HYUNDAI **Technical Service Bulletin**	GROUP **ENGINE MECHANICAL**	NUMBER **26-EM-002H**
	DATE **FEBRUARY 2026**	MODEL(S) **SANTA FE (NC)**

SUBJECT: ENGINE NOISE INSPECTION & REPLACEMENT (WARRANTY EXTENSION TXX8)

This TSB supersedes 25-EM-008H to add a surge tank and water ventilator gasket to the Parts Information section, remove the 2WD & 4WD engines (P/N: 135Q1-3CS00QQH & 137Q1-3CS00QQH) and corresponding op codes due to depleted stock, add op codes 40D245R6 & 40D245R8 for engine seized cases, and add a step differentiating the surge tank and intake manifold assembly on page 18.

Description: Certain Santa Fe / Santa Fe XL (NC) vehicles equipped with 3.3L Lambda II GDI engines may exhibit abnormal engine noise or damage. This bulletin describes the procedure to inspect the engine and perform the proper repair based on the results of the inspection. Utilize the flowcharts as a guide to ensure the proper procedure and repair is performed.

The warranty coverage for engine repair or replacement related to engine noise or damage has been extended to 15 years or 150,000 miles from the date of original retail delivery or date of first use, whichever occurs first. Warranty coverage is valid for original and subsequent owners.

NOTICE

Warranty Prior Approval (PA) must be submitted on all applicable vehicles that exhibit the conditions above. PA will provide detailed confirmation of engine approval or denial based on all available case details and applicability of any related terms.

Applicable Vehicles (Certain):

Model Year	Model	Engine
2013 – 2019	Santa Fe / Santa Fe XL (NC)	3.3L Lambda II GDI

SST Information:

Tool Name	Tool Number	Figure	Ordering Information
Bearing Clearance Tester Set Gen III	KQ231-2T312QQH		For complete details related to Bearing Clearance Test SST components (including the Crank Rotator Tool), refer to **TSB 24-GI-008H** (or latest version).

Circulate To: General Manager, Service Manager, Parts Manager, Warranty Manager, Service Advisors, Technicians, Body Shop Manager, Fleet Repair

SST Information (continued):

Tool Name	Tool Number	Figure	Ordering Information
Outer Tie-Rod Ball Joint Remover	09568-4A000		Website: https://hyundaiessentialtools.com/ Email: Hyundaitools@snapon.com Phone: 1-855-763-9199 Hours: 7 AM – 7 PM CST Commercially available equivalent tools may be used instead.
Fuel Injector Combustion Seal Installer	09353-2B000		
Oxygen Sensor Socket Wrench	09392-1Y100		
Torque Wrench Socket	09314-3V100		
AGA Lift Table XL	AGALIFTXL		
Stud Extractor (commercially available)	N/A		

NOTE 1: Commercially available equivalent tools may be used instead.

Required Equipment/Supplies:

Name	Equipment/Supply #	Figure	Remarks
17 mm 12-Point Metric Flank Drive® Reversible Ratcheting Box/ Speed Open-End Combination Wrench	SRXRM17 (Snap-on)		For unfastening torque converter bolts to separate engine/trans between bellhousing if engine cannot rotate.

Parts Information (when engine replacement is necessary):

Model	Part Name	Part Number	Qty	Remarks
	Engine Sub-Assy	117R1-3CS00QQH	1	**2WD** does **NOT** include OPS wiring harness
	Service Kit	20251-3CS2WQQH	1	**2WD**
	Engine Sub-Assy	118R1-3CS00QQH	1	**4WD** does **NOT** include OPS wiring harness
	Service Kit	20251-3CS4WQQH	1	**4WD**
	Gasket – Water Ventilator	28215-3CFB0	1	Part is **NOT** included in the service kit Order when engine replacement is required
	Tank Assy – Surge Tank	29210-3CFC1	1	Replace for engine seize and/or other conditions listed in **TSB 26-EM-001H** *(or latest version)*
	Green Coolant	00232-19010	2	N/A
	Engine Oil	Use Hyundai OEM Authorized Synthetic Engine Oil	7	Use 5W-30. Synthetic Engine Oil Dealer will be reimbursed under 00232-ENGOILWAR for QTY 7.

Parts Information
(only when PA for Engine Sub-Assembly is declined or engine replacement is NOT required):

Model	Part Name	Part Number	Qty	Remarks
Santa Fe / Santa Fe XL (NC)	Gasket - Rocker Cover, RH	22441-3CGA1	1	N/A
	Gasket - Surge Tank	29215-3CFA1	1	
	Bolt	29213-3C010	2	Surge Tank Mounting Bolts
	Gasket – Throttle Body	35101-3C000	1	N/A

NOTE 1: Order engine sub-assemblies with the Oil Pressure Switch (OPS) wiring harness until stocks are depleted. Order engines without the OPS wiring harness if the engine sub-assembly with OPS wiring harness is **NOT** available.
NOTE 2: Ensure the engine's core is returned under the current Engine-Core-Return process and entered within the Core Return Portal. There will be **NO** exceptions granted for failure to return a core.
NOTE 3: Do **NOT** damage the engine prior to shipping the core.

Parts Information:

Part Name	Part Number		Remarks
Engine Service Kit	20251-3CS2WQQH **2WD**	20251-3CS4WQQH **4WD**	(For use with Engine Sub-Assembly)
Includes Contents Below			
High Pressure Fuel Pipe – Upper	35305-3C104	35305-3C104	Qty: 1
High Pressure Fuel Pipe – Lower	35305-3C330	35305-3C330	Qty: 1
Water Pipe Assembly – O-Ring	25462-35504	25462-35504	Qty: 2
Exhaust Manifold Gasket – LH	28521-3C702	28521-3C702	Qty:1
Exhaust Manifold Gasket – RH	28521-3C712	28521-3C712	Qty: 1
Front Exhaust Pipe Gasket	28751-2B550	28751-2B550	Qty: 2
Center Exhaust Pipe Gasket	28751-3S100	28751-3S100	Qty: 1
Inlet Manifold – Gasket	28215-3CFA0	28215-3CFA0	Qty: 6
Surge Tank – Gasket	29215-3CFA1	29215-3CFA1	Qty: 1
Intake Manifold Bolts	29213-3C010	29213-3C010	Qty: 2
Tip Seal – Injector	35313-2T000	35313-2T000	Qty: 12
Tip Seal – Injector	35312-3C720	35312-3C720	Qty: 12
Clip – Injector	35309-3C550	35309-3C550	Qty: 6
Upper O-Ring (Injector)	35312-3C700	35312-3C700	Qty: 6
Backup O-Ring (Injector)	35312-3C710	35312-3C710	Qty: 6
Injector Bracket – Washer	35313-3C200	35313-3C200	Qty: 6
Steering Joint Shaft Bolt	56415-1M000	56415-1M000	Qty: 1
Drive Plate Bolt	23311-35050	23311-35050	Qty: 8
Torque Converter Bolt	42121-21720	42121-21720	Qty: 6
Roll Rod Mount Bolt	21920-2T000	21920-2T000	Qty: 1
Exhaust Manifold Self-Locking Nut	10225-10003	10225-10003	Qty: 16
Cotter Pin (Tie-Rod End)	57799-4D200	57799-4D200	Qty: 2
Thermostat Housing Gasket	25651-3CAA0	25651-3CAA0	Qty: 1
Thermostat Housing Gasket	25652-3CAA0	25652-3CAA0	Qty:1
Oil Level Rod O-Ring	26614-2B000	26614-2B000	Qty: 1
Castle Nut (M22)	49551-3X000	49551-3X000	Qty: 2 Production Date: Before 11/24/2015
Castle Nut (M24)	49551-4T000	49551-4T000	Qty: 2 Production Date: After 11/24/2015
Engine Bracket Self Flange Nuts	51759-07000	51759-07000	Qty: 3
HPFP O-Ring	35322-3C210	35322-3C210	Qty: 1
HPFP Mounting Bolt	11405-06206-K	11405-06206-K	Qty: 2
Water Temperature Sensor Assembly	39220-3C100	39220-3C100	Qty: 1
A/C Suction Side O-Ring	97690-34330	97690-34330	Qty: 1
A/C Discharge Side O-Ring	97690-34350	97690-34350	Qty: 1
Sway Bar End Link Self Locking Flange Nuts	54559-1F000	54559-1F000	Qty :2
Engine and Transmission Alignment Dowel (Bush)	14331-12160	14331-12160	Qty :2
Propeller Shaft Bolts – Rear	Not Applicable	49129-C5200	Qty: 3
Propeller Shaft Bolts – Front	Not Applicable	49129-4H700	Qty: 4

Warranty Information (Inspection Op. Codes):

Model	Op. Code	Operation	Op. Time
Santa Fe / Santa Fe XL (NC)	40D119I0	Seized/External Damage (YES) + Oil Cap Condition (PASS) + Submit PA Includes: Engine Rotation Check	0.6 M/H
	40D119I1	Seized/External Damage (YES) + Oil Cap Condition (PASS/NO PASS) + Rear Bank Rocker Cover Removal + Submit PA Includes: Engine Rotation Check	1.6 M/H
	40D119I2	Seized/External Damage (NO) + BCT Front Bank (NO PASS) + Oil Cap Condition (PASS) + Submit PA	0.7 M/H
	40D119I3	Seized/External Damage (NO) + BCT Front Bank (NO PASS) + Oil Cap Condition (PASS/NO PASS) + Rear Bank Rocker Cover Removal + Submit PA	1.7 M/H
	40D119I4	Seized/External Damage (NO) + BCT Front & Rear Bank (NO PASS / NO BCT) + Oil Cap Condition (PASS) + Submit PA Includes: Compression Test for No BCT	1.7 M/H
	40D119I5	Seized/External damage (NO) + BCT Front & Rear Bank (NO PASS / NO BCT) + Oil Cap Condition (PASS/NO PASS) + Rear Bank Rocker Cover Removal + Submit PA Includes: Compression Test for No BCT	2.0 M/H
	40D119I6	Seized/External Damage (NO) + BCT Front & Rear Bank (PASS) + Reassemble Engine + Follow Normal Diagnostics (TT') + Submit PA + Engine Replacement **Recommended**	1.9 M/H
	40D119I7	Seized/External Damage (NO) + BCT Front & Rear Bank (PASS) + Reassemble Engine + Follow Normal Diagnostics (TT') + Engine Replacement **NOT Recommended**	1.7 M/H

Warranty Information (Engine Replacement/Reinstallation Op. Codes):

Model	Op. Code	Operation	Op. Time	Causal Code	Nature Code	Cause Code
Santa Fe / Santa Fe XL (NC)	40D245R1	Engine Sub-Assembly Replacement **(2WD)** **(P/N 117R1-3CS00QQH)** (Wheel Alignment Adjustment Included)	8.8 M/H	173R1-3CA00	Q55	ZZ1
	40D245R3	Engine Sub-Assembly Replacement **(4WD)** **(P/N 118R1-3CS00QQH)** (Wheel Alignment Adjustment Included)	9.2 M/H			
	40D245R4	Engine Sub-Assembly Reinstallation **NOT** Replaced (PA Declined or Engine Replacement **NOT** recommended)	0.6 M/H			
	40D245R6	Engine Sub-Assembly Replacement **(2WD)** **(P/N 117R1-3CS00QQH)** (Wheel Alignment Adjustment Included) **(Engine Seized Case)**	8.8M/H			
	40D245R8	Engine Sub-Assembly Replacement **(4WD)** **(P/N 118R1-3CS00QQH)** (Wheel Alignment Adjustment Included) **(Engine Seized Case)**	9.2M/H			

NOTE 1: Submit claim under 'Campaign' Entry screen.
NOTE 2: All 'TT' time must be submitted under 1 separate claim using the same repair order number:

- If a part is in need of replacement and the malfunction is directly caused by Warranty Extension TXX8 related engine failure, or if additional labor is required while performing Warranty Extension TXX8:
  - Submit with 173R1NTT using the engine causal part number associated with the TXX8 op code AND
  - Ensure part replacement and punch times are accurate and that they match the labor performed along with the service manager's signature approving the TT time.
  - Refer to Documents Library posting for details regarding ATT/NTT Best Practice Guide. **Location: Hyundai Tech Info > Service > WebDCS > Warranty > Warranty Support Portal > Search 'ATT' > Select 'ATT/NTT Best Practice Guide and Supplemental Worksheet**
- If the part replacement does not require additional labor, follow the above steps and use the system minimum of .00 labor time with a quantity of 1.
- For Op Codes 40D119I6 and 40D119I7, submit for 'TT' time to identify root cause of engine noise. Op code 40D119I7 is for vehicles that have confirmed external engine noise and do not require an engine replacement.
- For OP Code 40D119I6, submit for 'TT' time if the PA Department requests rocker cover removal. For certain op codes, labor time for removal of the Rear Bank Rocker Cover (RH) is included if mentioned in applicable operation's description

NOTE 3: If a part is found in need of replacement while performing this warranty extension and the affected part (malfunction not directly caused by TXX8) is still under warranty, submit a separate claim using the same repair order. If the affected part(s) are out of warranty, submit a Prior Approval request for goodwill consideration prior to performing the work.
NOTE 4: If the Engine Sub-Assembly is declined or replacement is not recommended, replace all non-reusable parts and use OP code 40D245R4.
NOTE 5: Two op codes may be submitted, one for inspection and one for engine replacement.
NOTE 6: If engine replacement is required, dealers will be compensated for 7 quarts of engine oil under part number 00232-ENGOILWAR and 2 gallons of green coolant under part number 00232-19010.
NOTE 7: Refer to the 1st Warranty table for the causal part, nature code, and cause code.

Service Procedure:

DIGITAL DOCUMENTATION

This TSB includes repair validation photos. Refer to the latest Warranty Digital Documentation Policy for requirements.

NOTICE

Applying the recommended torque to all fasteners is essential to reduce potential issues from occurring after the service procedure.

Table of Contents

Engine Oil Maintenance Information

Poor oil maintenance can reduce engine lubrication and cooling efficiency. This may cause abnormal internal engine wear, carbon, buildup, sludge, and other issues. These conditions may require inspection before engine warranty approval.

NOTICE

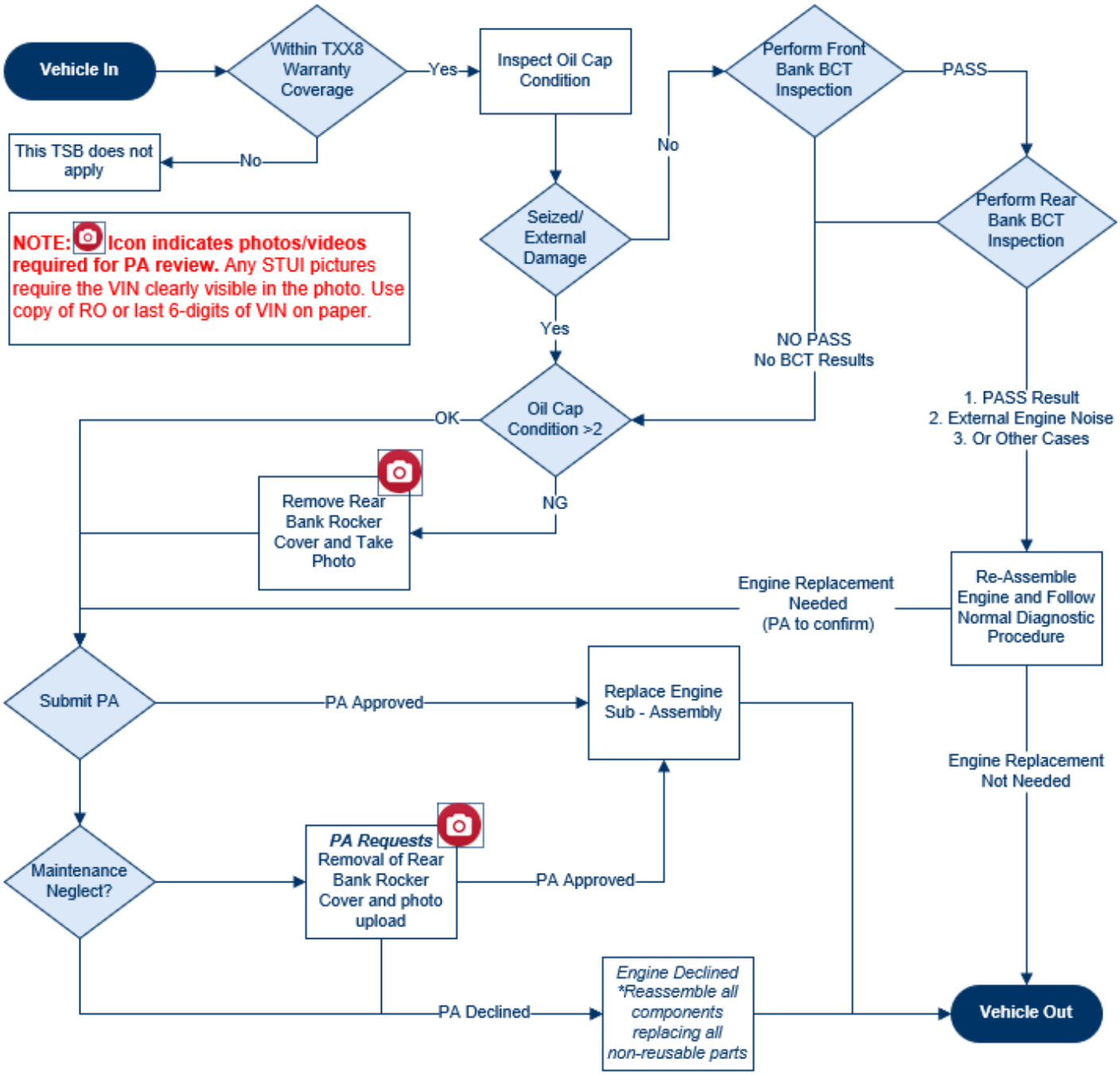
- Engine oil lubricates, cools, and operates key engine components.
- Regular oil changes and oil level checks are required for all engines.
- Check and top off engine oil as needed between oil changes.

Piston Ring Deposits

Oil Sludge

Excessive Wear

Flowchart:


Vehicle In
Within TXX8 Warranty Coverage
Yes
No
This TSB does not apply
Inspect Oil Cap Condition
Seized/ External Damage
No
Yes
Perform Front Bank BCT Inspection
PASS
NO PASS
No BCT Results
Perform Rear Bank BCT Inspection
1. PASS Result
2. External Engine Noise
3. Or Other Cases
NOTE: Icon indicates photos/videos required for PA review. Any STUI pictures require the VIN clearly visible in the photo. Use copy of RO or last 6-digits of VIN on paper.
Oil Cap Condition >2
OK
NG
Remove Rear Bank Rocker Cover and Take Photo
Engine Replacement Needed (PA to confirm)
Re-Assemble Engine and Follow Normal Diagnostic Procedure
Submit PA
PA Approved
Replace Engine Sub - Assembly
Engine Replacement Not Needed
Maintenance Neglect?
PA Requests Removal of Rear Bank Rocker Cover and photo upload
PA Approved
PA Declined
Engine Declined *Reassemble all components replacing all non-reusable parts
Vehicle Out

Initial Inspection

1. Verify if the vehicle is within the TXX8 warranty extension coverage:

Information

The warranty coverage for the engine repair or replacement related to engine noise or damage has been extended to **15 years** or **150,000 miles** from the date of original retail delivery or date of first use, whichever comes first. Warranty coverage is valid for original and subsequent owners.

- If the vehicle is within warranty coverage, proceed with **step 2**.
- If the vehicle is out of warranty coverage, then this TSB does **NOT** apply. Follow normal diagnostic procedures.
    - The service procedure is now complete.

2. Remove the engine oil cap.

Information

The oil cap condition will be used to determine if the rear bank rocker cover removal is needed.

3. ***DIGITAL DOCUMENTATION***

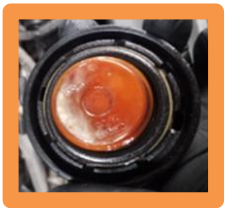
Using the STUI camera function, take a photo of the engine oil cap.

Upload the photo to STUI.

NOTE: If the STUI camera function is **NOT** used, write the last 6 digits of the VIN and date of repair on a piece of paper to include in the photo.

PASS


NO PASS



4. Inspect for engine seize or external lower end damage to the cylinder block:
   - If engine is **NOT** seized and external damage is **NOT** found, then proceed to the **Bearing Clearance Test (BCT)** procedure.
   - If engine is seized or external damage is found:
     A. Capture at least 1 photo of the damage for PA.
     B. Remove the rear bank rocker cover depending on the oil cap condition chart on **step 3** of **page 9.**
     C. Submit a PA.

NOTICE

PA is required for engine replacement. Submit a PA and refer to the Dealer Best Practices guide for the latest requirements for engine approval.

- A picture of the lower end damage is required if present.

Additional documentation may be required:

- Refer to the Prior Approval Submission Documentation's last page for PA required items located on Hyundai Tech Info (HTI).
  HTI > Service > Dealer Resources > Documents Library > Warranty > 'Engine PA Required Documentation' and/or **'PA Dealer Best Practices'**
- Use the STUI feature on the GDS to take and submit pictures.

Engine Rotation Check

1. Rotate the crankshaft with the crankshaft rotator tool.
   - If the crankshaft does **NOT** turn with moderate force, measure the required torque with a torque wrench.
   - If the SST or shop tools do **NOT** fit the vehicle, then remove the front passenger wheel, wheel liner, or underbody tray as needed.

NOTICE

If engine accessory components are seized, then remove the accessory belt before performing the crankshaft rotation check.

2. Evaluate the crankshaft rotation:
   - If the crankshaft rotates up to 2 full turns (**720 degrees**) then proceed to the **Bearing Clearance Test (BCT)** procedure.
   - If torque required **exceeds 94 lb-ft**, then documentation via STUI video is required. Follow the instructions in the Notice box below to submit PA.

Information

All vehicles in this TSB must complete a Bearing Clearance Test (BCT) unless the engine is seized or external damage is visible.

NOTICE

PA is required for engine replacement. Submit PA and refer to the Dealer Best Practices guide for the latest requirements for engine approval.

If the engine does **NOT** rotate properly, the following STUI video is required:

- VIN plate (on windshield or doorjamb)
- Attempt to rotate the crankshaft with a torque wrench set to **94 lb-ft**
- Save and submit the torque value.

Additional documentation may be required:

- Refer to the Prior Approval Submission Documentation's last page for PA required items located on Hyundai Tech Info (HTI).
  HTI > Service > Dealer Resources > Documents Library > Warranty > 'Engine PA Required Documentation' and/or **'PA Dealer Best Practices'**
- Use the STUI feature on the GDS tablet to take and submit pictures.

Bearing Clearance Test (BCT)

Information

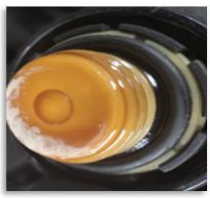
Refer to **25-EM-006H (or latest version)**, **Bearing Clearance Test Service Procedure**

Perform BCT:

A. If the BCT result is **PASS**
   - Save a screenshot of the result.
   - Reinstall all parts in the reverse order of the removal process and replace non-reusable parts.
   - Follow a normal diagnostic procedure if both front and back banks show a **PASS**.
   - Do **NOT** remove the front rocker cover.

B. If the BCT result is **NO PASS**
   - Save a screenshot of the result.
   - Inspect the oil cap condition to determine **PASS** or **NO PASS**.

- **PASS** – proceed to the next step.
- **NO PASS** – remove the rear bank rocker cover and provide images of the valvetrain and inside of the cover. Include a sticky note of the repair date.

PASS		NO PASS		
				

NOTICE

If the oil cap is in **PASS** region, rear bank rocker cover removal is **NOT** required for PA. However, the PA department may still request valvetrain images if maintenance gaps are suspected.

If the oil cap is in the **NO PASS** region, remove the rear bank rocker cover and upload the images of the valvetrain and inside the rear bank rocker cover to STUI with a sticky note with the date of repair.

- Do **NOT** remove the front bank rocker assembly.
  - Submit PA for engine replacement.

NOTICE

The PA department may request valvetrain images of the rear bank rocker cover if maintenance gaps are suspected, even if the oil cap result is **PASS**.

  - Upon PA approval, complete the remaining steps of the TSB.
  - Check DTCs and perform the appropriate diagnostics service to ensure **NO** warning lights are present.
  - Use the proper operation code for the engine inspection and replacement.

C. If BCT result is **NO** **BCT: 1 or more** cylinders may have been skipped during the BCT:
- Save a screenshot of the result.
- Record the error code in the Repair Order (RO).
- Follow the **Skipped Cylinder STUI Video Submission** on **pages 18-21** of **25-EM-006H** (or latest version) to properly record a STUI video of the **Skipped Cylinder Test**.
- Do **NOT** remove the front bank rocker assembly.
- Submit a PA for the engine replacement.

NOTICE

The PA department may request valvetrain images of the RH rear bank rocker cover if maintenance gaps are suspected, even if the oil cap result is **PASS**.

- Upon PA approval, complete the remaining steps of the TSB.
- Check DTCs and perform the appropriate diagnostics service to ensure **NO** warning lights are present.
- Use the proper operation code for the engine inspection and replacement.

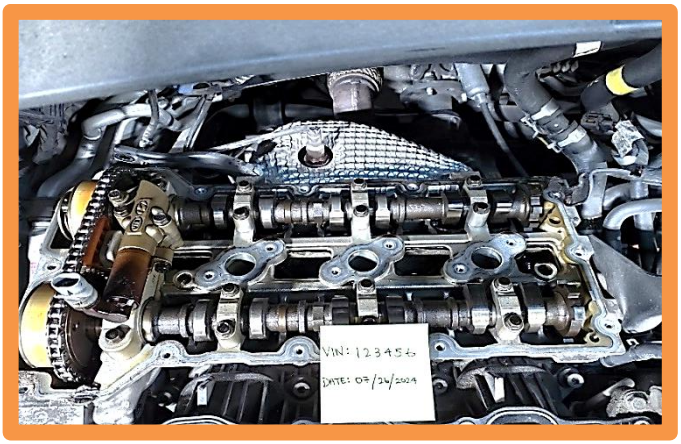
Rear Bank Rocker Cover Digital Documentation Guidelines:

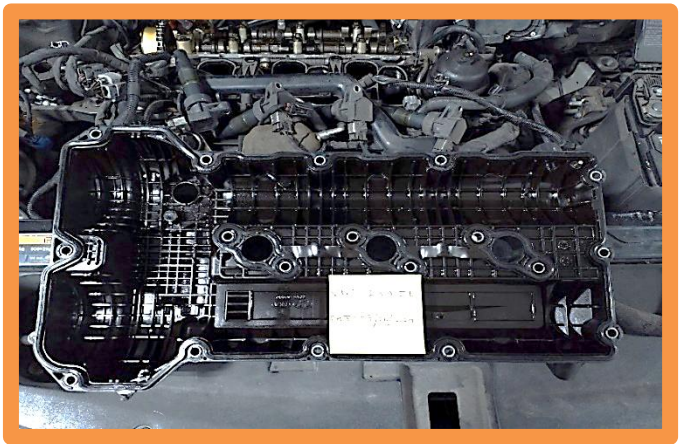
1.

DIGITAL DOCUMENTATION

Ensure the photo is clear and focused, and matches the examples shown to the right when submitting valvetrain images via STUI.

Do **NOT** remove the front bank LH rocker cover for valvetrain images. This can disturb the high-pressure fuel system and line. Claims may be subject to chargeback if the front bank rocker cover is removed.





Engine Replacement

NOTICE

Replace the Engine Sub-Assembly only if directed by the PA department per the Service Procedure Flowchart.

1. Remove the engine from the vehicle by referring to the shop manual:
   - **Engine Mechanical System > Engine and Transaxle Assembly > Engine and Transaxle Assembly > Repair procedures**

Information

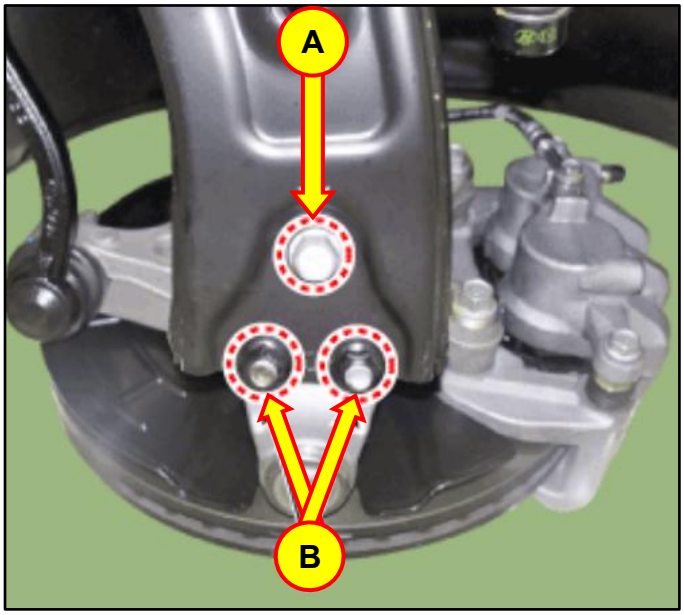
Record audio presets (XM, AM, FM, etc.) before disconnecting the battery.

2. Refer to the shop manual to transfer the following components:
   - Intake and Exhaust Manifolds
     - Follow **23-EM-002H** (or latest version) if vehicle arrives with a **seized or damaged internal rotating component** (see **Step 6**).
   - Surge Tank
   - Starter Assembly
   - Drive Plate
   - Full Drive Belt Kit (Idler, Belt Tensioner, Water Pump Pulley, Serpentine Belt)
   - Water Temperature Control Assembly and Studs
   - Cross-Over Coolant Pipe
   - Fuel Rail, Injectors, and High-Pressure Fuel Pump
   - Oil Level Rod and Guide Assembly
   - A/C Compressor Assembly
   - Front Transfer Case Assembly (if applicable)
   - Engine Front Wiring Harness
   - Roller Tappet for the High-Pressure Fuel Pump
   - Oil Pressure Switch Extension Harness (some engines may come with or without the oil pressure switch extension harness, verify before re-assembly)

Information

Certain removed parts from the old engine will need to be reinstalled to the new engine. Refer to the shop manual to confirm which parts may be reused. Full part list of the service kit will be in the parts bulletin.

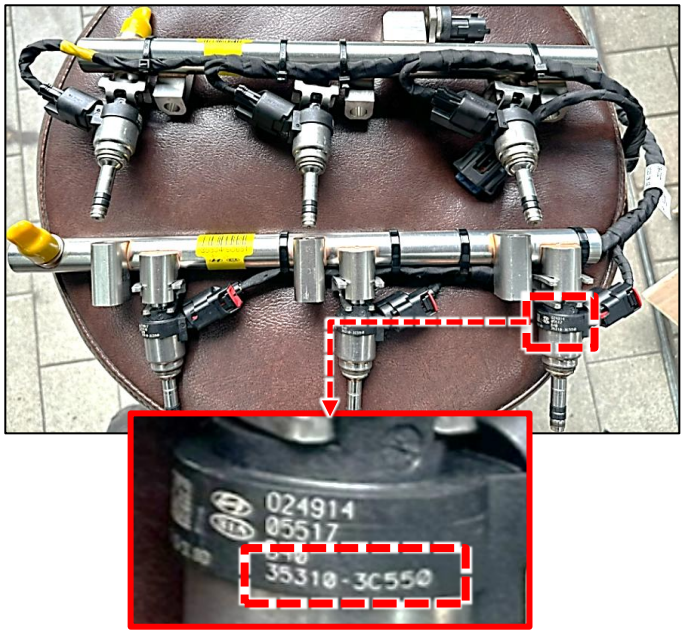
3. During the removal of the front subframe from the vehicle, loosen and unbolt the LH and RH lower control arm ball joint assemblies (A & B).



Information

The lower control arm ball joints do **NOT** need to be removed from the steering knuckle as shown in the shop manual.

4. During the replacement, install the applicable injector tip seals based on the marking on each injector. Since both seals are included in the kit, use the table below to match the applicable part.



Injector	Injector Tip Seal	
	Without "T" Mark	With "T" Mark
35310 3C550 35310 3C570	35312 3C720	
35310 3C560 35310 3C580	35312 3C720	35313 2T000

CAUTION

Select the appropriate tip seal according to the existing fuel injector part number.

Use of the incorrect tip seal may result in a critical fuel leak.

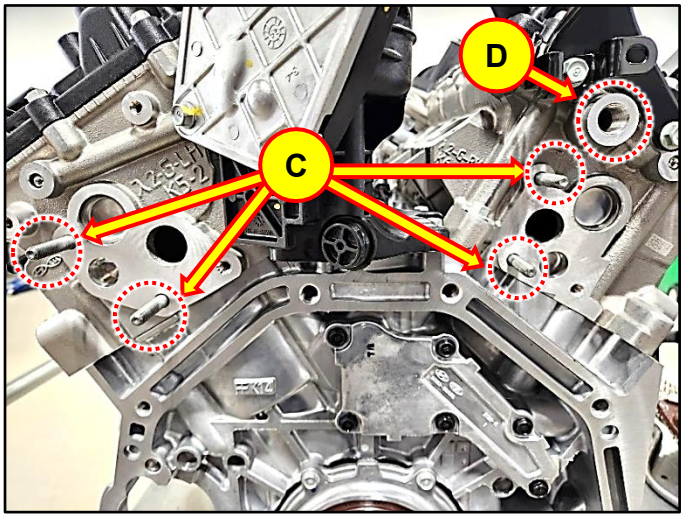
Information

Tip-Seal Part Identification as shown on the right.

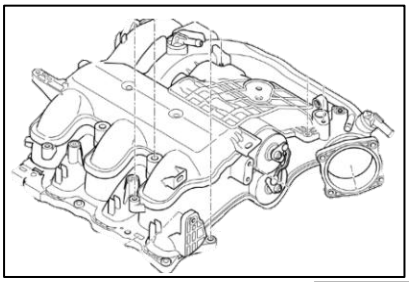
P/N: 353132T000 is labeled.
P/N: 353123C720 is **NOT** labeled.

5. Exchange the water temperature control assembly studs (C) from the old engine to the new engine.

   Install the new water temperature sensor (D) from the service kit.

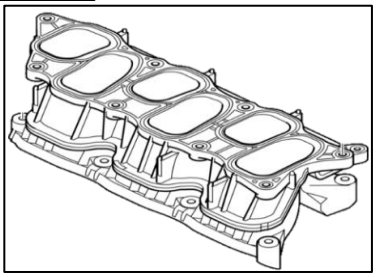


6. Refer to TSB **26-EM-001H** (or latest version) to verify the engine condition then perform the recommended action to the applicable components.



Surge Tank

Intake Manifold



7. Reconnect and reinstall the front engine harness.

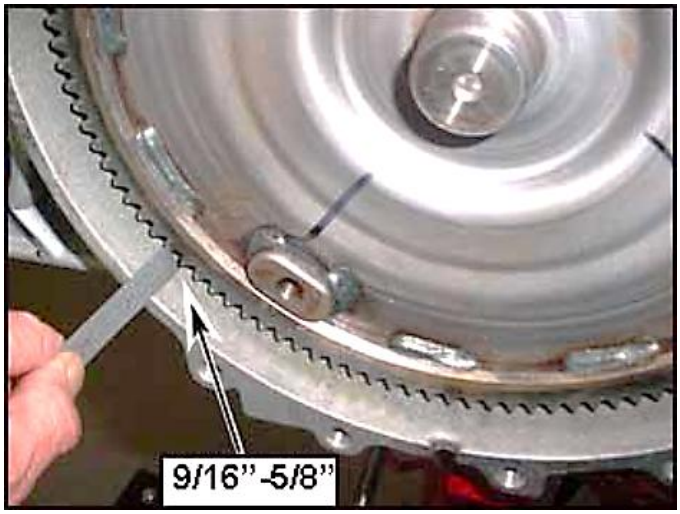
8. Reinstall the engine sub-assembly by referring to the shop manual:
   - **Engine Mechanical System > Engine and Transaxle Assembly > Engine and Transaxle Assembly > Repair procedures**

NOTICE

If the engine had lower-end damage or failure, check engine rotation:

- Inspect the starter motor for signs of damage before reuse.
- Do **NOT** reinstall a damaged starter motor, replace if needed.

9. If the torque converter moved out of position, gently push and rotate it back in until it is seated **5/16 inch – 9/16 inch (8-14 mm)** into the transaxle.



NOTICE

If the torque converter is **NOT** fully seated, the oil pump may be damaged during reinstallation.

10. Reconnect and reinstall the cooling system parts.

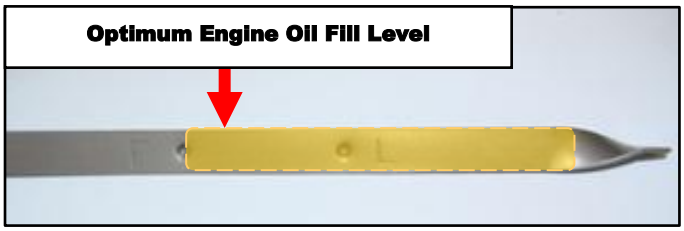
    Fill the system with **35-50%** coolant/antifreeze, diluted with distilled water.

11. Fill the engine crankcase:
    - Add **6.3 quarts** of oil for the initial dry fill. With the fuel system temporarily disabled, crank the engine for a few seconds to prime the lubrication system before starting.

Information

5W-30 Full Synthetic, API SN/SN+/SP, ILSAC GF4/GF5 (or higher)

12. Warm up the vehicle by starting the engine and start the cooling system air bleeding process by referring to the shop manual:
    - **Engine Mechanical System > Cooling System > Coolant > Repair procedures**
        - Check for leaks.
        - After the engine reaches normal temperature, turn **OFF** the engine.
        - Recheck and adjust oil level to reach the 'F' mark.

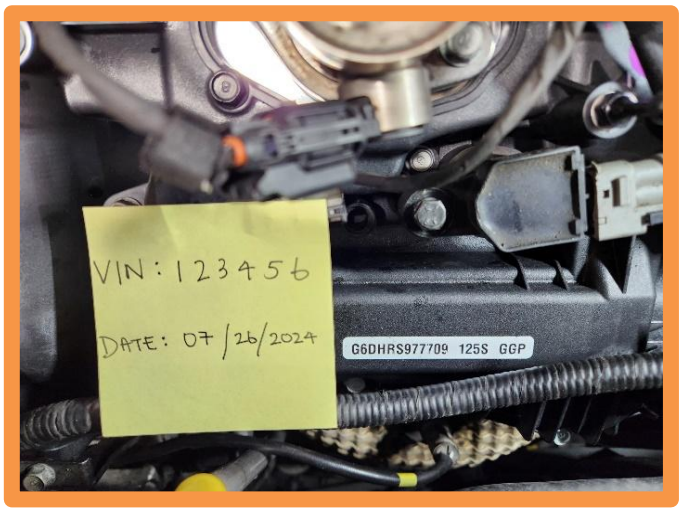


13. ***DIGITAL DOCUMENTATION***

Using the STUI camera function, take a photo of the new Engine Sub-Assembly serial number located on the Front Bank Rocker Cover (nearest to the front of the vehicle).

Upload the photo to STUI.

NOTE: If the STUI camera function is **NOT** used, write the last 6 digits of the VIN and date of repair on a piece of paper to include in the photo.



14. Perform the wheel alignment by referring to the shop manual:
    - **Suspension System > Tires/Wheels > Alignment > Repair procedures**

15. ***DIGITAL DOCUMENTATION***

    Using the STUI camera function, take a photo of the completed alignment sheet clearly showing the vehicle's VIN and date of repair.

    Upload the photo to STUI.

    NOTE: If the STUI camera function is **NOT** used, write the last 6 digits of the VIN and date of repair on a piece of paper to include in the photo.


VIN: *****
6/11/25 2:29 PM
MITCHELL
Hyundai : Santa Fe (Including Sport, XL) : 2014 (09/27/2012- Production Date) : Front Wheel Drive
ExpressAlign Total Alignment

Front : Left

Actual	Before	Specified Range
-0.1°		-1.0° 0.0°
4.2°		3.6° 4.6°
0.07°		-0.05° 0.15°
13.0°*		13.1° 14.1°
12.9°		12.1° 14.1°
	0psi	

Camber	
Caster	
Toe	
SAI	
Included Angle	
Turning Angle Diff.	
Tire Pressure	

Front : Right

Actual	Before	Specified Range
-1.1°*		-1.0° 0.0°
4.3°		3.6° 4.6°
0.07°		-0.05° 0.15°
14.2°*		13.1° 14.1°
13.1°		12.1° 14.1°
	0psi	

Front

	Actual	Before	Specified Range
Cross Camber	1.0°		
Cross Caster	-0.1°		
Cross SAI	-1.2°		
Total Toe	0.14°		-0.10° 0.30°
Cross Turn Diff.			

Rear : Left

Actual	Before	Specified Range
-1.0°		-1.5° -0.5°
0.11°		0.00° 0.20°
	0psi	

Camber	
Toe	
Tire Pressure	

Rear : Right

Actual	Before	Specified Range
-1.5°		-1.5° -0.5°
0.08°		0.00° 0.20°
	0psi	

Rear

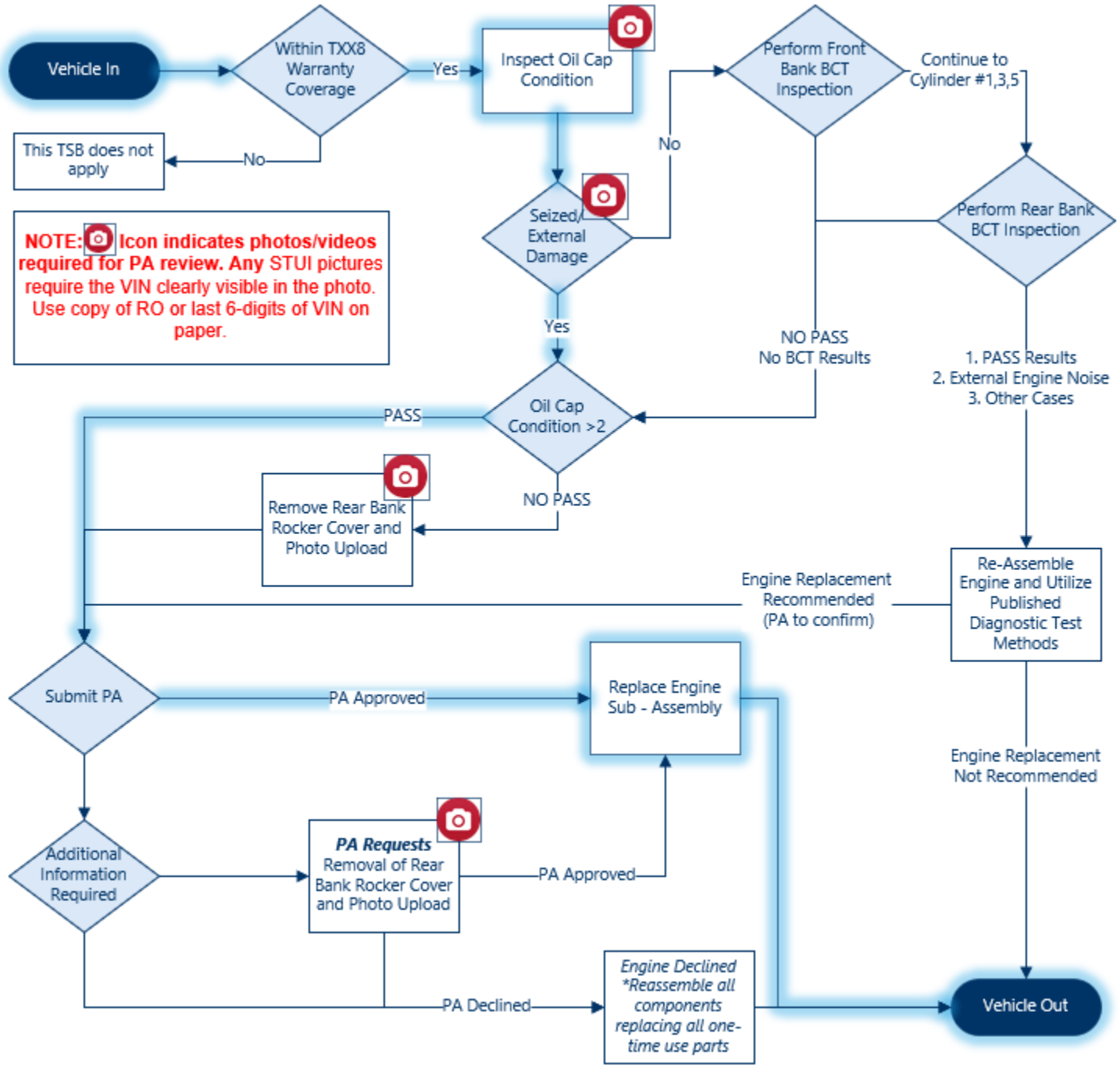
	Actual	Before	Specified Range
Cross Camber	0.5°		
Total Toe	0.19°		0.00° 0.40°
Thrust Angle	0.02°		

16. Verify all fluids are filled and all quality checks are completed:
    - Set the customer's audio presets.
    - Erase any DTCs that may have been triggered during the repair.
    - Reset engine adaptive valves using GDS.
    - Confirm the vehicle properly operates.

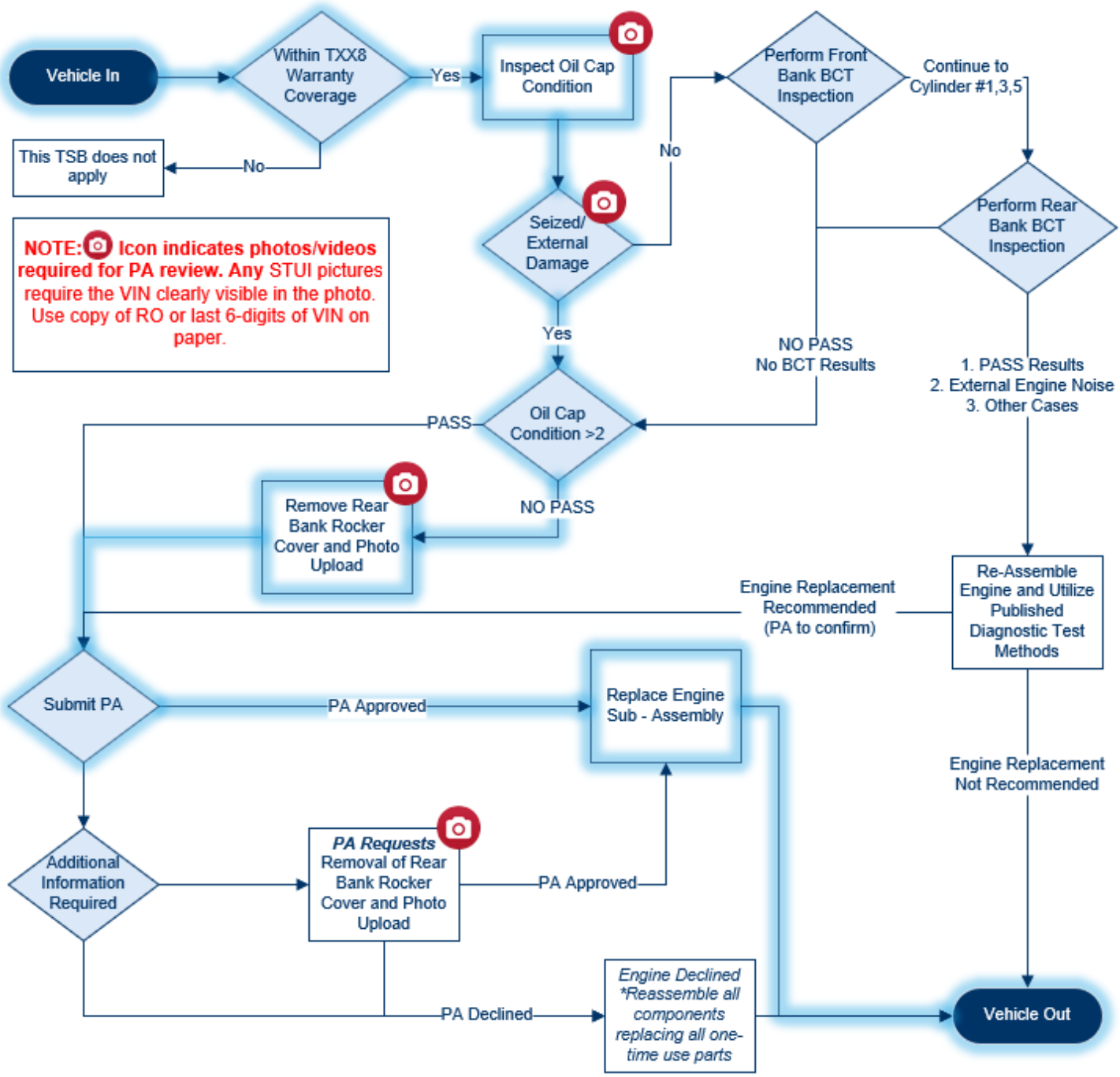
17. The service procedure is now complete.

Appendix: Operation Code Reference Guide

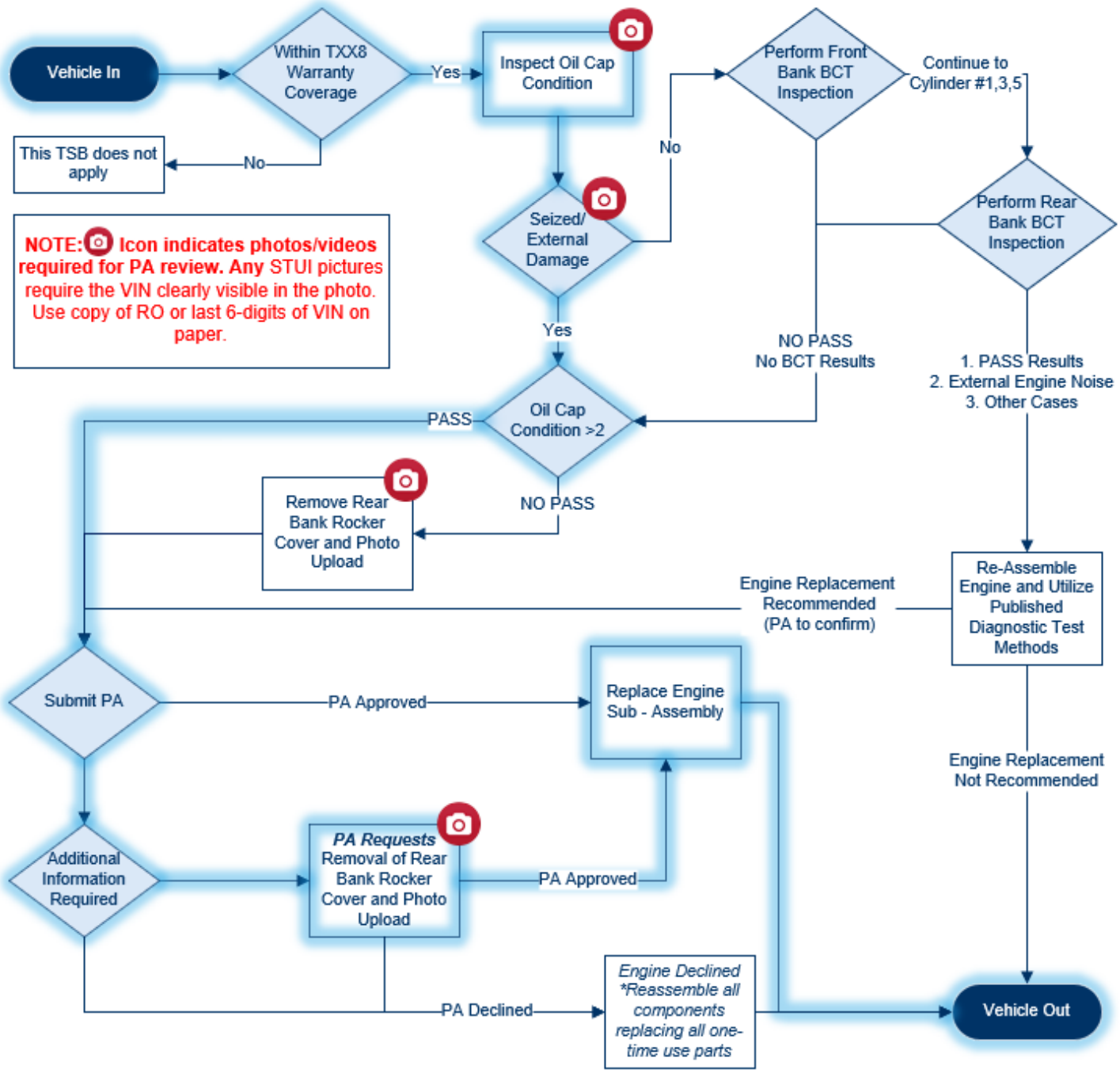
Op. Code **40D119I0** **Flow Path:**



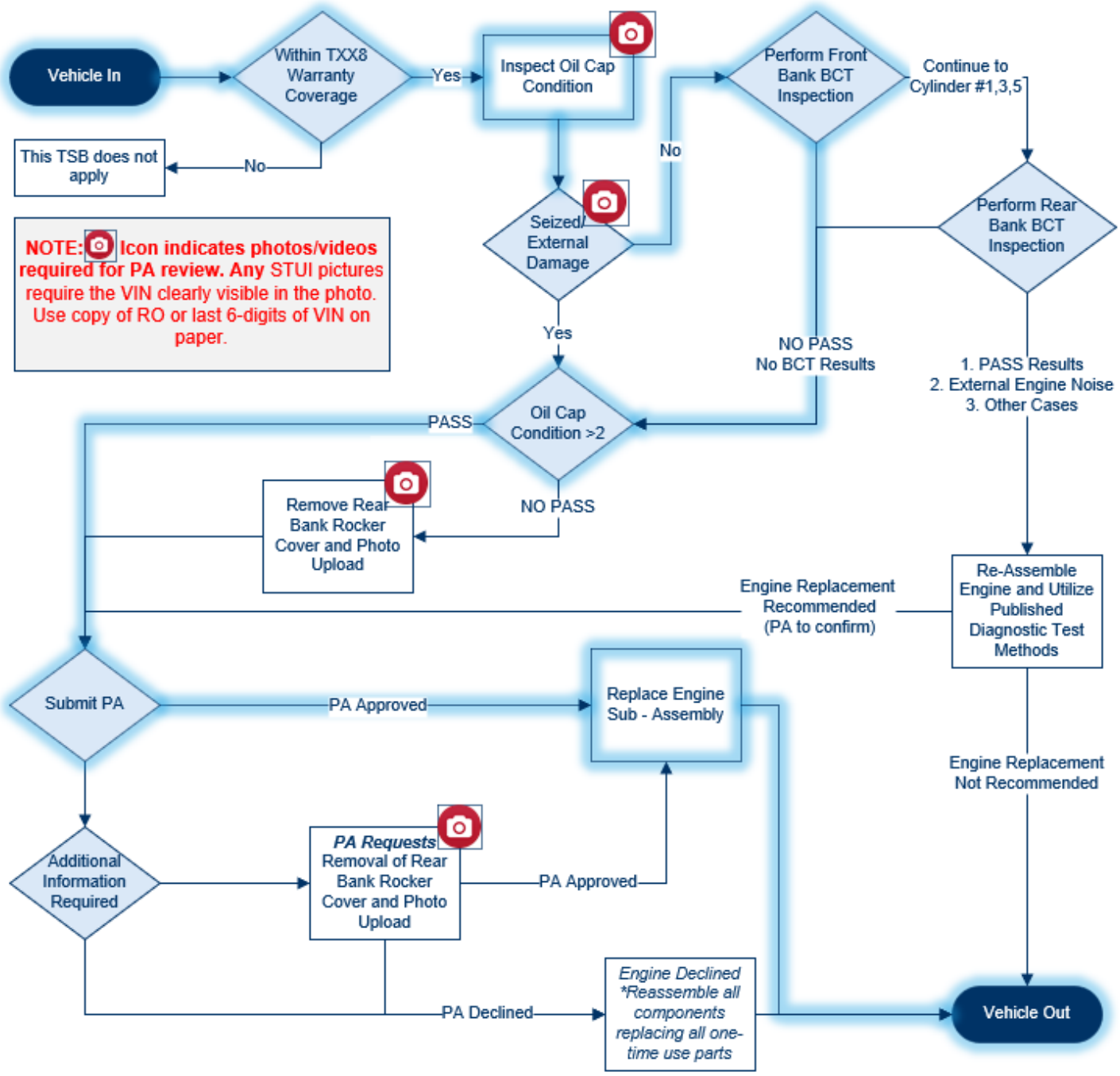
Op. Code **40D119I1** **Flow Path (1 of 2 possibilities):**



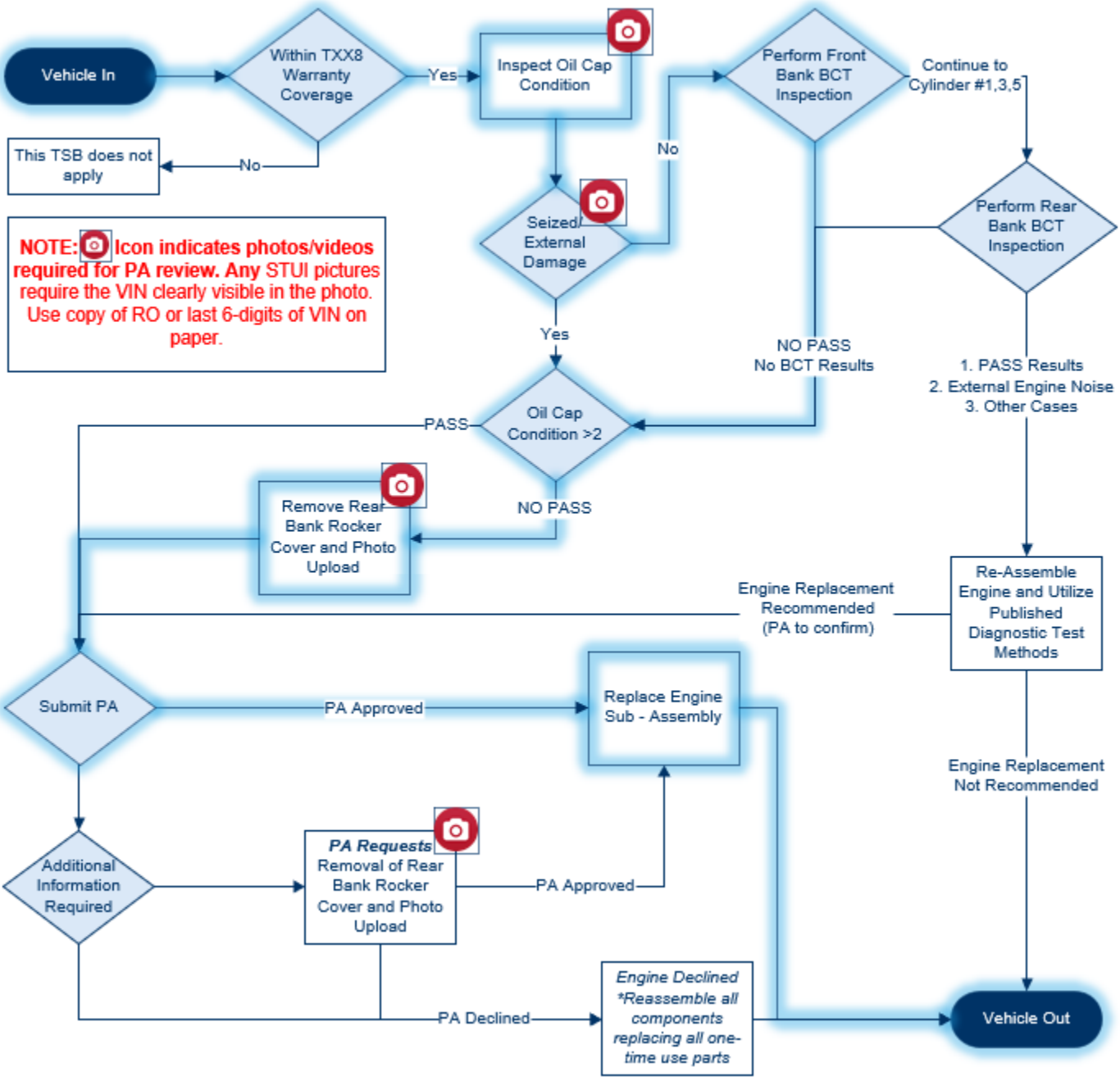
Op. Code **40D119I1 Flow Path (2 of 2 possibilities):**



Op. Code **40D119I2** **Flow Path:**

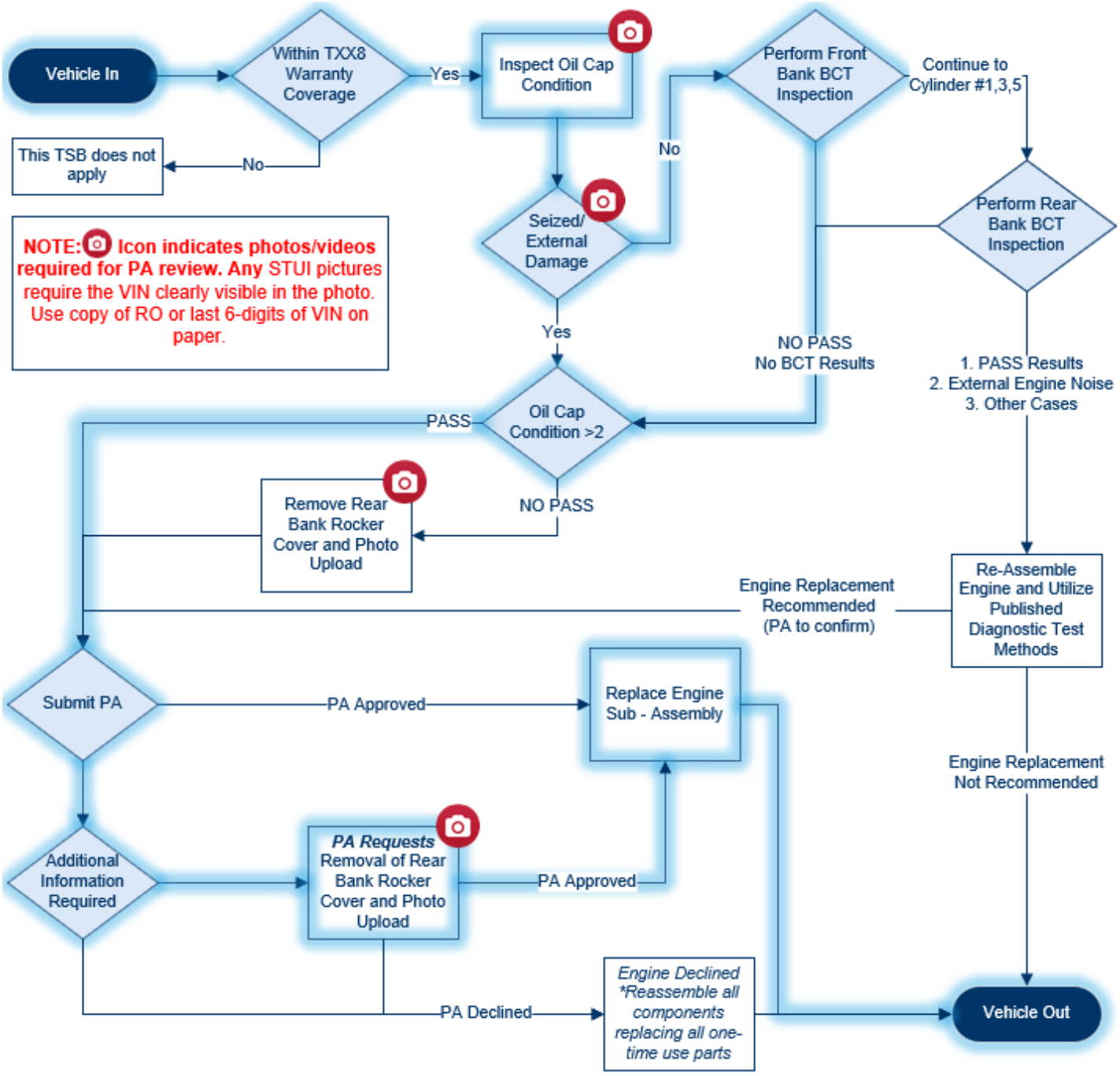


Op Code 40D119I3 Flow Path (1 of 2 possibilities):

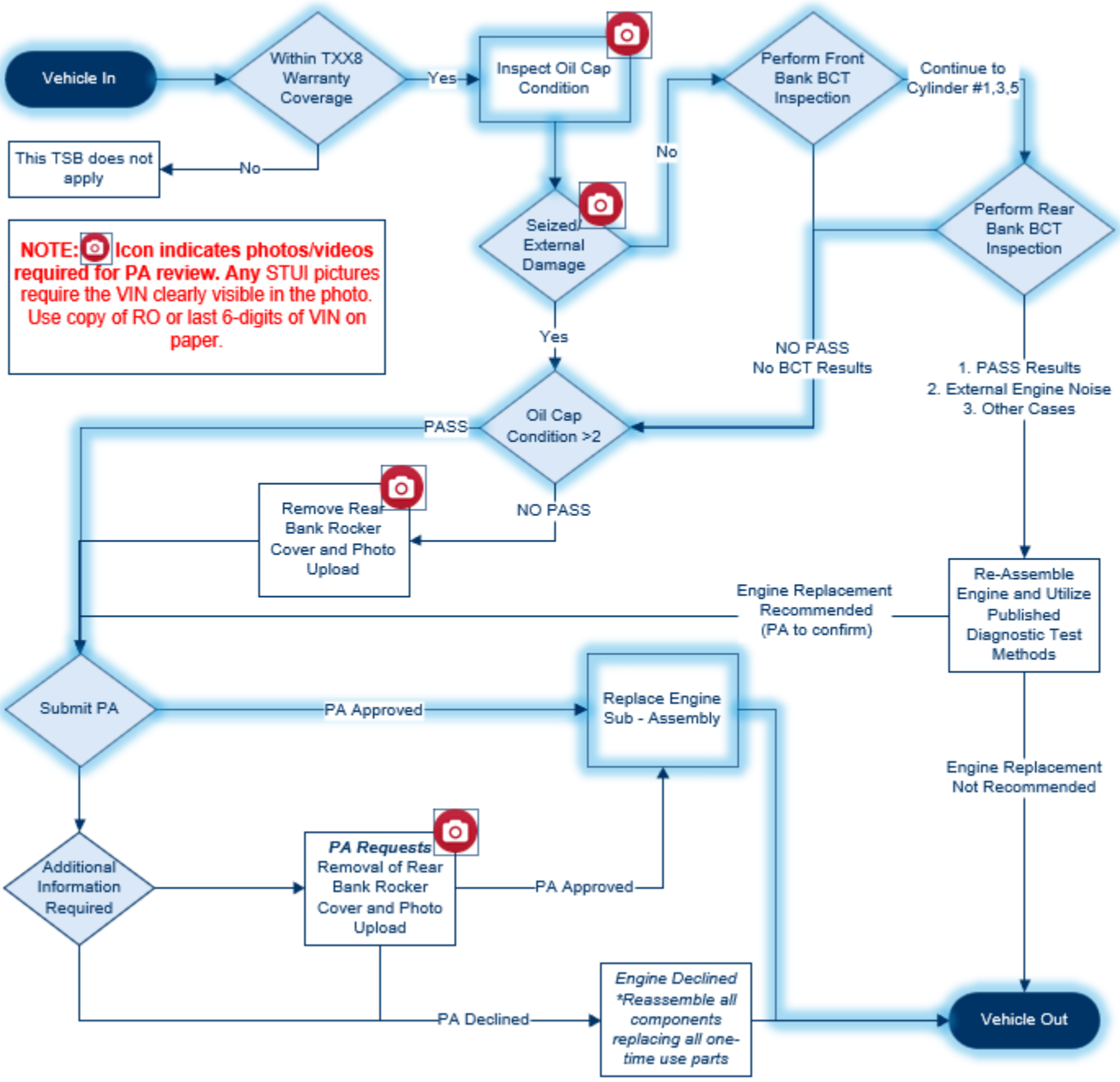


NOTE: Icon indicates photos/videos required for PA review. Any STUI pictures require the VIN clearly visible in the photo. Use copy of RO or last 6-digits of VIN on paper.

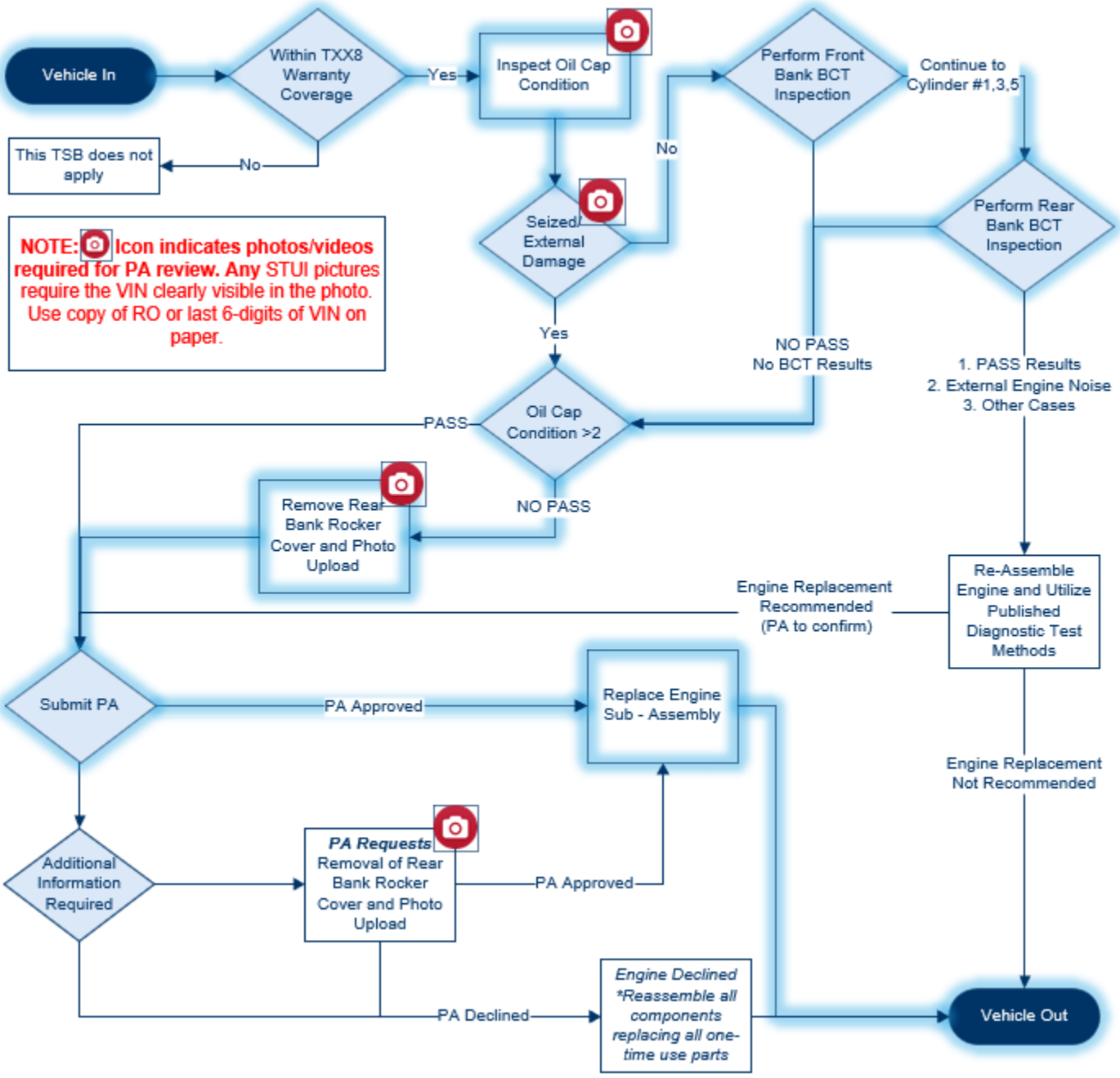
Op Code 40D119I3 Flow Path (2 of 2 possibilities):



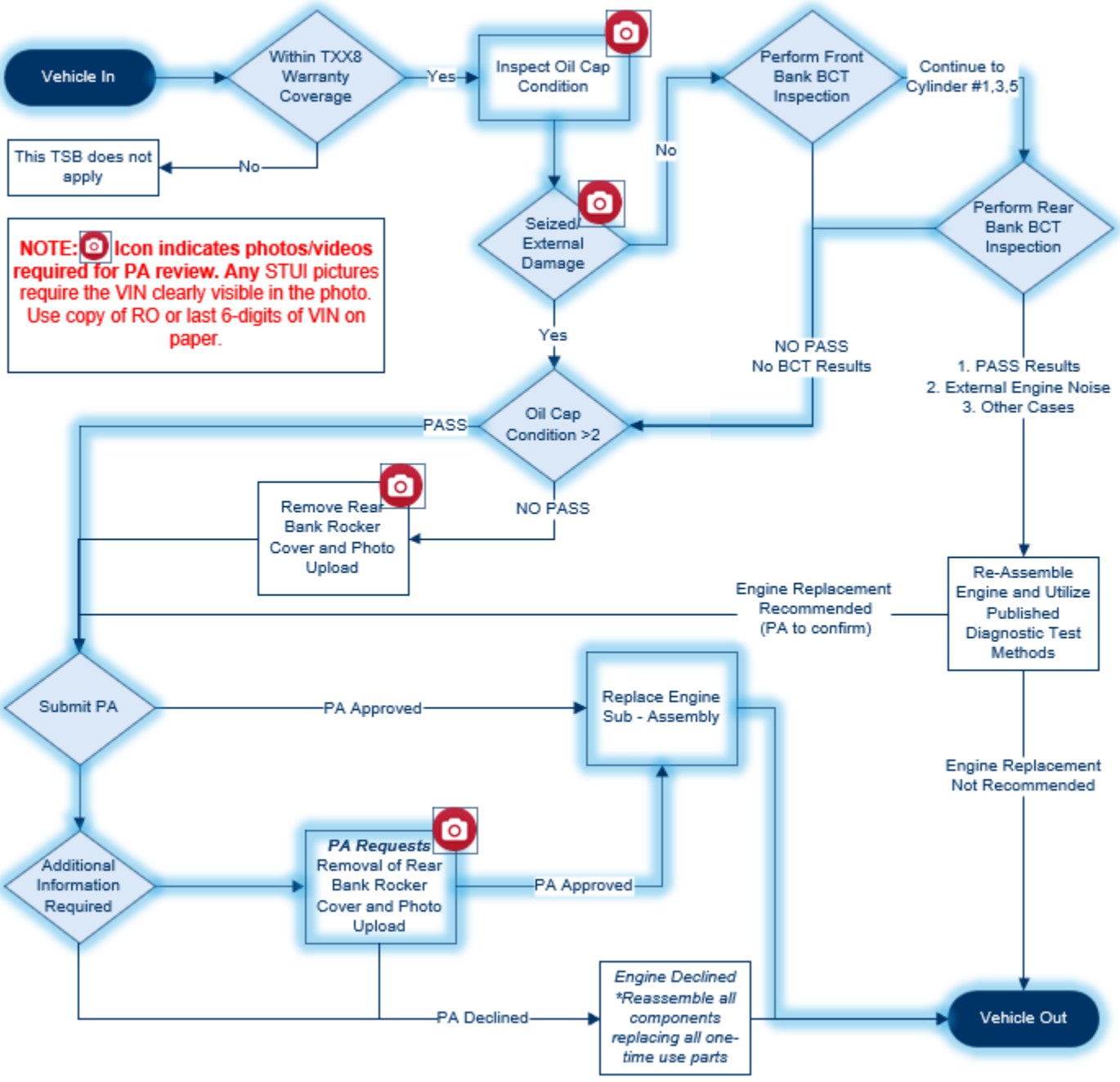
Op Code 40D119I4 Flow Path:



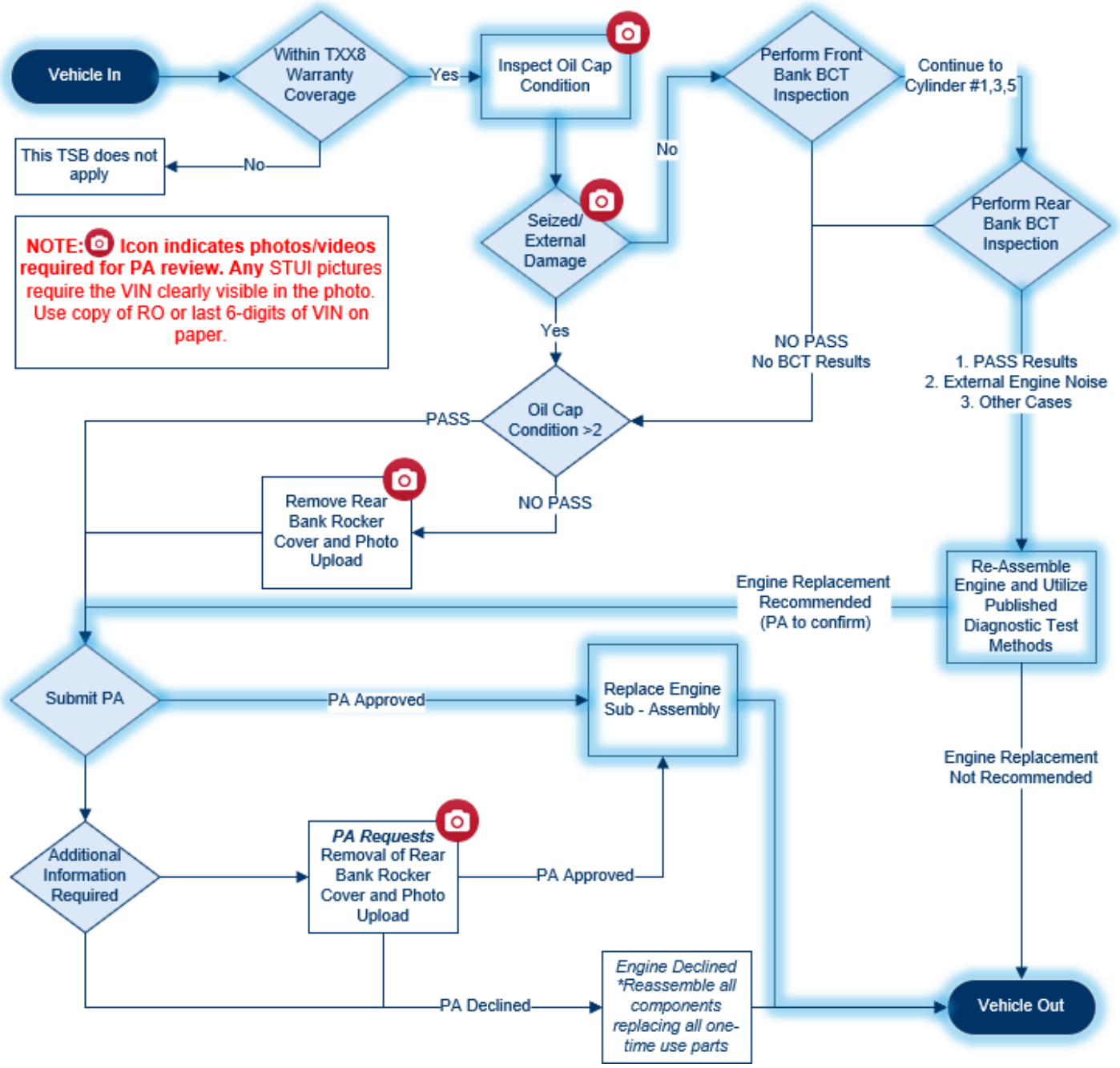
Op Code 40D119I5 Flow Path (1 of 2 possibilities):



Op Code 40D119I5 Flow Path (2 of 2 possibilities):



Op Code 40D119I6 Flow Path:



Op Code 40D119I7 Flow Path: