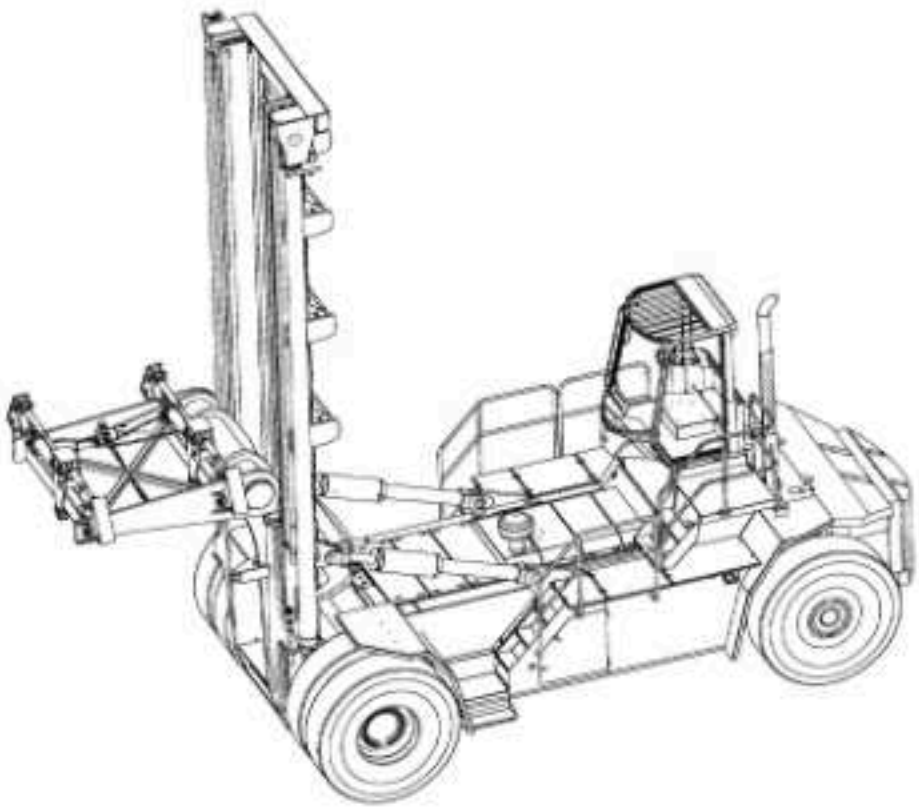
SERVICE MANUAL

E117 (H1050HD-CH, H1150HD-CH)



FORM 1546428 Rev. 07/14

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Item	Specification
Hydraulic Pumps Output @ 2100 rpm (Governed speed-no load)	
M ACC - Accumulator Charge Valve (Upper Limit)	20.0 to 21.5 MPa (2901 to 3118 psi)
M P - Auxiliary Circuit at 2100 rpm	23 to 24.5 MPa (3336 to 3553 psi)
M PLT - Pilot Circuit at 2100 rpm	4.5 to 5.0 MPa (653 to 725 psi)
M SB1 - Service Brake Pressure at 2100 rpm	16.5 to 17.0 MPa (2393 to 2466 psi)
M SB4 - Service Brake Treadle at 2100 rpm	Maximum 16.0 MPa (2321 psi)
M RF - Pressure at 2100 rpm fully lowered speed and oil temp 60° C (140° F) or higher.	Maximum 250 kPa (36 psi)
Main Hydraulic Filters	
Bypass Pressure	250 to 350 kPa (36 to 51 psi)

Torque Specifications

CONTROL VALVES

Main Control Valves
(Bolts and Nuts that Fasten Sections)
80 N•m (59 lbf ft)

Remote Control Valves
Screw of Pin Set 1.4 N•m (12 lbf in)
Plate Screws 5 N•m (44 lbf in)
Lock Nut of Hand Lever 30 N•m (266 lbf in)
Nuts of Through Bolts 5 N•m (44 lbf in)
Lock Nut of Adjustment Screw 5 N•m (44 lbf in)

Attachment Control Valve
Cover Capscrews 11 N•m (97 lbf in)
Mount Capscrews 14 N•m (124 lbf in)
Solenoids Capscrews 2.3 N•m (20 lbf in)
Pilot Valve Mount Capscrews 9 N•m (80 lbf in)

Carriage Solenoid Valves
Solenoid Capscrews 6.3 N•m (56 lbf in)
Mount Capscrews 14 N•m (124 lbf in)

ELECTRICAL SYSTEM

Alternator
Shaft Nut 95 to 108 N•m (70 to 80 lbf ft)
Mount Bolt 81 to 95 N•m (60 to 70 lbf ft)
Battery (B+) Terminal 9.0 to 13.6 N•m (80 to 120 lbf in)
Indicator (I) Terminal 1.7 to 2.8 N•m (15 to 25 lbf in)
Ground (B-) Terminal 5.6 to 6.8 N•m (50 to 60 lbf in)

COUNTERWEIGHT (CAST)

Main Counterweight
Tie Rod Weldments (Top) 1500 N•m (1106 lbf ft)
Tie Rod Weldments (Rear) 1500 N•m (1106 lbf ft)

Rear Counterweight
Tie Rod Weldments 1500 N•m (1106 lbf ft)

COUNTERWEIGHT (FABRICATED)

Main Counterweight
Tie Rod Weldments (Top) 1500 N•m (1106 lbf ft)
Tie Rod Weldments (Rear) 1500 N•m (1106 lbf ft)

COUNTERWEIGHT (SLAB)

Main Counterweight
Mount Capscrews 600 N•m (443 lbf ft)

DRIVE AXLE

Mounting Bolts
1650 to 2050 N•m (1220 to 1515 lbf ft)

WHEEL BEARING ADJUSTING NUT

PRC-5324 to 7314 (Initial Torque Value)
813 N•m (600 lbf ft)

PRC-5324 to 7314 (Final Torque Value)
678 N•m (500 lbf ft)

PRC-7534 (Initial Torque Value)
949 N•m (700 lbf ft)

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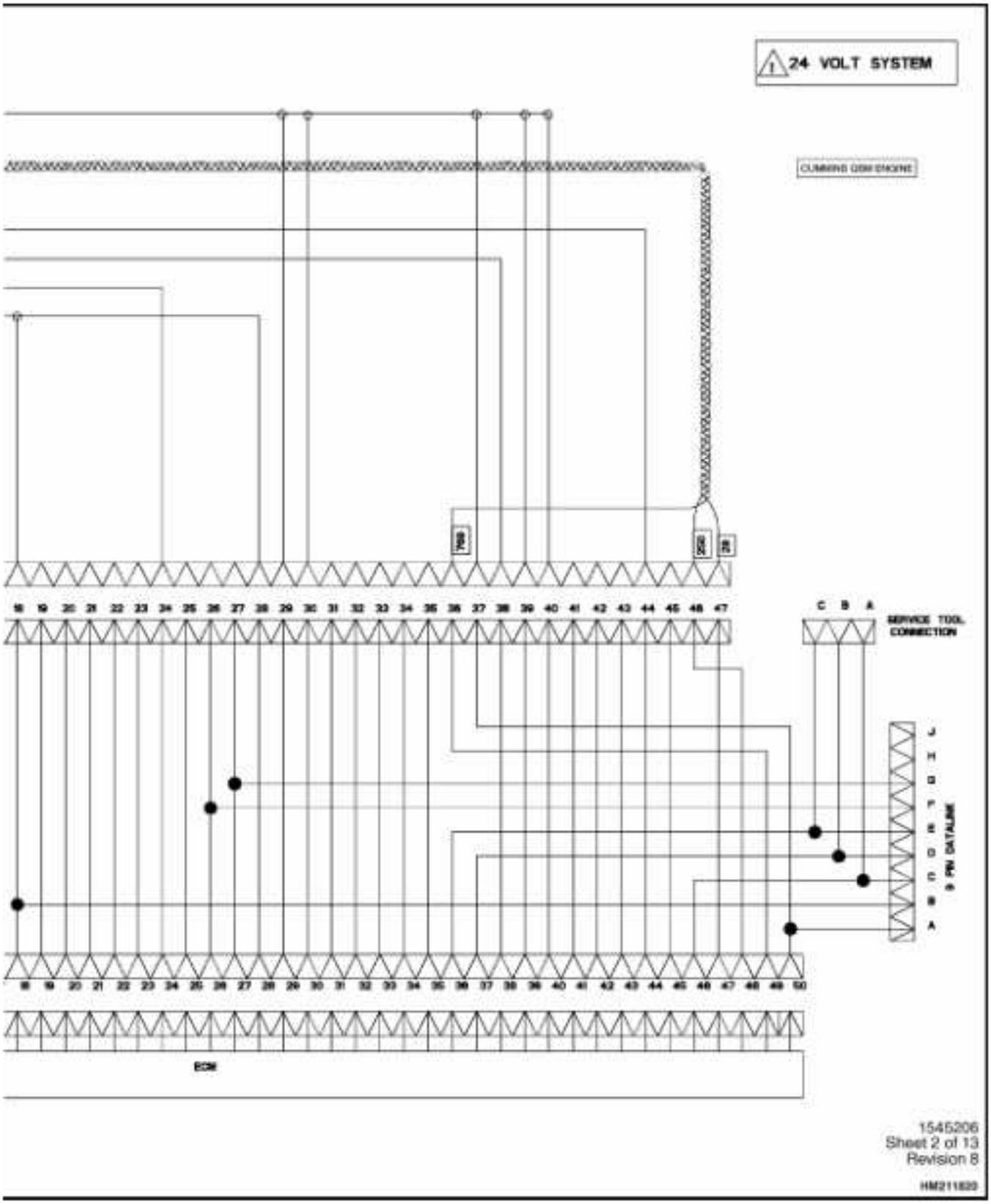


Figure 1. Electrical Schematic (Sheet 2 of 12)

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Maintenance Monitor (A222 Only)

GENERAL

The maintenance monitor (oil change monitor) feature provides a method of monitoring the oil change interval in the engine and signaling the operator when an oil change is needed. The maintenance monitor counts the hours of engine operation and subtracts this from the oil change interval time. The maintenance monitor feature also allows for extended oil change intervals when the customer is using such products as Premium Blue 2000. Programming tools can be used to display the percent of the current interval that has been consumed.

When a certain calibrated percentage of the oil change interval time has been used, the maintenance light will flash when the key is turned to **ON** and a warning flag is set.

Electronic Throttle Calibration

The electronic throttle calibration is advised after any throttle adjustment or throttle sensor replacement. It is also advised when the main power has been disconnected, such as changing the batteries or disconnecting the batteries for maintenance.

ELECTRONIC THROTTLE CALIBRATION PROCEDURE

1. Turn the ignition **ON**.
2. Press the throttle slowly to maximum throttle, and then fully release the throttle.
3. Repeat this procedure three times.

NOTE: Not performing the calibration will generate the fault code E0431, but eventually the performance of the lift truck (E117) or ReachStacker® (A222) will return to normal operation.

Fault Codes

GENERAL

The control system can show and record operation anomalies, which present themselves as fault codes. These codes will make troubleshooting easier. The fault codes are recorded in the engine control module (ECM). They can be read using the fault lights in the cab panel or with INSITE™.

The two types of fault codes are as follows:

- Engine electronic control fault codes: A fault has been detected with the engine or control system.
- Information codes: An event that could provide important information has occurred with the engine or control system.

All fault codes recorded will either be active (fault code is currently active on the engine) or inactive (fault code was active at some time, but is not currently active).

The warning light is yellow and indicates the need to repair the fault at the first available opportunity. See Figure 1 or Figure 2.

The stop light is red and indicates the need to stop the engine as soon as it can be safely done. The engine should remain shut down until the fault can be repaired. See Figure 1 or Figure 2.

The maintenance light will be **ON** when some type of maintenance is required. This light could indicate water in the fuel filter, low crankcase oil level, low coolant level, high coolant temperature, high intake air temperature, or high oil temperature. See Figure 1 or Figure 2.

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