



# COOLING SYSTEM AND AFTERCOOLER MAINTENANCE RECOMMENDATIONS

Keeping on top of you engine cooling system service is a must if you do not want have to watch your gauges all the time and to avert loss of performance or worse yet a catastrophic failure down the line. Unlimited Yacht Services Inc. is offering a special service campaign for all turbo charged aftercooled diesel owner operators this summer. There are no short cuts to this kind of service and please don't be fooled by acid flushing which can do more harm than good by damaging rubber gaskets and seals and degrade metal components. Keep in mind that the aftercooler going bad will not cause your engine to run hot unless the salt water circuit is plugged. If the end seals or core should fail- that salt water is going into your cylinders and greatly shortening the life of your engine and leading to total failure. So far this summer we have encountered more issues with aftercoolers going bad and doing just the kind of damage that you the owner does not want. (see detailed pictures below on the following pages) So lets service them and make your diesel run strong and happy for as long as you own your boat.

## DESCRIPTION:

## MINIMUM SERVICE INTERVAL RECOMMENDED:

Visual inspection for leaks, broken hose clamps, cracked hoses	before and after every use
Pencil zincs checked/ replaced	6 months minimum
Raw water pump impellor change and or service	1 year
Fuel cooler inspection/ cleaning	3 year
Aftercooler removal disassembly, core cleaning and pressure testing Cummins is now saying every 2 years	3 year minimum
Transmission cooler coring/cleaning, pressure testing	3 year
Heat exchanger removal/coring cleaning	3 year

This service requires gaining access, draining all the coolant from engines, removing all above components, disassembly at shop with physically coring all tube bundles, pressure testing all cores and housings, removing all deposits, dress all seal and gaskets surfaces, replace all zincs, inspecting all hoses and hose clamps, inspect/repair raw water pump seals for any issues or replace with Seamax pumps, and reassembly, filling, pressure testing closed cooling system and test running. On a twin engine vessel with Cummins B or C series engines this can be done over a three day period and depending on access and what does not meet reuse guidelines to replace or repair. This costs around \$3000 for the pair which is a whole lot less than a new aftercooler or new or Recon engine.

Here is a cupro-nickel core and aluminum housing out of a Cummins 450-C which had o-rings going bad or and a lack of zincs. This engine has been ingesting salt water and has extreme blow-by now due to damaged piston rings and cylinder walls. Not good for an 8 year old engine with only a little over a 1000 hours on it.

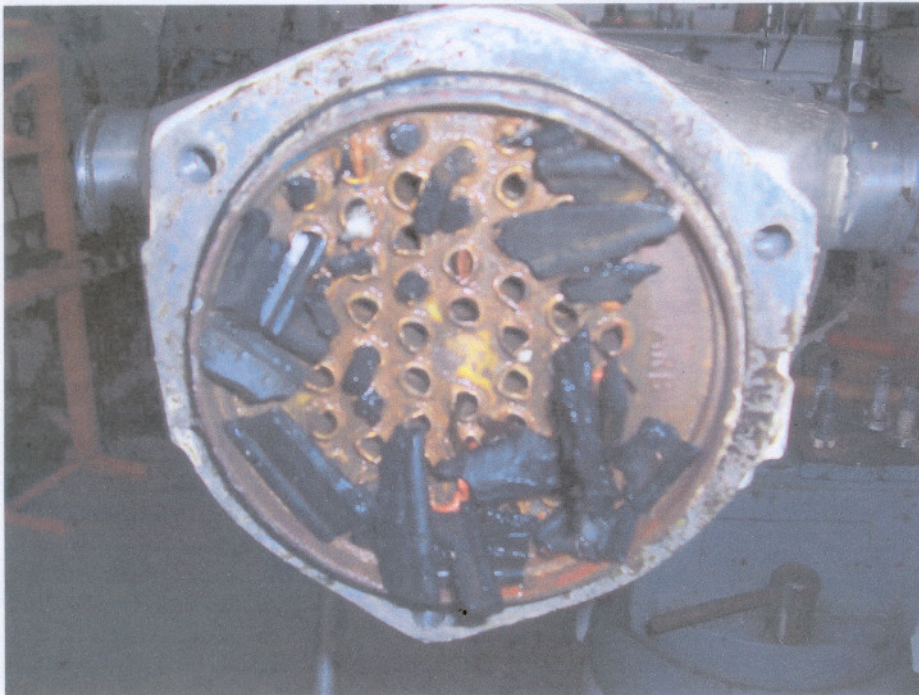


Most all aftercoolers have aluminum housings, cupro nickle or stainless core bundles, and bronze end caps all touching each other and holding salt water which cools your intake air coming from the turbo charger. Without zincs and periodical service, they fail and leak then the engine is doomed.

Here is the end of an aftercooler core bundle that has severe mineral deposits from drying out and causing engine to run hot .



These impellor blades plugging up this after cooler is why it is important to find all the blades when you blow out an impellor. Putting in a new impellor is only half the job. This engine still ran hot.



Here is what happens when you check the top aftercooler zincs and the pencil zinc does not come out with the brass pipe plug and all those zincs go somewhere. This guy had a maintenance company check his engines every month but had no clue as to why his engine was running hot or why he was paying so much for zincs. Well at least his tranny coolers were well zined.



Lots of poor maintenance can never replace informed professional maintenance.

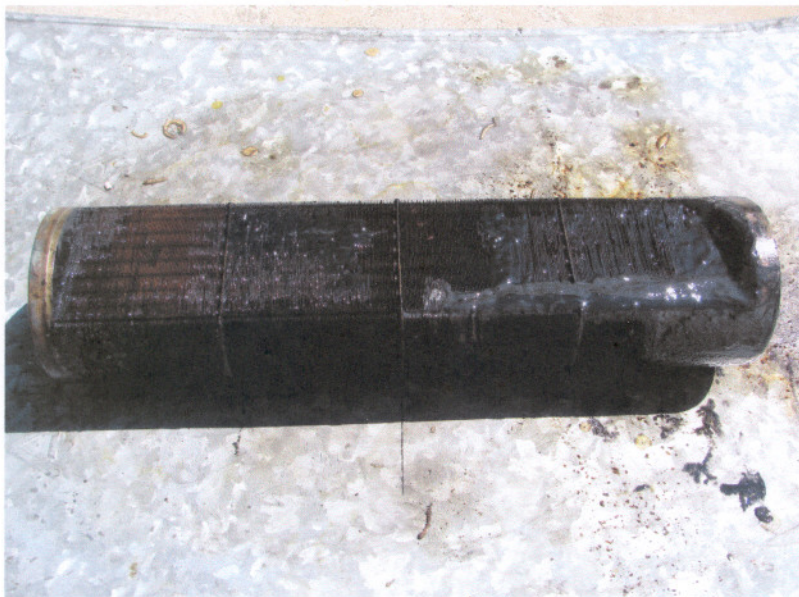


Aftercooler core from Cummins B-series that had an acid flush that damaged the o-ring seals and caused salt water to leak past them. Not good.

Here is a aftercooler core being pressure tested which we also submerge in a tank of water to see any minute bubbles



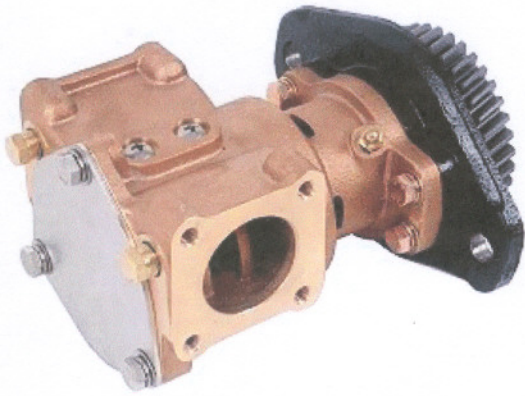
Here is an aftercooler core that is packed with oil sludge from a turbo charger that failed it's thrust bearings and seals. This engine was smoking alot and and was not getting enough air.



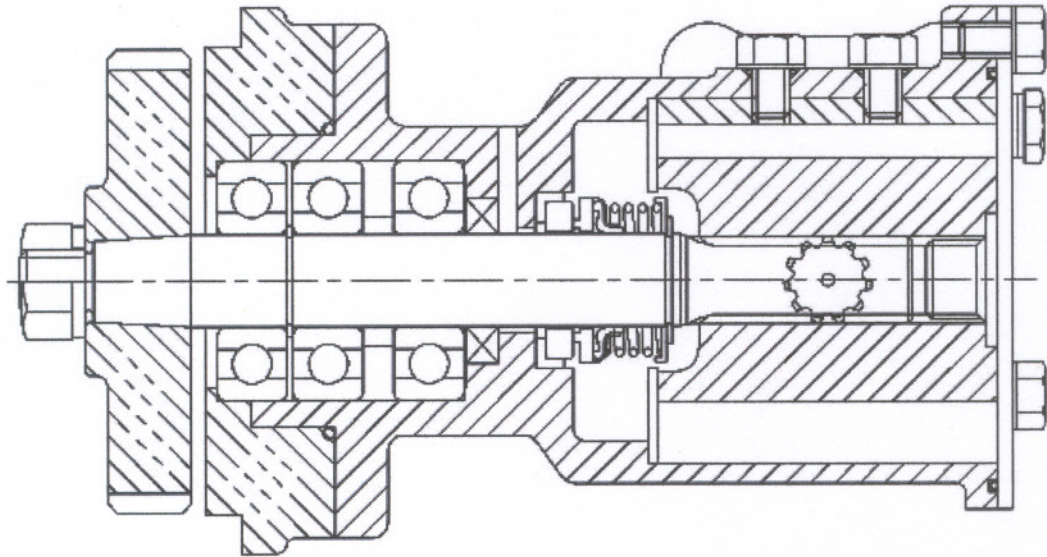
**Salt water leakage is  
always obvious**



## SEAMAX Model SMX 1730 Pump



- Exclusive design for 100% "PLUG & PLAY" replacement on all Cummins B & C Diamonds
- Triple bearing design w/ ENGINE OIL lubricated bearings and "emergency lube" zerk
- "Detroit Style" mechanical water seal w/ aft-mounted double lip oil-lubed "oil seal"
- Impeller has splined naval brass inner hub for ease of replacement - NO MORE KEYS or plugs
- Made from proven seawater resistant alloys of bronze, brass & SS - no "JUNK" metals
- Redesigned front flange for easier R&R on the 6BTA Diamonds - "clears" front mount
- New cam design eliminates any chance of the dreaded "Spinning Cam Syndrome"
- Exclusive 316 SS inner wear plate & locking design - no more "Spinning Wear Plate" pump failures
- Simple rebuild using commonly available tools, bearings & seals
- Special intake and outlet ports available for "custom installs" or early engine upgrades



SEAMAX Model SMX 1730 Pump - Internal view