

Lovejoy[®]

BY TIMKEN

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Jaw In-Shear

IN THIS SECTION:

- Jaw In-Shear 6 Pin
- Jaw In-Shear 6 Pin Spacer



Warnings



WARNING

Failure to observe the following warnings could cause the power transmission product to break and parts to be thrown with sufficient force to cause serious injury or death.

Selection. Do not exceed catalog ratings. Refer to the Lovejoy catalog for proper selection, sizing, horsepower, torque range, and speed range of these products.

Installation. Proper maintenance, handling, and shop practices are critical. Follow all installation instructions included with the product and provided by your equipment manufacturer, and all applicable federal, state, and local regulations concerning the safe operation and maintenance of manufacturing equipment.

Operation. Avoid sudden shock loads during start up and operation.

Do not operate a coupling assembly with improper alignment or bolt torque or with damaged or worn elastomeric elements. Inspect the assembly for these conditions shortly after initial operation and periodically thereafter.

The coupling assembly should operate quietly and smoothly. If the coupling assembly vibrates or makes a beating sound, shut down the equipment immediately and recheck the alignment.

Disclaimer

This catalog is provided solely to give you analysis tools and data to assist you in your product selection. Product performance is affected by many factors beyond the control of Lovejoy. Therefore, you must validate the suitability and feasibility of all product selections for your applications.

Lovejoy does not manufacture or sell power transmission products for elevators, man lifts, or other devices that carry people. We make no representation or warranty concerning such uses and disclaim all liability for harm that might result from the use of our products in those applications.

Lovejoy products are sold subject to Lovejoy terms and conditions of sale (view at www.lovejoy-inc.com/resources), which include our limited warranty and remedy. Please consult with your Lovejoy engineer for more information and assistance.

Every reasonable effort has been made to ensure the accuracy of the information in this writing, but no liability is accepted for errors, omissions or for any other reason.

If you have any questions, contact the Lovejoy Engineering Department at 1-630-852-0500.



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Overview

Jaw In-Shear (JIS) 6 Pin Saves Time, Maintenance, and Inventory Costs

JIS

- Created through Lovejoy's commitment to continual product improvement
- Unique 6 pin locking system
- Utilizes the standard Lovejoy L and C Type hub design
- The spider is radially removable, so neither hub needs to be removed from their shaft and no tools are needed

Choose from 16 Jaw In-Shear 6 Pin Sizes and New Spacer design

- Available in bore sizes up to 9 inches
- Spacer version designed as a non-lubricates drop-in replacement for a grid spacer coupling
- The JIS 6 Pin spacer coupling is available in sizes LS090-CS350
- Spacer sizes cover BSE (between shaft end measurement) of 3.5, 5, 7, and 9 inches, depending on coupling size

Jaw In-Shear 6 Pin Stainless Steel Option

For highly corrosive, heavy washdown environments, the JIS 6 Pin design combined with Lovejoy's stainless steel jaw hubs creates a totally stainless steel coupling.

Features

- 2° angular misalignment capability
- .030 - .094 of an inch parallel misalignment capability
- Torsional wind-up of 5° at full load
- 50D shore Urethane material – maximum temperature of 200° F (93° C)
- The retaining ring is made from #347 cast stainless steel
- Stainless steel hubs are available for sizes SS075-SS150 from stock. All other stainless steel hub sizes are available as made to order
- Can be used with AL Type aluminum jaw coupling hubs for AL090/095, AL099, 100 and AL110
- The Original JIS locking ring is interchangeable with the new JIS 6 Pin elastomer



Jaw In-Shear 6 Pin Assembled



**Jaw In-Shear 6 Pin Element
50D Shore Urethane Material**



**Jaw In-Shear 6 Pin Ring
Stainless Steel**

 **WARNING**

Failure to follow these cautions could create a risk of injury.

You must refer to page JIS-2 for Important Safety Instructions and Precautions for the selection and use of these products.
Failure to follow the instructions and precautions can result in severe injury or death.

Selection Process

Jaw In-Shear Coupling Selection Process

The selection process for determining the proper Jaw In-Shear coupling size requires using the charts shown in this section. There are four components to be selected, two hubs, one elastomer spider, and one ring.

Information necessary before a coupling can be selected:

- HP (or KW) and RPM or Torque of Driver
- Shaft sizes of Driver and Driven equipment and
- Corresponding keyways
- Application description, including operation details
- Environmental conditions (temperature, space limitations, or corrosive/chemicals)

List of Charts provided for Selection:

- Chart 1 – Application Service Factor K1 (page JIS-5)
- Chart 2 – Service Factor for Operational Period K2 (page JIS-5)
- Chart 3 – Service Factor for Starts per Hour K3 (page JIS-5)
- Jaw In-Shear Torque Rating Data (page JIS-6)

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Steps In Selecting A Jaw In-Shear Coupling

Step 1: Determine the Nominal/Torque (Tkn) of your application:

$$\text{in-lbs} = \text{Tkn} = \frac{(\text{HP} \times 63025)}{\text{RPM}}$$

$$\text{Nm} = \text{Tkn} = \frac{(\text{KW} \times 9550)}{\text{RPM}}$$

Step 2: Calculate your Application Service Factor using charts on this page.

The total Service Factor (K) will be:
 $K = K1 \times K2 \times K3$

Step 3: Calculate the Design Torque (Tkmax) of your application.

Design Torque = Nominal Torque x Service Factor:
 $\text{Tkmax} = \text{Tkn} \times K$

Step 4: Use the Jaw In-Shear Torque Rating table on page JIS-6. Scan down this chart to the first entry where both the Tkn and Tkmax torque values for the coupling size are greater than your application. Once this coupling size is determined, ensure that your application does not exceed the maximum RPM or maximum Bore Size for that hub.

Step 5: Once the coupling size, maximum RPM and maximum Bore has been verified, refer to pages JIS-7 and JIS-8 for dimensional data.

Application Service Factor (K1)

Chart 1

Driven Machine Examples	Prime Mover Electric Motor	
	Standard Torque	High Torque
(a) Uniform operation, with small masses to be accelerated. Hydraulic and centrifugal pumps, light generators, blowers, fans, ventilators, belt/screw conveyors	1.0	1.4
(b) Uniform operation, with medium masses to be accelerated. Sheet metal bending machines, wood working machines, mills, textile machines, mixers	1.4	1.8
(c) Medium masses to be accelerated & irregular operation. Rotating ovens, printing presses, generators, shredders, winders, spinning machines, pumps for viscous fluids	1.7	2.0
(d) Medium masses to be accelerated, irregular operation & shocks. Concrete mixers, drop hammers, cable cars, paper mills, compression pumps, propeller pumps, rope winders, centrifuges	2.0	2.2
(e) Large masses to be accelerated, irregular operation & heavy shocks. Excavators, hammer mills, piston pumps, presses, rotary boring machines, shears, forge presses, stamping presses	2.2	2.4
(f) Very large masses to be accelerated, irregular operation & heavy shocks. Piston type compressors and pumps without speed variations, heavy roll sets, welding machines, brick presses, stone crushers	2.3	2.8

Service Factor for Operation Period (K2) Chart 2

Uninterrupted Time of Operation	Factor
Up to 8 hours per day	1.00
More than 8 hours, up to 16 hours/day	1.10
More than 16, up to 24 hours/day	1.15

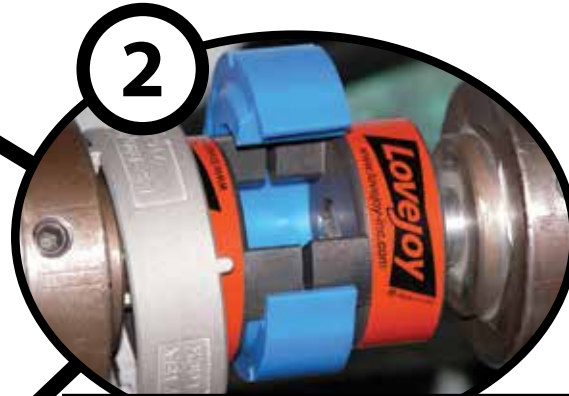
Service Factor for Starts per Hour (K3) Chart 3

	Operation, Per Table K1:	
	a-c	d-f
Up to 10 starts/stops per hour	1.0	1.0
More than 10, up to 40 per hour	1.4	1.5
More than 40, up to 125 per hour	1.8	2.0
More than 125, up to 250 per hour	2.2	2.5

Easy as 1 - 2 - 3



Slide off locking ring



Remove and replace element



Slide on locking ring -
twist to secure

You're Done!

Jaw In-Shear Torque Rating Data

Size	Max Bore		Nominal Torque		Max Torque		Weight	Max Speed
	in	mm	in-lbs	Nm	in-lbs	Nm	lbs	RPM
LS090	1.000	25	335	38	670	76	1.50	9,200
LS095	1.125	28	335	38	670	76	1.50	9,200
LS099	1.188	30	560	63	1,110	125	2.60	7,700
LS100	1.375	35	560	63	1,110	125	2.90	7,700
LS110	1.625	42	1,090	123	2,180	246	5.90	5,900
LS150	1.875	48	1,810	205	3,620	409	8.60	5,200
LS190	2.125	55	2,920	330	5,830	659	14.60	4,300
LS225	2.625	65	4,200	475	8,400	949	17.00	3,900
LS276	2.875	73	7,460	843	14,920	1,686	37.70	3,100
CS280	3.000	76	13,300	1,503	26,600	3,006	53.50	2,600
CS285	4.000	102	18,760	2,120	37,500	4,237	80.60	2,300
CS300	4.875	109	33,000	3,728	66,000	7,457	106.80	2,300
CS310	5.625	143	50,000	5,649	100,000	11,298	139.30	2,100
CS350	6.375	162	83,333	9,415	166,666	18,831	228.20	1,900
CS400	7.375	187	126,667	14,311	256,334	28,623	345.10	1,800
CS500	9.000	229	183,333	20,714	366,666	41,428	589.60	1,500

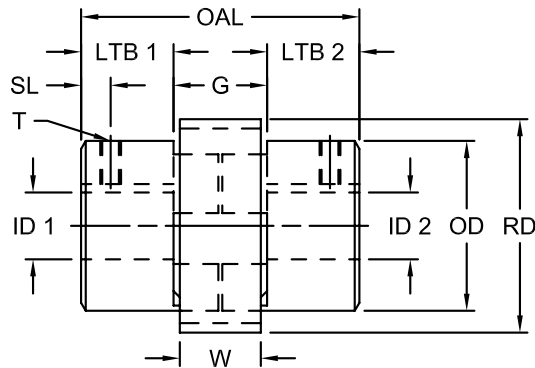
6 Pin

Dimensional Data

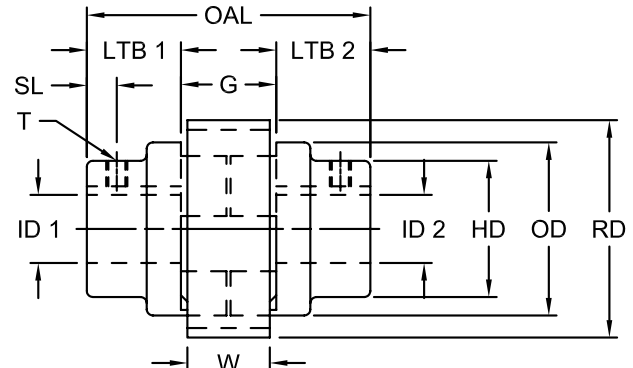
The Jaw In-Shear Coupling, sizes LS090 – CS285 consists of two hubs, one Jaw In-Shear spider, and one Jaw In-Shear ring.

The Jaw In-Shear Coupling, sizes CS300 – CS500 consists of two hubs, one Jaw In-Shear cushion (set of six) and one Jaw In-Shear ring.

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Style 1



Style 2

Jaw In-Shear 6 Pin Dimensional Data

Size	Style	OAL in	LTB1 - LTB2 in	SL in	G in	T	ID1 - ID2				W in	RD in	OD in	HD in
							Min Bore		Max Bore					
							in	mm	in	mm				
LS090	1	2.64	0.82	0.44	1.00	1/4-20	0.25	6	1.00	25	0.83	2.75	2.11	2.11
LS095	1	3.00	1.00	0.44	1.00	5/16-18	0.44	11	1.13	29	0.83	2.75	2.11	2.11
LS099	1	3.52	1.06	0.44	1.40	5/16-18	0.44	11	1.19	30	1.21	3.19	2.54	2.54
LS100	1	4.16	1.38	0.44	1.40	5/16-18	0.44	11	1.38	35	1.21	3.19	2.54	2.54
LS110	1	5.00	1.68	0.75	1.64	3/8-16	0.63	16	1.63	41	1.45	4.00	3.32	3.32
LS150	1	5.44	1.75	0.75	1.94	3/8-16	0.63	16	1.88	48	1.71	4.69	3.75	3.75
LS190	2	5.82	1.94	0.88	1.94	1/2-13	0.75	19	2.13	54	1.71	5.50	4.50	4.00
LS225	2	6.30	2.18	1.00	1.94	1/2-13	0.75	19	2.63	67	1.71	6.13	5.00	4.25
LS276	2	9.43	3.12	1.56	3.19	1/2-13	0.88	22	2.88	73	2.97	7.41	6.18	5.00
CS280	2	9.43	3.12	1.56	3.19	1/2-13	1.25	32	3.00	76	2.97	8.94	7.50	5.50
CS285	2	10.69	3.75	1.75	3.19	5/8-11	1.25	32	4.00	102	2.97	10.00	8.50	6.50
CS300	2	12.25	4.00	2.00	4.25	CSL	1.50	38	4.88	124	5.10	11.07	10.00	7.25
CS310	2	13.25	4.50	2.25	4.25	CSL	1.50	38	5.63	143	5.10	12.07	11.00	8.25
CS350	2	17.64	6.38	3.19	4.88	CSL	1.50	38	6.38	162	5.70	13.57	12.50	9.25
CS400	2	20.14	7.38	3.69	5.38	CSL	1.75	44	7.38	187	6.20	15.33	14.25	10.75
CS500	2	24.38	9.00	4.50	6.38	CSL	1.75	44	9.00	229	7.20	17.57	16.50	13.25

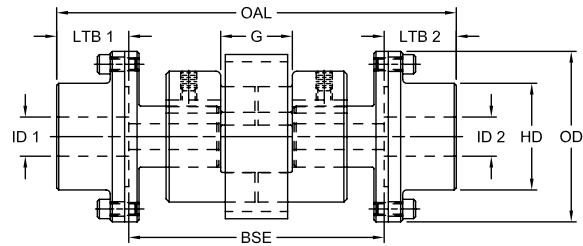
6 Pin Spacer Dimensional Data

The Jaw In-Shear Spacer Coupling, sizes LS090 – CS285 consists of:

- 2 Grid shaft hubs
- 1 Jaw In-Shear spacer subassembly:
 - 2 Jaw In-Shear spacer hubs
 - 1 Jaw In-Shear spider
 - 1 Jaw In-Shear ring

The Jaw In-Shear Spacer Coupling, sizes CS300 – CS350 consists of:

- 2 Grid shaft hubs
- 1 Jaw In-Shear spacer subassembly:
 - 2 Jaw In-Shear spacer hubs
 - 1 Jaw In-Shear cushion (set of six)
 - 1 Jaw In-Shear ring



Jaw In-Shear 6 Pin Spacer Dimensional Data

Size	OAL	LTB1 - LTB2	G	ID1 - ID2				BSE	OD	HD	Grid Hub Size
				Min Bore		Max Bore					
				in	mm	in	mm				
LS090	6.26	1.375	1.000	0.50	12.7	1.375	35	3.5	3.38	2.06	1020
	7.76	1.375	1.000	0.50	12.7	1.375	35	5.0	3.38	2.06	1020
	9.76	1.375	1.000	0.50	12.7	1.375	35	7.0	3.38	2.06	1020
	11.76	1.375	1.000	0.50	12.7	1.375	35	9.0	3.38	2.06	1020
LS095	6.26	1.375	1.000	0.50	12.7	1.375	35	3.5	3.38	2.06	1020
	7.76	1.375	1.000	0.50	12.7	1.375	35	5.0	3.38	2.06	1020
	9.76	1.375	1.000	0.50	12.7	1.375	35	7.0	3.38	2.06	1020
	11.76	1.375	1.000	0.50	12.7	1.375	35	9.0	3.38	2.06	1020
LS099	6.26	1.375	1.400	0.50	12.7	1.375	35	3.5	3.38	2.06	1020
	7.76	1.375	1.400	0.50	12.7	1.375	35	5.0	3.38	2.06	1020
	9.76	1.375	1.400	0.50	12.7	1.375	35	7.0	3.38	2.06	1020
	11.76	1.375	1.400	0.50	12.7	1.375	35	9.0	3.38	2.06	1020
LS100	6.25	1.375	1.400	0.50	12.7	1.375	35	3.5	3.38	2.06	1020
	7.75	1.375	1.400	0.50	12.7	1.375	35	5.0	3.38	2.06	1020
	9.75	1.375	1.400	0.50	12.7	1.375	35	7.0	3.38	2.06	1020
	11.75	1.375	1.400	0.50	12.7	1.375	35	9.0	3.38	2.06	1020
LS110	8.25	1.625	1.640	0.50	12.7	1.625	41	5.0	3.69	2.34	1030
	10.25	1.625	1.640	0.50	12.7	1.625	41	7.0	3.69	2.34	1030
	12.24	1.625	1.640	0.50	12.7	1.625	41	9.0	3.69	2.34	1030
LS150	9.26	2.125	1.940	0.50	12.7	2.125	54	5.0	4.44	3.09	1040
	11.25	2.125	1.940	0.50	12.7	2.125	54	7.0	4.44	3.09	1040
	13.25	2.125	1.940	0.50	12.7	2.125	54	9.0	4.44	3.09	1040
LS190	11.75	2.375	1.940	0.50	12.7	2.375	60	7.0	4.94	3.44	1050
	13.75	2.375	1.940	0.50	12.7	2.375	60	9.0	4.94	3.44	1050
LS225	12.75	2.875	1.940	0.75	19.05	2.875	73	7.0	5.69	4.06	1060
	14.75	2.875	1.940	0.75	19.05	2.875	73	9.0	5.69	4.06	1060
LS276	21.76	3.125	3.190	0.75	19.05	3.125	79	9.0	6.00	4.31	1070
CS280	24.24	3.500	3.190	1.06	26.97	3.500	89	9.0	7.00	4.81	1080
CS285	16.00	3.500	3.190	1.06	26.97	3.500	89	9.0	7.00	4.81	1080
CS300	17.00	4.000	4.250	1.06	26.97	4.000	102	9.0	8.25	5.62	1090
CS310	16.12	3.560	4.898	1.50	38.10	4.750	121	9.0	9.88	6.75	1100
CS350	17.20	4.100	5.380	2.00	50.80	5.500	140	9.0	10.88	7.75	1110