

THOMAS Flexible Couplings

Type ~~CMR~~/AMR

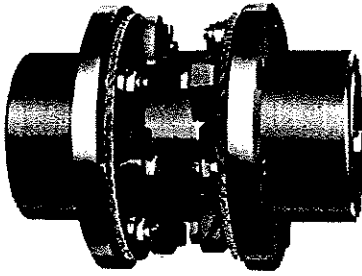
More information on any of these items may be obtained from:

Rexnord Corporation
Coupling Operation
304 Main Avenue
P.O. Box 549
Warren, PA. 16365
Phone: (814) 723-6600
Fax: (814) 726-1740

THOMAS FLEXIBLE DISC COUPLINGS



TYPE AMR



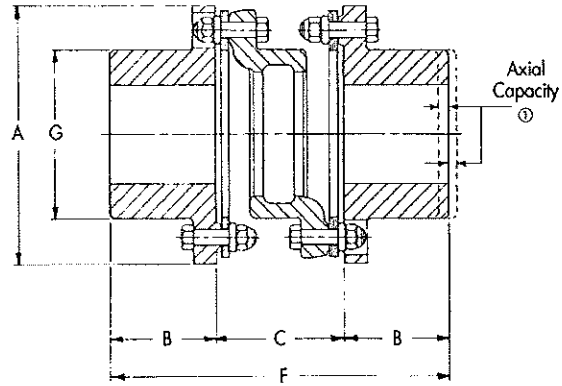
AMR couplings are designed for use in the heavy-duty, slow-to-medium speed field. They are used extensively on heavy-duty motor and engine drives that have high starting torque, shock load, torque reversal, or continuous alternating torque.

All hubs are cast alloy iron and machined on all critical surfaces to provide indicator points for easy alignment. Center members, Sizes 162-600, are cast alloy iron, and Sizes 700 and up are cast steel. The open lug-type center member gives ample clearance for assembly while minimizing the space required for coupling installation.

The disc packs are available in Tormaloy or stainless steel. Stainless steel is recommended for corrosive applications. Bolts are alloy steel, and may be furnished plated.

General Dimensions (in.)

Coupling Size	Rough Bore ^③	Max. Bore ^④	A	B	C	F	G
162	—	1 1/8	4 1/2	1 1/4	2 3/8	6 1/8	2 3/8
200	—	2	5 1/4	2 1/8	3	7 1/4	3 1/8
225	—	2 1/4	6	2 1/2	3	8	3 3/8
262	—	2 3/8	6 7/8	2 7/8	3 1/2	9 1/4	4 1/8
312	—	3 1/8	8 1/4	3 3/8	4 1/4	10 3/8	5 1/8
350	—	3 1/2	9 1/8	3 3/4	4 3/8	12 1/8	6
375	—	3 3/4	10 1/8	4	5 1/4	13 1/8	6 1/2
425	—	4 1/4	11	4 1/4	5 5/8	14 1/8	7
450	—	4 1/2	11 1/4	4 1/2	5 13/16	14 13/16	7 1/8
500	2 1/16	5	13 1/8	5	6 13/16	16 13/16	8 3/8
550	2 1/4	5 1/2	15	5 1/2	7 1/4	18 1/4	9 1/4
600	3 1/16	6	16 3/4	6	8 7/16	20 7/16	10 1/16
700	4 1/16	7	18 1/16	7	9 5/8	23 3/8	11 3/4
750	4 3/16	7 1/2	20 5/8	7 1/4	10 1/2	25	12 3/8
800	5 3/16	8	22 3/8	7 3/4	11 1/8	26 3/8	13 3/4
850	5 7/16	8 1/2	23 3/4	8 1/4	12 1/2	28 3/8	14 1/2
925	5 15/16	9 1/4	25 1/4	9	13 1/4	31 1/4	15 1/8
1000	6 1/2	10	28 1/4	9 1/2	14 1/2	33 1/2	17 1/2
1100	7	11	30 3/4	10 1/4	15 1/2	36	18 1/2
1200	7 1/2	12	33 3/8	11	17 1/8	39 1/8	20 1/4
1300	8	13	36	12	18 5/8	42 5/8	22 1/2
1550	8 1/2	15 1/2	39 1/4	14 1/2	19 1/8	48 1/8	26



Selection Table

Coupling Size	Max. Horsepower Per 100 RPM					③ Max. RPM	Max. Continuous Torque (lb.-in.)	⑦ Peak Overload Torque (lb.-in.)	② Weight (lbs.)	② WR ² (lb.-in. ²)	① Axial Capacity (in.)
	Service Factor										
	1.0	1.5	2.0	2.5	3.0						
162	6.9	4.6	3.4	2.8	2.3	2,500	4,350	5,200	9	20	±0.036
200	13.5	9.0	6.7	5.4	4.5	2,500	8,500	10,000	14	55	±0.036
225	19.0	12.7	9.5	7.6	6.3	2,500	12,000	14,400	19	71	±0.036
262	24.3	16.2	12.1	9.7	8.1	2,500	15,300	18,300	28	148	±0.043
312	34.1	22.8	17.1	13.7	11.4	2,500	21,500	25,800	49	367	±0.051
350	46.2	30.8	23.1	18.5	15.4	2,300	28,600	34,300	68	624	±0.056
375	59.7	39.8	29.9	23.9	19.9	2,200	37,800	45,300	92	1,020	±0.062
425	81.7	53.8	40.5	32.4	26.7	2,000	50,000	60,000	118	1,600	±0.067
450	107.7	71.7	53.8	42.3	35.2	1,900	66,900	80,000	142	2,140	±0.072
500	142.7	95.7	71.7	57.2	47.2	1,800	89,000	107,000	202	4,240	±0.082
550	192.7	127.7	95.7	77.2	63.2	1,800	119,000	143,000	278	6,900	±0.092
600	252.7	167.7	127.7	101.2	83.2	1,500	159,000	191,000	375	11,000	±0.102
700	332.7	217.7	167.7	133.2	111.2	1,250	219,000	263,000	570	21,500	±0.115
750	427.7	282.7	217.7	173.2	143.2	1,200	293,000	351,000	830	32,300	±0.125
800	542.7	362.7	282.7	223.2	183.2	1,000	393,000	472,000	1,190	58,600	±0.136
850	682.7	457.7	352.7	283.2	233.2	1,000	517,000	617,000	1,700	89,200	±0.144
925	892.7	612.7	462.7	373.2	303.2	1,000	1,040,000	1,248,000	2,390	106,000	±0.156
1000	1,152.7	792.7	602.7	483.2	393.2	900	1,399,000	1,660,000	3,390	164,000	±0.172
1100	1,492.7	1,042.7	782.7	633.2	513.2	800	1,889,000	2,270,000	4,890	253,000	±0.183
1200	1,932.7	1,342.7	1,012.7	813.2	663.2	650	2,489,000	2,980,000	6,890	408,000	±0.203
1300	2,472.7	1,742.7	1,312.7	1,043.2	843.2	600	3,289,000	3,940,000	9,390	561,000	±0.218
1550	4,502.7	3,002.7	2,252.7	1,813.2	1,513.2	600	7,840,000	9,400,000	15,150	889,000	±0.242

For larger sizes, consult Rexnord. For ordering instructions, see pages 39-41.

① All Thomas disc couplings meet NEMA frame sleeve bearing motor specifications without modifications or the addition of end-float restricting devices.

② Weight and WR² at maximum bore.

③ AMR Couplings are not furnished dynamically balanced. If balancing is required, use Series 52.

④ Hub sizes 162 through 450 furnished without a finished bore will be solid.

⑤ Special hub available for size 600 with 6 1/4 max. bore. Consult Rexnord.

⑥ Straight bores with no keyway require a steel hub. Consult Rexnord.

⑦ The Peak Overload Torque is not an alternating torque limit.

Note: Dimensions subject to change. Certified dimensions of ordered material furnished on request.

THOMAS FLEXIBLE DISC COUPLINGS

ORDERING INSTRUCTIONS

PROCEDURES

The following bore will be furnished when **tolerance and type of fit** are not specified. (Does not apply to miniature and DBZ stocked bores.)

Nominal Bore Dia.		
Over	Thru	Bore Tolerance
....	1½	+ .0000 - .0005
1½	3	+ .0000 - .001
3	6	+ .0000 - .0015
6	12	+ .0000 - .002

See page E-48 for types of fits and shaft dimensions.

- ① Quantity
- ② Coupling Size and Type
- ③ Bore Sizes
- ④ Keyway and Setscrew Sizes (if non-standard)
- ⑤ Dynamic balancing if required
- ⑥ Additional Data (where applicable):
 - (a) Disc Pack material (if other than Tomaloy).
 - (b) Free or interference fit on shafts (if shaft diameters are given).
 - (c) Complete details on tapered bore requirements. Page E-49.
 - (d) On DBZ-A Couplings:
 - (1) Identify bore of standard hub, and bore of extended hub.
 - (e) On SN, SF, and SV Couplings:
 - (1) Corrosion Resistance Class
 - (2) "L" Dimension
 - (3) Dynamic Balancing if required
 - (4) Sketch of Stub shaft (SF only) if non-standard
 - (5) On SV, identify bore of upper hub and lower hub.
 - (f) On BMR Couplings:
 - (1) Solid shaft diameter, if ordered
 - (2) "L" Dimension
 - (g) On CMR Couplings:
 - (1) Adaptor; Page E-42.
 - (a) Outside Diameter
 - (b) Bolt Circle Diameter
 - (c) Bolt Hole Diameter
 - (d) Number of Bolts and Spacing

EXAMPLES

- 2 pcs. No. 450 SN, Class C, bores 3⅞" and 4¼", L = 35", dynamically balanced.
- 5 pcs. No. 263 DBZ, stainless steel discs, 2¼" bore one hub, ⅝" x ⅝₁₆" keyway; 2½" bore other hub, ⅝" x ⅝₁₆" keyway.
- 3 pcs. No. 162 BMR, bore one hub 1¼", taper bore other hub per Drawing XYZ, diameter of solid shaft 1", L = 11".
- 10 pcs. No. 226 SN Disc Packs, stainless steel.
- 2 pcs. No. 75 DBZ-A Extended Hubs, bore ¾", keyway and setscrew.
- 1 pc. No. 163 DBZ Center Member assembly.
- 8 pcs. No. 262 SN Singles (no floating shaft), Class A, 2⅝" bore one hub, ¾" x ⅝" keyway, setscrew; 2⅞" bore other hub, ½" x ¼" keyway, setscrew.

REX ROLLER CHAIN COUPLINGS

PROCEDURES

- ① Quantity
- ② Coupling Number
- ③ Bore Sizes
Class II clearance fit unless otherwise specified.
- ④ Keyway and Setscrew Sizes (if non-standard).
- ⑤ Coupling Cover (if required).
- ⑥ Free fit or interference fit on shafts (if shaft diameters are given).

EXAMPLES

- 3 pcs. No. D60-18, bores 2" and 2⅞", ⅝" x ⅝₁₆" keyway and setscrew both hubs, with coupling covers.
- 3 pcs. No. D60-18 Coupling Chains.
- 6 pcs. No. D35-18 Coupling hubs, bore 1" with ⅜" x ⅜₃₂" keyway and setscrew.

THOMAS FLEXIBLE DISC COUPLINGS

ORDERING INFORMATION

BORE SPECIFICATIONS

Couplings will be bored in accordance with AGMA STANDARD 9002-A86[Ⓞ] for Flexible Couplings. The type of bore fit normally supplied by Rexnord is listed below.

Roller Chain	Straight Bore — Class II Clearance Fit for Both Stock and Bore-to-Order Sizes [Ⓞ]
DBZ	Straight Bore — Class I Clearance Fit — Stocked Straight Bore — Interference Fit on Bore-to-Order Sizes [Ⓞ] Taper Bore — To Customer Specification
AMR, BMR, CMR, SN, SF, SV, ST Series 42, 52, 54, 71, 75	Straight Bore — Interference Fit on All Bores [Ⓞ] Taper Bore — To Customer Specification
Series 63/64	All Bores per Customer Specification
Miniatures	See page E-45

[Ⓞ] Unless specified otherwise by customer.
[Ⓞ] Previously this was AGMA Standard 511.

Standard Keyways Dimensions-Tolerances

Nominal Shaft Diameter		Keyway			Keyway Tolerance		Depth
Over	Thru	Width	Depth	Width	Depth		
3/16	7/16	3/32	3/64	±.0005	±.002	+.015 -.000	
7/16	7/8	7/16	3/16	±.0005	±.002		
7/8	1 1/4	7/8	3/8	±.0005	±.002		
1 1/4	1 3/4	1 1/4	3/4	±.0005	±.002		
1 3/4	2 1/4	1 3/4	1 1/4	±.0005	±.0025	+.023 -.000	
2 1/4	2 3/4	2 1/4	1 3/4	±.0005	±.003		
2 3/4	3 1/4	2 3/4	2 1/4	±.0005	±.003		
3 1/4	3 3/4	3 1/4	2 3/4	±.0005	±.003		
4 1/4	5 1/4	4 1/4	3 1/4	±.0010	±.0035	+.030 -.000	
5 1/4	6 1/4	5 1/4	4 1/4	±.0010	±.004		
6 1/4	7 1/4	6 1/4	5 1/4	±.0010	±.004		
7 1/4	8	7 1/4	6 1/4	±.0010	±.004		

[Ⓞ] Rectangular keyways recommended for shafts over 6 1/2" diameter.
[Ⓞ] Close Side Fit Keyways — Recommended for reversing torque, drives, or other drives which are vibratory in nature, or where zero backlash is required. A close side fit keyway will be furnished on all Disc type couplings unless specified by the customer.
[Ⓞ] Free Side Keyways — Recommended for use on smooth, unidirectional drives where fitting of key as assembly cannot be tolerated. A free side fit keyway will be furnished on Roller Chain and DBZ couplings with Class I clearance fits unless specified by customer.

Bore Sizes

Shaft Dia.	Clearance Fit		Interference Fit	Shaft Dia.	Clearance Fit		Interference Fit
	Class I	Class II			Class I	Class II	
1/2	500-501	500-502	4990-4995	2 3/8	2,375-2,376	2,375-2,377	2,373-2,374
5/8	625-626	625-627	6240-6245	2 1/2	2,500-2,501	2,500-2,502	2,498-2,499
3/4	750-751	750-752	7490-7495	2 3/4	2,625-2,626	2,625-2,627	2,623-2,624
7/8	875-876	875-877	8740-8745	2 1/2	2,750-2,751	2,750-2,752	2,748-2,749
1	1,000-1,001	1,000-1,002	9990-9995	2 7/8	2,875-2,876	2,875-2,877	2,873-2,874
1 1/8	1,125-1,126	1,125-1,127	1,1240-1,1245	3	3,000-3,001	3,000-3,002	2,998-2,999
1 1/4	1,250-1,251	1,250-1,252	1,2490-1,2495	3 1/4	3,250-3,251	3,250-3,253	3,247-3,248
1 3/8	1,375-1,376	1,375-1,377	1,3740-1,3745	3 1/2	3,500-3,501	3,500-3,503	3,497-3,498
1 1/2	1,500-1,501	1,500-1,502	1,4990-1,4995	3 3/4	3,625-3,626	3,625-3,628	3,622-3,623
1 5/8	1,625-1,626	1,625-1,627	1,623-1,624	3 1/2	3,750-3,751	3,750-3,753	3,747-3,748
1 3/4	1,750-1,751	1,750-1,752	1,748-1,749	4	4,000-4,001	4,000-4,003	3,997-3,998
1 7/8	1,875-1,876	1,875-1,877	1,873-1,874	4 1/2	4,500-4,502	4,500-4,504	4,498-4,499
2	2,000-2,001	2,000-2,002	1,998-1,999	5	5,000-5,002	5,000-5,004	4,998-4,999
2 1/8	2,125-2,126	2,125-2,127	2,123-2,124	5 1/2	5,500-5,502	5,500-5,504	5,498-5,499
2 1/4	2,250-2,251	2,250-2,252	2,248-2,249	6	6,000-6,002	6,000-6,004	5,998-5,999

Consult Rexnord for unlisted sizes or bores over 6-inch diameter.

Q.D. AND TAPER-LOCK* BUSHING SELECTION AND CROSS REFERENCE

In order to cross reference tapered bushing and bore sizes to a coupling selection, the following tables will cover the majority of cases.

* Reg. TM of others.

Taper-Lock* Type

Bushing Size	Coupling Size and Type				
	Maximum Bore	DBZ	SV, SF, SN	Series 52, 54	AMR, BMR, CMR, ST
1108	1 1/8	126	125	125	162
1215	1 1/4	163	162	162	200
1310	1 3/8	201	200	200	200
1610	1 5/8	201	200	200	200
1615	1 5/8	201	200	200	200
2012	2	226	226	225	262
2517	2 1/2	263	262	262	312
2525	2 1/2	263	262	262	262
3020	3	351	350	350	375
3030	3	351	312	312	350
3535	3 1/2	401	375	375	425

Note: "C" Dimension will be as listed for all couplings.
"F" Dimension will vary according to bushing selection.
Consult Rexnord for "F" dimensions with bushings.

Hubs bored for Q.D. or TAPER-LOCK* bushings will be modified for proper fit with bushing length. Consult Rexnord for specific dimensional data.

If specific reference to the coupling series or type is not found in the table, i.e. special designs, comparison of the shaft size with the maximum bore table only, will indicate the correct taper bushing in the left side of each table. Other flange style and compression bushings can be used with coupling hubs.

Q.D. Type

Bushing Size	Coupling Size and Type				
	Maximum Bore	DBZ	SV, SF, SN	Series 52, 54	AMR, BMR, CMR, ST
JA	1 1/4	126	125	125	162
SH	1 3/8	163	162	162	200
SDS	1 5/8	201	200	200	225
SD	1 5/8	201	200	200	225
SK	2 1/2	263	262	262	262
SF	2 1/2	301	312	312	312
E	3 1/8	401	375	375	375
F	3 1/8	.....	.....	.....	.....

[Ⓞ] With shallow keyway. Key supplied with bushing where shallow keyway is furnished.

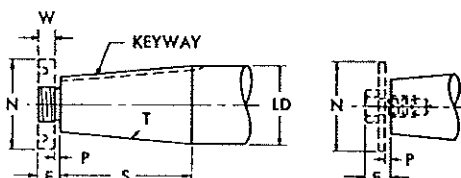
Note: Dimensions subject to change. Certified dimensions of ordered material furnished on request.

THOMAS FLEXIBLE DISC COUPLINGS

ORDERING INFORMATION TAPERED BORES

Information Required

1. Drawing of HUB showing complete bore and keyway details
— OR —
2. Drawing of SHAFT with dimensions shown below, allowing Rexnord to bore hubs to suit.



- (LD) Large Diameter, Specify in Decimals.
 (S) Length of Taper, Measure parallel to Shaft centerline.
 (T) Taper per Foot, Difference in Diameter in one foot length.
 (P) Clearance space for drawing Hub up on tapered shaft. Usually 1/8" or 1/4", depending on shaft size and taper.

Keyway: Width, Depth

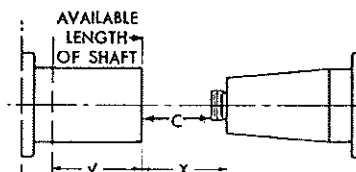
Note: Specify if keyway is parallel to Taper or if parallel to shaft center line.

Specify depth at larger diameter of Taper if keyway is parallel to shaft center line.

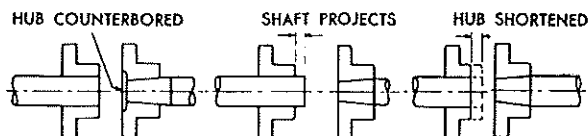
Supplemental Taper Bore Information

With connected equipment in fixed position, the following additional information is necessary:

Dimensions "V" and "X" must be given when one or both connected machines are fixed on their bases. Advise if dimension "X" is fixed, or if variable between what limits.



A fixed "X" dimension may require altered or special coupling hubs. Often the straight bored hub can be positioned on its shaft allowing the use of a standard coupling. See illustrations below.



Consult A.G.M.A. Standard 9002-A86⁰ "Taper Bores for Flexible Couplings" for new application.

⁰ Previously this was A.G.M.A. Standard 513.01.

LOCKNUT TIGHTENING TORQUES

Properly tightened locknuts are essential in achieving maximum coupling torque. This table suggests the approximate locknut tightening torque values of disc couplings. Torque should be measured at the locknut while it is being turned.

The tightening torques apply to remove locknuts as received from the factory. If plated hardware is used, tightening torque must be modified to suit.

Stainless steel hardware requires special consideration. The tightening torques must be reduced to 60% of the values shown. Bolt and locknut threads must also be liberally coated with a molybdenum disulphide grease.

Bolting instructions for Series 63 Couplings are included with coupling installation procedures.

Disc Couplings
Approximate Locknut Torque — Ft.-Lbs.

Coupling Size	Coupling Types		Coupling Size	Coupling Types	
	DBZ-A DBZ-B DBZ-C	SN, SF, SV, AMR, BMR, ST Series 42 52, & 54		DBZ-A DBZ-B DBZ-C	SN, SF, SV, AMR, BMR, ST Series 42 52, & 54
50	2	2	312	....	40
62	3	3	350	....	95
75	3	3	351	175	....
100	....	8	375	....	130
101	8	....	401	200	....
125	....	13	425	....	175
126	13	....	450	....	200
162	....	13	454	260	....
163	13	....	500	....	260
200	....	25	550	....	350
201	25	....	600	....	490
225	....	25	700	....	630
226	43	25	750	....	830
262	....	30	800	....	1100
263	63	....	850	....	1400
301	95	....	925	....	1800

Note: Dimensions subject to change. Certified dimensions of ordered material furnished on request.

THOMAS FLEXIBLE DISC COUPLINGS

GENERAL ALIGNMENT INSTRUCTIONS

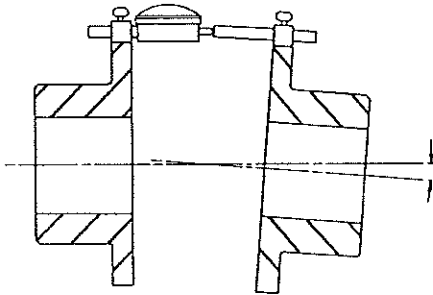
Correct installation and alignment will assure long life and smooth, trouble free service. Refer to specific instruction sheet, which accompanies shipment, for style of coupling being installed.

Two methods are commonly accepted:

1. Dial indicator method (recommended for precise measurement).
2. Caliper and straight edge (alternate method).

For complete alignment information contact Rexnord — ask for Bulletin MT-SS-004-01

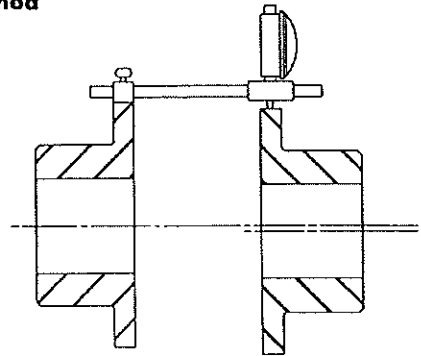
Dial Indicator Method (Preferred)



CHECK FOR ANGULAR MISALIGNMENT

Dial indicator measures maximum longitudinal variation in hub spacing through 360° rotation.

1. Attach dial indicator to hub, as with a hose clamp; rotate coupling 360° to locate point of minimum reading on dial; then rotate body or face of indicator so that zero reading lines up with pointer.
2. Rotate coupling 360°. Watch indicator for misalignment reading.
3. Driver and driven units will be lined up when dial indicator reading comes within maximum allowable variation for that coupling style. Refer to specific installation instruction sheet for the coupling being installed.

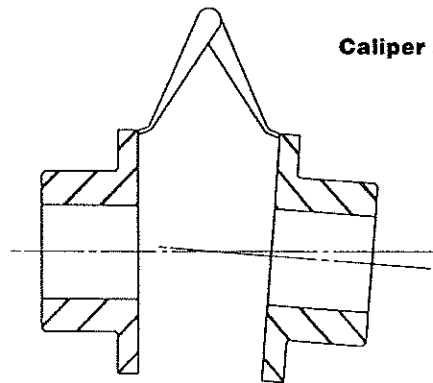


CHECK FOR PARALLEL MISALIGNMENT

Dial indicator measures displacement of one shaft center line from the other.

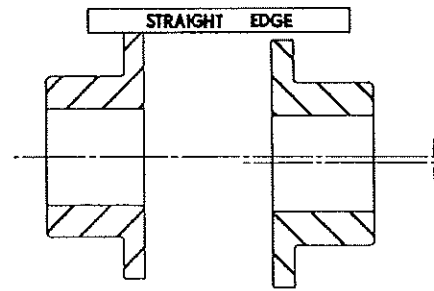
4. Reset pointer to zero and repeat above operations 1 and 2 when either driven unit or driver is moved during aligning trials.
5. Check for parallel misalignment as shown. Move or shim units so that parallel misalignment is brought within the maximum allowable variations for the coupling style.
6. Coupling should be rotated several revolutions to make sure no "end-wise creep" in connected shafts is measured.
7. Tighten all locknuts or capscrews. Do not turn bolts.
8. Re-check and tighten all locknuts or capscrews after several hours of operation.

Caliper and Straight Edge Method



CHECK FOR ANGULAR MISALIGNMENT

1. Use calipers to check the gap between hubs. Gap should be the same at all points around the hub.
2. Place straight edge on the rims at the top and sides. When the coupling is in alignment the straight edge should rest evenly and both disc pack assemblies should be in a perfect plane at right angles to the straight edge.



CHECK FOR PARALLEL MISALIGNMENT

3. Tighten all locknuts or capscrews. Do not turn bolts.
4. After several hours of operation recheck gap between hubs, and recheck tightness of all locknuts or capscrews.

Roller Chain Couplings

For Roller Chain couplings, NGLI # 1 (multi-purpose) grease is recommended. A heavier grease is recommended for use in a high temperature environment.

Where "Interference Fits" are used, heat the hubs in oil, oven or under soft flame. (Do not exceed 350°). Quickly position hubs on shafts being careful to maintain proper hub spacing.

CAUTION

All rotating power transmission products are potentially dangerous and must be properly guarded for the speeds and applications for which they were intended.

TYPE CMR/AMR Couplings

Thomas® Installation Instruction

Warning: All rotating power transmission products are potentially dangerous and must be properly guarded in compliance with OSHA standards for the speed and applications for which they are intended. It is the responsibility of the user to provide proper guarding.

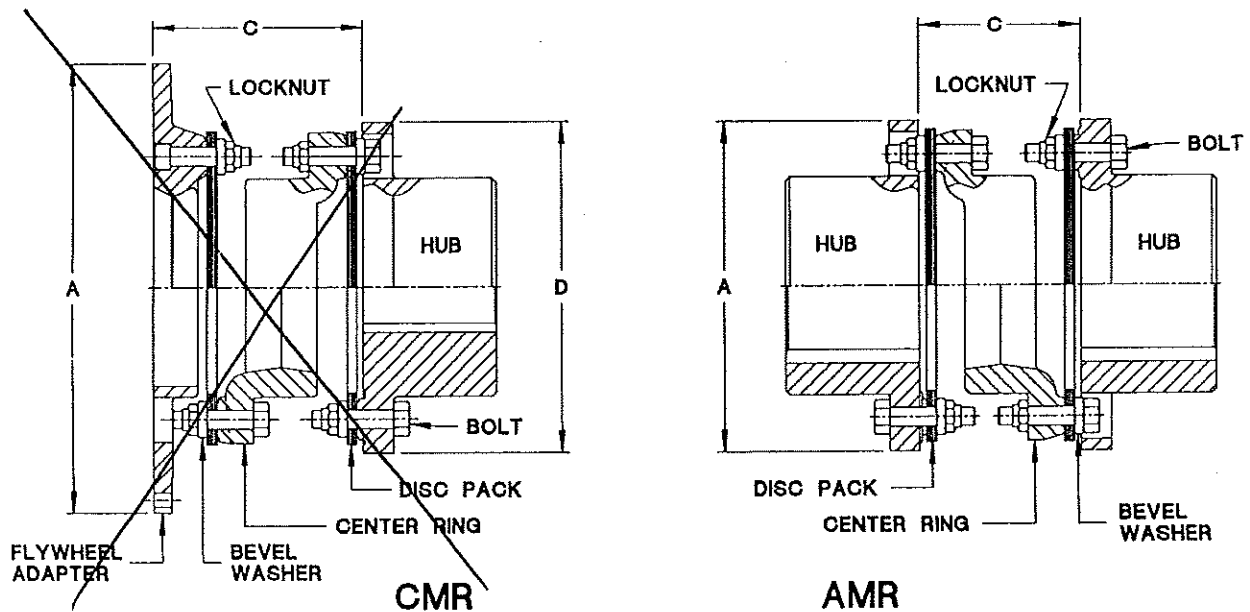


Figure 1

- I. **Purpose:** These instructions are intended to help you to install, align, and maintain your THOMAS coupling.
- II. **Scope:** Covered here will be general information, hub mounting, alignment, assembly, locknut torquing, disc pack replacement, and part numbers.
- III. **General Information:** The coupling, as received, may or may not be assembled. If assembled, the locknuts are not torqued. Examine the parts to assure there is no visible damage. If coupling is assembled, remove the bolts, locknuts, and washers that attach the hub(s) to the disc pack. Remove the hub(s). Leave the disc packs attached to the center ring and the flywheel adapter (when used).
- IV. **Hub Mounting:**
 - A. **General.** Clean hub bore and shaft. 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 an oil bath or oven until bore is sufficiently larger than the shaft. 350 degrees 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. **Taper Bore.** Put the hub on the shaft without key(s) in place. Lightly tap hub up 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 this 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 hub and install key(s). Remount hub, drawing it up the shaft to the "0" set point. Continue to advance 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 depth micrometer. The hub may have to be heated in order to reach the desired position on the shaft. **DO NOT SPOT HEAT THE HUB OR DISTORTION MAY OCCUR.** Install shaft locknut to hold hub in place.

V. **SHAFT ALIGNMENT.** Move equipment into place.

- A. **Soft Foot (footplane).** The equipment must sit flat on its base. Any soft foot must be corrected now.
- B. **Axial Spacing.** The axial spacing of the shaft should be positioned so that the disc packs (flexing elements) are flat 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. Move the connected equipment or hub(s) on their respective shaft(s) to accomplish the above.

NOTE: The disc pack is designed to an optimal thickness and is not to be used for axial adjustments.

As a guide, maximum and minimum values for dimension "C" 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. **Angular Alignment.** Rigidly mount a dial indicator on one hub or shaft, reading the face of the other hub flange or flywheel adapter, 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 Chart (A).

- D. **Parallel Offset.** Rigidly mount a dial indicator on one hub or shaft, reading the other hub flange or flywheel adapter 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 .002 inch per inch of the axial length between flex elements. See Chart (A).

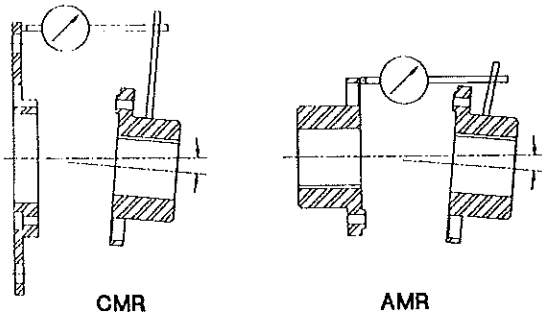


Figure 2

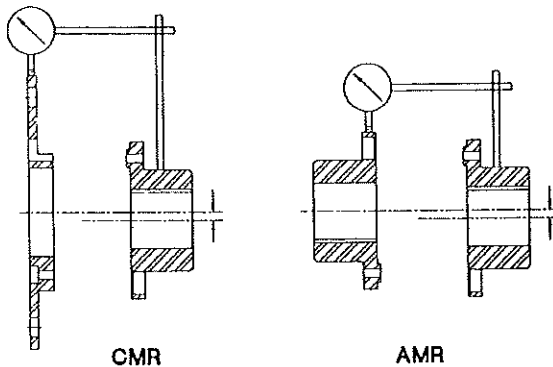


Figure 3

NOTE: If the driver or driven equipment alignment specification is tighter than these recommendations, then those manufacturer's specifications should be used. Also, be sure to compensate for any thermal growth which may occur during normal equipment operation. The coupling is capable of approximately three times the shaft misalignment tolerances shown in the chart below. However, the more exact the alignment is at installation will definitely result in a much longer coupling life and smoother operation.

COUPLING SIZE	TOTAL INDICATOR READING (T.I.R.)		
	ANGULAR for AMR	ANGULAR for CMR	PARALLEL
162	.009	.002 INCHES PER INCH OF "A" DIA.	.005
200	.011		.006
225	.012		.006
262	.014		.007
312	.016		.008
350	.018		.009
375	.020		.010
425	.022		.011
450	.024		.012
500	.027		.014
550	.030		.015
600	.033		.017
700	.036		.019
750	.041		.021
800	.045		.023
850	.047		.024
925	.051	.026	
1000	.056	.029	
1100	.060	.031	
1200	.067	.034	
1300	.073	.036	

CHART (A)

VI. **FINAL ASSEMBLY.** With the coupling in good alignment, the bolts will fit through the holes in the flanges and the disc packs more easily. See Figure 1.

A. When fly wheel adapter is used - CMR.

1. If the coupling arrived assembled, the disc packs, center ring, and flywheel adapter are still attached. Before taking the disc pack off the hub end, first install one hub bolt through the disc pack and secure with a locknut. This will help when the pack is reinstalled later. Remove disc pack. If the coupling was shipped disassembled, the bolt through the pack is not required as the discs in the pack are factory-taped together.
2. If coupling is not preassembled, start with the center ring on a work bench. Put the bolts through the bolt holes at one end. Slide the disc over the bolts. Add the washers. **The beveled side of the washer should always be against the disc pack.** Secure with the locknuts. Torque locknuts to the value shown in Table 1. Now mount the flywheel adapter to this disc pack by putting the bolts through the holes in the adapter from the back side seating the head of the bolt in the slot provided and then through the remaining disc pack holes. Add the washers, and secure with the locknuts. The locknuts can now be torqued to the values shown in Table 1.

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

If the coupling was preassembled (flywheel adapter, disc pack, and center ring) the locknut in this sub assembly can be torqued to the values shown in Table 1.

The disc pack when installed should look flat and parallel with mating adapter and center ring fingers.

3. With the hub mounted and the span length "C" set, proceed to put the sub-assembly (flywheel adapter, disc pack, and center ring) into place between the flywheel and hub. Bolt the adapter to the flywheel in the manner prescribed by the engine manufacturer.
4. Now install the remaining disc pack. Rotate the hub or center ring so that the hub bolt holes line up between the center ring fingers. Start a bolt through the bolt hole in the hub. Hold the disc pack in one hand, slip it down between the hub and center ring until one hole in the disc pack lines up with the bolt. Slide the bolt through this hole into the disc pack. Add a washer. **The beveled side of the washer should always be against the disc pack.** Install the locknut.

Do not torque the locknut at this time. Remove the disc pack alignment bolt if used. Now pivot the pack around until it lines up with the rest of the bolt holes in the hub. Install the rest of the hub bolts through the hub bolt holes, disc pack, washers, and locknuts. The remaining bolts for this end can now be installed. These bolts go in from the hub side first through the washer, the disc pack and then the bolt hole in the center ring adding the locknut. The locknuts can be snugged up at this time. The disc pack as installed should look flat and parallel with the mating hub and center ring fingers.

5. Make the final coupling alignment check at this time.
6. Torque up the locknuts. See Table 1 for torque values.

NOTE: Due to tight nut body clearances, it may be necessary to use an open end wrench to torque the locknuts at the head end. The lock nut torque value can be easily calculated. Take the foot/pounds required

and divide it by the weight of the mechanic. This gives you the length of pipe needed to go over the wrench. The mechanic's weight hanging on this horizontal length of pipe will put the desired inch/pounds of torque on the locknut.

Example: A #925 CMR requires 1800 ft/lbs of torque. Mechanic's weight is 200 lbs.
 $1800/200 = 9$ The distance from the center of the locknut to the mechanic should be 9 feet. This is a dead weight hanging force.

It is recommended that all locknuts be retorqued after several hours of initial operation.

B. When two hubs are used - AMR.

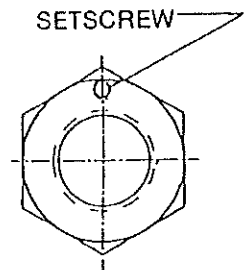
1. If the coupling arrived assembled, the disc packs are still attached to the center ring. Before taking the disc packs off, first install one hub bolt through each disc pack and secure with a locknut. This will help when the pack is reinstalled later. Remove disc pack. If the coupling was shipped disassembled, the bolt through the pack is not required as the discs in the pack are factory-taped together.
2. With the hubs mounted and the span length "C" set, proceed to put the center ring into place between the two hubs. Care should be taken when handling the center ring.

Support the center ring on wood blocks, with nylon straps from a hoist, or some other convenient way. It may help to support the end not being worked on with bolts through the center ring bolt holes and into the hub flange bolt holes. This will hold the parts in line at that end.

3. Now install the disc pack. Rotate the hub or center ring so that the hub bolt holes line up between the center ring fingers. Start a bolt through a bolt hole in the hub. Hold the disc pack in one hand, slip it down between the hub and the center ring until one hole in the disc pack lines up with the bolt. Slide the bolt through this hole into the disc pack. Add a washer. **The beveled side of the washer should always be against the disc pack.** Install the locknut.

Table 1
Locknut
Tightening
Torques

Coupling Size	CMR="D AMR="A Diameter	Dimension "C" for CMR		Dimension "C" for AMR		Axial Capacity (In.)	Thread Size	Torque Ft.-Lbs. (In.-Lbs.)
		Min.	Max.	Min.	Max.			
162	4.56	3.33	3.35	2.64	2.66	± .036	1/4-28	156*
200	5.75	3.89	3.91	3.02	3.04	± .036	5/16-24	25
225	6.00	3.89	3.91	3.02	3.04	± .036	5/16-24	25
262	6.88	4.45	4.47	3.52	3.54	± .043	3/8-24	30
312	8.12	5.33	5.36	4.14	4.17	± .051	7/16-20	40
350	9.12	5.89	5.92	4.58	4.61	± .056	1/2-20	95
375	10.06	6.64	6.67	5.14	5.17	± .062	9/16-18	130
425	11.00	7.14	7.17	5.58	5.61	± .067	5/8-18	175
450	11.88	7.64	7.67	5.96	5.99	± .072	11/16-16	200
500	13.44	8.77	8.81	6.83	6.87	± .082	3/4-16	260
550	15.00	9.89	9.93	7.71	7.75	± .092	7/7-14	255*
600	16.75	10.89	10.94	8.46	8.51	± .102	1-14	335*
700	18.94	12.46	12.52	9.65	9.71	± .115	1-1/8-12	425*
750	20.62	13.53	13.59	10.53	10.59	± .125	1-1/4-12	560*
800	22.38	14.78	14.85	11.40	11.47	± .136	1-3/8-12	740*
850	23.75	15.78	15.85	12.15	12.22	± .144	1-1/2-12	950*
925	25.75	17.28	17.35	13.28	13.35	± .156	1-5/8-12	1800
1000	28.25	18.59	18.67	14.53	14.61	± .172	1-3/4-12	2350
1100	30.25	19.84	19.92	15.53	15.61	± .183	1-7/8-12	3000
1200	33.38	21.59	21.69	17.09	17.19	± .203	2-1/8-8	4000
1300	36.00	23.36	23.46	—	—	± .218	2-1/8-8	4000



NOTE:

1. These torque values are approximate for steel bolts with lubricated threads.
2. Bolts should be held from rotating while the locknuts are torqued to the values shown.
3. *These locknuts are cad plated.

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

Do not torque any locknuts at this time. Remove the disc pack alignment bolt if used. Now pivot the pack around until it lines up with the rest of the bolt holes in the hub. Install the rest of the hub bolts through the hub bolt holes, disc pack, washers, and locknuts. The remaining bolts for this end can be put through the center ring bolt holes, disc pack, washers, and locknuts. The locknuts can be snugged up at this time. The disc pack installed should look flat and parallel with the mating hub and center ring fingers.

4. Now proceed to the other end of the coupling. Remove the support bolts, if used, supporting the center ring in one of the other ways. Using paragraph "VI.B.3" above install the second disc pack to the hub. The remaining bolts for this end can now be installed. These bolts go in from the hub side first through the washer, the disc pack and then the bolt hole in the center ring adding the locknut. The locknuts can be snugged up at this time. The disc pack as installed should look flat and parallel with the mating hub and center ring fingers.
5. Make the final coupling alignment check at this time.
6. Torque up the locknuts. See Table 1 for torque values.

It is recommended that all locknuts be retightened after several hours of initial operation.

7. For further help with the installation or alignment, consult Rexnord.

NOTE: It may be necessary to use an open end wrench to torque the locknuts at the hub end due to the lack of room.

7. For further help with the installation or alignment, consult Rexnord.

VII. Disc Pack Replacement. If it becomes necessary to replace the disc pack, it can be done as follows:

- A. At the hub end of the coupling, remove all locknuts and washers. Back out and remove all but one bolt. It may be necessary to tap the ends of the bolts with a soft hammer to start them out. Pivot the disc pack out. Put one of the coupling bolts through the pack securing it with a locknut. This will keep the discs together and maintain the disc orientation for later reinstallation if reused. Remove the last bolt and slide the pack out.

~~B. For the CMR coupling~~

1. Remove the bolts that hold the flywheel adapter to the flywheel. Remove the adapter, disc pack, center ring assembly and put it on a bench.
2. Remove all the locknuts, washers, and bolts that hold the center ring to the disc pack. Remove the center ring. Before removing the disc pack, put a bolt through the pack and secure with a locknut. Remove the rest of the locknuts, washers, and bolts.
3. Replace parts as necessary. Recheck alignment per Section V. Reassemble per Section VI.A.

C. For the AMR coupling

1. Now disassemble the other end per "VII.A" above being sure to support the center ring when taking out the last bolts. Remove the center ring.
2. Replace parts as necessary. Recheck alignment per Section V. Reassemble per Section VI.B.

VIII. FOR REPLACEMENT PARTS, see Table 2.

Table 2 Part Numbers and Quantity Required

Size of CMR Cplg.	FLYWHEEL ADAPTER	Hub	Center Ring	Disc Pack Two per Cplg.		Washer		Bolt		Locknut	
				Tom-aloy	Stain-less						
				Part No.	Part No.	Part No.	Part No.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
162	1 PER COUPLING MADE TO CUSTOMERS' SPECIFICATIONS	811410	811050	710663	310663	002161	12	511049	12	916504	12
200		322058	120959	210665	710665	002170	12	211046	12	316505	12
225		622050	320960	210984	610984	002170	16	211046	16	316505	16
262		322047	720826	010985	210985	002167	16	110717	16	716506	16
312		021395	720752	010957	310957	210957	16	910966	16	116507	16
350		721392	820897	810952	010952	019098	16	310968	16	516508	16
375		921797	921373	410943	610943	019100	16	210924	16	916509	16
425		221838	321377	810986	010986	910928	16	210929	16	316510	16
450		122088	121376	210987	410987	710916	16	010917	16	716511	16
500		321936	920941	420735	620735	810919	16	310918	16	116512	16
550		021647	930642	110962	310962	910920	16	210921	16	039125*	16
600		120943	937205	710959	910959	610901	16	910923	16	020253*	16
700		621073	830400	-	420803	910935	16	110936	16	020254*	16
750		622262	130597	-	921021	611079	16	811080	16	202055*	16
800		931467	330562	-	220851	710991	16	510990	16	020256*	16
850		531608	430458	-	020793	810978	16	610977	16	020257*	16
925	002228	002232	-	020958	011043	16	713897	16	913898	16	
1000	002216	002220	-	721034	411083	16	211082	16	112543	16	
1100	002222	002226	-	421151	311167	16	111166	16	212014	16	
1200	002235	002240	-	521630	002237	16	511627	16	412015	16	
1300	008671	015963	-	411734	008674	16	511735	16	412015	16	

*These locknuts are cad plated.

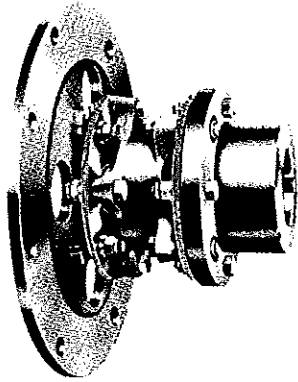


For further assistance, call Rexnord Corp. Coupling Operation, Warren, PA — 814-723-6600
FAX - 814-726-1740

THOMAS FLEXIBLE DISC COUPLINGS

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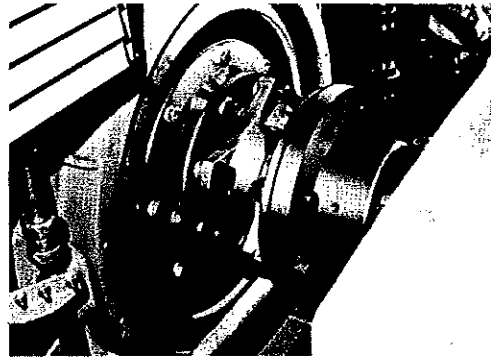
FLYWHEEL ADAPTER TYPE CMR



CMR coupling between engine and reciprocating compressor.

TYPE CMR HEAVY DUTY COUPLINGS are designed with an adapter plate which bolts directly to the flywheel of an engine or compressor. The adapters are made to fit accurately into the recess in the flywheel, and external strains on the crankshaft resulting from misalignment of the driven equipment are minimized. The CMR coupling is designed to withstand reversing and vibratory torques from the engine or driven unit.

All hubs and adapters are cast alloy iron. Special steel hubs are available where required. Center members, Sizes 162-600 are cast alloy iron, and Sizes 700 and up are cast steel. Disc packs are available in either Tormaloy or stainless steel. Stainless is recommended for corrosive applications. Nuts and bolts are alloy steel and may be furnished plated.



FLYWHEEL ADAPTER INFORMATION

Adapters can be furnished to accommodate virtually any flange design. Where possible, the user should select dimensions from the tables below, as these represent industry stan-

dards and thus are the most economical selection. Note that most sizes are available either with SAE bolting or Thomas heavy duty bolting.

Available Adapters

Coupling Size	ADAPTERS AVAILABLE IN SHADED SIZES											
	8.500	9.500	10.375	12.375	13.875	16.000	18.375	20.375	22.500	26.500	28.875	
CMR	8.498	9.498	10.373	12.373	13.873	15.998	18.373	20.372	22.497	26.497	28.872	
162												
200												
225												
262												
312												
350												
375												
425												
450												
500												
550												
600												
700												
750												
800												
850												

AVAILABLE IN THESE SIZES

Sizes 925 to 1550 — Adapting dimensions on request

Bolting

Standard A Diameter	LIGHT DUTY SAE BOLTING			HEAVY DUTY THOMAS BOLTING		
	Bolt Circle	No. Holes	Size (Dia.)	Bolt Circle	No. Holes	Size (Dia.)
8 1/2	7 7/8	6	1 1/32	7 1/2	8	1 1/32
9 1/2	8 3/4	8	1 1/32	8 5/8	8	1 5/32
10 3/8	9 3/8	6	1 3/32	9 1/2	8	1 5/32
12 3/8	11 3/8	8	1 3/32	11 1/2	8	1 7/32
13 3/8	13 3/8	8	1 3/32	12 1/2	8	2 1/32
16	—	—	—	14 7/8	8	2 5/32
18 3/8	17 1/4	8	1 7/32	16 3/4	8	2 5/32
20 3/8	19 1/4	8	1 7/32	18 1/2	8	2 5/32
22 1/2	21 3/4	6	2 1/32	20 1/2	8	1 1/32
26 1/2	25 1/4	12	2 1/32	24 1/2	12	1 1/32
28 1/2	27 1/4	12	2 5/32	26 7/8	12	1 1/32

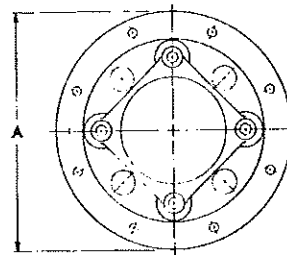
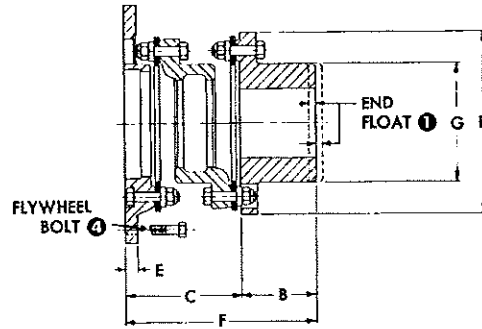
Note: Dimensions subject to change. Certified dimensions of ordered material furnished on request.

THOMAS FLEXIBLE DISC COUPLINGS

FLYWHEEL ADAPTER TYPE CMR

General Dimensions (In.)

Coupling Size	Rough Bore ⓐ	ⓑ Max. Bore	Ⓒ Min. "A" Dia.	B	C	Ⓓ ⓐ D	E	F	G
162	—	1 1/8	6 1/4	1 1/4	3 3/16	4 13/32	5/16	5 7/16	2 3/4
200	—	2	7 3/8	2 1/8	3 7/8	5 3/4	3/8	6	3 5/8
225	—	2 1/4	7 5/8	2 1/2	3 3/8	6	3/8	6 3/8	3 3/8
262	—	2 3/8	8 7/8	2 7/8	4 7/16	6 7/8	7/16	7 3/16	4 1/2
312	—	3 1/8	10	3 3/8	5 5/16	8 1/8	1/2	8 11/16	5 1/16
350	—	3 1/2	10 3/8	3 3/4	5 7/8	9 1/8	1/2	9 3/8	6
375	—	3 3/4	11 7/8	4	6 3/8	10 1/16	9/16	10 3/8	6 1/2
425	—	4 1/4	13 3/8	4 1/4	7 1/8	11	5/8	11 3/8	7
450	—	4 1/2	14 3/4	4 1/2	7 5/8	11 7/8	1 1/16	12 1/8	7 7/16
500	2 13/16	5	16 1/2	5	8 3/4	13 7/16	3/4	13 3/4	8 3/8
550	3 7/16	5 1/2	18	5 1/2	9 7/8	15	7/8	15 5/8	9 1/16
600	3 13/16	6 ⓐ	19 1/2	6	10 7/8	16 3/4	1	16 3/8	10 7/16
700	4 7/16	7	22 1/2	7	12 7/16	18 13/16	1	19 1/16	11 3/4
750	3	7 1/2	24	7 1/4	13 1/2	20 3/8	1 1/8	20 3/4	12 3/8
800	4	8	25 3/8	7 3/4	14 3/4	22 3/8	1 1/4	22 1/2	13 3/4
850	4 1/2	8 1/2	27 3/8	8 1/4	15 3/4	23 3/4	1 1/4	24	14 1/2
925	5	9 1/4	28 3/8	9	17 1/4	25 3/4	1 3/8	26 1/4	15 1/8
1000	5	10	31 3/8	9 1/2	18 3/16	28 1/4	1 5/8	28 3/16	17 1/2
1100	5	11	33 3/8	10 1/4	19 3/16	30 1/4	1 3/4	30 1/16	18 1/2
1200	7 7/16	12	37 1/16	11	21 1/16	33 3/8	2	32 3/16	20 1/4
1300	8	13	39 3/8	12	23 3/16	36	2 1/8	35 3/16	22 1/8
1550	8 1/2	15 1/2	43 3/8	14 1/2	23 3/4	39 1/4	2 3/8	38 3/4	26



Selection Table

Coupling Size	Max. Horsepower Per 100 RPM					ⓐ Max. RPM	Max. Continuous Torque (Lb.-In.)	Peak Overload Torque (Lb.-In.)	ⓑ Weight (Lbs.)	ⓑ WR ² (Lb.-In. ²)	ⓑ End Float (In.)
	Service Factor										
	1.0	1.5	2.0	2.5	3.0						
162	6.9	4.6	3.4	2.8	2.3	2,500	4,350	5,200	8	27	±.036
200	13.5	9.0	6.7	5.4	4.5	2,500	8,500	10,000	12	68	±.036
225	19.0	12.7	9.5	7.6	6.3	2,500	12,000	14,400	16	130	±.036
262	24.3	16.2	12.1	9.7	8.1	2,500	15,300	18,300	26	189	±.043
312	34.1	22.8	17.1	13.7	11.4	2,500	21,500	25,800	40	391	±.051
350	76.2	50.8	38.1	30.5	25.4	2,300	48,000	57,600	56	630	±.056
375	99.7	66.5	49.8	39.9	33.2	2,200	62,800	75,300	77	1,040	±.062
425	127	84.7	63.5	50.8	42.3	2,000	80,000	96,000	101	1,780	±.067
450	157	105	78.6	62.9	52.4	1,900	99,000	118,800	126	2,470	±.072
500	232	154	116	92.7	77.2	1,800	146,000	175,200	180	4,760	±.082
550	300	200	150	120	100	1,800	189,000	226,800	245	7,700	±.092
600	414	276	207	166	138	1,500	261,000	313,200	330	12,300	±.102
700	659	439	329	263	220	1,250	415,000	498,000	500	23,300	±.115
750	846	564	423	338	282	1,100	533,000	639,600	610	34,300	±.125
800	1087	725	544	435	362	1,000	685,000	822,000	800	58,700	±.136
850	1297	865	648	519	432	1,000	817,000	980,000	975	73,300	±.144
925	1651	1101	825	660	550	1,000	1,040,000	1,248,000	1,180	107,000	±.156
1000	2063	1376	1032	825	688	900	1,300,000	1,560,000	1,650	155,000	±.172
1100	2460	1640	1230	984	820	800	1,550,000	1,860,000	1,950	247,000	±.183
1200	2889	1926	1445	1156	963	650	1,820,000	2,180,000	2,550	407,000	±.203
1300	3450	2300	1725	1380	1150	600	2,170,000	2,610,000	3,320	567,000	±.218
1550	4500	3000	2250	1800	1500	600	2,840,000	3,400,000	4,100	840,000	±.242

For larger sizes, consult Rexnord. For ordering instructions, see pages E47-E49.

- ⓐ Thomas Flexible Disc Couplings meet NEMA specification MG1-14.37 without modification or additional end-float restricting devices.
- ⓑ Larger bores, with shallow keyways, are available. Consult Rexnord.
- ⓑ Flywheel bolts are not supplied with coupling.
- ⓑ Maximum speeds are based on smallest available adapter O.D. For higher speeds, consult Rexnord.
- ⓑ Weight & WR² at max. bore & min. adapter dia.
- ⓑ Special hub available for size 600 with 6 3/8 max. bore. Consult Rexnord.
- ⓑ Hub sizes 162 through 500 furnished without a finished bore will be sold.

Note: Dimensions subject to change. Certified dimensions of ordered material furnished on request.

Type AMR, ~~BMR~~, ~~CMR~~, ~~ST~~ Couplings

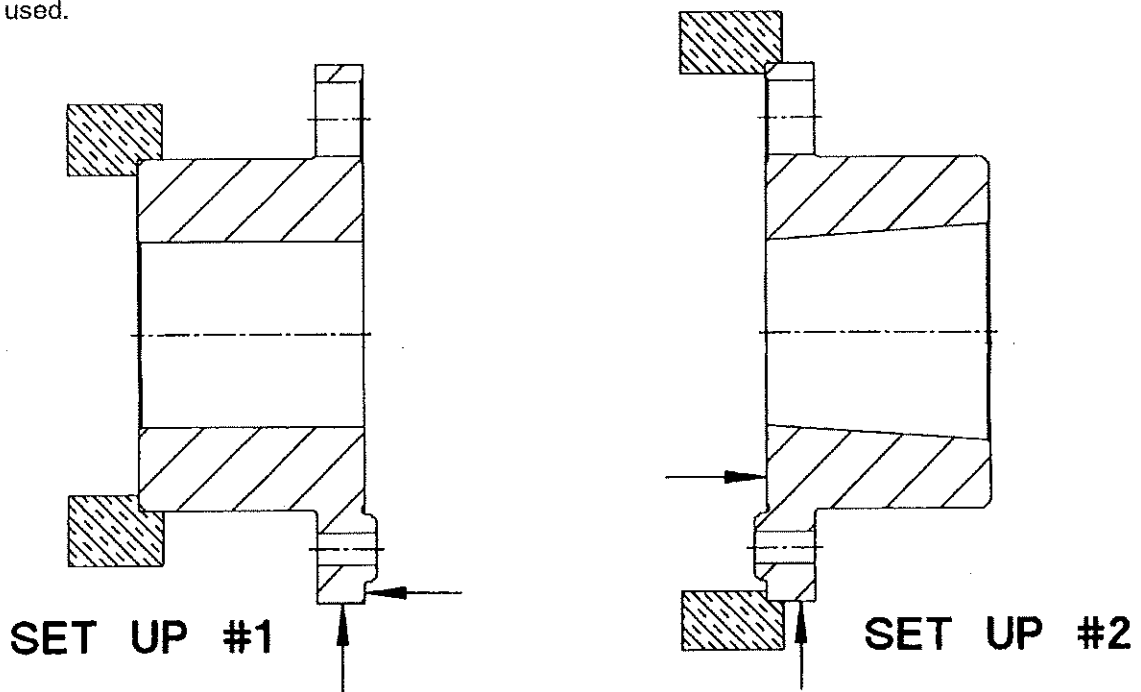
Thomas® HUB REBORE INSTRUCTION

A coupling is a rotating member used to connect two shafts. It is important that proper centering of the hub bores be maintained to help minimize the unbalance in the coupling and to assure the maximum misalignment of the coupling is maintained.

When chucking the hub in the following manner, the arrow indicated the surface toleranced to the bore. (see chart below for maximum values)

Set up #1 is usually used for straight bore hubs. The indicator can be placed on the flange face and on flange O.D.

Set up #2 is used for taper bore hubs. The jaw face must be indicated and machined in tolerance or a rebore plate maybe used.



Coupling Size	Flange O.D.	Flange Face
162, 200, 225, 262, 312	.001 TIR	.002 TIR
350, 375, 425	.0015 TIR	.0025 TIR
450, 500, 550, 600, 700, 750	.002 TIR	.0025 TIR
800, 850, 925, 1000	.0025 TIR	.0030 TIR

TIR - Total Indicator Reading Inches.



For further assistance, call Rexnord Corp. Coupling Operation, Warren, PA
814-723-6600 FAX 814-726-1740