

TYPE ST, BMR SINGLE, SN SINGLE COUPLINGS

Thomas[®]

Installation Instructions

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.

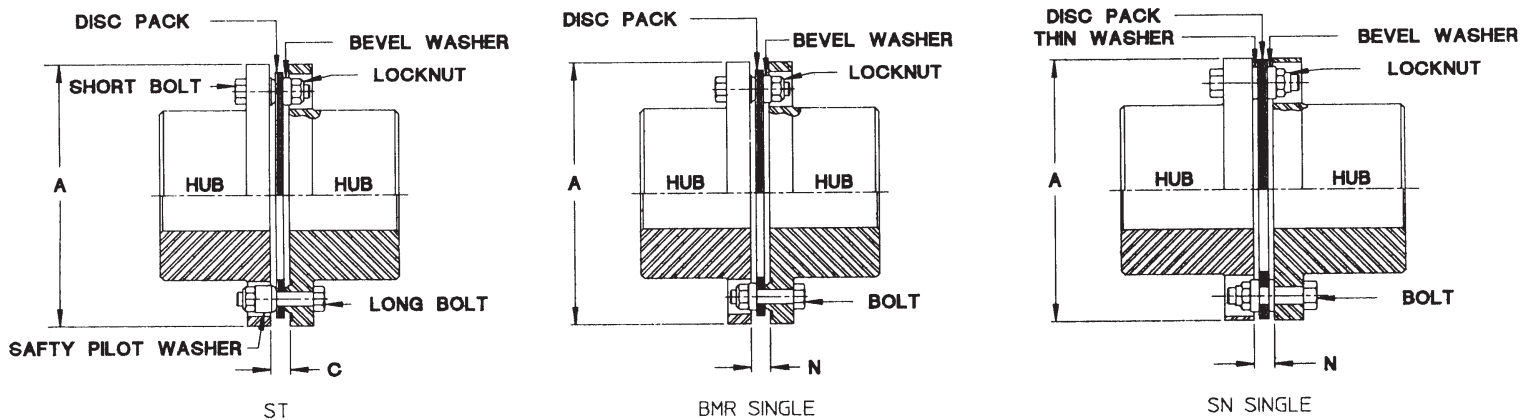
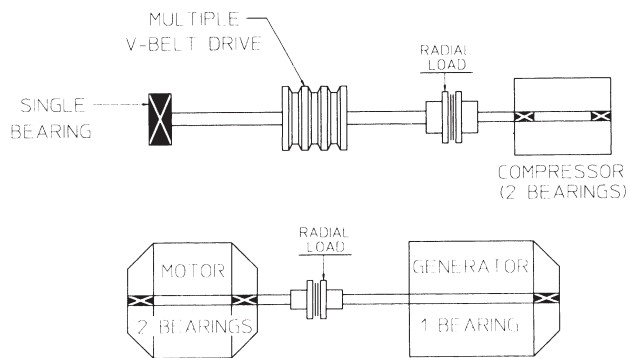


FIGURE 1

The ST, BMR Single, and SN Single couplings are designed for applications which require the couplings to support a radial load while accommodating angular misalignment. Typical installations include close-coupled motor generator sets or motor compressor units where one shaft is fully supported in its own bearings, and the other shaft is single-bearing supported. The radial load is transmitted through the coupling to the inner bearing of the other shaft.

Belt drives can be designed to utilize this type of coupling to eliminate a jack shaft bearing and transfer radial loading directly to a machine bearing. Such arrangements are economical and space saving. See the sketches below.



SINGLE-FLEX COUPLINGS CANNOT ACCOMMODATE PARALLEL OFFSET MISALIGNMENT. They are not suitable for connecting equipment where both shafts are held radially rigid in their own bearings.

The SN Single and BMR Single are used for single-flexing applications where light-to moderate radial loads occur. The ST is used for higher radial loads.

The SN Single and BMR Singles couplings are also used for floating shaft applications where the user wishes to supply his own intermediate solid shaft. For information on this arrangement, refer to the installation instructions for SN or BMR couplings.

These instructions cover the single-flexing applications only.

- 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 that attach the hubs to the disc packs. Remove one hub leaving disc pack attached to the other hub. Before removing the disc pack, install a bolt and nut through the pack to keep it held together for later assembly. The coupling hubs must be mounted on their respective shafts before moving the last piece of drive equipment into place.

IV. 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 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.
- 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 a 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. Assembly

- A.** With the hubs mounted, put the last piece of drive equipment into place and set the gap "C" & "N".
- B.** Support the free shaft end. Rotate one hub so that the hub bolts line up with the other hub clearance holes. Start a bolt through the bolt hole in the hub flange and just through a thin washer (on a size 262 or larger.) **The beveled side of the washer should always be against the pack.** Hold the disc pack in one hand, slip it down between the two flanges until one hole in the pack lines up with bolt.. Slide the bolt through this hole and add a washer and a locknut.

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 first hub.

Install the rest of the bolts through the bolt holes, thin washer (if called for), disc pack, washer into the clearance hole of the second hub flange, and add a locknut. **NOTE:** when installing the thin washer, it may be helpful to use a stiff wire with one end bent into a hook to put a around the O.D. of the washer. This will assist in lining up the washer with the hole. The remaining bolts can be put through the second hub flange bolt holes, thin washer (if called for), disc pack, washer into the clearance hole in the first hub flange and add a locknut. The locknuts can be snugged up at this time making sure that the washers are positioned on the ground body of the bolts. Disc pack, when installed and aligned, should look flat and parallel with the mating flanges.

VI. Shaft Alignment. With the equipment in place and coupling assembled, align the units.

- A. Soft Foot.** The equipment must sit flat on its base. Any soft foot must be corrected now.
- B. Axial Spacing.** The axial spacing of the shafts should be positioned so that the disc packs (flexing elements) are flat when the equipment is running under normal conditions. This means there is a minimal amount of waviness in the disc pack when viewed from the side. This will result in a flexing element that is centered and parallel to its mating flanges faces. Move the connection equipment or hubs on their respective shafts 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" & "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 the coupling are also given. See Table 1 and Figure 1.

NOTE: Single-flexing couplings can accommodate only angular misalignment and are, therefore, not suitable for drives where each shaft is supported rigidly in two bearings.

C. Angular Alignment. As these couplings are single flex, they must be aligned using a shaft angular approach. See Figures 2 and 3.

NOTE: In order to use this procedure, the coupling must be fully assembled. See Section V, Final assembly.

Rigidly mount a dial indicator on the shaft or hub, reading the face on the other hub. Rotate both shafts together making sure the shaft axial spacing remains constant. Adjust the equipment by shimmed and/or moving so that the indicator is within .002 inch per inch of hub flange diameter. See Table 1.

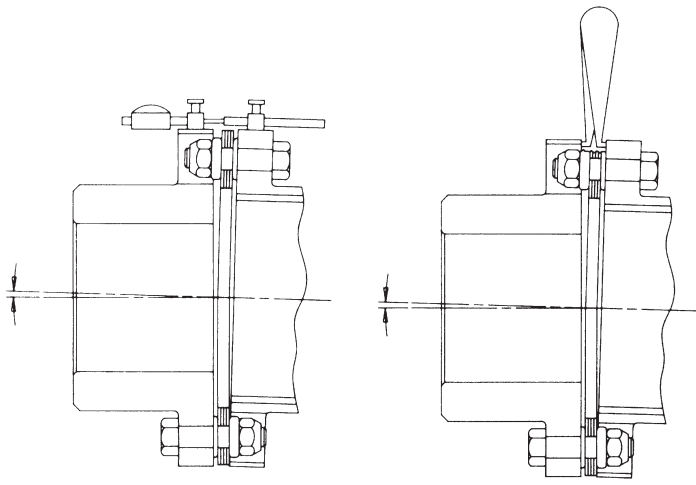


FIGURE 2

FIGURE 3

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

D. Now torque up the locknuts. See Table 1 for torque values.

NOTE: With the coupling in good alignment the bolts will fit through the holes in the flanges and the disc pack more easily.

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

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

TABLE 1 – Locknut Tightening Torques and Suggested Maximum Alignment Values

COUPLING		"A" DIAMETER	DIMENSION "C" & "N"		AXIAL CAPACITY	THREAD SIZE	TORQUE FT.-LBS. (IN.-LBS.)	TOTAL INDICATOR READING (T.I.R.)
SIZE	TYPE		MIN.	MAX.				ANGULAR
100	SN	3.22	.46	.47	± .019	#12-28	(96)	.006
125	SN	3.84	.53	.54	± .023	1/4-28	(156)	.008
162	ST/BMR SN	4.59 4.34	.41 .55	.42 .56	± .018	1/4-28	(156)	.009
200	ST/BMR SN	5.75 5.44	.45 .58	.46 .59	± .018	5/16-24	25	.011
225 226	ST/BMR SN	6.00 5.81	.45 .59	.46 .60	± .018	5/16-24	25	.012
262	ST/BMR SN	6.88 6.69	.54 .48	.55 .49	± .022	3/8-24	30	.014
312	ST/BMR SN	8.13 7.81	.63 .51	.64 .52	± .026	7/16-20	40	.016
350	ST/BMR SN	9.13 8.69	.70 .55	.67 .56	± .028	1/2-20	95	.018
375	ST/BMR SN	10.06 9.69	.88 .60	.82 .62	± .031	9/16-18	130	.020
425	ST/BMR SN	11.00 10.50	.88 .63	.90 .65	± .034	5/8-18	175	.022
450	ST/BMR SN	11.88 11.31	.95 .79	.88 .81	± .036	11/16-16	150*	.024
500	ST/BMR T-SN	13.44 12.88	1.13 .79	1.07 .81	± 0.41	3/4-16	190*	.027
550	ST/BMR T-SN	15.00 14.44	1.32 .92	1.26 .94	± .046	7/8-14	255*	0.03
600	ST/BMR T-SN	16.75 16.00	1.38 .99	1.41 1.02	± .051	-114	335*	.033
700	BMR T-SN	18.94 18.25	1.58 1.20	1.61 1.23	± .058	1 1/8-12	425*	.038
750	BMR T-SN	20.63 19.81	1.76 1.26	1.8 1.30	± .062	1 1/4-12	560*	.041
800	BMR	22.38	1.83	1.88	±.068	1 3/8-12	740*	.045
850	BMR	23.75	2.01	2.06	± .072	1 1/2-12	950*	.048
925	BMR	25.75	2.26	2.32	± .078	1 5/8-12	1800	.051

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

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

This will keep the discs together and maintain the disc orientation for later reinstallation. Remove the last bolt and slide the pack out.

- A. Supporting the free shaft end, remove all the locknuts and washers. Back out and remove all but one bolt. It may be necessary to tap the ends of one bolt with a soft hammer to start them out. Pivot the disc pack out. Put one of the coupling bolts through the pack. Put the locknut on.

- B. Replace parts as necessary. Assemble per Section V. Check per Section VI.

VIII. For replacement parts, see Table 2.

TABLE 2 – Part Numbers and Quantity Required

COUPLING		HUB (NOBORE) 2 PER CPLG.	DISC PACK 1 PER CPLG.		BEVEL WASHER STEEL	THIN WASHERS STEEL (SN ONLY)	SAFETY PILOT WASHERS (ST ONLY)	SHORT BOLT	LONG BOLT (ST ONLY)	LOCK NUTS							
SIZE	TYPE	TOM- ALLOY	STAIN- LESS														
PART NO.	PART NO.	PART NO.	PART NO.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.				
100	SN	216105	810619	310619	511192	4		–	0	411161	4	–	0	516503	4		
125	SN	816107	910618	310618	002161	4		–	0	510728	4	–	0	916504	4		
162	ST BMR SN	811410	710663	310663	002161	3		311412	3	511049	3	111411	3	916504	6		
		811410						0	511049	6	–	0	6				
		216132						0	510728	6	–	0	6				
200	ST BMR SN	322058	210665	7106657	002170	3		611384	3	211046	3	411383	3	316505	6		
		322058	210665	810664				0	211046	6	–	0	6				
		816133	610664	–				0	210721	6	–	0	6				
225 226	ST BMR SN	622050	002360	002361	002170	4		611384	4	211046	4	411383	4	316505	8		
		622050	210984	610984				0	211046	8	–	0	8				
		416134	210984	610984				0	210721	8	–	0	8				
262	ST BMR SN	322047	002364	002365	002167	4	–	311645	4	–	0	511646	4	716506	8		
		322047	010985	210985				–	0	–	0	–	0				
		526624	010985	210985				014762	8	–	0	110717	8		–	0	8
312	ST BMR SN	021395	411005	611005	002165	4	–	111488	4	–	0	911487	4	116507	8		
		021395	010957	210957				–	0	–	0	–	0				
		426630	010957	210957				017142	8	–	0	910966	8		–	0	8
350	ST BMR SN	721392	610931	810931	019098	4	–	911358	4	–	0	711357	4	516508	8		
		721392	810952	010952				–	0	–	0	–	0				
		526636	810952	010952				019099	8	–	0	310968	8		–	0	8
375	ST BMR SN	921797	510851	710851	019100	4	–	311810	4	–	0	511811	4	916509	8		
		921797	410943	610943				–	0	–	0	–	0				
		026642	410943	610943				019101	8	–	0	210924	8		–	0	8
425	ST BMR SN	211838	610927	810927	910928	4	–	211893	4	–	0	411894	4	316510	8		
		211838	810986	101986				–	0	–	0	–	0				
		226648	810986	010986				019102	8	–	0	210929	8		–	0	8
450	ST BMR SN	122088	410909	610909	710916	4	–	511793	4	–	0	711796	4	716511	8		
		122088	2109877	410987				–	0	–	0	–	0				
		326654	210987	410987				711655	8	–	0	010917	8		–	0	8
500	ST BMR TSN	321936	620629	002370	610919	4	–	611976	4	310918	4	011977	4	116512	8		
		321936	420735	620735				–	0	310918	8	–	0				
		634415	420735	620735				–	0	516095	8	–	0		8		
550	ST BMR TSN	021647	020636	220636	910920	4	–	111643	4	210921	4	911642	4	039125*	8		
		021647	110962	310962				–	0	–	0	–	0				
		034416	110962	310962				311750	16	–	0	716096	8		–	0	8
600	ST BMR TSN	120943	–	210902	610901	4	–	711035	4	910923	4	811039	4	020253*	8		
		120943	710959	910959				–	0	–	0	910923	8		–	0	8
		234417	710959	910959				–	0	612127	16	–	0		916907	8	–
700	BMR TSN	621073	–	420803	910935	8	–	–	0	110936	8	–	0	202254*	8		
		434410	–	420803				–	0	–	0	116098	8		–	0	8
		–	–	–				511413	16	–	0	–	0		–	0	8
750	BMR TSN	622262	–	921021	611079	8	–	–	0	811080	8	–	0	020255*	8		
		003126	–	921021				–	0	–	0	316099	8		–	0	8
		–	–	–				111803	16	–	0	–	0		–	0	8
800	BMR	931467	–	220851	710991	8	–	–	0	510990	8	–	0	020256*	8		
850	BMR	531608	–	20793	810978	8	–	–	0	610977	8	–	0	020257*	8		
925	BMR	002228	–	20958	011043	8	–	–	0	713897	8	–	0	913898	8		

* These lock nuts are cad plated.



For further assistance, call Rexnord Coupling Division
New Berlin, WI – 800-767-3539, Fax - 262-796-4064