

Introduction

The following instructions apply to the assembly of motor adapters to Type FC UltraMax drives. NEMA C-Face motor adapters are available for Drive Sizes 2040 thru 2080 and IEC D-Flange motor adapters are available for Drive Sizes M2040 and M2050.

Note: Falk motor adapters provide an economical “soft” mounting for standard NEMA C-Face and IEC D-Flange electric motors. The vibration magnitude of the motor will vary depending on the application and the system dynamics. Consequently, it may become necessary to support the rear of the motor to minimize excessive vibration.

Required Equipment

In addition to standard mechanic’s tools, a torque wrench, hex socket driver, dial indicator and feeler gauges are required.

General Instructions

1. Disassembly

A. Remove the high speed seal cage and fasteners. Discard the seal cage, oil seal, seal cage fasteners, and gasket. For Drive Size 2080, save the shim gaskets for reference when reassembling, but do not reuse them.

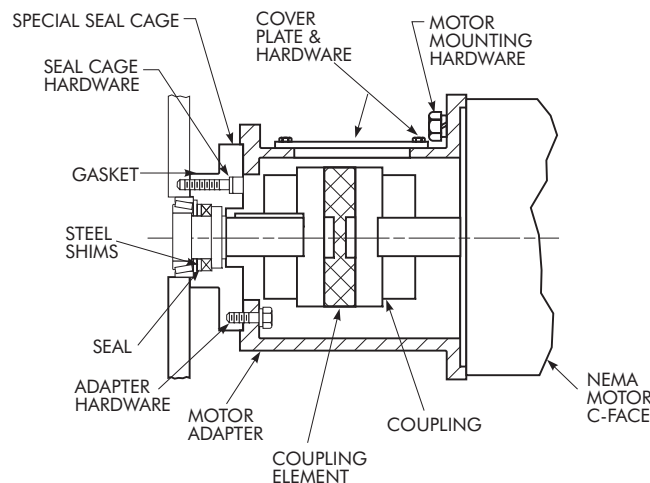


Figure 1 — NEMA Motor C-Face Adapter

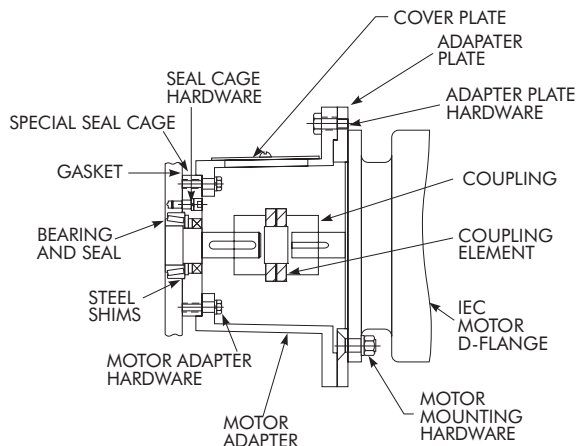


Figure 2— IEC Motor D-Flange Adapter

B. Clean the shaft extension, but DO NOT allow abrasive material to mar the shaft seal journal. Clean all gasket material from the housing.

2. Assembly — Figures 1 and 2.

The high speed shaft bearings of most drives (except the 2060, 2070, and 2080 quadruple reduction drives) require bearing float adjustment with installation of the motor adapter accessory. Bearing adjustment is achieved via steel shims at the outer bearing cup backface on all drives except the 2080 which makes use of shim gaskets between the seal cage and the drive housing.

- A. Prior to installing the seal into the seal cage, assemble the special HS seal cage to the drive including one .015” thick gasket between the cage and the drive (for the 2080 drive, replace the old gasket pack with a new pack of the same thickness). Install fasteners and lock washers and tighten to the torque specified in Table 1 (C-Face) or Table 2 (D-Flange), Page 2.
- B. Measure the HS shaft axial float with a dial indicator, making sure that both bearing cups are properly seated. (For a detailed explanation of this procedure, see Drive Assembly/Disassembly Instructions.)
- C. For all drives except the 2080, subtract the specified axial float (.004” - .006” for all HS shafts with motor adapters) from the measured value and add this amount of steel shims to obtain the specified axial shaft float (see Figs. 1 & 2 for steel shim location). For the 2080, either add or subtract shim gaskets to the gasket pack to provide .004” to .006” axial float.
- D. Prior to final seal cage assembly, the seal must be assembled into the cage. Coat the seal O.D. with Permatex #3 or equivalent.

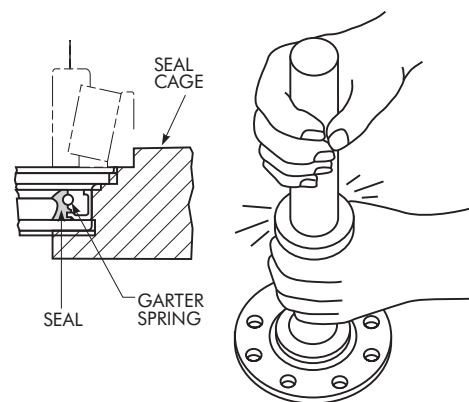


Figure 3

E. Figure 3: Position seal squarely in seal cage so that the spring faces the bearing when the cage is mounted on the drive. Place a flat ended cylindrical tool against the seal and press or lightly tap the tool (not the seal) until the seal is seated.

F. Assemble seal cage to drive.

Caution: Protect seal lips from the sharp edges of the keyway by wrapping thin strong paper around the shaft and coating the paper and the seal lips with grease before sliding the seal on or off the shaft. Do not expand the seal lips more than .03” diameter.

G. Insert seal cage fasteners with lock washers and tighten finger tight. **Note:** The 2050F4 seal cage does not have a register. The seal cage and seal must be centered on the shaft. Use a feeler gauge to check clearances at 90° intervals between shaft and seal cage bore. Lightly tap the cage and center within .004”.

C-Face (NEMA Motors)

- H. Cross tighten fasteners to the torque specified in Table 1.
- I. Mount coupling hub to gear drive shaft (locate per Table 3, Page 3). Tighten coupling hub setscrew.
- J. Mount motor coupling hub to motor shaft (locate per Table 3). Tighten coupling hub setscrew.
- K. Mount coupling element on motor coupling hub.
- L. Install motor adapter to seal cage. Position adapter so cored opening will allow easy access to coupling. The adapter can be positioned so that the motor’s terminal box is located on the horizontal axis and the lifting device is vertical for all drive sizes except the 2080FC3 with 182TC thru 256TC motors. For these selections the terminal box and lifting device will be rotated 45° from the horizontal and vertical axis. Insert fasteners with lock washers and tighten to torque specified in Table 1.
- M. Assemble motor to motor adapter, engage coupling and tighten motor mounting fasteners with lock washers to torque specified in Table 1. Adjust coupling hubs if a gap exists between coupling element and hubs. Re-tighten hub setscrews.
- N. Mount cover plate over cored opening in motor adapter and tighten fasteners.

D-Flange (IEC Motors)

- H. Cross tighten fasteners to the torque specified in Table 2.
- I. Attach adapter plate to motor flange and tighten fasteners to torque specified in Table 2.
- J. Mount coupling hub to motor shaft at the specified overhang from Table 4, Page 4 and tighten setscrew.
- K. Mount coupling element on motor coupling hub.
- L. Position coupling cover over coupling element.
- M. Install bell housing to seal cage so cored opening will allow easy access to the coupling. Insert fasteners with lock washers and tighten to torques specified by Table 2. If the coupling will fit through the drive side opening of the bell housing, it may be easier to switch steps “M” and “N”.
- N. Mount drive coupling hub to drive shaft at the specified overhang from Table 4, Page 4 and tighten setscrew.
- O. Assemble motor to bell housing, engage coupling, and tighten adapter plate mounting fasteners with lock washers to torques specified in Table 2. The motor’s electrical terminal box should be located in either the horizontal or vertical position depending on motor lifting eyebolt locations.
- P. Adjust drive coupling hub as required through cored opening to remove gap between the coupling element and hubs. Tighten coupling setscrews. This adjustment should not exceed .125” (3 mm). If so, disassemble and reset proper coupling overhangs.
- Q. Install cover plate over cored opening in motor adapter and tighten fasteners.

TABLE 1 — Fastener Tightening Torques ± 5% DO NOT LUBRICATE FASTENERS

Fastener Size	Seal Cage Fasteners ★		Motor Adapter Fasteners †		Motor Fasteners †	
	lb.-ft.	Nm	lb.-ft.	Nm	lb.-ft.	Nm
.3125-18	15	20	...	...	...	...
.375-16	...	...	27	37	27	37
.500-13	...	...	...	...	67	91

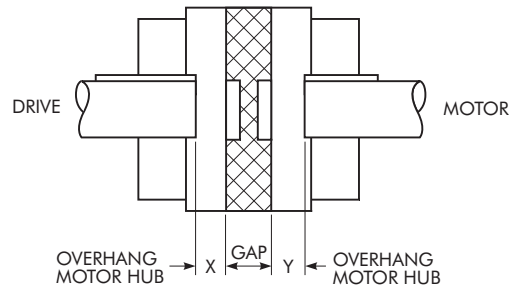
★ SAE Grade 8 or better fasteners.
 † SAE Grade 5 or better fasteners.

TABLE 2 — Fastener Tightening Torques ± 5% DO NOT LUBRICATE FASTENERS

Fastener Size	Seal Cage Fasteners ‡		Motor Adapter Fasteners ●		Adapter Plate Fasteners ●		Motor Fasteners ■	
	lb.-ft.	Nm	lb.-ft.	Nm	lb.-ft.	Nm	lb.-ft.	Nm
.3125-18	15	20	...	...	...	...	...	...
.375-16	27	37	...	...	...	...
.500-13	67	91	...	...
M10 x 1.50	36	49
M12 x 1.75	62	84
M16 x 2.00	156	211

‡ SAE Grade 8 or better fasteners.
 ● SAE Grade 5 or better fasteners.
 ■ Property Class 8.8 or better fasteners.

C-Face Adapter Coupling (Lovejoy® Type "L") Mounting Dimensions


TABLE 3 — Coupling Mounting Dimensions for Standard NEMA Motor Frames – Inches (mm) ★

NEMA Motor Frame Size	Lovejoy Coupling Size	DRIVE SIZE									
		2040		2050		2060		2070		2080	
		X	Y	X	Y	X	Y	X	Y	X	Y
Type FC2											
182TC-184TC	L190	0	.54 (13.7)	0	.64 (16.3)						
213TC-215TC	L190	0	.54 (13.7)	.25 (6.4)	.39 (9.9)	0	.20 (5.1)				
254TC-256TC	L190	-.08 (-2.0) †	0	0	.02 (.5)	0	.07 (1.8)				
284TC-286TC	L190	0	.04 (1.0)	.14 (3.6)	0	.12 (3.0)	.07 (1.8)				
Type FC3											
56C	L110	0	.14 (3.6)	0	.21 (5.3)						
143TC-145TC	L110	0	.08 (2.0)	0	.14 (3.6)	0	.41 (10.4)				
182TC-184TC	L190	0	.58 (14.7)	0	.64 (16.3)	.12 (3.0)	.78 (19.8)	0	.53 (13.5)	0	.70 (17.8)
213TC-215TC	L190	0	.58 (14.7)	.25 (6.4)	.39 (9.9)	.38 (9.7)	.53 (13.5)	.12 (3.0)	.50 (12.7)	0	.20 (5.1)
254TC-256TC	L190	...	...	0	.02 (.5)	0	.28 (7.1)	0	0	0	.07 (1.8)
284TC-286TC	L190	...	...	...	...	...	...	.12 (3.0)	0	.06 (1.5)	.14 (3.6)
Type FC4											
56C	L110	.50 (12.7)	.64 (16.3)	.38 (9.7)	.52 (13.2)	.50 (12.7)	.61 (15.5)	.25 (6.4)	.59 (15.0)	0	.21 (5.3)
143TC-145TC	L110	.50 (12.7)	.57 (14.5)	.38 (9.7)	.45 (11.4)	.25 (6.4)	.80 (20.3)	.25 (6.4)	.53 (13.5)	0	.15 (3.8)
182TC-184TC	L190	...	...	.71 (18.0)	.62 (15.7)	.69 (17.5)	.86 (21.8)	.50 (12.7)	.78 (19.8)	.25 (6.4)	.41 (10.4)
213TC-215TC	L190	...	...	...	...	...	...	.25 (6.4)	.53 (13.5)	.25 (6.4)	.41 (10.4)

★ Dimension X is the amount that the end of the drive hub coupling bore overhangs the shaft end.

Dimension Y is the amount that the end of the motor hub coupling bore overhangs the shaft end.

Zero (0) dimensions for X or Y indicates that the end of the coupling hub bore is flush with the end of the shaft.

† A negative number indicates that the shaft protrudes into the coupling element.

D-Flange Adapter Coupling (ATRA FLEX®) Mounting Dimensions

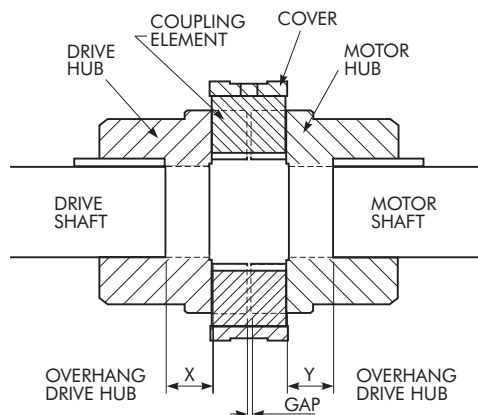


TABLE 4 —Coupling Mounting Dimensions for Standard IEC Motor Frames — Inches (mm) ★

IEC Motor Frame Size	DRIVE SIZE					
	M2040			M2050		
	ATRA-FLEX Coupling Size	X	Y	ATRA-FLEX Coupling Size	X	Y
Type FC2						
100-112	A1	-.46 (-11.7) †	0	A2	.16 (4.1)	.66 (16.8)
132	A2	.15 (3.8)	0	A2	-.43 (-10.9) †	0
160	A2	-.22 (-5.6) †	0	A2	-.40 (-10.2) †	-.39 (-9.9) †
180	A3	0	-.73 (-18.5) †	A3	-.76 (-19.3) †	-.53 (-13.5) †
Type FC3						
80	A2	.23 (5.8)	.50 (12.7)	A2	0	.54 (13.7)
90	A2	0	.33 (8.4)	A2	0	.15 (3.8)
100-112	A1	.17 (4.3)	.17 (4.3)	A2	0	.26 (6.6)
132	A2	.66 (16.8)	.28 (7.1)	A3	0	.25 (6.4)
160	...	...	...	A2	.24 (6.1)	.15 (3.8)
Type FC4						
80	A2	.25 (6.4)	.82 (20.8)	A2	0	.76 (19.3)
90	A2	.25 (6.4)	.43 (10.9)	A2	0	.37 (9.4)
100-112	...	...	...	A1	.18 (4.6)	.18 (4.6)

★ Dimension X is the amount that the end of the drive hub coupling bore overhangs the shaft end.
 Dimension Y is the amount that the end of the motor hub coupling bore overhangs the shaft end.
 Zero (0) dimensions for X or Y indicates that the end of the coupling hub bore is flush with the end of the shaft.
 † A negative number indicates that the shaft protrudes into the coupling element.