

**SUBJECT: 4MF and 4MW Sweepers Equipped
 With Cummins T4F QSF 2.8L Engines
 Ground Wire Improvement**

DATE: 12/16/2014

NUMBER: SB-0160

**TO: All Dealer Principals, Service Managers, and
 Parts Managers**

PURPOSE:

The purpose of this bulletin is to update the battery and alternator wiring to eliminate a fault that can result in high current passing through the auxiliary engine harness.

WARRANTY COVERAGE:

8 hr

SPECIAL TOOLS:

Dielectric Grease (Obtain Locally)

UNITS TO SERVICE:

Certain 4MF and 4MW sweepers equipped with Cummins T4F QSF 2.8L electronic engines.

- 4MF10476 - 4MF10478
- 4MW10487 - 4MF10494
- 4MF10479 - 4MF10484

PARTS REQUIRED:

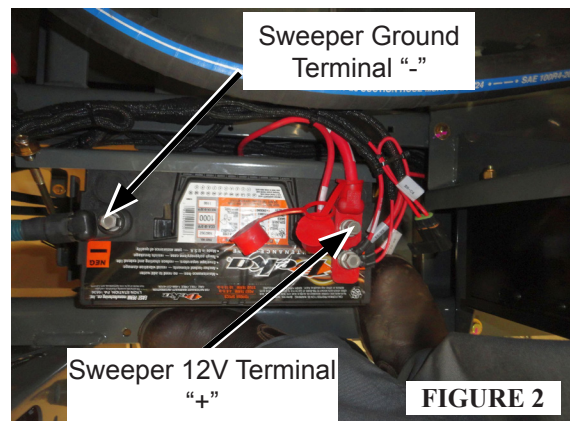
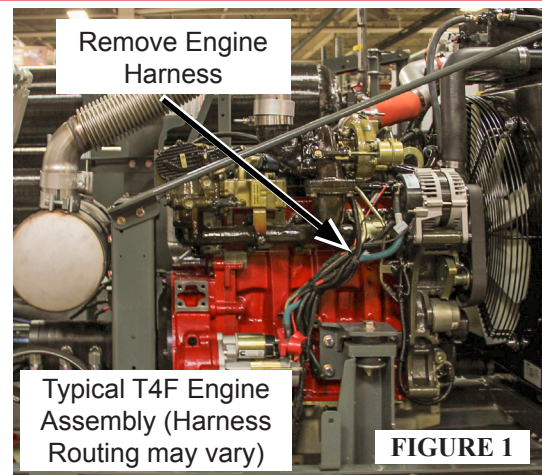
Part No.	Qty.	Description
1119580	1	FSO - 4MF/W Harness Improvement

PROCEDURE:

Order and install FSO 1119580 on all affected 4MF and 4MW sweepers.

1. Park the unit on level ground, turn off both engines, and chock both sides of one wheel.
2. Disconnect chassis and auxiliary engine battery ground cables. **FIGURE 2**
3. Measure and record the auxiliary engine battery voltage.
4. Remove the engine harness part number 1117912. **FIGURE 1**
5. Install new engine harness. (See Pages 5 and 6 for instructions)

NOTE: It is recommended to install the new engine harness concurrently with the removal of the old harness. Ensure that the markings of the harness connectors match the marking of the connectors being removed.



INSTALL FSO 1119580

6. Replace Alternator output cable.

6.1. Remove the cable from the alternator output to the engine starter motor (Part Number 1117666) **FIGURE 3** and **FIGURE 4**. Save the cable for use at Step 7.2.

6.2. Install new cable (Part Number 1119570) from the alternator output to the engine starter motor. Reuse the original hardware.

IMPORTANT: Route all cables and harness as shown in this bulletin. New routing methods will replace the original locations.

7. Install alternator ground cable.

7.1. Clean the powder coat off of the engine sub-frame ground boss. Chase threads in the boss.

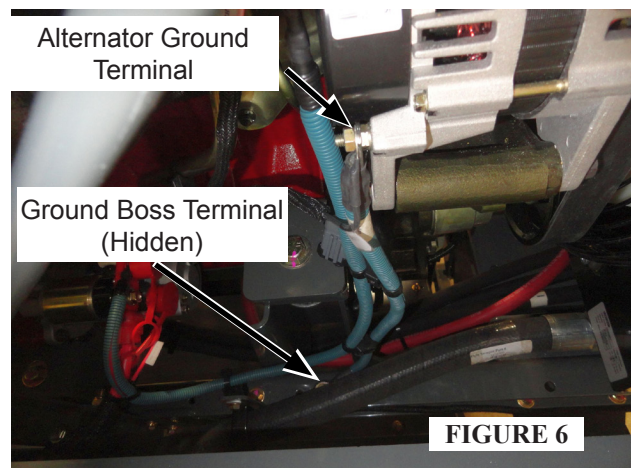
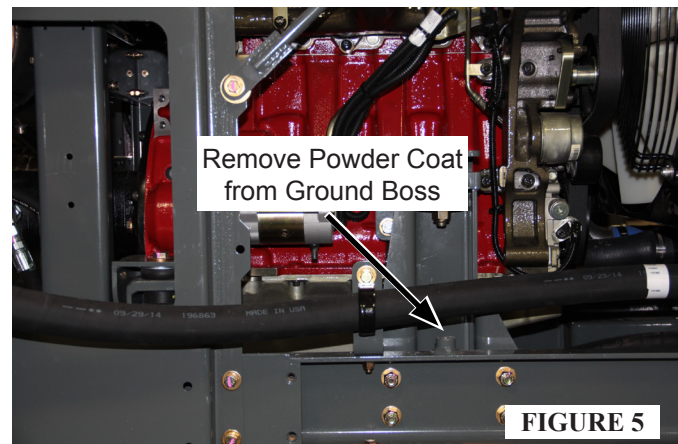
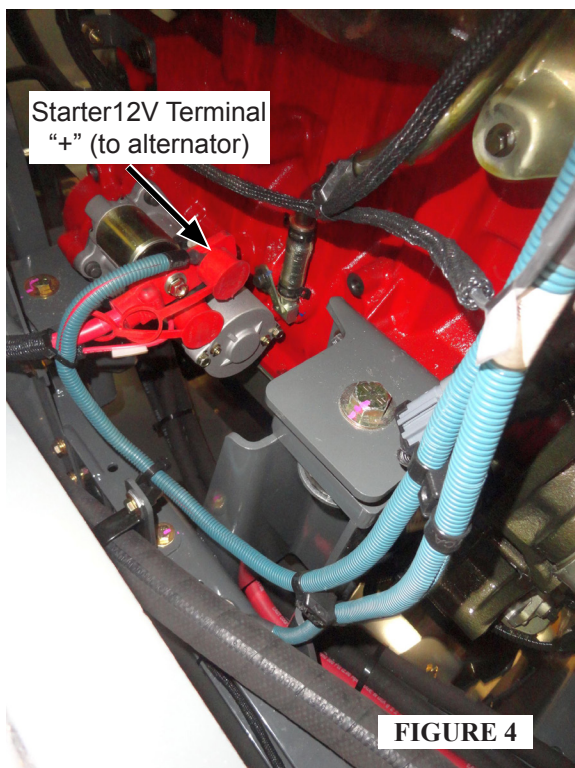
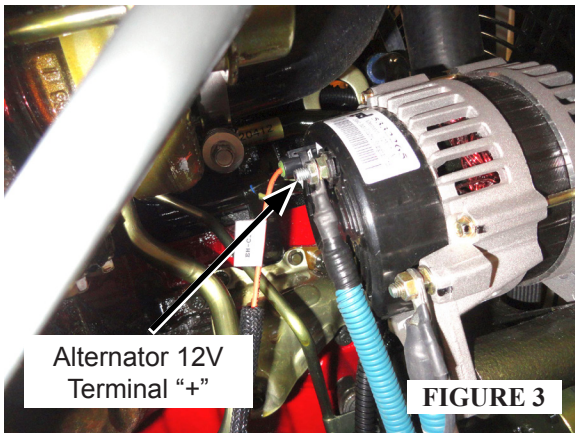
FIGURE 5

7.2. Connect the cable (P/N 1117666,) previously removed from the alternator-to-starter to the engine ground boss. Use the 0.375" dia. Ring terminal.

FIGURE 5

7.3. Route the cable to the alternator and attach as shown in **FIGURE 6**. Reuse hardware.

7.4. Connect the ground cable with the engine harness ground terminal. The harness terminal EH-T16 must be on top of the ground cable when installing the nut. **FIGURE 6**

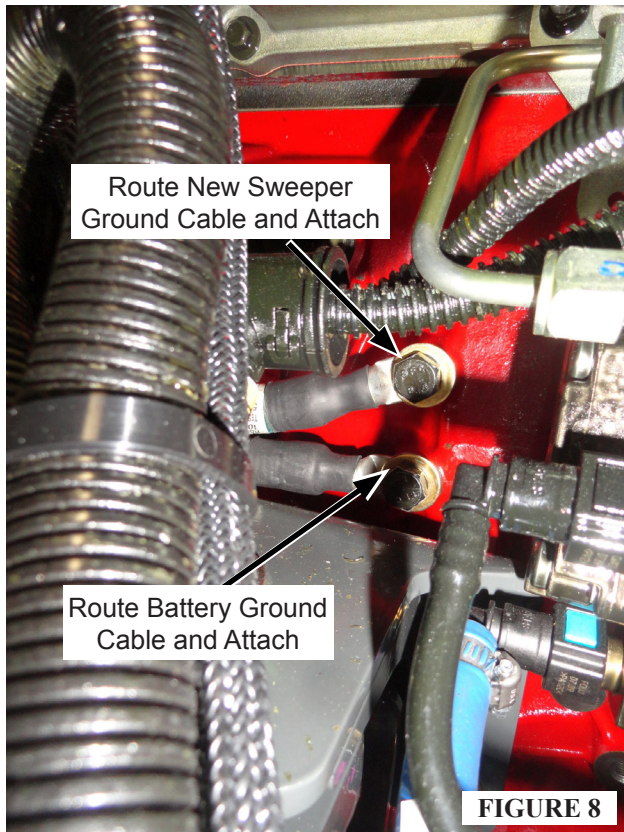
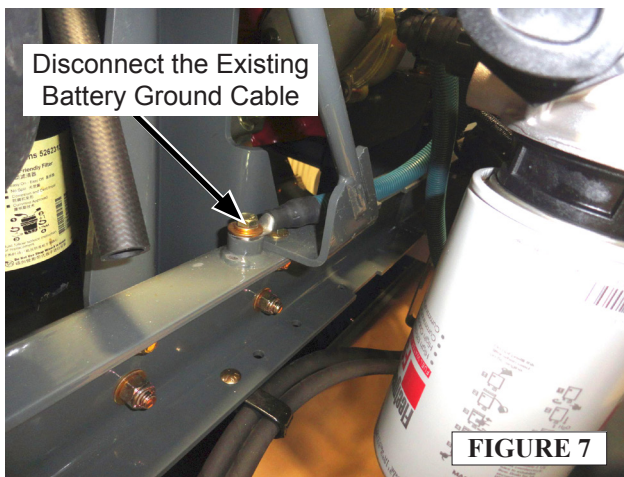


8. Re-route battery ground cable.

8.1. Disconnect the battery ground cable from the ground boss on the rear of the engine frame. **FIGURE 7**

8.2. Clean the clear coating from two ground bosses on the engine block. **FIGURE 8**

8.3. Route the battery ground cable to the lower threaded engine block boss **FIGURE 8**. Use correct hardware 5008611 and 5005184. Torque bolt securely.



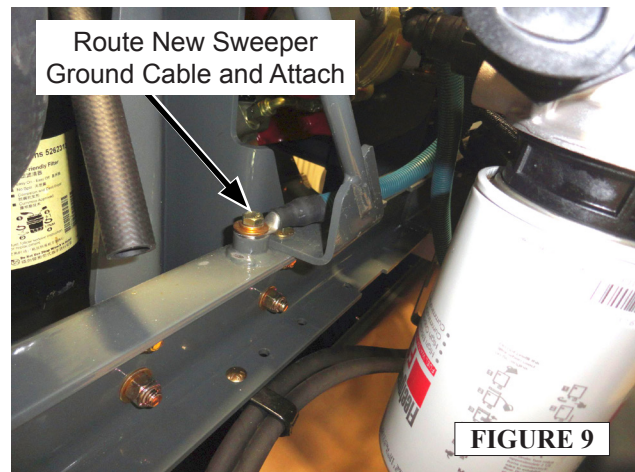
9. Install sweeper ground cable

9.1. Clean the clear coating from the engine ground boss. **FIGURE 8**

9.2. Attach one end to the engine with 5008611 and 5005184. Torque bolt securely. **FIGURE 8**

9.3. Clean the ground boss and chase the threads.

9.4. Attach the other end of the ground cable to the ground boss on the sweeper sub-frame. Use 5009521 and 5005184. Torque securely. **FIGURE 9**



10. Install clamps and wire ties.

10.1. Install two dual cable clamp ties P/N 1119175 to the two cables that are attached to the alternator. **FIGURE 10**

10.2. Remove bolt from the hydraulic line clamp and discard. Install cable mount P/N 1079181 with (0.25" hardware). **FIGURE 11**

10.3. Install wire tie P/N 5009159 as shown around the starter battery cable and alternator output cable. Include the starter relay wire tied over the harness loom, not directly on the wire. **FIGURE 12**

10.4. Install wire ties as shown. **FIGURE 13**

10.5. Re-install the chassis and sweeper battery cables.

10.5. Coat all stud-terminal (threaded) connections with dielectric grease after assembly. **FIGURES 3,5,7,8, & 9 (typical)**



FIGURE 12

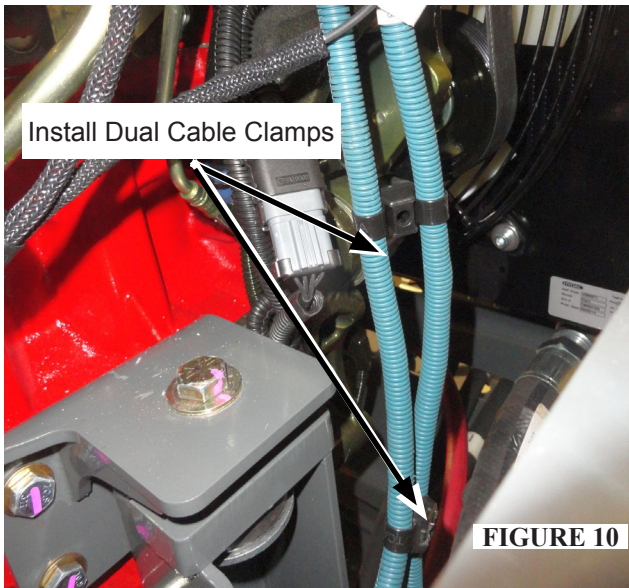


FIGURE 10

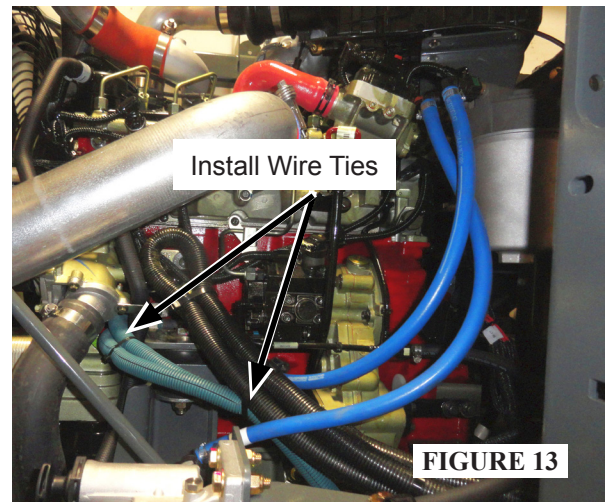


FIGURE 13

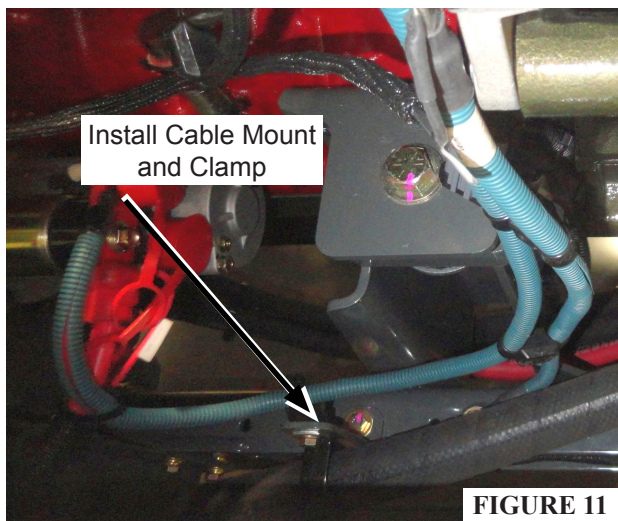


FIGURE 11

11. Test Unit

11.1. Check fluid levels.

11.2. Clear area of bystanders.

11.3. Start the auxiliary engine. Station an observer to check for unusual operation or overheating. Turn engine off and repair any malfunction that is found.

11.4. Monitor the Auxiliary engine battery voltage. Normal system voltage should be 13.5-14.6V with the engine operating.

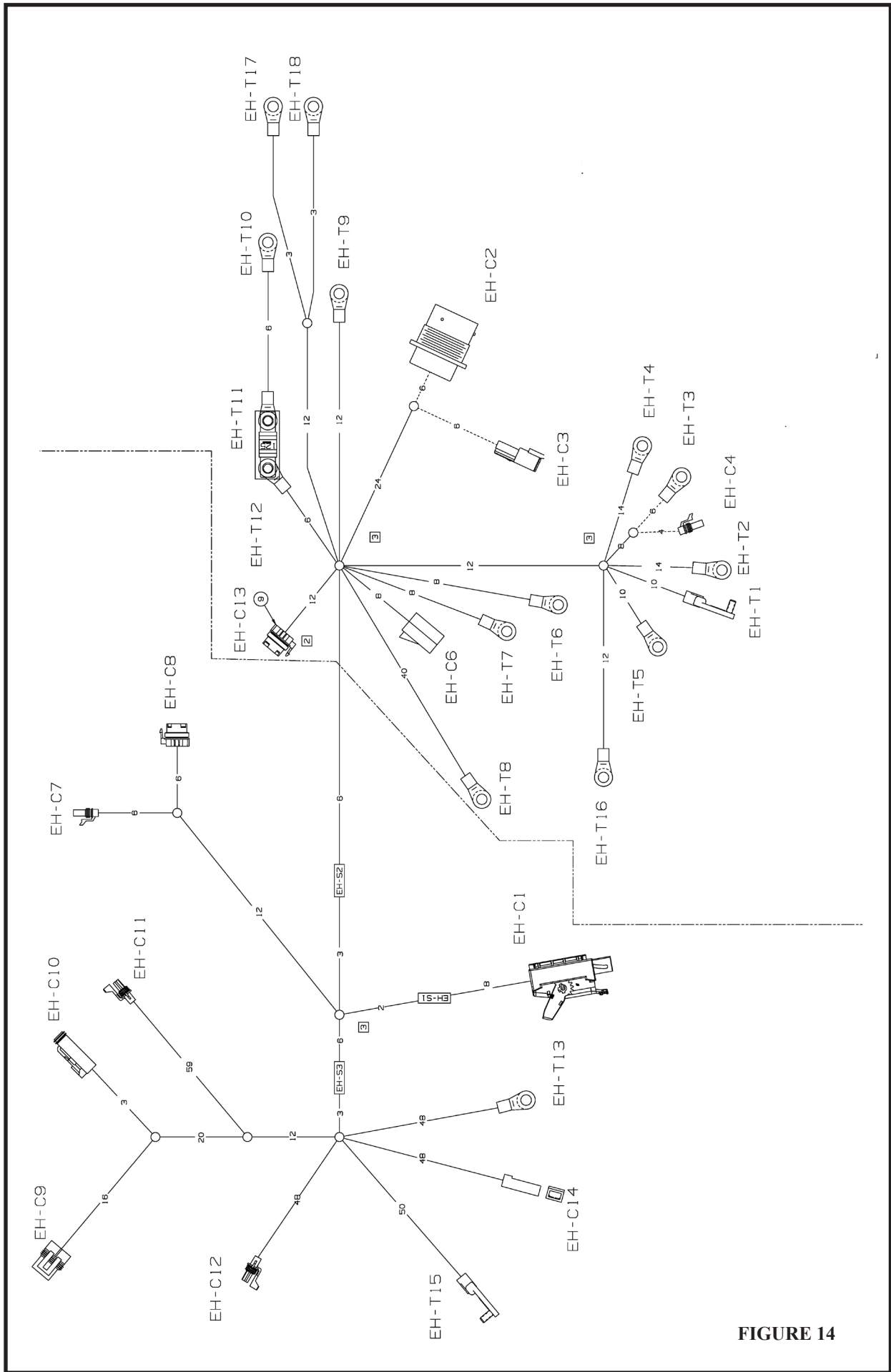


FIGURE 14

Remove and Install The New Engine Harness P/N 1117912

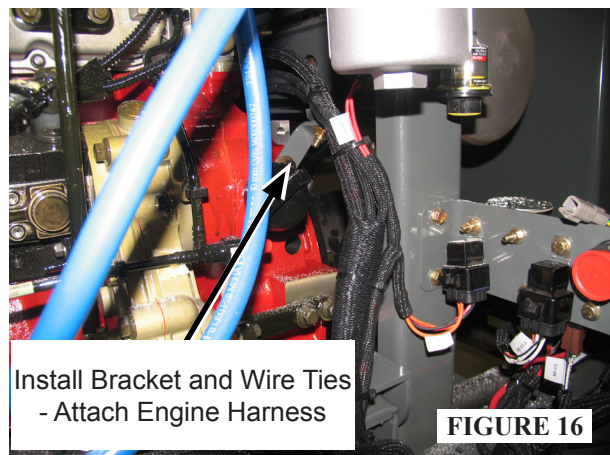
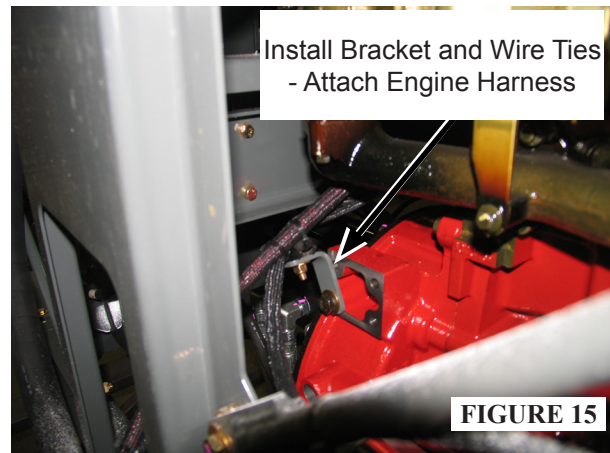
1. Park the unit on level ground, turn off both engines, and chock both sides of one wheel.
2. Disconnect chassis and auxiliary engine battery ground cables. (If not already accomplished.)

IMPORTANT: It is recommended to install the new harness as the old harness is being removed. Ensure that the markings of the harness connectors match the marking of the connectors being removed.

3. Note the locations of all wire ties. The new harness must be properly tied and retained.
4. Cut and remove all engine harness wire ties.
5. Remove the old engine harness part number 1117912. **FIGURE 1**
6. Install new engine harness. **FIGURE 15**
Terminal and circuit connector identification is found on **FIGURE 14**.

IMPORTANT: Route the new engine harness over the flywheel housing. The original harness to be replaced may have been routed beneath the engine.

7. Install Bulkhead Angle Bracket and HD Cable mount with wire ties. **FIGURE 15** and **FIGURE 16**
8. Call Elgin Service TSS for assistance with any installation problems. (877-DIALESG)



Warranty Coverage and Claim Submittal

The ESG dealer should submit a claim for warranty.

Use the following information when submitting a warranty claim:

CAUSAL PART: 1117912

To create the FAULT CODE, click ELECTRICAL (04), click HARNESSSES/CONNECTORS (021), and then click FSO 1119580 Ground Cables (1098).

In the FAULT FOUND drop down list, select DESIGN UPGRADE.

In the CAUSED BY drop down list, select Product Improvement.

To enter the Service procedures, perform the following:

For **INSTALLED PART # 1119580**, select ELECTRICAL (04), select HARNESSSES/CONNECTORS (021), select FSO 1119580 Ground Cables (1098), and then select INSTALL (01).

Standard Repair Time (SRT) of 8 hrs and 0 min is allowed.
