



**ATEX** — In order for this coupling to meet the ATEX requirements, it is mandatory to precisely follow these installation instructions along with the included supplement form 0005-08-49-01. This supplement outlines the ATEX requirements. If the operator does not

adhere to these instructions, conformity is immediately invalidated.

**WARNING:** *Because of the possible danger to person(s) or property from accidents which may result from improper use or installations of products, it is extremely important to follow the selection, installation, maintenance and operational procedures. All rotating power transmission products are potentially dangerous and can cause serious injury. They must be properly guarded in compliance with OSHA, ANSI, and any other local or governmental standards for the speeds and applications in which they are used. It is the responsibility of the user to provide proper guarding. For ATEX requirements the guard must have a minimum of ½ inch (12.7 mm) radial clearance to the coupling major diameter "A" (See Figure 1) and allow for good ventilation.*

- Purpose** — These instructions are intended to help you to install, align, and maintain your THOMAS coupling.
- Scope** — Covered here will be general information, hub mounting, alignment, assembly, locknut tightening, disc pack replacement, and part numbers.
- General Information** — The coupling, as received, may or may not be assembled. If assembled, the locknuts are not fully tightened. Examine the parts to assure there is no visible damage. If coupling is assembled, remove the bolts, locknuts, and washers that attach the hubs to the disc packs. Remove both hubs. Leave the disc packs attached to the center member assembly.

#### 4. Hub Mounting

- A. **General** — Clean hub bores and shafts. Remove any nicks or burrs. If bore is tapered, check for good contact pattern. If the bore is straight, measure the bore and shaft diameters to assure proper fit. The key(s) should have a snug side-to-side fit with a small clearance over the top.

**NOTE:** If the DBZ hub position on the shaft does not allow enough room to install the short bolts in the hub after hub mounting, install the bolts and disc pack before mounting hub on shaft. See Section 6A & B.

- B. **Straight Bore** — Install the key(s) in the shaft. If the hub is an interference fit, heat the hub in an oil bath or oven until bore is sufficiently larger than the shaft. 350°F is usually sufficient. An open flame is not recommended. However, if flame heating is necessary, use a very large rose bud tip to give even heat distribution. A thermal heat stick will help determine hub temperature. **DO NOT SPOT HEAT THE HUB OR DISTORTION MAY OCCUR.** With the hub expanded, slide it up the shaft to the desired axial position. A pre-set axial stop device can be helpful.

**NOTE:** All DBZ hubs have pressed in bushings. Make sure the bushings are facing the disc pack.

- C. **Straight Bore Slip Fit** — Install the key(s) in the shaft. Install the set screw(s) in the hub making sure they do not protrude into the keyway or the bore. Now slide the hub up the shaft to the desired axial position. The set screw(s) which hold the hub in place are tightened, using a torque wrench, to the values shown in Table 1A.

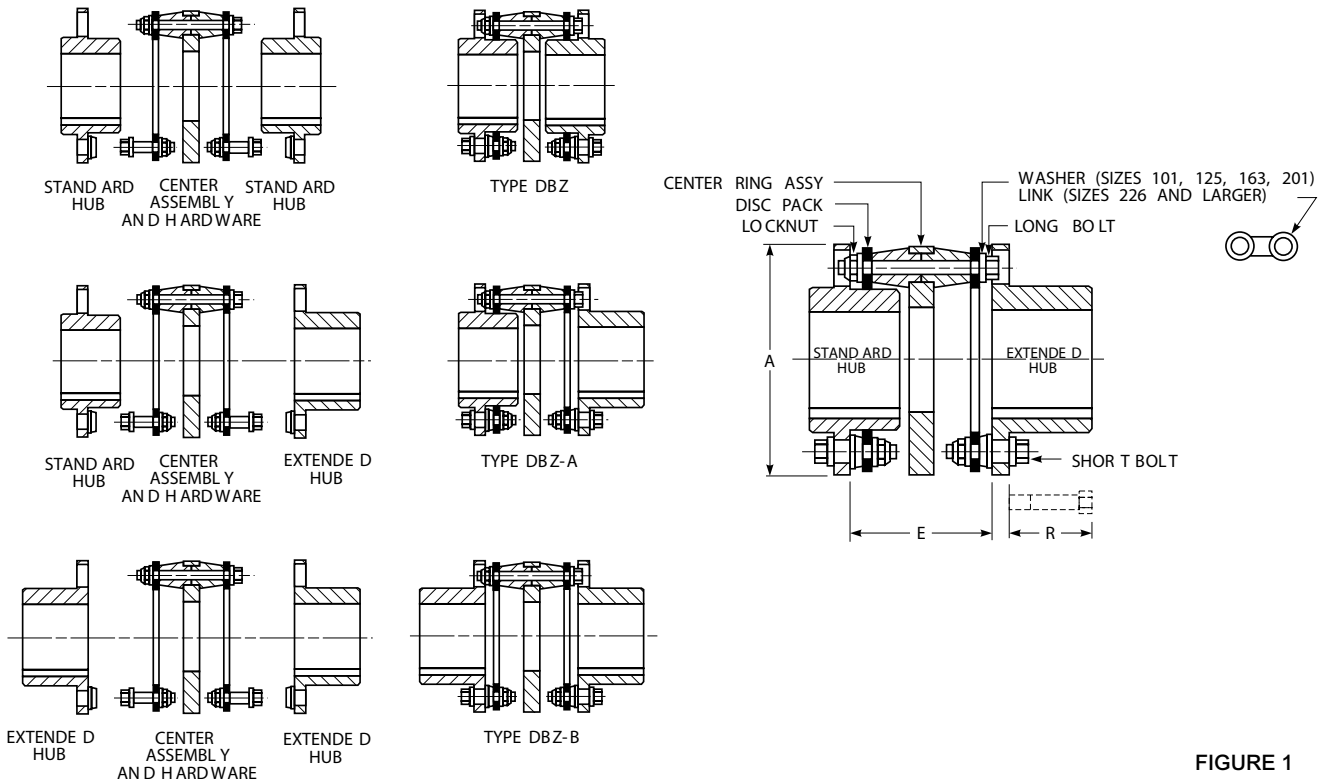


FIGURE 1

**NOTE:** Never use two set screws one on top of the other.

- D. **Taper Bore** — Put the hub on the shaft without the key(s) in place. Lightly tap the hub on the shaft with a soft hammer. This will assure a metal-to-metal fit between shaft and hub. This is the starting point for the axial draw. Record the position between shaft end and hub face with a depth micrometer. Mount a dial indicator to read axial hub movement. Set the indicator to “0.” Remove the hub and install the key(s). Heat the hub in an oil bath or oven until the bore is sufficiently larger than the shaft. 350°F is usually sufficient. An open flame is not recommended. However, if flame heating is necessary, use a very large rose bud tip to give even heat distribution. A thermal heat stick will help determine the hub temperature. **DO NOT SPOT HEAT THE HUB OR DISTORTION MAY OCCUR.** With the hub expanded, slide it quickly up the shaft to the “0” set point. Continue to advance the hub up the taper to the desired axial position. Use the indicator as a guide only. A pre-set axial stop device can be helpful. Check the final results with a depth micrometer. Install the hub shaft end retention device to hold the hub in place.

- 5. **Shaft Alignment** — Move equipment into place.

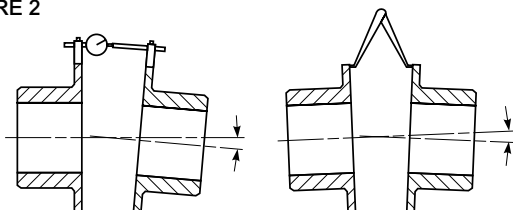
- A. **Soft Foot** — The equipment must sit flat on its base. Any soft foot must now be corrected.
- B. **Axial Spacing** — The axial spacing of the shafts should be positioned so that the disc packs (flexing elements) are not distorted when the equipment is running under normal operating conditions. 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 connected equipment to accomplish the above.

**NOTE:** The disc pack is designed to an optimal thickness and is not to be used for axial adjustments by removing or adding individual discs.

As a guide, maximum and minimum values for dimension “E” are given. These dimensions are suggested for initial installation. Additional capacity is available to compensate for thermal and structural movement. Maximum axial capacity values for these couplings are also given. See Table 1 and Figure 1.

- C. **Laser Alignment is an Option** — If not available proceed with dial indicator method.
- D. **Angular Alignment** — Rigidly mount a dial indicator on one hub or shaft, reading the face of the other hub flange, as shown in Figure 2. Rotate both shafts together making sure the shaft axial spacing remains constant. Adjust the equipment

FIGURE 2

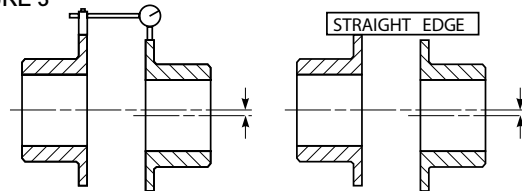


by shimming and/or moving so that the indicator reading is within the values shown in Chart “A”.

- E. **Parallel Offset** — Rigidly mount a dial indicator on one hub or shaft, reading the other hub flange outside diameter, as shown in Figure 3. Compensate for indicator set-up sag. Rotate both shafts together. Adjust the equipment by shimming and/or moving so that the indicator reading is within the values shown in Chart “A”.

**NOTE:** If the driver or driven equipment alignment tolerances are more stringent than our

FIGURE 3



recommendations, the driver or driven equipment

**CHART A — Suggested Maximum Alignment Value**

COUPLING SIZE	Total Indicator Reading (TIR) (in.)	
	Angular	Parallel
50	.004	.003
62	.005	.003
75	.005	.003
101	.006	.004
126	.007	.005
163	.009	.005
201	.010	.006
226	.012	.007
263	.014	.009
301	.016	.010
351	.018	.012
401	.020	.013
451	.024	.014

tolerances should be used. Also, be sure to compensate for thermal movement in the equipment. The coupling is capable of approximately four times above shaft misalignment tolerances. However, close alignment at installation will provide longer service with smoother operation.

- 6. **Final Assembly** — With the coupling in good alignment, the bolts will fit through the holes in the flanges and the disc packs easily.
  - A. If the coupling arrived assembled, the disc packs are still attached to the center ring. Before taking the disc packs off, first install one hub bolt through each disc pack and secure with a locknut. This will help when the pack is reinstalled later. If the coupling was shipped disassembled, the bolt through the pack is not required as the discs in the pack are factory-taped together.
  - B. Remove the long bolts. Mount disc packs on the hubs with the one bolt through the disc pack aligned with a clearance hole in the hub. Install the short bolts through the hub bolt holes, disc pack, bevel washers or links, and secure with locknuts. Make sure all parts pilot on the body ground part of the

bolt. Remove the disc pack alignment bolt.

**NOTE:** All bolt threads should be lubricated. A clean motor oil is recommended.

- C. Position one set of the short bolts in each hub on top. Now slide the center ring down into place straddling the short bolts with the center ring bushings. If coupling is dynamically balanced, the center ring match marks must line up with both hub match marks. When one bushing is in line with the hole in the disc pack, slide one long bolt through washer or link, disc pack, center ring, disc pack, washer or link, and then secure with a locknut. The long bolt requires a minimum clearance “R” for installation between back side of coupling flange and stationary equipment. See Figure 1 and Table 1 for value of “R”. On size 226 and larger a link must be put on the bolt first. Now install the rest of the long bolts in the same manner.

- D. Tighten the long bolt locknuts at this time. See Table 1 for torque values.

**NOTE:** With the coupling in good alignment the bolts should easily fit through the holes in the flanges and the disc pack. It is recommended that all locknuts be retightened after several hours of initial operation

when ever possible.

- E. For further help with the installation or alignment, consult the Factory

7. **Disc Pack Replacement** — If it becomes necessary to replace the disc pack, it can be done as follows:
- Remove all the long bolts and lower the center ring by sliding it out from between the two disc packs.
  - Remove one short bolt from the disc pack/hub connection and re-install it through a hub clearance hole and into the hole in the disc pack. Put the nut on. This will keep the discs together and maintains the disc orientation for later reinstallation. Remove the rest of the short bolts and take off the disc pack. Repeat for the second disc pack.
- C. Replace the pack(s) if required. Recheck alignment per Section 5. Reassemble per Section 6.
8. **Replacement parts** — See Table 2.

**TABLE 1 — Dimensions & Tightening Torques ★**

COUPLING SIZE	A (in.)	E (in.)		Axial Capacity (in)	R (in.)	Thread Size ‡	Torque	
		Min	Max				ft-lbs (in.-lbs)	Nm
50	2.00	1.36	1.37	± .023	1.41	#6-40	(24)	2.7
62	2.44	1.74	1.75	± .028	1.75	#10-32	(36)	4
75	2.69	1.77	1.78	± .032	1.75	#10-32	(36)	4
101	3.22	2.08	2.10	± .038	1.97	#12-28	(96)	11
126	3.84	2.46	2.48	± .046	2.31	1/4-28	(156)	18
163	4.56	2.46	2.48	± .057	2.31	1/4-28	(156)	18
201	5.34	2.96	2.98	± .067	2.69	5/16-24	25	34
226	6.06	3.83	3.85	± .076	3.31	3/8-24	34	46
263	7.00	4.33	4.35	± .089	3.75	7/16-20	60	81
301	8.00	4.90	4.93	± .102	4.44	1/2-20	95	129
351	9.38	5.90	5.93	± .118	5.44	5/8-18	175	237
401	10.69	6.71	6.75	± .136	6.16	11/16-16	150★	203★
451	12.13	7.27	7.31	± .154	6.75	3/4-16	190★	258★

★ These torque values are approximate for steel bolts with lubricated threads. The locknuts are prevailing torque type and some resistance will be felt. If galling is suspected, immediately stop and contact the Factory. Modification will be necessary for stainless steel. For stainless steel the tightening torque must be reduced to 60% of the values shown. Stainless steel bolt and locknut threads must also be liberally coated with molybdenum disulfide grease.

‡ Bolts should be held from rotating while the locknuts are torqued to the values shown.

\* These locknuts are cad plated.

**TABLE 1A — Set Screw Tightening Torque**

Setscrew Thread Size	Torque in-lb	Torque ft-lb	Torque Nm
1/4-20	66	6	7
1/4-28	76	6	9
5/16-18	132	11	15
5/16-24	144	12	16
3/8-16	240	20	27
3/8-24	276	23	31
1/2-13	600	50	68
1/2-20	660	55	75



**TABLE 2 — Part Numbers & Quantity Required**

COUPLING SIZE OF DBZ DBZ-A DBZ-B	Std Hub	Ext Hub	Center Ring	Center Member Assembly with Hardware		Disc Pack Two per Cplg		Parts Kit Consists of Washers or Links, Bolts, and Locknuts for One Coupling								
				Tomaloy Disc Packs	Stainless Disc Packs	Tomaloy	Stainless	Parts Kit	Washer or Link	Long Bolt		Short Bolt		Locknut		
				Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Qty	Part No.	Qty	Part No.	Qty
<b>50</b>	114401	514402	314405	114404	314404	710492	910492	716320	...	...	312659	2	210495	4	711738	6
<b>62</b>	414412	114413	014416	814415	914415	510601	710601	816320	...	...	112657	2	010525	4	011739	6
<b>75</b>	114423	814424	514427	314426	414426	710523	910523	816320	...	...	112657	2	010525	4	011739	6
<b>101</b>	716104	216105	814438	614437	714437	910619	310619	916320	511192	8	711162	2	411161	4	516503	6
<b>126</b>	116106	816107	414445	214444	314444	910618	310618	116320	002161	8	811198	2	510728	4	916504	6
<b>163</b>	816108	616109	016022	414455	514455	410954	610954	416320	002161	16	811198	4	510728	8	916504	12
<b>201</b>	416110	016111	414471	214470	314470	710624	910624	001950	002170	16	411206	4	210721	8	316505	12
<b>226</b>	616112	116113	614482	414481	514481	010689	210689	001953	011874	12	011250	4	010634	8	716506	12
<b>263</b>	716114	216115	514491	314490	414490	920357	120357	001956	211875	12	710788	4	410787	8	116507	12
<b>301</b>	416116	516117	414500	214499	314499	420359	620359	001958	411876	12	310656	4	010655	8	516508	12
<b>351</b>	616118	716119	314509	114508	214508	820361	020361	001960	711877	12	410734	4	110733	8	316510	12
<b>401</b>	816120	916121	914516	714515	814515	220363	420363	001962	011878	12	310241	4	110240	8	716511 *	12
<b>451</b>	016122	116123	514523	314522	414522	310646	510646	001964	311879	12	910642	4	710641	8	116512 *	12

\* These locknuts are cadmium plated.