

AIR COOLER WASHER

DESCRIPTION

AIR COOLER WASHER (ACW) is a liquid blend of highly active cleaning compounds and corrosion inhibitors. ACW has been developed for safe, fast and economical in-service cleaning of the air handling systems of turbo charged diesel engines.

By using ACW, airborne contaminants that 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.

ADVANTAGES

1. By using ACW and the ACW INJECTION SYSTEM, fouling of air coolers is reduced so heat transfer and engine efficiency are improved. Pressure drops across the air cooler and air temperature after the air cooler are kept to a minimum.
2. Fire hazards from the build-up of grease and residue are minimized.
3. Down time and expense of periodic dismantling of the air handling system for cleaning is eliminated.
4. Scavenging efficiency is improved by the reduction of deposit build-up around scavenging ports.
5. Water displacing surfactants incorporated in ACW form a mono-molecular film throughout the air handling system that protects the metal and reduces the adherence of airborne contaminants.

USAGE

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

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.	ACW /Water solution
6.000 to 12.000	1 liter ACW with 2 liter water
12.000 to 24.000	1½ liter ACW with 3 liter water
24.000 or more	2 liter ACW with 4 liter water

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AIR COOLER WASHER

Liquid cleaner containing solvents and surface-active agents for on-line and off-line cleaning of charge air coolers

- Effective removal of oily contaminants
- On-line cleaning saves time and maintenance costs
- Completely combustible in the cylinder
- Does not damage cylinder oil film

PRODUCT CHARACTERISTICS

Appearance:	clear amber liquid (light yellow or dark brown)
Corrosive action:	metal - none plastic, rubber, paint: make preliminary test
Specific gravity:	0,9 (20°C)
Flash point:	>63°C
IMO Class:	9 / III
UN Number:	3082
ADR:	9.11c)

APPLICATION

ACW 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 ACW by means of circulation method to thoroughly clean the system before commencing ACW injection treatment.

IMMERSION METHOD

(generally ACW is used undiluted)

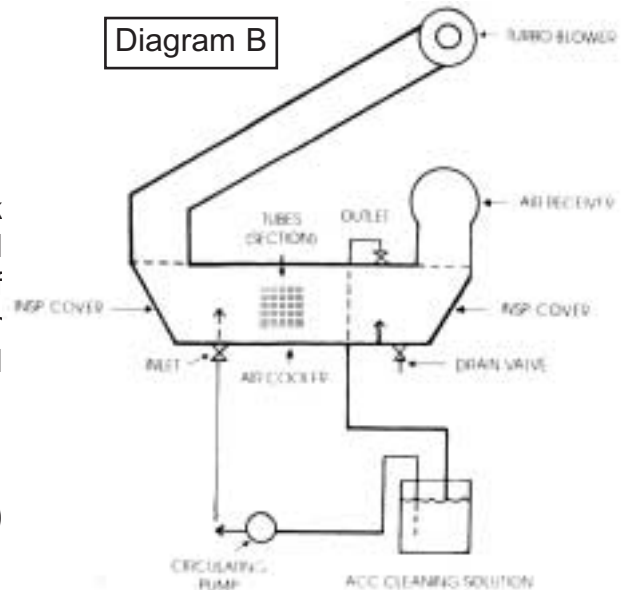
The dismantled parts to be cleaned are laid in a tank specially designed for the purpose, which has been filled with undiluted ACW. Movement is achieved by means of compressed air. Wash surface with high-pressure water hose or compressed air. ACW can be reused for several cleanings. Cleaning time: 5-12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

CIRCULATION METHOD

(for in-place cleaning - generally ACW is used undiluted)

See diagram B

1. Arrange to collect ACW 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.



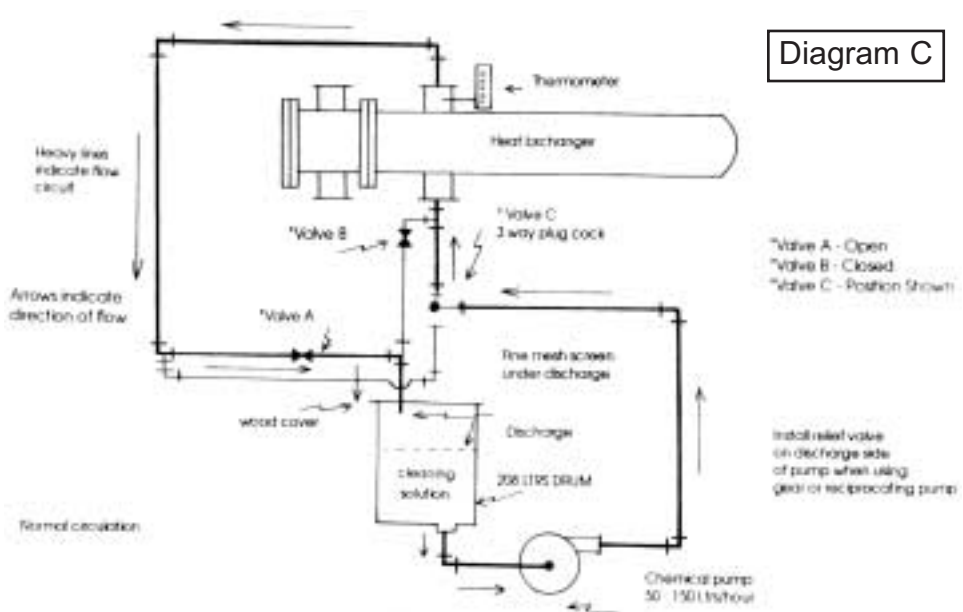
CLEANING FUEL OIL HEATERS OR LUBE OIL COOLERS

See diagram C

For best results ACW 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 ACW is used as a preventive maintenance item periodically, circulating times can be substantially reduced.

ACW solution can be saved and reused until it becomes thoroughly contaminated. Flushing unit with kerosene before using ACW 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 ACW has been reduced by excessive dilution with fuel oil, the material can then be dumped into the bunker tanks and then burned.

For circulating ACW a pump with a large discharge volume should be used in order to insure rapid flow



through the unit. A 50 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 ACW 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 to remove large pieces, which become dislodged during the cleaning operation. To avoid the dislodging of loosened particles, a method of backflushing can be used as indicated in schematic drawing showing recommended hood-ups for use of ACW .

INJECTION METHOD USING ACW(DAILY) UNDERWAY

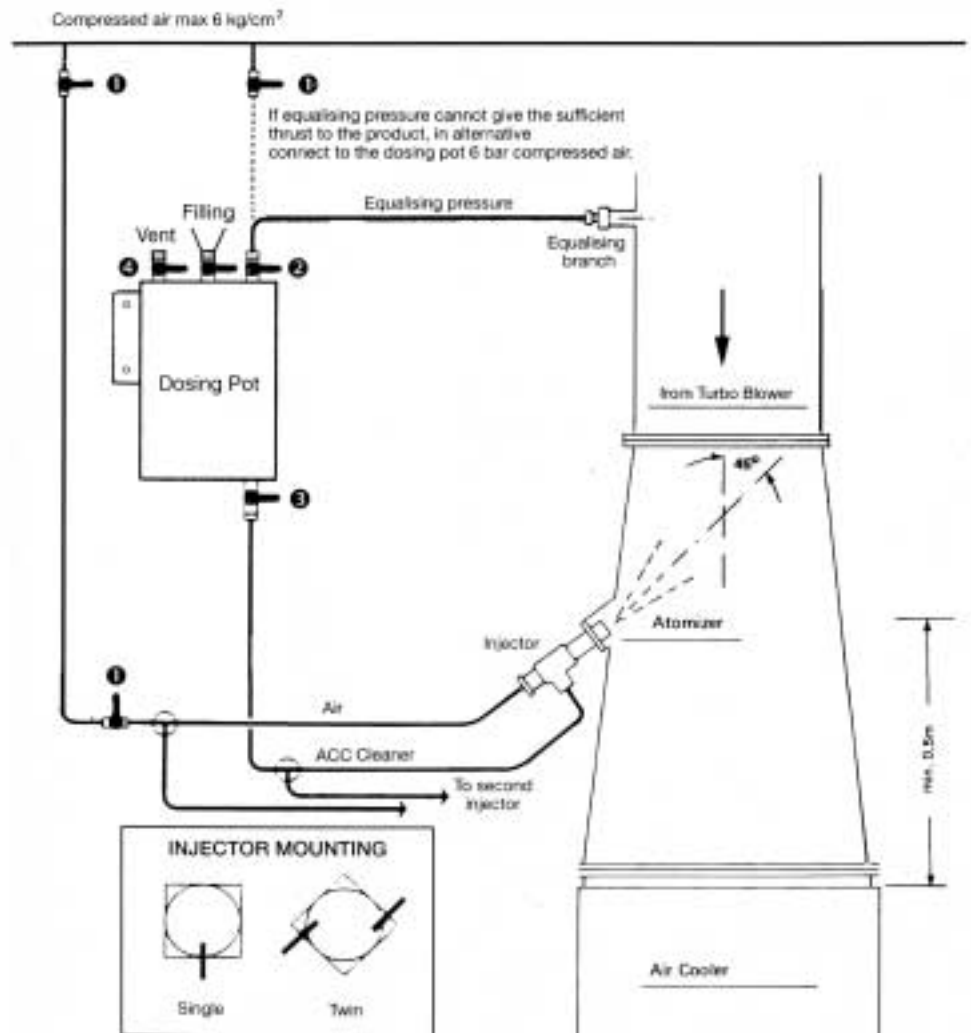
Dilute with water as per dosage diagram. See diagram A

Simple, safe application of AIR COOLER WASHER (ACW) is provided by use of the ACW INJECTION SYSTEM

This system consists of a steel 6 liter dosage tank, complete with all necessary valves, an atomizer 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 atomizer, from the dosage tank to the casing on the pressure side of the turbo blower (equalizing line), and from the ships' compressed air system to the atomizer.

By means of SPECIAL ACW INJECTION SYSTEM a mixture of ACW 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 ACW injection system diagram is as follows:

1. Fill the dosing tank with the required quantity of ACW fresh water mixture. Close the tank.
2. Open valve 1 (compressed air for atomizer).
3. Open valve 2 and 3; following equalization of pressure to the scavenging air line the ACW/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 the tank.
6. Fill the tank with fresh water. Close the tank. Repeat steps 2-5.



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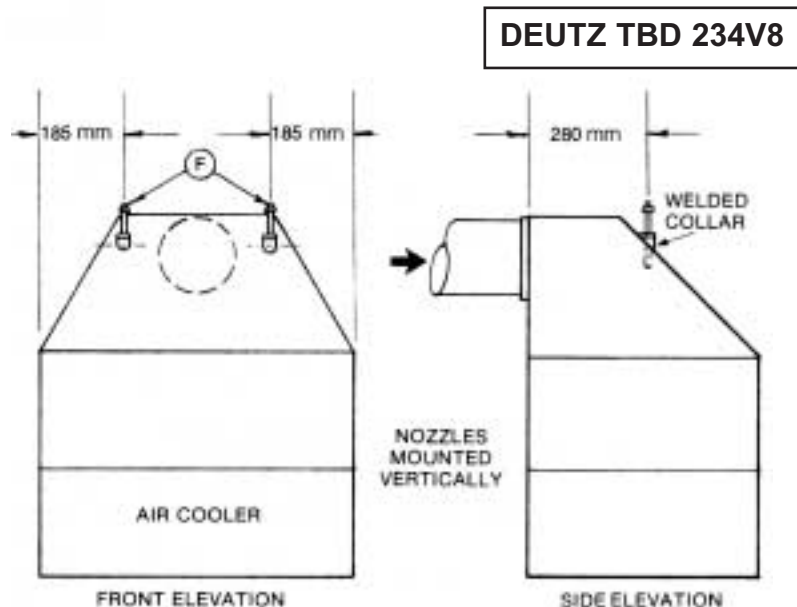
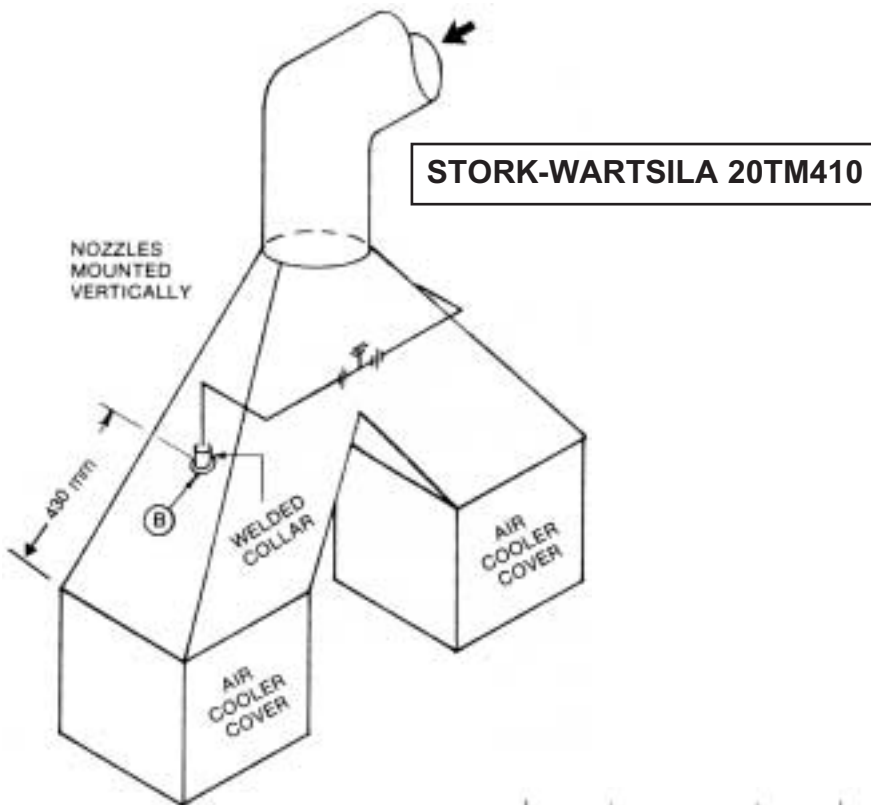
NATURE OF SPECIAL RISKS AND SAFETY ADVICE

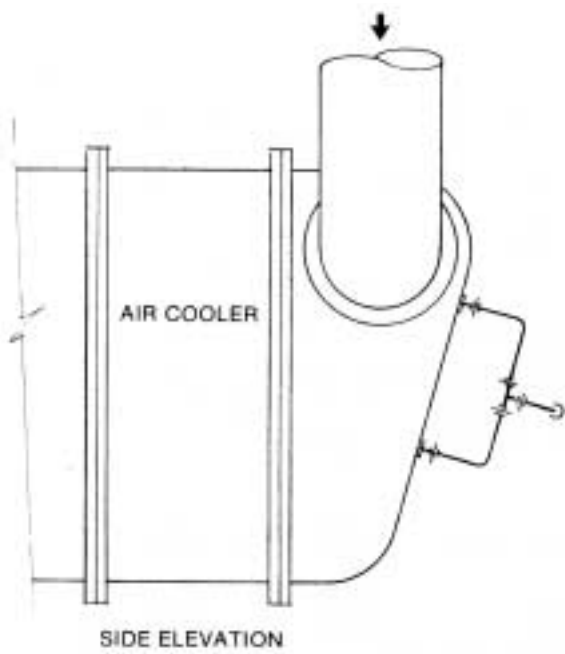
In accordance with the latest EEC Council directives this product is subjected to:

- R51/53 : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- R65 : Harmful, may cause lung-damage if swallowed
- S2 : Keep out of reach of children
- S23 : Do not breathe vapour / spray
- S24 : Avoid contact with skin
- S60 : The material and its container must be disposed of as hazardous waste
- S61 : Avoid release to the environment. Refer to special instructions / safety data sheets
- S62 : If swallowed do not induce vomiting, seek medical advice. Immediately show this container or label

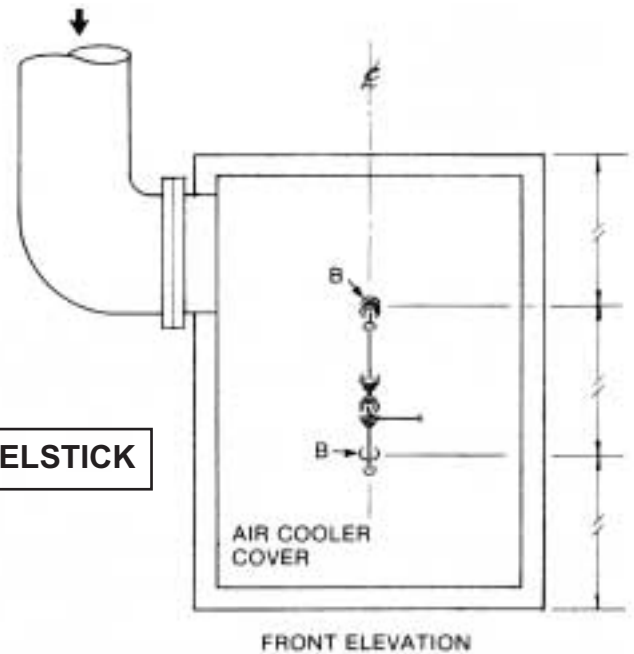
INSTALLATION DRAWINGS

These installation drawings are only a guide for typical installations. Air trunking dimensions, configuration and baffles arrangement may differ between engines of the same model. Physical inspection is necessary to ensure that nozzles are correctly sited and installed. These drawings are not to scale. All dimensions

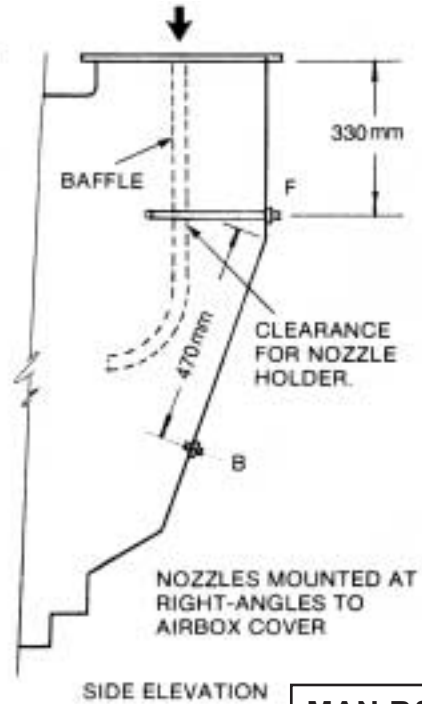
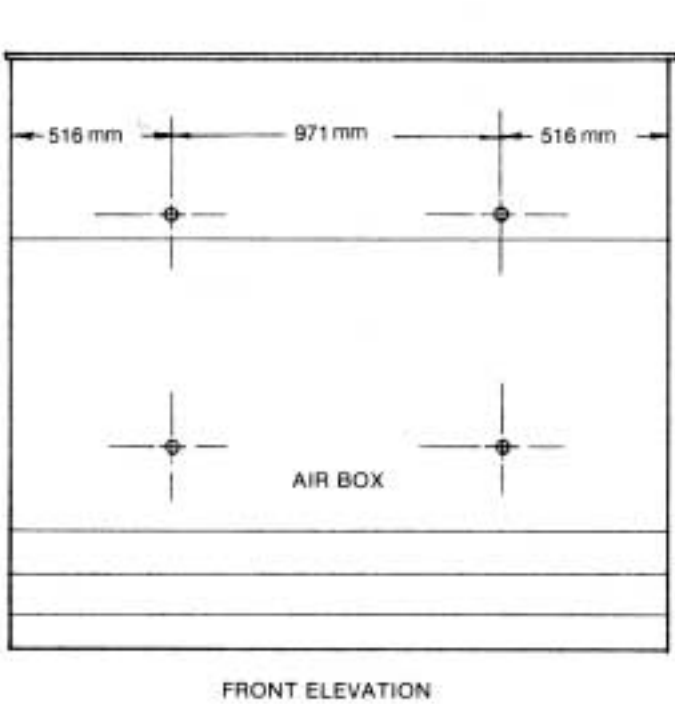
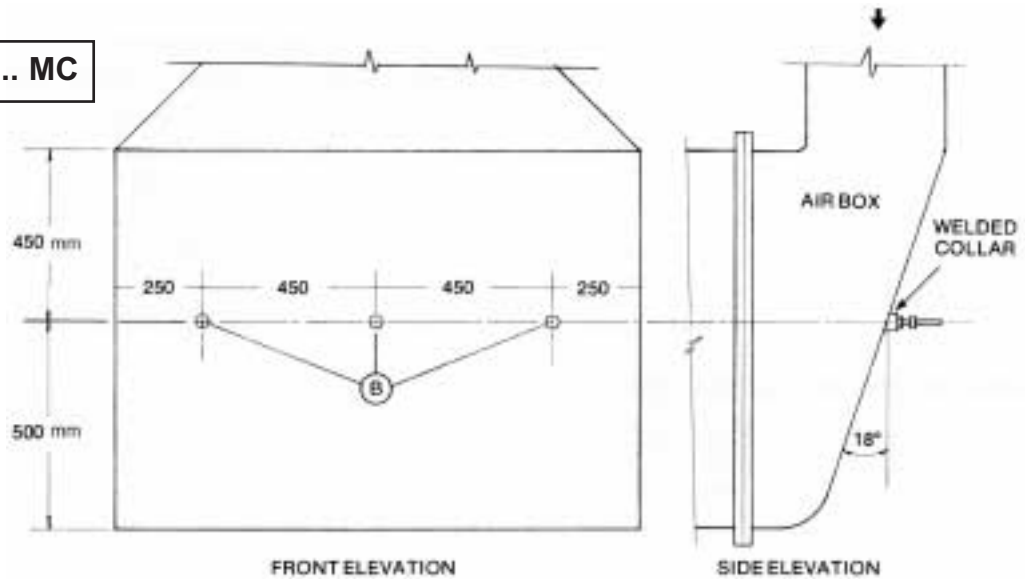




PIELSTICK



MAN B&W L/S.. MC



MAN B&W K.. MC