How to Use This Manual

This manual provides detailed instructions on installation, removal, maintenance, and part descriptions. Use the table of contents below to locate required information.

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CAREFULLY FOLLOW THE INSTRUCTIONS IN THIS MANUAL FOR OPTIMUM PERFORMANCE AND TROUBLE-FREE SERVICE.

Introduction

This manual applies to Type MCF rigid moment couplings, sizes 3030 thru 3095. The couplings are designed to shaft mount a gear drive to a shaft. The couplings will generally be mounted horizontally but they can be mounted vertically as well. MCF couplings are available with interference fit hubs with one key (Type 2), keyless hubs with shrink discs (Type 4), or a combination of Type 2 and Type 4 hubs. See Figure 1 and Figure 8.

The performance and life of couplings depend largely upon how you install and service them.

***WARNING**: Consult applicable local and national safety codes for proper guarding of rotating members. Observe all safety rules when installing or servicing couplings.*

***WARNING**: Lockout starting switch of prime mover and remove all external loads from drive before installing or servicing couplings.*

***WARNING**: Do not service the coupling without first completely reading installation, alignment, and maintenance instructions. The compressive fit between the shaft and hub provides both support for the drive assembly and transmits the torque. Failure to achieve correct fit between the shaft and hub, and between the two hubs, can result in damage to the system components and has the potential to cause serious injury to personnel in the immediate vicinity.*

***CAUTION**: Visual movement of the drive and assembly is normal. The movement is due to shaft and coupling connection runout. DO NOT restrain this movement; to do so will adversely load the reducer low-speed shaft and the connected shaft, and may result in shaft or hub failures.*

Installation

1. Thoroughly clean, degrease, and dry coupling hub flange mounting faces, drive and driven shafts. Clean with a non-flammable solvent. See also Figure 3, page 2.
2. Check both shafts for runout to ensure shafts are not bent. Refer to Figure 6, page 3.
3. Shaft ends must be chamfered to provide a lead for hub mounting.
4. Shafts and bores must be free of burrs. Any rust or corrosion in the interference area must be removed before assembly.

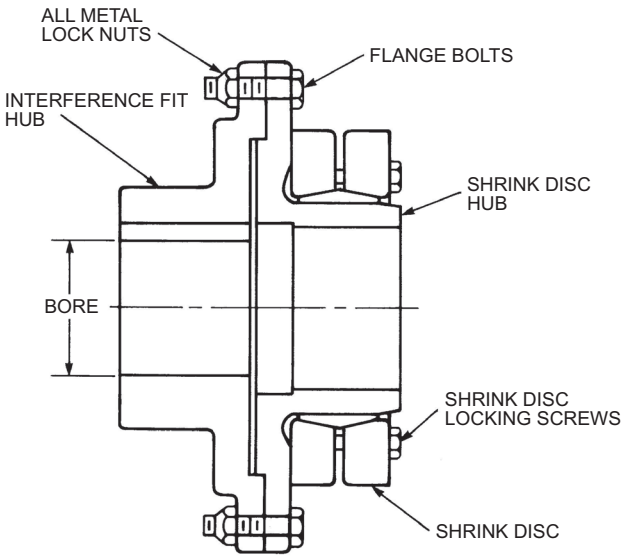

Figure 1 — TYPE 2 FEMALE HUB & TYPE 4 MALE HUB

5. If a keyway is present, the edges of the keyway should be broken with a file and free of burrs.
6. Mount hubs on shafts.
   a. **STRAIGHT BORED INTERFERENCE FIT HUB WITH KEY (TYPE 2 HUB)**
      (1) Clean all parts. Heat hub to between 350°F (177°C) and 450°F (232°C) using an oven, torch, or an induction heater.

      ***WARNING**: Do not use an oil bath to heat hub.*

      When an oxy-acetylene or blow torch is used, use an excess acetylene mixture. Mark hub near the center of its length in several places on hub body with temperature-sensitive crayons, one 350°F (177°C) and one 450°F (232°C) melt temperature. Direct flame toward hub bore using constant motion to avoid overheating an area.
      (2) Mount hub flush with face of shaft. Allow hub to cool before proceeding. See Figure 4.
      (3) Check that the hub is correctly positioned on the shaft, then using dial indicators, check hub runout as illustrated in Figure 6. Checking the hub runout ensures correctness of hub mounting and will reduce drive movement. Make sure runout values do not exceed limits listed in Table 3. If runout is excessive, remove hub following the removal instructions, carefully remount the hub to the shaft, and recheck hub runout.
      (4) Proceed to Step 6. b. below for installation of Type 4 hub with shrink disc, or to Step 7, page 3, for balance of installation.
   b. **HUB WITH SHRINK DISC (TYPE 4 HUB)**

      IMPORTANT: Never tighten shrink disc locking screws before shaft is inside the hub to prevent plastic deformation of the hub.

(1) Remove shipping spacers used to provide protection during transportation.

(2) Make certain locking screw threads, screw head bearing area and tapers of the inner ring are lubricated. If not, lubricate them with a molybdenum disulfide grease such as Molykote Gn™ paste or similar.

NOTE: It is very important for the shrink disc to be lubricated properly. If the correct lubricant is not used, the coupling capacity can be reduced 50% or more.

(3) Position the shrink disc on the coupling hub. The hub outside diameter can be greased to aid assembly. Make sure the shrink disc is fully seated on the hub and is not jammed in the radius in the corner. See Figure 2.

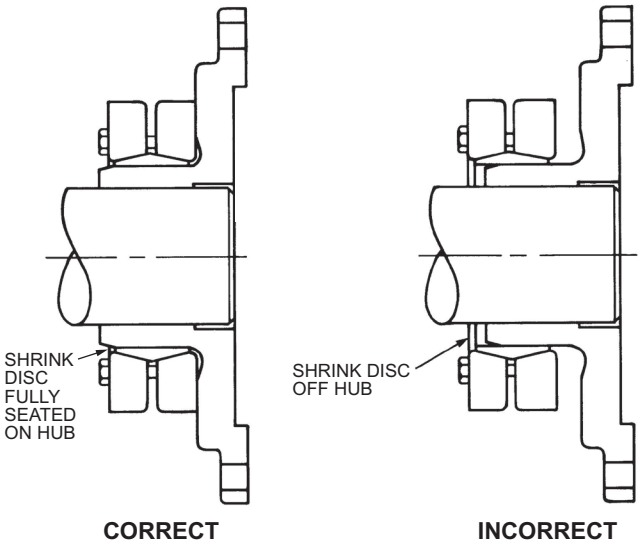

Figure 2

(4) Degrease hub bore and shaft seat. See Figure 3.

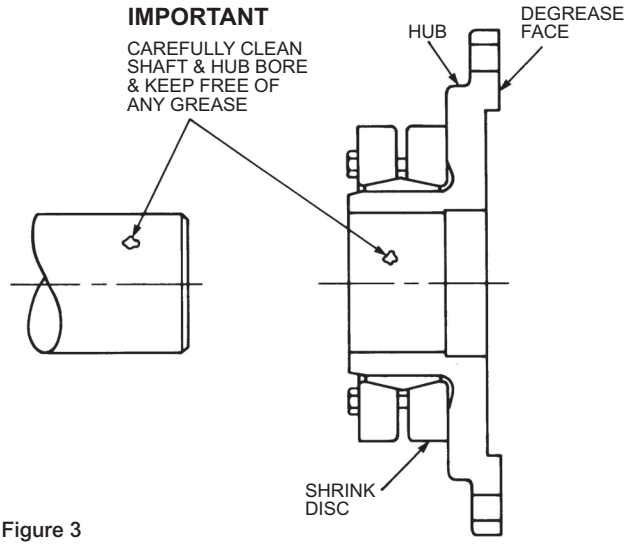

Figure 3

(5) Slide both hub and shrink disc into place on the shaft. Mount hub as shown in Figure 4, so that each hub face is flush with the end of its shaft.

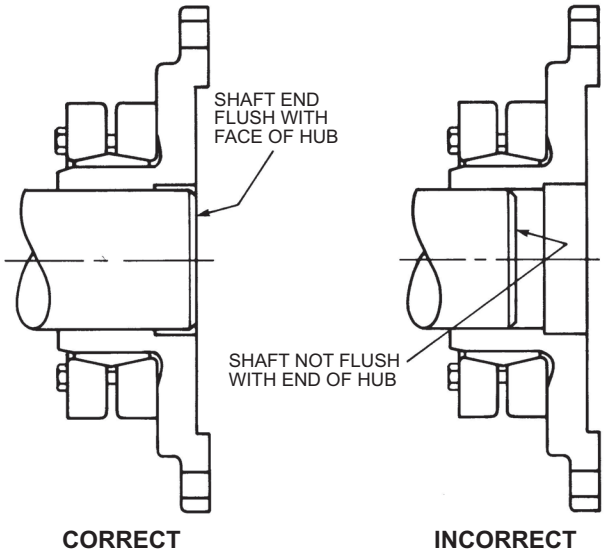

Figure 4

(6) Tighten three or four equally spaced shrink disc locking screws to establish a parallel condition of the collar faces, and a perpendicular position of the shrink disc collars relative to the shaft. This will properly seat the collars on the taper of the inner ring and avoid cocking of the collars.

The following gap parallel tolerance values are recommended for the shrink disc sizes listed below. See Figure 5.

Sizes 24 – 100	.015" (0.38mm) max. deviation in gap
Sizes 110 – 260	.032" (0.81mm) max. deviation in gap
Sizes 280 – 500	.062" (1.57mm) max. deviation in gap

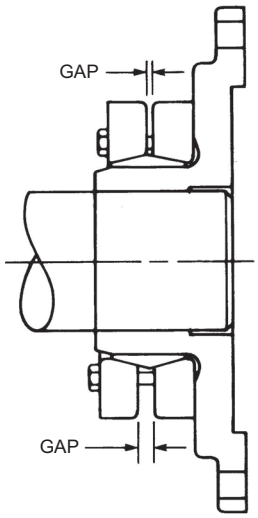

Figure 5

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(7) Using a torque wrench, tighten all locking screws gradually one after another in a clockwise or counterclockwise sequence (not in diametrically opposite sequence). Depending on the size of shrink disc it can take as many as 10 to 15 complete passes before the specified tightening torque is reached. See Table 1. Make certain the locking screws are tightened properly, since this affects coupling capacity.

Table 1 — Shrink Disc Locking Screw Tightening Torque Values

Screw Size (Metric) DIN 931 GR 10.9	Distance Across Flats of Head (mm)	Tightening Torque	
		(Nm)	(lb-ft)
M5	8	5	3.6
M6	10	12	8.7
M8	13	30	22
M10	17	59	44
M12	19	100	74
M16	24	250	185
M20	30	490	362
M24	36	840	620
M27	41	1250	922

(8) Make certain that screws will no longer turn by applying specified torque — only then is the installation complete. Make sure that both collars are still parallel. Correct if not.

(9) Check that the hub is correctly positioned on the shaft, then using dial indicators, check hub runout as illustrated in Figure 6. Checking the hub runout ensures correctness of hub mounting and will reduce drive movement. Make sure runout values do not exceed limits listed in Table 3. If runout is excessive, reverse the hub assembly procedure, carefully reassemble, and recheck hub runout. Recheck all fasteners to be sure they are torqued to specified values in Table 1.

7. With suitable lifting equipment, move the drive/motor assembly into position approximately parallel and in line with the driven shaft using hub flanges as a guide. Align fastener holes, and install and hand tighten one flange fastener. Align hub registers and flange fastener holes. Install all flange bolts finger tight.
8. Use a precision torque wrench and equally tighten all opposing fasteners while allowing the drive assembly to move as required to draw the flanges together (flexible support). Continue tightening until flanges are mated and all flange fasteners are torqued to values specified in Table 2.

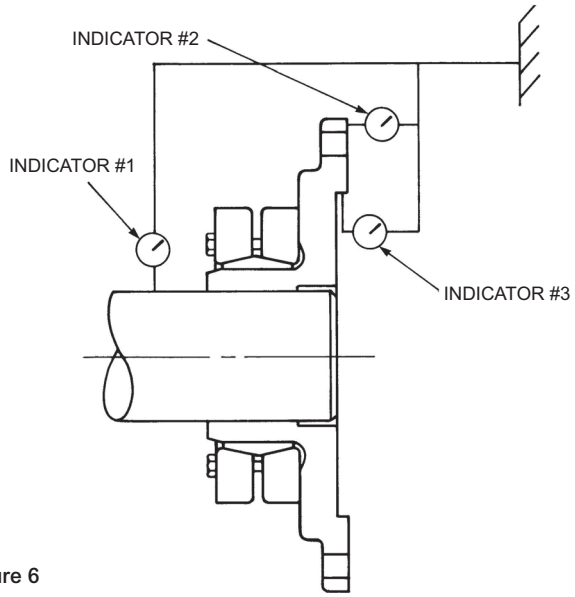
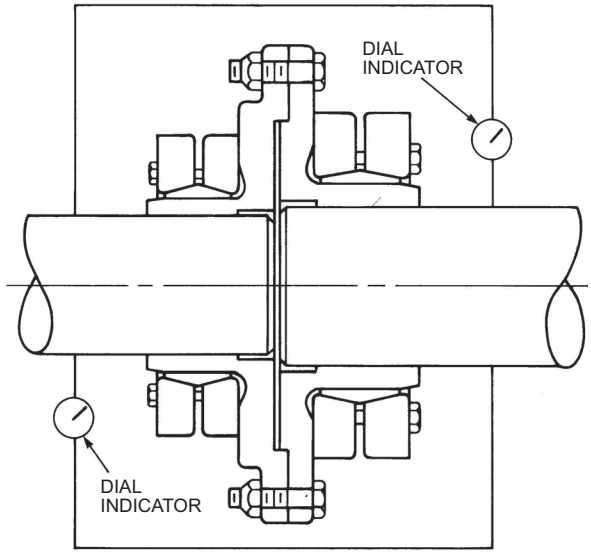


Figure 6

Table 2 — Flange Fastener Tightening Torque

Coupling Size	Flange Fastener Size (in) Grade 8	Flange Fastener Tightening TorqueTolerance ±5%	
		(Nm)	(lb-ft)
3030MCF	0.875 - 9 UNC x 2.25	640	470
3035MCF	0.875 - 9 UNC x 2.50	640	470
3040MCF	1.000 - 8 UNC x 3.50	940	690
3045MCF	1.125 - 7 UNC x 4.00	1320	970
3055MCF	1.125 - 7 UNC x 4.00	1320	970
3060MCF	1.250 - 7 UNC x 4.50	1850	1360
3065MCF	1.250 - 7 UNC x 5.00	1850	1360
3075MCF	1.500 - 6 UNC x 6.00	3750	2765
3080MCF	1.500 - 6 UNC x 7.00	3750	2765
3090MCF	1.500 - 6 UNC x 8.00	3750	2765
3095MCF	1.500 - 6 UNC x 8.00	3750	2765

9. Fasten the torque arm to the bed frame and remove the lifting equipment. Rexnord recommends that a loose, unrestraining safety sling be attached to the bedplate and support structure, to support the drive in case of an emergency.
10. Using dial indicators per Figure 7, measure assembly runout on driving and driven shafts. Runout values should be within .005" (0.127mm) TIR (total indicator reading) to minimize drive movement.



REVERSE DIAL INDICATOR METHOD

Figure 7

Table 3 — Maximum Runouts (TIR) for Dial Indicators — Inch (mm)

	#1	#2	#3
ALL SIZES	.001 (0.025)	.003 (0.076)	.003 (0.076)

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11. Run the drive for a short period of time, and then shut off and lockout motor. Recheck all fasteners for specified torque.
12. The coupling installation is now complete.

WARNING: *Install the warning nameplate and DiRXN™ label supplied with the coupling on the coupling guard or on some other support structure near the coupling.*

Removal

WARNING: *Do not disconnect torque arm or tie rod until the low-speed coupling is completely disconnected.*

1. With suitable equipment, remove the weight of the drive assembly from the coupling and driven shafts. It is necessary to make fine adjustments of position at each of the bedplate lugs. The lifting slings should have appropriate provisions for adjustment.
2. Lift the drive by the lifting lugs in the bedplate or wrap slings around the assembly when a bedplate is not used. Balance loads so drive is level and will not swing down when the coupling is disconnected.
3. Loosen flange fasteners in sequence until all fasteners have at least a .125" (3.175mm) clearance under the fastener heads. Remove all but one fastener near the top of the flange. Separate the two flanges using four 1/2–13UNC fasteners (not supplied with coupling) inserted in the four jackscrew holes in the male register flange. Continue backing off the last flange fastener as the flanges are separated. When completely separated, adjust the weight of the drive assembly until the weight is off the last fastener. Carefully remove the last fastener.
4. Adjust the drive assembly position until all the weight of the assembly is balanced. When the tie rod is no longer bearing any of the weight, disconnect the tie rod. Slowly lower the assembly to the ground.
5. When removing the shrink disc, first clean all debris from between the hub flange and shrink disc clamping flange to ensure the flange can move axially when loosened. Then gradually loosen the locking screws in sequence using 90° turns to avoid tilting and jamming the collars. Do not completely unscrew the screws, otherwise the collars may spring off. Remove any rust from in front of the hub, and pull hub from shaft.

Annual Maintenance

Whenever the equipment is down for general maintenance or service, recheck the tightening torque of the shrink disc and flange fasteners. Tighten fasteners if necessary. For extreme or unusual operating conditions, check coupling more frequently.

Part Descriptions

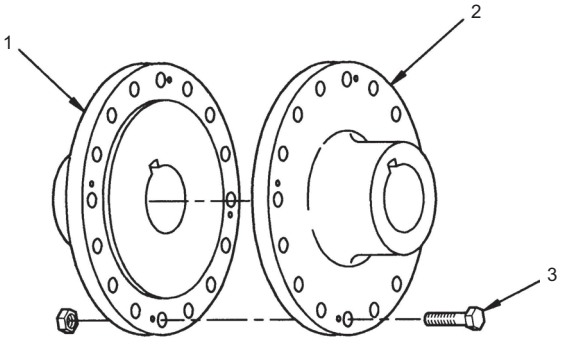
Part descriptions are shown below. In addition, all coupling parts have identifying part numbers. When ordering parts, always SPECIFY SIZE and TYPE of hub, and part number.

Finish Bores

See catalog for finish bore and keyway requirements.

WARNING: *To qualify as an item covered by warranty under Rexnord's standard terms and conditions of sale any 3000MCF couplings supplied as rough stock bores must be finish bored per the shaft tolerances, hub bore diameter tolerances, interference fit tolerances, bore surface finish, key, keyway, runout, countersink, counterbore, and all finish bore requirements as defined in catalog GR2-007 by a qualified engineer. The finish bore is critical to the performance and to ensure the safe operation of 3000MCF couplings. For tolerances, fits or any other finish bore requirement outside of those required in this catalog, refer application details to Rexnord engineering for evaluation.*

MCF COUPLING SHOWN WITH TWO TYPE 2 HUBS



MCF COUPLING SHOWN WITH TWO TYPE 4 HUBS & SHRINK DISCS

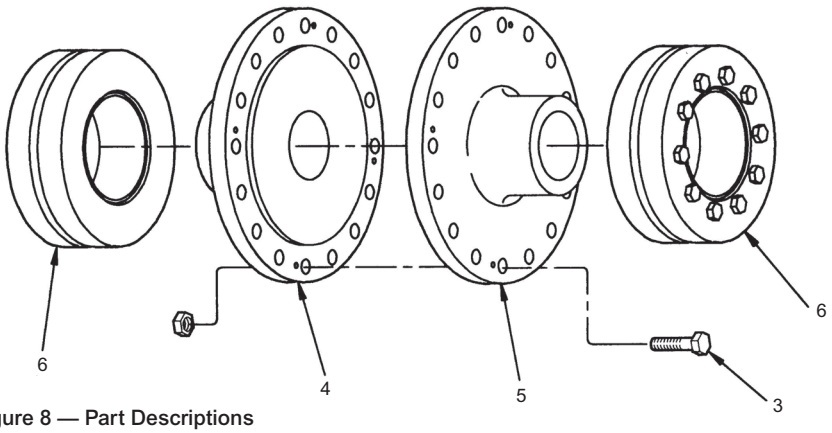


Figure 8 — Part Descriptions

PART DESCRIPTIONS

1. Male Pilot Hub (Type 2)
2. Female Pilot Hub (Type 2)
3. Flange Fasteners
4. Male Pilot Hub (Type 4)
5. Female Pilot Hub (Type 4)
6. Shrink Disk

MCF COUPLINGS ARE ALSO AVAILABLE WITH COMBINATIONS OF TYPE 2 AND TYPE 4 HUBS