

# WHAT DRIVERS NEED TO KNOW ABOUT THE MAXWELL ESM

The Engine Start Module (ESM) is an ultracapacitor-based starting device for heavy duty engines. It replaces one of the batteries in the truck battery box and connects directly to the starter motor to provide reliable starting in a broad range of temperatures and environmental conditions. How is the Maxwell ESM different from batteries?



- 1 The Maxwell ESM has three terminals. The Starter+ (S+) terminal is connected directly to the starter motor solenoid.



Battery (+) Terminal  
Starter (+) Terminal  
(connects only to starter solenoid +)

Push to Test button  
(activates status lights and resets ESM)  
Battery (-) Terminal  
Status Lights

- 2 The Maxwell ESM has an internal computer and DC-to-DC converter to charge its internal ultracapacitor cells.
- 3 The S+ terminal will provide 15 volts to 16.2 volts from the Maxwell ESM to the starter solenoid, depending upon the temperature.
- 4 The Maxwell ESM has a Push to Test button on top that activates two status lights to provide diagnostic information. The color of the lights and their meaning is described on the label and in the User Manual.

## DRIVER DO'S

In accordance with your vehicle manufacturer's operating manual, start the engine properly by turning the key half-way, wait for the gauge sweep to complete, then crank the engine.

Your battery voltage gauge will continue to show battery voltage, not the Maxwell ESM starter voltage.

If battery voltage drops below 12 volts you should have your batteries tested, serviced or replaced.

If you turn the key half-way and the dash does not light up this means your batteries are discharged below 10 volts.

Make sure all accessories and lights are turned off and wait a few minutes since the battery voltage may bounce back enough to start.

Loose or corroded connections account for the majority of starting issues. Keep those connections clean and tight. We recommend 18 ft.-lbs. of torque on the Maxwell ESM terminal nuts.

## DRIVER DON'TS

Do not let a technician service or remove the Maxwell ESM from the battery box if they have never seen one before. Call Maxwell Tech Support for help.

Do not jump-start the Maxwell ESM on the S+ terminal, as this will cause permanent damage to the Maxwell ESM. If the truck will not start it is probably due to discharged batteries. Connect 12 volt jump start cables to the batteries or remote jump start posts and wait for the Maxwell ESM to recharge.

Do not use a 24 volt jump start with the Maxwell ESM as this will cause permanent damage to the Maxwell ESM.

Do not short the S+ terminal to ground or B- terminal.

Do not use the Maxwell ESM to prime fuel lines; it will only crank for 10 – 15 seconds then it will require an automatic 15 minute recharge.

To prime fuel lines, temporarily move the cable from the Maxwell ESM S+ terminal to any B+ terminal, start the truck, then make sure to put the cable back on the S+ terminal.

Do not ignore the sounds your truck makes when starting. If it is suddenly taking longer to start have it checked.

Maxwell Technologies Toll-Free 24/7/365  
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