APRILIA ETX 150 SERVICE STATION MANUAL

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aprilia

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THE VALUE OF SERVICE

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

The reliability of the vehicle also depends on its mechanical conditions. Checking the vehicle before riding it, its regular maintenance and the use of **original Aprilia spare parts** only are essential factors!

For information on the nearest **Official Dealer and/or Service Centre** consult our 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 images in this publication are given for illustrative purposes only and are not binding. While the basic characteristics as described and illustrated in this booklet remain unchanged, Piaggio & C. S.p.A. 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 models should be confirmed with the official Aprilia sales network.

Piaggio & C. S.p.A. Viale Rinaldo Piaggio, 25 - 56025 PONTEDERA (PI), Italy

www.piaggio.com

SERVICE STATION MANUAL
ETX - STX 150

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 scooters. 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, aprilia 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

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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.

Used engine oil

CAUTION

IT IS ADVISABLE TO WEAR PROTECTIVE IMPERMEABLE GLOVES WHEN SERVICING THE VEHICLE.
HANDLING ENGINE OIL FOR PROLONGED PERIODS AND ON A REGULAR BASIS CAN CAUSE SERIOUS SKIN DAMAGE.
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 INTO THE ENVIRONMENT.
KEEP OUT OF THE REACH OF CHILDREN.

Brake fluid

BRAKE FLUID MAY BE HARMFUL TO PAINTWORK, PLASTIC AND RUBBER. WHEN SERVICING THE BRAKING SYSTEM PROTECT THESE COMPONENTS WITH A CLEAN CLOTH. ALWAYS WEAR PROTECTIVE GOGGLES WHEN SERVICING THE SYSTEM. BRAKE FLUID IS EXTREMELY HARMFUL TO THE 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

During repair, removal and refitting of the vehicle strictly follow the following recommendations.

BEFORE REMOVING THE COMPONENTS

- Remove any dirt, mud, dust and foreign objects from the vehicle before removing the components. Where provided, use special tools designed for this vehicle.

REMOVING THE COMPONENTS

- Do not loosen and/or tighten the screws and nuts with callipers or other tools, always use the specific spanner.
- Mark the positions on all connection joints (tubes, cables, etc.) before dividing and identifying them with different distinctive signs.
- Each part is clearly signed to be able to identify it during installation.
- Clean and wash the dismantled components carefully using a low-flammability detergent.
- Keep the parts together that are coupled to each other, since they are "adjusted" to each other due to normal wear.
- Some components must be used together or be completely replaced.

- Keep away from heat sources.

REFITTING OF COMPONENTS

CAUTION

THE BEARINGS MUST TURN FREELY, WITHOUT LOCKING AND/OR NOISES, OTHERWISE THEY MUST 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 thin layer of lithium-based grease on the oil seal rims. Reassemble oil seals and bearings with the brand or batch number facing outward (visible side).

ELECTRICAL CONNECTORS

The electrical connectors are disconnected as follows, the non-compliance with this procedure leads to irretrievable damages to the connector and to the wiring:

If available, press the specific safety couplings.

- Hold the two connectors and deactivate them by pulling to the opposite direction of each other.
- If there are signs of dirt, rust, moisture etc. clean the inside of the connector using a pressure air jet.
- Make sure that the cables are properly seamed to the terminals inside the connectors.
- Then connect the two connectors, ensuring that they couple correctly (if fitted with clips, you will hear them "click" into place).

CAUTION

TO DISCONNECT THE TWO CONNECTORS DO NOT PULL THE CABLES.

NOTE

THE TWO CONNECTORS CAN ONLY BE INSERTED IN ONE DIRECTION, SUBMITTING THEM TO COUPLE IN THE RIGHT DIRECTION.

TIGHTENING TORQUES

CAUTION

IF UNSCREWING A SELF-LOCKING NUT, IT MUST BE REPLACED WITH A NEW ONE.

CAUTION

DO NOT FORGET THAT THE TIGHTENING TORQUE OF ALL FIXING ELEMENTS THAT ARE PLACED ON WHEELS, BRAKES, WHEEL AXLE AND OTHER SUSPENSIONS COMPONENTS

ARE IMPORTANT IN ORDER TO ENSURE THE VEHICLE SAFETY AND TO MAINTAIN THE PRESCRIBED VALUES. REGULARLY CHECK THE TIGHTENING TORQUE OF THE FIXING ELEMENTS AND ALWAYS USE A TORQUE WRENCH FOR THE REFITTING. IN CASE OF NON COMPLIANCE WITH THESE WARNINGS, ONE OF THESE COMPONENTS MAY LOOSEN AND COME OFF, THUS BLOCKING A WHEEL OR CAUSING OTHER PROBLEMS THAT COULD HARM THE MANOEUVRABILITY AND CAUSE FALL WITH RISK OF SEVERE INJURY OR DEATH.

Vehicle identification

SERIAL NUMBER LOCATION

These numbers are necessary for vehicle registration.

NOTE

ALTERING IDENTIFICATION NUMBERS MAY BE SERIOUSLY PUNISHABLE BY LAW. IN PARTICULAR, MODIFYING THE FRAME NUMBER IMMEDIATELY VOIDS THE WARRANTY.

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

LBM???10??XXXXXX

KEY:

LBM: production plant

???: vehicle type and variant

1: brand (1: Aprilia, 2: Derbi)

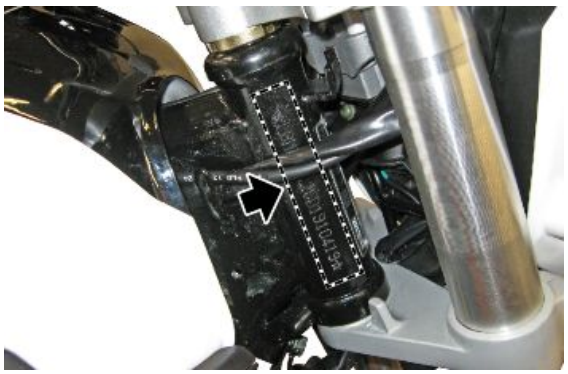
0: design number

?: check digit

?: year of production

1: assembly plant

XXXXXX: serial number (6 digits);



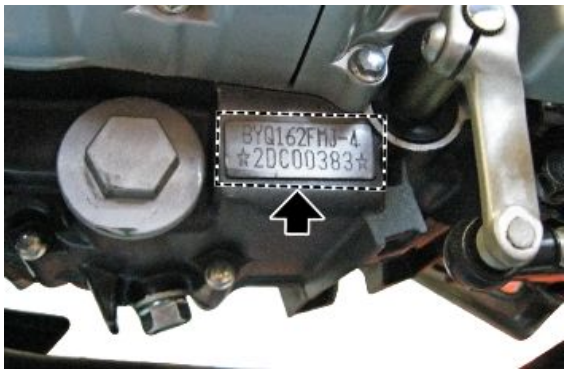
FRAME NUMBER

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

ENGINE NUMBER

The engine number is printed on the base of the engine crankcase, left hand side.

Engine No. .....



Dimensions and mass

DIMENSIONS AND WEIGHT

Specification	Desc./Quantity
Maximum length	2,000 mm (78.74 in)
Maximum width (at the handlebar) (ETX 150)	750 mm (29,53 in)
Maximum width (at the handlebar) (STX 150)	760 mm (29,92 in)
Maximum height (at the handlebar) (ETX 150)	1090 mm (42,92 in)
Maximum height (at the handlebar) (STX 150)	1040 mm (40.94 in)
Center to center distance (STX 150)	1330 mm (52,36 in)
Center to center distance (ETX 150)	1340 mm (52.76 in)
Dry weight (ETX 150)	130 kg (286,60 lb)
Dry weight (STX 150)	128 kg (282,19 lb)
Curb weight (ETX 150)	144 kg (317,46 lb)
Curb weight (STX 150)	142 kg (313,06 lb)

Engine

MOTORE

Specification	Desc./Quantity
Modello	BYQ162FMJ-4
Tipo	Monocilindrico 4 tempi con orientamento longitudinale
Numero cilindri	1
Cilindrata complessiva	149 cc (9.09 cu in)
Alesaggio / Corsa	62 mm / 49.5 mm (2.44 in / 1.95)
Rapporto di compressione	9.2 +/- 0.4 : 1
N° giri del motore al regime minimo	1400 +/- 100 rpm (giri/min)
N° giri del motore al regime massimo	11000 +/- 100 rpm (giri/min)
Carburatore	KEIHIN - PTG 22 mm con starter manuale
Frizione	Multidisco in bagno d'olio con comando meccanico sul lato sinistro del manubrio
Electric	Electric starter
Air filter	Sponge.

Transmission

RAPPORTI DI TRASMISSIONE

Specification	Desc./Quantity
Rapporto di trasmissione primaria	15 / 44 (ad ingranaggi)
Rapporto di trasmissione 1° marcia	13 / 37 (secondaria)
Rapporto di trasmissione 2° marcia	16 / 33 (secondaria)
Rapporto di trasmissione 3° marcia	20 / 28 (secondaria)
Rapporto di trasmissione 4° marcia	23 / 26 (secondaria)
Rapporto di trasmissione 5° marcia	26 / 24 (secondaria)

Capacities

CAPACITA'

Specification	Desc./Quantity
Serbatoio carburante (inclusa riserva)	18 l (3.96 UK gal) (4.75 US gal)
Riserva serbatoio carburante	3.15 l (0.69 UK gal) (0.83 US gal)
Olio motore	cambio olio e filtro olio 1.4 l (0.30 UK gal) (0.37 US gal)
Seats	2

Drive chain

CATENA DI TRASMISSIONE

Specification	Desc./Quantity
Tipo	428H
Modello	124 maglie

Electrical system

IMPIANTO ELETTRICO

Specification	Desc./Quantity
Candela	NGK D8EA
Distanza elettrodi	0.7 +/- 0.05 mm (0.028 +/- 0.0020 in)
Batteria	GTX7L-BS
Generatore	110 W
Fusibile	15 A

SPIE

	Specification	Desc./Quantity
1	Indicatore di direzione sinistro	LED
2	Riserva carburante	LED
3	Cambio in folle	LED
4	Luce abbagliante	LED
5	Indicatore di direzione destro	LED

LAMPADINE

Specification	Desc./Quantity
Luce anabbagliante / abbagliante	12V - 35W/35W - HS1
Luce posizione	12V - 5W
Luce posizione posteriore / stop	LED
Luce indicatori di direzione	LED
Luce targa	12V - 5W

Frame and suspensions

TELAIO

Specification	Desc./Quantity
Telaio	Monotrave
Angolo inclinazione sterzo (STX 150)	27° (le misure fanno riferimento al telaio "nudo")

SOSPENSIONI

Specification	Desc./Quantity
Forcella anteriore (ETX 150)	Forcella idraulica a steli rovesciati, diam. 35 mm (1.38 in)
Forcella anteriore (STX 150)	Forcella idraulica, diam. 37 mm (1.46 in)
Ammortizzatore posteriore	2 Ammortizzatori idraulici con serbatoio separato, regolabili nel precarico molla

Brakes

BRAKES

Specification	Desc./Quantity
Front (ETX)	Stainless steel disc brake diameter 260 mm (10.24 in), with floating dual callipers diameter 25 mm (0.98 in) and two brake pads

Specification	Desc./Quantity
Front (STX)	Stainless steel disc brake diameter 240 mm (9.45 in), with floating dual callipers diameter 25 mm (0.98 in) and two brake pads
Rear	Drum - diam. 104 mm (4,09 in), with two shoes

Wheels and tyres

CERCHI RUOTE

Specification	Desc./Quantity
Cerchio ruota anteriore (ETX 150)	2.15 x 17" a raggi
Cerchio ruota anteriore (STX 150)	2.15 x 17" in lega
Cerchio ruota posteriore (ETX 150)	2.50 x 17" a raggi
Cerchio ruota posteriore (STX 150)	2.75 x 17" in lega

PNEUMATICI

Specification	Desc./Quantity
Pneumatico anteriore (ETX 150)	3.00-17 45P
Pneumatico anteriore (STX 150)	90/90-17 49S
Pressione gonfiaggio anteriore (ETX 150)	2.25 bar (225 kPa) (32.63 PSI)
Pressione gonfiaggio anteriore (STX 150)	2.50 bar (250 kPa) (36.26 PSI)
Pneumatico posteriore (ETX 150)	3.50-17 54P
Pneumatico posteriore (STX 150)	110/80-17 57S
Pressione gonfiaggio posteriore (ETX 150)	2.25 bar (225 kPa) (32.63 PSI)
Pressione gonfiaggio posteriore (STX 150)	2.50 bar (250 kPa) (36.26 PSI)

Supply

ALIMENTAZIONE

Specification	Desc./Quantity
Fuel	Premium unleaded petrol, minimum octane rating 95 (NORM) and 85 (NOMM)

Tightening Torques

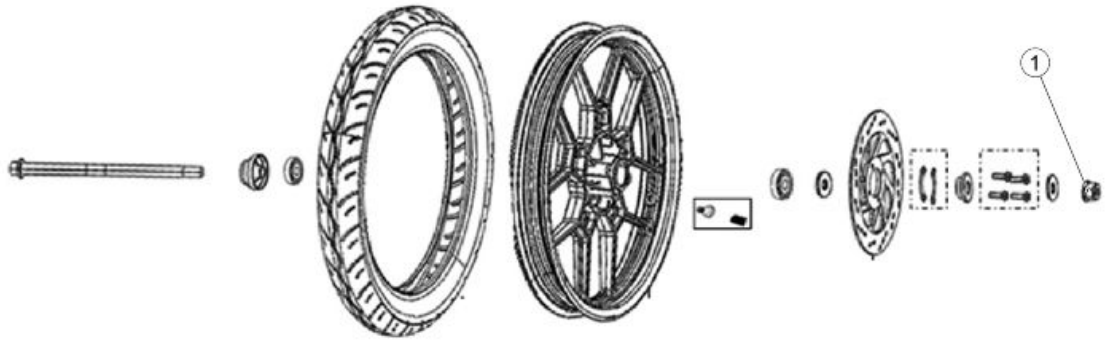
- In this manual, where it is not specified through specific tables with the related tightening torques, refer to the reported tightening torques:

Locking torques (N*m)

Screws M4 4 +/- 1 Nm (2.95 +/- 0.74 lb ft) Screws M6 10 +/- 2 Nm (7.38 +/- 1.47 lb ft)

Chassis

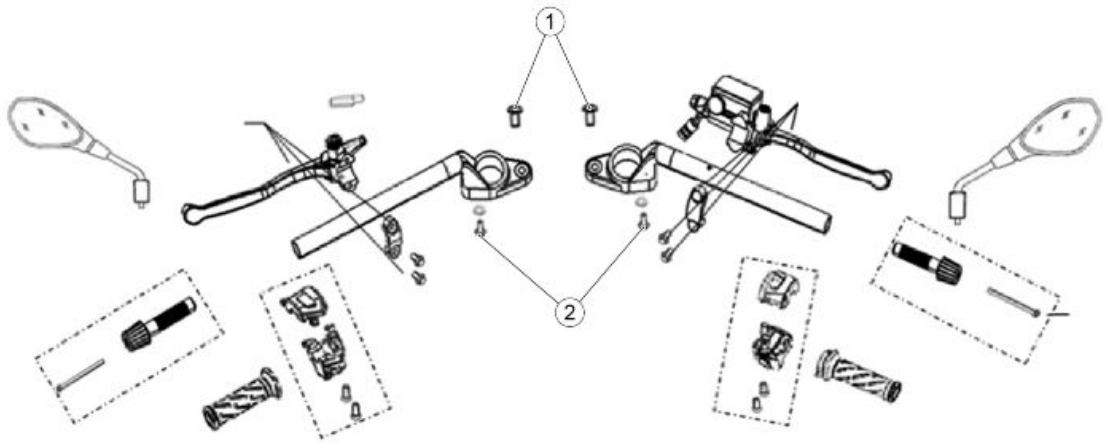
Front side



FRONT WHEEL

pos.	Description	Type	Quantity	Torque	Notes
1	Front wheel fixing nut	M12x1.25	1	60 +/- 5 Nm (44.25 +/- 3.69 lb ft)	-

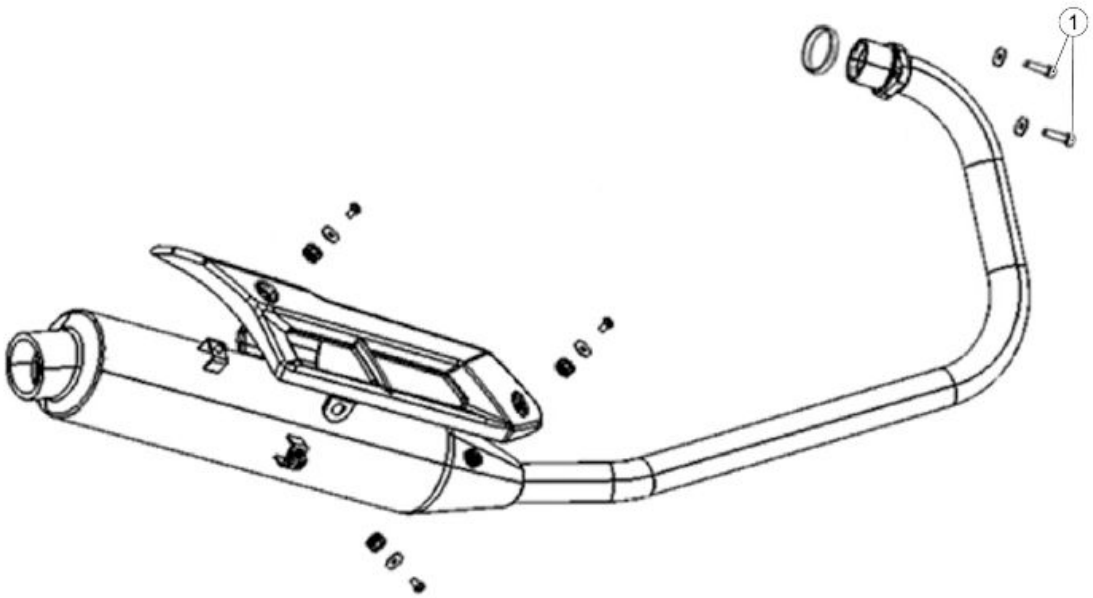
STX 150



HANDLEBAR / CONTROLS

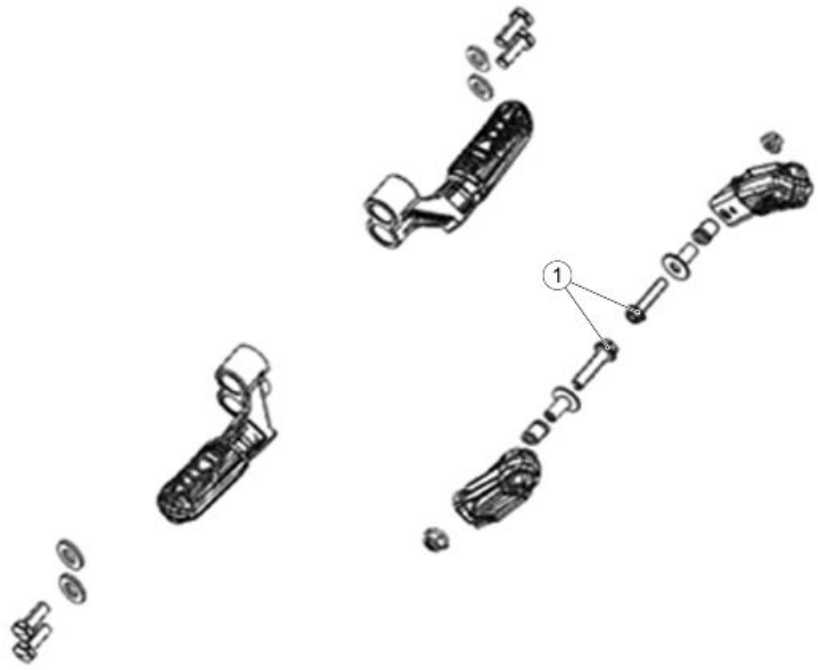
pos.	Description	Type	Quantity	Torque	Notes
1	Handlebar half upper fixing screws	M8x30	2	18 / 25 Nm (13.28 / 18.44 lbf ft)	-
2	Handlebar half lower fixing screws	M6x20	2	7 / 10 Nm (5.16 / 7.38 lbf ft)	-

Central part



EXHAUST

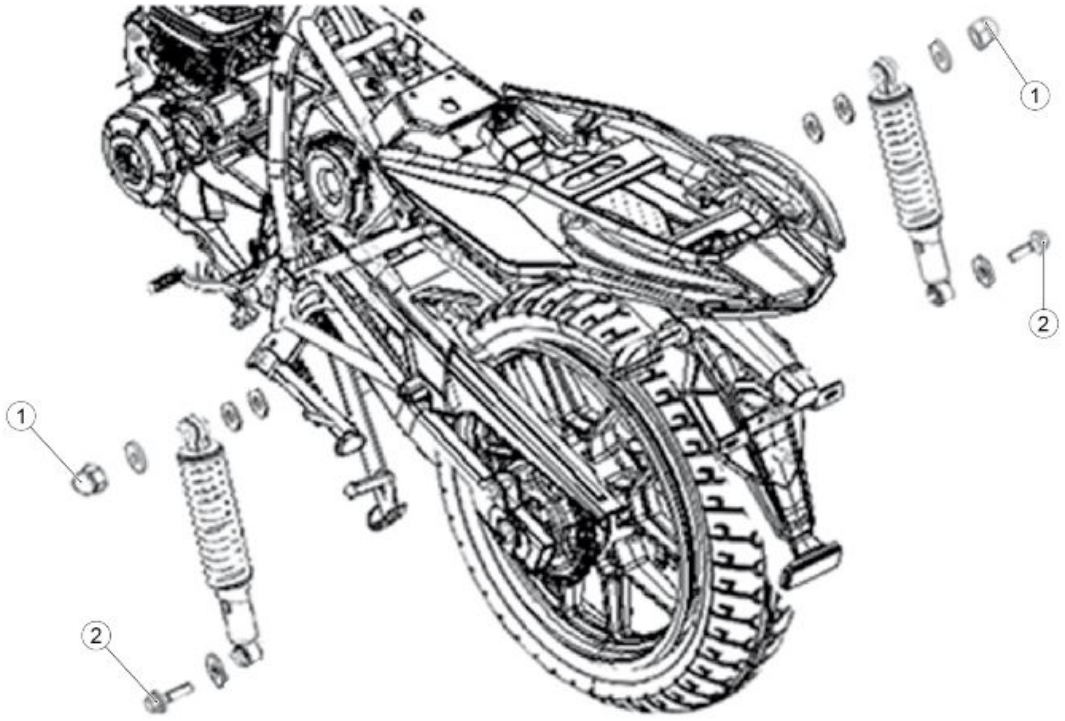
pos.	Description	Type	Quantity	Torque	Notes
1	Drainage retainer screws	M8x30	2	18 / 25 Nm (13.28 / 18.44 lbf ft)	-



FOOTRESTS

pos.	Description	Type	Quantity	Torque	Notes
1	Screws fastening passenger foot-pegs	M10x55	2	35 / 40 Nm (25.81 / 29.50 lbf ft)	-

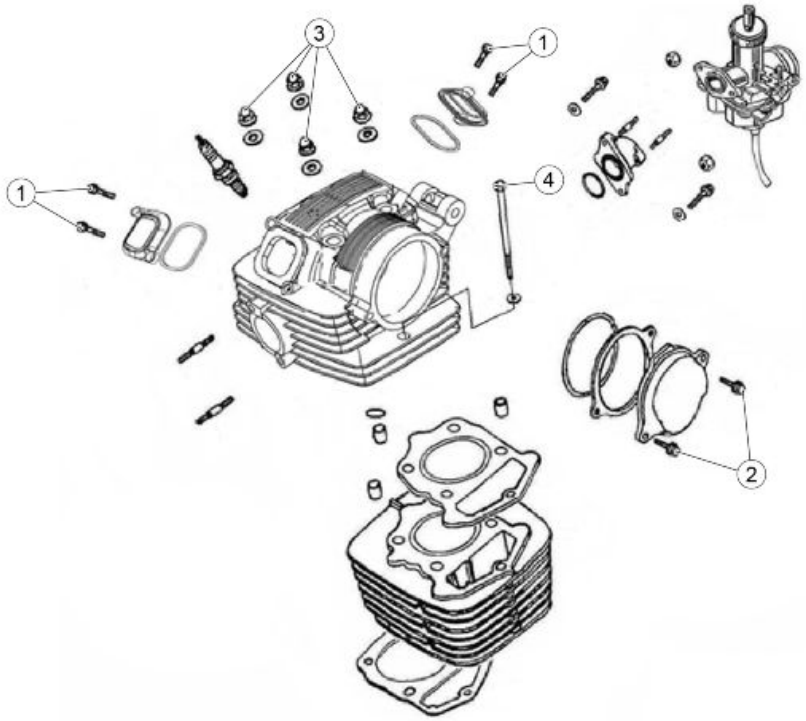
Back side



REAR SHOCK ABSORBERS

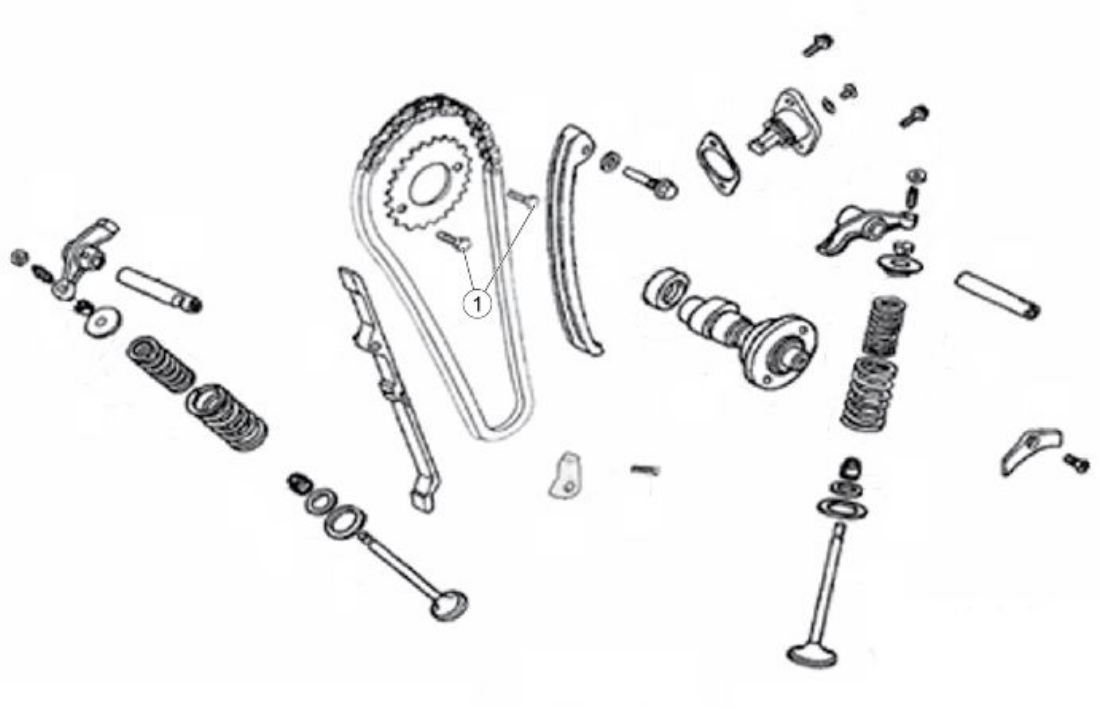
pos.	Description	Type	Quantity	Torque	Notes
1	Upper shock absorber fixing nut	M10x1.25	2	35 /45 Nm (25.81 +/- 33.19 lb ft)	-
2	Shock absorber lower fixing screws	M10x40	2	30 /40 Nm (22.13 +/- 29.50 lb ft)	-

Engine



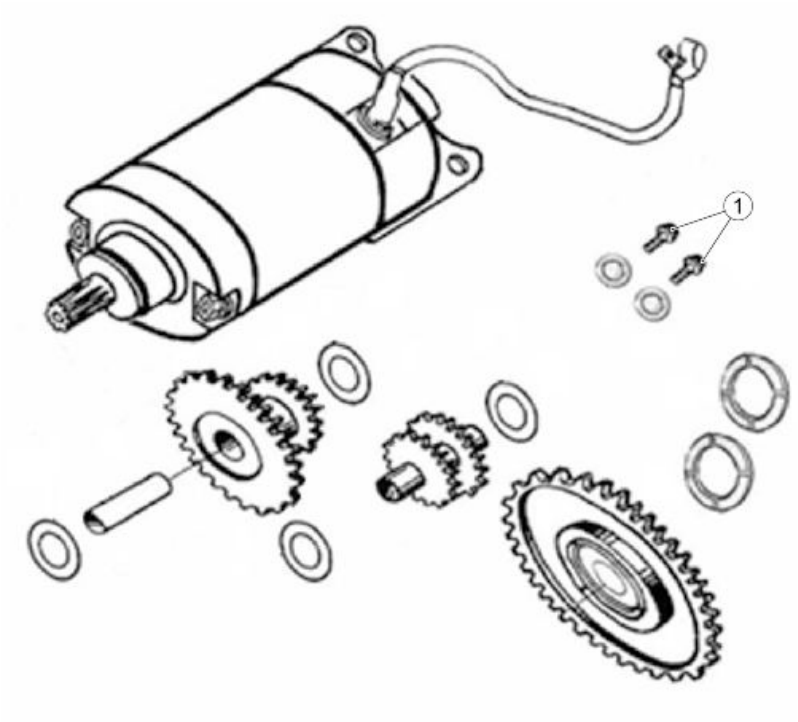
HEAD - CYLINDER UNIT

pos.	Description	Type	Quantity	Torque	Notes
1	Valve cover fixing screws	M6x18	4	25 +/- 5 Nm (18.44 +/- 3.69 lb ft)	-
2	Timing system gear cover fixing screws	M6x20	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
2	Head fixing nuts	M8	4	30 +/- 2 Nm (22.13 +/- 1.47 lb ft)	-
4	Head fixing screw	M6x110	4	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



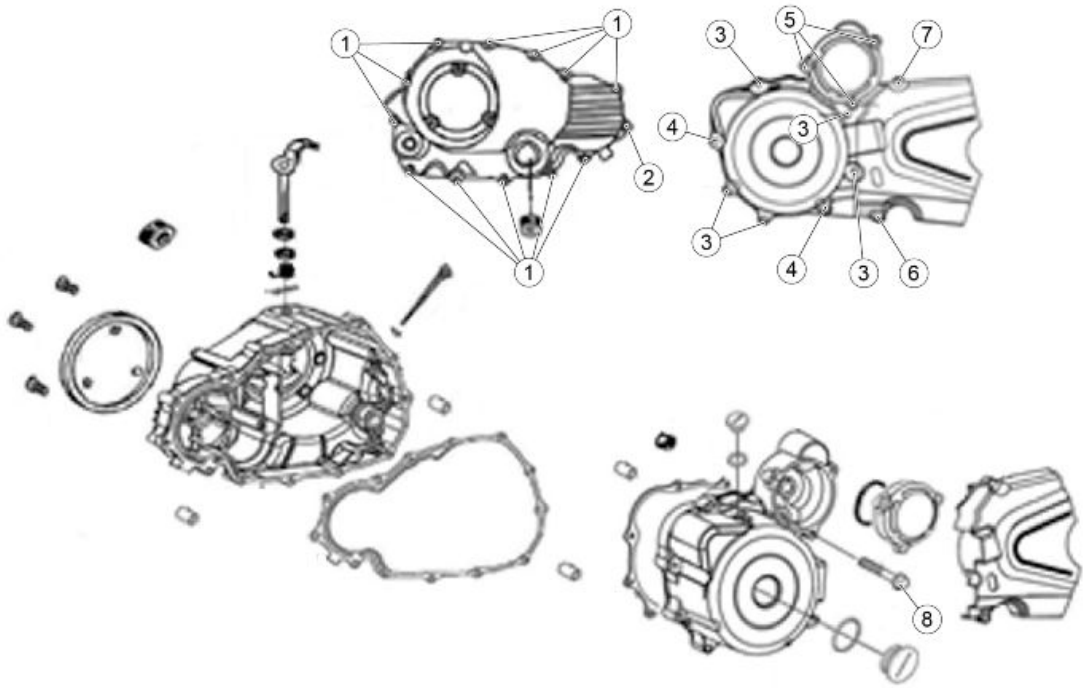
TIMING SYSTEM

pos.	Description	Type	Quantity	Torque	Notes
1	Timing system gear fixing screws	M6x10	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



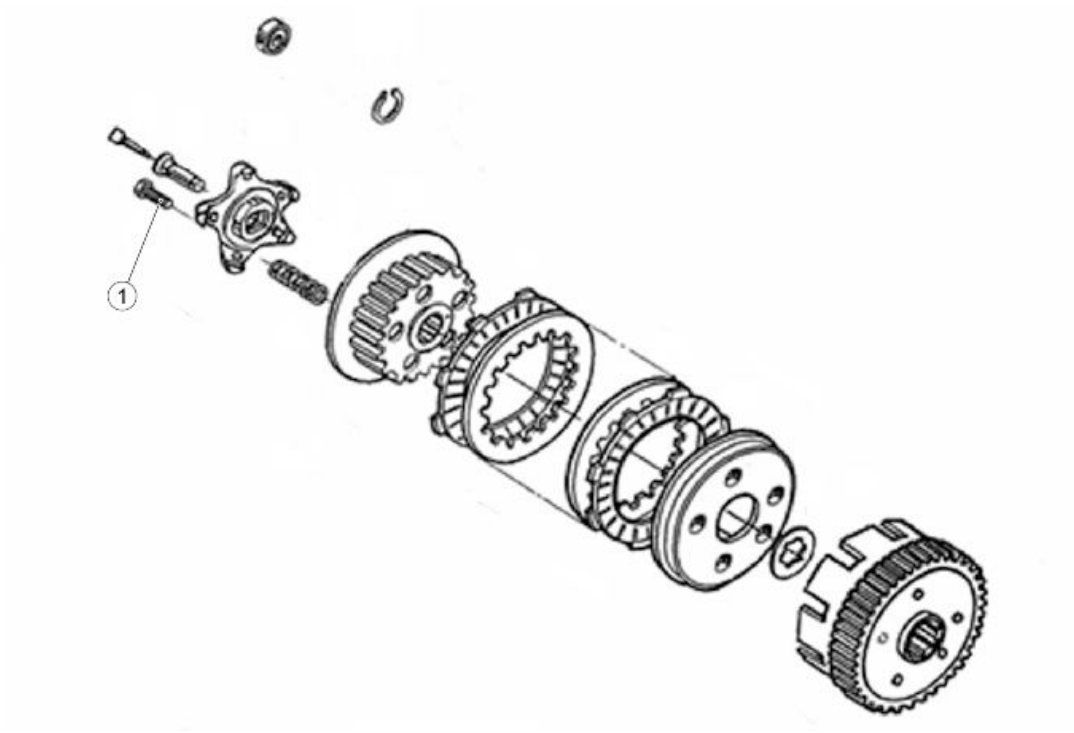
STARTER MOTOR

pos.	Description	Type	Quantity	Torque	Notes
1	Starter motor fixing screws	M6x28	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



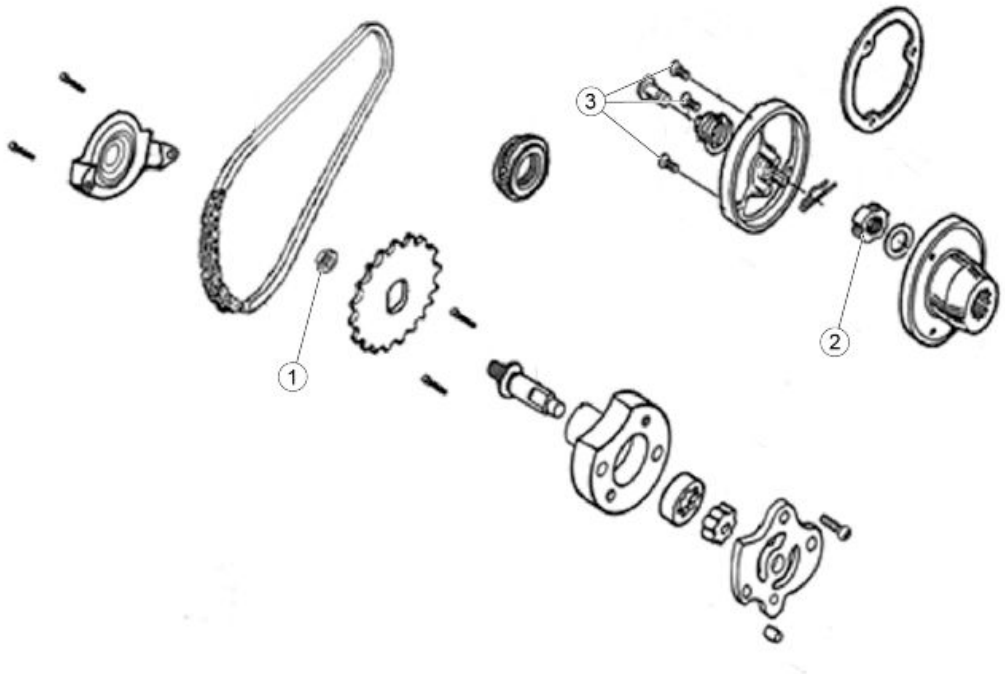
CRANKCASE COVERS

pos.	Description	Type	Quantity	Torque	Notes
1	Clutch crankcase fixing screws	M6	12	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
2	Clutch crankcase fixing screw	M6x45	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
3	Freewheel crankcase fixing screws	M6	4	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
4	Freewheel crankcase fixing screws	M6x50	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
5	Freewheel crankcase fixing screws	M6x20	3	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
6	Pinion crankcase fixing screw	M6	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
7	Pinion crankcase fixing screw	M6x30	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
8	Flywheel crankcase fixing screw	M6x25	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



CLUTCH ASSEMBLY

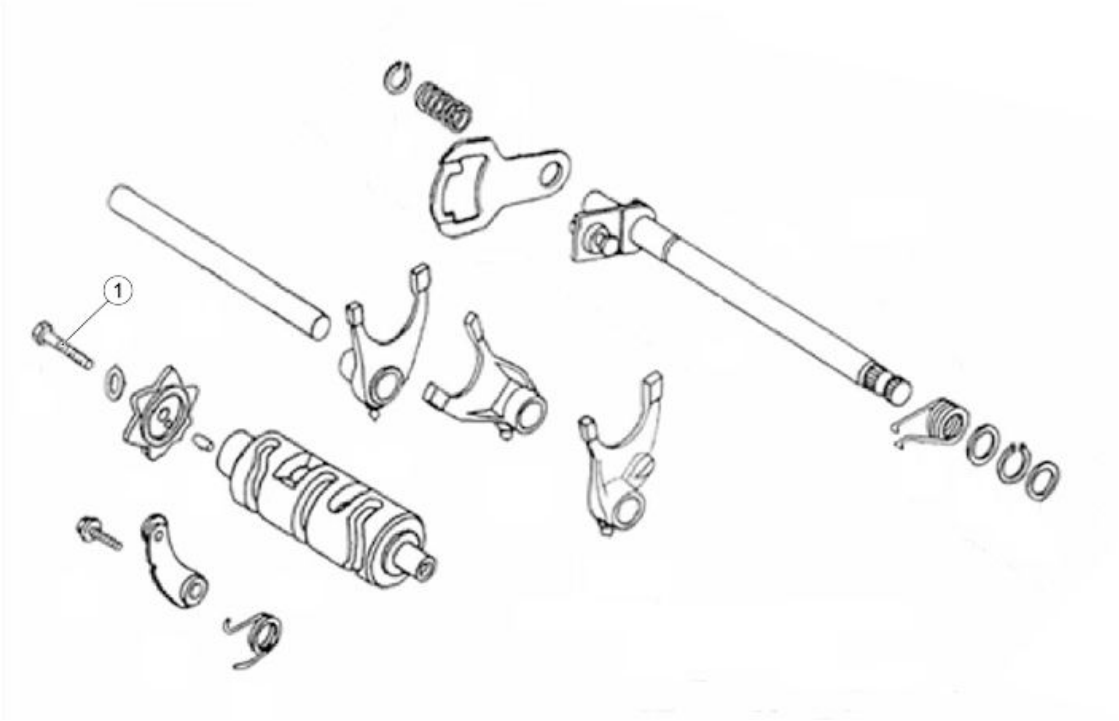
pos.	Description	Type	Quantity	Torque	Notes
1	Clutch spring plate fixing screws	M6x22	5	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



OIL PUMP

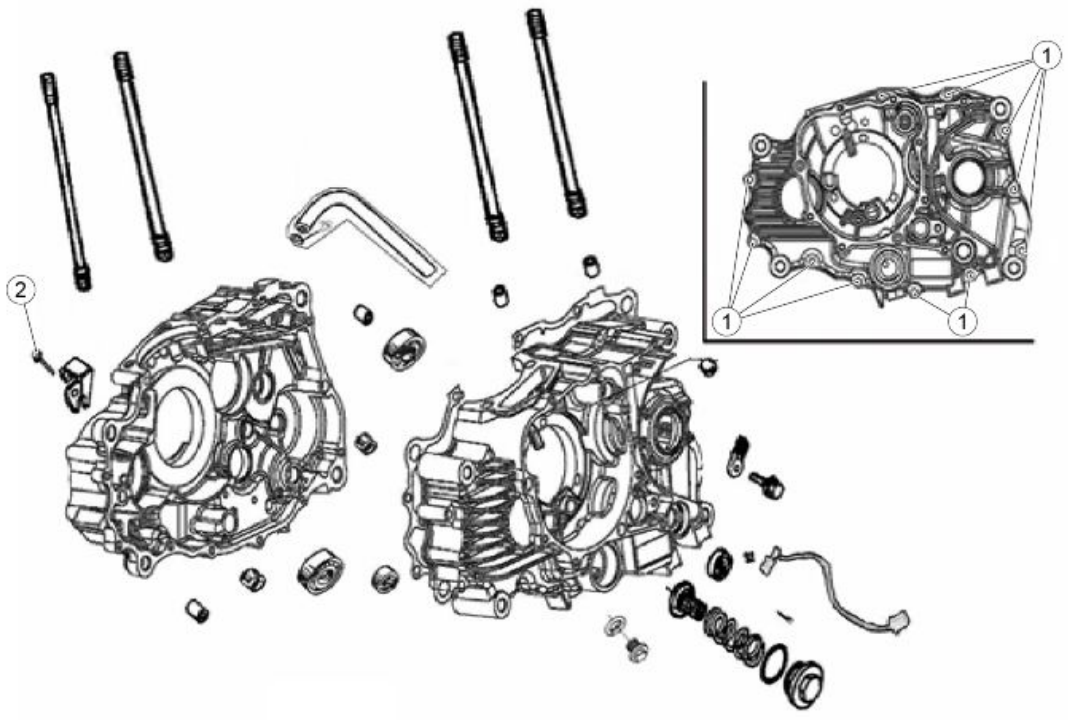
pos.	Description	Type	Quantity	Torque	Notes
1	Oil pump gear fixing nut	M6	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-

pos.	Description	Type	Quantity	Torque	Notes
2	Oil pump fixing ring nut	-	1	45 +/- 5 Nm (33.19 +/- 3.69 lb ft)	-
3	Oil filter cover fixing screws	M5x12	3	3 / 5 Nm (2.21 / 3.69 lbf ft)	-



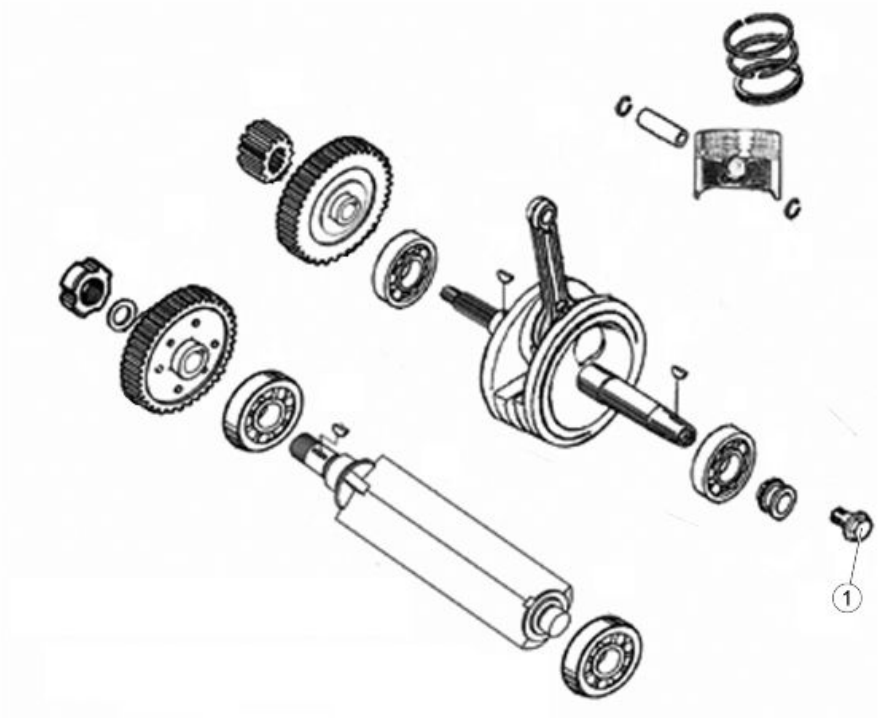
GEAR SELECTOR

pos.	Description	Type	Quantity	Torque	Notes
1	Desmodromic shaft fixing screw	M6	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



CRANKCASE

pos.	Description	Type	Quantity	Torque	Notes
1	Freewheel crankcase fixing screws	M6x50	11	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	Loctite 270
2	Clutch side crankcase fixing screw	M6x55	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	Loctite 270



CONNECTING ROD-PISTON UNIT

pos.	Description	Type	Quantity	Torque	Notes
1	Flywheel fixing screw	M10x36	1	55 +/- 5 Nm (40.57 +/- 3.69 lb ft)	-

Recommended products chart

TABELLA PRODOTTI CONSIGLIATI

Product	Description	Specifications
eni i-Base 15W-40	Olio motore	Utilizzare oli di marca con prestazioni conformi o superiori alle specifiche ACEA A3/B4-04 - API Service SL/CF - MB 229.1 - VW 501 01 + 505 00
AGIP FORK 10W	Olio forcella	SAE 10W
AGIP BRAKE 4	Brake fluid	SAE J 1703 -FMVSS 116 - DOT 3/4 - ISO 4925 - CUNA NC 956 DOT 4 synthetic fluid
AGIP GREASE SM2	Lithium grease with molybdenum for bearings and other points needing lubrication	NLGI 2
AGIP CHAIN LUBE SPRAY	Spray lubricating grease	-

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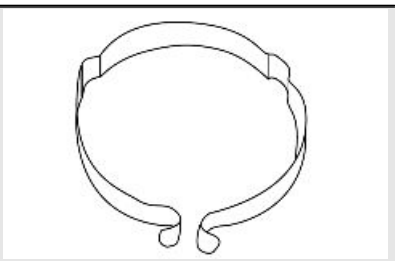
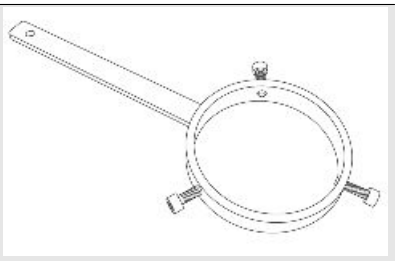
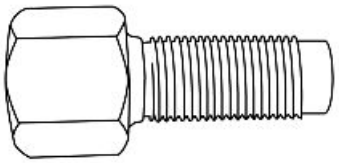
SPECIAL TOOLS

Stores code	Description	
020287Y	tool for sealing ring fitting	
020382Y	Valve cotters removal tool	
020970Y	Flywheel retainer	
020971Y	Flywheel extractor	

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Maintenance chart

Correct maintenance is fundamental for ensuring the longevity of your vehicle and maintaining optimum function and performance.

To this end, Aprilia offers a set of checks and maintenance services (at the owner's expense), that are summarised in the table shown on the following page. Any minor faults must be reported without delay to an **Authorised Aprilia Dealer or Sub-Dealer** without waiting until the next scheduled service to solve it.

All scheduled services must be carried out at the specified intervals and mileage, as soon as the pre-determined mileage is reached. Carrying out scheduled services on time is essential for the validity of your warranty. For further information regarding Warranty procedures and "Scheduled Maintenance", please refer to the "Warranty Booklet".

NOTE

CARRY OUT MAINTENANCE OPERATIONS AT HALF THE INTERVALS SPECIFIED IF THE VEHICLE IS USED IN PARTICULAR RAINY OR DUSTY CONDITIONS, OFF ROAD OR FOR TRACK USE.

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

C: CLEAN, R: REPLACE, A: ADJUST, L: LUBRICATE, G: CLOSE, B: RECHARGE

(1) Lubricate every 500 km (310.68 mi)

(2) Check every 3,000 km (3,728.23 mi) / Replace every 12,000 km (7,456.45 mi)

(3) Check every 6,000 km (3,728.23 mi) / Replace every 20,000 km (12,427.42 mi)

(4) Grease every 2 years or 20,000 Km (12,427.42 mi)

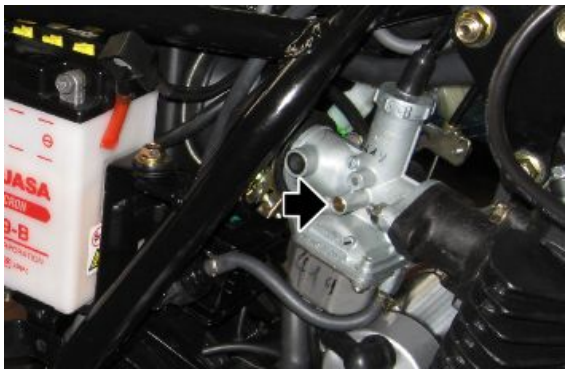
(5) Charge the battery once a month if the vehicle is unused

ROUTINE MAINTENANCE TABLE

km (mi) x 1,000	0.5 (0.31)	3 (1.86)	6 (3.73)	9 (5.59)	12 (7.46)	15 (9.32)	18 (11.18)
Rear shock absorber	I	I	I	I	I	I	I
Battery (5)	I-B	I-B	I-B	I-B	I-B	I-B	I-B
Safety fasteners	G	G	G	G	G	G	G
Spark plug	-	-	I-C	-	I-C	-	I-C
Rear brake cam (4)	-	-	-	-	-	-	-
Depression carburettor	I	-	I	-	I	-	I
Timing chain	-	-	I-A	-	I-A	-	I-A
Drive chain (1)	I	I	I	I	I	I	I
Transmission cables and controls	A	-	A-C	-	A-C	-	A-C
Wheels/tyres	I	I	I	I	I	I	I
Fluid loss check	C	C	C	C	C	C	C
Front/rear wheel bearings (4)	-	-	-	-	-	-	-
Steering bearings (4)	-	-	-	-	-	-	-
Air filter	C	C	C	C	C	C	C
Fuel filter (2)	C	C	C	C	R	C	C
Engine oil filter	C	C	C	C	C	C	C
Rear brake	A	A	A	A	A	A	A
Clutch	I	I	I	I	I	I	I
Valve clearance	-	-	I-A	-	I-A	-	I-A
Light circuit	I	I	I	I	I	I	I
Stop light switch	I-A	I-A	I-A	I-A	I-A	I-A	I-A
Brake fluid (3)	I	-	I	-	I	-	I
Motor oil	R	R	R	R	R	R	R

km (mi) x 1,000	0.5 (0.31)	3 (1.86)	6 (3.73)	9 (5.59)	12 (7.46)	15 (9.32)	18 (11.18)
Brake pads/shoes	I	I	I	I	I	I	I
Idle speed	I-A	I-A	I-A	I-A	I-A	I-A	I-A
Odometer reference (4)	-	-	-	-	-	-	-
Rear brake tie rod (4)	-	-	-	-	-	-	-

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.

Depression 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 guillotine seat causing an inadequate free 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.

Spark plug

Remove the spark plug regularly, clean off carbon scales, and replace spark plug if necessary.

For removal and cleaning:

- Make sure that the ignition switch is set to "OFF".
- Remove the tube (1) from the spark plug
- Clean off any trace of dirt from the spark plug base

- Using the special box spanner (2) in the tools pouch, unlock the spark plug

- Unscrew and completely remove the spark plug (3) from its seat, making sure no dust or dirt gets into the cylinder.

- Check that the spark plug electrode and the centre porcelain are free of carbon deposits or signs of corrosion. If necessary, clean using suitable spark plug cleaners, a wire and/or metal brush.
- Blow vigorously with a blast of air to prevent removed dirt from getting into the engine. Replace the spark plug if there are cracks on its insulating material, corroded electrodes or large deposits.
- Check the electrode gap with a feeler gauge. This gap should be 0.7 +/ - 0.05 mm (0.028 +/ - 0.0020 in); adjust it if required by carefully bending the earth electrode.
- Make sure the washer is in good conditions. Once the washer is fitted, finger screw the spark plug to avoid damaging the thread.
- Tighten using the spanner supplied in the tool kit, make the spark plug complete 1/2 a turn to press the washer.

CAUTION

TIGHTEN THE SPARK PLUG CORRECTLY, OTHERWISE THE ENGINE MAY OVERHEAT AND GET IRRETRIEVABLE DAMAGED. USE RECOMMENDED SPARK PLUGS ONLY. USING A SPARK PLUG OTHER THAN SPECIFIED MIGHT COMPROMISE ENGINE PERFORMANCE AND LIFE.

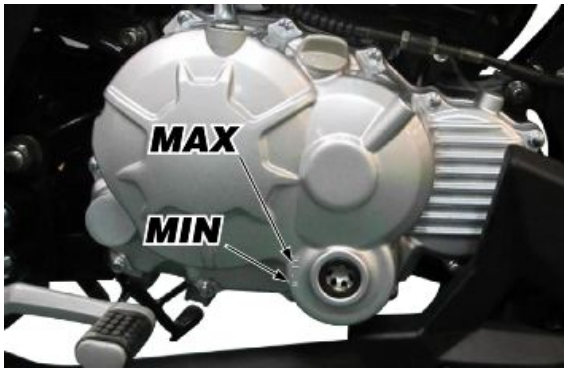
Locking torques (N*m)

Spark plug **15/25 Nm (11.06/18.44 lb ft)**

Engine oil

Check

Per il controllo:



IL CONTROLLO DEL LIVELLO OLIO MOTORE DEVE ESSERE EFFETTUATO A MOTORE CALDO.

CAUTION

DO NOT LET THE ENGINE IDLE WITH THE VEHICLE AT STANDSTILL TO WARM UP THE ENGINE AND OBTAIN THE OPERATING TEMPERATURE OF ENGINE OIL. PREFERABLY CHECK THE OIL AFTER A JOURNEY OF AFTER TRAVELLING APPROXIMATELY 15 Km (10 miles) IN EXTRAURBAN CONDITIONS (ENOUGH TO WARM UP THE ENGINE OIL TO OPERATING TEMPERATURE).

- Arrestare il motore e attendere almeno cinque minuti per permettere al lubrificante di tornare correttamente in coppa.
- Tenere il veicolo in posizione verticale, su una strada piana, con le due ruote appoggiate al suolo.
- Verificare attraverso l'apposito oblò d'ispezione, posizionato sul lato destro veicolo, il livello olio.

'**MAX**' = livello massimo.

'**MIN**' = livello minimo.

La differenza tra '**MAX**' e '**MIN**' è di circa 400 cc (24.4 cu in)

- Il livello è corretto, se raggiunge approssimativamente il livello 'MAX'.

Controllare periodicamente il livello olio motore.

CAUTION

NEVER ALLOW THE OIL LEVEL TO DROP BELOW THE MINIMUM LEVEL OR FILL ABOVE THE MAXIMUM LEVEL; IF YOU DO NOT COMPLY WITH THE MINIMUM AND MAXIMUM OIL LEVELS THE ENGINE COULD BE SERIOUSLY DAMAGED

Replacement

Check the engine oil level frequently.

For replacement:

CAUTION

HOT OIL IS MORE FLUID AND WILL DRAIN OUT MORE EASILY AND COMPLETELY; IDEAL TEMPERATURE IS REACHED AFTER THE ENGINE HAS RUN FOR ABOUT TWENTY MINUTES.

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

- Use a cloth to wipe off any mud deposit on the area next to the filler plug (1).
- Place a container with an over 1400 cm³ (85.43 cu.in) capacity under the drainage plug (2).
- Unscrew and remove the drainage plug (2).
- Unscrew and remove the filler plug (1).

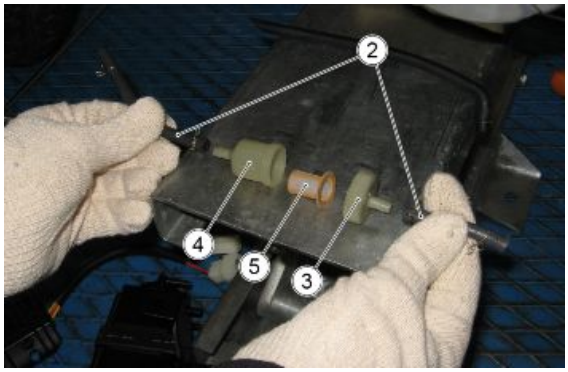
- Drain the oil into the container; allow several minutes for oil to drain out completely.
- Replace the sealing washer of the drainage plug (2).
- Remove any metal scrap attached to the drainage plug (2) magnet.
- Screw and tighten the drainage plug (2).

- Replace the oil filter.
- Fill up to the right engine oil level by adding recommended engine oil.

Fuel filter

- Remove the fuel tank
- Remove the left side fairing
- Remove the petrol filter (1)

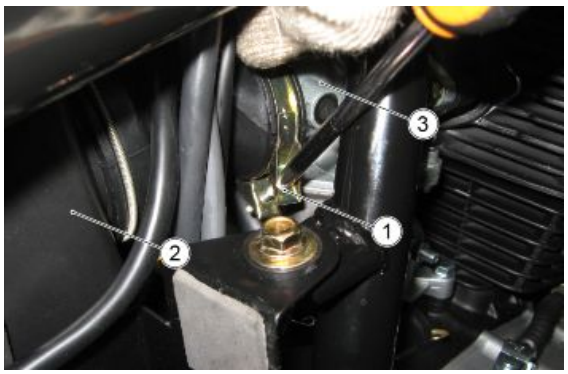
- Disconnect the pipes (2)
- Unscrew the cover (3) of the filter holder (4)
- Remove, clean and if necessary replace the internal filter (5)



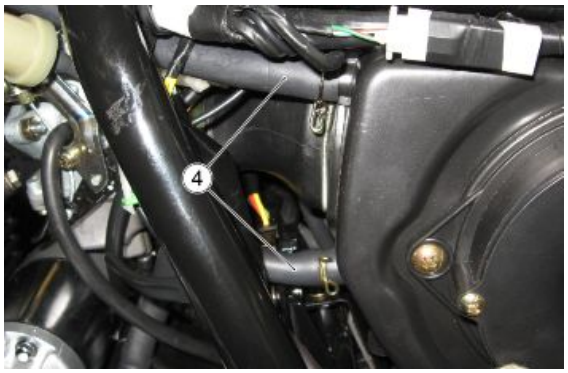
Air filter housing

Air filter housing removal

- Loosen the clamp (1) locking the filter box (2) to the carburettor (3)



- Disconnect the blow by pipes (4) from the filter box

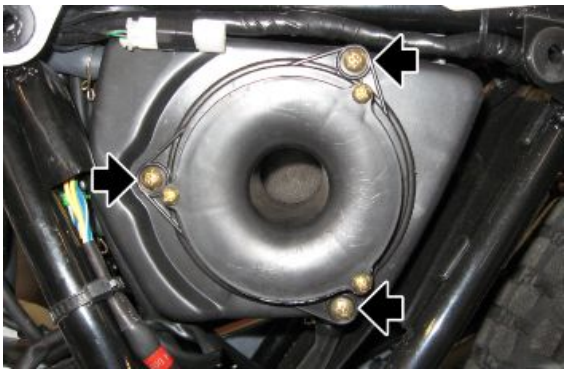


- Disconnect the breather pipe (5)

- Remove the filter box laterally

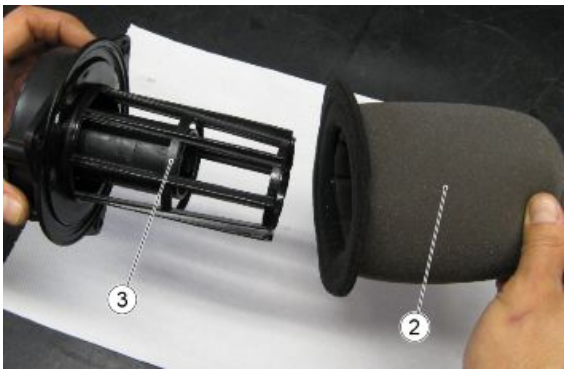
AIR FILTER REMOVAL

- Remove the three fixing screws of the filter



- Extract the filter completely

- Extract the filter from the filter support

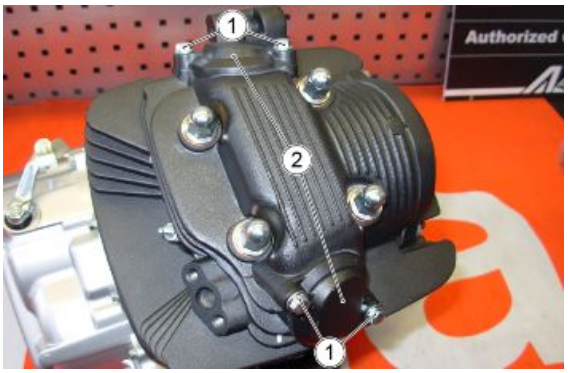


Checking the valve clearance

If the timing system is very noisy, check the clearance between the valves and the rocking levers. The following operation can be carried out also with the engine fitted on the vehicle.

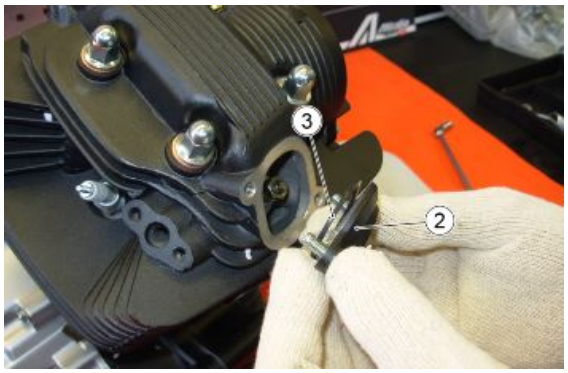
VALVE CLEARANCE CHECK

- Remove the screws (1) of both valve covers (2).



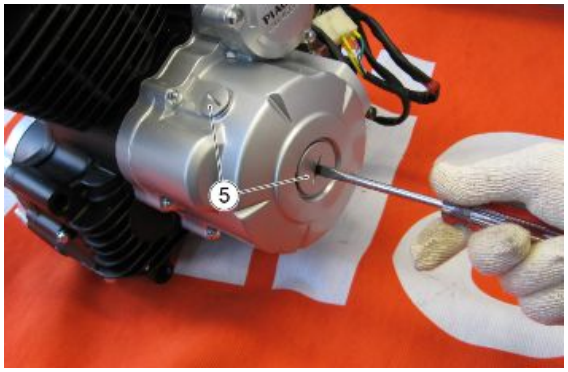
CAUTION

EACH TIME THE COVERS OF THE CYLINDER HEAD VALVE ARE REMOVED, THE GASKETS (3) MUST BE CHECKED AND IF NECESSARY REPLACED.



- Remove the spark plug (4)

- Remove the inspection cover (5)

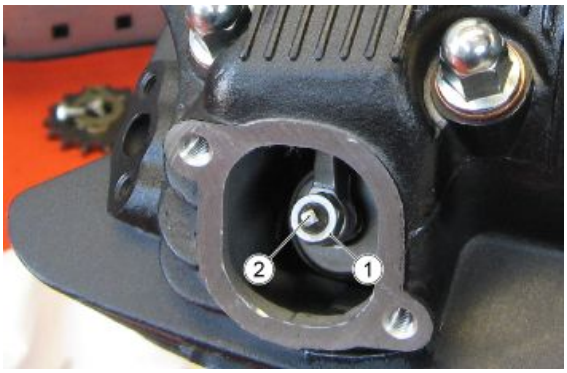


- Turn the crankshaft until in the inspection cover the reference notch (6) is visible corresponding to the upper dead centre of the piston.

- Check that the tappets (7) have clearance and with a suitable feeler gauge (8) check that the clearance is within the limit values.

VALVE CLEARANCE ADJUSTMENT

- Loosen the nut (1).
- Turn the adjuster (2) until obtaining the following clearance:



Technical specifications

Values valid with control clearance between rockers and valve

Inlet valve: 0.15 mm (0.0059 in)

Exhaust valve: 0.20 mm (0.0079 in)

- The measurement must be taken using a special thickness gauge.

CAUTION

IF CLEARANCE IS LARGER THAN RECOMMENDED, THE TAPPETS WILL BE NOISY. OTHERWISE, THE VALVES DO NOT CLOSE CORRECTLY, WHICH CAN LEAD TO PROBLEMS SUCH AS:

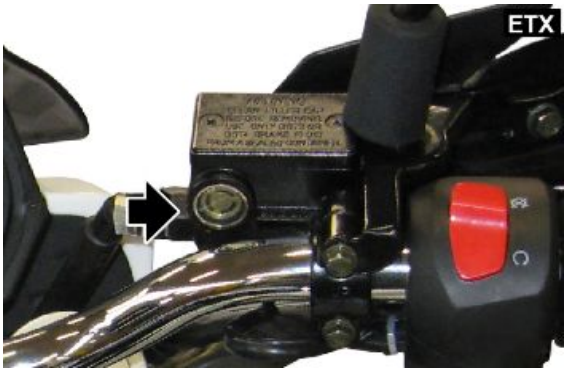
- PRESSURE DROP;
- ENGINE OVERHEAT;
- VALVE BURN OUT, ETC.

Braking system

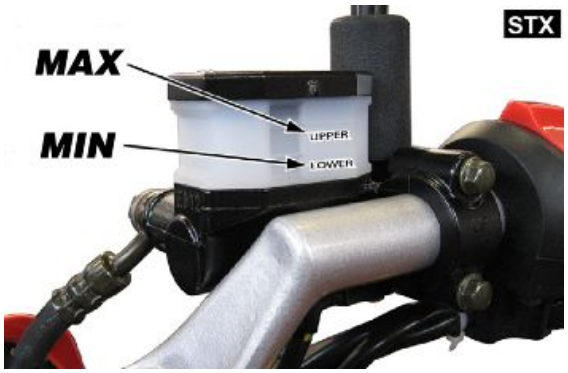
Level check

Frequently check the brake fluid tank level, through the inspection points on the right side of the handlebar corresponding to the sight glass in the model **ETX** or the reference notches in the model **STX**.

The brake fluid level must be half of the inspection sight glass in the model **ETX** and within the reference notch **MIN** and **MAX** in the model **STX** if the tanks are parallel to the ground.



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

RISK OF BRAKE FLUID SPILLAGE. DO NOT USE THE BRAKE LEVER WHILE THE BRAKE FLUID TANK CAP IS LOOSENED OR REMOVED.

CAUTION

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

TO AVOID BRAKE FLUID SPILLING OUT DURING THE PROCEDURE, MAINTAIN THE FLUID IN THE TANK PARALLEL TO THE EDGES OF THE TANK (HORIZONTAL). DO NOT ADD ADDITIVES OR OTHER SUBSTANCES TO THE FLUID. IF YOU USE A FUNNEL OR ANOTHER IMPLEMENT, MAKE SURE THAT THEY ARE PERFECTLY CLEAN.

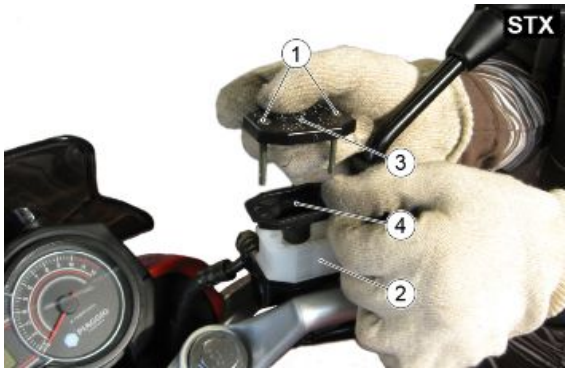
THE BRAKE FLUID IS HIGHLY CORROSIVE, AVOID CONTACT WITH SKIN AND EYES AND PARTS OF THE MOTORCYCLE.
WHEN TOPPING OFF, PROTECT THE AREAS NEAR THE TANK WITH ABSORBENT MATERIAL.

Recommended products

AGIP BRAKE 4 Brake fluid

As an alternative to the recommended fluid, other fluids with performance equal to or higher than the specifications may be used. Synthetic fluid SAE J1703, NHTSA 116 DOT 4, ISO 4925

Impianto frenante anteriore



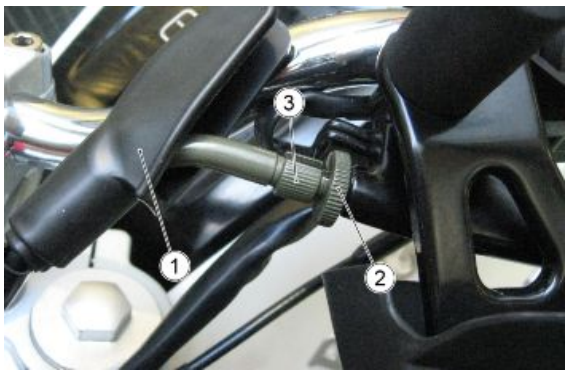
- Utilizzando un cacciavite corto a croce, svitare le viti (1) del serbatoio liquido impianto frenante anteriore (2).
- Sollevare e rimuovere il coperchio (3) completo di viti (1) e la guarnizione (4).
- Rabboccare il serbatoio (2) con liquido freni consigliato, fino ad oltrepassare il livello minimo, indicato dal riferimento "MIN".

CAUTION

IL RABBOCCO SINO AL LIVELLO MASSIMO DEVE ESSERE EFFETTUATO SOLO CON PASTIGLIE NUOVE. SI RACCOMANDA DI NON RABBOCCARE SINO AL LIVELLO MASSIMO CON LE PASTIGLIE USURATE, POICHÉ SI PROVOCHERÀ LA FUORIUSCITA DEL LIQUIDO IN CASO DI SOSTITUZIONE PASTIGLIE FRENO.
CONTROLLARE L'EFFICIENZA FRENANTE.
NEL CASO IN CUI LA CORSA LIBERA DELLA LEVA FRENO SIA TROPPO LUNGA, O IN CASO DI PERDITE, POTREBBE ESSERE NECESSARIO SPURGARE ARIA DAL SISTEMA.
IN TAL CASO, RIVOLGERSI AD UN Concessionario Ufficiale Aprilia.

Clutch system

Adjusting the lever

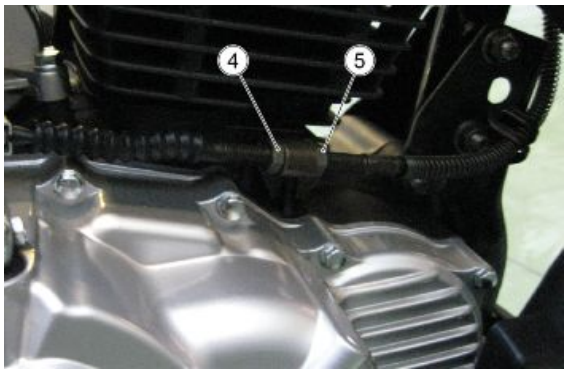


Adjust the clutch if the motor stops, or if the vehicle moves forward with the clutch activated and the gear inserted, or if the clutch "slides," causing a delay in acceleration with respect to the rpm. Adjustment of minor pieces can be performed using the register on the clutch by operating as followed:

- Slide the protective casing (1) out
- Loosen the nut (2)
- Turn the adjuster (3) until the clearance at the extreme end of the clutch lever is between 10 - 20 mm (0.39 - 0.79 in)

- Tighten the nut (2), until the adjuster is locked in place (3).
- Check the clearance at the extremity of the clutch lever.
- Reposition the protective casing (1).
- If the adjuster (3) is completely screwed in, completely unscrewed, and/or it is not possible to obtain the correct clearance:
- Slide the protective casing (1) out. Completely screw in the nut (2) on the adjuster (3).
- Completely tighten the adjuster (3).

Operating from the right vehicle side:



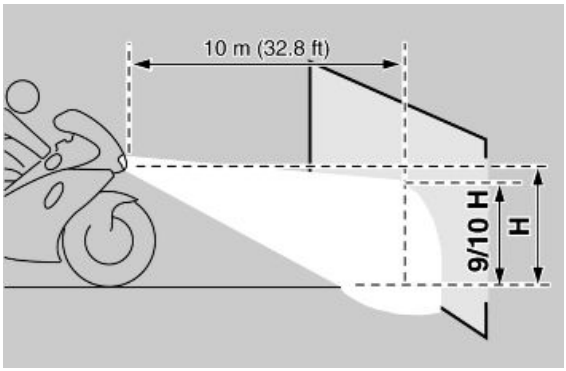
- Loosen the nut (4)
- Turn the adjuster (5) until the clearance at the extreme end of the clutch lever is between 10 - 20 mm (0,39 - 0,79 in)
- Tighten the nut (4), until the adjuster is locked in place (5).
- Check the clearance at the extremity of the clutch lever.
- Start the engine.
- Completely activate the clutch, and insert first gear.
- Make sure that the engine does not stop and that the vehicle does not move forward, and that the friction does not "slide" during acceleration or during driving.

Headlight adjustment

NOTE

IN COMPLIANCE WITH LOCAL LEGISLATION, SPECIFIC PROCEDURES MUST BE FOLLOWED WHEN ALIGNING THE LIGHTS.

Per una verifica rapida del corretto orientamento del fascio luminoso anteriore, porre il veicolo a 10 m (32.8 ft) di distanza da una parete verticale accertandosi che il terreno sia piano. Accendere la luce anabbagliante, sedersi sul veicolo, e verificare che il fascio luminoso proiettato sulla parete sia di poco al di sotto della retta orizzontale del proiettore (circa 9/10 dell'altezza totale).



Per effettuare la regolazione verticale del fascio luminoso:

- Posizionare il veicolo sul cavalletto centrale.
- Operando dal lato posteriore sinistro del cupolino, agire con un cacciavite a croce sull'apposita vite. AVVITANDO (senso orario), il fascio luminoso si alza; SVITANDO (senso antiorario, il fascio luminoso si abbassa.
- Con questa vite si regola l'inclinazione del gruppo ottico anteriore.

NOTE

CHECK THAT THE LIGHT BEAM VERTICAL DIRECTION IS CORRECT.

INDEX OF TOPICS

Electrical system installation

INTRODUCTION

Scope and applicability

This document aims at defining the cable harness routing in order to achieve the vehicle reliability targets.

CHASSIS

Materials used and corresponding quantities

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

- 1 Battery
- 1 Vehicle cable harness
- 1 Positive battery cable
- 1 Battery - engine ground cable
- 1 Right handlebar control
- 1 Left handlebar control
- 1 Horn
- 1 Ignition switch
- 1 Instrument panel
- 1 Lights control unit
- 1 CDI
- 1 Diode
- 1 Headlamp
- 1 Taillight
- 1 Right front turn indicator
- 1 Left front turn indicator
- 1 Rear right turn indicator
- 1 Rear left turn indicator
- 1 Front stop switch
- 1 Clutch switch
- 1 Rear stop switch
- 1 Voltage regulator
- 1 Start-up relay
- 1 Fuel level sensor
- 1 Speed sensor

ENGINE

Materials used and corresponding quantities

The electrical system consists of the following components:

- 1 Engine speed sensor
- 1 Coil
- 1 Gear sensor
- 1 Alternator
- 1 Starter motor
- 1 Spark plug

Motorcycle division

The wiring timing is subdivided in three essential sections, as indicated in the figure.

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

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.

CHASSIS

- Instrument panel connector
- Start-up relay connector
- Speed sensor connector
- Lights control unit connector
- Front headlamp connector
- Taillight connector
- Fuel level sensor connector
- Alternator connector
- Regulator connector
- Starter motor eyelet
- Right handlebar control connector
- Left handlebar control connector
- Clutch sensor connector
- Start-up relay connector
- Ignition switch connector

ENGINE

- Engine speed sensor connector
- Coil connector
- Gear sensor connector

The connectors in the list are circled 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.

Front side

TABLE A: FRONT HEADLIGHT ASSEMBLY

1. Front lights cable harness connector
2. Front light cable harness
3. Front main cable harness
4. Left front turn indicator connectors
5. Right front turn indicator connectors

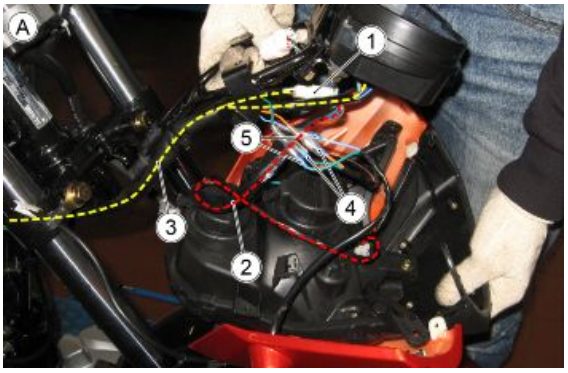


TABLE A1: FRONT HEADLIGHT ASSEMBLY

- Fix the front cable harness to the support frame with a clamp (6)

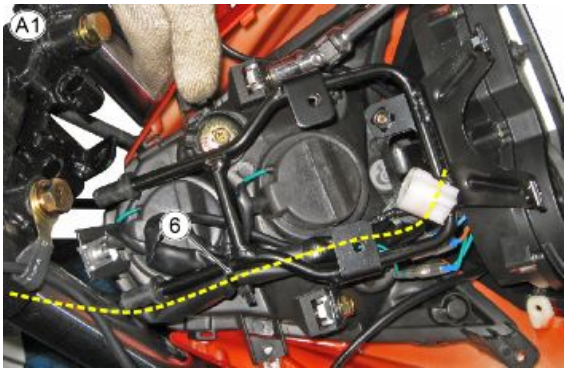


TABLE A2: FRONT HEADLIGHT ASSEMBLY

3. Front main cable harness
7. Front main cable harness connector

- Pass the front cable harness through the cable grommet (8)

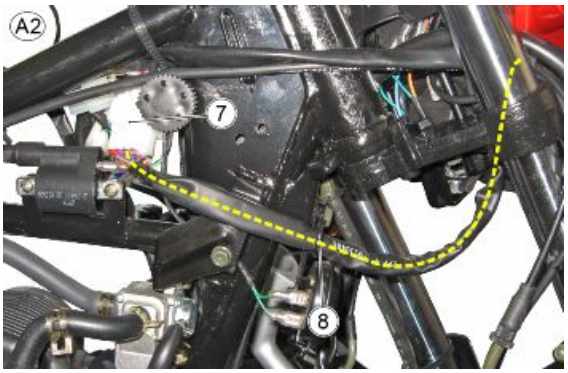


TABLE B: SPEED SENSOR

1. Speed sensor
2. Speed sensor cable harness
3. Cable grommets

TABLE B1: SPEED SENSOR

- Remove the front light assembly to access the speed sensor connector

4. Speed sensor connector

TABLE C: LIGHT SWITCH

1. Right light switch cable harness
2. Left light switch cable harness

- Use a cable grommet (3) and lock the throttle grip cable to the right light switch cable harness
- Use a cable grommet (4) and lock the clutch cable to the left light switch cable harness

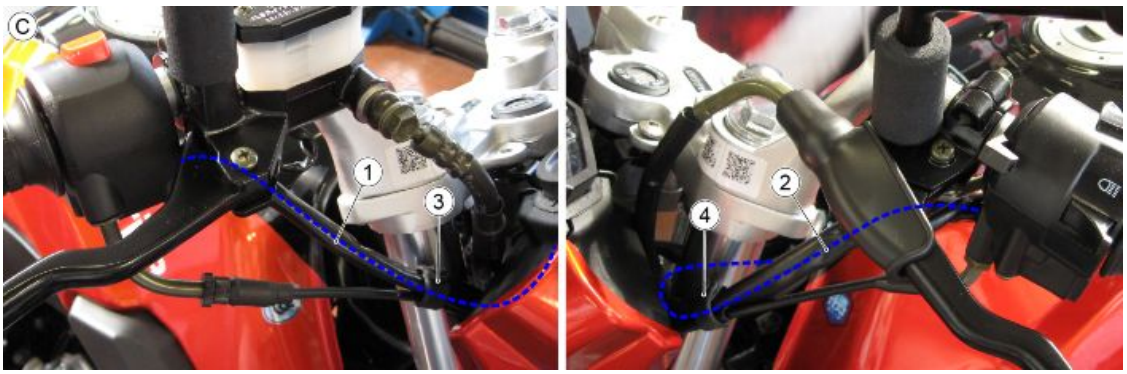


TABLE C1: LIGHT SWITCH

1. Right light switch connector
2. Left light switch connector

- Using a clamp (3) lock the cable harness to the frame

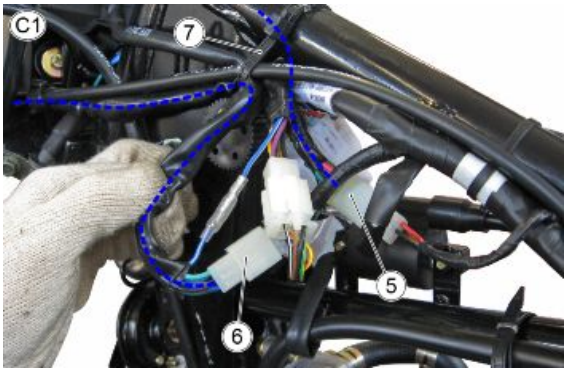
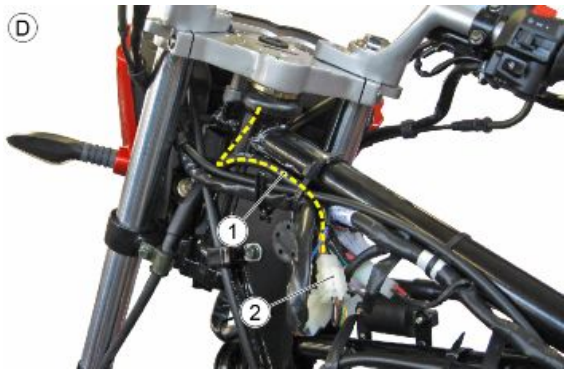


TABLE D: IMMOBILIZER

1 Immobilizer cable harness

2. Immobilizer connector



Central part

TABLE A: MAIN CABLE HARNESS

1. Main cable harness
2. Fuel level sensor connector

- In the points with the white belt on the main cable harness, lock it to the frame with two clamps (3)

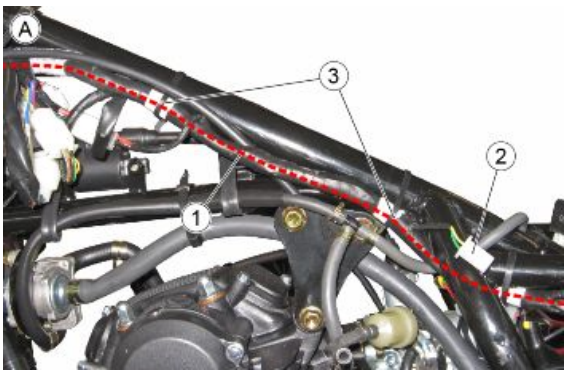


TABLE A1: MAIN CABLE HARNESS

1. Main cable harness

- In the points with the white belt on the main cable harness, lock it to the frame with two clamps (3)

TABLE A2: MAIN CABLE HARNESS

1. Main cable harness
    - In the indicated point, lock the main cable harness to the frame with a clamp (3)

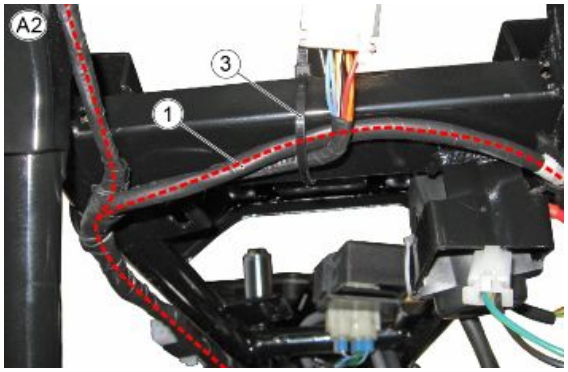


TABLE A3: MAIN CABLE HARNESS

1. Main cable harness
    - In the indicated point, lock the main cable harness to the frame with a clamp (3)

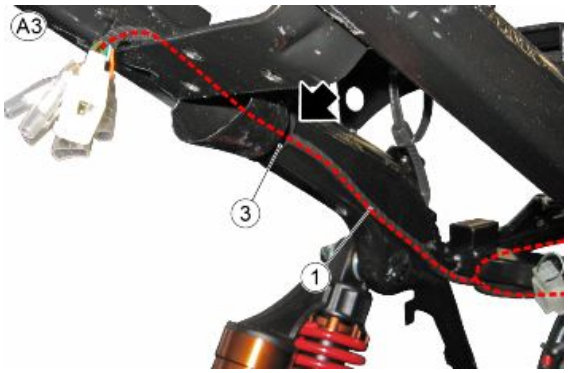


TABLE B: HORN

1. Horn
2. Horn connectors
3. Horn cable harness
    - Pass the cable harness between the frame and the support plate, in the indicated point

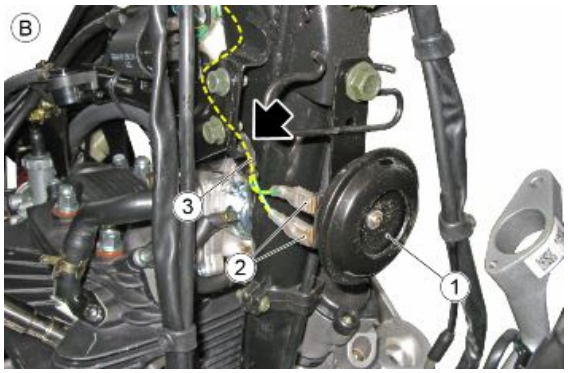


TABLE C: COIL

1. Coil
2. Connector
3. Eyelet
4. Spark plug cap
    - Pass the spark plug cap cable harness through the cable grommet (5)

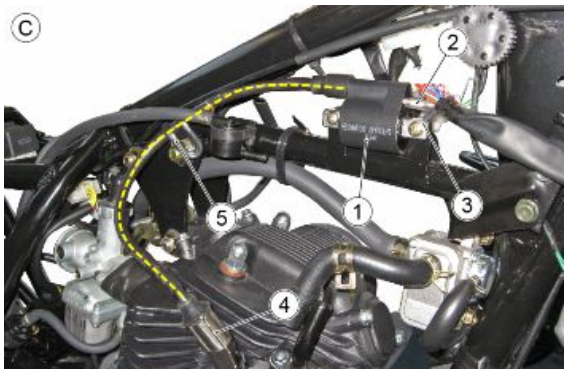


TABLE D: ELECTRONIC CONTROL UNIT

1. Control unit
2. Control unit cable harness
3. Main cable harness

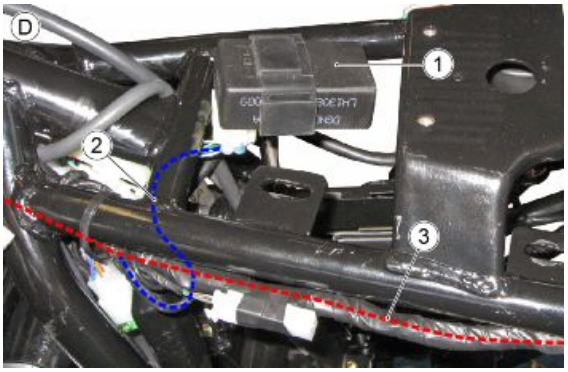


TABLE E: BATTERY POSITIVE

1. Battery positive eyelet
2. Battery positive cable harness
3. Turn indicator diode

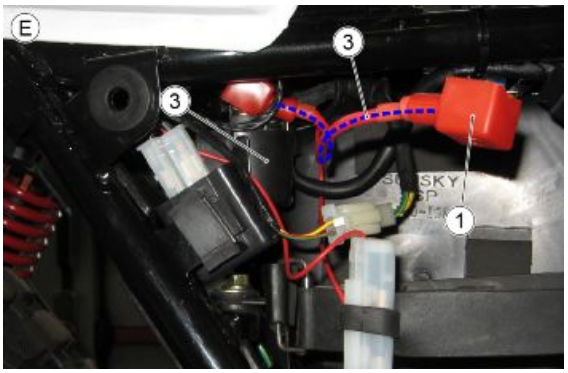


TABLE F: STARTER MOTOR

1. Starter motor
2. Starter motor positive cable harness
    - Clamp the cable harness to the frame in the indicated points

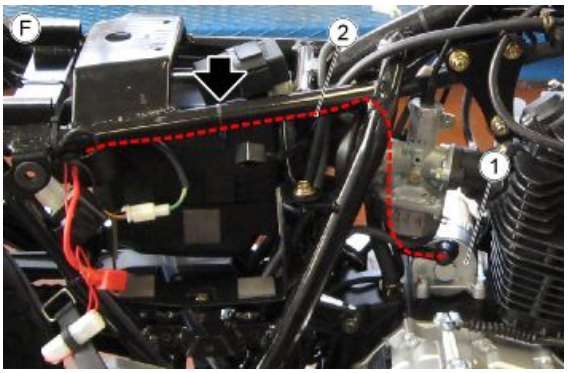


TABLE G: BATTERY NEGATIVE

1. Battery negative eyelet
2. Battery negative cable harness
3. Main cable harness

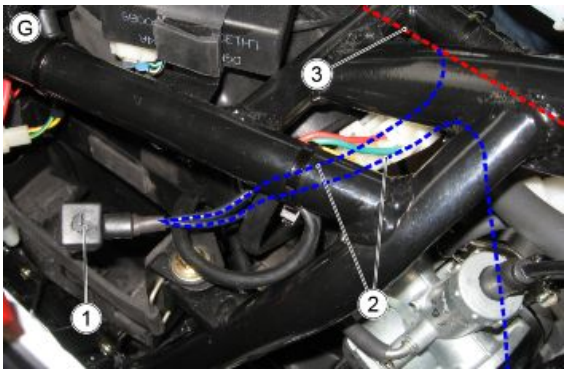


TABLE G1: BATTERY NEGATIVE

4. Engine ground eyelet
5. Negative battery/ground cable harness

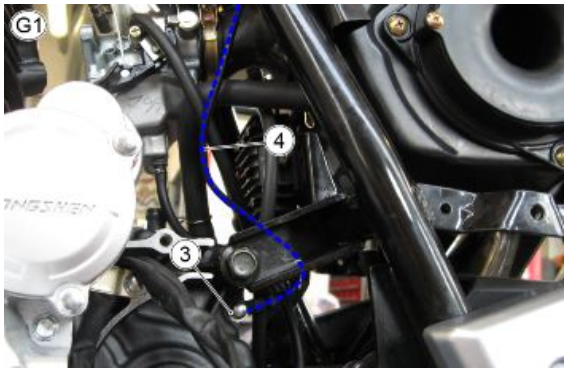


TABLE H: VOLTAGE REGULATOR

1. Voltage regulator
2. Voltage regulator connectors
3. Voltage regulator cable wiring

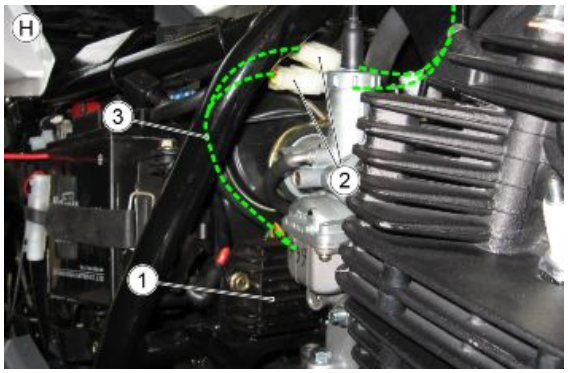
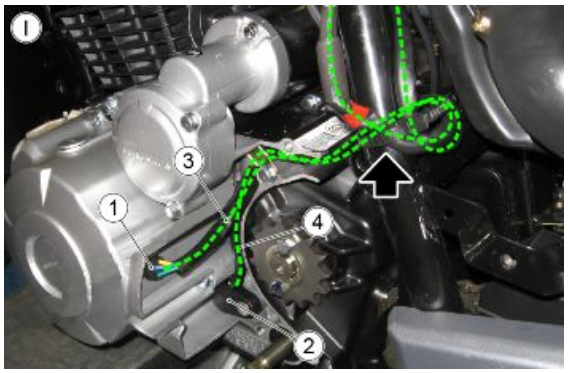


TABLE I: ENGINE SPEED SENSOR / GEAR SENSOR

1. Rpm sensor
2. Gear sensor
3. Rpm sensor cable harness
4. Gear sensor cable harness

- Lock the cable harness of the two sensors with a clamp to the frame, in the indicated points



Back side

TABLE A: REAR LIGHT UNIT

- Pass the cable harness of the turn indicators (1) and the licence plate light (2) through the cable grommet (3)

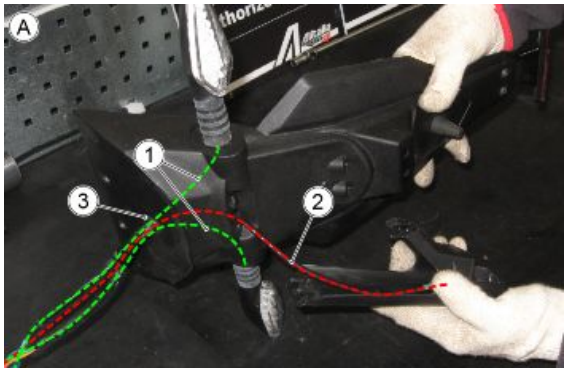


TABLE A1: REAR LIGHT UNIT

- Pass the cable harness of the taillight (4) below the rear frame, in the indicated points

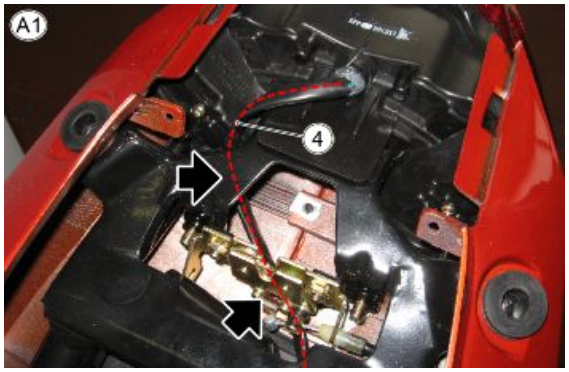


TABLE A2: REAR LIGHT UNIT

- Place the connectors of the rear light assembly in the protective casing, under the frame in the indicated points and lock the cable harness with a clamp (5)

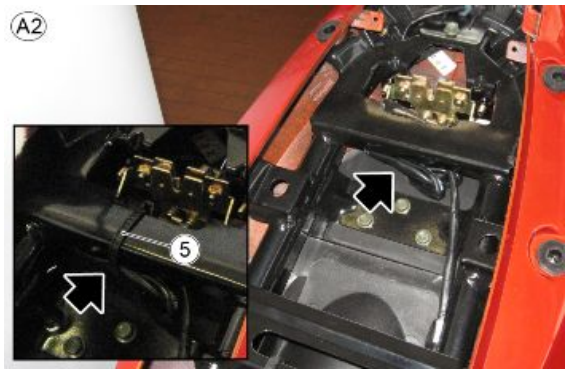


TABLE B: REAR STOP SWITCH

1. Rear stop switch
2. Rear stop switch cable harness

- Fasten the cable harness to the swingarm by a clamp (3)

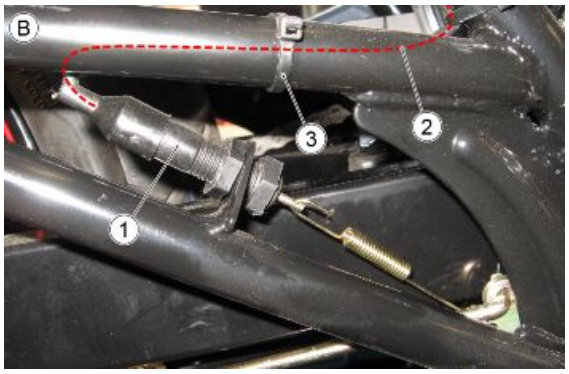
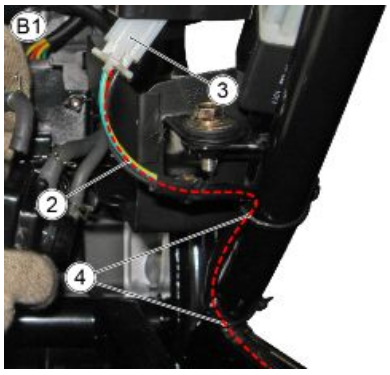


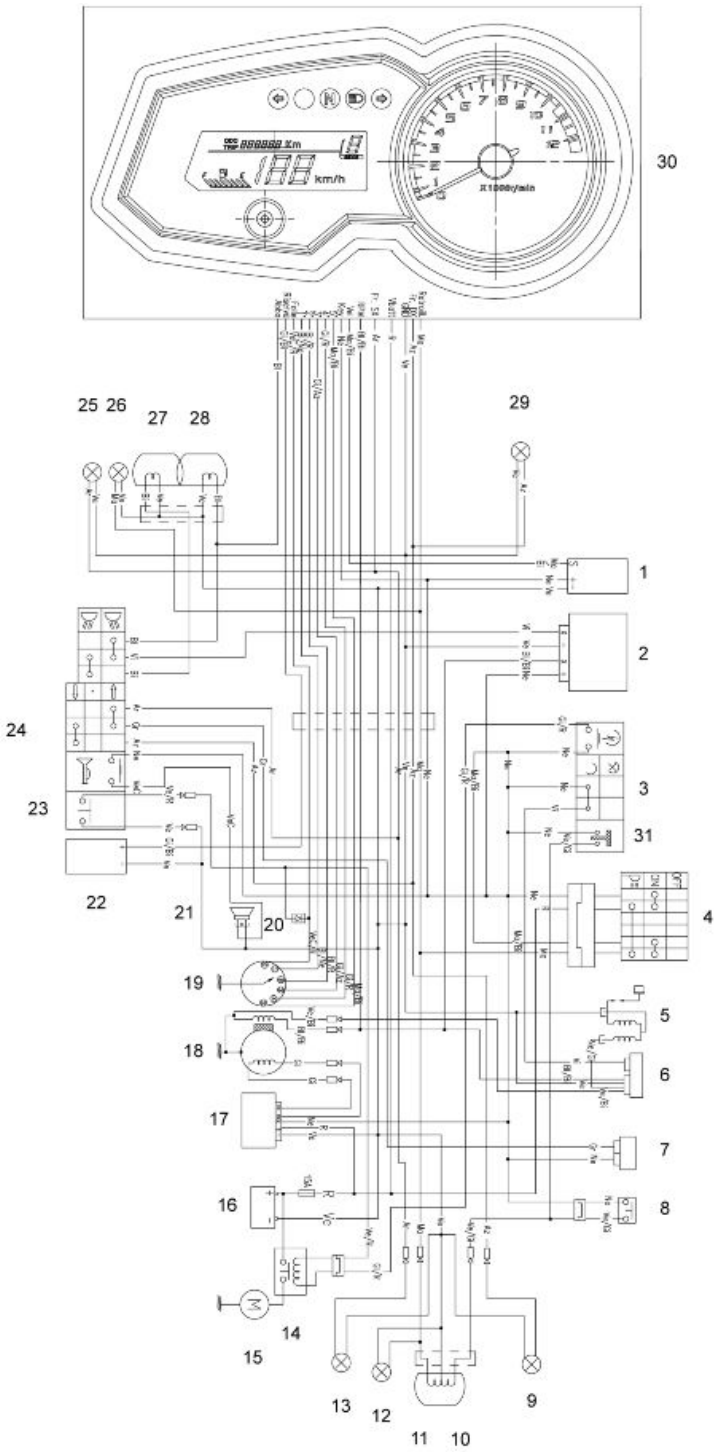
TABLE B1: REAR STOP SWITCH

2. Rear stop switch cable harness
3. Rear stop switch connector

- Fix the cable harness to the frame with two clamps (4)



General wiring diagram



Key:

1. Speed sensor
2. Lights control unit
3. Right turn signal switch
4. Ignition switch

5. Coil
6. CDI
7. Turn indicator arrows
8. Rear stop switch
9. RH rear indicator
10. Stop light
11. Rear tail light
12. License plate light
13. LH rear indicator
14. Start-up relay
15. Starter motor
16. Battery
17. Voltage regulator
18. Alternator
19. Gear sensor
20. Diode
21. Horn
22. Fuel level sensor
23. Clutch switch
24. Left turn signal switch
25. LH front indicator
26. Front position light
27. Low beam light
28. High beam light
29. RH front indicator
30. Instrument panel
31. Front stop switch

Cable colours - key:

Ar orange

Az sky blue

Bl blue

Bi white

Gi yellow

Gr grey

Mabrown

Ne black

R red

Ve green

Vi purple

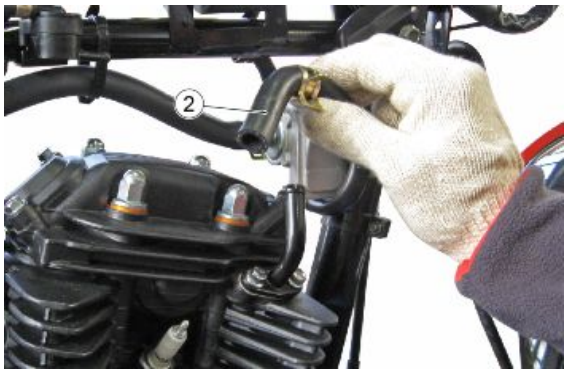
VeC clear green

INDEX OF TOPICS

Removing the engine from the vehicle

- Remove the tank
- Remove the side fairings
- Disconnect the spark plug cap (1)

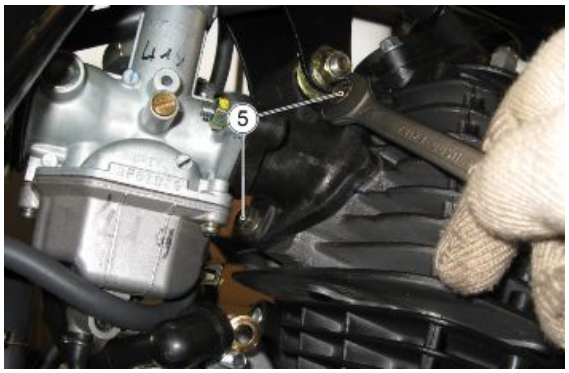
- Disconnect the oil vapour recovery pipe (2) from the head



- Disconnect the clutch cable (3) from the lever

- Remove the clutch cable locking plate (4)

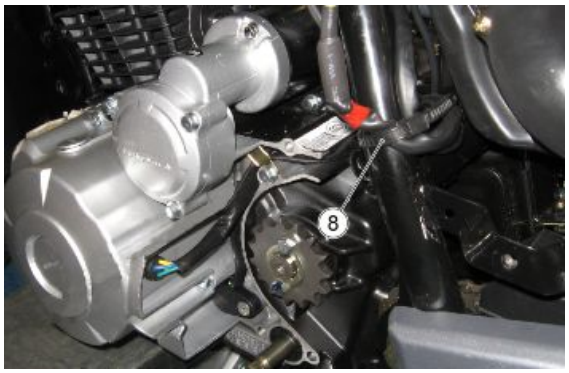
- Remove the fixing screws (5) of the fuel manifold



- Remove the starter motor power supply cable (6)

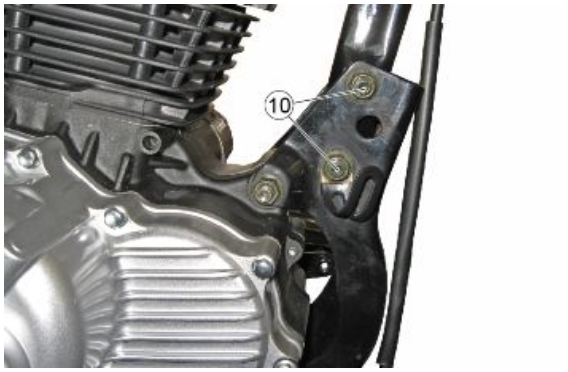
- Remove the gear lever linkage (7)

- Remove the pinion crankcase
- Disconnect the connectors of the gear sensor and the engine speed sensor, remove the clamp (8) and free the two cable harness

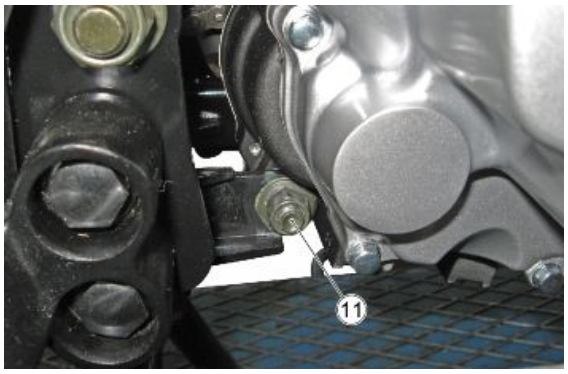


- Remove the ground lead (9)

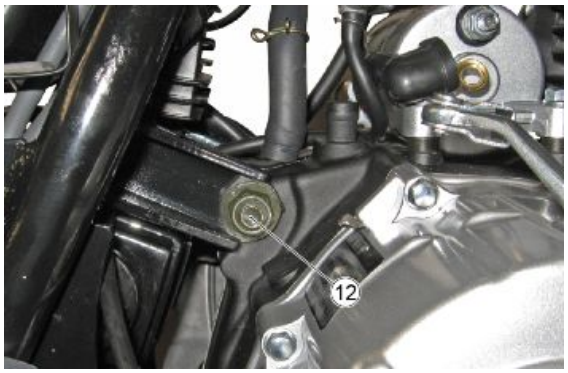
- Place a engine support stand when removing from the frame
- Remove the two front pins (10) and related cradle nuts



- Remove the rear pin (11) and related lower nut fixing the engine to the frame

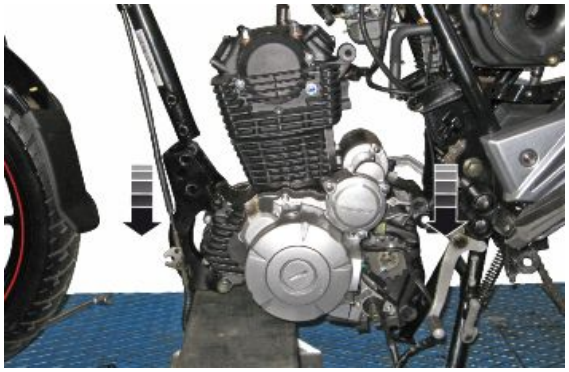


- Remove the rear pin (12) and related upper nut fixing the engine to the frame



- Remove the upper pin (13) and related nut fixing the engine to the frame

- Remove the engine



INDEX OF TOPICS

CAUTION

NOTE

FOR THE TEAR-OFF AND THE PRESS-FIT OF THE BEARINGS USE GENERAL EXTRACTORS AND PUNCHES

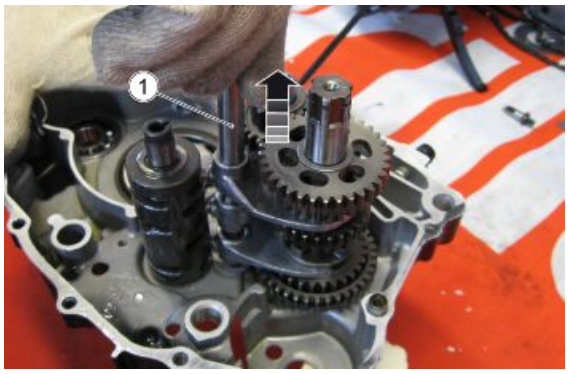
Gearbox

Gearbox shafts

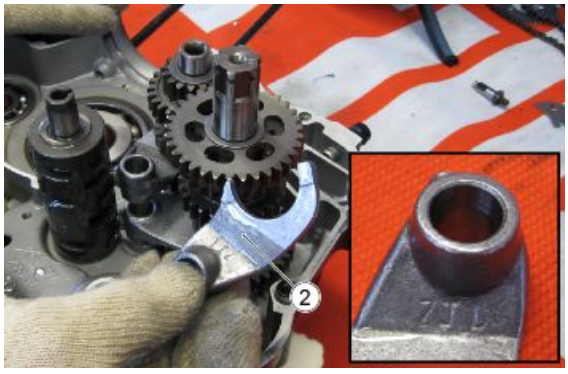
Disassembling the gearbox

- After removing the closing screws of the engine crankcase, place the engine from the clutch side and remove the opposite crankcase by lifting it carefully.
- Remove the gasket.

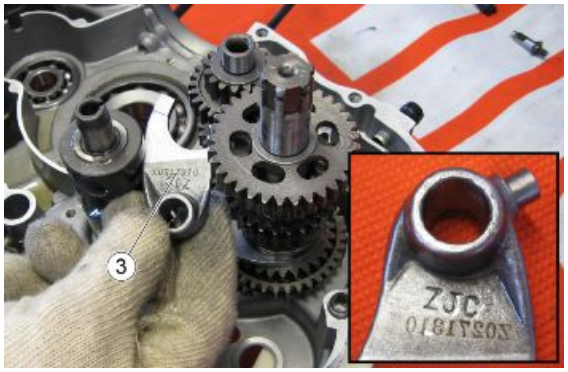
- Remove the forks guide pin (1)



- Remove the fork (2)



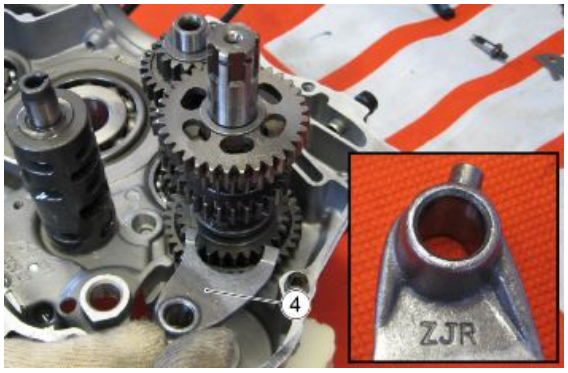
- Remove the fork (3)



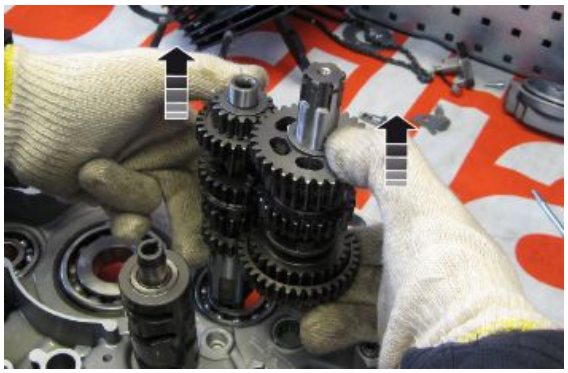
- Remove the fork (4)

CAUTION

FOR THIS FORK, THE MARK HIGHLIGHTED IN THE IMAGE DURING ASSEMBLY, MUST FACE DOWNWARDS UNLIKE THE OTHER TWO FORKS

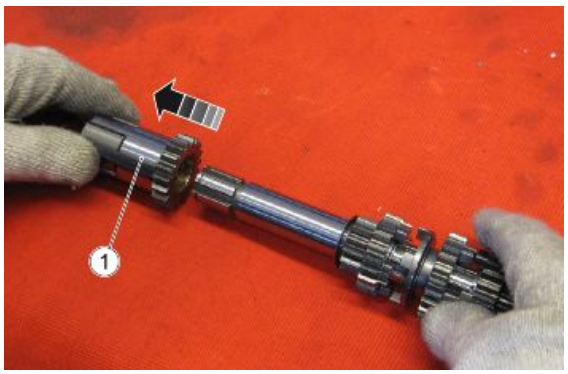


- Remove the complete gearbox

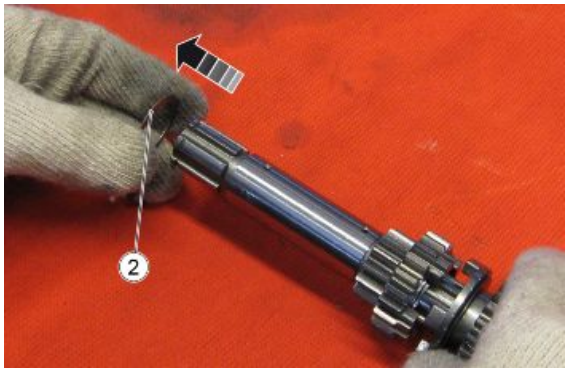


Removing the primary shaft

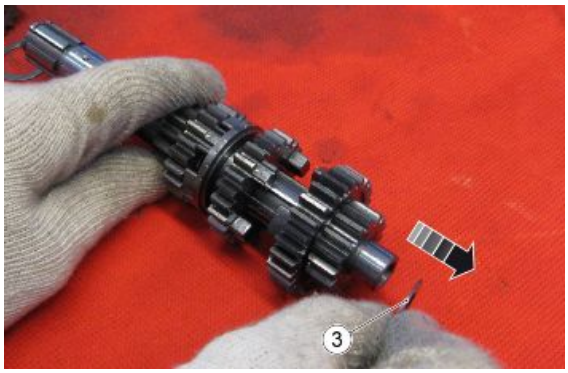
- Remove the main shaft.
- Operate on the main shaft from the output shaft gear side (1) and remove it.



- Remove the washer 20.2x0.5x27 (2).

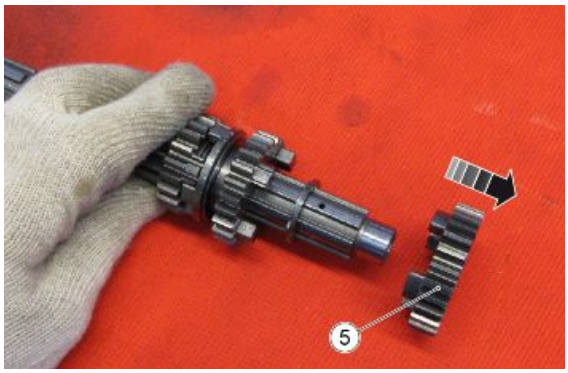


- Working from the opposite side, remove the washer 15.2x1x25 (3).

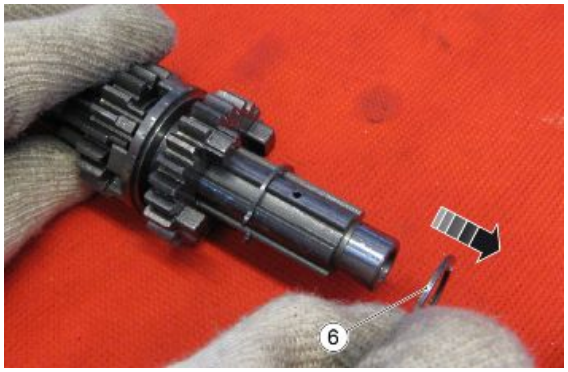


- Remove the fixed gear of the second gear (4).

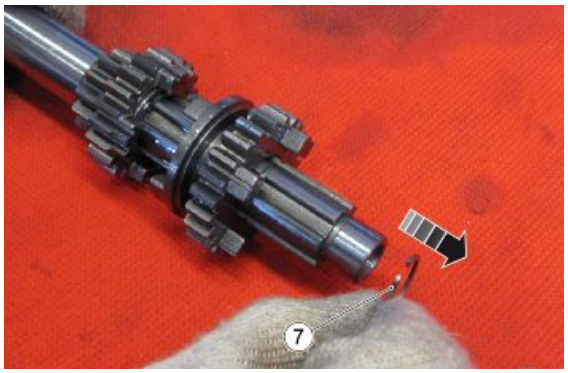
- Remove the free gear of the fifth gear (5)



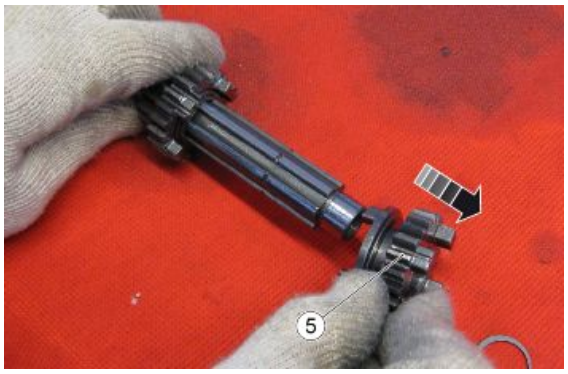
- Remove the washer (6)



- Remove the circlip (7)

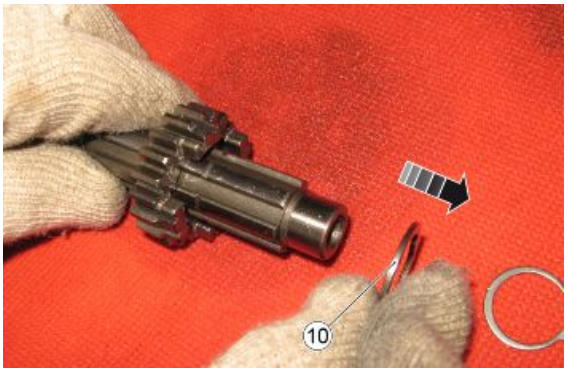


- Remove the free gear of the fourth gear (8)

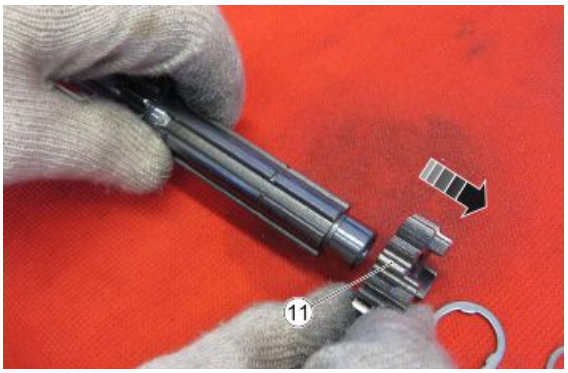


- Remove the circlip (9)

- Remove the washer (10)

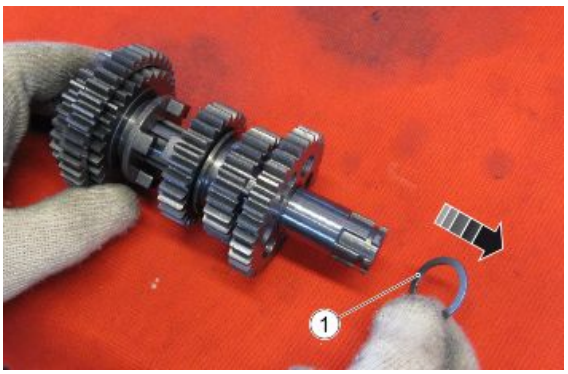


- Remove the free gear of the third gear (11)

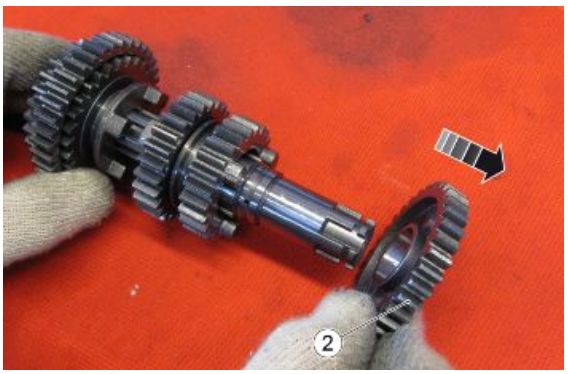


Removing the secondary shaft

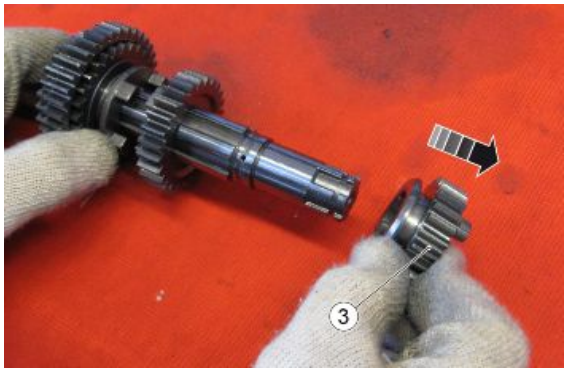
- Remove the transmission shaft
- Working on the transmission shaft from the pinion side and remove the spacer washer 20x1x27 (1)



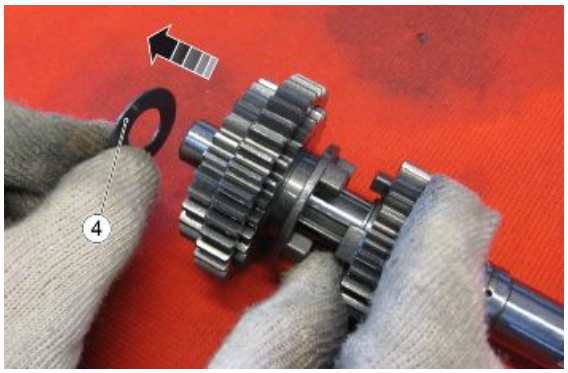
- Remove the gear of the second gear (2)



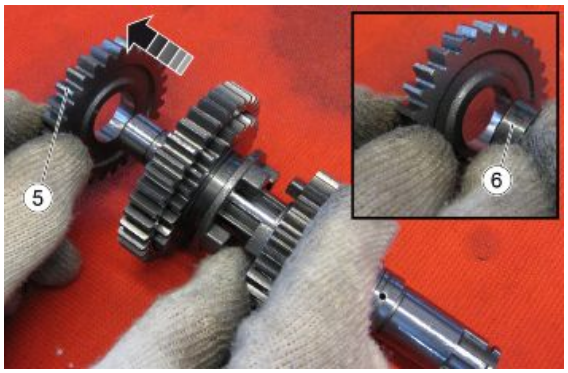
- Remove the gear of the fifth gear (3)



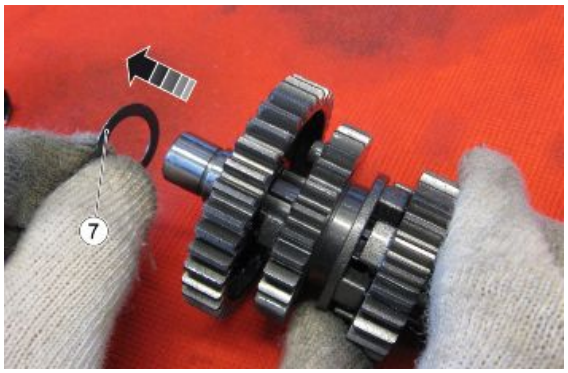
- Working from the opposite side, remove the washer 15.2x1x30 (4)



- Remove the starter gear (5) and the bushing (6)

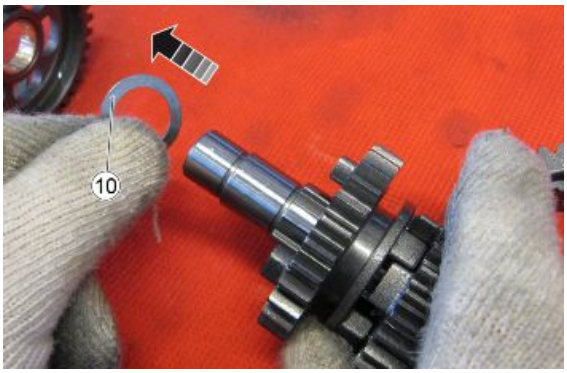


- Remove the washer 16.5x0.5x24 (7)

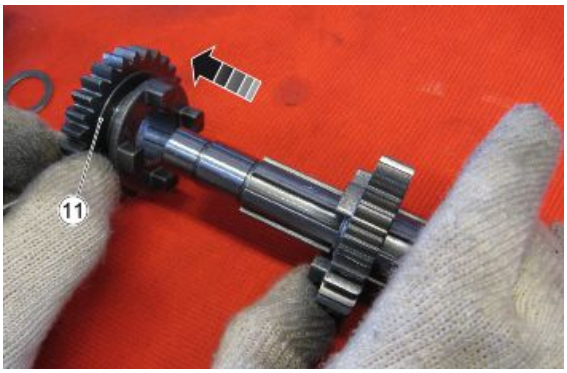


- Remove the gear of the first gear (8) and the bushing (9)

- Remove the washer 16.5x0.5x24 (10)

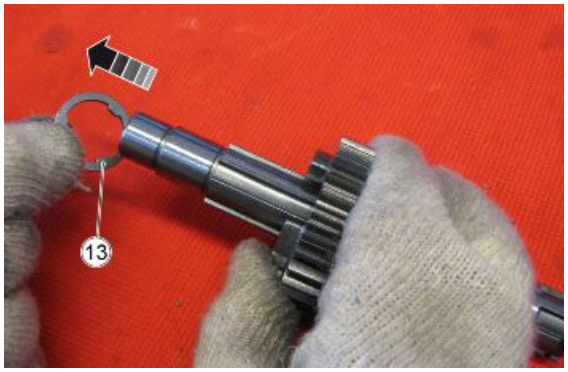


- Remove the gear of the third gear (11)

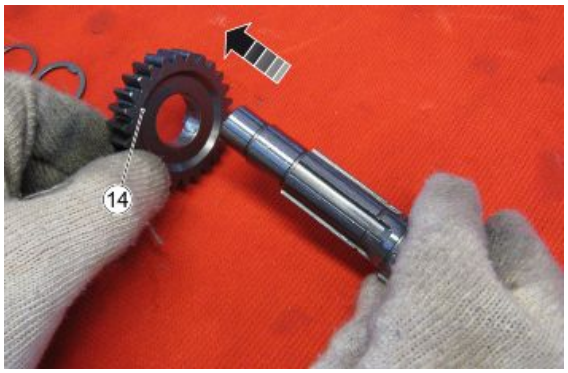


- Remove the circlip (12)

- Remove the washer (13)

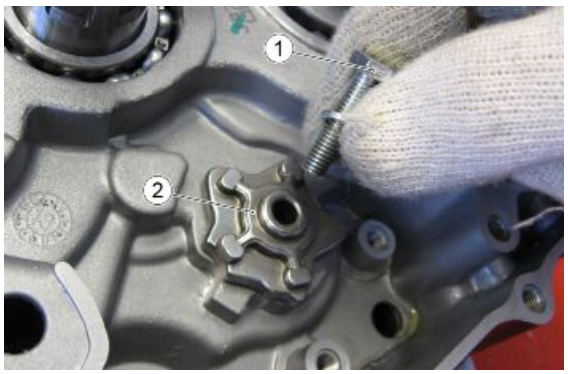


- Remove the gear of the fourth gear (14)

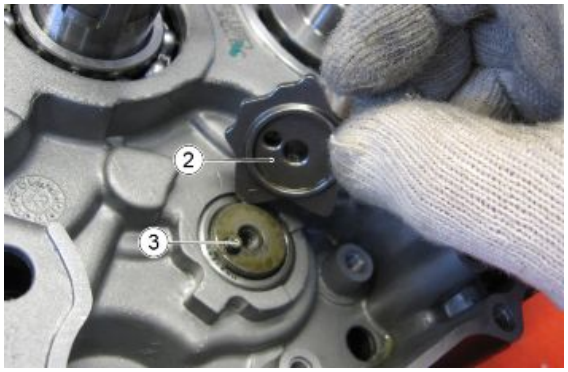


Smontaggio desmodromico

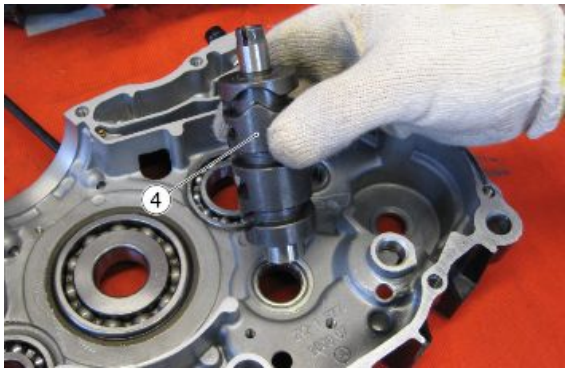
- Working from the outside of the clutch side crankcase, remove the fixing screw (1) of the gear selector drum (2), making sure to collect the washer



- Remove the gear selector drum (2) and the pin (3) inserted in the desmodromic



- Remove the desmodromic (4)

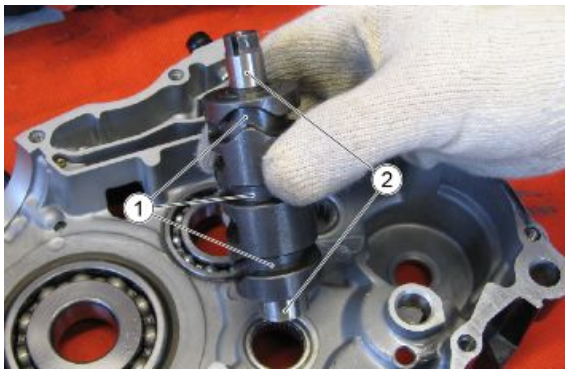


Controllo alberi

Check transmission gears for signs of pitting and wear and replace damaged gears if necessary.
Check the gear fitting teeth for cracks, damage and wear and replace those damaged if necessary.
Check the transmission gears movement and, if it is not regular, replace the damaged part.

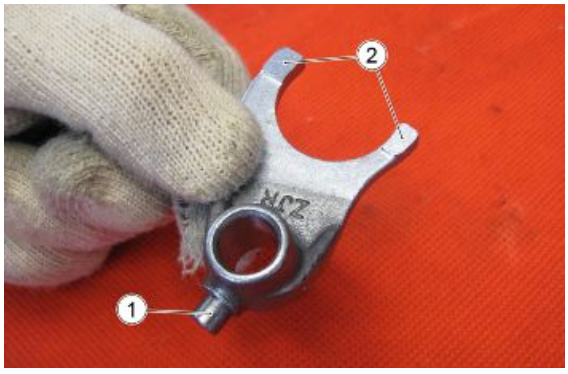
Checking the desmodromic drum

- Check the wear of the grooves (1) and of the contact surfaces with the bearings (2).
- In case of abnormal wear, replace the desmodromic and check the bearings in the crankcase

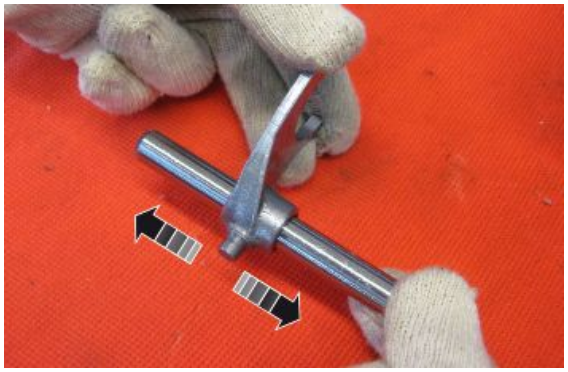


Checking the forks

Check the transmission fork cam roller (1) and the gear fork tooth (2) for damage, distortion and wear.
Replace the transmission fork if necessary.



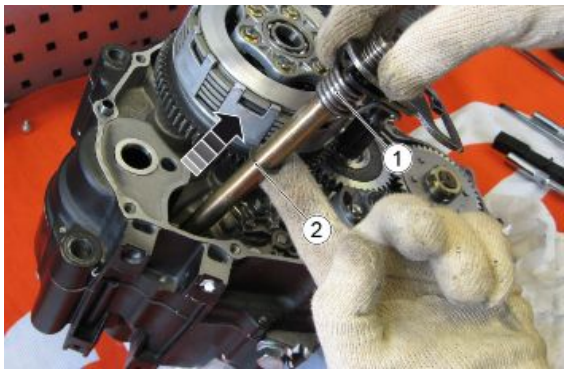
Check the transmission fork movement and if it is not regular, replace the transmission forks.



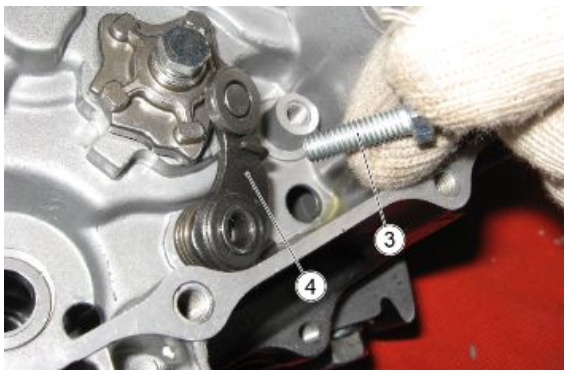
Gear selector

Removing the gear selector

- Drain the engine oil
- Remove the clutch cover
- Remove the complete selector shaft (1), making sure to collect the washer (2)

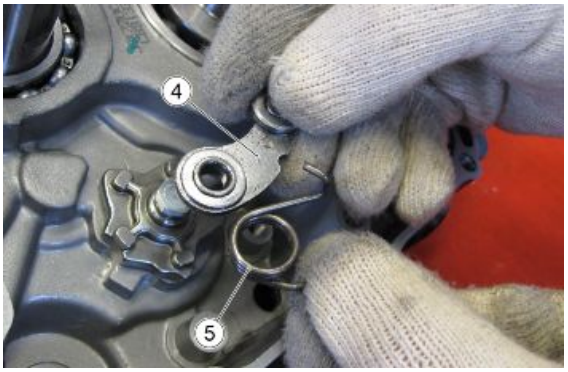


- Remove the fixing screw (3) of the complete index lever (4)

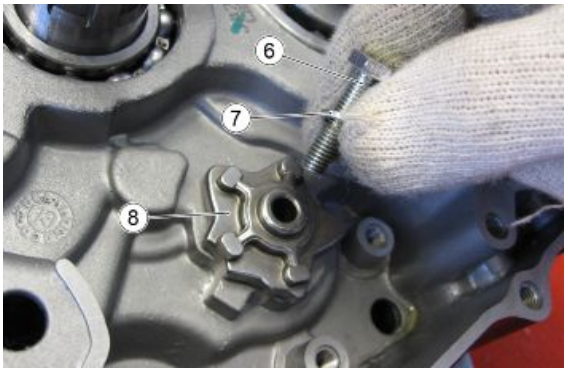


- Remove the complete index lever (4)

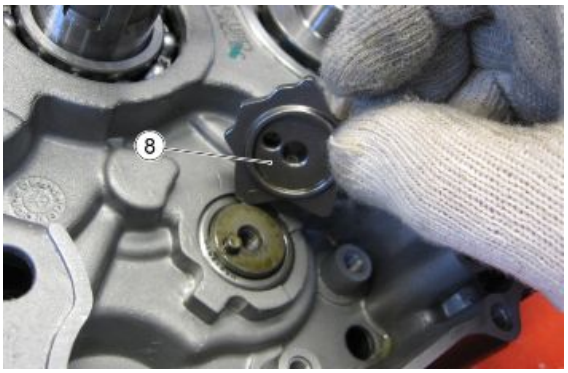
- Remove the spring (5) from the index lever (4)



- Remove the fixing screw (6) and the relative washer (7) of the gear selector drum (8)



- Remove the gear selector drum (8)



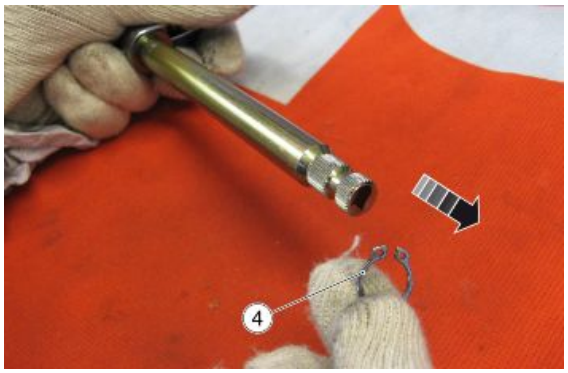
GEAR SELECTOR SHAFT REMOVAL

- Remove the upper circlip (1) locking the gear selector plate

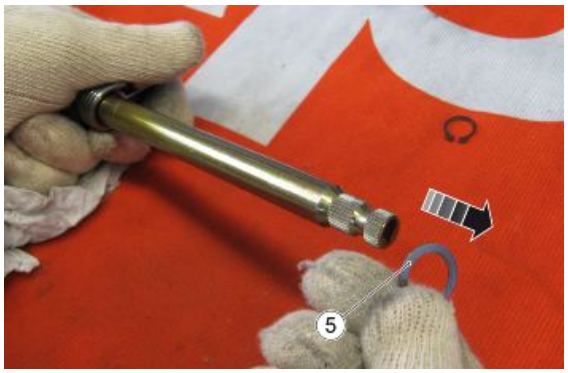
- Remove the spring (2)

- Remove the gear selector plate (3)

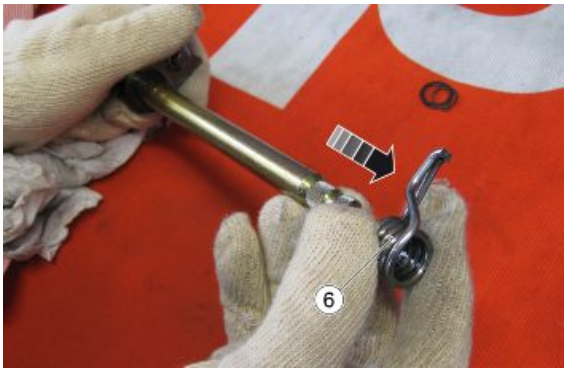
- Working from the opposite side, remove the circlip (4)



- Remove the washer (5)



- Remove the selector plate spring (6)



Checking the gear selector

Check the stop lever for damage and wear and make sure the ball rotates freely.
If necessary, replace the parts.
Check the gear selector spring for damage and wear.
If necessary, replace the part.

Check the selector shaft and its teeth for damage and wear.
If necessary, replace the part.
Check the lever spring for damage and wear.
If necessary, replace the part.

Generatore

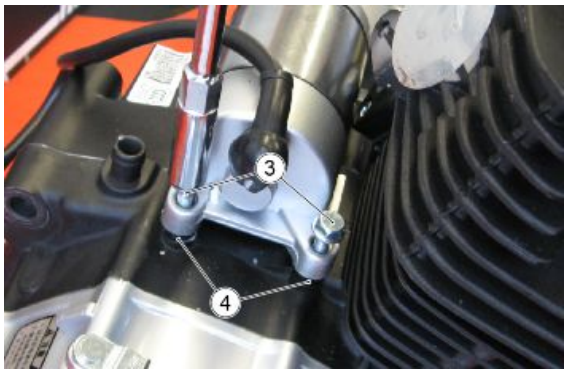
Starter motor

Removing the starter motor

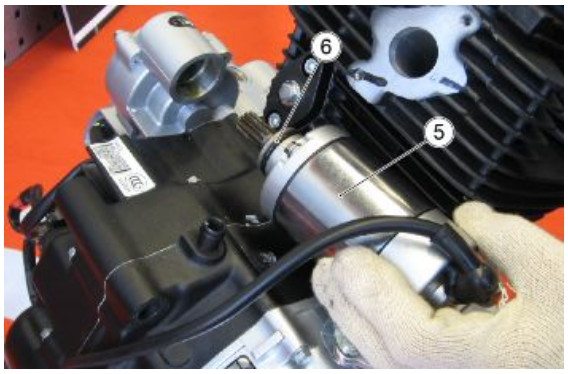
The removal and installation of the starter motor can be carried out even if the motor is installed on the frame:

- Remove the locking nut (1) of the supply cable (2)

- Remove the two fixing screws (3), making sure to collect the rubber spacer washers (4)



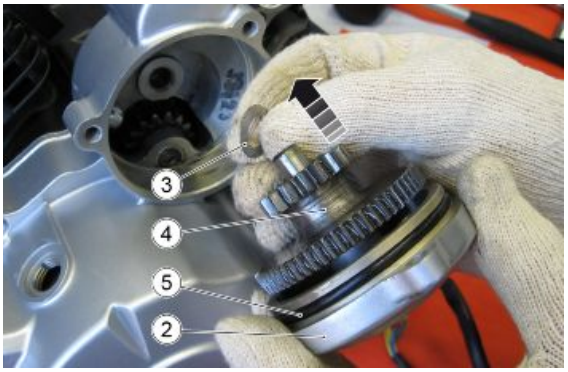
- Remove the starter motor (5) and if necessary replace the sealing gasket (6)



Removing the idle gear

- Remove the three fixing screws (1) of the intermediate gear cover (2)

- Remove the intermediate gear cover (2), the spacer washer (3) and slide off from the gear pin (4).
- Check and if necessary replace the rubber O-ring (5)



Start-up system check

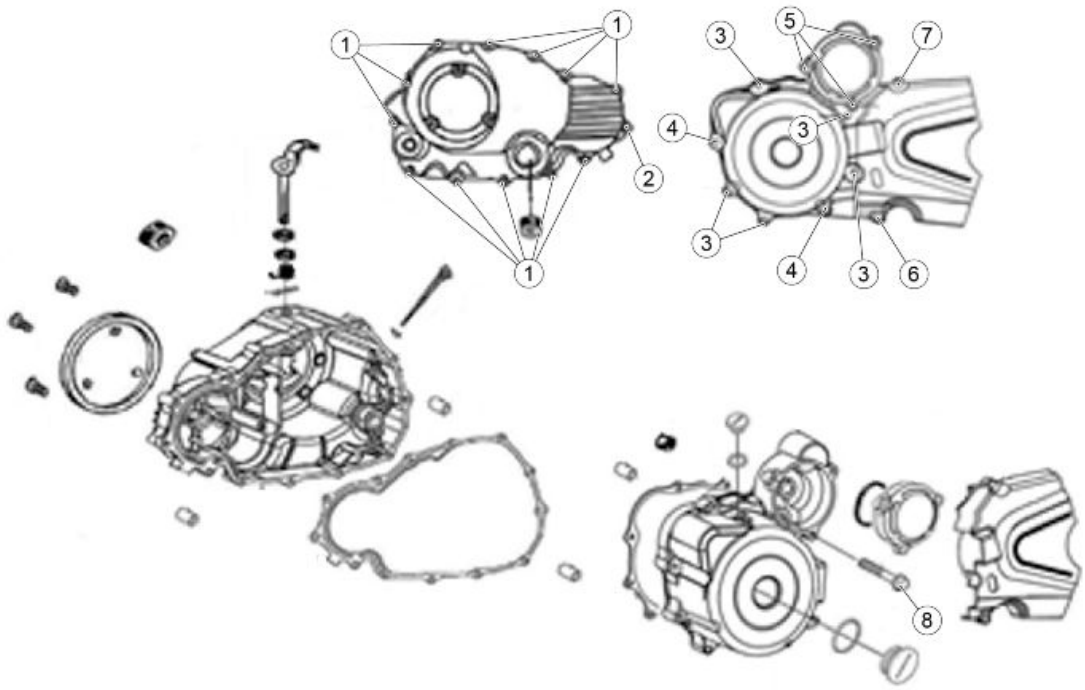
IF THE DUAL FREEWHEEL GEAR TOOTHING IS DEFORMED, THE STARTER MOTOR TOOTHING MUST BE CHECKED AS WELL.

- Check the dual freewheel gear toothing (1) and the dual intermediate gear (2) to see if the material is damaged or deformed.

- In case of deformations or non-uniform consumption of the gears, replace them.

Generator side

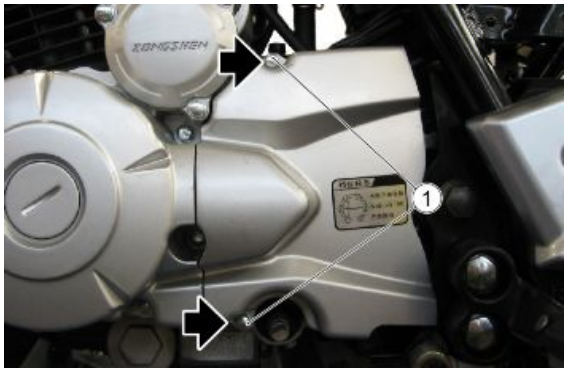
Rimozione coperchio generatore



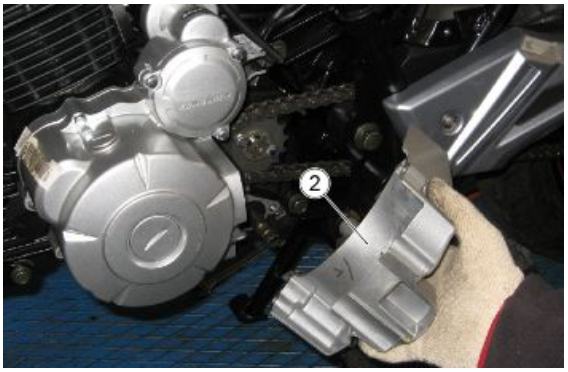
CRANKCASE COVERS

pos.	Description	Type	Quantity	Torque	Notes
1	Clutch crankcase fixing screws	M6	12	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
2	Clutch crankcase fixing screw	M6x45	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
3	Freewheel crankcase fixing screws	M6	4	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
4	Freewheel crankcase fixing screws	M6x50	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
5	Freewheel crankcase fixing screws	M6x20	3	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
6	Pinion crankcase fixing screw	M6	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
7	Pinion crankcase fixing screw	M6x30	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
8	Flywheel crankcase fixing screw	M6x25	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-

- Remove the two fixing screws (1) of the pinion crankcase (2)



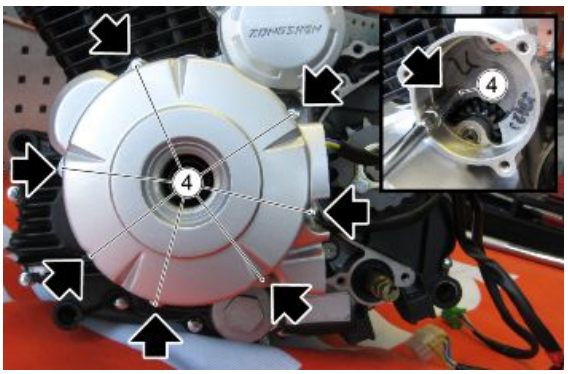
- Remove the pinion crankcase (2)



- Remove the fixing screw (3) of the locking plate of the alternator wiring

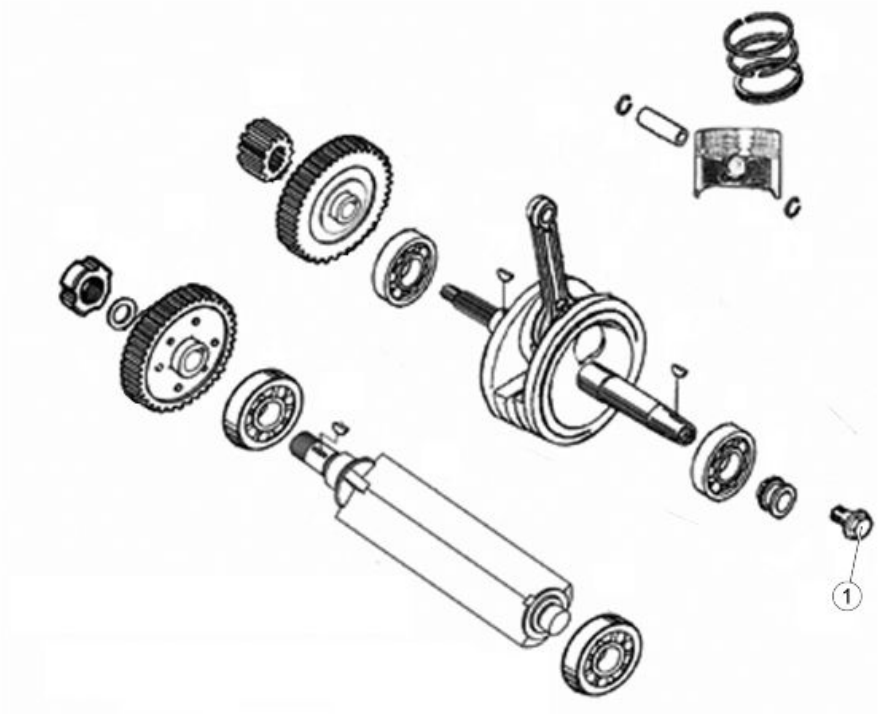
- Remove the starter motor, the intermediate gear cover and the gear itself

- Remove the 8 fixing screws (4) of the alternator crankcase



- Remove the alternator crankcase (5)

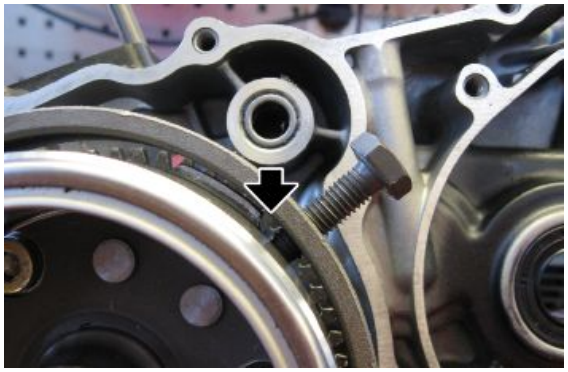
Rimozione rotore



CONNECTING ROD-PISTON UNIT

pos.	Description	Type	Quantity	Torque	Notes
1	Flywheel fixing screw	M10x36	1	55 +/- 5 Nm (40.57 +/- 3.69 lb ft)	-

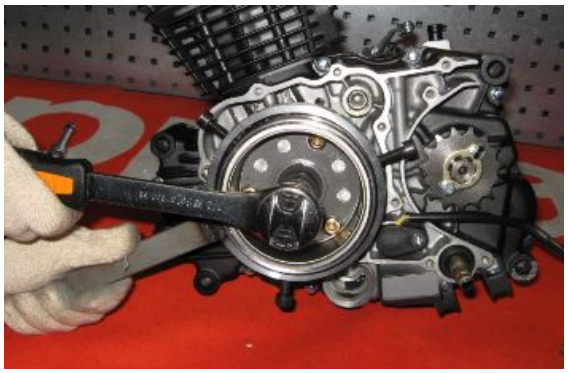
- Place the specific rotor lock tool and fit with the screws with the protrusion as indicated in the figure



Specific tooling

020970Y Flywheel retainer

- Remove the rotor fixing screw

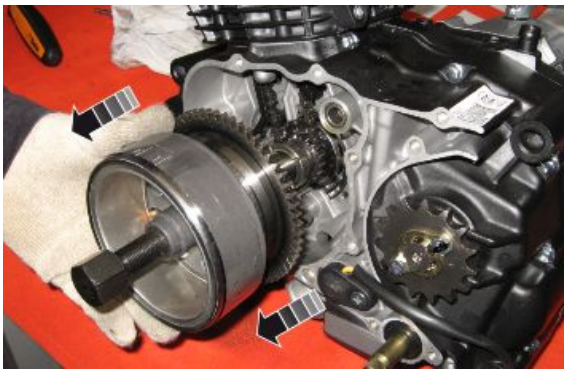


- Place the specific tool for the rotor extraction and tighten it to allow the extraction of the rotor

Specific tooling

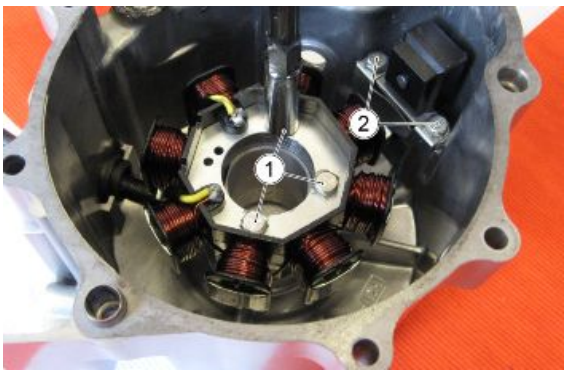
020971Y Flywheel extractor

- Remove the rotor

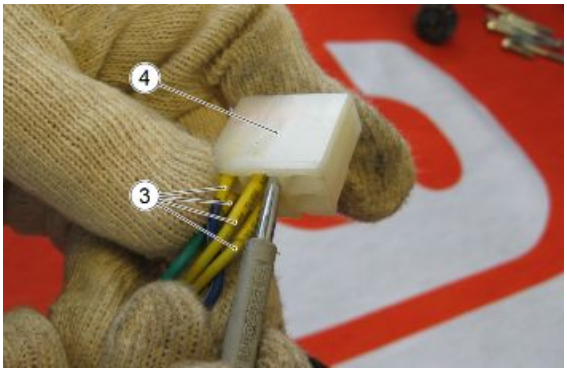


Removing the stator

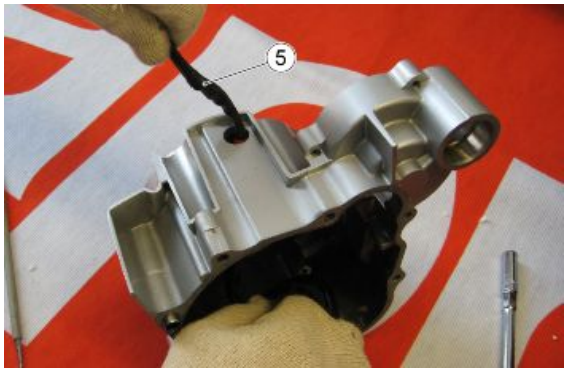
- Remove the three fixing screws (1) of the stator and the two screws (2) of the pick-up



- Remove the cables (3) from the connector (4)



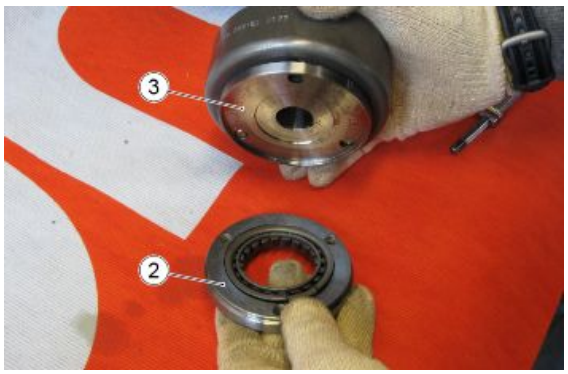
- Remove the cables (5) from the crankcase
- Remove the stator and the pick-up



Freewheel removal

- Remove the three fixing screws (1) of the freewheel to the rotor

- Remove the freewheel (2) from the rotor (3)



- Remove the flange (4) from the freewheel (2)

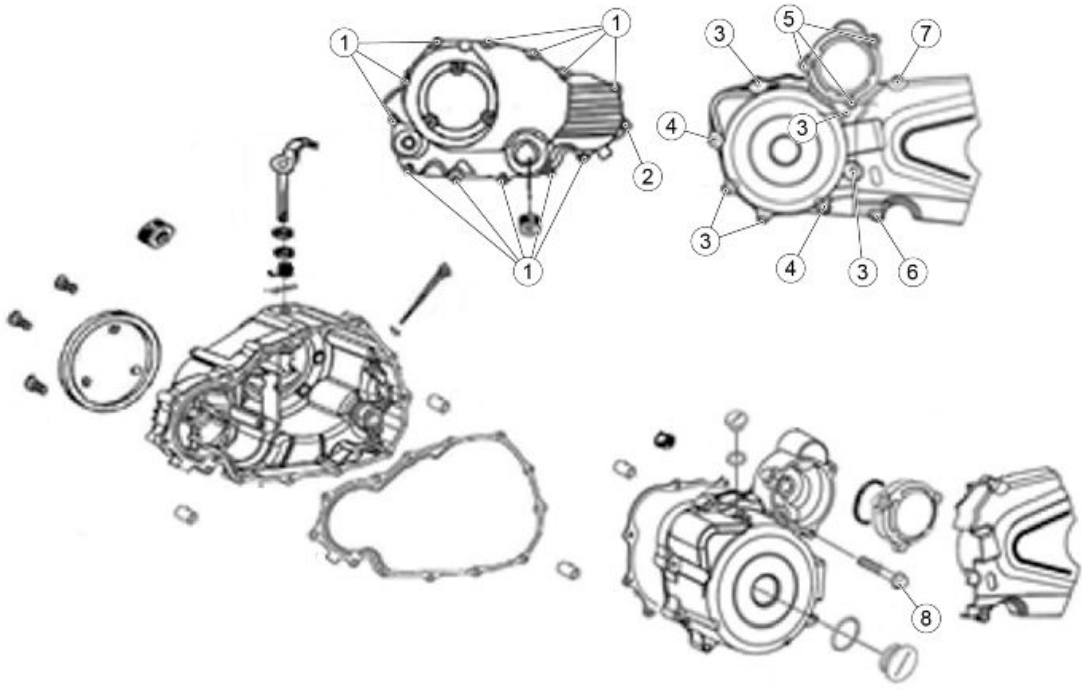
Rimozione ingranaggio ruota libera

- Remove the freewheel gear (1) by pulling it from the crankshaft

- Remove the spacer (2) by pulling it from the crankshaft

Clutch side

Removing the clutch cover

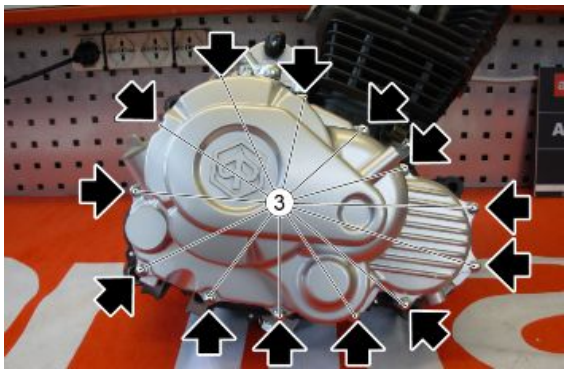


CRANKCASE COVERS

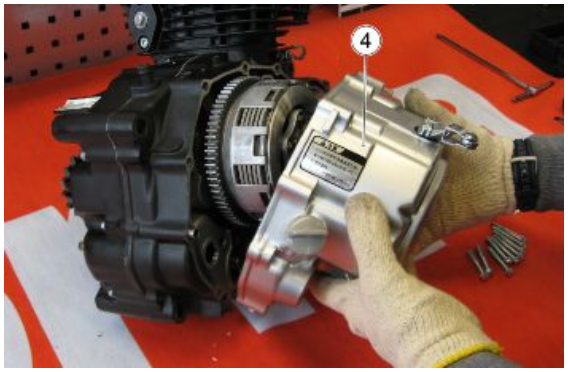
pos.	Description	Type	Quantity	Torque	Notes
1	Clutch crankcase fixing screws	M6	12	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
2	Clutch crankcase fixing screw	M6x45	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
3	Freewheel crankcase fixing screws	M6	4	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
4	Freewheel crankcase fixing screws	M6x50	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
5	Freewheel crankcase fixing screws	M6x20	3	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
6	Pinion crankcase fixing screw	M6	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
7	Pinion crankcase fixing screw	M6x30	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
8	Flywheel crankcase fixing screw	M6x25	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-

- Remove the clutch cable (1) from the cable guide (2)

- Remove the 13 fixing screws (3) of the clutch cover (4)



- Remove the clutch cover (4)



- Remove the lock spring (5) of the clutch driving shaft (6)

- Remove the lock pin (7) of the spring from the clutch driving shaft (6)

- Slide off the clutch driving shaft (6) from the clutch cover (4)
- Check and if necessary replace the oil seal (8)

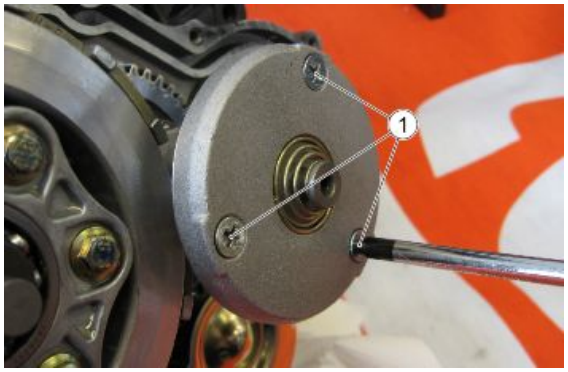
- Remove the gasket (9)

NOTE

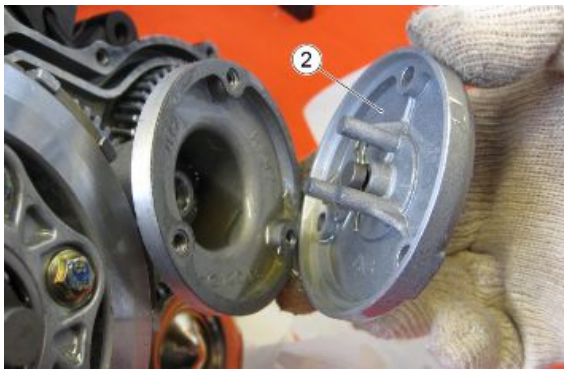
ALWAYS REPLACE THE GASKET EACH TIME THE CLUTCH COVER IS REMOVED

Smontaggio filtro olio completo

- Remove the three fixing screws (1) of the oil filter cover



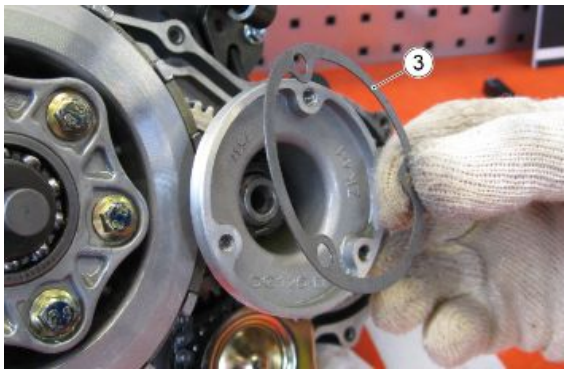
- Remove the oil filter cover (2)



- Remove the gasket (3)

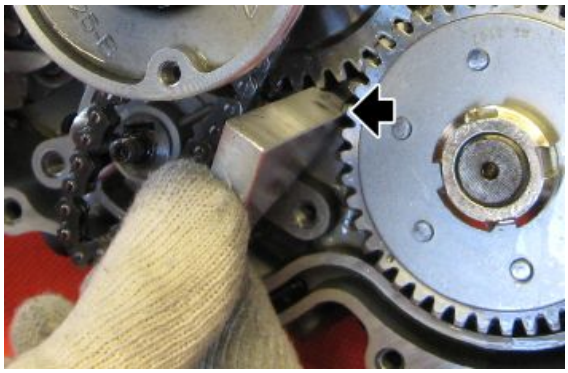
NOTE

ALWAYS REPLACE THE GASKET EACH TIME THE ENGINE OIL FILTER COVER IS REMOVED

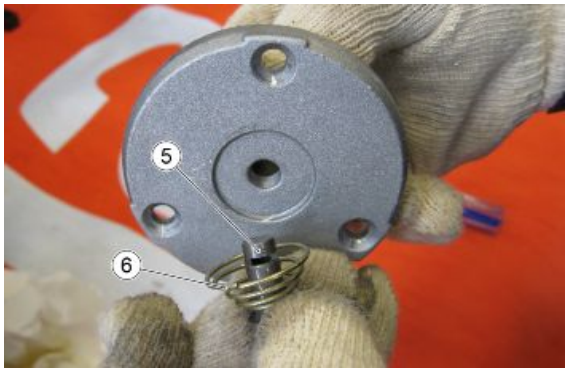


- Remove the cotter pin (4)

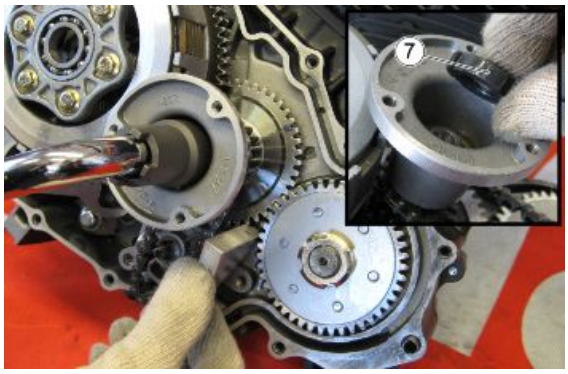
- Using an aluminium lock, place it in the indicated zone and lock the gears.



- Remove the pin (5) and the spring (6)



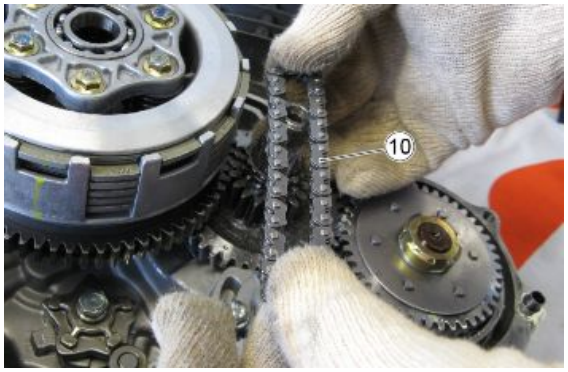
- Remove the ring nut (7)



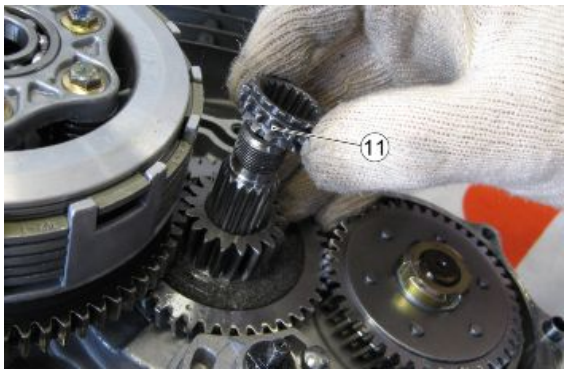
- Remove the spacer washer (8)

- Remove the oil filter base (9)

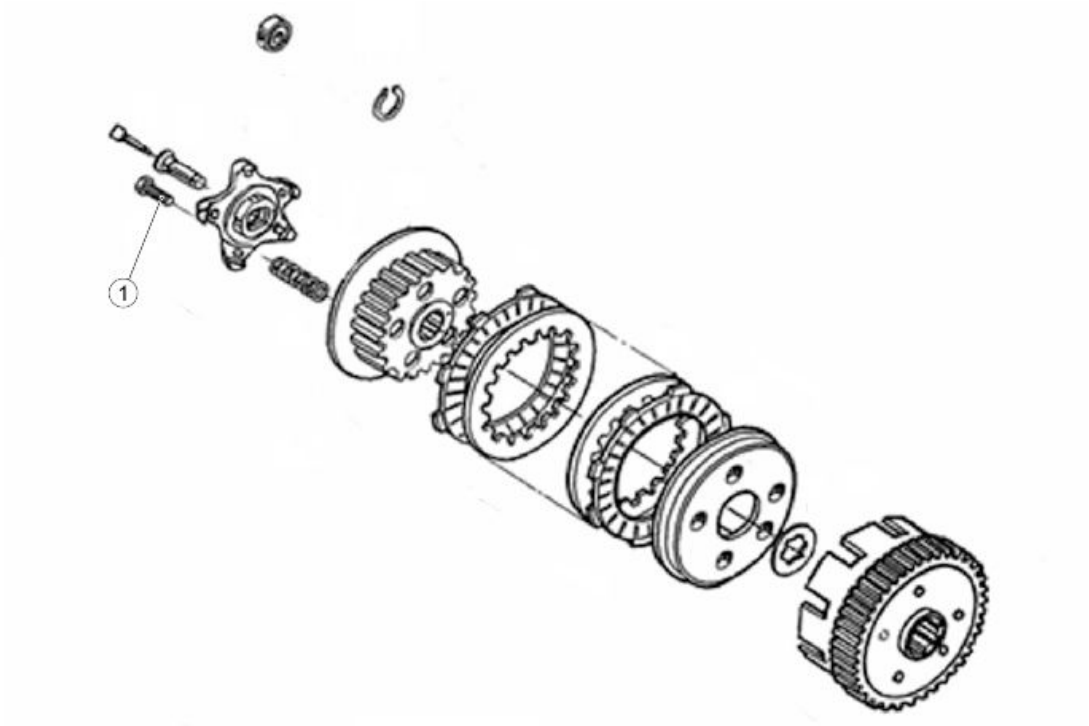
- Remove the timing chain (10) between crankshaft and oil pump gear



- Remove the timing system gear (11)



Disassembling the clutch



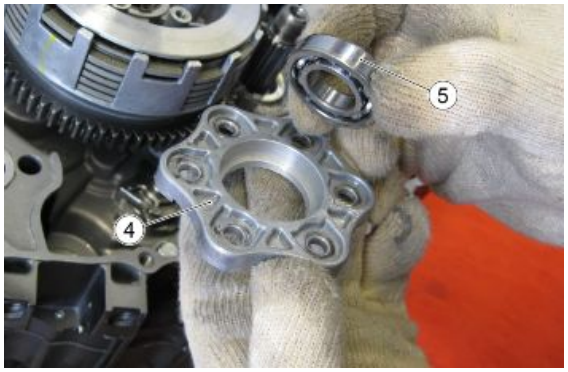
CLUTCH ASSEMBLY

pos.	Description	Type	Quantity	Torque	Notes
1	Clutch spring plate fixing screws	M6x22	5	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-

- Remove the engine oil filter to allow the complete removal of the clutch
- Remove the clutch pressure plate rod (1) and the pin (2)

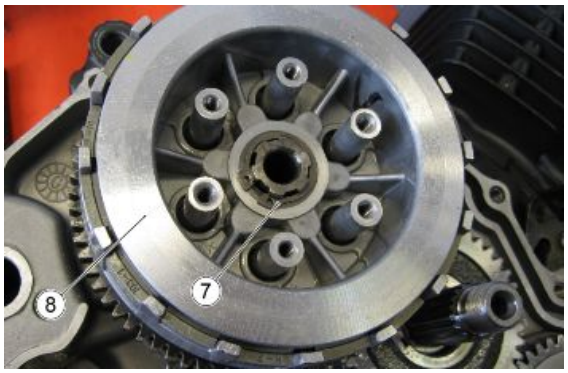
- Remove the six fixing screws (3) of the clutch pressure plate (4)

- Remove the bearing (5) from the clutch pressure plate (4)

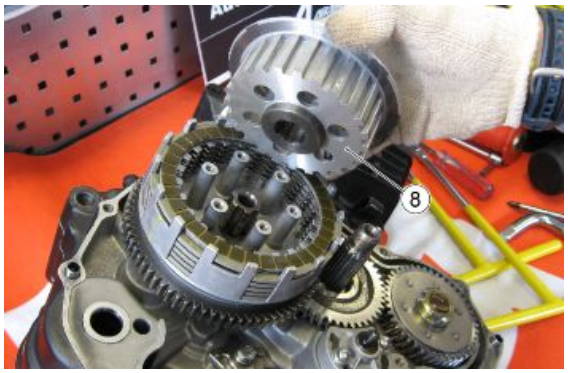


- Remove the six springs (6)

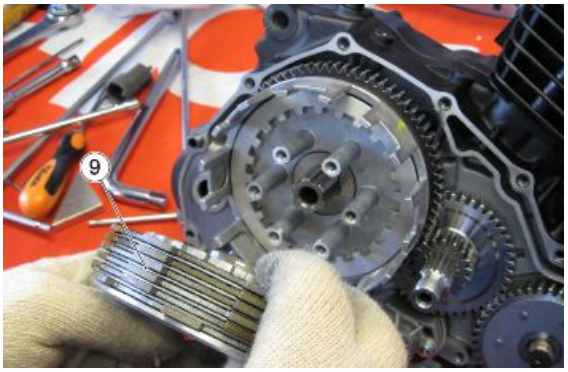
- Remove the circlip (7) locking the clutch hub (8)



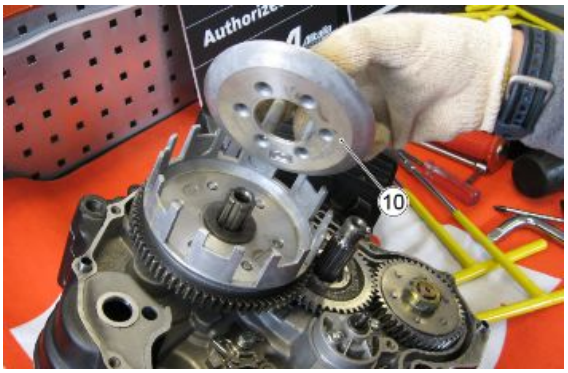
- Remove the clutch hub (8)



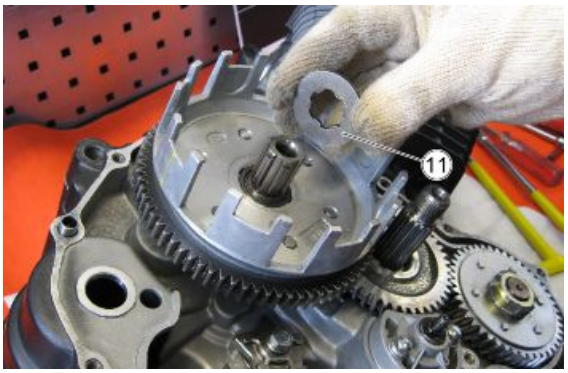
- Remove the clutch plate pack (9)



- Remove the thrust plate (10)



- Remove the spacer washer (11)



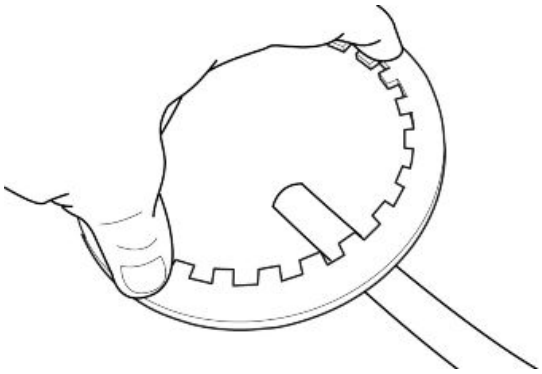
- Remove the clutch housing (12)

- Remove the spacer bushing (13)

Checking the clutch plates

Clutch plates

- Check that the clutch plate are not scored or very worn.
- Lay the friction discs and steel discs on a level surface and check them for cracks and potential distortions, in that case replace them.



Characteristic

Conductor disc minimum thickness

3 +/- 0.05 mm (0.12 +/- 0.0020 in)

Conductor disc minimum thickness

1.6 mm (0.063 in)

Checking the clutch housing

Check the clutch housing for damage and wear that may result in clutch irregular operation.

PRIMARY DRIVEN GEAR CHECK

Check the primary driven gear for damage and wear and, if necessary, replace the primary driven gear and the clutch bell all together.

Make sure there is not excessive noise during operation; if necessary, replace the primary drive gear and the clutch bell all together.

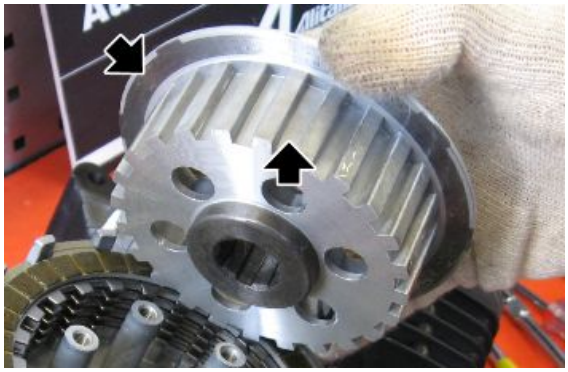
Checking the pusher plate

Pressure plate

Check that the disc does not shown signs of wear in the bearing seat, which can then cause clearance and abnormal wear

Checking the clutch hub

Check the clutch hub for damage and wear that may result in clutch irregular operation, especially on the discs friction surface and on the sliding channels.
If necessary, replace the hub.

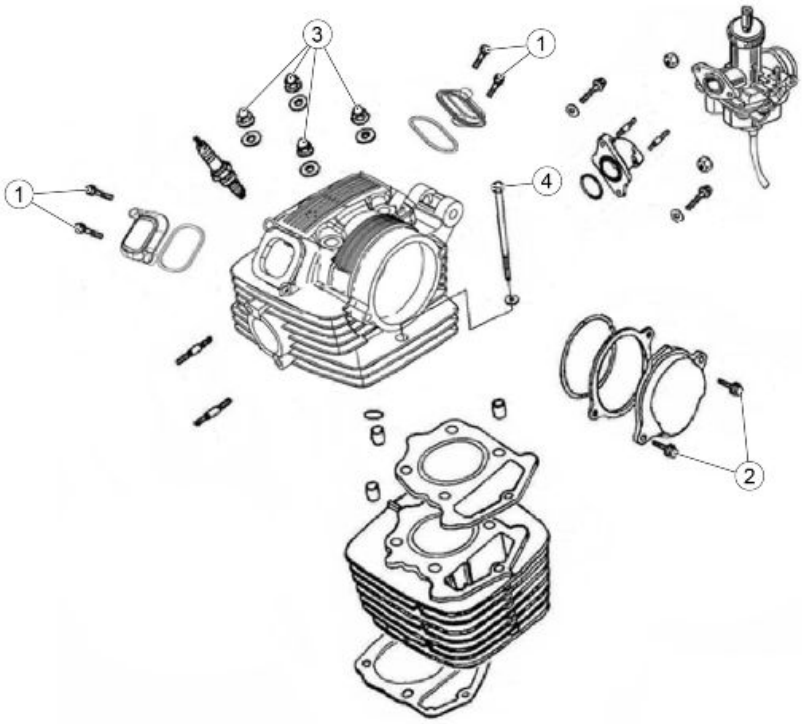


Head and timing

Removing the intake manifold

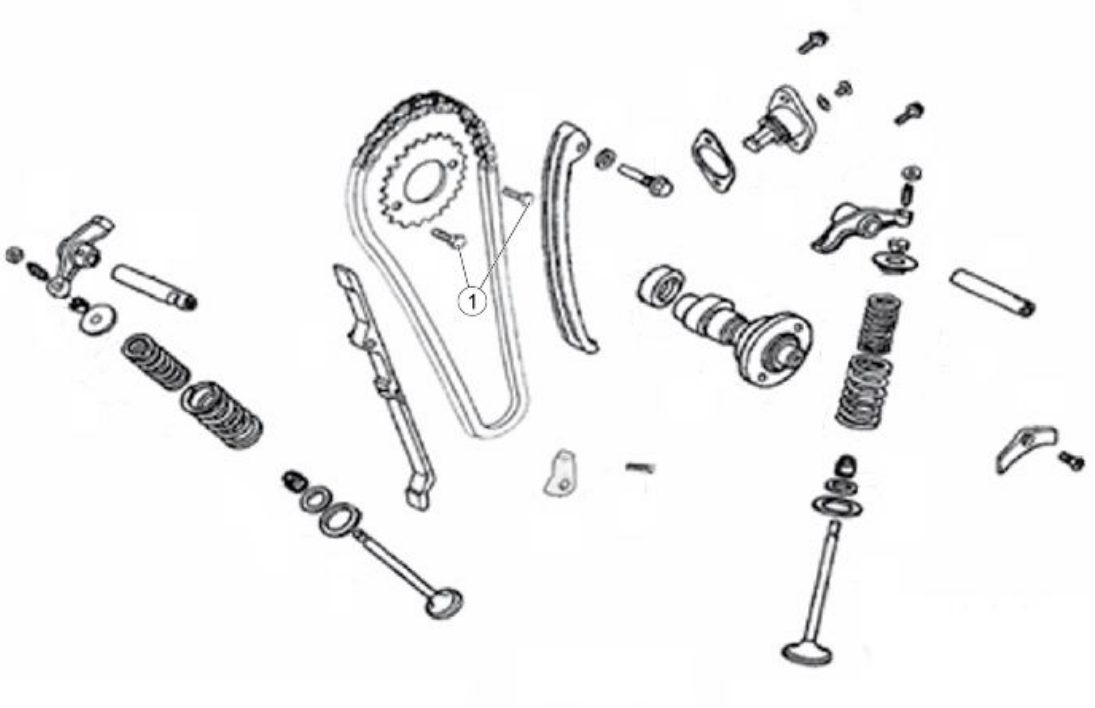
- Remove the carburettor
- Remove the two fixing screws (1) of the manifold (2)
- Remove the manifold (2)

Removing the cylinder head



HEAD - CYLINDER UNIT

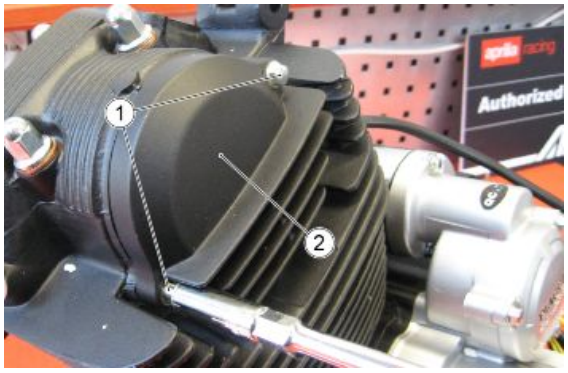
pos.	Description	Type	Quantity	Torque	Notes
1	Valve cover fixing screws	M6x18	4	25 +/- 5 Nm (18.44 +/- 3.69 lb ft)	-
2	Timing system gear cover fixing screws	M6x20	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
2	Head fixing nuts	M8	4	30 +/- 2 Nm (22.13 +/- 1.47 lb ft)	-
4	Head fixing screw	M6x110	4	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-



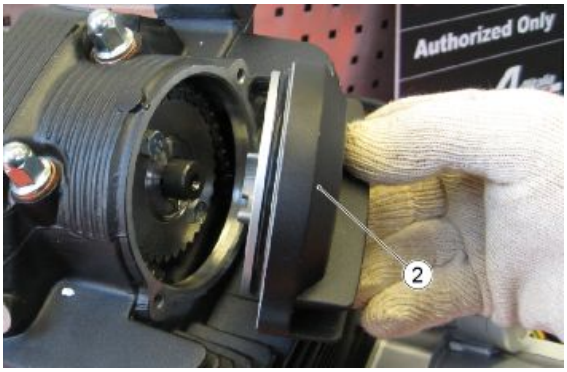
TIMING SYSTEM

pos.	Description	Type	Quantity	Torque	Notes
1	Timing system gear fixing screws	M6x10	2	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-

- Remove the two fixing screws (1) of the timing system gear cover (2)

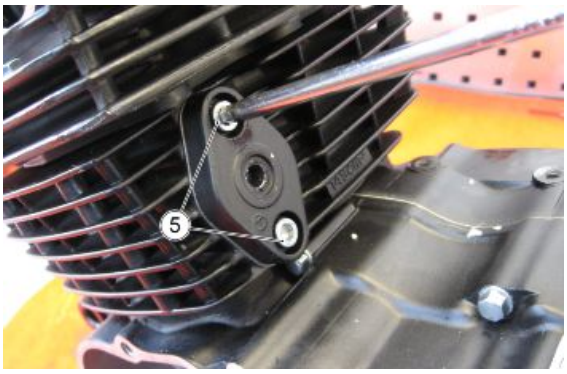


- Remove the timing system gear cover (2)

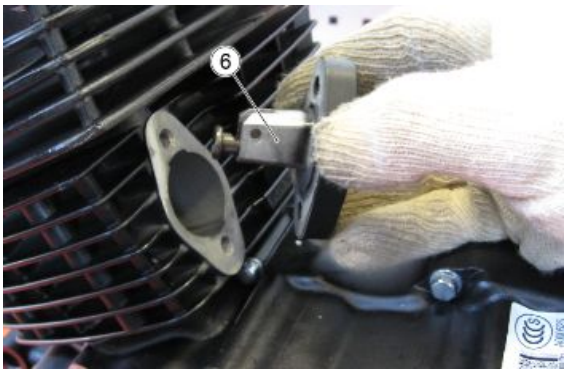


- Remove the central screw (3) of the chain tensioner, making sure to collect the tensioning spring (4)

- Remove the two fixing screws (5) of the chain tensioner



- Remove the chain tensioner (6)

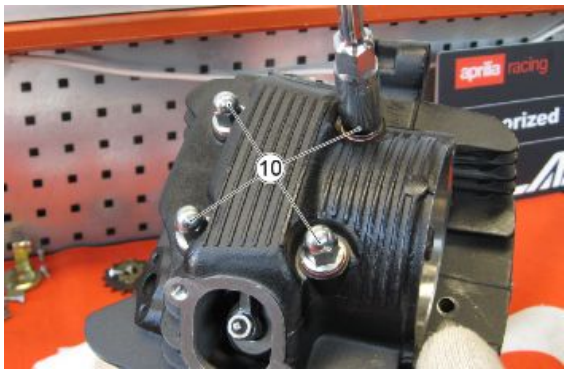


- Remove the two fixing screws (7) of the timing system gear

- Remove the timing system gear (8)

- Remove the screw (9) fixing the head to the cylinder

- Remove the four fixing bolts (10) of the head



- Remove the four washers (11)

- Remove the complete cylinder head (12) and collect the seal (13)

Cylinder head

Removing the overhead camshaft

- Remove the cylinder head and the rockers
- Warm up the corresponding cylinder head of the camshaft bearing to facilitate the removal.

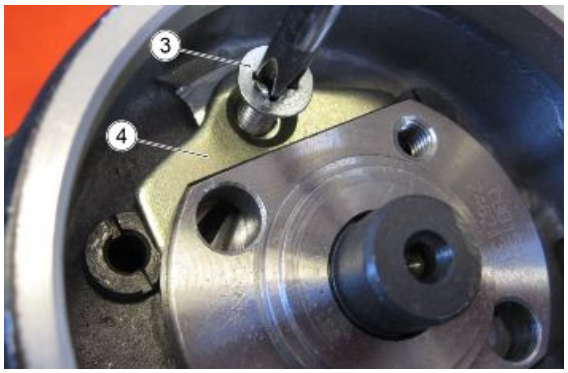
- Take out the camshaft complete with the bearing.

Removing the rocker arms

- Remove the cover and the timing system gear of the camshaft
- Remove the four fixing screws (1) of the rocker/valve seats covers

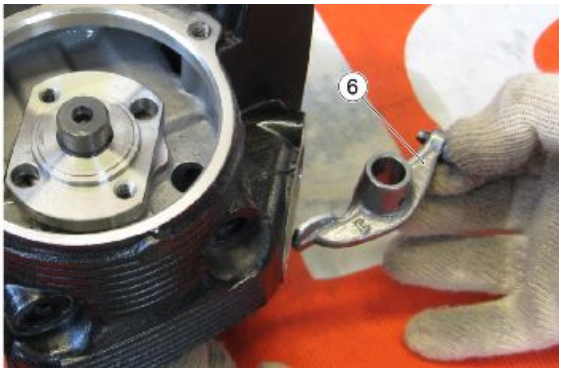
- Remove the two covers (2) of the rocker/valve seats

- Remove the fixing screws (3) and the locking plate (4) of the rockers shafts



- Remove the lock shafts (5) of the rockers

- Remove the rockers (6)



Removing the valves

- Remove the head
- Using the appropriate tool compress the intake valve spring

Specific tooling

020382Y Valve cotters removal tool

- Remove the cotters (1) and then the appropriate tool

- Remove the cap (2)

- Remove the springs (3)

- Remove the exhaust valve (4)

NOTE

CARRY OUT THE PREVIOUSLY DESCRIBED PROCEDURE ALSO FOR THE REMOVAL OF THE INTAKE VALVE

Checking the overhead camshaft

CAMSHAFT

Characteristic

Standard diameter

25 +/- 0.03 mm (0.98 +/- 0.0012 in)

Intake cam height

6.075 mm (0.239 in)

Exhaust cam height

5.704 mm (0.224 in)

CAMSHAFT GEAR CHECK

- Check that the camshaft gear works properly: if it is damaged or does not move smoothly, replace the timing chain and the camshaft gear.

CAMSHAFT LOBES

- Check that they do not show blue colouring, cracks or scratches; otherwise, replace the camshaft, gear and chain.

Checking the rocker arms

- Check that the bolt surface that contacts the rockers is not exceedingly worn.
- Check the rocker to valve and rocker to rod contact surfaces.

Inspecting the valve housings

- Check that the valve guide does not show any signs of wear and is within the indicated values; otherwise, replace the component.

Characteristic

Intake guide - standard diameter

5.485 / 5.475 mm (0.2159 / 0.2155 in)

Intake guide - Wear limit

0.01 / 0.04 mm (0.00039 / 0.00157 in)

Discharge guide - standard diameter

5.485 / 5.475 mm (0.2159 / 0.2155 in)

Discharge guide - Wear limit

0.01 / 0.04 mm (0.00039 / 0.00157 in)

Inspecting the springs and half-cones

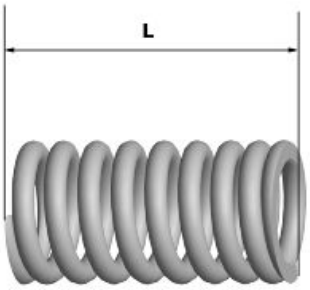
Check that the spring supporting caps, the cotters and the oil seal do not show signs of abnormal wear. Replace a component when worn.

Measure the unloaded spring length.

Characteristic

Standard length of spring valve

44.8 / 39.2 mm (1.76 / 1.54 in)

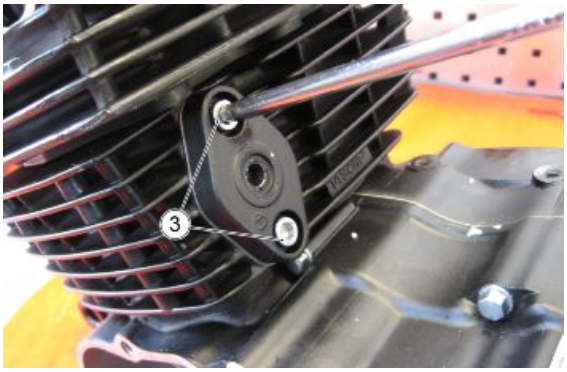


Timing

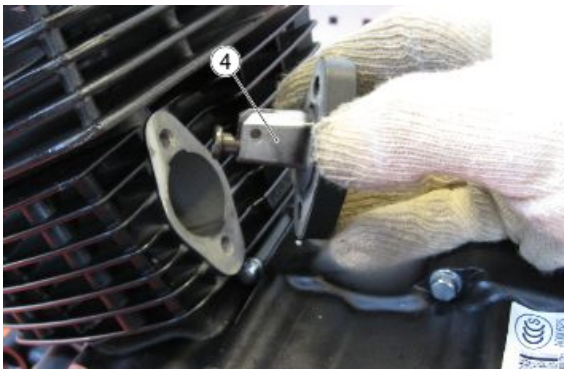
Removing the chain tensioner

- Remove the central screw (1) of the chain tensioner, making sure to collect the tensioning spring (2)

- Remove the two fixing screws (3) of the chain tensioner

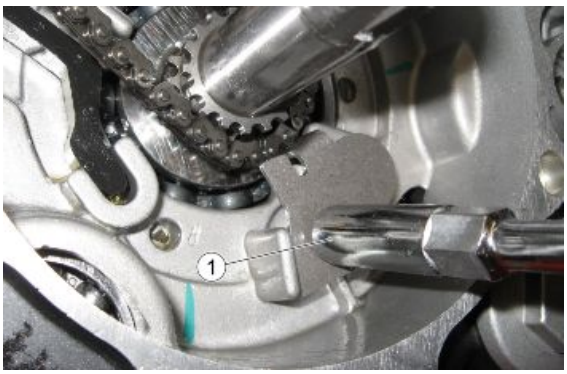


- Remove the chain tensioner (4)

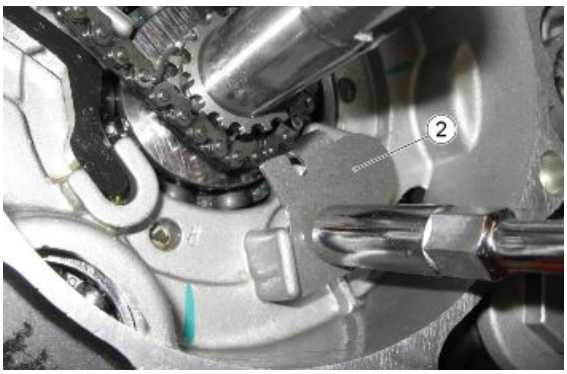


Chain removal

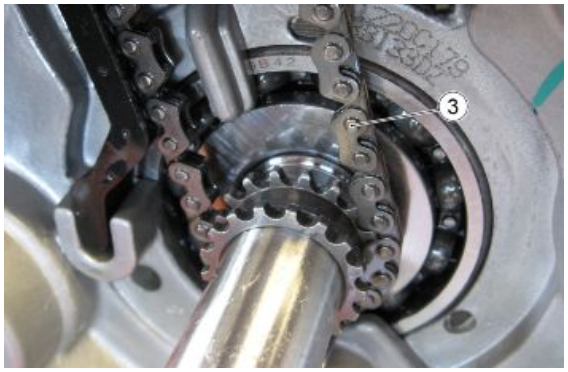
- Remove the camshaft timing system gear cover and the gear
- Remove the chain tensioner
- Remove the alternator crankcase, the complete alternator and the spacer to be able to access the safety plate for the chain
- Remove the fixing screw (1) of the plate



- Remove the plate (2)

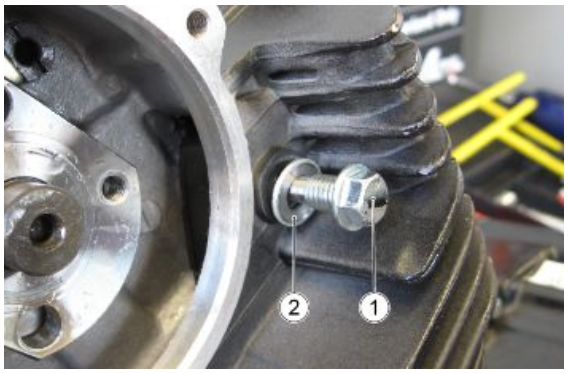


- Slide off the chain (3) and remove it



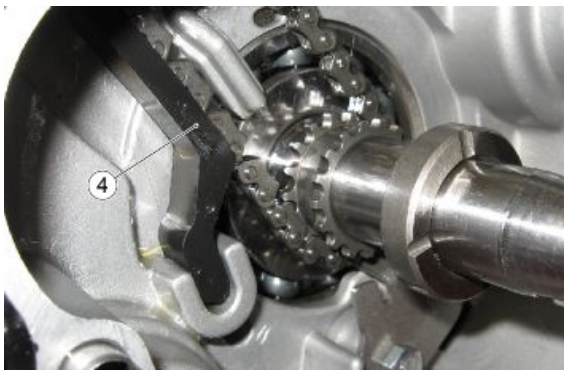
Removing the chain sliders

- Remove the alternator crankcase
- Remove the fixing screw (1) of the chain pad paying attention to collect the washer (2)



- Slide off and remove the chain tensioner pad (3) from the crankcase

- Unhook the chain guide pad (4) from the crankcase and remove it

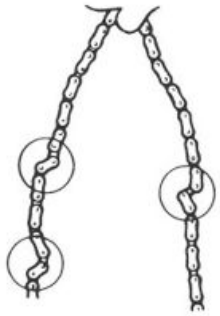


Checking the chain tensioner

- Check that there is no damage and replace the component if necessary.
- Check that the one-way cam works properly: if it does not move smoothly, replace the chain tensioner.

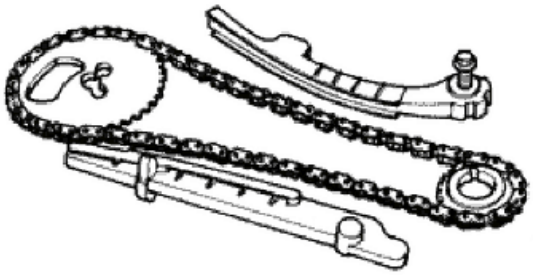
Checking the chain

Check the timing chain for damage or stiffness while moving.
If necessary, replace the timing chain together with the camshaft gears.
Check the timing chain guide sliders for damage.
If necessary, replace the parts.



Checking the sliders

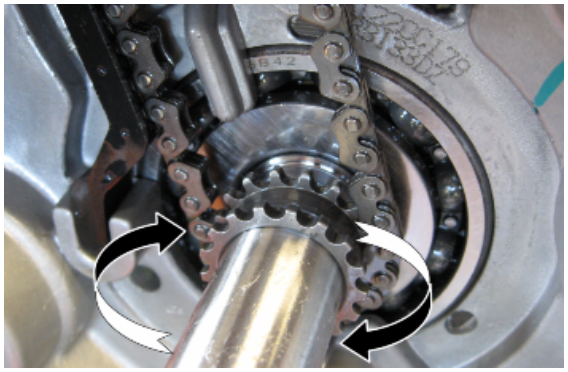
- Check that the guide slider and the tensioner pad are not excessively worn.
- Replace the sliders when wear is found.



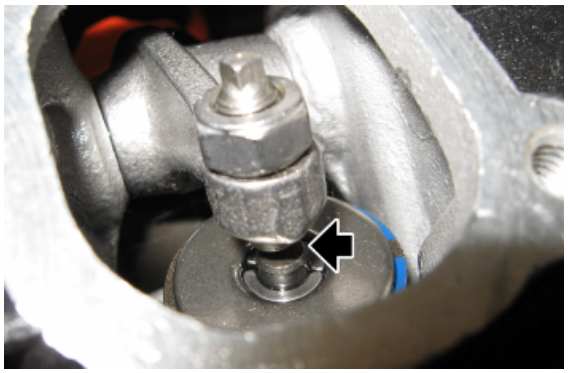
Cam timing

Timing

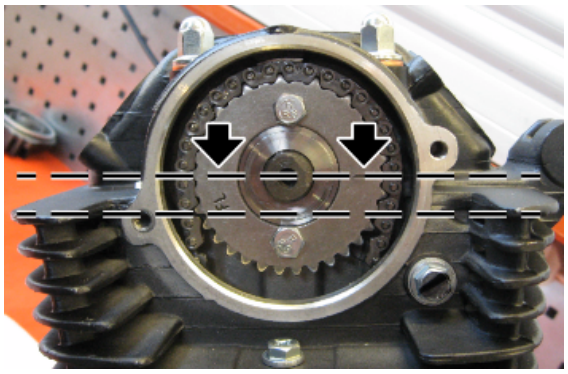
- Turn the crankshaft until the TDC is identified (top dead centre).



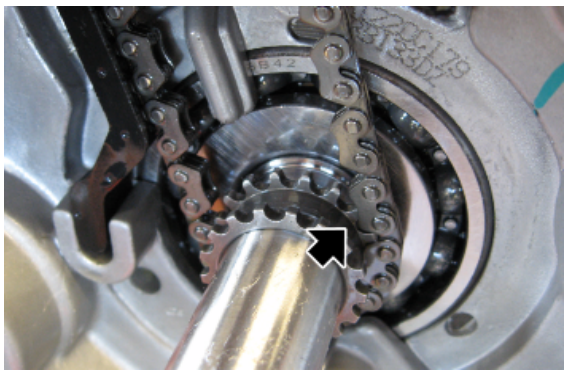
- Check that the rockers are not fixated on the valves but that there is clearance, otherwise check the crankshaft installation procedure.



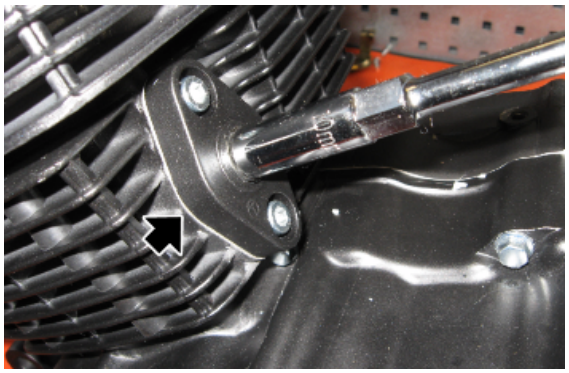
- Install the timing system gear paying attention that the notches are aligned with the head level line



- Check that the timing chain is correctly positioned on the gear on the crankshaft

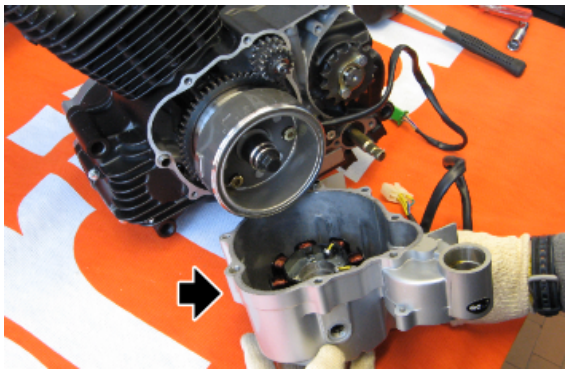


- Install the chain tensioner after pressing it to the end of stroke

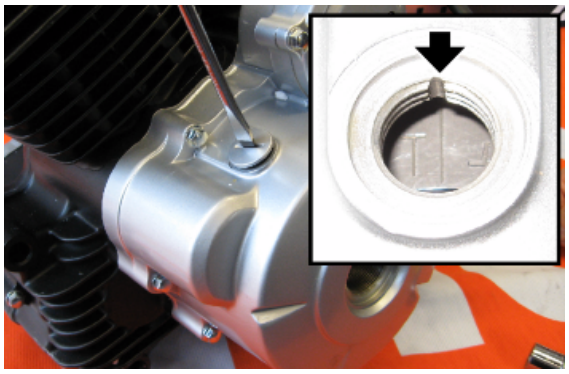


- Install the rotor complete and the secondary gear of the freewheel

- Install the alternator cover



- Remove the inspection cap on the alternator cover and check that the reference notch is present, which can be identified by the letter "T" on the rotor

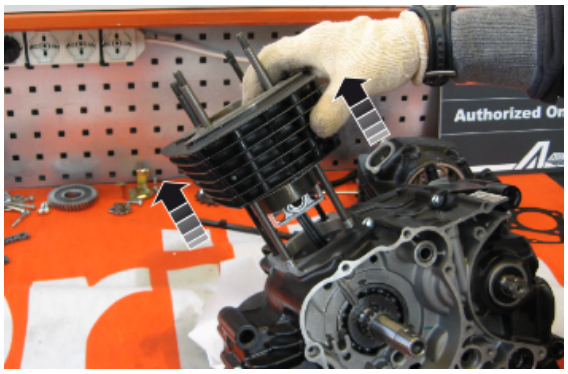


- If there is no correspondence between the signs present on the timing system gear and the reference notch on the rotor, the timing adjustment procedure must be repeated

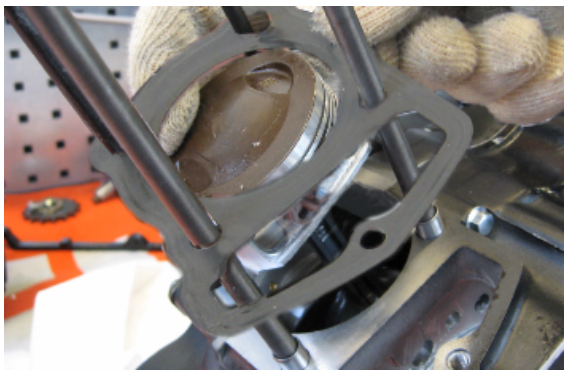
Cylinder-piston assembly

Removing the cylinder

- Remove the complete cylinder head gasket, the timing chain and the sliders
- Remove the cylinder

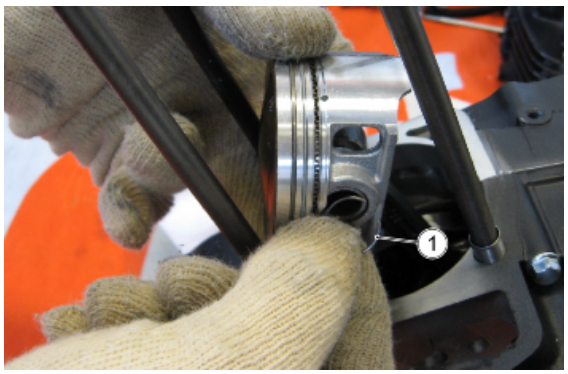


- Remove the gasket

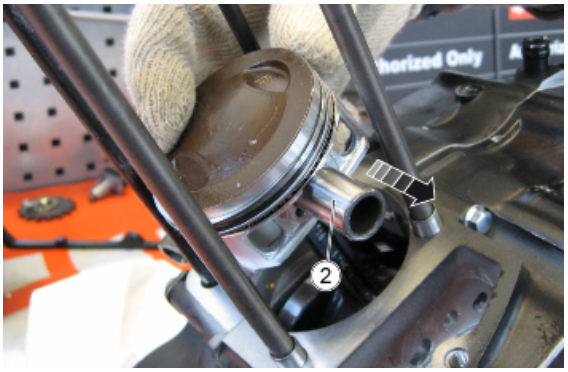


Disassembling the piston

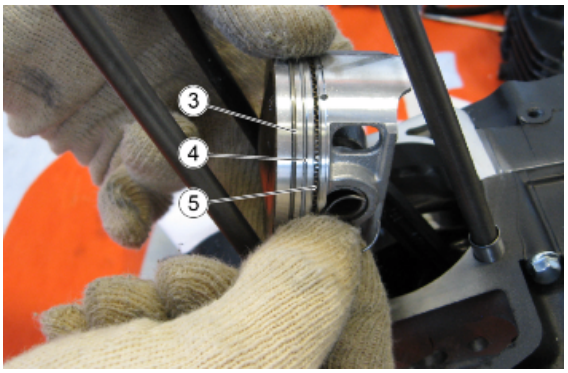
- Remove the retainer ring (1)



- Remove the pin (2)



- After having removed the piston, proceed with the removal of the top ring (3), the central ring (4) and the oil scraper ring (5)



Checking the cylinder

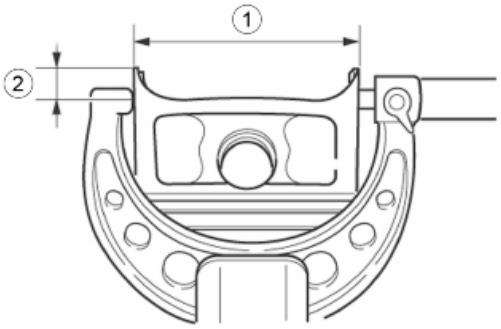
- All seal surfaces must be clean and flat.
- Check cylinder internal surface for signs of abrasion and scratches. Also check the seal surfaces for damages.

CAUTION

IF THE GROOVES ON THE CYLINDER LINER ARE EVIDENT, REPLACE THE CYLINDER AND THE PISTON.

Checking the piston

- Measure the piston skirt diameter (1) with a micrometer (2=10mm - 0.39in from the piston lower border).
- Replace the cylinder, the piston and the piston ring all together if not complying with specifications.



Characteristic

Minimum piston diameter

61 +/- 0.05 mm (2.40 +/- 0.0020 in)

Maximum piston diameter

61.98 / 61.97 mm (2.44 / 2.43 in)

Maximum clearance between the piston and cylinder

0.025 / 0.035 mm (0.00098 / 0.00138 in)

PISTON RINGS

- Clean off any carbon deposits from the grooves in the piston rings and from the rings themselves.
- Measure the piston ring side clearance and replace the piston and the piston rings all together if not complying with specifications.

Piston ring side clearance:

Characteristic

Top ring

0.15 / 0.35 mm (0.0059 / 0.0138 in)

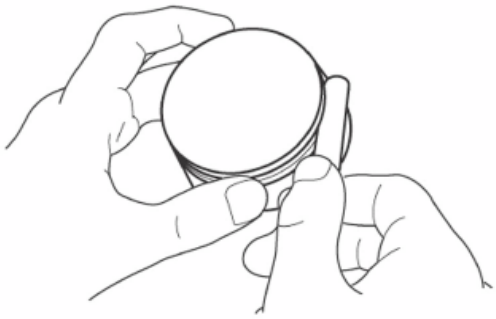
Middle ring

0.15 / 0.35 mm (0.0059 / 0.0138 in)

Oil scraper ring

0.15 / 0.60 mm (0.0059 / 0.0236 in)

- Fit the piston ring to the cylinder.
- Level the installed piston ring with the piston crown.
- Measure piston ring port and replace it if not complying with specifications.



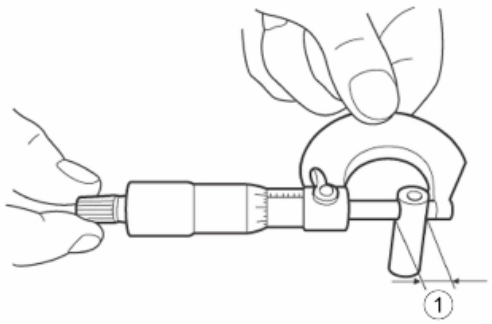
CAUTION

IT IS NOT POSSIBLE TO MEASURE THE OIL SCRAPER RING END LIGHT: IF THERE IS AN EXCESSIVE CLEARANCE, REPLACE THE THREE PISTON RINGS.

PIN

- Clean off combustion residues from the piston crown and from the area above the top ring.
- Check for cracks on the piston and for compression on the piston sliding surface (seizing); Replace the piston if required.

- Measure the pin outside diameter (1) and if not complying with specifications, replace the pin.

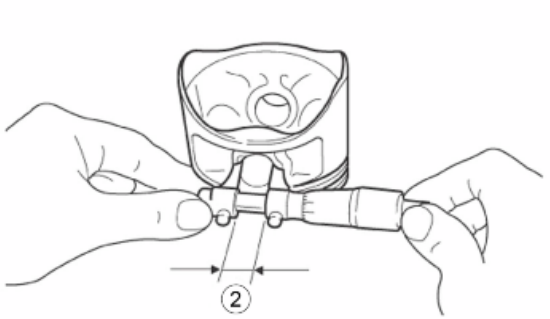


Characteristic

Pin outside diameter

14.998 / 14.992 mm (0.5905 / 0.5902 in)

- Measure the pin hole diameter (2) and replace the piston and the pin all together if not complying with specifications



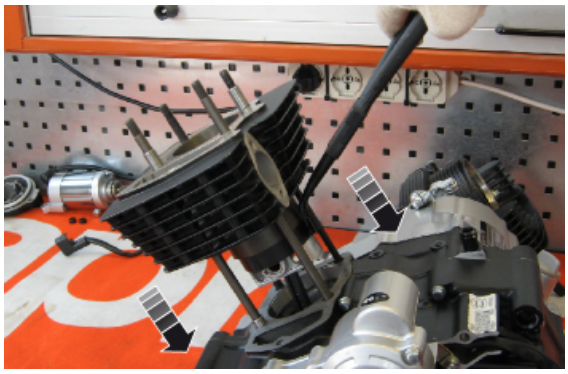
Characteristic

Pin hole diameter on piston

15.002 / 15.008 mm (0.5906 / 0.5909 in)

Installing the cylinder

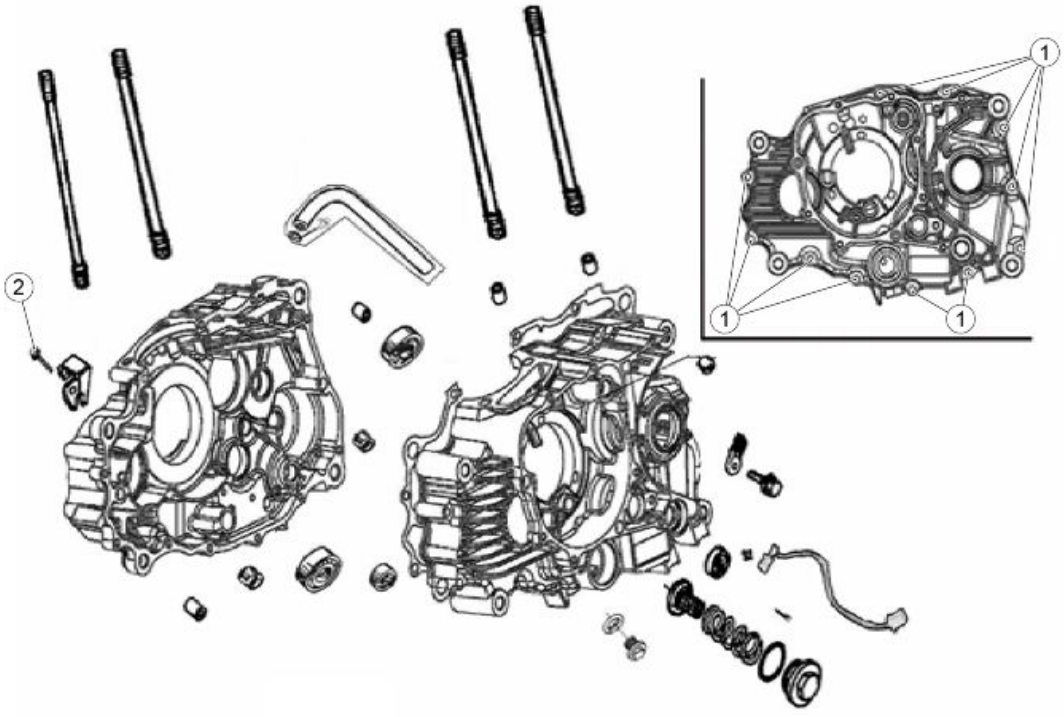
- With the special tool, tighten the piston rings of the piston and insert it in the cylinder sliding it downwards.



Specific tooling

020287Y tool for sealing ring fitting

Crankcase - crankshaft

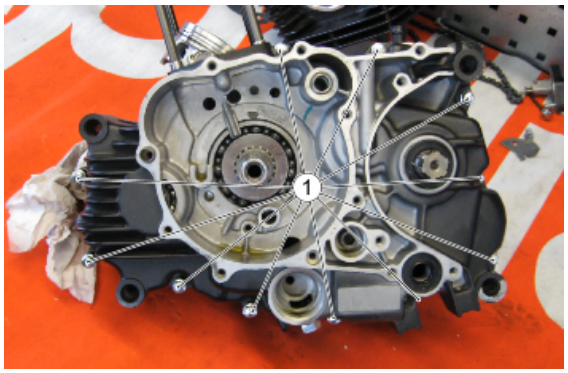


CRANKCASE

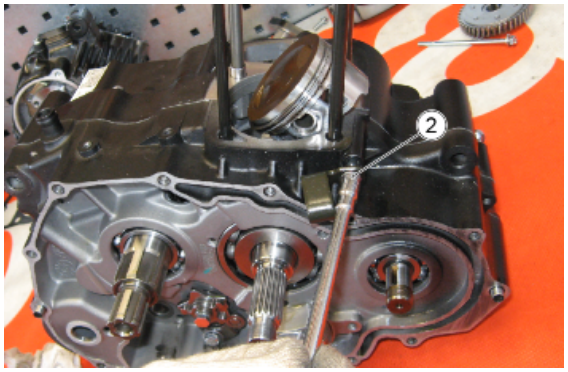
pos.	Description	Type	Quantity	Torque	Notes
1	Freewheel crankcase fixing screws	M6x50	11	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	Loctite 270
2	Clutch side crankcase fixing screw	M6x55	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	Loctite 270

Splitting the crankcase halves

- Remove the complete cylinder head timing system and the cylinder
- Remove the clutch and the timing system gears
- Remove the alternator
- Remove the 11 fixing screws (1) of the alternator side crankcase

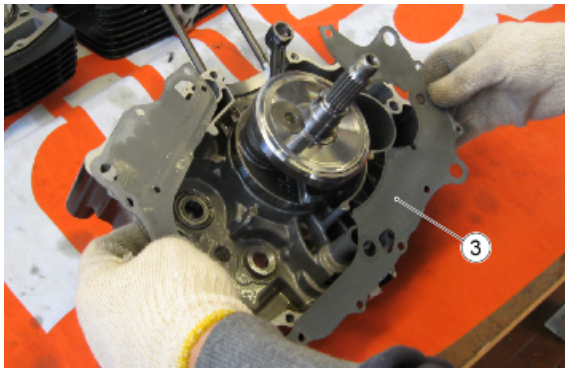


- Remove the screw (2) fixing the clutch side crankside



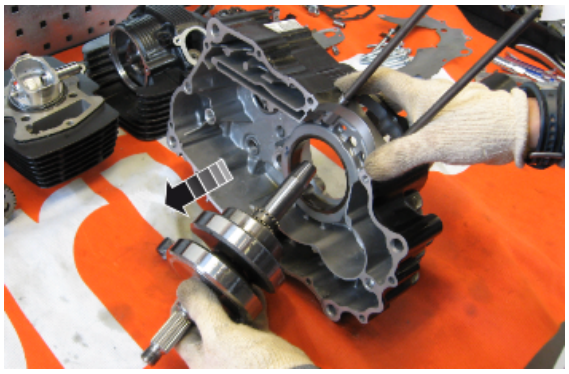
- Detach the crankcase

- Remove the gasket (3)



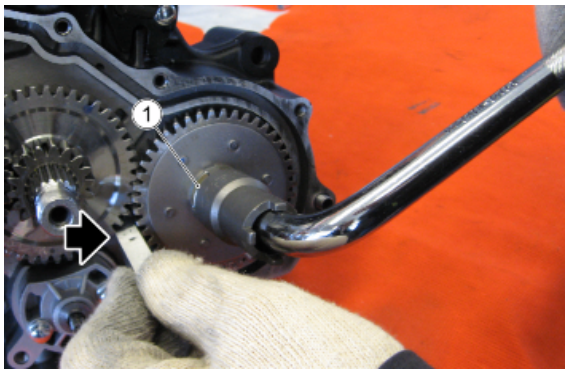
Removing the crankshaft

- Open the crankcase
- Remove the crankshaft from the free-wheel side crankcase

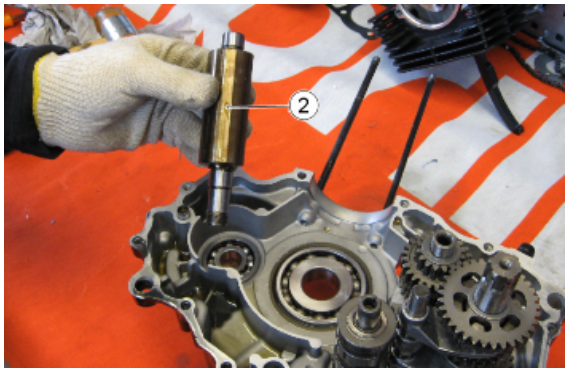


Removing the countershaft

- Using an aluminium lock, place it in the indicated zone and lock the gears
- Remove the locking ring nut (1) of the timing system gear connected to the countershaft

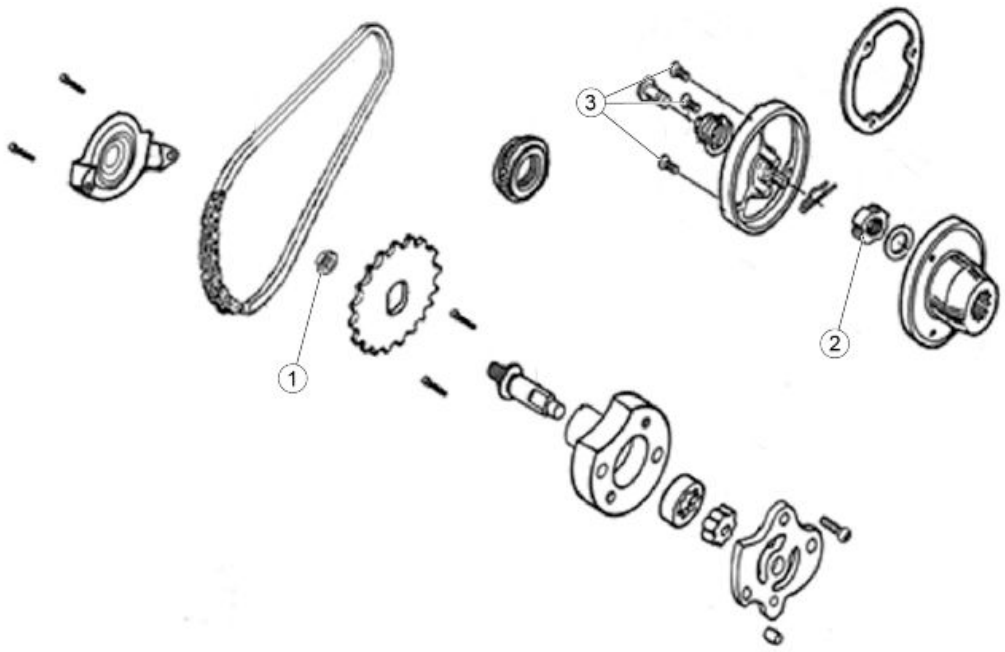


- Detach the crankcase
- Remove the countershaft (2)



Lubrication

Oil pump

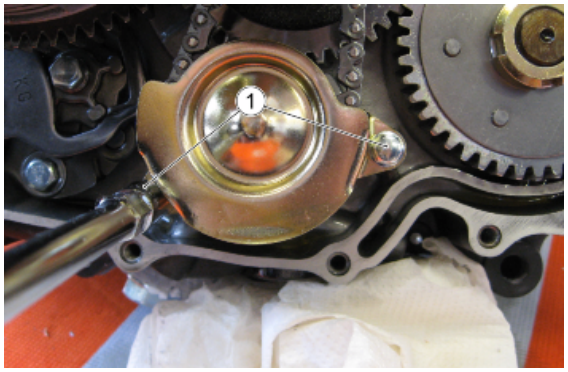


OIL PUMP

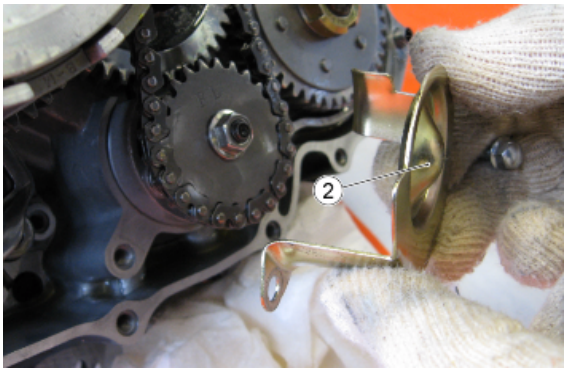
pos.	Description	Type	Quantity	Torque	Notes
1	Oil pump gear fixing nut	M6	1	10 +/- 2 Nm (7.38 +/- 1.47 lb ft)	-
2	Oil pump fixing ring nut	-	1	45 +/- 5 Nm (33.19 +/- 3.69 lb ft)	-
3	Oil filter cover fixing screws	M5x12	3	3 / 5 Nm (2.21 / 3.69 lbf ft)	-

Removing

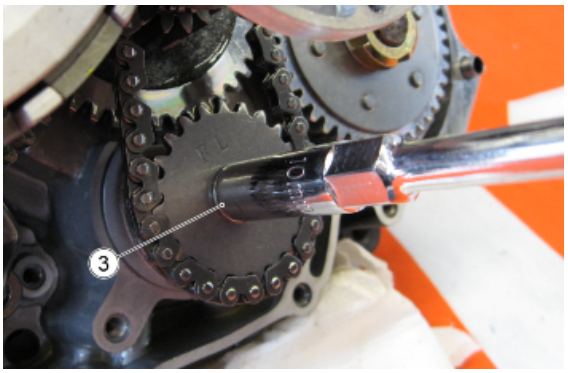
- Remove the two fixing screws (1) of the cover plate (2) of the oil pump gear



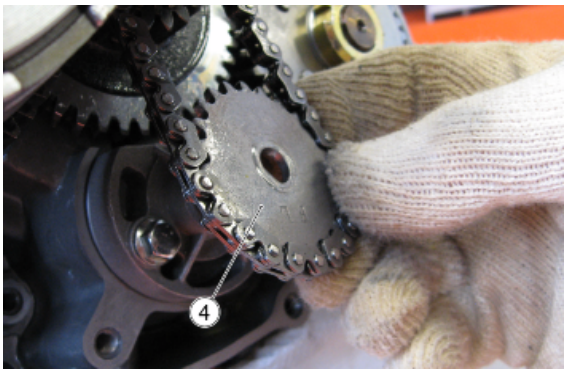
- Remove the cover plate (2)



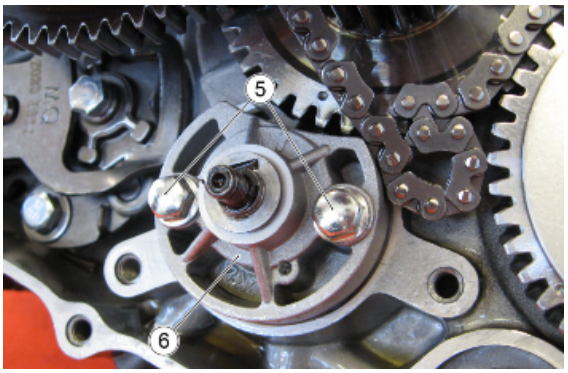
- Remove the fixing screw (3) of the timing system gear



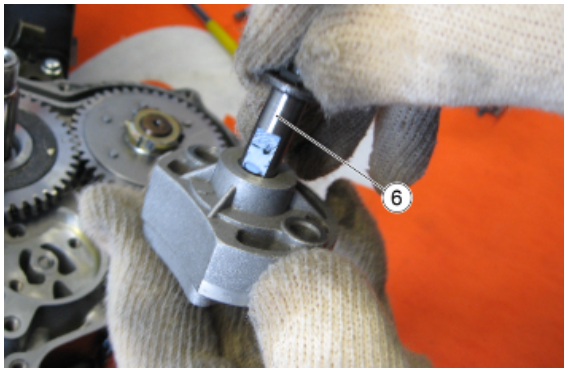
- Remove the timing system gear (4)



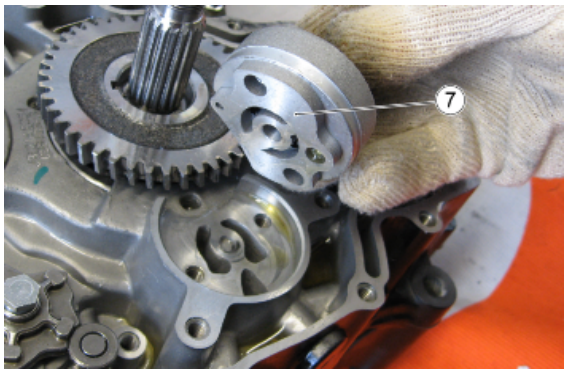
- Remove the two fixing screws (5) of the oil pump (6)



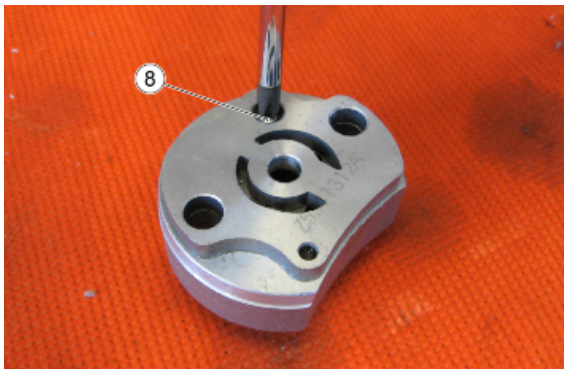
- Remove the oil pump shaft (6)



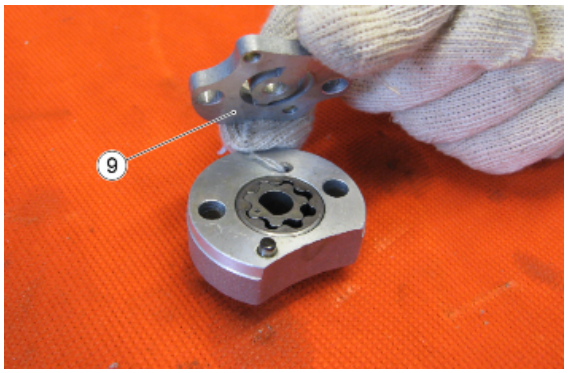
- Remove the complete oil pump (7)



- Remove the fixing screw (8) of the oil pump cover



- Remove the oil pump cover (9)

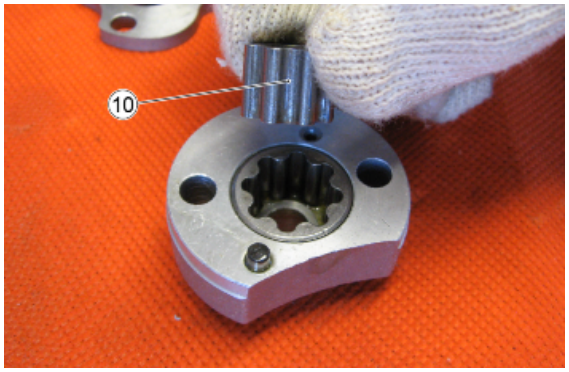


- Remove the inner rotor (10)

CAUTION

NOTE

MAKE SURE THAT DURING THE REFITTING THE PUNCH MARK IS FACING UPWARDS.

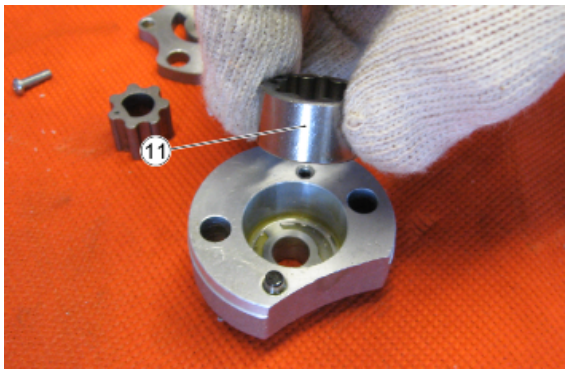


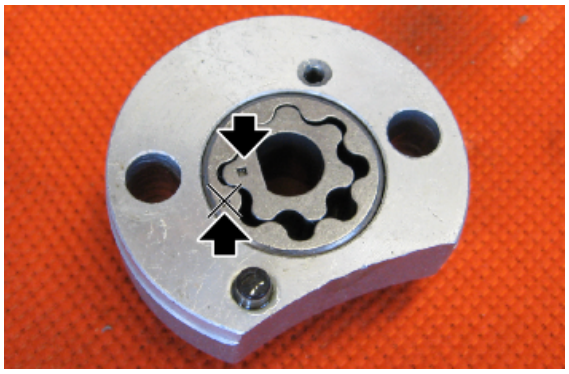
- Remove the outer rotor (11)

CAUTION

NOTE

MAKE SURE THAT DURING THE REFITTING THE PUNCH MARK IS FACING DOWNWARDS AND THEREFORE NOT VISIBLE.





Inspection

- Check the rotors of the oil pump, the sliding surfaces of the external rotors in both bodies and the surfaces to check for possible grooves.

Characteristic

Internal rotor thickness

12.98 / 12.60 mm (0.511 / 0.496 in)

External rotor thickness

12.98 / 12.60 mm (0.511 / 0.496 in)

Internal rotor axial clearance

0.1 mm (0.0039 in)

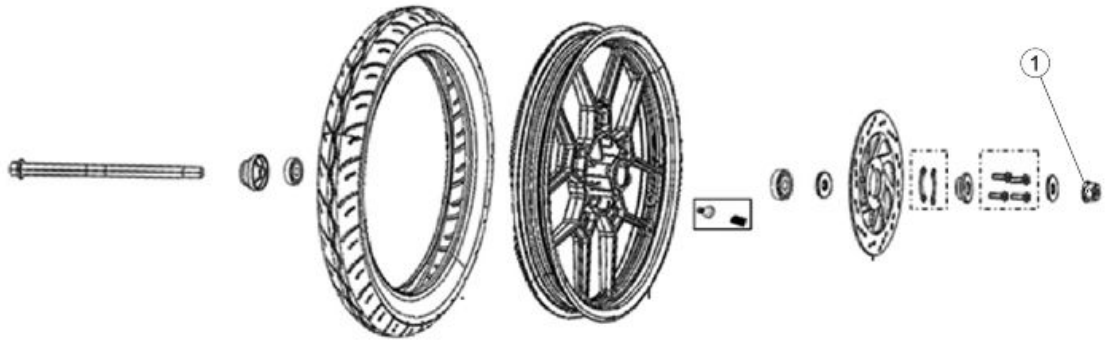
External rotor axial clearance

0.1 mm (0.0039 in)

INDEX OF TOPICS

Front

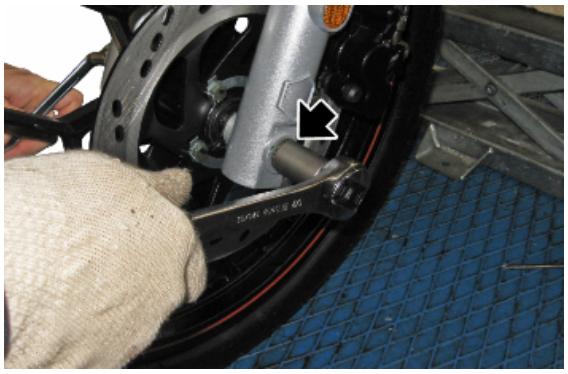
Removing the front wheel



FRONT WHEEL

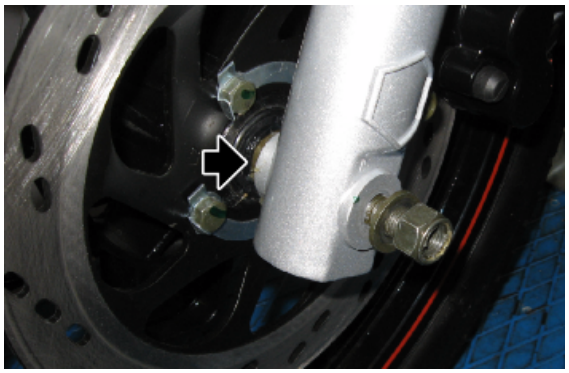
pos.	Description	Type	Quantity	Torque	Notes
1	Front wheel fixing nut	M12x1.25	1	60 +/- 5 Nm (44.25 +/- 3.69 lb ft)	-

- Operating from the left side of the motorcycle, remove the fixing nut of the front wheel

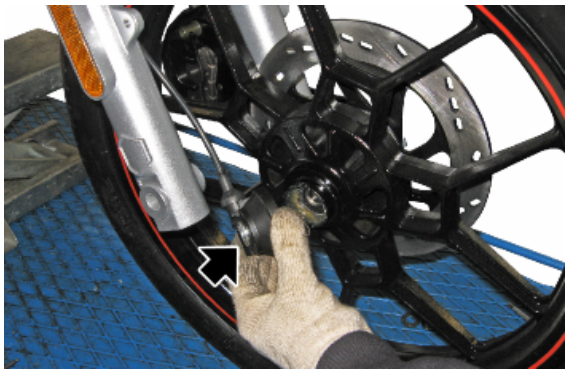


- Remove the pin from the right side of the motorcycle

- Remove the spacer



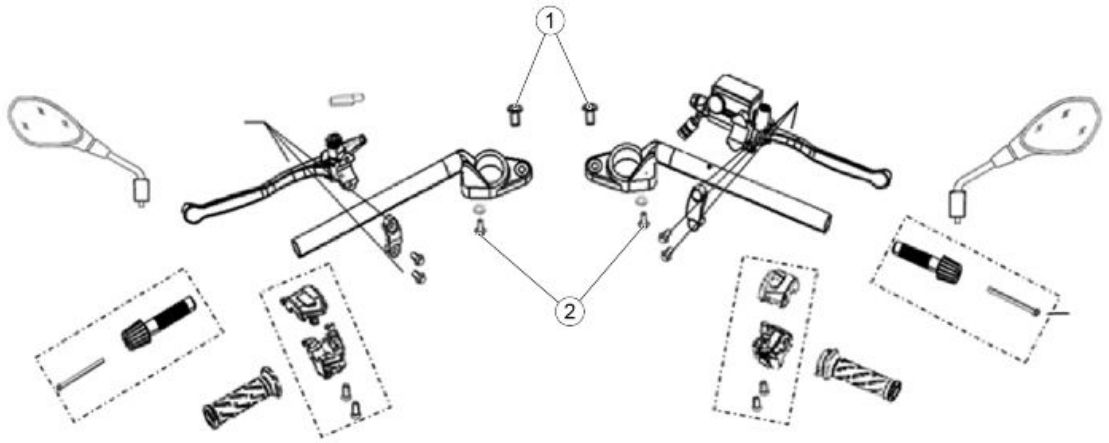
- Remove the odometer from the wheel rim



- Remove the wheel complete

Handlebar

ETX 150



HANDLEBAR / CONTROLS

pos.	Description	Type	Quantity	Torque	Notes
1	Handlebar half upper fixing screws	M8x30	2	18 / 25 Nm (13.28 / 18.44 lbf ft)	-
2	Handlebar half lower fixing screws	M6x20	2	7 / 10 Nm (5.16 / 7.38 lbf ft)	-

Removing

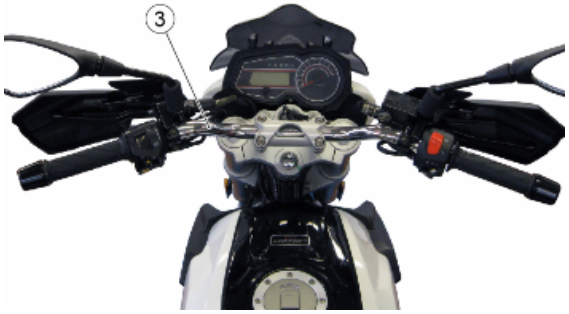
- The following described operations vary according to the identified model:

ETX 150

- Remove the four screws (1) fixing the U-bolt

- Remove the U-bolt (2)

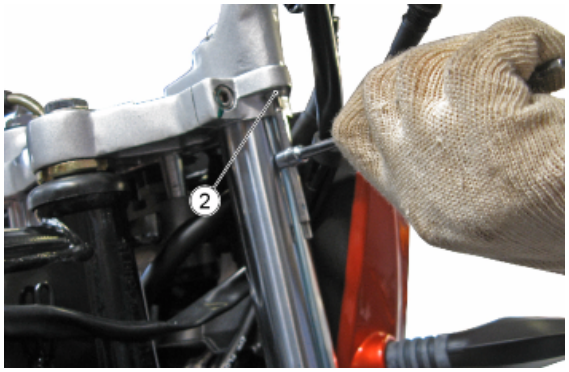
- Remove the handlebar (3)



STX 150

- Remove the two fixing screws (1) of the semi-handlebar to the steering yoke on the upper part

- Remove the two fixing screws (2) of the semi-handlebar to the steering yoke on the lower part and the equivalent for the left semi-handlebar



- Slide off and remove thesemi-handle-bars from the fork stems

NOTE

TO COMPLETELY REMOVE THE HANDLEBAR OR THE SEMI-HANDLEBAR, ACCORDING TO THE MODEL, THE LIGHT SWITCH, THE CLUTCH LEVER AND THE FRONT BRAKE PUMP MUST BE REMOVED

Front fork

Removing the fork legs

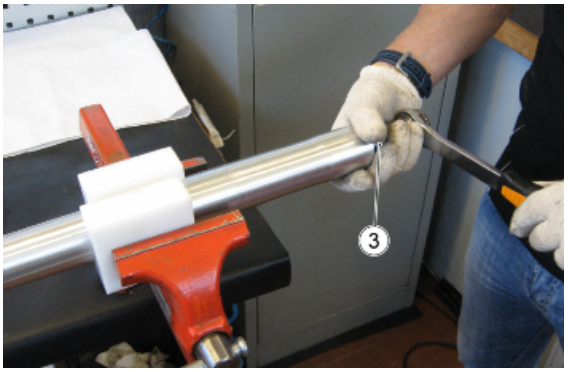
- The operations to be carried out are different according to the specific model and regarding a single stem of the described motorcycle

ETX 150

- Remove the lower front mudguard
- Remove the front wheel
- Loosen the two fixing screws of the stem (1)

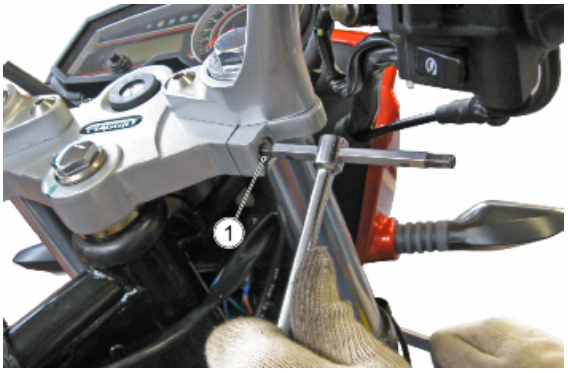
- Remove the stem (2)

- Using the Teflon shoes, lock the stem in a vice and partially loosen the cap (3)



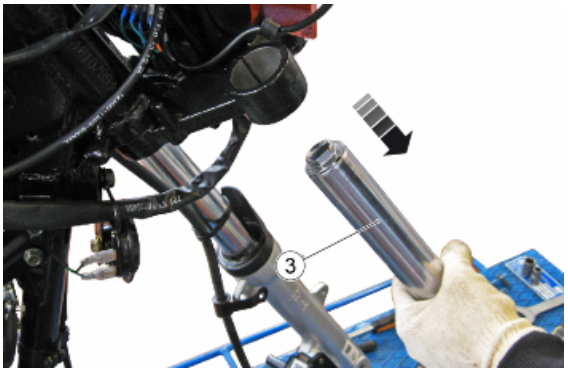
STX 150

- Remove the front mudguard
- Remove the front wheel
- Loosen the fixing screw (1) at the upper steering plate of the stem



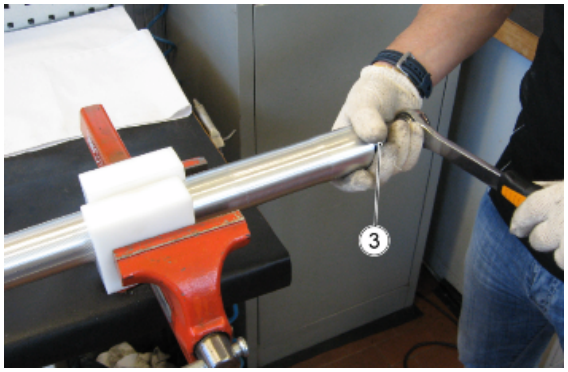
- Loosen the screw (2) at the lower steering plate fixing the stem

- Remove the stem (3)



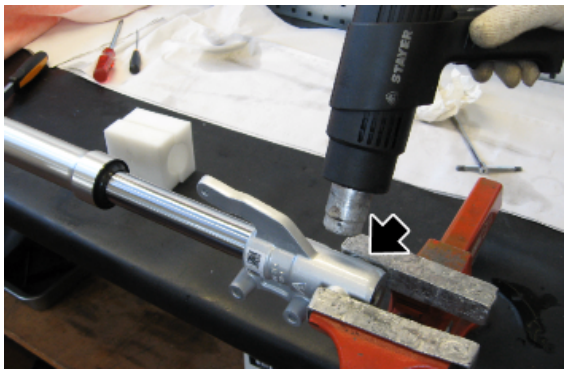
Disassembling the fork

- Using the Teflon shoes, lock the stem in a vice and partially loosen the cap (3)

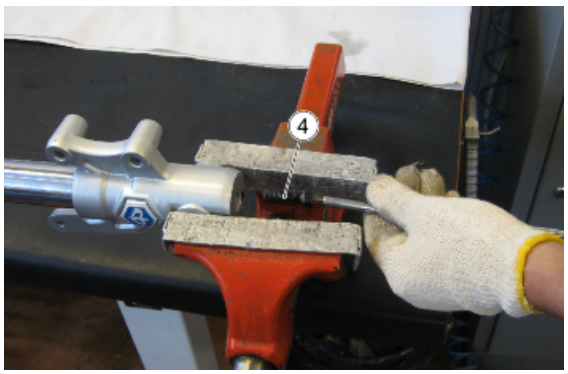


- Provide a container with at least 0.5 l (0.11 UK gal) (0.13 US gal) volume, completely undo the stem from the fork cap and drain the oil

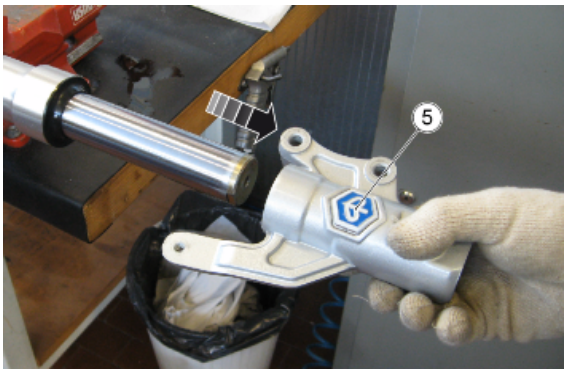
- Place the foot of the fork in the vice supplied with specific protection and warm up the indicated area with a heat blower



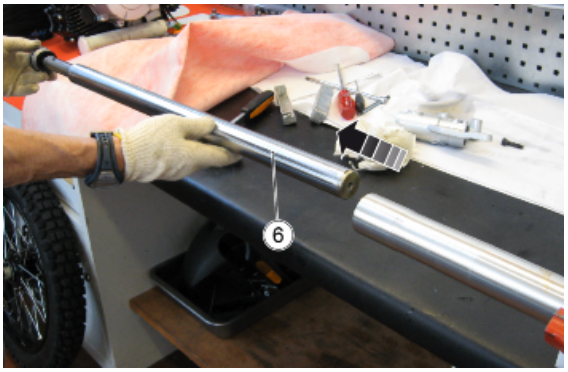
- Loosen and remove the screw (4) fixing the fork foot



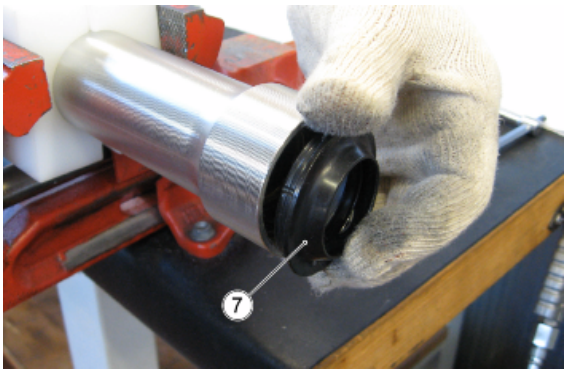
- Remove the fork foot (5)



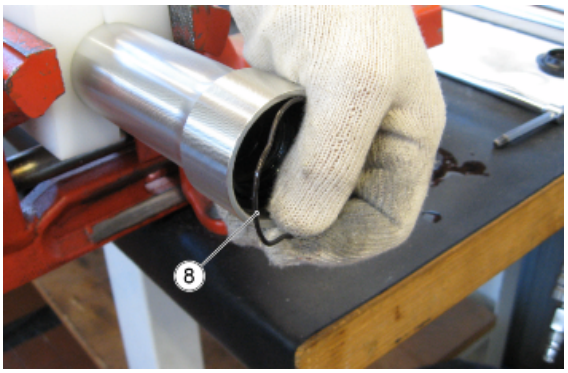
- Remove the stem completely (6) from the sleeve



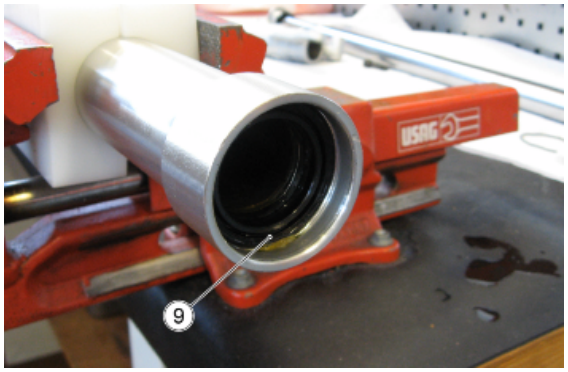
- Remove the dust gaiter (7)



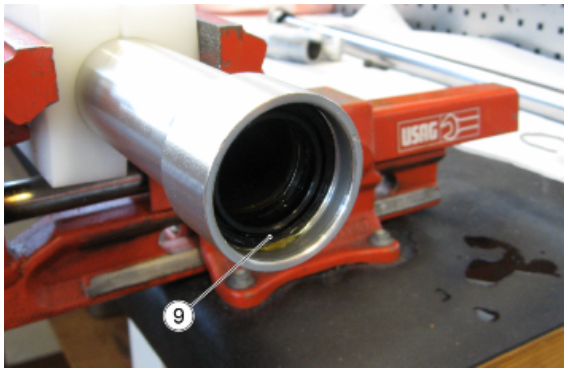
- Remove the retainer ring (8)



- Remove the oil seal (9)



- Remove the oil seal (9)

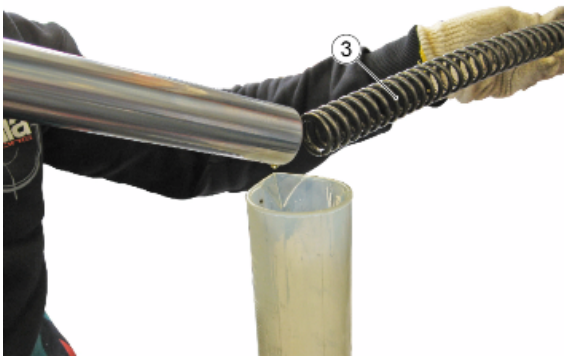


STX 150

- Using the Teflon shoes, lock the stem in a vice and remove the cap (1)

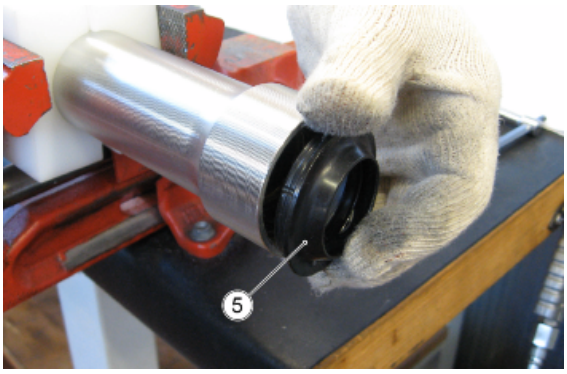
- Remove the preload pipe (2)

- Remove the spring (3), provide a container with at least 0.5 l (0.11 UK gal) (0.13 US gal) volume and drain the oil

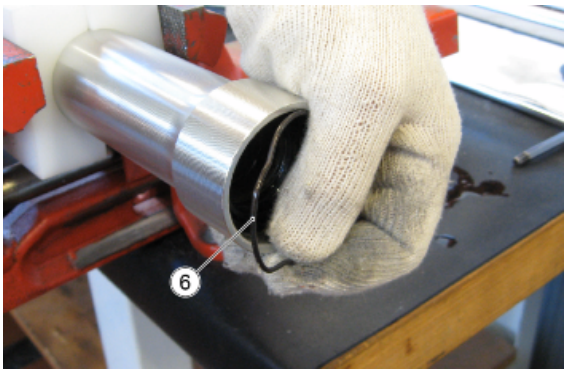


- Remove the protection (4) from the sleeve
- Pull off the sleeve from the stem

- Remove the dust gaiter (5)



- Remove the retainer ring (6)



- Remove the oil seal (7)

Checking the components

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.

CAUTION

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

Sleeve

Check that there are no damages and/or cracks; otherwise, replace it.

Spring

Check the spring is in good conditions.

Filling oil

- Place the sleeve in vertical position in a vice with protection shoes.
- Press the stem in the sleeve. Place a support under the sleeve to remain it pressed.
- Pour part of the fork oil inside the fork.
- Wait some minutes to distribute the oil in all channels.
- Pour the remaining oil.
- Carry out some pumping.

Characteristic

Oil for front fork ETX

300 cm³ (18.31 cu.in) (for each stem)

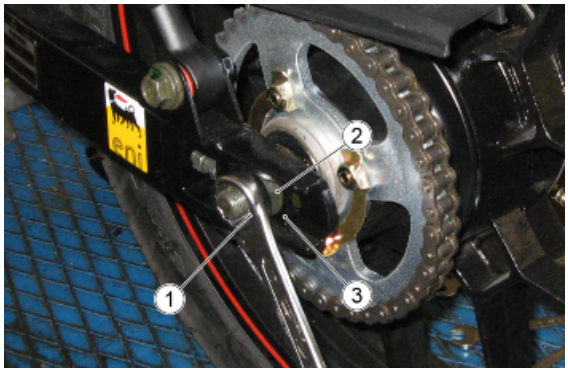
Oil for front fork STX

345 cm³ (21.05 cu.in) (for each stem)

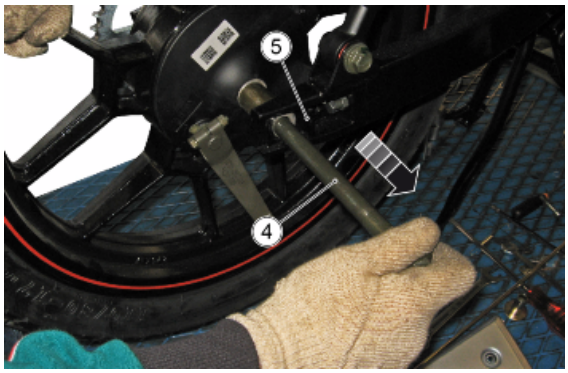
Rear

Removing the rear wheel

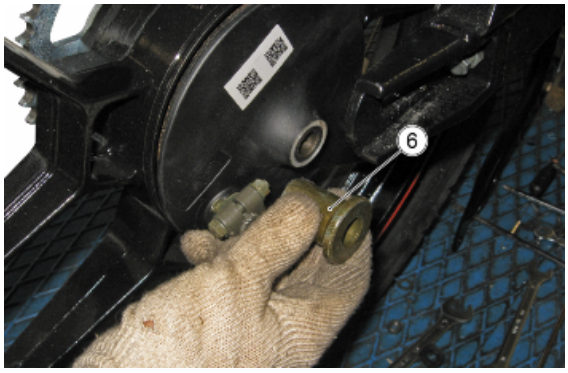
- Loosen the chain tension and remove it
- Remove the rear brake control rod
- Remove the fixing nut (1), the washer (2) and the chain tensioner pad (3)



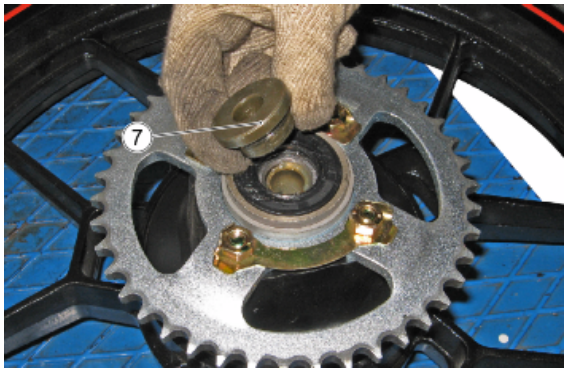
- Remove the pin (4) and the chain tensioner pad



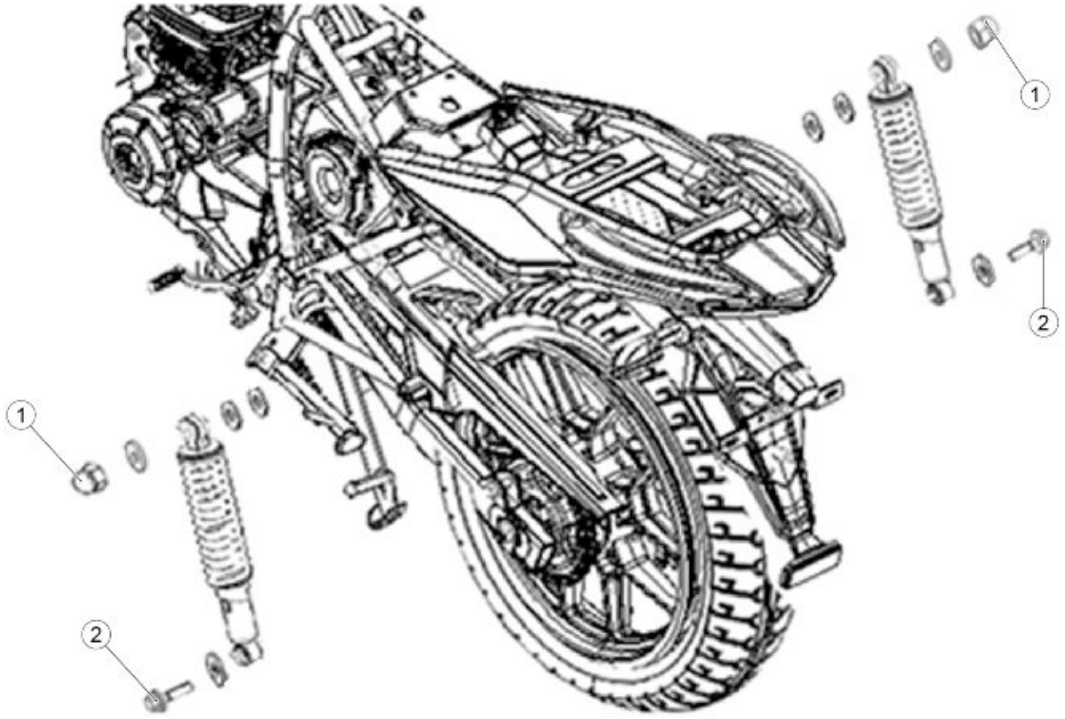
- Collect the spacer (6) located between the drum brake and the swingarm



- Remove the complete wheel and the spacer (7)



Shock absorbers

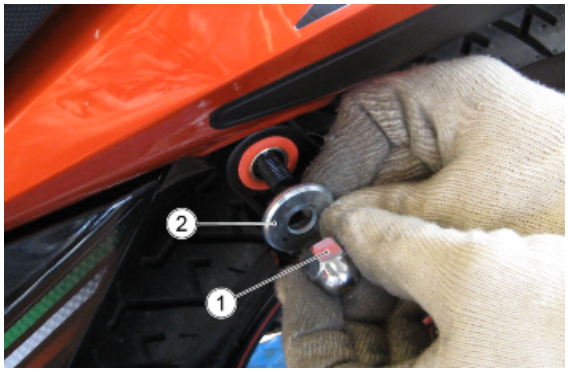


REAR SHOCK ABSORBERS

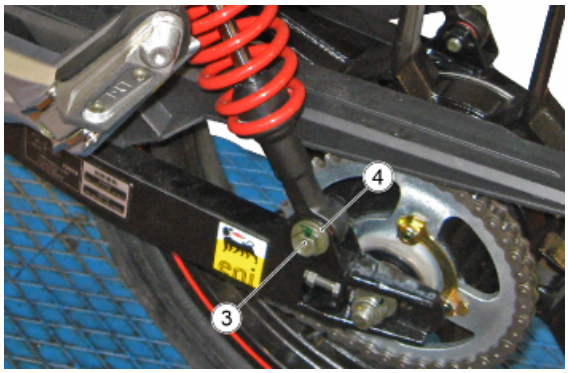
pos.	Description	Type	Quantity	Torque	Notes
1	Upper shock absorber fixing nut	M10x1.25	2	35 /45 Nm (25.81 +/- 33.19 lb ft)	-
2	Shock absorber lower fixing screws	M10x40	2	30 /40 Nm (22.13 +/- 29.50 lb ft)	-

Removing

- Remove the upper fixing nut (1) of the shock absorber and the washer (2)



- Remove the lower fixing screw (3) of the shock absorber and the washer (4)



- Lift the lower part of the shock absorber and remove it from the upper pin
- Remove the complete shock absorber (5)

NOTE

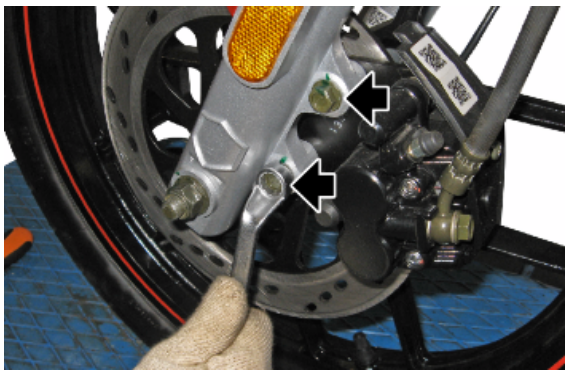
TO REMOVE THE RIGHT REAR SUSPENSION, CARRY OUT THE SAME PREVIOUSLY DESCRIBED OPERATIONS

INDEX OF TOPICS

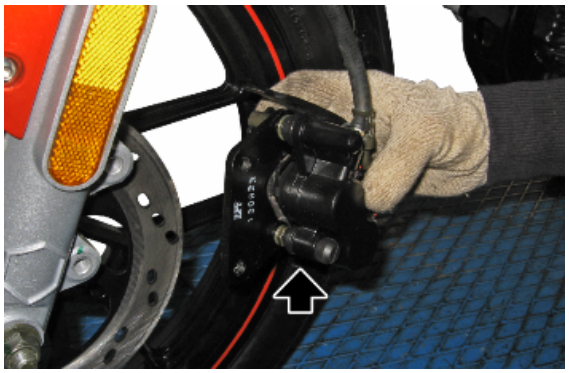
Front brake calliper

Removal

- Remove the two front brake calliper fixing screws



- Remove the front brake calliper

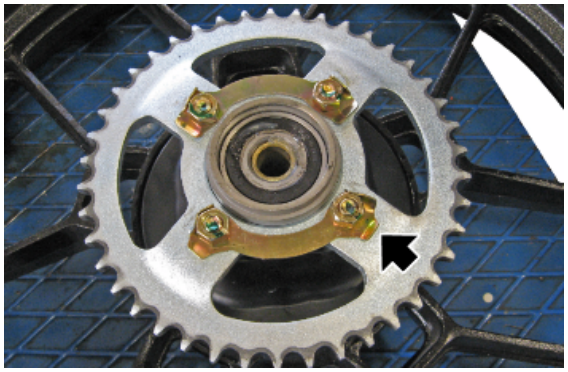


- To completely remove the front brake calliper, the circuit must be emptied by removing the joint fixing screw

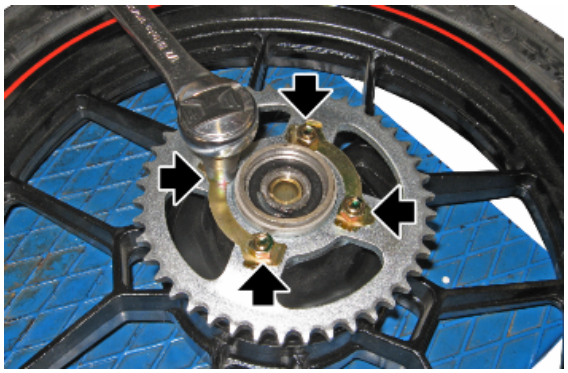
Rear brake disc

Removal

- Remove the rear wheel.
- Level the safety plate tab



- Remove the four screws that fix the rear disc



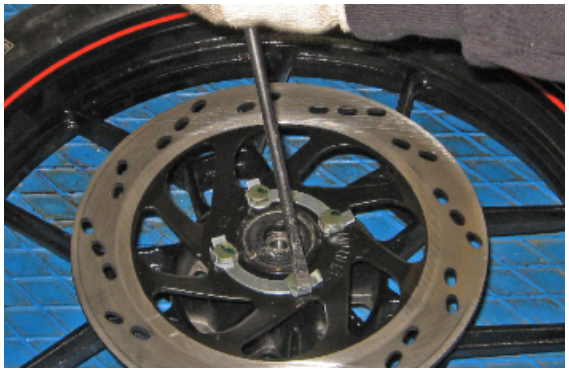
- Remove the two safety plates

- Remove the rear brake disc

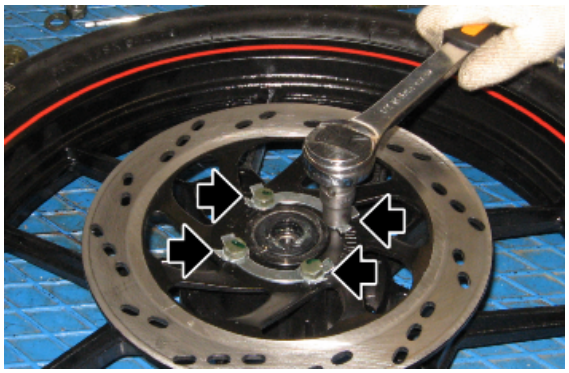
Front brake disc

Removal

- Remove the front wheel
- Level the safety plate tab



- Remove the four screws that fix the front disc



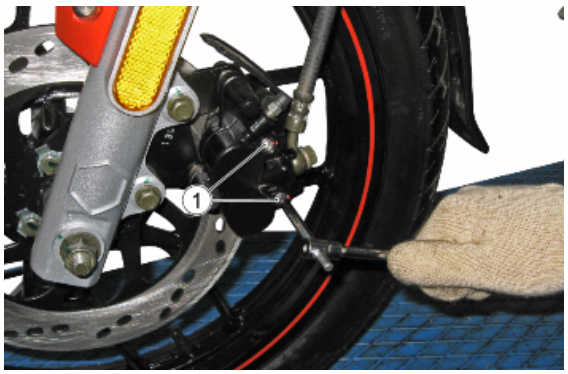
- Remove the two safety plates

- Remove the front brake disc

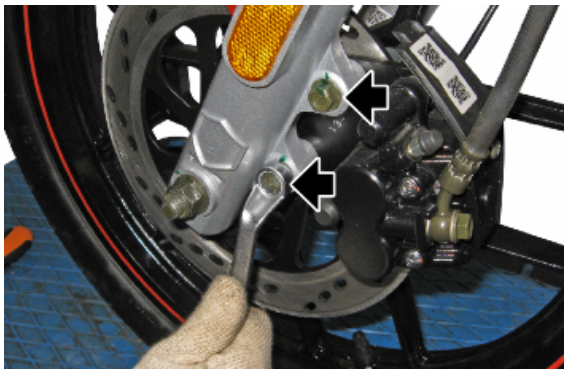
Front brake pads

Removal

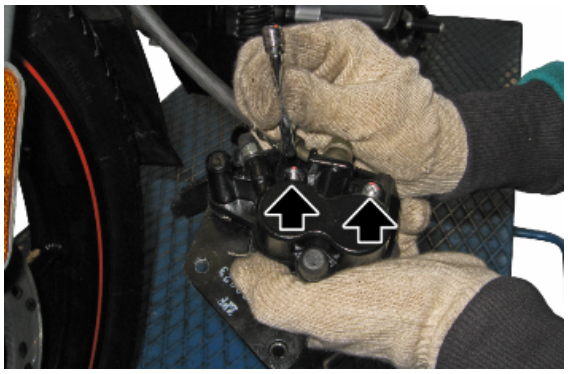
- Partially loose the locking threaded pins (1) of the brake pads



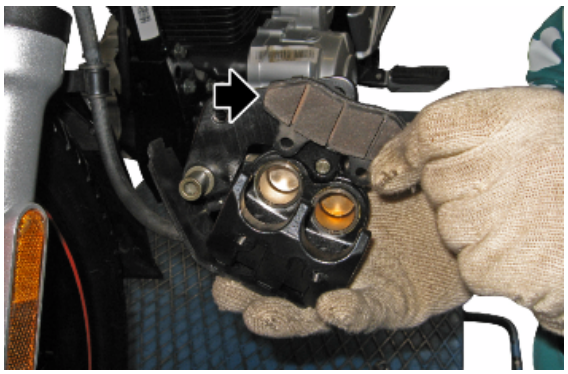
- Remove the two screws fixing (2) the brake calliper and take it off



- Complete the removal of the pins (1)



- Remove the pads (3)



- If the friction material thickness is reduced to a value of about 1.5 mm (0.06 in), replace the brake calliper pads

Bleeding the braking system

Front

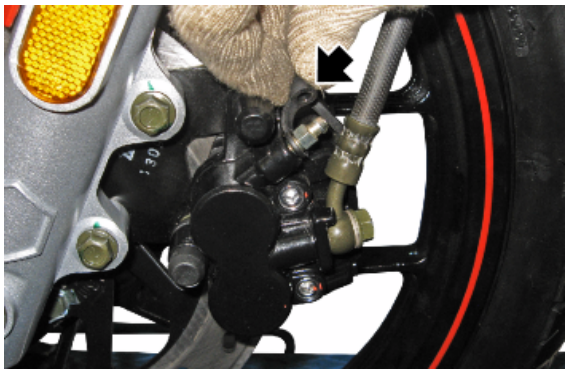
- Any air trapped in the hydraulic circuit acts as a cushion, absorbing much of the pressure applied by the brake pump and minimising the braking power of the calliper.
- The presence of air is signalled by the "sponginess" of the brake control and poor braking efficiency.

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

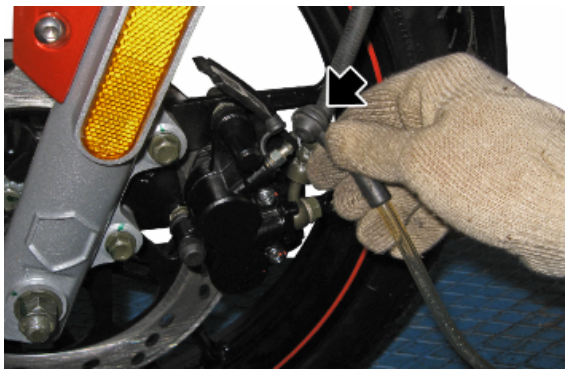
NOTE

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

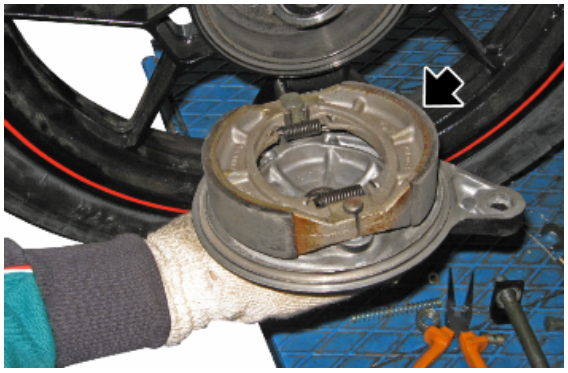
WHILE PURGING THE HYDRAULIC SYSTEM, FILL THE RESERVOIR WITH THE NECESSARY QUANTITY OF BRAKE FLUID. CHECK THAT, DURING THE OPERATION, THERE IS ALWAYS BRAKE FLUID IN THE RESERVOIR.

- 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.

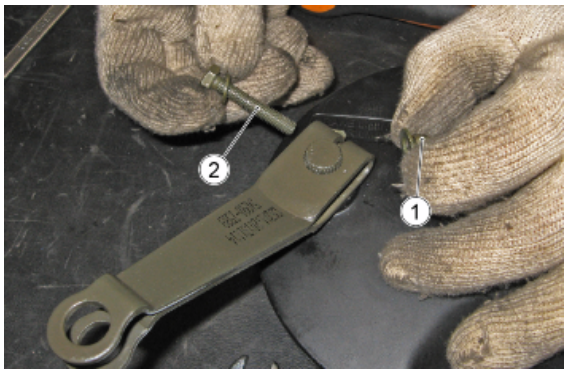
Rear drum brake

Rimozione

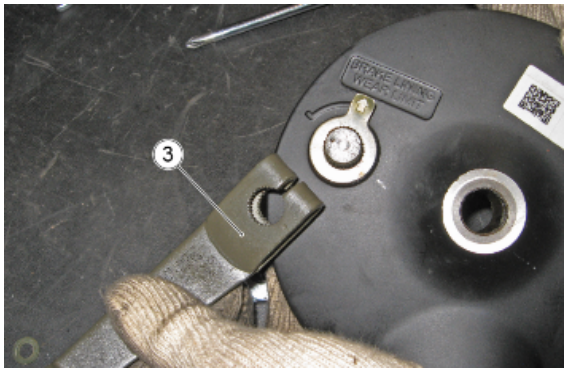
- Remove the drum brake control rod
- Remove the complete rear wheel
- Extract the complete drum brake from the wheel rim



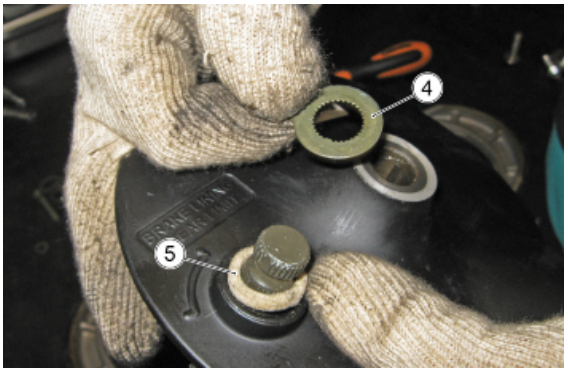
- Remove the nut (1) and the fixing screw (2) of the brake lever, paying attention to collect the washers



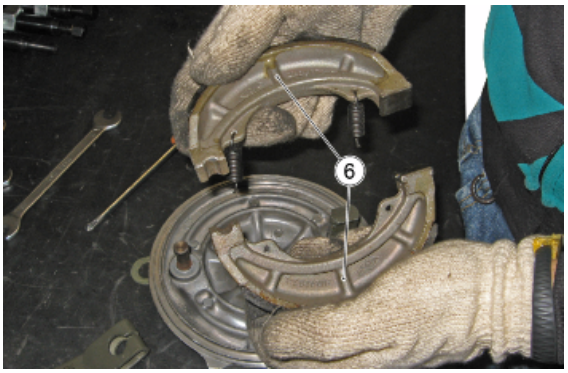
- Remove the brake lever (3)



- Remove the washer with the reference notch (4) and the gasket (5) of the pin

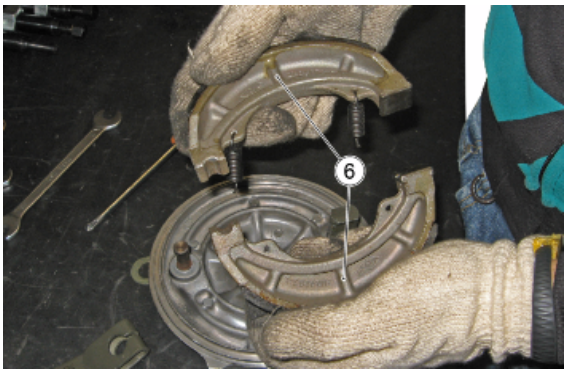


- Remove the brake linings (6) by unhooking the springs



- Remove the pin (7) by unhooking it from the internal part of the cover

- Remove the brake linings (6) by unhooking the springs



- Remove the pin (7) by unhooking it from the internal part of the cover

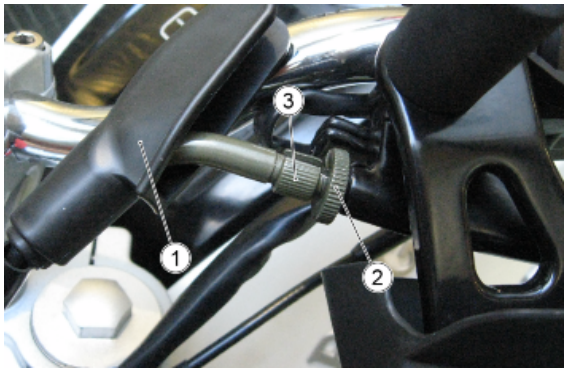
Controllo

- Remove the brake linings and check that the friction material has a thickness of at least 1.5 mm (0.06 in), otherwise replace the worn components

INDEX OF TOPICS

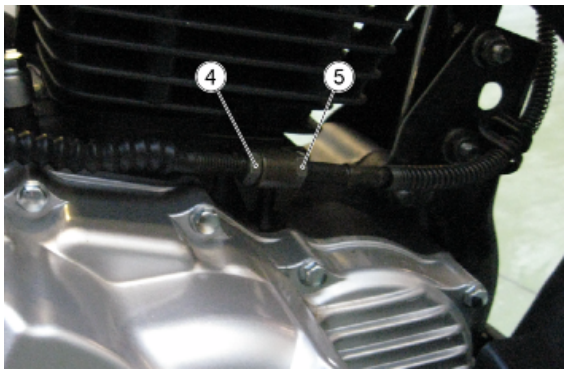
Adjustment

Adjust the clutch if the motor stops, or if the vehicle moves forward with the clutch activated and the gear inserted, or if the clutch "slides," causing a delay in acceleration with respect to the rpm. Adjustment of minor pieces can be performed using the register on the clutch by operating as followed:



- Slide the protective casing (1) out
- Loosen the nut (2)
- Turn the adjuster (3) until the clearance at the extreme end of the clutch lever is between 10 - 20 mm (0.39 - 0.79 in)
- Tighten the nut (2), until the adjuster is locked in place (3).
- Check the clearance at the extremity of the clutch lever.
- Reposition the protective casing (1).
- If the adjuster (3) is completely screwed in, completely unscrewed, and/or it is not possible to obtain the correct clearance:
- Slide the protective casing (1) out. Completely screw in the nut (2) on the adjuster (3).
- Completely tighten the adjuster (3).

Operating from the right vehicle side:



- Loosen the nut (4)
- Turn the adjuster (5) until the clearance at the extreme end of the clutch lever is between 10 - 20 mm (0,39 - 0,79 in)
- Tighten the nut (4), until the adjuster is locked in place (5).
- Check the clearance at the extremity of the clutch lever.
- Start the engine.

- Completely activate the clutch, and insert first gear.
- Make sure that the engine does not stop and that the vehicle does not move forward, and that the friction does not "slide" during acceleration or during driving.

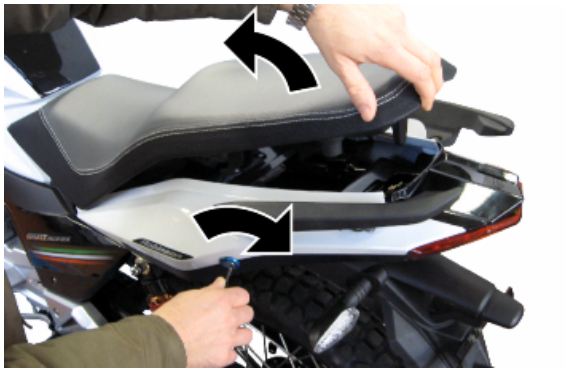
WARNING

CHECK THAT THE CLUTCH LEVER CABLE IS INTACT: IT SHOULD NOT BE CRACKED OR CRUSHED, AND THE CASING SHOULD NOT BE WORN ANYWHERE.

INDEX OF TOPICS

Seat

- Posizionare il veicolo sul cavalletto.
- Inserire la chiave nella serratura sella.
- Ruotare la chiave in senso orario e sganciare la sella.
- Rimuovere la sella.

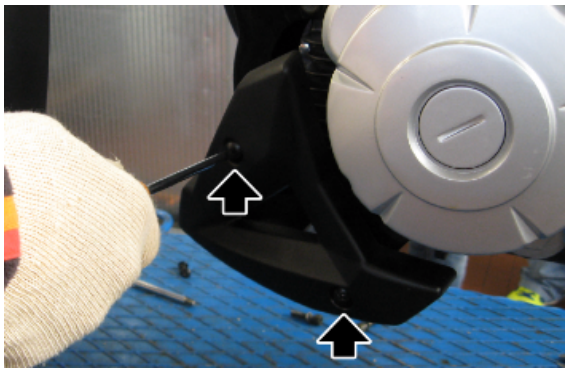


CAUTION

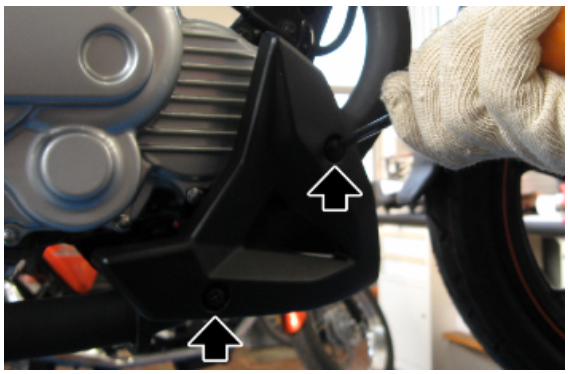
BEFORE LOWERING AND LOCKING THE SADDLE, CHECK THAT THE KEY HAS NOT BEEN LEFT IN THE GLOVEBOX / TOOL KIT COMPARTMENT.

Engine guard

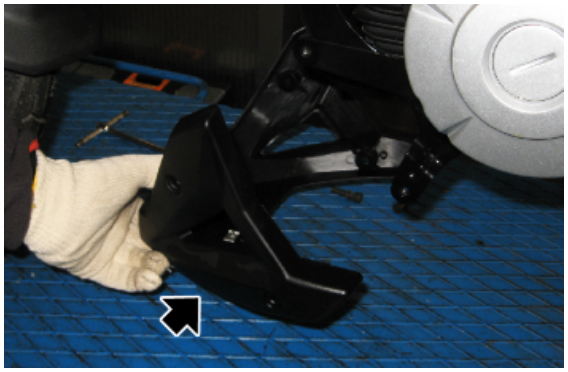
- Operating from the left side of the motorcycle, remove the two screws fixing the engine guard.



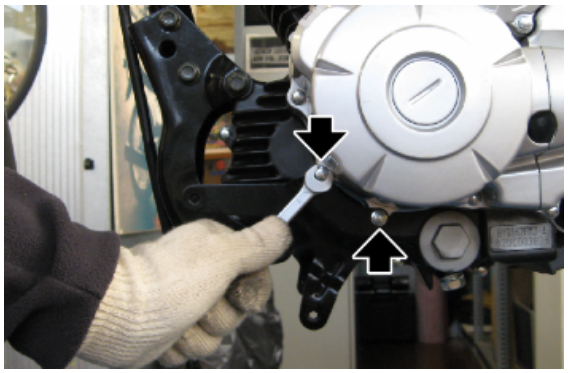
- Operating from the right side of the motorcycle, remove the two screws fixing the engine guard.



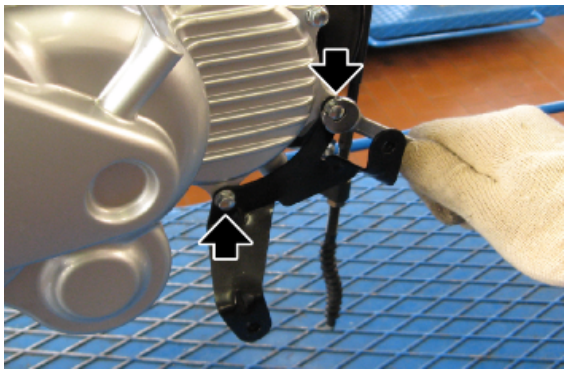
- Remove the engine guard.



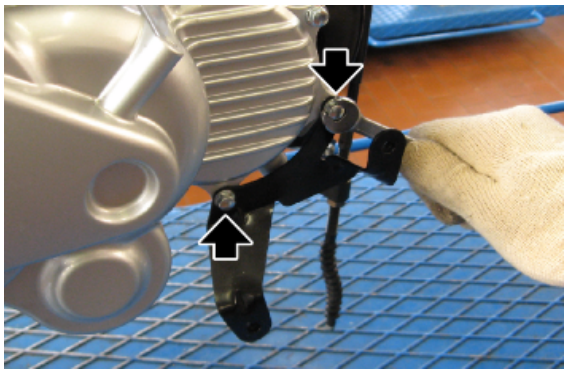
- To remove the support bracket of the engine guard from the left side it is necessary to remove the fixing screws.



- To remove the support bracket of the engine guard from the right side, it is necessary to remove the fixing screws.



- To remove the support bracket of the engine guard from the right side, it is necessary to remove the fixing screws.



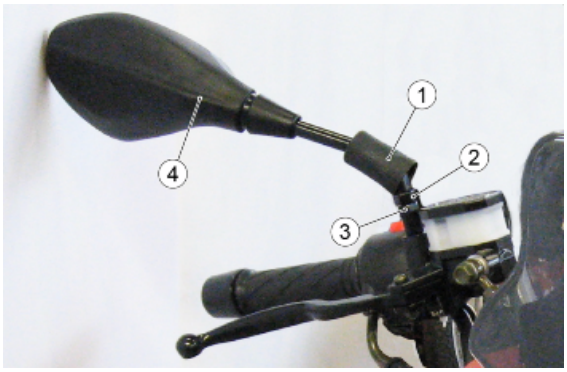
Driving mirrors

REMOVAL

- Lift the protection casing (1)

HOLD THE REAR-VIEW MIRROR (4) TO AVOID DROPPING IT BY ACCIDENT.

- Keep the screw (2) blocked and completely unscrew the nut (3).



HANDLE PLASTIC AND PAINTED COMPONENTS WITH CARE, DO NOT SCRATCH OR SPOIL THEM.

- Remove the rear-view mirror (4).

CAUTION

REPEAT THE PROCEDURE TO REMOVE THE OTHER MIRROR.

AFTER REFITTING, ADJUST THE REAR-VIEW MIRRORS CORRECTLY AND TIGHTEN THE NUTS IN ORDER TO ENSURE STABILITY.

After refitting:

- Adjust the rear-view mirror angle correctly.

Headlight assy.

WINDSHIELD REMOVAL

- Remove the four screws (1) fixing the top fairing

- Remove the top fairing (2) paying attention to collect the rubber washers (3) placed between the top fairing and the dashboard

DASHBOARD REMOVAL

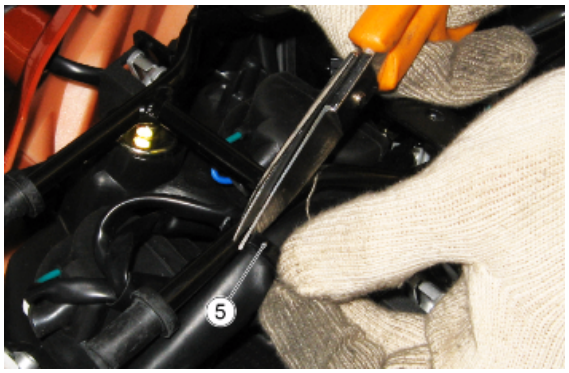
- Remove the two upper fixing screws (1) of the dashboard

- Remove the lower fixing screw (2) of the dashboard

- Turn forward and lift the dashboard to take the frame off the reference fittings in the lower steering yoke

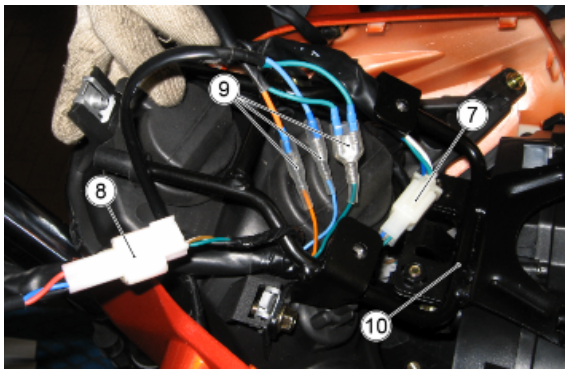
- Remove the two screws and the relative washers (3) fixing the internal part of the dashboard (4) and remove it

- Remove the clamp (5) that fastens the front light assembly wiring



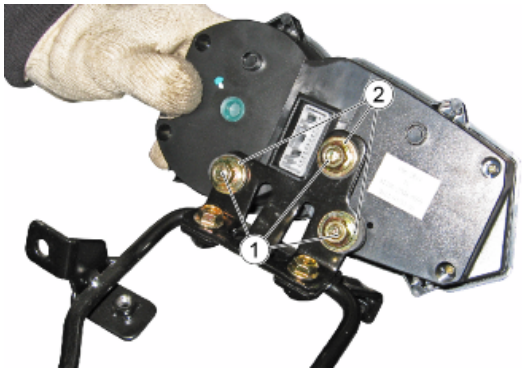
- Remove the two screws (6) fixing the front light assembly to the frame

- Disconnect the low/high beam light connectors (7), the speedometer connector (8), the turn indicator connectors (9), the instrument panel connector (10)
- Remove the front light assembly and the frame with the instrument panel.

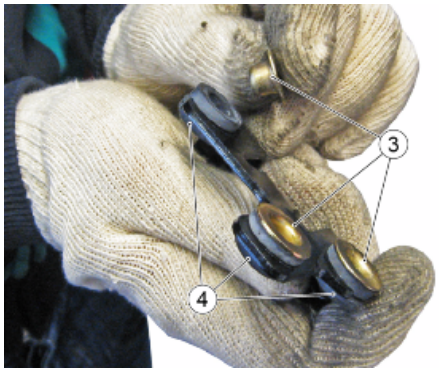


REMOVING THE INSTRUMENT PANEL

- Remove the three fixing screws (1) of the instrument panel from the frame paying attention to collect the washers (2)



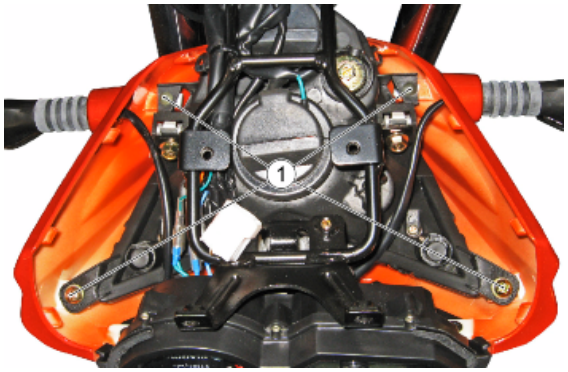
- Remove the bushings (3) and rubber (4)



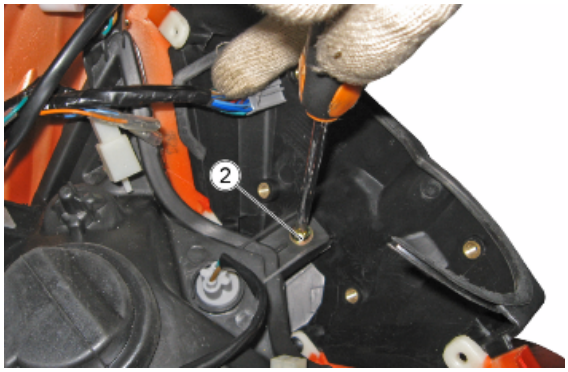
- To remove the instrument panel support (5) from the frame, remove the two fixing screws (6)

LEGSHIELD REMOVAL

- Remove the four fixing screws (1) of the legshield

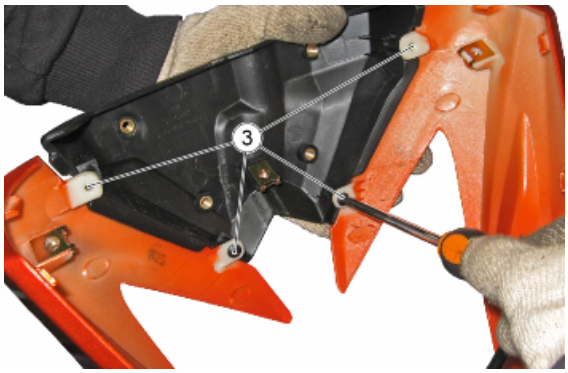


- Remove the central screw (2) fixing the light assembly to the legshield



- Remove the front shield

- Remove the four screws (3) to divide the central part from the lateral parts of the legshield



HEADLIGHT ASSEMBLY BULB REPLACEMENT

DAYLIGHT RUNNING LIGHT

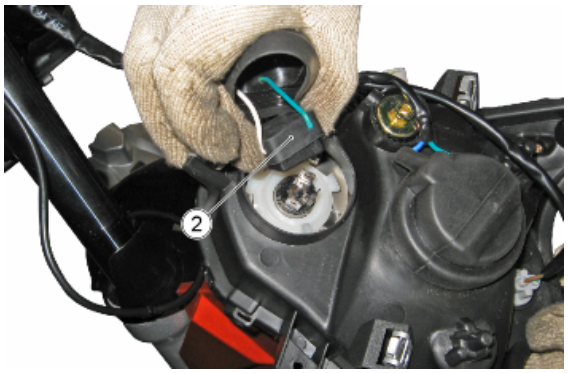
- Remove the bulb holder (1) of the day-light running light

- Remove the bulb (2) from the bulb holder (1) and replace it with one of the same type

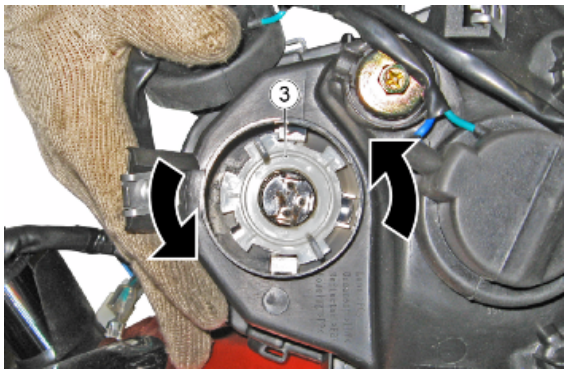
LOW BEAM LIGHT

- Remove the rubber protection cover (1)

- Disconnect the connector (2)



- Turn the bulb holder (3) anticlockwise and remove it

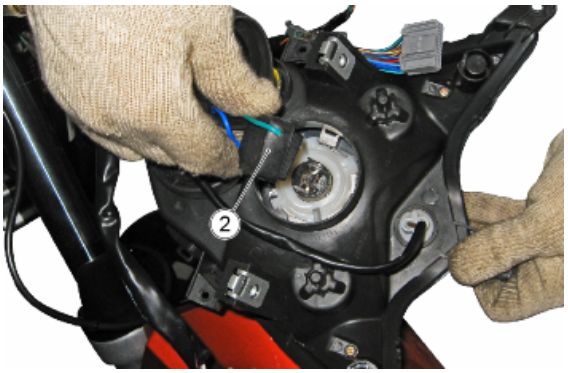


- Remove the bulb (4)

HIGH BEAM LIGHT

- Remove the rubber protection cover (1)

- Disconnect the connector (2)



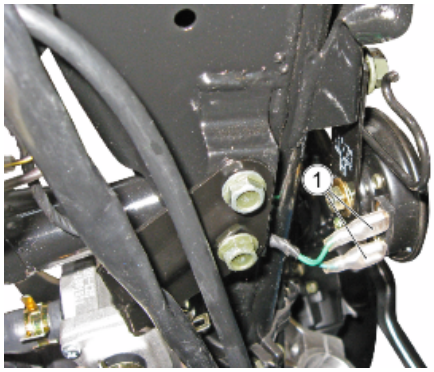
- Turn the bulb holder (3) anticlockwise and remove it

- Remove the bulb (4)

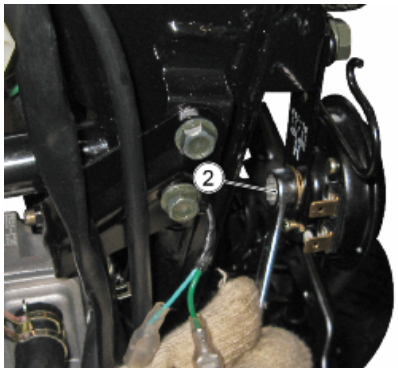
Horn

REMOVAL

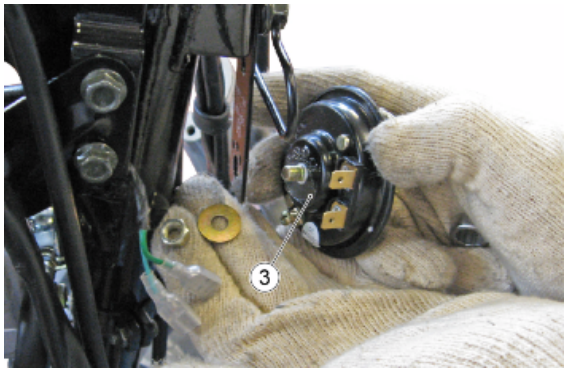
- Disconnect the connectors (1)



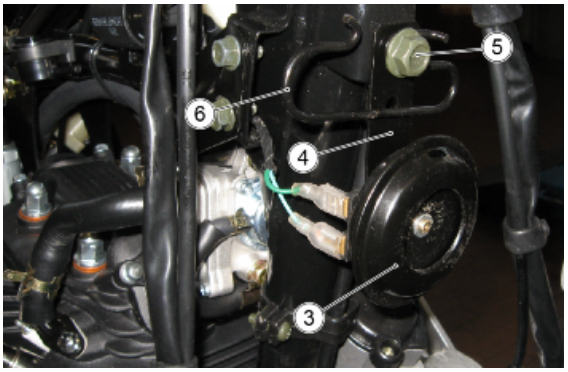
- Remove the fixing nut (2)



- Remove the horn (3)



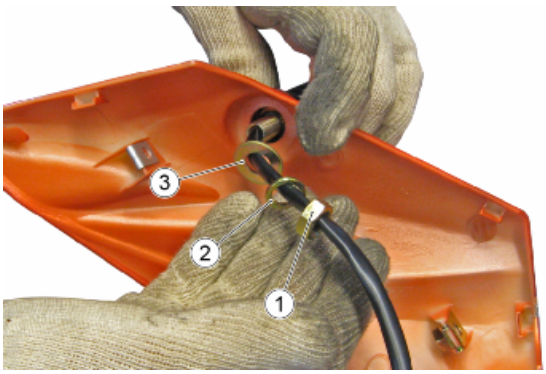
- To remove the horn (3) complete with the support bracket (4), it is necessary to remove the fixing screw (5) and the cable guides (6)



Turn indicators

FRONT TURN INDICATORS REMOVAL

- Remove the front headlight assembly complete
- Remove the nut (1), the Seeger ring (2) and the washer (3)



- Remove the turn indicator and the wiring

NOTE

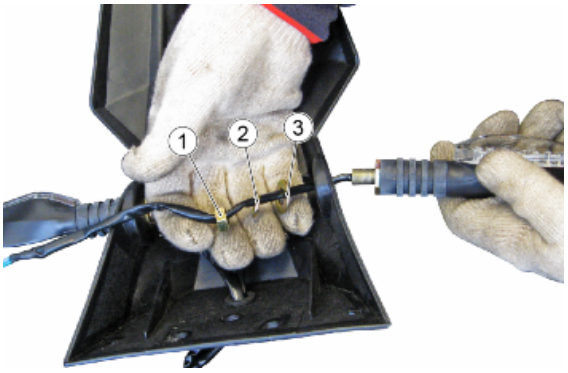
CARRY OUT THE SAME REMOVAL OPERATION FOR THE TURN INDICATOR ON THE OPPOSITE SIDE

REAR TURN INDICATORS REMOVAL

- Remove the complete license plate holder
- Remove the nut (1), the Seeger ring (2), the washer (3) and remove the turn indicator

NOTE

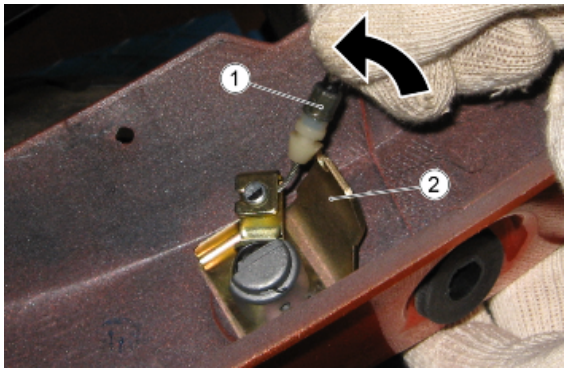
CARRY OUT THE SAME REMOVAL OPERATION FOR THE TURN INDICATOR ON THE OPPOSITE SIDE



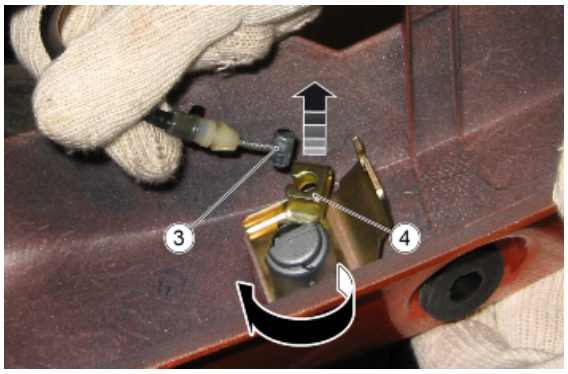
Disassembling the lock

LOCK ON TAIL FAIRING REMOVAL

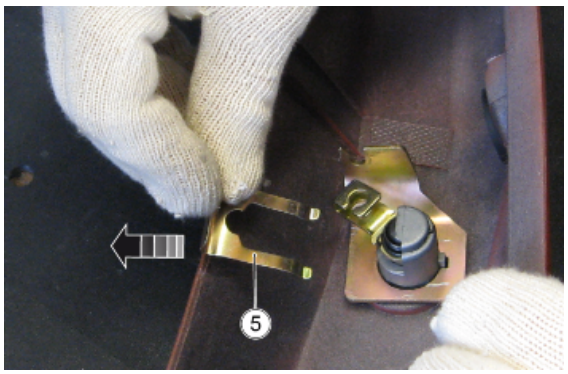
- Remove the tail fairing and unhook the hood of the saddle opening cable (1) from the plate (2)



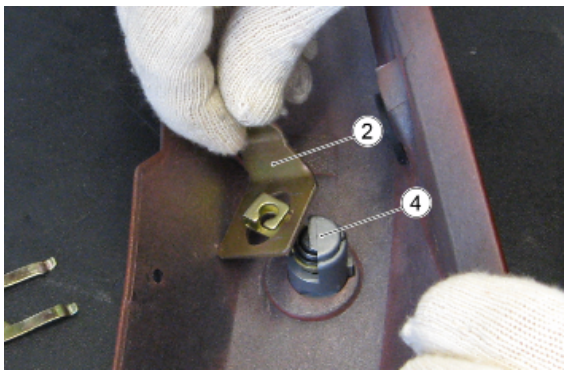
- Turn the cable (3) and unhook it from the lock block (4)



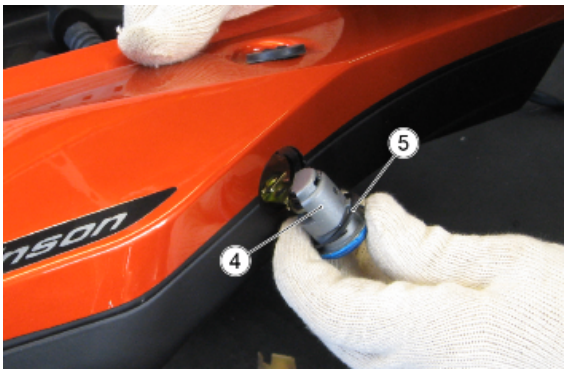
- Remove the fork spring (5)



- Remove the plate (2) from the lock block



- Remove the lock block (4) and collect the washer (5)

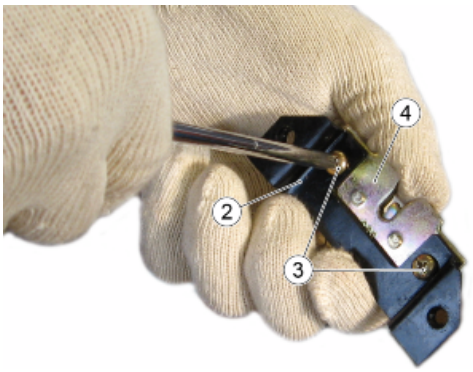


LOCK ON FRAME REMOVAL

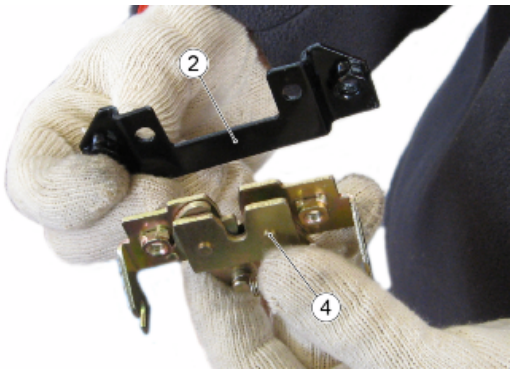
- Remove the two fixing screws (1) of the lock supporting plate (2)

- Remove the lock supporting plate (2)

- Remove the two screws (3) fixing the lock supporting plate (2) to the lock (4)



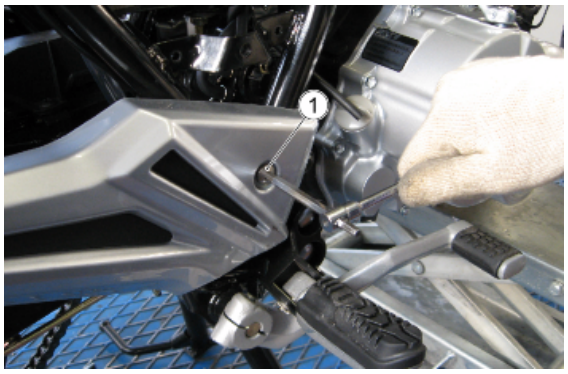
- Remove the lock (4) from the lock supporting plate (2)



Protezione staffa pedane

FOOTREST BRACKET PROTECTION REMOVAL

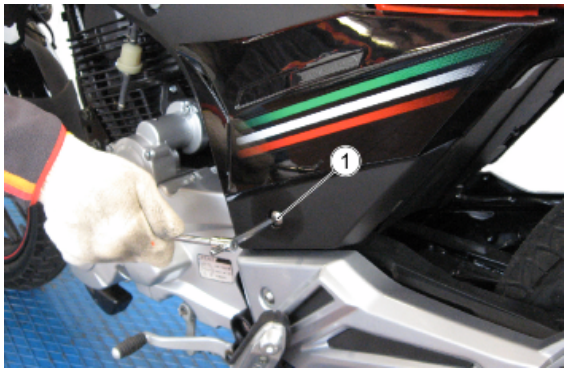
- Remove the passenger footrest
- Remove the fixing screw (1)



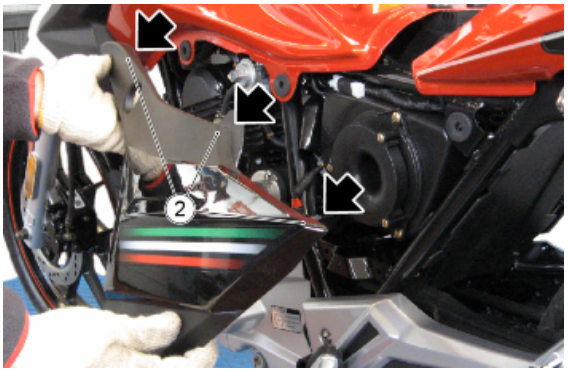
- Remove the footrest bracket protection (2)

Side body panels

- Remove the Allen screw (1)



- Remove the three anchoring pins (2) of the side fairing from the motorcycle and remove it

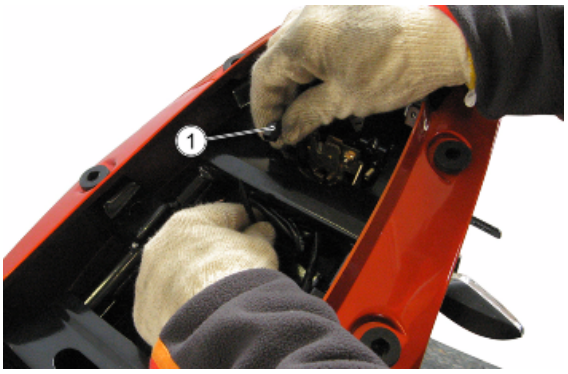


REPEAT THE OPERATION ON THE OPPOSITE SIDE

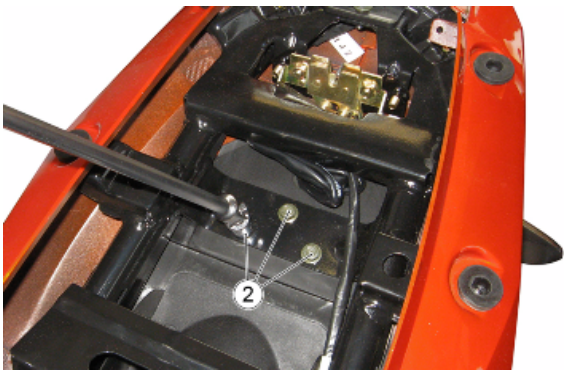
License plate holder

PLATE HOLDER REMOVAL

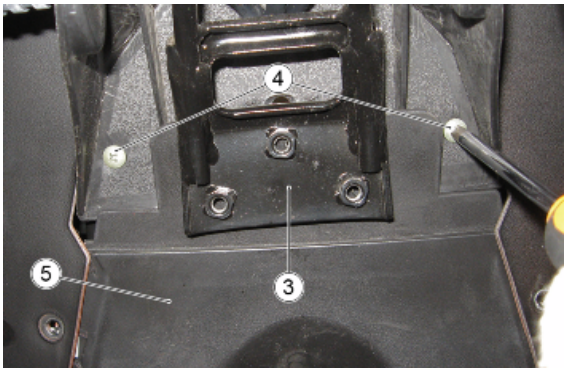
- Remove the clamp (1) fixing the connectors of the rear light unit (taillight, turn indicators, licence plate light) and free the wiring



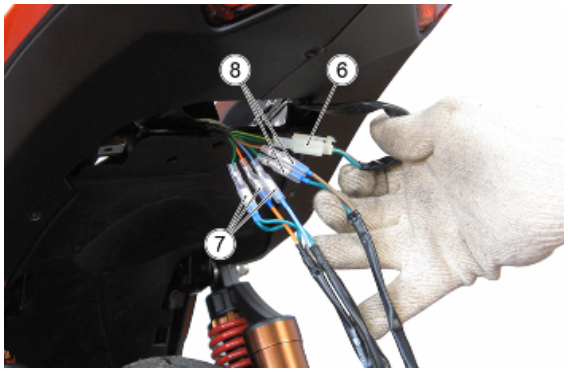
- Remove the three fixing screws (2) of the license plate holder support frame (3)



- Remove the two fixing screws (4) of the licence plate holder (5)



- Disconnect the taillight connector (6), the turn indicator connectors (7) and the licence plate light connector (8)



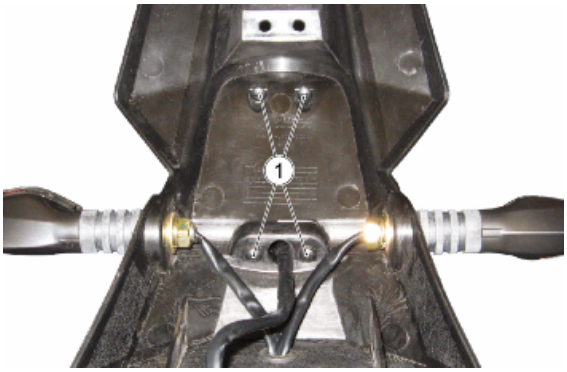
- Remove the license plate holder complete with the licence plate support

- Remove the two fixing screws (9) of the licence plate bracket

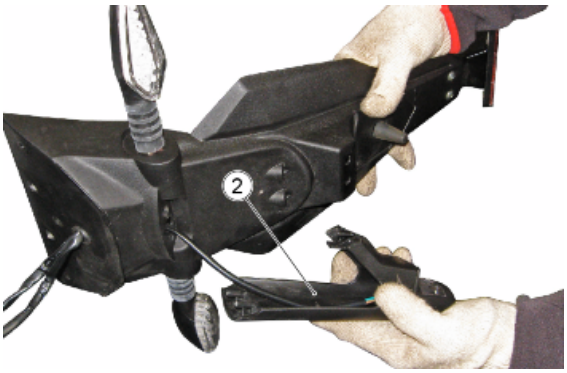
- Remove the licence plate bracket and take off the licence plate holder (5) from the licence plate holder support frame (3)

LICENCE PLATE LIGHT SUPPORT REMOVAL

- Remove the four fixing screws (1) of the license plate light support (2)

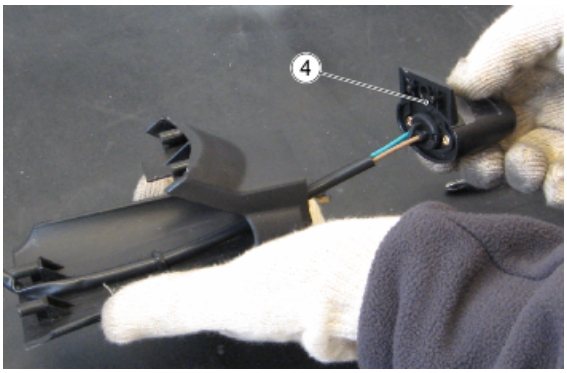


- Remove the license plate light support (2)

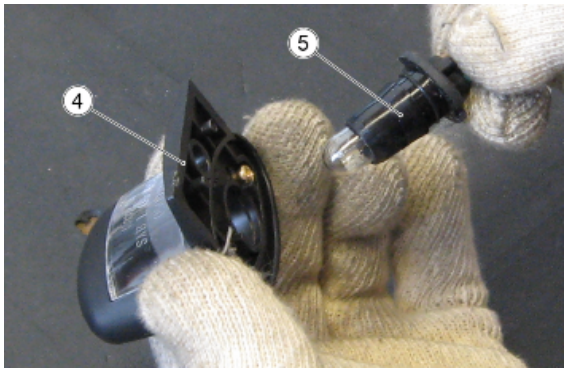


- Remove the screw (3) of the external bulb holder fixing the licence plate light support

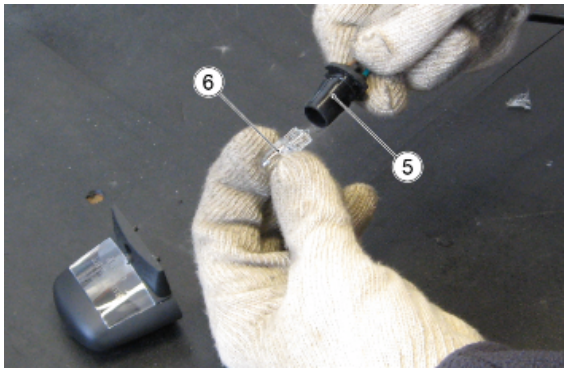
- Remove the external bulb holder (4)



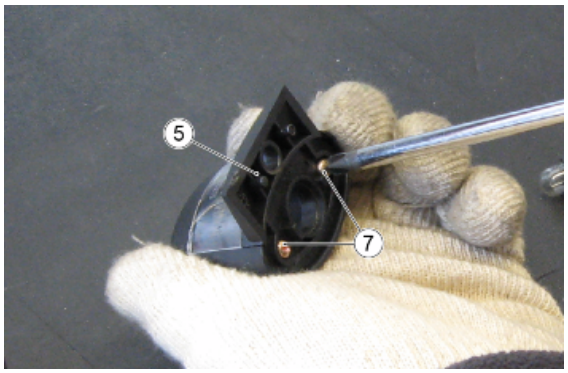
- Extract the bulb support (5) from the external bulb holder (4)



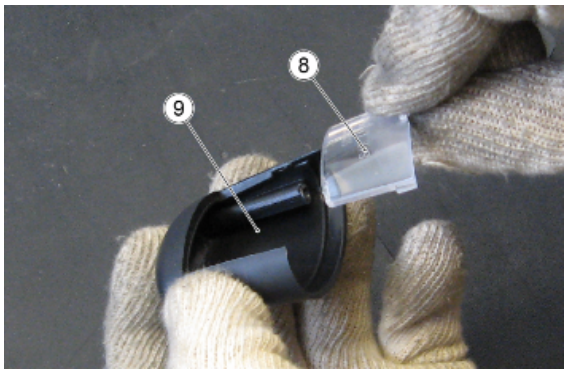
- Remove the bulb (6) from the bulb support (5) and replace it with one of the same type



- Remove the two screws (7) of the bulb support (5) to remove it



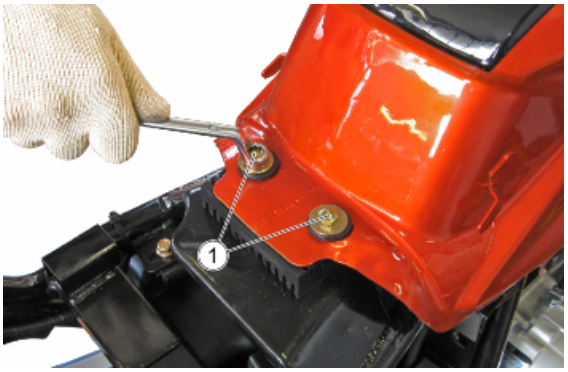
- Remove the transparent Plexiglas (8) from the bulb support cover (9)



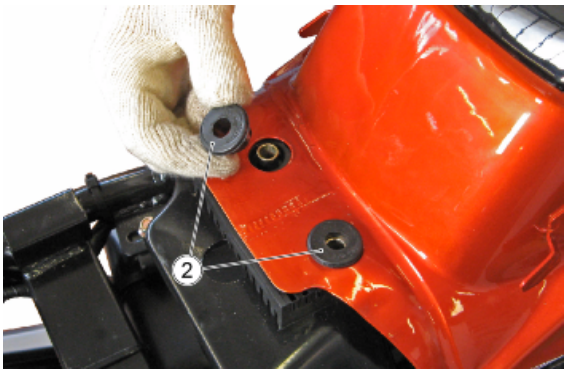
Fuel tank

TANK REMOVAL

- Remove the saddle
- Remove the side fairings
- Remove the two screws (1) fixing the tank to the frame

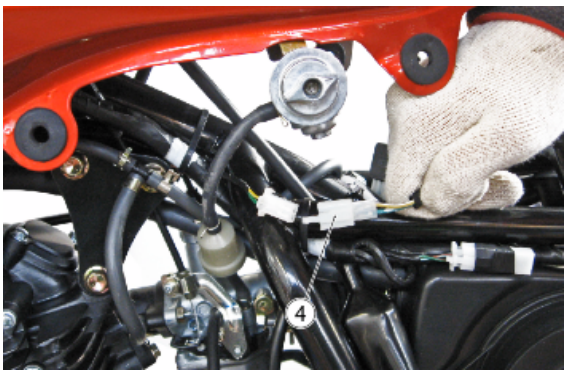


- Remove the spacer rubber rings (2)

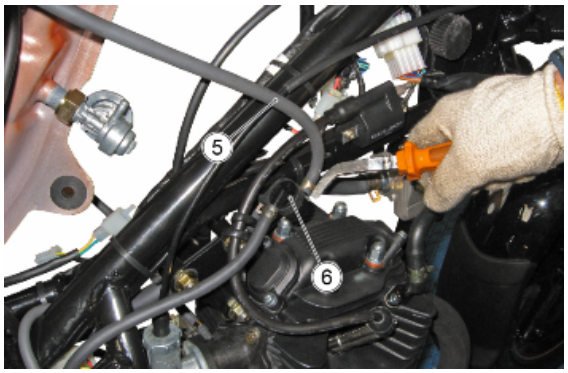


- Disconnect the carburettor pipe (3) from the cock

- Disconnect the fuel pump connector (4)



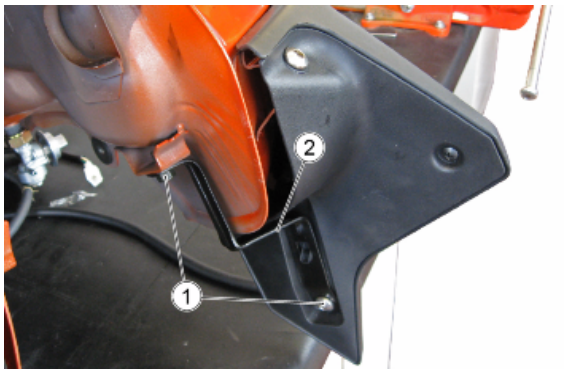
- Remove the breather pipe (5) of the non-return valve (6)



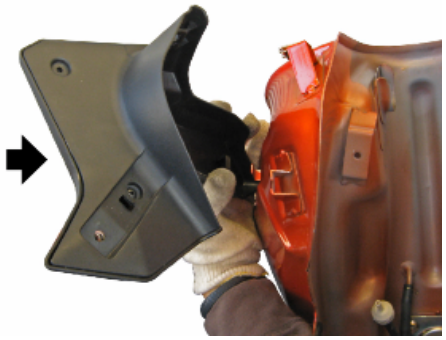
- Remove the fuel tank (6) paying attention not to damage the breather pipe from the left side of the motorcycle

TANK FAIRING REMOVAL

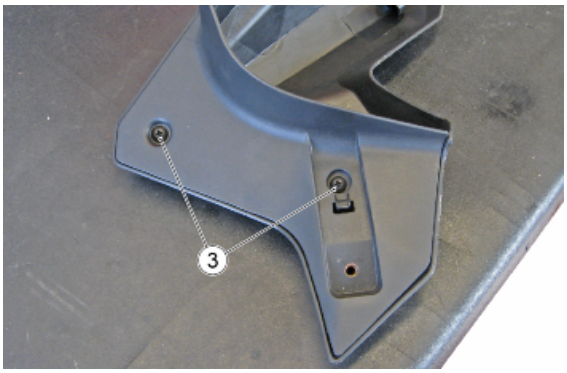
- Remove the two screws (1) fixing the bracket (2) to the tank and to the side fairing



- Remove the bracket (2) and the side fairing completely



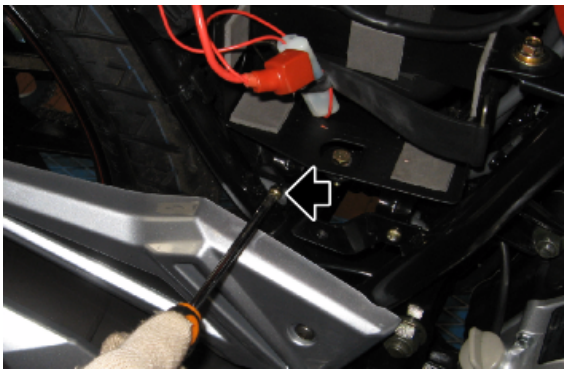
- Remove the two fixing screws (3) of the internal part from the external one of the side fairing



Rear wheelhouse

REAR WHEELHOUSE REMOVAL

- Operating from the right side of the motorcycle, remove the screw fixing the wheelhouse to the frame.

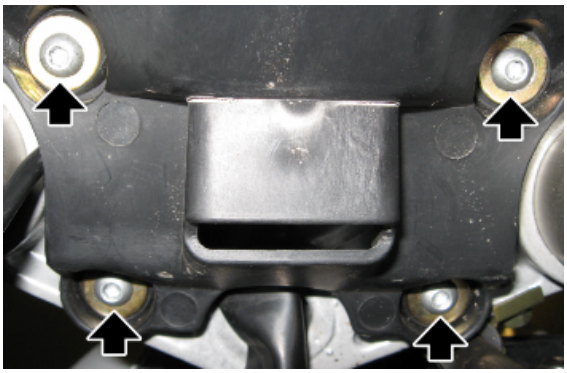


- Remove the wheelhouse by sliding it backwards.

Front mudguard

FRONT MUDGUARD REMOVAL (ETX)

- Operating from the bottom, remove the four screws fixing the front mudguard to the lower steering plate



- Remove the front mudguard

LOWER MUDGUARD REMOVAL

(ETX)

- Operating from the left side of the motorcycle, remove the three screws (1)

CARRY OUT THE REMOVAL OF THE SCREWS, ALSO FROM THE OPPOSITE SIDE OF THE MOTORCYCLE

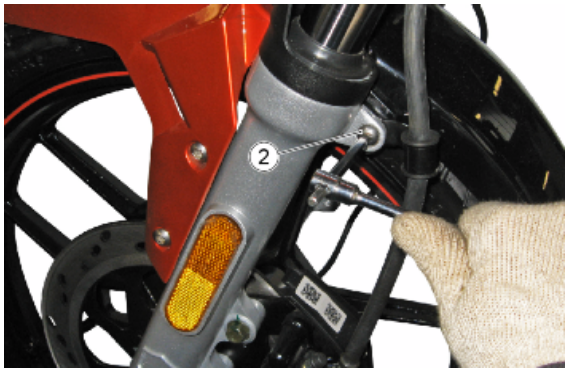
- Remove the lower mudguard

(STX)

- Operating from the left side of the motorcycle, remove the two front screws (1)

- Remove the rear screw (2)

CARRY OUT THE REMOVAL OF THE SCREWS, ALSO FROM THE OPPOSITE SIDE OF THE MOTORCYCLE



- Remove the lower mudguard

Rear grab rail

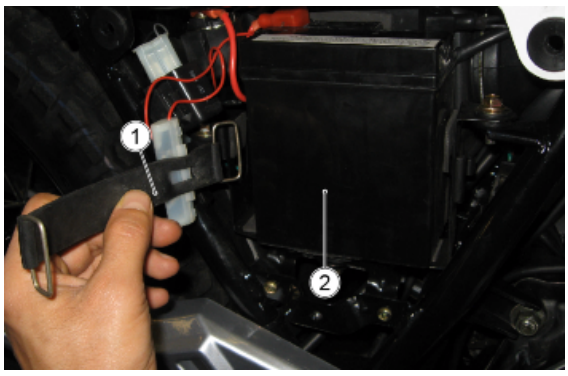
REAR GRAB HANDLES REMOVAL

- Operating from the left side of the motorcycle, remove the two screws (1) fixing the grab handle (2)
- Remove the T bushings (3) and spacers (4)

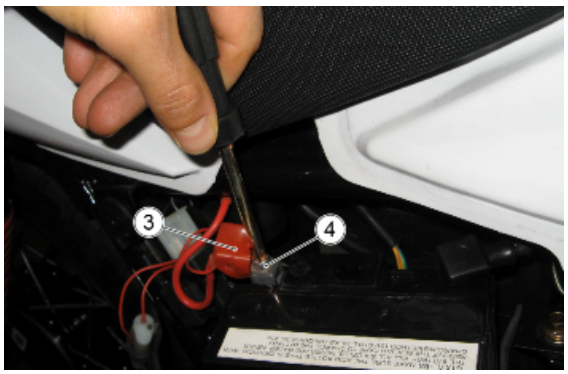
Battery

BATTERY REMOVAL

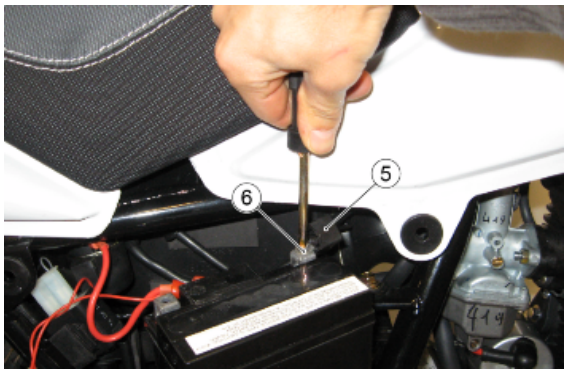
- Make sure that the ignition switch is set to "OFF".
- Remove the right hand side fairing.
- Unhook the fixing rings of the lock belt (1) of the battery (2) from the frame.



- Partially extract the battery to have an easy access to the terminals.
- Move the rubber cap (3) that protects the positive clamp (+).
- Undo and remove the screw (4) of the positive terminal (+).

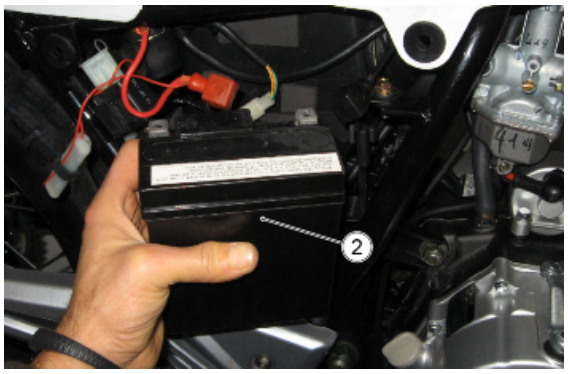


- Move the rubber cap (5) that protects the negative clamp (-).
- Undo and remove the screw (6) of the negative terminal (-).



- Hold the battery firmly and remove it from its seat.
- Put the battery away on a level surface, in a cool and dry place.

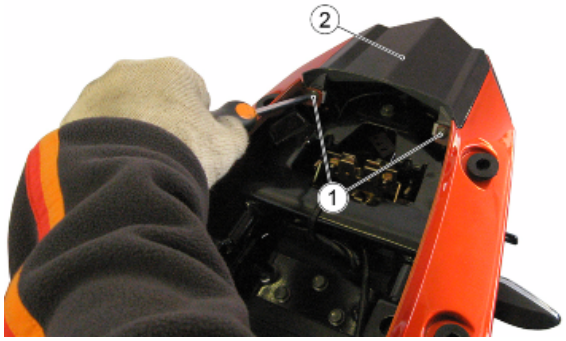
PAY MAXIMUM ATTENTION AND PREVENT ALL CONTACT BETWEEN THE BATTERY POLES AND ANY METAL OBJECT TO PREVENT THE RISK OF SHORT-CIRCUITS.



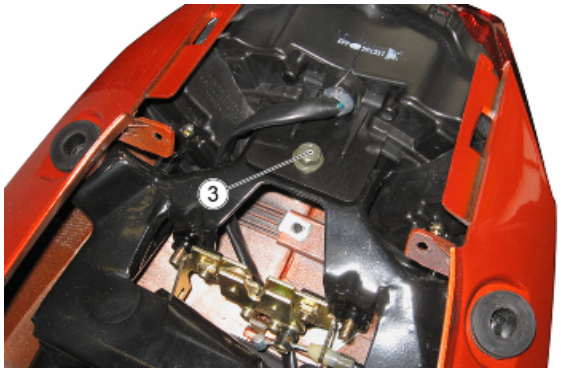
Tail guard

TAIL FAIRING REMOVAL

- Remove the rear grab handles
- Remove the fixing screws (1) of the rear light assembly cover (2) and remove it



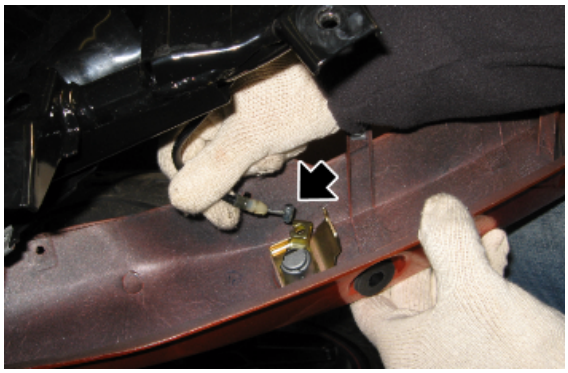
- Remove the central screw (3) fixing the rear light assembly to the frame



- Remove the four lower screws (4) fixing the tail fairing to the wheelhouse

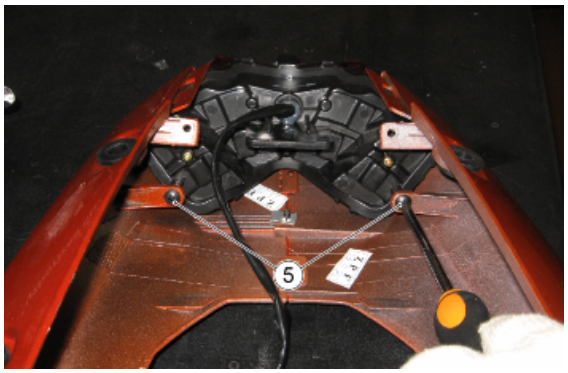
- Remove the licence plate holder by disconnecting the turn indicator connectors, licence plate light and the rear light assembly

- Disconnect the cable of the lock for saddle opening

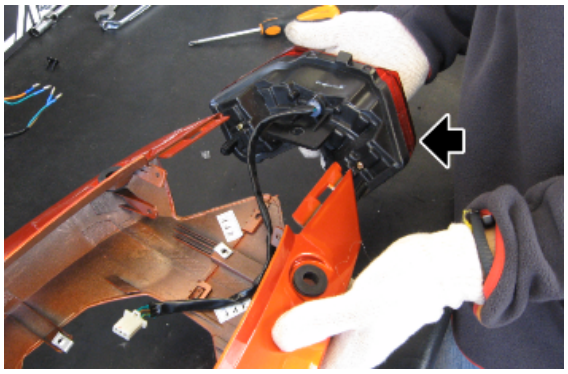


- Remove the tail fairing complete with the rear light assembly

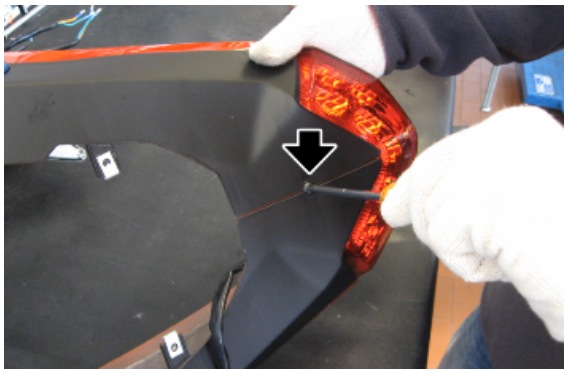
- Remove the two screws (5) fixing the rear light assembly to the tail fairing



- Remove the rear light assembly from the tail fairing



- Remove the central fixing screw that connects the two parts of the tail fairing and remove it



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