



Newfoton



NFB

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回转驱动产品介绍

SLEW DRIVE INTRODUCTION



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鞍山新福源设备有限公司
Anshan Newfoton Machinery Co., Ltd

INTRODUCTION

企业简介

鞍山新福源设备有限公司为新福田集团的下属独立企业。成立于1996年，专业从事回转产品的研发、设计、生产、检测以及维修。旗下拥有回转支承(90mm-8000mm)和回转驱动2大系列产品。在多年的专业化生产实践中，公司拥有一支成熟的专业化队伍，积累了丰富的经验，积极推动回转支承及回转驱动在特殊领域的应用，并取得了显著成果，NFB品牌已在国内外的应用赢得良好的口碑。

NFB回转支承和回转驱动显著特点如下：防水，防尘，防风沙；耐热，耐寒，耐腐蚀；精密，分体，高承载。特殊要求，特殊设计，特殊定制。

产品主要应用于军工和新能源开发、医疗设备、环保水下设备、高精度生产线、海上平台、近海设备、矿山机械、旋转输送装置、冶金机械、航天航空等特种领域。

企业在保证并提升产品质量的同时，不断研发新产品、提高产品档次以满足快速扩大的市场需求。企业的主旨是全力打造NFB品牌，持续追求顾客、企业、员工及其利益相关者共赢，成为国内著名、国际上有影响力的回转支承制造厂家。

Anshan Newfoton Machinery Co., Ltd is one independent subsidiary of Newfoton Group Limited, which is a professional company engaged in research and development, design, manufacture, inspection and repair of slewing products for 20 years. Our main products are slewing ring from 90mm to 8000mm and slew drive. For many years professional production, Newfoton owns a professional team, accumulates rich experience to produce slewing ring and slew drive for special field, and promote application in special field. Now NFB brand gains a good reputation.

NFB brand excellent advantages: waterproof, dustproof, sand-proof; heat-resisting, cold-resisting corrosion-resisting; High precision, Splitting, high loading; special requirement, special design, special customization.

NFB slewing ring and slew drive can be used in many special field, such as war industry, new energy development field, Environmental protection underwater equipment, harbor machinery, mining machinery, rotating conveyer device, metallurgical machinery, aviation, filling machine, medical equipment and so on.

We will assure the product quality when we are enlarging industrial scale, researching and developing new products and improving product level to meet the market demand. Our main goal is to build "NFB" brand and make all of the customers, enterprise and employees obtain benefits to be a famous slewing ring manufacture in home and abroad.

NFB回转驱动特点

Advantage of NFB Slew Drive

- 回转驱动采用蜗轮结构，承载力强
 - 经渗氮处理直蜗杆，强度大
 - 全封闭式精密铸造壳体，防尘，防腐蚀
 - 整体设计偏向重型载荷，适用于高承载领域
 - 常规型号现货库存
 - 应用领域：矿山设备、军工设备、旋转输送装置、冶金机械、医疗设备、环保设备、工程机械等
 - 可根据使用情况特殊设计
- 开放式
 - 立式全封闭式
 - 特殊材质：如不锈钢，黄铜等。
 - 蜗杆、蜗轮的特殊热处理：渗碳，渗氮，齿面硬化等。
 - 壳体可采用锻件，焊接等结构形式。
 - 润滑方式：稀油润滑
 - 自锁，刹车功能
 - 可根据要求选配电机，液压马达
- Slewing drive with complete toothed worm gear, Max. loading capacity.
 - Nitrided Straight worm.
 - Total precision casting enclosed housing, dustproof, corrosion-resisting.
 - Heavy duty designing for high loading application.
 - Normal types are in stock.
 - Application: mining machinery, military industry, metallurgical machinery, rotating conveyer device, medical equipment, Environmental equipment, engineering machinery and so on.
 - Customization accepted.
- Open housing type.
 - Vertical and total enclosed housing.
 - Special material: stainless steel, copper.
 - Special heatreatment for worm gear and worm: Nitriding, carburization, gear harden and so on.
 - Housing used forging, welding structure.
 - Lubrication: Thin oil lubrication.
 - Self locked or brake.
 - AC, DC, Hydraulic Motor for choice.



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开放式: SD-O 系列
Open Type: SD-O Series



单蜗杆式: SD-L 系列
Single-worm Type: SD-L



高精度回转驱动
机器人专用 2013
新松机器人自动化股份有限公司

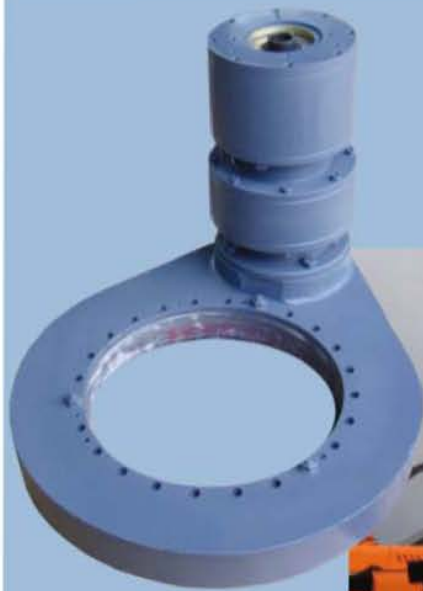


回转驱动装置是一种新型的回转类产品，核心部件采用回转支承，因此可以同时承受轴向力、径向力、倾翻力矩。新福源回转驱动按国际标准生产，通用安装尺寸，更强承载力，常年备有现货。
下图是我公司回转驱动应用到西班牙的一个20兆瓦太阳能发电项目，型号为SD-L-01。除此之外还可应用到抓斗机上。



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立式: SD-V系列
Vertical Type: SD-V



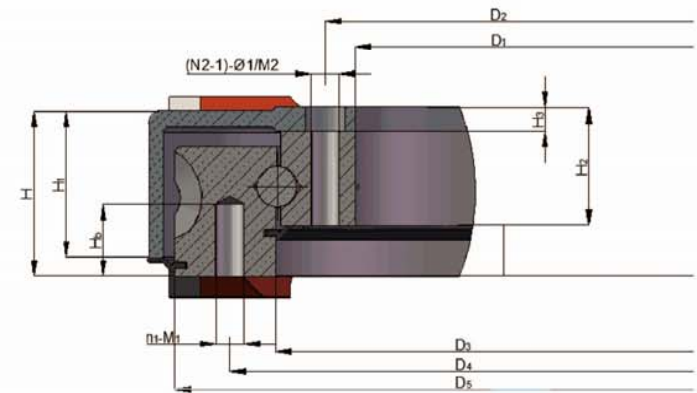
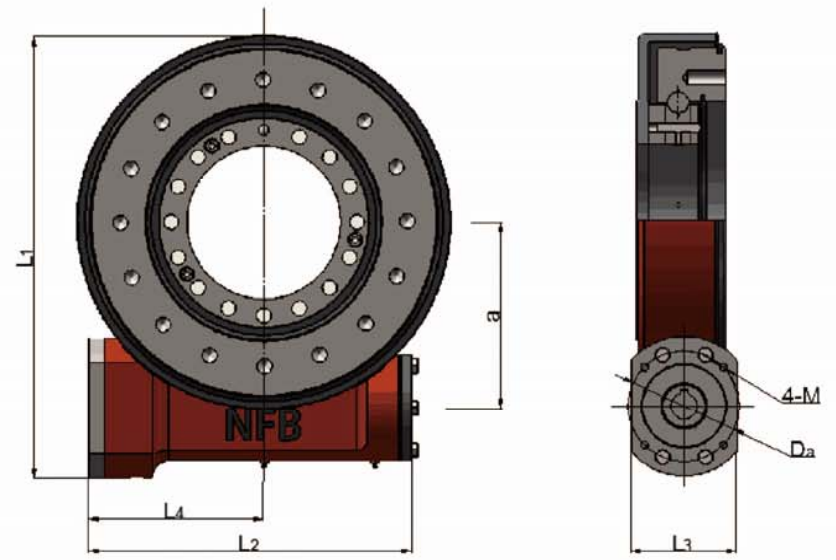
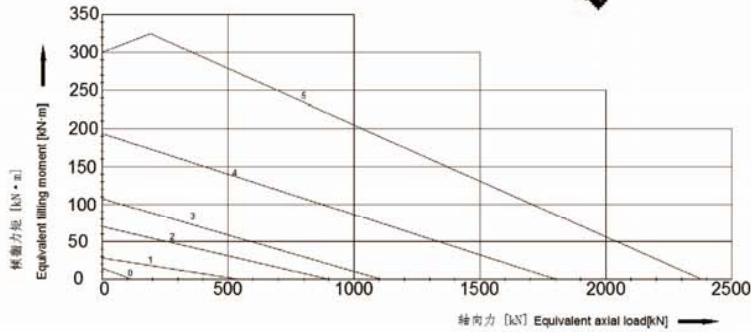
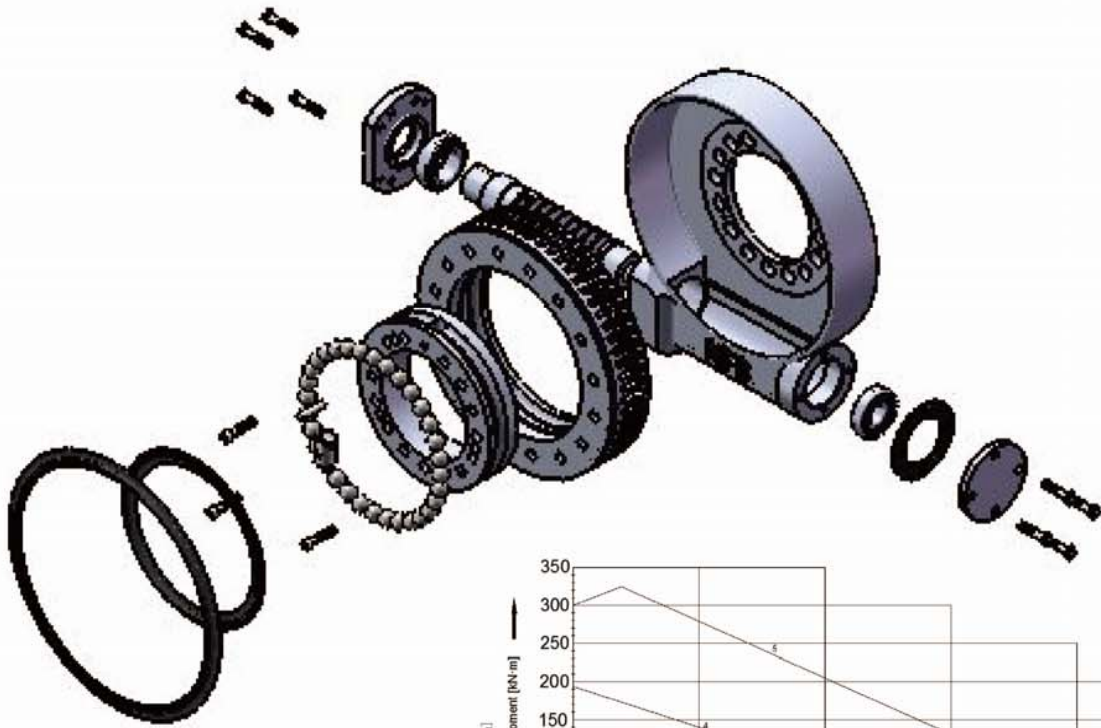
双蜗杆式: SD-H系列
Double-worm



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尺寸参数 Dimension parameters

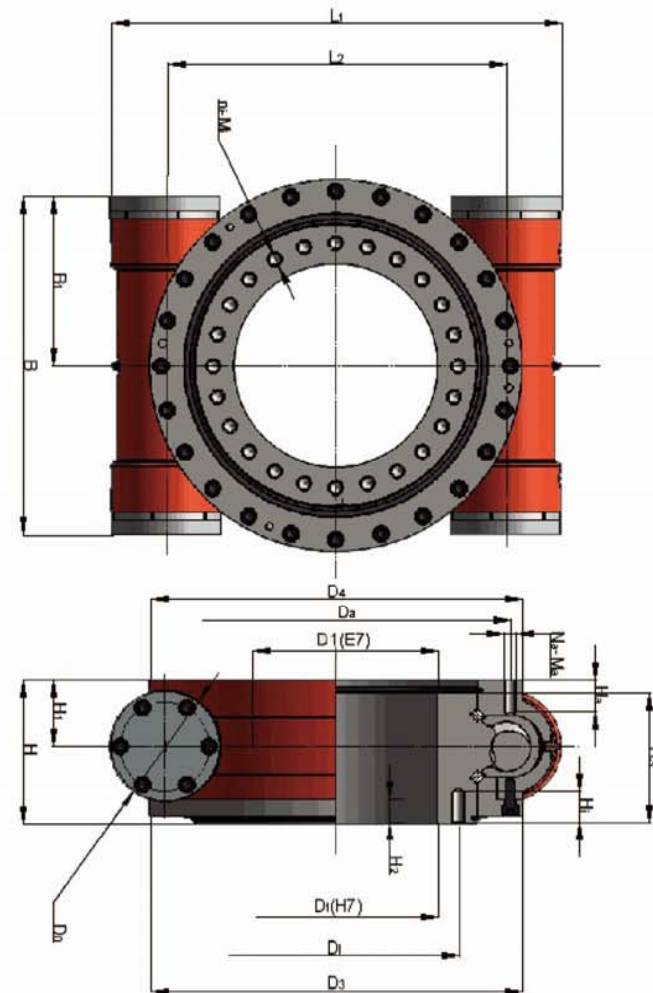
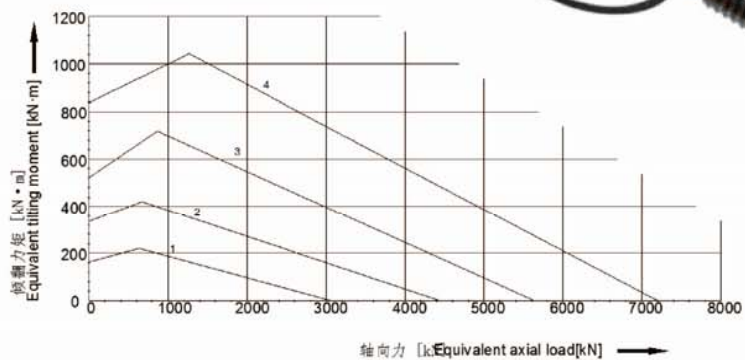
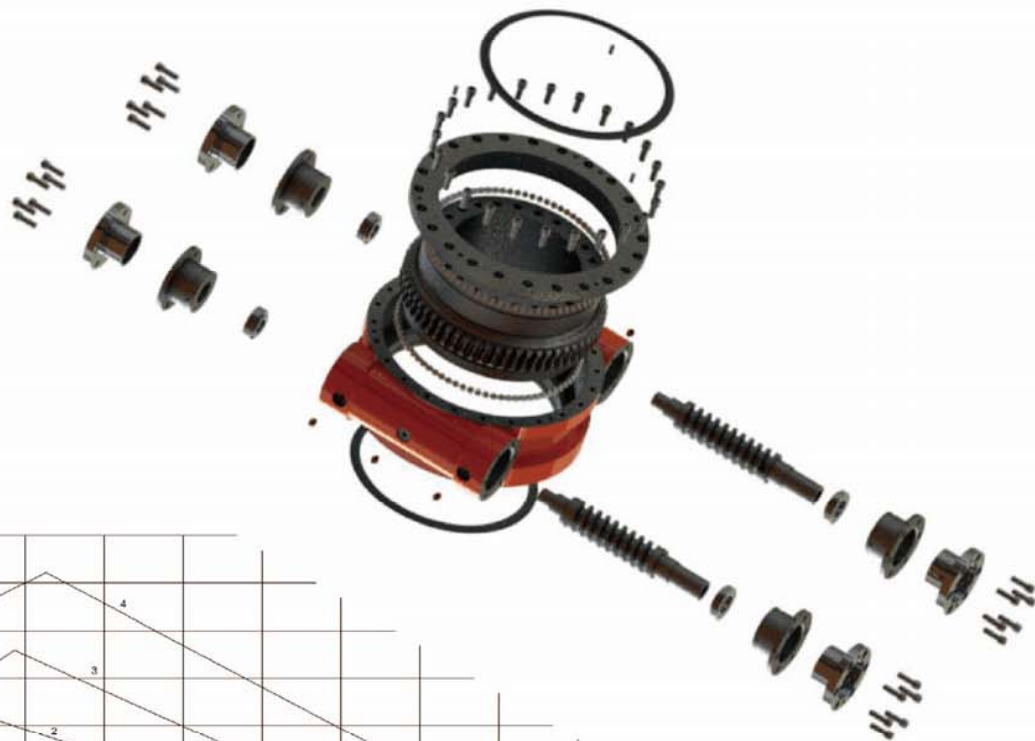


型号 Model	外形尺寸 External Dimensions										安装孔参数 Mounting Hole Data								极限扭矩 Maximum torque (N·m)	工作扭矩 Normal torque (N·m)	静态载荷 Static load rating		动态载荷 Dynamic load rating		模数 module (mm)	减速比 Gear Ratio	安装方式 installation	重量 Weight (kg)
	L1	L2	L3	H	H1	H2	D1	D3	D5	a	L4	D2	n1	φ 1/M1	D4	n2	M2	Hb			径向 radial	轴向 axial	径向 radial	轴向 axial				
SD-L-00	307.75	230	86	82	72	57	95	163	242	132.75	118	120	10	14/12	203	8	12	22	1485	1042	53	133	28	32	3.15	73	L	25
SD-L-01	416.5	302	100	82	73	57	222	224	325	175	165	175	15	/15	270	16	16	30	9303	4795	204	547	132	154	5	62	L	48
SD-L-02	536.5	345	100	82	73	57	265	344	445	235	180	295	20	18/16	390	18	16	30	12905	10150	338	905	157	183	5	86	L	72
SD-L-03	626.5	402	86	82	73	57	324	421	535	280	215	365	20	18/16	480	20	16	30	15606	13096	413	1107	170	198	5	104	L/R	89
SD-L-04	674	415	106	106	97	73	380	482	580	305	214	420	31	18/16	520	32	16	30	24288	2038	675	1808	251	293	6	93	R	130
SD-L-05	852.5	508	130	130	120	80	525	629	749	392	250	565	24	22/20	24	24	20	40	42824	35935	883	2364	280	327	7	104	R	250



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型号 Model	外形尺寸 External Dimensions										安装孔参数 Mounting Hole Data								极限扭矩 Maximum torque	工作扭矩 Normal torque	静态载荷 Static load rating		动态载荷 Dynamic load rating		模数 module	减速比 Gear Ratio	重量 Weight	
	L1	L2	B	B1	H	H1	Hs	D1	D3	D4	D0	Da	na	Ma	Ha	Di	ni	Mi			Hi	径向 radial	轴向 axial	径向 radial				轴向 axial
	(mm)																		(N·m)		(kN)		(mm)		(kg)			
SD-H-01	796	626	411	214	175	80	160	250	456	456	134	427	24	16	30	300	24	16	35	44720	25200	1506	3074	316	445	6	61	188
SD-H-02	679	509	564	285	200	88	190	313	567	561	313	513	32	20	30	373	30	20	40	94832	71000	2185	4485	442	622	8	56	335
SD-H-03	796	626	600	303	200	88	190	430	684	678	430	630	36	20	30	490	36	20	40	119598	119598	2775	5662	502	707	8	70	400
SD-H-04	952	782	664	335	200	88	190	575	834	834	575	792	48	20	30	625	48	20	40	152610	152610	3528	7199	570	803	8	90	480

Installation Adjustment & Attentions

■ 安装与调试

1、回转驱动必须安装在平整坚固的底座上，底脚螺栓必须紧固以防震松和产生非正常震动；安装基准面和支架安装平面必须清理干净，去除油污、毛刺、油漆以及其他异物。为了防止回转驱动局部过载，保证其灵活运转，安装支架应在所有焊接工序后进行消除内应力处理，并对安装平面进行机械加工，其平面度(包括水平面角度偏差)应控制在一定范围内。

2、回转驱动所使用的螺栓尺寸应负荷中华人民共和国国家标准 GB/T5782-2000 和 GB/T5783-2000 的有关规定，其强度等级不低于中华人民共和国国家标准 GB/T3098.1-2000 规定的 8.8 级。

垫圈尺寸应负荷中华人民共和国国家标准 GB/T97.1-1985 和中华人民共和国国家标准 GB/T97.2-1985 的有关规定，需调质处理；禁止使用弹簧垫圈；应采用经热处理后的平垫圈，并根据回转支承受力情况选择合适的强度等级。

螺母尺寸应负荷中华人民共和国国家标准 GB/T6170-2000 和中华人民共和国国家标准 GB/T6175-2000 有关规定，其机械性能应符合中华人民共和国国家标准 GB/T3098.2-2000 有关规定。

螺栓拧紧方式按主机设计规定，应保证一定的预紧力，除非有特殊规定，一般预紧力应为螺栓屈服极限的 0.7 倍；拧紧时允许在螺纹处少量涂油。螺栓夹紧长度 $LK \geq 5d$ (d 为螺栓直径)

3、安装工作结束后，应该及时清除回转驱动上的脏物及灰尘，并将露出部分涂上防锈漆，调整动力源。

1. Slew drive must be installed on a hard horizontal bottom case, and the bolts of the firm steps must be tightened in case of loosen and abnormal vibration; Install datum plane and bracket installation flat must be cleaned up, remove smeary clean, burr, paint and other foreign material. In order to prevent slew drive overload in some part, ensure its flexible partial overload running, mounting bracket shall in all welding processes for eliminating stress after treatment, and make mechanical processing to the installation flat, so the surface of planar degree (including horizontal Angle deviation) should be controlled in a certain range.

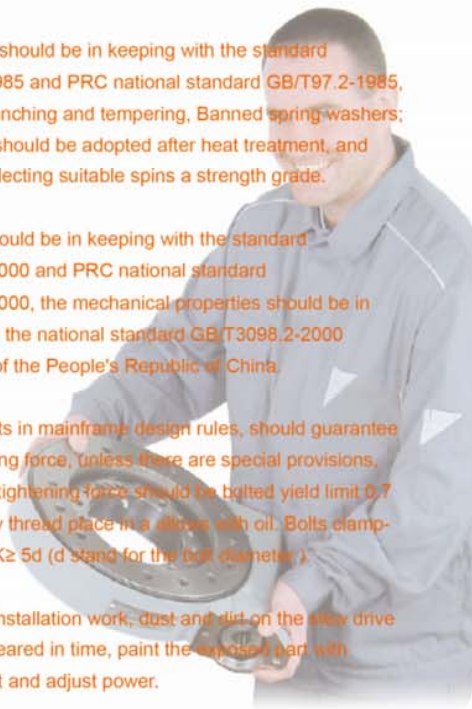
2. The special bolts size for slew drive should be in keeping with the standard GB/T5782-2000 and GB/T5783-2000, the intensity of the relevant regulations of the People's Republic of China rank below national standard GB/T3098.1-2000 regulations of 8.8.

Gasket size should be in keeping with the standard GB/T97.1-1985 and PRC national standard GB/T97.2-1985, required quenching and tempering, Banned spring washers; The gasket should be adopted after heat treatment, and based on selecting suitable spins a strength grade.

Nut size should be in keeping with the standard GB/T6170-2000 and PRC national standard GB/T6175-2000, the mechanical properties should be in keeping with the national standard GB/T3098.2-2000 regulations of the People's Republic of China.

Tighten bolts in mainframe design rules, should guarantee of prestressing force, unless there are special provisions, general pre-tightening force should be bolted yield limit 0.7 times, Screw thread place in a allow with oil. Bolts clamping length $LK \geq 5d$ (d stand for the bolt diameter)

3. After the installation work, dust and dirt on the slew drive should be cleared in time, paint the exposed part with antirust paint and adjust power.



螺栓强度等级 GB38 Strength grade of bolts GB38			8.8			10.9			12.9		
螺栓屈服强度 N/mm ² Yield strength of bolts			640			900			1080		
螺纹规格 Bolts Specification	螺纹有效面积 Threaded effective area As (mm ²)	螺纹最小断面 积 Threaded minimum area As (mm ²)	夹紧力 Clamp force Fsp (N)	理论预紧扭矩 The theoretical prediction torque Msp (Nm)	实际使用预紧扭矩 Actual use preload torque MA=0.9 Msp (Nm)	夹紧力 Clamp force Fsp (N)	理论预紧扭矩 The theoretical prediction torque Msp (Nm)	实际使用预紧扭矩 Actual use preload torque MA=0.9 Msp (Nm)	夹紧力 Clamp force Fsp (N)	理论预紧扭矩 The theoretical prediction torque Msp (Nm)	实际使用预紧扭矩 Actual use preload torque MA=0.9 Msp (Nm)
M5	14.2	12.7	6350	6	5.5	8950	8.5	7.5	10700	10	9
M6	20.1	17.9	9000	10	9	12600	14	12.5	15100	17	15
M8	36.6	32.8	16500	25	22.5	23200	35	31.5	27900	41	36
M10	58	53.3	26200	49	44	36900	69	62	44300	83	75
M12	84.3	76.2	38300	86	77.5	54000	120	110	64500	145	130
M14	115	105	52500	135	120	74000	190	170	88500	230	210
M16	157	144	73000	210	190	102000	295	265	123000	355	320
M18	192	175	88000	290	260	124000	405	365	148000	485	435
M20	245	225	114000	410	370	160000	580	520	192000	690	620
M22	303	282	141000	550	500	199000	780	700	239000	930	840
M24	353	324	164000	710	640	23000	1000	900	276000	1200	1080

为避免螺栓锁紧力间的偏差，请注意如下条款：

- ▲ 给螺纹和螺头少量的注油，以确保抵抗统一的摩擦（粘合剂不允许使用）。
- ▲ 对包括垫圈在内的螺栓进行预加载荷，如果有必要就按 30% 80% 100% 三步。
- ▲ 对于液压马达，预加载荷的锁紧力不能超过成品的90%。

In order to avoid the deviation between the bolt locking force, please pay attention to the following provisions:

- ▲ Oiling to the screw thread and head, to ensure that the friction resistance unification (adhesives are not allowed to use)
- ▲ Preload to the gasket bolt including the gasket, if necessary by 3 steps as 30% 80% 100%.
- ▲ For hydraulic motor, the preload clamping force cannot exceed 90% of the finished product.



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a. 我公司生产的回转驱动出厂前,根据中华人民共和国国家标准 JBT2300-1999 有关规定,在滚道内注有少量的锂基脂润滑油,客户在接收我公司产品后启用时应根据不同的工作条件,重新充满新的润滑脂。

b. 回转驱动应定期加注润滑脂,具体加注润滑脂时间如下:

若在特殊工作环境,如:热带、湿度大、灰尘多、温差大以及连续连续工作时,应缩短润滑脂加注周期,应保证每工作 50 小时加注一次;正常工作时应保证每工作 150 小时涂抹润滑剂一次,剧烈工作时,应每工作 75 小时涂抹润滑剂一次。回转驱动长期停滞运转的前后也必须重新加注新的润滑脂,每次加注润滑脂必须将滚道填满,直至从密封装置溢出为止,加注润滑脂,要慢慢转动回转驱动,使润滑脂在滚道内填充均匀。

a. According to JBT2300-1999, slew drive should be oiled small quantity of lithium base grease before delivery, please check and oil new grease in the different operating condition before installing.

b. Relubrication interval depend mainly on the prevailing work and environmental conditions as well as on the version of the slew drive. The following table can be used for a reference value. Slew drive shall generally be relubricated before and after long inactive periods, while rotating the slew drive, inject grease into all the cleaned grease nipples consecutively until a bead of fresh grease forms at lease on one seal or at the bearing gap.

Working condition	Lubrication intervals
torrid zone, high humidity, dusty, big temperature difference and continuous working	Every 50 hours
Extreme condition	Every 75 hours
Normal working condition	Every 150 hours

c. 使用过程中应经常清除回转驱动表面的杂物,检查回转驱动密封条是否老化、干裂、破损或者脱离,若有其中之一情况发生,应及时更换的密封条,防止滚道内进入杂物和润滑脂的流失,更换后应涂抹相应的润滑脂,避免滚动物体和滚道拉毛卡死或锈蚀。

d. 因为在使用过程中综合因素较多,用户可以根据具体的情况自行选择最佳润滑脂,例如,滚道可以采用: 3 号、4 号石墨润滑脂; 工业润滑脂; 203 号润滑脂; 7002 号高低温轴承脂和 2 号铝基润滑脂等。
回转驱动自安装起,首次运转 100 小时,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。

c. It is necessary to clear the sundries on the surface of slew drive away and check whether seal is aged, dissilient, or breakage, in case of loose seal, please replace new seal to prevent sundries and running grease off, then relubricate grease to avoid corrosion of roller and raceway.

d. Grease types can be determined under actual operating conditions by customer, for example: Raceway can be lubricated by 3#,4# graphite grease, Industry grease, 203# grease, 7002# bearing grease and 2# Aluminum base grease and so on.
It is necessary to check the preload of bolt to keep enough preload after first 100 hours in operating. And this inspection shall be repeated after every 500 hours.

e. 回转驱动累计工作 2000 小时后,如果发现某个螺栓松动到规定力矩的 80% 以下,则该螺栓以及相邻的两个螺栓更换新的; 如果发现 20% 的螺栓松动到规定力矩的 80% 以下,则全部螺栓更换成新的。回转驱动累计工作达到 14000 小时,全部螺栓更换成新的(我公司建议: 在使用两至四个月,对各紧固件进行重新紧固,然后过渡到每年的系统性检查)。

f. 在使用中要密切关注回转驱动的运转情况,如发现噪音、冲击、功率突然增大,应立即停机检查,直至排除所有故障,必要时需拆开检查。

e. After 2000 hours in operating, if some bolt loose more than 20% torque, please replace the bolt and two neighbors, if 20% of bolts loose more than 20%, please replace all the bolts. After 14000 hours in operating, replace all bolts, nuts and washers with new ones.

f. It is necessary to give close attention to operating condition, in the case of increasing noise, impact or power suddenly, it should be fixed until clearing all the trouble, if necessary, Dismantle slew drive. Clean, check and correct it.

回转产品研发专家
特种领域拓展先锋
科技创新领先者

Expert of slew product
Pioneer of special application
Leader of innovation

