Uniflex Couplings Installation Guide

INTRODUCTION:

The following document is intended for the explicit use of Lovejoy customers to aid in the installation of Lovejoy power transmission products. The information may be considered privileged and should only be disseminated as an active part of conducting business with Lovejoy, Inc.

Although the coupling may have been properly specified during the design and selection phase before the coupling was ordered, operational conditions could possibly have changed prior to installation. Lovejoy, Inc. provides the information and technical support necessary to ensure the appropriate gear coupling selection was made relative to the product specifications and limitations of Lovejoy's power transmission products. The end user is ultimately responsible for verifying the suitability of the final coupling selection based on the actual service conditions at the time of the coupling installation.

Correct installation and alignment practices will ensure longer coupling life, trouble free operation, and a safer operating environment for the coupling. Please thoroughly review all of the instructions in this document prior to installing this coupling and placing it in operation. Proper safety guidelines and practices should always be followed during every phase of the installation.

This installation document is considered part of the purchased product and should be retained for future reference.

SAFETY:

Accidents involving rotating equipment may result in loss of life, serious bodily harm, or property damage. The purchaser of this equipment must assure that the equipment is properly assembled, installed, safeguarded, operated, and maintained. This equipment should never be operated at, or subjected to, conditions that exceed manufacturer's specifications.

Consult all applicable Federal, State and local laws and regulations covering the safe operation and maintenance of equipment, including, without limitation, the USDOL-OSHA "Lockout / Tag-out" procedure set forth in 29 CFR 1910.147.

Because of the possible danger to persons or property from accidents which may result from the improper use or unapproved modifications of the product, this product must be installed, maintained and operated in accordance with the procedures, standards, and engineering specifications specified in the product literature. To assure safe operation, this product should be inspected in accordance with the instructions described in this document. Proper guards and any suitable safety equipment or procedures as may be necessary, or as may be specified in safety codes, should be installed by the user. Safety equipment, coupling guards, and shields are not provided by, nor are they the responsibility of Lovejoy, Inc.

Symbols and text format used in this document may contain safety information and will appear similar to the following:

Warning!	*This symbol indicates safety measures which must be observed to avoid **personal injury**.*

Caution!	This symbol indicates safety measures which must be observed to avoid **damage to coupling.**

Figure 1

PRODUCT INSPECTION:

Prior to installation, the coupling should be examined for signs of damage that may have occurred as a result of shipping or handling. All parts should be measured prior to installation to ensure correctness of parts to meet the application requirements; such as the hub bore diameter, shaft diameter, shaft separation, bolt lengths, key sizes, etc. The BSE (shaft separation) dimension should be measured from the end of one shaft to the end of the other shaft, not to hub faces or pilots.

For maximum protection, the coupling and all components should be stored in the original packaging.

Refer to the following descriptions to ensure all the ordered parts are present. Please refer to the photo above (Figure 1) to assist in identifying the particular Uniflex coupling descriptions.

1. Standard Uniflex U-series couplings are one piece couplings with two hubs bonded to the spring center member. (Figure 1, lower left)

2. The UFH couplings has a standard hub bonded on one end of the spring center member and a flange mounted on the other end with dimensions as defined in table 6. (Figure 1, lower right)

3. The UF style Uniflex coupling consists of two flanges bonded to the spring center member. This is normally used as the drop-out center member in an RRU coupling. (Figure 1, upper left)

4. The RRU Uniflex coupling consists of a UF style Uniflex coupling with two hubs separate from the spring center member. This allows the UF coupling to act as a drop out unit for ease of maintenance and replacement. The hubs and UF coupling are piloted to ensure concentricity in high speed applications. (Figure 1, upper right)

Caution!	Lovejoy manufactures couplings based on the shaft data provided by the purchaser. Lovejoy will not be responsible for inaccurate or incomplete information supplied by the purchaser. Check all shaft dimensions prior to installation.

It is the responsibility of the purchaser to assure the interface connections (flanges, bolts, keys, hydraulic fits, etc.) between the coupling and connected equipment is capable of handling the anticipated loads.

> ***Warning!*** *Before beginning the coupling installation, make sure the machinery is made safe. Disconnect and lock out all power to the equipment. No part of the installation should be performed on moving or unstable equipment.*

REQUIRED TOOLS:

- Calipers
- Calibrated Torque Wrench
- Sockets for set screws and flange mounting bolts
- Alignment Equipment

COUPLING AND COMPONENT PREPARATION:

It may be necessary to clean exposed surfaces of the coupling and/or coupling components to remove dirt and foreign materials that may have accumulated during shipping and handling. Lovejoy coats couplings with a rust preventive solution prior to shipping. When cleaning the coupling prior to installation, it is important to understand this protective coating will likely be removed. If a protective coating is required as part of the application, it may be necessary to reapply a rust preventative coating prior to placing the coupling in service.

All sleeves, seals, hub bores, shafts, keys, and keyways must be checked for raised metal, nicks, burrs, dents, gouges, etc., and should be dressed or repaired accordingly prior to installation.

After cleaning, inspect bores and keyways for accuracy of size and ensure the shaft separation matches the BSE value for the coupling. Maximum allowable bore sizes are listed in Table 1. Uniflex coupling bores, by default, are clearance fit (slip fit) supplied with a set screw and keyway unless otherwise specified at the time of placing the order for the coupling. Due to the bonding procedure, Uniflex hubs are bored to size prior to assembly at the factory. Only RRU Uniflex hubs are offered with the RSB (Rough Stock Bore) option.

INSTALLATON - STANDARD 'U' CONFIGURATION:

1. The standard Uniflex coupling configuration is a one piece design with the hubs bonded to a spring center member. The shafts will need to be separated enough to position the entire coupling between the shaft ends prior to sliding the first hub onto the appropriate shaft. The over all length of the couplings can be found in Table 4.

2. Place the key in the shaft keyway and move the coupling onto the shaft with the hub keyway positioned to slide over the key. The length of the hub engagement on the shaft should be equivalent to the diameter of the bore or greater unless specifically designed for less engagement. The LTB, or Length Thru Bore, for the hubs can be found in Table 4.

3. Tighten the set screw on this first hub enough to limit the hub from sliding on the shaft when the equipment is moved into final position.

4. Place a key in the second shaft and carefully move the equipment together taking care to align the keyway in the hub with the key located in the keyway on the shaft. Ensure equipment alignment is maintained as recommended in Table 3 and ensure the BSE matches the dimension found in Table 4.

5. Tighten the set screws on both hubs using a calibrated torque wrench and tighten to the torque specified in Table 2.

6. Perform a visual inspection on the coupling and equipment to ensure the coupling is correctly installed. If precision alignment is not possible, place a straight edge placed across the hubs of the coupling for a visual alignment inspection. Ideally use dial indicators or laser alignment equipment for the most accurate alignment accuracy. Recheck the set screws for proper tightness prior to placing the coupling into operation.

7. Install or replace the appropriate coupling guard over the coupling and inspect for proper clearance.

8. Start the equipment and check for vibration and alignment issues.

INSTALLATON - 'UFH' CONFIGURATION:

1. The standard Uniflex UFH flange-to-hub coupling configuration is a one piece design with a hub bonded to the center member on one end and a machined flange bonded to the opposite end. The shaft will need to be separated from the flange enough to position the entire length of the coupling between the shaft and flange prior to sliding mounting the coupling. The over all length of the couplings can be found in Table 6.

2. Determine whether the flange end or the hub end is to be mounted first.

2.11 Hub end first: Place the key in the shaft keyway and move the hub end onto the shaft with the hub keyway positioned to slide over the key. The length of the hub engagement on the shaft should be equivalent to the diameter of the bore or greater unless specifically designed for less engagement. The LTB, or Length Thru Bore, for Uniflex hubs can be found in Table 4.

2.12 Tighten the set screw on this hub enough to limit the hub from sliding on the shaft when the equipment is moved into final position.

2.13 Connect the flange end of the coupling to the equipment by inserting the cap screws thru the flange into the equipment being driven. Tighten the cap screws with a calibrated torque wrench using the torque values specified by the equipment manufacturer, or as listed in Table 2.

2.14 Tighten the set screw to the torque value specified in Table 2 using a calibrated torque wrench.

2.21 Flange end first: Connect the flange end of the coupling to the equipment using the bolt tightening torque specified in Table 2.

2.22 Place the key in the shaft keyway and move the equipment so that the hub can slide over the key onto the shaft. The length of the hub engagement on the shaft should be equivalent to the diameter of the bore or greater unless specifically designed for less engagement. The Length Thru Bore value for Uniflex hubs can be found in Table 4.

2.23 Tighten the set screw to the torque value specified in Table 2.

3. Perform a visual inspection on the coupling and equipment to ensure the coupling is correctly installed. Check fo any alignment issues. Ideally use dial indicators or laser alignment equipment for the most accurate alignment accuracy. Recheck the all screws for proper tightness prior to placing the coupling into operation.

4. Install or replace the appropriate coupling guard over the coupling and inspect for proper clearance.

5. Start the equipment and check for vibration and alignment issues.

INSTALLATON - 'RRU' CONFIGURATION:

1. The standard RRU coupling consists of a UF flanged drop out spacer and two bolt-on hubs. Besides the "drop out center" benefit, the hubs allow for a larger bore capacity than standard Uniflex 'U' hubs. The over all length, the BSE (shaft separation), and length thru bore for this style coupling can be found in Table 5.

2. The equipment should not need to be moved as long as the shafts are separated enough to position the hubs between the shaft ends prior installation.

3. Place the key in the shaft keyway and move the hub onto the shaft with the hub keyway positioned to slide over the key. The length of the hub engagement on the shaft should be equivalent to the diameter of the bore or greater unless specifically designed for less engagement. The LTB, or Length Thru Bore, for the hubs can be found in Table 5.

4. Tighten the set screw on this first hub enough to limit the hub from sliding on the shaft. The hubs may need to be moved to secure the drop out spacer. Repeat for the second hub.

5. Position the drop out center member between the two hubs. Slide one or both of the hubs against the spacer ensuring the piloted ends on the spacer are centered on the hub pilots.

6. Insert the cap screws thru the spacer into the hubs and tighten the screws to the recommended torque per Table 2 using a calibrated torque wrench.

7. Tighten the set screws using the torque value specified in Table 2 using a calibrated torque wrench.

8. Perform a visual inspection on the coupling and equipment to ensure the coupling is correctly installed. If precision alignment is not possible, place a straight edge placed across the hubs of the coupling for a visual alignment inspection. Ideally use dial indicators or laser alignment equipment for the most accurate alignment accuracy. Recheck the flange cap screws and set screws for proper tightness prior to placing the coupling into operation.

9. Install or replace the appropriate coupling guard over the coupling and inspect for proper clearance.

10. Start the equipment and check for vibration and alignment issues.

Table 1: Maximum Bore Size (not stainless steel)

Size U	Bore Size Minimum Inch	Minimum mm	Maximum inch	Maximum mm
U-18	0.125	3	0.250	6
U-25	0.125	3	0.312	8
U-37	0.250	6	0.375	10
U-50	0.312	8	0.500	13
U-62	0.312	8	0.625	16
U-75	0.375	10	0.750	19
U-87	0.438	11	0.875	22
U-100	0.438	11	1.000	25
U-125	0.625	14	1.250	32
U-137	0.625	16	1.375	35
U-150	0.750	19	1.500	38

Size RRU	Bore Size Minimum Inch	Minimum mm	Maximum inch	Maximum mm
RRU-50	0.375	10	1.000	25
RRU-75	0.375	10	1.250	32
RRU-87	0.438	11	1.380	35
RRU-100	0.438	11	1.380	35
RRU-125	0.625	16	1.620	41
RRU-137	0.625	16	1.880	48
RRU-150	0.750	19	2.120	54

Table 2: Set Screw and Cap Screw Information

Coupling Size RRU / UFH	Set Screw Details: Set Screw Qty	Size	Tightening Torque: Under 1/4" long		Over (including) 1/4" long		Flange Screw Details: Bolt Circle Holes and BC Dia[3]	Socket Head Cap Screws Qty	Size	Tightening Torque	
RRU / UFH 50	1	1/4-20	50	in-lbs	85	in-lbs	3 @ 1.50"	6	1/4-20x7/8	96	in-lbs
RRU / UFH 75	1	1/4-20	50	in-lbs	85	in-lbs	3 @ 2.00"	6	1/4-20x7/8	96	in-lbs
RRU / UFH 87	1	1/4-20	50	in-lbs	85	in-lbs	3 @ 2.25"	6	1/4-20x7/8	96	in-lbs
RRU / UFH 100	1	1/4-20	50	in-lbs	85	in-lbs	3 @ 2.68"	6	5/16-18x1"	204	in-lbs
RRU / UFH 125	1	3/8-16	145	in-lbs	160	in-lbs	3 @ 3.12"	6	5/16-18x1"	204	in-lbs
RRU / UFH 137	1	3/8-16	145	in-lbs	160	in-lbs	3 @ 3.75"	6	3/8-16x1-1/4	372	in-lbs
RRU / UFH 150	1	3/8-16	145	in-lbs	160	in-lbs	4 @ 4.38"	8	3/8-16x1-1/4	372	in-lbs

Table 3: Uniflex Performance Details

Size [1] U	Torque Capacity Nominal in-lbs	Torque Capacity Nominal Nm	Maximum Speed [3] RPM	Allowable Misalignment [2] Angular Offset	Parallel Offset inch	Parallel Offset mm	Axial Offset [4] inch	Axial Offset [4] mm
18 R	18	2.0	30,000	3.0°	0.008	0.20	0.010	0.25
25 R	34	3.8	30,000	4.5°	0.011	0.28	0.020	0.51
37 R	39	4.4	30,000	4.5°	0.014	0.36	0.020	0.51
50 R	82	9.3	30,000	4.5°	0.021	0.53	0.035	0.89
62 R	126	14.2	20,000	3.0°	0.019	0.48	0.035	0.89
75 R	175	19.8	20,000	4.5°	0.028	0.71	0.040	1.02
87 R	346	39.1	10,000	4.5°	0.035	0.89	0.040	1.02
100 R	565	63.8	6,000	3.0°	0.030	0.76	0.040	1.02
125 R	755	85.3	6,000	4.5°	0.044	1.12	0.040	1.02
137 R	1,260	142.4	6,000	3.0°	0.035	0.89	0.040	1.02
150 R	1,890	213.5	3,000	3.0°	0.041	1.04	0.040	1.02
25 S	34	3.8	30,000	3.0°	0.007	0.18	0.015	0.38
37 S	39	4.4	30,000	3.0°	0.009	0.23	0.015	0.38
50 S	82	9.3	30,000	3.0°	0.014	0.36	0.010	0.25
62 S	126	14.2	20,000	3.0°	0.019	0.48	0.020	0.51
75 S	175	19.8	20,000	3.0°	0.019	0.48	0.020	0.51
87 S	346	39.1	10,000	3.0°	0.024	0.61	0.020	0.51
100 S	565	63.8	6,000	3.0°	0.030	0.76	0.020	0.51
125 S	755	85.3	6,000	3.0°	0.030	0.76	0.020	0.51
137 S	1,260	142.4	6,000	3.0°	0.035	0.89	0.020	0.51
150 S	1,890	213.5	3,000	3.0°	0.041	1.04	0.020	0.51

Notes:
1. "R" denotes regular length, "S" denotes short length
2. Allowable misalignment is listed for operation. Allowable misalignment during installation should be roughly 20% of the total allowable
3. Uniflex couplings are not specially balanced and may require accurate alignment for high speeds
4. Axial Offset may also be referred to as 'end play'

Table 4: Standard 'U' Uniflex Dimensional Details

Size U	OAL [1] (Over All Length) Short (U-xxS) Inch	OAL [1] (Over All Length) Short (U-xxS) mm	OAL [1] (Over All Length) Reg (U-xxR) Inch	OAL [1] (Over All Length) Reg (U-xxR) mm	LTB (Length Thru Bore) Short (U-xxS) Inch	LTB (Length Thru Bore) Short (U-xxS) mm	LTB (Length Thru Bore) Reg (U-xxR) Inch	LTB (Length Thru Bore) Reg (U-xxR) mm	BSE[2] (Gap Between Shaft Ends) * Maximum Allowable * Short (U-xxS) Inch	BSE[2] (Gap Between Shaft Ends) * Maximum Allowable * Short (U-xxS) mm	BSE[2] (Gap Between Shaft Ends) * Maximum Allowable * Reg (U-xxR) Inch	BSE[2] (Gap Between Shaft Ends) * Maximum Allowable * Reg (U-xxR) mm
U-18	--	--	1.000	25.4	--	--	0.310	7.9	--	--	0.380	9.7
U-25	1.000	25.4	1.500	38.1	0.320	8.1	0.380	9.7	0.360	9.1	0.740	18.8
U-37	1.650	41.9	2.060	52.3	0.520	13.2	0.520	13.2	0.610	15.5	1.020	25.9
U-50	1.820	46.2	2.500	63.5	0.500	12.7	0.640	16.3	0.820	20.8	1.220	31.0
U-62	2.280	57.9	2.720	69.1	0.620	15.7	0.840	21.3	1.040	26.4	1.040	26.4
U-75	2.720	69.1	3.310	84.1	0.840	21.3	0.840	21.3	1.040	26.4	1.630	41.4
U-87	2.910	73.9	3.500	88.9	0.840	21.3	0.840	21.3	1.230	31.2	1.820	46.2
U-100	3.560	90.4	4.120	104.6	1.000	25.4	1.290	32.8	1.560	39.6	1.540	39.1
U-125	3.750	95.3	4.880	124.0	1.100	27.9	1.280	32.5	1.550	39.4	2.320	58.9
U-137	4.120	104.6	5.250	133.4	1.010	25.7	1.580	40.1	2.100	53.3	2.090	53.1
U-150	5.000	127.0	6.280	159.5	1.720	43.7	1.880	47.8	1.560	39.6	2.520	64.0

Notes:
1. Over all length tolerance is +/- .125"
2. Custom BSE's (shaft separation) are not available

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Table 5: UF and RRU Dimensional Details

Size UF or RRU	Bore Size Minimum inch	Bore Size Minimum mm	Bore Size Maximum inch	Bore Size Maximum mm	Hub LTB[1] inch	Hub LTB[1] mm	Shaft Separation BSE[2] inch	Shaft Separation BSE[2] mm	UF Drop Out Length[2] inch	UF Drop Out Length[2] mm	RRU OAL[2] inch	RRU OAL[2] mm	Bolt Circle Holes and BC Dia[3]
UF / RRU 50	0.38	10	1.00	25	1.00	25	1.56	40	1.56	40	3.52	89	3 @ 1.50"
UF / RRU 75	0.38	10	1.25	32	1.25	32	1.81	46	1.81	46	4.27	108	3 @ 2.00"
UF / RRU 87	0.44	11	1.38	35	1.38	35	2.12	54	2.12	54	4.84	123	3 @ 2.25"
UF / RRU 100	0.44	11	1.38	35	1.38	35	2.18	55	2.18	55	4.90	124	3 @ 2.68"
UF / RRU 125	0.62	16	1.62	41	1.62	41	2.62	67	2.62	67	5.84	148	3 @ 3.12"
UF / RRU 137	0.62	16	1.88	48	1.88	48	2.81	71	2.81	71	6.53	166	3 @ 3.75"
UF / RRU 150	0.75	19	2.12	54	2.12	54	3.44	87	3.44	87	7.66	195	4 @ 3.44"

Notes: Only sizes shown are available - No custom lengths

Custom UF Drop out flange sizes or bolt circles are available by special quotation only

1. If hub is to be shorter than 'LTB' a face off charge is required
2. UF Drop out Center length tolerance is +/- .125" RRU OAL length tolerance is +/-.190"
   Tighter tolerances are only available thru special pricing, quoted thru Lovejoy Customer Service
3. A bolt kit is supplied with RRU type, not with the UF drop out assembly

Table 6: UFH Dimensional Details

Size UFH	Bore Size Maximum inch	Bore Size Maximum mm	AOL (Over All Length)[1] Short Inch	AOL (Over All Length)[1] Short mm	AOL (Over All Length)[1] Regular inch	AOL (Over All Length)[1] Regular mm	LTB (Length Thru Bore)[2] Short Inch	LTB (Length Thru Bore)[2] Short mm	LTB (Length Thru Bore)[2] Regular inch	LTB (Length Thru Bore)[2] Regular mm	Length - Shaft to Flange Face Short Inch	Length - Shaft to Flange Face Short mm	Length - Shaft to Flange Face Regular inch	Length - Shaft to Flange Face Regular mm	Bolt Circle Holes and BC Dia[3]
UFH-50	1.00	25.0	1.50	38.1	2.03	51.6	0.50	12.7	0.64	16.3	1.00	25.4	1.39	35.3	3 @ 1.50"
UFH-75	1.25	32.0	2.00	50.8	2.58	65.5	0.84	21.3	0.84	21.3	1.16	29.5	1.74	44.2	3 @ 2.00"
UFH-87	1.38	35.0	2.25	57.2	2.82	71.6	0.84	21.3	0.84	21.3	1.41	35.8	1.98	50.3	3 @ 2.25"
UFH-100	1.38	35.0	2.88	73.2	3.14	79.8	1.00	25.4	1.29	32.8	1.88	47.8	1.85	47.0	3 @ 2.68"
UFH-125	1.62	41.0	2.82	71.6	3.75	95.3	1.10	27.9	1.28	32.5	1.72	43.7	2.47	62.7	3 @ 3.12"
UFH-137	1.88	48.0	3.46	87.9	4.03	102.4	1.02	25.9	1.58	40.1	2.44	62.0	2.45	62.2	3 @ 3.75"
UFH-150	2.12	54.0	3.75	95.3	4.86	123.4	1.72	43.7	1.88	47.8	2.03	51.6	2.98	75.7	4 @ 3.44"

Notes: Only sizes shown are available - No custom lengths

Custom UF Drop out flange sizes or bolt circles are available by special quotation only

1. UF Drop out Center length tolerance is +/- .125" RRU OAL length tolerance is +/-.190"
   Tighter tolerances are only available thru special pricing, quoted thru Lovejoy Customer Service
2. If hub is to be shorter than 'LTB' a face off charge is required
3. A bolt kit is not supplied with UFH style couplings