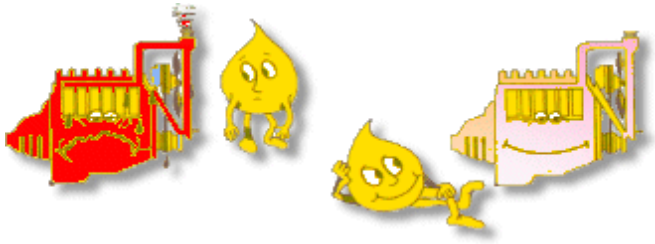
FAQ : The Pressurized Cooling System and Bar's Leaks

truth ... consequences



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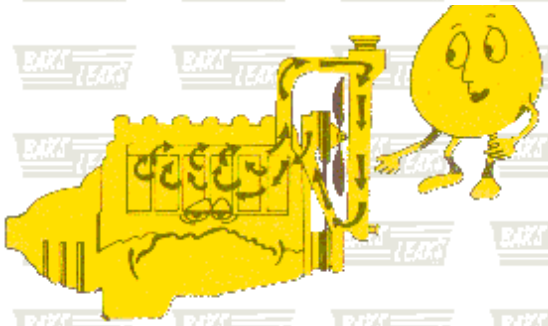
Why A Cooling System?

Your engine creates up to 5,000 degrees

of heat within the combustion chamber. Enough heat to m-e-l-t the entire engine in less than 30 minutes! Approximately 1/3 of gasolines energy is converted into usable power to propel the vehicle, 1/3 of the energy is dissipated out through the exhaust system, and the remaining 1/3 is carried off by the cooling system. Today's lighter weight engine designs result in higher efficiency and better emission control, but they also place greater and greater demands on the *operational efficiency* of the modern pressurized cooling system. **When you learn the *TRUTHS* of the modern cooling system You'll be better able to avoid the costly *CONSEQUENCES* that often result from simple neglect or lack of understanding.**



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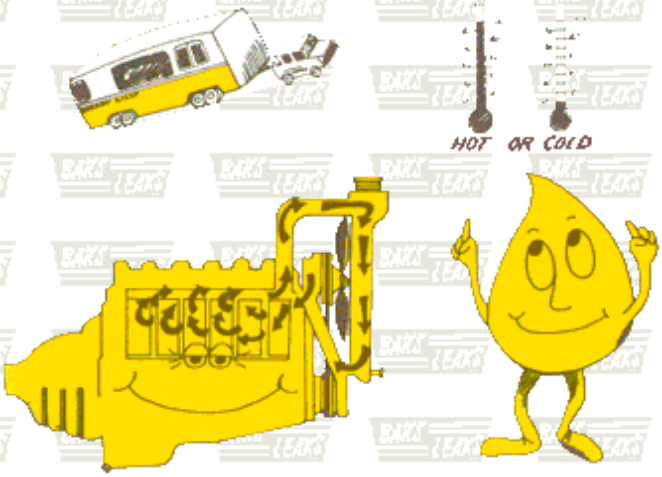
How Does A Cooling System Work?



Coolant, which is a mixture of water and ethylene glycol(anti-freeze) is pumped throughout the engines water jacket drawing heat from the head, pistons, combustion chambers, cylinder walls, valves, etc. The heated coolant travels from the water jacket through a radiator hose, to the radiator, where aided by a fan, it's air cooled and returned via the other radiator hose, to the engine. Gas is **SAVED** and engine life **INCREASED** when the cooling system ***quickly reaches and maintains*** a very narrow operational range regardless of outside temperature extremes or engine load demands. Upon engine start-up, the temperature must rise quickly, and then remain balanced - not too hot and not too cold! **It's important to understand how the condition of the coolant, and the condition of cooling system components can effect the operational economy and life of your engine.**

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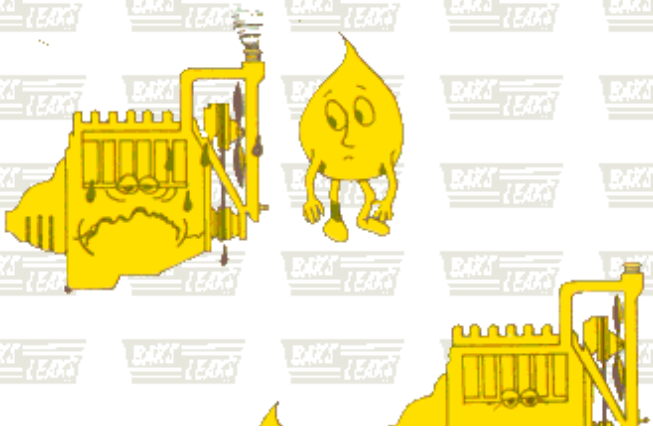
Why Is The Condition Of The Coolant Important?

Auto manufactures have learned that a balanced coolant solution of water and ethylene glycol is an ideal mixture to carry off heat, under a wide variety of outside temperature extremes and operational loads (air conditioning, boat or trailer towing, etc.). As long as the coolant is maintained at the proper mixture, protection against freezing will continue



indefinitely! Anti-freeze manufacturers recommend periodic replacement of coolant because "inhibitors" added to the anti-freeze naturally wear-out during normal coolant circulation. These inhibitors are very important because they help prevent the formation of rust and corrosion, a prime cause of leaks and seepage. Leaks may occur both internally and externally at any of 20 or more different component connection points within the conditions are right for the damaging (and expensive) occurrence of leaks and seepage. Although only an ounce or so by weight, ***inhibitors must be present within the coolant AT ALL TIMES*** is the system is to function properly.

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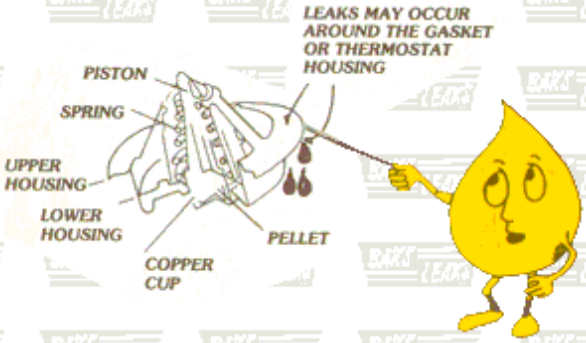
How Does The Thermostat Work?



Often called the "watchdog of the cooling system", the thermostat is a temperature controlled valve which opens at a specific 192 or 195 degrees, etc. depending on vehicle manufacturers specifications. During engine start up, most engines incorporate a by-pass to quickly circulate coolant just through the block. As this coolant is heated to the operational temperature of the thermostat, the thermostat valve opens, allowing the coolant to circulate through the radiator. The thermostat cycles hundreds of times a day during normal driving, and will fail to remain sensitive to small temperature changes if subjected to corrosion or slime build-up caused by worn out coolant inhibitors. The thermostat is just one of the cooling system components where seepage may occur.

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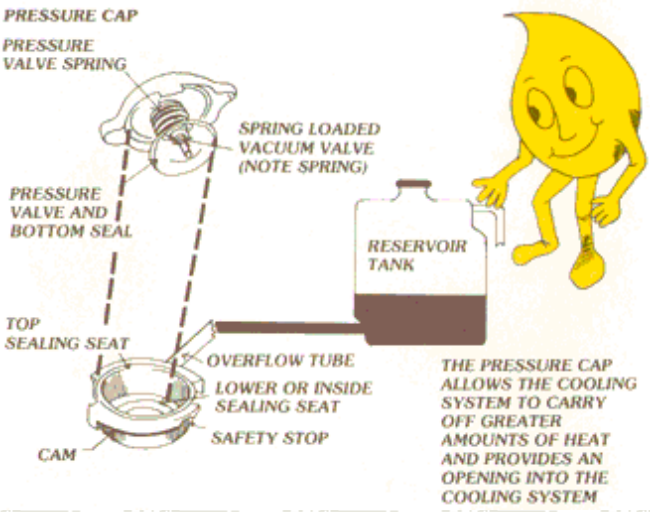
How Does The Radiator Pressure Cap Work?



The pressure cap is similar to the safety valve found on a kitchen pressure cooker. The pressure cap seals the operating cooling system forcing the hot pressurized coolant to carry approximately 50 more degrees of heat than the normal (212) boiling point of water. When seepage or leaks have reduced the quantity of coolant, the temperature rises, forcing open the pressure valve, causing even more coolant to escape.

The pressure valve also operates under normal conditions. When the cooling system pressure exceeds the rated pressure of the cap, the hot coolant escapes and overflows under the pressure valve and bottom seal of the cap and into the coolant reservoir tank. After the engine is shut down and begins to cool, the temperature, and therefore the pressure, drops to a point of slight partial vacuum equal to the task of siphoning the overflow coolant back

from the reservoir tank, through the vacuum valve of the radiator cap, thereby continually maintaining the radiator at full capacity.

The desired siphoning action will only take place if the entire cooling system is free of all leaks and seepage.

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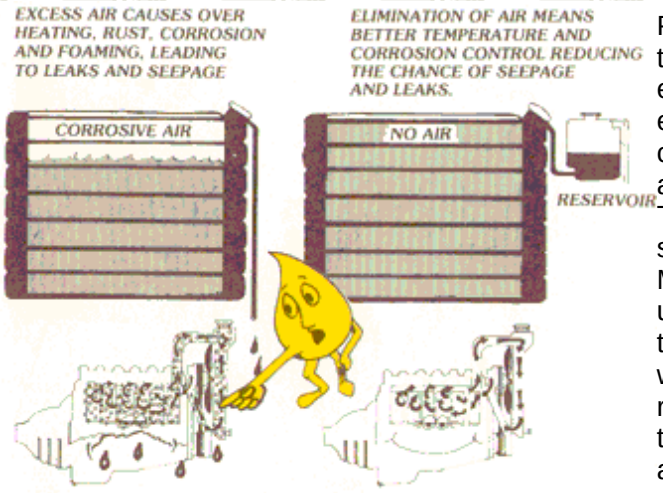
What Are The Advantages Of A Full Radiator?



Prior to the wide spread use of the reservoir tank (begun in the early '70's) expanded coolant escaped through the pressure cap, down the over-flow hose and was wasted on the road. This left 2 or 3 inches of air space in the top of the radiator. Many motorists, not understanding the operation of the older type cooling system would periodically refill the radiator, usually with water only, thereby further reducing freeze and inhibitor protection of the engines cooling system. Additional problems resulted, because the top air in the radiator mixed with the circulating coolant causing the coolant to foam. foamed coolant traps heat within engine damage. A properly designed reservoir tank eliminates the air through the pressure cap into the top of the radiator. The reservoir will not work if the cooling system has any leaks or seepage, if the radiator cap is fouled with debris or the cap seals are damaged.

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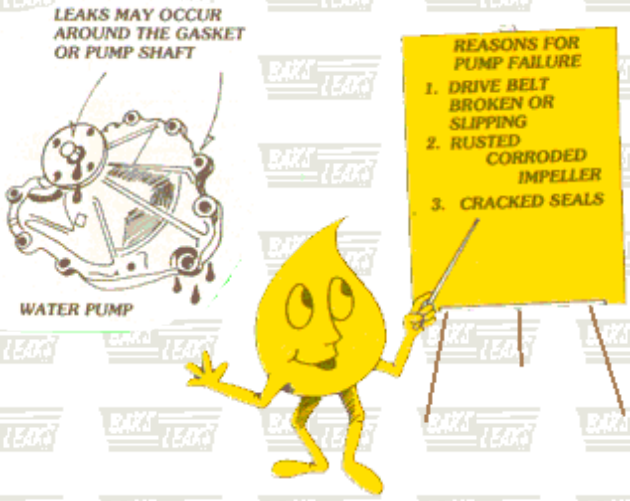
What Should I Know About The Water Pump?

The "water pump", more properly termed the coolant pump, moves coolant through the cooling system at volume levels that correspond to the speed of the engine. For instance, at highway speeds, the hot coolant flows at rates of up to 5,000 gallons per hour! Pump breakdown may occur when:



1. *The drive belt has broken or slips on the pump pully requiring replacement or adjustment.*
2. *The impellers within the pump have rusted or lost effectiveness through corrosion. This occurs when the coolant inhibitors have "worn out" thus allowing the pH balance of the coolant to become acid - a condition necessary in the formation of rust and corrosion.*
3. *The pump seals have become brittle and cracked with age or display excessive wear because of shaft vibration against the seals.*

Problems No.2 and 3 require expensive replacement of the pump. It's been shown that the application of a water pump seal lubricant containing fine particles saturated with a

special water soluble oil will provide a "cushion effect" between the shaft and the neoprene or ceramic pump seals thereby maintaining and extending the useful life of the pump.

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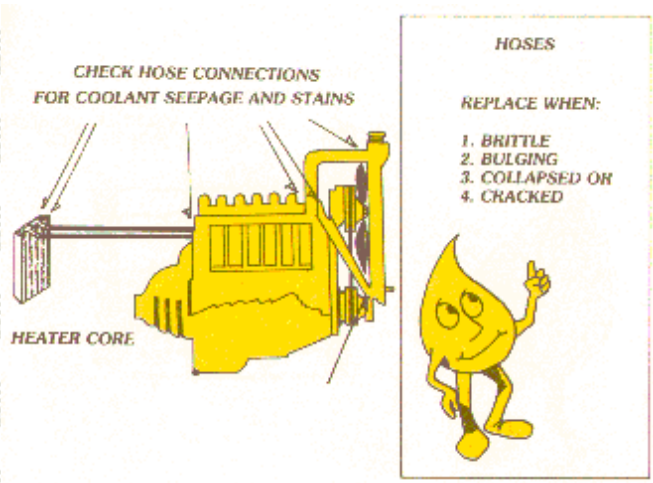
What About Hoses And Hose Connections?



Hoses channel the coolant from the radiator to the engine and back again to the radiator. A smaller set of hoses transfers coolant to and from a smaller radiator-like device: the heater core. Hose failure is the most frequent component problem of the cooling system. Hoses that are brittle, bulging, collapsed or cracked should be replaced as soon as possible. Each year many vacations get off to a bad start because of radiator hose failure. Hose connections should also be checked for rust and wear, or over, or under tightening which may result in cut hoses, leaks, or seepage as revealed by the presence of coolant or coolant stains. Hose connection leaks at the top of the engine often go unnoticed because the leak quickly evaporates against the hot engine leaving only a slight coolant stain.

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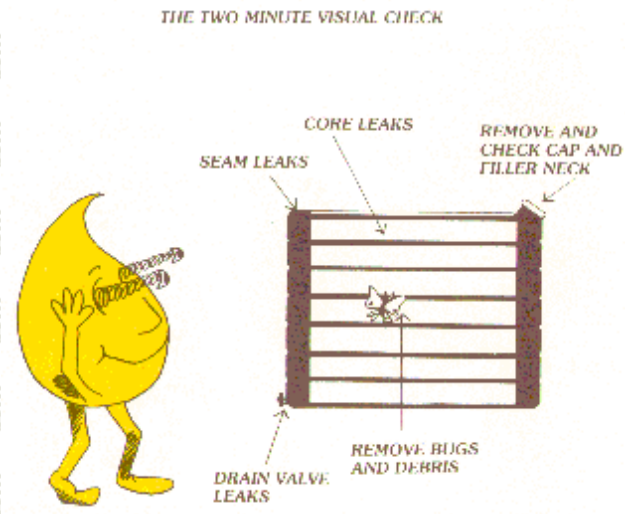
How Do You Check Out A Radiator?



Visual inspection at periodic intervals (most easily performed while checking the oil level) is always a good money saving idea. A great deal about the condition of the ENTIRE cooling system can be quickly learned by checking both the INSIDE and OUTSIDE of the radiator! Inspect the radiator for coolant seepage or stains around soldered seams of the sides, top and bottom of the radiator. Remove bugs and debris from the finned core area while checking for coolant leaks. Both the front and back of the radiator should be checked for seepage. When the engine is cool remove the radiator cap. The cap should be clean, the rubber bottom seal free of cracks and flexible. Look into the radiator filler neck the coolant should be clean and free from floating debris. Coolant should be slightly alkaline (around pH7) to inhibit the formation of rust and corrosion. Inhibitors within the coolant are used to maintain this balance, and with a little practice you can actually smell the "sweet" condition of the coolant - a quick indication of inhibitor protection. All coolant inhibitors wear out and should be replaced annually with the ***addition of a good sealer/inhibitor*** - the one with the "buffing action".

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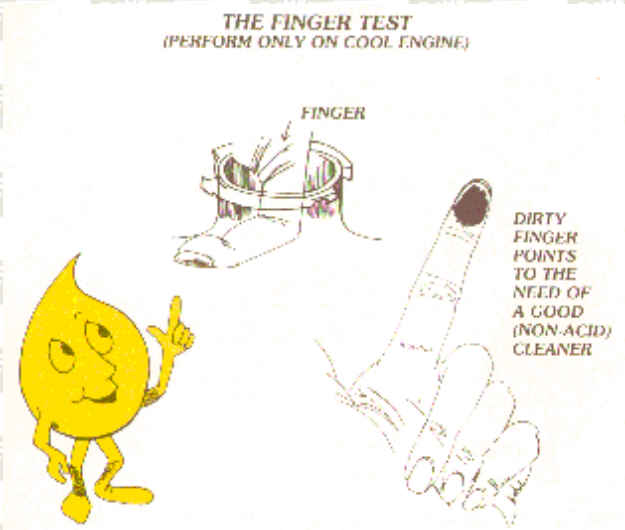
What's The Finger Test?



With the radiator cool, remove the pressure cap and insert the index finger into the filler neck - rub the ***underside*** of the radiator tank. If your finger comes out dirty the system needs cleaning with REACTOR, a safe non-acid cleaner designed to remove rust, scale and muck from the entire cooling system. REACTOR'S container instructions are specific about draining: "Drain radiator by removing lower hose and flush block while warm." This fast flush will empty the entire cooling system in a matter of seconds leaving it clean and scum free. Draining through the small petcock valve may, at first, seem more convenient, however, its slow drain leaves the inside surface of the cooling system similar to the sides of your kitchen sink just after doing a pile of greasy dishes.

A cooling system requiring a cleaner is proof that the system has been neglected. Cleaners will often loosen rust, scale and lime deposits to reveal long existing weak areas of seepage and leaks. It is therefore recommended that ***every*** cleaning be ***immediately*** followed with the addition of a good sealer/inhibitor - BAR'S LEAKS.

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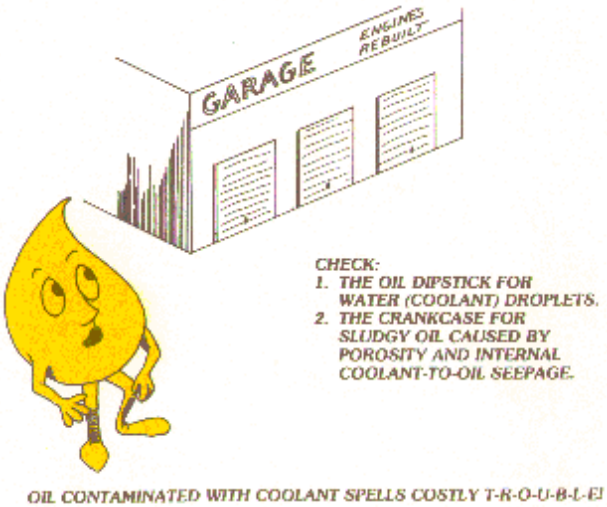
What can we learn from the "Pros" about cooling system maintenance?



Engine re-builders and fleet mechanics have long recognized the importance of regular cooling system maintenance. They know from experience that ignition, carburetion, mileage and engine life are all adversely affected if the cooling system is not CONTINUALLY operated under CLEAN and AIR-TIGHT conditions. When they change oil, a thick sludgy oil first "flowing" from from the crankcase is a good indication that internal or porosity seepage of the coolant is intruding into and breaking down the lubricant. Re-builders continually work with the INTERNAL parts of the engine: pistons, valves, rods, cylinders, rings, crankshafts and cylinder heads. They KNOW first hand, the expensive repair required from over-heating and internal coolant seepage. A large percentage of damaged engines fail prematurely because of owner NEGLECT of the COOLING SYSTEM resulting in LUBRICATION SYSTEM FAILURE. The *truth* of the matter is that cooling systems must operate under CLEAN and AIR-TIGHT conditions ALL OF THE TIME for economy of operation and longer engine life. The *consequences* of neglect are inconvenience and often hundreds of dollars of learned from experience that periodic maintenance with Bar's Leaks is the sure way to provide ***complete*** cooling system protection.

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What Is Good Coolant?

Auto manufacturers have learned that a balanced coolant solution of water and ethylene glycol is an ideal mixture of carry off heat, under a variety of outside temperature extremes and operational loads. (air conditioning, heavy loads).

Bad coolant: It is strongly advised against the use of ordinary fresh tap water in cooling system for two reasons:

1) ordinary fresh tap water contains harmful chemicals and minerals like salts and iron which increase the formation of rust and scale.

2) ordinary water (without pressure cap) starts boiling at 100• ‹C. The usual operating temperature of water in a car is approx 90• ‹C. The difference is not enough for providing sufficient cooling when driving in the summer, or long distance at high speed, or in traffic jams during peak hours, causing boiling radiator water - too high an engine temperature.

Conclusion: ordinary water cannot provide enough cooling for the engine, (boiling radiator), the engine temperature will increase and easily cause engine damage and expensive repairs. The increased rust and scale formation are other reasons for deteriorating the cooling capacity of the radiator.

Good coolant it made from deionized water (water from which all harmful chemicals have been taken). The main component of good coolant, recommended by car manufactures and dealers, contains Ethylene Glycol (also called anti freeze). Ethylene glycol does not give only frost protection during the winters in Europe, but in addition **it increases the boiling point of coolant water**.

The following table will show the effects of the amount of Ethylene Glycol (=antifreeze) mixed with water.

anti freeze solution	frost protection	boiling point
0%	no	no
20%	-9• ‹C	114• ‹C
35%	-19• ‹C	124• ‹C
50%	-35• ‹C	135• ‹C

Hence coolant should contain antifreeze (ethylene glycol) even in hot tropical countries, and remain in the cooling system permanently all year round.

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The Function Of Bar's Leaks

- **Stops internal & external leaks**
- **stops rust, corrosion & scale**
- **Lubricates water pump**
- **Cleans inside by buffing agent**
- **Prevents rust & corrosion**
- **Prevents from fuel leaks**
- **Prevents pressure leaks**
- **Prevents cavitation**
- **Prevents water pump noise**
- **Prevents water-oil leaks**

The Necessity Of Bar's Leaks

The size of engines have a tendency of getting smaller and smaller and its inside pressure is increasing higher and higher. (It has increased from 0.3 kg/cm2 to 0.9 kg/cm2 for last 10 years). The cooling system pressure is designed to keep high to maintain its function so that cooling fluid does not boil.

It is, therefore, very necessary to prevent from internal and external leaks and to keep an inside pressure for modern car engines.

When antifreeze or coolant is added to the cooling system, porosity leaks increase. Bar's Leaks is known to be the only product to stop these porosity leaks without any side-effects

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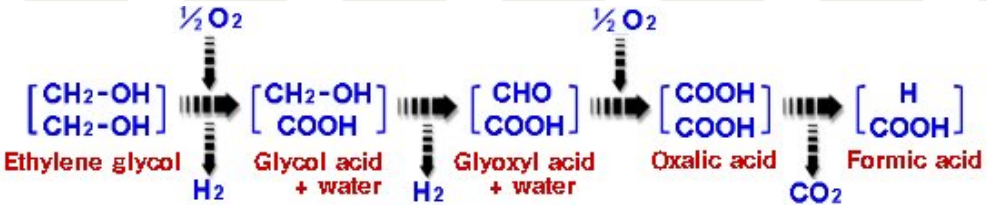
Why Too Long Use Of Coolant Is Not Good

The chemical symbol of Ethylene Glycol is:

$$\begin{bmatrix} CH_2\text{-}OH \\ CH_2\text{-}OH \end{bmatrix}$$

When ethylene glycol is mixed with water and air, and it is heated up for long time at the temperature over 60• ‹C, it's chemical composition will change as follow:



As shown above Ethylene Glycol changes to several kinds of acids and these acids cause the rust and corrosion on the metal of the cooling system. In order to neutralize these acids, some additives are mixed with antifreeze and the most common additive is: Borax. Its chemical symbol is:

Na 2 B 4 O 7 - 10 H 2 O (1)

This one also reacts with water at high temperature and changes to **HaOH** which reacts with the metals such as **Zn** or **Al** (an oxide is both basic and acid) and produce

$2Al + 2NaOH + 2H_2O \Longrightarrow 2NaAlO + 3H_2O$

$Zn + 2NaOH \Longrightarrow Na_2zNO_3 + H_2O$

Periodic replacement of coolant is recommended because inhibitors added to the coolant wear-out during normal coolant circulation.

These inhibitors are very important because they help prevent the formation of rust, corrosion and scale, a prime cause of leaks and seepage. Rust and corrosion are warning signals that the conditions are right for the damaging (and expensive repairs) occurrence of leaks and seepage.

Long time use of coolant decreases rust inhibitor ability and causes the rust and corrosion. Therefore, it is necessary to add Bar's Leaks, to restore the protection and improve the coolant in use. Bar's Leaks mixes well with all known types of antifreeze.

With proper coolant/antifreeze PLUS and inexpensive application of Bar's Leaks, you have a properly sealed cooling system, no rust & corrosion and sufficient cooling (up to 124• ‹C boiling point of water) under the most extreme conditions.

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Why Also Long Life Coolant Needs Bar's Leaks

The main component of Long Life Coolant is also ethylene blycol. This ethylene glycol has a very strong penetrating ability and many cooling systems do not leak with water but often leak with ethylene glycol.

For example if you mix 100cc of water with 100cc of ethylene glycol, the mixed liquid does not become 200cc but about 180cc. This 20cc difference does not disappear but smaller particles of ethylene glycol get into larger particles of water, which means that ethylene glycol with smaller particles has **a stronger penetrating ability than water**.

The surface tension of both water and ethylene is follows:

Item:	Surface Tension
Water	72.0 dyne/cm
Ethylene glycol	48.4 dyne/cm

Conclusion: In order to prevent from coolant loss it is highly recommended to use Bar's Leaks together with coolant-antifreeze.

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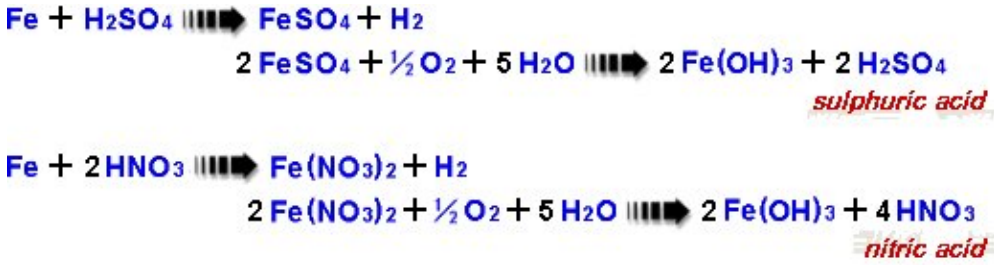
Why Leakage In The Cooling System Causes Rust

When there is a leak from cylinder head or head gasket, the fuel leaks into the cooling system and the sulfur contained in this fuel reacts with water and becomes sulfuric acid (**H2SO4**). The nitric oxide in blow-by fuel reacts with **H** ion in cooling system water and creates nitric acid (**HNO3**).



Conclusion: These two acids causes the rust formation on metal. Therefore, not only a regular rust inhibitor but also Bar's Leaks is necessary for the complete prevention of rust and corrosion.

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Cooling System Rust And Corrosion

Cooling system rust and corrosion may produce "hot spot" engine damage often resulting in major engine repair and occasionally complete engine replacement! Bar's Leaks inhibits rust and corrosion with a special cleansing and buffing agent that continually scrubs away corrosion while repeatedly lifting and re-deposing thin emulsions of protective water soluble oil throughout the entire cooling system.

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Why Organic Corrosion Inhibitor Prevents Galvanic Corrosion

Better Than Inorganic Inhibitor

Galvanic electricity is produced between 2 different metals causing galvanic corrosion. The following graphic is the test result of 3 different solutions.

1: Water + NaOH + NaCl
2: Water + NaCl + an inorganic anti corrosion inhibitor
3: Water + NaCl + an organic anti corrosion inhibitor

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Three Major Kinds Of Cooling System Inhibitor

- **A. Inorganic rust inhibitor (Chromates, nitrates, borates)**
- **B. Organic rust inhibitor (Water Soluble Oil)**
- **C. Anti corrosion product (mixture of A and B)**

Rust inhibitor (A) has a long life and a good heatproof ability. It has been used in cooling systems for a long time. The cost is comparatively low. It is said, however, that it creates galvanic corrosion in engines with aluminum alloy. It does not mix well with ethylene glycol neither does it give good effects on water pump seal (wears out fast and produces noise).

Rust inhibitor (B) has less effect on galvanic corrosion in an engine with aluminum alloy and lubricates water pump. The short lifetime and poor heatproof ability, which has been said to be the weak points of organic rust inhibitor, has been solved by using high quality water soluble oil.

Anti corrosion product (C) is the product that is used in Bar's Leaks. It has been scientifically tested for a long time.

The characteristics of the 3 different products are listed in the following servey:

	Characteristics	A	B	Bar's Leaks
1.	Inhibits rust	Yes	Yes	Yes
2.	Lubricates water pump	No	Yes	Yes
3.	Prevents from cavitation	No	Yes	Yes
4.	Protects mecha-seal	No	Yes	Yes
5.	Protects aluminum engine blocks	No	Yes/No	Yes
6.	Keeps a cooling system pressure	No	No	Yes
7.	Protects from engine block leaks	No	No	Yes
8.	Protects from gas leaks (from head gasket into cooling system).	No	No	Yes
9.	Protects cooling system water leak into an engine	No	No	Yes
10.	Stops water pump noice	No	Yes	Yes

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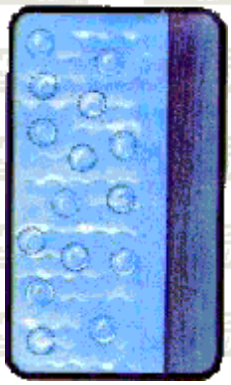
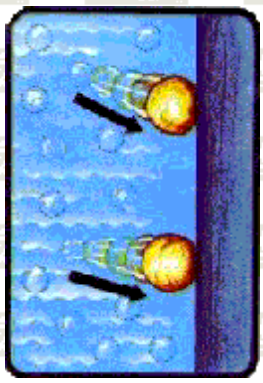
Scale

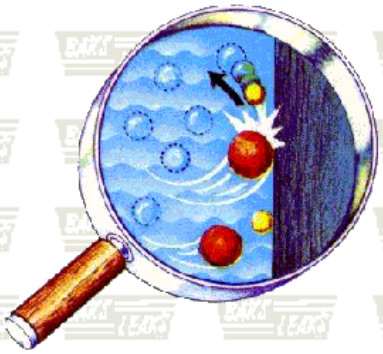
If you were to cut a motor block in two pieces in which you had used only water/anti freeze coolant, you would find scale on the cylinder walls and on the inside of the block. This scale is created because lime in the water will cristallize. Scale is very bad for the engine, and it greatly reduces heat transfer to the water.



Lime particles floating invisibly through the water.



Lime particles becoming cristals attaching to the inside walls.



Bar's Leaks loosens these crystals, and ensures no new crystals will create. No more scale can be formed.

There are many products that are said to reduce scale. Most of them do so by reducing the acidity (**Ph' content**) of water. However, that means more rust & corrosion.

There are products that are specially made to prevent rust. Their action is based on increasing the acidity (**Ph content**) of water. This will indeed result in less rust but you will get more scale.

Bar's Leaks is, however, the only product that stops both rust and scale without changing the acidity (Ph) content of water.

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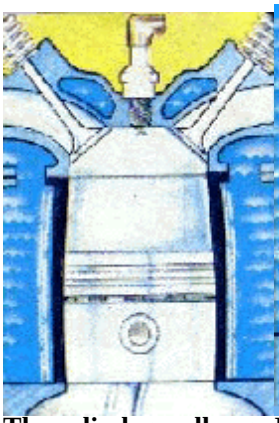
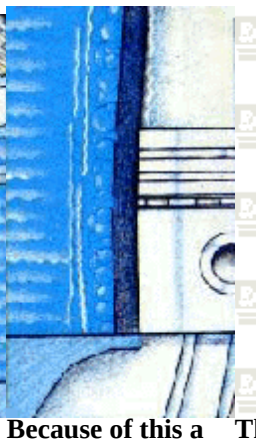
Cavitation

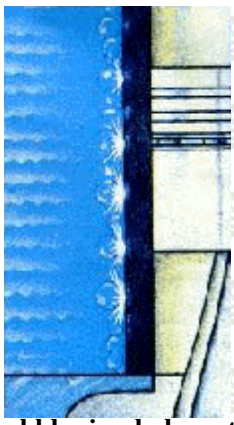
Cavitation is a kind of corrosion that is caused when air bubbles burn on a hot metal surface that vibrates under water. Cavitation, also known as pitting, causes countless small holes in metal that grow deeper and deeper and will cause leakage in the long run. The cavitation problem is a great question mark in the modern motor vehicle industry, and was very difficult to control until recently.



The cylinder walls are constantly subject to changing forces and high temperatures.

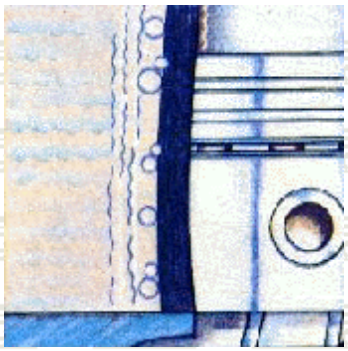


Because of this a stream of hot air bubbles flow along the cylinder walls.

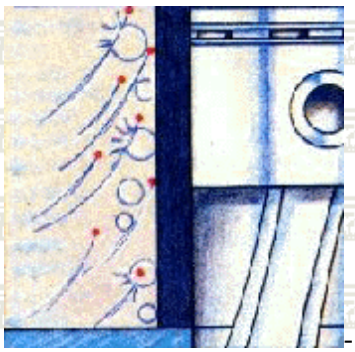


These air bubbles implode on the cylinder walls and cause cavitation.

If Bar's Leaks is added to the coolant, the Rhizex particles and the water soluble oil will prevent new air bubbles. Bar's Leaks Rhizex forms a protective layer along the cylinder walls without hampering heat transfer.



The Rhizex particles in Bar's Leaks will prevent the air bubbles growing and destroy most of them before they reach the cylinder walls. The damaging effect of burning is, therefore, mnimized.



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Internal Leaks

On Internal leaks against the combustion chamber, (where temperatures often reach as high as 2500• ‹C) the Rhizex particles actually burn to form a hard Rhizonous seal similar in substance to Bakelite.

Bar's Leaks also eliminates seepage and porosity leaks along the cylinder walls as well as the damage caused by the electron chemical influence.

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Coolant-To-Oil Leaks

In the case of heavy diesel engines (trucks, busses, off road machines) water cooled cylinder walls are used, because of the superior heat exchange to the coolant. The seal between the cooling system and the lower crank case is made by a gasket (**O**-ring). This O-ring deteriorates because of the heath and mechanical use. It will loose its sealing efficiency in the source of time, and give no longer a proper seal. This will give coolant-to-oil leaks which contaminates and break down both coolant and lubricant.

Tests with Bar's Leaks have resulted in restoring the sealing efficiency perfectly, and put and end to this water-to-oil leakage.

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Aluminum Radiators & Plastic Tanks

The car industry builds more and more light weight aluminum radiators with plastic tanks in their new cars. However, the repair of this type of radiator is, in most cases, very difficult if not impossible. An often occurring leakage is around the rubber gasket between the aluminum radiator and the plastic tank. The car dealer usually does not repair this type of radiator but will prefer to replace it for and expensive new radiator.

However, an inexpensive Bar's Leaks application will repair any leaks in aluminum

radiator cores, between the core and the plastic tank, and even small holes in the plastic tank.

In addition Bar's Leaks will prevent leaks in aluminum radiators throughout the year.

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The Comparison Between Bar's Leaks And Other Stop Leak Brands

Bar's Leaks forms an expansion seal ***penetrating*** the leaking opening, even the smallest hair cracks throughout the cooling system. Bar's Leaks repairs leaks in metals, copper, plastic, rubber, neoprene etc. from haircracks to holes up to 0.9mm. Because Bar's Leaks seals in the inside, it is a ***permanent*** seal, impervious to wear away from coolant circulation. Bar's Leaks seals are in the inside of openings, it will never clog or block. **Other stop-leak** brands are thick products. They build up **on the outside** on an leaking opening. Hence they clog and block the free passage of coolant, and eventually wear away from coolant circulation.

Bar's Leaks is applied as a cooling system protection against rust, leaks, deposits, galvanic corrosion, fuel-leaks, pressure leaks, and cavitation. Bar's Leaks also lubricates the water pump preventing it from wear-out and noise. Bar's Leaks should never be confused with ordinary Stop-Leaks products for radiators often tried as a quick patch under emergency conditions.

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Bar's Leaks Mesh Screen Test

Radiator cores are just a lot of small tubes crossing vertically or horizontally all over a radiator. Tube diameter is around 1.5mm to 2.0mm. Some modern radiators like those on BMW, Mercedes, or Renault have very special tubes with interlayers clogging easily.

Some auto manufactures specify the contents of stop-leak to pass 28 mesh per inch screen. **Bar's Leaks passes this test and is the only products which has been used by auto manufactures for a long time.**

The reason that Bar's Leaks passes through this mesh screen is that Bar's Leaks consists of very small particles that do not stick to cores or radiator surface. These particles circulate in the cooling system until each particle finds a hole and builds up inward towards the center of the opening. As the particles come in contact with the outside air, they expand approximately 25%.

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A Word Of Caution

With the introduction of Glycol, formerly referred to as "Permanent-Type" antifreeze, many vehicle owners conveniently forgot about the importance of cooling system maintenance and the corrosive heat trapping dangers of "hot spot" engine damage to valves, rings, heads, blocks, and pistons.

Fortunately, this cooling system neglect is gradually being reversed through the introduction of new coolant labeling statements such as: "All Season" or "Winter-Summer". It's a fact that the coolant will indefinitely continue to provide freeze protection, but as with all chemicals, the corrosion inhibitors within the antifreeze break down and become depleted through use.

An inexpensive application of Bar's Leaks every year, will fully replace the depleted

protection formerly provided by the antifreeze.

Bar's Leaks mixes well with all known types of antifreeze, and millions of motorists find that a periodic application of Bar's Leaks is much more economical and convenient than the alternative of annually replacing expensive antifreeze solution.

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Only Bar's Leaks Provides Complete Inhibitor Protection

Bar's Leaks prevents the formation of rust and scale, lubricate water pumps seals, corrects pH imbalance regardless of local water conditions.

Bar's Leaks is installed on an OEM (Original Equipment Manufacturers) basis by 3 out of 5 new cars and truck manufacturers the world over!

Bar's Leaks is protected by:

United States Patent Nos 2.580.719 and 2.935.189
Bar's Leaks is approved by TUV in Germany

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The optimum Pressure For Pressurized Cooling Systems

The recent automobiles use pressurized cooling system which improves the efficiency of the cooling system by raising its pressure and its boiling temperature. The boiling temperature increases by 2 to 3 degrees by increasing inside pressure by 0.1 kg/sq.cm

Frost Protection	Freezing Point (Centigrade)
Anti-Freeze Solution	P.T / L.L.C.
0%	0C• ‹
20%	-9C• ‹
50%	-35C• ‹

		Boiling Point (Centigrade)	
Anti-Freeze Solution	Atmospheric Pressure	0.3 KG/SQ.CM	0.9 KG/SQ.CM
P.T. %	P.T. L.L.C.	P.T. L.L.C.	L.L.C.
0%	100• ‹C	100• ‹C	100• ‹C
20%	104• ‹C	111• ‹C	122• ‹C
50%	109• ‹C	116• ‹C	124• ‹C

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External Leaks

On external leaks, the small Rhizex particles first adhere to the outside areas of seepage and leaks and then steadily build inward towards the center of the opening. As the particles come in contact with the outside air, they expand to their original size or approx 25% to form a smooth walled compression seal that continues to contact and expand consistent with the variety of metallic expansion rates found in today's modern cooling systems.

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