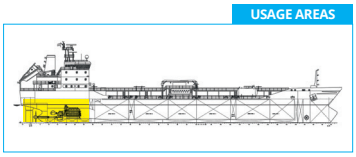
Global
Marine
Solutions

AIR COOLER CLEANER

Cleaning of Diesel Engine Air Cooler

Technical Information

PHYSICAL DATA



Appearance:	Opalescent white liquid
Specific gravity:	1,1 at 20°C.
Flash Point:	above 70°C (158°F) solution - none.
Corrosive action:	Metal: none. Plastic, rubber, paint: make a preliminary test.

DESCRIPTION

Uniservice Unisafe AIR COOLER CLEANER (ACC) is a liquid blend of highly active cleaning and corrosion inhibiting compounds. ACC has been developed for safe, fast and economical in service cleaning of the air handling systems of turbo charged diesel engines. By using ACC, airborne contaminants which have been carried into and deposited on scavenger air trunks, air coolers and inlet valves are removed. Thus, all surfaces are kept clean and free of deposits.

- Keeps air cooler clean
- Maintains scavenge air system clean
- Stabilizes air cooler at continuous peak efficiency

APPLICATION

- By using ACC and Uniservice Unisafe ACC Injection System fouling of air coolers is reduced thus heat transfer and engine efficiency is improved. Pressure drop across the air cooler and air temperature after the air cooler are kept to a minimum.
- Fire hazards from the build-up of grease and residue are minimized.
- Down time and expense of periodic dismantling of the air handling system for cleaning is eliminated.
- Scavenging efficiency is improved by the reduction on of deposit build-up around scavenging ports.
- Water displacing surfactants incorporated in ACC form a mono molecular film throughout the air handling system which protects the metals and reduces the adherence of airborne contaminants.

DIRECTIONS FOR USE

Usage

ACC is suitable for all types of diesel engines. The ACC/fresh water mixture has no flash-point and cylinder lubrication is not impaired.

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Dosage

The following table shows our recommendation for initial dosage per air cooler. This is based on one injection every 24 hours. This can be varied based on performance of the pressure drops across the air coolers.

SUGGESTED DAILY USAGE TABLE

ENGINE H.P.	ACC/WATER SOLUTION
6,000 to 12,000	1 litre ACC with 3 litres water
12,000 to 24,000	1.5 litres ACC with 4.5 litres water
24,000 or more	2 litres ACC with 6 litres water

HANDLING INSTRUCTION

Precautionary measures:

- Protect the eyes.
- ACC concentrate actually has a very high flash-point, but should be kept away from open fire.
- Should ACC come in contact with the skin, rinse off with plenty of water, and then rub in any oily cream.

APPLICATION

ACC can be applied by immersion, circulation or injection. For immersion and circulation, cleaning time is reduced considerably by heating the chemical to maximum 50°C (122°F). If the air coolers are very dirty it may be advisable to use undiluted ACC by means of circulation method to thoroughly clean the system before commencing ACC injection treatment.

Immersion method (Generally ACC is used undiluted)

The dismantled parts to be cleaned are laid in a tank specially designed for the purpose, which has been filled with undiluted ACC. Movement is achieved by means of compressed air. Wash surface with high pressure water hose or compressed air. ACC can be reused for several cleanings. Cleaning time: 5-12 hours.

Circulation method for in place cleaning (Generally ACC is used undiluted) **See diagram B**

1. Arrange to collect ACC at bottom of unit with drain back to drum.
2. Circulate by pump and/or spray (airless spray or steady low pressure flow - do not atomize) on deposits through access doors. A perforated pipe placed between tubes is effective for reaching normally inaccessible tubes.
3. Thoroughly saturate deposits and allow to stand for one hour minimum.
4. Wash off with high pressure water hose and drain to collecting tank.
5. Dry with compressed air.

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Cleaning fuel oil heaters or lube oil coolers – See diagram C

For best results ACC should be circulated through the heat exchange unit for 6 to 8 hours depending on the amount of deposits present and the length of time since the last cleaning. When ACC is used as a preventive maintenance item periodically, circulating times can be substantially reduced. ACC solution can be saved and reused until it becomes thoroughly contaminated.

- Flushing unit with kerosene before using ACC will prevent excessive dilution.
- During cleaning, solids may accumulate in reservoir drum. These solids may be removed by allowing the solution to settle and decanting clean liquid from the top.
- When cleaning action of ACC has been reduced by excessive dilution with fuel oil, the material can then be dumped into the bunker tanks and burned. For circulating ACC a pump with a large discharge volume should be used in order to ensure rapid flow through the unit.
- A50 or a 200 liters drum fitted with a wooden cover containing an opening for the discharge pipe can be used as a reservoir. Use enough ACC to fill the unit, piping and enough additional material to keep the reservoir one third full.
- Take pump suction from the reservoir and discharge into the lowest connection on the heat exchanger.
- Pipe the overflow from the highest point on the heat exchanger back into the reservoir.
- A fine mesh screen should be adapted to the reservoir return for removing large pieces which become dislodged during the cleaning operation.
- To aid the dislodging of loosened particles, a method of backflushing can be used as indicated in schematic drawing showing recommended hood-ups for use of ACC.

Injection Method using ACC (Daily) underway - To be diluted with water as per dosage diagram. – See diagram A

Simple, safe application of Uniservice Unisafe AIR COOLER CLEANER (ACC) is provided by use of the Uniservice Unisafe ACC Injection System.

- This system consists of a steel 6 litre dosage tank complete with all necessary valves, an atomiser, and required fittings for 6x8 mm copper tubing.
- The dosage tank may be installed in any appropriate place in the engine room.
- Copper tubing (6x8 mm) is fitted from the dosage tank to the atomiser, from the dosage tank to the casing on the pressure side of the turbo blower (equalising line), and from the ship's compressed air system to the atomiser.

By means of Uniservice Unisafe special ACC injection system a mixture of ACC and fresh water in a ratio of 1:3 (observe the mixture ratio exactly) is injected into the air channel between the turbo blower and the air cooler. This is followed by a second injection of fresh water only. Injection procedure as per the ACC injection system diagram, is as follows:

1. Fill the dosing tank with the required quantity of ACC fresh water mixture. Close the tank.
2. Open Valve 1 (compressed air for atomiser).
3. Open Valves 2 and 3; the ACC/fresh water mixture is injected in about 5-10 minutes.
4. Close Valves 1, 2 and 3.
5. Open Valve 4 to vent air from tank.
6. Fill the tank with fresh water. Close the tank. Then repeat steps 2-5.

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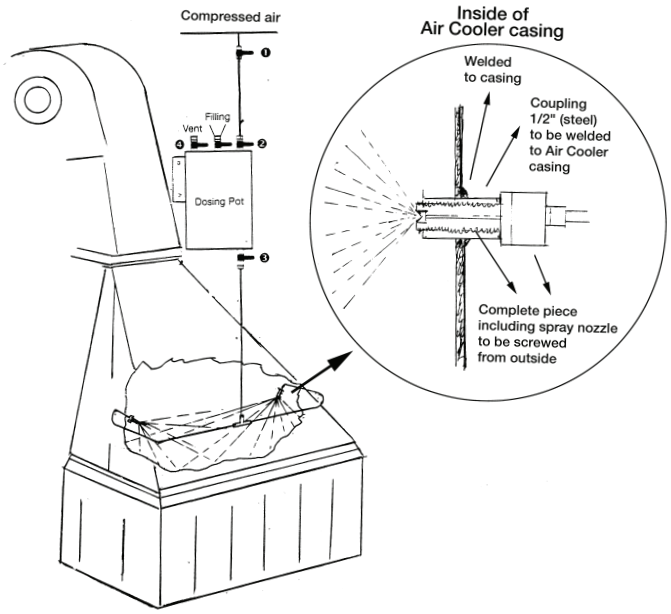
INJECTION METHOD USING ACC UNDERWAY **DIAGRAM A**

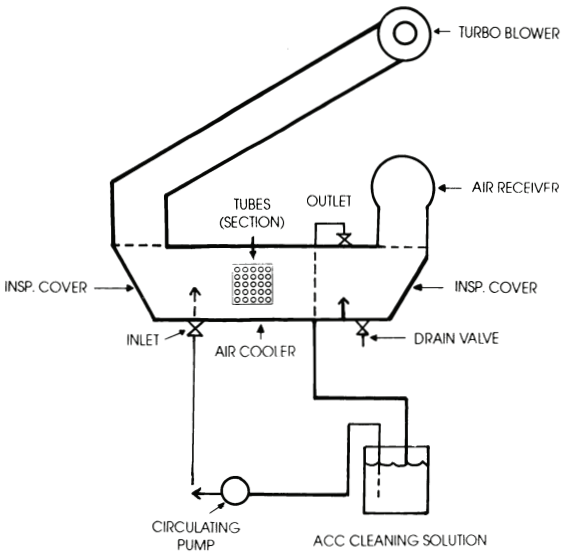
To be diluted with water as per dosage table



Typical cleaning system using ACC, carbon remover, I.O. separator cleaner, FOT, etc.

CIRCULATION METHOD FOR IN PLACE CLEANING OF AIR COOLER **DIAGRAM B**

Generally ACC is used undiluted



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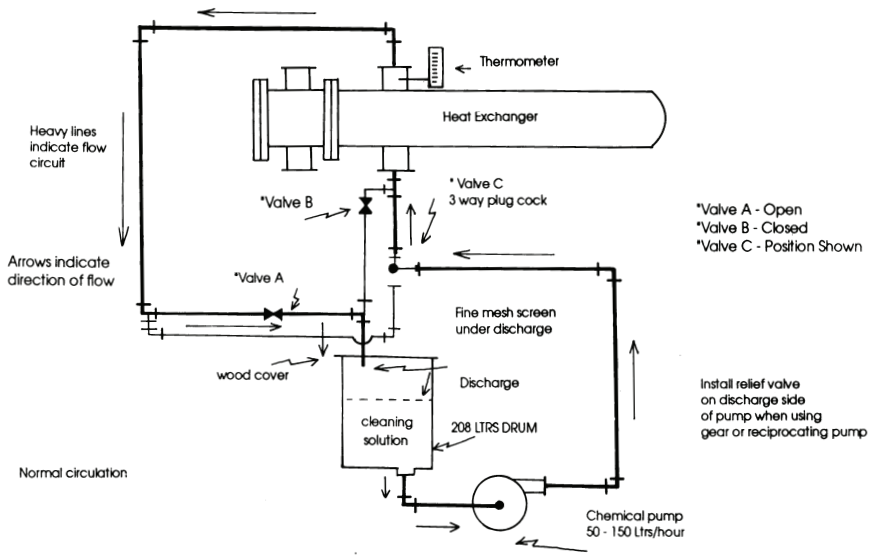
CLEANING FUEL OIL HEATERS OR LUBE OIL COOLERS **DIAGRAM C**

Generally ACC is used undiluted - Use 3/4 or 1 inch pipe



IMPORTANT NOTICE