

Radiator Core Component Service Manual

Removal of Tanks

The Radiator should be cleaned thoroughly with a high-pressure washer before work is commenced. If available, the radiator may be submersed into a hot caustic soda solution to help clean the radiator fins. When removing radiator rinse thoroughly.

Caution must be taken when cleaning charge air coolers in caustic soda.

Copper Core charge air coolers are made with aluminum turbulators.

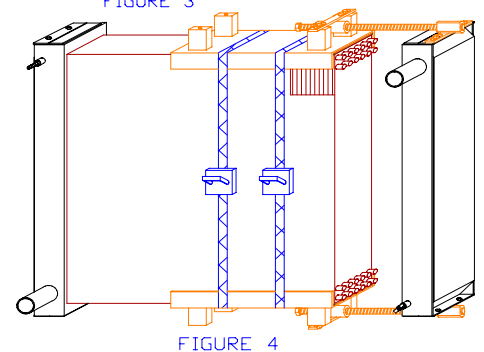
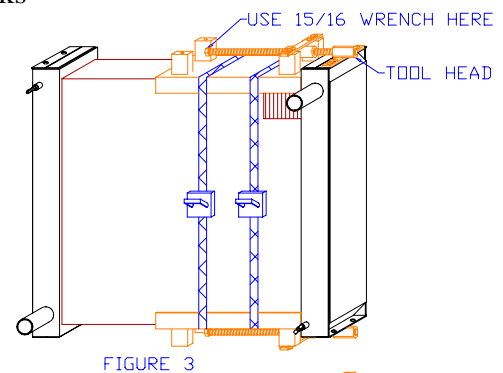
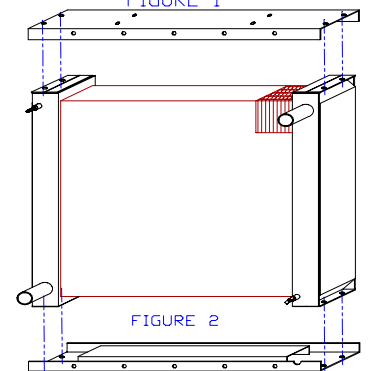
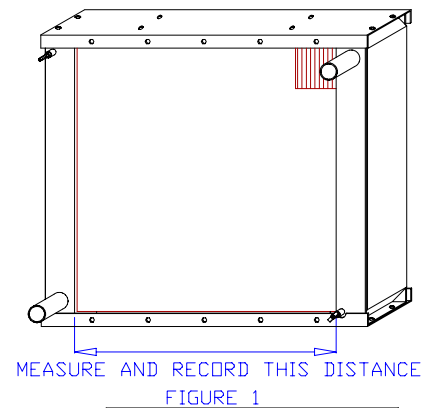
Caustic soda will destroy aluminum.

Note: Before disassembling, mark all components. Mark inlet one core. Mark rails top – bottom – left and right to insure they are reattached in the correct position.

Place the radiator on its side rail (See figure 1) measure and record distance between tanks to insure correct size when reassembled. Remove bolts that fasten the one side rail to the inlet and outlet tanks and lift off side rail. After removing one side rail, flip radiator so it is sitting on the inlet and outlet tanks. Remove bolts from the other side rail and remove side rail. (See figure 2) Now that the side rails are off the radiator, you can proceed with removing the tanks.

Caution should be taken when removing tanks, so that tube ends and fins are not damaged. Place radiator on worktable or floor with hose connections facing up. Locate the tank pullers (P/N 911986) near the tank to be removed and on either side to the core with open ends of channel facing inward. Using the belts provided with tool, tighten the tank puller against the core, making sure that the core is between the two lips of both channels and only tightening the channel against the core so that the tools are held firmly in place.

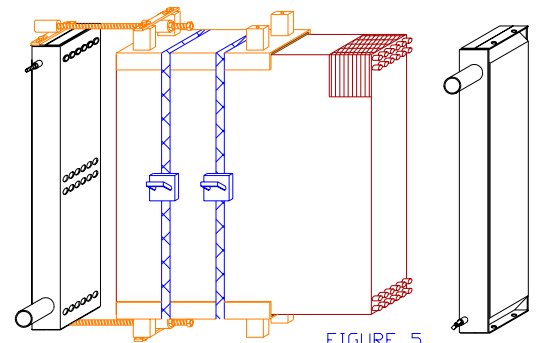
Next, align holes in the tool head with the holes in the tank that held the side rails on (See figure 3). Insert two 5/16-18 UNC bolts and nuts and tighten. Do this for both end of the tank. Using a 15/16 wrench turn the threaded rod to remove the tank. Turn each side one full turn at a time so that the tank is moved evenly until it clears the tubes (See figure 4). Repeat this procedure for the other tank, if required (See figure 5).



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Grommet Replacement – Part #GRO-100

Remove the old grommets from the tank using a blunt screwdriver. Then wire brush the tank around the grommet holes to remove any scale build-up. Rinse tanks thoroughly and repaint as necessary. Lubricate lightly with liquid dish washing soap around the grommet holes before inserting new grommets. New grommets should all be inserted the same way - each grommet has a number embossed on it. Install with the number facing the outside of the tank. Before reinstalling the tanks, check the tube ends on the core for a clean smooth surface. If not buff the tube ends lightly by using 3/8 gas hose attached to a drill. Dip the hose in wetted fine gain sand to act as a sanding agent. Insert the 3/8 hose over a tube end and rotate using the drill. The sand and rotating action of the hose will buff the outside of the tube to a clean finish. Thoroughly rinse tubes inside and out when finished buffing.

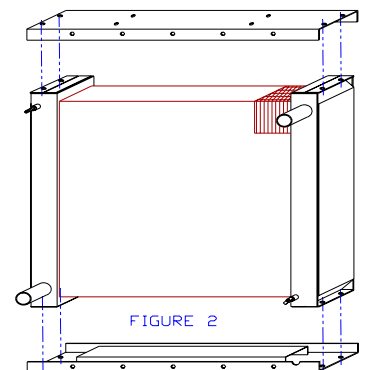


Note: If servicing turbulators as well. Go to turbulator removal section of this manual before reinstalling tank.

Reassembly of Radiator

The first tank to reinstall is the bottom/outlet tank. Lubricate the new grommets and tube ends by generously applying liquid dish soap with a soft tip paintbrush. Be sure the numbered side of the grommets is facing the fins (Air Side). Use the tank puller to reinstall the bottom/outlet tank first. Place the tank so that all the tubes end are aligned with the holes for the tubes in the grommets. Fasten the head of the puller to the tank as in removal procedure. Turn the threaded rod to pull the tank onto the core (one full turn per side). **The tank is completely on when the grommets touch the fins.** Visually check the grommets to be sure they are all seated properly.

Working on the top/inlet tank repeat the above procedure except for the following. When installing the top/inlet tank, the grommets **should not be touching the fins** when the tank is completely on. The distance between the two tanks should be the same as you measured and recorded before you started the disassembly of the radiator. Adjust the top tank up or down as required by turning the threaded rod. The tanks are properly located when the tank to tank dimension is equal to your recorded dimension all across the tank width. You can carefully flip the radiator on its side (See figure 2) and reattach a side rail. Flip the radiator again and attach the other side rail.

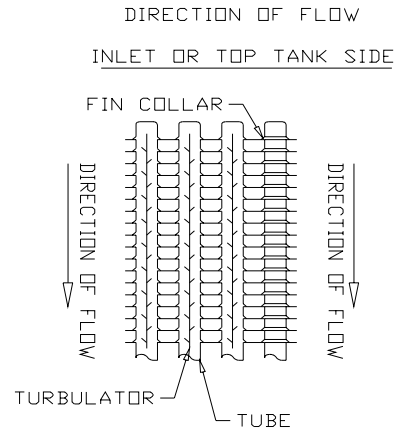


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Tubulator Removal

Caution: The direction of the tubulator paddles is important. Note the direction of the paddles when you remove the tubulators and install in the same direction. The tubulators are made of brass alloy and should not corrode or deteriorate in engine cooling systems. Plugging of the paddles may occur in severely contaminated systems. If plugging has occurred the cooling system must be flushed to remove contaminants. Under normal conditions tubulators should require little or no service.

With side rails and tanks off. Carefully place core in vertical position resting on two blocks of wood. **Make sure the blocks of wood are the same size.** Open the tube ends at the inlet end of the core, using tool P/N 911967. Insert a ¼ rod or a Robertson screwdriver into the **closed** end of the tubes and push the tubulators out until exposed. Once exposed, pull out tubulators from the open tube end. Tubulators may be soaked in a hot caustic soda solution for cleaning. With the tubulators out, use a high-pressure washer to rinse off the tubulators and radiator tubes. After the tubulators have been cleaned insert them back into the open end of the tubes making sure paddles are in right direction (See figure 6). Close the end of the tubes using Peining Tool P/N 911973.



TO INSURE MAXIMUM COOLING, PLEASE MAKE CERTAIN THAT THE FLOW IS AS SHOWN IN DIAGRAM.

FIGURE 6

Repairing Radiator Core Damage

Radiator core damage can normally be repaired using one of the following methods.

Soft Soldering

Soft solder of a 30/70 grade or better may be used to seal a tube puncture in the damage area.

Note: Do not apply an open flame near grommets. When repair is completed, rinse area thoroughly.

Blank Grommet – Part #GRO-200

Remove top and bottom radiator tanks. Cut the damaged tube off flush with the core fin (i.e. no tube protrudes outside fin). Remove the old grommets. Insert a blank grommet (See figure 7) into the hole to provide a water seal. Reassemble radiator.

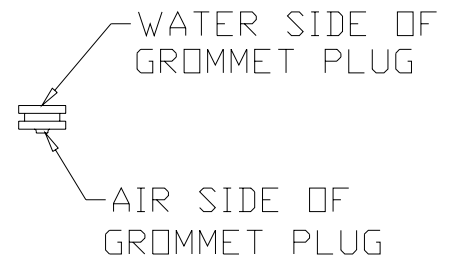


FIGURE 7