

May 13, 2024

Version 8

Safety Recall: 2015–20 TLX Connecting Rod Bearing

Supersedes 24-002, dated April 19, 2024, to revise the information highlighted in **yellow**.

AFFECTED VEHICLES

Year	Model	Trim Level	VIN Range
2015–20	TLX	V6 Only	Check the iN VIN status for eligibility.

REVISION SUMMARY

Under **WARRANTY CLAIM INFORMATION**, crankshaft replacement flat rate times were adjusted.

BACKGROUND

On November 9th, 2023, Acura announced a **STOP SALE** and **safety recall** for a certain number of 2015–20 TLX V6 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.

CLIENT NOTIFICATION

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

When **adequate replacement parts** become available, Acura will send a follow-up letter to clients instructing them to schedule an appointment for all vehicles affected by this recall. If a client experiences the known symptoms associated with this **safety recall** (see IMPORTANT NOTICE), they are instructed to contact their local Acura 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 *Dealer Operations Manual* (DOM) 7.2.1 will apply for this recall.

CLIENT 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 Acura automobile dealer.

Suggested Verbiage to be Included on the Repair Order

Client 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 client experiencing a symptom of an engine rod knock or rod knock followed by a stall when driving should be inspected. Otherwise, advise the client that parts are limited as described in the CLIENT 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.

If replacing the crankshaft or long block, the remaining must-replace parts will not be shipped until the new crankshaft or engine information is sent to the Bearing Inspection Team. 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:

- SCR: Standard Connecting Rod
- 0000: Last 4 digits of the VIN
- X: Alpha Character Used for Separate Orders

REQUIRED MATERIALS

Part Name	Part Number	Quantity
0W-20 Full Synthetic Motor Oil	-	4.2 Qt. or 5.3 Qt. (Depending on Repair)
Hondabond HT Silicone Gasket	08718-0004	3 tubes per 2 vehicles
Antifreeze / Coolant Type 2	OL999-9011A	9.6 L (2.54 Gal.) (Repair #2, #3, and #4)
Oil Filter	15400-PLM-A02	1 (Repair #3 and #4)

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
Connecting Rod Guides, [SET, CON ROD TIE DOWN]	07AAB-5G0A300	1 set
Crank Install Guide, [GUIDE, CRANK INSTALL]	07AAG-5J6A100	1
Subframe Guide, [PIN, SUBFRAME GUIDE]	07AAG-TZ3A100	1 set
Subframe Support, [JIG, SUBFRAME SUPPORT]	07AAK-TZ3A100	1
Engine Stand	78155	1
Engine Stand Crane with Crank Holder Tool	555-80103	1
Engine Stand Adapter Plate	555-80104	1
PARTS CART	PR1-A	1
Rod Bearing Organizer, [ORGANIZER, ROD BRNG]	07AAK-5J2A100	1
Crank Bearing Organizer, [ORGANIZER, CRANK BRNG]	07AAK-R9PA100	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.
- Select dealers will receive extra tools based on reported volume.

Tool Name	Tool Number	Quantity Per Repair
V-SMART Phone	CDW5001003PK	1
Large Zip Tie	Commercially Available	2
LOAD LEVELER	NR178115H	1
LIFT TABLE	KLS6227500	1
ENGINE BALANCE BAR ATTACHMENT	VSB02C000044 with VSB02C000019	1
LARGE, COMMERCIALY AVAILABLE RUBBER BANDS	-	2

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
- Select dealers will receive extra tools based on reported volume.

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.

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 templates D.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G5	Inspection procedure A - conrod bearings (includes photos)	1.5hr	6JA00	THS00	B24002A	13010-R9P-A00
1111ER	Replace connecting rod bearings (includes photos)	2.3hr	6KC00	CH700	B24002D	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 or 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 templates E.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1115G6	Inspection procedure B - conrod & main cap bearings (includes photos)	2.6hr	6JA00	THS00	B24002B	13050-R9P-A00
1111FM	FOR INSPECTION B Replace connecting rod bearings (includes photos)	2.3hr	6KC00	CH700	B24002E	13341-R9P-A01

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

NOTE:

- No further warranty claim required; vehicle is considered fixed 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 VERIFICATION 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 photos)	0.3hr	6KC00	CH700	B24002C	11200-5J6-A11

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 procedure A - conrod bearings (includes photos)	1.5hr	6JA00	THS00	B24002A	13010-R9P-A00
1115G6	Inspection procedure B - conrod & main cap bearings (includes photos)	2.6hr	6JA00	THS00	B24002B	13050-R9P-A00

Crankshaft 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**.

FWD

1111EY	Replace crankshaft (Includes align)	8.9hr	6KC00	CH700	B24002F	13322-5J6-A01
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AWD

1111EY	Replace crankshaft (Includes align)	9.0hr	6KC00	CH700	B24002G	13322-5J6-A01
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Crankshaft Replacement Including Oil Pump, Strainer, and Base

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**.

FWD

1111EZ	Replace crankshaft, Pump, Strainer, Base (Includes align)	8.9hr	6KC00	CH700	B24002H	13323-5J6-A01
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AWD

1111EZ	Replace crankshaft, Pump, Strainer, Base (Includes align)	9.0hr	6KC00	CH700	B24002J	13323-5J6-A01
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Long 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**.

FWD

1111FE	Replace long block (Includes align)	9.8hr	6KC00	CH700	B24002K	13324-5J6-A01
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AWD

1111FE	Replace long block (Includes align)	9.9hr	6KC00	CH700	B24002L	13324-5J6-A01
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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 M and 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 conrod only (Includes photos)	0.5hr	6JA00	THS00	B24002M	11221-5G0-A00

FWD

1111FE	Replace long block (Includes align)	9.8hr	6KC00	CH700	B24002N	13324-5J6-A01
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AWD

1111FE	Replace long block (Includes align)	9.9hr	6KC00	CH700	B24002P	13324-5J6-A01
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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.

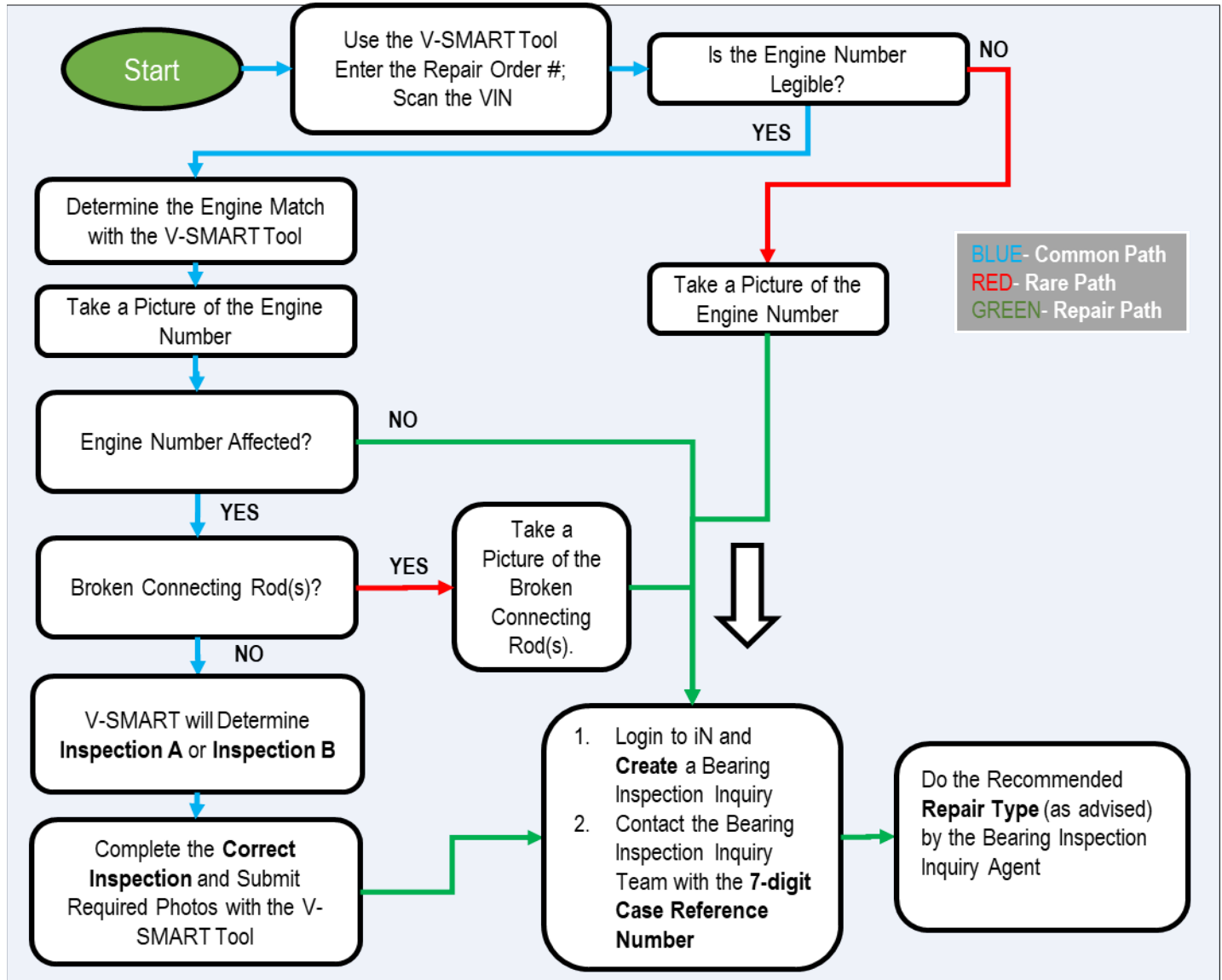


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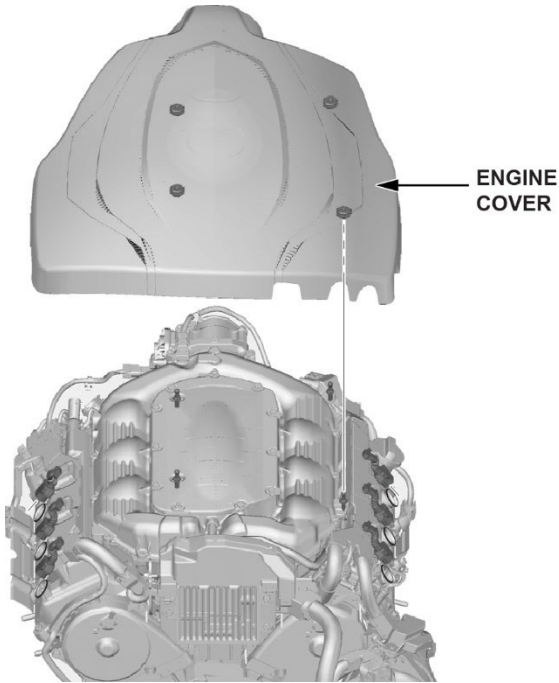
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NOTE: Click on a section title to go there.

V-SMART ENGINE NUMBER VERIFICATION

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

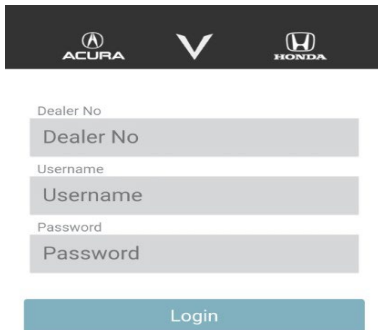
1. Remove the engine cover for better access to the engine identification number.



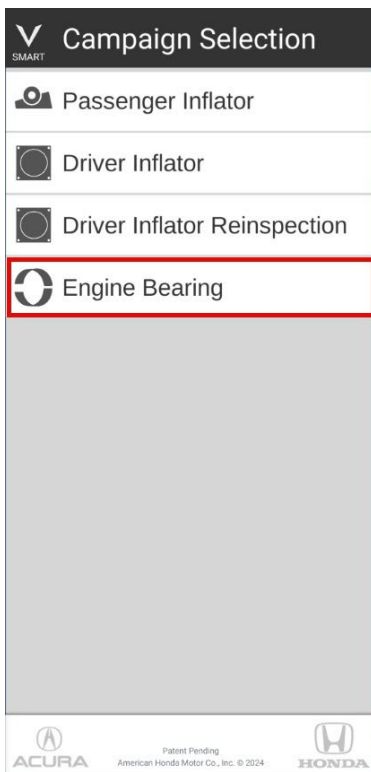
2. Login to V-SMART tool.

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)

A screenshot of the V-SMART login interface. At the top, there are logos for ACURA, a stylized V, and HONDA. Below the logos are three input fields: "Dealer No", "Username", and "Password". Each field has a grey background and a white border. Below the input fields is a blue "Login" button.

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



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

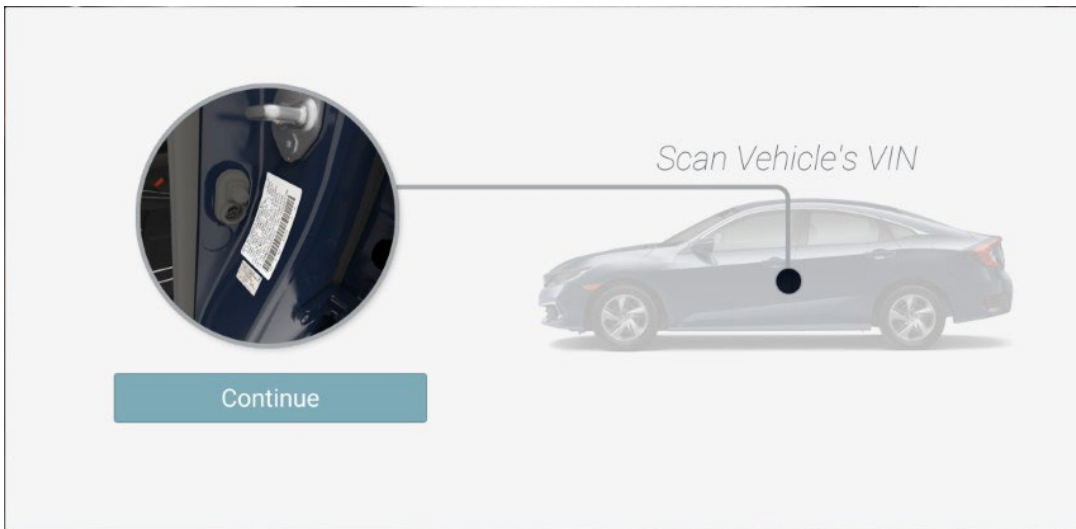


Repair Order #



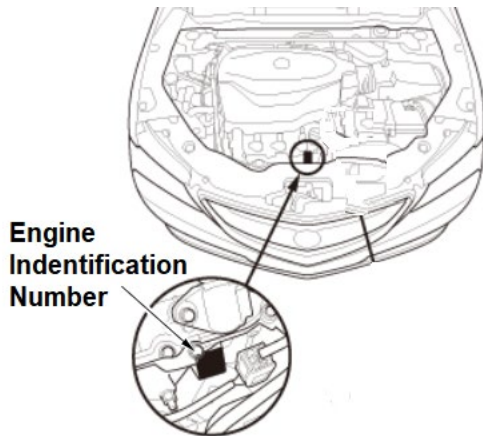
American Honda Motor Co., Inc. © 2024

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



6. Locate the engine identification number.

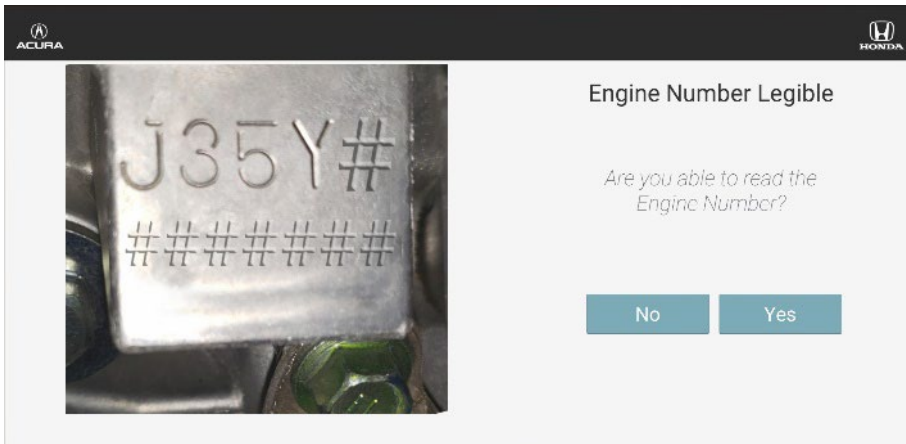
NOTE: If the number is not legible, clean the surface.



7. 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.

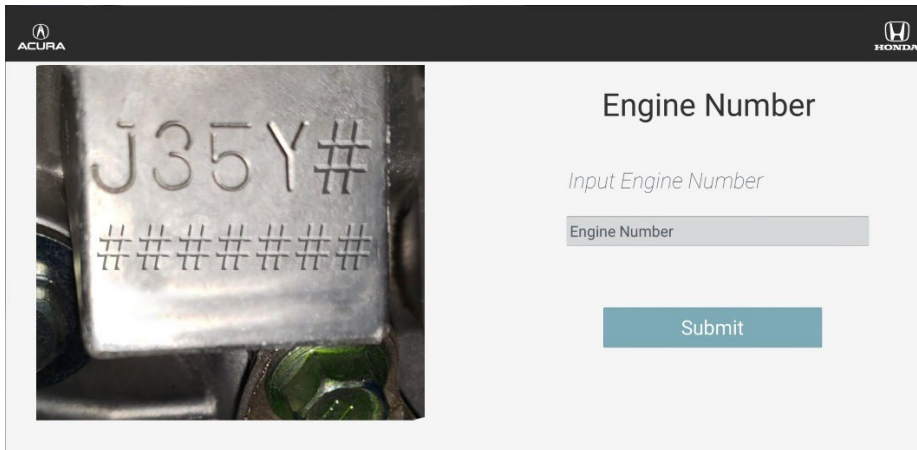


8. Does the engine identification number match?

- **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 inquiry call.

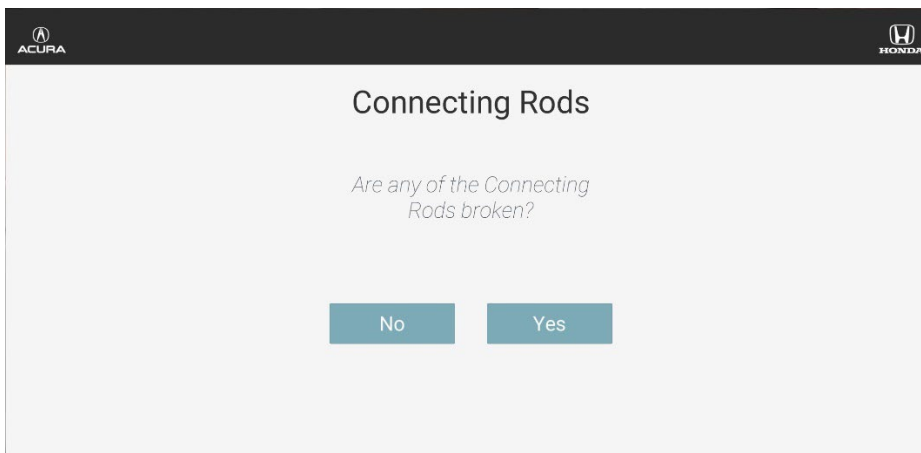


9. Answer the V-SMART tool's question: *Are any connecting rods broken?*

- **Yes**—Follow the application's instructions.

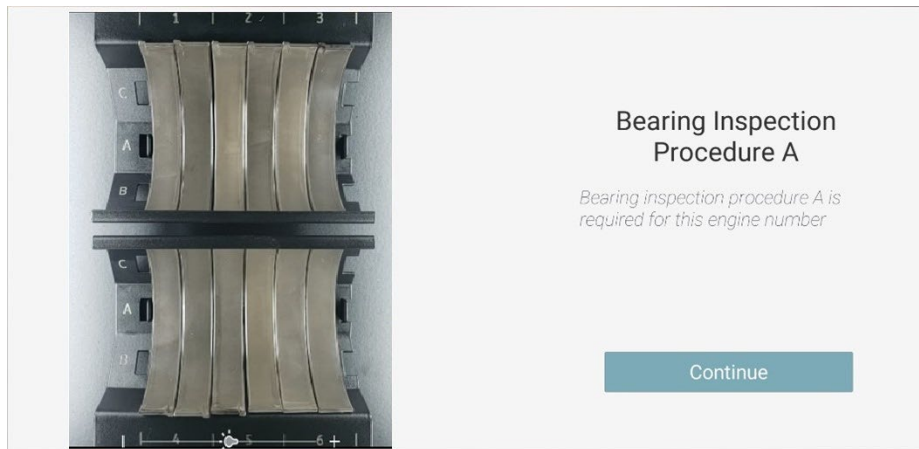
NOTE: Proceed to step 13 as necessary for information on creating a Bearing Inspection Inquiry and contacting the Bearing Inspection Inquiry Team.

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

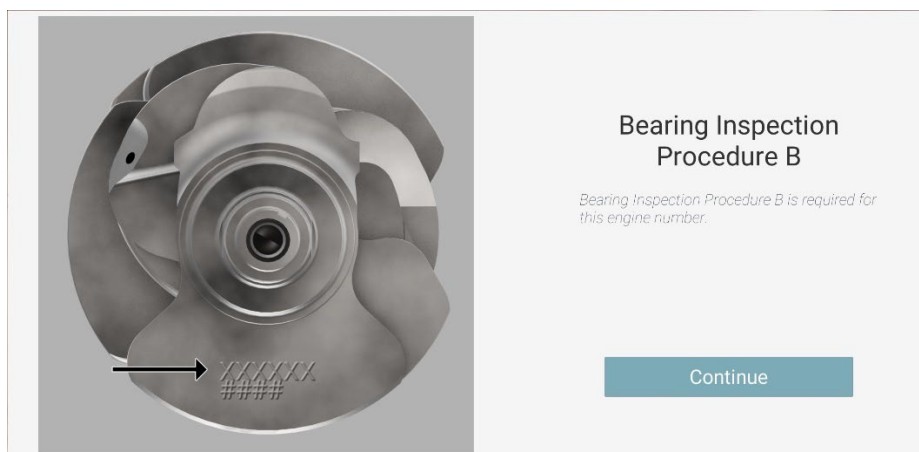


10. The V-SMART tool will direct you to either **INSPECTION A** or **INSPECTION B**.

- **INSPECTION A:** V-SMART Database contains engine build information.



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



11. 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.

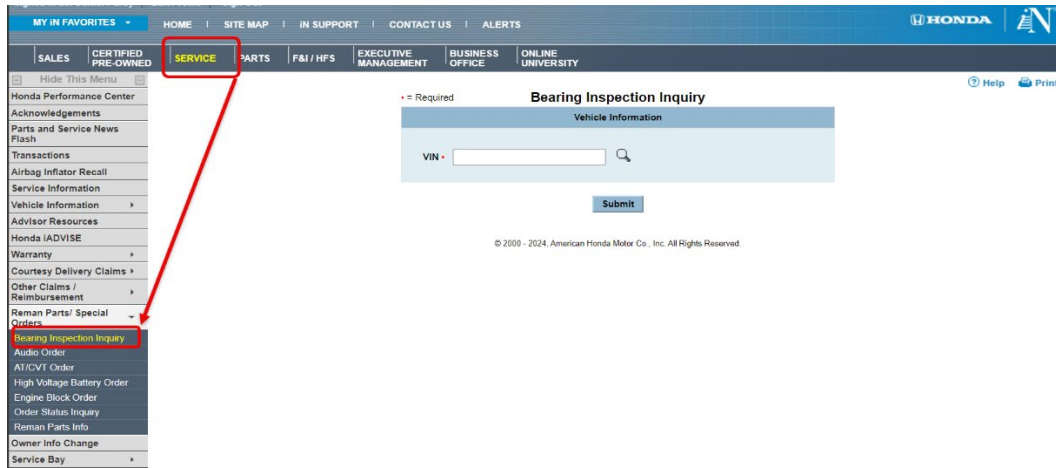
12. If advised by the V-SMART tool, proceed to either **INSPECTION A** or **INSPECTION B**. Otherwise, continue to the next step.

NOTE:

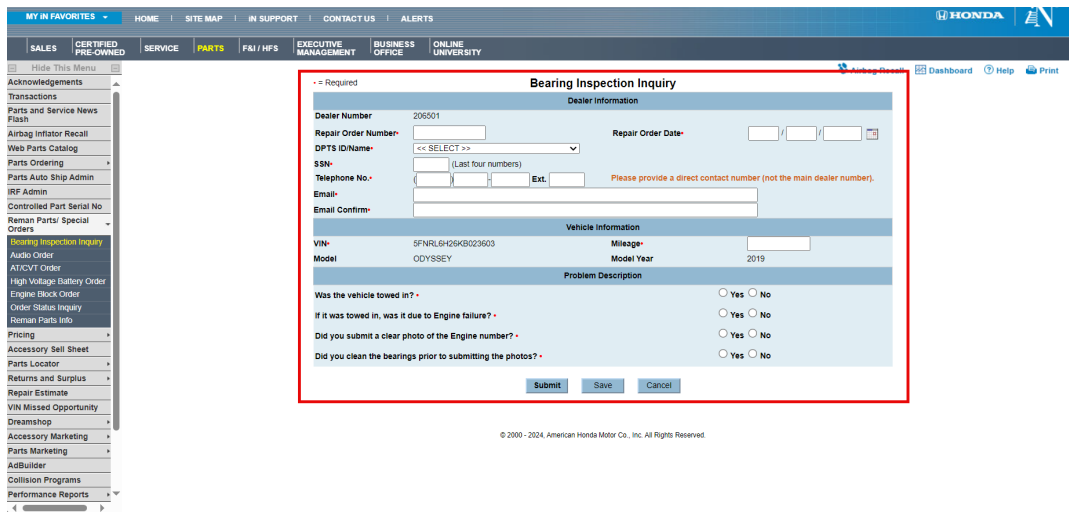
- Link to **INSPECTION A**, ([Click HERE](#))
- Link to **INSPECTION B**, ([Click HERE](#))
- Logging into the V-SMART application will always prompt the user to enter the RO# and scan/enter VIN.
- V-SMART Troubleshooting Hotline Number: **(800) 346-6327**.

13. 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](#)).

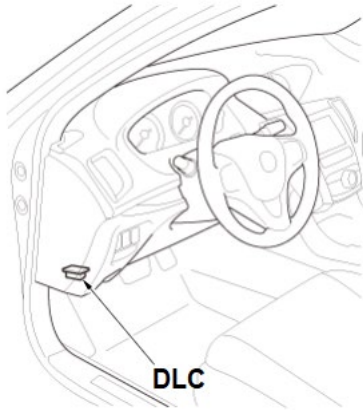
INSPECTION A

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:

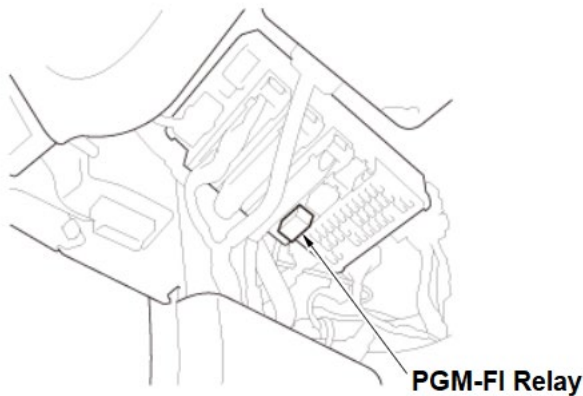
- Plug an interface tool into the DLC (located under the driver's side of the dashboard) and load i-HDS.



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

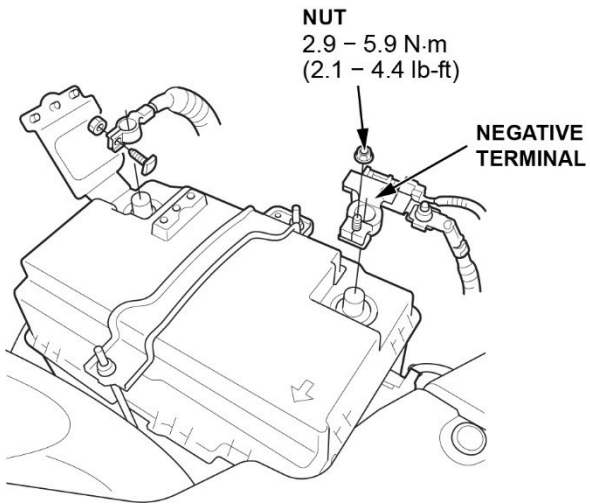
Without an i-HDS:

- Remove the PGM-FI main relay 2 from the under-dash fuse/relay box.

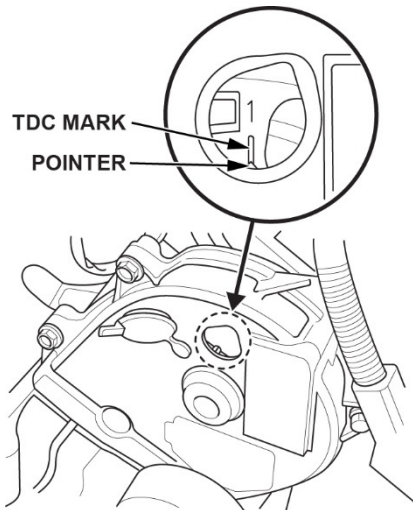


- Start the engine and let it idle until it stalls.
- Turn the vehicle to OFF.
- Install the PGM-FI main relay 2.

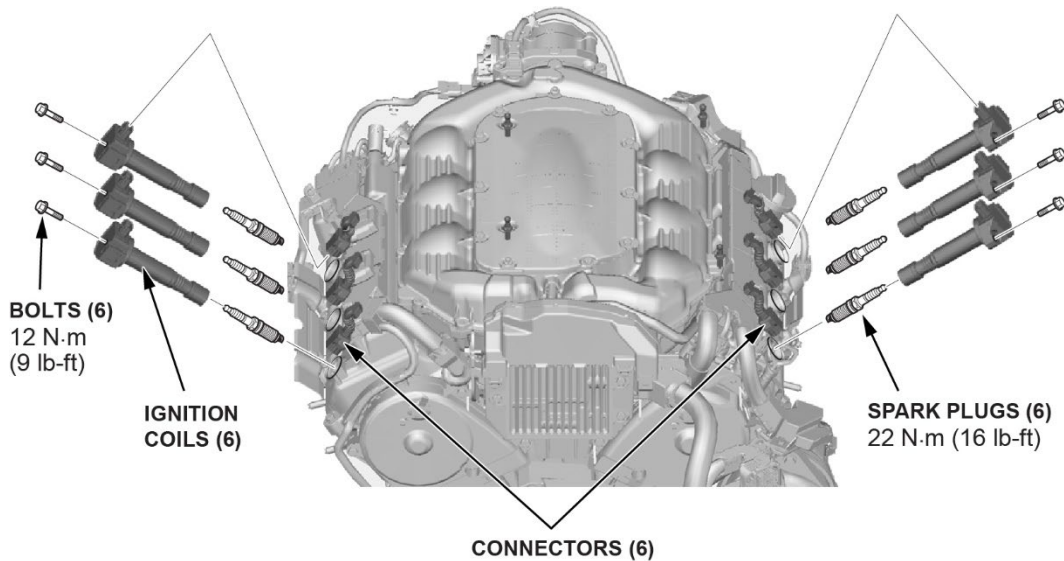
3. Disconnect the 12-volt battery.



4. Remove the oil dipstick.
5. Set **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.



6. Disconnect the coil connectors, then remove the ignition coils and spark plugs.

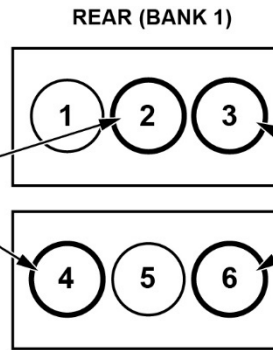


7. Install piston stoppers to **cylinder 2,3,4, and 6.**

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



Piston Stoppers
in cylinder #2 and #4.



Piston Stoppers
in cylinder #3 and #6.

FRONT (BANK 2)

FRONT OF VEHICLE

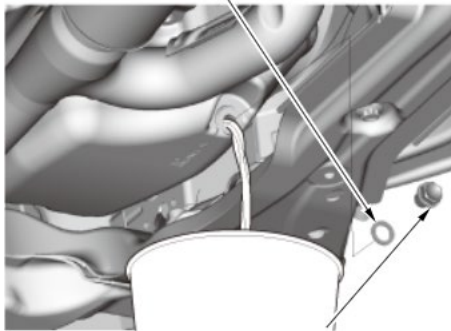


PISTON STOPPER
P/N 07AAB-5G0A200



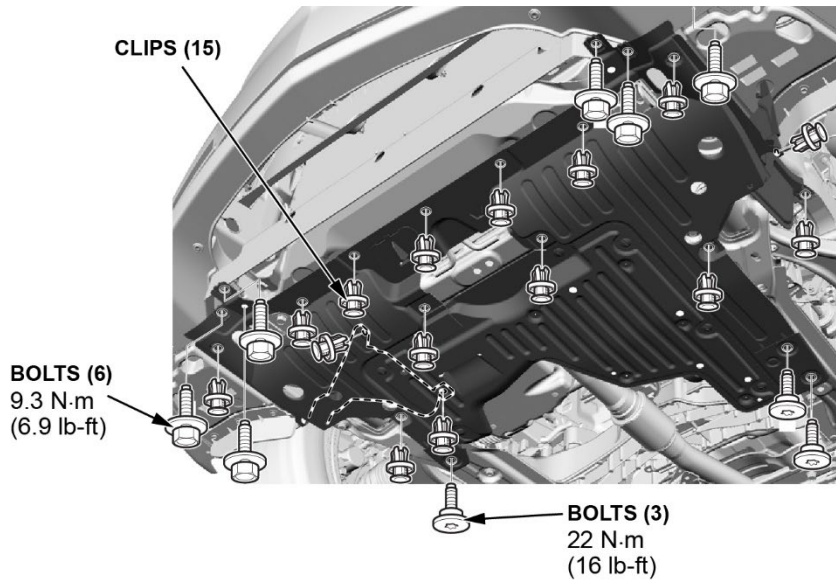
8. Raise the vehicle, and remove the passenger side front wheel, **108 N·m (80 lb-ft).**
9. Drain the engine oil by removing the drain bolt, **40 N·m (30 lb-ft).**

Washer
Replace.



Drain Bolt
40 N·m (30 lb-ft)
Do not overtighten.

10. Remove the engine undercover.



11. With the **cylinder 1** at TDC, mark the crankshaft pulley with a vertical line at the 6 o'clock position.



12. 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 10.

▶ PLAY VIDEO

Click here to view a video:

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



**CRANK ANGLE GAUGE
P/N 07AAJ-5G0A100**

13. 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:

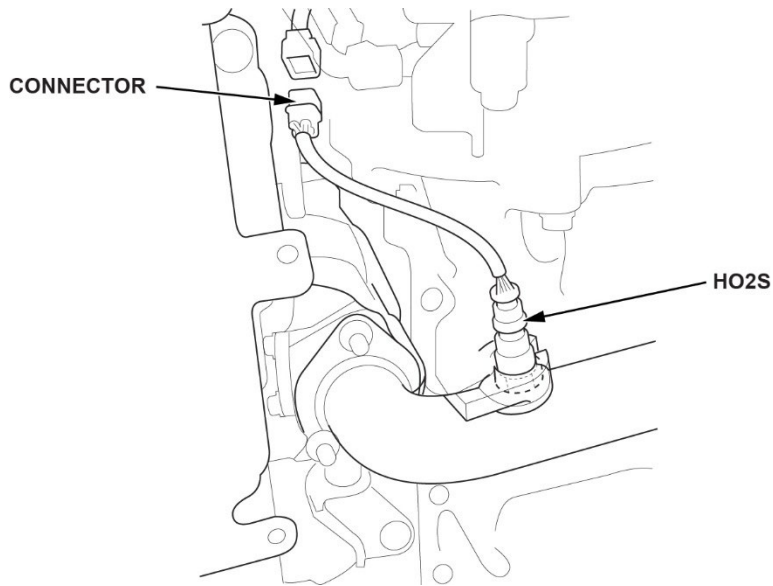
- Make sure it is pointing up at the 6 o'clock position on the pulley.
- The zip tie should extend roughly **8" to 12"** over the subframe.



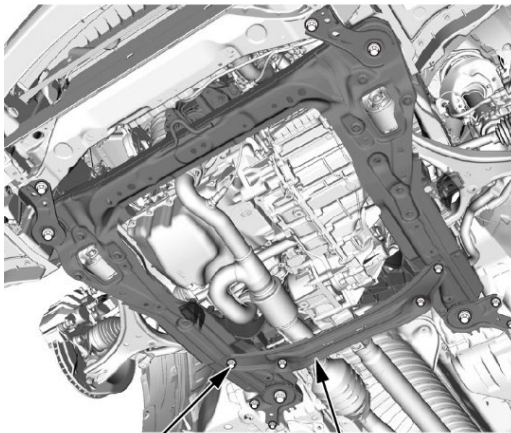
ZIP TIE
Attach a zip tie to the frame
and line up as shown.

14. Unplug the front bank 2 (HO2S) oxygen sensor.

NOTE: Exhaust may be HOT!



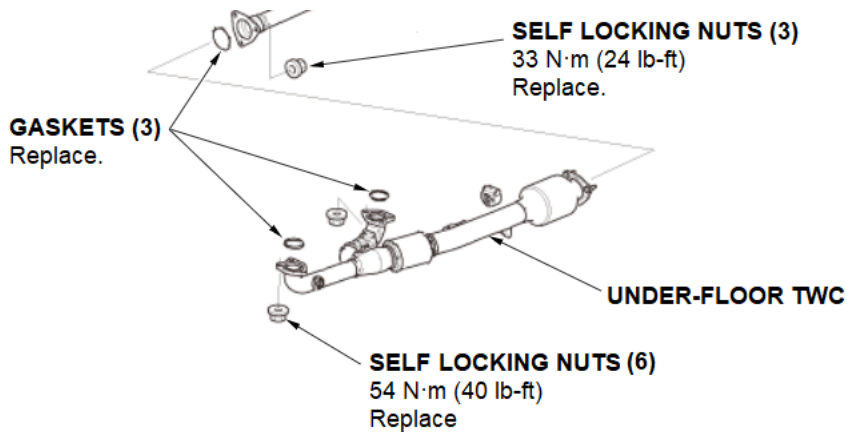
15. Remove the front subframe stiffener plate.



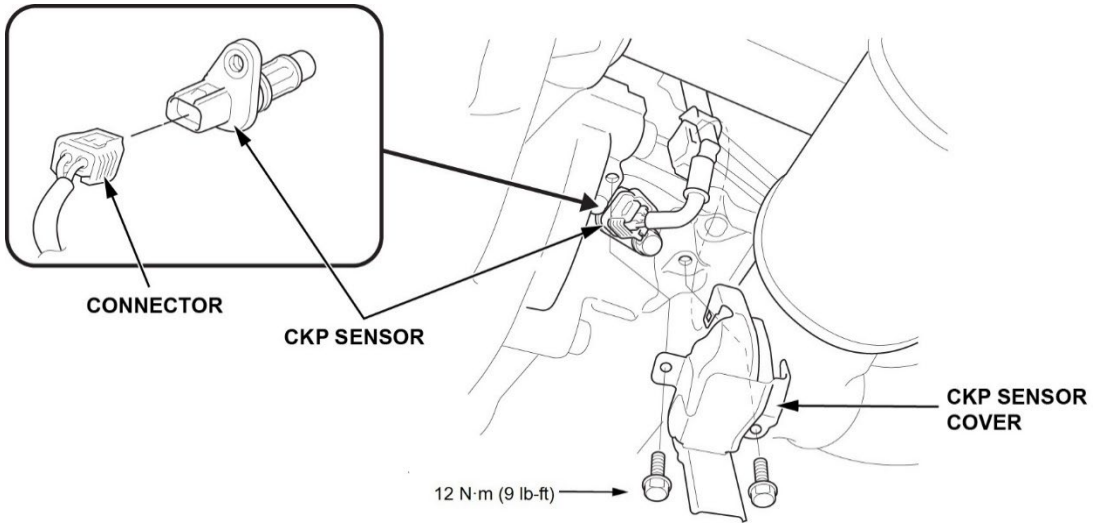
BOLTS (4)
54 N·m (40 lb-ft)
Replace.

**FRONT SUBFRAME
STIFFENER PLATE**

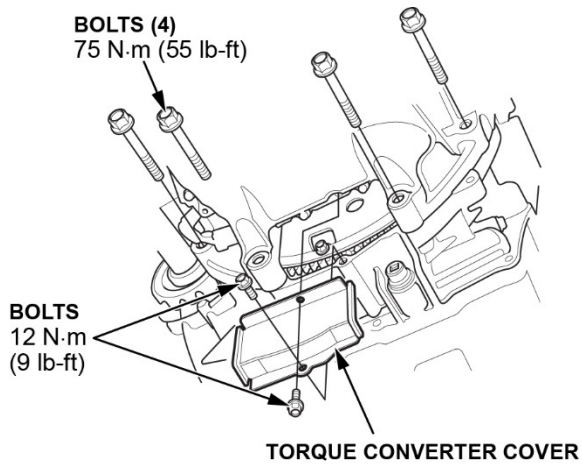
16. Remove the under-floor TWC (A-pipe).



17. Remove the CKP sensor cover, then disconnect the connector.



18. Remove the torque converter cover and the 4 lower transmission bolts.



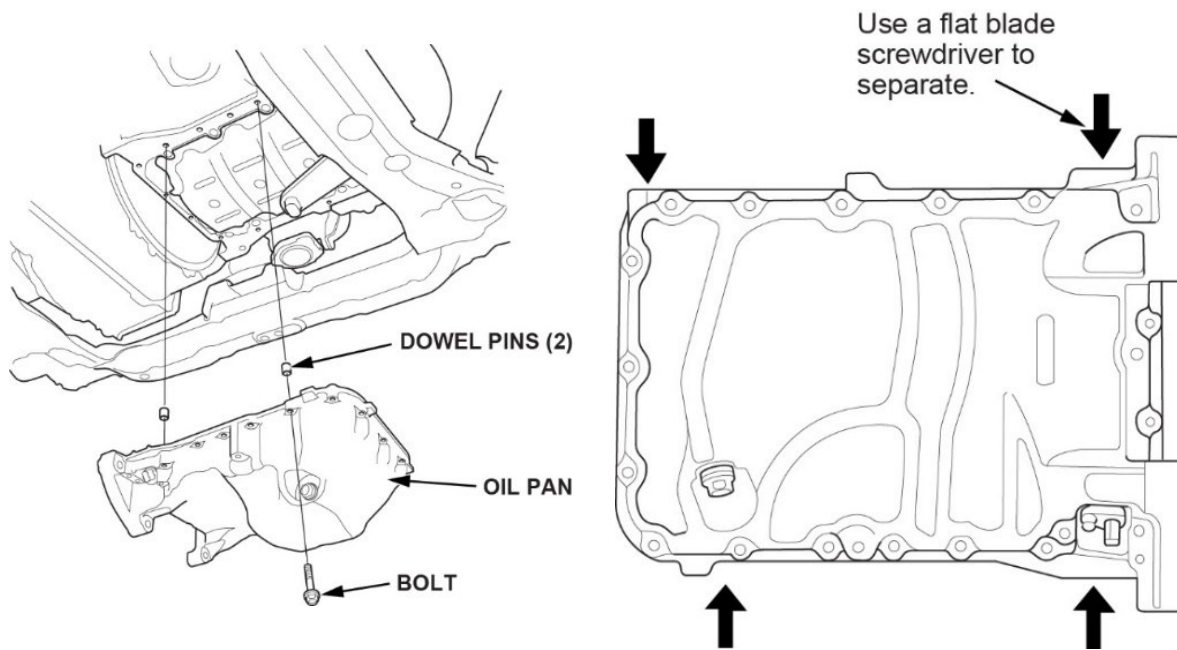
19. Remove the engine oil pan.

⚠ CAUTION

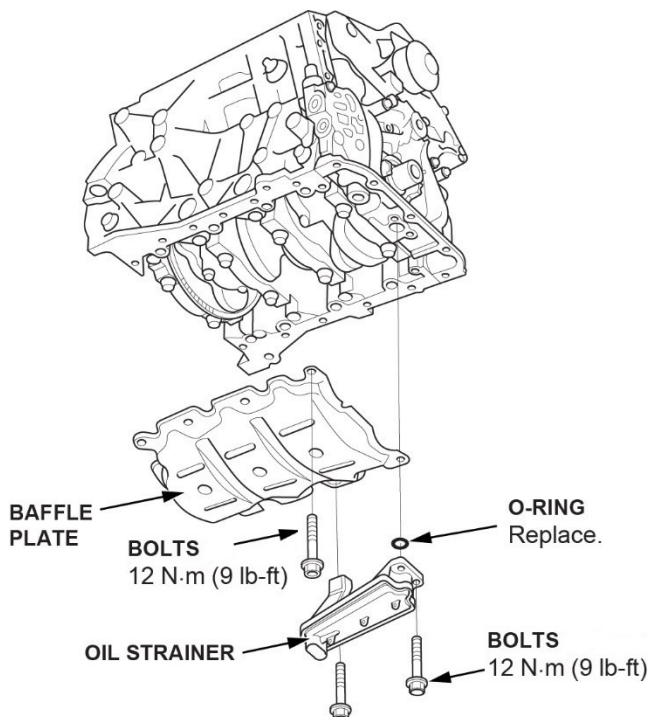
Hot engine oil may continue to drip from the engine which can cause burns or eye damage. Wear proper protective equipment and eyewear to avoid injury.

NOTE:

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



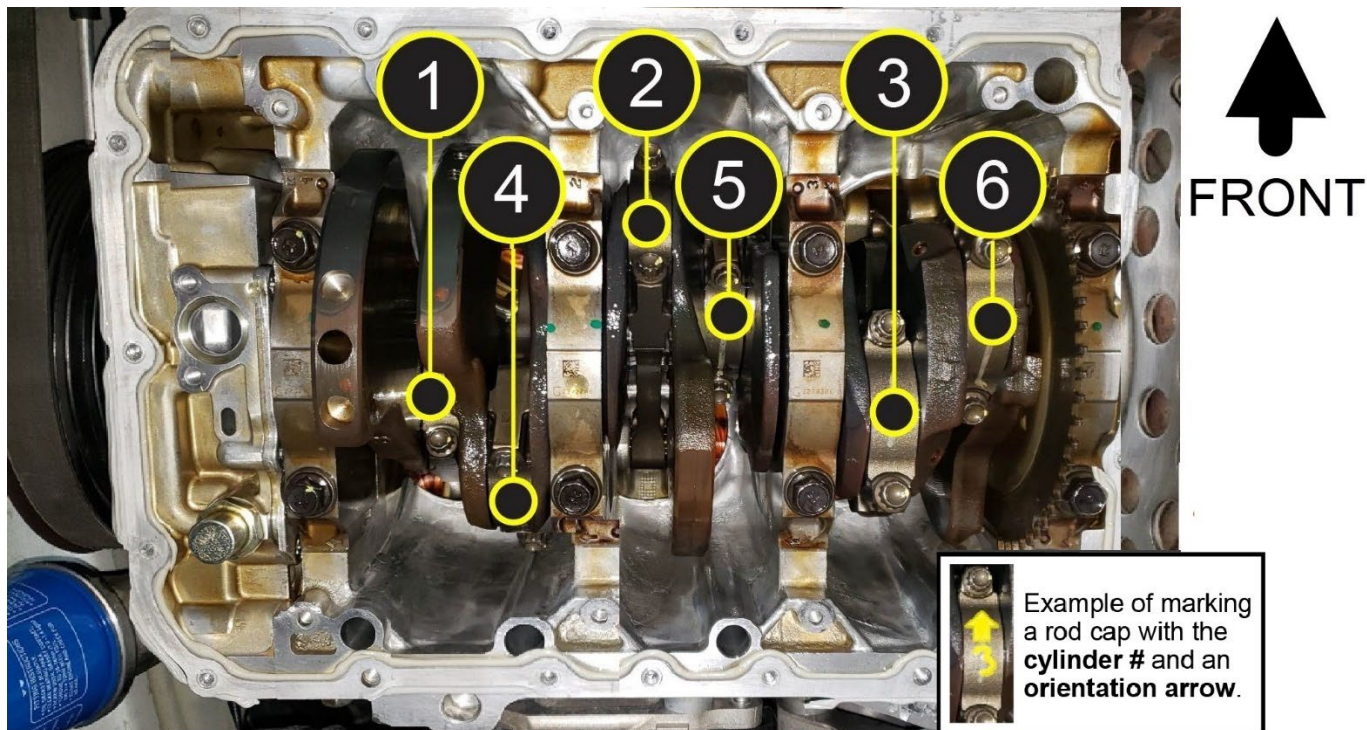
20. Remove the oil strainer and baffle plate.



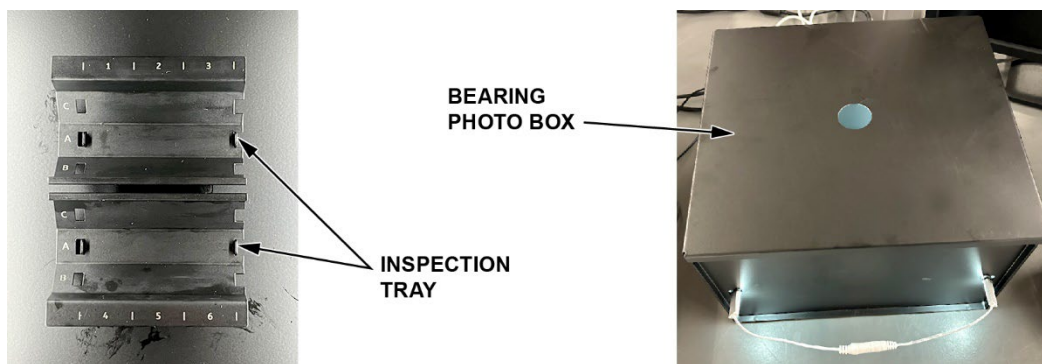
21. Clean and label each connecting rod cap with a paint marker (or otherwise suitable marking instrument) prior to removal. Make sure each rod cap has both the **cylinder #** and an **orientation arrow** pointing to the front of the vehicle.

NOTE:

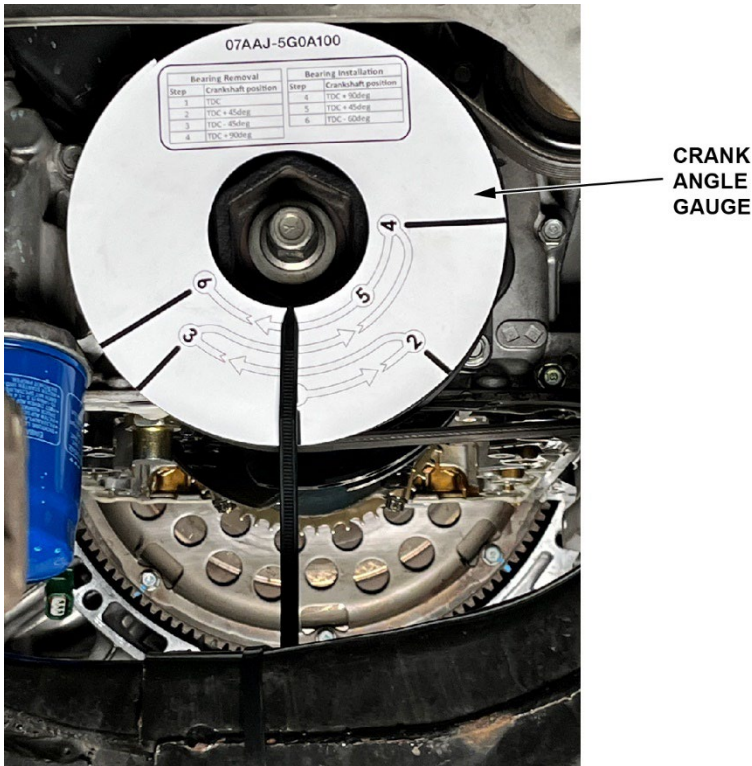
- Do not confuse the existing marking on the side of the connect rod and rod cap with the cylinder number. Those are manufacturing marks referring to the size of the rod.
- Reminder, installing a rod cap incorrectly will result in engine knock and/or engine failure.



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



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



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



Click here to view a video:

NOTE:

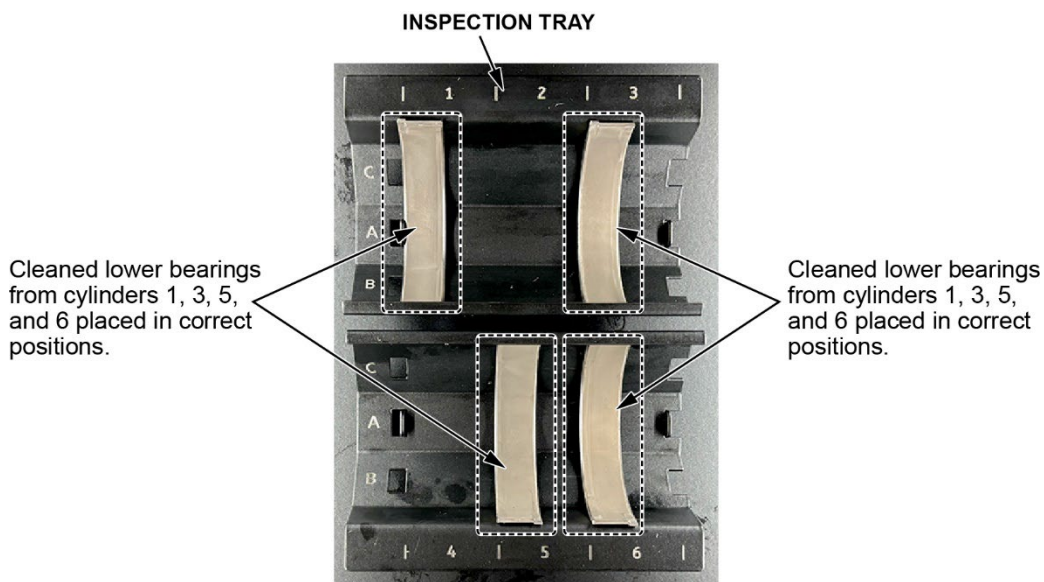
- Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston 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.**

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

25. 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.**



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



Rotate the crank clockwise to the #2 position.

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

NOTE:

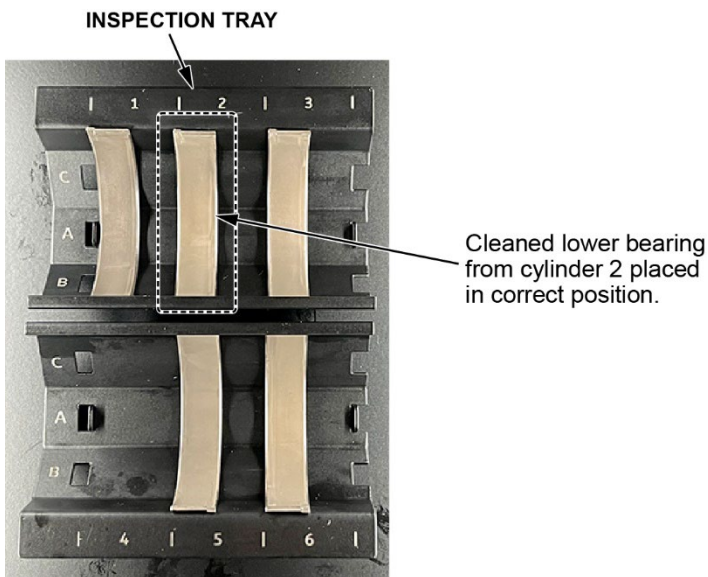
- Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston 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

28. 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**.



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

▶ PLAY VIDEO

Click here to view a video:

M8 ROD HOLDER
P/N 07AAB-5G0A100

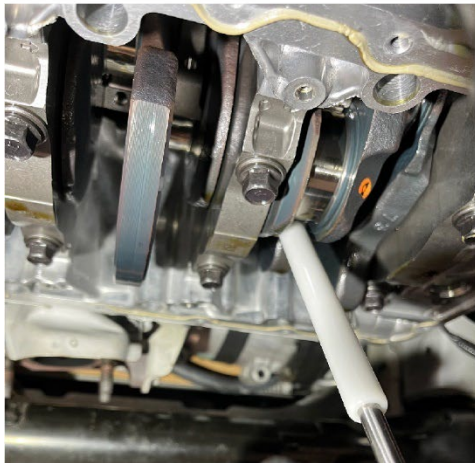


NOTE:

- 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:

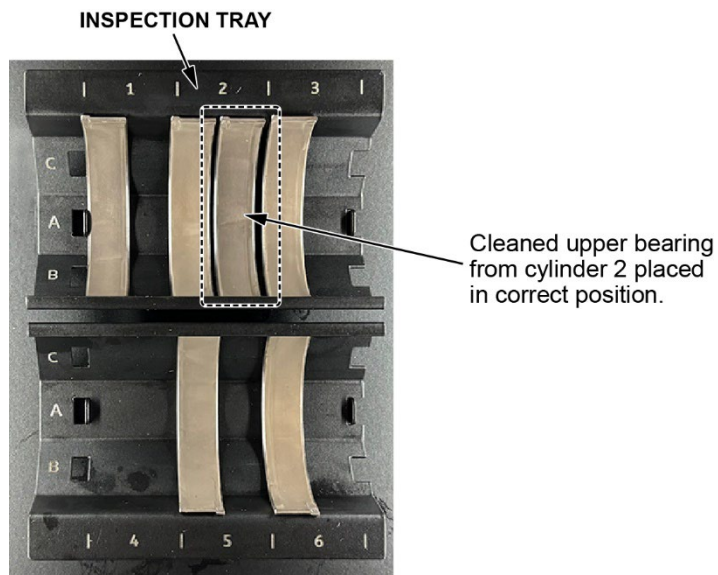


1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it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

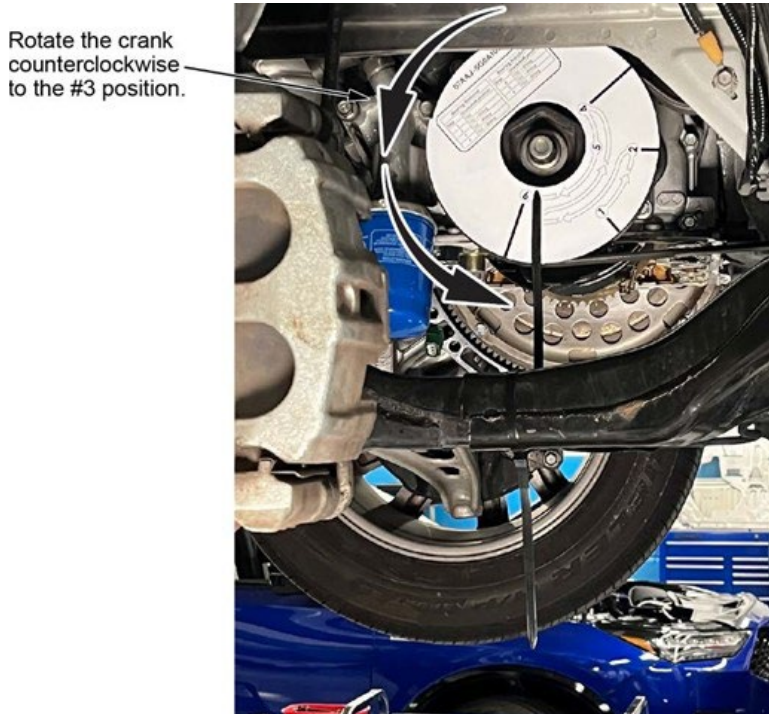
30. Place the removed **upper bearing** from **cylinder 2** into the rod bearing organizer.

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.**



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



32. 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

33. 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**.



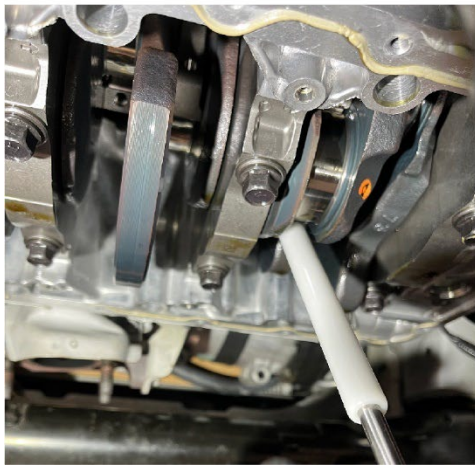
34. Remove the **cylinder 3 and cylinder 4 upper connecting rod bearings**.

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:

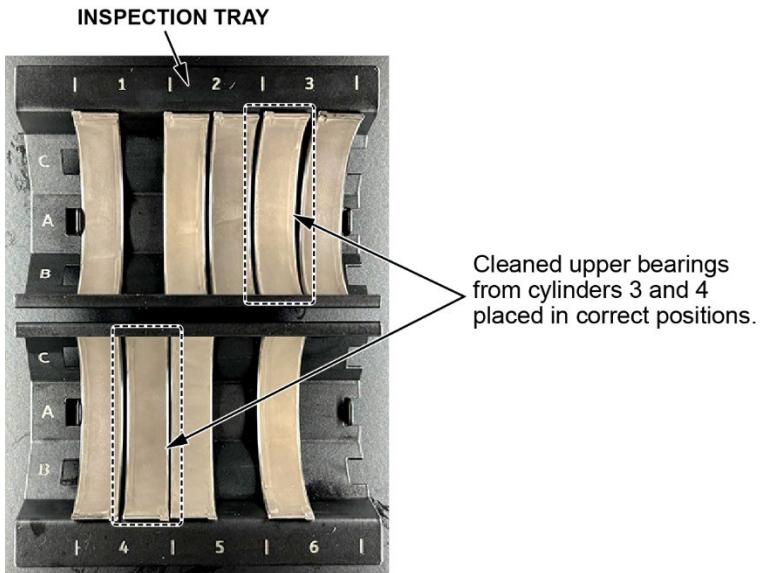


1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it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

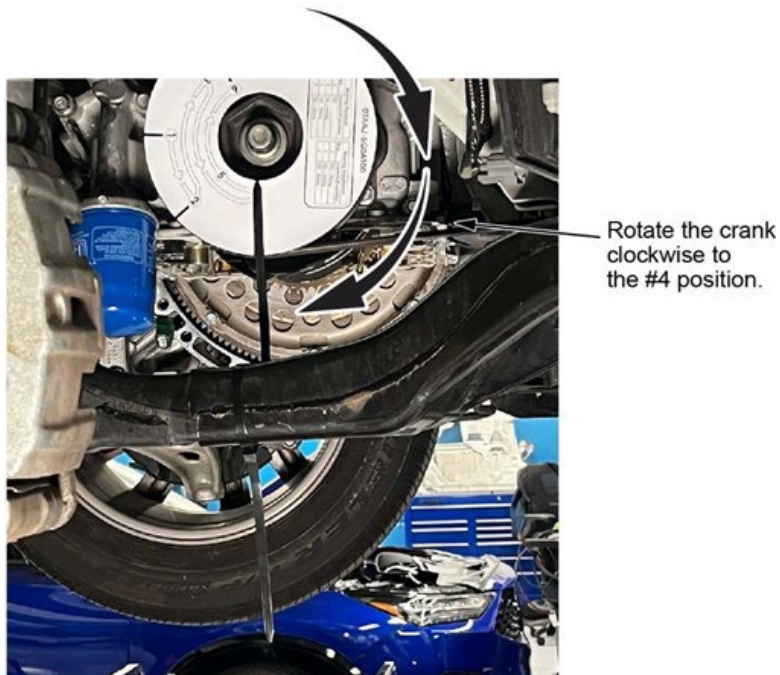
35. Place the removed **upper bearings** from **cylinder 3 and 4** into the rod bearing organizer.

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.**



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



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

NOTE:

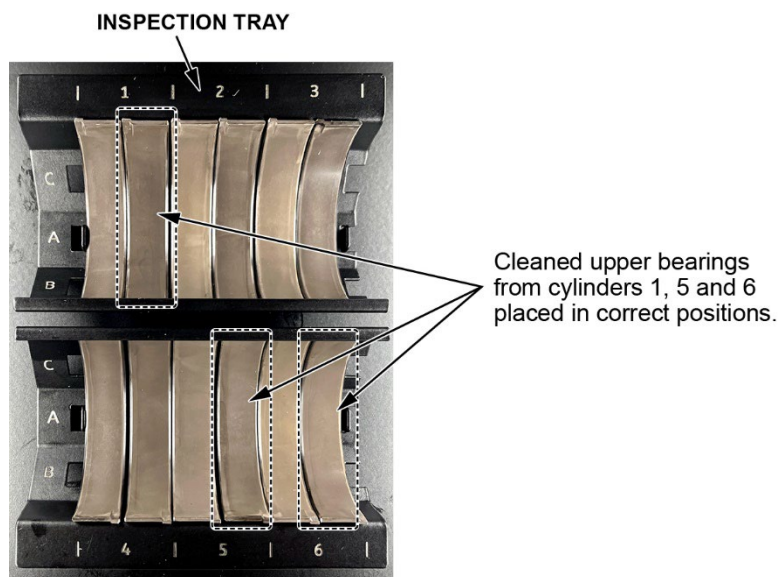
- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- The next steps involve manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the 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.**
38. Place the removed **upper bearings** from **cylinders 1, 5, and 6** into the rod bearing organizer.

NOTE:

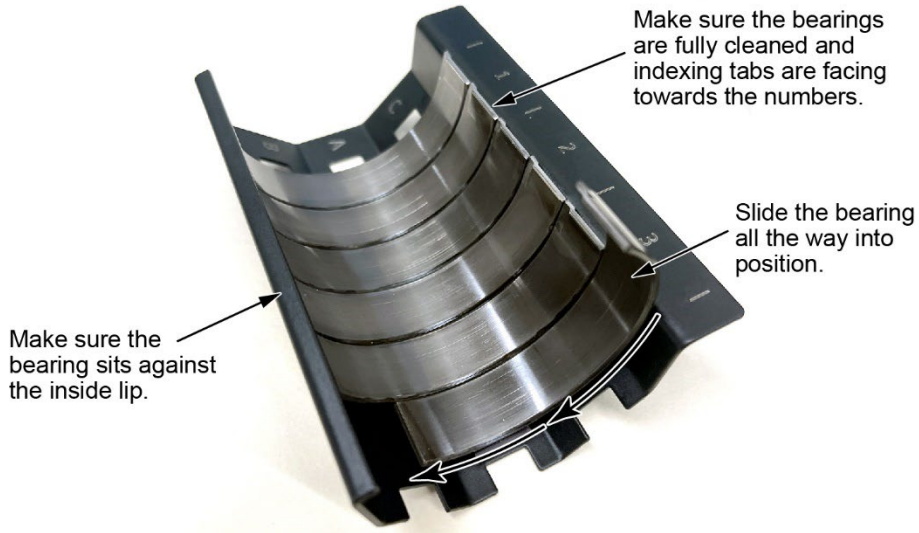
- Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents.**
- **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the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



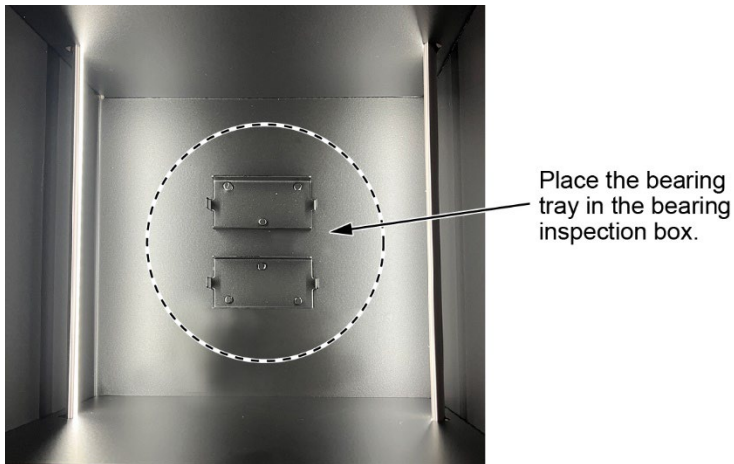
39. Make sure the bearings are fully seated and level with the edge of the rod bearing organizer.

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.



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

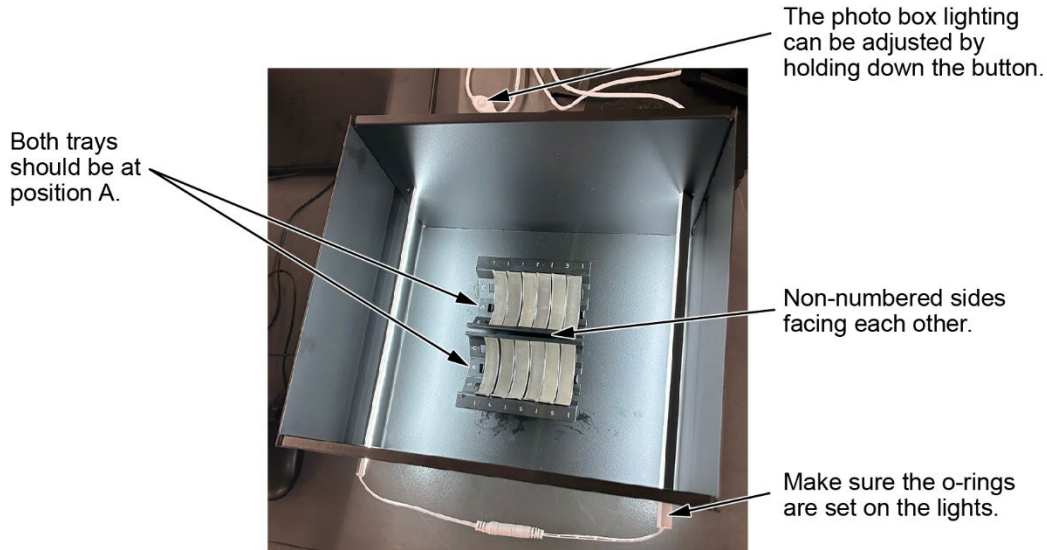


41. Confirm the following on the bearing inspection box:

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.



42. Login to the V-SMART tool.

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

43. 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:

Tap here to focus camera.



44. 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.

The screenshot shows the Honda iN website interface. The top navigation bar includes 'MY IN FAVORITES', 'HOME', 'SITE MAP', 'IN SUPPORT', 'CONTACT US', and 'ALERTS'. Below this is a secondary menu with 'SALES', 'CERTIFIED PRE-OWNED', 'SERVICE', 'PARTS', 'F&I / HFS', 'EXECUTIVE MANAGEMENT', 'BUSINESS OFFICE', and 'ONLINE UNIVERSITY'. The 'SERVICE' menu is highlighted with a red box, and a red arrow points to the 'Bearing Inspection Inquiry' option in the left-hand navigation menu. The main content area displays the 'Bearing Inspection Inquiry' form, which includes a 'Vehicle Information' section with a 'VIN' input field and a 'Submit' button. The footer contains the copyright notice: '© 2009 - 2024, American Honda Motor Co., Inc. All Rights Reserved.'

5. Input all vehicle information to create a case.

The screenshot shows the 'Bearing Inspection Inquiry' form with all fields filled out. The form is divided into several sections: 'Dealer Information' (Dealer Number: 206501, Repair Order Number: 206501, DPTS IDName: << SELECT >>, SSN: (Last four numbers), Telephone No.: (Area, Prefix, Ext.), Email, Email Confirm), 'Vehicle Information' (VIN: 5FNRL6H28KB023603, Mileage: (input field), Model: ODYSSEY, Model Year: 2019), and 'Problem Description' (Was the vehicle towed in?, If it was towed in, was it due to Engine failure?, Did you submit a clear photo of the Engine number?, Did you clean the bearings prior to submitting the photos?). The form includes 'Submit', 'Save', and 'Cancel' buttons. The footer contains the copyright notice: '© 2009 - 2024, American Honda Motor Co., Inc. All Rights Reserved.'

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.

45. 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 auto-shipped to your dealership. Make sure to advise the parts department with a copy of the RO.

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

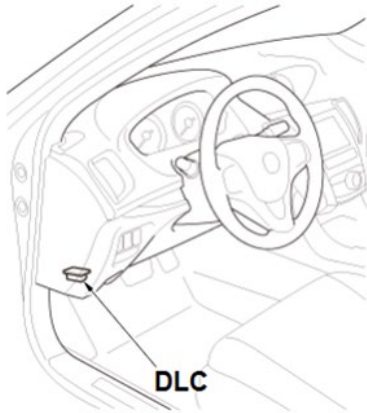
INSPECTION B

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:

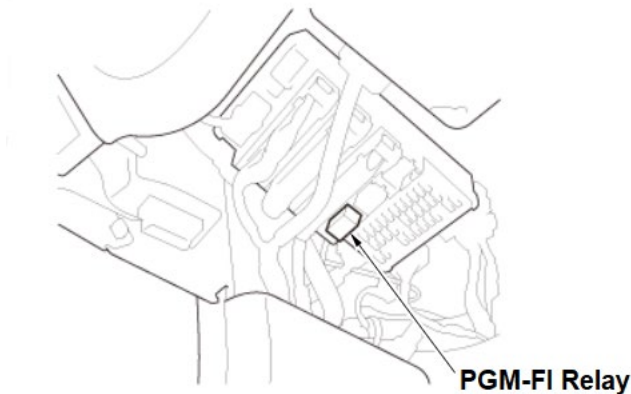
- Plug an interface tool into the DLC (located under the driver's side of the dashboard) and load i-HDS.



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

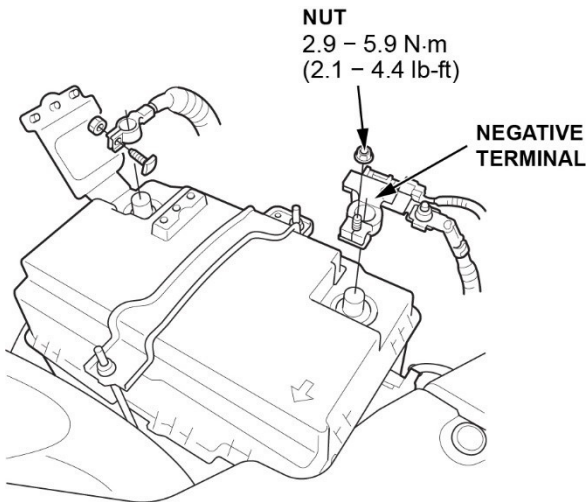
Without an i-HDS:

- Remove the PGM-FI relay form the under-dash fuse/relay box.

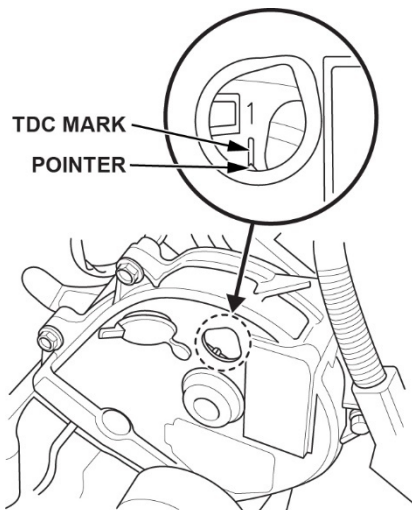


- Start the engine and let it idle unit it stalls.
- Turn the vehicle to OFF.
- Install the PGM-FI main relay 2.

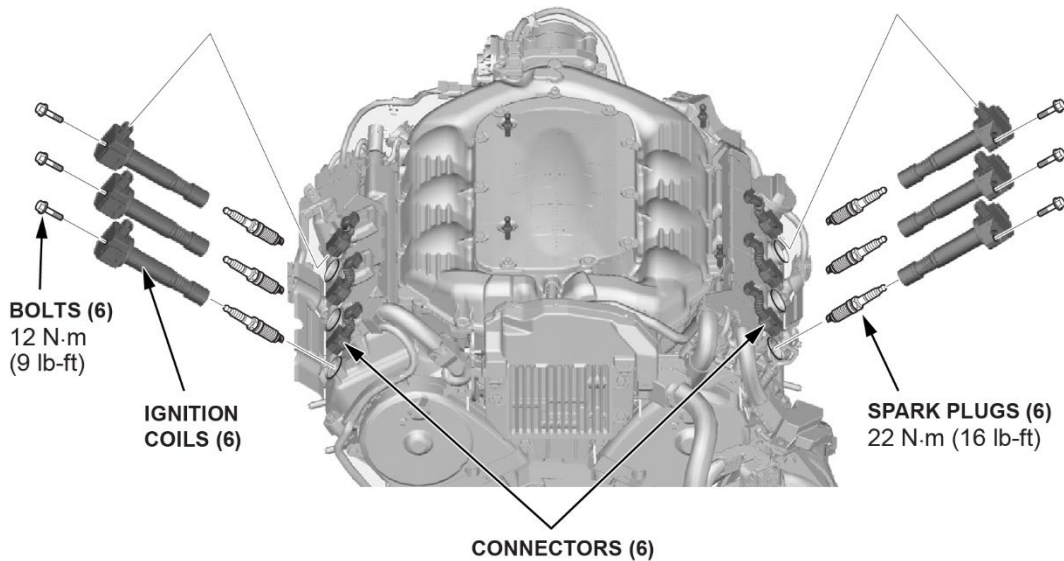
3. Disconnect the 12-volt battery.



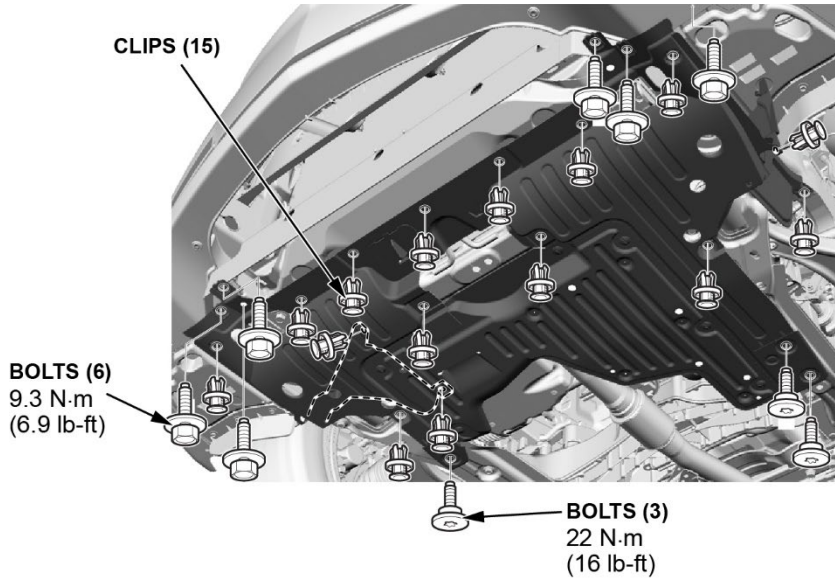
4. Remove the oil dipstick.
5. Set **cylinder #1** to top dead center (TDC). Align the pointer on the front upper cover with the No. 1 Piston TDC mark on the front camshaft.



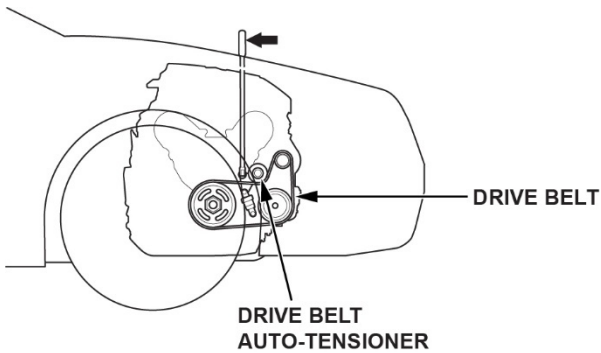
6. Disconnect the coil connectors, then remove the ignition coils and spark plugs.



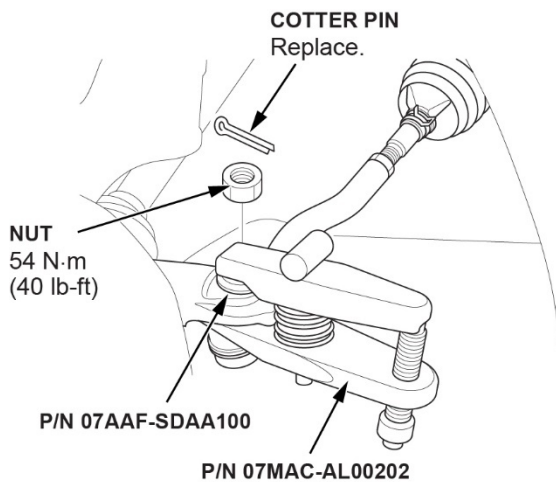
7. Lift the vehicle.
8. Remove the engine undercover.



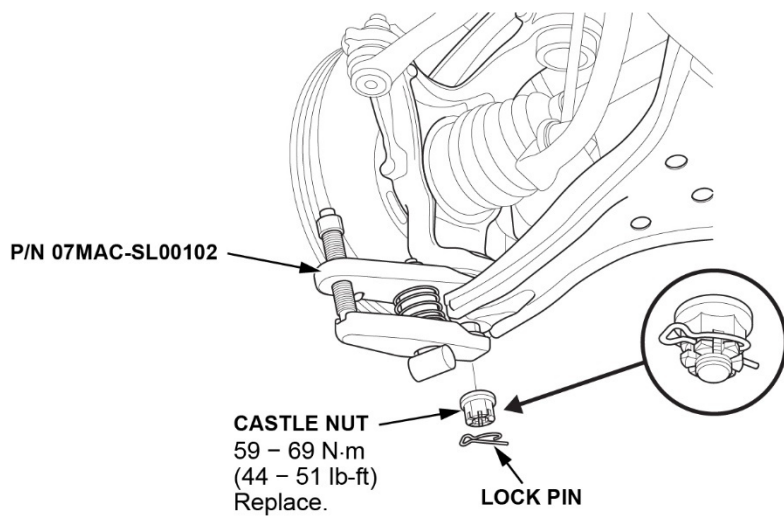
9. Remove passenger side wheel, **108 N·m (80 lb-ft)**.
10. Remove drive belt.



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

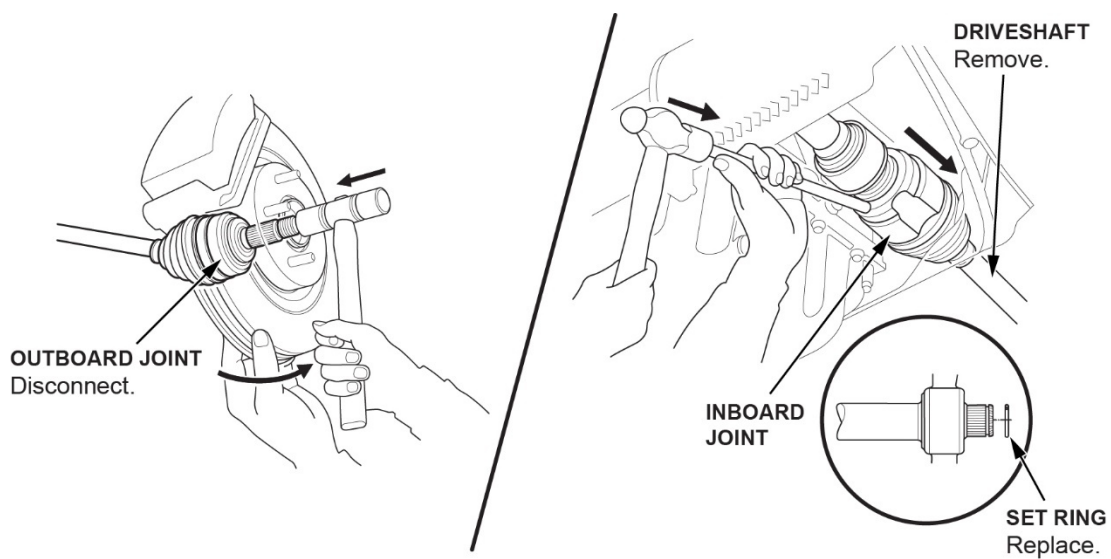


12. Separate the lower knuckle ball joint.



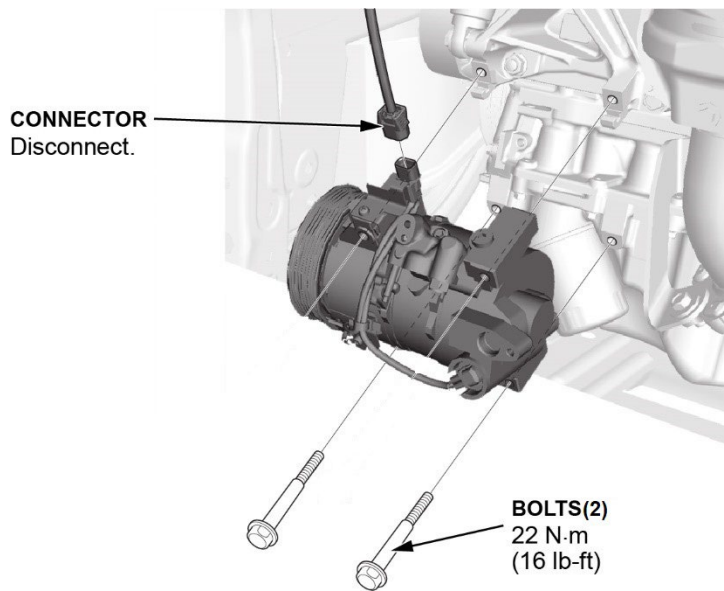
13. Remove the passenger side drive shaft.

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.

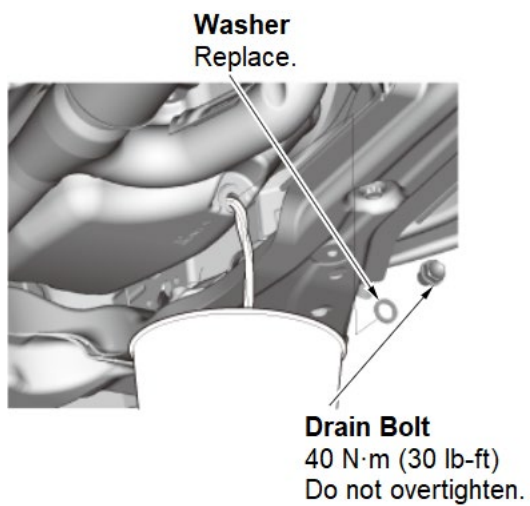


4. Remove the driveshaft as an assembly.
5. Remove and replace the set ring.

14. Remove the 2 lower bolts of compressor.

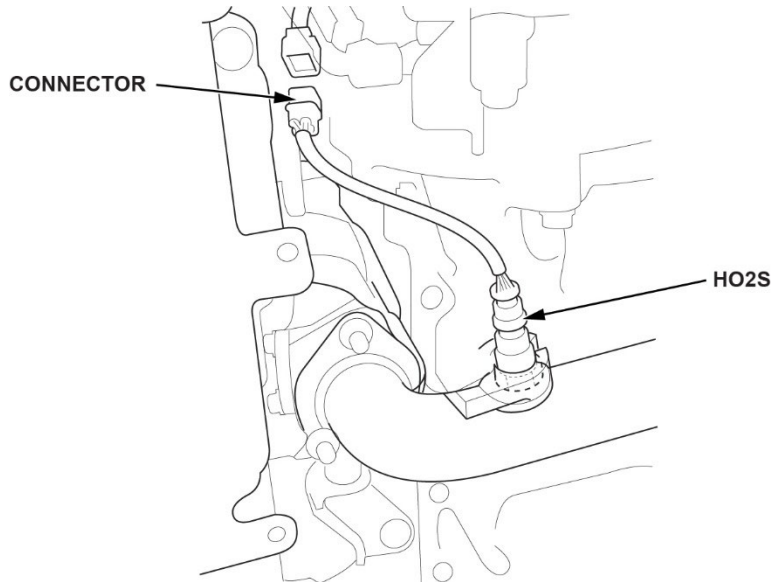


15. Drain the engine oil by removing the drain bolt, **40 N·m (30 lb-ft)**.

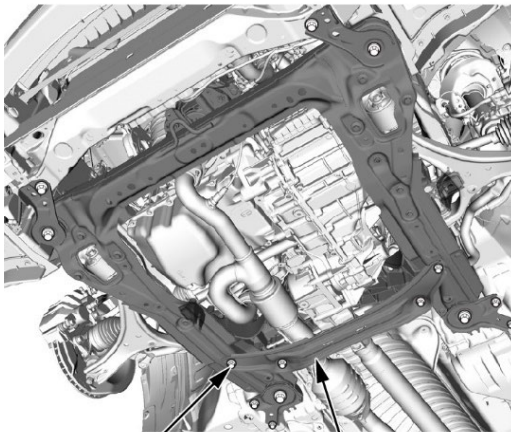


16. Unplug the front bank 2 (HO2S) oxygen sensor.

NOTE: Exhaust may be HOT!



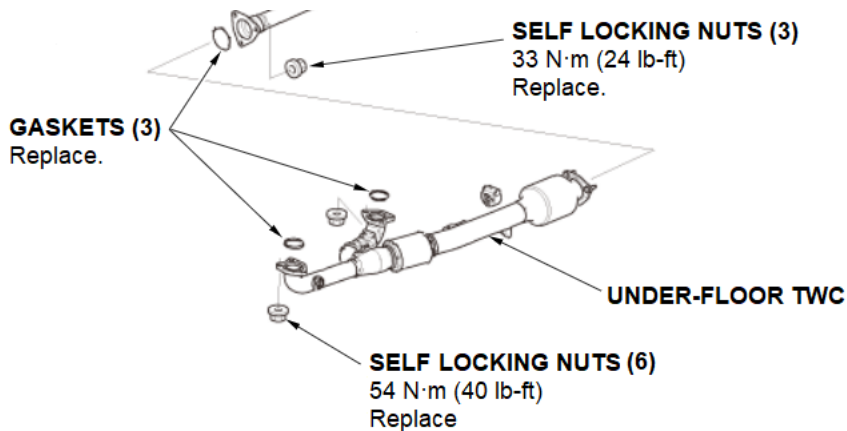
17. Remove the front subframe stiffener plate.



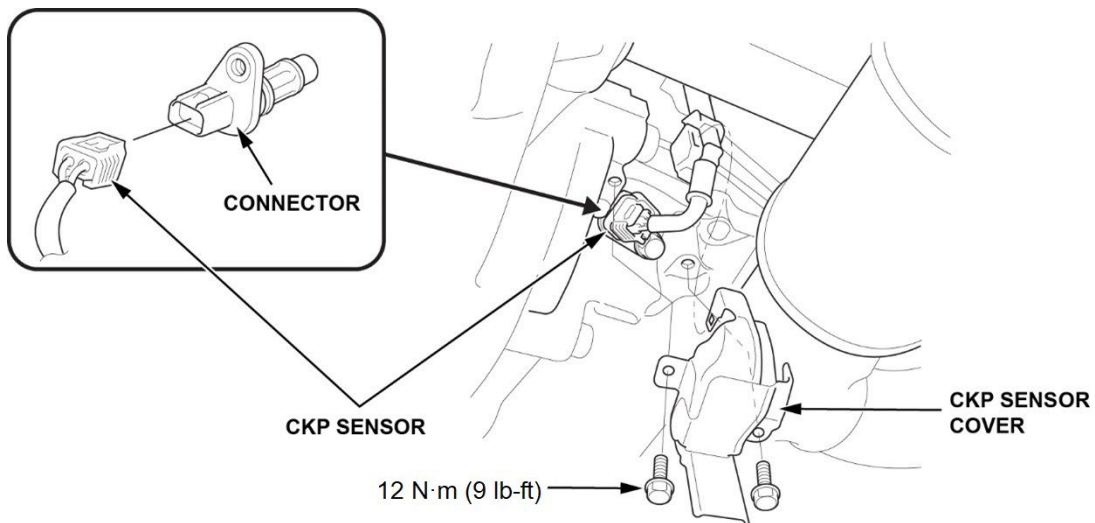
BOLTS (4)
54 N·m (40 lb-ft)
Replace.

**FRONT SUBFRAME
STIFFENER PLATE**

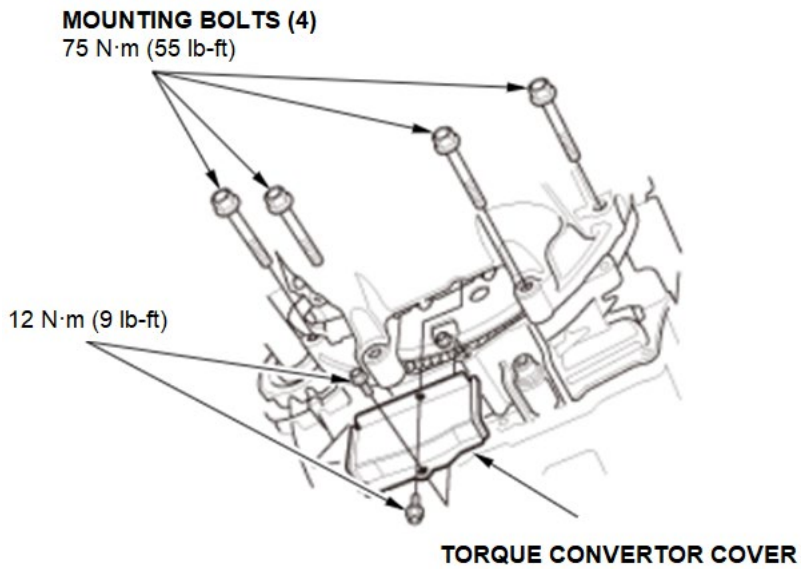
18. Remove the under-floor TWC (A-pipe).



19. Remove the CKP sensor cover, then disconnect the connector.

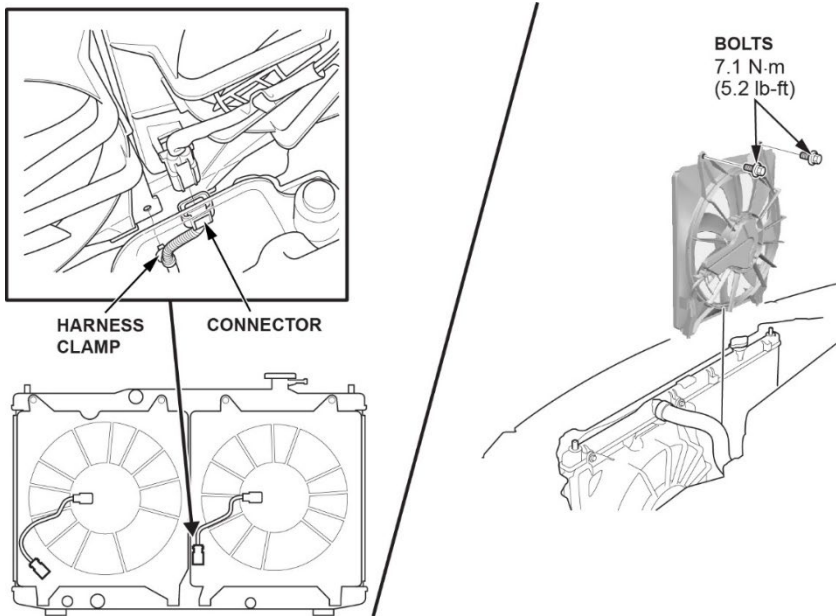


20. Remove the torque converter cover and 4 lower transmission mounting bolts.



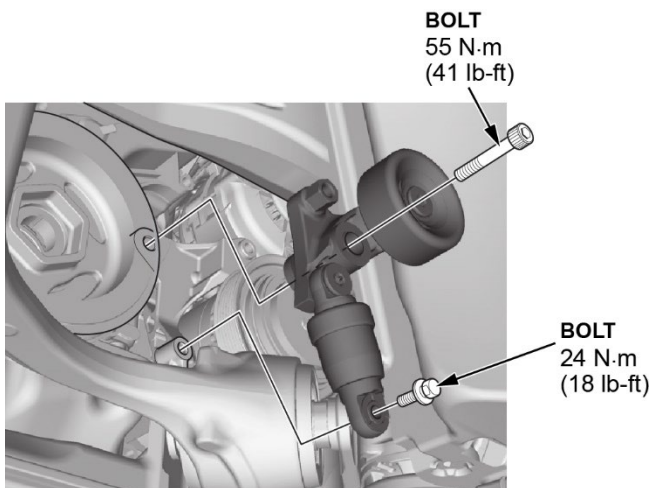
21. Lower the vehicle.

22. Disconnect the passenger side condenser fan connector, and then remove the fan.

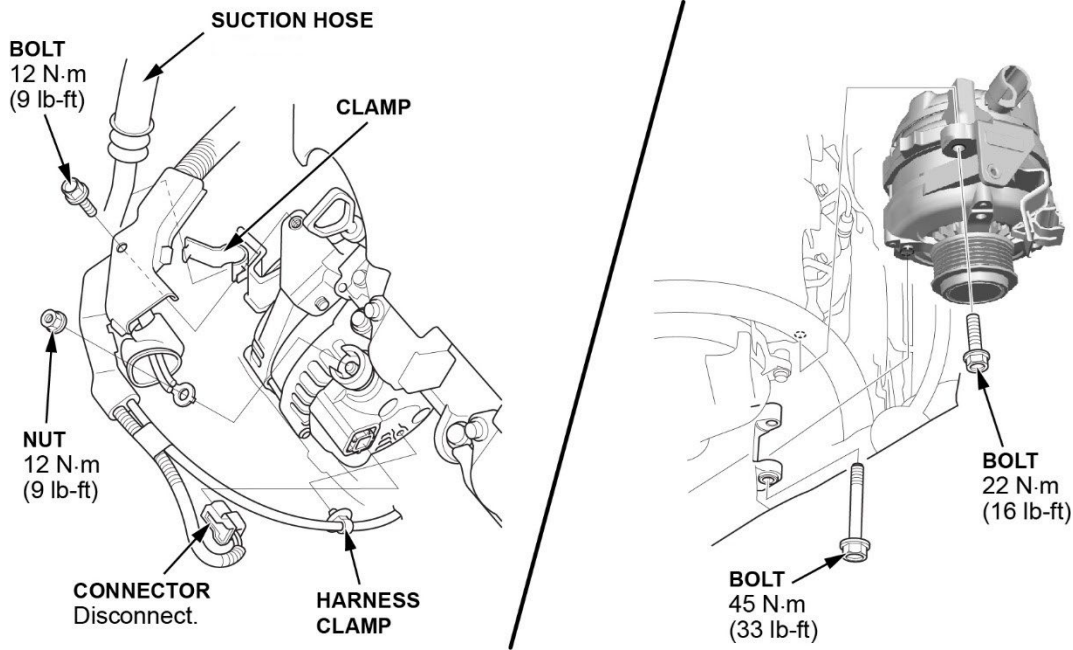


23. Remove the drive belt auto-tensioner.

NOTE: During reinstall, do the driver belt auto tensioner air bleed step.



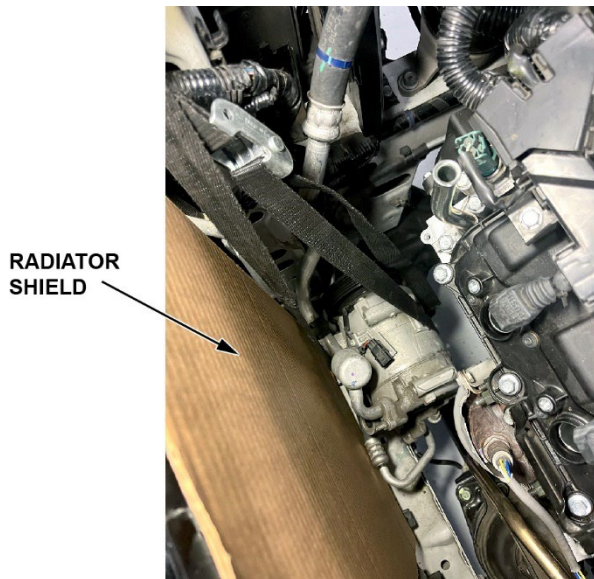
24. Remove the alternator.



25. Install the radiator protector to protect the radiator.

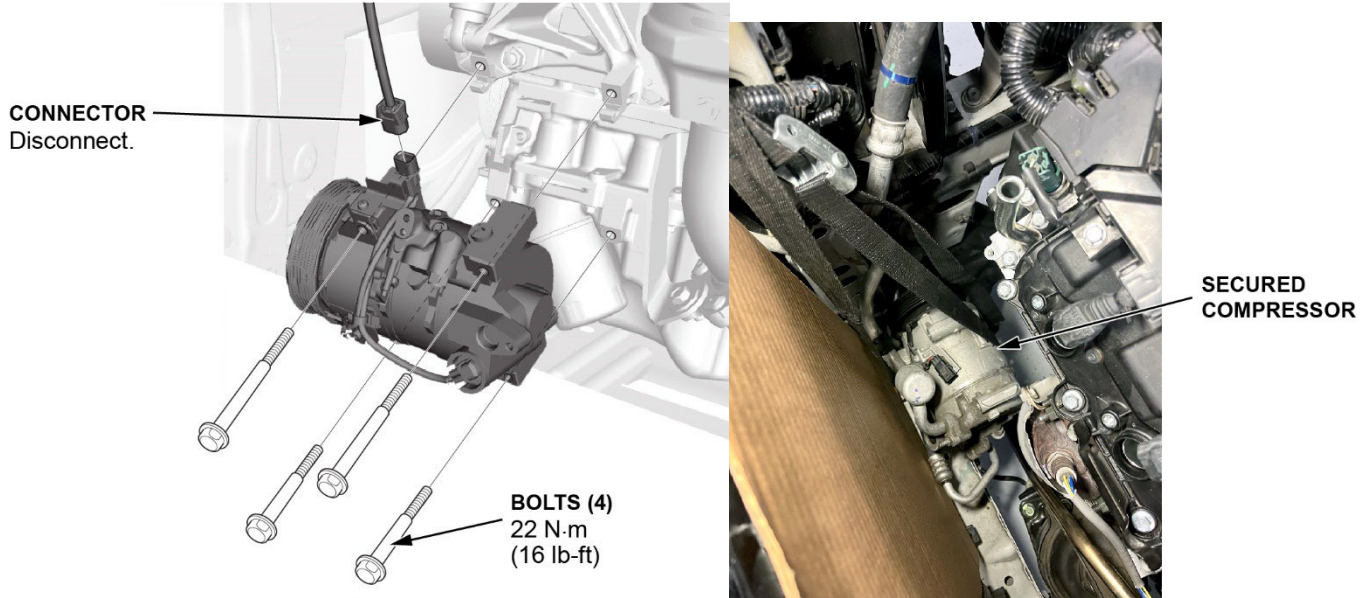
NOTE:

- A suitable radiator shield could be as simple as a clean piece of cardboard.
- Make sure the shield covers the surface area that was exposed with fan removal.

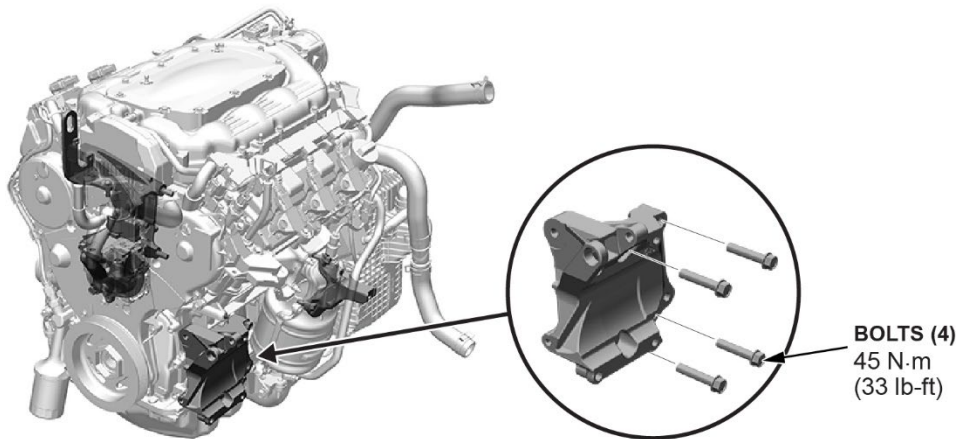


26. Remove the upper A/C compressor mounting bolts and move the A/C compressor forward to rest on the bulkhead frame by the radiator and secure with a strap.

NOTE: Do not disconnect the A/C hoses.



27. Remove the compressor bracket



28. Lift the vehicle.

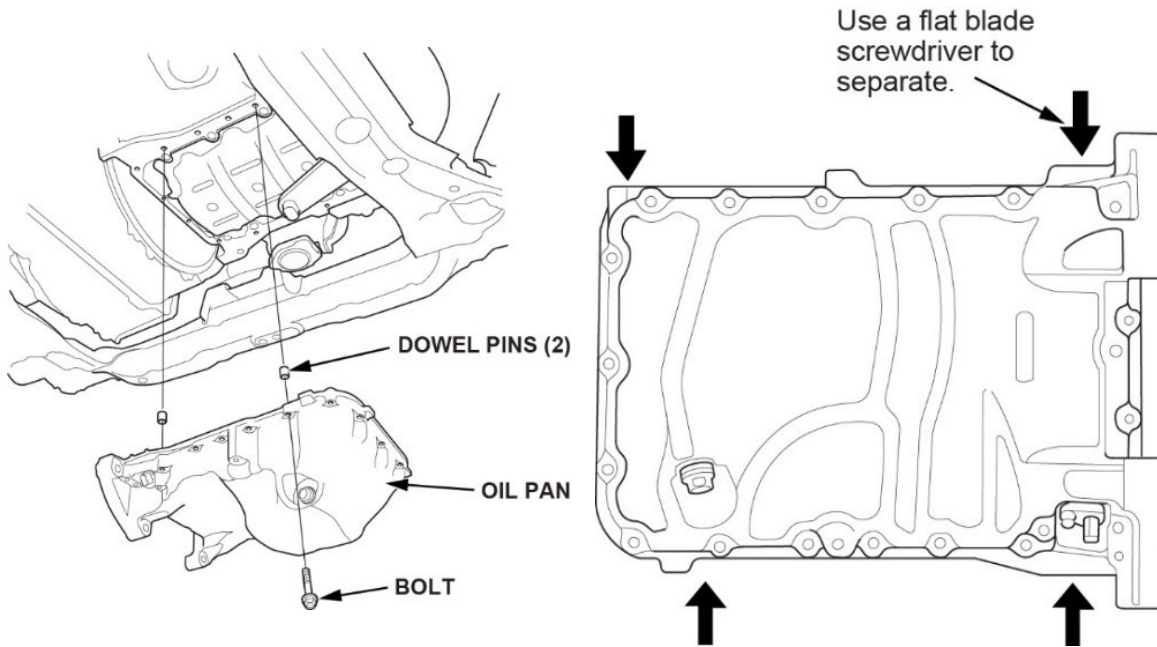
29. Remove the engine oil pan.

⚠ CAUTION

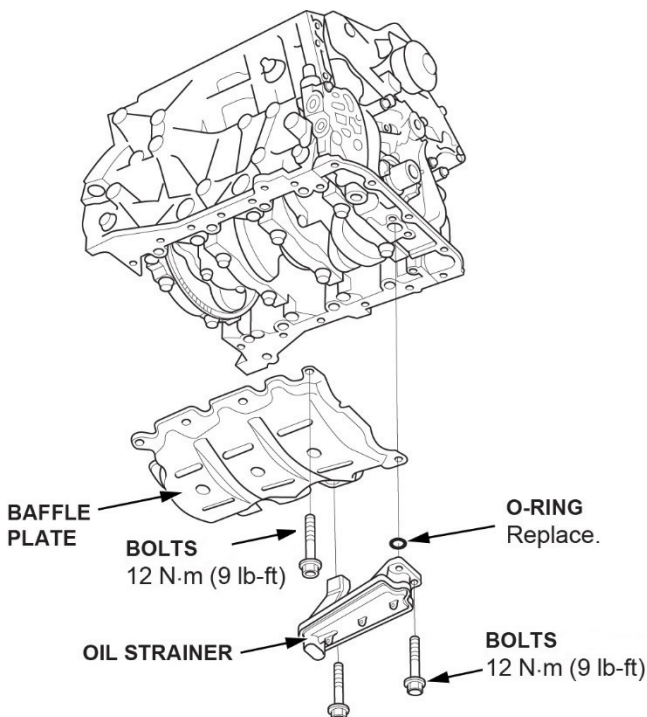
Hot engine oil may continue to drip from the engine which can cause burns or eye damage. Wear proper protective equipment and eyewear to avoid injury.

NOTE:

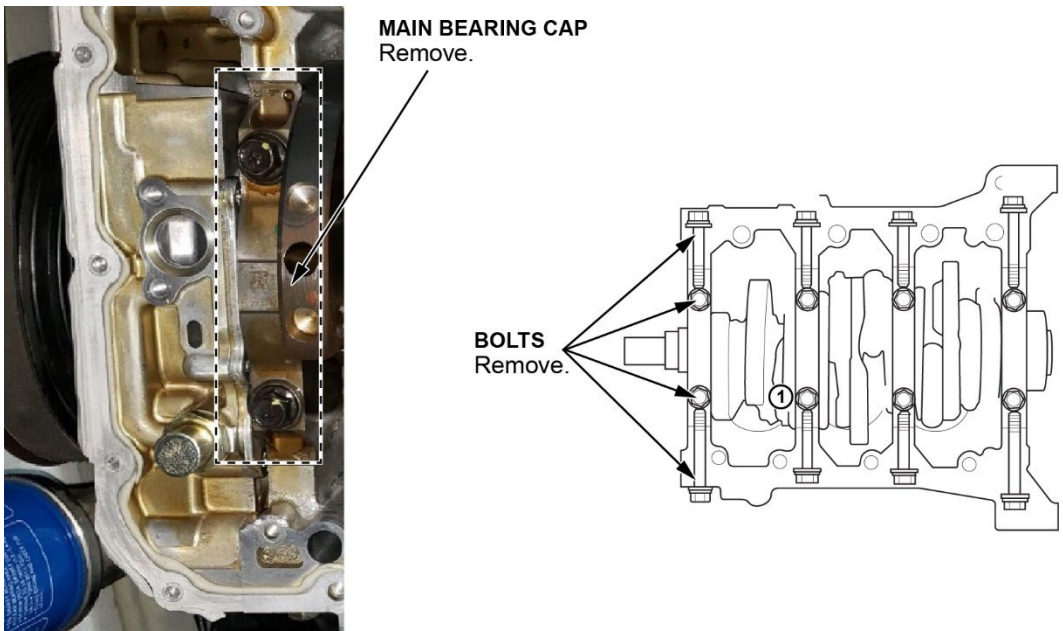
- Remove the bolts securing the oil pan.
- Use a flat blade screwdriver to separate the oil pan from the engine block.



30. Remove the oil strainer and baffle plate.



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

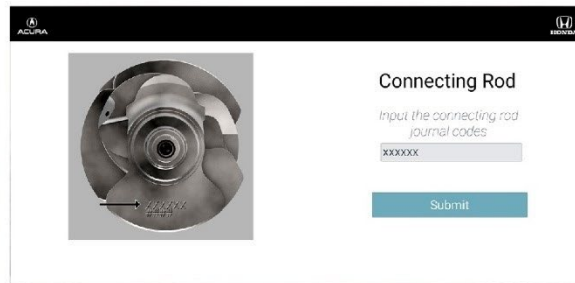


32. Login to the V-SMART tool.

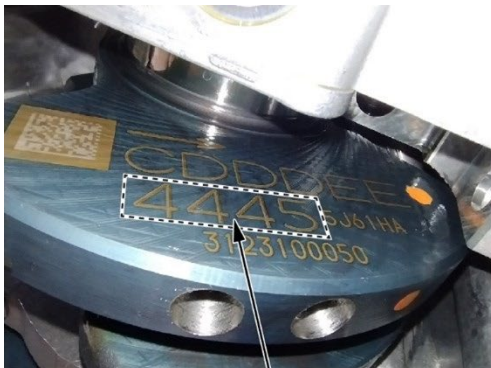
33. Enter the connecting rod journal code.



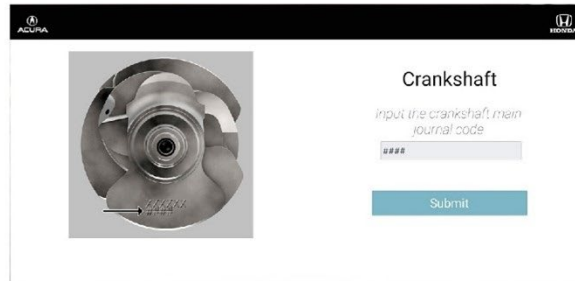
**CONNECTING ROD
JOURNAL CODE**



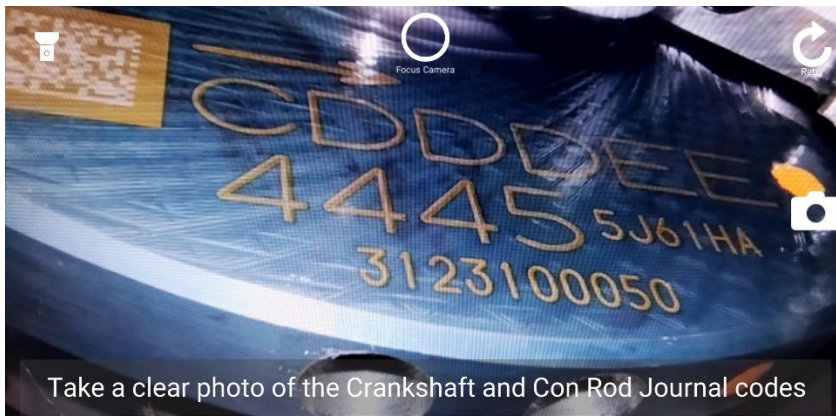
34. Enter the crankshaft main journal code.



**CRANKSHAFT MAIN
JOURNAL CODE**



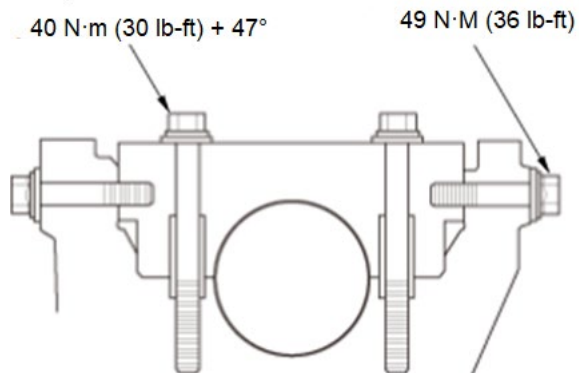
35. Take a picture of the code on the crankshaft counterweight with the V-SMART tool.



36. Install the #1 main bearing cap.

NOTE:

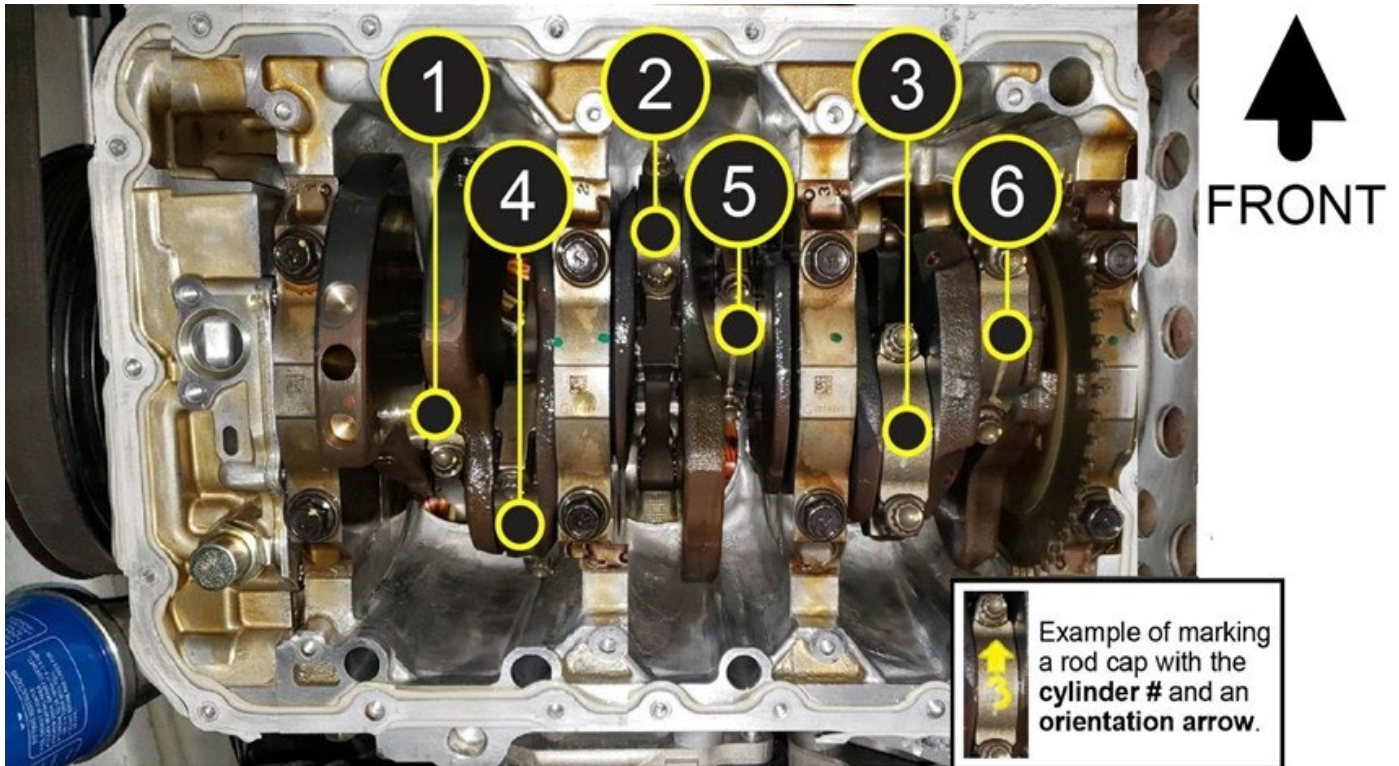
- Apply new engine oil to the bolt threads and flanges.
 - **Do not** rotate the crankshaft during inspection.
1. Torque the 2 vertical bolts to **40 N·m (30 lb-ft)**.
 2. Torque the 2 horizontal bolts to **49 N·m (36 lb-ft)**.
 3. Torque the 2 vertical bolts again an additional **47°**.



37. 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.

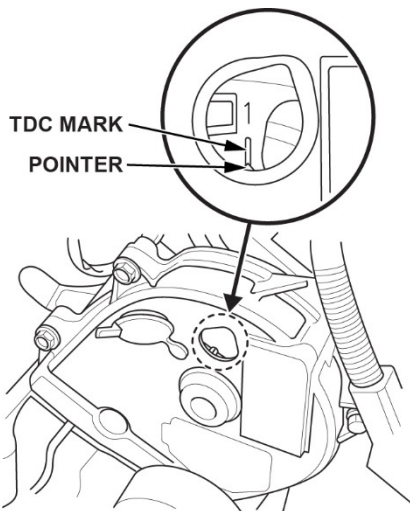


38. Make sure you are still logged into the V-SMART tool and follow the screen commands.

39. Rotate the engine to take pictures of all the connecting rod numbers:

1. Rotate crank 240° clockwise for pictures of **cylinder rods 1, 4, 5, and 6**. Enter the values and pictures into the V-SMART application, as directed.
2. Rotate the crankshaft approximately 120° clockwise until the **cylinder 3** rod is visible. Enter the value and take a picture as directed by V-SMART.
3. Rotate the crankshaft approximately 120° clockwise until the **cylinder 2** rod is visible. Enter the value and take a picture as directed by V-SMART.
4. Rotate the crankshaft approximately 240° clockwise until **cylinder 1** is back at TDC.

40. Make sure **cylinder 1** is at top dead center (TDC). Align the pointer on the front upper cover with the No. 1 Piston TDC mark on the front camshaft.

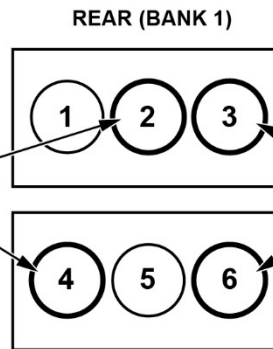


41. Install piston stoppers to **cylinders 2, 3, 4, and 6**.

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



Piston Stoppers
in cylinder #2 and #4.



Piston Stoppers
in cylinder #3 and #6.

FRONT (BANK 2)

FRONT OF VEHICLE



PISTON STOPPER
P/N 07AAB-5G0200



42. 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.

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

[▶ PLAY VIDEO](#)

Click here to view a video:

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



CRANK ANGLE GAUGE
P/N 07AAJ-5G0A100

44. 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.

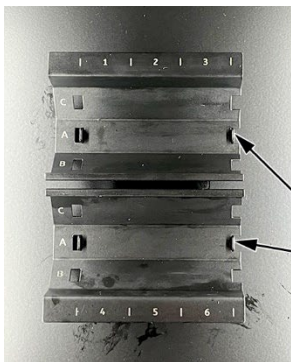
NOTE:

- 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.



ZIP TIE
Attach a zip tie to the frame and line up as shown.

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



INSPECTION TRAY



BEARING PHOTO BOX

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



47. 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:

NOTE:

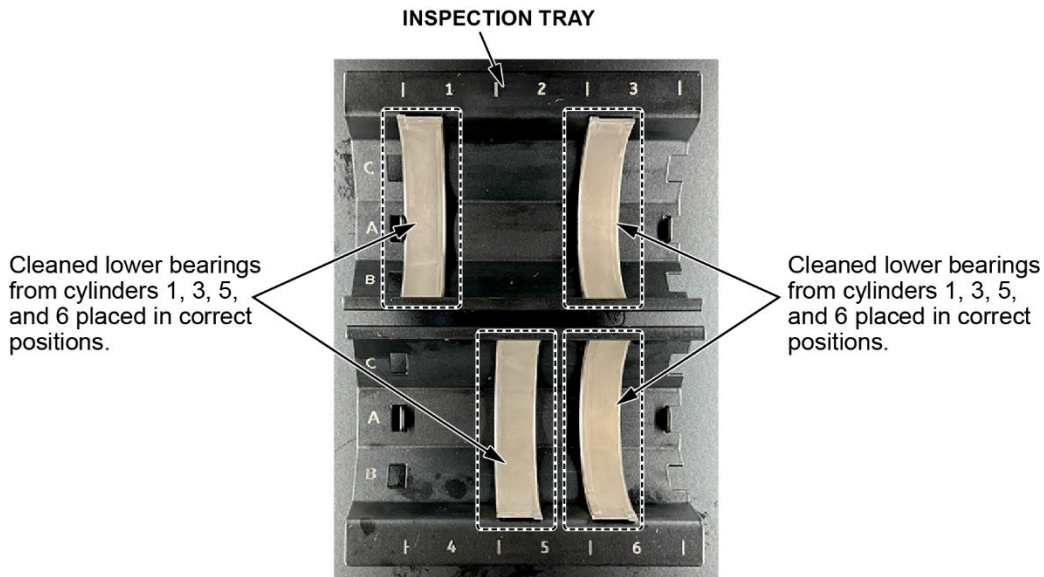
- Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston 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

48. 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**.



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



Rotate the crank clockwise to the #2 position.

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

NOTE:

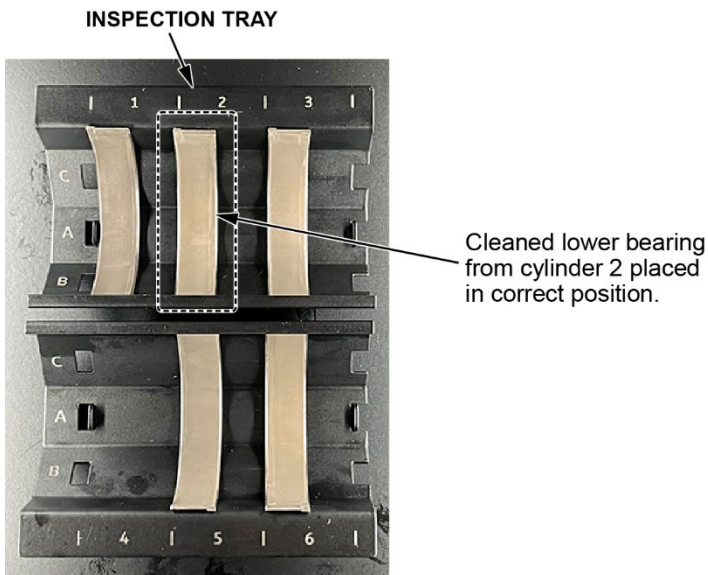
- Follow the removal of the connecting rod steps precisely to prevent damage to the crank journal and connecting rods.
- This step involves manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the piston 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

51. 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**.



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



Click here to view a video:

M8 ROD HOLDER
P/N 07AAB-5G0A100

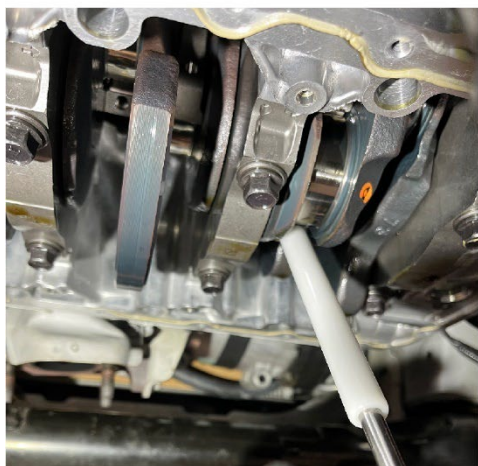


NOTE:

- 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:

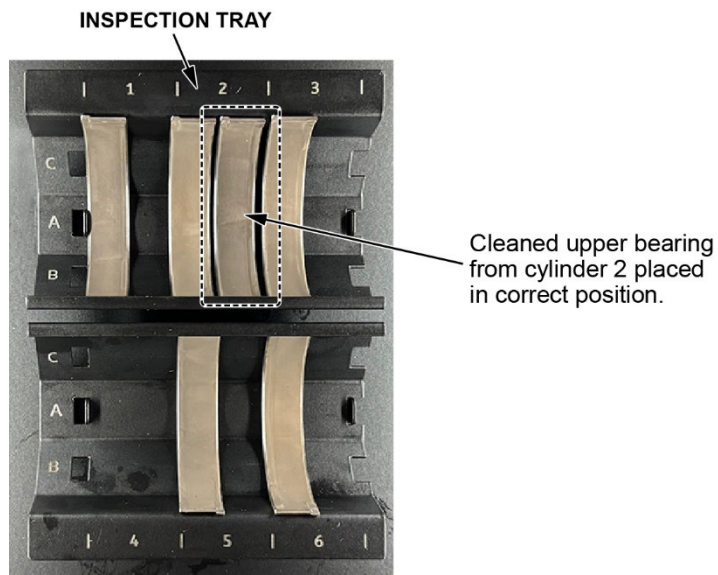


1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it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

53. 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.**



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

Rotate the crank counterclockwise to the #3 position.



55. 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

56. 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**.



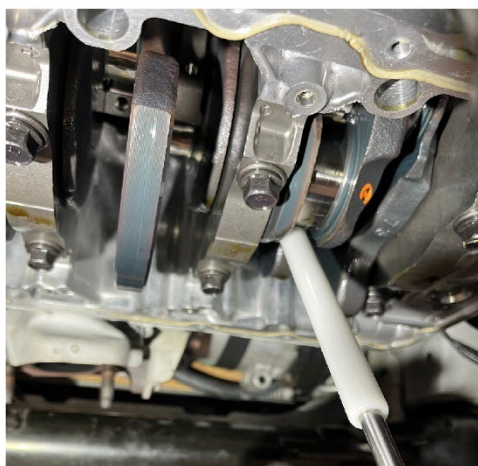
57. Remove the **cylinder 3 and cylinder 4 upper connecting rod bearings**.

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:

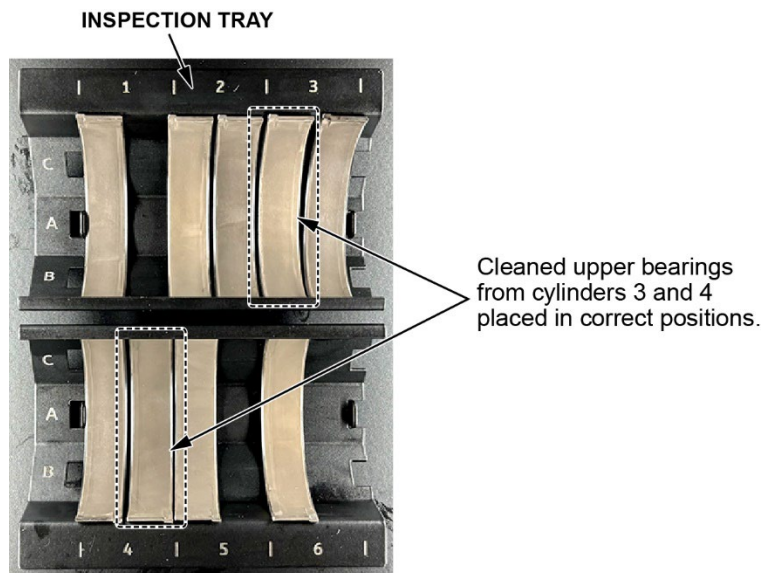


1. Thread the rod holder into the connecting rod bolt hole.
2. Carefully push the connecting rod up until the connecting rod clears the crankshaft journal.
3. Swing the connecting rod to the side, then pull down just enough to gain access to the upper bearing.
4. Remove the upper bearing by sliding it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

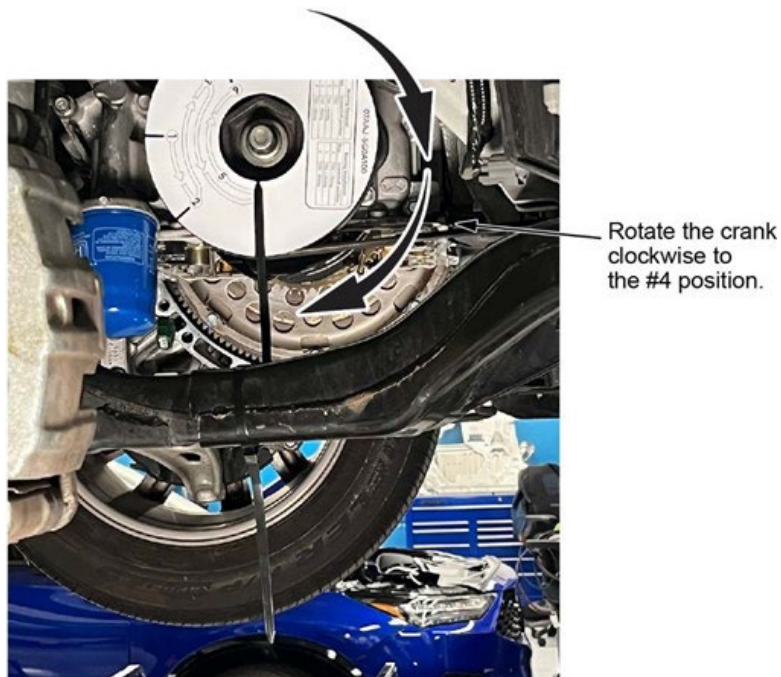
58. Place the removed **upper bearings** from **cylinder 3 and 4** into the rod bearing organizer.

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.**



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



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

NOTE:

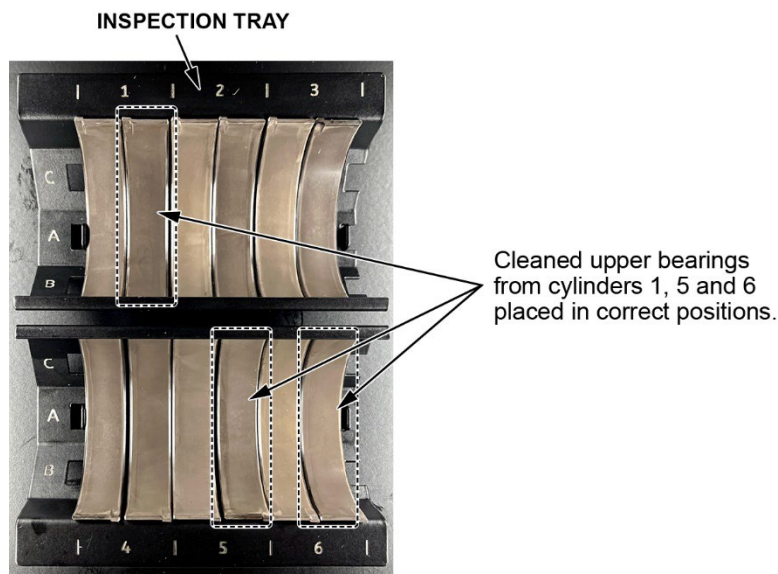
- Follow the removal of the connecting rod bearings precisely to prevent damage to the crank journal and connecting rods.
- The next steps involve manually moving the piston/rod assemblies while disconnected from the crankshaft. Moving the piston/rod assembly too far in either direction can damage the 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.**
61. Place the removed **upper bearings** from **cylinders 1, 5, and 6** into the rod bearing organizer.

NOTE:

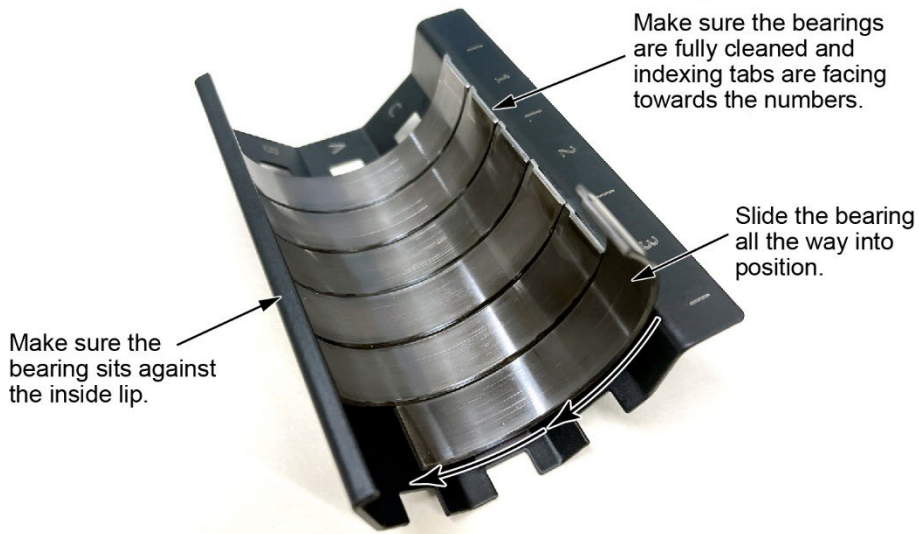
- Thoroughly clean the bearing with a clean shop towel prior to placing in the rod bearing organizer. No oil should be present. **Do not use any solvents.**
- **Place** the removed bearings into the rod bearing organizer at the correct position. For example, the **cylinder 1 bearings** should be in the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



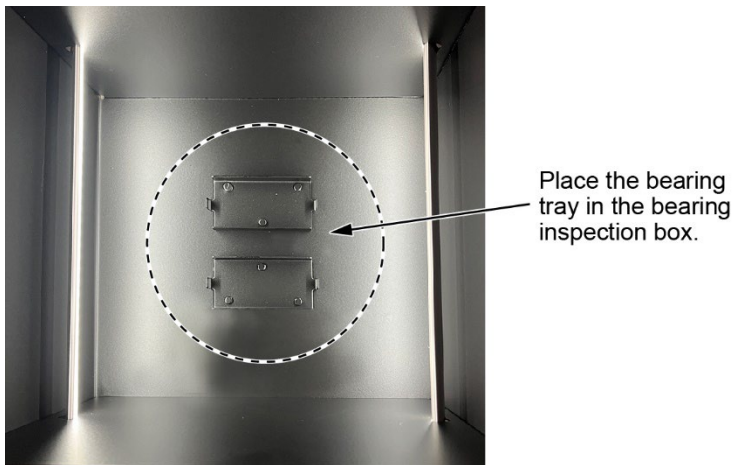
62. Make sure the bearings are fully seated and level with the edge of the rod bearing organizer.

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.



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

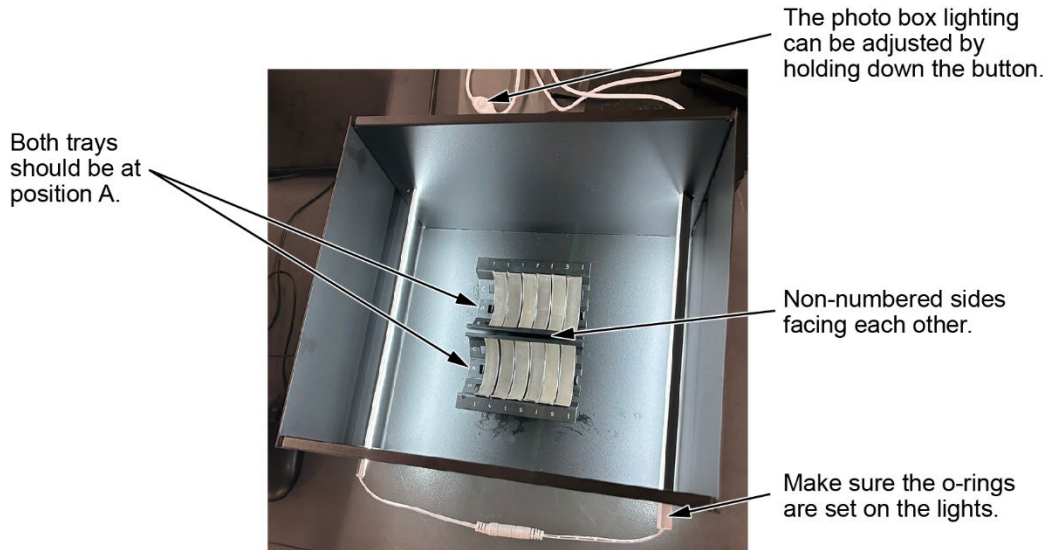


64. Confirm the following on the bearing inspection box:

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.



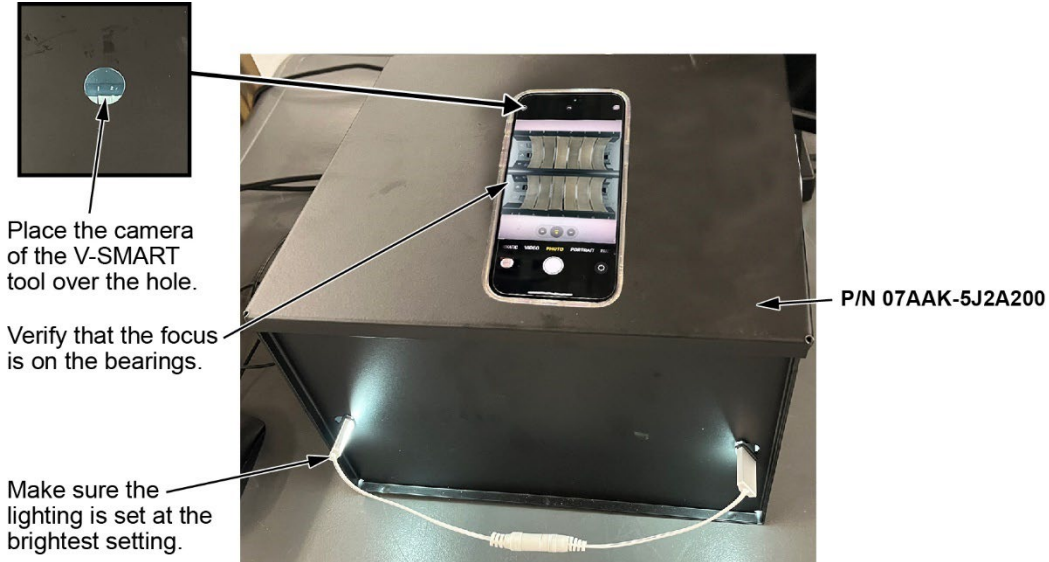
65. Login to the V-SMART application.

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

66. 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.

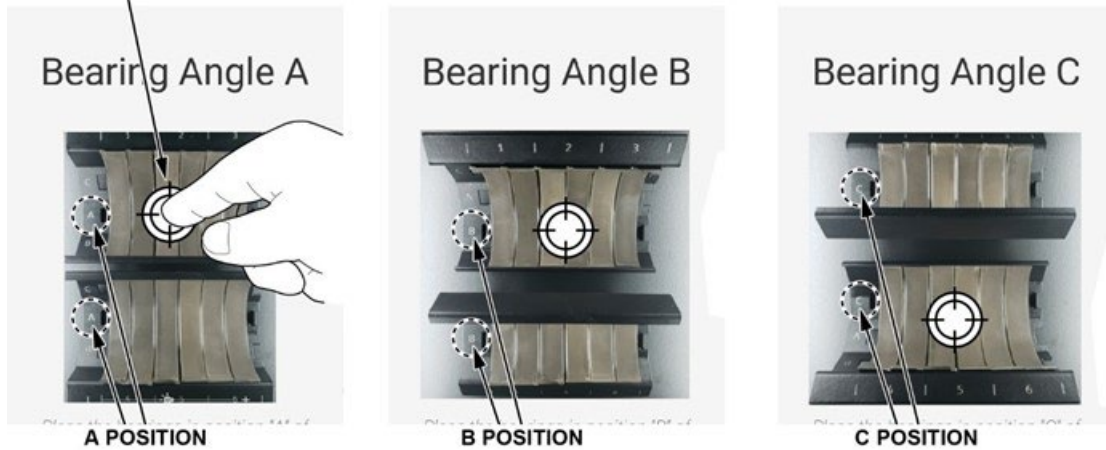
NOTE:

- 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.



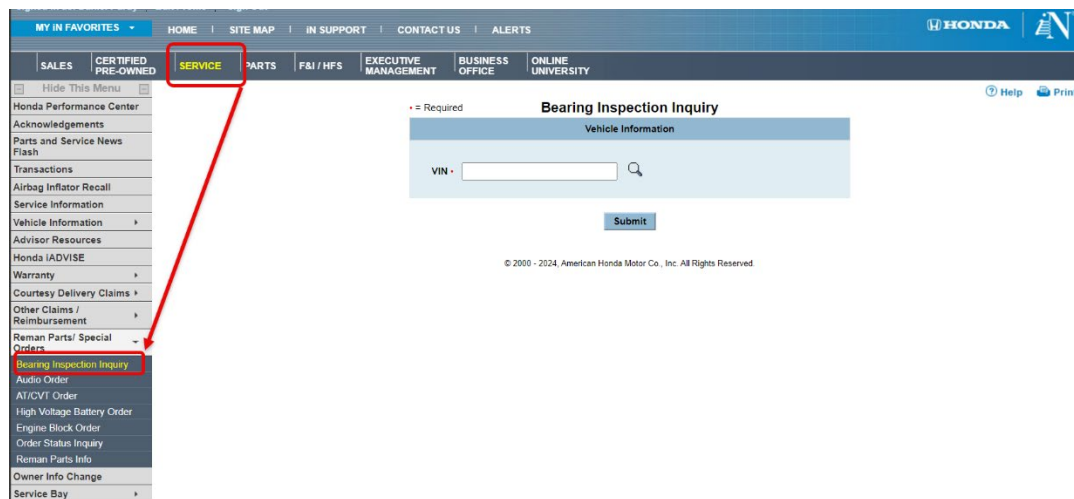
When taking the photos:

Tap here to focus camera.

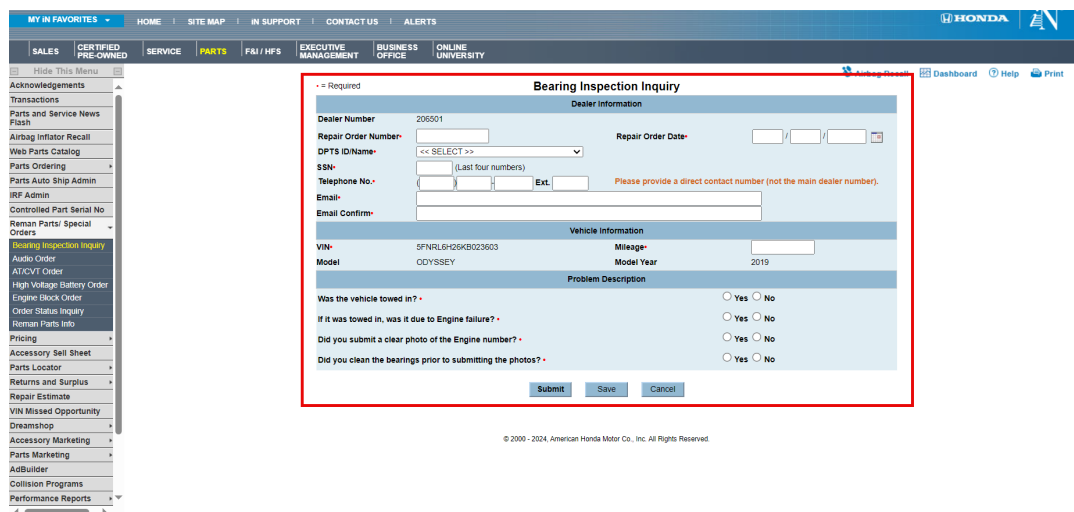


67. Create a Bearing Inspection Inquiry.

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.

68. 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, [\(Click HERE\)](#).

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.

PST Bearing Inspection Repair Direction Date: 2024-02-01
Time: 18:32
Page: 1

Car Information:

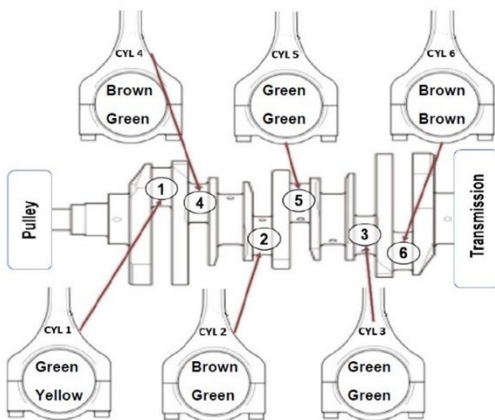
Case #: 1234567	VIN: [REDACTED]	Exterior Color: SLATE SILVER
Dealer #: 1234567	EIN: [REDACTED]	METALLIC
	Model: [REDACTED]	Interior Color: EBONY SLATE
		SILVER METALLIC
		Year: 2015

Warranty Verification Code: [REDACTED]

Failed Part Number: [REDACTED]

Repair Type: Rod Bearings

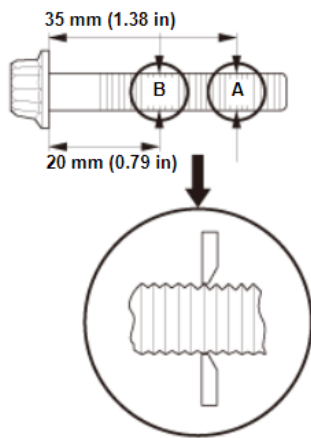
Bearing Information:



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.)

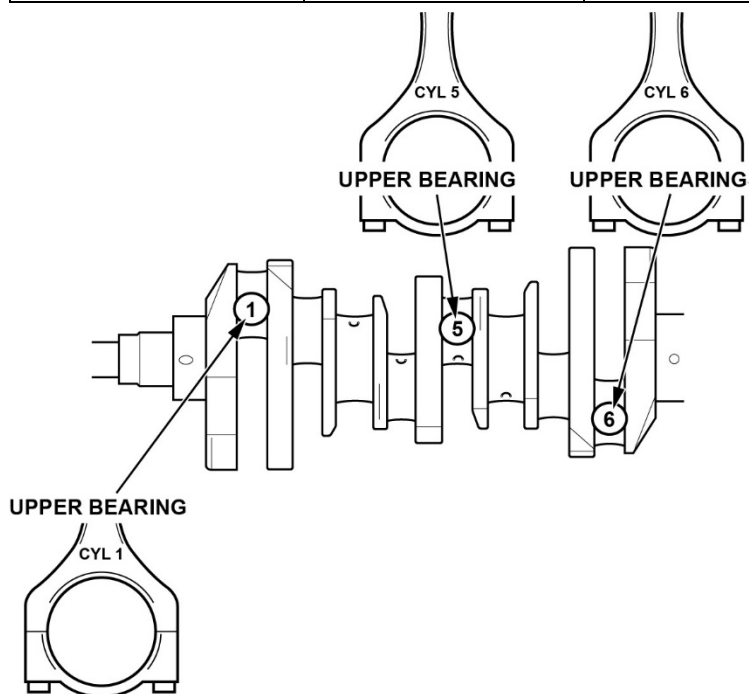


3. Apply a light coating of oil to all connecting rod journals prior to installing the remainder of the steps.
4. While the crankshaft is still at crank angle gauge **position #4** (TDC +90°), install the **upper bearing** to the connecting rod for **cylinders 1, 5, and 6**.

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

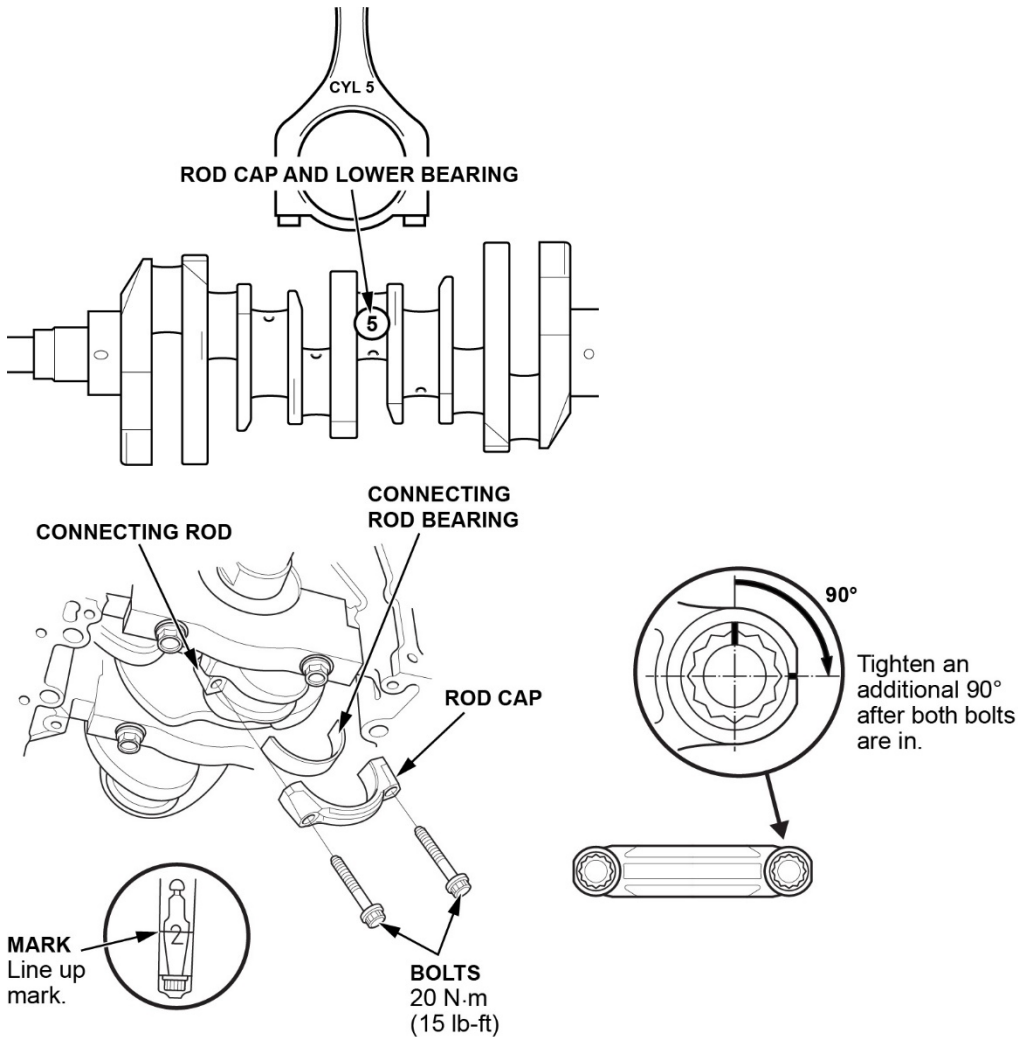


5. Install the **connecting rod cap and lower bearing** to the connecting rod **for cylinder 5**.

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, this includes resting against the journal as a guide.
- 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°).

Rotate the crank counter-clockwise to the #5 position.

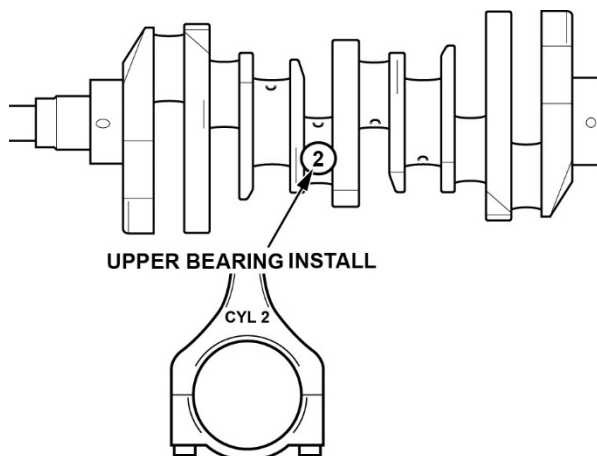


7. Install the **upper bearing** to the connecting rod **for cylinder 2**.

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

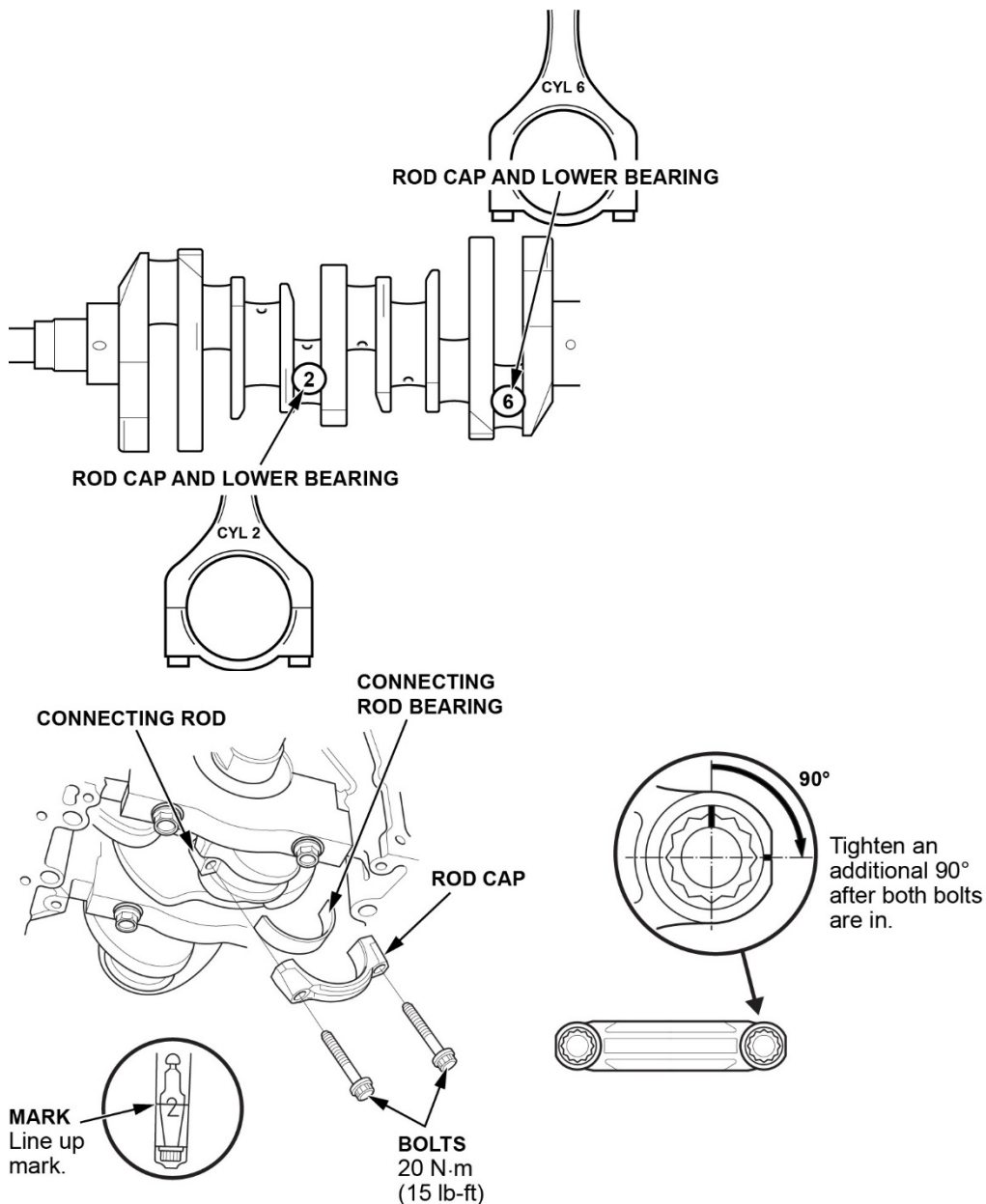


8. Without rotating the crank, install the **rod cap and lower bearing** to the connecting rod **for cylinders 2 and 6**.

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, this includes resting against the journal as a guide.
- 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.

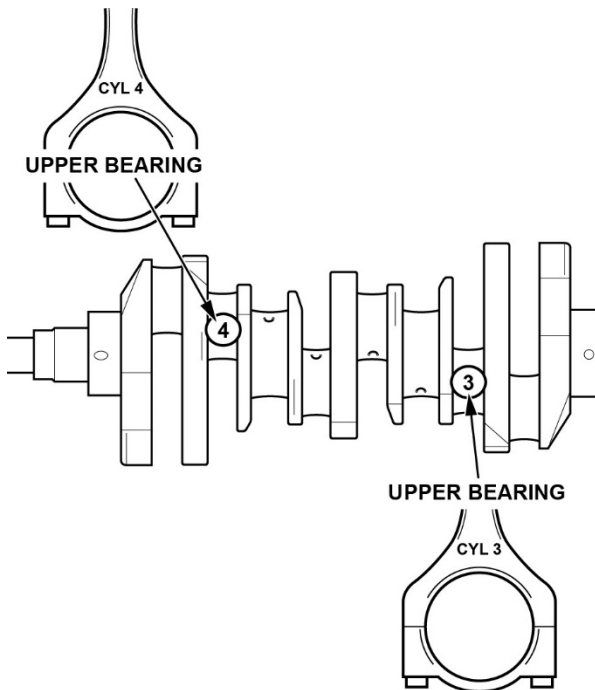


10. Install the **upper bearing** to the connecting rod for **cylinders 3 and 4**.

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

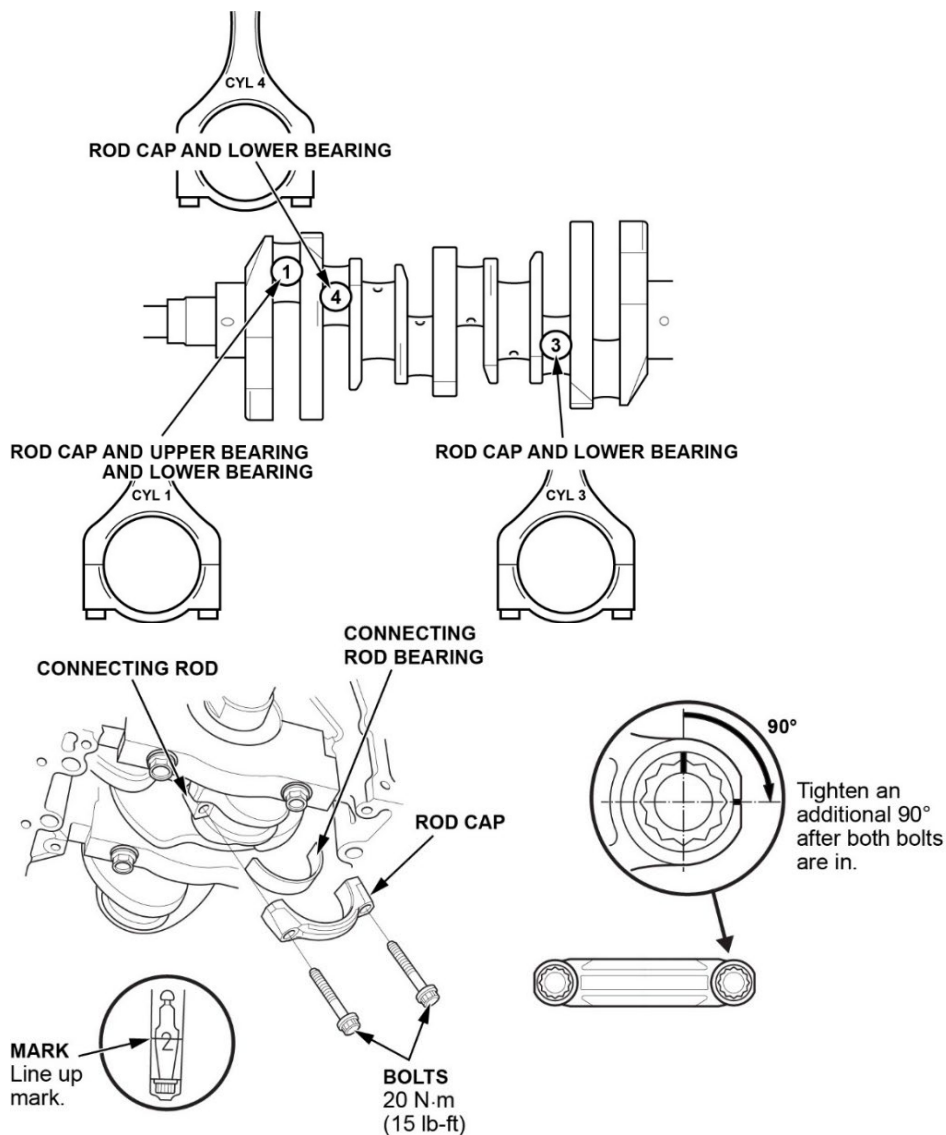


11. Without rotating the crank, install the **rod caps and lower bearings** to the connecting rod **for cylinder 1**. Then, **install the rod cap and lower bearing** to the connecting rod **for cylinders 3 and 4**.

NOTE:

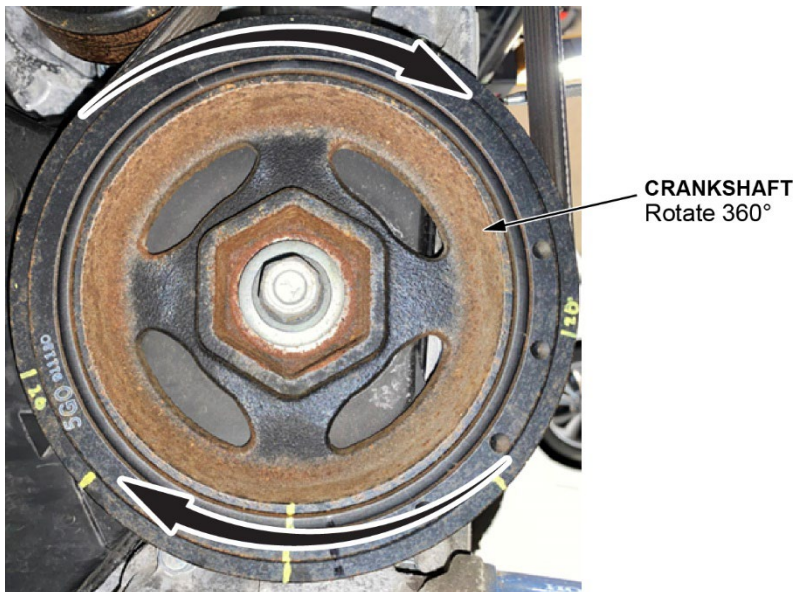
- Make sure the bearing indexing tabs are properly oriented during installation.
- Apply new engine oil to the bolt threads and bolt flanges.
- If you tightened the connecting rod bolt beyond the specified angle, remove and inspect the connecting rod bolt. **Do not loosen** it back to the specified angle.
- Use a commercially available torque angle meter.
- Use the M8 Rod Holder tool as needed, this includes resting against the journal as a guide.
- 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

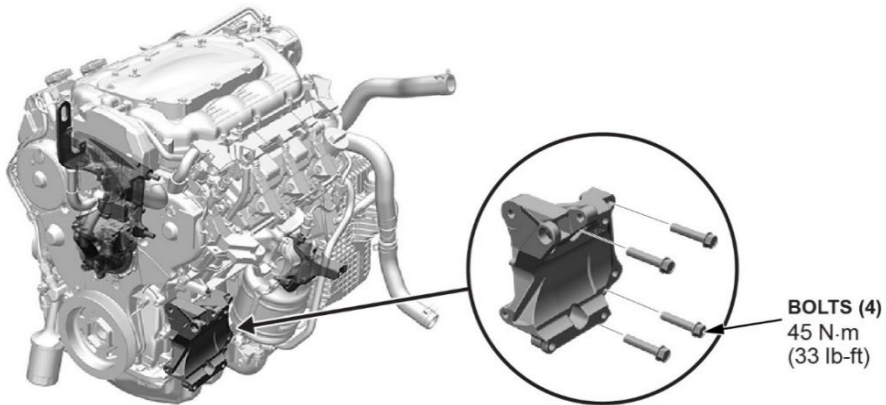


12. Remove the crank angle gauge and zip tie.

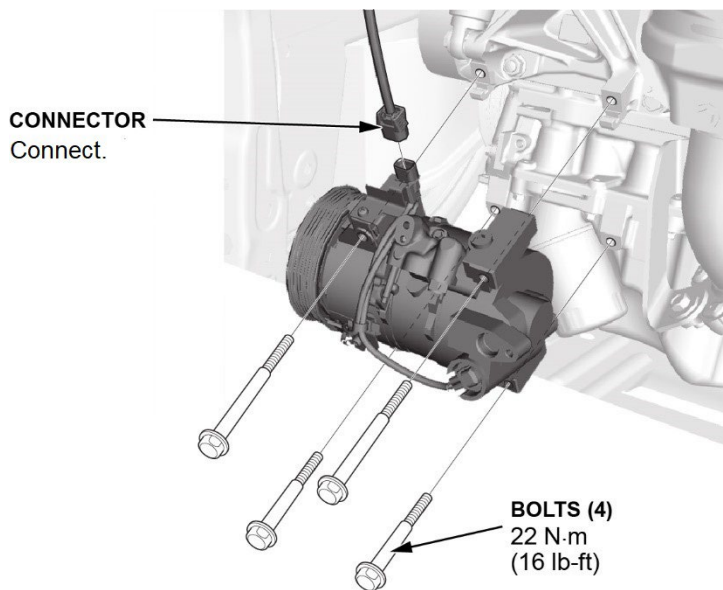
13. Lower the vehicle and remove the piston stoppers.
14. Rotate the crankshaft **360°** to check for binding of the connecting rod bearings.



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

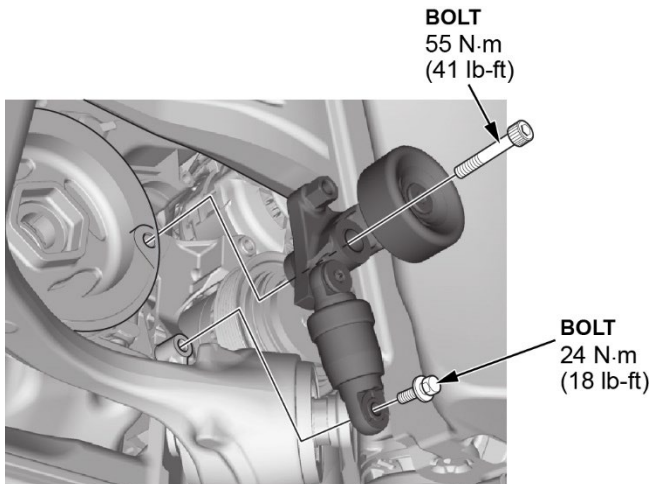


16. **INSPECTION B ONLY:** Install the compressor.

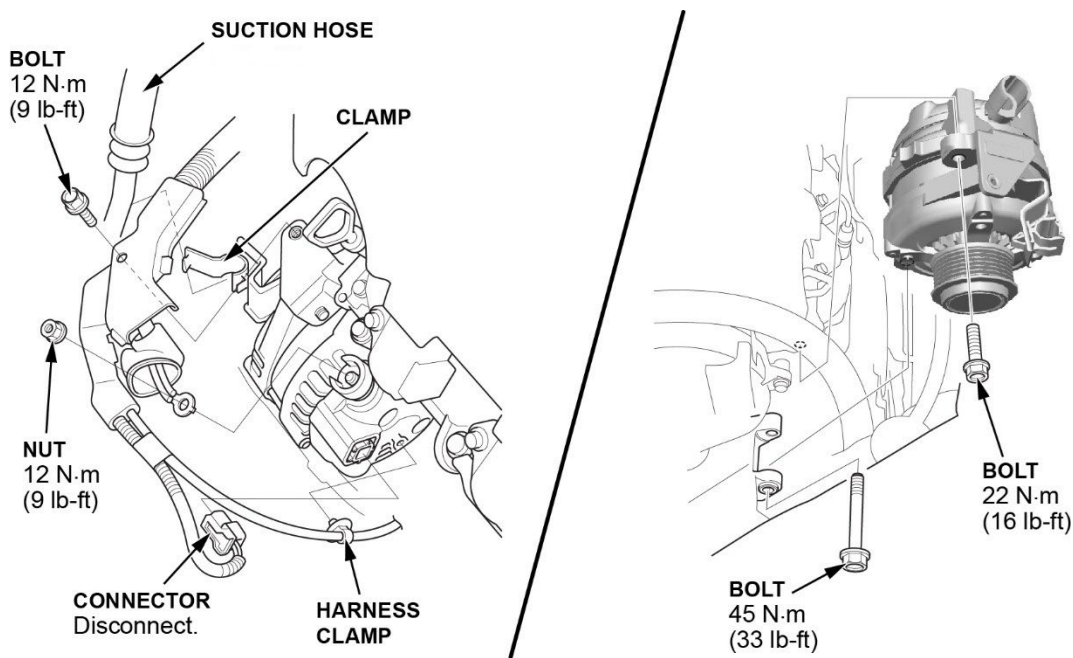


17. **INSPECTION B ONLY:** Install the drive belt auto-tensioner.

NOTE: Do the driver belt auto tensioner air bleed.

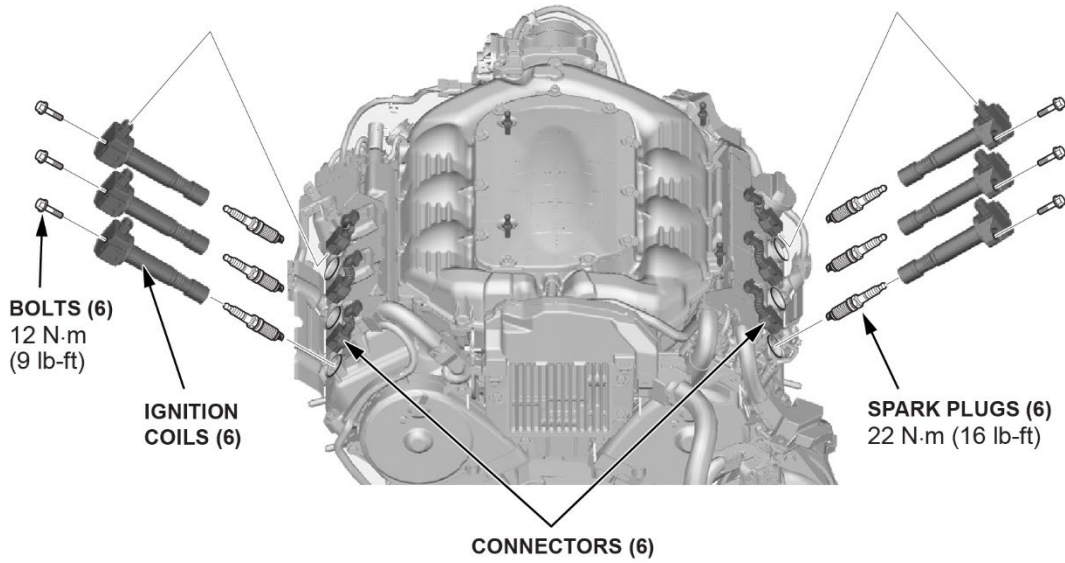


18. **INSPECTION B ONLY:** Install the alternator.

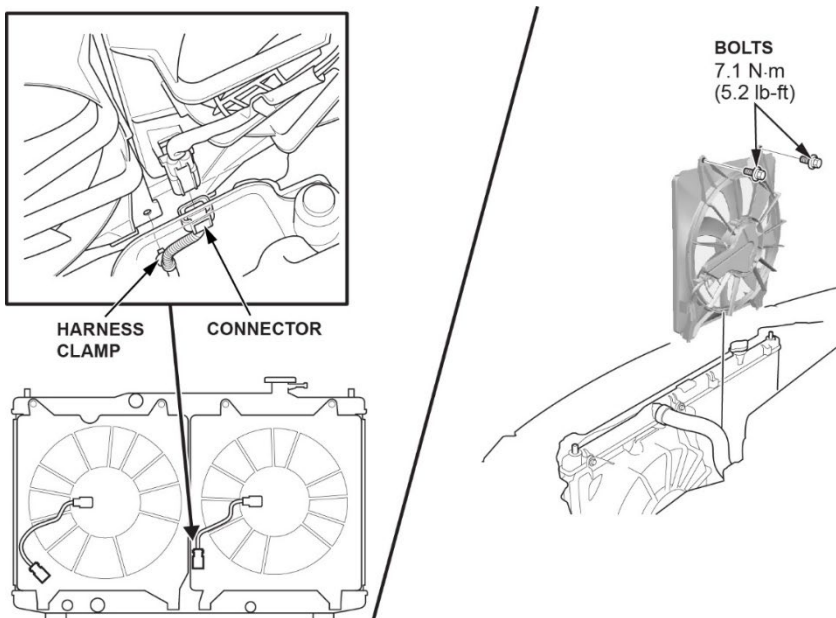


19. **INSPECTION B ONLY:** Remove the radiator shield.

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

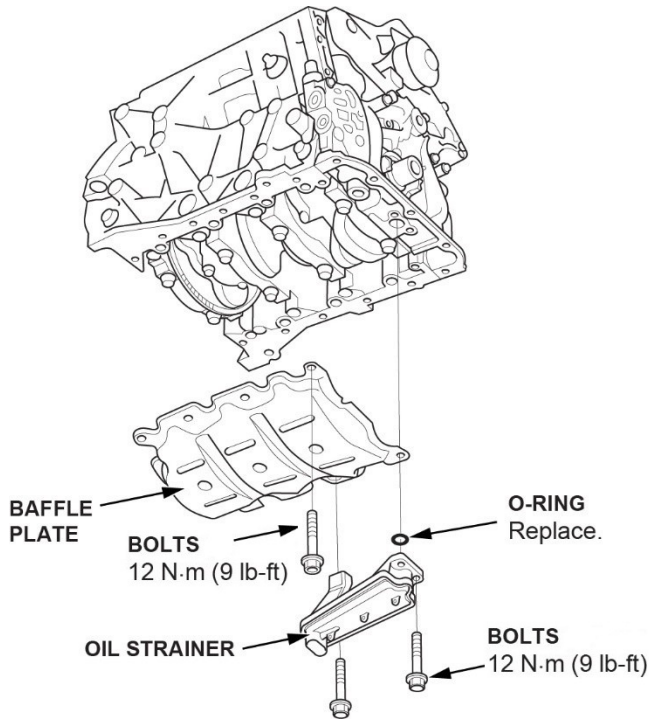


21. **INSPECTION B ONLY:** Connect the passenger side radiator fan connectors, and then install the passenger side radiator fan.



22. Raise the vehicle.

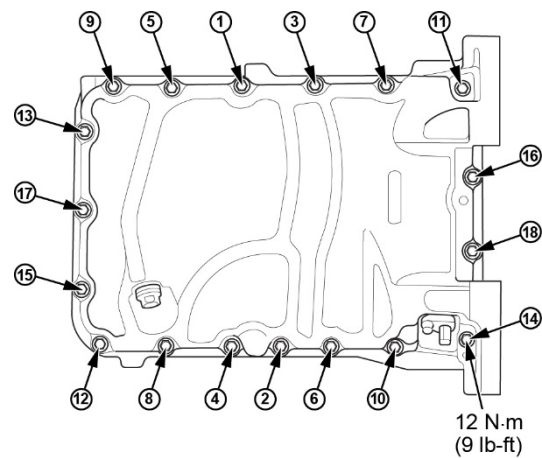
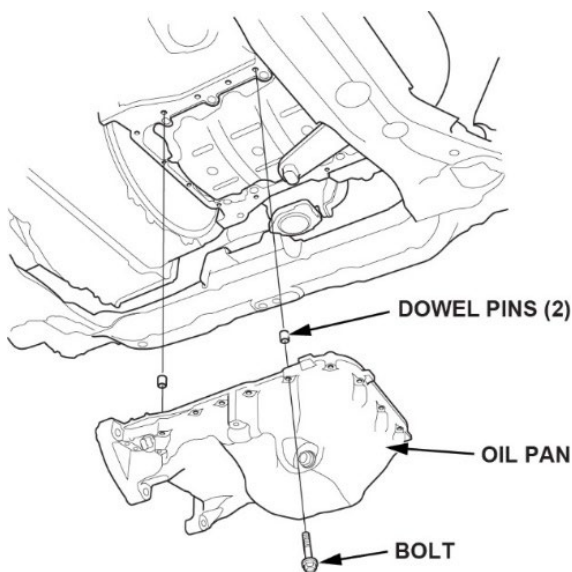
23. Install the oil strainer and baffle plate.



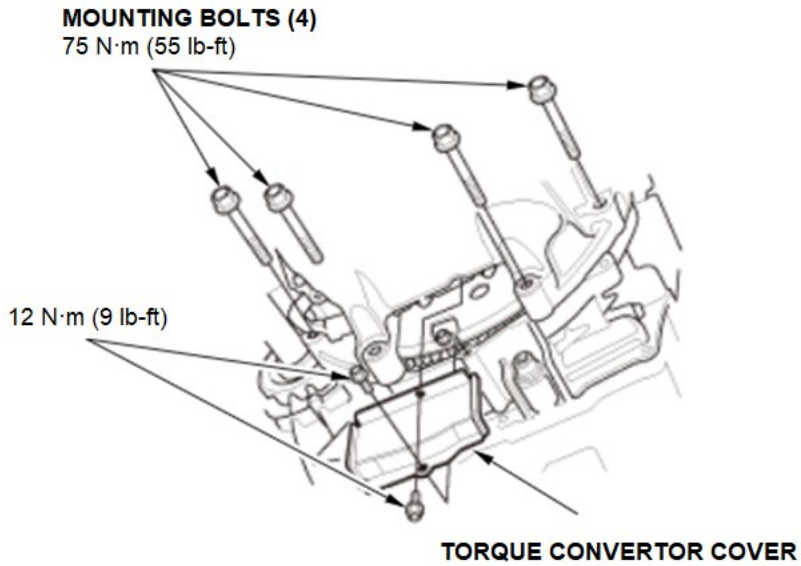
24. Install the engine oil pan.

NOTE:

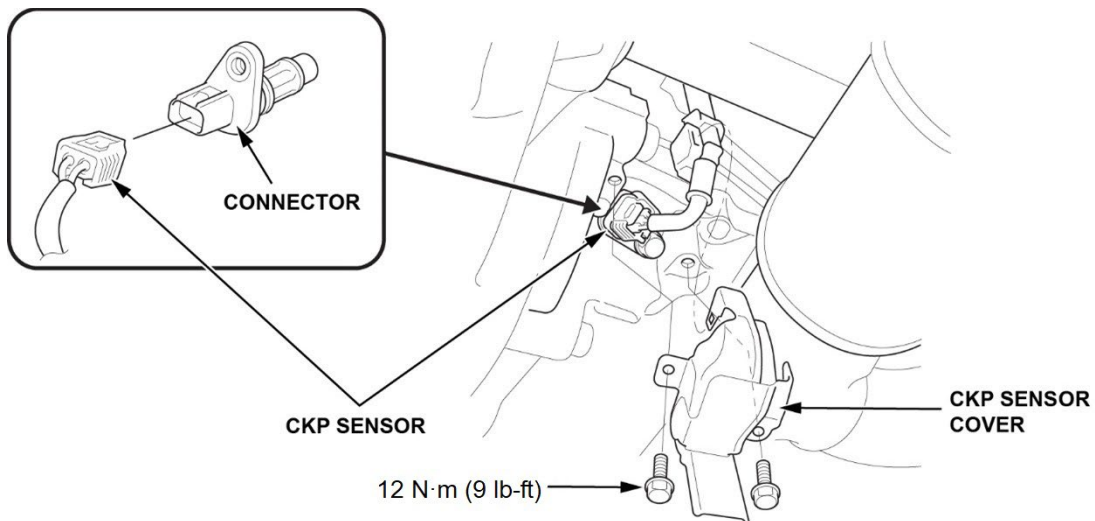
- **Remove** any Hondabond left on the oil pan bolts.
- **Apply** a liquid sealing gasket (Hondabond HT Silicone Gasket, P/N 08718-0004) to the oil pan mating surface of the engine block and inside edge of the threaded bolt holes.
- Torque the bolts to **12 N·m (9 ft-lb)**.
- **Wait** at least **30 minutes** 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.



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



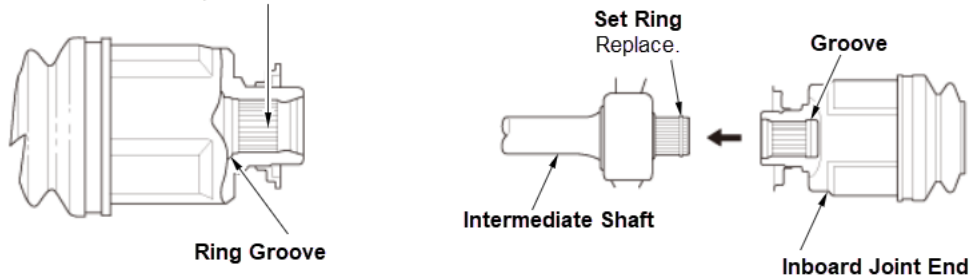
26. Install the CKP sensor cover, then connect the connector.



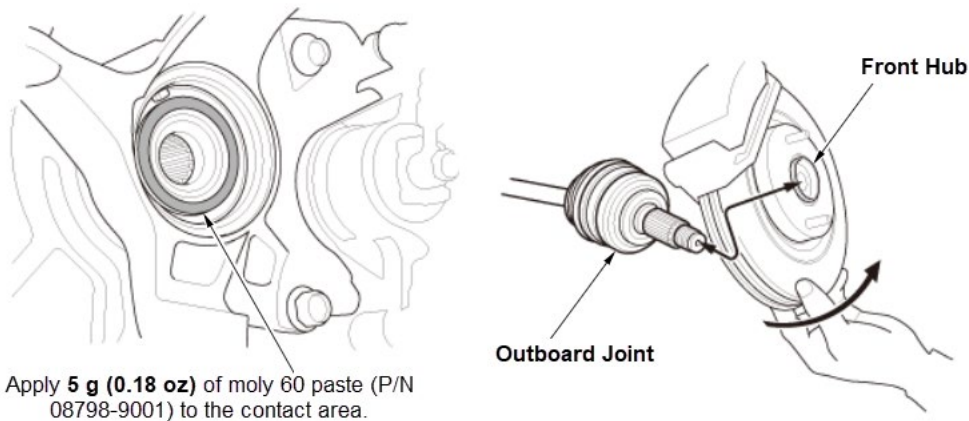
27. **INSPECTION B ONLY:** Install the passenger side driveshaft.

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.

Apply **2.0-3.0 g (0.071-0.106 oz)** of super high temperature urea grease (P/N 08798-9002) to the whole splined surface.



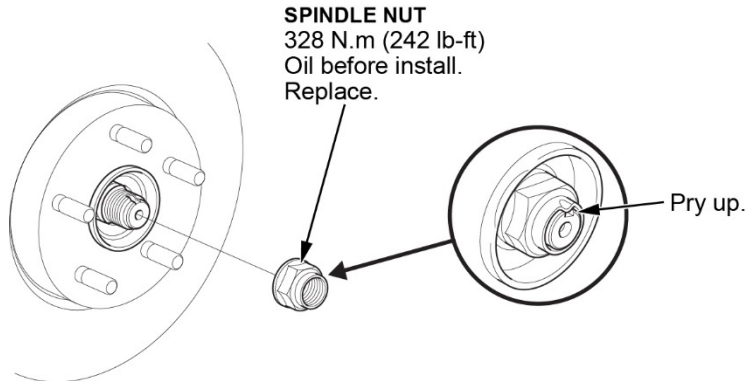
5. Apply about **3.0 g** of molybdenum grease to the contact area of the outboard joint and the front wheel bearing.
6. Install the outboard joint into the front hub on the knuckle.



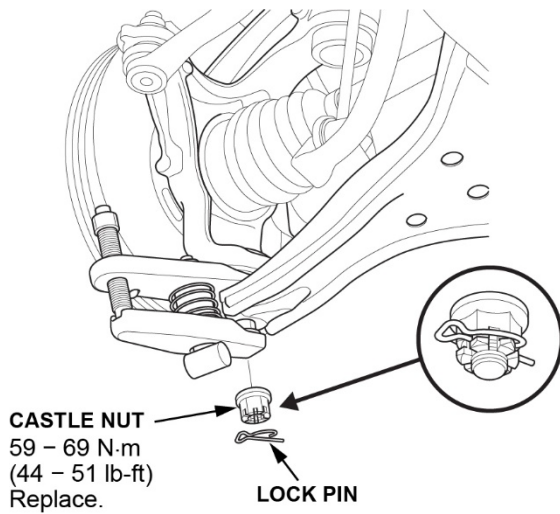
7. Install the new spindle nut.

NOTE:

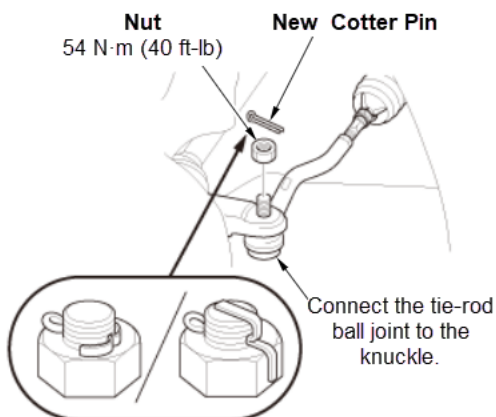
- Apply a small amount of engine oil to the seating surface of the new spindle nut.
- Use a drift to stake the spindle nut shoulder against the driveshaft.
- Be careful not to make a crack on the spindle nut when staking.



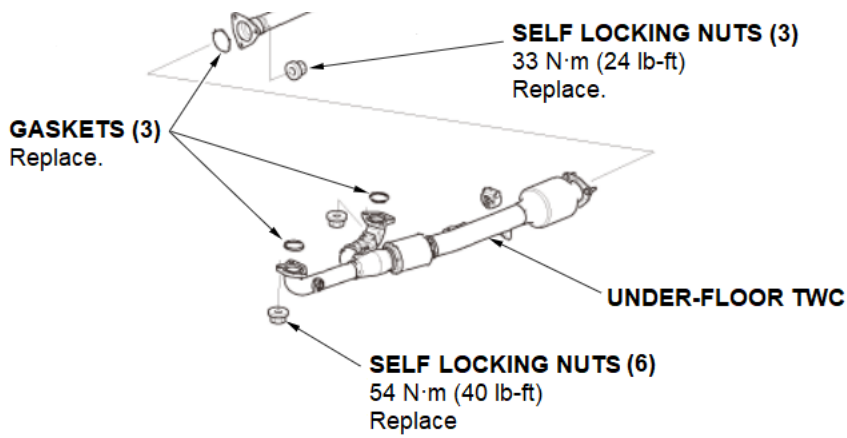
28. Connect the passenger's side lower knuckle ball joint.



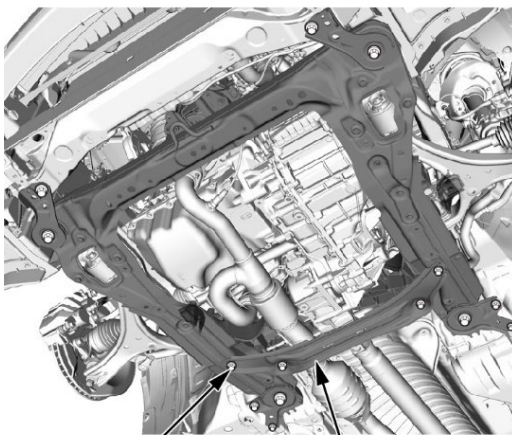
29. Connect the tie-rod end ball joint.



30. Install the under-floor TWC (A-pipe).



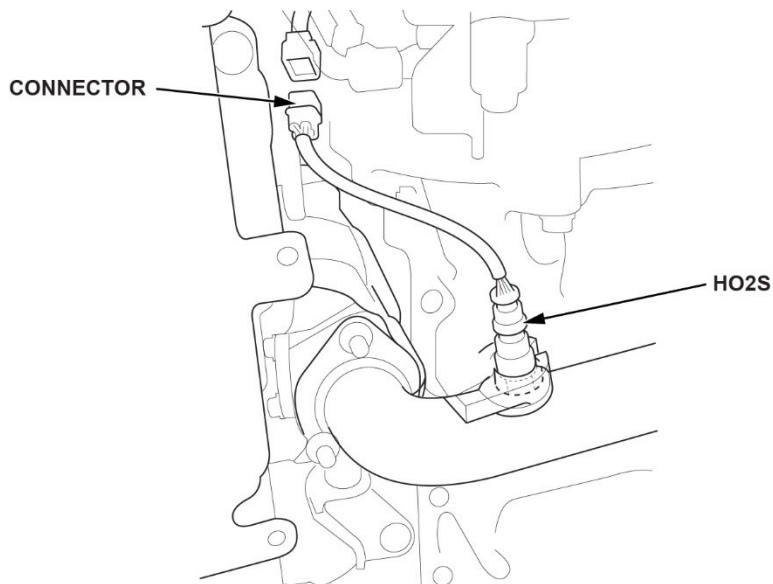
31. Install the front subframe stiffener plate.



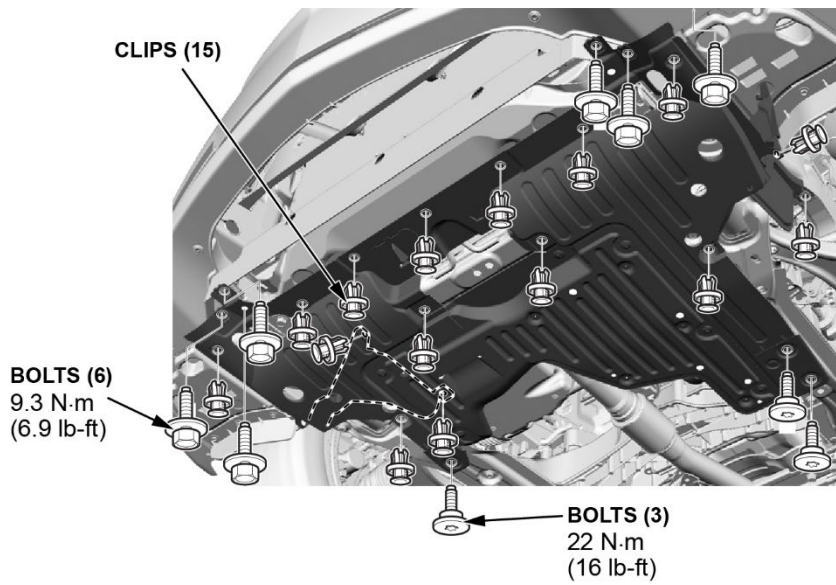
BOLTS (4)
54 N·m (40 lb-ft)
Replace.

**FRONT SUBFRAME
STIFFENER PLATE**

32. Plug in the front bank 2 (HO2S) oxygen sensor.



33. Install the engine undercover.

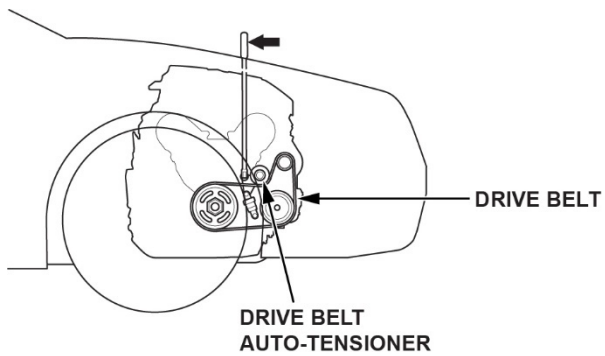


34. Replace the washer and install the oil drain bolt, **40 N·m (30 lb-ft)**.

35. Install the passenger side front wheel, **108 N·m (80 lb-ft)**.

36. Lower the vehicle.

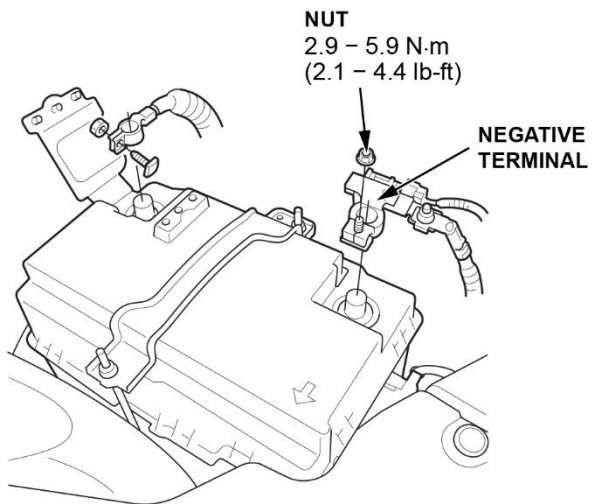
37. **INSPECTION B ONLY:** Install the drive belt.



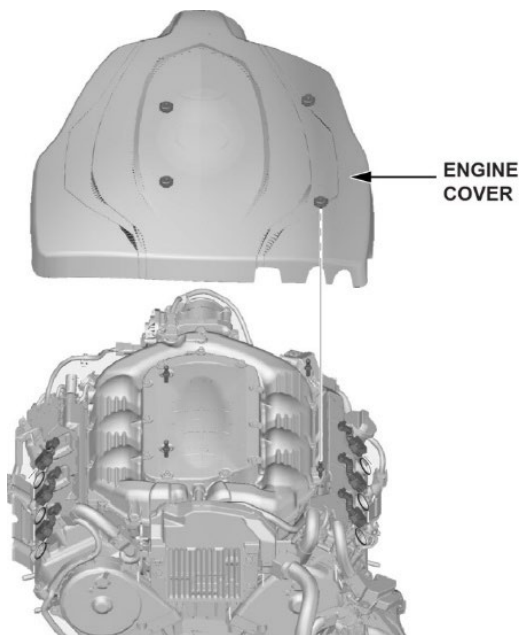
38. Install the oil dipstick and fill the engine oil.

Fill: 4.0 L (4.2 US qt.)

39. Connect the 12-volt battery.



40. Install the engine cover.



41. 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.

42. Connect to the i-HDS.

43. 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.

44. 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.

45. 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

46. 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.

47. 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.

48. Exit the i-HDS, **REPAIR #1** is complete.

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

REPAIR #2 REPLACE THE LONG BLOCK

NOTE:

- Log into V-SMART prior to starting this portion and input any necessary photo(s) for the new parts.
 - The remaining must-replace parts will not be shipped until the new engine information is sent to the Bearing Inspection Inquiry Team.
 - Contact the Bearing Inspection Inquiry Team *after* inputting the needed V-SMART information for the unique warranty codes.
1. Disconnect the steering column at the steering joint.
NOTE: See *Step 9, Steering Column Removal and Installation* ([Click HERE](#)).
 2. Remove the piston stoppers.
 3. Remove the battery.
NOTE: *12 Volt Battery Removal and Installation* ([Click HERE](#)).
 4. Remove the intake tubing and filter box.
 5. Remove the positive terminal connections from the battery cable.
 6. Remove the brake booster vacuum hose.
NOTE: See *Step 5, Intake Manifold Removal and Installation* ([Click HERE](#)).
 7. Remove the EVAP hose and PCM (with connector).
NOTE: See *Step 34, Engine Removal and Installation* ([Click HERE](#)).
 8. Lift the vehicle.
 9. Remove the front wheels, **108 N·m (80 lb-ft)**.
 10. Loosen the coolant drain plug and drain the coolant.
NOTE: *Coolant Replacement* ([Click HERE](#)).
 11. **AWD Only:** Unbolt the propeller shaft from the transfer case.
NOTE:
 - Make a reference mark across the No. 1 propeller shaft and transfer companion flange.
 - *Propeller Shaft Removal and Installation* ([Click HERE](#)).
 12. **If not removed yet**, separate the passenger driveshaft inner joint from the intermediate shaft.
 13. Remove the transmission ground cable, the front active mount, EPS connector, and the rear active mount connector.
NOTE: *Engine Removal and Installation* ([Click HERE](#)).
 14. Remove the torque converter bolts.
NOTE: See *Step 32, Automatic Transmission Removal and Installation* ([Click HERE](#)).
 15. Remove the upper nut from the stabilizer link.
NOTE: See *Step 4, Front Damper/Spring Removal and Installation* ([Click HERE](#)).
 16. Lower the vehicle.
 17. Disconnect the radiator hoses and heater hoses on the engine side.
NOTE: *Water Passage Removal and Installation* ([Click HERE](#)).
 18. Disconnect the ATF warmer hose on the engine side.
NOTE: See *Step 9, ATF Warmer and Removal Installation* ([Click HERE](#)).
 19. Disconnect the passenger condenser fan.
NOTE: See *Step 8, Radiator and A/C Condenser Fan, Motor, and Shroud Removal and Installation* ([Click HERE](#)).
 20. Remove the accessory drive belt, tensioner, and alternator.
NOTE: See *Steps 2 through 9, Alternator Removal and Installation* ([Click HERE](#)).

21. Unbolt the A/C compressor and move forward to sit on the core support.

22. Disconnect the fuel line.

NOTE:

- Unbolt the 3 bolts from the upper transmission mount bracket.
- See *Step 10, Engine Removal and Installation* ([Click HERE](#)).

23. Remove the side engine mount bracket.

NOTE: See *Step 2, Side Engine Mount Removal and Installation* ([Click HERE](#)).

24. Raise the vehicle to waist height.

25. **INSPECTION B Only:** Re-install the ball joints, castle nuts, and cotter pins.

NOTE:

- *Front Knuckle Ball Joint Removal and Installation* ([Click HERE](#)).
- *Steering Tie-Rod End Ball Joint Boot Replacement* ([Click HERE](#)).

26. Remove the pinch bolt for the knuckle and strut.

NOTE: See *Step 10, Front Damper/Spring Removal and Installation* ([Click HERE](#)).

27. Unbolt the brake caliper and hang it on the spring with an S-hook.

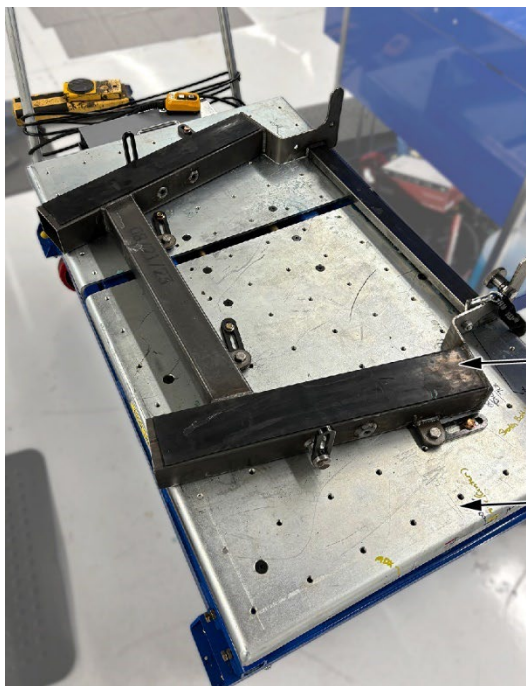
NOTE: See *Step 5, Front Brake Caliper Removal and Installation* ([Click HERE](#)).

28. Remove the wheel speed sensor from the knuckle.

NOTE: See *Step 3, Wheel Speed Sensor Removal and Installation* ([Click HERE](#)).

29. Position the lift table (P/N K1700) under the subframe with the subframe attachment.

NOTE: Use the integrated strap to aid in securing the subframe and posts.



SUBFRAME SUPPORT
P/N 07AAK-TZ3A100

LIFT TABLE

30. Lift the table until contact with the subframe.



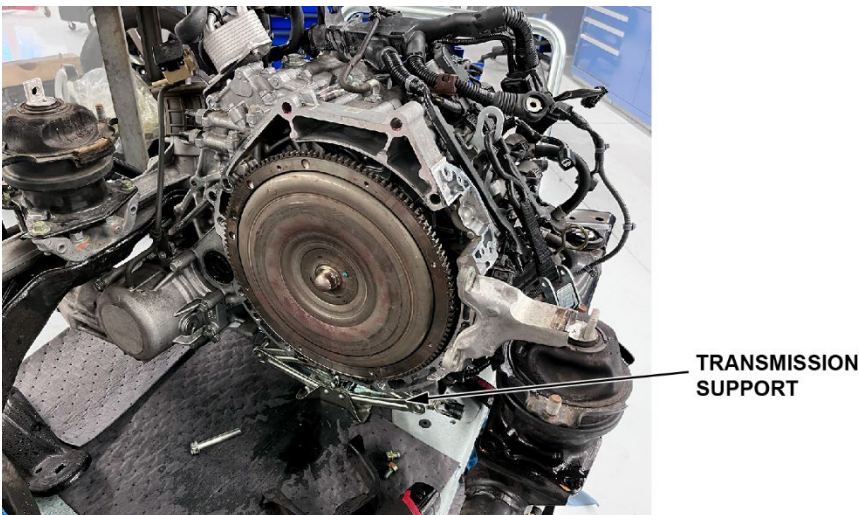
31. Unbolt the side bolts on the subframe, then unbolt the remainder.

NOTE: *Subframe Removal and Installation* ([Click HERE](#)).

32. Lower the lift table with the subframe, engine, knuckles, and transmission assemblies as one.

NOTE:

- Use micro-adjustments to clear the powertrain from the chassis.
- Place a commercially available tool to support the transmission and provide adjustment for future installation.



33. Remove the passenger axle nut and passenger drive shaft.

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

34. Remove the rear (bank 1) catalytic convertor.

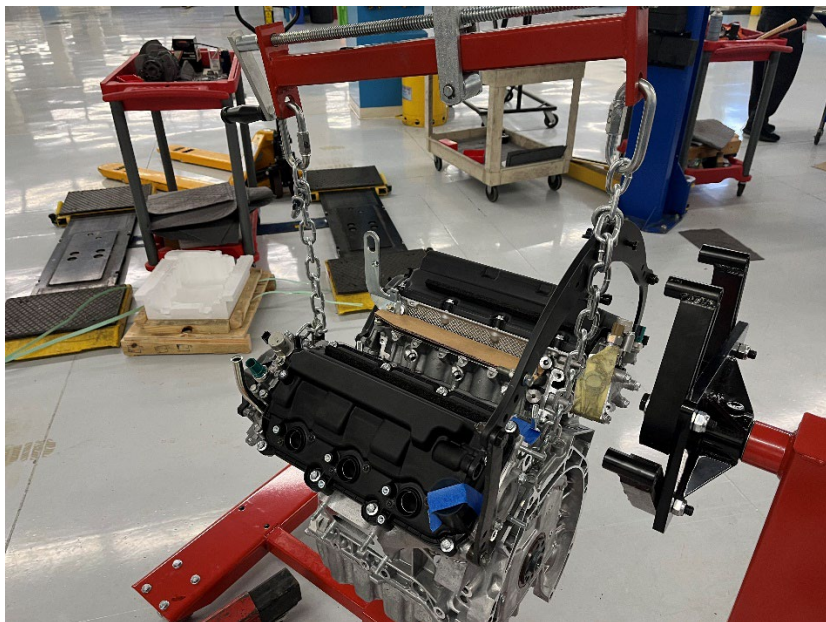
NOTE: *Warm Up TWC Removal and Installation* ([Click HERE](#)).

35. Loosen the harness bracket and then remove the intermediate shaft.

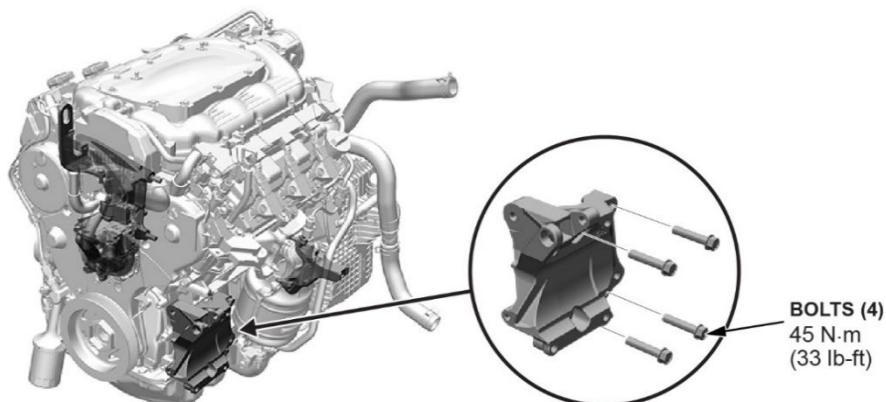
NOTE: See *Step 3, Intermediate Shaft Removal and Installation* ([Click HERE](#)).

36. Mount the **new long block assembly** to the engine stand, if not already done.

37. Apply painter's tape to the intake ports.



38. Transfer the compressor bracket to the new block.



39. Remove the front catalyst (with the EGR pipe) from the original engine, then transfer to the new engine.

NOTE: See *Step 7, Warm Up TWC Removal and Installation* ([Click HERE](#)).

40. Remove the engine mount stoppers.

NOTE: See *Step 4, Front Engine Mount Removal and Installation* ([Click HERE](#)).

41. Remove the intake manifold and manifold base.

NOTE: See *Steps 5 through 8, Intake Manifold Removal and Installation* ([Click HERE](#)).

42. Transfer the bank 2 heat shield at the valve cover to the new engine.

NOTE: *Cylinder Head Cover Removal and Installation* ([Click HERE](#)).

43. Transfer the timing belt guide plate and crankshaft pulley.

NOTE:

- *Timing Belt Removal and Installation* ([Click HERE](#)).
- *Cylinder Head Cover Removal and Installation* ([Click HERE](#)).

44. Transfer the CKP sensor with a new O-ring.

NOTE: *CKP Sensor Removal and Installation* ([Click HERE](#)).

45. Unbolt and disconnect the ICM, then disconnect the fuel rail connectors.

NOTE: *Injector Control Module Removal and Installation* ([Click HERE](#)).

46. Remove the following:

NOTE: *High Pressure Fuel Pump Removal and Installation* ([Click HERE](#)).

1. High-Pressure Fuel Pump Cover
2. Injector Cover
3. High- Pressure Fuel Pump Coupler
4. Fuel Joint Pipe (must replace with new)
5. Roller under the high pressure fuel pump

47. Remove the fuel rails with injectors still installed.

NOTE: *Injector Removal and Installation* ([Click HERE](#)).

48. Transfer the knock sensors and sub-harness to the new engine.

NOTE:

- Coolant crossover pipe may need to be removed to secure sub-harness to the new block.
- *Knock Sensor 1 (Bank 1) and Knock Sensor 2 (Bank 2) Removal and Installation* ([Click HERE](#)).

49. Remove the EVAP canister purge valve.

NOTE: *EVAP Canister Purge Valve Removal and Installation* ([Click HERE](#)).

50. Unplug the cam position sensor from the front heads.

NOTE: *CMP Sensor Removal and Installation* ([Click HERE](#)).

51. Transfer the following to the new engine:

NOTE: *Engine Removal and Installation* ([Click HERE](#)).

1. Front Valve Cover Breather Vent Hose
2. Rear Valve Cover Breather
3. Spark Plug and Coils
4. Engine Harness

52. Install the following to the new engine:

NOTE: *Engine Removal and Installation* ([Click HERE](#)).

1. Injectors (with new seals)
2. Fuel Rails
3. Fuel Joint Pipe
4. High Pressure Fuel Pump and Roller
5. ICM Bracket
6. ICM
7. Injector Cover
8. Dipstick
9. Oil Fill Cap
10. ICM Cover
11. Ground Harness
12. High Pressure Fuel Pump Cover

13. Intake Manifold Base
14. Intake Manifold
15. Intake Manifold Cover
53. Connect the following to the new engine:
NOTE: *Engine Removal and Installation* ([Click HERE](#)).
 1. Front Bank Breather Tube
 2. EVAP Vacuum Hose
 3. Injector and Knock Sensor Sub-Harness to Engine Harness
54. Loosen the rear engine mount bracket bolt completely from engine block.
NOTE: *Rear Engine Mount Removal and Installation* ([Click HERE](#))
55. Remove the front engine block mount and front engine mount bracket.
NOTE: *Front Engine Mount Removal and Installation* ([Click HERE](#))
56. Bolt in the engine hanger (P/N VSB02C000019) and load lever (P/N NRI78115ZH) to the original engine.
57. Remove the starter.
NOTE: *Starter Removal, Installation, and Performance Test* ([Click HERE](#)).
58. Separate the original engine from the transmission.
59. Remove the flex plate.
60. Original engine is no longer needed from this point forward.
61. Install the engine hanger and flex plate to the new long block.
NOTE:
 - *Engine Removal and Installation* ([Click HERE](#)).
 - *Drive Plate Removal and Installation* ([Click HERE](#)).
62. Connect the engine to the transmission with alignment pins.
63. Install the front engine mount bracket and rear engine mount bracket.
NOTE: *Engine Removal and Installation* ([Click HERE](#)).
64. Install the following:
NOTE: *Engine Removal and Installation* ([Click HERE](#)).
 1. Front Catalyst with EGR Pipe
 2. Intermediate Shaft (Remove the 9AT Protecting Cap prior)
 3. Drive Shaft
 4. Rear Catalyst
 5. Engine Mount Heat Shield
 6. Rear Catalyst Brace
65. Connect CKP sensor and install the cover.
66. Go to the INSTALL THE SUBFRAME section to continue with the subframe installation.
NOTE: Link to INSTALL THE SUBFRAME, ([Click HERE](#)).

REPAIR #3 AND #4 REPLACE THE CRANKSHAFT

NOTE:

- Log into V-SMART prior to starting this portion and input any necessary photo(s) for the new parts.
 - The remaining must-replace parts will not be shipped until the new crankshaft information is sent to the Bearing Inspection Inquiry Team.
 - Contact the Bearing Inspection Inquiry Team *after* inputting the needed V-SMART information for the unique warranty codes.
1. Disconnect the steering column at the steering joint.
NOTE: See *Step 9, Steering Column Removal and Installation* ([Click HERE](#)).
 2. Remove the battery.
NOTE: *12 Volt Battery Removal and Installation* ([Click HERE](#)).
 3. Remove the intake tubing and filter box.
 4. Remove the positive terminal connections from the battery cable.
 5. Disconnect the brake booster vacuum hose.
NOTE: *Intake Manifold Removal and Installation* ([Click HERE](#)).
 6. Disconnect the EVAP hose and PCM (with connector).
NOTE: See *Step 34, Engine Removal and Installation* ([Click HERE](#)).
 7. Lift the vehicle.
 8. **AWD Only:** Unbolt the propeller shaft from the transfer case.
NOTE:
 - Make a reference mark across the No. 1 propeller shaft and transfer companion flange.
 - *Propeller Shaft Removal and Installation* ([Click HERE](#)).
 9. Remove the front wheels, **108 N·m (80 lb-ft)**.
 10. Separate the passenger side driveshaft inner joint from the intermediate shaft.
NOTE: *Front Driveshaft Removal and Installation* ([Click HERE](#))
 11. Drain the coolant.
NOTE: *Coolant Replacement* ([Click HERE](#)).
 12. Remove the transmission ground cable, the front active mount, EPS connector, and the rear active mount connector.
NOTE: *Front Stabilizer Bar Removal and Installation* ([Click HERE](#)).
 13. Remove the torque convertor bolts.
 14. Remove the upper nuts to the sway bar links.
NOTE: See *Step 4, Front Damper/Spring Removal and Installation* ([Click HERE](#)).
 15. Lower the vehicle.
 16. Disconnect the radiator hoses on the engine side.
NOTE: See *Step 8, Water Passage Removal and Installation* ([Click HERE](#)).
 17. Disconnect the ATF warmer lower hose on the engine side.
NOTE: See *Step 9, ATF Warmer and Removal Installation* ([Click HERE](#)).
 18. Disconnect the passenger condenser fan.
NOTE: See *Step 2, Radiator and A/C Condenser Fan, Motor, and Shroud Removal and Installation* ([Click HERE](#)).
 19. Remove the accessory drive belt, auto tensioner, and alternator.

NOTE: *Alternator Removal and Installation* ([Click HERE](#)).

20. Unbolt the A/C compressor and move forward to sit on the support.
21. Disconnect the heater core hoses on the engine side.
22. Unbolt the side engine mount bracket and fuel line at the throttle body.

NOTE:

- Unbolt the 3 bolts from the upper transmission mount bracket.
- *Engine Removal and Installation* ([Click HERE](#)).

23. Raise the vehicle to waist height.

24. **INSPECTION B Only:** Re-install the ball joints, castle nuts, and cotter pins.

NOTE:

- See *Step 5, Front Knuckle Ball Joint Removal and Installation* ([Click HERE](#)).
- See *Step 2, Steering Tie-Rod End Ball Joint Boot Replacement* ([Click HERE](#)).

25. Remove the pinch bolt for the knuckle and strut.

NOTE: See *Step 10.2, Front Damper/Spring Removal and Installation* ([Click HERE](#)).

26. Unbolt the brake caliper and hang on the suspension spring with S hook.

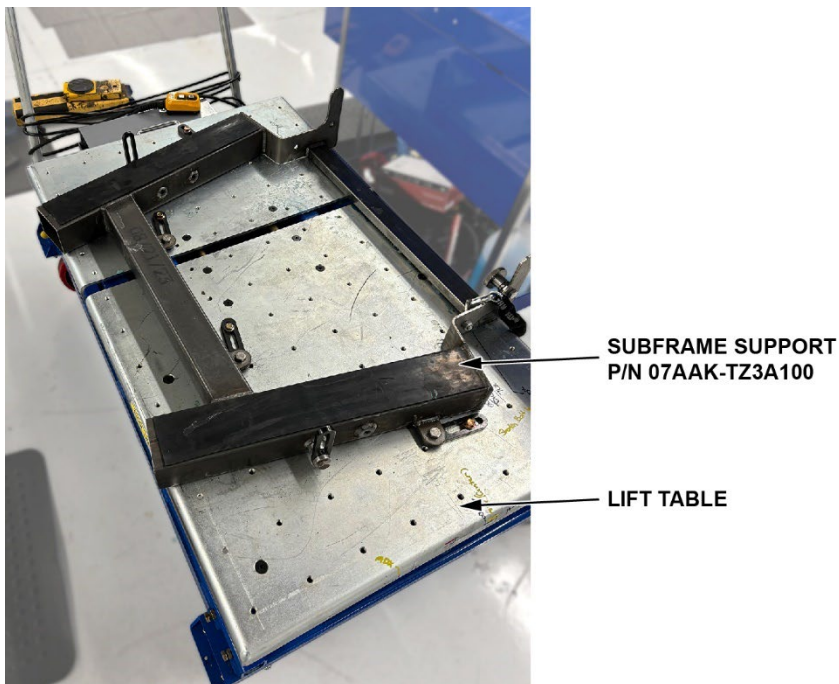
NOTE: See *Step 3, Front Brake Caliper Removal and Installation* ([Click HERE](#)).

27. Remove the wheel speed sensor from the knuckle.

NOTE: See *Step 3.3, Wheel Speed Sensor Removal and Installation* ([Click HERE](#)).

28. Position the lift table (P/N K1700) under the subframe with the subframe attachment.

NOTE: Use the integrated strap to aid to secure the subframe and posts.



29. Lift the table until contact with the subframe.



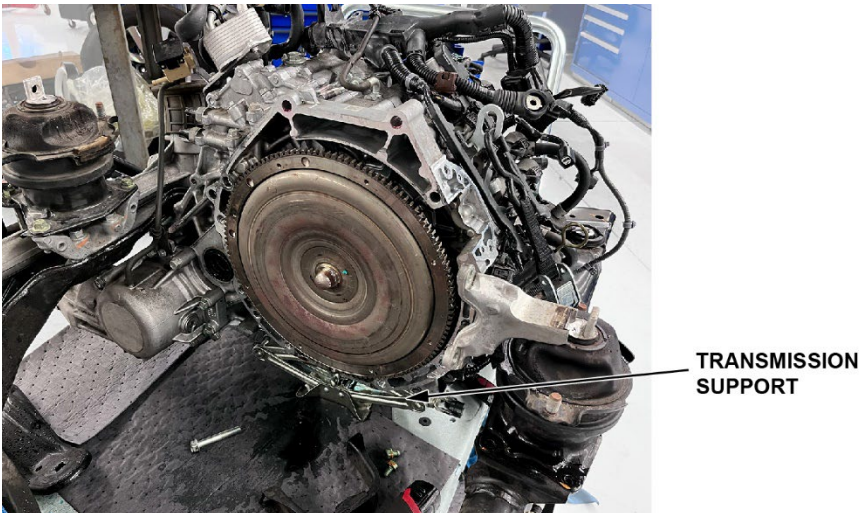
30. Unbolt the side bolts on the subframe, then unbolt the remainder.

NOTE: *Subframe Removal and Installation* ([Click HERE](#)).

31. Lower the lift table with the subframe, engine, knuckles, and transmission assemblies as one.

NOTE:

- Use micro-adjustments to clear the powertrain from the chassis.
- Place a commercially available tool to support the transmission and provide adjustment for future installation.



32. Remove the passenger axle nut and passenger driveshaft.

NOTE: See *Step 3, Front Driveshaft Removal and Installation* ([Click HERE](#))

33. Remove the EPS heat shield, bank 1 oxygen sensors, and bank 1 catalytic convertor.

NOTE: See *Steps 7 through 9, Warm Up TWC Removal and Installation* ([Click HERE](#)).

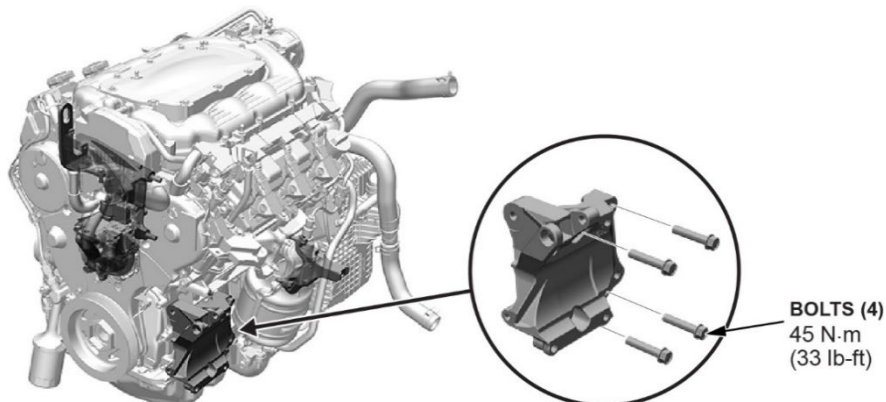
34. Loosen the harness bracket and then remove the intermediate shaft.

NOTE: See *Step 3, Intermediate Shaft Removal and Installation* ([Click HERE](#)).

35. Remove the bank 2 catalyst and EGR pipe.

NOTE: See *Step 7, Warm Up TWC Removal and Installation* ([Click HERE](#)).

36. Remove the A/C compressor bracket.



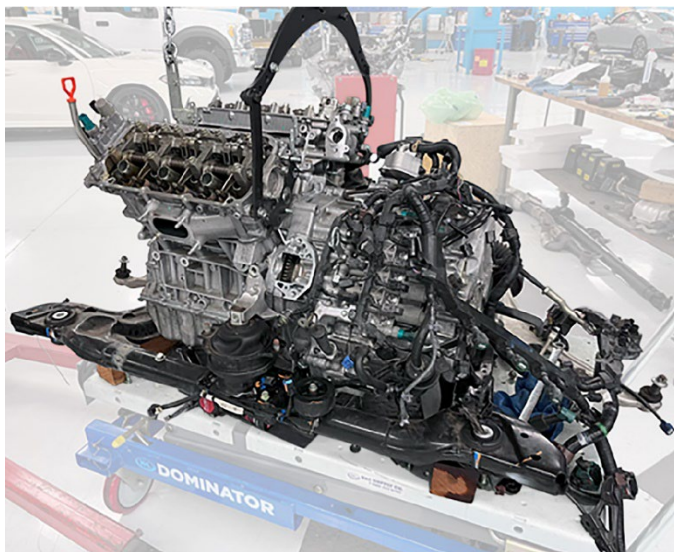
37. Disconnect the starter harness, then disconnect the transmission sub-harness to engine harness.

NOTE: See *Step 3, Starter Removal, Installation, and Performance Test* ([Click HERE](#)).

38. Remove the rear engine mount upper bolt and then loosen the rear engine mount bracket bolts.

NOTE: See *Step 1, Rear Engine Mount Removal and Installation* ([Click HERE](#)).

39. Install the engine hanger mount attachment.



40. Attach the engine hoist.

41. Remove the front engine stopper and mount.

NOTE: *Front Engine Mount Removal and Installation* ([Click HERE](#)).

42. Separate the engine from the transmission.

43. Mount the engine to the stand.

44. Remove the flex plate.

45. Set **cylinder 1** to TDC.

46. Reinstall the piston stoppers to **cylinders 2, 3, 4, and 6**.

47. Remove the timing belt covers on the cylinder head and block, then remove the timing belt.

NOTE: See Steps 9 through 14, *Timing Belt Removal and Installation* ([Click HERE](#)).

48. Rotate the engine **upside down** on the engine stand.

NOTE: Make sure the appropriate engine fluid spill protection measures are taken.

49. Remove the oil pan.

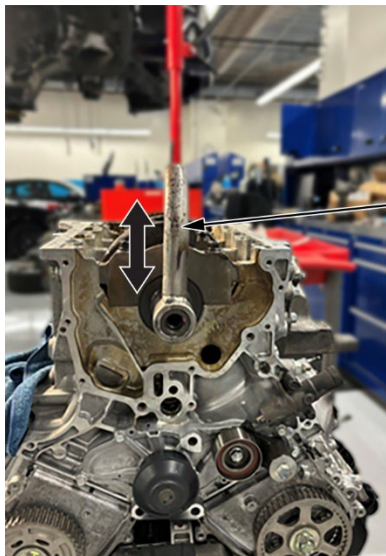
NOTE:

- Step can be skipped if already done.
- *Engine Oil Pan Removal and Installation* ([Click HERE](#)).

50. Remove the oil filter base, oil pump, and rear main seal cover.

NOTE: *Crankshaft and CKP Pulse Plate Removal, Installation, and Inspection* ([Click HERE](#)).

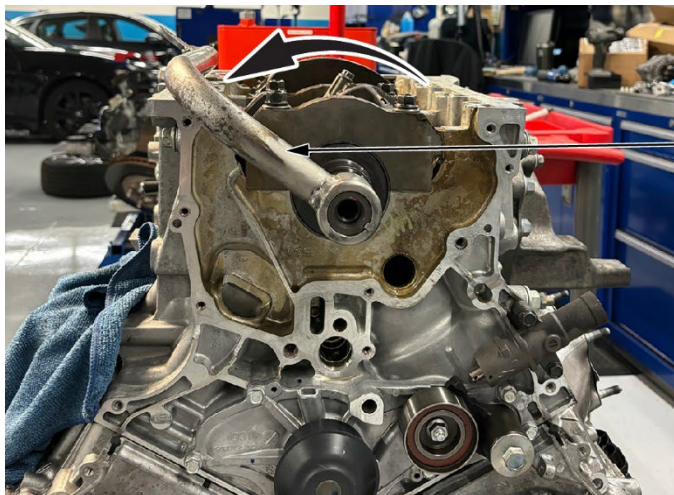
51. Install the crank holder tool into the crank with keyway at the 6 o'clock position.



HANDLE
Verticle.

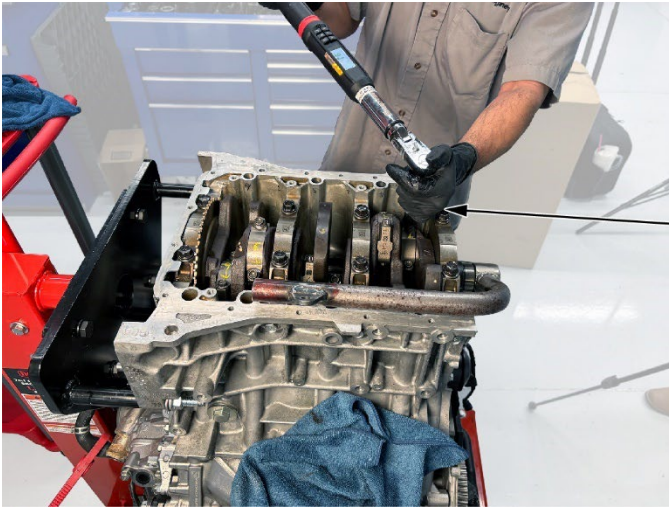
52. Use the crank holder tool to rotate the crankshaft counterclockwise 45° from TDC.

NOTE: Rest the handle on the block.



HANDLE
Push the handle
this direction.

53. Remove the connecting rod caps for **cylinders 1, 3, and 4.**



Remove the connecting rod caps for cylinders 1, 3 and 4.

54. Use the crank holder tool rotate the crankshaft clockwise 45° from TDC.

NOTE: Rest the handle on the block.



HANDLE
Push the handle this direction.

55. Remove the connecting rod caps for **cylinders 2, 5, and 6.**

56. Use the crank holder tool to rotate crank back to TDC position.

57. Remove the main caps.

NOTE: See Steps 10 and 11, *Crankshaft Main Bearing Replacement* ([Click HERE](#))

58. Remove the crankshaft from the engine block.

59. Remove the thrust washers and main bearings.

60. Swap over the crank pulser plate from the original crank to the new crank.

NOTE:

- Make sure there are no bent or damaged teeth.
- *Crankshaft and CKP Pulse Plate Removal, Installation, and Inspection* ([Click Here](#))

61. Make sure all pistons are pushed down into the cylinder.

NOTE: Make sure the connecting rods are properly aligned with the journals.

62. Set the new upper main bearings and connecting rod bearings as instructed by the Bearing Inspection Inquiry Team.

63. Install the crank install guide onto the new engine.



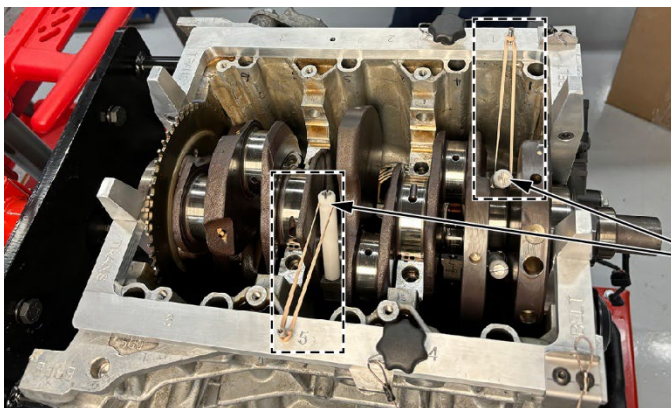
CRANK INSTALL GUIDE
P/N 07AAG-5J6A100

64. Insert the connecting rod guides (CON ROD TIE DOWN SET P/N 07AAB-5G0A300) into the connecting rods at **cylinder 1 and 5**.

NOTE: Secure the guides to the outer edge of the block (on the crank install guide) with commercially available rubber bands.



CON ROD TIE DOWN
P/N 07AAB-5G0A300



TIE DOWNS
Make sure the tie
downs are attached
to cylinders 1 and 5.

65. Install the new crankshaft while set to TDC.

NOTE:

[▶ PLAY VIDEO](#)

- Click here to view a video:
- Make sure the new crankshaft seats within the cradle of the guides.

66. Remove the connecting rod guides from **cylinders 1 and 5** and remove the crankshaft install guide.

67. Insert the new thrust washers.

68. Set the new bearings on the main caps.

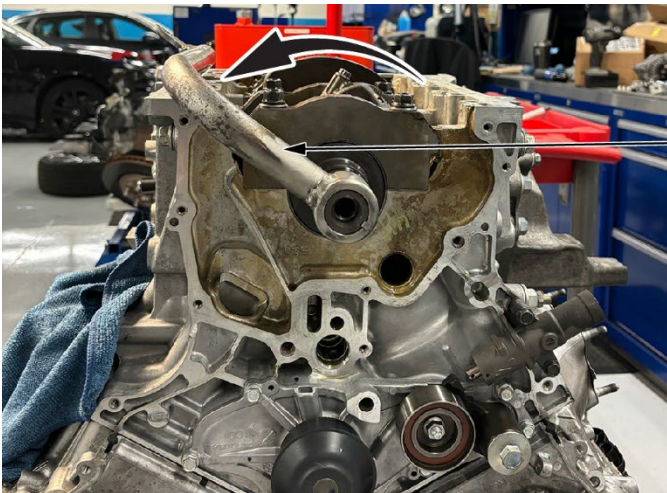


BEARING
Lubricate the bearing
prior to insertion.

69. Install the main caps.

NOTE: See Step 2, *Crankshaft Main Bearing Replacement* ([Click HERE](#))

70. Use the crank holder tool and rotate the crank counterclockwise 45° from TDC.



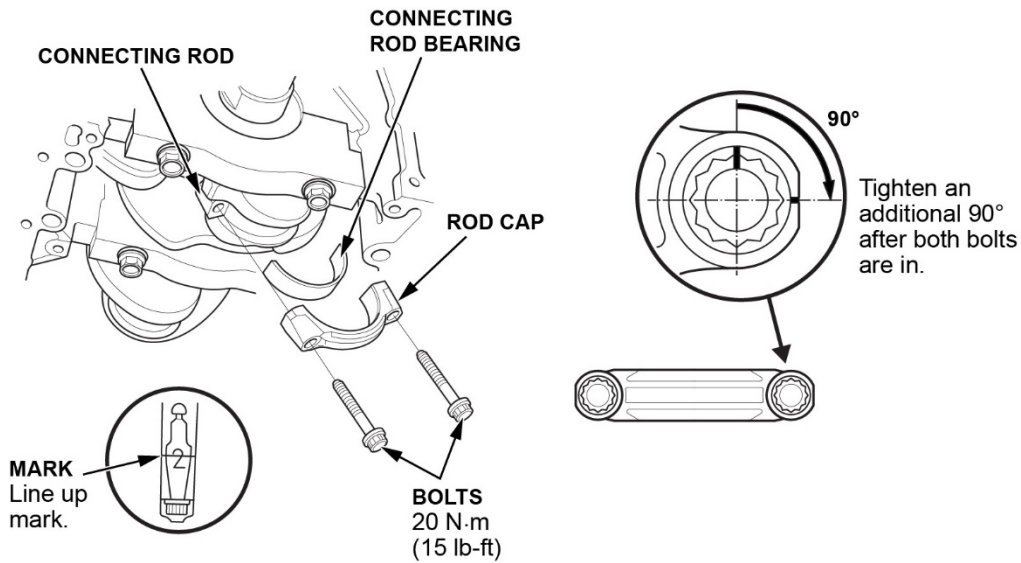
HANDLE
Push the handle
this direction.

71. Pull the connecting rods up (with the M8 rod holder) to the crank journal for **cylinders 1, 3, and 4**.

NOTE: Click here to view a video:

▶ PLAY VIDEO

72. Install the bearing caps (with bearings) and torque to specifications.



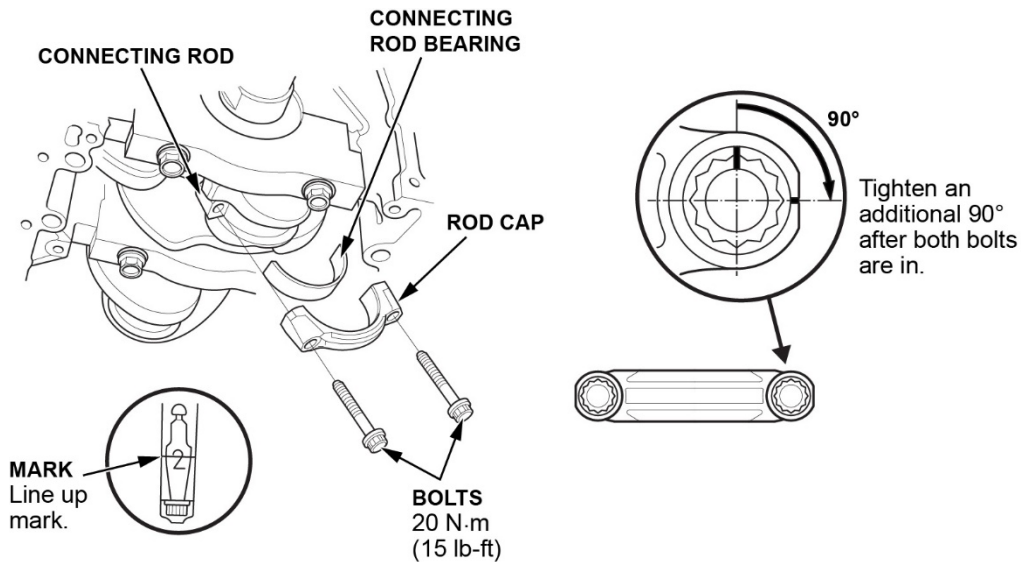
73. Use the crank holder tool and rotate the crank clockwise 45°.



74. Pull the connecting rods up (with the M8 rod holder) to the crank journal for **cylinders 2, 5, and 6**.

75. Install the bearing caps (with bearings) and torque to specifications.

NOTE: See *Step 6, Piston, Ring, Pin, and Connecting Rod Removal and Installation* ([Click HERE](#))



76. Set the crank position back to TDC.



77. Remove the crank handle.

78. Install the oil pump and oil filter base.

NOTE:

- New or original will depend on the Bearing Inspection Inquiry Team's judgement.
- See Step 9, *Piston, Ring, Pin, and Connecting Rod Removal and Installation* ([Click HERE](#))

79. Install the strainer and baffle plate.

NOTE:

- New or original will depend on the Bearing Inspection Inquiry Team's judgement.
- See Step 8, *Piston, Ring, Pin, and Connecting Rod Removal and Installation* ([Click HERE](#))

80. Install the rear main seal cover.

81. Remove the piston stoppers.

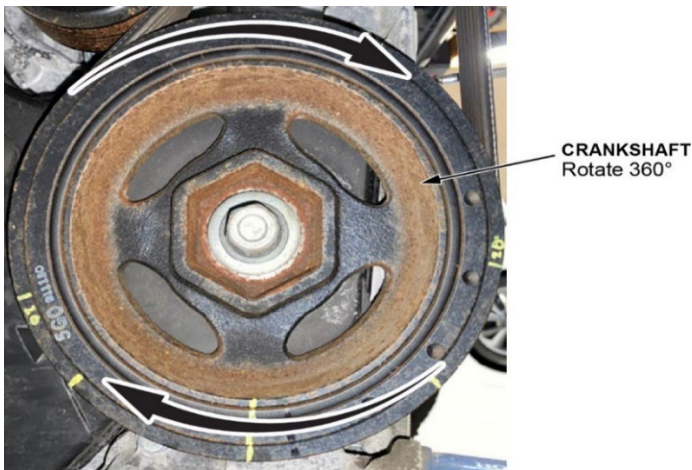
82. Install the timing belt and all covers.

NOTE: See Step 1, *Timing Belt Auto-Tensioner Removal and Installation* ([Click HERE](#))

83. Clean and install the oil pan.

NOTE: *Engine Oil Pan Removal and Installation* ([Click HERE](#)).

84. Rotate the crank 360° to make sure the bearings allow free movement.

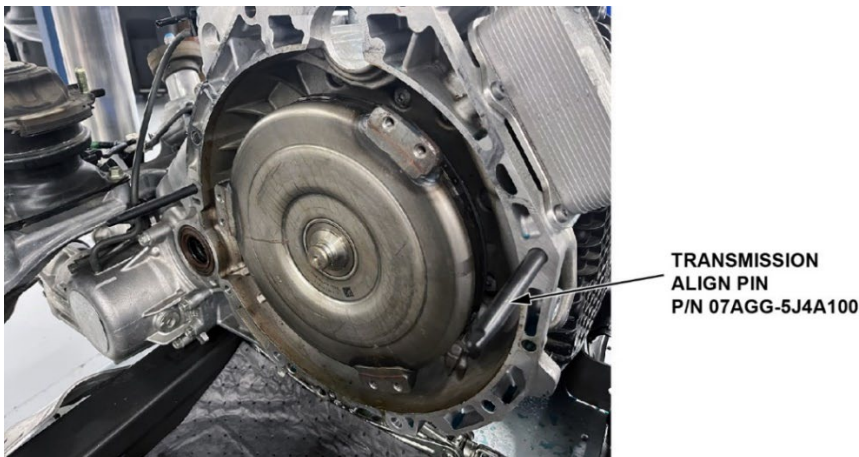


85. Install the drive plate.

NOTE: Drive Plate Removal and Installation ([Click Here](#))

86. Install the engine hanger (VSB02C000019 with VSB02C000044) to the new long block.

87. Connect the engine to the transmission with the alignment pins, (Mission Align Pin P/N 07AAG-5J4A100).



88. Install the front engine mount bracket and rear engine mount bracket.

NOTE: *Engine Removal and Installation* ([Click HERE](#)).

89. Install the following:

NOTE: *Engine Removal and Installation* ([Click HERE](#)).

1. Front Catalyst with EGR Pipe
 2. Intermediate Shaft (Remove the 9AT Protecting Cap prior)
 3. Drive Shaft
 4. Rear Catalyst
 5. Engine Mount Heat Shield
 6. Rear Catalyst Brace
90. Connect CKP sensor and install the cover.
91. Go to the INSTALL THE SUBFRAME section to continue with the subframe installation.
- NOTE: Link to INSTALL THE SUBFRAME, ([Click HERE](#)).

INSTALL THE SUBFRAME

1. Install the subframe guide (P/N 07AAG-TZ3A100), for the subframe alignment, at the diagonal corner.



SUBFRAME
GUIDE PIN
P/N 07AAG-TZ3A100

2. Make sure the knuckles are aligned with the strut housing while lifting the lift table to the chassis while aligning the alignment pins.

NOTE: Make sure the knuckles are aligned with the strut assemblies.



ALIGN

3. Install the brake calipers.

NOTE: *Front Damper/Spring Removal and Installation* ([Click HERE](#)).

4. Install the knuckle pinch bolts, sway bar links, and wheel speed sensor.

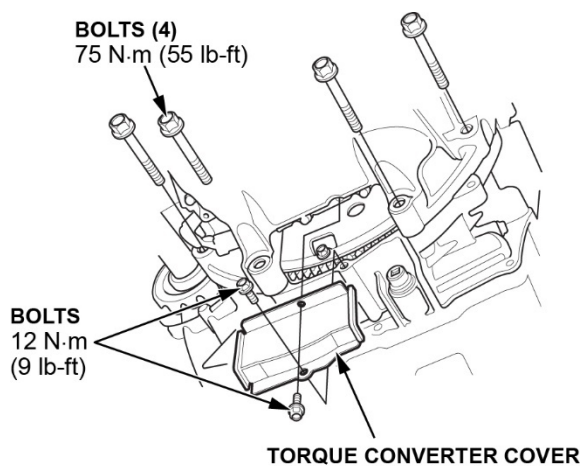
NOTE: *Font Knuckle/Hub/Wheel Bearing Replacement* ([Click HERE](#)).

5. Install and torque the subframe bolts.

NOTE: *Subframe Removal and Installation* ([Click HERE](#))

6. Remove the lift table from underneath the vehicle, it is no longer needed.

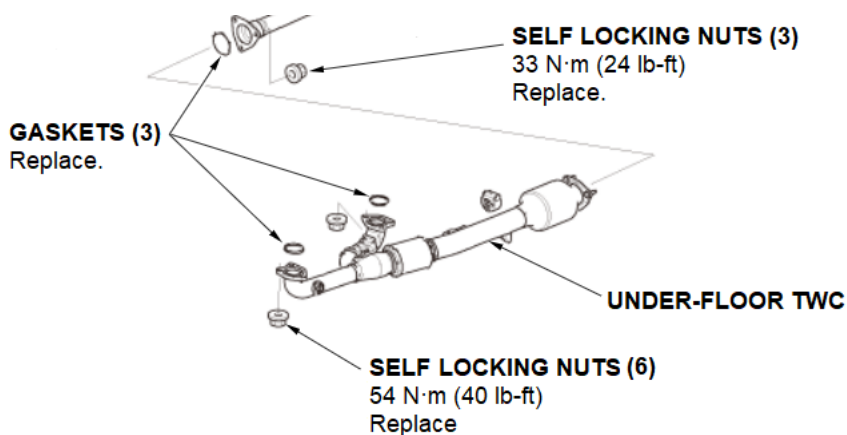
7. Install the 4 lower transmission bolts, torque converter bolts, and torque converter cover.



8. Secure the rear active mount, front active mount, and EPS connectors.

NOTE: *Front Stabilizer Bar Removal and Installation* ([Click HERE](#)).

9. Install the underfloor TWC (A-pipe).

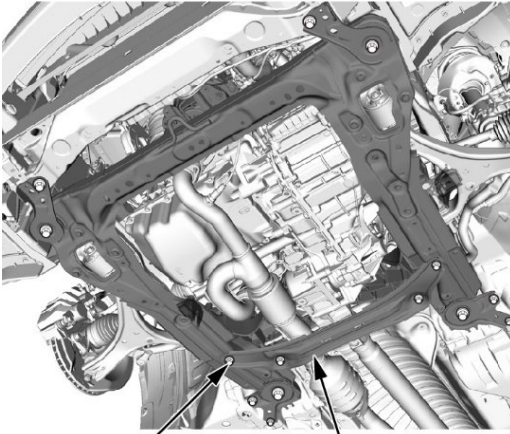


10. Plug in the oxygen sensor at the A-pipe.

11. **AWD Only:** Re-attach the propeller shaft to transfer case with new hardware.

NOTE: *Propeller Shaft Removal and Installation* ([Click HERE](#))

12. Install the subframe stiffener.



BOLTS (4)
54 N·m (40 lb-ft)
Replace.

**FRONT SUBFRAME
STIFFENER PLATE**

13. Secure the transmission ground and fender liners.

NOTE: See Step 10, *Front Stabilizer Bar Removal and Installation* ([Click HERE](#)).

14. Lower the vehicle.

15. Connect the high-pressure fuel line.

NOTE: See Step 41, *Engine Removal and Installation* ([Click HERE](#)).

16. Install the right-side engine mount bracket.

NOTE: See Step 2, *Front Engine Mount Removal and Installation* ([Click HERE](#)).

17. Plug in the PCM, positive battery cables, and engine harness connections.

NOTE: See Step 22, *Engine Removal and Installation* ([Click HERE](#)).

18. Connect the brake booster and EVAP vacuum lines.

NOTE: See Step 7, *Brake Booster Removal and Installation* ([Click HERE](#)).

19. Install the upper transmission mount bracket and connect the heater hoses.

NOTE: See Step 3, *Upper Transmission Mount Removal and Installation* ([Click HERE](#)).

20. Install the A/C compressor, drive belt auto-tensioner, alternator, and drive belt.

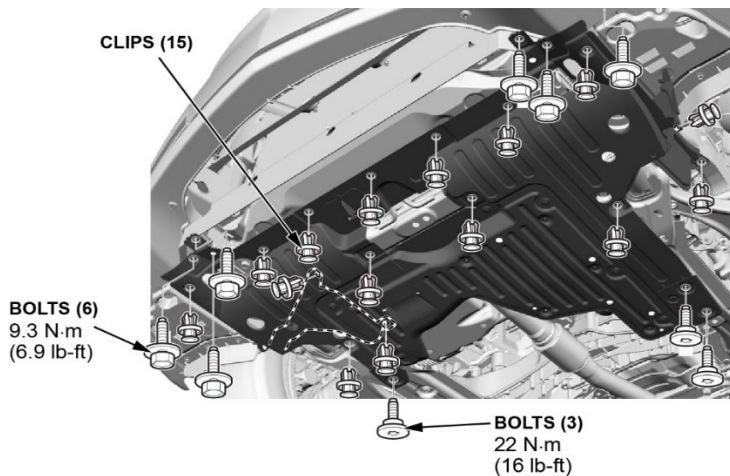
NOTE:

- *Alternator Removal and Installation* ([Click HERE](#)).
- See Steps 2 through 6, *A/C Compressor Removal and Installation* ([Click HERE](#)).

21. Install the radiator fan and plug in the fan connector.

NOTE: See Steps 2 through 4, *Radiator and A/C Condenser Fan, Motor, and Shroud Removal and Installation* ([Click HERE](#)).

22. Install the engine undercover.



23. Connect the transmission warmer hose.

NOTE: See Step 1.3, *ATF Warmer Removal and Installation* ([Click HERE](#)).

24. Connect the radiator hoses.

25. Install the battery.

NOTE: See Step 2, *12 Volt Battery Removal and Installation* ([Click HERE](#)).

26. Install the air intake and filter box.

NOTE: *Air Cleaner Removal and Installation* ([Click HERE](#)).

27. **Repair #3 and #4 ONLY:** Install a new oil filter.

28. Add motor oil, **5.0 L (5.3 qt.)**

NOTE: *Engine Oil Replacement* ([Click HERE](#)).

29. Add coolant, **9.6 L (2.54 gal.)**.

NOTE: *Coolant Replacement* ([Click HERE](#)).

30. Secure the steering column pinch bolt.

NOTE: See Step 2, *Steering Column Removal and Installation* ([Click HERE](#)).

31. Torque the spindle nut **328 N·m (242 lb-ft)** and install the front wheels, **108 N·m (80 lb-ft)**.

32. Purge the cooling system for air.

NOTE: *Coolant Replacement* ([Click HERE](#)).

33. Do a PCM reset.

NOTE: *PCM Reset* ([Click HERE](#)).

34. Do a CKP pattern learn.

NOTE: *CKP Pattern Clear/CKP Pattern Learn Procedure* ([Click HERE](#)).

35. Do a wheel alignment.

NOTE: *Wheel Alignment* ([Click HERE](#)).

36. Do the VSA Sensor Neutral Position Memorize.

NOTE: *VSA Sensor Neutral Position Memorization* ([Click HERE](#)).

37. Do the Steering Angle Sensor Neutral Position Clear.

NOTE: *Steering Angle Sensor Neutral Position Clear* ([Click HERE](#)).