

PM Features and Benefits



Features

- Severe shock load protection
- Intrinsically fail safe
- Maintenance free
- Vibration control
- Zero backlash
- Misalignment capability
- Low cost

Construction details

- PM Couplings up to PM18 are manufactured in high strength ductile iron to BS EN 1563 and PM27 and above manufactured in cast steel to BS 3100 A4.
- Separate rubber elements with a choice of grade and hardness, styrene butadiene with 60 shore hardness (SM60) being the standard.
- Rubber elements loaded in compression.
- Rubber elements are totally enclosed.

Heavy duty steel coupling for torques up to 6000KNm.

The Standard range comprises

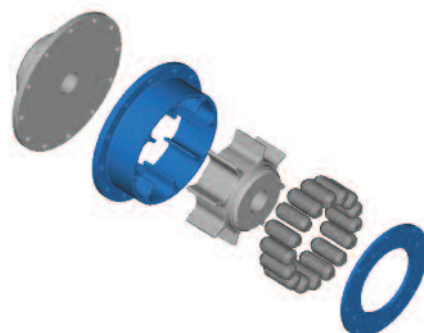
- Shaft to shaft
- Flange to shaft
- Mill motor coupling
- Brake drum coupling

Applications

- Metal manufacture
- Mining and mineral processing
- Pumps
- Fans
- Compressors
- Cranes and hoists
- Pulp and paper industry
- General heavy duty industrial applications

Benefits

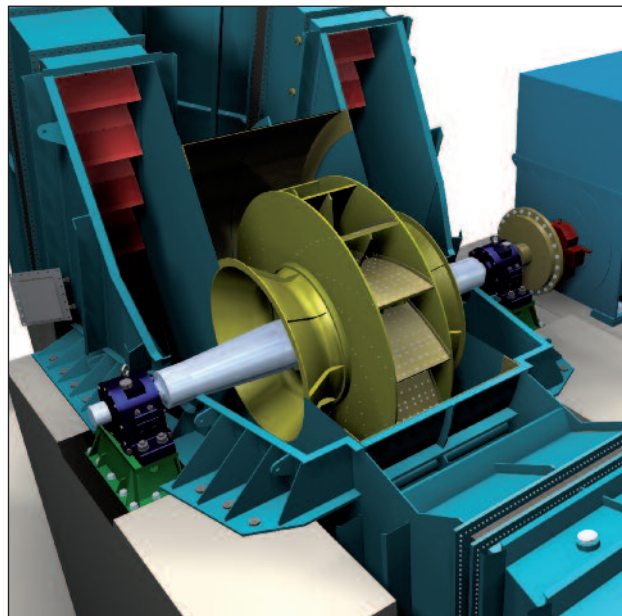
- Giving protection and avoiding failure of the driveline under high transient torques.
- Ensuring continuous operation of the driveline in the unlikely event of rubber failure or damage.
- With no lubrication or adjustment required resulting in low running costs.
- Achieving low vibratory loads in the driveline components by selection of optimum stiffness characteristics.
- Eliminating torque amplifications through pre-compression of the rubber elements.
- Allows axial and radial misalignment between the driving and driven machines.
- The PM Coupling gives the lowest lifetime cost.



PM Typical Applications



Ladle Crane. Couplings fitted on the input and output of the main hoist and long travel.



Fan Drive. Coupling fitted between the variable frequency electric motor and the fan.



Conveyor. Couplings fitted on the input and output on conveyor drives.



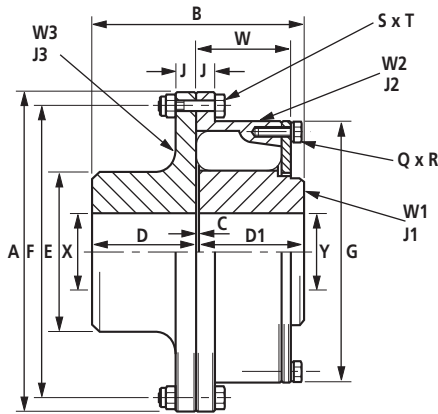
Steam Turbine Gerator Set. Coupling fitted between the gearbox and alternator.



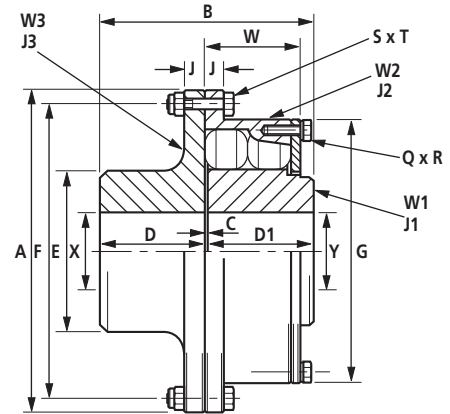
Eiffle Tower main lift. Coupling with brake disc fitted between the electric motor and the gearbox that raises, lowers and brakes lift.

PM Shaft to Shaft PM 0.4 to PM 130

0.4 - 60



90 - 130

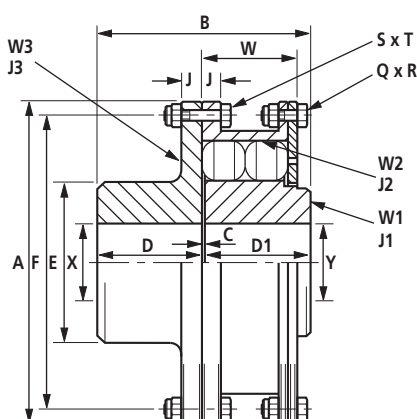
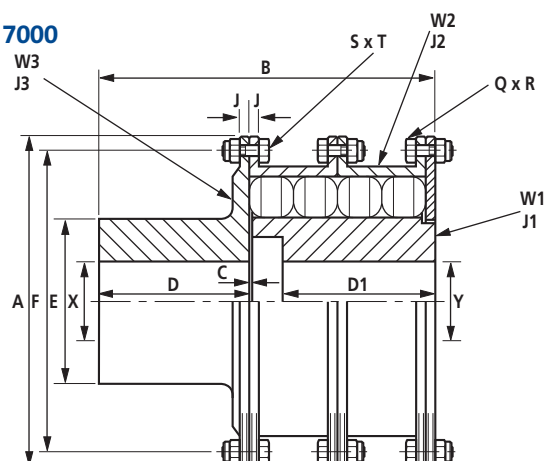


Dimensions, Weight, Inertia and Alignment

COUPLING SIZE		0.4	0.7	1.3	3	6	8	12	18	27	40	60	90	130
DIMENSIONS (mm)	A	161.9	187.3	215.9	260.3	260	302	338	392	440	490	568	638	728
	B	103	110	130	143	175	193	221.5	254	290.5	329	377.5	432.5	487
	C	1	2	2	3	3	3	3.5	4	4.5	5	5.5	6.5	7
	D	51	54	64	70	86	95	109	125	143	162	186	213	240
	D1	51	54	64	70	86	95	109	125	143	162	186	213	240
	E	76	92	108	122	135	148	168	195	220	252	288	330	373
	F	146	171.4	196.8	235	240	276	312	360	407	458	528	598	680
	G	133	157	181	214.3	222	245	280	320	367	418	479	548	620
	J	9.5	11	12	14.5	11	13.5	14	16	18.5	21	24	26.5	31
	Q	5	5	6	6	8	8	8	8	8	8	8	8	8
	R	M8	M8	M8	M8	M8	M10	M12	M16	M16	M16	M20	M20	M24
	S	8	8	8	8	12	12	12	12	12	16	12	16	16
	T	M8	M8	M8	M8	M8	M12	M12	M16	M16	M16	M20	M20	M24
	W	36	39	46	60	81	89	102	118	134	152.7	175	200	226
	MAX. X & Y (4)	41	51	64	73	85	95	109	125	143	162	186	213	240
	MIN. X (5)	27	27	35	37	50	62	68	80	90	105	120	140	160
MIN. Y	27	27	37	40	50	55	65	70	85	105	110	140	160	
RUBBER ELEMENTS	Per Cavity	1	1	1	1	1	1	1	1	1	1	1	2	2
	Per Coupling	10	10	12	12	16	16	16	16	16	16	16	32	32
MAXIMUM SPEED (rpm) (1)		7200	6300	5400	4500	4480	3860	3450	2975	2650	2380	2050	1830	1600
WEIGHT (3) (kg)	W1	1.9	2.8	4.5	6.9	8.9	11.62	17.74	27.0	40.18	59.5	89.45	132.0	191.11
	W2	2.0	2.9	4.6	6.0	6.55	10.92	15.86	24.59	35.34	50.47	77.80	111.96	165.24
	W3	2.8	4.3	6.6	10.0	10.84	15.14	21.24	33.03	47.80	69.32	104.63	151.78	222.39
	TOTAL	6.7	10.0	15.7	22.9	26.3	37.7	54.8	84.6	123.3	179.3	271.9	395.7	578.7
INERTIA (3) (kg m ²)	J1	0.002	0.004	0.008	0.018	0.026	0.050	0.101	0.203	0.392	0.756	1.491	2.872	5.330
	J2	0.006	0.014	0.019	0.049	0.072	0.149	0.273	0.560	1.041	1.898	3.867	7.188	13.680
	J3	0.005	0.013	0.025	0.05	0.058	0.116	0.194	0.406	0.748	1.345	2.719	4.955	9.565
ALLOWABLE MISALIGNMENT (2)														
RADIAL (mm)		0.8	0.8	0.8	1.2	1.5	1.6	1.6	1.6	1.9	2.1	2.4	2.8	3.3
AXIAL (mm)		0.8	1.2	1.2	1.2	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.25	3.5
CONICAL (degree)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

- (1) For operation above 80% of the declared maximum coupling speed, it is recommended that the coupling is dynamically balanced.
- (2) Installations should be initially aligned as accurately as possible. In order to allow for deterioration in alignment over time, it is recommended that initial alignment should not exceed 25% of the above noted data. The forces on the driving and driven machinery should be calculated to ensure that these do not exceed the manufacturers allowables.
- (3) Weights and inertias are calculated with mean bore for couplings up to and including PM600, and with maximum bore for PM900 and above.
- (4) Oversize shafts can be accommodated in large boss driving flanges, manufactured to customer's requirements.
- (5) PM0.4 - PM3 driving flanges are available with solid bores on request.

PM Shaft to Shaft PM 180 to PM 7000

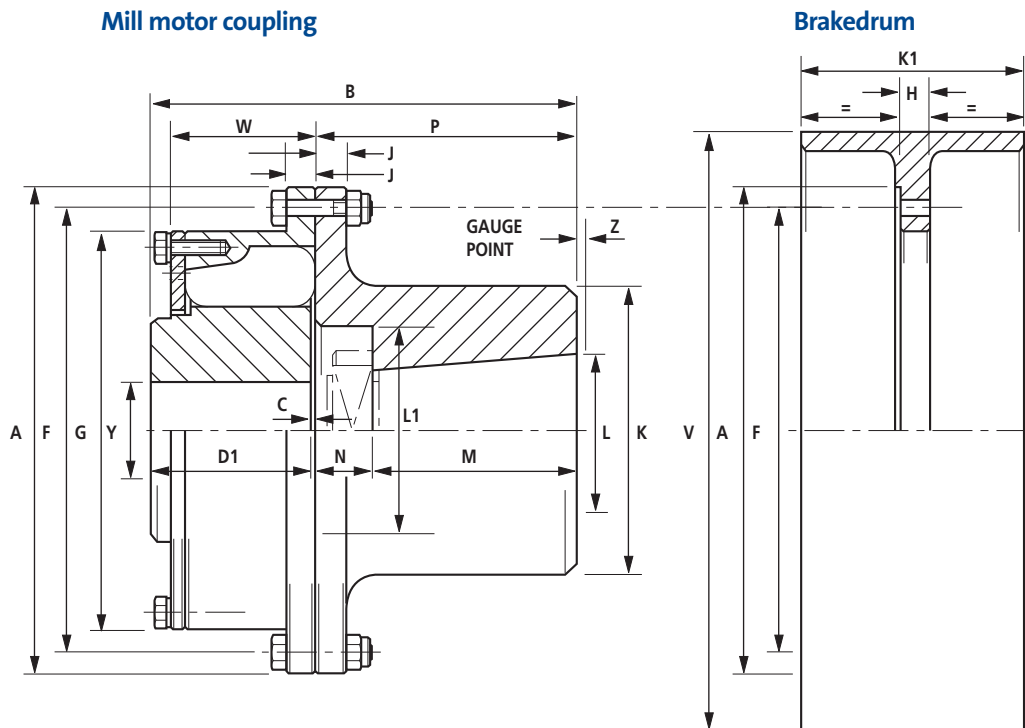
180 - 600

850 - 7000


Dimensions, Weight, Inertia and Alignment

COUPLING SIZE		180	270	400	600	850	1200	2000	3500	4700	7000
DIMENSIONS (mm)	A	798	925	1065	1195	1143	1320.8	1574.8	2006.6	2006.6	2006.6
	B	544	623	710.5	812	831	869	1035	1245	1447	1877
	C	8	9	10.5	12	6.35	6.35	6.35	12.7	12.7	12.7
	D	268	307	350	400	406	425	508	507	711	875
	D1	268	307	350	400	406	425	508	507	711	875
	E	415	475	542	620	648	762	965	1016	1220	1370
	F	750	865	992	1122	1066.8	1239.9	1473.2	1892.3	1892.3	1892.3
	J	33.5	36	43	52	44.5	50.8	63.5	76	76	76
	Q	12	12	12	12	20	20	20	24	24	24
	R	M24	M30	M36	M36	M30	M30	M36	M36	M36	M36
	S	20	20	20	24	20	20	20	24	24	24
	T	M24	M30	M36	M36	M36	M36	M45	M48	M48	M48
	W	252	288.5	328	376	425.5	444.5	514.4	520.7	643.5	1003.3
	MAX. X & Y (4)	268	307	350	400	400	457	559	612	711	813
	MIN. X	167	192	232	285	343	381	457	533	609	686
MIN. Y	170	195	235	285	343	381	457	533	609	686	
RUBBER ELEMENTS	Per Cavity	2	2	2	2	2	3	3	3	4	6
	Per Coupling	32	32	32	32	48	78	84	96	128	192
MAXIMUM SPEED (rpm) (1)		1460	1260	1090	975	1000	870	725	580	580	580
WEIGHT (3) (kg)	W1	262.3	389.0	562.4	813.3	1059.9	1633.3	2594.6	5263.3	6450.8	8644.4
	W2	266.78	414.0	633.4	909.1	710.3	965.1	1670.9	2732.2	3921.2	4895.6
	W3	297.4	437.3	651.2	946.7	929.8	1388.8	2631.4	4185.5	7196.1	7742.9
TOTAL		826.5	1240.3	1847	2669.1	2700.0	3987.2	6896.9	12181.0	17568.1	21282.9
INERTIA (3) (kg m ²)	J1	9.14	17.88	34.03	65.54	103.97	221.36	493.67	1653.41	2145.76	3063.85
	J2	28.80	59.30	119.5	220.2	163.89	306.74	743.28	2075.48	3056.46	3755.94
	J3	15.35	29.89	60.66	115.7	105.01	212.24	587.70	1466.3	2637.60	2927.67
ALLOWABLE MISALIGNMENT (2)											
RADIAL (mm)		3.5	3.9	4.6	5.2	2.8	3.3	3.3	3.3	3.3	3.3
AXIAL (mm)		4.0	4.5	5.25	6.0	3.2	3.2	4.8	6.3	6.3	6.3
CONICAL (degree)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

- (1) For operation above 80% of the declared maximum coupling speed, it is recommended that the coupling is dynamically balanced.
- (2) Installations should be initially aligned as accurately as possible. In order to allow for deterioration in alignment over time, it is recommended that initial alignment should not exceed 25% of the above noted data. The forces on the driving and driven machinery should be calculated to ensure that these do not exceed the manufacturers allowables.
- (3) Weights and inertias are calculated with mean bore for couplings up to and including PM600, and with maximum bore for PM900 and above.
- (4) Oversize shafts can be accommodated in large boss driving flanges, manufactured to customer's requirements.

PM Mill Motor Couplings



Brakedrums may be used in conjunction with the whole range of PM couplings and may be bolted on either the driving flange or flexible half side of the coupling, the recess - ϕA - locating on the outside diameter of the coupling.

Recommended brake drums for each size of coupling are shown in the table, but ϕV is adjustable to suit "Non-standard" applications.

Type PM-SDW dimensions table (Ingot motor)

COUPLING SIZE		0.7	1.3	3	6	12	18				
MOTOR FRAME SIZE		180M	180L	225L	250L	280M	280L	355L	400L	400LX	450L
hp		12.7	16	26	43	63	82	123	170	228	300
rpm		956	958	730	732	734	735	590	590	591	592
DIMENSIONS (mm)	A	187.3	187.3	215.9	260.3	260	260	338	338	392	392
	B	168	168	178	215	231	231	284.5	324.5	341	341
	C	2	2	2	3	3	3	3.5	3.5	4	4
	D1	54	54	64	70	86	86	109	109	125	125
	F	171.4	171.4	196.8	235	240	240	312	312	360	360
	G	157	157	181	214.3	222	222	280	280	320	320
	H	15.3	20.3	18.7	18.9	23.5	23.5	23.5	25.5	26	26
	J	11	11	12	14.5	11	11	14	14	16	16
	K	100	100	125	140	155	185	205	205	205	215
	K1	90	110	110	140	180	180	180	225	225	225
	L	42	42	55	60	75	75	95	100	100	110
	L1	70	70	90	105	120	120	135	155	155	170
	M	84	84	84	107	107	107	132	167	167	167
	N	28	28	28	35	35	35	40	45	45	45
	P	112	112	112	142	142	142	172	212	212	212
	V	250	315	315	400	500	500	500	630	630	630
	W	36	46	46	60	81	81	102	102	118	118
MIN.Y	27	27	38	49	50	50	72	72	80	80	
MAX.Y	51	51	64	73	85	85	109	109	125	125	
Z	3	3	3	3	3	3	3	5	5	5	

The motor ratings are taken for Periodic Duty Classes S4 and S5, 150 starts per hour with a cyclic duration factor at 40%. For motors operating outside these ratings, consult Renold Hi-Tec Couplings

PM Mill Motor Couplings

Type PM-MM dimensions table (AISE motor)

Series 6 mill motors

COUPLING SIZE		0.4	0.7	1.3	3	6	12	18	27	40
MOTOR FRAME SIZE		602	603 604	606	608	610	612 614	616	618 620	622 624
hp		7	10 15	25	35	50	75 100	150	200 275	375 500
rpm		800	725 650	575	525	500	475 460	450	410 390	360 340
DIMENSIONS (mm)	A	161.9	187.3 187.3	215.9	260.3	260	338 338	392	440 440	440 490
	B	153	172 172	196	219	237	281.5 281.5	318	336.5 336.5	392.5 466
	C	1	2 2	2	3	3	3.5 3.5	4	4.5 4.5	4.5 5
	D1	51	54 54	64	70	86	109 109	125	143 143	143 162
	F	146	171.4 171.4	196.8	235	240	312 312	360	407 407	407 458
	G	133	157 157	181	221	222	280 280	320	367 367	367 418
	H	13.5	15.3 15.3	18.7	18.9	18.5	18.5 18.5	21	21 21	21 21
	J	9.5	11 11	12	14.5	11	14 14	16	18.5 18.5	18.5 21
	K	102	121 121	133	171	178	190 216	241	254 305	305 305
	K1	83	95 95	146	146	171	222 222	286	286 286	286 286
	L	44.45	50.80 50.80	63.50	76.20	82.55	92.07 107.95	117.47	127.00 149.22	158.75 177.80
	L1	76.2	88.9 88.9	101.6	123.8	127	158.7 158.7	181	203.2 228.6	228.6 228.6
	M	70	83 83	95	111	111	124 124	137	149 168	178 232
	N	31	33 33	35	35	37	45 45	52	40 51	67 67
	P	101	116 116	130	146	148	169 169	189	189 219	245 299
	V	203	254 254	330	330	406	483 483	584	584 584	584 584
	W	36	39 39	46	60	81	102 102	118	134 134	152.7 152.7
MIN.Y	22	27 27	38	49	50	72 72	80	92 92	92 105	
MAX.Y	41	51 51	64	73	85	109 109	125	143 143	143 162	
Z	3	3 3	3	3	3	3 3	5	5 5	5 5	

Series 8 mill motors

COUPLING SIZE		0.4	0.7	1.3	3	6	12	18	27
MOTOR FRAME SIZE		802	802	803	804	806 808	810	812 814	816 818
hp		7.5	10	15	20	30 50	70	100 150	200 250
rpm		800	800	725	650	575 525	500	475 460	450 410
DIMENSIONS (mm)	A	161.9	161.9	187.3	215.9	260.3 260.3	260	338 338	392 440
	B	153	153	172	182	203 219	237	281.5 281.5	318 336.5
	C	1	1	2	2	3 3	3	3.5 3.5	4 4.5
	D1	51	51	54	64	70 70	86	109 109	125 143
	F	146	146	171.4	196.8	235 235	240	312 312	360 407
	G	133	133	157	181	221 221	222	280 280	320 367
	H	13.5	15.3	15.3	18.7	18.9 18.5	18.5	18.5 18.5	21 21
	J	9.5	9.5	11	12	14.5 14.5	11	14 14	16 18.5
	K	102	102	121	121	133 171	178	190 216	241 254
	K1	83	95	95	146	146 171	171	222 222	286 286
	L	44.45	44.45	50.80	50.80	63.50 76.20	82.55	92.07 107.95	117.47 127.00
	L1	76.2	76.2	88.9	88.9	101.6 123.8	127	158.7 158.7	181 203.2
	M	70	70	83	83	95 111	111	124 124	137 149
	N	31	31	33	33	35 35	37	45 45	52 60
	P	101	101	116	116	130 146	148	169 169	189 189
	V	203	254	254	330	330 406	406	483 483	584 584
	W	36	36	39	46	60 60	81	102 102	118 134
MIN.Y	22	22	27	38	49 49	50	72 72	80 92	
MAX.Y	41	41	51	64	73 73	85	109 109	125 143	
Z	3	3	3	3	3 3	3	3 3	5 5	

PM Technical Data

1.1 Prediction of the System Torsional Vibration Characteristics.

An adequate prediction of the system torsional vibration characteristics can be made by the following method.

- 1.1.1 Use the torsional stiffness as shown in the technical data, which is based upon data measured at a 30°C ambient temperature (C_{Tdyn}).
- 1.1.2 Repeat the calculation made as 1.1.1 but using the maximum temperature correction factor S_{t100} , and dynamic magnifier correction factor, M_{100} , for the corrected rubber. Use tables below to adjust values for both torsional stiffness and dynamic magnifier. ie, $C_{Tdyn} = C_{Tdyn} \times S_{t100}$

Rubber Grade	Temp _{max} °C	S _t
SM 60	100	$S_{t100} = 0.60$
SM 70	100	$S_{t100} = 0.44$
SM 80	100	$S_{t100} = 0.37$
SM 60 is considered "standard"		

Rubber Grade	Dynamic Magnifier at 30°C (M_{30})	Dynamic Magnifier at 100°C (M_{100})
SM 60	8	13.1
SM 70	6	13.6
SM 80	4	10.8
SM 60 is considered "standard"		

- 1.1.3 Review calculations 1.1.1 and 1.1.2 and if the speed range is clear of criticals which do not exceed the allowable heat dissipation value as published in the catalogue, then the coupling is considered suitable for the application with respect to the torsional vibration characteristics. If there is a critical in the speed range then actual temperature of the coupling will need to be calculated.

1.2 Prediction of the Actual Coupling Temperature and Torsional Stiffness

- 1.2.1 Use the torsional stiffness as published in the catalogue, this is based upon data measured at 30°C and the dynamic magnifier at 30°C (M_{30}).

- 2.2.2 Compare the synthesis value of the calculated heat load in the coupling (P_k) at the speed of interest to the "Allowable Heat Dissipation" (P_{kw}).

The coupling temperature rise

$$\Delta C = \text{Temp}_{\text{coup}} = \left(\frac{P_k}{P_{kw}} \right) \times 70$$

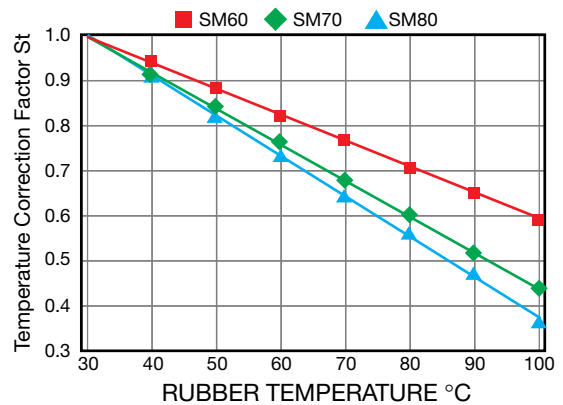
The coupling temperature = ϑ

$$\vartheta = \text{Temp}_{\text{coup}} + \text{Ambient Temp.}$$

- 1.2.3 Calculate the temperature correction factor S_t from 1.3 (if the coupling temperature > 100°C, then use S_{t100}). Calculate the dynamic Magnifier as per 1.4. Repeat the calculation with the new value of coupling stiffness and dynamic magnifier.

- 1.2.4 Calculate the coupling temperature as per 1.2. Repeat calculation until the coupling temperature agrees with the correction factors for torsional stiffness and dynamic magnifier used in the calculation.

1.3 Temperature Correction Factor



1.4 Dynamic Magnifier Correction Factor

The Dynamic Magnifier of the rubber is subject to temperature variation in the same way as the torsional stiffness.

$$M_T = \frac{M_{30}}{S_t}$$

$$\Psi_T = \Psi_{30} \times S_t$$

Rubber Grade	Dynamic Magnifier (M_{30})	Relative Damping Φ_{30}
SM 60	8	0.78
SM 70	6	1.05
SM 80	4	1.57
SM 60 is considered "standard"		

PM Technical Data - Standard Blocks

PM 0.4 - PM 130

COUPLING SIZE		0.4	0.7	1.3	3	6	8	12	18	27	40	60	90	130
kW / rpm		0.045	0.07	0.14	0.32	0.63	0.84	1.25	1.89	2.83	4.19	6.28	9.43	13.62
MAXIMUM TORQUE T _{Kmax} (kNm)		0.43	0.67	1.3	3.0	6.0	8.0	12.0	18.0	27.0	40.0	60.0	90.0	130.0
VIBRATORY TORQUE T _{Kw} (kNm) (2)		0.054	0.084	0.163	0.375	0.75	1.0	1.5	2.25	3.375	5.0	7.5	11.25	16.25
ALLOWABLE DISSIPATED HEAT AT AMB. TEMP. 30°C P _{Kw} (W)		266	322	365	458	564	562	670	798	870	1018	1159	1209	1369
MAXIMUM SPEED (rpm)		7200	6300	5400	4500	4480	3860	3450	2975	2650	2380	2050	1830	1600
DYNAMIC TORSIONAL (3) STIFFNESS C _{Tdyn} (MNm/rad)														
@ 0.25 T _{KN}	SM 60	0.003	0.005	0.012	0.029	0.073	0.097	0.146	0.218	0.328	0.485	0.728	1.092	1.577
	SM 70	0.005	0.008	0.018	0.043	0.104	0.138	0.207	0.311	0.466	0.691	1.036	1.554	2.245
	SM 80	0.009	0.013	0.030	0.072	0.134	0.179	0.269	0.403	0.605	0.896	1.344	2.016	2.912
@ 0.50 T _{KN}	SM 60	0.005	0.008	0.019	0.046	0.104	0.138	0.207	0.311	0.466	0.691	1.036	1.554	2.245
	SM 70	0.007	0.010	0.025	0.058	0.139	0.185	0.277	0.416	0.624	0.924	1.386	2.079	3.003
	SM 80	0.010	0.015	0.036	0.086	0.181	0.241	0.361	0.542	0.813	1.204	1.806	2.709	3.913
@ 0.75 T _{KN}	SM 60	0.008	0.012	0.029	0.069	0.154	0.205	0.308	0.462	0.693	1.027	1.540	2.310	3.337
	SM 70	0.009	0.014	0.033	0.078	0.199	0.265	0.398	0.596	0.895	1.325	1.988	2.982	4.307
	SM 80	0.012	0.018	0.043	0.102	0.265	0.353	0.529	0.794	1.191	1.764	2.646	3.969	5.733
@ 1.0 T _{KN}	SM 60	0.011	0.018	0.043	0.102	0.224	0.299	0.448	0.672	1.008	1.493	2.240	3.360	4.853
	SM 70	0.012	0.018	0.044	0.105	0.277	0.370	0.554	0.832	1.247	1.848	2.772	4.158	6.006
	SM 80	0.014	0.021	0.051	0.122	0.382	0.510	0.764	1.147	1.720	2.548	3.822	5.733	8.281
RADIAL STIFFNESS (N/mm) @ NO LOAD	SM 60	685	723	1240	2050	6276	6966	7980	9140	10460	11069	12680	14500	16400
	SM 70	1070	1130	1950	3240	8400	9320	10680	12230	14000	15960	18280	20916	23646
	SM 80	1740	1820	3210	5190	11400	12650	14500	16600	19000	21660	24810	28200	32100
RADIAL STIFFNESS (N/mm) @ 50% T _{Kmax}	SM 60	1430	1510	2600	4300	13180	14630	16780	19200	21970	25050	28700	32820	37110
	SM 70	1760	1860	3200	5240	13800	15320	17550	20100	23000	26220	30040	34360	38850
	SM 80	2510	2650	4480	7450	16500	18320	20980	24000	27500	31350	35910	41100	46450
AXIAL STIFFNESS (N/mm) @ NO LOAD	SM 60	458	502	714	970	1060	1176	1347	1543	1766	2010	2306	2638	2980
	SM 70	753	828	1180	1610	2748	3050	3495	4000	4580	5220	5980	6840	7740
	SM 80	1040	1160	1670	2230	4120	4573	5240	6000	6867	7828	8968	10260	11600
AXIAL STIFFNESS (N/mm) @ 50% T _{Kmax}	SM 60	920	1050	1540	2020	2300	2500	2920	3310	3830	4360	4980	5720	6460
	SM 70	1100	1360	1920	2610	2750	3050	3500	4000	4580	5220	5980	6840	7740
	SM 80	1250	1450	2060	2750	4120	4570	5240	6000	6870	7830	8970	10260	11600
MAX. AXIAL FORCE (N) @ 50% T _{Kmax} (1)	SM 60	66	72	102	128	1501	1668	1913	2178	2502	2845	3267	3728	4218
	SM 70	78	80	112	140	1648	1825	2099	2374	2747	3139	3581	4101	4640
	SM 80	85	106	148	185	2237	2482	2845	3257	3728	4265	4866	5572	6298

(1) The couplings will 'slip' axially when the maximum axial force is reached.

(2) At 10Hz only, allowable vibratory torque at higher or lower frequencies $f_e = T_{kw} \sqrt{\frac{10\text{Hz}}{f_e}}$

$$\sqrt{\frac{10\text{Hz}}{f_e}}$$

(3) These values should be corrected for rubber temperature as shown in the design information section.

$$T_{KN} = \frac{T_{KMAX}}{3}$$

PM Technical Data - Standard Blocks

PM 180 - PM 7000

COUPLING SIZE		180	270	400	600	850	1200	2000	3500	4700	7000
kW / rpm		18.86	28.29	41.91	62.86	89.01	125.67	209.45	366.53	492.20	733.06
MAXIMUM TORQUE T_{Kmax} (kNm)		180.0	270.0	400.0	600.0	850.0	1200	2000	3500	4700	7000
VIBRATORY TORQUE T_{KW} (kNm) (2)		22.5	33.75	50.00	75.00	106.2	150.0	250.0	437.5	587.5	875.0
ALLOWABLE DISSIPATED HEAT AT AMB. TEMP. 30°C P_{KW} (W)		1526	1735	1985	2168						
MAXIMUM SPEED (rpm)		1460	1260	1090	975	1000	870	725	580	580	580
DYNAMIC TORSIONAL (3) STIFFNESS C_{Tdyn} (MNm/rad)											
@ 0.25 T_{KN}	SM 60	2.184	3.276	4.853	7.280	14.600	22.500	40.800	74.900	102.000	148.000
	SM 70	3.108	4.662	6.838	10.360	22.000	34.000	61.700	114.000	154.000	225.000
	SM 80	4.032	6.048	8.960	13.440	36.600	56.500	102.000	195.000	257.000	376.000
@ 0.50 T_{KN}	SM 60	3.108	4.661	6.838	10.360	23.100	35.500	64.000	117.000	161.000	232.000
	SM 70	4.158	6.237	9.240	13.860	29.900	46.100	83.300	153.000	209.000	304.000
	SM 80	5.418	8.127	12.040	18.060	43.800	67.600	123.000	226.000	307.000	443.000
@ 0.75 T_{KN}	SM 60	4.620	6.720	10.269	15.400	36.000	55.300	99.100	178.000	249.000	358.000
	SM 70	5.964	8.946	13.251	19.880	40.600	62.400	115.000	205.000	232.000	409.000
	SM 80	7.938	11.907	17.64	26.480	52.500	80.900	147.000	268.000	367.000	534.000
@ 1.0 T_{KN}	SM 60	6.720	10.080	14.931	22.400	54.000	82.900	149.000	265.000	372.000	533.000
	SM 70	8.316	12.474	18.480	27.720	54.700	84.100	151.000	272.000	379.000	546.000
	SM 80	11.466	17.199	25.480	38.220	63.000	97.100	175.000	320.000	439.000	638.000
RADIAL STIFFNESS (N/mm) @ NO LOAD	SM 60	18270	20920	23820	27300	37800	41900	54900	57500	76500	115000
	SM 70	26350	30170	34340	39370	60300	66200	87300	91100	122000	182000
	SM 80	35750	40945	46600	53400	95800	105000	140000	145800	195000	291000
RADIAL STIFFNESS (N/mm) @ 50% T_{Kmax}	SM 60	41350	47350	53890	61780	85540	94820	124240	130120	173345	260245
	SM 70	43290	49560	56420	64680	99073	108766	143434	149677	200446	299026
	SM 80	51760	59260	67460	77330	38714	152040	202720	211118	282360	421368
AXIAL STIFFNESS (N/mm) @ NO LOAD	SM 60	3324	3800	4332	4966	18200	20800	27700	28400	37800	56700
	SM 70	8620	9870	11230	12880	30300	34300	45600	47000	62700	94000
	SM 80	12924	14800	16844	19310	35000	39800	49300	75000	100000	150000
AXIAL STIFFNESS (N/mm) @ 50% T_{Kmax}	SM 60	7200	8240	9380	10760	39440	45074	60026	61543	81913	122869
	SM 70	8620	9870	11230	12880	30300	34300	45600	47000	62700	94000
	SM80	12920	14800	16840	19310	35000	39800	49300	75000	100000	150000
MAX. AXIAL FORCE (N) @ 50% T_{Kmax} (1)	SM 60	4709	5396	6131	7034	-	-	-	-	-	-
	SM 70	5160	5915	6730	7720	-	-	-	-	-	-
	SM 80	7014	8025	9143	10477	-	-	-	-	-	-

(1) The couplings will 'slip' axially when the maximum axial force is reached.

(2) At 10Hz only, allowable vibratory torque at higher or lower frequencies $f_e = T_{KW} \sqrt{\frac{10\text{Hz}}{f_e}}$

$$\sqrt{\frac{10\text{Hz}}{f_e}}$$

(3) These values should be corrected for rubber temperature as shown in the design information section.

$$T_{KN} = \frac{T_{KMAX}}{3}$$

PM Technical Data - Special Round Blocks

PM 12 - PM 600

COUPLING SIZE		12	18	27	40	60	90	130	180	270	400	600
kW / rpm		1.25	1.89	2.83	4.19	6.28	9.43	13.62	18.86	28.29	41.91	62.86
NOMINAL TORQUE T_{KN} (kNm)		3.2	4.8	7.2	10.67	15.99	24.0	34.67	48.0	72.0	106.67	159.99
MAXIMUM TORQUE T_{Kmax} (kNm)		12.0	18.0	27.0	40.0	60.0	90.0	130.0	180.0	270.0	400.0	600.0
VIBRATORY TORQUE T_{KW} (kNm) (2)		1.0	1.5	2.25	3.334	5.0	7.5	10.833	15.0	22.5	29.0	42.75
ALLOWABLE DISSIPATED HEAT AT AMB. TEMP. 30°C P_{KW} (W)		130	150	180	220	260	300	340	375	440	490	565
MAXIMUM SPEED (rpm)		3450	2975	2650	2380	2050	1830	1600	1460	1260	1090	975
DYNAMIC TORSIONAL (3) STIFFNESS C_{rdyn} (MNm/rad)												
@ 0.25 T_{KN}	SM 60	0.053	0.08	0.12	0.18	0.27	0.613	0.885	1.226	1.839	2.724	4.087
	SM 70	0.072	0.109	0.163	0.241	0.362	0.895	1.293	1.79	2.685	3.978	5.967
	SM 80	0.1	0.149	0.224	0.322	0.498	0.747	1.079	1.493	2.24	3.319	4.98
@ 0.50 T_{KN}	SM 60	0.088	0.132	0.198	0.293	0.44	0.791	1.143	1.582	2.373	3.516	5.273
	SM 70	0.104	0.155	0.233	0.345	0.52	1.05	1.517	2.1	3.15	4.667	7
	SM 80	0.159	0.239	0.358	0.53	0.796	1.193	1.724	2.387	3.58	5.304	7.956
@ 0.75 T_{KN}	SM 60	0.168	0.251	0.377	0.559	0.84	1.154	1.667	2.308	3.462	5.129	7.693
	SM 70	0.162	0.243	0.364	0.539	0.809	1.317	1.902	2.634	3.951	5.853	8.78
	SM 80	0.214	0.321	0.481	0.713	1.069	1.603	2.316	3.207	4.81	7.126	10.689
@ 1.0 T_{KN}	SM 60	0.285	0.427	0.641	0.948	1.424	1.91	2.759	3.82	5.73	8.489	12.733
	SM 70	0.256	0.385	0.577	0.855	1.282	1.85	2.672	3.7	5.55	8.222	12.333
	SM 80	0.328	0.491	0.737	1.092	1.638	2.457	3.549	4.913	7.37	10.919	16.378
RADIAL STIFFNESS (N/mm) @ NO LOAD	SM 60	2619	3000	3433	3914	4497	5132	5798	6464	7398	8438	9657
	SM 70	3742	4286	4905	5592	6425	7333	8284	9236	10570	12050	13798
	SM 80	6138	7030	8044	9170	10538	12025	13586	15147	17335	19770	22628
RADIAL STIFFNESS (N/mm) @ T_{KN}	SM 60	9510	10900	12470	14215	16300	18640	21000	23480	26870	30650	35070
	SM 70	9056	10374	11870	13530	15550	17745	20048	22350	25580	29176	33390
	SM 80	9132	10460	11968	13644	15678	17892	20214	22535	25790	29410	33666
AXIAL STIFFNESS (N/mm) @ NO LOAD	SM 60	1122	1285	1470	1675	1925	2198	2482	2768	3168	3613	4135
	SM 70	1495	1710	1960	2234	2568	2930	3310	3690	4220	4818	5514
	SM 80	2545	2915	3335	3800	4368	4986	5632	6278	7187	8197	9380
AXIAL STIFFNESS (N/mm) @ T_{KN}	SM 60	2918	3340	3825	4360	5010	5718	6460	7200	8242	9400	10750
	SM 70	3067	3510	4020	4580	5266	6000	6790	7570	8660	9880	11300
	SM 80	3218	3686	4218	4808	5526	6306	7124	7942	9090	10368	11865
MAX. AXIAL FORCE (N) @ T_{KN} (1)		2943	3335	3728	4415	5003	5690	6475	7161	8240	9418	10791

- (1) The couplings will 'slip' axially when the maximum axial force is reached.
 (2) At 10Hz only, allowable vibratory torque at higher or lower frequencies $f_e = T_{kw} \sqrt{\frac{10\text{Hz}}{f_e}}$

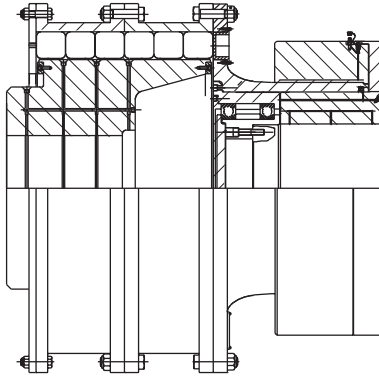
$$\sqrt{\frac{10\text{Hz}}{f_e}}$$

- (3) These values should be corrected for rubber temperature as shown in the design information section.

PM Design Variations

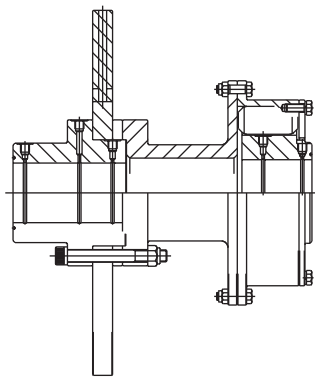
The PM Coupling can be adapted to meet customer needs as can be seen from some of the design variations shown below. For a more comprehensive list contact Renold Hi-Tec.

Torque Limiting Coupling



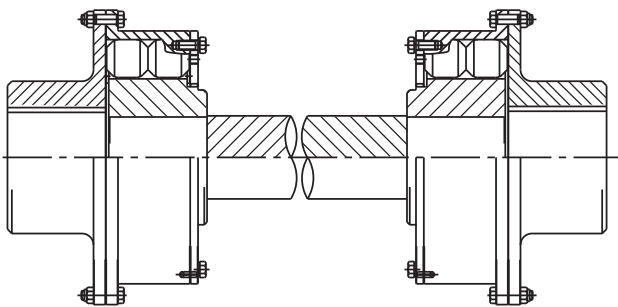
Combination with a torque limiting device to prevent damage to driving and driven machine under shock load.

Brake Disk Coupling



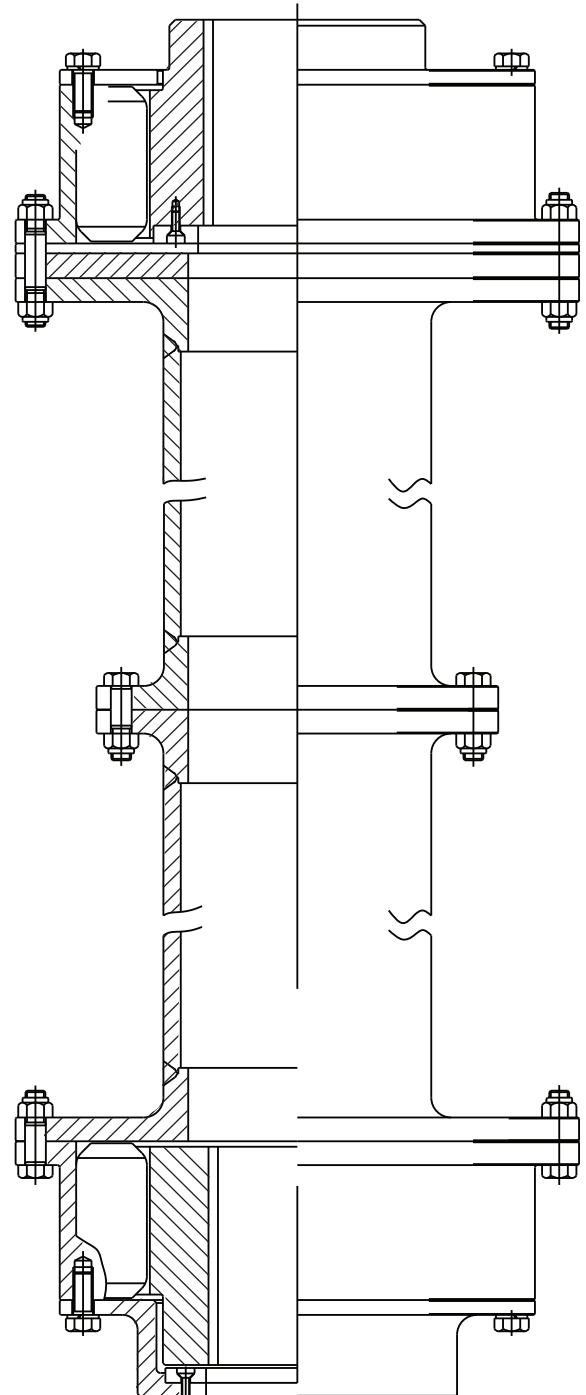
Combination with a brake disc, for use on cranes, fans and conveyor drives. (Brake drum couplings also available).

Cardan Shaft Coupling



Cardan Shaft Coupling. Used to increase the distance between shaft ends and give a higher misalignment capability.

Vertical Spacer Coupling



Spacer Couplings. Used to increase the distance between shaft ends and allow access to driven and driving machine.