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HOWE ALUMINUM RADIATOR INSTRUCTIONS

Mounting & Installation

- 1) Avoid making any of the radiator mounts solid. Never mount two opposing sides solid as sustained vibration and chassis flex will damage the radiator.
- 2) Always support the bottom of the radiator from under the tanks only. Do not mount or support the radiator by any part of the core as this can damage the fins or coolant tubes.
- 3) Any Howe radiator with the cap on top of the tank are built to be installed with the tanks vertical. Leaning the top of the radiator back tends to reduce low speed airflow. Regardless of mounting angle, any time that the filler neck and cap are below the highest point in the system, a surge tank or a means of venting the system at the high point should be installed.
- 4) Howe radiators require at least a 22 to 24 pound radiator cap for racing applications, a 29 to 31 pound cap may be required in some cases. Lighter poundage caps are ok for less demanding street type applications.

WARNING!!! - DO NOT RUIN YOUR NEW RADIATOR BY IMPROPER FILLING!

It is very important that your engine is completely full of water at all times. We do not recommend water that may contain high levels of lime or mineral content such as well water or high levels of chlorine such as some city water as we have found these types of water to contribute to corrosion of the aluminum in some cases. *We recommend using a distilled water to fill your aluminum radiator to help avoid corrosion.* Aluminum radiators must NOT be subjected to the pressure surges that result from air pockets in the engine. When air surrounds a cylinder or an area next to a combustion chamber, the metal becomes extremely hot. When the water circulates and comes in contact with the hot metal, a volume of steam is produced that is larger than the pressure cap can release. The resulting pressure bulges the tubes in the radiator and greatly reduces the airflow and cooling capacity. It may be necessary to raise the front of the car when filling the radiator in order to get all the air out of the system.

Maintenance

- 1) Howe radiators are intended to be used with either straight water or a mixture of water and an ethylene glycol based antifreeze. The effects of any other additives are unknown to us.
- 2) Small leaks may be repaired with Howe radiator repair epoxy kit (PN:34211). Clean the area around the leak in the tube with fine sand paper or machinist cloth then wipe with lacquer thinner or brake cleaner. Apply the epoxy and allow to dry.
- 3) There is a cut in the top and bottom support rail of the radiator to allow for heat expansion. This cut is not a mistake or a repair; it is intended to increase the life of the core and prevent fatigue induced separation between the tubes and the tank header. Welding together this cut will do no immediate damage to the radiator but can lead to an eventual leak.

Cleaning

Accumulation of rubber, dirt and speedy dry in the fins of the radiator will drastically reduce its ability to cool efficiently. The following steps are the best way that we have found to remove this debris:

- 1) Remove radiator from the car.
- 2) Place a piece of plywood or cardboard on the floor that is at least as large as the radiator.
- 3) Hold the radiator 8-10" above the board parallel to the floor with all the fittings facing up.
- 4) Drop the radiator so it lands on the board flat on the tanks only. Be sure no other objects are on the floor before dropping.
- 5) Dump the debris from the board and repeat this procedure until no debris comes out.
- 6) Wash the fins by laying the radiator flat on the floor and dumping hot soapy water through the fins then rinse with clean water.
- 7) Do not use high pressure water or air to clean out the fins as it may bend them over. Bent fins may be individually straightened with a toothpick.

WARNING!!! - DO NOT RUIN YOUR NEW RADIATOR BY IMPROPER CLEANING!

Howe Racing recommends against using any caustic type cleaner to flush your aluminum radiator. The cleaner can damage the protective barrier on the surface of the aluminum. This leaves the radiator vulnerable to corrosion which in some cases can occur very rapidly and lead to the failure of the radiator.

WARRANTY

Howe Racing Enterprises, Inc. will repair or replace any Howe products found upon our inspection to be defective in material or workmanship within one year from the date of purchase for the original purchaser. Neither the seller nor Howe Racing Enterprises will be responsible for any loss, damage or injury from any cause including defects of Howe Racing Enterprises products. Under no circumstances shall Howe Racing Enterprises be responsible for incidental or consequential damages with respect to economic loss or injury to persons or property, whether as a result of breach of expressed or implied warranty, negligence, or otherwise. Howe Racing Enterprises radiators are not guaranteed for reasons of misuse; particularly from damage due to improper filling (bulged tubes), solid mounting, or from water contaminants. Purchase and/or use of Howe Racing Enterprises products implies recognition and acceptance of the entire warranty and disclaimer by consumer.