500	700	840
M24	640	900	1080
M27	950	1350	1620
M30	1300	1800	2160
	预紧力 Pre-tightening force $F_A(10^3N)$		
	8.8	10.9	12.9
M33	293	412	495
M36	344	484	581
M39	414	584	698
M42	473	665	798
M45	553	777	932
M48	623	876	1050
M52	749	1054	1265
M56	863	1214	1457
M60	1008	1418	1621

6、当采用螺孔安装联接方式时，螺栓在回转支承中的最小拧入长度 l 应符合表5的规定。

6. When using screw connection, the length l of bolt screwing into the slewing ring should meet the requirement of table 5.

表5 螺栓在回转支承中的最小拧入长度 l

螺栓性能等级 Bolt performance class	8.8	10.9	12.9
l	0.70T	0.75T	0.8T

注：T为螺孔螺纹长度 Note: T is the length of screw thread

7、为确保螺栓工作的可靠性，避免螺栓预紧力的不足，在单排球回转支承工作的第一个100h和500h后，均匀检查螺栓预紧扭矩。

7. In order to insure the reliability of bolt, avoid it appears lack of pre-tightening force, we recommend checking the pre-tightening torque of the bolt after first 100 hours and 500 hours of use.

三、回转支承的包装、运输、使用及维护 Packaging, Transport and Maintenance of Slewing Ring

1、包装

目前我公司产品一般采用三种包装形式：无木箱包装、木箱包装、木托包装。

1) 无木箱包装 这种包装适用于汽车短途运输。产品涂防锈油后，内层用麻布紧裹，外层用塑料布缠绕，多个可用钢带扎紧在一起。

2) 木箱包装 对于需要经多次转运或长途运输的回转支承必须采用木箱包装，单个或多个包装后用钢带扎紧在一起，放入并固定在木箱内。

3) 木托包装 这种包装方式主要适用于较长路程的运输。

2、运输

1) 回转支承在装卸时应做到轻取轻放，严禁摔、碰回转支承，重量在30kg以上的回转支承，装卸时要使用支承上的吊装孔。

2) 回转支承在运输过程中必须水平放置，对于无木箱包装的回转支承，下面必须放置木制垫块，并应有防止滑动的措施。

3) 对于直径 $Do \geq 3000\text{mm}$ 或易于变形的回转支承，应有辅助支承。

3、使用及维护

1) 回转支承出厂时滚道内已涂有少量的3号锂基润滑脂，使用时，用户应根据不同的工作条件重新填注合适的润滑脂。一般球类支承每运转100小时加油一次，滚柱类支承每运转50小时加油一次，加锂基润滑脂时，应使回转机构慢速转动，边转边注油，使润滑脂填充均匀，直到密封处有润滑脂挤出，表示旧脂已被取代；特殊工作环境中，如热带、湿度大、灰尘多、温度变化大以及连续工作时，应缩短润滑周期。

2) 机器长期停止运转的前后也必须加足新的润滑脂。

3) 暴露在外的齿面，应经常清除齿面杂物，并涂以相应的润滑脂。

4) 一般工作条件下，回转支承安装运转100小时后应检查一次螺栓预紧力，以后每运转500小时检查一次，必须保持足够的螺栓预紧力。

5) 使用过程中，禁止用水直接冲刷回转支承，以防止水进入滚道。

6) 使用过程中，如发现噪音、冲击、功率突然增大，应立即停机检查，排除故障，必要时需拆检支承。

7) 严防较硬异物接近或进入支承齿啮合区。

8) 经常检查密封圈的完好情况，如果发现密封圈破损应及时更换，如发现脱落应及时复位。

9) 多件回转支承重叠在一起水平堆放，必须在每个回转支承之间在圆周方向至少均匀放置3~5个垫块，并且上层垫块和下层垫块在圆周方向的位置上应一致。禁止把回转支承竖起放置。

10) 放置回转支承应在无腐蚀性介质、干燥、平整的室内存放，不可浸泡或水淋。

1. Packaging

At present, our products generally use three kinds of packaging: non-wooden packaging, wooden packaging, wood care packaging.

1) Non-wooden packaging This type of packaging is fit for short-distance transport. After painting the anti-rust coating oil, inner layer of the slewing ring wrapping with flax tightly, the outer wrapping with plastic sheeting, and could put several together using metal band.

2) Wooden packaging Who need repeated transfer or long-distance transport of slewing ring must be in wooden packaging. Single or multiple packaged slewing ring could together with metal band, and fixed in a wooden box.

3) Wood care packaging This type of packaging is the main mode of transport for long distance.

2. Transportation

1) Slewing ring handling in the loading and unloading process should be done gently, and non-throwing, hitting. Weighting more than 30kg slewing ring, it should be use lifting holes when in the handling process.

2) Slewing ring must be horizontal in the transport. For the non-wooden packaging of slewing ring, the bottom must be put in wooden pads and should have anti-slip steps.

3) For the diameter greater than 3000mm or easily deformed slewing ring, bearing should have assistant supporting.

3. Maintenance of the Slewing Ring

1) The slewing ring had been filled a few of No.3 lithium based grease in the race before delivery. Consumers should fill the new grease suitably according to different working condition before use it. Generally, it is necessary to fill in grease once every 100 hours for ball slewing ring, and once every 50 hours for roller slewing ring. When filling in lithium based grease, it must make the grease even till the grease out off from the sealing. The filling period should be shorten if there is the special working condition such as at the torrid zone, high humidity, severe dust, large temperature variation and long continuing working time.

2) It should be filled with new grease before and after the machine being long time stop working.

3) The gear faces exposed in air should periodically cleaned and spread with appropriate oil on it.

4) In general working condition, check the pre-tighten force of the bolts after first 100 working hours then check it every 500 hours of the slewing ring. It must be always kept enough pre-tighten force.

5) Cleaning the slewing ring with high-pressure water is not permissible during operation so as to avoid the water entering to the rolling race.

6) Stop and check the machine during operation if there is abnormal noise, vibration occurred or suddenly power rose. Remove the trouble or dismantle it for repairing if necessary.

7) Should not let the hard materials access or enter in the engaging area of the gear.

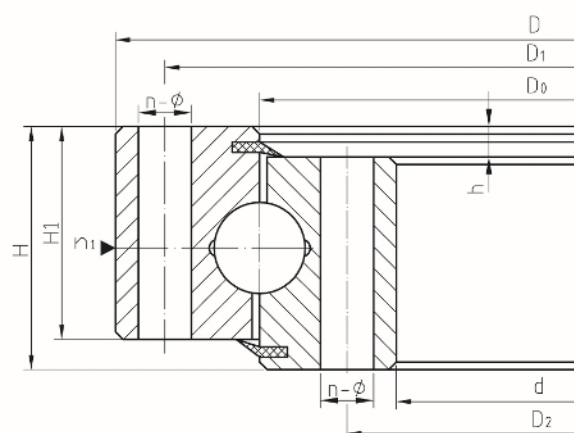
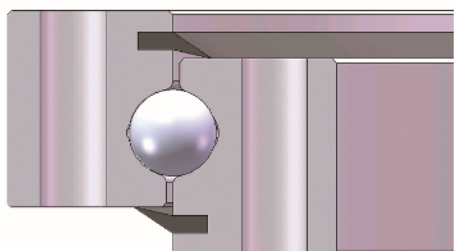
8) Regularly check the seal ring is that OK or not. Replace it if it is damaged and reset it when it is fallen.

9) Multi-slewing rings overlapping together horizontally must put at least 3-5 pads evenly in the direction of circumference between the slewing rings. And the upper and lower pads put in the circumferential direction of the position should be consistent. Slewing ring stand up is prohibited.

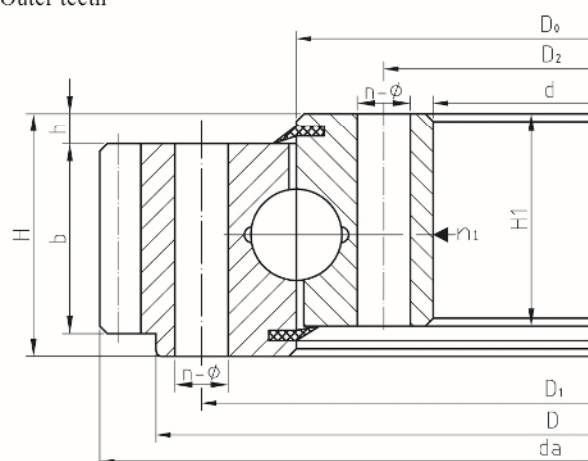
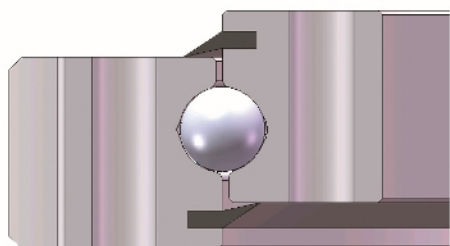
10) Slewing ring should be placed on non-corrosive medium, and stored in dry, flat indoor room, can not be soaked or watered.

单排球式 Single-row ball

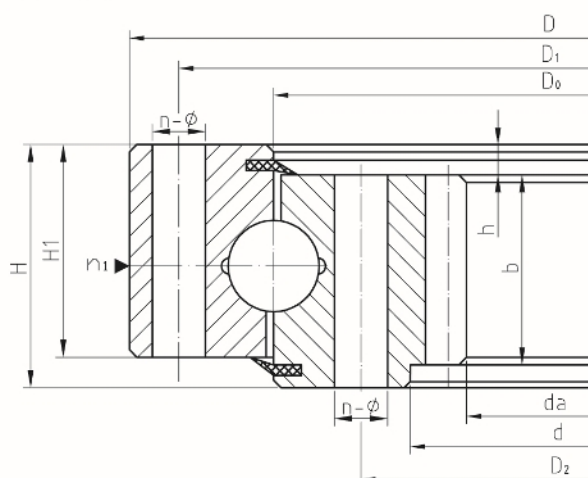
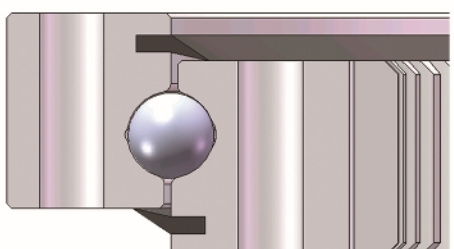
无齿式 No teeth



外齿式 Outer teeth



内齿式 Inner teeth



回转支承参数表 Basic Data of Slewing Ring

Q系列基本参数表 JB/T10839-2008 (JJ 36.1-91) Basic data of standard series Q. (推荐系列 Recommendation)

序号	基本型号 Basic Size	外形尺寸 Configuration Size				安装尺寸 Mounting Size						结构尺寸 Structural Size			齿轮参数 Gear Data		外齿参数 Outer Gear Data		内齿参数 Inner Gear Data		参考重量 kg Weight		
		外齿式 Outer teeth		内齿式 Inner teeth		H	D ₁	D ₂	n	通孔 Bolt Hole A型 Φ	螺纹孔 Screw Hole B.C.D型 Φ T	n ₁	H ₁	h	b	m	X=-0.5		X=+0.5		外齿 outer gear	内齿 inner gear	
		D	d	D	d												da	Z	da	Z			
NO.	QU.QW.QN系列	D	d	D	d																		
1	315.20	406	222	408	224	60	370	260	10	17	M16	24	2	50	10	40	3	423	140	207	70	34	35
	4																428	106	200	51	35	36	
2	355.20	446	262	448	264	60	410	300	10	17	M16	24	2	50	10	40	3	462	153	249	84	39	40
	4																468	116	240	61	40	41	
3	400.20	490	307	493	310	60	455	345	12	17	M16	24	2	50	10	40	4	512	127	288	73	44	45
	5																520	103	280	57	46	47	
4	450.20	540	357	543	360	60	505	395	12	17	M16	24	2	50	10	40	4	564	140	336	85	50	51
	5																570	113	330	67	52	43	
5	500.20	590	407	593	410	60	555	445	14	17	M16	24	2	50	10	40	5	615	122	385	78	55	56
	6																624	103	378	64	57	58	
6	560.20	654	464	656	468	70	618	502	14	17	M16	30	2	60	10	50	4	680	169	440	111	76	78
	5																685	136	435	88	77	79	
7	630.20	724	534	726	538	70	688	572	16	17	M16	30	2	60	10	50	4	748	186	512	129	84	86
	5																755	150	505	102	86	88	
8	710.20	804	614	806	618	70	768	652	18	17	M16	30	2	60	10	50	5	835	166	585	118	97	99
	6																840	139	582	98	97	101	
9	800.20	894	704	896	708	70	858	742	20	17	M16	30	2	60	10	50	6	930	154	672	113	110	114
	8																936	116	664	84	111	114	
10	800.25	904	692	908	694	78	864	736	18	22	M20	36	2	68	10	58	6	942	156	654	110	142	143
	8																952	118	648	82	142	147	
11	900.25	1004	792	1008	794	78	964	836	20	22	M20	36	2	68	10	58	8	1048	130	744	94	163	162
	10																1060	105	740	75	162	168	
12	1000.25	1104	892	1108	894	78	1064	936	24	22	M20	36	2	68	10	58	8	1152	143	848	107	178	182
	10																1160	115	840	85	179	185	
13	1000.32	1120	876	1124	880	90	1074	926	24	24	M22	40	2	80	10	70	8	1160	144	832	105	230	227
	10																1170	116	830	84	227	232	
14	1120.32	1240	996	1244	1000	90	1194	1046	28	24	M22	40	4	80	10	70	10	1300	129	940	95	263	272
	12																1308	108	936	79	262	275	
15	1250.32	1370	1126	1374	1130	90	1324	1176	32	24	M22	40	4	80	10	70	10	1430	142	1070	108	294	302
	12																1440	119	1068	90	290	309	
16	1400.32	1520	1276	1524	1280	90	1474	1326	36	24	M22	40	4	80	10	70	12	1584	131	1212	102	333	337
	14																1596	113	1204	87	336	347	
17	1250.40	1390	1108	1394	1110	102	1336	1164	32	26	M24	45	4	90	12	80	10	1450	144	1050	106	388	396
	12																1452	120	1044	88	388	392	
18	1400.40	1540	1258	1544	1260	102	1486	1314	36	26	M24	45	4	90	12	80	12	1608	133	1188	100	444	448
	14																1610	114	1190	86	434	443	
19	1600.40	1740	1458	1744	1460	102	1686	1514	40	26	M24	45	4	90	12	80	12	1812	150	1392	117	509	528
	14																1820	129	1386	100	511	534	
20	1800.40	1940	1658	1944	1660	102	1886	1714	44	26	M24	45	4	90	12	80	14	2016	143	1582	114	576	583
	16																2032	126	1568	99	591	607	
21	1600.50	1762	1434	1766	1438	124	1704	1496	40	30	M27	50	4	112	12	100	12	1824	151	1368	115	714	714
	14																1834	130	1358	98	723	727	
22	1800.50	1964	1634	1966	1638	124	1904	1696	44	30	M27	50	4	112	12	100	14	2044	145	1568	113	794	845
	16																2048	127	1552	98	818	843	
23	2000.50	2162	1834	2166	1842	124	2104	1896	48	30	M27	50	6	112	12	100	16	2240	139	1760	111	891	912
	18																2250	124	1746	98	913	927	
24	2240.50	2402	2074	2406	2078	124	2344	2136	54	30	M27	50	6	112	12	100	16	2480	154	1984	125	1044	1020
	18																2502	138	1980	111	1041	1078	
25	2500.50	2662	2334	2666	2342	124	2604	2396	60	30	M27	50	6	112	12	100	18	2754	152	2250	126	1132	1171
	20																2760	137	2240	113	1148	1175	
26	2500.60	2696	2304	2696	2308	150	2626	2374	60	33	M30	56	6	136	14	122	18	2790	154	2214	124	1621	1677
	20																2800	139	2200	111	1654	1701	
27	2800.60	2992	2604	2996	2608	150	2926	2674	66	33	M30	56	6	136	14	122	18	3078	170	2502	140	1871	1817
	20																3100	154	2500	126	1857	1904	
28	3150.60	3342	2954	3346	2958	150	3276	3024	72	33	M30	56	8	136	14	122	20	3440	171	2840	143	2144	2087
	22																3454	156	2838	130	2129	2139	
29	3550.60	3742	3354	3746	3358	150	3676	3424	78	33	M30	56	8	136	14	122	20	3840	191	3240	163	2425	2355
	25																3875	154	3225	130	2437	2500	
30	4000.60A	4200	3804	4196	3808	150	4126	3874	80	33	M30	56	8	136	14	122	22	4312	195	3696	169	2683	2787
	25																4325	172	3675	148	2763	2827	

01系列基本参数表 JB/T 2300-1999 Basic data of standard series 01.

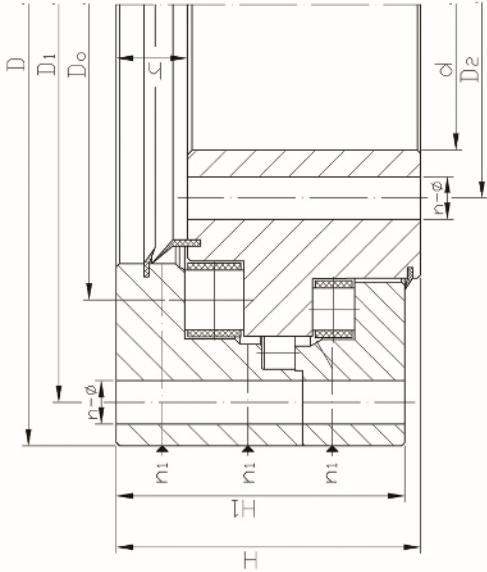
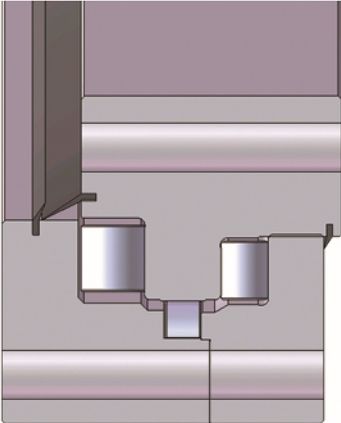
序 号 No.	基本型号 Basic Size			外形尺寸 Configuration Size			安装尺寸 Mounting Size					结构尺寸 Structural Size			齿轮参数 Gear Data			外齿参数 Outer Gear Data		内齿参数 Inner Gear Data		参考 重量 kg Weight	
	无齿式 No teeth	外齿式 Outer teeth	内齿式 Inner teeth	D	d	H	D ₁	D ₂	n	通孔 Bolt Hole	螺纹孔 Screw Hole	n ₁	H ₁	h	b	x	m	da	Z	da	Z		
	Do	Do	Do							0型 Φ	1,2,3型 Φ T												
1	010.20.200	011.20.200	—	280	120	60	248	152	12	16	M14	28	2	50	10	40	0	3	300	98	—	—	19
2	010.20.224	011.20.224	—	304	144	60	272	176	12	16	M14	28	2	50	10	40	0	3	321	105	—	—	21
3	010.20.250	011.20.250	—	330	170	60	298	202	18	16	M14	28	2	50	10	40	0	4	352	86	—	—	23
4	010.20.280	011.20.280	—	360	200	60	328	232	18	16	M14	28	2	50	10	40	0	4	384	94	—	—	26
5	010.25.315	011.25.315	013.25.315	408	222	70	372	258	20	18	M16	32	2	60	10	50	0	5	435	85	190	40	41
6	010.25.355	011.25.355	013.25.355	448	262	70	412	298	20	18	M16	32	2	60	10	50	0	5	475	93	235	49	46
7	010.25.400	011.25.400	013.25.400	493	307	70	457	343	24	18	M16	32	2	60	10	50	0	6	528	86	276	48	54
8	010.25.450	011.25.450	013.25.450	543	357	70	507	393	24	18	M16	32	2	60	10	50	0	6	576	94	324	56	60
9	010.30.500	011.30.500 012.30.500	013.30.500 014.30.500	602	398	80	566	434	20	18	M16	32	4	70	10	60	+0.5	5 6	629 628.8	123	367 368.4	74 62	85
10	010.30.560	011.30.560 012.30.560	013.30.560 014.30.560	662	458	80	626	494	20	18	M16	32	4	70	10	60	+0.5	5 6	689 688.8	135	427 428.4	86 72	95
11	010.30.630	011.30.630 012.30.630	013.30.630 014.30.630	732	528	80	696	564	24	18	M16	32	4	70	10	60	+0.5	6 8	772.8 774.4	126	494.4 491.2	83 62	110
12	010.30.710	011.30.710 012.30.710	013.30.710 014.30.710	812	608	80	776	644	24	18	M16	32	4	70	10	60	+0.5	6 8	850.8 854.4	139	572.4 571.2	96 72	120
13	010.40.800	011.40.800 012.40.800	013.40.800 014.40.800	922	678	100	878	722	30	22	M20	40	6	90	10	80	+0.5	8 10	966.4 968	118	635.2 634	80 64	220
14	010.40.900	011.40.900 012.40.900	013.40.900 014.40.900	1022	778	100	978	822	30	22	M20	40	6	90	10	80	+0.5	8 10	1062.4 1068	130	739.2 734	93 74	240
15	010.40.1000	011.40.1000 012.40.1000	013.40.1000 014.40.1000	1122	878	100	1078	922	36	22	M20	40	6	90	10	80	+0.5	10 12	1188 1185.6	116	824 820.8	83 69	270
16	010.40.1120	011.40.1120 012.40.1120	013.40.1120 014.40.1120	1242	998	100	1198	1042	36	22	M20	40	6	90	10	80	+0.5	10 12	1298 1305.6	127	944 940.8	95 79	300
17	010.45.1250	011.45.1250 012.45.1250	013.45.1250 014.45.1250	1390	1110	110	1337	1163	40	26	M24	48	5	100	10	90	+0.5	12 14	1449.6 1453.2	118	1048.8 1041.6	88 75	420
18	010.45.1400	011.45.1400 012.45.1400	013.45.1400 014.45.1400	1540	1260	110	1487	1313	40	26	M24	48	5	100	10	90	+0.5	12 14	1605.6 1607.2	131	1192.8 1195.6	100 86	480
19	010.45.1600	011.45.1600 012.45.1600	013.45.1600 014.45.1600	1740	1460	110	1687	1513	45	26	M24	48	5	100	10	90	+0.5	14 16	1817.2 1820.8	127	1391.6 1382.4	100 87	550
20	010.45.1800	011.45.1800 012.45.1800	013.45.1800 014.45.1800	1940	1660	110	1887	1713	45	26	M24	48	5	100	10	90	+0.5	14 16	2013.2 2012.8	141	1573.6 1574.4	113 99	610
21	010.60.2000	011.60.2000 012.60.2000	013.60.2000 014.60.2000	2178	1825	144	2110	1891	48	33	M30	60	8	132	12	120	+0.5	16 18	2268.8 2264.4	139	1734.4 1735.2	109 97	1100
22	010.60.2240	011.60.2240 012.60.2240	013.60.2240 014.60.2240	2418	2065	144	2350	2131	48	33	M30	60	8	132	12	120	+0.5	16 18	2492.8 2498.4	153	1990.4 1987.2	125 111	1250
23	010.60.2500	011.60.2500 012.60.2500	013.60.2500 014.60.2500	2678	2325	144	2610	2391	56	33	M30	60	8	132	12	120	+0.5	18 20	2768.4 2776	151	2339.2 2228	125 112	1400
24	010.60.2800	011.60.2800 012.60.2800	013.60.2800 014.60.2800	2978	2625	144	2910	2691	56	33	M30	60	8	132	12	120	+0.5	18 20	3074.4 3076	168	2527.2 2528	141 127	1650
25	010.75.3150	011.75.3150 012.75.3150	013.75.3150 014.75.3150	3376	2922	174	3286	3014	56	45	M42	84	8	162	12	150	+0.5	20 22	3476 3471.6	171	2828 2824.8	142 129	1950
26	010.75.3550	011.75.3550 012.75.3550	013.75.3550 014.75.3550	3776	3322	174	3686	3414	56	45	M42	84	8	162	12	150	+0.5	20 22	3876 3889.6	191	3228 3220.8	162 147	2300
27	010.75.4000	011.75.4000 012.75.4000	013.75.4000 014.75.4000	4226	3772	174	4136	3864	60	45	M42	84	10	162	12	150	+0.5	22 25	4329.6 4345	194	3660.8 3660	167 147	3600

三排柱式

Three-row roller

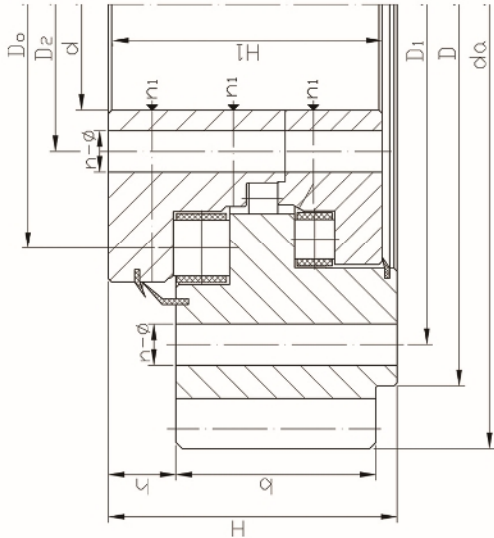
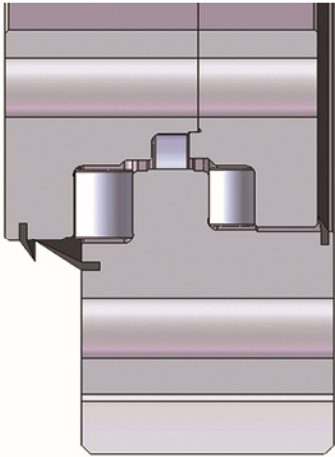
无齿式

No teeth



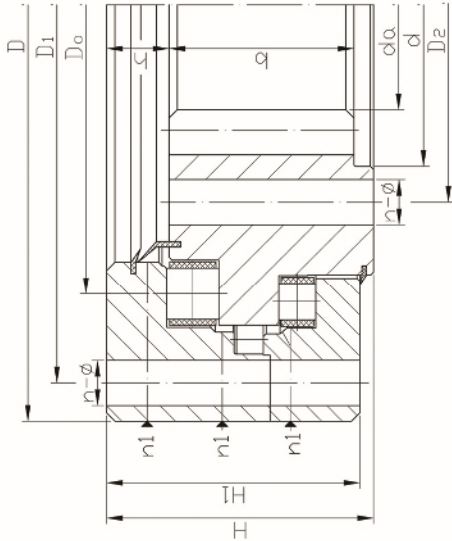
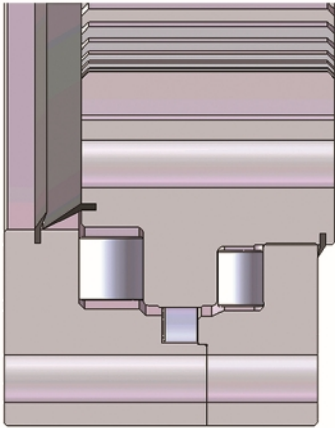
外齿式

Outer teeth



内齿式

Inner teeth



S系列基本参数JG/T68-1999 (JJ36. 3-91) Basic data of Standard series S

序 号 NO.	基本型号 Basic Size	外形尺寸 Configuration Size				安 装 尺 寸 Mounting Size								结构尺寸 Structural Size			齿轮参数 Gear Data				外齿参数 Outer Gear Data		内齿参数 Inner Gear Data		参考重量 kg Weight	
		外齿式 Outer teeth		内齿式 Inner teeth		H	外齿式 Outer teeth		内齿式 Inner teeth		n	通孔 Bolt Hole		n ₁	H ₁	h	b	x	m	da	Z	da	Z			
												A型	φ											B、C、D型		T
		D	d	D	d	D	D ₁	D ₂	D ₁	D ₂	D ₁	D ₂	φ	φ	T											
1	1000.20	1156	854	1146	844	128	1106	906	1094	894	28	26	M24	45	4	118	26	98	+0.5	10	1210	118	790	80	426	418
2	1120.20	1280	974	1266	964	128	1226	1026	1214	1014	30	26	M24	45	4	118	26	98	+0.5	12	1344	109	900	76	478	470
3	1250.20	1410	1104	1396	1094	128	1356	1156	1344	1144	36	26	M24	45	4	118	26	98	+0.5	12	1476	120	1032	87	540	524
4	1400.20	1560	1254	1546	1240	128	1506	1306	1494	1294	36	26	M24	45	4	118	26	98	+0.5	14	1638	114	1162	84	626	614
5	1600.20	1760	1454	1746	1444	128	1706	1506	1694	1494	40	26	M24	45	4	118	26	98	+0.5	14	1834	128	1372	99	708	686
6	1600.25	1790	1418	1782	1400	148	1726	1484	1716	1474	32	33	M30	56	4	138	30	110	+0.5	14	1862	130	1330	96	992	966
7	1800.25	2000	1618	1982	1600	148	1926	1684	1916	1674	36	33	M30	56	6	138	30	110	+0.5	16	2080	127	1520	96	1121	1096
8	2000.25	2190	1818	2182	1810	148	2126	1884	2116	1874	44	33	M30	56	6	138	30	110	+0.5	16	2272	139	1728	109	1211	1196
9	2240.25	2430	2058	2422	2040	148	2366	2124	2356	2114	48	33	M30	56	6	138	30	110	+0.5	18	2520	137	1944	109	1373	1396
10	2500.25	2700	2318	2682	2310	148	2626	2384	2616	2374	54	33	M30	56	6	138	30	110	+0.5	18	2790	152	2214	124	1561	1532
11	2240.32	2464	2022	2458	2000	182	2394	2100	2380	2086	40	39	M36	66	6	172	42	130	+0.5	18	2556	139	1908	107	1968	2002
12	2500.32	2730	2282	2718	2270	182	2654	2360	2640	2346	44	39	M36	66	6	172	42	130	+0.5	18	2826	154	2178	122	2245	2199
13	2800.32	3040	2582	3018	2560	182	2954	2660	2940	2646	48	39	M36	66	6	172	42	130	+0.5	20	3140	154	2460	124	2566	2526
14	3150.32	3380	2932	3368	2920	182	3304	3010	3290	2996	56	39	M36	66	8	172	42	130	+0.5	20	3480	171	2820	142	2316	2788
15	2800.40	3040	2562	3038	2560	220	2962	2640	2960	2638	56	39	M36	66	8	210	50	160	+0.5	20	3140	154	2460	124	3264	3213
16	3150.40	3380	2912	3388	2910	220	3312	2990	3310	2988	64	39	M36	66	8	210	50	160	+0.5	22	3498	156	2794	128	3740	3683
17	3550.40	3780	3312	3788	3300	220	3712	3390	3710	3388	72	39	M36	66	8	210	50	160	+0.5	22	3894	174	3190	146	4175	4171
18	4000.40	4240	3762	4238	3750	220	4162	3840	4160	3838	84	39	M36	66	8	210	50	160	+0.5	24	4368	179	3624	152	4801	4810
19	3150.50	3430	2884	3416	2870	268	3340	2974	3326	2960	56	45	M42	80	8	258	64	190	+0.5	24	3552	145	2736	115	5176	5072
20	3550.50	3840	3284	3816	3270	268	3740	3374	3726	3360	64	45	M42	80	8	258	64	190	+0.5	24	3960	162	3144	132	5798	5816
21	4000.50	4290	3734	4266	3720	268	4190	3824	4176	3810	72	45	M42	80	8	258	64	190	+0.5	24	4416	181	3600	151	6544	6512

回转支承参数表 Basic Data of Slewing Ring

13系列基本参数 (JB/T2300-1999) Basic data of Standard series 13

序 号 NO.	基本型号 Basic Size		外形尺寸 Configuration Size			安装尺寸 Mounting Size					结构尺寸 Structural Size			齿轮参数 Gear Data			外齿参数 Outer Gear Data		内齿参数 Inner Gear Data		参考 重量 kg Weight		
	无齿式 No teeth Do	外齿式 Outer teeth Do	内齿式 Inner teeth Do	D	d	H	D ₁	D ₂	螺栓孔 Screw Hole 1,2,3型		n ₁	H ₁	h	b	x	m	da	Z	da	Z			
									0型	φ												φ	T
1	130.25.500	131.25.500 132.25.500	133.25.500 134.25.500	634	366	148	598	402	24	18	M16	32	4	138	32	80	+0.5	5 6	664 664.8	130 108	337 338.4	68 57	224
2	130.25.560	131.25.560 132.25.560	133.25.560 134.25.560	694	426	148	658	462	24	18	M16	32	4	138	32	80	+0.5	5 6	724 724.8	142 118	397 398.4	80 67	240
3	130.25.630	131.25.630 132.25.630	133.25.630 134.25.630	764	496	148	728	532	28	18	M16	32	4	138	32	80	+0.5	6 8	808.8 806.4	132 98	458.4 459.2	77 58	270
4	130.25.710	131.25.710 132.25.710	133.25.710 134.25.710	844	576	148	808	612	28	18	M16	32	4	138	32	80	+0.5	6 8	886.8 886.4	145 108	536.4 539.2	90 68	300
5	130.32.800	131.32.800 132.32.800	133.32.800 134.32.800	964	636	182	920	680	36	22	M20	40	4	172	40	120	+0.5	8 10	1006.4 1008	123 98	595.2 594	75 60	500
6	130.32.900	131.32.900 132.32.900	133.32.900 134.32.900	1064	736	182	1020	780	36	22	M20	40	4	172	40	120	+0.5	8 10	1102.4 1108	135 108	691.2 694	87 70	600
7	130.32.1000	131.32.1000 132.32.1000	133.32.1000 134.32.1000	1164	836	182	1120	880	40	22	M20	40	5	172	40	120	+0.5	10 12	1218 1221.6	119 99	784 784.8	79 66	680
8	130.32.1120	131.32.1120 132.32.1120	133.32.1120 134.32.1120	1284	956	182	1240	1000	40	22	M20	40	5	172	40	120	+0.5	10 12	1338 1341.6	131 109	904 904.8	91 76	820
9	130.40.1250	131.40.1250 132.40.1250	133.40.1250 134.40.1250	1445	1055	220	1393	1107	45	26	M24	48	5	210	50	150	+0.5	12 14	1509.6 1509.2	123 105	988.8 985.6	83 71	1200
10	130.40.1400	131.40.1400 132.40.1400	133.40.1400 134.40.1400	1595	1205	220	1543	1257	45	26	M24	48	5	210	50	150	+0.5	12 14	1665.6 1663.2	136 116	1144.8 1139.6	96 82	1300
11	130.40.1600	131.40.1600 132.40.1600	133.40.1600 134.40.1600	1795	1405	220	1743	1457	48	26	M24	48	6	210	50	150	+0.5	14 16	1873.2 1868.8	131 114	1335.6 1334.4	96 84	1520
12	130.40.1800	131.40.1800 132.40.1800	133.40.1800 134.40.1800	1995	1605	220	1943	1657	48	26	M24	48	6	210	50	150	+0.5	14 16	2069.2 2076.8	145 127	1531.6 1526.4	110 96	1750
13	130.45.2000	131.45.2000 132.45.2000	133.45.2000 134.45.2000	2221	1779	231	2155	1845	60	33	M30	60	6	219	54	160	+0.5	16 18	2300.8 2300.4	141 125	1702.4 1699.2	107 95	2400
14	130.45.2240	131.45.2240 132.45.2240	133.45.2240 134.45.2240	2461	2019	231	2395	2085	60	33	M30	60	6	219	54	160	+0.5	16 18	2556.8 2552.4	157 139	1926.4 1933.2	121 108	2700
15	130.45.2500	131.45.2500 132.45.2500	133.45.2500 134.45.2500	2721	2279	231	2655	2345	72	33	M30	60	8	219	54	160	+0.5	18 20	2822.4 2816	154 138	2185.2 2188	122 110	3000
16	130.45.2800	131.45.2800 132.45.2800	133.45.2800 134.45.2800	3021	2579	231	2955	2645	72	33	M30	60	8	219	54	160	+0.5	18 20	3110.4 3116	170 153	2491.2 2488	139 125	3400
17	130.50.3150	131.50.3150 132.50.3150	133.50.3150 134.50.3150	3432	2868	270	3342	2958	72	45	M42	84	8	258	65	180	+0.5	20 22	3536 3537.6	174 158	2768 2758.8	139 126	5000
18	130.50.3550	131.50.3550 132.50.3550	133.50.3550 134.50.3550	3832	3268	270	3742	3358	72	45	M42	84	8	258	65	180	+0.5	20 22	3936 3933.6	194 176	3168 3154.8	159 144	5600
19	130.50.4000	131.50.4000 132.50.4000	133.50.4000 134.50.4000	4282	3718	270	4192	3808	80	45	M42	84	8	258	65	180	+0.5	22 25	4395.6 4395	197 173	3116.8 3610	165 145	6400

注:

1、Q系列较01系列无论其科学性、合理性、还是经济性都优，详见《建筑机械》2002年第3期，《回转支承产品标准对合理选型的影响》一文，或查阅我公司网站。

2、QU(无齿式)系列外形尺寸由相同滚道中心直径的外齿式d和内齿式D组成，其堵塞与油孔布置在外圈上。

3、JB2300-1999标准中，对于钢球直径 $\phi 30$ 及以上的各型号增加了小直径的钢球档，对应的型号数增加了一倍，但其他基本参数完全相同，01系列基本参数表中予以省略。

4、T为螺纹长度。

NOTE:

1.Q series are more scientific,reasonable and economic than 01 series,please see the detail article of 'The effect of slewing ring product standard to reasonable selection'in the third issue in 2002 of 'Construction Mechanism'or consult the website of our company.

2.No teeth slewing ring consists of outside gear d and inside gear D with the same track center diameter.The plug and oil-hole are located on the outer ring.

3.In Standard Series JB2300-1999,more than the diameter of ball 30,we add to the series of small diameter of ball,the series are twice,but the other data is the same.01 series is omitted in the table.

4.T is the length of screw.

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