

# MERITOR WABCO

## Technical Bulletin

### Replacement of the ESC3 Module with the ESC5 Module on Vehicles Equipped with Electronic Stability Control (ESC) and the Calibration Procedure

Affected Part Numbers: 446 065 020 0, 446 065 027 0, 440 850 179 0, 400 850 185 0, 400 850 195 0

#### Hazard Alert Messages

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

#### How to Obtain Additional Maintenance and Service Information

If you have any questions regarding the material covered in this bulletin, or for information about the Meritor WABCO product line, please contact the OnTrac Customer Service Center at 866-OnTrac1 (668-7221) or visit our website: meritorwabco.com

#### Description and Function

The ESC module is part of the ESC system. It measures the vehicle yaw rate as well as vehicle lateral acceleration. The ESC module includes part of the ESC control algorithm. It exchanges data with the ESC ABS ECU via the ESC system internal data link. The ABS ECU supplies the module with power and ground.

#### Field Repair Kit Part Number 400 869 024 7

The ESC Module field kit, part number 400 869 024 7, is required for completing the replacement and calibration procedure. The kit consists of the following parts.

- ESC5 Module Kit, part number 400 850 199 0
- Technical Bulletin TP-1205

**NOTE:** This replacement procedure consists of several different steps based on the type of ECU that the vehicle uses. Please carefully review the following instruction first before proceeding.

#### Identifying the Type of ECU in the Vehicle

1. Connect your laptop or PC to the vehicle.
2. Launch the Meritor WABCO TOOLBOX® Diagnostic Software and click on the Pneumatic ABS Icon for Truck, Tractor and Buses. Figure 1.

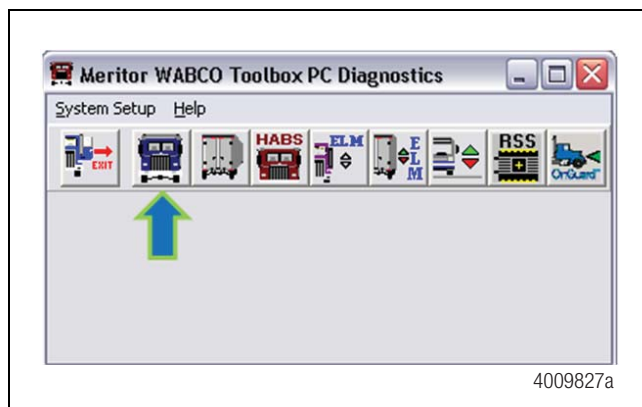


Figure 1

3. In the main ABS ECU screen, locate the field for the ECU software version. Figure 2.

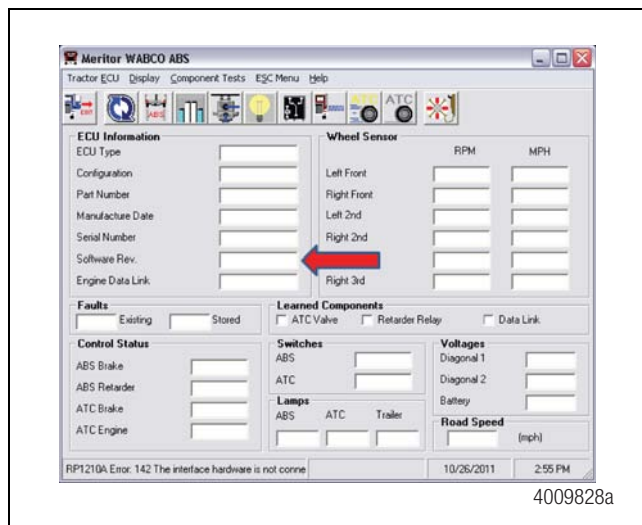


Figure 2

- Once the ECU revision is located, please review the following table and use the applicable procedure.

Software Rev.	Procedure to Use
E435, E436, E440, E441	Use the procedures on page 2.
E404	Use the procedures on page 4.
E401	Please contact the OnTrac Customer Service Center at 866-OnTrac1 (668-7221).

## Procedures for ECUs with Software Revision E435, E436, E440 or E441

### Step 1 — Obtaining the Special Version of TOOLBOX® Software

In order to complete the Calibration Procedure for the ESC5 Module, a special version of the Meritor WABCO TOOLBOX® Diagnostic Software is required.

To obtain this special version, you will need an internet connection to perform the following.

- Type this link in Windows Explorer:  
<ftp://ftp.mwtoolbox.com/>
- When prompted, use:
  - ID >> ESC5
  - Password >> ESC5Module (case sensitive)
- Go into the folder called TOOLBOX ESC5 Update.
- Select all files in the folder and copy them into a specific folder in your laptop hard drive.
- Double click on the file "Setup.exe".

### Step 2 — Saving the Steering Ratios

- Connect your laptop or PC to the vehicle.
- Launch the Meritor WABCO TOOLBOX® Diagnostic Software and click on the Pneumatic ABS Icon for Truck, Tractor and Buses. Figure 1.
- On the main ECU screen, select from the top bar click on "ESC Menu". Figure 3.

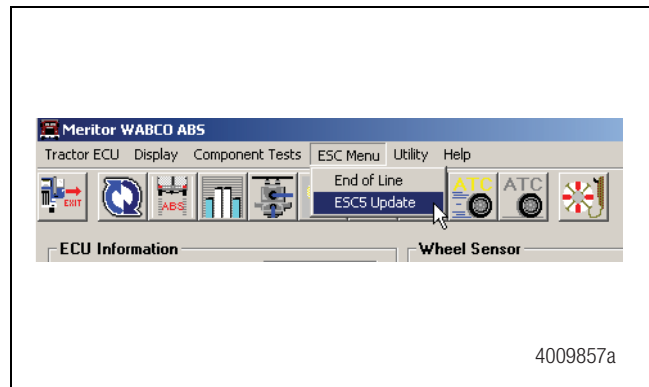


Figure 3

- Click on "ESC5 Update" Steering Ratios.

On the lower left corner of the main screen, you should see the following screen. Figure 4.

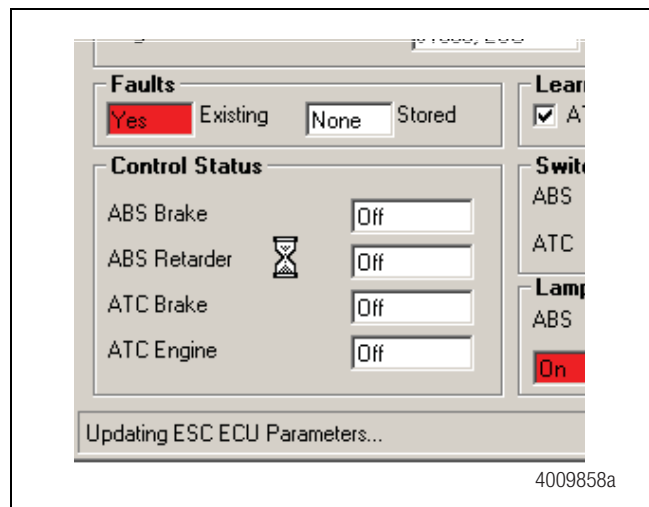


Figure 4

Once the system completes the process, the following message will be displayed. Figure 5.

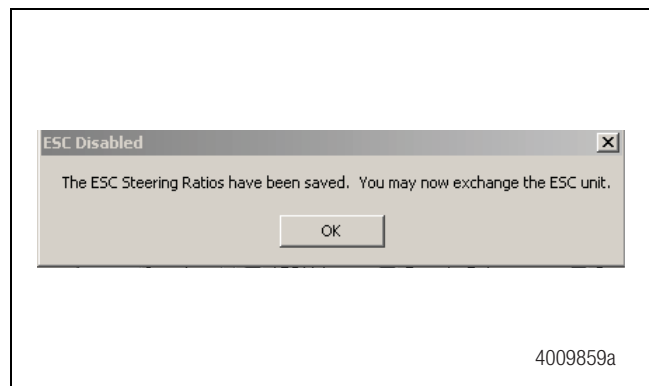


Figure 5

- Turn the ignition OFF.

### Step 3 — Removing the ESC3 Module

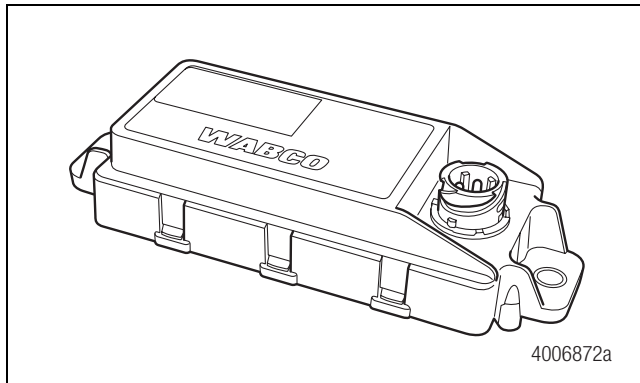
**Tools** — To complete this procedure, you will need a wrench or a ratchet appropriate for the type of capscrews used to attach the ESC Module (ESC3) to the frame cross member.

#### **WARNING**

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

**Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.**

1. Park the vehicle on a level surface with the steering wheel centered and the front wheels positioned straight ahead.
2. Turn the ignition switch to the OFF position and apply the parking brake.
3. Block the wheels to prevent the vehicle from moving.
4. If necessary, raise the vehicle off the ground and place safety stands under the vehicle.
5. Disconnect the wiring harness connector from the ESC Module.
6. Remove the two mounting capscrews and nuts. Remove the ESC Module. Figure 6.



**Figure 6**

### Step 4 — Installing the New ESC5 Module

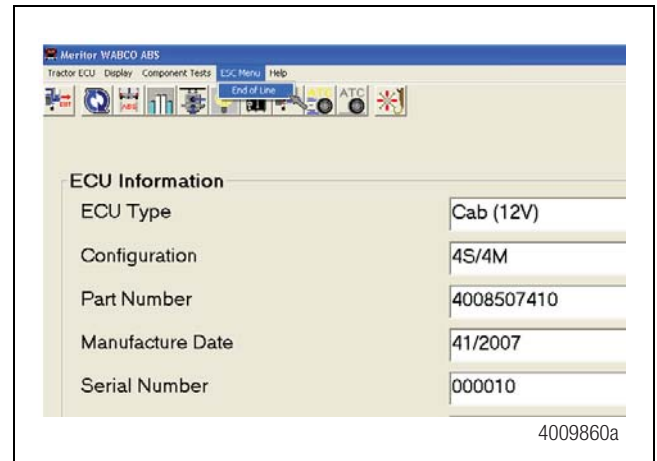
**NOTE:** It is important that the module is aligned correctly and the tab on the ESC module mounting surface fits into the appropriate hole.

1. Install the new ESC5 module included in the kit with the two capscrews and nuts. Tighten the capscrews per the manufacturer's recommendation.

2. Connect the wiring harness connector to the ESC Module. Hand-tighten only.
3. Remove the stands and blocks.

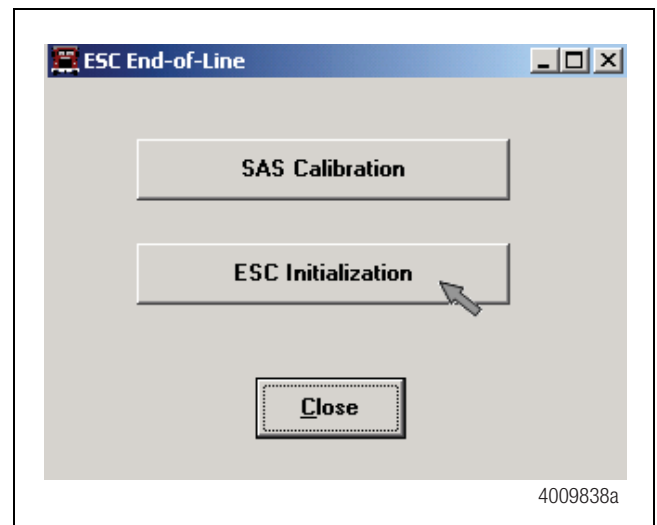
### Step 5 — Calibrating the ESC System Straight Driving Portion

1. Turn the ignition ON.
2. On the main screen, select "ESC Menu" and select "End of Line". Figure 7.



**Figure 7**

3. Click on "ESC Initialization". Figure 8.



**Figure 8**

4. Check the message box. Figure 9.



Figure 9

5. Press the space bar or click "Continue" when ready to proceed.
6. Carefully follow the instruction from the message box.

The Stability Light will start blinking when the 15 mph speed has been reached.

When straight driving is completed after about 800 feet, the Stability Light will stop blinking and will be ON solid.

**NOTE:** The Straight driving can be done in segments and the ECU will accumulate the information until the 800 feet are reached, but it must be done in the same ignition cycle.

## Step 6 — Testing the ESC System

When the ESC Calibration Procedure is completed, the ABS and ATC/ESC lamps should come on and go back off when ignition power is turned on. The ATC/ESC lamp may remain on briefly after the ABS lamp goes off.

There should not be any active faults displayed in the ECU memory.

## Step 7 — Disposing of Removed Parts

Meritor WABCO requires that the ESC module removed from the vehicle be destroyed and disposed. The recommended method for destruction of the ESC Module is to drill a steel bit through the electric connector.

# Procedures for ECUs with Software Revision E404

## Step 1 — Removing the ESC3 Module

**Tools** — To complete this procedure, you will need a wrench or a ratchet appropriate for the type of capscrews used to attach the ESC Module (ESC3) to the frame cross member.

### **WARNING**

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

1. Park the vehicle on a level surface with the steering wheel centered and the front wheels positioned straight ahead.
2. Turn the ignition switch to the OFF position and apply the parking brake.
3. Block the wheels to prevent the vehicle from moving.
4. If necessary, raise the vehicle off the ground and place safety stands under the vehicle.
5. Disconnect the wiring harness connector from the ESC Module.
6. Remove the two mounting capscrews and nuts. Remove the ESC Module. Figure 10.

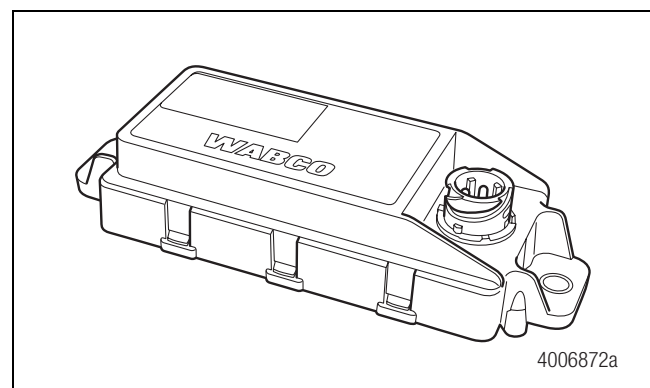


Figure 10

## Step 2 — Installing the New ESC5 Module

**NOTE:** It is important that the module is aligned correctly and the tab on the ESC module mounting surface fits into the appropriate hole.

1. Install the new ESC5 module included in the kit with the two capscrews and nuts. Tighten the capscrews per the manufacturer's recommendation.
2. Connect the wiring harness connector to the ESC Module. Hand-tighten only.
3. Remove the stands and blocks.

## Step 3 — Calibrating the ESC System Straight Driving Portion

1. Connect your laptop or PC to the vehicle.
2. On the main Screen, click "ESC Menu" and select "End-Of-Line". Figure 11.

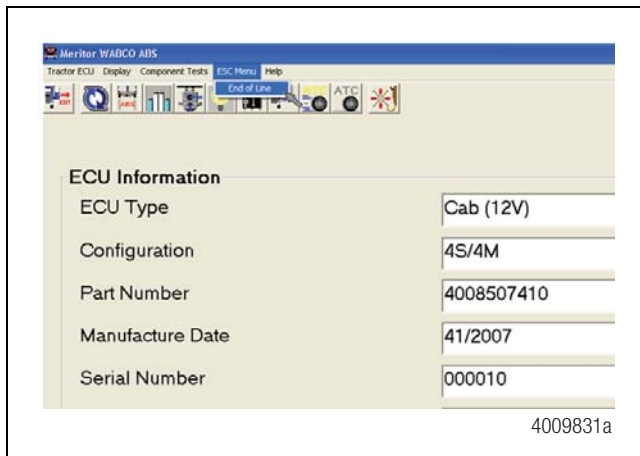


Figure 11

3. Click on "ESC Initialization". Figure 12.

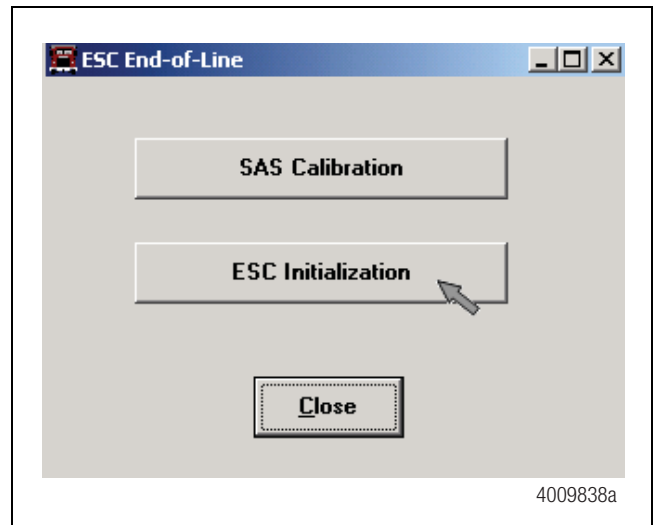


Figure 12

4. Check the message box. Figure 13.



Figure 13

5. Press the space bar or click "Continue" when ready to proceed.
6. Carefully follow the instruction from the message box.

The Stability Light will start blinking when the 15 mph speed has been reached.

When straight driving is completed after about 800 feet, the Stability Light will stop blinking and will be ON solid.

**NOTE:** The Straight driving can be done in segments and the ECU will accumulate the information until the 800 feet are reached, but it must be done in the same ignition cycle.

## Step 4 — Calibrating the ESC System Steering Ratio Portion

1. After completing the Straight Driving Portion, the next message will appear. Carefully read the message box and follow the instructions. Figure 14.

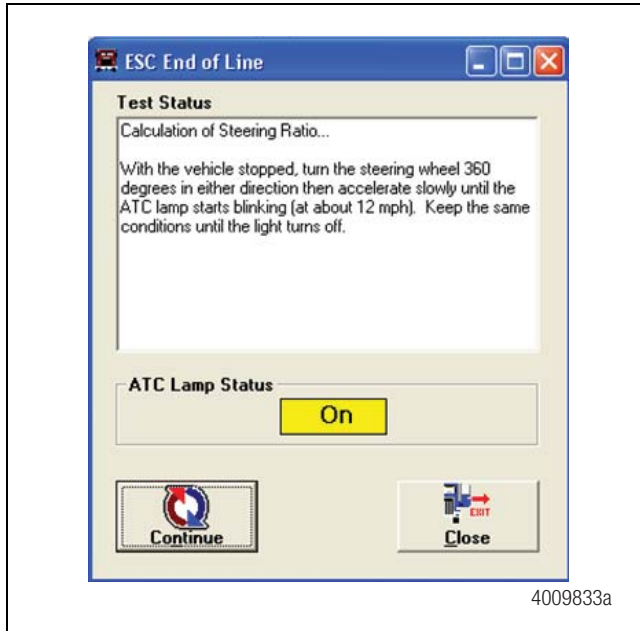


Figure 14

2. Turn the steering wheel 360 degrees in either direction and begin driving.

**NOTE:** The Circle driving may also be done in segments and the ECU will accumulate the information until the desired distance is reached, but it must be done in the same ignition cycle.

The ATC/Stability Light will start blinking when the required conditions are met. Keep driving until the light turns off. Figure 15.



Figure 15

3. Stop the vehicle. Turn the steering wheel 360 degrees in the opposite direction and repeat the driving conditions.

Again, the Stability Light will start blinking when the required conditions are met. Keep driving until the light turns off. Figure 16.

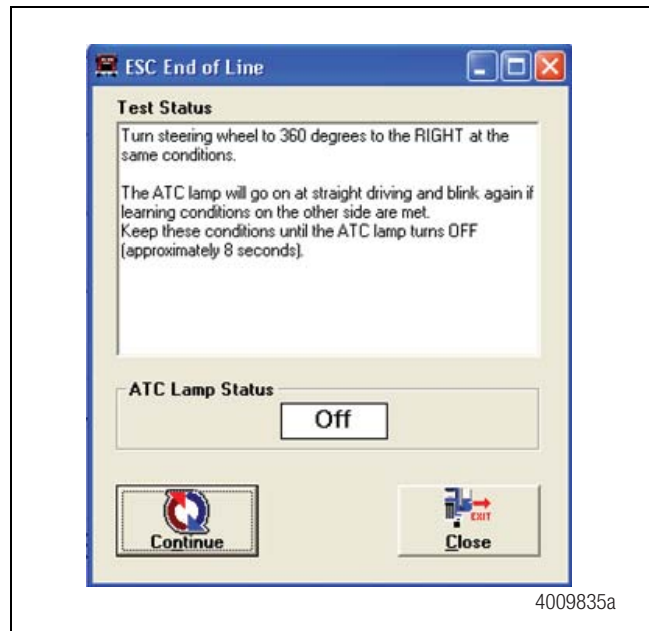
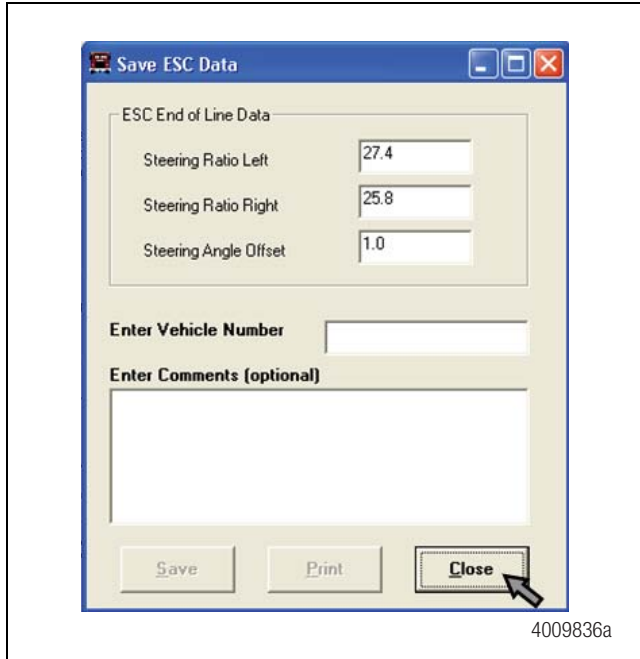


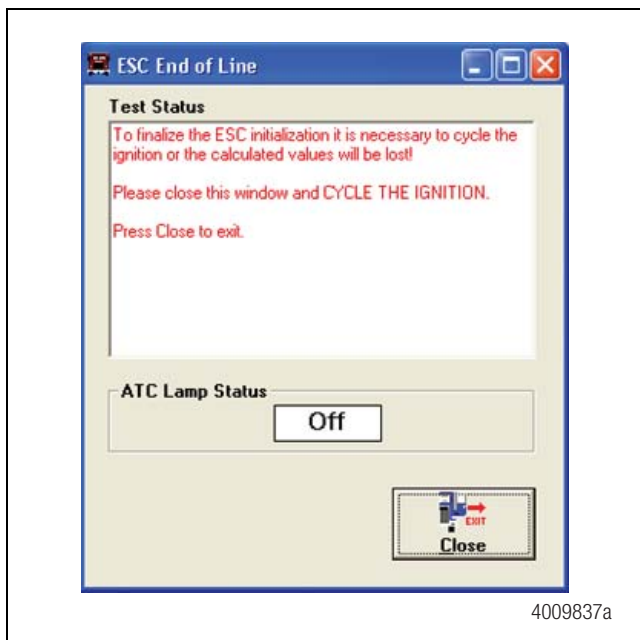
Figure 16

4. A Message box with the Steering Ratio and Steering Angle Offset values will appear. Click "Close". Figure 17.



**Figure 17**

5. Read the message box and follow the instructions very carefully. Click "Close" and Cycle the Ignition. Figure 18.



**Figure 18**

## Step 5 — Testing the ESC System

When the ESC Calibration Procedure is completed, the ABS and ATC/ESC lamps should come on and go back off when ignition power is turned on. The ATC/ESC lamp may remain on briefly after the ABS lamp goes off.

There should not be any active faults displayed in the ECU memory.

## Step 6 — Disposing of Removed Parts

Meritor WABCO requires that the ESC module removed from the vehicle be destroyed and disposed. The recommended method for destruction of the ESC Module is to drill a steel bit through the electric connector.

## **MERITOR WABCO**

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