



十字轴式万向联轴器

Universal Joint Shafts for Industrial Applications



无锡市万向联轴器有限公司
Wuxi Driveshafts Co., Ltd.

Introduction 企业简介 to Company

无锡万向联轴器有限公司（无锡万向）成立于1987年，专业从事十字轴式万向轴及各类鼓形齿式联轴器的研发、生产、销售和服务。同行业首家获得了ISO 9001质量体系认证。无锡万向设备先进，占地面积25,000m²，现有员工200人。

公司的产品年产量10,000余套，在国内市场占领先地位，并远销世界20多个国家和地区。

Founded in 1987, **Wuxi Driveshafts Co. Ltd (WDC)** is an ISO 9001 certified company that has been specializing in R & D, production, sales and service of universal joint shafts and gear couplings. WDC has a well-equipped facility covering an area of 25,000 m², combined with a dedicated workforce of about 200 employees.

With the annual output of over 10000 shaft assemblies, WDC commands a leading market share in China and has customers in over 20 different countries and regions worldwide.



你需要的质量，
The quality you expect.

你需要的服务，
The services you deserve.

你需要的解决方案。
The solutions you need.



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一、产品简介

十字轴式万向联轴器简称万向轴。是应用日益广泛的传动基础件。SWC型万向轴是万向轴族种结构最紧凑，承载能力最大，可靠性最高的一种型式。

我厂集二十年生产万向轴之经验，学习借鉴国外先进技术并运用有限元仿真手段，对SWC型万向轴进行了三次换代设计改进，从而使结构日趋完善，性能显著提高，外形更加美观。而且在JB5513-2006产品标准的基础上增加了SWCD-短型系列和具有我公司独立知识产权的专利产品-空心万向轴系列，进一步满足了顾客的多样性需求。

近年来，我公司确立实施了“专心致志，聚精会神，建中国工业万向轴研发生产基地，创鑫鼎世界知名品牌”的企业定位；坚持了“细节决定成败”的质量理念；并实现了加工设备“专机化、数控化”。从而保证了我公司SWC型万向轴产品质量迅速提高；逐步缩小了与世界著名厂家的差距。进入新世纪以来，我们的万向轴产品已走出国门，大批量出口欧美市场。

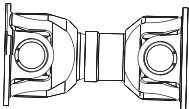
An Overview of Products

Universal joint couplings, commonly known as u-joint shafts, are a type of power transmission components that find increasingly widespread applications. The SWC type u-joint shafts are a category with the most compact structure, the largest bearing capacity and the highest operational reliability in the universal joint family.

Drawing on 20 years of experience in universal joint engineering and the advanced world technology as well as by using the Finite Element Analysis method, we have made three essential innovations to the designs of SWC universal joint shafts, which have greatly enhanced the structure, the performance and the artistic look of the products. Moreover, in addition to the national standard JB5513-2006 product lines, we have developed the SWCD Short Series and the Hollow U-joint Series for which we own patent rights, in order to meet the diverse needs of our customers.

Over the years, we have established and implemented the corporate objective of "focusing on and setting our minds to building our company into an R & D and production base for China's industrial universal joint shafts and building Bixi into a world known brand name; we have adhered to the belief of "the key to success is the attention to details" for quality improvement; and we have achieved the strategic goal of specialized and numerically controlled machining equipment. As a result, we are able to enhance the quality of our SWC universal joint products rapidly to narrow the gap with the best known producers in the world. As we entered the new century, our u-joint products have found their way to the world markets and have been exported to the European and American markets in large quantities.



系列		法兰直径	扭矩范围
Series		Flange Diameters (mm)	Torque Range (NM)
■ 轻型	SWC-I Light Duty	58-225	180-22,000
			
■ 长寿命型	SWCL Duty	160-390	40,000-225,000
			
■ 中型	SWC Medium Duty	160-620	21,000-1,250,000
			
■ 重型	SWCZ Heavy Duty	680-1200	1,640,000-9,000,000
			
■ 贯穿型	KSWC Tunnel Shaft	225-490	56,000-700,000
			
■ 超短型	SWCD Short Design	275-405	25,000-90,000
			
■ 十字轴总成	Cross Assembly		
			
■ 轴套	Companion Flange Adapter		
			

简介

Description

轻型系列产品，安装角度大，转动惯量小，采用新型接管，保证其抗扭刚度，维护率低。
The light duty series SWC-I offers the unique characteristics of large operating angle, high speed, special tubing for increased torsional stiffness, low moment of inertia and low maintenance.

长寿命型系列产品，整轴采用轻量化设计，轴承拥有最大轴承寿命，低转动惯量，高抗扭刚度，保证整轴在高速运转工况下的稳定性
Our medium duty SWC series has been proven countless of times among our customers to be the most popular choice of shafts for large torque in compact design to fit a wide variety of application and with long lifetime.

中型系列产品，用途最广泛的产品系列。结构紧凑，扭矩大。
Our medium duty SWC series has been proven countless of times among our customers to be the most popular choice of shafts for large torque in compact design to fit a wide variety of application and with long lifetime.

重型系列产品，采用定炼原材料，特殊热处理工艺及合理的结构设计，保证该系列产品在高负载工况下的可靠性。
The heavy duty SWCZ series is a specially designed cardan shaft which features special cross design along with a unique and heavy shock application with increased reliability.

空心贯穿型系列产品，广泛用于Daniel型轧机，也是由于安装长度有限同时需要大伸缩量工况的选择。
Our unique and self engineered tunnel shaft, KSWC design is a very popular choice for Daniel style mills, vertical applications, and other applications which involves long length compensation in limited length space.

超短型系列产品，主要针对安装长度极度受限的工况，设计结构非常紧凑，同时还能提供一定的长度补偿。
The short design shaft SWCD was created as a solution for our customer in applications with very tight and limited space.

自制十字轴总成，同时提供进口总成及其它非标总成的转化服务。
Our cross assemblies are well known for withstanding substantial amount torque while offering long lifetime and reliability.

轴套产品，万向轴的姊妹部件，我公司提供各类型轴套的设计及生产。
A key component for mating the power transmission device to the power drive and the driven component. Our quality forged companion flange adapter will ensure problem free operations and ease of connection.

应用

Applications

造纸设备 - Paper machines
普通机械 - General machines
水泵设备 - Pumps
试验台 - Test machines

造纸设备 - Paper machines
地下卷曲机 - Down coiler
水泵设备 - Pumps
船舶驱动 - Marine drives

轧钢机 - Rolling mills
船舶驱动 - Marine drives
起重机 - Crane
矫直机 - Straightening machines

穿孔机 - Tube Piercer
板材轧机主传动 - Plate mill R1&R2
破碎机 - Crushers
风电试验台 - Wind mill test machine

棒材轧机 - Bar mill
H型钢轧机 - H Beam

机车驱动 - Locomotives
船舶驱动 - Marine
风电 - Wind mill





产品应用实例
Application examples





二、技术参数 Engineering Data

1、SWC-I型—轻型十字轴式万向联轴器

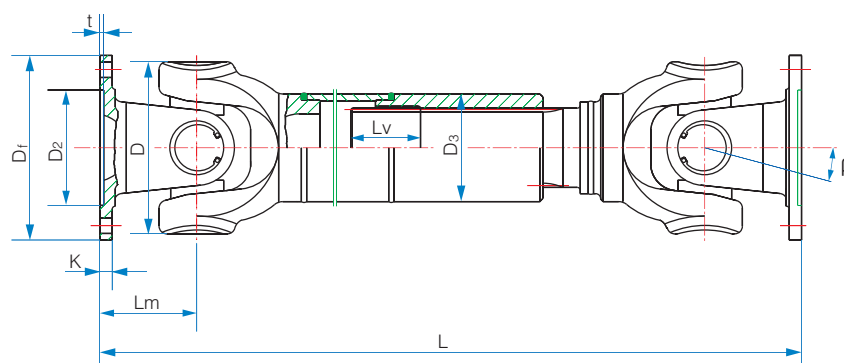
SWC-I Series —Light-Duty Designs

结构形式

Designs

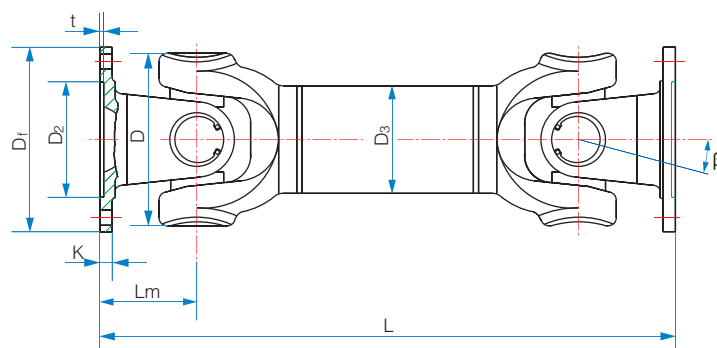
A型—可伸缩焊接型

Type A – Welded shaft design,
with length compensation



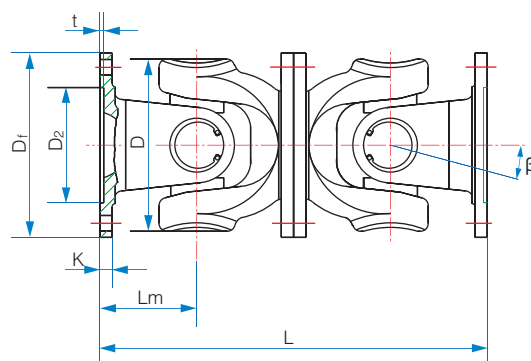
B型—无伸缩焊接型

Type B – Welded shaft design,
without length compensation



C型—无伸缩单元结构短型

Type C – Short flanged design,
without length compensation



法兰螺栓孔布置

Flange bolthole patterns

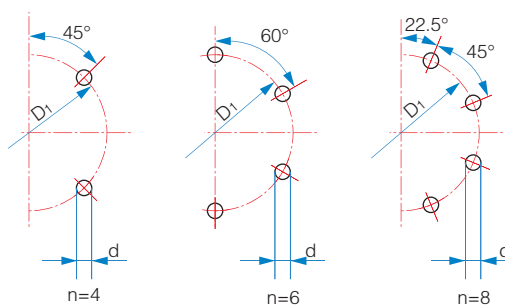


表1: SWC-I型万向联轴器的基本参数与主要尺寸

Data and Sizes of SWC-I Series Universal Joint Couplings

Table 1

型式 type	数值data	型号 design	SWC-I 58	SWC-I 65	SWC-I 75	SWC-I 90	SWC-I 100	SWC-I 120	SWC-I 150	SWC-I 180	SWC-I 200	SWC-I 225
	项目item											
A型	L		255	285	335	385	445	500	590	640	775	860
	Lv		35	40	40	45	55	80	80	80	100	120
	m(kg)		2.2	3.0	5.0	6.6	9.5	17	32	40	76	128
B型	L		150	175	200	240	260	295	370	430	530	600
	m(kg)		1.7	2.4	3.8	5.7	7.7	13.1	23	28	55	98
C型	L		128	156	180	208	220	252	340	348	440	480
	m(kg)		1.3	1.95	3.1	5.0	7.0	12.3	22	30	56	96
T _n (N·m)			180	240	500	800	1200	2300	4500	8400	16000	22000
T _f (N·m)			90	120	250	400	600	1150	2250	4200	8000	11000
β (°)			35	35	35	35	35	35	35	25	25	25
D			52	63	72	92	100	112	142	154	187	204
D _f			58	65	75	90	100	120	150	180	200	225
D ₁			47	52	62	74.5	84	101.5	130	155.5	170	196
D ₂ (H9)			30	35	42	47	57	75	90	110	125	140
D ₃ ×δ			38X1.5	45X1.5	63.5X2.5	63.5X2.5	89X2.5	89X2.5	120X3	120X3	127X5.5	140X6.5
L _m			32	39	45	52	55	63	85	87	110	120
K			3.5	4.5	5.5	6.0	8.0	8.0	10.0	12.0	14.0	15.0
t			1.5	1.7	2.0	2.5	2.5	2.5	3.0	4.0	4.0	5.0
n			4	4	6	4	6	8	8	8	8	8
d			5.1	6.5	6.5	8.5	8.5	10.5	13	15	17	17
m _L (kg)			0.14	0.16	0.38	0.38	0.53	0.53	0.87	0.87	1.65	2.14
法 兰 螺 栓 Flange bolt	规格size		M5	M6	M6	M8	M8	M10	M12	M14	M16	M16
	拧紧力矩 (N·m) Tightening torque		7	13	13	32	32	64	110	180	270	270

注：1. 上表中各代号含义如下：

- L — 标准长度，对可伸缩型而言，长度L系缩短状态下的最小长度；
- L_v — 伸长量；
- m — 质量；
- T_n — 公称转矩；
- T_f — 疲劳转矩，即在交变负荷作用下按疲劳强度确定的许用转矩；
- β — 最大轴线折角；
- δ — 接管壁厚；
- m_L — 增长100mm的质量。

2. 上表中未注明计量单位者按毫米计；

3. 用户需要改变标准长度、伸缩量和法兰型式尺寸时，请和我厂商定。

1. Notations:

L = Standard length, or compressed length for designs with length compensation;

L_v = Length compensation;

m = Weight;

T_n = Nominal torque;T_f = Fatigue torque, i.e. permissible torque as determined according to the fatigue strength under reversing loads;

β = Maximum deflection angle;

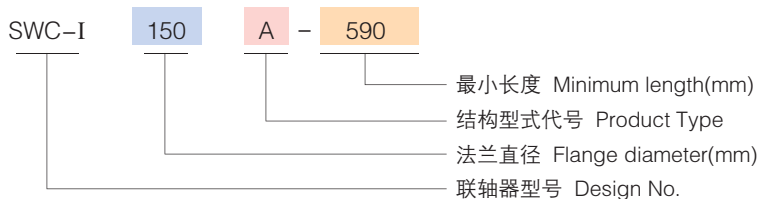
δ = Thickness of the tube;

m_L = weight per 100mm tube.

2. Millimeters are used as measurement units except where noted;

3. Please consult us for customizations regarding length, length compensation and flange connections. (DIN or SAE etc.)

标记示例 Example



2、SWCL型 — 中型十字轴式万向联轴器

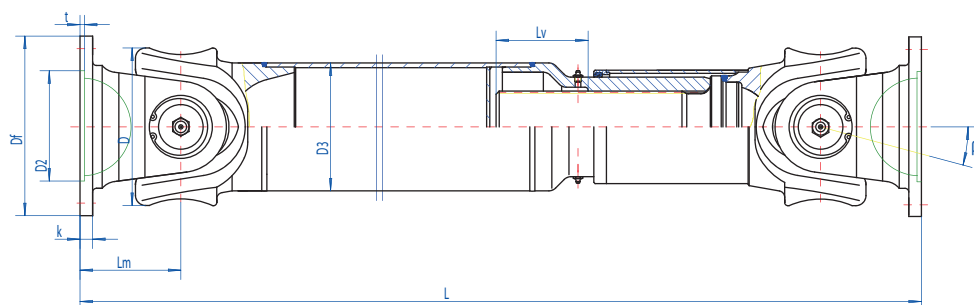
SWCL Series – Medium-Duty Designs

结构形式

Designs

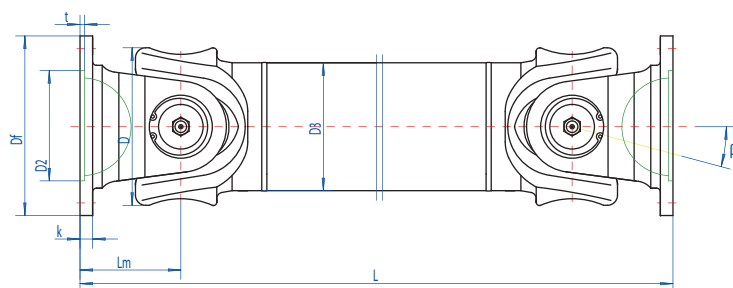
A型—可伸缩焊接型

Type A – Welded shaft design,
with length compensation



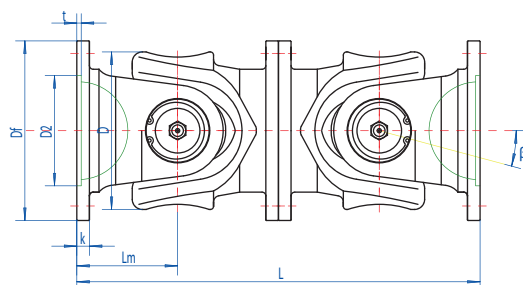
B型—无伸缩焊接型

Type B – Welded shaft design,
without length compensation



C型—无伸缩单元结构短型

Type C – Short flanged design,
without length compensation



法兰螺栓孔布置

Flange bolthole patterns

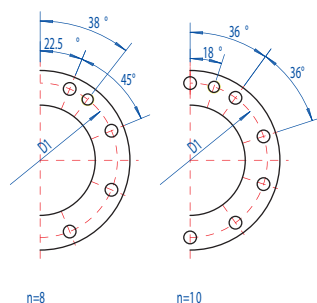


表2: SWCL型万向联轴器的基本参数与主要尺寸

Data and Sizes of SWC Series Universal Joint Couplings

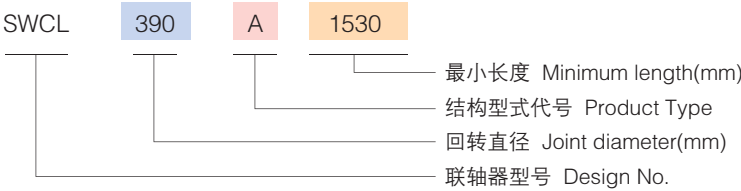
Table 2

型式 type	数值data 项目item	型号 design	SWCL 225	SWCL 250	SWCL 285	SWCL 315	SWCL 350	SWCL 390
A	L		960	1010	1150	1300	1420	1570
	LV		140	140	140	140	200	200
	m(kg)		130	185	255	360	510	680
B	L		630	690	770	870	970	1090
	m(kg)		100	140	200	280	400	550
C	L		600	640	720	800	880	1000
	m(kg)		105	135	200	270	365	940
Tn (kN · m)			40	56	80	120	160	225
Tf (kN · m)			20	28	40	58	80	110
β (°)			15	15	15	15	15	15
D			225	250	285	315	350	390
Df			250	285	315	350	390	435
D1			218	245	280	310	345	385
D2(H9)			140	175	175	220	250	280
D3x δ			180 × 7.5	203 × 7.5	219 × 9.0	245 × 11	273 × 11.5	299 × 15
Lm			150	160	180	200	220	250
K			20	20	22	25	28	32
t			6	7	7	8	8	10
n			8	8	8	10	10	10
D(+0.2)			18.1	20.1	22.1	22.1	24.1	27.1
mL(kg)			3.19	3.62	4.66	6.35	7.42	10.51
法兰 螺栓 Flange bolt	规格size		M18	M20	M22	M22	M24	M27
	拧紧力矩 (N m) Tightening torque		372	526	710	710	906	1340

- 注：1. 上表中各代号含义如下：
- L — 标准长度，对可伸缩型而言，长度L系缩短状态下的最小长度；
 - Lv — 伸长量；
 - m — 质量；
 - Tn — 公称转矩；
 - Tf — 疲劳转矩，即在交变负荷作用下按疲劳强度确定的许用转矩；
 - β — 最大轴线折角；
 - δ — 接管壁厚；
 - mL — 增长100mm的质量。
2. 上表中未注明计量单位者按毫米计；
3. 用户需要改变标准长度、伸缩量和法兰型式尺寸时，请和我厂商定。

1. Notations:
- L = Standard length, or compressed length for designs with length compensation;
Lv = Length compensation;
m = Weight;
Tn = Nominal torque;
Tf = Fatigue torque, i.e. permissible torque as determined according to the fatigue strength under reversing loads;
β = Maximum deflection angle;
δ = Thickness of the tube;
mL = weight per 100mm tube.
2. Millimeters are used as measurement units except where noted;
3. Please consult us for customizations regarding length, length compensation and flange connections.
(DIN or SAE etc.)

标记示例 Example



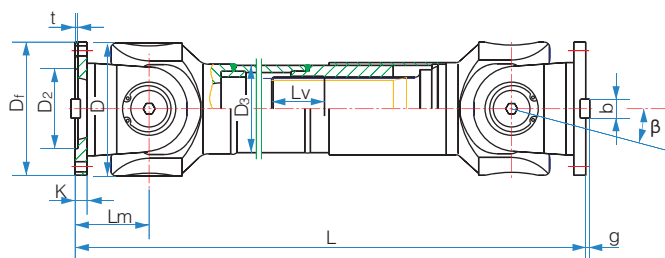
3、SWC型 —中型十字轴式万向联轴器 SWC Series – Medium-Duty Designs

结构形式

Designs

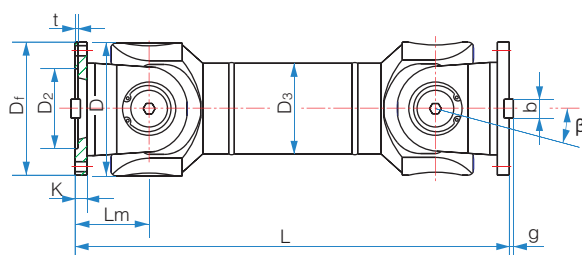
A型—可伸缩焊接型

Type A – Welded shaft design,
with length compensation



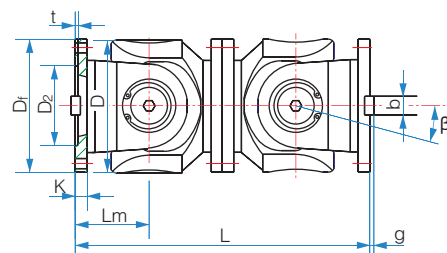
B型—无伸缩焊接型

Type B – Welded shaft design,
without length compensation



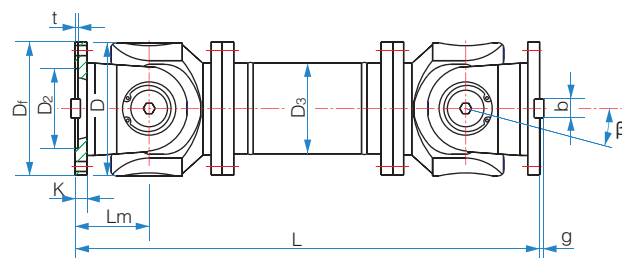
C型—无伸缩单元结构短型

Type C – Short flanged design,
without length compensation



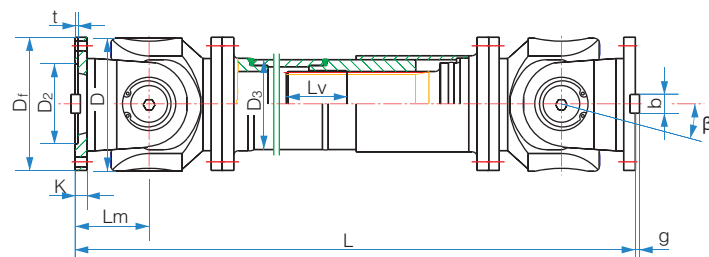
D型—无伸缩单元结构长型

Type D – Long flanged design,
without length compensation



E型—可伸缩单元结构型

Type E – Flanged shaft design,
with length compensation



法兰螺栓孔布置

Flange bolthole patterns

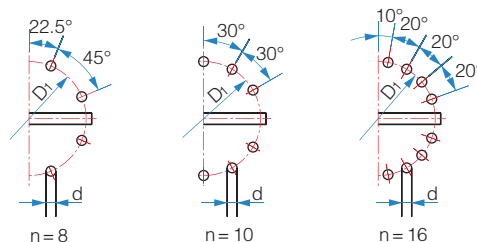


表3: SWC型万向联轴器的基本参数与主要尺寸

Data and Sizes of SWC Series Universal Joint Couplings

Table 3

型式 type	数值 data	型号 design	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC	SWC
			160	180	200	225	250	265	285	315	350	390	440	490	550	620
A	L		740	800	900	1000	1060	1120	1270	1390	1520	1530	1690	1850	2060	2280
	Lv		100	100	120	140	140	140	140	140	150	170	190	190	240	250
	m(kg)		65	83	115	152	219	260	311	432	610	804	1122	1468	2154	2830
B	L		480	530	590	640	730	790	840	930	1000	1010	1130	1240	1400	1520
	m(kg)		44	60	85	110	160	180	226	320	440	590	820	1090	1560	2100
C	L		380	420	440	500	560	600	640	720	780	860	1040	1080	1220	1360
	m(kg)		35	48	66	90	130	160	189	270	355	510	780	970	1330	1865
D	L		520	580	620	690	760	810	860	970	1030	1120	1230	1360	1550	1720
	m(kg)		48	65	90	120	173	220	250	355	485	665	920	1240	1765	2390
E	L		800	850	940	1050	1120	1180	1320	1440	1550	1710	1880	2050	2310	2540
	Lv		100	100	120	140	140	140	140	140	150	170	190	190	240	250
	m(kg)		70	92	126	168	238	280	340	472	660	886	1230	1625	2368	3135
T _n (kN·m)			21	28	40	56	80	100	120	160	225	320	500	700	1000	1250
T _f (kN·m)			10.5	14	20	28	40	50	58	80	110	160	250	350	500	625
β (°)			15	15	15	15	15	15	15	15	15	15	15	15	15	15
D			160	180	200	225	250	265	285	315	350	390	440	490	550	620
D _f			160	180	200	225	250	265	285	315	350	390	440	490	550	620
D ₁			137	155	170	196	218	233	245	280	310	345	390	435	492	555
D ₂ (H9)			100	105	120	135	150	160	170	185	210	235	255	275	320	380
D ₃ ×δ			114×10	127×10.5	146×11.5	159×10.5	180×12.5	194×13.5	203×14.5	219×16.5	245×19	273×21	325×25	351×30	402×32	426×40
L _m			95	105	110	125	140	150	160	180	195	215	260	270	305	340
K			16	17	18	20	25	25	27	32	35	40	42	47	50	55
t			4	5	5	5	6	6	7	8	8	8	10	12	12	12
n			8	8	8	8	8	8	8	10	10	10	16	16	16	16
d			15	17	17	17	19	19	21	23	23	25	28	31	31	38
b			20	24	28	32	40	40	40	40	50	70	80	90	100	100
g			6.0	7.0	8.0	9.0	12.5	12.5	15.0	15.0	16.0	18.0	20.0	22.5	22.5	25
m _L (kg)			2.57	3	3.82	3.85	5.17	6	6.75	8.25	10.6	13	18.50	23.75	29.12	38.08
法兰 螺栓 Flange bolt	规格Size		M14	M16	M16	M16	M18	M18	M20	M22	M22	M24	M27	M30	M30	M36
	拧紧力矩 (N·m) Tightening torque		180	270	270	270	372	372	526	710	710	906	1340	1820	1820	3170

注: 1. 上表中各代号含义如下:

- L — 标准长度, 对可伸缩型而言, 长度L系缩短状态下的最小长度;
- Lv — 伸长量;
- m — 质量;
- T_n — 公称转矩;
- T_f — 疲劳转矩, 即在交变负荷作用下按疲劳强度确定的许用转矩;
- β — 最大轴线折角;
- δ — 接管壁厚;
- m_L — 增长100mm的质量。

2. 上表中未注明计量单位者按毫米计;

3. 用户需要改变标准长度、伸缩量和法兰型式尺寸时, 请和我厂商定。

1. Notations:

L = Standard length, or compressed length for designs with length compensation;

Lv = Length compensation;

m = Weight;

T_n = Nominal torque;

T_f = Fatigue torque, i.e. permissible torque as determined according to the fatigue strength under reversing loads;

β = Maximum deflection angle;

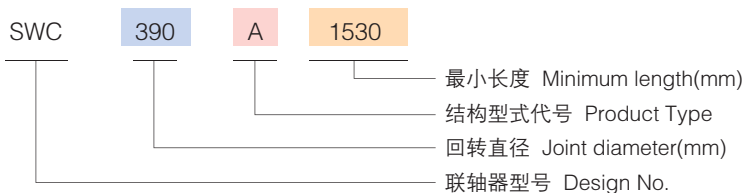
δ = Thickness of the tube;

m_L = weight per 100mm tube.

2. Millimeters are used as measurement units except where noted;

3. Please consult us for customizations regarding length, length compensation and flange connections.
(DIN or SAE etc.)

标记示例 Example



4、SWCZ型 — 重型十字轴式万向联轴器

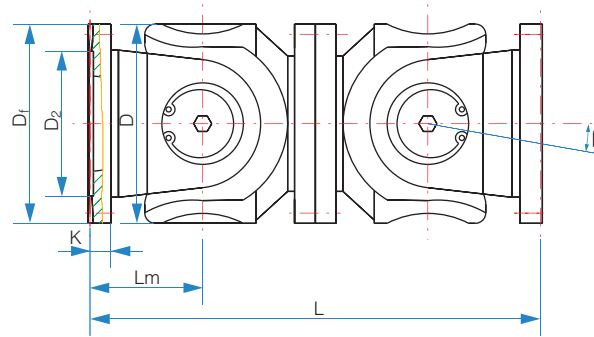
SWCZ Series – Heavy-Duty Designs

结构形式

Designs

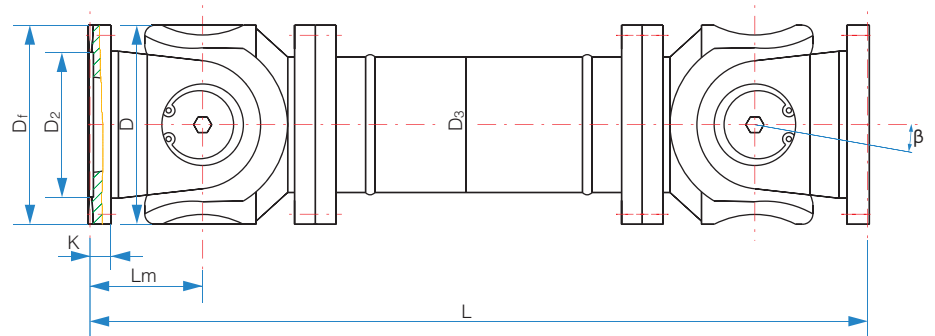
C型—无伸缩单元结构短型

Type C – Short flanged design,
without length compensation



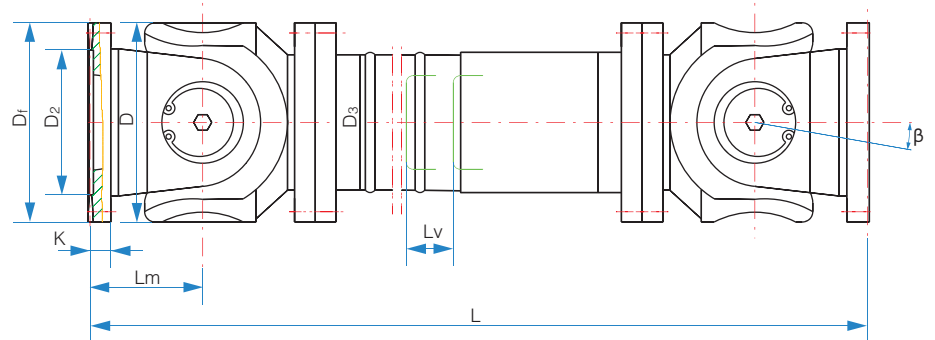
D型—无伸缩单元结构长型

Type D – Long flanged design,
without length compensation



E型—可伸缩单元结构型

Type E – Flanged shaft design,
with length compensation



端面齿法兰螺栓孔布置

Hirth serration flange
bolthole patterns

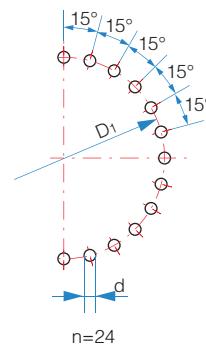
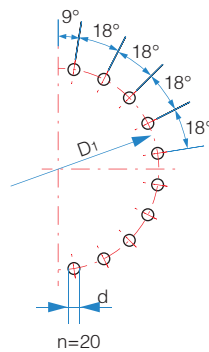


表4: SWCZ型万向联轴器的基本参数与主要尺寸
Data and Sizes of SWCZ Series Universal Joint Couplings

Table 4

型式 type	数值 data 项目 item	型号 design	SWCZ 680	SWCZ 700	SWCZ 750	SWCZ 780	SWCZ 800	SWCZ 840	SWCZ 900	SWCZ 920	SWCZ 1000	SWCZ 1060	SWCZ 1100	SWCZ 1200
C	L		1540	1600	1840	1920	1920	2120	2280	2280	2380	2480	2500	2720
	m(kg)		3150	3450	4300	4680	5050	6400	8420	8950	10600	12100	13500	16900
D	L		1940	2100	2400	2500	2500	2680	2950	2950	3130	3200	3300	3570
	m(kg)		3220	3530	4500	5400	5800	7470	9980	10500	12300	14500	15800	19500
E	L		3230	3460	3620	4000	4000	4250	4580	4850	4770	4950	5100	5660
	Lv		250	250	250	250	250	250	300	300	300	300	300	300
	m(kg)		4880	5400	8000	8450	9070	11800	15900	16500	19900	22000	27500	34800
T _n (kN·m)			1640	1750	2250	2500	2670	3100	3800	4050	5200	6500	6900	9000
T _f (kN·m)			980	1050	1350	1500	1600	1860	2280	2430	3120	3900	4140	5400
β (°)			15	15	15	15	15	15	15	15	15	15	15	15
D			680	700	750	780	800	840	900	920	1000	1060	1100	1200
D _f			680	700	750	780	800	840	900	920	1000	1060	1100	1200
D ₁			635	635	695	725	745	775	835	855	915	980	1015	1100
D ₂ (H9)			550	570	610	640	660	710	740	760	840	840	920	1000
D ₃			560	560	620	660	660	660	750	750	790	800	850	900
L _m			385	400	480	480	480	530	570	570	595	620	625	680
K			70	70	95	95	95	110	120	120	130	130	130	130
n			24	24	24	24	24	24	24	24	20	20	20	20
d			26	26	31	31	36	38	38	38	50	45	50	58
法兰螺栓 Flange bolt			M24	M24	M30	M30	M30	M36	M36	M36	M48	M42	M48	M56

注：1. 上表中各代号含义如下：

- L — 标准长度，对可伸缩型而言，长度L系缩短状态下的最小长度；
- L_v — 伸长量；
- m — 质量；
- T_n — 公称转矩；
- T_f — 疲劳转矩，即在交变负荷作用下按疲劳强度确定的许用转矩；
- β — 最大轴线折角。

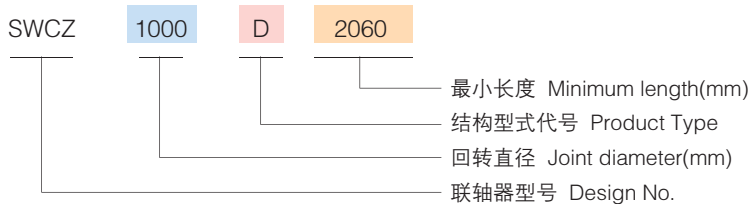
2. 上表中未注明计量单位者按毫米计；
3. 用户需要改变标准长度、伸缩量和法兰型式尺寸时，请和我厂商定。

1. Notations:

- L = Standard length, or compressed length for designs with length compensation;
L_v = Length compensation;
m = Weight;
T_n = Nominal torque;
T_f = Fatigue torque, i.e. permissible torque as determined according to the fatigue strength under reversing loads;
β = Maximum deflection angle.

2. Millimeters are used as measurement units except where noted;
3. Please consult us for customizations regarding length, length compensation and flange connections.

标记示例 Example



5、KSWC型 一空心十字轴式万向联轴器
KSWC Series – Tunnel Shafts

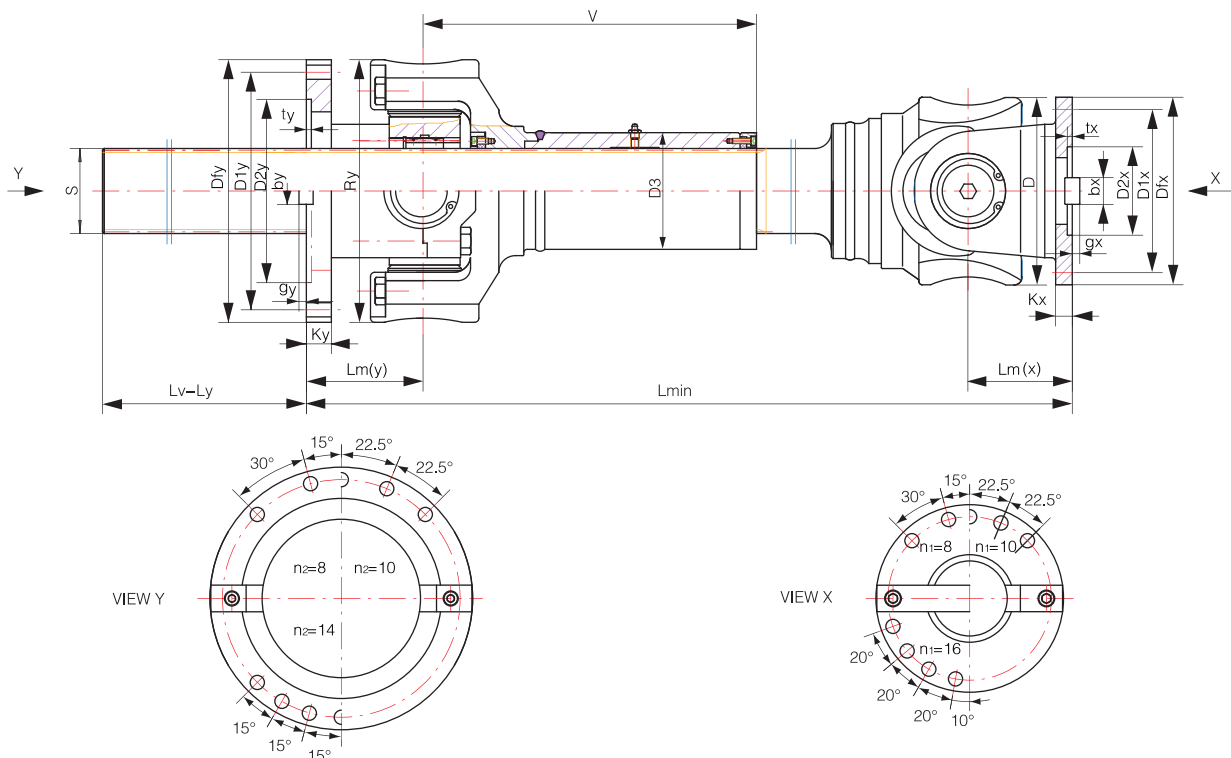


表5: KSWC正装贯穿式联轴器参数表

Table 5

型号	回转直径 Dfx/Dfy	公称转矩 Tn kn.m	疲劳扭矩 Tp kn.m	轴线折角 $\beta(^{\circ})$	伸缩量 Lv(mm)	尺寸(mm)										
						Lmin	Dfx	D1x	D2x	bx	tx	gx	Kx	Lm(x)	Dfy	Ly
KSWC225	225/315	56	28	5° /15°	650	920	225	196	105	32	5	9	20	125	315	190
KSWC250	250/330	80	40		700	1020	250	218	115	40	5	12.5	25	140	330	200
KSWC285	285/390	120	58		750	1140	285	245	135	40	7	15	27	160	390	230
KSWC315	315/435	160	80		750	1300	315	280	150	40	7	15	32	180	435	250
KSWC350	350/480	225	110		800	1445	350	310	165	50	8	16	35	195	480	290
KSWC390	390/520	320	160		800	1605	390	345	185	70	8	18	40	215	520	320
KSWC440	440/600	500	250		900	1760	435	385	200	80	10	20	42	260	600	390
KSWC490	490/650	700	350		900	1955	480	425	225	90	12	22.5	47	290	650	410

型号	尺寸(mm)													重量(kg)	
	D1y	D2y	by	ty	gy	Ky	Lm(y)	n1-d1	n2-d2	S	D3	V	Ry	Lmin	增长 100mm
KSWC225	285	220	32	5	9	28	140	8-Φ17	8-Φ17	102.18	146	395	315	215	6.4
KSWC250	315	240	40	7	12.5	30	150	8-Φ19	8-Φ19	117.72	159	435	330	283	8.5
KSWC285	355	270	40	8	15	40	170	8-Φ21	8-Φ21	127.7	180	480	390	400	10
KSWC315	390	300	40	8	15	42	190	10-Φ23	10-Φ23	137.5	203	565	435	533	11.6
KSWC350	435	335	40	10	16	47	210	10-Φ23	10-Φ23	165.2	219	630	480	721	16.8
KSWC390	480	385	70	10	18	50	230	10-Φ25	10-Φ25	177.24	245	695	520	1013	19.4
KSWC440	550	420	80	12	20	60	280	16-Φ28	10-Φ28	201.25	273	735	600	1410	25
KSWC490	595	450	90	15	22.5	60	290	16-Φ31	14-Φ31	225.25	325	810	650	2040	31.3

1. 长度Lmin为允许的最短长度，实际尺寸可以根据需要在确定：须 $\geq$ Lmin
2. 伸缩量Lv可以根据实际尺寸确定
3. 以上数据仅供参考

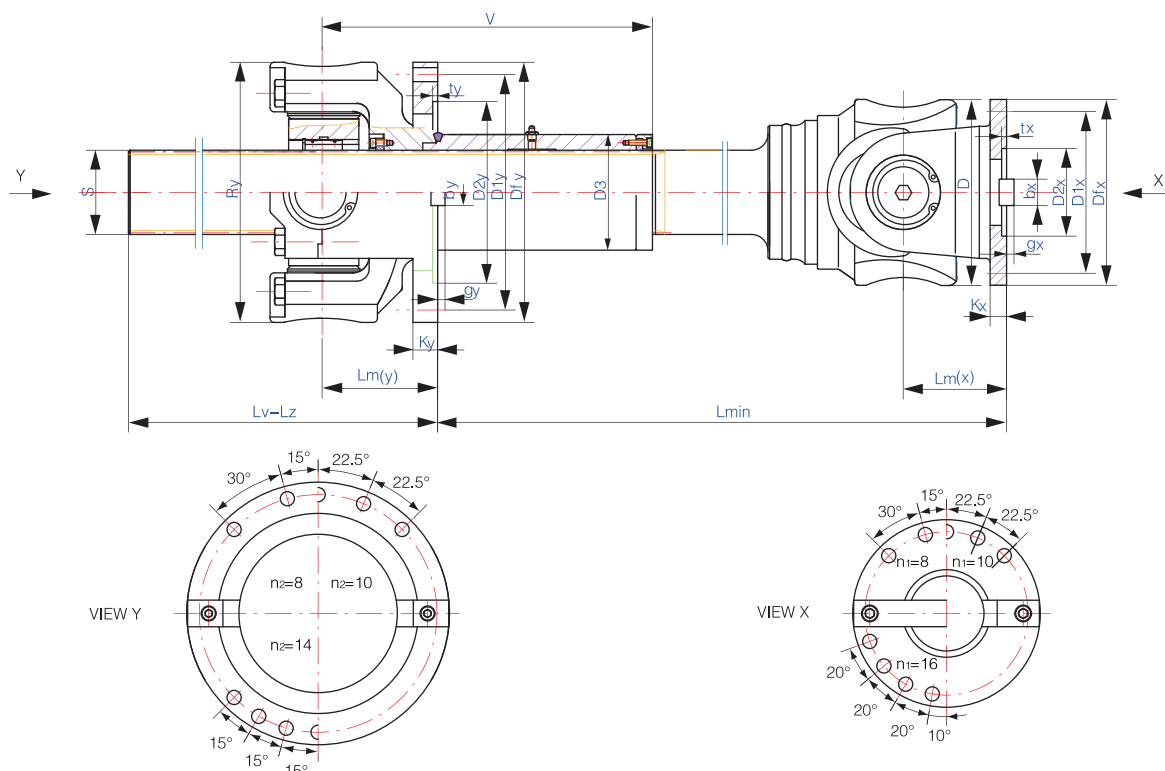


表6: KSWC正装贯穿式联轴器参数表

Table 6

型号	回转直径 Dfx/Dfy	公称转矩 Tn kn.m	疲劳扭矩 Tp kn.m	轴线折角 $\beta(^{\circ})$	伸缩量 Lv(mm)	尺寸(mm)										
						Lmin	Dfx	D1x	D2x	bx	tx	gx	Kx	Lm(x)	Dfy	Ly
KSWC225	225/315	56	28	5° /15°	650	920	225	196	105	32	5	9	20	125	315	190
KSWC250	250/330	80	40		700	1020	250	218	115	40	5	12.5	25	140	330	200
KSWC285	285/390	120	58		750	1140	285	245	135	40	7	15	27	160	390	230
KSWC315	315/435	160	80		750	1300	315	280	150	40	7	15	32	180	435	250
KSWC350	350/480	225	110		800	1445	350	310	165	50	8	16	35	195	480	290
KSWC390	390/520	320	160		800	1605	390	345	185	70	8	18	40	215	520	320
KSWC440	440/600	500	250		900	1760	435	385	200	80	10	20	42	260	600	390
KSWC490	490/650	700	350		900	1955	480	425	225	90	12	22.5	47	290	650	410

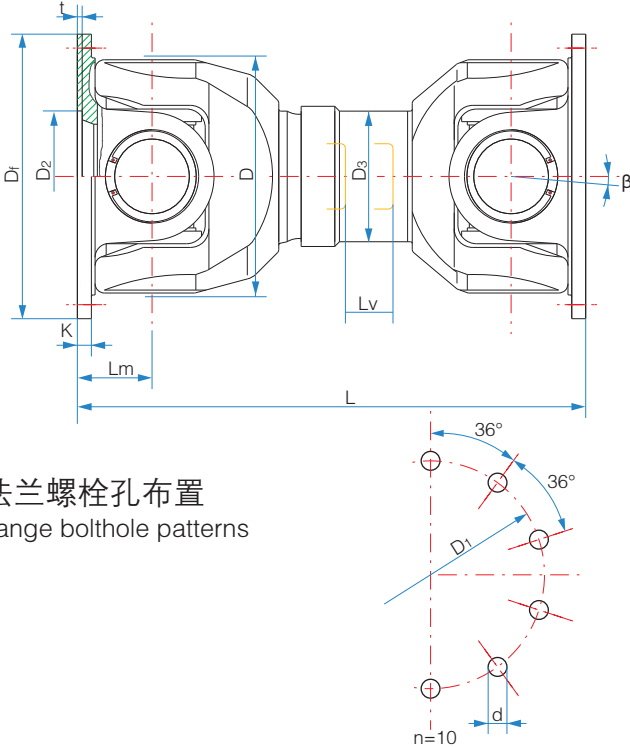
型号	尺寸(mm)													重量(kg)	
	D1y	D2y	by	ty	gy	Ky	Lm(y)	n1-d1	n2-d2	S	D3	V	Ry	Lmin	增长 100mm
KSWC225	285	220	32	5	9	28	140	8-Φ17	8-Φ17	102.18	146	395	315	215	6.4
KSWC250	315	240	40	7	12.5	30	150	8-Φ19	8-Φ19	117.72	159	435	330	283	8.5
KSWC285	355	270	40	8	15	40	170	8-Φ21	8-Φ21	127.7	180	480	390	400	10
KSWC315	390	300	40	8	15	42	190	10-Φ23	10-Φ23	137.5	203	565	435	533	11.6
KSWC350	435	335	40	10	16	47	210	10-Φ23	10-Φ23	165.2	219	630	480	721	16.8
KSWC390	480	385	70	10	18	50	230	10-Φ25	10-Φ25	177.24	245	695	520	1013	19.4
KSWC440	550	420	80	12	20	60	280	16-Φ28	10-Φ28	201.25	273	735	600	1410	25
KSWC490	595	450	90	15	22.5	60	290	16-Φ31	14-Φ31	225.25	325	810	650	2040	31.3

1. 长度Lmin为允许的最短长度，实际尺寸可以根据需要在确定：须 $\geq$ Lmin
2. 伸缩量Lv可以根据实际尺寸确定
3. 以上数据仅供参考



6、SWCD型 —短型十字轴式万向联轴器
SWCD Series — Short Designs

结构形式
Designs



法兰螺栓孔布置
flange bolthole patterns

- 注：1. 上表中各代号含义如下：
- L — 标准长度，对可伸缩型而言，长度L系缩短状态下的最小长度；
 - Lv — 伸长量；
 - m — 质量；
 - Tn — 公称转矩；
 - Tf — 疲劳转矩，即在交变负荷作用下按疲劳强度确定的许用转矩；
 - β — 最大轴线折角。
2. 上表中未注明计量单位者按毫米计；
3. 用户需要改变标准长度、伸缩量和法兰型式尺寸时，请和我厂商定。

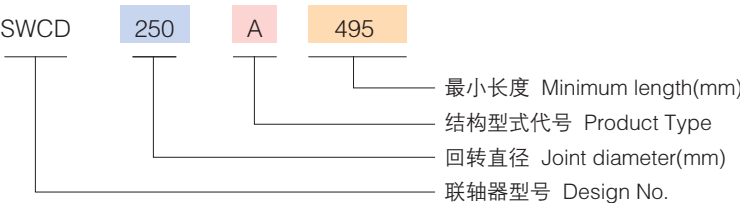
表7: SWCD型万向联轴器的基本参数与主要尺寸
Data and Sizes of SWCD Series Universal Joint Couplings

Table 7

型号 design	SWCD 215	SWCD 250	SWCD 285	SWCD 315	SWCD 350
数值 data					
项目 item					
L	415	495	545	600	688
Lv	40	40	40	40	55
m(kg)	60	98	120	169	256
Tn (kN.m)	25	35.5	40	63	90
Tf (kN.m)	12.5	18	20	31.5	45
β (°)	5	5	5	5	5
D	215	225	250	285	315
Df	275	305	348	360	405
D1	248	275	314	328	370
D2(H9)	140	140	175	175	220
D3	114	140	152	168	194
Lm	68	80	90	100	108
K	15	15	18	18	22
t	4.2	5.2	6.2	6.2	6.8
n	10	10	10	10	10
d	15	17	19	19	21

1. Notations:
- L = Standard length, or compressed length for designs with length compensation;
Lv = Length compensation;
m = Weight;
Tn = Nominal torque;
Tf = Fatigue torque, i.e. the permissible torque as determined according to the fatigue strength under reversing loads;
β = Maximum deflection angle.
2. Millimeters are used as measurement units except where noted;
3. Please consult us for customizations regarding length, length compensation and flange connections.

标记示例 Example



三、十字轴总成的结构型式及主要参数

Designs and Data of Journal Cross Assemblies

不同型号的十字轴式万向联轴器，其十字轴总成的结构型式和主要参数各不相同，常用的SWC-I型轻型十字轴式万向联轴器和SWC型中型十字轴式万向联轴器十字轴总成的外部结构和主要尺寸见下图和表8、表9。用户可根据需要选用。

The designs and technical data of journal cross assemblies vary with different types of universal joint shafts. The most commonly used are the cross assemblies for SWC-I Series and SWC Series Universal joint shafts, whose configurations and specifications are shown in the following illustrations and tables. Customizations are available on request.

SWC-I 型万向联轴器的十字轴总成 Cross Assemblies for SWC-I Series Universal Joint Shafts

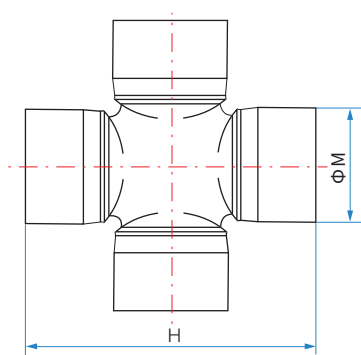


表8

联轴器规格 Coupling Specifications	Φ M (mm)	H (mm)
SWC-I 58	17	44
SWC-I 65	20	55
SWC-I 75	24	62
SWC-I 90	27	81.7
SWC-I 100	30	88

Table 8

联轴器规格 Coupling Specifications	Φ M (mm)	H (mm)
SWC-I 120	35	98
SWC-I 150	45	126
SWC-I 180	50	135
SWC-I 200	59	168
SWC-I 225	72	180

SWC 型万向联轴器的十字轴总成 Cross Assemblies for SWC Series Universal Joint Shafts

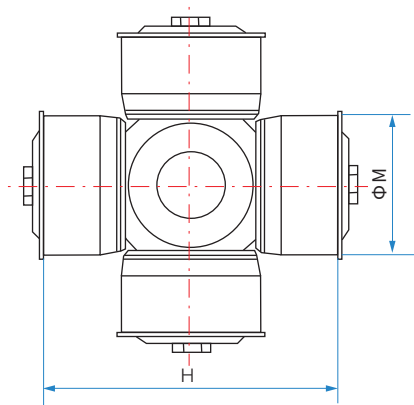


表9

联轴器规格 Coupling Specifications	Φ M (mm)	H (mm)
SWC160	65	136
SWC180	72	154
SWC200	82	171
SWC225	90	192
SWC250	100	214
SWC265	108	226
SWC285	115	243

Table 9

联轴器规格 Coupling Specifications	Φ M (mm)	H (mm)
SWC315	130	269
SWC350	145	299
SWC390	165	333
SWC440	185	377
SWC490	210	419
SWC550	240	472
SWC620	265	526

KSWC 型空心万向联轴器的十字轴总成 Cross Assemblies for KSWC Series Universal Joint Shafts

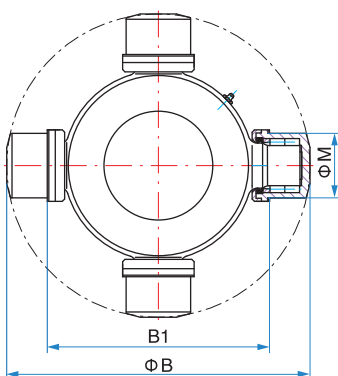


表10

联轴器规格 Coupling Specifications	Φ B (mm)	A (mm)	Φ B1 (mm)
KSWC225	315	74	225
KSWC250	327	74	237
KSWC285	390	83	286
KSWC315	436	95	318
KSWC350	480	110	350
KSWC390	519	120	376
KSWC440	600	130	436
KSWC490	650	154	475

Table 10





产品应用实例
Application examples





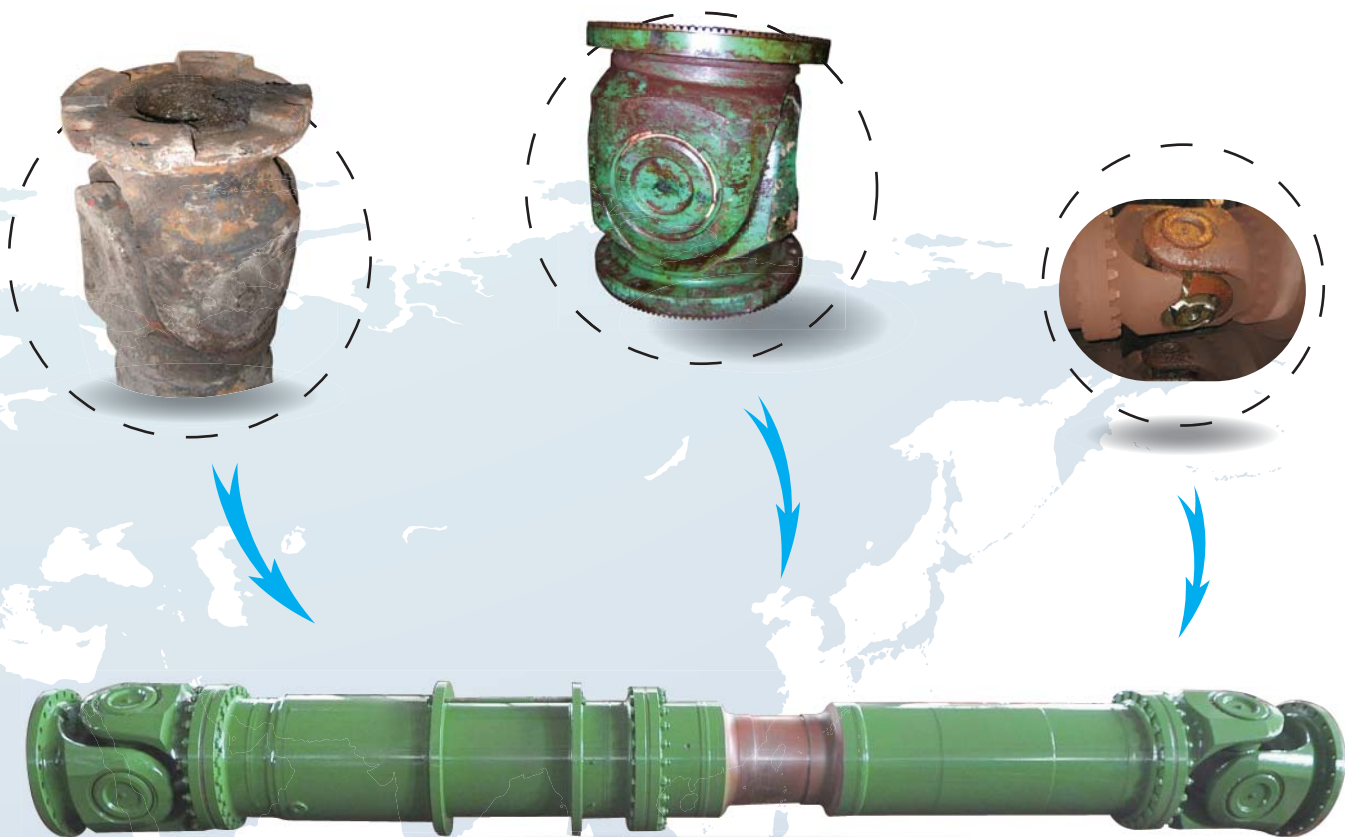


三、万向轴维修服务

——“产品重生”计划(Domestic Use Only)

- 诚然，任何一个产品的寿命都是有限的
- 幸运的是，万向轴的损坏并不意味着完全的损失
- 根据我们的统计，80%的产品损坏仅仅是1/4的零件损坏
- 无论正常的磨损还是非正常的损坏，万向轴的意外罢工，都意味着巨大的后续成本——停机、关联设备的损坏等等
- 采取适当的预防措施，可以为您减少投资、节约成本
- 万向轴——值得一修，而且您将从中受益！





“产品再造” 流程

- 1、现场确认，确定能否继续修复，并初步报价
- 2、物流公司，产品运回
- 3、拆解、清洗、检查，出具检查报告并报价
- 4、更换件制作、产品按新品出厂标准修复
- 5、产品发回，客户体验



四、万向联轴器联接法兰的型式及配套法兰轴套的说明

Flange Connections and Companion Flange Adapters

● 万向联轴器一般是通过两端外侧叉头的法兰与配套法兰轴套的法兰相联。叉头的法兰有下图所示四种结构型式，分别为纯螺栓孔联接法兰以及端面键联接法兰、牙嵌式联接法兰和端面齿联接法兰。

● The universal joint shaft is normally connected to the flange adapters at both ends by flanging and bolting the outboard yoke flanges to the flanges of the flange adapters. There are four types of flange connections as shown below:



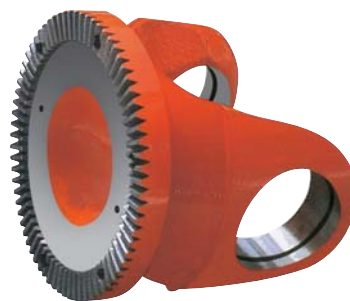
纯螺栓孔联接法兰
Bolt hole connection



端面键联接法兰
Face key connection



牙嵌式联接法兰
Integral face pad connection



端面齿联接法兰
Hirth serration connection

用户可根据需要进行选择并应在订货时说明。

Please specify your choice of flange connections when making orders.

● 与万向联轴器配套的法兰轴套按用户要求单独提供。要求提供法兰轴套的用户，订货时应向我厂提供设计图纸，或提出明确要求由我厂代为设计。供设计法兰轴套所需的数据，请用户确定轴套型式(圆孔或扁孔)后，填入表11或表12传真给我厂。

● The companion flange adapters are provided separately on request. Customers requesting flange adapters can either provide us with relevant drawings, or specify requirements for customized designing. If you need our assistance in companion flange designing, please determine the type of companion flange required (cylindrical bore or flat bore). Then complete Table11 or Table12 with related dimensional data and fax it back to us.

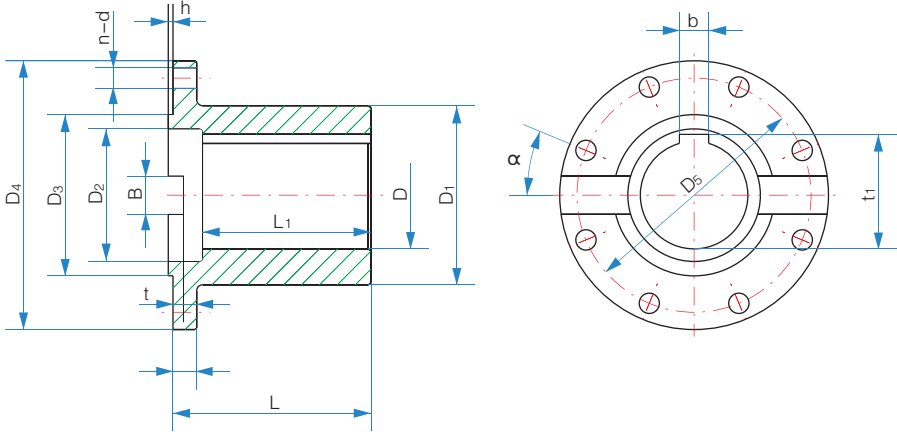


表11: 典型圆柱形孔法兰轴套数据表

Table11 Technical Data for Standard Cylindrical Bore Companion Flanges

单位 Unit: mm

相配万向轴规格 Specifications for Matching Universal Joints	D	D1	D2	D3	D4	D5	L	L1
SWC	K	h	t	t1	B	b	n-d	α

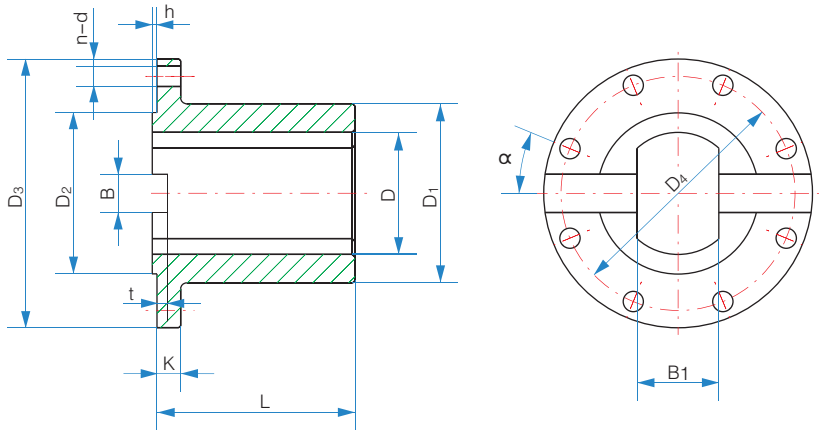


表12: 典型扁孔法兰轴套数据表

Table12 Technical Data for Standard Flat Bore Companion Flanges

单位 Unit: mm

相配万向轴规格 Specifications for Matching Universal Joints	D	D1	D2	D3	D4	L	K
SWC	h	t	B	B1	n-d	α	



五、万向联轴器选用说明 The Selection of Universal Joint Couplings

根据JB5513-91标准, SWC-I 和SWC型万向联轴器按下列方法选型。其它型号万向轴的选择请用户向我厂咨询并共同商定。

1. 万向联轴器应根据载荷特性、计算转矩、轴承寿命及工作转速选用。

2. 计算转矩由式(1)、式(2)或式(1)、式(3)求出:

$$T_c = KT \dots\dots\dots (1)$$

$$T = 9550 \frac{P_w}{n} \dots\dots\dots (2)$$

$$T = 7020 \frac{P_H}{n} \dots\dots\dots (3)$$

或

式中: T_c — 计算转矩, $N \cdot m$;

T — 理论转矩, $N \cdot m$;

P_w — 驱动功率, kW;

P_H — 驱动功率, hp;

n — 工作转速, r/min;

K — 工作情况系数, 见表10。

According as standard JB5513-91, use the following methods to select SWC-I series and SWC series universal joint shafts. Please consult us for selecting other product series.

1. Universal joint shafts are selected according to the load features, calculated torques, bearing life, and operating speed.

2. The calculated torque is acquired from Formulas (1)、(2) or (1)、(3):

$$T_c = KT \dots\dots\dots (1)$$

$$T = 9550 \frac{P_w}{n} \dots\dots\dots (2)$$

$$T = 7020 \frac{P_H}{n} \dots\dots\dots (3)$$

or

Where, T_c = Calculated torque, $N \cdot m$;

T = Theoretic torque, $N \cdot m$;

P_w = Driving power, kW;

P_H = Driving power, hp;

n = Operating speed, rpm;

K = Service factors (See Table 10)

表13: 工作情况系数K

负荷性质	使用万向轴的设备名称	K
轻冲击负荷	发电机 离心泵 通风机 木工机床 皮带运输机	1.1 ~ 1.3
中冲击负荷	压缩机(多缸) 活塞泵(多缸) 小型型钢轧机 连续线材轧机 输送机主传动	1.3 ~ 1.8
重冲击负荷	船舶驱动 运输辊道 连续管轧机 连续工作辊道 中型型钢轧机 压缩机(单缸) 活塞泵(单缸) 搅拌机 压力机 矫直机 起重机主传动 球磨机	2 ~ 3
特重冲击负荷	造纸机 起重机辅助传动 破碎机 可逆工作辊道 卷取机 破鳞机 初轧机	3 ~ 5
极重冲击负荷	轧机送料辊道 厚板剪切机	6 ~ 15

Table13 Service Factors K

Service Factor Type	Driven Equipment	K
Light shock load	Generators Centrifugal pumps Ventilators Wood handling machines Belt conveyers	1.1 ~ 1.3
Medium shock load	Compressors (multi-cyl.) Pumps (multi-cyl.) Small section mills Continuous wire mills Conveyer primary drives	1.3 ~ 1.8
Heavy shock load	Marine transmissions Transport roller tables Continuous tube mills Continuous working roller tables Medium section mills Compressors (single-cyl.) Pumps (single-cyl.) Mixers Presses Straightening machines Crane drives Ball mills	2 ~ 3
Extra heavy shock load	Paper machines Crane accessory drives Crushers Reversing working roller tables Reeling drives Scale breakers Blooming stands	3 ~ 5
Extreme shock load	Feed roller drives Plate shears	6 ~ 15

3. 一般情况下按所传递转矩和轴承寿命选择万向联轴器，也可根据机械设备的具体使用要求，只校核扭转强度或轴承寿命中的一项。

3.1 强度校核

按式(4)进行强度校核。

$$T_c \leq T_n, \text{ 或 } T_c \leq T_f \text{ 或 } T_c \leq T_P \dots\dots\dots(4)$$

式中：

T_c —计算转矩， $N \cdot m$ ；

T_n —公称转矩，即在给定条件—联轴器转速 $n \approx 10r/min$ ，轴线折角 $\beta = 3^\circ$ 以及轴承寿命 $L_N = 5000$ 小时，负荷平稳情况下的理论计算数值； $N \cdot m$ ；

T_f —在交变负荷下按疲劳强度所允许的转矩， $N \cdot m$ ；

T_P —在脉动负荷下按疲劳强度所允许的转矩， $N \cdot m$ ；

$$T_P = 1.45T_f$$

3.2 轴承寿命校核

按式(5)进行轴承寿命校核。

$$L_N = \frac{K_L}{K_1 n \beta T^{10/3}} \times 10^{10} \geq L_{min} \dots\dots(5)$$

式中： L_N —使用寿命，小时；

n —工作转速， r/min ；

β —工作时联轴器节点处的轴线折角， $(^\circ)$

K_1 —原动机系数；

电动机： $K_1 = 1$ ；

柴油机： $K_1 = 1.2$ ；

K_L —轴承容量系数，见表11；

L_{min} —轴承最小寿命，小时；

T —理论转矩， $kN \cdot m$ 。

3. Generally, universal joint shafts are selected according to the torque to be transmitted and the required bearing life. They can also be selected by checking their torque strengths or bearing life with relation to the requirements of the applicable equipment.

3.1 Checking the torsional strength using Formula (4),
 $T_c \leq T_n$ or $T_c \leq T_f$ or $T_c \leq T_P \dots\dots\dots(4)$

Where,

T_c = Calculated torque, $N \cdot m$

T_n = Nominal torque, $N \cdot m$ (i.e., a theoretically calculated value under these pre-determined conditions: speed of shaft $n \approx 10$ rpm, deflection angle $\beta = 3^\circ$, and a bearing life $L_N = 5000$ hours under even load).

T_f = Permissible torque according to the fatigue strength under alternating loads, $N \cdot m$

T_P = Permissible torque according to the fatigue strength under pulsating loads, $N \cdot m$

$$T_P = 1.45T_f$$

3.2. Checking the bearing life

Using Formula (5),

$$L_N = \frac{K_L}{K_1 n \beta T^{10/3}} \times 10^{10} \geq L_{min} \dots\dots(5)$$

Where,

L_N = Service life, hrs;

n = Operating speed, rpm;

β = Joint operating angle in operation, $(^\circ)$;

K_1 = Prime motor factor

Electric motor: $K_1 = 1$

Diesel generator: $K_1 = 1.2$

K_L = Bearing capacity factor (See Table 11);

L_{min} = Min. bearing life, hrs;

T = Theoretic torque, $kN \cdot m$.

表14: 轴承寿命系数 (Bearing Capacity Factor) K_L

Table 14

型号 design	K_L	型号 design	K_L	型号 design	K_L	型号 design	K_L
SWC - I 58	0.022×10^{-5}	SWC160	0.16	SWC440	8.25×10^3	SWCL225	9.79
SWC - I 65	0.012×10^{-4}	SWC180	0.51	SWC490	2.145×10^4	SWCL250	34.7
SWC - I 75	0.058×10^{-4}	SWC200	1.47	SWC550	6.335×10^4	SWCL285	106
SWC - I 90	0.048×10^{-3}	SWC225	7.812	SWC620	0.13×10^6	SWCL315	356
SWC - I 100	0.26×10^{-3}	SWC250	28.2	SWCZ700	0.32×10^6	SWCL350	938
SWC - I 120	0.26×10^{-2}	SWC265	54.8	SWCZ750	0.75×10^6	SWCL390	2323
SWC - I 150	2.65×10^{-2}	SWC285	82.8	SWCZ800	1.06×10^6		
SWC - I 180	3.60×10^{-2}	SWC315	279	SWCZ900	5.62×10^6		
SWC - I 200	1.03	SWC350	744	SWCZ1060	30.3×10^6		
SWC - I 225	1.89	SWC390	1860				



4. 当联轴器在水平和垂直面间同时存在轴线折角时，其合成轴线折角按式(6)计算：

$$\operatorname{tg} \beta=\sqrt{\operatorname{tg}^2 \beta_1+\operatorname{tg}^2 \beta_2} \cdots \cdots \cdots(6)$$

式中：β——合成轴线折角，(°)；
β₁——水平面的轴线折角，(°)；
β₂——垂直面的轴线折角，(°)；

5. 万向联轴器除按转矩、寿命选择外，当回转直径小于(或等于)390mm时，还应按式(7)、式(8)校核最大转速。

$$n_{\max } \leq\left[n_{\beta}\right] \cdots \cdots \cdots(7)$$

$$n_{\max } \leq\left[n_L\right] \cdots \cdots \cdots(8)$$

式中：n_{max}——最大工作转速，r/min；
[n_β]——与工作轴线折角有关的最大许用转速，见图7—1，r/min；
[n_L]——与工作长度有关的最大许用转速，见图7—2，r/min。

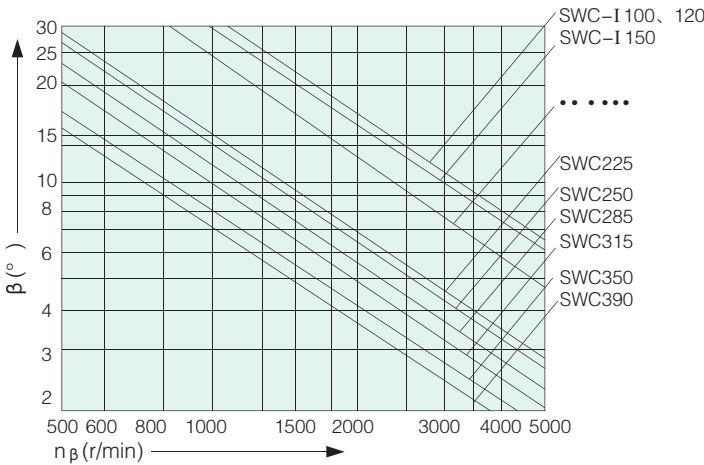


图7—1 与工作轴线折角有关的最大许用转速
Maximum permissible speed in relation to operating deflection angle

6. 万向联轴器转速超过300r/min时，要提出动平衡的精度要求，其精度等级在G16~G40范围为宜；因影响动平衡精度的因素复杂，出厂后复验时应降低一个精度等级。

4. When there are simultaneous horizontal and vertical angular misalignments on the universal joint shaft, the composite deflection angle is calculated using Formula (6):

$$\operatorname{tg} \beta=\sqrt{\operatorname{tg}^2 \beta_1+\operatorname{tg}^2 \beta_2} \cdots \cdots \cdots(6)$$

Where, β = Composite deflection angle, (°) ;
β₁ = Horizontal deflection angle, (°) ;
β₂ = Vertical deflection angle, (°) .

5. If the joint diameter of the shaft is 390mm or less, Formulas (7) and (8) should be used to check the maximum speed in addition to the considerations of torque and bearing life.

$$n_{\max } \leq\left[n_{\beta}\right] \cdots \cdots \cdots(7)$$

$$n_{\max } \leq\left[n_L\right] \cdots \cdots \cdots(8)$$

Where,
n_{max} = Maximum operating speed, rpm;
[n_β] = Maximum permissible speed in relation to operating deflection angle, rpm. (See Figure 7-1)
[n_L] = Maximum permissible speed in relation to operating length, rpm. (See Figure 7-2).

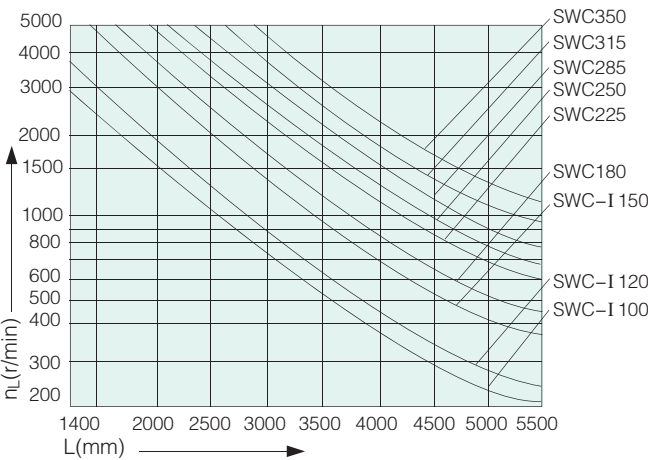


图7—2 与工作长度有关的最大许用转速
Maximum permissible speed in relation to operating length

6. If the line speed of the shaft is over 7m/s, dynamic balancing test is requested, normally to a balancing accuracy between G16~G40. There are complex variables which effects the balancing grade. The customer's verification should be in a lower rank.

六、万向联轴器的安装与维护

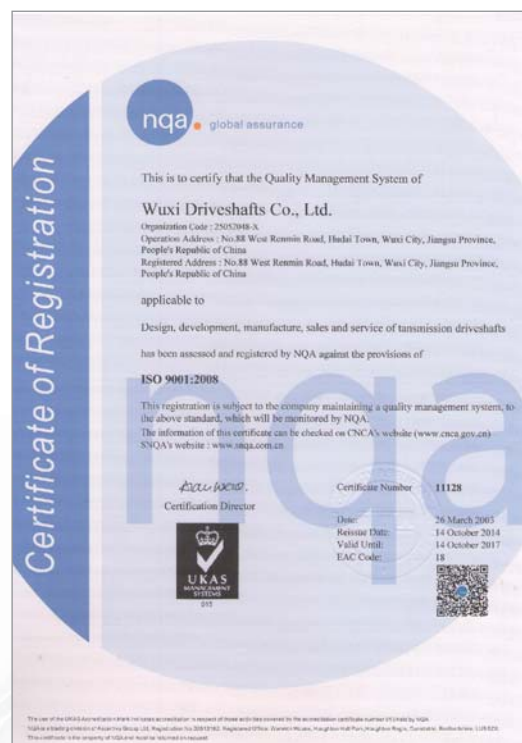
万向联轴器的安装与维护详见本厂《SWC-I、SWC型十字轴式万向联轴器使用说明书》，该说明书在产品包装箱中提供。



ISO9001产品质量保证体系获英国国家
质量有限公司(NQA)认证的证书
ISO9001 Certification by NQA of Great Britain

The Installation and Maintenance of Universal Joint Couplings

For installation and maintenance of universal joint shafts, please refer to the 《Manual for SWC-I and SWC Series Cross Type Universal Joint Couplings》，which is provided in the package boxes with the products.



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