Date: January 25, 2010
Contact: Technical Services
Subject: NHTSA Recall-??????- RSV4 Engine Recall

Service Communication: 2010-002 USA Designation- 2010 RSV4 Engine Recall

Affected Models: All US specification 2010 model year RSV4 "R" and RSV4 "Factory" models.

Affected U.S. Model VIN Range: Please refer to page two for detailed instructions concerning VIN identification

RSV4 "R" ZD4RKC013AS000001 to ZD4RKC014AS000220
RSV4 "Factory" ZD4RKC004AS000001 to ZD4RKC00XAS000164

Concern: Within our experimental tests on RSV4 engines, Aprilia identified a batch of connecting rods that due to an unauthorized process used in their production, do not meet quality standards. This batch of connecting rods was immediately intercepted and removed from the engine production line. However, some of these substandard components were used in the production of a limited number of RSV4 vehicles worldwide. However, the VIN range of affected vehicles includes all US specification RSV4s.

Correction: Since this is an issue that may affect rider safety, a complete engine assembly will be replaced on customer bikes as well as bikes in your inventory. In order to expdedite the replacement process and to reduce technician error, the replacement engines will arrive completely configured as an "assembly line configuration". This means the engines will arrive at your dealership with the Wiring harness, Throttle bodies, Airbox and ECU pre-installed. As such, it will be important to identify and install the correct engine in each respective model; RSV4 "R" or RSV4 "FACTORY".

Roadside Assistance*:* In respect to safety concerns, Aprilia USA advises that customers refrain from using their RSV4s until the engine replacement has been performed. In the event that customers are unable to transport their RSV4 to their nearest dealer, Aprilia USA is making arrangements through our Roadside Assistance Program to provide a towing service from the owner's residence to their servicing dealer.

Given the logistical complexity of organising this recall campaign and the complexity of the procedure that you are required to perform, vehicles **MUST** be rectified in accordance with the following order of **PRIORITY**:

PRIORITY	Description
1	**SOLD vehicles** already delivered to customers
2	Sold vehicles pending delivery to customers
3	**UNSOLD** vehicles in **Dealer stock**

Important note: As a dealer, you are advised not to accept customer RSV4s into your service department until the replacement **engine has arrived** at your dealership. Upon receipt of the replacement engine, please open the wooden crate with care so that it may be reused for returning the replaced engine. The engine removed from the vehicle must be returned to Aprilia USA within 45 days. (See pages 4 and 5 for further details)

Owner Notification: Each owner of an affected RSV4 included in this recall will be notified by first class mail. In this letter Aprilia USA will describe the details of the concern, the cause and the correction addressed by this recall. In addition, Aprilia USA asks that each owner contact an authorized Aprilia dealer to arrange an appointment to have the parts and labor required of this recall completed. Please make every effort to accommodate your recall customers within your existing service schedule. In addition, Aprilia USA has provided each recall customer with details of the TREAD Act Reimbursement program. In short, this program provides a plan to reimburse a customer who has already paid for the same repair or update as described in the recall documents. A copy of the Owner Notification and the TREAD Act Reimbursement letters are attached to this bulletin.

Important Note: Under the National Traffic and Safety Act of 1966 as amended, if there has been a recall campaign, dealers must ensure that all new vehicles and new items of replacement equipment are free of safety defects and comply with all applicable Federal Motor Vehicle Safety Standards at the time of delivery to the customer. This means that dealers may not deliver new motor vehicles or new items of replacement equipment to consumers unless the safety defect or noncompliance has been remedied before delivery.

Engine Recall VIN Identification:

1) RSV4 (originally sold to your dealer): Log on to www.serviceaprilia.com

- Select “Warranties” on left side of home page, then “Recall Campaigns” in center of page.
- Under “Search Recall Campaigns”, select “RSV4- Engine Replacement” under the drop down menu
- View the RSV4 VIN numbers sold to your dealer that require the engine replacement.

2) RSV4 (originally sold from another dealer): Log on to www.serviceaprilia.com

- Select “**GGP**” under the heading “Warranties”- on left side of home page. Once the GGP portal opens, select “Warranty”, then “View Vehicle Data”.
- Enter the VIN number next to “Chassis” and select the “Search” button 
- Click on “Campagne” to view the campaigns or recalls that **apply** to the VIN
- Click on “Maintenance jobs” to view campaigns or recalls that **have been completed and already claimed for.**

Procedure for receiving a new engine:

During the **first** phase, engine shipments will be based on Aprilia USA contacts made with the owners of RSV4s. Once the owner has chosen the RSV4 authorized dealer where he/she wants the recall to be performed, an order for an engine is internally generated and will be shipped to the requested dealer. Once customer vehicles have been rectified, engines will then be allocated for use in dealer stock vehicles. In the **second** phase, the engine shipments will be generated from orders placed in the BM ordering system.

Part number info (second phase-dealer stock): Engines must be ordered based on the specific model, "R" or "Factory"

VEHICLE	ENGINE CODE	DESTINATION
RSV4 FACTORY	CM225904	USA
RSV4 R	CM225905	USA

Warranty Operations: There are two types of operations:

- Non zero-mileage vehicles (**vehicles already delivered to customer**)
- Zero-mileage vehicles **(vehicles in your dealer stock)**

	Customer vehicles	**Stock vehicles**
Labor for packing engine	30	30
Labor for engine replacement	450	450
Labor for STATIC testing	30	30
Labor for ROAD testing	30	NOT APPLICABLE
Total Labor	**540min. (9 hours)**	**510 min. (8.5 hours)**
Engine oil	4 liters	1 liter

ATTENTION!: At the time of launch of this campaign, all sales registered in the SOM system will be extracted and all vehicles in STOCK will be considered as **NOT delivered to customers** and, as a result, are associated with the category that does not entail road testing and reimbursement for the full quantity of engine oil.

Warranty Claim Entry: This operation, using registration data from SOM, automatically determines which type of technical update is necessary for the motorcycle in question, and consequently, the applicable reimbursement.

1) Log on to www.serviceaprilia.com using your user name and password. Select "GGP" under the heading "Warranties"- on left side of home page.
2) Once the GGP portal opens, select "Tech. Update- Recall Campaign", then "Enter Recall Campaign Claim".

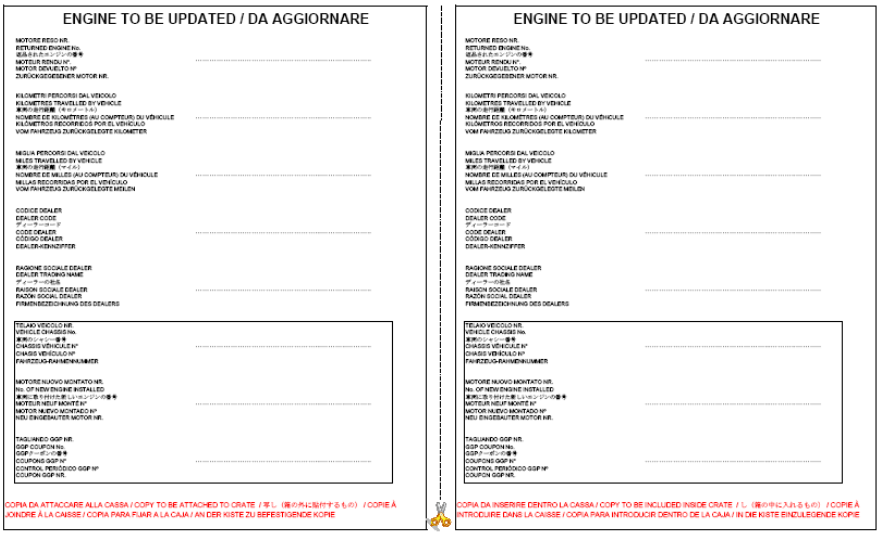
3) Enter the VIN number under “Frame” and tab down using the TAB key on your keyboard
4) Under “Element”- select “**RSV4- Engine Replacement**”
5) Under “Coupon Type” select, “Extraordinary”.
6) Under “Coupon Number” click the Question mark and a pop-up box will appear. Click on the number of the coupon that applies to the procedure that was performed (1, 2, etc) in the coupon box.
   Coupons have not been configured yet in GGP
7) In the “Km / Mls” box, enter the mileage of the bike.
8) In “Document No.” enter your in-house repair order number.
9) In “Document type” select “invoice”.
10) Under the “Date Carried Out”, enter the date in European format (dd/mm/yyyy)

When you are finished, submit the claim by clicking on the “Diskette Icon”  in the upper left hand corner of the screen.

PROCEDURE FOR RETURNING REPLACED ENGINES

After completing the engine installation, enter all the information requested in the “**ENGINE TO BE UPDATED**” form received with the new engine. The following information must be entered on the form: VIN number, total mileage (on customer vehicles), Engine serial number of returned engine (stamped at rear of engine), **Engine number of new engine installed in frame**, your dealer code, dealer name and GGP coupon number (Coupon Prog. Number can be found in GGP under “View/Confirm Recall Coupons”, after claim has been submitted.).

The form must be cut into two parts and compiled in duplicate. One copy must be placed inside the crate, while the other copy must be affixed to the exterior of the crate, over the document already fixed to the crate. (SEE **STEP 4** of “TECHNICAL PROCEDURE”)


ENGINE TO BE UPDATED / DA AGGIORNARE

ENGINE TO BE UPDATED / DA AGGIORNARE

The replaced engine must be returned complete with all ancillaries **within 45 days** of registering the campaign coupon in the GGP system. **All returned engines will be inspected for completeness and must not be missing any component. This includes the ECU, Throttle bodies, Airbox, Variable intakes if fitted, wiring harness, sensors, coils, spark plugs, stators/rotors, clutch basket/discs and left & right engine covers. If the replaced engine is not received by Aprilia within 45 days, or if it is received incomplete or damaged as a result of careless packing, Aprilia USA reserves the right to charge you with a penalty fee equivalent to the value of the replaced engine.**

Return Shipping Information: All engines removed from vehicles **must be** returned to ApriliaUSA

1) Follow Step 11 of the technical procedure concerning packing the old engine in the crate (See page 59 of this bulletin). Please be sure all documents are filled out and attached to the crate as described.

2) Information describing the return process will be communicated to your dealer through a dealer communication generated by the Aprilia USA parts department.

TREAD ACT CUSTOMER REIMBURSEMENT PLAN

Letter will be included upon NHTSA approval

CUSTOMER LETTER

Letter will be included upon NHTSA approval

TECHNICAL PROCEDURE

The main technical steps in the procedure are as follows:

1. **Vehicle identification**
2. **Specific equipment**
3. **Personnel necessary**
4. **Opening crate with new engine**
5. **Vehicle preparation**
6. **Removal of engine from vehicle inclusive of components still mounted on engine**
7. **Preparation of new and old engines**
8. **Installation of new engine and components on vehicle (without fairings)**
9. **Static testing of vehicle and refitting of fairings**
10. **Road test of vehicle (registered customer vehicles only)**
11. **Closing crate containing old engine being returned**

Important Note:

Tables indicating tightening torques are given at the end of the procedure.

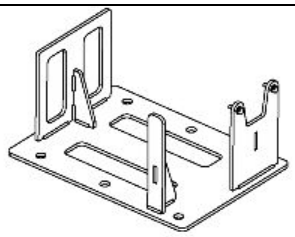
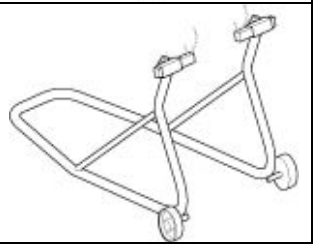
1. Vehicle identification

Ensure that the vehicle is effectively one of the vehicles requiring the procedure (see list of chassis numbers involved at www.serviceaprilia.com) and check that the new engine to be installed is the correct engine for the vehicle in question. "Factory" engines have **brown** colored engine side cases, while "R" engines have **black** colored side cases. In addition, "Factory" engines have the variable intake system wire protruding from the top of the airbox, underneath the ECU. "R engines have a "dummy" plug covering the hole at the top of the airbox.

VEHICLE	ENGINE CODE	DESTINATION
RSV4 FACTORY	CM225904 or CM225902	USA
RSV4 R	CM225905	USA

- Check the map loaded in the ECU: if the message **RACE appears on the dashboard** (map for Akrapovic exhaust system) when the ignition key is turned ON, use the **ECU already installed** on the vehicle and not the ECU installed on the new engine.
- Write down the vehicle mileage indicated on the instrument panel.

2. Specific equipment

Engine mounting plate p/n: 020864Y	
Rear stand p/n: AP8705021	

3. Personnel necessary (JOBS REQUIRING MORE THAN 1 PERSON)

Certain steps in the procedure must be carried out by 2 workers:

- Removing the engine laterally from the vehicle and installing new engine
- Placing engine to be returned in wooden crate

4. Opening crate with new engine

- Open the top cover of the crate containing the engine by undoing the two screws at the mid points of the two shorter sides of the cover.

- Undo the screws fastening the panel facing the front of the engine and remove the panel.

- Undo the screws fastening the panel facing the right hand side of the engine and remove the panel.

WARNING
Retrieve the protective bag, which must be reused for returning the old engine removed from the vehicle
If the engine is inside a blue sealed bag, save the bag for later use.

- Secure the engine with two straps, passing the straps through the four front and four rear stud bolts.

• Lift the engine with a hoist	
• Set the engine down on the floor, on its rear side	

The crate also contains a pack with the following: 1 frame - engine combination document 2 flywheel cover and clutch cover shields 3 left and right hand frame protectors 4 miscellaneous spare parts 5 AS APPLICABLE: bag for the old engine to be returned	

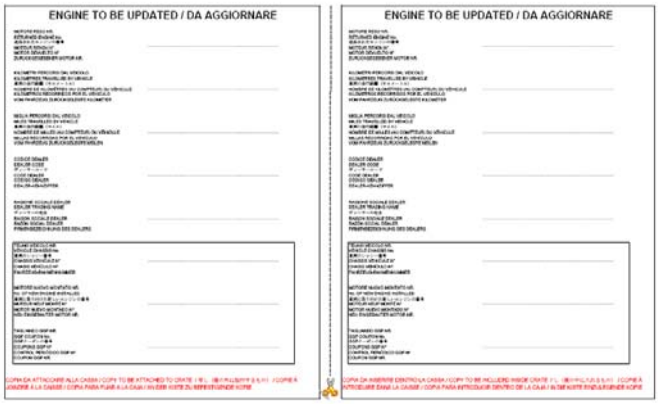
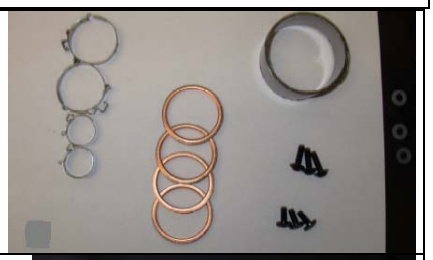
The crate contains the document FRAME – NEW ENGINE COMBINATION (1). This document must be compiled in full, and then one half of the document must be placed inside the crate and the other half affixed to the exterior of the crate, following the instructions given in Step 11	
The sealed pack (4) contains the spare parts indicated in the table below.	
N.B. the two frame protectors (3), and the flywheel cover and clutch cover shields (2) which must be fitted on the old engine, the four gaskets of the exhaust manifolds and mufffler gasket must be used. The other spare parts provided may be used only if necessary.	
AS APPLICABLE Bag (5) to protect the engine, to use as indicated in Chapter 11	

TABLE OF SPARE PARTS INCLUDED

QUANTITY	P/N	DESCRIPTION	NOTES
3	895915	STAINLESS TBEI M5X16 SCREW	R VERSION FAIRING SCREWS
3	893838	ERGAL TBCEI M5X12 SCREW	FACTORY VERSION FAIRING SCREWS (the three shorter screws)
2	890931	WATER PIPE CLAMPS	
2	AP8102349	OIL PIPE CLAMPS	
3	AP8120622	WASHERS	FOR FAIRING SCREWS
4	852090	EXHAUST GASKETS	MUST BE USED
1	GU05128230	SILENCER GASKET	MUST BE USED

5. *Vehicle preparation*

Proceed as follows to remove the engine from the frame:

5.1 Position the rear stand, the frame protectors and the flywheel cover and clutch cover shield.

5.2 Remove the fairings, the fairing lug and the radiator cowl.

5.3 Remove the fuel tank and the battery.

5.4 Disconnect and remove the throttle grip position sensor and the voltage regulator connectors.

5.5 Drain the engine oil and the coolant

5.6 Remove the engine coolant and oil radiators

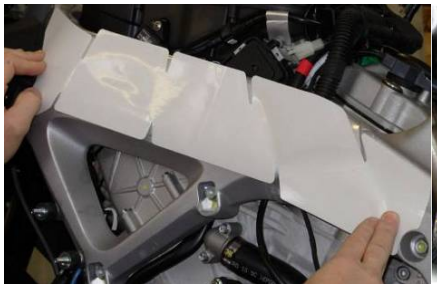
5.7 Remove the exhaust manifolds (inclusive of left hand rider footpeg and the exhaust butterfly valve motor, exclusive of rear manifolds)

5.8 Remove the side stand and the gear lever

5.1 Position the rear stand, the frame protectors and the flywheel cover and clutch cover shields.

- Set the vehicle on the rear stand.

- Fit the right and left hand protectors on the frame.
- Position flywheel cover and clutch protection shields.

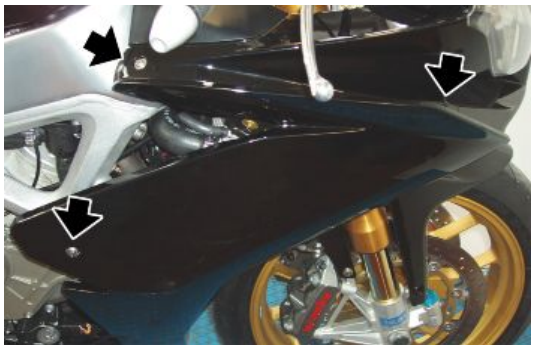


5.2 Remove the fairings, the fairing lug and the radiator cowl.

SIDE FAIRINGS

The following procedure is relative to a single fairing, but is applicable to both.

- Remove the lower side fairing.
- Unscrew and remove the three screws.



- Ease off the side fairing, taking particular care not to damage the fitting with the lower side fairing and the tabs fastening the side fairing to the lug.

- Release the insert on the retainer with the duct.

- Release the three inserts on the inner fairing.

- To refit, repeat the above steps in the reverse order, taking particular care not to damage the components involved.

Warning!

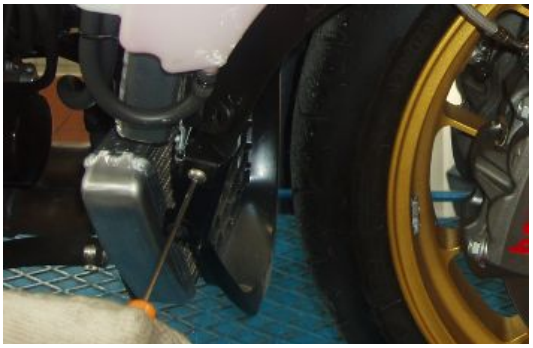
HANDLE PAINTED AND PLASTIC COMPONENTS WITH CARE; BE CAREFUL NOT TO SCRATCH OR DAMAGE THEM.

LOWER SIDE FAIRINGS

- The operations described below are valid for both lower side fairings.
- Remove the side fairing.
- Unscrew and remove the screw and remove the lower side fairing.

SIDE UNDERFAIRINGS

- The following procedure is relative to a single lateral underfairing, but is applicable to both, except where specified otherwise.
- After having undone and removed the securing screw from the central underfairing remove the side fairing concerned



- Unscrew and remove the lower screw.

- When working on the left hand side of the vehicle, remove the underfairing taking particular care not to damage the fittings with the central underfairing.
- When working on the left hand side of the vehicle, support the left hand underfairing, unscrew and remove the two nuts, retrieve the screws and lower the regulator.
- Remove the underfairing.

5.3 Remove the fuel tank and the battery.

- Remove both side fairings
- Unscrew and remove the front screw fixing the tank.

- Remove the passenger saddle, rider saddle and the battery, disconnecting the negative terminal (black) first.
- Undo and remove the two rear screws.

FOR ALL VERSIONS EXCEPT USA VERSION

- Release the clamps.
- Remove the two tank breather pipes on the left.

USA VERSION ONLY

- Release the clamp on the forward most nipple and remove the water drain hose from fuel tank.

- Detach the clamp under the check valve and carefully remove the hose from the bottom of the checkvalve. The short hose and Check valve stay on the tank..

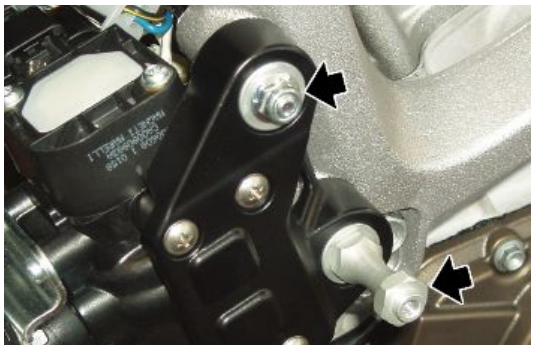
- Disconnect the quick connect fuel pipe connnection on the right

Warning: Be aware of possible fuel spray

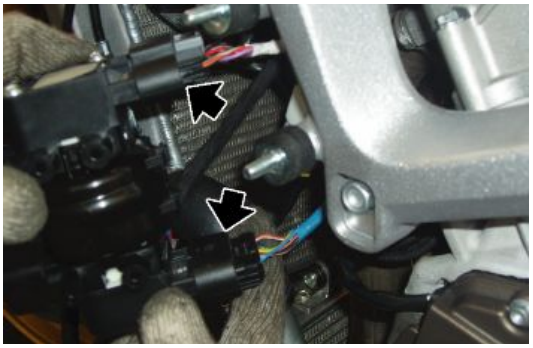
- Disconnect the fuel pump electrical connector.
- Remove the tank.

5.4 Disconnect and remove the throttle grip position sensor and the voltage regulator connectors.

- Unscrew and remove the nut and the stud bolt.
- Retrieve the washers.

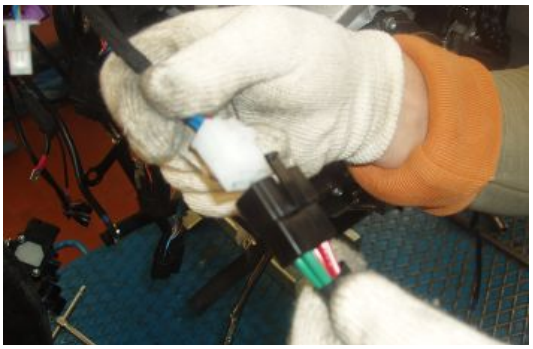


- Move the throttle grip sensor aside, cut the cable ties and disconnect the two connectors, sliding off the retainer locks with two fingers and then pressing the black tab on the connector
- Remove the throttle grip position sensor.



- Disconnect the alternator connector.

- Disconnect the voltage regulator connector.



5.5 Drain the engine oil and the coolant

Engine oil

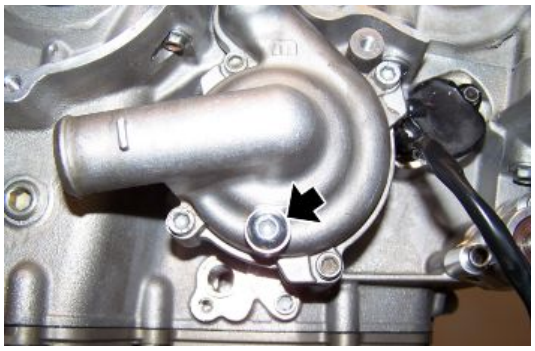
- Place a container with a capacity of at least 4 litres (0.88 UK gal) under the drainage plug.
- Unscrew and remove the filler cap
- Unscrew and remove the drain plug.
- Drain the oil into the container; allow several minutes for oil to drain out completely.

WARNING: For unsold dealer stock vehicles, the oil must be saved and be reused to refill the engine.

Coolant

- Place a container with a capacity of at least 2.2 litres (0.48 UK gal) under the coolant pump.
- Remove the radiator cap/valve to help the fluid drain out.

- Unscrew and remove the system drain screw and retrieve the seal washer.
- Wait for the entire circuit to drain (engine+pipes+radiator)
- Refit the system drain screw complete with washer.



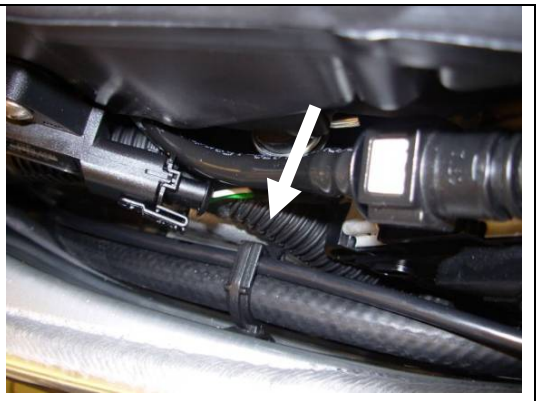
WARNING: The coolant must be reused completely to fill the new engine, sold and unsold vehicles.

5.6 Remove the coolant and oil radiators

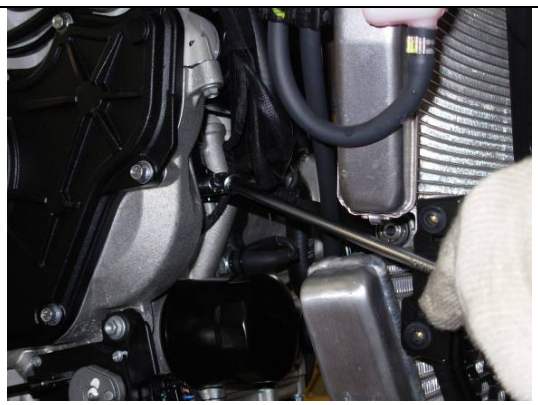
USA VERSION ONLY

REMOVING THE CANISTER

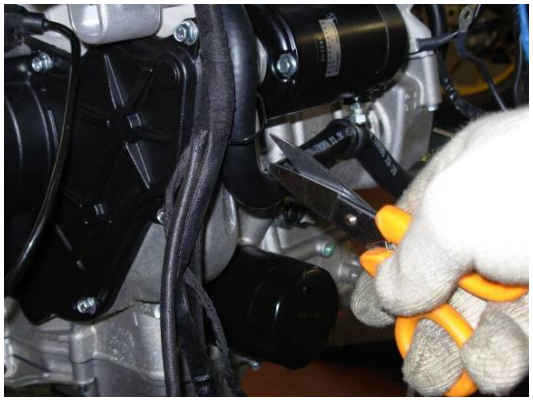
- Detach the clamp on the fuel vapor reburn hose (top left pipe on canister) without detaching the hose.
- Use a hot air gun to heat the union/nipple and remove the hose.

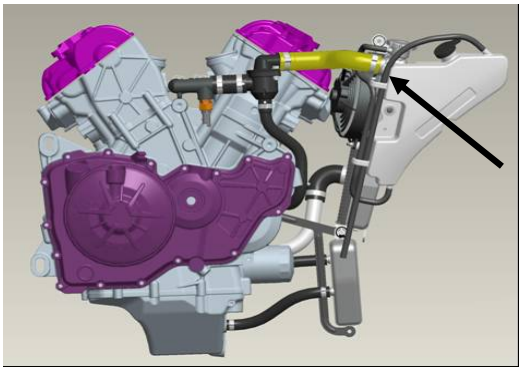
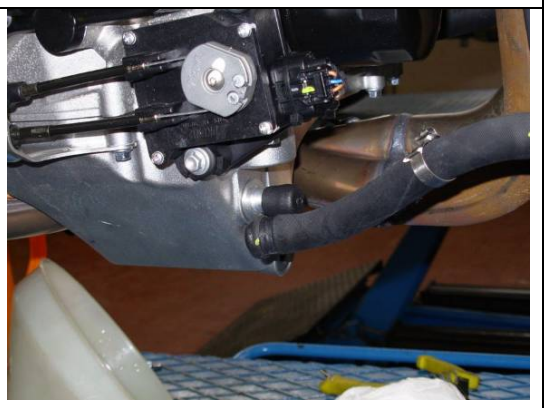
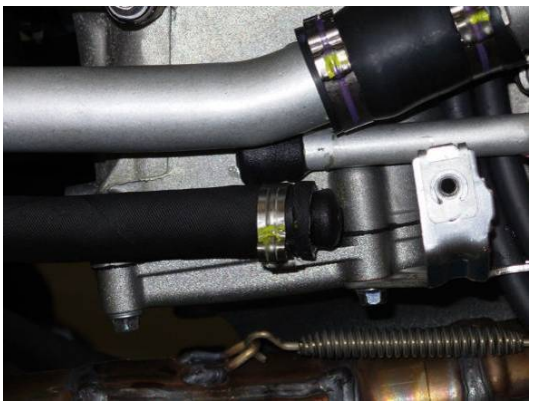
• Pull the fuel vapor hose (one that was connected to valve) out through the hose grommet on the left hand side of the vehicle • Also remove the hose from the 2 slots fastened by the radiator mounting screws	
• Remove the canister from the frame, undoing the two screws fastening the canister to the frame	

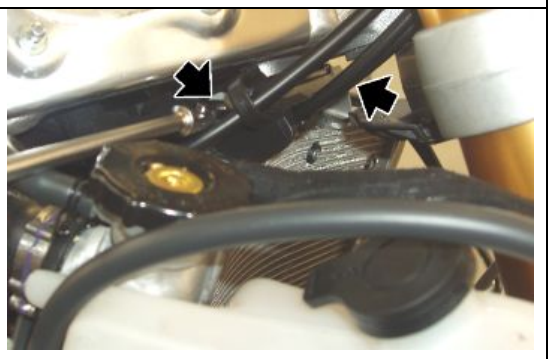
ALL VERSIONS

• Undo and remove the 2 screws fastening the radiator mounting subframe to the engine	

- Cut the zip ties on the left side and front right side.



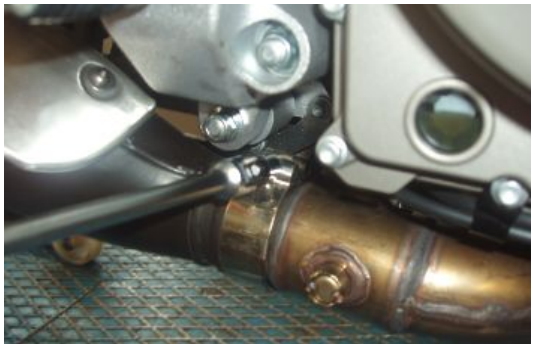
• Disconnect the coolant pipe from the radiator, on the right side	
• Disconnect the oil pipes on the left side and right side	 

• Disconnect the coolant pipe from the water pump on the left side (careful! liquid will come out)	
• Undo and remove both radiator bracket upper fixing screws **USA VERSION ONLY:** • Retrieve the hose grommet for the canister–fuel tank hose located on the right hand side **ALL VERSIONS** • Remove the radiators with the bracket	

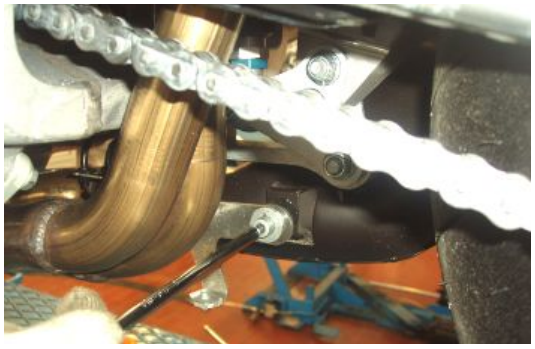
5.7 Remove the exhaust manifolds (inclusive of left hand rider footpeg and the exhaust butterfly valve motor, exclusive of rear manifolds)

Removing the muffler

- Loosen the sealing clamp between the muffler and the central manifold.



- Unscrew and remove the front screw fastening the muffler to the chassis bracket.



- Unscrew and remove the upper attachment screw fixing the muffler to the foot peg bracket; retrieve the collar, the washer and the nut.

Warning:
DURING THIS OPERATION SUPPORT THE EXHAUST SO THAT IT DOES NOT FALL.

- Remove the muffler.

2-IN-1 FRONT EXHAUST MANIFOLD

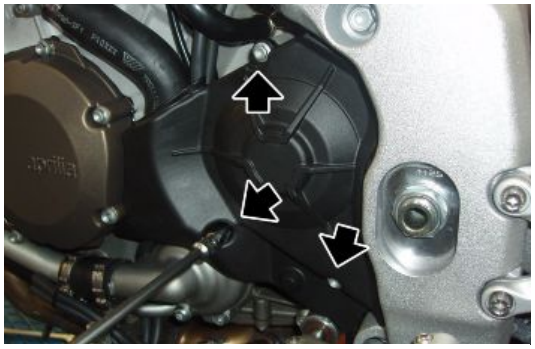
- Release the springs between the front exhaust manifolds and the catalytic converter mid pipe.

- Unscrew and remove the four nuts fastening the front exhaust manifold and retrieve the washers.

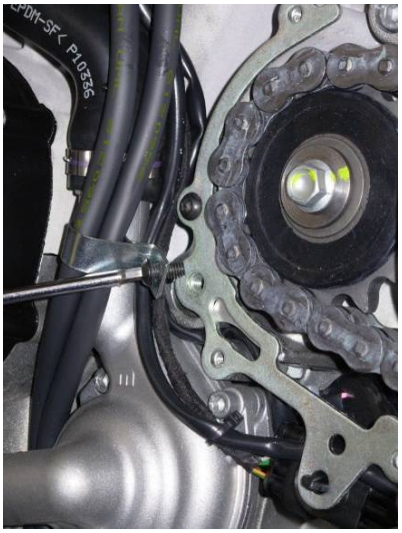
- Remove the front exhaust manifold.

2-in-1 Central exhaust manifold (with catalytic converter)

- Undo and remove the 3 screws and remove the pinion cover.
- Oxygen sensor connector is fastened to the metal suppport



- Remove the screw and metal clamp through which the fuel tank water drain hose goes through.
- Remove the screw holding the metal guard to the engine.

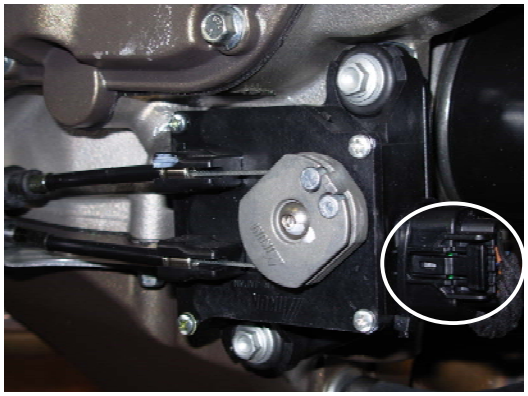


- Remove the Oxygen sensor connector from the metal guard and unplug the connector
- Cut the zip tie.

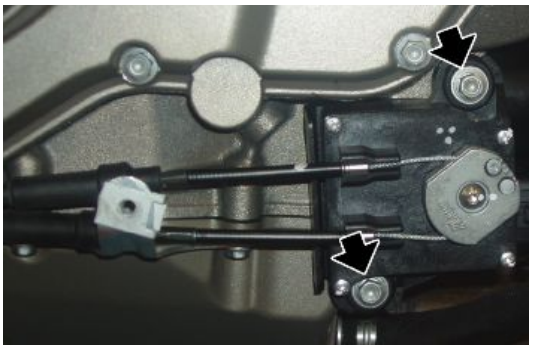
- Release the gear sensor connector

EXHAUST BUTTERFLY VALVE MOTOR

- Disconnect the connector from the valve control starter by cutting the zip tie.



- Unscrew and remove the two valve actuator motor screws
- Remove the valve actuator motor together with the heat shield.



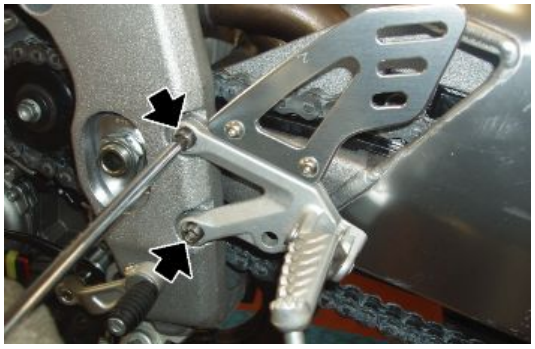
- If installed, unscrew and remove the screw from the cable grommet for the two exhaust butterfly valve control cables.

WARNING: Do not refit the cable grommet on the new engine (to reduce risk of damage to the cables)

- Detach the springs between the rear exhaust manifolds and central manifold.
- Remove the central manifold.

Note:To facilitate subsequent removal, leave the rear manifolds in place

- Remove the left hand rider footpeg.

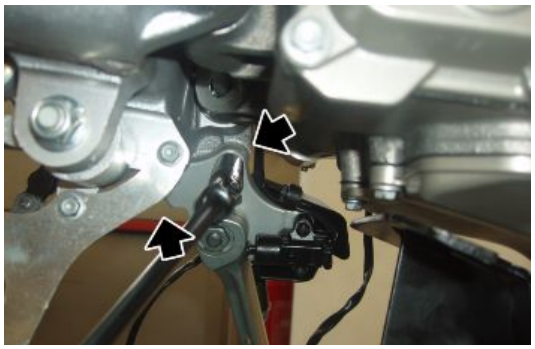


5.8 Remove the side stand and the gear lever

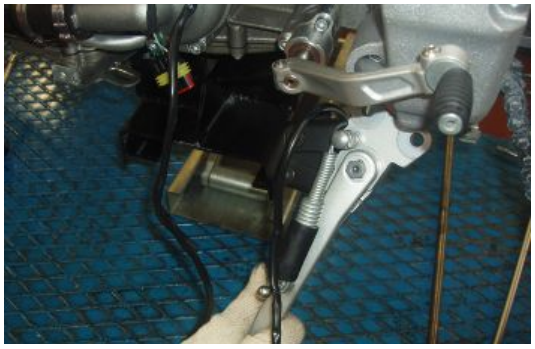
- Remove the zip tie.

- Disconnect the side stand connector.

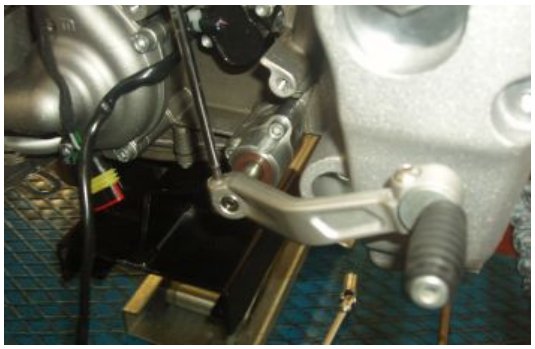
- Unscrew and remove the two screws (one screw is not visible in this photo)



- Remove the side stand.



- Loosen the pinch screw and ease off the gear shifter lever.



6. Removal of engine from vehicle inclusive of components still mounted on engine

- Detach the clutch cable.

- Remove the engine oil pressure sensor wiring harness.

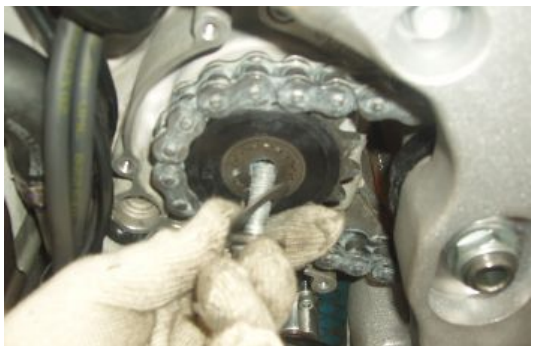
- Detach the rubber cap from the starter motor
- Unscrew and retrieve the nut together with the relative washer, and disconnect the starter motor.

- Unscrew and remove the engine ground screw, remove the cable grommet and detach the three ground cables.

- Undo and retrieve the chassis ground screw together with the relative washer.
- Detach the ground cable from the chassis.

- Disconnect the vehicle wiring harness/engine wiring harness connector

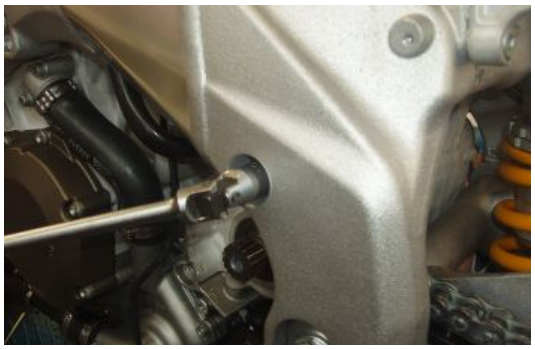
- Unscrew and remove the front sproket fixing screw and retrieve the two washers.



- Loosen the drive chain adjuster screws.

- Loosen the rear wheel fixing nut.
- Remove the front sproket, releasing it from the drive chain.

- Working on the left side of the vehicle, undo and remove the engine support screw and collect the washer.



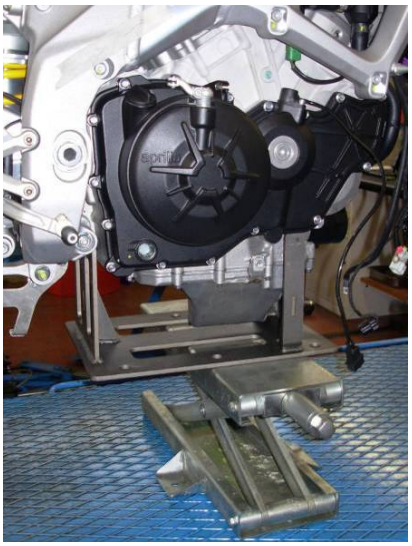
- Unscrew and remove the three engine bracket screws and remove the bracket.

REAR EXHAUST MANIFOLDS

- Unscrew and remove the four nuts fastening the rear exhaust manifolds and retrieve the washers.

- Remove the two rear exhaust manifolds and **mark the left hand manifold** to facilitate reinstallation on the new engine.

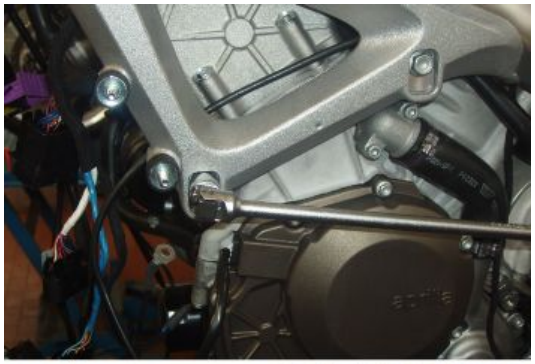
- Install the engine support special tool **020864Y**, fastening it to the engine with the two front screws.



- Place a scissor jack or similar shop tool underneath the engine support, to eventully support the weight of the engine.

- Working on the left side of the vehicle, undo and remove the two engine support screws.

Note: For the Factory version only: retrieve the frame inserts.



- Working on the right side of the vehicle, undo and remove the two engine support screws

Note: For the Factory version only: retrieve the frame inserts.

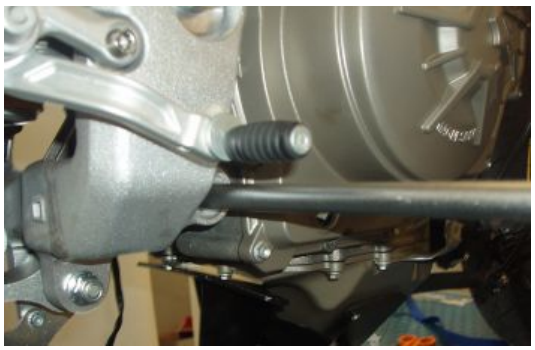
- For both versions, retrieve the two round spacers shims on the inner side of the frame. (one used for each screw)

- Working on the right side, unscrew and remove the upper rear engine support screw and retrieve the clamping plate.

- Unscrew the upper adjuster screw bushing until it turns no more. (use a allen/hex tool)

- Working on the right side of the vehicle, unscrew the lower engine support nut and retrieve the washer.
- Ease off the long bolt from the left hand side of the vehicle.

- Be sure to unscrew the lower (in the picture) and upper adjustment bushes using the allen/hex tool.



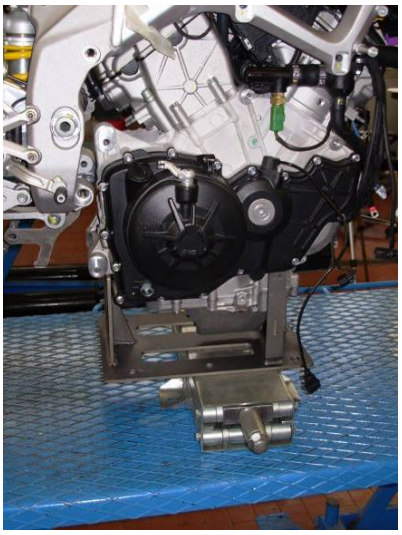
- Remove the zip ties on the subframe support to free the variable intake control unit wiring

Note: For the Factory version only: disconnect the connector from the variable intake duct ECU.

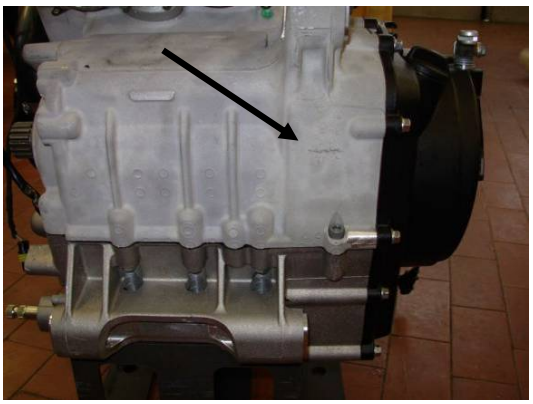
WARNING:

THE FOLLOWING OPERATIONS MUST BE DONE WITH THE AID OF A SECOND PERSON.

- Fasten the *Engine mounting plate (*p/n: 020864Y) to the engine, supporting the weight of the engine with a scissor lift or similar equipment.
- Lower the engine using the scissor jack.
- Hook an appropriately sized belt for the weight of the vehicle onto a hoist and fasten the ends of the belt to the semi-handlebars (clip-ons)
- Raise the front wheel of the vehicle by approximately 65 cm (26 in).
- Remove the engine from the vehicle sideways



- Identify and note the engine serial number of the engine removed from the vehicle and the serial number of the new engine being installed.



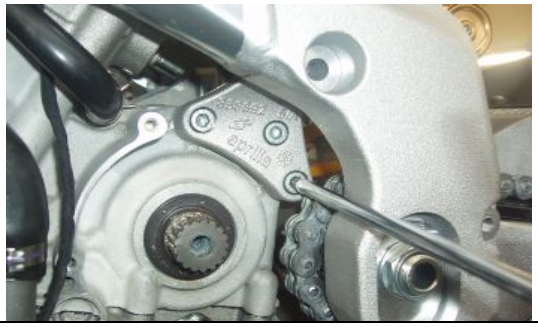
Important Note: Write these numbers on the paper form that comes in the crate with the new engine.

7. Preparation of new and old engines

The following components must be removed from the old engine that is to be returned and installed on the new engine:

<table>
<tr>
<td>

- Remove the three inserts and install on new engine. (Be certain they are oriented as shown.)
- Install support bracket on new engine with the 3 screws (torque to 18.44 ft. lbs.)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- Remove the coolant pipe, complete with thermostat valve by opening the clamp
- Intstall on new engine.
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- Remove the two front airbox unions from the airbox
- install on new engine.
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</table>

• Remove the fairing/engine fastener clips on the right and left hand sides of the oilpan- pay attention to their location and orientation. Install on new engine.	
Remove the ECU from the removed engine if it is loaded with the RACE (Akrapovic map): Install on new engine. • electronic control unit. • Detach the two connectors, pushing the two sliding locks outward. **Note:** **Do NOT remove the ECU if it is loaded with a standard map.**	
USA version only • Working from the front right side, remove the fuel vapor reburn hose, complete with brass union and clamp (disconnect the upper clamp only). • Re-clamp the fuel vapor reburn hose and brass union to the new engine, removing the white cap from the protuding hose.	 

The following components must be removed from the new engine and installed on the old engine to be returned.

• From the new engine, remove all protective plugs and the caps from the oil and coolant pipes. • Install on the removed engine to prevent fluid spillage during transport.	
• **Install the New ECU on the old engine wiring harness, only if the vehicle has an ECU loaded with the RACE mapping. (Must reuse RACE mapped ECUs)** • Detach the two connectors, pushing the two sliding locks outward.	
• Set the old engine down carefully on its rear side to enable removal of the engine support, which must be installed on the new engine.	

NOTE: we recommend not placing the old engine in the crate yet, and waiting until the new engine has been completely installed and final testing has been concluded.

8. Installation of new engine and components on vehicle (without fairings)

NOTES APPLICABLE FOR FACTORY VERSION ONLY

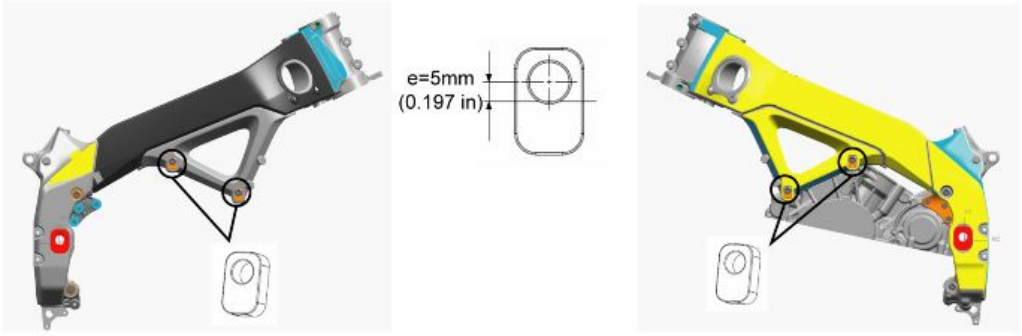
- Before aligning the engine retainers, place on the frame the internal and external right and left inserts, with the precautions described below.

Adjustment of engine height in relation to the chassis is assured by proper inserts placed on the chassis (front position) and on the engine, matching the fixing points of the engine to the chassis.

The hole position relative to the centreline of the insert is e=+5 mm (e= +0.197 in), therefore, the engine is fixed at maximum height possible.

WARNING

THE FRONT LEFT AND RIGHT INSERTS ARE IDENTICAL AND MUST NOT BE TURNED UPSIDE DOWN.



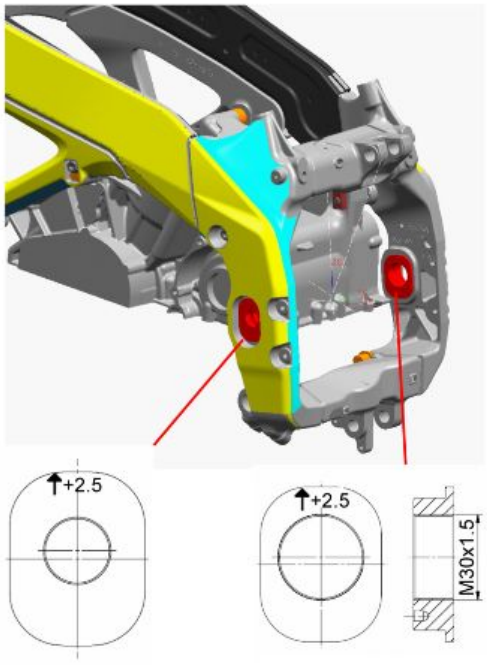
The height of the swingarm pin in relation to the chassis is adjusted with special inserts housed in the chassis. The hole is offset by +2.5 mm (0.098 in) in relation to the centre line of the insert; as a result the swingarm is in the high position.

There are 4 inserts, subdivided as follows:

- Inner/outer
- Right/Left

The two right side swingarm pin inserts are different from each other.

The two left side swingarm pin inserts are the same in relation to each other.

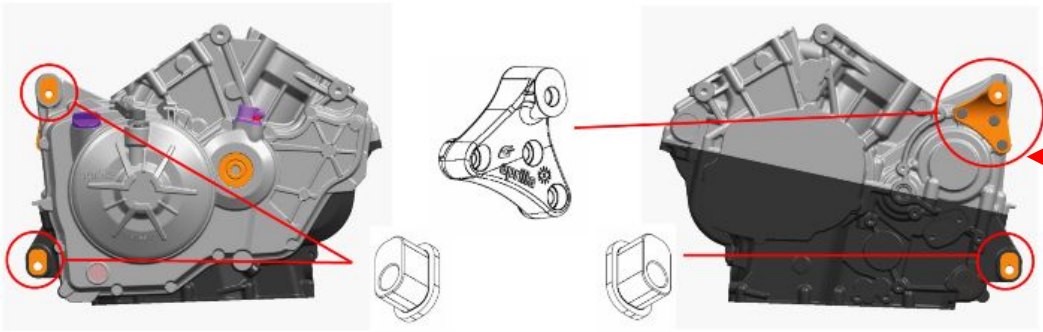


WARNING

THE FOUR INSERTS MUST BE FITTED WITH THE ARROW FACING UPWARDS, OTHERWISE THE VEHICLE WILL BE DAMAGED!

WARNING

THE RIGHT REAR INSERTS (+5mm (+0.19 in)) AND THE LOWER LEFT REAR INSERT (+5mm (+0.19 in)), ARE IDENTICAL.



Install bracket on new engine using the three screws and tighten to **18.44 Ft. lbs.**

ALL VERSIONS

WARNING

Observe the tightening torques specified and the indications given for the use of Loctite (see the tables at the end of this document)

- With the help of another worker and with the motorcycle frame secured to a hoist, raise the engine into the installation position using the scissor jack, ensuring that the airbox air intake unions are aligned correctly.

Centring the engine on the chassis

WARNING:

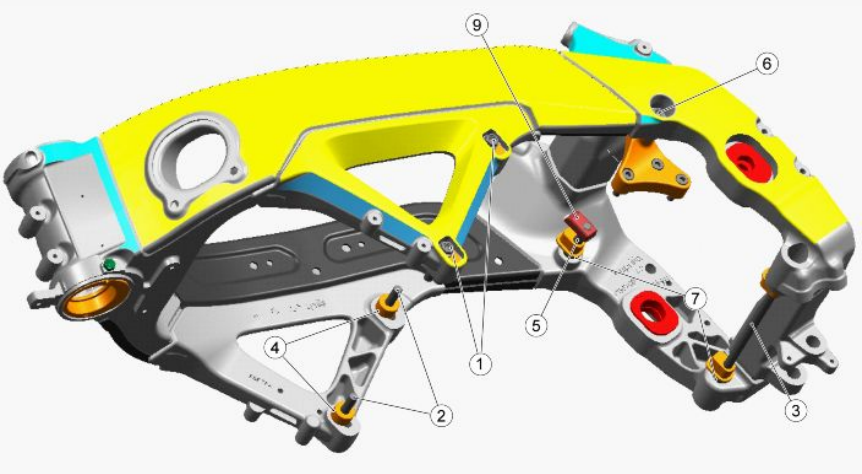
PAY SPECIAL ATTENTION DURING CENTRING PHASE OF THE ENGINE ON THE CHASSIS. OPERATE WITH CAUTION SO AS NOT TO DAMAGE THE SCREWS AND THE CHASSIS INTERNAL AND EXTERNAL SPACERS.

Working on the **left side**, place and screw without tightening:

- the two front fixing screws (1);
- the engine attachment upper fixing screw (6);
- the lower rear fixing pin (3), so as to centre the engine position.

Working on the **right side**, place and screw without tightening:

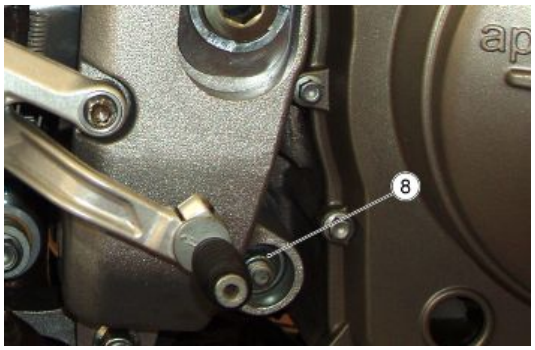
- the two front fixing screws (2) and, from the chassis internal side, the specific spacer bushings (4);
- The upper rear fixing screw (5).



Securing the engine

WARNING

TO MAKE SURE THE ENGINE ALIGNMENT AND CENTRING ON THE CHASSIS IS CORRECT TIGHTEN TO THE PRESCRIBED TORQUE ALL THE SCREWS IN THE SPECIFIC ORDER GIVEN BELOW.



Working on the left side:

- Tighten the two front screws (1) to the prescribed torque. (36.88 Ft. lbs)- Loctite 243
- Tighten the engine attachment upper fixing screw (6) to the prescribed torque, after installing the corresponding washer. (36.88 Ft lbs.)

- Slide off the lower rear long bolt, which was temporarily installed earlier (3);

Working on the right side:

- Slide off the upper rear fixing screw (5), which was temporarily installed earlier.
- Place and tighten internally the two set bushings (7) to the prescribed torque (use allen/hex tool) – (8.85 Ft. lbs for each bushing)
- Place again on the left side, the lower rear long bolt (3).
- Tighten the lower rear long bolt nut on right side (8).- (36.88 Ft lbs.)
- Install again the upper rear fixing screw (5) and tighten the lock plate (9) against the internal mount of the engine to the prescribed torque. (36.88 Ft.lbs.)
- Tighten the two front engine screws (2) to the prescribed torque, making sure the two round spacer bushings (4) are in place. (36.88 Ft. lbs)- Loctite 243

- Remove the engine support and scissor jack.

WARNING

As noted on bulletin posted on serviceaprilia:

Tighten the screws fastening the clutch cover, flywheel cover and oil sump:

- **clutch cover** screws, correct tightening torque (12 Nm) 8.85 Ft lbs.
- **flywheel cover** screws, correct tightening torque (12 Nm) 8.85 Ft lbs.
- **oil sump** screws, correct tightening torque (12 Nm)) 8.85 Ft lbs.

WARNING

The following vehicle reassembly sequence does not provide detailed instructions for each component. Critical stages in the procedure, however, are indicated.

- Install the rear exhaust manifolds,

Warning:

Use the two new gaskets supplied with the new engine.

- Install the ground cables

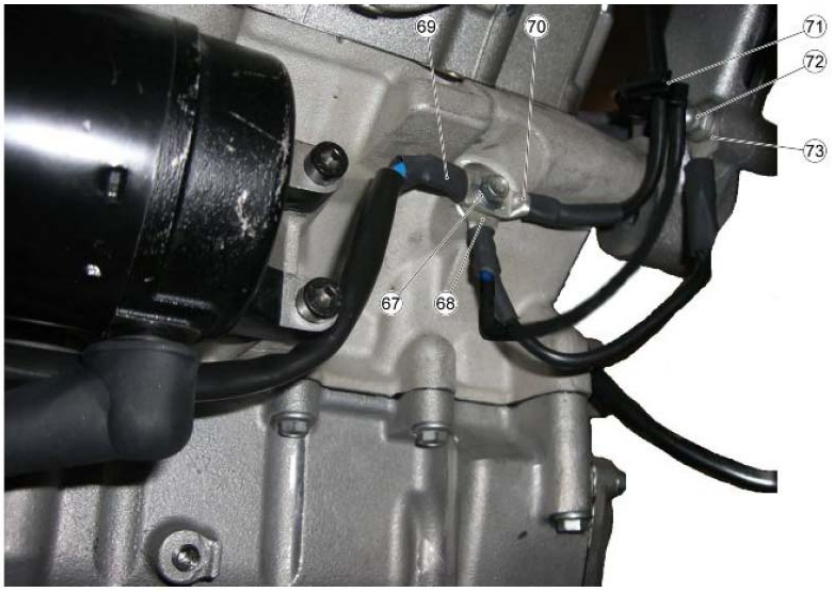
NOTES FOR THE REINSTALLATION OF THE GROUND CABLES

68. Lug terminal from engine wiring harness
69. Vehicle wiring harness lug terminal
70. Battery - engine ground cable lug terminal.
71. Cable grommet
73. Lug terminal from engine wiring harness (single cable with 68 lug terminal)

To avoid inverting the ground connections, unscrew the screw (67) from the engine; to connect the other ground connections, the frame ground connection (73) can be connected using the screw (72), as shown in the figure.

WARNING

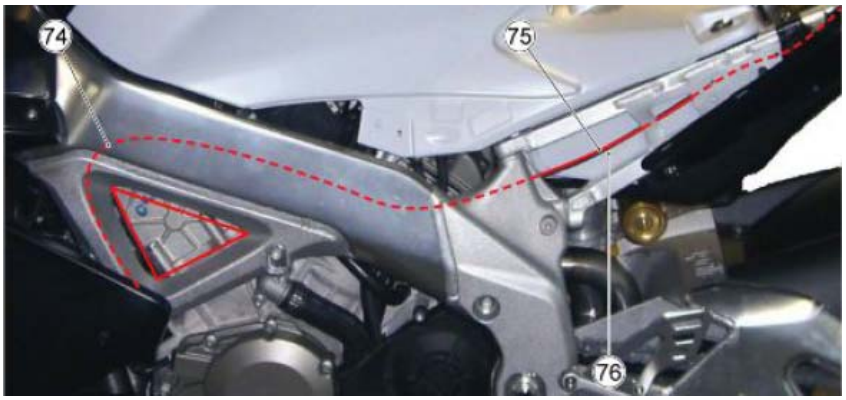
TAKE CARE NOT TO SWAP THE TWO GROUND LUG TERMINALS (68) AND (73).



-

Zip tie the battery-engine ground cable harness to the throttle grip position sensor cable harness as far up as possible.
74. Zip tie
75. Battery - engine ground lead
76. Engine - battery ground cable harness routing

The engine - battery ground cable harness must not be visible within the area indicated with a red triangle.



- Install the side stand and connect the connector
- Install the central manifold
- Install the front manifold

WARNING

Use the two new gaskets supplied with the new engine.

- Install the exhaust muffler

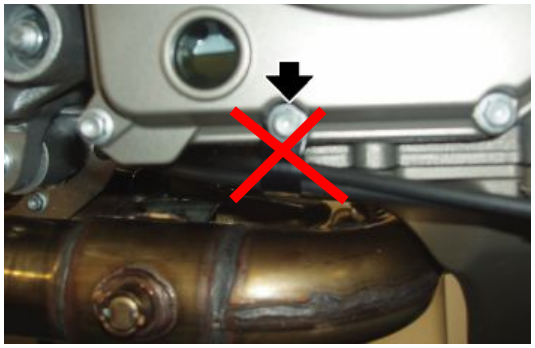
WARNING

Use the new gasket supplied with the new engine.

- Refit the chain and the pinion
- On the left hand side, install the triangular plate fastening the engine to the frame (this must only be installed now to facilitate the installation of the components listed)
- Install the left hand rider footpeg.
- Install the exhaust butterfly valve with the heat shield, but without the cable grommet

NOTES FOR THE REINSTALLATION OF THE EXHAUST BUTTERFLY VALVE

- Do not refit the cable grommet (to prevent heat conduction from the engine, which may result in damage to the sheaths).
- After installation, calibrate the exhaust butterfly valve

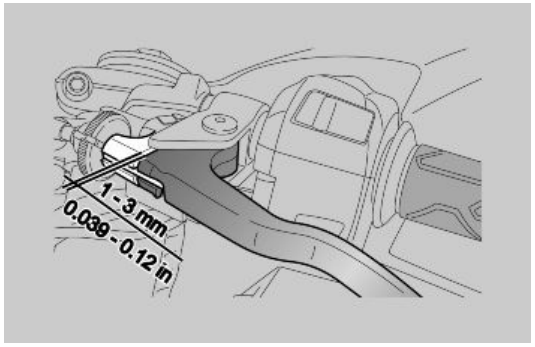


- Connect the exhaust butterfly valve connector and fit the retainer zip tie.

- Connect the clutch cable

NOTES FOR THE REINSTALLATION OF THE CLUTCH CABLE

- Check and adjust the clutch lever clearance with the adjuster screw.
- The clutch lever clearance should be between 1-3 mm (0.039 - 0.12 in).



NON-USA VERSIONS ONLY

- Fit the 2 tank breather pipes on the left hand side

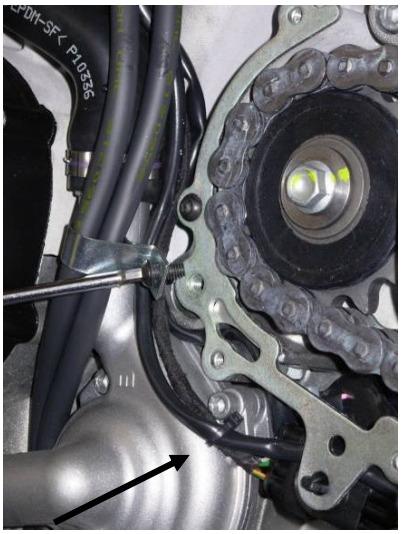
USA VERSION ONLY

NOTES FOR REFITTING THE CANISTER HOSE ONTO THE FUEL TANK

- The tank breather hose must be fitted for this version.
- Fit the canister-fuel tank hose, routing the hose underneath the front of the frame (from right to left), installing the right hand radiator mounting hose grommets, feeding the hose through the left hand radiator mounting hose grommets and inserting into the plastic hose grommet on the left hand side of the frame

- Connect the oxygen sensor connector, fit the connector onto the metal bracket and fix the bracket onto the engine
- Connect the side stand connector and the gear sensor connector near the filter box

NOTES FOR THE REINSTALLATION OF THE OXYGEN SENSOR, STAND AND GEAR SENSOR

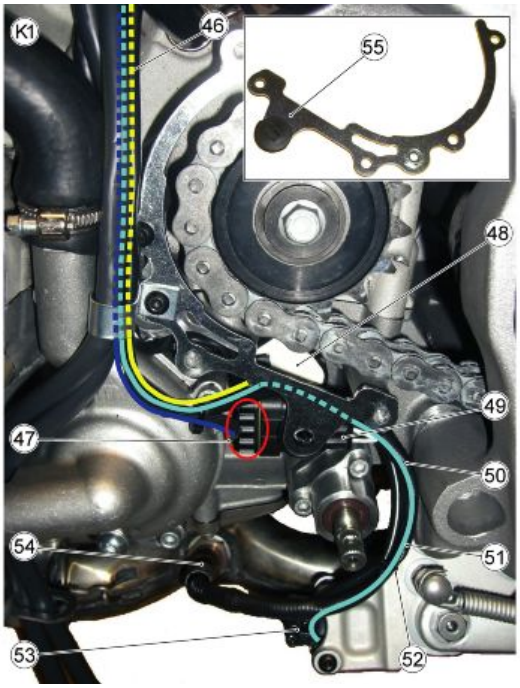


- Route the cables under the slot for the passage of the fuel tank water drain hose
- Fit a clamp as indicated in the figure

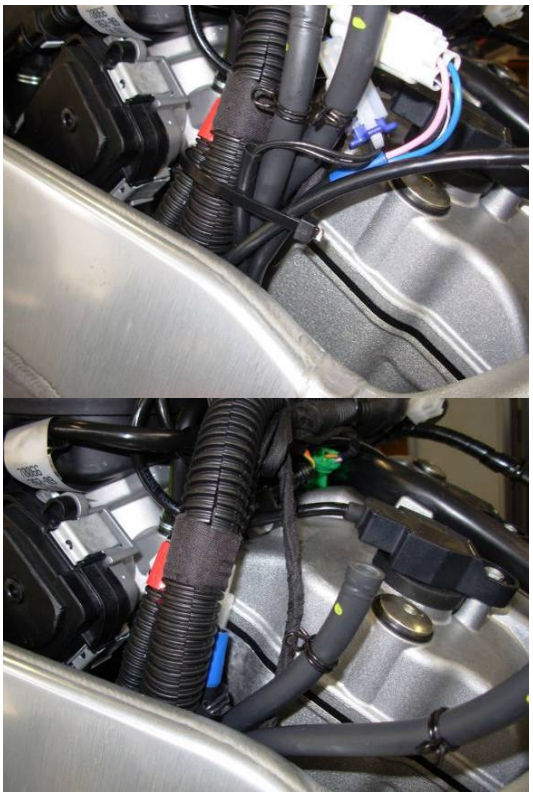
WARNING

Ensure that there is no interference between the cables and the screws fastening the sproket cover, which will be installed later.

46. Gear sensor wiring harness routing (yellow)
47. Oxygen sensor connector, vehicle wiring harness side
48. Gear sensor
49. Oxygen sensor connector
50. Side stand switch wiring harness routing (light blue)
51. Oxygen sensor wiring harness routing (dark blue)
52. Zip tie
53. Stand switch
54. Oxygen sensor
55. Mounting



Fit a zip tie and position the connectors for the side stand switch and the gear sensor underneath the corrugated pipes (as indicated in the two figures)

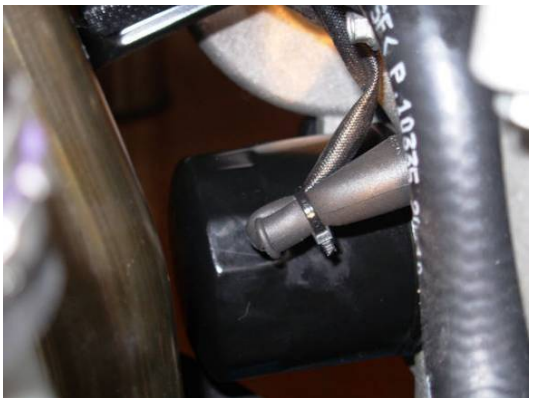


- Install the sproket cover
- Install the gear change lever
- Connect the starter motor cable
- Install the oil pressure sensor connector

NOTES FOR THE INSTALLATION OF THE STARTER MOTOR AND OIL PRESSURE SENSOR CONNECTOR CABLES

Right side
3. Starter motor (the cable must be routed between the radiator pipe and the engine)
4. Zip tie
5. Exhaust valve actuator cable harness routing
6. Oil pressure sensor and cable harness routing

- Fasten the oil pressure sensor cable onto the rubber cap with a zip tie



- Fit and connect the vehicle wiring harness-engine wiring harness connector, ensuring the purple lock slider is pushed fully into the lock position
- Install the water and oil radiator mountings

NON-USA VERSIONS ONLY

NOTES FOR THE INSTALLATION OF THE RADIATOR MOUNTINGS

- On the right hand side, fasten the clutch cable grommet together with the screw

- On the left hand side, fasten the accelerator cable guide slot together with the screw

USA VERSION ONLY

NOTES FOR THE INSTALLATION OF THE RADIATOR MOUNTINGS

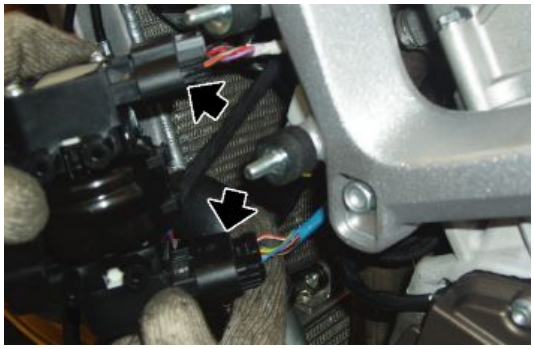
- On the right hand side, install the metal cable grommet with hose as well as the clutch cable grommet

- On the left hand side install the cable grommet with the throttle grip position sensor cables and the canister hose leading to fuel tank.

- Fasten the engine fuel vapor reburn hose onto the canister with the metal clamp
- Install the canister on the frame

- Connect the oil and coolant pipes and fit the relative metal clamps.
- Fit the regulator, alternator and throttle grip position sensor cables

NOTES FOR THE INSTALLATION OF THE THROTTLE GRIP POSITION SENSOR



- **THE LIGHT BLUE CONNECTOR HAS THE LIGHT BLUE CABLE AND THE WHITE CONNECTOR HAS THE WHITE CABLE.**
- Ensure that the throttle grip position sensor cables are fitted correctly and that the grey safety locks are correctly locked.

WARNING

The following procedure must be carried out correctly to prevent contact between the cables and the front exhaust manifolds

- Connect the regulator (black) and alternator (white) cables, routing between the two throttle grip position sensor cables and behind the coolant hose leading to the radiator

- Fasten all cables, except for the alternator cable, with a zip tie placed as far up as possible

- Fitting a zip tie approximately 3 cm (1 in) below the previously fitted zip tie, fasten all the cables including the alternator connector cable, pushing the connector downwards

- Fit a third zip tie at the same height as the lower connector of the throttle grip position sensor

USA VERSION ONLY

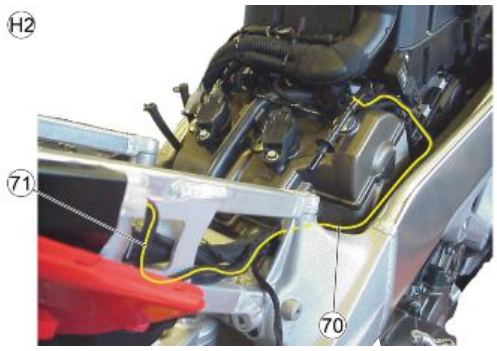
NOTES FOR ROUTING THE CANISTER–FUEL TANK HOSE ON THE LEFT HAND SIDE

- Route the hose as far up as possible between the wiring installed in the previous step and the frame.

- The hose **must not** be positioned as shown in the figure: the hose must not be visible from the exterior.

- Route the wiring for the variable intake duct control unit along the rear subframe

NOTES FOR ROUTING THE INTAKE DUCT CONTROL UNIT CABLE



70. Zip tie
71. Intake duct control unit wirng harness routing

- For Factory version: connect the connector to the intake duct control unit
- For R version: fasten the connector with a zip tie

- Fill engine oil system.

NOTES FOR FILLING ENGINE OIL SYSTEM

- If the vehicle is a customer bike, replace the oil, otherwise reuse the oil drained previously.
- Use AGIP TEC 4T **semi-synthetic** oil or an oil compliant with CCM G-4 A.P.I. SG. SAE 15W-50 standards
- Check and, if necessary, replace the drain plug sealing washer.
- Screw and tighten the drainage plug.

- Add 4 l (0.88 UK gal) of engine oil.
- Screw on the filler cap.

- Fill the cooling system via the filler orifice on the radiator with the quantity of coolant (drained from the old engine) necessary to reach the lip of the orifice (approx. 2.2 l - 0.48 UK gal), and fit the cap/valve.

- Install the fuel tank complete with breather pipes, fuel pipe and fuel pump connector. Check that there is sufficient fuel in the tank (at least 2 l – 0.4 UK gal).

USA VERSION ONLY

NOTES FOR THE FUEL TANK

- Connect the canister hose to the check valve using a metal clamp (hose coming from the previosly installed canister)

- Connect the water drain hose to the front nipple on the tank
- Connect the canister hose to the rear nipple on the tank (if short hose and valve assembly was previously removed)
- The ground cable must be routed between canister hose and frame.

9. Static testing of vehicle and refitting of fairings

- Connect the vehicle battery (with an in stock vehicle , use another appropriate battery temporarily for the purposes of the test and do not activate the vehicle's own battery)
- Connect the diagnostic tool to the vehicle
- Turn the ignition key ON: check that the side stand warning light and neutral indicator function correctly
- Carry out the **"Handle self-learning"** procedure from the Parameter adjustment screen (screwdriver and hammer icon), then check that the status given in the Device states screen (0/1) for "Handle self-learning" is "Completed" or "Done".
- Carry out the **"Throttle self-learning"** procedure from the Parameter adjustment screen (screwdriver and hammer icon), then check that the statuses given in the Device states screen (0/1) for "Front throttle automatic self-learning", "Rear throttle automatic self-learning" and "Throttle self-learning with diagnostics instrument" are "Completed" or "Done".
- Check for the following errors:

  if the error MEM (memorised) is shown, select the function "Cancel error memory" from the "Component activation" (injector icon) screen

  if the error ATT (current) error is shown, resolve the problem and, once the error status has changed to MEM, select the function "Cancel error memory" from the "Component activation" (injector icon) screen

If using the old ECU (for vehicles with **RACE** indicated on the instrument panel), carry out the **Exhaust butterfly valve calibration** procedure.

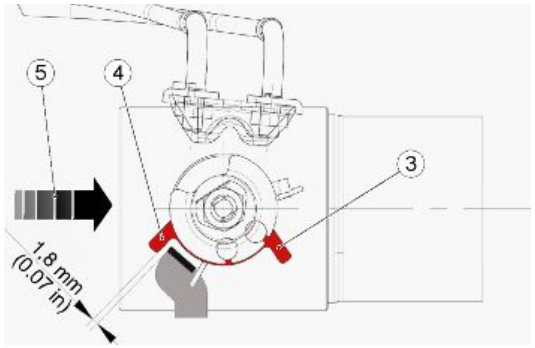
If using the ECU received with the new engine:

- Check that the correct map is loaded from the ISO/INFO ECU screen:

VEHICLE	ENGINE CODE	MAPPING	DESTINATION
RSV4 FACTORY	CM225904 or CM225902	4023AB01	USA
RSV4 R	CM225905	4023AF01	USA

EXHAUST BUTTERFLY VALVE CALIBRATION

- Slacken the exhaust butterfly valve cable tension.
- From the Adjustable parameters screen page, use the diagnostic instrument to select: Acquire exhaust butterfly valve zero position
- Press the enter button to launch zero position acquisition, then switch off the vehicle and leave the ignition key **OFF.**



- Using the specific adjuster screw, tension the upper cable, leaving approx. 1.8 mm (0.07 in) between the retainer and opening travel limit (4) of the valve. Using the specific adjuster screw, tension the lower cable so it has the same tension as the upper cable.
- Tightening the lower cable will probably have caused the travel limit to shift: repeat the procedure until the correct position is obtained.
- Turn the ignition key **ON,**
- Using the diagnostic tool, from the Adjustable parameters screen page, select:

“Exhaust butterfly valve self-acquisition”, which acquires the opening travel limit (4) (valve open) and the closing travel limit (3) (valve closed).

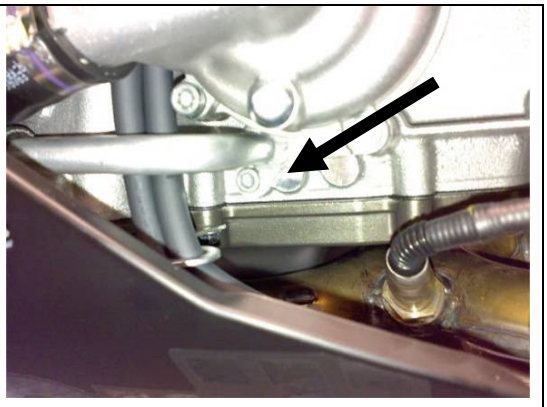
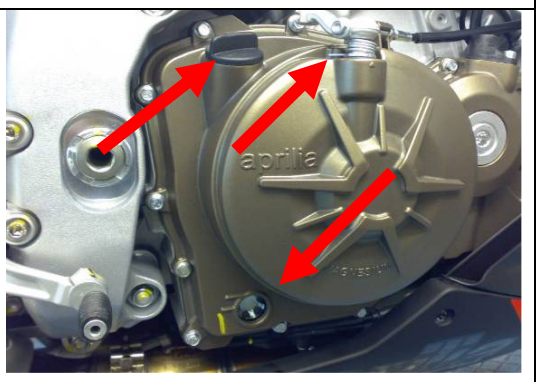
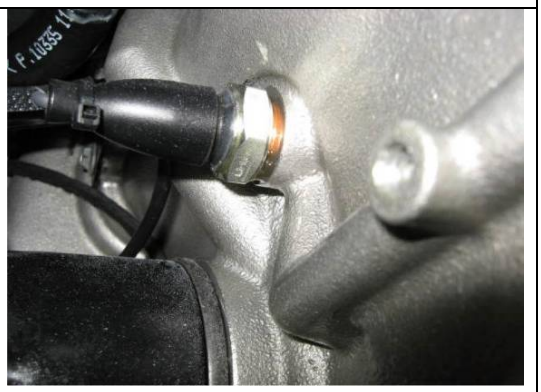
(5) - direction of exhaust gas flow.

- Remove the flywheel cover and clutch cover shields

- **Start the engine,** wait for the fans to activate three times and check that the temperature indicated on the instrument panel or the diagnostic tool is correct (fans should activate at 101 °C – 213 °F).

- Check that there are no errors indicated by the instrument panel. If necessary, identify the error with the diagnostic tool, rectify the problem then use the “Cancel error memory” function to cancel the error

- Checking for leaks: check that there are no engine oil, coolant or fuel leaks.

NOTES FOR CHECKING FOR OIL LEAKS • Check the following areas in particular • Oil pipe underneath coolant pump	
• Oil level sign glass, filler plug, clutch spindle	
• Drainge plug	
• Oil pressure sensor	

• Front and rear cylinder head covers	

NOTES FOR CHECKING FOR COOLANT LEAKS Check the following areas in particular • Thermostat connector union	
• Coolant outlet pipe from cylinders	

WARNING

Wait at least 2 hours before checking the engine oil and coolant levels.

- Checking engine oil level

WARNING

Hold the vehicle in a vertical position, standing on both wheels (not on the side stand)

CHECK THAT THE OIL LEVEL IS BETWEEN THE MINIMUM AND MAXIMUM LEVELS; IF YOU DO NOT COMPLY WITH THE MINIMUM AND MAXIMUM OIL LEVELS THE ENGINE COULD BE SERIOUSLY DAMAGED

- Checking coolant level
  Check that the coolant in the expansion tank is between the minimum and maximum levels.

- Refit the fairings on the vehicle

If the vehicle is an in- stock unsold vehicle:

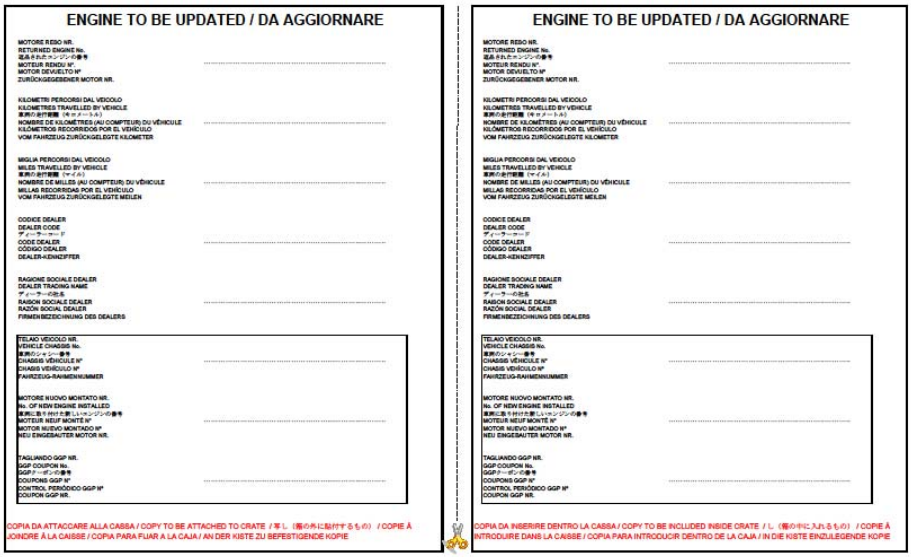
- Remove the battery used for testing and refit the vehicle's own battery
- Install the passenger saddle and rider saddle.
- Go to the step for closing the crate described in Chapter 11

10. Road test of vehicle (Customer vehicles)

- Fit the passenger and rider saddles.
- Set the gear shift indicator LED activation point at 7,500 rpm **and inform the owner that the new engine must be run in and not over-revved.**
- Prepare the vehicle for normal road use in accordance with the applicable terms of the highway code
- Engage all gears from 1st to 6th and vice versa three or four times in succession
- After completing the road test, check for fluid leakage: check that there are no engine oil, coolant or fuel leaks.
- Remove the frame protectors

11. Closing crate containing old engine being returned

- Compile the FRAME - ENGINE COMBINATION document in full, and place the right hand side of the document in the crate.



IF THE NEW ENGINE WAS IN A CLEAR BAG • Place the engine carefully in the crate, ensuring that it is aligned correctly on the three mounts.	
• Use the protective bag of the new engine to cover the old engine to be returned.	

IF THE NEW ENGINE WAS IN A BLUE BAG • Before placing the engine on the three crate supports, place the engine in the blue bag contained in the crate, so that the bag bottom is closed.	
• Fold the bag	 
• Use adhesive tape to seal the bag.	

ALL ENGINES • Close the crate, using the screws removed previously.	
• **Replace the document shown in the photo above (to be removed) with the left hand side of the filled out FRAME - ENGINE COMBINATION form, protected in a clear bag.**	

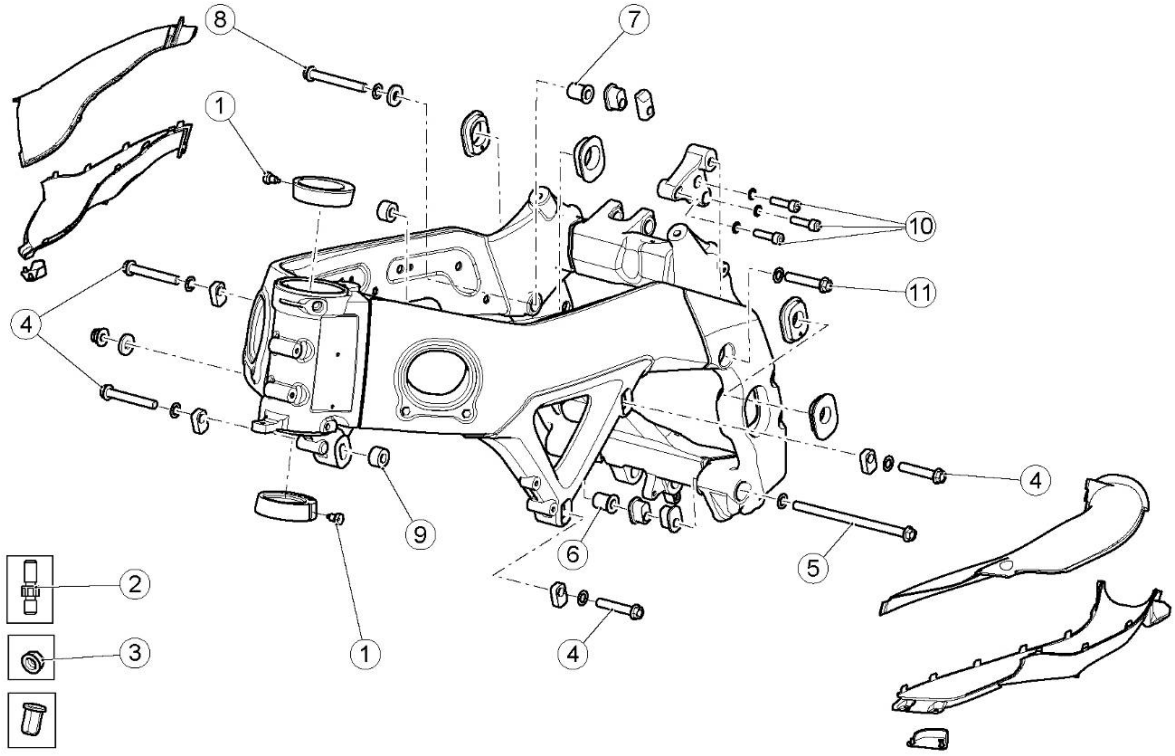
Tightening torques

The following are all the tightening torques for this procedure. Yellow is used to indicated when Loctite must also be applied.

If necessary, please consult the chapter Specifications/Tightening torques in the Workshop Manual.

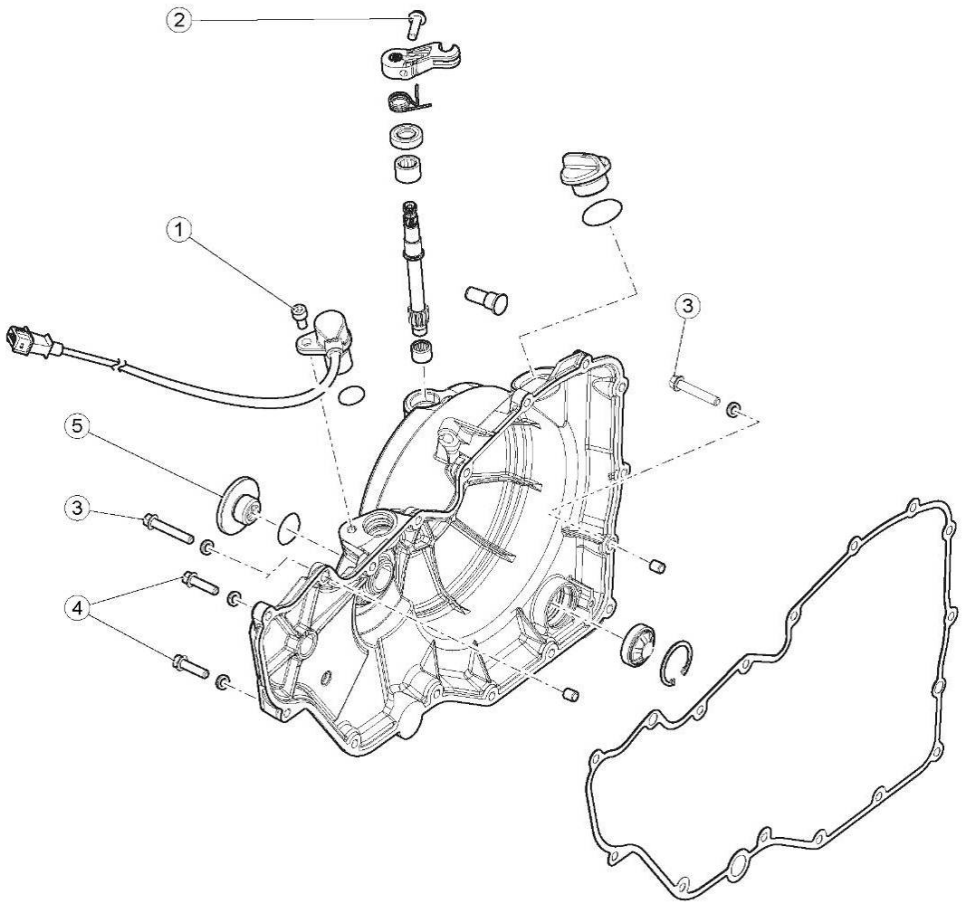
The tables are ordered in accordance with the installation procedure for the new engine.

FRONT CHASSIS



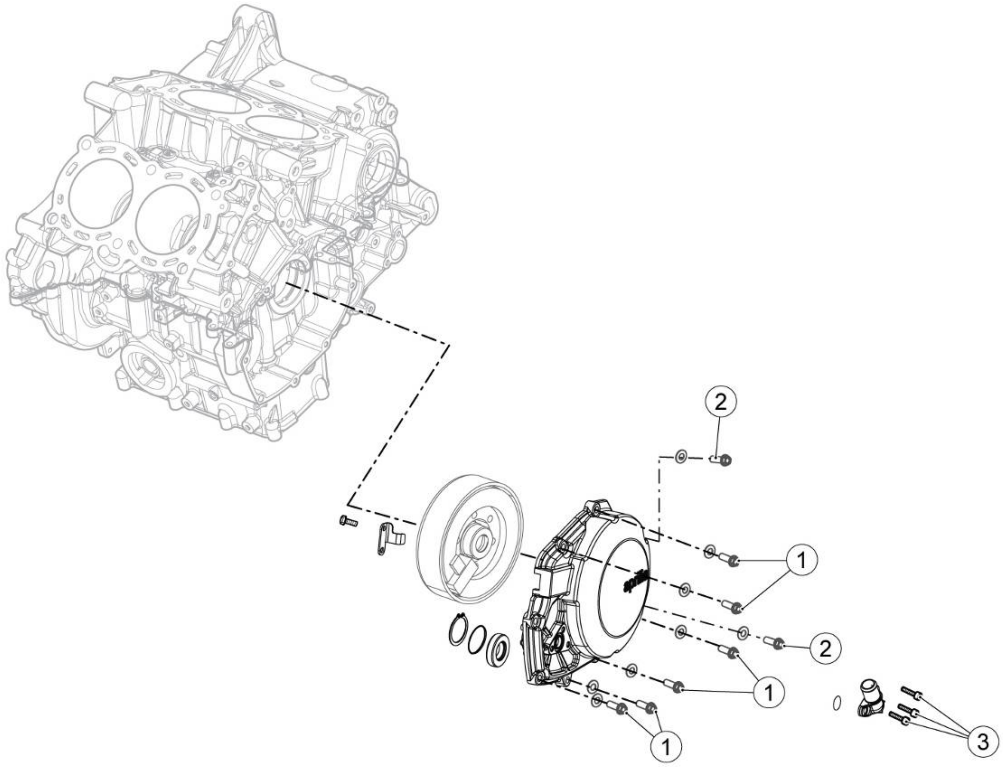
pos.	Description	Type	Quantity	Torque	Notes
3	Intake duct fixing nuts	M6	2 + 2	Manual	
4	Front mounts	M10	2 + 2	50 Nm (36.88 lbf ft)	Loct. 243
5	Lower rear mount	M10	1	50 Nm (36.88 lbf ft)	-
6	Lower rear right hand adjuster screw bushing	M18x1.5	1	12 Nm (8.85 lbf ft)	-
7	Upper rear right hand adjuster screw bushing	M18x1.5	1	12 Nm (8.85 lbf ft)	-
8	Upper rear right hand mount	M10	1	50 Nm (36.88 lbf ft)	-
9	Right fairing spacer	M6	1	10 Nm (7.37 lbf ft)	
10	Upper rear left hand engine mount fastener screws	M8	3	25 Nm (18.44 lbf ft)	-
11	Upper rear mount	M10	1	50 Nm (36.88 lbf ft)	-
-	Screw fastening the ground cable to the left side chassis	M6	1	6 Nm (4.42 lbf ft)	-

CLUTCH COVER



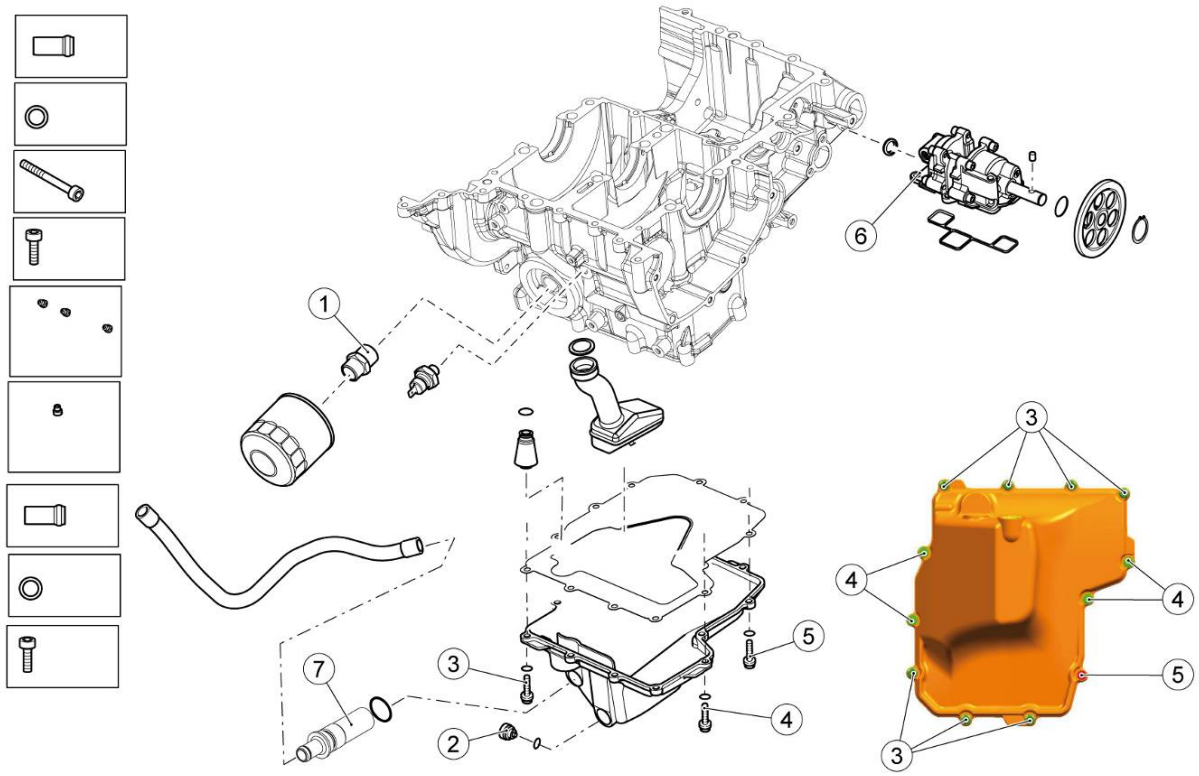
pos.	Description	Type	Quantity	Torque	Notes
2	TE Flanged screw	M6x20	1	12 Nm (8.85 lbf ft)	-
3	Flanged TE screw	M6x35	2	12 Nm (8.85 lbf ft)	-
4	Flanged TE screw	M6x22	16	12 Nm (8.85 lbf ft)	-

ALTERNATOR COVER



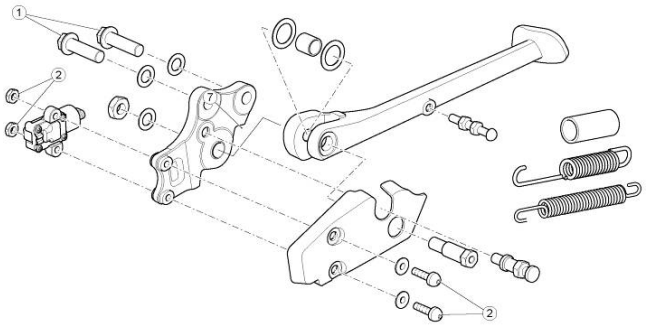
pos.	Description	Type	Quantity	Torque	Notes
1	Screws fastening cover onto centre pins	M6x25	6	12 Nm (8.85 lbf ft)	-
2	Cover fastener screws, alternator side	M6x40	2	12 Nm (8.85 lbf ft)	-

OIL SUMP



pos.	Description	Type	Quantity	Torque	Notes
2	Oil drainage plug	-	1	30 Nm (22.12 lbf ft)	-
3	Oil sump fixing screws	M6x30	7	12 Nm (8.85 lbf ft)	-
4	Oil sump fixing screws	M6x22	4	12 Nm (8.85 lbf ft)	-
5	Oil sump fixing screws	M6x25	1	12 Nm (8.85 lbf ft)	-

SIDE STAND

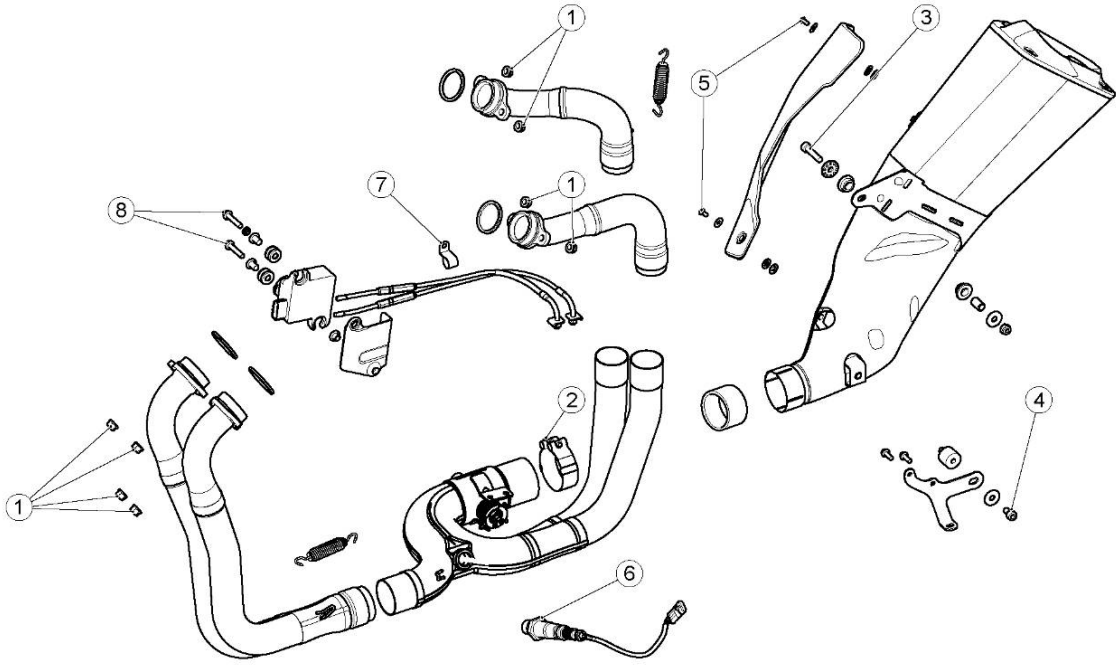


pos.	Description	Type	Quantity	Torque	Notes
1	Screws fastening the stand to the chassis	M10	2	45 Nm (33.19 lbf ft)	Loct. 243

SCREWS FASTENING GROUND CABLE GUIDE SLOTS ON FRONT OF ENGINE AND ON FRAME

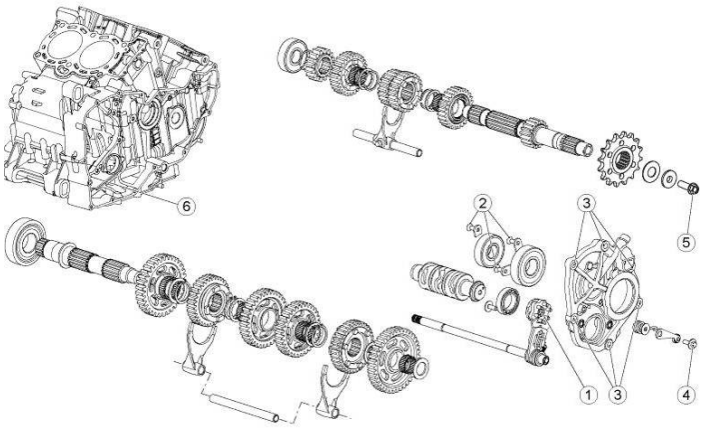
pos.	Description	Type	Quantity	Torque	Notes
	Screws	M6	2	12 Nm (8.85 lbf ft)	

EXHAUST MANIFOLDS, VALVE AND SILENCER



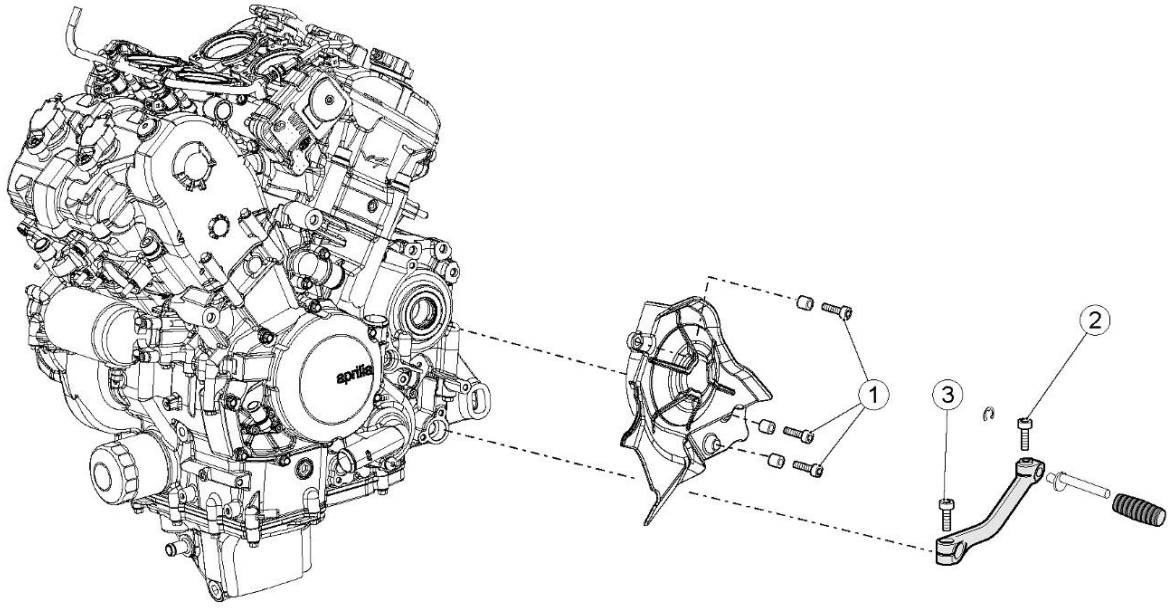
pos.	Description	Type	Quantity	Torque	Notes
1	Exhaust manifold flange fixing nut	M7	8	13 Nm (9.59 lbf ft)	-
2	Silencer clamp fixing screw	M6	1	10 Nm (7.37 lbf ft)	-
3	Screw fastening silencer to right hand footpeg mounting	M8	1	25 Nm (18.44 lbf ft)	-
4	Screw fastening silencer to central lower fairing bracket	M8	1	20 Nm (14.75 lbf ft)	-
5	Cosmetic silencer shield fixing screw	M5	2	5 Nm (3.69 lbf ft)	-
6	Oxygen sensor fastener	M18x1.5	1	38 Nm (28.03 lbf ft)	-
8	Exhaust butterfly valve actuator fixing screws	M6	2	10 Nm (7.37 lbf ft)	-

PINION



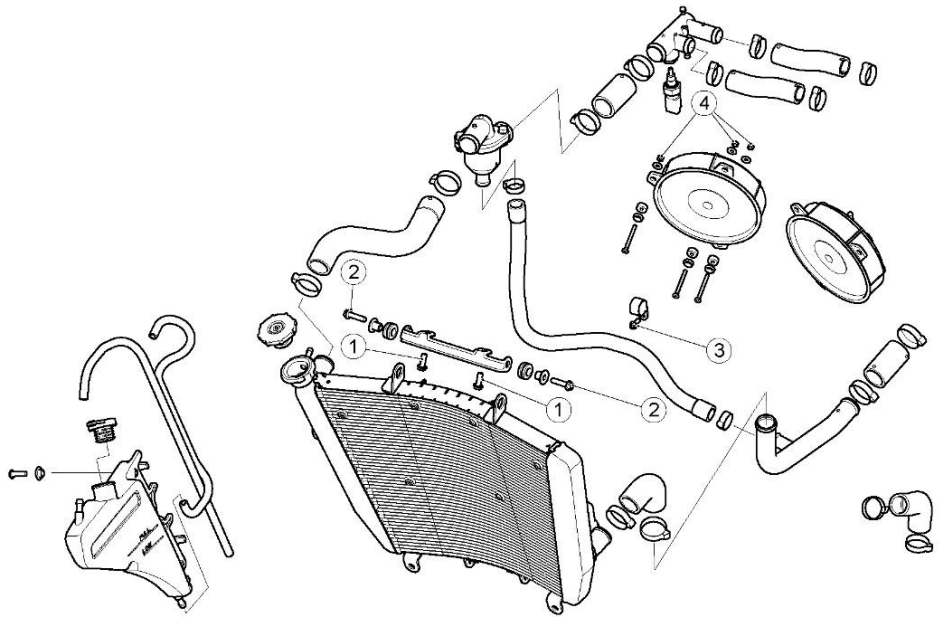
pos.	Description	Type	Quantity	Torque	Notes
5	Pinion retainer	-	1	50 Nm (36.88 lbf ft)	Loct. 243

PINION COVER AND GEAR LEVER



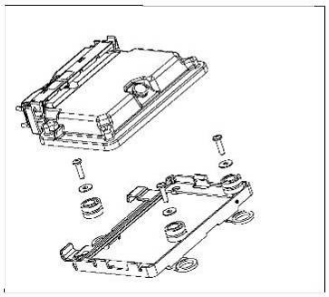
pos.	Description	Type	Quantity	Torques	Notes
1	Screws fastening pinion cover	M6	3	8 Nm (5.9 lbf ft)	-
3	Gearbox lever fixing screws	M6	1	10 Nm (7.37 lbf ft)	-

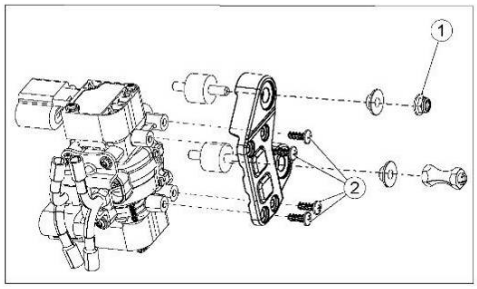
COOLING

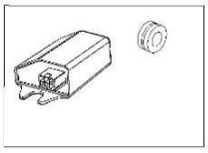


pos.	Description	Type	Quantity	Torque	Notes
1	Screws fastening water radiator mounting bracket to chassis	M6	2	10 Nm (7.37 lbf ft)	-
3	Screw fastening pipe grommet for By-pass water hose	M5	1	6 Nm (4.42 lbf ft)	-

CENTRAL ELECTRICAL SYSTEM

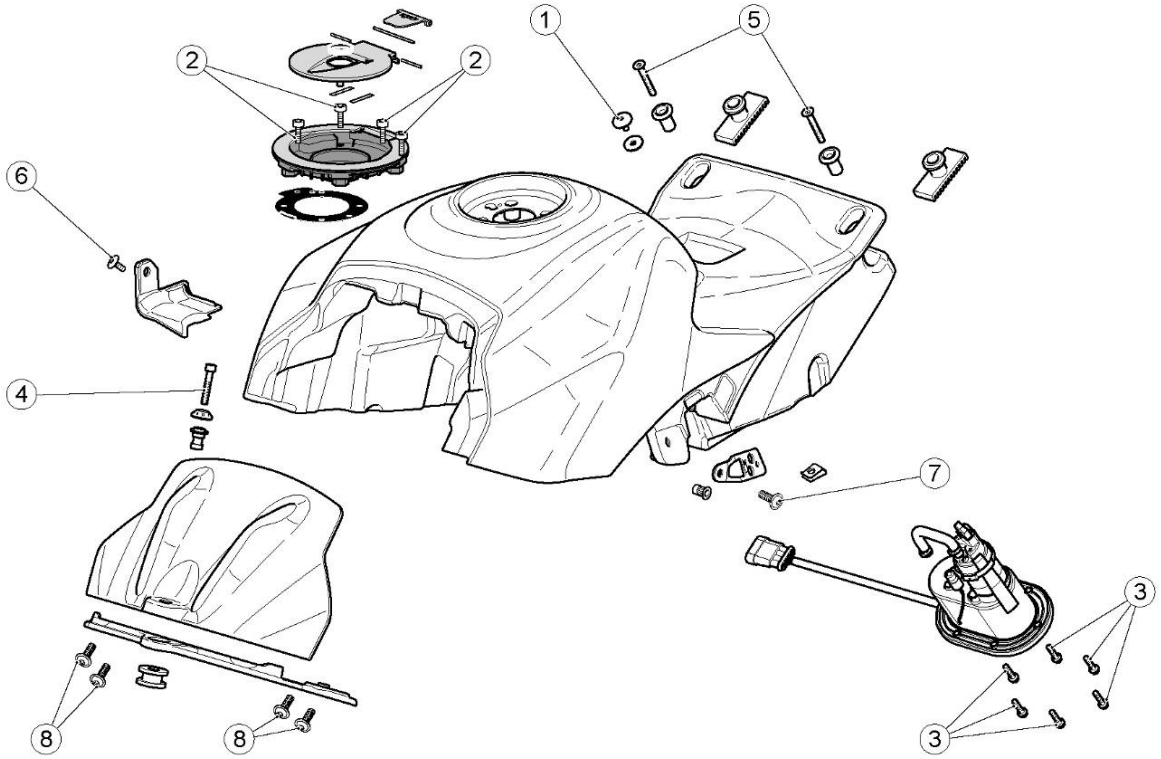






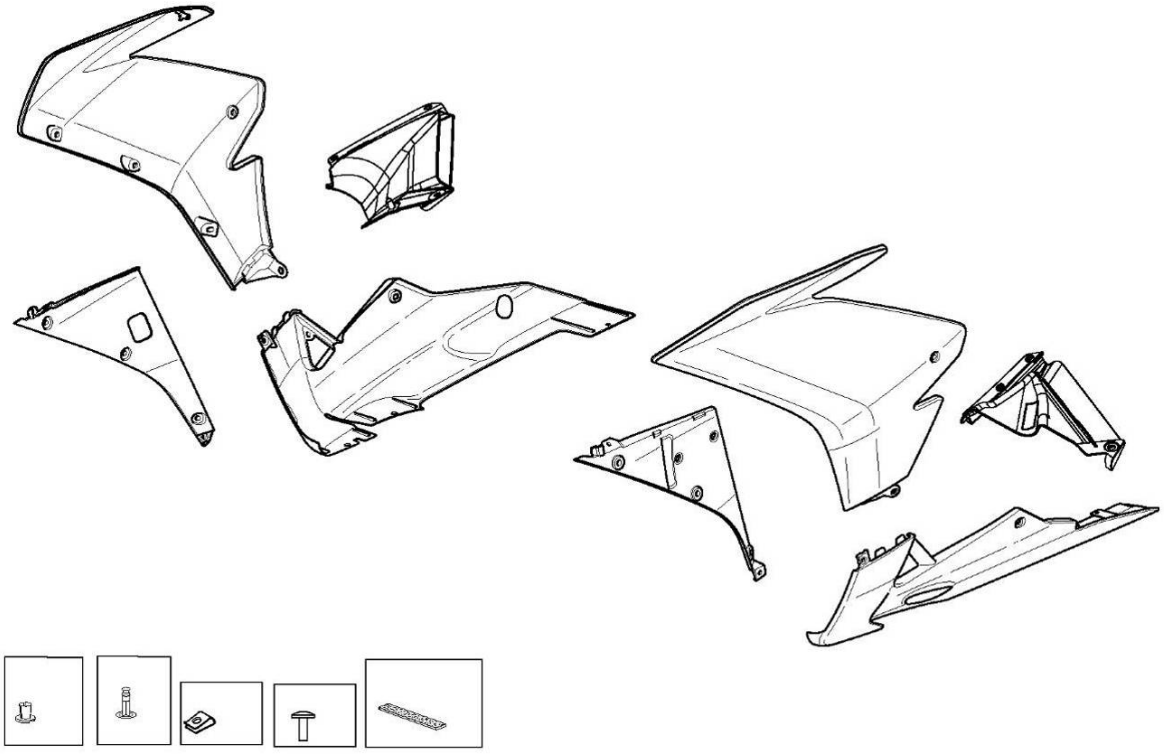
pos.	Description	Type	Quantity	Torque	Notes
1	Nut fastening upper silent block, throttle valve position sensor mounting bracket	M6	1	5 Nm (3.69 lbf ft)	-

FUEL TANK



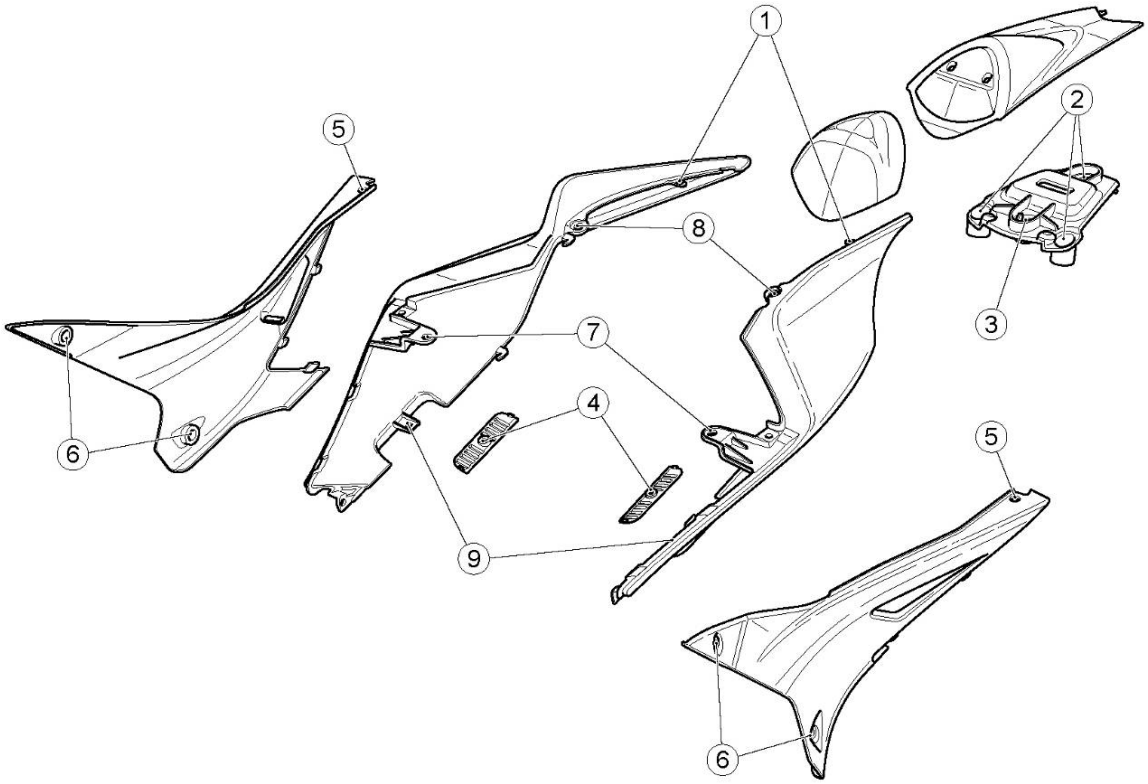
pos.	Description	Type	Quantity	Torque	Notes
1	Special screw fastening rider saddle to the tank	M6	1	4 Nm (2.95 lbf ft)	-
4	Front screws fastening the tank to the chassis	M6	1	8 Nm (5.9 lbf ft)	-
5	Rear screws fastening the tank to the rear chassis	M6	2	7 Nm (5.16 lbf ft)	-
6	Screws fastening plastic fuel pipe mounting	M5	1	2.5 Nm (1.84 lbf ft)	-
7	Left fairing mounting bracket fixing screws	M5	1	3 Nm (2.21 lbf ft)	-
-	Central screw fastening the cover to the tank	M4	1	0.5 Nm (0.37 lbf ft)	-
-	Fuel tank breather pipe unions	M7	2	3 Nm (2.21 lbf ft)	-

FAIRING



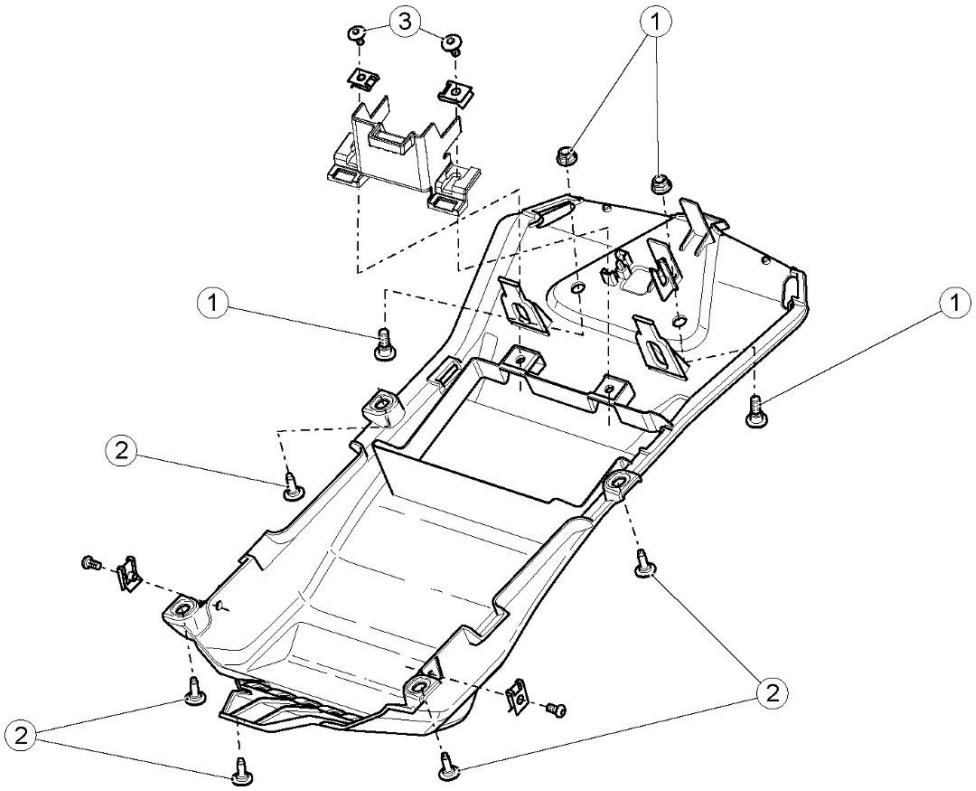
pos.	Description	Type	Quantity	Torque	Notes
-	Centre screws fastening lower fairing	M6	2	10 Nm (7.37 lbf ft)	-
-	Right hand lower fairing mounting bracket	M6	2	10 Nm (7.37 lbf ft)	-
-	Left hand lower fairing mounting bracket	M6	2	10 Nm (7.37 lbf ft)	-
-	Screws fixing the side fairings to the side spacers	M5	2	1.5 Nm (1.11 lbf ft)	-
-	Screws fixing upper fairing fastener to intake duct	M5	2	1.5 Nm (1.11 lbf ft)	-
-	Screws fixing upper fairing fastener to front fairing	M5	2	1.5 Nm (1.11 lbf ft)	-
-	Screws fixing upper fairing fastener to intake duct	self-tapping	2	1 Nm (0.74 lbf ft)	-
-	Screws fixing upper fairing fastener to headlamp	self-tapping	2	1 Nm (0.74 lbf ft)	-
-	Screws fastening the lower fairing to the bracket	M5	2 + 2	1 Nm (0.74 lbf ft)	-
-	Screws fastening the lower fairing to the lug	M5	2	2 Nm (1.47 lbf ft)	-
-	Lower fairing lower fastening screws	M5	2	2 Nm (1.47 lbf ft)	-
-	Lower fork fastener fixing screws	M6	2	8 Nm (5.90 lbf ft)	-
-	Screws fixing lower front fairing fastener to inlet ducts	SWP 3.9	2	1 Nm (0.74 lbf ft)	-
-	Inner screws fixing fairing to the lower front fairing fastener	M4	2	0.5 Nm (0.37 lbf ft)	-
-	Inner screws fastening the fairing to the lug	M5	2	2 Nm (1.47 lbf ft)	-

TAIL FAIRING



pos.	Description	Type	Quantity	Torque	Notes
2	Screws fastening saddle cover base to saddle cover	SWP 2.9	3	1 Nm (0.74 lbf ft)	-
3	Screws fastening saddle cover hinge	M4	1	1.5 Nm (1.11 lbf ft)	-
5	Screws fastening side fairings to tail fairing	M5	2	1 Nm (0.74 lbf ft)	-
6	Screws fixing side fairings to tank	M5	2 + 2	2 Nm (1.47 lbf ft)	-

HELMET COMPARTMENT



pos.	Description	Type	Quantity	Torque	Notes
3	Battery bracket fixing screws	M5	2	2 Nm (1.47 lbf ft)	-