

## ELECTRIC FUEL PUMPS RUST AND DIRT CONTAMINATION

### ELECTRIC FUEL PUMPS:

- Are used with all fuel injection (EFI) systems.
- Are usually inside the gas tank (if two pumps are used the second is located between the gas tank and engine).
- Are a precision component built to supply fluid under pressure to the engine.
- Use a filter or strainer (often referred to as a sock) to keep contaminants from getting into the pumps working mechanism.
- Filters should be replaced every 12-20,000 miles to prevent fuel pump overload and failure. As the filter becomes clogged the pump works harder (amperage increases) reducing its service life.

### CONTAMINANTS CAN DESTROY A PUMP BY BLOCKING FLUID FLOW AND DAMAGING INTERNAL COMPONENTS

#### Dirt:

- Improper strainer installation can also cause a pump to fail. The strainer should always be installed onto the pump by hand and never pounded onto the pump. Pounding the strainer onto the pump can cut a hole in the strainer, allowing large pieces of debris to enter the pump. Driving a strainer on can also break internal nylon components contained inside the strainer. Vanes will be broken from pump impellers once this debris enters the pump causing immediate failure, figures 1 & 2.
- Strainers should never be reused. If the above situation occurs, the broken vanes can fall into the strainer. If the strainer is reused, the new pump can draw the broken vanes from the strainer causing immediate failure of the new pump.
- Can get into the vehicles fuel tank through contaminated fuel pumped from service station tanks. These tank pick up tubes are located toward the bottom of the tank. Small light particles tend to float on the surface and heavier particles tend to sink to the bottom of the tank. If the storage tank fuel level is allowed to drop too low it will increase the possibility of contaminated fuel, even if a filter is used at the pumping facility.
- Can get into the vehicles tank if the cap is not tight, or the wrong cap is used.
- Can get into the vehicles tank if the vent tube is damaged.
- Dirt can also be caused by "White box" fuel filters with rubber or plastic internal components. Fuels with methanol or ethanol additives can erode a filter if it is not made with the proper materials.
- Particles will return to the tank through the return system.

#### Rust:

- Can develop in a tank from condensation produced through normal temperature changes.
- Will develop at a faster rate if the tank is habitually kept at low levels.
- Will develop in a tank that was not treated properly during the manufacturing process.

### INSPECTION:

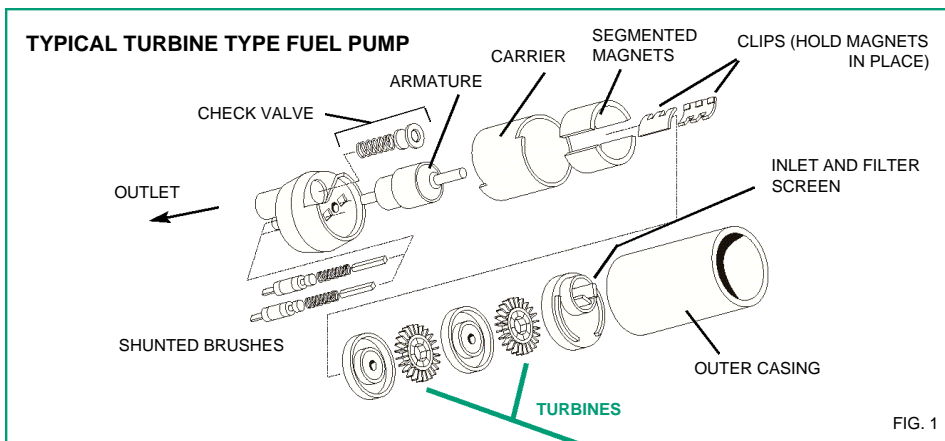
- Always inspect the filter/strainer carefully for signs of rust or dirt contamination.
- Scrutinize the filter carefully because some dirt will be difficult to see under normal shop lighting.
- Carefully inspect the tank. Tank removal is often required in order to perform a thorough inspection. Use adequate light and a mechanics mirror to examine the interior of the tank.

# Bulletin

- If rust or dirt is present it is **imperative** that the tank be removed and thoroughly cleaned.
- always flush the tank, even if it looks clean. The fine debris that can get past the strainer and cause pump failure often can't be seen with the naked eye. **Steam cleaning is the only satisfactory method to flush a fuel tank.**
- If the tank has debris in it the lines should also be flushed with the tank removed.
- If the tank is contaminated the fuel removed should not be reused unless it is filtered first.
- It is recommended that the filter/strainer be replaced whenever a pump is replaced.
- There is a general misconception regarding filter/strainer capabilities. The strainer can not filter out all contaminants. The strainers that are used are a practical compromise. It is possible to build a strainer with a fine enough material to block any harmful debris from entering the fuel pump. But, if that were done the strainer would have to be replaced on a regular maintenance schedule. This would be necessary because when it became completely clogged it would cause the pump to fail from fuel starvation

**Note: a fuel pump that is placed in a contaminated tank will fail prematurely.** Rust or dirt can clog up the strainer of the new pump causing rapid wear. Small particles can get by the filter and get into the pump accelerating internal wear. If the tank is not cleaned because of time necessary to perform that task consider the time required to install a second pump.

- For more specific information consult the Carter "How to Troubleshoot and Diagnose Fuel Delivery Problems" brochure or the vehicle's service manual.



**CONTAMINATION THAT GETS PAST THE FILTER SCREEN CAN DAMAGE TURBINE BLADES. ONCE A BLADE, OR BLADES IS DAMAGED THEY WILL DAMAGE OTHER BLADES CAUSING THE EXTENSIVE DAMAGE YOU SEE HERE.**

NOTE DAMAGE TO FINS/BLADES

