



Tech Tip

FILTERS 129

FILTERING FORD'S POWER STROKE Installing the Air Filter Can Be a Challenge

Filtering Ford's turbocharged diesel engines has proven to be a challenge. They have a thirsty appetite for air, and will get the needed volume by some means. In previous years, the Ford trucks have encountered numerous failures with air filters, some resulting in turbocharger and engine failure. When the filter became restricted, it would often be pulled from the air box, allowing unfiltered air to enter the engine. In extreme situations, contaminants could be pulled through a dirty filter in what Ford refers to as dusting. In some cases, the air filter would be consumed by the turbocharger and engine, resulting in costly repairs. Several changes have transpired, including improvements in the filter design and thickness, and changes in the air box. In addition, re-routing of the air inlet was necessary to prevent water entry into the filter housing. Improper installation procedures have plagued the system, resulting in broken filter hold-down latches. When this occurs, unfiltered air enters the engine, resulting in major engine damage. And the saga continues. Ford's most recent design air filter for the turbocharged diesel has posed some challenges, too.

TOUGH BUT FRAGILE

Ford has designed a bullet-proof air filter for the 2003 and current applications fitted with the 6.0L turbodiesel. It would be impossible for this filter to get sucked into the turbocharger or engine. Space limitations and the fragility of the filter make for a difficult installation, while preventing damage to the latch mechanism. The information contained within this writing is to impress the importance of making a proper filter installation.

Replacing the filter on one of these applications is not for the impatient or the inexperienced, especially considering that the list price of the filter exceeds \$100, and it can be rendered defective with an incorrect closure of a clamp. If your shop's policy is to replace the filter in one minute or less, you would be wise to let someone else service this vehicle. Of great concern is a filter becoming damaged during installation and the installer not taking the responsibility to acknowledge the mistake; instead, allowing the customer to leave.

This can leave the system with an improperly sealed air filter, resulting in major engine and turbocharger damage and costly repairs.

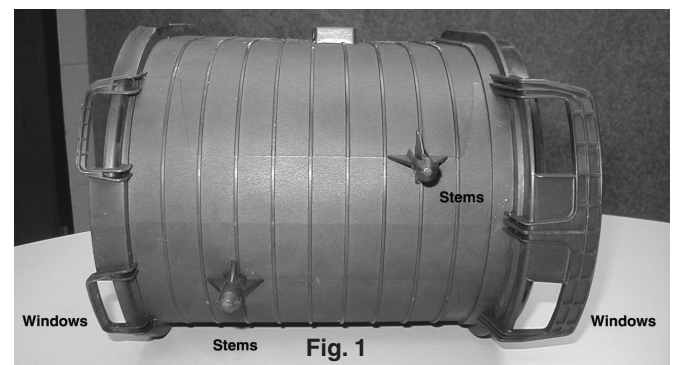
MAKING THE INSTALLATION

With the new design filter, the housing and the filter are now one assembly. This eliminates the problems associated with extended excessive heat distorting the filter case, resulting in filter sealing problems. Each time the filter is replaced, the system automatically gets a new filter housing.

The inlet and outlet covers that seal each end of the filter are each fitted with two spring clamps. The bottom of both the inlet and outlet covers incorporates two tabs, which fit into windows on the filter. The tabs function like a hinge to hold the bottom of the covers tightly sealed against the filter. The clamps keep the covers sealed against the top of the filter. Proper use of the clamps during the filter installation is imperative.

Removing the Filter

- 1) The first step in the filter replacement process is to release all 4 spring clamps and make certain they are free from the plastic latches on the filter. **CAUTION: The plastic filter latches are easily damaged.**
- 2) Remove the front inlet cover by lifting it just enough to disengage the two tabs on the cover from the windows on the filter (see fig.1). Failure to disengage the tabs from the windows can result in broken windows (see fig. 2).



Plastic windows on the filter receive the tabs positioned at the bottom of the inlet/outlet covers. Plastic stems seat into the grommets in the filter cradle, supporting the filter.

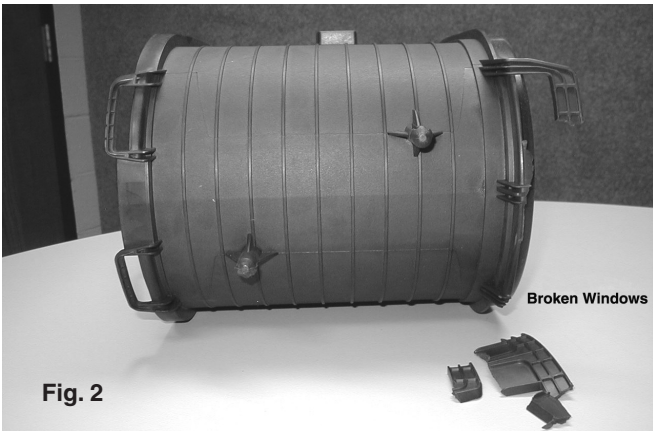


Fig. 2

Failure to disengage the inlet/outlet cover tabs from the filter windows can result in broken windows, preventing a proper sealing of the filter.

- 3) Move the cover plate slightly to clear the windows on the filter.
- 4) Next, separate the outlet cover by pushing on the top of the cover, separating it from the filter seal. There may be some resistance, but minimum pressure with your fingers should be sufficient.
- 5) The outlet cover should be positioned approximately 15 degrees from the filter, with only a visible gap at the top of the filter.
- 6) The bottom tabs on the outlet cover are inserted in the filter windows, as previously illustrated. Pull the outlet cover slightly upward to disengage the two tabs. Position the outlet cover slightly away from the filter, being careful not to damage the Mass Air Flow sensor.
- 7) The filter contains two plastic stems on the bottom of the filter, which fit into two grommets (see fig.1). Pull upward on the filter, while rocking it gently until the stems are free from the grommets. Once this is achieved, the filter can be removed for replacement.

Installing the Filter

- 1) Insert the new filter into the cradle, making certain the two plastic stems located on the filter bottom (see fig.1) are secured in the grommets, and the filter is properly seated in the cradle.
- 2) Position the inlet cover, making certain the cover tabs are properly seated in the filter windows. The windows are easily damaged, preventing a proper seal of the filter (see fig.2).
- 3) Close the inlet cover against the filter and make certain it is properly seated. Attach the spring clamps to the plastic filter latches and gently close the clamps, securing the inlet cover to the filter. **CAUTION: Make certain the clamps are properly positioned in the**

filter latches, prior to closing. Otherwise, damage to the plastic filter latches will occur. The clamps must be positioned at the base of the plastic filter latch. If the clamp is resting on the tab at the top of the plastic latch, the latch will break when the clamp is secured (see fig.3).

- 4) Next, attach the outlet cover plate to the filter, making certain the two tabs on the cover are properly seated in the filter windows.

- 5) **This step is the critical part of the installation:**

Seat the outlet cover plate to the filter seal. It may require some force to properly seat the cover. This seal offers resistance and some installers attempt to pull the cover plate into position by using the spring clamps. **DO NOT ATTEMPT TO PULL THE COVER PLATE ONTO THE FILTER SEAL WITH THE SPRING CLAMPS.** Doing so will result in broken latches on the new filter (see fig. 3). Should that occur,



Fig. 3

Failure to properly position the spring clamps on the plastic latches will result in broken latches. Attempting to pull the cover plate onto the filter seal with the force of the spring clamps will result in broken latches.

the filter must be discarded, to prevent engine and turbocharger damage. Only when the cover plate is properly seated on the filter seal is it acceptable to close the spring clamps. Make certain the clamps are fully seated into the plastic latches on the filter. Close the inboard clamp first, while keeping pressure on the cover and seal. Then, close the outboard clamp, while exerting the same pressure on the cover.

The filter installation can be difficult due to space limitations. The spring clamps are intended to hold the assembly and keep the components sealed. They are not intended to pull the cover over the filter seal. Many filters are broken due to improper use of the spring clamps.

Getting in a hurry or being negligent can result in damaging this expensive air filter. If a latch is broken, the filter must be discarded. Failure to discard the filter can result in major engine and turbocharger failure.

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