



ELECTRONIC OVERSPEED SWITCH EOS-110 & EOS-111



**INSTALLATION
INSTRUCTIONS**



**Muncie[®]
Power
Products**

Introducing the EOS-110 & EOS-111

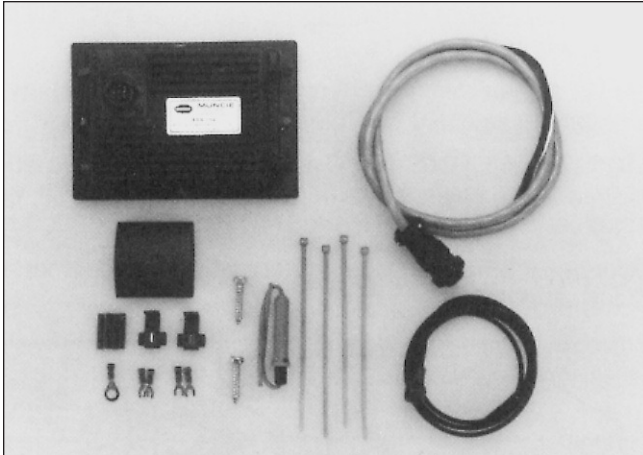
The EOS-110 is an electronic switch that protects power take-off and hydraulic equipment from operator abuse by switching off the equipment when an excessive speed is reached and automatically re-engages the equipment when the engine slows to a safe speed.

The EOS-110 is equipped with a fail-safe circuit so that if the input RPM signal is lost or not properly sensed via the yellow wire, no output power will be available (via the green wire) for the solenoid or clutch. This feature is beneficial in obtaining the proper signal from the alternator and helps to deter operator tampering.

The EOS-110 can be used as a direct replacement for the previous model EOS-100. Refer to the installation and adjustment procedures in this booklet and also, to the note on Page 9.

The EOS-111 is a modified version of the EOS-110 and is considered the same as the EOS-110 for installation purposes as described in this booklet.

Parts included for installation of EOS-110 and tools required



EOS-110 and parts included

These are the tools required for installation of the EOS-110:

- Digital voltmeter
- Crimping/stripping pliers
- Screw driver .06
- Electric drill with 3/16 bit
- 3/8" socket and drive
- Standard pliers
- Hot air gun (optional)

EOS-110 PARTS LIST

QTY	PART NO.	DESCRIPTION
1	EOS-110	Overspeed Switch
1	074-20018	Wiring Harness
1	074-30023	Packard Terminal
1	074-20016	Small Parts Bag

INSTALLATION INSTRUCTIONS

Choosing a Mounting Location

The EOS-110 should be mounted in the cab. This keeps the EOS-110 away from the harsh environment seen under the hood and allows easier one man installation.

CONNECTING THE VEHICLE WIRING HARNESS

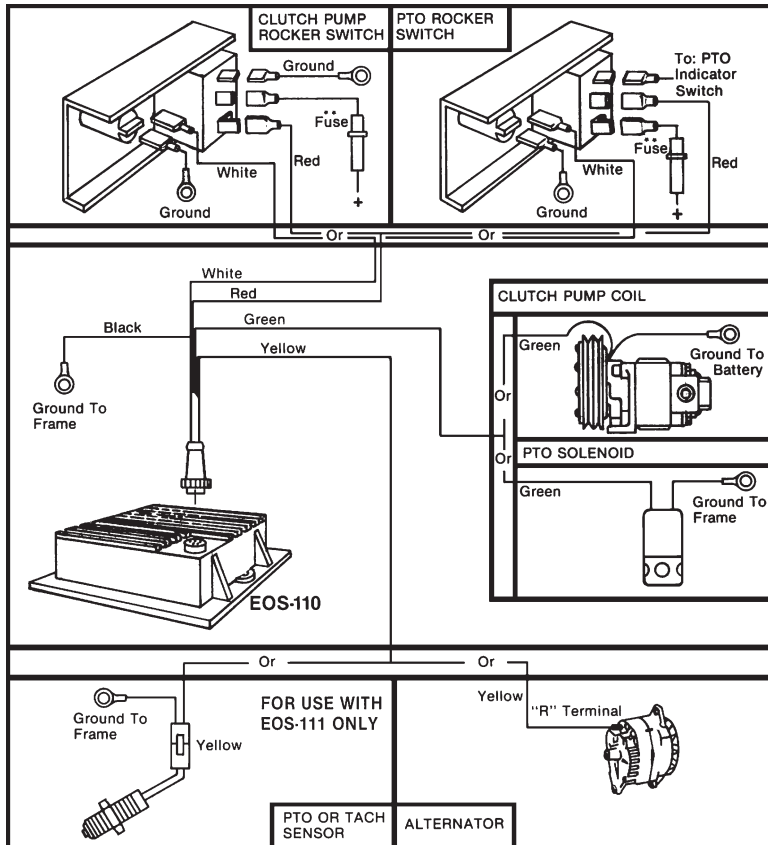
Black - Ground Wire: This wire should be attached to the truck frame. Caution: Body attachments do not always provide good grounds.

Red - Power Input To EOS-110: Connect this line to the output terminal of the on/off switch controlling the clutch or PTO. A 9 Amp fuse is required in this line.**

Green - Power Output From EOS-110: (Normally open output): Connect this line to solenoid or clutch coil.

Yellow - RPM Input To EOS-110: Connect this line to alternator 'R' terminal, tachometer signal, or connect to magnetic sensor pick up on PTO unit.

White - Overspeed Indicator Light: (Normally closed output): Connect this line to overspeed light.



****NOTE:** The EOS-110 is supplied with a 9 amp fuse. Be sure there is a 9 amp fuse in this circuit. If fuse is blown do not bypass fuse, refer to trouble shooting guide in the back of this booklet.

LATE MODEL VEHICLE INSTALLATIONS

Tachometer Signal

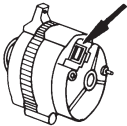
Many engine and vehicle suppliers are providing a “clean” tachometer signal for use by body installers. Refer to the engine supplier’s or vehicle manufacturer’s “Body Builders Reference Books” for their recommended location for this connection. If available use this location to connect the “Yellow” wire from our wiring harness.

EARLIER MODEL VEHICLES

Locating the Alternator “R” Terminal

The “R” terminal is the only alternator output that provides proper input signal to the EOS-110 Electronic Overspeed Switch. This terminal is easily identifiable as an insulated pin protrusion as shown below. If you are unable to verify this terminal visually or through use of testers, you will have to take the alternator to an authorized service center for installation of the terminal.

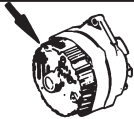
Delco-Remy Alternators



Terminals S, F, L, P

CS Series Output rating: CS-121 61 & 74 amp
CS-130 85, 100, & 105 amp
CS-144 108 & 120 amp

The “P” terminal is connected to the stator. Connect yellow EOS-110 lead to this terminal.



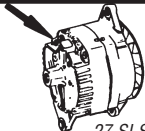
10 SI Series

10 SI Series – Passenger Cars & Light Trucks

Output rating: 42-63 amp.

This series **does not** normally have an external “R” terminal.

Similar Series: 1251-56-94 amp
1551-85-105 amp



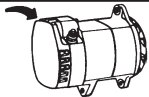
27 SI Series

27 SI Series – Passenger Cars & Light Trucks

Output rating: 65-100 amp

Normally has “R” terminal in location indicated.

Similar Series: 2151-100-130 amp

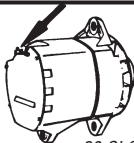


25 SI Series

25 SI Series – Line Haul Diesel & Large Gasoline Engines

Output rating: 85 amp Always has “R” terminal, usually covered by rubber boot, in position as indicated.

Similar Series: 3051-105 amp



20 SI Series

20 SI Series – Small to Mid-Range Diesel & Large Gas Engines

Output rating: 60 amp

Note: 29 SI Series is same appearance, but 90 amp rating.



40 SI Series

40 SI Series – Extra High Output for Ambulances, Fire Engines, Etc.

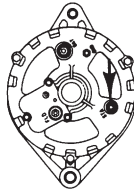
Output rating: 105-145 amp

Always has “R” terminal as indicated - covered with boot.

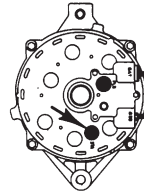
Motorcraft (Ford) Alternators



D9 Series



D4 Series



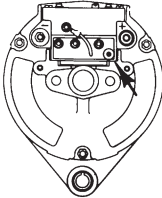
E2 Series

Motorcraft Alternators have terminals marked "STA" (Stator) as indicated by the Arrows.

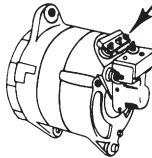
However, the D9 Series may not give the proper signal for the EOS-110. If step 3 of harness test is not satisfied, the alternator should be taken to an alternator service shop for modification.

Most current model Ford Alternators with a built-in, solid state regulator do not have a "STA" terminal. They may, however, have a stator connection through one of the connectors on the unit. Refer to the Ford body builders book or contact the dealer for assistance.

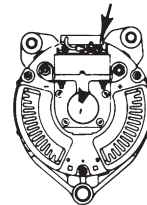
Prestolite/Leece-Neville Alternators



2000 Series



4000 Series



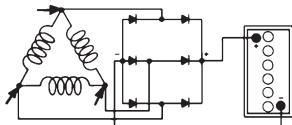
7000 Series

Prestolite/Leece-Neville Alternators are very common on many makes of small diesel and large gas engines.

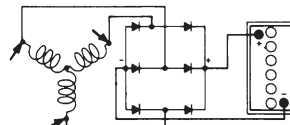
In the absence of a separate terminal, attach to the right hand terminal of the three-in-a-row shown.

Foreign Vehicles: Foreign manufactured vehicles may have an alternator stator tap. Some vehicles are equipped with D.C. generators (instead of alternators) and the EOS cannot be connected to these generators. It may be possible to make the connection by using the same signal location as the vehicle tachometer, as long as the signal input conditions can be met. Refer to the EOS-110 specifications for these values.

Typical Alternator Windings



Delta Connected Stator



Wye Connected Stator

(Arrows Indicate Proper "R" Terminal Output)

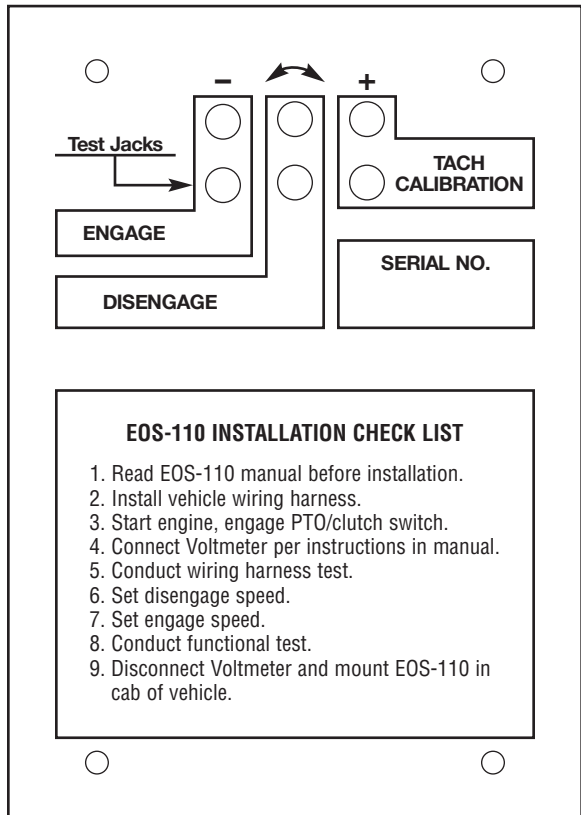
VEHICLE WIRING HARNESS TEST

1. Place positive (+) lead from voltmeter in the TACH calibration jack and the negative (-) lead to frame. Set on 0-20vdc scale.
2. Start engine, advance engine to 1200 RPM and return to idle.
3. Increase and decrease engine RPM and observe voltmeter. The voltage should increase and decrease with engine speed.
4. Place positive (+) lead from voltmeter in the engage jack. If there is no voltage then unit is not receiving current on the red wire.
5. When the engine is shut off and the PTO/clutch switch is activated the red overspeed light should be on.

Refer to trouble shooting guide if any test fails.

EOS-110 Speed Adjustment Procedure Using a Voltmeter.

1. The EOS-110 has test jacks to allow adjustment by use of a voltmeter. The test jack voltages will be in the 0-6 VDC range. Your voltmeter should be on the lowest voltage selection which covers the range. Use the positive meter probe in the test jacks with the negative probe grounded to the truck frame.



2. Start the engine, engage the PTO/clutch switch, briefly advance the engine to 1200 RPM and return to idle.
3. The TACH calibration will set the EOS-110's internal tachometer circuit to match the truck's tachometer. This test jack voltage will rise and fall with the engine speed, just as the vehicle's tachometer. Use the adjustment screw to adjust the voltmeter so that the meter displays 1.0 VDC when the truck TACH shows 1000 RPM. The meter should then display 1.5 VDC at 1500 RPM, 2.0 VDC at 2000 RPM, etc.
4. Once you have the RPM set for 1.0 VDC per 1000 RPM turn the engine off and return the ignition key to the "on" position.
5. Make sure there is power at the EOS-110 (overspeed light should be on). Place the positive lead into the disengage jack. Using the disengage adjustment screw adjust the voltmeter so that the display shows your desired disengagement speed based on the relationship that 1.0 VDC = 1000 RPM. (Example: a disengage speed of 1800 RPM will show 1.8 VDC on your voltmeter.)
6. Place the positive lead into the engage jack. Using the engage adjustment screw adjust the voltmeter so that the display shows your desired re-engagement speed based on the relationship that 1.0 VDC = 1000 RPM. It is recommended that the engage be set at 1000 RPM. The engine must idle at a speed below the engage setting in order for the unit to function properly.

NOTE: The DISENGAGE is to be set first, then the ENGAGE. Also, when the engine is running the ENGAGE test jack will show 6 VDC or 6000 RPM when the EOS-110 has engaged the PTO or pump. This condition is normal and no damage occurs during this condition.

7. The EOS is now calibrated. Remove the voltmeter and test the EOS with engine running. Repeat steps 3-6 if needed.

Mounting the EOS-110

- 1. Disconnect the voltmeter or tester.
- 2. Use the two self-tapping machine screws supplied to mount EOS-110.
- 3. Plug vehicle wire harness into EOS-110.
- 4. There is a piece of heat shrink tubing supplied with the EOS-110 which can be shrunk over the connector when installation is finished. This is to seal and deter tampering with the connector.

Optional Cover

The EOS-110 can be supplied with an optional cover (074-20019) which will seal the bottom of the EOS-110. To install this cover:

- 1. Remove the existing foam seal from the bottom of the EOS-110.
- 2. Using the 6 screws from the kit, screw the plate into place so that the seal/gasket is facing in.

Field Replacement of the EOS-100

The EOS-110 can be used to replace the EOS-100.

Using the new wiring harness provided either make a new connection as shown in the wiring instructions of this booklet or splice the new harness into the old by matching wire colors. Make sure there is a fuse in the red wire circuit.

EOS-110 SPECIFICATIONS

Input Voltage	+9-18 VDC
Operating Current	20 ma + (Output Load)
Signal Input (Alternator)	12 Vac P-P min.
Input Frequency Range	50-1800 Hz
Output Load	+9-18 VDC @ 5 Amp Inductive Load Fused to 10 Amp
Operating Temp Range	- 20°C To +100°C
Linearity	±5%
Weight	1 Lb.
EOS-111 Input Frequency Range	50-3000 Hz

EOS-110 Trouble Shooting Guide

PROBLEM	TEST Voltmeter	PROBABLE CAUSE	SOLUTION
Unit will not engage and overspeed light not on	No current at red wire.	<ul style="list-style-type: none"> • Blown fuse. • Poor ground connection. • Reverse polarity. • Connection, splice or harness connection loose. 	<ul style="list-style-type: none"> • See problem "Blown Fuse". • Check crimped and frame connections. • Interchange red and black leads. • Check crimped connections. Make sure pin connector is in proper alignment and ring tight.
Unit will not engage and overspeed light always on	Voltage at TACH jack does not increase with engine speed.	<ul style="list-style-type: none"> • Alternator not engaged. • Incorrect alternator terminal. • Poor or loose connection. 	<ul style="list-style-type: none"> • Briefly run engine between 1200-1500 RPM. • See pg.5 this manual or contact dealer. • Check crimp and connection of yellow wire.
	Voltage at TACH jack does increase and decrease with engine speed.	<ul style="list-style-type: none"> • Poor or loose connection. • Unit out of adjustment. 	<ul style="list-style-type: none"> • Check crimp and connection of green wire. • See adjustment procedure, pg. 7.
Unit will not disengage	Voltage at green wire.	<ul style="list-style-type: none"> • Unit out of adjustment. • Faulty EOS-110. 	<ul style="list-style-type: none"> • See adjustment procedure. • Replace unit.
Intermittent operation	Changes in voltage readings.	<ul style="list-style-type: none"> • Poor connection. 	<ul style="list-style-type: none"> • Check crimped and ground connections.
Blown fuse		<ul style="list-style-type: none"> • Failed solenoid coil, shorted output lead, faulty EOS-110. 	<ul style="list-style-type: none"> • Examine wiring harness and connections for possible short circuits. Check out & replace faulty components.

Limited Warranty

Muncie Power Products, Inc. warrants the EOS-110 or EOS-111 to be free from defective materials and workmanship and will repair or replace, at our option, any units found to be defective upon examination by the Muncie Division from which the unit was purchased, for twelve months from the date of purchase.

Units may not be returned unless specifically authorized in writing by the Muncie Division from which the unit was purchased.

Muncie Power Products, Inc. does not assume any responsibility or liability for damage to any component of the vehicle electrical system, which may result from the installation or attempted installation of the EOS-110 or EOS-111 overspeed switch.



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