



# TROUBLESHOOTING

ROY RIPPLE | CONTRIBUTING EDITOR

## Lean Windstar Feedback

*Editor's note: Roy received many responses to his "Lean Windstar" article in his April 2005 Troubleshooting column. All were interesting, but we only have space for a few. Thanks to all who wrote.*

Dear Roy:

Our shop specializes in fuel and electrical system diagnosis and repairs. We have also seen the codes and past service history that the reader from Bronx, NY has described. We have discovered a different solution than was mentioned in your article.

When we diagnose our vehicles, we use propane around the Variable Induction Control Valve Actuator Shafts at the serpentine belt end of the intake manifold. At the warm-up temperature mentioned in the freeze frame data, our data also is in the 140°F range.

We use the fuel trim and oxygen sensor data PIDs to verify the vacuum leak at the tuning valve shaft seals. With 100,000 miles on the odometer, we have found that both shafts have vacuum leaks severe enough to skew fuel trim enough to trigger P0171 and P0174 codes. We have found no TSBs from Ford (2003 to 2004 repair periods) on this problem but have successfully repaired several vehicles by replacing the lower intake manifold assembly. This includes the intake manifold tuning shafts and seals because they are not available separately.

Thank you for taking the time to read my letter. Feel free to share my experiences with your other readers.

Sincerely,

Hans Hiller, Manager, Auto Electric & Fuel

Dear Roy,

I just read your Troubleshooting article "Lean Windstar." I found it very funny because when I opened the magazine, one of my mechanics was in the process of fixing the same problem.

One thing you could have referenced was a Ford TSB (03-16-1) which requires checking the latest PCM calibration, vacuum leaks and fuel pressure. The fix requires new left side valve cover, intake insulators and upper intake gasket. I have performed this fix on about six vehicles in our fleet and have had great success. I was informed about this by my Ford parts man and owe him big-time for the insight.

I hope this info may help any future P0171/P0174 codes that mechanics may be struggling with.

John Croak, Shop Manager

### STUMPED?

Let Roy take a crack at your problem:

**Motor Age Troubleshooters**  
150 Strafford Ave.  
Suite 210  
Wayne, PA 19087  
or e-mail to:  
[jgordon@advanstar.com](mailto:jgordon@advanstar.com)

Please supply the vehicle year, make, model, engine, transmission, accessories and VIN, as well as your name, address and phone number, too.

### TECH A ANSWER:

**THE CORRECT ANSWER IS C, BOTH TECHNICIANS.** In a system that uses vacuum to control air vent routing, a reduction in the amount of vacuum to the system will cause the air vent routing to change by itself. A vacuum leak in the vent control system or a faulty vacuum reservoir check valve would cause this, and it would show up during hard acceleration because less manifold vacuum is available to overcome the leak.

Look in Jump Start each month for an ASE study guide question.

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Dear Roy,

In regards to the '99 Windstar with the lean running condition that was mentioned in the April 2005 issue, I have come across this problem many times before. It is most likely caused by the upper air intake plenum seals shrinking and allowing air to be sucked in causing the lean condition. When the Windstar warms up, the seals swell and blocks the air from getting in.

One way to check is with a smoke machine to see if smoke comes out the base of the plenum when the van is cold. Another is to watch the short-term fuel trim readings and spray carb cleaner at the base to see if any fast change in the readings occurs. Replace the seals if it does. One last thing: Check with Ford to see if an updated intake plenum and fuel pressure vacuum hose are available.

I hope this helps.

Abe Kurek

Monsey Service Station, Monsey NY

## E85 In the Wrong Vehicle

Hi Roy,

I have questions about using E85 fuel. What can we expect to see in driveability problems from people running it in non-flex fuel vehicles? Can you run it in any car or truck?

Thank you,

Kevin Hebert, D and B Tune Up, Sioux Falls, SD

Dear Kevin,

*E85 is composed of 85 percent ethanol and 15 percent petroleum. This fuel is designed for use in flexible fuel vehicles (FFV).*

*E85, like gasoline and diesel fuels, is seasonally adjusted to ensure proper performance in different geographic locations. For example, E85 sold during colder months typically contains 70 percent ethanol and 30 percent petroleum to produce the necessary vapor pressure for starting in cold temperatures. This makes an E70 mixture.*

*Ethanol is most commonly used to increase octane and improve the emissions quality of gasoline. Ethanol is an alcohol-based alternative fuel produced by fermenting and distilling starch crops that have been converted into simple sugars.*

*In some areas of the United States, lower concentrations of ethanol are blended with gasoline. The most common low concentration blend is E10 (10 percent ethanol and 90 percent gasoline).*

*While it reduces emissions, E10 is not considered an alternative fuel. The availability of E85 and FFVs is expected to increase significantly in the next few years. The E85 was not designed to be used in non-flex fuel vehicles.*

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## Recurring Codes

Dear Roy,

We have a customer's 1999 Ford Windstar (3.8L engine, VIN 2FMZA5246XBC68721) with 48,462 miles on it. It has a recurring P0171 and P0174 code being set.

A smoke test revealed a leak at the intake manifold about three months ago. We replaced the intake gasket, cleared the codes and everything was fine until a couple of weeks ago.

The codes reset, but we cannot find anything wrong. All the sensor values look normal, and we can't find any evidence of a vacuum leak anywhere. After we clear the codes, the vehicle will run for a few days before they reset.

The engine always seems to be operating properly. Fuel economy

stays the same.

*Dick Waskom  
Self Service Auto Repair, Inc.*

*Dear Mr. Waskom,*

*P0171 and P0174 are fuel trim codes: A code is set whenever short-term fuel trim (STFT) and/or long-term fuel trim (LTFT) exceeds a specific plus or minus limit. In this case, the codes indicate a lean condition in both banks. This means the system was adding fuel to compensate.*

*What did the freeze frame tell us when these codes set? This information can be invaluable in duplicating the condition and comparing trim values to existing datastream. Lets look at some of the areas that can cause this condition:*

- **Vacuum leaks:** *This is not an*

*uncommon occurrence, especially in those engines with composite intake manifolds. Usually the freeze frame will indicate a cold or luke warm engine when this code sets.*

- **Low fuel pressure or partially clogged injectors:** *This will result in a lean condition and raise fuel trim values. Test fuel pressure/volume and clean injectors.*

- **MAF sensor:** *It is not uncommon for a Ford MAF to get out of calibration and result in a lean condition. Typically these sensors will show a change in the BARO reading when this occurs.*

*Hook up your scan tool and look at the BARO reading. The scan tool should display approximately 159 Hz at sea level. If your results are much lower suspect the MAF.*



(Circle 62 on Reader Service Card)