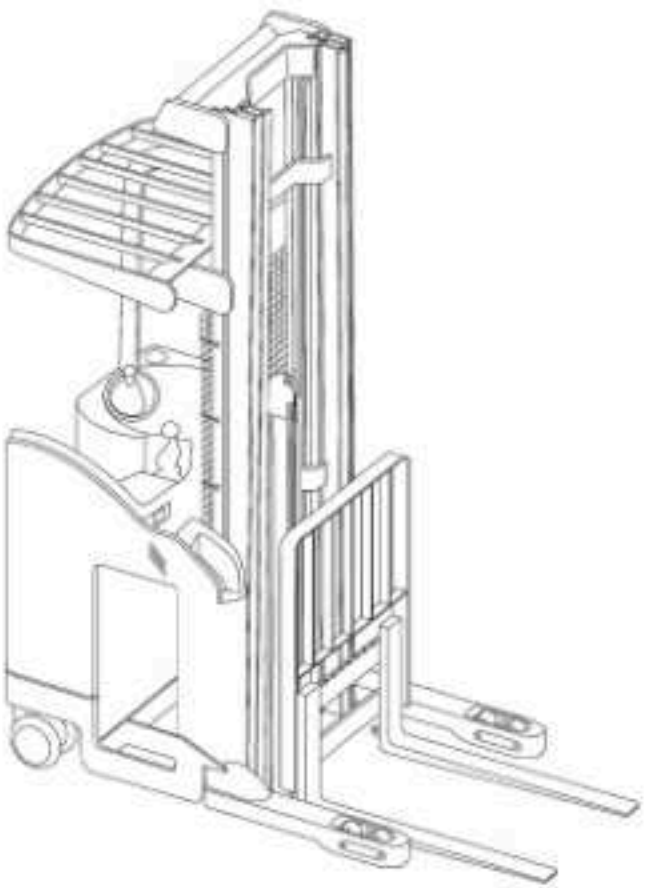
SERVICE MANUAL

D470 (N35ZR, N40ZR, N30ZDR)



FORM 1590971-D470 Rev. 04/14

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This section is for the following models:

N30XMXDR3, N45XMXR3 [B264];
N30XMH, N30XMH$_2$ [C210];
N25XMDR3, N30/40XMR3 [C470];
N50XMA3 [C471];
N30XMDR3, N45XMR3 [G138];
W30-40ZA [B453];
W20-30ZR [B455];
W25-30-40ZC [B454];
V30ZMD [D210/E210];
N35ZDR, N45ZR [C264];
N35ZDR2, N45ZR2 [D264];
N30ZDR, N35-40ZR [D470];
N35-40ZR2, N30ZDR2 [E470];
N30ZDRS, N35-40ZRS [A265];
N35-40ZRS2, N30ZDRS2 [B265];
W25-30ZA$_2$ [B495]

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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.
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.

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DISCHARGING THE CAPACITORS

When working with the electrical systems of the truck, it is necessary to discharge the internal or external capacitors of the controllers associated with each circuit affected.

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 your supervisor immediately. If repair is necessary, attach a DO NOT OPERATE tag to the control handle and disconnect the battery.

Disconnect the battery and discharge the internal or external capacitors before opening any compartment covers or inspecting or repairing the electrical 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 jewelry or other metallic items on your fingers, arms, or neck when working near electrical components. Metal items can accidentally make an electrical connection and cause injury.

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

The capacitors in the transistor controllers can hold an electrical charge after the battery is disconnected. To prevent an electrical shock and personal injury, discharge the internal or external capacitors before inspecting or repairing any component in the electrical compartments. 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.

CAUTION

To avoid controller damage, always disconnect the battery, discharge the internal or external capacitors, and never put power to the controller while any power wires are disconnected. Never short any controller terminal or motor terminal to the battery. Make sure to use proper procedure when servicing the controller.

NOTE: Depending on your lift truck see Figure 2 or Figure 3 for discharging the capacitiors.

1. Move the lift truck to a safe, level area and completely lower the mast. Turn the key switch to the **OFF** position and attach a **DO NOT OPERATE** tag to the control handle. Block the drive wheel to prevent unexpected movement.
2. Disconnect the battery power cable connector from the truck connector located on the right side of the frame. Pull the battery cable connector handle to separate the battery connector from the truck connector.
3. Remove the operator compartment cover.
4. Discharge the internal or external capacitors in the controllers by connecting a 200-ohm, 2-watt resistor across the controller B+ and B terminals of the motor controller. Remove the resistor after discharging the capacitors. See Figure 2 or Figure 3.

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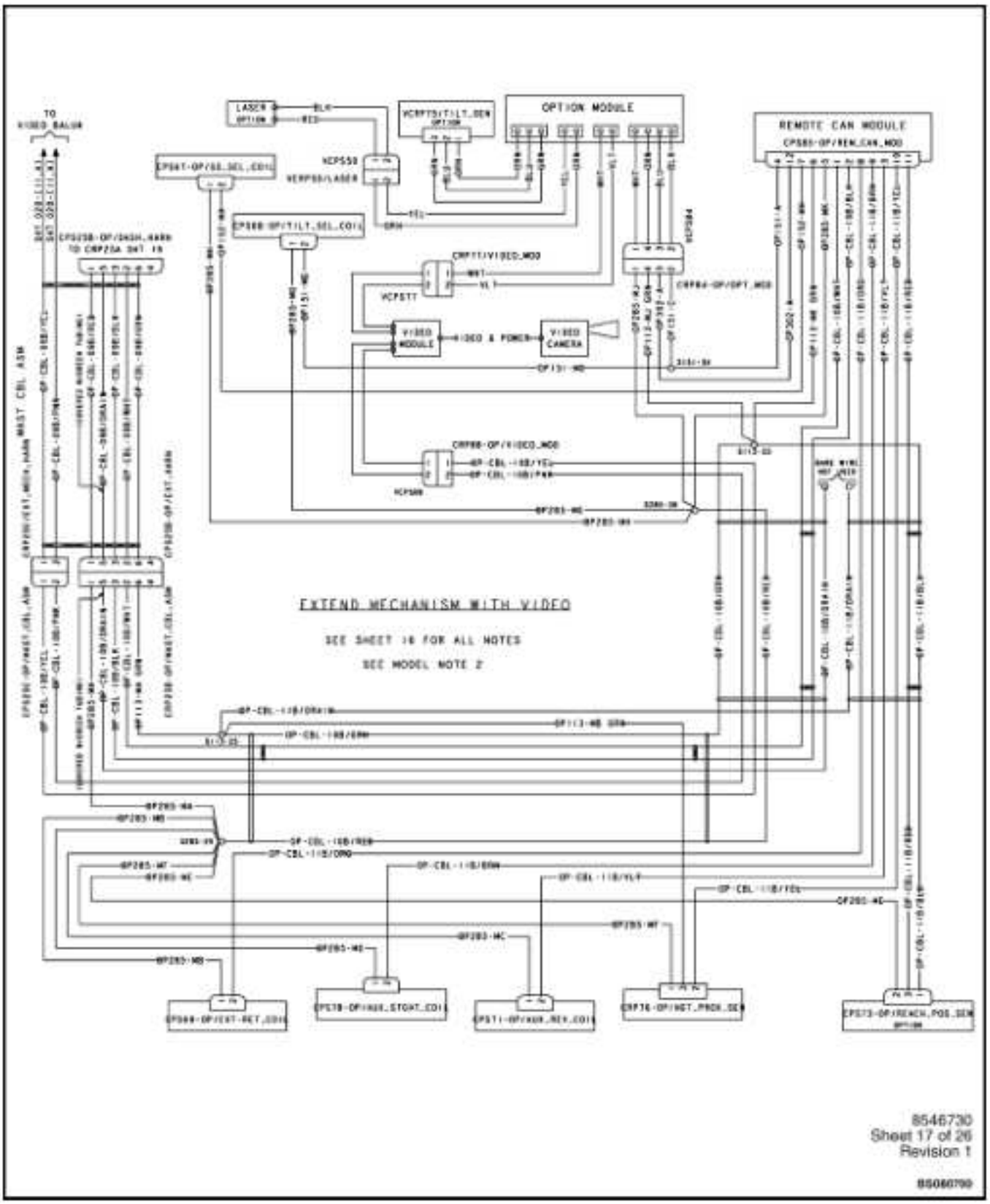


Figure 2. Schematic/Wiring Diagram After October, 2008 (Sheet 17 of 26)

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