

FORD:

2004-2008 F-150
2005-2008 Expedition, F-Super Duty

LINCOLN:

2005-2008 Navigator
2006-2008 Mark LT

This article supersedes TSB **06-15-2** to update Vehicle Applications, Service Procedure and Part List.

ISSUE

Some 2004-2008 F-150, 2006-2008 Mark LT, 2005-2008 F-Super Duty, Expedition, and Navigator vehicles built with a 5.4L 3-V engine and has a engine built date before 10/9/2007, may experience difficulty with spark plug removal. This may cause damage to the spark plug and leave part of the spark plug in the cylinder head.

ACTION

Refer to the following Service Procedure for techniques to remove the spark plugs and extract broken spark plugs.

SERVICE PROCEDURE

The engine build date can be read on the left hand cam cover information sticker.

To remove spark plugs without damage, it is necessary to adhere exactly to this procedure before removal is attempted.

CAUTION

DO NOT REMOVE PLUGS WHEN THE ENGINE IS WARM OR HOT. THE ENGINE MUST BE AT ROOM TEMPERATURE WHEN PERFORMING SPARK PLUG SERVICE. REMOVING THE SPARK PLUGS FROM A WARM/HOT ENGINE INCREASES THE CHANCE THE THREADS COULD BE DAMAGED.

Spark Plug Removal Procedure

1. Remove the coil-on-plug assemblies and thoroughly blow out the spark plug wells and surrounding valve cover area with compressed air.

2. Back out the spark plugs no more than 1/8 to 1/4 of a turn. Using Motorcraft® Carburetor Tune-Up Cleaner, fill the spark plug well just above where the jamb nut hex sits (1/2 - 3/4 teaspoon). A minimum period of 15 minutes of soak time is required. The cleaner will wick down to the ground electrode shield and soften the carbon deposits in this time. **DO NOT WORK** the spark plug back and forth at this point.

NOTE

COMPLETELY REVIEW THE PRODUCT LABEL FOR THE MOTORCRAFT CARBURETOR TUNE-UP CLEANER PRODUCT - USE AT ROOM TEMPERATURE AND SHAKE WELL.

CAUTION

EXCESSIVE MOTORCRAFT® CARBURETOR TUNE-UP CLEANER, OR REPEATING THE PROCESS SEVERAL TIMES WITH TOO MUCH CLEANER FLUID, COULD INTRODUCE ENOUGH LIQUID VOLUME TO HYDRO-LOCK THE ENGINE.

CAUTION

DO NOT USE AIR OR POWER TOOLS FOR SPARK PLUG REMOVAL. SPARK PLUGS MUST ONLY BE REMOVED WITH HAND TOOLS.

3. Slowly turn the spark plug out. Some screeching and high effort may be noticed, but not in every case. The expected removal torque is about 33 lb-ft (45 N•m), but should decrease on the way out. If it is higher, try turning the spark plug back in a half turn, then back out again. If the turning torque still seems high, repeat the back and forth rotation along with introducing additional Motorcraft® Carburetor Tune-Up Cleaner to reduce turning effort.

Separated/Broken Spark Plug Removal

If the spark plug does come apart even after following the Spark Plug Removal Procedure, it will break in one of two modes:

NOTE: The information in Technical Service Bulletins is intended for use by trained, professional technicians with the knowledge, tools, and equipment to do the job properly and safely. It informs these technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by "do-it-yourselfers". Do not assume that a condition described affects your car or truck. Contact a Ford, Lincoln, or Mercury dealership to determine whether the Bulletin applies to your vehicle. Warranty Policy and Extended Service Plan documentation determine Warranty and/or Extended Service Plan coverage unless stated otherwise in the TSB article. The information in this Technical Service Bulletin (TSB) was current at the time of printing. Ford Motor Company reserves the right to supersede this information with updates. The most recent information is available through Ford Motor Company's on-line technical resources.

TSB 08-1-9 (Continued)

- a. Mode 1: The ground electrode shield is left behind as an empty shell. (Figure 1)

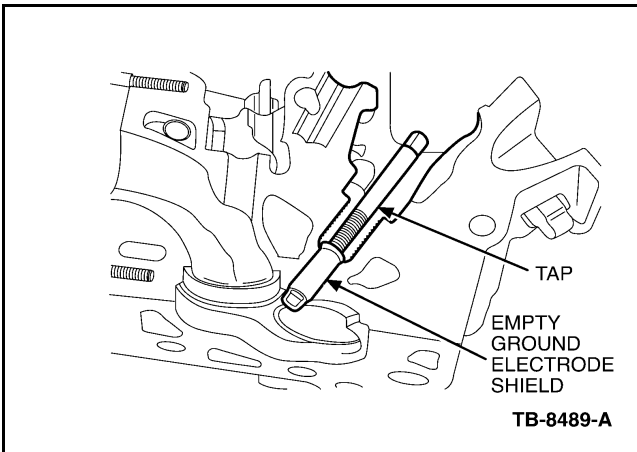


Figure 1 - Article 08-1-9

- b. Mode 2: The porcelain center and ground electrode shield is left behind and only the upper jamb nut comes out, or the porcelain breaks with a section remaining in the ground electrode shield and only the upper jamb nut and a section of porcelain comes out. In this case additional soaking with Motorcraft® Carburetor Tune-Up Cleaner is required to dissolve carbon deposits. Long-reach nose pliers should be used to grasp and remove the porcelain center from the ground electrode shield. (Figure 2)

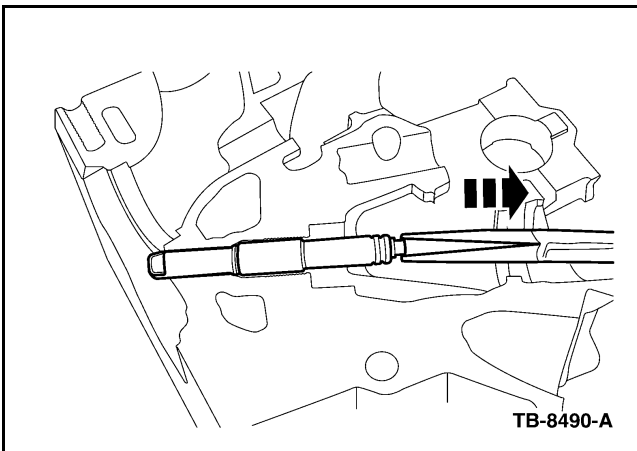


Figure 2 - Article 08-1-9

Once there is only an empty ground electrode shield left in the cylinder head, perform the following steps to remove the shield using Rotunda Special Service Tool 303-1203. (Figure 3)

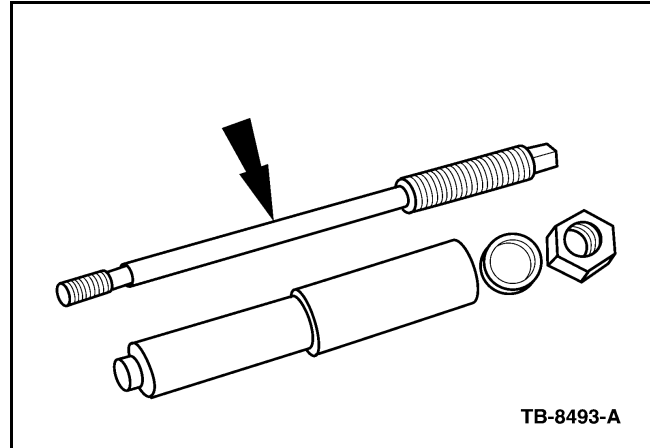


Figure 3 - Article 08-1-9

NOTE

THIS TOOL IS ONLY DESIGNED TO WORK WITH AN EMPTY GROUND ELECTRODE SHIELD. IF THE SPARK PLUG CAME APART AS DESCRIBED IN MODE 2, THE PORCELAIN CENTER MUST BE REMOVED PRIOR TO FOLLOWING THESE STEPS. IF ATTEMPTS TO REMOVE THE PORCELAIN CENTER ARE UNSUCCESSFUL, CONTACT THE TECHNICAL SERVICE HOTLINE FOR ADDITIONAL REPAIR DIRECTION.

1. The combustion chamber must be protected from contamination during the extraction process by using a modified protective cap as a stopper-type plug. This is because the remaining ground electrode shield will be thread-tapped, so the cap is needed to prevent thread chips from falling into the cylinder bore. Cut a vacuum cap to a 3/8 inch (10 mm) length for each ground electrode shield that needs to be removed.
2. Install the modified cap with a long drill bit or suitable wire, sized for the internal diameter of the cap. The rubber cap should bottom-out on the electrode strap of the ground electrode shield once installed. (Figure 4)

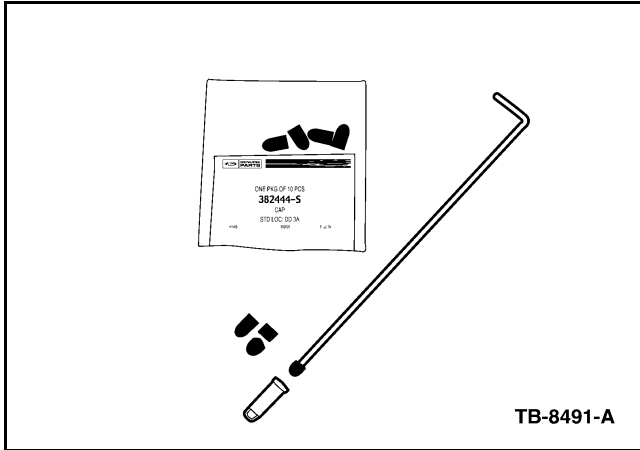


Figure 4 - Article 08-1-9

3. Thread-tap the ground electrode shield using a 9.0 x 1.0 mm plug tap (tap profile is about 3-4 reduced diameter threads on the tip end).
 - a. Coat the end of the tap with general purpose grease. (Figure 5)

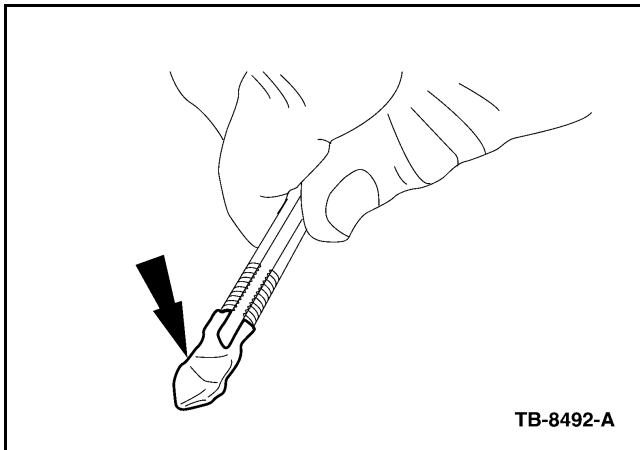


Figure 5 - Article 08-1-9

- b. Turn the tap about 3 to 4 turns into the ground electrode shield once the tap begins to cut. As the shield is tapped, for every 1/2 turn, the tap should be backed up 1/8 turn to break chips and prevent any cut material from coiling-up and laying in the spark plug well. All of the thread chips will embed in the grease pack or drop inside the vacuum cap when following this procedure. A suitably sized tap wrench of about 7-9 inches in handle length will aid in reaching down the well. If not available, use an 8 point socket with a ratchet and drive extension. Keep the shank aligned with the axis of the spark plug bore cavity to prevent possible thread bore damage. Use care not to damage any spark plug threads on the way in.

CAUTION

DO NOT ATTEMPT TO REMOVE THE GROUND ELECTRODE SHIELD WITH THE TAP AND WRENCH. THE TAP MAY BREAK IF THIS IS ATTEMPTED.

- c. Carefully back out the tap while maintaining the residual grease coat on the tap which contains some chips. Take care not to touch the sides of the spark plug well bore during removal.
4. Once the ground electrode shield is tapped, thread Rotunda Special Service Tool 303-1203 into the ground electrode shield to extract it from the spark plug well and encapsulate any remaining chips from falling into the combustion chamber.

NOTE

SEE FIGURE 6 FOR DETAILS OF THE TOOL AS INSTALLED IN THE HEAD.

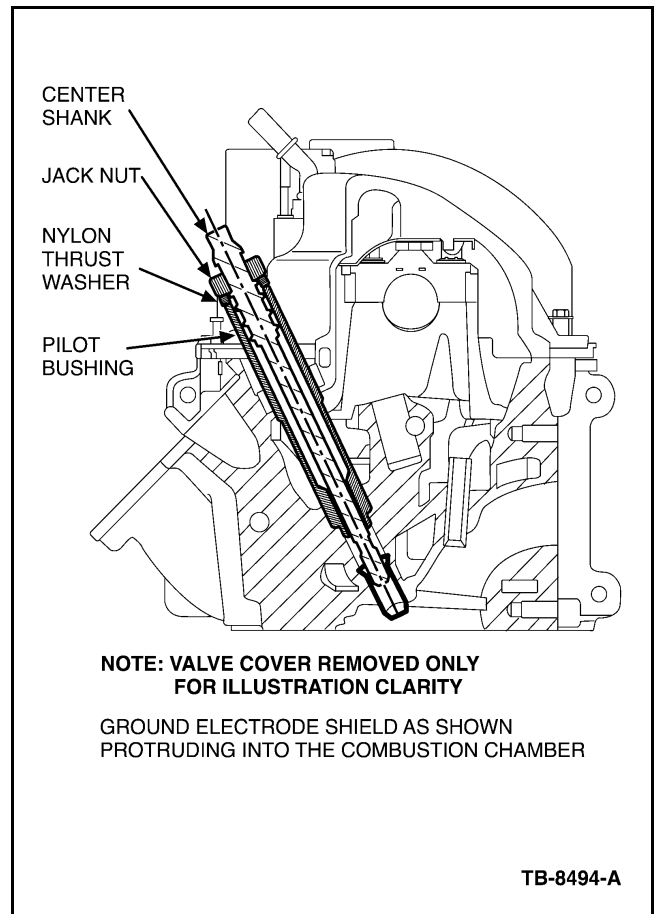


Figure 6 - Article 08-1-9

- a. Install the stepped end of the tool pilot bushing into the spark plug well ensuring it bottoms out.

TSB 08-1-9 (Continued)

- b. Screw the center shank into the ground electrode shield. Do not over tighten the shank, to prevent thread stripping.
- c. Install the nylon washer and jack nut until finger tight.
- d. Turn the jack nut with a socket and 3/8 inch drive ratchet until the ground electrode is freed from the cavity and withdraw the tool assembly. Several turns of the nut are required. Upon removal, any remaining chips not caught earlier by the tap grease will be captured by the rubber plug sitting at the bottom of the ground electrode shield.

NOTE

ONCE THE SPARK PLUGS HAVE ALL BEEN REMOVED, NEW PLUGS SHOULD BE INSTALLED USING A FILM COATING OF MOTORCRAFT® HIGH TEMPERATURE NICKEL ANTI-SEIZE LUBRICANT ON THE GROUND ELECTRODE SHIELD OF THE NEW SPARK PLUGS. (FIGURE 7) DO NOT COAT THE ELECTRODE STRAP OR THE PLUG WILL MISFIRE. THE NEW SPARK PLUGS SHOULD BE INSTALLED WITH NO LUBRICANT ON THE THREADS AND TORQUED TO SPECIFICATION, 25 LB-FT (34 N•m).

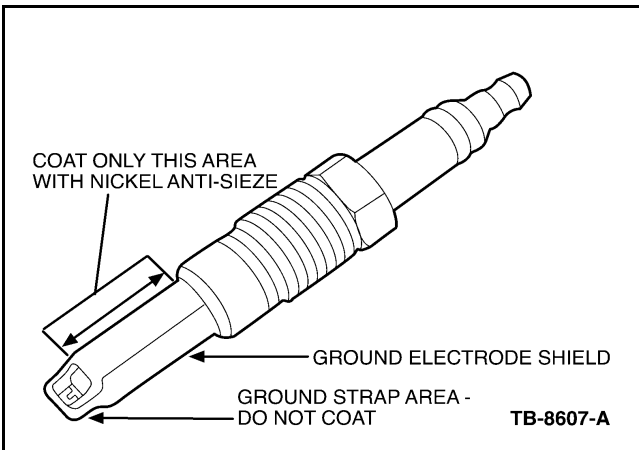


Figure 7 - Article 08-1-9

PART NUMBER	PART NAME
PM-3	Motorcraft® Carburetor Tune-Up Cleaner
XL-2	Motorcraft® High Temperature Nickel Anti-Seize Lubricant
382444-S	Protective Cap

WARRANTY STATUS: Eligible Under Provisions Of New Vehicle Limited Warranty Coverage And Emissions Warranty Coverage
IMPORTANT: Warranty coverage limits/policies are not altered by a TSB. Warranty coverage limits are determined by the identified causal part.

OPERATION	DESCRIPTION	TIME
MT080109	Claim Labor As Actual Time	Actual Time

DEALER CODING

BASIC PART NO.	CONDITION CODE
12405	01