

二、技术参数 Engineering Data

1、SWC-I型—轻型十字轴式万向联轴器

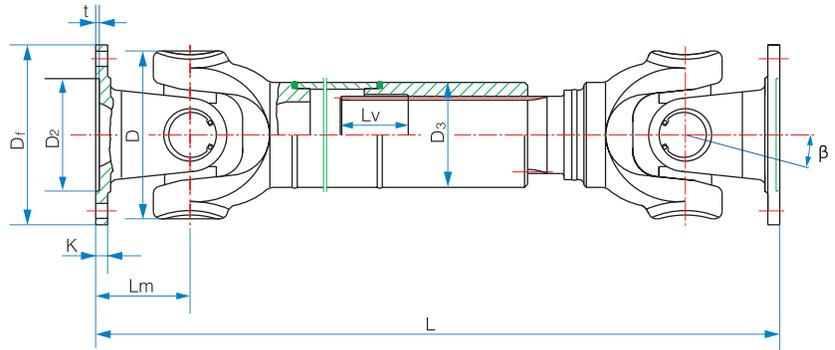
SWC-I Series —Light-Duty Designs

结构形式

Designs

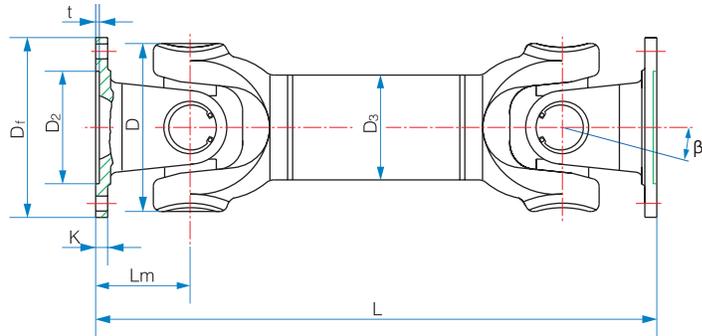
A型—可伸缩焊接型

Type A – Welded shaft design,
with length compensation



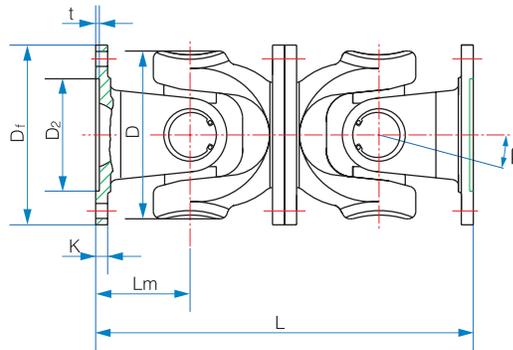
B型—无伸缩焊接型

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

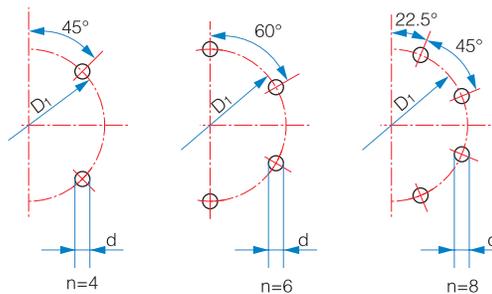


表1: SWC-I型万向联轴器的基本参数与主要尺寸

Data and Sizes of SWC-I Series Universal Joint Couplings

Table 1

型式 type	数值 data	型号 design										
	项目 item	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	
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 x 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；
- 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;

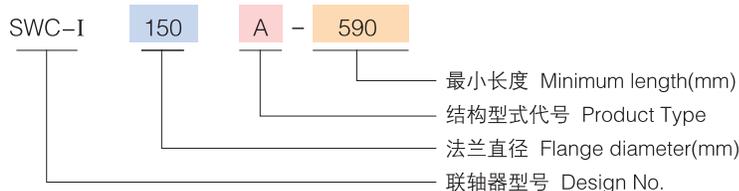
δ = Thickness of the tube;

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



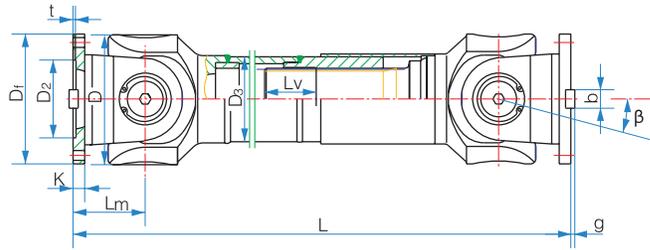
2、SWC型 — 中型十字轴式万向联轴器 SWC Series – Medium-Duty Designs

结构形式

Designs

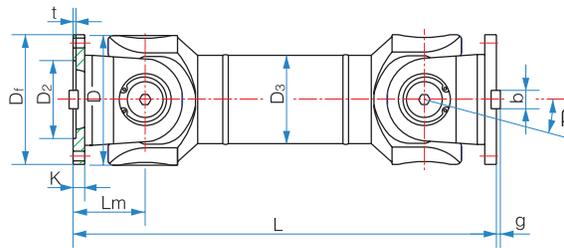
A型—可伸缩焊接型

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

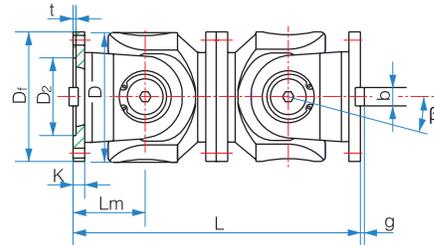


表2: SWC型万向联轴器的基本参数与主要尺寸

Data and Sizes of SWC Series Universal Joint Couplings

Table 2

型式 type	数值 data 项目 item	型号 design														
		SWC 160	SWC 180	SWC 200	SWC 225	SWC 250	SWC 265	SWC 285	SWC 315	SWC 350	SWC 390	SWC 440	SWC 490	SWC 550	SWC 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	290	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;

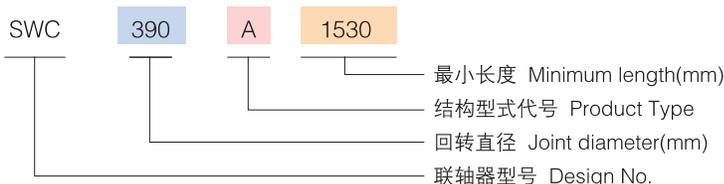
δ = Thickness of the tube;

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

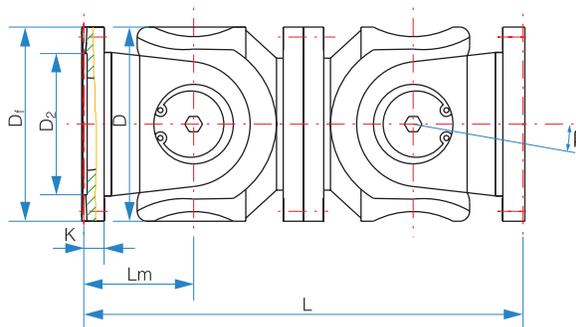


3、SWCZ型 — 重型十字轴式万向联轴器 SWCZ Series – Heavy-Duty Designs

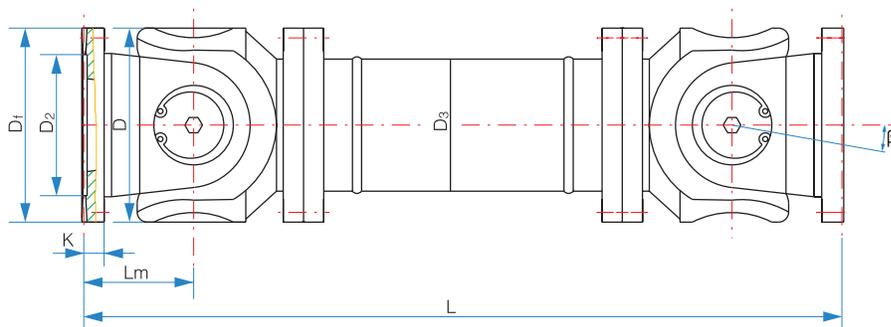
结构形式

Designs

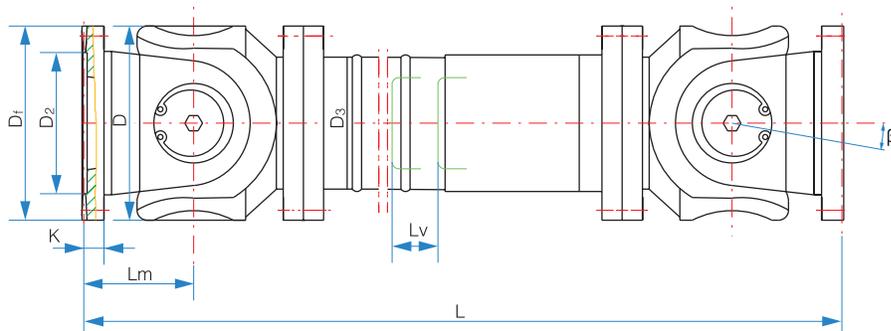
C型—无伸缩单元结构短型
Type C – Short flanged design,
without length compensation



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

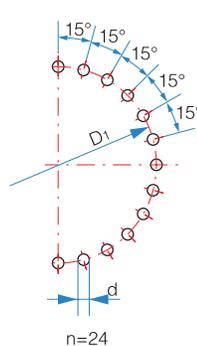
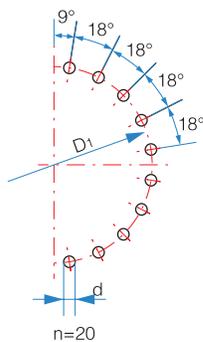


表3: SWCZ型万向联轴器的基本参数与主要尺寸
Data and Sizes of SWCZ Series Universal Joint Couplings

Table 3

型式 type	数值 data	型号 design											
		项目 item	SWCZ 680	SWCZ 700	SWCZ 750	SWCZ 780	SWCZ 800	SWCZ 840	SWCZ 900	SWCZ 920	SWCZ 1000	SWCZ 1060	SWCZ 1100
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	460	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

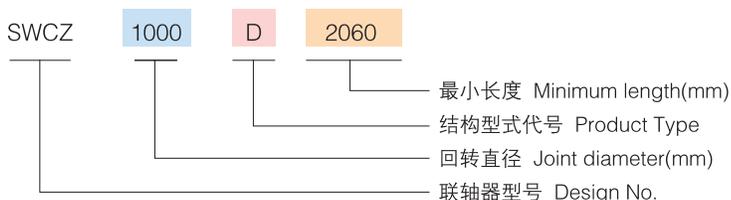
注：1. 上表中各代号含义如下：

- 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



4、KSWC型 一空心十字轴式万向联轴器

KSWC Series - Tunnel Shafts

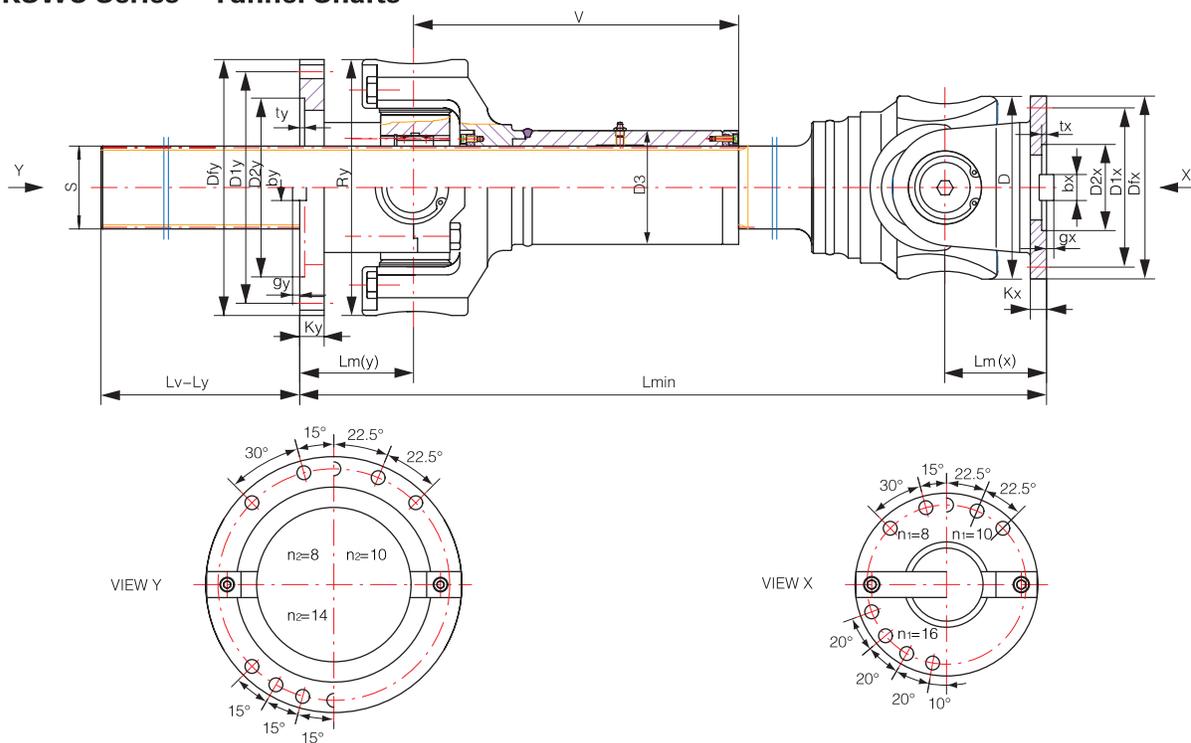


表4: KSWC正装贯穿式联轴器参数表

Table 4

型号	回转直径 Dfx/Dfy	公称转矩 Tn kN.m	疲劳扭矩 Tf kN.m	轴线折角 β (°)	伸缩量 Lv(mm)	尺寸(mm)										
						Lmin	Dfx	D1x	D2x	bx	tx	gx	Kx	Lm(x)	Dfy	Ly
KSWC225Z	225/315	56	28	5° /15°	650	920	225	196	105	32	5	9	20	125	315	190
KSWC250Z	250/330	80	40		700	1020	250	218	115	40	5	12.5	25	140	330	200
KSWC285Z	285/390	120	58		750	1140	285	245	135	40	7	15	27	160	390	230
KSWC315Z	315/435	160	80		750	1300	315	280	150	40	7	15	32	180	435	250
KSWC350Z	350/480	225	110		800	1445	350	310	165	50	8	16	35	195	480	290
KSWC390Z	390/520	320	160		800	1605	390	345	185	70	8	18	40	215	520	320
KSWC440Z	440/600	500	250		900	1760	435	385	200	80	10	20	42	260	600	390
KSWC490Z	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
KSWC225Z	285	220	32	5	9	28	140	8-Φ17	8-Φ17	102.18	146	395	315	215	6.4
KSWC250Z	315	240	40	7	12.5	30	150	8-Φ19	8-Φ19	117.72	159	435	330	283	8.5
KSWC285Z	355	270	40	8	15	40	170	8-Φ21	8-Φ21	127.7	180	480	390	400	10
KSWC315Z	390	300	40	8	15	42	190	10-Φ23	10-Φ23	137.5	203	565	435	533	11.6
KSWC350Z	435	335	50	10	16	47	210	10-Φ23	10-Φ23	165.2	219	630	480	721	16.8
KSWC390Z	480	385	70	10	18	50	230	10-Φ25	10-Φ25	177.24	245	695	520	1013	19.4
KSWC440Z	550	420	80	12	20	60	280	16-Φ28	10-Φ28	201.25	273	735	600	1410	25
KSWC490Z	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

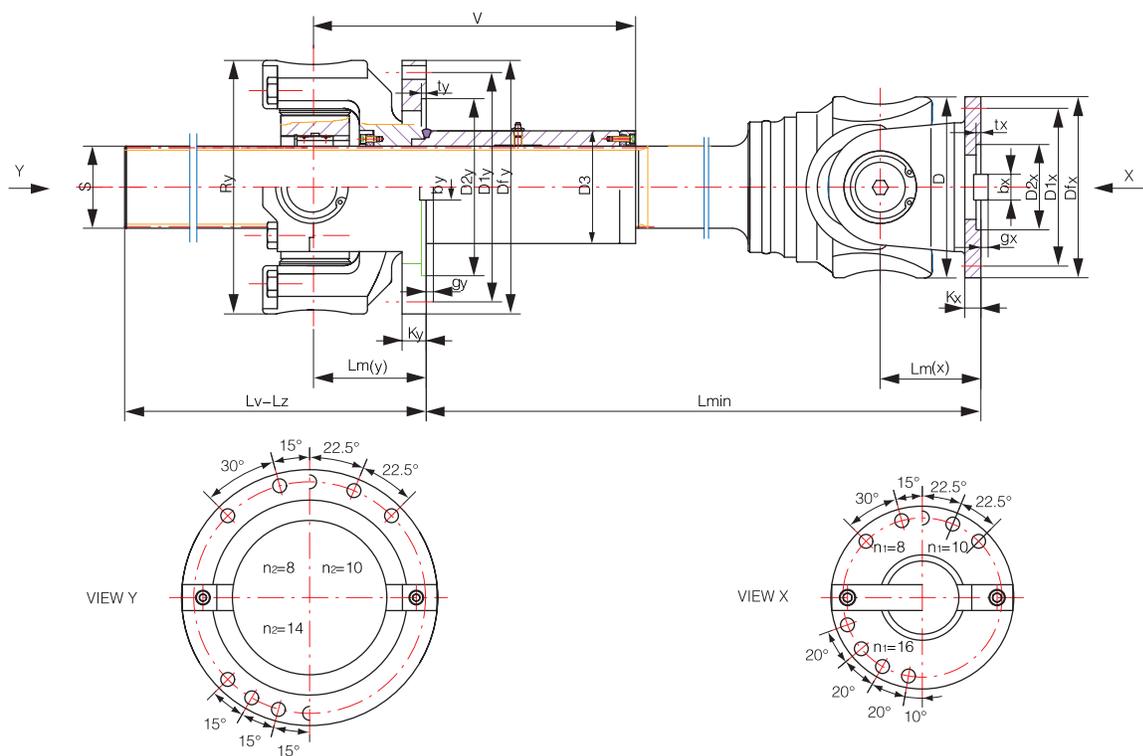


表5: KSWC反装贯穿式联轴器参数表

Table 5

型号	回转直径 Dfx/Dfy	公称转矩 Tn kn.m	疲劳扭矩 Tf kN.m	轴线折角 β (°)	伸缩量 Lv(mm)	尺寸(mm)										
						Lmin	Dfx	D1x	D2x	bx	tx	gx	Kx	Lm(x)	Dfy	Lz
KSWC225F	225/315	50	28	5° /15°	650	260	225	196	105	32	5	9	20	125	315	90
KSWC250F	250/330	71	40		700	285	250	218	115	40	5	12.5	25	140	330	100
KSWC285F	285/390	100	58		750	325	285	245	135	40	7	15	27	160	390	110
KSWC315F	315/435	150	80		750	360	315	280	150	40	7	15	32	180	435	130
KSWC350F	350/480	212	110		800	400	350	310	165	50	8	16	35	195	480	130
KSWC390F	390/520	300	160		800	445	390	345	185	70	8	18	40	215	520	140
KSWC440F	440/600	425	250		900	500	435	385	200	80	10	20	42	260	600	170
KSWC490F	490/650	560	350		900	570	480	425	225	90	12	22.5	47	290	650	170

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
KSWC225F	285	220	32	5	9	28	140	8-Φ17	8-Φ17	102.18	146	395	315	215	6.4
KSWC250F	315	240	40	7	12.5	30	150	8-Φ19	8-Φ19	117.72	159	435	330	283	8.5
KSWC285F	355	270	40	8	15	40	190	8-Φ21	8-Φ21	127.7	180	480	390	400	10
KSWC315F	390	300	40	8	15	42	190	10-Φ23	10-Φ23	137.5	203	565	435	533	11.6
KSWC350F	435	335	50	10	16	47	210	10-Φ23	10-Φ23	165.2	219	630	480	721	16.8
KSWC390F	480	385	70	10	18	50	230	10-Φ25	10-Φ25	177.24	245	695	520	1013	19.4
KSWC440F	550	420	80	12	20	60	280	16-Φ28	10-Φ28	201.25	273	735	600	1410	25
KSWC490F	595	450	90	15	22.5	60	290	16-Φ31	14-Φ31	225.25	325	810	650	2040	31.3

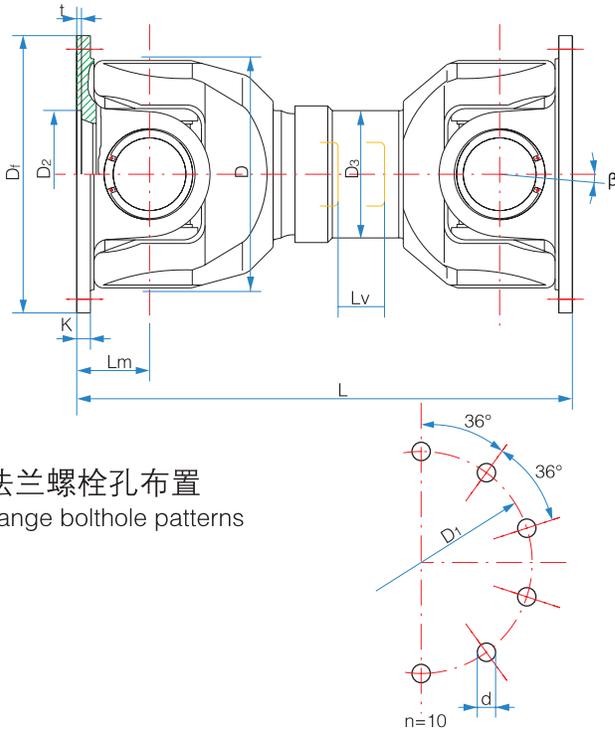
1. 长度Lmin为允许的最短长度，实际尺寸可以根据需要在确定：须 \geq Lmin
2. 伸缩量Lv可以根据实际尺寸确定
3. 以上数据仅供参考



5、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

表6: 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 6

数值 data	型号 design				
	SWCD 215	SWCD 250	SWCD 285	SWCD 315	SWCD 350
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
Tr (kN·m)	12.5	18	20	31.5	45
β (°)	5	5	5	5	5
D	215	250	285	315	350
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

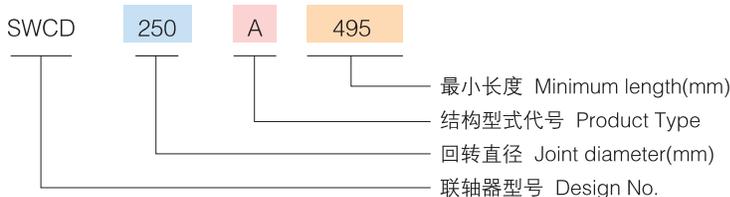
注：1. 上表中各代号含义如下：

- 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；
 - Tr — 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;
Lv = Length compensation;
m = Weight;
Tn = Nominal torque;
Tr = 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5、表6。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

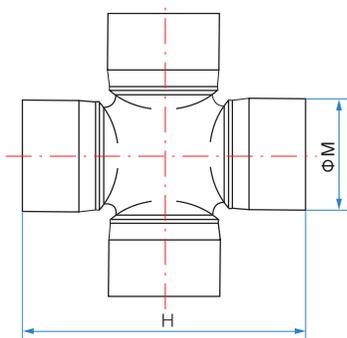


表7

联轴器规格 Coupling Specifications	ΦM (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 7

联轴器规格 Coupling Specifications	ΦM (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

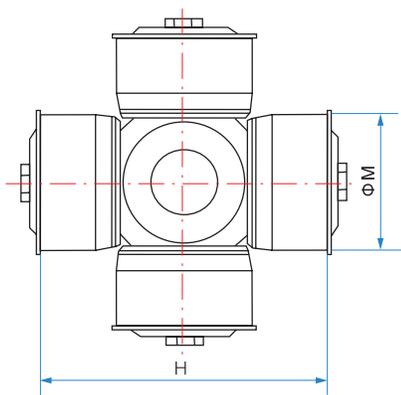


表8

联轴器规格 Coupling Specifications	ΦM (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 8

联轴器规格 Coupling Specifications	ΦM (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

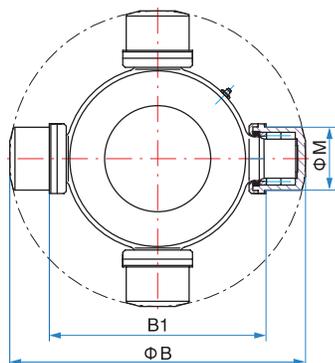


表9

联轴器规格 Coupling Specifications	ΦB (mm)	ΦM (mm)	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 9



四、万向联轴器连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，分别为纯螺栓孔连接法兰以及端面键连接法兰、牙嵌式连接法兰和端面齿连接法兰。

● 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:



纯螺栓孔连接法兰
Bolt hole connection



端面键连接法兰
Face key connection



牙嵌式连接法兰
Integral face pad connection



端面齿连接法兰
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7或表8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 Table 10 or Table 11 with related dimensional data and fax it back to us.

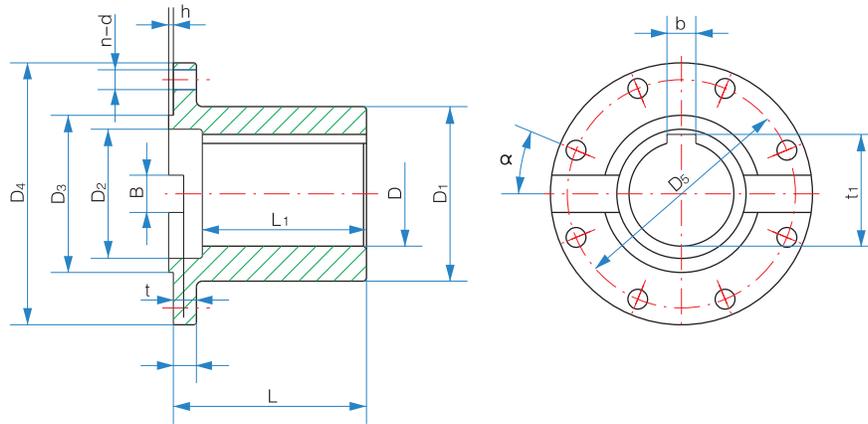


表10 典型圆柱形孔法兰轴套数据表

Table 10 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

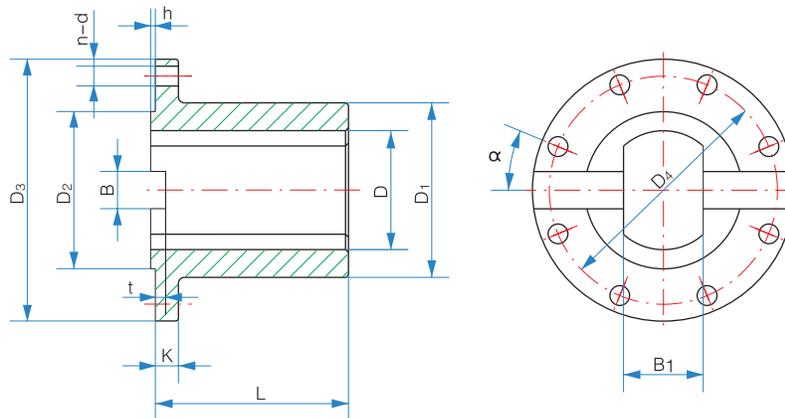


表11 典型扁孔法兰轴套数据表

Table 11 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JB5513-2006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:

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

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

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

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 JB5513-2006, 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):

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

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

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

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

T = Nominal 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11 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 造纸机	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	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

Table 12 Service Factors K

Service Factor Type	Driven Equipment	K
Light shock load	Generators Centrifugal pumps Ventilators Wood handling machines Belt conveyers Paper machines	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	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體使用要求,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 $n \approx 30r/min$, 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 $n \approx 30$ 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13: 轴承容量系数 (Bearing Capacity Factor) K_L

Table 13

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
SWC - I 65	0.012×10^{-4}	SWC180	0.51	SWC490	2.145×10^4
SWC - I 75	0.058×10^{-4}	SWC200	1.47	SWC550	6.335×10^4
SWC - I 90	0.048×10^{-3}	SWC225	7.812	SWC620	0.13×10^6
SWC - I 100	0.26×10^{-3}	SWC250	28.2	SWCZ700	0.32×10^6
SWC - I 120	0.26×10^{-2}	SWC265	54.8	SWCZ750	0.75×10^6
SWC - I 150	2.65×10^{-2}	SWC285	82.8	SWCZ800	1.06×10^6
SWC - I 180	0.56	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		

