MSS RS4 50 MY2011

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THE VALUE OF SERVICE

As a result of continuous technical updates and specific mechanic training programs for Aprilia products, only **Aprilia Official Network** mechanics know this vehicle fully and have the special tools necessary to carry out maintenance and repair operations correctly.

The reliability of the vehicle also depends on its mechanical state. Checking the vehicle before riding it, its regular maintenance and the use of **Original Aprilia Spare Parts** only are essential factors!

For further information contact the nearest **Official Dealer and/or Service Centre**, or consult the Yellow Pages or search directly on the inset map in our Official Website:

www.aprilia.com

Only by requesting Aprilia Original Spare Parts can you be sure of purchasing products that were developed and tested during the actual vehicle design stage. All Aprilia Original Spare Parts undergo quality control procedures to guarantee reliability and durability.

The descriptions and illustrations given in this publication are not binding; While the basic characteristics as described and illustrated in this booklet remain unchanged, Aprilia reserves the right, at any time and without being required to update this publication beforehand, to make any changes to components, parts or accessories, which it considers necessary to improve the product or which are required for manufacturing or construction reasons.

Not all versions/models shown in this publication are available in all countries. The availability of individual versions/models should be confirmed with the official aprilia sales network.

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This manual provides the main information to carry out regular maintenance operations on your vehicle. This manual is intended to **Aprilia Dealers** and their qualified mechanics; several concepts have been deliberately omitted as they are considered unnecessary. As it is not possible to include complete mechanical notions in this manual, users should have basic mechanical knowledge or minimum knowledge about the procedures involved when repairing motorcycles. Without this knowledge, repairing or checking the vehicle may be inefficient or even dangerous. As the vehicle repair and check procedures are not described in detail, be extremely cautious so as not to damage components or injure individuals. In order to optimise customer satisfaction when using our vehicles, **Piaggio & C. s.p.a.** commits itself to continually improve its products and the relative documentation. The main technical modifications and changes in repair procedures are communicated to all **aprilia Sales Outlets and its International Subsidiaries**. These changes will be introduced in the subsequent editions of the manual. In case of need or further queries on repair and check procedures, consult **aprilia CUSTOMER DEPARTMENT**, which will be prepared to provide any information on the subject and any further communications on updates and technical changes related to the vehicle.

NOTE Provides key information to make the procedure easier to understand and carry out.

CAUTION Refers to specific procedures to carry out for preventing damages to the vehicle.

WARNING Refers to specific procedures to carry out to prevent injuries to the repairer.

Personal safety Failure to completely observe these instructions will result in serious risk of personal injury.

Safeguarding the environment Sections marked with this symbol indicate the correct use of the vehicle to prevent damaging the environment.

Vehicle intactness The incomplete or non-observance of these regulations leads to the risk of serious damage to the vehicle and sometimes even the invalidity of the guarantee


aprilia

INDEX OF TOPICS

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Rules

Safety rules

Carbon monoxide

If you need to keep the engine running while working on the vehicle, please ensure that you do so in an open or very well ventilated area. Never run the engine in an enclosed area. If you do work in an enclosed area, make sure to use a fume extraction system.

CAUTION

EXHAUST EMISSIONS CONTAIN CARBON MONOXIDE, A POISONOUS GAS WHICH CAN CAUSE LOSS OF CONSCIOUSNESS AND EVEN DEATH.

Fuel

CAUTION

THE FUEL USED TO POWER INTERNAL COMBUSTION ENGINES IS HIGHLY FLAMMABLE AND MAY BE EXPLOSIVE UNDER CERTAIN CONDITIONS. IT IS THEREFORE RECOMMENDED TO CARRY OUT REFUELLING AND MAINTENANCE PROCEDURES IN A VENTILATED AREA WITH THE ENGINE SWITCHED OFF. DO NOT SMOKE DURING REFUELLING AND NEAR FUEL VAPOURS, AVOIDING ANY CONTACT WITH NAKED FLAMES, SPARKS OR OTHER SOURCES WHICH MAY CAUSE THEM TO IGNITE OR EXPLODE.
DO NOT DISPERSE FUEL IN THE ENVIRONMENT.
KEEP OUT OF THE REACH OF CHILDREN

Hot components

The engine and the exhaust system components become very hot and remain hot for some time after the engine has been switched off. When handling these components, wear insulating gloves or wait until the engine and the exhaust system have cooled down.

Coolant

The coolant contains ethylene glycol which, under certain conditions, can become flammable.

When it burns, ethylene glycol produces an invisible flame which however can cause burns.

CAUTION

TAKE CARE NOT TO POUR COOLANT ONTO HOT ENGINE OR EXHAUST SYSTEM COMPONENTS; THE FLUID MAY CATCH FIRE AND BURN WITH INVISIBLE FLAMES. WHEN CARRYING OUT MAINTENANCE OPERATIONS, IT IS ADVISABLE TO WEAR LATEX GLOVES. EVEN THOUGH IT IS TOXIC, COOLANT HAS A SWEET FLAVOUR WHICH MAKES IT VERY ATTRACTIVE TO ANIMALS. NEVER LEAVE THE COOLANT IN OPEN CONTAINERS IN AREAS ACCESSIBLE TO ANIMALS AS THEY MAY DRINK IT.

KEEP OUT OF THE REACH OF CHILDREN
DO NOT REMOVE THE RADIATOR CAP WHEN THE ENGINE IS STILL HOT. THE COOLANT IS UNDER PRESSURE AND MAY CAUSE BURNS.

Used engine oil and transmission oil

CAUTION

IT IS ADVISABLE TO WEAR PROTECTIVE IMPERMEABLE GLOVES WHEN SERVICING THE VEHICLE.
THE ENGINE OR GEARBOX OIL MAY CAUSE SERIOUS INJURIES TO THE SKIN IF HANDLED FOR PROLONGED PERIODS OF TIME AND ON A REGULAR BASIS.
WASH YOUR HANDS CAREFULLY AFTER HANDLING OIL.
HAND THE OIL OVER TO OR HAVE IT COLLECTED BY THE NEAREST USED OIL RECYCLING COMPANY OR THE SUPPLIER.
DO NOT DISPOSE OF OIL IN THE ENVIRONMENT
KEEP OUT OF THE REACH OF CHILDREN

Brake and clutch fluid

BRAKE AND CLUTCH FLUIDS CAN DAMAGE THE PLASTIC OR RUBBER PAINTED SURFACES. WHEN SERVICING THE BRAKING SYSTEM OR THE CLUTCH SYSTEM, PROTECT THESE COMPONENTS WITH A CLEAN CLOTH. ALWAYS WEAR PROTECTIVE GOGGLES WHEN SERVICING THESE SYSTEMS. BRAKE AND CLUTCH FLUIDS ARE EXTREMELY HARMFUL FOR YOUR EYES. IN THE EVENT OF ACCIDENTAL CONTACT WITH THE EYES, RINSE THEM IMMEDIATELY WITH ABUNDANT COLD, CLEAN WATER AND SEEK MEDICAL ADVICE.
KEEP OUT OF THE REACH OF CHILDREN

Battery electrolyte and hydrogen gas

CAUTION

THE BATTERY ELECTROLYTE IS TOXIC, CORROSIVE AND AS IT CONTAINS SULPHURIC ACID, IT CAN CAUSE BURNS WHEN IN CONTACT WITH THE SKIN. WHEN HANDLING BATTERY ELECTROLYTE, WEAR TIGHT-FITTING GLOVES AND PROTECTIVE APPAREL. IN THE EVENT OF SKIN CONTACT WITH THE ELECTROLYTIC FLUID, RINSE WELL WITH PLENTY OF CLEAN WATER. IT IS PARTICULARLY IMPORTANT TO PROTECT YOUR EYES BECAUSE EVEN TINY AMOUNTS OF BATTERY ACID MAY CAUSE BLINDNESS. IF THE FLUID GETS IN CONTACT WITH YOUR EYES, WASH WITH ABUNDANT WATER FOR FIFTEEN MINUTES AND CONSULT AN EYE SPECIALIST IMMEDIATELY. THE BATTERY RELEASES EXPLOSIVE GASES; KEEP IT AWAY FROM FLAMES, SPARKS, CIGARETTES OR ANY OTHER HEAT SOURCES. ENSURE ADEQUATE VENTILATION WHEN SERVICING OR RECHARGING THE BATTERY.
KEEP OUT OF THE REACH OF CHILDREN
BATTERY LIQUID IS CORROSIVE. DO NOT POUR IT OR SPILL IT, PARTICULARLY ON PLASTIC COMPONENTS. ENSURE THAT THE ELECTROLYTIC ACID IS COMPATIBLE WITH THE BATTERY TO BE ACTIVATED.

Maintenance rules

GENERAL PRECAUTIONS AND INFORMATION

When repairing, dismantling and reassembling the vehicle, follow the recommendations given below carefully.

BEFORE DISASSEMBLING COMPONENTS

- Before dismantling components, remove dirt, mud, dust and foreign bodies from the vehicle. Use the special tools designed for this bike, as required.

COMPONENTS REMOVAL

- Do not loosen and/or tighten screws and nuts using pliers or any other tools than the specific wrench.
- Mark positions on all connection joints (pipes, cables etc.) before separating them, and identify them with distinctive symbols.
- Each component needs to be clearly marked to enable identification during reassembly.
- Clean and wash the dismantled components carefully using a low-flammability detergent.
- Keep mated parts together since they have "adjusted" to each other due to normal wear.
- Some components must be used together or replaced completely.
- Keep away from heat sources.

REASSEMBLING COMPONENTS

CAUTION

BEARINGS MUST ROTATE FREELY, WITHOUT JAMMING AND/OR NOISE, OTHERWISE, THEY NEED TO BE REPLACED.

- Only use ORIGINAL Aprilia SPARE PARTS.
- Comply with lubricant and consumables use guidelines.
- Lubricate parts (whenever possible) before reassembling them.
- When tightening nuts and screws, start either from the components with the largest diameter or from the innermost components, proceeding diagonally. Tighten nuts and screws in successive steps before applying the tightening torque.
- Always replace self-locking nuts, washers, sealing rings, circlips, O-rings (OR), cotter pins and screws with new parts if the thread is damaged.
- When assembling the bearings, make sure to lubricate them well.
- Check that each component is assembled correctly.
- After a repair or routine maintenance, carry out pre-ride checks and test the vehicle on private grounds or in an area with low traffic.
- Clean all mating surfaces, oil seal rims and gaskets before refitting. Smear a light layer of lithium-based grease on the oil guard rims. Reassemble oil seals and bearings with the brand or batch number facing outward (visible side).

ELECTRICAL CONNECTORS

Electric connectors must be disconnected as described below; failure to comply with this procedure causes irreparable damage to both the connector and the wiring harness:

Press the relative safety clips, if applicable.

- Grip the two connectors and disconnect them by pulling them in opposite directions.

- If any signs of dirt, rust, moisture, etc. are noted, clean the inside of the connector carefully with a jet of compressed air.
- Ensure that the cables are correctly fastened to the internal connector terminals.
- Then connect the two connectors, ensuring that they couple correctly (if fitted with clips, you will hear them "click" into place).

CAUTION

DO NOT DISCONNECT CONNECTORS BY PULLING THE CABLES.

NOTE

THE TWO CONNECTORS CAN ONLY BE CONNECTED IN ONE DIRECTION: CONNECT THEM THE RIGHT WAY ROUND.

TIGHTENING TORQUES

CAUTION

IN THE EVENT THAT A SELFBRAKING NUT IS UNSCREWED, IT IS NECESSARY TO REPLACE IT WITH A NEW ONE.

CAUTION

REMEMBER THAT THE TIGHTENING TORQUES FOR ALL FASTENING ELEMENTS ON WHEELS, BRAKES, WHEEL AXLES AND ANY OTHER SUSPENSION COMPONENTS PLAY A KEY ROLE IN ENSURING VEHICLE SAFETY AND MUST COMPLY WITH SPECIFIED VALUES. CHECK THE TIGHTENING TORQUES OF FASTENING ELEMENTS ON A REGULAR BASIS AND ALWAYS USE A TORQUE WRENCH TO REASSEMBLE THESE COMPONENTS. FAILURE TO COMPLY WITH THESE RECOMMENDATIONS MAY CAUSE ONE OF THESE COMPONENTS TO LOOSEN OR EVEN DETACH, CAUSING A WHEEL TO LOCK OR COMPROMISING VEHICLE HANDLING. THIS MAY LEAD TO FALLS, WITH THE RISK OF SERIOUS INJURY OR DEATH.

Running-in

Running the engine in correctly is essential for ensuring engine longevity and functionality. Twisty roads and gradients are ideal for running in the engine, brakes and suspension effectively. Vary your riding speed during the running in period. This ensures that components operate in "loaded" conditions and then "unloaded" conditions, allowing the engine components to cool.

CAUTION

THE FULL PERFORMANCE OF THE VEHICLE IS ONLY AVAILABLE AFTER THE SERVICE AT THE END OF THE RUNNING IN PERIOD.

Follow the guidelines detailed below:

- Do not fully open the throttle grip abruptly at low engine speeds, either during or after the running in period.
- During the first 100 Km (62 miles) use the brakes gently, avoiding sudden or prolonged braking. That is to permit the adequate adjustment of the pad friction material to the brake discs.

Vehicle identification

CAUTION

THE MODIFICATION OF THE IDENTIFICATION CODES IS A SERIOUS PUNISHABLE CRIME. HOWEVER, THE LIMITED WARRANTY FOR NEW VEHICLES WILL BE VOID IF THE VEHICLE IDENTIFICATION NUMBER (VIN) HAS BEEN MODIFIED OR NOT PROMPTLY DETERMINED.

Chassis number

The chassis number is stamped on the right hand side of the headstock.

This number consists of numbers and letters, as in the example shown below.

ZD4TK0000YSXXXXXX

KEY:

ZD4: WMI (World manufacturer identifier) code;

TK: model;

000: version variation;

0: free digit

Y year of manufacture

S: production plant (H= Martorelles (Spain); S= Scorzè (Italy); 4= Zongshen (China); 5= Pontedera (Italy); M= Mandello del Lario (Italy)

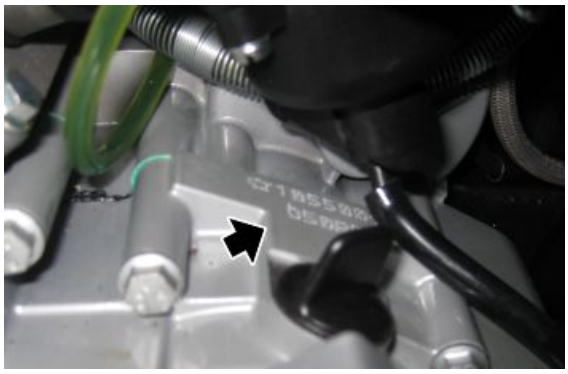
XXXXXX: serial number (6 digits);

CHASSIS NUMBER

The chassis number is stamped on the right hand side of the headstock.

Engine number

The engine number is stamped on the rear side, close to the transmission oil filler cap.



Dimensions and mass

SIZES

Specification	Desc./Quantity
Maximum length	1968 mm (77.48 in)
Maximum width	760 mm (29.92 in)
Maximum height to the windshield	1135 mm (44.68 in)
Saddle height	818 mm (32.20 in)
Wheelbase	1353 mm (53.26 in)
Minimum ground clearance	137 mm (5.39 in)
Kerb weight	132 kg (291 lb)

Engine

ENGINE

Specification	Desc./Quantity
Type	2-stroke single aluminium cylinder with nickel and silicon carbide coated bore
Cycle	two-strokes
Total engine capacity	50 cm³ (3.05 cu in)
Bore / stroke	39.88 x 40 mm (1.57 x 1.5747 in)
Compression ratio	11.5: 1
Electric	starter
Engine revs	1600 +/- 100 rpm
Clutch	multiple-disk, oil-bathed clutch with hand control on the left side of the handlebar.
Cooling	Coolant

IGNITION

Specification	Desc./Quantity
Type	CDI
Ignition advance	20° +/- 1° before TDC

Transmission

GEAR

Specification	Desc./Quantity
Type	mechanic, 6-speed gearbox with pedal on the engine left side which operates the selector with fork and distribution drum.

GEAR RATIOS

Specification	Desc./Quantity
1st gear ratio	11 /34 = 1 : 3.091
2nd gear ratio	15 / 30 = 1 : 2.000
3rd gear ratio	18 / 27 = 1 : 1.500
4th gear ratio	20 / 24 = 1 : 1.200
5th gear ratio	22 / 23 = 1 : 1.045
6th gear ratio	23 / 22 = 1 : 0.956
final drive gear ratio	11/53

Capacities

CAPACITY

Specification	Desc./Quantity
Fuel tank	14.5+/-1 l (3.07+/-0.22 UK gal; 3.70 +/-0.26 US gal)
Fuel tank reserve	3 l (0.660 UK gal; 0.792 US gal) (mechanical reserve)
Gearbox oil	582 cm³ (35.51 cu in)
Coolant	0.9 l (0.198 UK gal) (0.238 US gal)
Oil mixer tank	1.5 l (0.330 UK gal; 0.396 US gal)
Mixer oil reserve	0.4 l (0.088 UK gal; 0.105 US gal)
Seats	2
Vehicle maximum load (rider + luggage)	105 kg (231.48 lb)
Vehicle maximum load (rider + passenger + luggage)	180 kg (396.83 lb)

Electrical system

ELECTRICAL SYSTEM

Specification	Desc./Quantity
Battery	12 V - 4 Ah MF
Fuses	7.5 A
Alternator	12V - 85W

SPARK PLUG

Specification	Desc./Quantity
Standard	NGK BR8ES
Alternatively	CHAMPION RN3C
Electrode gap	0.5 mm (0.020 in)

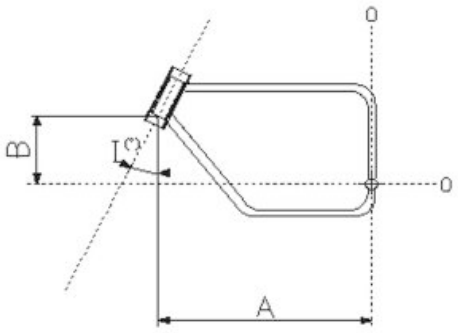
BULBS

Specification	Desc./Quantity
Low beam light	- 12 V - 35 W H4
High beam light	- 12 V - 35 W H4
2 daylight running lights	12V - 5W
Turn indicator light	Micro bulb
Rpm indicator lighting	12 V - LED
Rear daylight running light/stop light	LED
License plate lamp (where provided)	12V - 5W

Frame and suspensions

CHASSIS

Specification	Desc./Quantity
Type	With die-cast beam with aluminium alloy
Trail	93.6 mm (3.68 in)
Size "A"	535.1 mm (21.067 in) (measurements refer to the bare chassis)
Size "B"	357.5 mm (14.075 in) (measurements refer to the bare chassis)



SUSPENSIONS

Specification	Desc./Quantity
Front	Hydraulic action telescopic fork with upside-down stems
Front wheel travel	110 mm (4.33 in)
Rear	single hydraulic shock absorber
Rear wheel travel	122 mm (4.80 in)

Brakes

BRAKES

Specification	Desc./Quantity
Front	Ø 300 mm (11.81 in) disc brake
Rear	Ø 218 mm (8.58 in) disc brake

Wheels and tyres

WHEEL RIMS

Specification	Desc./Quantity
Type	made of light alloy
Front	2.75 x 17"
Rear	3.50 x 17"

TYRES

Specification	Desc./Quantity
Front - size	100 / 80 17" 52H or alternatively 110 / 70 17" 54H
Front inflation pressure - rider only	1.7 bar (170 kPa) (24.66 PSI)
Front inflation pressure - rider + passenger	1.8 bar (180 kPa) (26.11 PSI)
Rear - size	130 / 70 17" 62H or alternatively 150 / 60 17" 66H
Rear inflation pressure - rider only	1.8 bar (180 kPa) (26.11 PSI)
Rear inflation pressure - rider + passenger	1.9 bar (190 kPa) (27.56 PSI)

Supply

FUEL SYSTEM

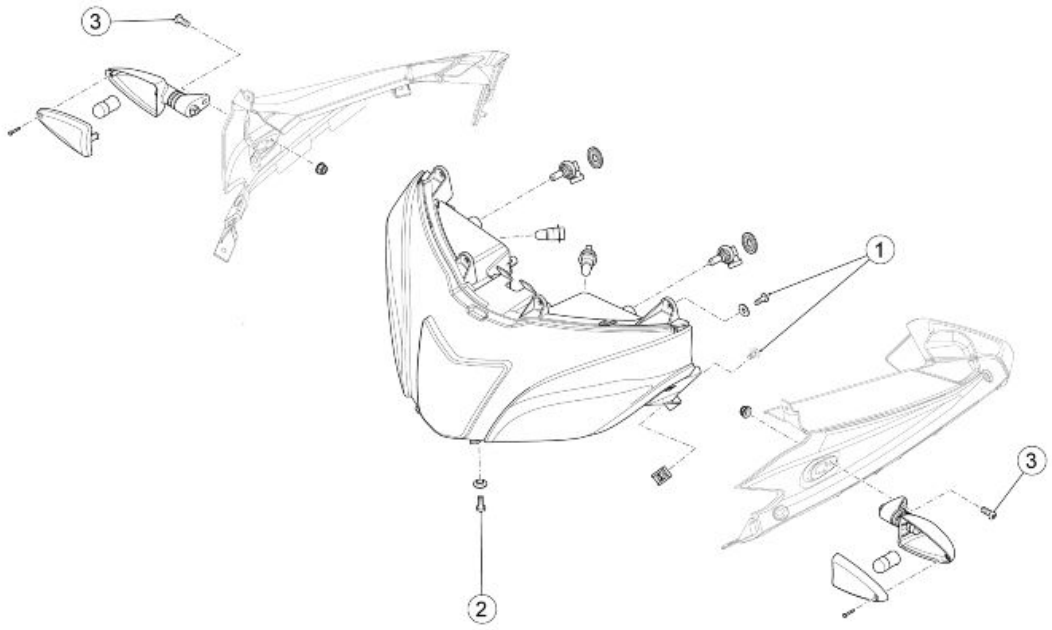
Specification	Desc./Quantity
Fuel	premium unleaded petrol as per DIN 51 607, minimum octane rating of 95 (NORM) and 85 (NOMM).

CARBURETTOR

Specification	Desc./Quantity
Quantity	1
Model	DELL'ORTO PHVA - 17.5 with manual starter

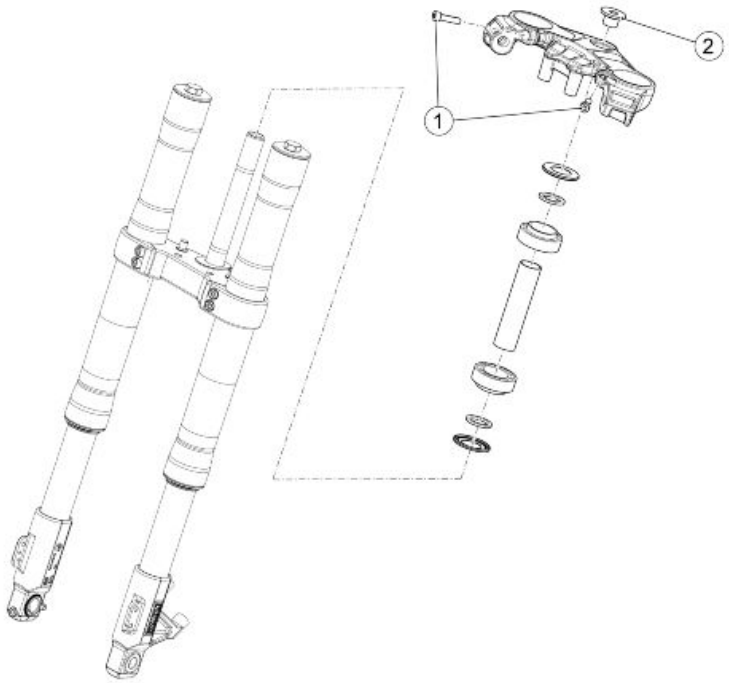
Tightening Torques

Front side



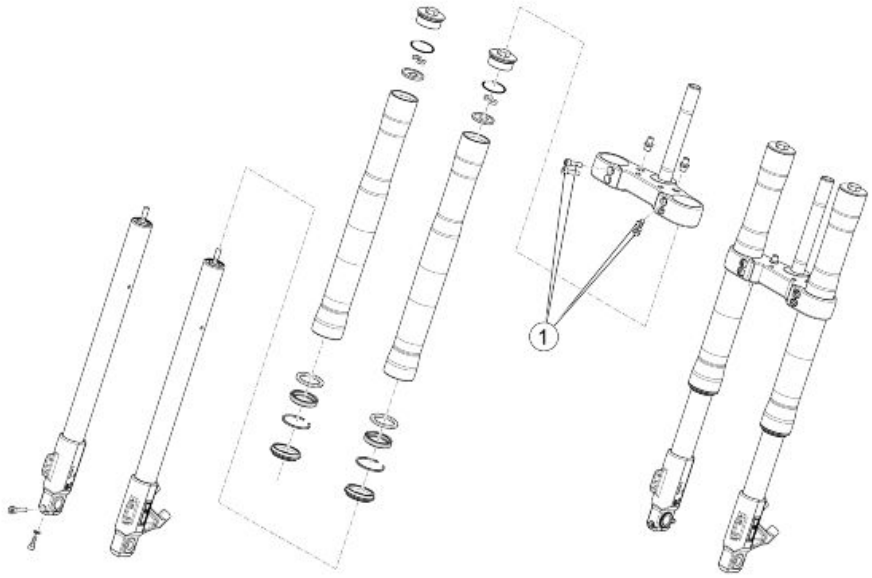
FRONT LIGHTS

pos.	Description	Type	Quantity	Torque	Notes
1	Headlamp fixing screw	M5x14	4	2.5 Nm (1.84 lbf ft)	-
2	Self-tapping screw	M5	1	1.5 Nm (1.11 lbf ft)	-
3	Turn indicator fixing screw	M5	2	1.5 Nm (1.11 lbf ft)	-



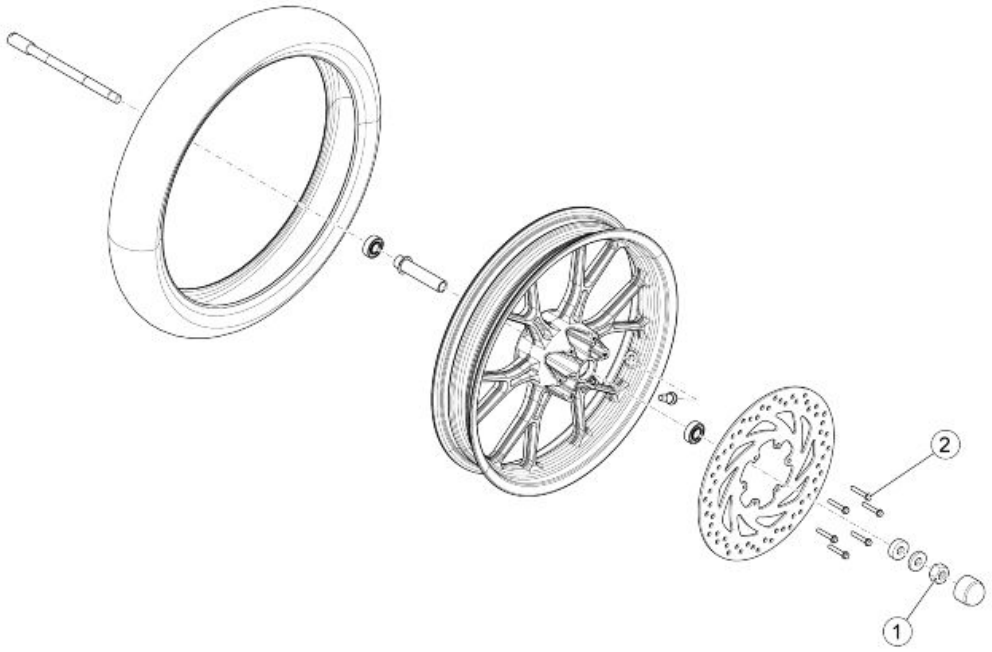
STEERING

pos.	Description	Type	Quantity	Torque	Notes
1	Upper yoke fastening to sleeve	M8	2	25 Nm (18.43 lbf ft)	-
2	Steering retainer nut	M20	1	48 Nm (35.40 lbf ft)	-



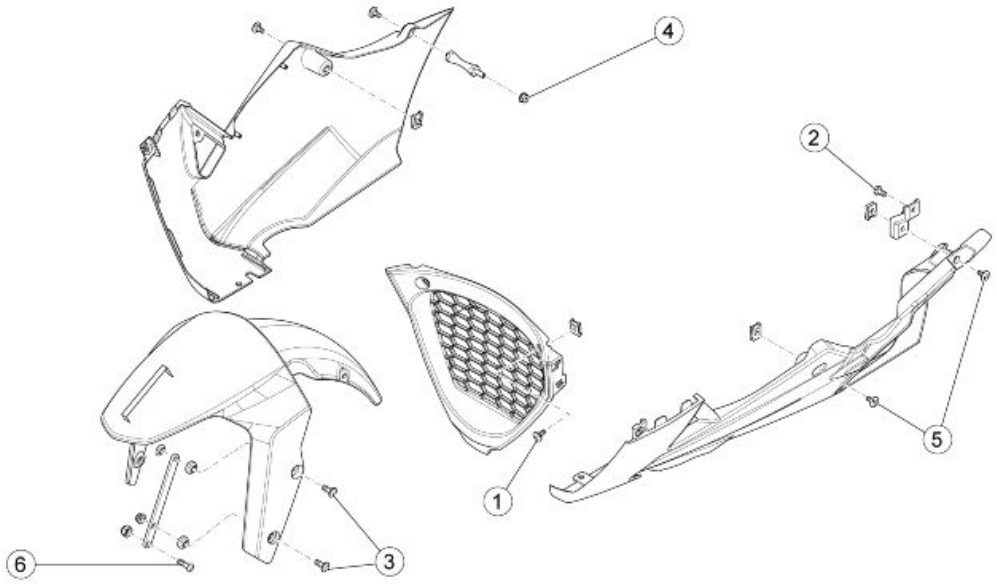
FRONT SUSPENSION

pos.	Description	Type	Quantity	Torque	Notes
1	Screws fastening lower yoke to sleeve	M8	2x2	25 Nm (8.43 lbf ft)	-



FRONT WHEEL

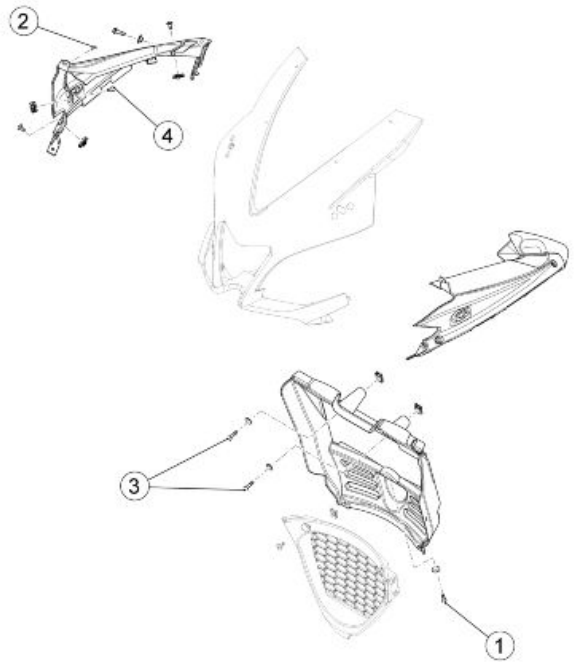
pos.	Description	Type	Quantity	Torque	Notes
1	Front wheel spindle nut	M14	1	78 Nm (8.85 lbf ft)	-
2	Front disc fixing screw	M6x20	6	12 Nm (8.85 lbf ft)	-



FRONT MUDGUARD - LUG

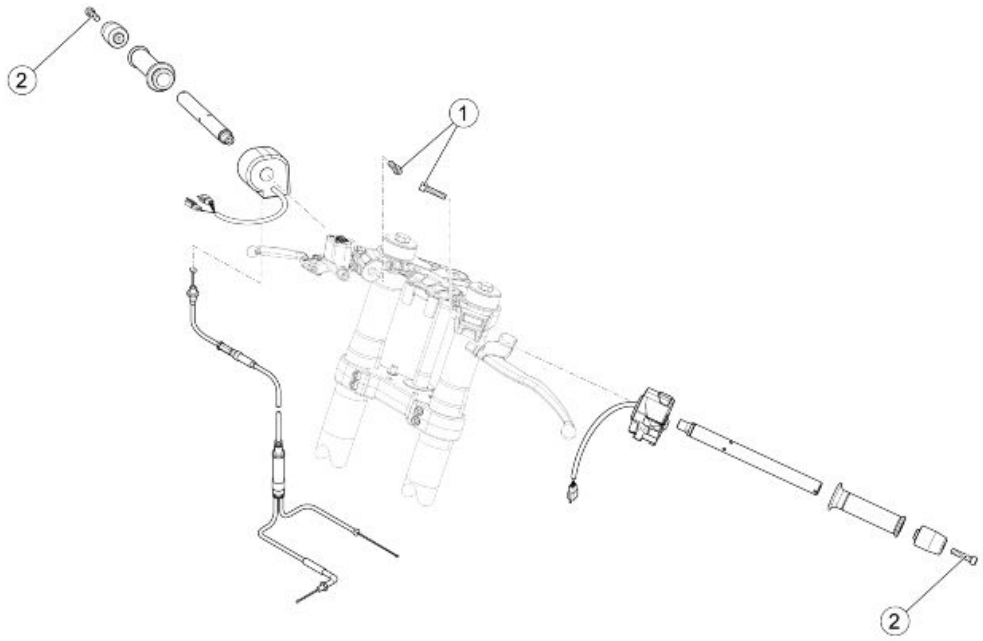
pos.	Description	Type	Quantity	Torque	Notes
1	Lug fixing screw	M5x9	2	3 Nm (2.21 lbf ft)	-

pos.	Description	Type	Quantity	Torque	Notes
2	Side fairing fixing screw	M6x12	2	6 Nm (4.42 lbf ft)	-
3	Front mudguard fixing screw	M6x25	3	4.4 Nm (3.24 lbf ft)	5 Nm (3.68 lbf ft)
4	Flanged self- locking nut	M6	1	6 Nm (4.42 lbf ft)	-
5	Screws fastening lower fairing to cradle	M5x12	4	3 Nm (2.21 lbf ft)	-
6	Front mudguard support fixing screw	M6x20	2	5 Nm (3.68 lbf ft)	Max 6 N (4.42 lbf ft)



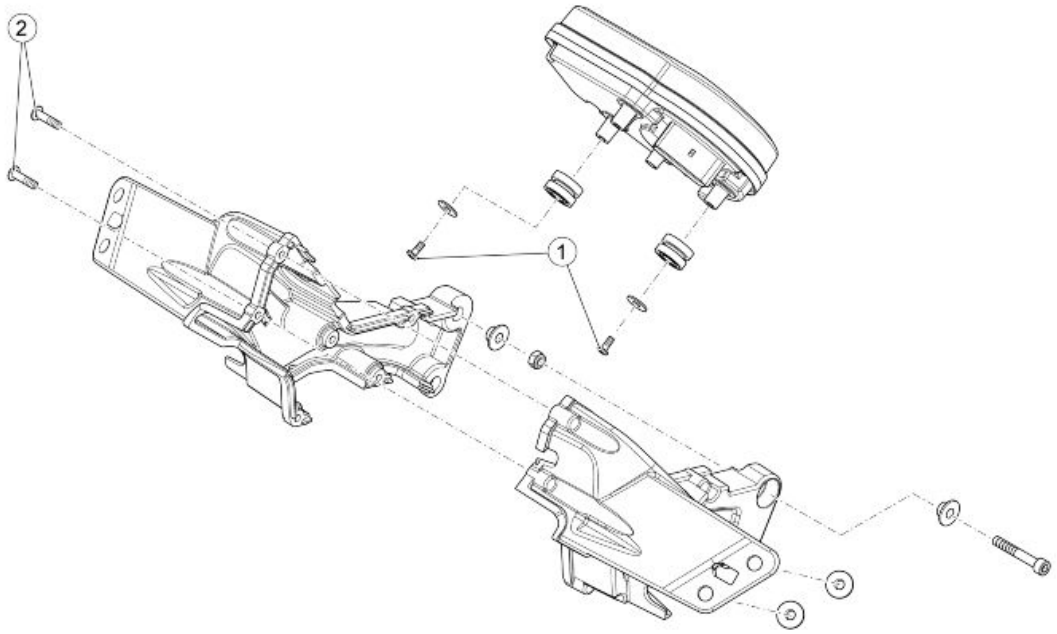
AIR DEFLECTORS

pos.	Description	Type	Quantity	Torque	Notes
1	Radiator frame screw	M5x16	1	2 Nm (1.47 lbf ft)	Max 2.5 N (1.84 lbf ft)
2	Front fixing screw	Self-t. 3.9	2	1 Nm (0.74 lbf ft)	-
3	TCEI screw	M5x20	2	2 Nm (1.47 lbf ft)	Max 2.5 N (1.84 lbf ft)
4	Flanged TBEI screw	M5x16	2	3 Nm (2.21 lbf ft)	-



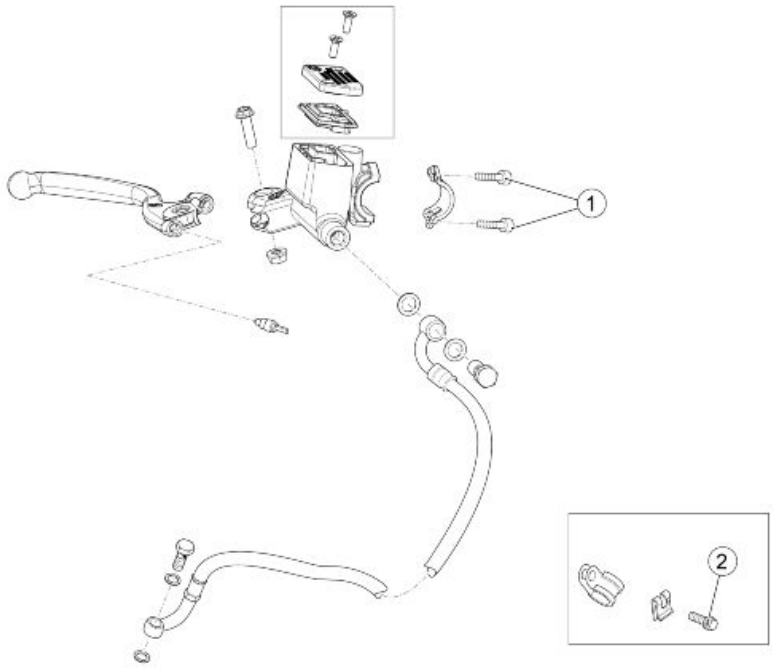
HANDLEBAR AND CONTROLS

pos.	Description	Type	Quantity	Torque	Notes
1	Semi-handlebar retainer	M8x30	2	25 Nm (18.44 lbf ft)	Loctite 243
2	Handlebar counterweight retainer	M5x50	2	5 Nm (3.69 lbf ft)	Loctite 243



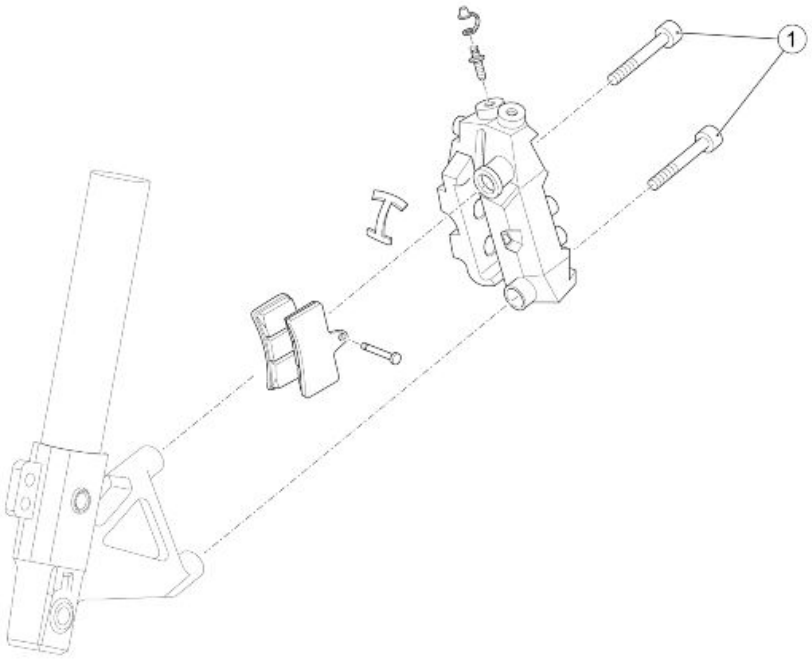
INSTRUMENT PANEL

pos.	Description	Type	Quantity	Torque	Notes
1	Self-tapping screw	M5x4	3	2.5 Nm (1.84 lbf ft)	-
2	Instrument panel fixing screw	M5x20	6	2 Nm (1.47 lbf ft)	-



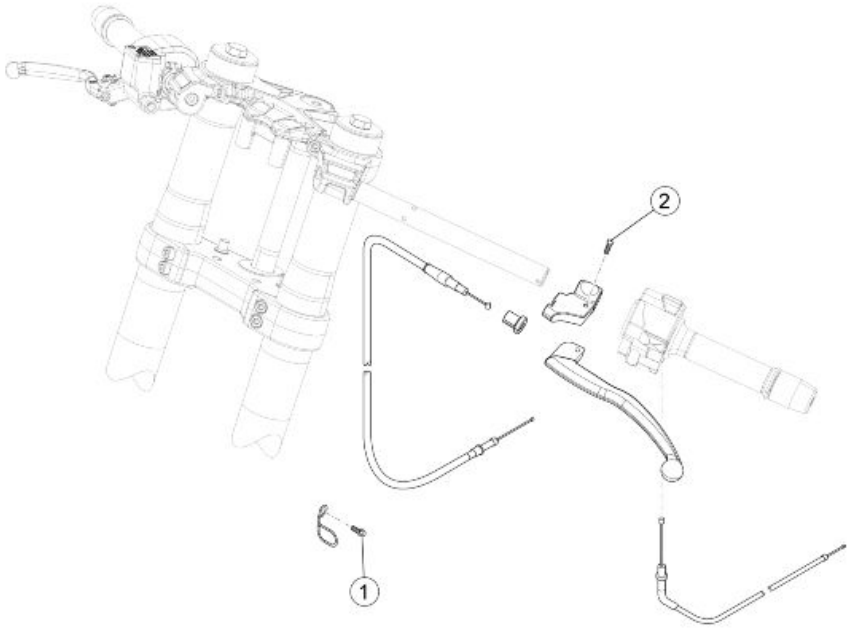
FRONT BRAKE PUMP

pos.	Description	Type	Quantity	Torque	Notes
1	Front brake pump fixing screw	M5	2	5 Nm (3.68 lbf ft)	-
2	Brake pipe clamp fixing screw	M5x16	1	5 Nm (3.68 lbf ft)	-



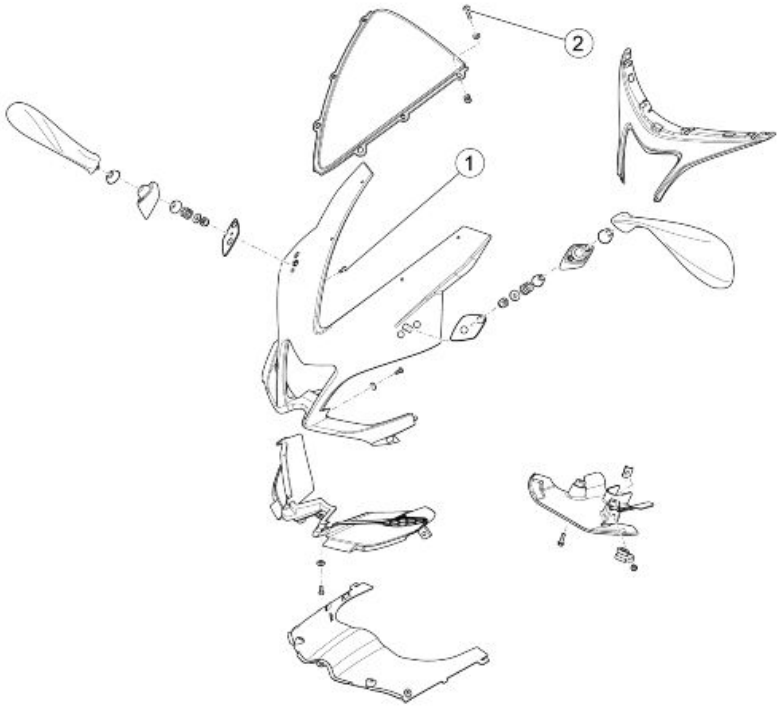
FRONT CALLIPER

pos.	Description	Type	Quantity	Torque	Notes
1	Front calliper fixing screw	M10x60	2	50 Nm (36.87 lbf ft)	-



CLUTCH CONTROL

pos.	Description	Type	Quantity	Torque	Notes
1	Throttle cable ring fixing screw	M6x16	1	6 Nm (4.42 lbf ft)	-
2	Throttle control fixing screw	M6x20	1	10 Nm (7.37 lbf ft)	-

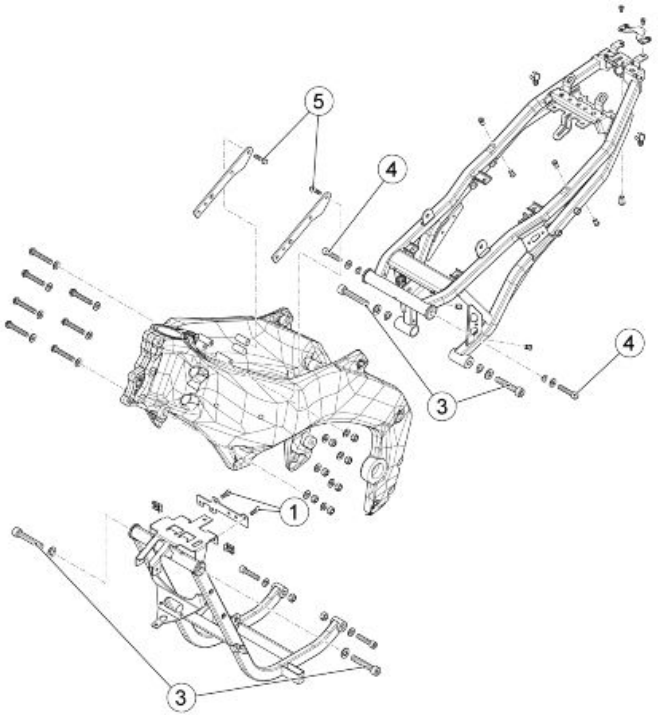


WINDSHIELD

pos.	Description	Type	Quantity	Torque	Notes
1	Rear view mirror fixing screw	Self-t. 3.9	4	0.4 Nm (0.29 lbf ft)	-

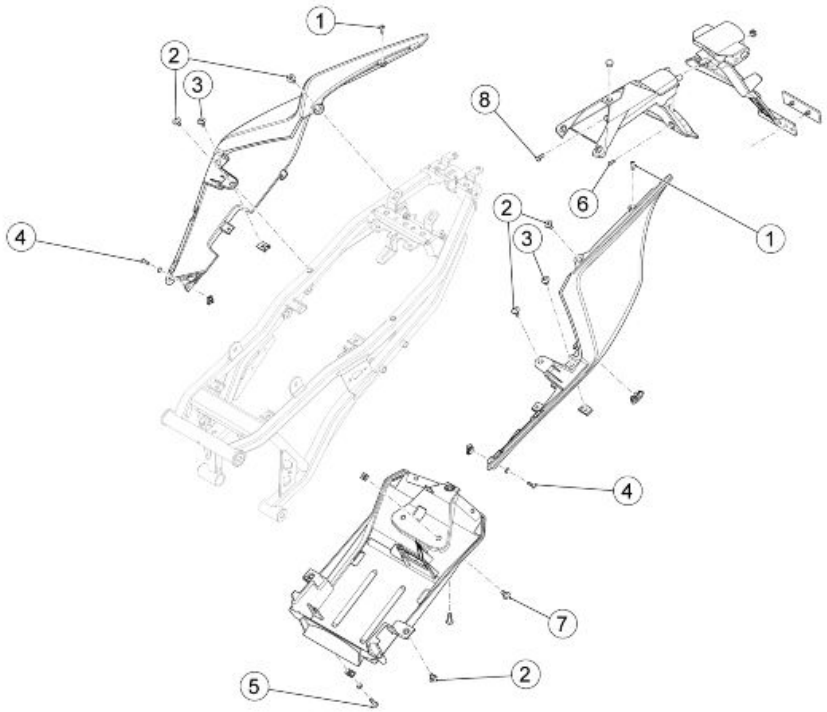
pos.	Description	Type	Quantity	Torque	Notes
2	Top fairing glass fixing screw	M4	4	1 Nm (0.73 lbf ft)	-

Central part



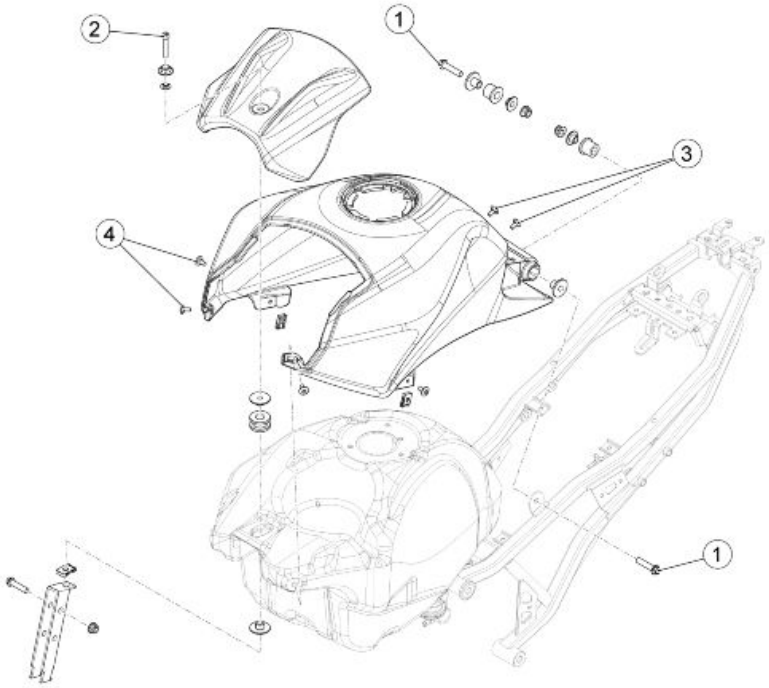
CHASSIS

pos.	Description	Type	Quantity	Torque	Notes
1	TCEI screw	M8x16	2	15 Nm (11.06 lbf ft)	-
2	TCEI screw	M8	2	25 Nm (18.43 lbf ft)	-
3	TCEI screw	M10x45	4	50 Nm (36.88 lbf ft)	-
4	TE screw	M8x40	2	25 Nm (18.43 lbf ft)	-
5	TE screw	M6x16	2	12 Nm (8.85 lbf ft)	Loctite 243



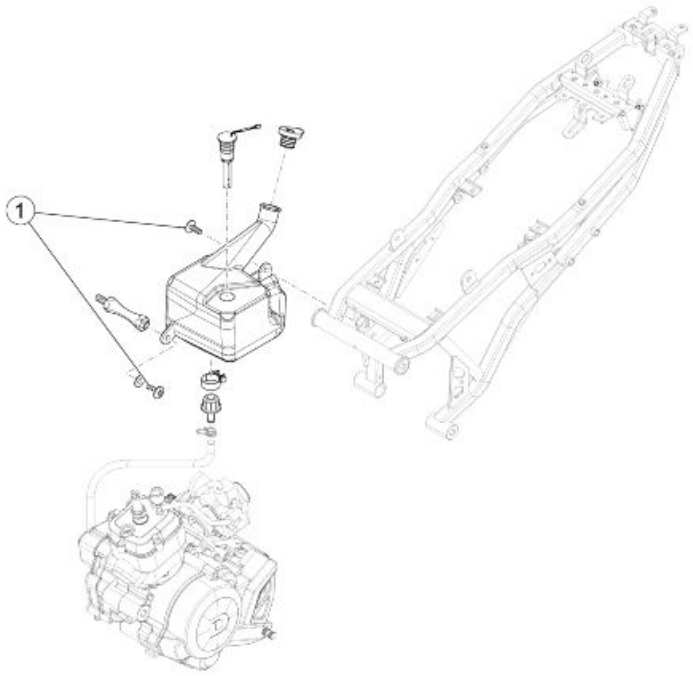
REAR BODYWORK

pos.	Description	Type	Quantity	Torque	Notes
1	Side fairing to chassis fixing screw	M4x14	2	-	-
2	Plastic panel fixing screw	M5x12	6	3 Nm (2.21 lbf ft)	-
3	Side fairing to chassis fixing screw	M5x9	2	3 Nm (2.21 lbf ft)	-
4	Side fairing to chassis fixing screw	M5x9	2	3 Nm (2.21 lbf ft)	-
5	SWP Screw	M5x20	2	2 Nm (1.47 lbf ft)	-
6	Self-tapping screw	3.9x10	4	0.4 Nm (0.29 lbf ft)	-
7	Self-tapping screw	M5x14	2	1.5 Nm (1.11 lbf ft)	-
8	TBEI screw	M5x12	1	3 Nm (2.21 lbf ft)	-



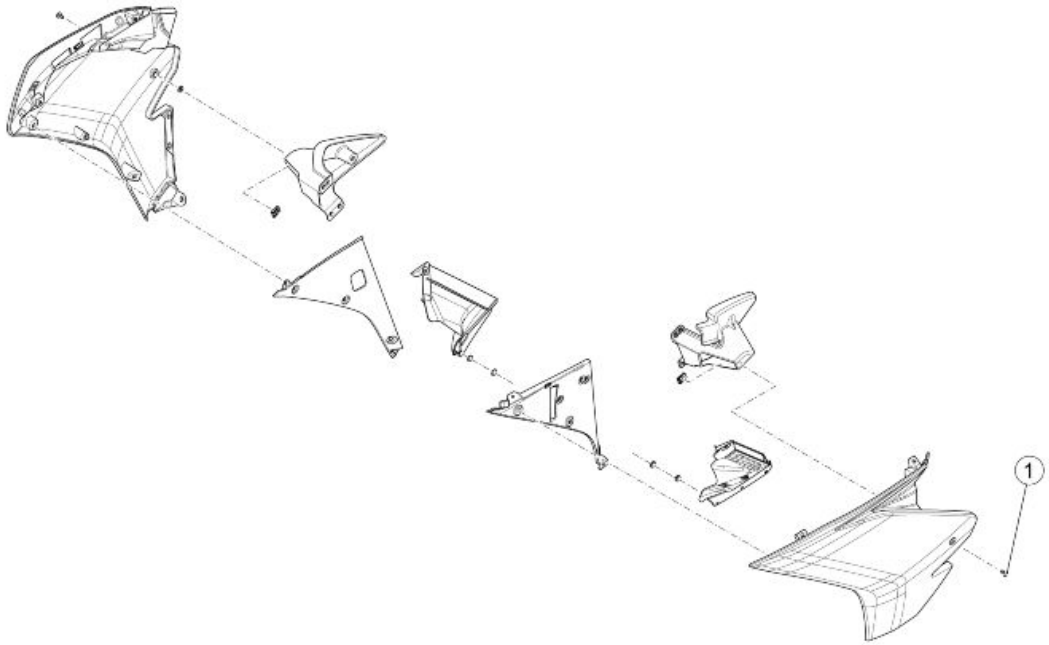
TANK

pos.	Description	Type	Quantity	Torque	Notes
1	Rear tank fixing screw	M8x40	1+1	25 Nm (18.44 lbf ft)	-
2	Front tank fixing screw	M6x35	1	10 Nm (7.37 lbf ft)	-
3	Fastener screw	M5x9	4	3 Nm (2.21 lbf ft)	-
4	Tank cover fixing screw	M5x9	4	3 Nm (2.21 lbf ft)	-



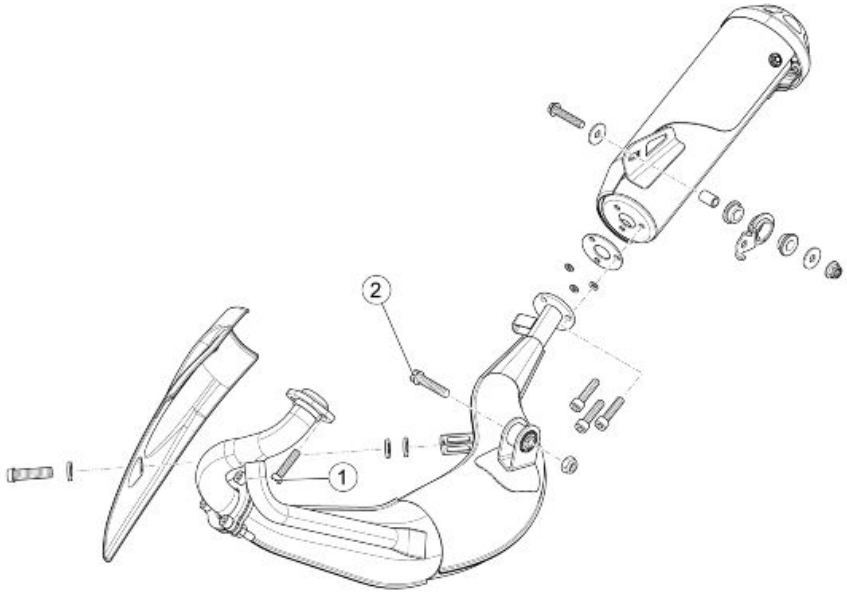
MIXER TANK

pos.	Description	Type	Quantity	Torque	Notes
1	Mixing tank fixing screw	M6x16	2	4.4 Nm (3.24 lbf ft)	Max 5 N (3.68 lbf ft)



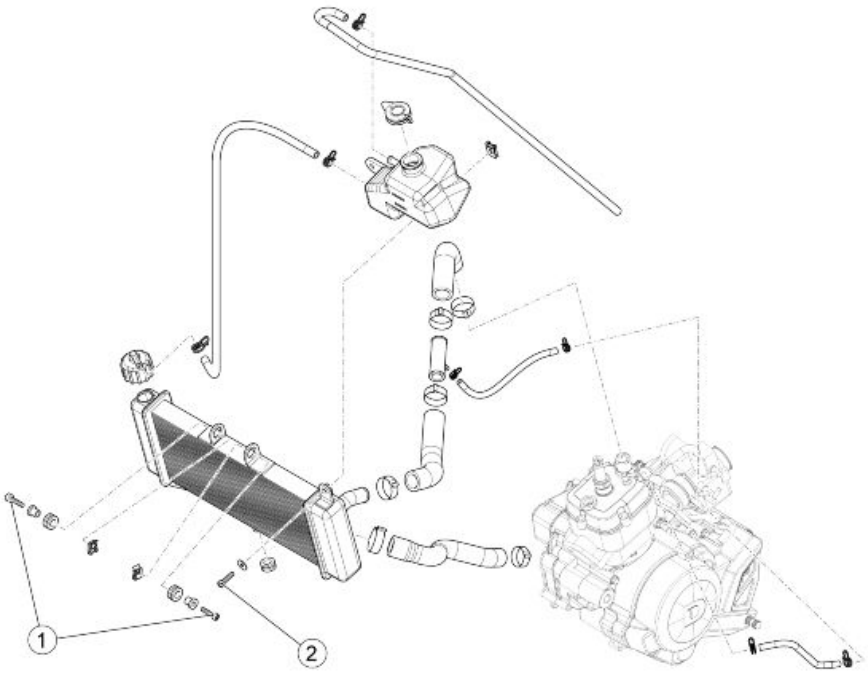
SIDE FAIRINGS

pos.	Description	Type	Quantity	Torque	Notes
1	Side fairing fixing screw	M5x9	6	1.7 Nm (1.25 lbf ft)	Max 2 Nm (1.47 lbf ft)



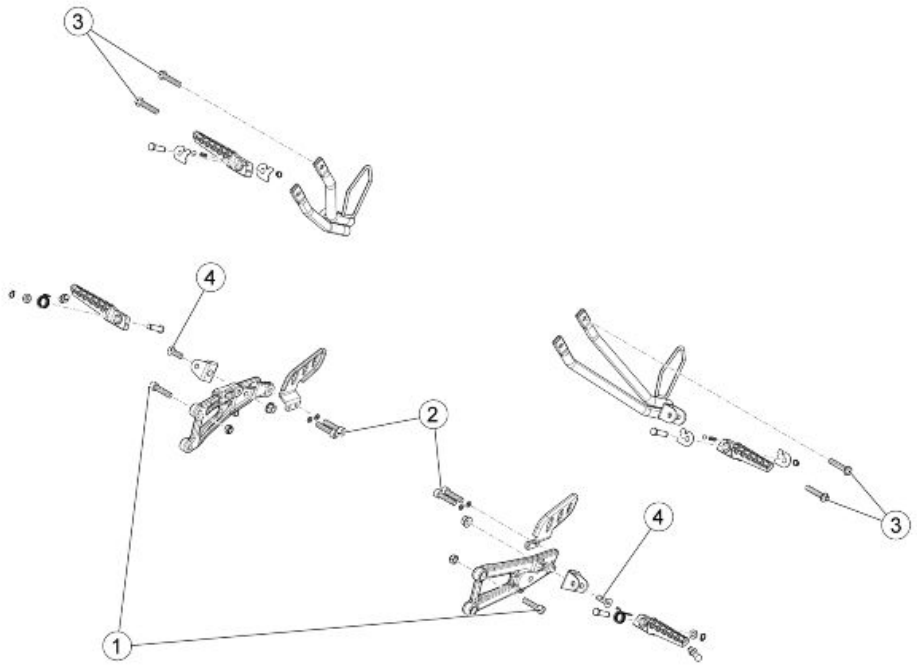
EXHAUST

pos.	Description	Type	Quantity	Torque	Notes
1	Drainage retainer	M6x20	2	10 Nm (7.37 lbf ft)	-
2	Footrest retainer	M8x40	1	25 Nm (18.43 lbf ft)	-



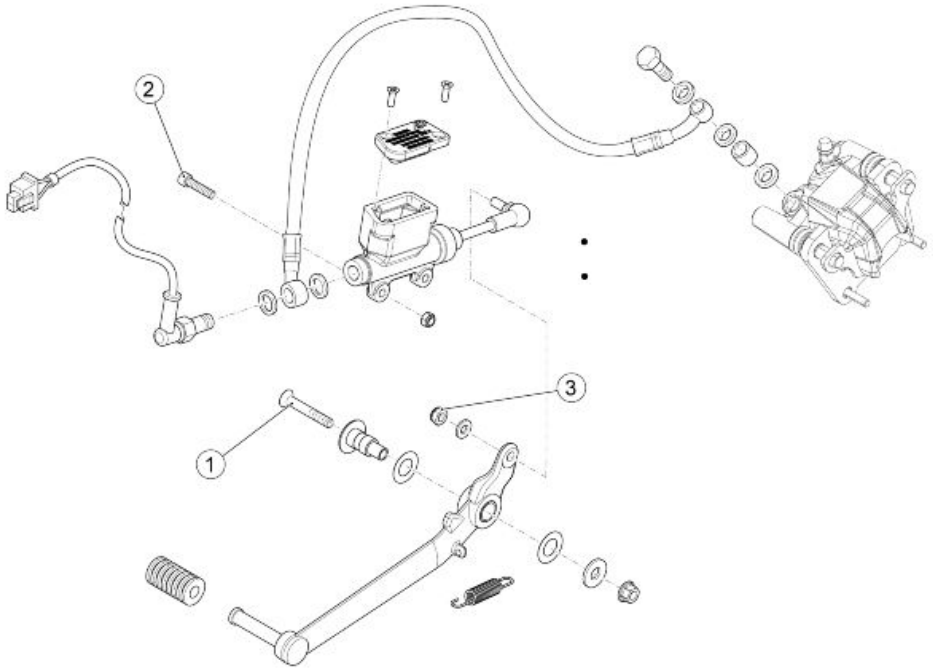
RADIATOR

pos.	Description	Type	Quantity	Torque	Notes
1	Radiator retainer	M6x25	2	10 Nm (7.37 lbf ft)	-
2	Expansion tank support fixing screw	M6x20	1	3.5-4 Nm (2.58-2.95 lbf ft)	-



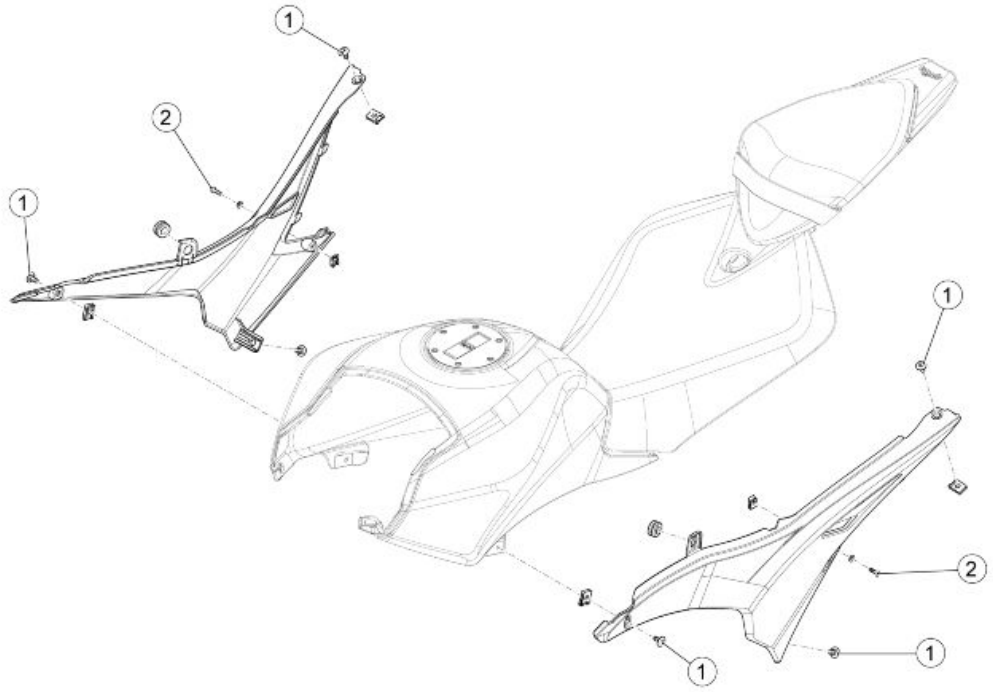
FOOTRESTS

pos.	Description	Type	Quantity	Torque	Notes
1	Rider footrest support fixing screw	M8x25	1+1	25 Nm (18.43 lbf ft)	Loctite 243
2	Footrest protection fixing screw	M5x12	2+2	5 Nm (3.69 lbf ft)	-
3	Passenger footrest fixing screw	M8x40	4	20 Nm (14.75 lbf ft)	-
4	Rider pedal retainer	M8x26	2	25 Nm (18.44 lbf ft)	-



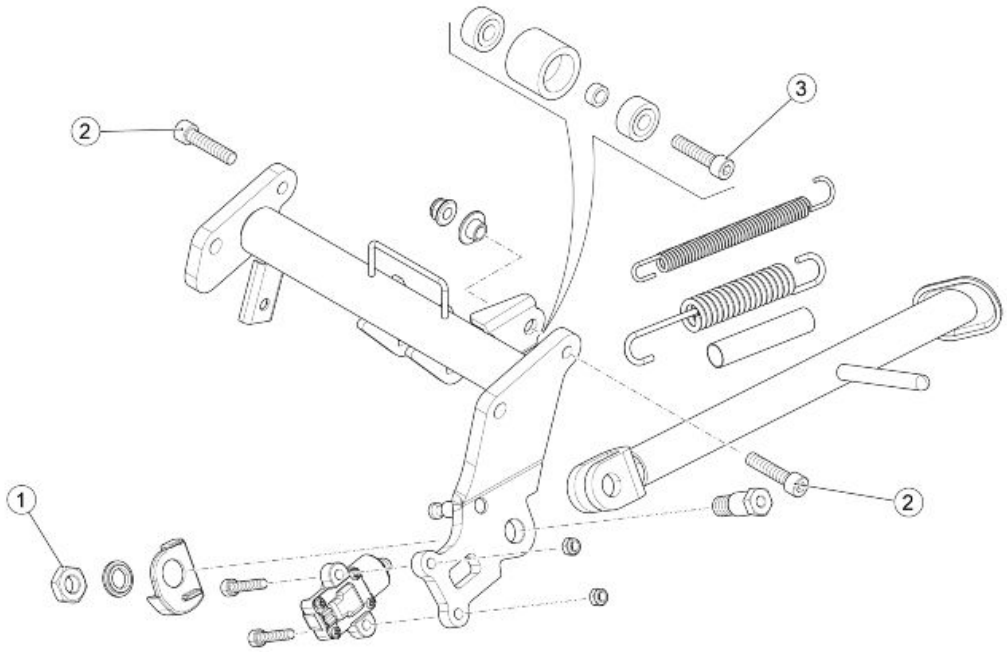
REAR BRAKING SYSTEM

pos.	Description	Type	Quantity	Torque	Notes
1	Brake lever fixing screw	M6x40	1	12 Nm (8.85 lbf ft)	-
2	Rear brake pump fixing screw	M6x30	2	10 Nm (7.37 lbf ft)	-
3	Brake pump joint retainer	M6	1	10 Nm (7.37 lbf ft)	-



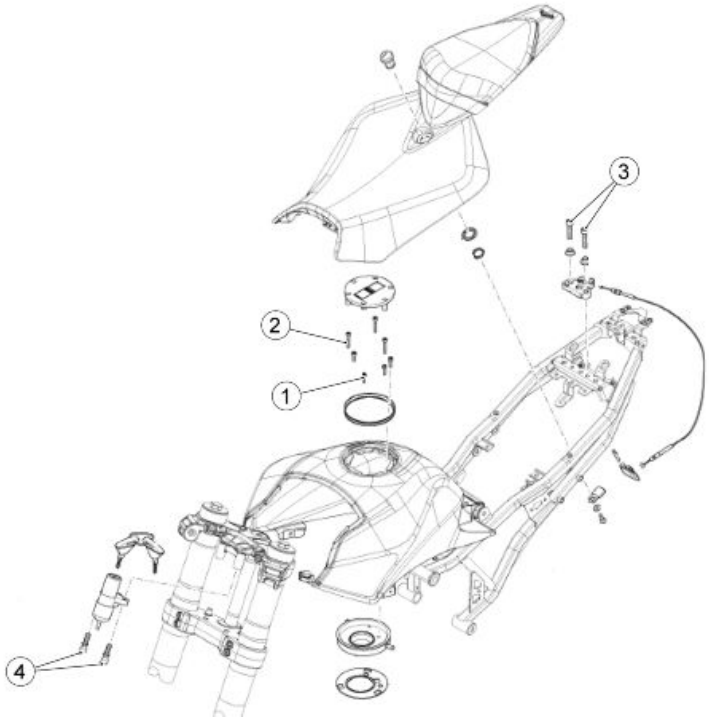
CENTRAL BODYWORK

pos.	Description	Type	Quantity	Torque	Notes
1	Fairing upper fixing screw	M5x9	6	3 Nm (2.21 lbf ft)	-
2	Fairing lower fixing screw	M4x14	2	-	-



STAND

pos.	Description	Type	Quantity	Torque	Notes
1	Thin nut	M10x1.25	1	10 Nm (7.38 lb ft)	-
2	TCEI screw	M8x30	2	25 Nm (18.43 lb ft)	Loctite 243
3	TCEI screw	M8x45	1	25 Nm (18.43 lb ft)	-

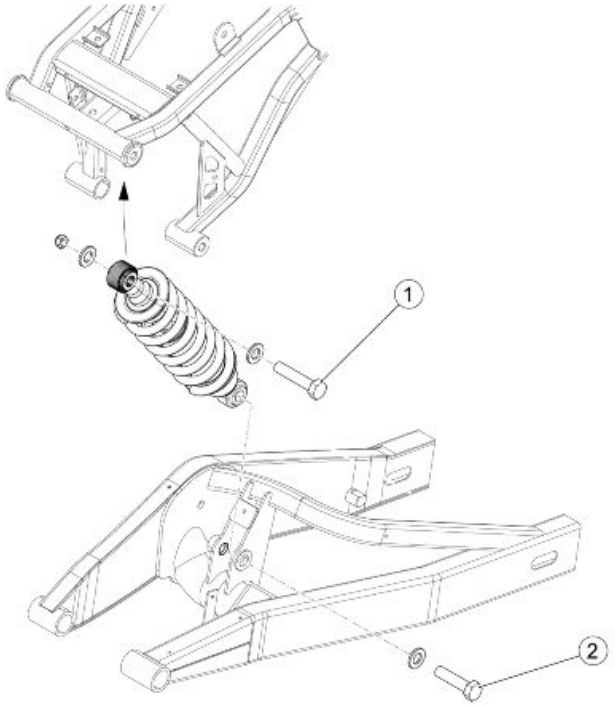


LOCKS

pos.	Description	Type	Quantity	Torque	Notes
1	Fuel tank cap retainer	M5x16	3	3 Nm (2.21 lb ft)	-

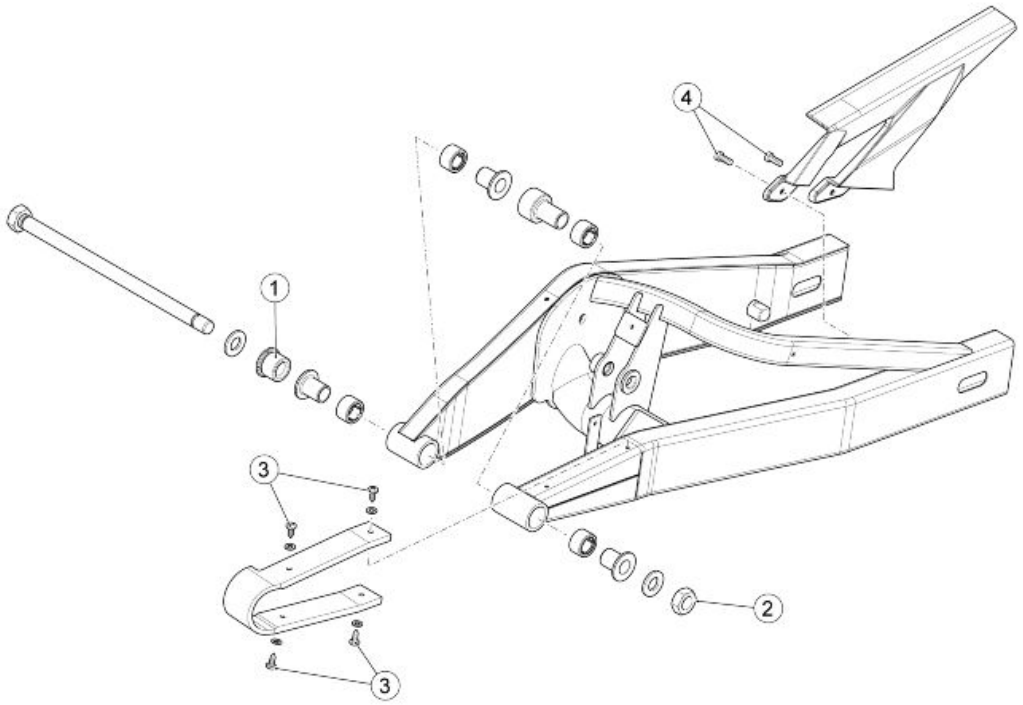
pos.	Description	Type	Quantity	Torque	Notes
2	Fuel tank cap retainer	M5x30	2	3 Nm (2.21 lb ft)	-
3	Saddle lock retainer	M6x30	2	6 Nm (4.42 lb ft)	-
4	Steering lock retainer	M8x20	2	6.5 Nm (4.79 lb ft)	-

Back side



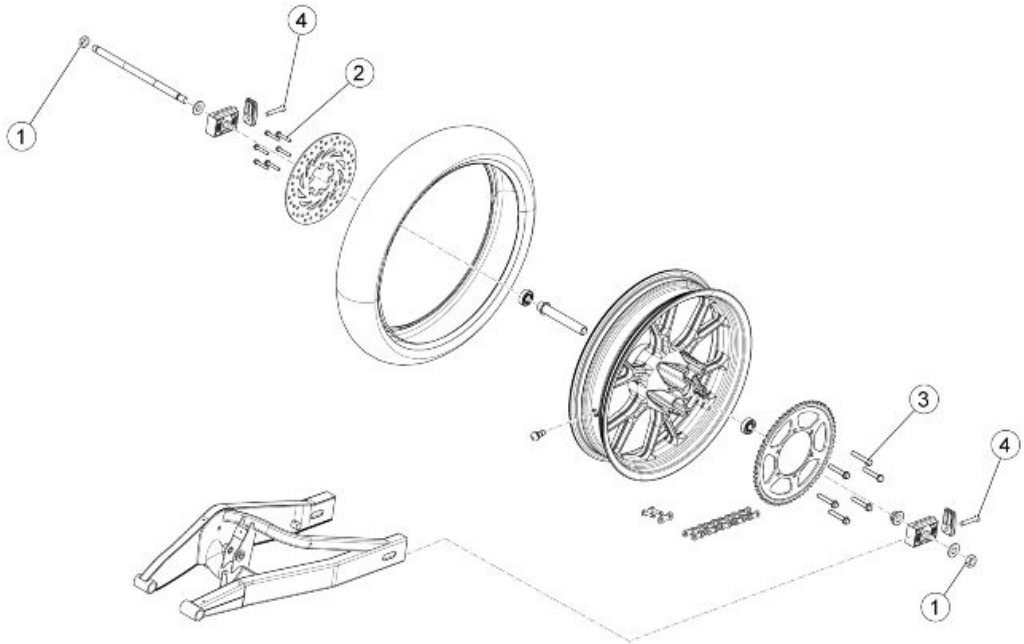
REAR SUSPENSION

pos.	Description	Type	Quantity	Torque	Notes
1	Upper retainer	M12	1	58 Nm (42.78 lbf ft)	-
2	Lower retainer	M12	1	58 Nm (42.78 lbf ft)	Loctite 243



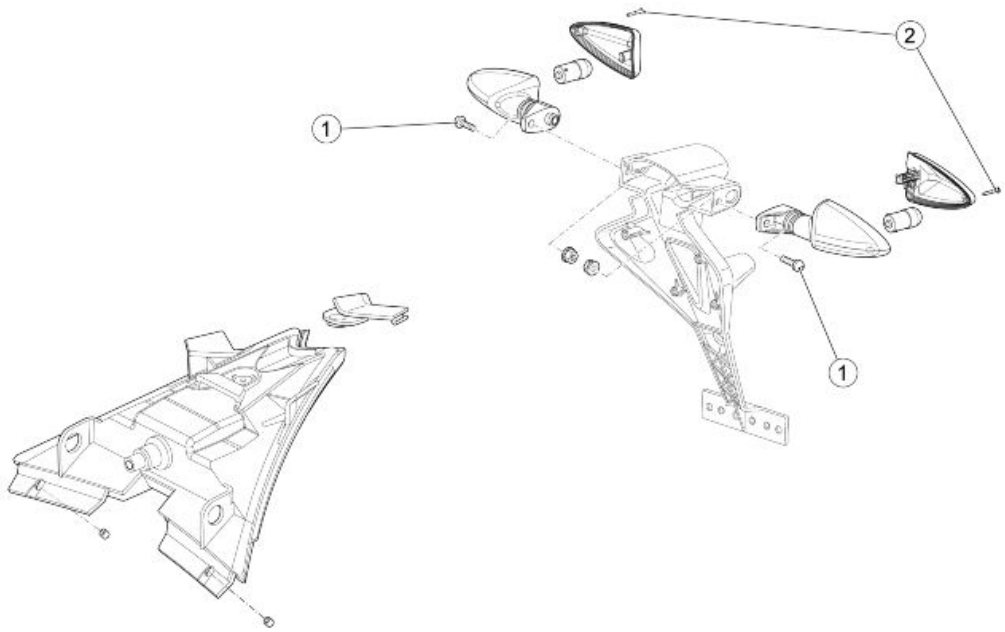
SWINGARM

pos.	Description	Type	Quantity	Torque	Notes
1	Swingarm to chassis adjustment nut	M25x1.5	1	15 Nm (11.06 lbf ft)	-
2	Swingarm pin nut	M14	1	78 Nm (57.52 lbf ft)	-
3	Chainguard fixing screw	M 4.8x13	4	1 Nm (0.74 lbf ft)	-
4	Chainguard fixing screw	Self-tap.	2	-	-



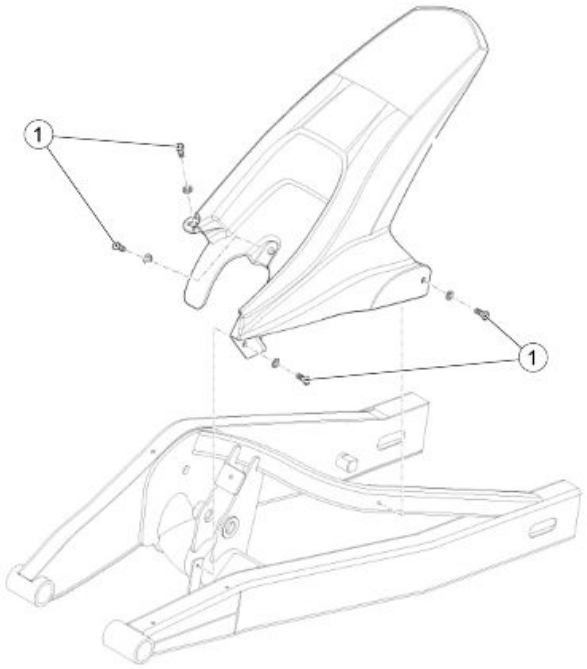
REAR WHEEL

pos.	Description	Type	Quantity	Torque	Notes
1	Rear wheel axle nut	M14	2	78 Nm (57.53 lbf ft)	-
2	Rear disc fixing screw	M6x20	6	12 Nm (8.85 lbf ft)	-
3	Sprocket fixing screw	M6	6	12 Nm (8.85 lbf ft)	-
4	Chain tensor fixing screw	M8	2	12 Nm (8.85 lbf ft)	Loctite 243



REAR LIGHTS

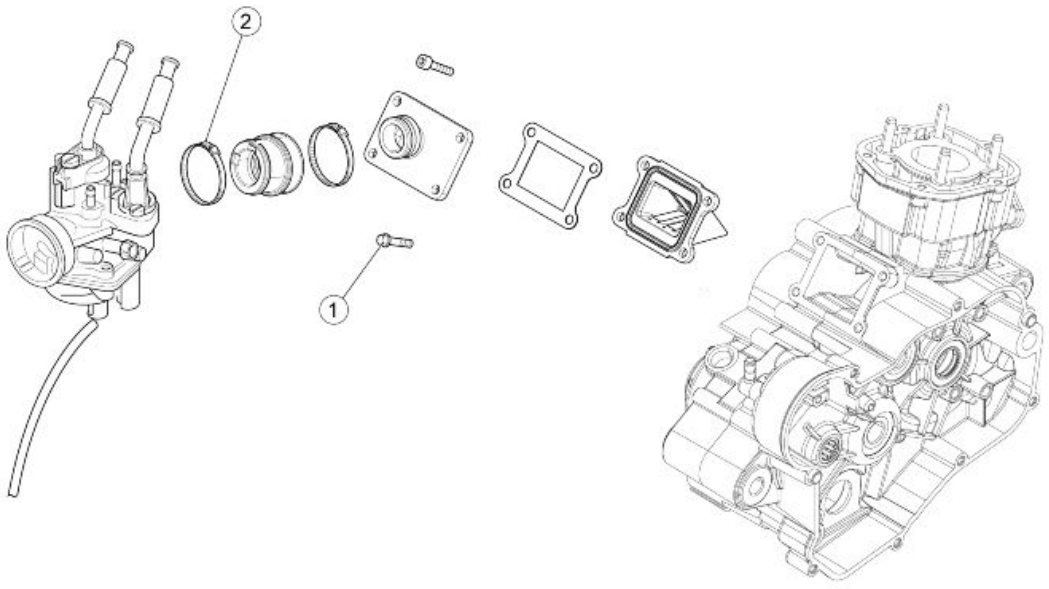
pos.	Description	Type	Quantity	Torque	Notes
1	Turn indicator retainer	M5	2	3 Nm (2.21 lbf ft)	-
2	Turn indicator cover retainer	-	2+2	0.3 Nm (0.22 lbf ft)	-



REAR MUDGUARD

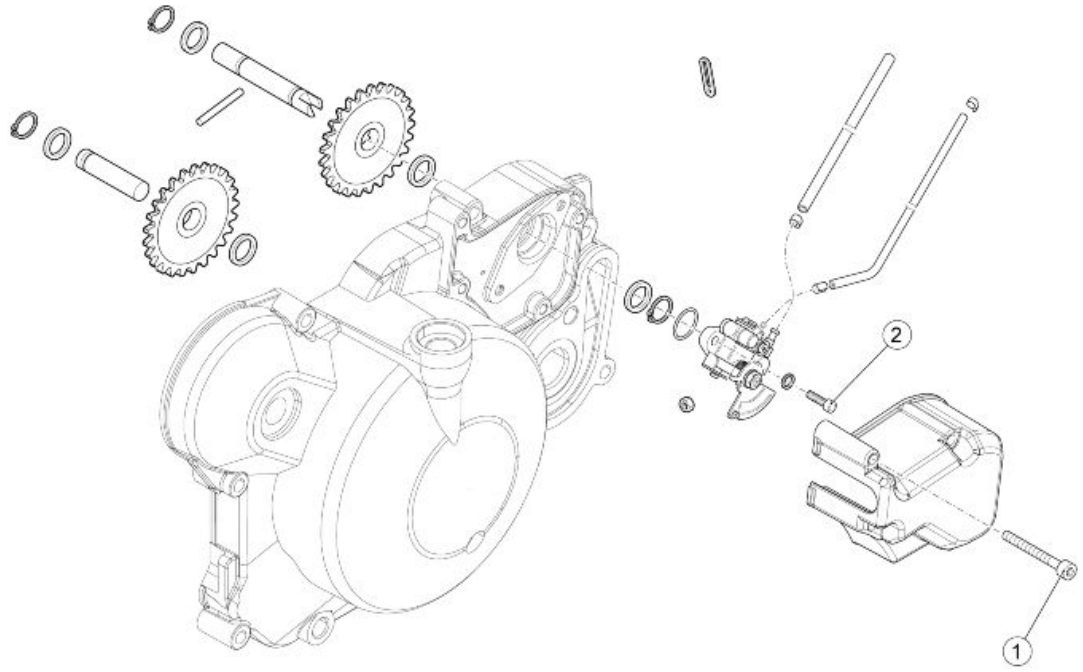
pos.	Description	Type	Quantity	Torque	Notes
1	Rear mudguard to swingarm fixing screw	Self-tap.	4	3 Nm (2.21 lbf ft)	Max 4.5 Nm (3.31 lbf ft)

Engine



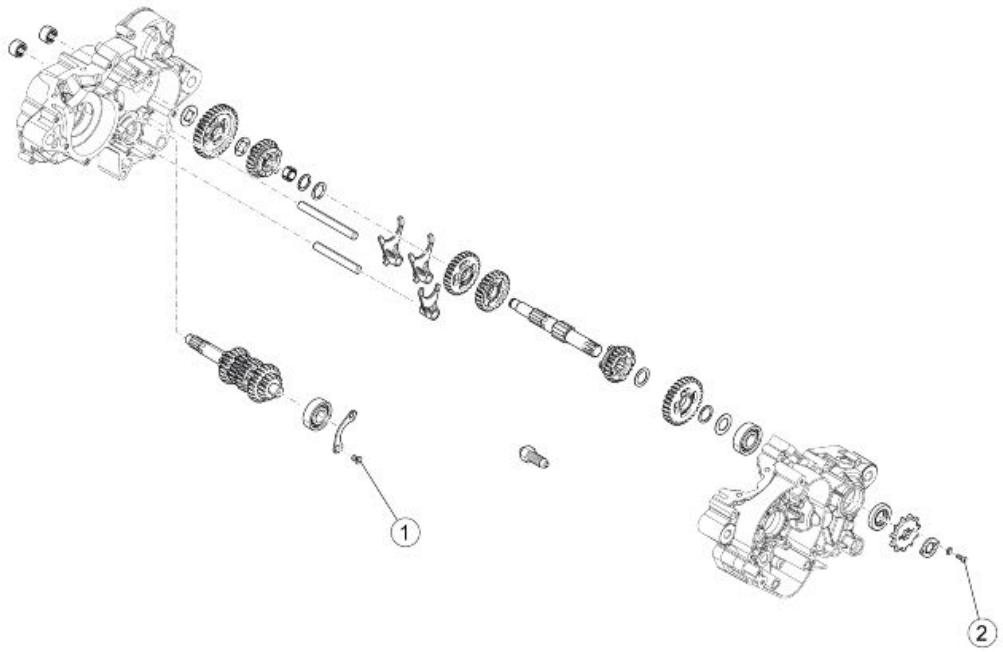
REED VALVE

pos.	Description	Type	Quantity	Torque	Note
1	Reed valve retainer	M6x110	4	8-10 Nm (5.90-7.38 lbf ft)	-
2	Clamp retainer	-	1	0.3 - 0.4 Nm (0.22-0.29 lbf ft)	-



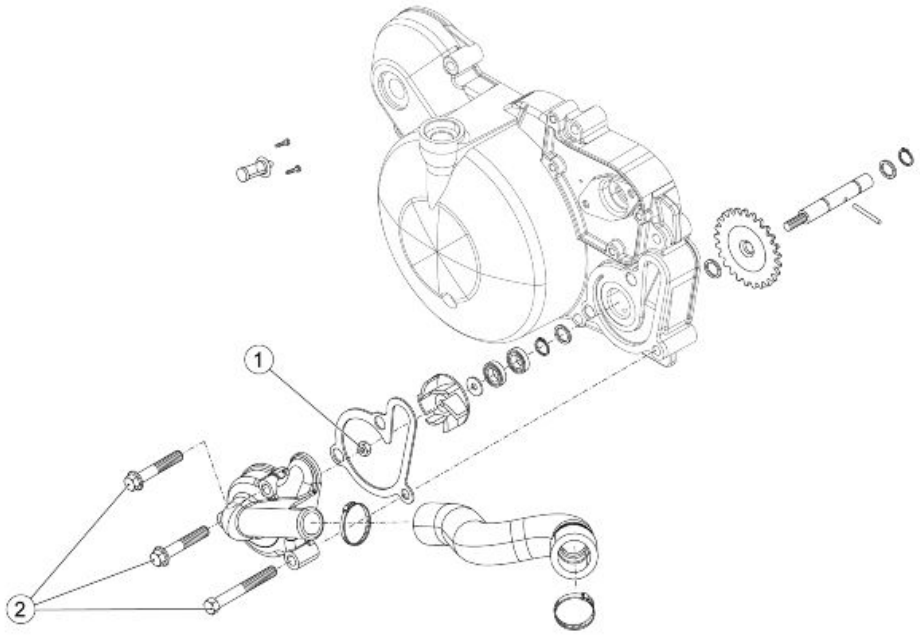
OIL PUMP

Description	Type	Quantity	Torque	Note
Oil pump cover retainer	M5x80	4	3.5-4.5 Nm (2.58-3.31 lbf ft)	-
Oil pump retainer	M5x80	2	3.5-4.5 Nm (2.58-3.31 lbf ft)	-



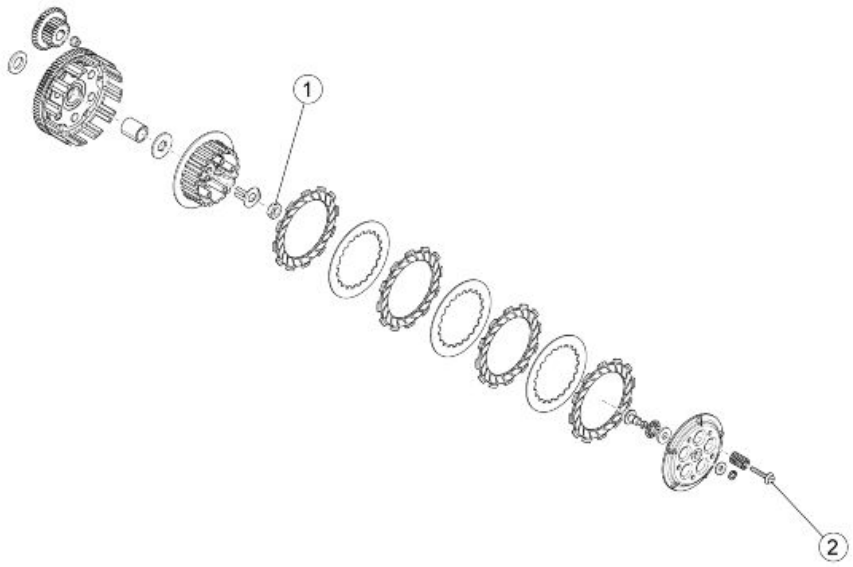
TRANSMISSION AND MAIN SHAFT

pos.	Description	Type	Quantity	Torque	Note
1	Main axle bearing retainer	M5x80	2	3.5-4.5 Nm (2.58-3.31 lbf ft)	-
2	Pinion retainer	M4x10	2	2-4 Nm (1.47-2.95 lbf ft)	Loctite 243



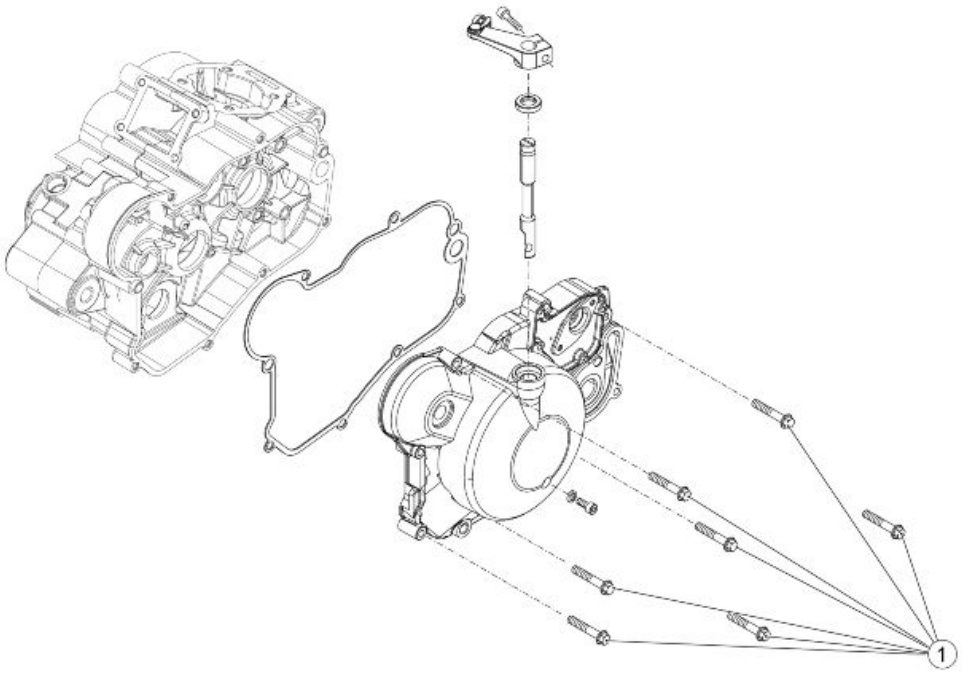
WATER PUMP

pos.	Description	Type	Quantity	Torque	Note
1	Water pump shaft retainer	M5	1	3.5-4.5 Nm (2.58-3.31 lbf ft)	-
2	Water pump cover retainer	M6x100	3	8-10 Nm (5.90-7.38 lbf ft)	-



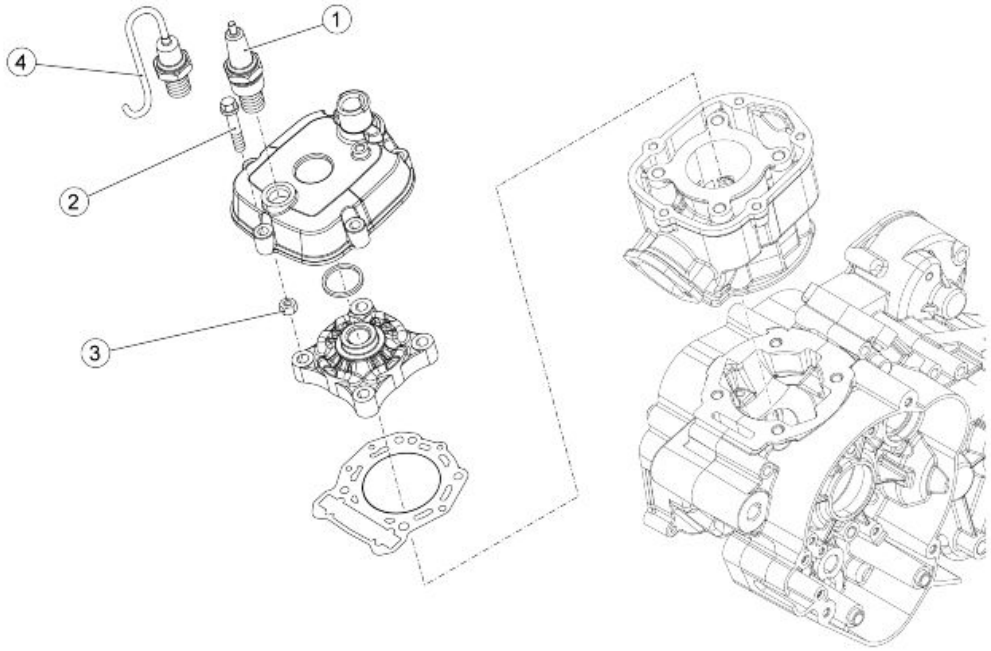
CLUTCH

pos.	Description	Type	Quantity	Torque	Note
1	Clutch housing retainer	M12	1	35-45 Nm (28.81-33.19 lbf ft)	-
2	Clutch spring retainer	M5x80	5	3.5-4.5 Nm (2.58-3.31 lbf ft)	-



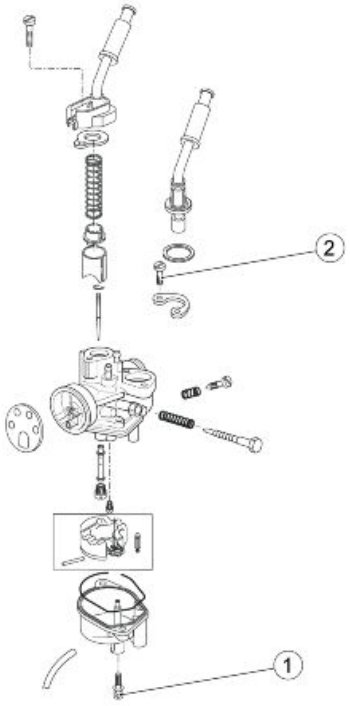
CLUTCH COVER

pos.	Description	Type	Quantity	Torque	Note
1	Cover retainer	M6x110	7	8-10 Nm (5.90-7.38 lbf ft)	-



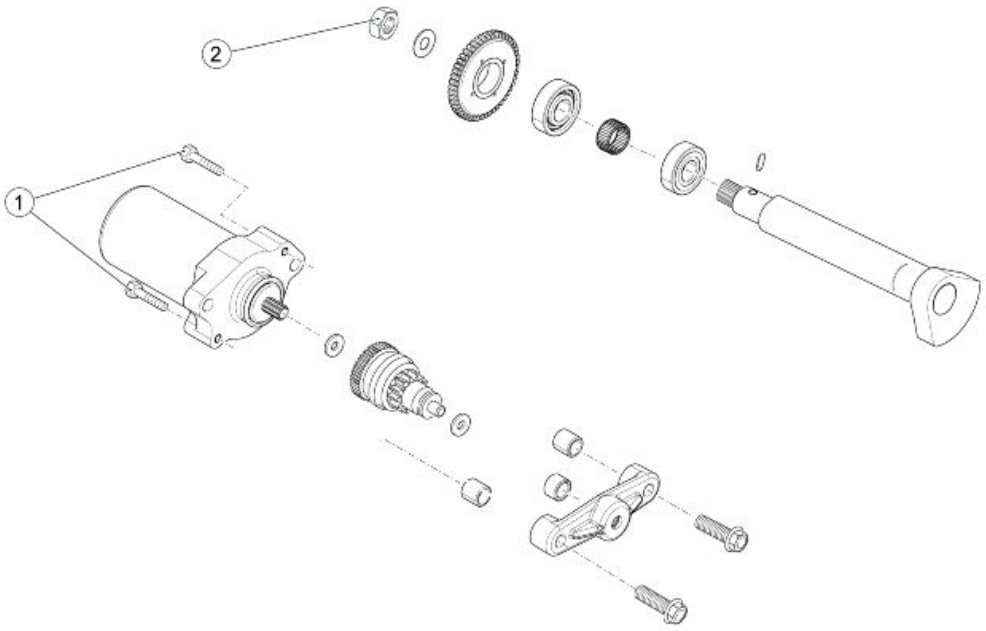
HEAD

pos.	Description	Type	Quantity	Torque	Note
1	Spark plug retainer	M14x125	1	20-30 Nm (14.75-29.50 lbf ft)	-
2	Head retainer	M6x10	5	8-10 Nm (5.90-7.38 lbf ft)	-
3	Head nut retainer	M7	4	19-22 Nm (14.01-16.23 lbf ft)	-
4	Thermistor retainer	M14	1	32-38 Nm (23.60-28.03 lbf ft)	-



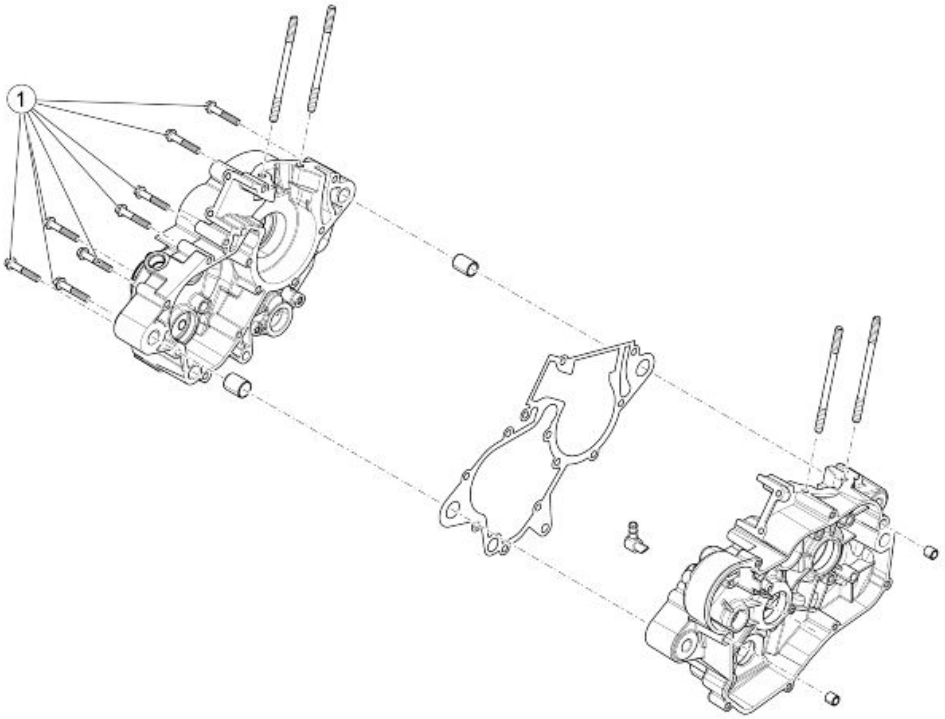
DEPRESSION CARBURETTOR

pos.	Description	Type	Quantity	Torque	Note
1	Carburettor chamber retainer	-	1	1 Nm (0.73 lbf ft)	-
2	Starter cover retainer	-	1+1	1 Nm (0.73 lbf ft)	-



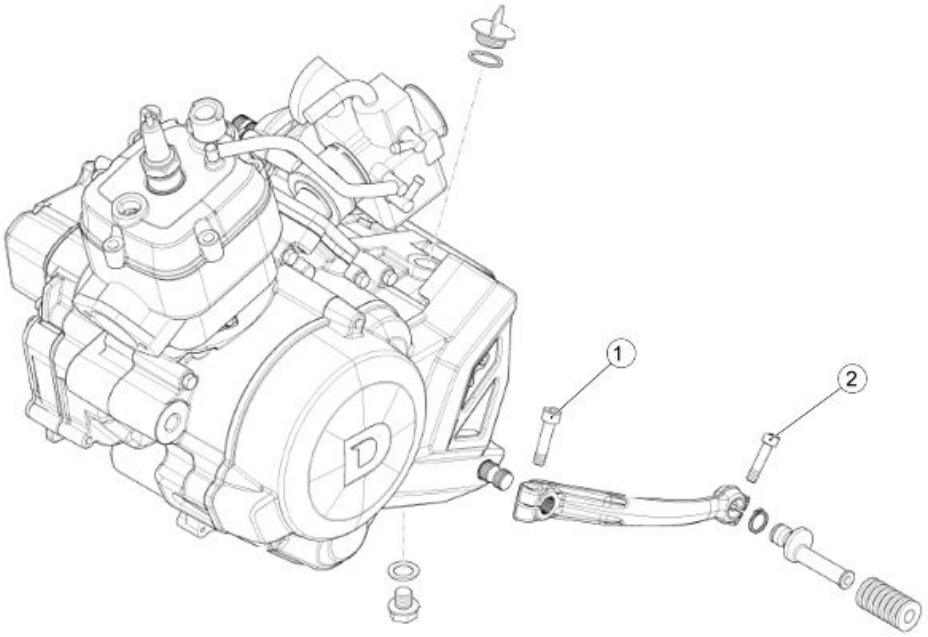
STARTER MOTOR

pos.	Description	Type	Quantity	Torque	Note
1	Starter motor retainer	M6x100	2	8-10 Nm (5.90-7.38 lbf ft)	-
2	Countershaft retainer	M10	1	15-18 Nm (11.06-13.27 lbf ft)	-



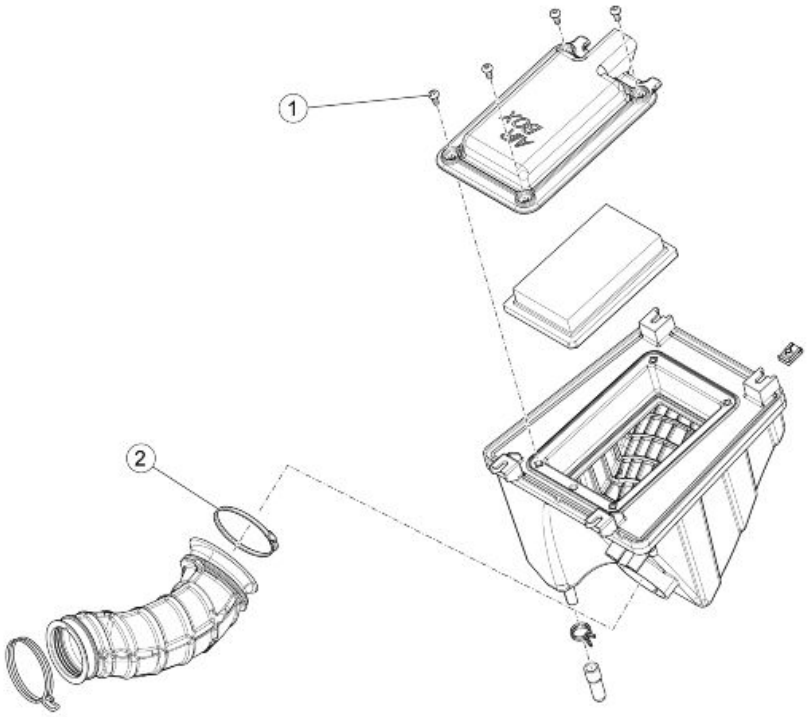
ENGINE CRANKCASE

pos.	Description	Type	Quantity	Torque	Note
1	Crankcase retainer	M26x100	8	8-10 Nm (5.90-7.38 lbf ft)	-



LEVERS

pos.	Description	Type	Quantity	Torque	Note
1	Gearbox lever fixing screws	M6x20	1	10 Nm (7.73 lbf ft)	-
2	Gearbox lever fixing screws	M6x16	1	10 Nm (7.73 lbf ft)	-



AIR FILTER BOX

pos.	Description	Type	Quantity	Torque	Notes
1	Filter box cover fixing screw	M5x12	4	3 Nm (2.21 lbf ft)	Class 8.8
2	Sleeve fixing clamp	-	1	0.5 Nm (0.37 lbf ft)	-

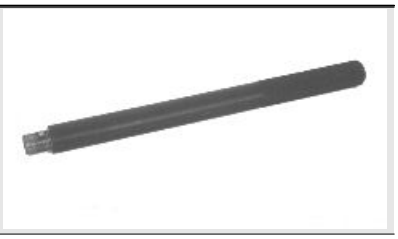
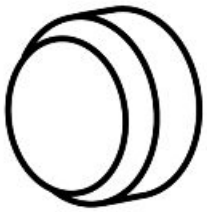
Recommended products chart

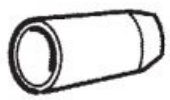
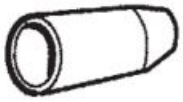
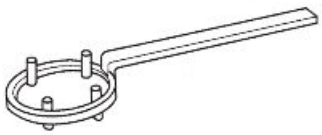
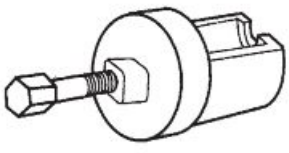
RECOMMENDED PRODUCTS TABLE

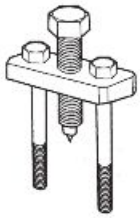
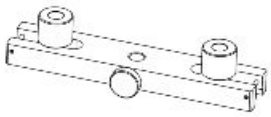
Product	Description	Specifications
ENI I-RIDE PG 2T	Mixer oil	As an alternative for recommended oils, use top branded fully synthetic oils that meet or exceed the ISO - L - EGD, or alternatively JASO FC or API TC specifications requirements.
AGIP GEAR 10W-40	Gearbox oil	API GL-4
SPEZIAL ENI ANTIFREEZE	Coolant	Fluid without amines, nitrites or phosphates, intended to be used in mixtures with de-ionised water.
AGIP BRAKE 4	Brake fluid	As an alternative to the recommended fluid, other fluids that meet or exceed the required specifications may be used. SAE J1703, NHTSA 116 DOT 4, ISO 4925 Synthetic fluid
AGIP GREASE 30	Grease for steering bearings, pin seats and swinging arm	
AGIP FILTER OIL	Oil for air filter sponge	-
NEUTRAL GREASE OR PETROLEUM JELLY	BATTERY POLES	Neutral grease or petroleum jelly.
AGIP CHAIN GREASE SPRAY	Recommended CHAIN oil	Grease
AGIP FORK 7.5W	Fork oil	As an alternative it is possible to use AGIP FORK 5W oil for forks.

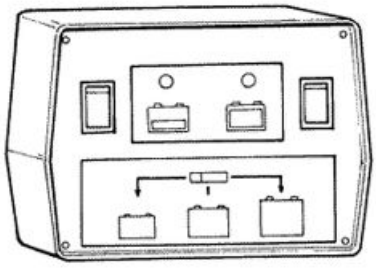
INDEX OF TOPICS

TOOLS

Stores code	Description	
020376Y	Adapter handle	
020357Y	32 x 35 mm adaptor	
020441Y	Oil seal punch	
020456Y	Ø 24 mm punch	
020358Y	37 x 40-mm adaptor	
020426Y	Piston fitting fork	

Stores code	Description	
020455Y	10-mm guide for oil seal on water pump shaft	
020362Y	12mm oil guard guide	
020412Y	15-mm Oil seal guide	
020439Y	17-mm guide for oil seal	
020363Y	20-mm Oil seal guide	
0.0H.053.0.004.1	Clutch locking tool	
0.0H.056.0.032.1	Primary drive pinion extractor	

Stores code	Description	
020565Y	Flywheel lock calliper spanner	
AP8106698	Crankcase separator	
AP8501501	Flywheel extractor	
AP8140266	Dial gauge mounting	
020330Y	Stroboscopic light for timing checking	
020331Y	Digital multimeter	

Stores code	Description	
020333Y	Single battery charger	
020334Y	Multiple battery charger	
866714	Swingarm adjustment	

INDEX OF TOPICS

Maintenance chart

ROUTINE MAINTENANCE TABLE

km(mi)x1000	1 (0.62)	6 (3.72)	12 (7.45)	18 (11.18)	24 (14.91)	30 (18.64)
Months	2	12	24	36	48	60
Rear shock absorber	-	-	I	-	I	-
Reed valve intake	-	-	I	-	I	-
Battery electrolyte level	I	I	I	I	I	I
Safety fasteners	I	-	I	-	I	-
Spark plug	I	R	R	R	R	R
DEPRESSION CARBURETTOR	I	I	I	I	I	I
Headlight - adjustment	-	-	A	-	A	-
Air filter	C	R	R	R	R	R
Final drive kit (1)	I	R	R	R	R	R
Clutch control lever	A	A	A	A	A	A
Brake levers	I	I	I	I	I	I
Brake fluid level	I	I	I	I	I	I
Oil level mixer (5)	I	I	I	I	I	I
Coolant (2)	I	I	I	I	I	I
Gearbox oil	R	I	R	I	R	I
Brake fluid (2)	-	-	-	-	-	-
Fork oil	-	-	R	-	R	-
Brake pads	I	I	I	I	I	I
Tyres	I	I	I	I	I	I
Tyres pressure (4)	I	I	I	I	I	I
Vehicle and brake system test	I	I	I	I	I	I
Radiator - External cleaning	-	-	C	-	C	-
Tightening screws	I	I	I	I	I	I
Steering	I	-	I	-	I	-
Head - Cylinder - Piston	-	-	I	-	I	-
Brake hoses	-	-	I	-	I	-
Fuel and oil + filters pipes (3)	I	I	R	I	R	I

I: INSPECT AND CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY

C: CLEAN, R: REPLACE, A: ADJUST, L: LUBRICATE

(1) Grease every 500 Km (310 mi) and before each use in severe conditions.

(2) Replace every 2 years.

(3) Replace every four years.

(4) Check every month.

(5) Check at each engine start.

Carburettor

Adjust idle speed whenever it is not regular.

To carry out this operation:

- Ride some kilometres until the regular operating temperature is reached.
- Set the gearshift lever in neutral (green warning light lit).
- Check the engine idle speed on the rpm indicator.

The engine idle speed should be of about 1600 ± 100 rpm;

If necessary:

- Rest the vehicle on its stand.
- Insert a Phillips screwdriver in the slot and actuate on the set screw placed in the carburettor.

TURN IT CLOCKWISE to increase revs. TURN IT ANTICLOCKWISE to reduce revs.

- Accelerate and decelerate some times with the throttle grip to check its correct functioning and that the idle speed is stable.

NOTE

TAKE THE VEHICLE TO AN official aprilia Dealer IF REQUIRED.

Carburettor

- Disassemble the carburettor in its parts, wash all of them with solvent, dry all body grooves with compressed air to ensure adequate cleaning.
- Check carefully that the parts are in good conditions.
- The throttle valve should slide freely inside the mix chamber; replace valve in case of excessive clearance due to wear.
- If there are wear marks in the mix chamber causing inadequate tightness or valve slide (even if it is new), replace the carburettor.
- It is advisable to replace the gasket at each refit

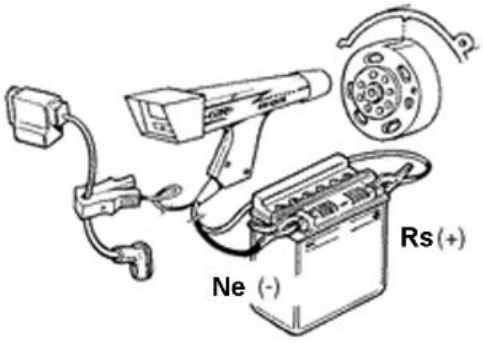
WARNING

PETROL IS HIGHLY EXPLOSIVE ALWAYS REPLACE THE GASKETS TO AVOID PETROL LEAKS

Checking the spark advance

Engine timing control

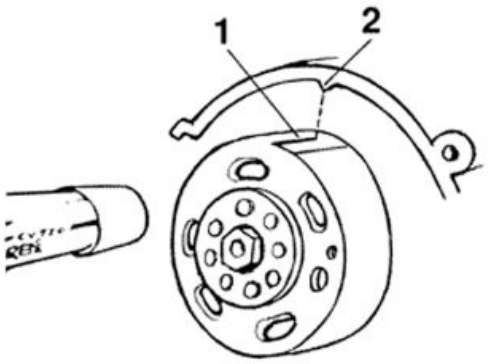
- Remove the crankcase left cover.
- Connect the adequate specific tool, with the red clamp to the positive (+) battery lead and the black clamp to the negative (-) battery lead. Connect the synchroniser to the high voltage conductor (the wire connecting the high voltage coil and the spark plug).



Specific tooling

020330Y Stroboscopic light for timing checking

- With the engine at 3000 rpm, check that the reference position (1) on the magneto flywheel is aligned with the notch on the crankcase (2).

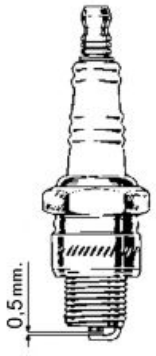


IGNITION

Specification	Desc./Quantity
Type	CDI
Ignition advance	20° +/- 1° before TDC

Spark plug

- Lift the tank.



- Disconnect the spark plug HV wire cap;
- Unscrew the spark plug using the socket wrench;
- Examine the condition of the spark plug, check that the insulating material is whole and measure the distance between the electrodes using a feeler gauge.
- Adjust the distance, if necessary, by bending the side electrode very carefully. In the case of defects, replace the spark plug with one of the specified type.

- Engage the spark plug with the due inclination and screw it right down by hand, then do it up with the wrench at the prescribed torque.
- Fit the cap on the spark plug as far as it will go.

CAUTION

THE SPARK PLUG MUST BE REMOVED WHEN THE MOTOR IS COLD. THE SPARK PLUG MUST BE REPLACED EVERY 5000 KM. USE OF STARTERS NOT CONFORMING OR SPARK PLUGS NOT THOSE DESCRIBED CAN SERIOUSLY DAMAGE THE ENGINE.

SPARK PLUG

Specification	Desc./Quantity
Standard	NGK BR8ES
Alternatively	CHAMPION RN3C
Electrode gap	0.5 mm (0.020 in)

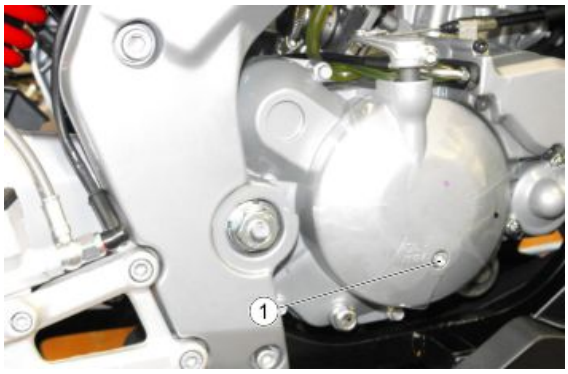
Gearbox Oil

Inspection

NOTE

PARK THE MOTORCYCLE ON SAFE AND LEVEL GROUND.

- Carefully unscrew the level inspection screw (1) on the right hand engine cover.
- Check that the oil level reaches the threaded hole.



TOP-UP

If necessary, top up:

- Unscrew and remove the filler plug (2).
- Add a small quantity of the specified oil and wait approximately one minute for the oil to distribute evenly throughout the casing.
- Check that the oil level reaches the threaded hole (1).

- If the oil level does not reach the hole, continue adding small quantities of oil and checking the level via the hole (1) until the specified level is reached.
- Once the top up procedure is complete, fit and tighten the inspection screw (1) and the filler cap (2).

TIGHTEN UP THE FILLER CAP AND MAKE SURE THE OIL DOES NOT SEEP.
CHECK REGULARLY THAT THERE ARE NO LEAKS IN THE CRANKCASE COVER GASKET.
DO NOT RIDE THE MOTORCYCLE WITH INSUFFICIENT LUBRICATION OR WITH CONTAMINATED OR INCORRECT LUBRICANTS AS THIS ACCELERATES THE WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE IRRETRIEVABLE DAMAGE.

Recommended products

AGIP GEAR 10W-40 Gearbox oil

API GL-4

Replacement

- Start the engine and let it idle for a few minutes; in this way, it is easier to drain the oil during the subsequent drainage stage.

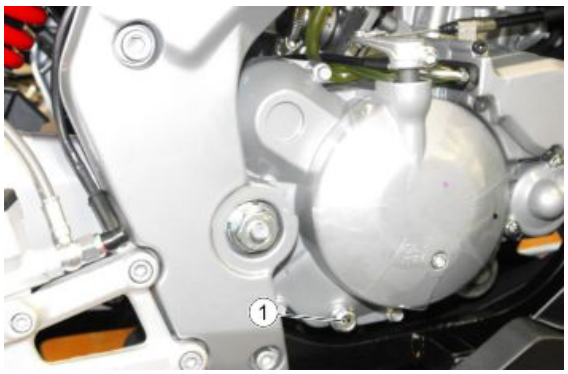
CAUTION

PARK THE MOTORCYCLE ON SAFE AND LEVEL GROUND.

- Shut off the engine.

OIL BECOMES VERY HOT WHEN THE ENGINE IS HOT; BE CAREFUL NOT TO GET BURNED WHEN CARRYING OUT THE OPERATIONS DESCRIBED BELOW.

- Keep the vehicle upright with both wheels on the ground.
- Place a container with suitable capacity under the drainage plug (1).
- Unscrew and remove the drainage plug (1).
- Unscrew and remove the filler plug (2).



- Drain the oil into the container; allow several minutes for oil to drain out completely.
- Check and if necessary, replace the drainage plug (1) sealing washer.
- Screw and tighten the drainage plug (1).
- Pour gearbox oil through the filler opening (2).

- Screw the filler plug (2).
- Start the engine and let it idle for about a minute to allow the gearbox oil circuit to get filled.
- Check the oil level and refill if necessary.

TIGHTEN UP THE FILLER CAP AND MAKE SURE THE OIL DOES NOT SEEP.
CHECK REGULARLY THAT THERE ARE NO LEAKS IN THE CRANKCASE COVER GASKET.
DO NOT RIDE THE MOTORCYCLE WITH INSUFFICIENT LUBRICATION OR WITH CONTAMINATED OR INCORRECT LUBRICANTS AS THIS ACCELERATES THE WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE IRRETRIEVABLE DAMAGE.

Air filter

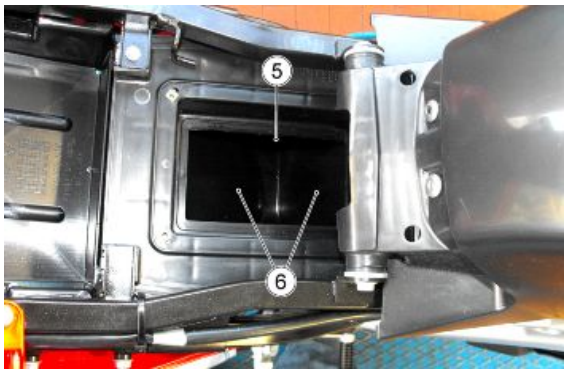
- Remove the passenger saddle and collect the supporting rod of the fuel tank.
- Lift the fuel tank and fasten it with the supporting rod.
- Unscrew and remove the two screws (1).
- Lower the tank, unscrew and remove the two screws (2) collecting the nuts underneath.
- Operating on the rear area of the tank, lift the filter box cover (3) and sliding it together with the filtering element (4),

making it slide upwards and backwards.

- Separate the filtering element (4) on the clean and dry surface of the filter box cover (3).

COVER THE HOLE WITH A CLEAN CLOTH SO THAT NO FOREIGN ELEMENTS GET INTO THE INLET DUCTS.

AIR FILTER CLEANING



DO NOT USE SCREWDRIVERS OR ANY OTHER ELEMENT ON THE FILTER.

- Clean the air filter (4) with a blast of compressed air direct from the inner to the outer part of the filter.
- Clean the external side of the air filter (4) with a clean cloth.
- Clean the inside of the filter casing (5) and the intake ducts (6) with a clean cloth.

CAUTION

WHEN CLEANING THE FILTERING ELEMENT, CHECK THAT IT IS NOT TORN. IF IT IS, REPLACE THE FILTERING ELEMENT.

AIR FILTER REPLACEMENT

Replace the air filter (1) with a new one of the same type.

NOTE

NEVER REUSE AN OLD FILTER.

Checking cables and tubes

MIXER TIMING

- Remove the oil pump cover.
- Adjust mixer working on the corresponding adjuster screw.
- The correct oil flow rate is obtained by aligning the two references.

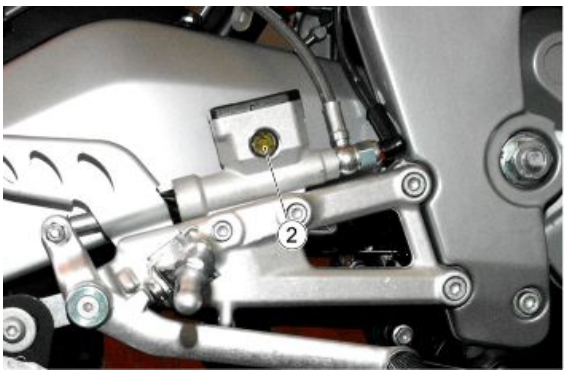
Braking system

Level check

Periodically check the brake fluid level via the brake fluid reservoir sight glasses (1 - 2) located on the right hand side of the handlebar (front brake) and on the right hand side of the swingarm (rear brake).

The brake fluid level should be above the sight glass with the reservoir completely level.

Otherwise, top-up.



THE SYSTEM MUST ONLY BE TOPPED UP WITH DOT4 TYPE BRAKE FLUID.

BRAKE FLUID IS HIGHLY CORROSIVE - AVOID CONTACT WITH PAINTWORK. IN THE EVENT OF SPILLAGE ON PAINTED PARTS, RINSE IMMEDIATELY WITH WATER.

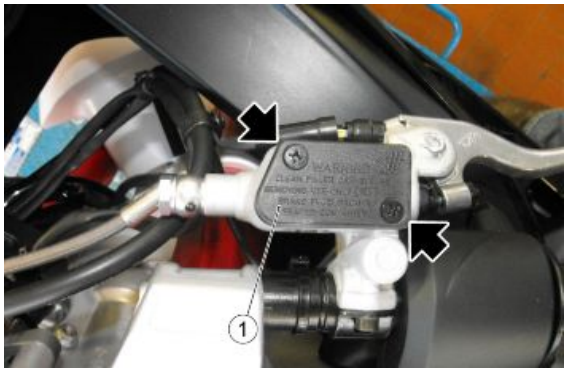
WARNING

THE FLUID IN THE BRAKING CIRCUIT IS HYGROSCOPIC, THAT IS, IT ABSORBS MOISTURE FROM THE SURROUNDING AIR. IF THE MOISTURE CONTENT IN THE BRAKE FLUID EXCEEDS A CERTAIN VALUE, WATER VAPOUR BUBBLES MAY FORM IN THE CIRCUIT, OR THE PUMP AND CALLIPERS MAY SEIZE, CAUSING THE BRAKES THEMSELVES TO SEIZE. NEVER USE BRAKE LIQUID IN OPEN OR PARTIALLY USED CONTAINERS.

Top-up

- The following operations refer to one braking system but they are valid for both braking systems:

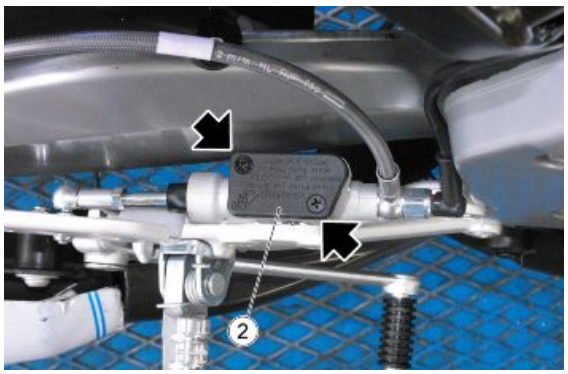
1. Front brake fluid reservoir (1);
2. Rear brake fluid reservoir (2).



CAUTION

RISK OF BRAKE FLUID SPILLS. DO NOT PULL THE BRAKE LEVER WHEN THE COVER FIXING SCREWS ARE LOOSE OR, MAINLY, WHEN THE BRAKE FLUID RESERVOIR COVER HAS BEEN REMOVED.

- Undo and remove the two screws fixing the brake fluid reservoir cover.



CAUTION

AVOID PROLONGED AIR EXPOSURE OF THE BRAKE FLUID. BRAKE FLUID IS HYGROSCOPIC AND ABSORBS MOISTURE WHEN IN CONTACT WITH AIR. LEAVE THE BRAKE FLUID RESERVOIR OPEN ONLY FOR THE TIME NEEDED TO COMPLETE THE TOPPING UP PROCEDURE.

- Lift and remove the cover and seals.

TO AVOID SPILLING FLUID WHILE TOPPING-UP, KEEP THE TANK PARALLEL TO THE RESERVOIR EDGE (IN HORIZONTAL POSITION).

DO NOT ADD ADDITIVES OR ANY OTHER SUBSTANCE TO THE FLUID.

WHEN USING A FUNNEL OR ANY OTHER ELEMENT, MAKE SURE IT IS PERFECTLY CLEAN.

- Top up the tank you are working on until the inspection sight glass is fully covered

CAUTION

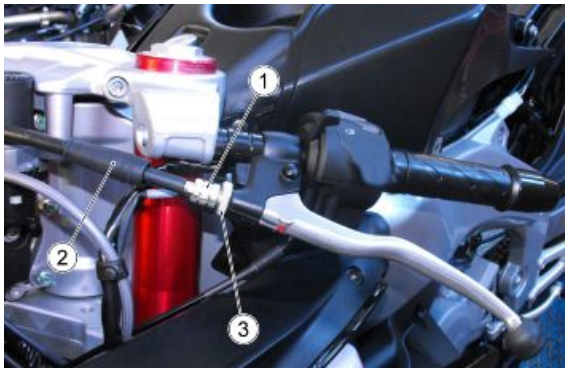
TOP-UP TO MAXIMUM LEVEL MARK ONLY WHEN BRAKE PADS ARE NEW. BRAKE FLUID LEVEL DECREASES GRADUALLY AS BRAKE PADS WEAR OUT.
WHEN TOPPING-UP, DO NOT EXCEED THE MAXIMUM LEVEL MARK WHEN BRAKE PADS ARE WORN AS YOU RISK SPILLING FLUID WHEN CHANGING THE BRAKE PADS.

- Check braking efficiency.

- In case of excessive travel of the brake lever or poor performance of the braking system, purge the air in the system.

Clutch system

Adjusting the lever



Adjustment clutch when the engine stops or the vehicle tends to move forward even when clutch lever is operated and the gear engaged, or if the clutch "slides", resulting in acceleration delay considering the engine revs.
Minor adjustments can be carried out through the set screw (1):

- Rest the vehicle on its stand.
- Remove the protection casing (2).
- Loosen the lock nut (3).
- Turn the set screw (1) until the empty travel at the clutch lever end is approximately 10 - 15 mm (0.39 - 0.59 in) (see figure).
- After adjusting, tighten the check nut (3) to lock the adjuster screw (1).
- Check the empty travel at the clutch lever end.
- Refit he protection casing (2).

NOTE

CHECK THE CLUTCH WIRE IS IN GOOD CONDITIONS: THERE SHOULD BE NO SIGNS OF CRUSHING OR WEAR ALL ALONG THE SHEATH.

- Lubricate the clutch wire frequently with an appropriate grease to avoid early wear and corrosion.

INDEX OF TOPICS

Electrical system installation

Scope and applicability

The purpose of this document is to define the position of the vehicle cable harness, its routing and how it is fixed on the chassis, tool kit compartment support and the saddle mounting, any potential problems and particular checks to be carried out on the connections and routings in order to reach the objectives of vehicle reliability.

Materials used and corresponding quantities

The electrical system consists of the following cable harnesses and parts:

- No.1 Main Cable Harness
- No.1 Headlight Cable Harness
- N° 1 License plate frame cable harness (EU Version)
- N° 1 License plate frame cable harness (Ch Version)
- N° 2 Turn indicators cable harness
- N° 1 Relay (5 contacts)
- Nº 1 Starter relays 12 V / 80 A
- Nº 1 Relays 12 V / 30 A

Small parts and mountings:

- N° 8 Large black clamps 290x4,5 (11.42x0.18 in)
- N° 6 Medium black clamps 190x4,5 (7.48x0.18 in)
- N° 5 Small black clamps 160x4,5 (6.30x0.10 in)
- Nº 4 Rubber clamps
- N° 6 Cable guide of various types
- N° 3 Retaining clip

Special checks for the correct connection and laying of cables

It is extremely important that any security-locks for the following connectors are properly connected and correctly tightened to ensure proper engine, and therefore proper vehicle, operation. The operator in charge must mark these connectors with a permanent marker sign.

- Regulator connector - FRONT SECTION, TABLE H.
- Regulator ground eyelet - FRONT SECTION, TABLE H.
- Neutral wire fitting on engine - CENTRAL SECTION, TABLE H,I.
- Flywheel wire connections (check if faston covers are well inserted and insulate fastons) - CENTRAL SECTION, TABLE D.
- Resistance connections (check if, if well connected and if there are pins slide off) - CENTRAL SECTION, TABLE E5.

- MIX oil reserve sensor connector (check if connected and if there are pins slide off) - CENTRAL SECTION, TABLE C.
- Check proper connection of transducer cables (CDI) - CENTRAL SECTION, TABLE D.
- Check MIX oil warning light ignition - FRONT SECTION, TABLE G.

The connectors in the list are circled in "green" in the different pictures.The listed connectors are considered more critical than the others because their disconnection could cause the vehicle to stop or malfunction. Obviously, the correct connection of the other connectors is also important and essential for proper vehicle operation.

It is also important and essential that the instructions regarding the routing and fixing of the cable harness in the various areas are followed meticulously in order to guarantee functionality and reliability.

The installation is shown on the three ideal divisions of the vehicle:

1. Front section
2. Central section
3. Rear section

Front side

TABLE A - FRONT LIGHT PRE-FITTING

1. High beam light
2. Cable guide
3. Grey sheathing that indicates the cable for the left HIGHBEAM headlight
4. Clamps
5. Low beam light
6. Cable harness headlight
7. Daylight running light connections (3+3W)
8. Daylight running light (3W)

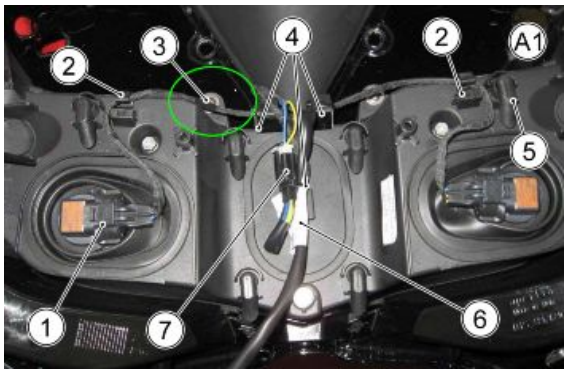


TABLE B

9. Clutch odometer

10. Clamps

11. Speed sensor: the speed sensor must be fitted with two clamps on the clutch odometer and must have a turn as on the engine.

TABLE C - Positioning left and right handlebar cables

12. Rubber clamp

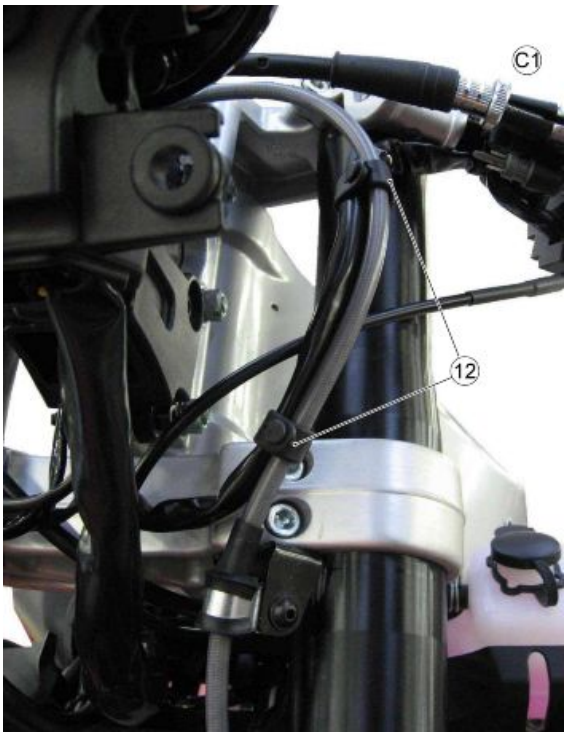


TABLE D - Special hand grip

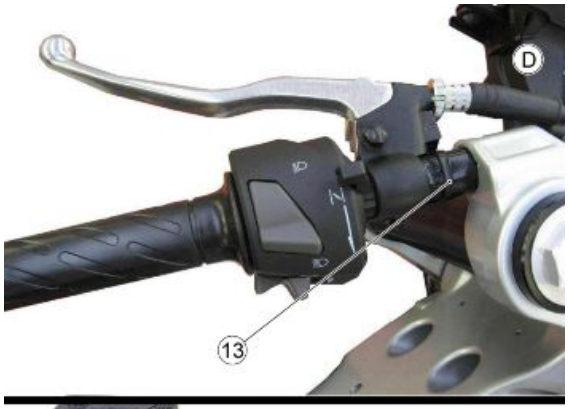
Left Switch must be without passing.

- The clamp must take the switch cable.

The right Switch must be without Engine Kill.

- The clamp must take the switch cable.

13. Clamps



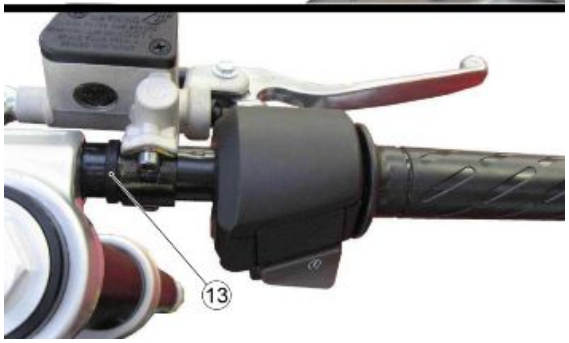


TABLE E - Special tool kit compartment support

14. Front headlamp cable harness connector
15. Clamp

The clamp must take all the cables inside the tool kit compartment support, especially the main cable harness must be provided with the clamp on the grey sheathing.

16. Main cable harness

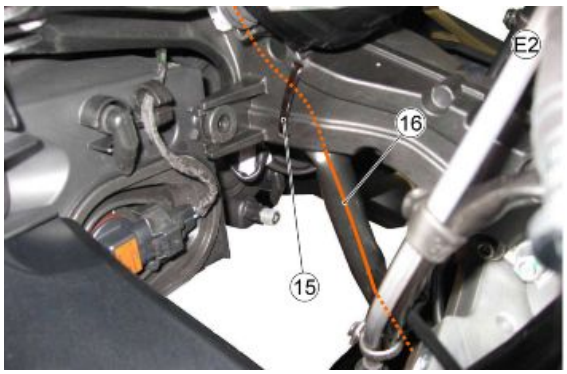


TABLE F - Special laying of cables on headlight

2. Cable guide
17. Headlight cable harness
18. Turn indicator cable harness
19. Headlight cable harness
20. Turn indicator cable harness

TABLE G - Instrument panel

21. Mix oil reserve warning light

TABLE H - Regulator positioning

22. Main cable harness
23. Regulator ground cable
24. Cable guide

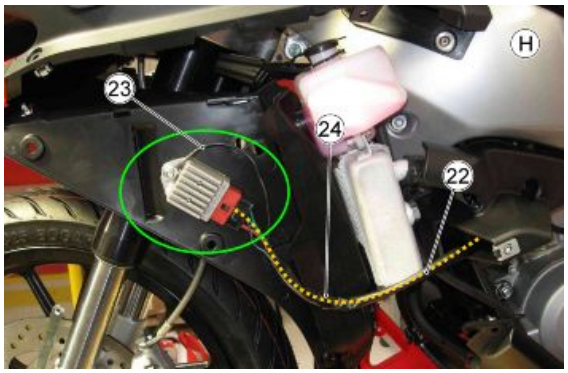
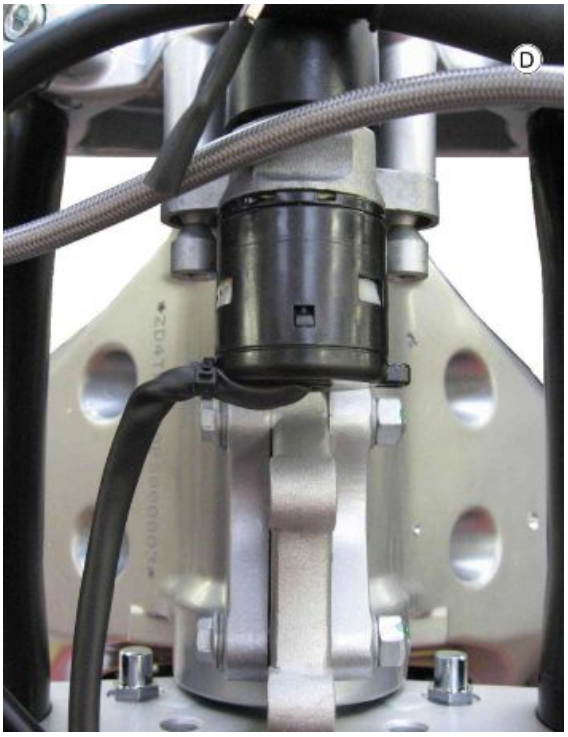


TABLE I - Special cable

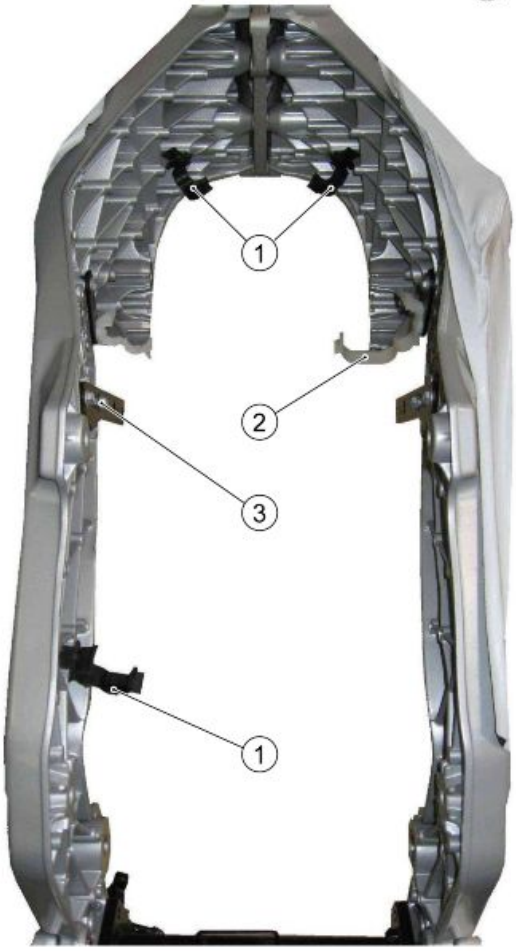


Central part

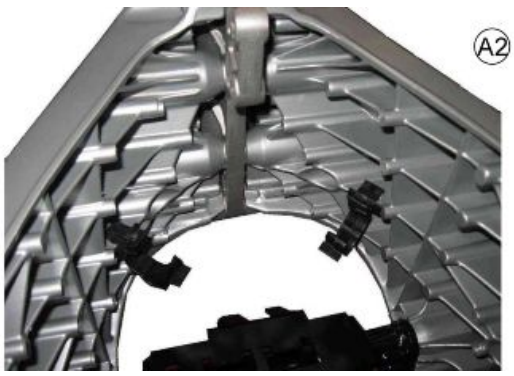
TABLE A - Pre-fitting chassis

1. Cable retaining clip
2. Cable guide
3. Cable guide

A1



A2




A3


A4
2


A5
3

TABLE B

- Fuel reserve sensor

TABLE C - Pre-fitting mix oil probe

5. Mix oil sensor

6 **ATTENTION: check carefully if the connection has been carried out and if there are pins slide off. Signal with a permanent marker after having made the control. IF NOT WELL CONNECTED, THE ENGINE COULD SEIZE.**

7. Low fuel connector

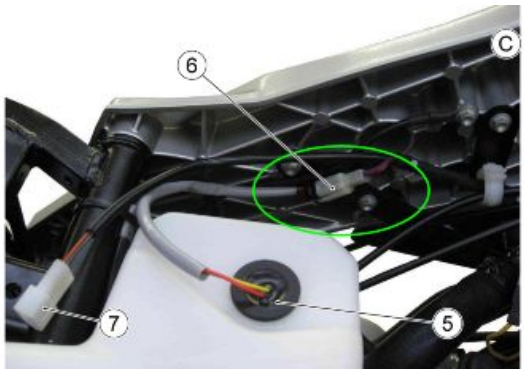


TABLE D - Wire connection on transducer (CDI)

8. Transducer (CDI)

9. The yellow cable that stays free on the flywheel cable harness, is connected to the Yellow Red cable that is provided by the Main Cable harness. (see CENTRAL SECTION, TABLE E5, SPECIAL 21)

10. On the "STOP" input connect the White-Red cable in the branch of the Main Cable harness.

11. **ATTENTION Connect the cables from the flywheel to the transducer according to the written colours on the transducer (as shown in the picture).**

12. Flywheel cable

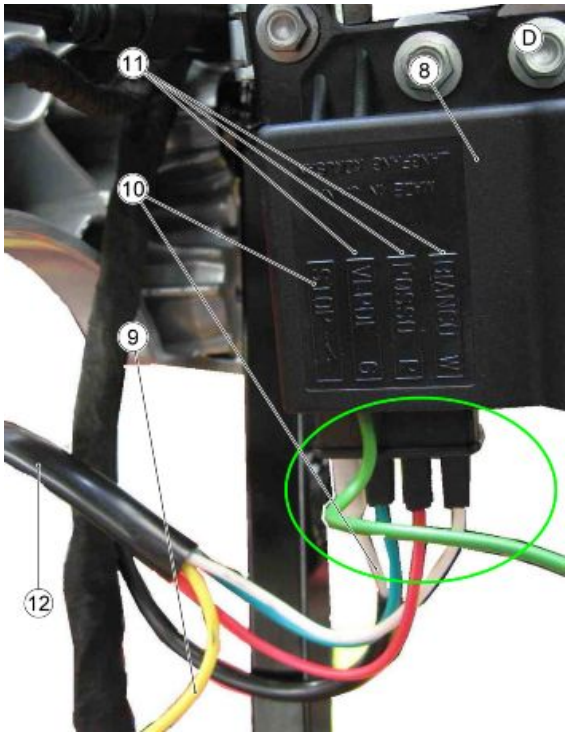


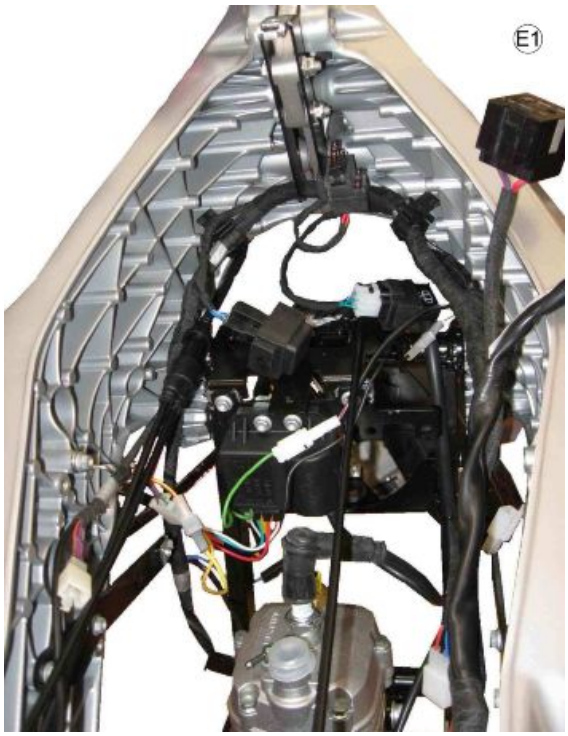
TABLE E - Installing main cable harness

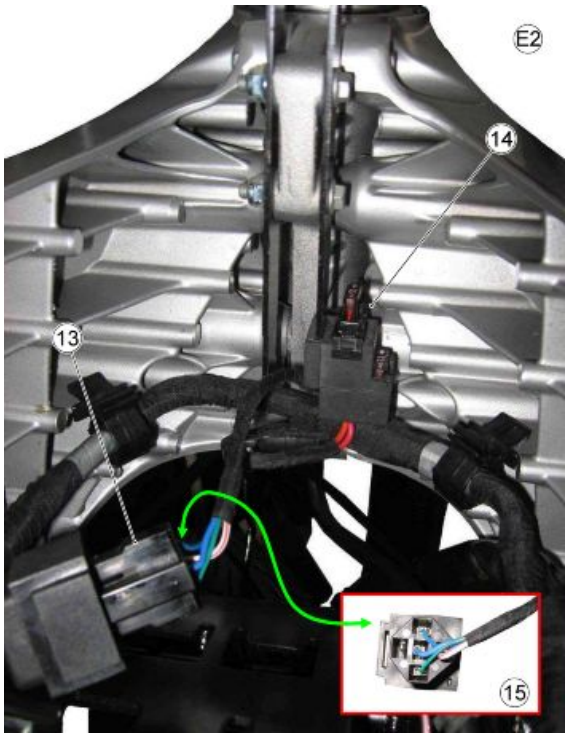
13. Relay 5 contacts for vehicle shut off

14. Main fuse

15. **CAUTION: If the cables are not correctly positioned or if wrong relay is used, can not be shut off the motorcycle.**

16. Clamps




E2
14
13
15

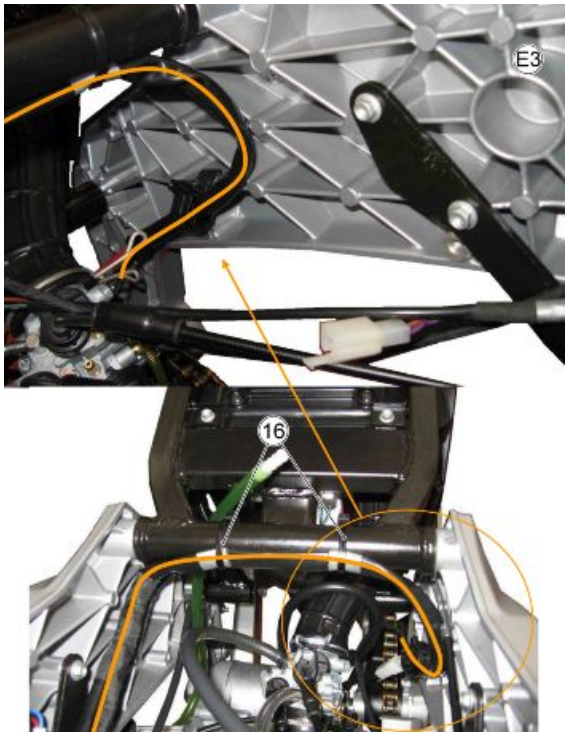
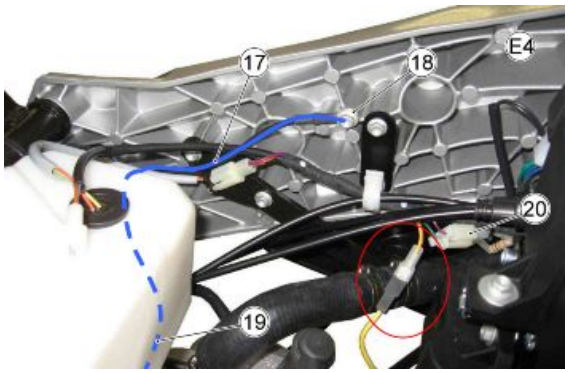

E3
16

TABLE E4

If by mistake the resistance (899436) is not well inserted or does not start correctly, the instrument panel will not signal the end of the Mix oil and could cause the engine failure.

17. Clamps
18. Frame assembly
19. Towards engine ground
20. **CAUTION: see CENTRAL SECTION, TABLE D**
21. Connection
22. **CAUTION: Check carefully if the connection has been carried out and if there are pins slide off. Signal with a permanent marker after having made the control. CAN CAUSE THE ENGINE SEIZURE.**
23. Main cable harness
24. If this is the resistance, put on the clamp



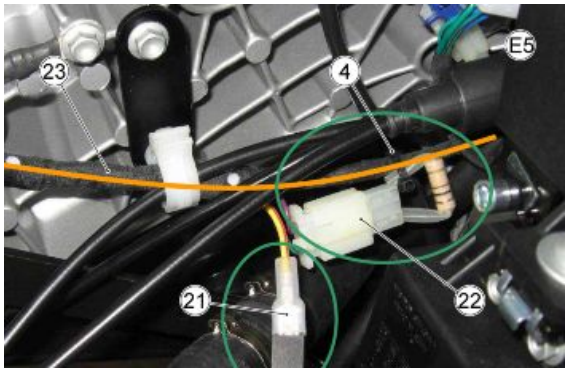


TABLE F - Position engine ground

24. Towards chassis ground
25. Towards main cable harness
26. Engine ground

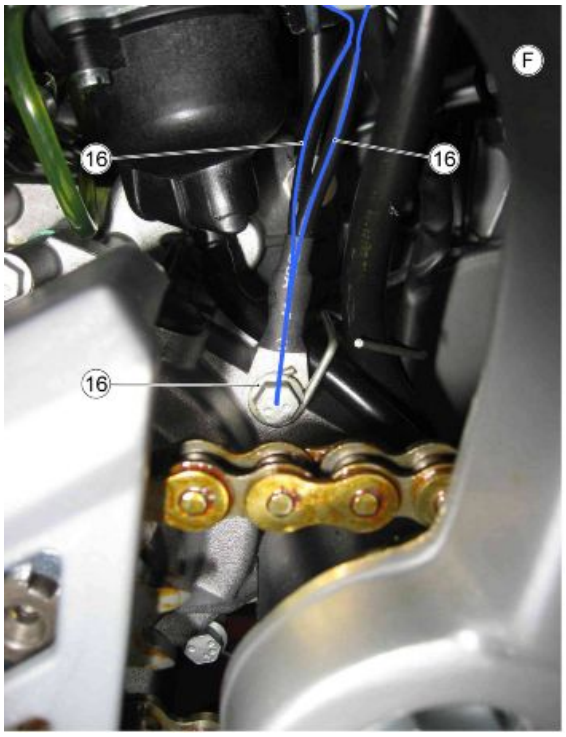


TABLE G

27. Start-up relay
28. Acid battery exhaust: DO NOT COVER
29. Side stand connection
30. Relay
31. Relay

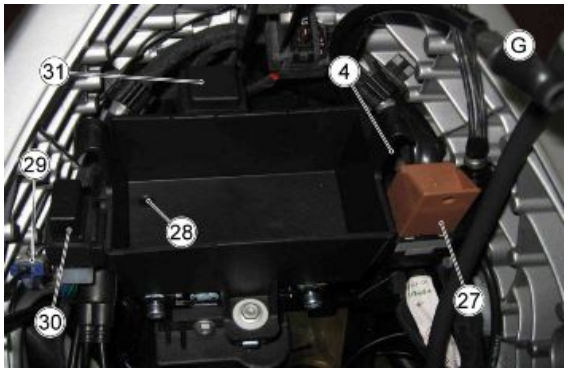


TABLE H

32. The horn cable is put on the 3 indicated clamps.
33. Horn cable
34. Neutral cable
35. N° 5 Clamp to keep the cables positioned: Horn, Stand and Neutral Sensor
36. Stand sensor cable

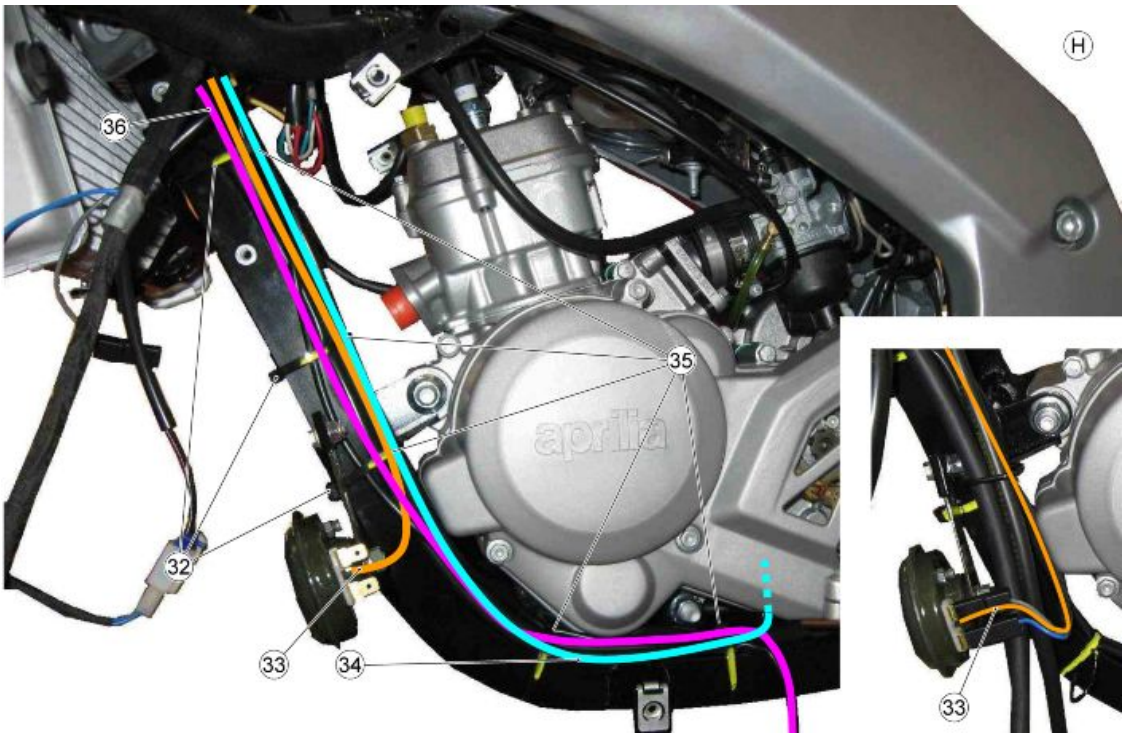


TABLE I

34. Neutral cable

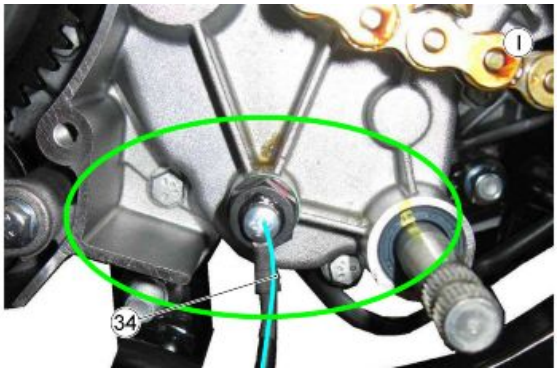


TABLE J - Special connection low fuel tank sensor

37. Main cable harness

38. Fuel reserve sensor

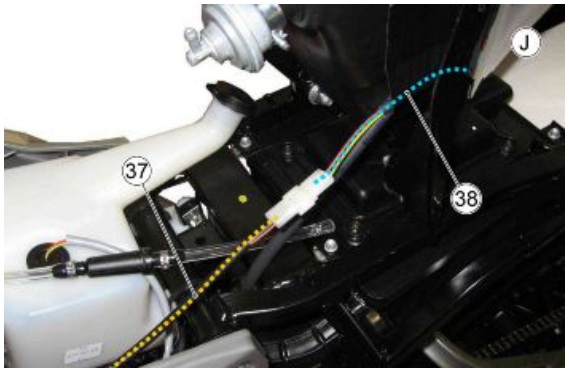


TABLE K - Proper battery positioning

Place the battery cables as indicated, to facilitate the test.

Back side

TABLE A - REAR LIGHT PRE-FITTING

1. Grey sheathing that indicated the left turn indicator

2. Faston of 2.8 mm (0.11 in); cable colour: light blue and blue

3. Faston of 2.8 mm (0.11 in); cable colour: red and blue

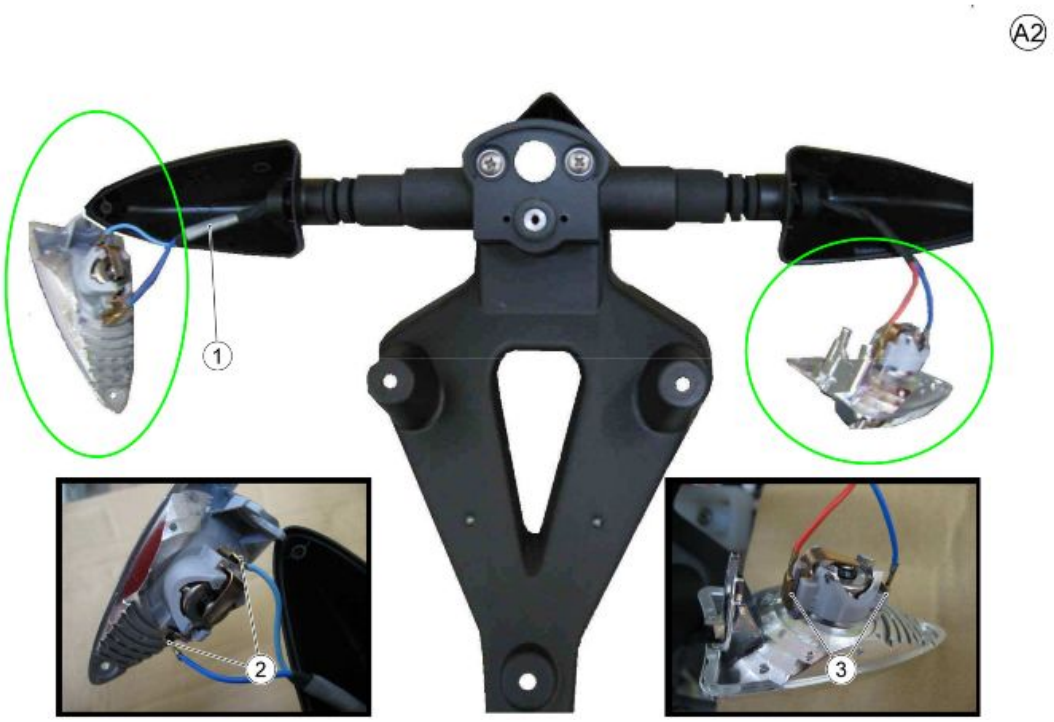


TABLE B

1. Rear left turn indicator
2. Faston of 2.8 mm (0.11 in);
    - 2a. Light blue
    - 2b. Blue
3. Rear right turn indicator
    - 3a. red
    - 3b. blue
4. Left rear turn indicator cable harness routing
5. EU License plate frame cable harness
6. CH License plate frame cable harness
7. Right rear turn indicator cable harness routing
8. Rear right turn indicator
9. Only version CH

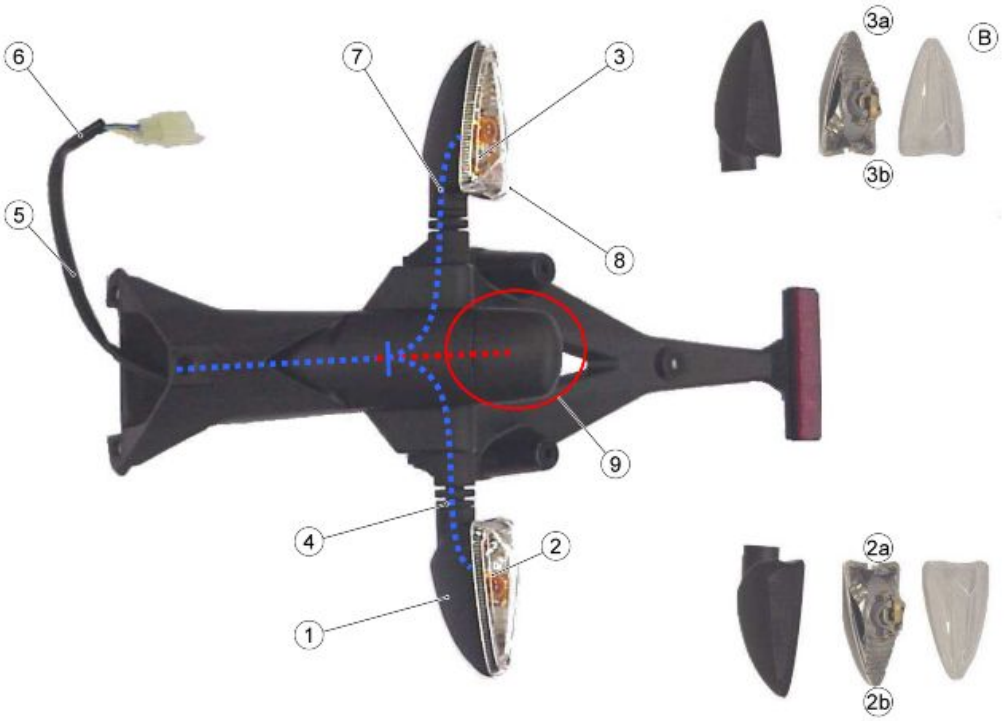


TABLE C

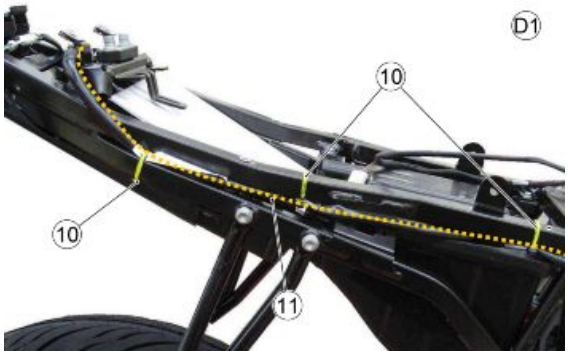
- Breather pipe

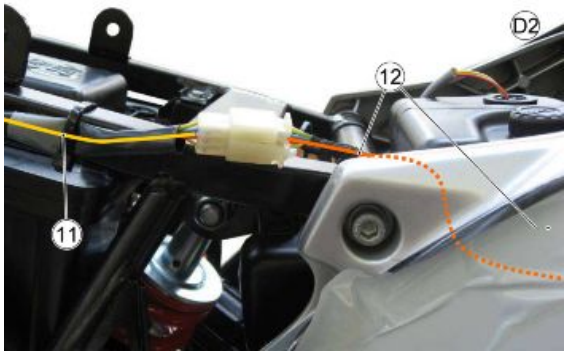
TABLE D - Tail fairing cable harness fitting

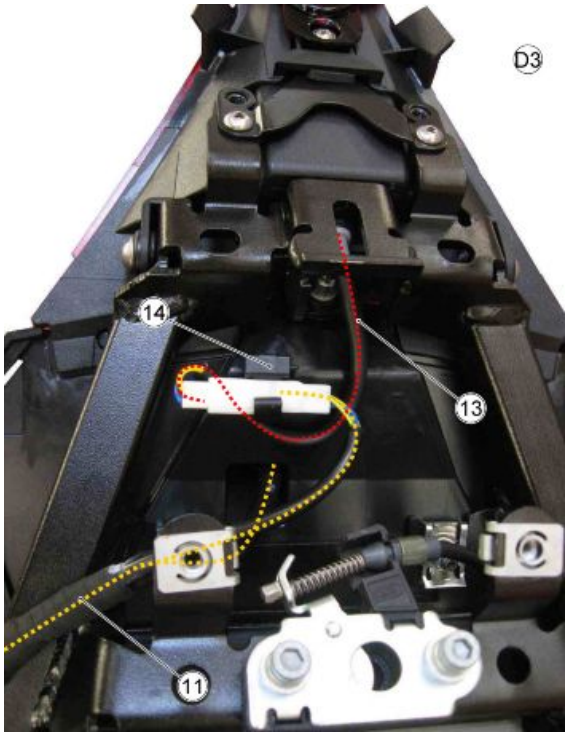
10. Clamps

CAUTION: this clamp to be put on the joist below saddle mounting

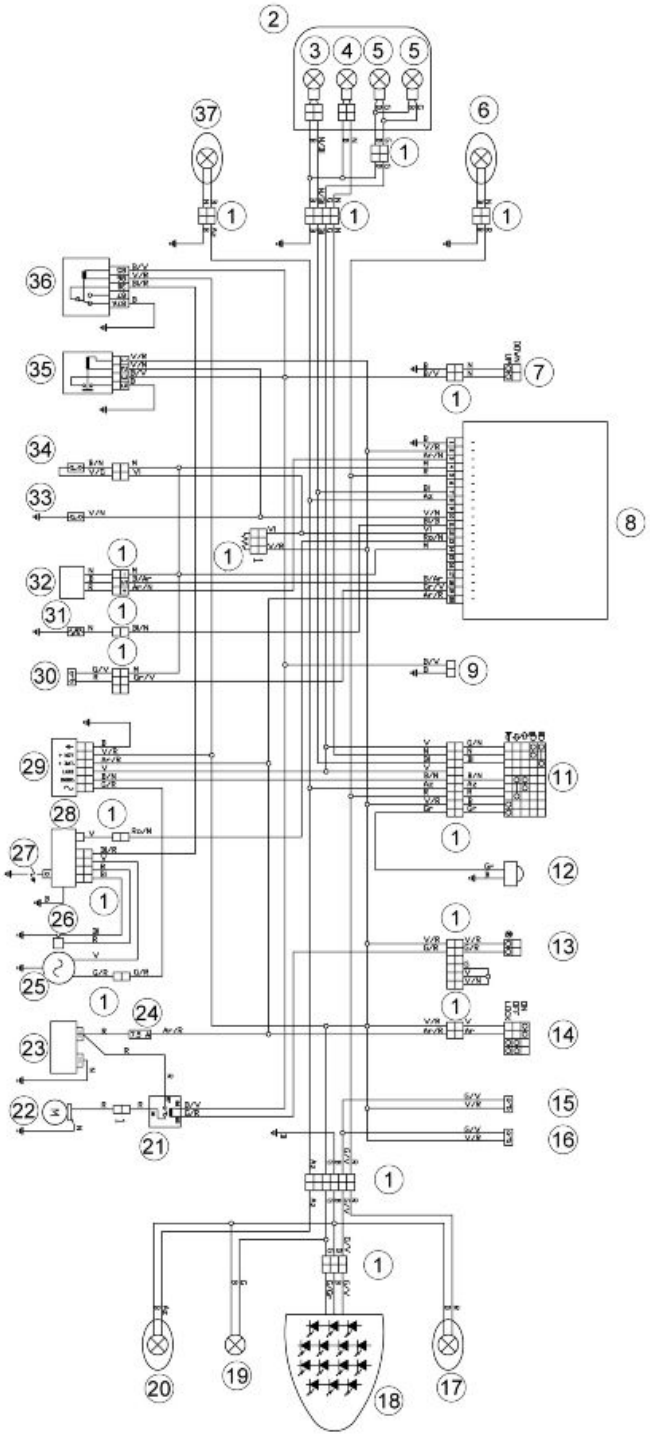
11. Taillight Cable harness
12. Main cable harness
13. LED Rear light
14. Cable guide




D2
12
11


D3
14
13
11

General wiring diagram



KEY:

1. MULTIPLE CONNECTORS
2. COMPLETE HEADLAMP
3. HIGH-BEAM BULB
4. LOW_BEAM BULB

5. FRONT POSITION
6. FRONT RIGHT TURN INDICATOR
7. STAND SWITCH
8. INSTRUMENT PANEL (pico)
9. CLUTCH SWITCH LAYOUT
10.-
11.LEFT LIGHT SWITCH
12.HORN
13.Right light switch
14.KEY
15.FRONT STOP SWITCH
16.REAR STOP SWITCH
17.Rear right turn indicator
18.REAR LIGHT
19.LICENSE PLATE LIGHT (only for Switzerland)
20.REAR LEFT TURN INDICATOR
21.START-UP RELAY
22.STARTER MOTOR
23.BATTERY
24.FUSE 7.5A
25.Flywheel
26.PICK-UP
27.SPARK PLUG
28.ECU CONTROL UNIT (with engine revs outlet)
29.REGULATOR
30.LOW FUEL
31.Water Temperature Sensor
32.SPEED SENSOR
33.NEUTRAL SENSOR
34.MIXER OIL SENSOR
35.NEUTRAL LOGIC RELAY
36.MAIN RELAY
37.FRONT LEFT TURN INDICATOR
38.RESISTANCE
39.-
40.-
41.-
42.-

43.-

44.-

45.-

Colour key:

Ar Orange

Az Sky blue

B Blue

Bi White

G Yellow

Gr Grey

M Brown

N Black

R Red

Ro Pink

V Green

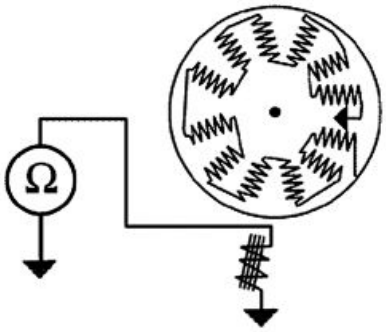
Vi Purple

Checks and inspections

In case the cause of ignition failure or malfunction cannot be easily identified at sight, first of all replace the control unit by another one in operating conditions.

Remember that disconnection due to replacement of the central unit must be done with the engine off.

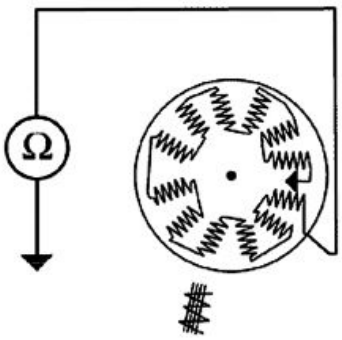
If after replacement the vehicle starts properly, the control unit is failing and must be replaced.



If the failure persists, check the alternator and the stator components as follows:

After a sight control of the electrical connections, use a specific tester to measure the stator winding and the pick-up.

If checks on the loading coil, pick-up detect irregularities, **replace the stator and the failing components**.



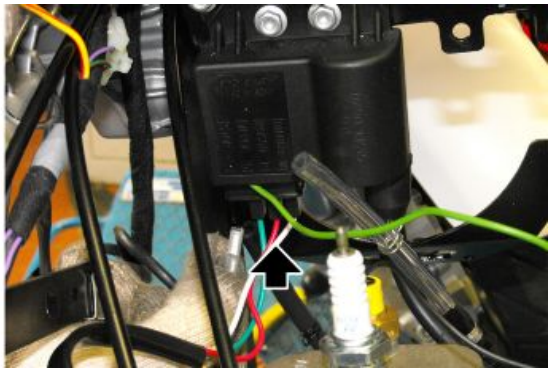
Disconnect the connector on the flywheel cover and measure the resistance between either contact and the earth.

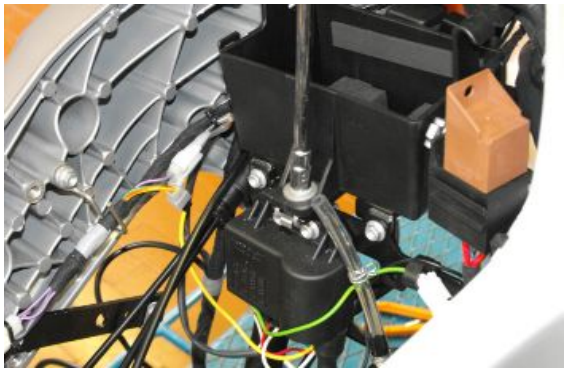
Specific tooling

020331Y Digital multimeter

Ignition circuit

- Lift the tank and support it with the appropriate supplied supporting stick.
- Unscrew and remove the four fixing screws and slide off the ground lead.
- Disconnect the flywheel connections.
- Slide off the tube from the spark plug.
- Remove the coil.

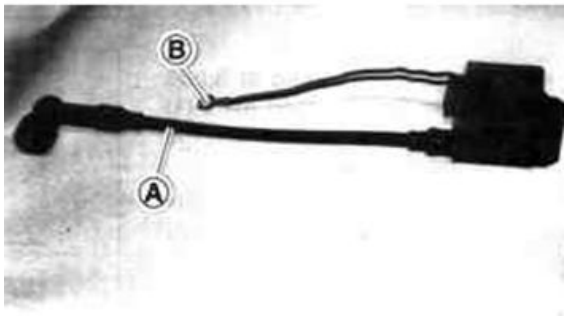




- Check the resistance of the secondary winding of the high voltage coil (resistance between points A and B)

WARNING

IF THE READINGS OF THE SECONDARY WINDING AND THE MAGNETO FLYWHEEL ARE RIGHT, REPLACE THE COIL.



Electric characteristic

Resistance

5 - 6 kOhm

- Check the resistance value in the hole

Electric characteristic

Resistance

4 - 6 kOhm

Lights list

BULBS

Specification	Desc./Quantity
Low beam light	- 12 V - 35 W H4
High beam light	- 12 V - 35 W H4
2 daylight running lights	12V - 5W
Turn indicator light	Micro bulb
Rpm indicator lighting	12 V - LED
Rear daylight running light/stop light	LED
License plate lamp (where provided)	12V - 5W

Fuses

- The electrical system is protected by one 7.5 A fuse located in the fuse box on the right of the battery support retainer.
- Before replacing a blown fuse, find and solve the problem that caused it to blow.
- Do not substitute the fuse with any alternative form of conductor

NOTE

THERE IS ONE SPARE FUSE.

Battery

This vehicle is fitted with a battery without maintenance.

If the battery is exhausted or disconnected and the engine is started with a not conventional method, or in case that the battery is disconnected during the running or there is a collapse of an element, can be checked the following problems:

- turn indicators the proper flashing function is not ensured, according to the Regulations;

- headlamps: it is not ensured that the light intensity is the same as having a normal component function;
- instrument panel: malfunctions can be checked in the screen page of the display and in the instrument panel functions; it is possible that the speed indications are not right.

IN CASE OF A FAILURE IN THE BATTERY OR A BUMP STARTER, THE CORRECT OPERATION OF THE VEHICLE AND THE RESPECT FOR THE REGULATIONS IN FORCE ARE NOT GUARANTEED.

WARNING

BATTERY ELECTROLYTE IS TOXIC AND IT MAY CAUSE SERIOUS BURNS. IT CONTAINS SULPHURIC ACID. AVOID CONTACT WITH YOUR EYES, SKIN AND CLOTHING. IF IT ACCIDENTALLY COMES INTO CONTACT WITH YOUR EYES OR SKIN, WASH WITH ABUNDANT WATER FOR APPROX. 15 MIN. AND SEEK IMMEDIATE MEDICAL ATTENTION.
IF ACCIDENTALLY SWALLOWED, IMMEDIATELY DRINK LARGE QUANTITIES OF WATER OR MILK FOLLOWED BY MAGNESIUM MILK, BEATEN EGG OR VEGETABLE OIL. SEEK IMMEDIATE MEDICAL ATTENTION.
BATTERIES PRODUCE EXPLOSIVE GASES; KEEP CLEAR OF NAKED FLAMES, SPARKS OR CIGARETTES; VENTILATE THE AREA WHEN RECHARGING INDOORS.
ALWAYS WEAR EYE PROTECTION WHEN WORKING IN THE PROXIMITY OF BATTERIES.
KEEP OUT OF THE REACH OF CHILDREN.

Characteristic

Battery

12 V - 4 Ah MF

Battery maintenance

If the vehicle is not be used for a certain time (1 month or more), the battery needs to be recharged periodically.

The battery runs down completely in about three months. If it is necessary to refit the battery in the vehicle, be careful not to reverse the connections, remembering that the ground wire (**black**) marked (-) must be connected to the **-negative** clamp while the other two **red** wires marked (+) must be connected to the clamp marked with the **+positive** sign.

1) Recharging the battery

First detach the negative terminal before removing the battery from the vehicle.

Regular bench charging must be carried out with the specific battery charger, (single) or (multiple), setting the battery charger selector to the type of battery to be recharged. Connections to the power supply source must be implemented by connecting the corresponding poles (+ to+ and - to -).

2) Cleaning the battery

The battery should always be kept clean, especially its top side, and the terminals should be coated with petroleum jelly.

CAUTION

NEVER USE FUSES WITH A CAPACITY HIGHER THAN THE RECOMMENDED CAPACITY. USING A FUSE OF UNSUITABLE RATING MAY SERIOUSLY DAMAGE THE VEHICLE OR EVEN CAUSE A FIRE.

CAUTION

ORDINARY DRINKING WATER CONTAINS MINERAL SALTS THAT ARE HARMFUL TO THE BATTERY. CONSEQUENTLY, ONLY USE DISTILLED WATER.

CAUTION

TO ENSURE MAXIMUM PERFORMANCE THE BATTERY MUST BE CHARGED BEFORE USE. LACK OF PROPER CHARGING OF THE BATTERY BEFORE FIRST USE AT LOW ELECTROLYTE LEVEL, CAN LEAD TO PREMATURE BATTERY LIFE.

Specific tooling

020333Y Single battery charger

020334Y Multiple battery charger

WARNING

BATTERY ELECTROLYTE IS TOXIC AND IT MAY CAUSE SERIOUS BURNS. IT CONTAINS SULPHURIC ACID. AVOID CONTACT WITH YOUR EYES, SKIN AND CLOTHING. IF IT ACCIDENTALLY COMES INTO CONTACT WITH YOUR EYES OR SKIN, WASH WITH ABUNDANT WATER FOR APPROX. 15 MIN. AND SEEK IMMEDIATE MEDICAL ATTENTION.
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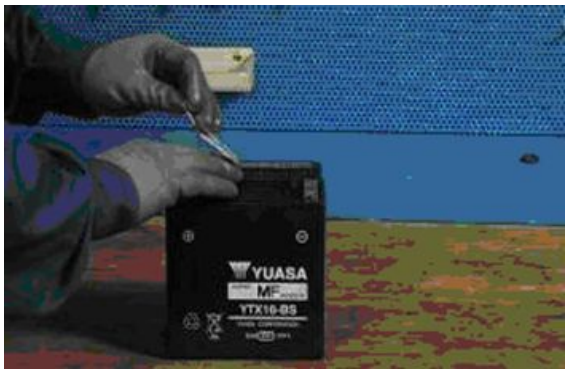
ALWAYS WEAR EYE PROTECTION WHEN WORKING IN THE PROXIMITY OF BATTERIES.
KEEP OUT OF THE REACH OF CHILDREN.

1) Battery preparation

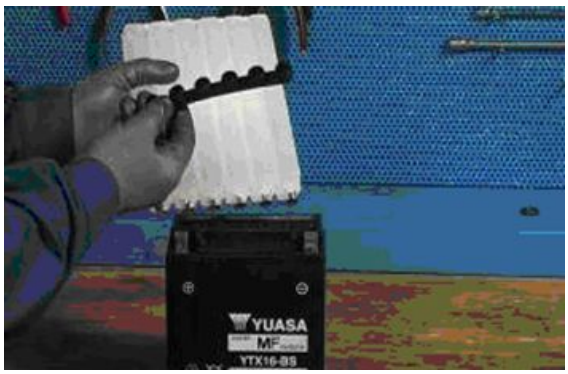
Position the battery on a flat surface. Remove the adhesive sheet closing cells and proceed as quickly as possible to run the subsequent activation phases.



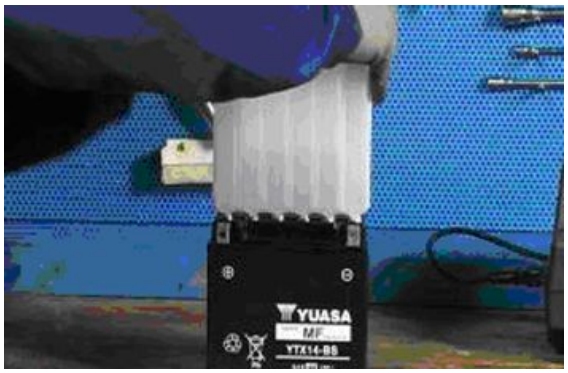
2) Electrolyte preparation.

Remove the container of the electrolyte from the pack. Remove and preserve cover strips from the container, in fact, the strip will later be used as a closing cover.

Note: Do not pierce the sealing of the container or the container itself because inside there is sulphuric acid.



3) Procedure for filling the battery with acid.



Position the electrolyte container upside down with the six areas sealed in line with the six battery filler holes. Push the container down with enough force to break the seals. The electrolyte should start to flow inside the battery.

Note: Do not tilt the container to prevent the flow of electrolyte from pausing or stopping.

4) Control the flow of electrolyte

Make sure air bubbles are rising from all six filling holes. Leave the container in this position for 20 minutes or more.

Note: If there are no air bubbles coming out of the filling holes, lightly tap the bottom of the container two or three times. Do not remove the container from the battery.

5) Take out the container.

Make sure all the electrolyte in the battery is drained. Gently tap the bottom of the container if electrolyte remains in the container. Now, gently pull the container out from the battery, only do this when the container is completely empty, and proceed immediately to the next point.

6) Battery closing.

Insert the airtight cover strips into the filling holes. Press horizontally with both hands and make sure that the strip is levelled with the top part of the battery.

Note: To do this, do not use sharp objects that could damage the closing strip, use gloves to protect your hands and do not bring your face close to the battery.

The filling process is now complete.

Do not remove the strip of caps under any circumstances, do not add water or electrolyte.

Place the battery down for 1 to 2 hours prior to the charging from the battery.

7) Recharging the new battery

With the above-mentioned procedure, the battery will have gained around 70% - 75% of its total electrical capacity. Before installing the battery on the vehicle, it must be fully charged and then must be recharged.

If the battery is to be installed on the vehicle prior to this pre-charged one, the battery will not be able to exceed 75% charge without jeopardising its useful life on vehicle.

The dry charge battery MF like the completely loaded YTX, must have a no-load voltage between

12.8 - 13.15 V Bring the battery to full charge, using the 020648Y battery charger:
a - select the type of battery with the red switch on the left of the panel battery charger panel
b - select NEW on the yellow timer
c - connect the clamps of the battery charger to the battery poles (black clamp to negative pole (-) and red clamp to positive pole (+)).

d - Press the red button, as shown in figure.

e - Press the "MF" black button to activate the battery recharge **Maintenance Free** as shown in figure.

f - Check the ignition of the green LED indicated with a red arrow in figure.

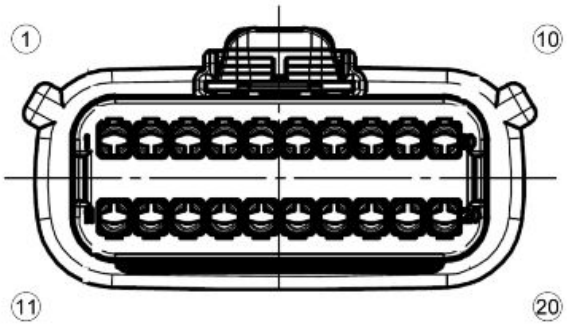
g - The activation cycle of the new battery lasts for 30 minutes after the ignition of the recharge LED has taken place

h - Disconnect the clamps from the battery and check the voltage, if voltages are detected of less than 12.8 V, proceed with a new recharge of the battery starting from point c of the recharge procedure of **the new battery**, otherwise go to point i

i - The battery is now completely activated, disconnect the battery charger from the fuel supply grid, disconnect the clamps from the battery and proceed to fitting the battery on the vehicle.

Connectors

Dashboard

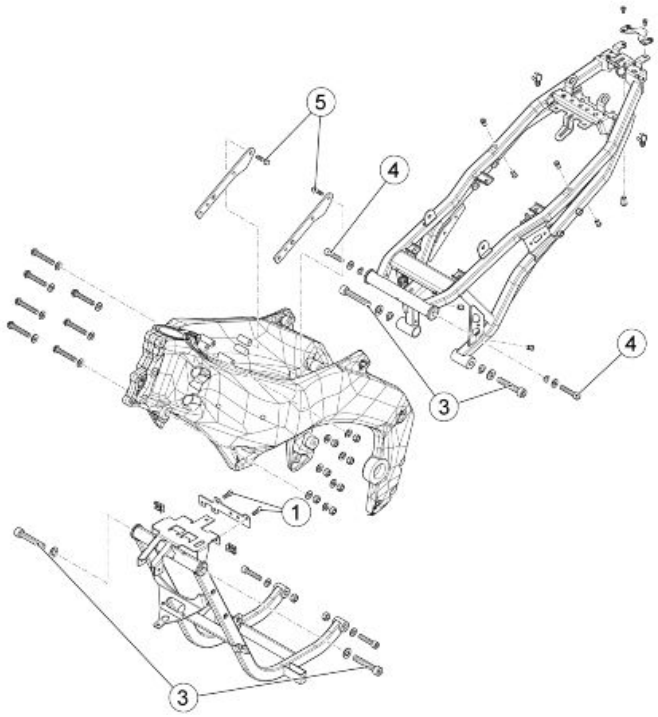


Key pin-out:

1. General ground (-)
2. Key (+)
3. Speed sensor, positive (+)
4. Sensor ground (-)

5. Right turn indicator warning light
6. -
7. High beam warning light
8. Left turn indicator warning light
9. -
10. Neutral warning light (neutral)
11. Water Temperature Sensor
12. Mixer oil reserve warning light
13. Rpm indicator, input
14. Configuration pin 50/125
15. -
16. -
17. -
18. Speed sensor, input
19. Low fuel warning light
20. Battery (+)

INDEX OF TOPICS



CHASSIS

pos.	Description	Type	Quantity	Torque	Notes
1	TCEI screw	M8x16	2	15 Nm (11.06 lbf ft)	-
2	TCEI screw	M8	2	25 Nm (18.43 lbf ft)	-
3	TCEI screw	M10x45	4	50 Nm (36.88 lbf ft)	-
4	TE screw	M8x40	2	25 Nm (18.43 lbf ft)	-
5	TE screw	M6x16	2	12 Nm (8.85 lbf ft)	Loctite 243

Vehicle preparation

- Place the vehicle on its OPTIONAL front service stand.
- Support the vehicle rear part using belts and hoist.
- Drain off the cooling system.
- Beforehand, remove the lug, the side fairings, the battery, the fuel tank, the side fairings, the drive chain, the mixer oil tank, the air filter box, the carburettor.
- Position an under-sump stand that will be supported on the lower side of the engine.

See also

Removing the radiator
Lower cowl

Side fairings

Fuel tank

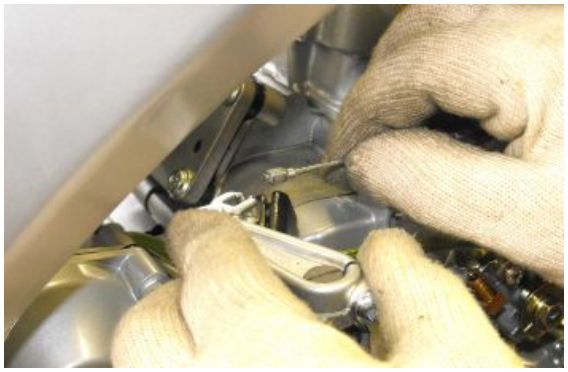
Drive chain
Mixture oil tank
Air box

Removing

Removing the engine from the vehicle

- Remove the necessary components to work freely on the engine, as described in the chapter "Vehicle preparation".

- Release the clutch cable and release it from the clamps and from the cable grommet.

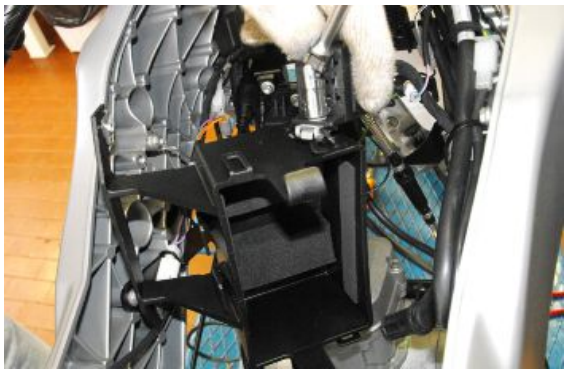


- Unscrew and remove the battery support fixing screw.

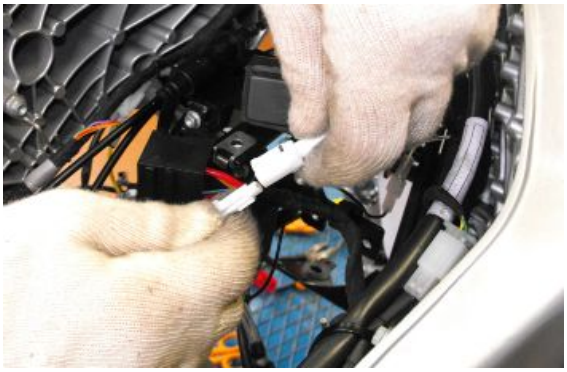
See also

Vehicle preparation

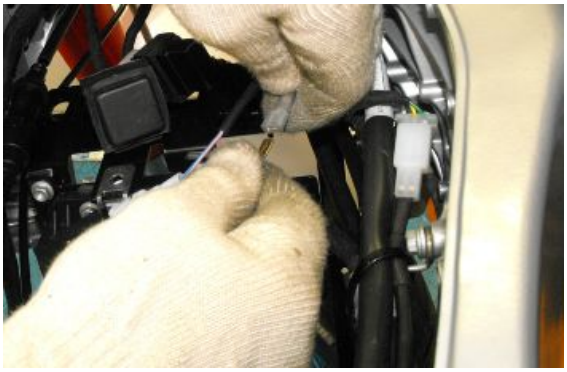
- Slide off the three relays fastened to the battery support.
- Unscrew and remove the screws and collect battery support.



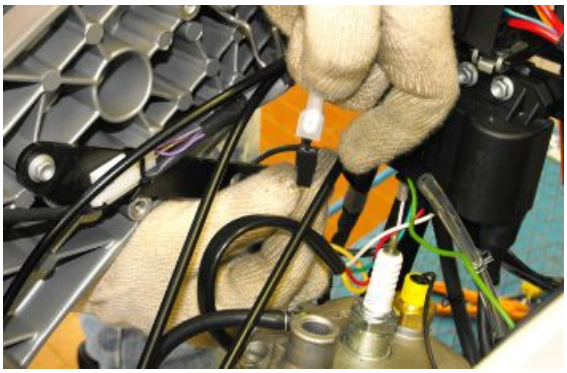
- Disconnect the coil connector.



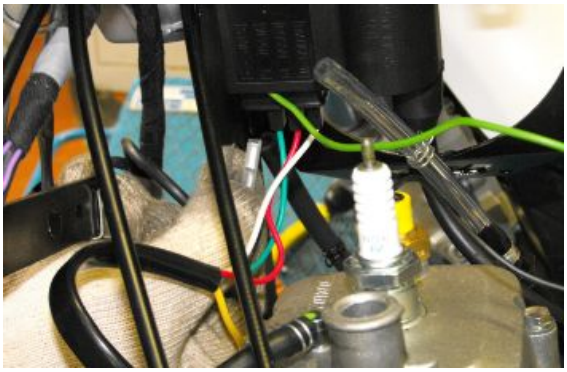
- Disconnect the horn connector.
- Disconnect the temperature sensor.



- Disconnect the electrical system connector - engine.



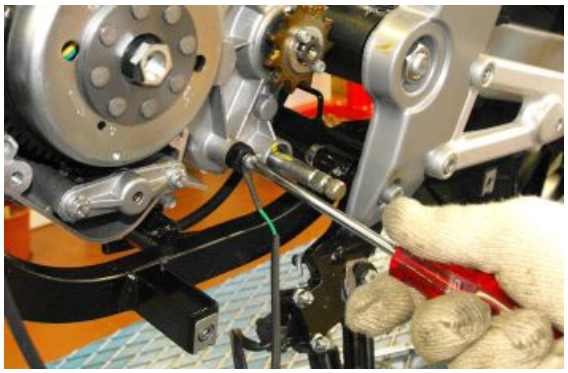
- Disconnect the coil cable connector - engine.



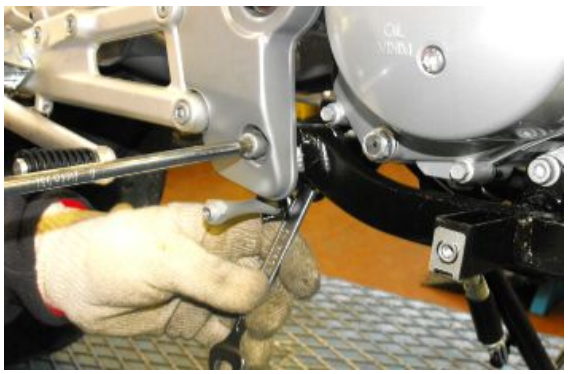
- Unscrew and remove the screw.
- Slide off the gearbox lever.

- Unscrew and remove the three screws.
- Remove the clutch cover.

- Unscrew the screw by releasing the neutral sensor.

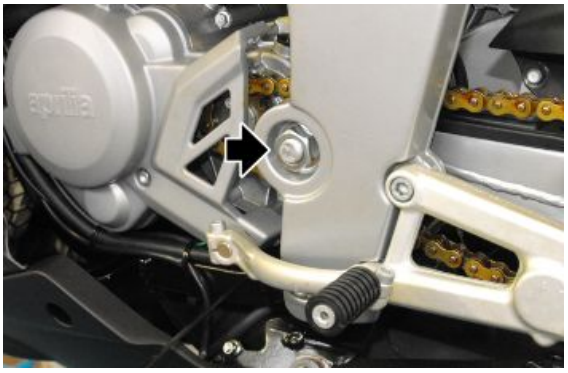


- Make sure that the vehicle is well fitted on the previously positioned devices for its support and the for the engine.
- Working from both sides of the vehicle, Unscrew and remove the screw, and collect the nut and the corresponding washers.

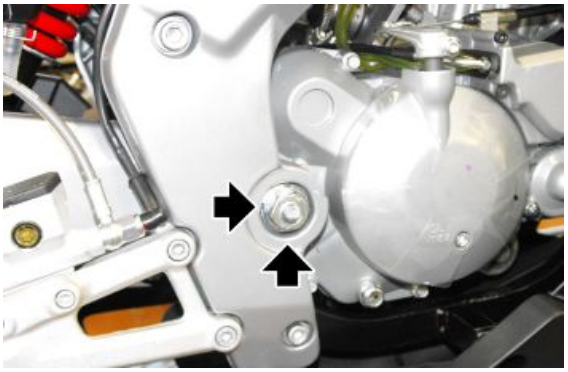


- Operating from both sides, Unscrew and remove the cradle upper fixing screw to the chassis.

- Check the proper position of the under-sump stand.
- After loosen the ring with the suitable special key, unscrew the swingarm pin by operating both from the left side and from the right one:



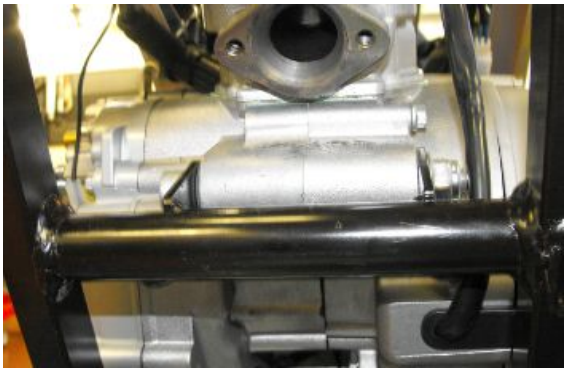
1. working from the left side, unscrew and remove the nut and collect the washer.
2. Tap slightly with a rubber hammer on the swingarm pin, removing it from the right side and collecting the washer.

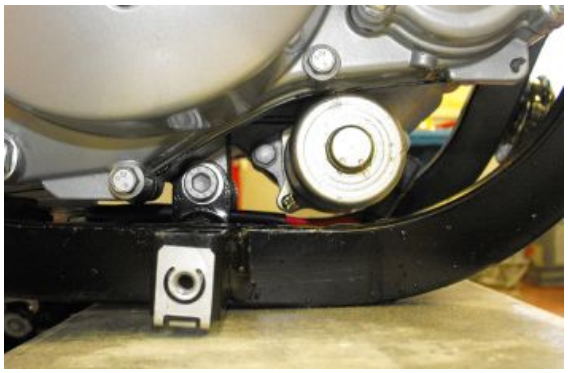


Specific tooling

866714 Tools for the swingarm nut adjustment

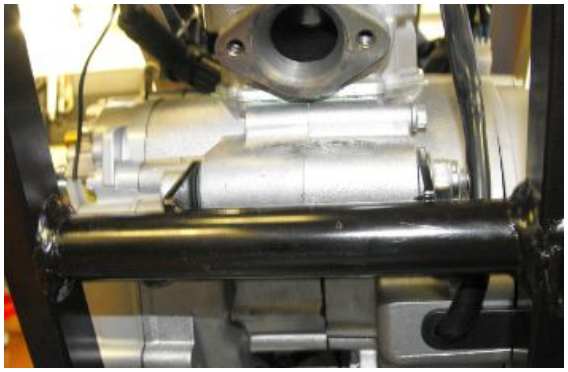
- Slide off downwards the engine together with the cradle.
- To release the cradle from the engine, operate on three fixings.

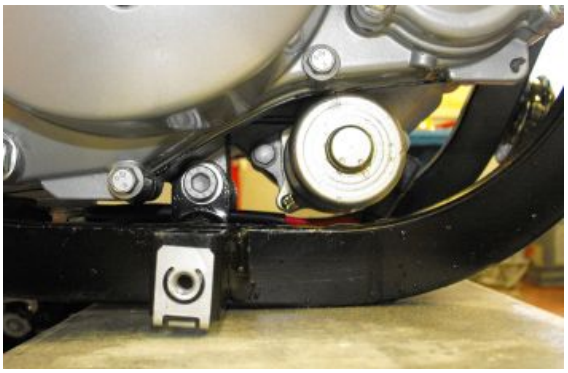




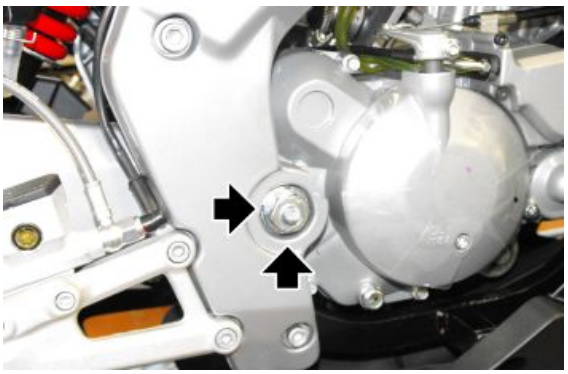
Installing the engine to the vehicle

- When before removed from the cradle, fasten the engine to it, on the three indicated points.





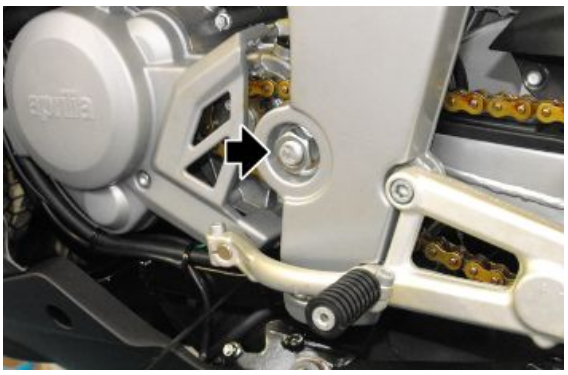
- Place the engine on the vehicle, by using the under-sump stand.
- Insert the swingarm pin and the corresponding washer, from the right side of the vehicle, with a rubber hammer.
- With a suitable special key, tighten the ring and position the nut.



Specific tooling

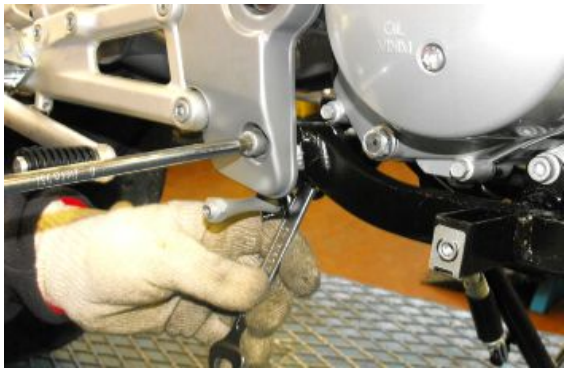
866714 Tools for the swingarm nut adjustment

- Operating from the left side, position the nut.
- Operating together on both sides of the vehicle, tighten two swingarm pin nuts to the prescribed torque.

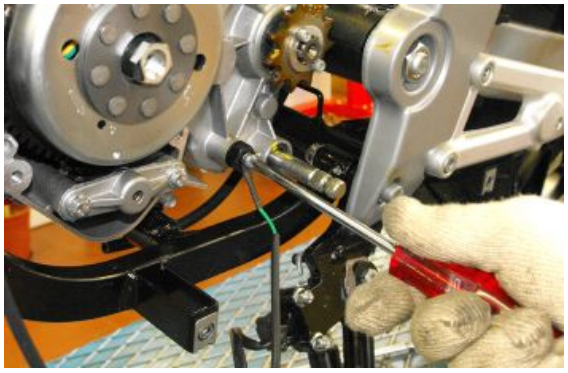


- Position and tighten the cradle upper fixing screw of the to the chassis.

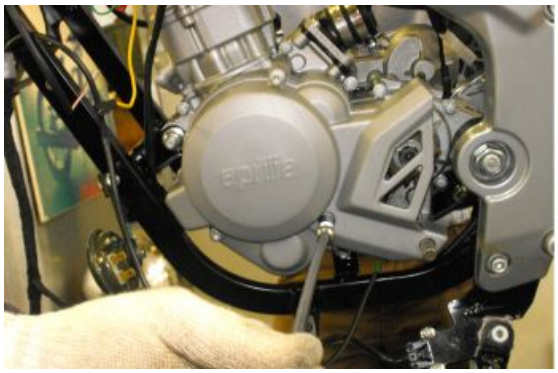
- Operating on both sides of the vehicle position the washers and tighten the screw and the nut.



- Fasten the neutral sensor with the screw.

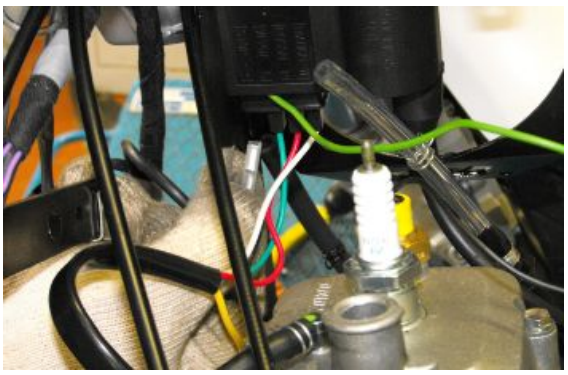


- Fitting the clutch cover with the three screws.

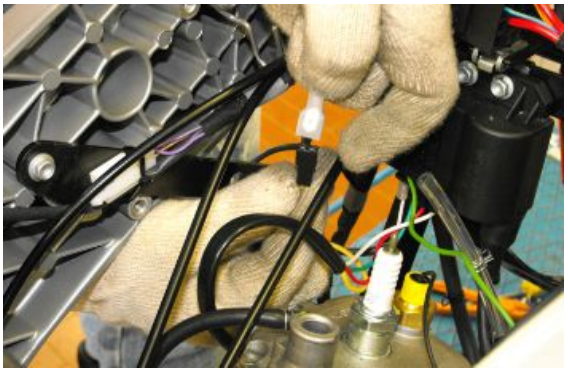


- Insert the transmission lever in the groove crankshaft at the required inclination and tighten the screw.

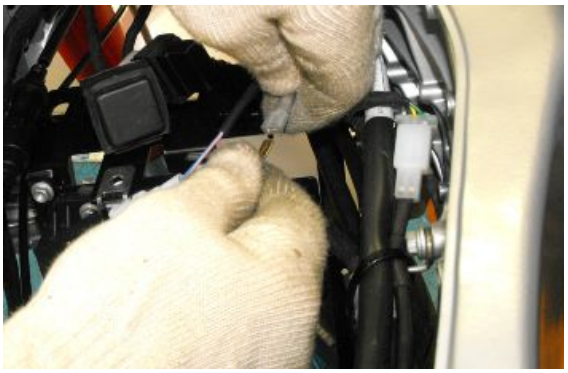
- Connect the coil cable connector - engine.



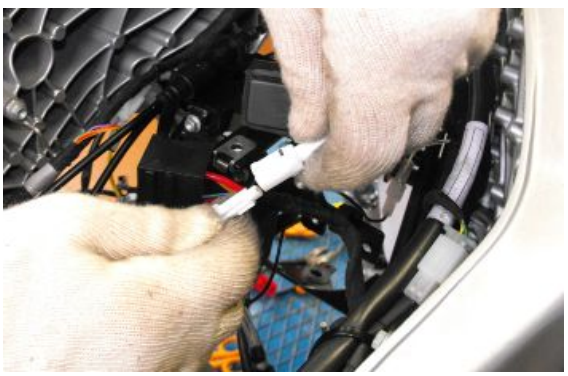
- Connect the electrical system connector - engine.



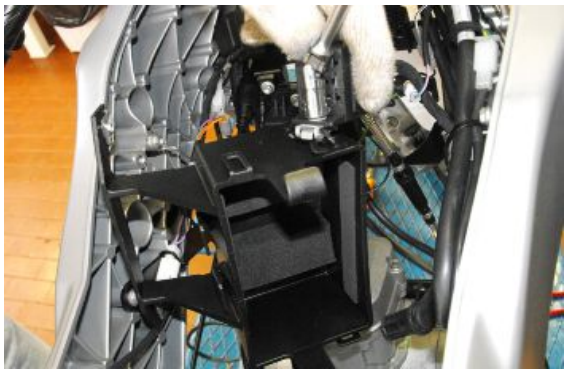
- Connect the temperature sensor.



- Connect the horn connector.
- Connect the coil connector.

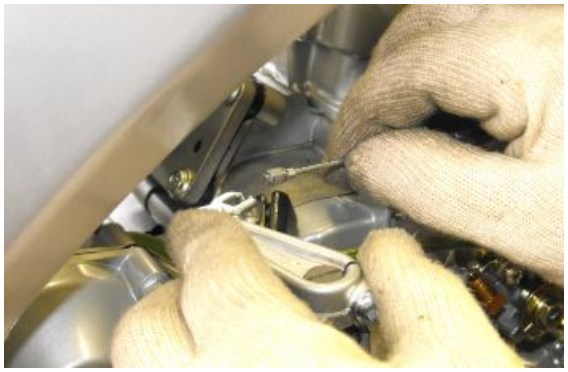


- Position the three relays in the seat of the battery support



- Tighten the battery support screw.

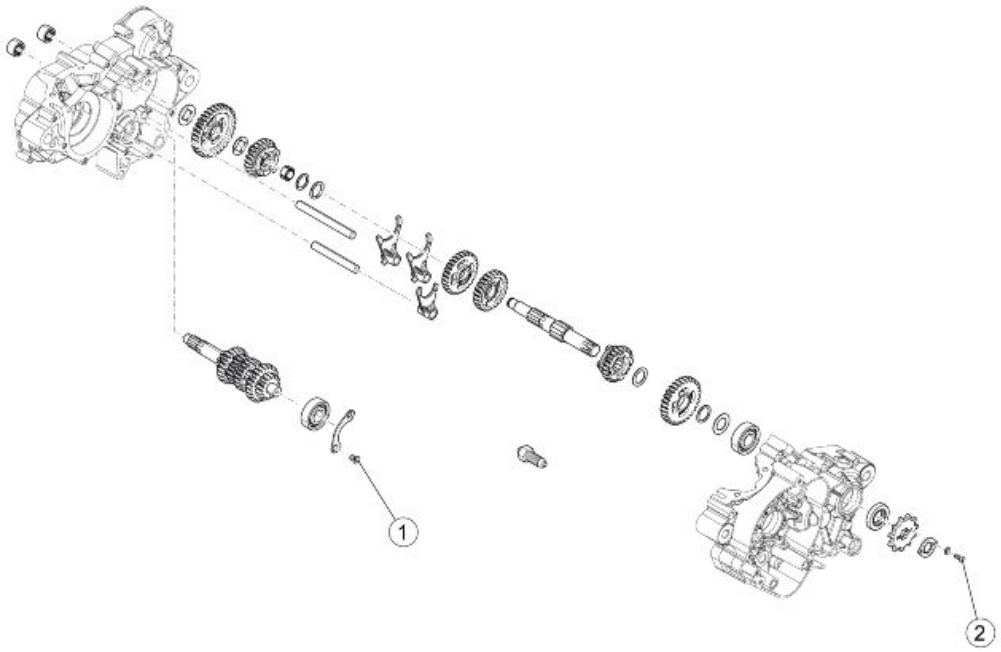
- Position correctly the clutch cable on the leverage and on the cable grommet.



- Proceed with the refit of all previously removed components, ensuring to apply all the prescribed tightening torque.

INDEX OF TOPICS

Gearbox



TRANSMISSION AND MAIN SHAFT

pos.	Description	Type	Quantity	Torque	Note
1	Main axle bearing retainer	M5x80	2	3.5-4.5 Nm (2.58-3.31 lbf ft)	-
2	Pinion retainer	M4x10	2	2-4 Nm (1.47-2.95 lbf ft)	Loctite 243

Disassembling the gearbox

- Open the crankcase halves.
- Take out the selector guiding fork and the selector after removing the relative bolts

- Remove the selector

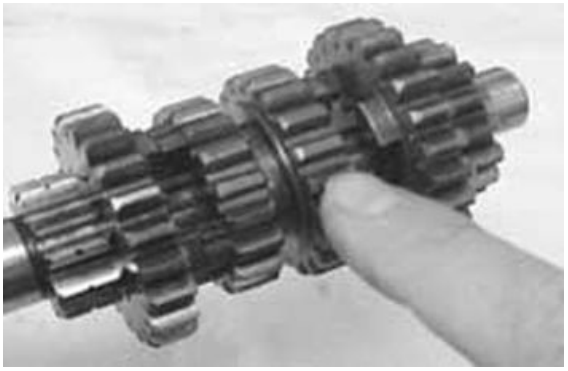
See also

Splitting the
crankcase halves

- Take out the two gear shafts simultaneously

Checking the primary shaft

- Clean and degrease the gear shaft, then check it
- Carry out a visual inspection of the gears. Replace the gears if they show signs of overheating or surface softening or abnormal wear of teeth
- Replace the whole shaft if it is damaged or abnormally worn



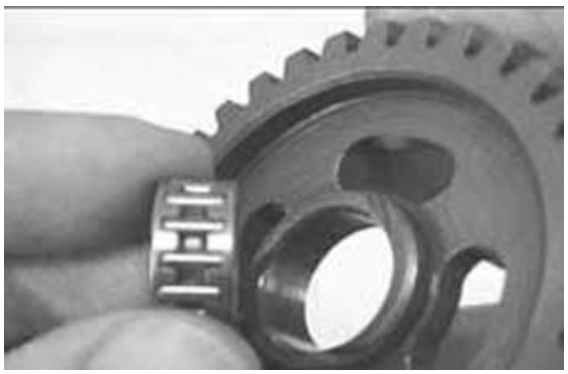
Checking the secondary shaft

- Take out the gears and the shim washers of the secondary shaft once the locks have been removed

- Check there gear studs and clefts are not rounded or show signs of abnormal wear

- Check the secondary shaft rings for wear
- Replace them if 25% of their surface is worn

- Make sure that the secondary shaft roller bearings show no signs of wear. Otherwise, replace it.



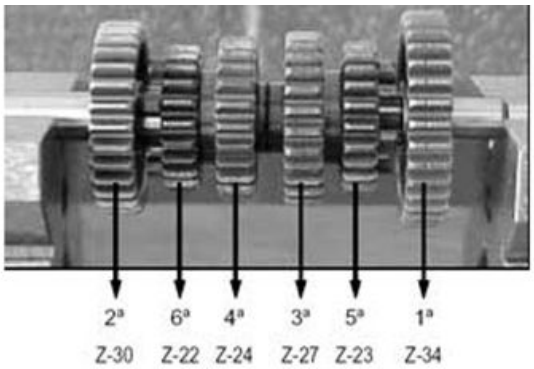
- Clean and lubricate the main bearings
- Replace them if there are signs of abnormal wear, deformations or jams.

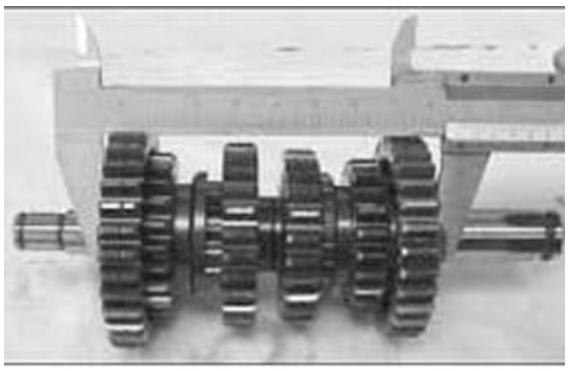
- Thoroughly clean and degrease all the components of the gear housing, the selector and the shaft
- Reassemble the secondary shaft making sure all components are fitted correctly
- Refit the gear unit in the crankcase (the main and the secondary shafts must be mounted at the same time)
- First check the overall volume of the secondary shaft including shimmings

Characteristic

Secondary shaft overall height

Max. 87.7 mm (3.4527 in) Min. 87.35 mm (3.4390 in)





Gear selector

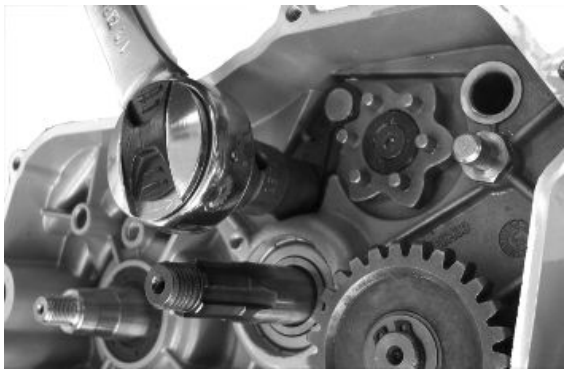
Removing the gear selector

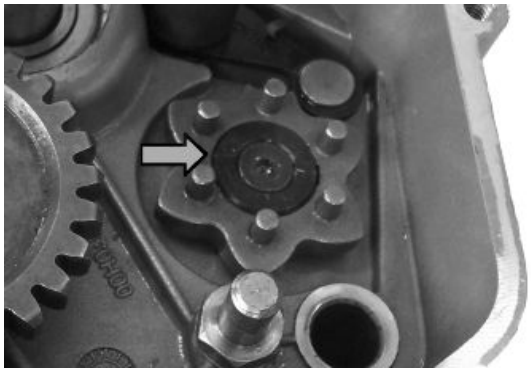
- Take out the clutch assembly

- Remove the gear pedal

- Pull and extract the shaft/selector unit together with its shimming

- Undo the screw of the gear selector lever
- Undo the screw of the drum control head



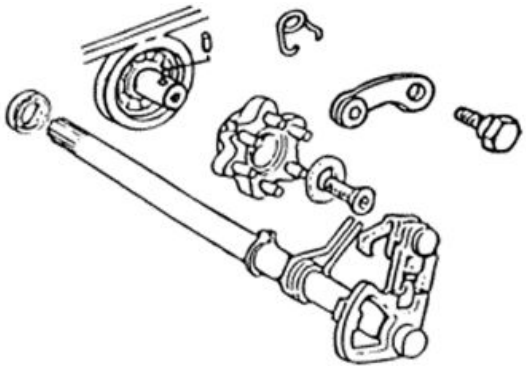


See also

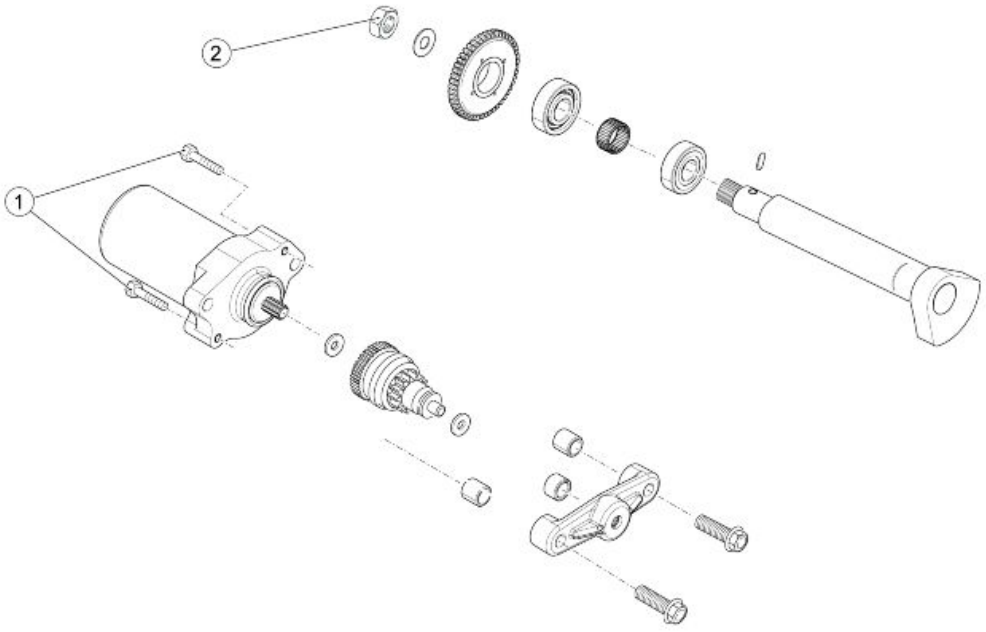
Disassembling the clutch

Checking the gear selector

- Check that the selector shaft is not worn or damaged
- Mount the components following the removal procedure but in reverse order
- Apply one drop of Loctite 270 on the thread of the screw of the drum control head
- Make sure that the selector shaft springs and the gear selector lever spring have been correctly fitted



Starter motor



STARTER MOTOR

pos.	Description	Type	Quantity	Torque	Note
1	Starter motor retainer	M6x100	2	8-10 Nm (5.90-7.38 lbf ft)	-
2	Countershaft retainer	M10	1	15-18 Nm (11.06-13.27 lbf ft)	-

Removing the starter motor

- Remove the flywheel cover.
- Unscrew the two screws to remove the bendix supporting plate

- Slide the bendix form its seat and take the shim washers

- Remove the electrical connections to the starter motor
- Unscrew the two screws to remove the starter motor

Installing the starter motor

Follow the removal procedure but in reverse order being careful to replace and grease the sealing O-ring on the starter motor coupling

- Check that the lower and upper shim washers are fitted

Generator side

Magneto flywheel removal

- Remove the gear pedal
- Unscrew the three fixings screws and remove the left crankcase cover

- Lock the magneto flywheel with the aid of a specific calliper spanner. Unscrew the flywheel fixing screw and collect the spacer

Specific tooling

020565Y Flywheel lock calliper spanner

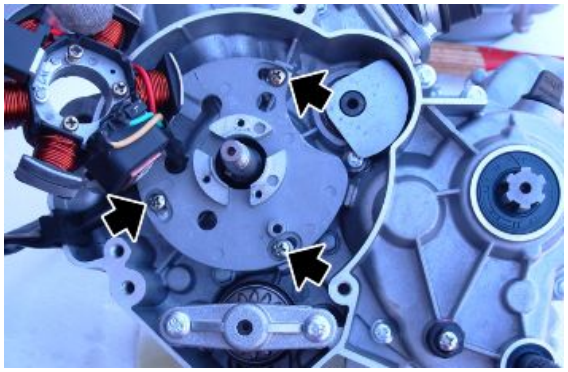
- Remove the flywheel with the specific extractor

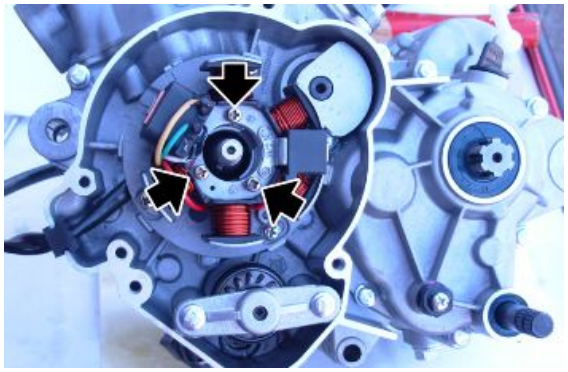
Specific tooling

AP8501501 Flywheel extractor

- Detach the connector between stator and the clamps fixing the wire to the chassis

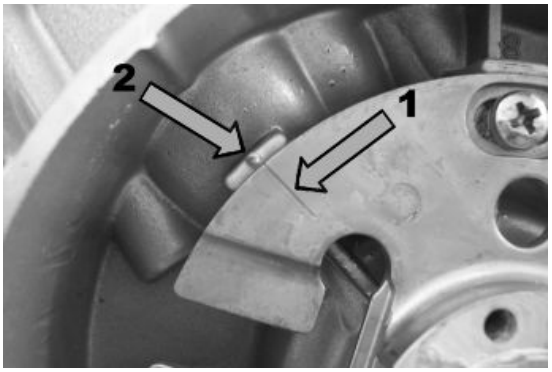
- Unscrew the three fixings screws and remove the stator from stator plate
- Unscrew the three fixing screws of the plate in order to detach the stator electrical cable

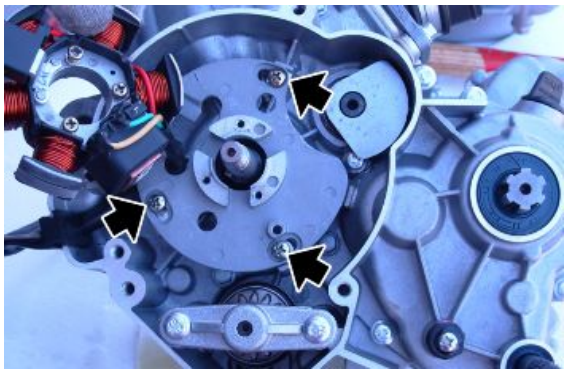




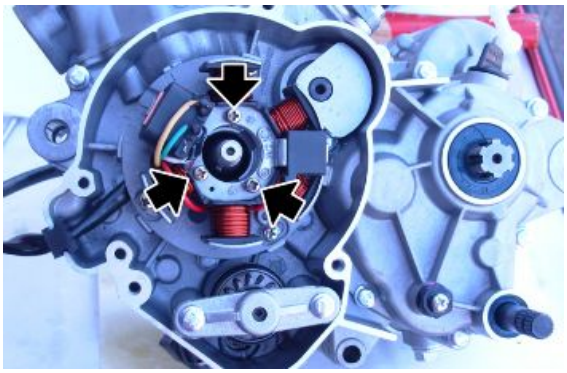
Installing the flywheel

- Align the reference point «**2**» on the engine and fix it with three screws
- Make the electrical cable go from the seat to the stator plate
- Make the notch «**1**» of the stator plate coincide with the reference point on the engine crankcase
- Fix the plate with the three screws
- Fit the stator on the stator plate

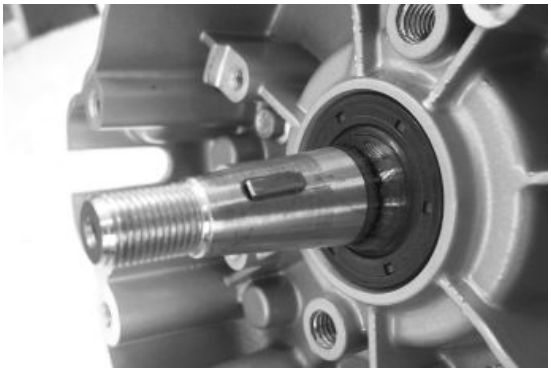




- Connect the stator connector and fix the wire to the chassis by means of the clamps
- Make sure the cable support inside the crankcase is correctly positioned so that the cables do not get into contact with the flywheel rotor



- Mount the flywheel checking the proper insertion of the key in the slot on the crankshaft
- Lock the flywheel with the aid of a specific calliper spanner and tighten the flywheel fixing screw
- Mount the rest of the components following the removal procedure but in reverse order



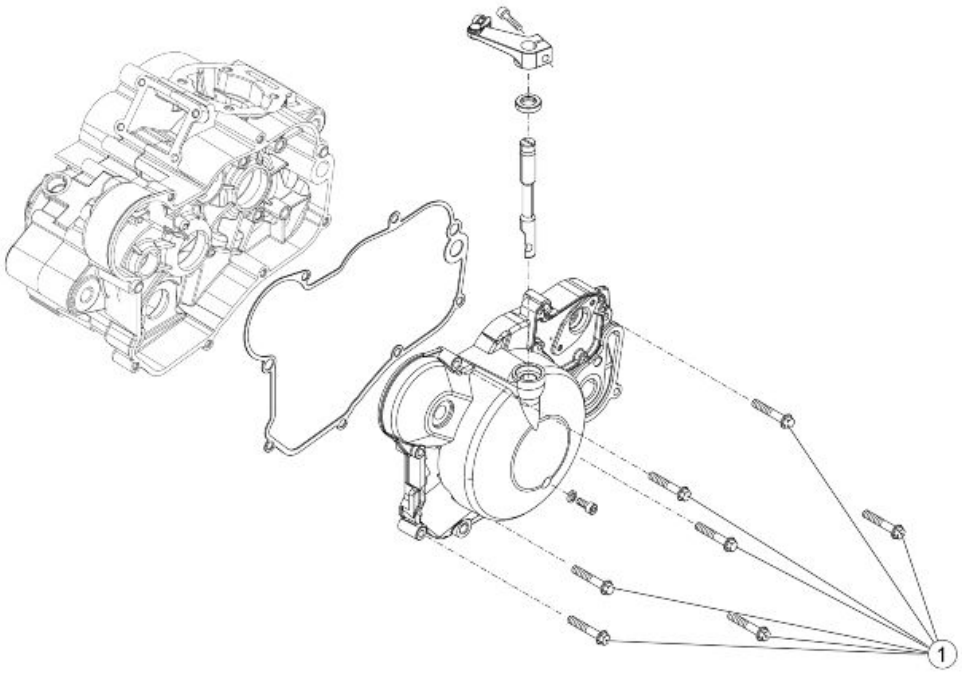
Specific tooling

020565Y Flywheel lock calliper spanner

Locking torques (N*m)

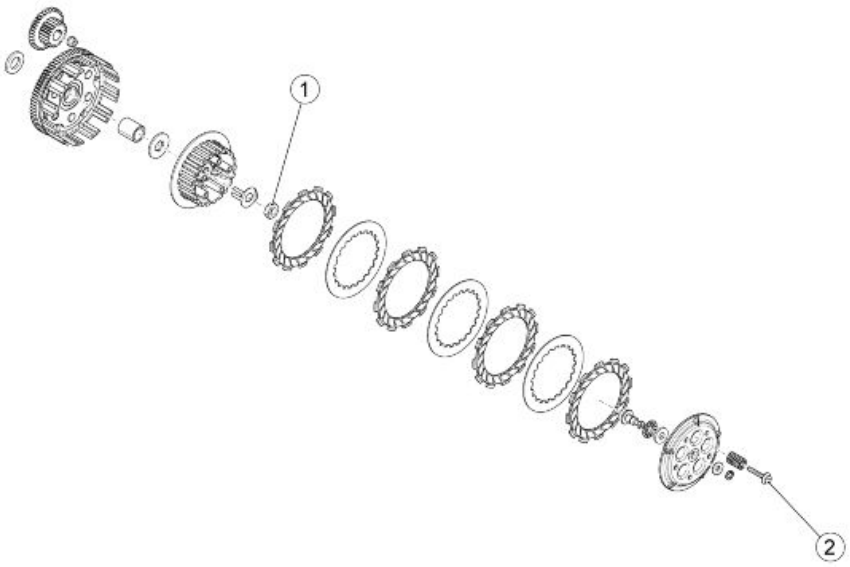
Flywheel to shaft 40 Nm (29.50 lbf ft)

Clutch side



CLUTCH COVER

pos.	Description	Type	Quantity	Torque	Note
1	Cover retainer	M6x110	7	8-10 Nm (5.90-7.38 lbf ft)	-

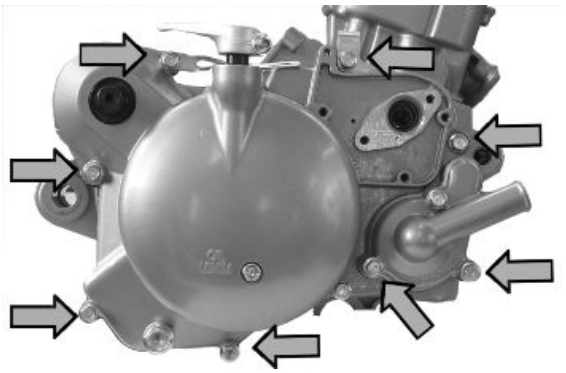


CLUTCH

pos.	Description	Type	Quantity	Torque	Note
1	Clutch housing retainer	M12	1	35-45 Nm (28.81-33.19 lbf ft)	-
2	Clutch spring retainer	M5x80	5	3.5-4.5 Nm (2.58-3.31 lbf ft)	-

Removing the clutch cover

- Remove the oil pump
- Remove the clutch cover undoing the eight screws indicated in the figure
- Remove the clutch cover bolts



NOTE

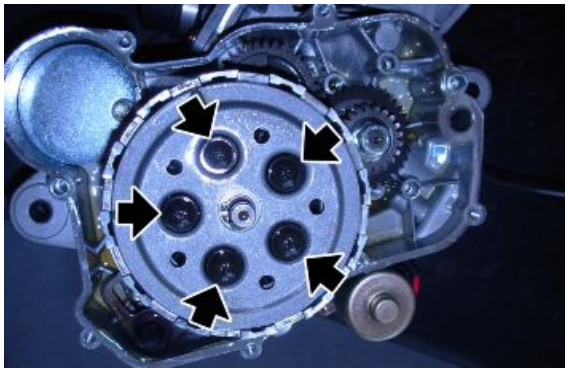
THE START-UP PEDAL SHAFT SHOULD REMAIN ON THE ENGINE UNIT WHILE THE CLUTCH COVER IS TAKEN OUT.

See also

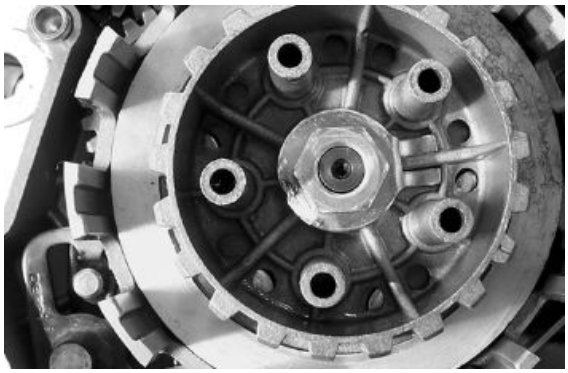
Removing

Disassembling the clutch

- Remove the crankcase right cover
- Undo the 5 screws fixing the clutch spring and lift the internal clutch cover



- Remove the 4 clutch plates and the three steel discs
- Straighten the bevelled washer

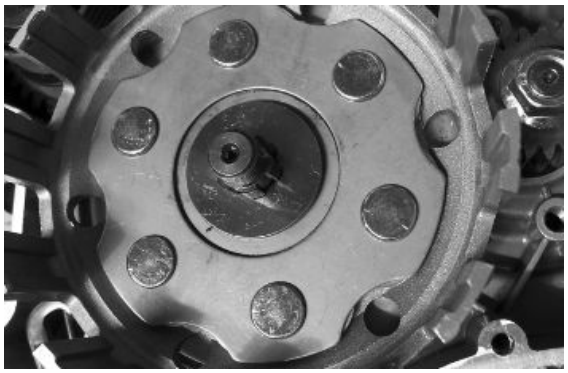


See also

Removing the clutch cover

- Lock the disc thrust plate with the specific tool and unscrew the nut
- Detach the locking washer and the star washer

- Slide off the clutch bell as well as the bushing and the shim washer



Checking the clutch plates

- Check the clutch plate
- Measure each plate thickness

Characteristic

Serviceability limit:

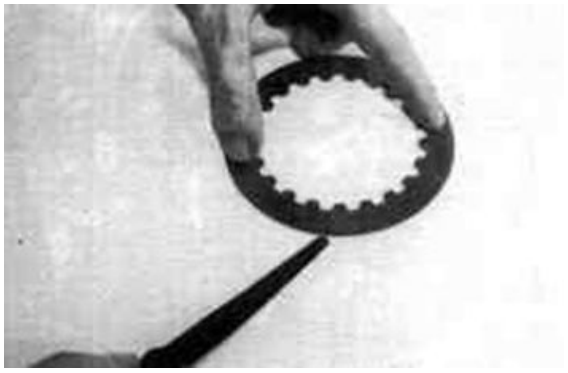
3.8 mm (0.1496 in)

- Check the steel discs
- Use thickness gauges to check that the plates are not deformed

Characteristic

Serviceability limit:

0.15 mm (0.0059 in)



Checking the clutch housing

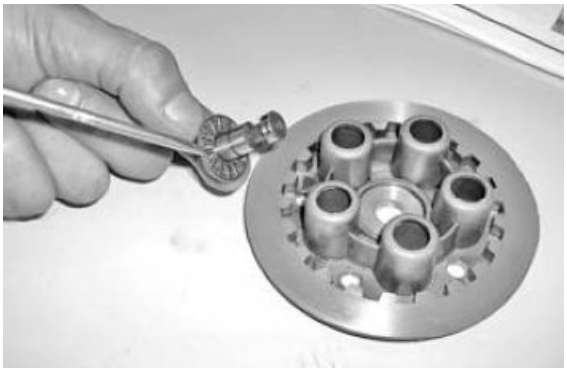
Carry out a visual inspection of the clutch jaws.
Replace the component if there are signs of thermal fatigue, reduced surface hardness or irregular jaw wear.
Check the components of the clutch bell are in good conditions:
- Clutch plate seats
- Rivets and connecting plugs to crown gears
- Main shaft lever coupling

CAUTION
REPLACE THE PART IN CASE OF UNDUE DAMAGE.

Checking the pusher plate

Check the disc thrust plate and its axial bearing.

CAUTION
REPLACE THE PART IN CASE OF UNDUE DAMAGE.



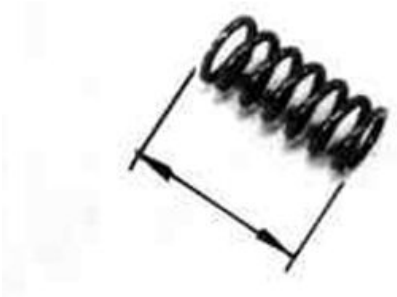
Checking the clutch hub

Check that the disc holding plate is in good conditions.
Check that the coupling between the surface and the plate is not eroded or grooved. Replace the part if any defect is found.

CAUTION
REPLACE THE PART IN CASE OF UNDUE DAMAGE.

Checking the springs

- Check the clutch spring
- Measure the length of each spring when extended



Characteristic

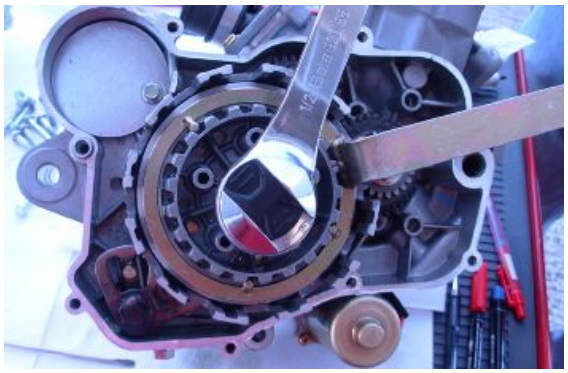
Spring serviceability limit:

31 mm (1.2205 in)

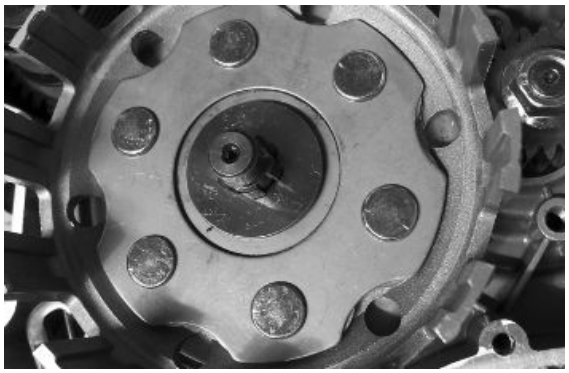
Assembling the clutch

- Fit the shim washer and the clutch bushing

- Fit the clutch housing.

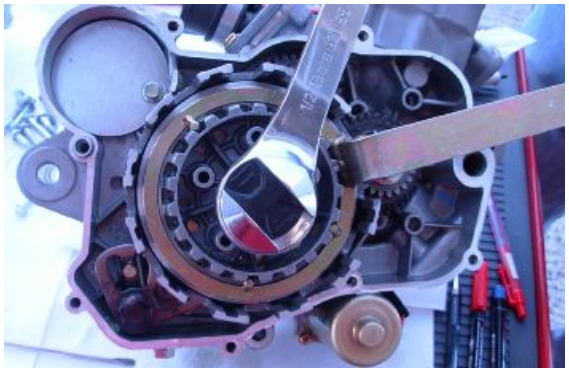


- Fit the star washer
- Fit the disc thrust plate, the bevelled washer and the fixing nut
- Lock the plate with the specific tool and tighten the fixing nut
- Fold the locking washer to secure the nut



Specific tooling

00H0530004.1 Clutch locking tool

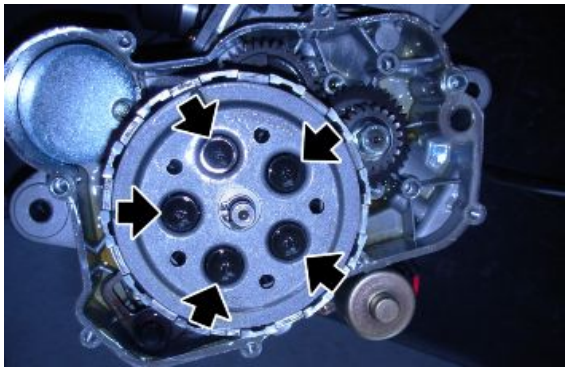


- Lubricate the clutch plates with new oil
- Fit the plates with the visible mark on one of the friction surfaces facing out
- Be careful with the trim driver discs alignment that must have the lubrication channels facing in the opposite direction to the rotation.

- Fit the clutch springs and their fixing screws
- Tighten to the specified torque

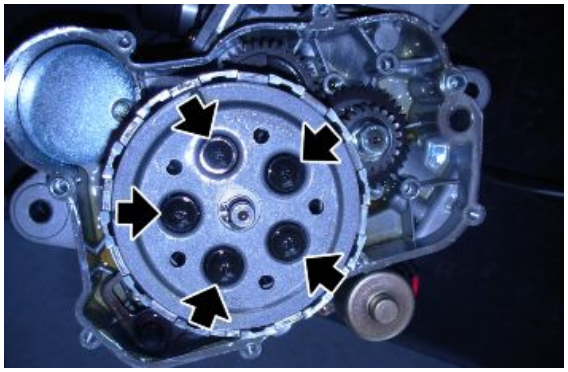
Locking torques (N*m)

Clutch spring screws 9 Nm (6.64 lbf ft)



Installing the clutch cover

- Insert the bolts on the clutch cover
- Fit a new gasket on the crankcase right cover
- Make sure the faying surfaces of the crankcase and cover are clean and not damaged
- Align the tappet (1) with the clutch lever on the cover

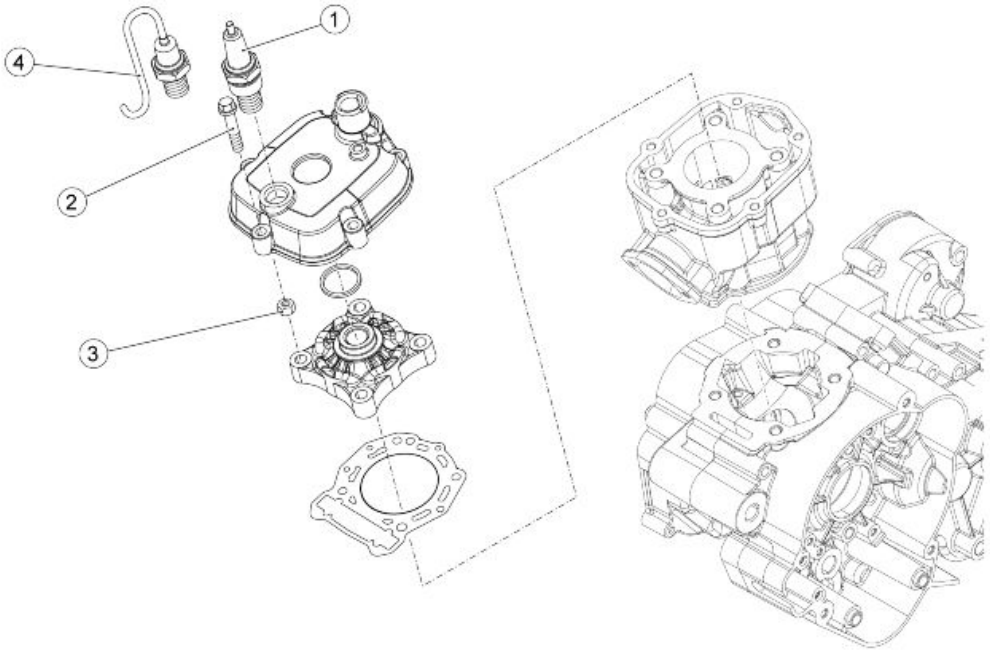


- Place the clutch cover, turn the clutch control until it coincides with the tappet
- Turn the water pump rotor so as to engage the driving gear with the pin of the crankshaft
- Repeat this procedure also with the oil pump transmission gear, use a screwdriver to turn the oil pump shaft
- Push the clutch cover until it stops on the engine crankcase
- Tighten the screws on the crankcase cover in two or three stages, first screw in on screw and then the one that is diametrically opposite

Locking torques (N*m)

Clutch cover 9 Nm (6.64 lbf ft)

Head and timing



HEAD

pos.	Description	Type	Quantity	Torque	Note
1	Spark plug retainer	M14x125	1	20-30 Nm (14.75-29.50 lbf ft)	-
2	Head retainer	M6x10	5	8-10 Nm (5.90-7.38 lbf ft)	-
3	Head nut retainer	M7	4	19-22 Nm (14.01-16.23 lbf ft)	-
4	Thermistor retainer	M14	1	32-38 Nm (23.60-28.03 lbf ft)	-

Removing the cylinder head

- Remove the coolant rubber pipes connecting the pump and the radiator and collect the coolant
- Remove the rubber pipes connecting the head and the radiator
- Disconnect the electrical connector of the temperature sensor
- Remove the spark plug
- Undo the five fixing screws to remove the head cover
- Undo the four stud bolt nuts to remove the head and its gasket

- Remove any carbon deposits present on the head being careful not to scratch the coupling surfaces
- Use a trued bar to check the head coupling surface is not distorted.

Characteristic

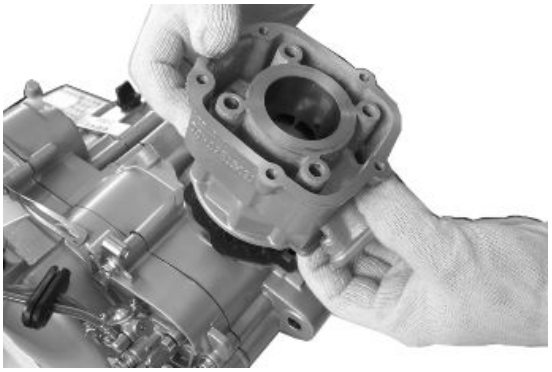
Maximum allowable run-out

0.05 mm (0.002 in)

Cylinder-piston assembly

Removing the cylinder

- Empty the coolant out the system
- Remove the cylinder head
- Remove the cylinder by slowly sliding it upwards
- Remove the base gasket
- Put a piece of old cloth in the cylinder housing hole on the crankcase so that no object can fall in



See also

Removing the cylinder head

Disassembling the piston

- Remove the cylinder
- Remove the seeger ring retaining the pin
- Remove the pin. Be careful to support the connecting rod properly to avoid deformations
- Remove the piston
- Remove the gasket rings from the piston (piston rings)
- Remove the roller cage of the connecting rod small end
- Check and clean the components
- Clean the piston crown carefully to remove any carbon deposits
- Visually check the piston sealing circlips. Replace them if damaged or distorted

See also

Removing the cylinder

Checking the cylinder

- Measure the openings of the piston elastic sealing rings by placing a feeler gauge in the cylinder

Characteristic

Maximum allowable piston ring opening:

0.35 mm (0.0138 in)

- Check cylinder for wear with a bore meter.
- Carry out measurements following the perpendicular axis and at three different heights of the cylinder.
- To select the piston to be coupled to the cylinder, refer to the TYPES tables, keeping in mind that the piston-cylinder clearance should be always between 0.035 mm (0.00138 in) and 0.045 mm (0.00178 in).

Characteristic

Serviceability limit:

0.05 mm

TYPE A

Specification	Desc./Quantity
Nominal cylinder diameter (A)	39.890 mm (1.57047 in)
Cylinder diameter (A)	39.8875 - 39.8925 mm (1.570369 - 1.570566 in)
Piston nominal diameter (A)	39.840 mm (1.568499 in)
Piston diameter (A)	39.8375 - 39.8425 mm (1.568401 - 1.568598 in)

TYPE B

Specification	Desc./Quantity
Nominal cylinder diameter (B)	39.895 mm (1.57066 in)
Cylinder diameter (B)	39.8925 - 39.8975 mm (1.570566 - 1.570763 in)
Piston nominal diameter (B)	39.845 mm (1.56869 in)
Piston diameter (B)	39.8425 - 39.8475 mm (1.568598 - 1.568794 in)

CLASS C

Specification	Desc./Quantity
Nominal cylinder diameter (C)	39.900 mm (1.57861 in)
Piston diameter (C)	39.8475 - 39.8525 mm (1.568794 - 1.5568991 in)
Piston nominal diameter (C)	39.850 mm (1.56889 in)
Cylinder diameter (C)	39.8975 - 39.9025 mm (1.570763 - 1.57096 in)

CLASS D

Specification	Desc./Quantity
Nominal cylinder diameter (D)	39.905 mm (1.57106 in)
Piston diameter (D)	39.8525 - 39.8575 mm (1.568991 - 1.569188 in)
Piston nominal diameter (D)	39.855 mm (1.56909 in)
Cylinder diameter (D)	39.9025 - 39.9075 (1.57096 - 1.571157 in)

CAUTION

COUPLING CLEARANCE IN THE FITTING:
0.045 - 0.055 mm (0.0017716 - 0.0021653 in)

Checking the piston

- Check the piston outside diameter following the perpendicular axis to the pin seat. Carry out measurements 15 mm (0.59 in) away from the lowest circlip seat

Characteristic

Serviceability limit:

0.05 mm (0.0019 in)

Fitting the piston

- Refit the piston sealing circlips
- Fit a new cylinder base gasket
- Refit the roller cage at the connecting rod small end and make sure to lubricate the components with recommended oil
- Refit the piston paying attention to the direction of the arrow indicated at the piston crown. This arrow should be facing the outlet

- Fully fit the previously lubricated pin and mount two new pin retaining seeger rings being careful to fit them in their correct positions
- Lubricate both the cylinder and the piston faying surfaces and the sealing circlips
- Carefully fit the piston in the cylinder being careful to press the sealing circlips in their positions

Installing the cylinder

- Lubricate both the cylinder and the piston faying surfaces and the sealing circlips
- Carefully fit the cylinder in the piston being careful to press the sealing circlips in their positions
- Fit a new head gasket and refit the cylinder head
- Mount the head cover
- Fit a new spark plug
- Connect again the temperature sensor connectors and the spark plug cap
- Fill up the cooling system being careful to purge it

Selecting the base gasket

CAUTION

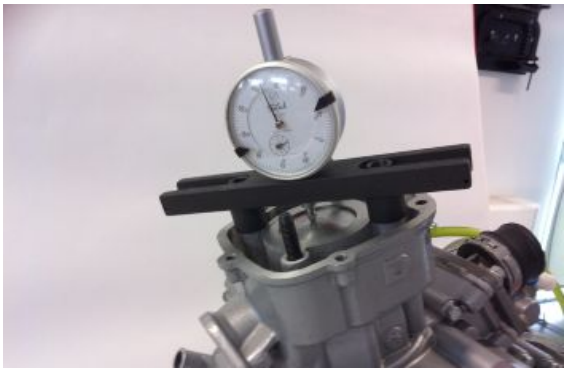
NEVER REUSE A GASKET BASE OF REMOVED CYLINDERS.
ALWAYS INSTALL A NEW ONE.
TO FACILITATE THE INSTALLATION, grease THE INTERNAL SURFACE OF THE CYLINDER WITH RECOMMENDED ENGINE OIL.
IN CASE THAT HAVE BEEN REPLACED THE PISTON OR THE CYLINDER, IT IS NECESSARY TO CALCULATE THE THICKNESS OF THE NEW GASKET TO BE INSTALLED, TO ESTABLISH THE REPORT OF APPROPRIATE COMPRESSION.
MEASURE WITHOUT PLACING GASKETS BETWEEN CYLINDER AND DIAL GAUGE.

NOTE

MAKE SURE THAT THE COMPARATOR DOOR IS PROPERLY FITTED TO THE STUD BOLTS, TO AVOID POSSIBLE CLEARANCES THAT CAN DELETE THE MEASURE.

CALCULATION OF THE BASE GASKET THICKNESS

- Install the dial gauge on the suitable special tool AP8140266.
- Connect the dial gauge on a flat surface and adjust it to point zero.
- Place the piston to the top dead center and carry out the measure.
- Select the cylinder base gasket for the values of the table.



Specific tooling

AP8140266 Comparator door

BASE GASKET

Measure top dead center (mm)(in)	Gasket thickness (mm) (in)
2.15 + 2.35 (0.08464 +0.09252)	0.70 +/- 0.04 (0.02756 +/- 0.0015748)
1.75 + 1.95 (0.06889 + 0.07677)	0.30 +/- 0.04 (0.01181 +/- 0.0015748)
1.95 + 2.15 (0.07677 + 0.08464)	0.50 +/- 0.04 (0.01968 +/- 0.0015748)

Installing the cylinder head

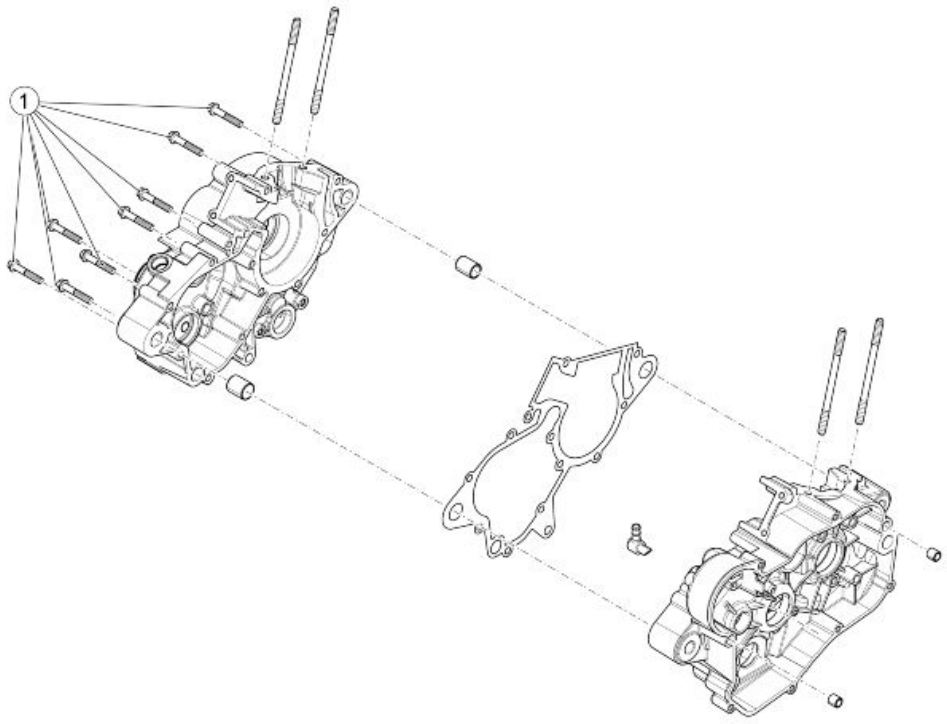
To refit, carry out the removal operations but in reverse order:

- Fit a new gasket between the head and the cylinder
- Check that the coupling surfaces are perfectly clean
- Place the head on the cylinder and tighten the four stud bolts in two or three stages, tightening one stud bolt and afterwards the one that is diametrically opposite
- Refit the head cap tightening the screws in several stages
- Refit the spark plug
- Connect the thermal switch connector and the spark plug pipe
- Connect the radiator hose to the cylinder head
- Connect the radiator hose to the hydraulic pump
- Fill up the cooling system reservoir with coolant
- Bleed the system

Locking torques (N*m)

Head-cylinder retaining nuts 20 Nm (14.75 lbf ft) Head cover screws 6 Nm (4.43 lbf ft) Cylinder head thermistor 35 Nm (25.81 lbf ft)

Crankcase - crankshaft



ENGINE CRANKCASE

pos.	Description	Type	Quantity	Torque	Note
1	Crankcase retainer	M26x100	8	8-10 Nm (5.90-7.38 lbf ft)	-

Splitting the crankcase halves

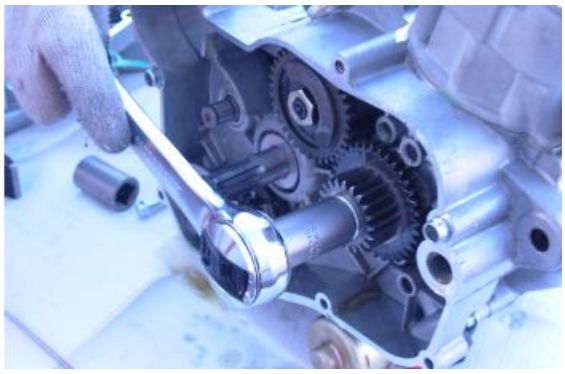
MAIN TRANSMISSION GEAR REMOVAL AND GEAR COUNTERSHAFT

- Remove the crankcase left cover
- Lock the magneto flywheel with the specific tool. If the flywheel has been already removed, reposition it on the shaft only for this operation

Specific tooling

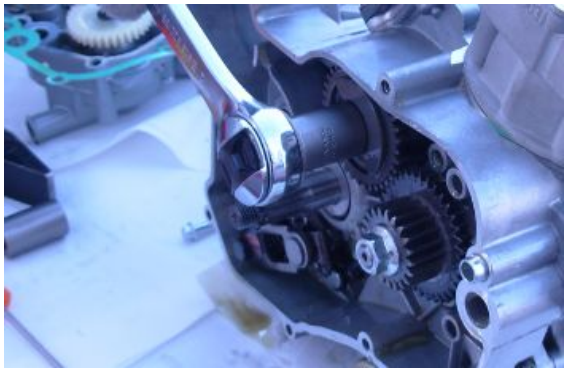
020565Y Flywheel lock calliper spanner

- Unscrew and remove the fixing nut



- Unscrew and remove the countershaft gear nut.

- Remove the gear with the shim.



See also

Magneto flywheel removal

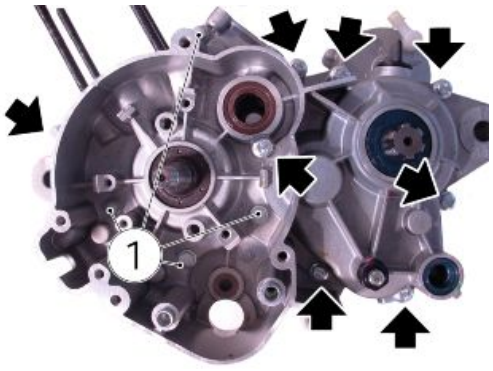
- Dismount the primary drive gear with the specific tool

Specific tooling

0.0H.056.0.032.1 Primary drive pinion extractor

CRANKCASE OPENING

- Remove the engine from the chassis.
- Remove the thermodynamic unit (cylinder, head and piston).
- Remove the magneto flywheel.
- Remove the whole clutch, the main gear and the gear selector lever.
- Remove the fixing screws of both crankcase halves located at the left of the engine. The two screws (1) are shorter.



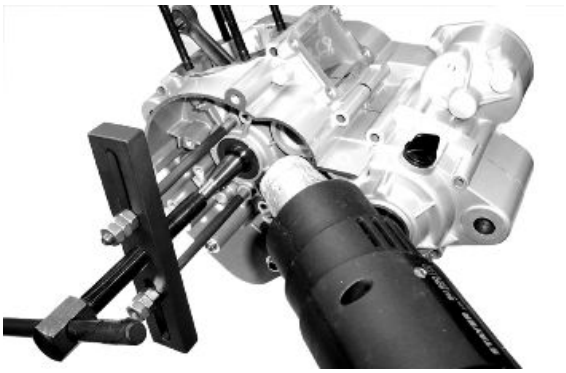
See also

Removing the cylinder head

Magneto flywheel removal

Disassembling the clutch

- Warm up at about 60°C (140°F) the seats of the crankshaft, main shaft, secondary shaft on the left hand side
- Separate the two crankcase halves with the specific tool



CAUTION

NEVER USE A LEVER OR A SCREWDRIVER TO SEPARATE THE CRANKCASE HALVES. REPLACE THE CRANKCASE HALVES IF THE COUPLING SURFACES GET DAMAGED.

Specific tooling

AP8106698 Crankcase separator

Removing the crankshaft

- Open the crankcase halves and remove the gearbox shafts
- Warm the crankshaft seat on the clutch side at about 60°C (140°F) and take out the crankshaft

See also

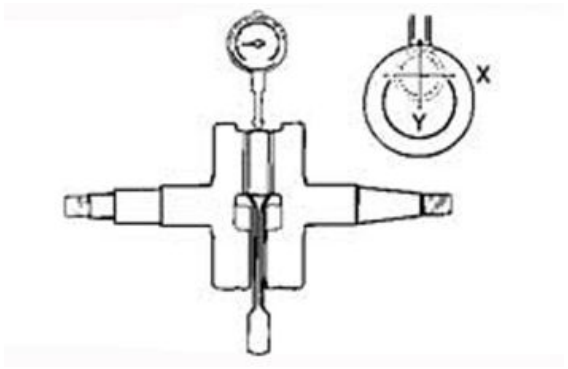
Disassembling the gearbox

Inspecting the crankshaft components

- Thoroughly clean and degrease the crankshaft and then check it
- Use a feeler gauge to check the clearance between the big end and the half shaft

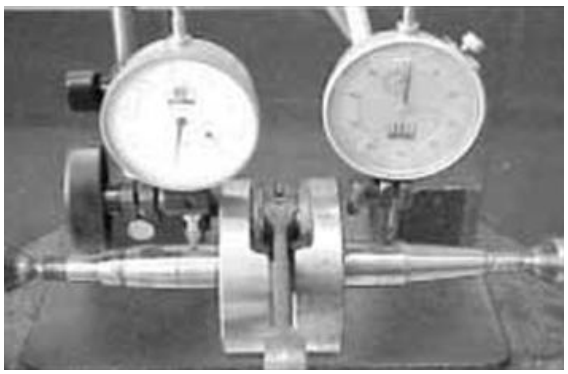
Characteristic
Serviceability limit:
0.8 mm (0.0315 in)

- Use a dial gauge to check the clearance between the connecting rod and the crankpin on X and Y axis as indicated in the photograph



Characteristic
Serviceability limit:
0.04 mm (0.0016 in)

- Make sure that both half shafts are not scratched or unduly worn
- Use two comparators and a support as indicated in the photograph to check the run out for both half shafts



Characteristic
Serviceability limit:
0.01 mm (0.0004 in)

Refitting the crankcase halves

- Fit the selector. Lubricate the surfaces with specific oil
- Make sure that the gear housing works properly by selecting different speeds and turning the drum to both sides
- Select neutral gear and check that the system rotates freely

- Refit the crankcase by warming up the shaft seats at about 60°C (140°F)
- Tighten the screws to the prescribed torque
- Make sure the crankshaft and the gear work freely after having refitting the crankcase

Recommended products

ENI I-RIDE PG 2T Mixer oil

As an alternative for recommended oils, use top branded fully synthetic oils that meet or exceed the ISO - L - EGD, or alternatively JASO FC or API TC specifications requirements.

Locking torques (N*m)

Crankcase halves fixing screws 9 Nm (6.64 lbf ft)

INSTALLING THE MAIN TRANSMISSION GEAR

- - Insert the key into the hole on the crankshaft and then install the primary drive gear
- Insert the countershaft of the flywheel side and make sure that the mechanical timing between the engine pinion and the countershaft gear is correct.

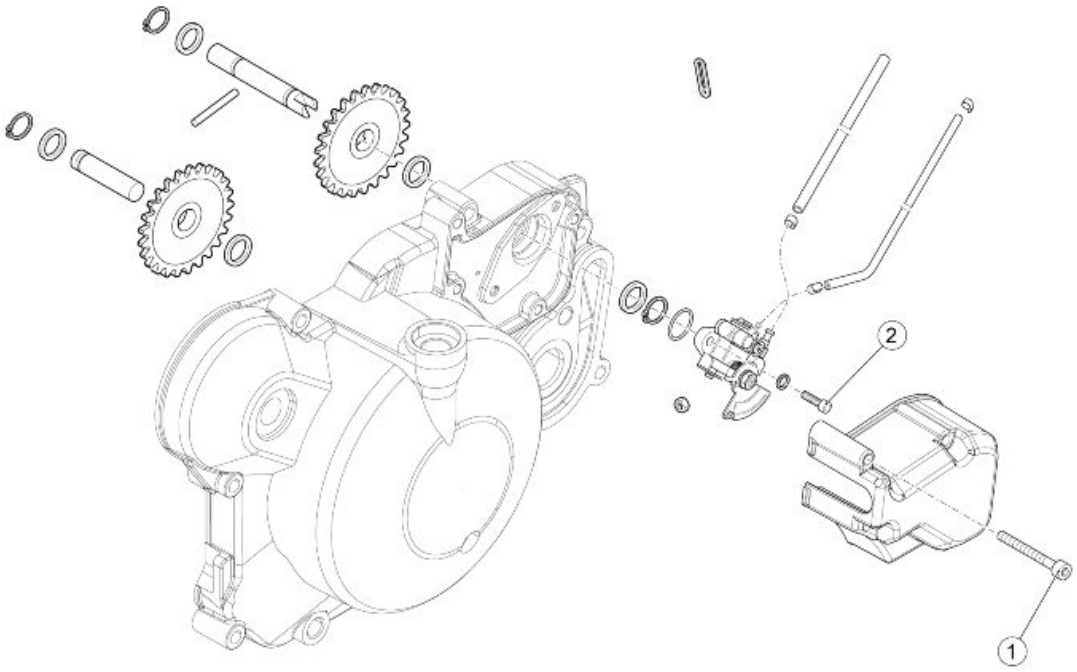
- Lock the magneto flywheel with the aid of a specific tool and tighten the fixing nut of the gear to the specified torque

Specific tooling

020565Y Flywheel lock calliper spanner

Lubrication

Oil pump



OIL PUMP

Description	Type	Quantity	Torque	Note
Oil pump cover retainer	M5x80	4	3.5-4.5 Nm (2.58-3.31 lbf ft)	-
Oil pump retainer	M5x80	2	3.5-4.5 Nm (2.58-3.31 lbf ft)	-

Removing

- Remove the start-up pedal
- Remove the rear brake pedal
- Detach the sleeve connecting the radiator to the hydraulic pump and flow out the coolant of the cooling system
- Disconnect the clutch lever wire and remove the clutch wire clamp
- Drain the oil out of the gearbox
- Remove the oil pump cover
- Undo the two fixing screws of the oil pump
- Move the whole oil pump assembly and its choses upwards but do not detach them

Inspection

- Remove the pump
- Make sure that the pump drive rotates freely
- Check the sealing rings are in good conditions. Replace them if they are damaged or deformed
- The oil pump is an essential safety element for proper engine operation. Replace, not repair, them in case of faults

See also

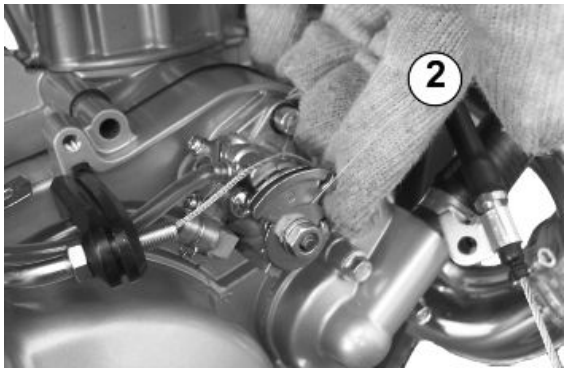
Removing

Oil pump purging

- Check oil in the reservoir for correct level; top up with recommended oil if necessary
- Place a suitable container under the pump to collect the oil purged from the pump
- Loosen the oil pump bleed screw (1), located at the front of the pump between the inlet and the delivery pipes, to facilitate drainage until the oil flow is constant and no air bubbles are formed. Tighten the bleed screw (1)

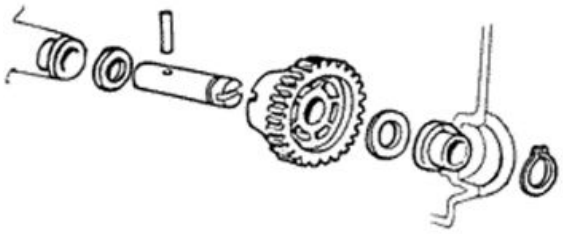
Pipe purging

- Fill up the fuel tank with a mixture of oil and petrol at 2.5%, use the recommended oil specific for this type of engine
- Start the engine and let it run for about 10 minutes with the oil pump control lever (2) fully open in order to send out all the air in the pipes together with the oil
- NEVER fully rev up the engine while purging
- Carry out this operation in a well-ventilated area



Installing

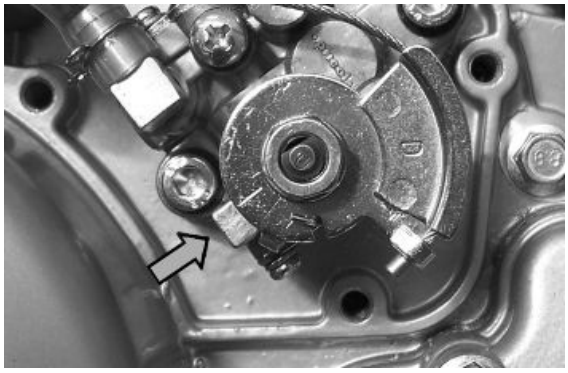
- Mount the oil pump shaft following the same procedure as for removal but in reverse order
- It is crucial to check that the shim washers are correctly mounted
- Mount the transmission and the driving gear
- Fit a new oil seal in the clutch lever seat on the cover
- Fit the clutch lever



- Install the clutch cover
- Mount the oil pump and the pipe support
- Mount the oil pump wire. Operate the nut to align the symbols stamped cage on the oil pump with the throttle control in neutral
- Mount the oil pump cover.

Specific tooling

020441Y Oil seal punch



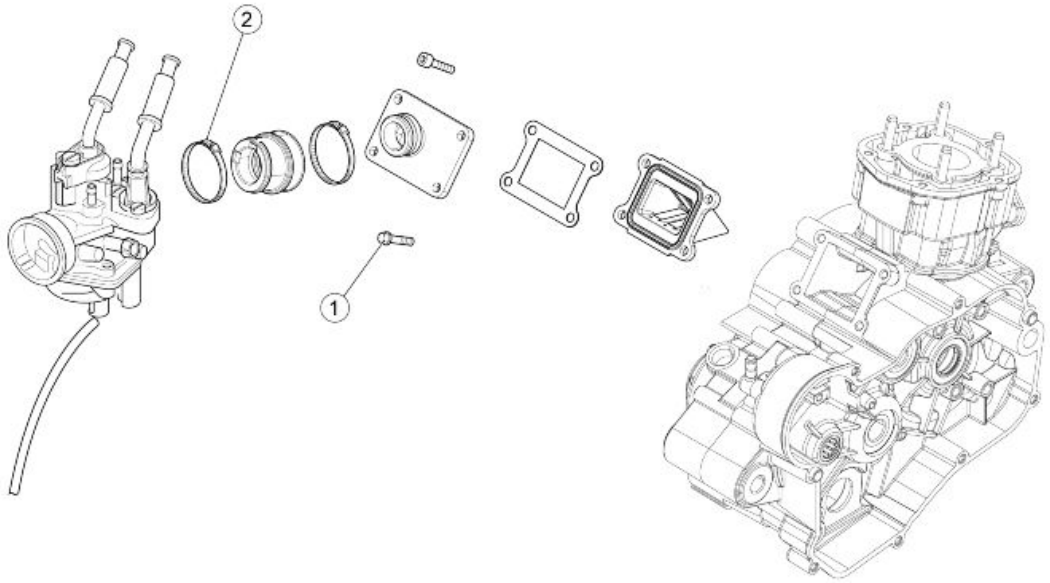
See also

Installing the clutch cover

- Fit the clutch wire, the clamp and the lever
- Turn the clutch control clockwise with a screwdriver and then fit the clutch lever and its screws
- Adjust the clutch lever clearance to a value between 2 mm (0.08 in) and 4 mm (0.16 in) (handlebar left side)

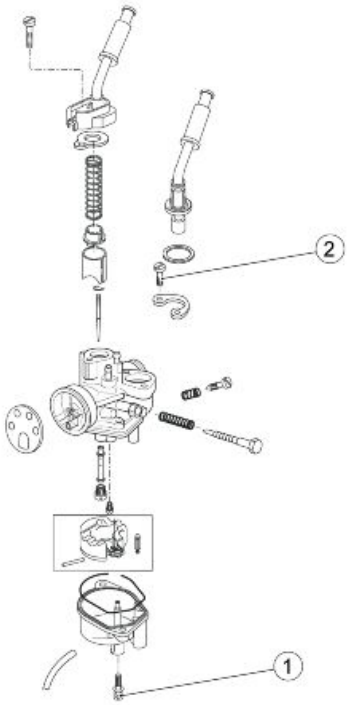
- Mount the sleeve connecting the hydraulic pump to the radiator and that connecting the hydraulic pump to the cylinder
- Fit the start-up pedal
- Fit the rear brake pedal
- Pour recommended oil in the crankcase

INDEX OF TOPICS



REED VALVE

pos.	Description	Type	Quantity	Torque	Note
1	Reed valve retainer	M6x110	4	8-10 Nm (5.90-7.38 lbf ft)	-
2	Clamp retainer	-	1	0.3 - 0.4 Nm (0.22-0.29 lbf ft)	-



DEPRESSION CARBURETTOR

pos.	Description	Type	Quantity	Torque	Note
1	Carburettor chamber retainer	-	1	1 Nm (0.73 lbf ft)	-
2	Starter cover retainer	-	1+1	1 Nm (0.73 lbf ft)	-

Precautions

WARNING

IF THE MOTORCYCLE IS NOT USED FOR OVER 1 MONTH, DRAIN ALL THE FUEL IN THE CARBURETTOR CHAMBER. OTHERWISE, THE NOZZLES CAN GET PARTIALLY OR FULLY CLOGGED

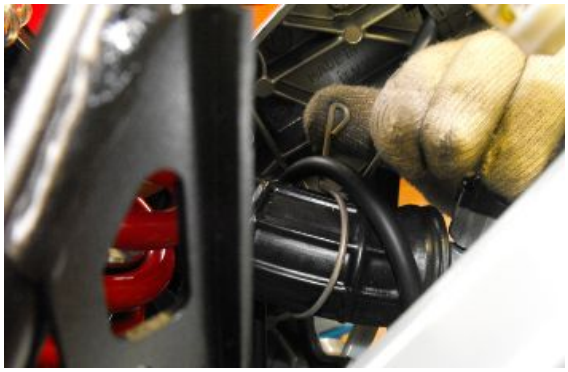
WARNING

THE CARBURETTOR CAN BE REMOVED OR REPLACED WITH THE ENGINE FITTED ON THE MOTORCYCLE

Carburettor

Removing

- Remove the carburettor by releasing the clamps on the inlet manifold and the bellows connected to the air cleaner housing
- Remove the fuel pipe of the carburettor, the mixer oil intake pipe and the fuel cock vacuum pipe and the two carburettor heating pipes



Reed valve

- Remove the carburettor from the engine
- Remove the reed valve and its gaskets from the crankcase

- Check that the valve petals are not damaged or deformed. Otherwise, replace it.

- Remove the plate limiting the reed valve opening by undoing the three screws fixing the reeds

- Mount the valve following the removal procedure but in reverse order, make sure the plate limiting the reed valve opening has been correctly positioned
- Absence of the plate limiting the reed valve opening compromises the engine performance and reliability
- Check the O-ring of the reed support. Replace it if damaged or deformed

Disassembling

- Undo the two screws to remove the throttle valve and the tapered pin as well

- Compress the throttle valve return spring
- Remove the safety cap of the throttle valve and remove the throttle control cable from the throttle

- Remove the fixing plate of the starter control by undoing the screws indicated in the photograph
- Remove the starter control

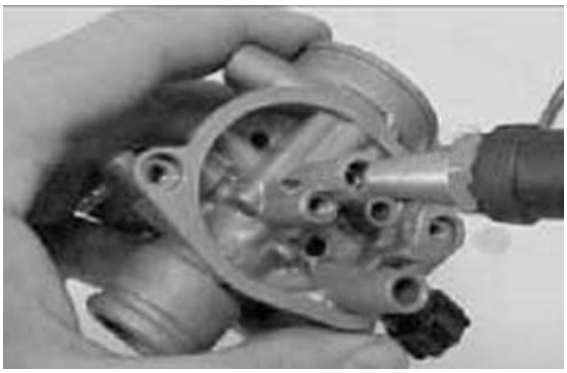
- Remove the air flow set screw as indicated in the photograph

- Remove the carburettor float chamber
- Remove the float by operating the stem that fixes it to the carburettor with a very thin pin
- Remove the maximum nozzle, the idle nozzle and the starter nozzle

CARBURETTOR FITTING

- Clean thoroughly all the carburettor components with solvent
- Be careful not to damage the carburettor gaskets and the starter control O-ring

- Blow short blasts of compressed air through all the nozzles of the carburettor, including the oil and petrol intake ones



- Use scales to check the float weight. Weight: 3.5 g (0.123 oz).
- Replace the float if higher weight values are found

- Check that the tapered pin is in good conditions. Replace it if worn or deformed

- Check the starter control pistons are in good conditions
- Replace them if they show signs of abnormal wear

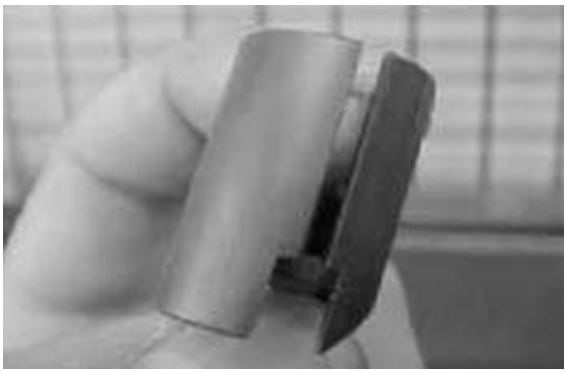
- Check that the calibration of the nozzles is adequate (see the carburettor calibration table)
- Failure to respect these values compromises engine performance

- Check that the stop is correctly positioned on the tapered pin notch
- The stop must be on the third notch from the top
- Move up the stop to obtain a leaner mixture
- Move it down to obtain a richer mixture Thus, carburetion can adapt to different climatic conditions

- Replace the tapered pin if it shows signs on early wear as shown in the photograph

- Check that idle set screw shows no signs of abnormal wear. This is detrimental to a correct idle speed adjustment

- Check that the throttle valve shows scratches comprising 25% of its overall surface. Otherwise, replace it.

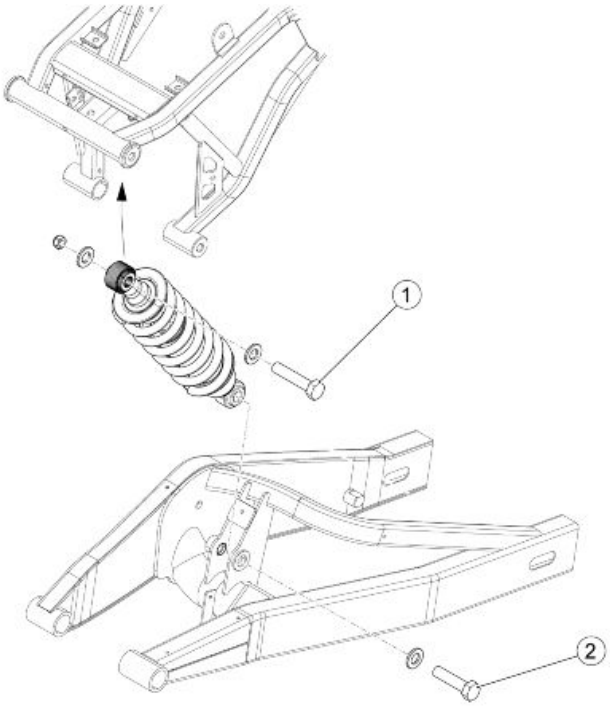


- If the throttle valve is replaced, fit another with the standard settings indicated on the top surface as shown in the photograph
- Re-assemble the whole carburettor
- Refit the carburettor to the engine, connect the fuel pipes again, the mixer oil intake pipes and the vacuum pipe for the fuel cock control

Adjusting the idle speed

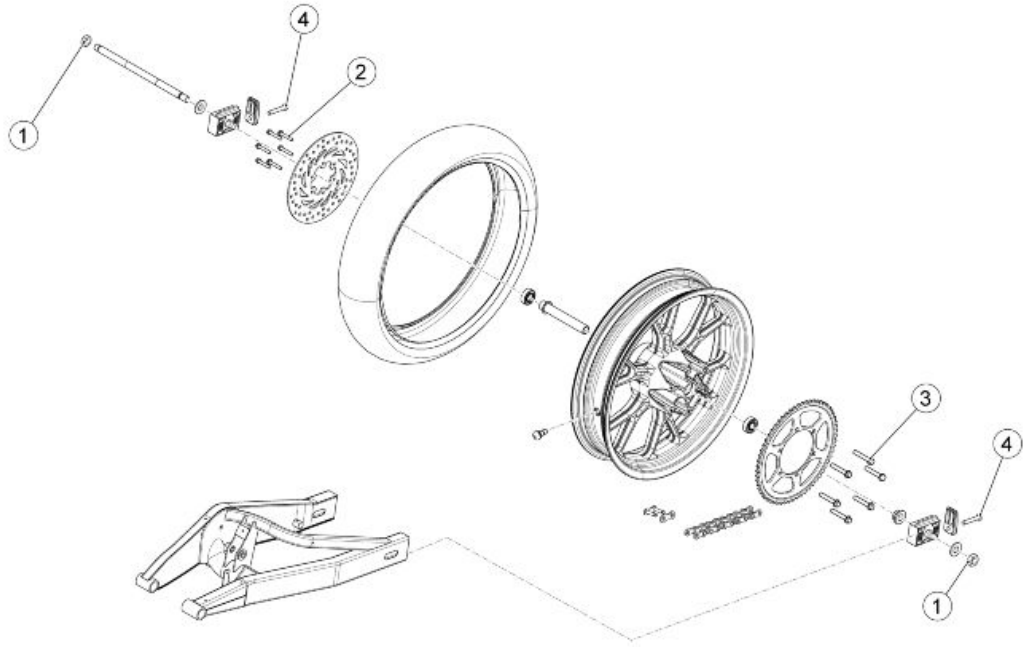
- Tighten the flow set screw slowly until it stops and then unscrew it as many turns as specified for this type of engine (1+1/4)
- Remember this is the first adjustment
- Warm the engine up to the regular operating temperature
- Adjust the idle speed at 1600 ± 200 rpm by operating the idle speed set screw
- Turn the flow set screw (1) to both sides until the maximum rpm possible is obtained

INDEX OF TOPICS



REAR SUSPENSION

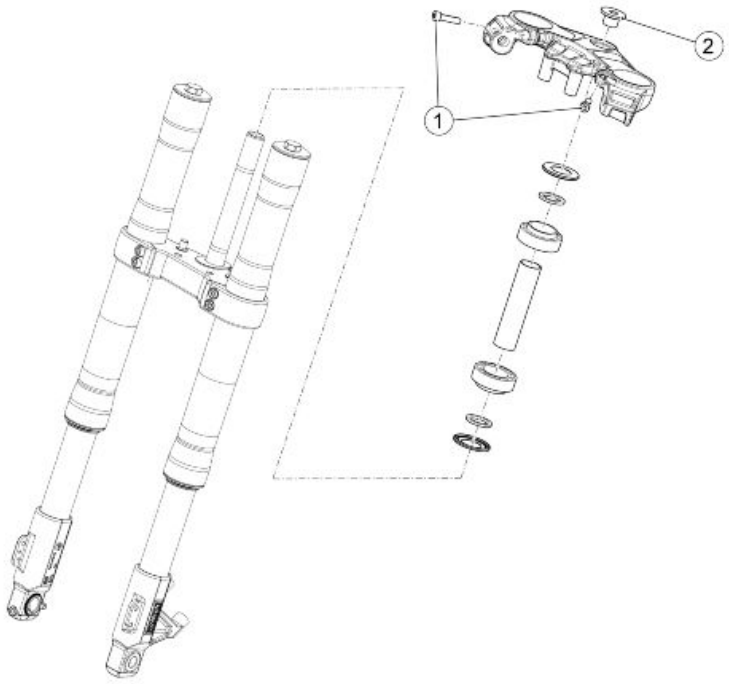
pos.	Description	Type	Quantity	Torque	Notes
1	Upper retainer	M12	1	58 Nm (42.78 lbf ft)	-
2	Lower retainer	M12	1	58 Nm (42.78 lbf ft)	Loctite 243



REAR WHEEL

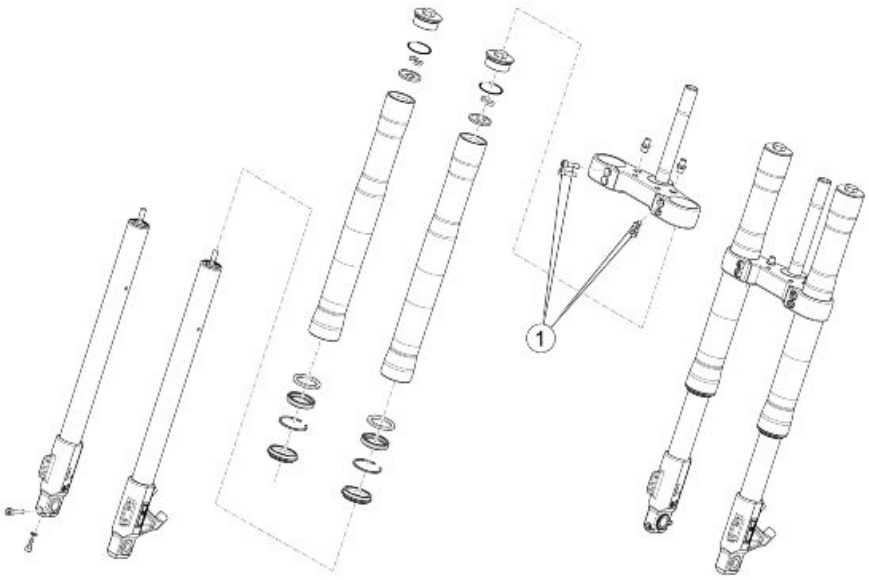
pos.	Description	Type	Quantity	Torque	Notes
1	Rear wheel axle nut	M14	2	78 Nm (57.53 lbf ft)	-
2	Rear disc fixing screw	M6x20	6	12 Nm (8.85 lbf ft)	-

pos.	Description	Type	Quantity	Torque	Notes
3	Sprocket fixing screw	M6	6	12 Nm (8.85 lbf ft)	-
4	Chain tensor fixing screw	M8	2	12 Nm (8.85 lbf ft)	Loctite 243



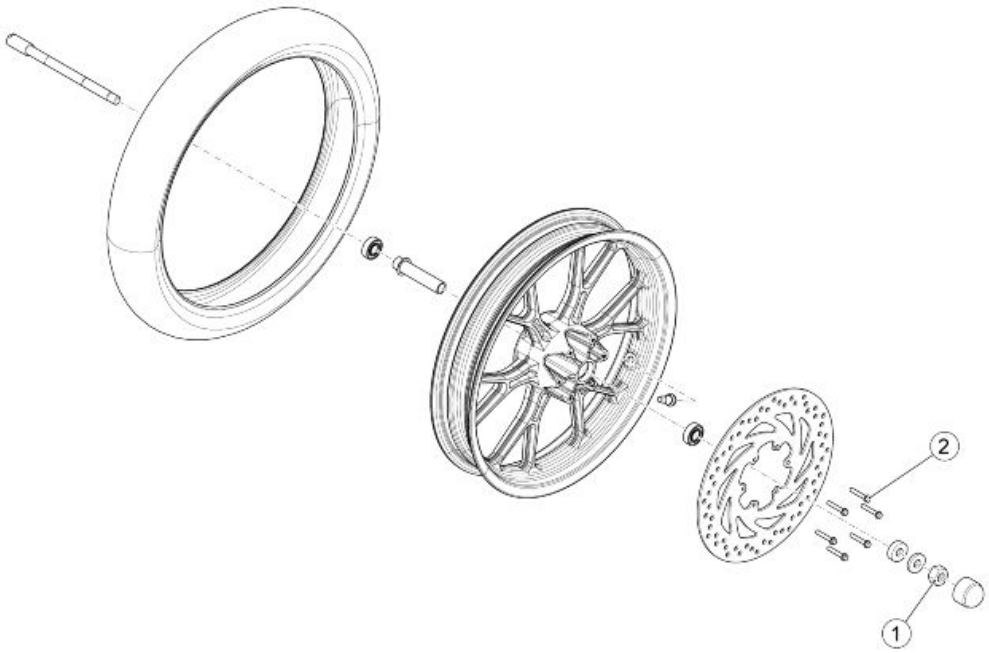
STEERING

pos.	Description	Type	Quantity	Torque	Notes
1	Upper yoke fastening to sleeve	M8	2	25 Nm (18.43 lbf ft)	-
2	Steering retainer nut	M20	1	48 Nm (35.40 lbf ft)	-



FRONT SUSPENSION

pos.	Description	Type	Quantity	Torque	Notes
1	Screws fastening lower yoke to sleeve	M8	2x2	25 Nm (8.43 lbf ft)	-



FRONT WHEEL

pos.	Description	Type	Quantity	Torque	Notes
1	Front wheel spindle nut	M14	1	78 Nm (8.85 lbf ft)	-
2	Front disc fixing screw	M6x20	6	12 Nm (8.85 lbf ft)	-

Front

Removing the front wheel

- Support the vehicle at the front, by fastening a suitable belt to the handlebar and a crane.
- Slide off the nut cover.

- Unscrew and remove the wheel axle fixing nut and collect the washer.

- Loosen the lock screw of the calliper mounting bracket.
- Extracting the wheel, slide off the pin from the right side of the vehicle, paying attention to the speed sensor collar.
- Remove the front wheel.

Checking the front wheel

WHEEL INSPECTION

NOTE

BALANCE THE WHEEL, IF A TYRE OR A WHEEL WAS REPLACED.

WARNING

WHEEL RIM REPAIRS MUST NOT BE CARRIED OUT.

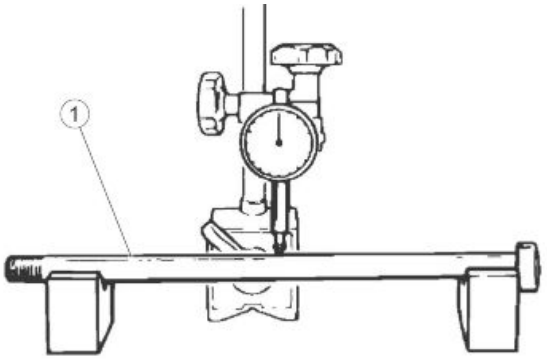
- Check the wheel axle by turning the wheel rim on a flat surface.
- If there are bends, replace it.

WARNING

NEVER TRY TO STRAIGHTEN THE BEND AXLE.

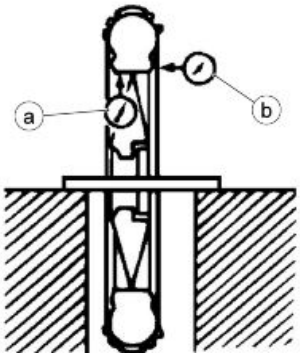
Wheel axle bending limit (1):

0.2 mm



TYRES

- Check the tyres for wear; If they are damaged, replace them.



WHEEL RIMS

- Check the wheel deformation.
- If there are bends or damages, replace it.
- Check the wheel deformation limits.

Radial limit (a): 0.6 mm

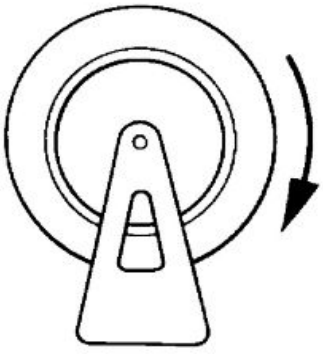
Lateral limit (b): 0.5 mm

- If the measured values exceed the limit, replace the wheel rim.

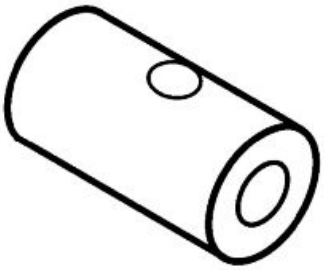
- Check wheel bearings.

NOTE

BEARINGS MUST ROTATE FREELY, WITHOUT JAMMING AND/OR NOISE, OTHERWISE, THEY NEED TO BE REPLACED.



- Check the spacer.
- Replace together with the retaining ring if there are scorings or signs of deterioration.



Installing the front wheel

- Follow the steps described in the front wheel removal in reverse, be very careful when positioning the components and the corresponding tightening torque.

Front fork

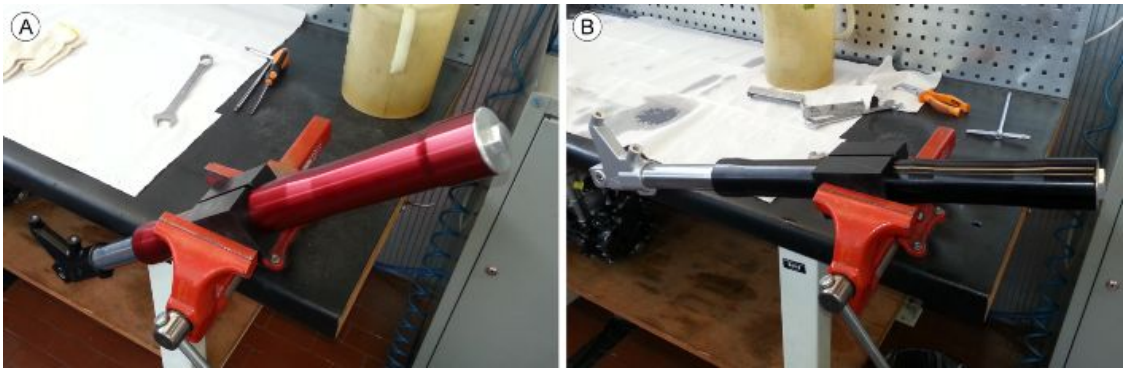
CAUTION

THE MOTORCYCLE MAY BE FITTED WITH TWO DIFFERENT TYPES OF FORKS, PAIOLI E MINGXING

key:

A) Paioli Forks

B) Mingxing Forks



Removing the fork legs

The following operations are described for the Mingxing fork, but are identical for the operation with the fork model Paioli, except where specified.

The following operations only refer to one fork, but they apply to both.

- Support the vehicle at the front, by fastening a suitable belt to the handlebar and a crane.
- Position a support under-sump stand and the rear stand.
- Remove the front wheel and the front brake callipers.
- Loosen the fixing screw at the upper steering plate.

See also

Rear mudguard
Removing the front wheel

- For the operation with Mingxing fork, loosen the two fixing screw at the lower plate.
- For the operation with fork Paioli, loosen the fixing screw at the lower plate.
- Slide the stanchion downwards to remove it.

Disassembling the fork

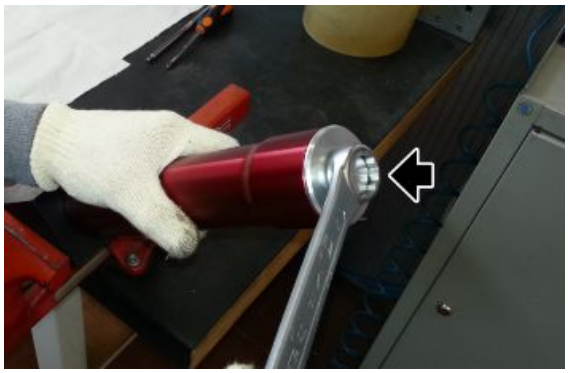
PAIOLI FORKS

CAUTION

THE FOLLOWING PROCEDURES ARE FOR A SINGLE WHEEL CARRIER STANCHION/SLEEVE ASSEMBLY, BUT ARE APPLICABLE TO BOTH.

- Fit the fork in the vice using the special Teflon grips.

- Undo the cap and partially pull out the piston



- Using a wrench to prevent the internal piston from rotating

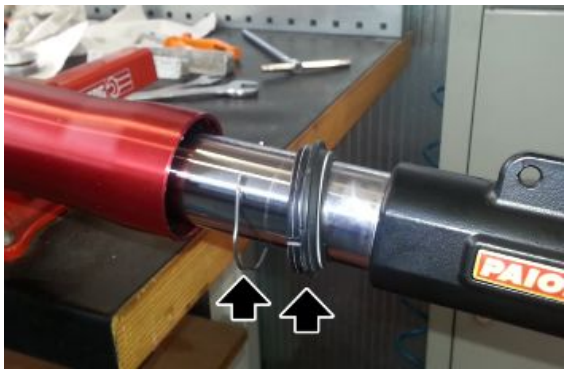
- Remove the cap

CAUTION

BEFORE PROCEEDING WITH THE FOLLOWING OPERATIONS GET A SUITABLE COLLECTION CONTAINER.

- Remove the stem from the vice and drain off the oil inside it into the collection container.

- Reposition the stem in the vice using the specific Teflon shoes.
- Remove the dust gaiter, taking care for the surface of the stem and the integrity of the dust gaiter.
- Remove the retainer ring.



- Remove the stem from the sleeve.

CAUTION

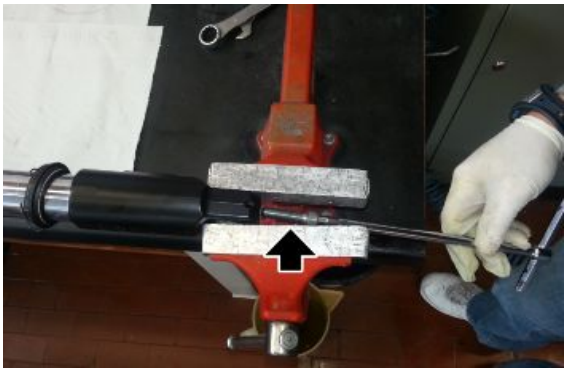
BE CAREFUL NOT TO DAMAGE THE SLEEVE INTERIOR WHEN REMOVING THE DIFFERENT COMPONENTS.

- Remove the oil seal from the sleeve, taking care not to damage it

CAUTION

ONLY FOR THE RIGHT STEM IT IS POSSIBLE TO REMOVE THE COMPLETE PISTON OPERATING AS FOLLOWS

- Undo and remove the piston retaining screw on the foot of the fork



- Remove the complete piston

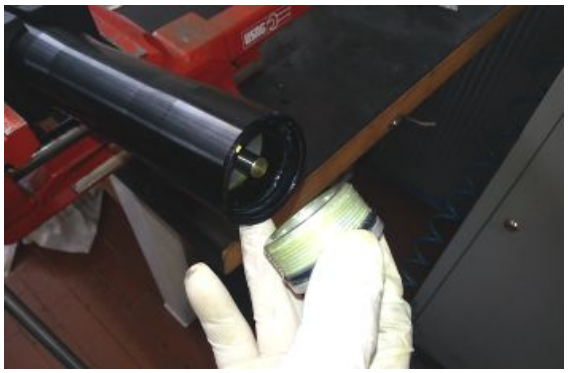
MINGXING FORK

CAUTION

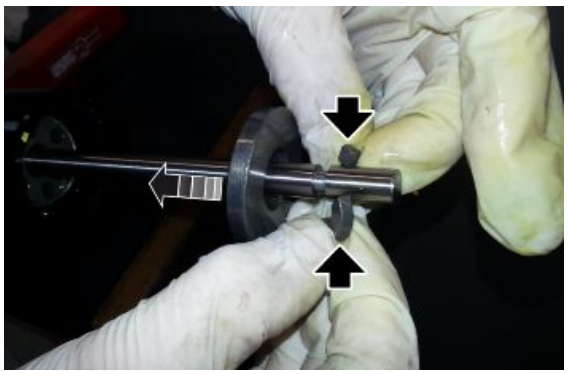
THE FOLLOWING PROCEDURES ARE FOR A SINGLE WHEEL CARRIER STANCHION/SLEEVE ASSEMBLY, BUT ARE APPLICABLE TO BOTH.

- Fit the fork in the vice using the special Teflon grips.

- Unscrew and remove the cap



- Remove the internal piston and, lowering the lock washer, remove the two half cylinders



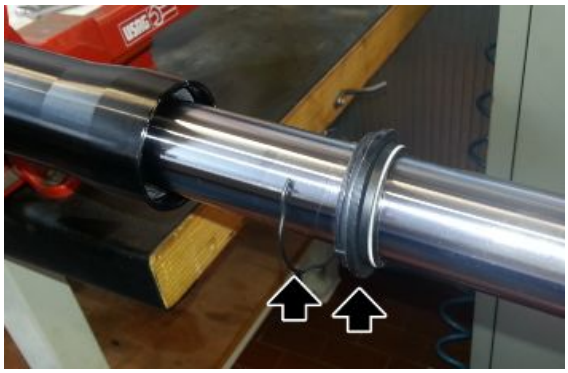
- Remove the lock washer

CAUTION

BEFORE PROCEEDING WITH THE FOLLOWING OPERATIONS GET A SUITABLE COLLECTION CONTAINER.

- Remove the stem from the vice and drain off the oil inside it into the collection container.

- Reposition the stem in the vice using the specific Teflon shoes.
- Remove the dust gaiter, taking care for the surface of the stem and the integrity of the dust gaiter.
- Remove the retainer ring.

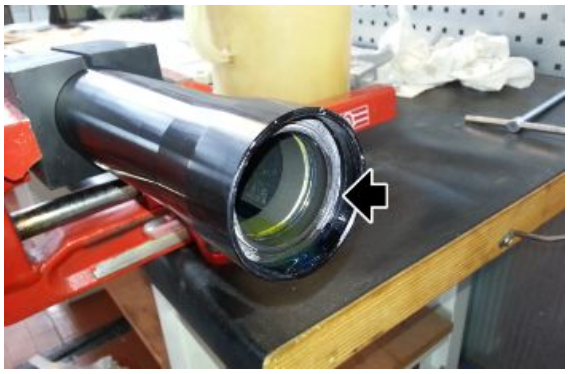


- Remove the stem from the sleeve.

CAUTION

BE CAREFUL NOT TO DAMAGE THE SLEEVE INTERIOR WHEN REMOVING THE DIFFERENT COMPONENTS.

- Remove the oil seal from the sleeve, taking care not to damage it

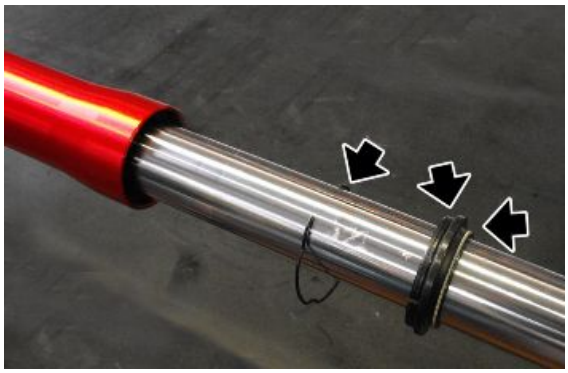


Checking the components

MINGXING FORK

WHEEL HOLDER STEM

- Check the sliding surface for scorings and/or scratches. These scorings can be eliminated by rubbing them with wet sandpaper (grain 1).
- If the scorings are deep, replace the stem.
- Use a dial gauge to check that the stem bending is below the limit value.



- If over the value, replace the stem.

Bending limit: 0.2 mm

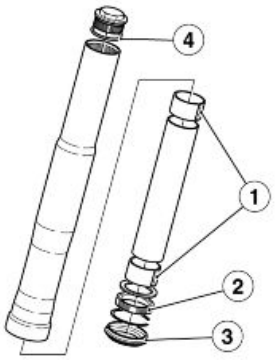
CAUTION

A BENT STEM SHOULD NEVER BE STRAIGHTENED BECAUSE ITS STRUCTURE WOULD BE WEAKENED AND USING THE VEHICLE MAY BECOME DANGEROUS.

- Replace the following components with new ones:

- sealing ring;
- dust guard;
- O-ring gasket on the cap.

- Check that there are no damages and/or cracks; otherwise, replace it.
- Check that the sliding bushings (1) for good conditions.
- If there are signs of excessive wear or damage, replace the affected component.



CAUTION

REMOVE ANY IMPURITY IN THE BUSHINGS, TAKING CARE NOT TO SCRATCH THEIR SURFACE.

PAIOLI FORKS

WHEEL HOLDER STEM

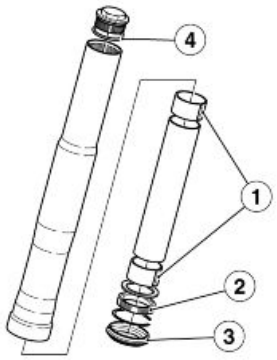
- Check the sliding surface for scorings and/or scratches. These scorings can be eliminated by rubbing them with wet sandpaper (grain 1).
- If the scorings are deep, replace the stem.
- Use a dial gauge to check that the stem bending is below the limit value.
- If over the value, replace the stem.

Bending limit: 0.2 mm

CAUTION

A BENT STEM SHOULD NEVER BE STRAIGHTENED BECAUSE ITS STRUCTURE WOULD BE WEAKENED AND USING THE VEHICLE MAY BECOME DANGEROUS.

- Check that there are no damages and/ or cracks; otherwise, replace it.
- Check that the sliding bushings (1) for good conditions.
- If there are signs of excessive wear or damage, replace the affected component.



CAUTION

REMOVE ANY IMPURITY IN THE BUSHINGS, TAKING CARE NOT TO SCRATCH THEIR SURFACE.

Replace the following components with new ones:

- sealing ring (2);

- dust scraper (3);

- O-rings on the cap (4).

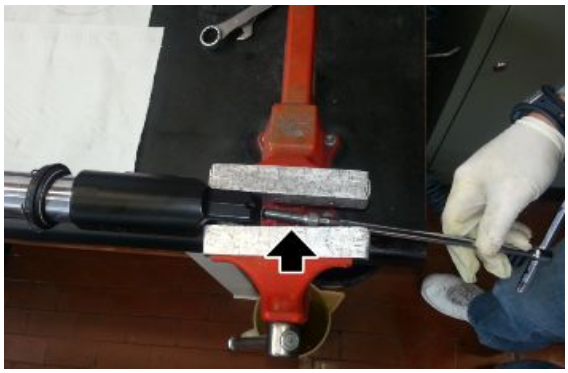
Reassembling the fork

PAIOLI FORKS

CAUTION

ONLY FOR THE RIGHT STEM IT IS POSSIBLE TO INSTALL THE COMPLETE PISTON OPERATING AS FOLLOWS

- Tighten the piston retaining screw on the foot of the fork and tighten it to the prescribed torque



CAUTION

THE FOLLOWING PROCEDURES ARE FOR A SINGLE WHEEL CARRIER STANCHION/SLEEVE ASSEMBLY, BUT ARE APPLICABLE TO BOTH.

- Insert the oil seal in the sleeve

- After inserting the dust gaiter in the stem as well as the retainer ring, insert the stem itself in the sleeve

- Position the retainer and push the dust gaiter into its seat

- Position the fork vertically in a vice
- Fill the fork with oil

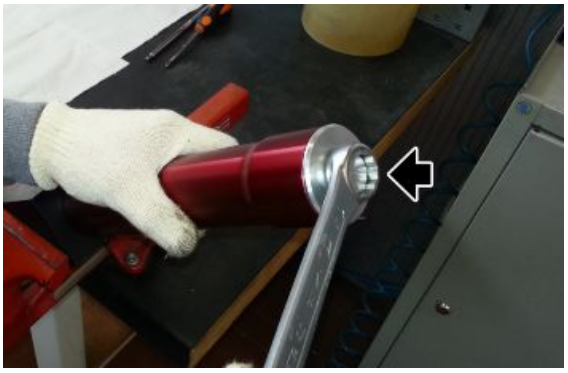
Characteristic

Fork Paioli oil

390+/-5 ml (0.086 +/-0.0010 UK gal; 0.103 +/-0.0013 US gal) (for each stem)

- Screw the cap on the piston and tighten it

- Screw the cap on the sleeve

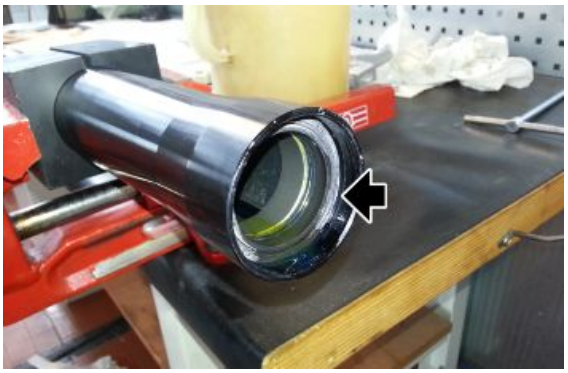


MINGXING FORK

CAUTION

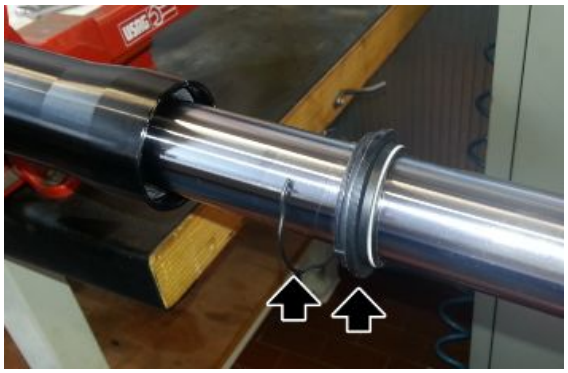
THE FOLLOWING PROCEDURES ARE FOR A SINGLE WHEEL CARRIER STANCHION/SLEEVE ASSEMBLY, BUT ARE APPLICABLE TO BOTH.

- Insert the oil seal in the sleeve



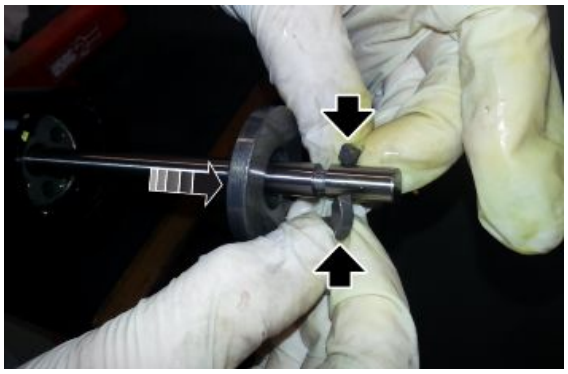
- After inserting the dust gaiter in the stem as well as the retainer ring, insert the stem itself in the sleeve

- Position the retainer and push the dust gaiter into its seat



- Insert the retainer ring

- Position the two half cylinders and lock them in place with the retainer ring



- Position the fork vertically in a vice
- Fill the fork with oil

Characteristic

Fork MingXing oil quantity

Right stem: 355+/-5 ml (0.0781+/-0.0011 UK gal; 0.0938 +/-0.0013 US gal)

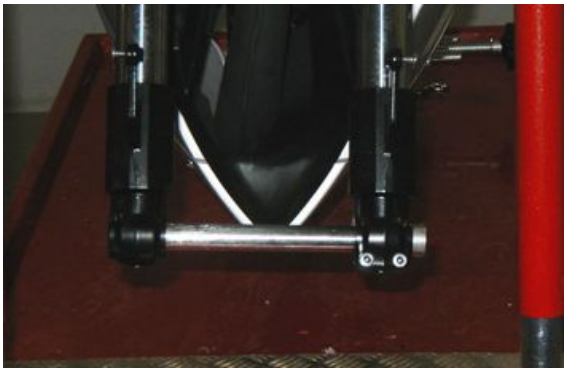
Left stem: 360 +/-5 ml (0.0792+/-0.0792+/-0.0011 UK gal; 0.0951 +/-0.0013 US gal)

- Screw the cap on the sleeve

Installing the fork legs

The following operations are described for the Paioli fork, but are identical for the operation with the fork model Mingxing, except where specified.

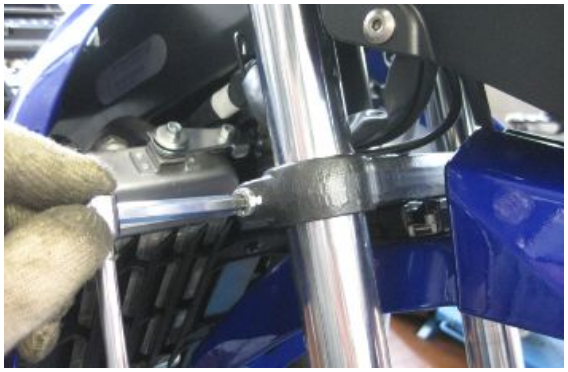
- Insert the sleeve together with the wheel holder stem on the lower and upper plates.
- Insert the wheel pin through both stems to align the holes.



- Insert the stems holding pipe on the lower plate, in the clamps of the front headlamp and on the upper plate.
- Insert the wheel pin through both sheaths to align the holes.

- Align the end of the upper plate to the top of the holding pipes (except the plug).
- Provisionally tighten the screw that locks the upper plate on the holding pipes.

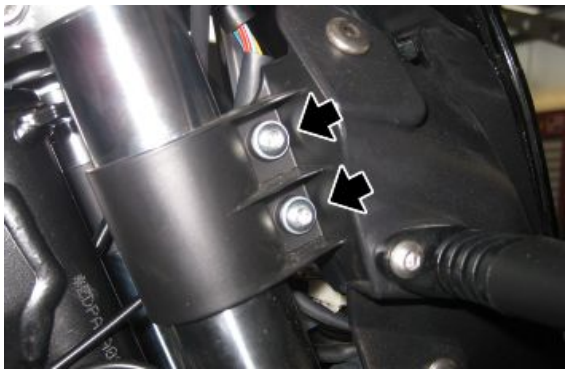
- Tighten the screws that lock the lower plate to the holding pipes to the prescribed torque.
- Tighten completely the screws that lock the upper plate to the holding pipes to the prescribed torque.



- For the operation with Paioli fork, tighten the sleeve fixing screw to the lower plate.
- For the operation with the Mingxing fork, operate in the same way on the two sleeve fixing screws at the lower plate.

- Tighten the screw that tightens the upper plate to the sleeve.

- Tighten the two screws on the front headlamp clamp.



- Fasten the brake piping to the left sheath.
- Slide off the wheel axle.
- Mount the front wheel.

- Fit the front brake calliper and tighten the two fixing screws.

See also

Removing the front wheel
Removal

- Lower the hoist arm.

CAUTION

BEFORE RELEASING THE BELTS MAKE SURE THAT THE OPTIONAL REAR SERVICE STAND IS ADEQUATELY POSITIONED.

- Correctly fit the lower shield, the mudguard, the front wheel, the brake callipers.
- Release the belts from the chassis.
- Check the proper fork operation by operating on the front brake and pushing repeatedly on the fork.
- The brake should operate progressively and there should be no oil marks on the stems.

CAUTION

BEFORE RIDING, CHECK THAT THE VEHICLE IS CORRECTLY SET.

Rear

Removing the rear wheel

BEFORE CARRYING OUT THE FOLLOWING OPERATIONS AND IN ORDER TO AVOID BURNS, ALLOW THE ENGINE AND SILENCER TO COOL OFF TO AMBIENT TEMPERATURE.

CAUTION

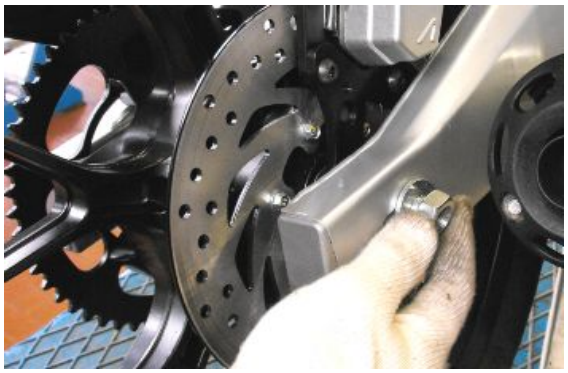
UPON REMOVING, PAY ATTENTION NOT TO DAMAGE THE BRAKE HOSES, DISCS AND PADS.

CAUTION

TO REMOVE THE REAR WHEEL, GET THE APPROPRIATE REAR SERVICE STAND (OPTIONAL).

- Place the vehicle on its optional rear stand.
- Remove the drive chain.
- Operating from both sides, remove the two adjuster screws.

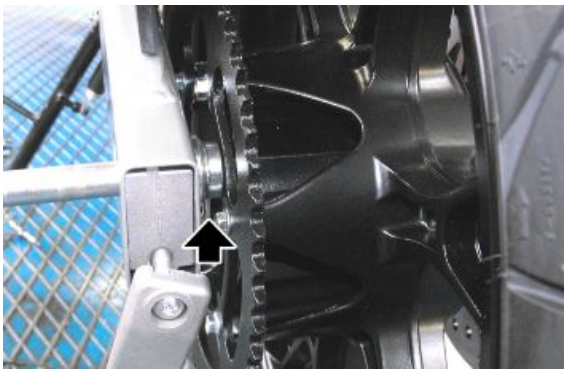
- Working from the right side of the vehicle, unscrew and remove the fixing nut and retrieve the washer.



See also

Drive chain

- Move the wheel a few millimetres and extract it, slide the pin off the left side.
- Collect the washer and the spacer.

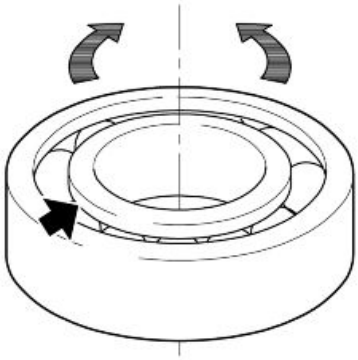


- Slide the rear wheel completely off and check the mechanical components.

Checking the rear wheel

CAUTION

CHECK THAT ALL PARTS ARE IN GOOD CONDITION, ESPECIALLY THOSE LISTED AS FOLLOWS.
BEARINGS, GASKETS, WHEEL PIN, RIM.



FLEXIBLE COUPLING

Check that the anti-vibration buffer is not damaged and/or excessively worn. Replace the buffer if necessary.

Insert the anti-vibration buffer in the wheel hub.

Fit the entire final transmission unit on the wheel, manually rotate the crown gear to right and left and check the clearance between the anti-vibration buffer and the hub. Replace the anti-vibration buffer if excessive clearance is found.

SPROCKET

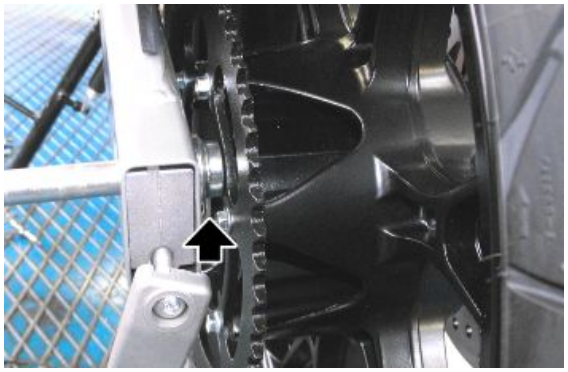
Check the toothing of the crown and the pinion. If excessive wear is found, replace: the crown, the pinion and the drive chain.

CAUTION

REPLACE ALL THREE PARTS TO PREVENT EARLY WEAR OF NEW COMPONENTS.

Installing the rear wheel

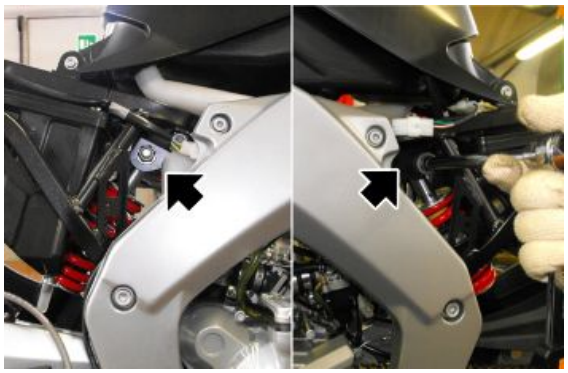
- Follow the removal steps but in reverse order, be careful to adequately position the spacers on the left side as indicated in the figure.
- Tighten the nuts to the prescribed torque.



Shock absorbers

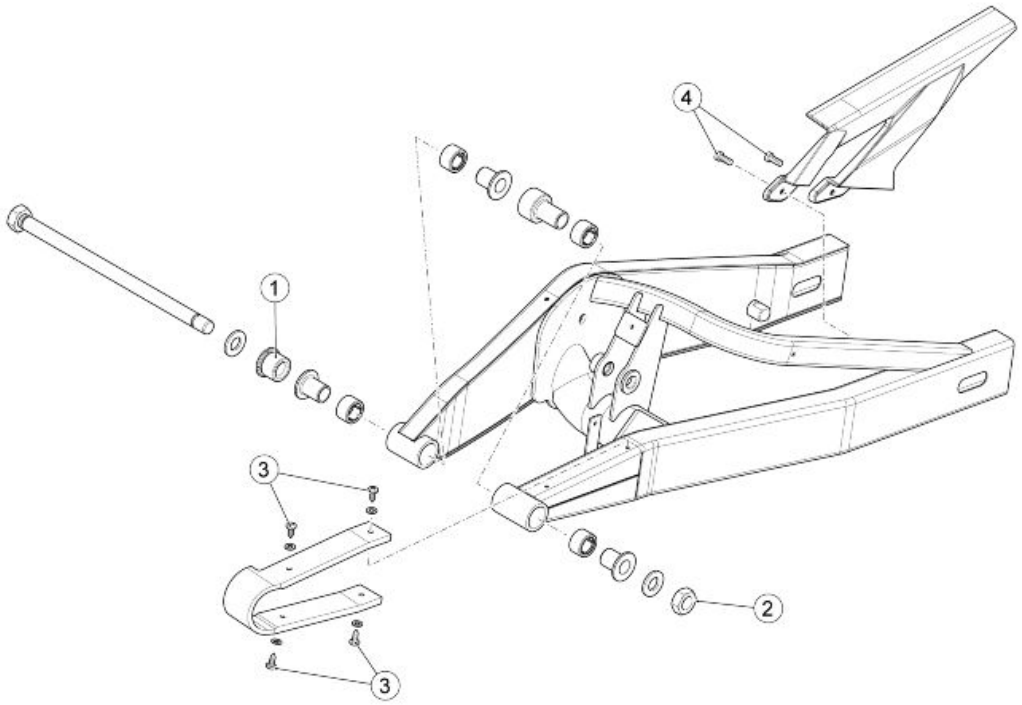
Removing

- Remove both central side fairings.
- Place the vehicle on its optional front service stand.
- Support the vehicle rear part using belts and hoist.
- Place a support under the swingarm, so that it stays in neutral position.
- Unscrew and remove the front screw and collect the washer
- At the same time, collect the nut and washer from the right side.



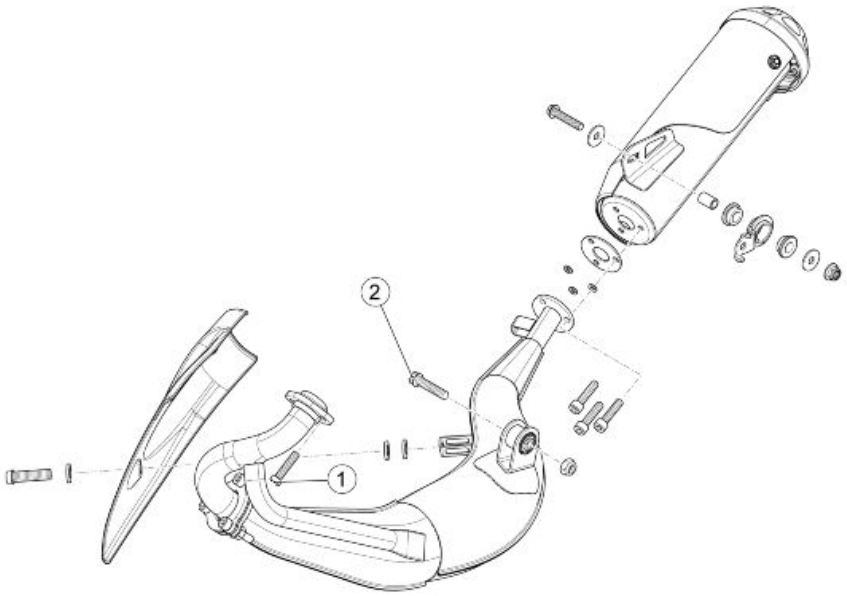
- Unscrew and remove the lower screw on the left side and collect the washer
- At the same time, collect the nut and washer from the right side.

INDEX OF TOPICS



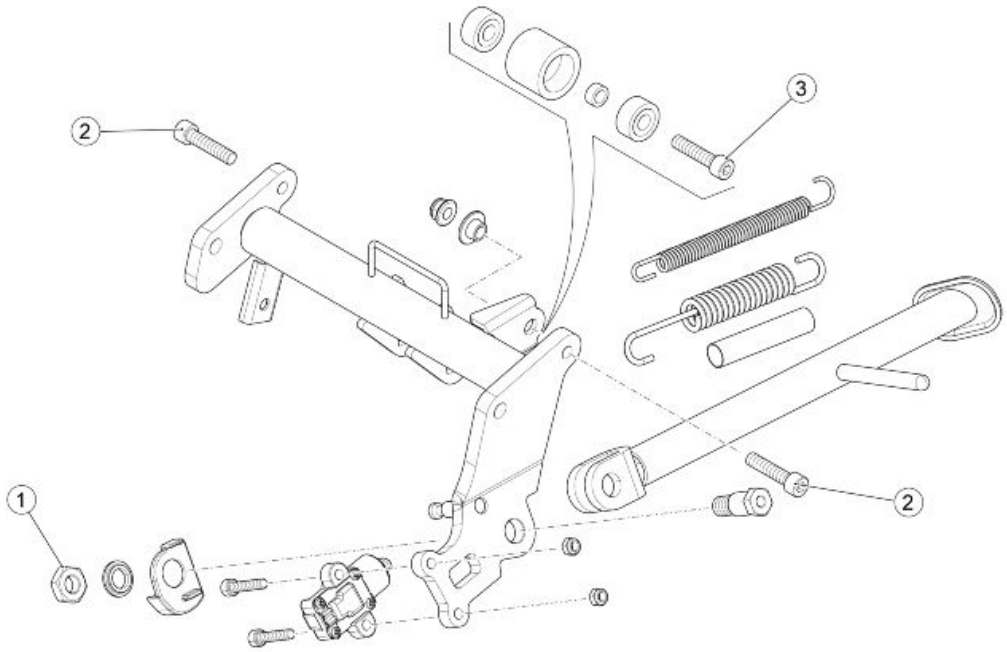
SWINGARM

pos.	Description	Type	Quantity	Torque	Notes
1	Swingarm to chassis adjustment nut	M25x1.5	1	15 Nm (11.06 lbf ft)	-
2	Swingarm pin nut	M14	1	78 Nm (57.52 lbf ft)	-
3	Chainguard fixing screw	M 4.8x13	4	1 Nm (0.74 lbf ft)	-
4	Chainguard fixing screw	Self-tap.	2	-	-



EXHAUST

pos.	Description	Type	Quantity	Torque	Notes
1	Drainage retainer	M6x20	2	10 Nm (7.37 lbf ft)	-
2	Footrest retainer	M8x40	1	25 Nm (18.43 lbf ft)	-



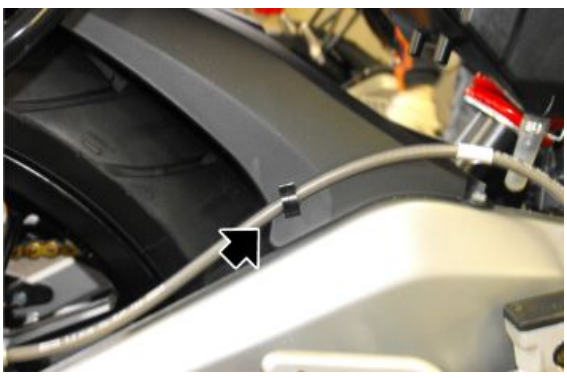
STAND

pos.	Description	Type	Quantity	Torque	Notes
1	Thin nut	M10x1.25	1	10 Nm (7.38 lb ft)	-
2	TCEI screw	M8x30	2	25 Nm (18.43 lb ft)	Loctite 243
3	TCEI screw	M8x45	1	25 Nm (18.43 lb ft)	-

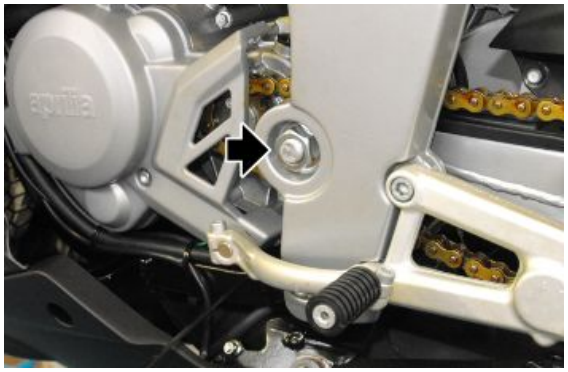
Swinging arm

Removing

- Place the vehicle on its OPTIONAL front service stand.
- Support the vehicle rear part using belts and hoist.
- Remove the rear brake calliper and take off the pipe.
- Remove the wheel and rear shock absorber.



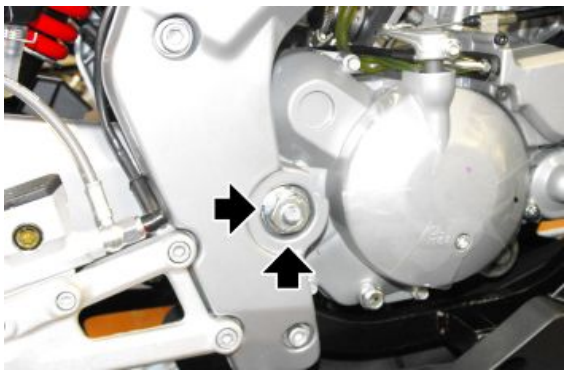
- Operating on both sides, loosen the swingarm pin tightening nut.
- Working on the left side, unscrew and remove the nut and collect the washer.



See also

Removal
Removing the rear wheel
Removing

- Working from the right side of the vehicle, unscrew and remove the nut and retrieve the washer.
- Then loosen the tightening ring with the suitable special key.



Specific tooling

866714 Tools for the swingarm nut adjustment

- Lightly tap with a rubber hammer, slide the swingarm pin off the left side of the vehicle.
- If necessary, remove the rear mudguard and the chainguard.

Installing

Drive chain

Removing

- Support the vehicle with the optional rear stand.
- Loosen the chain tension, by unscrewing the rear adjuster screws.
- Identify the master link; slide off the clip.
- Remove the plate underneath.
- Collect the chain.

CAUTION

REPLACE THE ENTIRE UNIT IF THE CHAIN IS PARTICULARLY WORN.

See also

Adjusting

inspection

Also check the following parts and make sure that the chain, pinion and crown do not present:

- Damaged rollers.
- Loose pins.
- Dry, rusty, flattened or jammed chain links.
- Excessive wear.
- Excessively worn or damaged pinion or crown teeth.

CAUTION

IF THE CHAIN ROLLERS ARE DAMAGED AND / OR THE PINS ARE LOOSE, THE ENTIRE CHAIN UNIT (PINION, CROWN AND CHAIN) SHOULD BE REPLACED.
LUBRICATE THE CHAIN ON A REGULAR BASIS, PARTICULARLY IF YOU DETECT DRY OR RUSTY PARTS.
FLATTENED OR JAMMED CHAIN LINKS SHOULD BE LUBRICATED AND GOOD OPERATING CONDITIONS RESTORED.

Installing

- Check the correct positioning of the chain on the pinion and the sprocket.
- Fit the chain with the two ends joined at a point between the pinion and the sprocket on the lower branch of the chain.
- Join the two ends of the chain and fit the master link pins from the inside to the outside.
- Insert the plate on the pins.
- Fit the clip on the pins.

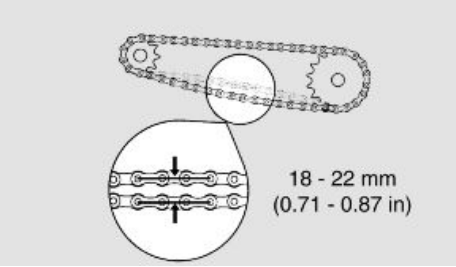
CAUTION

THE MASTER LINK CLIP MUST BE FITTED WITH ITS OPEN SIDE FACING DIRECTION OPPOSITE THE CHAIN FORWARD MOVEMENT.

Adjusting

To check clearance:

- Shut off the engine.
- Rest the vehicle on its stand.
- Engage neutral gear.
- Check vertical oscillation, midway between pinion and sprocket, in the lower chain length.
- If the chain clearance is less than 18 mm (0.71 in) or exceeds 22 mm (0.87 in), adjust the chain.
- Move the vehicle forward so as to check vertical oscillation of the chain in other positions too. clearance should remain constant at all wheel rotation phases.



CAUTION

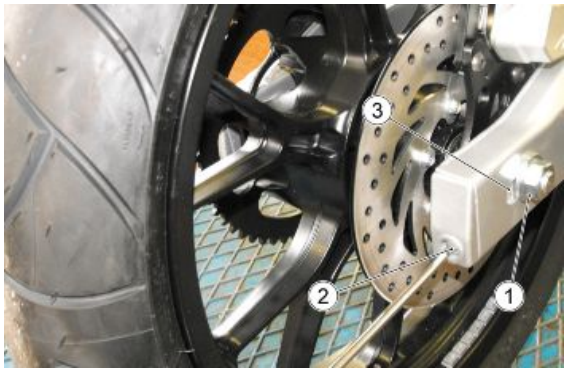
IF CLEARANCE IS GREATER AT SOME POSITIONS, THIS MEANS THAT SOME CHAIN LINKS ARE FLATTENED OR JAMMED.
TO AVOID RISK OF SEIZURE, LUBRICATE THE CHAIN ON A REGULAR BASIS.

CAUTION

GET A SPECIFIC REAR SERVICE STAND (OPT) TO ADJUST THE CHAIN.

If you need to adjust the chain tension after the check, perform the following.

- Place the vehicle on its optional rear service stand.
- Working from both sides, loosen the nut (1) completely.
- Actuate on the adjuster screws (2) and adjust the chain clearance according to the references (3).
- Check that the references (3) are aligned on both sides.
- Then tighten the nuts (1).



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IF CLEARANCE IS GREATER AT SOME POSITIONS, THIS MEANS THAT SOME CHAIN LINKS ARE FLATTENED OR JAMMED.
TO AVOID RISK OF SEIZURE, LUBRICATE THE CHAIN ON A REGULAR BASIS.

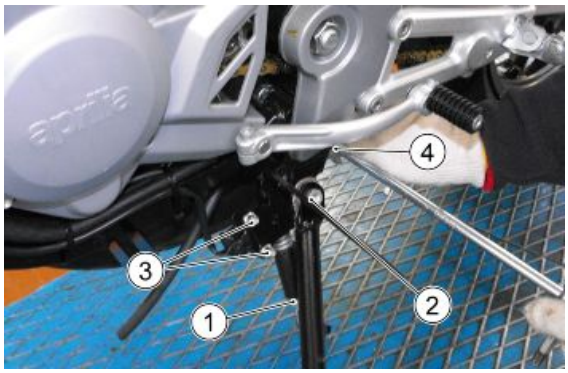
CAUTION

GET A SPECIFIC REAR SERVICE STAND (OPT) TO ADJUST THE CHAIN.

Stand

Side stand

- Rest the vehicle on the optional rear stand.



Stand rod removal

- With closed stand, release the spring (1)
- Unscrew and remove the nut (2).

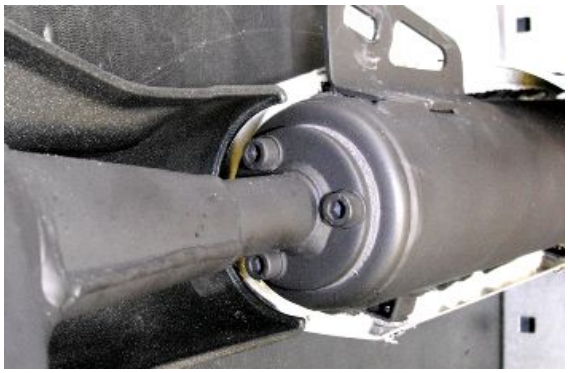
Remove stand together with the plate

- Unscrew and remove the two stand switch fixing nuts (3).
- Unscrew and remove the internal nut and the pin (4) by collecting the washer.
- Slide off the stand together with the plate.

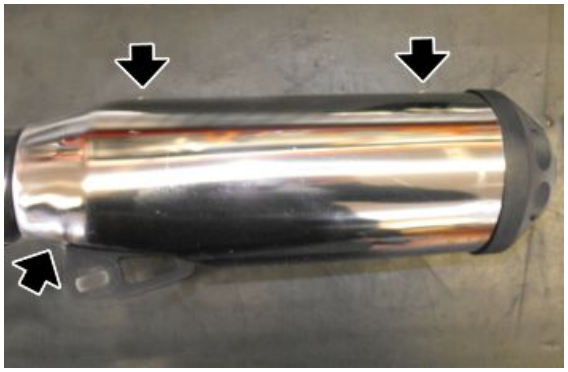
Exhaust

Removing the tail pipe

- The muffler can also be removed with the fitted exhaust.
- Unscrew and remove the three screws.



- If necessary, unscrew and remove the three screws and remove the rear cover.



Removing the manifold - tail pipe

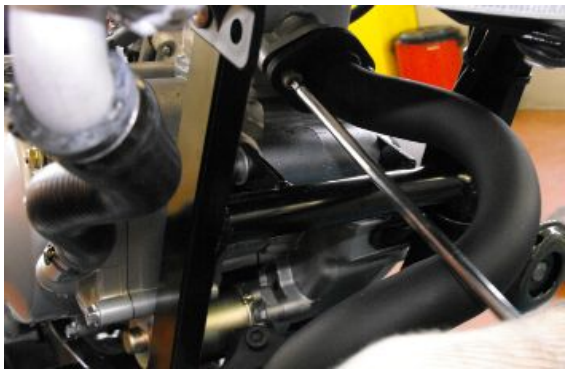
- Remove the fairing and the lug.
- Unscrew and remove the stay-bolts and collect the nut.

- Unscrew and remove the screw and collect the two washers.

See also

Side fairings
Lower cowl
Removing the tail pipe

- Extracting the exhaust, unscrew both front fixing screws at the head.



- Slide off the complete exhaust.
- If necessary, remove the muffler and the cover.

- If necessary, unscrew and remove the three screws and remove the central exhaust cover.

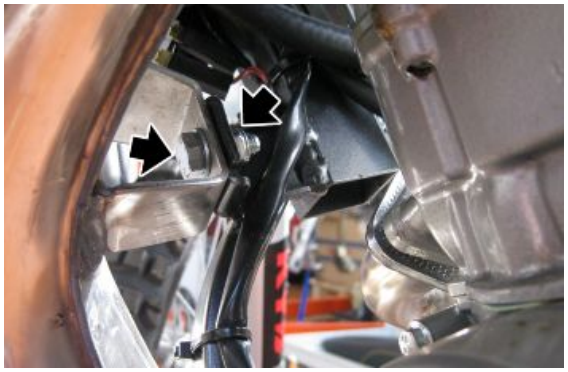
Removing the exhaust manifold

- Remove the exhaust end.
- Unscrew and remove the two screws from cylinder.

Locking torques (N*m)

Silencer to cylinder 9 Nm (6.64 lbf ft)

- Unscrew and remove the front nut, retrieve the screw.
- Remove the exhaust manifold.



See also

Removing the tail pipe

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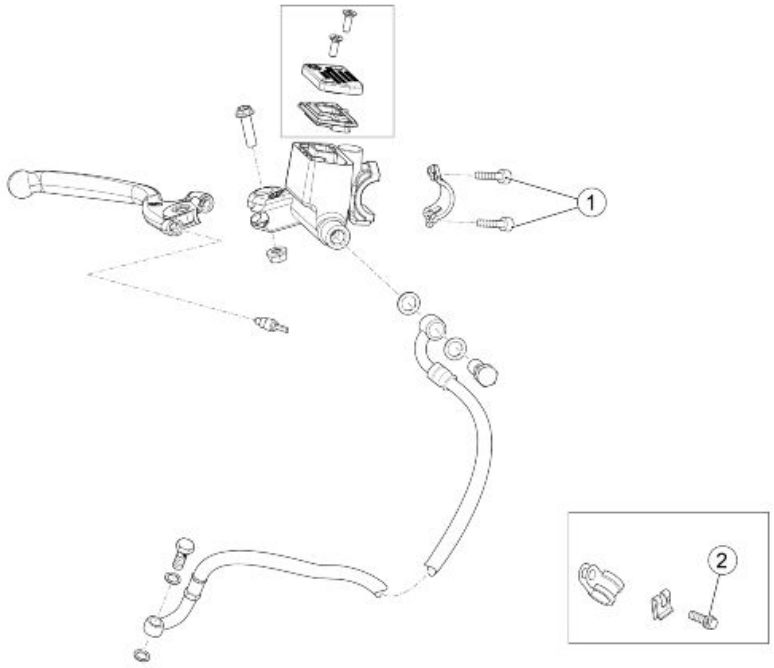
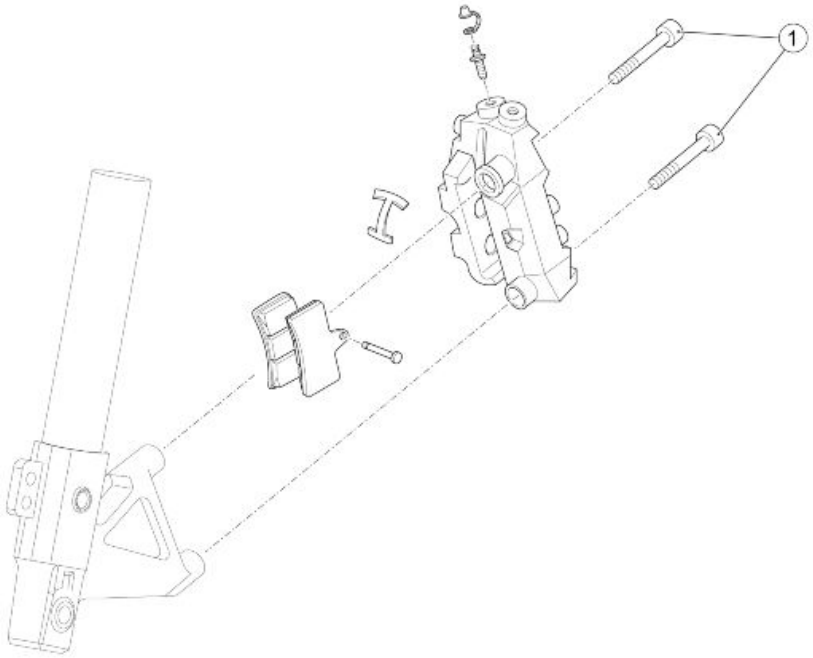


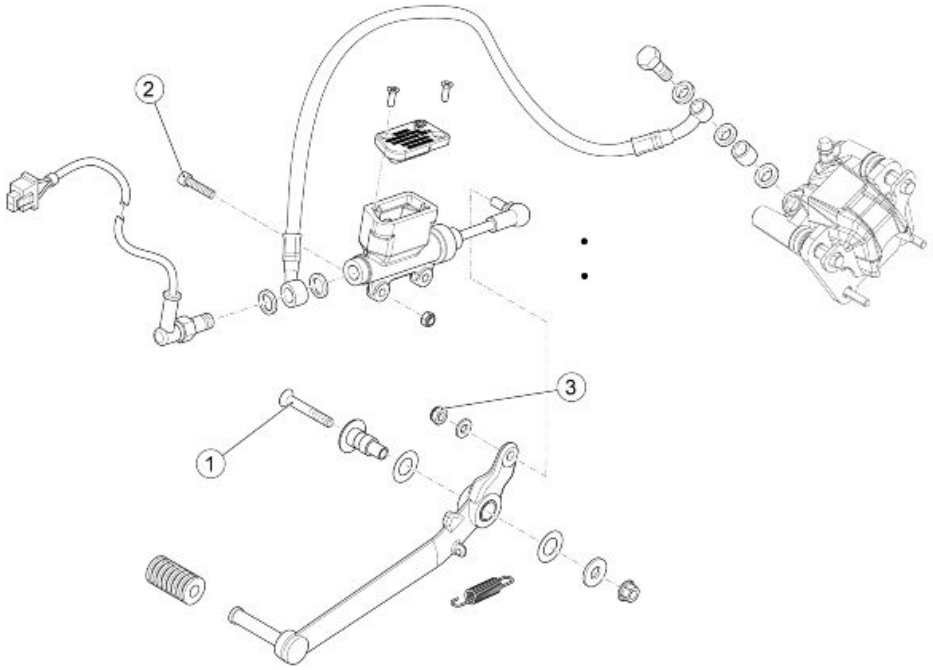
FRONT BRAKE PUMP

pos.	Description	Type	Quantity	Torque	Notes
1	Front brake pump fixing screw	M5	2	5 Nm (3.68 lbf ft)	-
2	Brake pipe clamp fixing screw	M5x16	1	5 Nm (3.68 lbf ft)	-



FRONT CALLIPER

pos.	Description	Type	Quantity	Torque	Notes
1	Front calliper fixing screw	M10x60	2	50 Nm (36.87 lbf ft)	-



REAR BRAKING SYSTEM

pos.	Description	Type	Quantity	Torque	Notes
1	Brake lever fixing screw	M6x40	1	12 Nm (8.85 lbf ft)	-
2	Rear brake pump fixing screw	M6x30	2	10 Nm (7.37 lbf ft)	-
3	Brake pump joint retainer	M6	1	10 Nm (7.37 lbf ft)	-

Rear brake calliper

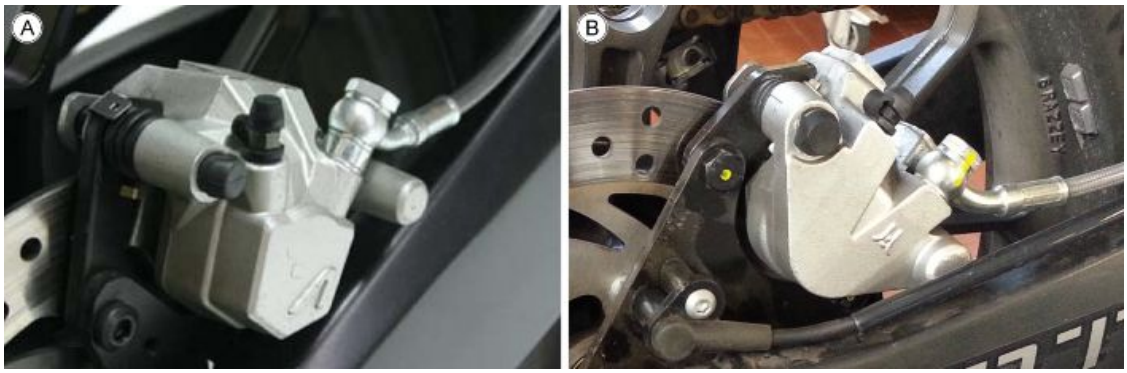
CAUTION

THE MOTORCYCLE MAY BE FITTED WITH AN A.J.P. OR J.JUAN BRAKING SYSTEM.
THE PROCEDURES FOR REMOVING AND INSTALLING THE BRAKE CALLIPER ARE IDENTICAL

key:

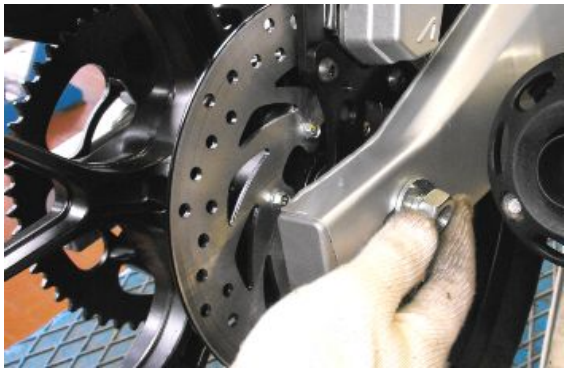
A) A.J.P. Brake calliper

B) J.JUAN Brake calliper



Removal

- Release the chain.
- Loosen the wheel axle, acting on the nut, from the right side of the vehicle and on the pin, from the left side.



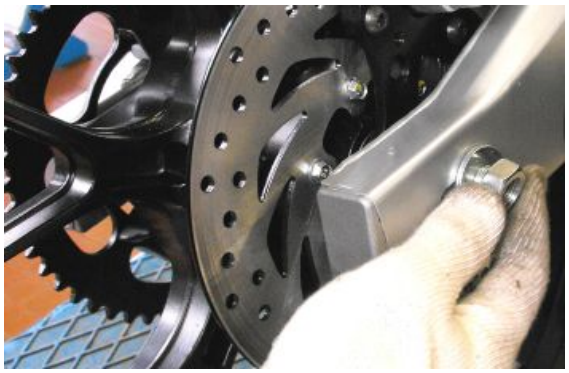
- Move the rear wheel.
- Move the rear brake calliper plate until the end and slide it one off.

- Undo the joint from the rear calliper after placing an appropriate container to collect the brake fluid.
- Remove the speed sensor.
- It is now possible to remove the complete calliper

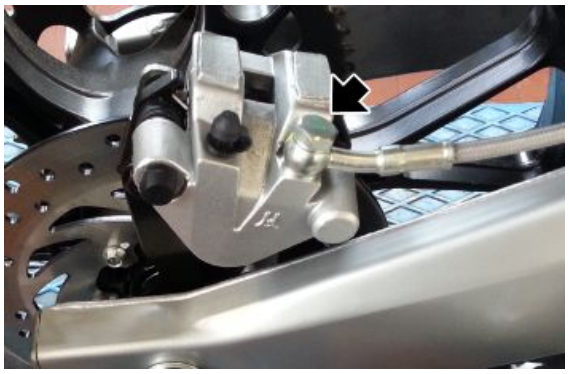
Installing

- Place the complete calliper on the specific lodging on the swingarm.
- Connect the drive chain after positioning the wheel and insert the retaining pin

- Insert the washer, the nut and fix the pin at the prescribed torque



- Connect the braking system line to the calliper and proceed with bleeding.



Front brake calliper

CAUTION

THE MOTORCYCLE MAY BE FITTED WITH AN A.J.P. OR A J.JUAN BRAKING SYSTEM. THE PROCEDURES FOR REMOVING AND INSTALLING THE BRAKE CALLIPER ARE IDENTICAL

key:

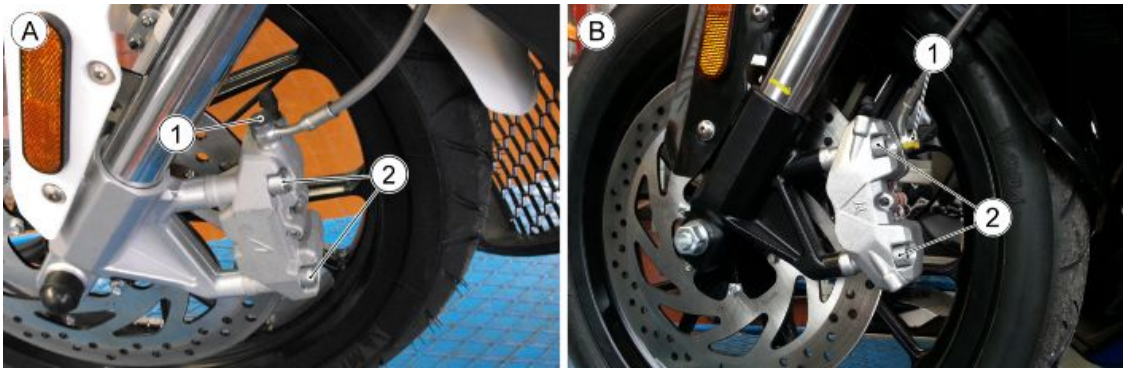
A) A.J.P. Brake calliper

B) J.JUAN Brake calliper

Removal

- Carry out the drainage of the front braking system.
- Unscrew the screw (1) and slide off the brake oil pipe.

- Unscrew and remove both calliper fixing screws (2).
- Slide off the front brake calliper.



See also

Bleeding the braking system

Rear brake disc

Removal

- Remove the wheel.
- Unscrew and remove the six disc fixing screws.
- Upon refitting, position the disc adequately so that the inscriptions are on the external side.
- Tighten to the specified torque.

Disc Inspection

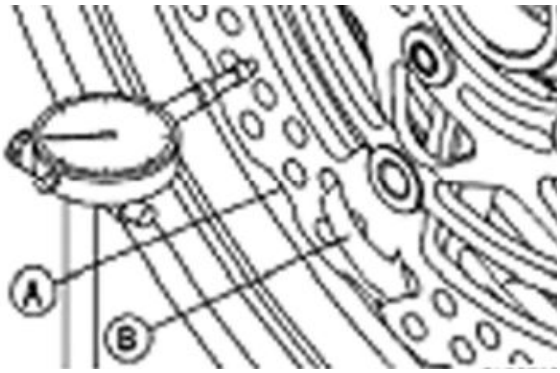
- Check the disc thickness (1) at the most worn points.
- If the disc thickness is less than the minimum limit, replace it. The measurement area is approximately at the point (2).

In case of cracks or slots, replace it.

Standard thickness of the disc: 3.5 mm (0.13 in).

Serviceability limit: 3 mm (0.11 in).

- Check the decentralisation with a micrometer by placing it on the disc (A) and turning the wheel.
- If the decentralisation exceeds the serviceability limit, replace the disc.



Decentralisation of the disc: 0.2 mm

Front brake disc

Removal

- Remove the wheel.
- Unscrew and remove the six disc fixing screws.
- Upon refitting, position the disc adequately so that the inscriptions are on the external side.
- Tighten to the specified torque.

Locking torques (N*m)

Front brake disc 10 - 12

Disc Inspection

- Check the disc thickness (A) at the most worn points. If the disc is worn more than the specific limit, replace it.

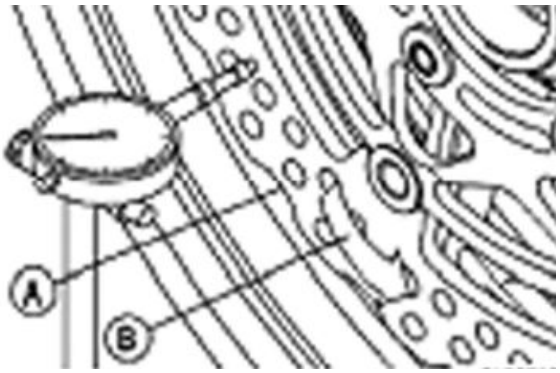
Measurement area (2).

- Check that there are no cracks and slots, if it does not comply with the specifications, replace it.

Standard thickness of the disc: 4mm (0.15 in)

Serviceability limit: 3.50 mm (0.13 in)

- Check the decentralisation with a micrometer by placing it on the disc (A) and turning the wheel.
- If the decentralisation exceeds the serviceability limit, replace the disc.



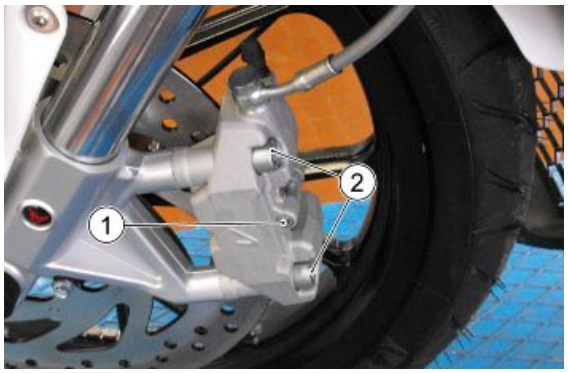
Decentralisation of the disc: 0.2 mm

Front brake pads

Removal

A.J.P. BRAKE CALLIPER

- Loosen the central pad fastener screw (1) on the front brake calliper, on the left hand side of the vehicle.
- Undo and remove the two screws (2) fastening the brake calliper.



- Remove the brake calliper.
- Remove the screw (1) and retrieve the two pads from below.

- Check the pads.
- Measure the thickness of the brake pads. If one of the two falls under the serviceability limit, replace them.

Serviceability limit 1.5 mm (0.05 in).

WARNING

IF THE BRAKE LEVER STARTS WITHOUT THE CALLIPER IT MAY BE NECESSARY TO CARRY OUT BLEEDING.

J.JUAN BRAKE CALLIPER

- On the front brake calliper on the left hand side of the vehicle, undo and remove the two brake calliper fastener screws.

- Remove the circlip.

- Remove the pad fastener pin.

- Remove the pads.

- Check the pads.

- Measure the thickness of the brake pads. If one of the two falls under the serviceability limit, replace them.

Serviceability limit 1.5 mm (0.05 in).

WARNING

IF THE BRAKE LEVER STARTS WITHOUT THE CALLIPER IT MAY BE NECESSARY TO CARRY OUT THE CORRESPONDING BLEEDING.

Rear brake pads

Removal

NOTE

THE PAD DISASSEMBLY AND INSTALLATION PROCEDURES FOR THE BRAKE CALLIPER ARE THE SAME FOR BOTH THE A.J.P AND THE J.JUAN SYSTEM.

WARNING

IF THE BRAKE LEVER STARTS WITHOUT THE CALLIPER IT MAY BE NECESSARY TO CARRY OUT BLEEDING.

- Remove the rear brake calliper.
- Press on the external pad in the direction of the arrow.

- Remove the pads.

- Check the pads.
- Measure the thickness of the brake pads. If one of the two falls under the serviceability limit, replace them.

Serviceability limit 1.5 mm (0.05 in).

WARNING

IF THE BRAKE LEVER STARTS WITHOUT THE CALLIPER IT MAY BE NECESSARY TO CARRY OUT THE CORRESPONDING BLEEDING.

Bleeding the braking system

NOTE

IF AIR CONTINUES TO COME OUT DURING THE BLEED OPERATION EXAMINE ALL THE FITTINGS:
IF SAID FITTINGS DO NOT SHOW SIGNS OF BEING FAULTY, LOOK FOR THE AIR INPUT AMONG THE VARIOUS SEALS ON THE PUMP AND CALLIPER PISTONS.

CAUTION

DURING THESE OPERATIONS, THE VEHICLE MUST BE UPRIGHT.

NOTE

DURING THE BLEEDING OPERATIONS FREQUENTLY CHECK THE LEVEL TO PREVENT AIR GETTING INTO THE SYSTEM THROUGH THE PUMP.

WARNING

BRAKE FLUID IS HYGROSCOPIC; IT TENDS TO ABSORB MOISTURE FROM THE SURROUNDING AIR.
IF THE LEVEL OF MOISTURE IN THE FLUID EXCEEDS A GIVEN VALUE, BRAKING EFFICIENCY WILL BE REDUCED.
THEREFORE, ALWAYS USE FLUID FROM SEALED CONTAINERS.
UNDER NORMAL DRIVING AND CLIMATIC CONDITIONS YOU SHOULD CHANGE THIS LIQUID EVERY TWO YEARS.
IF THE BRAKES ARE USED INTENSELY AND/OR IN HARSH CONDITIONS, CHANGE THE FLUID MORE FREQUENTLY.

CAUTION

WHEN CARRYING OUT THE OPERATION, BRAKE FLUID MAY LEAK FROM BETWEEN THE BLEED SCREW AND ITS SEAT ON THE CALLIPER. CAREFULLY DRY THE CALLIPER AND DEGREASE THE DISC SHOULD THERE BE OIL ON IT. WHEN THE OPERATION IS OVER, TIGHTEN THE OIL BLEED SCREW TO THE PRESCRIBED TORQUE.

CAUTION

MAKE SURE THE BRAKE FLUID DOES NOT GET INTO YOUR EYES OR ON YOUR SKIN OR CLOTHES. IF THIS HAPPENS ACCIDENTALLY, WASH WITH WATER.

WARNING

BRAKE CIRCUIT FLUID IS VERY CORROSIVE; DO NOT LET IT COME INTO CONTACT WITH THE PAINTED PARTS.

key:

A) A.J.P. Brake calliper

B) J.JUAN Brake calliper

Front

Any air trapped in the hydraulic circuit acts as a cushion, absorbing much of the pressure applied by the brake pump and minimising the braking power of the calliper.

The presence of air is signalled by the "sponginess" of the brake control and poor braking efficiency.

CONSIDERING THE DANGER FOR VEHICLE AND RIDER, IT IS STRICTLY NECESSARY, AFTER REFITTING BRAKES AND RESTORING THE BREAKING SYSTEM TO THE REGULAR USE CONDITIONS, THAT THE HYDRAULIC CIRCUIT BE AIR PURGED.

NOTE

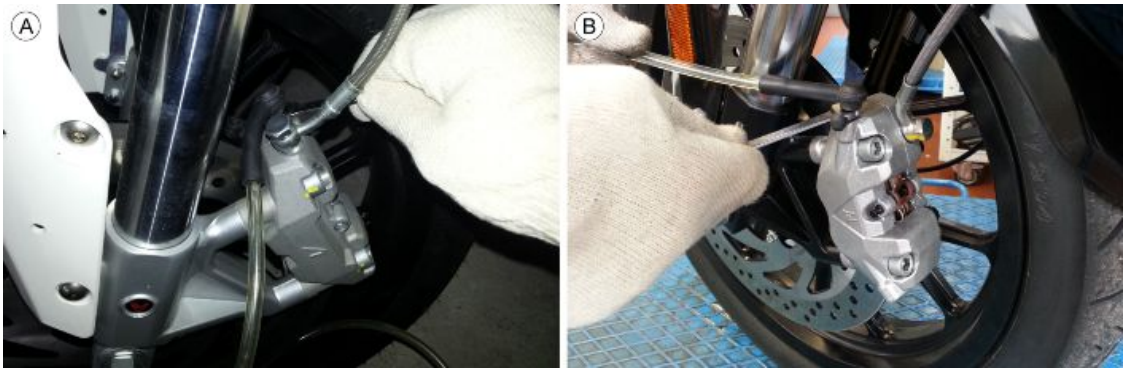
THE FOLLOWING OPERATIONS REFER TO ONLY ONE FRONT BRAKE CALLIPER BUT APPLY TO BOTH CALLIPERS. THE VEHICLE MUST BE ON LEVEL GROUND TO BE PURGED. WHILE PURGING THE HYDRAULIC SYSTEM, FILL THE RESERVOIR WITH THE NECESSARY QUANTITY

OF BRAKE FLUID. CHECK THAT, DURING THE OPERATION, THERE IS ALWAYS BRAKE FLUID IN THE RESERVOIR.

- Remove the rubber protection cover from the bleed valve.
- Insert the transparent plastic pipe in the front brake calliper bleed valve and slide the other end of this pipe in a container to collect the fluid.
- Remove the front brake fluid reservoir cap.
- Quickly press and release the front brake lever several times and then keep it fully pressed.
- Loosen the bleed valve 1/4 of a turn so that the brake fluid flows into the container. This will release the tension on the brake lever and will make it reach the end of stroke.
- Close the bleed valve before the lever reaches its end of stroke.
- Repeat the operation until the fluid draining into the container is air-bubble free.

NOTE

WHILE PURGING THE HYDRAULIC SYSTEM, FILL THE RESERVOIR WITH THE NECESSARY QUANTITY OF BRAKE FLUID. CHECK THAT, DURING THE OPERATION, THERE IS ALWAYS BRAKE FLUID IN THE RESERVOIR.



- Screw the bleeding valve and remove the pipe.
- Top-up the reservoir until the correct brake fluid level is obtained.
- Refit and block the front brake oil reservoir cap.
- Refit the rubber protection cover.

Rear

Any air trapped in the hydraulic circuit acts as a cushion, absorbing much of the pressure applied by the brake pump and minimising the braking power of the calliper.

The presence of air is signalled by the "sponginess" of the brake control and poor braking efficiency.

CAUTION

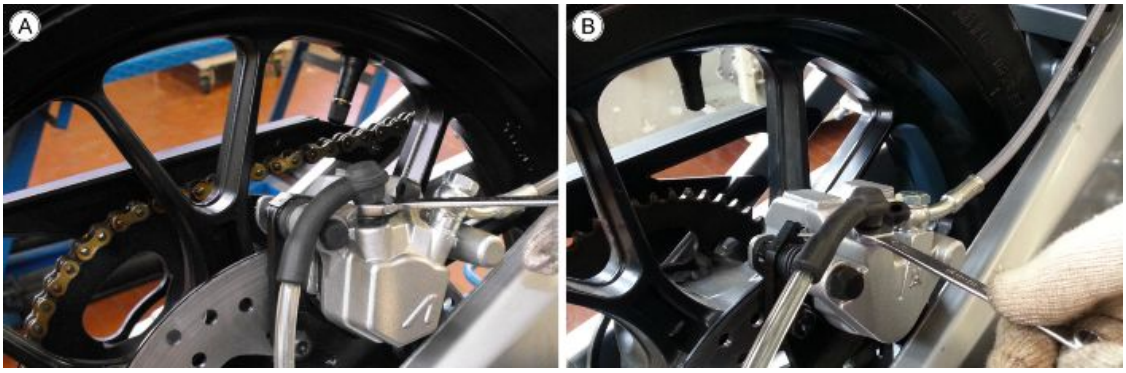
CONSIDERING THE DANGER FOR VEHICLE AND RIDER, IT IS STRICTLY NECESSARY, AFTER REFITTING BRAKES AND RESTORING THE BRAKING SYSTEM TO THE REGULAR USE CONDITIONS, THAT THE HYDRAULIC CIRCUIT BE AIR PURGED. THE VEHICLE MUST BE ON LEVEL GROUND TO BE PURGED. WHILE PURGING THE HYDRAULIC SYSTEM, FILL THE RESERVOIR WITH THE NECESSARY QUANTITY OF BRAKE FLUID. CHECK THAT, DURING THE OPERATION, THERE IS ALWAYS BRAKE FLUID IN THE RESERVOIR.

- Remove the rubber protection cover from the bleed valve.

- Insert the transparent plastic pipe in the rear brake calliper bleed valve and insert the other end of this pipe into a container to collect the fluid.
- Remove the rear brake fluid reservoir cap.
- Quickly press and release the rear brake lever several times and then keep it fully pressed.
- Loosen the bleed valve 1/4 of a turn so that the brake fluid flows into the container. This will release the tension on the brake lever and will make it reach the end of stroke.
- Close the bleed valve before the lever reaches its end of stroke.
- Repeat the operation until the fluid draining into the container is air-bubble free.

NOTE

WHILE PURGING THE HYDRAULIC SYSTEM, FILL THE RESERVOIR WITH THE NECESSARY QUANTITY OF BRAKE FLUID CHECK THAT, DURING THE OPERATION, THERE IS ALWAYS BRAKE FLUID IN THE RESERVOIR.



- Screw the bleeding valve and remove the pipe.
- Top-up the reservoir until the correct brake fluid level is obtained.
- Refit and lock the rear brake oil reservoir cap.
- Refit the rubber protection cover.

Changing the brake fluid

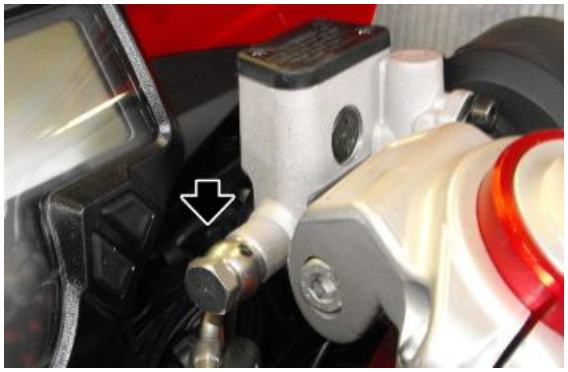
- To replace the brake fluid, operate the same way as for the front part and for the rear one.
- Open the brake fluid tank, unscrewing the two screws and removing the cover and gasket.
- Drain the system as for the bleeding procedure, proceeding till reaching the indicated level in the inspection glass.
- Place the gasket and the cover and tighten the two fixing screws.

WARNING

IF THE BRAKE LEVER STARTS WITHOUT THE CALLIPER IT MAY BE NECESSARY TO CARRY OUT THE CORRESPONDING BLEEDING.

Front brake pump

- Unscrew and remove the screw and, by disconnecting the hoses, collect the brake oil in the tank, in an adequate container.
- Unscrew and remove the two U-bolt fixing screw at the handlebar and slide off the front brake pump tank.
- During the refit, carry out the described operations, in reverse order, tightening the screws to the prescribed torque.



Rear brake pump

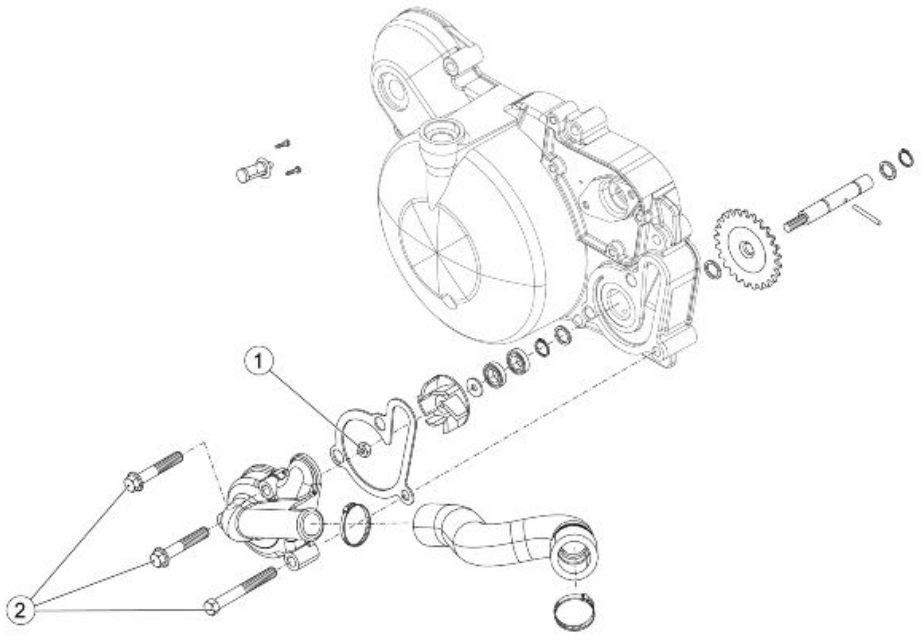
Rimozione

- Unscrew the screw, disconnect the pipe, collect the break fluid in an adequate container.

- Unscrew and remove the two screws and collect the corresponding nuts.

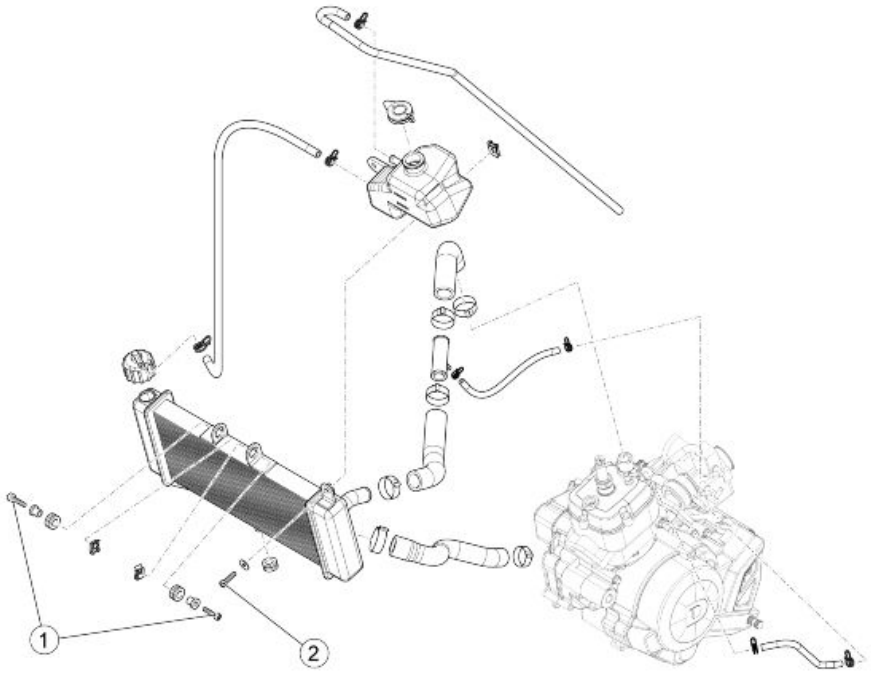
- Unscrew and remove the nut, retrieving the nut.
- Slide off the rear brake pump.
- During the refit, work in reverse order as described.

INDEX OF TOPICS



WATER PUMP

pos.	Description	Type	Quantity	Torque	Note
1	Water pump shaft retainer	M5	1	3.5-4.5 Nm (2.58-3.31 lbf ft)	-
2	Water pump cover retainer	M6x100	3	8-10 Nm (5.90-7.38 lbf ft)	-



RADIATOR

pos.	Description	Type	Quantity	Torque	Notes
1	Radiator retainer	M6x25	2	10 Nm (7.37 lbf ft)	-
2	Expansion tank support fixing screw	M6x20	1	3.5-4 Nm (2.58-2.95 lbf ft)	-

Coolant replacement

CAUTION

DO NOT USE YOUR VEHICLE IF THE COOLANT IS BELOW THE MINIMUM LEVEL.
CHECK THE COOLANT LEVEL PERIODICALLY OR AFTER LONG TRIPS.

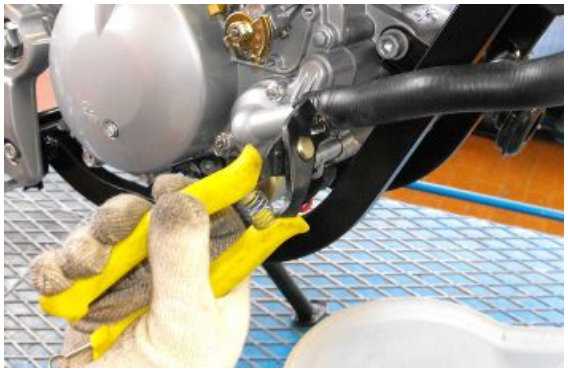
- Remove the right fairing.

- Working on the left side of the vehicle, open the expansion tank cap.

See also

Side fairings

- Release the clamp.



Slide the pipe off and let the cooling liquid spill out, by pouring it into a container of a suitable capacity.

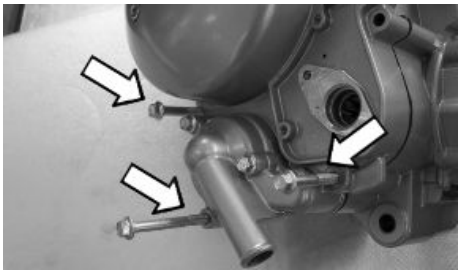
CAUTION

DO NOT DISPOSE OF THE FLUID INTO THE ENVIRONMENT.

Water pump

Removal

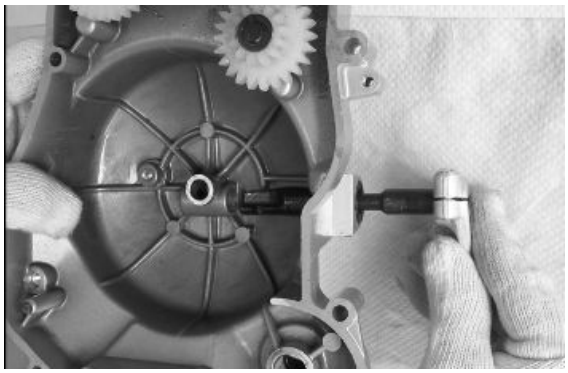
- Remove the clutch cover
- The longer screws are highlighted in the figure
- Remove the crankcase cover gasket and clean off any rests of old gaskets that may remain on the crankcase or the cover

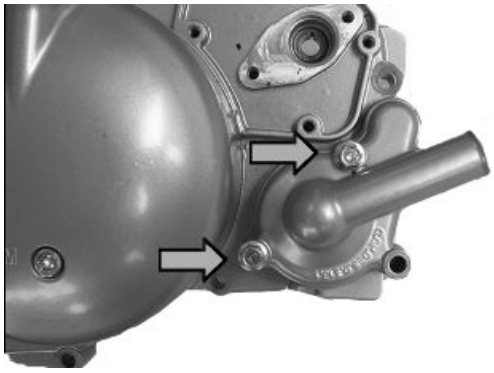


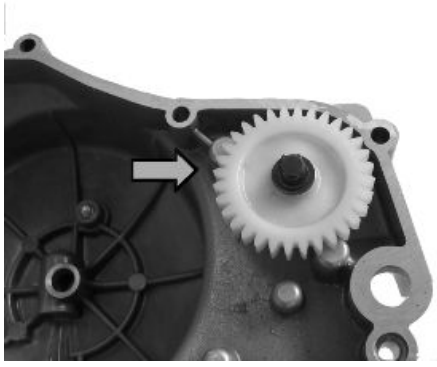
See also

Removing the clutch cover

- Slide off and remove the clutch lever from the clutch cover
- Undo the two fixing screws of the hydraulic pump and remove the pump
- Detach the gasket and clean off any rests of old gaskets that may be left on the coupling surfaces of the hydraulic pump
- Lock the driving gear



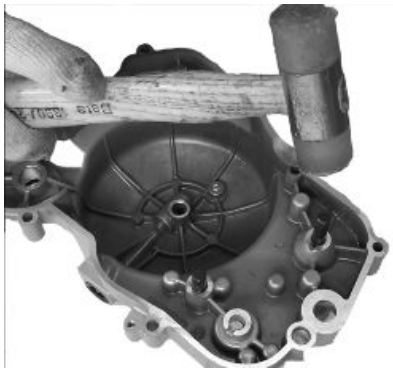




- First unscrew the fixing nut and then the rotor.

Remove the driving gear

- Slide out the hydraulic pump shaft and its oil seals

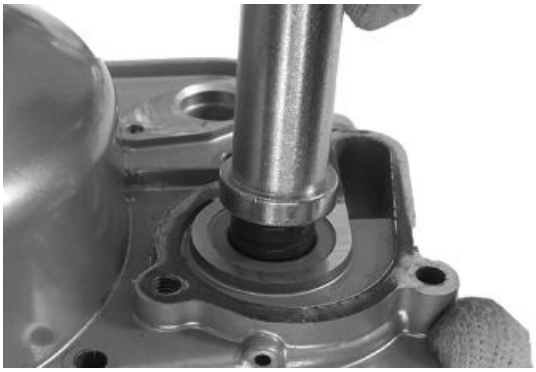


- Remove the transmission gear
- Remove the driving gear and the oil pump shaft

Installing

- On the cover, install the hydraulic pump shaft together with the outer seeger ring, fitting it from the rotor side
- Mount the driving gear

- Fit new oil seals on the hydraulic pump shaft with the aid of the specific tool
- Fit the first oil seal with its rim facing inside, and the second with the rim facing outside



Specific tooling

020441Y Oil seal punch

- Mount the pump rotor and fixed it by tightening its nut manually
- Fit the pump cover with a new gasket and then mount the pump cover

- Fit the oil pump
- Fit the clutch cover
- Fill up the cooling system with the recommended coolant

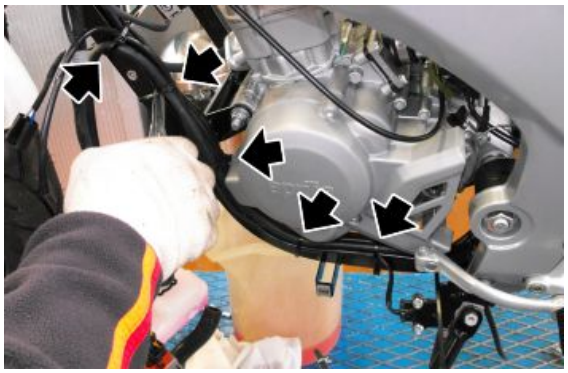
See also

Installing
Installing the
clutch cover

Removing the radiator

- Remove the expansion tank and the radiator cowl.
- Slide off the fastening clamp of the heater pipe.

- Release the hoses from the five clamps that fasten it to the chassis.
- On refitting, renew the five clamps.



See also

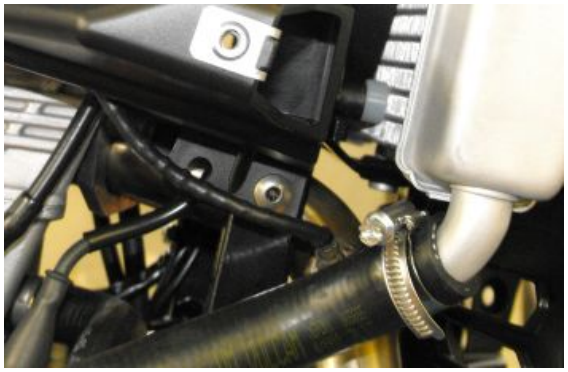
Removing the expansion tank

- Unscrew the radiator cover and let it connect to the hoses.

- Loosen the clamp with a screwdriver.
- Slide off the radiator - head pipe.

WARNING

CARRY OUT THESE OPERATIONS WHEN THE ENGINE IS COLD, SCALDING FLUID OR ITS VAPOURS CAN CAUSE SERIOUS BURNS. COLLECT THE FLUID IN A SUITABLE CONTAINER. THE COOLANT IS HARMFUL. AVOID CONTACT WITH THE SKIN AND EYES.



- Unscrew and remove both screws fixing from the radiator to the chassis.

- Sliding it off the fitting slots, remove the radiator.

Radiator installation

- Install the radiator following the removal operations but in reverse order.
- Fill the coolant tank with the recommended product.
- Check that the system does not show leaks.

Removing the expansion tank

- Remove the left side fairing and drain off the coolant.
- Lift the tank and fasten it in position with the supplied supporting stem.
- Release and remove the clamp and slide off the hoses.
- During the refit, fit a new clamp, of the same type.

- Loosen the clamp and slide off the hoses.

See also

Side fairings

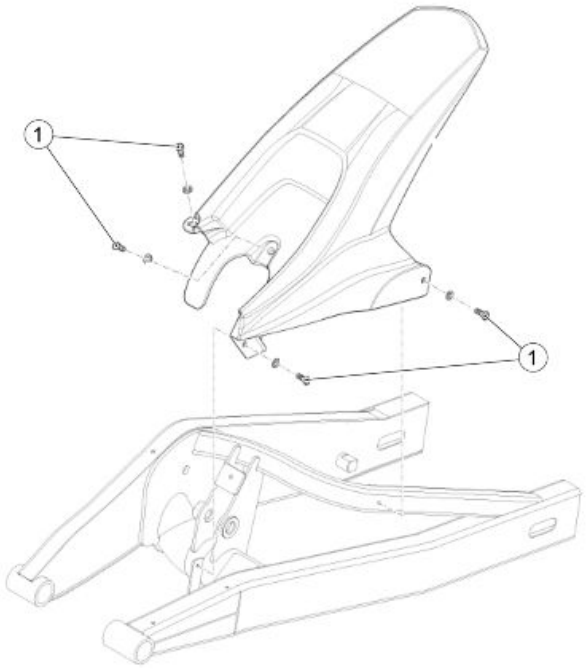
Coolant replacement

- Unscrew and remove the tank fixing screw.
- Slide off the coolant tank.

INSTALLATION

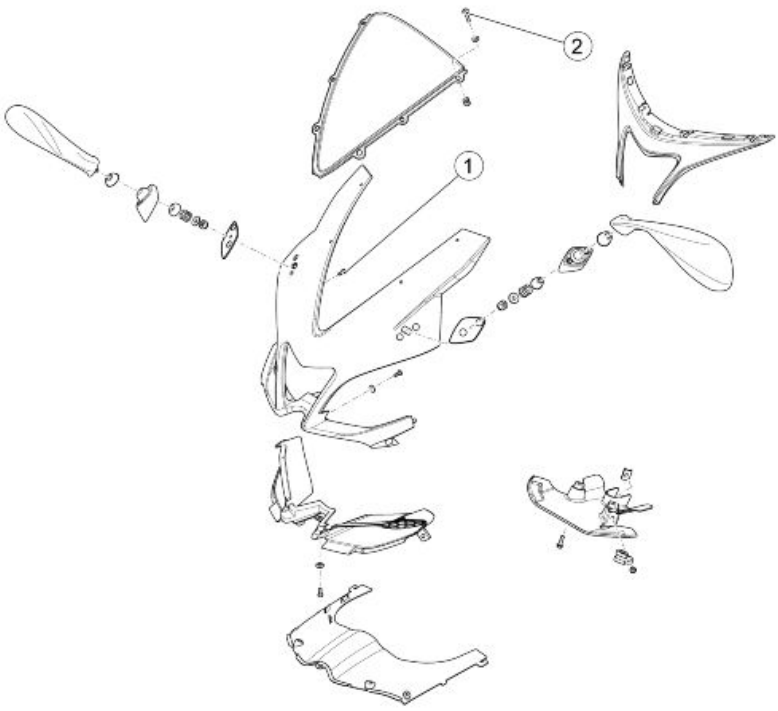
- For the installation, proceed in reverse order as described and fill the system after having replaced the recommended clamps.

INDEX OF TOPICS



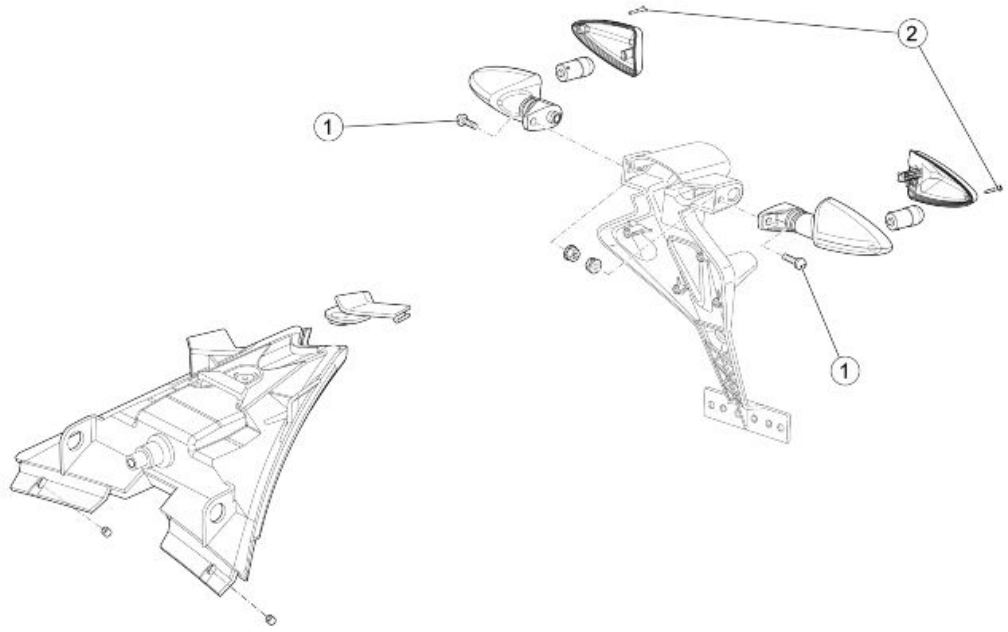
REAR MUDGUARD

pos.	Description	Type	Quantity	Torque	Notes
1	Rear mudguard to swingarm fixing screw	Self-tap.	4	3 Nm (2.21 lbf ft)	Max 4.5 Nm (3.31 lbf ft)



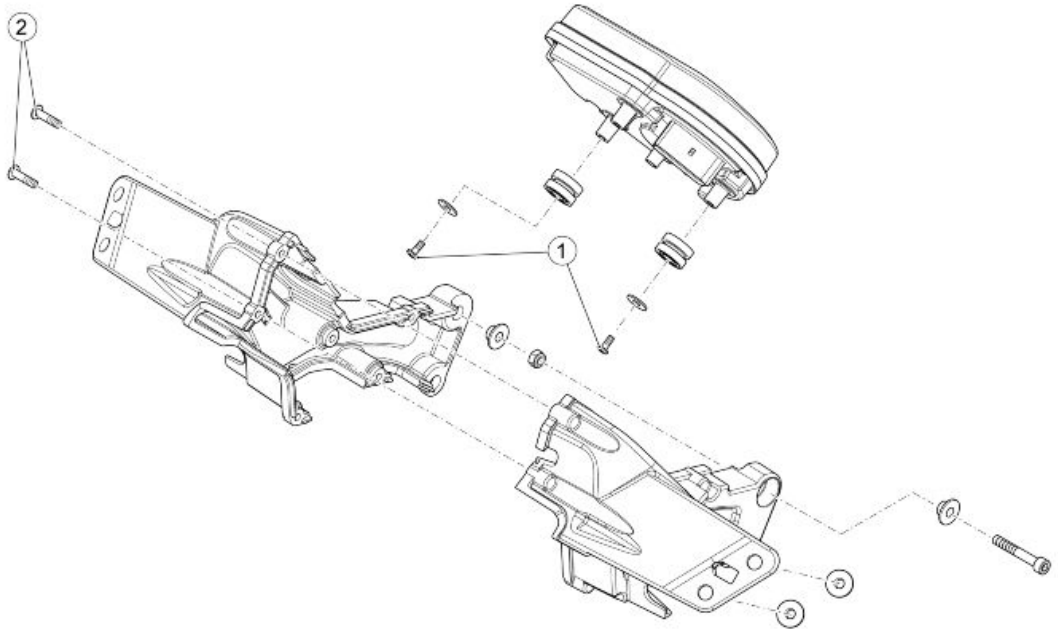
WINDSHIELD

pos.	Description	Type	Quantity	Torque	Notes
1	Rear view mirror fixing screw	Self-t. 3.9	4	0.4 Nm (0.29 lbf ft)	-
2	Top fairing glass fixing screw	M4	4	1 Nm (0.73 lbf ft)	-



REAR LIGHTS

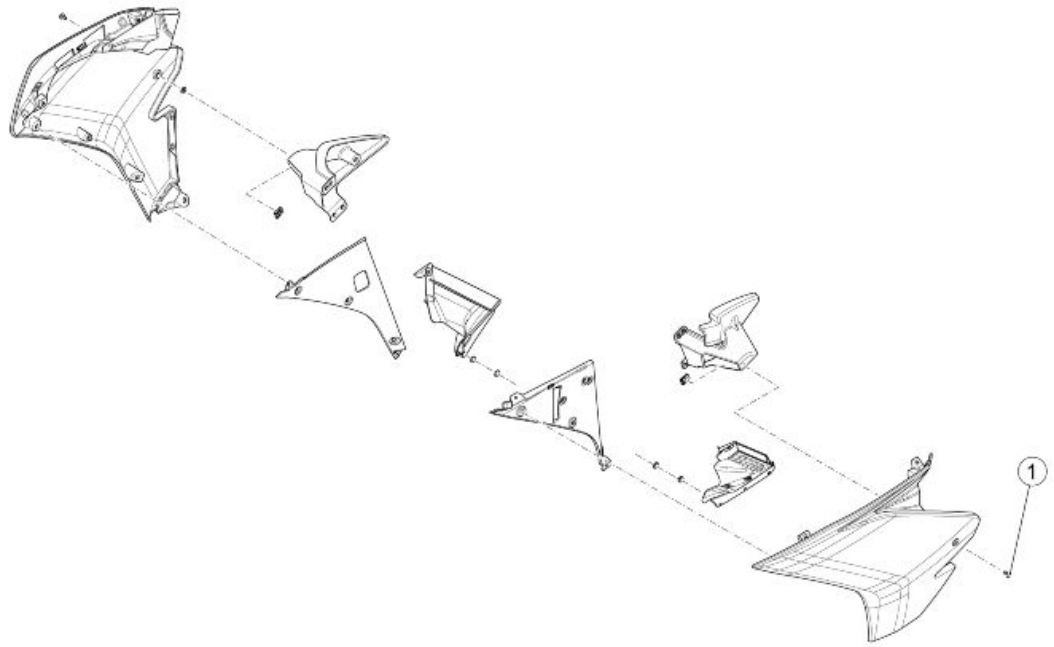
pos.	Description	Type	Quantity	Torque	Notes
1	Turn indicator retainer	M5	2	3 Nm (2.21 lbf ft)	-
2	Turn indicator cover retainer	-	2+2	0.3 Nm (0.22 lbf ft)	-



INSTRUMENT PANEL

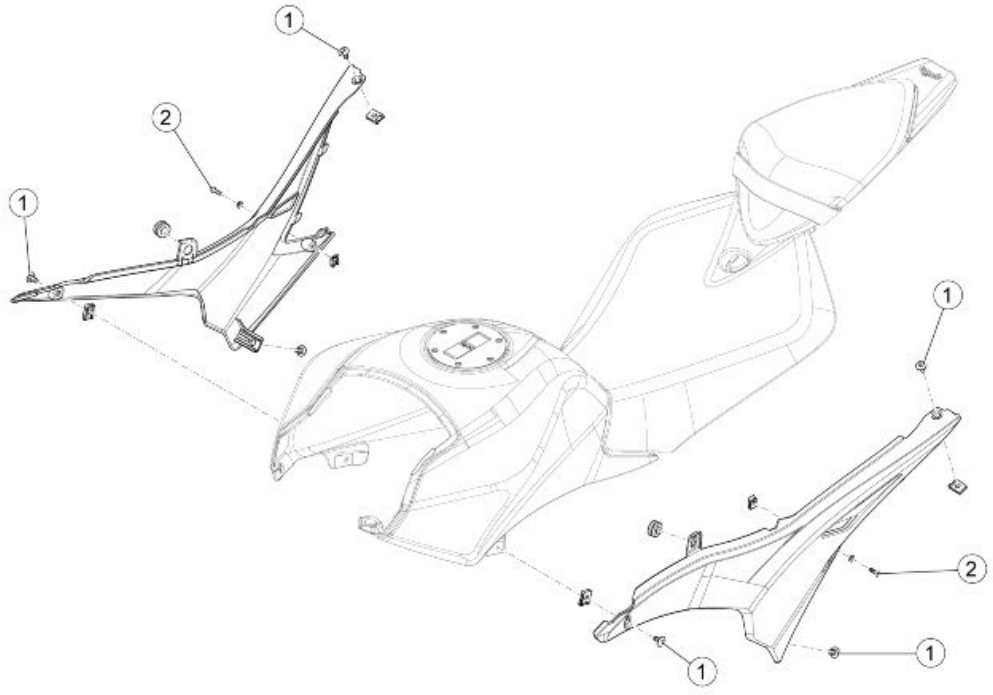
pos.	Description	Type	Quantity	Torque	Notes
1	Self-tapping screw	M5x4	3	2.5 Nm (1.84 lbf ft)	-

pos.	Description	Type	Quantity	Torque	Notes
2	Instrument panel fixing screw	M5x20	6	2 Nm (1.47 lbf ft)	-



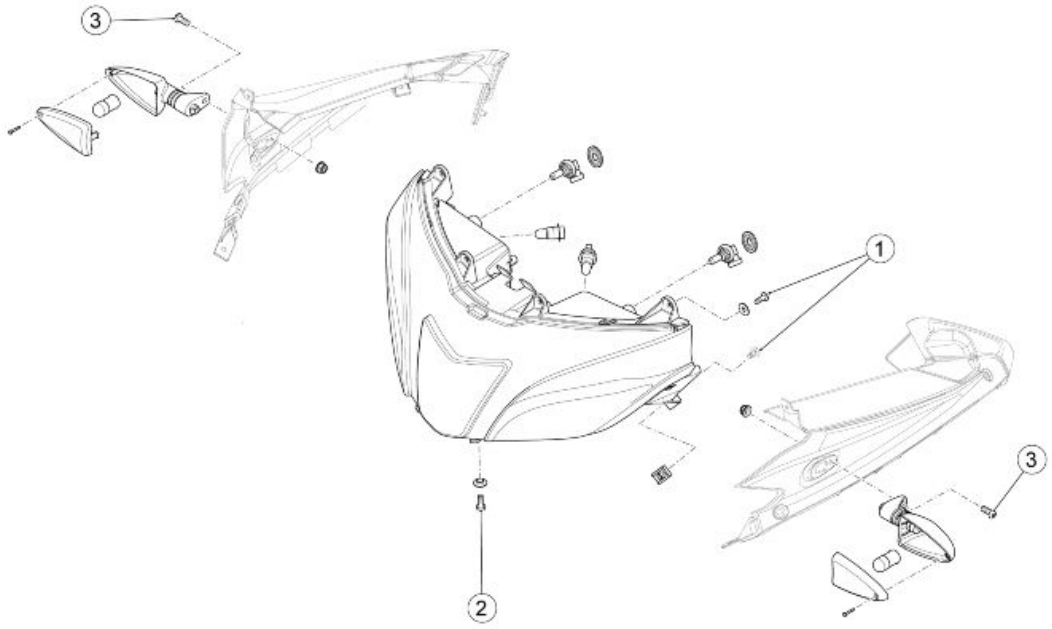
SIDE FAIRINGS

pos.	Description	Type	Quantity	Torque	Notes
1	Side fairing fixing screw	M5x9	6	1.7 Nm (1.25 lbf ft)	Max 2 Nm (1.47 lbf ft)



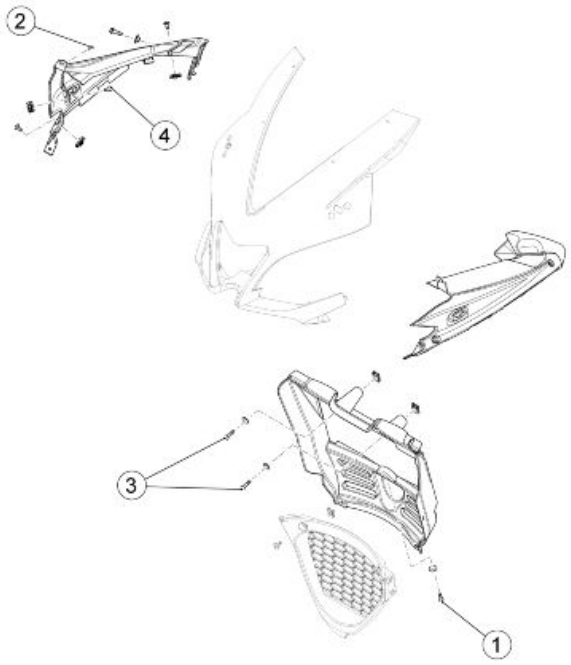
CENTRAL BODYWORK

pos.	Description	Type	Quantity	Torque	Notes
1	Fairing upper fixing screw	M5x9	6	3 Nm (2.21 lbf ft)	-
2	Fairing lower fixing screw	M4x14	2	-	-



FRONT LIGHTS

pos.	Description	Type	Quantity	Torque	Notes
1	Headlamp fixing screw	M5x14	4	2.5 Nm (1.84 lbf ft)	-
2	Self-tapping screw	M5	1	1.5 Nm (1.11 lbf ft)	-
3	Turn indicator fixing screw	M5	2	1.5 Nm (1.11 lbf ft)	-



AIR DEFLECTORS

pos.	Description	Type	Quantity	Torque	Notes
1	Radiator frame screw	M5x16	1	2 Nm (1.47 lbf ft)	Max 2.5 N (1.84 lbf ft)
2	Front fixing screw	Self-t. 3.9	2	1 Nm (0.74 lbf ft)	-
3	TCEI screw	M5x20	2	2 Nm (1.47 lbf ft)	Max 2.5 N (1.84 lbf ft)
4	Flanged TBEI screw	M5x16	2	3 Nm (2.21 lbf ft)	-

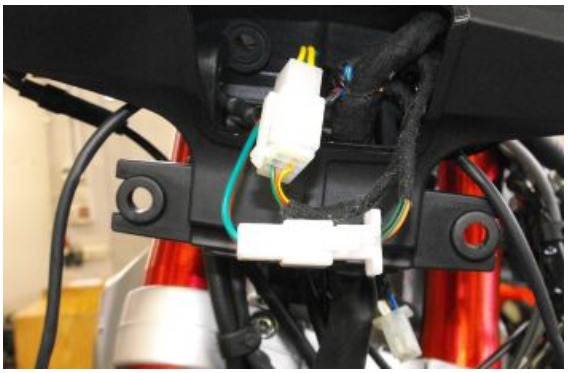
Driving mirrors

- Unscrew and remove the two nuts inside the top fairing, two for each mirror.
- Remove the rear-view mirrors.

Instrument panel

- Remove the windshield.
- Lift the instrument panel and disconnect the connector.

- Disconnect the two connectors from the turn indicator and remove the instrument panel from the support.



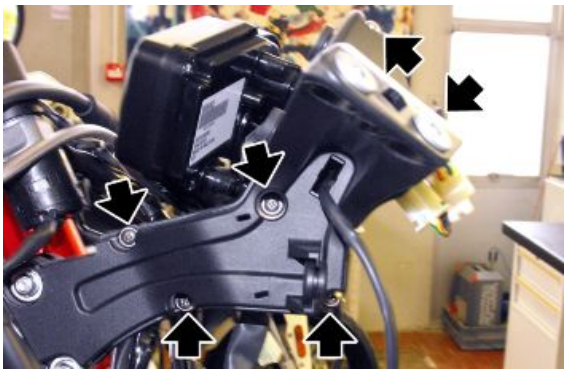
See also

Headlight fairing

INSTRUMENT PANEL SUPPORT REMOVAL

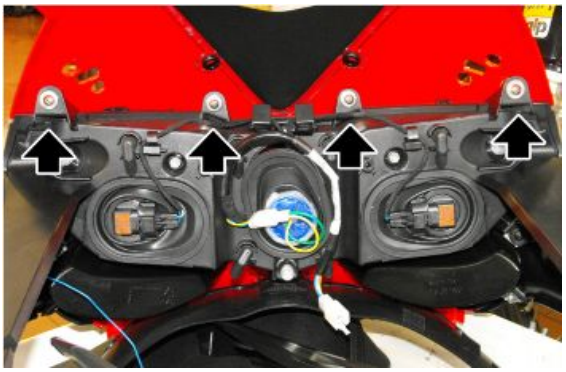
- Unscrew and remove the two staybolts and retrieve the washer from the left side and the nut from the right side.

- Unscrew and remove the six perimeter screws and remove the two shells.



Headlight assy.

- Remove the top fairing.
- Disconnect the two tail light connectors.
- Unscrew and remove the four fixing screws at the top fairing.
- Remove the headlight assembly.

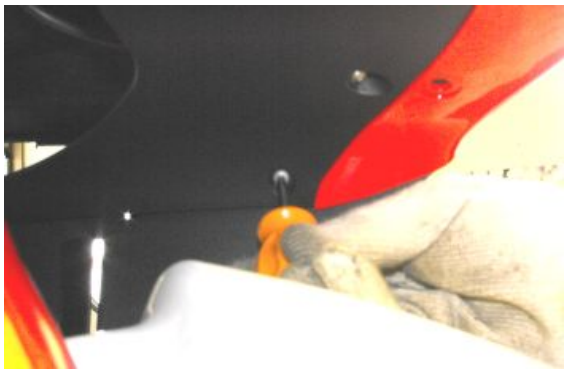


See also

Headlight fairing

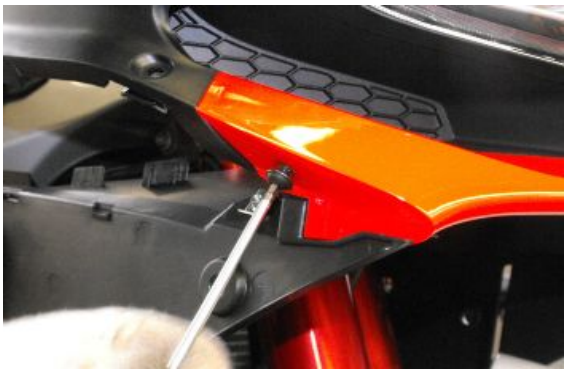
Headlight fairing

- Remove the fairing and the rear-view mirrors.
- Unscrew and remove the screw of the direction arrow.
- Remove the glass and disconnect the two wires from the bulb.
- Remove the two screws placed in the inside the top fairing from both sides of the motorcycle.

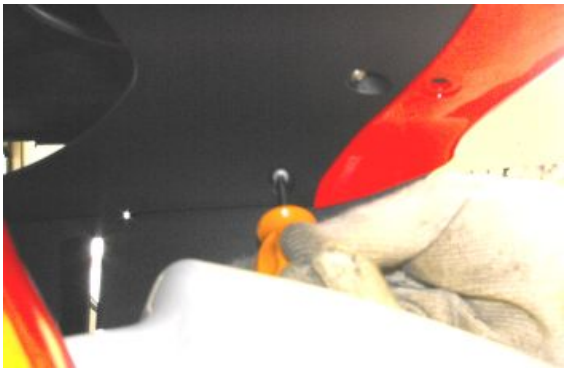


- Remove the two side screws fixing the top fairing to the chassis.

- Unscrew and remove the two top fairing side screws.



- Unscrew and remove the two screws on the front fairing.

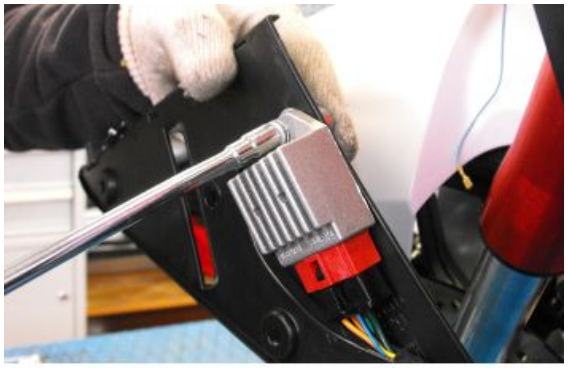


- Disconnect the instrument panel connector.

- Remove the windshield.

Front wheelhouse

- Remove the fairing from the side of the wheel housing that you want to remove.
- Operating from the left shield, unscrew and remove the regulator fixing screw, collecting the nut and the washer.



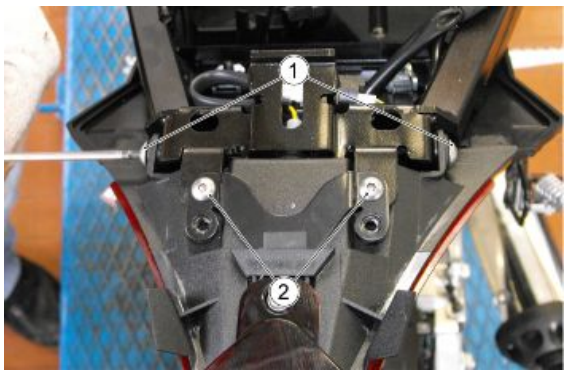
- Operating from both sides, Unscrew and remove the lower screw.
- Remove the wheel housing.

See also

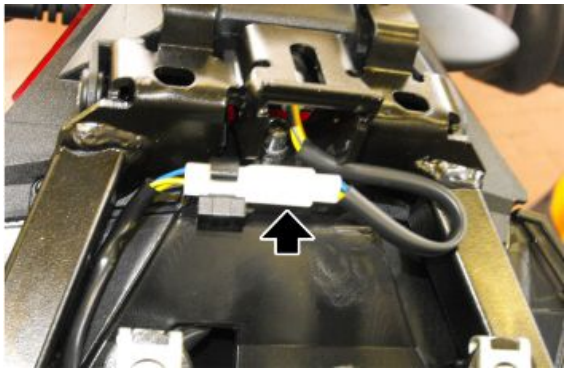
Side fairings

Taillight assy.

- Remove the tail fairing and the passenger saddle.
- Remove the two side screws (1).
- Remove the two upper screws (2).



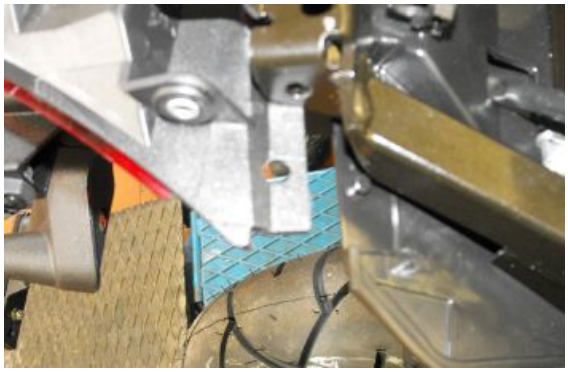
- Disconnect the connector.



See also

Tail guard

- Take off the rear light unit, by removing it from the hooks.

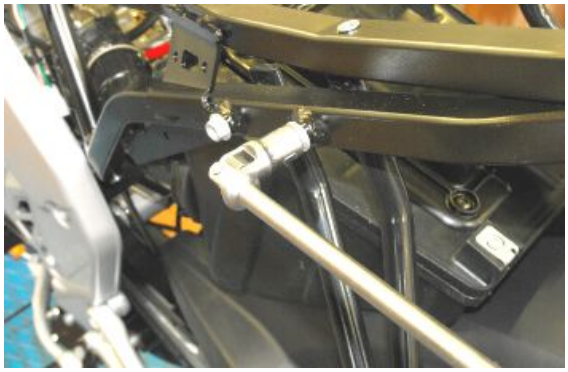


Footrest

PASSENGER FOOTREST

The following procedures only refer to one footrest, but they are applicable to both.

- Remove the tail fairing.
- Unscrew and remove the two fixing screws.
- Remove the passenger footrest.

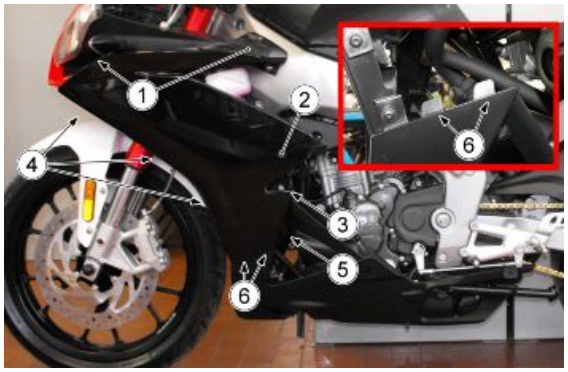


See also

Tail guard

Side fairings

The following operations only refer to one fairing, but they apply to both.



- Rest the vehicle on its stand.
- Remove the side fairing.
- Unscrew and remove the two screws (1) and collect the corresponding washers.
- Unscrew and remove the screw (2) and collect the washer.
- Remove the rivet (3).
- Working on the front side of the vehicle, remove the three rivets (4).
- Loosen and remove the screw (5).
- Sliding it off the fixing tongues (6) and paying attention to the integrity of the plastic parts, remove the fairing.

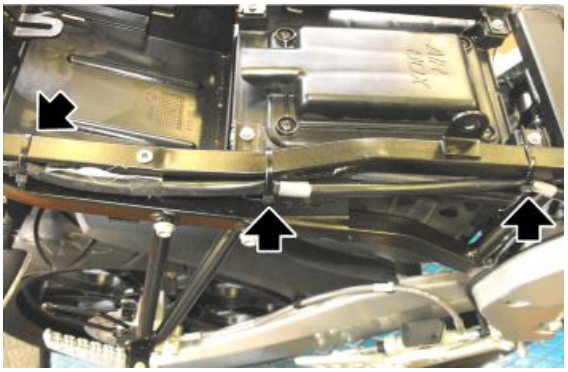
License plate holder

- Remove the passenger saddle.
- Remove the lower licence plate support cover.

- Unscrew and remove the central lower screw.

- Unscrew and remove the two lower screws.

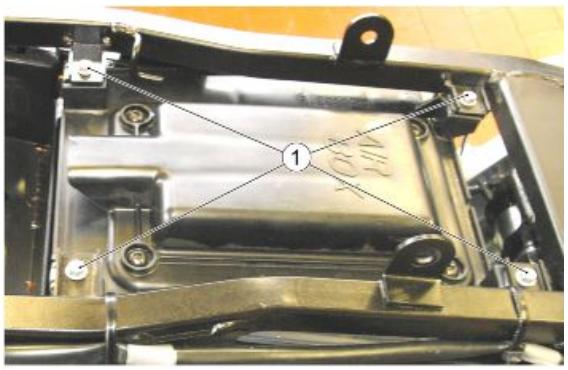
- Remove the three clamps.



- Disconnect the connector.
- Remove the license plate support.

Air box

- Remove the passenger footrest, the saddle, the tank, the fairing and the splash guard.
- Unscrew and remove the four screws (1).



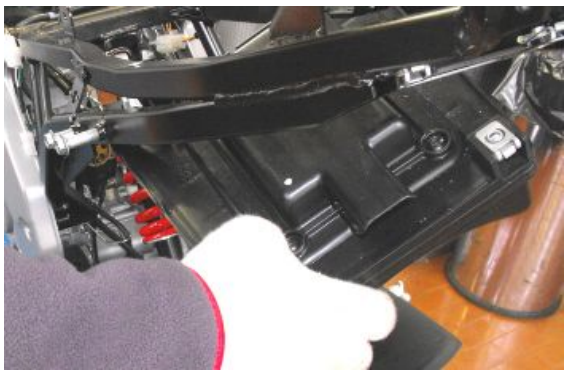
- Remove the lock of the intake pipe.
- Slide off the intake pipe

See also

Footrest

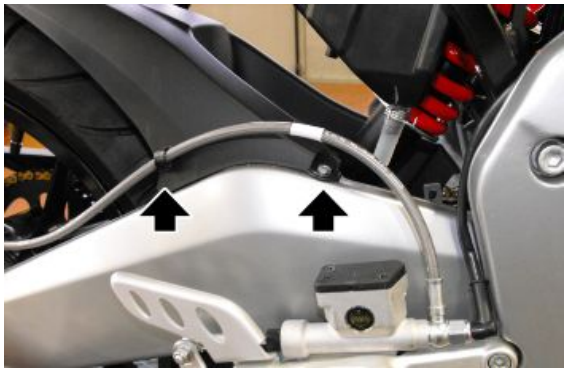
Fuel tank
Rear wheelhouse

- Remove the air filter box.



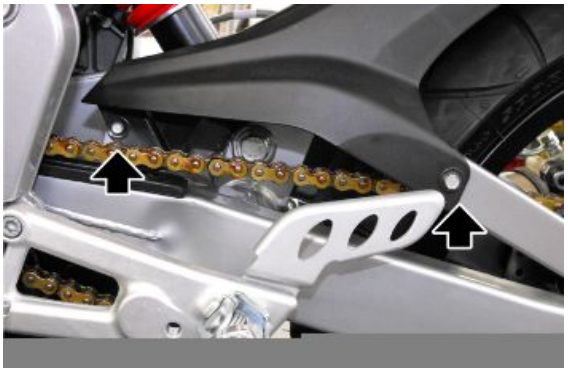
Rear mudguard

- Unscrew and remove the screw.
- Slide off the pipe grommet.



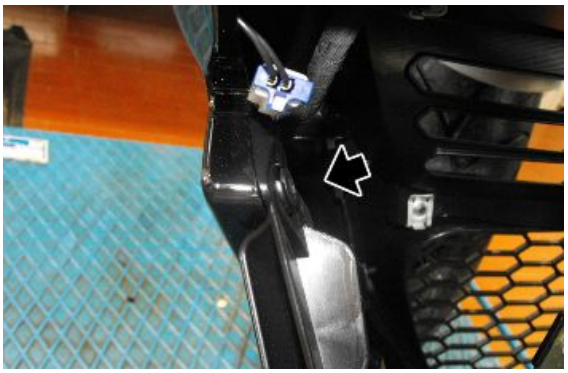
- Operating from the right side, unscrew and remove the central screw.

- Working on the left side, unscrew and remove the two screws.
- Remove the rear mudguard.



Lower cowl

- Remove the side fairings.
- Position the vehicle on the optional rear stand, with the vehicle on the open side stand.
- Remove the side rivet.



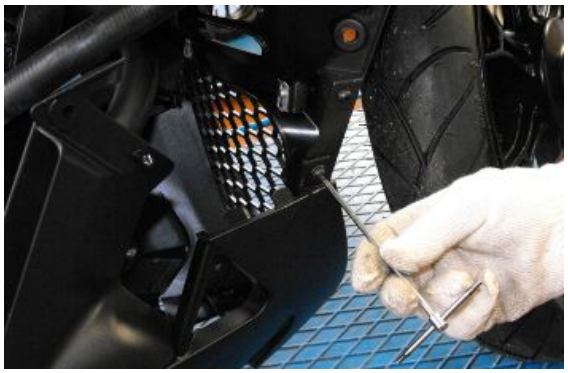
- Carry out the following operations on one side of the vehicle and then on the other.
- Unscrew and remove the rear screw.

See also

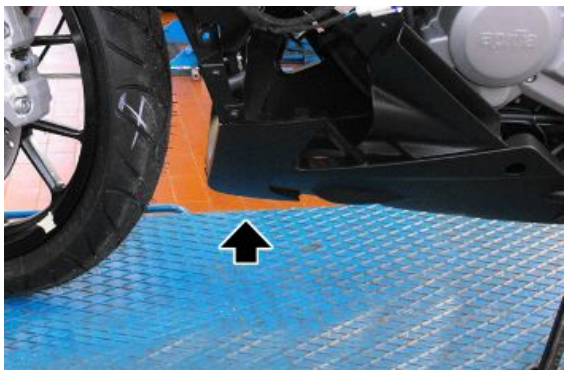
Side fairings

- Unscrew and remove the central screw.

- Unscrew and remove the front screw, following the lug downwards.



- Remove the lower rivet.
- Slide the right semi-lug off from the right side.
- Slide off the left semi-lug from the left side, along the stand profile.



Fuel tank

- Remove the rider saddle.
- Working from both sides, unscrew and remove the side screw.

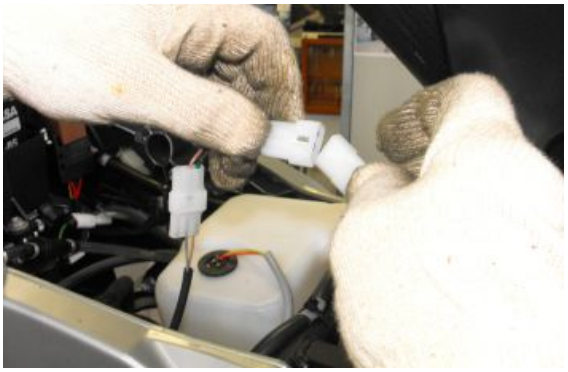
- After having removed the passenger saddle, collect the supporting rod of the fuel tank.
- Lift the tank and support it appropriately.

- Slide off the clamp and fuel pipes, be careful with the fuel in the pipes and in the cock.
- Cover the cock and the hoses, to avoid disposing fuel.

CAUTION

FIRE HAZARD. FUEL OR ANY OTHER FLAMMABLE SUBSTANCES MUST NOT BE CLOSE TO ELECTRICAL COMPONENTS.
THE BATTERY ELECTROLYTE IS TOXIC, CORROSIVE AND AS IT CONTAINS SULPHURIC ACID, IT CAN CAUSE BURNS WHEN IN CONTACT WITH THE SKIN. WEAR PROTECTION CLOTHES, A FACE MASK AND/OR SAFETY GOGGLES WHEN CARRYING OUT MAINTENANCE OPERATIONS. IF THE ELECTROLYTIC FLUID GETS INTO CONTACT WITH THE SKIN, WASH WITH ABUNDANT COOL WATER.
IF THE FLUID GETS INTO CONTACT WITH THE EYES, WASH WITH ABUNDANT WATER FOR FIFTEEN MINUTES AND CONSULT AN EYE SPECIALIST IMMEDIATELY.
IF IT IS ACCIDENTALLY INGESTED, DRINK A LOT OF WATER OR MILK, THEN MILK OF MAGNESIA OR VEGETAL OIL, AND SEEK MEDICAL ADVICE IMMEDIATELY.
THE BATTERY RELEASES EXPLOSIVE GASES. KEEP IT AWAY OF FLAMES, SPARKS, CIGARETTES OR ANY OTHER HEAT SOURCE.
WHEN RECHARGING OR USING THE BATTERY, BE CAREFUL TO HAVE THE ROOM ADEQUATELY AIRED. DO NOT BREATH GASES RELEASED WHEN THE BATTERY IS BEING RECHARGED.
KEEP OUT OF THE REACH OF CHILDREN.
PAY ATTENTION NOT TO TILT THE MOTORCYCLE EXCESSIVELY TO AVOID DANGEROUS SPILLS OF BATTERY FLUID.

- Remove the electrical cable harness of the low fuel sensor.



- Slide off the fuel breather pipe.

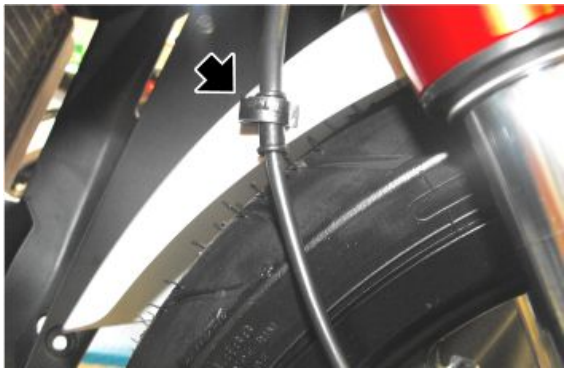
- Operating from both sides, unscrew and remove the screw and collect the nut on the internal side.
- Keeping the tank in position, lower it by removing the supporting rod.
- Remove the tank.

Rear wheelhouse

- Beforehand, remove the tail fairing, the taillight the saddle and the passenger saddle.
- Unscrew and remove the two fixing screws.
- Remove the mudflap.

Front mudguard

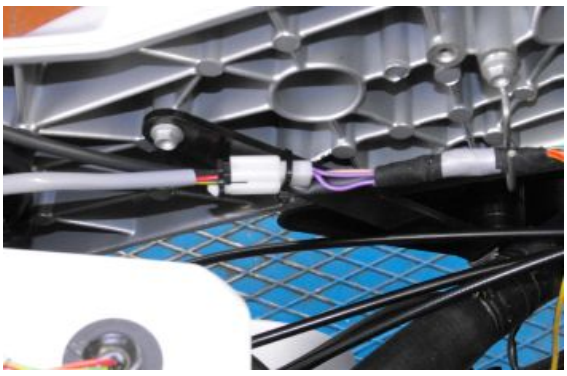
- Slide off the cable grommet cable.



- Unscrew and remove the four mudguard fixing screws (1), two for each side.
- Remove the mudguard.

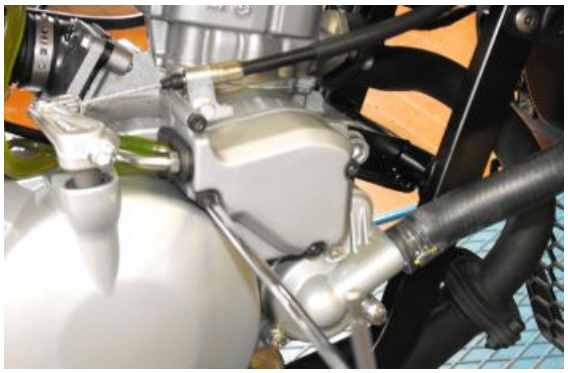
Mixture oil tank

- Lift the tank.
- Disconnect the oil reserve sensor connector.



Release the clamp.

- Unscrew and remove the four mixer pump cover screws and slide off the cover.



- Loosen the clamp and detach the pipe from the pump

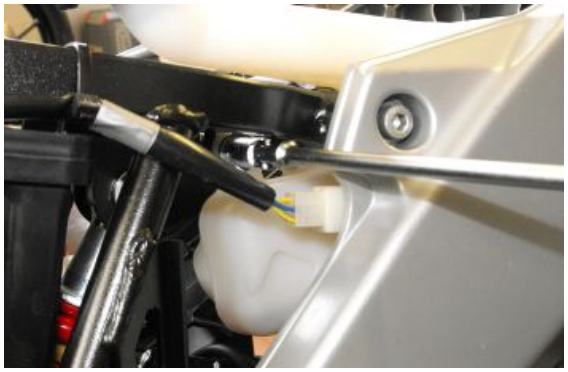
CAUTION

CLOSE THE PIPE WITH A COVER OR A CLAMP TO AVOID THAT OIL COMES OUT.

- Unscrew and remove the two screws with the corresponding washers.

CAUTION

CLOSE THE PIPE WITH A COVER OR A CLAMP TO AVOID THAT OIL COMES OUT.



- Slide off the mixer oil tank.

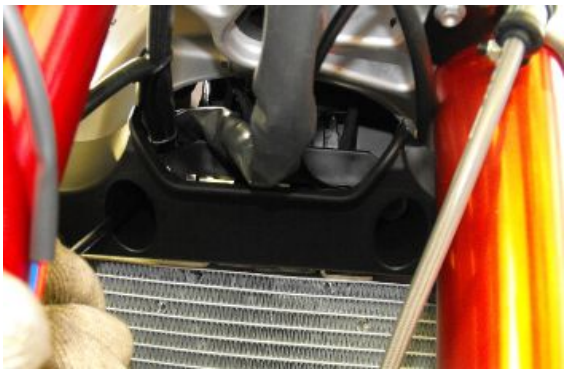
CAUTION

CLOSE THE PIPE WITH A COVER OR A CLAMP TO AVOID THAT OIL COMES OUT.

Radiator cover

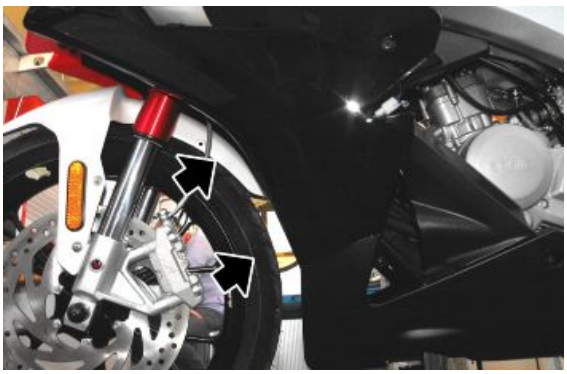
- Unscrew and remove the central screw.

- Unscrew and remove the two upper screws.
- Retrieve the corresponding washers.



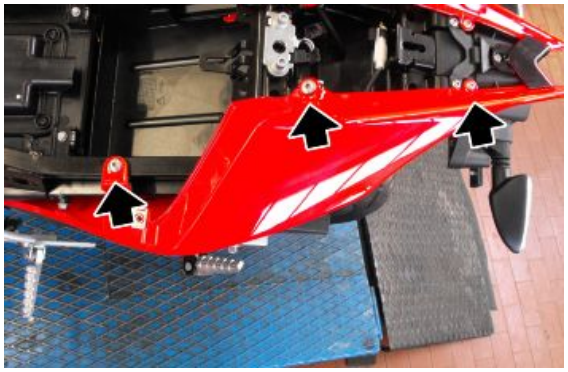
- Unscrew and remove the two lower screws.
- Slide off the radiator cover.

- Working from both sides of the vehicle, release the two rivets and slide off the front lug.



Tail guard

- The following procedures refer to the left side of the vehicle, but apply to both.
- Remove the central side fairing and the passenger saddle.
- Unscrew and remove the two front screws and the rear screw.



- Slide off the fairing.

CAUTION

DURING THE REMOVAL, PAY ATTENTION TO THE FITTINGS.

INDEX OF TOPICS

Carry out the listed checks before delivering the motorcycle.

WARNING

HANDLE FUEL WITH CARE.

Aesthetic inspection

- Paintwork
- Fitting of Plastic Parts
- Scratches
- Dirt

Tightening torques inspection

- Safety fasteners:

front and rear suspension unit

front and rear brake calliper retainer unit

front and rear wheel unit

engine - chassis retainers

steering assembly

- Plastic parts fixing screws

Levels check

- Hydraulic braking system fluid level
- Clutch system fluid level (if present)
- Gearbox oil level (if present)
- Transmission oil level (if present)
- Engine coolant level (if present)
- Engine oil level
- Mixer oil level (if present)

Road test

Test ride:

- Cold start
- Response to throttle control
- Stability when accelerating and braking
- Front and rear brake efficiency

- Front and rear suspension efficiency
- Abnormal noise level

Static test

Static check after test drive:

- Restarting when warmed up
- Starter operation (if present)
- Minimum holding (turning the handlebar)
- Uniform turning of the steering
- Possible leaks
- Radiator electric fan operation (if present)

Functional inspection

- Hydraulic braking system
- Stroke of brake and clutch levers (if present)
- Clutch - Check for correct operation
- Engine - Check for correct general operation and absence of abnormal noise
- Other
- Documentation check:
- Chassis and engine numbers check
- Supplied tools check
- Tyre pressure check

NEVER EXCEED THE RECOMMENDED INFLATION PRESSURES AS TYRES MAY BURST.

CAUTION

CHECK AND ADJUST TYRE PRESSURE WITH TYRES AT AMBIENT TEMPERATURE.

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