



Filtration Products



*The Ultimate
in Protection
and Performance.*



The Importance of Engine Filtration

Compared to microscopic dirt particles, your engine is a Goliath, roaring with heat and energy as it converts fuel into raw horsepower. But despite all this power, your engine is extremely vulnerable to the threat of microscopic engine dirt. In fact, if unchecked, this tiny menace will dramatically erode your engine's performance and can eventually cripple it beyond repair.



THE PROBLEMS

Engine Wear — Automotive experts agree that dirt is the number one cause of engine wear. At first glance, it does not seem possible. Engine dirt particles are so small — mere dust specks — and an engine is a highly sophisticated piece of machinery, crafted from the most durable metal alloys. How can these minute particles bring down such a high-tech giant? The answer lies in the fact that dirt particles are extremely abrasive. They consist of razor-like flakes of road dust and airborne grit drawn into the engine through the air intake, as well as manufacturing scarf and wear metal particles generated inside the engine. These particles are carried by the oil into the precision clearances between bearings and other moving parts. Once they work in between these parts, they grind and gouge surfaces, altering clearances, and generating

more abrasive debris. As this wear cycle continues, precision components become progressively sloppy and fatigued until they fail altogether.

Oil Degradation — In addition to physically assaulting engine components, dirt and other contaminants work to degrade the oil that provides vital engine lubrication. Sooty particles generated during combustion can be forced past piston rings and into the oil. These particles act like tiny sponges, absorbing critical additives and shortening oil life. Soot also wreaks havoc with viscosity by causing oil to thicken. And in the presence of moisture, common by-products of combustion will react chemically to produce corrosive and rust-producing acids.

THE SOLUTION

AMSOIL Oil and Air Filters — Filtration is the key to preventing costly repairs caused by engine dirt. Filtration is simply a method of removing contaminants by trapping and holding them outside the system of oil circulation. In order for filtration to be truly effective, however, it must be able to capture contaminants of all types and sizes.

AMSOIL has developed a complete line of sophisticated filtration products designed to offer the best protection available against virtually all harmful engine contaminants. With an AMSOIL 2-Stage Air Filter, an AMSOIL Super Duty Oil Filter and an AMSOIL By-Pass Oil Filter, your engine can run long and hard with outstanding protection against engine dirt.



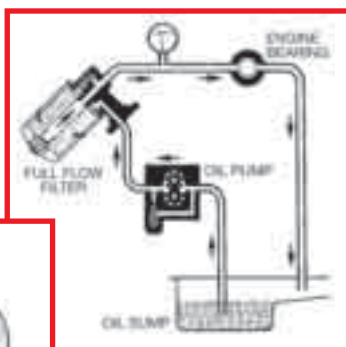
AMSOIL SDF Oil Filters

Full-flow filters install directly into the line of oil circulation. The full flow of oil passes through the filter as the oil journeys between the oil pump and engine. A full-flow filter must be capable of removing and holding contaminants without obstructing oil flow to the engine.

Most conventional filters on the market use a thin layer of porous filter paper as their filtration media, which compromises their ability to catch fine particles. In addition, these filters have almost no extended cleaning ability since their media have a low capacity for storing dirt.

Because of their limited filtering area, most conventional paper filters display good flow characteristics but are restricted in their capacity and longevity.

They become obstructed relatively quickly, opening the relief valve and allowing unfiltered oil into the engine. Their lightweight construction also makes them susceptible to degradation.



Oil Pressure Relief Valve

assures proper oil flow at all times under all operating conditions

Heavy-Duty Case of Drawn Steel

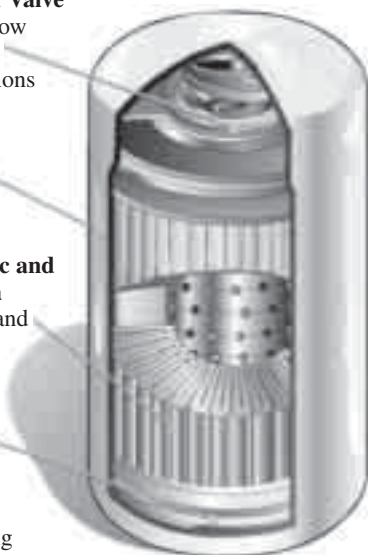
double-crimped at base with rolled-under seaming

Cellulose, Synthetic and Glass Blend Media

provide longer life and improved efficiency

Anti-Drain Back Valve

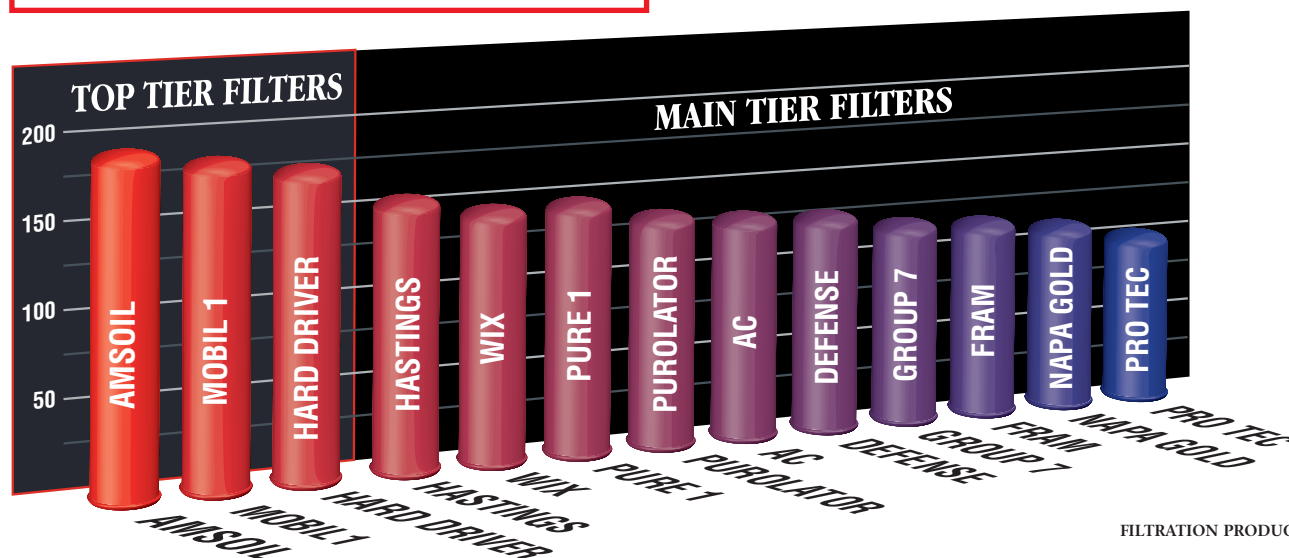
positive action keeps dirty oil in the filter when engine is not running



AMSOIL SDF FILTERS WORK BETTER — LONGER!

AMSOIL Super Duty Oil Filters (SDF) feature an advanced fiber media offering the ready flow of oil hard-working engines demand with superior capacity, efficiency and service life to that offered by conventional paper oil filters. In fact, the SDF has over a 75 percent better combined efficiency/capacity rating than other popular oil filters as tested according to industrial standards.

The AMSOIL SDF may be used for intervals of 12,500 miles or six months (whichever comes first).



The AMSOIL Spin-On By-Pass Oil Filter

***Absolute Protection From Engine Dirt
Assurance of Analytically Clean Oil***

WHY ANOTHER FILTER? Even the best full-flow filter can't do it all

Any full-flow filter must allow oil to pass through it quickly to keep the engine from starving for oil. Advances in auto technology and more compact engine designs place increasing demands on these filters; to keep from creating a circulation bottleneck, they filter out only the coarser particles, and feature relief valves that open when the engine's demand for lubrication can't be ignored.

But the smallest grit that passes through—road dust, manufacturing scarf, and engine-metal flake in the 5- to 20-micron range—accounts for up to 60% of all engine wear. These microscopic particles closely match the precision clearances between critical engine components; they can enter the spaces between bearings, rings, and other components to damage metal surfaces, alter tolerances, fatigue components, and generate additional debris.

Automobile engines are also susceptible to damage related to water formation, something a full-flow filter is powerless against. Water enters the oil either as a blowby combustion product of fuel ignition or as condensed moisture from air drawn into the engine through the carburetor. Water causes metal surfaces to rust; it also reacts with other blowby contaminants to produce corrosive acids that attack the engine, contributing to further friction, wear, debris, and oil degradation.

The AMSOIL Solution – By-Pass Filtration

Unlike a full-flow filter, the AMSOIL By-Pass Filter is situated *outside* the main line of oil circulation; it *taps into the line* to bleed off and clean only a portion of the oil at a time. The AMSOIL By-Pass Filter retains the oil longer and does a more thorough job of removing contaminants without obstructing flow. You still need a full-flow filter, of course, because oil must circulate continuously. But with an AMSOIL By-Pass Filter drawing 10% of your system's capacity, *all the oil* in a six-quart system will be filtered to analytical purity in about five minutes, at an average engine speed equivalent to 45 mph.

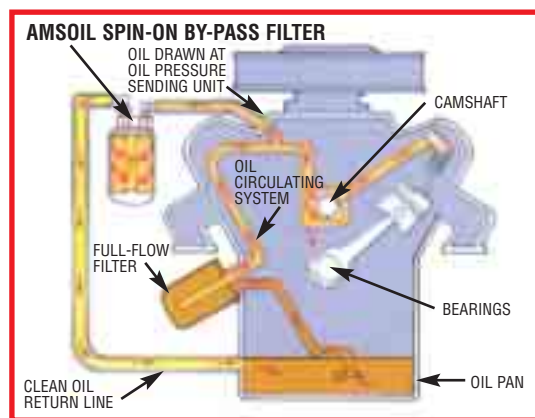
The differences between AMSOIL By-Pass Filters and others are the unique design of the filtering media and the patented construction of the filter element. Our high-capacity filtration medium is a special blend of virgin wood and cotton fibers



- Captures particles down to less than one micron in size
- Removes water
- Quick and easy to change

formed into discs, stacked, and compressed. The center tube is all steel, perforated for oil flow, and wrapped with a fine mesh cotton screen. All dirt particles down to *less than one micron* in size are trapped, and the medium's thirsty cellulose fibers can remove up to a pint of water. Channeling is eliminated with the inclusion of a hydraulic follower plate activated by a sophisticated internal pressure system.

Each filter consists of a mounting unit with a spin-on filtering cartridge, connected by hoses to engine ports as illustrated. The entire assembly is less bulky than other bypass systems, and fits easily into cramped engine compartments. Changing the spin-on filter is simple... no more soggy, dripping elements sliding out of tilted cannisters!



The AMSOIL Dual Remote Oil Filtration System

For Optimum OIL FILTRATION and Maximum SERVICE ACCESSIBILITY

The AMSOIL Dual Remote Oil Filtration System replaces the standard full-flow oil filter with a combination full-flow/bypass system, using a remote mounting assembly.

The mount couples an AMSOIL Super Duty Oil Filter with an AMSOIL Spin-On By-Pass Filter; it takes oil from the engine and returns it without the use of multiple fittings or extra return holes in the oil pan or valve cover. The mount and filters are installed in an accessible area of the engine compartment.

A specially manufactured, spin-on steel casting with threading adapters is simply screwed onto the engine block's filter nipple, replacing the old full-flow filter. In-and-out ports in the casting and two flexible oil lines connect this adapter to the remote mount.

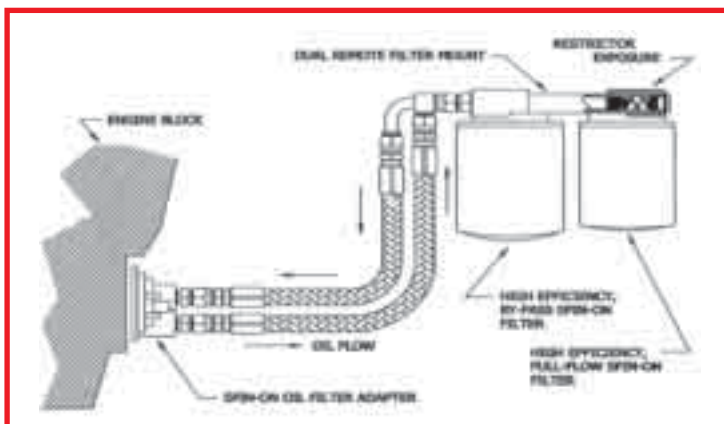
Remote placement of the filtration units allows larger oil filters to be used, and increases oil sump capacity — dramatically extending



the oil's useful service life and protecting your wise investment in AMSOIL Synthetic Motor Oil. The recommended replacement interval for the AMSOIL By-Pass Oil Filter is 25,000 miles or one year (whichever comes first).

USER-FRIENDLY!

The Dual Remote's above-crankcase, spin-on filter units minimize oily mess. You locate the mounting bracket in any convenient, accessible area under the hood in your engine compartment.



AMSOIL 2-Stage Air Filter

Your engine “breathes” air to mix with fuel for combustion — about 9,000 gallons of air for every gallon of gas. And there is a lot more dust and grit in the air than is generally realized — over 400 tons of suspended dirt in a cubic mile of air over a typical city, and more in rural areas with frequent travel over unpaved roads.



The air filter is the first line of defense against the abrasive airborne grit that can cause engine damage. But in order to do the job right, an air filter must effectively filter the dangerous particles out of incoming air without obstructing the vital flow of air that is sustaining the engine.

THE EFFECTIVE WAY TO STOP DIRT WITHOUT STOPPING AIR

AMSOIL has literally gone to new depths to provide the best filtration and air flow. The AMSOIL 2-Stage Air Filter features two layers of polyurethane foam wrapped around an expanded metal cage. The foam is wetted with a light coating of AMSOIL Foam Filter Oil.

As air is drawn through the honeycomb network of oiled fibers, dirt particles are trapped — only clean air emerges from the foam and enters the engine.

Because foam is much thicker than paper, the material used in conventional air filter elements, the filtering area is more spread out and air passes through it easily and quickly.

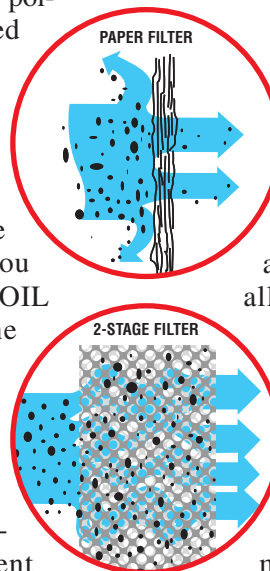
The SAE Test Method J7263 measures filter dirt-holding ability and air restriction. The AMSOIL 2-Stage Air Filter allows better air flow while holding substantially more dirt (see graph).

AMSOIL 2-STAGE AIR FILTERS PAY FOR THEMSELVES

Paper element air filters need regular replacement. In fact, air pollution, driving on unpaved roads and wind increase the volume of dirt in the air. Your filter may need changing more often than you think.

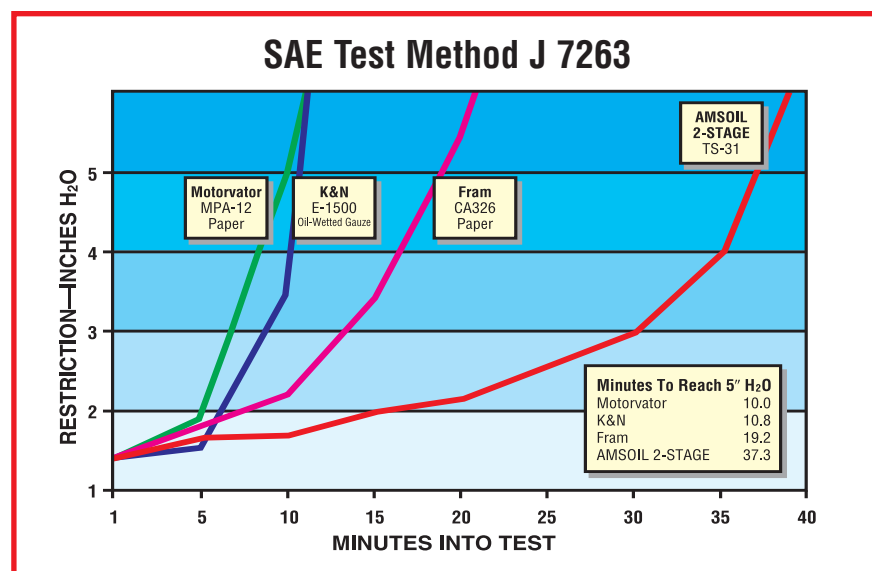
Every time you change a paper filter it costs you money. Buying an AMSOIL 2-Stage Air Filter is the cost-effective alternative. One 2-Stage costs about as much as five paper filters. Its foam elements may be cleaned and reused for miles of trouble-free driving. Replacement foam elements are also available.

Cleaning and reinstalling the high-quality foam element is easy.



Simply remove the filter element from the housing (planar filters may be removed from the engine, but not from their metal housing), wash it with detergent and warm water, rinse, allow it to air dry, work AMSOIL Foam Filter Oil into the element and reinstall.

Under normal driving conditions, the AMSOIL TS Air Filter may be cleaned at 25,000 miles or one year intervals (whichever comes first). In dusty conditions, the filter may require servicing more often.





Engine Protection Plan

As long as engine oil is able to cool and lubricate and is kept clean, it doesn't need to be changed. AMSOIL synthetic motor oils withstand the abuse of heat and engine pounding without breaking down — resulting in a vastly extended ability to last and lubricate over nonsynthetic motor oils. And AMSOIL makes advanced filtration products that keep these oils analytically free of harmful engine dirt and other contaminants. By combining these sophisticated oil and filtration products with an advanced system of engine monitoring through oil analysis, AMSOIL has created the Trigard Plan of Engine Protection — a way to keep engine oil clean indefinitely. The Trigard Plan can eliminate the need for changing oil in your personal vehicle* forever. Here are the components of the Trigard Plan.

**available for cars and light trucks in non-commercial applications.*

1. Superior Motor Oil — The key to extending oil change intervals is the oil you use. Because AMSOIL synthetic motor oils are synthetic lubricants, they withstand temperature extremes without breaking down. AMSOIL synthetic motor oils provide excellent protection at high temperatures and easier starting at low temperatures. Kept clean, they last indefinitely, providing outstanding fuel economy and engine protection.



2. The Best Filtration — Dirt is the single major cause of engine wear. The AMSOIL Trigard Plan uses the AMSOIL 2-Stage Air Filter to keep airborne dirt out of the engine and the AMSOIL By-Pass Oil Filter to continuously filter dirt and combustion by-products from the motor oil.

The AMSOIL 2-Stage Air Filter stops and holds more dirt than conventional paper filters do while allowing greater air flow.

The AMSOIL By-Pass Oil Filter stops and holds smaller particles than full-flow filters do. It also removes water, something full-flow filters can't do. The AMSOIL By-Pass Oil Filter keeps oil analytically clean, allowing it to be used for significantly longer drain intervals than usual.



3. Engine Monitoring — To insure that your oil and engine are performing properly, the Trigard Plan includes an oil analysis at prescribed intervals.

By analyzing used engine oil, a qualified lab can determine the degree of protection that the oil is delivering and make certain the oil has not been contaminated.



In addition, mechanical problems in an engine are not always detected until they grow serious. Oil analysis may detect them early and save the motorist the cost of major repairs or replacements.

Oil analysis is simple: draw oil from a petcock in the bypass system into a sample bottle included in your Trigard Plan package and mail it to AMSOIL. AMSOIL will return your oil analysis within days.

AMSOIL Also Offers a Complete Line of Hastings Filters

A Filter for Every Application:

- Oil Filters
- Air Filters
- Fuel Filters
- Coolant Filters
- Crankcase Filters
- Automatic Transmission Fluid Filters
- Hydraulic Filters
- Heavy Duty Filters
- Off-Road Filters



AMSOIL offers the highest quality oil, air and bypass filters on the market. However, for those applications not covered by the AMSOIL filter line, AMSOIL is an authorized Hastings filter distributor. Hastings delivers a superior line of filter coverage, including air, oil, fuel, hydraulic, coolant, transmission and crankcase breathers covering virtually every transportation and equipment application. With over 3,500 automotive and commercial applications, Hastings offers the widest range of filters in the industry.



AMSOIL products and Dealership information are available from your local AMSOIL Dealer.

