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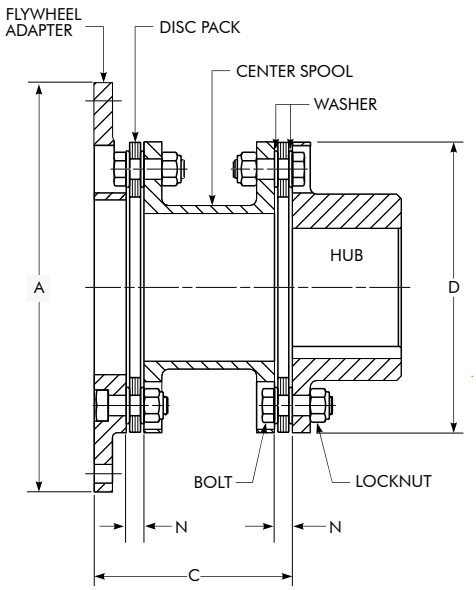

Figure 1 – Thomas Series 44 Disc Coupling

1. General Information

1.1. Thomas Series 44 Couplings are designed to provide a mechanical connection between the rotating shafts of mechanical equipment, using flexible disc elements to accommodate inherent misalignment while transmitting the power and torque between the connected shafts.

1.2. These instructions are intended to help you to install, align, and maintain your THOMAS® coupling. Where applicable, these instructions are to be used in conjunction with any special Rexnord drawing(s) that pertains to a specific engineered coupling. Covered here will be general information, hub mounting, alignment, assembly, locknut torque, disc pack replacement, and part numbers.

1.3. Rexnord Industries, LLC owns the copyright of this material. These Installation and Maintenance instructions may not be reproduced in whole or in part for competitive purposes.

1.4. Symbol descriptions:

STOP Danger of injury to persons.

⚠ Damages on the machine possible.

Pointing to important items.

Hints concerning explosion protection.

2. Safety and Advice Hints

STOP DANGER!

2.1. Safety should be a primary concern in all aspects of coupling installation, operation, and maintenance.

2.2. Proper lockout-tag out procedures must be followed to safeguard against unintentional starting of the equipment.

2.3. Because of the possible danger to person(s) and/or property, from accidents which may result from improper use or installation of these products, it is extremely important to follow the proper selection, installation, maintenance and operational procedures.

PRECAUTION! For this coupling to meet the ATEX requirements, you must precisely follow these installation and maintenance instructions, and the supplement form 0005-08-49-01. This supplement outlines the ATEX requirements. If the operator does not follow these instructions, the coupling will immediately be considered non-conforming to ATEX.

2.4. All personnel involved in the installation, service, operation, maintenance, and repair of this coupling and the connected equipment must read, understand, and comply with these Installation and Maintenance instructions.

2.5. All rotating power transmission products are potentially dangerous and can cause serious injury. They must be properly guarded in compliance with OSHA, ANSI, ATEX, European machine safety standards, and other local standards. It is the responsibility of the user to provide proper guarding.

2.6. For ATEX requirements the guard must have a minimum of 12.7 mm (1/2 inch) radial clearance to the coupling outside diameter "A" and allow for proper ventilation.

2.7. Make sure to disengage the electrical power and any other sources of potential energy before performing work on the coupling.

2.8. Do not make contact with the coupling when it is rotating and/or in operation.

2.9. All work on the coupling must be performed when the coupling is at rest under no load.

2.10. Do not start or jog the motor, engine, or drive system without securing the coupling components. If the equipment is started with only a hub attached, the hub must be properly mounted and ready for operation, with the key and set screw (if included) fastened. When the full coupling assembly is started, all fasteners and hardware must be completely and properly secured. Do not run the coupling with loose fasteners.

2.11. The coupling may only be used in accordance with the technical data provided in the Thomas catalog for the Series 44 coupling. Customer modifications and alterations to the coupling are not permissible.

⚠ **CAUTION: Air driven wrenches for assembly are not permitted to avoid the potential of excessive speed and heat build up that may lead to thread damage during assembly.**

2.12. All spare parts for service or replacement must originate from or be approved by Rexnord Industries, LLC.

3. Components and Part Numbers

Thomas Series 44 Coupling Components

Thomas Series 44 couplings may be delivered from the factory assembled or non-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 locknuts, bolts, and washers that attach the one disc pack to the hub and center member. The disc packs are typically taped to hold them in place for ease of assembly. If they are not taped, refer to **Section VI. Final Assembly: A** for comments regarding use of coupling bolt to retain disc pack assembly. Do not disassemble the bolted joint/disc pack attached to the adapter and center member.

4. Hub Mounting

STOP **DANGER!**

Be sure to disengage the electrical power and any other sources of potential energy before you perform work on the hub and coupling assembly.

Mounting Hubs on Shafts

⚠ **CAUTION: When disc type couplings are installed on "sleeve bearing" motor drives, some precautions are necessary. It is important that the coupling be installed as close to its free state (neutral) axial position as possible and that the motor shaft is on its "magnetic center" (normally defined by a scribed line on the shaft). Disc type couplings, with their flexing element(s) comprised of multiple laminated discs or sheets, will act as a spring in the axial direction (exhibiting non-linear restoring forces) and serve to hold the motor rotor on magnetic center during operation and away from the motor's internal thrust stops. The coupling span ordered for the equipment must consider the motor rotor as being positioned on its magnetic center.**

4.1. Examine the coupling assembly to insure there is no visible damage.

4.2. Clean the hub bore and shaft using lint free cloth. Remove any nicks or burrs. If the bore is straight, measure the bore and shaft diameters to assure proper fit. If the bore is tapered, check for a good contact pattern.

4.3. When assembled, the key(s) should have a close side-to-side fit in the keyway in both the hub and shaft, with a slight clearance over the top of the key.

⚠ **CAUTION: When heating hubs is required, use of an oven is preferred and an open flame is not recommended. If flame heating is considered mandatory, it is important to provide uniform heating to avoid distortion and excessive temperature. Use a very large rose bud tip to give an even heat**

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distribution. A thermal stick (crayon marker) applied to the hub surface will help determine the hub temperature.

DANGER!

Touching hot hubs causes burns. Wear safety gloves to avoid contact with hot surfaces.

5. Straight Bore Interference Fit – Recommended

5.1. Accurately measure the bore and shaft diameters to assure proper fit.

5.2. Install the key(s) in the shaft if applicable.

5.3. For interference fit, heat the hub in an oven or oil bath until the bore is sufficiently larger than the shaft.

5.4. 350°F (177°C) is usually sufficient for carbon steel hubs. Do not exceed 500°F (260°C). An open flame is not recommended. If flame heating is necessary, use a very large rose bud tip to give an even heat distribution. A thermal heat stick will help determine hub temperature.

ATTENTION! Do not spot heat the hub or distortion may occur.

5.5. With the hub expanded, slide the hub quickly up the shaft to the desired axial position. A pre-set axial stop device can be helpful.

5.6. Assemble and tighten the set screw(s), using a calibrated torque wrench.

6. Straight Bore Clearance Fit – THIS FIT IS NOT RECOMMENDED

6.1. Accurately measure the bore and shaft diameters to assure proper fit.

6.2. Install the key(s) in the shaft.

6.3. Install the set screws in the hub making sure they do not protrude into the keyway or the bore.

6.4. Heat the hub in an oven until the bore is sufficiently larger than the shaft.

6.5. 350°F (177°C) is usually sufficient for carbon steel hubs. Do not exceed 500°F (260°C).

6.6. With the hub expanded, install it quickly on the shaft to the desired axial position. A pre-set axial stop device can be helpful.

6.7. The set screws which hold the hub in place are tightened, using a torque wrench, to the values shown in table 1A.

7. Taper Bore –

7.1. Check for acceptable contact pattern between the hub and the shaft.

7.2. Put the hub on the shaft, without key(s), where applicable, in place.

7.3. Lightly tap hub onto the shaft with a soft mallet. This will assure a metal-to-metal fit between the shaft and hub. The resultant position will provide a starting point for the hub axial draw up.

7.4. Use a depth micrometer to measure the distance from the shaft end to the hub face. Record the dimension.

7.5. Mount a dial indicator to read axial hub movement. Set the indicator to “zero”.

7.6. Remount the hub, drawing it up the shaft to the “0” set point. Continue to advance hub up the taper to the desired axial position. A pre-set axial stop device can be helpful.

7.7. Check the final results with depth micrometer. The hub may require heating in order to reach the desired position on the shaft. 350°F (177°C) is usually sufficient for carbon steel hubs. Do not exceed 500°F (260°C).

ATTENTION! Do not spot heat the hub or distortion may occur.

7.8. Install shaft locknut or retaining plate/capscrew(s) to hold hub in place.

7.9. Inspect the assembly to verify that the hub is properly positioned. Consult Rexnord if necessary.

7.10. Install any hub axial retention device (if any) in accordance with the equipment manufacturer’s specifications.

8. Shaft Alignment –

8.1. Move the equipment into place.

ATTENTION! Soft Foot – The equipment must rest flat on its base. If one or more feet of the machine are shorter, longer, or angled in some way to prevent uniform contact (a condition commonly known as “soft foot”) it must now be corrected.

ATTENTION! To improve the life of the coupling, the shafts must be aligned to minimize deflection of the flexing elements. Shaft alignment is required in the axial, parallel, and angular directions, with each of these values not to exceed the recommended installation limits. Shaft alignment can be measured using various established methods, including Laser Alignment, Reverse Dial Indicator, and Rim and Face. Refer to Rexnord bulletin 538-214 “Coupling Alignment Fundamentals” for instructions regarding shaft alignment.

8.2. Move the connected equipment to achieve acceptable alignment. When properly aligned, the disc packs will be centered and approximately parallel to their mating flange faces and the flexing elements will have little visible waviness when viewed from the side.

ATTENTION! The disc pack is designed to an optimal thickness and is not to be used for axial adjustments by removing or adding individual discs to the pack.

8.3. Maximum and minimum values for the disc pack gap or “N” Dimension are provided. These values are suggested for initial installation only. This coupling has additional capacity to compensate for thermal and structural movements. The maximum axial capacity for these couplings is shown in Table 1.

ATTENTION! C = 2N + Center Member Length + Adapter Length

8.4. Laser Alignment is an Option – If not available, then proceed with dial indicator method.

8.5. Angular Alignment – Rigidly mount a dial indicator on either the hub or shaft, reading the face of the adapter, as shown in Figure 2. Rotate both pieces of equipment together making sure the shaft axial spacing remains constant. Adjust the equipment by shimming and/or moving it so that the indicator reading is within 0.002” per inch of coupling flange diameter “D” or values shown in Table 1.

Table 1 — Dimension “N” Limits, Suggested Maximum Alignment Values, and Locknut Tightening Torques

Coupling Size	“D” Diameter Inch	Dimension “N” Inch		Axial Capacity Inch	Thread Size	Alignment Total Indicator Reading		Locknut Torque★ †	
		Min	Max			Angular Inch	Parallel Inch	Ft-lb (in-lb)	Nm
125	3.69	0.27	0.28	± 0.036	1/4 -28	0.007	0.002” Per Inch of “C” Dimension	(156)	18
162	4.34	0.29	0.30	± 0.036	1/ 4-28	0.009		(156)	18
200	5.44	0.37	0.38	± 0.036	5/16 -24	0.011		25	34
225	5.69	0.37	0.38	± 0.036	5/16 -24	0.011		25	34
262	6.63	0.48	0.49	± 0.043	3/8 -24	0.013		30	41
312	7.81	0.51	0.52	± 0.051	7/16 -20	0.016		40	52
350	8.69	0.54	0.55	± 0.056	1/2 -20	0.017		95	129
375	9.69	0.60	0.61	± 0.062	9/16 -18	0.019		130	176
425	10.50	0.63	0.64	± 0.067	5/8 -18	0.021		175	237
450	11.31	0.73	0.75	± 0.072	11/16 -16	0.023		150 ‡	203 ‡
500	12.88	0.79	0.81	± 0.082	3/4 -16	0.026		190 ‡	258 ‡
550	14.44	0.92	0.94	± 0.092	7/8 -14	0.029		255 ‡	346 ‡
600	16.00	0.99	1.01	± 0.102	1 -14	0.032		335 ‡	454 ‡
700	18.25	1.20	1.23	± 0.115	1-1/8 -12	0.037		425 ‡	576 ‡
750	19.81	1.26	1.29	± 0.125	1-1/4 -12	0.040		560 ‡	759 ‡
800	21.50	1.33	1.36	± 0.136	1-3/8 -12	0.043		740 ‡	1003 ‡
850	23.00	1.42	1.45	± 0.144	1-1/2 -12	0.046		950 ‡	1288 ‡
925	25.00	1.51	1.55	± 0.156	1-5/8 -12	0.050		1350 ‡	1830 ‡

★ These locknut torque values are approximate for steel bolts with a light weight machine oil as received from Factory.
† **Bolts should be held from rotating while the locknuts are tightened to the values shown.**
‡ These locknuts are Cadmium plated.

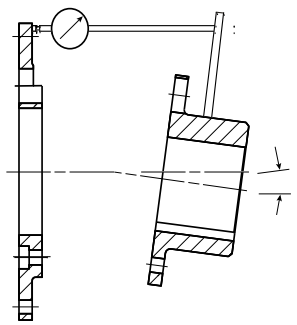

Figure 2

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8.6. These dimensions are suggested for initial installation. Additional capacity is available to compensate for thermal and structural equipment movement.

8.7. Parallel Offset – Rigidly mount a dial indicator on either the hub or shaft, reading the outside diameter of the adapter, as shown in ***Figure 3.*** Compensate for indicator set-up sag. Rotate both pieces of equipment together. Adjust the equipment by shimming and/or moving it so that the indicator reading is within 0.002" per inch of axial length between disc packs as shown in **Table 1**.

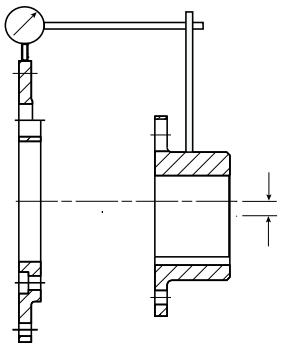

Figure 3

9. Final Assembly –

ATTENTION! if the driver or driven equipment alignment tolerances are more stringent than our recommendations, the driver or driven equipment tolerances should be applied. Be sure to compensate for thermal movement in your equipment/piping. The coupling is capable of approximately 3 times the above misalignment tolerances. However, close alignment at installation will provide longer service with smother operation and load on bearing.

DANGER!

When handling the coupling, components may sometimes slip and fall.
To prevent loss of fingers or injury do not insert fingers into any fastener holes.

ATTENTION! All bolt threads must be lubricated prior to assembly. A clean, light weight motor oil is recommended. Do not use lubricants containing molybdenum disulfide or greases, unless otherwise noted.

9.1. Verify that the equipment has been setup to provide the correct coupling "C" dimension shown in Figure 1. The "C" dimension is the distance measured between the hub flange face and the adapter flange face.

9.2. If the coupling arrived assembled, both disc packs are still attached to the hub, center member, and adapter. If the disc packs are not taped, before taking out the disc pack from the hub end, remove all but one bolt. Swing the disc pack to the outside of the coupling and reinstall one bolt and locknut to hold the pack together for assembly later. Remove this disc pack. If the coupling was shipped disassembled by component, the disc packs are factory taper together and a through bolt is not necessary to help with reassembly..

9.3. If the coupling is not preassembled, start with the disc pack on a workbench. Install a washer under (4) of the bolt heads and put these bolts into every other hole of the pack. Then flip the pack over with the threaded end of the bolts sticking upwards. Now place another thin washer onto each of the bolts.

The beveled side of the washers should always be against the disc packs.

9.4. Position the center member with the (4) bolts in the bolt holes in one of the flanges of the spacer. Secure with locknuts that are to be torqued to the value shown in **Table 1**. Note On sizes 850 through 1300 the SuperBolt® may be used. If used refer to **Table 1B** for tightening torque values.

9.5. Mount the flywheel adapter to the disc pack by putting the bolts through the small diameter holes in the adapter from the back side seating the head of the bolt in the slot provided. Add a washer to each bolt installed on the adapter.

The beveled side of the washers should always be against the disc packs.

9.6. Install adapter to spacer flange that has disc pack mounted by positioning bolts installed in adapter to remaining bolt holes in disc pack and pressing together until firmly seated against disc pack and threads of bolt are exposed through disc pack on spacer flange side. Place another washer to the bolts with the beveled side against the disc pack. Install lock nut to bolts and torque to value shown in Table 1 or Table 1B if SuperBoltss® are used. The disc pack when installed should look flat and parallel with the mating adapter and spacer flange.

9.7. With the hub mounted and the span "C:" length set, proceed to put the sub-assembly (Flywheel, disc pack, and spacer) into place between the flywheel and hub. Bolt the adapter to the flywheel in per the equipment manufactures instructions.

9.8. Install the remaining disc pack. Rotate the hub or spacer assembly so that the hub bolt holes line up between the spacer bolt holes. Make sure that one of the small diameter bolt holes lines up with one of the large diameter clearance holes of the other flange. Start a bolt through the bolt hole in the hub. Install a washer onto the bolt once it is exposed through the flange. Hold the disc pack in one hand, slip it down between the hub and spacer flange until one of the bolt holes in the disc pack lines up with the bolt. Slide the bolt through the hole in the disc pack. Add a washer to the bolt.

☞ **The beveled side of the washers should always be against the disc packs.**

9.9. Install the locknut finger tight at this time. Follow the same procedure for the remaining bolts in the smaller diameter holes in the hub pivoting the disc pack to line up the hole for the next bolt. For the bolt holes installed through the large diameter clearance holes in the hub install a washer on the bolt with the beveled side of washer facing the disc pack, put bolt through the clearance hole then through the disc pack. Once the bolt is through the disc pack add a washer to the bolt, with the beveled side toward the disc pack, between the disc pack and the spacer flange. Proceed with putting the bolt through the flange bolt hole. Install the locknut to the bolts. The disc pack as installed should look flat and parallel with the mating hub and spacer flange.

9.10. Make the final coupling alignment check.

9.11. Tighten all of the locknuts use the torque values in **TABLE 1** or **TABLE 1B** if SuperBolts® were used. **Note:** Due to the locknut body clearances, it may be necessary to use an open end wrench type tool attached to your torque reading tool to tighten the locknuts at the head end.

☞ **ATTENTION!** It is recommended that all locknuts are retightened and checked after several hours of initial operation.

Table 1A – Set Screw Tightening Torques

Set Screw 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 1B – SuperBolt® "Jackbolt" Tightening Torques

Coupling Size	Thread Size	SuperBolt® Nut	Torque	
			Ft-lb	Nm
850	1-1/2-12	MT-150-12/w	32	43
925	1-5/8-12	MT-162-12/w	38	52
1000	1-3/4-12	MT-175-12/w	53	72
1100	1-7/8-12	MT-187-12/w	70	95
1200	2-1/8-8	MT-212-12/w	83	113
1300	2-1/8-8	MT-212-12/w	83	113

⚠ **CAUTION: Tightening torques stamped on SuperBolt® Nuts are not applicable for use on Thomas Couplings. Only the torque values in this chart should be applied when installing SuperBolt® Nuts on any Thomas Coupling. Consult Rexnord for any questions.**

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