

## 1.0 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 process 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 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 the coupling is installed.

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.

## 2.0 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.

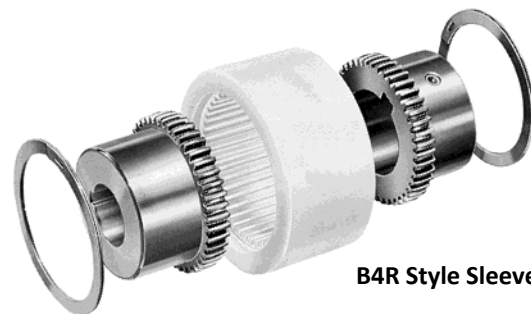


**B Style Sleeve shown**

## 3.0 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. Refer to the following chart (Table-1) to ensure all the ordered parts were included with the shipment.

**Note: Standard Gear Couplings are shipped unassembled.**



**B4R Style Sleeve shown**

**Table 1 – Dentex Components List**

Sizes	Hubs	Sleeves	Accessory Kit
<b>B14 - B65</b>	2	2	Optional
<b>B80, B100</b>	2	2	Required

Sizes B80 and B100 do not have the ridge in the center of the sleeve that is typically found in standard B14 through B65 sleeve sizes. Accessory kits are needed for B80 and B100 size couplings.

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

**Warning!** Before performing 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, non secure, or unstable equipment.

**CAUTION!** Lovejoy manufactured the coupling interface based on the equipment and shaft data supplied by the purchaser. Lovejoy is not responsible for inaccurate or incomplete information supplied by the purchaser.

*It is the purchasers' responsibility to assure that the interface connections between the coupling and the connected equipment are capable of handling the anticipated loads.*

#### 4.0 REQUIRED TOOLS:

- Vernier Calipers
- Calibrated Torque Wrench
- Allen Sockets (for set screws)
- Alignment Equipment

#### 5.0 COUPLING AND COMPONENT PREPARATION:

**5.1 Prior to installation, all exposed surfaces of the coupling and components**, including hubs, sleeves, and hardware should be thoroughly cleaned to remove any protective coatings normally applied by Lovejoy at the factory. These coatings are applied as corrosion protection for the coupling surfaces during shipping. All coupling parts, equipment components, shafts, and keyways must be clean and free of any foreign materials prior to attempting assembly or installation. A clean cloth dampened with a nonflammable solvent should be sufficient for this cleaning.

**5.2 All sleeves, hub bores, shafts, keys, and keyways** should be checked for raised metal, nicks, burrs, dents, gouges, etc., and dressed or repaired as needed prior to installation.

**5.3 Prior to removing any existing coupling**, establish and record the distance Between Shaft Ends (BSE) between the driver and driven shafts. This BSE dimension should match the values specified in Table-2 for the Lovejoy Dentex couplings with allowable end float as specified in Table-3.

**5.4 Once all necessary measurements have been taken** and all components are confirmed to be correct, remove any existing coupling and dress or repair the equipment shafts as needed.

**5.5 If the final shaft separation will be different than the specified BSE** of the Lovejoy Gear coupling, then the hubs must be mounted on the driver and driven shafts so that the distance between the ends of the hubs match the BSE dimension specified in Table-2.

**5.6 Lovejoy machines bores in all Lovejoy Dentex coupling hubs** with 'inch' dimensioned straight bores and keyways to meet the industry accepted **ANSI/AGMA 9002-B04** Standards' tolerance for a clearance, or slip fit bore unless otherwise specified. Tapered and spline bores typically require special consideration.

**5.7 Lovejoy machines bores in all Lovejoy Dentex coupling hubs** with 'metric' dimensioned straight bores and keyways to meet the industry accepted **ANSI/AGMA 9112-A04** Standards' tolerance for a clearance or slip fit bore unless otherwise specified. Tapered and spline bores typically require special consideration.

**5.8 For all Lovejoy Dentex coupling hubs with taper bores and taper bores with keyways**, Lovejoy manufactures these hubs with bores using tolerances and specifications as supplied by the customer. Taper bores will be tested with plug gauges usually supplied by the customer or included in the cost of the coupling.

#### **CAUTION!**

*The amount of hub engagement on the shaft should be equal to the shaft diameter or greater for a clearance, or slip fit.*

#### 6.0 DENTEX HUB INSTALLATION:

**6.1 Prior to installing any coupling**, it is important to make sure the equipment where the coupling is being installed is made safe and no part of this installation will be done on non-secured, unsafe, or moving equipment. Ideally, the equipment should be disconnected from any power source using the Lockout/Tag-out procedures defined by OSHA. Consult with local, State, and Federal laws and regulations covering safe operation and maintenance of equipment.



#### **Warning!**

*When installing hubs, consult with 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.*

**6.2 Lovejoy Dentex hubs** are shipped with a clearance fit bore unless otherwise specified. Prior to installing the coupling, measure the shaft diameters and the hub bores to ensure a proper fit. With a clearance fit, the hub bore diameter should be slightly larger than the shaft diameter. The hub may fit tight on the shaft.

**Note**, the Engineering Data section of the *Lovejoy Power Transmission Products Catalog* on-line contains the actual bore and keyway sizes supplied by Lovejoy for specific shaft sizes. Please visit the Lovejoy website at: <http://www.lovejoy-inc.com>.

**6.3 If using lock rings (usually for blind installations such as inside a motor/pump housing)**, slide a lock ring onto the motor shaft.

**6.4 Place a key in the keyway on each shaft.** The key should fit snugly in the keyway with no side to side movement. The length of the key should be the same length as the hub for dynamic balance and to be able to transmit the maximum amount of torque.

**6.5 Slide a hub onto each shaft.** The end of the hub with the gear teeth should be flush with the key and the end of the shaft. Using a calibrated torque wrench, tighten the set screw to the torque specified in Table-4.

**6.6 Slide the Dentex sleeve onto one of the motor hub** until the ridge in the center of the sleeve contacts the gear teeth on the hub.

**6.7 If a lock ring is used, slide the lock ring over the hub** against the sleeve. Separate the layers of the lock ring with a flat blade tool, then walk the ring around the hub sliding it into the groove in the end of the sleeve.

**6.8 Move the equipment into place.** Use care when sliding the second hub inside of the sleeve to prevent damage to the sleeve. When the equipment is in place, there should be a very slight amount of back and forth movement in the sleeve. If the hubs are both tight against the ridge in the center of the sleeve, the coupling will not be able to accommodate any misalignment.

**6.9 Check coupling alignment** using a preferred optical alignment process such as laser and correct for any discrepancies prior to placing this coupling into service. Allowable misalignment values can be found in Table-3.

**6.10 Slide the sleeve onto one hub**, centering the sleeve over both hubs. Insert the lock ring into both ends of the sleeve by separating the layers of the lock with flat blade tool, then walk the ring around the hub sliding it into the groove in the end of the sleeve.

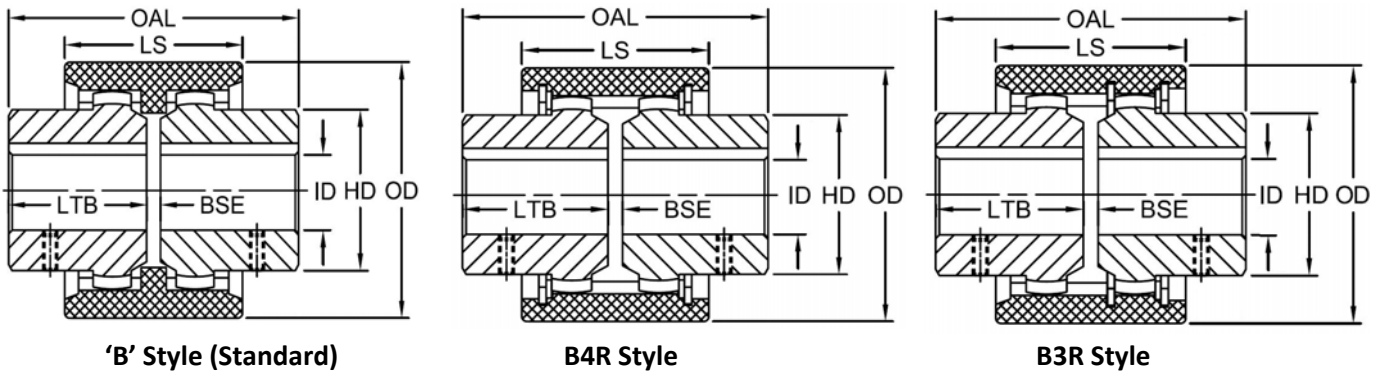
**6.11 Remove any tooling and material** away from the coupling and equipment. Install the coupling guard per OSHA requirements and remove the Lockout / Tagout kit from the power supply. The equipment can then be started up and tested. The coupling and equipment should run smoothly. If any vibration is detected, it could indicate there are alignment issues or other problems, possibly related to the motor, coupling, or driven equipment. After running a short time, check the coupling for any possible abnormalities or premature wear. Any issues or problems should be resolved prior to placing this coupling into

**7.0 MAINTANENCE:**

**7.1 It is common practice to inspect the coupling** after running a few hours or less to ensure there are no issues with alignment, heat, or other concerns that could be detrimental to the operation of the coupling.

**7.2 After roughly one month of operation**, the coupling should be disassembled and inspected for abnormal wear or possible issues with equipment alignment.

**7.3 Periodic inspections should take place at least on an annual basis** to ensure the coupling is performing as designed and the sleeve is not showing signs of excess wear.



**Table 2a - Dentex® B - Series Dimensional Data**

Size	Over All Length OAL		Sleeve Length LS		Max Bore Size ID		Length Thru Bore - LTB		BSE or 'G'		Sleeve Diameter OD		Hub Diameter HD	
	in	mm	in	mm	inch	mm	in	mm	in	mm	in	mm	in	mm
<b>B 14</b>	1.97	50	1.46	37	0.56	14	0.91	23	0.16	4	1.57	40	0.98	25
<b>B 19</b>	2.13	54	1.46	37	0.75	19	0.98	25	0.16	4	1.89	48	1.18	30
<b>B 24</b>	2.20	56	1.61	41	0.94	24	1.02	26	0.16	4	2.05	52	1.42	36
<b>B 28</b>	3.31	84	1.81	46	1.13	28	1.57	40	0.16	4	2.60	66	1.73	44
<b>B 32</b>	3.31	84	1.89	48	1.25	32	1.57	40	0.16	4	2.99	76	1.97	50
<b>B 38</b>	3.31	84	1.89	48	1.38	38	1.57	40	0.16	4	3.27	83	2.28	58
<b>B 42</b>	3.46	88	1.97	50	1.56	42	1.65	42	0.16	4	3.62	92	2.56	65
<b>B 48</b>	4.09	104	1.97	50	1.75	48	1.97	50	0.16	4	3.94	100	2.68	68
<b>B 55</b>	4.88	124	2.56	65	2.06	55	2.36	60	0.16	4	4.92	125	3.27	83
<b>B 65</b>	5.67	144	2.83	72	2.38	65	2.76	70	0.16	4	5.51	140	3.78	96
<b>B 80</b>	7.32	186	3.66	93	3.00	80	3.54	90	0.24	6	6.89	175	4.88	124
<b>B 100</b>	8.98	228	4.02	102	3.75	100	4.33	110	0.31	8	8.27	210	5.98	152

**Table 2b - Dentex® B4R - Series Dimensional Data**

Size	Over All Length OAL		Sleeve Length LS		Max Bore Size ID		Length Thru Bore - LTB		BSE or 'G'		Sleeve Diameter OD		Hub Diameter HD	
	in	mm	in	mm	inch	mm	in	mm	in	mm	in	mm	in	mm
B4R 32	3.31	84	2.28	58	1.25	32	1.57	40	0.16	4	3.31	84	1.97	50
B4R 45	3.46	88	2.36	60	1.56	42	1.65	42	0.16	4	3.94	100	2.56	65
B4R 65	5.67	144	3.31	84	2.38	65	2.76	70	0.16	4	5.51	140	3.78	96
B4R 80	7.32	186	3.66	93	3.00	80	3.54	90	0.24	6	6.89	175	4.88	124
B4R 100	8.98	228	4.02	102	3.75	100	4.33	110	0.31	8	8.27	210	5.98	152

**Table 2c - Dentex® B3R - Series Dimensional Data**

Size	Over All Length OAL		Sleeve Length LS		Max Bore Size ID		Length Thru Bore - LTB		BSE or 'G'		Sleeve Diameter OD		Hub Diameter HD	
	in	mm	in	mm	inch	mm	in	mm	in	mm	in	mm	in	mm
B3R 24	2.20	56	2.01	51	0.94	24	1.02	26	0.16	4	2.28	58	1.42	36
B3R 28	3.31	84	2.20	56	1.13	28	1.57	40	0.16	4	2.76	70	1.73	44
B3R 32	3.31	84	2.28	58	1.25	32	1.57	40	0.16	4	3.31	84	1.97	50
B3R 45	3.46	88	2.36	60	1.56	42	1.65	42	0.16	4	3.94	100	2.56	65
B3R 65	5.67	144	3.31	84	2.38	65	2.76	70	0.16	4	5.51	140	3.78	96
B3R 80	7.32	186	3.66	93	3.00	80	3.54	90	0.24	6	6.89	175	4.88	124
B3R 100	8.98	228	4.02	102	3.75	100	4.33	110	0.31	8	8.27	210	5.98	152

**Table 3a - Dentex® B - Series Performance Data**

Size	Torque Capacity				Max Speed RPM	Misalignment					Weight <sup>1</sup>		Number of Gear Teeth
	Nominal		Maximum			Angular Degrees	Axial		Parallel		kg	lbs	
	in-lbs	Nm	in-lbs	Nm			Inch	mm	inches	mm			
B 14	89	10	177	20	8,000	1 ° Per Hub	+/- .039	+/-1	0.012	0.3	0.2	0.4	20
B 19	142	16	283	32	8,000				0.012	0.3	0.3	0.7	24
B 24	177	20	354	40	8,000				0.016	0.4	0.3	0.7	28
B 28	398	45	797	90	8,000				0.016	0.4	0.7	1.6	34
B 32	531	60	1,062	120	7,000				0.016	0.4	1.0	2.1	40
B 38	708	80	1,416	160	6,000				0.016	0.4	1.2	2.7	44
B 42	885	100	1,770	200	5,400				0.016	0.4	1.5	3.3	50
B 48	1,239	140	2,478	280	5,000				0.016	0.4	1.8	4.0	50
B 55	2,213	250	4,425	500	4,000				0.016	0.4	3.5	7.6	45
B 65	3,452	390	6,903	780	3,800				0.024	0.6	5.2	11.4	42
B 80	6,195	700	12,390	1 400	3,000				0.028	0.7	11.5	25.3	46
B 100	11,063	1 250	22,125	2 500	2,400				0.031	0.8	20.5	45.2	48

**Table 3b - Dentex® B4R - Series Performance Data**

Size	Torque Capacity				Max Speed RPM	Misalignment				Weight <sup>1</sup>		Number of Gear Teeth	
	Nominal		Maximum			Angular Degrees	Axial		Parallel		kg		lbs
	in-lbs	Nm	in-lbs	Nm			Inch	mm	inches	mm			
B4R 32	708	80	1,416	160	7,000	1 ° Per Hub	+/-0.039	+/-1	0.016	0.4	1.1	2.4	40
B4R 48	1,239	140	2,478	280	5,000				0.016	0.4	1.5	3.3	50
B4R 65	3,452	390	6,903	780	3,800				0.024	0.6	5.4	11.9	42
B4R 80	6,195	700	12,390	1 400	3,000				0.028	0.7	11.7	25.8	46
B4R 100	11,063	1 250	22,125	2 400	2,400				0.031	0.8	20.8	45.9	48

**Table 3c - Dentex® B3R - Series Performance Data**

Size	Torque Capacity				Max Speed RPM	Misalignment				Weight <sup>1</sup>		Number of Gear Teeth	
	Nominal		Maximum			Angular Degrees	Axial		Parallel		kg		lbs
	in-lbs	Nm	in-lbs	Nm			Inch	mm	inches	mm			
B3R 24	177	20	354	40	10,200	1 ° Per Hub	+/-0.039	+/-1	0.016	0.4	0.3	0.7	28
B3R 28	398	45	797	90	8,300				0.016	0.4	0.8	1.8	34
B3R 32	708	80	1,416	160	7,000				0.016	0.4	1.1	2.4	40
B3R 48	1,239	140	2,478	280	5,000				0.016	0.4	1.5	3.3	50
B3R 65	3,452	390	6,903	780	3,800				0.024	0.6	5.4	11.9	42
B3R 80	6,195	700	12,390	1 400	3,000				0.028	0.7	11.6	25.6	46
B3R 100	11,063	1 250	22,125	2 400	2,400				0.031	0.8	20.7	45.6	48

- Notes:**
1. Weight is calculated using maximum bore and no keyway
  2. Minimum and Maximum Bore Sizes are given for straight bores.  
For Taper bores and splines, contact Lovejoy Technical Support



**Table 4 - Set Screw Tightening Torque**

Inch Set Screws				Metric Set Screws			
Set Screw - inch		Tightening Torque		Set Screw - mm		Tightening Torque	
Size	Length	in-lbs	Nm	Size	Length	in-lbs	Nm
6-32	3/32	3-4	0.34-0.45	M3	3	4.4	0.5
	1/8	7-8	0.8-0.9		4 & up	5.3	0.6
	3/16 & up	9-10	1.0-1.1				
1/4-20	3/16	45-50	5.0-5.6	M4	3 & up	18	2
	1/4 & up	78-87	9-10	M6	4-6 8 & up	44 58-62	5 6.6-7
5/16-18	1/4	80-90	9-10	M8	5-8	84-88	9.5-10
	5/16 & up	150-160	17-19		10 & up	142-150	16-17
3/8-16	1/4	135-150	15-17	M10	6-10 12 & up	168-177 283-300	19-20 32-34
	5/16	225-250	25-38				
	3/8 & up	260-290	29-33				
1/2-13	1/2 & up	540-600	61-68	M12	8-12 14 & up	372-396 504-528	42-45 57-60