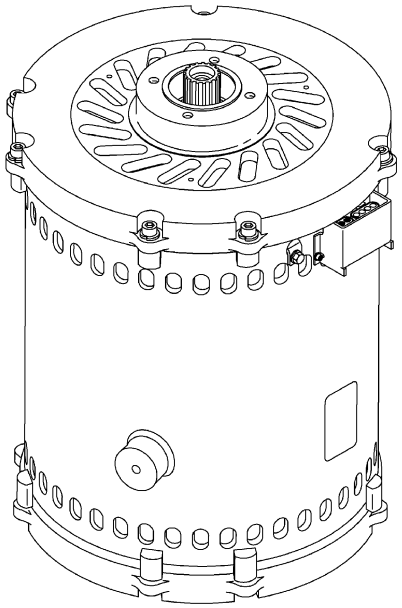
AC MOTOR REPAIR

J2.00-3.20XM [A416]



HYSTER

PART NO. 1534732

620 SRM 1053

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This section is for the following models:

J2.00-3.20XM (J40-65Z) [A416, B416]

(More Content includes: Brake system, Capacities, and specifications, Frame, Hydraulic, System, Industrial battery, Main control, Valve, Mast repair, Fasteners, Schematics diagrams, Steering axle, Steering system, Wire harness repair And more)

General

This section describes the disassembly, assembly, inspection, and checks for malfunctions of AC motors.

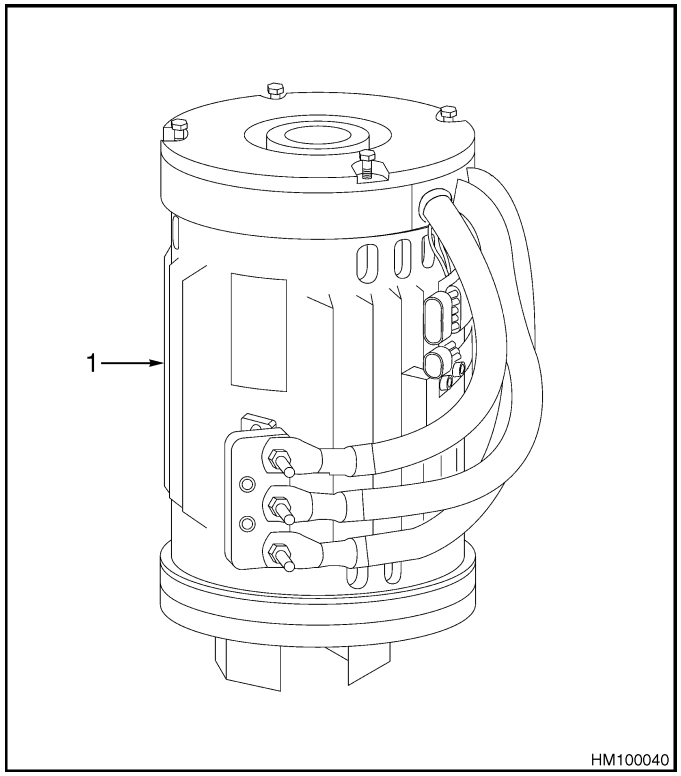
AC traction motors and AC hydraulic pump motors are similar in design. Older model J2.00-3.20XM (J40-65Z) (A416) lift trucks are equipped with an AC traction and AC hydraulic pump motor that is shown in Figure 1. Newer model J2.00-3.20XM (J40-65Z) (A416) lift trucks are equipped with an AC traction and AC hydraulic pump motor that is shown in Figure 2.

For both types of motors, the AC hydraulic pump motor is a smaller version of the AC traction motor. Disassembly and repair of these motors is similar.

For lift truck models J2.00-3.20XM (J40-65Z) (B416) the AC hydraulic pump motor is similar to the traction motor shown in Figure 2. The disassembly and repair of the AC hydraulic motor used on these lift truck models is similar to the disassembly and repair of the AC hydraulic and AC traction motors used on J2.00-3.20XM (J40-65Z) (A416) lift trucks.

The AC traction motor used on J2.00-3.20XM (J40-65Z) (B416) (see Figure 3) lift trucks is different from the AC traction and AC hydraulic motors used on J2.00-3.20XM (J40-65Z) (A416) lift trucks and from the AC hydraulic motor used on J2.00-3.20XM (J40-65Z) (B416) lift trucks. The traction motor on J2.00-3.20XM (J40-65Z) (B416) lift trucks is mounted between the drive axle.

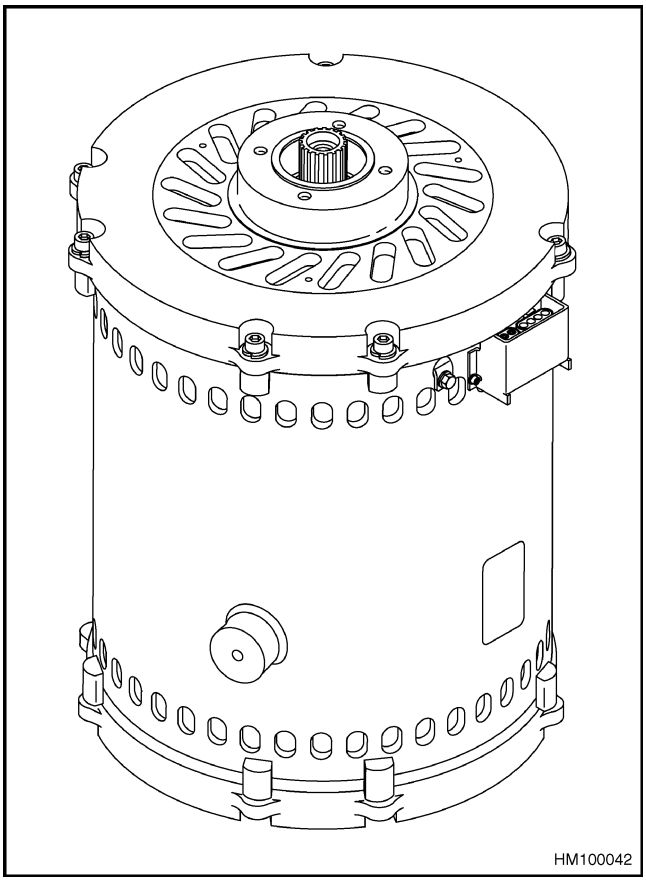
Disassembly, repair, and assembly of this motor is different from the other AC motors covered in this manual. The procedures are covered in the section AC Motor Repair in this manual.



NOTE: AC HYDRAULIC PUMP MOTOR USED ON OLDER MODEL J2.00-3.20XM (J40-65Z) (A416) TRUCKS SHOWN.

1. AC HYDRAULIC PUMP MOTOR

Figure 1. AC Hydraulic Pump Motor (Shown)



NOTE: AC TRACTION MOTOR USED ON NEWER MODEL J2.00-3.20XM (J40-65Z) (A416) TRUCKS SHOWN.

Figure 2. AC Traction Motor

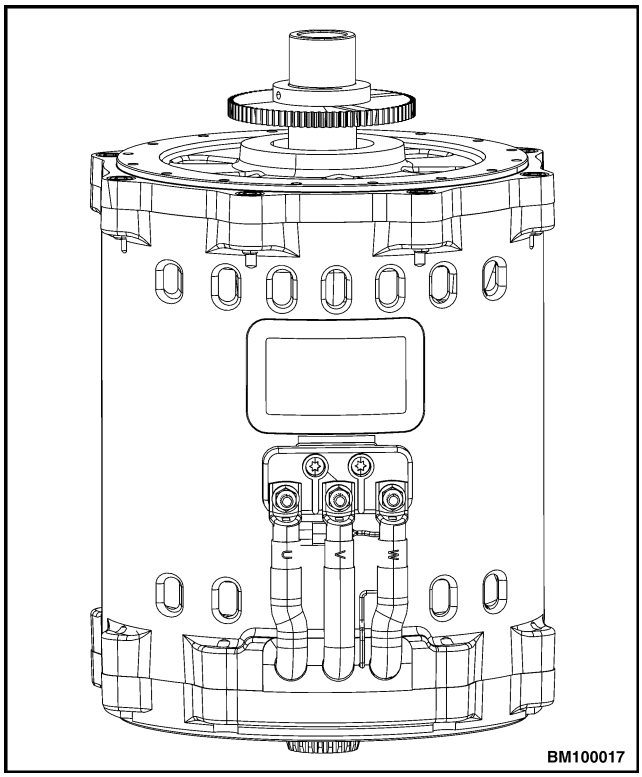


Figure 3. AC Traction Motor, J2.00-3.20XM (J40-65Z) (B416) Lift Truck Models

AC Motor Repair

DISASSEMBLE

NOTE: The procedures described in the following paragraphs apply to AC traction and AC hydraulic motors used on J2.00-3.20XM (J40-65Z) (A416) lift trucks and AC hydraulic motor used on J2.00-3.20XM (J40-65Z) (B416) lift trucks.

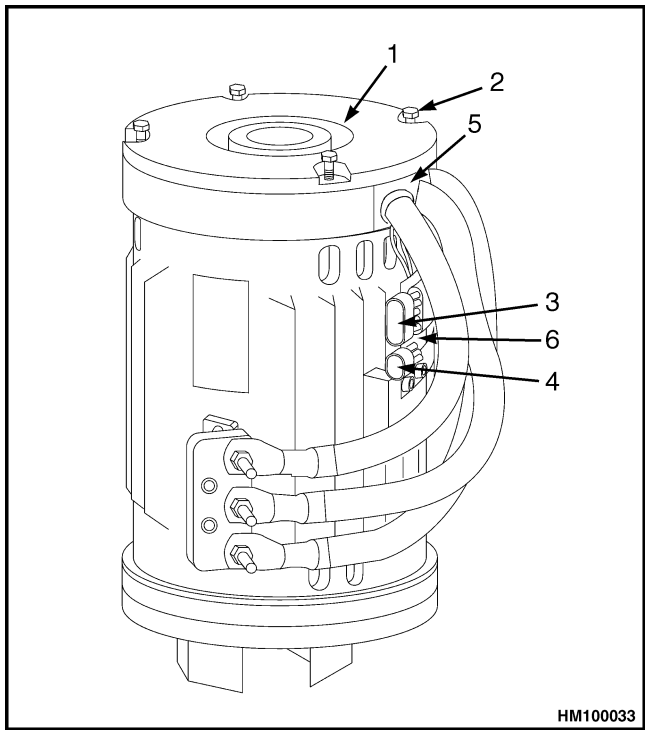
⚠ WARNING

The bearing and seal on the AC traction motor are serviceable parts, while the only serviceable part on the AC hydraulic pump motor is the bearing. Be careful to not damage bearings when replacing. The AC hydraulic pump motor weighs 46 kg (101 lb) and the AC traction motor weighs 109 kg (240 lb). To prevent injury, use a lifting device capable of lifting the assembly.

NOTE: When replacing one bearing, it is strongly recommended to replace both bearings and the seal of the AC traction motor.

1. Remove traction motor from the lift truck. See **Master Drive Unit** for your lift truck model for removal information.
2. Screw lifting eye into the threaded hole in the end of the rotor shaft and connect a chain to the lifting eye.

3. Remove temperature sensor wire and encoder wire from holding bracket. See Figure 4 and Figure 5. Note placement of wires in rubber gasket that surrounds stator wires.



NOTE: AC HYDRAULIC PUMP MOTOR USED ON OLDER MODEL J2.00-3.20XM (J40-65Z) (A416) TRUCKS SHOWN.

1. END BELL
2. SCREW
3. ENCODER WIRE
4. TEMPERATURE SENSOR WIRE
5. RUBBER GASKET
6. HOLDING BRACKET

Figure 4. AC Motor Assembly (Hydraulic Pump Motor Shown)

4. Remove screws from the non drive rear end bell.

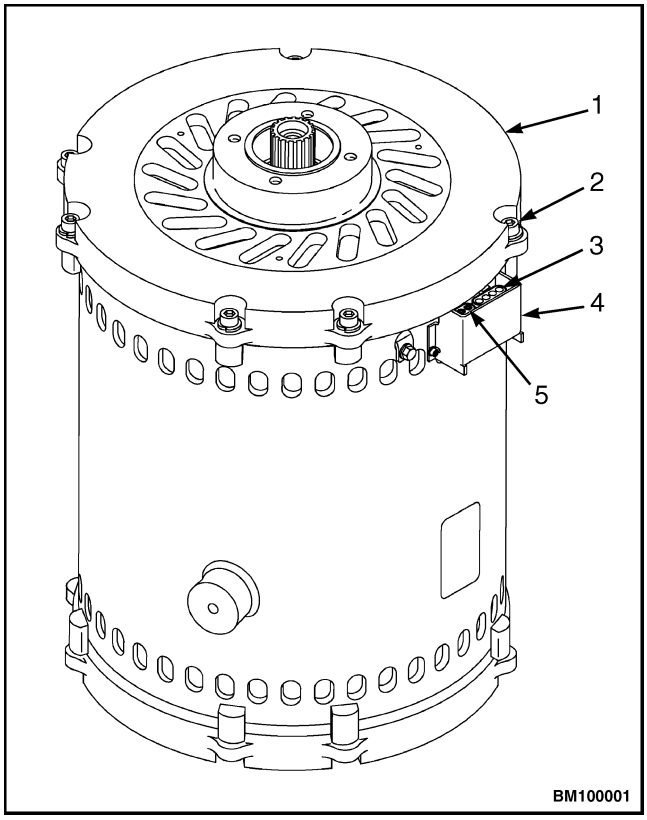
5. Place alignment marks on the end bell and motor case. Marks will be used to correctly align the end bell on the motor case during assembly.

6. Lift end bell and rotor assembly from AC motor case. Place horizontally on a flat surface and remove rubber gasket that covers three field wires.

7. Remove chain and lifting eye.

8. Remove screws from air guide.

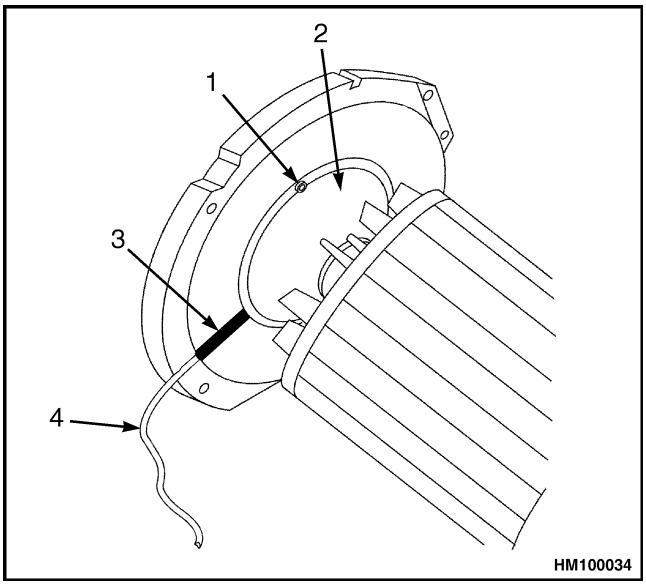
9. Remove end bell from rotor assembly. See Figure 6.



NOTE: AC TRACTION MOTOR USED ON NEWER MODEL J2.00-3.20XM (J40-65Z) (A416) TRUCKS SHOWN. AC HYDRAULIC MOTOR USED ON J2.00-3.20XM (J40-65Z) (B416) IS SIMILAR.

1. END BELL
2. SCREW
3. ENCODER BEARING CONNECTOR
4. CONNECTOR COVER
5. TEMPERATURE SENSOR

Figure 5. AC Motor Assembly (Traction Motor Shown)



1. SCREW
2. AIR GUIDE
3. END BELL SLOT
4. ENCODER WIRE

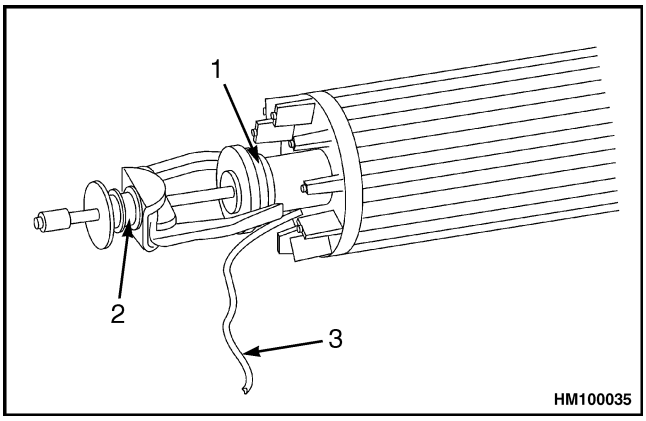
Figure 6. Rotor Disassembly

10. Remove air guide, being careful not to damage encoder bearing wire.

NOTE: Before removing the encoder bearing, note its orientation and install the new encoder bearing in the same orientation.

11. Using a bearing puller, remove encoder bearing. See Figure 7.

12. Using a bearing puller, remove bearing from drive end of rotor shaft.



1. ENCODER BEARING
2. BEARING PULLER
3. ENCODER WIRE

Figure 7. Bearing Removal

ASSEMBLE

NOTE: The procedures described in the following paragraphs apply to AC traction and AC hydraulic motors used on J2.00-3.20XM (J40-65Z) (A416) lift trucks and AC hydraulic motor used on J2.00-3.20XM (J40-65Z) (B416) lift trucks.

CAUTION

To avoid damage to the encoder bearing electronics, use a bearing driver and arbor press.

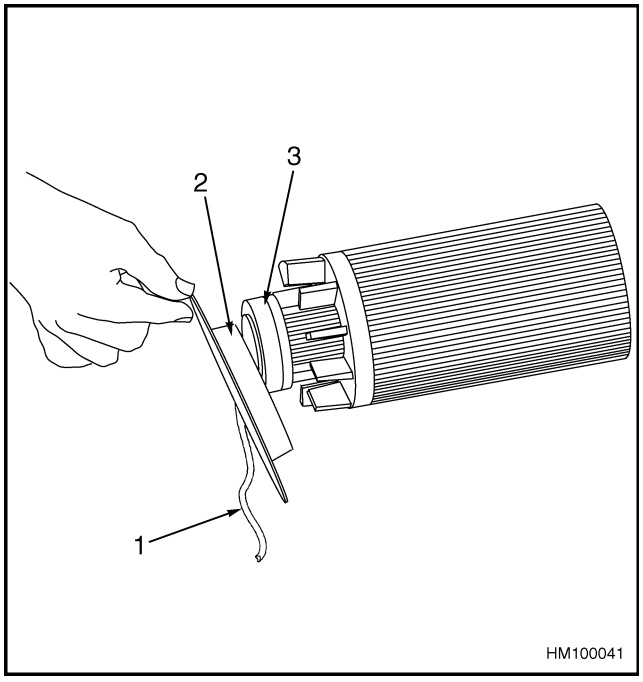
1. Install the bearing on the drive end of the rotor shaft using a bearing driver and arbor press.

NOTE: The encoder bearing must be oriented as noted during removal.

2. Using a bearing driver and arbor press, install the encoder bearing as noted during removal.

3. Place encoder wire through air guide and move air guide back over encoder bearing. See Figure 8.

4. Place end bell on rotor assembly.



1. ENCODER WIRE
2. AIR GUIDE
3. ENCODER BEARING

Figure 8. Alignment of Air Guide and End Bell

CAUTION

To prevent damage to the encoder bearing, ensure encoder wire is inserted in end bell slot when air guide is attached to the end bell.

5. Insert encoder wire in the end bell slot and attach air guide to end bell.

6. Install eyebolt into end bell and rotor assembly and connect a chain to the lifting eye.

7. Lift the end bell and rotor assembly to a vertical position.

CAUTION

To prevent damage to the encoder wire, line up end bell and rotor assembly slot with visible mark to guide encoder wire into end bell and rotor assembly case.

8. Using the alignment marks made during disassembly, line up the end bell and rotor assembly with the motor case.

9. Lower the end bell and rotor assembly back into the case and place the encoder bearing and temperature sensor wires into position on the rubber gasket.

10. Replace rubber gasket that covers the field wires.

11. Attach end bell and rotor assembly to AC motor case.

12. Install temperature sensor wire and encoder wire onto holding bracket.

13. Remove chain and lifting eye.

14. Install motor into the lift truck. See the **Frame** SRM for your lift truck model for installation information.

DRIVE END BEARING, REPLACE

NOTE: The procedures described in the following paragraphs apply to AC traction and AC hydraulic motors used on J2.00-3.20XM (J40-65Z) (A416) lift trucks and AC hydraulic motor used on J2.00-3.20XM (J40-65Z) (B416) lift trucks.

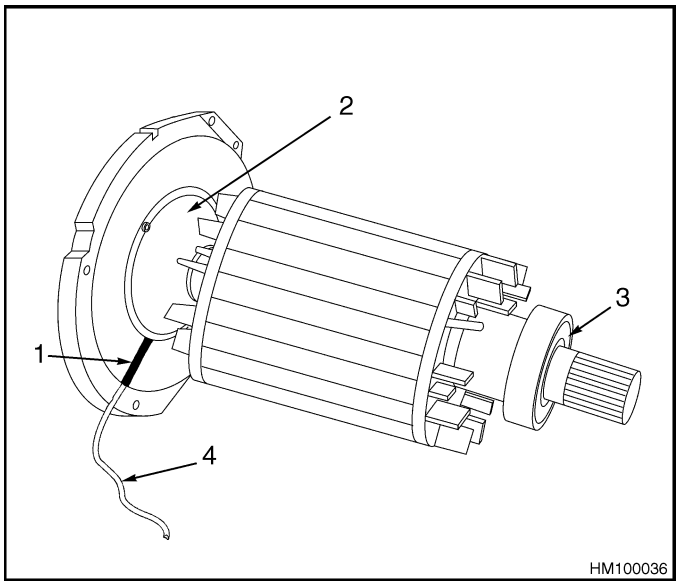
NOTE: Drive end bearing is to be replaced if worn or damaged.

1. Follow Step 1 through Step 10 of Disassemble procedure.

2. Using a bearing puller, remove drive end bearing from shaft. See Figure 9.

3. Using a bearing driver and arbor press, install drive end bearing.

4. Follow Step 3 through Step 13 of the Assemble procedure.



1. END BELL SLOT
2. AIR GUIDE
3. DRIVE END BEARING
4. ENCODER WIRE

Figure 9. Alignment of End Shaft Bearing

DISASSEMBLE, J2.00-3.20XM (J40-65Z) (B416) TRACTION MOTOR

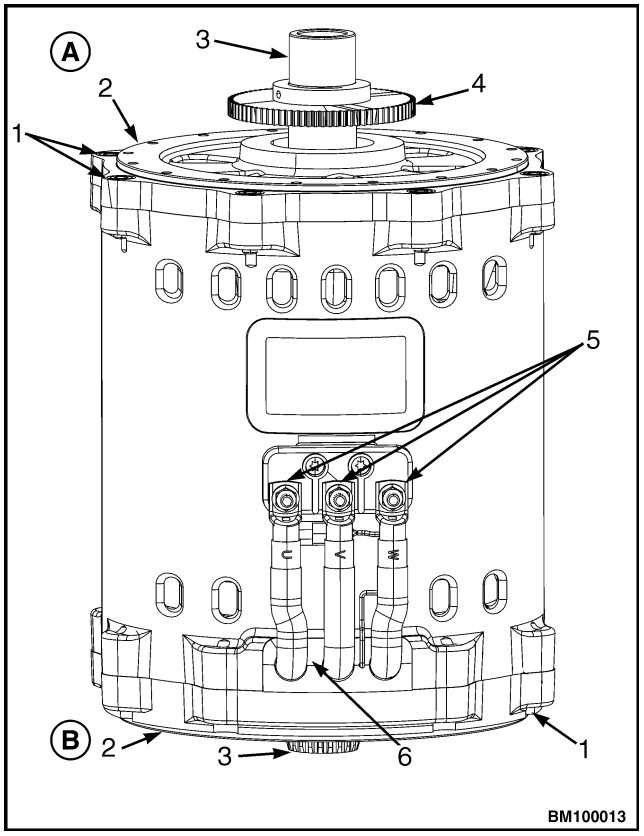
WARNING

The bearings and seals on the AC traction motor are serviceable parts. Be careful to not damage bearings when replacing. The AC traction motor weighs 70 kg (155 lb). To prevent injury, use a lifting device capable of lifting the assembly.

NOTE: When replacing one bearing, it is strongly recommended to replace both bearings and the seals.

1. Remove traction motor from drive axle. See **Drive Unit Assembly** 1400 SRM 1223 for the procedures.

2. Note the placement of wires in rubber gasket that surrounds stator wires. See Figure 10.



A. NON DRIVE SIDE
B. DRIVE SIDE

1. SCREWS
2. END BELL
3. ROTOR SHAFT
4. SPEED SENSOR PHONIC WHEEL
5. STATOR WIRES
6. RUBBER GASKET

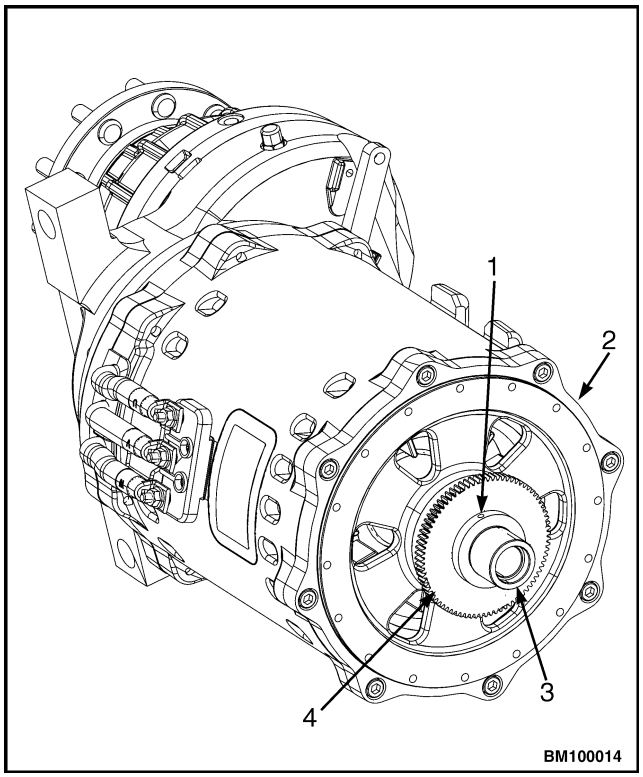
Figure 10. AC Traction Motor, J2.00-3.20XM (J40-65Z) (B416) Lift Truck Models

3. Loosen set screw and remove speed sensor phonic wheel from rotor shaft on the non drive side of motor. See Figure 11.

4. Remove screws from non drive side end bell. See Figure 10.

5. Place alignment marks on the non drive side end bell and motor case. Marks will be used to correctly align the end bell on the motor case during assembly.

6. Remove non drive side end bell and wave washer. See Figure 12.



1. SETSCREW
2. END BELL
3. ROTOR SHAFT
4. SPEED SENSOR PHONIC WHEEL

Figure 11. Gear Removal

7. Remove snap ring from rotor shaft on drive end. See Figure 12.

8. Place alignment marks on the drive side end bell and motor case. Marks will be used to correctly align the end bell on the motor case during assembly.

9. Remove screws from end bell on drive side and remove end bell. See Figure 10.

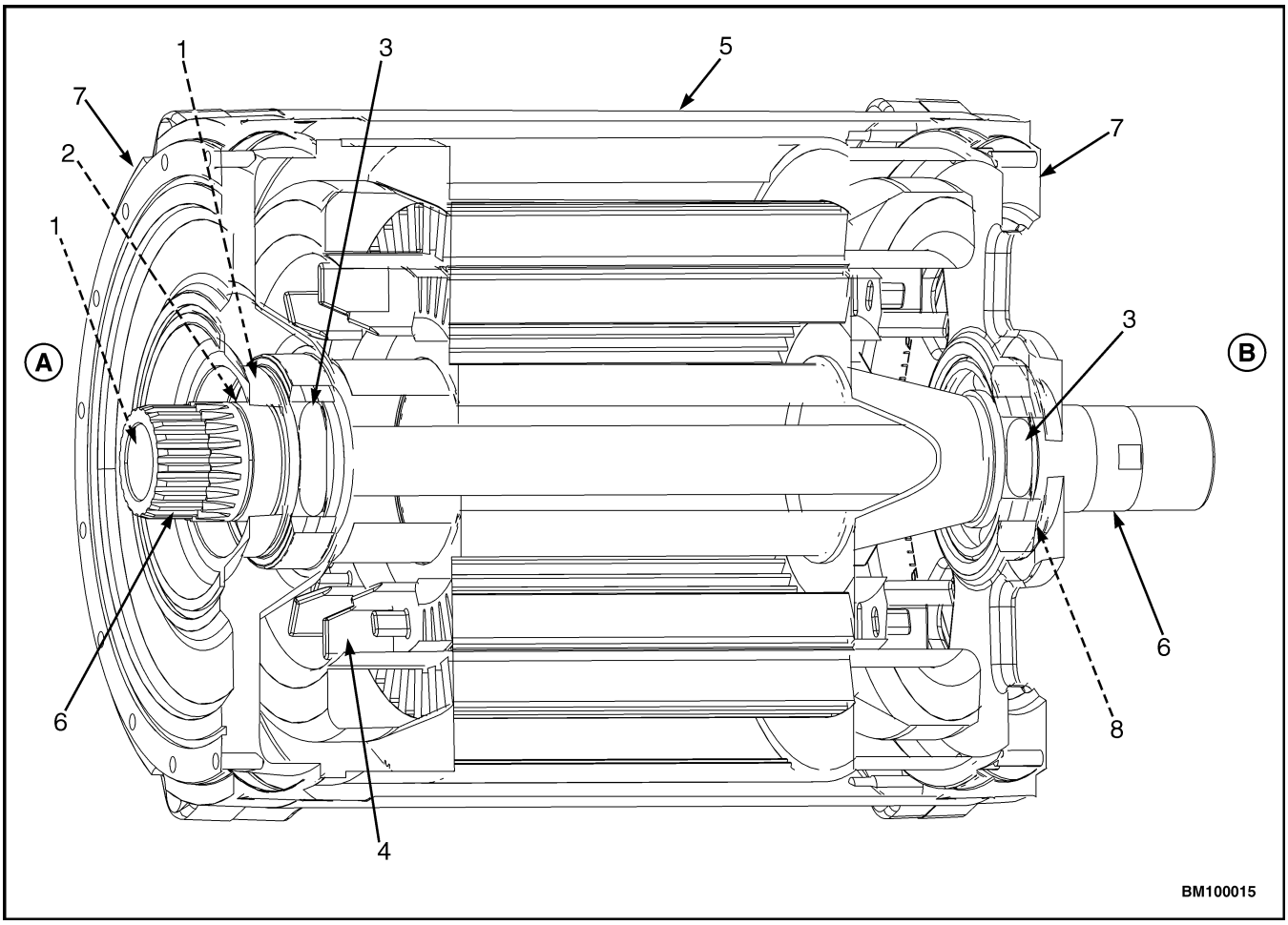
10. Remove rotor assembly and shaft from traction motor case. See Figure 12.

CAUTION

When removing bearing, do not damage sealing surface on drive end of rotor shaft.

11. Use a bearing puller to remove drive and non drive end bearings from rotor shaft. See Figure 12.

12. Drive seals out of drive side end bell and drive end of rotor shaft.



A. DRIVE END SIDE

B. NON DRIVE END SIDE

1. SEAL*
2. SNAP RING* (GROOVE SHOWN)
3. BEARING
4. ROTOR ASSEMBLY
5. TRACTION MOTOR CASE
6. ROTOR SHAFT
7. END BELL
8. WAVE WASHER*

*ITEMS NOT SHOWN IN FIGURE 12, BUT LOCATION IS CORRECT.

Figure 12. Seal and Bearing Removal

ASSEMBLE, J2.00-3.20XM (J40-65Z) (B416) TRACTION MOTOR

WARNING

The bearings and seals on the AC traction motor are serviceable parts. Be careful to not damage bearings when replacing. The AC traction motor weighs 70 kg (155 lb). To prevent injury, use a lifting device capable of lifting the assembly.

1. Install seals in drive side end bell and drive end of rotor shaft. See Figure 12.

CAUTION

Do not damage sealing surface on drive end of rotor shaft when installing bearing.

2. Install bearings on drive end and non drive end of the rotor shaft using a bearing driver and arbor press.

3. Install rotor assembly into traction motor case. See Figure 12.

NOTE: Before installing drive side end bell, cover snap ring groove with tape to protect seal from damage. See Figure 12.

4. Using the alignment marks made during disassembly, line up the drive side end bell with the motor case. Remove tape from snap ring groove. Apply Loctite® 243, insert screws and tighten to 45 to 58 N•m (398 to 513 lbf in) to secure end bell to traction motor.

5. Install snap ring on drive end of rotor assembly. See Figure 12. Install rubber gasket that surrounds the stators wires. See Figure 10.

6. Place wave washer into non drive side end bell. See Figure 12.

7. Using the alignment marks made during disassembly, line up the non drive side end bell with the motor case. Apply Loctite® 243, insert screws and tighten to 45 to 58 N•m (398 to 513 lbf in) to secure end bell to traction motor.

8. Press speed sensor phonic wheel onto rotor shaft on non drive end side and insert set screw to secure sensor to rotor shaft. See Figure 11.

9. Install traction motor into lift truck. See **Drive Unit Assembly** 1400 SRM 1223 for the procedures.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
Truck moves slow or in a jerky motion.	Encoder broken.	Replace encoder bearing.
	Encoder wire broken.	Check and repair encoder wire or replace encoder bearing.
Temperature sensor failure.	Temperature sensor wire damaged.	Measure resistance with ohmmeter. Resistance should be 530 ohms at 25 °C (77 °F). Inspect and repair temperature sensor wire. The temperature sensor wire can be repaired, but the temperature sensor must be replaced if faulty.
	Temperature sensor malfunction.	Measure resistance with ohmmeter. If wiring is ok, resistance should be 530 ohms at 25 °C (77 °F). Replace the temperature sensor.
Stator shorting.	Loss of insulation in wire.	Disconnect the battery and check resistance between winding and case. Resistance should be at 50,000 ohms or above.

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
Stator open circuit.	Broken coil windings.	Raise drive wheel off the floor and verify voltage at motor terminals. Disconnect the battery and check resistance of windings.

NOTES