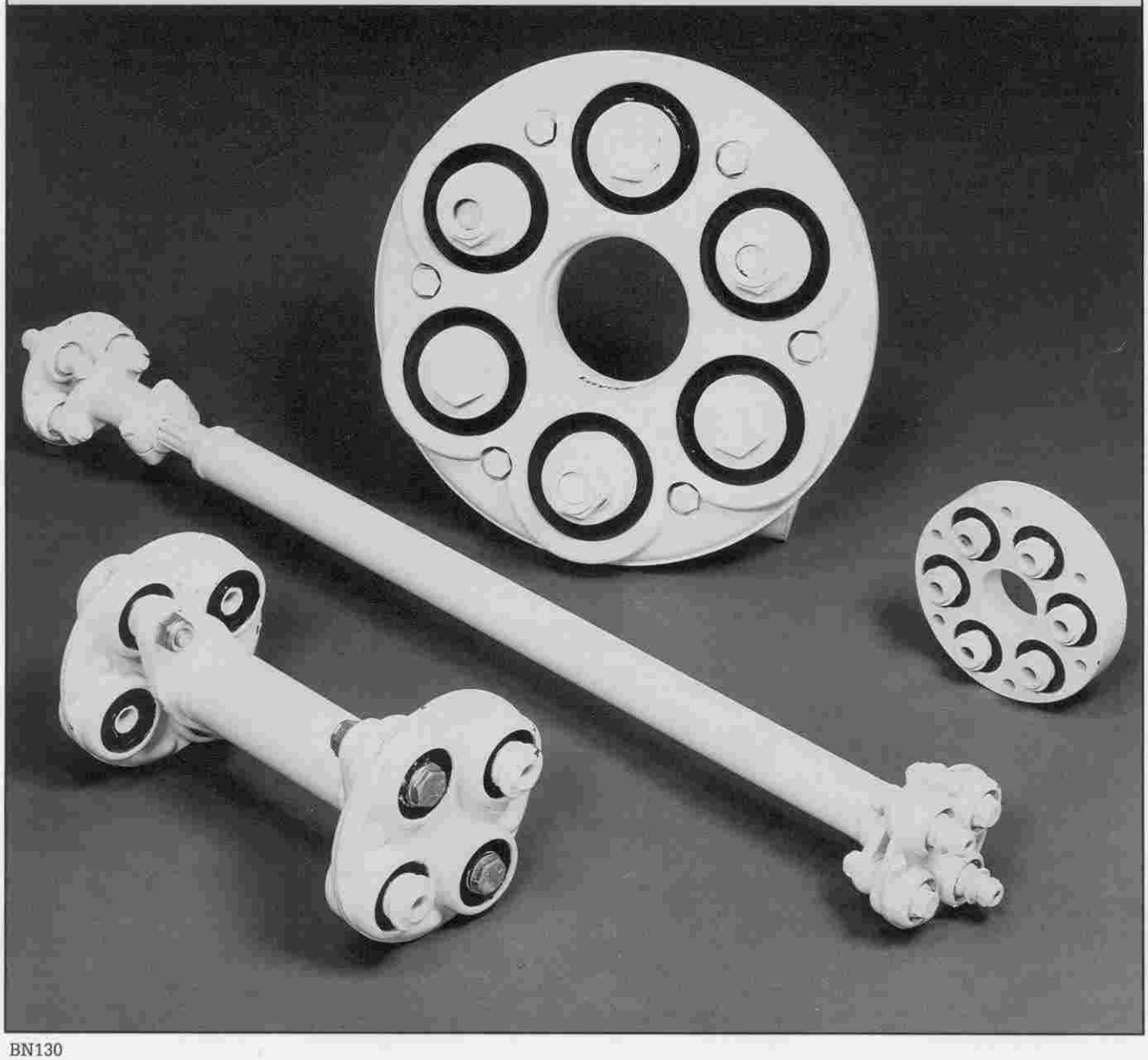
TWIFLEX

The Power Transmission Problem Solvers

LAYRUB FLEXIBLE COUPLINGS & SHAFTS



BN130

TWIFLEX

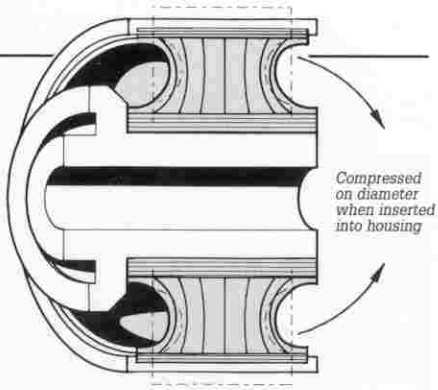
"The Shaft Coupling is a critical interface between components of a transmission system."

LAYRUB HIGH SPEED COUPLINGS

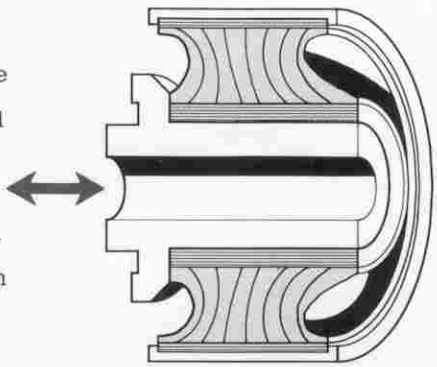
Layrub Block

Pre-compressed rubber blocks form the basis of all Layrub coupling and shaft designs. Natural rubber of 60/65 duro hardness is the standard material, but alternative mixes are available and neoprene blocks are used for high temperature installations, additional damping or where the presence of mineral oil presents a special hazard. The blocks accommodate movement in all directions, making the couplings exceptionally tolerant of relative shaft displacements and providing controlled torsional stiffness for the correct tuning of systems subject to torsional vibration excitation. Flexible shafts, consisting of two Layrub couplings connected either by a fixed length tube or a splined centre shaft, will tolerate very large relative movement with minimal shaft reaction forces and moments.

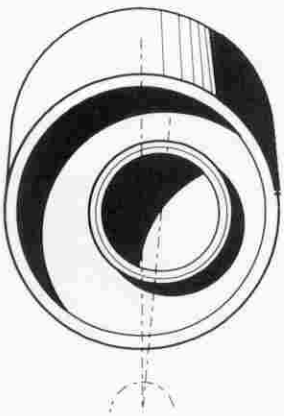
Approved by leading Classification Societies and Government Agencies, these couplings and shafts have been proven in the field over many years and have earned their reputation as world leaders in a wide range of industries and applications.



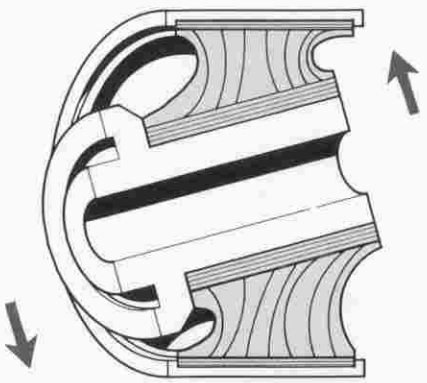
Section of Block



Axial Deflection



Torsional Resilience



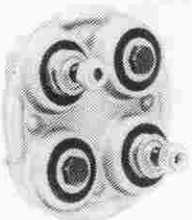
Angular Deflection

Typical Layrub Couplings

Layrub Coupling Range

Layrub couplings are produced in various types and sizes, the most common ranges being the 2/4, 3/6 6/6 and Multi-Point types having maximum torque ranges of 147-3254 Nm, 1356-8140 Nm, 515-14900 Nm and 20300-63700 Nm respectively. For capacities beyond these ranges Multi-Point Couplings can be manufactured to suit the customer's own requirements.

The versatility of Layrub makes it possible to produce special designs which meet the requirements of a particular industry or application, especially in areas where it is desirable to have the advantage of flexibility and damping coupled with either large misalignments or high speed.



Two-four series (two bolts in each flange, four resilient blocks)

Three-six series (three bolts in each flange, six resilient blocks)

Six-six series (six bolts in each flange, and Multi-point (larger sizes, including 8/8, 9/9, 10/10, 12/12)

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"To mis-select the Coupling is to design unreliability and a source of damage into the system"

SELECTION

Maximum Momentary Torque

If this figure is exceeded, the Layrub blocks may be damaged, so it is important to make a realistic assessment of the peak torque which the couplings or shaft will have to transmit. This may be produced on start up by, for example, a high starting torque electric motor or a reciprocating engine, especially when connected to a driven machine of high inertia relative to the prime mover. The maximum torque may also be produced by short circuit torques, or out-of-phase paralleling of alternators, or by stalling. Braking may also be responsible for high coupling torques, especially where the coupling is interposed between the brake and the load or the principal inertia in the system.

Service Factor

Maximum Monentary Torque = Normal Operating Torque x (Prime Mover Factor + Driven Machine Factor)

PRIME MOVER FACTOR	
Electric Motors and Turbines	0.5
Diesel or Petrol Engines with 6 or more cylinders	1.0
with 4 cylinders	2.0
with 1, 2, 3, and 5 cylinder	2.5

DRIVEN MACHINE FACTORS	
Alternators	1.5
Blowers	1.5
Ball Mills	2.25
Cement Mill Machinery	2.0
Compressor	
3 or more cylinders	3.0
2 cylinders	4.0
Single cylinder	4.5
Conveyor	1.5
Cranes	2.5
Crushers	3.0
Dynastarters	2.0
Earth Moving Equipment	2.5
Fans(small)	1.5
Gearbox	2.0
Generator (D.C.)	3.0
Lifts (Passenger & Goods)	3.5
Paper Machines & Cutters	2.25
Propellor	2.0
Pump (Centrifugal)	1.5
Pump (Ram Type)	4.5
Road Rollers	2.0
Rolling Mills	3.0
Rubber Mixers	2.25
Sawing Machinery	2.25
Torque Converter	1.5
Winches	2.5
Worm Reduction Box	2.0

FOR ENGINE TEST APPLICATIONS THE PRIME MOVER PLUS THE DRIVEN MACHINE FACTOR IS GIVEN IN THE TABLE BELOW.

DYNAMOMETER TYPE	NUMBER OF CYLINDERS									
	DIESEL					PETROL				
	1/2	3/4/5	6	8	10+	1/2	3/4/5	6	8	10+
HYDRAULIC	4 5	4 0	3.7	3.3	3.0	3.7	3.3	3.0	2.7	2 4
HYD + DYNO START	6.0	5 0	4.3	3.7	3.0	5.2	4.3	3.6	3.1	2.4
EDDY CURRENT (EC)	5.0	4 5	4.0	3.5	3.0	4.2	3.8	3.3	2.9	2.4
EC + DYNO START	6 5	5 5	4.5	4.0	3.0	5.7	4.8	3.8	3.4	2.4
DC + DYNO START	8.0	6.5	5.0	4.0	3.0	7.2	5.8	4.3	3.4	2.4

SELECTIONS ARE SUBJECT TO TORSIONAL VIBRATION COMPATIBILITY

Preliminary Selection

Given the transmitted power and speed, a preliminary choice of coupling size (to suit most applications), may be made from the graphs (these giving a selection of 3 times the operating torque, i.e. service factor of 3) and the corresponding 'maximum momentary torques' for each size are given in the tables on pages 6 to 9. If a service factor (maximum momentary torque ÷ normal transmitted torque) other than 3.0 is required, the initial selection should be made on the basis of the 'maximum momentary torque' expected in the application.

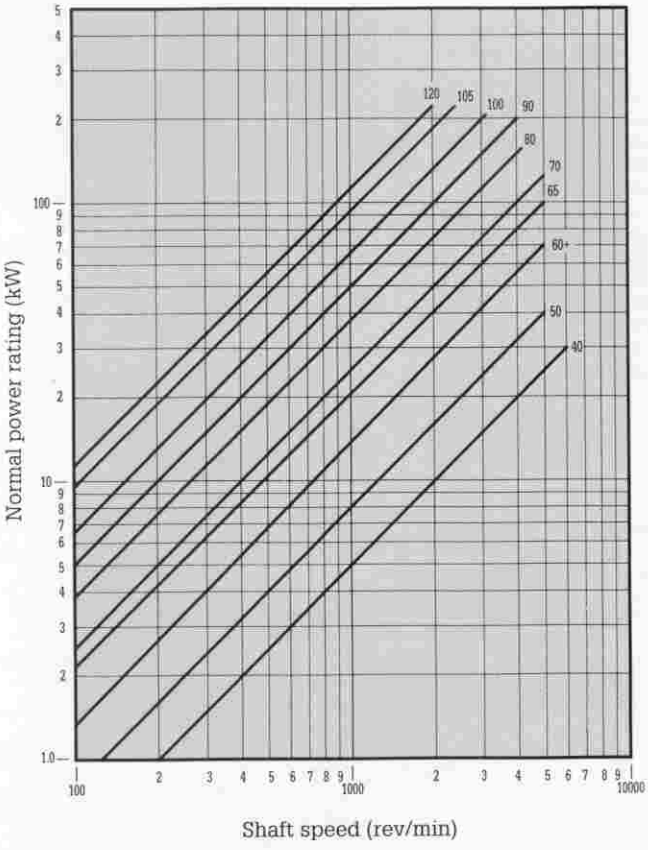
Choosing the best type

Having established the maximum torque it will be seen that the Layrub range provides more than one choice at most powers and speeds. Other considerations may indicate the best type for a given application. For example, to transmit 100kW at 1500 rev/min, with a service factor of 3.0, the graphs on page 4 give the following choices:

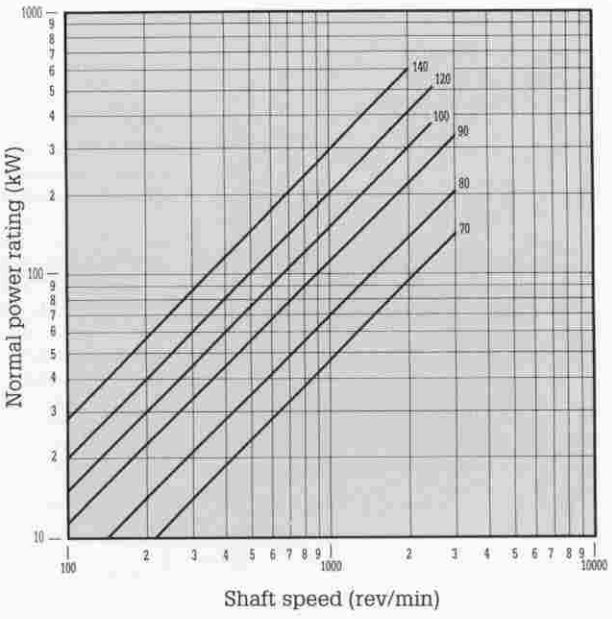
Coupling Size	Outside Dia mm	Max Speed rev/min	Static Axial Stiffness N/mm	Dyn Torsional Stiffness MNm/rad	Max Shaft angle (deg)
105-2/4	270	2500	705	0.017	3.5
80-3/6	260	3000	600	0.027	2.5
65-6/6	191	5000	1860	0.054	1.0

The stiffness values (which are given on the relevant data sheets for each series (see pages 6 to 9) relate to one coupling, so that the given value is halved for flexible shafts having a coupling at each end. If these technical properties do not determine the optimum choice, then other factors such as cost or standardisation (where one of the blocks is already held in stock for another application, for example) will become decisive.

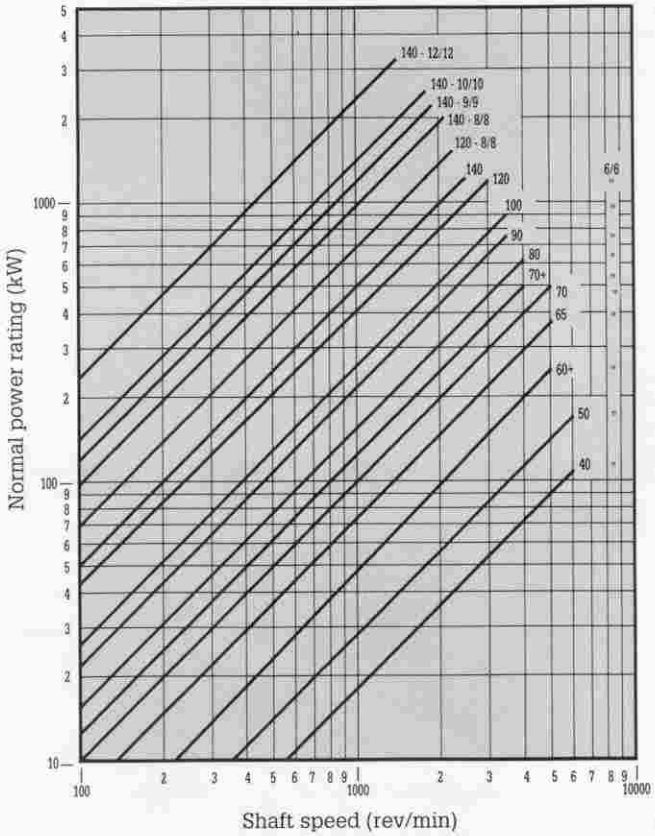
Two-four series
Service factor = 3.0



Three-six series
Service factor = 3.0



Six-six and Multi-point series
Service factor = 3.0



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Two major engineering factors dictate the type of coupling selected.

- Misalignment/Movement
- Torsional Vibration

To ignore these factors is to accept unreliability and potential failure with the associated equipment damage down-time and physical danger.

Torsional Vibration

In order to ensure satisfactory operation, it is essential to carry out TV calculations for the whole transmission system. Inertia and stiffness values for all Layrub couplings are given on separate data sheets together with permissible vibratory torque amplitudes. Continuous vibratory torque amplitude should not exceed $\pm$ max torque rating $\div$ 6. Twiflex will be pleased to check torsional vibration compatibility if inertia and torsional stiffness details for the rest of the system can be provided. In most sizes, alternative hardness grades and materials for the Layrub blocks are available, providing a choice of stiffness and damping factors as follows:

Block material	Dyn. torsional stiffness factor	Static axial stiffness factor	Damping	
			Dyn. Magnifier M	Rel. damping factor ψ
Nat Rubber 50/55	0.6	0.6	14	0.45
Nat Rubber 60/65	1.0	1.0	12	0.52
Nat Rubber 70/75	1.75	1.35	9	0.70
Nat Rubber 75/80	2.0	1.6	7	0.90
Neoprene 60/65	1.4	1.0	8	0.79

Maximum speed

Values for single standard couplings are indicated on the graphs (see page 4). Maximum speeds for sliding and fixed length shafts are also subject to angular misalignment and transverse frequency and may be different.

Overload protection

Where high accidental overloads may occur, it is worth considering the use of a torque limiting device such as a shear pin coupling or a clutch. The Twiflex centrifugal clutch coupling provides effective protection against momentary overloads, but if a sustained overload is possible, the air-start variant of the clutch is worth considering because of its ability to protect the whole of the power train and to provide a definable maximum torque above which the clutch will automatically disengage itself.

Alignment

Maximum continuous displacements, radial axial, and conical for single couplings and shafts are given on pages 6 to 10. Where expected alignment errors, drift or thermal growth or flexibly mounted machinery may cause movements exceeding the stated values for a single coupling, a close-coupled assembly ('short shaft') can be used to increase the permissible radial and axial coupling deflections. Momentary excursions up to twice the continuous displacements are acceptable where they occur at insufficient frequency to cause a heat build-up, for example during starts. Higher displacements may also be used at low speeds or by increasing the service factor.

Hostile Environment

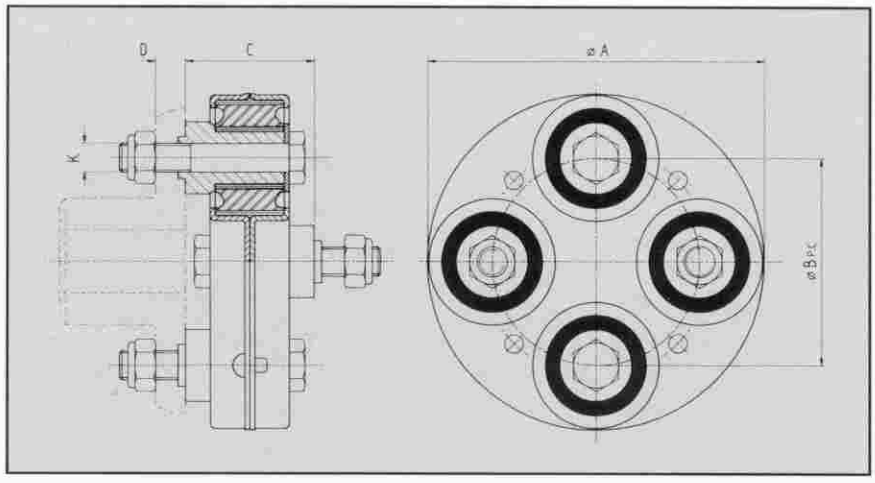
Although natural rubber is attacked by mineral oils, it operates satisfactorily in the oil mist atmosphere of an engine room environment, but should not be exposed to frequent splashing or total immersion. The following table summarises the tolerance range of the blocks:

Material	Natural Rubber (all mixes)	Neoprene
Ambient temp range Deg C:	- 40 to + 60	- 40 to + 80
Resistance to:		
Mineral Oils	poor	excellent
Vegetable Oils	excellent	poor

2/4 SERIES COUPLINGS

Typical Applications

- Dumper Trucks
- Excavators
- Rollers
- Cranes
- Tractors
- Rolling Mills
- Commercial Vehicles
- Electric Vehicles
- Automotive P.T.Os.
- Dynamometers
- Marine P.T.Os.
- Diesel Auxiliary Drives



Block Type	Maximum Torque Nm	* Normal Torque Nm	** Maximum Vibratory Torque ± Nm	DYNAMIC TORSIONAL STIFFNESS MNm/RAD					† Static Axial Stiffness N/mm	† Static Radial Stiffness N/mm	† Dynamic Conical Stiffness Nm/deg	Inertia kg.m²
				NATURAL RUBBER 50/55	60/65	70/75	75/80	NEOPRENE 60/65				
40	147	49	24.5	.0012	.0020	.0035	.004	0.0028	196	1472	4	.0010
50	235	78	39.2	.0009	.0015	.0026	.003	0.0021	177	687	6	.0020
60+	392	131	65.3	.0024	.0040	.0070	.008	0.0056	265	1177	10	.0046
65	598	199	100	.0036	.0060	.0105	.012	0.0084	314	1560	16	.0072
70	735	245	122	.0048	.0080	.0140	.016	0.0112	314	1765	21	.0113
70+	929	310	155	.0080	.0130	.0220	.025	0.0180	350	2804	25	.0117
80	1080	360	180	.0072	.0120	.0210	.024	0.0168	402	1962	30	.0169
80+	1351	450	225	.0090	.0140	.0250	.029	0.0200	491	2453	43	.0174
90	1492	497	249	.0102	.0170	.0297	.034	0.0238	470	2256	47	.0334
100	1898	633	316	.0108	.0180	.0315	.036	0.0252	422	2060	48	.0560
105	2712	904	452	.0102	.0170	.0297	.034	0.0236	705	1962	77	.0827
120	3254	1085	542	.0156	.0260	.0455	.052	0.0364	705	1962	101	.1435

*Normal torque based on a service factor of 3. **Maximum vibratory torque base frequency of 450 vpm.
†All stiffness values are for natural rubber 60°/65° duro.

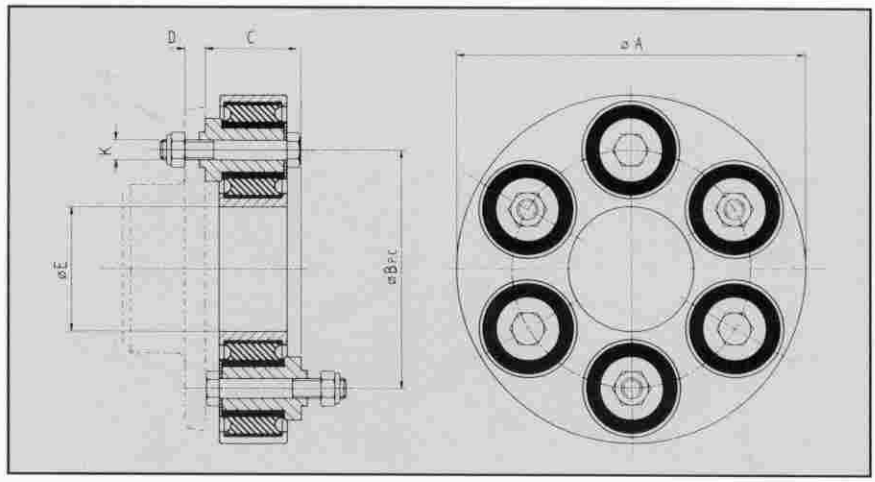
Block Type	Maximum Coupling Angles		Maximum Extension or Compression per Coupling with θ_1° and θ_2°(mm)		Maximum Radial Mis-alignment of Single Couplings	†† Maximum Speed of Single Couplings	DIMENSIONS (mm)					Basic Coupling Assembly Number	Fixing Kit Number	Weight
							A	B	C	D	K			
	Continuous θ_1°	Momentary θ_2°	θ_1°	θ_2°	(mm)	rev/min	Dia	PCD						kg
40	2°	5°	1.2	3.2	0.3	6000	102	65.08	41.5	10	M10	LA21001	LA22001	0.80
50*	3.5°	8°	1.6	4.0	0.3	5000	128	80.96	47.5	10	M12	LA21002	LA22002	1.13
60+	3.5°	8°	2.4	6.4	0.4	5000	153	96.84	57.0	10	M12	LA21004	LA22004	1.81
65	3.5°	8°	2.4	6.4	0.4	5000	167	104.78	57.0	12.5	M12	LA21005	LA22005	2.35
70	3.5°	8°	2.4	6.4	0.4	5000	178	109.54	68.5	16	M16	LA21006	LA22007	3.29
70+	3.5°	8°	2.4	3.2	0.4	5000	178	109.54	68.5	16	M16	LA21008	LA22009	3.43
80	3.5°	8°	3.2	7.9	0.5	4500	203	125.42	68.5	16	M16	LA21010	LA22010	4.35
80+	3.5°	8°	3.2	3.9	0.5	4500	203	125.42	68.5	16	M16	LA21011	LA22010	4.47
90	3.5°	8°	3.2	7.9	0.5	4000	229	141.28	76.0	19	M16	LA21012	LA22012	5.83
100	3.5°	8°	3.2	7.9	0.6	3500	254	157.12	79.5	19	M20	LA21013	LA22013	7.68
105	3.5°	8°	4.0	9.5	0.6	2500	270	157.12	92.0	25	M24	LA21014	LA22014	11.10
120	3.5°	8°	4.0	9.5	0.6	2000	305	187.32	92.0	25	M24	LA21015	LA22014	13.38

††For speeds in excess of specified values or maximum shaft speeds, please consult our Engineering Department.
*Type 50 has a ø22 hole through the centre.

3/6 SERIES COUPLINGS

Typical Applications

- Generating Sets
- Dumper Trucks
- Compressor Sets
- Marine Maindrives and P.T.O.s
- Pump Sets
- Diesel Multiple Units
- Locomotives
- Automotive Transmissions and P.T.O.s.



Block Type	Maximum Torque Nm	* Normal Torque Nm	** Maximum Vibratory Torque ± Nm	DYNAMIC TORSIONAL STIFFNESS MNm/RAD					† Static Axial Stiffness N/mm	† Static Radial Stiffness N/mm	† Dynamic Conical Stiffness Nm/deg	Inertia kg.m²
				NATURAL RUBBER 50/55	60/65	70/75	75/80	NEOPRENE 60/65				
70	1356	452	226	.012	.020	.035	.040	.028	470	2650	42	.025
80	2033	678	339	.016	.027	.047	.054	.038	600	2940	64	.059
90	3119	1040	520	.028	.047	.082	.094	.066	706	3385	106	.092
100	4340	1447	723	.041	.068	.119	.136	.095	630	3090	141	.156
120	5831	1944	972	.032	.054	.094	.108	.076	1080	2940	205	.323
140	8140	2713	1357	.044	.074	.129	.148	.104	880	2500	265	.526

*Normal torque based on a service factor of 3. **Maximum vibratory torque base frequency of 450 vpm.
†All stiffness values are for natural rubber 60°/65° duro.

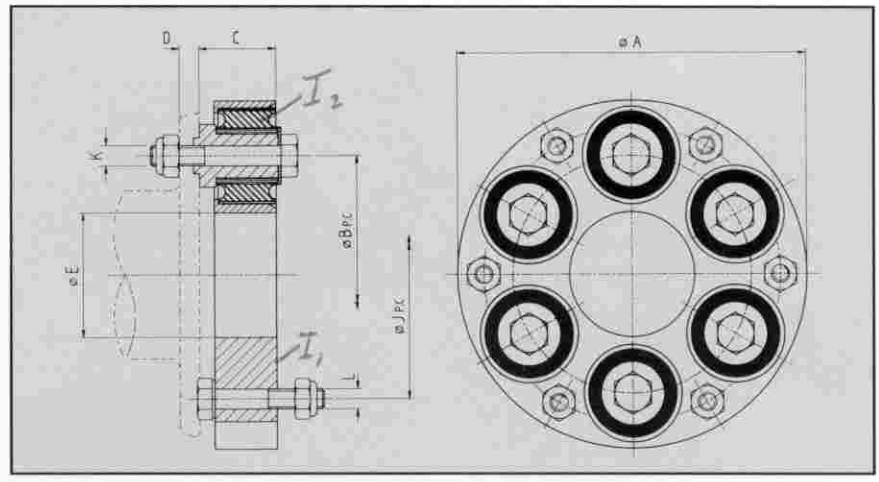
Block Type	Maximum Coupling Angles		Maximum Extension or Compression per Coupling with θ_1° and θ_2° (mm)		Maximum Radial Mis-alignment of Single Couplings	†† Maximum Speed of Single Couplings	DIMENSIONS (mm)						Basic Coupling Assembly Number	Fixing Kit Number	Weight
	Continuous θ_1°	Momentary θ_2°	θ_1°	θ_2°	(mm)	rev/min	A Dia	B PCD	C	D	E Dia.	K			kg
70	2.5°	6.0°	2.4	6.4	0.3	3000	220	139.70	68.5	16	63.5	M16	LA21018	LA22016	4.6
80	2.5°	6.0°	3.2	7.9	0.4	3000	251	160.32	68.5	16	66.5	M16	LA21019	LA22017	7.8
90	2.5°	6.0°	3.2	7.9	0.4	3000	280	188.88	76.0	19	98.0	M16	LA21020	LA22018	9.1
100	2.0°	5.0°	3.2	7.9	0.5	2500	350	241.30	79.5	19	130.0	M20	LA21021	LA22019	11.2
120	2.5°	6.0°	3.2	7.9	0.5	2500	350	225.40	92.0	19	105.0	M24	LA21022	LA22020	18.1
140	2.5°	6.0°	3.2	7.9	0.6	2500	423	279.40	101.5	25	139.0	M24	LA21023	LA22021	26.0

††For speeds in excess of specified values or maximum shaft speeds, please consult our Engineering Department.

6/6 SERIES COUPLINGS

Typical Applications

- Generating Sets
- Pump Sets
- Compressor Sets
- Marine Maindrives
- Steel Mills
- Dynamometers
- Fans
- Tractor P.T.Os.



Block Type	Maximum Torque Nm	* Normal Torque Nm	** Maximum Vibratory Torque ± Nm	DYNAMIC TORSIONAL STIFFNESS MNm/RAD NATURAL RUBBER 50/55	60/65	70/75	75/80	NEOPRENE 60/65	† Static Axial Stiffness N/mm	† Static Radial Stiffness N/mm	† Dynamic Conical Stiffness Nm/deg	INERTIA kg m² I_1	I_2
40	515	172	86	.0108	.018	.0315	.036	.0252	1176	8820	31	.0022	.0006
50	814	271	136	.0084	.014	.0245	.028	.0196	1078	4116	43	.0054	.0014
60+	1373	458	229	.0204	.034	.0595	.068	.0476	1568	7056	87	.0138	.0035
65	2170	723	362	.0330	.055	.0962	.110	.0770	1860	9410	130	.0227	.0057
70	2850	950	475	.0462	.077	.1347	.154	.1078	1860	10585	175	.0378	.0095
70+	3530	1176	588	.0740	.123	.2150	.246	.1720	2106	16812	205	.0378	.0095
80	4460	1490	743	.0780	.130	.2275	.260	.1820	2450	11760	294	.0858	.0214
80+	5605	1868	934	.0970	.162	.2840	.324	.2270	2942	14711	358	.0858	.0214
90	6100	2030	1020	.1100	.184	.322	.368	.2660	2940	13525	426	.1383	.0346
100	7300	2430	1220	.1150	.192	.336	.384	.2660	2450	12350	426	.1880	.0470
120	11800	3930	1970	.1380	.230	.4025	.460	.3220	4215	11760	837	.3916	.0979
140	14900	4970	2480	.1560	.260	.4550	.520	.3640	3530	10000	940	.6918	.1730

*Normal torque based on a service factor of 3. **Maximum vibratory torque base frequency of 450 vpm.
†All stiffness values are for natural rubber 60°/65° duro.

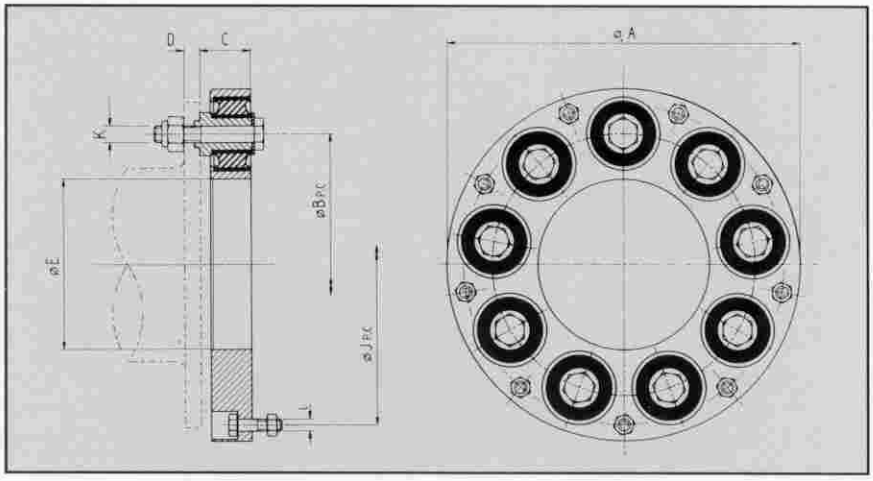
Block Type	Maximum Coupling Angles Continuous $\theta_1°$	Momentary $\theta_2°$	Maximum Extension or Compression per Coupling with $\theta_1°$ and $\theta_2°$ (mm) $\theta_1°$	$\theta_2°$	Maximum Radial Mis-alignment of Single Couplings (mm)	†† Maximum Speed of Single Couplings rev/min	DIMENSIONS (mm) A Dia	B PCD	C	D	E Dia.	J PCD	K	L	Basic Coupling Assembly Number	Fixing Kit Number	Weight kg
40	1°	2°	0.6	1.6	0.13	6000	115	76.20	32.5	10	34.93	98.40	M10	M8	LA21024	LA22022	1.5
50	1°	2°	0.8	2.0	0.13	6000	145	95.26	37.0	10	44.45	125.42	M12	M10	LA21025	LA22023	2.2
60+	1°	2°	1.2	3.2	0.15	5000	172	114.30	45.0	10	55.56	152.40	M12	M10	LA21026	LA22024	4.0
65	1°	2°	1.2	3.2	0.15	5000	191	127.00	45.0	11	60.32	165.10	M12	M12	LA21027	LA22025	5.5
70	1°	2°	1.2	3.2	0.15	5000	210	139.70	53.0	14	68.26	184.16	M16	M12	LA21028	LA22026	7.2
70+	1°	2°	1.2	3.2	0.15	5000	210	139.70	53.0	14	68.26	184.16	M16	M12	LA21029	LA22027	7.3
80	1°	2°	1.6	4.0	0.18	4000	253	171.46	55.0	14	88.90	215.90	M16	M12	LA21030	LA22028	11.0
80+	1°	2°	1.6	4.0	0.18	4000	253	171.46	55.0	14	88.90	215.90	M16	M12	LA21031	LA22029	11.0
90	1°	2°	1.6	4.0	0.20	3500	276	188.88	61.0	16	98.43	234.94	M16	M16	LA21032	LA22030	15.1
100	1°	2°	1.6	4.0	0.25	3500	296	200.20	65.0	19	101.60	250.82	M20	M16	LA21033	LA22031	18.2
120	1°	2°	2.0	4.8	0.25	3000	346	228.60	73.0	19	107.95	298.44	M24	M16	LA21034	LA22032	30.4
140	1°	2°	2.0	4.8	0.30	2500	394	260.34	80.5	25	127.00	339.72	M24	M20	LA21035	LA22033	39.5

††For speeds in excess of specified values or maximum shaft speeds, please consult our Engineering Department.

MULTI-POINT COUPLINGS

Typical Applications

- Marine Maindrives
- Rail Traction
- Hovercraft
- Dynamometers
- Helicopters
- Gas Turbine Generating Sets



Coupling Type	Maximum Torque Nm	* Normal Torque Nm	** Maximum Vibratory Torque ± Nm	DYNAMIC TORSIONAL STIFFNESS MNm/RAD					† Static Axial Stiffness N/mm	† Static Radial Stiffness N/mm	† Dynamic Conical Stiffness Nm/deg	INERTIA kg m²	
				NATURAL RUBBER				NEOPRENE					
				50/55	60/65	70/75	75/80	60/65				I_1	I_2
120-8/8	20300	6770	3380	0.300	0.50	0.875	1.00	0.700	5700	15700	1770	0.858	0.214
140-8/8	27050	9020	4510	0.348	0.58	1.015	1.16	0.812	4700	13350	2062	1.530	0.383
140-9/9	33800	11270	5630	0.486	0.81	1.417	1.62	1.134	5300	15000	2797	2.046	0.512
140-10/10	40600	13530	6770	0.654	1.09	1.907	2.18	1.526	5900	16700	3532	2.722	0.681
140-12/12	63700	21230	10620	1.338	2.23	3.902	4.46	3.122	7050	20000	6915	5.348	1.337

*Normal torque based on a service factor of 3. **Maximum vibratory torque base frequency of 450 vpm.
†All stiffness values are for natural rubber 60°/65° duro.

Coupling Type	Maximum Coupling Angles		Maximum Extension or Compression per Coupling with θ_1° and θ_2°(mm)		Maximum Radial Misalignment of Single Couplings	†† Maximum Speed of Single Couplings	DIMENSIONS (mm)								Basic Coupling Assembly Number	Fixing Kit Number	Weight
							A	B	C	D	E	J	K	L			
	Continuous θ_1°	Momentary θ_2°	θ_1°	θ_2°	(mm)	rev/min	Dia	PCD			Dia.	PCD					kg
120-8/8	.75°	1.5°	2.0	4.75	0.25	2400	419	295.2	73.0	19	168.27	374.64	M24	M16	LA21036	LA22036	40.9
140-8/8	1.0 °	2.0°	2.0	4.75	0.30	2100	483	343.0	80.5	25	203.20	428.62	M24	M20	LA21037	LA22037	55.0
140-9/9	1.0 °	2.0°	2.0	4.75	0.30	1900	524	381.0	80.5	25	234.95	469.90	M24	M20	LA21038	LA22038	64.5
140-10/10	.75°	1.5°	2.0	4.75	0.30	1800	559	415.8	80.5	25	266.70	508.00	M24	M20	LA21039	LA22039	73.8
140-12/12	.75°	1.5°	2.0	4.75	0.30	1500	673	539.8	80.5	25	393.70	622.30	M24	M20	LA21040	LA22040	86.8

††For speeds in excess of specified values or maximum shaft speeds, please consult our Engineering Department.

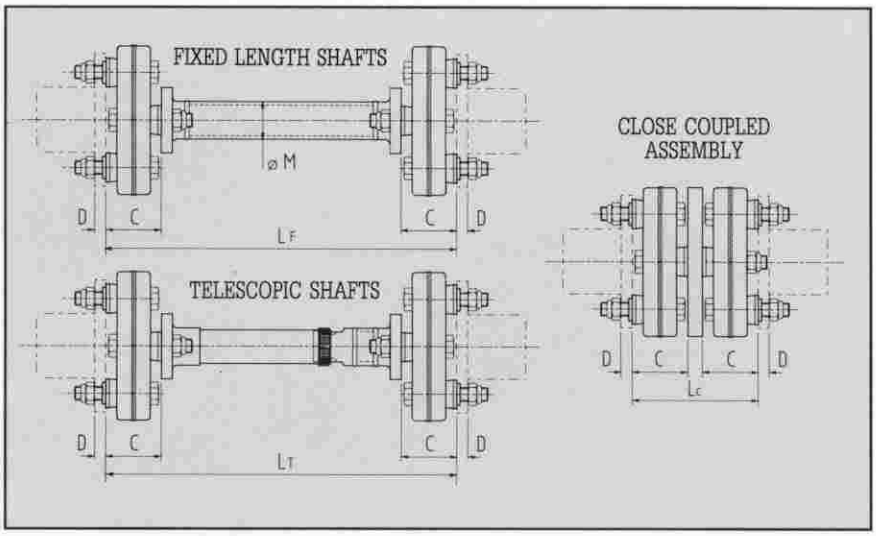
SHAFTS

1. The normal operating torque must be multiplied by an appropriate service factor before comparing with the maximum torque.

2. See sheets 6 to 9 for additional dimensional information, including dimensions C and D.

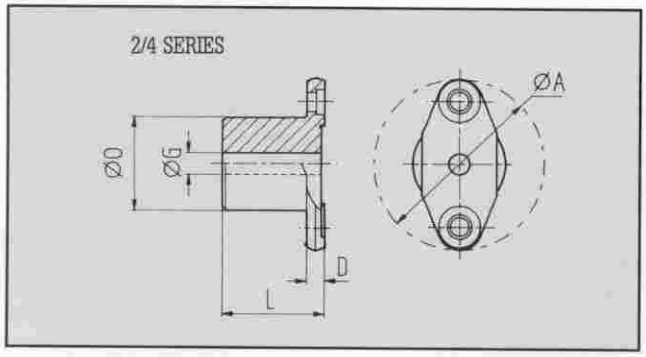
3. Shafts can be supplied up to 2.75m long but the design length which affects the dynamic torsional stiffness and weight may be governed by the whirling and transverse critical speeds which in turn are limited by the operating speed.

4. Maximum continuous operating angles are also a function of speed, therefore due to the interdependence of these characteristics application approval must be obtained from Twiflex Ltd.

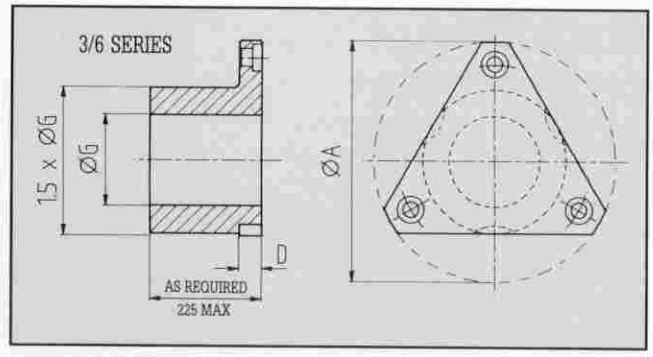


Coupling Type	(1) Maximum Torque	Dimensions mm					(3) Maximum Angle Continuous		Maximum Extension or Compression with $0_1°$ and $0_2°$ mm	
					Minimum Compressed Length	Telescopic Extension				
	Nm	M dia.	L_F min	Lc	L_T		$0_1°$	$0_2°$	$0_1°$	$0_2°$
40-2/4	147	39	150	93	280	19	2°	5°	2.4	6.4
50-2/4	235	50	170	105	308	19	3.5°	8°	3.2	8.0
60+2/4	392	50	190	124	360	25	3.5°	8°	4.8	12.8
65-2/4	598	78	190	127	360	25	3.5°	8°	4.8	12.8
70-2/4	735	78	238	153	384	28	3.5°	8°	4.8	12.8
70+2/4	929	78	238	153	384	28	3.5°	8°	4.8	12.8
80-2/4	1080	78	238	153	365	50	3.5°	8°	6.4	15.8
80+2/4	1351	78	238	153	365	54	3.5°	8°	6.4	15.8
90-2/4	1492	78	260	171	520	54	3.5°	8°	6.4	15.8
100-2/4	1898	78	280	178	616	54	3.5°	8°	6.4	15.8
105-2/4	2712	100	315	209	520	41	3.5°	8°	8.0	19.0
120-2/4	3254	100	330	209	520	41	3.5°	8°	8.0	19.0
70-3/6	1356	63.5/76	261	153	480	56	2.5°	6°	2.4	6.4
80-3/6	2034	76	271	153	435	54	2.5°	6°	3.2	7.9
90-3/6	3119	100	302	171	476	41	2.5°	6°	3.2	7.9
100-3/6	4340	89/102	319	178	513	40	2.0°	5°	3.2	7.9
120-3/6	5831	89/102	364	209	630	100	2.5°	6°	3.2	7.9
140-3/6	8140	102/114	405	228	641	82	2.5°	6°	3.2	7.9
40-6/6	515	51	135	75	330	35	1.0°	2°	1.2	3.2
50-6/6	814	51	145	84	336	38	1.0°	2°	1.6	4.0
60+-6/6	1373	63.5/76	155	100	420	56	1.0°	2°	2.4	6.4
65-6/6	2170	76	180	101	394	54	1.0°	2°	2.4	6.4
70-6/6	2850	76/89	205	120	394	76	1.0°	2°	2.4	6.4
70+6/6	3530	76/89	205	120	394	76	1.0°	2°	2.4	6.4
80-6/6	4460	89/102	225	124	454	40	1.0°	2°	3.2	8.0
80+6/6	5605	89/102	225	124	454	40	1.0°	2°	3.2	8.0
90-6/6	6100	89/102	245	138	562	100	1.0°	2°	3.2	8.0
100-6/6	7300	89/102	265	149	562	100	1.0°	2°	3.2	8.0
120-6/6	11800	102/114	285	165	572	82	1.0°	2°	4.0	9.6
140-6/6	14900	127/152	325	186	600	82	1.0°	2°	4.0	9.6
120-8/8	20300	127/133/152	300	165	590	82	.75°	1.5°	4.0	9.5
140-8/8	27050	133/152	350	186	600	56	1.0°	2°	4.0	9.5
140-9/9	33800	152	350	186	600	56	1.0°	2°	4.0	9.5
140-10/10	40600	152	400	186	950	100	.75°	1.5°	4.0	9.5
140-12/12	63700	203	400	186	950	100	.75°	1.5°	4.0	9.5

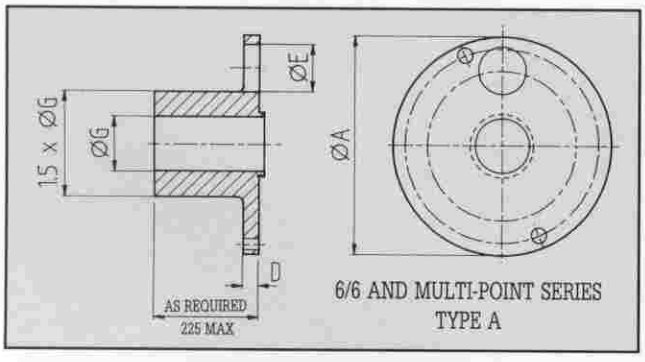
COMPANION FLANGES



Type	A Dia.	D	G Dia. (max)	L	O Dia.	G & Lgth Max Weight kg	G & Lgth Max Inertia kg m²
40	90.4	10	25	48.5	45	0.4	.0003
50	109.0	10	39	67.5	59	0.9	.0006
60	131.5	10	50	89	75	1.8	.0020
65	141.0	13	55	96	82.5	2.5	.0030
70	150.9	16	54.5	92	82	2.5	.0040
80	169.5	16	65	108	98	4.1	.0080
90	195.3	19	76	125	114	6.0	.0110
100	217.5	19	82.5	137	124	7.8	.0170
105	221.5	25	76.5	150	115	7.6	.0130
120	251.6	25	96.5	162	145	12.5	.0360

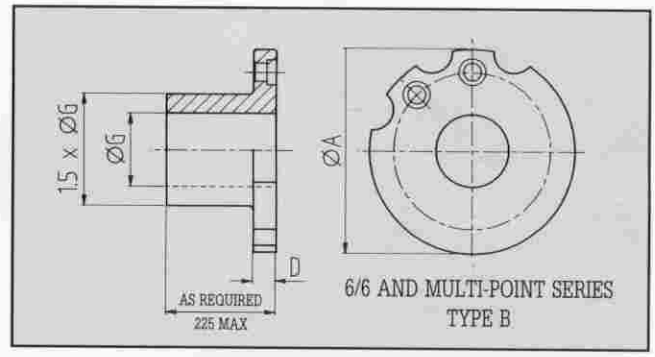


Type	A Dia.	D	G Dia. (max)	G & Lgth Max Weight kg	G & Lgth Max Inertia kg m²
70	181	16	73	8.1	.022
80	205	16	82	10.2	.034
90	241	19	100	14.7	.084
100	302	19	120	21.1	.178
120	289	19	118	20.5	.156
140	340	25	140	27.2	.331



6/6 AND MULTI-POINT SERIES
TYPE A

Type	Series	A Dia.	D	E Dia.	G Dia. (max)	G & Lgth Max Weight kg	G & Lgth Max Inertia kg m²
40	6-6	115	8	27	28	1.7	.002
50	6-6	145	10	32	38	3.2	.005
60	6-6	172	10	38	48	5.1	.009
65	6-6	191	11	48	54	6.1	.014
70	6-6	210	10	50	60	7.5	.019
80	6-6	253	10	57	82	13.4	.053
90	6-6	276	14	67	92	17.1	.080
100	6-6	296	14	70	95	18.8	.110
120	6-6	346	18	83	100	23.3	.202
140	6-6	394	22	89	120	34.8	.427
120	8-8	419	18	83	162	52.8	.730
140	8-8	483	22	89	196	76.3	1.557
140	9-9	524	22	89	228	101.2	2.596
140	10-10	559	22	89	260	127.5	4.012
140	12-12	673	22	89	388	262.6	16.536



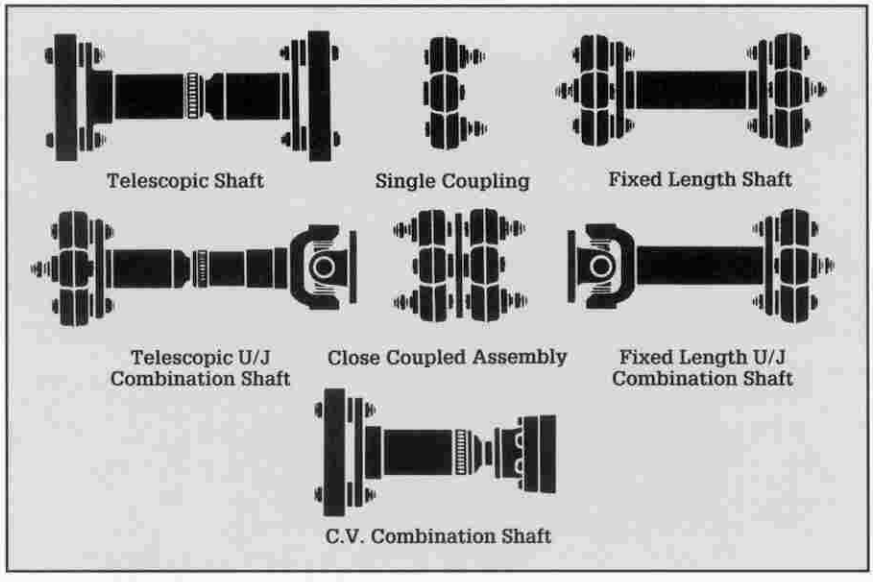
6/6 AND MULTI-POINT SERIES
TYPE B

Type	Series	A Dia.	D	G Dia. (max)	G & Lgth Max Weight kg	G & Lgth Max Inertia kg m²
40	6-6	102	10	35	2.5	.002
50	6-6	122	10	45	3.9	.004
60	6-6	150	10	57	6.3	.010
65	6-6	162	11	65	8.1	.015
70	6-6	181	14	72	10.3	.025
80	6-6	213	14	92	15.9	.059
90	6-6	240	16	102	20.0	.098
100	6-6	260	19	106	22.3	.119
120	6-6	290	20	118	27.8	.184
140	6-6	334	25	133	40.0	.380
120	8-8	359	20	164	53.6	1.010
140	8-8	416	25	187	71.8	1.200
140	9-9	454	25	213	92.6	1.970
140	10-10	490	25	235	111.6	2.917
140	12-12	613	25	286	168.8	6.575

All dimensions in millimeters.

Shaft Arrangements

Layrub shafts, including the fixed length configuration, can accommodate axial movement as well as radial and angular misalignments, also there are no wearing parts and no bearings, for the shafts are self-supporting. In its shortest possible form it becomes a 'close coupled assembly'. It can, however, also be supplied with a Hookes or CV joint at one end, an arrangement often used to provide a low cost installation where more torsional flexibility is required than is provided by a standard U.J. or CV shaft, or where it is necessary to reduce transmitted noise or to provide some damping. Typical arrangements, which can be supplied in all sizes, are illustrated here.



Applications

The Layrub coupling has been operating around the world for half a century, so there are few applications within its power and speed range where it will not be found, from commercial vehicles to compressors, from dumpers to dynamometers. If there is a new application, we shall be interested to hear about it.

Application Engineering

Twiflex will be pleased to advise in all matters relating to coupling selection, application and installation. We therefore hope that you will consult us as early as possible in the design stage of a project in order that we may be of the maximum possible help. On completion of the selection, Twiflex should finally approve all applications.

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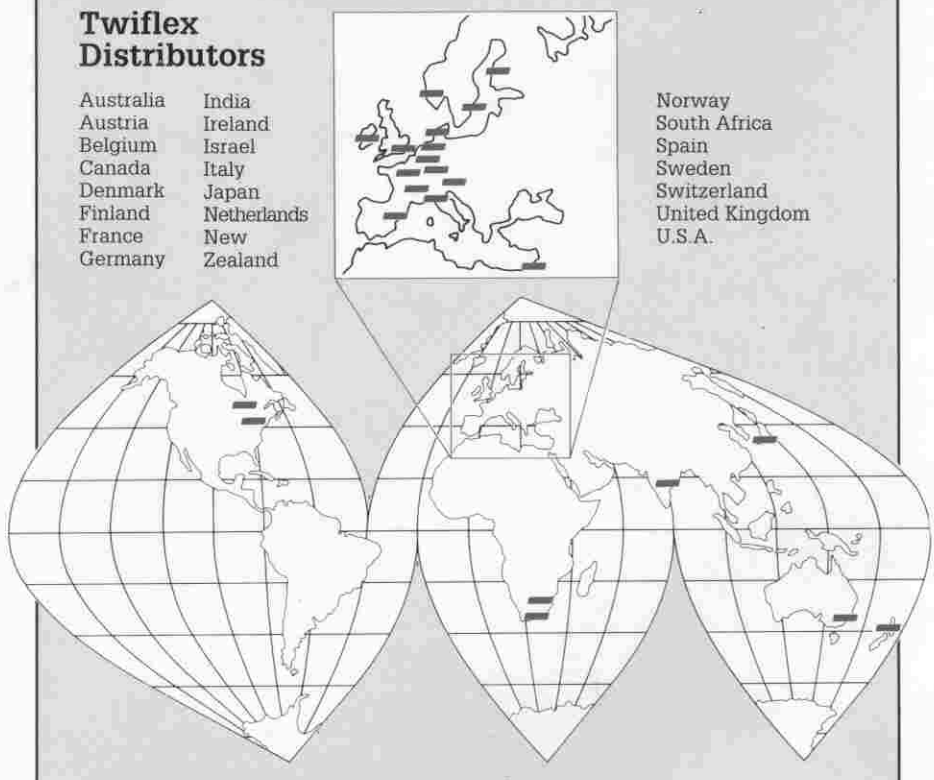

This approval is in Accordance with Certificate No. 850822

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