



ISO9001:2015 质量体系认证

## 十字轴式万向联轴器

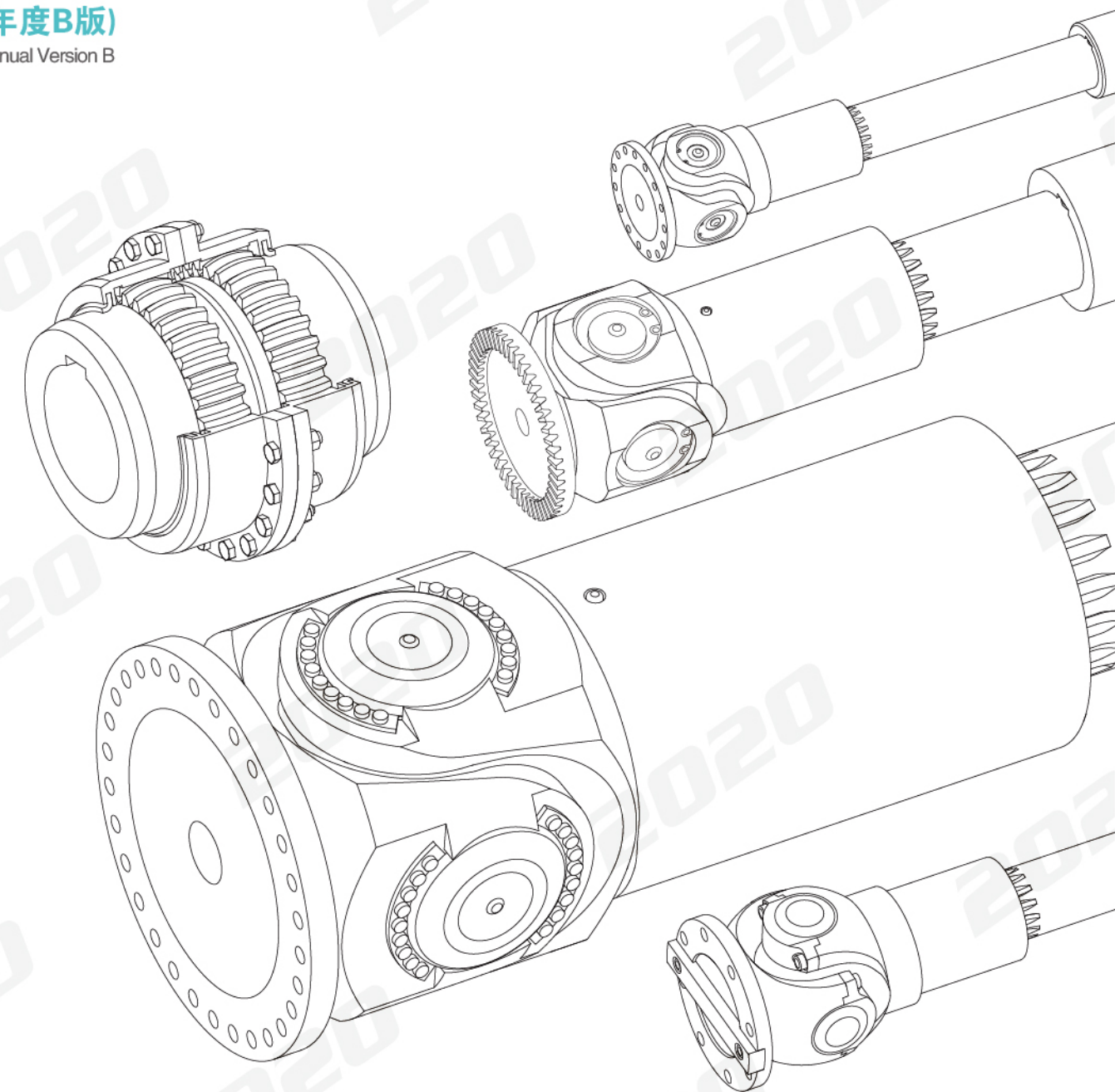
CROSS-SHAFT UNIVERSAL COUPLING

## 鼓型齿式联轴器

GROWN GEAR COUPLING

(通用年度B版)

General Annual Version B



乐清市三丰传动有限公司

YUEQING SANFENG TRANSMISSION CO., LTD.

乐清市三丰传动件厂

YUEQING SANFENG TRANSMISSION PART FACTORY

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## 乐清市三丰传动有限公司简介

BRIEF INTRODUCTION TO YUEQING SANFENG TRANSMISSION CO., LTD.

创建于上世纪八十年代中后期的乐清三丰传动，1994年开发生产SWF系列十字轴式万向联轴器和2013年高起点优化结构设计生产全系列鼓形齿式联轴器。企业拥有一批高素质专业团队从事以上联轴器的开发、生产、销售工作，不断获得多项自主知识产权，坚持品质第一的理念，始终不懈对技术、工艺、材料改进升级。企业早已通过ISO9001质量管理体系认证，目前在人均产值及亩产值的指标上均排在全国同行最前列。

乐清三丰传动提供的SWF系列十字轴式万向联轴器在当今国际行业中是一款综合性能很优秀的产品，大批产品长期供应各冶金工程项目，在获得专家和用户普遍赞赏的同时，成功为中国酒泉、海南等航天工程提供较大规格SWF系列十字轴式万向联轴器，为中国航天事业尽自己的微薄之力。

在取得一定成就的同时，我们更多谋划企业未来发展，不以低端同质化竞争求发展，不以盲目扩大规模求发展，继续朝高品质、高性价比的方向奋力发展。昨天的成就得益于您的真诚合作，在此深表谢意，希望有机会为您提供更优质的服务体验，期待您来乐清三丰传动作技术、商务深入交流。

**诚信务实，是我们生存的基石；**

**卓越品质，是我们获得市场的基本保证；**

**开拓创新，是我们不断发展的动力。**

时常有不法商贩抄袭仿冒乐清三丰传动的技术及产品，所造成后果非常严重，敬请您认真甄别。

YUEQING SANFENG TRANSMISSION CO., LTD. was established in the middle and later periods of 1980s. It developed and produced SWF series Universal Coupling with Cross Shaft in 1994 developed and produced full series Coupling with Drum Gear with optimized structural design based on a high starting point in 2013. It possesses a number of high-quality professional teams which are engaged in the development, production and sales of aforesaid couplings. It continuously wins multiple independent intellectual property rights, insists in the idea of quality first and persists in making improvement and upgrading in technology, processes and materials. It has passed ISO-9001 quality management system certification for a long time and it ranks in the forefront of nationwide peers in the country in per capita output value and output value index per mu.

SWF series Universal Coupling with Cross Shaft offered by YUEQING SANFENG TRANSMISSION CO., LTD. is a product with excellent overall performance in current international industry. Large quantities of products are supplied to various metallurgical engineering projects. While being widely praised by experts and users, it successfully offers SWF series Universal Coupling with Cross Shaft equipped relatively big specification for Chinese Jiuquan, Hainan and other aerospace engineering projects and makes its own negligible contribution for Chinese aerospace industry.

We have acquired certain achievements, and meanwhile we are focusing more on the future development of the enterprise. We neither seek for development through low-end homogeneous competition, nor strive for development by blindly expanding the scale, but we continue to develop toward the direction of high quality and higher cost performance. Previous achievements benefit from your sincere cooperation. Here we express deep appreciations to you and we hope that we have opportunities to offer better service experience to you. Expect you to come to YUEQING SANFENG TRANSMISSION CO., LTD. to make in-depth technical and business communications.

**Honesty and pragmatist are the foundation for our existence;**

**Excellent quality is the basic guarantee for us to acquire the market;**

**Exploration and innovation are our motivations of continuous development.**

There are frequently illegal traders plagiarizing the technologies and products of YUEQING SANFENG TRANSMISSION CO., LTD., and the consequences generated will be very serious. Please distinguish them carefully.



中国酒泉、海南航天工程均由乐清三丰传动提供SWF系列十字轴式万向联轴器。

The SWF cross-shaft universal couplings of Chinese Jiuquan aerospace engineering and Hainan aerospace engineering are all provided by YUEQING SANFENG TRANSMISSION.

## 十字轴式万向联轴器概述

### Overview of Cross Shaft Universal Coupling

十字轴式万向联轴器主要由十字轴总成、各种叉头、花键副等零部件组成。具有传递转矩大、可用夹角大、使用寿命长、使用范围广，且灵活平稳高效运转等优点。

**SWP系列：**属早期产品，因叉头轴承孔是剖分结构，造成叉头内宝贵空间尺寸消耗过多，同时该部位可靠性较差等弊端。在相同回转直径下承载转矩较小，可用夹角也较小的落后产品。

**SWC系列：**整体叉头结构，是SWP系列的改进替代型产品。原设计为了更好地利用叉头内宝贵空间尺寸，将轴承设计成主副轴承结构，实践证明，主副轴承结构除造成装配困难外并没达到预期的功效。同时轴承轴向限位采用开槽嵌挡圈结构，既浪费宝贵的径向尺寸，又使结构可靠性降低，所以一般也不推荐该系列产品。

**JXC系列：**整体叉头结构，基本结构类似SWC系列产品，但没有副轴承，该系列属轻载小规格产品，弹性挡圈受力较小，故使用中还是比较可靠。优点是可用夹角更大，造价相对低廉，但传递转矩较小。

**SWF系列：**乐清三丰传动开发的经典结构系列，拥有多项自主知识产权，能完全替代SWP及SWC系列的高性价比优质产品。属整体叉头结构，充分利用叉头内宝贵的空间尺寸，用独创可靠且装拆方便的卡板替代开槽嵌挡圈结构，并巧妙地在十字轴端部装有轴向滚动轴承，实现径向、轴向全滚动轴承结构。该系列产品承载转矩大、使用寿命长、精度高、转动灵活可靠，特别适用于各繁重工况条件，其优势更加突出。

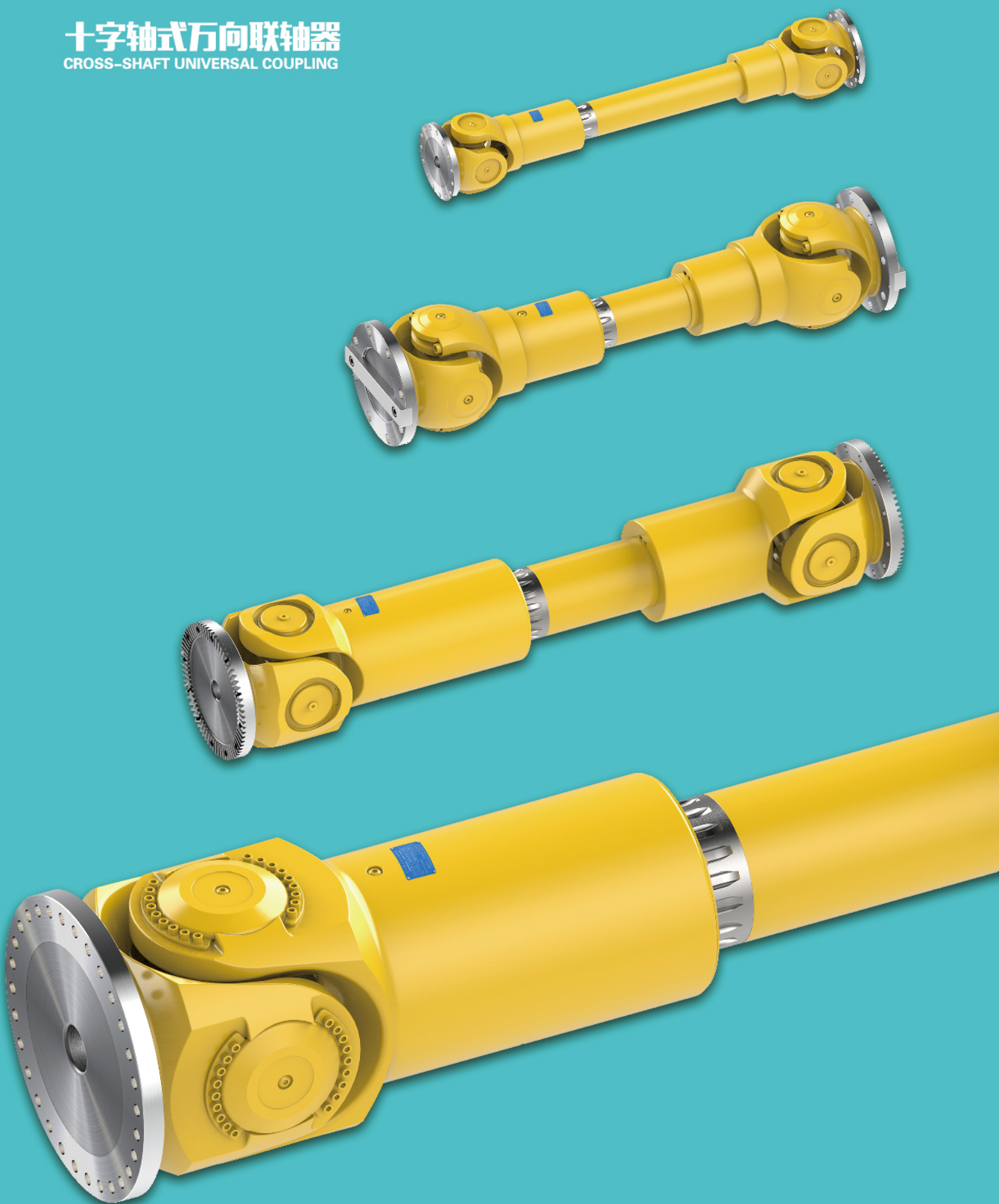
Cross Shaft Universal Coupling is mainly composed of the cross assembly, various forks, spline pairs and other components and parts. It has big transmission torque, big available included angle, long service life, wide application scope, flexible, steady and efficient operation and other advantages.

**SWP Series:** It belongs to earlier products. As the fork bearing hole is of subdivision structure, it causes too much consumption of the precious space size within the fork, and meanwhile the reliability in this position is relatively bad, etc. It is a backward product with relatively small load torque under the same swing diameter and relatively small available included angle.

**SWC Series:** It is of overall fork structure and it is the improved alternative product for SWP series. In the original design, to make better use of the precious space size within the fork, the bearing is designed into the main and auxiliary bearing structure. Practice has proved that, the main and auxiliary bearing structure makes the installation difficult, besides, it fails to reach the expected effect. Meanwhile the axial limit of the bearing adopts the structure of slotted retaining ring. It does not only waste the precious radial dimension, but it also reduces the structural reliability. Thus generally such series products are not recommended.

**JXC Series:** It is of overall fork structure and its basic structure is similar to SWC series products. However, it has no auxiliary bearing. Such series belong to products with light load, small specification and relatively small stress on elastic retaining ring. Thus it is comparatively reliable during use. The advantages are that the applied included angle is relatively big, the cost is relatively low but the transmission torque is relatively small.

**SWF Series:** It is the series with classic structures developed by YUEQING SANFENG TRANSMISSION CO., LTD. It possesses multiple independent intellectual property rights, It can completely replace the high-quality products with high cost performance of SWP and SWC series. and it is of overall fork structure. It makes full use of the precious space size within the fork, uses the unique pallet which is convenient in assembly and disassembly and reliable to replace the structure of slotted retaining ring. In addition, it skillfully equips axial rolling bearing at the end of the cross shaft to realize full rolling bearing structure at radial and axial directions. Such series products have big load torque, long service life, high accuracy and flexible and reliable rotation. It is especially suitable for various tough operating conditions, where its advantages are more outstanding.



## 十字轴式万向联轴器选型

根据不同工况需求，选择结构合适、可靠，性价比高的系列产品。根据您提供的技术参数及工况，乐清三丰传动可为您推荐最佳传动技术整体解决方案。

### 联轴器型号规格选择

$$T_c = \frac{T_{max}}{S} \cdot K \leq T_m$$

$T_c$  —— 计算转矩 (kN·m)

$T_{max}$  —— 机构最大计算转矩  $T_{max} = 9.55 \frac{N_{max}}{n}$  (kN·m)

$N_{max}$  —— 机构最大计算功率 (kW，不是指电机功率，含组件惯量转矩与功耗及其他作用于联轴器的载荷)

$n$  —— 联轴器运行转速 (r/min)

$S$  —— 机构驱动所需联轴器数量

$K$  —— 工况系数 取1.1~3.5 (以设备重要性、动态载荷、运行转速、设计寿命、运行环境等取值)

$T_m$  —— 联轴器许用转矩 (kN·m，见联轴器型号规格性能表)

### 联轴器轴承寿命计算

$$L_h = \frac{1.5 \cdot 10^7}{n \cdot \alpha} \left( \frac{A}{T_y} \right)^{10/3}$$

$L_h$  —— 不含停歇时间，净运行寿命 (h)

$\alpha$  —— 联轴器运行夹角， $\alpha \leq 3^\circ$  时取 $3^\circ$

$A$  —— 联轴器轴承容量值 (见联轴器型号规格性能表)

$T_y$  —— 运行转矩  $T_y = 9.55 \frac{N_y}{n}$  (kN·m)

$N_y$  —— 电机运行功率 (kW，结合运行中最大功率及低谷功率，按实况平衡取值)

● 经乐清三丰传动优化的联轴器选型公式，供您参考选用。

### 联轴器两法兰联接型式(见法兰联接尺寸表)

从输入至输出，两法兰联接是联轴器可靠运行的重要组成部分。建议选用铰制孔配铰制孔用螺栓组联接型式—J，该结构具有联接性能可靠、综合效果好、性价比高等特点。推荐指数★★★★★

同时承接轴接手及配套螺栓组等附件订货。

### 确定联轴器使用工况

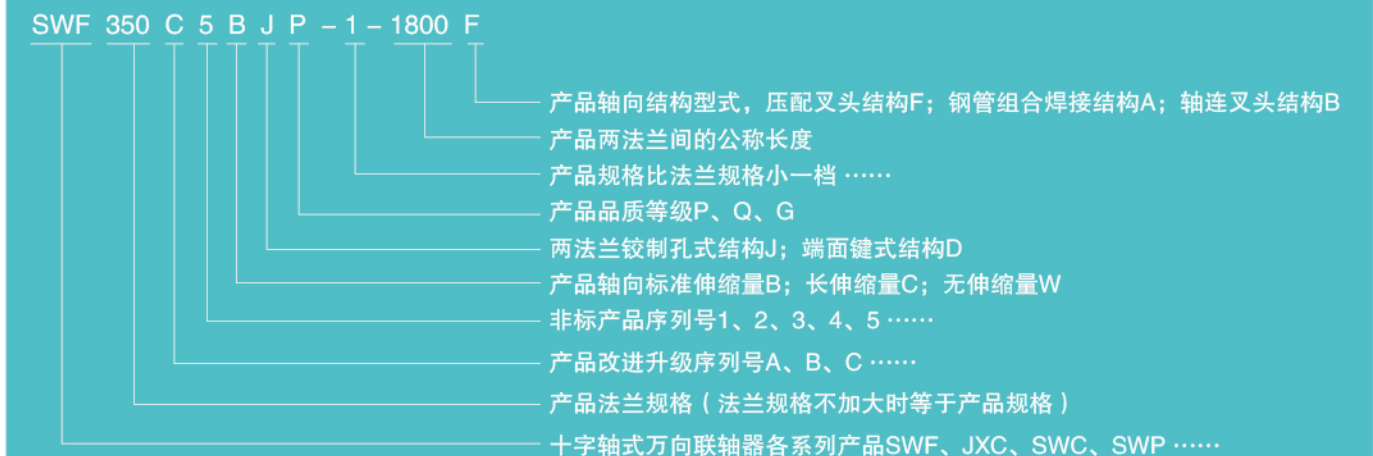
联轴器运行工况须确定运行夹角、总长度、伸缩量、防尘防水级别、环境温度范围、是否带载荷伸缩、运行转速及动平衡精度级别……

### 联轴器品质等级选择 (见联轴器型号规格性能表)

十字轴式万向联轴器主要由十字轴总成、各种叉头、花键副等零部件组成。以往受工艺、成本等条件制约，叉头形面整体质量成一明显短板，提升其整体质量将对联轴器综合性能发挥具有较大价值。您可根据需要选择不同品质等级的联轴器：铸钢基础型组合—P；铸钢全加工质优价平型组合—Q；锻钢全加工高端轻奢型组合—G。根据行业发展趋势综合分析，铸钢全加工型组合具有品质优越、性价比高、可定制性强等特点，有广阔发展前景。推荐指数★★★★★



### 联轴器型号注释



## Model Selection of Cross Shaft Universal Coupling

Select series products with suitable and reliable structure and high cost performance as per different demands of operating conditions. According to the technical parameters and operating conditions you offered, YUEQING SANFENG TRANSMISSION CO., LTD. may recommend you the optimal overall solutions of transmission technologies.

### Selection of Coupling Model and Specification

$$T_c = \frac{T_{max}}{S} \cdot K \leq T_m$$

$T_c$  — Calculated torque ( kN · m )

$T_{max}$  — Maximum mechanism calculated torque  $T_{max} = 9.55 \frac{N_{max}}{n}$  ( kN · m )

$N_{max}$  — Maximum mechanism calculated power (kW, not the power of the motor, including component inertia torque, power consumption and other loads acting on the coupling)

$n$  — Operating speed of coupling (r/min)

$S$  — The number of couplings required for mechanism drive

$K$  — Working condition coefficient, ranging from 1.1 to 3.5 (depending on equipment importance, dynamic load, operating speed, design life, operating environment, etc.)

$T_m$  — Allowable torque of coupling (kN · m, see the table for models, specifications and performance of coupling)

### Calculation of Bearing Life of Coupling

$$L_h = \frac{1.5 \cdot 10^7}{n \cdot \alpha} \left( \frac{A}{T_y} \right)^{10/3}$$

$L_h$  — Excluding down time, net operating life (h)

$\alpha$  — Operating angle of coupling,  $3^\circ$  when  $\alpha \leq 3^\circ$

$A$  — Capacity value of coupling bearing (see the table for models, specifications and performance of coupling)

$T_y$  — Operating torque  $T_y = 9.55 \frac{N_y}{n}$  (kN · m)

$N_y$  — Operating power of the motor (kW, balanced on the basis of the actual condition, in combination with the maximum power and off-peak power in operation)

● The selection formula of coupling optimized by Yueqing Sanfeng Transmission Co., Ltd. is provided for your reference.

### Two-Flange Connection Pattern of Coupling (See the Flange connection size table)

Two-flange connection from input to output is a key component for the reliable operation of the coupling. Suggest to select connection pattern for hinged bolt set equipped for hinged hole – J. Such structure has the features of reliable connection performance, good comprehensive effect and high cost performance. The recommendation index is ★★★★★

Meanwhile we accept goods ordering for axis handle, matching bolt set, etc.



### Confirmation of Operating Conditions of Coupling

For the operating conditions of the coupling, the operating include angle, total length, extension amount, dust prevention and water prevention grade, ambient temperature range, whether with load expansion, operating speed and dynamic balance accuracy level...

### Selection of Coupling Quality Grade (see the table for models, specifications and performance of coupling)

The universal joint coupling is mainly composed of universal joint assembly, various forks, and spline pairs. Previously restricted by technology, cost and other conditions, the overall quality of the fork surface has become an obvious shortcoming, and improving this overall quality will play a valuable role in the comprehensive performance of the coupling. You may choose couplings of different quality grades to suit your needs: Basic cast steel portfolio – P; Fully processed high-quality but low-price cast steel portfolio – Q; Fully processed high-end and entry-luxury forged steel portfolio – G. Based on a comprehensive analysis on industry development trends, the fully processed cast steel portfolio, characterized by superior quality, high cost performance, and strong customizability, has broad development prospects. Recommendation Rating ★★★★★

### Model notes of Coupling

SWF 350 C 5 B J P - 1 - 1800 F

- Pressure matching fork structure F of product axial structure pattern; combined welding structure A of steel tube; axis connection fork structure B
- Nominal length between two flanges of the product
- Product specification is one gear smaller than the flange specification...
- Product Quality Grade P, Q, G
- Structure with hinged hole for two flanges J; End face key structure D
- Axial standard extension amount of product B; long extension amount C; no extension amount W
- Serial No. of non-standard products 1, 2, 3, 4, 5 ...
- Serial No. of product improvement and upgrading A,B,C...
- Product flange specification(Product flange specification (if the flange specification is not added, it is equal to the product specification) )
- Each series products of Cross Universal Coupling SWF, JXC, SWC and SWP .....

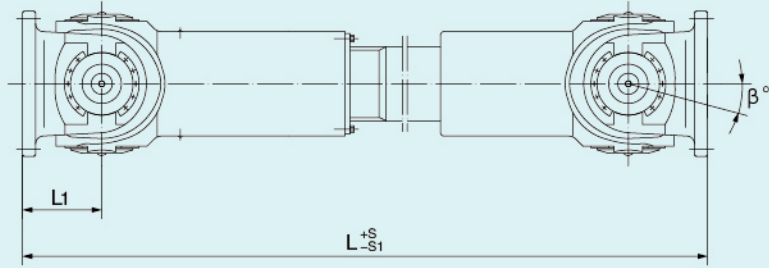
### 十字轴式万向联轴器常用轴向结构型式图:

Ordinary axial Structure pattern for cross shaft universal coupling:

可伸缩分为标准伸缩量B型及超长伸缩量C型

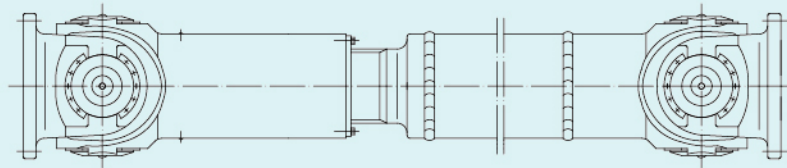
It is of extension-type and it is classified into Type-B with standard extension amount and Type-C with super-long extension amount

压配叉头结构—F  
Pressure matching  
fork structure—F



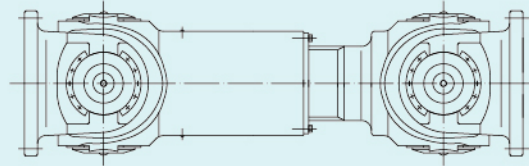
精度最佳，用量最多，质量稳定，可适用B型及C型  
Best accuracy, most usage and stable quality, suitable for Type—B and Type—C

钢管组合焊接结构—A  
Combined welding structure  
of steel tube—A



适用较长产品的结构，可适用B型及C型  
Applicable for structure of relatively long product, suitable for Type—B and Type—C

轴连叉头结构—B  
Axle connection fork  
structure—B

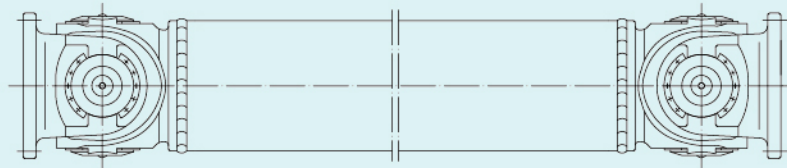


适用较短产品的结构，可适用B型及C型  
Applicable for structure of relatively short product, suitable for Type—B and Type—C

### 无伸缩W型 (需配外置式伸缩)

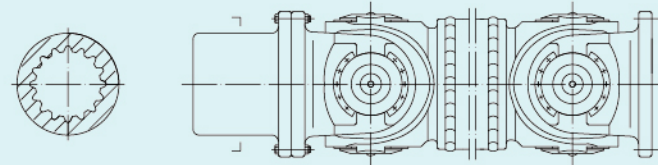
Type-W without extension (requiring to be equipped with external extension)

四个法兰叉头或钢管组合焊接结构型式  
Structure pattern for four flanges fork or steel  
tubes in combined welding



从最短至最长的产品均可任意选择，两端轴接手一端紧固，另一端可轴向伸缩  
Products (from the shortest to the longest) can be arbitrarily selected - fasten the axle at the end of holding, and axial extension is available on the other end

四个法兰叉头或钢管组合焊接外置伸缩超短结构型式  
Super-short Structure pattern of external extension for four flanges  
fork or steel tubes in combined welding



利用一端轴接手紧固，另一端轴接手可向伸缩的超短结构方案

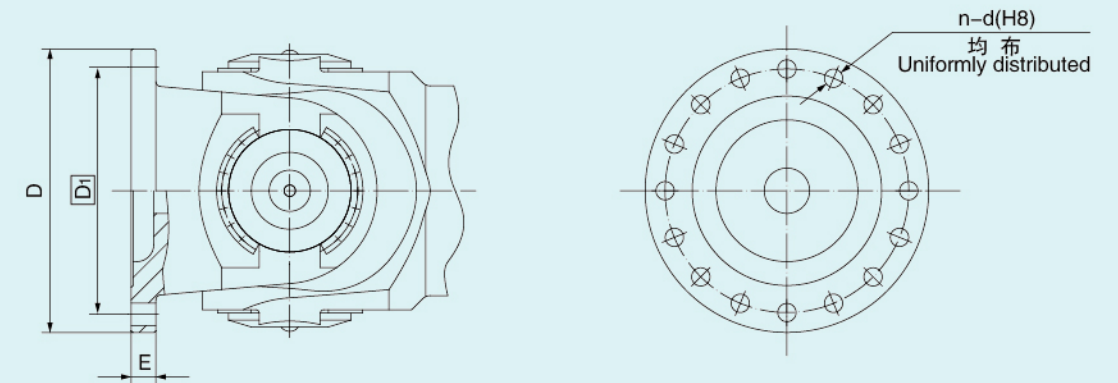
Scheme of making use of the axle at the end of holding to fasten the super-short structure of the other end where axial extension is available

所有十字轴式万向联轴器在运行时轴向均需伸缩空间。两个法兰叉头一个十字轴总成的结构型式长度虽然可更短，但使用中会产生严重的干涉，一般不推荐使用。

The extension space is required for all cross shaft universal couplings at the axial direction during operation. Structure pattern of two flanges fork and one cross assembly although the length can be shorter, it will cause serious interference during use, thus it will not recommend to use it generally.

### 铰制孔配铰制孔用螺栓组法兰联接尺寸表

Size specification for flange connection of hinged bolt set equipped for hinged hole



D	E	D1	n-d(H8)	铰制孔用螺栓 Bolt specification for hinged hole
100	8	85	8-φ7	M6
110	8	95	8-φ7	M6
120	10	105	10-φ7	M6
140	11	125	8-φ9	M8
150	11	135	12-φ9	M8
160	13	140	12-φ11	M10
180	13	160	14-φ11	M10
200	16	175	14-φ13	M12
225	18	200	14-φ15	M14
250	21	225	16-φ15	M14
285	25	255	16-φ17	M16
315	25	285	24-φ17	M16
350	30	315	24-φ19	M18
390	30	355	28-φ19	M18
435	35	400	30-φ21	M20
440	35	405	30-φ21	M20
480	35	445	30-φ21	M20
490	40	445	26-φ26	M24
550	45	505	30-φ26	M24
620	50	575	36-φ26	M24
680	55	630	34-φ30	M27
780	65	720	32-φ36	M33
840	70	780	34-φ36	M33
920	75	855	34-φ40	M36
1000	80	930	34-φ43	M39
1100	90	1015	32-φ50	M45
1200	100	1105	30-φ57	M52

注：1. 螺栓组机械性能应符合GB/T3098规定

2. 选用橄榄形铰制孔用螺栓（专利号：ZL 2019 2 1730808.X），使用效果更佳

3. 铰制孔用螺栓M24以下规格选用10.9级，M24及以上规格选用12.9级，销杆部位公差h6

Notes: 1. The mechanical property of the bolt set shall be able to meet the provisions of GB/T3098.

2. Olivary bolt (patent No.: ZL 2019 2 1730808.X) is selected for hinged hole, the effect is better.

3. Class-10.9 bolt is selected for hinged hole with specification of M24 below, Class-12.9 bolt is selected for hinged hole with specification of M24 and above, and the tolerance at the polished rod position is h6.



## SWC系列、SWP系列型号规格性能表 Specification and Performance Table of SWC Series and SWP Series

型号 Model	P-T <sub>m</sub>	P-T <sub>p</sub>	P-T <sub>f</sub>	A	β	L1	S	S1	L-F <sub>min</sub>	L-B <sub>min</sub>	G <sub>0</sub>	G <sub>100</sub>	I <sub>0</sub>	I <sub>100</sub>
	kN · m					mm				kg		kg · m <sup>2</sup>		
SWC100	2	1.75	1.2	0.64	≤25°	60	30	30	400	385	10	1.1	0.0068	0.0002
SWC120	3.5	3	2.1	1.1		70	40	40	480	455	17.8	1.42	0.0166	0.0004
SWC150	7.5	6.5	4.5	2.21		85	50	50	590	545	37	2.38	0.05	0.0011
SWC180	16	13.9	9.6	4		110			790	680	79	3.77	0.178	0.0028
SWC200	28	24.4	16.8	5.5	≤15°	115	55	55	825	730	110	5.25	0.33	0.0055
SWC225	39	33.9	23.4	7.67		120	70	70	870	750	151	6.45	0.56	0.0084
SWC250	48	41.8	28.8	10.4		140			985	810	205	7.78	0.98	0.0122
SWC285	74	64.4	44.4	15.4		160			1140	930	301	9.69	1.875	0.019
SWC315	100	87	60	20.3		180			1270	1035	418	12.15	3.151	0.0298
SWC350	131	114	78.6	28.8		194	75	75	1390	1145	571	15.87	5.417	0.051
SWC390	229	199	138	39.9		215	85	85	1530	1240	810	20.09	9.322	0.081
SWC440	332	289	199	55.5		260	95	95	1830	1480	1314	30	20.16	0.182
SWC490	443	385	266	77.8		270			2010	1610	1690	35.7	31.53	0.257
SWC550	625	544	375	111.6		305	120	120	2300	1840	2583	48.6	60.65	0.476
SWC620	874	761	525	149		340			2600	2060	3755	63.5	111.6	0.81
SWP160	10.4	9	6.2	2.89		≤12°	85	25	15	620	455	55	3.2	0.11
SWP180	13	11.3	7.8	4.16	95		30	20	700	510	77	4.16	0.19	0.0035
SWP200	17.5	15.2	10.5	5.84	110		35		800	580	109	5.24	0.34	0.0056
SWP225	24.5	21.3	14.7	7.64	130		40	25	925	670	158	6.45	0.63	0.0084
SWP250	33	28.7	19.8	10.8	135				30	980	720	205	7.78	1.01
SWP285	53	46.1	31.8	15.6	150		50	35	1100	800	295	9.7	1.88	0.0189
SWP315	84	73	50.4	21.6	170		55		1240	900	413	12.15	3.17	0.03
SWP350	109	95	65.4	28.7	185		60	40	1400	990	581	15.87	5.38	0.051
SWP390	140	122	84	38.3	205				1480	1100	794	20.09	9.2	0.081
SWP435	264	230	159	53.5	235		75	45	1720	1240	1150	24.8	16.53	0.124
SWP480	370	322	222	71.9	265		85	55	1920	1390	1550	30	27.26	0.182
SWP550	561	488	337	103.6	290		95	60	2100	1530	2150	35.7	50.44	0.257

注：1. 统一纠正以往联轴器性能参数误差的同时，更进一步优化设计，提升联轴器性能指标  
2. P-T<sub>m</sub>、P-T<sub>p</sub>、P-T<sub>f</sub>—分别为铸钢基础型组合许用转矩、脉动疲劳转矩及对称疲劳转矩  
3. A—反应轴承容量的值  
4. L-F<sub>min</sub>、L-B<sub>min</sub>—分别为压配叉头轴向结构型式和轴连叉头轴向结构型式的最短长度  
5. G<sub>0</sub>—在最短长度L-F<sub>min</sub>时的自重  
6. I<sub>0</sub>—在最短长度L-F<sub>min</sub>时的传动惯量  
7. G<sub>100</sub>、I<sub>100</sub>—长度每增加100mm时的G、I增量  
8. 如需非标产品，乐清三丰传动亦可设计制造

Notes: 1. While the performance parameter errors of previous couplings are uniformly corrected, the design is further optimized to improve the performance indicators of the coupling;  
2. P-T<sub>m</sub>、P-T<sub>p</sub> and P-T<sub>f</sub> Respectively allowable torque, pulsating fatigue torque and symmetrical fatigue torque;  
3. A - Capacity value of coupling bearing;  
4. L-F<sub>min</sub> and L-B<sub>min</sub> - Respectively basic cast steel portfolio the shortest length of the pressure matching fork structure and axle connection fork structure;  
5. G<sub>0</sub> - Dead weight at the shortest length of L-F<sub>min</sub>;  
6. I<sub>0</sub> - Transmission inertia at the shortest length of L-F<sub>min</sub>;  
7. G<sub>100</sub> and I<sub>100</sub> - G & I increments when the length increases 100mm;  
8. YUEQING SANFENG TRANSMISSION CO., LTD. also can design and manufacture as required non-standard products.

## 十字轴式万向联轴器同步运转所需条件 Conditions Required for Synchronous Running of Universal Coupling with Cross Shaft

十字轴式万向联轴器需同时满足以下三项条件才能同步运转，即输入端、输出端与轴线形成的夹角相等；输入端、输出端、联轴器三轴线在同一平面内；输入端与输出端的叉头轴承中心线在同一平面内。（您如将花键副分开后再装回时务必恢复输入端与输出端的叉头轴承中心线在同一平面内）。

Universal Coupling with Cross Shaft needs to satisfy following three conditions simultaneously for synchronous running, namely the included angles formed by the input and output ends and the axis and equal; the input end, output end and coupling are within the same plane; the fork bearing center lines of the input end and output end are on the same plane. (If you separate the spline pairs, and then reload them, please recover the fork bearing center lines of the input end and output end onto the same plane).

## 十字轴式万向联轴器安装维护 Installation and Maintenance of Universal Coupling with Cross Shaft

从输入至输出，两法兰联接是联轴器重要组成部分，直接关系到整个传动链可靠性及各部件性能和寿命。安装时应先清除各安装面的油污异物，检查相关接触面须符合技术要求。参照技术要求反复预紧螺栓组并采取防松措施（可涂厌氧胶防松），且在运行中经常检查螺栓组的预紧可靠性。

十字轴式万向联轴器出厂时各需润滑部位已注2#极压复合锂基脂，您可选用相应牌号清洁的润滑脂按工况注油（次/1~3月），每次注油后须拧好油堵。

改善使用工况环境对产品使用寿命意义重大，如您发现有异常情况，应及时检查排除，必要时请及时更换。

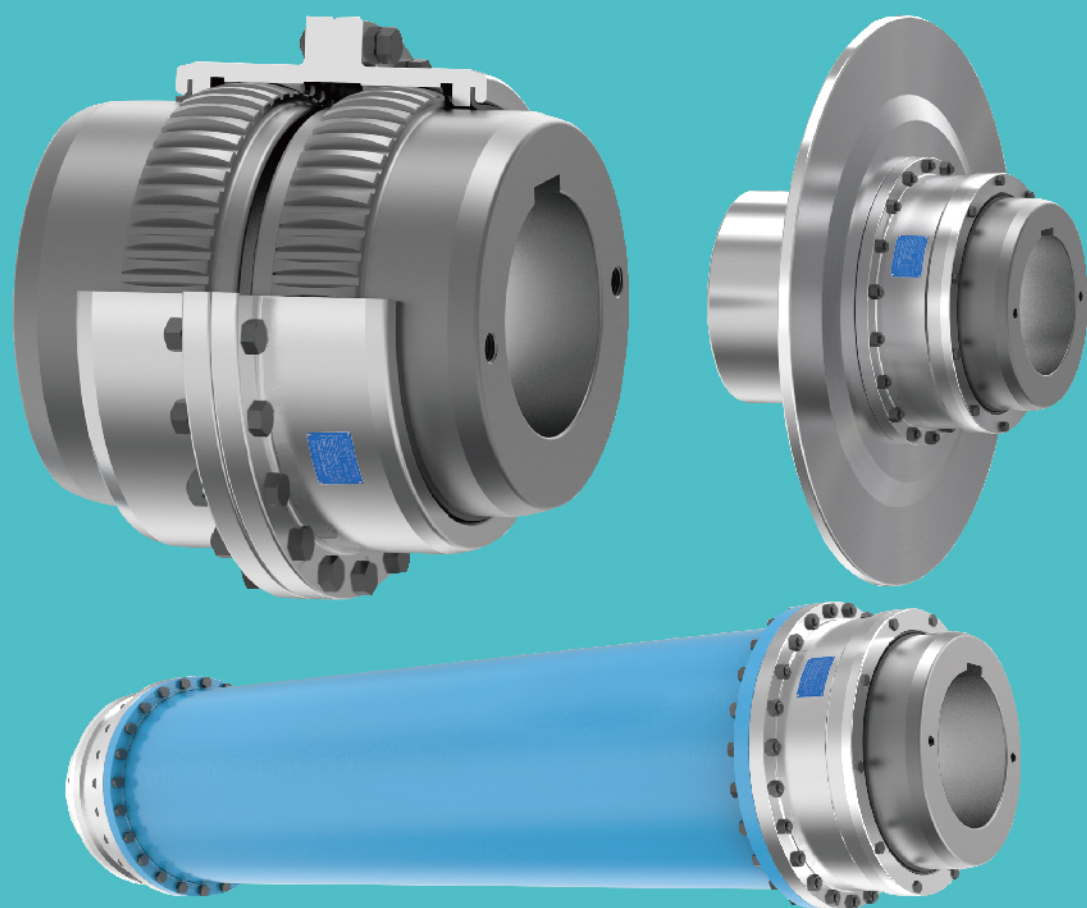
Two-flange connection from input to output is a key component of the coupling and it is directly related to the reliability of the whole transmission chain and the performance and life of each component. Firstly, remove the oil stains and foreign matters on each installation surface at the time of installation, and inspect and ensure that related contact surfaces must conform to the technical requirements. Refer to technical requirements, repeatedly pre-tighten the bolt set and adopt loose prevention measures (it is allowed to be coated with anaerobic adhesive to prevent looseness), and check the pre-tightening reliability of the bolt set frequently during operation.

When leaving the factory, the Universal Coupling with Cross Shaft has been injected with Compound extreme pressure lithium-based grease 2# on each lubrication point. You can select clean lubricating grease with corresponding brand for oil injection (1-3 months per time) as per the operating conditions. Screw the oil plug after every time of oil injection.

Improving the applied operating conditions is of significant meaning for the service life of the product. If you discover any abnormal condition, please timely inspect and eliminate it, and replace it on time when necessary.



## 鼓形齿式联轴器 GROWN GEAR COUPLING



### 鼓形齿式联轴器概述 Overview of Grown Gear Coupling

鼓形齿式联轴器由相同齿数及模数的鼓形外齿配合直内齿组成，能在额定夹角及轴向伸缩范围内传递额定转矩，具有结构简单、制造成本较低等优点。因受产品结构限制，运行夹角一般不大于 $1^{\circ}30'$ ，减小运行夹角对增加鼓形齿式联轴器使用寿命效果显著。

乐清三丰传动根据鼓形齿式联轴器相关标准作进一步结构优化设计，并灵活选择不同材料和热处理工艺，以满足不同工况使用要求。更多相关内容请您登陆乐清三丰传动网站或参照相关标准对鼓形齿式联轴器的详细介绍，欢迎您与我们作进一步的技术、商务洽谈。

Grown gear coupling is composed of drum external gears and internal straight gears with same number of gears and modules. It can transmit the rated torque within rated included angle and extension range and it has simple structure, low manufacturing cost and other advantages. As limited by the product structure, the applied included angle does not exceed  $1^{\circ}30'$  generally. Decreasing the applied included angle has obvious effect in improving the service life of the grown gear coupling

YUEQING SANFENG TRANSMISSION CO., LTD. makes further structural optimization design for standards related with grown gear coupling and flexibly selects different materials and heat processing technologies to meet the operating requirements of different operating conditions. For more relevant contents, please log into the website of YUEQING SANFENG TRANSMISSION CO., LTD. or refer to detailed introductions of grown gear coupling. Waiting to make technical or business discussions with you.

### 普通螺栓组预紧力矩表 (N·m) Table of Pretightening Torque of Ordinary Bolt Set

螺纹规格d×p Thread Specification	8.8 级class	10.9 级class	12.9 级class
M5×0.8	5	7	8.5
M6×1	8.5	12	14
M8×1.25	20	28	35
M10×1.5	40	58	70
M12×1.75	71	100	120
M14×2	115	160	195
M16×2	175	250	300
M18×2.5	245	345	410
M20×2.5	350	490	585
M22×2.5	470	660	790
M24×3	600	840	1000

螺纹规格d×p Thread Specification	8.8 级class	10.9 级class	12.9 级class
M27×3	870	1225	1470
M30×3.5	1190	1670	2020
M33×3.5	1600	2250	2700
M36×4	2050	2860	3450
M39×4	2580	3630	4360
M42×4.5	3200	4320	5200
M45×4.5	3830	5300	6460
M48×5	4600	6500	7800
M52×5	5900	8300	9900
M56×5.5	7300	10000	12400
M60×5.5	9200	13000	15000



### 铰制孔用螺栓组预紧力矩表 (N·m) Table of Pretightening Torque of Bolt Set for Hinged hole

螺纹规格d×p Thread Specification	8.8 级class	10.9 级class	12.9 级class
M6×1	6	8.4	9.8
M8×1.25	14	20	25
M10×1.5	28	41	49
M12×1.75	50	70	84
M14×2	81	112	137
M16×2	123	175	210
M18×2.5	172	242	287
M20×2.5	245	345	410
M22×2.5	330	465	555
M24×3	420	590	700

螺纹规格d×p Thread Specification	8.8 级class	10.9 级class	12.9 级class
M27×3	610	860	1030
M30×3.5	835	1170	1420
M33×3.5	1120	1575	1890
M36×4	1435	2010	2420
M39×4	1810	2550	3060
M42×4.5	2240	3030	3640
M45×4.5	2680	3760	4520
M48×5	3240	4550	5460
M52×5	4140	5810	6930
M56×5.5	5150	7210	8680

注：1. 螺栓组机械性能应符合GB/T3098规定  
2. 螺栓预紧力矩根据相关机械设计手册整理编辑，供您参考

Notes: 1. The mechanical property of the bolt set shall be able to meet the provisions of GB/T3098.  
2. The pretightening torque of bolt is collated and edited as per related mechanical design manual for your reference.

