

**COPPER CORE LIMITED**  
275 CARRIER DRIVE  
TORONTO, ONTARIO, CANADA, M9W 5Y8  
Phone (416) 675-1177 FAX: (416) 675-0400

**Maintenance/Cleaning Guidelines for Copper Core  
Radiator, Oil Coolers & Charge Air Coolers.**

In order to ensure the optimum performance of your Copper Core cooling product, periodic maintenance is required. Due to the diversity of environments and usage, the maintenance intervals will vary. The machine maintenance person will need to evaluate the level of service required beyond the daily-recommended service level.

**Daily recommended service.**

It is recommended to blow out any trapped debris from between the external fins on a daily basis to prevent excessive buildup. It may be necessary to remove grill guards or other obstructions to gain access to the core face. Cleaning may be accomplished by using compressed air. Aim the air discharge directly into the fin gaps. Do not direct the air at an angle to the fins as this will greatly reduce the air velocity and pressure that reaches the center and exit side of the core. Generally speaking, if the debris buildup is dry and oil free, an “air wash” is sufficient for daily maintenance.

If the debris is resistant to an air wash, then a high-pressure water spray may be required. Most service facilities have 2,000-3,000 psi @ 2 gpm pressure washers which are suitable for this task. Take care to aim the spray directly into the fin gaps. Do not aim the spray at an angle to the fins. This will greatly reduce the water pressure reaching the center and exit side of the core. With persistent use, it may also bend the fins over.

**Periodic Maintenance**

The service personnel will need to determine when the cooling performance cannot be satisfactorily recovered with daily maintenance procedures. The great majority of heat exchanger performance deterioration in the field is due to reduced airflow through the heat exchanger core face. This will normally show up as an overheating of the cooled component (ie. engine coolant).

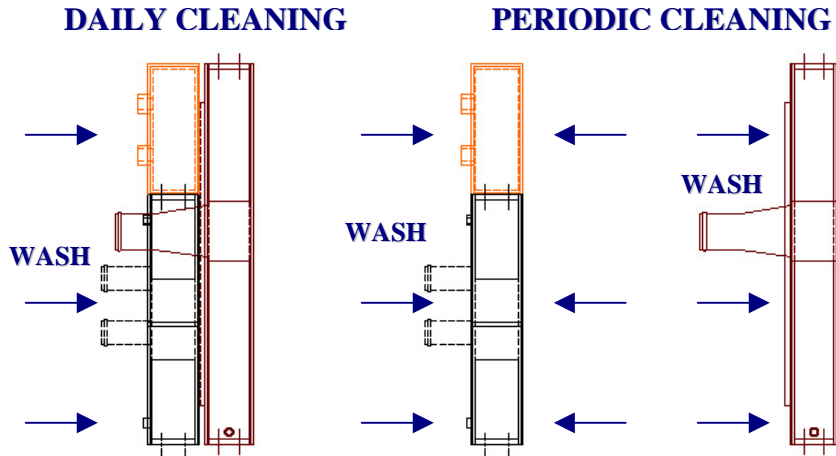
The technician should visually inspect the heat exchanger core face. Does it have excessive debris buildup after daily maintenance procedures? Are there numerous damaged fins in the core face? When the cooling fan is elevated to operating rpm, is the airflow through the heat exchanger core face aggressive. Is it even throughout the core face? Airflow through the core face can be measured using an anemometer. This device will put numbers to the airflow readings you take in various areas on the core face. They can be compared to figures from a new installation for reference as to how plugged the core face is. Generally speaking core external plugging happens from the ground up. This is to say that the part of the core closest to the ground will be more plugged than the top section.

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If you determine the core to be externally plugged with debris, the next level of service is as follows.

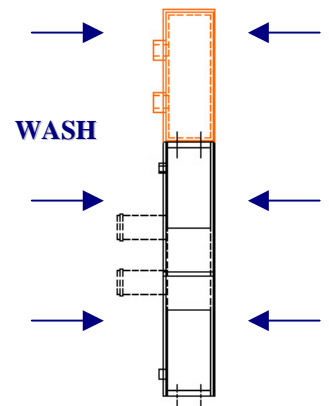
- a) If the cooling system has multiple heat exchangers and they are arranged, one-in front-of the other (see figure 1), then we suggest removing the ones on the grill side from the machine. Either pressure-wash or air-wash the removed heat exchanger separately from the front and backsides. Straighten any damaged fins.



**FIGURE 1**

Next, pressure-wash or air-wash the heat exchangers that were left on the machine and straighten any damaged fins. Visually inspect your work. If the heat exchanger cores look clean, reassemble and check fan airflow. Compare to results from clean system. This is normally the most service that is required. In some extreme cases, certain debris can harden in the core fin gaps and a chemical will be required to break up the clogging debris. Please consult our factory for chemical recommendations.

- b) If the cooling system has a single heat exchanger or multiple heat exchangers stacked one on top of the other (see figure 2), you may have an access problem in the pressure washing/air washing stage. You should remove the problematic component and wash it from front and back. Straighten any damaged fins. Visually inspect and reinstall components.



**FIGURE 2**

Service beyond the above levels is covered in our service manuals, which are readily available from your OEM. It is common for these service procedures to be performed by specialty radiator repair shops. Many radiator repair shops have taken training sessions in our factory. Please consult our factory for an authorized service location in your area.