

Shaft Couplings & Universal Joints



Lenze

ideas in motion

Selection guide

Coupling type	Nominal torque range Nm	Speed capacity	Range of bores mm	Torsionally soft	Torsionally rigid	Backlash free	
Universal joints	10 to 580	Low to medium	6 to 50	✗	✓	✓	
Oldham	0.2 to 42	Medium	3 to 30	✗	✓	✗	
Curved jaw	11 to 1465	High	14 to 90	✓	✗	✗	
Clamp hub curved jaw	0.65 to 187	High	4 to 45	✓	✗	✓	
High torque curved jaw	7 to 450	High	10 to 47	✓	✗	✓	
Straight sided jaw	0.4 to 660	High	4 to 67	✓	✗	✗	
Jaw in-shear	38 to 475	Medium	12 to 67	✓	✗	✗	
Barrel gear	10 to 700	High	7 to 80	✗	✓	✗	
Reinforced rubber disc	100 to 2250	Medium	14 to 100	✓	✗	✓	
Beam	0.4 to 5	High	3 to 12	✗	✓	✓	
Simpliflex	2.5 to 900	High	3 to 75	Slight	✗	✓	
Bellows	2.5 to 45	High	3 to 25	✗	✓	✓	
Mini Servoflex & Servoflex	1 to 500	High	4 to 55	✗	✓	✓	
Arcoflex	800-9000	High	25 to 120	✗	✓	✓	
Modulflex	280 to 300000	Very high	15 to 335	✗	✓	✓	
Gear couplings	280 to 500000	High	12 to 340	✗	✓	✗	

	Typical misalignment values			Ambient temperatures °C	Spacer models	Comments	Page No.
	Angular degrees	Radial mm	Axial mm				
	45 per joint	-	with telescopic models	to 100°C	Telescopic	Not true flexible couplings, Double & telescopic version available	7 to 11
	0.5	0.2	0.15	-25 to +60°C		Compact design clamping hubs standard	14 to 15
	15	0.12	1.4	-40 to +120°C	on request	General purpose & economic	16 to 17
	1	0.12	1.4	-40 to +120°C	on request	Eliminates keyways	18 to 19
	1	0.12	1.4	-40 to +120°C	on request	Compact with high torque	20 to 21
	1	0.12	1.4	-51 to +120°C		General purpose, variable stiffness	22 to 26
	2	0.8	0.8	-30 to +93°C		Radially removable	27
	1	0.4	±1	-25 to +90°C		Suits blind assembly, electrically insulating	28 to 29
	3	0.7	3	-30 to +80°C	built from stock	General purpose coupling, rugged	30 to 32
	3	0.2 to 0.38	0.1 to 0.25	-40 to +170°C	On request	Set screw or clamp hub. Special materials available	33
	3-6	0.5	±1	-30 to +100°C		Strong all steel coupling, 3 lengths available	34 to 36
	1.5 to 2	0.1 to 0.25	0.2 to 0.5	-45 to +90°C		Lowest inertia, clamping hubs standard	37
	2	0.2 to 0.5	±0.3 to ±3	-40 to +270°C	to 5m	Clamping hubs optional	38 to 41 & 45
	2	2.2	±2	-40 to +270°C	to 5m or more	Adaptable metal disc couplings. Clamp hubs available	42 to 45
	1.5	0.9 to 5	±2	-25 to +150°C	On request	High speed and high performance	46
	1	0.2 to 2	3	-30 to +120°C	to 5m	All steel heavy duty couplings to AGMA standards	47




Shaft couplings

How to select your flexible shaft couplings

The optimum choice of flexible coupling for any application is the result of a compromise between many factors. Care should be taken to select a coupling which meets the performance criteria at the minimum cost.

1. Decide if the coupling should be torsionally soft or rigid. Torsionally soft types are generally less expensive.
2. Consider whether a small amount of backlash is tolerable; a backlash-free coupling is usually more expensive.

3. Calculate the required torque by multiplying the running power and speed by the service factors shown in the table below.
4. Make a provisional selection.
5. Check maximum speed and coupling dimensions meet requirements.
6. Contact Lenze to confirm price and delivery. Please give the type number where possible. Our coupling specialists are able to give advice where needed and can offer other models.

<p>Angular This is usually present to some extent on all applications, typical values 1° – 2°. Sometimes higher values are necessary.</p> 	<p>With backlash or backlash free Couplings that are one part or comprise bolted joints are backlash free. These are useful for precise positioning and to avoid wear on reversing drives. Couplings with backlash tend to have lower cost and are easier to install.</p>
<p>Radial Also known as parallel misalignment, this is also nearly always present. A well aligned installation might have values below 0.20mm.</p> 	<p>Torsionally soft or torsionally rigid As a guide, couplings with rubber or plastic elements can be considered as torsionally soft. Most metal couplings are rigid, but some such as Simplaflex have quite low stiffness. A soft coupling may wind up 5° or more at rated torque whilst a rigid one would twist as little as 0.1°. Soft couplings are generally lower in cost.</p>
<p>Axial This can be considered as end float. It is sometimes caused by thermal expansion or is a result of machine design.</p> 	
<p>Often a combination of all three types of misalignment is present. Coupling maximum limits should not be used simultaneously.</p>	

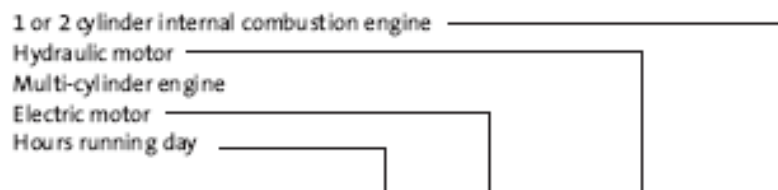
Service factors

The required torque is determined using the following equation:

$$\text{Torque required} = 7124 \times \frac{\text{hp}}{N} \times k \times S, \text{ Nm} \quad \text{or} \quad \text{Torque required} = 9550 \times \frac{\text{kW}}{N} \times k \times S, \text{ Nm}$$

- N = revolutions per minute
- k = safety factor depending on operating conditions
- S = starting frequency factor

Safety factor K



Type of machine

Light, even load Small generators, centrifugal pumps, turbo-compressors, belt conveyors	4 8 24	0.8 1.0 1.25	1.0 1.25 1.5	1.25 1.5 1.75
Irregular shock-free load – few drive reversals Screw conveyors, agitators, woodworking machines, machine tools	4 8 24	1.0 1.25 1.5	1.25 1.5 1.75	1.5 1.75 2.0
Irregular shock load – few drive reversals Piston-type pumps and compressors, textile machines, agitators, centrifuges	4 8 24	1.25 1.5 1.75	1.5 1.75 2.0	1.75 2.0 2.25
Arduous driving conditions – frequent drive reversals Piston type compressors (without flywheel), vibrators, rolling mills	4 8 24	1.5 1.75 2.0	1.75 2.0 2.25	2.0 2.25 2.5

Starting frequency, factor S

Maximum number of starts per hour	up to 30	up to 60	up to 120	up to 180
Starting frequency, factor	1	1.2	1.5	2.0

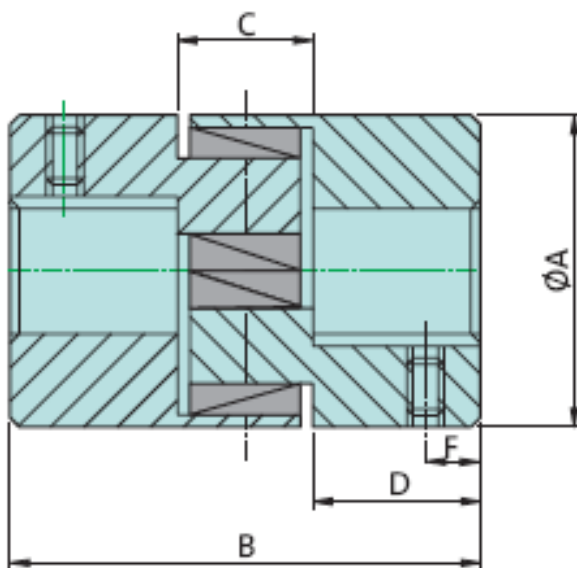
Straight sided jaw couplings | Lovejoy jaw

0.4 - 750Nm

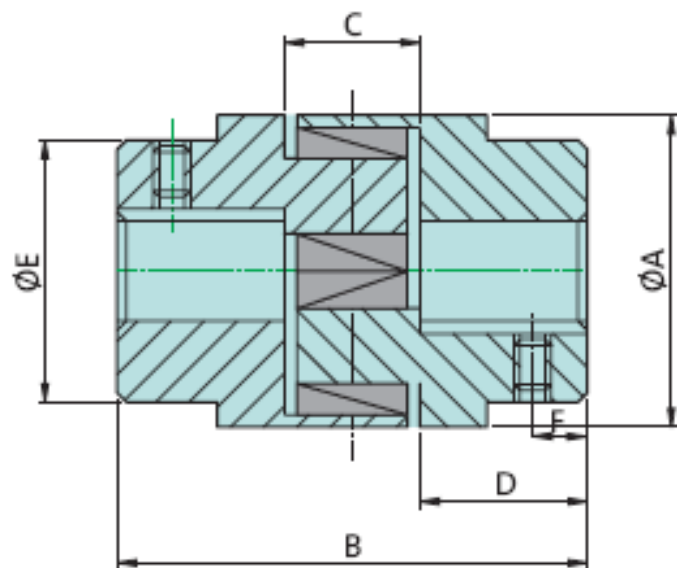
- Quick and simple to install
- Reliable, rugged, compact
- Smooth, silent action
- Grease and oil resistant
- Five standard "spider" types available
- Hubs are supplied in sintered iron as standard. Aluminium and stainless steel are available in some sizes, marked AL and SS on these pages



Complete coupling and alternative "spiders".



L035 to L110



L150 to L225

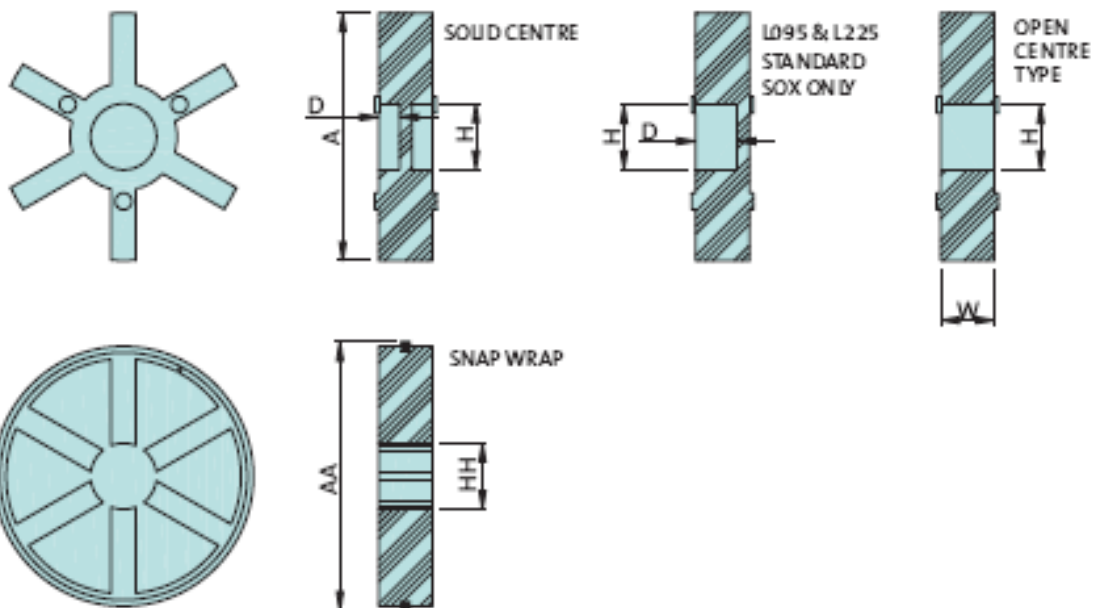
Coupling no.	Rated torque Nm			Max speed rpm	Max bore dia. mm	Complete weight sintered iron (min. bore) kg	Complete weight aluminium (min. bore) kg	Dimensions					
	Standard Spider	Urethane Spider	Hytrel Spider					A	B	C	D	E	F
L035	0.4	—	—	31,000	9	0.03	—	16	21	8	6.5	—	3.3
L050	3	4.5	9	18,000	16	0.13	—	27.4	43	12	15.5	—	8.0
L070	5	8	15	14,000	19	0.24	0.11	35	51	13	19	—	9.6
L075	10	15	26	11,000	22	0.40	0.18	45	54	13	20.5	—	8.0
L090	16	24	45	9,000	25	0.68	0.24	54	54	13	21	—	11
L095	22	33	65	9,000	28	0.82	0.36	54	64	13	25.5	—	11
L100	47	71	118	7,000	35	1.6	0.68	65	89	19	35	—	11
L110	90	135	225	5,000	42	3	1.25	84	108	22	43	—	19
L150	140	210	350	5,000	48	5	—	95	115	25	44	80	19
L190	195	293	488	5,000	54	7.6	—	115	124	26	49	102	22
L225	264	396	660	4,200	67	8	—	127	136	26	55	108	25

Straight sided jaw couplings | 'Spider' elements

0.4 - 660Nm

The rated torque of a particular coupling size can be increased by substituting the standard spider for one of the alternatives shown below

Type	Temp. range °C	Misalignment		Shore hardness	Wind up at rated torque (°)	Remarks and characteristics	Rated torque factor
		Angular	Radial				
Standard (black)	-40 +100	1°	0.4 mm	80A <small>(except L035 60A)</small>	3.75	Good misalignment and damping Good resistance to oil Standard material supplied	1
Urethane (blue)	-34 +71	1°	0.4 mm	55D <small>(L-050-110) 40D(L-100-110)</small>	2	Good oil and chemical resistance Torsionally stiffer than standard	1.5
Hytrel (cream)	-51 +121	0.5°	0.4 mm	55D	1.2	Good oil and chemical resistance High temperature capacity Torsionally stiffer than urethane	2.5 - 3
Bronze	-40 +232	0.5°	0.25 mm	-	-	Excellent oil and chemical resistance Maximum speed 250 r/min Very high temperature capacity	3
Snap Wrap/RRS (black)	-40 +100	1°	0.4 mm	80A	3.75	Good misalignment and damping Can be removed radially without disturbing either hub	1



Size	Solid Centre Spiders						Open Centre Spiders					Snap Wrap Spiders			All	
	Material available			Dimensions			Material available			Dimensions		Material	Dimensions		W	B
	Std SOX	Urethane URE	Hytrel HYT	A	D	H	Ureth. URE	Hytrel HYT	Bronze BRZ	A	H	Sox	AA	HH		
L035	X	-	-	15.8	-	-	-	-	-	-	-	-	-	-	7.1	5.3
L050	X	X	X	27.1	-	-	-	-	X	27.2	7.9	-	-	-	10.7	6.9
L070	X	X	-	35.1	-	-	X	X	X	35.1	12.7	-	-	-	10.7	6.9
L075	X	-	-	44.5	-	-	X	X	X	44.5	19.1	-	-	-	11.2	6.9
L090/L095	X	-	-	53.9	4.6	22.4	X	X	X	53.9	22.4	X	65	27	11.2	9.1
L100	X	-	-	64.5	6.4	26.2	X	X	X	64.5	26.2	X	78	35	15.5	10.9
L110	X	-	X	84.1	SOX 6.4 HYT 4.6	30.2	X	X	X	84.1	30.0	X	99	38	19.1	11.4
L150	X	-	X	95.3	SOX 7.9 HYT 5.3	31.8	X	X	X	95.3	31.8	X	116	44	22.4	15.2
L190	X	-	X	114.3	SOX 7.9 HYT 4.6	35.1	X	X	X	114.3	35.1	X	132	57	22.4	15.2
L225	X	-	X	126.5	SOX 9.7 HYT 4.6	44.5	X	X	X	126.5	44.5	URE.	138	69	22.4	15.2

X = our stock standard - = not available

Straight sided jaw couplings | Lovejoy jaw

0.4 - 26Nm

Coupling No. L035

Pilot bore 1/8 std spider complete [13024167](#)

Rated torque 0.4 Nm

Hubs pilot bore		Hubs imperial plain bore H7		Hubs metric plain bore H7		Spiders	
Size	Type No.	Size	Type No.	Size	Type No.	Type of material	Type No.
Blank	13005644	1/4	13004911	4	13006114	Standard Hard rubber	13007059
1/8	13006884			6	13004929		13005520
1/4	13004932			8	13006911		

Coupling No. L050

Pilot bore 1/8 std spider complete [13024168](#)

Rated torque 3 Nm

Hubs pilot bore		Hubs plain bore H7				Hubs bored H7 & keyway				Spiders	
Size	Type No.	Imperial		Metric		Imperial BS46		Metric BS4235		Type of material	Type No.
		Size	Type No.	Size	Type No.	Size	Type No.	Size	Type No.		
Blank	13006839	1/4	13007083	10	13006834	1/4	13007008	9	13005648	Standard	13005523
1/4	13006885	3/8	13004905	12	13006877	1/2	13006121	10	13004908	Urethane	13007081
1/2	13005645	1/2	13006844	11	13004926	12	13006847			Hytrell	13005538
		5/8	13006912			14	13006134			Bronze	13005530
						15	13004933				
						16	13006882				

Coupling No. L070

Pilot bore 3/8 std spider complete [13024169](#)

Rated torque 5 Nm

Hubs pilot bore		Hubs plain bore H7				Hubs bored H7 & keyway				Spiders	
Size	Type No.	Imperial		Metric		Imperial BS46		Metric BS4235		Type of material	Type No.
		Size	Type No.	Size	Type No.	Size	Type No.	Size	Type No.		
1/4	13004915	1/2	13004936	12	13006864	1/2*	13006115	9	13006123	Standard	13007070
3/8	13006873					5/8*	13004919	10	13006848	Urethane	13007055
AL 1/4	00476000					3/4*	13006909	11*	13006903	Hytrell	13005531
						12*	13004912			Bronze	13007048
						14*	13006867				
						15*	13006897				
						16*	13006843				
						19*	13006879				
						AL12	00475984				

Coupling No. L075

Pilot bore 1/2 std spider complete [13024170](#)

Rated torque 10 Nm

Hubs pilot bore		Hubs plain bore H7		Hubs bored H7 & keyway				Spiders	
Size	Type No.	Imperial		Imperial BS46		Metric BS4235		Type of material	Type No.
		Size	Type No.	Size	Type No.	Size	Type No.		
1/4	13004939	5/8	13006827	1/2	13006907	10*	13006865	Standard	13005536
1/2	13006890			5/8*	13004928	12	13004942	Urethane	13005535
5/8	13004934			3/4*	13006893	14*	13004924	Hytrell	13005532
AL 1/4	13004930			AL 5/8	13006835	15*	13006874	Bronze	13007072
AL 3/8	13006891			AL 3/4	13004917	16*	13006886		
AL 1/2	13006863					19*	13004925		
AL 5/8	13006838					20*	13004938		
SS 1/4	13007082					AL14	13006896		
						AL19	13006914		

Straight sided jaw couplings | Lovejoy jaw

16 to 130Nm

Coupling No. L090

Pilot bore $\frac{3}{8}$ std spider complete 13024240

Rated torque 16 Nm

Hubs pilot bore		Hubs imperial bore & keyway to BS46		H7 Hubs metric bore H7 & keyway to BS4235		Spiders	
Size	Type No.	Size	Type No.	Size	Type No.	Type of material	Type No.
$\frac{3}{8}$	13006900	$\frac{5}{8}$	13005643	12	13006837	Standard	13007045
AL $\frac{3}{8}$	13006860	$\frac{3}{4}$	13004940	14*	13006828	Urethane	13006899
		$\frac{7}{8}$	On Request	15*	13006902	Hytrel	13007068
				16*	13004914	Bronze	13007052
				19*	13004935	Snapwrap	13005521
				20*	13006924		
				24*	13006859		
				25*	13006880		

Coupling No. L095

Pilot bore $\frac{7}{16}$ std spider complete 13024175

Rated torque 22 Nm

Hubs pilot bore		Hubs plain bore H7				Hubs bored H7 & keyway				Spiders	
Size	Type No.	Imperial		Metric		Imperial BS46		Metric BS4235		Type of material	Type No.
		Size	Type No.	Size	Type No.	Size	Type No.	Size	Type No.		
$\frac{7}{16}$	13006881	$\frac{5}{8}$	13004907			$\frac{1}{2}$	13006875	14*	13006841	Standard	13007045
$\frac{1}{2}$	13006855	$\frac{3}{4}$	13006119			$\frac{5}{8}$ *	13004927	15	On Request	Urethane	13006899
AL $\frac{1}{2}$	13006906	AL $\frac{5}{8}$	On Request	AL16	On Request	$\frac{3}{4}$ *	13006905	16*	13004943	Hytrel	13007068
SS $\frac{7}{16}$	On Request					$\frac{7}{8}$ *	13004916	19*	13006872	Bronze	13007052
						1	13006913	20*	13006895	Snapwrap	13005521
						$1\frac{1}{8}$	13007026	24*	13006871		
						AL $\frac{9}{16}$	On Request	25*	13006833		
						AL $\frac{3}{4}$	On Request	28*	13006135		
								AL16	13004913		
								AL19	13006862		
								AL24	13006933		

Special low prices
 Hubs marked * are mass produced with sintered finished bores and keyways. Special prices are available for orders starting at 100 complete couplings.