

CARDAN

SHAFT

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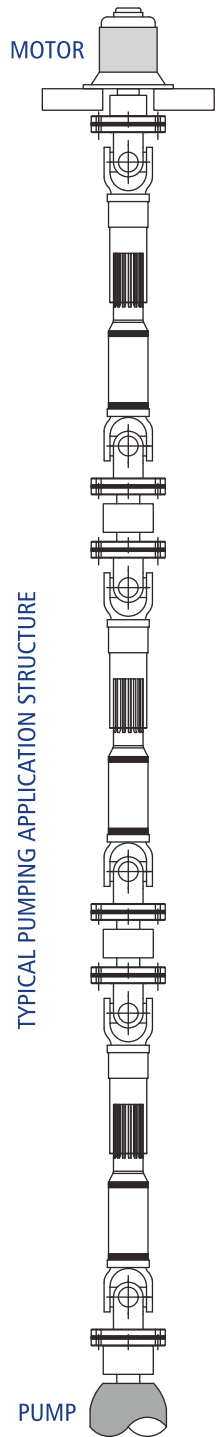
Manufacturer of Cardan Shafts



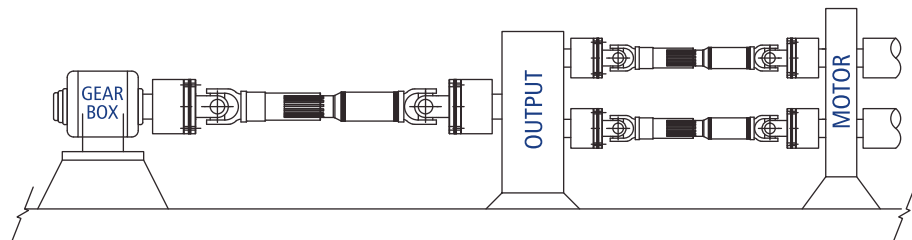
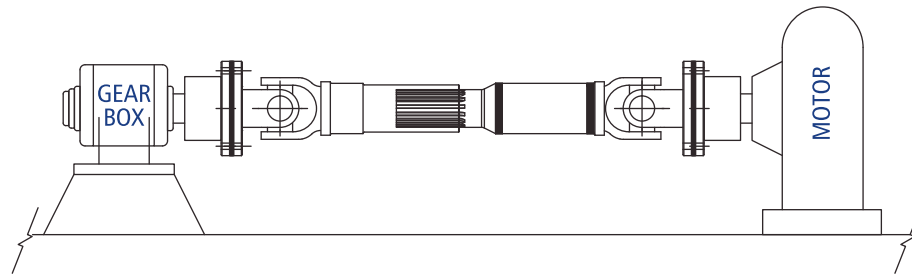
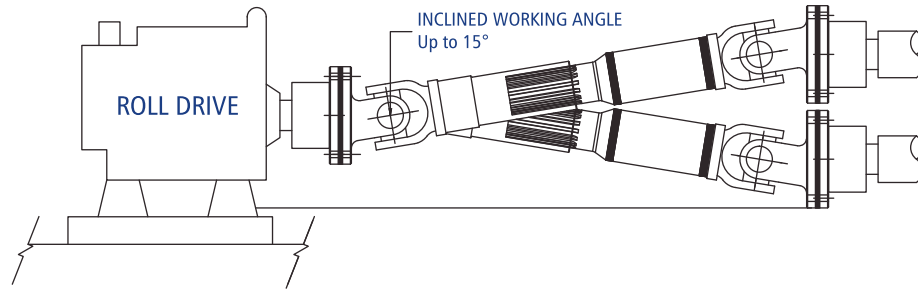
**SUPREME**  
ENGINEERS

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## Conventional Cardan Shaft Application layouts.



## Diverse Industrial & Automotive Applications

### Heavy Shock Load

Pulp & Paper Industry  
 Steel Rolling & Tube Mills,  
 Corrugated Box Mfg. Co.  
 Sewage Pumping Stations,  
 Conveyer Primary Drives,  
 Cement Industries  
 Tube Straitening Machines



### Medium Shock Load

TMT - Manufacturers  
 Vibrating Screens  
 Self Loading Transit Mixer  
 DTH – Water Well Drilling Rigs  
 Road Construction Equip. Machinery  
 Auxiliary Drives  
 Transfer Trolley Roller Tables



### Light Shock Load

PTO-Pump Drive Propeller Shafts  
 Printing & Packaging Industry  
 Textile Machinery  
 Rip Saw Wood Working machines  
 Balancing Machines  
 Diamond Wire Saw Machines  
 Farm Equipments & Tractor-Loaders



# How Do I Select A Suitable Cardan Shaft ?

## Understanding the Mechanism of Cardan Shafts and the Growth in its Application!

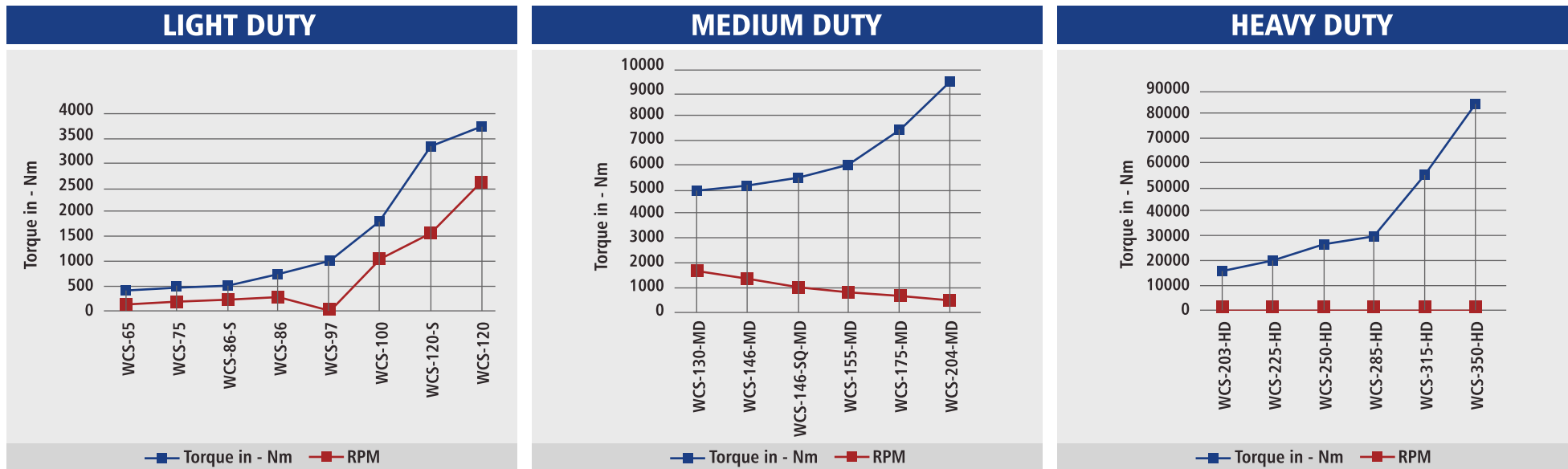
Cardan Shaft is defined as a motorized machine that can transmit torque between the driven and the driving torque or rotational motion from one shaft to another at fixed and varied angles of intersection on the shaft axis. They are principally categorized by their torque indicators when used as a single joint while operating at angles greater than 0° which may be non-uniform or uniform confiding to their necessary applications.

Though, it is conventionally known that the one of the most unique and prominent feature of a Cardan Shaft is not only of handling misalignment capabilities up to 15° or greater, which evidently is quite higher than the 6° potential of gear couplings and spindles, but, Also for applying it for high stress torque load applications and almost continuous operation in various mills today, is surely on the rise. As a consequence the requisitions for Cardan Shafts have increased significantly where high torque load transmission is mandatory.

We are presenting for you a relatively simplified and universally approved torque determining technique which has been employed over the years by many Drive Shaft Manufacturing Companies that have been perusing a similar procedure while nominating to authorize a technically and efficient design of Cardan Shaft which would best suit your requirements. On the Cardan Shaft selection, it is necessary to assure that the rotating speed which is in function of the working angle is not too much high.

**Torque Transmission in Nm = 7025 \* ( p ) in motor-hp ) / rpm x safety factor ( where ever applicable )**

### CARDAN SHAFT - SERIES SELECTION CHART



**Note: Although major elements for determining the Torque levels have been ensured, we would still recommend a discussion with our technical team before the final selection of Cardan Shaft**

# Torque Calculation Technique

## Suitable For The Paper & Pulp Mills Applications.

1. Basic Parameters required

(A) mpm - meters per minute, (B) rd - Roll Dia in mm, (C) p -Motor-HP.

2. Determining the Circular Movement = (cm) of the Roll by using the following technique.  $cm = rd * \pi ( 3.1416 )$

3. Method for calculating the RPM =  $mpm/cm * 1000$

4. Nominal Torque ( Nm ) Rating Calculation method :  $Nm = 7,025 \times hp/rpm$

5. Closed and Expansion Length Measurement Observations must be drawn from the actual working conditions.

6. Safety Factors to be considered where applicable.

**Please refer the below illustration for a better understanding**

Basic parameters observed and received are : mpm = 200 , Roll dia - 950.mm and the motor HP = 220

Step – 1 – Finding out the cm = circular dia =  $950 \times 3.1416 = 2984.5$

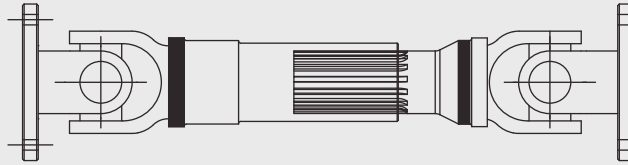
Step – 2 – Finding out the RPM =  $mpm / cm = 200 / 2984.5 \times 1000 = 67$

Step – 3 – Finding Nominal - Torque =  $7025 \times 220 / 67 = 23067$  - Safety Factors may we considered where necessary.

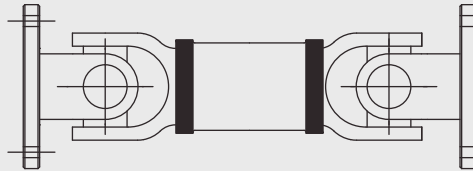
**Note: Although major elements for determining the Torque levels have been ensured, we would still recommend a discussion with our technical team before the final selection of Cardan Shaft**

# Varied Cardan Shaft Designs

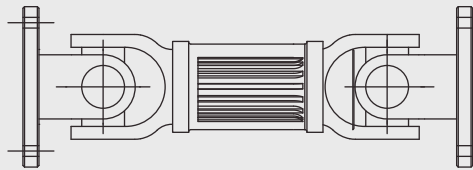
**TYPE A**  
With  
Length Expansion



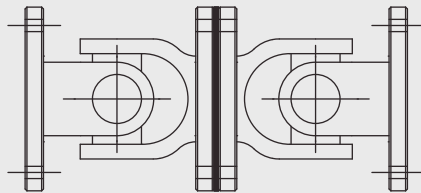
**TYPE B**  
Without  
Length Expansion



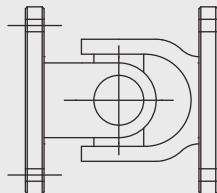
**TYPE C**  
Without tube  
Compact Series



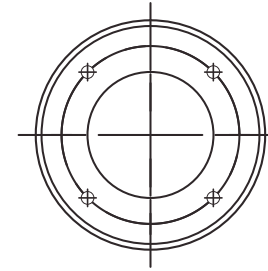
**TYPE D**  
Double Flange Yoke  
Assembly



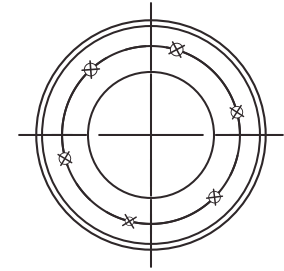
**TYPE E**  
Single Flange Yoke  
Assembly



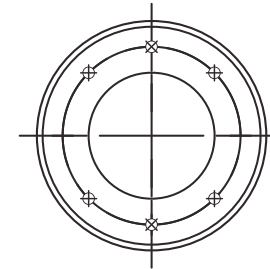
# With Standard Flange Options



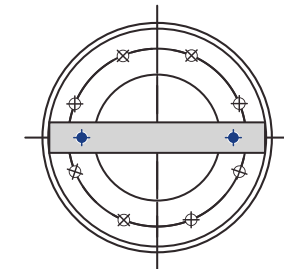
**4 BOLT FLANGE**



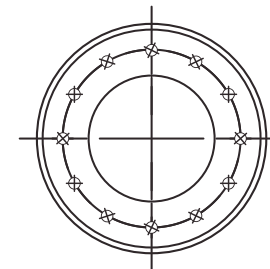
**6 BOLT FLANGE**



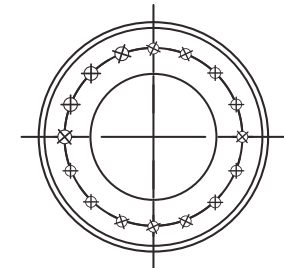
**8 BOLT FLANGE**



**8 BOLT FLANGE DRIVE KEY**

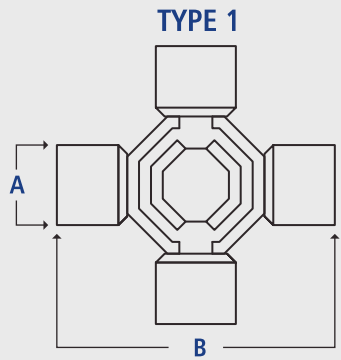


**12 BOLT FLANGE**



**16 BOLT FLANGE**

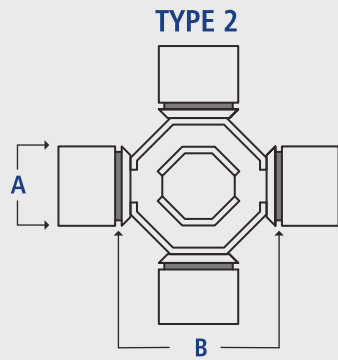
# UNIVERSAL JOINT SERVICE KITS



**TYPE 1**



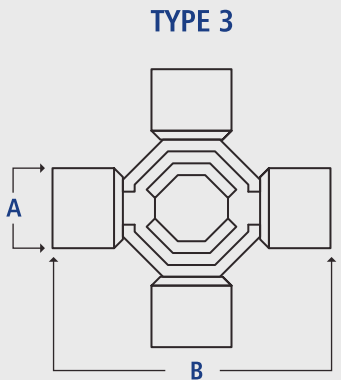
**Outer Circlip Lock**



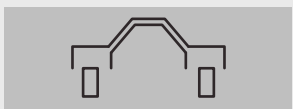
**TYPE 2**



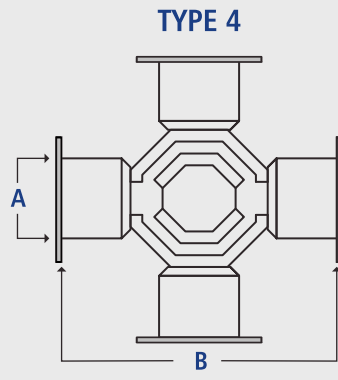
**Inner Circlip Lock**



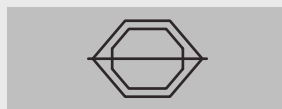
**TYPE 3**



**Outer Clamp Lock**



**TYPE 4**



**Weld Plate Lock**

TYPE	U.J.SERVICE KIT PART CODE	CUP-DIA A	LENGTH B
1	CS-UJ-01	110	245
1	CS-UJ-02	95	218
1	CS-UJ-03	89	218
1	CS-UJ-04	74	218
1	CS-UJ-05	65	172
1	CS-UJ-06	59	167
1	CS-UJ-07	57	152
1	CS-UJ-08	57	144
1	CS-UJ-09	52	147.5
1	CS-UJ-10	52	133
1	CS-UJ-11	48	154
1	CS-UJ-12	48	135
1	CS-UJ-13	47.68	135
1	CS-UJ-14	47.64	134.9
1	CS-UJ-15	42	129
1	CS-UJ-16	42	122
1	CS-UJ-17	42	119.8
1	CS-UJ-18	41.28	126
1	CS-UJ-19	39	115
1	CS-UJ-20	34.95	126
1	CS-UJ-21	34.95	106
1	CS-UJ-22	32	93
1	CS-UJ-23	30	106

TYPE	U.J.SERVICE KIT PART CODE	CUP-DIA A	LENGTH B
1	CS-UJ-24	30	92.9
1	CS-UJ-25	30	81.8
1	CS-UJ-26	27	81.8
1	CS-UJ-27	27	78
1	CS-UJ-28	23	61.8
1	CS-UJ-29	22	55
2	CS-UJ-30	46	69
2	CS-UJ-31	38	57
2	CS-UJ-32	23.8	35.25
3	CS-UJ-33	74	220
3	CS-UJ-34	74	244
3	CS-UJ-35	83	280
4	CS-UJ-36	59	167
4	CS-UJ-37	49	155



# CARDAN SHAFT - TORQUE RANGE:

## Mt.350.Nm up to 4000.Nm



### SE - LD SERIES - LIGHT DUTY DESIGN

TYPE	TECHNICAL SPECIFICATION	UNITS	SE-LD 65	SE-LD 75	SE-LD 86-SQ	SE-LD 86	SE-LD 97	SE-LD 100	SE-LD 120-SQ	SE-LD 120
A	SHORT DURATION TORQUE	Nm	350	400	450	700	950	1750	3200	3600
A	FLANGE BASE – OD	mm	65	75	SQUARE	86	96	100	SQUARE	120
A	FLANGE THICKNESS	mm	6	8	5,2	5,2	6,8	7	7,5	8
A	FLANGE SPIGOT – OD	mm	35	42	57	57	60	57	69.8	82
A	FLANGE SPIGOT HEIGHT	mm	1,5	1,5	1,6	1,6	1,6	2	1.6	1.6
A	C.L. OF JOINT TO FLANGE FACE	mm	50/65	60/75	40	35	42	50	50	60/80
A	NO. OF HOLES	no's	4	4	4	4	4	6	4	6 * 8
A	BOLT HOLE PCD	mm	52	62	69.8	69,8	79,3	84	95 / 100	101.5
A	DIAMETER OF BOLT HOLE	mm	5.2	6,2	8,2	8,2	9,8	8.5	11.2 / 12.2	10.6
A	ROTATING DIA	mm	70	75	70	76	95	102	122	120
A	JOURNAL CAP DIA	mm	22	22	22	23,6	27	30,81	30,106	38/46
A	TUBE DIA	mm	40	40	65	65	66	60	76	68 / 72
A	SLIP MOVEMENT	mm	100	80/120	100/150	40	40	50 / 100	50	45
A	OPERATING ANGLE	degree	20*	20*	20*	15*	20*	20*	18*	22*
A	MIN. LENGTH - Lz	mm	300	325	325/400	255	340/365	390	410	475
C	COMPACT DESIGN Min. - Lz	mm	220/250	250/275	250/280	180/230	215/280	265/320	320	310/360

Note: Although major elements for determining the Torque levels have been ensured, we would still recommend a discussion with our technical team before the final selection of Cardan Shaft. (More info: 91-98250-88388 | pulley007@gmail.com )

# CARDAN SHAFT - TORQUE RANGE:

## Mt.5000.Nm up to 9500.Nm



### SE - MD SERIES - MEDIUM DUTY DESIGN

TYPE	TECHNICAL SPECIFICATION	UNITS	SE-MD 130-R	SE-MD 146-R	SE-MD 146-SQ	SE-MD 155-R	SE-MD 175-R	SE-MD 204-R
A	SHORT DURATION TORQUE	Nm	5000	5250	5500	6800	7500	9500
A	FLANGE BASE - OD	mm	120/130	146	RECTANGULAR	155	175	204
A	FLANGE THICKNESS	mm	9	9,1	10,4	12,	10	10,2 / 14
A	FLANGE SPIGOT - OD	mm	82	95	95	90 / 100	168	196 / 198
A	FLANGE SPIGOT HEIGHT	mm	2	2	2	2	1,8	2
A	C.L. OF JOINT TO FLANGE FACE	mm	80	64 / 70	57 / 80	80 / 85	77 / 70	100 / 65
A	NO. OF HOLES	no's	6 * 8	4	4	6 * 8	8	8 * 12
A	BOLT HOLE PCD	mm	101,5 / 112	120	120	130	155,2	140 / 184
A	DIAMETER OF BOLT HOLE	mm	10,5	12,9	12,9	12,2	9,8 / 10.2	10,2 / 12,2
A	FLANGE ROTATING DIA	mm	135	150	150	150	180	210
A	JOURNAL CAP DIA	mm	46	39	35 / 41	35 / 41	41 / 47,64	49
A	SLIP MOVEMENT	mm	65	60	60	60 / 75	50	65 / 85
A	ANGULAR MOVEMENT	degree	30*	20	18* / 24*	18* / 20*	20*	18*
A	MIN. LENGTH - Lz	mm	625	485	465/500	550	600 / 575	640/590
C	COMPACT DESIGN LENGTH : Lz	mm	500 / 530	300 / 380	450 / 495	410 / 470	470 / 445	550 / 485

**Note:** Although major elements for determining the Torque levels have been ensured, we would still recommend a discussion with our technical team before the final selection of Cardan Shaft. (More info: 91-98250-88388 | pulley007@gmail.com )

# CARDAN SHAFT - TORQUE RANGE:

## Mt.9500.Nm up to 85000.Nm

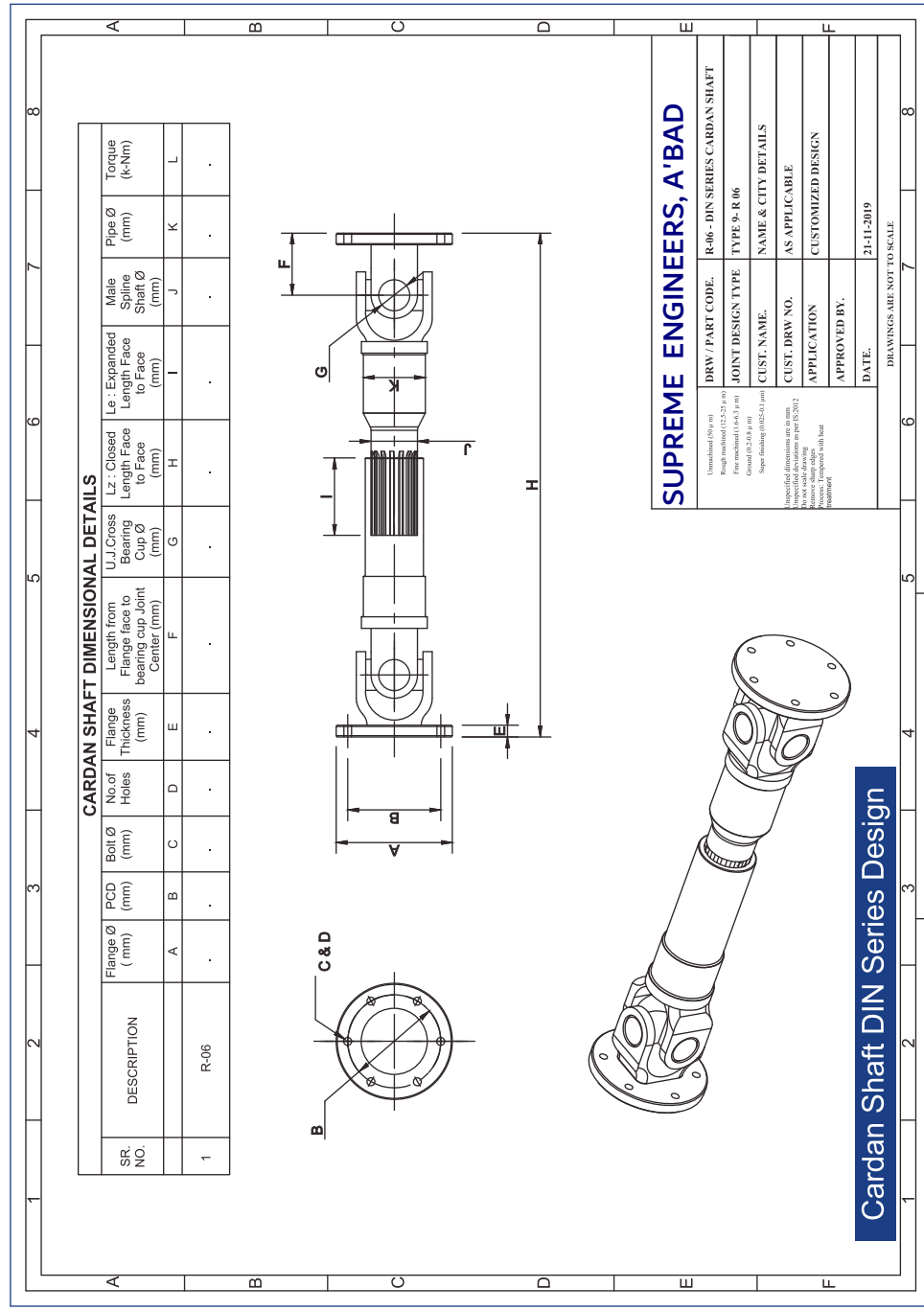
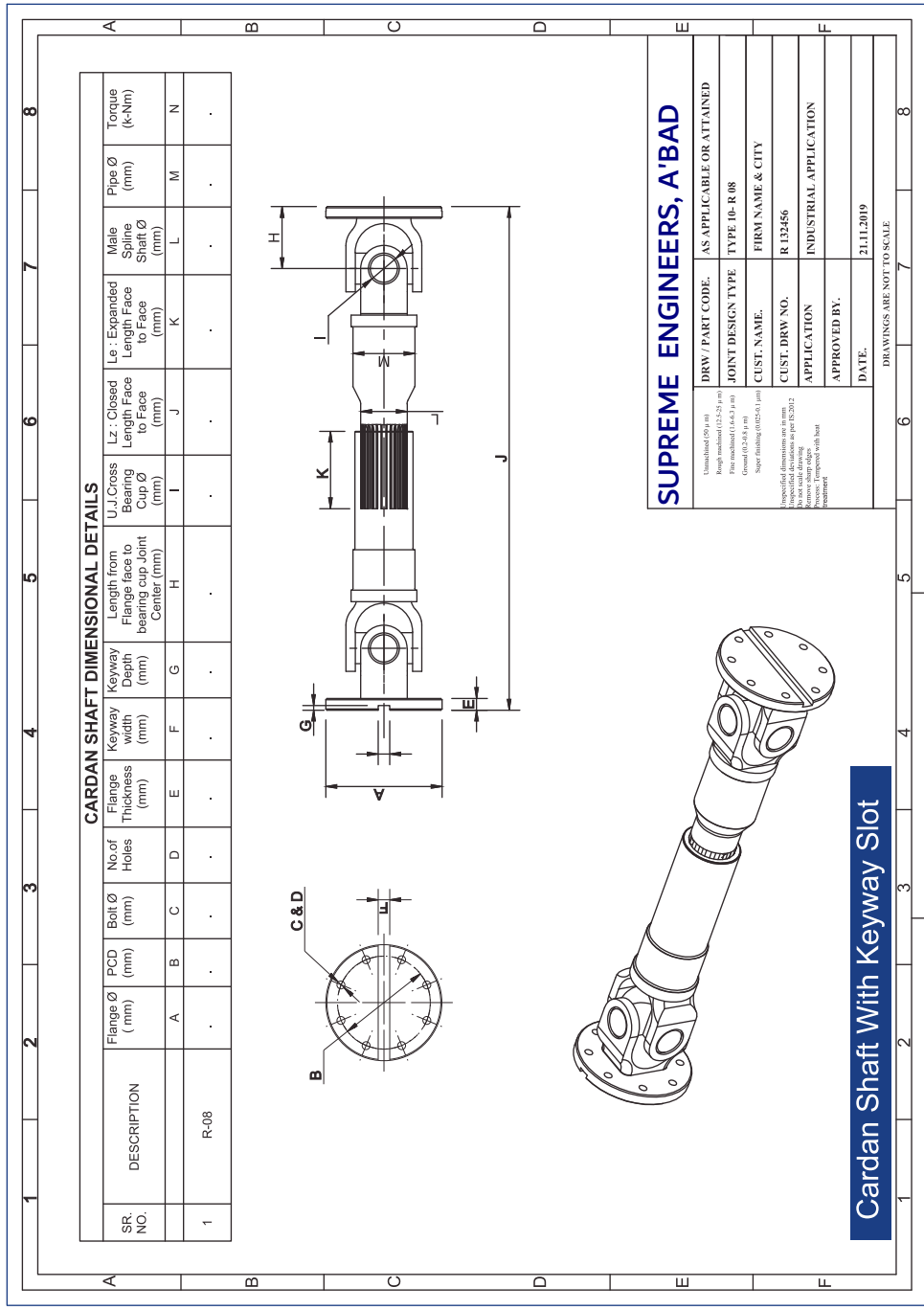


SE - HD SERIES - HEAVY DUTY DESIGN								
TYPE	TECHNICAL SPECIFICATION	UNITS	SE-HD-203	SE-HD-225	SE-HD-250	SE-HD-285	SE-HD-315	SE-HD-350
A	SHORT DURATION TORQUE	Nm	16000	20000	24000	30000	55000	85000
A	FLANGE BASE - OD	mm	204	225	250	285	315	350
A	FLANGE THICKNESS	mm	12,2 / 14,5	14 / 18	18 / 20	25 / 28	28 / 30	32
A	FLANGE SPIGOT - OD	mm	PLAIN / 196	180	PLAIN	PLAIN	PLAIN	PLAIN
A	FLANGE SPIGOT - HEIGHT / DEPTH	mm	H-2	4	6	8	10	12
A	C.L. OF JOINT TO FLANGE FACE	mm	105	110	115	120	140	150
A	NO. OF HOLES	no's	8	8	8	8	8	12
A	BOLT HOLE PCD	mm	184	196	220	250	280	295
A	DIAMETER OF BOLT HOLE	mm	12,2 / 14,4	14,4 / 16,4	16,4 / 18,8	18,8 / 21	23 / 25	27 / 31
A	JOURNAL CAP DIA	mm	52 / 57	57 / 59	59 / 65	65 / 74	89 / 95	95 / 110
A	KEY-WAY	mm	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
A	KEY-WAY ( WITDH x THICKNESS )	mm	12 * 6	20 * 20	25 * 25	25 * 25	30 * 30	3
A	TUBE - OUTER DIA	mm	101	112 / 120	116 / 124	124 / 130	155 / 175	175 / 190
A	SLIP MOVEMENT	mm	55	65	75	90	100	110
A	OPTIMAL ANGULAR MOVEMENT	degree	20*	18*	15*	14*	12*	12*
A	MIN. LENGTH AVAILABLE	mm	700	750	680 / 700	725 / 760	850 / 900	950 / 1000
B	MIN. LENGTH - Lz							
C	COMPACT DESIGN LENGTH : Lz	mm	525 / 560	580 / 620	620 / 680	680 / 750	750 / 820	820 / 950

**Note:** Although major elements for determining the Torque levels have been ensured, we would still recommend a discussion with our technical team before the final selection of Cardan Shaft. (More info: 91-98250-88388 | pulley007@gmail.com )

# PROCUREMENT MADE EASY

We are pleased to share illustrated drawings to ease your effort in sharing accurate dimensional information before sharing data of your existing or new requisitions for Cardan Shafts.



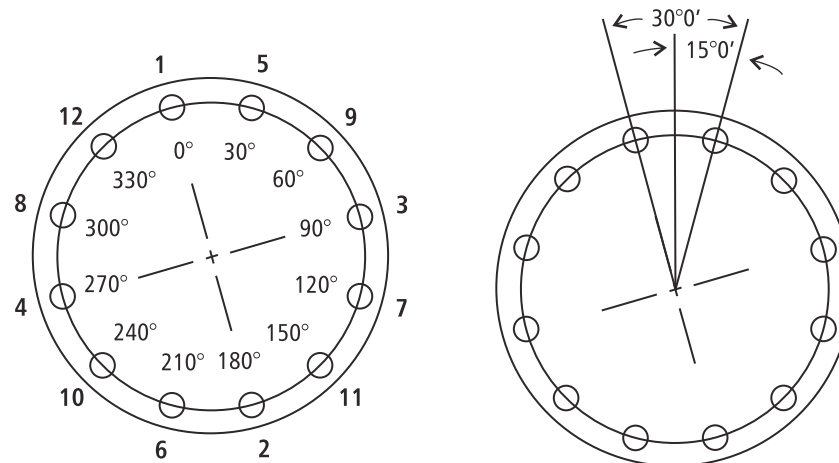
# Installation Manual

- Installing the Cardan Shafts requires skilled use of man power and we highly recommend that the responsible applicator should ideally be a skilled one. All traces of dirt, rust inhibitor and grease must be removed from the surface of the old flange to preserve the coefficient of friction which is vital for the torque transmission.
- Prior to the installation, it must be properly checked that they are assembled correctly which means that the  $\longleftrightarrow$  marking rays on the spline shaft and the spline hub must face each other at the same angle.
- The necessary bolting hardware used should be equal in length, strength and should be suitable as per the holes of the Spline Companion Hub, Also, please ensure that play between the Flange Hole and Bolts used to fasten the Cardan Shafts should be within the permissible limits.

## Re-Lubricating Instructions

- The Cardan Shafts are normally provided with grease points, one on the Grease cup and the other one on the spline shaft.
- We highly recommend you to provide for a periodical lubrication both on the Bearing Caps and the Spline grooves, at an interval of 1-2 months , However, in case of Medium and Heavy Duty shafts, we recommend that the greasing process be carried out every 4-6 weeks for obtaining a longer life span of the universal joint cross bearings.
- Pumping of the grease on the bearings should ideally be carried out up to its emission from the bearings cap seals with a maximum pressure 15 bar. Further, after the greasing process is completed, excess grease must be wiped off from the bearing sides and it may attract dust from the environment.

## Ideal Bolts Tightening Procedure



# Reference Notes

## Guidelines prior to placing a Purchase Order.

Special technical requests must be stated clearly in your valued Purchase Order forms and approval for the same is mandatory from our end.

1. Reference drawing incase of the existing Cardan Shafts (if available) may be submitted along with your requirement.
2. Any specific or Preferred Packaging Details - Wooden / Corrugated Boxes / Poly Bags - etc. may be updated to us.
3. Color Preferences (If any) must be mentioned separately.
4. Request for Anti-corrosion coating in case required must be stated in your order.
5. Room Temperature and working area conditions may be mentioned for a better understanding of the requirement.
6. The Lead Time must be clearly stated in your order form, so that any kind of delay is avoided.
7. Lubrication procedures may be well understood for obtaining a mature life cycle of the product.
8. Reference for use of High Tensile Fasteners are recommended, however, it may be consulted incase required.
9. Mode of material transit may be stated precisely along with your preferred dispatch destination.
10. Billing Name & Address, GST No, Any particular correspondence address should be precisely indicated.
10. Any preferred mode of Courier services may be mentioned clearly.
11. Your company's E-Mailing addresses with mandatory cc-bcc address.
12. Name and contact details of the Technical & Commercially concerned persons may be shared for prompt communication.

ILLUSTRATION FOR SENDING US A P.PO.								
SR.NO	INDUSTRY REF.	APPLICATION	CODE	DESIGN TYPE	MIN. LENGTH	MAX . LENGTH	TORQUE MAX. REQ.	PO QTY
1	PAPER & PULP MILL	COUCH ROLL	SE-HD-250	A	1000	1100	25-K-Nm	20
2	TUBE MILLS	TM.1-TM.2	SE-MD-204	A	650	725	10-K-Nm	10
3	VIBRATING SCREEN	VB-MACHINE	SE-MD-155	A	850	950	5-K-Nm	15
4	SEWAGE PUMPS	PUMP-NO-1-6	SE-HD-165	A	1000	1075	15-K-Nm	6



# SUPREME

E N G I N E E R S

Contact us:

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**CARDAN SHAFT MANUFACTURER IN INDIA**