

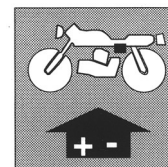
ELECTRICAL SYSTEM

TR 650 TERRA 2013 - TR 650 STRADA 2013

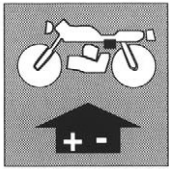


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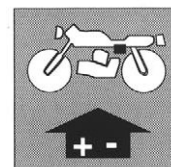


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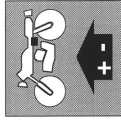
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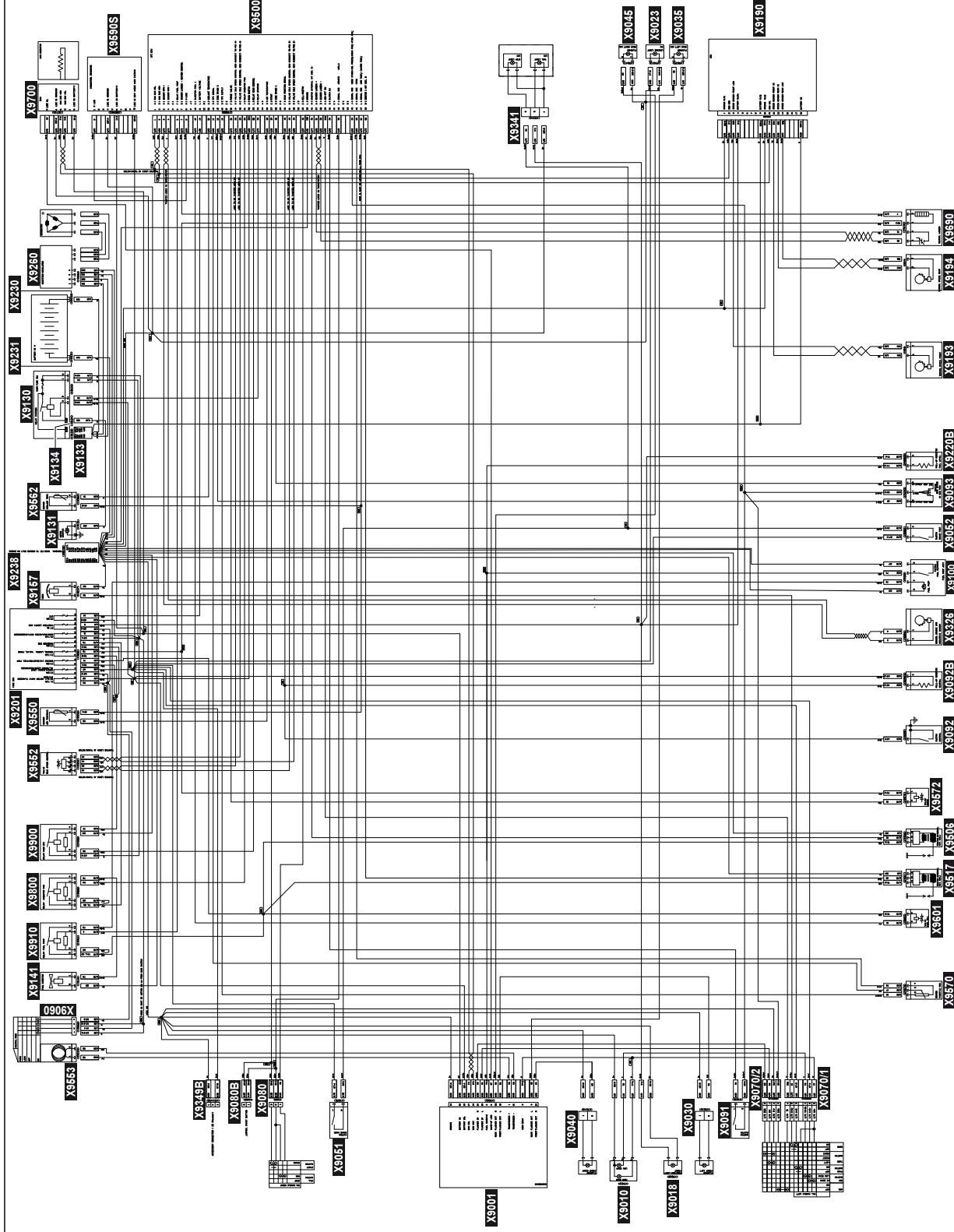


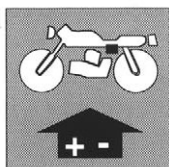
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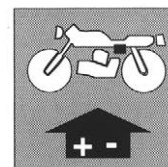
Wiring diagram (ABS Version)





Key to wiring diagram

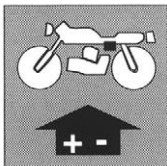
Code	Description
X9001	Instrument panel
X9010	Headlight
X9018	Front parking light
X9023	Number plate light
X9030	Front LH turning indicator
X9035	Rear LH turning indicator
X9040	Front RH turning indicator
X9045	Rear RH turning indicator
X9051	Front stop light switch
X9052	Rear stop light switch
X9060	Main switch (key)
X9070	Left-hand switch
X9070/1	Left-hand switch
X9070/2	Left-hand switch
X9080	Right-hand switch
X9080B	Clamp, starter button
X9091	Clutch microswitch
X9092	Neutral switch
X9092B	Pull-up, gearbox in neutral
X9093	Side stand switch
X9100	Fuel pump
X9130	Solenoid starter
X9131	Starter motor
X9133	Solenoid starter
X9134	Solenoid starter
X9141	Radiator fan
X9157	Horn
X9159	Exhaust valve
X9190	ABS
X9193	Front speed sensor
X9194	Rear speed sensor
X9201	Fuse box
X9220B	Pull-up, fuel level
X9230	Battery, positive terminal
X9231	Battery, negative terminal
X9238	Terminal, engine ground
X9260	Voltage regulator
X9326	Crankshaft sensor
X9341	Rear light
X9349B	Accessory connection
X9500	Engine control
X9506	External ignition coil (1)



Code	Description
X9517	Internal ignition coil
X9550	Intake air temperature sensor
X9552	Idle check valve
X9553	Alarm system antenna
X9562	Coolant temperature sensor
X9570	Throttle position sensor
X9572	Canister cleaning valve (USA)
X9590S	Diagnostic connector
X9601	Cylinder fuel injector
X9690	Lambda probe
X9700	Anti-theft device
X9800	Radiator fan relay
X9900	Main relay
X9910	Fuel pump

Colour key

Bk Black
Bl Blue
Br Brown
Gr Green
Gy Grey
R Red
V Violet
W White
Y Yellow
Bk-Bl Black-Blue
Bk-Br Black-Brown
Bk-R Black-Red
Bk-V Black-Violet
Bk-W Black-White
Bl-Bk Blue-Black
Bl-Bk-W Blue-Black-White
Bl-Bk-Y Blue-Black-Yellow
Bl-Br Blue-Brown
Bl-Br-Y Blue-Brown-Yellow

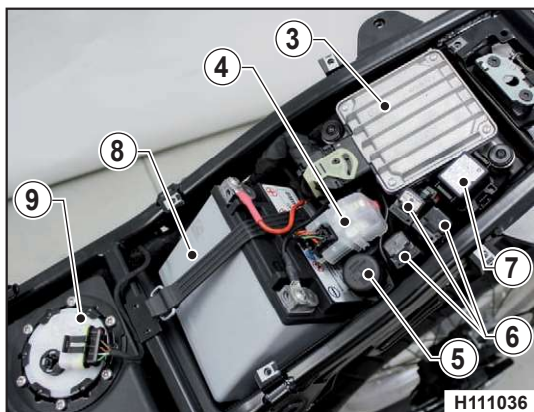


Electrical component location

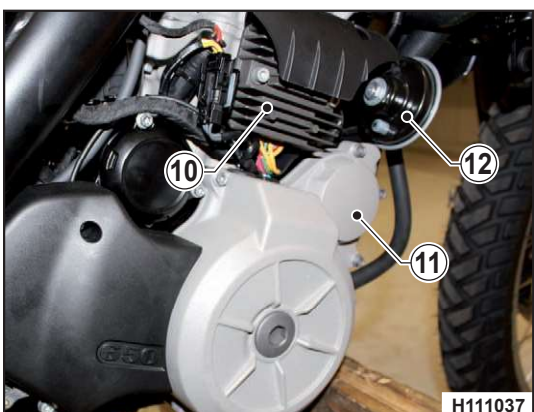
- Generator (1) inside the right-hand cover;



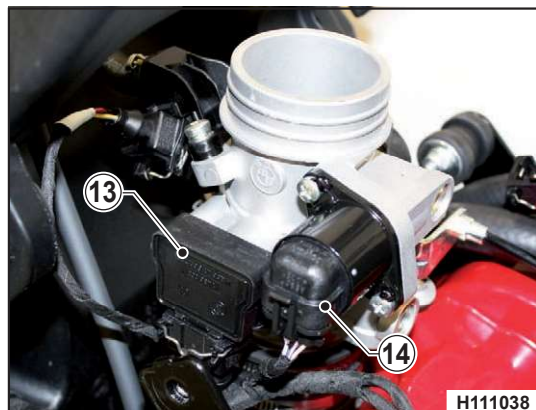
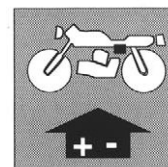
- Electronic ignition coils (2) integrated with spark plug cap positioned on the cylinder head;
- Spark plugs on the cylinder head;



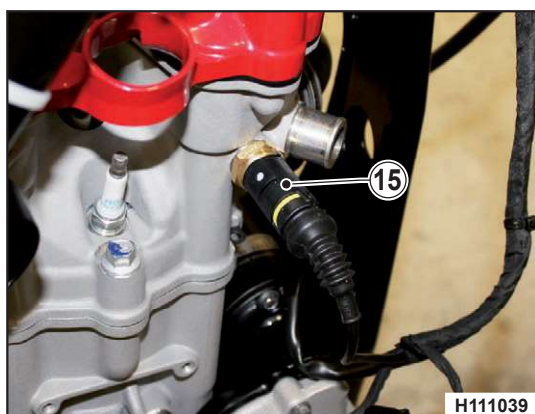
- Components on rear chassis under saddle:
 - ECU (3);
 - Starter relay (4) with 30A fuse;
 - Diagnostics socket (5);
 - Relay (6);
 - Fuse box (7);
 - Battery (8);
 - Fuel pump (9);



- Voltage regulator (10) on a support on the battery;
- Starter motor (11) on the front part of the engine;
- Horn (12);



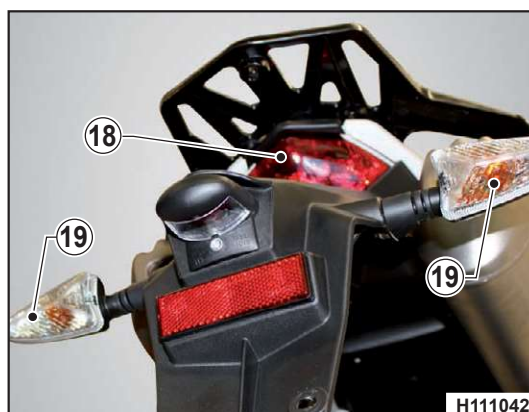
- Throttle open position sensor (13) on throttle body;
- Idle actuator (14) on throttle body;



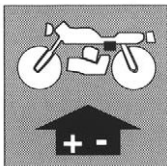
- Coolant temperature sensor (15) on RH side of cylinder head;



- Electric fan (16) on the rear part of the radiator;



- Headlamp (17) with H4 12V-55/60W HD twin halogen lamp and 12V-5W LL parking light bulb;
- LED tail light (18);
- Turning indicators (19), 12V-10W bulbs;

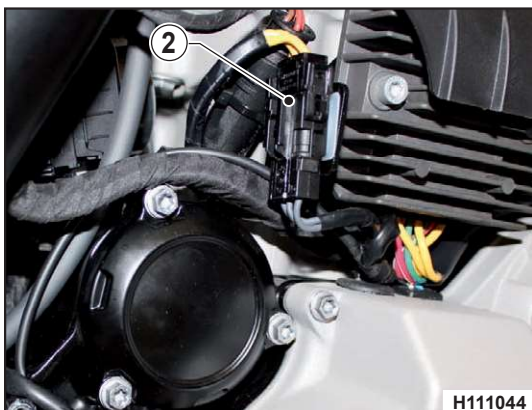


- Combined dashboard (20).



Checking generator stator windings resistance (1)

Disconnect the stator coil connector from the wiring and measure resistance with a meter.



- 1) Measure across the terminals of the connector (2); correct value is about 0.1 - 1.0 Ω .

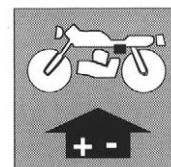
If resistance is outside the specified limits, replace the complete generator.

Generator performance

14V / 400W.

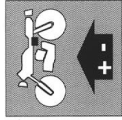


AT EACH ENGINE OVERHAUL, CLEAN FLYWHEEL ROTOR TO REMOVE ANY DEBRIS SUSPENDED IN SWIRLING OIL AND CAPTURED BY THE MAGNETS.



Neutral position sensor

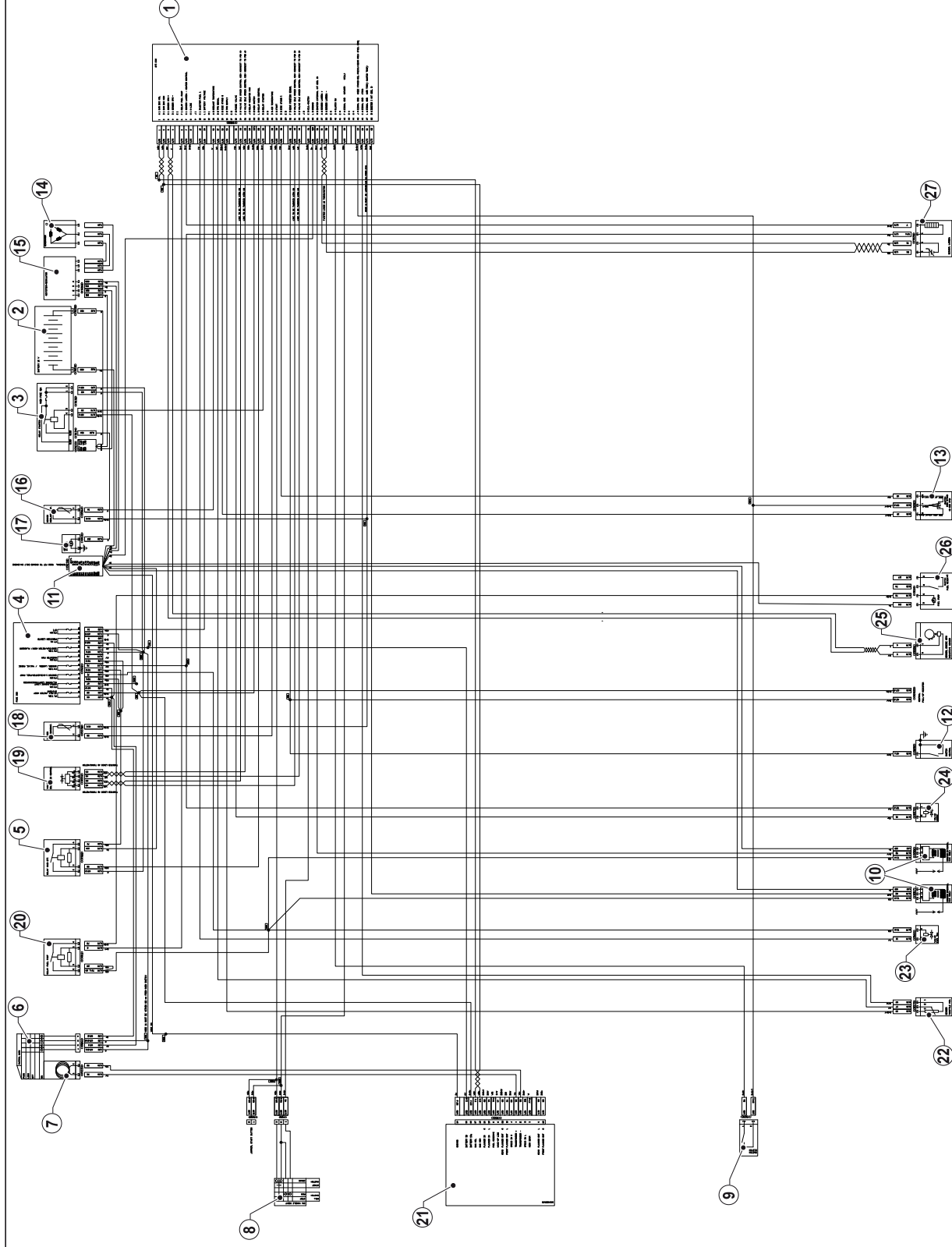
Positioned in the left-hand side of the engine, under the sprocket casing.

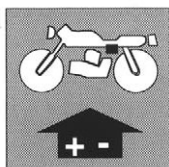


ELECTRICAL SYSTEM

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Ignition and injection system





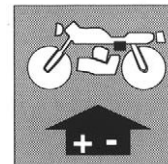
Ignition and injection system

The engine ignition and injection system is controlled by the electronic control unit (ECU) which controls the status of the engine and the surrounding environment at each moment with a series of sensors.

The sensors are: a crankshaft position sensor (pick-up), an ambient air temperature sensor in filter box, a coolant temperature sensor, a throttle position sensor and a pressure sensor on the throttle body.

The ignition system is composed of:

- ECU (1).
- Battery (2).
- Starter relay (3).
- Fuse box (4).
- EFI general relay (5).
- Ignition (6).
- Transponder antenna (7).
- R.H. switch (8).
- Clutch lever microswitch (9).
- Spark plug coils (10).
- Engine ground terminal (11).
- Neutral position sensor (12).
- Side stand microswitch (13).
- Alternator (14).
- Voltage regulator (15).
- Coolant temperature sensor (16).
- Starter motor (17).
- Air temperature sensor (18).
- Idle check valve (19).
- Fuel pump relay (20).
- Instrument panel (21).
- Throttle position sensor (22).
- Fuel injector (23).
- Canister cleaning valve (USA) (24).
- Crankshaft sensor (25).
- Fuel pump (26).
- Lambda sensor (27).

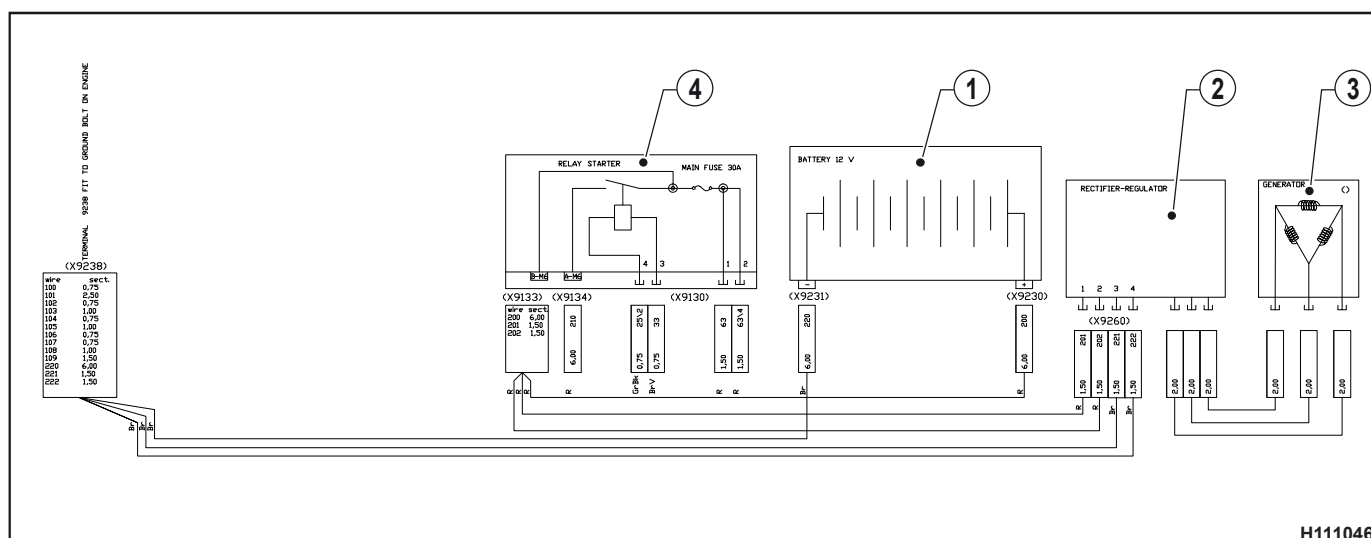


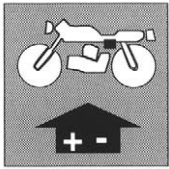
Charging system

The charging system is composed of:

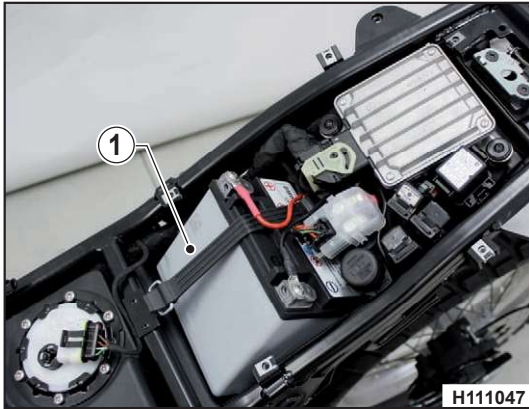
- Battery (1);
- Voltage regulator (2);
- Alternator (3).
- Starter relay (4).

The alternated current generated by the alternator is converted into direct current by the voltage regulator. The voltage regulator serves a dual purpose: it provides overvoltage protection for the battery and converts alternated current into direct current.





Charging system inspections



Battery

Remove the saddle as described in the relevant paragraph to gain access to the battery.
Disconnect the BLACK negative cable from the battery.
Measure current across the negative terminal of the battery and the negative cable using an ammeter clamp. A reading greater than 0.5 mA indicates current draw by some utility.



If the vehicle is not used for long periods, it is recommended to disconnect the battery from the electrical system.

Regulated voltage

Remove the protection panel (as described in the relevant paragraph) to gain access to the battery.
With the engine warmed up and running at slightly above 3,000 rpm, measure voltage across the positive and negative terminal of the battery using a meter (the battery must be charged when performing this test). If reading is outside a 14.0÷14.5 V, check generator and voltage regulator as described in the relevant paragraph.



Voltage regulator inspection

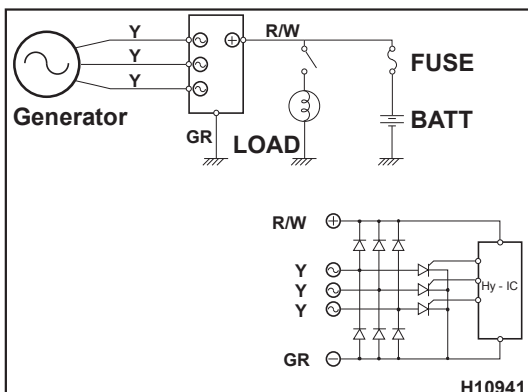
With the ignition on and the battery charged (12.5-13 V), start the engine: if the battery voltage does not increase (14 V) after around two minutes, it is necessary to check the voltage regulator as well as the battery.

Voltage regulator

The voltage regulator (1) incorporates the diodes used to rectify the generator current output.
It also incorporates an electronic device that adjusts charging voltage to battery charge: if battery charge is low, charging voltage will be lower.

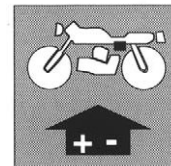


Do not disconnect the battery cables while the engine is running, or the regulator will suffer irreparable damage.



Voltage regulator/rectifier wiring diagram

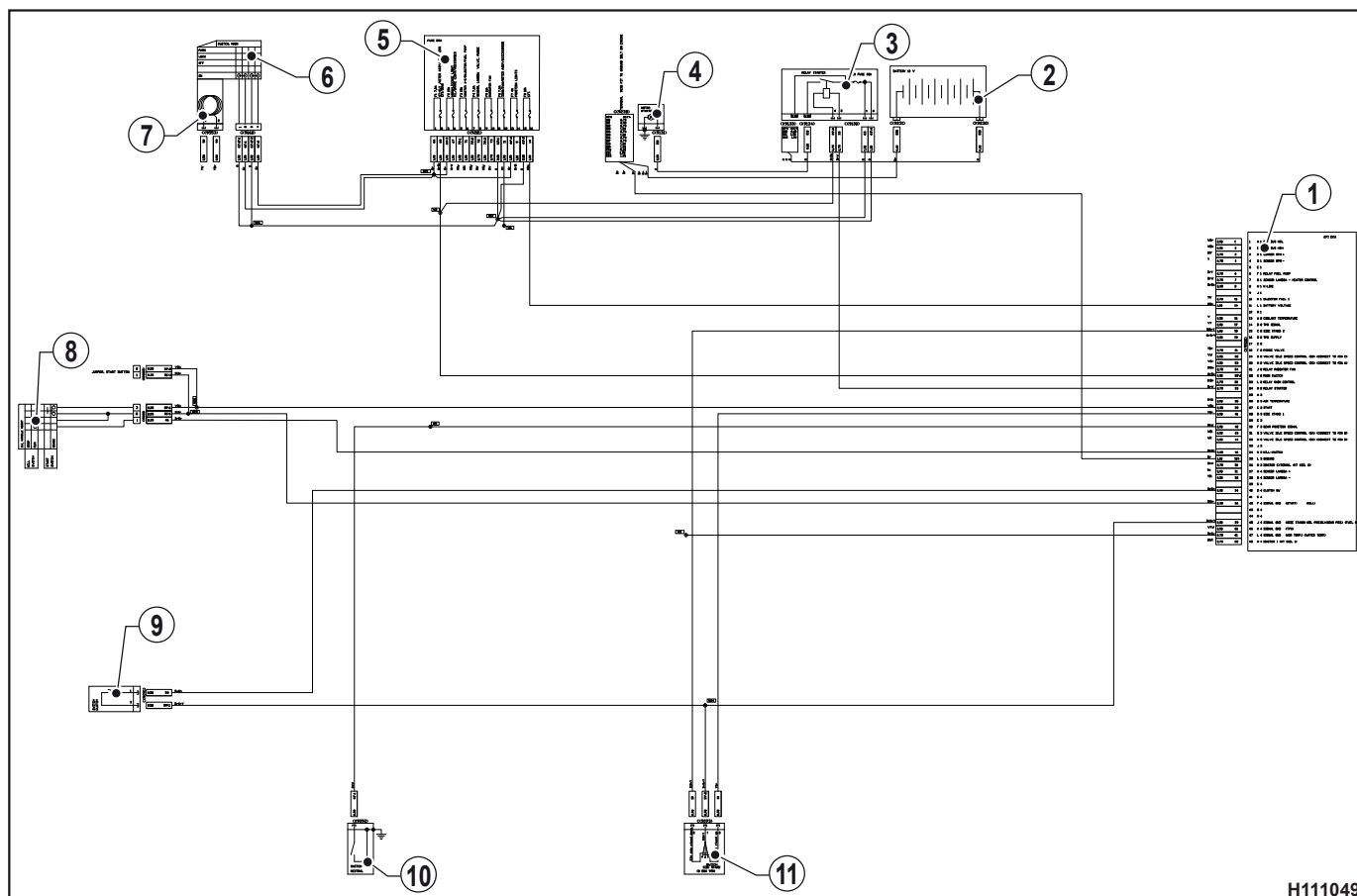
Key:
Y= Yellow
GR= Green
R/W= Red / White
LOAD= Ground
FUSE= Fuse
BATT= Battery



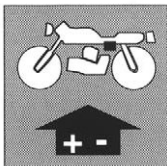
Electric starting system

The starting system is composed of:

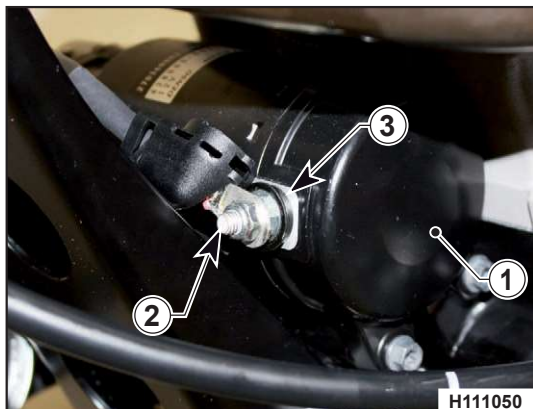
- ECU (1).
- Battery (2);
- Starter relay (3);
- Starter motor (4);
- Fuse box (5);
- Ignition (6);
- Transponder antenna (7).
- R.H. switch (8);
- Clutch lever microswitch (9).
- Neutral position sensor (10).
- Side stand sensor (11).



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Starting system inspection



Starter motor inspection

For the inspection of the starter motor (1), proceed as follows:

- connect a meter across ground (3) and starter motor contact (2).
- Check for continuity between the positive pole and motor ground. If no continuity is found, replace the starter motor.

Starter motor

Rated voltage: 12V

Current draw: 800W



Solenoid starter inspection

Disconnect the cables at the battery negative terminal to avoid possible short circuits during disassembly. Disconnect the starter relay connector (A).

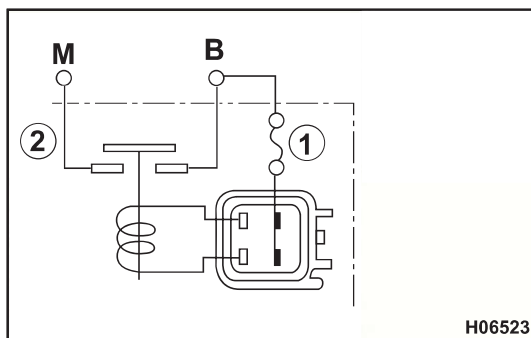
Disconnect the starter motor and battery positive cable wires at relay end. Apply 12 Volts to the terminals (1) and (2) on the relay and check the continuity between the terminals B-M. **Do not apply such voltage to the relay for more than 5 seconds as it could overheat and suffer damage.** Use a multimeter to establish whether the winding is open circuit or resistance exists. A winding in good condition will give the following resistance readings.

Meter scale setting: Ohm

Starter relay resistance. Standard: 3-6 Ω .

NOTE:

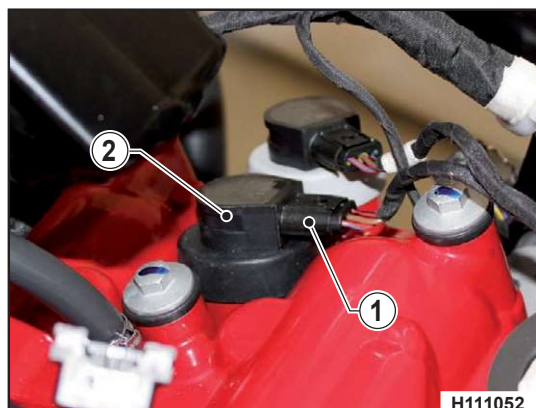
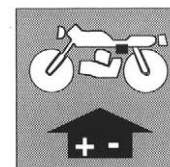
If the fuse on the starter relay is interrupted or removed, the system is isolated from all electric supply sources.



Starter relay wiring diagram

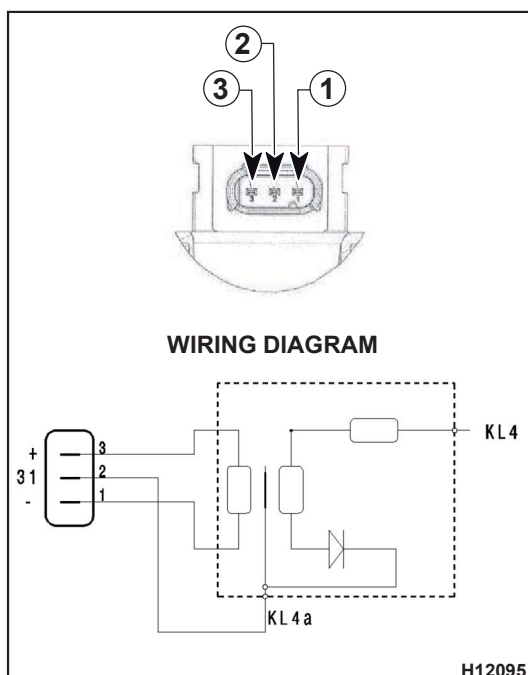
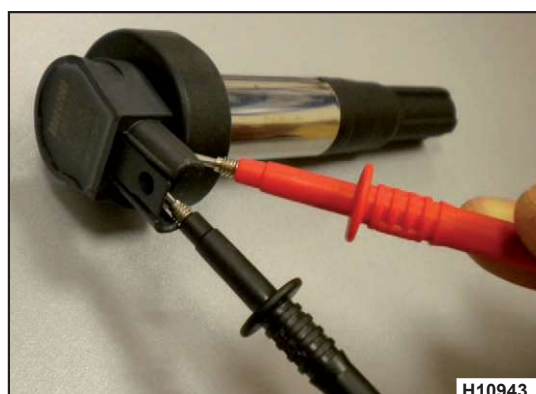
1= 30A fuse

2= + 12V to the starter motor

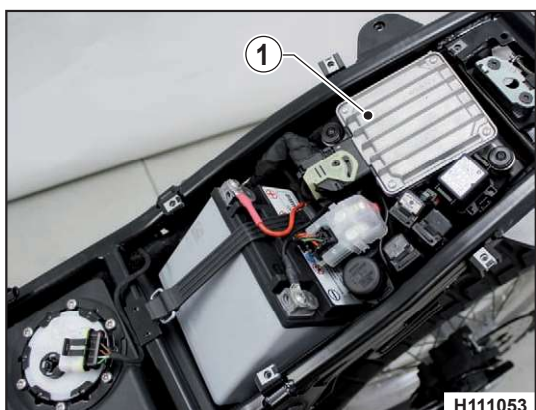


Coil windings / Stick-Coil inspection

- Disconnect the connector (1).
- Lift the coil / Stick-Coil (2) to remove it.
- Measure the resistance of the primary and secondary winding with a meter.
- Primary winding resistance: $< 0,87 \Omega$ at 20°C between terminals 1 and 3.



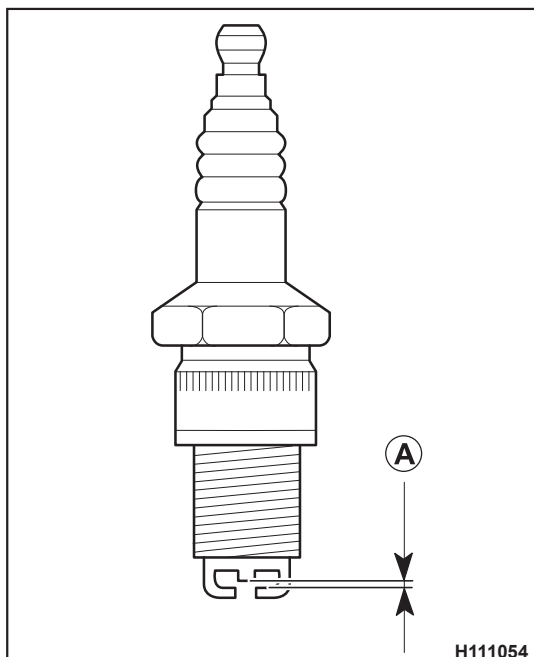
- 1) PIN 1 Ground
- 2) PIN 2 Ground
- 3) PIN 3 Vbatt
+12V



Electronic control unit (ECU)

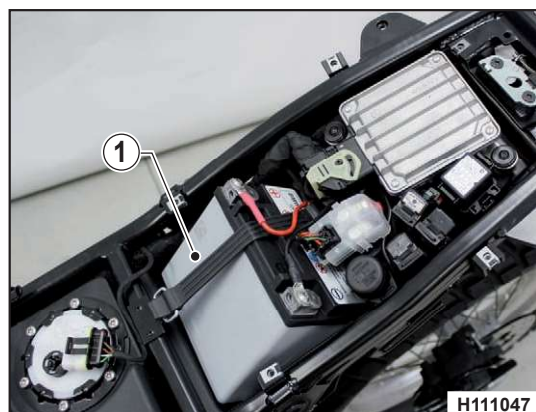
Remove the saddle as described in Section E to gain access to the ECU (1). The control unit consist of a microprocessor system that controls the ignition advance according to the signals coming from the various sensors, in accordance to the injection parameters.

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Spark plug

Check electrode gap "A" (0,6 mm) (0,02 in.). A wider gap may cause difficulties in starting the engine and overload the coil. A gap that is too narrow may cause difficulties when accelerating, when idling or poor performance at low speed. Clean off any dirt around spark plug base before removing the spark plug. It is good practice to closely inspect the spark plug after removal, as any deposits on it and the colour of the insulator provide useful indications on spark plug heat rating, carburetion, ignition and the general condition of the engine. Before refitting the spark plug, accurately clean the insulator with a wire brush. Smear some graphite grease on spark plug thread, do it fully home finger tight then tighten it to 13 Nm - 1,3 Kgm - 9,59 ft/lb. Loosen the spark plug then tighten it again to 13 Nm - 1,3 Kgm - 9,59 ft/lb. Spark plugs which have cracked insulators or corroded electrodes should be replaced.



Battery

The battery (1) is a sealed-for-life, maintenance-free battery. If the vehicle remains unused for long periods, it is recommended to disconnect the battery from the electrical system and store it in a dry place. After an intensive use of the battery, it is advisable to carry out a standard slow charging cycle (0.5A for 8 hours for 12V-10Ah battery).

Quick charging is advised only in situations of extreme necessity since the life of lead elements is drastically reduced by such cycle (5A for 0.5 hours for 12V-10Ah battery).

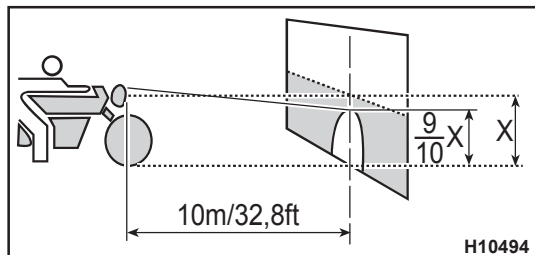
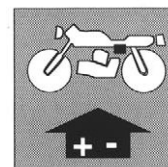
Battery charger

To gain access to the battery (1):

- remove the elastic band;
- first remove the BLACK negative cable, then the RED positive cable (when reassembling, first connect the RED positive cable, then the BLACK negative cable);
- remove the battery (1) from its housing.

Use a voltmeter to ensure that the battery voltage is not lower than 12.5V. If it is not so, the battery needs to be charged. Using a battery charger with a constant voltage, first connect the RED positive cable to the battery positive terminal then the BLACK negative cable to the battery negative terminal. At a constant voltage level of 14.4 V, apply "x" Amps according the battery's charge percentage as indicated in the table below. The voltage reaches a constant value only after a few hours, therefore it is suggested NOT to measure it immediately after having charged or discharged the battery. Always check the battery charge before reinstalling it on the vehicle. The battery should be kept clean and the terminals coated with grease.

INDICATIVE CHARGE TIMES DEPENDING ON BATTERY CHARGE STATUS		
AT REST VOLTAGE * (V)	% CHARGE	CHARGE DURATION (THE RATED CURRENT IN AMPERE TO BE APPLIED: 0.1x BATTERY RATED CAPACITY)
> 12.7	100	
~ 12.5	75	4h
~ 12.2	50	7h
~ 12.0	25	11h
~ 11.8	0	14h



Headlight, tail light

Headlight adjustment

The headlamp features a twin bulb for low and high beam and a festoon bulb for the city or parking light.

When checking the proper aiming of the headlight beam: inflate tyres at the right pressure, have a person sit astride the motorcycle and set the motorcycle perpendicular to its longitudinal axis

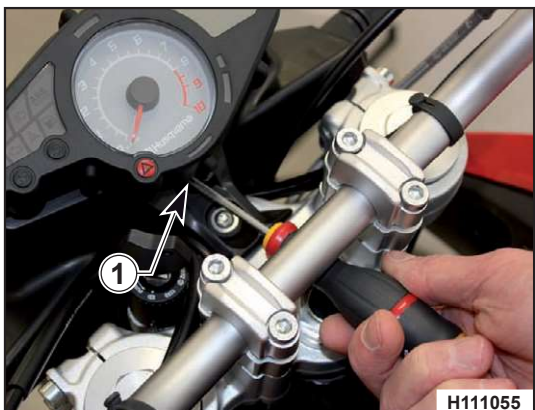
In front of a wall or a screen positioned at a distance of 10 metres (32.8 ft), draw a horizontal line corresponding to headlight centre height, and a vertical line aligned with vehicle longitudinal axis.

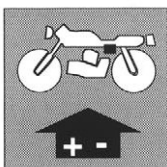
If possible, execute this operation in a shaded place.

When the low beam is on, the upper edge between dark and lit zone should be at 9/10th of headlight centre from ground.

Beam height can be adjusted as follows:

- Regulate the setscrew (1) on the upper part of the light unit; tighten to lower the beam, loosen to raise the beam.

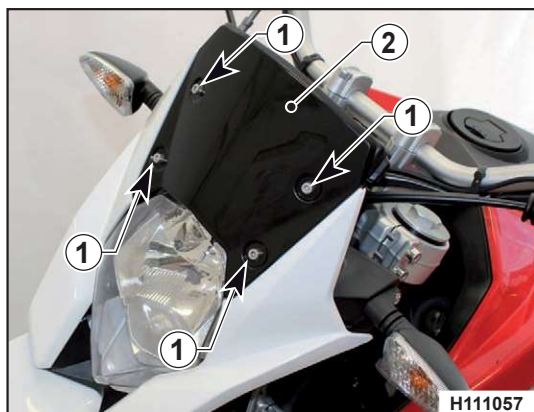




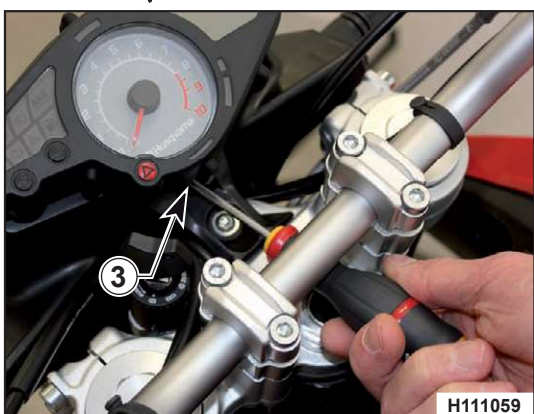
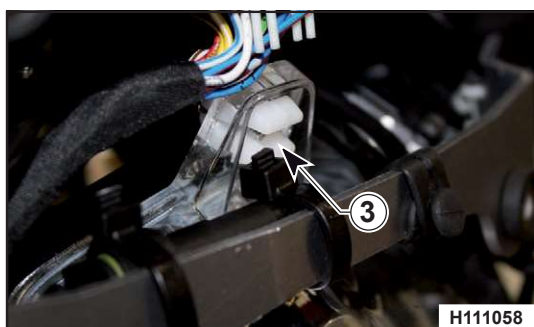
Front headlamp bulb replacement

Proceed as follows to reach the headlamp bulbs:

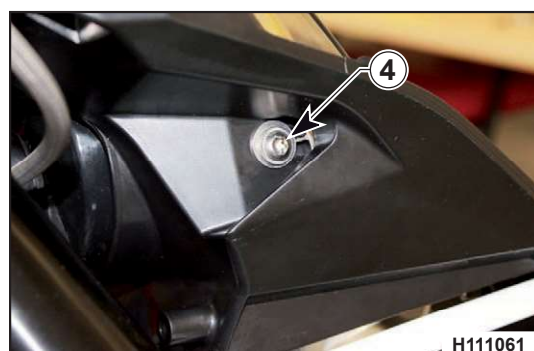
- Loosen the screws (1) and remove the front fairing (2);

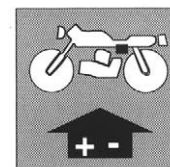


- completely loosen the top headlight adjustment screw (3);

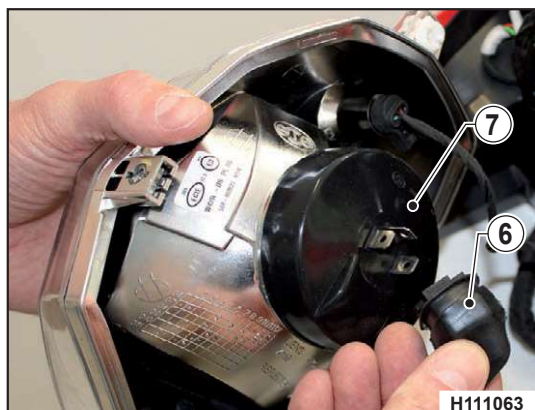


- loosen the two side headlight retention screws (4);





- remove the headlight (5) by turning it downwards (see illustration);



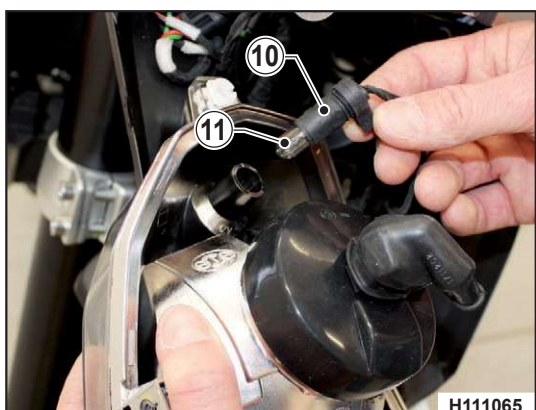
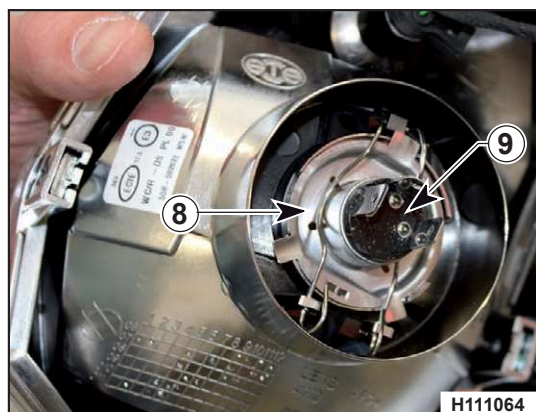
- disconnect the connector (6);
- remove the rubber hood(7), release the retainer clip (8) and remove the light bulb (9).



Headlamp bulb (9) is of the halogen type; be careful when replacing it since the glass part shall not be touched with bare hands.



Make sure that the new bulb is of the HD type (Heavy Duty).



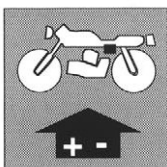
To replace the parking light bulb:

- Detach the bulb holder (10) and remove the light bulb (11).

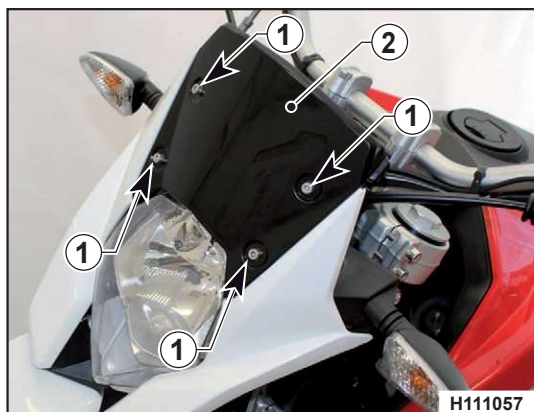


Make sure that the new bulb is of the LL type (Long Life).

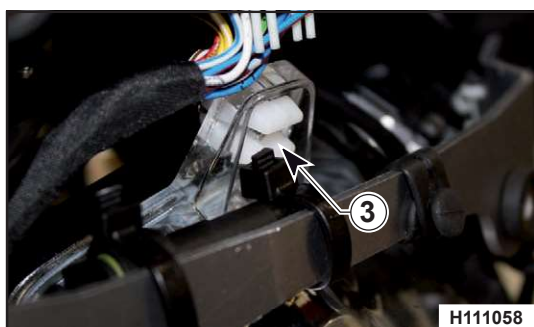
After making replacement, proceed to fit back on in the reverse sequence and then regulate the light beam as described in the specific paragraph.



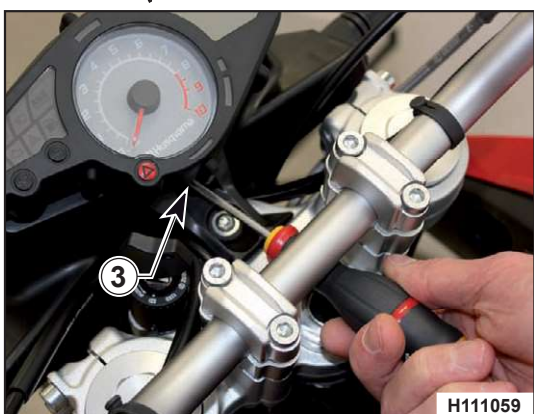
Headlight removal



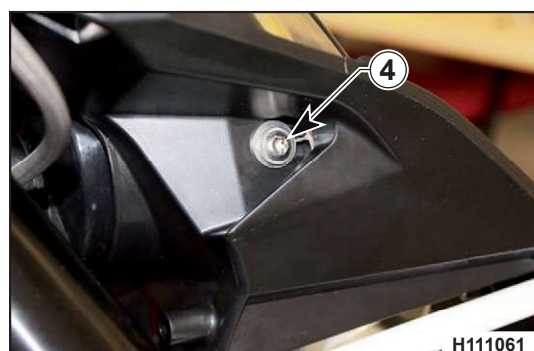
- Loosen the screws (1) and remove the front fairing (2);

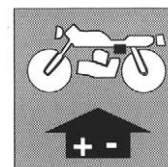


- completely loosen the top headlight adjustment screw (3);

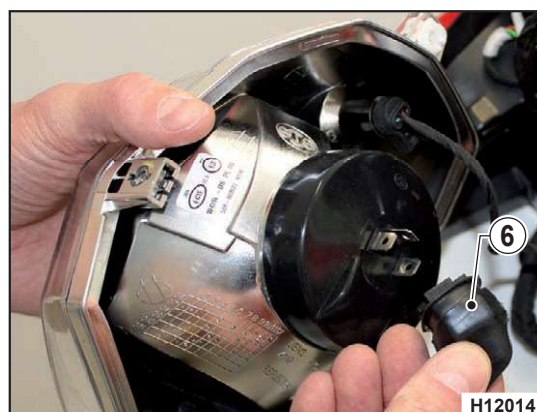


- loosen the two side headlight retention screws (4);

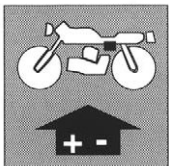




- remove the headlight (5) by turning it downwards (see illustration);



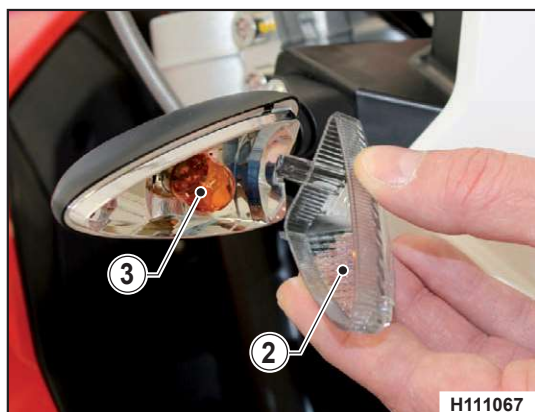
- disconnect the connector (6).



Turning indicator bulb replacement

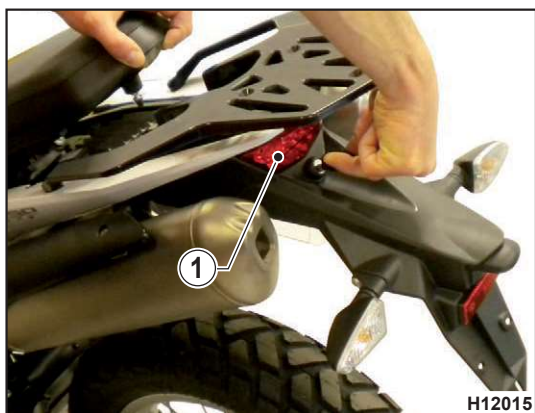


- Loosen the screw (1);



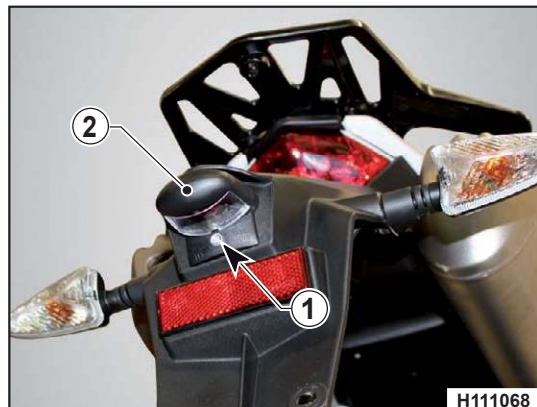
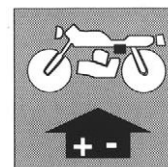
- remove lens (2) and replace bulb (3) pushing it inside, and turning it to remove it;

Once the bulb has been replaced, reverse the above procedure to reassemble. (12V - 10W bulb)



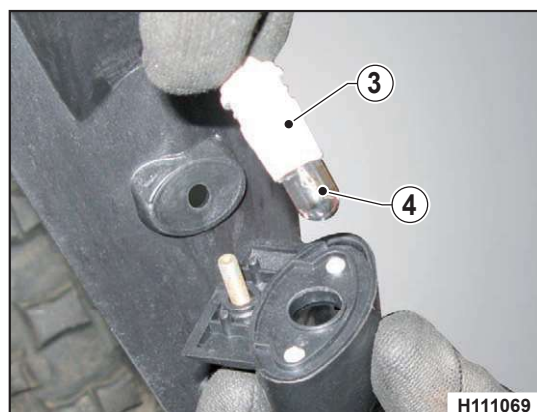
Tail light replacement

The tail light (1) is a LED light; if it does not work properly, it must be replaced. The removal of the tail light is described in Chapter "E".



Number plate bulb replacement

- Loosen screw (1) and remove the number plate bulb (2) from the mudguard.

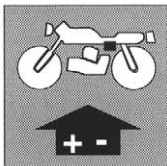


- Extract the bulb holder (3) with the bulb (4) from the housing.
- Pull the bulb (4) to detach it from bulb holder.

Once the bulb has been replaced, reverse the above procedure to reassemble.
(12V - 5W bulb).



Make sure that the new bulb is of the LL type (Long Life).



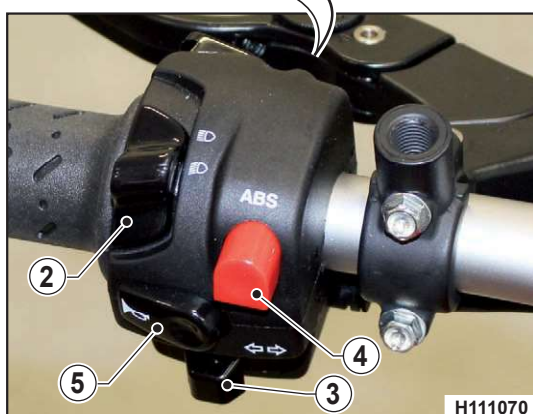
ELECTRICAL SYSTEM

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Left-hand switch

1. High beam flashing light.
2. High beam switch control.
- Low beam switch.
3. Left-hand turning indicators (self-cancelling)
- Right-hand turning indicators (self-cancelling)
To deactivate the turning indicators, press the control lever after it is returned to the centre.
4. ABS switch (where fitted)
- By pressing the button for over 3 seconds, the "ABS" antilock braking system is engaged or disengaged.
5. Horn.

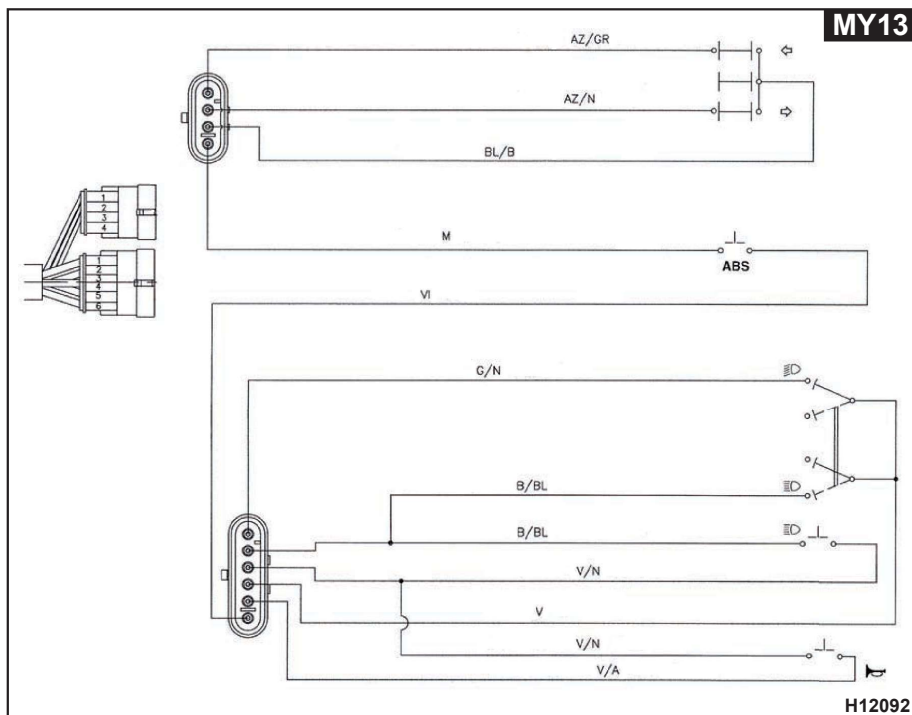
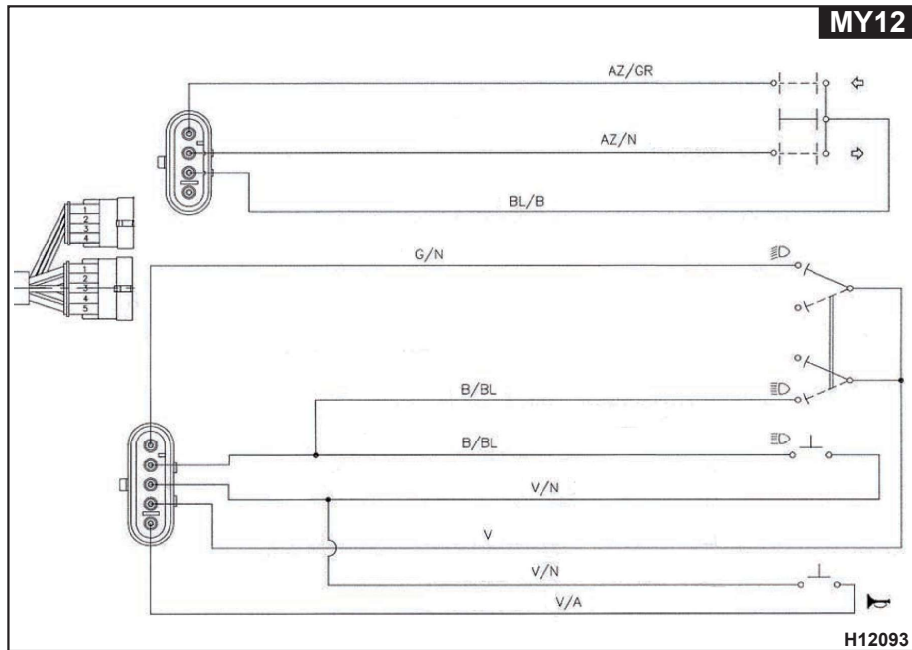
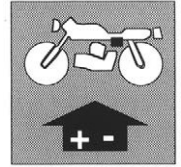


TURN SWITCH					HORN SWITCH		
	AZ/R	BL/B	AZ/N	CARICO NOMINALE		V/BL	V/GR
	<input type="radio"/>	<input type="radio"/>		52 W	A RIPOSO (OFF)	<input type="radio"/>	
N PREMUTO (OFF)					PREMUTO (ON)	<input type="radio"/>	
		<input type="radio"/>	<input type="radio"/>	52 W			

DIMMER SWITCH					PASSING SWITCH		
	V/M	B/V	V/M	G/V/N		V/BL	B/V
	<input type="radio"/>	<input type="radio"/>			A RIPOSO (OFF)	<input type="radio"/>	
HI					PREMUTO (ON)	<input type="radio"/>	
LO			<input type="radio"/>				

H10945

- Turn Switch= Turn Switch
- Premuto (OFF)= Pressed (OFF)
- Horn Switch= Horn Switch
- Carico nominale=Rated charge
- A riposo (OFF)= At rest (OFF)
- Premuto (ON)= Pressed (ON)
- Dimmer switch= Dimmer switch
- Passing switch= Passing switch

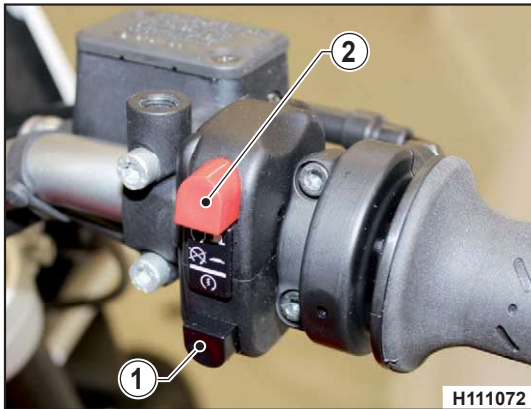


Key

AZ Light blue
Gr Grey
N Black
Bl Blue
B White
G Yellow
V Green

A Orange
R Red
M Brown
VI Violet

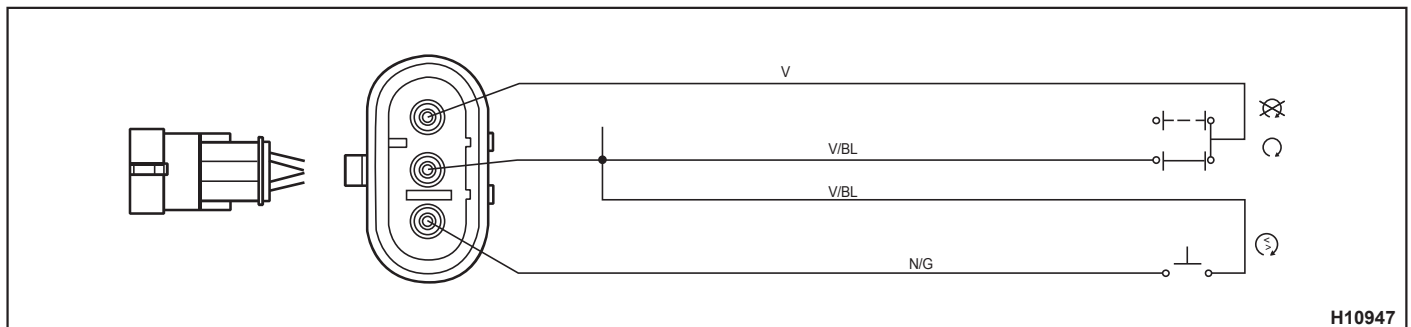
TR 650 TERRA 2013 - TR 650 STRADA 2013



Right-hand handlebar switch

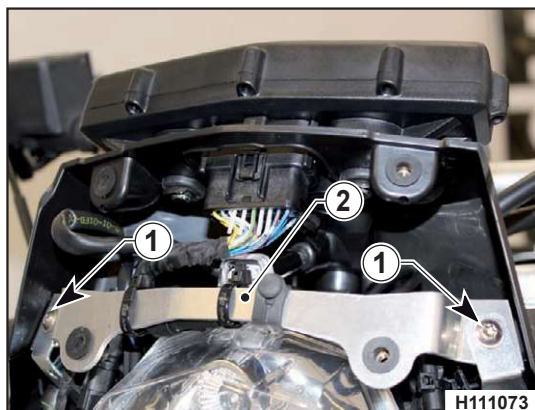
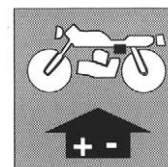
The right-hand switch features the following controls:

- 1) Engine start button
- 2) Engine KILL SWITCH.



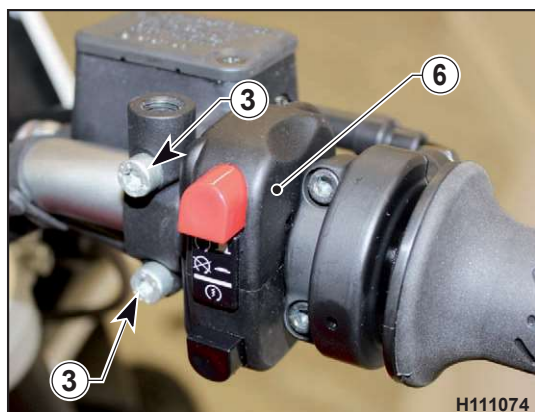
Key

V Green
Bl Blue
N Black
G Yellow



Right-hand switch removal

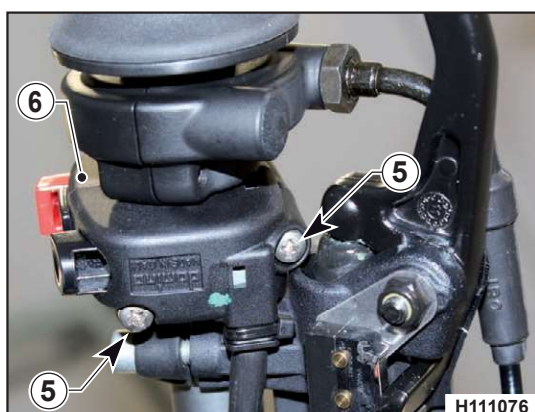
- Remove the front fairing as described in the relevant paragraph.
- Unscrew the screws (1) and move the support (2) to gain access to the connectors.
- Remove the headlight as described in the relevant paragraph.



- Loosen the screws (3) and move the lever/master cylinder.



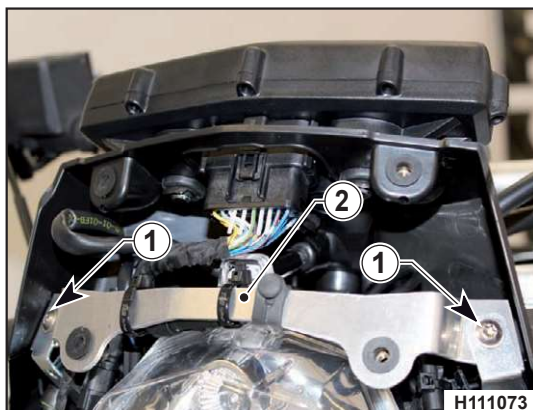
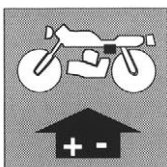
- Disconnect the connector (4).



- Unscrew the screws (5) and remove the switch (6).

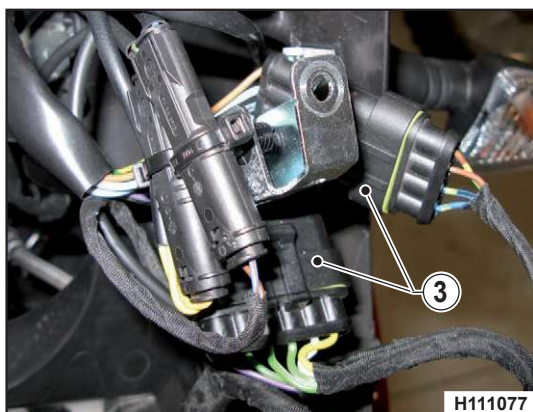


When reassembling, put the cable harness back in the same position it was before.

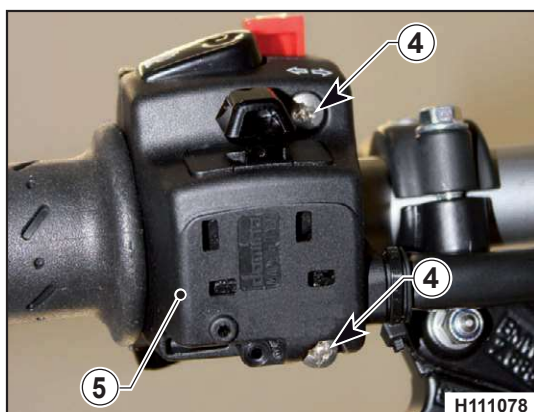


Left-hand switch removal

- Remove the front fairing as described in the relevant paragraph.
- Unscrew the screws (1) and move the support (2) to gain access to the connectors.
- Remove the headlight as described in the relevant paragraph.



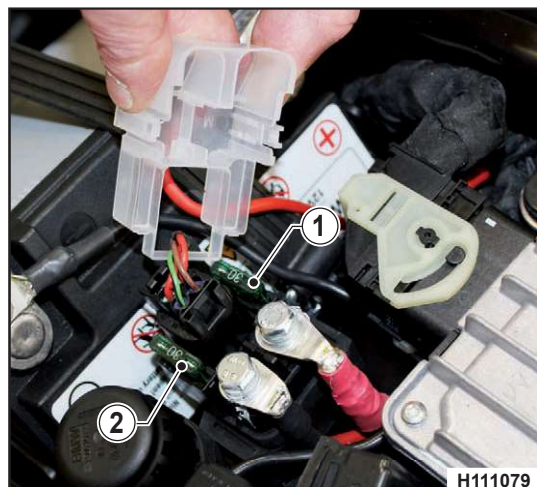
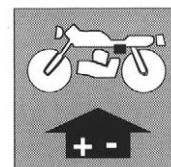
- Disconnect the two connectors (3).



- Loosen the two screws (4) and remove the light switch (5).



When reassembling, put the cable harness back in the same position it was before.



Fuses

- When you find a blown fuse, always investigate and eliminate the cause before replacing it.
- Never replace a fuse with another fuse with a different rating.
- Never use a wire or other makeshift repair techniques instead of installing a new fuse.

General fuse (1) - 30A

Two fuses located in the rear of the battery compartment on the solenoid starter, one of which is a spare.

1= General fuse.

2= Spare fuse.



Auxiliary fuses (3)

Located at the rear of the motorcycle under the saddle.

Fuse 1 = 7.5 A

Instrument panel
Turning indicators
Engine control
Solenoid starter
Diagnosis socket

Fuse 2 =

15 A
Horn
Number plate light
Headlight (high beam and low beam)
Stop light
Accessories socket

Fuse 3 =

15 A
Ignition
Injectors
Fuel pump

Fuse 4 =

7.5 A
Lambda sensor
Canister washing valve

Fuse 5 =

10 A
Radiator fan

Fuse 6 =

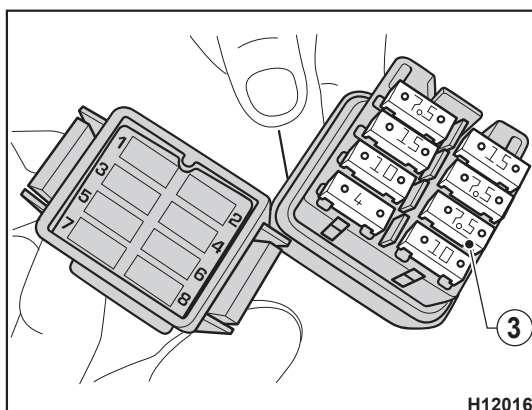
7.5 A
Instrument panel
Antitheft
Diagnosis socket

Fuse 7 =

4 A
Parking lights
ABS (where fitted)

Fuse 8 =

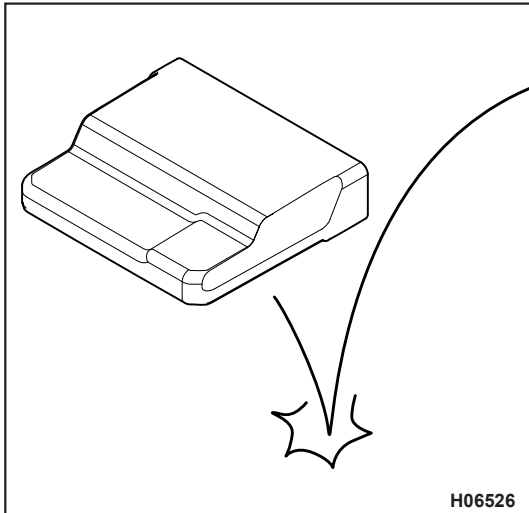
10 A
Engine control



To avoid possible short circuits, set the ignition switch to OFF before servicing the fuses.

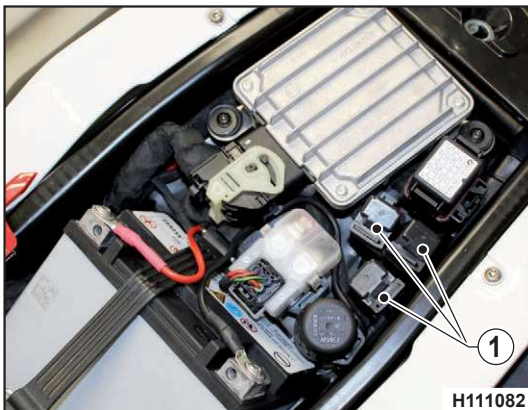
Never use a fuse with a different rating.

TR 650 TERRA 2013 - TR 650 STRADA 2013



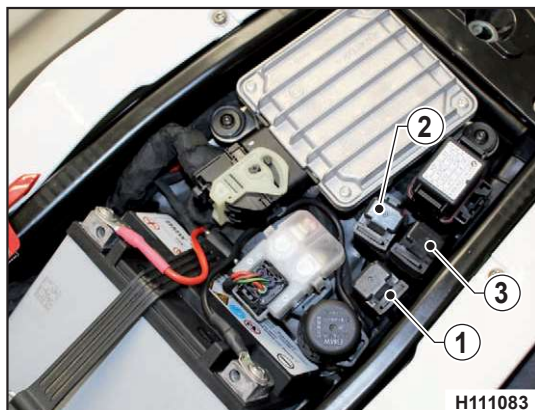
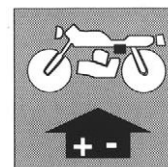
Semiconductor parts

- Be careful to never drop parts that incorporate a semiconductor, such as the ECU or the voltage regulator/rectifier.
- Closely follow the relevant instructions when inspecting these parts. An improper procedure may lead to severe damage.



Relay removal

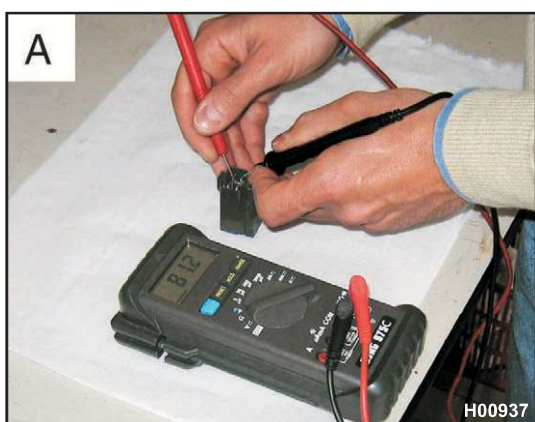
- Remove the saddle as described in the relevant paragraph.
- Lift the relays (1) off their supports and disconnect them by removing the connectors.



Relay test

Gain access to the relays as described in the relevant paragraph; then remove them.

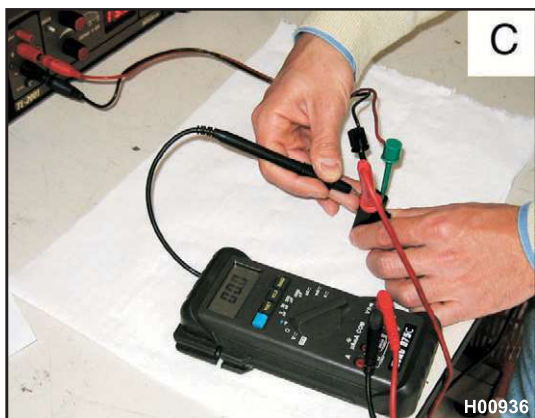
- 1) Main relay.
- 2) Electric fan relay
- 3) Fuel pump relay



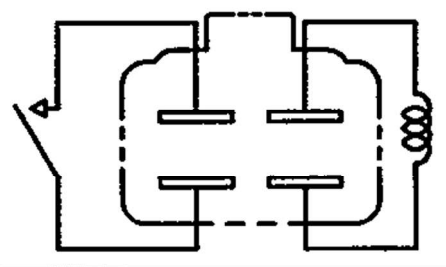
A: Set the meter to the "Impedance" scale and check the energiser coil for proper operation. Reading should be: 80 Ohm (+/- 10%) at 20 °C.

B: Set the meter to "Continuity" mode and check the circuit is open.

C: Feed the coil from a power supply unit with stable 12V output and make sure that the circuit closes.

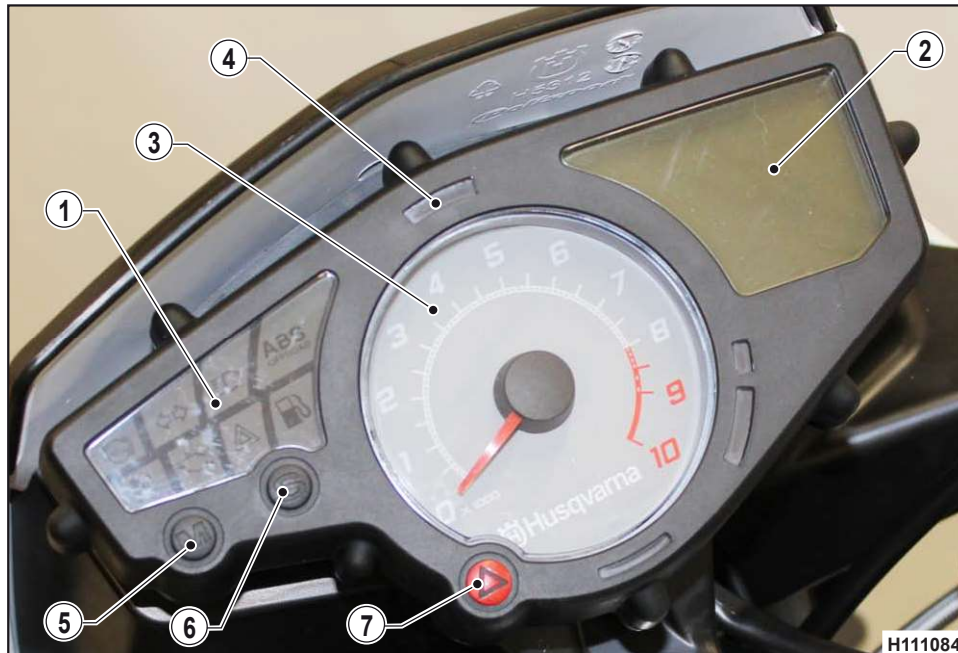


SCHEMA ELETTRICO
WIRING DIAGRAM
SCHÉMA ÉLECTRIQUE
SCHALTPLAN
ESQUEMA ELÉCTRICO





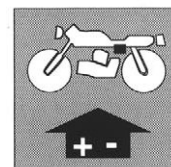
(BOTTOM VIEW)

Combined dashboard



The motorcycle has a combined dashboard divided into the following areas:

1. Warning lights (see “Description of warning lights”).
2. Multifunction display (see “Description of multifunction display”).
3. Rev meter
Indicates the engine rpm.
4. Alarm system warning light (optional) (RED).
5. “MODE” button
6. “SET” button
This displays the various functions of the multifunction display (see “Description of multifunction display”).
7. “HAZARD” button
When this is pressed, the turning indicators, warning light  and warning light  flash at the same time.
Press it again to deactivate the hazard warning lights.



Warning light description



“ABS” warning light.

When turning the key to the “ON” position, the warning light starts blinking and keeps on blinking until the vehicle starts moving forward. If the system works properly, the warning light turns off; if the self-diagnosis finds a failure in the system, or if the system is deactivated, the warning light stays on.



Turning indicator warning light (GREEN)

This flashes when the turning indicators have been turned on or the “HAZARD” button has been pressed.



High beam warning light (BLUE)

This lights up permanently when the high beam is on.



Neutral warning light (GREEN)

This lights up permanently when the motorcycle is in neutral.



Engine diagnosis warning light (ORANGE)



This lights up permanently when the engine ECU has diagnosed malfunctioning.

There are two types of fault:

- Critical fault: the engine switches off and you must contact your HUSQVARNA dealer.
- Fault with emergency operating: the engine operates with reduced performance to allow you to reach the nearest HUSQVARNA dealer to have the fault checked.



“HAZARD” warning light (RED)

This flashes together with the warning light  and the turning indicators when switch  has been pressed.



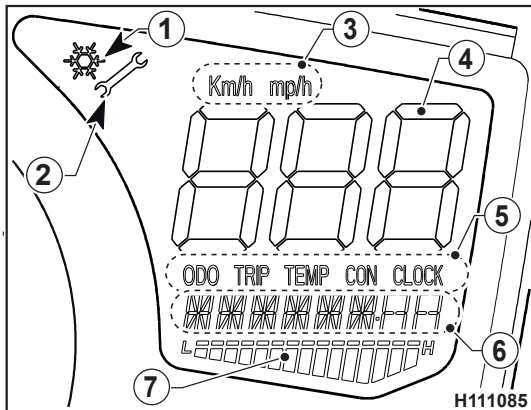
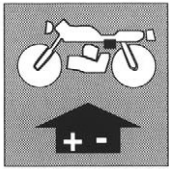
Fuel reserve warning light (ORANGE)

This comes on when there are approximately 3 litres of fuel left in the tank.

You need to refuel.



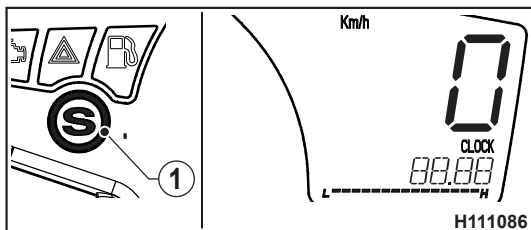
The fuel reserve warning light usually switches itself off after refuelling.



Description of multifunction display

1. "ICE" indicator:
This appears when the external temperature is lower than 3°C or 37.4°F
2. "SERVICE" indicator:
This indicates that it is time for a service.
Contact your HUSQVARNA dealer to have scheduled maintenance work carried out.
3. km/h or mp/h odometer scale indicator (see "setting units of measurement")
4. Speed indicator
5. Display parameters:
This field is used to individually set the parameters below that will be displayed in (6).
ODO = Odometer / Total mileage
TRIP = Odometer / Partial mileage
(to set the functions, see "Setting parameters")
TEMP = Air temperature (AIR BOX) / Coolant temperature
CON = Actual fuel consumption / Average consumption.
CLOCK = Clock (see "Clock adjustment").
6. This displays the parameter set in (5).
7. This lights up in sequence from left to right as the coolant temperature increases.

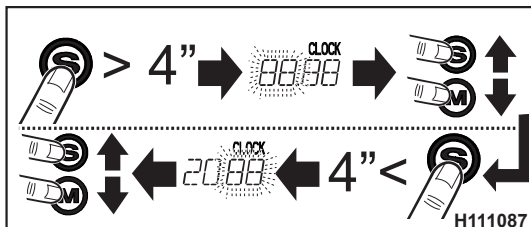
In case of overheating, the indicator lights up steady and the bar (7) flashes.



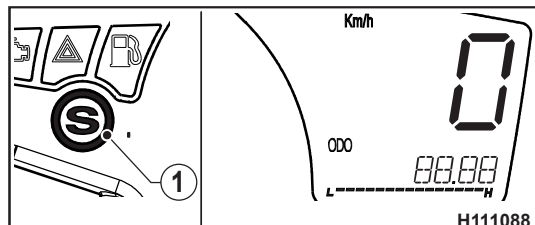
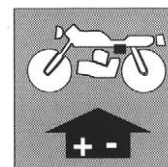
Clock adjustment

The clock must be set when the motorcycle is stationary and the key is set to ON.
The clock is set to 24 hours.

- Press the "S" button (1) until the word "CLOCK" appears on the display.



- Press the "S" button for more than 4 seconds and the hours will flash on the display.
- The value of the hours increases by one unit each time you press the "S" button.
- The value of the hours decreases by one unit each time you press the "M" button.
- Press the "S" button for more than 4 seconds to memorise the hours set and the minutes will flash on the display.
- The value of the minutes increases by one unit each time you press the "S" button.
- The value of the minutes decreases by one unit each time you press the "M" button.
- To memorise the time once you have set it, press the "S" button for more than 4 seconds. If not, the setting is automatically memorised after 10 seconds.



Setting units of measurement

The units of measurement must be set when the motorcycle is stationary and the key is set to ON.

- Press the "S" button (1) until the word "ODO" or "TEMP" appears on the display.
- Press the "S" button for more than 4 seconds. The word "SET" appears on the display and the unit of measurement currently in use.
- Press the "S" button once to change the unit of measurement. Once you have selected the unit of measurement, press the "S" button for more than 4 seconds to confirm the set data and go onto the next scale.

The following units of measurement can be set:

Km / mp = the display will show:

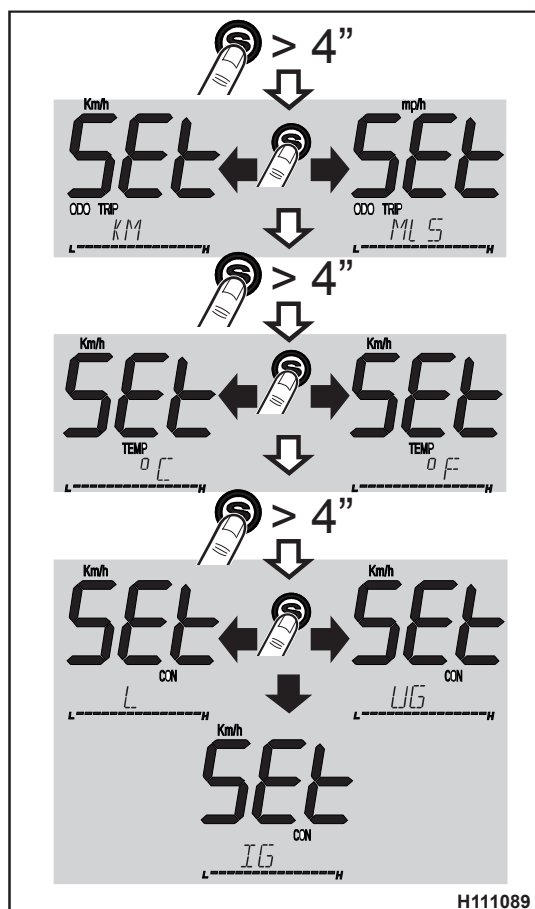
- the speed in "km/h" or "mp/h" ;
- the total distance covered in "km" or "mp"
- the partial "TRIP" distance covered in "km" or "mp".

Temperature = °C / °F

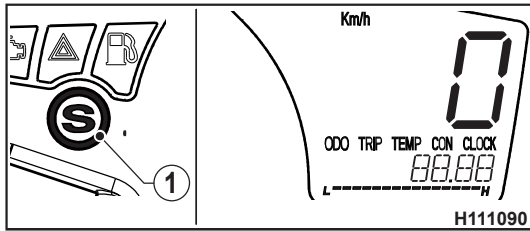
Quantity of fuel:

L = (litres) - UG = US/GAL - IG = IM/GAL

- To quit the "SET" stage once you have made your last setting, press the "S" button for more than 4 seconds. If not, the program automatically quits after 10 seconds.



TR 650 TERRA 2013 - TR 650 STRADA 2013

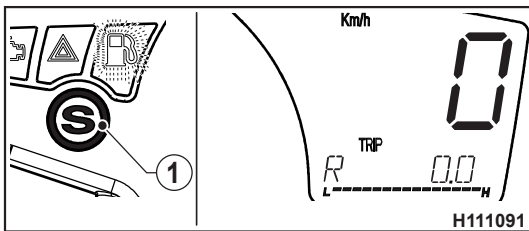


Setting parameters

With the dashboard on, press the “S” button (1) to display the various display functions:

ODO ; TRIP ; TEMP ; CON ; CLOCK

The “ODO”, “TEMP” and “CLOCK” functions are for display purposes only.



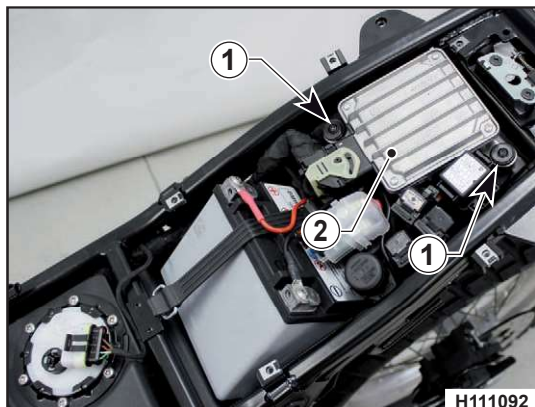
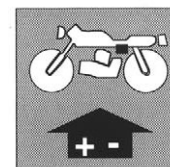
TRIP function:

When this function is activated, press the “S” button for more than 4 seconds to reset and start a new partial count of the kilometres /miles subsequently travelled.

When this function is set after the fuel reserve light has come on, press the “S” button “S” (1) for more than 4 seconds to display fuel consumption (in litres or gallons depending on the unit of measurement you have selected) from when you go onto fuel reserve.

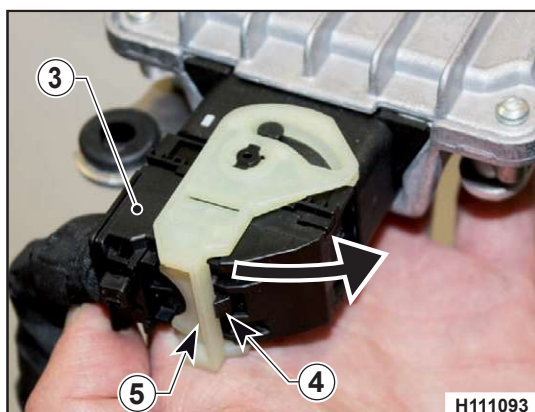
CON function:

When this function is activated, press the "S" button for more than 4 seconds to reset and start a new count of the litres/ gallons consumed from when average consumption (L/100 km) has been reset.



Control unit removal

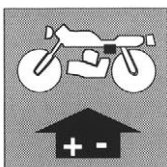
- Before disconnecting the ECU, disconnect the battery cables.
- Remove the saddle as described in the relevant paragraph.
- Unscrew the two screws (1) and remove the ECU (2).



- Disconnect the connector (3) pressing with a screwdriver the tooth (4) and turning the locking element (5).

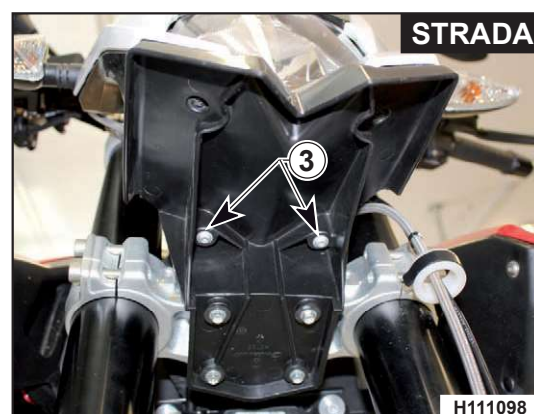
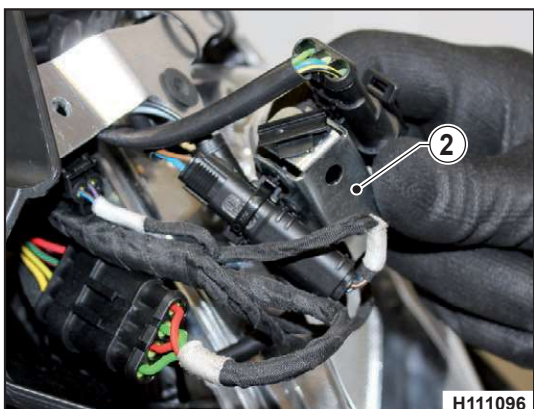
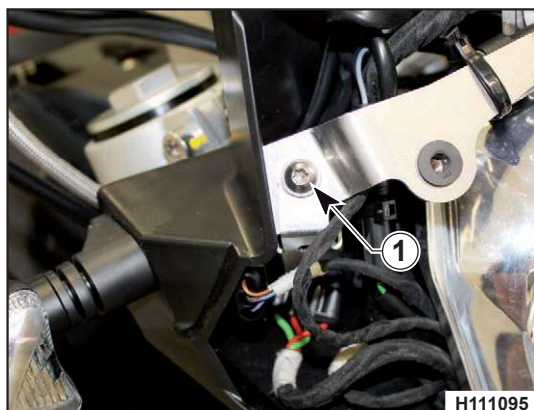


Refit a new control unit proceeding in the reverse order.
To replace the part, use the diagnostic tool and follow the guided procedure.

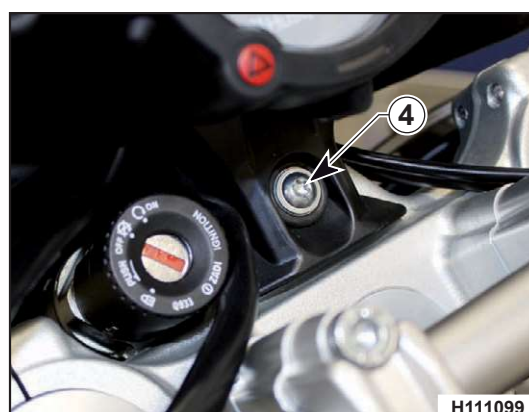
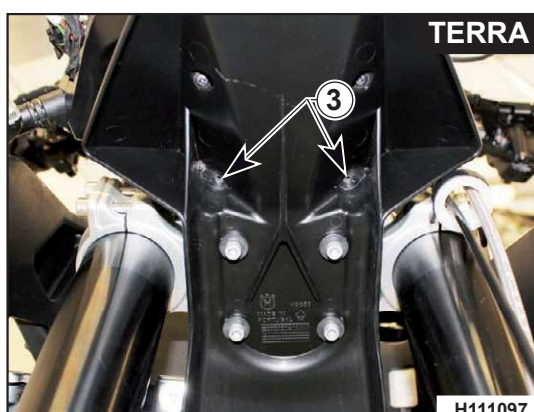


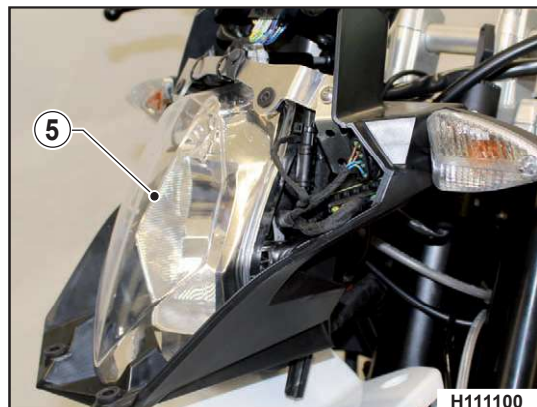
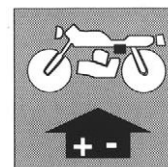
Ignition removal

- Remove the front fairing as described in the relevant paragraph.
- Unscrew the screw (1) to remove the connector bracket (2).

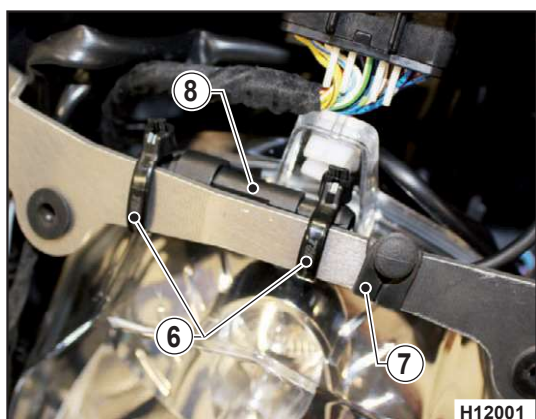


- Unscrew the screws (3) under the mudguard and the upper screw (4).





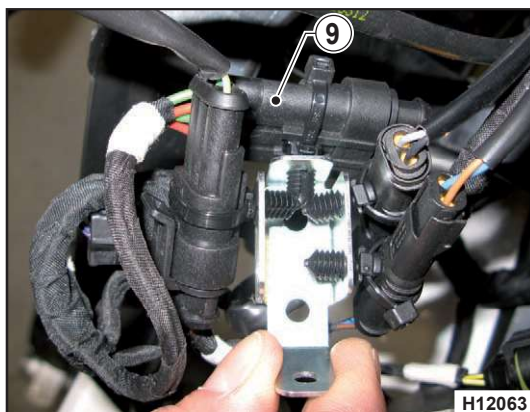
- Lift the headlamp fairing (5) off the lower clips and turn it to the right.



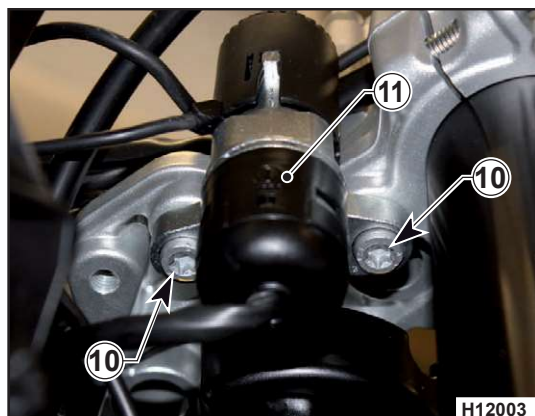
- Cut the ties (6) and open the clamp (7).
- Disconnect the alarm system antenna connector (8).



When reassembling, put the cables back in their origin position and secure the connector (8) and the alarm system antenna cable as before using the two ties (6) and the rubber clamp (7).



- Remove the ignition switch connector (9) and remove it from the headlight support.

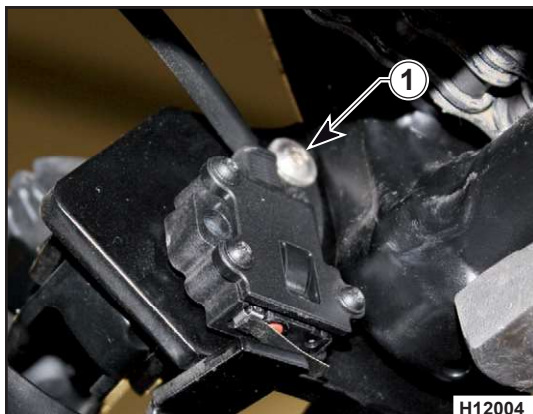
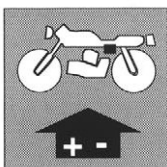


- Unscrew the two screws (10) and remove the ignition switch (11).
- Reverse the removal procedure to reassemble, making sure you put the cables back in the same position they were before.



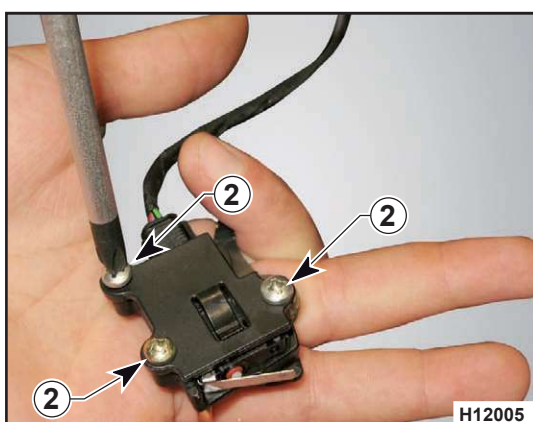
Reassemble a new ignition switch by following the steps in reverse order and make sure you put the cables back in the same position they were before.

To replace the part, use the diagnostic tool and follow the guided procedure.

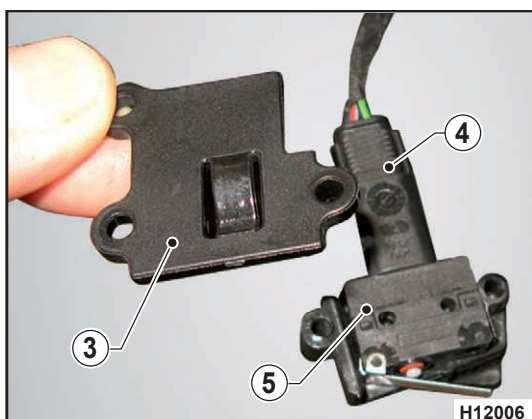


Rear stop microswitch replacement

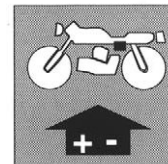
- Unscrew the screw (1).



- Unscrew the three screws (2) and remove the plastic cover (3).

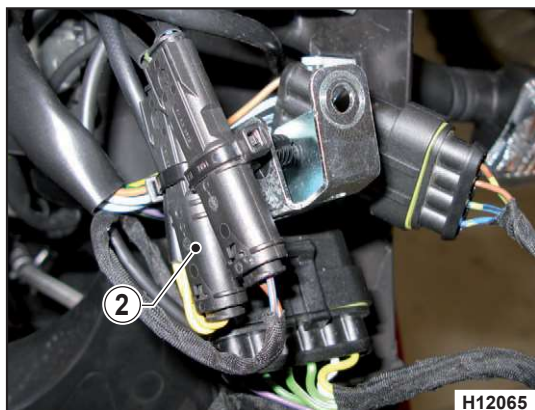


- Disconnect connector (4) and remove the microswitch (5).

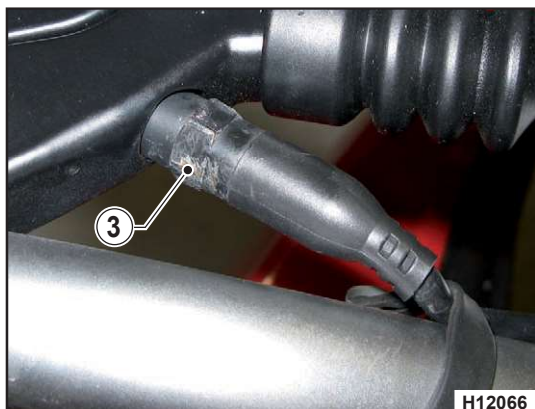


Clutch microswitch replacement

- Remove the headlight as described in the relevant paragraph.
- Open the rubber clamps (1).



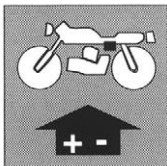
- Disconnect the connector (2).



- Unscrew the microswitch (3) and replace it.



When reassembling, put the cable harness back in the same position it was before.

**Front stop microswitch replacement**

- Remove the headlight as described in the relevant paragraph.
- Undo the nut (1).
- Disconnect the microswitch (2).



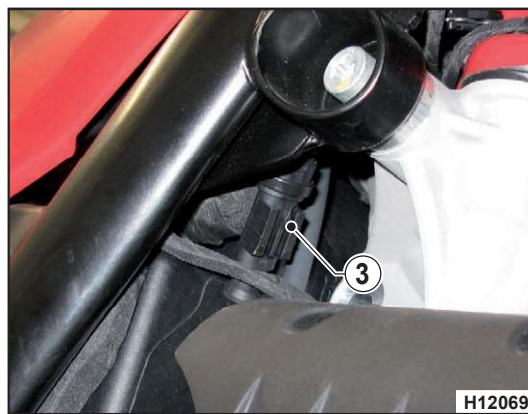
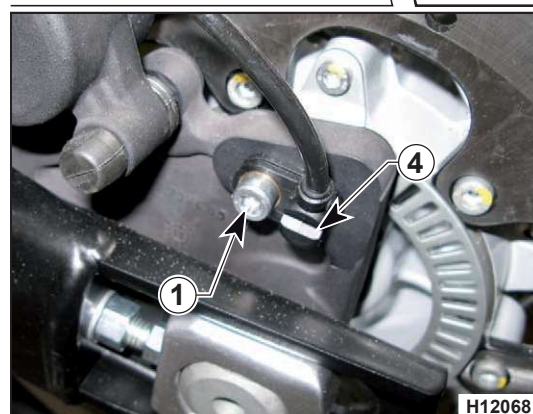
- Disconnect the connector (3).
- Fit a new microswitch and tighten the nut to torque (1).

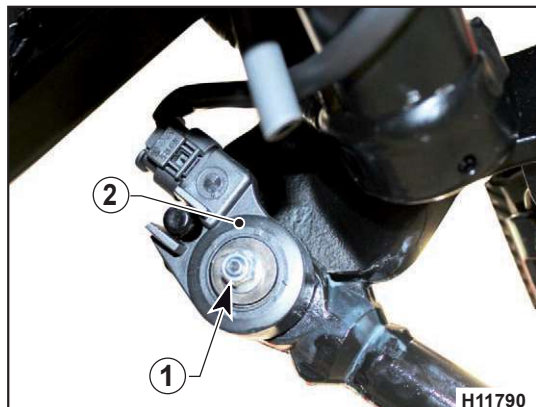
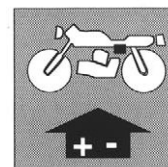


When reassembling, put the cable harness back in the same position it was before.

**Speed sensor replacement / Rear wheel ABS**

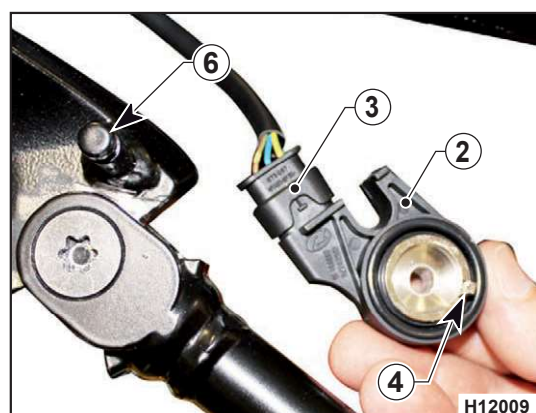
- Remove the fuel tank as described in the relevant paragraph.
- Loosen the screw (1).
- Remove the fastening from the harness (2).
- Disconnect the connector (3).
- Replace the sensor (4) and refit the harness as before.





Stand rotative switch replacement

- Loosen the nut (1) and remove the switch (2) from the stand.

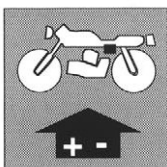


- Disconnect the connector (3).
- Replace the switch (2); during the reassembly, insert the switch tab (4) in the hole (5) of the stand and the upper part of the switch in the centring pin (6).



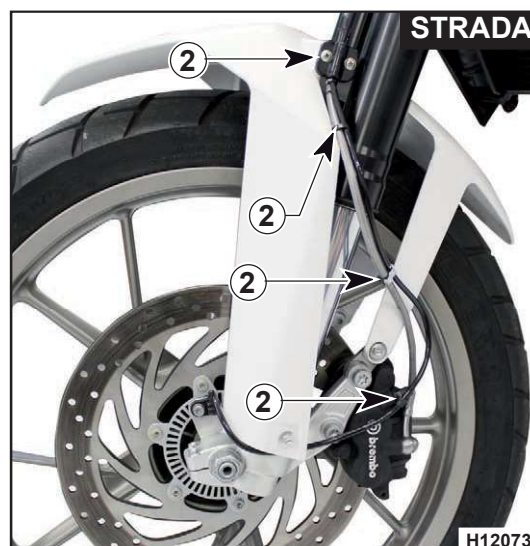
Water temperature sensor replacement

- Remove the expansion tank and drain the cooling system as described in the relevant paragraph.
- Disconnect the connector (1) and remove it.
- Loosen the sensor (2); replace and tighten it to torque (see Chapter F4).



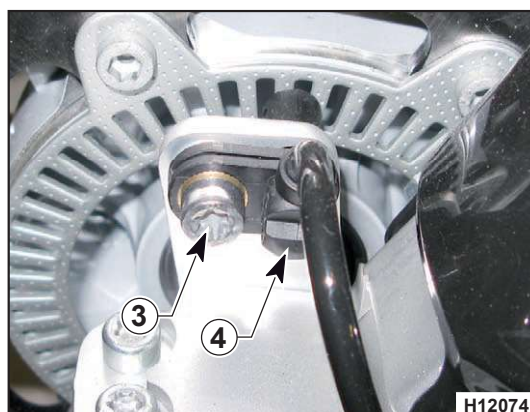
Replacement of front wheel ABS sensor

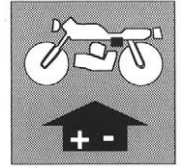
- Disconnect the connector (1).



- Free the cable harness from its fasteners (2).

- Unscrew the screw (3) and remove the sensor (4).
- Reassemble the hose as it was before and make sure it is laid correctly.





Troubleshooting

Charging system

A battery that does not hold charge might be a symptom of:

- 1) current draw (see paragraph "Battery");
- 2) incorrect voltage (see paragraph "Regulated voltage");
- 3) no continuity in generator (see paragraph "Checking generator stator windings resistance");
- 4) defective generator;
- 5) voltage regulator malfunction (see paragraph "Voltage regulator/rectifier inspection")

- a battery overload indicates:

- 1) faulty voltage regulator (see paragraph "Voltage regulator inspection");
- 2) defective battery (see paragraph "Battery").

Starting system

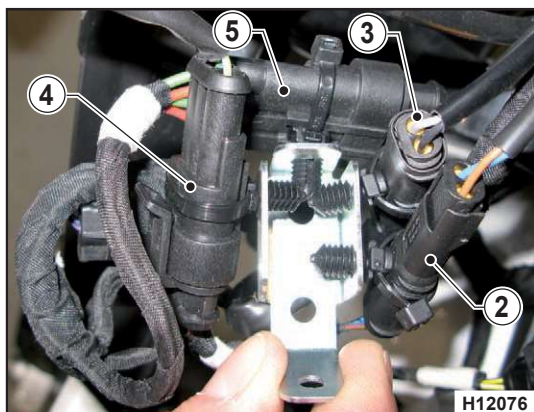
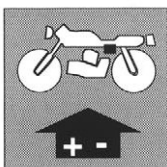
If the starter motor does not start, this might be a symptom of:

- 1) faulty starter relay (see paragraph "Starter relay inspection");
- 2) loose starter motor cable;
- 3) faulty starter motor (see paragraph "Starter motor inspection");
- 4) flat battery (see paragraph "Battery charger").

Electronic ignition system

A weak or missing spark might be a symptom of:

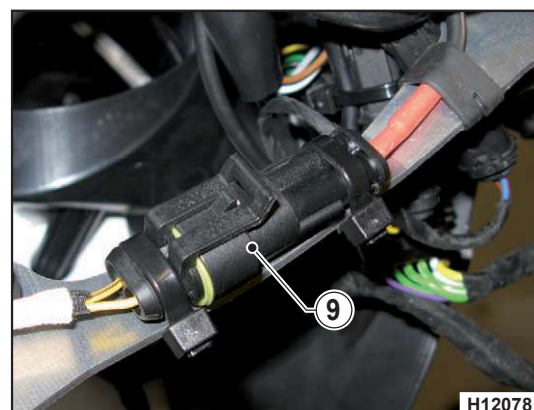
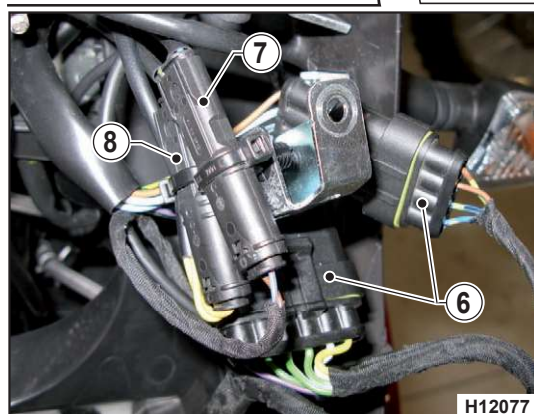
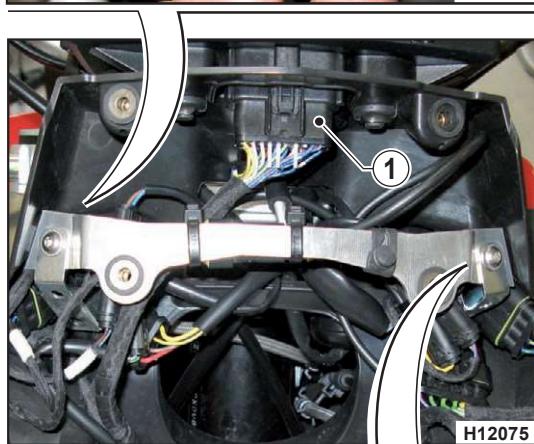
- 1) incorrect connections in the electrical system;
- 2) faulty spark plug or wrong heat rating or incorrect spark plug gap (see paragraph "Spark plug");
- 3) defective starter coil/Stick-Coil (see paragraph "Coil/Stick-Coil winding resistance inspection").

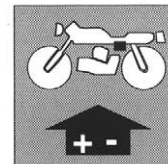


Electrical connectors positioning

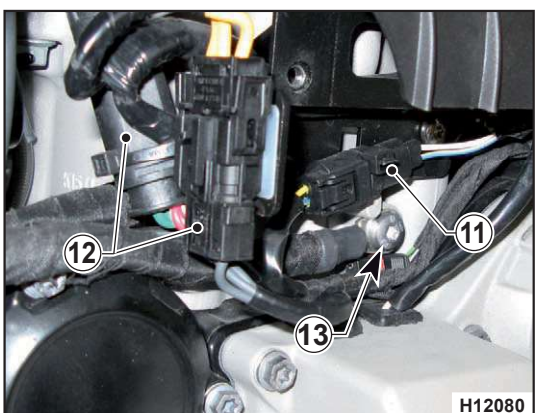
The following connectors are located in the front underneath the headlight:

- 1) Dashboard connector.
- 2) R.H. turning indicator connector.
- 3) Front stop microswitch connector.
- 4) Right-hand switch connector.
- 5) Ignition switch connector.
- 6) Left-hand switch connectors.
- 7) L.H. turning indicator connector.
- 8) Clutch microswitch connector.
- 9) Alarm system antenna connector.





On the right-hand side of the bike, the following connectors are to be found:
10) Speed sensor/rear wheel ABS connector.



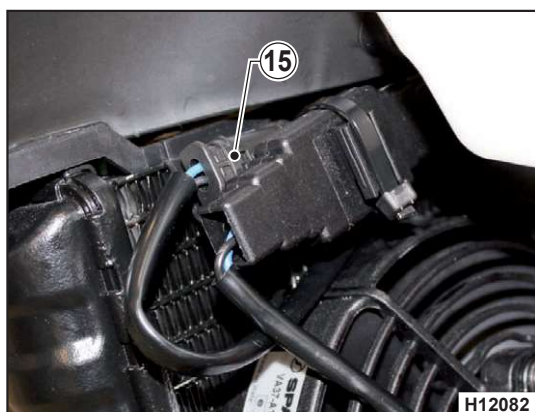
11) Crankshaft position sensor connector.

12) Voltage regulator connector.

13) Engine ground screw.

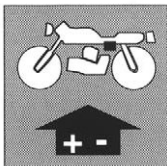


14) Coolant temperature sensor connector.



The following connectors are located to the left of the motorcycle:

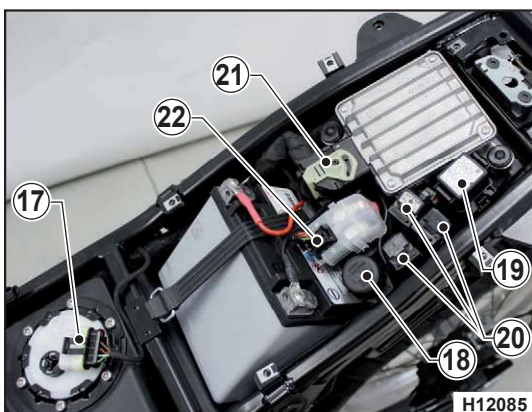
15) Electric fan connector.



16) Lambda sensor connector.



16A) Front wheel ABS sensor connector.



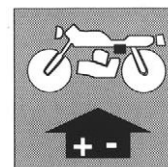
The following connectors are located underneath the saddle:

- 17) Fuel pump connector.
- 18) Diagnosis connector.
- 19) Fuses.
- 20) Relay connectors.
- 21) ECU connector.
- 22) Starter relay connector.

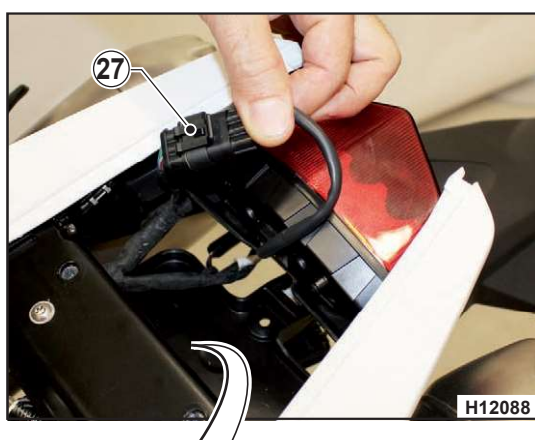


The following connectors are located on the engine cylinder head:

- 23) Coil 1 connector.
- 24) Coil 2 connector.

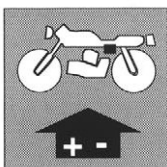


The following connectors are located on the throttle body:
 25) Throttle open sensor connector.
 26) Idle actuator connector.



The following connectors are located on the rear chassis:
 27) Tail light connector.
 28) Right-hand turning indicator connector.
 29) Left-hand turning indicator connector.
 30) Anti-theft device connector.





Important

Before washing the motorcycle, it is necessary to duly protect the following parts from water:

- a) Rear opening of the muffler;
- b) Clutch and front brake levers, handgrips, handlebar switches;
- c) Air filter intake;
- d) Steering head, wheel bearings.

In addition to these precautions, NEVER ALLOW HIGH-PRESSURE AIR OR WATER to get in contact with any ELECTRICAL PARTS, the FUEL INJECTION SYSTEM, and especially the electronic control unit (1) and the digital dashboard (2).

