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What is EcoBoost?

EcoBoost is a marketing name for turbocharged, direct-injection gasoline engines designed by Ford and Mazda. EcoBoost-equipped engines are designed to deliver horsepower and torque consistent with that of larger engines. The claim is that an EcoBoost engine can achieve 30% better fuel efficiency and 15% fewer greenhouse emissions. The notion from Ford is that the EcoBoost engine is less costly and more versatile than further-developing or expanding the use of hybrid and diesel engine technologies. Thus, Ford intends to heavily utilize the EcoBoost engines across a myriad of vehicles now and into the future. The utilization of this engine has contributed to the discussion about LSPI concerns (discussed in the September and October issues of the newsletter).

There has been multiple revisions and modifications since the introduction of the original EcoBoost engine in 2009. Based upon the research that I have done, the EcoBoost engine is a pretty solid engine, even the first generation EcoBoost engines have performed well over time.

However, a lack of routine preventative maintenance and running inadequate, subpar lubricants (as with all vehicles) will lead to frequent breakdowns.

Although I am technically defined as a "Millennial", I am still of the era/mindset that is hesitant to accept the integration of all these new technologies. I currently drive a 2001 Ford F150, 5.4L V-8 truck. Here in the next few years I will be thinking about upgrading to a little bit newer truck. After doing research for this article, my interest has been peeked for considering accepting the integration of the 3.5L EcoBoost engine in the F150.

What's inside?

Congratulations:

New Catalog Customer

James Warner
Fort Wayne, IN

Dealer Contact

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Challenges with EcoBoost Engines

The industry trend toward smaller engines that deliver increased power and fuel efficiency has been well documented, specifically with regards to the EcoBoost engines. Some key technologies that enable today's advanced engines include turbochargers, gasoline direct injection (GDI) and variable valve timing (VVT). These technologies are great for fuel economy but they're brutal on oil. It's one of the reasons more automakers are installing synthetics at the factory.

Fuel dilution can be a problem

To summarize, GDI technology locates the fuel injectors directly in the cylinder (hence the name), as opposed to the manifold. This arrangement allows for greater control over injection, allowing engineers to fine-tune engines for greater efficiency and power. A side-effect of this process, however, is fuel contaminating the oil. As fuel is sprayed into the combustion chamber, it can wash past the rings and down the cylinder walls, into the oil sump. Ford has seen the issue frequently enough to release a technical service bulletin (14-0040) titled "Fuel Odor From Engine Oil and/or Engine Oil Level Overfull" to address F-150 trucks equipped with the 3.5L Ecoboost engine. Fuel dilution varies by engine type and driving conditions, with some vehicles showing no issues.

There are two main side-effects of fuel in the oil. First, fuel thins the oil, sometimes reducing the viscosity below the specified grade. If not accounted for in the design of the engine, this can affect wear rates and have an effect on systems that use the oil to function, like VVT.

Second, significant fuel contamination increases the rate of oil degradation. For these reasons, oil analysis labs typically condemn oil samples when the fuel content is greater than 5 percent.

Low-quality oils are no match for turbochargers

Many GDI engines are also turbocharged (TGDI). Turbos push more air into the combustion chamber, and tuning for efficiency can improve fuel economy, especially when combined with other technologies, such as direct injection. Operating at up to 150,000 rpm on exhaust gases that can exceed 1,000°F, turbos create extreme conditions that can cause low-quality oils to quickly break down, creating deposits and shortening the life of the oil. By 2020, industry experts predict nearly every new vehicle sold will come equipped with GDI technology, and the vast majority will be turbocharged.

Many motorists – and even more in the future – probably see only the tremendous benefits of improved power and fuel economy from their TGDI vehicles. Most don't realize the toll modern engines take on motor oil.

Like most vehicle manufacturers, AMSOIL has long recommended different service intervals based on "normal" or "severe" driving conditions. Turbocharged vehicles are automatically included in the severe service category due to the extreme heat they generate.

That means that using Signature Series Synthetic Motor Oil in TGDI engines can extend drain intervals up to 15,000 miles/700 hours/12 months, whichever comes first, and should only extend oil changes beyond that with the guidance of oil analysis.

AMSOIL synthetic motor oil delivers superior protection

As proven in numerous tests, AMSOIL synthetic motor oils deliver outstanding protection for these challenging engines. For example, the TEOST Test determines an oil's tendency to form deposits at high temperatures and is a good indicator of turbocharger protection. In the test, Signature Series 5W-30 Synthetic Motor Oil minimized deposits and easily surpassed API SN requirements. In the extreme heat of the Sequence IIIG Test, Signature Series scored 86 percent better for piston deposits than required by API SN, even after doubling the length of the test.

As modern engines become more advanced and tougher on oil, AMSOIL is committed to formulating synthetic lubricants that help you get the most out of your vehicle.

More to come next month...

'Sunshine' Vitamin Provides Multiple Benefits

Vitamin D, often called the "sunshine vitamin," is actually a fat-soluble hormone that your body can synthesize naturally. There are several forms, including two that are important to humans: D2 and D3. Vitamin D2 (ergocalciferol) is synthesized by plants, and vitamin D3 (cholecalciferol) is synthesized by humans when skin is exposed to ultraviolet-B (UVB) rays from sunlight. The active form of the vitamin is calcitriol, synthesized from either D2 or D3 in the kidneys. Vitamin D helps to maintain normal blood levels of calcium and phosphorus.

Why Do You Need Vitamin D?

Research shows Vitamin D is important for protecting the integrity of your bones because it assists in the absorption of calcium and promotes bone mineralization, which may prevent or slow the progression of osteoporosis, according to Dr. Andrew Weil.

Vitamin D3 provides a number of other benefits. It also helps to strengthen the immune system and protect against a number of serious diseases, including rickets and osteomalacia, according to Weil. Research suggests vitamin D may also provide protection from hypertension, psoriasis, several autoimmune diseases (including multiple sclerosis and rheumatoid arthritis), and reduce the incidence of fractured bones, according to Weil.

What Are The Signs Of A Deficiency?

Deficiencies of vitamin D are common, especially in industrialized countries in northern latitudes, where sun exposure is typically infrequent. Low levels of vitamin D may be indicated by porous bones, weak muscles and easy fracturing, according to Weil.

How Much Vitamin D S hould Adults Take?

According to the National Institutes of Health (NIH), the daily Adequate Intake (AI) for adults is 5 mcg (200 IU) daily for males, female, and pregnant/lactating women under the age of 50. People 50 to 70 years old should get 10 mcg daily (400 IU) daily, and those over 70 should get 15 mcg daily (600 IU). Based on recent research, Dr. Weil recommends 2,000 IU of vitamin D per day. Look for supplements that provide D3 (cholecalciferol) rather than D2 (ergocalciferol).

What Are Some Vitamin D Foods?

It isn't easy to get enough vitamin D from your diet. While fortified vitamin D foods such as milk and cereals are available, most provide vitamin D2, a form which is much less well utilized by the body than D3. Good dietary sources include fortified foods, eggs, salmon, tuna, mackerel and sardines.

Altrum Vitamin D3

ALTRUM Vitamin D3 provides 2,000 IU of vitamin D3 in each capsule, along with organic superfoods for a multitude of health benefits.

More Health Benefits of Vitamin D3

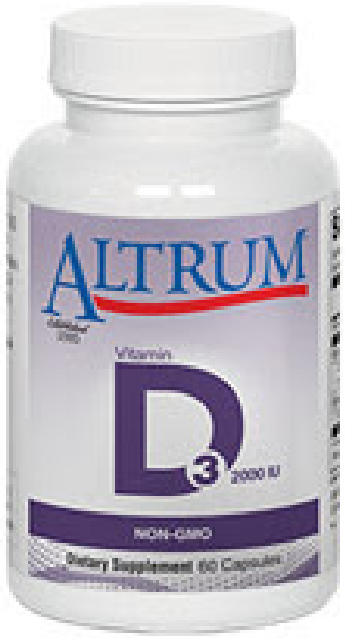
Helps maintain normal blood levels of calcium and phosphorus

Helps protect against osteoporosis

Helps maintain healthy blood pressure

Helps support colon health

ALTRUM Vitamin D3 contains no genetically modified ingredients (non-GMO), artificial colors, artificial flavors or preservatives.



Learn more at: AltrumOnline.com

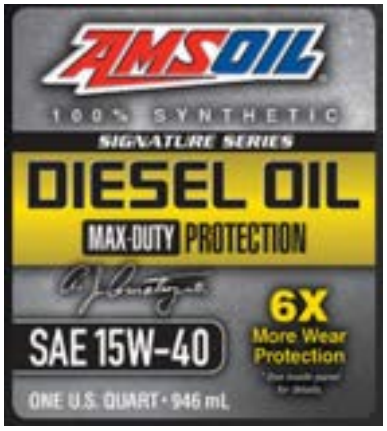
Diesel Digest - Parts and Pieces

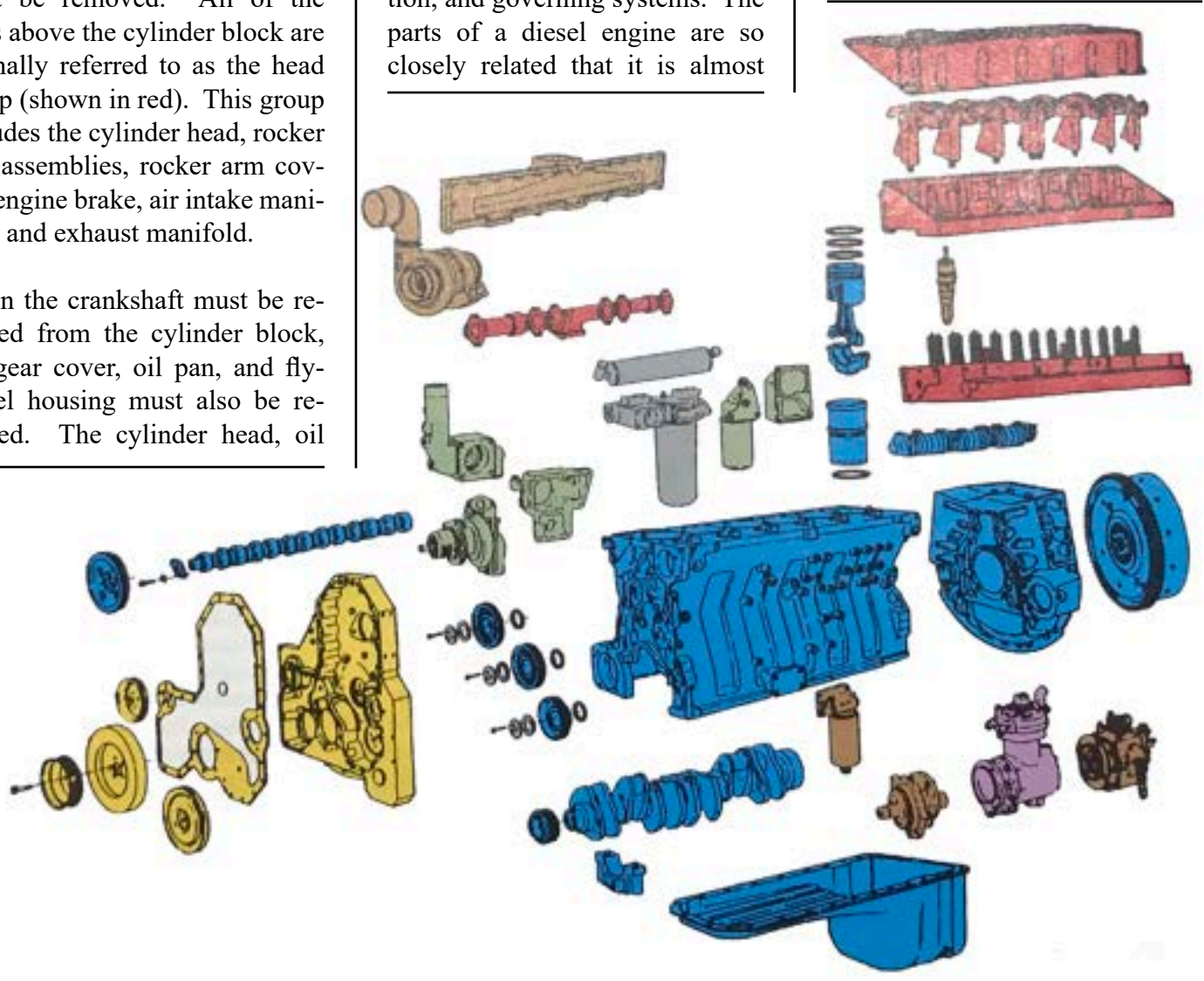
It is often easier to think of an engine as a number of subassemblies or part groups rather than as a single assembly of many components. The largest engine subassembly is the cylinder block and its related parts, such as the cylinder liners (if used), pistons, connecting rods, crankshafts, vibration damper, flywheel, camshaft, bearings, and camshaft followers (shown in blue in the image below).

In order to work on the internal components of the cylinder block, the top and bottom of the engine must be removed. All of the parts above the cylinder block are normally referred to as the head group (shown in red). This group includes the cylinder head, rocker arm assemblies, rocker arm covers, engine brake, air intake manifold, and exhaust manifold.

When the crankshaft must be removed from the cylinder block, the gear cover, oil pan, and flywheel housing must also be removed. The cylinder head, oil pan, gear cover, and flywheel housing are all bolted to the cylinder block. Most joining surfaces must be sealed with gaskets that are designed to withstand the temperatures and pressures generated inside the engine. Accessory items mounted to the outside of the engine include the water pump, fuel pump, oil cooler, turbocharger, supercharger, charge air cooler, and fan hub.

A number of other systems are needed for engine operation. These include the cooling, exhaust, fuel metering, fuel injection, and governing systems. The parts of a diesel engine are so closely related that it is almost impossible for any single part to wear without affecting other components. Skilled diesel technicians can visualize all of the engine parts in relation to each other.





Shop Talk...

with Dr. Jonathan D. Olson, EdD
ZO #10458

The weather is getting cold and that means it is time to double check the quality of your coolant. Many vehicles can get by with using a traditional coolant tester that you can find at your local superstore.

If you are running Amsoil's Low Toxicity Antifreeze and Engine Coolant you will need to test it using Amsoil's Antifreeze Test Strips, as the Low Toxicity Antifreeze and Engine Coolant is a Propylene Glycol formulation rather than an Ethylene Glycol formulations.

However, you can use the test strips for both formulations.

Dealer's Zone

By Don Olson, ZO #4901

Tips for building your AMSOIL business:

1. Use the products.
2. Name your business.
3. Obtain business cards and give one to everyone you meet.
4. Be genuine.
5. Be friendly.
6. Ask questions.
7. Be available.
8. Keep up with new products.
9. Read the Data Bulletins.
10. Do not build your business for the money.
11. Help people keep their vehicles longer and in better condition.
12. Develop customers and dealers. (Keep in contact with them at least quarterly).

Let's talk about number 11.

Vehicles today should easily last 20 or more years. They must be maintained properly. Preventive maintenance must be performed on a regular schedule. Ensure your customer knows their basic schedule. First, follow what their owner's manual recommends. Secondly, since most people do not read their owner's manual give them a guideline to follow for vehicle fluid changes. Many customers need a friendly reminder when to change their oil and filter. I try to E-mail my customers when their last oil/filter change was and (due to the oil they use and the last time they purchased their oil change) suggest they schedule their next oil change. You are in a service business!

Oil/filter change: Depends on their AMSOIL schedule of 3 months, 6 months, or one year. Coolant (5 years), power steering fluid (5 years), brake fluid flush (every 2 years), differentials (5 years), and transmission fluid (5 years). Check your owner's manual for manufacturer's recommendations. If you are using all AMSOIL products some fluids may be extended.

Corrective maintenance. It is the owner's responsibility to keep their vehicles in proper, safe, operating condition. When a problem exists, get it repaired immediately. If you don't have the money for the repair, you shouldn't be driving the vehicle.

Take care to ensure you are not stranded this winter. Whether to and from work, taking a vacation or visiting loved ones for the holidays.

Have a happy and safe Thanksgiving!