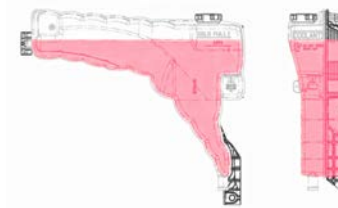


**SB-10056296-6465**

Technical Information Bulletin

42-052

Section

Cooling - 42

Subject

MX Coolant Pump Leakage Definitions & T680/T880 Coolant Level Check Procedure

Release Date

4/16/2014

Condition

This bulletin was created in response to two coolant related problems. The first is the large number of unnecessary coolant pump replacements in the field. The goal is to help the technicians differentiate between normal coolant seepage and true leakage from the coolant pumps. The second issue is a misdiagnosed low coolant condition. These two problems are so closely related that they have been lumped into one bulletin.

Chassis Affected

All chassis equipped with the MX-13 engine built during model years 2013 and 2014.

Action

Information Only

See the "Procedures" below for the correct methods for diagnosing water pump leaks and for checking coolant levels in the surge tank.

Warranty

None. This TIB is for information only.

Background

Trucks are brought to the dealership with low coolant fault codes. The technicians inspect the surge tanks to ensure the engines have enough coolant. If coolant is missing, they check for leaks and, most of the time, they find coolant drips at the "weep hole" of the coolant pump. This is often the cause of a false R&R of the pump.

- Investigations from the division have shown that the "Surge Tank" design is the main root cause for the "Low" coolant fault codes. With RC7 the fault code should be deactivated, but will still remain in the DAVIE Log.
- The replaced, suspect-pumps are sent back to Concentric UK for inspection and bench tests. Most of the pumps pass the test and are marked as "N.T.F." or "No Trouble Found."

The coolant pump's mechanical seal uses engine coolant as fluid film for proper operation.

This fluid film creates a controlled leak path that, over time, will reflect at the weep hole as a dry red coolant spot. This red spot at the weep hole is normal (weep hole refers to the opening in the housing below the shaft).

During hard driving cycles excessive engine vibrations can increase and disturb the fluid film, increasing the chance of a small leakage. This is also a normal pump behavior.

Procedure

PACCAR MX-13 Water Pump Service Recommendations:

Inspect the front of the coolant pump housing, illuminating the area with a spot or portable light.

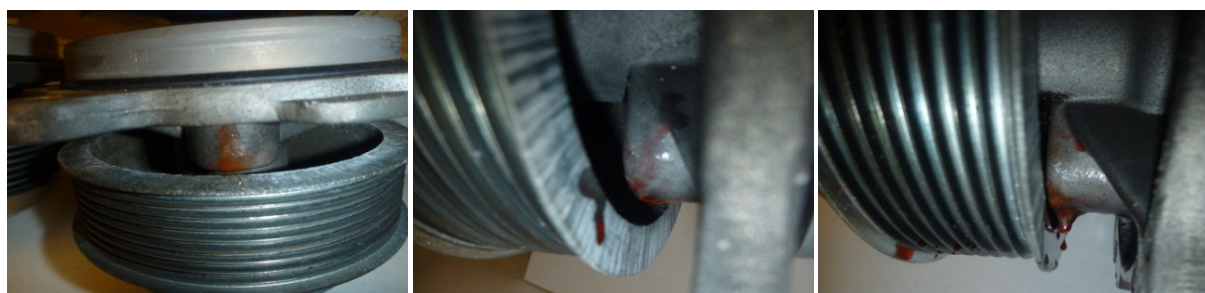
If a leak at the pump shaft seal is discovered, the severity must be classified in order to determine if the coolant pump requires replacement.

Here are examples of weep-hole leak classifications:

Classification I
Wetness/discoloration
Figure 1 - Do not replace

Classification II
Drop build-up
Figure 2 - Do not replace

Classification III
Continual dripping
Figure 3 - Replace



Proper coolant check procedure for T680/T880 to help avoid misdiagnosis:

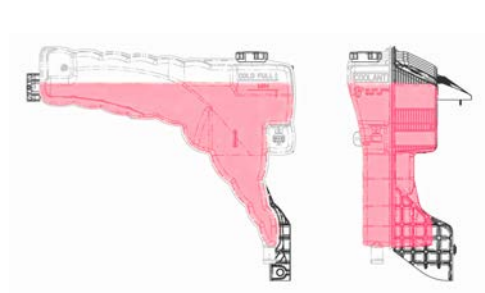
- To avoid being surprised by low coolant levels, periodic checks of the coolant level should become a regular part of the customer's daily routine. If they are familiar with what is "normal," they will notice immediately if something has changed.
- Coolant levels MUST be checked with the vehicle on level ground. If parked on an incline, the unique shape of the T680/T880 coolant expansion tank may cause inaccurate readings which may lead to the tank being overfilled. (If the cooling system has been recently drained, follow the purging procedure in the operator's manual to ensure all air has been properly bled from the system.) See diagrams below.
- The minimum fluid level is determined by the line on the surge tank indicated by the letters "MIN". This indicator is located below the fill cap. Do not add coolant to the surge tank unless the coolant level does not rise to the "MIN" line regardless if the system is hot or cold.



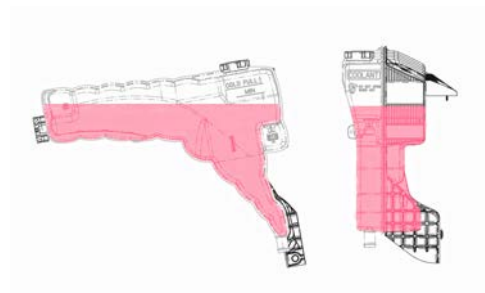
Never open the surge tank when the engine is hot. Removing the fill cap on a hot engine can cause scalding coolant to spray out and burn you badly. If the engine has been in operation within the previous 30 minutes, be very careful in removing the fill cap. Protect face, hands, and arms against escaping fluid and steam by covering the cap with a large, thick rag. Do not try to remove it until the surge tank cools down or if you see any steam or coolant escaping. In any situation, remove the cap very slowly and carefully. Be ready to back off if any steam or coolant begins to escape.

- Top off the cooling system when coolant does not rise to the level indicated as "MIN" on the surge tank. The surge tank is translucent which allows the coolant level to be seen. Add coolant through the surge tank fill cap. Do not remove the pressure cap to fill the cooling system.

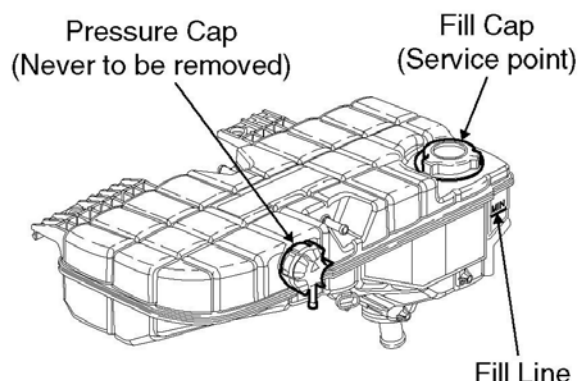
When adding coolant to the system, be accurate. If overfilled, the tank may overflow with the engine running as the coolant heats and expands. The excess coolant is then blown back onto the front of the engine by wind-speed and the radiator fan. This condition has often been misdiagnosed as a leaking water pump. Technicians notice low coolant levels in the surge tank and drops of coolant near the weep hole on the water pump. Avoid this mistake by being absolutely sure that the coolant tank has NOT been recently topped off or shows signs of overflowing. If records indicate that coolant has been recently added, don't immediately assume the water pump is leaking.



Coolant level as seen with vehicle on flat ground.



Coolant level as seen with vehicle on 10° side-slope.



Refilling Your Radiator

1. If your cooling system is built with drain valves in the upper engine coolant pipe, open them before filling the surge tank.
2. Close any open coolant drains in the system.
3. Remove the surge tank fill cap (Do not remove the surge tank pressure cap).
4. Fill the system with premixed coolant through the surge tank fill cap. Pour coolant at a steady flow rate until the surge tank is full (to the base of the fill neck). It may be necessary to pause for one minute and then re-fill if the fluid level has dropped.
5. Close any drain valves that were opened in Step 1.
6. Start the engine and idle at low RPM.
7. During low rpm idle, air will purge from the cooling system which will lower the coolant level in the surge tank. Continue to fill the surge tank until the coolant level remains approximately ½ inch above the "MIN" line. This may take up to two minutes, depending on the outside temperature.
8. Operate the engine throttle until the operating temperature stabilizes (when the thermostat opens).
9. Fill the surge tank as necessary to raise the coolant level to ½ inch above the "MIN" level.
10. Operate the engine at high idle for another 10 minutes and then fill the surge tank again to ½" above the "MIN" level.
11. Replace the surge tank fill cap.
12. Check the coolant level after each trip. Add coolant as necessary. You may find your coolant level is not up to the correct level soon after you have filled the radiator. This may be because all of the trapped air in the system has not yet been purged. It takes a little time for all the air to leave the system after you fill your radiator.

Attachments



[Y53-1200-1B1](#)

Authored by: GH

Access to PACCAR's Enterprise Portal is provided as a benefit of doing business with PACCAR. All applications and content accessed through this system are confidential and proprietary and the property of PACCAR Inc and its suppliers, and must be kept strictly confidential pursuant to the contract licensing such access. Disclosure, publication, release or distribution of any material found on PACCAR systems to any person other than employees with a need to know such information is strictly prohibited. All activity on this system is monitored. If PACCAR suspects or discovers any unauthorized activity, access may be immediately terminated without prior notification. Violators may be subject to legal action.

© Copyright 2014 PACCAR Inc. All rights reserved. We welcome your [feedback](#) on this page. For technical questions or concerns about this page, please contact the [DealerNet Webmaster](#).