

SSV KIT - High Output 172HP Upgrade Kit X3

Part number (SKU) : 715004700

Product:	Side-by-side
Project no:	487802575
Instruction Sheet P/N:	487802575
Revision no:	
Revision date:	
Item covered:	High Output 172HP Upgrade Kit X3

The following symbols may be used in this document:

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: Indicates a hazard situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates an instruction which, if not followed, could severely damage vehicle components or other property.

WARNING

- For safety reasons, this kit should be installed by an authorized BRP dealer.
- This kit is designed for specific applicable models only (authorized BRP dealers will confirm model(s)). It is not recommended for units other than the one (those) for which it was sold.
- If the installation of the kit requires a template, ensure that template is to scale.
- Should removal of a locking device (e.g. lock tabs, self-locking fasteners, etc.) be required when undergoing disassembly/assembly, always replace with a new one.
- Torque wrench tightening specifications must strictly be adhered to.
- Some components may be HOT. Always wait for engine to cool down before performing work.

WARNING

Improper, incomplete or partial installation will result in permanent damage to the vehicle and its engine including the possibility of fire. All warranties WILL be VOIDED and the owner WILL be responsible for all damages resulting from such installation.

WARNING

Always install all component of this High Output 172HP Upgrade Kit before loading the new Engine Control Module file. Running the vehicle without these parts with the new ECM file will generate excessive heat in the exhaust system. This may lead to overheating or fire.

NOTICE This kit is made available under CARB Executive Order # D-799U. EO # D-799U does not apply (and the kit may not be sold or used) if the kit is advertised, offered for sale, sold with, or installed on a new off-road recreational sports vehicle prior to or concurrent with transfer to the ultimate purchaser. To comply the kit must be separately advertised, offered for sale, sold and installed apart from the respective vehicle sold to the consumer.

⚠ WARNING

It is important to print and give this instruction sheet to the customer, it contains important safety information and/or operating instructions dedicated to the end user.

NOTE: USE TIGHTENING TORQUES IN THE FOLLOWING TABLE IF NOT OTHERWISE SPECIFIED.

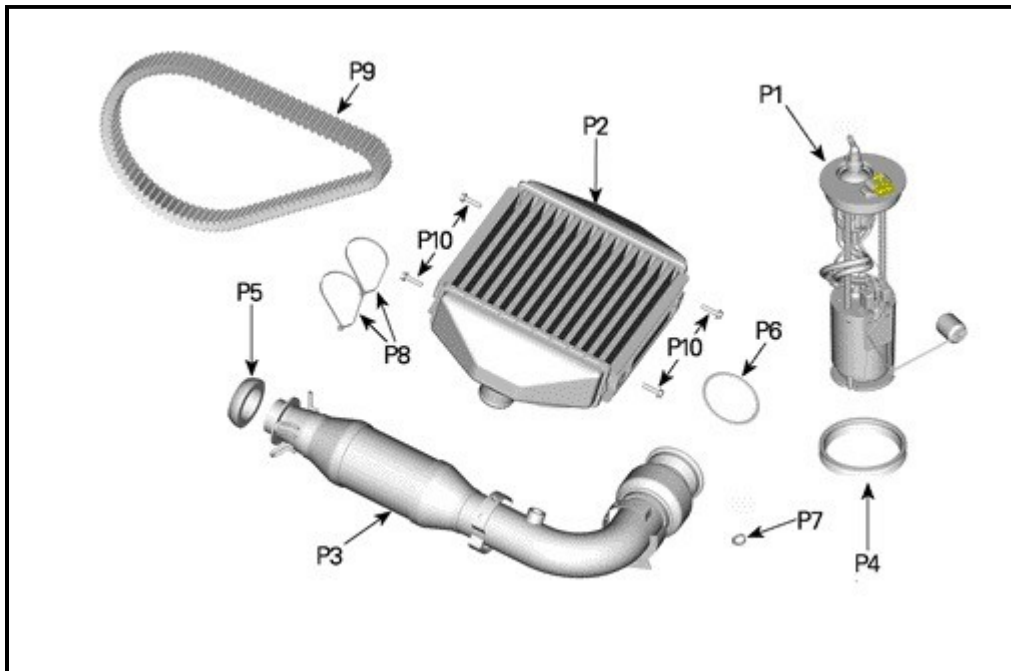
	GRADE			
	5.8	8.8	10.9	12.9
M4	1.8 ± 0.2 N•m (16 ± 2 lbf•in)	2.8 ± 0.2 N•m (25 ± 2 lbf•in)	3.8 ± 0.2 N•m (34 ± 2 lbf•in)	4.5 ± 0.5 N•m (40 ± 4 lbf•in)
M5	3.3 ± 0.2 N•m (29 ± 2 lbf•in)	5 ± 0.5 N•m (44 ± 4 lbf•in)	7.8 ± 0.7 N•m (69 ± 6 lbf•in)	9 ± 1 N•m (80 ± 9 lbf•in)
M6	7.5 ± 1 N•m (66 ± 9 lbf•in)	10 ± 2 N•m (89 ± 18 lbf•in)	12.8 ± 2.2 N•m (113 ± 19 lbf•in)	16 ± 2 N•m (142 ± 18 lbf•in)
M8	15.3 ± 1.7 N•m (135 ± 15 lbf•in)	24.5 ± 3.5 N•m (18 ± 3 lbf•ft)	31.5 ± 3.5 N•m (23 ± 3 lbf•ft)	40 ± 5 N•m (30 ± 4 lbf•ft)
M10	29 ± 3 N•m (21 ± 2 lbf•ft)	48 ± 6 N•m (35 ± 4 lbf•ft)	61 ± 9 N•m (45 ± 7 lbf•ft)	73 ± 7 N•m (54 ± 5 lbf•ft)
M12	52 ± 6 N•m (38 ± 4 lbf•ft)	85 ± 10 N•m (63 ± 7 lbf•ft)	105 ± 15 N•m (77 ± 11 lbf•ft)	128 ± 17 N•m (94 ± 13 lbf•ft)
M14	85 ± 10 N•m (63 ± 7 lbf•ft)	135 ± 15 N•m (100 ± 11 lbf•ft)	170 ± 20 N•m (125 ± 15 lbf•ft)	200 ± 25 N•m (148 ± 18 lbf•ft)
M16	126 ± 14 N•m (93 ± 10 lbf•ft)	205 ± 25 N•m (151 ± 18 lbf•ft)	255 ± 30 N•m (188 ± 22 lbf•ft)	305 ± 35 N•m (225 ± 26 lbf•ft)
M18	170 ± 20 N•m (125 ± 15 lbf•ft)	273 ± 32 N•m (201 ± 24 lbf•ft)	330 ± 25 N•m (243 ± 18 lbf•ft)	413 ± 47 N•m (305 ± 35 lbf•ft)

The illustrations in this document show typical construction of the different assemblies and may not reproduce the full detail or exact shape of the parts; however, they represent parts that have the same or similar function.

In the pictures below, parts may have been removed for clarity purposes.

Installation time is approximately: 3.5 hour.

PARTS TO BE INSTALLED



ITEM	DESCRIPTION	part number	QTY
P1	Fuel pump	709000979	1
P2	Intercooler	707800782	1
P3	Exhaust pipe	707602242	1
P4	Fuel pump gasket	293250173	1
P5	Exhaust gasket	707801908	1
P6	Exhaust gasket	707801835	1
P7	Universal spring clamp	414554800	1
P8	Locking tie	293750008	2
P9	Drive belt	422280652	1
P10	Hexagonal M6 screw	207562544	4
P11	CARB Label	704907124	1

NOTE: Access to the latest BRP diagnostic software is mandatory to perform a complete installation of this kit.

INSTRUCTIONS

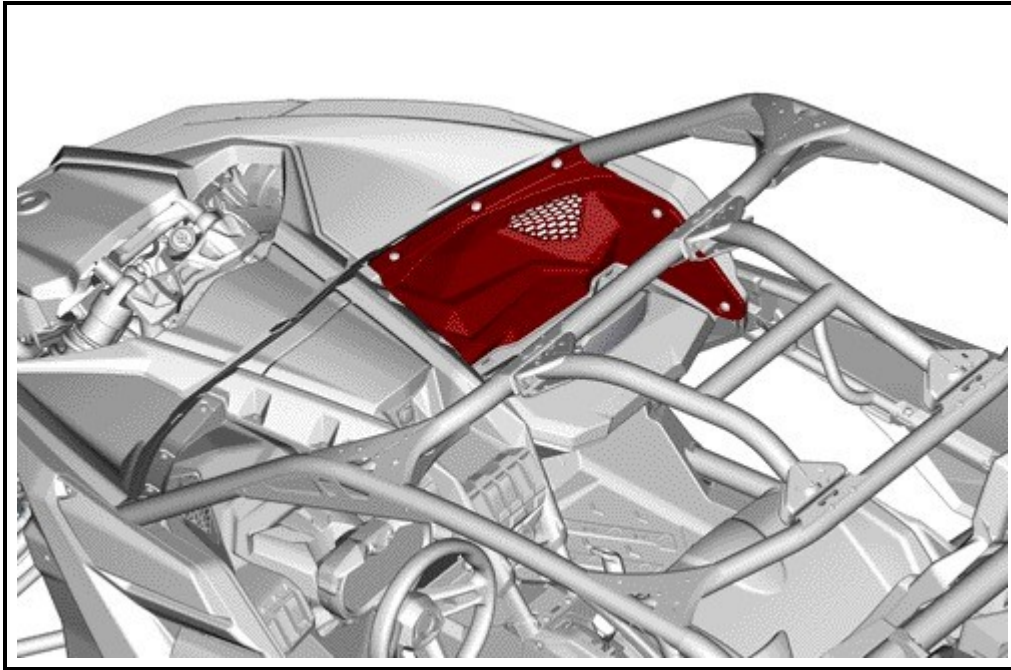
Fuel Pump

It is not necessary to empty the fuel tank but be sure the fuel level is lower than half.

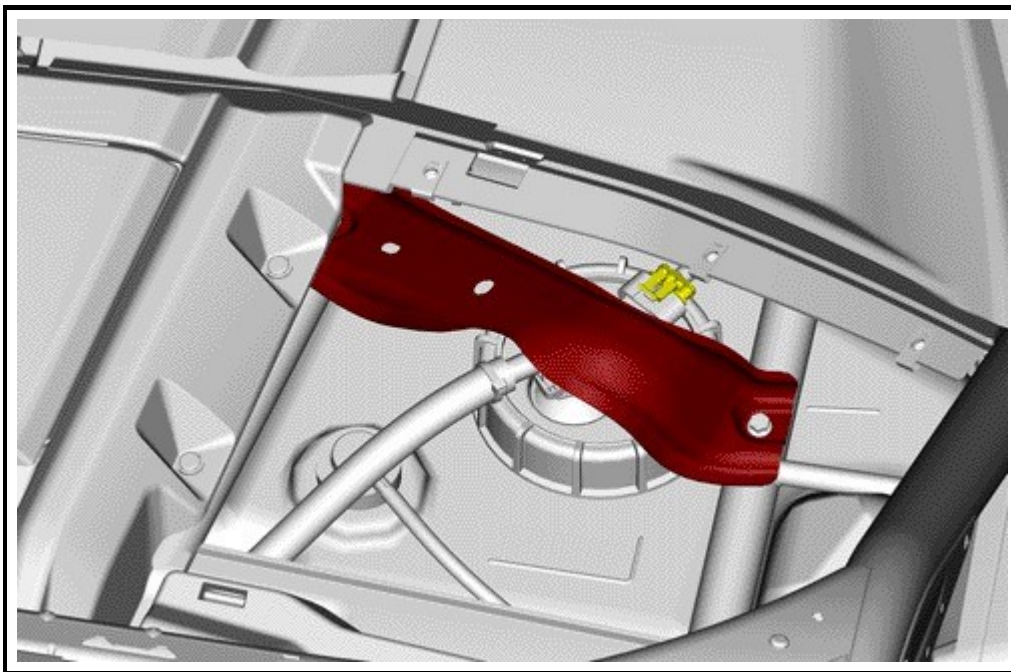
NOTICE Fuel level must not be above 1/2 full.

Connect vehicle to the appropriate BRP diagnostic software and do a fuel pressure release. Refer to *FUEL SYSTEM* in the appropriate Shop Manual.

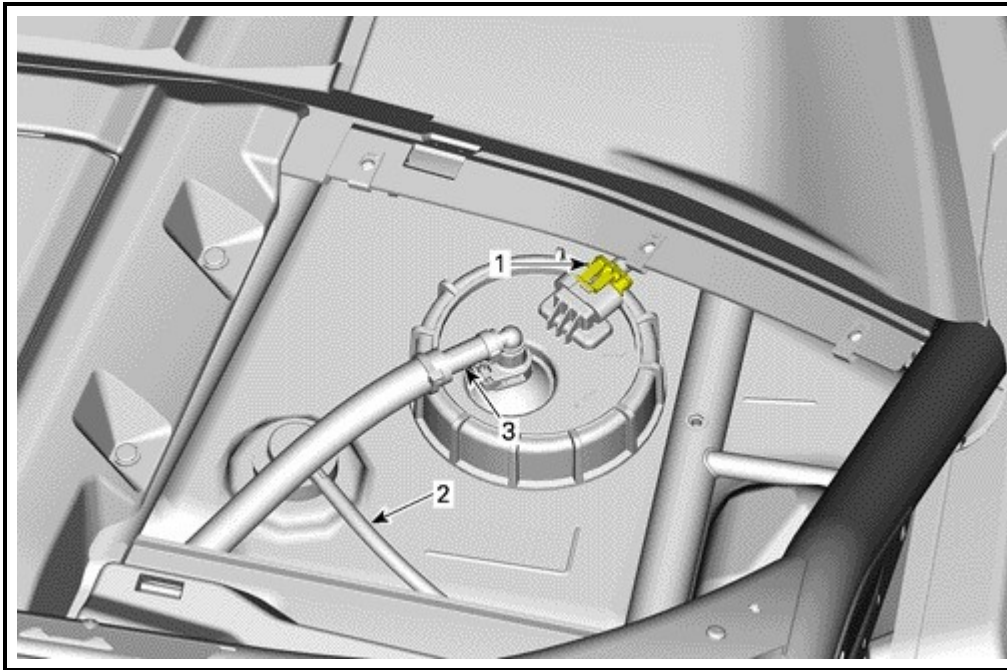
Remove RH dash board panel.



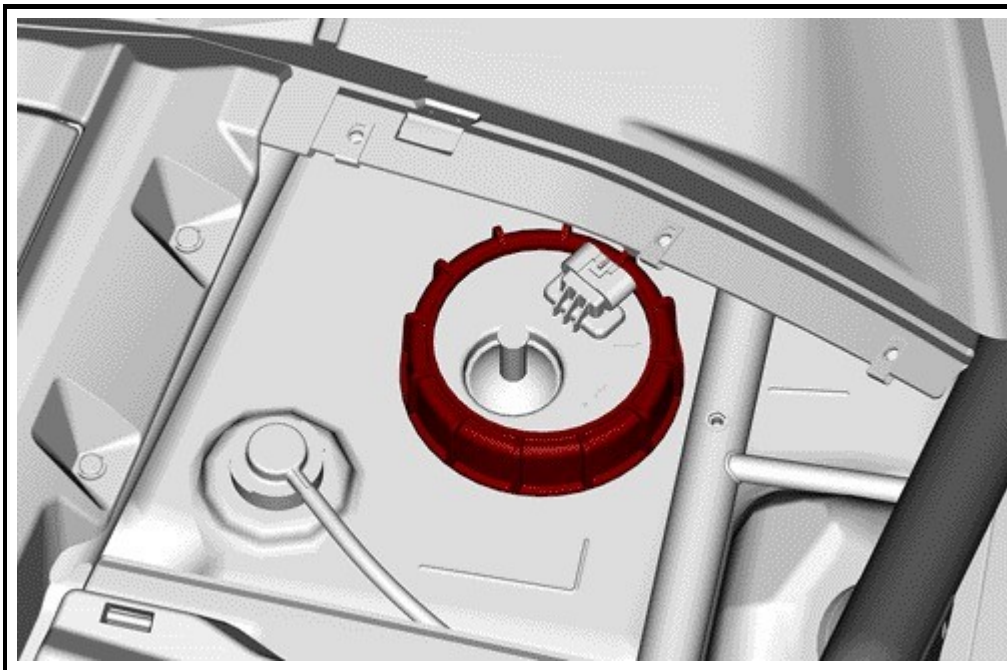
Remove the fuel pump connector cover.



Disconnect the fuel pump electric connector and high pressure fuel hose and remove fuel pump locking ring.



1. Fuel pump connector
2. Vent hose
3. High pressure fuel hose



FUEL PUMP LOCKING RING

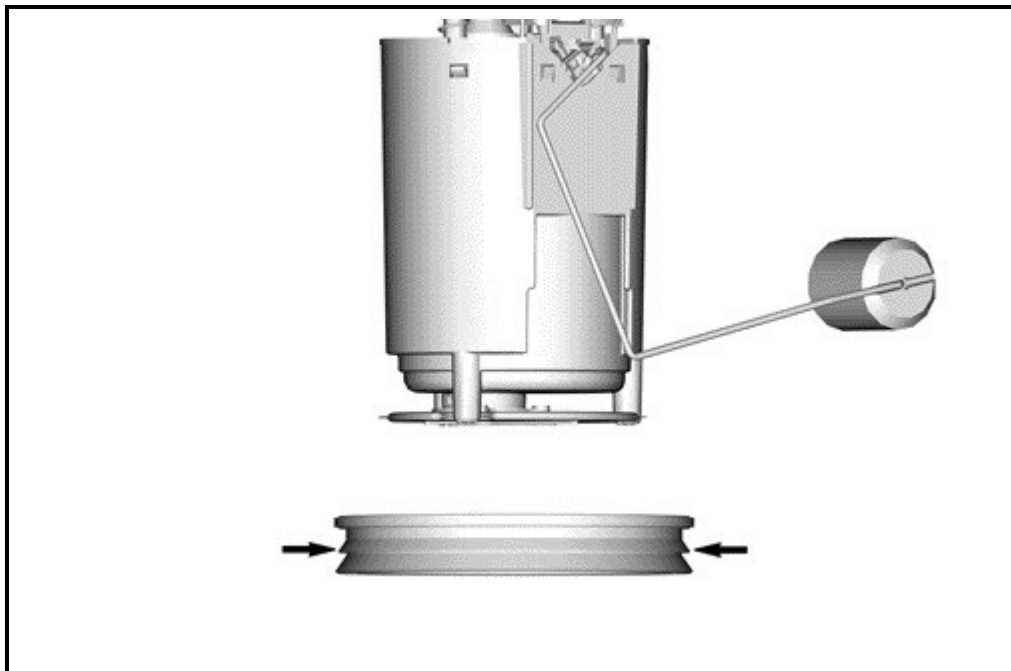
Carefully pull out fuel pump.

⚠ CAUTION: While pulling out the fuel pump, pay attention to fuel sensor arm. Float arm can get stuck and bend reducing fuel sensor accuracy.

For installation, reverse the removal procedure. However, pay attention to the following.

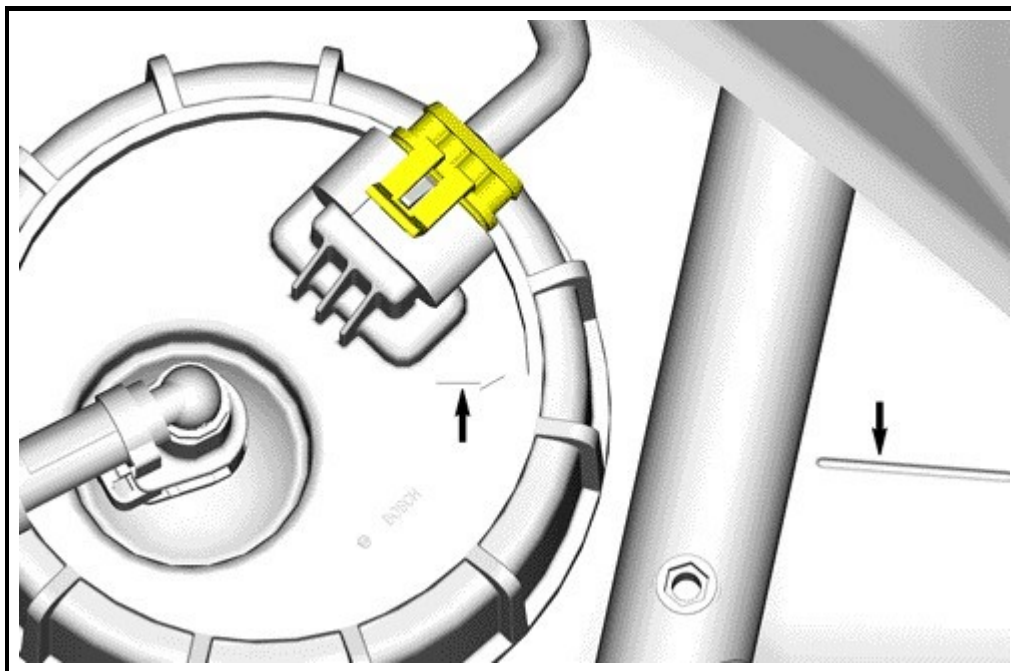
⚠ CAUTION: Manipulate fuel pump with care.

1. Wipe off any fuel residue in the sealing area.
2. Install the NEW[P4] gasket ring.
3. Place gasket so that it is located between pump and tank mounting surface in the correct orientation. Make sure gasket is sitting properly in place on the fuel tank without any folds or wrinkles, then lower the [P1] pump in place.



CORRECT ORIENTATION OF GASKET

4. Pay attention to pump orientation as in following illustration.



NOTE: Make sure arrow on fuel pump [P1] points toward the line on fuel tank.

5. Insert fuel pump locking ring over the fuel pressure hose and electrical wiring connector.
6. While firmly holding pump down against tank, engage fuel pump locking ring on fuel tank flange.
7. Turn locking ring until it is fully engaged.

NOTE: Make sure the pump body has not rotated during nut torquing procedure.

⚠ WARNING

Fuel vapors are flammable and explosive under certain conditions. Ensure pump locking ring is fully engaged.

8. Tighten locking ring to the proper torque.

tightening torque	
Fuel pump locking ring	$60 \pm 5 \text{ N}\cdot\text{m}$ ($44 \pm 4 \text{ lbf}\cdot\text{ft}$)

9. Reconnect the high pressure fuel hose and electrical connector.

10. Reconnect battery.

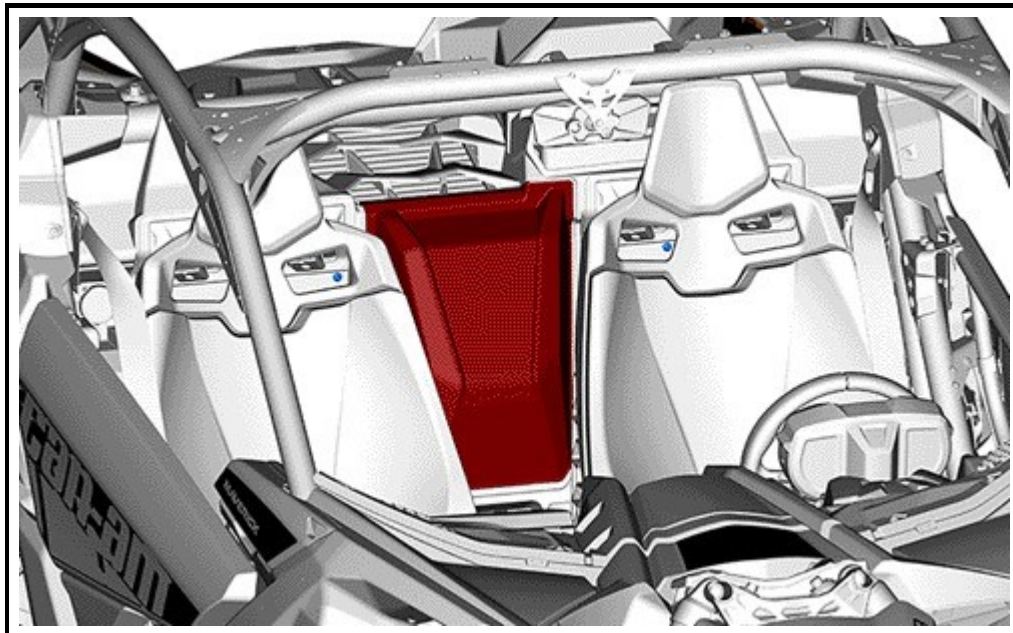
11. Refill fuel tank and ensure there are no leaks by performing a *FUEL TANK LEAK TEST* and a *FUEL PRESSURE TEST* as described in the appropriate Shop Manual.

12. Check fuel level sensor operation.

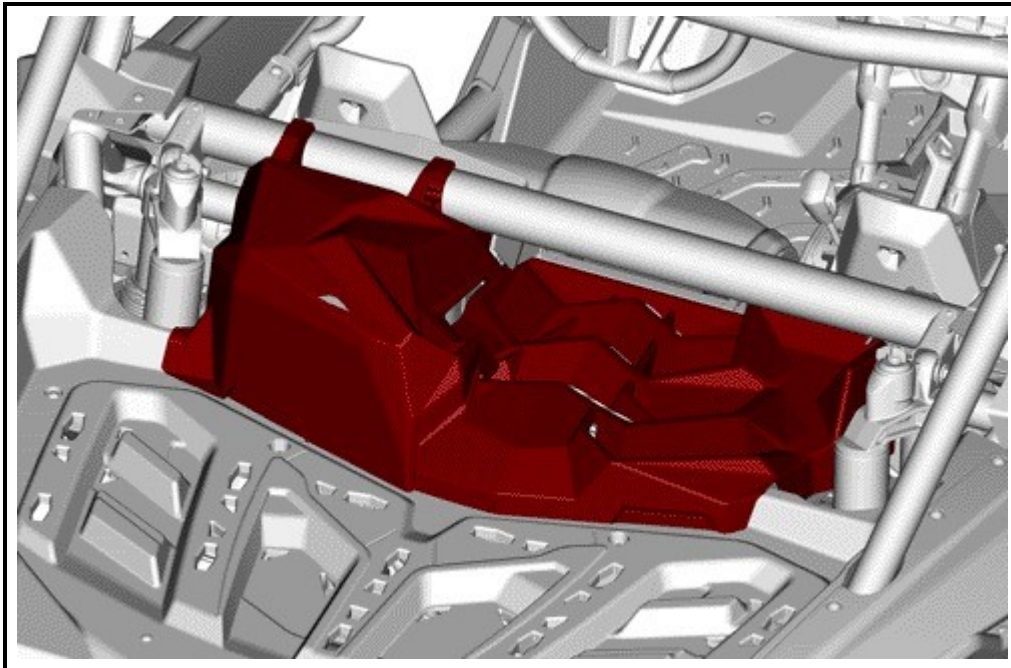
Intercooler

Refer to *BODY* subsection of appropriate Shop Manual and remove:

- Rear service cover
- Air box cover
- Intercooler grille



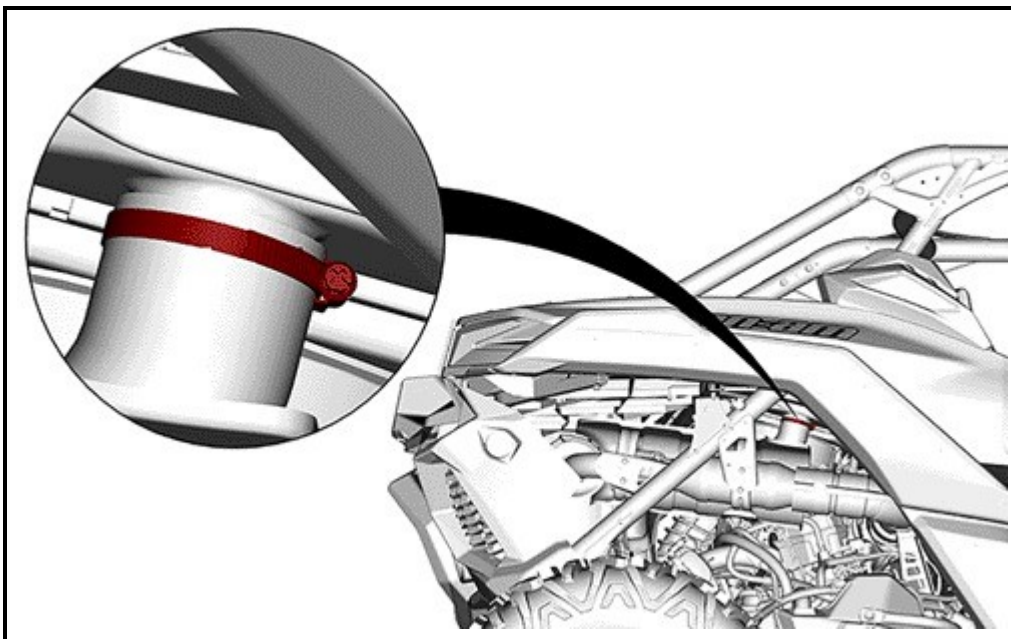
SERVICE COVER



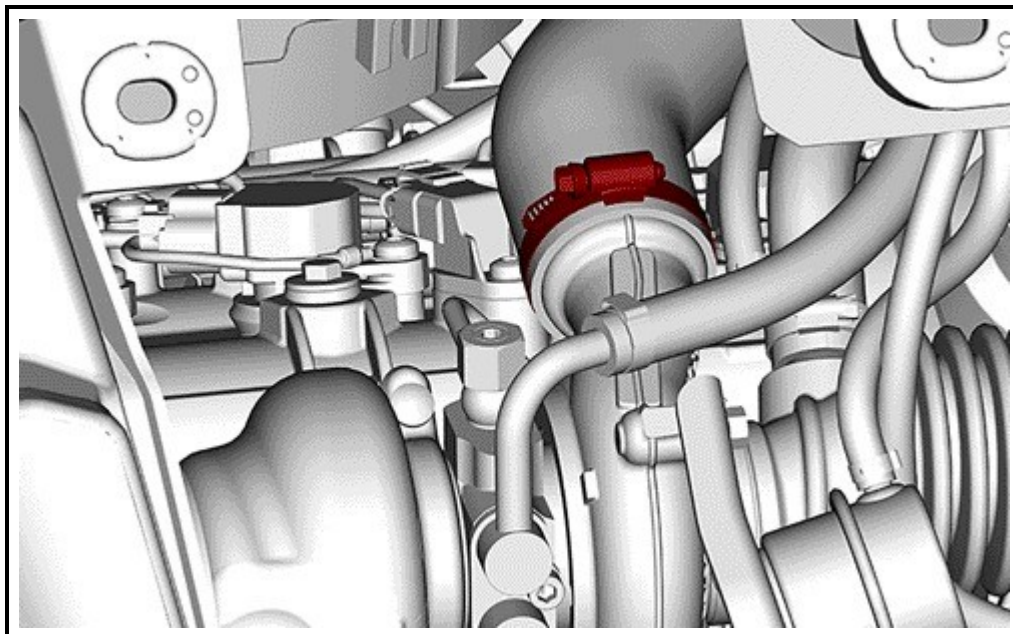
AIR BOX COVER AND INTERCOOLER GRILLE

NOTICE When removing the intercooler, always plug the turbo charger hoses with clean rags to prevent dirt from entering the turbo.

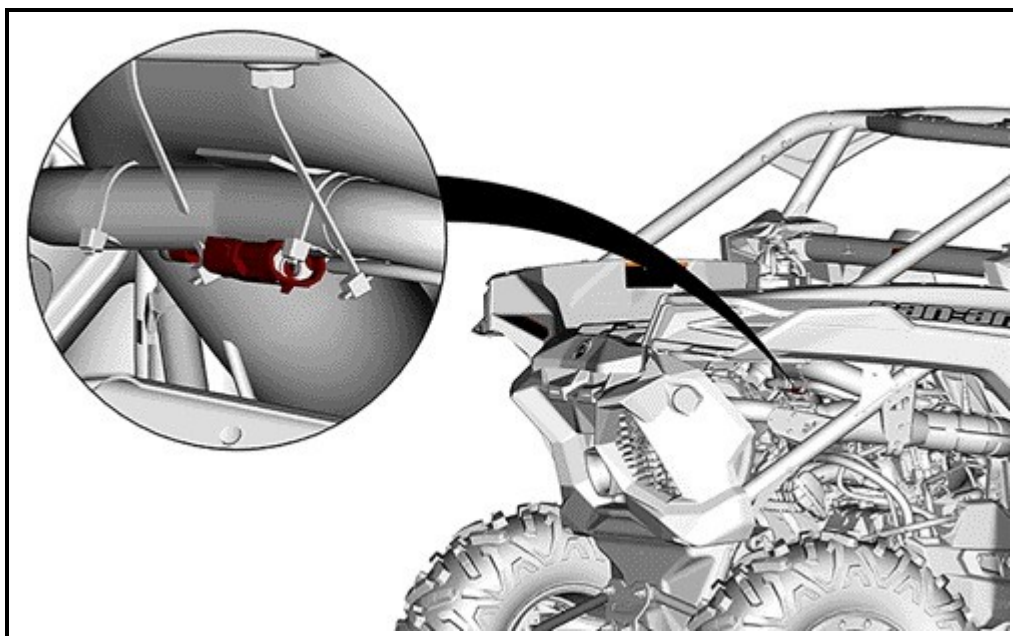
1. Loosen the clamp and disconnect the intercooler air outlet hose.



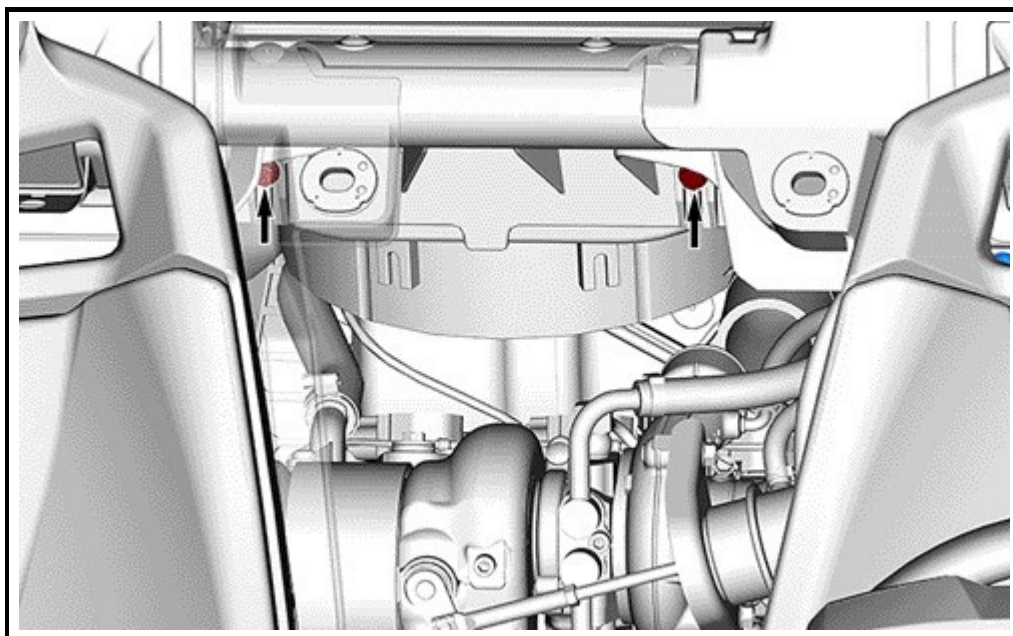
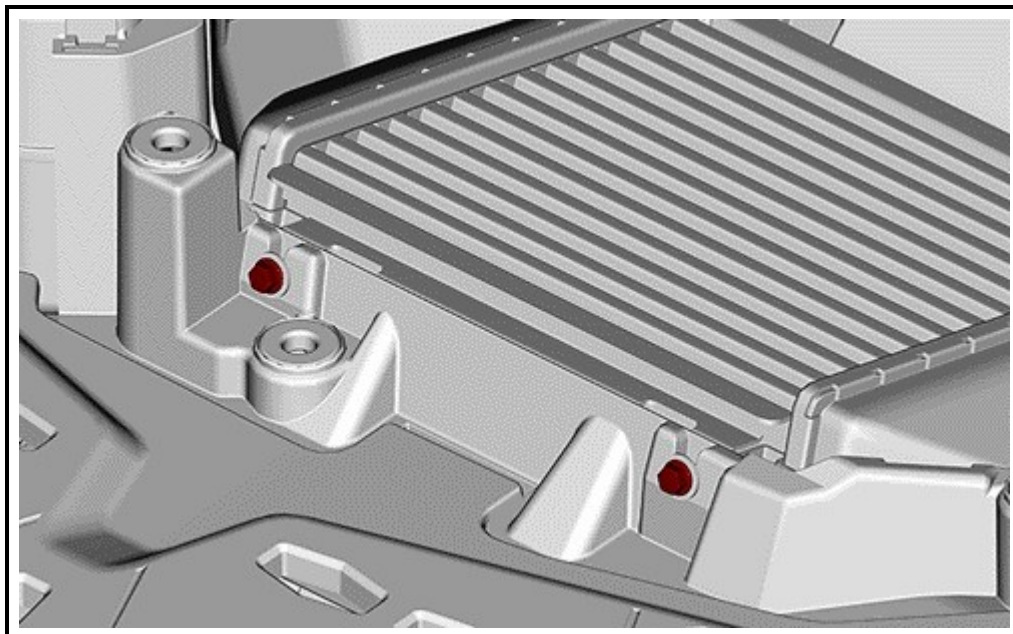
2. Loosen the clamp and disconnect the intercooler air inlet hose from the turbo.



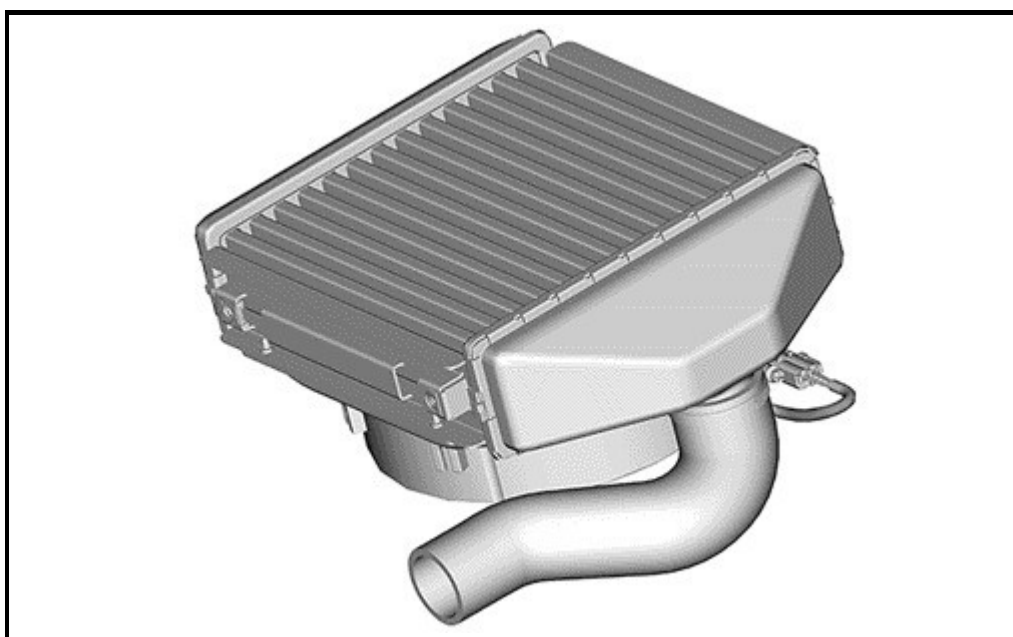
3. Cut locking tie and disconnect fan connector.



4. Remove and discard the intercooler retaining screws.



5. Remove intercooler.



Install new [P2] intercooler with new [P10] retaining screws by reversing the removal procedure. Tighten the intercooler retaining screws to specification.

Connect fan connector and install [P8] locking tie.

tightening torque	
Intercooler retaining screws	$8 \pm 1 \text{ N}\cdot\text{m}$ ($71 \pm 9 \text{ lbf}\cdot\text{in}$)

NOTICE Do not forget to remove the previously installed rags in turbocharger hoses.

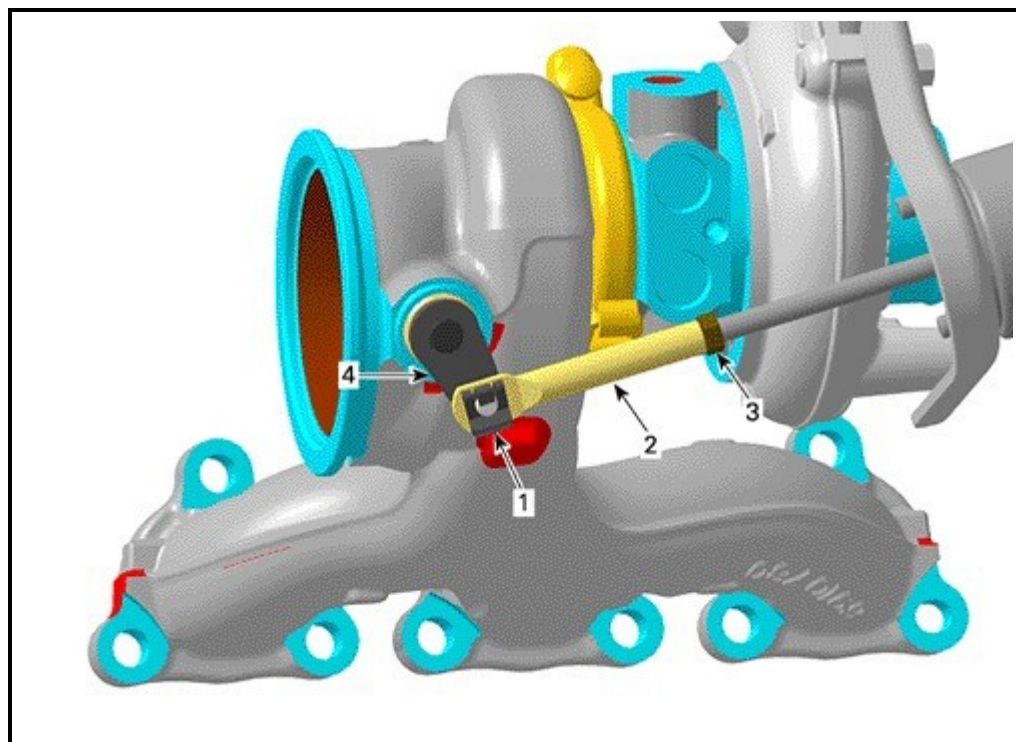
Turbo Waste Gate Adjustment

The waste gate preload is defined by pressure needed to open the waste gate at a defined stroke. Travel is measured when the actuator is assembled on the turbocharger and connected to the waste gate lever.

To adjust:

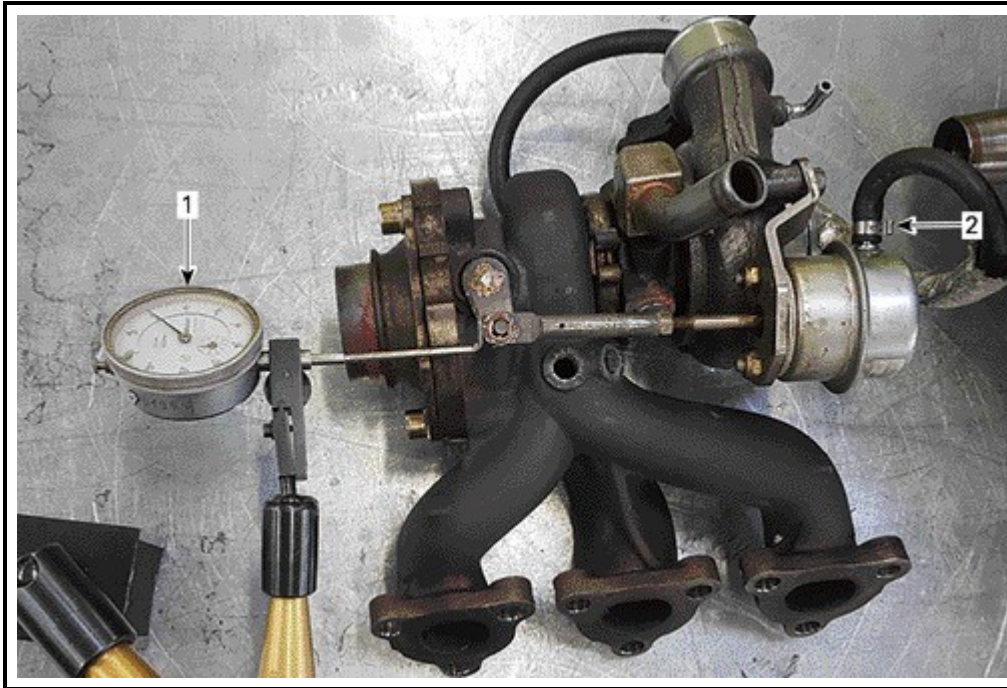
1. Remove retaining clip.
2. Loosen jam nut.
3. Disconnect waste gate actuator rod from waste gate lever.
4. Screw in waste gate actuator rod 2.5 turns. The waste gate actuator rod will be slightly shorter.
5. Reconnect actuator rod to waste gate lever.
6. Install retaining clip.
7. Tighten jam nut to specification.

tightening torque	
Jam nut	$11 \pm 1 \text{ N}\cdot\text{m}$ ($97 \pm 9 \text{ lbf}\cdot\text{in}$)



1. Retaining clip
2. Waste gate actuator rod
3. Jam nut
4. Waste gate lever

Install a dial indicator on waste gate actuator rod as shown and set display to zero.



TYPICAL - DO NOT REMOVE TURBO FROM VEHICLE

1. Dial gauge
2. Oetiker clamp to remove

1. Connect a vacuum pump to the waste gate actuator by cutting the Oetiker clamp.
2. Increase pressure to move the actuator rod. CONFIRM ALL DISTANCES.

Actuator rod movement	Pressure
1 mm (.04 in)	490 ± 20 mbar (7.1 ± .3)
3 mm (.12 in)	550 ± 30 mbar (8 ± .4)
5 mm (.2 in)	630 ± 40 mbar (9.1 ± .6)

3. All movement must be within specification. If not, readjust the actuator rod until the specification is respected.
 4. Reinstall the waste gate hose and secure with [P7] clamp.
- If the specifications can not be achieved, replace actuator.

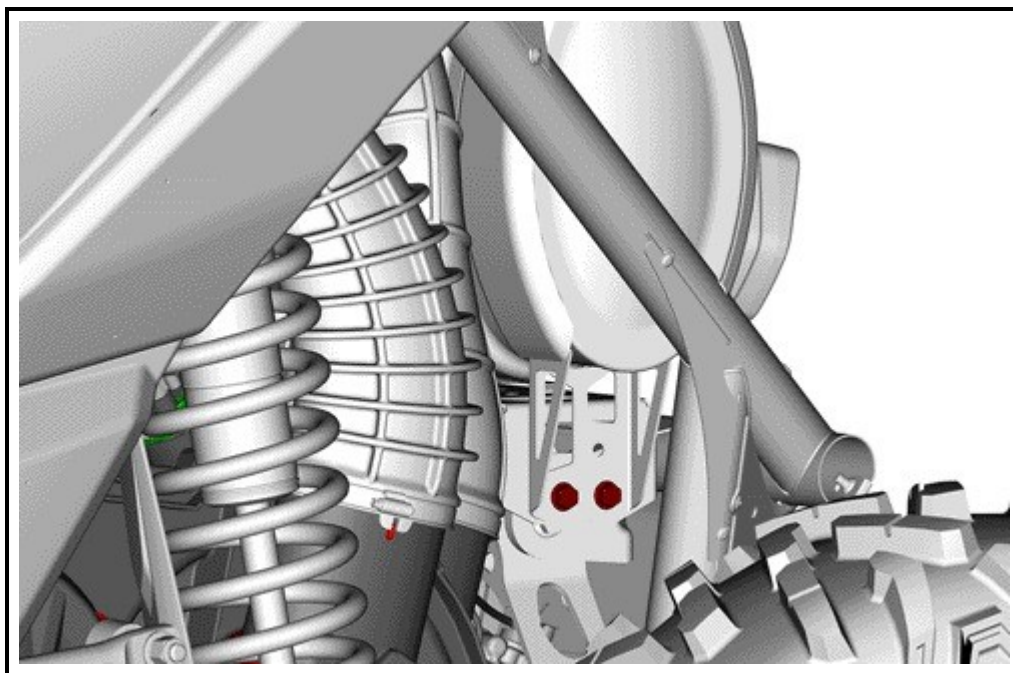
NOTICE It is very important to verify the actuator rod movement to confirm adjustment. If not done properly, serious engine damage will occur.

Exhaust

Remove rear fascia.

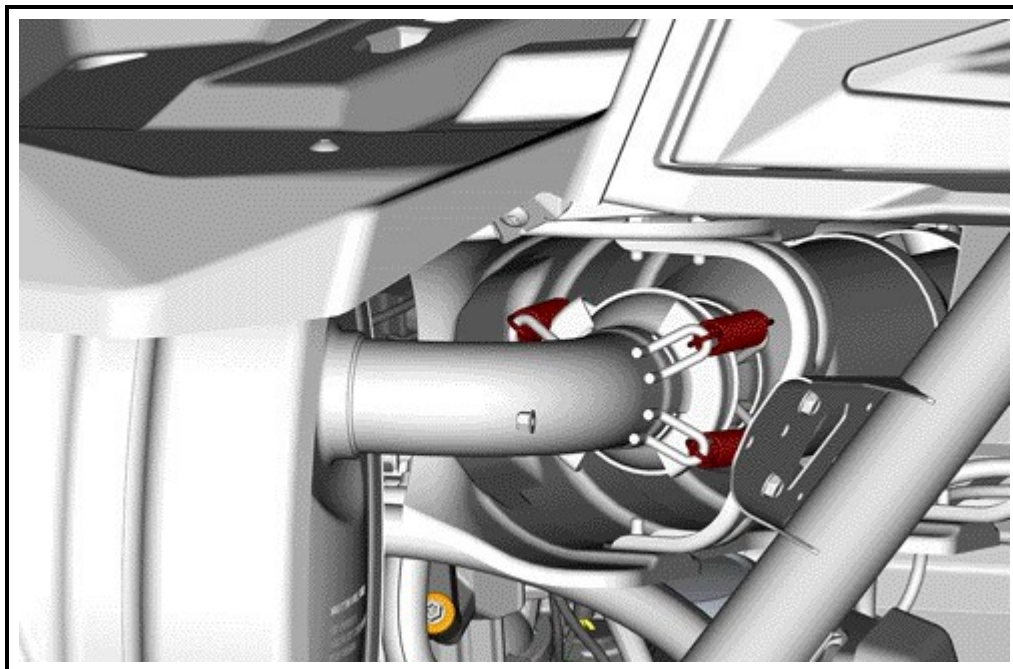


Remove screws securing the muffer on both sides.

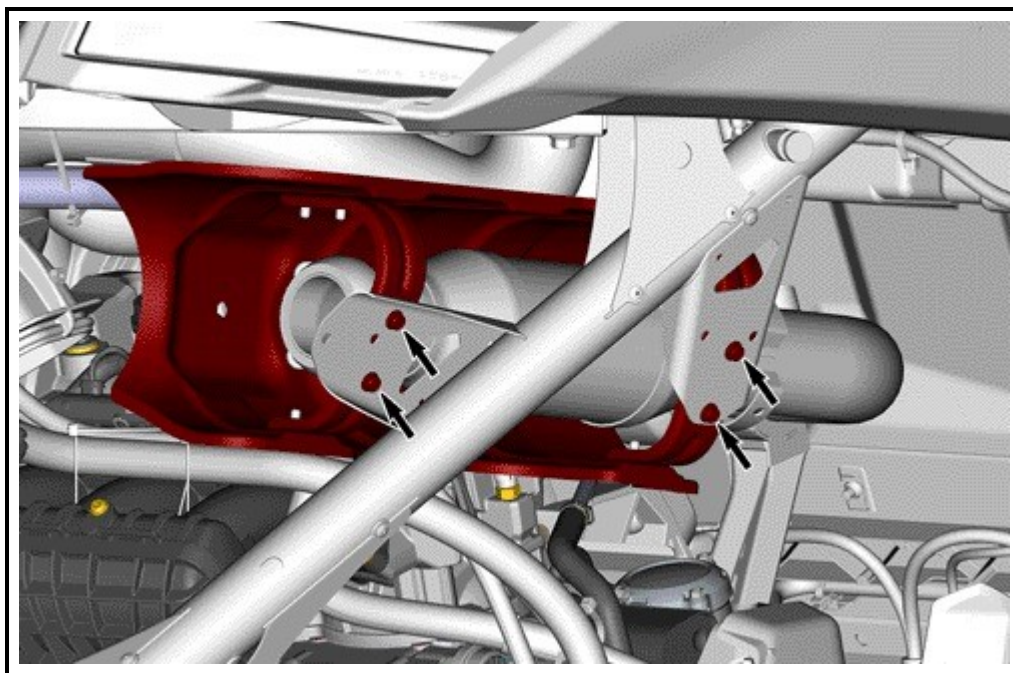


REPEAT ON OTHER SIDE

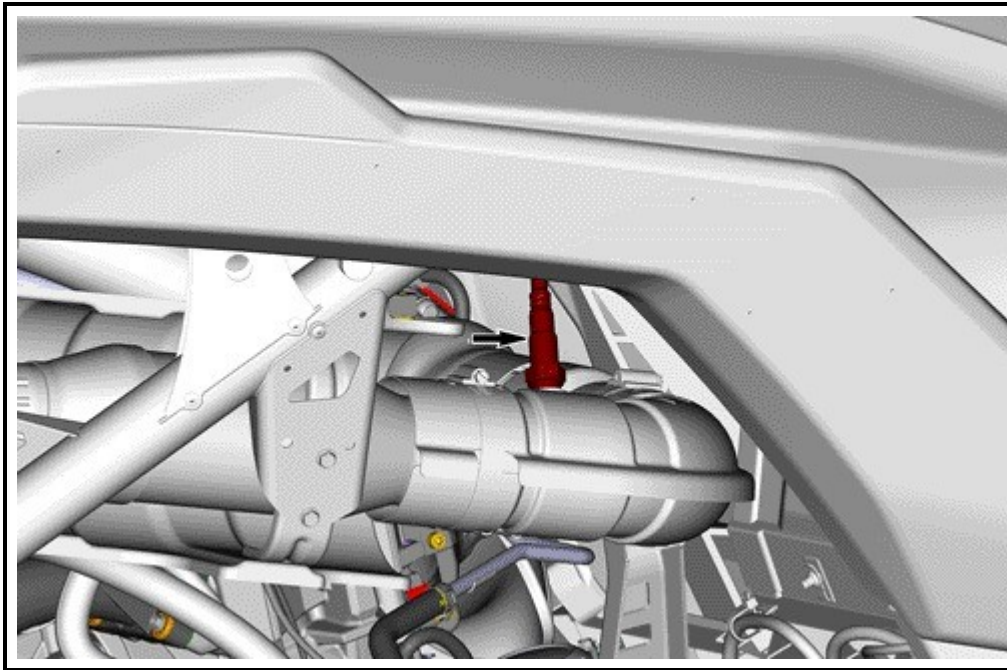
Remove the springs holding muffer to exhaust pipe.



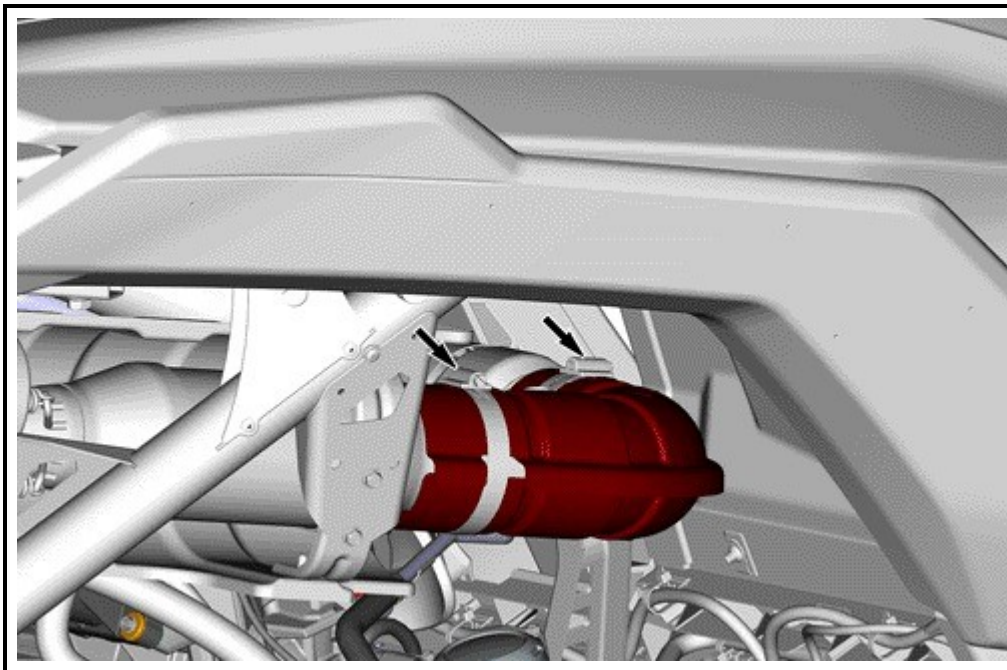
Remove the four screws holding the heat shield.



Disconnect and remove exhaust O2 sensor.



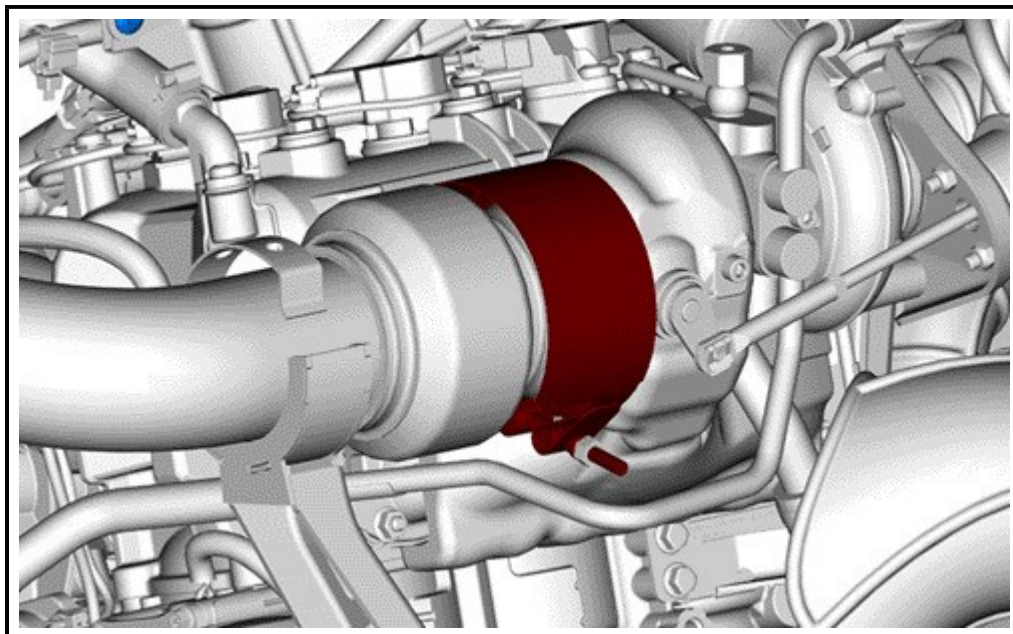
Remove both heat shield from the exhaust pipe by removing the clamps.



HEAT SHIELD CLAMPS

Remove the V-band clamp and remove exhaust pipe.

NOTE: The V-band clamp nut is stainless steel, do not use power tools as nut may seize on stud.



TYPICAL - PARTS NOT SHOWN FOR CLARITY

Install [P3] upgraded exhaust pipe by reversing the removal procedure. Pay attention to the following details;

Install the supplied [P5] and [P6] exhaust gaskets in their respective locations.

tightening torque	
V-band clamp	$11 \pm 1 \text{ N}\cdot\text{m}$ ($97 \pm 9 \text{ lbf}\cdot\text{in}$)
Heat shield bracket screws	$7 \pm 1 \text{ N}\cdot\text{m}$ ($62 \pm 9 \text{ lbf}\cdot\text{in}$)
O2 sensor	$42.5 \pm 2.5 \text{ N}\cdot\text{m}$ ($31 \pm 2 \text{ lbf}\cdot\text{ft}$)
Heat shield clamps	$9.5 \pm 1 \text{ N}\cdot\text{m}$ ($84 \pm 9 \text{ lbf}\cdot\text{in}$)
Shock absorber screws	$105 \pm 15 \text{ N}\cdot\text{m}$ ($77 \pm 11 \text{ lbf}\cdot\text{ft}$)

NOTE: The V-band clamp nut is stainless steel, do not use power tools as nut may seize on stud.

Ensure every component is properly installed, check for fuel leaks and reinstall all removed parts.

Drive Belt

Removing the CVT Cover

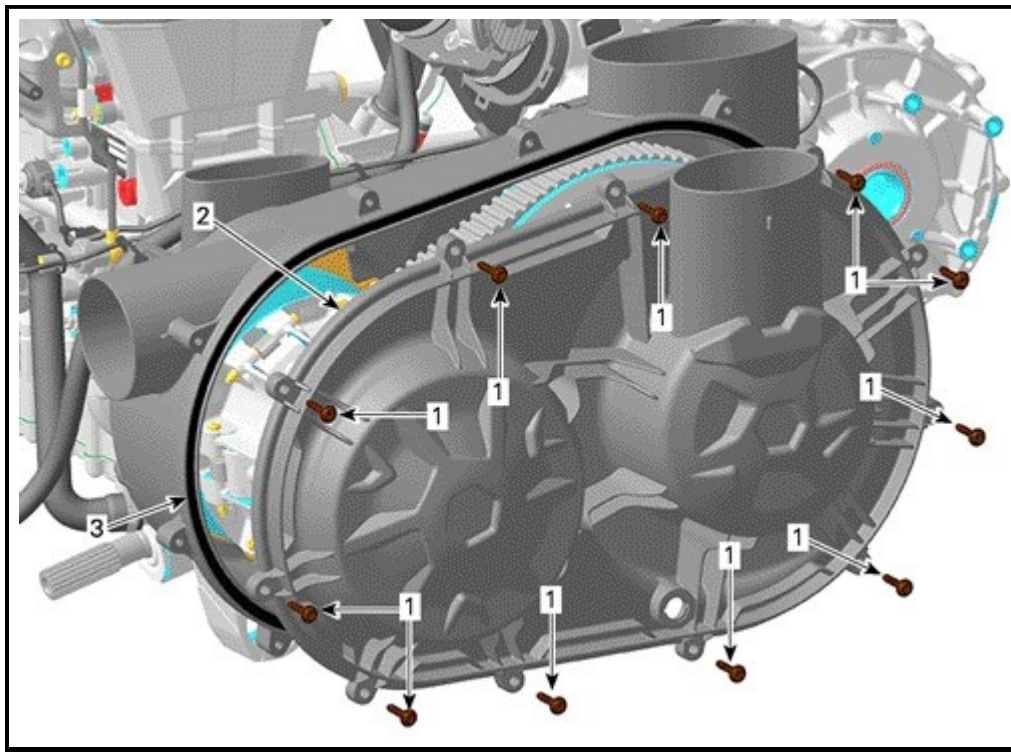
Detach CVT hoses from CVT cover.

Remove:

- Retaining screws
- CVT cover
- Gasket.

NOTE: Remove the center top screw last to support the cover during removal.



NOTICE Do not use and impact tool to remove CVT cover screws.



- 1. Retaining screws
- 2. CVT cover
- 3. Gasket

Removing the Drive Belt

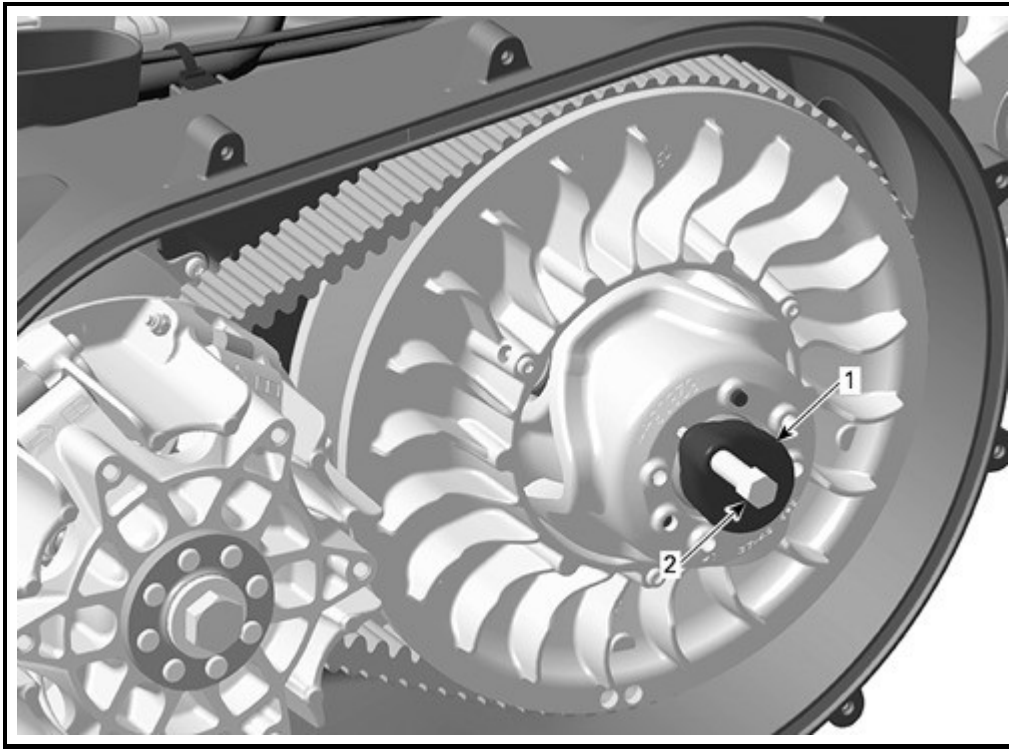
Remove CVT COVER.

required tools	
PULLER/LOCKING TOOL (P/N 529 000 088)	
DRIVEN PULLEY ADAPTER (P/N 708 200 720)	

Screw in the driven pulley adapter into the driven pulley shaft.

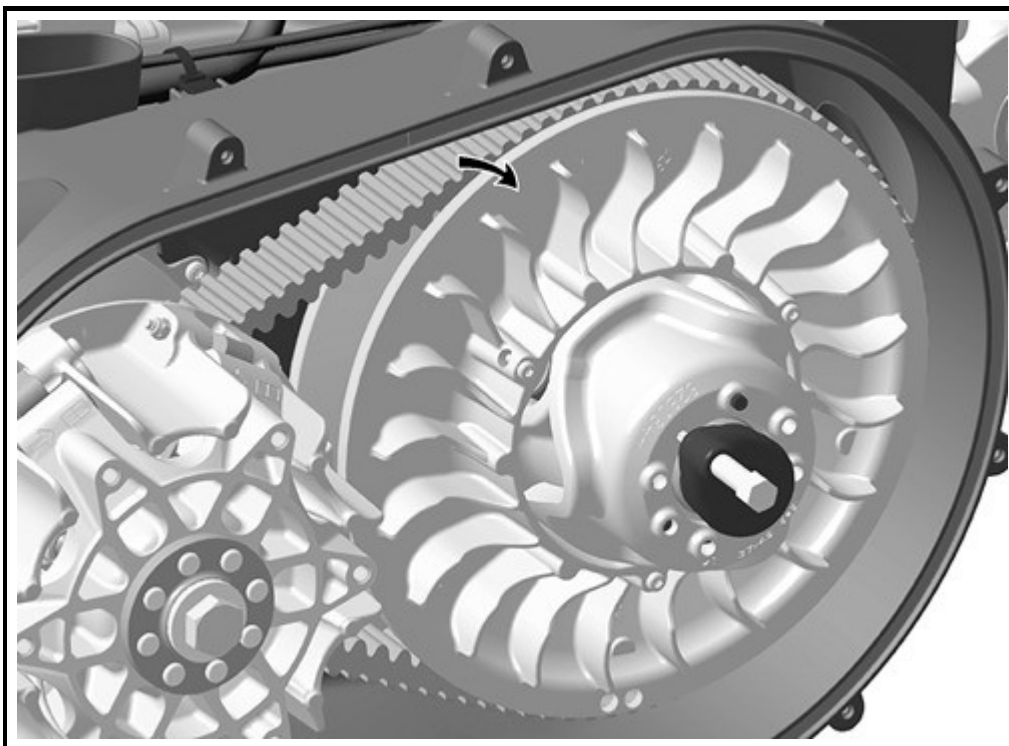
Screw in the driven pulley extractor into the threaded offset hole of the adapter.

Tighten the extractor to open the pulley.



1. Driven pulley adapter
2. Driven pulley extractor

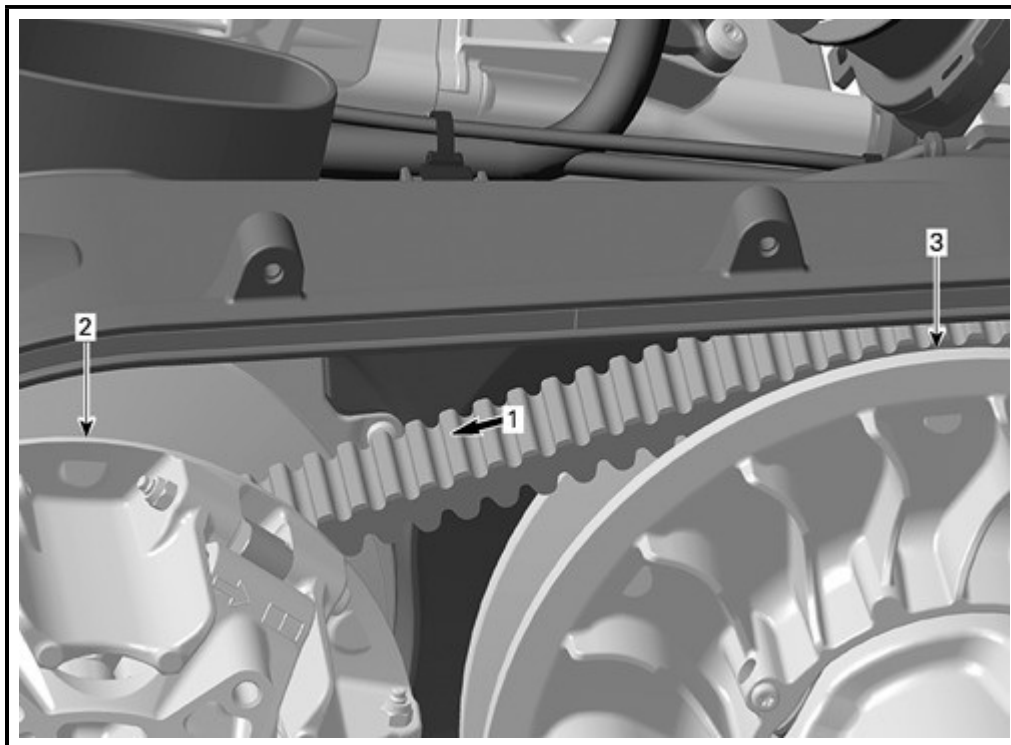
To remove belt, slip the belt over the top edge of fixed sheave, as shown.



Installing the Drive Belt

For installation, reverse the removal procedure. Pay attention to following details.

The maximum drive belt life span is obtained when the drive belt has the proper rotation direction. Install it so that the arrow printed on belt is pointing towards front of the vehicle, viewed from top.

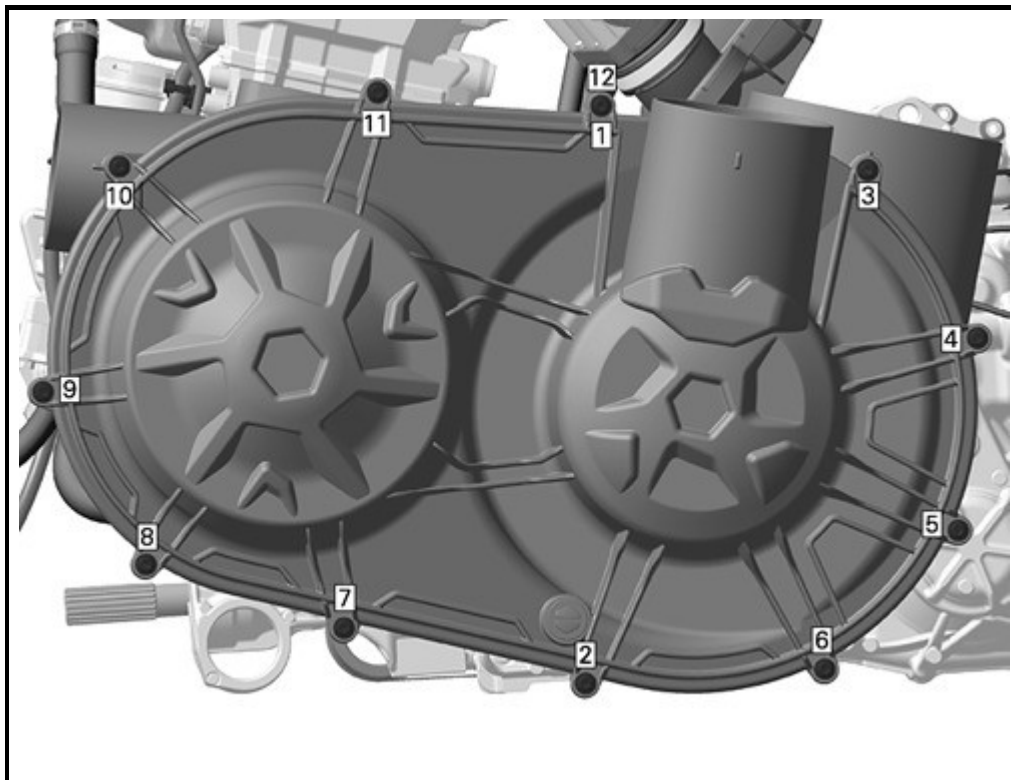


1. Rotation direction
2. Drive pulley (front)
3. Driven pulley (rear)

Installing the CVT Cover

Install the center top screw of first.

Tighten the CVT cover retaining screws as per following sequence.



Tightening torque

CVT cover retaining screws

$6 \pm 0.7 \text{ N}\cdot\text{m}$ ($53 \pm 6 \text{ lbf}\cdot\text{in}$)

ECM File

NOTICE It is mandatory to install the upgraded file before starting the engine, serious engine damage will occur and warranties will then be voided.

This section will cover the procedure to update the vehicle's engine parameters once ALL performance modifications have been done.

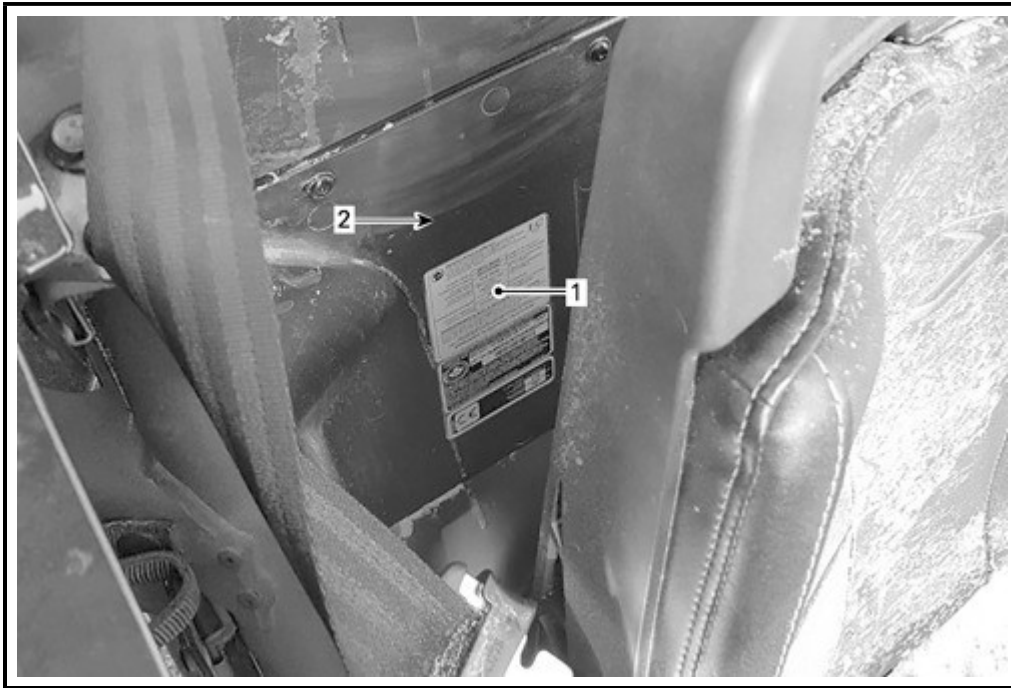
1. Open the computer on which BUDS2 is installed. Do NOT open BUDS2 yet.
2. Find the file "edb-dump_[...].zip" in the folder "C:\Program Files (x86)\BRP\BUDS2".
3. Grab and drag the file "edb-dump_[...].zip" onto the desktop. No copies of the file shall remain inside the folder.
4. Go to the [B.U.D.S. Directory](#) and download the following file: "edb-dump_SSV_Performance_Kit_715004700.zip"
5. Move "edb-dump_SSV_Performance_Kit_715004700.zip" to "C:\Program Files (x86)\BRP\BUDS2".
6. Connect the vehicle to BUDS2.
7. In BUDS2, go to:
 - FLASH page
 - ECM button.
8. Flash the Engine Control Module (ECM) with the available file for this SSV ECM.
9. Once the operation is completed, close BUDS2.
10. DELETE the file "edb-dump_SSV_Performance_Kit_715004700.zip" in the directory aforementioned.
11. Grab and drag the file "edb-dump_[...].zip" from the desktop, back into "C:\Program Files (x86)\BRP\BUDS2"

CARB Label

Install the new CARB label [P11] behind the passenger seat as indicated. Be sure the surface is clean.



CARB LABEL



- 1. Emission control information label
- 2. Install CARB label here

NOTICE This label is required to aid in passing the California Smog Check program.
