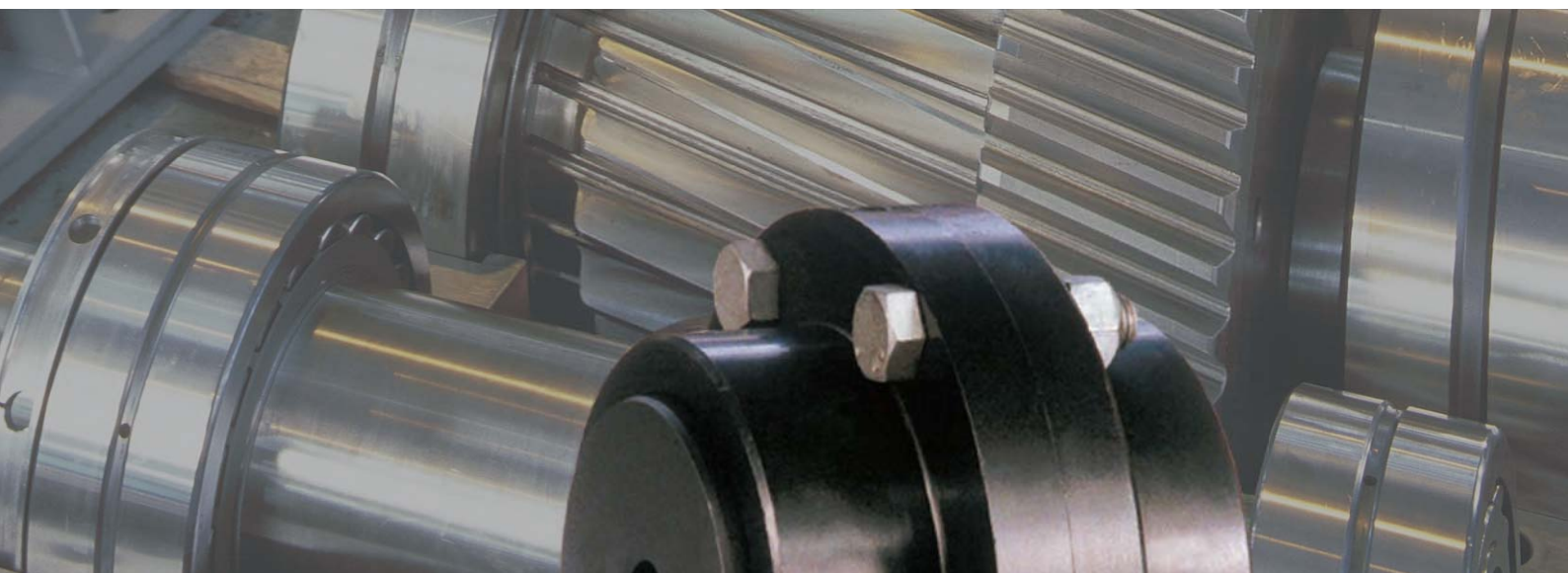


# ELECON **ELIGN MULTI CROWNED** GEAR COUPLING



Catalogue No.: 182/G/11/07 R2



[www.elecon.com](http://www.elecon.com)

## GEAR COUPLING

Ever Since its inception in 1951 Elecon's endeavour is to constantly update the products and offer superior products to its customers based on the latest technology available. Such a long experience in the field of development, design and manufacture of Power Transmission Equipment has led to the development of a new series of **ELIGN Gear couplings**.

The **ELIGN Gear couplings** are manufactured in Elecon's state of the art technology manufacturing plant on precision CNC machines. The new series of Gear couplings has a technology superiority compared with the other gear coupling available in the market. The usage of high quality material and workmanship is built-in-feature of **ELIGN Gear couplings**.

### WHY GEAR COUPLING ?

A Gear Coupling is used to join two rotating shafts for efficient transmission of mechanical power. Although the shafts are accurately aligned at the time of installation, it is likely that during the operation the alignment may get disturbed due to settling of foundation, thermal expansion, shaft deflection, wearing out of other parts, improper maintenance and many more reasons. Due to this unavoidable misalignment occurring during the operation a gear coupling provides a better solution to compensate or minimise the effect of misalignment.

The gear Couplings are therefore ideally suited for wide range of application in the entire field of drive technology.

### MISALIGNMENT

The main function of any Gear coupling is not only to connect two rotating shafts but also to accommodate mis-alignments of the connecting shafts **ELIGN Gear coupling** accommodates the following three types of misalignment.

#### A. Radial

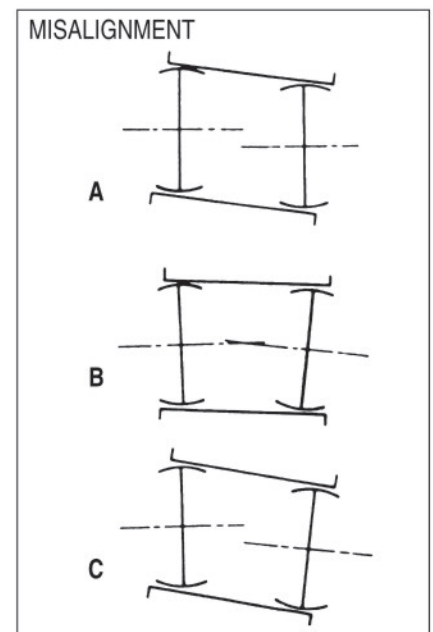
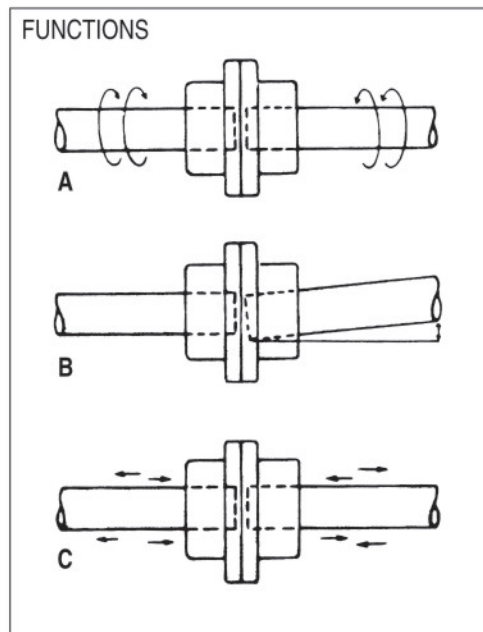
When axes of connected shafts are parallel but not in the same straight line

#### B. Angular

When axes of connected shafts intersect at center point of coupling but not in the same straight line.

#### C. Combined radial and angular.

When the axes of connected shafts do not intersect at point of coupling and are not parallel.



Besides above three types of misalignment, the **ELIGN Gear coupling** also permits axial movement of the shaft..

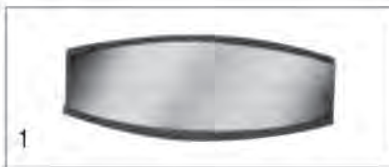
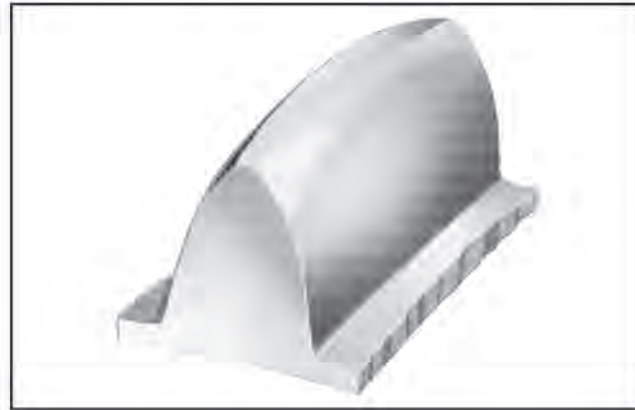
### CAUTION.

Normally permissible angular mis-alignment of **ELIGN gear coupling** is  $\pm 0.75^\circ$  for each half. However, it does not mean that the misalignment should be permitted to this limit from the initial installation. Since in case of misalignment occurring during operation the Elign gear coupling takes care of it without undue damage to the connected equipment, however the coupling's life may reduce due to relative motion between hub teeth and housing teeth causing fast wearing out of teeth.

It is therefore extremely important to align the interconnecting shafts precisely during initial installation.

## FEATURES OF ELIGN COUPLINGS

**ELIGN Gear coupling** consists of hubs with multi crowned teeth at Flank, tip and chamfering on teeth.



**Crowned Flanks :** Flanks of the teeth are crowned so that tooth thickness is greatest at that center of the tooth. This assures larger contact area per tooth for higher torque requirements and puts more teeth in contact for a given angle. Actual tooth loading takes place near the center of the tooth face where tooth thickness is greatest, Crowned flanks also eliminate end-of-tooth loading, provide optimum load distribution, and accommodate all types of misalignment with minimum backlash.

**Crowned Tips :** Tips of teeth are crowned. The crowned tip contacts the root of internal gear teeth in the external sleeve, accurately piloting the sleeve with true concentric ball-and-socket action. This allows minimum diametral sleeve clearance and centers the sleeve physically to assure good dynamic balance characteristics under various loading and misalignment conditions.

**Crowned Chamfers :** Faces of the teeth adjacent to the tips are chamfered to eliminate interference with the sleeve tooth fillets. This allows the true involute flanks of the gear teeth to be in contact with the sleeve teeth and assures freedom to misalign.

The hub teeth are manufactured on CNC machine. The hub is the heart of any gear coupling and a superior design and tooth profile of the hub enables the gear coupling to operate satisfactorily under all operating conditions with increased reliability and long life.

The multi crowned teeth also reduce the alignment adjustment and improve the load carrying capacity of the teeth. the backlash between the teeth is minimal due to multi-crown tooth design. This is where **ELIGN gear coupling** scores over other gear coupling available in the market.

**ELIGN gear coupling** is a simple, compact and light unit for transmitting the same power when compared to the couplings of similar capacity available in the market. It is manufactured out of tested quality forged carbon steel and passes through a number of quality checks.

Each half of the **ELIGN gear coupling** is interchangeable with any of other half, of same size of coupling

**ORDERING INFORMATION**  
**WHEN ORDERING, SPECIFY FOLLOWING INFORMATION**

- 1 Quantity and delivery requirements
- 2 Shaft or bore sizes and keyway dimensions. Give exact dimensions with tolerances.
- 3 **Load** — Horsepower and/or torque at a specific RPM. State normal and maximum conditions.
- 4 **Speed** — minimum, normal and maximum.
- 5 **Application** — type of driver and driven equipment.
- 6 Coupling Series, Type and Size.
- 7 **Space limitations** — envelope dimensions, shaft extensions and shaft spacing.
- 8 Unusual misalignment conditions.
- 9 **Modifications** — tapered bores, special keys, hub cut off, counterbores or others
- 10 Unusual operating conditions ambient temperatures and atmospheres.

**SELECTION**

- 1 **Obtain Shaft Sizes** Compare shaft sizes of driving and driven equipment with listed maximum bores of desired Series or Type coupling to determine "tentative" Coupling size
- 2 **Compute effective kW/rpm or torque to be transmitted** select a service factor from adjacent table Determine

$$\text{kW/rpm (effective)} = \frac{\text{kW TRANSMITTED X SERVICE FACTOR}}{\text{rpm}}$$

or determine Torque daNm as

$$\text{Torque (effective) daNm} = \frac{955 \text{ X kW TRANSMITTED X SERVICE FACTOR}}{\text{rpm}}$$

Confirm "Tentative" Coupling size or increase to a size which has a kW/rpm torque rating equal to or greater than value computed above.

- 3 **Check Maximum Speed of Application** Refer to maximum speed ratings. These speeds are given only as a guide since the maximum speed depends on the system characteristics.
- 4 **Check Space Limitations** Dimensions of the selected coupling should be compared with space provided in the application to assure proper clearances. Shaft extensions, separation, and clearances to align coupling should be checked.

## 5 Service Factor

Factor of driven machine											
driven machines	Daily duty (h)			driven machines	Daily duty (h)			driven machines	Daily duty (h)		
	8	16	24		8	16	24		8	16	24
<b>lifts</b>				<b>wood working machinery</b>				<b>Pump</b>			
freight elevators normal duty	1.25	1.35	1.5	decorating drums	1.25	1.35	1.35	rotary pumping plants	1.35	1.5	1.6
freight elevators heavy duty	1.35	1.5	1.7	frames	1.1	1.1	1.25	shaking machines	1.35	1.5	1.6
elevators	1.35	1.5		<b>iron and steel industry</b>				swing sieves	1.1	1.25	1.35
<b>excavators and stackers</b>				blast furnace blowers	1.35	1.35	1.35	<b>textile industry</b>			
bucket excavators (fixed chain)	1.4	1.5	1.7	inclined skip hoists for blast furnaces	1.5	1.5	1.6	bobbin winding machine	1.1	1.25	1.35
bucket chain excavators (loose chain)	1.25	1.35	1.5	<b>cranes</b>				printing and dyeing machines	1.1	1.25	1.35
travels (track)	1.4	1.4	1.4	travels	1.1	1.25	1.35	tan liquor vessels	1.1	1.25	1.35
travels (rail)	1.4	1.4	1.4	hoists	1.25	1.35	1.5	calenders	1.1	1.25	1.35
<b>bucket wheel stackers</b>				slews	1.25	1.3	1.4	willowing machines	1.1	1.25	1.35
bucket wheels	1.4	1.5	1.6	winches	1.25	1.3	1.4	looms	1.1	1.25	1.35
(Clearing/lime/coal)				<b>metal working</b>				<b>compressors, vents</b>			
slew drives	1.25	1.3	1.4	bending machines			1.35	rotary piston compress (U1:100-200)	1.35	1.5	1.6
winches	1.25	1.3	1.4	sheet straightening machine			1.4	rotary piston compressors (U<100)	1.4	1.6	1.6
<b>mining, rock, earth industry</b>				crank presses			1.5	vent N/n .005	1	1	1.1
jaw crushers			1.6	shears			1.35	vent N/n >0.05-0.1	1	1.1	1.25
pit fans			1.4	forging presses			1.5	ventN/n.0.1	1.1	1.15	1.35
cone crushers			1.6	punches			1.5	<b>rolling mills</b>			
chain tramways			1.4	<b>mixers</b>				working roller tables			
rotary crushers			1.6	mixers, liquids	1	1	1.1	strip reels			1.6
jolting machines			1.5	mixture semiliquid	1.1	1.25	1.35	sheet shears			1.6
scale breakers			1.6	mixture granular material	1.1	1.25	1.35	sheet manipulators			1.35
wagon pushers			1.4	concrete mixers	1.1	1.25	1.35	bloom conveying plants	1.6	1.9	1.9
crushing rolls			1.5	<b>mills</b>				wire reels			1.35
<b>chemical industry</b>				hammer mills			2	capstan handles			1.5
agitators, constant density	1	1	1.1	ball mills			1.9	revolving turrets, cont. casting			1.25
agitators, viscous liquids	1.1	1.25	1.35	pendulum mills			1.9	de-scaling crushers			1.4
wire pulls	1.25	1.35	1.5	impact mills			2	lifting tables			1.35
<b>rotary drums</b>				roll mills			1.9	walking beam conveyers			1.5
rotary kilns	1.1	1.25	1.35	roll crushers			1.9	chain transporters			1.4
cooling drums	1.1	1.25	1.35	<b>oil industry</b>				billet shares			1.5
drying drums	1.1	1.25	1.35	filter presses			1.35	cooling beds			1.25
threshers	1.1	1.25	1.35	pipeline pumps			1.35	straightening presses			1.7
<b>conveying plants</b>				scavenging pump			1.35	roll straighteners	1.35	1.6	1.6
shaft sinking machines	1.35	1.5	1.7	<b>paper machines</b>				plate trimming shears			1.4
bucket belts	1.1	1.25	1.25	couchers	1.35	1.5	1.5	winding turret			1.25
rubber belt conveyers light	1	1.1	1.1	horizontal rollers	1.35	1.5	1.6	winding tractors			1.25
rubber belt conveyers heavy	1.1	1.25	1.25	calenders	1.35	1.5	1.5	cropping shears			1.5
band bucket elevators	1	1.1	1.1	glue presses	1.35	1.5	1.6	rope tractors			1.4
trolley conveyers	1.1	1.25	1.25	wet ends	1.35	1.5	1.5	s-roller high speed			1.25
coilers	1.25	1.25	1.25	wet presses	1.35	1.5	1.5	s-rolls, low speed			1.1
bucket chain conveyers	1.25	1.35	1.35	suction formers	1.35	1.5	1.5	roller transporters			1.35
apron feeds	1.25	1.35	1.35	suction rollers	1.35	1.5	1.5	positioning and tilting mech.	1.6	1.9	1.9
Screw conveyers	1.1	1.25	1.35	dry glazing calenders	1.35	1.5	1.6	hot and cold saws			1.5
trough chain conveyers	1.1	1.25	1.35	dry cylinders	1.35	1.5	1.6	live rollertables			1.35
<b>blowers, fans, generators</b>				reversing suction presses	1.35	1.5	1.5	<b>machine tools</b>			
axial blowers	1	1.1	1.25	<b>presses</b>				turning movement	1.1	1.25	1.35
rotary piston blowers	1.1	1.25	1.35	folding presses	1.4	1.4	1.5	planing machines metal	1.25	1.35	1.5
radial blowers	1	1.1	1.25	briquetting presses	1.4	1.4	1.5	horizontal saw-mills	1.35	1.5	1.6
exhaust fans, ind.-drft fans	1.1	1.25	1.35	eccentric presses	1.4	1.4	1.5	wood grinding machines	1.25	1.35	1.5
turbo blowers	1	1.1	1.25	forging presses	1.4	1.4	1.5	centrifuges	1.25	1.36	1.5
light generators	1	1	1.1	brick presses	1.4	1.4	1.5	tackles	1.25	1.3	1.4
generators, pulsating load	1.1	1.25	1.35	<b>pumps</b>							
welding generators	1.35	1.4	1.6	centrifugal pumps, liquids	1	1	1.1				
<b>rubber and plastics machines</b>				centrifugal pumps semiliquids	1.1	1.1	1.25				
extruders	1.25	1.35	1.5	piston pumps(U1:100-200)	1.25	1.35	1.5				
rubber calenders	1.25	1.35	1.5	piston pumps (U<100)	1.4	1.5	1.6				
rubber kneading machines	1.25	1.35	1.5	cargo pumps	1.15	1.25	1.35				
rubber rolling machines	1.25	1.35	1.5	propeller pumps	1.25	1.35	1.5				
mixers	1.25	1.35	1.35	sand pumps	1.15	1.25	1.35				

- Lifting Hole**

The hubs of the couplings from size ED 1600 onwards are supplied with lifting holes to facilitate lifting of coupling.

- Lubrication**

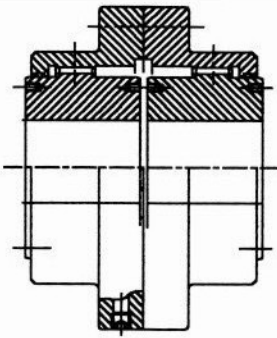
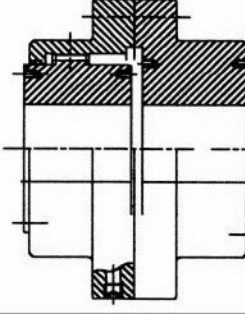
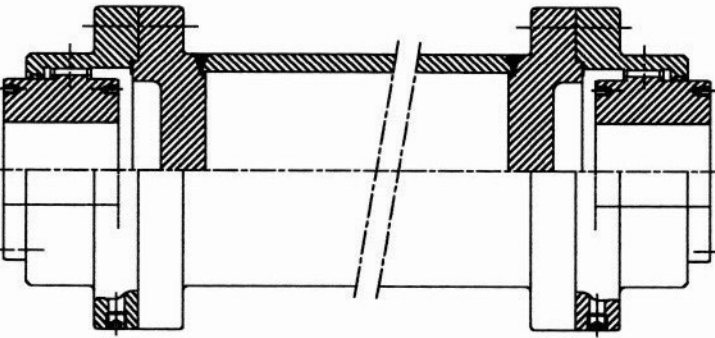
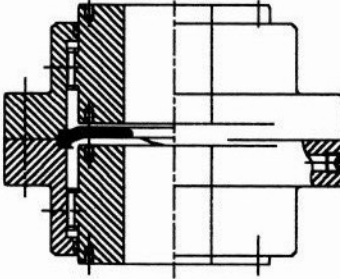
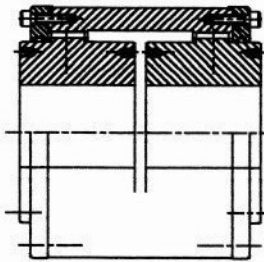
Each coupling half is provided with grease nipple/plug on the housing from where grease can be filled directly. The coupling are supplied with some quality of grease to facilitate assembly. It is recommended to fill the required quality and quantity of grease before putting the coupling in operation.

- Special Protection**

All the components of **ELIGN gear couplings** are applied a special rust preventive oil coating. Besides all the bolts & nuts are zinc/cadmium plated to give protection towards rust & corrosion.

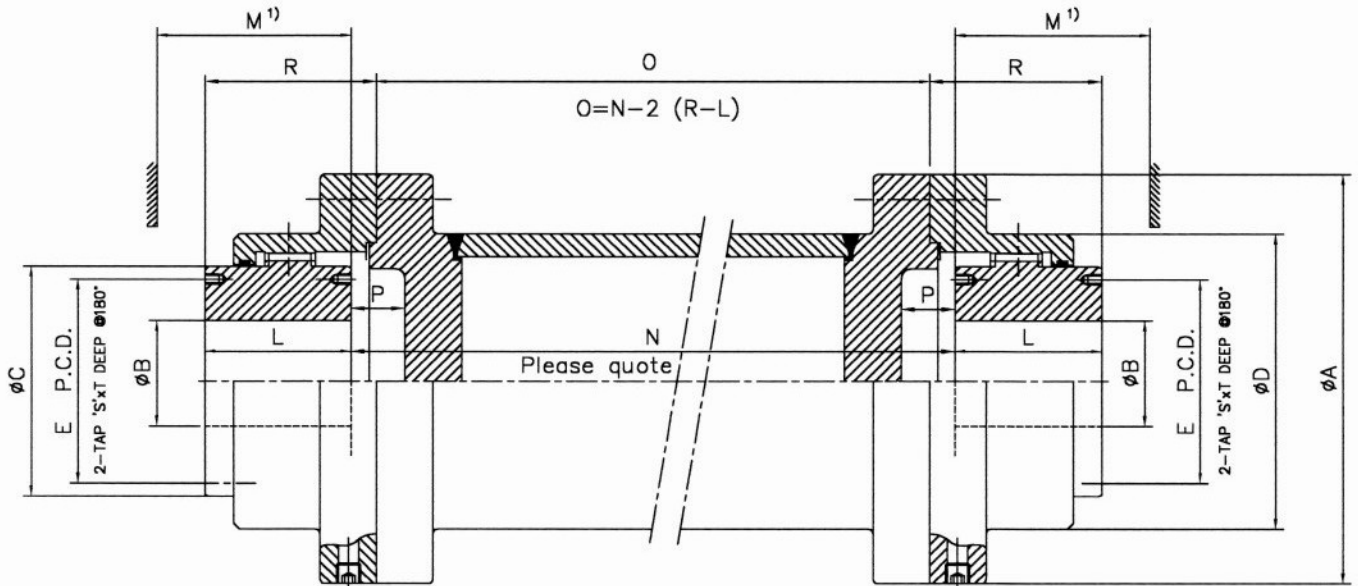
## TYPES OF ELIGN GEAR COUPLINGS

The following types are available

<p><b>Type ED</b></p>		<p>With Double housing The couplings are available with bore limitations upto 540 mm and torque ratings upto 110000 da Nm</p>
<p><b>Type ER</b></p>		<p>With one end rigid The coupling are available with bore limitations up to 370 mm one side and 410 mm on rigid end and torque ratings upto 45000 da Nm.</p>
<p><b>Type ET</b></p>		<p>With Spacer The couplings are available with bore limitations upto 540 mm and torque ratings upto 110000 da Nm</p>
<p><b>Type EV</b></p>		<p>For vertical application The couplings are available with bore limitations upto 275 mm and torque ratings upto 17400 da Nm</p>
<p><b>Type ES</b></p>		<p>With Single housing The couplings are available with bore limitations from 40 mm to 275 mm and torque ratings from 1600 da Nm to 17400 da Nm</p>

# Multi Crowned Toothed Couplings For Shaft Connections

## Type ET



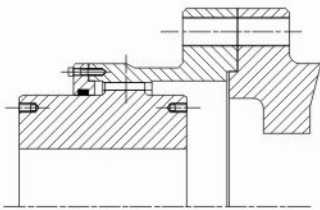
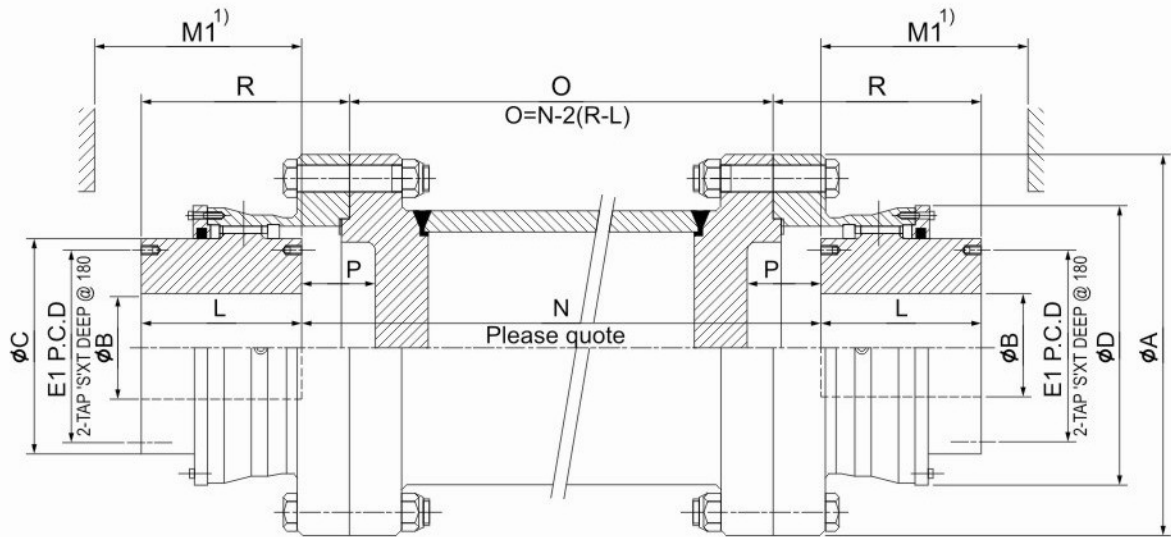
SIZE TkN CONTINUOUS	Tk max shock	PkN n conti.	DIAMETER						LENGTH				TAPPING		MISALIGNMENT		WEIGHT	MO- MENTS OF INERTIA	MAXIMUM ADM. SPEED
			A	B			C	D	L	M1	P	R	E	SxT	Degree	± mm			
				PILOT	MIN.	Maxi													
daNm	daNm	kW/rpm	mm						mm				mm		Degree	± mm	kg	J (kgm2)	1/min
ET 130	260	0.136	111	10	15	45	67	80	43	74	16	53.5	—	—	0.75	1.5	4	0.005	LIMITED BY THE CRITICAL SPEED AND WEIGHT OF THE INTERMEDIATE HOLLOW SHAFT
ET 280	560	0.293	141	15	20	60	87	103.5	50	84	13	57.5	—	—	0.75	1.5	8	0.015	
ET 500	1000	0.524	171	25	30	75	106	129.5	62	104	20	77.5	—	—	0.75	1.5	14	0.039	
ET 1000	2000	1.047	210	30	35	95	130	156	76	123	20	90.5	—	—	0.75	2.5	25	0.101	
ET 1600	3200	1.675	234	35	40	110	151	181	90	148	22	106.5	130	M8x12	0.75	2.5	37	0.188	
ET 2200	4400	2.304	274	50	55	130	178	209	105	172	25	125	155	M8x12	0.75	3	60	0.431	
ET 3200	6400	3.351	312	60	65	155	213	247	120	192	26	141	185	M10x15	0.75	3	90	0.845	
ET 4500	9000	4.712	337	75	80	175	235	273	135	216	31	160	205	M12x18	0.75	4	118	1.322	
ET 6200	12400	6.492	380	85	90	195	263	307	150	241	33	178	226	M16x24	0.75	4	168	2.450	
ET 8400	16800	8.796	405	95	100	215	286	338	175	279	40	210	250	M16x24	0.75	4	224	3.720	
ET 11500	23000	12.042	444	115	120	240	316	368	190	304	47	232	276	M16x24	0.75	4	277	5.390	
ET 17400	34800	18.221	506	145	150	275	372	426	220	339	42	257	330	M20x30	0.75	5.5	414	10.88	

- 1 SPACE REQUIRED TO CHANGE THE SEAL
- 2 KEYWAYS ACCORDING TO DIN:6885 PART-1
- 3 MAXIMUM ANGULAR MISALIGNMENT PER COUPLING HALF  $\pm 0.75^\circ$
- 4 WEIGHT & MOMENT OF INERTIA WITHOUT INTERMEDIATE HOLLOW SHAFT.
- 5 CONTINUOUS TORQUE RATING SUBJECT TO ACCURATE ALIGNMENT OF CONNECTING SHAFTS.
- 6 FOR HIGHER SIZE REQUIREMENT SEND REQUEST.

In accordance with our established policy to constantly improve our products, the specifications contained herein are subject to change without notice

# Multi Crowned Toothed Couplings For Shaft Connections

## Type ET (SUPER SERIES)



SHAPE OF COUPLING  
FOR SIZE 29000 & 56000

SIZE T <sub>k</sub> N CONTINUOUS	T <sub>k</sub> max shock	P <sub>k</sub> N n conti.	DIAMETER						LENGTH				TAPPING		MISALIGNMENT		WEIGHT	MOMENTS OF INERTIA	MAXIMUM ADM. SPEED
			A	B			C	D	L	M1	P	R	E	SxT	Degree	± mm			
				PILOT	MIN.	Maxi.													
daNm	daNm	kW/rpm	mm						mm				mm		Degree	± mm	kg	J (kgm <sup>2</sup> )	1/min
ET 25200	50400	26.39	632	155	160	310	422	550	280	335	119	391.5	360	M20x30	0.75	10	670	26.75	LIMITED BY THE CRITICAL SPEED AND WEIGHT OF THE INTERMEDIATE HOLLOW SHAFT
ET 29000	58000	30.366	640	195	200	320	432	518	292	324	33	318.5	380	M20x30	0.75	6.5	760	31	
ET 37000	74000	38.746	715	205	210	355	472	616	310	370	133	433	410	M24x40	0.75	12	930	48	
ET 45000	90000	47.123	750	225	230	370	502	648	330	395	144	464	435	M24x40	0.75	11.5	1110	65.8	
ET 56000	112000	58.639	804	275	280	450	594	682	350	379	61	404.5	544	M24x40	0.75	6.5	1532	105	
ET 75000	150000	78.539	910	285	290	480	620	812	410	485	121	521.5	550	M36x55	0.75	10.5	2180	198	
ET 90000	180000	94.247	980	315	320	515	670	860	430	510	102	523.5	585	M36x55	0.75	15.5	2520	265	
ET 110000	220000	115.19	1020	325	330	540	700	908	450	530	97	539.5	615	M36x55	0.75	16	2910	333	

- 1 SPACE REQUIRED TO CHANGE THE SEAL
- 2 KEYWAYS ACCORDING TO DIN:6885 PART-1
- 3 MAXIMUM ANGULAR MISALIGNMENT PER COUPLING HALF ±0.75°
- 4 WEIGHT & MOMENT OF INERTIA WITHOUT INTERMEDIATE HOLLOW SHAFT.
- 5 CONTINUOUS TORQUE RATING SUBJECT TO ACCURATE ALIGNMENT OF CONNECTING SHAFTS.
- 6 FOR HIGHER SIZE REQUIREMENT SEND REQUEST.

In accordance with our established policy to constantly improve our products, the specifications contained herein are subject to change without notice

Notes :

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