Index

Shaft Couplings

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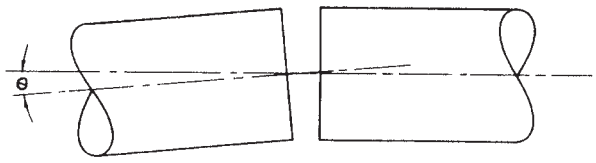
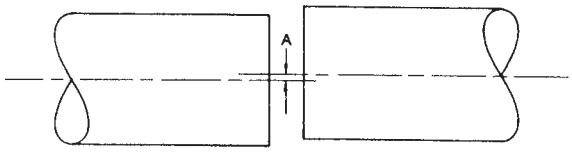
Coupling Selection

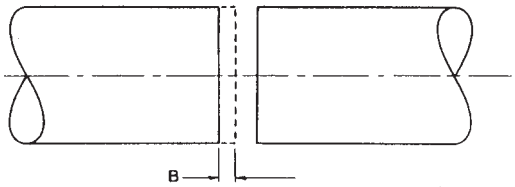
There are four basic functions which a shaft flexible coupling may be required to accommodate, and selection of a coupling should be made considering these.



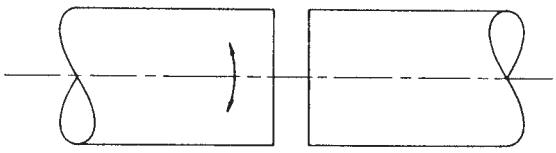
Angular Misalignment
Occurs when shaft axis are inclined to one another.



Parallel Misalignment
Present when axis of shafts are parallel but laterally displaced.



End Float
The ability to accommodate axial displacement of shafts due to thermal expansion or motor end float.



Torsional Stiffness
The ability to absorb torsional impulse loads. Rubber coupling stiffness can be adjusted to damp out vibrations. Metal couplings generally transmit torque without angular displacement.

Generally flexible couplings are required to accommodate a combination of the basic functions, and selection is made on ability to exceed the anticipated types of misalignment. Cross & Morse Couplings have the following basic capacities.

Coupling Type	Power Range kw	Speed Range rpm	Shaft Size mm	Max. Angular Misalignment	Max. Parallel Misalignment mm	Max. End Float mm	Torsional Stiffness
Delrin Chain	45	100- 5000	10- 60	1°	0.20	2.0	Stiff
Roller Chain	925	0- 2000	10-150	1°	0.76	–	Stiff
'L' Series	270	500-31000	3- 60	1°	0.40	1.0	Flexible
KE Series	760	50- 7700	8-130	1°	0.50	1.7	Flexible
GE Series	360	100-14000	8- 90	1½°	1.80	2.4	Flexible
Morflex Cplgs	600	100- 6500	10- 80	5°	1.25	1.0	Very Flexible
Polymer Gear Cplgs	170	0-14000	6- 65	2°	1.30	2.0	Stiff
Steel Gear Cplgs	3200	0- 6000	8-175	1°	0.80	2.0	Very Stiff

Selection Procedure for Chain and Rubber Couplings (Gear Couplings refer to Page 13).

Selection of correct type and size of coupling is essential to realise a long service life. Outside forces acting on the coupling and its own performance limitations must be taken into consideration in making a selection.

1. **Assemble data required to select coupling.**
   Type of driver and driven equipment.
   Shaft size of driver and driven.
   Load to be transmitted (kW, rpm).
   Space limitations.
   Misalignment - Angular, Parallel, Endfloat.
   Hours of operation/day.
   Lubrication facilities.
   Environment (temp., corrosion, etc.).

2. By consideration of the misalignment, power and speed requirements, select a Coupling Series from the table above. If gear coupling, see also page 13 for selection procedure.

3. **Determine suitable service factor from table below and modify for daily usage time.**
   Less 4 hrs/day -0.1
   16 hrs/day +0.2
   24 hrs/day +0.3

4. **Determine design power kW using factor obtained**
   Pd. kW=kW x S.F. (f1)

5. Using the design kW power value, select the correct coupling from the power rating tables for the respective series. Check coupling chosen will accommodate shafts, if not select larger size to meet shaft requirements. Ensure coupling finally selected can meet speed requirements, and space limitations.

Electric Motor or Steam Turbine	Gasoline or Diesel Engine 6 or more Cylinders	Gasoline or Diesel Engine 6 or less Cylinders	Characteristics	Driven Mechanism Typical
1	1.5	2	Even load - 8 hr./day Non-reversing - low starting torque	Agitators, Conveyors (chain or belt) Elevators, Evaporators, Generators, Line Shafts, Screens, Centrifugal Pumps & Fans
1.5	2	2.5	Uneven load - 8 hr./day Moderate shock or torque Non-reversing	Beaters, Cranes, Compressors (centrifugal), Elevators (bucket), Grinders (pulp), Hoists, Kilns, Mills (ball, rolling, pebble, tube), Mixers, Rotary Drills, Speed Reducers, Woodworking Machines
2.5	2.8	3.2	Heavy Shock - 8 hr./day Reversing under full load High Starting torque	Blowers (centrifugal), Compressors (reciprocating), Crushers, Feeders, Hammer Mills, Hog Drives, Presses, Pumps (reciprocating, oil well), Tractors, Trucks, Winches

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GE Series Elastomeric Couplings

The GE series of flexible couplings consist of two machined metal hubs connected by an elastomeric gear ring. The couplings are equally suited to horizontal or vertical shaft applications, providing positive power transmission and absorbing torsional, vibration and impact loads. The standard elastomeric ring is a black thermoplastic rubber of 94 shore A hardness selected for its resistance to wear, oil, chemicals, ozone and hydrolysis, which makes it suitable for tropical climates. Standard couplings can work in environments with temperature range –40°C to +125°C and withstand +150°C for short periods. The teeth of the gear ring are of involute form to prevent high stress concentrations in reduced surfaces, and crowned to avoid edge pressure on the teeth. The circular apertures on each hub are precision-machined to provide positive torque transmission with minimum backlash.

For increased torsional rigidity two alternative gear rings are available, both of 96 Shore a hardness; a red thermoplastic rubber element, and a yellow polyurethane element recommended for the Aluminium Hubs.

GE Plain Bore Couplings are manufactured in two materials, Grade 250 Cast Iron for normal industrial applications, and aluminium where weight and inertias must be kept to a minimum. Two styles of hub are offered: 'A' style with hub diameter reduced below flange diameter to minimise weight; and 'B' style with hub diameter basically the same as the flange diameter to accommodate larger diameter shafts of electric motors and gear units. Different styles of hub can be mixed to accommodate differing shaft requirements. The hubs are identified by the maximum bore which can be accommodated, and hub style, i.e. GE24A is an 'A' type hub capable of max. bore size 24mm. Hubs of different styles can be combined in a coupling, and identified as in examples below.

GE24A-24A - Has two 'A' type hubs. GE24A-32B - Has one 'A' and one 'B' type hub.

For aluminium couplings numbers are the same with addition of a suffix 'A' e.g. GE24AA-32BA

Coupling Capacities and Selection

For **GE Series Couplings** design torque may need correcting for elevated ambient temperature or frequent starting before comparison with the coupling nominal torque rating.

Coupling nominal torque $Tn \geq Td.f1.f2$ f1 = temperature factor

$Tn \geq 0.5Ts.f1.f2$ f2 = start-up factor

Ts = starting/max torque of motor

For applications with frequent torque changes or reversal, check capacityTr

Reversal Torque $Tr \geq Tv.f1$. Tv = actual torque variation

Factor f1-ambient temperature

Temperature °C	-30	31-40	41-60	61-80	81+
Factor f1	1.0	1.2	1.4	1.6	1.8

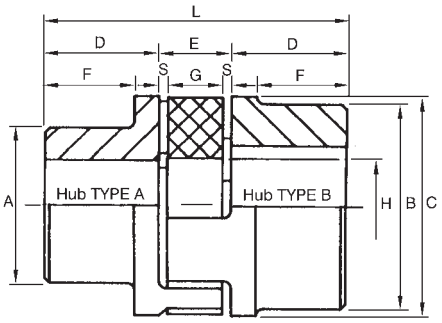
Factor f2-start-up

Start/hr	100	200	400	800
Factor f2	1.0	1.2	1.4	1.6

GE Plain Bore Couplings - Capacities and Dimensions (mm)

Technical Data

Coupling (1) Size	Max. Speed rpm	Nominal(3) Torque Tn Nm	Reversal Torque Tn Nm	Torsional Stiffness kNm/Rad				Maximum Misalignment		
				1.0 Tn	0.75 Tn	0.5 Tn	0.25 Tn	Angular deg.	Radial mm	Axial mm
GE19A-24B	14000	10	2.6	0.68	0.57	0.44	0.28	1.2°	0.2	1.2
GE24A-32B	10600	35	9	2.19	1.82	1.40	0.90	0.9°	0.2	1.4
GE28A-38B	8500	95	25	5.20	4.31	3.32	2.12	0.9°	0.25	1.5
GE38A-45B	7100	190	49	10.00	8.30	6.39	4.08	1.0°	0.28	1.8
GE42A-55B	6000	265	69	17.00	14.11	10.68	6.94	1.0°	0.32	2.0
GE48A-60B	5600	310	81	20.00	16.59	12.77	8.16	1.1°	0.36	2.1
GE55A-70B	4750	375	98	21.99	18.25	14.05	8.98	1.1°	0.38	2.2
GE65A-75B	4250	425	111	28.20	23.39	18.01	11.51	1.2°	0.42	2.6
GE75A-90B	3550	975	254	67.99	56.41	43.44	27.75	1.2°	0.48	3.0
GE90A-100B	2800	2400	624	110.00	96.26	70.27	44.89	1.2°	0.50	3.4



Performance ratings for Aluminium Hubs are identical to equivalent steel size.

Dimensions

Coupling (1) Size	Bore Diameters - mm Hub Type A Min.	Hub Type A Max(2)	Hub Type B Min.	Hub Type B Max(2)	A	B	C	D	E(4)	F	G	H	L	Approx. Coupling Wt. kg(5) Type A-A	Type A-B	Type B-B	Coupling Inertia kg cm(5) Type A-A	Type A-B	Type B-B
GE19A-24B	-	19	-	24	30	40	40	25	16	19	12	18	66	0.27	0.30	0.33	0.7	0.8	0.8
GE24A-32B	-	24	-	32	40	55	55	30	18	24	14	27	78	0.61	0.78	0.96	2.5	3.0	3.5
GE28A-38B	-	28	-	38	48	65	65	35	20	27.5	15	30	90	0.97	1.29	1.61	6	7	8
GE38A-45B	-	38	-	45	66	78	80	45	24	36.5	18	38	114	2.08	2.37	2.66	17	20	23
GE42A-55B	-	42	-	55	75	94	95	50	26	40	20	46	126	3.21	3.61	4.01	40	50	60
GE48A-60B	-	48	-	60	85	104	105	56	28	45	21	51	140	4.41	4.97	5.53	60	80	100
GE55A-70B	-	55	-	70	98	118	120	65	30	52	22	60	160	6.64	7.37	8.11	120	160	200
GE65A-75B	-	65	-	75	115	134	135	75	35	61	26	68	185	10.13	10.89	11.65	250	310	370
GE75A-90B	-	75	-	90	135	158	160	85	40	69	30	80	210	16.03	17.73	19.43	540	680	820
GE90A-100B	38	90	38	100	160	180	200	100	45	81	34	100	245	28.45	30.25	32.10	1400	1590	1780
GE19AA-24BA	-	19	12	24	32	40	40	25	16	19	12	18	66	0.12	0.13	0.14	0.3	0.4	0.4
GE24AA-32BA	6	24	14	28	40	55	55	30	18	24	14	27	78	0.24	0.26	0.28	0.8	0.9	1.0
GE28AA-38BA	7	28	16	38	48	65	65	35	20	27.5	15	30	90	0.39	0.46	0.53	2.0	2.4	2.8
GE38AA-45BA	8	38	20	45	66	78	80	45	24	36.5	18	38	114	0.82	0.89	0.95	7.0	7.5	8.0

(1) Coupling ref is for mixed hubs.
(2) With Standard keyway.
(3) Angular deflection at Nominal Torque Tn is 3° and Max Torque Tm is 5° Max Torque is double Nominal Torque.
(4) With coupling correctly positioned on shafts.
(5) Weights and Inertias for couplings on max. bore.

All Couplings can be supplied with hubs finished bored, keyseated and with set screws on 48 hour re-work service.
Also sizes 28A- 38B through to GE75A - 90B are available with Taper Bush fitting.

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'L' Series Jaw Couplings

Simple, economical design - fully interchangeable with industry standards.

Cross has expanded its comprehensive family of quality industrial couplings to include the Type 'C' Jaw...offering a uniquely simple design combined with misalignment capability and maximum economy.

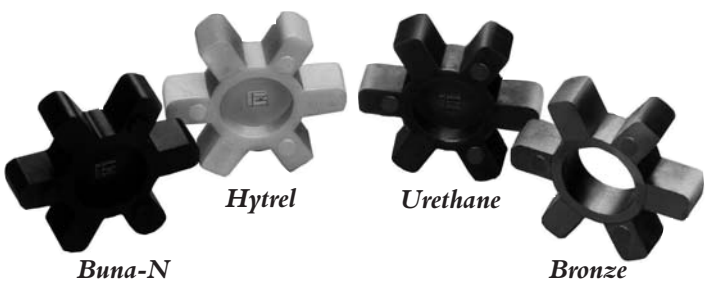
'L' coupling contain only three components...two jaws and one 'spider' insert. Power is transmitted between the jaw halves by the insert, which is offered in a choice of four materials to suit all the application characteristics and horsepower requirements. All sizes are dimensionally interchangeable with industry standards, making replacement in existing installations easy and economical.

Type 'L' Jaw Couplings are designed for light to medium duty applications up to 112 Kw at 1500 rpm, and are available for shaft sizes from ⅛" (3.2mm) to 60mm.

'L' Series Couplings offer a choice of 4 insert types for maximum versatility.

Insert Selection

Morse Type 'L' Jaw Couplings are designed for applications in the light-to-medium duty range, with capacities and performance characteristics depending on the type of insert used. For maximum versatility in selection, Morse offers four different insert materials to suit the application.



Buna-N

This is the standard flexible insert material in Type 'L' Jaw Couplings, serving the majority of applications. The materials is an oil resistant rubber compound with excellent flexibility and shock absorption; temperature range is –40°C to +100°C.

Urethane

The urethane insert offers approximately 50% greater torque capacity, than standard Buna-N, and in addition provides good chemical resistance. Temperature is –35°C to 70°C.

Hytrel®

This tough flexible plastic material provides still greater torque capacity, approximately three times that of standard Buna-N, and superior temperature resistance with a range of –50°C to +120°C. Oil and chemical resistance are excellent.

Bronze (Only used in 'L' Series)

This insert is intended exclusively for high torque, low speed applications, up to 250 rpm only. Capacities are three times those of standard Buna-N. The material offers excellent resistance to oils, chemicals and extreme temperatures –40°C to +230°C.

Performance Characteristics of Inserts

Material	Flexibility	Shock Absorption	Oil Resistance	Chemical Resistance	Temperature Range (°C)	Angular Misalignment	Parallel Misalignment
Buna-N	Excellent	Excellent	Good	–	–40 to 100	1°	0.4mm
Urethane	Good	Good	Good	Good	–35 to 70	1°	0.4mm
Hytrel®	Fair	Fair	Excellent	Excellent	–50 to 120	½°	0.4mm
Bronze	–	–	Excellent	Excellent	–40 to 230	½°	0.25mm

Misalignment Capability - Simplified Installation and Maintenance

Since power is transmitted between the two halves of the Type 'L' Jaw coupling by the resilient insert, it is not necessary to have perfect alignment between shafts. The elastomeric design permits angular misalignments up to 1° (½° for Hytrel and Bronze) and parallel misalignment up to 0.4mm, greatly simplifying installation in all types of industrial applications. Maintenance is minimal; the insert can be visually inspected, never needs lubrication, and in fact, the coupling can continue to transmit power even if the elastomeric insert becomes severely damaged or destroyed - minimising downtime and increasing reliability.

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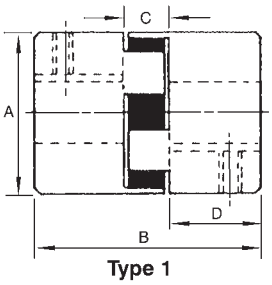
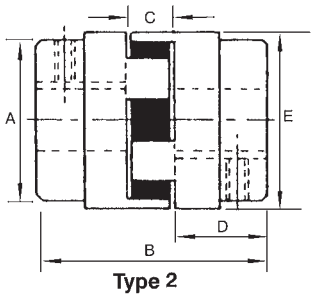
'L' Series Jaw Couplings

'L' Series Couplings use Sintered Iron Jaws for maximum strength & flexibility of bore size.



Type 1



Type 2

Dimensions (mm)

Coupling Size	Type	Coupling Half									Insert Part Nos.					
		Min Bore	Max Bore	Setscrews	A	B	C	D	E	Weight kg	Buna-N	Urethane	Hytrel	Weight kg	Bronze	Weight kg
L035	1	-	9.5	-	15.9	20.6	7.2	6.7	–	.010	L035N	N/A	N/A	.002	N/A	–
L050	1	6	15.0	M5	27.4	43.7	11.9	15.9	–	.065	L050N	N/A	L050H	.007	L050B	.022
L070	1	9	19.0	M6	34.5	50.8	12.7	19.1	–	.135	L070N	L070U	L070H	.008	L070B	.028
L075	1	9	22.2	M6	44.5	54.0	12.7	20.6	–	.23	L075N	L075U	L075H	.012	L075B	.065
L090	1	9	25.4	M6	53.6	54.0	12.7	20.6	–	.36	L090N	L090U	L090H	.015	L090B	.100
L095	1	9	28.6	2xM6	53.6	63.5	12.7	25.4	–	.40	L090N	L090U	L090H	.015	L090B	.100
L099	1	12	30.2	2xM8	64.3	73.0	19.1	27.0	–	.61	L099N	L099U	L099H	.033	L099B	.150
L100	1	12	35.0	2xM8	64.3	89.0	19.1	34.9	–	.81	L099N	L099U	L099H	.033	L099B	.150
L110	1	15	41.3	2xM10	84.2	108.0	22.2	42.9	–	1.71	L110N	L110U	L110H	.065	L110B	.30
L150	1	15	47.6	2xM10	95.0	114.5	25.4	44.5	–	2.28	L150N	L150U	L150H	.095	L150B	.63
L190	2	20	54.0	2xM12	102.0	133.5	25.4	54.0	114.5	3.72	L190N	L190U	L190H	.145	L190B	.90
L225	2	20	60.0	2xM12	108.0	152.0	25.4	63.5	127.0	5.20	L225N	L225U	L225H	.190	L225B	1.12

Hytrel is a registered trademark of E.I. Dupont Nermours & Co.

kW Power Ratings 'L' Series Couplings

Refer to page 2 for standard selection procedure.

Insert Material	Coupling Size	Max Bore	Max rpm	Max Torque Nm	kW Power Capacities								
					50	100	300	600	900	1200	1500	1800	3600
BUNA-N	L035	9.5	31000	0.4	.002	.004	.013	.026	.037	.05	.06	.07	.15
	L050	16.0	18000	2.9	.015	.030	.092	.186	.276	.36	.45	.55	1.10
	L070	19.0	14000	5.0	.026	.052	.157	.313	.470	.63	.78	.94	1.88
	L075	22.2	11000	10.0	.052	.104	.285	.565	.940	1.24	1.56	1.88	3.76
	L090	25.4	9000	16.4	.086	.172	.515	1.03	1.54	2.06	2.57	3.09	6.18
	L095	28.6	9000	21.4	.112	.224	.670	1.35	2.02	2.68	3.35	4.03	8.05
	L099	30.2	7000	35.6	.190	.373	1.12	2.24	3.35	4.50	5.6	6.70	13.4
	L100	35.0	7000	47.0	.250	.500	1.48	2.95	4.40	5.90	7.4	8.90	17.7
	L110	41.3	5000	89.0	.470	.930	2.80	5.60	8.40	11.2	14.0	16.8	33.6
	L150	47.6	5000	142.4	.750	1.45	4.45	8.95	13.4	17.9	22.4	26.9	53.7
	L190	54.0	5000	192.3	1.00	2.01	6.05	12.1	18.1	24.2	30.2	36.2	72.5
	L225	60.0	4200	263.5	1.38	2.76	8.30	16.5	24.8	33.0	41.3	49.6	99.0
URETHANE	L050	16.0	18000	4.8	.03	.06	.16	.31	.48	.61	0.73	0.91	1.9
	L070	19.0	14000	7.5	.04	.08	.24	.47	.71	.94	1.17	1.41	2.8
	L075	22.2	11000	15.0	.08	.16	.47	.94	1.41	1.88	2.35	2.82	5.6
	L090	25.4	9000	24.5	.13	.26	.78	1.55	2.32	3.09	3.86	4.63	9.2
	L095	28.6	9000	32.0	.17	.34	1.01	2.01	3.02	4.03	5.03	6.04	12.1
	L099	30.2	7000	53.5	.28	.56	1.68	3.36	5.04	6.70	8.35	10.0	20.1
	L100	35.0	7000	70.5	.37	.74	2.21	4.42	6.65	8.87	11.1	13.3	26.5
	L110	41.3	5000	133.5	.70	1.40	4.20	8.40	12.6	16.8	21.0	25.2	50.0
	L150	47.6	5000	214.0	1.12	2.24	6.71	13.4	20.1	26.8	33.5	40.2	80.5
	L190	54.0	5000	288.5	1.51	3.02	9.10	18.1	27.2	36.2	45.3	54.4	108.8
	L225	60.0	4200	395.0	2.07	4.14	12.40	24.8	37.3	49.7	62.1	74.5	149.0
HYTREL® & BRONZE*	L050	16.0	18000*	5.7	.03	.06	.18	.36	.54	.72	.90	1.08	2.1
	L070	19.0	14000*	12.8	.07	.13	.40	.80	1.32	1.61	2.02	2.42	4.8
	L075	22.2	11000*	25.6	.14	.28	.80	1.60	2.40	3.20	4.00	4.80	9.7
	L090	25.4	9000*	44.2	.23	.46	1.39	2.77	4.16	5.55	6.95	8.35	16.6
	L095	28.6	9000*	64.0	.33	.67	2.00	4.00	6.05	8.05	10.1	12.1	24.1
	L099	30.2	7000*	89.0	.47	.93	2.80	5.60	8.40	11.2	14.0	16.8	33.5
	L100	35.0	7000*	128.1	.67	1.34	4.03	8.05	12.0	16.1	20.1	24.2	48.3
	L110	41.3	5000*	256.0	1.34	2.68	8.05	16.1	24.1	32.2	40.2	48.3	96.6
	L150	47.6	5000*	419.0	2.19	4.38	13.10	26.3	39.5	52.6	65.7	78.9	158.0
	L190	54.0	5000*	529.0	2.78	5.54	16.60	33.2	49.9	66.5	83.1	99.7	200.0
	L225	60.0	4200*	712.0	3.75	7.50	22.50	45.0	67.5	90.0	112.5	135.0	270.0

*Note couplings with bronze inserts are limited to 250 rpm.

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KE Series Elastomeric Couplings

The KE coupling is a general-purpose flexible coupling, fully interchangeable with the standard couplings frequently used throughout the industry. The coupling consists of two machined cast iron hubs connected by an elastomeric gear ring. Available in 8 basic sizes, with torque capacity to 3300 Nm, the KE coupling provides positive power transmission between shafts, combined with the ability to accommodate moderate levels of misalignment. KE couplings are designed to transmit torques equal to the capabilities of sizes of commercial shafting which can be accommodated. Available either with parallel bore or with taper bush, these couplings are quick and easy to assemble with the machined outer flanges enabling simple alignment with just a straight edge. The elastomeric gear ring is moulded in Pebax R Polyether which is oil resistant, has a partial resistance to chemicals, and a low moisture absorption rate. The gear ring cushions transient peak torques, effectively reducing transmission of operational vibrations and shock loads. Standard couplings can be operated in environmental temperatures ranging from –40˚C to +85˚C.

KE Coupling Selection Procedure

Refer to page 2 for standard procedure for coupling selection. The number of starts to which an KE coupling is subjected will affect its life, and it is thus necessary to modify the design power Pd for drives subject to more than 4 starts per day by factor f. in table, to get selection power Ps. Thus

$$Ps = Pdf$$

No. starts/day	5-30	31-60	60+
f.	1.2	1.3	1.5

kW Power Ratings - Standard KE Couplings

Shaft Speed rpm	Coupling Size							
	7	9	11	13	15	18	23	28
100* 200	0.35 0.69	0.88 1.75	1.75 3.52	3.44 6.88	6.59 13.18	10.43 20.86	22.00 44.02	34.65 69.30
400 600 800	1.39 2.08 2.78	3.51 5.25 7.00	7.04 10.55 14.07	13.77 20.65 27.53	26.37 39.55 52.73	41.72 62.58 84.44	88.04 132.06 176.08	138.60 207.90 277.20
1000 1200 1400	3.47 4.16 4.86	8.75 10.50 12.25	17.59 21.11 24.62	34.42 41.30 48.18	65.92 79.10 92.28	104.30 125.20 146.02	220.10 264.12 308.13	346.50 415.80 485.10
1600 1800 2000	5.55 6.25 6.94	14.00 15.76 17.51	28.14 31.66 35.18	55.07 61.95 68.83	105.47 118.65 131.83	166.88 187.74 208.60	352.15 396.17 440.19	554.10 623.70 693.00
2200 2400 2600	7.64 8.33 9.02	19.26 21.00 22.76	38.69 42.21 45.73	75.72 82.60 89.48	145.01 158.20 171.38	229.46 250.32 271.18	484.21 528.23 572.25	762.30 –
2800 3000 3500	9.72 10.41 12.15	24.51 26.26 30.64	49.25 52.76 61.56	96.37 103.25 120.46	184.57 197.75 230.71	292.04 312.90		
4000 4500 5000	13.88 15.62 17.35	35.01 39.39 43.76	70.35 79.14 87.94	137.67	)			
5500 6000 6500	19.09 20.82 22.56	48.14 52.52			)	Dynamic balancing required for shaft speeds over 3600 rpm		
7000 7500	24.30 26.03				)			

*For shaft speeds below 100 rpm use nominal torque Tn.
Maximum shaft speeds of coupling controlled by safe max. peripheral speed for cast iron.

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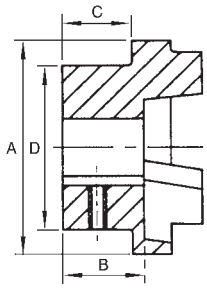
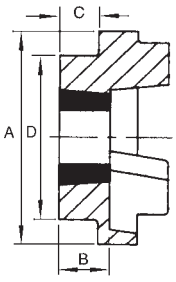
KE Series Couplings

KE Couplings Dimensions and Technical Specification

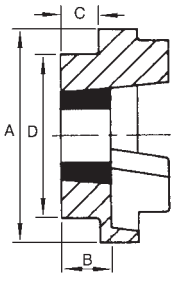
The KE couplings are available with solid hubs for reworking, 'type B'; or taper bored hubs for standard taper bushes. The taper bored hubs can be provided with the bush fitting from the hub end, 'type H', or from the flange end, 'type F', to enable easy fitting to end of motor/gearbox shafts.



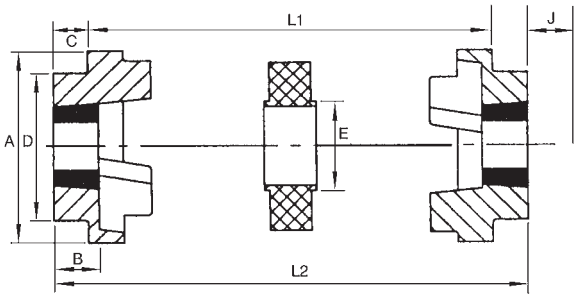
Type B



Type H



Type F



J = Dimension of clearance required to remove hub using Jack screw with shortened hex. key.

Coupling Capacities

Coupling No.	Nominal Torque Tn Nm	Maximum Torque Tn Nm	Max. Shaft Speed* rpm	Maximum Misalignment		
				Angular degrees	Radial mm	Axial mm
KE 7	33	73	7700	1.0	0.3	+0.2
9	84	185	6300	1.0	0.3	+0.5
11	168	370	5000	1.0	0.3	+0.6
13	331	725	4100	1.0	0.4	+0.8
15	630	1490	3600	1.0	0.4	+0.9
18	998	2300	3000	1.0	0.4	+1.1
23	2100	4800	2600	1.0	0.5	+1.3
28	3300	7000	2200	1.0	0.5	+1.7

*It is preferable to dynamically balance couplings operating above 4000 rpm

Taper Bush Coupling Dimensions (Hub types F & H)

Coupling No.	Bush Size	Max Bore mm	Dimensions in mm								Inertia (1)	Weight (1)
			A	B	C	D	E	J	L1	L2	kg cm²	kg
KE 7	1008	25	69	24	20	60	31	29	25	65	8.5	1.0
9	1108	28	85	24	20	70	32	29	31	70	11.5	1.7
11	1610	42	112	27	19	100	45	38	45	82	40	5.0
13	1610	42	130	27	18	105	50	38	53	89	78	5.5
15	2012	50	150	34	24	115	62	42	60	107	181	7.1
18	2517	65	180	47	35	125	77	48	73	142	434	16.6
23	3020	75	225	53	40	155	99	55	86	165	1207	26.0
28	3525	90	275	67	51	206	119	67	106	208	4465	50.0

(1) Including Taper Bushes mid-bore size.

Solid Hub Coupling Dimensions (Hub types B)

Coupling No.	Min Bore mm	Max. (2) Bore mm	Dimensions in mm							Inertia (1)	Weight (1)
			A	B	C	D	E	L1	L2	kg cm²	kg
KE 7	10	32	69	25	21	55	31	25	68	7.8	1.1
9	10	38	85	34	30	60	32	31	91	10.8	1.7
11	10	48	112	44	36	80	45	45	117	34.4	4.2
13	28	55	130	50	41	90	50	53	136	85	6.3
15	28	65	150	58	47	104	62	60	155	211	9.5
18	28	75	180	68	55	120	77	73	184	480	15.0
23	48	95	225	85	71	150	99	86	229	1405	28.0
28	60	130	275	106	90	206	119	106	286	5479	63.0

Ordering Instructions

KE Couplings can be supplied with any combination of hubs, or the hubs and rubber elements can be purchased separately. To indicate hub type required add type reference letter to coupling no., for rubber element add letter 'R' to coupling no. e.g.

KE 11F - is a 'F' type taper bush hub for coupling size KE 11.
KE 11R - is the rubber centre element for coupling size KE 11.

To order complete coupling indicate type of hub required for both hubs as suffix to basic coupling no. e.g.

KE 11FH - is a KE 11 Coupling with one 'F type' hub and one 'H type' hub.
KE 18BB - is a KE 18 Coupling with both hubs 'B type' parallel bore.

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Roller Chain Couplings

Cross & Morse Roller Chain Couplings consist of three high strength components; two special chain sprockets manufactured from high quality medium carbon alloy steels connected by a length of high strength Duplex Roller Chain. The sprockets have precision cut teeth, induction hardened for maximum service life; available either plain bore or machined for taper bores to provide ease of assembly. Size for size an LRC Roller Chain Coupling correctly lubricated is one of the strongest couplings available providing the following design advantages:-

● *Ease of Installation*

The LRC Coupling can be quickly installed and aligned. Connected shafts are easily separated by removing the spring clip connecting link and then the chain from the sprockets.

● *High Capacity*

Obtained through use of hardened tooth sprockets, Morse Precision Roller Chain with hardened rollers, allowing substantial kW Power in a compact size

● *Minimum Maintenance*

When optional spun covers are used lubrication is retained on the hardened working surfaces.

● *Inexpensive*

Low initial cost per kW Power transmitted, and long service life are obtained through the use of standard components with hardened working surfaces.

● *Flexibility*

Good installation practice dictates that coupling be installed with a minimum of misalignment. The LRC Coupling permits moderate angular and parallel shaft misalignment.

kW Power Ratings - Stock Roller Chain Couplings

Coupling No.	Torque Below 50 rpm Nm	Revolutions per minute														
		50	100	200	400	600	800	1000	1200	1500	1800	2000	2500	3000	4000	5000
LRC 4012	162	0.8	1.6	2.9	4.4	5.9	7.4	8.9	10.4	12.2	14.4	15.6	19.1	22.4	28.6	34.9
TB 4016	146	0.7	1.5	3.0	6.1	9.2	12.2	15.3	18.3	22.9	27.5	30.5	38.2	44.9	57.2	69.8
LRC 4016	325	1.7	3.2	5.8	8.8	11.4	14.9	17.6	20.4	24.5	28.8	31.3	38.3	44.9	57.2	69.8
LRC 5016	520	2.7	5.2	9.3	14.1	18.3	23.9	28.2	33.3	39.2	46.1	50.1	61.3	71.9	91.5	
TB 5018	485	2.5	5.0	10.1	18.8	24.6	32.0	37.8	44.6	52.6	61.9	67.2	82.2	96.5		
LRC 5018	712	3.6	7.0	12.5	18.8	24.6	32.0	37.8	44.6	52.6	61.9	67.2	82.2	96.5		
TB 6018	810	4.2	8.5	17.0	28.7	37.1	48.7	57.2	67.7	76.6	93.6	101.8	124.5	146.1		
LRC 6018	1056	5.5	10.6	19.0	28.7	37.1	48.7	57.2	67.7	76.6	93.6	101.8	124.5	146.1		
TB 6022	1310	6.6	13.7	27.4	42.8	55.4	72.6	85.2	101.0	114.0	139.2	151.5	185.0			
LRC 6022	1570	8.2	15.8	28.4	42.8	55.4	72.6	85.2	101.0	114.0	139.2	151.5	185.0			
TB 8018	1310	6.6	13.7	27.4	54.8	82.3	109.7	137.2	164.6	205.7	246.9	274.0				
LRC 8018	2913	15.2	29.2	52.4	79.3	102.5	134.2	158.0	186.7	219.6	258.1	280.7				
TB 8020	2700	14.1	28.3	56.5	103.0	133.2	174.4	205.4	242.7	285.4	335.5					
LRC 8020	3772	19.7	37.9	68.1	103.0	133.2	174.4	205.4	242.7	285.4	335.5					
LRC 12016	8945	46.8	89.9	161.1	243.5	314.1	412.1	485.3	573.2	674.3	792.3					
LRC 12020	11655	61.0	117.1	209.9	317.3	410.0	537.0	632.4	746.9	878.7						
LRC 12024	14432	75.5	145.0	259.9	392.9	507.8	665.0	783.0	924.9							
LRC 12030	18040	94.0	180.0	324.0	490.0	630.0	830.0	995.0								

For maximum service life, couplings selected with ratings to the right of the heavy line in table must be lubricated with a cover. Maximum speeds are indicated by heavy broken lines.

Torque and power capacities at slow speeds for TB series couplings are governed by taper bush limitations.

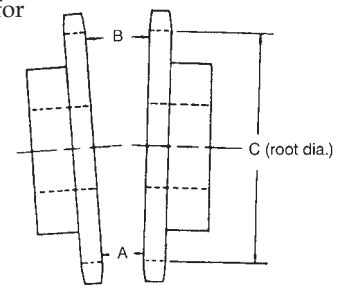
In addition to the standard sizes, Roller chain Couplings can be furnished in a wide range of sizes for special designs with Torque Ratings of up to 2000 Nm.

Misalignment

Maximum angular misalignment is 1°, but for maximum life angular misalignment should not exceed ½°. Refer to sketch on right, where .009mm per mm root dia. is equivalent to ½° angular misalignment.

B – A = .009 x C.

Offset or Parallel misalignment should not exceed 2% of chain pitch.



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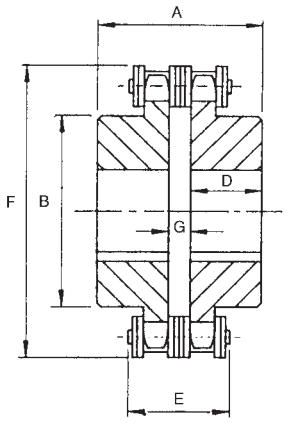
Roller Chain Couplings

LRC Plain Bore - Roller Chain Coupling Dimensions

Available from stock with pilot bore, or can be quickly modified to customers shaft requirements; standard finished bores being to H8 tolerance.

Stock Coupling Dimensions

Coupling No.	Min Bore mm	Max. Bore mm	Dimensions mm						Approx. Weight kg
			A	B	D	E	F	G	
LRC 4012	10.0	22	63	33	28	33	61	7	0.6
4016	12.0	34	63	50	28	33	77	7	1.2
5016	15.9	45	81	64	37	38	96	7	2.2
5018	19.0	50	91	75	42	38	106	7	2.7
6018	19.1	57	106	87	49	44	126	8	5.1
6022	24.0	68	108	102	50	44	150	8	7.4
8018	25.4	80	136	117	60	71	167	16	11.4
8020	35.0	90	148	136	66	71	183	16	17.6
12016	38.1	105	186	156	81	105	230	24	29.0
12020	50.8	120	178	175	77	105	278	24	53.0
12024	50.8	150	231	232	103	105	326	24	76.0
12030	50.8	200	231	302	103	105	398	24	137.0

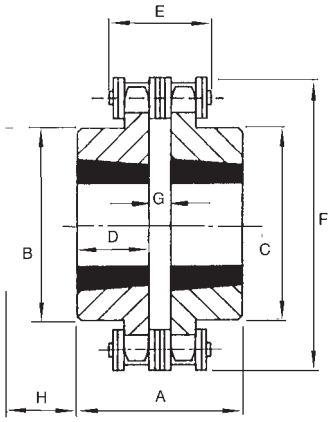


TB Taper Bore - Roller Chain Coupling Dimensions

Two types of sprockets are available; standard TBH with bushes mounted from the hub end, and type TBF where bushes are mounted from the flange (tooth) end of the sprocket.

Stock Coupling Dimensions

Coupling No.	Bush Size	Max. Bore mm	Dimensions in mm								Approx.(2) Weight kg
			A	B	C	D	E	F	G	H(1)	
TB 4016	1108	28	51	52	50	22	33	77	7	20	0.8
TB 5018	1610	42	57	75	75	25	38	106	7	27	2.6
TB 6018	2012	51	72	90	87	32	44	126	8	35	2.9
TB 6022	2517	63	98	102	102	45	44	150	8	42	4.1
TB 8018	2517	63	106	108	100	45	71	167	16	42	6.8
TB 8020	3020	76	116	136	136	50	71	183	16	53	8.4



(1) Space required to remove hub using jack screw with shortened hex. key.
(2) For coupling using 2 off TBH Sprockets - less taper bushes.
Note: To order TB coupling, hub type must be specified by suffix after coupling.
ie:- TB 6018 FH is coupling with one TBF and one TBH hub.

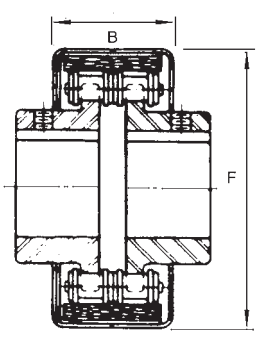
Coupling Covers

Chain Coupling Covers are used to provide protection for both the duplex roller chain and sprocket teeth on applications where couplings are exposed to corrosive or abrasive atmosphere, or to retain lubrication in the chain with high shaft speeds. Two types of cover are offered; a low cost spun aluminium cover for general use, or a fully sealed split cast aluminium cover on more demanding applications.

Stock Spun Aluminium Covers

Their light weight and cost make spun aluminium covers the ideal choice for protection of roller chain couplings. The two spun halves simply clip together to provide a protective cover for the chain. A felt pad located between chain and cover retains grease lubrication. Rounded exterior of the cover combines safety with neat appearance. Covers are also suited to the LSC inverted tooth couplings. For applications where aluminium is not permitted, spun steel covers of same dimensions can be supplied to order.

Cover No.	To Suit Couplings			B	F	App. Weight
	LRC	TB	LSC	mm	mm	kg
SA 4012C	4012			38.9	75	0.06
SA 4016C	4016	4016	4-16	38.9	93	0.08
SA 5016C	5016		4-20	47.0	110	0.10
SA 5018C	5018	5018		47.0	121	0.12
SA 6018C	6018	6018	4-28	56.6	142	0.16
SA 6022C	6022	6022		56.6	166	0.22
SA 8018C	8018	8018		79.5	186	0.35
SA 8020C	8020	8020		79.5	203	0.40
SA 12016C	12016			117.6	246	0.53



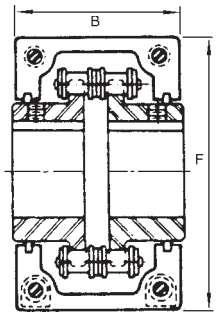
Cast Aluminium Covers

For more demanding applications, cast aluminium covers extend life of couplings by providing continuous lubrication and full protection from abrasive elements. The two halves fit around the coupling and connect by 'Nyloc' cap-head bolts. Neoprene seals are fitted to seal between sprocket hub and cover. These covers are fitted after coupling is fully installed on shafts.

Caution:- Never operate at rim speeds above 25 M/s.

Base Cover No.	Adaptor Kit No.*	To suit all couplings		B mm	F mm	Approx. Weight kg
AL 40	AL 4016K	LRC 4016		51	102	0.45
AL 50	AL 5016K	LRC 5016		60	130	0.70
AL 50	AL 5018K	LRC 5018	TB 5018	60	130	0.70
AL 60	AL 6018K	LRC 6018		75	162	1.25
AL 80	AL 8018K	LRC 8018		102	208	2.40
AL 80	AL 8020K	LRC 8020	TB 8020	102	208	2.35

*Accessory Kit includes two seals for specific hub size, two gaskets and hardwear necessary to install cover.



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Morse LNC Series
Delrin† Chain Couplings

Available in Two Series

- **Corrosion Resistant**
Where corrosion is a problem - Delrin Couplings are a must.

- **Pollution-Free Couplings**
A neat way to keep things clean.

- **Economical**
Cost less to install and maintain.

- **No Lubrication**
No dirt catching problems with grease.

- **Quiet**
Runs quieter than metal couplings.

- **Safe**
Smooth outer surface of Delrin Chain.

Morse Delrin† Chain Couplings for Applications up to 5000 RPM and from Fractional to 45kW

- Where corrosion is normally a problem from atmospheric conditions.
- For food processing, textile and other machinery which avoids the use of oil or grease.
- For the safety feature of the smooth outer surface without a cover.
- For centrifugal pumps and steady load applications.

Available with minimum plain bore, finished bore with standard keyway and setscrew, or TL taper bore.

N400 Series
1/2 " pitch
.2 through 21kW

Available from stock with minimum plain bore, TL taper bore or bored to suit.

kW Power Ratings LNC 400 Series 1/2 inch Delrin† Chain

Number of Teeth	Torque below 100 rpm Nm	Revolutions per minute																	
		100	200	300	400	500	600	700	800	900	1200	1500	1800	2000	2500	3000	3600	4000	5000
11	23.9	0.2	0.5	0.7	1.0	1.2	1.3	1.5	1.6	1.7	2.1	2.4	2.7	2.9	3.3	3.8	4.3	4.6	5.4
12	28.6	0.3	0.6	0.8	1.1	1.4	1.6	1.8	1.9	2.1	2.5	2.9	3.2	3.5	4.0	4.5	5.1	5.5	6.5
13	33.3	0.3	0.7	1.0	1.3	1.7	1.9	2.1	2.3	2.4	2.9	3.4	3.8	4.1	4.7	5.3	6.0	6.5	7.6
14	38.6	0.4	0.8	1.2	1.6	2.0	2.2	2.4	2.6	2.8	3.4	3.9	4.4	4.7	5.5	6.2	7.0	7.5	8.8
15	43.9	0.4	0.9	1.3	1.8	2.3	2.5	2.8	3.0	3.3	3.9	4.5	5.0	5.4	6.2	7.2	8.0	8.6	10.1
16	50.3	0.5	1.0	1.5	2.1	2.6	2.9	3.2	3.4	3.7	4.4	5.1	5.8	6.2	7.1	8.1	9.1	9.8	
17	56.7	0.6	1.1	1.7	2.3	2.9	3.3	3.6	3.9	4.2	5.0	5.7	6.5	6.9	8.0	9.0	10.3	11.0	
18	63.6	0.6	1.3	1.9	2.6	3.3	3.7	4.0	4.4	4.7	5.6	6.5	7.3	7.8	9.0	10.2	11.5		
19	70.5	0.7	1.4	2.2	2.9	3.6	4.1	4.5	4.8	5.2	6.2	7.2	8.1	8.7	10.0	11.3	12.8		
20	78.3	0.8	1.6	2.4	3.2	4.1	4.5	5.0	5.5	5.8	6.9	8.0	9.0	9.6	11.1	12.5	14.2		
21	86.1	0.9	1.8	2.7	3.6	4.5	5.0	5.5	6.1	6.4	7.6	8.8	9.9	10.6	12.2	13.8	15.7		
22	94.7	0.9	1.9	2.9	3.9	4.9	5.6	6.0	6.6	7.0	8.4	9.7	10.9	11.6	13.5	15.2			
23	103.3	1.0	2.1	3.2	4.3	5.4	6.2	6.6	7.1	7.6	9.1	10.5	11.8	12.7	14.7	16.7			
24	113.0	1.1	2.3	3.5	4.7	5.9	6.6	7.2	7.8	8.3	10.1	11.5	12.9	13.9	16.0	18.1			
25	122.7	1.2	2.5	3.8	5.1	6.4	7.1	7.7	8.4	9.0	10.8	12.5	14.0	15.0	17.3	19.6			
27	143.0	1.4	2.9	4.4	5.9	7.5	8.3	9.0	9.8	10.5	12.6	14.6	16.3	17.5	20.2				
30	176.0	1.7	3.6	5.5	7.3	9.2	10.2	11.1	12.1	13.0	15.5	18.0	20.1	21.6					

N600 Series
3/4 " pitch
1.1 through 45kW

Available from stock with minimum plain bore, TL taper bore or bored to suit.

kW Power Ratings LNC 600 Series 3/4 inch Delrin† Chain

Number of Teeth	Torque below 100 rpm Nm	Revolutions per minute																	
		100	200	300	400	500	600	700	800	900	1200	1500	1800	2000	2500	3000	3600	4000	5000
11	107.4	1.1	2.2	3.2	4.3	5.3	6.3	7.2	8.2	9.1	11.6	13.9	16.0	17.2	19.8	21.8	23.2		
12	129.6	1.2	2.5	3.7	4.9	6.0	7.1	8.2	9.2	10.2	13.0	15.6	17.8	19.1	21.8	23.6	24.7		
13	137.0	1.4	2.8	4.1	5.5	6.7	8.0	9.1	10.3	11.4	14.5	17.2	19.6	21.0	23.7	25.4	26.2		
14	152.9	1.5	3.1	4.6	6.1	7.5	8.8	10.1	11.4	12.6	15.9	18.9	21.3	22.8	25.4	26.9			
15	168.8	1.7	3.4	5.1	6.7	8.2	9.7	11.1	12.5	13.8	17.4	20.5	23.1	24.5	27.2				
16	184.7	1.9	3.7	5.5	7.3	8.9	10.5	12.1	13.6	15.0	18.8	21.5	24.6	26.0	28.4				
17	200.7	2.1	4.1	6.0	7.9	9.7	11.4	13.1	14.6	16.1	20.1	22.5	26.1	27.5	29.6				
18	217.6	2.2	4.4	6.5	8.5	10.5	12.3	14.1	15.7	17.3	21.5	24.4	27.2	28.8	30.5				
19	234.6	2.4	4.8	7.0	9.2	11.3	13.2	15.1	16.8	18.5	22.9	26.3	28.3	30.1	31.4				
20	252.5	2.6	5.1	7.6	9.9	12.1	14.2	16.1	18.0	19.7	24.3	27.8	30.0	31.4					
21	269.8	2.8	5.5	8.1	10.5	12.9	15.1	17.2	19.1	21.0	25.7	29.3	31.7	32.8					
22	288.8	3.0	5.9	8.6	11.2	13.7	16.0	18.2	20.2	22.1	27.0	30.6	32.2	33.7					
23	307.8	3.2	6.3	9.2	11.9	14.5	17.0	19.2	21.4	23.3	28.2	31.8	34.0	34.6					
24	326.8	3.4	6.6	9.7	12.6	15.4	18.0	20.4	22.6	24.7	29.8	33.4	35.4						
25	345.8	3.6	7.0	10.3	13.4	16.3	19.0	21.1	23.8	26.0	31.3	34.9	36.9						
27	403.0	4.2	8.2	12.0	15.6	19.0	22.1	24.6	27.7	30.3	36.5	40.7							
30	498.0	5.2	10.0	14.8	19.3	23.5	27.3	30.3	34.2	37.4	45.0								

All Delrin Couplings operated below 100 rpm must not be subjected to torque values in excess to those shown in tables above.
Refer to page 2 for service factor and selection procedure.

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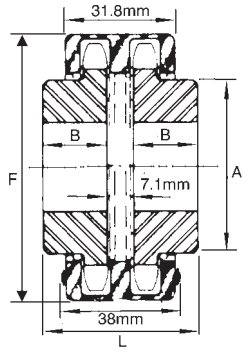
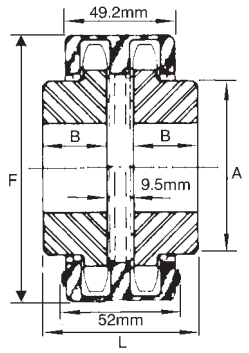
Morse LNC Series
Delrin† Chain Couplings

LNC 400 Series



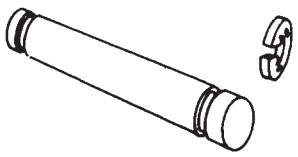
- Temperature range from –30°C to +66°C
- Angular misalignment of 1° (11T-19T), ½° (20T-30T)
- Parallel misalignment of 0.12 mm
- Total end float of 1.5mm

LNC 600 Series



- Temperature range from –30°C to +66°C
- Angular misalignment of 1° (11T-18T), ½° (19T-30T)
- Parallel misalignment of 0.20 mm, (11T-18T) 0.13mm (19T-30T)

Coupler Pin



A slip-fit coupler pin which provides ease of assembly or dis-assembly can be supplied with all couplings

Dimensions - Plain Bore Couplings

Coupling No.	Bore Sizes Min. mm	Bore Sizes Max. mm	A mm	B mm	F mm	L mm
LNC 411	10	19	29	25	57	57
LNC 412	10	22	33	28	61	63
LNC 413	10	25	37	28	65	63
LNC 414	10	28	41	28	69	63
LNC 415	10	30	45	28	73	63
LNC 416	12	34	50	28	77	63
LNC 417	12	35	52	28	81	63
LNC 418	12	37	56	28	85	63
LNC 419	12	40	60	28	89	63
LNC 420	12	42	64	28	93	63
LNC 421	14	45	68	28	97	63
LNC 422	14	46	70	28	101	63
LNC 423	14	46	70	28	105	63
LNC 424	14	46	70	28	109	63
LNC 425	14	46	70	28	113	63
LNC 427	16	46	70	30	121	67
LNC 430	16	52	80	30	133	67

Dimensions - Taper Lock Couplings

Coupling No.	Bush Size	Max. Bore mm	A mm	B mm	F mm	L mm
LNC 415TL	1008	25	46	22	73	52
LNC 416TL	1108	28	52	22	77	52
LNC 417TL	1210	32	60	25	81	58
LNC 418TL	1210	32	60	25	85	58
LNC 419TL	1210	32	63	25	89	58
LNC 420TL	1610	42	71	25	93	58
LNC 421TL	1610	42	71	25	97	58
LNC 423TL	1610	42	76	25	105	58
LNC 425TL	1610	42	76	25	113	58
LNC 427TL	1610	42	76	25	121	58
LNC 430TL	2012	50	90	32	133	71

Dimensions - Plain Bore Couplings

Coupling No.	Bore Sizes Min. mm	Bore Sizes Max. mm	A mm	B mm	F mm	L mm
LNC 611	14	29	46	35	89	80
LNC 612	14	35	52	35	95	80
LNC 613	14	37	58	35	101	80
LNC 614	14	42	64	35	107	80
LNC 615	14	46	70	35	113	80
LNC 616	16	50	75	35	119	80
LNC 617	16	52	80	35	125	80
LNC 618	16	52	80	35	131	80
LNC 619	16	52	80	35	137	80
LNC 620	16	52	80	35	143	80
LNC 621	20	58	90	40	149	90
LNC 622	20	58	90	40	155	90
LNC 623	20	58	90	40	161	90
LNC 624	20	58	90	40	169	90
LNC 625	20	58	90	40	173	90
LNC 627	20	62	95	40	185	90
LNC 630	20	62	95	40	204	90

Dimensions - Taper Lock Couplings

Coupling No.	Bush Size	Max. Bore mm	A mm	B mm	F mm	L mm
*LNC 613TL	1210	32	63	25	101	61
LNC 615TL	1610	42	71	25	113	61
LNC 617TL	1610	42	76	25	125	61
LNC 619TL	2012	50	90	32	137	73
LNC 620TL	2012	50	90	32	143	73
LNC 621TL	2517	60	102	45	149	99
LNC 623TL	2517	60	108	45	161	99
LNC 625TL	2517	60	108	45	173	99
LNC 627TL	2517	60	108	45	185	99
LNC 630TL	2517	60	108	45	204	99

*Hub recessed for chain clearance.

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NOTE: All Bores supplied to B.S. H8 limits and Keyways conform to B.S. Std. unless otherwise specified.

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GFA and GFAS Gear Couplings

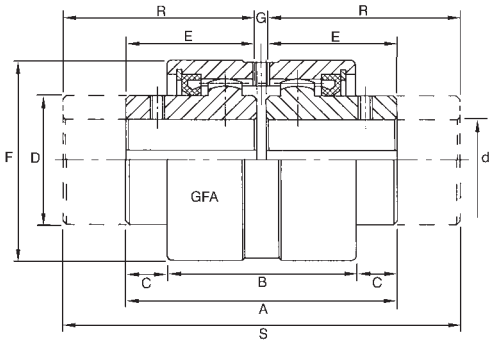
Coupling types GFA and GFAS are designed for heavy industrial applications, providing a torsionally stiff connection of shafts which can accommodate angular and parallel misalignment and axial movement.
The GFA coupling consists of two hardened steel hubs with external crowned and barrelled gear teeth, connected by a hardened steel sleeve with matching gear teeth. The hub teeth are positioned a maximum distance apart to minimise angular and parallel misalignment. The double articulation in the GFA series permits high misalignment.
The GFAS coupling has only one hub with external teeth, which connects to a sleeve with integral hub, to reduce weight and inertia. This series provides a stiffer connection, particularly suited to cardan shaft applications.
Hubs and sleeves are produced from high strength steel (800N/mm^2 tensile strength) with chemical surface-hardening to enhance wear and corrosion resistance, and avoid seizure. All teeth are to DIN 3992 Class 7 accuracy, with surface finish 1.4µm Ra. Lubrication is retained by sprung loaded seals which also prevent ingress of contaminants to ensure long operating life.
Re-lubrication is via two grub screws positioned on the sleeve.

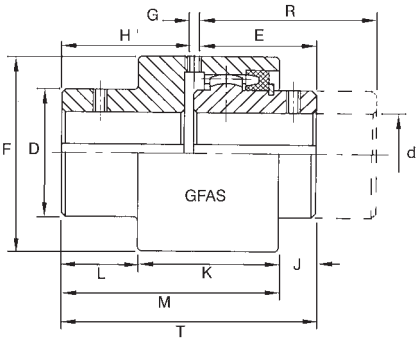
GFA Series

GFAS Series

Couplings are offered with two hub lengths; standard hub suitable for most applications, and long hub for shafts of standard series motors. Hubs of different lengths can be combined in one coupling (GFA type) with refs. modified as below:-

GFA - Has two std. hubs.
GFAL - Has one long and std. hub.
GFALL - Has two long hubs.
GFAS - Has std. length hub.
GFASL - Has long length hub.





GFA and GFAS Series Couplings - Power Capacities and Technical Data

For coupling selection procedure refer page 13. Max. motor torque must never exceed max. torque rating of coupling.

Coupling Size		Power Capacity kW/rpm Normal	Torque Nm		Power Capacity in kW at selected shaft speeds				Shaft speed(2)		Radial Misalign Max. mm GFA only	Inertia kg-cm^2 GFA (1)	Inertia kg-cm^2 GFAS (1)	Weights kg(3)			
			Rated	Max.	500	1000	1500	3000	Normal Running Max-rpm	Absolute Max-rpm				GFA Sleeve	GFAS Sleeve	Standard Hub	Long Hub
GFA-25	GFAS-25	0.063	600	1524	31	63	94	189	5000	6000	0.20	8.7	7.3	0.72	1.03	0.48	0.69
GFA-32	GFAS-32	0.104	1000	2520	52	104	156	312	4000	5000	0.26	25.1	19.2	1.14	1.75	0.99	1.58
GFA-40	GFAS-40	0.130	1250	3125	65	130	195	370	3000	4200	0.32	44.8	34.1	1.68	2.71	1.49	2.10
GFA-56	GFAS-56	0.261	2500	6200	130	261	391	-	2200	3500	0.37	132.6	95.6	2.86	4.43	2.96	4.22
GFA-63	GFAS-63	0.419	4000	9260	209	419	628	-	1600	3000	0.40	278.2	207.3	3.75	6.62	4.90	7.67
GFA-80	GFAS-80	0.785	7500	18000	392	785	-	-	1200	2600	0.48	558.6	492.6	5.58	10.50	8.72	14.26
GFA-100	GFAS-100	1.236	12000	28500	618	1236	-	-	700	1400	0.65	1044.5	1064.5	6.63	28.20	15.76	25.40
GFA-125	-	2.431	23600	56250	1215	2431	-	-	460	950	0.70	3650.0	-	17.70	-	32.60	49.50
GFA-155	-	4.121	40000	90000	2060	-	-	-	350	700	0.80	9982.0	-	28.30	-	65.50	91.40

(1) Moments of inertia refer to standard couplings bored to maximum bore size.
(2) For operating speeds in excess of 3,600 rpm couplings should be balanced in accordance with ISO 1940 to class G2.5.
(3) Weights are for unbored coupling hubs - total weight is the addition of two hubs plus sleeve (GFA), or sleeve plus hub (GFAS).

GFA and GFAS Series Couplings - Dimensions in mm

Coupling Size		Finished Bore Sizes d(1)		Standard Length Hubs											Long Hubs		
GFA	GFAS	Normal Max.	Max.	A(2)	B	C	D	E	F	G(2)	H	J	K	L	M(2)	R	S(2)	T(2)
GFA-25	GFAS-25	25	28	85	61	12.0	42*	41.0	68*	3	41	13	43	29	85	60	123	104
GFA-32	GFAS-32	32	38	100	73	13.5	55	48.5	85	3	48.5	16	49	35	100	80	163	131.5
GFA-40	GFAS-40	40	48	115	82	16.5	64	56.0	95	3	56	18.5	54.5	42	115	80	163	139
GFA-56	GFAS-56	56	60	140	97	21.5	80	68.0	120	4	60	27	60	45	132	100	204	164
GFA-63	GFAS-63	63	75	153	108	22.5	100	74.5	140	4	61.5	31	63	46	140	119.5	243	185
GFA-80	GFAS-80	80	90	170	125	22.5	125	82.5	175	5	65.5	26	76	51	153	140	285	210.5
GFA-100	GFAS-100	100	110	216	148	34	150	105	198	6	90	38	92	71	201	174.5	355	270.5
GFA-125	-	125	140	288	214	39	190	140	245	8	-	-	-	-	-	207.5	423	-
GFA-155	-	155	175	370	240	64	240	180	300	10	-	-	-	-	-	245	498	-

(1) Stock hubs are all unbored, but can be modified to customer's bore and keyway requirements, up to maximum bores indicated.
(2) Dimensions G, M, S, and T relate to couplings correctly positioned on shafts.
* For GFAS 25 dimension D on hub only is 40mm, and dimension F is 70mm.

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Type GF Gear Couplings

Low cost, gear couplings for lower power applications, available in 10 sizes with torque capacity to 410Nm and shaft speeds up to 14,000 rpm. The GF Coupling consists of two steel hubs with external crowned and barrelled gear teeth, phosphated for corrosion protection, connected by a synthetic resin sleeve. The sleeve is manufactured from high molecular weight polyamide, thermally conditioned and impregnated with solid lubricant to provide a long maintenance-free life. This sleeve has high resistance to atmospheric humidity and an operating temperature range of –20˚C to +80˚C with ability to withstand 120˚C for short durations.

The GF Series Couplings are made with two hub lengths; a standard hub suitable for most applications, and a longer hub (ref GFL) designed to fit full length of shaft on standard motors. Hubs of different lengths can be combined in coupling, being identified by coupling reference as following examples:

GF	-	Has two standard hubs	-	e.g. GF 14
GFL	-	Has one long hub	-	e.g. GFL 28
GFLL	-	Has both long hubs	-	e.g. GFLL 42

Gear Coupling Selection Procedure

Using factors from page 1 and below determine selection parameters by:-

a) Determine design power in kW from transmitted power by formula:- Design Power Pd = P, f1, f2, f3 kW
Divide design power Pd by shaft speed, rpm to give kW/rpm and use to select suitable coupling giving consideration also to shaft speed and misalignment.

b) Alternatively, if only shaft torque is know, design torque can be determined:- Design Torque Td = T, f1, f2, f3, Nm

Service Life Factor f2

Gear Couplings are designed for a working life of 3,800 hours under normal conditions of torque, misalignment and speed. Where a longer life is required use factor f2 when selecting coupling.

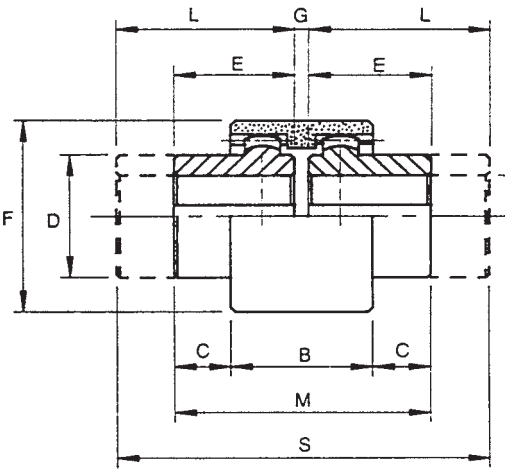
Life in hours	3800	4000	6000	8000	12000	20000
Factor f2	1.0	1.6	1.17	1.26	1.39	1.58

Misalignment Factor f3

The maximum operating speed indicated in the tables for each coupling is based on applications where the angular misalignment does not exceed 5 minutes angle. Where values on angular misalignment exist, both the catalogue torque capacity and the maximum speeds will have to be reduced. Where angles of misalignment and operating speeds are close to catalogue values, the selecting service factor should be increased by misalignment factor f3 of 1.12.

GF Series Couplings - Capacities and Dimensions (mm)

Couplings should be selected to requirements of motor power, shaft sizes and type of load. Under no circumstances should maximum motor torque exceed twice coupling rated torque.



Coupling Size	Torque Nm (3)	Power Cap kW/1000 rpm	Power Capacity in kW at selected shaft speeds			Max. Speed rpm	Inertia kg-cm² (1)	Maximum misalignment (2) capabilities		
			1000	1500	3000			Angular	Radial	Axial mm
GF-14	11.0	1.1	1.1	1.7	3.4	14,000	0.27	±2˚	0.7	±1
GF-19	18.5	1.9	1.9	2.9	5.8	12,000	0.64	±2˚	0.8	±1
GF-24	22.0	2.3	2.3	3.4	6.9	10,000	0.92	±2˚	0.8	±1
GF-28	51.5	5.4	5.3	8.1	16.1	8,000	3.45	±2˚	1.0	±1
GF-32	69.0	7.2	7.2	10.8	21.6	7,100	5.03	±2˚	1.0	±1
GF-38	88.0	9.2	9.2	13.8	27.6	6,300	9.59	±2˚	0.9	±1
GF-42	108.0	11.3	11.3	16.9	33.9	6,000	13.06	±2˚	0.9	±1
GF-48	154.0	16.1	16.1	24.0	48.3	5,600	18.15	±2˚	0.9	±1
GF-55	285.0	29.8	29.8	44.7	89.5	4,800	49.44	±2˚	1.2	±1
GF-65	410.0	42.9	42.9	64.3	128.7	4,000	106.34	±2˚	1.3	±1

Coupling Size	Finished Bore Size		Standard Length Hubs							Long Hubs			Weights kg(6)	
	d(5) Min.	d(5) Max.	B	C	D	E	F	G(3)	M(3)	L	S(3)	Sleeve	Standard Hub	Long Hub
GF-14	6	14	38	6.5	25	23	40	4	51	30	64	0.022	0.10	0.13
GF-19	8	19	38	8.5	32	25	48	4	55	40	84	0.028	0.18	0.28
GF-24	10	24	42	7.	36	26	52	4	57	50	104	0.037	0.23	0.42
GF-28	10	28	48	19	45	41	68	4	86	60	124	0.086	0.54	0.79
GF-32	12	32	48	18	50	40	75	4	84	60	124	0.104	0.66	0.97
GF-38	14	38	50	17	60	40	85	4	84	80	164	0.131	0.93	1.83
GF-42	20	42	50	19	63	42	95	4	88	110	224	0.187	1.10	2.76
GF-48	20	48	50	27	68	50	100	4	104	110	224	0.198	1.50	3.21
GF-55	25	55	65	29.5	82	60	120	4	124	110	224	0.357	2.63	5.12
GF-65	25	65	72	36	95	70	140	4	144	140	284	0.595	4.02	7.92

(1) Inertia refers to standard couplings bored to maximum bore size.
(2) Angular misalignment relates to total angle between shafts.
(3) Dimensions G, M & S relate to couplings correctly positioned on shafts.
(4) Max. Torque = 2 x Rated Torque.
(5) Stock hubs are all unbored.
(6) Weights are for unbored coupling hubs.

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Morflex Couplings

Accommodate High Angular Misalignment – Cushion Vibration and Shock

The Morflex Coupling is designed for applications where considerable misalignment is expected. It also cushions shock loads and absorbs vibration. The Morflex coupling compensates for misalignment and is torsionally flexible.

All drive and reaction forces are accommodated by displacement of the flexible Neoprene biscuits. Spring rates (Nm/degree) are low, which accounts for the efficient compensation for misalignment and prolonged bearing life of equipment coupled by Morflex. The centre member "floats" between the two flanges, and the two sets of Neoprene biscuits share the misalignment.

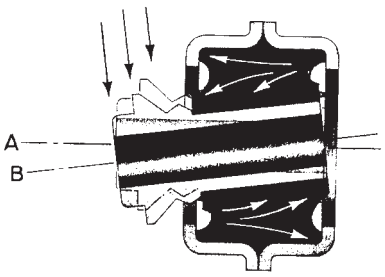
Round steel flanges are normally used, available with a minimum bore from stock. Lining up shaft centres is easier and higher operation speeds permissible with the Morflex Round Flanged Coupling.

The Morflex Principle

Specially developed, resilient, non-cold-flow neoprene biscuits are responsible for the flexibility of the Morflex coupling. Relative movement between shafts is confined to the controlled displacement of the neoprene. Preloading the biscuits in assembly permits them to allow considerable deflection, even with light load. The shape of neoprene biscuit has been carefully designed for uniform stress and deflection - an important operational advantage and one which contributes greatly to the life of the coupling. Morflex couplings can be used in ambient temperatures ranging from -15˚C to 95˚C.

Angular deflection

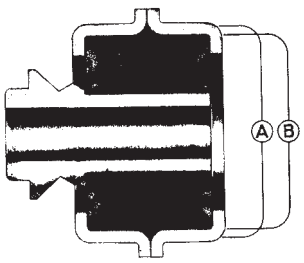
A. Centreline of biscuit before angular deflection.



B. Displacement of the neoprene, as indicated by arrows, compensates for angular misalignment of the connected shafts.

Axial displacement resulting from thrust loads

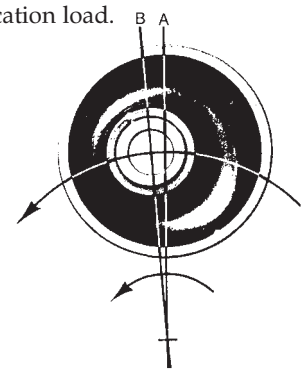
A. Position of biscuits prior to imposition of thrust load.



B. Position of biscuit after thrust load has been imposed. The flow of the neoprene permits controlled end float. Thrust loading is transmitted smoothly and uniformly.

Torsional deflection resulting from torque loads and torsional vibration

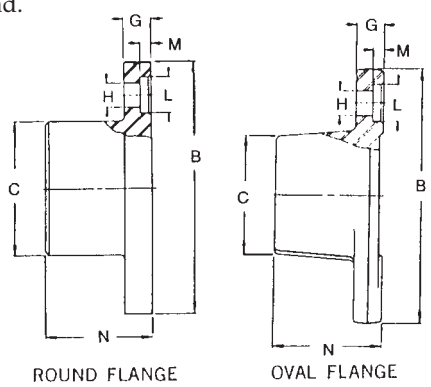
A. Centreline of biscuit before application load.



B. Imposition of a torque increases pressure in the direction of the load, and reduces pressure in the opposite direction. Because of its initial preloaded condition the neoprene remains under compression throughout its volume at maximum torque load.

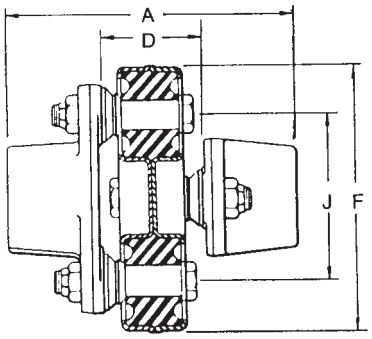
Morflex Coupling Capacities

Cplg No.	Power Ratings		Max. rpm	Max. misalignment capabilities	Parallel Misalignment	Stock Min. Bore mm	Max Bore mm	Approx Wt. kg
	kW per 100 rpm	Torque Nm		Angular	Radial mm			
252-0	0.18	17.5	6500	1.5˚	0.25	9.53	15	0.35
302-0	0.28	27.0	6000	2˚	0.25	9.53	18	0.50
352-0	0.50	43.4	5500	3˚	0.38	9.53	22	0.90
402-R	0.75	71.9	5500	4˚	0.38	12.70	30	1.80
502-R	1.19	114.0	5300	5˚	0.50	12.70	38	3.15
602-R	2.42	232.0	5000	5˚	0.75	19.10	42	5.45
702-R	4.00	385.0	4600	5˚	0.89	22.22	50	9.00
802-R	5.50	527.0	4400	5˚	1.00	25.40	55	13.60
902-R	7.50	712.0	4200	4˚	1.00	25.40	62	21.75
1002-R	10.30	983.0	4000	4˚	1.15	31.25	70	30.40
1202-R	15.75	1505.0	3800	2˚	1.25	50.80	80	48.00



Dimensions mm

Cplg No.	A	B	C	D	F	G	H	J	L	M	N
252-0	57	57	24	19	67	4.0	6.4	41	-	-	19
302-0	70	65	30	25	79	4.8	6.4	49	-	-	22
352-0	79	76	35	28	92	6.4	7.9	57	-	-	25
402-R	105	91	45	41	105	9.5	9.9	65	15.9	5.6	32
502-R	124	107	57	48	128	9.5	11.5	81	19.1	4.8	38
602-R	162	129	70	57	154	12.7	13.1	97	19.1	4.8	52
702-R	186	148	79	62	178	15.9	14.7	110	22.3	4.8	62
802-R	210	167	95	68	203	15.9	14.7	125	22.3	4.8	71
902-R	248	193	108	76	229	19.1	16.7	141	28.6	5.6	86
1002-R	279	215	120	79	254	23.8	19.8	157	31.8	5.6	100
1202-R	317	247	133	92	330	31.8	26.2	187	38.2	7.1	113



Couplings 252-0 to 352-0 have oval flanges, other sizes have round flanges, although to size 1002 can be supplied to special order with oval flanges

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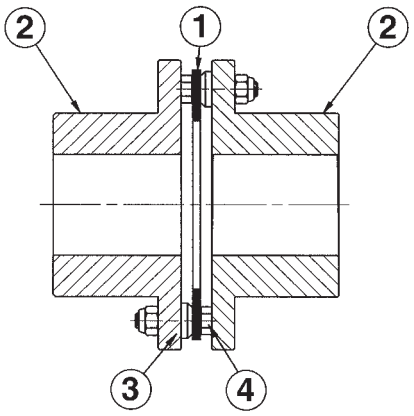
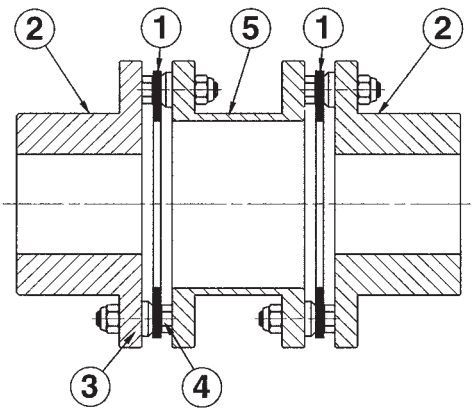
Crossflex Disc Couplings

Crossflex Disc flexible shaft couplings provide reliable and accurate transmission of mechanical power for applications requiring low maintenance and no lubrication.
The couplings are particularly suited for drives to pumps, compressors, generators, and paper making machinery operating in poor environmental conditions, as well as the accurate drives on assembly equipment, printing machines and servomotors.
The well balanced all steel construction enables transmission of high torques at high shaft speeds, as encountered on turbine drives.
Three hub designs, and option of spacer provides numerous design possibilities to accommodate space limitations and shafting dimensions.





1. *Disc Pack*
2. *Hub*
3. *Precision Bush*
4. *High Tensile Bolts*
5. *Spacer Hub*

Crossflex Couplings Construction

Crossflex couplings use disc packs (1) manufactured from stainless spring steel, as the driving flexible element.
Steel hubs (2) are connected to the disc packs by a system of precision bushes (3) and high tensile bolts (4). This design provides a backlash free, torsionally stiff, all steel construction, which is maintenance free.
The Crossflex coupling has modular components to enable adaption to a wide range of applications.
Series 1 uses two hubs with a single disc pack. This series provides maximum torsional stiffness, but cannot compensate for radial misalignment.
Series 2 incorporates a spacer (5) between two disc packs and two hubs. These compensate for radial as well as axial and angular misalignments.
To reduce overall length, reversed hubs are available which fit inside of the central spacer.
Both series can be supplied with shaft clamping elements to provide a totally backlash free drive.

Crossflex Couplings Performance Characteristics

1) Backlash Free: ensures accuracy of control on all positioning applications, particularly essential for drives with frequent stop and starts, and reversing drives. The use of Shaft Clamping Elements with the couplings ensure a totally positive drive.

2) Torsionally stiff: the disc pack design ensures high torsional stiffness, essential for applications with servomotors, machine tools, assembly machinery, packaging machines and printing presses.

3) High Temperature: the Crossflex Couplings are manufactured entirely from steel, enabling operating temperatures up to 240 °C in difficult environmental conditions.

4) High Operating Speeds: close tolerences, and precision machining provide accurate concentricity enabling high speed operation.

5) Long maintenance free life: The design of the Crossflex coupling ensures there is almost no wear enabling a very long service life. As there are no moving parts within the system no lubrication or maintenance are required.

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Crossflex Disc Couplings Selection

Crossflex Coupling Selection

To correctly select a Crossflex Coupling it is necessary to determine the correct service factor (f_s) and then multiply the actual maximum torque transmitted by this factor to give a Design torque (T_d). This design torque must be no higher than the nominal torque of the coupling selected. The service factor (f_s) accounts for shaft misalignment (f_1), the type of operating machinery (f_2), and the temperature (f_3).

$$f_s = f_1 \times f_2 \times f_3$$

Misalignment Factor f1

The maximum misalignment shown in the technical data table cannot be accomodated together ; therefore, the presence of axial misalignment Δax reduces the amount misalignment Δrad and angular misalignment Δang which can be accommodated. These can be seen in fig. 1.
The effective total angular misalignment ΔTOT is a function of the combined effects of the combined effects of the angular misalignment Δang and misalignment Δrad of the two shafts, and can be determined as below:

$$\Delta TOT° = \frac{\Delta ang}{2} + \frac{\arcsin \Delta rad}{(H - B)}$$

Values for H and B are in the dimensions table.
The misalignment factor f_1 is a function of ΔTOT, and can be found from fig. 2.

Operating Machinery Load Factor f2

The load factor f_2 can be obtained from the following table which gives values for machines using a soft drive system such as electric motor, hydraulic motor, or steam/gas turbines. For other power units refer to the correction factors at base of the table. If the drive is subject to continuous reversing of direction or toque load, or subject to more than 60 starts per hour the factor obtained must be increased by 25%.

Operating Machinery	Factor f_2	Operating Machinery	Factor f_2
Agitators and Centrifuges light liquids	1.00	Machine Tool main drives	1.75
Agitators and Centrifuges semi-liquids	1.75	Machine Tool auxiliary drives	1.00
Blowers - low inertia	1.00	Mills	2.50
Blowers - high inertia/cooling towers	2.00	Mining Machinery incl. Crushers	3.00
Centrifugal Compressors	1.50	Packaging and botttling Machinery	1.50
Centrigul Pumps light liquids	1.00	Paper Machinery	2.00
Centrigal Pumps semi-liquids	1.75	Presses	3.00
Ceramic machinery	2.50	Reciprocating Compressors	2.50
Continuous Casting machinery	2.50	Reciprocating Pumps	2.50
Conveyors	1.50	Rolling Machines and Washing Machines	1.75
Elevators and Cranes	2.00	Rotating Ovens	2.00
Extruders and mixers for plastic materials	1.75	Textile Machinery	2.00
Gear Pumps	1.50	Welding Generators	1.75
Generators	1.00	Woodworking Machinery	1.50

Modify load factor f_2 for the following:-
1 to 3 cylinder internal combustion engines $f_2 + 0.9$
4 plus cylinder internal combustion engines $f_2 + 0.4$

Temperature Factor f3

For temperature above 160°C use factor from diagram 3

Misalignment diagram

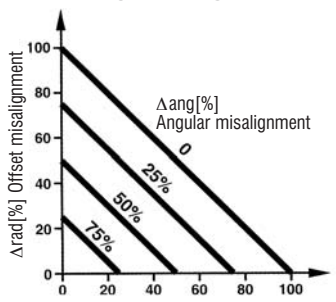

Fig. 1 Δax [%] Axial misalignment

Misalignment factor f1

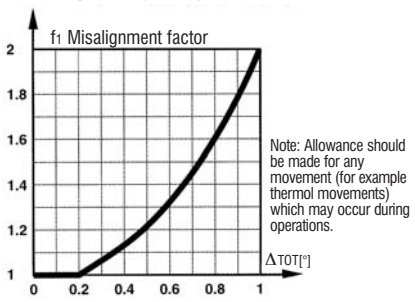

Fig. 2

Temperature factor f3

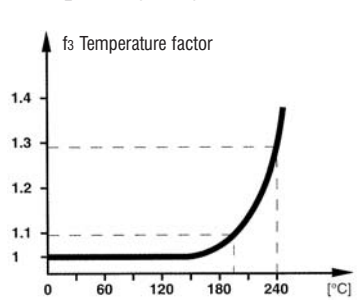

Fig. 3 Working temperature

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Crossflex Disc Couplings

Capacities and Technical Specifications

Coupling Size	Nom.* Torque T Nm	Max Speed V rpm	Bolt Torque T_B Nm	Crossflex Single Disc Coupling					Crossflex Twin Disc Coupling					
				Max. misalignment			Inertia I $kgcm^2$	Torsional Stiffness Ts kNm/rad	Spacer Width H mm	Max. misalignment			Inertia I $kgcm^2$	Torsional Stiffness Ts kNm/rad
				Δ rad mm	Δ ax ± mm	Δ ang [°]				Δ rad mm	Δ ax ± mm	Δ ang [°]		
CF40	18	12000	2.5	0	0.4	1.0	0.2	14	16 26	0.2 0.3	0.8	2.0	0.50 0.4	7 5
CF53	90	11500	7	0	0.4	1.0	1.1	110	30 43	0.3 0.4	0.8	2.0	1.6 1.9	56 41
CF72	170	8800	8	0	0.5	1.0	4.9	140	31.2 60 100 140	0.3 0.8 1.5 2.2	1.1	2.0	7.1 7.6 8.1 8.7	71 56 47 40
CF89	320	7000	14	0	0.6	1.0	16.3	200	37.6 70 80 100 140	0.4 1.0 1.1 1.5 2.1	1.2	2.0	22 25 26 27 28	100 90 89 86 80
CF118	750	6200	31	0	0.8	1.0	60.8	340	46.3 100 140 180	0.5 1.4 2.1 2.8	1.6	2.0	80 91 95 99	170 154 147 141
CF142	1350	5100	62	0	1.0	1.0	137.5	500	55 100 140 180	0.7 1.5 2.1 2.8	2.1	2.0	180 210 220 230	252 233 224 216
CF168	2400	4300	110	0	1.2	1.0	351.3	710	100 140 180	1.4 2.1 2.8	2.5	2.0	520 540 560	327 314 301
CF200	4000	3600	180	0	1.4	1.0	838.5	1260	140 180	2.0 2.7	2.8	2.0	1200 1300	587 573
CF238	6500	3000	280	0	1.7	1.0	2320.0	2270	140 180	2.0 2.6	3.4	2.0	3400 3500	1068 1043
CF295	21000	2500	570	0	1.1	0.5	6138.5	6160	200 250	1.4 1.8	2.2	1.0	10700 11000	2787 2698
CF345	36000	2100	1000	0	1.3	0.5	15308.4	8680	224 250 300	1.6 1.8 2.2	2.6	1.0	26200 26400 26800	3993 3942 3847

*Can be exceeded by up to 1.75x for brief periods.

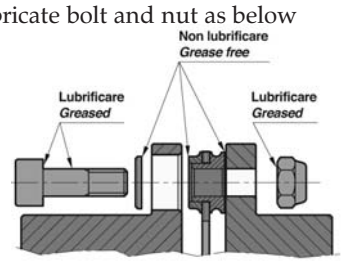
$$\text{Angle of Torsional Deflection } [°] = 0.18 \cdot \frac{T_A}{Ts}$$

T_A = Actual Torque Nm

Higher Torque Capacity units available giving 30% to 50% increase

Crossflex - Mounting and Operating Instructions

Prior to assembly lubricate bolt and nut as below



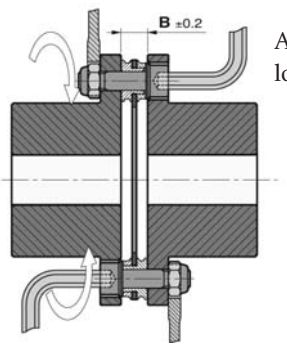
All Bolt Torques must be set by a Torque Wrench in steps and checked again after 100 hours service. Please refer to catalogue values for both Coupling and Clamping Elements.

Prefered Method to tighten bolts
Tighten nut with open-end Torque Wrench

Avoid twisting the Disc Pack when tightening screws

Alternative Method to Tighten bolts
Alan-key Torque Wrench used to tigthen bolts

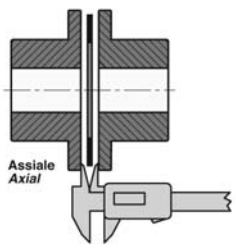
After mounting dimension B should be checked, and should be equal all round to avoid pretensioning of the Disc Pack.

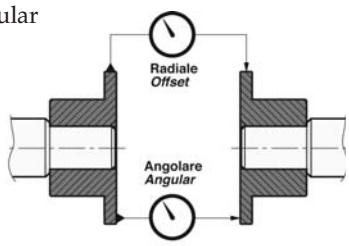


Alan-Key locking

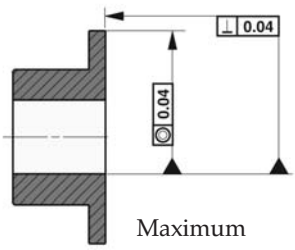
Open ended Spanner locking the nut

Measurement of axial, angular and offset alignments



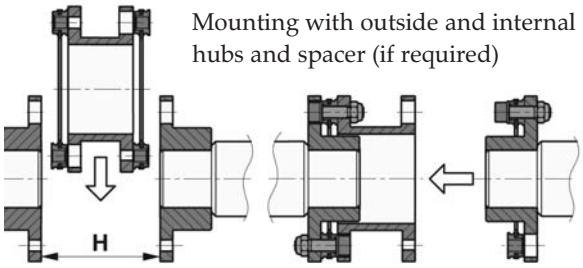


Limits of excentricity possible when bores are reworked



Maximum Excentricity

Mounting with outside and internal hubs and spacer (if required)



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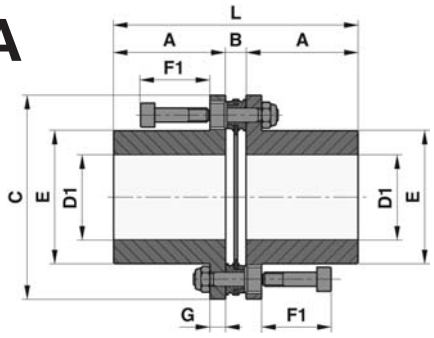
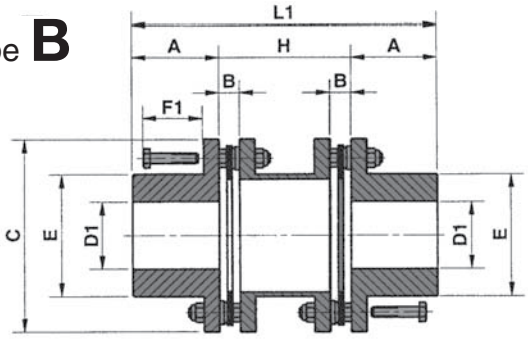
Crossflex Disc Couplings

Type A

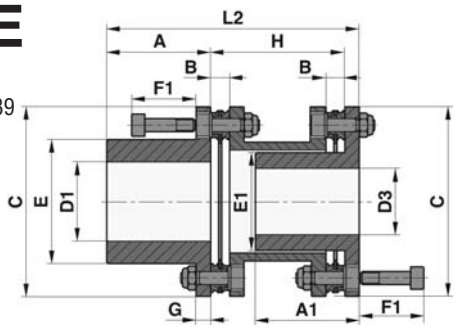


Type B



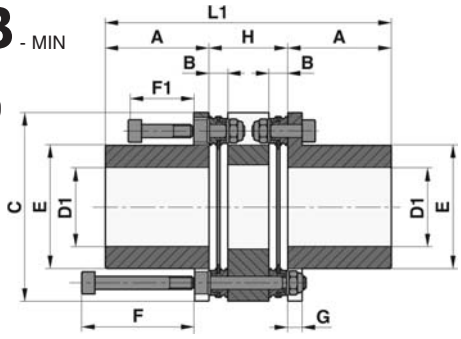
Type E

Sizes
CF53 to 239



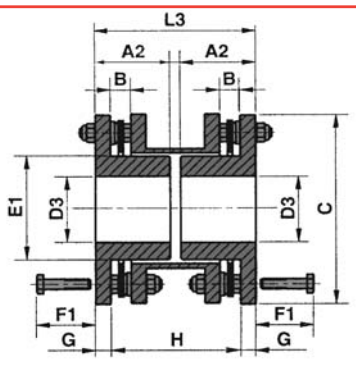
Type B - MIN

Sizes
CF53 to 200



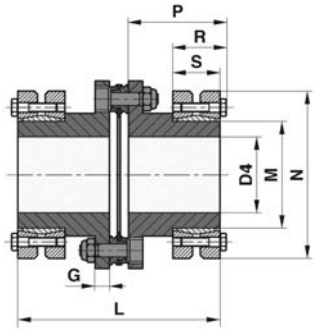
Type F

Sizes
CF53 to 239



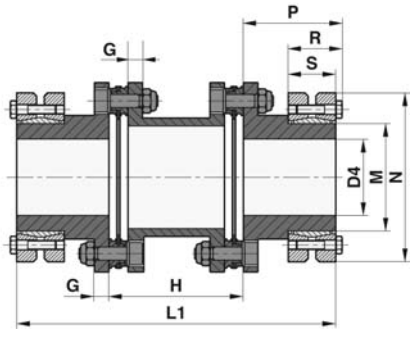
Type G

Only Sizes
CF142 to 345



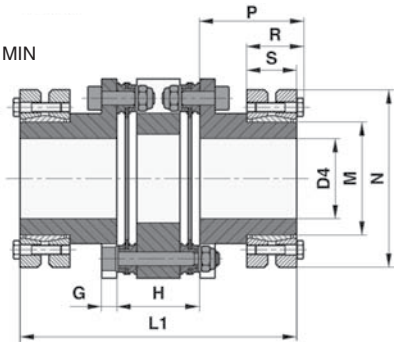
Type H

Only Sizes
CF142 to 345



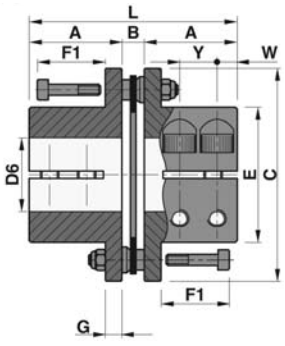
Type H - MIN

Only Sizes
CF142 to 345



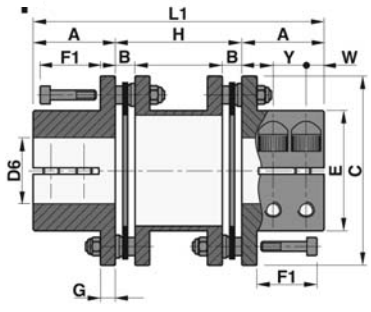
Type N

Sizes
CF40 to 142



Type P

Sizes
CF40 to 142



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Crossflex Disc Couplings

Dimensions

Coupling Size	A mm	A1 mm	A2 mm	B mm	C mm	Bore D mm	Maximum Bores D1 mm	Maximum Bores D3 mm	Maximum Bores D4 mm	Maximum Bores D6 mm	Dimensions E mm	Dimensions E1 mm	Dimensions F mm	Dimensions F1 mm	Dimensions G mm	Dimensions W mm	Dimensions Y mm	Spacer H mm	L mm	L1 mm	L2 mm	L3 mm
CF40	17			2.9	40	6	18*	-	-	15	26	-	25	15	4	4.5	-	16 26	36.9	50 60	-	-
CF53	24.5	- 24.5	- 24.5	6.9	53	6	22	- 18*	-	19	32.5	24.5	43	24	5	5	9	30 43	55.9	79 92	- 72.5	- 53
CF72	39.5	39.5	- 34.5 39.5 39.5	7.5	70.5	10	35	28*	-	25	47	37	43	24	5	7.5	13	31.2 60 100 140	86.5	110.2 139 179 219	- 105 145 185	- 70 110 150
CF89	45	- 45 45 45 45	- 40 45 45 45	8.8	88.3	14	45	35	-	35	62.5	48	53	32	8	9	16	37.6 70 80 100 140	98.8	127.6 160 170 190 230	- 123 133 153 193	- 86 96 116 156
CF118	55	- 55 55 55	55	10.4	116.5	15	60	50	-	45	82	64	67	40	10	10.5	19.5	46.3 100 140 180	120.4	156.3 210 250 290	- 165 205 245	- 120 160 200
CF142	60	- 60 60 60	- 58 60 60	12	140.5	19	75	60	75	60	98	77	82	47	11	11.5	20	55 100 140 180	131.7	175 220 260 300	- 171 211 251	- 122 162 202
CF168	75	75 75 75	60 75 75	13	166.5	25	90	75	90	-	118	90.5	94	55	12			100 140 180	162.7	250 290 330	187 227 267	124 164 204
CF200	90	90 90	81 90	15	198.5	30	110*	90*	100	-	141	114	108	64	14			140 180	194.6	320 360	244 284	168 208
CF238	125	125 125	- 104	20.8	238	39	120	100	125	-	169	135	-	81	16			140 180	270.8	390 430	281 321	- 212
CF295	160	160 160	- 160	28	295	59	150	130	155	-	205	170	-	112	22			200 250	348	520 570	382 432	- 294
CF345	200	- 200 200	- 145 168	32.2	345	79	180	140	200	-	254	170	-	133	26			224 250 300	432.2	624 650 700	- 476 526	- 302 352

*With shallow keyways to DIN6885 Sheet 3

Additional Dimensions Types G&H

Coupling Size	Clamping Element Size RCK 19	Bore Min/ Max mm	M mm	N mm	P mm	R mm	S mm	Max Torque T Nm	Axial Thrust F KN	RCK 19 Bolt Size	RCK 19 Bolt Torque Nm
CF142	90x155	65 75	90	155	69.5	45	39	1350	146 193	M8	30
CF168	90x155	65 75	90	155	76.0	45	39	2400	146 193	M8	30
CF168	115x188	80 90	115	188	87.5	57	50	2400	212 266	M10	59
CF200	90x155	65 75	90	155	82.5	45	39	4000	146 193	M8	30
CF200	115x188	80 90	115	188	97.0	57	50	4000	212 266	M10	59
CF200	130x215	90 100	130	215	97.0	59	52	4000	304 364	M10	59
CF238	130x215	90 100	130	215	132.0	59	52	6500	304 364	M10	59
CF238	155x265	105 115	155	265	133.0	72	64	6500	390 450	M12	100
CF238	165x290	115 125	165	290	135.0	81	71	6500	630 700	M16	250
CF295	175x300	125 135	175	300	170	81	71	21000	650 720	M16	250
CF295	185x330	135 145	185	330	170	96	86	21000	815 896	M16	250
CF295	195x350	140 155	195	350	170	96	86	21000	950 1100	M16	250
CF345	220x370	160 170	220	370	210	114	104	36000	1200 1300	M16	250
CF345	250x450	180 200	250	405	213	121	108	36000	1500 1700	M20	490

Available Bore sizes Types N & P

Bore Size	Coupling Size 40	40	53	72	89	118	142
8	9						
10	12						
11	12						
12	12		50				
14		13	55				
15		15	60	65			
16			70	75			
18			75	90			
19			75	100			
20			75	115	120		
22				140	150		
24				170	180		
25				170	210		
28					250		
30					300	360	340
32					320	420	380
35					320	490	420
38						550	470
40						650	500
42						750	600
45						750	650
48							750
50							900
55							1200
60							1350
M	4	3	4	6	8	10	10
T s Nm	5.2	2.6	5.2	17	41	83	83

Figures given under Coupling size are transmittable Torque Nm
M is the Screw size, and T s thr tightening torque

Crossflex Coupling Part No.

The full Crossflex Coupling part no. indicates Coupling size, type (with spacer dimension 'H' if applicable), and minor diameter of Clamping Disc on types 'G' and 'H'. Finish bore size, keyway and setscrew requirements for each hub should be indicated after with on type 'E' the external hub being shown first e.g. Coupling size CF72, type E with 60mm spacer, external hub bored 28mmH7, with standard Js9 tolerance keyway and 2 setscrews @ 120°, internal hub 25mm H7, with standard key and 1 setscrew at 90° to key. Part No. is CF72E60 - 28H7, Key J9, 2ss120 - 25KeyJ9, 1ss90. Coupling size CF168, type H, one half finish bore 65mm, other 80mm. Part No. is CF168H/90-100 - 65H7 - 80H7.

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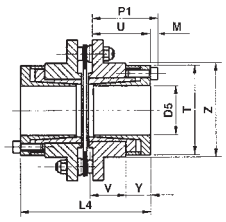
Crossflex Disc Couplings L & M With Avante Shaft Clamping Elements

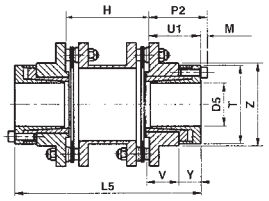
This series of Disc Couplings provides a totally zero backlash connection between shafts, with decrease in both weight and inertia over standard Disc Couplings. A selection of bore sizes for each bush size gives great design flexibility.
The combination eliminates the need for keys and set screws to locate the coupling, and provides an easy method for timing in a multi-function machine, either at initial build or at later during production. The total lack of rotary free play makes the system well suited to torque reversal and timing applications, robotics, and servo drives.

Type **L**



Single Disc Coupling

Type **M**



Twin Disc Coupling with Spacer

Dimensions

Coupling Size	Avante Bush Size	Torque Max. *2 Nm	Bore Size D_5*1		Dimensions									
			min mm	max mm	M mm	P_1/P_2 mm	T mm	U/U_1 mm	V mm	Y mm	Z mm	L_4 mm	H mm	L_5 mm
CF53	ACE81-x26	140	11	20	3	28.5	40.5	25.5	14.0	13.5	42	57.9	30 39	81 90
CF72	ACE81-x26	145	11	20	3	30.5	40.5	27.5	14.0	13.5	42	62.5	31.2 60 100 140	86.2 115 155 195
CF72	ACE81-x38	331	19	30	4	37.0	57.0	33.0	14.0	19.0	58	73.5	31.2 60 100 140	97.2 126 166 206
CF89	ACE81-x38H	497	19	30	4	48.5	57.0	44.5	27.0	19.0	58	97.8	37.6 70 80 100 140	126.6 159 169 189 229
CF89	ACE81-x52	720	24	42	4	48.5	70.5	44.5	25.5	19.0	72	97.8	37.6 70 80 100 140	126.6 159 169 189 229
CF118	ACE81-x56	1140	32	50	4	39.0	74.0	35.0	16.5	19.0	80	80.4	46.3 100 140 180	116.3 170 210 250
CF118	ACE81-x70	1368	55	60	4	48.0	89.5	44.0	27.0	19.0	92	98.4	46.3 100 140 180	134.3 188 228 268
CF142	ACE81-x52	926	24	42	4	50.0	70.5	45.5	26.5	19.0	72	102.7	55 100 140 180	146 191 231 271
CF142	ACE81-x72	2900	28	60	6	65.0	96.5	59.5	36.5	23.0	98	130.7	55 100 140 180	174 219 259 299
CF168	ACE81-x72	3133	28	60	6	65.0	96.5	59.5	36.5	23.0	98	131.7	100 140 180	219 259 299
CF200	ACE81-x72	3133	28	60	6	65.0	96.5	59.5	36.5	23.0	98	133.6	140 180	259 299

* 1 See table below for bore sizes available for bush * 2 Torque restricted by Clamping Bush capacity, check torque in table below.

Avante Clamping Element standard bore sizes with transmittable torques 'T'

Clamping Element		Bore Sizes available with respective Torque capacity												Locking Screws		Weight kg
														Size	Torque	
ACE81-x26	d mm T Nm	11 50	12 55	14 90	15 95	16 115	18 130	19 140	20 145					M4	5	0.22
ACE81-x38	d mm T Nm	19 195	20 200	22 240	24 265	25 275	28 310	30 330						M6	17	0.32
ACE81-x38H	d mm T Nm	19 310	20 330	22 360	24 400	25 410	28 460	30 500						M6	17	0.40
ACE81-x52	d mm T Nm	24 470	25 490	28 550	30 590	32 700	35 770	38 840	40 880	42 920				M6	17	0.60
ACE81-x56	d mm T Nm	32 540	35 710	38 780	40 820	42 950	45 1020	48 1090	50 1140					M6	17	0.80
ACE81-x70	d mm T Nm	55 1250	60 1370											M6	17	1.20
ACE81-x72	d mm T Nm	28 1240	30 1330	32 1420	35 1550	38 1780	40 1880	42 1970	45 2110	48 2250	50 2350	55 2590	60 2820	M8	41	1.50

Clamping Element part No. The part. No. combines the unit size with the bore size replacing the dash. e.g. a 24mm bored size 38H unit has part No. ACE81-24x38H, and this will fit all Coupling Hubs with bush refACE81-38H.

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Formulae and Conversion Factors

Useful formulae in Power Transmission Calculations

1. Motor Power (kw) $P = \frac{T \times n}{9550}$

2. Torque (Nm) $T = \frac{9550P}{n}$

3. For Solid Cylinder Inertia (kg m²) $I = \frac{md^2}{800} \times 10^{-4} = \frac{\pi\, lqd^4}{32000} \times 10^{-6}$

4. For Hollow Cylinder Inertia (kg m²) $I = \frac{m(da^2 - di^2)}{800} \times 10^{-4} = \frac{\pi\, lq\,(da^4 - di^4)}{32000} \times 10^{-6}$

5. Flywheel Inertia GD² (kp m²) $\triangleq 4 \times I$

6. Acceleration Torque (Nm) $Ta = \frac{0.105\, It\, (n_2 - n_1)}{ta}$

7. Total drive Torque (Nm) $Tt = Ta + T_L$

   also $Tt = \frac{KTs + T_L}{1 + K}$ where $K = \frac{I_L + It}{Id}$

8. Tooth & Belt/Chain drive speed m/Sec $V = \frac{Z \times p \times n}{60{,}000}$

9. Pull in Belt/chain (N) $F_L = \frac{P \times 1000}{V}$

10. Centrifugal Pull Belt/Chain $F_C = WV^2$

Where

d	=	diameter - mm	p	=	chain/belt pitch - mm
da	=	outside diameter - mm	P	=	Power - kw
di	=	inside diameter - mm	q	=	density - kg/cm³
Fc	=	Centrifugal - Newtons	ta	=	time acceleration - secs
F_L	=	Load (Power) Pull - Newtons	T	=	Torque - Nm
I	=	Inertia - kgm²	Ta	=	Acceleration Torque - Nm
Id	=	Inertia of Driver - kgm²	T_L	=	Load Torque - Nm
I_L	=	Inertia of Load - kgm²	Ts	=	Motor Starting Torque - Nm
It	=	Total Inertia - kgm²	Tt	=	Total Torque - Nm
l	=	length - mm	V	=	Velocity - m/Sec
m	=	mass - kg	W	=	Weight - kg/m
n	=	rotational speed - r.p.m.	Z	=	No. Teeth in Pulley
$n_2 - n_1$	=	change in speed - r.p.m.			

Conversion Factors

LENGTH	mm	×	0.03937	=	INCHES	×	25.4	=	mm
	METRES	×	3.2808	=	FEET	×	0.3048	=	METRES
WEIGHT	kg	×	2.2046	=	POUND f	×	0.4536	=	kg
FORCE	N (Newton)	×	0.2248	=	POUND f	×	4.4482	=	N
	N (Newton)	×	0.1019	=	kg f	×	9.807	=	N
TORQUE	Nm	×	0.7376	=	lb f ft	×	1.356	=	Nm
	kgfm	×	9.8066	=	Nm	×	0.1019	=	kgfm
POWER	kW	×	1.341	=	HP	×	0.7457	=	kW
	kW	×	1.3596	=	PS	×	0.7355	=	kW
INERTIA	kgm²	×	23.7304	=	lb f ft²	×	0.04214	=	kgcm²
	kgcm²	×	10^{-4}	=	kg m²	×	10,000	=	kgcm²
	kgcm²	×	0.3417	=	lb in²	×	2.9264	=	kgcm²
	GD²kpm	×	0.25	=	kg m²	×	4.0	=	kpm

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