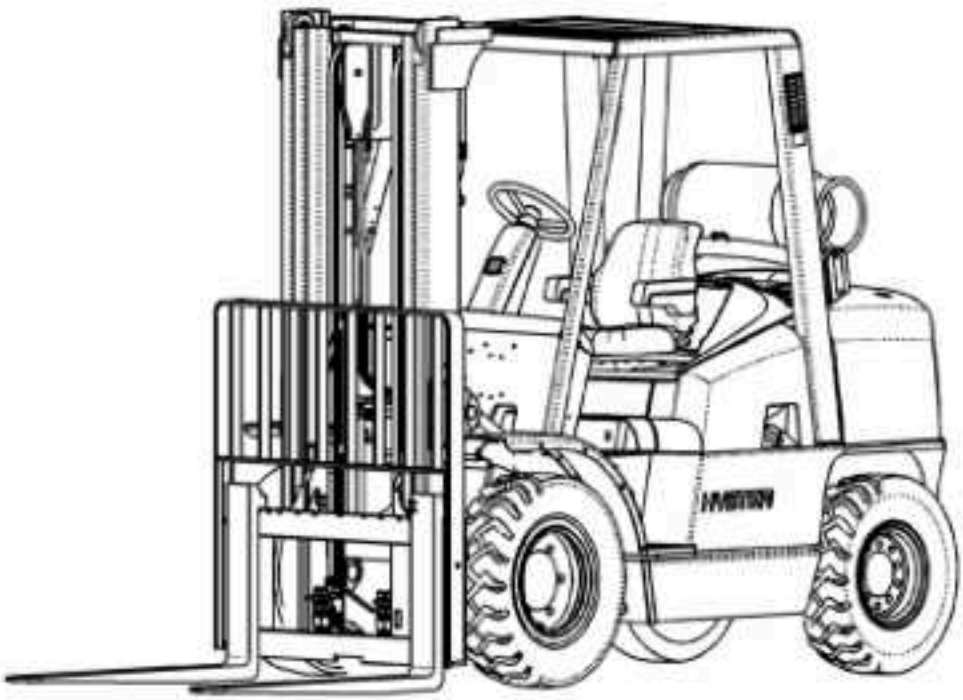
SERVICE MANUAL

H70-120XM (K005)



FORM 1467766 Rev. 02/04

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H70-120XM (K005)
SERVICE MANUAL CONTENTS

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FRAME	0100 SRM 0726	11/03
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GM V-6 4.3L ENGINE	0600 SRM 0590	11/03
PERKINS 1004.42 DIESEL ENGINE (AR)	0600 SRM 0705	09/03
COOLING SYSTEM	0700 SRM 0740	02/04
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ELECTRONIC ENGINE CONTROL-DESCR/OPER (GM 4.3L)	2200 SRM 0766	08/02
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HOW TO CLEAR A CODE

CAUTION

DO NOT damage the ECM! The ignition switch MUST be OFF before battery voltage is disconnected. Do not disconnect a power cable, fuse, or jumper cable that supplies power to the ECM until the ignition switch is OFF.

When the ECM senses a problem and sets a code in memory, the Service Engine Soon light illuminates. If the problem is not current, the Service Engine Soon light goes dark 10 seconds after the fault has stopped. The fault code stays in the ECM memory until the engine has been started 50 times and the problem is not repeated. Remove any problem codes from the ECM memory after repairs have been completed. Also, some of the troubleshooting charts indicate removal of the current codes before using the troubleshooting chart. This procedure permits the ECM to set the code while troubleshooting and can help find the problem more quickly.

FAULT IN THE ECM

See Fault Code 51 - ECM Failure.

Begin troubleshooting at the System Check described in Figure 1. The code system indicates a problem in a specified circuit. A Code 51 indicates that the ECM has failed and must be replaced.

If the ECM has been replaced and the malfunction has not been corrected, make the following checks:

1. Make sure the ECM is correct for the lift truck. A wrong ECM can cause a malfunction and not indicate a fault code or indicate a wrong fault code.
2. Make sure the connector at the ECM is in good condition. Check for corrosion or damage. If all other checks are completed and the fault is not found, it can be necessary to remove the connectors from the terminal to check their condition.
3. Make sure the replacement ECM is good. This problem almost never occurs, but must be included as part of the troubleshooting.
4. If the problem is not constant or not regular, go to Troubleshooting, Poor Operation. Make a CAREFUL VISUAL CHECK and do the troubleshooting described in that section.
5. A short circuit in a solenoid, relay coil, or wire harness can cause a fault in the ECM. Check for a possible short circuit in the solenoids and relay coils before installing a replacement ECM.

FUEL CONTROL

The ECM controls the fuel supply to the engine. Troubleshooting of the fuel control begins with A-3 - Starter Cranks Engine, But Does Not Run. This troubleshooting chart will test the fuel system. Additional troubleshooting is described in the following charts:

- Figure 13
- Figure 15
- Figure 17.

A bad fuel injector can cause the engine not to start or be difficult to start. A fuel injector that does not close completely can cause dieseling because some fuel can be delivered to the engine after the ignition switch is turned to **OFF**.

A correct and constant fuel pressure is very important to the operation of the engine. The operation of the fuel pressure regulator and the fuel pump must be within the specifications so that the engine operates correctly.

IDLE AIR CONTROL (IAC)

The checks and repairs of the idle air control valve are described in later paragraphs under Idle Air Control, Repairs. If the idle air control valve is disconnected or connected when the engine is running, the idle speed of the engine can be wrong. If the ignition switch is turned to **OFF** and then to **ON**, the idle air control valve will normally reset correctly.

The idle air control valve controls only the idle speed of the engine. If the idle air control valve is fully open, too much air will enter the inlet manifold and cause the idle speed to be too fast. If the idle air control valve is closed, the idle speed will be too slow; and the engine can stall. If the idle air control valve cannot move freely, the idle speed can be rough; and the engine will not adjust to load changes.

FUEL PUMP CIRCUIT

The fuel pump relay has a terminal to test the operation of the fuel pump. If battery voltage is applied at this terminal, the fuel pump will normally operate. This procedure can also be used to operate the fuel pump and fill the fuel line to the TBI.

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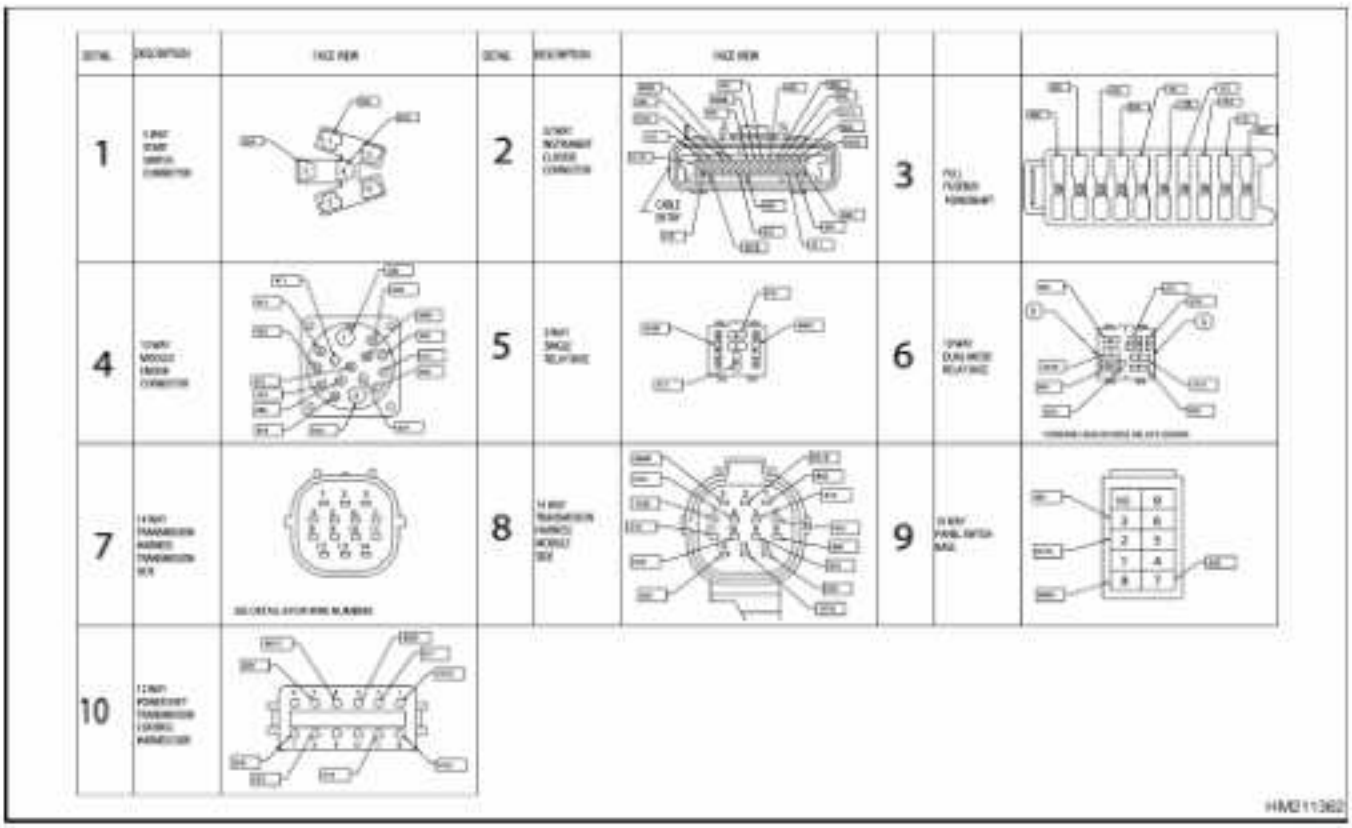


Figure 8. Operator Compartment Electrical Schematic (Powershift Transmission), (K005) (Sheet 3 of 3)

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Specifications

Table 3. Meter and Sender Specifications

Item	Design Data
Operating Voltage	
Hourmeter (Engine Powered Equipment), All Other Meters, and Senders	12 V
Sender Terminal Threads	#10-32 UNF or #6-32 UNC
Range of Meter	
Hourmeter	0.0 to 999,999.9 Hours
Voltmeter	10 to 16 Volts
Temperature Gauge (Range Based on Requirements)	38 to 121°C (100 to 250°F) Water Temperature 38 to 182°C (100 to 360°F) Transmission Oil Temperature
Oil Pressure Gauge (Range Based on Requirements)	0 to 5.20 kPa (0 to 0.75 psi)
Fastener Data (To Fit in a Threaded Hole)	
Water Temperature Sender (Gauge)	
Body Threads	3/8-18 NPTF (GM 4.3L) 1/2-14 NPTF (Diesel)
Hex (Across Flats)	19.0 mm (0.75 in.) (GM 4.3L) 22.0 mm (0.87 in.) (Diesel)
Water Temperature Sender (ECM/ECU)	
Body Threads	3/8-18 NPTF (GM 4.3L)
Hex (Across Flats)	19.0 mm (0.75 in.) (GM 4.3L)
Oil Pressure Sender	
Fitting Threads	1/8-27 NPTF (GM 4.3L and Diesel)
Hex (Across Flats)	14.0 mm (0.55 in.) (GM 4.3L and Diesel)
Low Coolant Sender	
Body Threads	1/2-14 Dryseal
Hex (Across Flats)	23.4 mm (0.92 in.) for a 15/16 in. Wrench
Fuel Sender Plate	
Number of Holes	2 (Equally Spaced)
Hole Size	7.30 to 7.60 mm (0.287 to 0.299 in.)

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