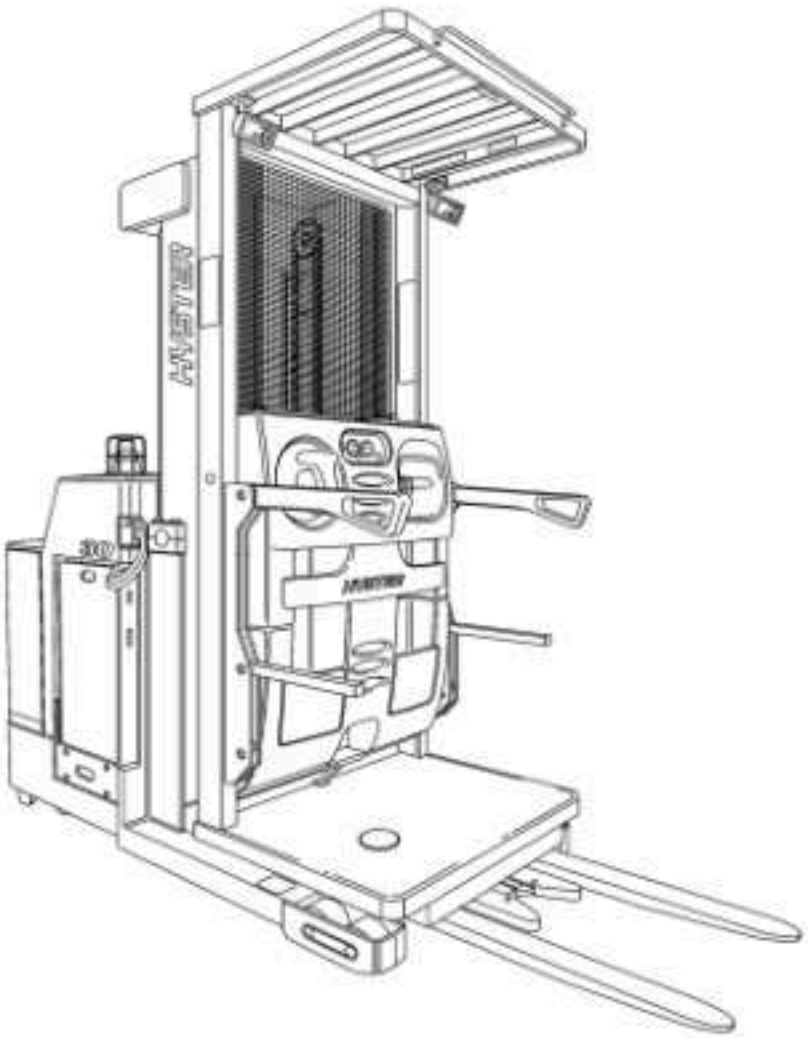
SERVICE MANUAL

R30XM2 / XMA2 / XMF2 (G118)



FORM 1485826 Rev. 11/03

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Brush Replacement

1. Motor brushes must be replaced before they are worn enough to damage the surface of the commutator. Move the brush spring and remove a brush from its brush holder. Install new brushes as a set if length of any brush is worn to a minimum length. See Table 3. If the brush lead is fastened to the brush with a rivet, install a new set of brushes if it is worn to within 3 mm (0.118 in.) of the rivet. If a brush does not move easily in its holder, a new set of brushes must be installed.

   The lead wire for some brushes is installed directly into the carbon compound of the brush. New brushes must be installed before the lead wire cuts a groove in the commutator. Install a new brush set when a brush is worn to a short length.

   Brushes are made to different specifications for motors used in different applications. Use only new brushes approved by Hyster Company for that motor.

NOTE: For some models of lift trucks, the battery does not need to be removed to access the electric motors. Other models will require the removal of the battery before gaining access to the electric motors.

2. Remove battery as necessary for your lift truck. See **How To Remove Battery** in the **Operating Manual** or the SRM section **Periodic Maintenance** for your lift truck.

WARNING

Compressed air can move particles so they cause injury to the user or to other personnel. Verify the path of the compressed air is away from all personnel. Wear protective goggles of a face shield to prevent injury to the eyes.

3. Remove access plate to motors. Remove brush covers to motor. See Figure 2. Wear eye protection. Use a vacuum cleaner or compressed air to remove dirt and brush dust from commutator area.

4. Make a note of the arrangement and connections of the brush assembly. See Figure 4. The new brushes must be installed in the same positions from which the worn brushes were removed.

5. Loosen screw that fastens brush wire to its terminal. Remove brush springs and brushes.

6. Inspect brush holders for burns and damage. Make sure brush holders are fastened tightly to brush mounting plate at end of motor. Make sure new brushes will move freely and smoothly in brush holders. Check that brush mounting plate is holding brush holder so it does not move.

7. Connect new brush wire to its terminal mount.

Table 3. Brush Wear Replacement Guide

Brush Height	17 mm (0.67 in.)	22 mm (0.87 in.)	28 mm (1.10 in.)	30 mm (1.18 in.)	31 mm (1.22 in.)	32 mm (1.26 in.)	40 mm (1.57 in.)
Wear	8 mm (0.31 in.)	12 mm (0.47 in.)	14 mm (0.55 in.)	15 mm (0.59 in.)	16 mm (0.63 in.)	16 mm (0.63 in.)	16 mm (0.63 in.)
Worn Brush Height	9 mm (0.35 in.)	10 mm (0.39 in.)	14 mm (0.55 in.)	15 mm (0.59 in.)	15 mm (0.59 in.)	16 mm (0.63 in.)	20 mm (0.79 in.)

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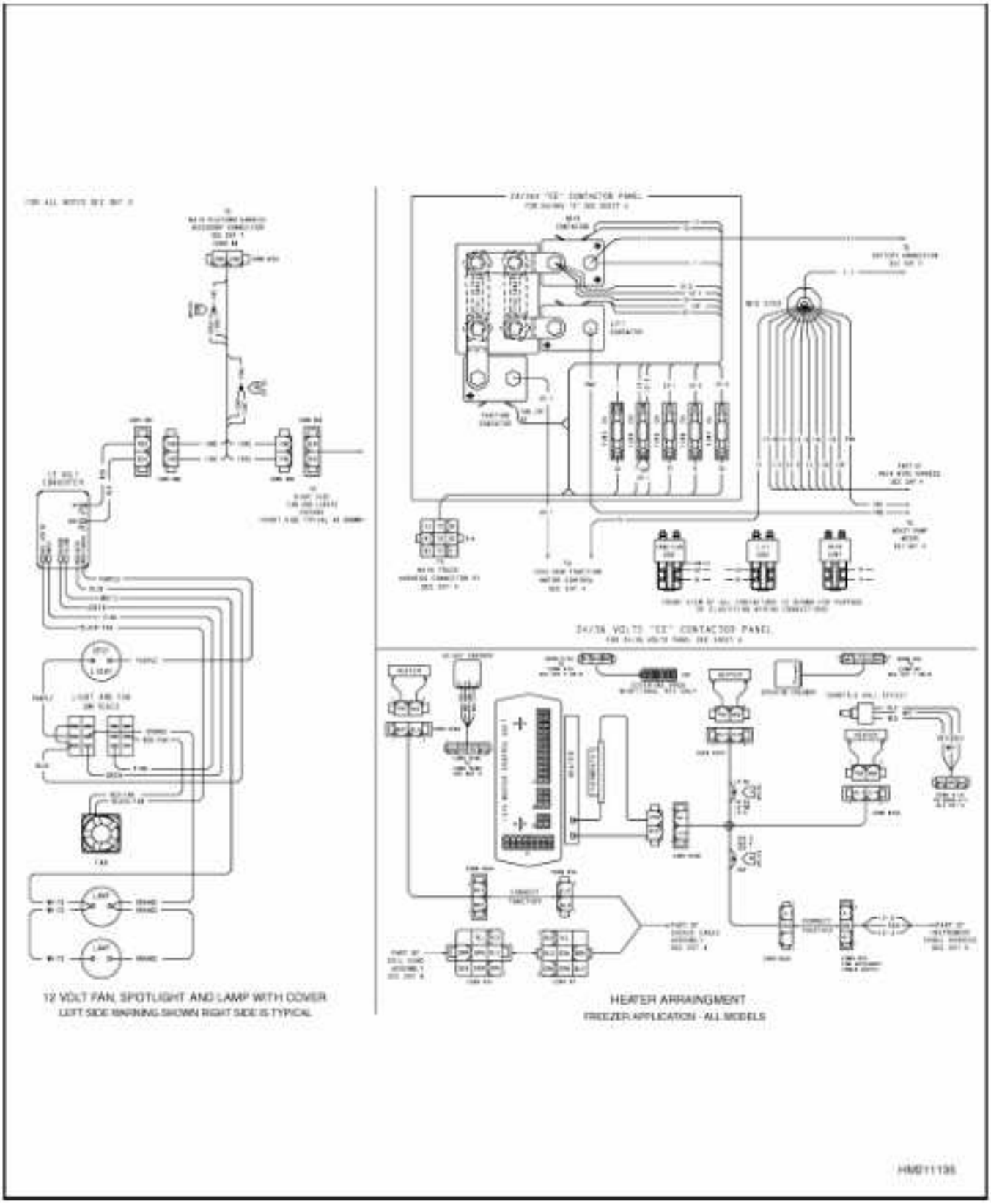


Figure 7. Wiring Diagram Optional Equipment

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ah. Error Log: Use the lift and lower controls to scroll through the log. Error codes will be provided in separate troubleshooting instructions. To clear the error log, hold down the foot switch for 5 seconds. The system will continuously beep during the clear step and display a countdown of 5 seconds. Error codes listed in order will be as follows:

(1) 1 xxxx E, where xxxx equals the most recently stored error code.

(2) 1ErrCtxxx, where xxx equals the number of occurrences of that error.

(3) 1Tmxxxxx, where xxxxx equals the hourmeter reading (in 0.1 hr) of the most recent occurrence.

(4) 1ErNdxx, where xx equals node of controller which sent the error code. 1=1310, 5=1243, 6=Steer Controller, and 7=Wire Guidance Unit.

(5) Step (1) through Step (4) are repeated for error codes 2 through 5.

ai. Internal serial number of 1310 (Sr# xxxx), to enter into Passkey program to obtain option enabling passcodes.

aj. Erase Memory (EraseMem). To clear all memory settings and restore defaults, scroll to this menu selection, then hold down the foot switch for 5 seconds. The system will continuously beep during the clear step and display a countdown of 5 seconds. After the countdown, the truck will shut itself off. Restart the truck, then follow these instructions from the beginning.

ak. Entry of passcode numbers (PC#16000): Use lift/lower control to scroll through the numbers to the proper passcode, then depress the foot switch to enter. While the foot switch is depressed, beeper will sound and confirmation message for the activated option will be displayed. Multiple passcodes may be entered, but are not saved until menu is exited with horn button. If an improper passcode is entered, the truck will shut down.

8. The setup menu can be entered at any time by starting the truck with the horn button depressed, then releasing the horn button and reapplying it within 0.5 second, then releasing again. If the Menu Password option is activated, see Step z; the following applies:

a. After entering the setup menu using the horn button sequence, the display will show (PW#16000); use lift/lower control to scroll through the numbers to the proper password, then depress the foot switch to enter. If an improper password is entered, the truck will shut down.

GENERAL DIAGNOSTICS

Diagnostics are displayed on the 840 dash display. There is no need for a handset; however the Curtis 1307 can be used in addition to the onboard diagnostics. This is the same handset that the dealers already have. No adjustments will be made with the Curtis handset; it will only be used for diagnostic purposes.

NOTE: If a traction controller handset is used for diagnostics, start truck in setup menu. Then plug handset in and exit truck setup menu when handset has completed bootup process. Failure to follow these steps may cause the truck to display a height encoder error. To clear the error, unplug handset, lift forks to 762 mm (30 in.), lower fully, then restart truck.

Several levels of diagnostics are utilized. Extensive tests are completed on every truck startup. Run-time diagnostic displays are available, displaying the operating information (e.g., armature current) which would normally require a traction controller handset. During truck operations, error or warning conditions detected by any of the controllers (steering, traction, or master controllers) are logged in the error log (described below under setup menu diagnostics). Error codes and display messages are listed in the table for troubleshooting.

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