



Service Memorandum

SM2401 – 7.3L / 6R140 FLUID CROSS CONTAMINATION

Suspect Population: BBCV buses with Ford 7.3L / 6R140 with build dates between August 1st, 2022 through December 21st, 2022

Issue: Coolant and Transmission Fluid cross contamination

Corrective Action: Follow SM2401 Flowchart*

Component Code: 30-100-146

SRTs:

- Contamination Inspection – 0.1 hour (6 minutes)
- Coolant Flush – 4.0 hours
- Transmission Health Check** – 1.0 hour
- Transmission Fluid Replacement – 1.0 hour

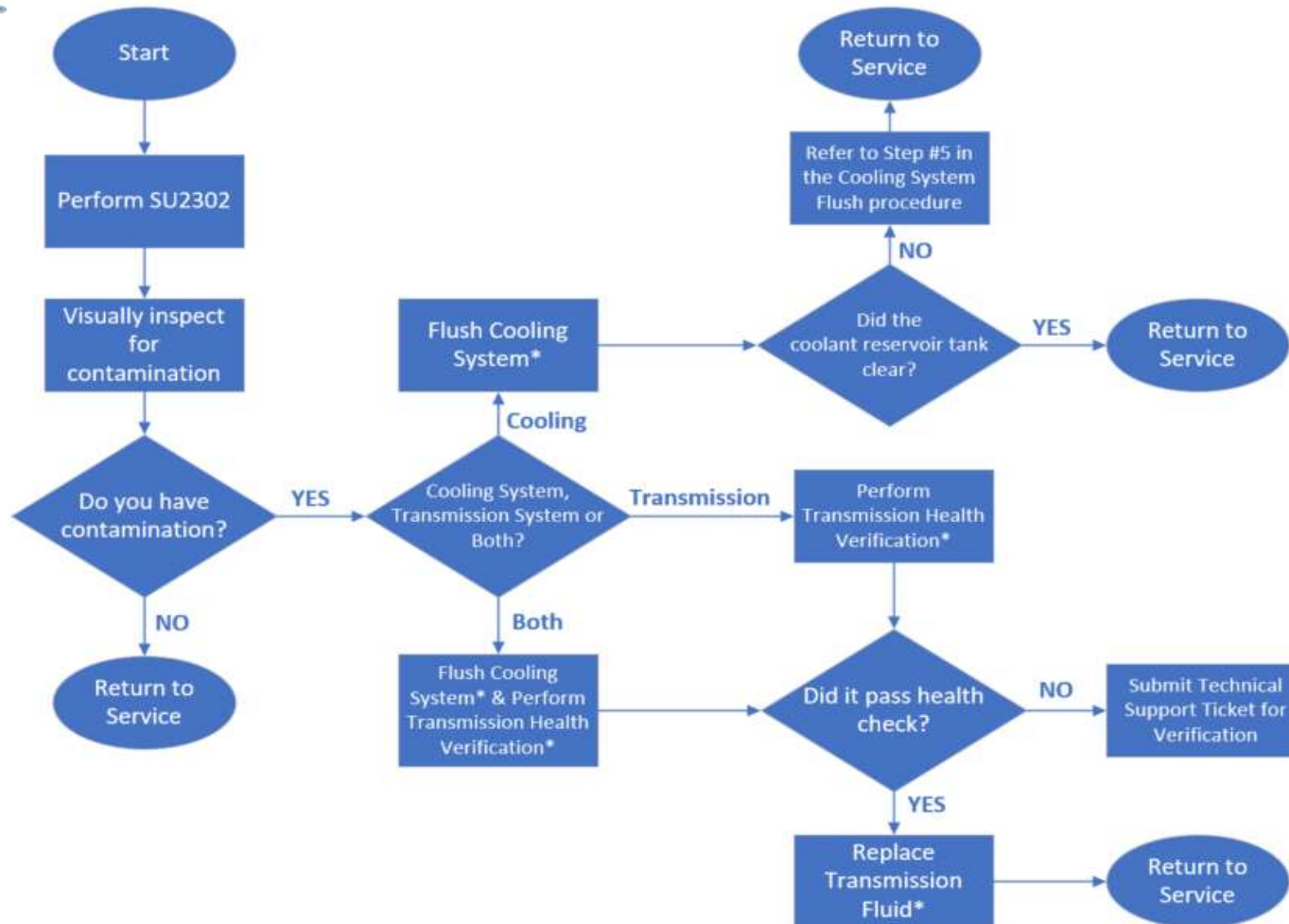
***NOTE 1:** Visually inspecting for contamination and following the transmission health check outlined in this memo replaces prior communications to use glycol test strips.

****NOTE 2:** Warranty claim submission will require including the transmission health check



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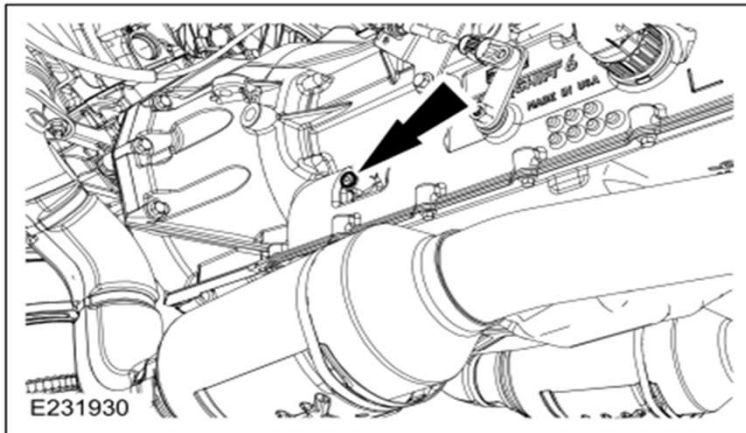
Transmission Health Verification

Scan the code to
watch IDS setup



1. Line Pressure Test:

- Connect 0-400 PSI pressure gauge with M10x1.00 to the line pressure port identified below. DO NOT use 1/8" NPT or case damage will result. Connect IDS and launch datalogger. Monitor PID LINEDSD#. Start engine and compare measured line pressure with value displayed on IDS datalogger. The two should be within 10 PSI of each other. Perform this check at variable RPM's in Neutral, Rev, and Drive. Continue to Step 2 if passed.



2. Stall Test:

- KOER, brake applied, place transmission in gear and hold throttle pedal fully down. Record max RPM. Do not hold in this state for greater than 3 seconds. RPM should stop at 2,450 RPM, +/- 50 RPM. Continue to step 3 if passed.



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3. Diagnostic Road Test:

- KOEO, connect IDS and create a new session

PVT (VACU)	PWRTRN_DRVMODE (MODE)	PWRT_FUNCMON_A (NUM)	PWRT_FUNCMON_B (NUM)	REALTIME (TIME)	
SHFT_DROP (RPM)	SHFT_FLRE (RPM)	SHFT_ID (MODE)	SHFT_LAG (TIME)	SHFT_TIME (TIME)	
SSA_AMP # (CUR)	SSB_AMP # (CUR)	SSC_AMP # (CUR)	SSD_AMP # (CUR)	SSE_AMP # (CUR)	
SSPCC_F (FAULT)	SSPCD (PRESS)	SSPCD_F (FAULT)	SSPCE_F (FAULT)	STARTER_PROT (MODE)	ST
TCC AMP # (CUR)	TCC_F (FAULT)	TCC_OSC # (MODE)	TCC_RAT (RATIO)	TCS_DEPRES (MODE)	
TFT_F (FAULT)	THL_ANG_COR (PER)	TP1 (PER)	TP1_LRN_TRIM (ANGL)	TP_A_2NDRCNT_F (FAULT)	TP_
TQ_FRICTION (PER)	TR (MODE)	TRANS_CLT_STAT (MODE)	TRANS_VOLT_A (MODE)	TRAN_RAT (RATIO)	
TR_FREQ (FREQ)	TSS_F (FAULT)	TSS_SRC (RPM)	VCT1_F (FAULT)	VCT2_F (FAULT)	
VCTDC2 (PER)	VCTSYS (MODE)	VCT_DSD # (ANGL)	VEHMODE (MODE)	VEH_FEL_RATE (FLOW)	

Note: A new IDS session should be created for each bus audited.

- Record & Clear any diagnostic fault codes (Should not be any stored transmission DTC's)
- Reset transmission adaptive tables
 - Toolbox->Transmission-> Reset Transmission Adaptive Tables
- Launch & configure IDS datalogger:
 - Highlight/select PID's listed below
 - Set PID triggers per below

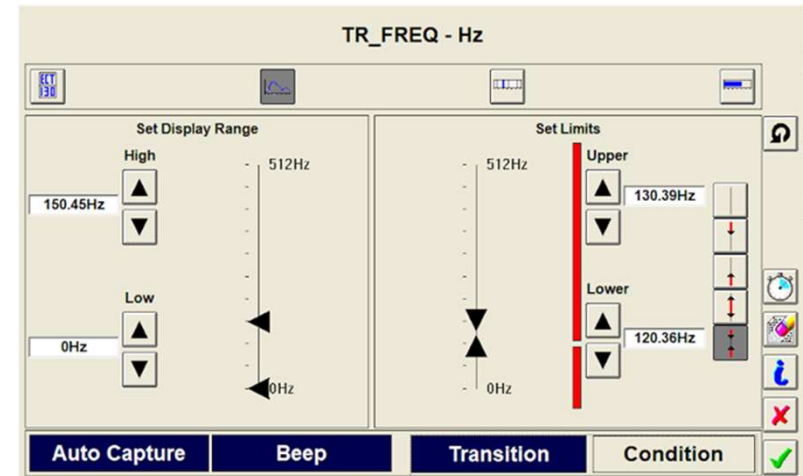
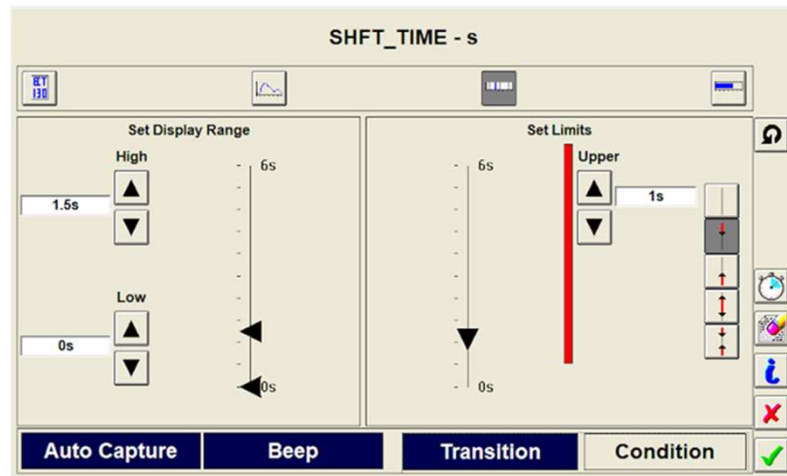
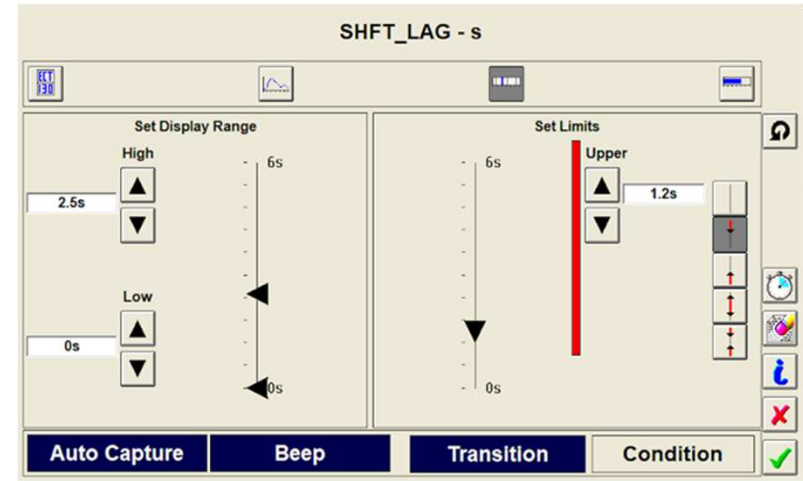
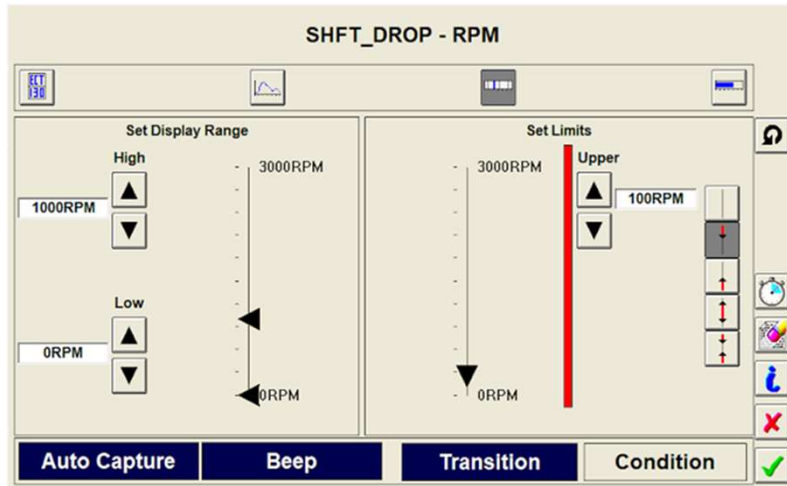
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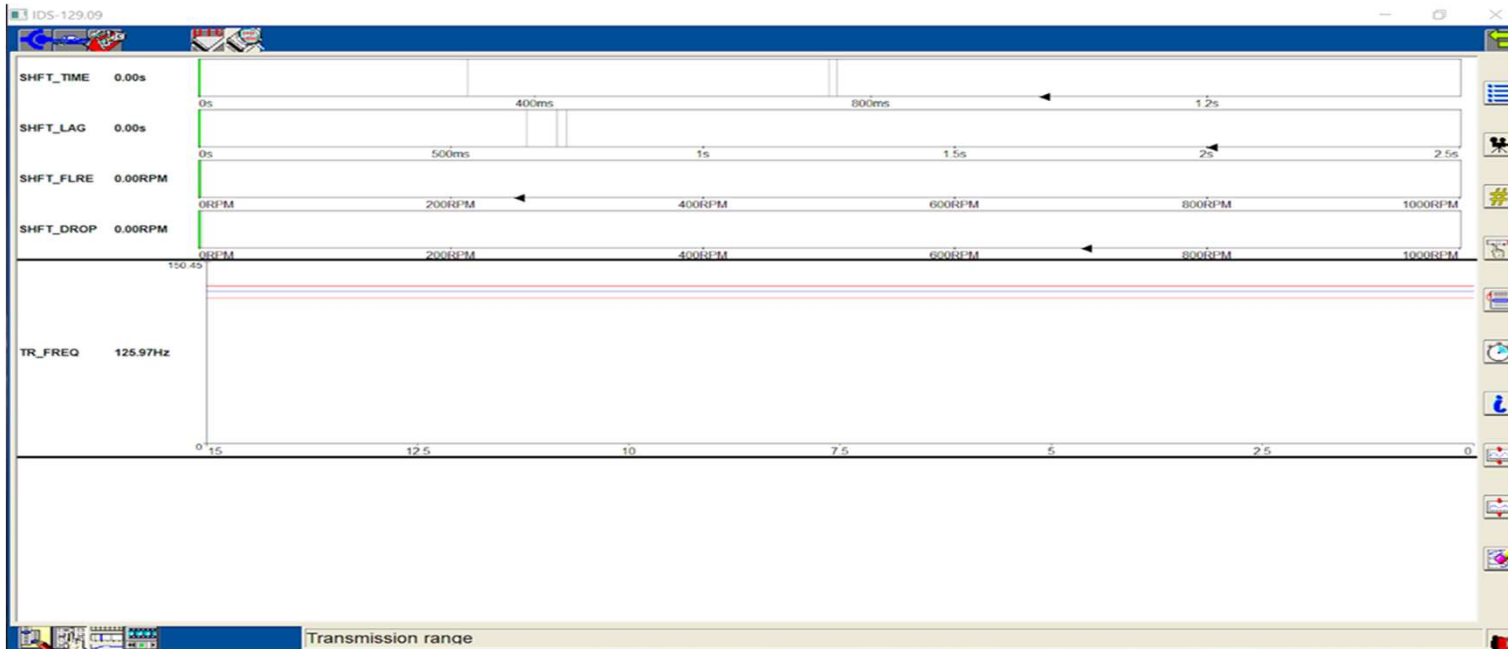
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- Conduct road test per the below direction
 - Bring the engine and the transmission up to operating temperature (185°F).
 - Operate the vehicle with the selector lever in the D position.
 - From a stop, accelerate the vehicle to 50 mph (80 km/h) with the shifts occurring at approximately 3000 rpm. Stay in 6th gear for 30 seconds. Repeat this sequence two additional times, for a total of 3.
- Once returned to the shop, refresh DTC's and verify no transmission related DTC's are present.
- Within the datalogger, check and see if any recordings were made during the road test.
- If no DTC's or recordings were logged, transmission is performing properly.



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Transmission Fluid Replacement:

1. With the transmission still at operating temp, shut the engine down.
2. Place a 5-gallon bucket under the RH/passenger side cooler fitting.
3. Remove the cooler line from the radiator, and aim in downward towards the bucket.
4. Start engine and allow it to idle. ATF will flow from the cooler line into the bucket.
5. Monitor flow and once oil stops flowing, immediately shut engine down.
6. Drop transmission pan and R&R filter. Re-install pan and torque fasteners to 80 in-lbs.
7. Be sure to capture photos of any debris present in the pan, or rusting of components.
8. Pan gasket is reusable.
9. Replace fluid with Mercon LV only, top off as required.

Cooling System Flush:

1. Allow the engine/cooling system to cold soak. Secure for service, open manual heater valves.
2. Drain & dispose coolant per local/state regulations. Cooling system contains between 12-15 gallons of coolant depending on feature content.
3. Vacuum fill cooling system with distilled water and cooling system flushing agent such as Motorcraft™ VC-1 or compatible agent meeting ESR-M14P7-A.
4. Start engine & bring coolant temp to >185°F(85°C). Operate for >20 minutes. Drain & dispose of refuse coolant/flush.
5. Fill with distilled water and bring bus back up to OT. Operate engine for >20 minutes. Drain and inspect water. If contaminated, repeat this step until water comes out free and clear.
 - This may require multiple chemical/water flush sessions to restore depending on the level of contamination.
 - If surge tank does not clear, proceed to replace with new tank.
6. Vacuum fill cooling system to 90% capacity(~2" below cold mark) with Motorcraft™ VC-13DL-G 50/50 Coolant or equivalent. Run engine to OT for >20 min. Using a refractometer, measure the coolant concentration and verify coolant was not diluted with residual water. Adjust with coolant concentrate VC-13 as required.