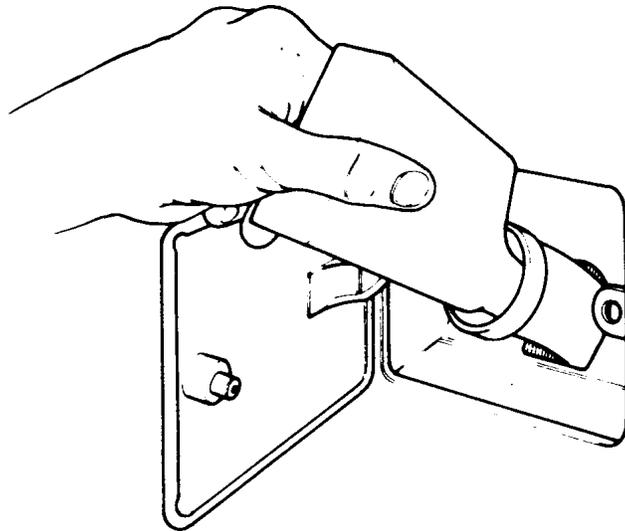




# ***HOW - TO ENGINE ADDITIVES***



## ***Tool And Material Checklist***

- |  |   |
|--|---|
| <input type="checkbox"/> Dry Gas               | <input type="checkbox"/> Carburetor, Choke, And |
| <input type="checkbox"/> Gas Treatment         | Injector Cleaner                                |
| <input type="checkbox"/> Oil Treatment         | <input type="checkbox"/> Penetrating Oil        |
| <input type="checkbox"/> Engine Carbon Cleaner | <input type="checkbox"/> Silicone Fluid         |
| <input type="checkbox"/> Engine Sludge Solvent | <input type="checkbox"/> Cooling System Sealer  |
| <input type="checkbox"/> Engine De-greaser     | <input type="checkbox"/> Belt Dressing          |
| <input type="checkbox"/> Starting Fluid        | <input type="checkbox"/> Diesel Fuel Biocide    |
| <input type="checkbox"/> Fuel Line Antifreeze  |   |

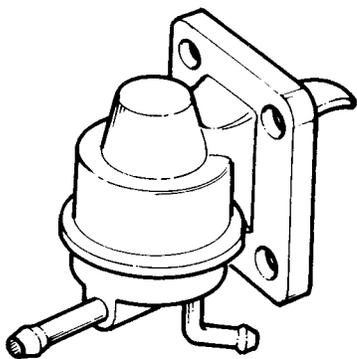
*\* This How-To Guide is designed as a general overview of a vehicle repair procedure. You should always refer to a service manual designed for your vehicle for detailed instructions. Parts Plus assumes no liability for an incorrect procedure.*

By definition, an additive is something put in gasoline or oil to change its structure, characteristics, or the way it performs. The additives discussed in this booklet have one more thing in common: They all help prolong the life of your car. The benefits of engine additives are equally valid whether your car is brand new or has already topped the 100,000-mile mark; either way, they are a vital part of vehicle longevity and performance.

An important point to keep in mind is this: Whatever engine additive you're working with, always carefully read and follow the directions as well as any specific cautions and warnings. And never work on an engine that is running or still hot.

## DRY GAS

Water vapor is always present in the air, and as your car's gas tank is emptied, a mixture of air and water vapor fills the space. In cold weather, the water vapor condenses at the top of the tank; eventually it sinks to the bottom where it forms rust. The rust combines with other impurities to form a thick sludge at the bottom of the tank. Besides working its way into the fuel line and preventing gas from reaching the fuel pump, sludge can also foul the pump, the filters, and the carburetor. Dry gas helps prevent the accumulation of water in the tank. Because it is mainly alcohol, dry gas combines with the water and allows the mixture to flow freely through the fuel line, where it eventually burns along with the gas. For best results, add it to the tank after filling up.



The fuel pump is a favorite target of sludge.

## GAS TREATMENT

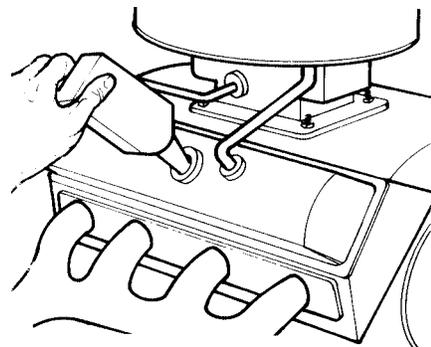
This product contains petroleum solvents and alcohol, which remove dirt and dissolve gum in the fuel system. Gas treatment is poured directly into the fuel tank. It is a good idea to use it once or twice a year, especially on fuel-injected engines. Because fuel injectors are precision parts, they are more easily affected by gum formation.

**CAUTION: Make sure the gas treatment you use is safe for cars with catalytic converters; some treatments are octane boosters.**

## OIL TREATMENT

If asked what oil does for a car's engine, most people would answer, "lubricate." Although lubrication is very important because it reduces friction and wear between the moving parts, it is by no means the only thing that oil does. Oil also:

- Carries heat away from critical areas and makes parts run cooler.
- Provides a seal between the cylinder walls and pistons.
- Combats rust and corrosion.
- Reduces engine noise.
- Combines with the oil filter to remove contaminants from the engine.



Adding oil treatment

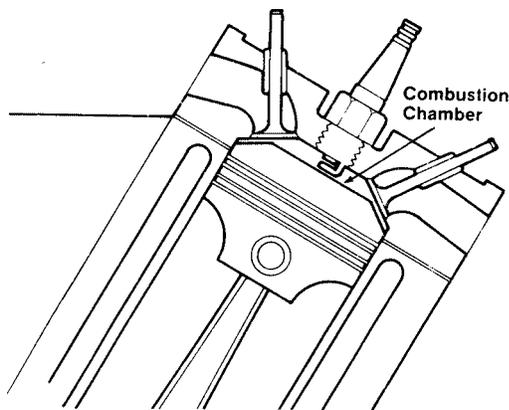
When performing these tasks, oil is subjected to extreme conditions. Engine temperatures can range from below zero during winter shutdown periods to well over 400° F while in operation. Contaminants that eat away at engine parts are constantly being introduced into the system. In addition, oil can be thinned by gasoline and water, and its protective additives can evaporate.

Oil treatments are used to improve oil stability and also prolong the period between oil changes. They replace the lost protective additives with new additives, rust and corrosion inhibitors, and other chemicals found in high-quality oils. Oil treatment poured into the engine through the oil fill hole. On a high-mileage car, oil treatment reduces oil loss past worn piston rings by thickening the oil. It also helps seal the ring-to-cylinder area, thus reducing smoke and noise while increasing power. It should be noted, however, that thicker crankcase oil makes it more difficult to start the engine during extremely cold weather. Because oil treatments adhere well to metal, they are also useful for lubricating parts before assembly when overhauling an engine.

**NOTE:** Oil treatments that act as oil thickeners should be used sparingly.

## **ENGINE CARBON CLEANER**

When carbon deposits build up inside the combustion chamber, two problems can occur. Knock, or ping, sounds like marbles being dropped into a metal can. It is loudest when the engine is accelerating or climbing a hill. The second problem is afterrun (or dieseling) when the engine is shut off. Engine carbon cleaner loosens carbon from the combustion chamber in order to reduce knock and afterrun.



**Engine carbon cleaner keeps the combustion chamber free of carbon deposits.**

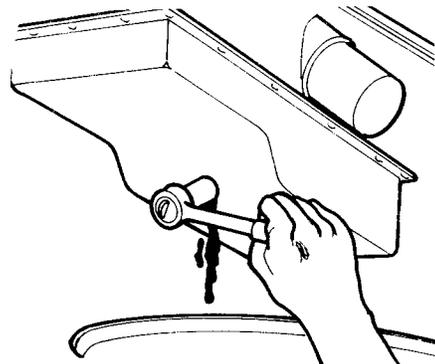
There are two ways to use it:

1. Pour it into the gas tank.
2. With the engine running at warm idle, allow the cleaner to dribble slowly into the carburetor or fuel injection barrel. On engines with catalytic converters, the air pump belt must be disconnected first.

**NOTE:** In late-model cars, knock and afterrun are often caused by problems in the emission, fuel, and/or ignition systems. These systems should be checked before engine carbon cleaner is used.

## **ENGINE SLUDGE SOLVENT**

Among other things, sludge buildup causes the hydraulic valve lifters to stick and malfunction. Engine sludge solvent can be used to free the filters. When the hydraulic lifters are clogged, they make a clicking sound. To determine that they are the source of the noise, remove the rocker cover and hold a finger on each rocker as the engine idles. (The rockers will be covered with oil and will probably be slippery, so use caution.) If the lifter is malfunctioning, a distinct shock will be felt as that valve closes. Use engine sludge solvent as follows:



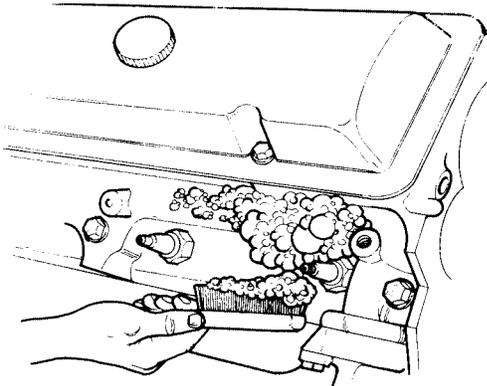
**Drain the old oil after using engine sludge solvent.**

1. Pour it into the engine through the oil fill.
2. Do not run the engine longer than specified in the directions on the container; this is usually less than an hour. Repeat treatments might be needed.
3. Drain and replace the additive-laden oil then change the oil filter.
4. If one or more treatments of solvent fail to free the lifters, they will have to be replaced.

## ENGINE DEGREASER

Engine degreaser cleans the engine's exterior and helps extend the life of engine wiring and rubber parts. Apply it as follows:

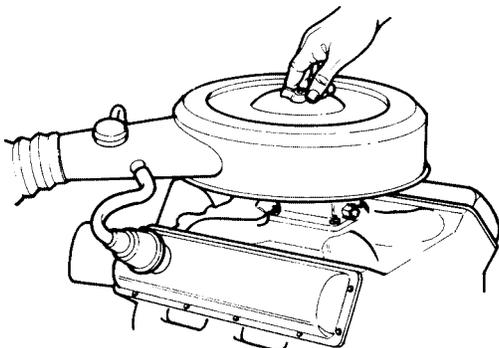
1. Cover the carburetor, distributor, alternator or generator, and any openings.
2. Spray on the degreaser.
3. Use a wire brush to loosen thick, baked-on grime.
4. Neutralize the degreaser with water from a garden hose.



A wire brush works well with engine degreaser.

## STARTING FLUID

Starting fluid is ether used to assist in cold starting. It vaporizes at a temperature as low as  $-60^{\circ}$  F, thus providing a combustible fuel when even a winterized gasoline might not vaporize sufficiently. Just before trying to start the engine, spray starting fluid into the air-cleaner opening. Starting fluid should be used only



Remove the air cleaner cover to spray starting fluid.

when the weather turns unusually cold or the temperature drops suddenly, and it should never be used on a diesel car or on a diesel truck with glow plugs. Your car might need a tune-up if it does not start at temperatures typical for your area.

**WARNING:** Because starting fluid contains ether, it is very volatile and should be handled with extreme care. Use it sparingly; if buildup occurs, a simple spark can cause detonation. Never spray it near an engine that is running or being started.

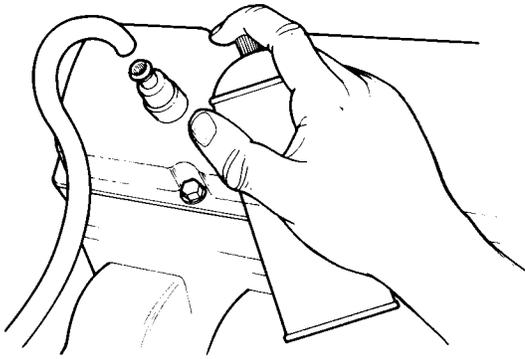
## FUEL LINE ANTIFREEZE

Fuel line antifreeze, or methanol, prevents water in the fuel system from freezing and stopping the flow of fuel. Just pour it in the gas tank. Large doses of methanol are corrosive to fuel systems, but it causes no real problems when a small amount is used occasionally. As an added precaution against fuel line freeze, keep the gas tank at least half full during the winter months. This will reduce condensation in the tank and minimize the need for the antifreeze.

## CARBURETOR, CHOKE, AND INJECTOR CLEANER

This cleaner should be a part of a regular preventive maintenance program for your car. The problems caused by a dirty carburetor/injectors include hard starting, lagging acceleration, stalling, excess emissions, and poor gas mileage. It is wise to keep your carburetor/injectors clean for maximum engine performance. This cleaner removes dirt from the choke, carburetor, and fuel injection linkage. It is also very effective at freeing sticking parts, it leaves no residue that attracts and retains dirt, and it penetrates light rust. Use it on the following:

- Inside of carburetor
- External linkage
- PCV valve
- Manifold heat control



**Spraying the PCV valve with carb, choke, and injector cleaner**

To keep fuel injection systems clean, pour a can of cleaner into the gas tank every few thousand miles. It can also be used on concrete garage floors to melt away grime and grease stains.

## **PENETRATING OIL**

Penetrating oil frees and lubricates parts that are stuck. It is particularly good for freeing stuck heat control valves on exhaust manifolds; spray the shaft joint with the oil, then work the part back and forth. Penetrating oil is also ideal for freeing sticking clutch and transmission linkages, door and hood hinges, and door locks (if they are not rozen).

**NOTE: Penetrating oil leaves a residue and should not be used on parts to be left clean, such as the carburetor linkage.**

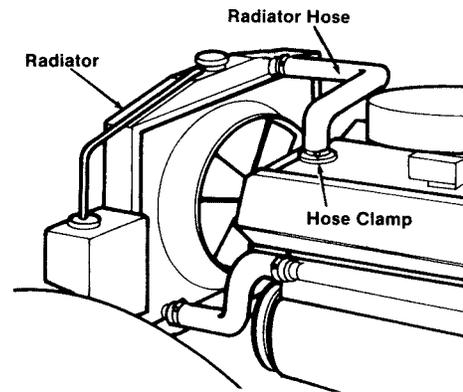
## **SILICONE FLUID**

Silicone fluid can be sprayed on spark plug wires to protect them from shorting due to moisture. Spray it more heavily on and in the spark plug and distributor cap nipples. Repeat the application every few months.

## **COOLING SYSTEM SEALER**

Cooling system sealer can be used to eliminate small cooling system leaks. It is usually made from vegetable or synthetic fibers in water. Do not use it before the source of the leak is found. Also, whenever possible, a mechanical repair should be made, since cooling system sealer provides only a temporary

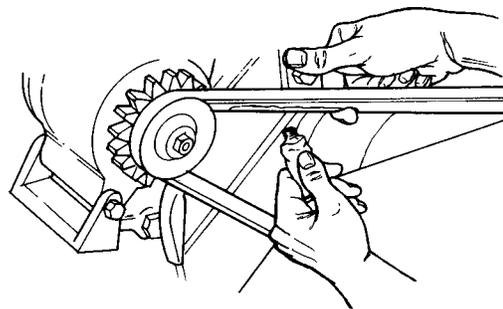
repair. Accessible leaks for cooling system sealer include hoses, clamps, engine gasket joints, water pump, and radiator. If the heater leaks, try cooling system sealer first, since this can be difficult to service. Pour the sealer directly into the radiator fill neck. **NOTE:** Do not overuse this sealer. Repeated usage may restrict the flow of water through the radiator.



**Cooling system sealer can be used on the radiator, hoses, and clamps.**

## **BELT DRESSING**

While belt dressing silences noisy belts, it does not solve the problem that caused the belt to squeal in the first place. Therefore, use it only as a diagnostic aid in pinpointing the cause of a noise, then tighten or replace the problem belt. If used over and over on a noisy belt, it could shorten the life of a good adjacent belt. Belt dressing is available in spray cans and tubes; with the latter, apply a few drops on the belt and rub it in with your fingers. Never apply belt dressing when the engine is running.

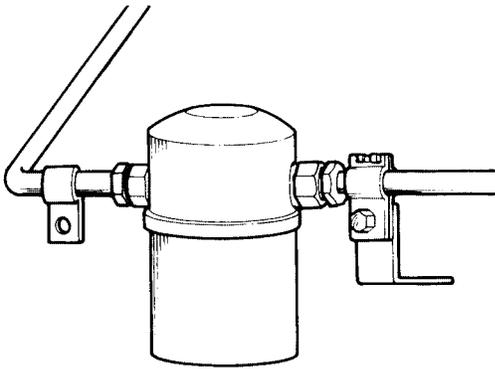


**Applying belt dressing**

# ***DIESEL FUEL BIOCIDES***

Fungus and bacteria can invade diesel fuel and create a substance that plugs filters, corrodes metal components, and damages rubber and tank coatings. Their presence on filters is evidenced by black, brown, or green slime. Diesel fuel biocide prevents these microorganisms from growing inside the tank or fuel lines.

If hard starting is traced to fungus or bacteria on your fuel filter, your fuel system will have to be professionally cleaned. Once the system is clean, use a biocide to prevent any further occurrence of the problem. Add it to the fuel as often as directed on the container.



**Fungus and bacteria are harmful to the fuel filter.**