



## INSTRUCTION TO SERVICE

**ITS: 6745**

<b>SECTION:</b>	231 Coolant System
<b>WRITTEN BY:</b>	Mike Pearson
<b>SUBJECT:</b>	Replace surge tank low coolant level sensor

# ITS6745

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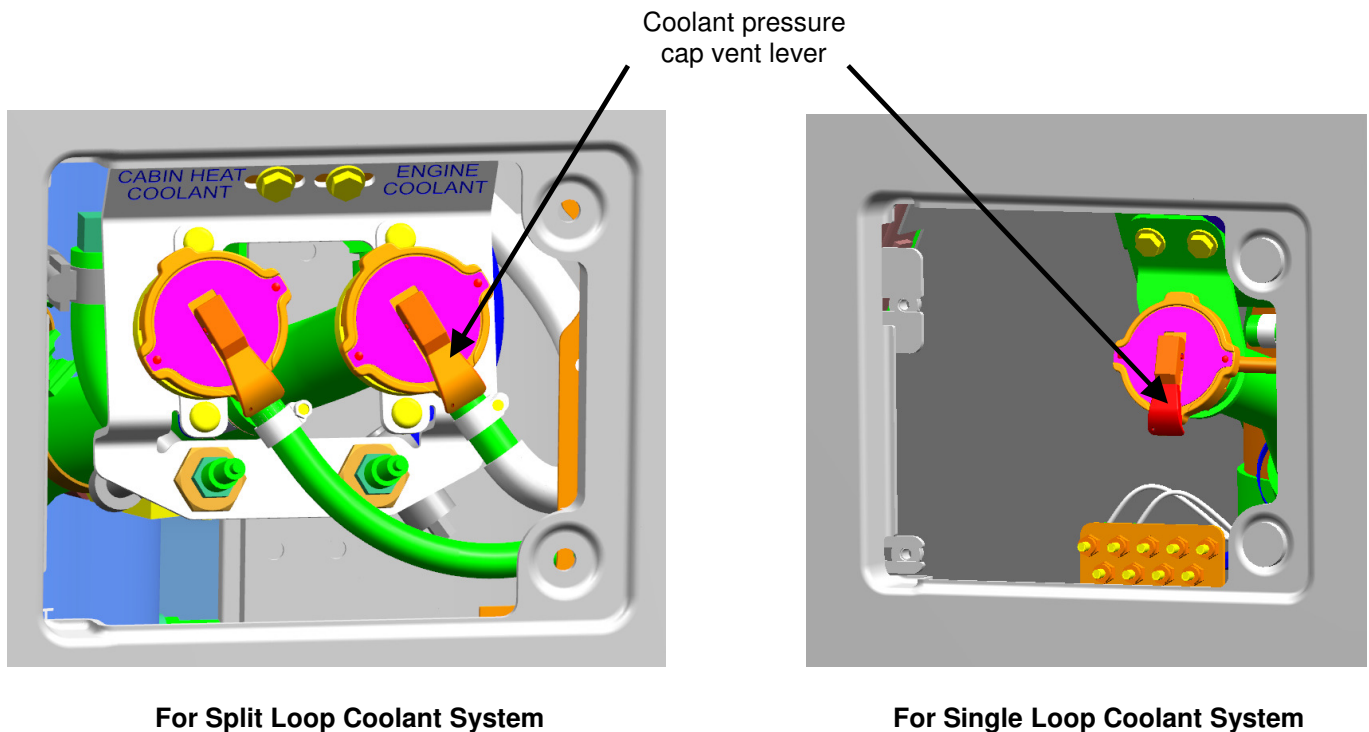
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**PROCEDURE:**

1. Turn the main battery disconnect switch to the “OFF” position.
2. Open the exterior rear engine access door.
3. Open the interior engine access door.
4. Open the coolant surge tank fill access door.
5. For a single loop coolant system, Isolate the heating system loop from the engine as follows;
  - a. Close the coolant outlet valve, located in coolant line between the engine and the booster pump.
  - b. Close heating system return valve, located in heating system return line close to lower radiator tube.
6. For a dual loop coolant system go to Step 7.

**⚠ CAUTION: To avoid personal injury from hot coolant, DO NOT work on the engine if it is hot and the coolant is steaming. Allow the engine to cool before working on the cooling system.**

7. Open the coolant fill door and release the coolant system pressure completely by lifting the coolant pressure cap vent lever on the surge tank pressure cap, see Figure 1 for location.



**Figure 1: Surge Tank Coolant Pressure Cap Vent Lever**

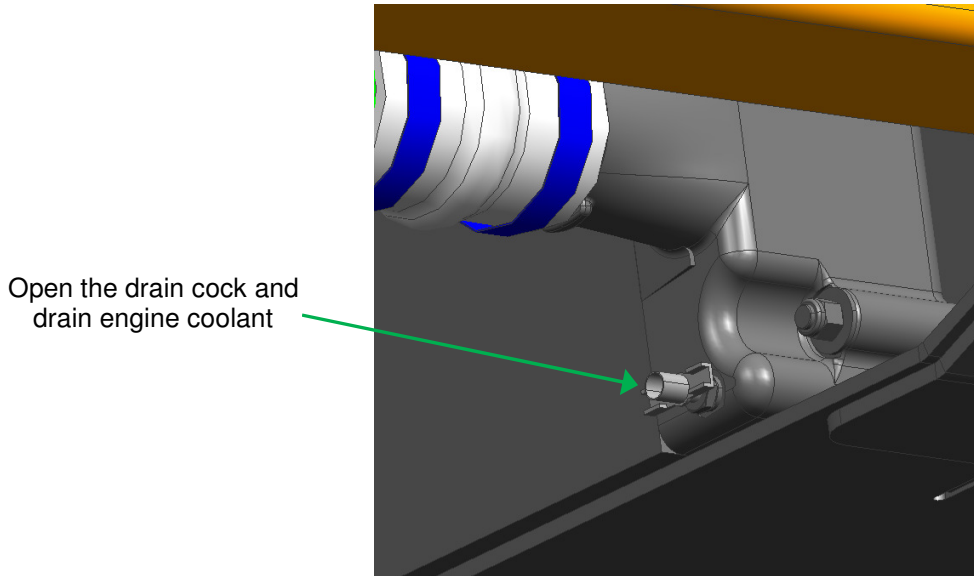
**☞ NOTE: If coolant is to be recovered, make sure container is clean and chemical free. If not, used coolant must be recycled or disposed of in accordance with municipal, state and federal government regulations.**

8. If necessary, raise coach in accordance with the New Flyer Service Manual.



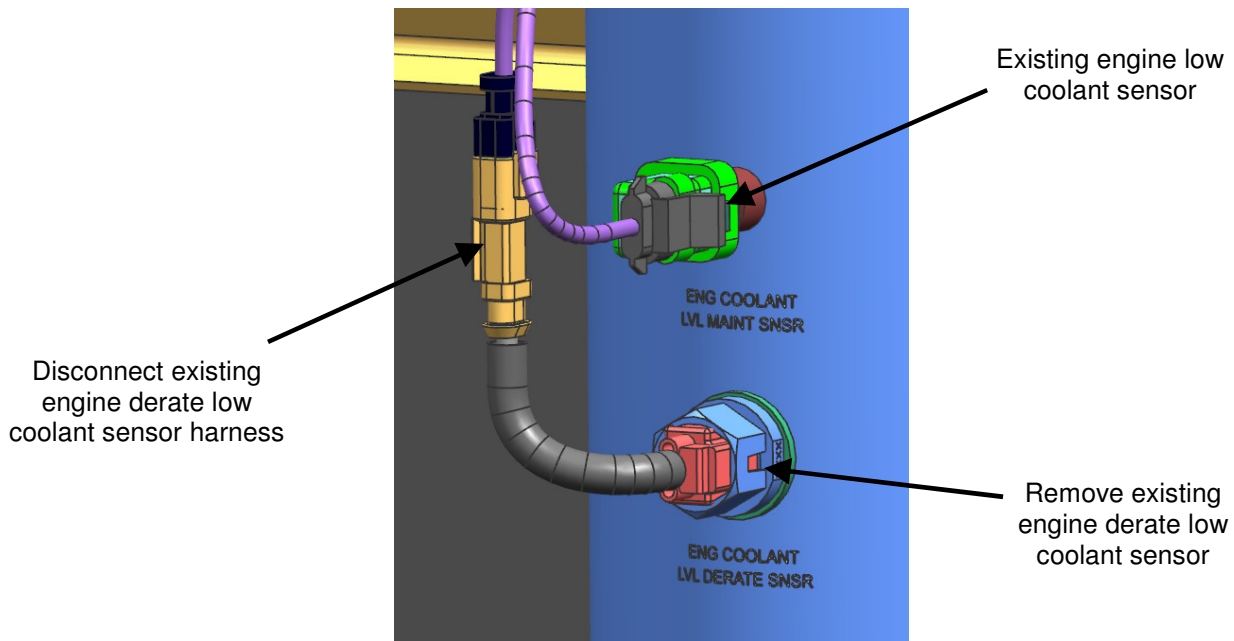
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- Place a suitable container under the radiator drain cock. Open the drain cock and drain engine coolant until level is below the surge tank derate sensor (Ref Figure 4) then close the drain cock. Use the coolant surge tank sight glass to estimate rate of loss. See Figure 2.



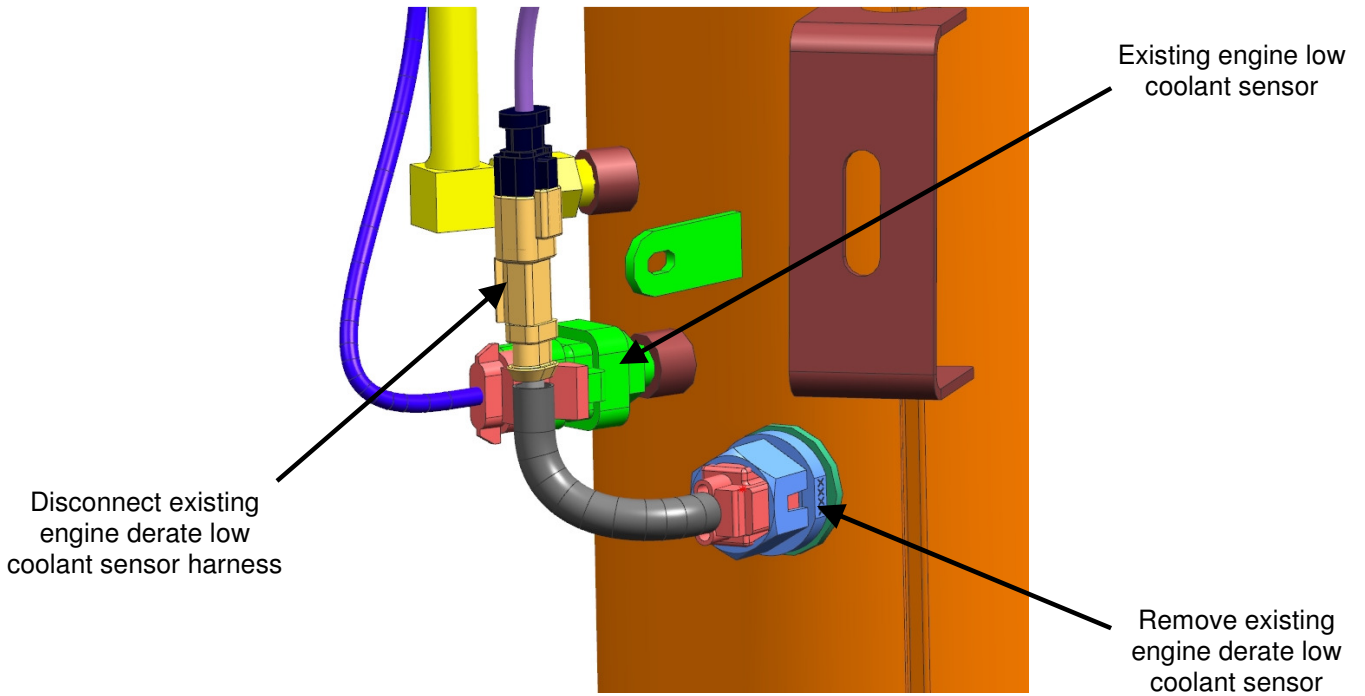
**Figure 2: Drain Engine Coolant**

- Open the rear interior engine access door and locate the surge tank low coolant derate sensor harness (lower sensor is derate). Disconnect the existing low coolant derate sensor harness, the location and appearance may vary a little. See Figure 3.
- Remove and discard the existing (derate) low coolant sensor, the appearance of the surge tank and location of the low coolant sensor may vary, see Figure 3.



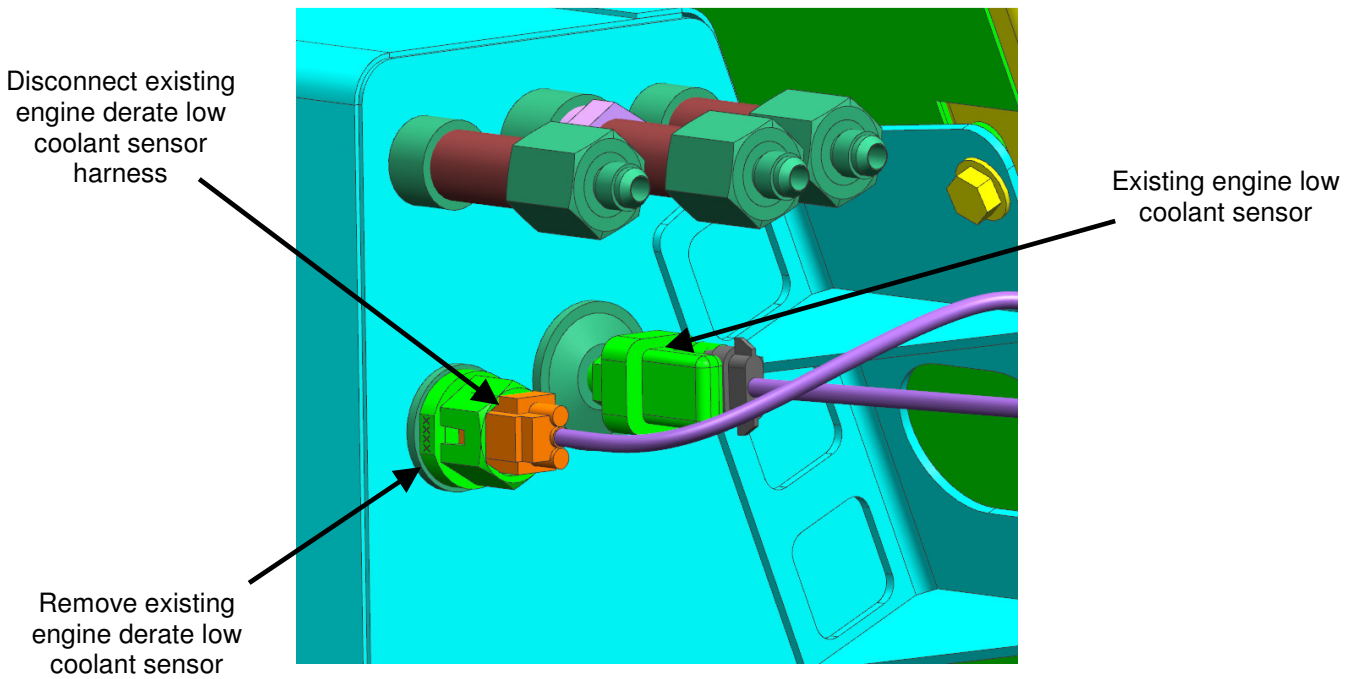
**For Split Loop Coolant System**

**Figure 3a: Low Coolant Sensor Location**



**For Single Loop Coolant System**

**Figure 3b: Low Coolant Sensor Location**



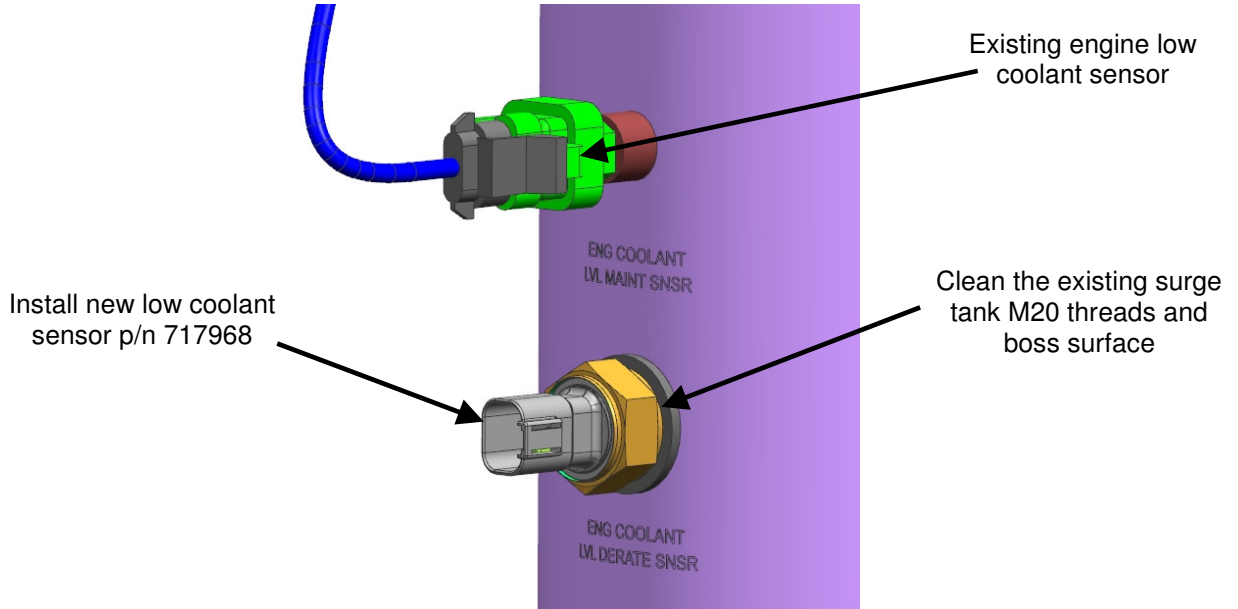
**For Single Loop Coolant System with Horizontal Surge Tank**

**Figure 3c: Low Coolant Sensor Location**



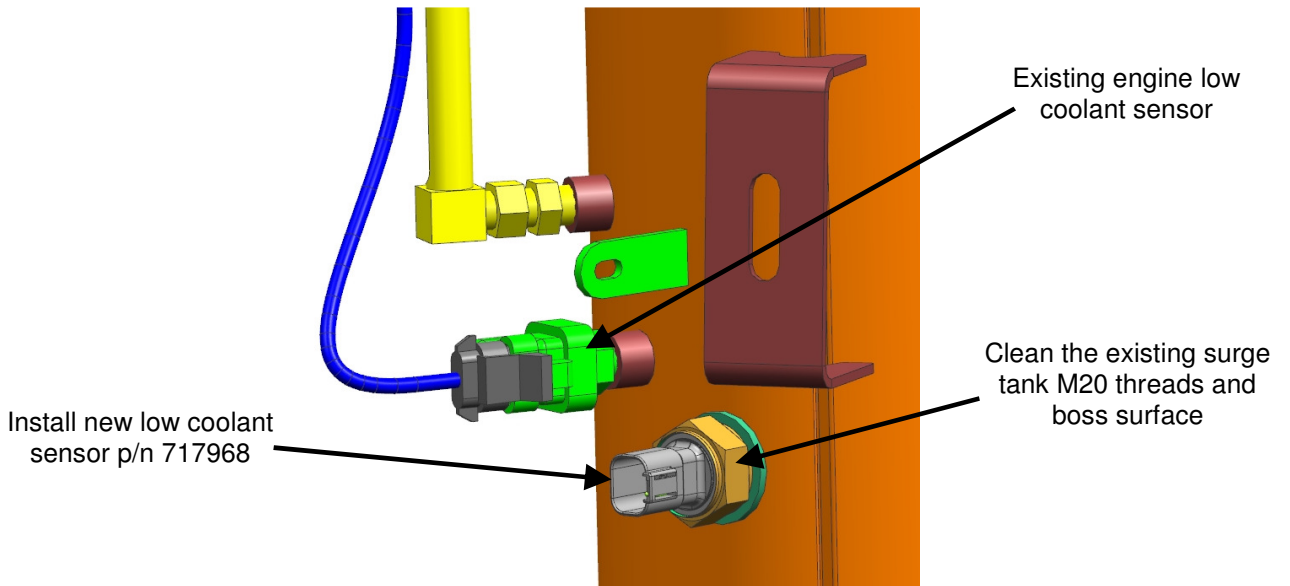
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12. Clean the existing surge tank M20 threads and boss surface from the removed sensor in Step 11, and install new low coolant sensor p/n 717968, torque sensor to 14-20 Nm. See Figure 4.



**For Split Loop Coolant System**

**Figure 4a: Low Coolant Sensor Location**

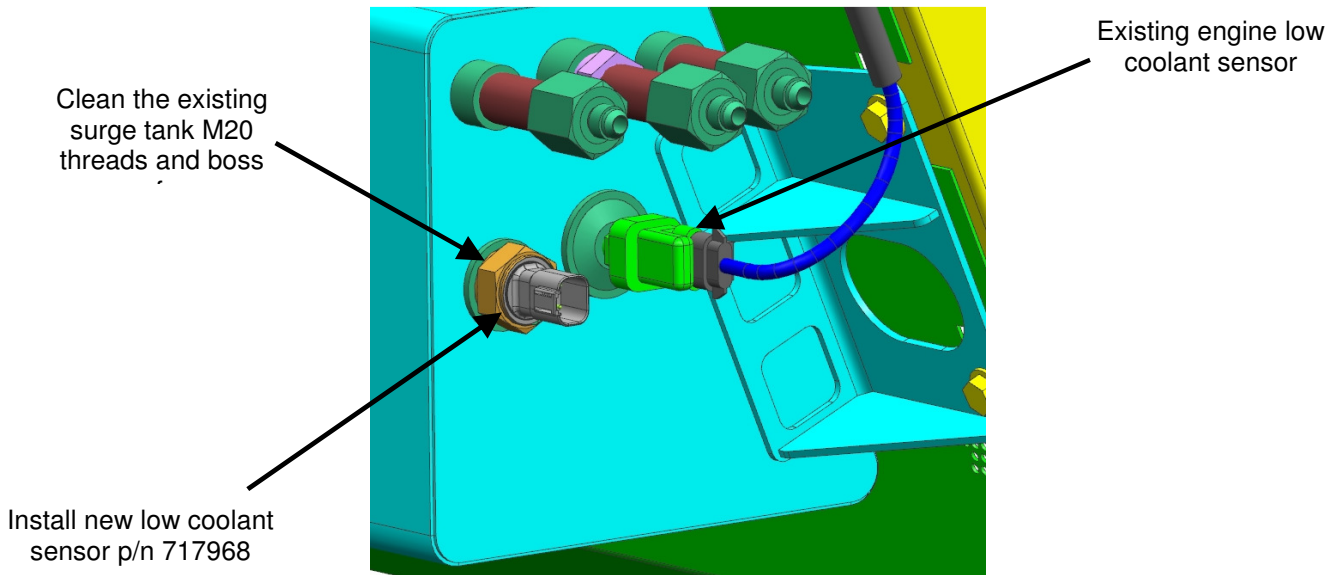


**For Single Loop Coolant System**

**Figure 4b: Low Coolant Sensor Location**



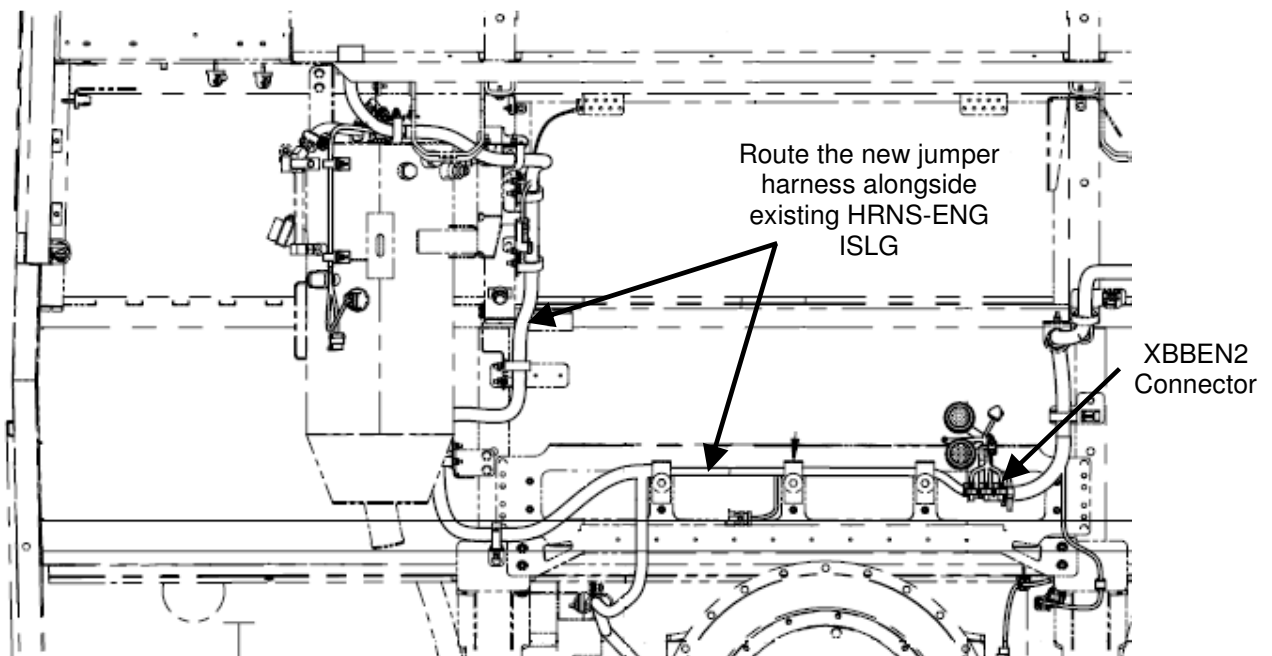
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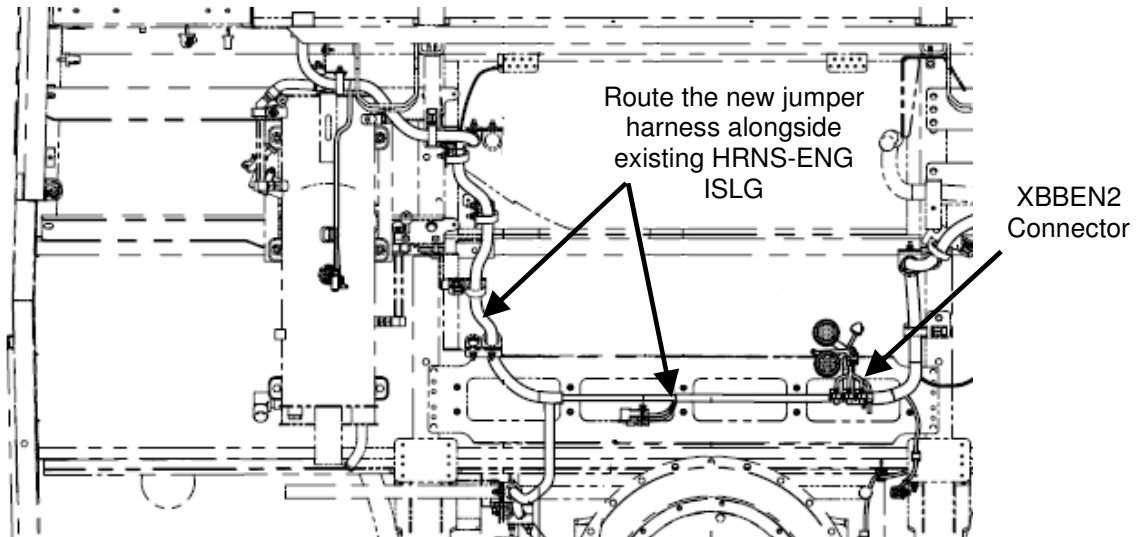
**For Single Loop Coolant System with Horizontal Surge Tank**

**Figure 4c: Low Coolant Sensor Location**

13. Locate the end labelled CLNT LVL DERATE SNSR-TWR on the existing HRNS-ENG G X. It will be the same connector removed from the old coolant derate sensor from Step 10. Ref Figure 3.
14. Locate the XBBEN2 connector on HRNS-ENG ISLG as per Step 13.
15. Gain access to the jumper harness HRNS-COOLANT SENSOR p/n 6472843.
16. Connect the end labelled XBBEN2 on the jumper harness from Step 15 to cavity F on the XBBEN2 connector.
17. Route and secure the new jumper harness alongside existing HRNS-ENG ISLG using tyrapts p/n 5958112, see Figure 5.



**For Single Loop Coolant System**



**For Dual Loop Coolant System**

**Figure 5: Surge Tank Low Coolant Sensors**

18. Locate the end labelled XCLNTJMPR on the new jumper. If the connector is compatible with the connector on CLNT LVL DERATE SNSR-TWR from HRNS-ENG ISLG then connect the harness and go to Step 20. If the connector is not compatible go to Step 19.
19. If the connector on CLNT LVL DERATE SNSR-TWR from HRNS-ENG ISLG is incompatible with the connection on the jumper harness then do the following;
  - a. De-pin the wires from the CLNT LVL DERATE SNSR-TWR and cut off the terminals.
  - b. Terminate the wires with terminal p/n 198432.
  - c. Connect the wires to a DT06-2S-CE13 connector p/n 611028. Connect the red wire to cavity 1 and black wire to cavity 2.
  - d. Connect the end labelled CLNT LVL DERATE SNSR to the new coolant sensor.
20. Top up engine coolant to the cold fill mark.
21. Close the rear interior and exterior engine access doors.
22. Close the coolant fill door.
23. Turn the main battery disconnect switch to the "ON" position.
24. Run the engine for 5 minutes at low idle and top up coolant if needed.



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### LABOUR ESTIMATE

	Operation	Men	Hours	Labour Time M X HR
1	Replace surge tank low coolant level sensor	1	1.0	1.0

### PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	717968	Sensor-Low Coolant, Fozmula M20	1	EA	Vpn S298
2	611028	Kit-2 Circuit Tower, Deutsch	1	EA	If needed
3	5958112	Tyrap-7" Black	4	EA	
4	198432	Terminal-20GA #16 Socket	2	EA	If needed
5	6472843	Hrns-Coolant Sensor Jumper	1	EA	