

Drivability Issues with a Ford 6.8 Gas V-10 E-Series Van: it dies at stops, going around corners or decelerating, and it just had the throttle body or Throttle Position Sensor (TPS) replaced.

If this sounds familiar, it could be magnetic interference from the alternator being picked up by the new style TPS.

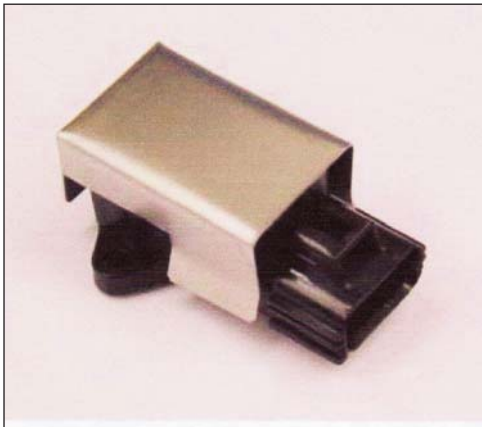
Around 2010, Ford changed the style of throttle position sensor on E-Series 6.8 gas V-10 engines from potentiometer to Hall-effect. The new TPS was also on most new replacement throttle bodies. The Hall-effect sensor has a magnet in it and it picks up the magnetic field created by the alternator, confusing the PCM. The best way to tell if the charging system is involved here is to deactivate it by disconnecting the voltage regulator. If the problem goes away, you need to install a PX-7011 TPS shield, seen below. The PX-7011 is available from our Warehouse Distributors. A Distributor List is on our web site at www.penntexusa.com.

The Two Throttle Position Sensor Styles



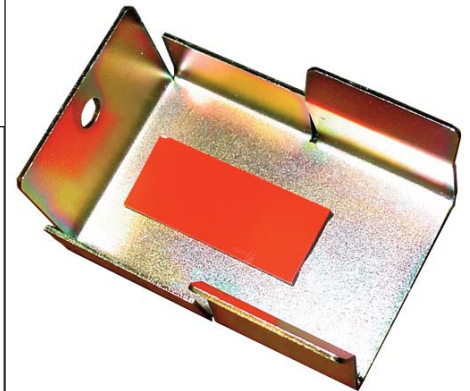
Potentiometer Style:
"Triangular" shape
Spring-loaded

Hall-effect Style:
Rectangular shape
Not spring-loaded

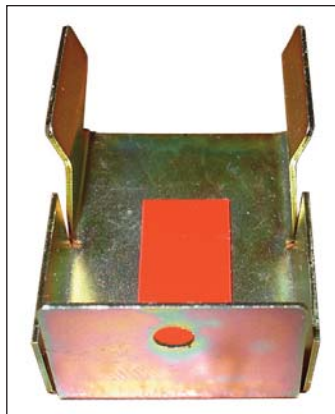


PX-7011 TPS Shield w/ Tape

The PX-7011 TPS Shield Kit is designed for Ford 6.8 L V-10 applications where the PennTex alternator is in close proximity to the Throttle Position Sensor.



To install, remove the red film from the double-sided tape and push firmly on to the TPS.



The PX-7011 TPS Shield is designed for the rectangular Hall-effect style sensor only. The other style TPS is not affected by magnetic interference and does not need one.

The TPS Shield is also available without tape as Part Number PX-7010. It can be attached with RTV.

PERFORMANCE ENDURANCE AND SATISFACTION



**Manufacturers of
High Efficiency Alternators and
Mobile Electronic Devices.**

Corporate:
202 Plaza Drive
Manchester, PA 17345
Ph: 717-266-8762
Fax: 717-266-7803

Manufacturing/ Sales/ Tech/ Warranty:
7620 Flagstone Drive
Fort Worth, TX 76118
Ph: 817-590-2818, Toll Free: 877-590-7366
Fax: 817-590-0505, Tech Fax: 817-590-0398

www.penntexusa.com
email: sales@penntexusa.com
tech@penntexusa.com



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Corporate Office:
202 Plaza Drive
Manchester, PA 17345
Phone: 717-266-7862
Fax: 717-266-7803

Manufacturing/ Sales/ Tech/ Warranty:
7620 Flagstone
Ft. Worth, TX 76118
Phone: 817-590-2818, 877-590-7366
Sales Fax: 817-590-0505, Tech Fax: 817-590-0398
sales@penntexusa.com, tech@penntexusa.com

SERVICE BULLETIN

RE: Ford 6.8L E-Series cutaway bus chassis with PennTex Charging Systems

Bulletin Date: 09-03-2014, Updated 07-18-2014

Service Issue:

Ford E-series throttle body replacements that include a new throttle position sensor may cure a drivability problem. On vehicles with a PennTex heavy-duty high amperage alternator, a new problem may occur that makes the throttle body change seem ineffective.

Background:

There are two styles of throttle position sensors: Potentiometer and Hall-effect. Ford had been using a potentiometer-style TPS sensor in the E-Series until late 2010 when they changed to a Hall-effect style. It determines throttle plate angle by sensing the rotary angle of a small internal permanent magnet in the sensor.

The old potentiometer-style TPS is immune to magnetic fields. A Hall-effect TPS can be affected by external magnetic fields unless it is properly shielded. Alternators always produce magnetic fields when energized and if a heavy-duty high amperage alternator like a PennTex is mounted close to a Hall-effect TPS, the sensor will pick up the magnetic field that the alternator is producing.

This interference problem first started occurring in 2010 Ford E-Series Super Duty van chassis with the 6.8L gas engine and a new PennTex Charging System install. However, it will also occur on an earlier model year Ford 6.8L gas engine chassis that has had a recent throttle body replacement. The new throttle body comes with a newer style Hall-effect TPS attached to it replacing the potentiometer-style TPS. A vehicle drivability problem in the older vehicle corrected by the throttle body replacement is now changed to a "dies at idle or when decelerating to a stop" type problem because of the new Hall-effect TPS / alternator magnetic interference.

Diagnosis:

If a new vehicle with a PennTex Charging System (or an older vehicle with a new throttle body or Hall-effect TPS) is stalling out at idle or when decelerating to a stop, disable the PennTex alternator by disconnecting the regulator harness connector from the voltage regulator. If the vehicle then runs properly, this can confirm that the magnetic interference is causing the problem. (This assumes that no other drivability problems exist at the time of the test.)

Solution: Part Number PX-7010 or PX-7011

Hall-effect TPS sensors on new 2010-up vehicles with PennTex Charging Systems will need a magnetic shield applied. PennTex has a TPS Sensor Shield available that covers the Hall-effect style TPS and protects it from the magnetic field of the alternator.

There are two TPS sensor shield part numbers available with both using the same shield. Part number **PX-7010** comes with nothing to attach it to the TPS. RTV is recommended as an adhesive. Part number **PX-7011** has a pre-attached piece of double-sided tape. This enables the shield to be attached to the TPS quickly and without the mess and drying time of RTV.

PennTex Industries
TPS Shield (PX-7011) Installation on Ford 6.8L V-10 E-Series with 3M Tape

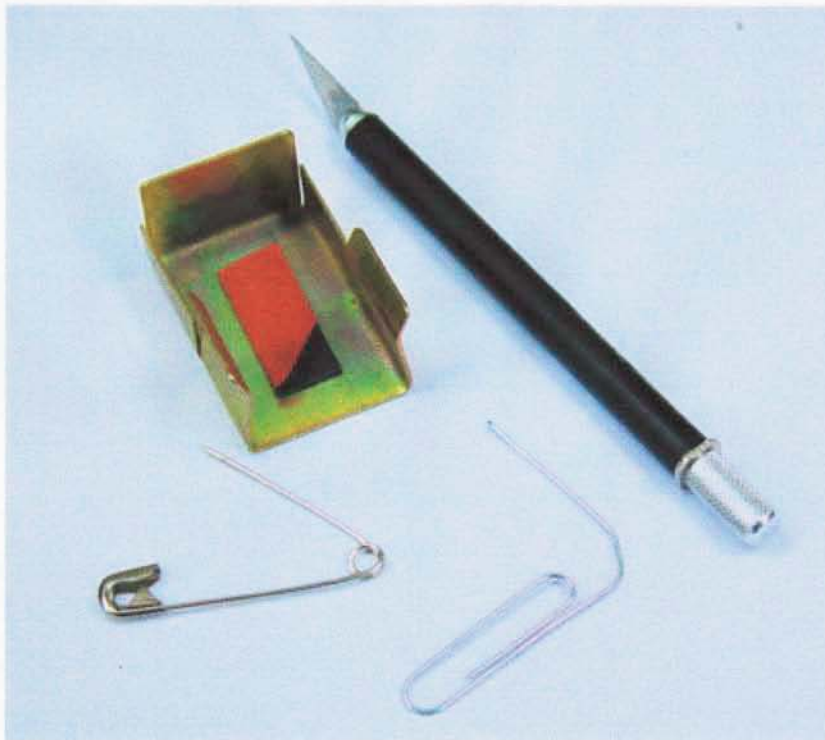
Disconnect ALL battery grounds. This is to insure TPS Sensor recalibration and as a safety precaution.

The Throttle Position Sensor is mounted on the front of the throttle body behind the alternator. Remove the following components as required to gain access to the TPS Sensor: Air Cleaner Inlet Tube, Air Cleaner Cover/Filter Assy., Alternator (Note: complete disconnect and removal may not be required)

DO NOT REMOVE THE TPS SENSOR FROM THE THROTTLE BODY. Locate the TPS Sensor and verify that the TPS Shield will fit over the sensor properly. The side tabs should hold it in place snugly. Adjust by bending tabs slightly as needed.

Remove the TPS shield. The double-sided adhesive tape (3M VHB # 4611) must be applied to clean & dry surfaces. Clean the mating surface on the TPS Sensor (top cover with numbers) to remove any dirt and oil films. NOTE: Apply cleaning fluid (solvent) to a paper towel and wipe surfaces. Do Not apply solvent or cleaning fluids to TPS Sensor directly. Do Not contaminate the adhesive or mating surfaces prior to installation such as by touching either with oily/dirty fingers & tools.

Remove the red/orange release liner from the tape. A sharp metal object such as a hobby knife, safety pin or sharpened paper clip may be helpful.



IMPORTANT!

PLEASE READ THESE DIRECTIONS FIRST.

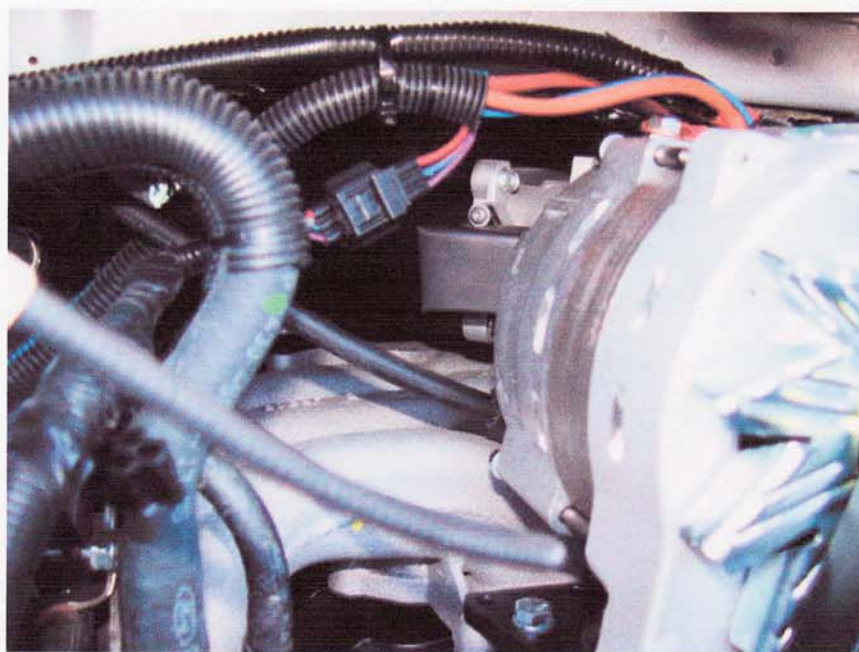
**THE PENNTEX PX-7011 TPS SENSOR SHIELD MUST BE
INSTALLED PRIOR TO THE INSTALLATION OF THE
ALTERNATOR ON ALL 2010 AND UP FORD 6.8L V-10
E-SERIES CHASSIS.**

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6. Install the TPS Shield onto the TPS Sensor and verify the position as shown below.
Note: Shield color and appearance may vary slightly.



7. Reinstall the components in reverse order. Note with some bracket kits it is advisable that the TPS Sensor's Harness should be secured away from the rear of the alternator in order to gain physical clearance. Some installers have successfully used cable ties to attach it to the air intake duct.
8. Reconnect battery grounds. Restart engine and verify drivability.

NOTE: This bulletin was issued before the magnetic interference issue was identified and then corrected by the installation of a PX-7010 or PX-7011 TPS Shield on the Hall-effect style TPS.



SVE BULLETIN

SPECIAL VEHICLE ENGINEERING – BODY BUILDERS ADVISORY SERVICE

E-Mail via website: www.fleet.ford.com/truckbbas (click "Contact Us")

Toll-free: (877) 840-4338

QVM Bulletin: Q-194R1

Date: 13 September 2010

OEM or Aftermarket Alternator Relocation (or Other High Current Line/Sources over 10 Amps) on 6.8L Gas Engine FEAD (Proximity to Throttle Body/ Throttle Position Sensor)

To:

Builders completing or altering E-Series vehicles

Models Affected:

2010 MY to Present E-Series E350/450 Cutaways with 6.8L Gas Engine

Background:

2010 MY E-Series (with a production date on or after March 8, 2010) began using a non-contacting (Hall Effect technology) type throttle body, throttle position sensor (TPS) which replaced a contacting type sensor.

Alternator Relocation/Addition of High Current Line/Sources Guidelines:

Body upfitters/alterers who are performing FEAD upfits (adding second A/C compressors or relocating the alternator from the OEM position, or adding high current sources over 10 amps) must maintain a minimum distance of 150mm from any point on the alternator assembly/high current source to any point on the TPS sensor.

Upfitter Requirement if 150mm Alternator to TPS Clearance is not Achievable:

If a builder is unable to re-package the alternator (or the high current line/source >10 amps) and maintain the 150mm minimum clearance to the TPS sensor, the TPS sensor shipped with the vehicle must be removed and replaced with the prior level contacting sensor. The Ford Service Part number of the required contacting type TPS kit (sensor, fastener and instruction sheet) is 6L2Z-9B989-C (refer to TSB # 072-2010-1719R1). Also, all 2005- present E-Series models with 6.8L gas engine and an alternator upfit seen on Transit /School Buses must receive the 6L2Z-9B989-C TPS sensor if a service replacement is required, to avoid potential drivability concerns.

If you have any questions, please contact the Ford Truck Body Builders Advisory Service as shown in the header of this bulletin.

NOTE: This bulletin was issued before the magnetic interference issue was identified and then corrected by the installation of a PX-7010 or PX-7011 TPS Shield on the Hall-effect style TPS.

FORD THROTTLE POSITION SENSOR STYLES



Earlier Potentiometer-style TPS

- * Triangle Shaped
- * Spring-loaded
- * Not affected by magnetic interference



Later Magnetic-style TPS

- * Rectangle Shaped
- * Not Spring-loaded

The PennTex PX-7010 Shield is only designed to fit the later magnetic-style sensor

SCALE: NONE

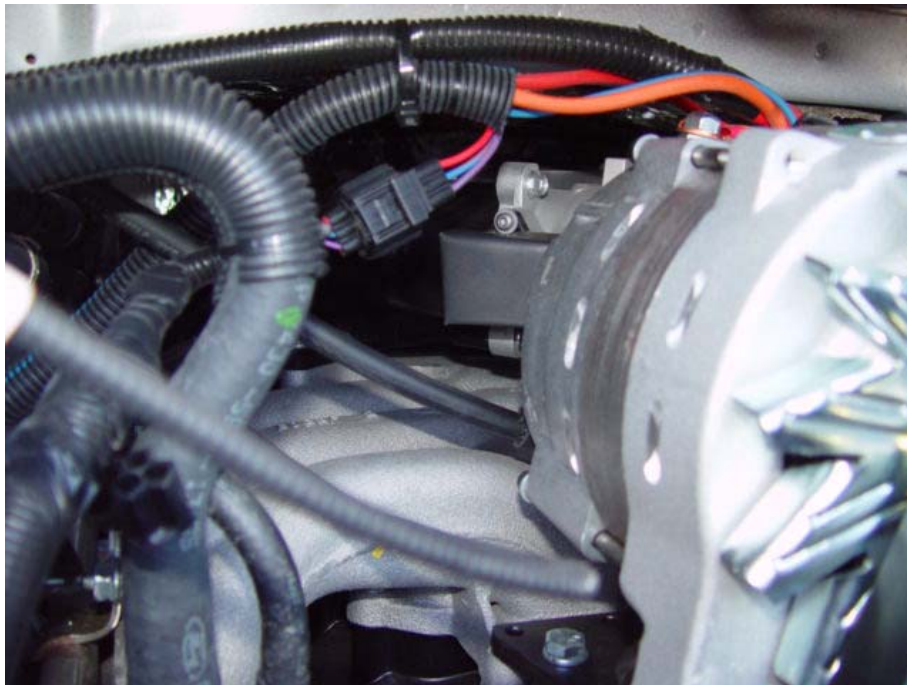
- *Both sensors have the same mounting pattern and connector.
- * Ford recommends heating the attaching screws before removal to loosen the LockTite on the screws. They can be broken off in the throttle body if this isn't done.

PennTex Industries
TPS Shield (PX-7010) Installation on Ford 6.8L V-10 E-Series

1. Disconnect ALL battery grounds. This is to insure TPS Sensor recalibration and as a safety precaution.
2. Remove the following components as required to gain access to the Throttle Position Sensor (TPS Sensor) which is mounted on the front of the throttle body behind the alternator: Air Cleaner Inlet Tube, Air Cleaner Cover/Filter Assy., Alternator (Note: complete disconnect and removal may not be required)
3. **DO NOT REMOVE THE TPS SENSOR.** Locate the TPS Sensor and verify that the TPS Shield will fit over the sensor properly. The side tabs should hold it in place snugly. Adjust by bending tabs slightly as needed.
4. Remove the TPS shield. Clean both the underside of the TPS shield and the adjacent mating surface on the TPS Sensor (top cover with numbers) to remove any dirt and oil films. **NOTE:** Apply cleaning fluid (solvent) to a paper towel and wipe surfaces. Do Not apply solvent or cleaning fluids to TPS Sensor directly.
5. Apply a small blob (3/8") of sensor-safe silicone or similar suitable adhesive (**NOT INCLUDED**) to the underside of the TPS shield as shown in the picture below.



6. Install the TPS Shield onto the TPS Sensor and verify the position as shown below.



7. Reinstall the components in reverse order. Note with some bracket kits it is advisable that the TPS Sensor's Harness should be secured away from the rear of the alternator in order to gain physical clearance. Some installers have successfully used cable ties to attach it to the air intake duct.
8. Allow time for the adhesive to cure. Reconnect battery grounds. Restart engine and verify drivability.

IMPORTANT!

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ROUGH DRAWING OF TPS HARNESS ROUTING TO CLEAR PENNTEK ALTERNATOR

