

Series 71 Short Span • Sizes 150-600

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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.

- 1. **Purpose** These instructions are intended to help you to install, align, and maintain your THOMAS coupling.
- 2. **Scope** Covered here will be general information, hub mounting, alignment, assembly, locknut tightening, disc pack replacement, and part numbers.
- 3. 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 adapter. Now remove the cap screws which hold the center member to the adapters.

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.

- B. Straight Bore Install key(s) in the shaft. If the hub is an interference fit, heat the hub in 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 quickly up the shaft to the desired axial position. A pre-set axial stop device can be helpful.
- C. Straight Bore Slip Fit Install 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 on 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.

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.

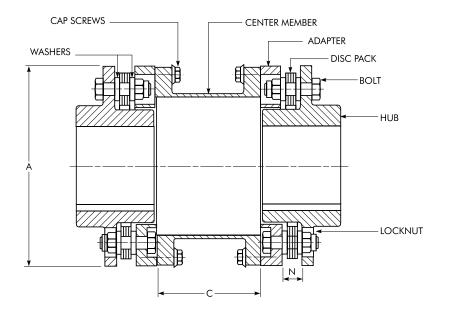


FIGURE 1

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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 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 "N" 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 by shimming and/or moving so that the indicator reading is within .002 inch per inch of coupling flange diameter. See Table 1.

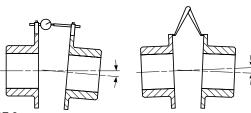


FIGURE 2

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

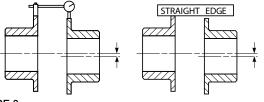


FIGURE 3

that the indicator reading is within .002 inch per inch of the axial length between flex elements. See Table 1.

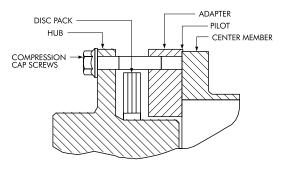
NOTE: If the driver or driven equipment alignment specification is tighter than these recommendations, that specification should be used. Also, be sure to compensate for thermal movement in the equipment. The coupling is capable of approximately four times above shaft misalignment tolerances. However, close alignment at installation will provide longer service with smoother operation.

6. Final Assembly

- A. If this coupling has been factory balanced, the hub flange, adapter and center member will be match marked. Recheck to assure the marks line up.
- B. If the coupling hubs were mounted without the disc pack adapter assemblies installed, install as follows:
- C. Install the bolts through the hub bolt holes. Add a washer to each bolt. The radius side of the washer should always be against the disc pack. Now position the disc pack onto the bolts. See Figure 1. Add the remaining washers making sure all the parts pilot on the body ground part of the bolt. Now add the locknuts and slightly tighten the locknuts.

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

- D. Install the bolts through the adapter bolt holes. Add a washer to each bolt. The radius side of the washer should always be against the disc pack. Now position this assembly so that the bolts go through the disc pack, making sure the balanced coupling match marks, when used, line up. See Figure 1. Add the remaining washers making sure all the parts pilot on the body ground part of the bolt. Now add the locknuts and slightly tighten the locknuts.
- E. Repeat 6C and D for the other hub.
- F. Now fully tighten all the disc pack locknuts using the torque values shown in Table 1.
- G. It may be necessary to slide the equipment back into alignment, setting the axial spacing "C" per Table 1. "C" is a reference dimension only. Due to the stack up in axial dimensional tolerances the final axial positioning should be set by the procedure outlined in section 5B.
- H. The hub, disc pack, adapter assembly must be compressed in order for the center member to clear the O.D. pilot on the adapter when installed. See Figure 4 which shows the compression cap screws.







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Be careful to compress both ends equally and only enough to allow the center member to fit between the adapters, clearing the O.D. pilots.

I. Install the center member. Position it between the adapters making sure the bolt holes line up with the tapped holes in the adapter. If the coupling has been balanced, make sure the match marks all line up. See Figure 1.

NOTE: With the coupling in good alignment, the cap screws will fit through the holes more easily.

- J. Install the center member cap screws, leaving them loose. Release and remove all compression cap screws. Make sure the center member flanges seats into the adapters. Now tighten the cap screws. Pilot seating is important. Using a torque wrench tighten all the cap screws to the values shown in Table 1.
- K. It is recommended that the locknuts be retightened after several hours of operation whenever possible.
- L. 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:
 - A. Remove the cap screws. Install the compression cap screws. See Figure 4. Compress both ends equally and only enough to allow the center member to clear the adapter pilots. Now remove the center member from the assembly. See Figure 1 and 4.

- B. Remove the locknuts, bolts, and washer from one end.
- C. Slide the adapter axially out of the way.
- D. The disc pack is now free to be removed.
- E. Replace the disc pack if needed.
- F. Repeat 6C D to finish this part of the assembly.
- G. Rework the other end if required as per Sections 7B through F.
- H. Now fully tighten all disc pack locknuts using the torque values shown in Table 1.
- I. Finish coupling assembly per Section 6H-J.
- J. Recheck the alignment of the coupling correcting as required.
- K. It is recommended that the locknuts be retightened after several hours of initial operation whenever possible.
- 8. For replacement parts, see Table 2.

COUPLING SIZE	A (in.)	N (in.)		Axial Capacity (in)	Locknut			Cap Screw			Alignment Total Indicator Reading	
					Thread	Torque		Thread	Torque		Angular	Parallel
		Min	Мах		Size ‡	ft-lb (in-lbs)	Nm	Size	ft-lb (in-lbs)	Nm	(in.)	(in.)
150	3.59	.48	.49	± .050	1/4 - 28 UNF	(156)	17	1/4 - 20 UNF	(113)	13	.007	
175	4.16	.49	.50	± .070	1/4 - 28 UNF	(156)	17	1/4 - 20 UNF	(108)	12	.008	
225	4.94	.48	.49	± .075	1/4 - 28 UNF	(156)	17	1/4 - 20 UNF	(108)	12	.010	
300	5.97	.59	.60	± .085	5/16 - 24 UNF	25	34	1/4 - 20 UNF	(108)	12	.012	.002 INCH
350	6.75	.67	.69	±.090	3/8 - 24 UNF	34	46	5/16 - 18 UNF	18	24	.014	PÉR INCH OF AXIAL
375	7.62	.68	.70	± .095	7/16 - 20 UNF	60	81	5/16 - 18 UNF	18	24	.015	LENGTH
412	8.00	.84	.86	±.110	1/2 - 20 UN F	95	108	5/16 - 18 UNF	18	24	.016	BETWEEN
462	9.00	.92	.94	± .120	9/16 - 18 UNF	130	176	3/8 - 16 UNF	33	45	.018	FLEX ELEMENTS
512	10.03	.92	.94	±.130	5/8 - 18 UNF	175	237	7/16 - 14 UNF	52	71	.020	
562	10.97	1.01	1.03	±.145	3/4 - 16 UNF	190 *	258 *	1/2 - 13 UNF	80	108	.022	
600	11.72	1.21	1.24	±.160	3/4 - 16 UNF	190 *	258 *	1/2 - 13 UNF	80	108	.024	

TABLE 1 — Tightening Torques * , Dimensions & Alignment Values

★ 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	Torque	Torque	Torque		
Thread Size	in-lb	ft-lb	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		

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TABLE 2 — Part Numbers & Quantity Required

COUPLING Size	Hub	Center Member		Stainless Disc Pack (2/Cplg)	Parts Kit Consists Of Bolts, Locknuts, Washers, and Cap Screws for One Coupling									
	nub				Parts Bolts Kit		Locknuts		Washers		Cap Screws			
	Part No.	Part No.	Length	Part No.	Part No.	Part No.	Qty	Part No.	Qty	Part No.	Qty	Part No.	Qty	
150 175 225 300	Consult Factory			020860 417769 529287 729288	918484 918484 018484 118484	917791 917791 917791 917791 917831	8 8 12 12	916504 916504 916504 316505	8 8 12 12	002161 002161 002161 017146	16 16 24 24	021605 021605 021605 021605	8 8 6 12	
350 375 412 462				007208 929289 129290 529292	007416 218484 318484 418484	007209 117793 017844 217795	12 12 12 12	716506 116507 516508 916509	12 12 12 12	007210 717789 817789 917789	24 24 24 24	021606 021606 021606 021607	12 12 12 12	
512 562 600				729293 329291 929294	518484 618484 718484	117847 217849 517853	12 12 12	316510 116512 * 116512 *	12 12 12	017789 117789 617902	24 24 24	020790 021608 021608	12 12 12	

* These locknuts are cadmium plated.