SERVICE MANUAL

E210 (V30ZMD)



FORM 1640596 Rev. 03/14

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This section is for the following models:

E/J1.25-1.75XL (E/J25-35XL) [C114];
E/J2.00-3.00XL (E/J40-60XL) [B168, C108];
E2.00-3.20XM (E45-65XM, E45-65XM$_2$) [F108];
N30XMH, N30XMH$_2$ [C210];
E2.00-3.20XM (E45-65Z) [G108];
V30ZMD [D210/E210]

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will not supply the volume and pressure shown in the specifications, then the pump must be repaired or replaced.

4. Inspect the gear assemblies, the gear bearings, and the pump body for wear or damage.
5. Clean the internal parts of the pump. Use hydraulic oil to lubricate the parts as they are installed into the pump. Install new seals in the bushings.
6. Install the gears and bushings in the pump body.
7. Install new O-rings, seal rings, and dowel pin into the end cover of the pump with the relief valve. See Figure 8 for the arrangement.
8. Install new O-rings, seal rings, and dowel pin into the other end cover with the flange. Install this end cover onto the pump.
9. Check that all of the parts are in the correct position, and install the four capscrews. Tighten the capscrews to 34 to 40 N•m (25 to 30 lbf ft).
10. Install a new O-ring on the flange to seal against the end plate of the motor.

Steering System Air Removal

If there is air in the hydraulic lines of the steering system, the operation will not be constant. Rotate the steering wheel from stop to stop several times to remove the air from the steering system. If the air cannot be removed from the steering system, check for leaks at the power steering pump. Check for a loose fitting or a leak in the intake manifold. If the O-ring or the oil seal between the power steering motor and pump has damage, air will enter the hydraulic system.

Steering Pressure Check

Do the following procedure to connect a 20 MPa (3000 psi) gauge:

1. Remove the cap of the pressure check fitting in the steering line under the floor plate and near the center of the cowl. See Figure 1 and Figure 9.
2. The hydraulic oil must be at operating temperature 54 to 66°C (130 to 150°F)
3. Operate the power steering pump and steering for a complete turn. The maximum pressure for each lift truck covered in this manual is:
   - **J2.00-3.20XM (J40-60Z) (A416/B416)** 9.40 MPa (1342 psi)
   - **E1.50-2.00XM (E25-35Z, E40ZS) (E114/F114)** 6.05 MPa (864 psi)
   - **E2.00-3.20XM (E45-65Z) (G108) and V30ZMD (D210/E210)** 9.00 MPa (1286 psi)
   - **E3.50-5.50XL, E4.50XLS (E70-120Z, E100ZS) (D098/E098)** 10.7 MPa (1550 psi)
4. If the pressure is less than the minimum pressure for the lift truck, check that the power steering pump is not worn or damaged. If the power steering pump is worn or damaged, replace the steering pump. The minimum pressure for each lift truck is:
   - **J2.00-3.20XM (J40-60Z) (A416/B416)** 8.70 MPa (1242 psi)
   - **E1.50-2.00XM (E25-35Z, E40ZS) (E114/F114)** 5.54 MPa (792 psi)
   - **E2.00-3.20XM (E45-65Z) (G108) and V30ZMD (D210/E210)** 8.50 MPa (1214 psi)
   - **E3.50-5.50XL, E4.50XLS (E70-120Z, E100ZS) (D098/E098)** 10.0 MPa (1450 psi)
5. When the pressure checks are complete, return the steering system to normal operation.

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Status Code	Description	Memory Recall	Circuit
55	Dash display cannot communicate with master controller.	Yes	Traction

Symptom

Varies due to problem.

Possible Causes and Test Procedures

- If truck operates and code is displayed on dash, the CANbus communication is not working between the dash and the master controller. See the section Troubleshooting When Dash and/or Lift Truck is not Operational.
  Check for loose or broken wires.
- If truck does not operate and code is displayed on dash, see the section Troubleshooting When Dash and/or Lift Truck is not Operational.

Status Code	Description	Memory Recall	Circuit
56	Mini-lever module or joystick cannot communicate with the master controller.	No	E-Hydraulics

Symptom

Hydraulic functions are disabled.

Possible Causes and Test Procedures

- Check input to the mini-lever module (or joystick).
  Voltage should be in the range 9-16V.
- Check LED status of the valve driver module.
  Green LED should be on.
- CANbus communication between mini-lever module and master controller is not working
  Check for loose or broken wires.

Status Code	Description	Memory Recall	Circuit
57	Valve driver module cannot communicate with master controller.	No	E-Hydraulics

Symptom

Hydraulic functions are disabled.

Possible Causes and Test Procedures

- Check LED status of the valve driver module.
  Green LED should be on.
- CANbus communication between mini-lever module and master controller is not working
  Check for loose or broken wires.

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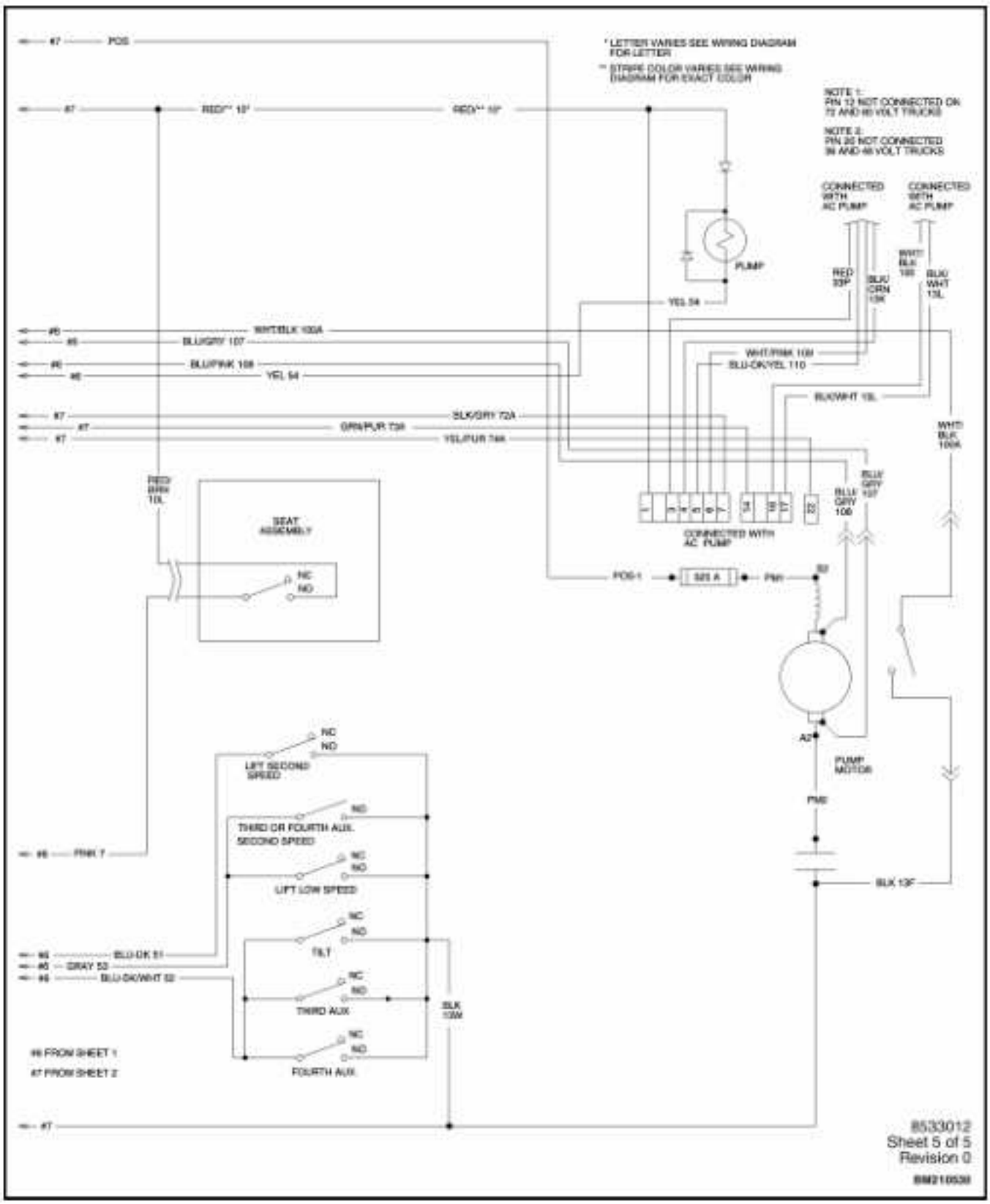


Figure 3. Wiring Schematic Diagram for E2.00-3.20XM (E45-65Z) (G108) and V30ZMD (E210), 36v/48v Lift Trucks With Electro-Hydraulic Control Valve (Sheet 5 of 5)

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4. Unplug the mini-lever connector from the main PCB. See Figure 51.

⚠ CAUTION

DO NOT TRY TO REMOVE CONNECTOR BY PULLING ON THE WIRES.

5. If push button switch connector is attached to the mini-lever PCB then unplug this connector. Carefully grip plug with flush cutting wire cutters. Gently work the plug out of the socket. See Figure 52.

6. Locate the mini-lever mounting screws. See Figure 53.

7. Remove screws using a No. 10 torx driver. Carefully slide lever out of the top of the MLM. Be sure wires do no catch on any sharp edges.

Clean and Inspect

Remove any grease or dirt from MLM housing exterior.

Install

1. Install the seal (supplied in mini-lever kit) onto the base of the new mini-lever.

NOTE: Mini-lever will only insert in one direction.

2. Carefully position the mini-lever over the mounting hole. Use index pins to align with matching hole pattern.

3. Insert one screw and hand tighten to hold the mini-lever in place. See Figure 53.

4. Insert the remaining 3 screws but do not tighten.

5. Tighten all screws per the tightening sequence using a No. 10 torx driver. See Figure 53. Torque to 0.62 N•m (5.5 lbf in). If no torque measurement device is available, tightened firmly. Do not over tighten.



Figure 51. MLM Connector

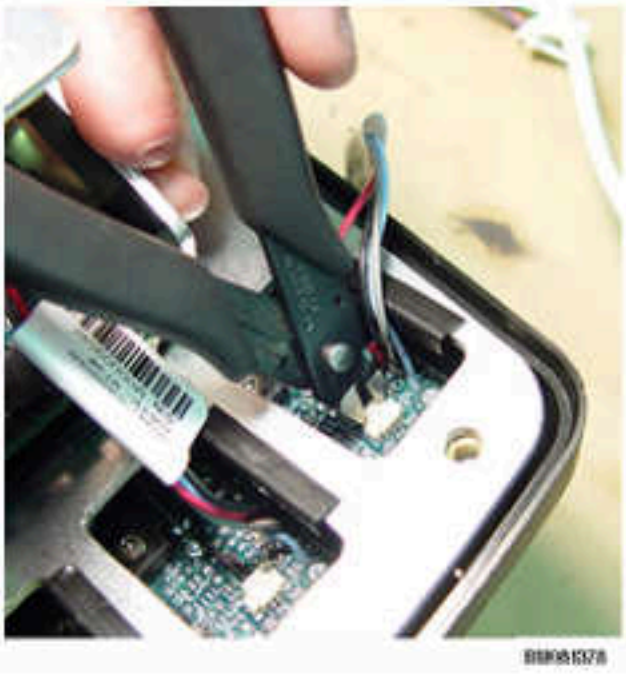


Figure 52. MLM Push Button Switch Connector

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