Disc Coupling
Inspection & Maintenance Instructions

1. Introduction
Correct installation and alignment will insure long life and trouble free operation of your coupling. Please read through these instructions carefully before you set the coupling back into operation. Make sure you follow all safety guidelines during the inspection or maintenance procedure. These Instructions should be retained for future reference or may be obtained from the Lovejoy web site (www.Lovejoy-Inc.com).

2. 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 must not be operated at 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 / Tagout" 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 modification 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 and shields are not provided, nor are they the responsibility of Lovejoy, Inc.

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.**

3. Static Disc Coupling Inspection
When the equipment is stopped, the coupling should be examined for any signs of damage, wear or fatigue that may have occurred during normal operation of the equipment. Making sure to inspect the complete coupling on all sides.

a. **Inspect all of the fasteners** for signs of damage, wear or fatigue, making sure they meet the correct torque values and replace or re-torque as necessary.

b. **Inspect hubs, spacers, mounting rings or guard rings of the coupling** for signs of damage, wear or fatigue and replace as necessary.

c. **Inspect the disc pack bushings** for signs of cracks or breaks and replace the complete disc pack if necessary.

d. **Inspect the disc pack(s)** for signs of damage, wear, fatigue or separation of the discs within the disc pack and replace the complete disc pack if necessary.

4. Operational Disc Coupling Inspection
While the equipment is operational and the use of a strobe light, the disc coupling's disc pack may be examined for any signs of damage, wear, fatigue or misalignment that may have occurred during normal operation of the equipment.

a. **Gain visual access of the disc pack(s) through the safety guard,** either thru a screen or hatch area.

b. **Adjust the strobe light so that the disc pack is at a stand still.**

   1. Check for **cracks or breaks in the bushings.**
   2. Check for **broken, frayed or cracked discs** within the disc pack(s).
   3. Check for **separation of the discs** in the disc pack(s).
   4. Check for **waviness or distortion in the disc pack** (Signals possible misalignment).
   5. If any of the above conditions exist **the complete disc pack(s) may have to be replaced.**

c. After a thorough inspection and it is determined that the disc pack(s) will need replacement a decision on when to make that replacement must be made. The time frame for the disc pack(s) replacement will be dependant on the degree of damage, wear or fatigue. **The more excessive the damage, wear or fatigue to the disc pack(s) the sooner the replacement must be made. In all cases the replacement must be made before complete failure of the disc pack(s) occurs.**

Warning!
Before beginning the coupling maintenance make sure the machinery is made safe. Discount all power.

5. Tools Required
- Calipers
- Sockets
- Torque Wrench
- Open End Wrenches
- Alignment Equipment

Table 1		*Lovejoy Disc Pack Bolts & Locknuts*							
Size	**Bolt Socket Size mm**	**Nut Socket Size mm**	**Coupling Clearance Hole Diameter mm**	**Coupling Clearance Hole Diameter in**	**Torque Wrench Drive Size in**	**Torque Lubricated Threads Nm**	**Torque Lubricated Threads ft-lbs**	**Torque Dry Threads Nm**	**Torque Dry Threads ft-lbs**
090-6	10	10	16	0.630	1/4	11	8	14	10
110-6	13	13	21	0.827	3/8	24	18	30	22
132-6	13	13	21	0.827	3/8	24	18	30	22
158-6	17	15	26	1.024	3/8	48	35	60	44
185-6	19	18	32	1.260	3/8	80	59	100	74
202-6	22	21	35	1.378	1/2	120	89	150	111
228-6	24	24	37	1.457	1/2	184	136	230	170
255-6	30	30	45	1.772	3/4	360	266	450	332
278-6	30	30	46	1.811	3/4	360	266	450	332
302-6	32	32	50	1.968	3/4	480	354	600	443
325-6	32	32	52	2.047	3/4	480	354	600	443
345-6	36	36	56	2.205	3/4	624	460	780	575
380-6	41	41	60	2.362	1	880	649	1100	811
410-6	46	46	68	2.677	1	1200	885	1500	1106
440-6	50	50	74	2.913	1	1600	1180	2000	1475
475-6	55	55	80	3.150	1	2080	1534	2600	1918
505-6	60	60	85	3.346	1	2640	1947	3300	2434

Please be advised that the Clearance Hole Diameter of the coupling may be smaller than the Outside Diameter of some typical sockets. The socket's OD may have to be turned down to 0.76 mm (0.030") smaller than the Coupling's Clearance Hole Diameter. For additional information contact Lovejoy's Application Engineering.

6. Disc Pack Replacement

a. It will depend on the series of disc coupling whether or not the disc pack(s) can be replaced without disassembling coupling components. Refer to the installation instructions for information on the assembly of the coupling.

b. After the original disc pack has been removed **the original hardware can be discarded** as the new hardware supplied with the disc pack should be used.

c. Prepare the new **disc pack for installation by placing a light coating of grease on each side of the bushing flats,** this will keep the disc packs from binding when the locknuts are being torqued.

Caution!
Do NOT USE POWER TOOLS as this may create a friction weld.

d. **Mount one side of the disc pack** by inserting the bolts for the disc pack and hand tightening the locknuts. **Do not Torque** the Locknuts at this time.

e. **Insert the remaining bolts** to secure the other side of the disc pack and hand tighten the locknuts. **Do not Torque** the Locknuts at this time.

f. Start with one side of the coupling and **torque all locknuts one side of the disc pack before torqueing the locknuts at the other side of the disc pack (see Table 1 for torque values)**.

g. Always remember to **properly seat the bolt** before tightening the locknut. Drawing the bolt through the flange and bushing by tightening the locknut could result in insufficient preloading of the bolt.

Note: If room permits, always tighten the locknut, not the bolt since part of the tightening torque is needed to overcome friction. As there is additional friction when turning the bolt, more of the effort goes into friction than in to stretching the bolt.

h. **Locknuts should be tightened to the recommended torque specification in the following steps:**

I. **Tighten the locknuts to 25%** of the recommended value in a crisscross pattern.

II. **Continue tightening the locknuts by increasing the tightening torque by 25%** in a crisscross pattern until reaching the recommended torque value.

III. **Check the first locknut to verify it meets the torque specification. If it does not meet the specification continue tightening the locknuts** in a crisscross pattern until reaching the recommended torque value.

i. Follow the alignment instructions in section 7.

7. Machinery Alignment

a. **Optical methods of alignment** (such as Laser) are recommended**.**

b. **The useful life of any Disc Coupling** is directly influenced by the operating misalignment; the better the alignment, the longer the coupling life. The coupling alignment should be check periodically. Even when a coupling is well aligned at installation, subsequent settling of foundations, shifting of equipment, etc., may cause the alignment to deteriorate.

c. **Realignment of the equipment may not be necessary** if all eight of the Disc Pack Width (PW) measurements (see Section 8-j) are within acceptable limits.

d. If the **equipment can be realigned without much movement** of the equipment (Only adding a few adjustment shims to the corners of the equipment), then the disc coupling may remain in place during the alignment procedure.

e. If **major equipment movement is required** (Such as removing all adjustment shims from one or more corners of the equipment), then the disc coupling should be removed prior to the alignment procedure and reinstalled after the equipment is aligned.

f. **Soft Foot:** The equipment must sit flat on its base. Any soft foot must be corrected now**.**

g. **The Axial Displacement** allowable between shafts during installation should not exceed 20% of the allowable displacement given in Table 2. This displacement is a function of the coupling size and the number of bolts utilized. The larger the size, the larger the axial displacement.

h. The axial displacement creates large stresses in the disc pack. For a long life, it is recommended that the axial spacing of the shafts should be positioned so that **the disc pack is flat when the equipment is operating** under normal conditions. This means there is a minimal amount of waviness in the disc pack when viewed from the side. This will result in a flexing element that is centered and parallel to its mating flange faces. Move the connecting equipment or the hubs on their respective shafts to accomplish this.

i. **Measuring using a Caliper & Recording the Disc Pack Width (PW)** at four radial locations (approximately 3, 6, 9 & 12 O'clock) will be the final step in the installation. **If the PW dimension at each location on the disc pack is within the upper and lower limits of Table 2 the installation is complete.**

j. **If the PW dimension on the disc pack is not within the limits,** calculate the average of the PW measurements for the coupling**.**

I. **Calculate the difference** between the recorded average PW value and the Table 2 value of the PW for the coupling.

II. This represents the **how much to adjust the** hubs on each side of the coupling or how much to move the equipment. **A positive number** indicates an expanded disc pack and the need to move the hubs or equipment inboard. **A negative number** indicates a compressed disc pack and the need to move the hubs or equipment outboard.

III. If no hubs have to be moved, and there is at least **one PW measurement that is beyond the upper or lower limit**, the equipment may have to be realigned.

k. **The SU disc coupling does not have parallel misalignment capabilities.**

Caution!
When using the PW measurement to determine axial displacement, remember that angular misalignment will affect the PW measurement.

Table 2			*Axial Tolerance*									
	Axial Misalignment ±ΔKa		**Angular Misalign Max**	**PW Disc Pack Width**		**+/- Tolerance**		**PW Low**		**PW High**	
Size	**in**	**mm**	**Degree**	**in**	**mm**	**in**	**mm**	**in**	**mm**	**in**	**mm**
090-6	0.0295	0.75	1.5°	0.295	7.5	0.003	0.08	0.292	7.43	0.298	7.58
110-6	0.0413	1.05		0.331	8.4	0.004	0.11	0.327	8.30	0.335	8.51
132-6	0.0512	1.30		0.331	8.4	0.005	0.13	0.326	8.27	0.336	8.53
158-6	0.0610	1.55		0.441	11.2	0.006	0.16	0.435	11.05	0.447	11.36
185-6	0.0728	1.85		0.551	14.0	0.007	0.19	0.544	13.82	0.558	14.19
202-6	0.0748	1.90	1°	0.610	15.5	0.007	0.19	0.603	15.31	0.617	15.69
228-6	0.0827	2.10		0.689	17.5	0.008	0.21	0.681	17.29	0.697	17.71
255-6	0.0925	2.35		0.807	20.5	0.009	0.24	0.798	20.27	0.816	20.74
278-6	0.1024	2.60		0.835	21.2	0.010	0.26	0.825	20.94	0.845	21.46
302-6	0.1122	2.85		0.961	24.4	0.011	0.29	0.950	24.12	0.972	24.69
325-6	0.1280	3.25		1.024	26.0	0.013	0.33	1.011	25.68	1.037	26.33
345-6	0.1358	3.45		1.110	28.2	0.014	0.35	1.096	27.86	1.124	28.55
380-6	0.1496	3.80		1.260	32.0	0.015	0.38	1.245	31.62	1.275	32.38
410-6	0.1614	4.10		1.307	33.2	0.016	0.41	1.291	32.79	1.323	33.61
440-6	0.1732	4.40		1.433	36.4	0.017	0.44	1.416	35.96	1.450	36.84
475-6	0.1870	4.75		1.504	38.2	0.019	0.48	1.485	37.73	1.523	38.68
505-6	0.1988	5.05		1.654	42.0	0.020	0.51	1.634	41.50	1.674	42.51

Lovejoy, Inc.
World Headquarters
2655 Wisconsin Avenue
Downers Grove, IL 60515
630-852-0500
630-852-2120 Fax
info@lovejoy-inc.com

www.lovejoy-inc.com

ISO 9001-2000 Certified

P/N 69790415374 15Feb07