ATTENTION:
GENERAL MANAGER ❑
PARTS MANAGER ❑
CLAIMS PERSONNEL ❑
SERVICE MANAGER ❑

IMPORTANT - All Service Personnel Should Read and Initial in the boxes provided, right.

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SUBARU

QUALITY DRIVEN® SERVICE

SERVICE BULLETIN

APPLICABILITY: 2020-24MY Legacy and Outback 2.5L NA and 2.4L DIT
2018-24MY Crosstrek
2017-24MY Impreza
2019-24MY Forester 2.5 NA
2014-18MY Forester 2.0L DIT
2015-24MY WRX 2.0 DIT
2019-24MY Ascent

NUMBER: 02-193-24R
DATE: 02/16/25
REVISED: 04/14/25

SUBJECT: Walnut Blast Cleaning Procedure for Carbon Deposit Removal to Address Engine Misfire DTCs, Black Smoke from the Exhaust, Lack of Power, Knocking (Ping) and / or Rough Idle Concerns

INTRODUCTION:

This bulletin provides updated parts information and a service procedure to follow for removing accumulated carbon deposits from fuel injectors and internal engine components (e.g. intake valves and / or manifold, and combustion chambers). Fuel quality and how the vehicle is operated are both major contributing factors which will have a direct effect on carbon deposit accumulation. This cleaning procedure for carbon deposit removal is recommended to address engine misfire DTCs, black smoke from the exhaust, lack of power, knocking (ping) and / or rough idle concerns. The procedure outlines the use of an Autool HTS558 Walnut Blasting Machine that has been approved by Subaru of America.

IMPORTANT: This procedure was developed as a suitable alternative to the procedures outlined in 09-74-21R due to available retailer equipment. **ONLY** one procedure can be reimbursed by Warranty.

REQUIRED TOOLS:

WALNUT BLASTING MACHINE

AUTOOL HTS558

CAUTION: VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD RESULT IN SERIOUS INJURY TO THOSE PERSONS OR TO OTHERS.
Subaru Service Bulletins are intended for use by professional technicians ONLY. They are written to inform those technicians of conditions that may occur in some vehicles, or to provide information that could assist in the proper servicing of the vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do the job correctly and safely. If a condition is described, DO NOT assume that this Service Bulletin applies to your vehicle, or that your vehicle will have that condition.

Subaru of America, Inc. is ISO 14001 Compliant
ISO 14001 is the international standard for excellence in Environmental Management Systems. Please recycle or dispose of automotive products in a manner that is friendly to our environment and in accordance with all local, state and federal laws and regulations.

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WALNUT SHELL MEDIA

Grit Size: #24orSAE 18/40

Amount: Approximately 1-2lbs

SHOP TOWELS

Size: 14in x 12in

Quantity: As Needed

MOVING BLANKET

Size: 40in x 72in

Quantity: 2

MASKING TAPE

Recommended Size：1.88in(48mm)

SEAL PICK TOOLS

Tip shape: 90°, 45°

Length: Approx 6.3in(160mm) or more

CAP

SOA Part Number: 16519AA100

NOTE: Can be ordered through Subaru Parts

Continued...

SUBARU THROTTLE PLATE CLEANER

SOA Part Number: SOA868V9170

NOTE: Can be ordered through Subaru Parts

P.E.A. (POLYETHERAMINE) CARBON CLEANER

SOA Part Number SOA868V9166

NOTE: Fuel tank additive

SERVICE PROCEDURE / INFORMATION:

STEP 1: Refer to the applicable Service Manual and review: General Description > Repair Contents > Action required before & after Battery Disconnect. Additionally, record any stored seat position(s) before proceeding. Relearn any seat position memory after work is complete. If the power rear gate (PRG) height has been customized, that position must also be noted and relearned.

STEP 2: Remove the battery as per the applicable Service Manual: Engine > STARTING/ CHARGING SYSTEMS > Battery > Removal

STEP 3: Remove the intake manifold as per the applicable Service Manual: Engine > FUEL INJECTION (FUEL SYSTEMS) > Intake Manifold Assembly > Removal

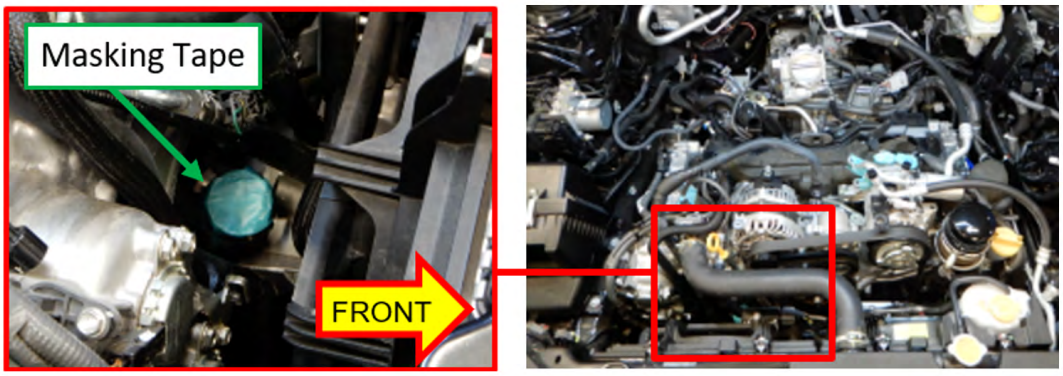
IMPORTANT CAUTIONS:

- The Service Manual uses a **black star (★)** in the component breakdown illustrations to indicate one-time use parts.
- It is vital to confirm no foreign matter enters any fuel lines, intake ducts, and any other peripheral parts.
- 2.0L & 2.5L DINA equipped models DO NOT require fuel delivery tube disconnection

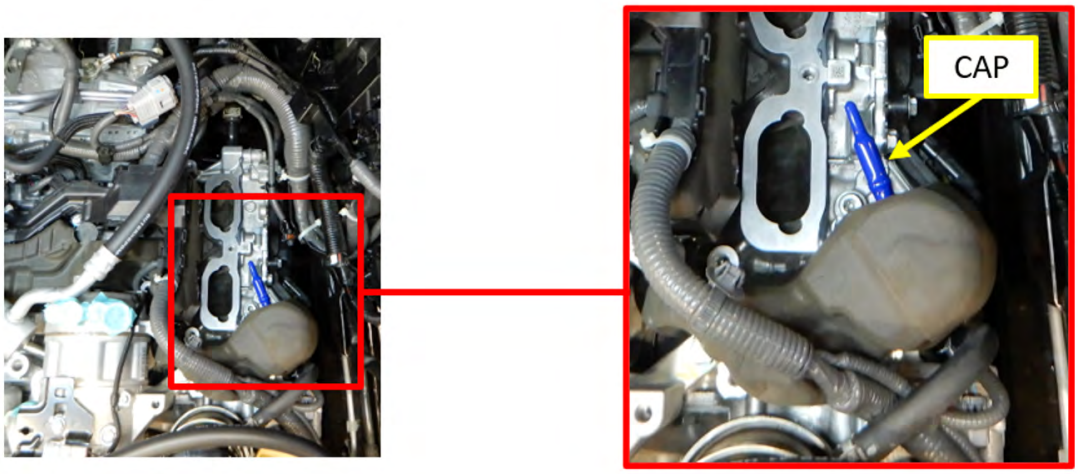
Continued...

STEP 4: Cover/seal the required areas indicated in the model specific images below. Proceed to Step 5 for 2.0L & 2.5L DINA equipped models.

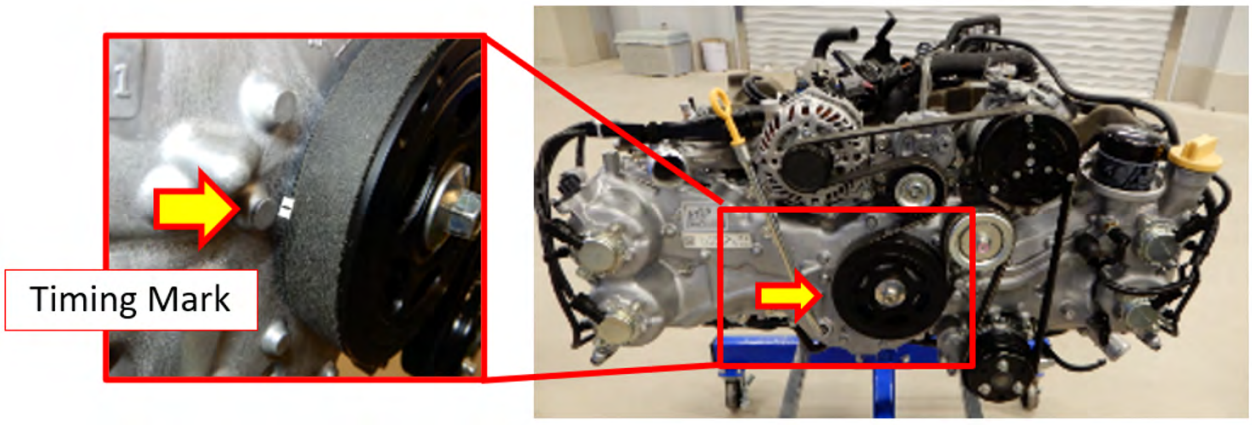
2.0L DIT & 2.4L DIT: Cover the turbo charger duct opening with making tape.



2.4L DIT: Install the cap (p.n. 16519AA100) on to the high pressure fuel pump connection.



STEP 5: Rotate the crank pully clockwise until the timing mark matches the position indicated below.



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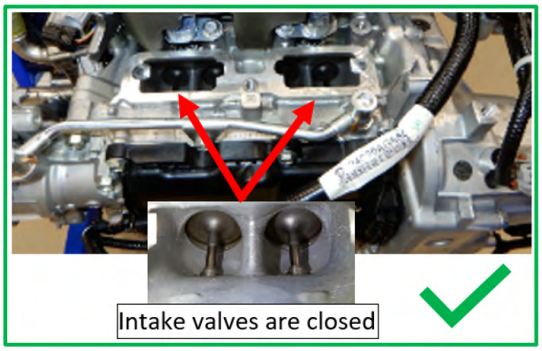
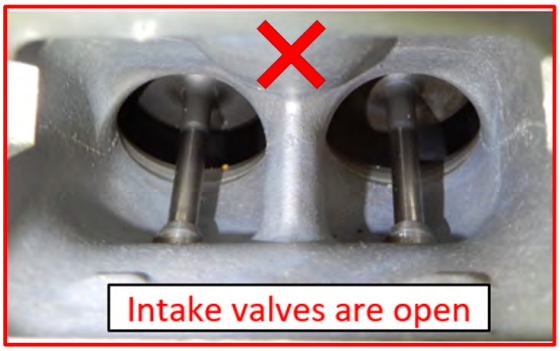
STEP 6: Visually inspect the intake valves of cylinders #1 and #3. Confirm the valves are in the closed position.



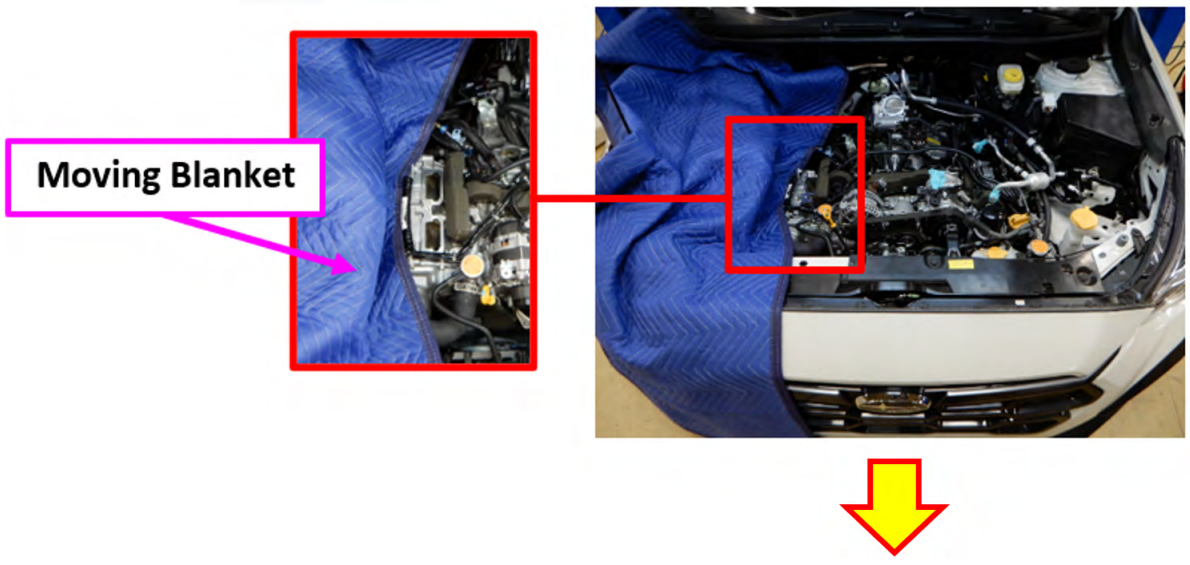


NOTE: If the valves are open, rotate the crank pully 360 degrees in the clockwise direction and monitor the valve position. DO NOT continue until the valves are confirmed to be closed.

STEP 7: Seal the intake ports of cylinders #2 and #4 with masking tape. This will prevent any foreign material from entering.

CAUTION: Contamination or adhesion of foreign material such as walnut shell media inside the engine may cause starting failure and/or engine stalling.

STEP 8: Cover the area around the intake port with two moving blankets. This will help prevent any walnut shell material from contamination.



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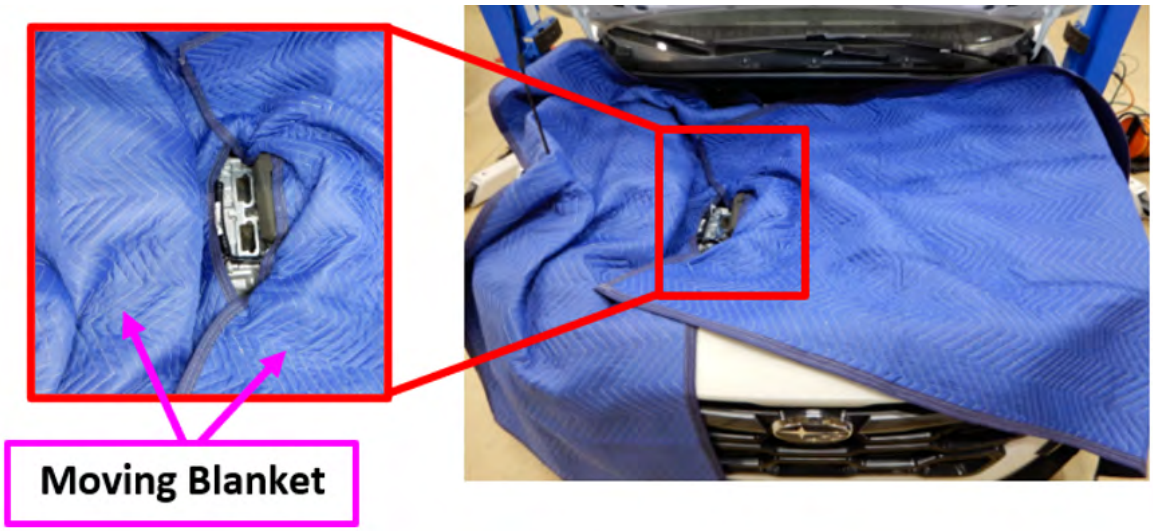
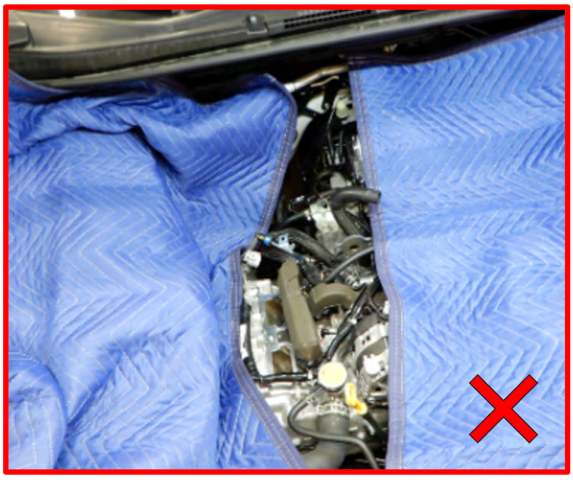
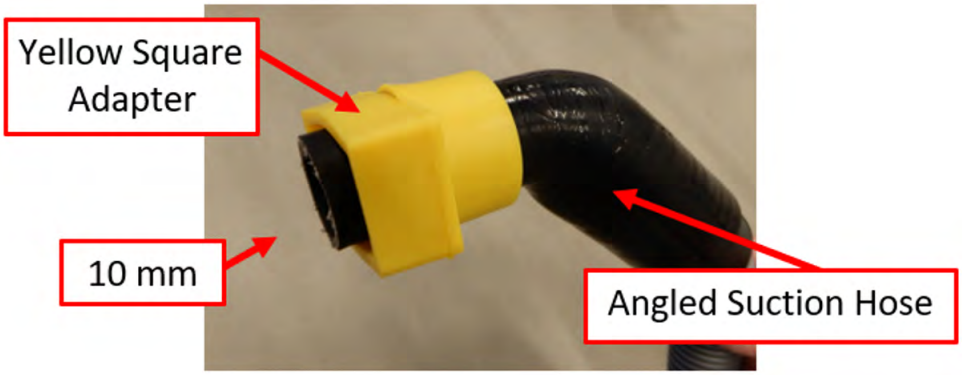


CAUTION: Confirm harness connections, fuels lines, and ALL other components are covered prior to cleaning.



STEP 9: Prepare the walnut blasting machine **(AUTOOL HTS558)** with the necessary air supply. Always use NEW abrasive material when performing cleaning.

STEP 10: Prepare the angled suction hose by inserting the square yellow adapter onto the end of the hose. Allow approximately 10mm of the hose to protrude from the adapter. This will provide added stability when cleaning.



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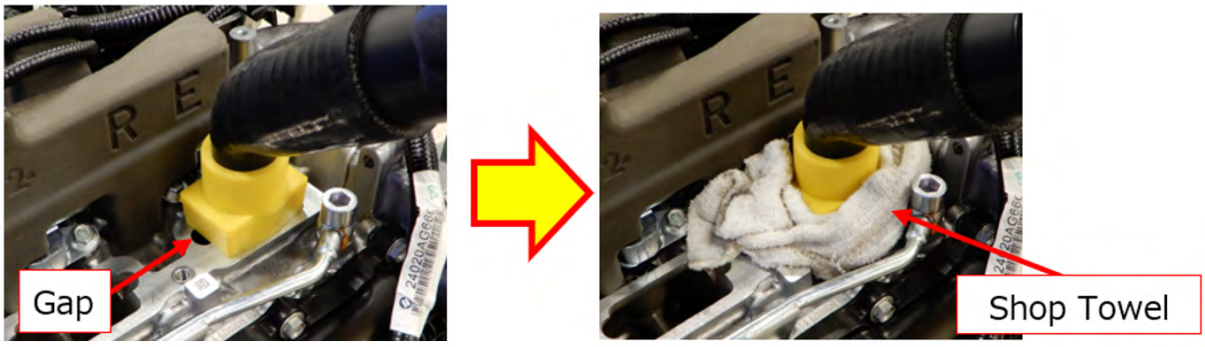
STEP 11: Set the hose into the cylinder #1 intake port. Cover any gaps with a shop towel.



STEP 12: Clean the intake valve and intake port of cylinders #1.

A. Confirm the walnut blaster is turned on.

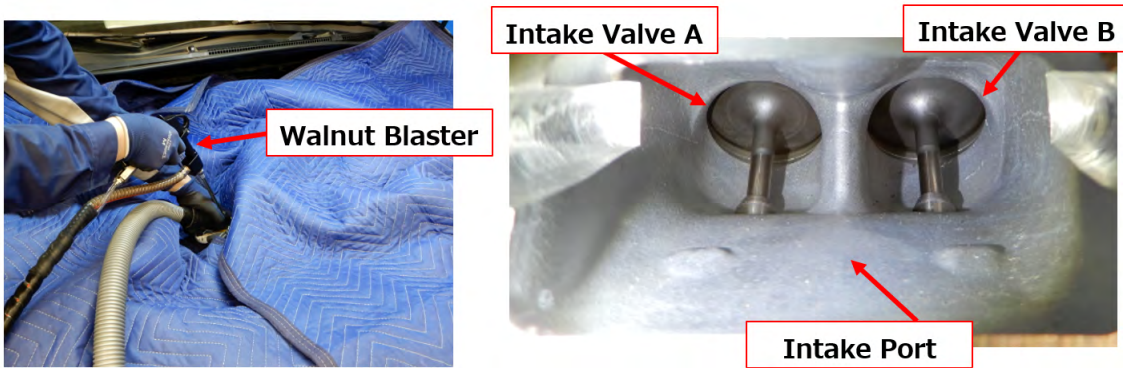
B. Insert the nozzle of the walnut blaster into the suction hose.

C. Pull the trigger and allow the abrasive material to pass through the nozzle.

D. Aim the nozzle in the direction of Valve A.

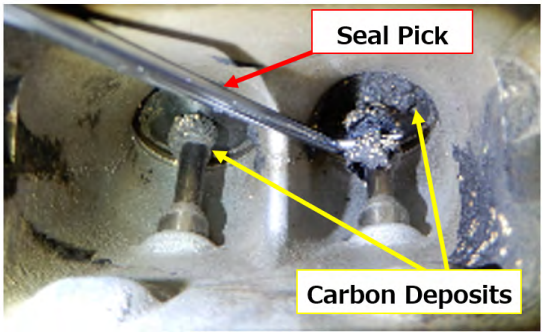
E. Aim the nozzle in the direction of Valve B.

F. Move the nozzle up, down, left, and right to ensure the entire area is cleaned.



CAUTION: DO NOT remove the nozzle from suction hose while blasting the abrasive material. This can cause contamination to the surrounding area.

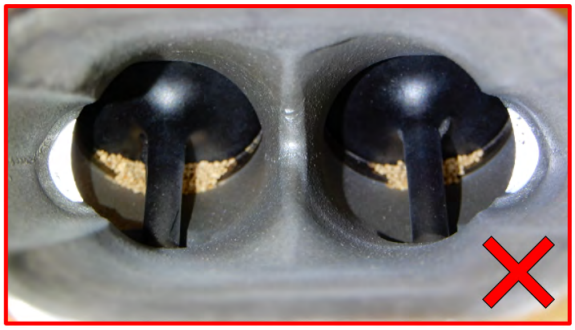
TIP: A seal pick can be used for the removal of some of the more difficult to remove carbon deposits. Be careful not to scratch the valves or cylinder head.



Continued...

STEP 13: Repeat the cleaning process outlined in Step 12 for cylinder #3.

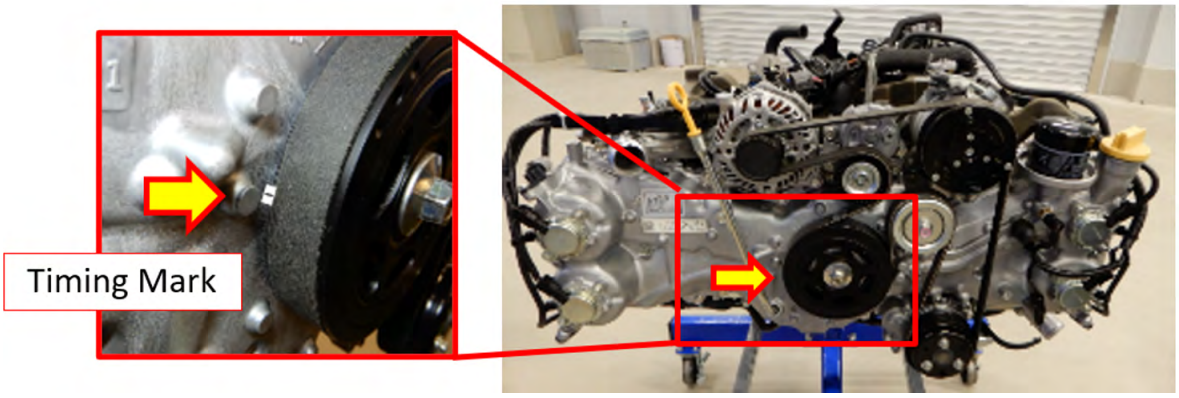
STEP 14: After cleaning is completed, remove any remaining abrasive material using the suction hose. Using a flashlight, inspect the ports and confirm there is no remaining material.



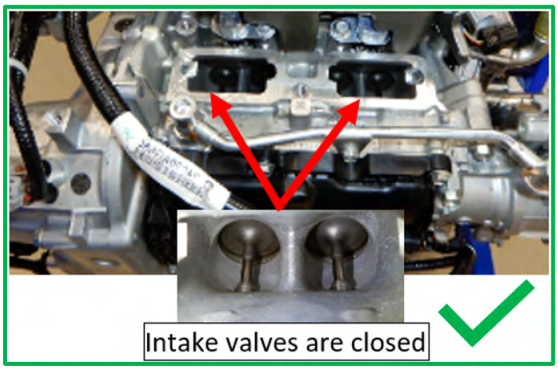
STEP 15: Remove the moving blankets and masking tape covering the intake ports on cylinders #2 and #4.

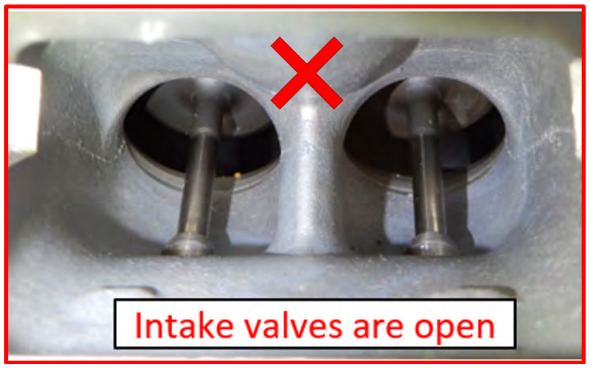
CAUTION: Be mindful not to spread any of the abrasive material collected by the blankets into the engine area.

STEP 16: Rotate the crank pully clockwise 360 degrees until the timing mark matches the position indicated below.



STEP 17: Visually inspect the intake valves of cylinders #2 and #4. Confirm the valves are in the closed position.





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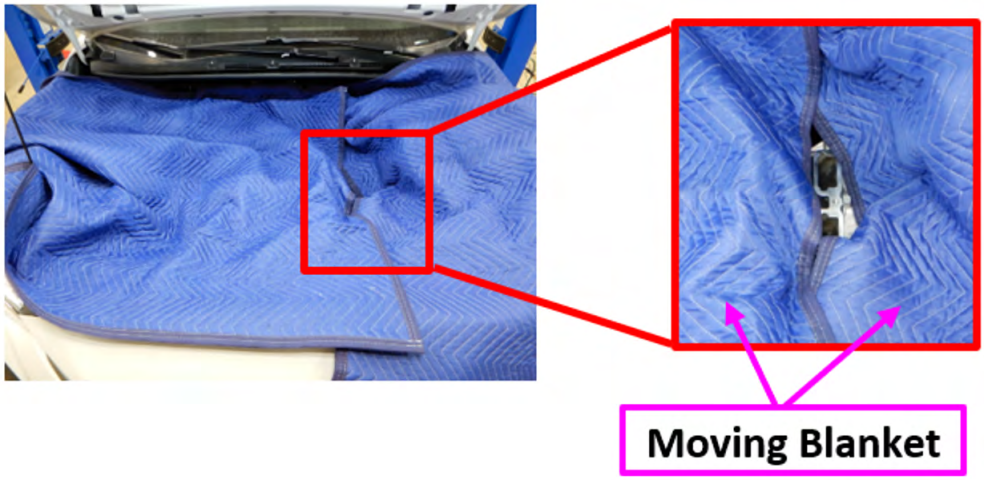
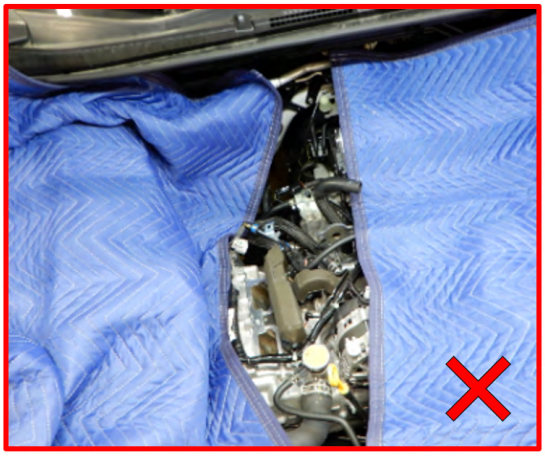
STEP 18: Seal the intake ports of cylinders #1 and #3 with masking tape. This will prevent any foreign material from entering.

CAUTION: Contamination or adhesion of foreign material such as walnut shell media inside the engine may cause starting failure and/or engine stalling.

STEP 19: Cover the area around the intake port with two moving blankets. This will help prevent any walnut shell material from contamination.



CAUTION: Confirm harness connections, fuels lines, and ALL other components are covered prior to cleaning.



STEP 20: Repeat the procedures outlined in Steps 9 through 15 on cylinders #2 and #4.

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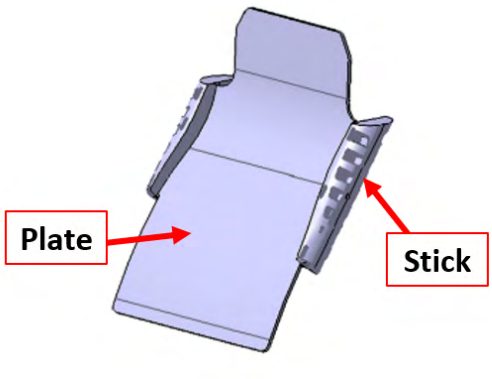
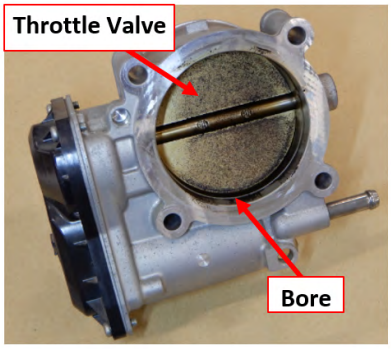
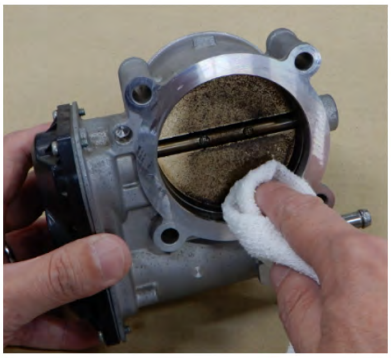
STEP 21: Clean the plate and stick portions of all the cylinder head plates using throttle plate cleaner. Dry the cylinder head plates with a clean shop towel. Confirm there is no cleaner remaining on the plates.



STEP 22: Clean the throttle body.

- **A.** Remove the throttle body from the intake manifold.
- **B.** Soak a shop towel in throttle plate cleaner.
- **C.** Wipe the throttle valve and bore inner surfaces from both the intake manifold and intake duct sides.
- **D.** Wipe the cleaned areas with a clean shop towel and confirm no throttle plate cleaner remains.





CAUTION: DO NOT open and close the throttle valve manually during cleaning. DO NOT deform or scratch the throttle valve/bore.

STEP 23: Reinstall all parts in the reverse order of disassembly.

STEP 24: Fill the fuel tank fuel. Add one bottle of P.E.A. carbon cleaner (SOA868V9166) the fuel tank.

STEP 25: Check for applicable ECM software. If available, perform the reprogramming procedure when required.

NOTES:

- The Service Manual uses a **black star (★)** in the component breakdown illustrations to indicate one-time use parts.
- Whenever reconnecting the ground cable terminal to the battery sensor, torque to 7.5Nm (5.5ft.-lbs. or 66inch-lbs.) while supporting the sensor with the other hand as outlined in the applicable Service Manual under: STARTING/CHARGING SYSTSEMS > Battery Sensor.

Continued...

WARRANTY / CLAIM INFORMATION:

For vehicles within the Powertrain Limited Warranty period, this repair may be submitted using the following claim information:

NOTE: This procedure was developed as a suitable alternative to the procedures outlined in 09-74-21R due to available retailer equipment. **ONLY** one procedure can be reimbursed by Warranty.

Labor Description	Labor Operation #	Repair Code	Labor Time / Aspiration
ROUGHNESS DIAGNOSIS & MEDIA CLEANING INTAKE PORTS	A449-286	BON-22	3.0h **NA**
			3.6h **Turbo**
CM VERSION UPDATE @ REPLACEMENT	C860-118		.3h

The claimable Warranty Part Number for 1 (one) bottle of the P.E.A. cleaner is SOA635328.

Add: Up to $2.00 can be claimed as Sublet for this repair for Walnut Shell Media

IMPORTANT: Always note the original Calibration Identification number (CID) / ROMID the vehicle came in with on the repair order before reprogramming and, make sure to list the NEW CID / ROMID for any newly installed programming (as confirmed from the actual control module AFTER installation). The NEW CID / ROMID MUST also be noted on the repair order as this information is required for entry in the Miscellaneous Detail field during claim submission. These numbers can be read using SSM5-R. NOTE: The pfc file listings provided in this bulletin are the latest available at the time of publishing. Updates are often released thereafter without revision to the original bulletin. For this reason, it is critical to always have the latest version of Select Monitor software installed on your system. You can confirm if a later version is available by entering the CID listed in this bulletin into SSM5-R. If a newer CID is shown as available in SSM5-R, reprogram using that file.

IMPORTANT REMINDERS:

- SOA strongly discourages the printing and/or local storage of service information as previously released information and electronic publications may be updated at any time.
- Always check for any open recalls or campaigns anytime a vehicle is in for servicing.
- Always refer to STIS for the latest service information before performing any repairs.