

# Olson Marketing Monthly

April 2023 - Issue #140

in partnership with Insane Oil of Omaha

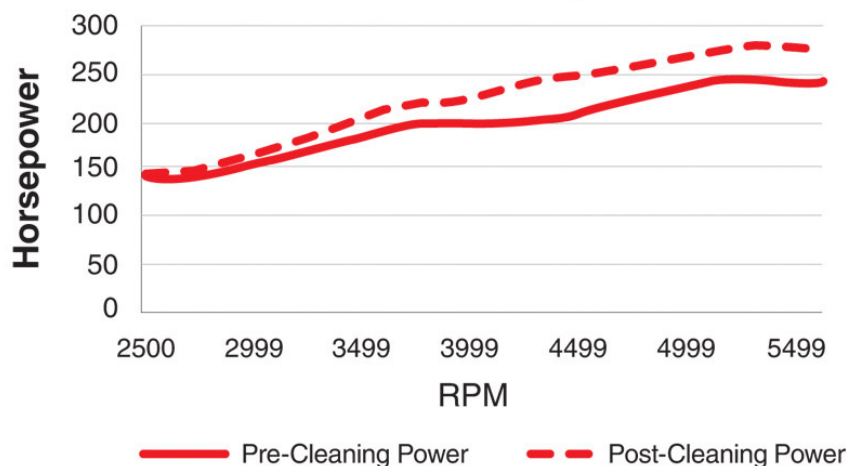
Your AMSOIL Information News Source

## Product Highlight: P.i. Performance Improver

AMSOIL P.i. is a potent gasoline performance improver with concentrated detergent that aggressively cleans stubborn, power-robbing deposits from injectors, valves and the combustion chamber. Effective in port and direct injection systems. Bottle compatible with capless fuel systems. Cleans entire fuel system in one tank of gasoline. For use with cars and trucks. Treats up to 30 gallons. Add entire bottle to tank at fill-up. For best results, clean your fuel system with P.i. every 4,000 miles (6,400 km). Do not use with diesel, E85 or 2-stroke mixed fuel.



### Horsepower Comparison



### What's Inside This Issue?

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# Conclusion to...Where Did The Fuel Come From?

In last month's newsletter, I discussed the oil analytic results indicating that one of my vehicles had extremely high fuel dilution in the oil. There were a couple of ideas as to the cause of this but nothing concrete...until this year's oil analysis report came back.

In September 2021, my oil analysis report indicated a greater than 5% fuel dilution in the oil sample. At the time I changed the oil and it was suggested that I resample the oil at a half cycle (6 months). When I resampled the new oil, after 6 months, the results again came back as having greater than 5% fuel dilution.

On the report, there were suggestions indicating possible causes of this high fuel dilution. One of

those noted indicated that frequent short trips could cause this issue (seen below).

As I thought about this concept, it dawned on me that at the time of these reports, the vehicle was driven according to the following daily schedule:

- Drive from home to school  
2.1 miles, 5 minute drive
- Drive from school to home  
2.1 miles, 5 minute drive
- Drive from home to work  
0.3 miles, 3 minute drive
- Drive from work to home  
0.3 miles, 3 minute drive

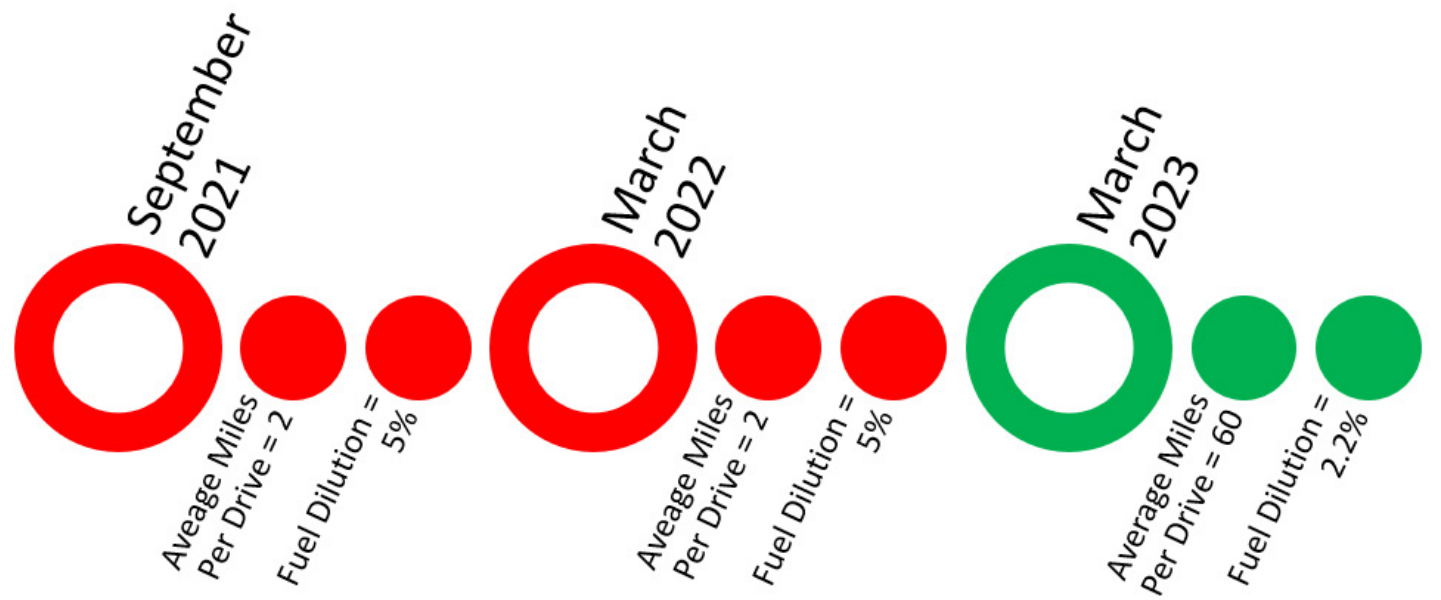
On average, five days a week for an entire year (or six months for the half sampling) this vehicle was driven for no more than five

minutes at a time, usually four times per day. Essentially, the engine was never given the proper amount of time to warm up.

The result of fuel in the oil is primarily caused through a process called blow-by. This occurs because most seals are not perfect and the cylinders are not perfectly round. The process of blow-by most commonly occurs in the region between the piston rings and the cylinder bore. Other factors can include leaking of the fuel injectors, incomplete combustion of the fuel, low engine temperature, and long periods of idle time. In my case, it was due to short trips and not allowing the engine to heat up to operating temperature.

continued on next page

Comments	Check for source of FUEL LEAK. Fuel is at a SEVERE LEVEL. Fuel dilution may be caused by component faults related to injectors, ignition/timing, or excessive blow-by. Additional causes include heavy throttle application, engine lugging, frequent short trips and excessive idling. Is this a Direct Injection Engine? If so, please notify the Data Analysis department to update this component information. LUBRICANT and FILTER CHANGE is suggested if not done at sampling time. Bushing/Thrust metal is at a MODERATE LEVEL; Flagged additive levels are lower than expected for the identified lubricant. This may have been topped off with a different lubricant, the fluid may be misidentified, or a different lubricant or formulation may have been in use prior to a recent change. Please provide this units sump capacity with next sample. Resample at half interval. Sample information has been added or tests have been rerun or additional testing was added and the report has been regenerated.
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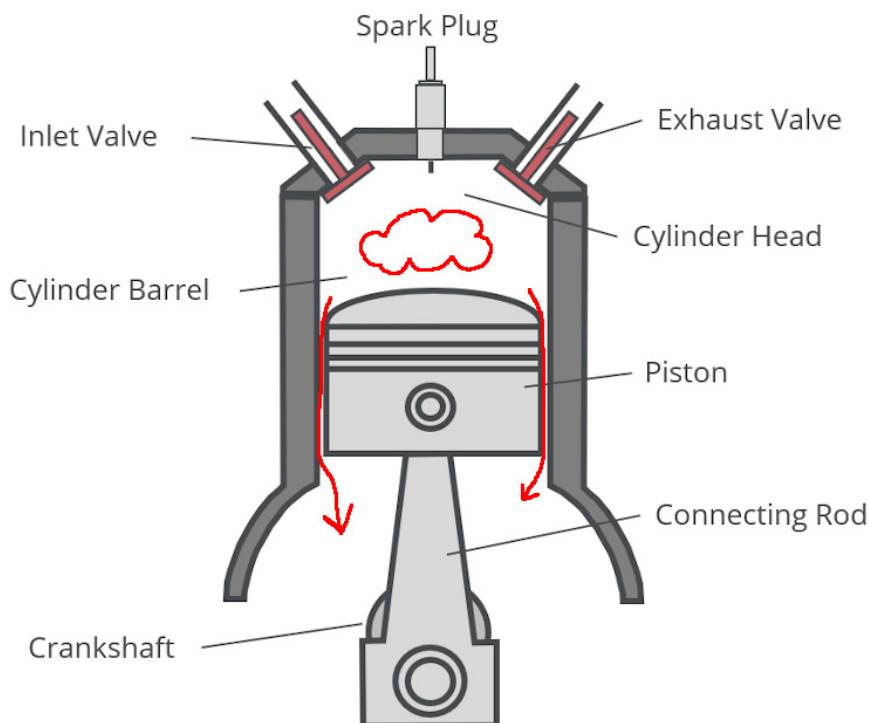


## Conclusion to...Where Did The Fuel Come From?

When an engine is just started, the piston is not round. It is slightly out-of-round (usually by a couple of thousandths of an inch). This opens up small gaps around the sides of the piston allowing the blow-by gasses to enter into the crankcase. As the engine heats up the piston becomes round and forms a tighter seal in the cylinder.

There is also a concept known as Wet Stacking. This occurs when engines are cold (meaning the engine has just been turned on and has not had time to warm up). Colder engines have a lower combustion efficiency than engines which are at the ideal operating temperature. This causes the fuel to ignite further on in the compression stroke (because of the lower internal temperatures). This can also cause fuel coming out of the injector to stick to the walls of the cylinder. Once the fuel is stuck to the sides, it will slowly enter the oil system by being scraped off by the piston rings.

On all engines, you will have some level of fuel entering the oil sump. As you drive and your engine heats up and the oil will heat up also. Given that the fuel has diluted itself into the oil, the fuel residue will also heat up. The heat



will cause light, unstable molecules to rise out of the oil, similar to water evaporating out of a cup that is sitting in the sun. The crankcase ventilation system will then cause the lighter, unstable molecules to exit the crankcase. However, if the engine never heats up to operating temperature, this process has a very limited positive effect on removing the fuel dilution from your oil.

Shown below is a portion of my latest oil analytic report. You will notice that the fuel dilution percentage is 2.2 compared to the previous two readings.

In March 2022, I changed the oil and the vehicle continued to follow a similar schedule of short trips through July 2022. Then from August 2022 to the present day, the vehicle was driven two times per week but for 60 miles and about an hour each trip. This change in driving habits has correlated to the Fuel Dilution being significantly lower. Additionally, the most recent sampling was 12 months after the previous one. So, after 12 months of running the same oil, the fuel dilution is falling within the normal range. I will take these results as a win.

Sample Information								Contaminants			Fluid Properties					
Sample #	Date Sampled	Date Received	Lube Time mi	Unit Time mi	Lube Change	Lube Added gal	Filter Change	Fuel Dilution %	Soot %	Water %	Viscosity 40°C cSt	Viscosity 100 °C cSt	Acid Number mg KOH / g	Base No. D4739 mg KOH / g	Oxidation abs / cm	Nitration abs / 0.1mm
1	19-Sep-2021	24-Sep-2021	1193	101902	Yes	0	Yes	>5 - GC	<.1	<.1 - FTIR		7.3		3.03	13	10
2	31-Mar-2022	06-Apr-2022	904	102806	No	0	No	>5 - GC	<.1	<.1 - FTIR		7.0		6.69	10	10
3	19-Mar-2023	22-Mar-2023	3523	106437	No	0	No	2.2 - GC	<.1	<.1 - FTIR		8.2		4.16	10	10



# Shop Talk...

with Dr. Jonathan D. Olson, EdD  
(Independent Amsoil Dealer 10458)

This month I replaced the spark plugs and ignition coils in my 2012 Ford F150. This was a repair that I did in my previous 2001 F150 and saw great improvements in fuel economy. The process is fairly straight forward and does not require a high degree of technical expertise.

According to RepairPal.com, replacing all of the spark plugs would cost about \$300 at a repair shop and replacing all of the ignition coils would cost about \$900.

My cost was about \$225 and about 2 hours of my time. I filmed the entire procedure (click on the picture link at the very bottom of this column). I was able to complete the procedure with some basic tools and a little bit of research before I began.

I always encourage people to do a YouTube search on whatever repair you are needing. Perhaps you will want to tackle it yourself, or, you will at least have gained a basic knowledge about the process and terminology involved so you can have a more productive conversation with your mechanic.

Have a great May.



## Congratulations to NEW Amsoil Opportunists and Enthusiasts!

### Congratulations:

#### New Preferred Customers

Robert Chrisco  
Broken Arrow, OK

Tyler Ernst  
Colorado Springs, CO

Nathan Koch  
Beatrice, NE

Chris Driggers  
Ashburnham, MA

Jesse Crist  
Ceresco, NE

Eldon Rhodes  
Juniata, NE

Kipp Spier  
Tecumseh, NE

Brian Sehnert  
Dorchester, NE

Brian Nicholson  
Lincoln, NE

### Congratulations:

#### New Commercial Account

DMS, Inc.  
Waterloo, NE

### Congratulations:

#### New Catalog Customers

Paul Jones  
Marrero, LA

Cory McMillin  
Bellevue, NE

Jeb Black  
Raleigh, NC

Ian Lieske  
Montello, WI

Tyler Brackett  
Baton Rouge, LA

Jason Pittman  
Spencerport, NY

Matthew Perry  
Winston, GA

Jared Long  
Duluth, MN

Mario Martinez  
Cairo, GA

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