

SERVICE REPAIR

MANUAL

Hyster A099 (E80XN, E100XN, E100XNS, E120XN)
Forklift

HYSTER

HYDRAULIC SYSTEM

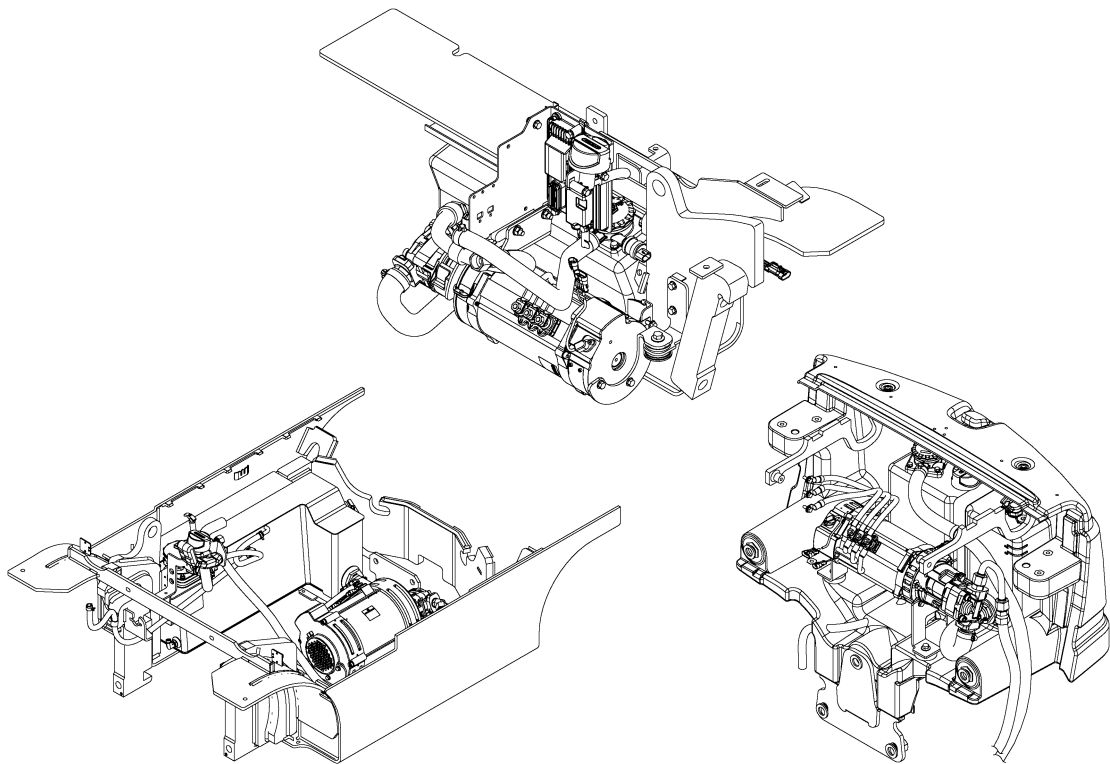
E2.2-3.5XN (E45-70XN) [A268];

E1.6-2.0XN (E30-40XN) [A269];

J2.2-3.5XN (J45-70XN) [A276];

**J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL)
[A970];**

**E4.0-5.5XN, E5.0XNS (E80-120XN, E100XNS)
[A099]**



HYSTER

SAFETY PRECAUTIONS

MAINTENANCE AND REPAIR

- The Service Manuals are updated on a regular basis, but may not reflect recent design changes to the product. Updated technical service information may be available from your local authorized Hyster® dealer. Service Manuals provide general guidelines for maintenance and service and are intended for use by trained and experienced technicians. Failure to properly maintain equipment or to follow instructions contained in the Service Manual could result in damage to the products, personal injury, property damage or death.
- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the Operating Manual or the Periodic Maintenance section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use HYSTER APPROVED parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the WARNING and CAUTION notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the **WARNING** symbol and word are on orange background. The **CAUTION** symbol and word are on yellow background.

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**Thanks very much for your reading,
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manual**

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This section is for the following models:

E2.2-3.5XN (E45-70XN) [A268];
E1.6-2.0XN (E30-40XN) [A269];
J2.2-3.5XN (J45-70XN) [A276];
J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) [A970];
E4.0-5.5XN, E5.0XNS (E80-120XN, E100XNS) [A099]

"THE
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PARTS

General

This section describes repairs, checks, and adjustments for the hydraulic pump and hydraulic tank including hydraulic filter and breather replacement. Repair procedures for related systems can be found in the following sections:

Main Control Valves 2000SRM1334 for lift truck models

- E2.2-3.5XN (E45-70XN) (A268)
- J2.2-3.5XN (J45-70XN) (A276)
- J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)
- E4.0-5.5XN, E5.0XNS (E80-120XN, E100XNS) (A099)

Main Control Valves 2000SRM1439 for lift truck models

- E1.6-2.0XN (E30-40XN) (A269)

Mast Repair (S/N A551, A555, A559, B551, B555, D507, D562, D508, D563, D509, D564, D515, E509, E564) 4000SRM1338 for lift truck models

- E2.2-3.5XN (E45-70XN) (A268)
- J2.2-3.5XN (J45-70XN) (A276)

Mast Repair (S/N B551, B555, and B559) 4000SRM1441 for lift truck models

- E1.6-2.0XN (E30-40XN) (A269)

Mast Repair (S/N A626-27, A751-52, B590-91, and B749-54) 4000SRM1540 for lift truck models

- J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)

Mast Repairs (S/N A551, A555, A559, A751, A752, B586, B587, B588, B590, B591, B749, B750, B751, B752, and B754) 4000SRM1576 for lift truck model

- E4.0-5.5XN, E5.0XNS (E80-120XN, E100XNS) (A099)

Cylinder Repair (Mast S/N A270-72, A551, A555, A559, A626, A627, A751-52, B551, B555, B586-91, B749-54, C661-63, C665, D507-09, D515, D562-64, E509, E564) 2100SRM1382 for lift truck models

- E2.2-3.5XN (E45-70XN) (A268)
- J2.2-3.5XN (J45-70XN) (A276)
- J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)
- E4.0-5.5XN, E5.0XNS (E80-120XN, E100XNS) (A099)

Cylinder Repair (Mast S/N B551, B555, B559) 2100SRM1440 for lift truck models

- E1.6-2.0XN (E30-40XN) (A269)

The service manuals below are for all lift truck models covered in this manual

- Steering System 1600SRM1363
- Steering Axle 1600SRM1360
- AC Motor Repair 0620SRM1385

DISCHARGING THE CAPACITORS



WARNING

DO NOT make repairs or adjustments unless you have been properly trained and authorized to do so. Improper repairs and adjustments can create dangerous operating conditions. **DO NOT** operate a lift truck that needs repairs. Report the need for repairs to you supervisor immediately. If repair is necessary, attach a **DO NOT OPERATE** tag on the steering wheel and disconnect the battery.

Disconnect the battery and allow the capacitors to discharge before opening any compartments covers or inspecting or repairing the hydraulic system. **DO NOT** place tools on top of the battery. If a tool causes a short circuit, the high current flow from the battery can cause personal injury or property damage.

Some checks and adjustments are performed with the battery connected. **DO NOT** connect the battery until the procedure instructs you to do so. Never wear any metallic items on your fingers, arms, or neck. Metal items can accidentally make an electrical connection and cause injury.

Before performing any tests or adjustment, block the lift truck to prevent unexpected movement.

The capacitor in the transistor controller(s) can hold an electrical charge for about 10 seconds after the battery is disconnected. To prevent an electrical shock and personal injury, discharge the capacitor(s) before inspecting or repairing any component in the drive unit compartment. Make certain that the battery has been disconnected.

DO NOT short across the motor controller terminals with a screwdriver or jumper wire.

Make certain the Emergency Disconnect Switch has not been activated. This will isolate the controller and prevent the capacitors from

discharging properly. The proper way to disconnect the battery is by separating the battery connectors.

1. Ensure the capacitors are discharged by performing Step 2 through Step 6 below.
2. Turn the key or keyless switch to the OFF position.
3. Disconnect the battery by separating the connectors.
4. Block drive wheels to prevent lift truck from moving.
5. Make sure the Emergency Disconnect Switch HAS NOT been activated. If the Emergency Disconnect Switch is activated, rotate the switch to the right until it pops up.
6. Press horn button. Wait 30 seconds to be sure capacitors are fully discharged.

Hydraulic Pump and Motor

REMOVE



WARNING

PUTTING THE LIFT TRUCK ON BLOCKS

The lift truck must be put on blocks for some types of maintenance and repair. The removal of the mast, drive axle, battery, or counterweight assemblies will cause large changes in the center of gravity. When the lift truck is put on blocks, put additional blocks in the following positions:

- If the mast and drive axle are removed, put blocks under the counterweight so the lift truck cannot fall backward.
- If the counterweight is removed, put blocks under the mast so that the lift truck cannot fall forward.

Put the lift truck on blocks on a solid, even, and level surface. Verify the blocks or stands have enough capacity to hold the lift truck. Use additional blocks next to the tires as necessary to prevent movement of the lift truck. Verify the lifting devices used during repairs can lift the weight of the parts and assemblies.

See the Operating Manual or Periodic Maintenance section for your lift truck model, for the procedures to put the lift truck on blocks.



CAUTION

DO NOT permit dirt to enter the hydraulic system during the steps of this procedure. Dirt can cause damage to the components of the hydraulic system.

Never operate the hydraulic pump without oil in the hydraulic system. The operation of the hydraulic pump without oil will damage the pump.

1. Place lift truck on blocks. See Operating Manual or one of the following sections

Periodic Maintenance 8000SRM1364 for lift truck models

- E2.2-3.5XN (E45-70XN) (A268)

Periodic Maintenance 8000SRM1442 for lift truck models

- E1.6-2.0XN (E30-40XN) (A269)

Periodic Maintenance 8000SRM1372 for lift truck models

- J2.2-3.5XN (J45-70XN) (A276)

Periodic Maintenance 8000SRM1541 for lift truck models

- J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)

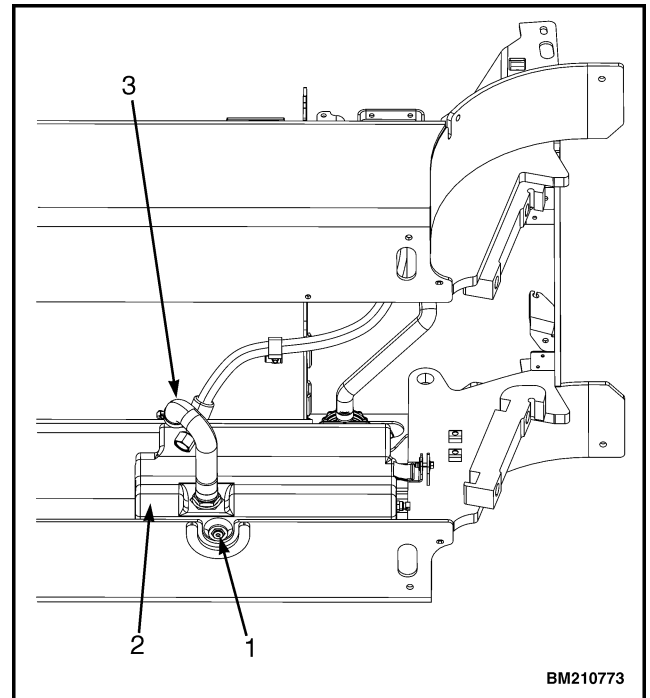
Periodic Maintenance 8000SRM1577 for lift truck model

- E4.0-5.5XN, E5.0XNS (E80-120XN, E100XNS) (A099)

2. Discharge capacitors as specified in Discharging the Capacitors in General section of this manual.

Lift Truck Models E2.2-3.5XN (E45-70XN) (A268)

1. Remove the battery from the lift truck. The procedure for removing the battery may be found in the Operating Manual or Periodic Maintenance 8000SRM1364.
2. Remove battery plate.
3. Install a container, with a capacity of 33 liter (35 qt) for nylon tank or 35 liter (37 qt) for metal tank, under drain plug of hydraulic tank. Remove drain plug and drain hydraulic oil. See Figure 1.



NOTE: MAJOR COMPONENTS OF HYDRAULIC SYSTEM REMOVED FOR CLARITY.

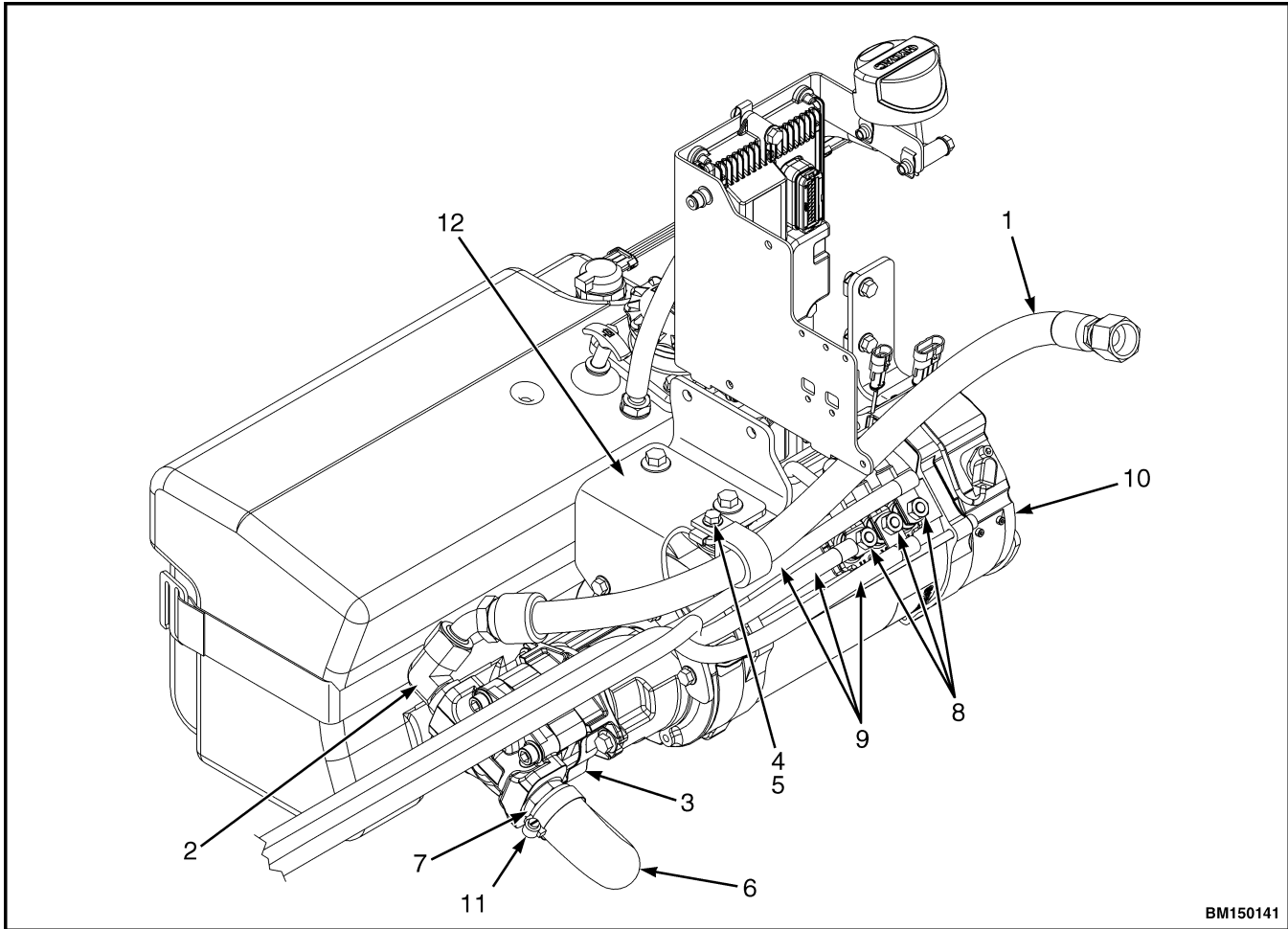
1. HYDRAULIC OIL DRAIN PLUG
2. HYDRAULIC TANK
3. SUCTION HOSE

Figure 1. Drain Hydraulic Oil From Lift Truck Models E2.2-3.5XN (E45-70XN) (A268)

NOTE: Tag hoses and electrical connections during removal to aid in installation.

NOTE: Plug hoses and pump openings to prevent foreign material from entering hydraulic system.

4. Remove capscrew and clamp, securing pressure line hose that runs from control valve to pump pressure port, from motor support bracket. See Figure 2.



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NOTE: STANDARD MOTOR SHOWN.

- | | |
|-----------------------|---------------------------|
| 1. PRESSURE LINE HOSE | 7. SUCTION ADAPTER |
| 2. FITTING | 8. NUT |
| 3. HYDRAULIC PUMP | 9. POWER CABLES |
| 4. CAPSCREW | 10. MOTOR |
| 5. CLAMP | 11. HOSE CLAMP |
| 6. SUCTION HOSE | 12. MOTOR SUPPORT BRACKET |

Figure 2. Hydraulic Pump and Motor Connections for Lift Truck Models E2.2-3.5XN (E45-70XN) (A268)

5. Disconnect pressure line hose at fitting and move aside to prevent damage. See Figure 2.
6. Loosen hose clamp at suction adapter end of suction hose and move it up suction hose until suction adapter is cleared. Tighten hose clamp enough to keep suction hose and hose clamp together.
7. Disconnect suction hose from suction adapter. See Figure 2. Plug adapter and suction hose.



CAUTION

Disposal of lubricants and fluids must meet local environmental regulations.

8. Ensure hydraulic oil has completely drained from hydraulic tank, replace drain plug, and cap all open ports. Remove container with used hydraulic oil.

9. With lift truck on blocks, position floor jack under pump and motor to support both at the same time.

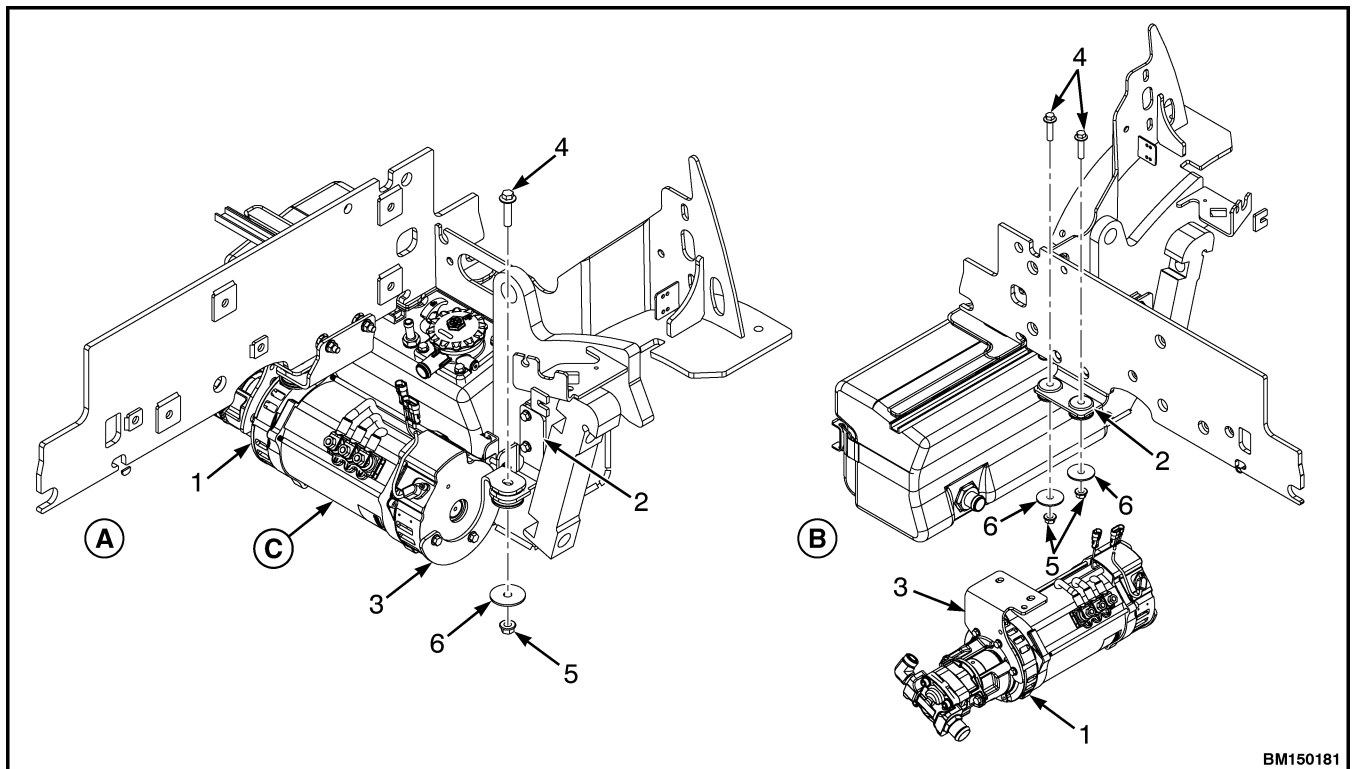
NOTE: Tag electrical connections during removal to aid in installation.

10. Remove three nuts and disconnect three power cables from motor. Lay power cables aside to prevent damage. See Figure 2.
11. Disconnect temperature and speed sensor connectors from wire harness.
12. Remove motor mount bolt, nut, and snubbing washer from motor mount bracket and motor support bracket at front of pump and motor assembly. See "A" of Figure 3.

13. Remove motor mount bolts, nuts, and snubbing washers from motor mount bracket and motor support bracket at rear of pump and motor assembly. See "B" of Figure 3.

14. With all connections and mounting bolts removed from the pump and motor assembly, raise floor jack slightly and maneuver pump and motor assembly toward rear of lift truck until free of all obstructions.

15. Lower pump and motor assembly and remove from lift truck.



NOTE: MAJOR COMPONENTS OF FRAME NOT SHOWN FOR CLARITY. STANDARD MOTOR SHOWN.

- A. FRONT VIEW
B. REAR VIEW

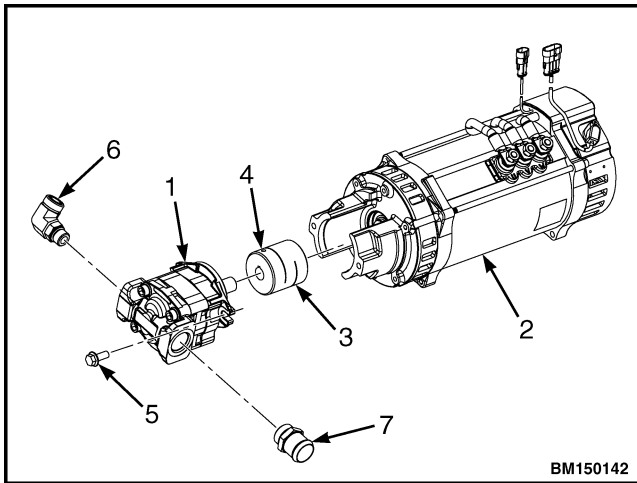
- C. FLOOR JACK PLACEMENT

1. PUMP AND MOTOR ASSEMBLY
2. MOTOR SUPPORT BRACKET
3. MOTOR MOUNT BRACKET

4. MOTOR MOUNT BOLT
5. NUT
6. SNUBBING WASHER

Figure 3. Pump and Motor Support for Lift Truck Models E2.2-3.5XN (E45-70XN) (A268)

16. Remove fitting from hydraulic pump. See Figure 4.



NOTE: STANDARD MOTOR SHOWN.

1. HYDRAULIC PUMP
2. MOTOR
3. COUPLING
4. SETSCREW
5. CAPSCREW
6. FITTING
7. SUCTION ADAPTER

Figure 4. Hydraulic Pump and Motor Assembly for Lift Truck Models E2.2-3.5XN (E45-70XN) (A268)

NOTE: Note orientation of suction adapter during disassembly to aid in assembly.

17. Remove suction adapter from hydraulic pump. See Figure 4.

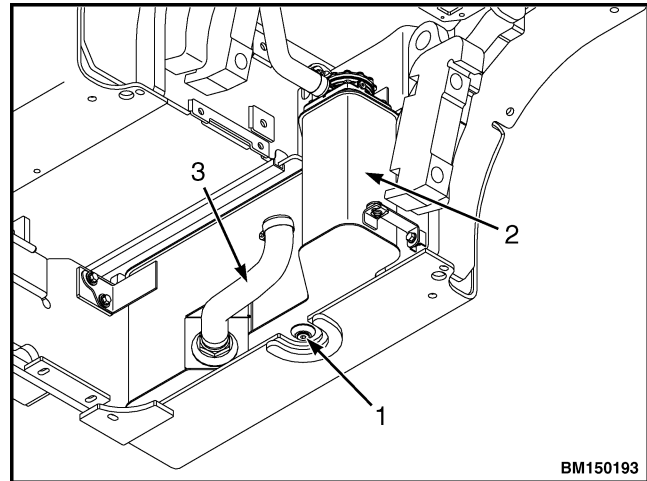
NOTE: Note position of inlet and outlet ports of pump for correct alignment during installation.

18. Remove two capscrews and pump from motor. See Figure 4.

Lift Truck Models E1.6-2.0XN (E30-40XN) (A269)

1. Remove the battery from the lift truck. The procedure for removing the battery may be found in the Operating Manual or Periodic Maintenance 8000SRM1442.

2. Remove battery plate.
3. Install a container, with a capacity of 30.0 liter (32 qt), under drain plug of hydraulic tank. Remove drain plug and drain hydraulic oil. See Figure 5.



NOTE: MAJOR COMPONENTS OF HYDRAULIC SYSTEM REMOVED FOR CLARITY.

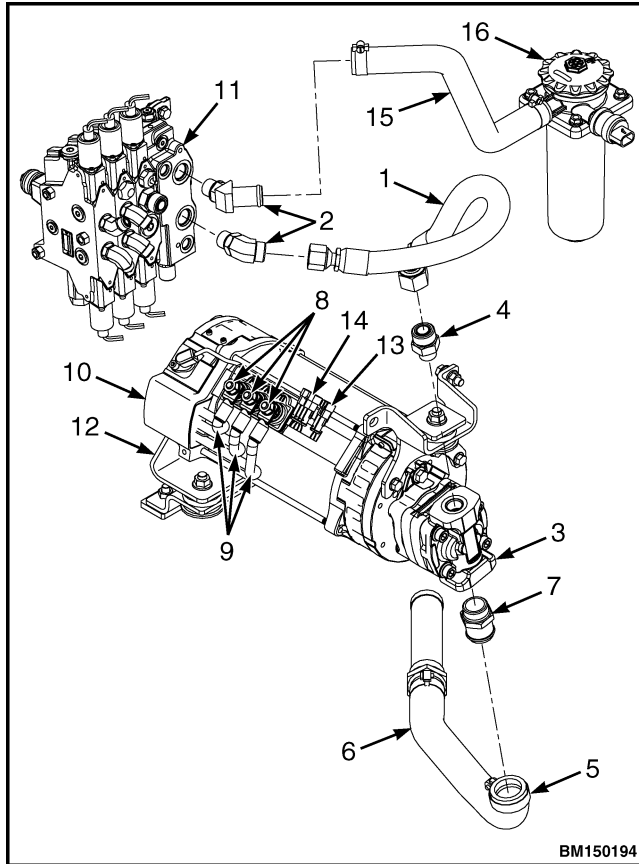
1. HYDRAULIC OIL DRAIN PLUG
2. HYDRAULIC TANK
3. SUCTION HOSE

Figure 5. Drain Hydraulic Oil From Lift Truck Models E1.6-2.0XN (E30-40XN) (A269)

NOTE: Tag hoses and electrical connections during removal to aid in installation.

NOTE: Plug hoses and pump openings to prevent foreign material from entering hydraulic system.

4. Disconnect control valve fitting, securing pressure line hose that runs from control valve to pump pressure port. See Figure 6.



NOTE: MAJOR COMPONENTS OF HYDRAULIC SYSTEM AND ELECTRICAL WIRING HARNESS REMOVED FOR CLARITY.

1. PRESSURE LINE HOSE
2. CONTROL VALVE FITTING
3. HYDRAULIC PUMP
4. PUMP PRESSURE PORT FITTING
5. CLAMP
6. SUCTION HOSE
7. SUCTION ADAPTER
8. NUT
9. POWER CABLES
10. MOTOR
11. CONTROL VALVE
12. MOTOR SUPPORT BRACKET
13. TEMPERATURE SENSOR CONNECTOR
14. SPEED SENSOR CONNECTOR
15. RETURN LINE
16. HYDRAULIC FILTER

Figure 6. Hydraulic Pump and Motor Connections for Lift Truck Models E1.6-2.0XN (E30-40XN) (A269)

5. Disconnect pressure line hose at pump pressure port fitting and move aside to prevent damage. See Figure 6.
6. Loosen hose clamp at suction adapter end of suction hose and move it down suction hose until suction adapter is cleared. Tighten hose clamp enough to keep suction hose and hose clamp together.
7. Disconnect suction hose from suction adapter. See Figure 6. Plug adapter and suction hose.



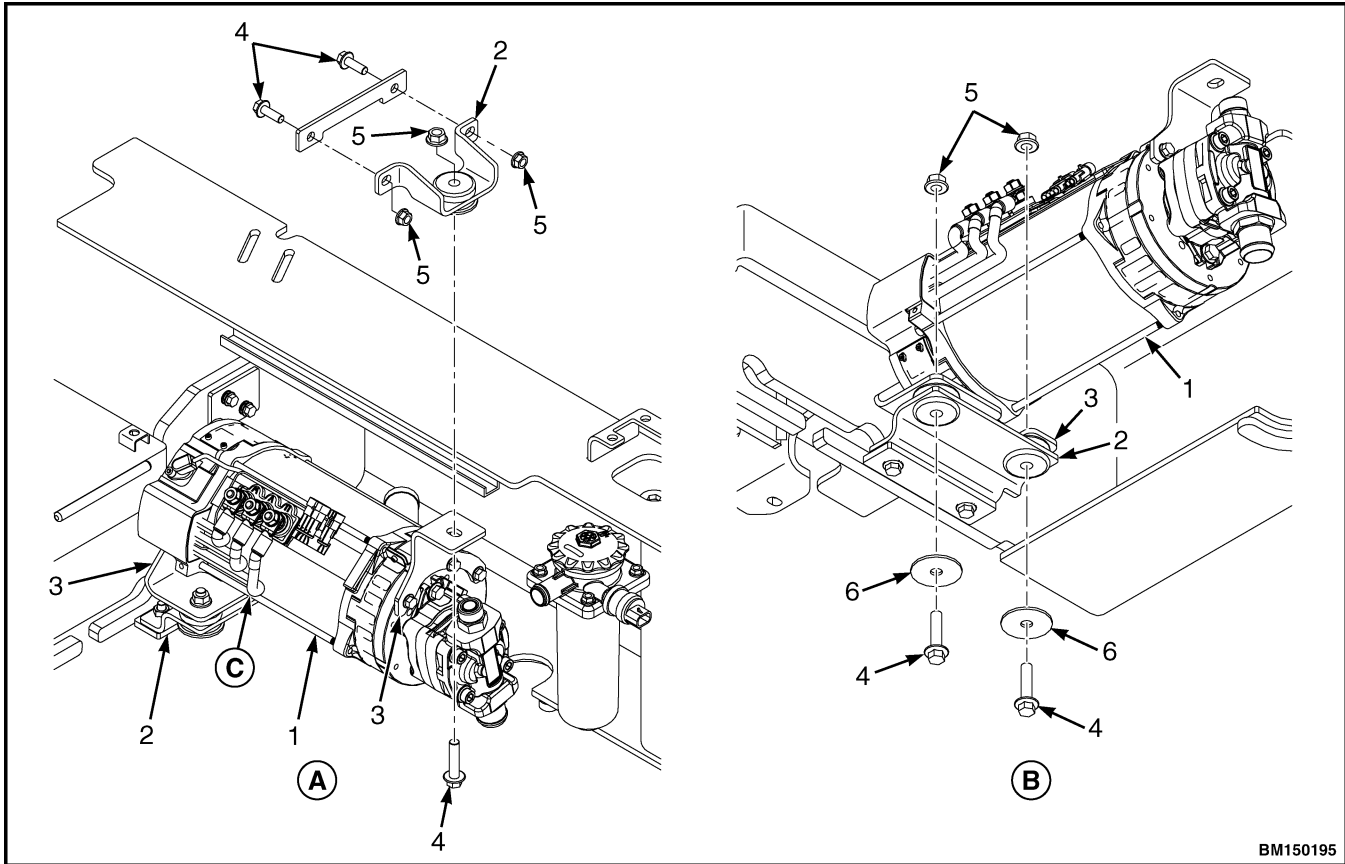
CAUTION

Disposal of lubricants and fluids must meet local environmental regulations.

8. Ensure hydraulic oil has completely drained from hydraulic tank, replace drain plug, and cap all open ports. Remove container with used hydraulic oil.
9. With lift truck on blocks, position floor jack under pump and motor to support both at the same time.

NOTE: Tag electrical connections during removal to aid in installation.

10. Remove three nuts and disconnect three power cables from motor. Lay power cables aside to prevent damage. See Figure 6.
11. Disconnect temperature and speed sensor connectors from wire harness. See Figure 6.
12. Remove two nuts, two motor mount bolts, motor support bracket, and motor mount from front motor mount bracket. See Figure 7.



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NOTE: MAJOR COMPONENTS OF FRAME NOT SHOWN FOR CLARITY.

- A. FRONT VIEW
- B. REAR VIEW

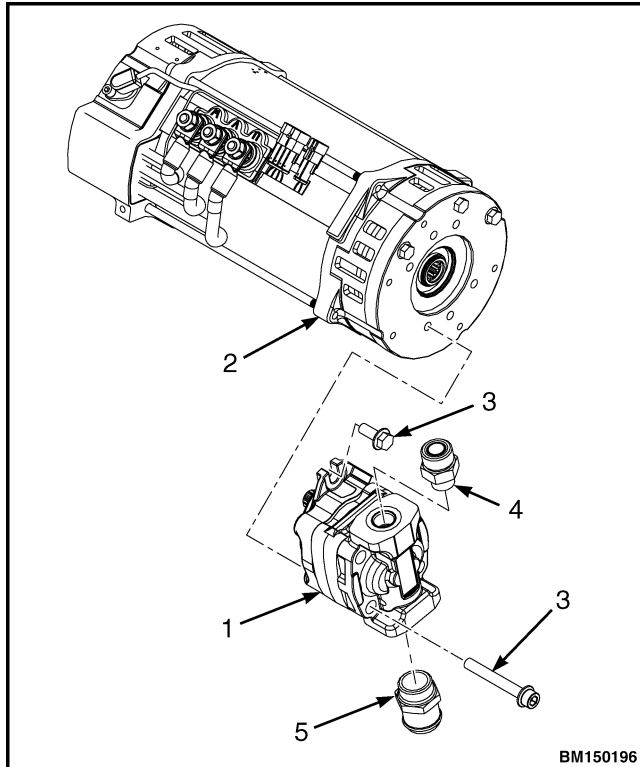
- C. FLOOR JACK PLACEMENT

- 1. PUMP AND MOTOR ASSEMBLY
- 2. MOTOR SUPPORT BRACKET
- 3. MOTOR MOUNT BRACKET

- 4. MOTOR MOUNT BOLT
- 5. NUT
- 6. SNUBBING WASHER

Figure 7. Pump and Motor Support for Lift Truck Models E1.6-2.0XN (E30-40XN) (A269)

- 13. Remove two nuts, two motor mount bolts, and two snubbing washers from motor mount bracket and motor support bracket at rear of pump and motor assembly. See Figure 7.
- 14. With all connections and mounting bolts removed from the pump and motor assembly, raise floor jack slightly and maneuver pump and motor assembly toward rear of lift truck until free of all obstructions.
- 15. Lower pump and motor assembly and remove from lift truck.
- 16. Remove fitting from hydraulic pump. See Figure 8.



- 1. HYDRAULIC PUMP
- 2. MOTOR
- 3. CAPSCREW
- 4. FITTING
- 5. SUCTION ADAPTER

Figure 8. Hydraulic Pump and Motor Assembly for Lift Truck Models E1.6-2.0XN (E30-40XN) (A269)

NOTE: Note orientation of suction adapter during disassembly to aid in assembly.

- 17. Remove suction adapter from hydraulic pump. See Figure 8.

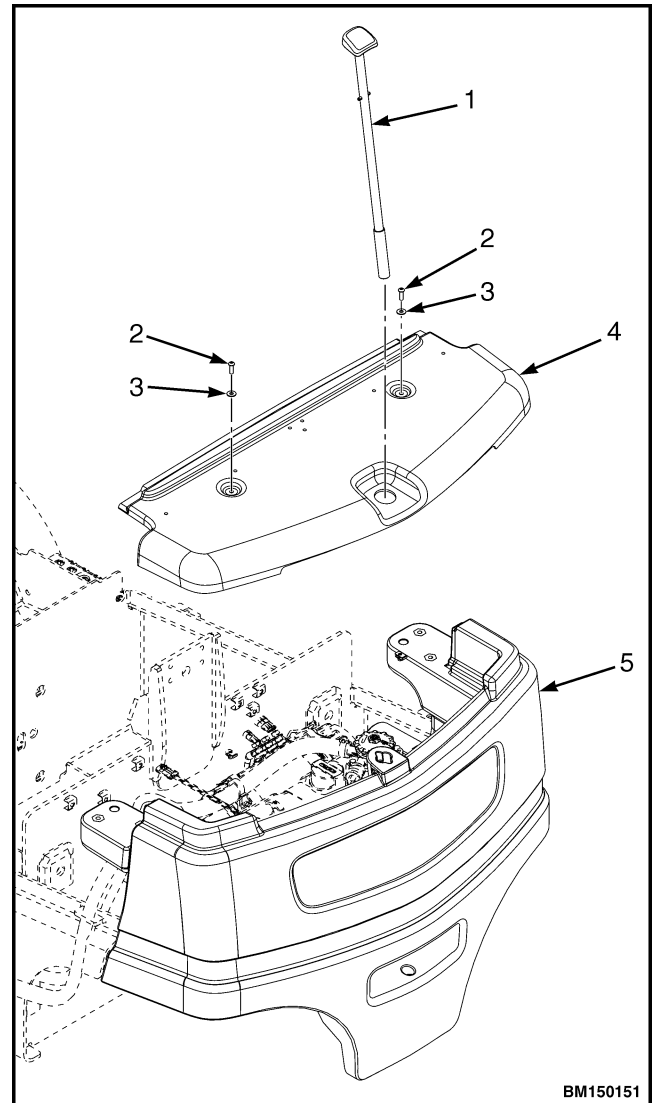
NOTE: Note position of inlet and outlet ports of pump for correct alignment during installation.

- 18. Remove two cap screws and pump from motor. See Figure 8.

Lift Truck Models J2.2-3.5XN (J45-70XN) (A276)

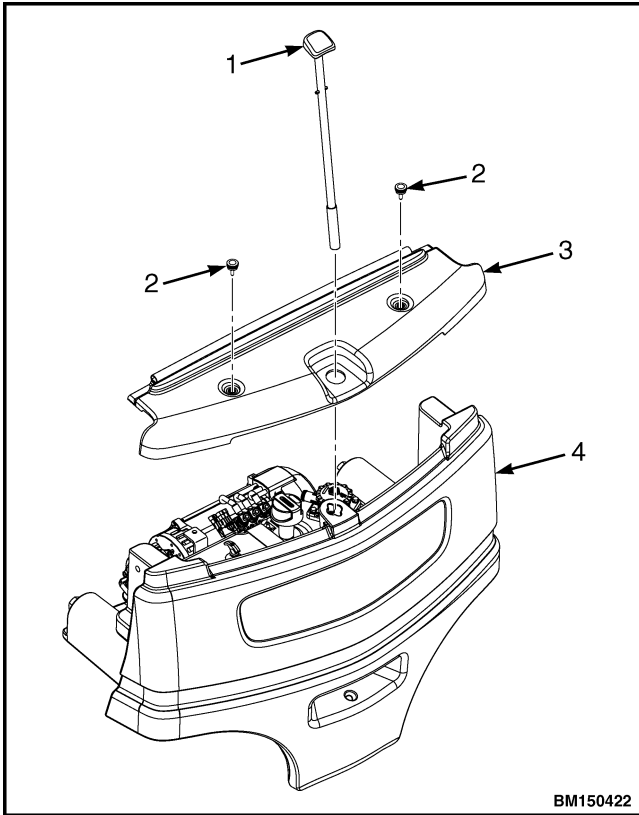
- 1. Install a container, with a capacity of 33 liter (35 qt) under drain hose beneath lift truck. Open drain valve and empty hydraulic tank.

- 2. Remove tow pin from counterweight and counterweight cover. See Figure 9 or Figure 10.



- 1. TOW PIN
- 2. CAPSCREW
- 3. WASHER
- 4. COUNTERWEIGHT COVER
- 5. COUNTERWEIGHT

Figure 9. Counterweight Cover for Lift Truck Models J2.2-3.5XN (J45-70XN) (A276) Manufactured Prior to November, 2015



1. TOW PIN
2. KNOB SCREW
3. COUNTERWEIGHT COVER
4. COUNTERWEIGHT

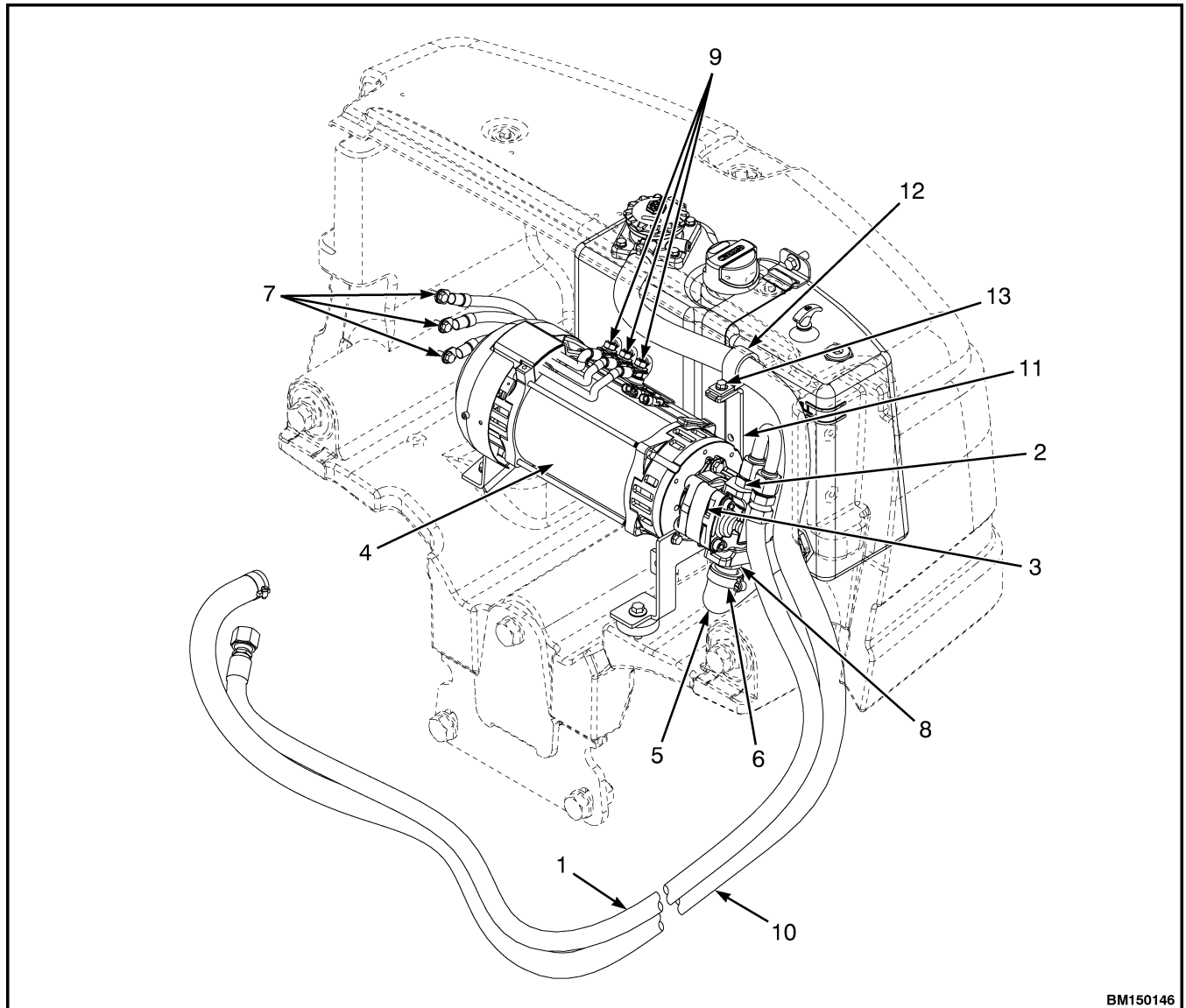
**Figure 10. Counterweight Cover for Lift Truck
Model J2.2-3.5XN (J45-70XN) (A276)ERP22-35VL
(ERP045-070VL) (A976) Manufactured After
November, 2015**

NOTE: If removing counterweight cover does not allow enough room for pump and motor assembly to be moved, the hood and hood support crossmember will need to be removed. See Operating Manual or Frame 0100SRM1342, Hood and Seat Assembly Replacement for procedures.

3. Remove two capscrews, two washers, and counterweight cover from counterweight. See Figure 9 or Figure 10.

NOTE: Tag electrical connections during removal to aid in installation.

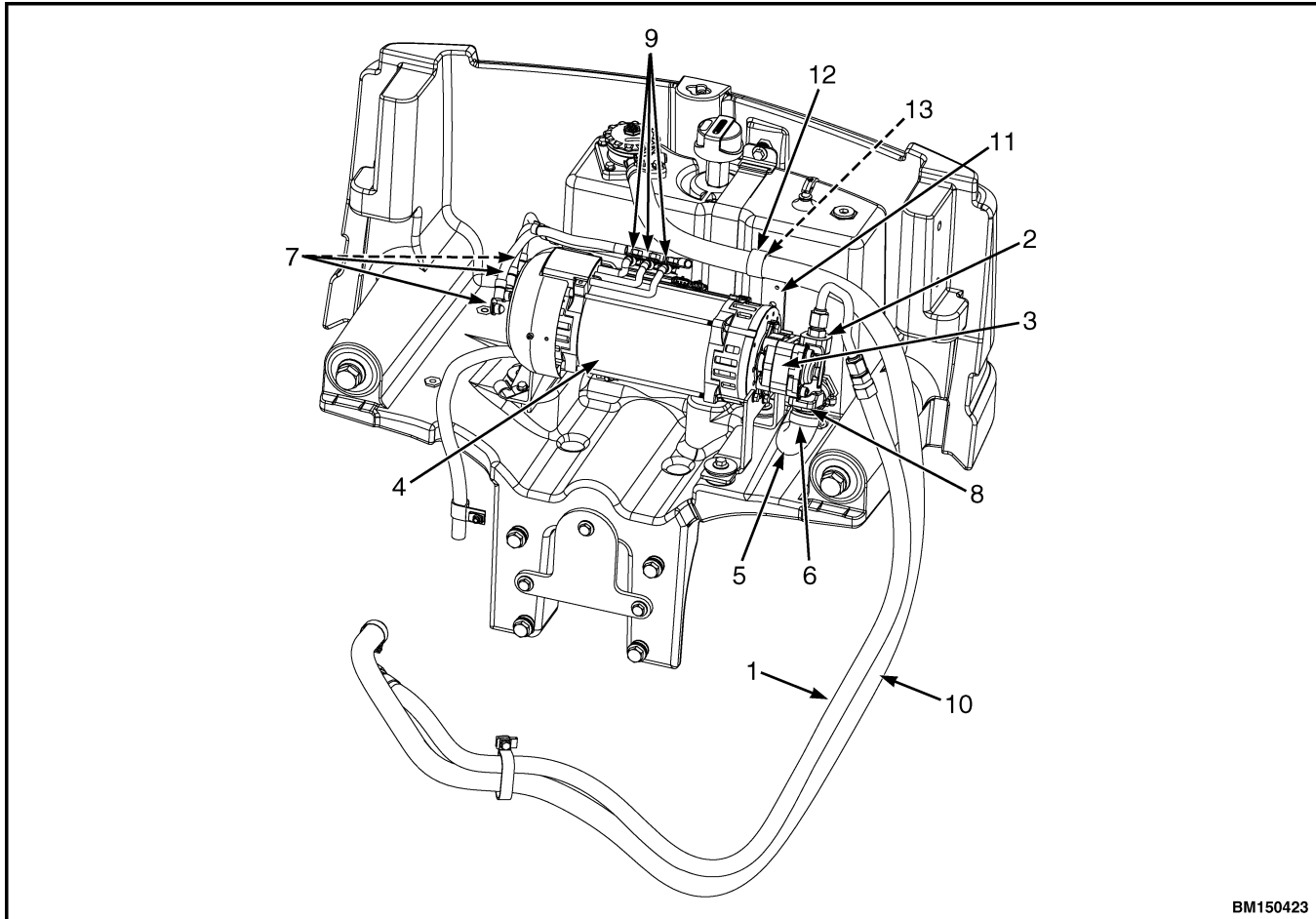
4. Remove three nuts and disconnect three power cables from motor. Lay power cables aside to prevent damage. See Figure 11 or Figure 12.



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- | | |
|-----------------------|-------------------------|
| 1. PRESSURE LINE HOSE | 8. SUCTION ADAPTER |
| 2. FITTING | 9. NUT |
| 3. HYDRAULIC PUMP | 10. RETURN LINE HOSE |
| 4. MOTOR | 11. MOTOR MOUNT BRACKET |
| 5. SUCTION HOSE | 12. CLAMP |
| 6. HOSE CLAMP | 13. CAPSCREW |
| 7. POWER CABLE | |

Figure 11. Pump and Motor Connections for Lift Truck Models J2.2-3.5XN (J45-70XN) (A276) Manufactured Prior to November, 2015



- | | |
|-----------------------|-------------------------|
| 1. PRESSURE LINE HOSE | 8. SUCTION ADAPTER |
| 2. FITTING | 9. NUT |
| 3. HYDRAULIC PUMP | 10. RETURN LINE HOSE |
| 4. MOTOR | 11. MOTOR MOUNT BRACKET |
| 5. SUCTION HOSE | 12. CLAMP |
| 6. HOSE CLAMP | 13. CAPSCREW |
| 7. POWER CABLE | |

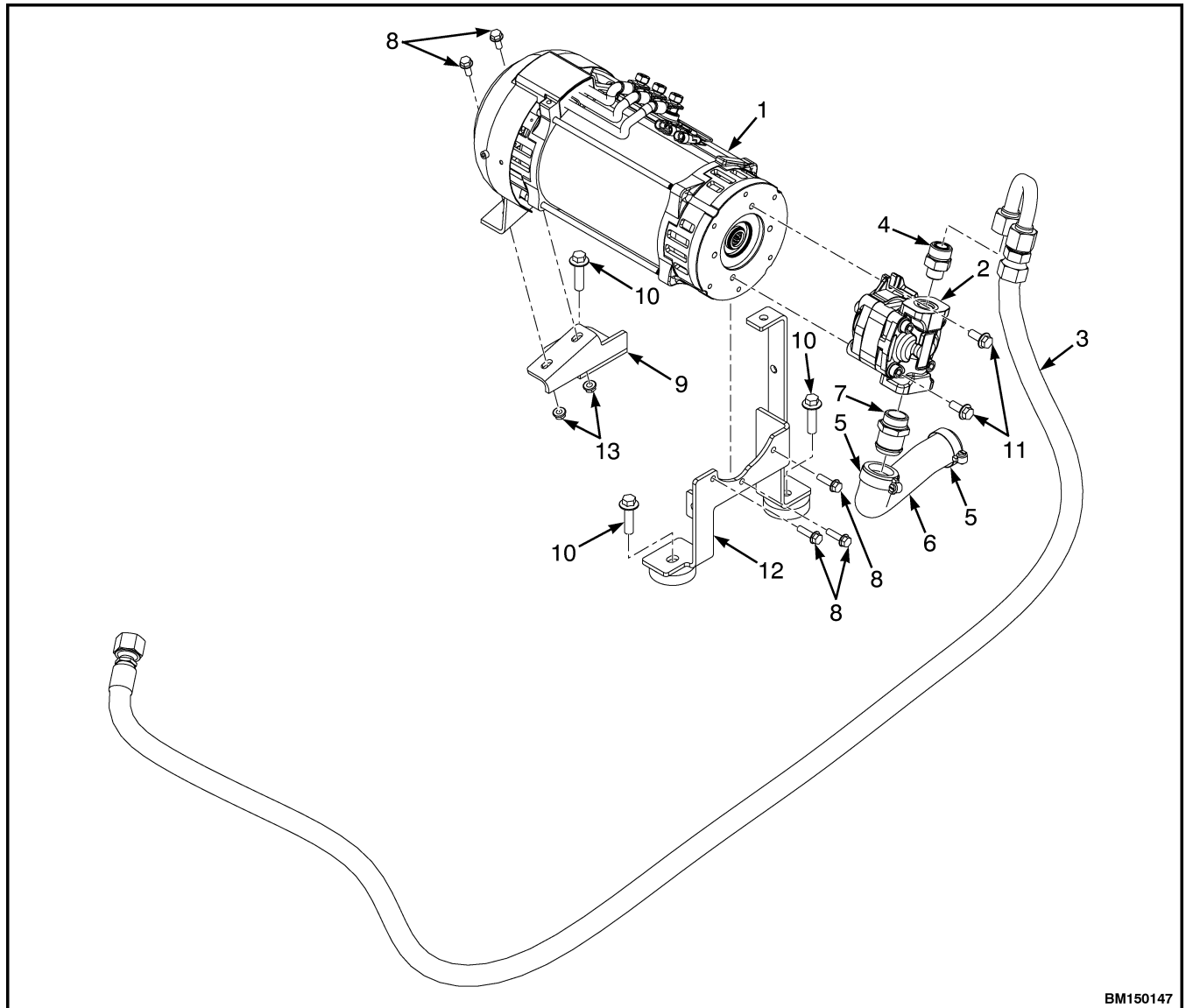
Figure 12. Pump and Motor Connections for Lift Truck Models J2.2-3.5XN (J45-70XN) (A276) Manufactured After November, 2015

5. Remove capscrew, clamp, and return line hose from motor mount bracket. See Figure 11 or Figure 12. Move return line hose aside to prevent damage.

NOTE: Tag hoses, adapters, and fittings during removal to aid in installation.

NOTE: Plug hoses and pump openings to prevent foreign material from entering the hydraulic system.

6. Disconnect pressure line hose from fitting. Plug fitting and pressure line hose. See Figure 11, Figure 12, and Figure 13.



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- | | |
|-----------------------|----------------------------------|
| 1. MOTOR | 8. CAPSCREW |
| 2. HYDRAULIC PUMP | 9. MOTOR MOUNT BRACKET |
| 3. PRESSURE LINE HOSE | 10. MOUNTING CAPSCREW |
| 4. FITTING | 11. CAPSCREW |
| 5. HOSE CLAMP | 12. PUMP END MOTOR MOUNT BRACKET |
| 6. SUCTION HOSE | 13. NUT |
| 7. SUCTION ADAPTER | |

Figure 13. Hydraulic Pump and Motor Assembly for Lift Truck Models J2.2-3.5XN (J45-70XN) (A276)

7. Loosen and move hose clamp up suction hose until suction adapter end is cleared, tighten hose clamp enough to keep suction hose and hose clamp together.
8. Disconnect suction hose from suction adapter. See Figure 11, Figure 12, and Figure 13. Plug suction adapter and suction hose.

**CAUTION**

Disposal of lubricants and fluids must meet local environmental regulations.

9. Ensure that hydraulic fluid has drained from the tank and close drain valve. Remove container with used hydraulic oil.

NOTE: Make sure crane and sling have the lifting capacity of 50.0 kg (110.0 lb) or more.

10. Once all connector wires and hoses have been disconnected from pump and motor assembly, connect crane and sling around center of hydraulic pump and motor assembly. Raise crane to support the assembly. See Figure 14.
11. Remove one mounting capscrew from motor mount bracket and counterweight on right side of lift truck, as viewed from front. See Figure 13.
12. Remove two mounting capscrews from pump end motor mount bracket and counterweight on left side of lift truck, as viewed from front. See Figure 13.

NOTE: DO NOT damage hoses, electrical connectors, or assembly during removal.

13. Using sling and crane, carefully lift pump and motor assembly from counterweight. See Figure 14.
14. Remove three capscrews and pump end motor mount bracket from motor. See Figure 13.

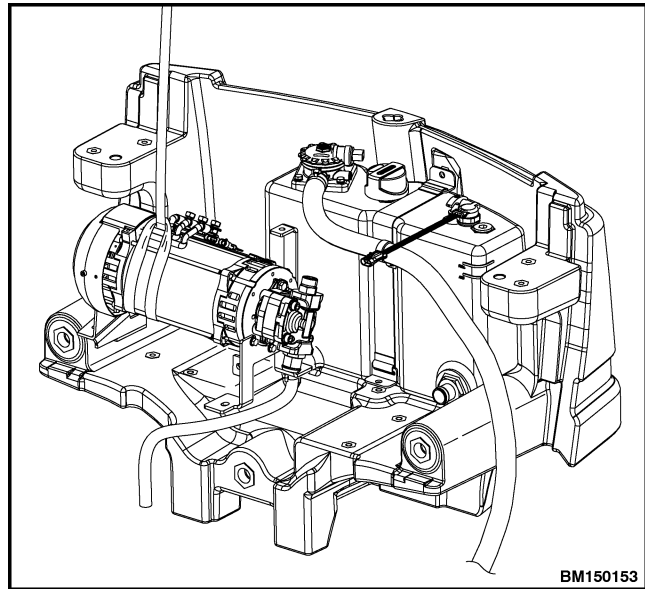


Figure 14. Sling and Crane

15. Remove two nuts, two capscrews and motor mount bracket from opposite end of motor. See Figure 13.

16. Remove fitting from hydraulic pump. See Figure 13.

NOTE: Note orientation of adapter during disassembly to aid in assembly.

17. Remove suction adapter from hydraulic pump. See Figure 13.

18. Remove two capscrews and pump from motor. See Figure 13.

Lift Truck Models J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)

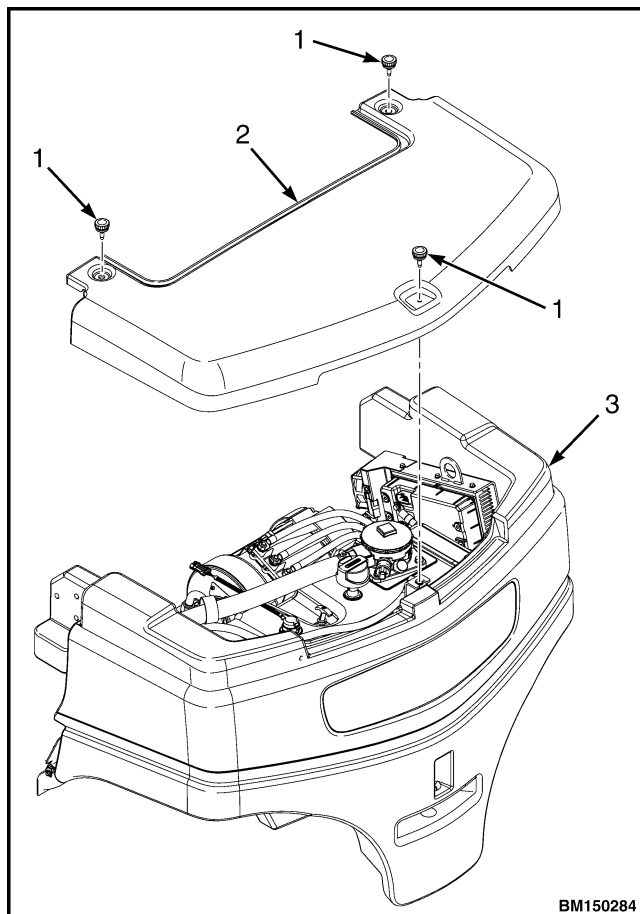
1. Install a container, with a capacity of 57.0 liter (60.2 qt) under drain hose beneath lift truck. Open drain valve and empty hydraulic tank.

NOTE: If removing counterweight cover does not allow enough room for pump and motor assembly to be moved, the hood and hood support crossmember will need to be removed. See Operating Manual or Frame 0100SRM1342, Hood and Seat Assembly Replacement for procedures.

2. Remove three capscrews and counterweight cover from counterweight. See Figure 15.

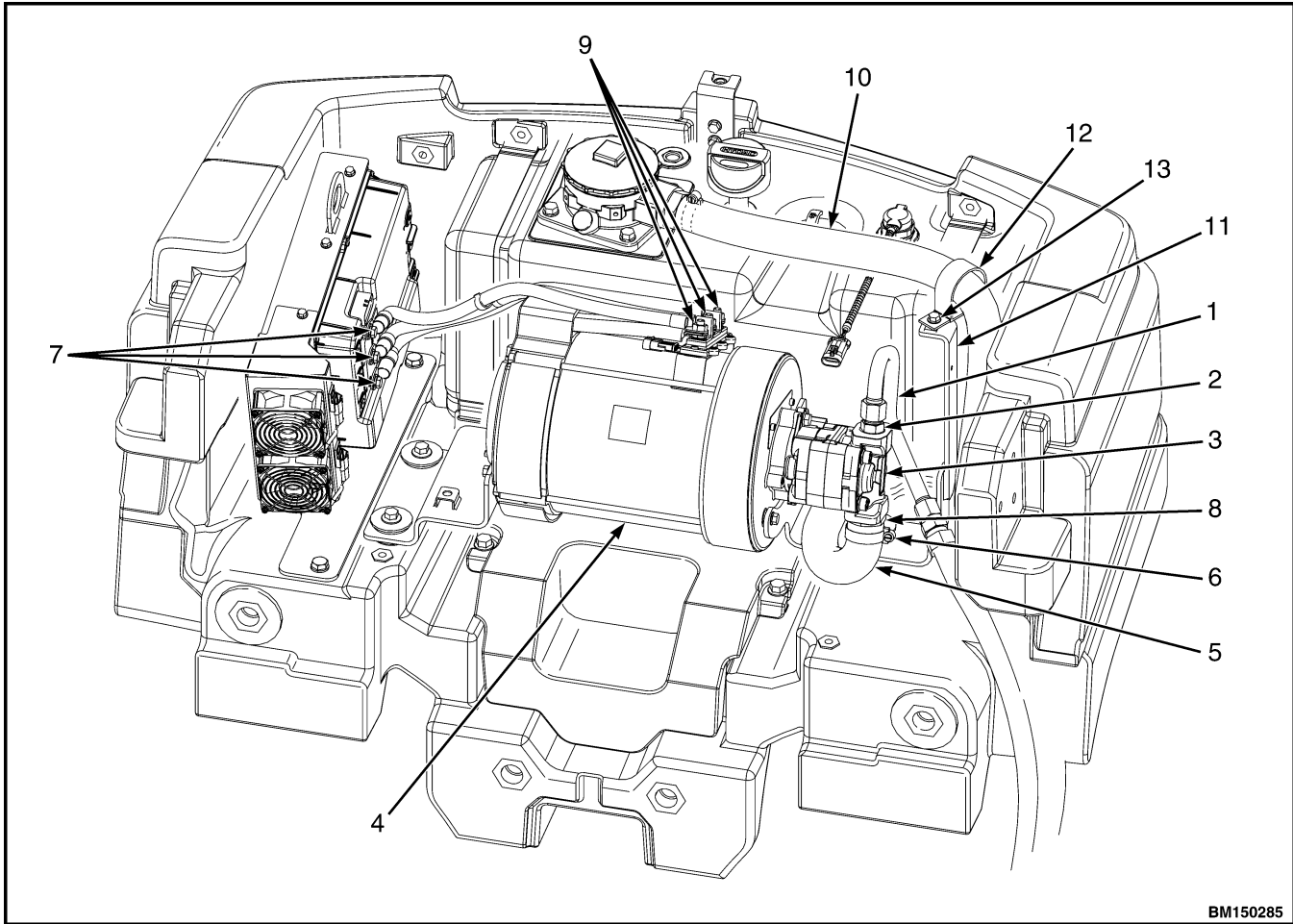
NOTE: Tag electrical connections during removal to aid in installation.

3. Remove three nuts and disconnect three power cables from motor. Lay power cables aside to prevent damage. See Figure 16 or Figure 17.



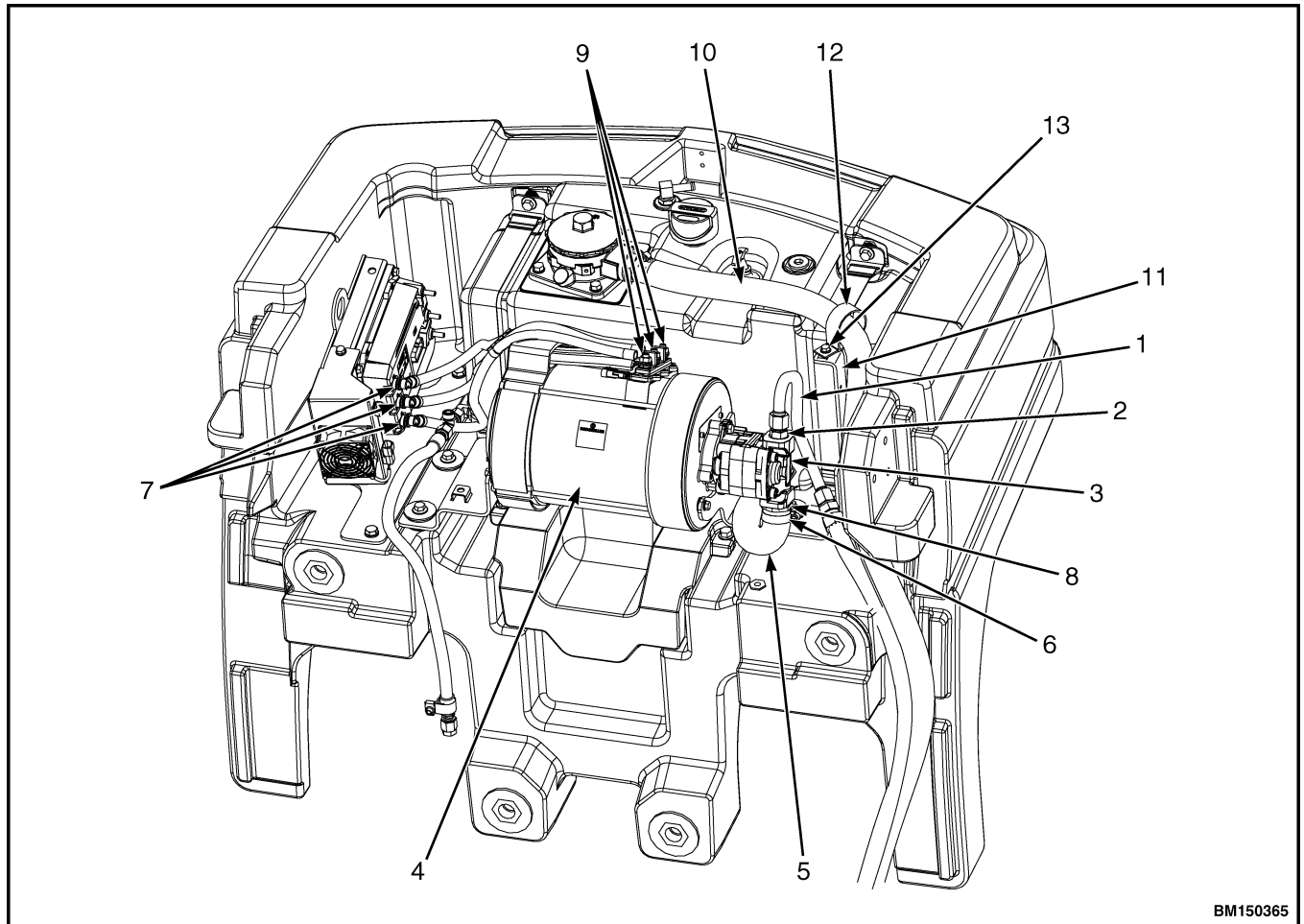
1. CAPSCREW
2. COUNTERWEIGHT COVER
3. COUNTERWEIGHT

Figure 15. Counterweight Cover for Lift Truck Models J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)



- | | |
|-----------------------|-------------------------|
| 1. PRESSURE LINE HOSE | 8. SUCTION ADAPTER |
| 2. FITTING | 9. NUT |
| 3. HYDRAULIC PUMP | 10. RETURN LINE HOSE |
| 4. MOTOR | 11. MOTOR MOUNT BRACKET |
| 5. SUCTION HOSE | 12. CLAMP |
| 6. HOSE CLAMP | 13. CAPSCREW |
| 7. POWER CABLE | |

Figure 16. Short Wheel Base (SWB) Pump and Motor Connections for Lift Truck Models J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)



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- | | |
|-----------------------|-------------------------|
| 1. PRESSURE LINE HOSE | 8. SUCTION ADAPTER |
| 2. FITTING | 9. NUT |
| 3. HYDRAULIC PUMP | 10. RETURN LINE HOSE |
| 4. MOTOR | 11. MOTOR MOUNT BRACKET |
| 5. SUCTION HOSE | 12. CLAMP |
| 6. HOSE CLAMP | 13. CAPSCREW |
| 7. POWER CABLE | |

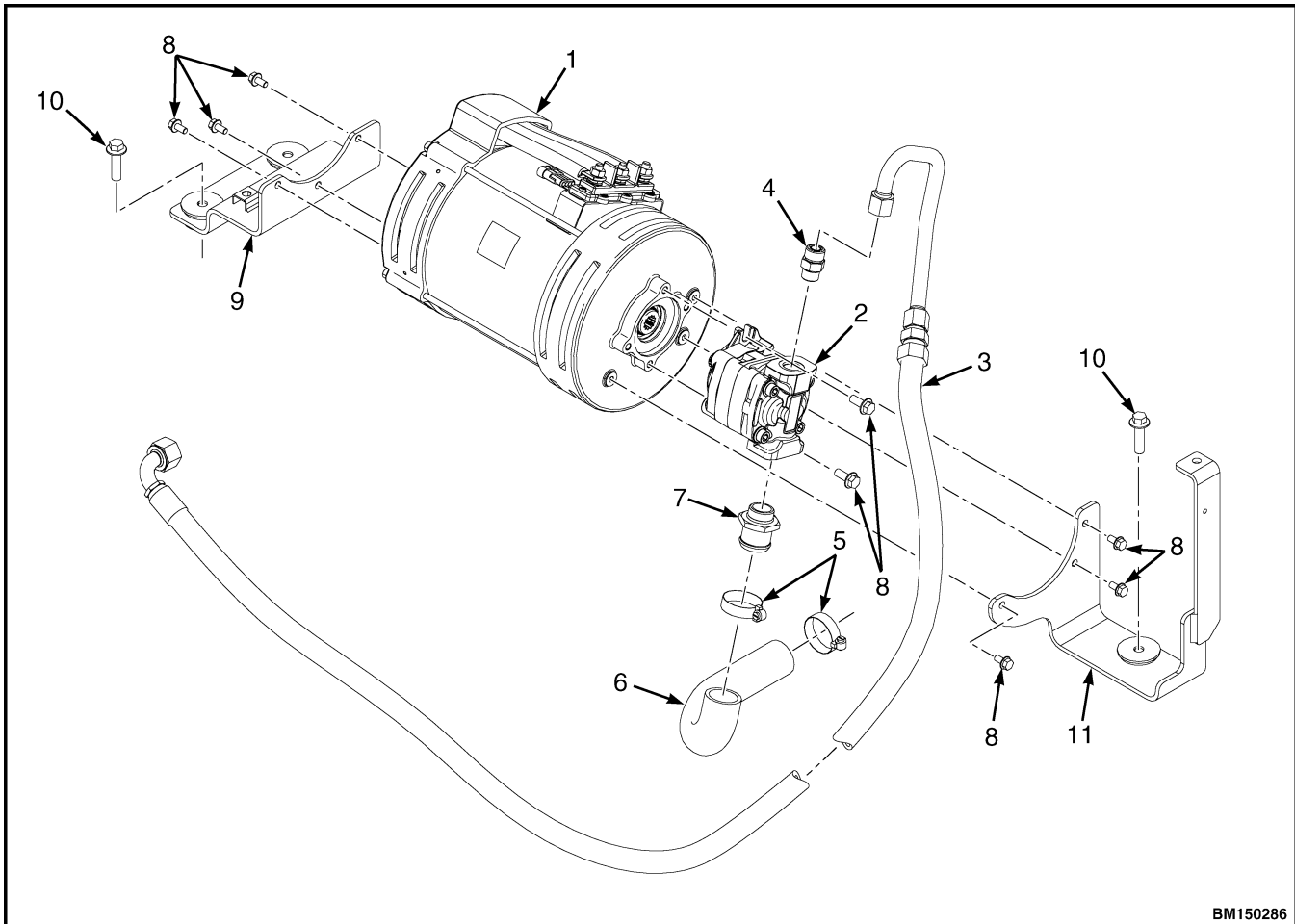
Figure 17. Long Wheel Base (LWB) Pump and Motor Connections for Lift Truck Models J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)

4. Remove capscrew, clamp, and return line hose from motor mount bracket (see Figure 16 or Figure 17). Move return line hose aside to prevent damage.

NOTE: Tag hoses, adapters, and fittings during removal to aid in installation.

NOTE: Plug hoses and pump openings to prevent foreign material from entering the hydraulic system.

5. Disconnect pressure line hose from fitting. Plug fitting and pressure line hose. See Figure 16, Figure 17, and Figure 18.



- | | |
|-----------------------|----------------------------------|
| 1. MOTOR | 7. SUCTION ADAPTER |
| 2. HYDRAULIC PUMP | 8. CAPSCREW |
| 3. PRESSURE LINE HOSE | 9. MOTOR MOUNT BRACKET |
| 4. FITTING | 10. MOUNTING CAPSCREW |
| 5. HOSE CLAMP | 11. PUMP END MOTOR MOUNT BRACKET |
| 6. SUCTION HOSE | |

Figure 18. Hydraulic Pump and Motor Assembly for Lift Truck Models J4.0-5.0XN, J5.0-5.5XN6 (J80-120XN, J100XNL) (A970)

6. Loosen and move hose clamp up suction hose until suction adapter end is cleared, tighten hose clamp enough to keep suction hose and hose clamp together.
7. Disconnect suction hose from suction adapter. Plug suction adapter and suction hose. See Figure 16, Figure 17, and Figure 18.

**CAUTION**

Disposal of lubricants and fluids must meet local environmental regulations.

8. Ensure that hydraulic fluid has drained from the tank and close drain valve. Remove container with used hydraulic oil.

NOTE: Make sure crane and sling have the lifting capacity of 50.0 kg (110.0 lb) or more.

9. Once all connector wires and hoses have been disconnected from pump and motor assembly, connect crane and sling around center of hydraulic pump and motor assembly. Raise crane to support the assembly. See Figure 19.

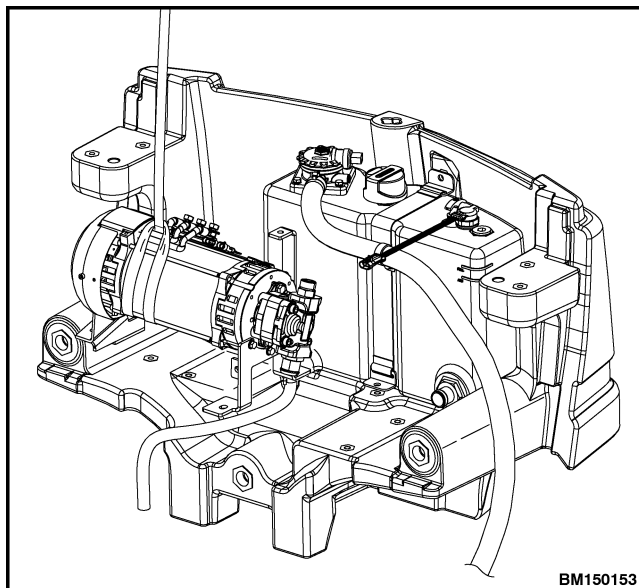


Figure 19. Sling and Crane

10. Remove one mounting capscrew from motor mount bracket and counterweight on right side of lift truck, as viewed from front. See Figure 18.
11. Remove two mounting capscrews from pump end motor mount bracket and counterweight on left side of lift truck, as viewed from front. See Figure 18.

NOTE: DO NOT damage hoses, electrical connectors, or assembly during removal.

12. Using sling and crane, carefully lift pump and motor assembly from counterweight. See Figure 19.
13. Remove three capscrews and pump end motor mount bracket from motor. See Figure 18.
14. Remove three capscrews and motor mount bracket from opposite end of motor. See Figure 18.
15. Remove fitting from hydraulic pump. See Figure 18.

NOTE: Note orientation of adapter during disassembly to aid in assembly.

16. Remove suction adapter from hydraulic pump. See Figure 18.
17. Remove two capscrews and pump from motor. See Figure 18.

**Lift Truck Model E4.0-5.5XN, E5.0XNS
(E80-120XN, E100XNS) (A099)**

1. Remove battery from lift truck. The procedure for removing the battery may be found in the Operators Manual or Periodic Maintenance 8000SRM1577.
2. Remove the battery plate.
3. Install a container, with a capacity of 62.0 liter (66 qt) under drain plug of hydraulic tank.
4. Remove drain plug and drain hydraulic oil. See Figure 20.