July 23, 2024 Version 5

Safety Recall: 2018–19 Odyssey Connecting Rod Bearing

Supersedes 24-003, dated April 19, 2024 to revise information highlighted in yellow.

AFFECTED VEHICLES

Year	Model	Trim Level	VIN Range
2018–19	Odyssey	ALL	Check the iN VIN status for eligibility.

REVISION SUMMARY

- Under TOOL INFORMATION, a tool was added.
- Under REPAIR #2 and #3 REPLACE THE SHORT BLOCK, a step was added.

BACKGROUND

On November 9th, 2023, Honda announced a **STOP SALE** and **safety recall** for a certain number of 2018–19 Odyssey units. These vehicles may have engines containing internal damage at the connecting rod bearings, possibly leading to engine failure. If an engine fails, the vehicle may lose motive power, increasing the risk of crash, fire and resulting injury.

During engine manufacturing, some crankshafts may have been built with improper connecting rod journal dimensions, resulting in increased friction between the journals and their bearings. This increased friction could lead to accelerated engine deterioration and possible failure due to a lack of lubrication and excessive heat.

If this bulletin appears during an iN VIN status inquiry, the vehicle is subject to a **safety recall**. Any affected vehicles in your dealer inventory are on **STOP SALE** until further notice. Refrain from calling Tech Line for updates.

CUSTOMER NOTIFICATION

Owners of the affected vehicles have been sent a notification of this campaign. They were informed that due to a limited supply of parts (at this time) Honda is prioritizing the repair of customer vehicles experiencing symptoms related to this recall.

When **adequate replacement parts** become available, Honda will send a follow-up letter to customers instructing them to schedule an appointment for all vehicles affected by this recall. If a customer experiences the known symptoms associated with this **safety recall** (see IMPORTANT NOTICE), they are instructed to contact their local Honda dealer for the repair.

For any questions or concerns customers may have, you may have them contact American Honda's Customer Support & Campaign Center at **1-888-234-2138**.

The following suggested text should be included on any repair order for an already sold affected vehicle that comes in for service. This information should be printed out completely any time service is conducted on an affected vehicle, and the recall repair has not yet been completed. Depending on parts availability, the normal procedures under *Service Operations Manual* (SOM) 7.2.1 will apply for this recall.

Suggested Verbiage to be Included on the Repair Order

CUSTOMER INFORMATION: The information in this bulletin is intended for use only by skilled technicians who have the proper tools, equipment, and training to correctly and safely maintain your vehicle. These procedures should not be attempted by "do-it-yourselfers," and you should not assume this bulletin applies to your vehicle, or that your vehicle has the condition described. To determine whether this information applies, contact an authorized Honda automobile dealer.

© 2024 American Honda Motor Co., Inc. – All Rights Reserved

Customer was advised that:

The vehicle is subject to a recall affecting the connecting rod bearings. The parts necessary to complete the recall repair are currently limited. Vehicles with eligible VINs and the following symptom: an abnormal engine knocking noise or an abnormal engine knocking noise followed by a loss of power are eligible for immediate inspection. Once parts repair kits are available, if the vehicle has not been repaired, the registered owner of the vehicle will receive a notice to bring the vehicle in for a repair, regardless of symptom.

IMPORTANT NOTICE

Due to a limited parts inventory to complete the necessary repairs, dealers must prioritize which vehicles are inspected and repaired. A customer experiencing a symptom of an engine rod knock or rod knock followed by a stall when driving should be inspected. Otherwise, advise the customer that parts are limited as described in the CUSTOMER NOTIFICATION section.

The self-study training module, *ENC65 Multiple Connecting Rod Repair with V-SMART*, is available on the Online University. Make sure to complete the module before starting the inspection procedure.

CORRECTIVE ACTION

Do an iN **VIN** status inquiry to make sure the vehicle is shown as eligible for an inspection. Removal of the connecting rod bearings and taking/sending photos via V-SMART for inspection by the Bearing Inspection Inquiry Team.

The technician will then create a Bearing Inspection Inquiry through iN and will receive a reference case number. This number must be used when contacting the Bearing Inspection Inquiry Team. This team will conduct a judgment and recommend the appropriate repair for the technician to complete.

In the event that parts are not available, the **STOP SALE** remains in effect for that vehicle. To see if a vehicle in inventory is affected by this safety recall, do a **VIN** status inquiry before selling it. Some vehicles affected by this campaign may be in your new or used vehicle inventory.

PARTS INFORMATION

Repair parts will be automatically allocated based on repair direction. Carefully review the **Repair Type** instructions emailed *after* submission of the inspection results to the Bearing Inspection Inquiry team.

American Honda Parts will automatically place orders for all parts necessary for this repair. These parts should be visible in iN within **24 hours** of the Bearing Inspection Inquiry.

Due to shipping constraints, please make sure **all** the required parts are received prior to beginning the repair.

To check the status of the auto-ordered parts, refer to Order Reference Number (for example: SCR0004X) using the code matrix:

1. SCR: Standard Connecting Rod
2. 0000: Last 4 digits of the VIN
3. X: Alpha Character Used for Separate Orders

REQUIRED MATERIALS

Part Name	Part Number	Quantity
0W-20 Full Synthetic Motor Oil	-	5.4 Qt. or 6.4 Qt. (Depending on Repair)
Hondabond HT Silicone Gasket	08718-0004	3 tubes per 2 vehicles
Antifreeze / Coolant Type 2	OL999-9011A	7.5 L (1.98 Gal.) (Repair #2 and#3)
Oil Filter	15400-PLM-A02	1 (Repair #2 and #3)

TOOL INFORMATION

Tool Name	Tool Number	Quantity Per Repair
Bearing Photo Box, [BOX, BEARING PHOTO]	07AAK-5J2A200	1
M8 Rod Holder, [HOLDER, M8 ROD]	07AAB-5G0A100	1
Crank Angle Gauge, [GAUGE, CRANK ANGLE]	07AAJ-5G0A100	1
Piston Stopper, [STOPPER, PISTON]	07AAB-5G0A200	1 set
Radiator Protector [PROTECTOR, RADIATOR]	07AAK-5A2A100	1
Transmission Pins, [PIN, MISSION ALIGN]	07AAG-5J4A100	1 set
Subframe Guide, [PIN, SUBFRAME GUIDE]	07AAG-TZ3A100	2
Subframe Support, [JIG, SUBFRAME SUPPORT]	07AAK-TZ3A100	1
9AT Transmission Cap (CAP, 9AT PROTECTING)	07AAK-5J4A101	1
PARTS CART	PR1-A	1

NOTE:

- These tools have been auto-shipped to your dealer. There is no need to order at this time as quantities are limited. Contact the Special Tools Hotline **(833) 949-4672** and/or email special_tools@ahm.honda.com for information.
- Once your dealership is identified as a requiring a short block replacement, additional special tools (PARTS CART, Subframe Support, and Transmission Pins) will be shipped along with the replacement engine block.

Tool Name	Tool Number	Quantity Per Repair
V-SMART Phone	CDW5001003PK	1
Large Zip Tie	Commercially Available	2
LOAD LEVELER	NRI78115H	1
LIFT TABLE	KLS6227500	1
ENGINE BALANCE BAR ATTACHMENT	VSB02C000044 with VSB02C000019	1

NOTE: These are existing required tools that dealers should have available. If additional tools are needed they are available for purchase, contact the Tool and Equipment Program at **(888) 424-6857** and/or email AHMTE@snapon.com

WARRANTY CLAIM INFORMATION

Important Notice:

- *Warranty claim information extends across multiple pages; please select the correct table.*
- *For repair method other than Connecting Rod Bearing replacement, the repair must be matched with the appropriate inspection and repair template to process the warranty claim.*
- *The Bearing Inspection Inquiry Team will send an email to the provided address containing a summary of the failed part numbers and the corresponding warranty codes to use.*

Connecting Rod Bearing Repair

INSPECTION A, plus repair

NOTE:

- For inspections that resulted in a repair, you will need to create **two repair lines** in the repair order: **one for inspection** and **one for repair**.
- Both repair lines must be done for completion of **this claim**.
- Enter the **bearing part number(s)** (provided by the Bearing Inquiry Team) under template D.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G5	Inspection A - connecting rod bearings (Includes photos)	1.2 hr	6JA00	YHR00	A24003A	13010-R9P-A00
1111ER	Replace connecting rod bearings (includes photos)	2.2 hr	6KC00	AH500	A24003D	13321-5J6-A01

INSPECTION B, plus repair.

NOTE:

- For inspections that resulted in a repair, you will need to create **two repair lines** in the repair order: **one for inspection** and **one for repair**.
- Both repair lines must be done for completion of **this claim.**
- Enter the **bearing part number(s)** (provided by the Bearing Inquiry Team) under template E.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G6	Inspection B -main cap bearings - (Includes connecting rod bearings & photos)	2.4 hr	6JA00	YHR00	A24003B	13050-R9P-A00
1111FM	Replace connecting rod bearings (includes photos)	2.2 hr	6KC00	AH500	A24003E	13341-R9P-A01

VIN and Engine Number Identification Query through V-SMART–No Repair.

NOTE:

- No further warranty claim required; campaign is considered closed by **engine number verification**.
- Use only this labor operation if the engine number identification query through V-SMART was done and resulted in "Engine *Not Affected*."
- **Do not** use this warranty table for either **Inspection A** or **Inspection B**.
- The Bearing Inspection Inquiry Team **must still** be contacted to complete a claim; See step 13 of the V-SMART ENGINE NUMBER VERIFCATION section for more details.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G2	Inspect VIN/EIN-Engine not affected (includes contacting the Bearing Inspection Inquiry Team)	0.3 hr	6KC00	AH500	A24003C	11200-5J6-A11

For repair method other than Connecting Rod Bearing replacement, the repair must be matched with the appropriate inspection and repair template to process the warranty claim.

INSPECTION A or B

NOTE:

- For repair method other than Connecting Rod Bearing replacement, the repair must be matched with the appropriate inspection and repair template to process the warranty claim.
- For inspections that resulted in other than a connecting rod bearing replacement, you will need to create **two repair lines** in the repair order- **one for inspection** and **one for repair**.
- Both repair lines must be done for completion of **this claim**.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G5	Inspection A – connecting rod bearings (Includes photos)	1.2 hr	6JA00	YHR00	A24003A	13010-R9P-A00
1115G6	Inspection B -main cap bearings - (Includes connecting rod bearings & photos)	2.4 hr	6JA00	YHR00	A24003B	13050-R9P-A00

Short Block Replacement

NOTE:

- Based on the Bearing Inquiry Team's recommended repair, select the appropriate repair template below.
- Both repair lines must be done for completion of **this claim**.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1111ES	Replace short block **9AT** (Includes alignment)	14.4 hr	6KC00	AH500	A24003F	13322-5J6-A01
1111ES	Replace short block 10**AT** (Includes alignment)	14.4 hr	6KC00	AH500	A24003G	13342-R9P-A01

Short Block Replacement with New Cylinder Heads

NOTE:

- Based on the Bearing Inquiry Team's recommended repair, select the appropriate repair template below.
- Both repair lines must be done for completion of **this claim**.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1111ET	Replace short block and cylinder heads **9AT** (Includes alignment)	14.4 hr	6KC00	AH500	A24003H	13323-5J6-A01
1111ET	Replace short block and cylinder heads 10**AT** (Includes alignment)	14.4 hr	6KC00	AH500	A24003J	13343-R9P-A01

Inspection Procedure for Complete Engine Failure

NOTE:

- For complete engine failure inspection, you will need to create **two repair lines** in the repair order- **one for inspection** and **one for repair**.
- Based on the Bearing Inquiry Team's recommended repair, select inspection template P and the appropriate repair template below.
- Both repair lines must be done for completion of **this claim**.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G7	Inspect for broken connecting rod only (includes photos)	0.5 hr	6JA00	YHR00	A24002P	11221-5G0-A00
1111ET	Replace short block and cylinder heads **9AT** (Includes alignment)	14.4 hr	6KC00	AH500	A24003H	13323-5J6-A01
1111ET	Replace short block and cylinder heads 10**AT** (Includes alignment)	14.4 hr	6KC00	AH500	A24003J	13343-R9P-A01

Skill Level: Repair Technician

NOTE: Repair will require a special code that has been emailed by the Bearing Inspection Inquiry Team.

CONTENT REFERENCE

Important Notice:

DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.

This information has been designed to work best when viewing through iN. It is **strongly suggested** (due to final page count and complexity) that the technician use iN to fully utilize this service bulletin's functions.

Furthermore, the technician is also advised to prepare their workstation for the tasks ahead. This includes: V-SMART phone fully charged, tools laid out, verify strong connection to Wi-Fi, and *access* to this service bulletin in its entirety via iN.

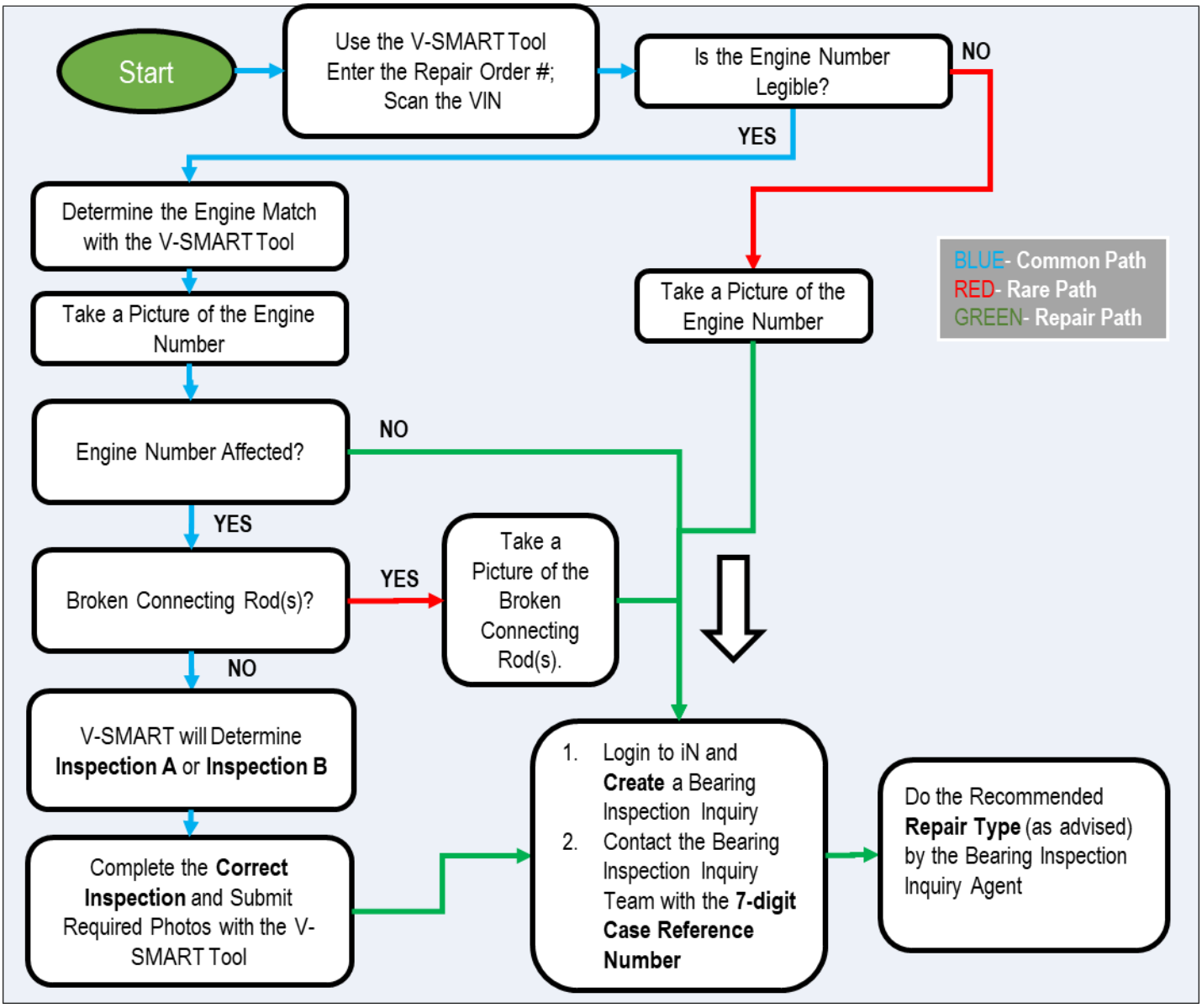


TABLE OF CONTENTS

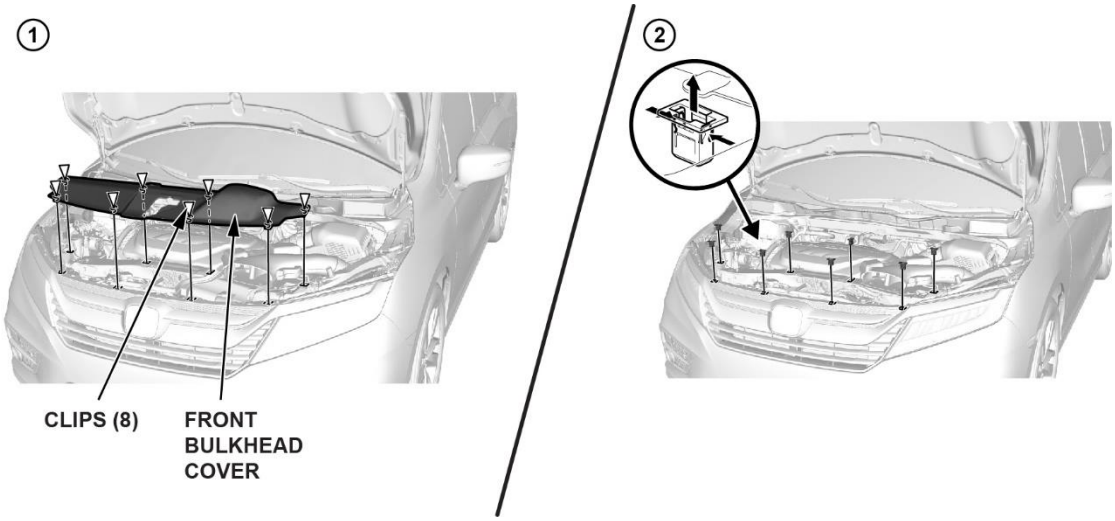
CONTENT REFERENCE	8
V-SMART ENGINE NUMBER VERIFICATION	9
INSPECTION A	16
INSPECTION B	40
REPAIR #1 INSTALL RECOMMENDED BEARINGS	71
REPAIR #2 AND #3 REPLACE THE SHORT BLOCK	91

NOTE: **Click** on a section title to go there.

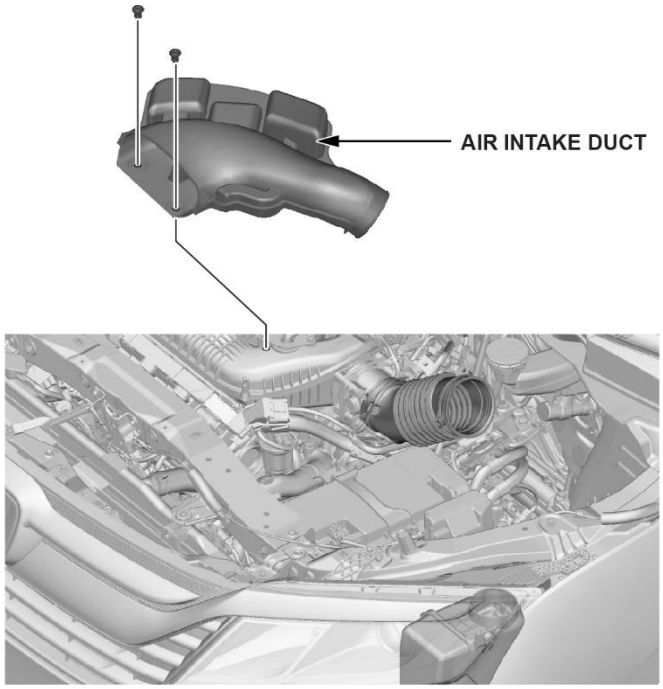
V-SMART ENGINE NUMBER VERIFICATION

NOTE: DO NOT contact Tech Line for any inquires to this safety recall. You must call the <u>Bearing Inspection Inquiry Team</u> at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.

1. Remove the front bulkhead cover.



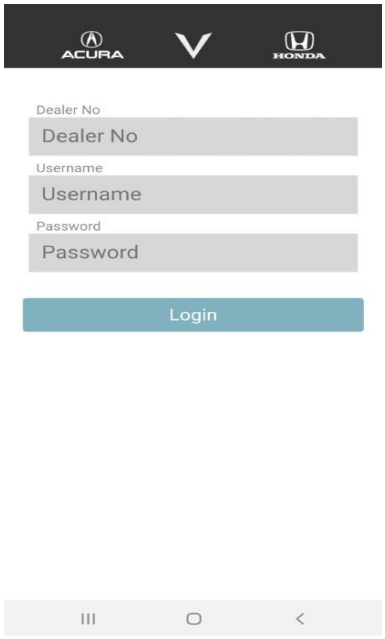
2. Remove the air intake duct.



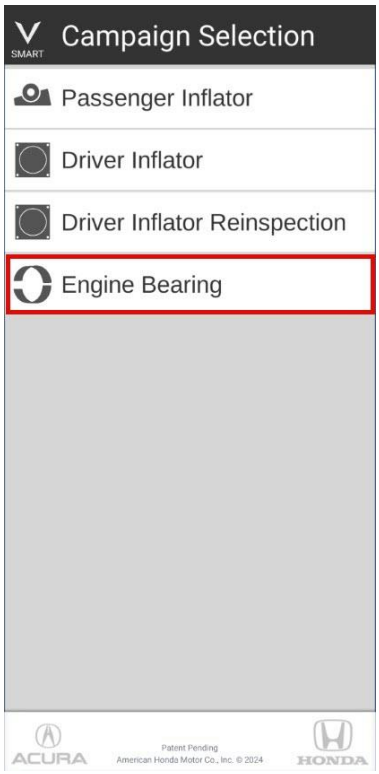
3. Login to V-SMART tool.

   NOTE: Refer to the job aid, *Using V-SMART* for additional information and tips. Although the job aid is primarily intended to perform the airbag inflator recall, some information will still apply to this bulletin.

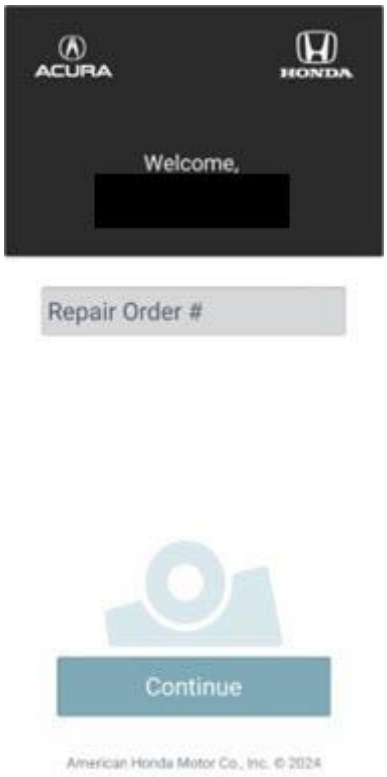
   1. Dealer Number
   2. Username (iN Login Credentials)
   3. Password (iN Login Credentials)



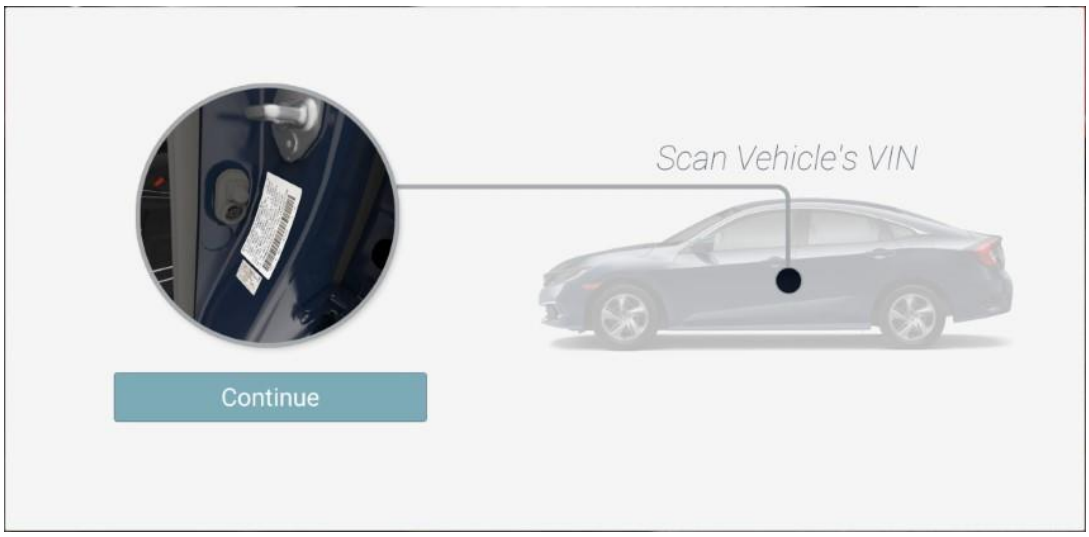
4. Select **Engine Bearing** from the campaign selection.



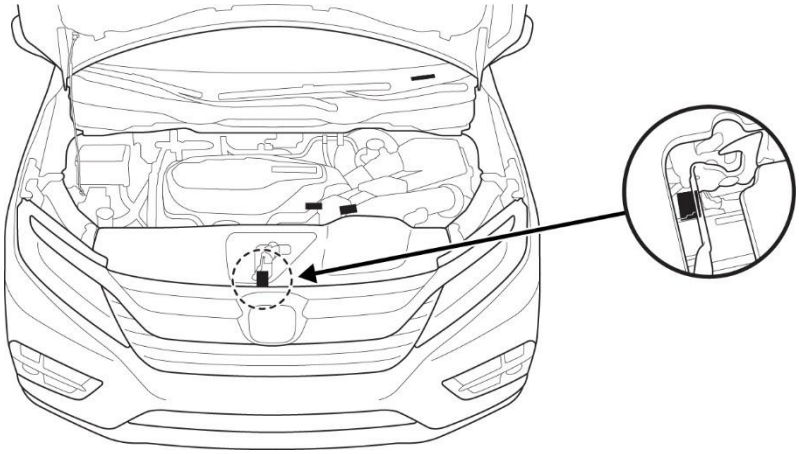
5. Enter the repair order number (RO#).



6. Scan the VIN on the driver's door jamb.

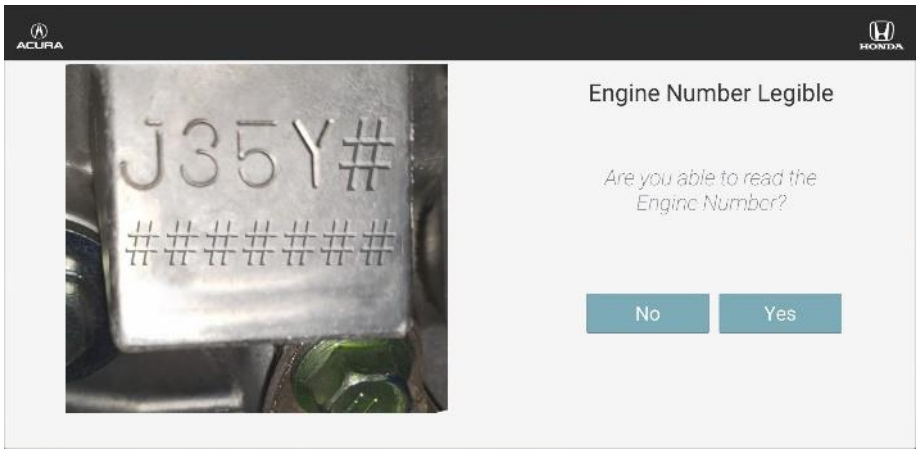


7. Locate the engine identification number.



8. Verify that the engine number is legible.
   - **Yes–**Press **YES** and continue to the next step.
   - **No–**Press **NO** and you will be prompted to clean the area, then take a photo.

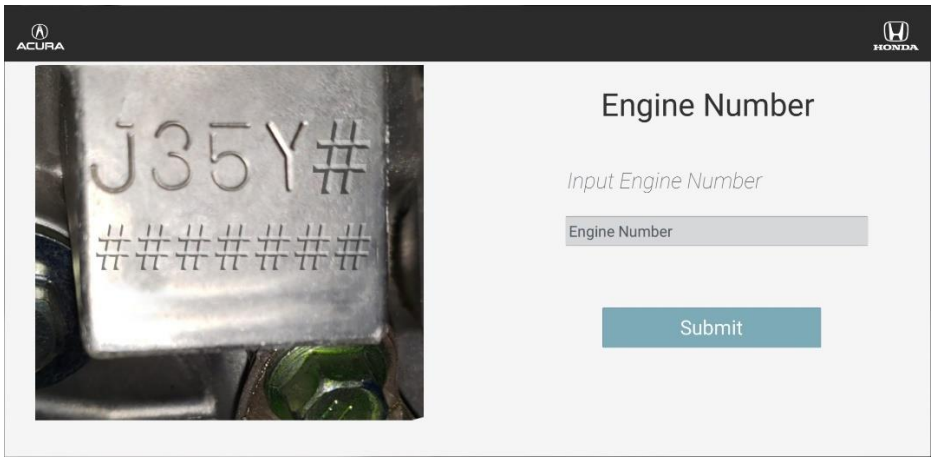
     NOTE: Proceed to step 13 as necessary for information on creating a Bearing Inspection Inquiry and contacting the Bearing Inspection Inquiry Team.



9. Does the engine identification number match?
   - **Yes–**Press **YES** and continue to the next step.

   - **No–**Manually enter the 12-digit engine identification number into the application.

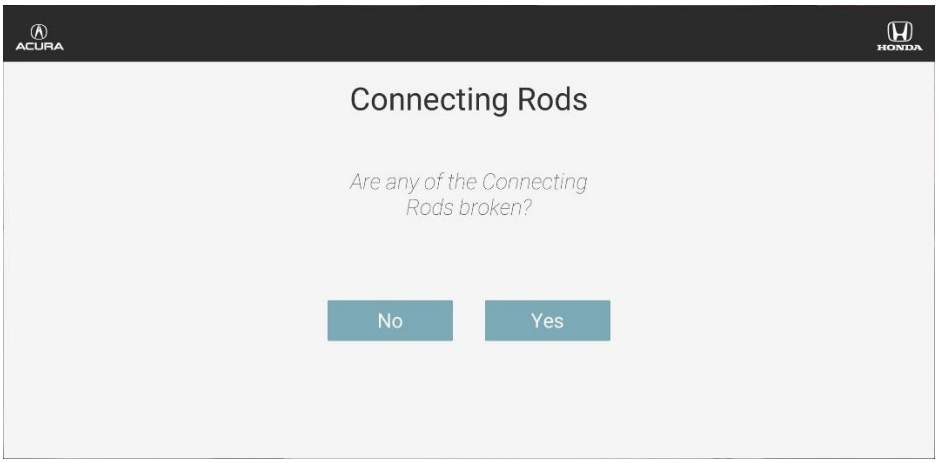
     NOTE: Blank or incorrect numbers will not be accepted and rejected during the inquiry call.



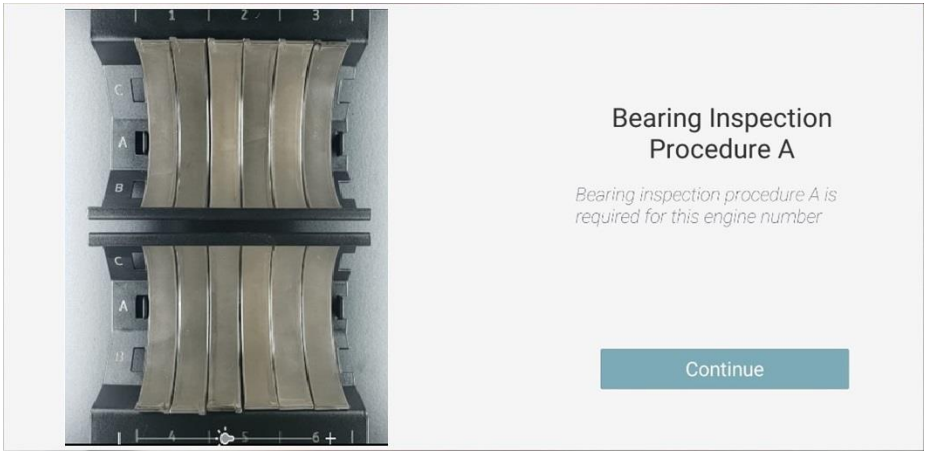
10. Answer the V-SMART tool's question: *Are any connecting rods broken*?
    - **Yes–**Follow the application's instructions.

      NOTE: Proceed to step 13 as necessary for information on creating a Bearing Inspection Inquiry and contacting the Bearing Inspection Inquiry Team.

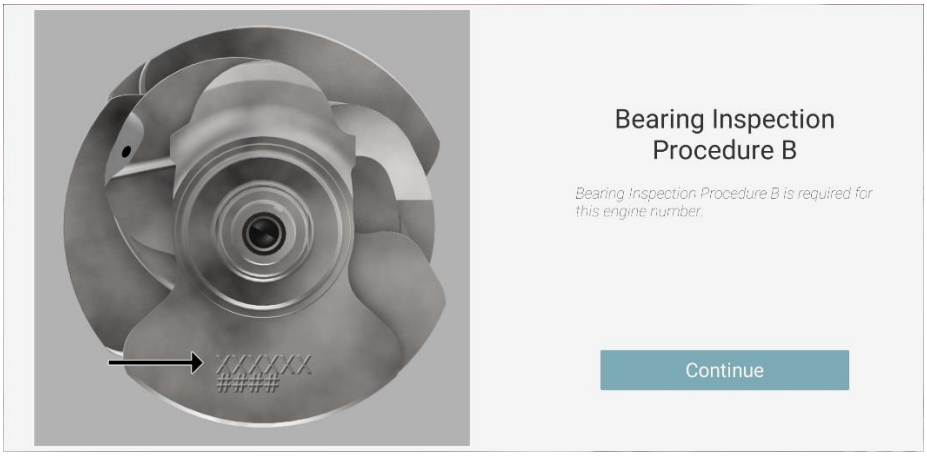
    - **No–**Press **NO** and continue to the next step in this bulletin.



11. The V-SMART tool will direct you to either **INSPECTION A or INSPECTION B**.
    - **INSPECTION A:** V-SMART Database contains engine build information.



    - **INSPECTION B:** V-SMART Database does not contain engine build information.



12. Sign out of the V-SMART application.

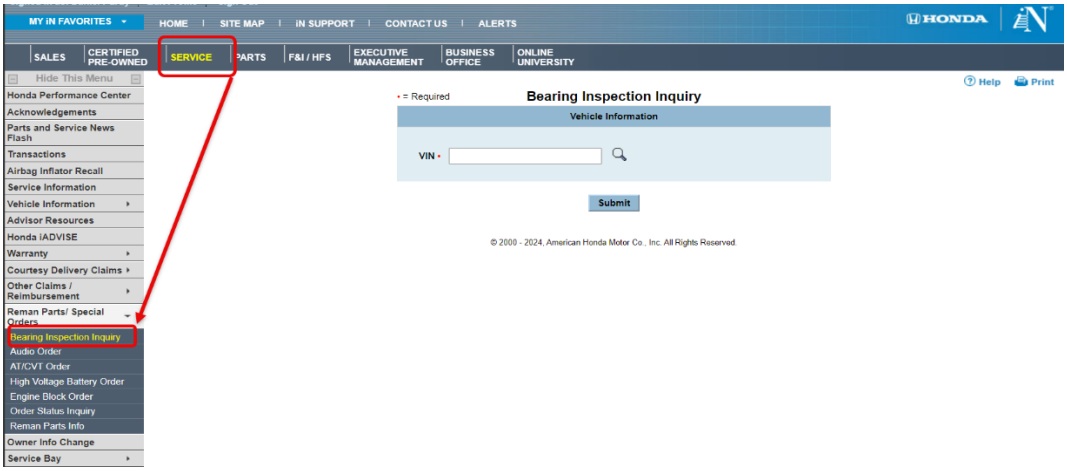
    NOTE: DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.

13. If advised by the V-SMART tool, proceed to either **INSPECTION A** or **INSPECTION B**. Otherwise, continue to the next step.

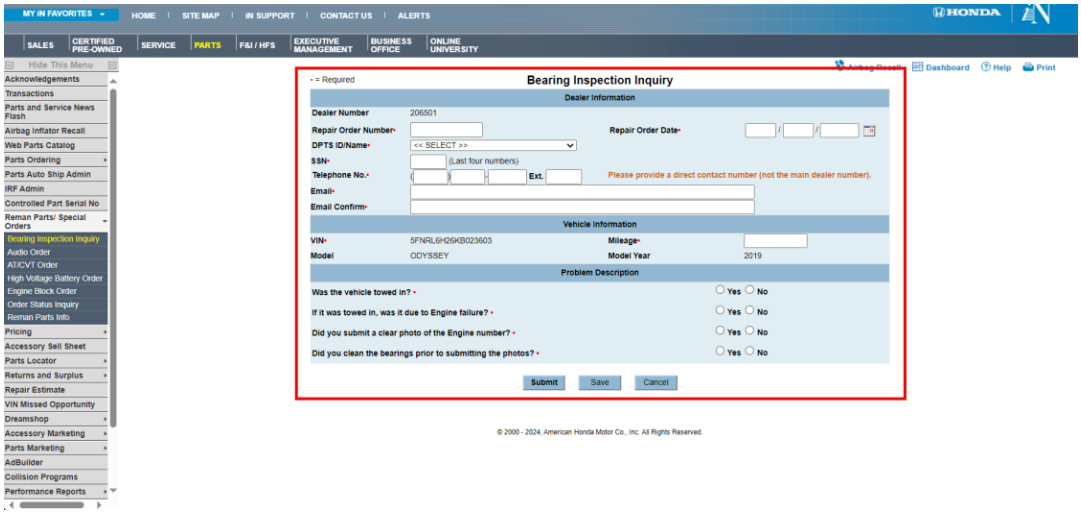
    NOTE:

    - Link to **INSPECTION A,** (Click HERE)
    - Link to **INSPECTION B,** (Click HERE)
    - Logging into the V-SMART application will always prompt the user to enter the RO# and scan/enter VIN.
    - V-SMART Troubleshooting Hotline Number: **(800) 346-6327.**

14. Create a Bearing Inspection Inquiry.
    1. Log into iN.
    2. Select SERVICE > REMAN PARTS / SPECIAL ORDERS > BEARING INSPECTION INQUIRY
    3. Select the BEARING INSPECTION INQUIRY.
    4. Input the correct **VIN**.



    5. Input all vehicle information to create a case.



    6. A 7-digit case reference number will be generated.

       NOTE: Note this number on the RO for future reference.

    7. Call the **Bearing Inspection Inquiry Team** at **(800) 824-6632**. Press **9** to be routed to the correct department (**do not contact TECH LINE for this**). Give the answering agent the **7-digit reference number** for a repair direction.

       NOTE:

       - MAKING THE INCORRECT SELECTION WILL RESULT IN INCREASED WAIT TIMES.
       - **DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.**

    8. The bearing inspection agent will give the **Repair Direction**. You will receive instructions via email on the repair method that includes the unique warranty code and the bearing sizes with their specific locations, if applicable. Parts will be shipped to your dealership. Make sure to advise the parts department with a copy of the RO.

       NOTE: Link to CONTENT REFERENCE, (Click HERE).

INSPECTION A

NOTE: DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.

1. Turn the steering wheel all the way to the right.
2. Relieve the fuel pressure.

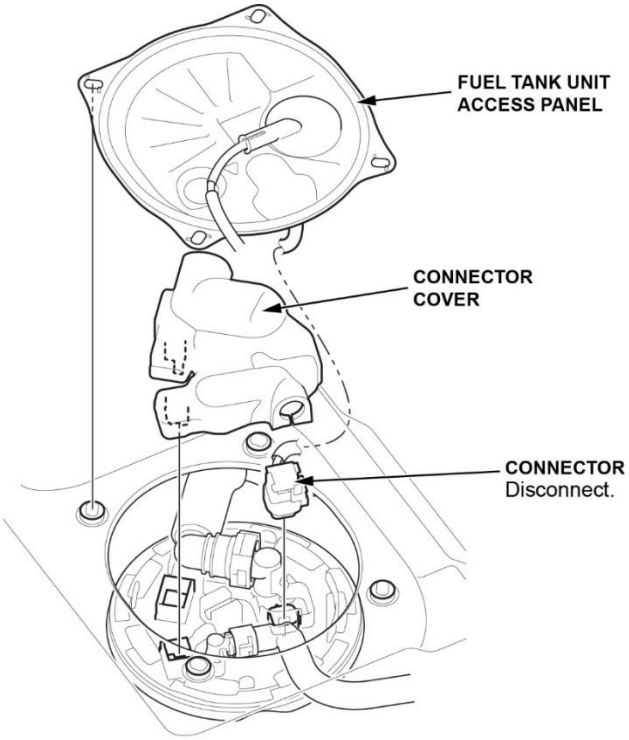
   With the i-HDS:

   - Plug an interface tool into the DLC (located under the driver's side of the dashboard) and load i-HDS.

   - Turn the vehicle to ON.
   - Select the **PGM-FI** system on the i-HDS.
   - Select the **FUEL PUMP OFF** from the **Inspection Menu** and follow the screen instructions.

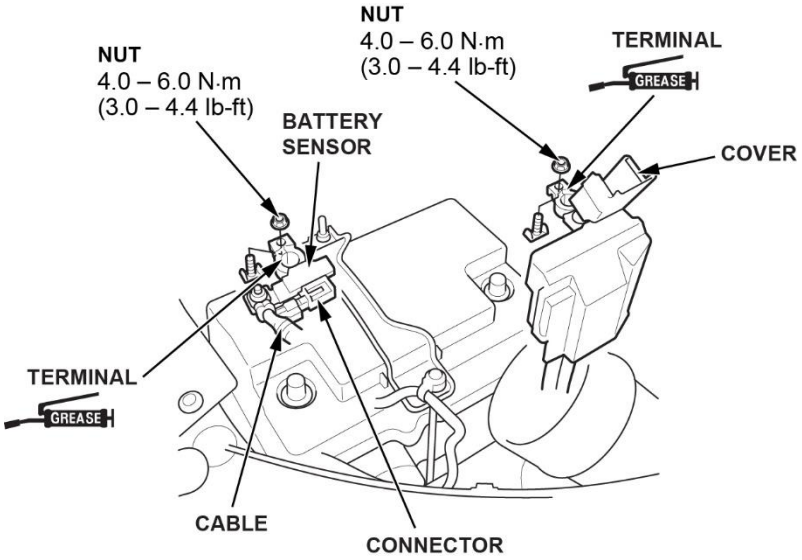
   Without an i-HDS:

   - Remove the fuel tank unit access panel and disconnect the connector from the fuel tank unit access panel.

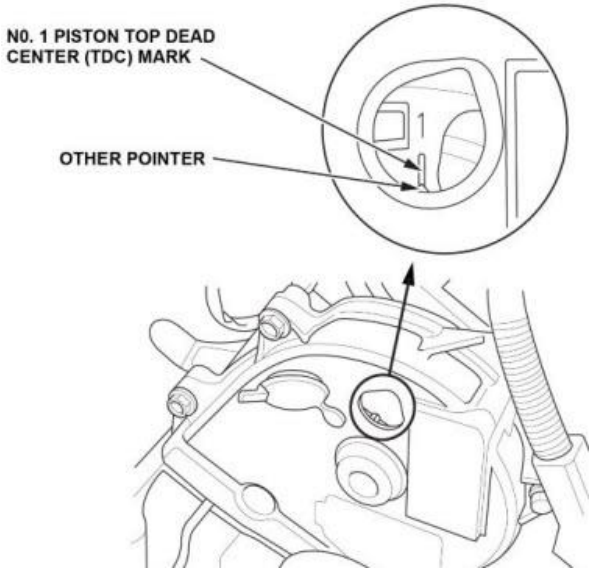


   - Start the engine, and let it idle until it stalls.

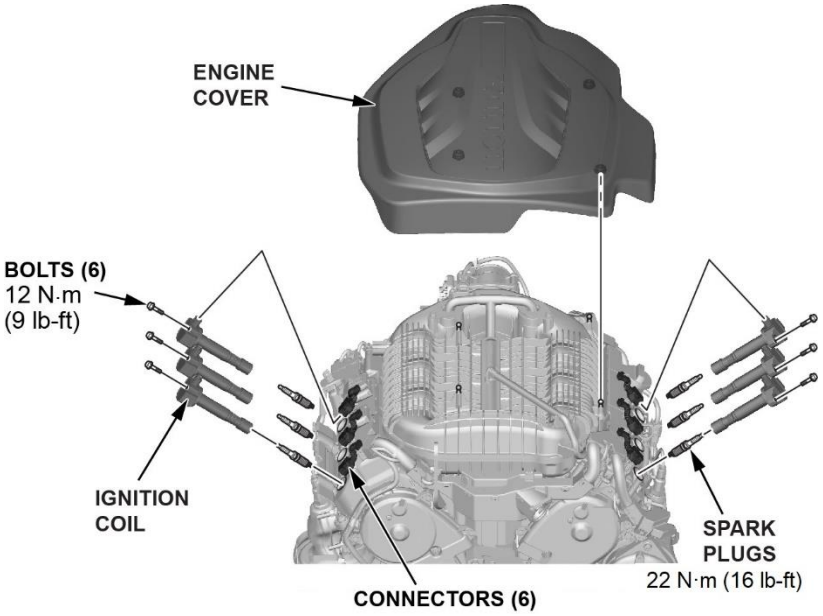
3. Disconnect the 12-volt battery.



4. Remove the engine oil dipstick.
5. Set the engine to TDC.

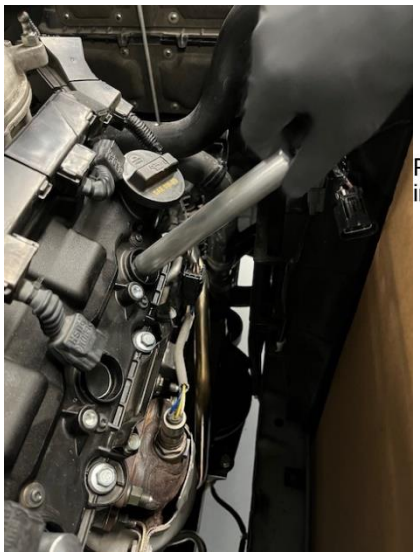


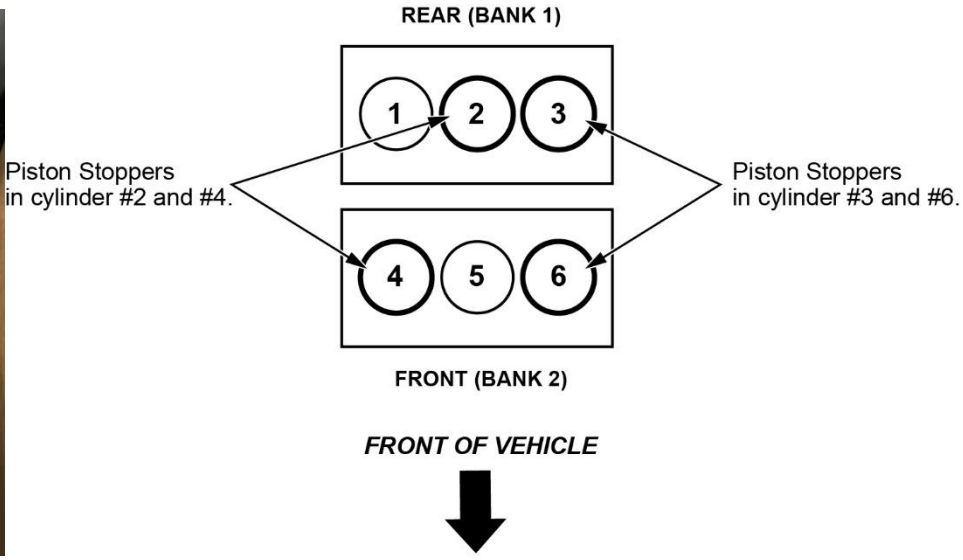
6. Remove the engine cover, the ignition coils, and spark plugs.

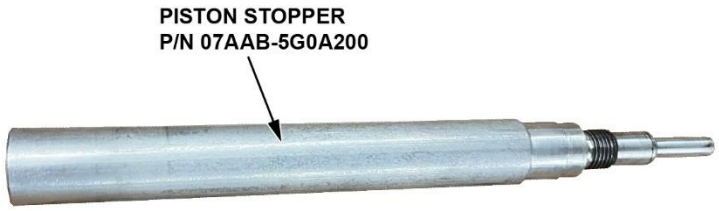


7. Install piston stoppers to **cylinder 2,3,4, and 6**.

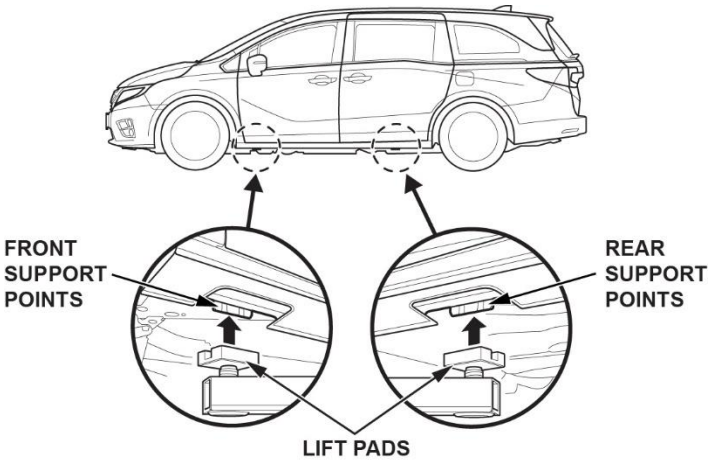
   NOTE: Make sure the stopper is clean and hand tighten only!



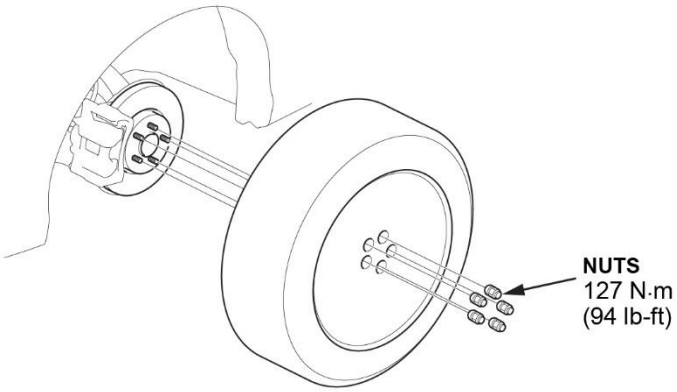




8. Lift the vehicle to a good working height.

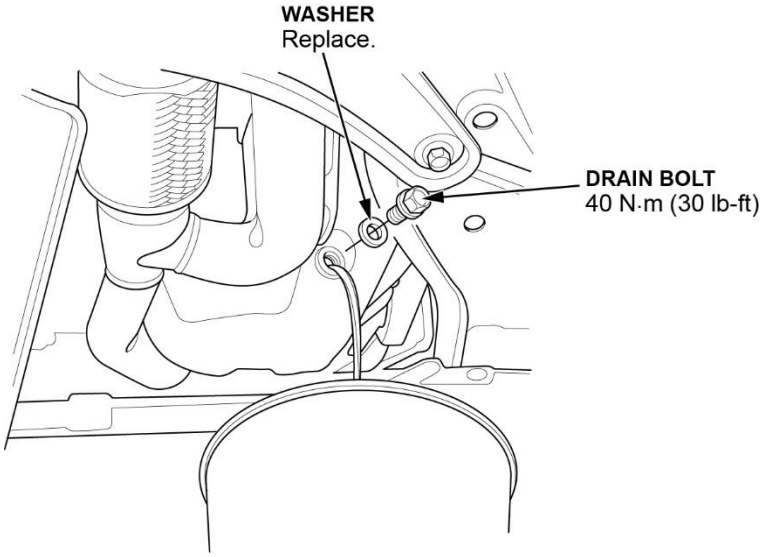


9. Remove the passenger side wheel.

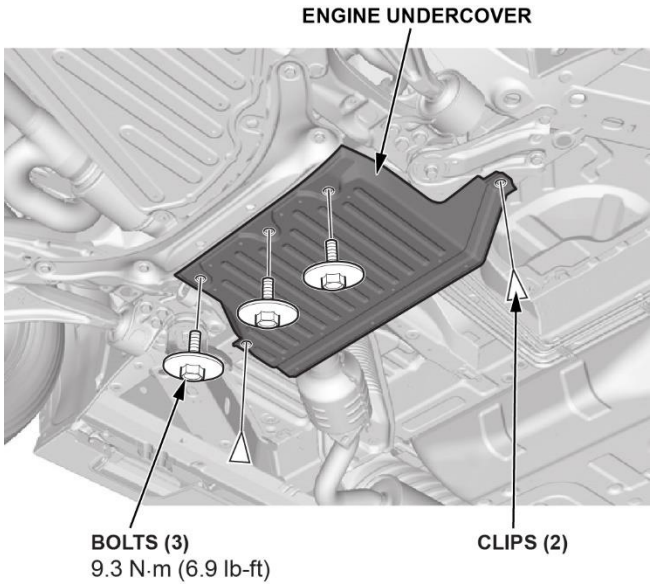


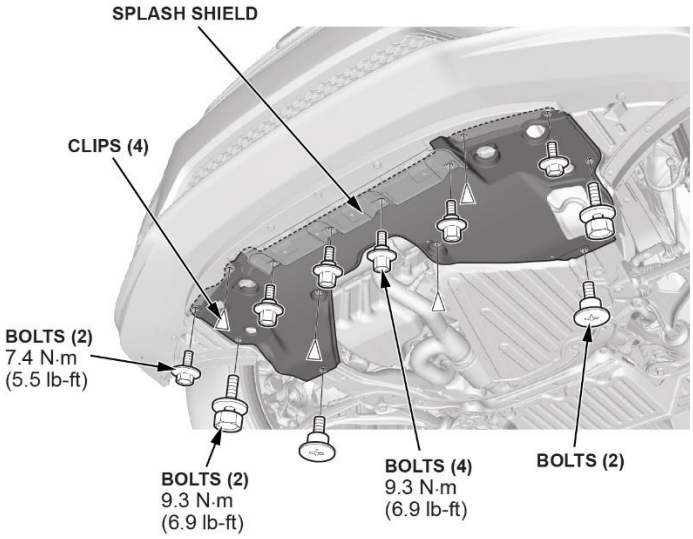
10. Pull back the fender liner to gain access to the crank pulley.

11. Drain the engine oil, **40 N·m (30 lb-ft).**



12. Remove the engine undercover and the lower splash shield.





13. With the crankshaft at TDC, mark the crankshaft pulley with a vertical line at the 6 o'clock position.

CRANKSHAFT PULLEY
Mark with a vertical line
from the 6 o'clock position.

14. Attach the crank angle gauge to the crankshaft pulley with **position #1** correctly aligned at the 6 o'clock position, also the mark made in step 13.

Click here to view a video: ► PLAY VIDEO

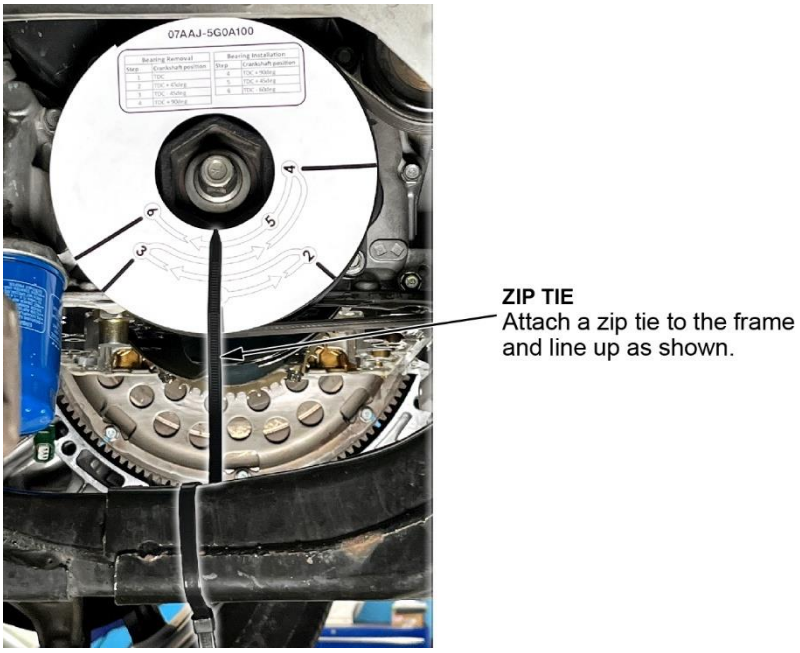
NOTE: The gauge has a magnetic reverse side that will hold onto the crankshaft pulley.

CRANK ANGLE GAUGE
P/N 07AAJ-5G0A100

15. Attach a large, commercially available zip tie to the subframe below the crankshaft pulley. The zip tie will be a **reference indicator** for a correct crank angle gauge position.

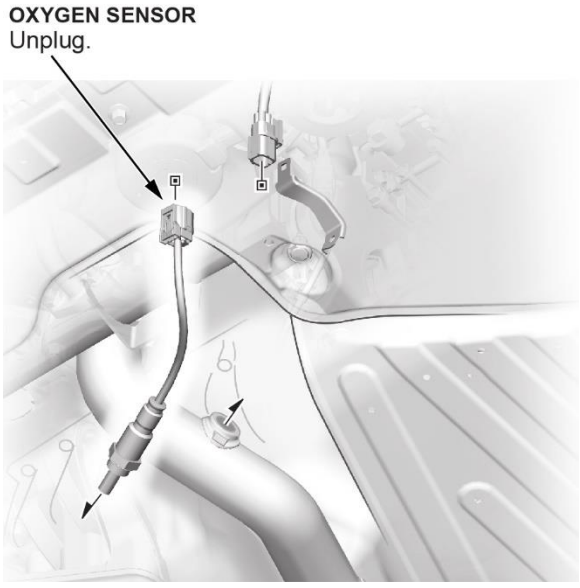
    NOTE:

    - Make sure it is pointing up at the 6 o'clock position on the pulley.
    - The zip tie should extend roughly **8" to 12"** over the subframe.



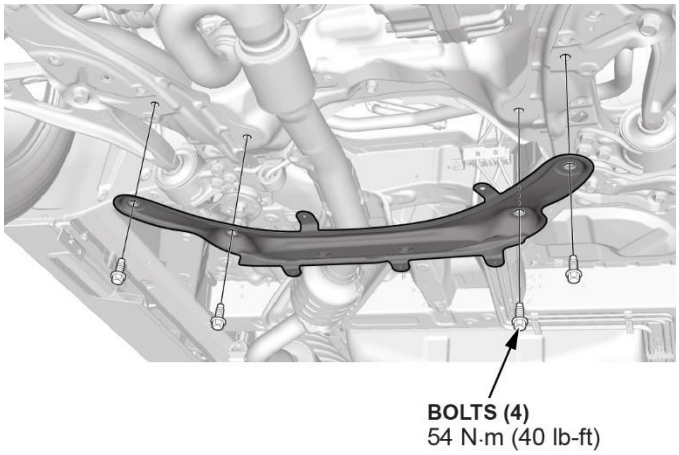
16. Unplug bank 2 oxygen sensor.

    NOTE: Exhaust may be HOT.



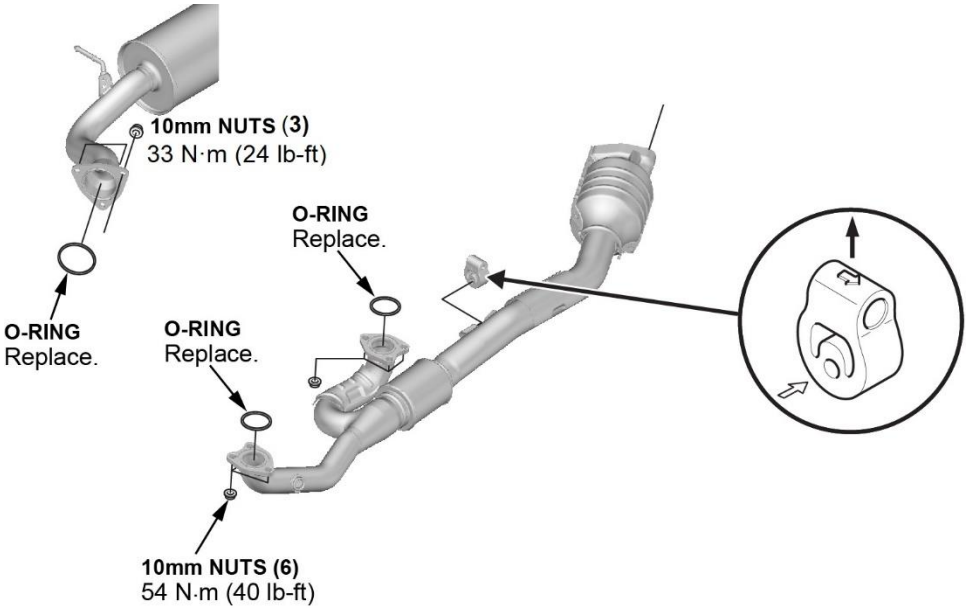
17. Remove the sub frame stiffener plate.

    NOTE: The bolts are must replace.

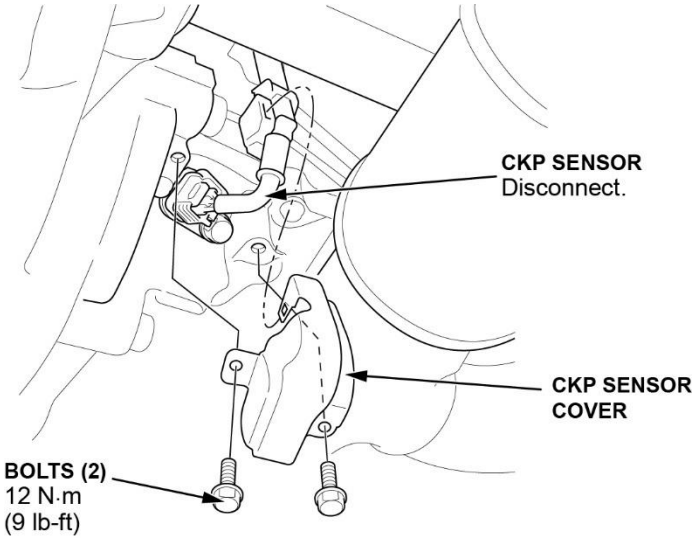


18. Remove the A-pipe.

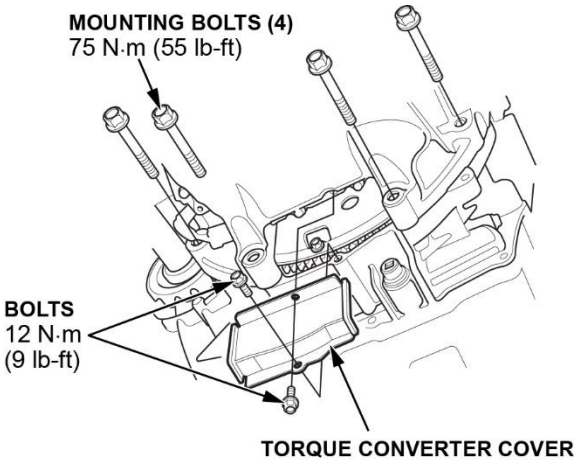
    NOTE: The nuts are must replace.



19. Remove the CKP sensor cover and disconnect the CKP sensor.



20. Remove the torque converter cover and the four lower transmission mounting bolts.



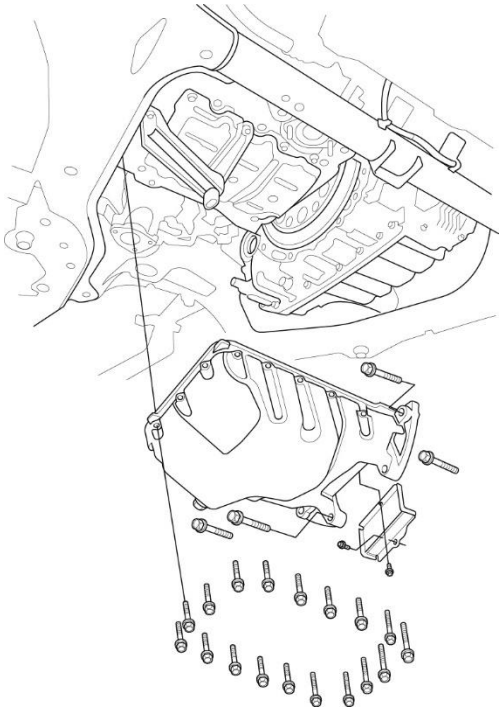
21. Remove the engine oil pan.

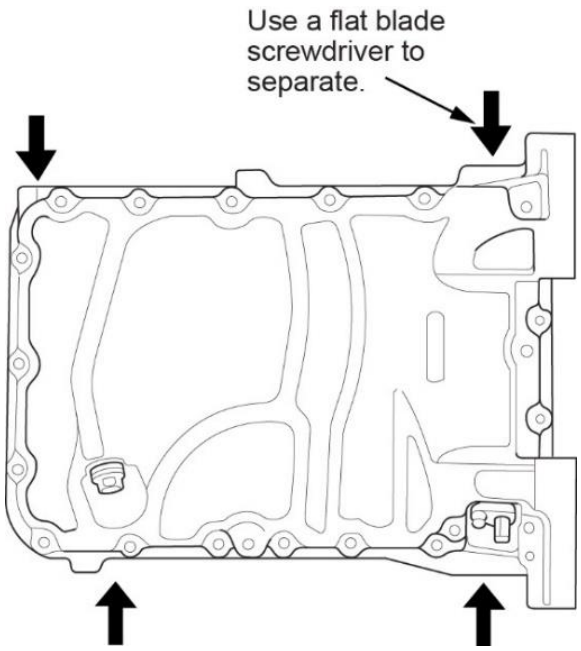
⚠ CAUTION

Hot engine oil may continue to drip from the engine which can cause burns or eye damage. Wear proper protective equipment and eyewear to avoid injury.

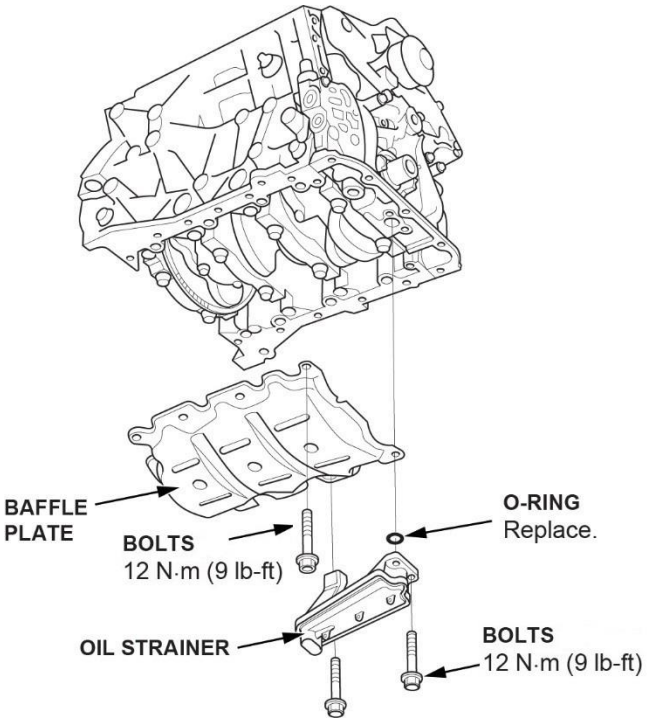
NOTE:

- Remove the bolts securing the oil pan.
- Use a flat blade screwdriver to separate the oil pan from the engine block.





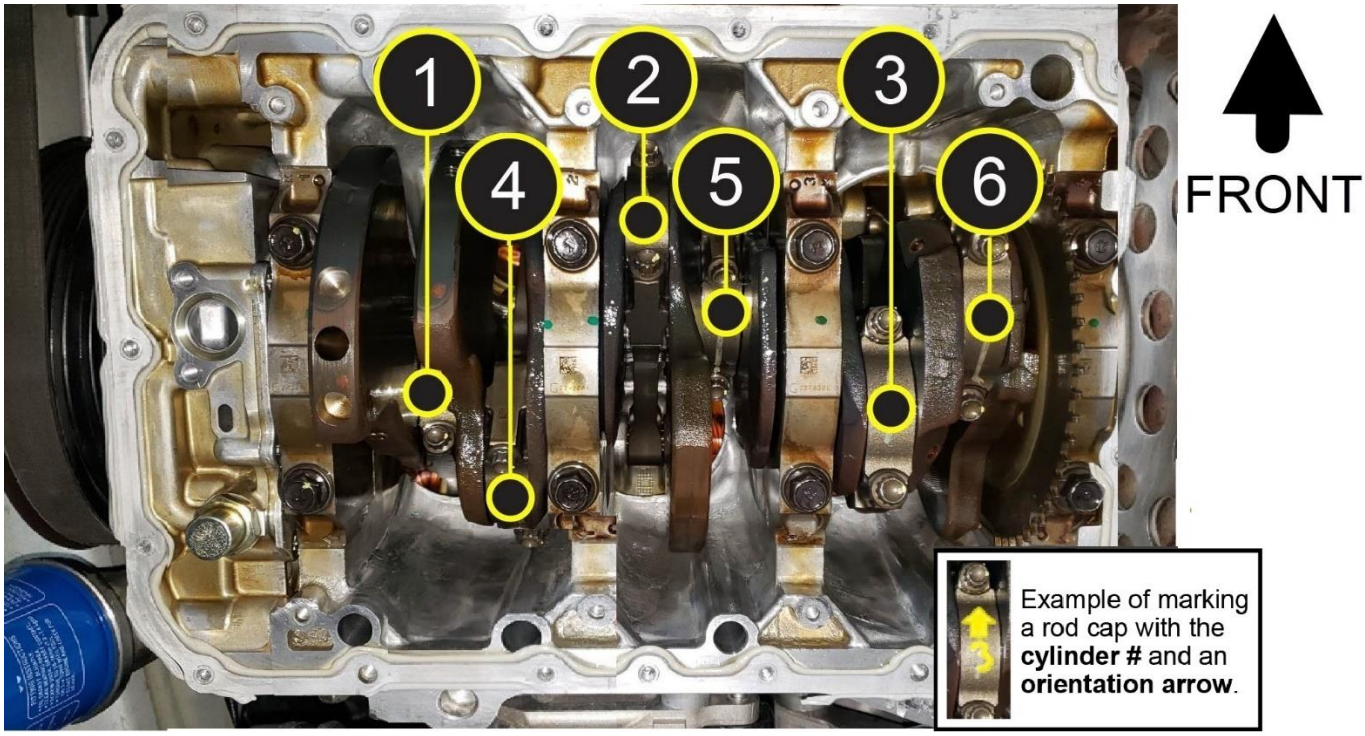
22. Remove the oil strainer and baffle plate.



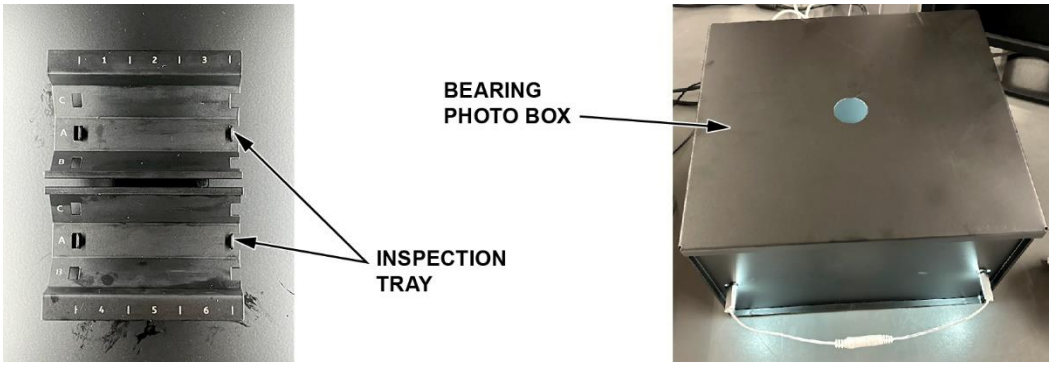
23. Clean and label each connecting rod cap with a paint marker (or otherwise suitable marking instrument) prior to removal. Make sure each rod cap has both the **cylinder #** and an **orientation arrow** pointing to the front of the vehicle**.**

NOTE:

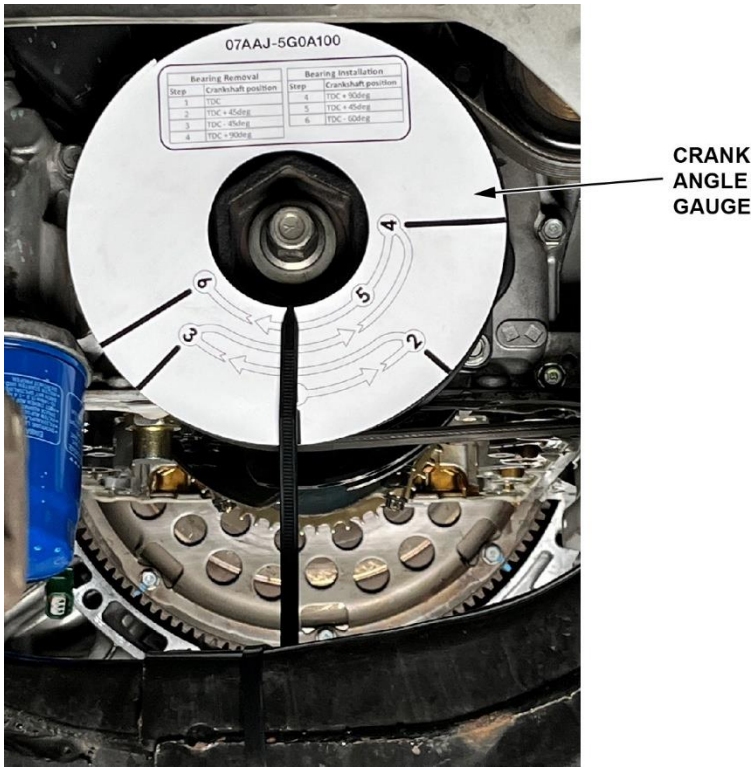
- Do not confuse the existing marking on the side of the connect rod and rod cap with the cylinder number. Those are manufacturing marks referring to the size of the rod.
- Reminder, installing a rod cap incorrectly will result in engine knock and/or engine failure.



24. Make sure the bearing photo box (P/N 07AAK-5J2A200) and inspection trays are available for use.



25. Make sure that **cylinder 1** is at TDC, **(position #1)**.



26. Remove the **connecting rod bearing caps with the lower bearings** from **cylinders 1,3,5, and 6**.

Click here to view a video: ▶ PLAY VIDEO

NOTE:

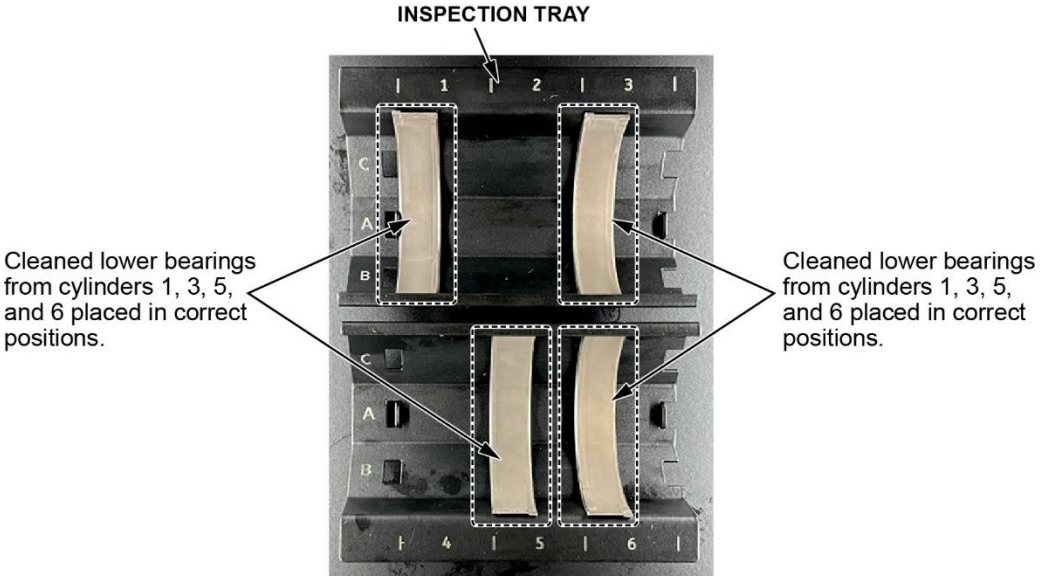
- Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents**.

Step/Crankshaft Position	Cylinder 1 Rod Bearing Cap and Lower Bearing	Cylinder 3 Rod Bearing Cap and Lower Bearing	Cylinder 5 Rod Bearing Cap and Lower Bearing	Cylinder 6 Rod Bearing Cap and Lower Bearing
#1/At TDC	**Remove**	**Remove**	**Remove**	**Remove**

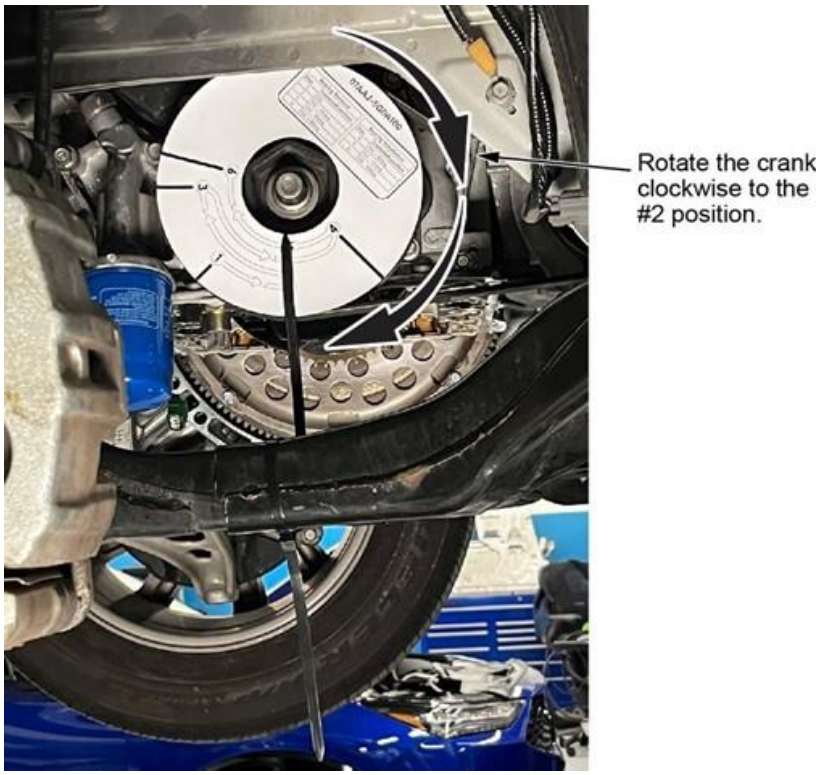
27. Place the removed lower bearings from **cylinders 1,3,5, and 6** into the rod bearing organizer.

NOTE:

- Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
- **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



28. Rotate the crankshaft clockwise to the **#2 position** (TDC +45°).



29. Remove the **rod bearing cap** and **lower bearing** from **cylinder 2**.

    NOTE:

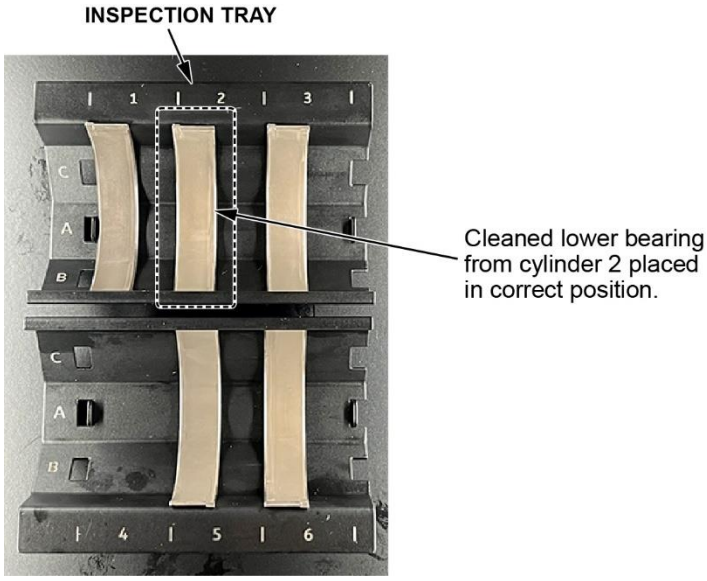
    - Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
    - This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.

Step/Crankshaft Position	Cylinder 2 Rod Bearing Cap and Lower Bearing
#2/TDC +45°	Remove

30. Place the removed lower bearing from **cylinder 2** into the rod bearing organizer.

NOTE:

- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
- **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



31. Remove the **upper connecting rod bearing** from **cylinder 2.**

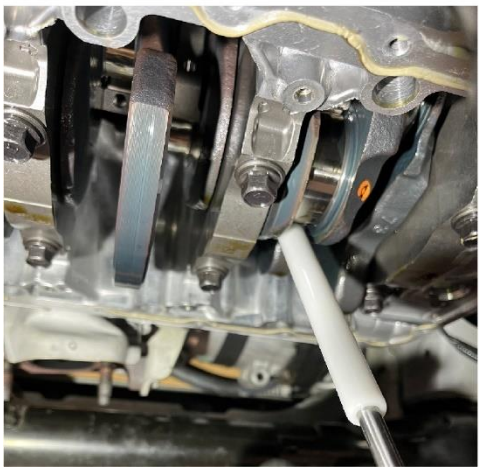
Click here to view a video: ► PLAY VIDEO

NOTE:

- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents.**
- Use the rod holder tool as needed, hand tighten only!

Step/Crankshaft Position	Cylinder 2 Upper Bearing
#2/TDC +45°	Remove

EXAMPLE OF USING THE M8 ROD HOLDER:

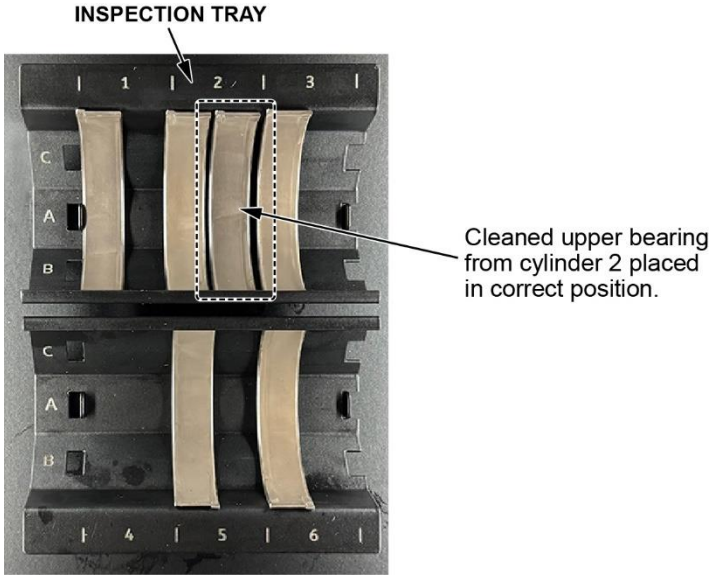


1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it to the side until it releases from the connecting rod.
5. Using the rod holder, carefully push the connecting rod back up until it clears the crankshaft journal.
6. Remove the rod holder.
7. Thoroughly clean the bearings with a clean shop towel to remove all oil residue. **Do not use any solvents**.

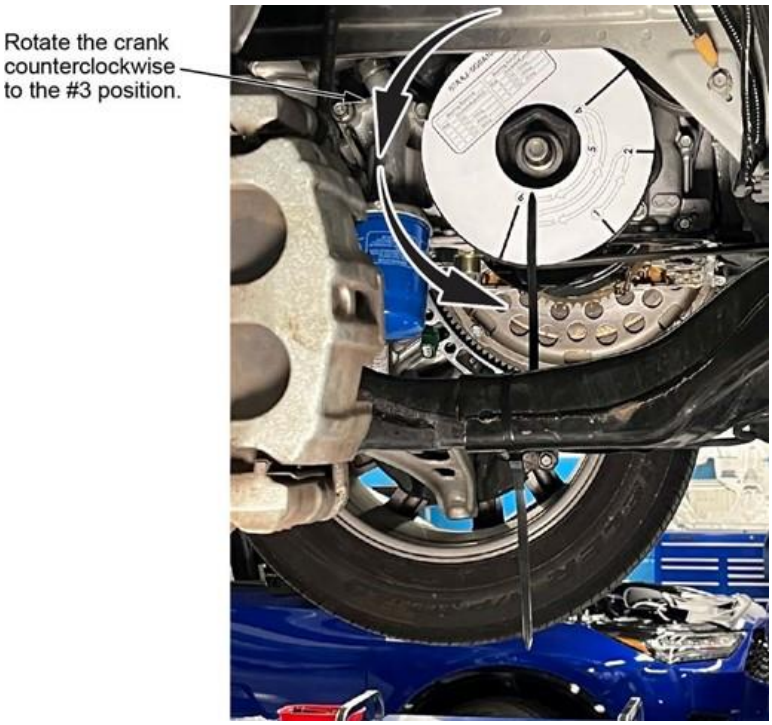
32. Place the removed **upper bearing** from **cylinder 2** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



33. Rotate the crankshaft counterclockwise to the **#3 position** (TDC -45°).



34. Remove the **rod bearing cap and lower bearing** from **cylinder 4**.

    NOTE:

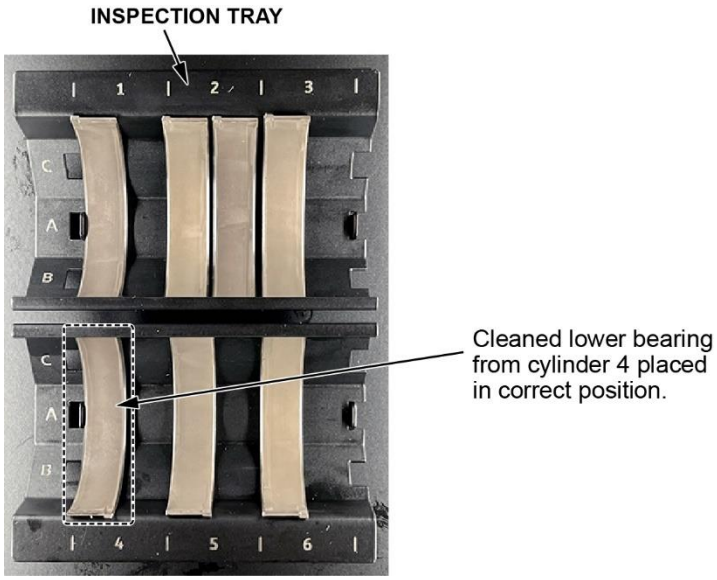
    - Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
    - This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
    - Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents.**

Step/Crankshaft Position	Cylinder 4 Rod Bearing Cap and Lower Bearing
#3/TDC -45°	**Remove**

35. Place the removed **lower bearing** from **cylinder 4** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



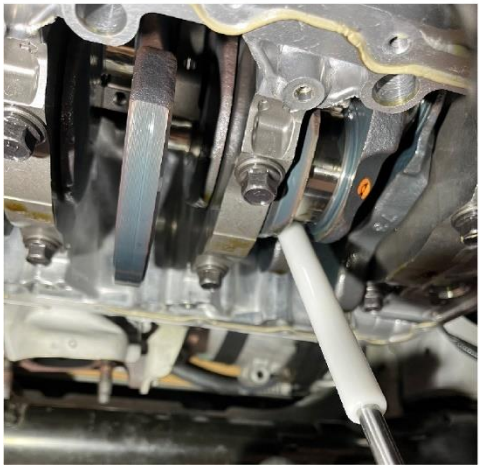
36. Remove the **cylinder 3 and cylinder 4 upper connecting rod bearings**.

NOTE:

- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- The next steps involve manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents**.
- Use the M8 as needed, hand tighten only!

Step/Crankshaft Position	Cylinder 3 Upper Bearing	Cylinder 4 Upper Bearing
#3/TDC -45°	Remove	Remove

EXAMPLE OF USING THE M8 ROD HOLDER:



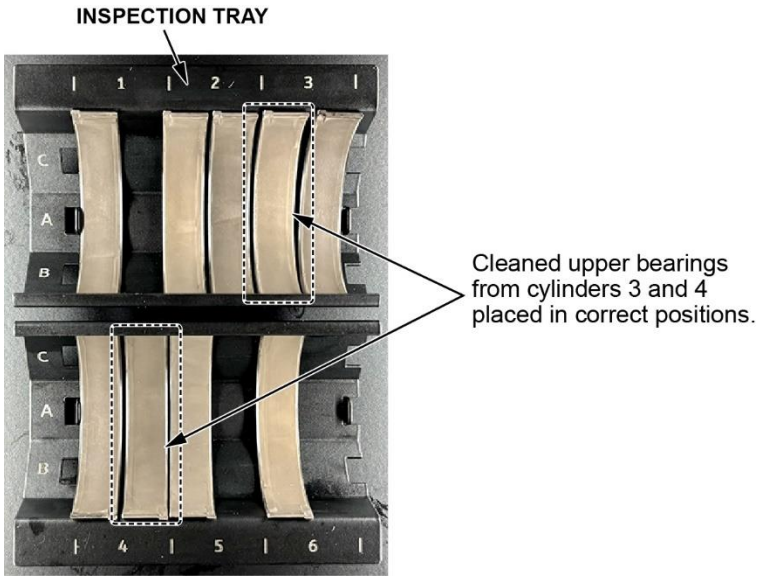
1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it to the side until it releases from the connecting rod.
5. Using the rod holder, carefully push the **cylinder 3** connecting rod back up until it clears the crankshaft journal.

   NOTE: Leave **cylinder 4** connecting rod in the lower position, **do not** push back up.
6. Remove the rod holder.
7. Thoroughly clean the bearings with a clean shop towel to remove all oil residue. **Do not use any solvents**.

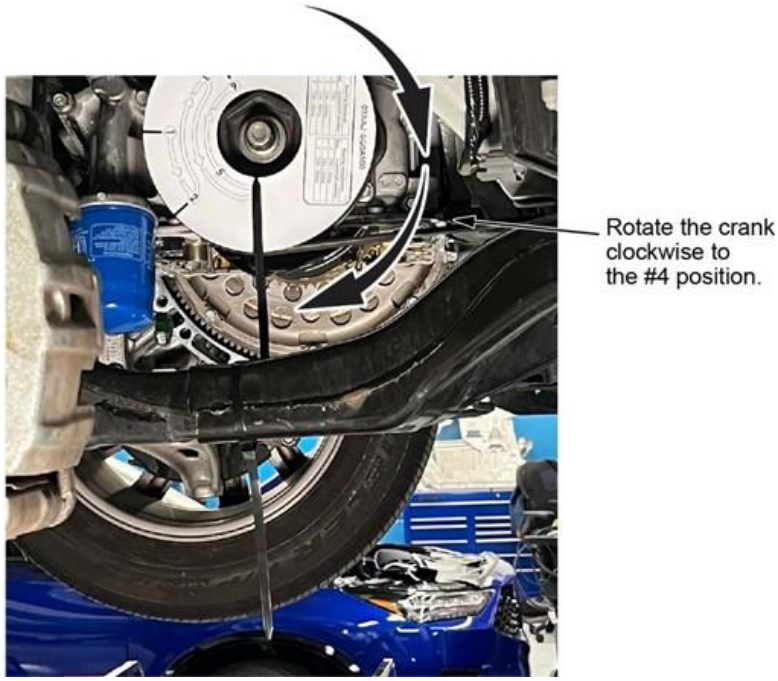
37. Place the removed **upper bearings** from **cylinder 3 and 4** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



38. Rotate the crankshaft clockwise to the **#4 position** (TDC +90°).



39. Remove the **upper bearings from cylinders 1, 5, and 6**.

NOTE:

- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- The next steps involve manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents**.
- Use the M8 as needed, hand tighten only!

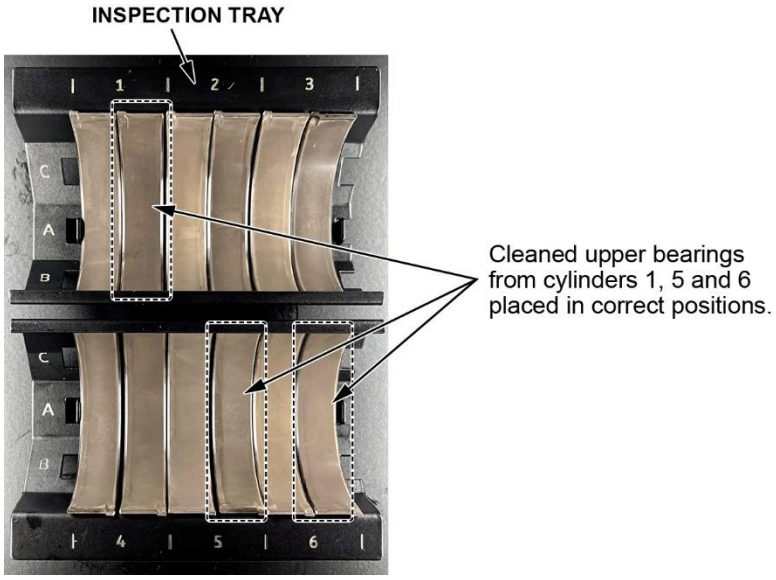
Step/Crankshaft Position	Cylinder 1 Upper Bearing	Cylinder 5 Upper Bearing	Cylinder 6 Upper Bearing
#4/TDC +90°	Remove	Remove	Remove

1. Thread the Rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it to the side until it releases from the connecting rod.
5. Using the Rod holder, carefully push the connecting rod back up until it clears the crankshaft journal.
6. Remove the Rod holder.
7. Thoroughly clean the bearings with a clean shop towel to remove all oil residue. **Do not use any solvents**.

40. Place the removed **upper bearings** from **cylinders 1, 5, and 6** into the rod bearing organizer.

NOTE:

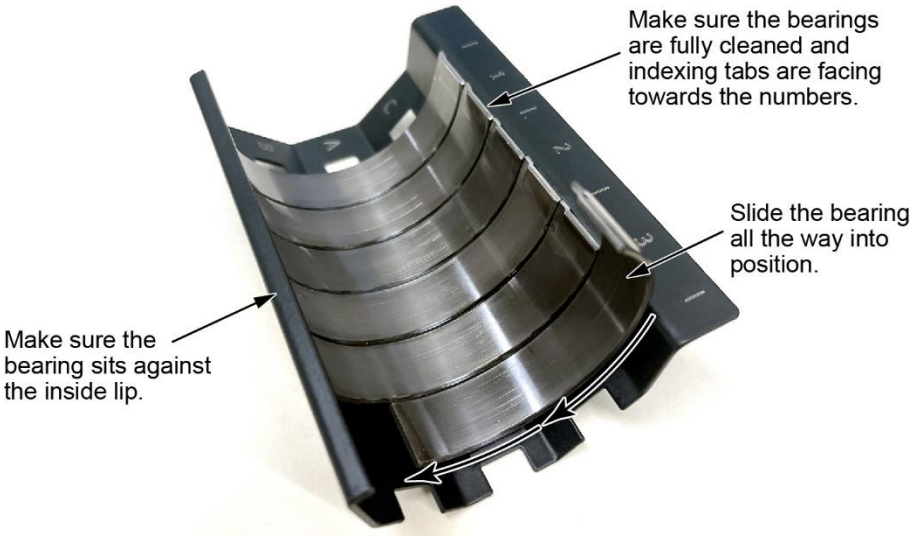
- Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
- **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



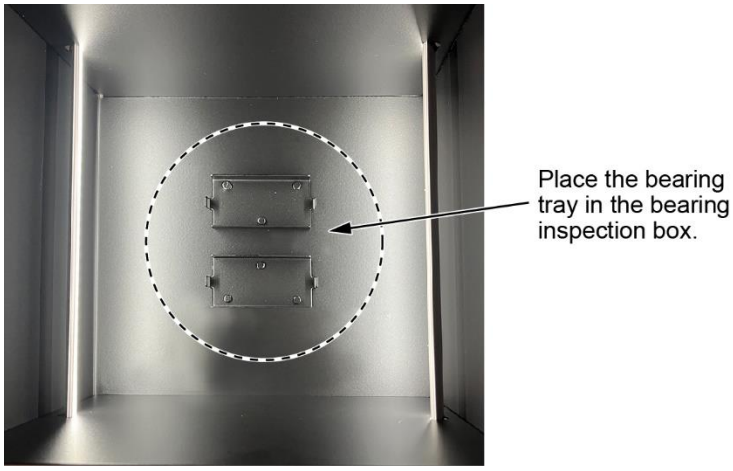
41. Make sure the bearings are fully seated and level with the edge of the rod bearing organizer.

    NOTE:

    - The bearing's indexing tab should be lined up at the numbers of the tray.
    - The flat edge of the bearing should be inside of the lip on the rod bearing organizer.
    - All bearings should be fully seated in the inspection tray.

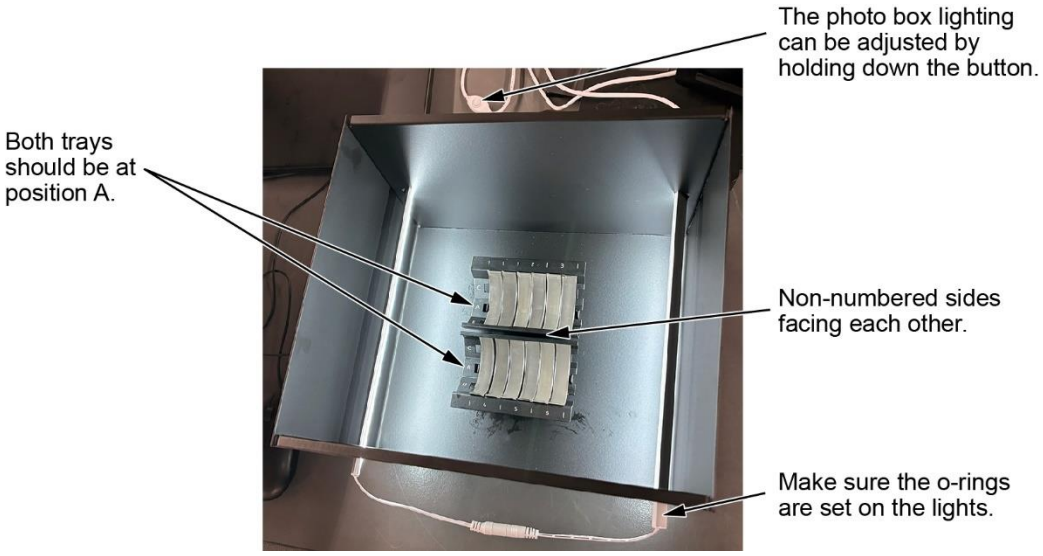


42. Remove the bearing photo box cover and place the bearing organizers in.



43. Confirm the following on the bearing inspection box:
    1. Lights at the brightest setting.

       NOTE: The light brightness can be adjusted by holding the button.
    2. Both bearing trays are in position A with non-numbered sides facing each other.
    3. The O-rings are set on the lights to prevent an outside light source.



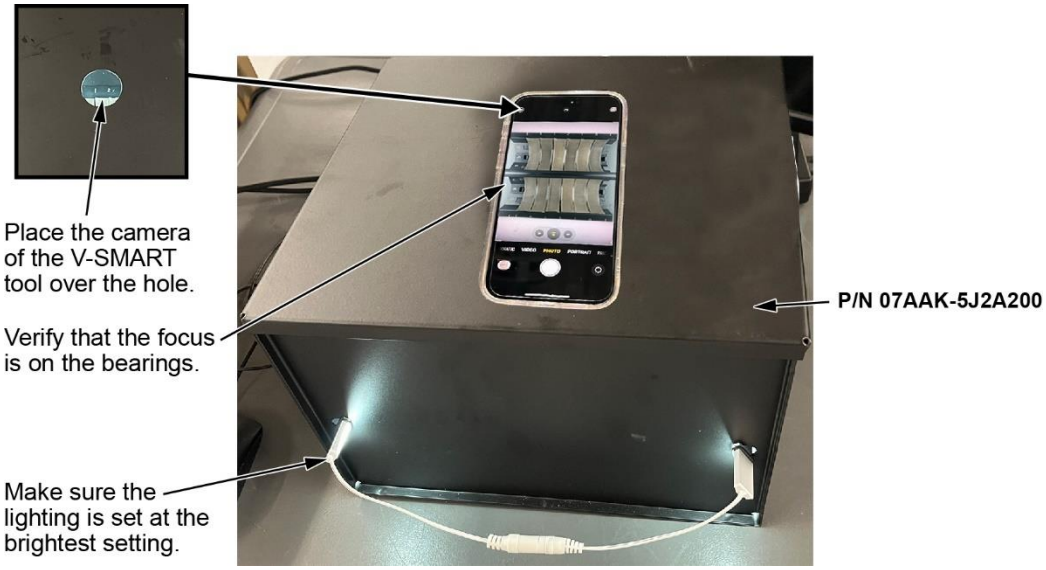
44. Login to the V-SMART tool.

    NOTE: Scanning the VIN will return to where you last left off at.

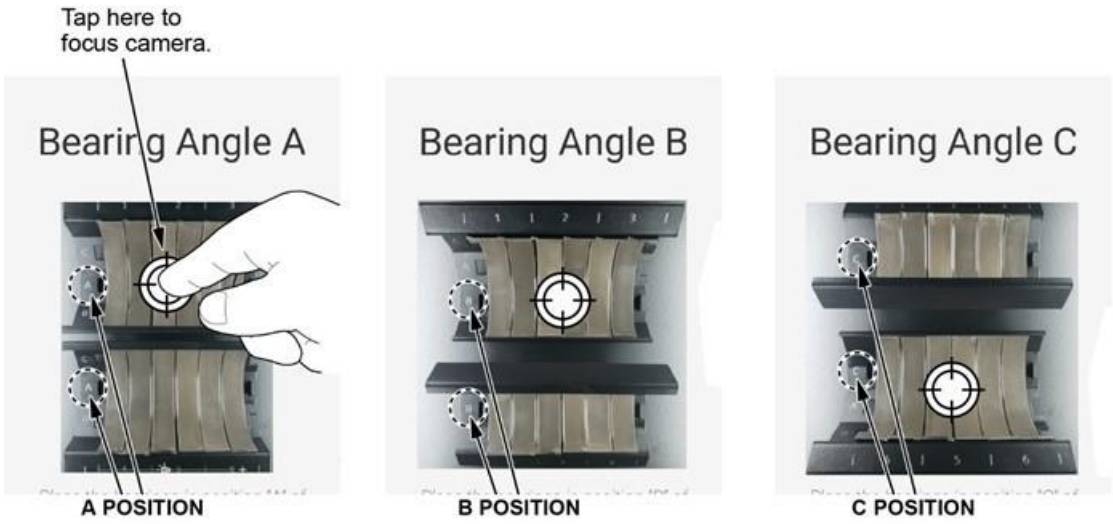
45. Using the V-SMART tool, follow the instructions on the application to take bearing photos in positions A, B, and C. Follow the prompts when submitting the photos.

    NOTE:

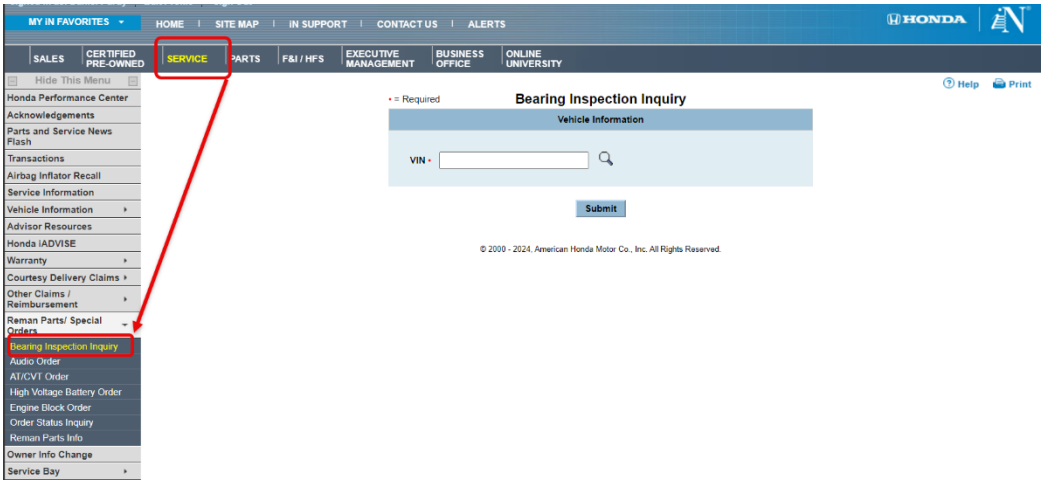
    - Use the camera tap focus for a clear image.
    - Any unclear images will not be accepted.
    - Follow the V-SMART tool prompts after photo submission.



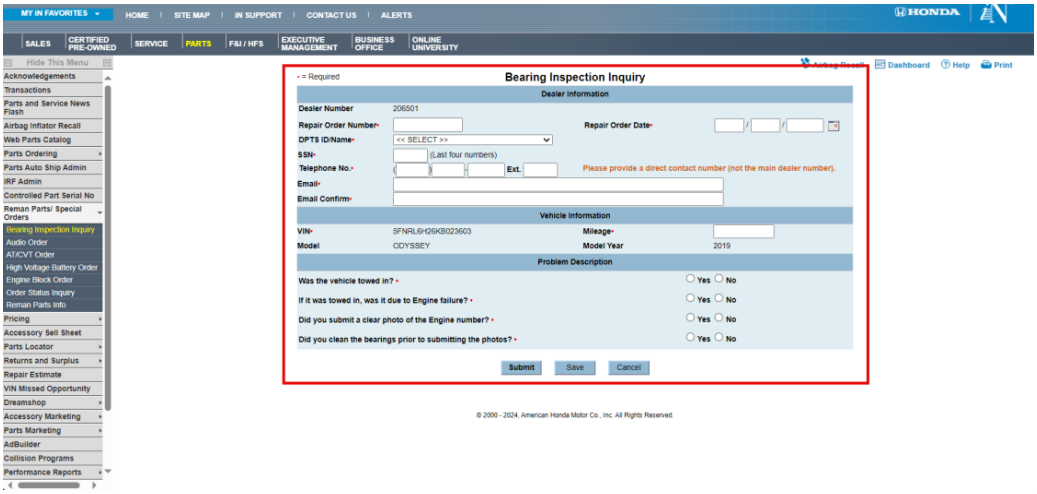
When taking the photos:



46. Create a Bearing Inspection Inquiry.
    1. Log into iN.
    2. Select SERVICE > REMAN PARTS / SPECIAL ORDERS > BEARING INSPECTION INQUIRY
    3. Select the BEARING INSPECTION INQUIRY.
    4. Input the correct **VIN**.



    5. Input all vehicle information to create a case.



    6. A 7-digit case reference number will be generated.

       NOTE: Note this number on the RO for future reference.

    7. Call the **Bearing Inspection Inquiry Team** at **(800) 824-6632**. Press **9** to be routed to the correct department (**do not contact TECH LINE for this**). Give the answering agent the **7-digit reference number** for a repair direction.

       NOTE:

       - MAKING THE INCORRECT SELECTION WILL RESULT IN INCREASED WAIT TIMES.
       - **DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.**

47. The bearing inspection agent will give the **Repair Direction**. You will receive instructions via email on the repair method that includes the unique warranty code and the bearing sizes with their specific locations, if applicable. Parts and tools will be shipped to your dealership. Make sure to advise the parts department with a copy of the RO.
48. NOTE: Link to CONTENT REFERENCE, (Click HERE).

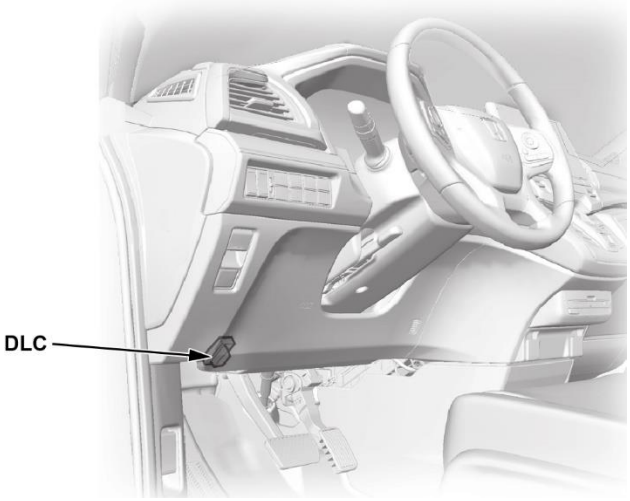
INSPECTION B

NOTE: DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.

1. Turn the steering wheel all the way to the right.
2. Relieve the fuel pressure.

   With the i-HDS:

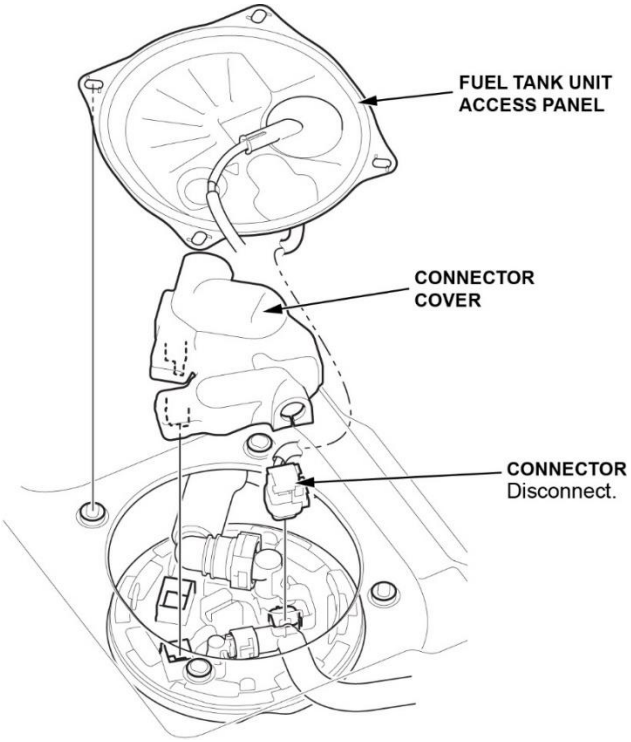
   - Connect an i-HDS to the data link connector (DLC) located under the driver's side of the dashboard.



   - Turn the vehicle to ON.
   - Select the **PGM-FI** system on the i-HDS.
   - Select the **FUEL PUMP OFF** from the **Inspection Menu** and follow the screen instructions.

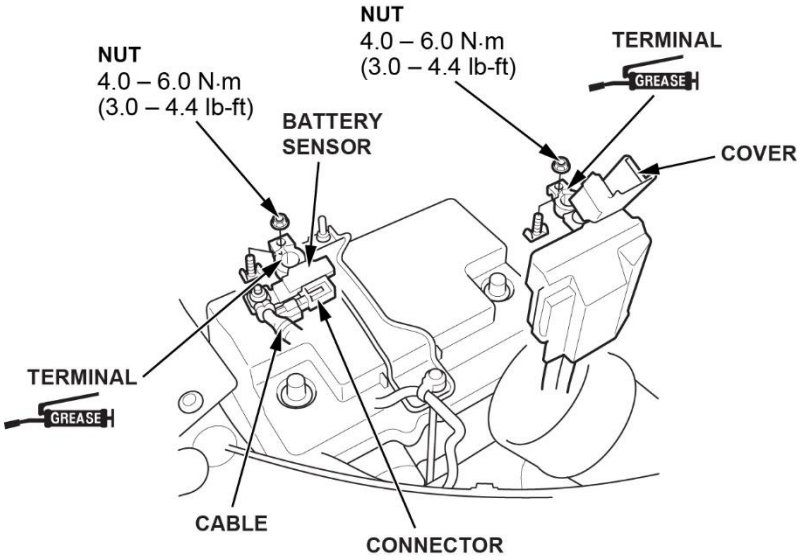
   Without an i-HDS:

   - Remove the fuel tank unit access panel and disconnect the connector from the fuel tank unit access panel.

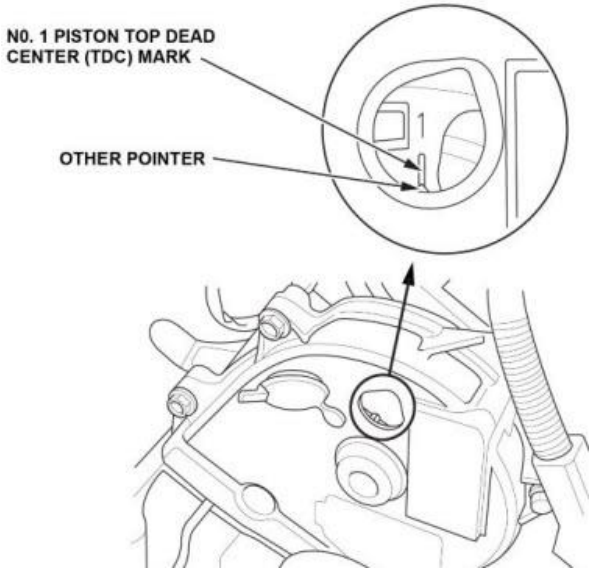


   - Start the engine, and let it idle until it stalls.

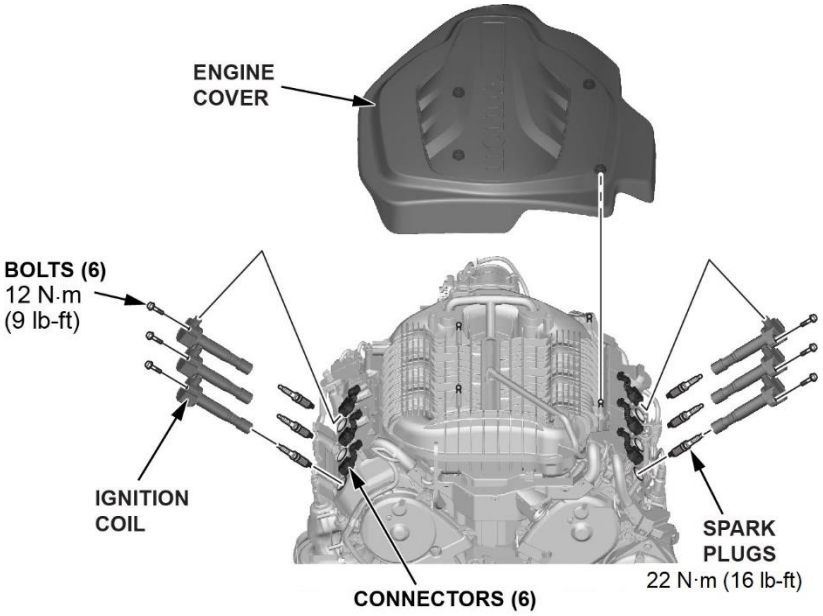
3. Disconnect the 12-volt battery.



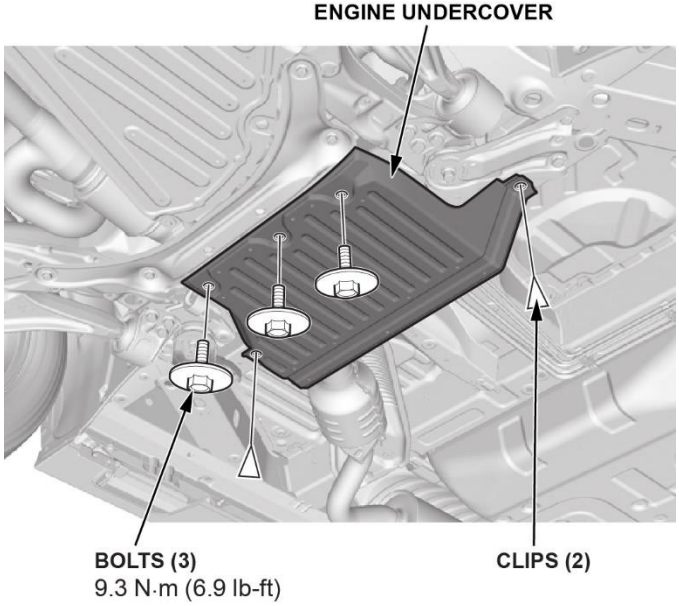
4. Remove the engine oil dipstick.
5. Set the engine to TDC.

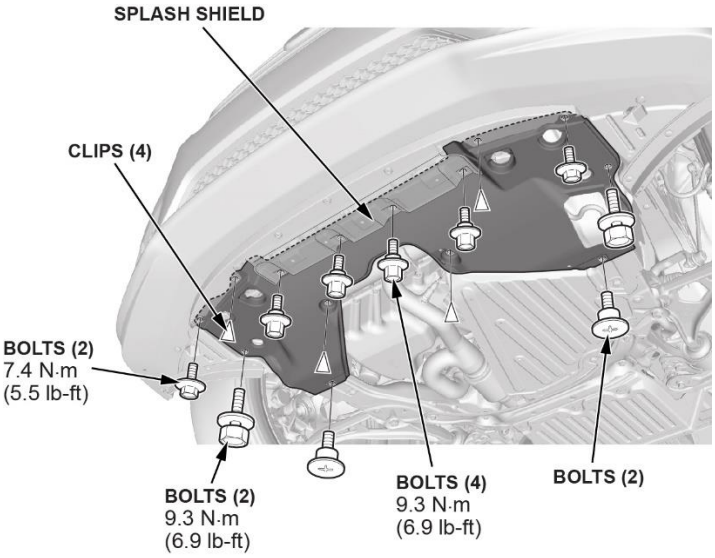


6. Remove the engine cover, the ignition coils, and spark plugs.

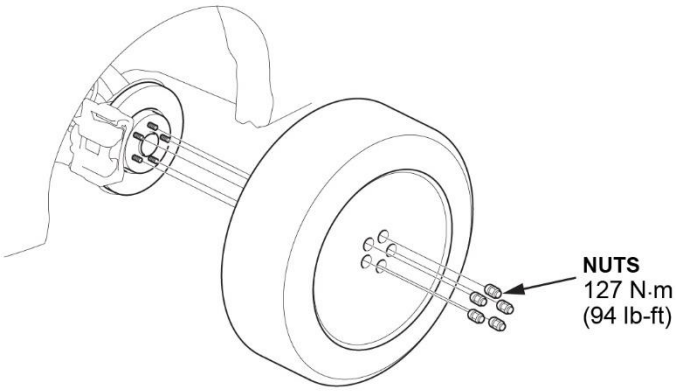


7. Lift the vehicle.
8. Remove the engine undercover and the lower splash shield.

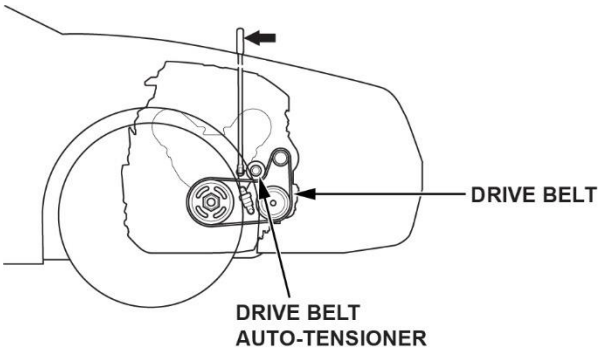




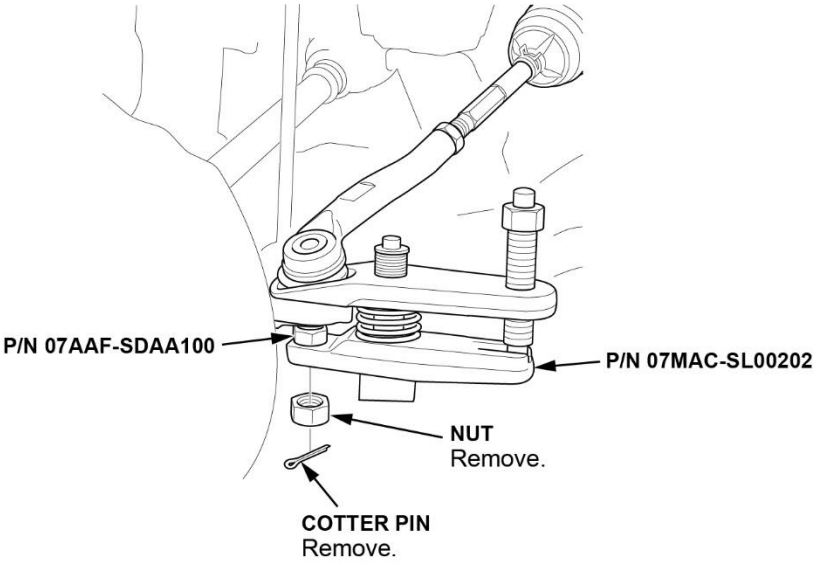
9. Remove the passenger side front wheel **127 N·m (94 lb-ft)**.



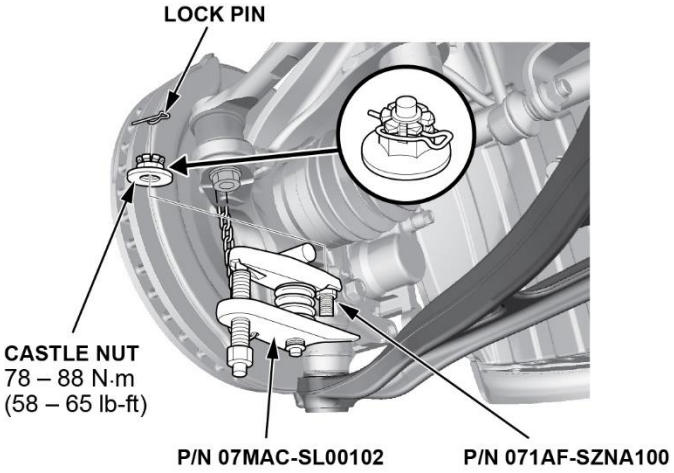
10. Remove drive belt.



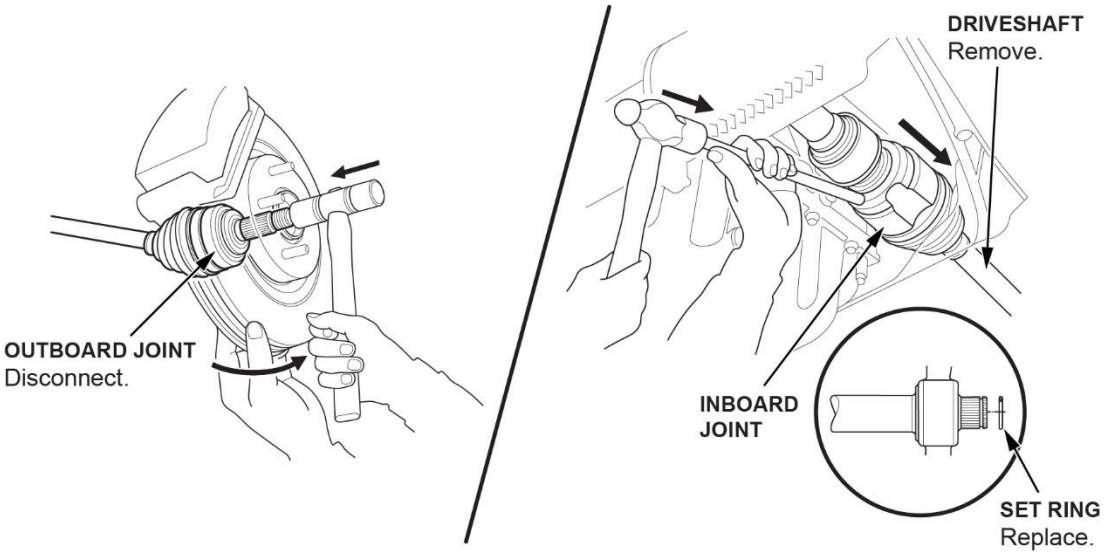
11. Separate the tie rod ball joint on the passenger side front wheel.



12. Separate the lower knuckle ball joint.

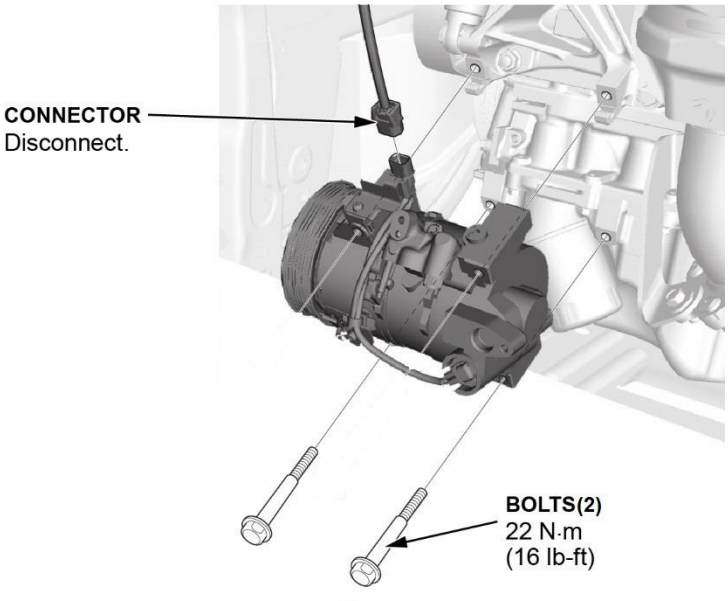


13. Remove the passenger side drive shaft.
    1. Remove the front spindle nut.
    2. Pull the knuckle outward and separate the outboard joint from the front hub using a soft face hammer.
    3. Drive the inboard joint off of the intermediate shaft using a drift punch and a hammer.

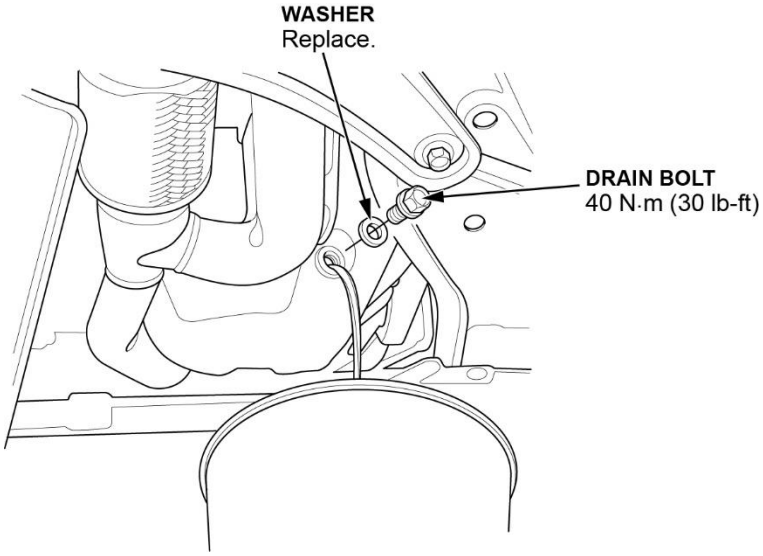


    4. Remove the driveshaft as an assembly.
    5. Remove and replace the set ring.

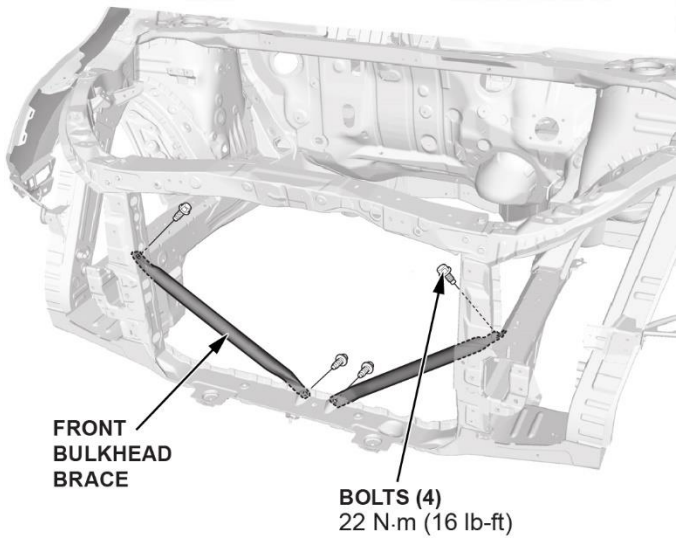
14. Loosen the 2 lower bolts of the compressor.



15. Drain the engine oil, **40 N·m (30 lb-ft).**

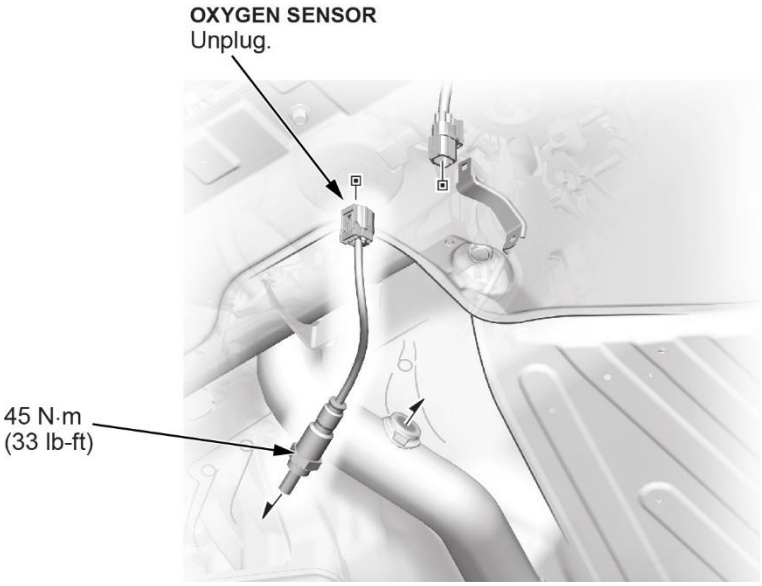


16. Remove the right side bulkhead brace.



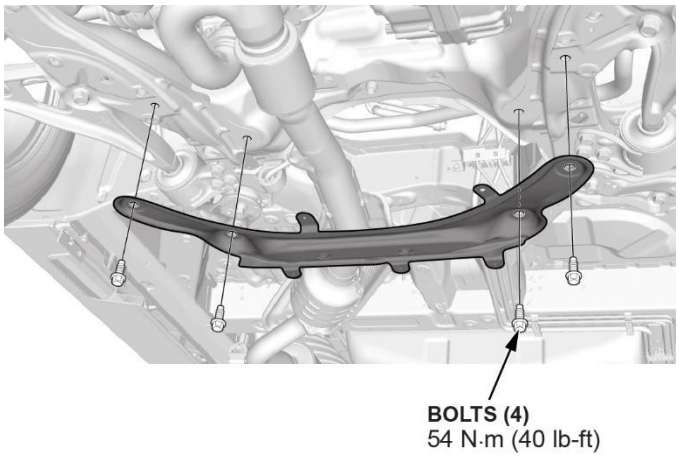
17. Unplug bank 2 oxygen sensor.

    NOTE: Exhaust may be HOT.



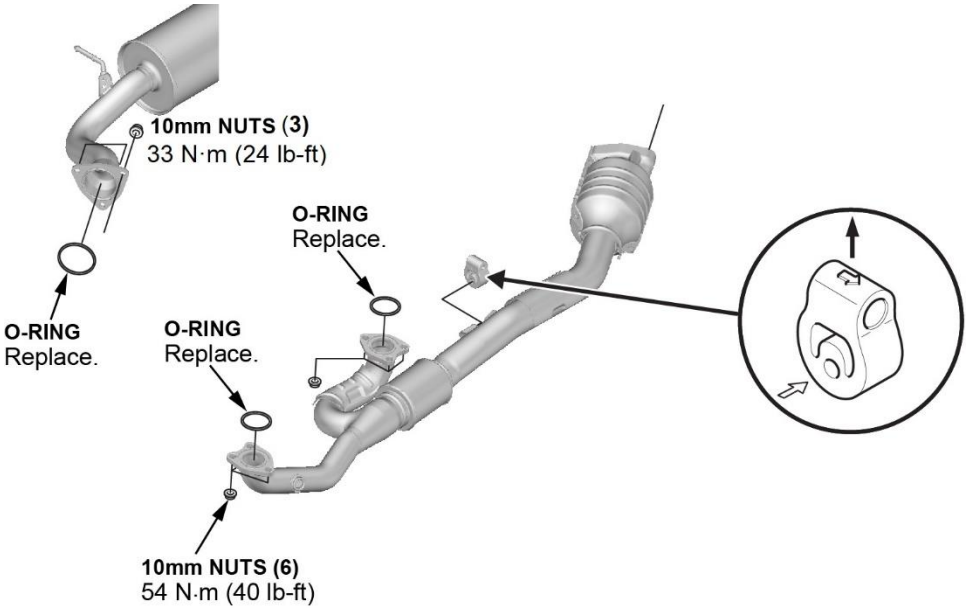
18. Remove the sub frame stiffener plate.

    NOTE: Bolts are must replace.

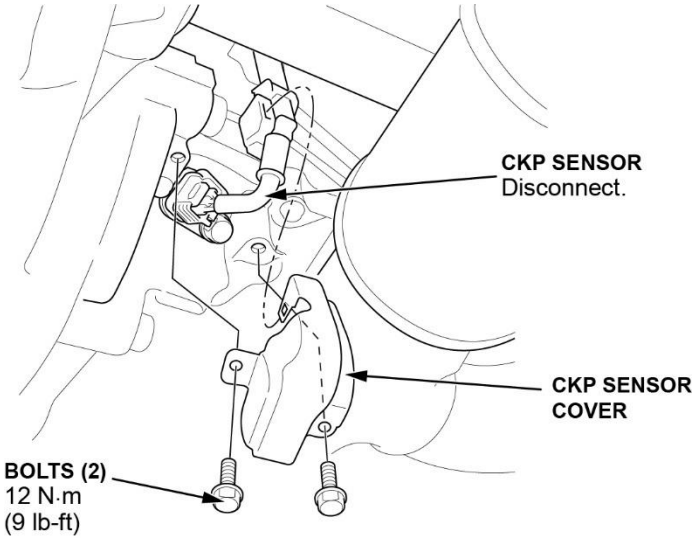


19. Remove the A-pipe.

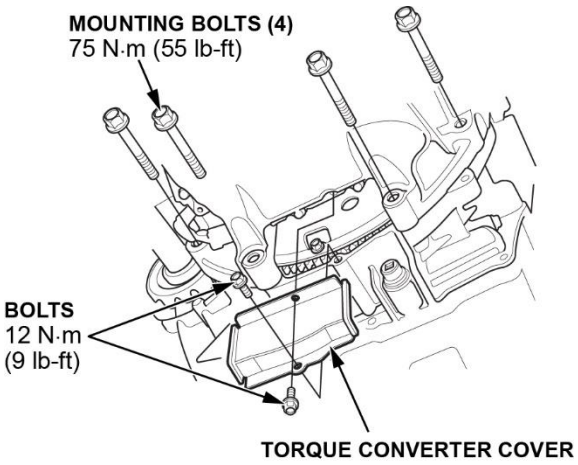
    NOTE: Nuts are must replace.



20. Remove the CKP sensor cover and disconnect the CKP sensor.

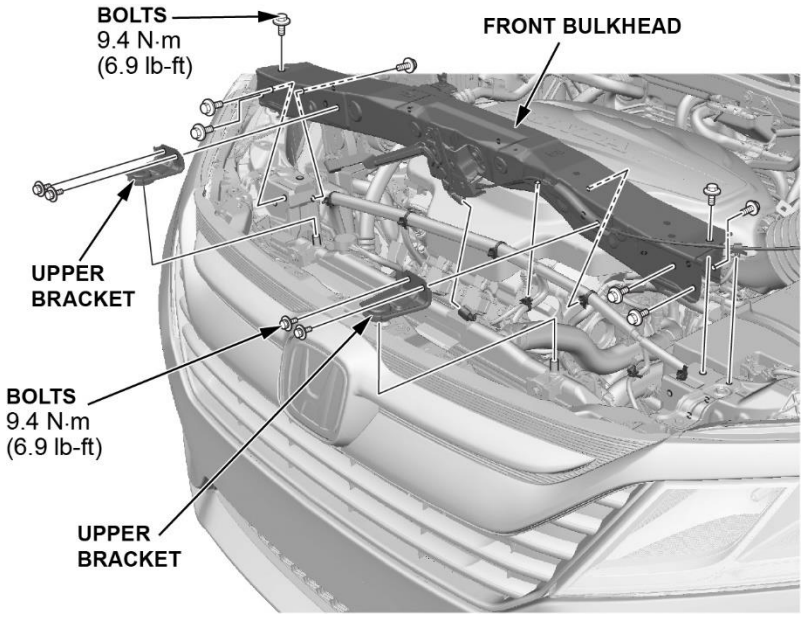


21. Remove the torque converter cover and the four lower transmission mounting bolts.

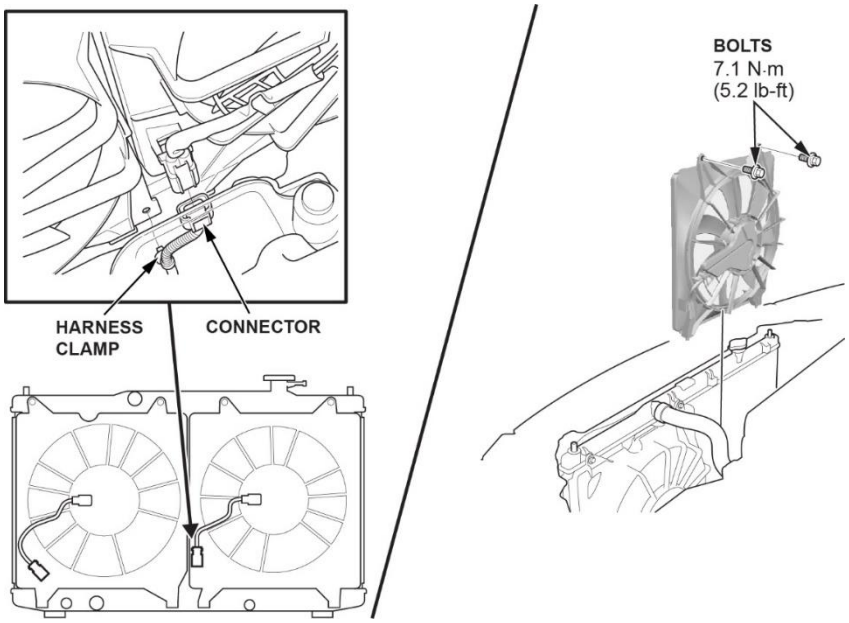


22. Lower the vehicle.

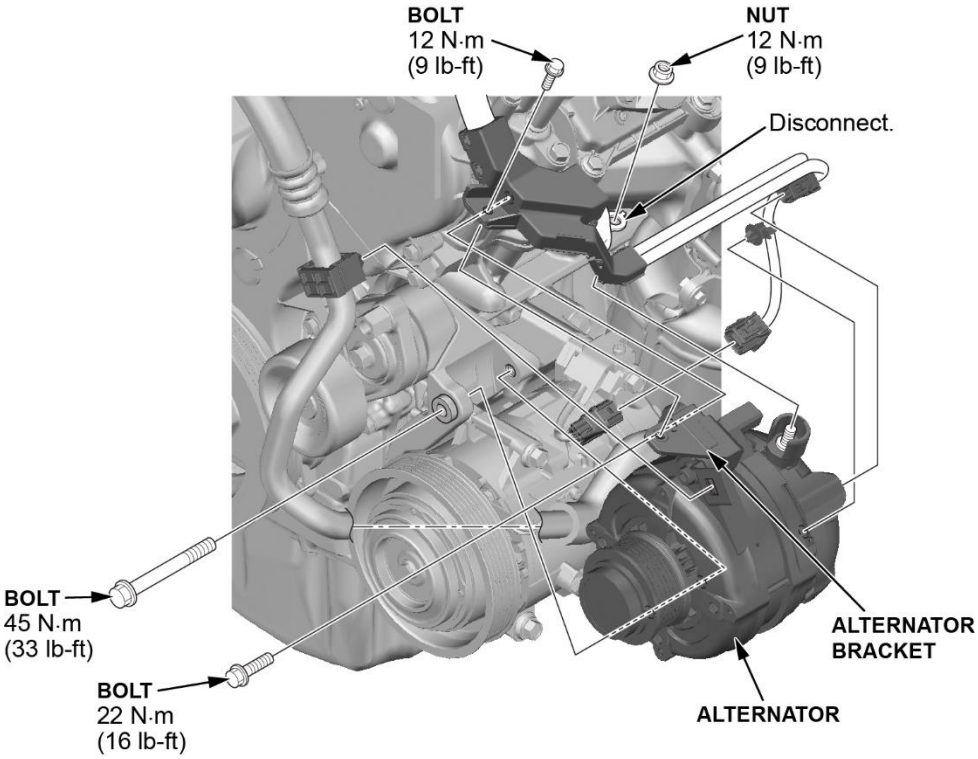
23. Remove the front bulkhead and upper bracket.



24. Remove the condenser fan.



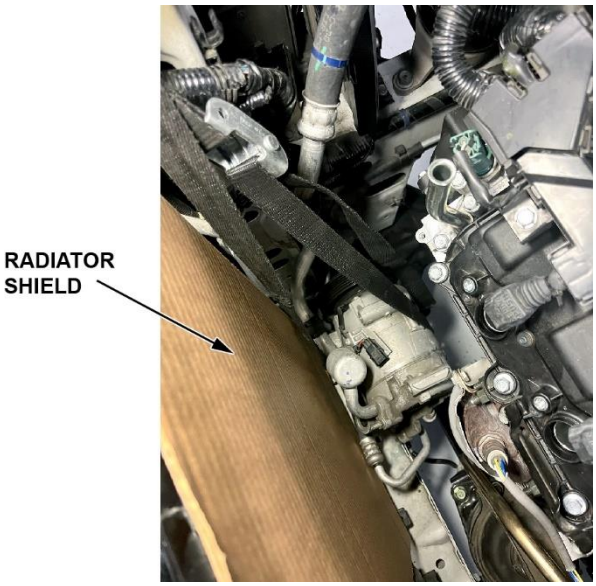
25. Remove the alternator and alternator bracket.



26. Install the radiator shield to protect the radiator.

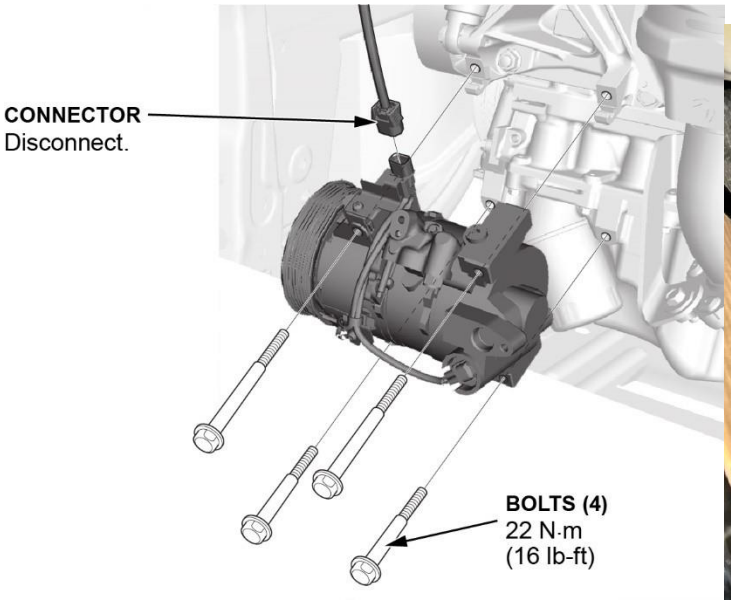
    NOTE:

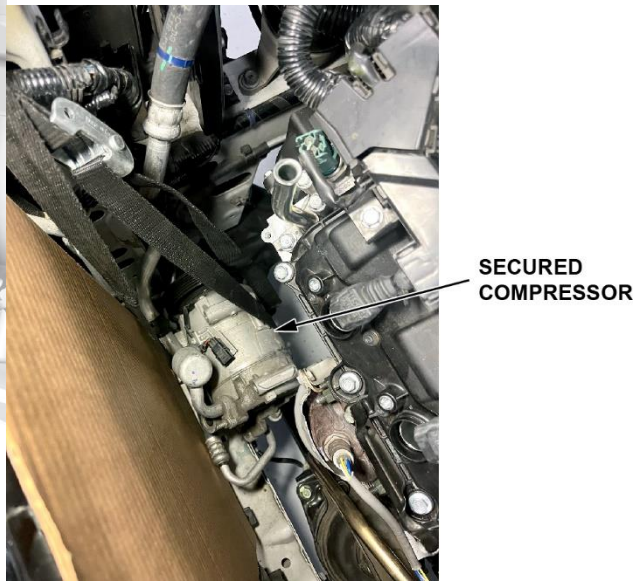
    - A suitable radiator shield could be as simple as a clean piece of cardboard.
    - Make sure the shield covers the entire radiator.



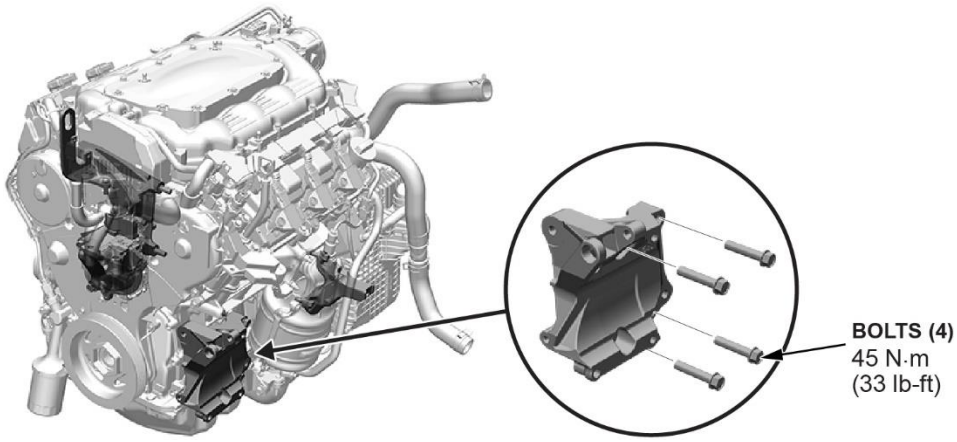
27. Remove the upper A/C compressor mounting bolts and move the A/C compressor forward to rest on the bulkhead frame by the radiator and secure with a strap.

    NOTE: Do not disconnect the A/C hoses.





28. Remove the compressor bracket.



29. Lift the vehicle.

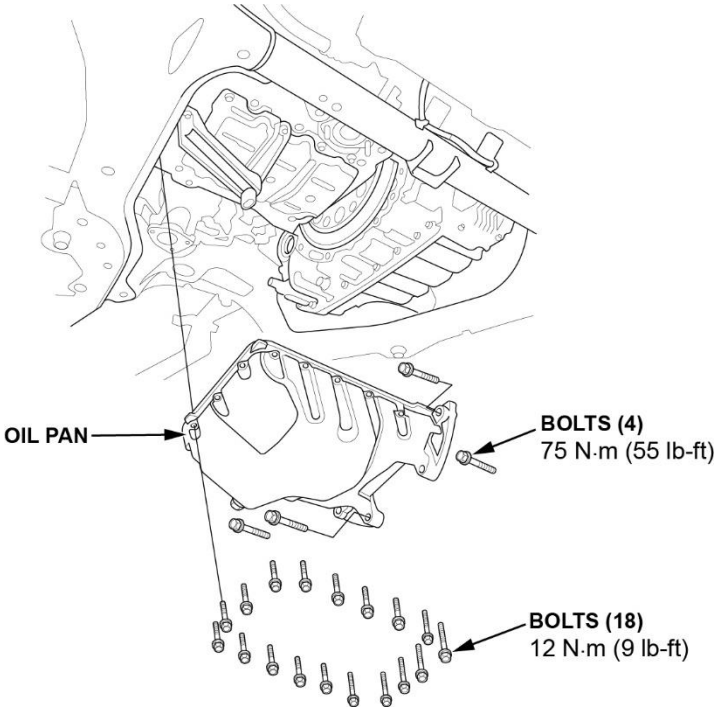
30. Remove the engine oil pan.

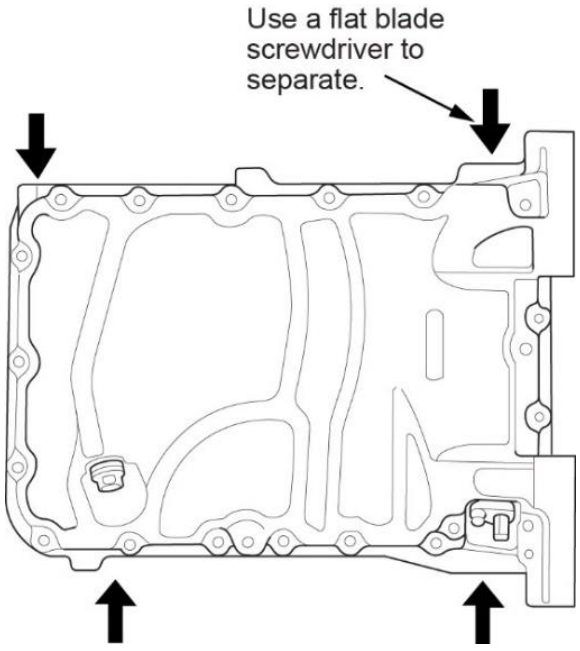
⚠ CAUTION

Hot engine oil may continue to drip from the engine which can cause burns or eye damage. Wear proper protective equipment and eyewear to avoid injury.

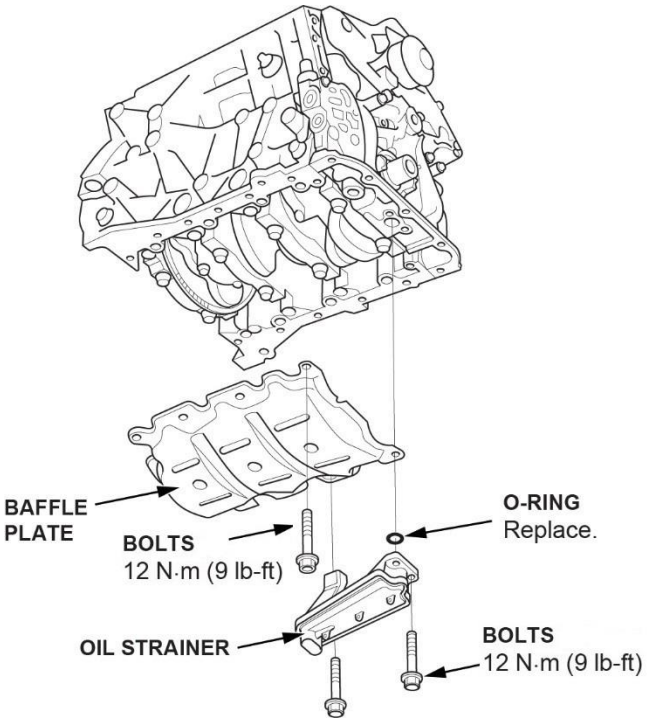
NOTE:

- Remove the bolts securing the oil pan.
- Use a flat blade screwdriver to separate the oil pan from the engine block.

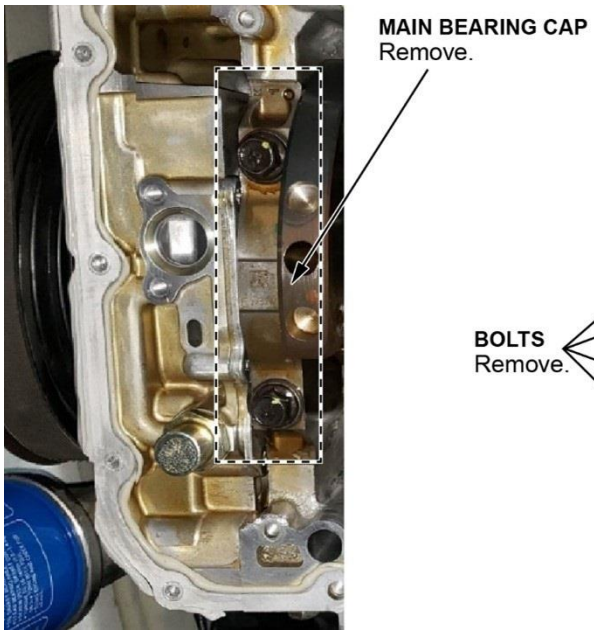


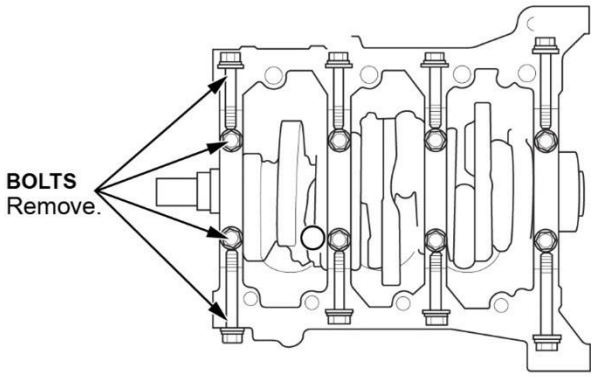


31. Remove the oil strainer and baffle plate.



32. Remove the #1 main bearing cap by removing both the side and lower bolts.

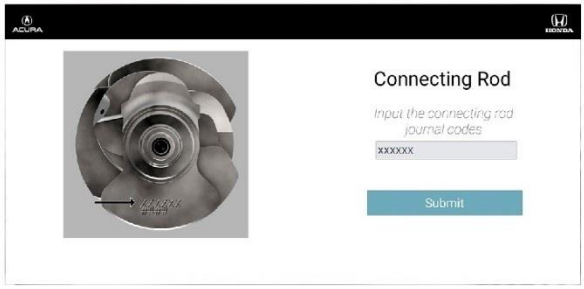




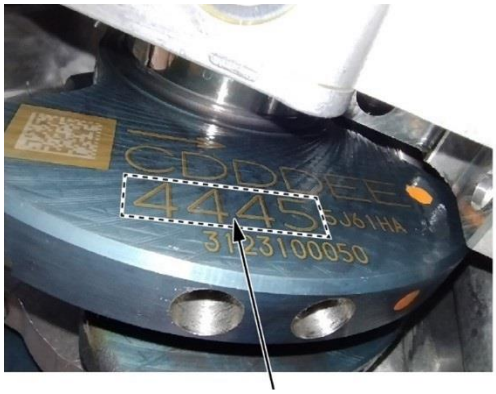
33. Login to the V-SMART tool.

34. Enter the connecting rod journal code.

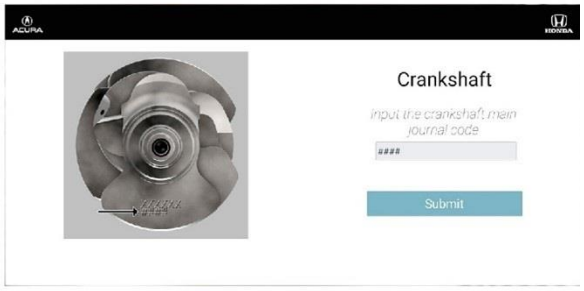
CONNECTING ROD
JOURNAL CODE



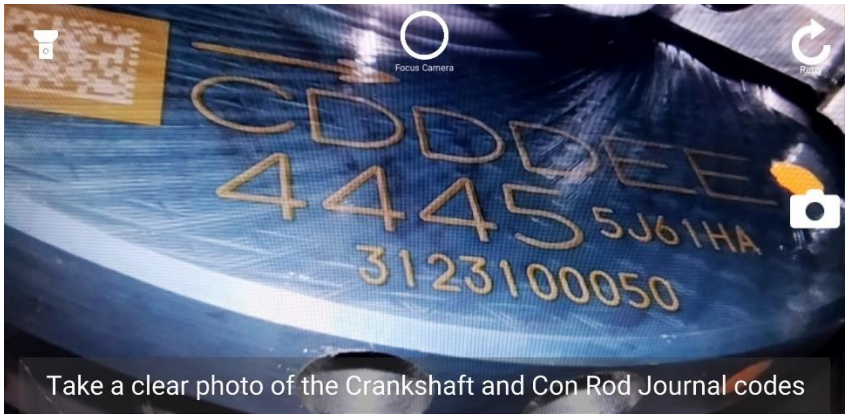
35. Enter the crankshaft main journal code.



CRANKSHAFT MAIN
JOURNAL CODE



36. Take a picture of the code on the crankshaft counterweight with the V-SMART tool.

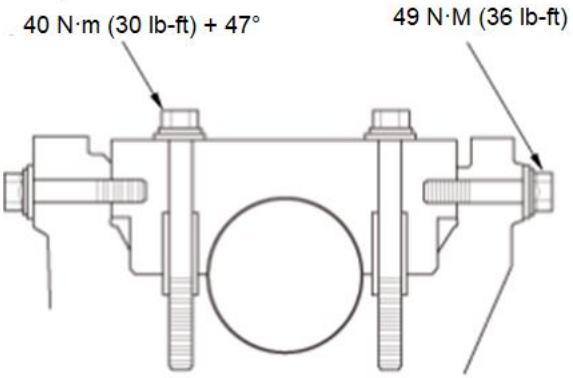


37. Install the #1 main bearing cap.

NOTE:

- Apply new engine oil to the bolt threads and flanges.
- **Do not** rotate the crankshaft during inspection.

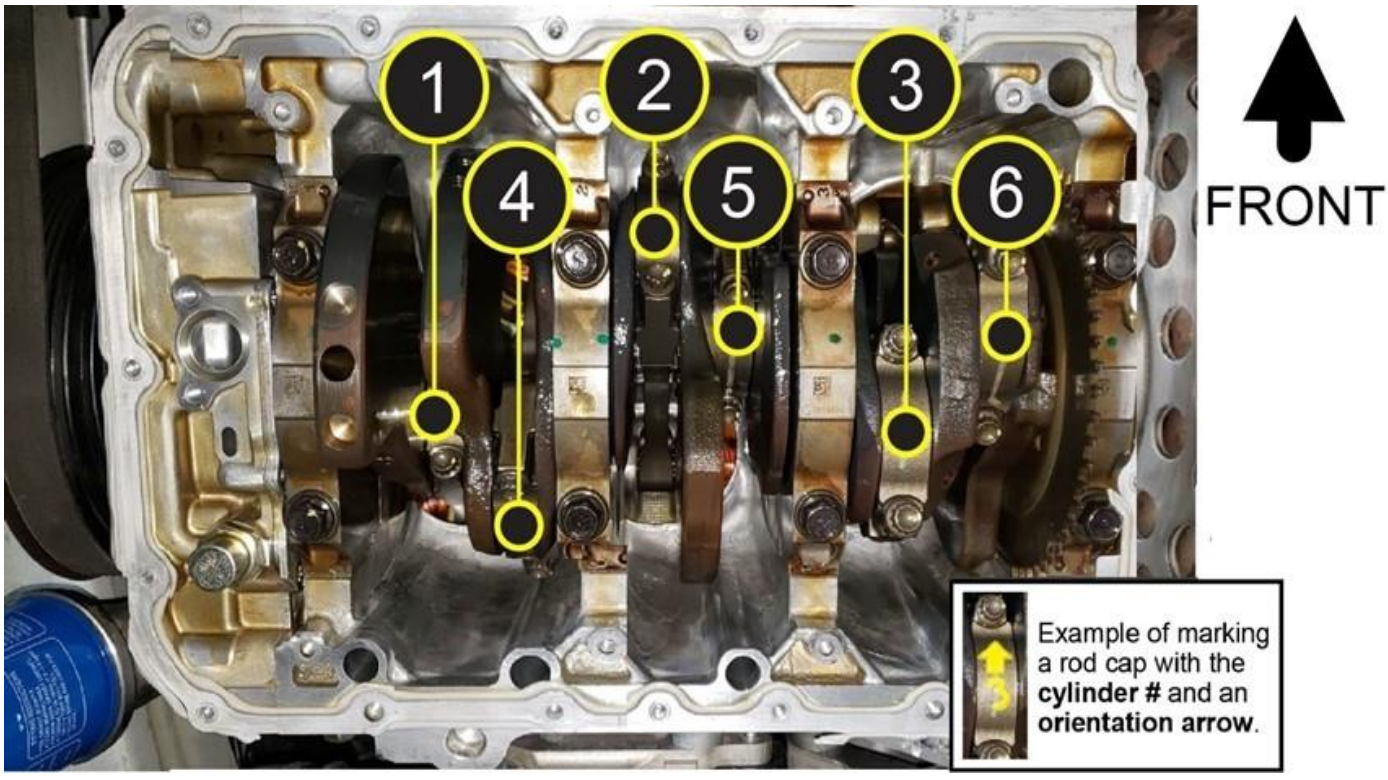
1. Torque the 2 vertical bolts to **40 N·m (30 lb-ft).**
2. Torque the 2 horizontal bolts to **49 N·m (36 lb-ft).**
3. Torque the 2 vertical bolts again an additional **47°.**



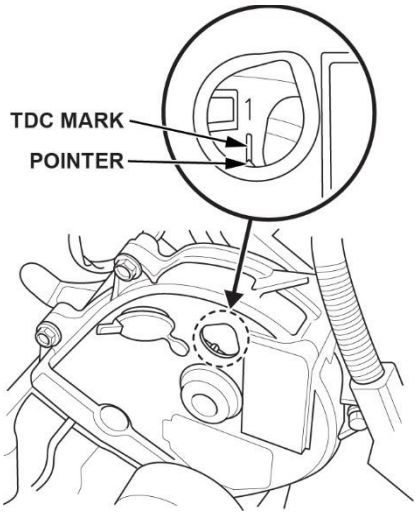
38. Clean and label each connecting rod cap with a paint marker (or otherwise suitable marking instrument) prior to removal. Make sure each rod cap has both the **cylinder #** and an **orientation arrow** towards front, in example: **3↑.**

NOTE:

- Do not confuse the existing marking on the side of the connect rod and rod cap with the cylinder number. Those are manufacturing marks referring to the size of the rod.
- Installing a rod cap incorrectly will result in engine knock and/or engine failure.

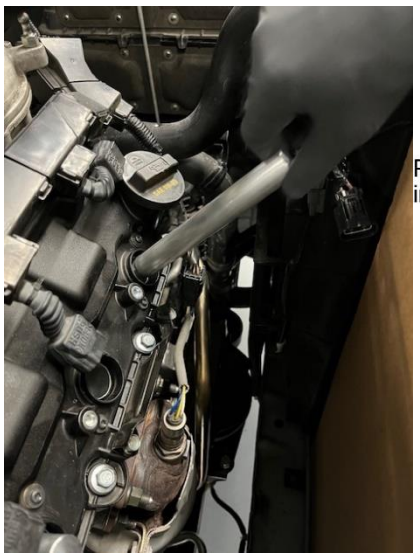


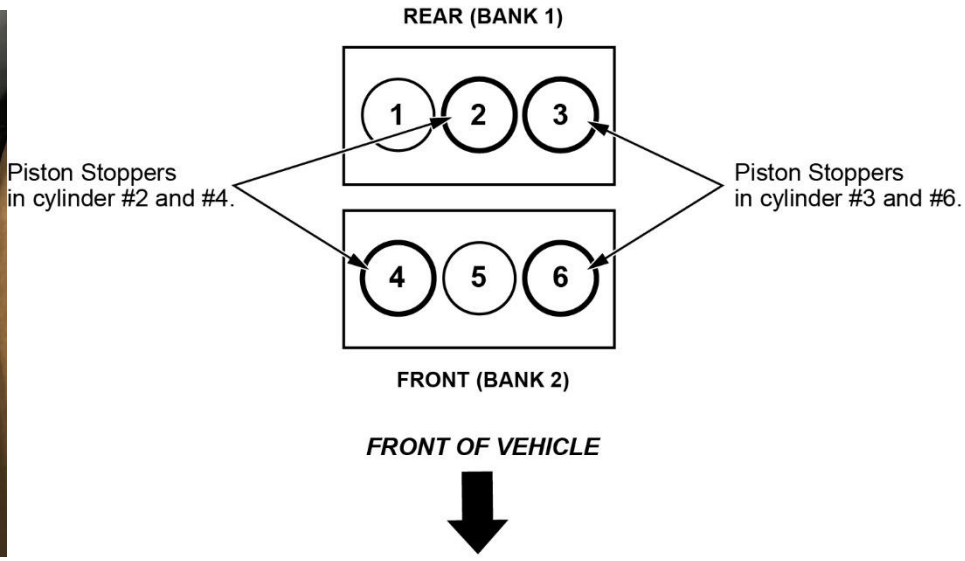
39. Make sure you are still logged into the V-SMART tool and follow the screen commands.
40. Rotate the engine to take pictures of all the connecting rod numbers:
    1. Rotate crank 240° clockwise for pictures of **connecting rods 1, 4, 5, and 6**. Enter the values and pictures into the V-SMART applicated, as directed.
    2. Rotate crank 120° clockwise until **cylinder 3** rod is visible. Enter the value and take a picture into the V-SMART applicated, as directed.
    3. Rotate crank 120° clockwise until **cylinder 2** rod is visible. Enter the value and take a picture into the V-SMART applicated, as directed.
    4. Rotate the crankshaft approximately 240° clockwise until **cylinder 1** is back at TDC.
41. Make sure **cylinder 1** to top dead center (TDC). Align the pointer on the front upper cover with the No. 1 Piston TDC mark on the front camshaft.

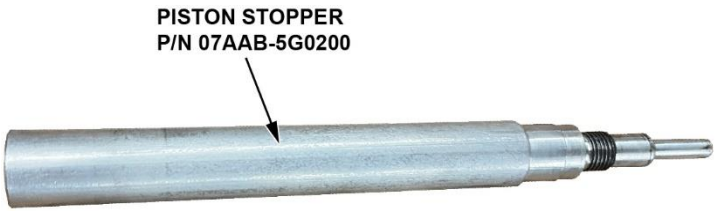


42. Install piston stoppers to **cylinders 2, 3, 4, and 6**.

    NOTE: Make sure the stopper is clean and hand tighten only!





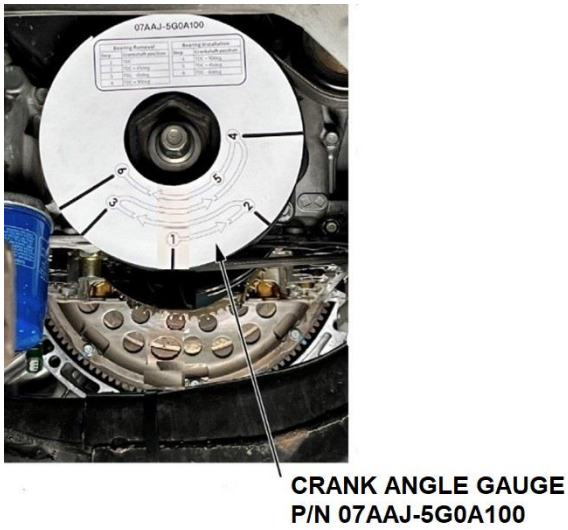


43. With the crankshaft at TDC, mark the crankshaft pulley with a vertical line at the 6 o'clock position.

44. Attach the crank angle gauge the crankshaft pulley with **position #1** correctly aligned at the 6 o'clock position.

Click here to view a video: ► PLAY VIDEO

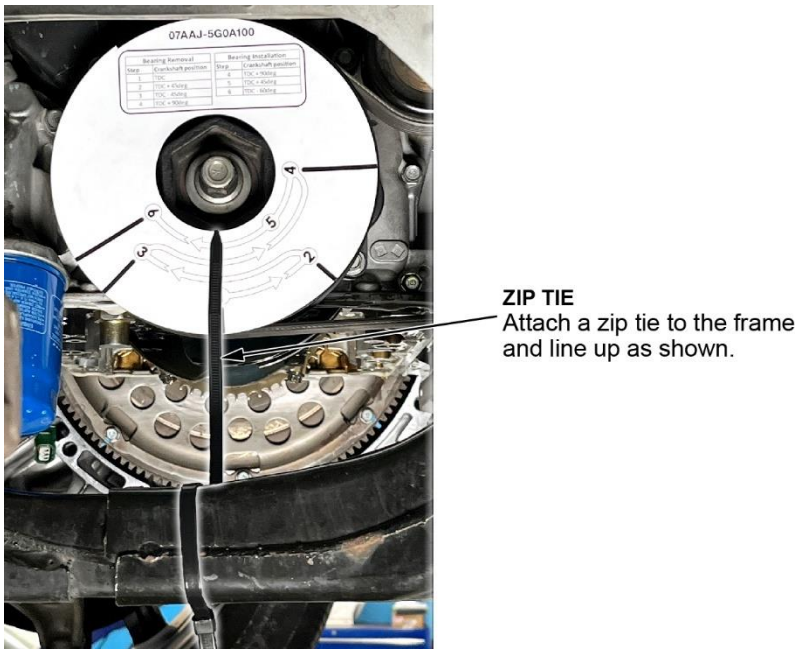
NOTE: The gauge has a magnetic reverse side that will hold onto the crankshaft pulley.



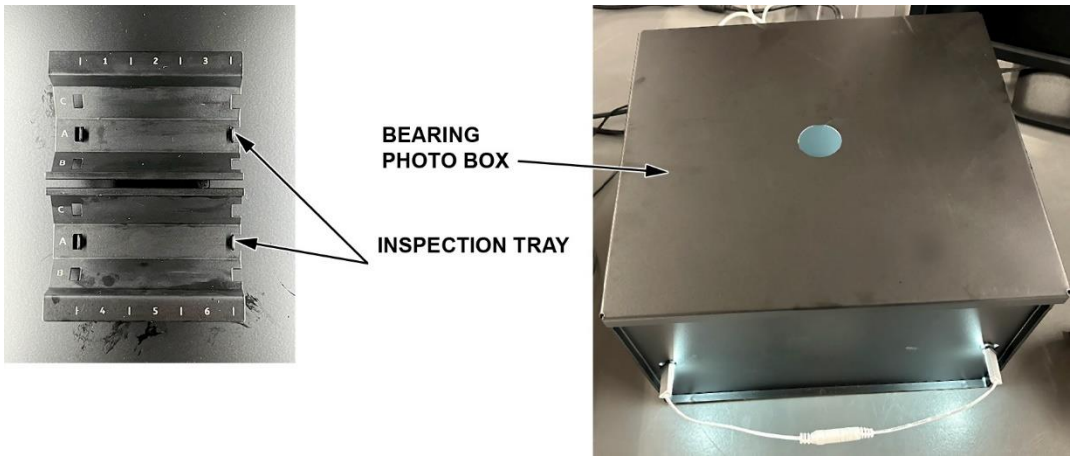
45. Attach a large, commercially available zip tie to the subframe below the crankshaft pulley. The zip tie will be a **reference indicator** for a correct crank angle gauge position.

    NOTE:

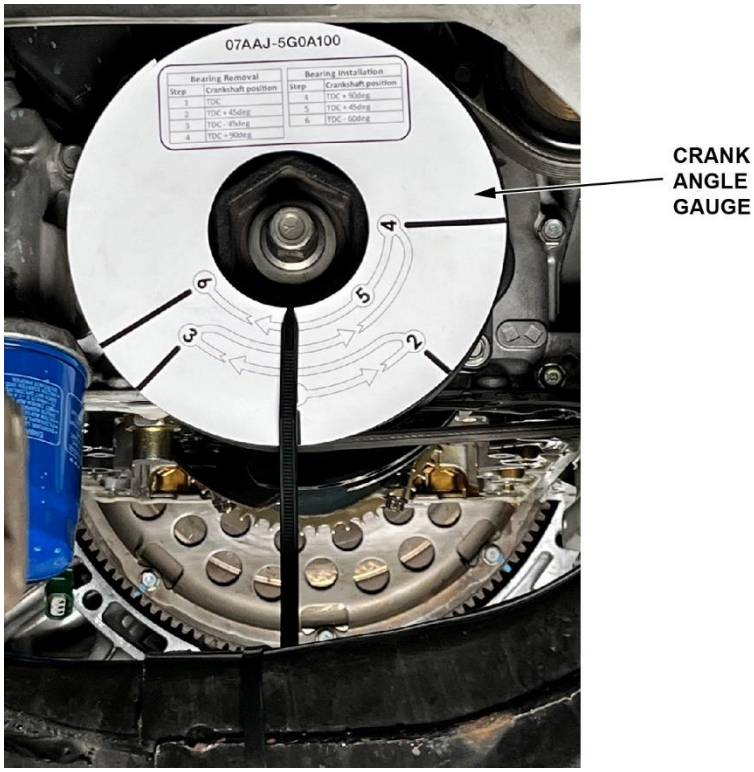
    - Make sure it is pointing up at the 6 o'clock position on the pulley.
    - The zip tie should extend roughly **8" to 12"** over the subframe.



46. Make sure the bearing photo box (P/N 07AAK-5J2A200) and inspection tray are available for use.



47. Make sure that **cylinder 1** is at TDC, **(position #1)**.



48. With **cylinder 1** at TDC (position #1), remove the **connecting rod bearing caps with the lower bearings** from **cylinders 1, 3, 5, and 6**.

Click here to view a video: ► PLAY VIDEO

NOTE:

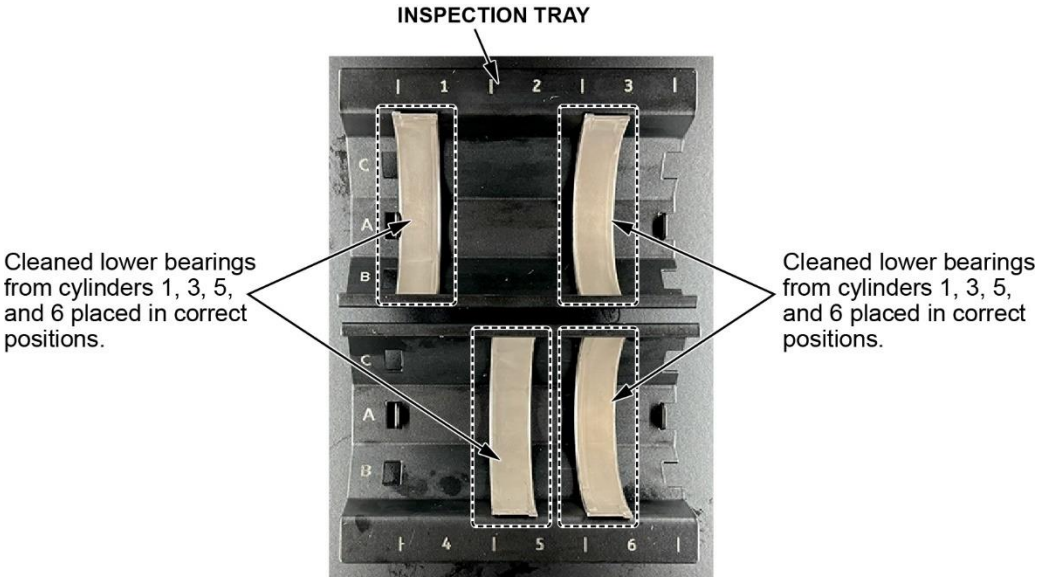
- Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents**.

Step/Crankshaft Position	Cylinder 1 Rod Bearing Cap and Lower Bearing	Cylinder 3 Rod Bearing Cap and Lower Bearing	Cylinder 5 Rod Bearing Cap and Lower Bearing	Cylinder 6 Rod Bearing Cap and Lower Bearing
#1/At TDC	**Remove**	**Remove**	**Remove**	**Remove**

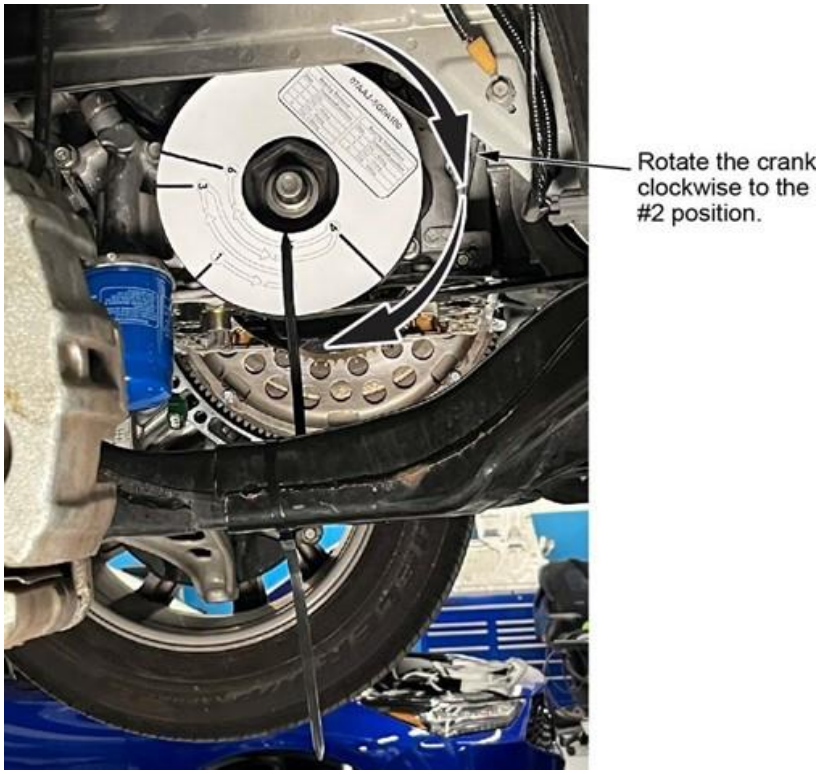
49. Place the removed lower bearings from **cylinders 1, 3, 5, and 6** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



50. Rotate the crankshaft clockwise to the **#2 position** (TDC +45°).



51. Remove the **rod bearing cap** and **lower bearing** from **cylinder 2**.

    NOTE:

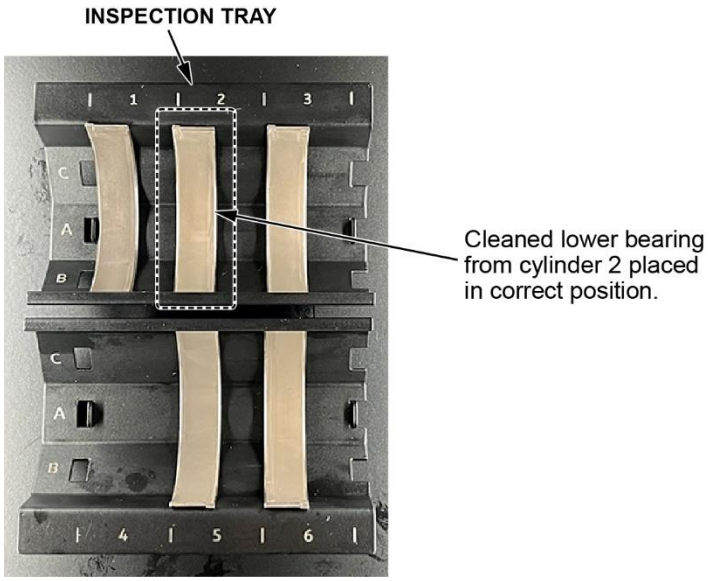
    - Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
    - This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.

Step/Crankshaft Position	Cylinder 2 Rod Bearing Cap and Lower Bearing
#2/TDC +45°	**Remove**

52. Place the removed lower bearings from **cylinder 2** into the rod bearing organizer.

    NOTE:

    - Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods
    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



53. Remove the **upper connecting rod bearing** from **cylinder 2.**

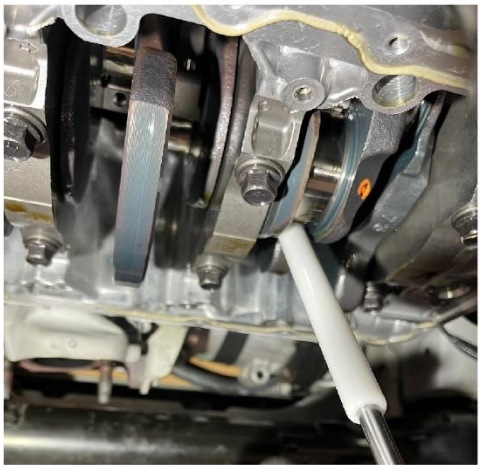
Click here to view a video: ► PLAY VIDEO

NOTE:

- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents.**
- Use the rod holder tool as needed, hand tighten only!

Step/Crankshaft Position	Cylinder 2 Upper Bearing
#2/TDC +45°	Remove

EXAMPLE OF USING THE M8 ROD HOLDER:

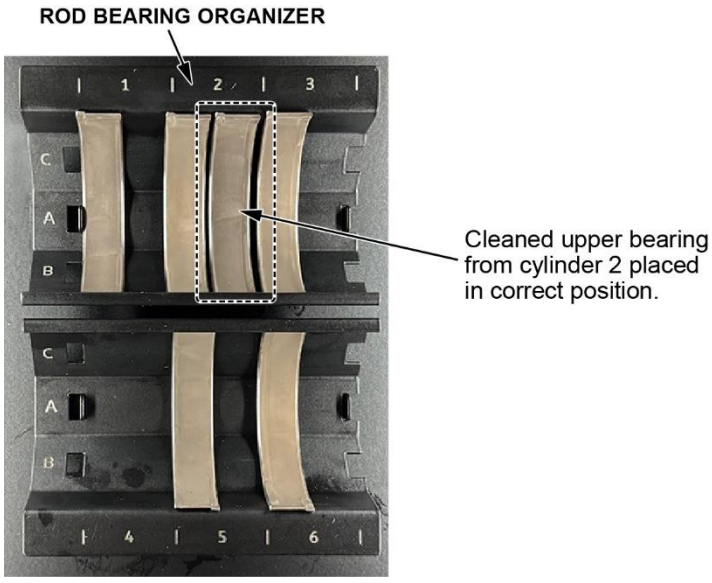


5. Thread the rod holder into the connecting rod bolt hole.
6. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
7. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
8. Remove the upper bearing by sliding it to the side until it releases from the connecting rod.
9. Using the rod holder, carefully push the connecting rod back up until it clears the crankshaft journal.
10. Remove the rod holder.
11. Thoroughly clean the bearings with a clean shop towel to remove all oil residue. **Do not use any solvents**.

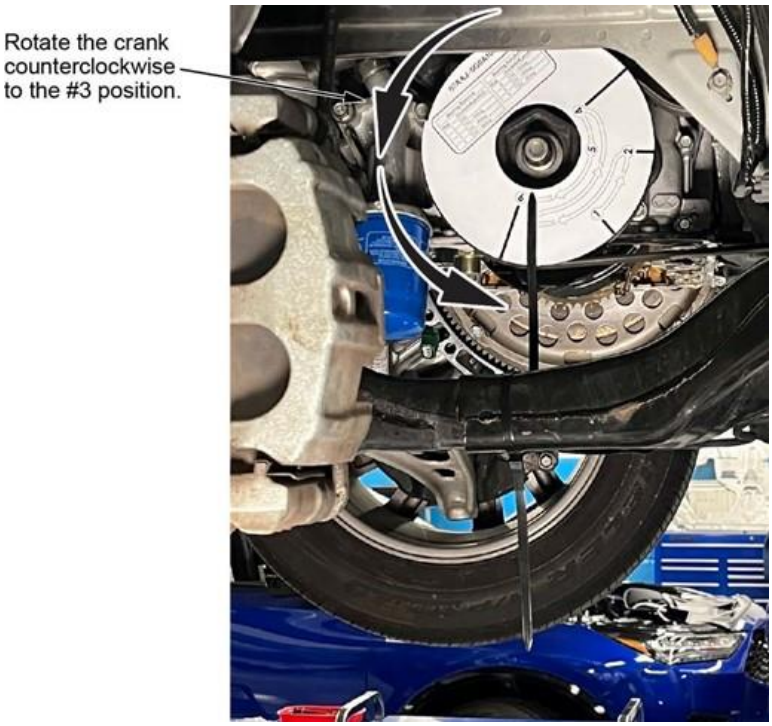
54. Place the removed **upper bearing** from **cylinder 2** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



55. Rotate the crankshaft counterclockwise to the **#3 position** (TDC -45°).



56. Remove the **rod bearing cap and lower bearing** from **cylinder 4**.

    NOTE:

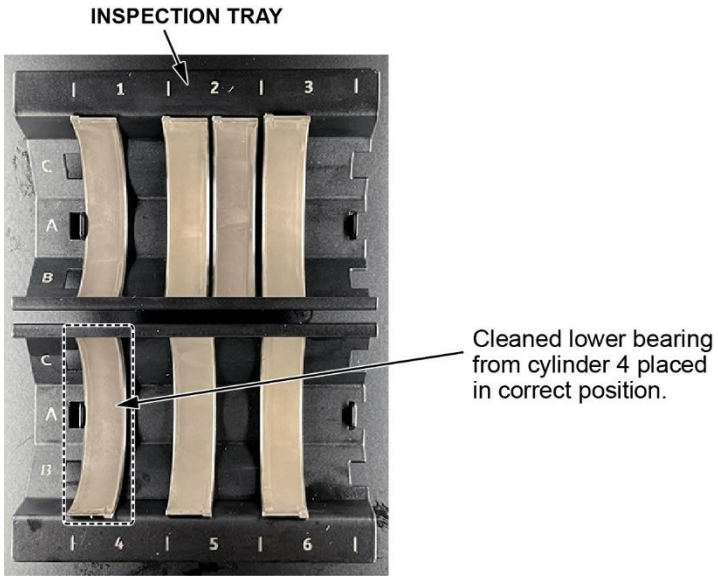
    - Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
    - This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
    - Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents.**

Step/Crankshaft Position	**Cylinder 4** **Rod Bearing Cap and Lower Bearing**
#3/TDC -45°	**Remove**

57. Place the removed **lower bearing** from **cylinder 4** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



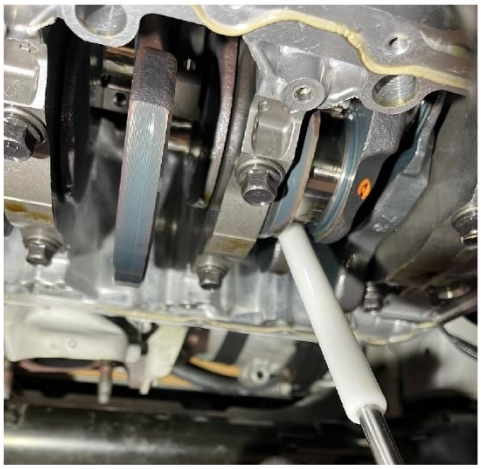
58. Remove the **cylinder 3 and cylinder 4 upper connecting rod bearings**.

    NOTE:

    - Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
    - The next steps involve manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.
    - Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents**.
    - Use the M8 as needed, hand tighten only!

Step/Crankshaft Position	Cylinder 3 Upper Bearing	Cylinder 4 Upper Bearing
#3/TDC -45°	Remove	Remove

EXAMPLE OF USING THE M8 ROD HOLDER:



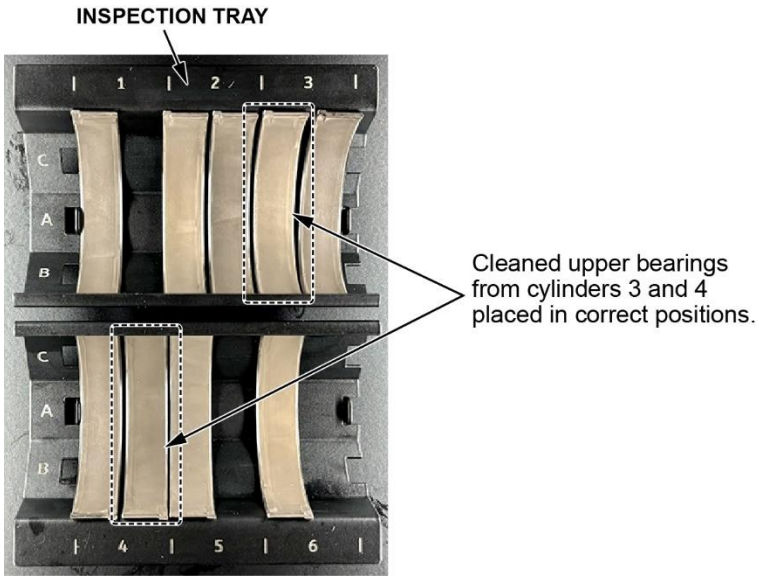
1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it to the side until it releases from the connecting rod.
5. Using the rod holder, carefully push the **cylinder 3** connecting rod back up until it clears the crankshaft journal.

   NOTE: Leave **cylinder 4** connecting rod in the lower position, **do not** push back up.
6. Remove the rod holder.
7. Thoroughly clean the bearings with a clean shop towel to remove all oil residue. **Do not use any solvents**.

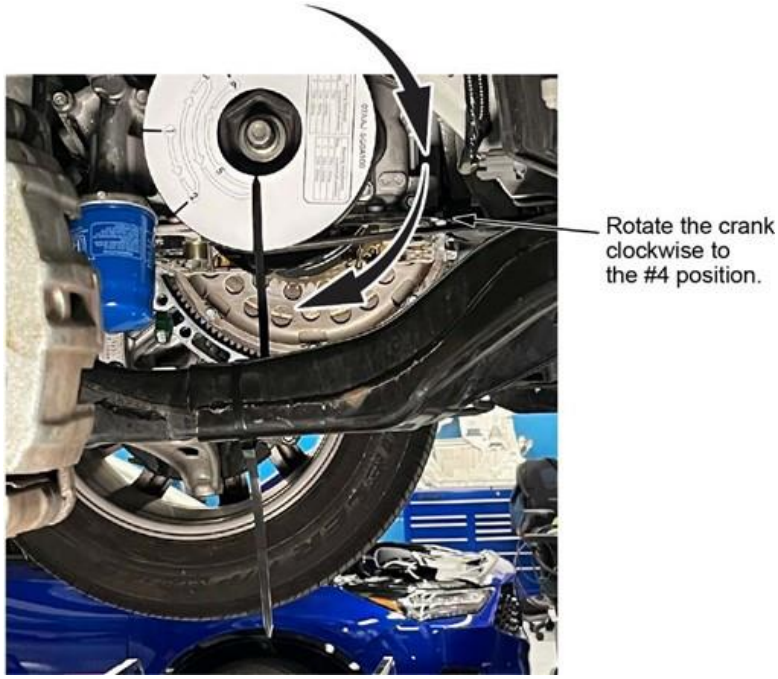
59. Place the removed **upper bearings** from **cylinder 3 and 4** into the rod bearing organizer.

    NOTE:

    - Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
    - **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



60. Rotate the crankshaft clockwise to the **#4 position** (TDC +90°).



61. Remove the upper bearing from **cylinders 1, 5, and 6**.

    NOTE:

    - Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
    - The next steps involve manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston and/or oil jet.

- Thoroughly clean the bearing with a clean shop towel after removal. No oil should be present. **Do not use any solvents**.
- Use the M8 as needed, hand tighten only!

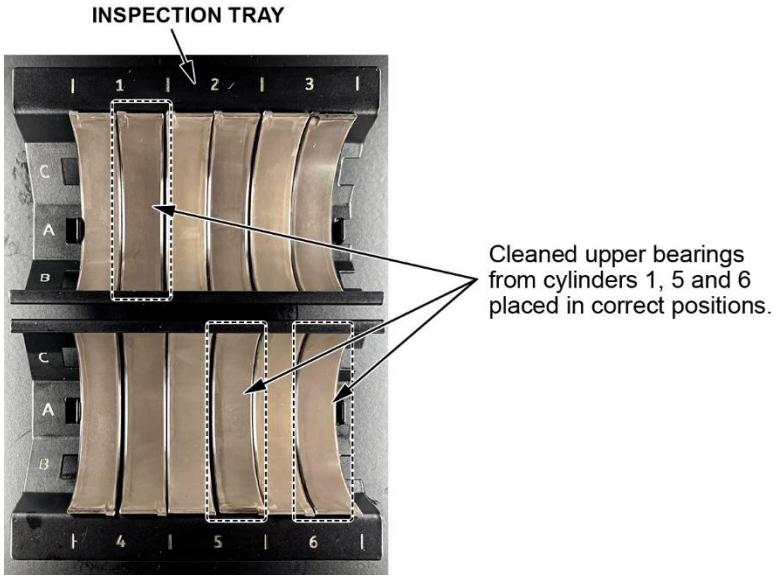
Step/Crankshaft Position	Cylinder 1 Upper Bearing	Cylinder 5 Upper Bearing	Cylinder 6 Upper Bearing
#4/TDC +90°	Remove	Remove	Remove

1. Thread the Rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it to the side until it releases from the connecting rod.
5. Using the Rod holder, carefully push the connecting rod back up until it clears the crankshaft journal.
6. Remove the Rod holder.
7. Thoroughly clean the bearings with a clean shop towel to remove all oil residue. **Do not use any solvents**.

62. Place the removed **upper bearings** from **cylinders 1, 5, and 6** into the rod bearing organizer.

NOTE:

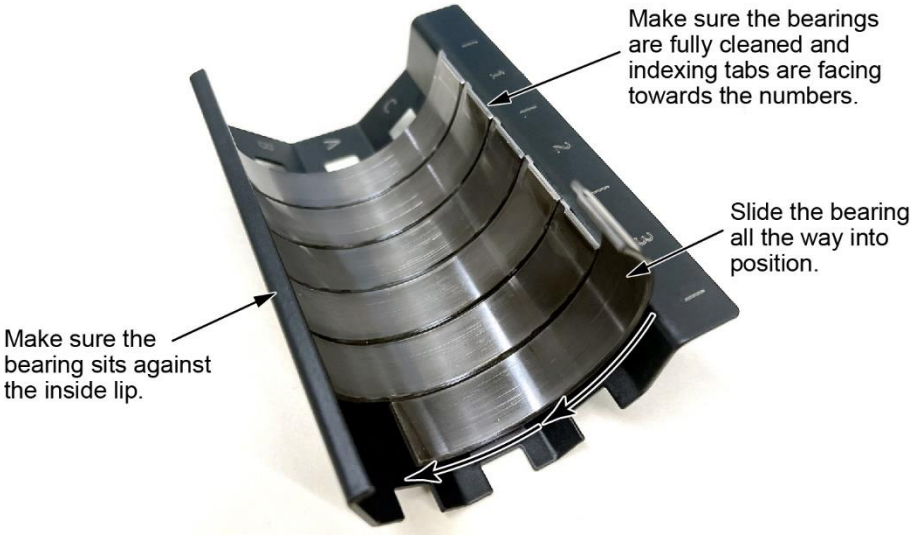
- Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents**.
- **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the **#1 slot** in the **tray**. **Upper and lower bearing** arrangement in the tray **does not matter**.



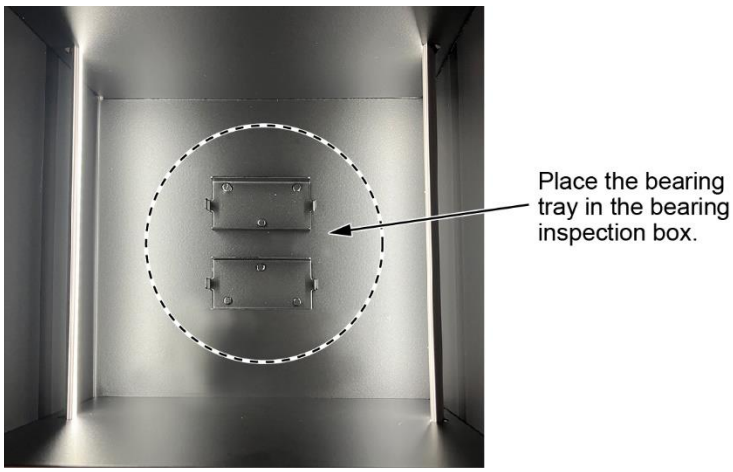
63. Make sure the bearings are fully seated and level with the edge of the rod bearing organizer.

NOTE:

- The bearing's indexing tab should be lined up at the numbers of the tray.
- The flat edge of the bearing should be inside of the lip on the rod bearing organizer.
- All bearings should be fully seated in the inspection tray.

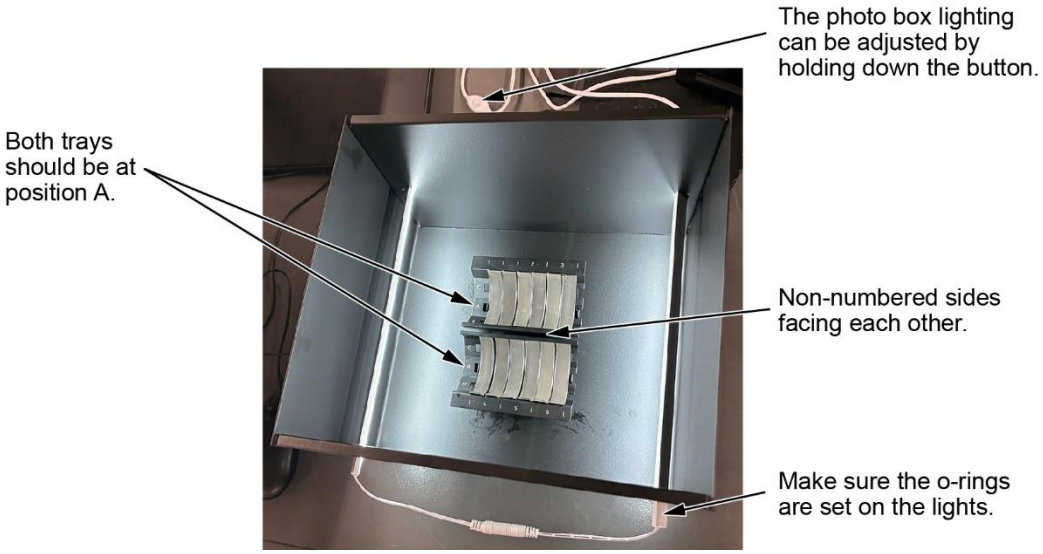


64. Remove the bearing photo box cover and place the bearing organizers in.



65. Confirm the following on the bearing inspection box:
    1. Lights at the brightest setting.

       NOTE: The light brightness can be adjusted by holding the button.
    2. Both bearing organizers are in position A with non-numbered sides facing each other.
    3. The O-rings are set on the lights to prevent an outside light source.



66. Login to the V-SMART application.

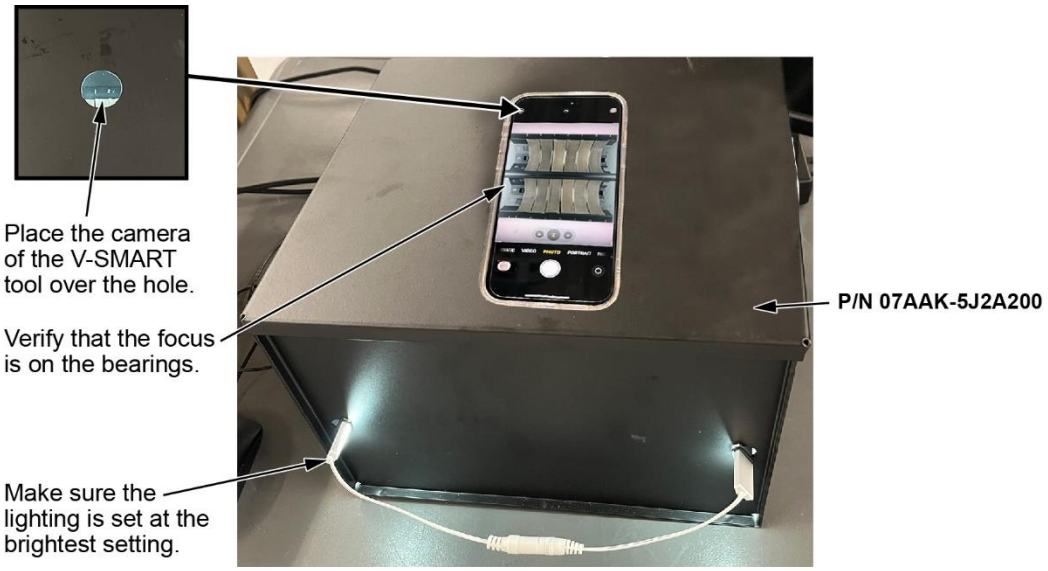
    NOTE: Scanning the VIN will return to where you last left off at.

67. Using the V-SMART application, follow the instructions on the application to take bearing photos in positions A, B, and C. Follow the prompts when submitting the photos.

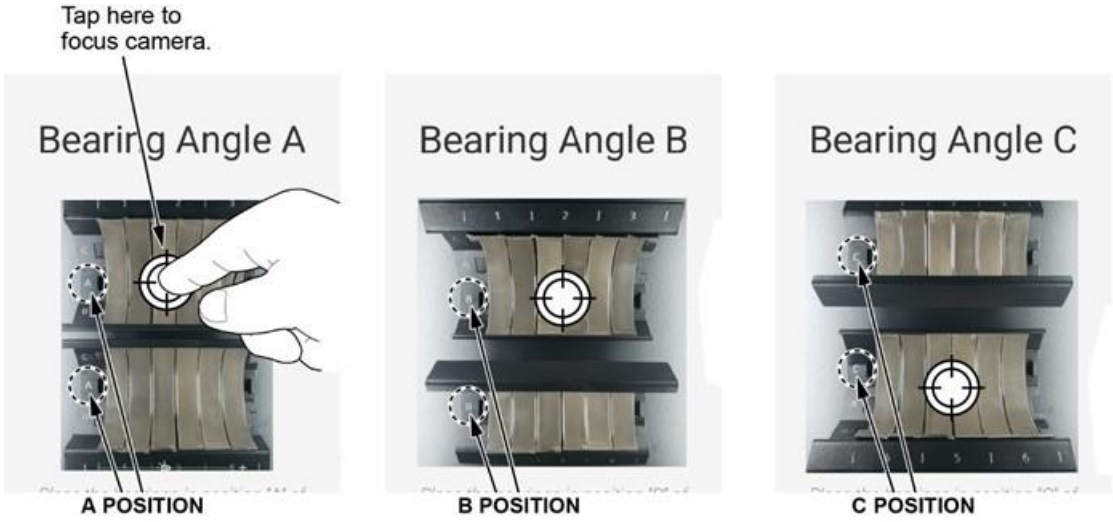
    NOTE:

    - Use the camera tap focus for a clear image.
    - Any unclear images will not be accepted.

- Follow the V-SMART tool prompts after photo submission.

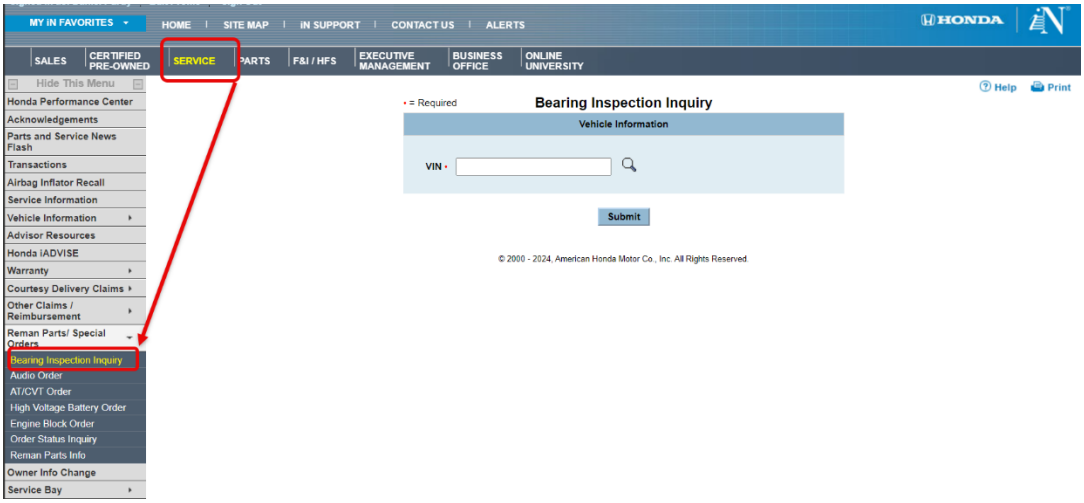


When taking the photos:

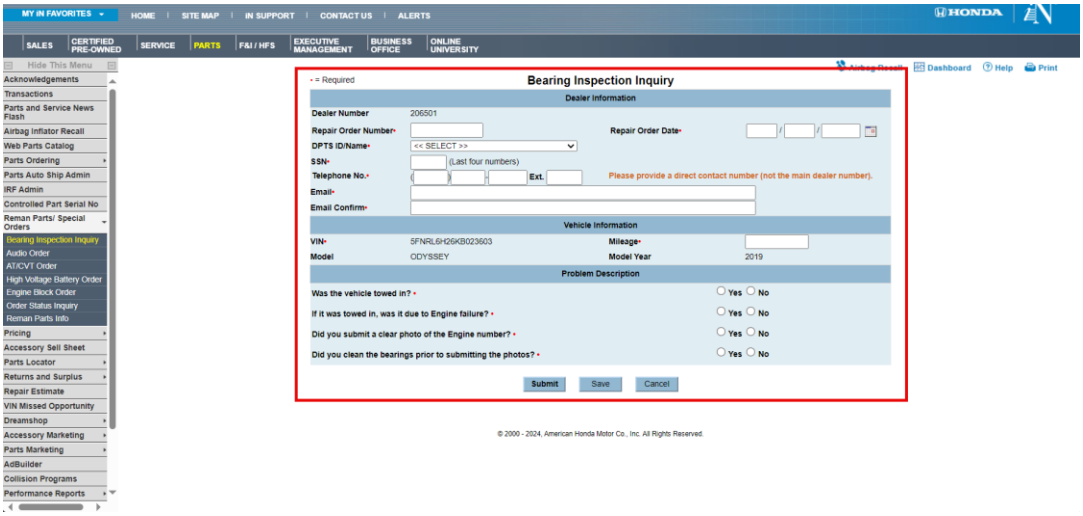


68. Create a Bearing Inspection Inquiry.
    1. Log into iN.
    2. Select SERVICE > REMAN PARTS / SPECIAL ORDERS > BEARING INSPECTION INQUIRY
    3. Select the BEARING INSPECTION INQUIRY.

4. Input the correct **VIN**.



5. Input all vehicle information to create a case.



6. A 7-digit case reference number will be generated.

   NOTE: Note this number on the RO for future reference.

7. Call the **Bearing Inspection Inquiry Team** at **(800) 824-6632**. Press **9** to be routed to the correct department (**do not contact TECH LINE for this**). Give the answering agent the **7-digit reference number** for a repair direction.

   NOTE:

   - MAKING THE INCORRECT SELECTION WILL RESULT IN INCREASED WAIT TIMES.
   - **DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.**

69. The bearing inspection agent will give the **Repair Direction**. You will receive instructions via email on the repair method that includes the unique warranty code and the bearing sizes with their specific locations, if applicable. Parts and tools will be shipped to your dealership. Make sure to advise the parts department with a copy of the RO.

    NOTE: Link to CONTENT REFERENCE, (Click HERE).

REPAIR #1 INSTALL RECOMMENDED BEARINGS

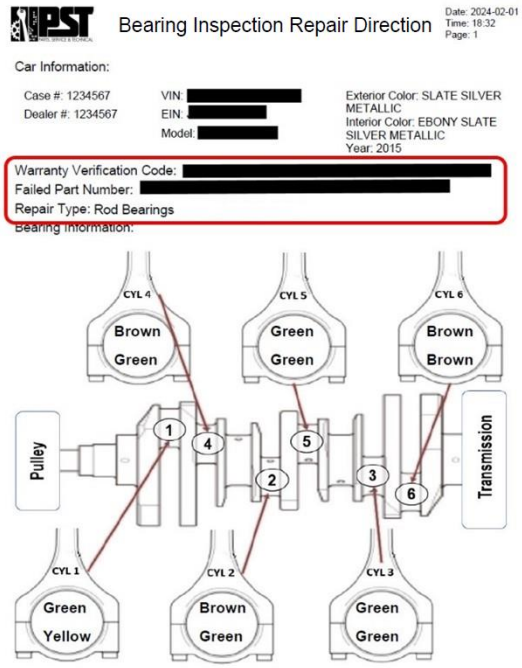
NOTE: DO NOT contact Tech Line for any inquires to this safety recall. You must call the Bearing Inspection Inquiry Team at (800) 824-6632 (Select Option #9) for all inquiries and repair direction.

1. Follow the **Repair Type** instructions on the emailed Bearing Inspection Repair Direction sheet. Make sure the VIN

matches the vehicle.

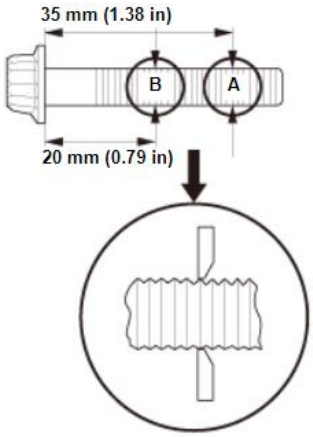
NOTE:

- Follow the **Repair Type** instructions exactly as recommended.
- Use the **Warranty Verification Code** for the warranty claim.



2. Inspect the connecting rod bolts.
   - Measure the diameter of each connecting rod bolt at point A and point B.
   - If the difference in diameter is out tolerance, replace the connecting rod bolt.
   - After calculating the difference in diameter between point A and point B.

     Difference in Diameter Specification: 0–0.1 mm (0–0.004 in.)

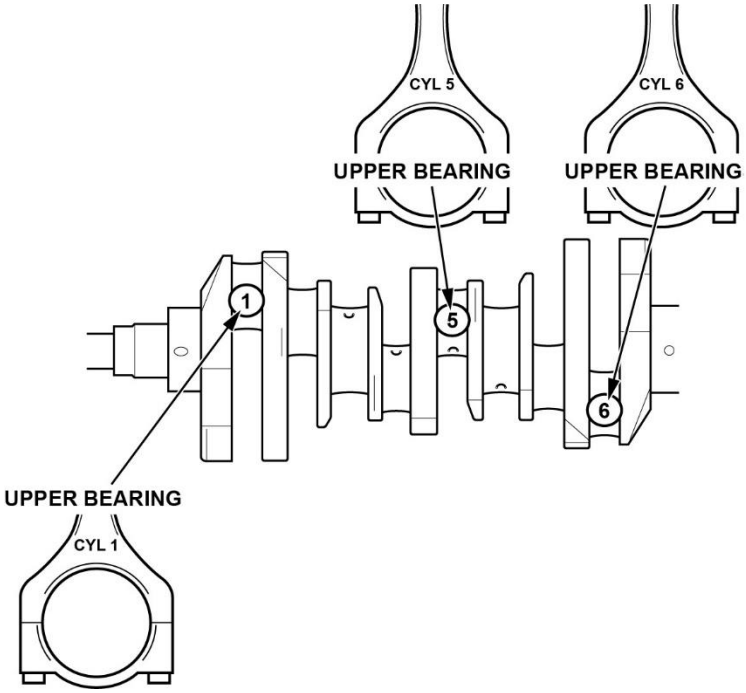


3. Apply a light coating of oil to all connecting rod journals prior to installing the remainder of the steps.
4. While the crankshaft is still at crank angle gauge **position #4** (TDC +90°), install the **upper bearing** to the connecting rod for **cylinders 1, 5, and 6**.

NOTE:

- Make sure the bearing indexing tabs are properly oriented during installation.
- Follow the install of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.

Step/Crankshaft Position	Cylinder 1 Upper Bearing	Cylinder 5 Upper Bearing	Cylinder 6 Upper Bearing
#4/TDC +90°	Install	Install	Install



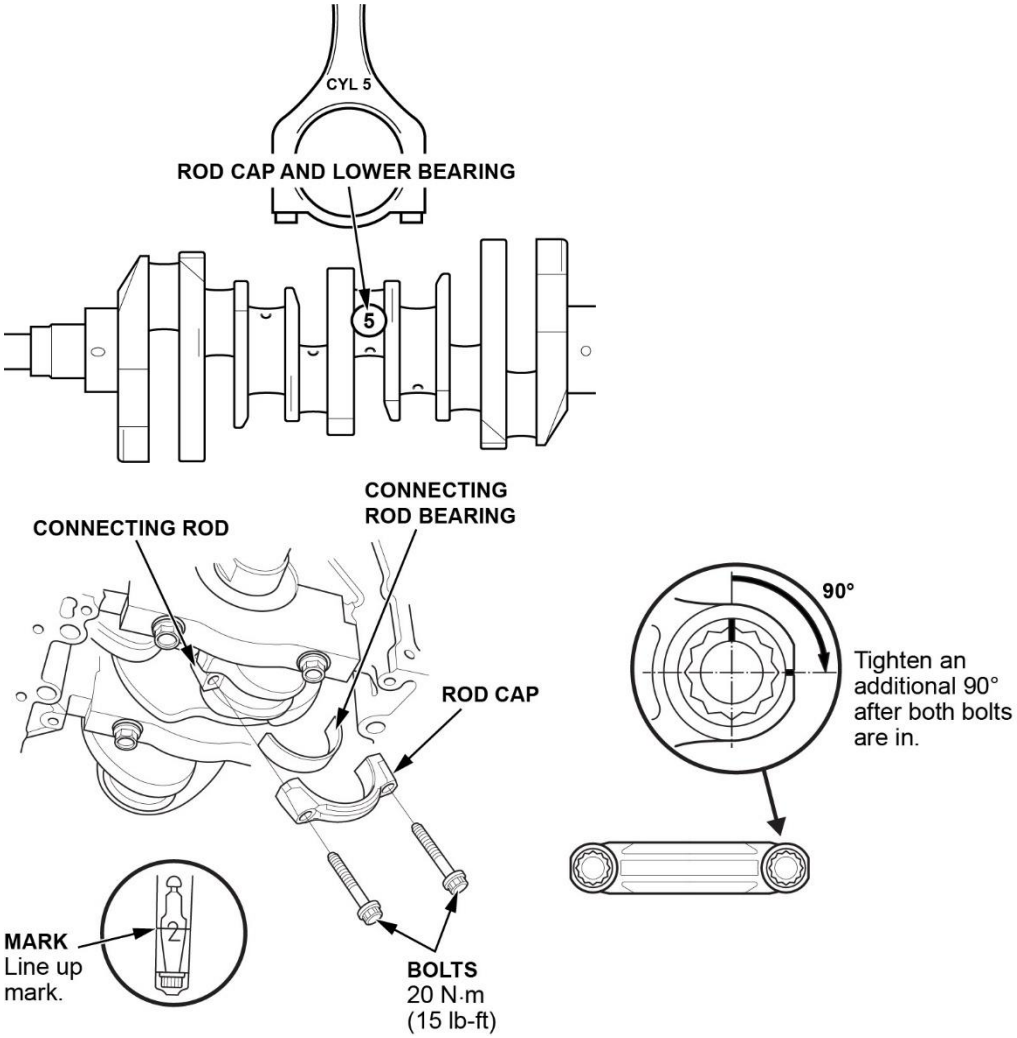
5. Install the **connecting rod cap and lower bearing** to the connecting rod **for cylinder 5**.

   NOTE:

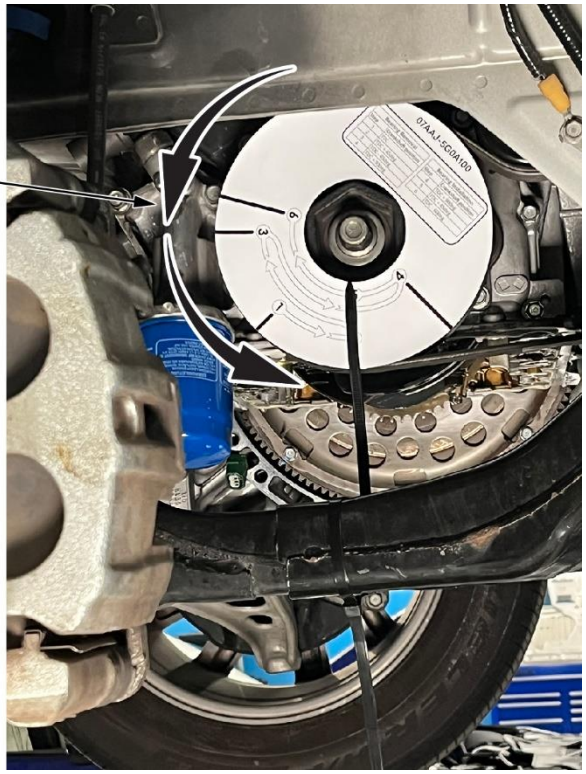
   - Make sure the bearing indexing tabs are properly oriented during installation.

- Apply new engine oil to the bolt threads and bolt flanges.
- If you tightened the connecting rod bolt beyond the specified angle, remove and inspect the connecting rod bolt. **Do not loosen** it back to the specified angle.
- Use a commercially available torque angle meter.
- Use the M8 Rod Holder tool as needed.
- Follow the install of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.

Step/Crankshaft Position	Cylinder 5 Rod Cap and Lower Bearing
#4/TDC +90°	Install



6. Rotate the crankshaft counterclockwise to crank angle gauge **position #5** (TDC +45°).

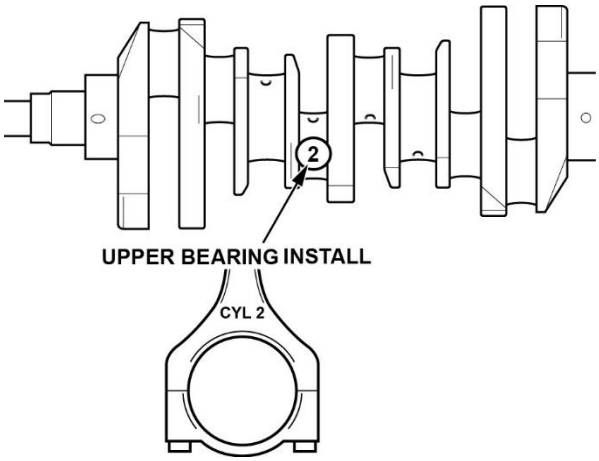


7. Install the **upper bearing** to the connecting rod **for cylinder 2**.

   NOTE:

   - Make sure the bearing indexing tabs are properly oriented during installation.
   - Follow the install of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.

Step/Crankshaft Position	Cylinder 2 Upper Bearing
#5/TDC +45°	Install

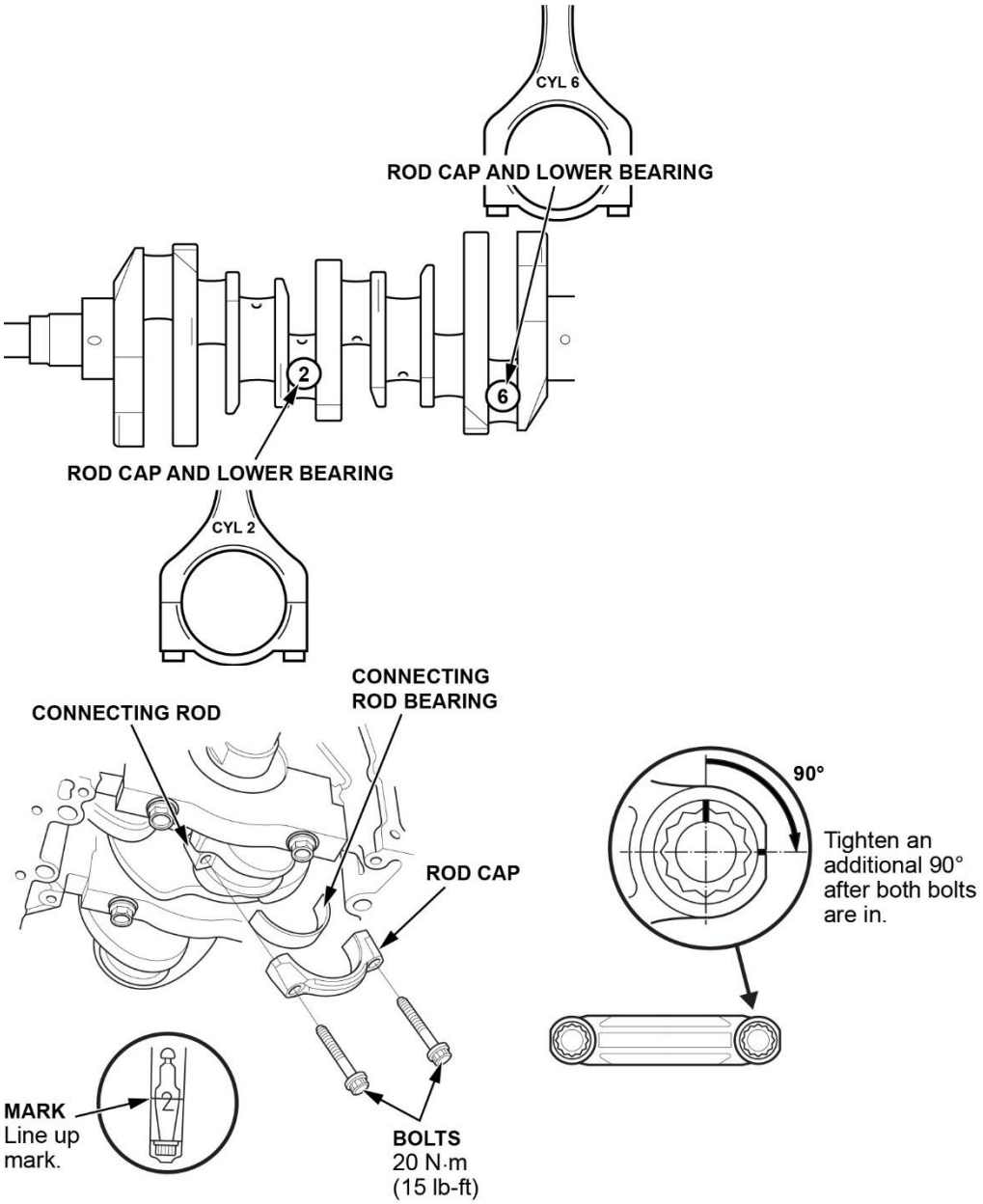


8. Without rotating the crank, install the **rod cap and lower bearing** to the connecting rod **for cylinders 2 and 6**.

NOTE:

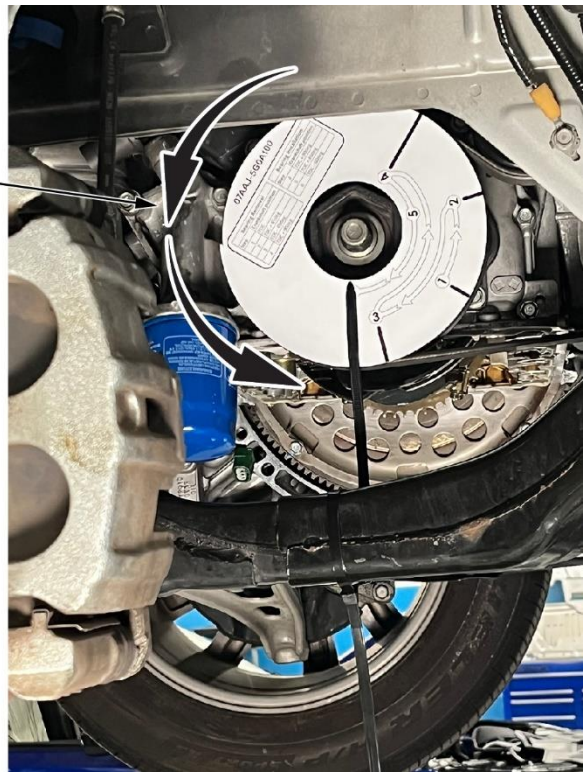
- Make sure the bearing indexing tabs are properly oriented during installation.
- Apply new engine oil to the bolt threads and bolt flanges.
- If you tightened the connecting rod bolt beyond the specified angle, remove and inspect the connecting rod bolt. **Do not loosen** it back to the specified angle.
- Use a commercially available torque angle meter.
- Use the M8 Rod Holder tool as needed.
- Follow the install of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.

Step/Crankshaft Position	Cylinder 2 Rod Cap and Lower Bearing	Cylinder 6 Rod Cap and Lower Bearing
#5/TDC +45°	Install	Install



9. Rotate the crankshaft counterclockwise to crank angle gauge **position #6** (TDC -60°).

Rotate the crank counterclockwise to the #6 position.

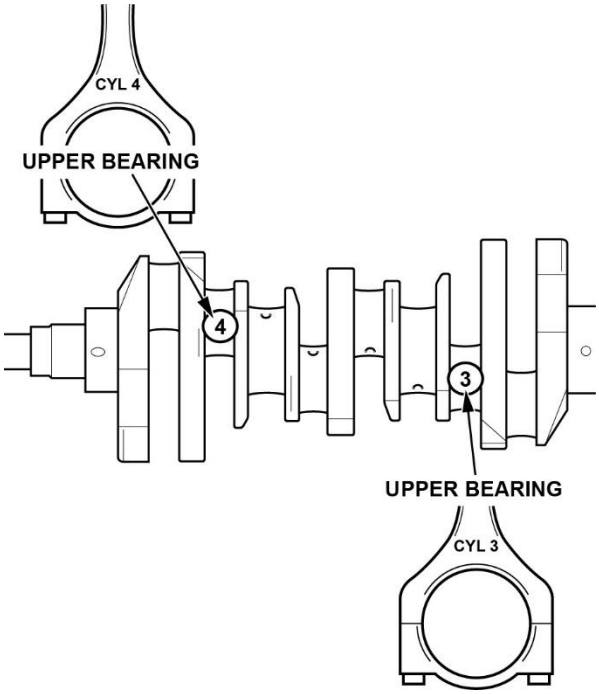


10. Install the **upper bearing** to the connecting rod for **cylinders 3 and 4**.

    NOTE:

    - Make sure the bearing indexing tabs are properly oriented during installation.
    - Follow the install of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.

Step/Crankshaft Position	Cylinder 3 Upper Bearing	Cylinder 4 Upper Bearing
#6/TDC -60°	Install	Install



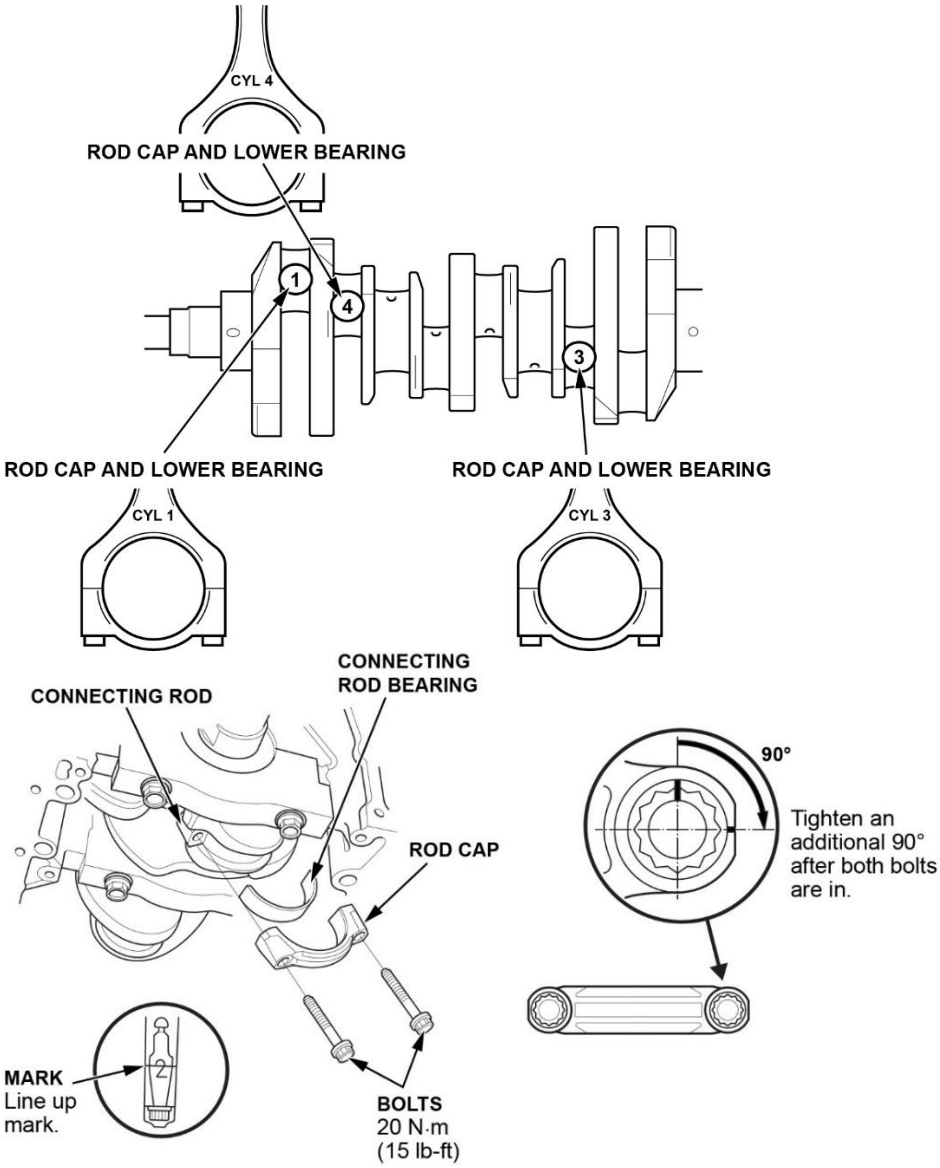
11. Without rotating the crank, install the **rod caps and lower bearings** to the connecting rod **for cylinder 1.**

Then**, install the rod cap and lower bearing** to the connecting rod **for cylinders 3 and 4.**

NOTE:

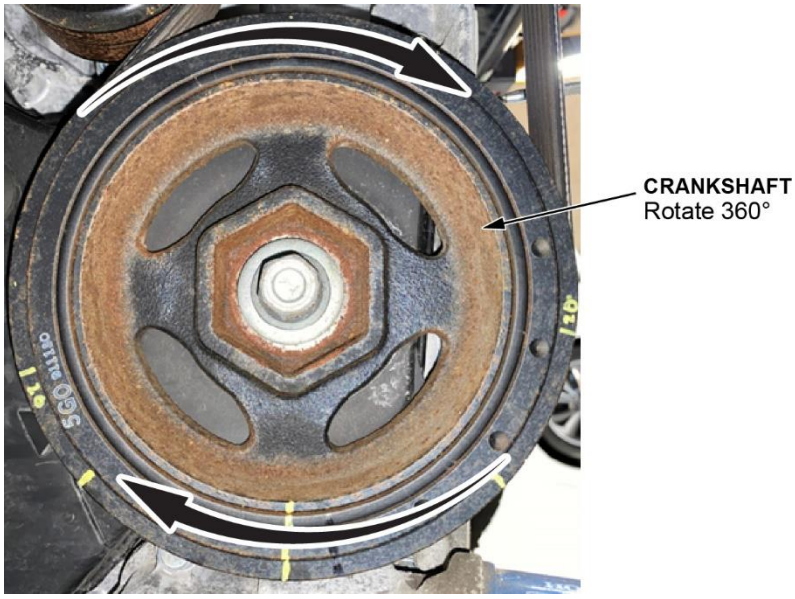
- Make sure the bearing indexing tabs are properly oriented during installation.
- Apply new engine oil to the bolt threads and bolt flanges.
- If you tightened the connecting rod bolt beyond the specified angle, remove and inspect the connecting rod bolt. **Do not loosen** it back to the specified angle.
- Use a commercially available torque angle meter.
- Use the M8 Rod Holder tool as needed.
- Follow the install of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.

Step/Crankshaft Position	Cylinder 1 Rod Cap and Lower Bearing	Cylinder 3 Rod Cap and Lower Bearing	Cylinder 4 Rod Cap and Lower Bearing
#6/TDC -60°	Install	Install	Install

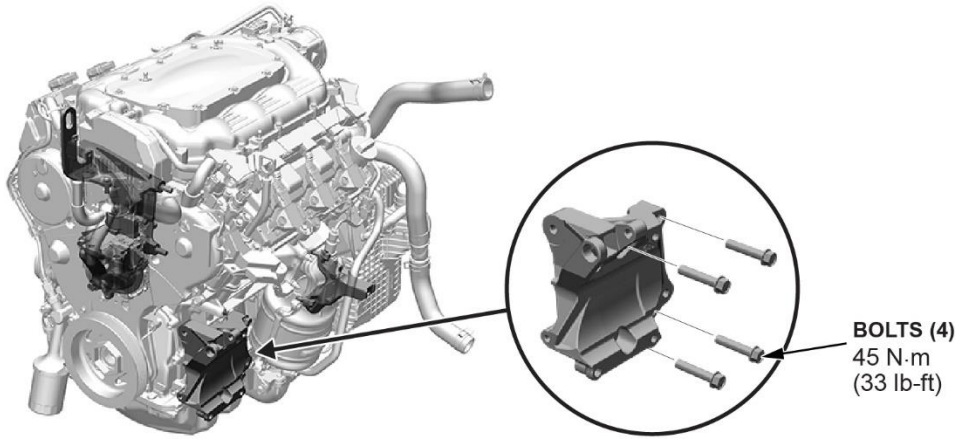


12. Remove the crank angle gauge and zip tie.

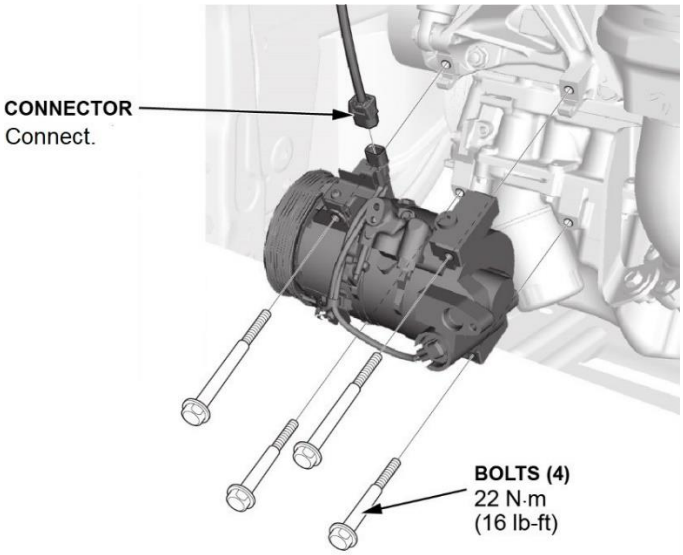
13. Lower the vehicle and remove the piston stoppers.
14. Rotate the crankshaft **360°** to check for binding of the connecting rod bearings.



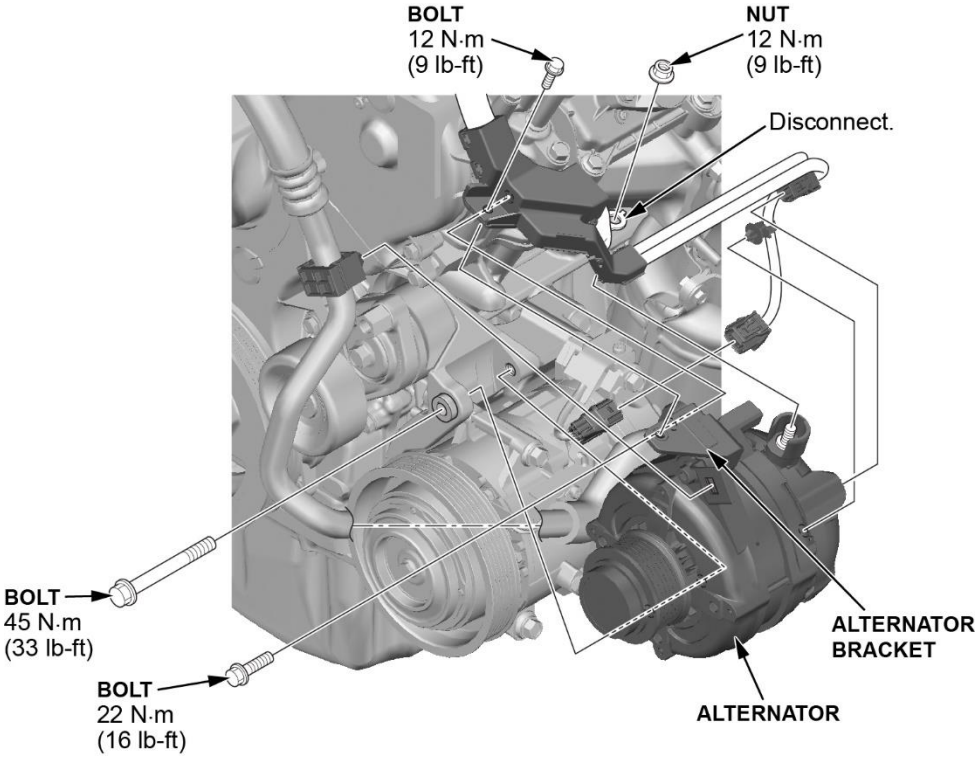
15. **INSPECTION B ONLY:** Install the A/C compressor bracket.



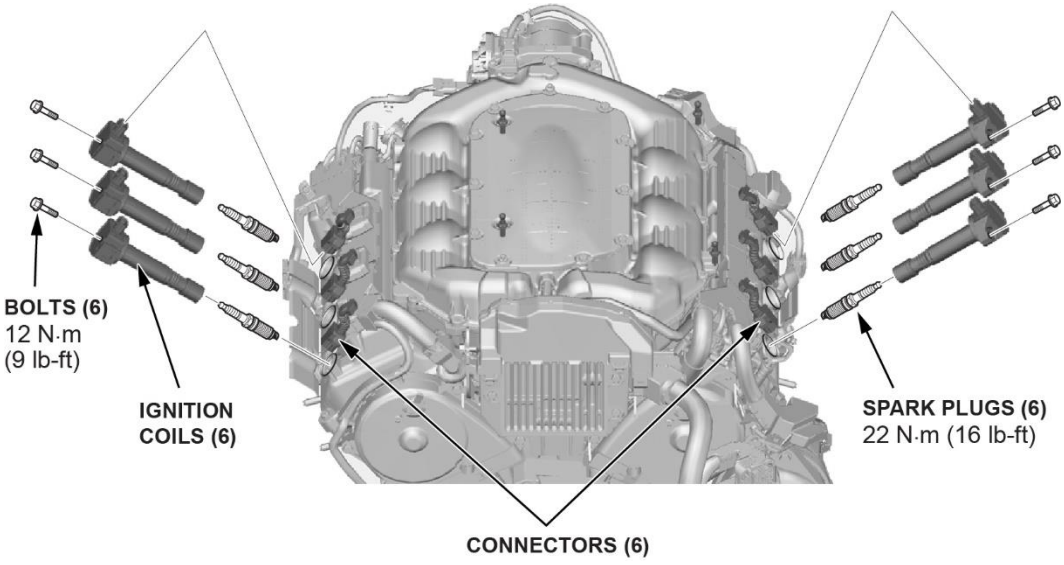
16. **INSPECTION B ONLY:** Install the compressor.



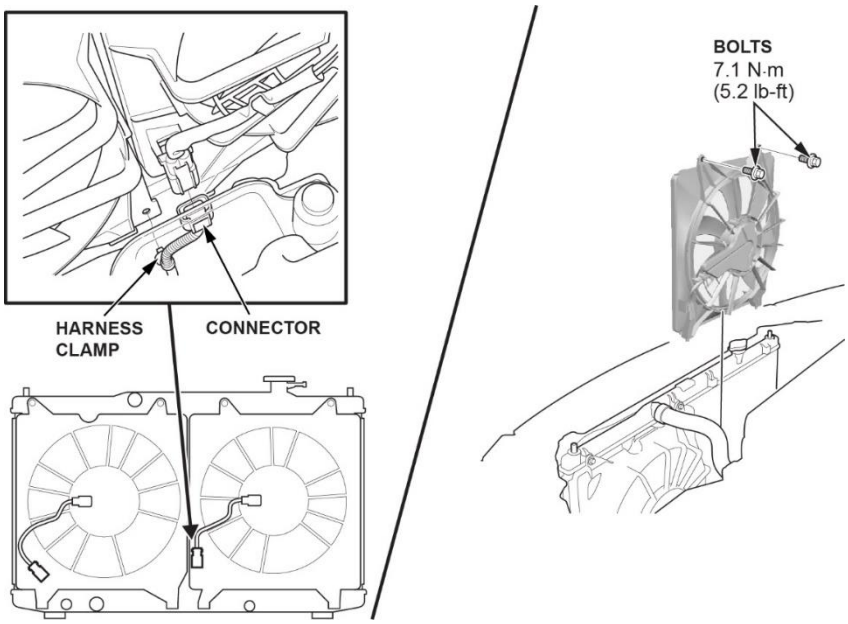
17. **INSPECTION B ONLY:** Install the alternator.



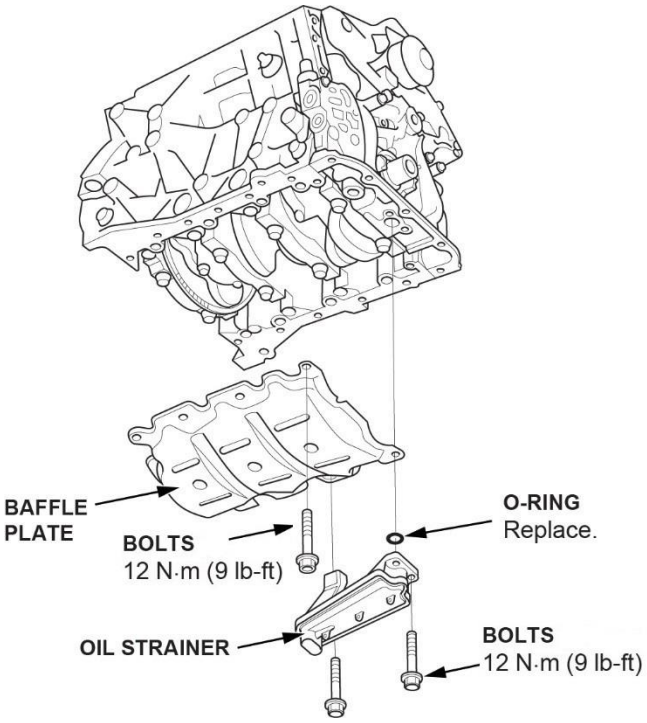
18. Install the coil connectors, ignition coils, and spark plugs.



19. **INSPECTION B ONLY:** Connect the passenger side radiator fan connectors, and then install the passenger side radiator fan.



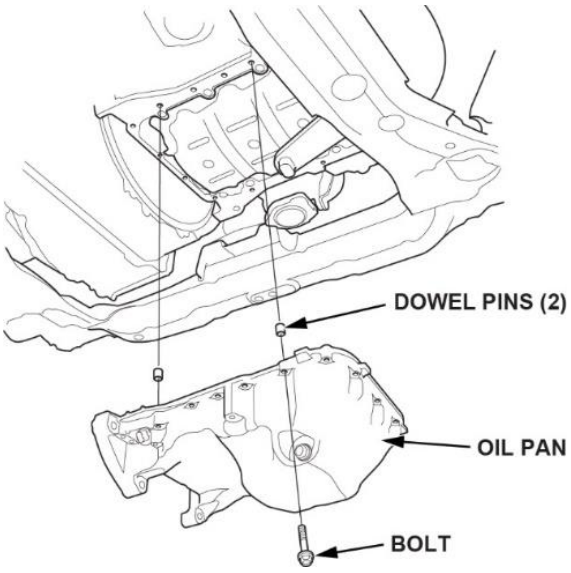
20. Raise the vehicle.
21. Install the oil strainer and baffle plate.

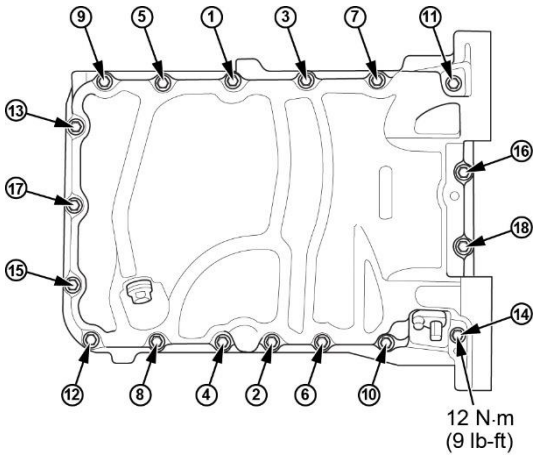


22. Install the engine oil pan.

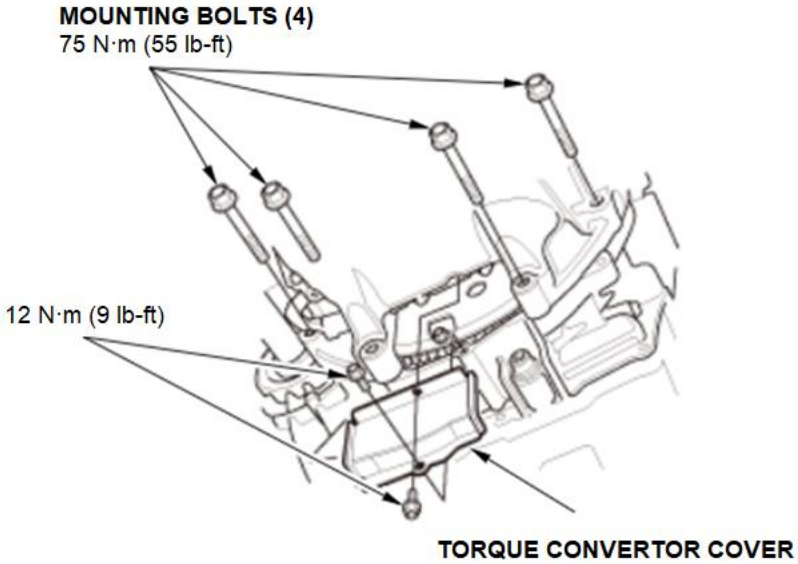
    NOTE:

    - **Apply** a liquid sealing gasket (Hondabond HT Silicone Gasket, P/N 08718-0004) to the oil pan mating surface of the engine block and inside edge of the threaded bolt holes.
    - Torque the bolts to **12 N·m (9 ft-lb).**
    - **Wait** at least **30 minutes** before filling the engine with oil**.**
    - **Do not** run the engine for at least **3 hours** after installing the oil pan.
    - **Follow** the bolt installation sequence.

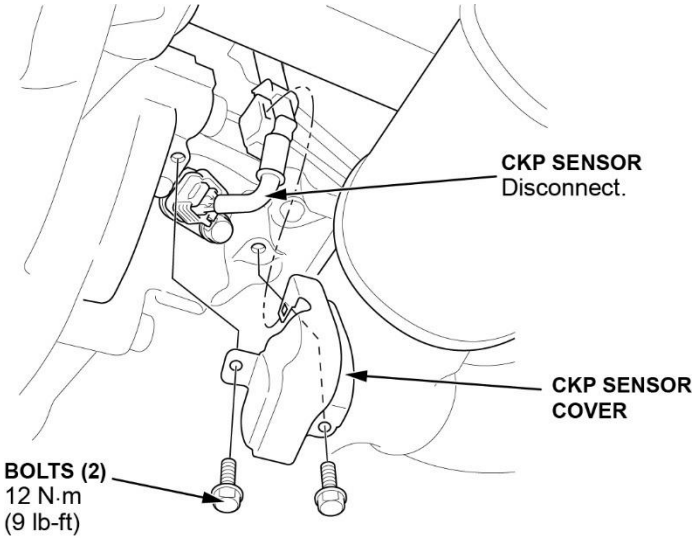




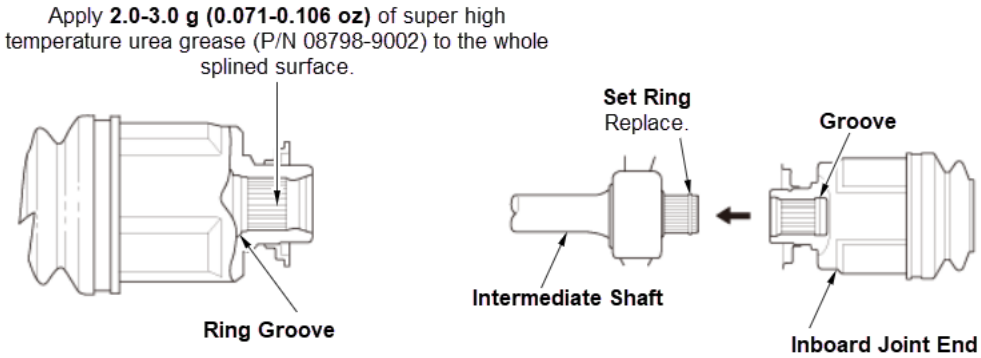
23. Install the torque converter cover and the 4 lower transmission bolts.



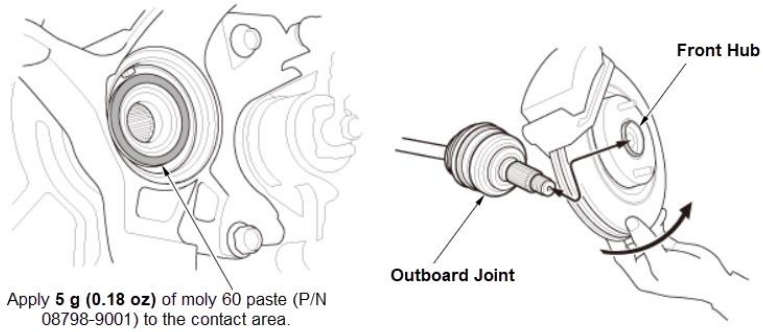
24. Install the CKP sensor cover and disconnect the CKP sensor.



25. **INSPECTION B ONLY:** Install the passenger side driveshaft.
    1. Apply **2.0–3.0 g** of molybdenum grease to the whole splines surface of the right driveshaft.
    2. After applying grease, remove the grease from the splined grooves at intervals of 2-3 splines and from the set ring groove so that air can bleed from the intermediate shaft.
    3. Install a new set ring.
    4. Insert the inboard joint end of the driveshaft onto the intermediate shaft until the set ring locks in the groove.



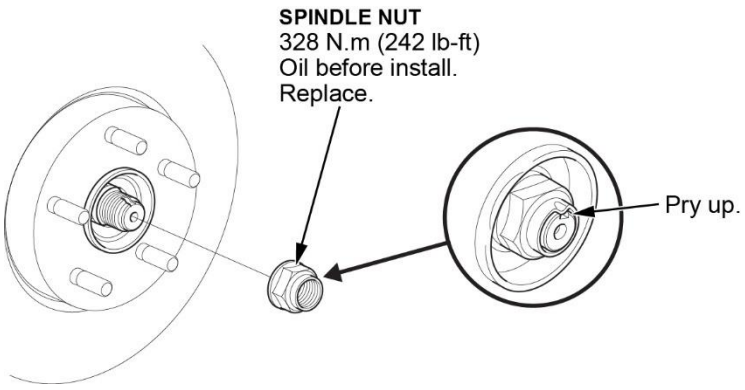
    5. Apply about **3.0 g** of molybdenum grease to the contact area of the outboard joint and the front wheel bearing.
    6. Install the outboard joint into the front hub on the knuckle.



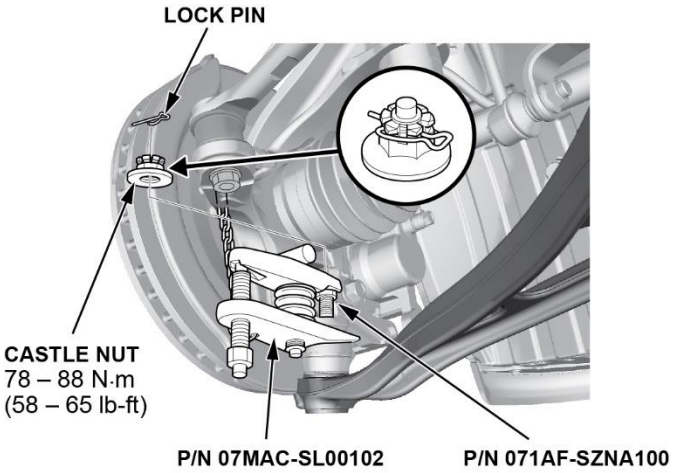
7. Install the new spindle nut.

   NOTE:

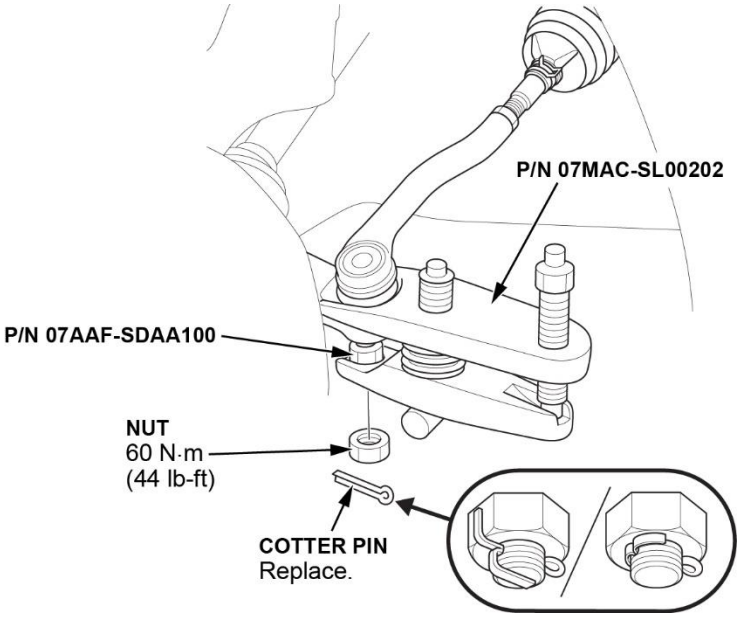
   - Apply a small amount of engine oil to the seating surface of the new spindle nut.
   - Use a drift to stake the spindle nut shoulder against the driveshaft.
   - Be careful not to make a crack on the spindle nut when staking.



26. Connect the passenger's side lower knuckle ball joint.

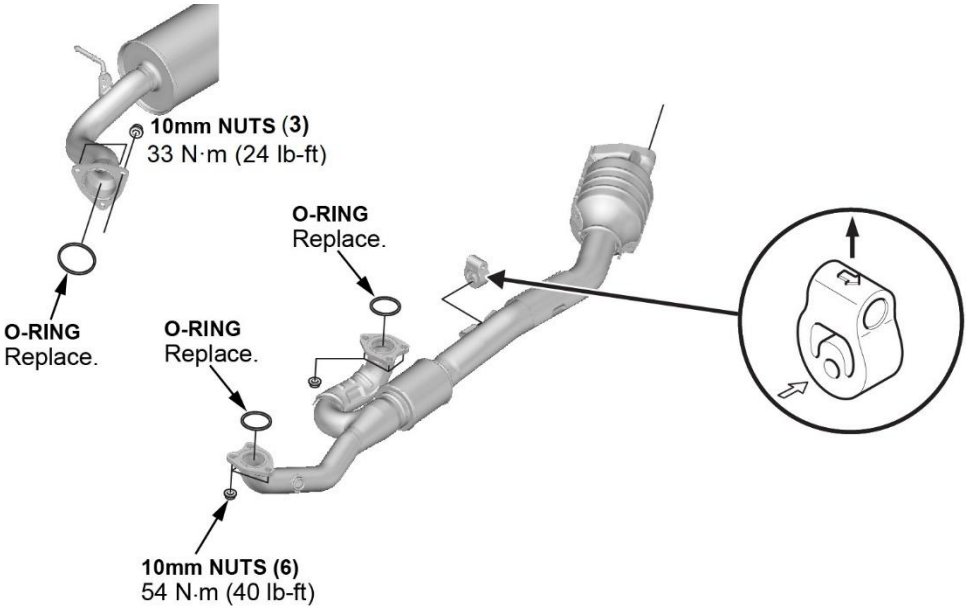


27. Connect the tie-rod end ball joint.



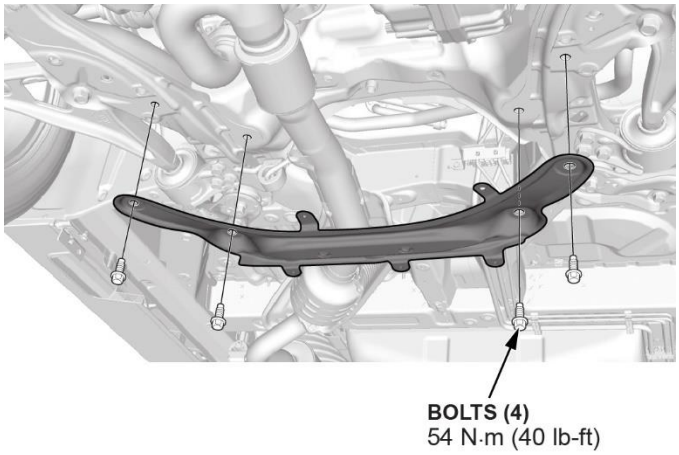
28. Install the A-pipe.

    NOTE: Nuts are must replace.

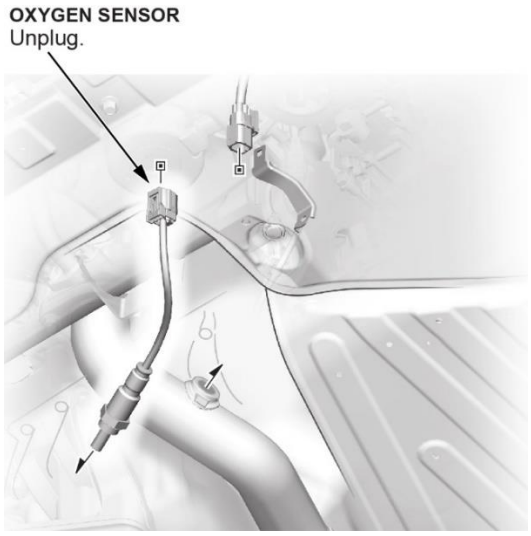


29. Install the sub frame stiffener plate.

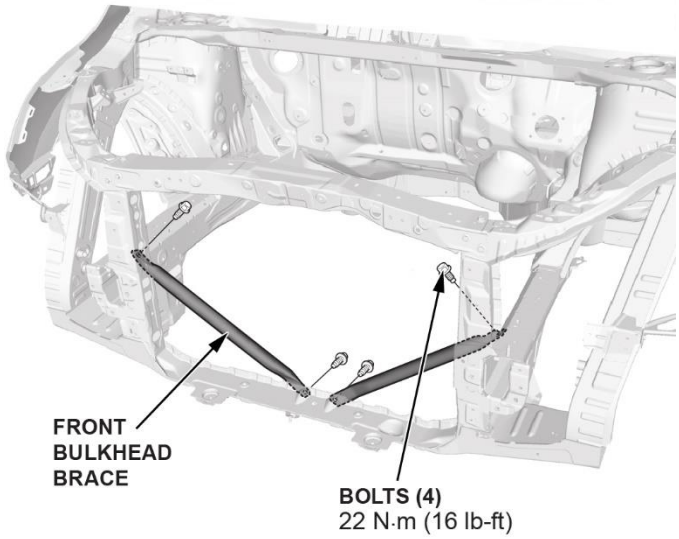
    NOTE: Bolts are must replace.



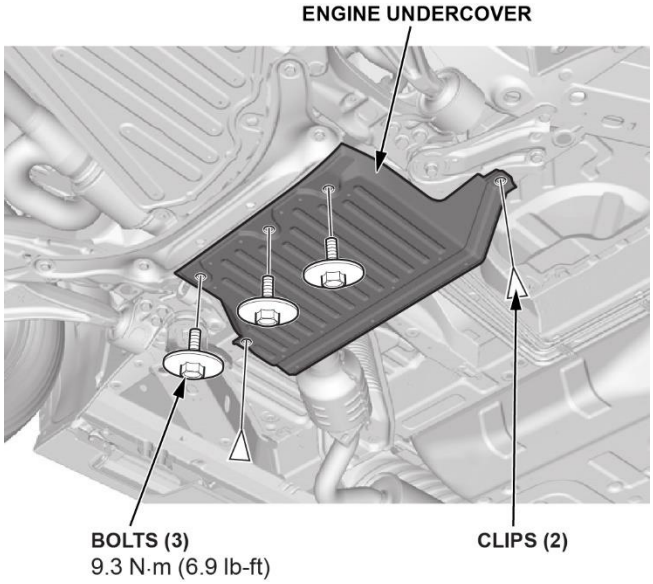
30. Plug in the bank 2 oxygen sensor.

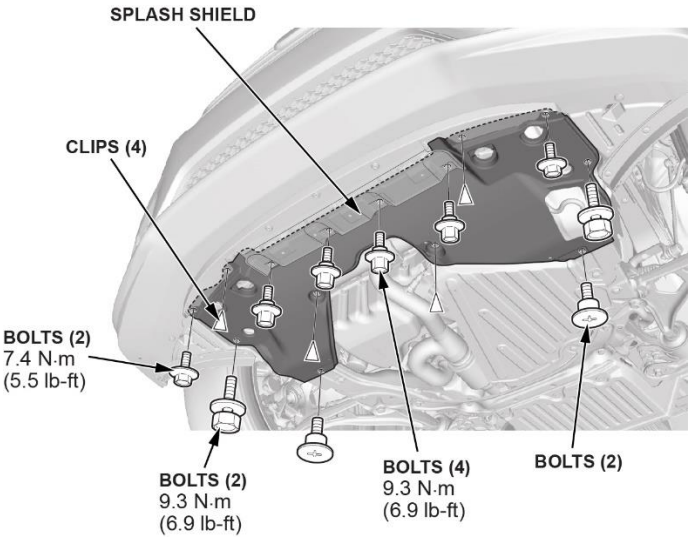


31. Install the bulkhead brace.

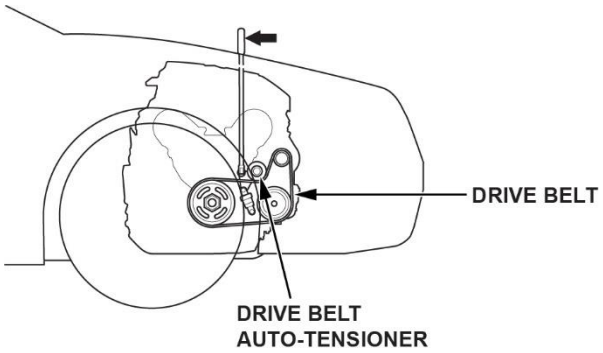


32. Install the engine undercover and the lower splash shield.





33. Replace the washer and install the oil drain bolt, **40 N·m (30 lb-ft).**
34. Install the passenger side front wheel, **127 N·m (94 lb-ft).**
35. Lower the vehicle.
36. **INSPECTION B ONLY:** Install the drive belt.



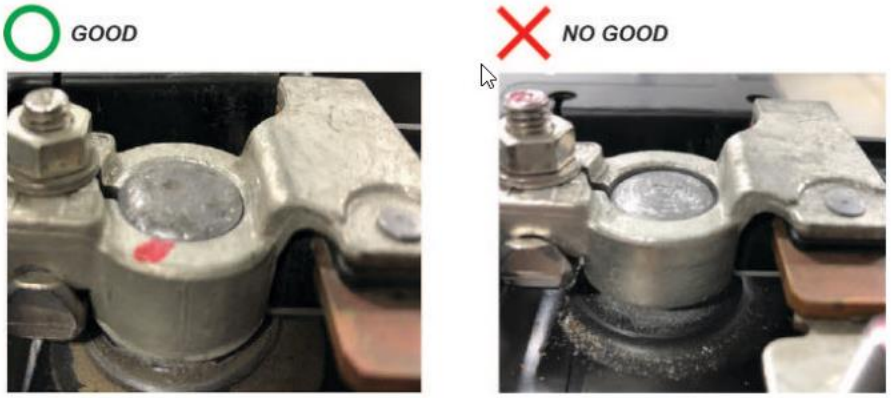
37. Install the oil dipstick and fill the engine oil.

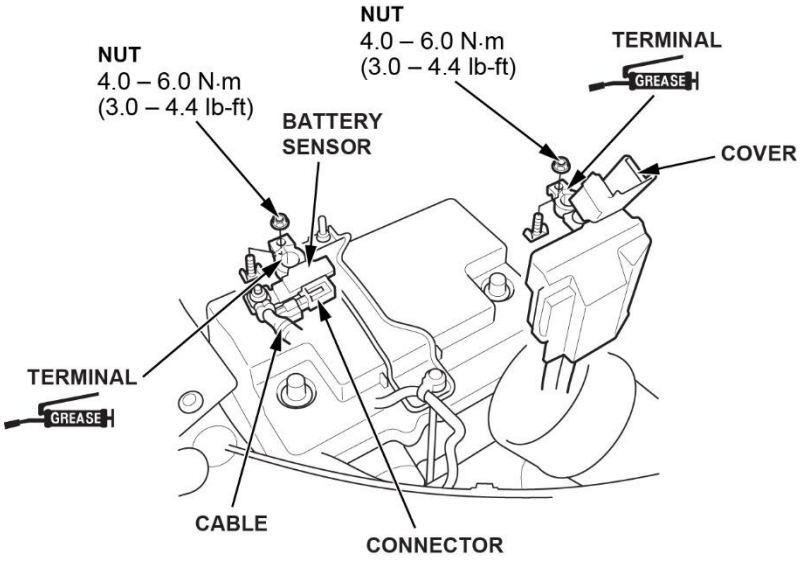
Fill: 5.1 L (5.4 US qt.)

38. Connect the 12-volt battery.

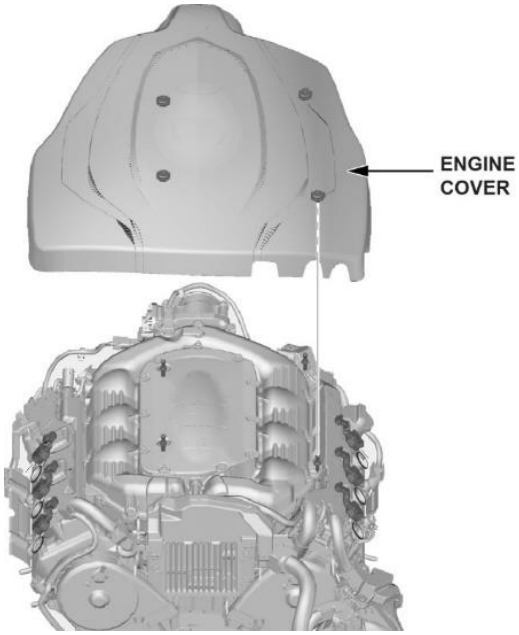
    NOTE:

    - Battery terminal installation on this vehicle is critical. Failure to follow the terminal installation or inspection procedures could cause electrical problems, stalling, and/or DTCs to set. Do not over torque the terminals, and do not use an impact gun.
    - Battery terminal installation must be level or below the post.

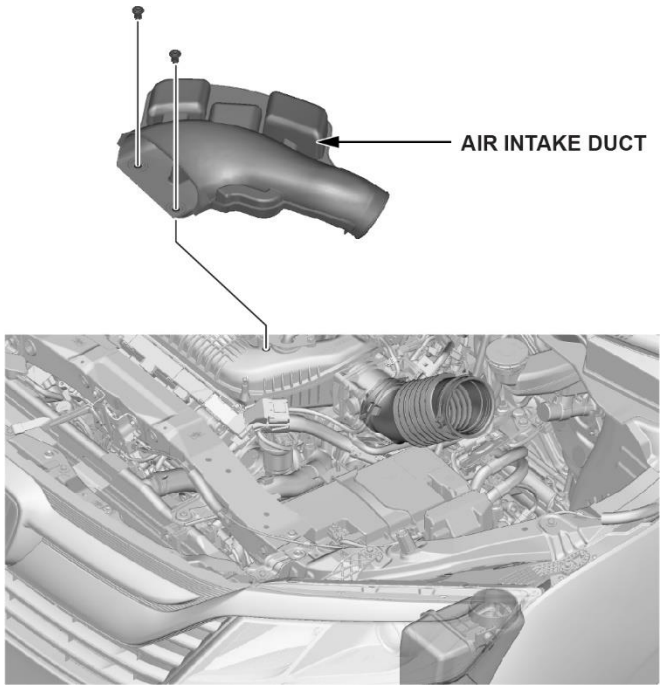




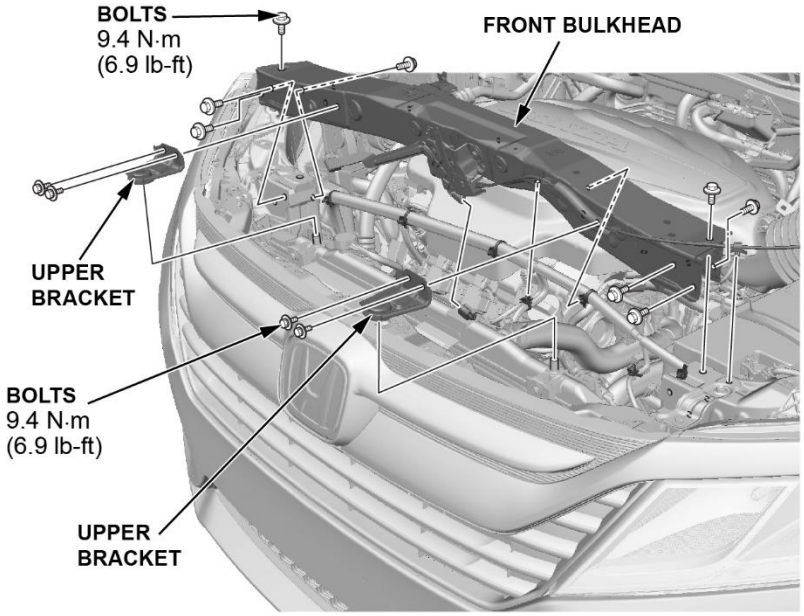
39. Install the engine cover.



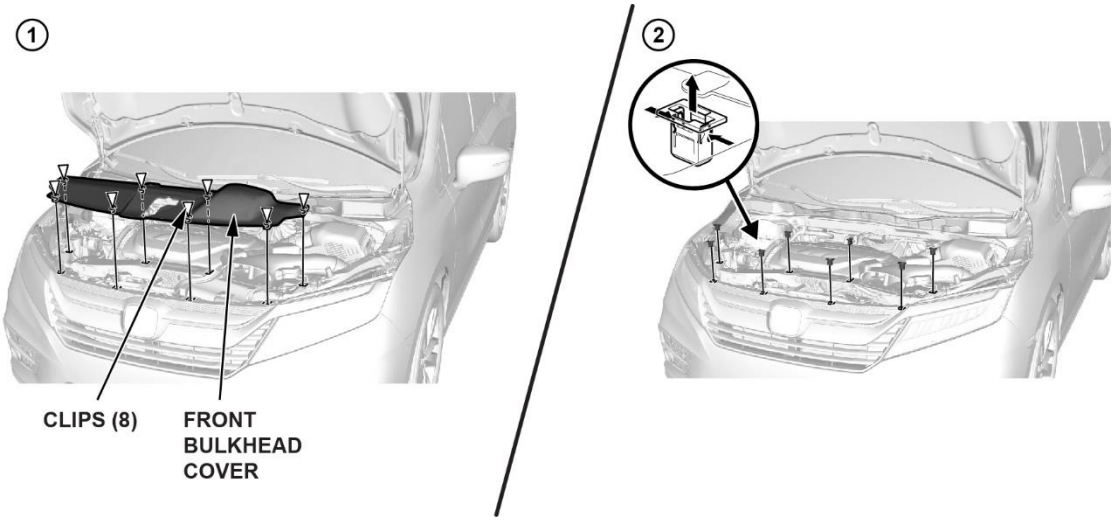
40. Install the air intake duct.



41. Install the front bulkhead and upper bracket.



42. Install the front bulkhead cover.



43. Make sure the vehicle has sat for at least **3 hours** from the time the oil pan was reinstalled.

    NOTE: This is to make sure the bonding on the oil pan has completely cured.

44. Connect to the i-HDS.

45. Do a PCM reset.

    1. Select the **PGM-FI** system with i-HDS.
    2. Reset the PCM with the i-HDS while the engine is stopped.
    3. Turn the vehicle to the OFF (LOCK) mode.
    4. Turn the vehicle to the ON mode and wait **30 seconds**.
    5. Turn the vehicle to the OFF (LOCK) mode and disconnect the i-HDS from the DLC.

46. Do the CKP Pattern clear and learn.
    1. Select **CRANK PATTERN** in the **ADJUSTMENT MENU** with the i-HDS.
    2. Select **CRANK PATTERN CLEAR**, and clear the CKP pattern.
    3. Select **CRANK PATTERN LEARNING**, and follow the screen prompts.
    4. Turn the vehicle to the OFF (LOCK) mode.
    5. Jump the SCS line with the i-HDS.
    6. Wait **60 seconds** and exit the SCS mode with the i-HDS.
47. Do the idle speed inspection.

    NOTE: If the idle speed is not within specification, do the *PCM Idle Learn Procedure* in the service manual.
    1. Start the engine and place the vehicle in PARK or NEUTRAL.
    2. Hold the engine speed **without load** at **3,000 rpm** until the radiator fan comes on, then let it idle.
    3. Check the idle speed under no load conditions: headlights, blower fan, radiator fan, audio system, and A/C off.

       Idle Speed at No Load Should Be:

       Engine: 680 ± 50 rpm in PARK or NEUTRAL
    4. Let the engine idle for **1 minute** with a high electrical load (A/C on, temperature set to max cool, blower fan on high, headlights on high beam).

       Idle Speed at High Load Should Be:

       Engine: 680 ± 50 rpm in PARK or NEUTRAL
48. Do the VSA sensor neutral position memorization procedure.

    NOTE: **Do not** press the brake pedal during this procedure.
    1. Park the vehicle on a flat and level surface.
    2. Make sure the steering wheel is straight ahead.
    3. Select **VSA ADJUSTMENT** in the i-HDS.
    4. Select **ALL SENSORS**, and follow the screen prompts.
49. Do the Steering Angle Sensor Neutral Position.
    1. Select **EPS ADJUSTMENT** on the i-HDS.
    2. Select **EPS STEERING ANGLE SENSOR VALUE CLEAR**, and follow the screen prompts.
50. Exit the i-HDS, **REPAIR #1** is complete.

    NOTE: Link to CONTENT REFERENCE, (Click HERE).

REPAIR #2 AND #3 REPLACE THE SHORT BLOCK

NOTE:

- **Log into V-SMART prior to starting this portion and input any necessary photo(s) for the new parts.**
- **Contact the Bearing Inspection Inquiry Team *after* inputting the needed V-SMART information for the unique warranty codes and needed alignments.**

1. Disconnect steering column at steering joint.

   NOTE: *Steering Joint Disconnection and Removal* (Click HERE)
2. Remove the piston stoppers.
3. Remove the battery.

   NOTE: *12 Volt Battery Removal, Installation, and Test* (Click HERE)
4. Remove the intake tubing and filter box.

   NOTE: *Air Cleaner Removal and Installation* (Click HERE)
5. Unbolt and disconnect the battery cable around the under-hood fuse box at the positive terminal.
6. Disconnect the brake booster vacuum hose and EVAP hose.

   NOTE: *Engine Removal and Installation* (Click HERE)
7. Disconnect the PCM and engine connector.

   NOTE: *Engine Removal and Installation* (Click HERE)
8. Lift the vehicle.
9. Remove the driver side wheel, **127 N·m (94 lb-ft)**.
10. Move the driver fender liner as needed.
11. Drain the coolant.

    NOTE: *Coolant Replacement* (Click HERE)
12. **9AT Only**: Separate the passenger side drive shaft inner joint from the intermediate shaft, if not already removed.

    NOTE: *Front Driveshaft Removal and Installation* (Click HERE)
13.
14. Remove the transmission ground cable.

    NOTE: *Automatic Transmission Removal and Installation* (Click HERE)
15. Disconnect the front engine mount and connector.

    NOTE: *Front Engine Mount Removal and Installation* (Click HERE)
16. Disconnect the EPS and rear engine mount and connector.

    NOTE: *Rear Engine Mount Removal and Installation* (Click HERE)
17. Remove the torque converter bolts.

    NOTE:

    - *9AT Automatic Transmission Removal and Installation* (Click HERE)
18. Remove the upper nuts to the sway bar links.

    NOTE: *Front Damper/Spring Removal and Installation* (Click HERE)
19. Separate the axle inner joint and intermediate shaft.
20. Loosen the 2 lower condenser bolts.

    NOTE: *A/C Condenser Removal and Installation* (Click HERE)
21. Lower the vehicle.

22. Remove the front, center upper beam A.

    NOTE: *Front Bumper Center Upper Beam Removal and Installation* (Click HERE)

23. Disconnect the radiator hoses and heater hoses **from the engine side**.

    NOTE: *Water Passage Removal and Installation* (Click HERE)

24. Disconnect the ATF warmer lower hose, only on the engine side.

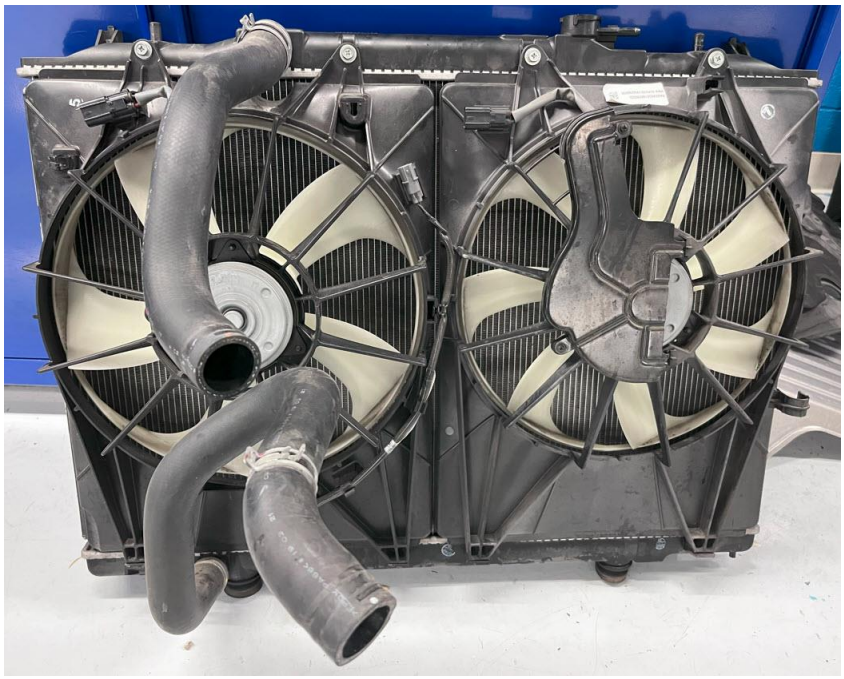
    NOTE: *Automatic Transmission Removal and Installation* (Click HERE)

25. Only remove the right-side core support brace, if not already removed.

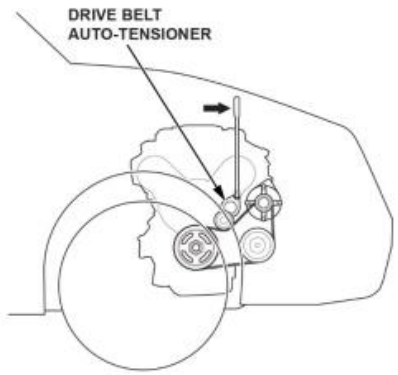
    NOTE: *Front Bulkhead Brace Removal and Installation* (Click HERE)

26. Remove the radiator, with fans attached.

    NOTE: *Radiator and A/C Condenser Fan, Motor, and Shroud Removal and Installation* (Click HERE)



27. **If not already removed,** remove the accessory drive belt.



28. Remove the alternator, if not already removed.

    NOTE: *Alternator Removal and Installation* (Click HERE)

29. Unbolt the A/C compressor, then move it forward to sit in the core support.

    NOTE:

    - Do not disconnect the sealed system lines.
    - *A/C Compressor Removal and Installation* (Click HERE)

30. Unbolt the engine side bracket.

    NOTE: *Side Engine Mount Removal and Installation* (Click HERE)

31. Disconnect the fuel line at the high-pressure fuel pump.

    NOTE: *Fuel Line/Quick-Connect Fitting Removal and Installation* (Click HERE)

32. Raise the vehicle to waist height.
33. Remove the pinch bolt for knuckle and strut.

    NOTE: *Front Damper/Spring Removal and Installation* (Click HERE)

34. Raise vehicle to waist height.
35. Unbolt the brake caliper at the bracket and hang on the spring.

    NOTE:

    - Do not remove the banjo bolt.
    - *Front Brake Caliper Removal and Installation* (Click HERE)

36. Remove the wheel speed sensor from the knuckle.

    NOTE: *Wheel Speed Sensor Removal and Installation* (Click HERE)

37. Set the lift table under the subframe with the subframe attachment.
38. Raise the lift table until contact with the subframe.
39. Unbolt the subframe.
40. Lower the lift table with the subframe, engine, and transmission assemblies as one.
41. Remove the rear (Bank 1) catalytic convertor.

    NOTE: *Warm Up TWC Removal and Installation* (Click HERE)

42. Remove the passenger axle nut.

    NOTE: *Front Driveshaft Removal and Installation* (Click HERE)

43. Remove the drive shaft with the intermediate shaft with support base.

    NOTE: *Front Driveshaft Removal and Installation* (Click HERE)

44. **9AT ONLY:** Insert the transmission axle cap.

45. Unbolt the EGR pipe from the coolant cross over pipe.

    NOTE: *EGR Pipe Removal and Installation* (Click HERE)

46. Remove the front bank catalytic converter, with the EGR pipe attached.

    NOTE: *Warm Up TWC Removal and Installation* (Click HERE)

47. Remove the intake manifold and intake manifold base.

    NOTE: *Intake Manifold Removal and Installation* (Click HERE)

48. Unclip the oxygen sensors, coils, ECT sensor, TDC sensor.
49. Separate the engine harness from the engine and flip over to transmission.
50. Cover the intake ports.

51. Remove the fuel joint pipe and high-pressure fuel pump.

    NOTE: *High Pressure Fuel Pump Removal and Installation* (Click HERE)

52. Remove the fuel line with the injectors attached.

    NOTE: *Injector Removal and Installation* (Click HERE)

53. Remove the starter.

    NOTE:

    - **9AT** (Click HERE)

54. Remove the water passage (including EGR valve) and coolant connecting pipe.
55. Remove the sub harness with knock sensors.

    NOTE: *Cylinder Head Removal and Installation* (Click HERE)

56. Remove the valve covers.

    NOTE: *Cylinder Head Removal and Installation* (Click HERE)

57. Remove the crank pulley.

    NOTE: *Crankshaft Pulley Removal and Installation* (Click HERE)

58. Remove the timing belt covers.

    NOTE: *Timing Belt Removal and Installation* (Click HERE)

59. Remove the lower half of side engine mount bracket of the old engine. Transfer the foam insulator from original bracket to new, if applicable.

    NOTE: *Timing Belt Removal and Installation* (Click HERE)

60. Remove the idler pulley and timing belt.

    NOTE: *Timing Belt Removal and Installation* (Click HERE)

61. Remove the crank gear and key.

    NOTE: *Timing Belt Drive Pulley Removal and Installation* (Click HERE)

62. Remove the auto tensioner and then compress the tensioner to install the locking pin.

    NOTE: *Timing Belt Auto-Tensioner Removal and Installation* (Click HERE)

63. Remove the timing belt adjuster and collar.

    NOTE: *Timing Belt Adjuster Removal and Installation* (Click HERE)

64. Remove the cam gear and cam gear plates.

    NOTE: *Camshaft Pulley Removal and Installation* (Click HERE)

65. Remove the head bolts and measure for stretch, **if not installing a new head**.

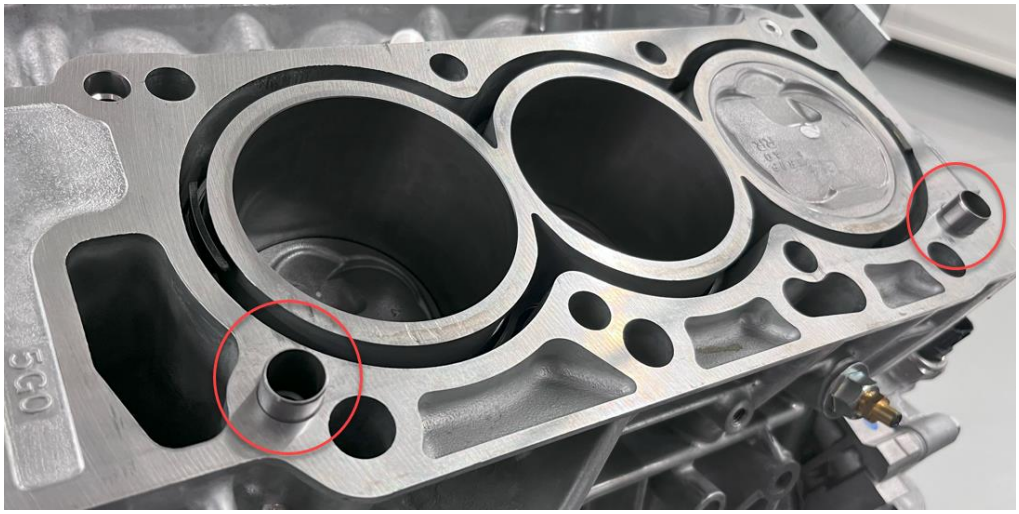
    NOTE: *Cylinder Head Removal and Installation* (Click HERE)

66. Lift the heads off the original block, **if not installing a new head**.

    NOTE: *Cylinder Head Removal and Installation* (Click HERE)

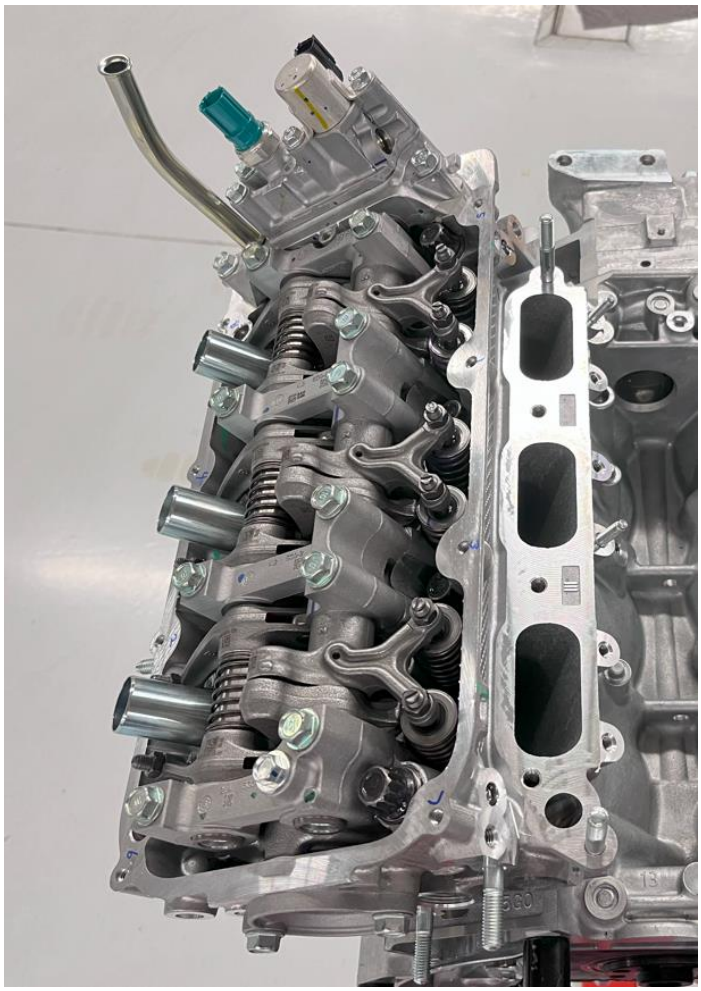
67. Mount the new block onto the engine stand.
68. Remove the side mount lower half.
69. Transfer the dowel pins to the new engine.

    NOTE: *Cylinder Head Removal and Installation* (Click HERE)



70. Lay in the new head gasket.

71. Set the new or original cylinder heads on top of the new head gasket as advised by the Bearing Inspection Inquiry Judgement.



72. Coat the head bolts in new engine oil.

    NOTE: *Cylinder Head Removal and Installation* (Click HERE)

73. Torque the head bolts to specification and in sequence.

    NOTE: *Cylinder Head Removal and Installation* (Click HERE)

74. Install the cam gear plates and cam gears onto a new engine.

    NOTE: *Camshaft Pulley Removal and Installation* (Click HERE)

75. Install the auto tensioner.

    NOTE: *Timing Belt Auto-Tensioner Removal and Installation* (Click HERE)

76. Install the crank gear and key.
77. NOTE: *Timing Belt Removal and Installation* (Click HERE)
78. Install the adjuster pulley, the idler pulley and timing belt.

    NOTE:

    - Make sure the timing is set correctly.
    - *Timing Belt Inspection* (Click HERE)

79. Install the side engine mount bracket.

    NOTE: *Side Engine Mount Removal and Installation* (Click HERE)

80. Install the timing belt covers.

    NOTE: *Timing Belt Removal and Installation* (Click HERE)

81. Install the timing belt plate and crank pulley, then set the valve clearance.

    NOTE: *Valve Clearance Adjustment* (Click HERE)

82. Replace the valve cover gasket and spark plug tube seals of the original valve covers, as needed.

    NOTE: *Cylinder Head Cover Removal and Installation* (Click HERE)

83. Install the valve covers, spark plugs, and coils.

    NOTE: *Cylinder Head Cover Removal and Installation* (Click HERE)

84. Transfer the A/C compressor bracket to the new block.
85. Install the knock sensors and lay the sub-harness.

    NOTE: *Knock Sensor 1 (Bank 1) and Knock Sensor 2(Bank 2) Removal and Installation* (Click HERE)

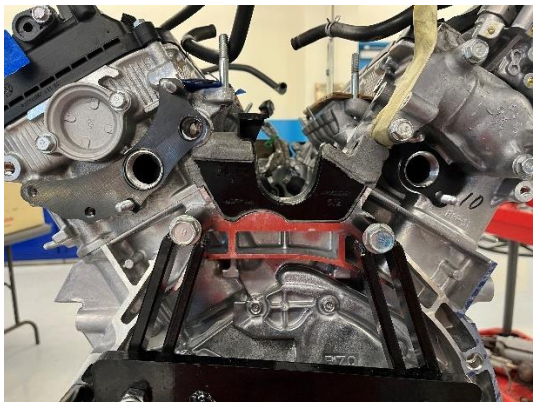
86. Secure the sub-harness and bracket.
87. Install the coolant connecting pipe with new O-rings.

    NOTE: *Water Passage Removal and Installation* (Click HERE)

88. Install the coolant passage with new gaskets.

    NOTE: *Water Passage Removal and Installation* (Click HERE)

89. Install the valley seal.



90. **If installing a new cylinder head, as directed by the bearing inspection team:** Remove the injectors from the fuel rail, replace the injector seals, and O-rings.

    NOTE: *Injector Removal and Installation* (Click HERE)

91. **If installing a new cylinder head, as directed by the bearing inspection team:** Replace the injector seals and install the injectors onto the fuel rail with new clips.

    NOTE: *Injector Removal and Installation* (Click HERE)

92. Install the high-pressure fuel pump, joint pipe, and high-pressure fuel pump cover.

    NOTE: *High Pressure Fuel Pump Removal and Installation* (Click HERE)

93. Install the engine support bracket to the original engine.

94. Remove the rear engine mount stopper; loosen the upper bolt plus the 4 bolts on the engine mount bracket.

    NOTE: *Engine Mount Tightening Procedure* (Click HERE)

95. Install the engine support bracket to the original engine.

    NOTE: *Engine Removal and Installation* (Click HERE)

96. Lift and hang the engine to unburden the load on the engine mount and bracket. Unbolt the front engine mount and bracket.

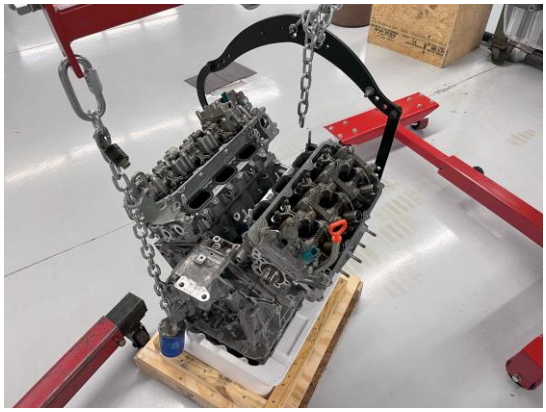
97. Lift the engine and slowly separate from the transmission.

    NOTE:

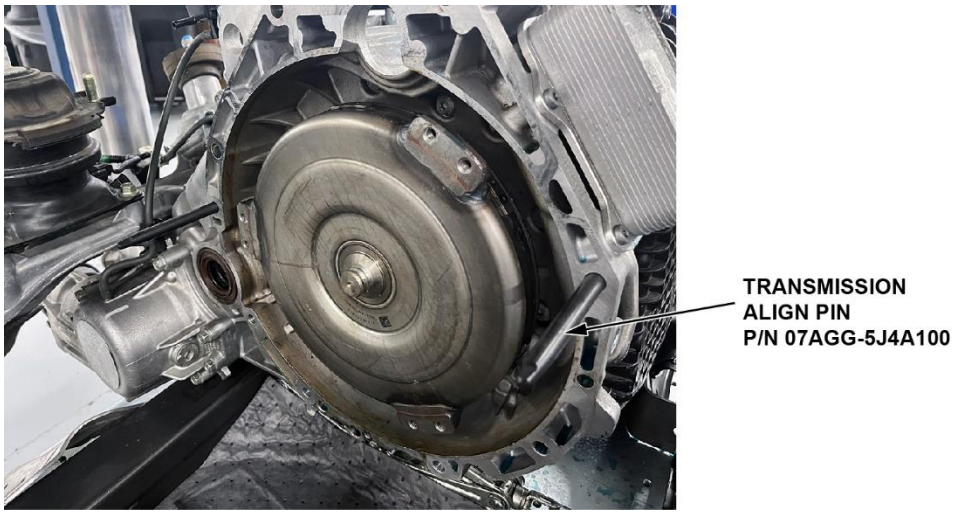
    - Watch the torque converter as engine is separating.
    - Place the original engine in an out-of-the way and safe place.

98. Transfer the drive plate from the original engine.

99. Install the engine hanger to the new engine.



100. Install the alignment pins to opposite ends of the transmission.



101. Connect the new engine to the transmission with the alignment pins.
102. Install the front engine mount, rear engine mount, and brackets.

    NOTE: *Engine Mount Tightening Procedure* (Click HERE)

103. Install the remaining parts (with subframe) in reverse order.
104. Add engine oil, **6.1 L (6.4 Qt.)**
105. Add coolant, **7.5 L (1.98 gal.)**
106. Do a PCM Reset.
107. Do the CKP Pattern clear and learn.
108. Do the idle speed inspection.
109. Do the VSA sensor neutral position memorization procedure.
110. Do the Steering Angle Neutral Position.