

Transmission Cooler Tube Removal & Replacement

The following describes the dismantling, cleaning, assembly, and testing procedures for the transmission cooler. Please read and follow the instructions carefully.

Tube Removal and Replacement

1. For ease of removal, disconnect all plumbing to cooler (or remove cooler from radiator bottom tank, if applicable) and position cooler horizontally on a flat surface.
2. Although most of our units have notches to clearly identify the proper end cap location, if they do not, then mark the end cap and shell for proper alignment on reinstallation.
3. To access the cooler tubes, remove the end cap and retainer plate from each end of the transmission cooler. In many cases, the retainer plate is integral to the end cap (see Fig. 1).

NOTE: THE COOLER ASSEMBLY HAS THE LETTERS "L" AND "S" STAMPED ON OPPOSITE ENDS OF THE SHELL. THE "L" DESIGNATES THE END OF THE COOLER WHERE THE LONG UNFINNED PORTION OF THE TUBE IS LOCATED. THE "S" DESIGNATES THE END OF THE COOLER WHERE THE SHORT UNFINNED PORTION OF THE TUBE IS LOCATED (SEE FIG. 1).

4. Insert the installation and removal tool, p/n 248622, into a tube on the long (L) side. Make sure the tool's shoulder contacts the tube. Grip the tube by squeezing the tool's handles together. Using a twisting motion, pull the tube until the short (S) end of the tube (opposite end) is pulled completely out of its seal (see Fig. 2). Repeat for each tube.

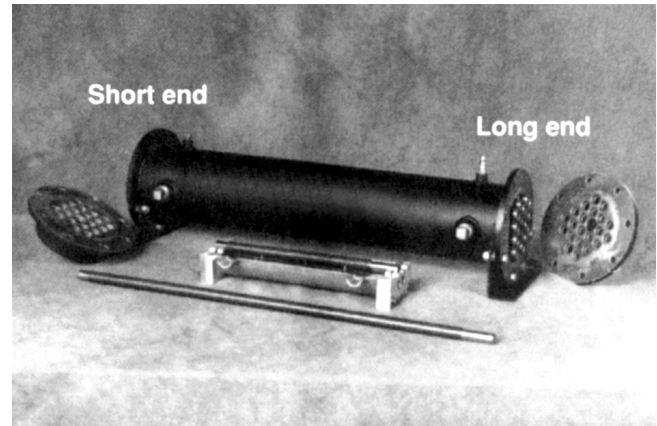


Figure 1

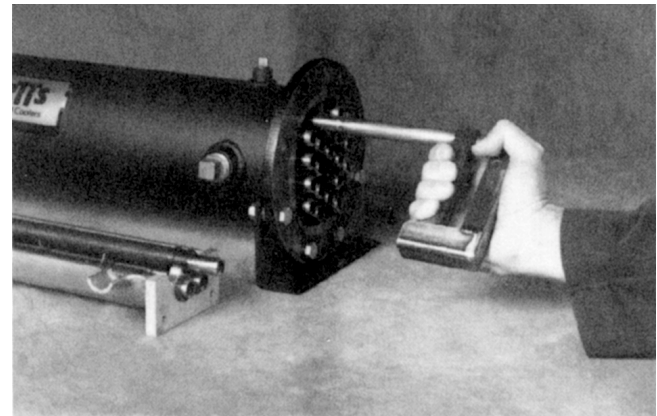


Figure 2: Long End



CAUTION

CAUTION: WHILE PULLING THE TUBES, TAKE CARE TO AVOID PULLING THE SHORT END SEALS INTO THE SHELL. IF A SEAL IS INADVERTENTLY PULLED INTO THE SHELL, IT MUST BE RETRIEVED.

5. Remove all of the seals from the short end header sheet.
6. From the short end, grip the tube with the tube tool. With a twisting motion, pull the tube until the entire tube is removed from the shell. Repeat for each tube (see Fig. 3).
7. Remove all of the seals from the long end header sheet.

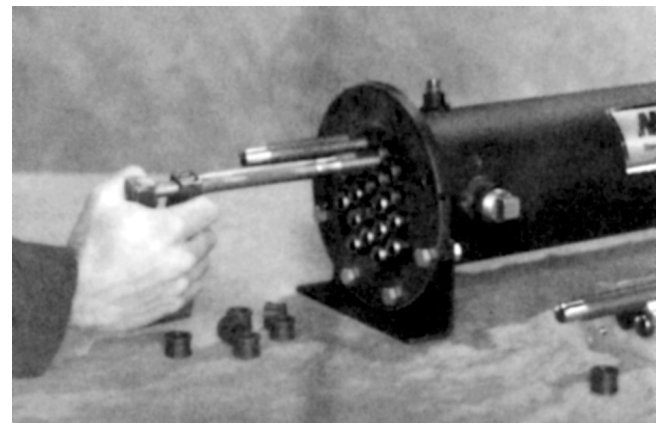


Figure 3: Short End

Cleaning

1. Clean both header plates and all holes. Try to ensure no debris falls into the shell.
2. Stand the cooler vertically and flush with a high-pressure hot water washer. Rinse out all contaminants.
3. Dry the inside of the cooler. Use a hot air blower, if available.
4. Inspect the tube ends for burrs. Remove any burrs using a fine emery cloth. Clean the machined ends, finning, and inside surface of each tube.

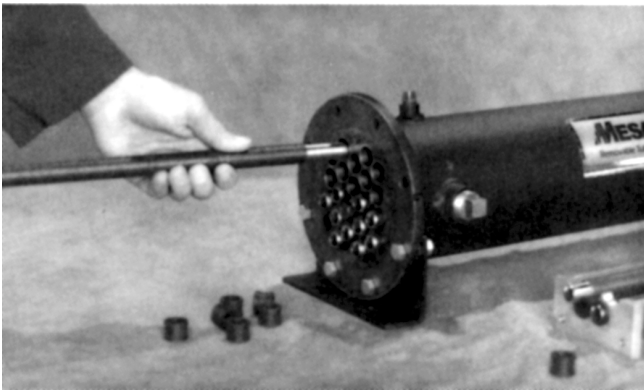


Figure 4

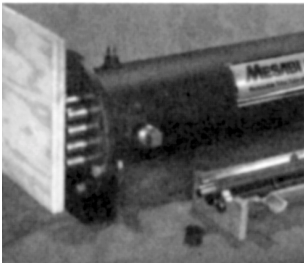


Figure 5A: Short End

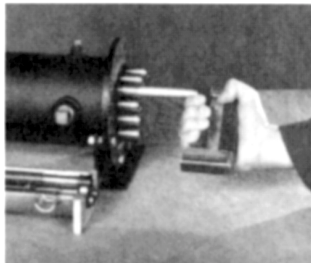
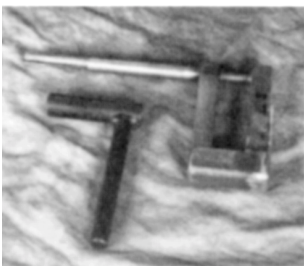


Figure 5B: Long End



Tools Required

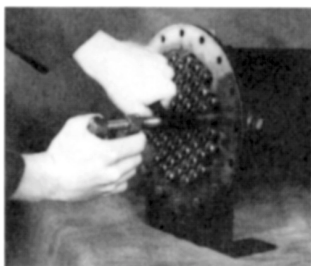


Figure 6: Short End

Tube and Seal Installation

1. Wipe out the long (L) end header plate holes with a small amount of cleaning solvent and inspect each for damage.
2. Install new seals into the long end header plate holes. Do not use lubricant to install seals. Make sure the seal's outer lip is pushed flush to the header plate.
3. Prior to tube installation, oil the inner surface of each long end seal and both tube ends with SAE10 mineral oil.
4. By hand, push the long end of each tube through the short (S) end header plate until the tube just contacts the long end seal. Repeat for each tube (see Fig. 4).
5. Place a plastic or wood backstop against the short tube ends to keep them from being pushed out during the next step. **DO NOT** use metal, as a metal backstop could cause damage to the tube ends (see Fig. 5A).
6. With a slight twisting motion, push the tube tool through a long end seal until the tool's shoulder contacts the tube. Grip the tube with the tool and, with a twisting motion, pull the tube through the long end seal until the short end of the tube clears the short end hole. Make sure the seal lip remains flush to the plate. Repeat for each tube (see Fig. 5B).
7. Remove the backstop.
8. Wipe clean all short end header plate holes, using the same method as in step 1.
9. Install new seals into the short header plate holes. Do not use lubricant to install seals. Make sure the seal's outer lip is pushed flush to the header plate.
10. Oil the inner surface of each short end seal with SAE10 mineral oil.
11. Insert the installation and removal tool through the seal retaining tool, p/n 248623. With a slight twisting motion, push the tube tool through a short end seal until the tool's shoulder contacts the tube. Holding the seal retaining tool firmly against the top of the seal, grip the tube with the tool and with a slight twisting motion, pull the tube through the short end seal until about 1/4" of the tube end sticks outside of the seal. Repeat for each tube (see Fig. 6).

Inspection, Testing and Reinstallation

1. Inspect the tube ends for seal fragments. If you find any chipped seal material on a tube, that tube must be reinstalled with new seals.
2. Inspect each seal to ensure that they are all seated tightly against the header sheet. If a space greater than 1/32" exists between the header sheet and the outer lip of a seal, that seal must be removed, inspected, and reinstalled (see Fig. 7).
3. To test for leaks around the seals, apply 50 PSI to the oil side fittings for 15 minutes. Submerge the transmission cooler in water (or spray ends with soapy water) and inspect for bubbles, which may indicate leaks (see Fig. 8).
4. Reinstall the retainer plates and/or end caps. Use the proper gasket to avoid damage to the seals.

IMPORTANT: GASKETS ARE MADE FROM 1/8" COMPRESSED THICKNESS. USE AMERAFLEX 1521-C OR EQUIVALENT MATERIAL.

Apply a small amount of silicone rubber to each side of the gasket. Make sure that notches in tank and shell are properly aligned (see Fig. 9).

5. Pressurize the oil side with 150 PSI for 15 minutes. Check for leaks by submerging in water.
6. Clean all surfaces of contaminants.
7. Reinstall the transmission cooler and/or parts and equipment removed in the **Tube Removal** section.

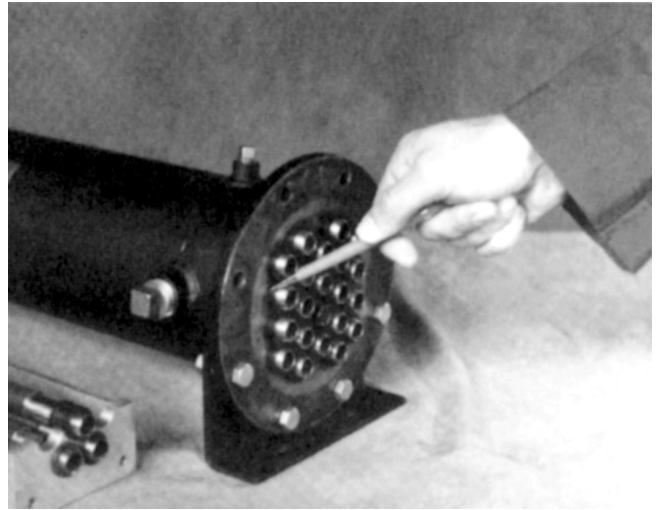


Figure 7

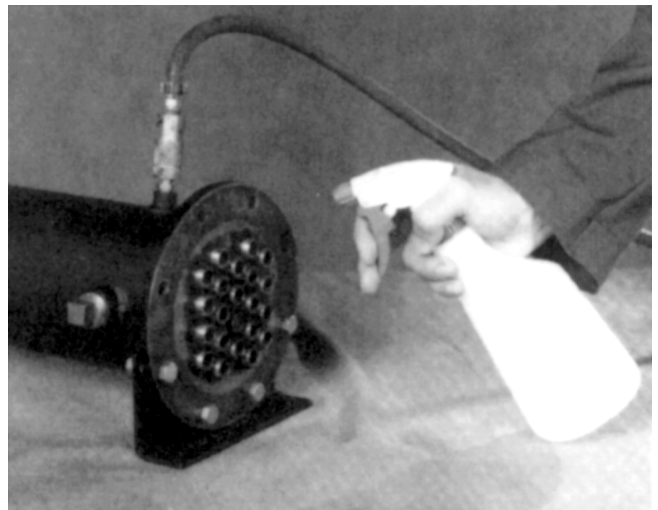


Figure 8

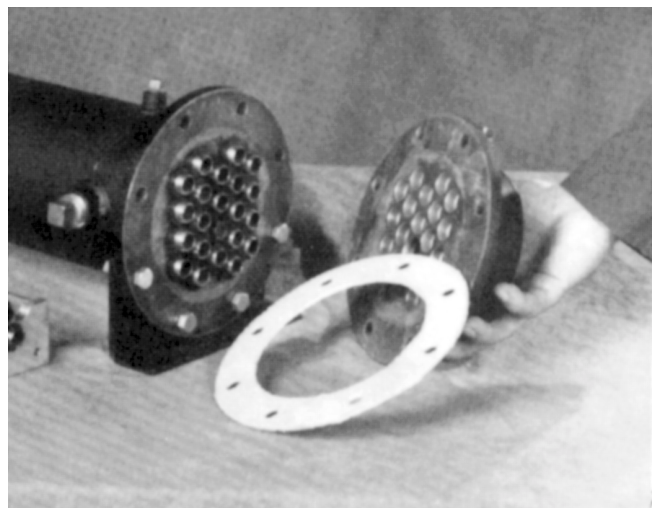


Figure 9