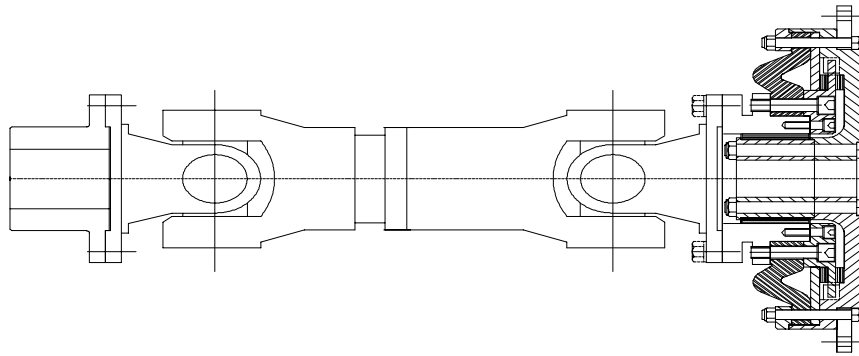
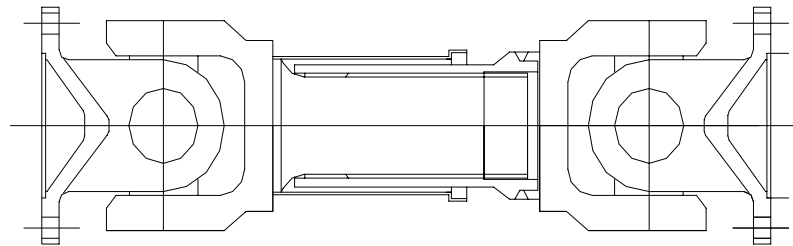


Unique Cardan (Propeller) Shafts



Unique Cardan shaft along with Unique Double Diaphragm Coupling
Specially suitable for Diesel Driven VT Pumps

***Unique Cardan shaft are suitable for connecting widely apart machines.

*** These can take large misalignments.

*** Specially suitable for Steel Rolling Mills , Tube Mills , Paper Mills
Locomotives , Pump drive, Line shaft , Testing machines, Crane travel
Bogey Drive , Vibrating Screen , Tea Machines etc

*** Can be used in horizontal , vertical , angular layout

*** Available for torque ratings upto 100000 Nm

*** Can be supplied with companion hubs & special end attachments.

Unique Transmission (India) Pvt Ltd.

Head Office 10/ID Lal Bazar Street ,Calcutta 700001

Tel No - 91-33- 2200366,2480433,2480231 Fax -91-33- 2206593

Email - metaflex@vsnl.com ; couplings@vsnl.com

Branch Office - 35/36 Nehru Place N.Delhi , Tel 91-11-6422983

Selection of Unique Cardan Shafts

Step 1 - Selection considering Bearing Life.

Graphs - data sheets give rating based on Service factor = 1.0 & Joint angle not exceeding 3 degrees, smooth load & bearing life 5000 Hours. For a given application following Service factors should be considered.

Service Factor $K = K1 * K2 * K3$

Multiply transmitted HP by Service Factor $K = K1 * K2 * K3$ to arrive at design HP & select shaft size using HP Rating vs Speed Table given in this catalogue.

K1 depends on type of primemover , Values are

Type of Primemover	Without torsionally resilient Flexible Coupling	With Highly resilient Flexible Coupling
	K1	K1
Petrol Engine 1-3 cyl	1.5	1.0
Diesel Engine 1-3 Cyl	2.0	1.5
Petrol Engine 4 or more Cyl	1.25	1.0
Diesel Engine 4 or more Cyl	1.50	1.1
Electric Motor	1.00	1.0

K2 depends on life of Bearings

Life in Hours	5000	10000	20000	37000	50000	75000	100000	200000
K2	1.0	1.2	1.6	1.8	2.0	2.25	2.5	3.0

K3 depends on Joint Angle

Joint Angle Degrees	3	4	6	8	10	12	15
K3	1.0	1.1	1.25	1.4	1.5	1.6	1.7

CHECK - There is a safe limit for Joint Angle, B for a given RPM . $N * B$ must not exceed following values. Where N is rpm & A is Joint Angle in degrees. Higher joint angles cause high vibratory torque - causing premature failure/ excessive vibratory torque.

Cardan shaft Series	1140,1310	1410,2872	3120	1510,1600, 1700	1800	1900
N*B max	25000	23000	21000	18000	12000	10000

Thus for Series 1700 , if operating speed is 1800 rpm , Max permissible Joint angle is $18000/1800 = 10$ degrees

Cardan shaft Series	116.150	133.150	133.180	144.180	172.225
N*B max	20000	18000	18000	15500	15500

Thus for Series 172.225 , if operating speed is 1800 rpm , Max permissible Joint angle is $15500/1800 = 8.6$ degrees

Step 2 - Check for Maximum shock Torque that may occur

Transmitted normal Torque - as calculated from Power transmitted & operating RPM should be multiplied by shock factor K4 to arrive at max Torque.

$Q_{max} = P * 60000 * K4 / (2 * 3.142 * N)$ Nm where P is Power in KW , N is RPM , K4 is shock factor

Type of Driven Machine	K4
Continious Loads (Pumps , Fans , Conveyors)	1.2-1.5

Light Shock Load (Printing m/c , small Paper m/c , textile m/c)	1.5-2.0
Medium Shock load (heavy paper , textile m/c Tube Mill , Pinch Roll)	2.5
Heavy Shock Load (Roller tables , presses, heavy tube mills , crane travel drives)	3.0
Extreme shock loads (Reversing working roller tables , vibrating conveyors)	4.0 to 6.0
Qmax - should be less than Max Torque capacity as stated in catalogue for different models.	

Step 3 - Check For Critical Speed for Lateral Vibration.

It is necessary to check for Critical speed

$$N_c = 167 * D_m / L^2$$

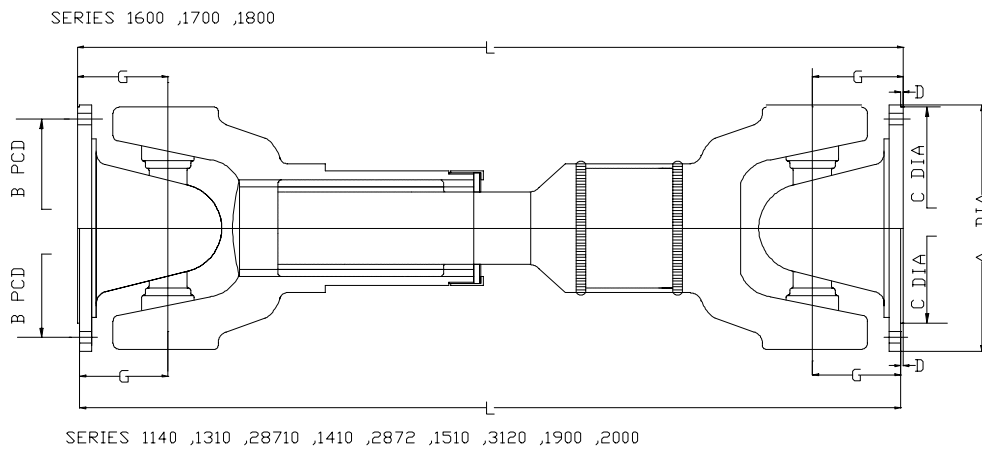
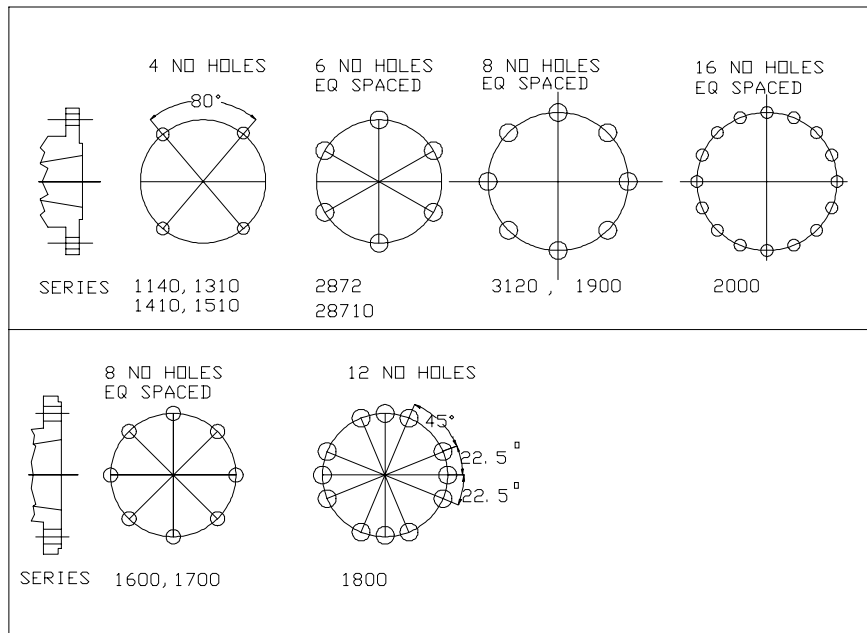
where D_m is Mean Tube dia in mm $= (D_o + D_i) / 2$

D_o is Tube OD in mm . D_i is Tube ID in mm

L is span - Jt centre to Jt Centre in m.

Metre Jt Cr to Jt Cr

Operating speed must not exceed $0.70 * N_c$



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UNIQUE CARDAN SHAFTS SERIES 1140 TO SERIES 2000

DIMENSIONS

SERIES	Max Torque Short Duration Nm	A FLANGE DIA MM	BOLTS		MAX JOINT ANGLE DEGREE	Joint Rotation Dia	C SPIGOT DIA MM	D SPIGOT HEIGHT MM	G FL FACE TO JT CENTRE MM	I FL TH MM	P TOTAL TELES- COPIC MOVEMENT MM	BOLT TIGHT. TORQUE NM
			B PCD MM	DIA*No MM								
1140	571	87.3	69.8	M 8*4	20	76	56.10	1.6	28.6	5.1	46	20
1140-DIN58**	150	58	47	M 5*4	20	76	30	-1.5	45.0	5.1	46	7
1140-DIN65**	250	65	52	M 6*4	20	76	35	-1.7	45.0	5.1	46	13
1140-DIN75**	400	75	62	M 6*6	20	76	42	-2.0	45.0	5.1	46	13
1310	800	96.8	79.4	3/8"*4	20	97	60.30	1.6	41.3	6.7	46	40
1310-DIN90**	750	90	74.5	M8*4	20	97	47	-2.5	41.3	6.7	46	32
28710	1350	100	84	M8*6	18	97	56.90	2.0	48.0	7.8	45	20
28710-DIN90**	750	90	74.5	M8*4	18	97	47.00	-2.5	48.0	7.8	46	20
28710-DIN100**	1350	100	84	M8*6	18	97	57	-2.5	48.0	7.8	45	32
1410M	2100	*	95.2	7/16"*4	20	123	69.85	1.2	42.9	7.5	57	64
2872	2400	120	101.4	M10*6	20	116	82.50	2.0	54.0	7.8	60	48
2872-DIN100**	1350	100	80	M8*6	20	116	57.00	-2.5	48.0	7.8	60	32
2872-DIN120**	2500	120	101.5	M10*8	20	116	75	-2.5	54.0	7.8	60	64
1510	3200	146.0	120.6	1/2"*4	20	136	95.20	1.6	63.5	9.1	51	100
1510-DIN120**	3200	120	101.5	M10*8	20	136	75	-2.5	63.5	9.1	51	64
3120	4000	129.0	111.5	M10*8	25	135	82.50	2.0	76.0	8.0	60	48
3120-DIN120**	4000	120	101.5	M10*8	20	135	75	-2.5	76.0	8.0	60	64
3120-DIN150**	4000	150	130	M12*8	20	135	90	-3	76.0	8.0	60	111
1610, 1600	4500	174.6	155.5	3/8"	22	173	168.28	1.6	69.9	9.5	70	40
1610-DIN180**	4500	180.0	155.5	M12*8	22	173	110.00	-3.0	70.0	10.0	70	48
1700	6500	203.2	184.1	3/8"	35	200	196.85	1.6	76.2	9.5	75	40
1800	9260	203.2	184.1	7/16"	20	217	196.85	1.6	85.7	11.1	82	64
1900	16700	276.2	247.6	M16	20	268	222.25	2.4	98.4	14.3	82	210
2000	26000	287.3	263.5	1/2"	15	287	196.80	2.4	95.2	14.3	76	100

* 1410 SERIES- RECT. FLANGE , SWING DIA ~ 123 MM

DIN FLANGES HAVE FEMALE SPIGOTS & FABRICATED (WELDED) FLANGES

NOTES - L LENGTH CAN BE AS REQUIRED

THE DIMENSIONS ARE FOR STANDARD EXECUTIONS AND SUBJECT TO CHANGE WITHOUT NOTICE.

ADDITIONAL INFORMATION ABOUT RATINGS AND GUIDELINES ARE GIVEN SEPERATELY

CARDAN SHAFTS ARE ALSO AVAILABLE IN MANY OTHER STYLES/ASSEMBLIES

SOME ILLUSTRATION FOR ALTERNATIVE ASSEMBLIES ARE GIVEN SEPERATELY.

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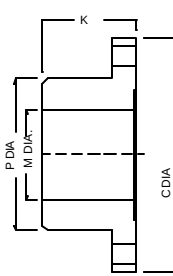
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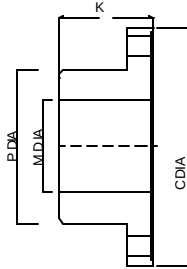
PHONES 91-11-6422983

Companion Hubs



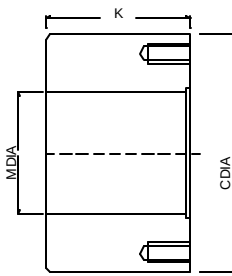
Standard Hub

Series 1140, 1310, 28710
1410, 2872, 1510, 3120



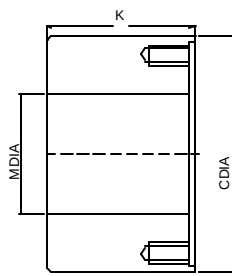
Standard Hub

Series 1600, 1610
1700, 1800



Special Hub

Series 1140, 1310, 28710
1410, 2872, 1510, 3120



Special Hub

Series 1600, 1700, 1800
1610

Standard Hubs				
Series	C	M	K	P
	mm	Max Bore mm	mm	mm
1140	87	32	45	57
1310	97	42	51	62
28710	100	48	50	69
1410	116	48	51	73
2872	120	55	55	80
1510	146	62	76	95
3120	130	65	75	90
1600, 1610	175	80	89	120
1700	203	100	100	155
1800	203	100	100	155

Special Hubs			
Series	C	M	K
	mm	Max Bore mm	mm
1140	87	55	50
1310	97	60	63
28710	100	70	75
1410	116	70	76
2872	120	80	80
1510	146	95	100
3120	130	85	75
1600, 1610	175	114	127
1700	203	140	152
1800	203	140	152

Unique Transmission (India) Pvt Ltd

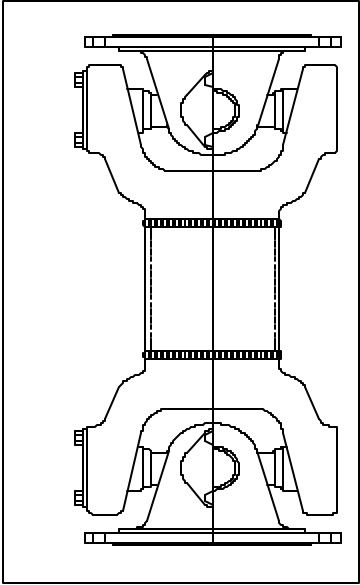
Weight & MR² data for Cardan shaft Series 1140 to 1900				
Cardan shaft Series	Weight 1000 mm Length Kg	MR ² 1000 mm Length KgM ²	Change Weight per 100 mm Kg	Change Mr ² per 100 mm Kg.m ²
1140	7.2	0.0046	0.5	0.0005
1310	8.5	0.0067	0.5	0.0005
28710	10.5	0.0108	0.6	0.0005
1410	11.9	0.0134	0.6	0.0007
2872	16.2	0.0196	0.6	0.0007
1510	18.5	0.0331	0.6	0.0012
3120	25.0	0.0400	0.6	0.0012
1600,1610	27.6	0.0707	0.6	0.0012
1700	36.8	0.1277	1.0	0.0020
1800	55.8	0.1935	1.0	0.0020
1900	87.8	0.5630	1.4	0.0045

Weight & MR² data for Companion Hub shaft Series 1140 to 1900				
Series	Standard Hub Each		Special Hub Each	
	Weight Kg	MR ² KgM ²	Weight Kg	MR ² KgM ²
1140	0.9	0.0007	1.5	0.0020
1310	1.0	0.0011	2.3	0.0037
28710	1.0	0.0011	2.2	0.0041
1410	1.2	0.0018	4.0	0.0092
2872	1.8	0.0027	4.0	0.0103
1510	3.6	0.0081	7.7	0.0292
3120	2.3	0.0042	3.9	0.0116
1600,1610	5.5	0.0178	13.5	0.0740
1700	10.0	0.0475	20.3	0.1546
1800	10.0	0.0475	20.3	0.1546
1900	24.0	0.2200	52.9	0.7286

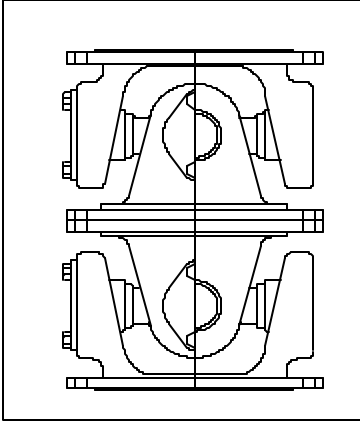
Weight and MR² values of companion Hubs are at max bore capacity

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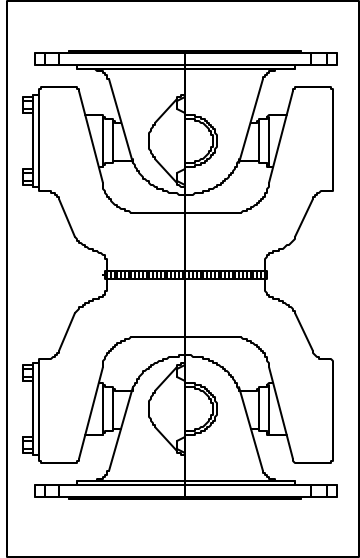
Unique Cardan Shafts Minimum Lengths



Short Yoke Shaft Assembly



Double Set of 2 Flange Yoke Assy



Double Joint

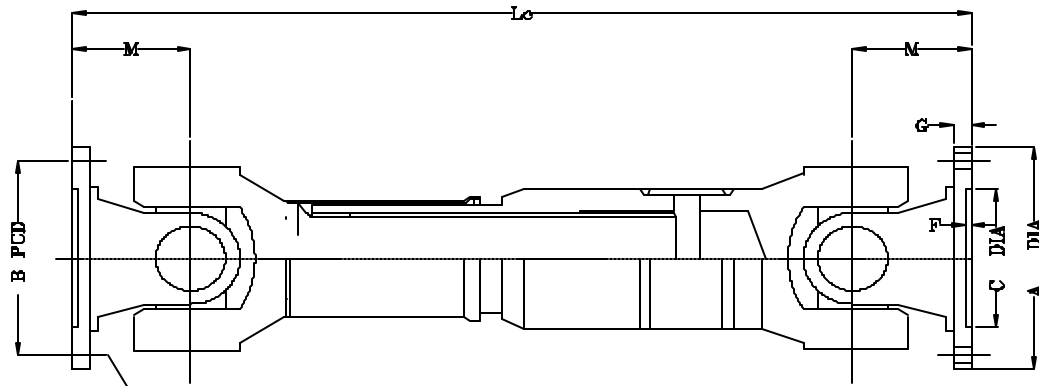
	Short Yoke Shaft Assembly		Double Set of 2 Flange Yoke Assy	Double Joint
Series	Telescopic Type		Fixed Centre Type , Length mm	Fixed Centre Type , Length mm
	Fully Compressed Length mm			
	Normal Special			Normal Special
1140	245 230		121	165 136
1310	310 280		168	180 150
28710	365 330		192	240 220
1410	375 340		174	210 180
2872	400 340		220	290 230
1510	460 410		254	320 265
3120	625 560		304	350 300
1600/1610	495 430		280	350 290
1700	745 670		305	375 305
1800	700 630		343	420

Nominal Torque ratings for cardan shafts series 1140 to Series 1800 at various speeds
for smooth loads , Jt angle 3 deg , 5000 hrs life. At SF = 1.0

Series	1140	1310	28710	1410 1410M	2872	1510	3120	1600 1610	1700	1800
Speed	Nominal Torque Rating in NM									
10 rpm	571	800	1350	2100	2400	3200	4000	4500	6500	9260
50 rpm	427	670	1054	1610	1994	2279	2849	3704	5700	7123
100 rpm	356	513	869	1282	1567	1923	2279	2849	4487	5698
250 rpm	259	370	627	969	1225	1425	1652	1994	3276	4416
500 rpm	199	285	541	755	969	1111	1211	1710	2564	3562
750 rpm	180	256	484	665	855	959	1187	1520	2232	3229
1000 rpm	157	228	449	598	784	876	1054	1353	2066	2849
1500 rpm	138	199	394	522	688	760	926	1187	1804	2493
1800 rpm	131	190	376	487	670	712	871	1128	1721	2374
2000 rpm	125	182	360	470	659	694	837	1068	1603	2279
3000 rpm	107	159	335	416	558	605	665	950	1425	1970
4000 rpm	98	142	325	383	499	498	552	837	1264	1781

Continious HP ratings of cardan shafts series 1140 to Series 1800 at various speeds
For smooth loads , Jt angle 3 deg , 5000 hrs life. At SF = 1.0

Series	1140	1310	28710	1410 1410M	2872	1510	3120	1600 1610	1700	1800
Speed	Nominal HP rating									
10 rpm	0.8	1.1	1.9	2.9	3.3	4	5	6	9	13
50 rpm	3.0	4.7	7.4	11.3	14	16	20	26	40	50
100 rpm	5.0	7.2	12.2	18	22	27	32	40	63	80
250 rpm	9.1	13	22	34	43	50	58	70	115	155
500 rpm	14	20	38	53	68	78	85	120	180	250
750 rpm	19	27	51	70	90	101	125	160	235	340
1000 rpm	22	32	63	84	110	123	148	190	290	400
1500 rpm	29	42	83	110	145	160	195	250	380	525
1800 rpm	33	48	95	123	169	180	220	285	435	600
2000 rpm	35	51	101	132	185	195	235	300	450	640
3000 rpm	45	67	140	175	235	255	280	400	600	830
4000 rpm	55	80	183	215	280	280	310	470	710	1000

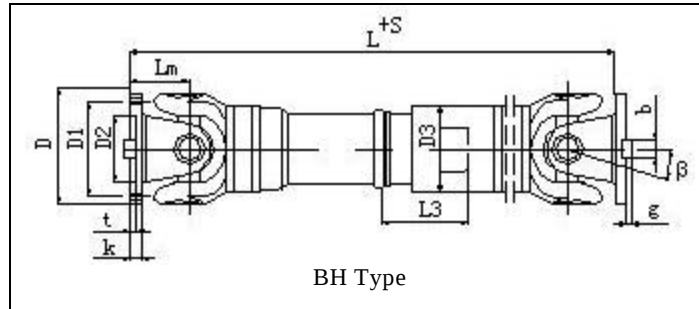
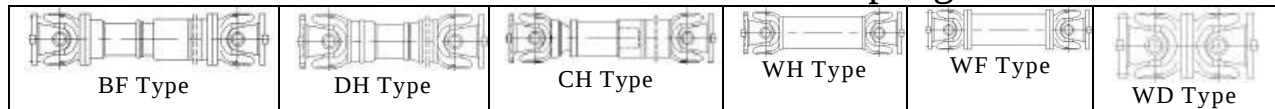


Z = NO OF EQUISPACED HOLES
H = DIA OF HOLES
B = PCD OF HOLES

Cardan Shaft Series	116.150	133.150	133.180	152.180	172.225
Max Torque , Md NM	6500	6500	10000	15000	21600
A Dia mm	150	150	180	180	225
B , Bolt PCD mm	130	130	155.5	155.5	196
G, Flange Th mm	10	12	12	14	16
Z , No of Holes	8	8	8	10	8
H , Hole dia mm	12	12	14	16	16
C , Dia mm	90	90	110	110	140
F Spigot Depth mm	3.0	3.0	3.0	3.0	5.0
M mm	86	90	98	100	110
Jt Angle max deg	35	35	35	30	30
Max Telescopic movement mm	130	120	120	140	150
Jt rotation dia mm	142	160	160	176	206
Lc Min mm	605	690	690	780	836
Tube OD mm	89	89	89	114	140
Weight Lc min Kg	26	38	41	56	84
Tube Kg/100 mm	1.0	1.0	1.4	1.8	1.7
Inertia MR ² Lc min KG.CM ²	394	835	900	1356	2780
Tube Inertia MR ² / 100 mm Kg.CM ²	19	19	31	50	76

Special Shorter Length also offered with reduced telescopic movement on request.
 UNIQUE TRANSMISSION (INDIA) PVT LTD
 CARDAN SHAFTS

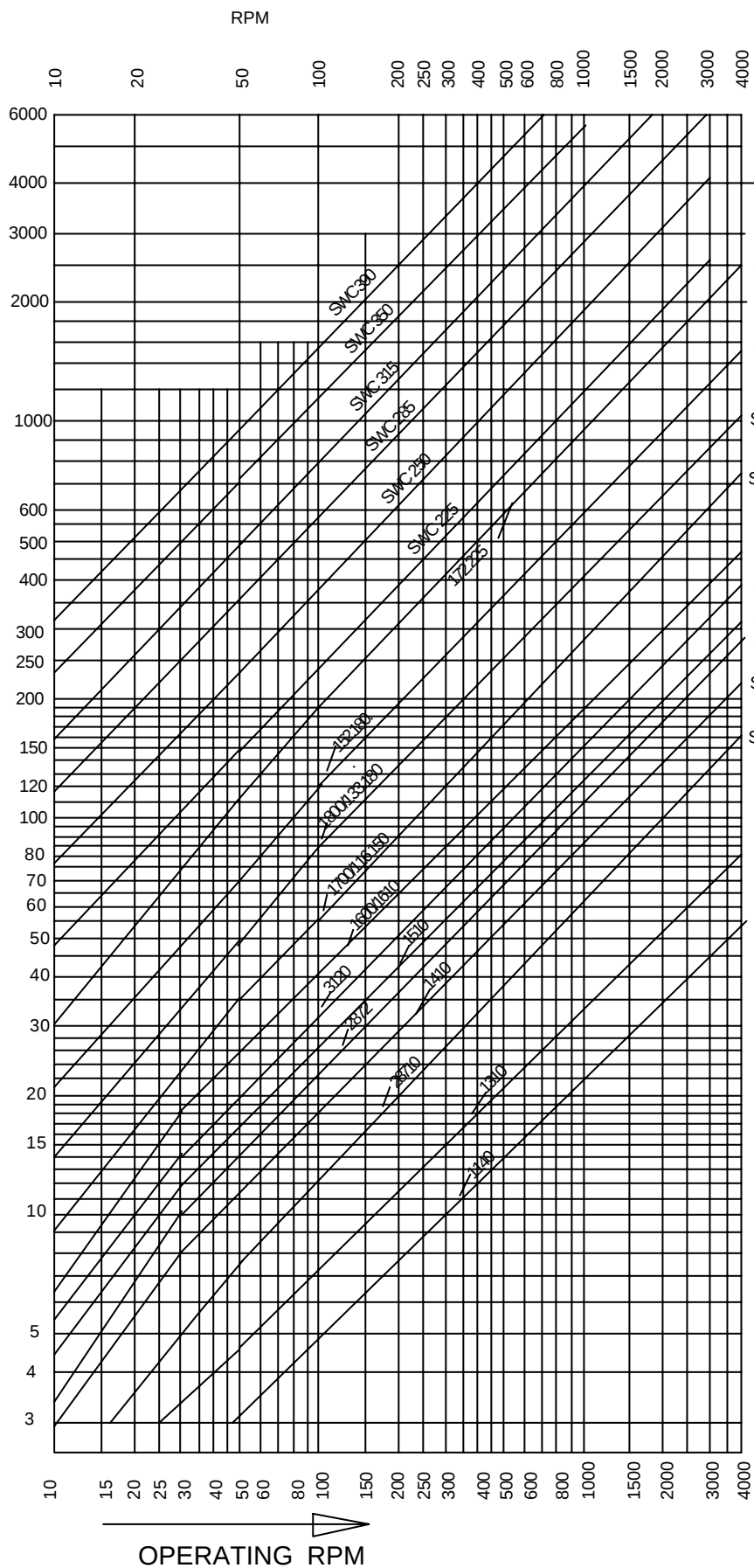
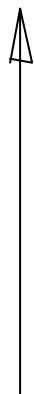
SWC Series cross universal coupling



Model	Rotary Diameter D(mm)	Max Torque KN.m	Fatigue Torque Mdw KN.m	Axial Angle â	Size								
					D1	D2	D3	Lm	n-d	K	t	b	g
SWC100	100	1.6	0.8	25°	84	57	60	55	6-9	7	2.5	-	-
SWC120	120	4.5	2.25	25°	102	75	70	65	8-11	8	2.5	-	-
SWC150	150	10	5	25°	130	90	89	80	8-13	10	3.0	-	-
SWC180	180	20	10	25°	155	105	114	110	8-17	17	5.0	-	-
SWC225	225	50	25	15°	196	135	152	120	8-17	20	5.0	32	9.0
SWC250	250	71	35.5	15°	218	150	168	140	8-19	25	6.0	40	12.5
SWC285	285	100	50	15°	245	170	194	160	8-21	27	7.0	40	15.0
SWC315	315	140	70	15°	280	185	219	180	10-23	32	8.0	40	15.0
SWC350	350	200	100	15°	310	210	267	194	10-23	35	8.0	50	16.0
SWC390	390	280	140	15°	345	235	267	215	10-25	40	8.0	70	18.0
SWC440	440	400	200	15°	390	255	325	260	16-28	42	10.0	80	20.0
SWC490	490	560	280	15°	435	275	325	270	16-31	47	12.0	90	22.5
SWC550	550	800	400	15°	492	320	426	305	16-31	50	12.0	100	22.5
SWC620	620	1120	560	15°	555	380	426	340	10-38	55	12.0	100	25.0

Model		100	120	150	180	225	250	285	315	350	390	440	490	550	620
BH	Lmin	390	485	590	810	920	1035	1190	1315	1410	1590	1875	1985	2300	2500
	Weight(kg)	7	12	26	75	130	180	273	389	601	758	1210	1602	2503	3200
	Ls	55	80	80	100	140	140	140	140	150	170	190	190	240	240
BF	Lmin	-	-	-	810	920	1035	1190	1315	1410	1590	1875	1985	2300	2500
	Weight(kg)				90	148	210	315	440	662	857	1380	1731	2667	3367
	Ls				100	140	140	140	140	150	170	190	190	240	240
DH	Lmin				550	640	735	880	980	1070	1200				
	Weight(kg)				62	102	148	240	350	500	655				
	Ls				40	70	70	80	90	90	90				
CH	Lmin				1425	1500	1615	1875	2000	2115	2245	2510	2620	3085	
	Weight(kg)				114	192	250	375	544	853	1000	1620	1860	3150	
	Ls				700	700	700	800	800	800	800	800	800	1000	
WH	Lmin	243	307	350	480	520	620	720	805	875	955	1155	1205	1355	
	Weight(kg)	5	8.5	20	52	85	144	215	302	415	566	870	1140	1526	
WF	Lmin				560	610	715	810	915	980	1100	1290	1360	1510	1690
	Weight(kg)				68	104	150	240	332	452	668	980	1274	1763	2442
WD	Lmin				440	480	560	640	720	776	860	1040	1080	1220	1360
	Weight(kg)				60	90	140	201	291	395	554	854	1156	1624	2220

HP RATING AT SF = 1.0



RATINGS ARE AT SF = 1.0 , JT ANGLE <= 3 DEGREE , LIFE 5000 HRS

Unique Transmission (India) Pvt Ltd.

Installation , Operation & Maintenance

Warning

These instructions are only general instructions for installation, operation & maintenance of cardan shaft assemblies. Unique Transmission (India) Pvt Ltd shall not be liable either directly or indirectly for any accident /injury that may occur as a result of using these shafts.

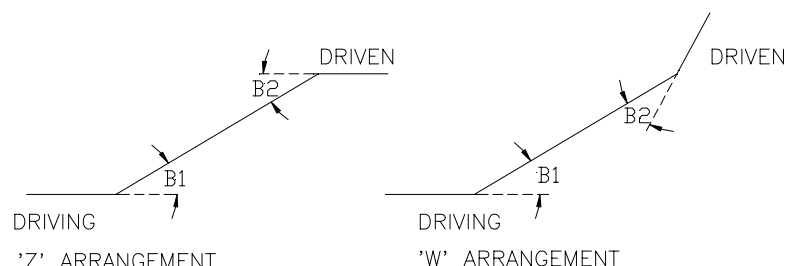
Assembly, disassembly & maintenance operations shall be done only by trained & qualified personnel. Drive shafts are also parts, due to their intrinsic nature, can cause damages to persons or things during their duty even if they are correctly dimensioned and installed. Therefore user must take all necessary precautions so as to prevent and avoid such damages by installing necessary protection guards etc.

Checking Correct Installation

In order to ensure constant velocity transfer of motion shafts should be arranged correctly either in Z arrangement or W arrangement as shown in sketch below. Driving & driven joint angle should be equal - max difference in angle can be 1 degree. Non observance of this causes vibration & failure of shaft.

Z - arrangement driving (input) shaft & driven shaft (output) should be parallel within 1 degree.

W arrangement - ensure driving joint angle is equal to driven joint angle.



Maximum Allowable Working Speed

Please check critical speed is at least 30 % higher than operating speed well above operating speed .

Consult Unique for calculation of critical speed. (Such calculation normally required required for shafts longer than 1000 mm operating at speed 750 rpm or higher.)

While selecting cardan shaft joint angle must be considered. In any case , joint angle must not exceed following figures in degrees for smooth operation

Series	Operating RPM			
	500 rpm	1000 rpm	1500 rpm	3000 rpm
	Max operating joint angle in degrees			
1140	20	20	16.6	8.3
1310	20	20	16.6	8.3
28710	18	18	15.2	7.6
2872	20	20	15.2	7.6
1410	20	20	15.2	7.6
1510	20	18	12	6
3120	20	18	12	6
1600	20	18	12	6
1700	20	18	12	6

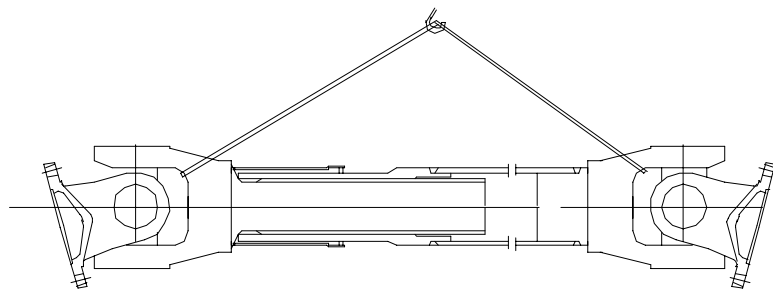
1800	20	12	8	4
1900	20	10	6.6	3.3
2000	15	10	6.6	3.3

Cardan shaft	116.150	133.150	133.180	152.180	172.225
Series					687.65
Operating rpm	Maximum Joint Angle in degrees				
500	35	35	35	30	30
1000	20	18	18	15	15
1500	13	12	12	10	10
3000	6.7	6.5	6.5	5.2	5.2

Higher joint angles can cause vibration & noise.

Handling Drive Shafts

The wrong handling of shafts may cause serious damage to them. Drive shaft must always be handled horizontally & if it is necessary to deviate from this position, all precautions must be taken so that two sides do not separate & come out. If slings have to be used, these should be used in Yokes as shown in sketch using adequate ropes. Never use UJ cross for handling drive shaft.



General assembly Rules

Make sure angular location of Yokes is correct. The Yokes should be in same line. Check for Arrow Marks/match marks.

Take care of cleaning the surfaces that will come in contact, most of all that concerns lubricants, rust, paint & dirt. Remove any safeties that may have been set against accidental coming out during transportation. During assembly do not force with levers or other tools specially in Universal Joint Area. Make sure that bolts are tightened by torque wrench to recommended tightening torque. In case of painting make sure area where sealing slides shall not be painted.

Maintenance -

Maintenance Interval will depend on environmental and working conditions. However we suggest that you carry out regularly, planning with maintenance of other components - but without extending them over six months. The controls to be made concern correct tightening of bolts & control of play in Spiders (U Joints) and of sliding action. For washing drive shafts do not use steam or pressure water. Do not use aggressive chemical detergents. In case of washing an accurate regreasing must be provided.

Lubrication

After drive shafts have been installed always check correct filling with grease of the Universal Joints. The pumping of grease should be continued until grease comes out from sealing. Lubrication of Universal Joints should be done after every 2000 Hours of running or 12 months whichever is earlier. In order to regrease always use Lithium Base Grease such as :

Servo Multipurpose of IOC , Multipurpose Grease of Indrol , Multipurpose Grease MP II of Bharat Petroleum.

The sliding section (when coated with anti friction material viz for series 116.150 , 133.150 , 133.180,152.180,172.225) does not need normally lubrication In case lubrication is wanted , quantity of grease must not be more than 30 grams. A check should be made once in 12 months & lurication of sliding part done if necessary.

Disassembly & replacement of UJ Cross Kits

Disassembly snap ring type **Series 1140,1310,28710,2872,1510,3120 - Tap one end of the bearing lightly to remove pressure on snap ring.Remove snap ring with pliers ; Repeat procedure for opposite bearing.Then drive with a soft drift on one bearing to push the opposite bearing through its yoke.Remove exposed bearing , turn the joint over and remove the first bearing by driving on the exposed end of the journal cross.Repeat the process for the other two bearings.**

1) Reassembly Snap Ring type Series

1140,1310,28710,2872,1510,3120,116.150,133.150,133.180,152.180,172.225 – Remove the bearings from new cross assembly, holding the cups so that needles donot fall out.Position the cross in one Yoke.Position one bearing cup with its needles in theYoke and insert the journal of the cross into the bearing.Press bearing into the Yoke.Repeat for the opposite bearing.If press is not available use a vice.Never hammer on new bearings.Instal snap ring and repeat operation for next two bearings.

3) Disassembly bearing cap type – Series 1410,1600,1700,1800,1900,2000

Remove the lock plate capscrews,and remove lock plates.Clamp the flange yoke in a vice with lugs horizontal.Tap on the top of the joint to start the top bearing coming out.Pull this bearing.Start the lower bearing by driving on the exposed end of the journal cross.Pull the lower bearing,Then remove the vice , turn 90 degrees , reclamp in vice and repeat operation for other two bearings.

4) Assembly bearing cap type – Series 1410,1600,1700,1800,1900,2000

Instal the new cross and bearing set , following the same procedure as used for the snap ring type.Instal the lock plates & capscrews.

Self aligning Bearing supports – Support should be rigid enough to avoid vibrations.In most applications bearing supports are located where there is existing floor , catwalk or Beam . If no such support is available we recommend :

- 1) Use rigid beams and instal so that principal section moulus opposes horizontal forces.
- 2) Beam selection should be such that horizontal and vertical natural frequency is atleast 3.5 to 4 times maximum rpm.

Bolt Tightening

All bolts are to be tightened by torque wrench and not by feel . Inadequate tightening will lead to loosening of bolts and consequent damage to shaft.Recommended Bolt tightening torque are given below.

Series	Flange OD	Bolt size	Qty	Tightening torque NM
1140	87.3	M8	4	20

1310	96.8	3/8"	4	40
28710	100	M8	6	20
1410	115.9	7/16"	4	64
2872	120	M10	6	48
3120	146	1 / 2"	8	100
1510	129	M10	4	48
1600	174.6	3/8"	8	40
1700	203.2	3/8"	8	40
1800	203.2	7/16"	12	64
1900	276.2	M16	8	210
2000	287.3	1 / 2"	16	100
116.150	150	12	8	80
133.150	150	12	8	80
133.180	180	14	8	130
152.180	180	16	10	200
172.225	225	15	8	200

Safety Precautions

***A serious fatal Injury can occur

if you lack proper training

if you fail to use proper tools & safety equipment

if you use incompatible drive shaft components

if you use wornout damaged drive shaft components

*** Donot work on drive shaft (with or without guard) when machine is operating

*** Drive shafts can be dangerous . You can entangle clothes , skin , hair, hands etc .

This can be fatal or cause serious injury.

*** If drive shaft is still exposed after installation instal a guard.

*** Guards cannot contain a drive shaft should it twist and separate.

Ordering Spares -

For ordering spares - please state

Item & Shaft Model Number (This is essential) , viz

Spare UJ Cross Kit , Series 1140

Spare Flange Yoke , Series 1310

Spare Stub Yoke , Series 2872

Spare Spline shaft + Sleeve Yoke , Series 1510

Please note each UJ cross Kit comprises 1 no UJ cross & 4 no Needle cups complete with needle roller bearings.

Adequate spares should be kept & ordered well in time.