mercruiser
STERN DRIVES & INBOARDS

service bulletin

TO: SERVICE MANAGER ☐ TECHNICIANS ☐
PARTS MANAGER ☐

No. 89-5

Use of Proper Anti-Freeze Solution in Diesel Engines

Quicksilver Marine Engine Coolant

With the introduction of MerCruiser Marine Diesel engines, Quicksilver Marine Parts and Accessory Division has introduced a special pre-mixed anti-freeze solution to be used in these engines. Because of the high compression engines and related higher engine operating temperatures created, the cooling system and passages must remain as clean as possible to provide adequate engine cooling. This can only be assured by using the proper anti-freeze, water, additives and inhibitors in a special formulated solution.

Two types of anti-freeze are available in todays market. High silicate formula for light/medium duty use in gasoline engines, and a low siiicate formula for heavy duty applications such as diesel engines. Because of the duty cycle and temperature ranges in the diesel engine the high siiicate level in the anti-freeze will separate and cause a gelatin to form which will cause blockage of the cooling passages and eventual engine overheating.

In addition to using the proper anti-freeze, mixing with deionized water is a must. Common tap water or softened water contains unwanted minerals which can leave large deposits in the system to further restrict the cooling system efficiency.

Additives and inhibitors are another important factor in the formulation of proper anti-freeze solutions. Any cavitation bubbles formed in the cooling system, leaking cylinder compression, revolving circulating coolant pump, compressed areas of coolant flow, etc, can lead to cooling problems. These cavitation vapor bubbles continually condense back to liquid through an implosion process with such force that internal passages can be eroded away. Additives and inhibitors introduced into the coolant solution will form a protective film on internal passages and provide protection against this erosion. The damaging cavitation erosion merely erodes the film away thus protecting the cooling system.

The correct dilution ratio of anti-freeze to water is also very important. It should be no greater than a 60/40 mix. Increasing the amount of anti-freeze above 60%, lessens the capability of heat transfer. The ability of full strength anti-freeze to transfer heat is only two thirds that of water. Thus, the engine would likely overheat. Lowering the amount of anti-freeze below 50% solution, decreases the corrosion/erosion protection.

Filling and maintaining the cooling system with the proper anti-freeze solution is vital in maintaining a clean and efficient cooling system. Proper and consistent cooling system temperatures are vital to the long life of the engine. A periodic maintenance schedule must be maintained to the manufacturers specifications.

Quicksilver has provided the proper 50/50 pre-mixed engine coolant with low silicate content for reduced gelatin build-up, deionized water for low mineral deposits and correct amount of additives to help fight against erosion, corrosion and deposit build up problems.

Quicksilver 50/50 Pre-Mixed Engine Coolant P/N 92-813054A2