

BRIEF INTRODUCTION

环球简介

安徽环球传动科技有限公司成立于2007年，是拥有现代企业制度、现代管理手段、现代化智能装备的企业。是机械行业回转支承标准JB/T10837—2023、JB/T10838—2023、JB/T10839—2023的起草单位之一，公司拥有全数控化机械加工生产线，装备多台HTC63150斜床身数控车床；HM805卧式加工中心；YK83200数控铣齿机；YK51160数控插齿机；全自动整体感应淬火机床等先进生产设备，具有年产30000套回转支承能力。公司通过ISO9001质量体系认证，取得国家高新技术企业、创新型中小企业、专精特新中小企业、科技型中小企业等荣誉，拥有发明专利5项、实用新型专利30余项。

主要产品“环球”牌回转支承，有单排球式、单排交叉滚柱式、三排滚柱式、双排异径球式等两千余种规格，是各型号挖掘机、塔式起重机、履带式起重机、轮式起重机的关键部件，广泛应用于建筑机械、工程机械、港口机械、冶金机械、医疗设备、环保设备、风力发电、太阳能发电等领域。

Anhui Huanqiu Drive Technology Co., Ltd., founded in 2007, is a modern enterprise with a fully integrated management system and advanced intelligent manufacturing capabilities. As one of drafting units of the slewing ring standards JB/T10837-2023, JB/T10838-2023, and JB/T10839-2023, the company operates a fully CNC-controlled production line. Key equipment includes HTC63150 inclined bed CNC lathes, HM805 horizontal machining centers, YK83200 CNC gear milling machines, YK51160 CNC gear shaping machines, and fully automated integral induction quenching machines, supporting an annual production capacity of 30,000 slewing rings. The company has achieved ISO9001 quality system certification and is recognized as a National High-Tech Enterprise, an Innovative SME, Specialized and Special New SME, and Technology-based SME, and holds five invention patents along with over 30 utility model patents.

The main product line, branded “HQ” slewing rings, offers more than 2,000 specifications, including single-row ball, single-row cross roller, three-row roller, and double-row ball types. These rings are key components for various models of excavators, tower cranes, crawler cranes, and wheeled cranes. They are widely used across multiple sectors, including construction machinery, port machinery, metallurgical machinery, medical equipment, environmental protection equipment, wind power, and solar power.

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HUANQIUCHUANDONG



车间展示 WORKSHOP SHOW

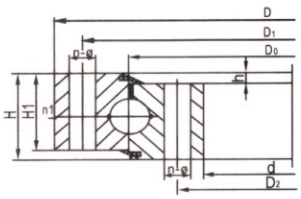
15+TH 专业机械部件供应商”

资质认证 AUTHENTICATION CERTIFICATE

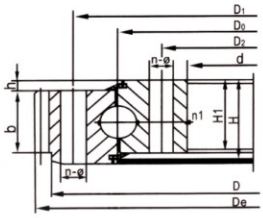


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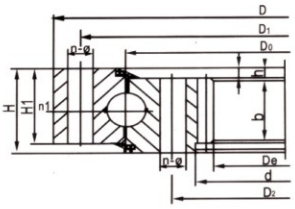
单排球式回转支承
SINGLE-ROW BALL SLEWING RING



无齿式(No teeth)



外齿式(Outer teeth)



内齿式(Inner teeth)

Q系列JB/T10839-2023 Standard seriesQ

X X X XXXX XX X X
(1)(2)(3) (4) (5) (6)(7)

(1) 回转支承结构型式代号 Type of slewing ring
Q：单排球式 Single-row ball
(2) 传动型式代号 Code of driven type
W：外齿式 Outer teeth
N：内齿式 Inner teeth
U：无齿式 No teeth
(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 installation bolt holes
B：内、外圈安装孔均为螺孔
Both rings with installation screw holes
C：外圈安装孔为螺孔,内圈为通孔
Outer ring with installation screw holes,inner ring with installation bolt holes
D:外圈安装孔为通孔，内圈为螺孔
Outer ring with installation bolt holes,inner ring with installation screw holes
(4) 滚道中心直径,mm Dia.of track center
(5) 滚动体直径,mm Dia.of roller ball
(6) 齿轮模数分类代号 Classification code NO.of gear module
A:大模数,不带A表示小模数
Bigger precision,without A:normal
(7) 精度等级分类代号 Precision grade
G:精密级,不带G表示普通级
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/T10839-2023

For example:
Single-row ball,bigger module,outer gear,Outer ring with installation screw holes,inner ring with installation bolt holes,Dia. of track center 1250mm,Dia.of ball 40mm,refer to the following
Slewing ring QWC1250 ·40A
JB/T10839-2023

01系列JB/T2300-2018 Standard series01

XX X XX XXXX X X
(1) (2) (3) (4) (5) (6)

(1) 回转支承结构型式代号 Type of slewing ring
01:单排球式 Single-row ball
(2) 传动型式代号 Code of gear driven type
0：无齿式 NO teeth
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) 滚动体直径，mm Dia.of roller ball
(4) 滚动中心直径，mm Dia.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 installation bolt holes
1：内、外圈安装孔均为螺孔
Both rings with installation screw holes
2：外圈安装孔为通孔，内圈为螺孔
Outer ring with installation screw holes, inner ring with installation bolt holes
3：外圈安装孔为螺孔，内圈为通孔
Outer ring with installation bolt holes,inner ring with installation screw 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 2300-2018

For example:
Single-row ball,bigger module, inner gear, Dia.of ball 40mm,Dia.of tack center 1000mm,with fitting cirle,both rings with installation bolt holes refer to the following:
Slewing ring 014 · 40 · 1000 · 10
JB/T 2300-2018



回转支承安全系数 fs
CALCULATION FOR FS SAFETY FACTOR

工作类型 Job type	工作特性 Job characteristics	机械举例 Mechanical examples	fs
轻型 light duty	不经常满负荷，回转平稳冲击小 Not frequently at full load, smooth rotation with minimal impact	堆取料机，汽车起重机，非港口用轮式起重机 Stacker reclaimer, truck crane, non port wheeled crane	1.00～1.15
中型 middle duty	不经常满负荷，回转较快，有冲击 Not frequently at full load, with fastrotation and impact	塔式起重机，船用起重机，履带起重机 Tower crane, marine crane, crawler crane	1.15～1.30
重型 heavy duty	经常满负荷，回转快冲击大 Frequent full load, fast rotation, and significant impact	抓斗起重机，港口起重机，单斗挖掘机，集装箱起重机 Grab bucket crane, port crane, single bucket excavator, container crane	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, high impact or poor workplace conditions	斗轮式挖掘机， 隧道掘进机，冶金起重机，海上作业平台起重机 Bucket wheel excavator, tunnel boring machine, metallurgical crane, offshore platform crane	1.45～1.70

单排球式回转支承的选型计算
SELECTION AND CALCULATION OF SINGLE VOLLEYBALL ROTARY BEARINGS

（1）计算额定静容量

$Co=f \cdot D \cdot d$

式中:Co ——— 额定静容量， KN

f ——— 静容量系数， 0.108KN/mm²

D ——— 滚道中心直径， mm

d ——— 钢球公称直径， mm

（2）根据组合后的外载荷，计算当量轴向载荷

$Cp=Fa+4370M/D+3.44Fr$

式中:Cp ——— 当量轴向载荷， KN

M ——— 倾覆力矩， KN · m

Fa ——— 轴向力， KN

Fr ——— 径向力， KN

（3）计算安全系数

fs=Co/Cp

fs值可按上表选取

Calculation for single-row ball slewing ring

Capacity of slewing ring

Capacity of bearing

Capacity factor

Diameter of track center

Diameter of ball

Loading calculation

Loading caculation

Toppling movement

Axial force

Radial force

Safety factor calculation

See the following table

序号 Serial Number	型号 Model	外形尺寸 External dimensions				安装孔尺寸 Installation hole size 通孔 Through-hole				安装孔尺寸 Installation hole size 螺孔 Screw hole					齿轮参数 Gear parameters					质量 Quality
		D	d_a	H	h	D_u	D_n	ϕ	n	D_u	D_n	ϕ	T	n	z	m	d	L	x	kg
		mm				mm				mm						mm				
1	QN□200.16 QN□200.16A	275	105 100	52	10	245	155	15	10	245	155	M14	28	10	37 27	3 4	111 108	42	0	14
2	QN□224.16 QN□221.16A	299	129 124	52	10	269	179	15	10	269	179	M14	28	10	45 33	3 4	135 132	42	0	16
3	QN□250.16 QN□250.16A	325	156 148	52	10	295	205	15	10	295	205	M14	28	10	54 39	3 4	162 156	42	0	18 19
4	QN□280.16 QN□280.16A	355	186 180	52	10	325	235	15	12	325	235	M14	28	12	64 47	3 4	192 188	42	0	20 21
5	QN□315.16 QN□315.16A	390	219 216	52	10	360	270	15	14	360	270	M14	28	14	75 56	3 4	225 224	42	0	23 23
6	QN□355.16 QN□355.16A	430	261 256	52	10	400	310	15	14	400	310	M14	28	14	89 66	3 4	267 264	42	0	26 27
7	QN□400.16 QN□400.16A	475	306 300	52	10	445	355	15	16	445	355	M14	28	16	104 77	3 4	312 308	42	0	30 30
8	QN□450.16 QN□450.16A	525	354 348	52	10	495	405	15	18	495	405	M14	28	18	120 89	3 4	360 356	42	0	34 35
9	QN□280.20 QN□280.20A	365	171.5 168	60	10	331	229	17	12	331	229	M16	32	12	51 44	3.5 4	178.5 176	50	0	28 28
10	QN□315.20 QN□315.20A	400	206.5 204	60	10	366	264	17	12	366	264	M16	32	12	61 53	3.5 4	213.5 212	50	0	31 32
11	QN□355.20 QN□355.20A	440	245 244	60	10	406	304	17	14	406	304	M16	32	14	72 63	3.5 4	252 252	50	0	36 36
12	QN□400.20 QN□400.20A	485	290.5 288	60	10	451	349	17	16	451	349	M16	32	16	85 74	3.5 4	297.5 296	50	0	40 41
13	QN□450.20 QN□450.20A	535	340 330	60	10	501	399	17	16	501	399	M16	32	16	87 68	4 5	348 340	50	0	46 47
14	QN□500.20 QN□500.20A	585	388 380	60	10	551	449	17	18	551	449	M16	32	18	99 78	4 5	396 390	50	0	52 53
15	QN□560.20 QN□560.20A	645	448 440	60	10	611	509	17	20	611	509	M16	32	20	114 90	4 5	456 450	50	0	58 60
16	QN□630.20 QN□630.20A	715	520 510	60	10	681	579	17	24	681	579	M16	32	24	132 104	4 5	528 520	50	0	65 67
17	QN□710.20 QN□710.20A	795	590 588	60	10	761	659	17	24	761	659	M16	32	24	120 100	5 6	600 600	50	0	73 73
18	QN□500.25 QN□500.25A	607	364.5 365	70	10	563	437	22	16	563	437	M20	40	16	83 75	4.5 5	373.5 375	60	0	76 75
19	QN□560.25 QN□560.25A	667	427.5 425	70	10	623	497	22	16	623	497	M20	40	16	97 87	4.5 5	436.5 435	60	0	85 85
20	QN□630.25 QN□630.25A	737	495 486	70	10	693	567	22	18	693	567	M20	40	18	101 83	5 6	505 498	60	0	96 99
21	QN□710.25 QN□710.25A	817	575 570	70	10	773	647	22	20	773	647	M20	40	20	117 97	5 6	585 582	60	0	109 110
22	QN□800.25 QN□800.25A	907	660 648	70	10	863	737	22	24	863	737	M20	40	24	112 83	6 8	672 664	60	0	124 127
23	QN□900.25 QN□900.25A	1007	744 730	70	10	963	837	22	24	963	837	M20	40	24	95 75	8 10	760 750	60	0	147 152
24	QN□1000.25 QN□1000.25A	1107	848 830	70	10	1063	937	22	28	1063	937	M20	40	28	108 85	8 10	864 850	60	0	161 169
25	QN□1120.25 QN□1120.25A	1227	968 950	70	10	1183	1057	22	30	1183	1057	M20	40	30	123 97	8 10	984 970	60	0	181 190
26	QN□560.32 QN□560.32A	680	410 408	84	10	632	488	24	18	632	488	M22	44	18	84 70	5 6	420 420	74	0	109 109
27	QN□630.32 QN□630.32A	750	474 464	84	10	702	558	24	20	702	558	M22	44	20	81 60	6 8	486 480	74	0	125 127
28	QN□710.32 QN□710.32A	830	558 544	84	10	782	638	24	24	782	638	M22	44	24	95 70	6 8	570 560	74	0	146 151
29	QN□800.32 QN□800.32A	920	632 620	84	10	872	728	24	24	872	728	M22	44	24	81 64	8 10	648 640	74	0	174 178
30	QN□900.32 QN□900.32A	1020	736 720	84	10	972	828	24	28	972	828	M22	44	28	94 74	8 10	752 740	74	0	193 200

序号 Serial Number	型号 Model	外形尺寸 External dimensions				安装孔尺寸 Installation hole size 通孔 Through-hole				安装孔尺寸 Installation hole size 螺孔 Screw hole					齿轮参数 Gear parameters					质量 Quality
		D	d_a	H	h	D_u	D_n	ϕ	n	D_u	D_n	ϕ	T	n	z	m	d	L	x	kg
		mm				mm				mm							mm			
31	QN□1000.32	1120	832	84	10	1072	928	24	30	1072	928	M22	44	30	106	8	848	74	0	218
	QN□1000.32A		820												84	10	840			224
32	QN□1120.32	1240	940	84	10	1192	1048	24	32	1192	1048	M22	44	32	96	10	960	74	0	252
	QN□1120.32A		936												80	12	960			252
33	QN□1250.32	1370	1070	84	10	1322	1178	24	36	1322	1178	M22	44	36	109	10	1090	74	0	282
	QN□1250.32A		1056												90	12	1080			291
34	QN□1400.32	1520	1212	84	10	1472	1328	24	40	1472	1328	M22	44	40	103	12	1236	74	0	321
	QN□1400.32A		1204												88	14	1232			324
35	QN□1600.32	1720	1416	84	10	1672	1528	24	44	1672	1528	M22	44	44	120	12	1440	74	0	363
	QN□1600.32A		1400												102	14	1428			378
36	QN□1000.40	1134	810	100	10	1082	918	26	32	1082	918	M24	48	32	83	10	830	90	0	292
	QN□1000.40A		792												68	12	816			304
37	QN□1120.40	1254	930	100	10	1202	1038	26	36	1202	1038	M24	48	36	95	10	950	90	0	327
	QN□1120.40A		912												78	12	936			342
38	QN□1250.40	1384	1060	100	10	1332	1168	26	40	1332	1168	M24	48	40	108	10	1080	90	0	366
	QN□1250.40A		1044												89	12	1068			380
39	QN□1400.40	1534	1200	100	10	1482	1318	26	44	1482	1318	M24	48	44	102	12	1224	90	0	419
	QN□1400.40A		1190												87	14	1218			426
40	QN□1600.40	1734	1392	100	10	1682	1518	26	48	1682	1518	M24	48	48	118	12	1416	90	0	494
	QN□1600.40A		1386												101	14	1414			496
41	QN□1800.40	1934	1582	100	10	1882	1718	26	54	1882	1718	M24	48	54	115	14	1610	90	0	567
	QN□1800.40A		1568												100	16	1600			584
42	QN□2000.40	2134	1778	100	10	2082	1918	26	60	2082	1918	M24	48	60	129	14	1806	90	0	639
	QN□2000.40A		1776												113	16	1808			634
43	QN□1250.50	1414	1020	120	10	1350	1150	32	32	1350	1150	M30	60	32	87	12	1044	110	0	545
	QN□1250.50A		1008												74	14	1036			555
44	QN□1400.50	1564	1164	120	10	1500	1300	32	36	1500	1300	M30	60	36	99	12	1188	110	0	621
	QN□1400.50A		1162												85	14	1190			616
45	QN□1600.50	1764	1372	120	10	1700	1500	32	40	1700	1500	M30	60	40	100	14	1400	110	0	689
	QN□1600.50A		1360												87	16	1392			703
46	QN□1800.50	1964	1554	120	10	1900	1700	32	44	1900	1700	M30	60	44	113	14	1582	110	0	817
	QN□1800.50A		1552												99	16	1584			811
47	QN□2000.50	2164	1744	120	10	2100	1900	32	48	2100	1900	M30	60	48	111	16	1776	110	0	924
	QN□2000.50A		1728												98	18	1764			951
48	QN□2240.50	2404	1984	120	10	2340	2140	32	54	2340	2140	M30	60	54	126	16	2016	110	0	1036
	QN□2240.50A		1980												112	18	2016			1034
49	QN□2500.50	2664	2232	120	10	2600	2400	32	60	2600	2400	M30	60	60	126	18	2268	110	0	1181
	QN□2500.50A		2220												113	20	2260			1204

序号 Serial Number	型号 Model	外形尺寸 External dimensions				安装孔尺寸 Installation hole size 通孔 Through-hole				安装孔尺寸 Installation hole size 螺孔 Screw hole					齿轮参数 Gear parameters					质量 Quality
		d_a	d_n	H	n	D_u	D_n	ϕ	n	D_u	D_n	ϕ	T	n	z	m	d	L	x	kg
		mm				mm				mm						mm				
31	QW□1000.32	1168	880	84	10	1072	928	24	30	1072	928	M22	44	30	144	8	1152	74	0	226
	QW□1000.32A	1180													116	10	1160			234
32	QW□1120.32	1300	1000	84	10	1192	1048	24	32	1192	1048	M22	44	32	128	10	1280	74	0	262
	QW□1120.32A	1308													107	12	1284			266
33	QW□1250.32	1430	1130	84	10	1322	1178	24	36	1322	1178	M22	44	36	141	10	1410	74	0	292
	QW□1250.32A	1440													118	12	1416			299
34	QW□1400.32	1584	1280	84	10	1472	1328	24	40	1472	1328	M22	44	40	130	12	1560	74	0	326
	QW□1400.32A	1596													112	14	1568			337
35	QW□1600.32	1788	1480	84	10	1672	1528	24	44	1672	1528	M22	44	44	147	12	1764	74	0	379
	QW□1600.32A	1806													127	14	1778			401
36	QW□1000.40	1190	866	100	10	1082	918	26	32	1082	918	M24	48	32	117	10	1170	90	0	303
	QW□1000.40A	1200													98	12	1176			311
37	QW□1120.40	1310	986	100	10	1202	1038	26	36	1202	1038	M24	48	36	129	10	1290	90	0	339
	QW□1120.40A	1320													108	12	1296			347
38	QW□1250.40	1440	1116	100	10	1332	1168	26	40	1332	1168	M24	48	40	142	10	1420	90	0	378
	QW□1250.40A	1452													119	12	1428			390
39	QW□1400.40	1608	1266	100	10	1482	1318	26	44	1482	1318	M24	48	44	132	12	1584	90	0	447
	QW□1400.40A	1610													113	14	1582			443
40	QW□1600.40	1800	1466	100	10	1682	1518	26	48	1682	1518	M24	48	48	148	12	1776	90	0	496
	QW□1600.40A	1820													128	14	1792			526
41	QW□1800.40	2016	1666	100	10	1882	1718	26	54	1882	1718	M24	48	54	142	14	1988	90	0	582
	QW□1800.40A	2032													125	16	2000			608
42	QW□2000.40	2212	1866	100	10	2082	1918	26	60	2082	1918	M24	48	60	156	14	2184	90	0	636
	QW□2000.40A	2224													137	16	2192			655
43	QW□1250.50	1476	1086	120	10	1350	1150	32	32	1350	1150	M30	60	32	121	12	1452	110	0	557
	QW□1250.50A	1498													105	14	1470			592
44	QW□1400.50	1632	1236	120	10	1500	1300	32	36	1500	1300	M30	60	36	134	12	1608	110	0	636
	QW□1400.50A	1652													116	14	1621			670
45	QW□1600.50	1834	1436	120	10	1700	1500	32	40	1700	1500	M30	60	40	129	14	1806	110	0	721
	QW□1600.50A	1840													113	16	1808			725
46	QW□1800.50	2044	1636	120	10	1900	1700	32	44	1900	1700	M30	60	44	144	14	2016	110	0	838
	QW□1800.50A	2048													126	16	2016			837
47	QW□2000.50	2256	1836	120	10	2100	1900	32	48	2100	1900	M30	60	48	139	16	2224	110	0	955
	QW□2000.50A	2268													124	18	2232			977
48	QW□2240.50	2496	2076	120	10	2340	2140	32	54	2340	2140	M30	60	54	154	16	2464	110	0	1067
	QW□2240.50A	2502													137	18	2466			1072
49	QW□2500.50	2772	2336	120	10	2600	2400	32	60	2600	2400	M30	60	60	152	18	2736	110	0	1232
	QW□2500.50A	2780													137	20	2740			1245
50	QW□2800.50	3060	2636	120	10	2900	2700	32	66	2900	2700	M30	60	66	168	18	3024	110	0	1330
	QW□2800.50A	3080													152	20	3040			1394
51	QW□3150.50	3420	2986	120	10	3250	3050	32	72	3250	3050	M30	60	72	188	18	3384	110	0	1544
	QW□3150.50A	3420													169	20	3380			1523
52	QW□1800.60	2080	1606	144	12	1918	1682	38	36	1918	1682	M36	72	36	128	16	2018	132	0	1169
	QW□1800.60A	2088													114	18	2052			1181
53	QW□2000.60	2301	1806	144	12	2118	1882	38	40	2118	1882	M36	72	40	126	18	2268	132	0	1369
	QW□2000.60A	2300													113	20	2260			1338
54	QW□2240.60	2538	2046	144	12	2358	2122	38	44	2358	2122	M36	72	44	139	18	2502	132	0	1507
	QW□2240.60A	2540													125	20	2500			1498
55	QW□2500.60	2790	2306	144	12	2618	2382	38	48	2618	2382	M36	72	48	153	18	2754	132	0	1647
	QW□2500.60A	2800													138	20	2760			1672

序号	基本型号			外形尺寸			安装孔尺寸						结构尺寸				齿轮参数		外齿参数		内齿参数	
	无齿式	外齿式	内齿式	D	d	H	D_1	D_2	d_{n1} d_{n2}	d_{m1} d_{m2}	L	n	n_1	D_3	d_1	H_1	h	b	m	d_a	Z	d_a	Z
				mm										mm								mm	
1	010.20.200	011.20.200	—	280	120	60	248	152	16	M14	28	12	2	201	199	50	10	40	3	300	98	—	—
2	010.20.224	011.20.224	—	304	144		272	176						225	223					321	105	—	—
3	010.20.250	011.20.280	—	330	170		298	202				18		251	249				4	352	86	—	—
4	010.20.280	011.20.280	—	360	200		328	232						281	279					348	94	—	—
5	010.25.315	011.25.315	013.25.315	408	222	70	372	258	18	M16	32	20		316	314	60		50	5	435	85	190	40
6	010.25.355	011.25.355	013.25.355	448	262		412	298						356	354					475	93	235	49
7	010.25.400	011.25.400	013.25.400	493	307		457	343				24		401	399				6	528	86	276	48
8	010.25.450	011.25.450	013.25.450	543	357		507	393						451	449					576	94	324	56
9	010.30.500	011.30.500	013.30.500	602	398	80	566	434				20	4	501	498	70		60	5	629	123	367	74
		012.30.500	014.30.500																6	628.8	102	368.4	62
10	010.25.500	011.25.500	013.25.500												499				5	629	123	367	74
		012.25.500	014.25.500																6	628.8	102	368.4	62
11	010.30.560	011.30.560	013.30.560	662	458		626	494						561	558				5	689	135	427	86
		012.30.560	014.30.560																6	688.8	112	428.4	72
12	010.25.560	011.25.560	013.25.560												559				5	689	135	427	86
		012.25.560	014.25.560																6	688.8	112	428.4	72
13	010.30.630	011.30.630	013.30.630	732	528		696	564	18	M16	32	24	4	631	628	70	10	60	6	772.8	126	494.4	83
		012.30.630	014.30.630																8	774.4	94	491.2	62
14	010.25.630	011.25.630	013.25.630	732	528	80	696	564						631	629				6	772.8	126	494.4	83
		012.25.630	014.25.630																8	774.4	94	491.2	62
15	010.30.710	011.30.710	013.30.710	812	608		776	644						711	708				6	850.8	139	572.4	96
		012.30.710	014.30.710																8	854.4	104	571.2	72
16	010.25.710	011.25.710	013.25.710												709				6	850.8	139	572.4	96
		012.25.71	014.25.710																8	854.4	104	571.2	72
17	010.40.800	011.40.800	013.40.800	922	678	100	878	722	22	M20	40	30	6	801	798	90		80	8	966.4	118	635.2	80
		012.40.800	014.40.800																10	968	94	634	64
18	010.30.800	0.11.30.800	0.13.30.800																8	966.4	118	635.2	80
		012.30.800	014.30.800																10	968	94	634	64
19	010.40.900	011.40.900	013.40.900	1022	788		978	822						901	898				8	1062.4	130	739.2	93
		012.40.900	014.40.900																10	1068	104	734	74
20	010.30.900	011.30.900	013.30.900																8	1062.4	130	739.2	93
		012.30.900	014.30.900																10	1068	104	734	74
21	010.40.1000	011.40.1000	013.40.1000	1122	878	100	1078	922	22	M20	40	36	6	1001	998	90	10	80	10	1188	116	824	83
		012.40.1000	014.40.1000																12	1185.6	96	820.8	69
22	010.30.1000	011.30.1000	013.30.1000																10	1188	116	824	83
		012.30.1000	014.30.1000																12	1185.6	g6	820.8	69
23	010.40.1120	011.40.1120	013.40.1120	1242	998		1198	1042				36		1121	1118				10	1298	127	944	95
		012.40.1120	014.40.1120																12	1305.6	106	940.8	79
24	010.30.1120	011.30.1120	013.30.1120																10	1298	127	944	95
		012.30.1120	014.30.1120																12	1305.6	1006	940.8	79
25	010.45.1250	011.45.1250	013.45.1250	1390	1110	110	1337	1163	26	M24	48	40	5	1252	1248	100		90	12	1449.6	118	1048.8	88
		012.45.1250	014.45.1250																14	1453.2	101	1041.6	75
26	010.35.1250	011.35.1250	013.35.1250											1251					12	1449.6	118	1048.8	88
		012.35.1250	014.35.1250																14	1453.2	101	1041.6	75
27	010.45.1400	011.45.1400	013.45.1400	1540	1260		1487	1313						1402	1398				12	1605.6	131	1192.8	100

序号	基本型号			外形尺寸			安装孔尺寸						结构尺寸				齿轮参数		外齿参数		内齿参数	
	无齿式	外齿式	内齿式	D	d	H	D_1	D_2	d_{n1} d_{n2}	d_{m1} d_{m2}	L	n	n_1	D_3	d_1	H_1	h	b	m	d_a	Z	d_a	Z
				mm										mm								mm	
27	010.45.1400	012.45.1400	014.45.1400	1540	1260	110	1487	1313	26	M24	48	40	5	1402	1398	100	10	90	14	1607.2	112	1195.6	86
28	010.35.1400	011.35.1400	013.35.1400											1401					12	1605.6	131	1192.8	100
		012.35.1400	014.35.1400																14	1607.2	112	1195.6	86
29	010.45.1600	011.45.1600	013.45.1600	1740	1460		1687	1513				45		1602	1598					1817.2	127	1391.6	100
		012.45.1600	014.45.1600																16	1820.8	111	1382.4	87
30	010.35.1600	011.35.1600	013.35.1600											1601					14	1817.2	127	1391.6	100
		012.35.1600	014.35.1600																16	1820.8	111	1382.4	87
31	010.45.1800	011.45.1800	013.45.1800	1940	1660	110	1887	1713	26	M24	48	45	5	1802	1798	100	10	90	14	2 013.2	141	1573.6	113
		012.45.1800	014.45.1800																16	2 012.8	123	1574.4	99
32	010.35.1800	011.35.1800	013.35.1800											1801					14	2 013.2	141	1573.6	113
		012.35.1800	014.35.1800																16	2 012.8	123	1574.4	99
33	010.60.2000	011.60.2000	013.60.2000	2178	1825	144	2110	1891	33	M30	60	48	8	2002	1998	132	12	120		2 268.8	139	1734.4	109
		012.60.2000	014.60.2000																18	2 264.4	123	1735.2	97
34	010.40.2000	011.40.2000	013.40.2000											2001					16	2 268.8	139	1734.4	109
		012.40.2000	014.40.2000																18	2 264.4	123	1735.2	97
35	010.60.2240	011.60.2240	013.60.2240	2418	2065		2350	2131						2242	2238				16	2 492.8	153	1990.4	125
		012.60.2240	014.60.2240																18	2 498.4	136	1987.2	111
36	010.40.2240	011.40.2240	013.40.2240											2241					16	2492.8	153	1990.4	125
		012.40.2240	014.40.2240																18	2498.4	136	1987.2	111
37	010.60.2500	011.60.2500	013.60.2500	2678	2325		2610	2391				56		2502	2498					2768.4	151	2239.2	125
		012.60.2500	014.60.2500																20	2776	136	2228	112
38	010.40.2500	011.40.2500	013.40.2500											2501					18	2768.4	151	2239.2	125
		012.40.2500	014.40.2500																20	2776	136	2228	112
39	010.60.2800	011.60.2800	013.60.2800	2978	2625		2910	2691						2802	2798				18	3074.4	168	2527.2	141
		012.60.2800	014.60.2800																20	3076	151	2528	127
40	010.40.2800	011.40.2800	013.40.2800						33	M30	60	56	8	2801	2798	132	12	120	18	3074.4	168	2527.2	141
		012.40.2800	014.40.2800																20	3076	151	2528	127
41	010.75.3150	011.75.3150	013.75.3150	3376	2922	174	3286	3014	45	M42	84	56	8	3152	3147	162	12	150	20	3476	171	2828	142
		012.75.3150	014.75.3150																22	3471.6	155	2824.8	129
42	010.50.3150	011.50.3150	013.50.3150												3148				20	3476	171	2828	142
		012.50.3150	014.50.3150																22	3471.6	155	2824.8	129
43	010.75.3550	011.75.3550	013.75.3550	3376	3322		3686	3414						3552	3547				20	3876	191	3228	162
		012.75.3550	014.75.3550																22	3889.6	174	3220.8	147
44	010.50.3550	011.50.3550	013.50.3550												3548				20	3876	191	3228	162
		012.50.3550	014.50.3550																22	3889.6	174	3220.8	147
45	010.75.4000	011.75.4000	013.75.4000	4226	3772	174	4136	3864				60	10	4002	3997				22	4329.6	194	3660.8	167
		012.75.4000	014.75.4000																25	4345	171	3660	147
46	010.50.4000	011.50.4000	013.50.4000												3998				22	4329.6	194	3660.8	167
		012.50.4000	014.50.4000																25	4345	171	3660	147
47	010.75.4500	011.75.4500	013.75.4500	4726	4272		4636	4364						4502	4497				22	4835.6	217	4166.8	190
		012.75.4500	014.75.4500																25	4845	191	4160	167
48	010.50.4500	011.50.4500	013.50.4500												4498				22	4835.6	217	4166.8	190
		012.50.4500	014.50.4500																25	4845	191	4160	167

注 1：序号1~8带堵塞的座圈安装孔减少1个，但仍按表中个数均布，在减少的安装孔处打堵塞。
注 2：安装配合型式和安装孔型式在基本型号中未给出，用户可根据要求选择。

使用、贮存、保养
USE STORAGE MAINTENCE

使用 回转支承
Precautions for use

- 回转支承出厂时通常注的是3#锂基脂，顾客使用时可根据需要重新填注合适的润滑脂。
  When the slewing bearing leaves the factory, it is usually filled with 3 # lithium grease. Customers can refill it with suitable lubricating grease as needed when using it.

- 一般工作条件下，安装后运转100小时应检查一次螺栓预紧力，以后每运转500小时检查一次，必须保持有足够的预紧力。每7年或工作14000小时之后，更换螺栓。
  Under normal working conditions, the bolt pretightening force should be checked once every 100 hours of operation after installation, and then every 500 hours of operation thereafter, and sufficient pre tightening force must be maintained. Replace bolts every 7 years or after 14000 hours of work.

- 一般工作条件下，球式回转支承安装后运转100小时后应加注润滑脂一次，滚柱式回转支承运转50小时后应加注润滑脂一次。以后每运转400小时检查一次并适量加注以保持良好的润滑状态，并做好记录。在灰尘多、温度大的地区使用时应根据具体情况至少保证每周润滑一次。机器长时间停止运转前后均应更新润滑脂。每次润滑时必须在滚道内注满润滑脂，加注时应缓慢转动回转支承，使其充分均匀的填充满。
  Under normal working conditions, lubricating grease should be added once after 100 hours of operation for ball bearings and once after 50 hours of operation for roller bearings. Check and add an appropriate amount of lubricant every 400 hours of operation to maintain good lubrication, and keep records. When used in areas with high dust and temperature, lubrication should be ensured at least once a week according to specific circumstances. The lubricating grease should be updated before and after the machine stops running for a long time. During each lubrication, it is necessary to fill the raceway with lubricating grease. When filling, the rotating support should be slowly rotated to ensure that it is fully and evenly filled.

- 回转支承齿面应保证每8–10个工作日清洁换油一次，绝不可混有异物。要定期检查回转支承密封状况是否完好，如发现密封条脱落应及时复位;如有破损应立即更换，以防止异物进入滚道。
  The gear surface of the slewing bearing should be cleaned and oil changed every 8–10 working days, and there should be no foreign objects mixed in. Regularly check whether the sealing condition of the slewing bearing is intact, and if the sealing strip is found to be detached, it should be reset in a timely manner; If there is any damage, it should be replaced immediately to prevent foreign objects from entering the raceway.

贮藏保养 回转支承
Storage and maintenance

- 回转支承出厂时滚道内已注有润滑脂，且表面已涂有防锈油。回转支承的包装根据顾客需求，有单个包装的，也有整匝包装的。如不安装使用，应6个月进行一次外表面涂油保养以防止锈蚀，南方地区3个月进行一次外表面涂油保养。回转支承滚道则应保证1年进行一次润滑保养，保养时要旋转回转支承检查运转是否灵活。所有保养以后均应恢复回转支承初始状态，并用薄膜包装好。
  When the slewing bearing leaves the factory, the raceway is already filled with lubricating grease and the surface has been coated with anti rust oil. The packaging of slewing bearings varies depending on customer needs, including individual packaging and full turn packaging. If not installed and used, the outer surface should be oiled and maintained every 6 months to prevent rust, and in southern regions, it should be oiled and maintained every 3 months. The raceway of the slewing bearing should be lubricated and maintained once a year. During maintenance, the slewing bearing should be rotated to check whether it operates flexibly. After all maintenance, the slewing bearing should be restored to its initial state and packaged with film.

- 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。
  The rotary bearing should be stored in a dry, flat indoor environment without corrosive media, and should not be soaked or soaked in water.

- 放置回转支承应平稳放置，避免竖直或斜放。平放时（除整匝包装外）每个回转支承之间在圆周方向至少均布放置3–5个垫块，并且上层块和下层块在圆周的位置上应一致。
  The slewing bearing should be placed steadily, avoiding vertical or diagonal placement. When placed flat (except for full turn packaging), at least 3–5 cushion blocks should be evenly distributed in the circumferential direction between each rotary bearing, and the upper and lower blocks should be in the same position on the circumference.

- 闲置多年的回转支承（尤其雨水多的地方）启用时应检查，检查项目请同我公司服务部联系。
  When the slewing bearings that have been idle for many years (especially in areas with heavy rainfall) are put into use, they should be inspected. Please contact our company's service department for inspection items.



回转支承安装维护
INSTALLATION AND MAINTENANCE OF SLEWING BEARINGS

安装支架要求 | 回转支承 Installation bracket requirements

回转支承的连接面必须平整且无油脂。焊瘤、毛刺、油或其他的不平异物必须清除干净。内外圈安装面与连接结构必须完全接触。安装前对连接面的平面度（包含水平的角偏差）进行检测（如图1所示，详见表1）。
Theconnectionsurfaceoftheslewingbearingmustbeflatandfreeofgrease.Weldbeads,burrs,oil,orotherunevenforeignobjectsmustbecleanedthoroughly.Theinstallationsurfaceoftheinnerandouterringsmustbeinfullcontactwiththeconnectingstructure.Beforeinstallation,checktheflatnessoftheconnectingsurface(includinghorizontalangulardeviation)(asshowninFigure1,seeTable1fordetails).

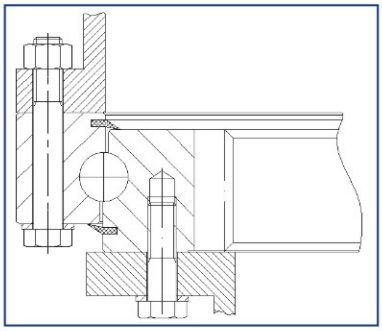


图1 安装示意图
Figure 1 Installation Diagram

表1 包含角偏差在内的平面度偏差要求
Table 1 Flatness Deviation Requirements Including Angular Deviation

滚道中心直径D Center diameter of raceway D (mm)	安装支架平面度偏差 Installation bracket flatness deviation		
	单排球式 Single Volleyball Style	双排球式 Double Volleyball Style	滚柱式 Roller type
~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

注：表1中的教值为最大值，在180°的扇形区内，只允许有一处波峰达到该值，并在0°~90°~180°区域内干稳上升或下降，不允许忽升忽降，以避免峰值。
Note: The teaching values in Table 1 are the maximum values. Within the 180° sector, only one peak is allowed to reach this value and steadily rise or fall within the range of 0°~90°~180°. Sudden rise or fall is not allowed to avoid peak values.

安装支架必须有足够的刚度，在最大工作负荷下，安装支架最大挠度应符合表2的规定。
Theinstallationbracketmusthavesufficientrigidity,andthemaximumdeflectionoftheinstallationbracketunderthemaximumworkingloadshouldcomplywiththeprovisionsofTable2.

表2 支架允许的最大挠度 Table 2 Maximum allowable deflection of bracket

滚道中心直径(mm) Center diameter of raceway	~1000	> 1000~1500	> 1500~2000	> 2000~2500	> 2500~3000	> 3000~3500	> 3500~4000
支架最大挠度(mm) Maximum deflection of bracket	0.6	0.8	1	1.2	1.5	2	2.5

安装要求 | 回转支承 Installation Requirements

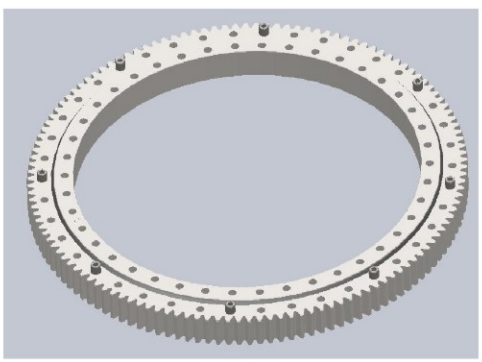
1.将回转支承水平吊放在安装支架上，将软带及堵塞位置置于非负荷区、非经常负荷区或轻负荷区。
2.回转支承安装螺栓应采用高强度螺栓，并根据支承受力情况，选择合适的强度等级。回转支承安装螺栓及螺母应符合GB/T3098.1及GB/T3098.2标准要求：
1. Lift the slewing bearing horizontally onto the installation bracket, and place the soft belt and blockage position in the non load area, non frequent load area, or light load area.2. The installation bolts for the slewing bearing should be high-strength bolts, and the appropriate strength grade should be selected according to the bearing capacity. The installation bolts and nuts of the slewing bearing shall comply with the requirements of GB/T3098.1 and GB/T3098.2 standards:

a.对于一般建筑机械，建议采用10.9级螺栓;
b.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:
c.对于载荷频繁多变，螺栓疲劳强度要求极为严格的场合，建议选用8.8级螺栓。
a.Forgeneralconstructionmachinery,itisrecommendedtouse10.9gradebolts;b.Forboltswithhighstaticstrengthrequirementsunderratedloadandhighyieldstrengthrequirementsundermaximumload,whileforboltswithlessstrictfatiguestrengthrequirements,12.9gradeboltscanbeselected:c.Forsituationswheretheloadisfrequentlychangingandthefatiguestrengthofboltsisextremelystrict,itisrecommendedtouse8.8gradebolts.

3.安装螺栓垫圈应选用调质平垫圈，禁止使用弹簧垫圈。
4.安装螺栓应有足够的预紧力，预紧力应≥0.7倍的螺栓屈服极限。其预紧力应符合表3的规定。
5.预紧螺栓时，用扭矩扳手在180”方向对称均匀多次拧紧(螺纹处可以涂少许轻油)，如图2所示。
6.回转支承首次运转100小时后，应检查螺栓的预紧力。以后每运转500小时检查一次，必须保持足够的预紧力。
3.Wheninstallingboltwashers,quenchedandtemperedflatwashersshouldbeused,andtheuseofspringwashersisprohibited.4.Theinstallationboltsshouldhavesufficientpretightening force,whichshouldbe≥0.7timestheboltyieldlimit.Thepretighteningforceshouldcomplywiththeprovisions ofTable3.5.Whenpretightening bolts,useatorquewrenchtotightenthemsymmetricallyandevenlyinthe180"directionmultipletimes(asmallamountoflightoilcanbeappliedtothethreads),asshowninFigure2.Afterthefirst100hoursofoperationoftheslewingbearing,thepretighteningforceoftheboltsshouldbechecked.Checkevery500hoursofoperationinthefuture,andensuresufficientpretensionismaintained.

螺栓规格（d） Bolt specification	Thread stress cross-sectional area 螺纹应力截面积 As （mm^2）	螺栓强度等级（GB/T3098.1–2000） Bolt strength grade		
		8.8	10.9	12.9
		螺栓材料的屈服强度极限（MPa） Yield strength limit of bolt material		
		640	900	1080
		预紧扭矩 Pre tightening torque M_A(N·m)		
M10	58	44	62	75
M12	84.3	77.5	110	130
M14	115	120	170	210
M16	157	190	265	320
M18	192	260	365	435
M20	245	370	520	620
M22	303	500	700	840
M24	353	640	900	1080
M27	459	950	1350	1620
M30	561	1300	1800	2160
预紧力 Preload $F_A(10^3$ N)				
M33	694	293	412	495
M36	817	344	484	581
M39	976	414	584	698
M42	1121	473	665	798
M45	1306	553	777	932
M48	1473	623	876	1050
M52	1758	749	1054	1265
M56	2030	863	1214	1457
M60	2362	1008	1418	1621

表3 螺栓的预紧扭矩或预紧力
Table 3 Pre tightening torque or pre tightening force of bolts



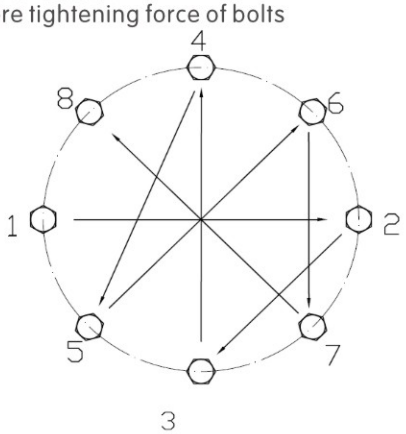


图2 紧固螺栓的拧紧顺序
Figure 2 Tightening sequence of fastening bolts

齿轮啮合侧隙调整 回转支承
Adjustment of gear meshing backlash

在安装螺栓预紧前，须进行齿轮啮合侧隙检测（如图3所示），尤其是硬齿面啮合，应保证回转支承齿轮跳动最大点（标有绿漆位置）与小齿轮啮合侧隙符合下列要求：

Before installing the bolt pretightening, it is necessary to perform gear meshing backlash testing (as shown in Figure 3), especially for hard tooth surface meshing. It should be ensured that the maximum runout point of the slewing support gear (marked with green paint position) and the meshing backlash of the small gear meet the following requirements:

a.软齿面啮合:不小于0.03m（m为齿轮模数）。
b.硬齿面啮合:不小于0.06m（m为齿轮模数）。

a. Soft tooth surface meshing: not less than 0.03m (m is the gear module).
b. Hard tooth meshing: not less than 0.06m (m is the gear module).

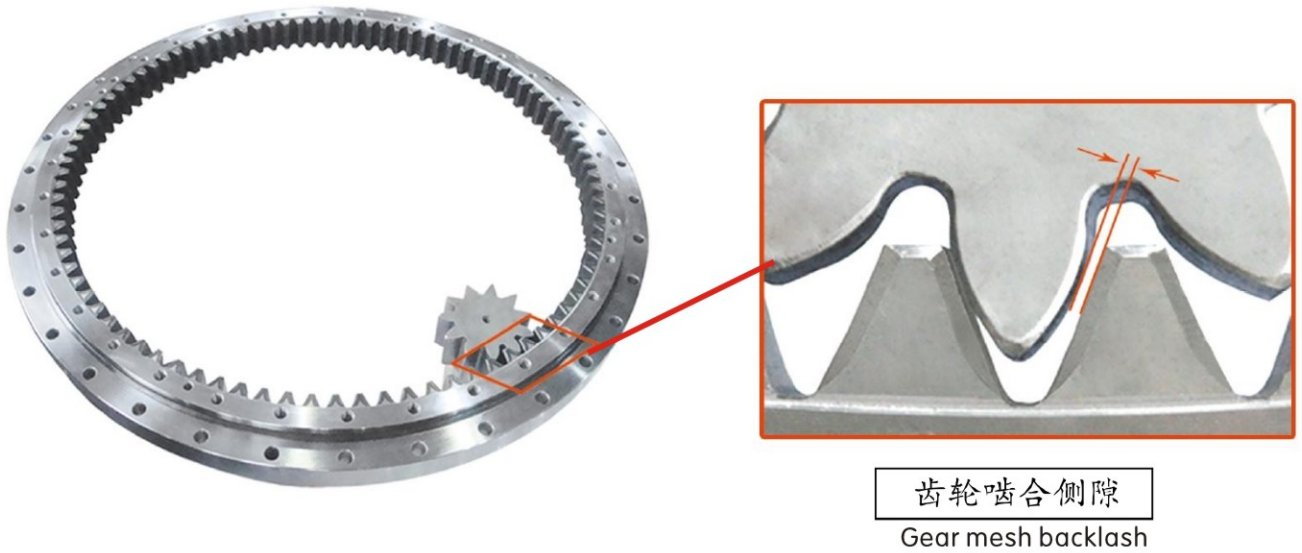


图3 齿侧间隙检测示意图
Figure 3 Schematic diagram of tooth flank clearance detection

安装后的调整 回转支承
Adjustment after installation

- 所有螺栓预紧之后，应及时清除大小齿轮之间、回转支承上及周围所有杂物，并确保运转时与其它部件没有干涉现象。
  After pretightening all bolts, all debris between the large and small gears, on the rotating support, and around should be promptly removed, and it should be ensured that there is no interference with other components during operation.

- 缓慢旋转回转支承3周以上，仔细检查其运转是否顺畅，有无异响、卡滞现象以及大小齿轮啮合是否正常。
  Slowly rotate the slewing bearing for more than 3 cycles, carefully check if it runs smoothly, if there are any abnormal noises or jamming, and if the meshing of the large and small gears is normal.

- 安装好回转支承的设备，禁止在其上方或附近进行焊接作业。
  Welding operations are prohibited above or near the equipment with installed slewing bearings.

产品润滑 回转支承 Product lubrication

回转支承滚道内在出厂时已经加注润滑脂（一般为3#锂基脂），客户可根据实际工况在使用时重新注入需要的润滑脂。加注润滑脂时，应使回转支承慢速转动，一边转动一边注入润滑脂，使润滑脂填充均匀，直到密封处有少许润滑脂挤出时说明已经加满，此时应停止加注。产品装机后的润滑频次要求如下:

The raceway of the slewing bearing has already been filled with lubricating grease (usually 3# lithium grease) when it leaves the factory. Customers can re inject the required lubricating grease according to the actual working conditions during use. When adding lubricating grease, the slewing bearing should be rotated slowly, and lubricating grease should be injected while rotating, so that the lubricating grease is evenly filled until a small amount of grease is squeezed out of the seal, indicating that it is already full. At this time, the filling should be stopped. The lubrication frequency requirements for the product after installation are as follows:

a.一般工作条件下，建议球式回转支承每运转100小时加注润滑脂一次，滚柱式回转支承每运转50小时加注润滑脂一次。
b.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，至少保证每周润滑一次。
c.机器长期停止运转的前后也必须加足新的润滑脂。
d.回转支承齿面应保证每8~10个工作日清洁、涂润滑脂一次，绝不可混有异物。

a. Under normal working conditions, it is recommended to lubricate ball bearings every 100 hours of operation and roller bearings every 50 hours of operation. b. In special working environments such as tropical zones, high humidity, dust, large temperature changes, and continuous operation, the lubrication cycle should be shortened to at least once a week. c. New lubricating grease must also be added before and after the machine stops running for a long time. d. The tooth surface of the slewing bearing should be cleaned and lubricated every 8–10 working days, and there should be no foreign objects mixed in.

其他使用说明 回转支承 Other usage instructions

产品清洁Product cleaning

在使用过程中禁止用水直接冲洗回转支承，以防水进入滚道。严防较硬异物接近或进入支承齿轮啮合区。

During use, it is prohibited to directly rinse the rotary bearing with water to prevent water from entering the raceway. Strictly prevent hard foreign objects from approaching or entering the meshing area of the supporting gear.

密封条检测Sealing strip inspection

对密封装置必须每6个月最少进行一次检查，密封装置受损后必须进行更换。

The sealing device must be inspected at least once every 6 months, and must be replaced if damaged.

齿轮磨损检测Gear wear detection

在使用寿命期间会出现切入处磨平以及啮合处磨损。视具体情况不同也有多种允许磨损极限值。齿根两侧磨损量之和不宜超过0.15倍齿轮模数。

During the service life, there may be wear and tear at the cutting point and the meshing point. There are also various allowable wear limits depending on the specific situation. The sum of wear on both sides of the tooth root should not exceed 0.15 times the gear module.

产品放置Product placement

放置回转支承应在无腐蚀性介质、干燥、平整的室内，不可浸泡或水淋，禁止把回转支承竖起放置。

The placement of the slewing bearing should be in a dry, flat room without corrosive media, and should not be soaked or soaked in water. It is forbidden to place the slewing bearing upright.



挖掘机回转支承常见故障排除方法
COMMON TROUBLESHOOTING METHODS

转动不灵活 | 挖掘机回转支承 Not flexible in rotation

（1）安装后运转不灵活。回转支承安装面配合不好，大小齿轮啮合不良；大小齿轮内卡有异物，清除安装面的异物，采用垫片垫平；重新按要求调整大小齿轮啮合侧隙，特别是注意齿轮跳动最大位置；检查确保大小齿轮啮合位置无异物。
（2）使用过程中运转不灵活。缺少润滑脂，按要求注满；密封条破损，造成异物进入滚道内（如使用工况较差，滚道内侵入灰尘等）；检查大小齿轮啮合情况，有无异物或断齿。
(1)Theoperationisnotflexibleafterinstallation.Theinstallationsurfaceoftheslewingbearingisnotwellmatched,andthemeshingofthelargeandsmallgearsispoor;Thereareforeignobjectsstuckinsidethelargeandsmallgears.Removetheforeignobjectsontheinstallationsurfaceanduseshimstolevelthem;Adjustthemeshingbacklashofthegearsaccordingtotherequirementsagain,especiallypayingattentiontothepositionofmaximumgearrunout;Checktoensurethatthereareno foreignobjectsinthemeshingpositionofthelargeandsmallgears.
(2)Theoperationisnotflexibleduringuse.Lackoflubricatinggrease,fillasrequired;Thesealingstripisdamaged,causingforeignobjectstoentertheraceway(suchas pooroperatingconditions,dustintrusionintotheraceway,etc.);Checkthemeshingofthelargeandsmallgearsforanyforeignobjectsorbrokenteeth.

异响 | 挖掘机回转支承 Abnormal Sound

（1）装配以后试运行出现异响。处理办法同“安装后运转不灵活”，或大小齿轮啮合不良，时紧时松，在齿跳最大位置啮合过紧产生异响。
（2）使用过程中产生异响。滚道内缺少润滑脂；滚道内混有异物，如砂粒、铁屑等；注意密封条是否破损，安装螺栓是否松动，排除以上情况。
(1)Thereisabnormalnoiseduringthetrialoperationafterassembly.Thehandlingmethodisthesameas"inflexibleoperationafterinstallation",orpoormeshingof largeandsmallgears,sometimestightandsometimesloose,causingabnormalnoisewhenthemeshingistootightatthepositionofmaximumtoothjump.
(2)Abnormalnoiseoccursduringuse.Lackoflubricatinggreaseintheraceway;Thereareforeignobjectsmixedintheraceway,suchassandparticles,ironfilings,etc; Payattentiontowhetherthesealingstripisdamagedandwhethertheinstallationboltsareloose,andeliminatetheabovesituations.

晃动 | 挖掘机回转支承 Shake

（1）安装螺栓松动，造成工作时晃动。请立即检查所有内外圈安装螺栓并按要求紧固。
（2）检查是否超载作业，并严格按规程操作。
（3）长期超载作业并导致滚道压溃，间隙过大。发生此类情况请及时通知我公司售后服部处理。
(1)Looseinstallationboltscauseshakingduringoperation.Pleaseimmediatelycheckalltheinstallationboltsoftheinnerandouterringsandtightenthemasrequired.
(2)Checkforoverloadingoperationsandstrictlyfollowtheprocedures.
(3)Longtermoverloadingoperationleadstothecrushingoftheracewayandexcessiveclearance.Pleasepromptlynotifyourafter-salesservicedepartmenttohandle suchsituations.

断齿 | 挖掘机回转支承 Broken Teeth

（1）常与安装有直接关系。安装时大小齿轮调整侧隙不当，未达到要求，运转齿轮啮合不良造成断齿，按要求调整侧隙；未按要求在齿跳最大位置与小齿轮进行啮合间隙调整，造成运转时小齿轮在与大齿轮齿跳最大位置啮合时卡死造成断齿，应在涂有绿漆位置与小齿轮进行啮合调整，并按要求调整后进行试运行；大小齿轮轴线不平行，安装后大小齿轮啮合不良，造成断齿，应保证两齿轮轴线平行；回转支承安装螺栓固定不紧，大小齿轮啮合不良，造成断齿，应按要求紧固螺栓。
（2）使用方面。违反操作规程，过载并高速旋转，主机冲撞（扫）障碍物等。应严格按操作规程要求操作。回转支承与小齿轮啮合时有异物卡入，应保证大小齿轮干净，并经常检查。
(1) Often directly related to installation. Improper adjustment of the side clearance of the large and small gears during installation did not meet the requirements, resultinginpoormeshingoftherunninggearsandtoothbreakage.Adjustthesideclearanceasrequired;Failuretoadjustthemeshingclearancewiththesmallgearat themaximumtoothjumppositionasrequired,resultinginthesmallgeargettingstuckandcausingtoothbreakagewhenmeshingwiththelargegearatthemaximum toothjumppositionduringoperation.Themeshingadjustmentwiththesmallgearshouldbecarriedoutatthepositioncoatedwithgreenpaint,andatrialrunshouldbe conductedafteradjustmentasrequired;Theaxesofthelargeandsmallgearsarenotparallel,resultinginpoormeshingandtoothbreakageafterinstallation.Itshould beensuredthattheaxesofthetwogearsareparallel;Theinstallationboltsoftheslewingbearingarenottightlyfixed,andthemeshingofthelargeandsmallgearsis poor,resultingintoothbreakage.Theboltsshouldbetightenedasrequired.
(2) In terms of usage. Violation of operating procedures, overloading and high-speed rotation, collision (sweeping) of obstacles by the host, etc. Strictly follow the operatingprocedures.Whentheslewingsupportmesheswiththesmallgear,foreignobjectsgetstuck.Itisnecessarytoensurethatthesmallandlargegearsareclean andregularlyinspectthem.