

Universal Joints

IN THIS SECTION:

- D Type
- HD Type
- NB (Needle Bearing) Type
- DD and DDX Type
- Curtis CJ Single Type
- Curtis CJ Double Type



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 or email appleng@lovejoy-inc.com.



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Overview

Lovejoy Pin & Block and Needle Bearing Industrial Universal Joints

Lovejoy has been manufacturing industrial universal joints for over 80 years. Our industrial universal joint product line is well established and provides you with a wide range of standard and specialized products. The shape of the yoke is a special feature which results in exceptionally high strength, yet allows full, free movement of the joint. This accounts for the high horsepower capacity at high speeds.

Features

- Industry standard
- Stainless steel and needle bearing available
- 13 sizes
- Pin & Block design
- Boot retaining grooves standard

D Type

- Standard pin and block design
- Ideal for applications up to 25 degrees of angular misalignment and speeds up to 1,750 RPM

HD Type

- The HD Type universal joint has induction hardened yoke ears that provide longer life than standard D Type

NB (Needle bearing) Type

- Designed with high quality, pre-lubricated, and sealed needle bearings
- Ideal for applications up to 25 degrees of angular misalignment and speeds up to 6,000 RPM

DD Type

- Designed with two Lovejoy® D Type universal joints and a center connecting shaft
- DD Type universal joints are tailored to your specific application requirements

Universal Joint Boots

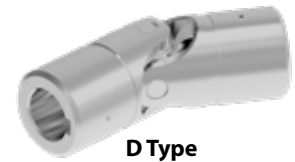
- The life of a universal joint can be extended substantially if booted
- Wear areas of the universal joint are protected from dirt and contaminants, while lubrication is retained

Curtis Pin & Block Type Universal Joint

Curtis Universal Joints are used throughout the world, transmitting torque in everything from weapons systems to sophisticated electronic equipment in theme parks. Our Curtis Universal Joints offer a quick and easy TakeApart feature which allows for simple disassembly, custom machining and reassembly with no damage to component parts.

CJ Single and Double Type

- Quick and easy TakeApart design.
- Built-in lubrication passages.
- Stainless steel options are available.



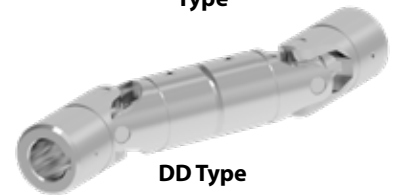
D Type



HD Type



Needle Bearing Type



DD Type



Universal Joint Boot



CJ Single Type



CJ Double Type

Pin & Block Selection Process

Pin & Block Type Selection Process

List of Charts provided for Selection:

- Chart 1 – Application Service Factors (page UJ-6)
- Running Curves (pages UJ-8 and UJ-9)

Steps in selecting a Universal Joint

Determine the correct universal joint size by working out the following calculations:

Step 1: Multiply revolutions per minute (RPM) by working angle.

Step 2: Determine the nominal torque of your application by using the following formulas:

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

$$\text{Nominal torque} = \text{Nm} = \frac{\text{KW} \times 9550}{\text{RPM}}$$

Step 3: Multiply the calculated torque by the desired Application Service Factor from Chart 1 on page UJ-6.

Step 4: Refer to the Running Curves on page UJ-8 that apply to the desired universal joint. For DD and DDX universal joints, use the curve that matches the universal joint being used. The required universal joint size can be determined by establishing the point of intersection of the RPM x Working Angle figure on the horizontal scale and the service factor torque on the vertical scale. Size is stated against the curve immediately above this point.

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.

Selection Example

A universal joint is needed to transmit a torque load of 180 in-lbs operating at 1,750 RPM. The working angle required is 5 degrees, and the service factor is 2.

Step 1: $\text{RPM} \times \text{Working Angle} = 1,750 \times 5 = 8,750$

Step 2: Nominal Torque = 180 in-lbs

Step 3: Service Factor x Torque = $2.0 \times 180 = 360$

Step 4: Find the point of the intersection of 360 in-lbs on the torque scale (vertical) and 8,750 on the RPM x Working Angle scale (horizontal), and the curve immediately above that point will indicate the correct universal joint size. The proper universal joint size is CJ-653 for longer life.

Application Service Factors Selection Data

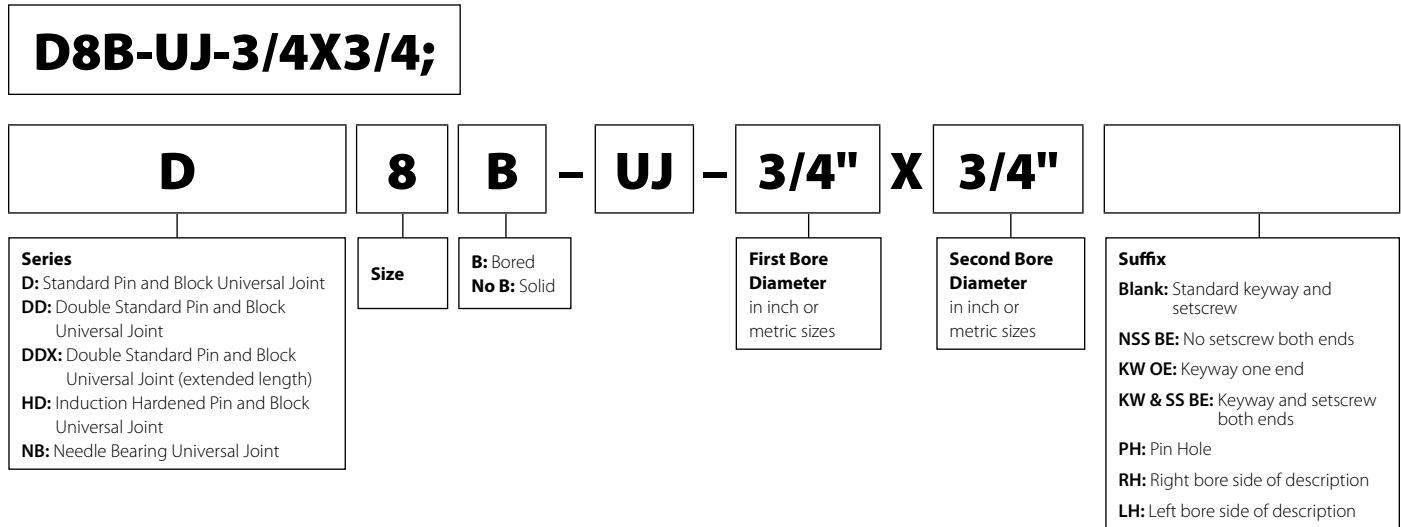
Application Service Factors

Chart 1

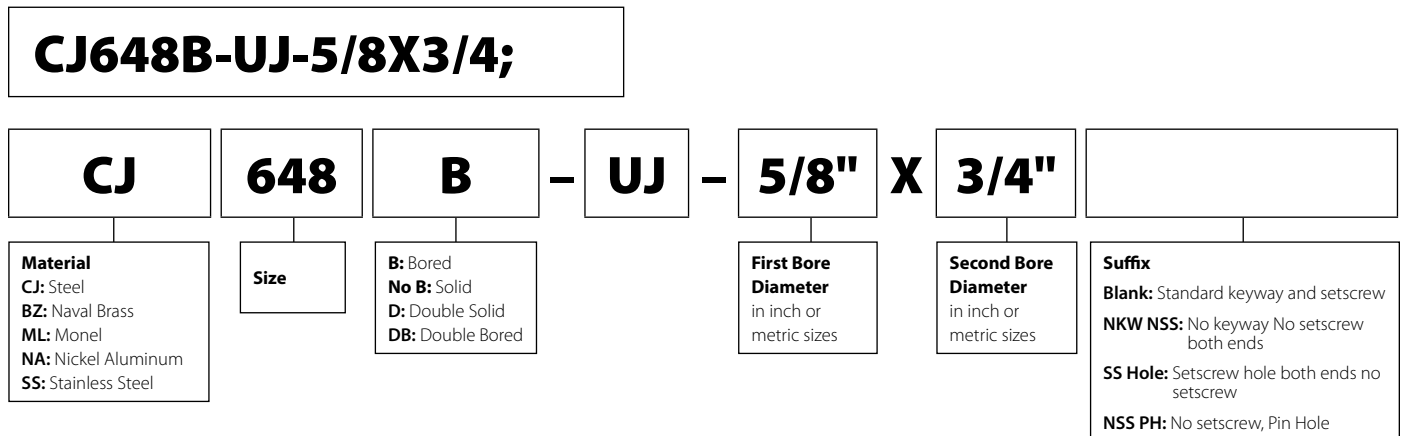
Agitators			Forced Draft.....	1.50	Tube.....	2.00
Pure Liquids			Induced Draft w/o Damper Control ...	2.00	Tumbling.....	1.50
Liquids Variable			Propeller.....	1.50	Mixers	
Barge Puller			Induced Draft w/Damper Control....	1.25	Concrete, Continuous.....	
Beaters			Feeders		Muller.....	
Blowers			Belt	1.25	Paper Mills	
Centrifugal.....			Screw.....	1.25	Agitators (Mixers)	
Lobe.....			Reciprocating	2.50	Barker, Mechanical	
Vane.....			Generators		"Barking" Drum Spur Gear.....	
Can Filling Machinery			Not Welding	1.25	Beater & Pulper.....	
Car Dumpers			Welding	2.00	Calenders	
Car Pullers			Hoist	1.50	Converting Machines.....	
Compressors			Hammer Mills		Conveyors.....	
Centrifugal.....			Kilns		Dresses.....	
Lobe.....			Laundry Washers		Dryers	
Reciprocating			Reversing.....		Jordans	
Conveyors, Uniformly loaded or fed			Line Shafting		Log Haul.....	
Assembly			Any Processing Mach.....		Reel	
Belt			Lumber Machinery		Super Calenders.....	
Screw.....			Barkers.....		Winder	
Bucket			Edger Feed		Printing Presses	
Live roll, shaker, and reciprocating...			Live Rolls		Pug Mill	
Conveyors (Heavy Duty),			Planer.....		Pumps	
Not uniformly fed			Slab Conveyor.....		Centrifugal	
Assembly			Machine Tools		Gear, Rotary, or Vane	
Belt			Bending Roll.....		Reciprocating	
Oven.....			Plate Planer		1 cyl. single or double acting ...	
Reciprocating			Punch Press Gear Driven		2 cyl. single acting	
Screw			Tapping Machinery		2 cyl. double acting	
Shaker.....			Other		3 or more cyl.	
Cranes & Hoists¹			Main Drive.....		Rubber Machinery	
Main Hoists			Aux. Drives		Mixer	
Reversing.....			Metal Forming Machines		Rubber Calender.....	
Skip.....			Draw Bench Carriage.....		Screens	
Trolley Drive.....			Draw Bench Main Drive		Air Washing.....	
Bridge Drive.....			Extruder		Rotary Stone or Gravel.....	
Slope.....			Forming Machinery.....		Vibrating	
Crushers			Slitters.....		Water	
Ore			Table Conveyors		Grizzly	
Stone.....			Non-reversing.....		Shredders	
Dredges			Reversing		Steering Gear	
Cable Reels.....			Wire Drawing		Stokers	
Conveyors.....			Wire Winding		Textile Machinery	
Cutter Head Drives.....			Coilers.....		Dryers	
Maneuvering Winches.....			Mills, Rotary Type		Dyeing Mach.	
Pumps			Ball		Tumbling Barrel	
Evaporators			Cement Kilns		Windlass	
Consult Factory			Dryers, Coolers.....		Woodworking Machinery	
Fans			Kilns.....			
Centrifugal.....			Pebble			
Cooling Towers.....			Rolling			

- Notes: ■ 1 indicates: 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 application.
- The values contained in the table should be used as a general guide.
- For above average shock loads or start/stop conditions of not more than once per hour, add .5 to the table value.
- Universal joints are not recommended for internal combustion engine applications.
- For severe shock loads or reversing loads, or start/stop conditions of more than once per hour, add 1 to the table value.

Lovejoy Universal Joint



Curtis Universal Joint



D, HD and CJ Type Running Curves Selection Data

Running Curves

D, HD and CJ Type

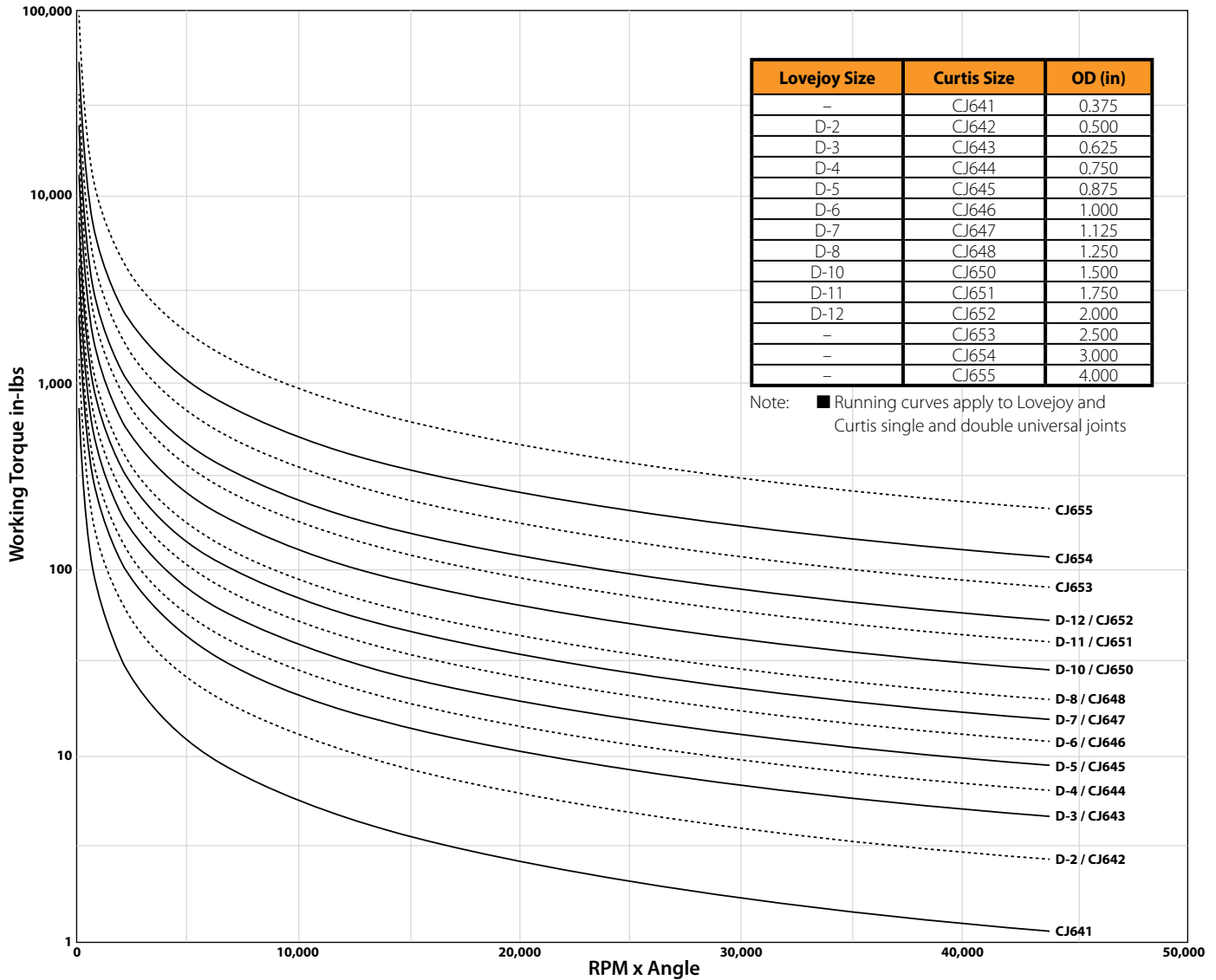


Fig. 1

NB Type Running Curves Selection Data

Running Curves

NB Type

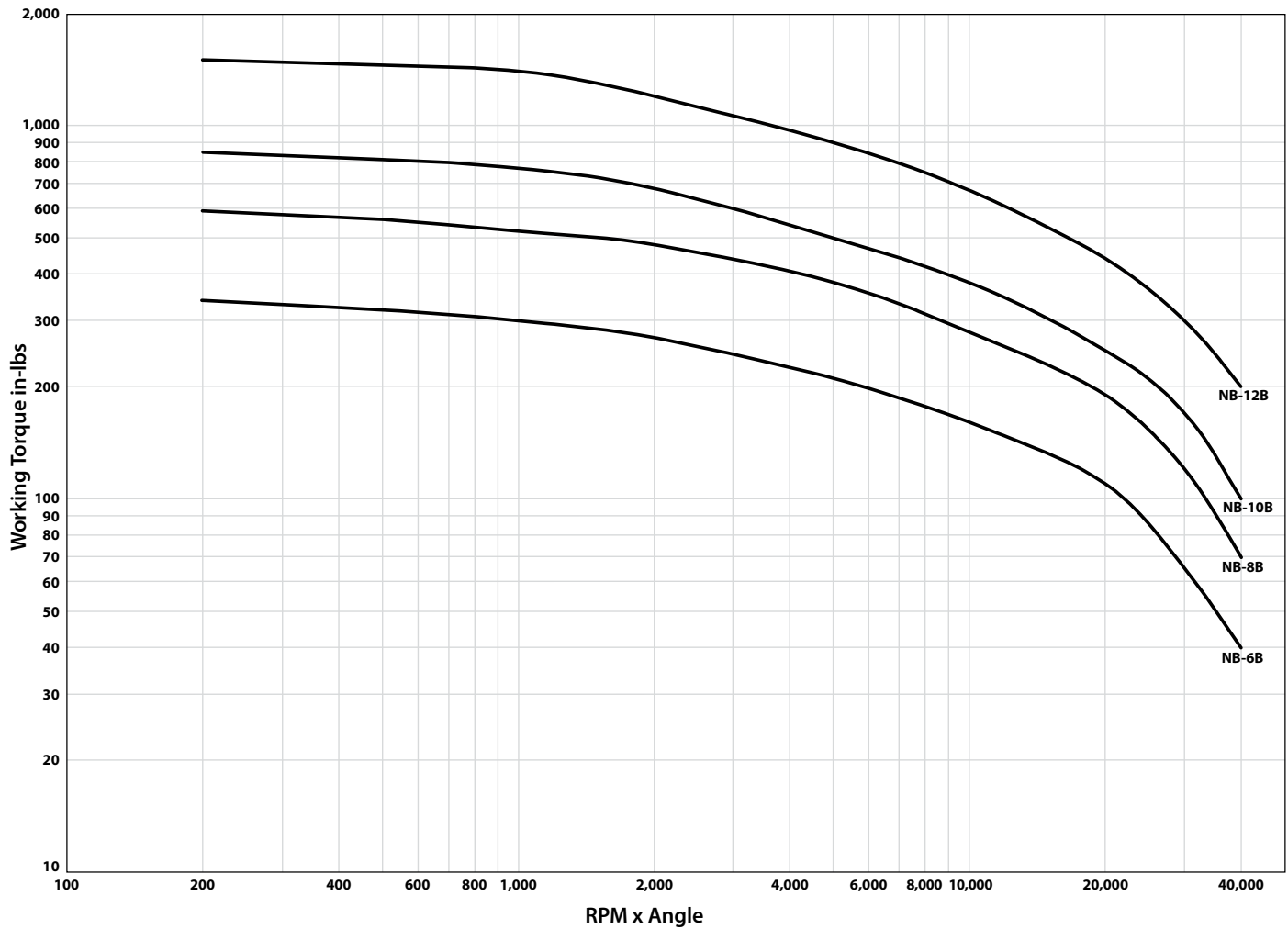
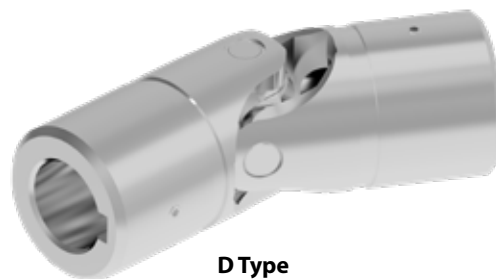


Fig. 2

D and HD Type Performance Data

D Type Universal Joints

- Standard industrial type universal joint with Pin and Block design
- The D type is ideal for applications with angles up to 25 degrees (for higher angles, see Curtis CJ series universal joint)
- Available in your choice of round, hex splined, or bore with keyway
- Boot retaining grooves are standard. See page UJ-11 for selection of on-site replaceable universal joint boots.
- A stainless-steel option can be supplied as the Curtis design



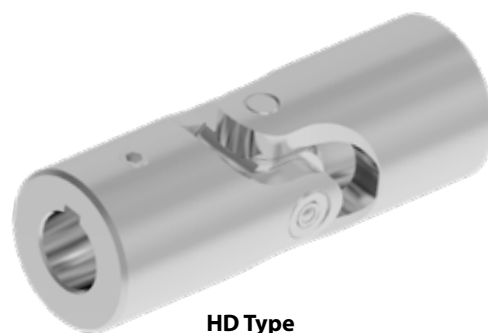
D Type

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.

HD Type Universal Joints

- The HD Type universal joint has induction hardened yoke ears that provide longer life than standard D Type
- The hardened yokes are match fitted with the universal components
- Available in your choice of round, hex splined, or bore with keyway
- Boot retaining grooves are standard. See page UJ-11 for selection of on-site



HD Type

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.

D and HD Type Performance Data

Size	Operating Torque Ratings	Static Breaking Torque*		Max RPM	ID1 - ID2					
					Max Bore No Keyway		Max Bore with Keyway		Max Square/ Hex Hole**	
		in-lb	Nm		in	mm	in	mm	in	mm
D-2	Refer to Fig. 1 on page UJ-8	378	42	Refer to Fig. 1 on page UJ-8	0.38	9	–	–	0.25	6
D-3		540	61		0.50	12	–	–	0.31	8
D-4		768	86		0.62	15	0.44	11	0.38	9
D-5		1,176	132		0.69	17	0.50	12	0.44	11
D-6		1,560	176		0.75	19	0.56	13	0.50	12
D-7		2,880	325		0.88	22	0.62	15	0.56	14
D-8		5,220	589		1.00	25	0.75	18	0.62	15
D-10		7,920	895		1.12	28	0.88	21	0.75	19
D-11		10,680	1,206		1.25	31	1.00	25	0.88	22
D-12		15,600	1,762		1.50	38	1.19	30	1.00	25
D-13	New inquiries are recommended to use the Curtis Universal Joint design for these sizes									
D-14										
D-15										

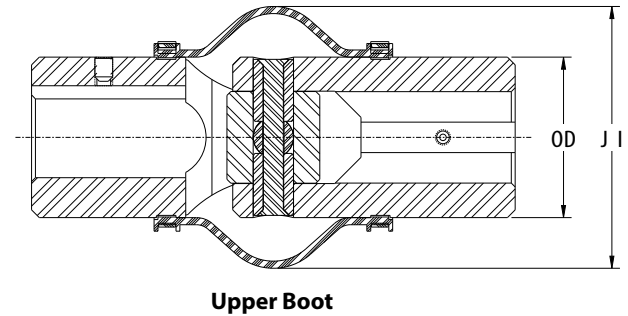
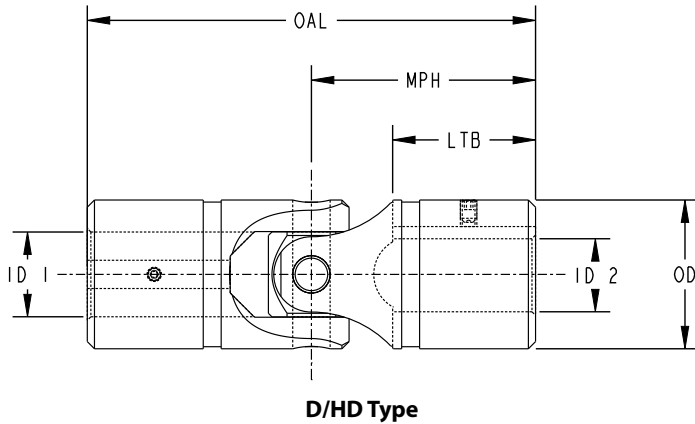
Notes: ■ *Indicates: This is not a recommended operating torque. Operating torque is determined by the RPM and operating angle of the universal joint

■ **Indicates: Square and Hex bores are measured across the flats

■ Consult Lovejoy Engineering for specific limitations and recommendations

■ Applications that fall outside of these tables should be referred to Lovejoy Engineering for assistance

D and HD Type Dimensional Data



D and HD Type Dimensional Data

Size	OD	OAL	Main Pin Height (MPH)	Length Through Bore (LTB)	Standard Bore (ID1 -ID2)	Weight Solid	Boot Diameter (J1)	Lubrication**
	in	in	in	in	in	lbs	in	
D-2	0.50	2.00	1.00	0.73	0.25	0.09	0.91	See below for lubrication specifications
D-3	0.62	2.25	1.12	0.79	0.31	0.15	1.09	
D-4	0.75	2.68	1.34	0.91	0.38	0.28	1.34	
D-5	0.88	3.00	1.50	1.04	0.44	0.44	1.50	
D-6	1.00	3.38	1.68	1.13	0.50	0.63	1.75	
D-7	1.12	3.50	1.75	1.16	0.56	0.84	2.03	
D-8	1.25	3.75	1.88	1.20	0.62	1.09	2.03	
D-10	1.50	4.25	2.12	1.38	0.75	1.80	2.56	
D-11	1.75	5.00	2.50	1.63	0.88	2.87	2.18*	
D-12	2.00	5.44	2.72	1.60	1.00	3.85	2.59*	
D-13	New inquiries are recommended to use the Curtis Universal Joint design for these sizes							
D-14								
D-15								

Notes: ■ *Indicates: Boot design is lower boot style.

■ **Indicates: The individual parts of a universal joint should always be well-lubricated. Lubrication is required for optimal wear, and it extends universal joint life. This allows the parts to not easily oscillate or slide on each other. Lovejoy recommends that the universal joints be lubricated with a free-flowing lubricant prior to use and every 40-50 operating hours thereafter. This lubricant should be an NLGI 2 extreme pressure grease.

NB Type

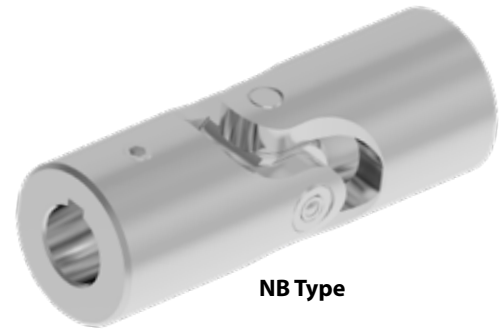
Performance Data

Needle Bearing (NB) Type

- Designed with high quality, pre-lubricated, and sealed needle bearings
- Ideal for applications up to 25 degrees of angular misalignment and speeds up to 6,000 RPM
- Boot retaining grooves are standard. See page UJ-13 for selection of on-site replaceable universal joint boots

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.



NB Type

Needle Bearing Type Performance Data

Size	Operating Torque Ratings	Static Breaking Torque*		Max RPM	ID1 - ID2					
					Max Bore No Keyway		Max Bore with Keyway		Max Square/Hex Hole**	
		in-lb	Nm		in	mm	in	mm	in	mm
NB-6	Refer to Fig. 2 on page UJ-9	1,150	130	Refer to Fig. 2 on page UJ-9	0.75	19	0.56	13	0.50	12
NB-8		2,500	282		1.00	25	0.75	18	0.62	15
NB-10		4,400	497		1.12	28	0.88	21	0.75	19
NB-12		10,500	1 186		1.50	38	1.19	30	1.00	25

Notes: ■ *Indicates: This is not a recommended operating torque. Operating torque is determined by the RPM and operating angle of the universal joint

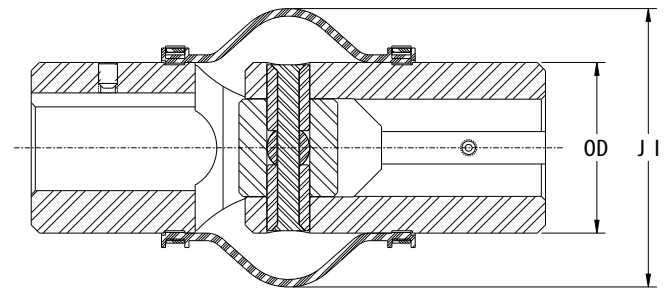
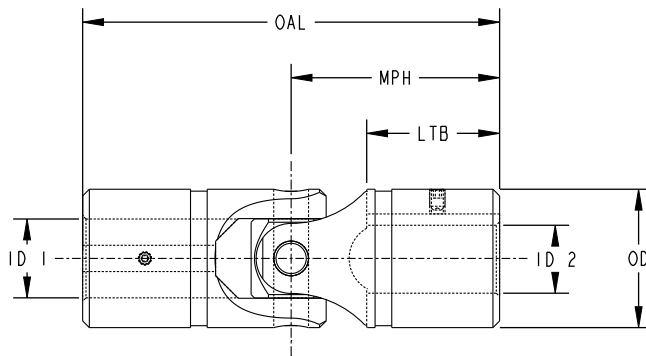
■ **Indicates: Square and hex bores are measured across the flats

■ Consult Lovejoy Engineering for specific limitations and recommendations

■ Applications that fall outside of these tables should be referred to Lovejoy Engineering for assistance

NB Type

Dimensional Data



Upper Boot

Needle Bearing Type Dimensional Data

Size	OD in	OAL in	Main Pin Height (MPH) in	Length Through Bore (LTB) in	Standard Bore (ID1 -ID2) in	Weight Solid lbs	Boot Diameter (J1) in	Lubrication**
NB-6	1.00	3.38	1.68	1.00	0.50	0.53	1.75	See below for lubrication specifications
NB-8	1.25	3.75	1.88	1.25	0.62	0.91	2.03	
NB-10	1.50	4.25	2.12	1.50	0.75	1.50	2.56*	
NB-12	2.00	5.44	2.72	2.00	1.00	3.40	2.59*	

Notes: ■ *Indicates: Boot design is lower boot style.

■ **Indicates: The individual parts of a universal joint should always be well-lubricated. Lubrication is required for optimal wear, and it extends universal joint life. This allows the parts to not easily oscillate or slide on each other. Lovejoy recommends that the universal joints be lubricated with a free-flowing lubricant prior to use and every 40-50 operating hours thereafter. This lubricant should be an NLGI 2 extreme pressure grease.

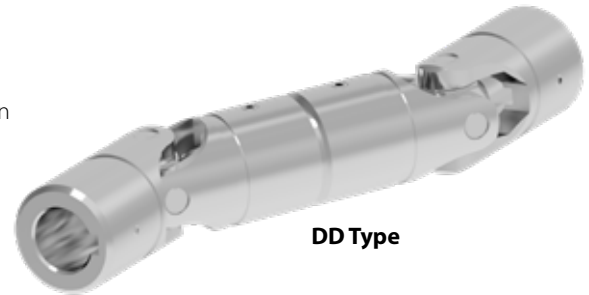
DD Type Performance Data

Double Joint Arrangement

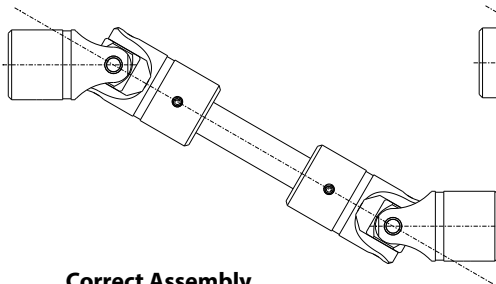
- Designed with two Lovejoy D Type universal joints and a center connecting shaft
- This configuration compensates for both parallel misalignment and shaft separation
- Round, hex, splined, or keyway bores are supplied per your requirements
- Boot retaining grooves are standard. See page UJ-15 for selection of on-site replaceable universal joint boots

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.

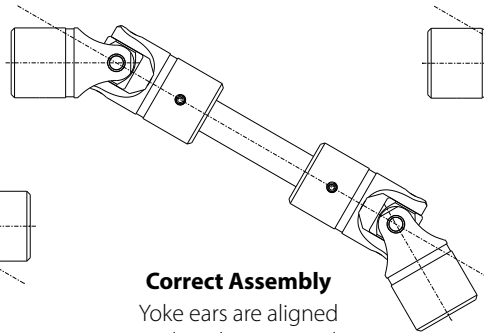


DD Type



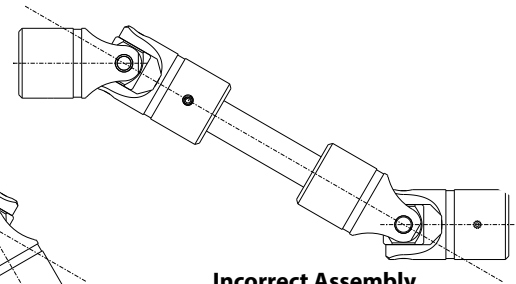
Correct Assembly

Yoke ears are aligned and angles are equal



Correct Assembly

Yoke ears are aligned and angles are equal



Incorrect Assembly

Yoke ears are not in alignment



CAUTION

Failure to follow this caution may result in damage to the coupling components

Double universal joint assemblies must be installed with the yoke ears properly aligned to avoid improper operation and increased vibration.

DD Type Performance Data

Size	Operating Torque Ratings	Static Breaking Torque*		Max RPM	ID1 - ID2					
		in-lb	Nm		Max Bore No Keyway		Max Bore with Keyway		Max Square/ Hex Hole**	
					in	mm	in	mm	in	mm
DD-2	Refer to Fig. 1 on page UJ-8	378	43	Refer to Fig. 1 on page UJ-8	0.38	9	–	–	0.25	6
DD-3		540	61		0.50	12	–	–	0.31	7
DD-4		768	87		0.62	15	0.44	11	0.38	9
DD-5		1,176	133		0.69	17	0.50	12	0.44	11
DD-6		1,560	176		0.75	19	0.56	13	0.50	12
DD-7		2,880	325		0.88	22	0.62	15	0.56	14
DD-8		5,220	590		1.00	25	0.75	18	0.62	15
DD-10		7,920	895		1.12	28	0.88	21	0.75	19
DD-11		10,680	1207		1.25	31	1.00	25	0.81	20
DD-12		15,600	1762		1.50	38	1.19	30	0.88	22
DD-13	New inquiries are recommended to use the Curtis Universal Joint design for these sizes									
DD-14										
DD-15										

Notes: ■ *Indicates: This is not a recommended operating torque. Operating torque is determined by the RPM and operating angle of the universal joint

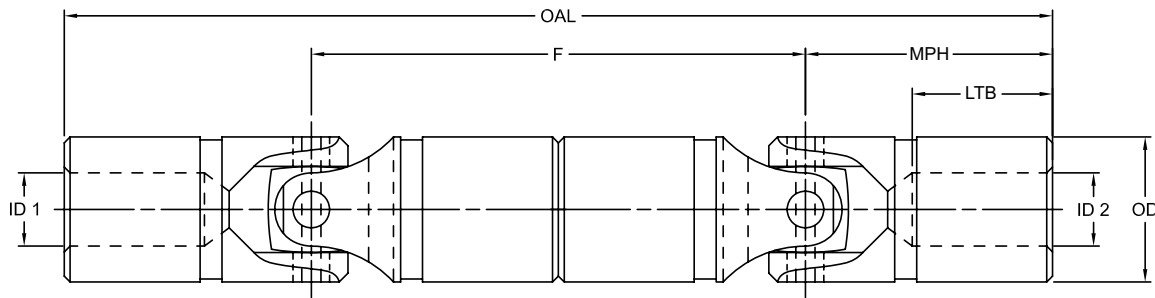
■ **Indicates: Square and hex bores are measured across the flats

■ Consult Lovejoy Engineering for specific limitations and recommendations

■ Applications that fall outside of these tables should be referred to Lovejoy Engineering for assistance

DD Type

Dimensional Data



DD Type Dimensional Data

Size	OD in	OAL in	F		Main Pin Height (MPH) in	Length Through Bore (LTB) in	Standard Bore in	Weight Solid lbs.	Boot Diameter in	Lubrication**
			Std in	Min in						
DD-2	0.50	4.00	2.00	1.38	1.00	0.73	0.25	0.18	0.91	See below for lubrication specifications
DD-3	0.62	4.50	2.25	1.56	1.12	0.79	0.31	0.32	1.09	
DD-4	0.75	5.38	2.68	1.81	1.34	0.91	0.38	0.55	1.34	
DD-5	0.88	6.00	3.00	2.12	1.50	1.04	0.44	0.82	1.50	
DD-6	1.00	6.75	3.38	2.38	1.68	1.13	0.50	1.20	1.75	
DD-7	1.12	7.00	3.50	2.50	1.75	1.16	0.56	1.56	2.03	
DD-8	1.25	7.50	3.75	2.68	1.88	1.20	0.62	2.05	2.03	
DD-10	1.50	8.50	4.25	3.06	2.12	1.38	0.75	3.30	2.56	
DD-11	1.75	10.00	5.00	3.62	2.50	1.63	0.88	5.50	2.18*	
DD-12	2.00	10.88	5.44	3.94	2.72	1.60	1.00	7.70	2.59*	
DD-13	New inquiries are recommended to use the Curtis Universal Joint design for these sizes									
DD-14										
DD-15										

Notes: ■ *Indicates: Boot design is lower boot style.

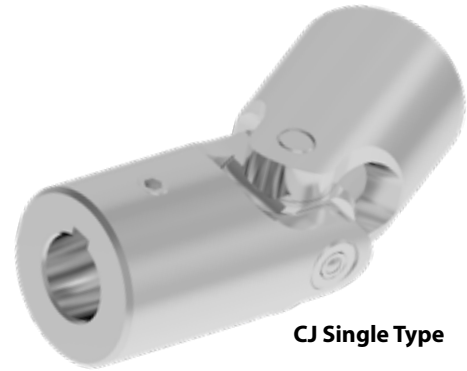
■ **Indicates: The individual parts of a universal joint should always be well-lubricated. Lubrication is required for optimal wear, and it extends universal joint life. This allows the parts to not easily oscillate or slide on each other. Lovejoy recommends that the universal joints be lubricated with a free-flowing lubricant prior to use and every 40-50 operating hours thereafter. This lubricant should be an NLGI 2 extreme pressure grease.

■ A DDX version of the DD type is available which offers a longer overall length based on application requirements (production/minimum quantities required).

CJ Single Type Performance Data

CJ Single Type

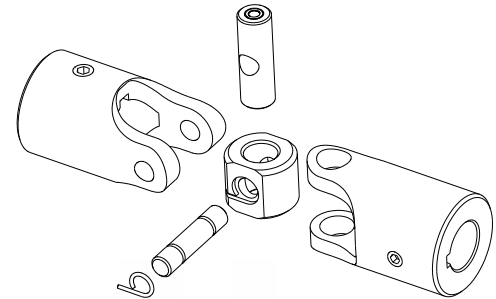
- Quick and easy TakeApart design (sizes CJ645 - CJ655)
- No special tooling required
- Built-in lubrication passages
- Lubrication covers (boots) available
- Operating angles of up to 35 degrees (Custom designs up to 45 degrees available, minimum quantities apply)
- Stainless steel option available
- Applications that fall outside of these tables should be referred to Lovejoy Engineering for assistance
- Additional alternative material options available in the Curtis Design (contact Lovejoy Customer Service)



CJ Single Type

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.

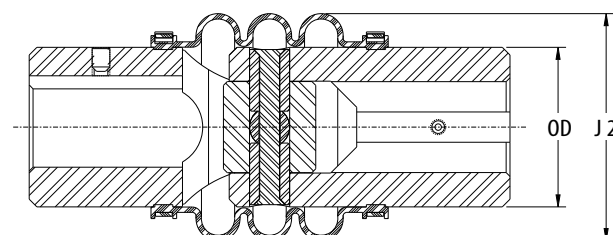
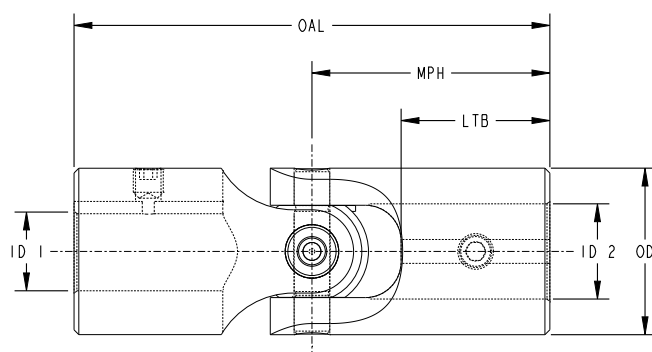


Curtis Block & Pin Single Type Universal Joint Performance Data

Size	Operating Torque Ratings	Static Breaking Torque*		Max RPM	ID1 - ID2						Take Apart Style
					Max Bore No Keyway		Max Bore with Keyway		Max Square/ Hex Hole**		
		in-lb	Nm		in	mm	in	mm	in	mm	
CJ641	Refer to Fig. 1 on page UJ-8	140	16	Refer to Fig. 1 on page UJ-8	0.25	6	–	–	0.19	4	No
CJ642		425	48		0.38	9	–	–	0.25	6	No
CJ643		900	102		0.50	12	–	–	0.31	8	No
CJ644		1610	182		0.62	15	0.44	11	0.38	9	No
CJ645		1,800	203		0.69	17	0.50	12	0.44	11	Yes
CJ646		3,050	345		0.75	19	0.56	13	0.50	12	Yes
CJ647		3,500	395		0.88	22	0.62	15	0.56	14	Yes
CJ648		5,500	621		1.00	25	0.75	18	0.62	15	Yes
CJ650		9,000	1017		1.12	28	0.88	21	0.75	19	Yes
CJ651		14,000	1582		1.25	31	1.00	25	0.88	22	Yes
CJ652		22,000	2486		1.50	38	1.19	30	1.00	25	Yes
CJ653		32,000	3616		1.75	44	1.50	39	1.12	28	Yes
CJ654		55,000	6215		2.00	50	1.81	48	1.38	35	Yes
CJ655		131,000	14802		3.00	76	2.50	63	1.75	44	Yes

Notes: ■ *Indicates: This is not a recommended operating torque. Operating torque is determined by the RPM and operating angle of the universal joint
 ■ **Indicates: Square and hex bores are measured across the flats
 ■ Consult Lovejoy Engineering for specific limitations and recommendations

CJ Single Type Dimensional Data



Lower Boot

Curtis Block & Pin Single Type Universal Joint Dimensional Data

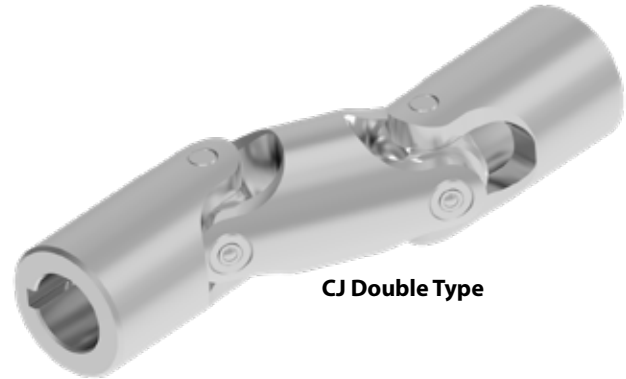
Size	OD in	OAL in	Main Pin Height (MPH) in	Length Through Bore (LTB) in	Standard Bore (ID1-ID2) in	Weight Solid lbs.	Boot Diameter (J2) in	Lubrication*
CJ641	0.37	1.75	0.88	0.69	0.19	0.05	1.03	See below for lubrication specifications
CJ642	0.50	2.00	1.00	0.75	0.25	0.10	1.25	
CJ643	0.62	2.25	1.12	0.81	0.31	0.18	1.50	
CJ644	0.75	2.68	1.34	0.97	0.38	0.30	1.47	
CJ645	0.88	3.00	1.50	1.03	0.44	0.45	2.00	
CJ646	1.00	3.38	1.68	1.19	0.50	0.66	2.00	
CJ647	1.12	3.50	1.75	1.22	0.56	0.88	2.56	
CJ648	1.25	3.75	1.88	1.25	0.62	1.15	2.58	
CJ650	1.50	4.25	2.12	1.34	0.75	1.81	2.78	
CJ651	1.75	5.00	2.50	1.56	0.88	2.86	3.03	
CJ652	2.00	5.44	2.72	1.63	1.00	4.06	3.50	
CJ653	2.50	7.00	3.50	2.09	1.25	8.25	5.50	
CJ654	3.00	9.00	4.53	2.84	1.50	15.25	6.00	
CJ655	4.00	10.63	5.32	3.13	2.00	31.30	6.88	

Note: ■ *Indicates: The individual parts of a universal joint should always be well-lubricated. Lubrication is required for optimal wear, and it extends universal joint life. This allows the parts to not easily oscillate or slide on each other. Lovejoy recommends that the universal joints be lubricated with a free-flowing lubricant prior to use and every 40-50 operating hours thereafter. This lubricant should be an NLGI 2 extreme pressure grease.

CJ Double Type Performance Data

CJ Double Type

- Extra angularity allows standard units to operate at angles up to 70 degrees.
- Quick and easy TakeApart design (sizes CJ645D - CJ655D)
- Built-in lubrication passages
- Lubrication covers (boots) available.
- Stainless steel option available (contact Lovejoy Customer Service)
- Applications that fall outside of these tables should be referred to Lovejoy Engineering for assistance



CJ Double Type

NOTE

Lubrication is required to minimize wear and extend universal joint service life. Use specified boots and lubricants for proper protection and performance.

Curtis Block & Pin Double Type Universal Joint Performance Data

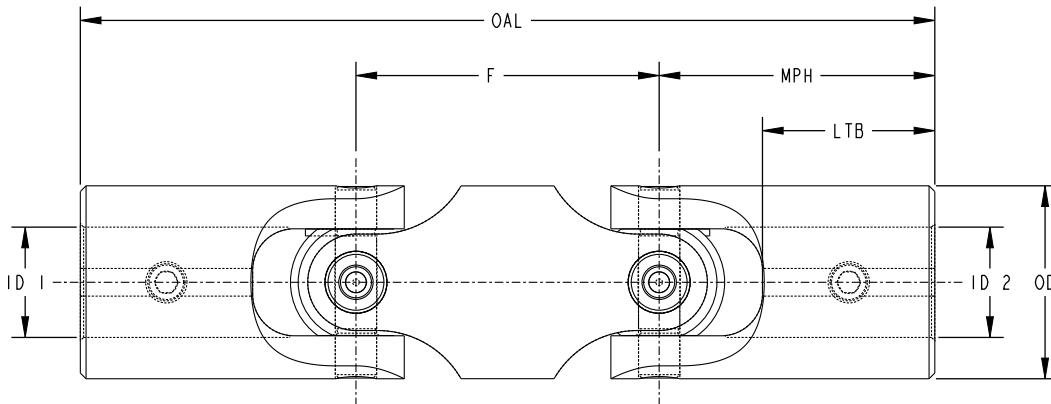
Size	Operating Torque Ratings	Static Breaking Torque*		Max RPM	ID1 - ID2						Take Apart Style
					Max Bore No Keyway		Max Bore with Keyway		Max Square/ Hex Hole**		
		in-lb	Nm		in	mm	in	mm	in	mm	
CJ641D	Refer to Fig. 1 on page UJ-8	140	16	Refer to Fig. 1 on page UJ-8	0.25	6	–	–	0.19	4	No
CJ642D		425	48		0.38	9	–	–	0.25	6	No
CJ643D		900	102		0.50	12	–	–	0.31	8	No
CJ644D		1610	182		0.62	15	0.44	11	0.38	9	No
CJ645D		1,800	203		0.69	17	0.50	12	0.44	11	Yes
CJ646D		3,050	345		0.75	19	0.56	13	0.50	12	Yes
CJ647D		3,500	395		0.88	22	0.62	15	0.56	14	Yes
CJ648D		5,500	621		1.00	25	0.75	18	0.62	15	Yes
CJ650D		9,000	1017		1.12	28	0.88	21	0.75	19	Yes
CJ651D		14,000	1582		1.25	31	1.00	25	0.88	22	Yes
CJ652D		22,000	2486		1.50	38	1.19	30	1.00	25	Yes
CJ653D		32,000	3616		1.75	44	1.50	39	1.12	28	Yes
CJ654D		55,000	6215		2.00	50	1.81	48	1.38	35	Yes
CJ655D		131,000	14802		3.00	76	2.50	63	1.75	44	Yes

Notes: ■ *Indicates: This is not a recommended operating torque. Operating torque is determined by the RPM and operating angle of the universal joint

■ **Indicates: Square and hex bores are measured across the flats

■ Consult Lovejoy Engineering for specific limitations and recommendations

CJ Double Type Dimensional Data



Curtis Block & Pin Double Type Universal Joint Dimensional Data

Size	OD in	OAL in	F		Main Pin Height (MPH) in	Length Through Bore (LTB) in	Standard Bore (ID1-ID2) in	Weight Solid lbs.	Boot Diameter in	Lubrication*
			Std in	Min in						
CJ641D	0.37	2.44	0.69	0.69	0.88	0.69	0.19	0.07	1.03	See below for lubrication specifications
CJ642D	0.50	2.81	0.81	0.81	1.00	0.75	0.25	0.14	1.25	
CJ643D	0.62	3.25	1.00	1.00	1.12	0.81	0.31	0.26	1.50	
CJ644D	0.75	3.81	1.13	1.13	1.34	0.97	0.38	0.43	1.47	
CJ645D	0.88	4.38	1.38	1.38	1.50	1.03	0.44	0.64	2.00	
CJ646D	1.00	4.88	1.50	1.50	1.68	1.19	0.50	0.91	2.00	
CJ647D	1.12	5.13	1.63	1.63	1.75	1.22	0.56	1.22	2.56	
CJ648D	1.25	5.63	1.88	1.88	1.88	1.25	0.62	1.65	2.58	
CJ650D	1.50	6.56	2.13	2.13	2.12	1.34	0.75	2.69	2.78	
CJ651D	1.75	7.75	2.50	2.50	2.50	1.56	0.88	4.27	3.03	
CJ652D	2.00	8.63	3.19	3.19	2.72	1.63	1.00	6.12	3.50	
CJ653D	2.50	11.06	4.06	4.06	3.50	2.09	1.25	12.34	5.50	
CJ654D	3.00	13.81	4.81	4.81	4.53	2.84	1.50	22.22	6.00	
CJ655D	4.00	17.00	6.38	6.38	5.31	3.13	2.00	47.61	6.88	

Note: ■ *Indicates: The individual parts of a universal joint should always be well-lubricated. Lubrication is required for optimal wear, and it extends universal joint life. This allows the parts to not easily oscillate or slide on each other. Lovejoy recommends that the universal joints be lubricated with a free-flowing lubricant prior to use and every 40-50 operating hours thereafter. This lubricant should be an NLGI 2 extreme pressure grease.



Alternative Designs

Curtis manufactures standard universal joints in a wide range of stainless-steel grades. For marine environments and applications demanding exceptional corrosion resistance, universal joints and components are also available in Alloy Steel, Naval Brass (Bronze), Nickel-Aluminum-Bronze, and Monel. Contact Lovejoy application engineering for assistance to review the best design solution for your application.