CAUTIONARY NOTE: DO NOT FLUSH COOLING SYSTEM WITH WATER!

REGARDING OLDER ENGINES: Metal to metal connections may be corroded. Do not apply force that can damage such connections and cause leaks.

1. Supplies, information, and special tools needed:
   a. Obtain this information:
      1) Is the engine equipped with a coolant filter?
      2) How many thermostats does the engine take?
   c. Purchase these items from the affiliate of the truck OEM:
      1) The correct thermostat housing gasket. (The gasket will be needed even if the
         thermostats will not be replaced.)
      2) A non-chemical coolant filter e.g. NAPA 4070 (if the engine uses a coolant filter).
   d. The following items are sourced from Evans Cooling Systems, Inc.:
      1) Evans Waterless Heavy Duty coolant. (16 gallons should suffice for a C-15.)
      2) Two gallons of Prep Fluid.
   e. A high-volume air source (rather than high pressure) such as Makita blower Model UB
      1101, widely available from the internet. A shop doing installations commercially should
      consider a Model MB 3CD Master Blaster. A powerful (and clean) shop vac, used in the
      blower mode, is also an acceptable high-volume air source.
   f. An angled pick for difficult hoses.
   g. Funnels.

2. Place containers to catch drained coolant.

3. If the engine is hot, wait for it to cool to a safe temperature. Never open a cooling system
   pressure cap if the engine is hot.

4. Remove the pressure cap and drain coolant from the bottom of the radiator. Sometimes there
is a petcock in the bottom radiator hose.

5. While the coolant is draining, remove enough of the air intake ducting to provide access to the thermostat housing.

6. When safety permits, pull off the bottom radiator hose completely and leave it to drain.

7. Draining the heater circuits:
   a. Close the manual valve(s) shown on the heater hose(s).
   b. Disconnect the heater hose(s) from the cylinder head end.
   c. Turn the cab heater “on” and set to max temperature.
   d. **If there is a second heater (e.g. for a sleeper cab), turn it on and set it to “max”**.
   e. Turn the key “on”.
   f. Blow air through each hose until there is no further flow out the pump inlet.
   g. Insert about a half gallon of Prep Fluid into the heater hose end(s) and blow air through.
   h. Turn key off. Leave the manual valve(s) closed for now.

8. If there is a transmission cooler and a coolant hose connection from the engine, open the hose and blow air toward the transmission cooler. Insert about a half gallon of Prep Fluid into the hose end and blow more air. Re-connect the hose.

9. Open the thermostat housing and remove the existing thermostats.

10. Block one of the vacant thermostat housing holes with a rag or tennis ball.

11. Blow high-volume air into the unblocked thermostat housing hole until coolant stops draining through the bottom hose.

12. Pour about a half gallon of Evans Prep Fluid into the unblocked thermostat housing hole and then blow high-volume air into the hole until coolant stops draining through the bottom hose.

13. If the engine is equipped with a coolant filter, remove it and blow air into the thermostat housing until no fluid emerges from the filter housing. Install a new non-chemical coolant filter.

14. Reattach any hoses; close any drains that are open; open the manual heater valve(s) and police the hose connections one last time to assure that they are tight.

15. Re-install the air filter and associated ducting.

16. Fill the cooling system with Evans waterless Heavy Duty coolant. Any remaining Prep Fluid is compatible with Evans HD Coolant.

17. Operate the engine to assure the opening of the thermostats and thorough circulation of the coolant. Add coolant as required to maintain the “hot” level.

18. The coolant in the expansion tank will get hot due to the coolant entering the expansion tank from the vent line attached to the thermostat housing. The high temperature assures that the coolant in the expansion tank is well-circulated. A refractometer reading may be taken at the expansion tank under the following conditions:

   -
The thermostats are clearly open.

- The coolant in the expansion tank is hot.
- No coolant was recently added to the expansion tank.
- Alternatively, take the reading after several days of operation.

19. Measuring the water content with the refractometer.
   - Calibrate the refractometer by placing a drop of new Evans waterless HD coolant on the refractometer glass and setting the reading to 57.0.
   - After cleaning the glass, place a drop of coolant, obtained from a location in the cooling system where the coolant is well-mixed, on the glass.
   - The reading must be 55.7 or higher to verify that the water content is 3 percent or less (a required condition).

20. Place the labels to warn against the addition of water or water-based coolant.

21. The equipment is ready for use. Upon cool-down and for a couple of days, small amounts of coolant may be necessary. The expansion tank should be about 1/3 full when the engine is cold.

22. Use the same radiator cap without modifications. Although it is possible to run an open vented system, the pressure cap will give you a virtually “sealed system”. Because there will be no vapor component, the pressure will remain quite low within the system (the only pressure will come from the expansion of the liquid against the air in the top of the expansion tank). It is unlikely that the pressure will ever breathe outward and that outside air will enter the system on a cool-down.

23. Bar’s Leaks Liquid Aluminum Stop Leak is compatible with Evans HDC and is effective in stopping small leaks.
Evans Refractometer Part# E2190
for Reading Water Content of Waterless Coolant

Readings are temperature sensitive, so calibrate before use:

**Calibrate the refractometer** by placing a drop of new Evans Waterless Heavy Duty Coolant on the refractometer glass. Use the small screwdriver supplied with the instrument and set the reading to 57.0. Always clean the glass and the daylight plate with a clean, soft cloth between readings.

Place a small amount of coolant, obtained from a location in the cooling system where the coolant is well-mixed, on the glass and close the daylight plate.

<table>
<thead>
<tr>
<th>°Brix</th>
<th>% water</th>
</tr>
</thead>
<tbody>
<tr>
<td>57.0</td>
<td>0.0</td>
</tr>
<tr>
<td>56.5</td>
<td>1.0</td>
</tr>
<tr>
<td>56.1</td>
<td>2.0</td>
</tr>
<tr>
<td>55.7</td>
<td>3.0</td>
</tr>
<tr>
<td>55.2</td>
<td>4.0</td>
</tr>
<tr>
<td>54.8</td>
<td>5.0</td>
</tr>
<tr>
<td>54.3</td>
<td>6.0</td>
</tr>
<tr>
<td>53.9</td>
<td>7.0</td>
</tr>
</tbody>
</table>