

**10.1 ELECTRICAL SYSTEM DIAGRAM**

**10.1.1 Cables colour coding**

**i** The colour of a cable can be an “A” colour or two “B” colours.

**i** The cable which has two colours is identified by the first colour code (primary “C” or colour of the sheath) followed by the second colour code (secondary “D”): the codes are separated by a dash “-”.

**i** Examples:

- case “A” : Blue = B ;
- case “B” : Red (primary) and Green (secondary) = RV.

The following table shows the codes used in the wiring diagram to identify the colour of the cable.

Code	Cable colour
Ar	ORANGE
Az	SKY BLUE
B	BLUE
Bi	WHITE
G	YELLOW
Gr	GREY
M	BROWN
N	BLACK
R	RED
V	GREEN
Vi	VIOLET
Ro	ROSE

**10.1.2 Key to wiring diagram colours**

The following table shows the meaning and function of the colours of the lines or wires of the electrical system diagram.

Colour	Definition	Note
RED	5 A fuse loads.	Identifies the direct supply signals under 5A fuse.
BLUE	30 A fuse loads.	Identifies the direct supply signals under 30 A fuse.
GREEN	Ground.	Identifies the ground reference signals.
BLACK	Generic signal.	Identifies all other types of signals.

**10.1.3 Key to abbreviations of the wiring diagram**

The following table shows the meaning of the abbreviation labels used in the wiring diagram and the related component to which it refers.

**i** The greyed boxes identify a particular function, a particular switch or the operating status of the component.

**i** The red boxes are used to distinguish the fuses and the relays of the system.

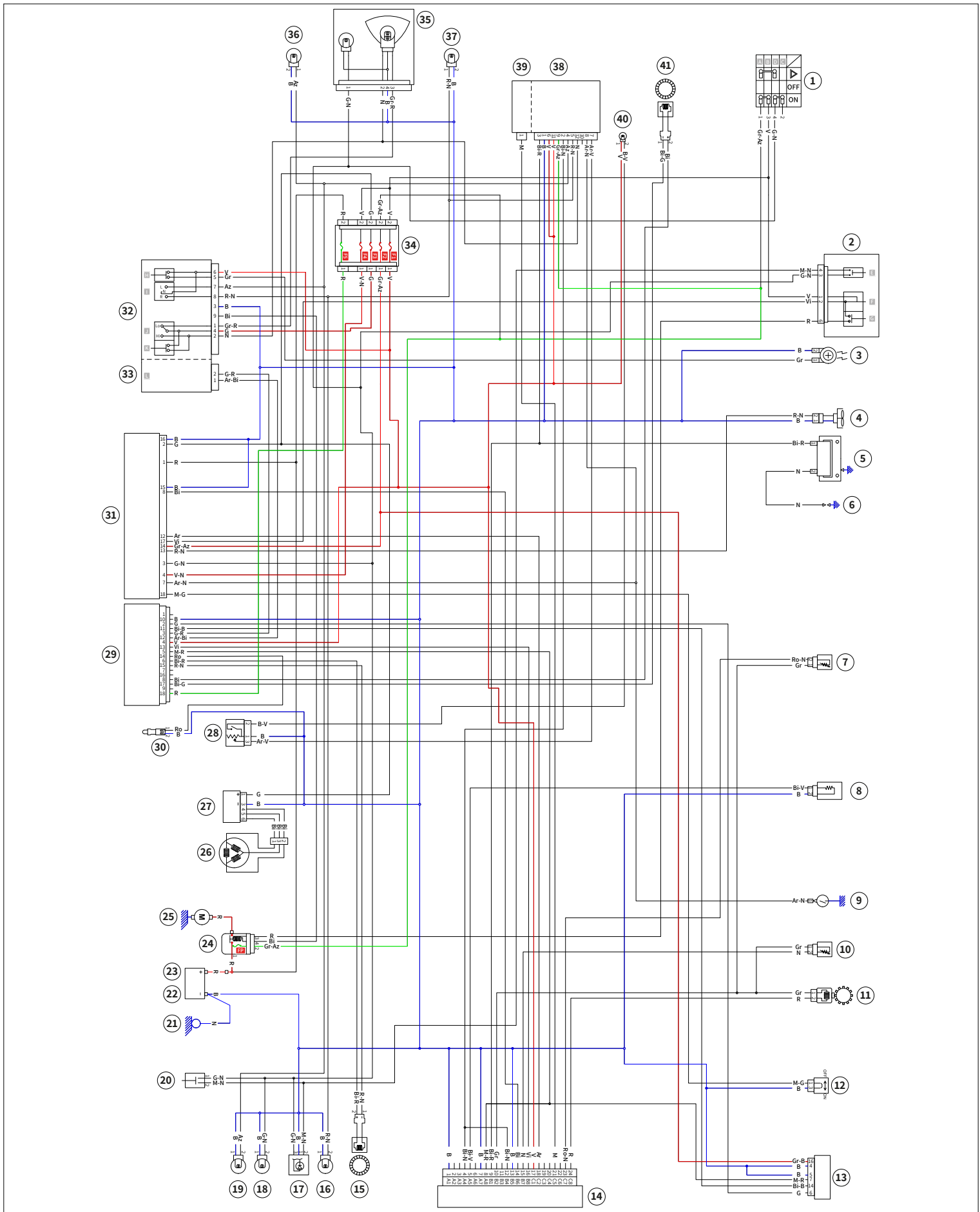
Abbreviation	Description	Reference component
<b>F1</b>	Fuse 1	34. Fuse box
<b>F2</b>	Fuse 2	34. Fuse box
<b>F3</b>	Fuse 3	34. Fuse box
<b>F4</b>	Fuse 4	34. Fuse box
<b>F5</b>	Fuse 5	34. Fuse box
<b>FP</b>	Main Fuse	24. Starter remote control switch
<b>A</b>	Power supply from battery main fuse	1. Key switch
<b>B</b>	Power supply under key	1. Key switch
<b>C</b>	User not connected	1. Key switch
<b>D</b>	Parking function	1. Key switch
<b>E</b>	Front brake button	2. Right light stalk
<b>F</b>	RUN/OFF switch	2. Right light stalk
<b>G</b>	START button	2. Right light stalk
<b>H</b>	Horn	32. Left light stalk
<b>I</b>	Turn signal selector: - L : Left side turn signal; - N : Neutral; - R : Right side turn signal.	32. Left light stalk
<b>J</b>	Low beam / high beam	32. Left light stalk
<b>K</b>	High beam flash switch	32. Left light stalk
<b>L</b>	ABS system deactivation button	33. Left light stalk - secondary connector

**10.1.4 Key to the wiring diagram components**

The following table lists all the components in the wiring diagram and their numbering.

<b>Number</b>	<b>Description of the electrical component</b>
1	Key switch
2	Right light stalk
3	Horn
4	Radiator fan
5	Ignition coil
6	Spark plug
7	Water temperature sensor
8	Fuel heater
9	Neutral gear switch
10	Air temperature sensor
11	Pick-Up
12	Side kickstand switch
13	OBD diagnosis connector
14	Ignition module
15	Rear ABS sensor
16	Right rear turn signal
17	Tail light
18	License plate light
19	Left rear turn signal
20	Rear stop switch
21	Engine ground point
22	Battery negative terminal
23	Battery positive terminal
24	Starter remote control switch
25	Starter motor
26	Generator
27	Voltage regulator
28	Fuel level sensor
29	ABS module
30	ABS mode selection connector
31	Relay and diodes box
32	Left light stalk
33	Left light stalk - secondary connector
34	Fuse box
35	Headlight
36	Left front turn signal
37	Right front turn signal
38	Dashboard
39	Dashboard - secondary connector
40	Fuel reserve indicator light
41	Front ABS sensor

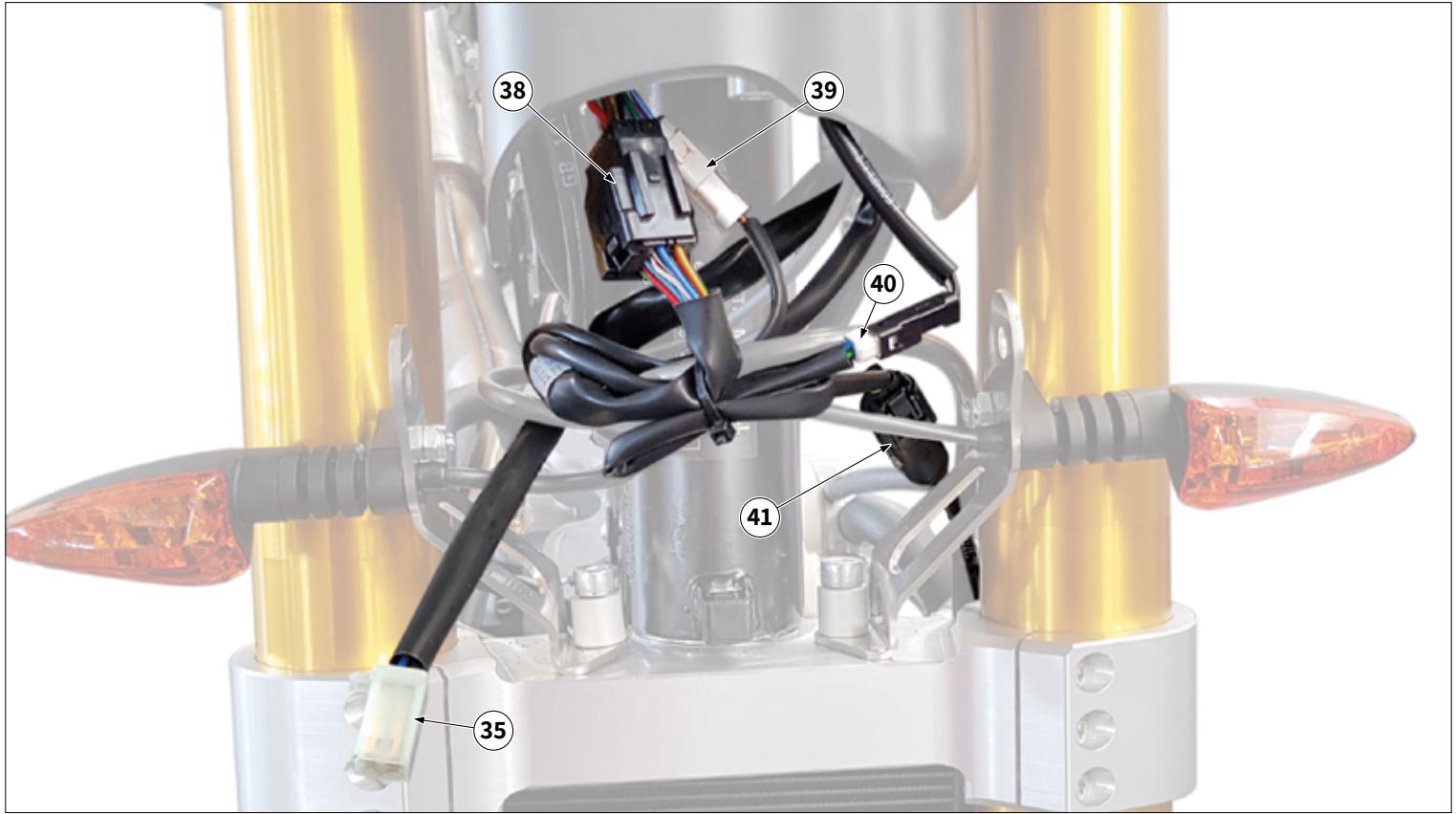
**10.1.5 Wiring diagram**





**10.2 CABLE PATH**

Main wiring path: front side, lights area and under the dashboard.

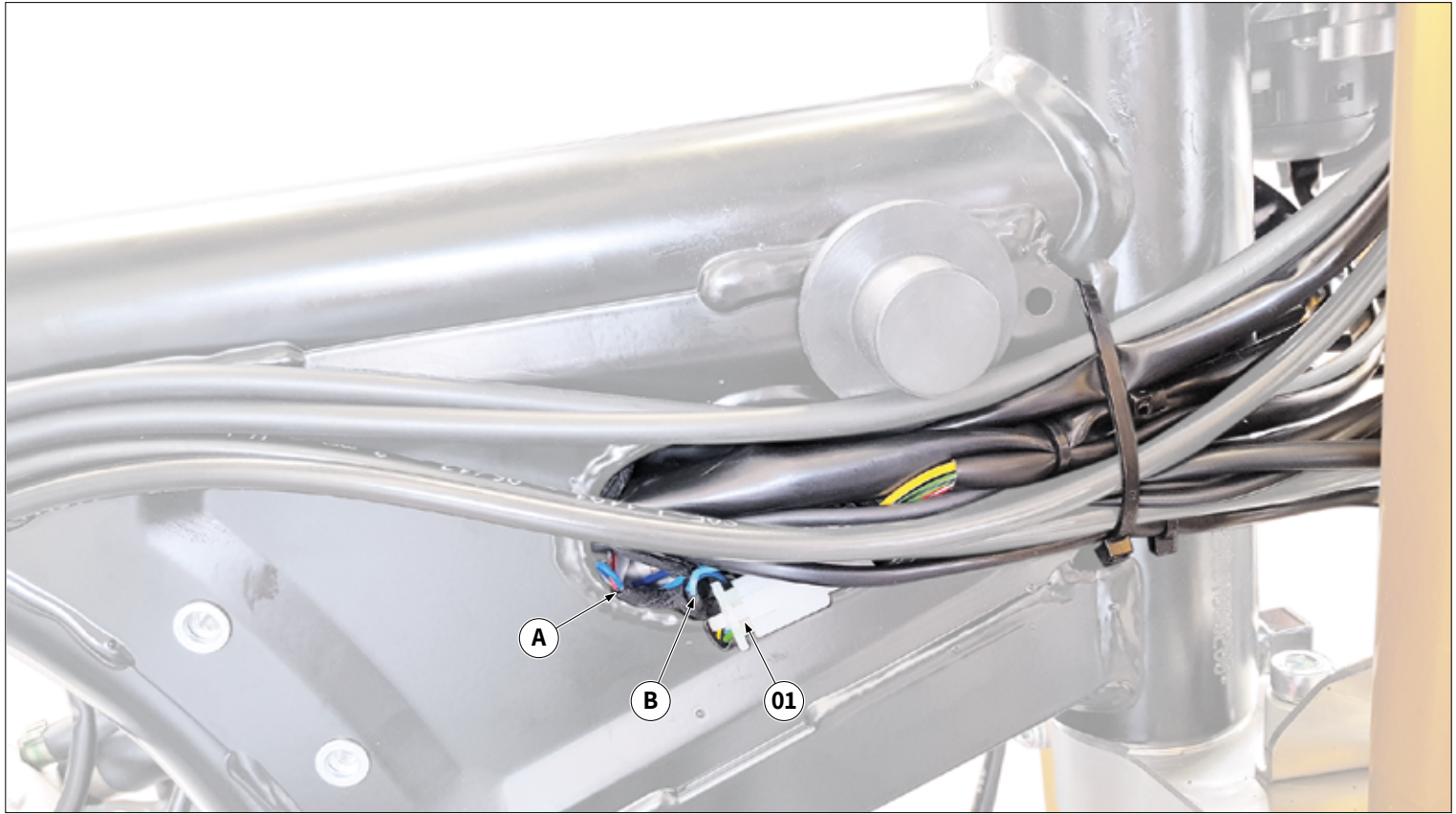


Ref.	Item	Remarks
35	Headlight	
38	Dashboard	
39	Dashboard - secondary connector	
40	Fuel reserve indicator light	
41	Front ABS sensor	

At the front, the cables of the main wiring and of the devices are collected and positioned in the space enclosed by the digital dashboard cover, with the exception of the front headlight connector “35” and the front ABS sensor “41”.

The connections of the devices on the handlebar and their wiring harness are grouped on the right side of the vehicle frame.

Main wiring path: front side, right side of the frame.

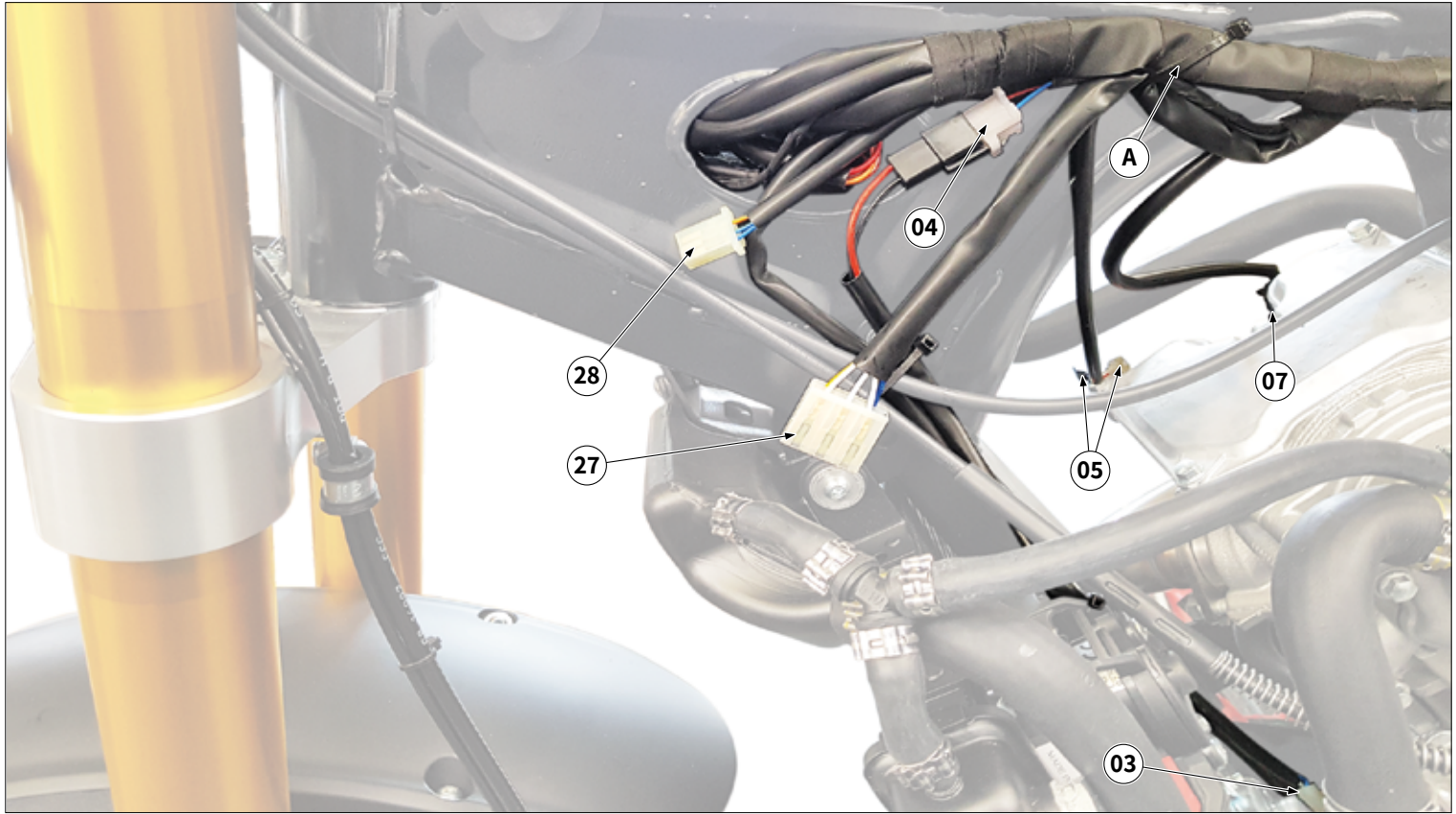


Ref.	Item	Remarks
01	Key switch	
A	Shunt of the main wiring leading to the front right turn signal connectors	
B	Shunt of the main wiring leading to the front left turn signals connectors	

The main wiring and the wiring harnesses of the devices installed on the handlebar must be collected together with the front brake hydraulic tubes and the throttle cables on the right side of the vehicle frame.

The main wiring continues through the path hole located on the frame wall on the tank area. In this point there are also the key switch connector "01" and the shunts of the front turn signals "A" and "B".

Main wiring path: front side, left frame side.



Ref.	Item	Remarks
03	Horn	
04	Radiator fan	
05	Ignition coil	
07	Water temperature sensor	
27	Voltage regulator	
28	Fuel level sensor	
A	Fixing point for the main wiring on the left side of the vehicle.	Path over the head engine.

The main wiring comes from the right side through the frame hole.

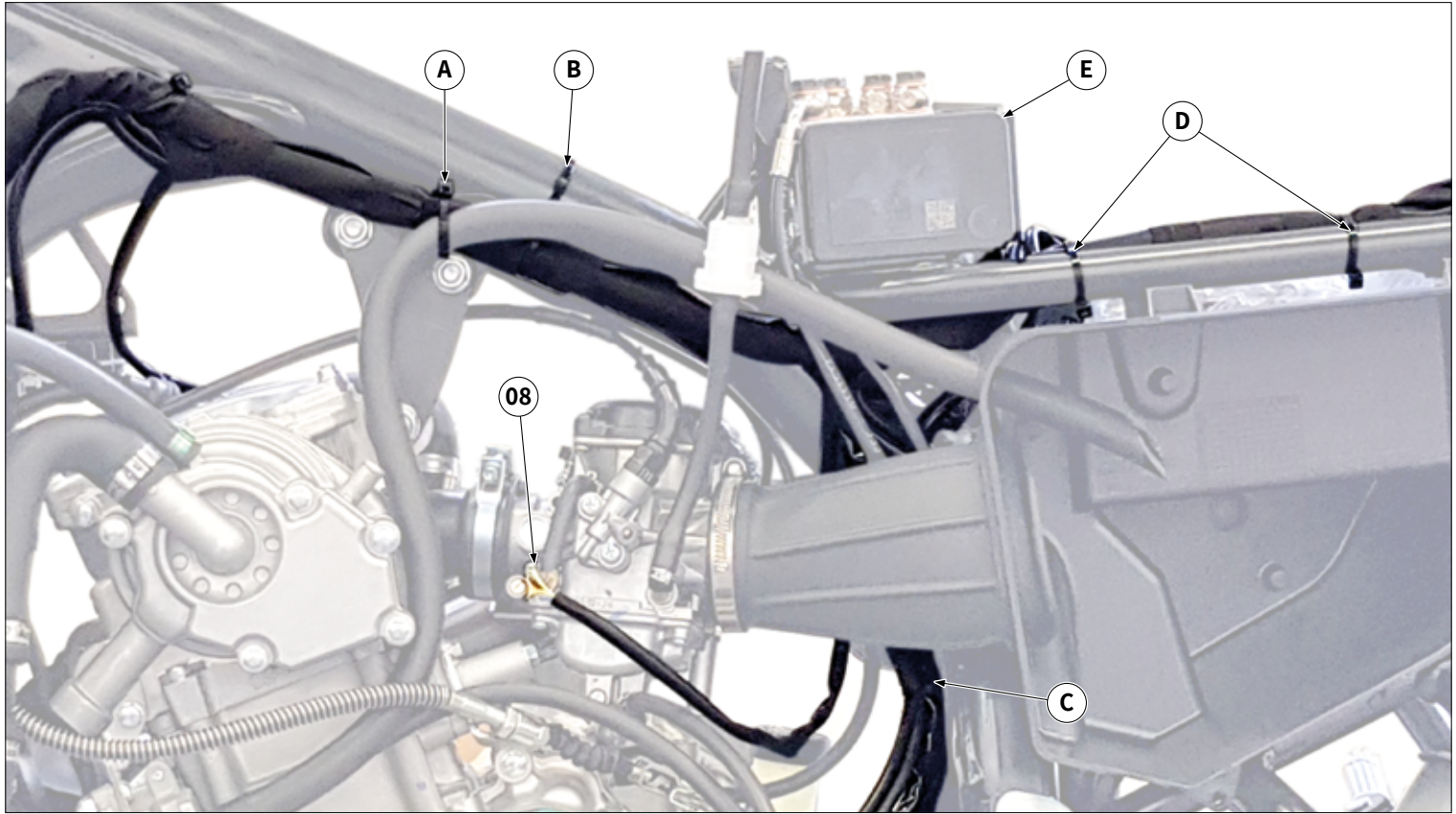
The main wiring must be attached and supported with a clamp on the left side of the frame “A” at the engine head cover.

The shunts “03” and “04” connect devices placed on the left side of the vehicle, while the shunts “05”, “07” and “28” run in the space between the engine head and the frame to connect the devices positioned on the right side of the vehicle.

The fuel level sensor connector “28” must be connected to the complete tank only during the tank re-assembling step.



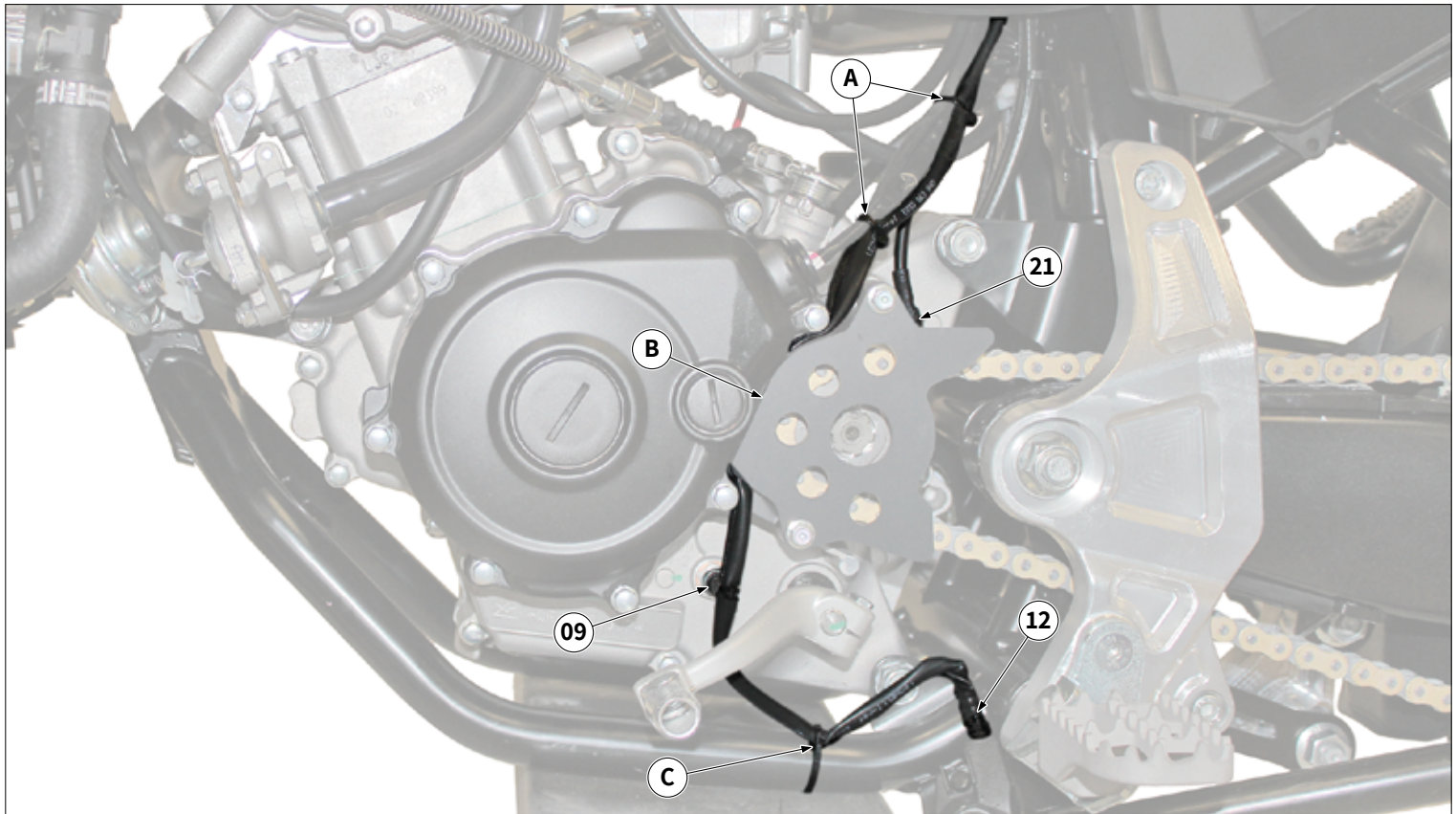
Main wiring path: central part, lower part path and rear part path.



Ref.	Item	Remarks
08	Fuel heater	
A	Main wiring fastening point, central part on engine support bracket	
B	Main wiring fastening point, central part on the vehicle frame	
C	Main wiring lower part shunt	
D	Main wiring fastening points in the under-seat area	
E	ABS module	

The main wiring must be fixed in the central part on the engine support bracket “A” together with the air intake tube for the SAS valve. The fastening points “B” and “D” are used to fasten the main wiring in the central area and in the under-seat area. The main wiring in the lower part “C” is collected and tied on the vertical trestle of the vehicle: many connectors remain hidden between the frame and the carburettor air intake tube.

Main wiring path: lower part, stator, clutch sensors and side kickstand area.



Ref.	Item	Remarks
09	Neutral gear switch	
12	Side kickstand switch	
21	Engine ground point	
A	Collection points of the lower part cables with the stator wiring harness	
B	Wiring path of the lower part behind the chain front wheel guard	
C	Fastening point of the side kickstand area wiring	

The main wiring must be collected and tied together with the wiring harness coming from the stator “A”.  
 The remaining wiring harness passes behind the guard “B” of the drive chain front wheel.  
 The wiring harness of the connector “12” must be attached to the lower frame of the vehicle in position “C”.  
 The ground point “21” is a return shunt coming from the negative battery, located in the under-seat compartment.

Main wiring path: rear part, ABS module and path to the under-seat compartment area.



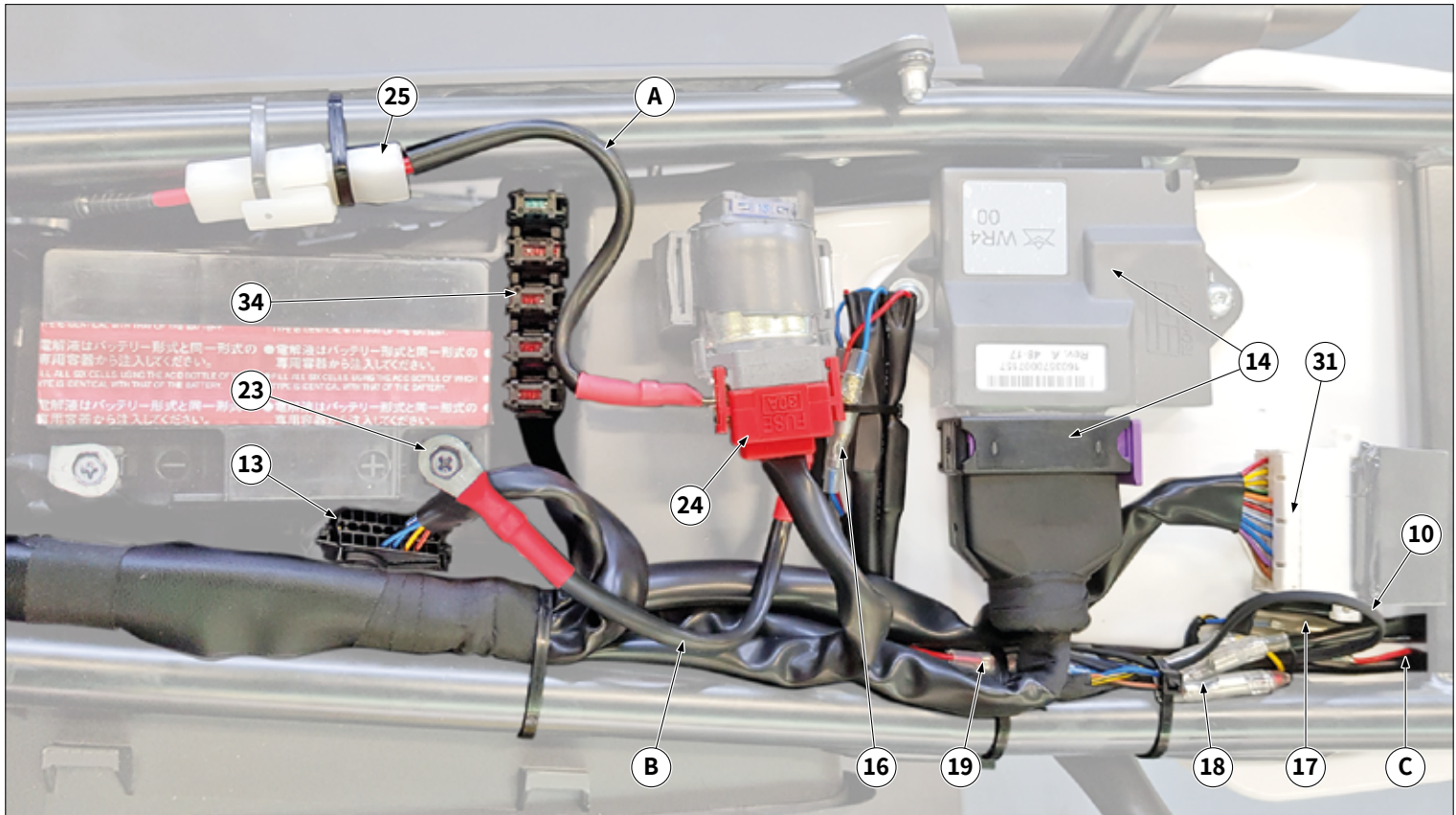
Ref.	Item	Remarks
22	Battery negative terminal	
29	ABS module	
30	ABS mode selection connector	
A	Wiring path area from the central part to the under-seat compartment	
B	Main wiring branching for the devices in the under-seat compartment and the tail lights	

The main wiring at the ABS module “29” runs from the central part to the under-seat compartment: in this point under the module support bracket there are the rear branches and the engine/frame ground shunt coming from the negative terminal of the battery “22”.

The main wiring continues with the branch “B” always fixed on the left side of the rear frame and the tail.



Main wiring path: rear side, under-seat compartment, ignition module and tail lights.



Ref.	Item	Remarks
10	Air temperature sensor	
13	OBD diagnosis connector	
14	Ignition module	
16	Right rear turn signal	
17	Tail light	
18	License plate light	
19	Left rear turn signal	
23	Battery positive terminal	
24	Starter remote control switch	
25	Starter motor	
31	Relay and diodes box	
34	Fuse box	
A	POWER CABLE FROM REMOTE CONTROL SWITCH TO STARTER MOTOR	
B	POWER CABLE FROM BATTERY TO STARTER REMOTE CONTROL SWITCH	
C	Path area of the tail light devices wiring harnesses	

The main wiring must always be fixed on the left side of the frame in the under-seat compartment.

The shunt of the OBD diagnosis socket “13” with closed plug and the fuse box “34” must be positioned in the remaining empty space of the battery compartment.

Fasten the connector “25” to the right side of the frame, in order to avoid contact with the battery terminals.

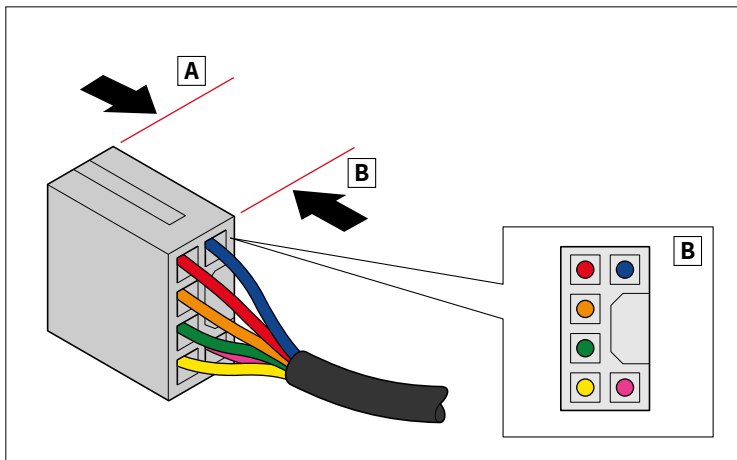
**10.3 DEVICES AND CONNECTORS**

This section concerns the devices and connectors present in the electrical system.

For each component and connector there is:

- an image that determines the location of the connector on the vehicle;
- a graphical representation of the connector;
- the specific numbering of the pins;
- the functional description of each pin (pinout table).

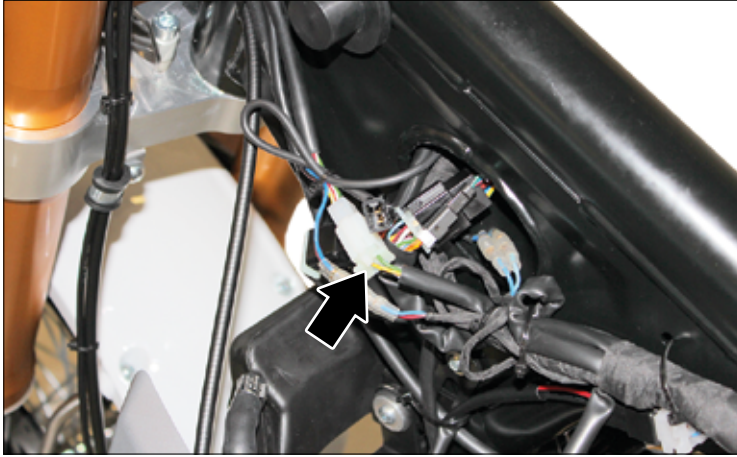
**i** An electrical device may have one or more connectors.



- A. Connection side or front side view.
- B. Side of cable insertion or rear side view.

**!** All the graphic representations of the connectors have been illustrated with the arrangement of the pins observing the connector on the cable "B" insertion side or on the back side.

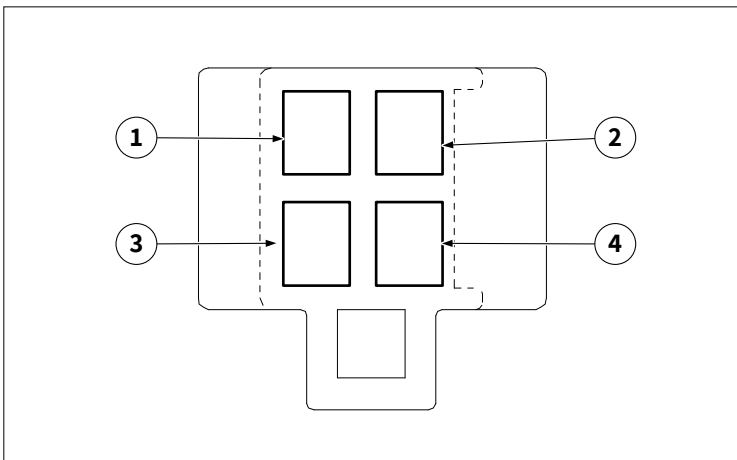




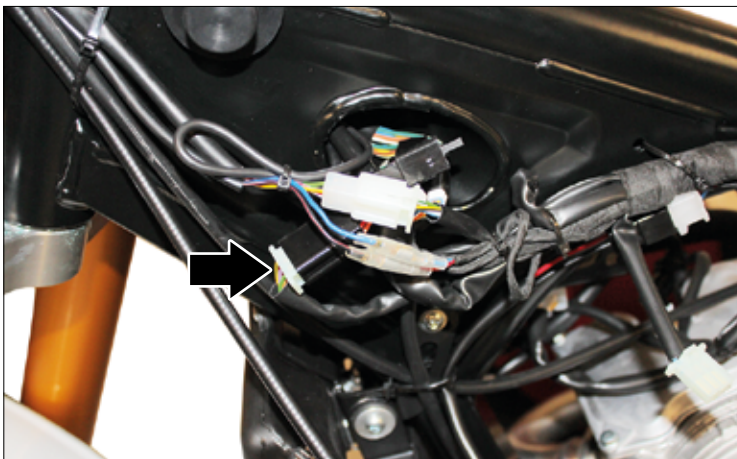
**10.3.1 Key switch**

The key switch connector is located under the fuel tank on the left side of the frame.

To access remove the tank, refer to “12.8.2 Complete tank removal” on page 123.



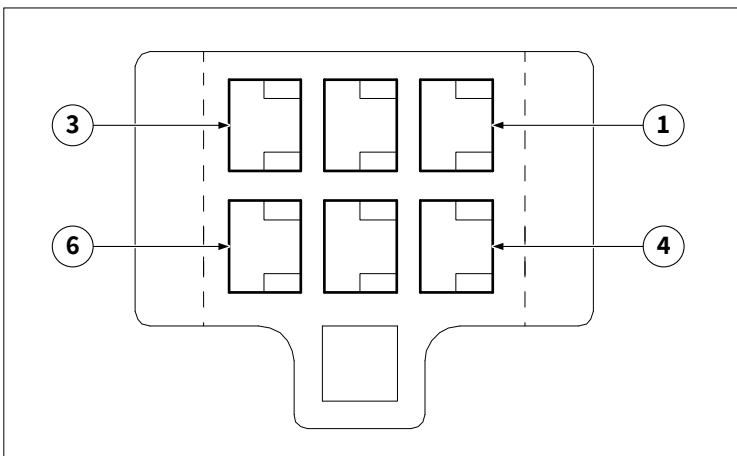
Pin	Colour	Function
1	Gr-Az	Power supply from main fuse
2	-	-
3	V	Consent output signal (+) key
4	G-N	Positioning/parking lights control signal



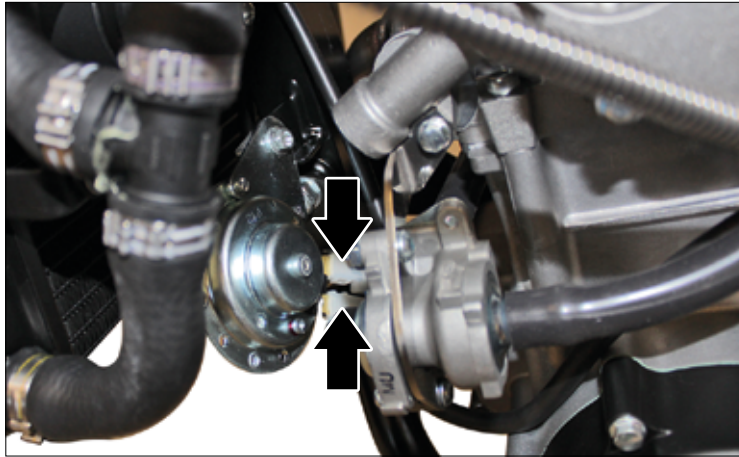
**10.3.2 Right light stalk**

The right light stalk connector is located under the fuel tank on the left side of the frame.

To access remove the tank, refer to “12.8.2 Complete tank removal” on page 123.

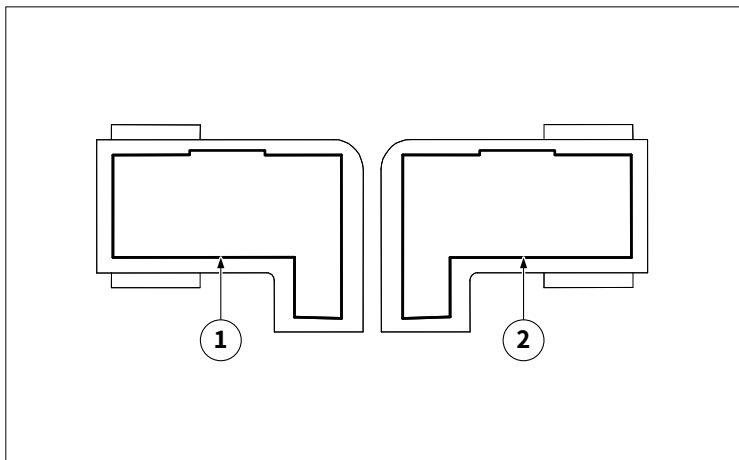


Pin	Colour	Function
1	V	Consent signal (+) from the key
2	Vi	RUN/OFF switch output signal
3	G-N	Input signal (+) front brake button
4	M-N	Output signal (-) front brake button
5	-	-
6	R	Consent signal from engine start button

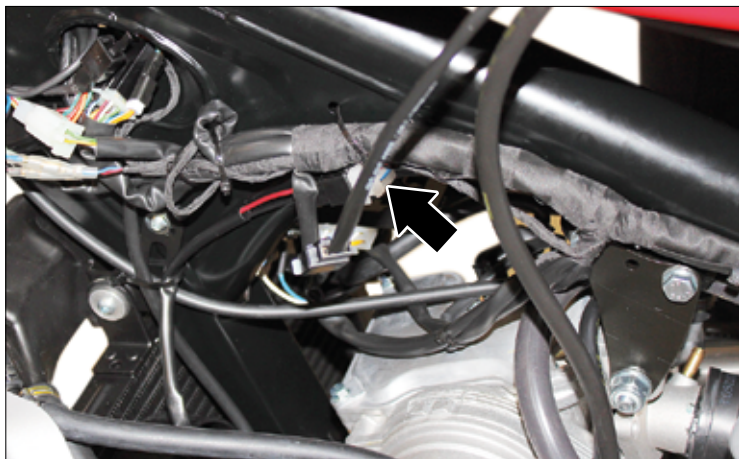


**10.3.3 Horn**

The horn and its two connectors are directly accessible: the device is positioned between the lower part of the radiator and the front part of the engine.



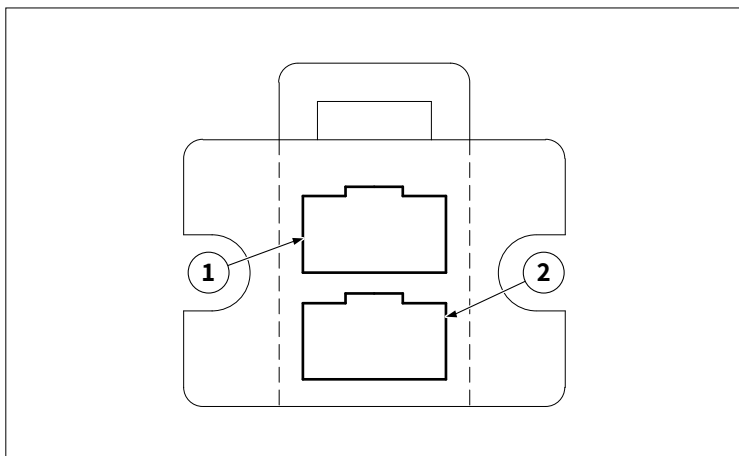
Pin	Colour	Function
1	Gr	Horn drive control
2	B	Ground



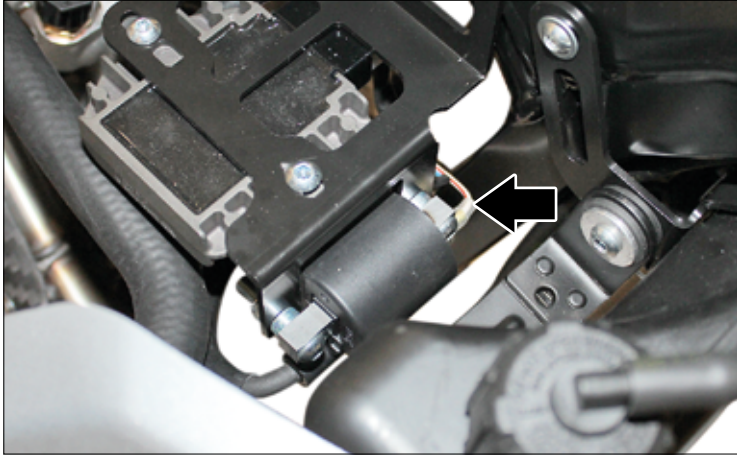
**10.3.4 Radiator fan**

The radiator fan connector is located under the fuel tank on the left side of the frame.

To access remove the tank, refer to “12.8.2 Complete tank removal” on page 123.



Pin	Colour	Function
1	B	Ground
2	R-N	Engine cooling fan control signal

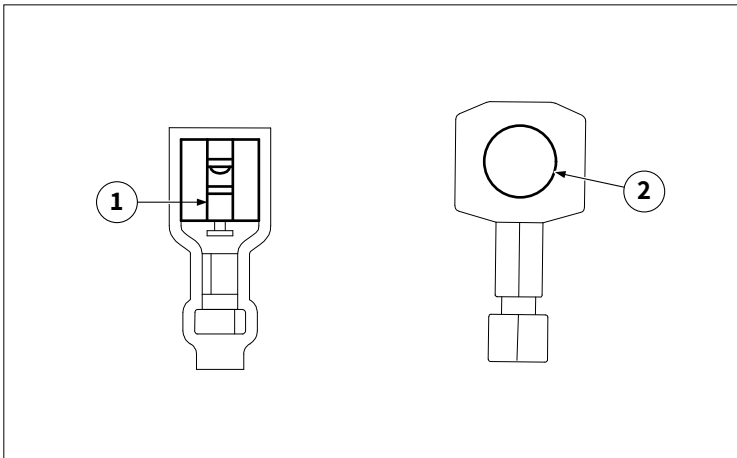


**10.3.5 Ignition coil**

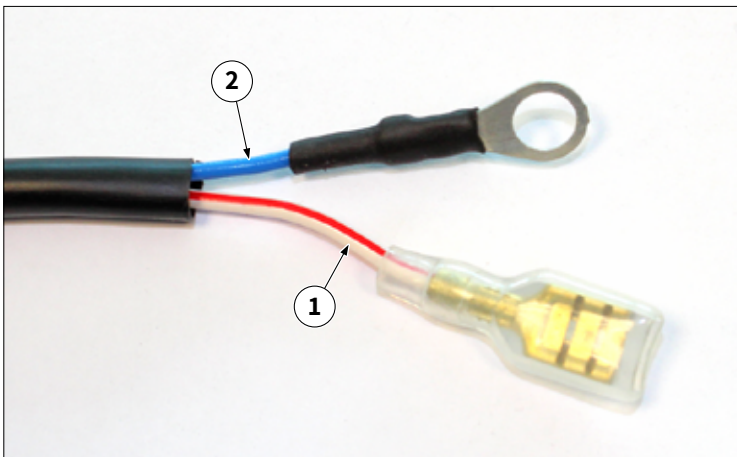
**i** The ignition coil has the task of raising the input voltage from the current generator and bringing the voltage to a level that can generate the spark in the spark plug.

This vehicle is equipped with a coil positioned near the radiator, mounted at the front of a support bracket.

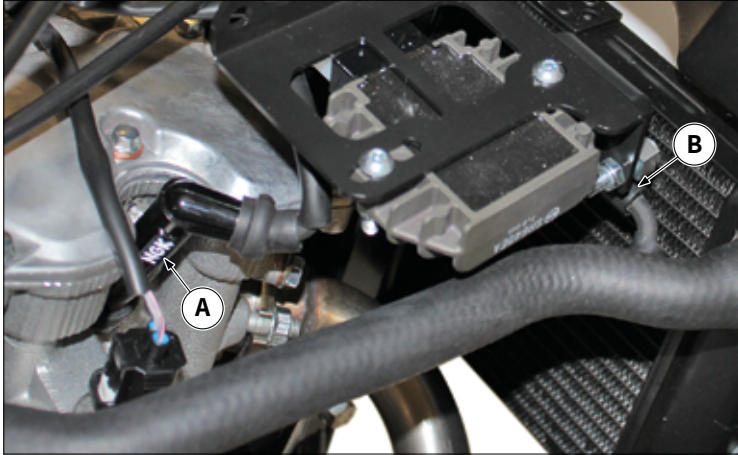
**!** This coil is equipped with wiring and power supply cap to the non-separable spark plug.



Pin	Colour	Function
1	Bi-R	Coil control signal
2	N	Spark plug power supply

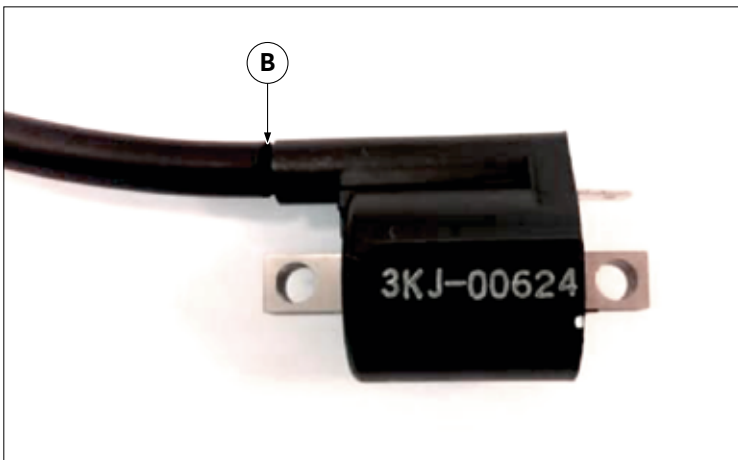


The device and the two connectors are directly accessible.

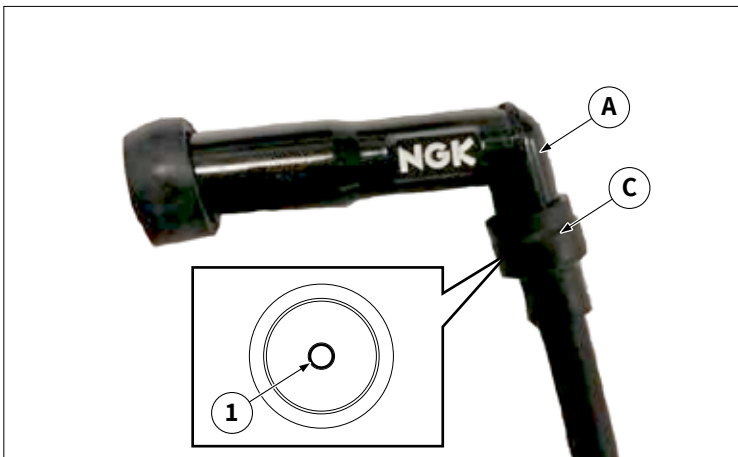


**10.3.6 Spark plug**

The spark plug connector or cap "A" is accessible directly from the right side of the vehicle under the tank.



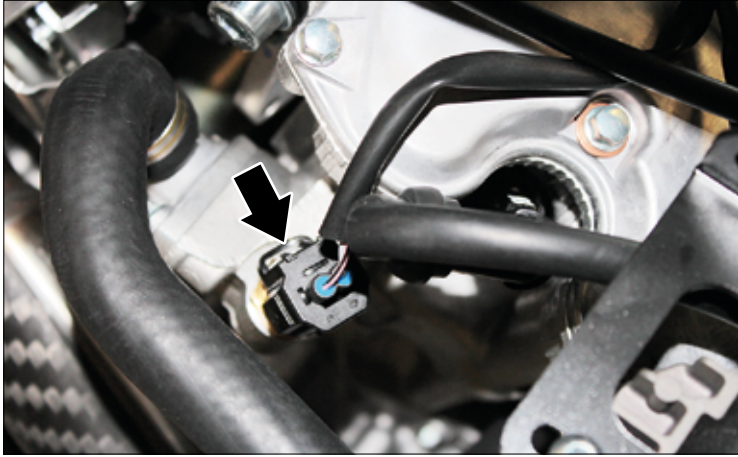
**⚠** The spark plug cable "B" can not be separated from the ignition coil.



To carry out tests on the spark plug wire, slightly pull out the gasket "C" and remove the cap "A" from the cable, unscrewing it counter-clockwise.

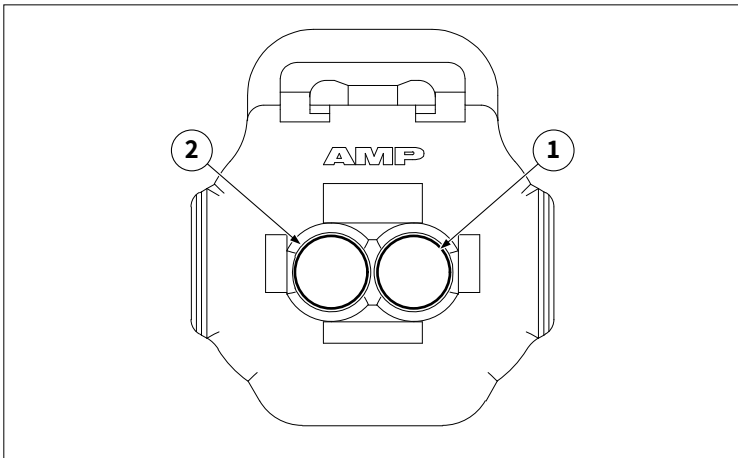
Pin	Colour	Function
1	N	Spark plug power supply from coil



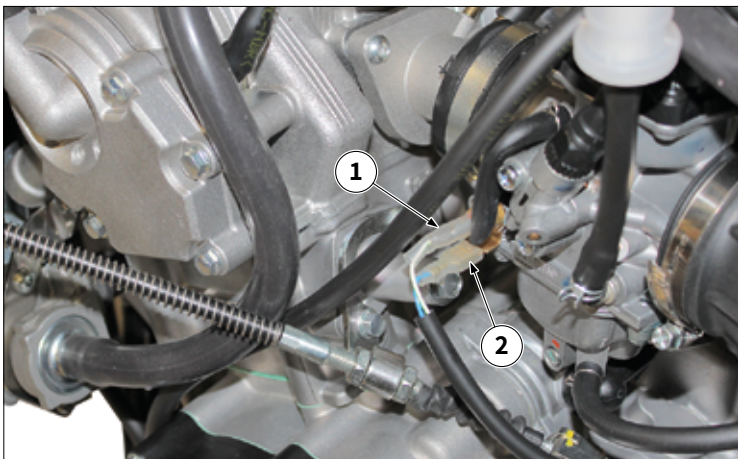


**10.3.7 Water temperature sensor**

The water temperature sensor connector is accessible directly on the right side of the vehicle near the spark plug and the thermostat.

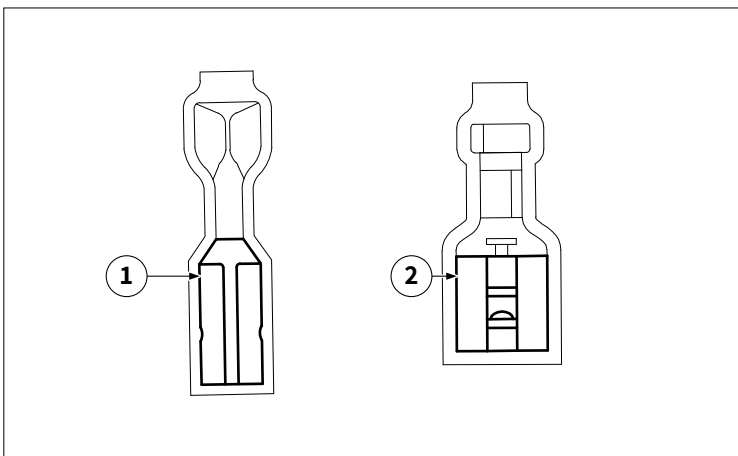


Pin	Colour	Function
1	Gr	Sensor ground
2	Ro-N	Engine temperature output signal

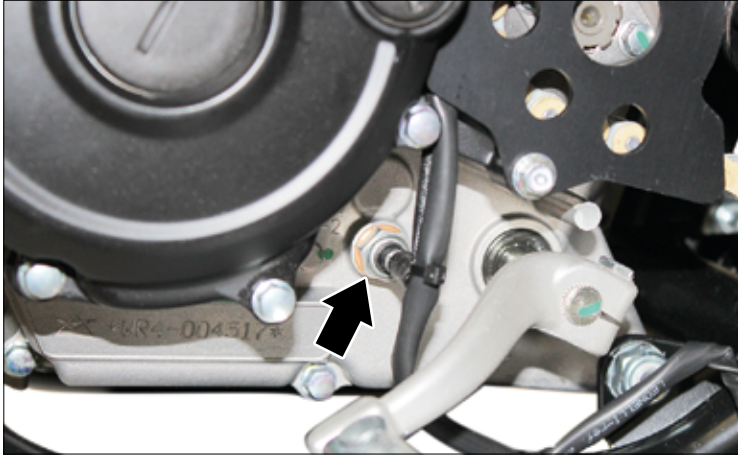


**10.3.8 Fuel heater**

The fuel heater connectors “1” and “2” can be accessed directly from the left side of the vehicle at the carburettor base.

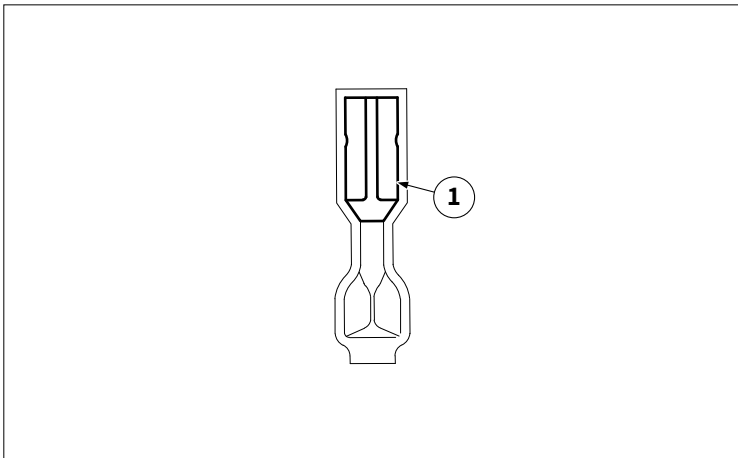


Pin	Colour	Function
1	Bi-V	Fuel heater control signal
2	B	Ground

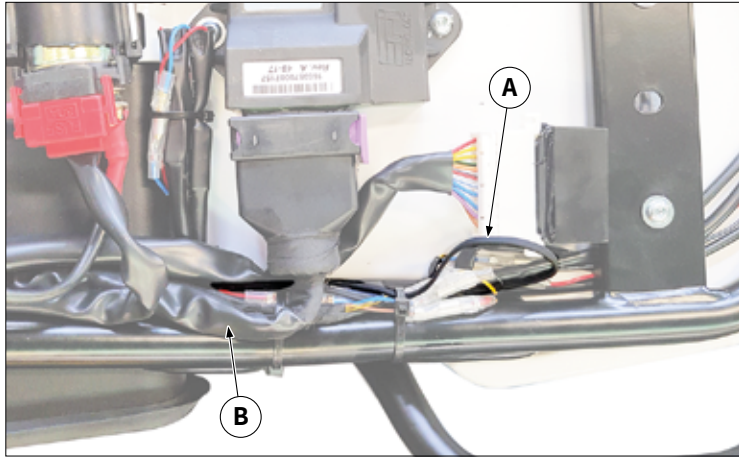


**10.3.9 Neutral gear switch**

The neutral gear switch connector is directly accessible and positioned at the gear lever on the left side of the vehicle.



Pin	Colour	Function
1	Ar-N	Neutral gear switch signal



**10.3.10 Air temperature sensor**

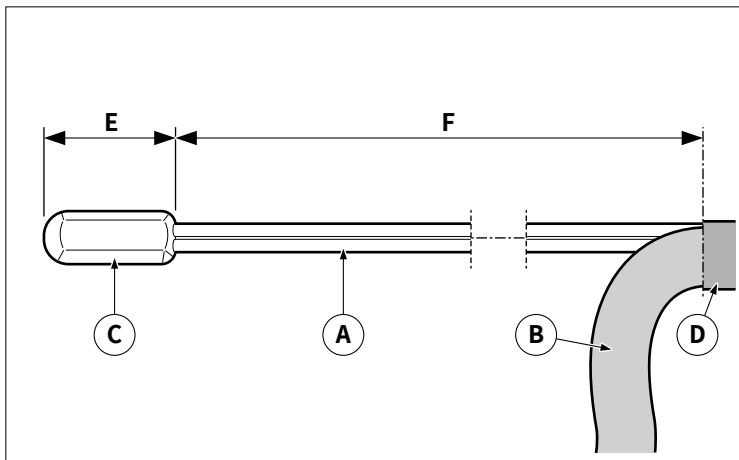
The air temperature sensor is a device that does not have an interface connector to the system, but its wires are welded and taped directly to the vehicle wiring.

**⚠ Do not cut, remove the sheath or crush the black cable of the air temperature sensor: it is not possible to replace the cable or the sensor without replacing all the wiring.**

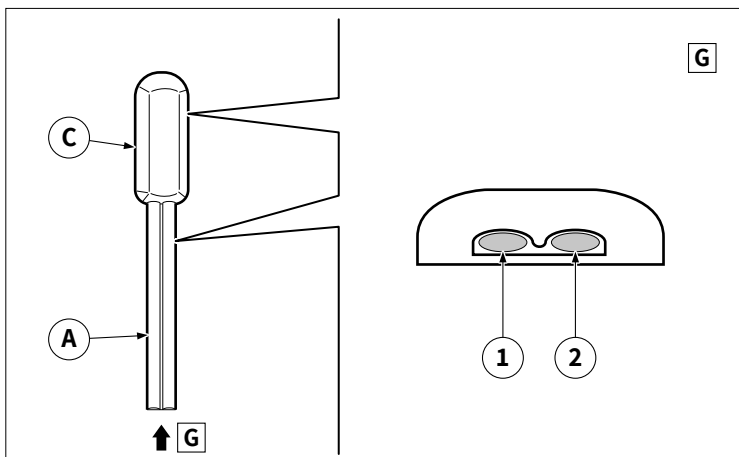
**⚠ The sensor wire “A” is located under the seat (refer to “12.1 Seat removal” on page 117) and it must be clamped near the left side of the rear tail, so that the wire does not remain in tension and that the sensor does not stay in direct contact with the frame.**

**⚠ It is not possible to carry out diagnostic checks on the wiring harness “A”, without damaging the wiring harness or the cable.**

The wire “A” comes out of the branch “B” and the protective sheath “D” for a length of about 340 mm (length “F”), while the length “E” of the sensor is about 15 mm (length “E”).

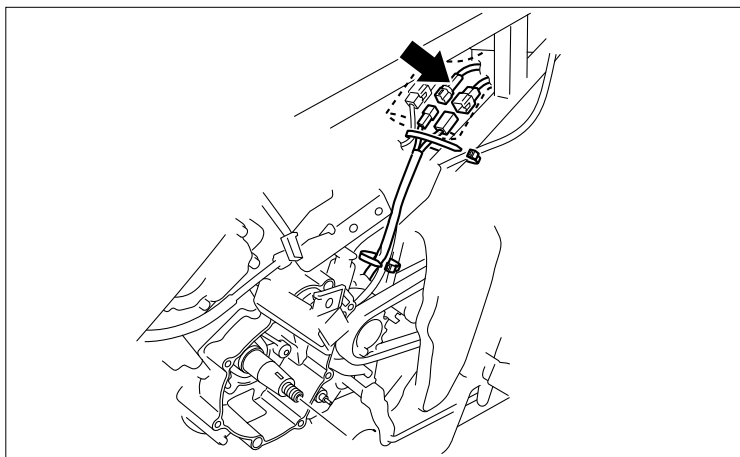


The wire “A” of the sensor “C” is a double sheathed cable, with a flattened shape with a smooth face and one that shows the individual wires (view “G”).



Pin	Colour	Function
1	Gr	Sensor ground
2	N	Air temperature output signal

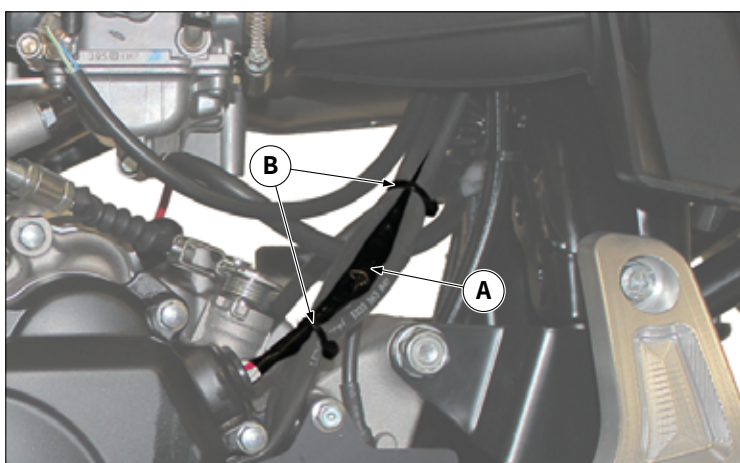
**i The colours shown above may not match the component installed on the vehicle.**



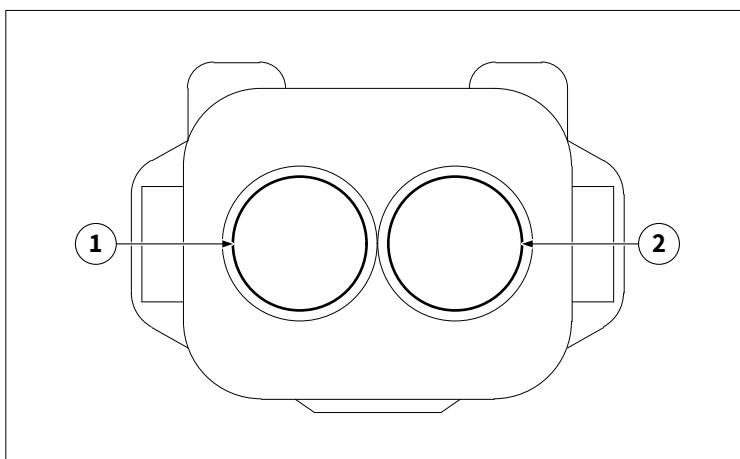
**10.3.11 Pick-Up**

The pick-up connector is accessible removing:

- Left lateral side panel: refer to “12.5.1 Left side panel removal” on page 121;
- Air filter: refer to “12.6 Air filter removal” on page 122;
- Air conveyor tube to the carburettor.

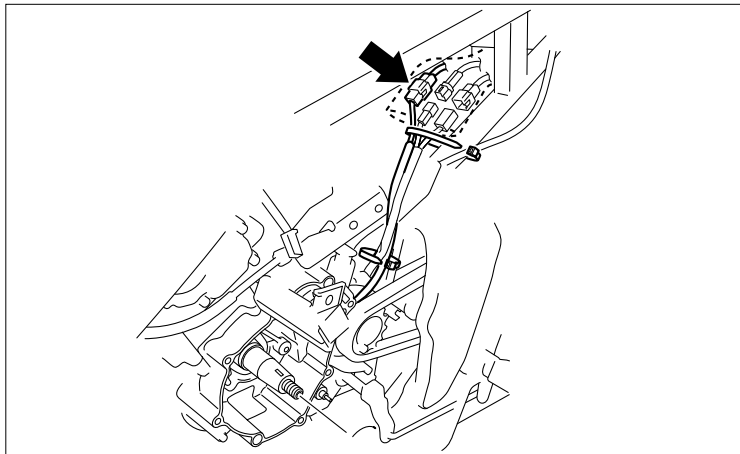


**!** If the wiring with the pick-up connector is difficult to reconnect, act on the wiring coming from the stator “A” removing and reinstalling the clamps “B”.



Pin	Colour	Function
1	Gr	Sensor ground
2	R	Signal Pick Up



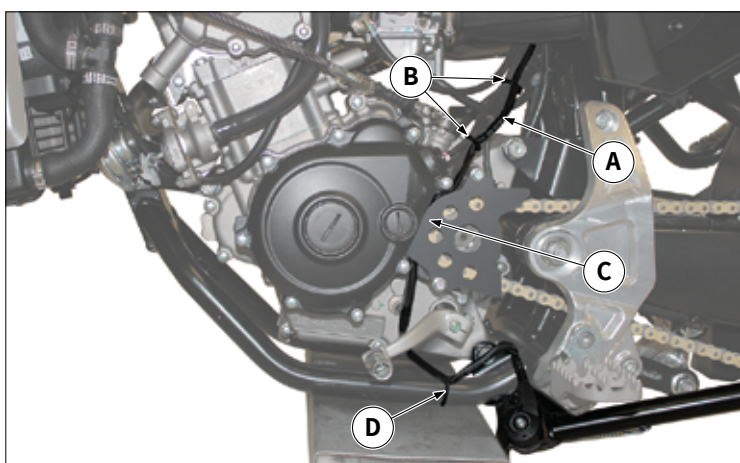


**10.3.12 Side kickstand switch**

The side kickstand device is equipped with a long interconnection wiring to the vehicle.

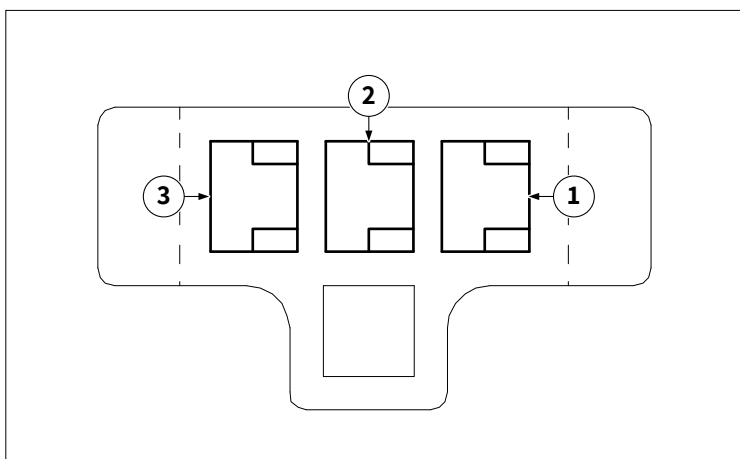
The side kickstand connector is accessible removing:

- Left lateral side panel: refer to “12.5.1 Left side panel removal” on page 121;
- Air filter: refer to “12.6 Air filter removal” on page 122;
- Air conveyor tube to the carburettor.

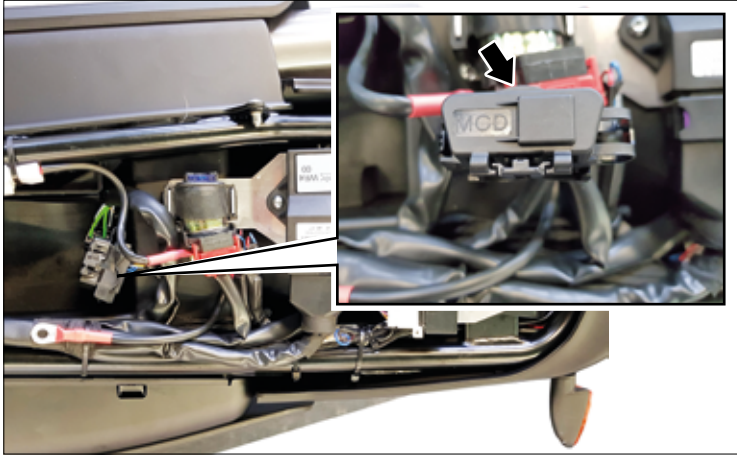


**⚠ If the kickstand switch connector is difficult to reconnect, operate on the wiring “A” removing and reinstalling the clamps “B” and the clamp “D”.**

**⚠ The kickstand wiring harness runs on a particular path, covered by the protection bracket “C” of the front chain wheel.**



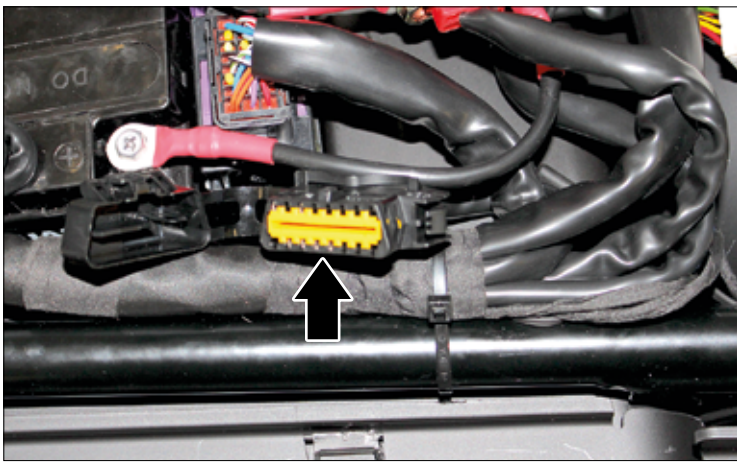
Pin	Colour	Function
1	M-G	Side kickstand position signal
2	-	-
3	B	Ground



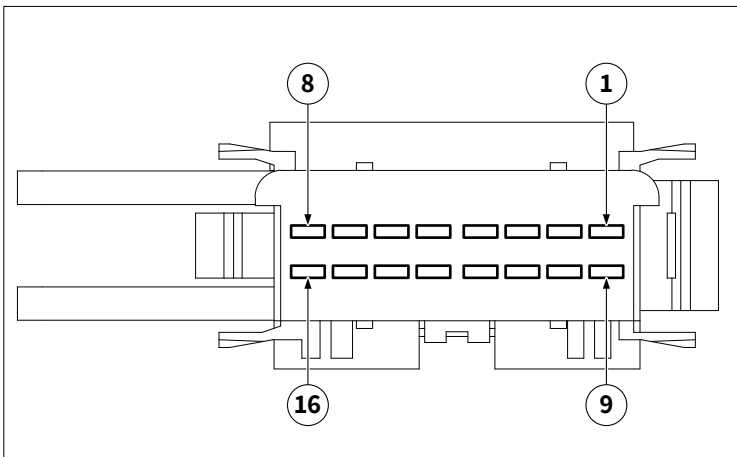
**10.3.13 OBD diagnosis connector**

**i** The On-Board Diagnostic (OBD) connector is the communication port used to connect the testers intended for self-diagnosis.

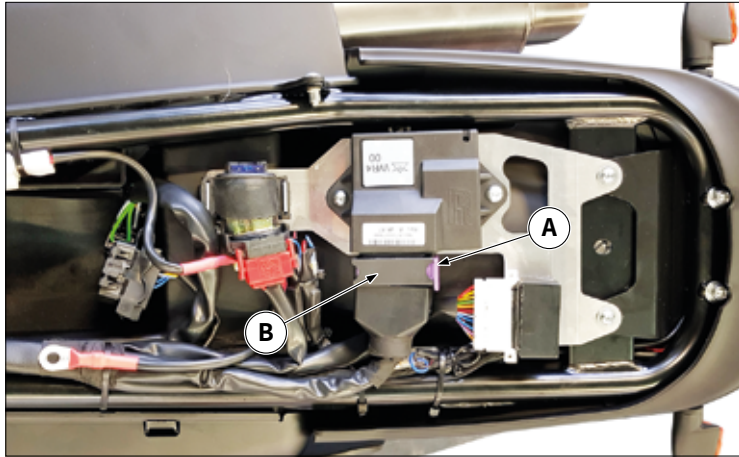
The OBD diagnosis connector is located under the seat. To access remove the seat; refer to “12.1 Seat removal” on page 117.



To connect the diagnostic tester, open the protective cover of the diagnostic socket and connect the device.



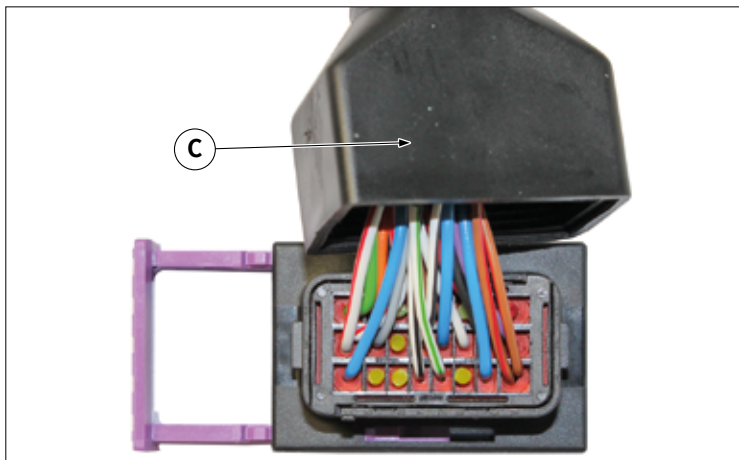
Pin	Colour	Function
1	-	-
2	-	-
3	-	-
4	B	Ground
5	B	Ground
6	G	CAN line H
7	M-R	Diagnosis line K
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	Bi-B	CAN line L
15	-	-
16	Gr-B	Diagnostic socket power supply (Vbatt)



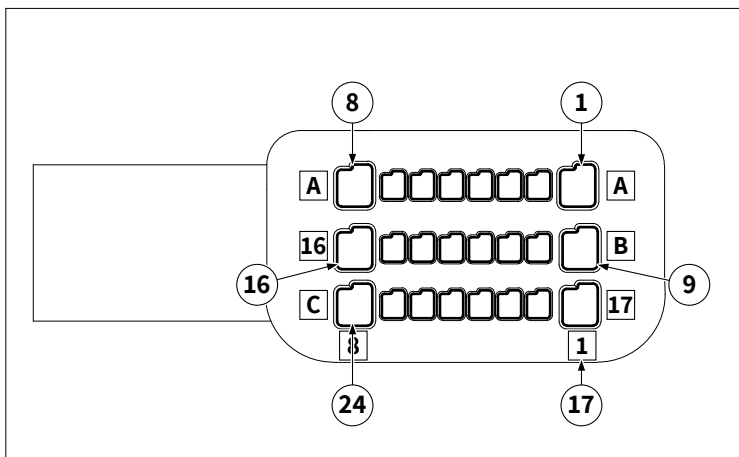
**10.3.14 Ignition module**

The ignition module is located under the seat: refer to the procedure "12.1 Seat removal" on page 117 and the procedure "10.6 Ignition module" on page 78.

To check the wires of the module, it is advisable to disconnect the module connector opening the violet tab "A" laterally and then pulling out the connector "B".

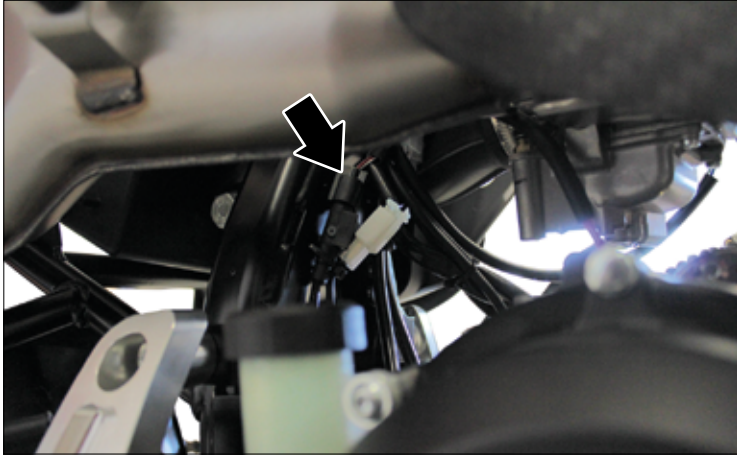


Remove the protective cap "C", in order to carry out instrumental tests on this connector.



Pin <sup>[1]</sup>	Pin <sup>[2]</sup>	Colour	Function
1	A1	B	Power grounding
2	A2	-	-
3	A3	-	-
4	A4	Bi-N	Engine attention signal (MIL warning light)
5	A5	Bi-V	Fuel heater control signal
6	A6	-	-
7	A7	B	Power grounding
8	A8	M-R	Diagnosis line K
9	B1	Bi-R	Coil control signal
10	B2	Gr	Sensors ground
11	B3	-	-
12	B4	Bi-N	Engine attention signal (MIL warning light)
13	B5	B	Power grounding
14	B6	Bi	Vehicle safety relay control signal (Kill)
15	B7	N	Air temperature input signal
16	B8	Vi	Speed sensor input signal
	C1	V	Segnale di consenso (+) da chiave
17	C1	V	Consent signal (+) from the key
18	C2	Ar	Engine cooling fan relay control signal
19	C3	-	-
20	C4	-	-
21	C5	M	Vehicle speed output signal
22	C6	-	-
23	C7	Ro-N	Engine temperature input signal
24	C8	R	Signal Pick Up

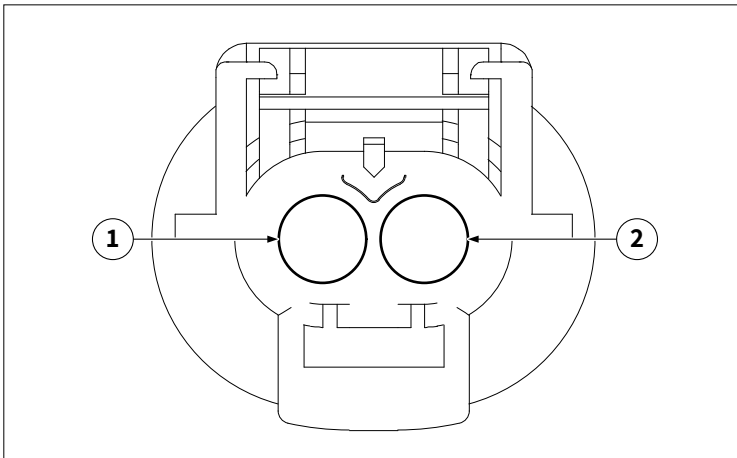
**i** The ignition module has two reading and pin sorting modes, one sequential [1] and one in the form of coordinates [2].



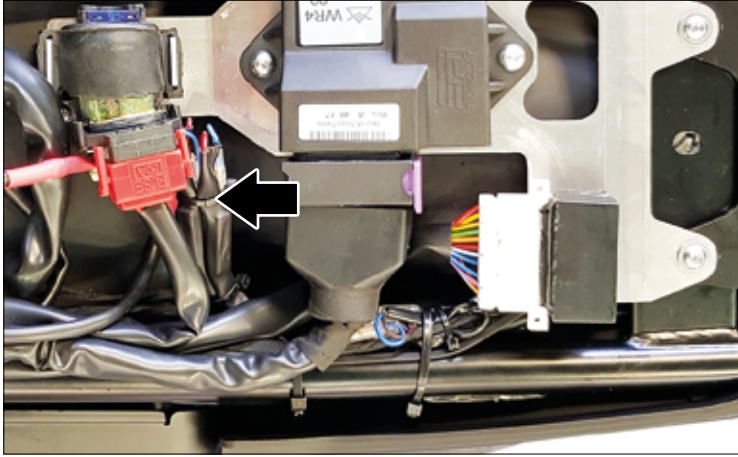
**10.3.15 Rear ABS sensor**

The rear ABS sensor connector is located in the central part of the vehicle, just above the engine block and is directly accessible.

**i** To perform instrumental tests it may be necessary to cut one or two clamps to release the connector from the frame.

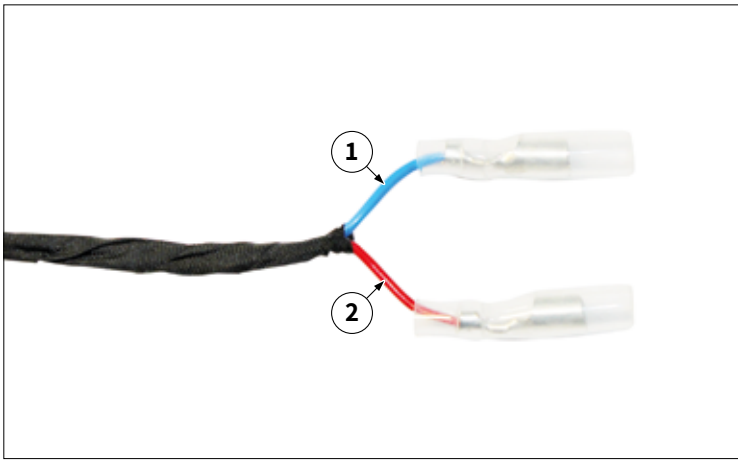


Pin	Colour	Function
1	R-N	Reference signal (-) rear ABS sensor
2	Bi-R	Signal (+) rear ABS sensor



**10.3.16 Right rear turn signal**

The right rear turn signal connectors are located under the seat. To access refer to “12.1 Seat removal” on page 117.

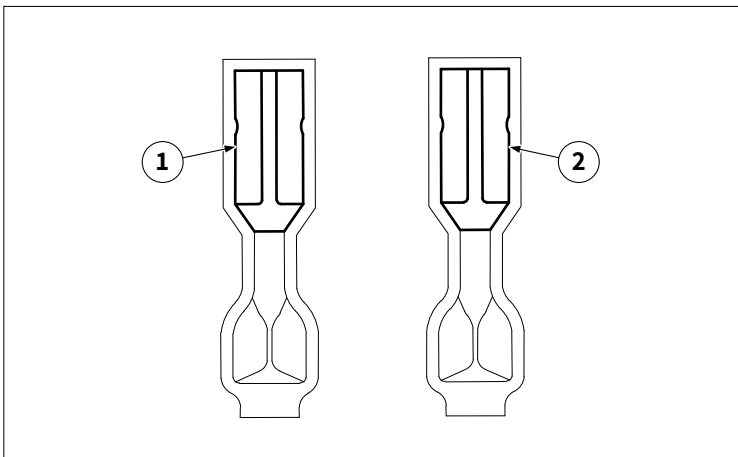


The connectors on the vehicle wiring side are identified as shown in the figure.

The right rear turn signal connectors are Blue and Black-Red.

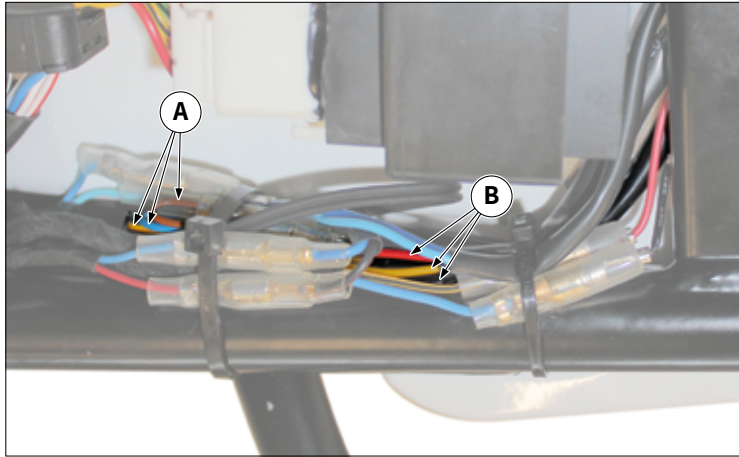
The coupling is as follows:

1. Blue (system side) to be connected to Blue one (Device side);
2. Red-Black (system side) to be connected to Black-Red one (device side).



Pin	Colour	Function
1	B	Ground
2	R-N	Right rear turn signal control signal



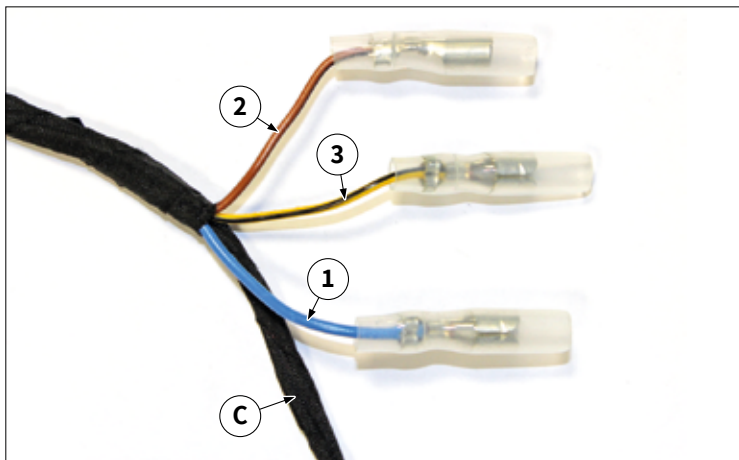


**10.3.17 Tail light**

The tail light connections are positioned under the seat.

To access, refer to “12.1 Seat removal” on page 117.

The connectors are three and the figure shows the connectors on the side of the system “A” and the connectors of the device “B”.

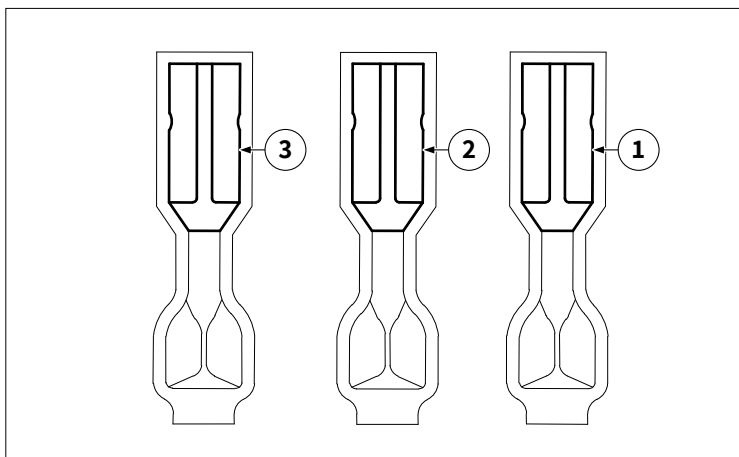


The connectors on the vehicle wiring side are identified as shown in the figure: the wiring branch continues towards the license plate light connectors “C”.

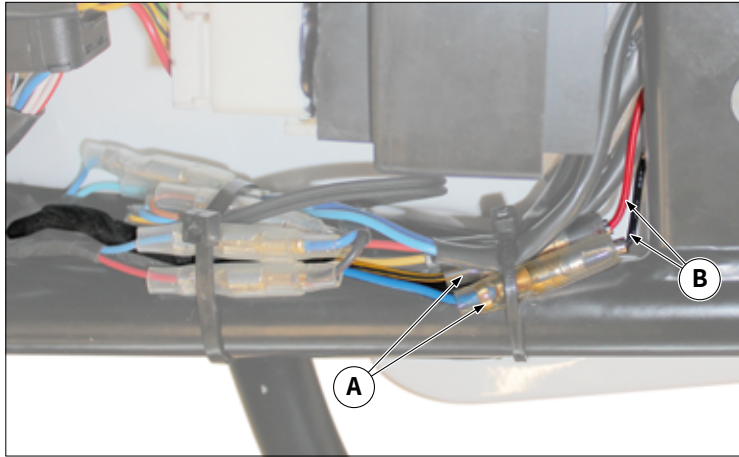
The tail light connectors are Black, Red and Yellow-Black.

The coupling is as follows:

1. Blue (system side) to be connected to Nero (Device side);
2. Brown-Black (system side) to be connected to the Red one (device side);
3. Yellow-Black (system side) to be connected to Yellow-Black one (device side).



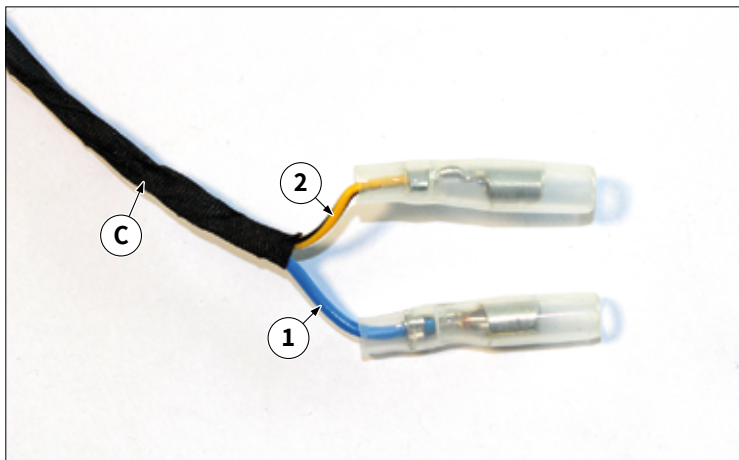
Pin	Colour	Function
1	B	Ground
2	M-N	Reference signal (-) tail light (rear brake light)
3	G-N	Input signal (+) tail light (position light)



**10.3.18 License plate light**

The license plate light connectors are located under the seat. To access refer to “12.1 Seat removal” on page 117.

The connectors are two and the figure shows the connectors on the system side “A” and the connectors of the device “B”.

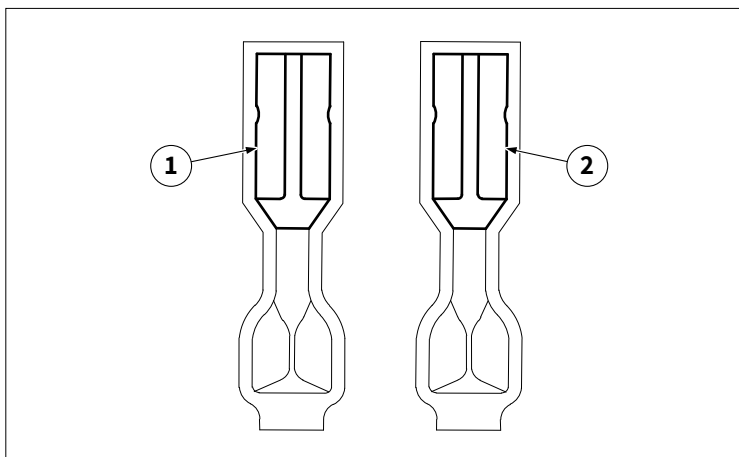


The connectors on the vehicle wiring side are identified as shown in the figure: the wiring branch “C” is previously taped together with the tail light connectors.

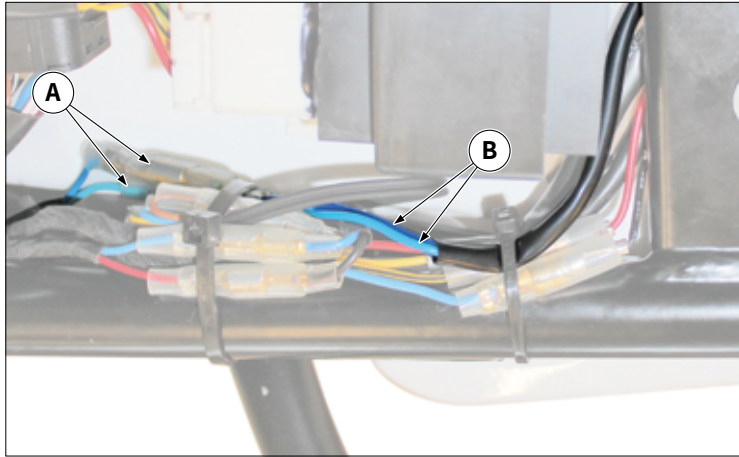
The license plate light connectors are Red and Black.

The coupling is as follows:

1. Blue (system side) to be connected to Nero (Device side);
2. Yellow-Black (system side) to be connected to Red (device side).

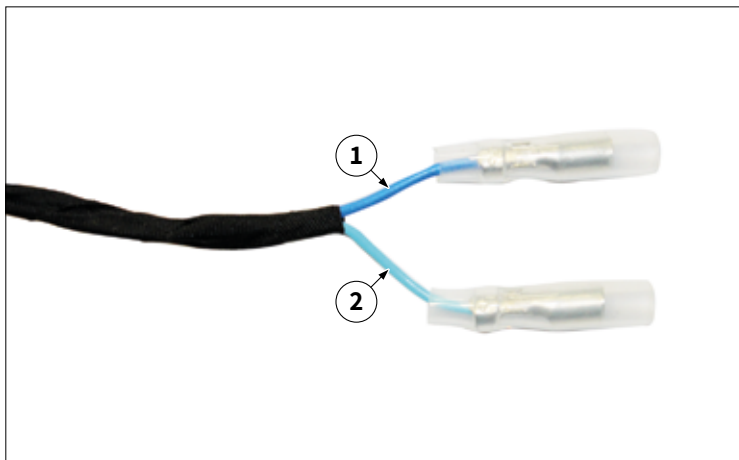


Pin	Colour	Function
1	B	Ground
2	G-N	Input signal (+) license plate light



**10.3.19 Left rear turn signal**

The left rear turn signal connectors are located under the seat. To access refer to “12.1 Seat removal” on page 117.

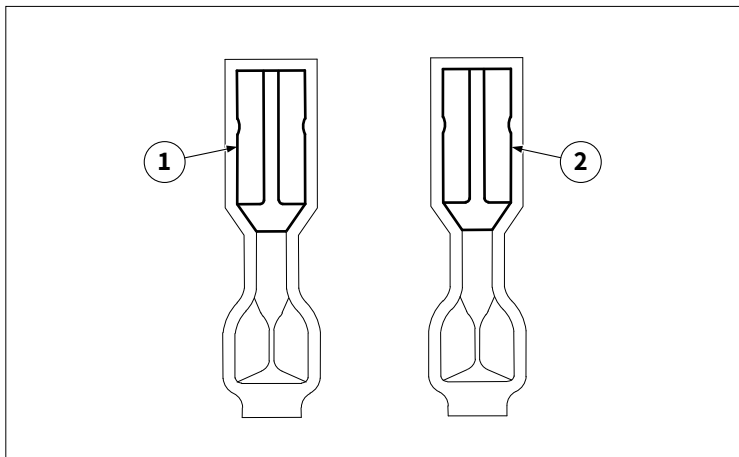


The connectors on the vehicle wiring side are identified as shown in the figure.

The left rear turn signal connectors are Blue and Sky Blue.

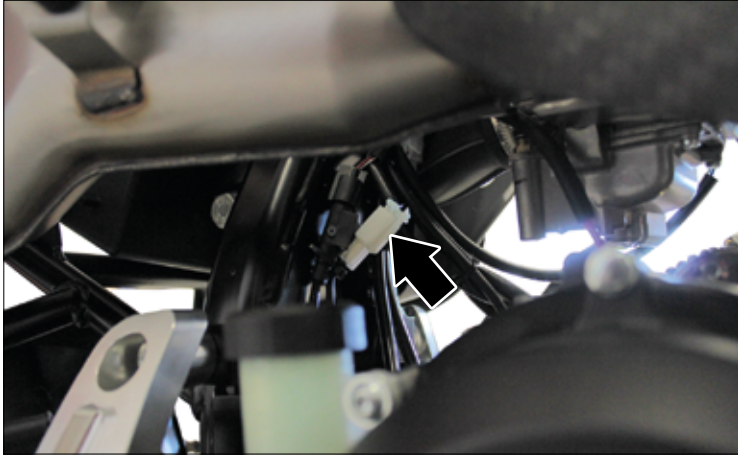
The coupling is as follows:

1. Blue (system side) to be connected to Blue one (Device side);
2. Red-Black (system side) to be connected to the Sky Blue one (device side).



Pin	Colour	Function
1	B	Ground
2	Az	Left rear turn signal control signal

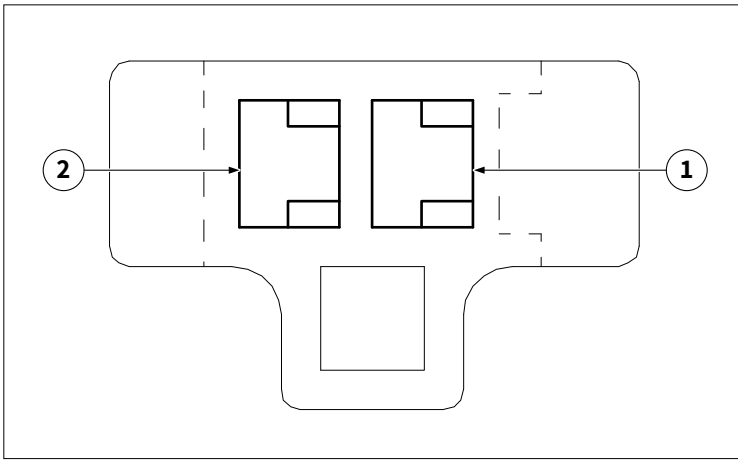




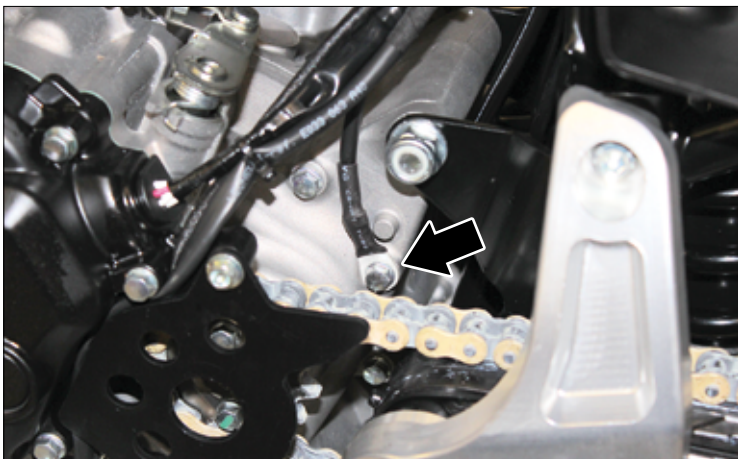
**10.3.20 Rear brake light switch**

The rear brake light sensor connector is located in the central part of the vehicle, just above the engine block and is directly accessible.

**i** To perform instrumental tests it may be necessary to cut one or two clamps to release the connector from the frame.



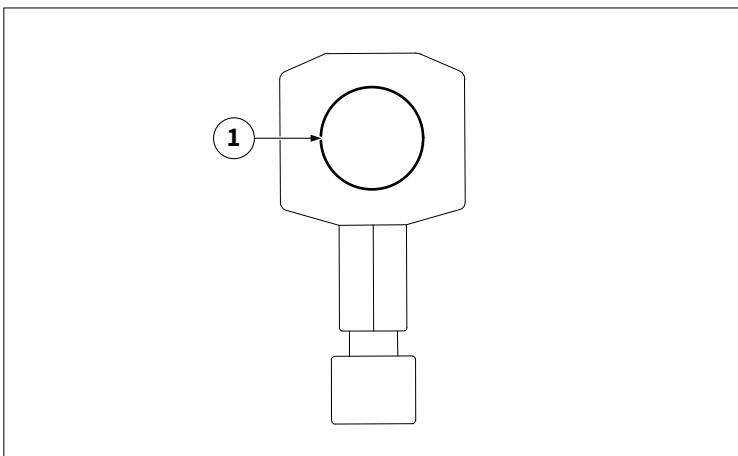
Pin	Colour	Function
1	G-N	Input signal (+) rear brake button
2	M-N	Output signal (-) rear brake button



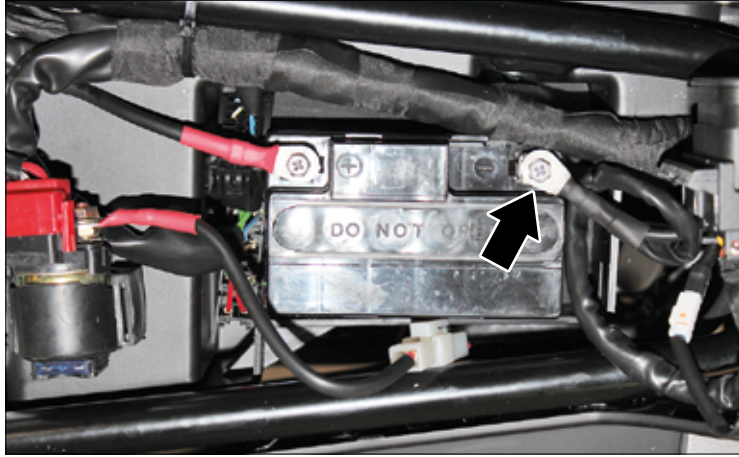
**10.3.21 Engine ground point**

The engine ground point is located on the left side of the vehicle and is directly accessible.

**i** The engine ground point is also used as a frame ground point.



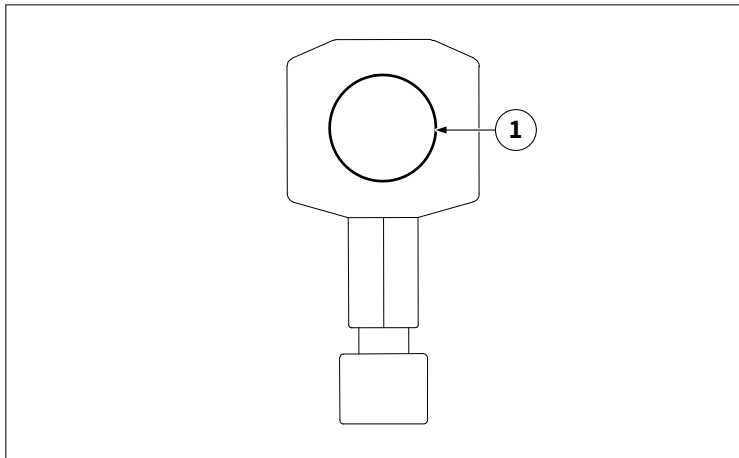
Pin	Colour	Function
1	N	Engine ground point



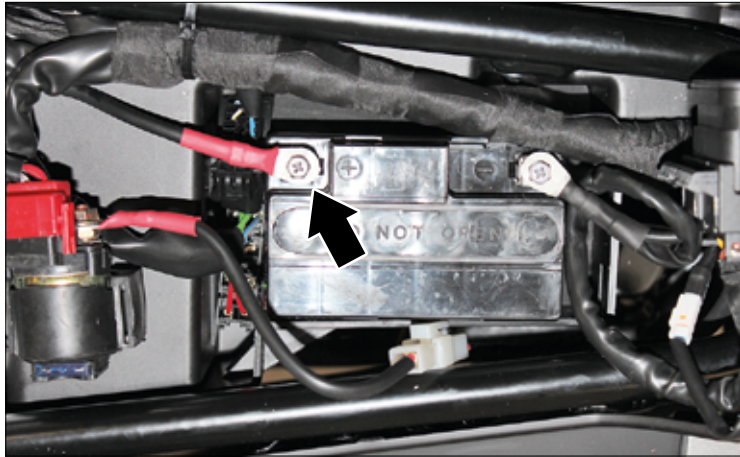
**10.3.22 Battery negative terminal**

The battery negative terminal and the battery are located under the seat. Refer to “12.1 Seat removal” on page 117.

**i** The negative battery terminal is also used as a reference for the frame ground point.

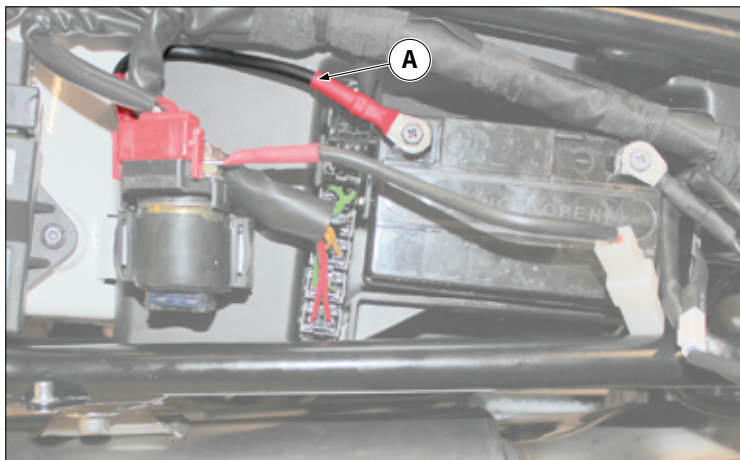


Pin	Colour	Function
1	N	Engine ground point

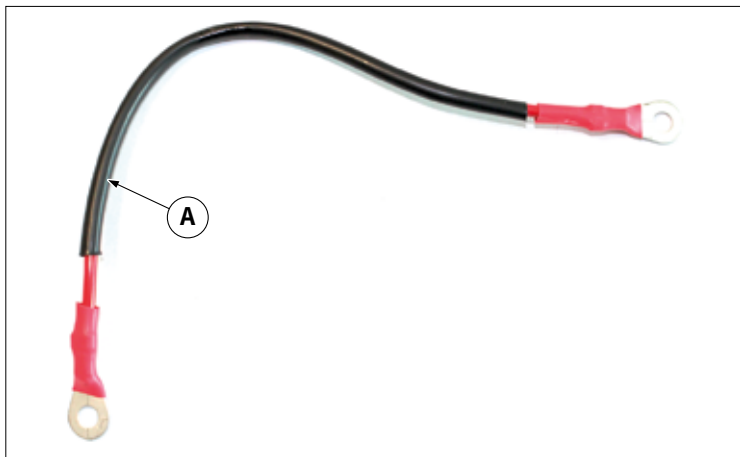


**10.3.23 Battery positive terminal**

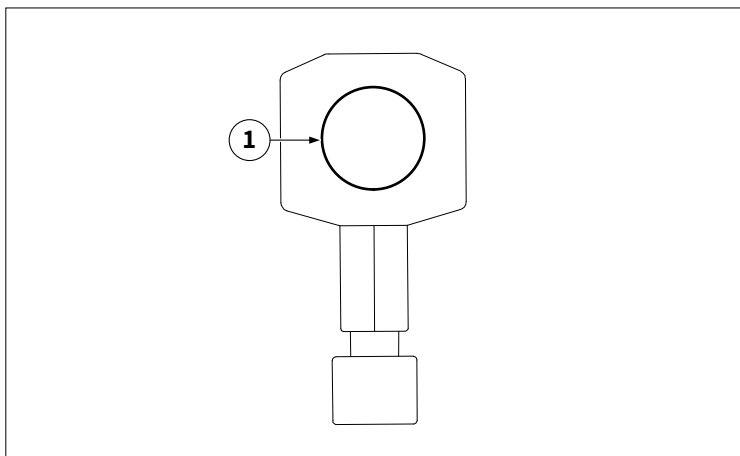
The battery positive terminal and the battery are located under the seat. Refer to “12.1 Seat removal” on page 117.



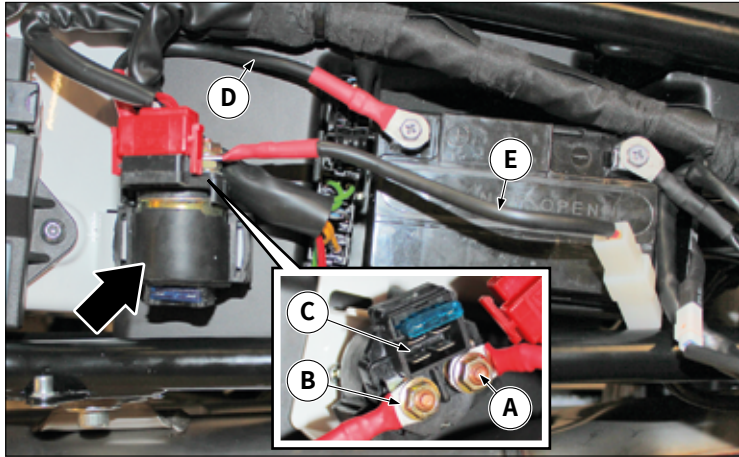
The battery positive terminal is not a connection of the main wiring. The battery positive terminal is connected to the engine starter remote control switch by means of a dedicated wiring harness “A”.



**i** The connecting wiring harness “A” is a power wiring harness to bring the charge to the starter remote switch to turn the vehicle on.



Pin	Colour	Function
1	R	Battery positive terminal

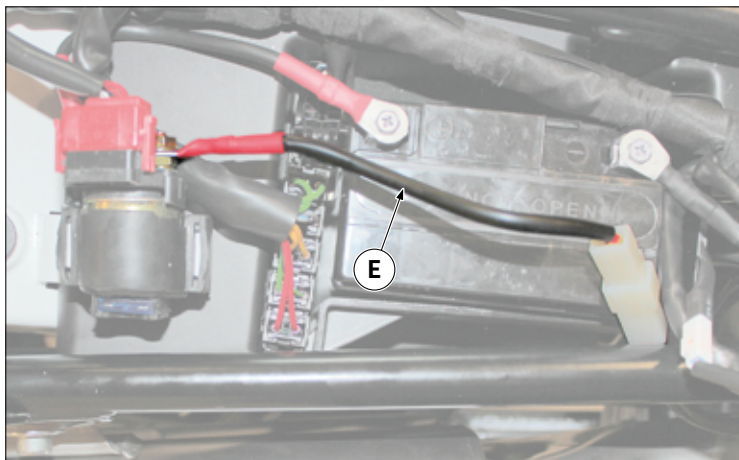


**10.3.24 Starter remote control switch**

The starter remote control switch is located under the seat. Refer to “12.1 Seat removal” on page 117.

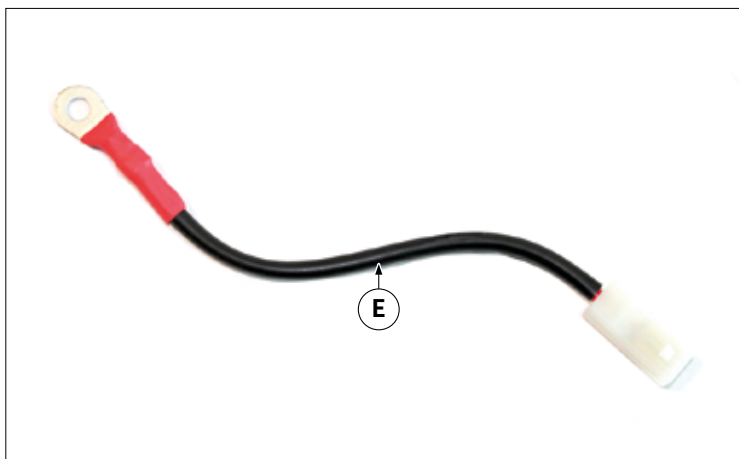
The remote control switch is equipped with three connections:

- A. Connection with nut to the charge wiring harness from the battery;
- B. Connection with nut to the charge wiring harness to the engine starter motor;
- C. Interface connector to the vehicle system.

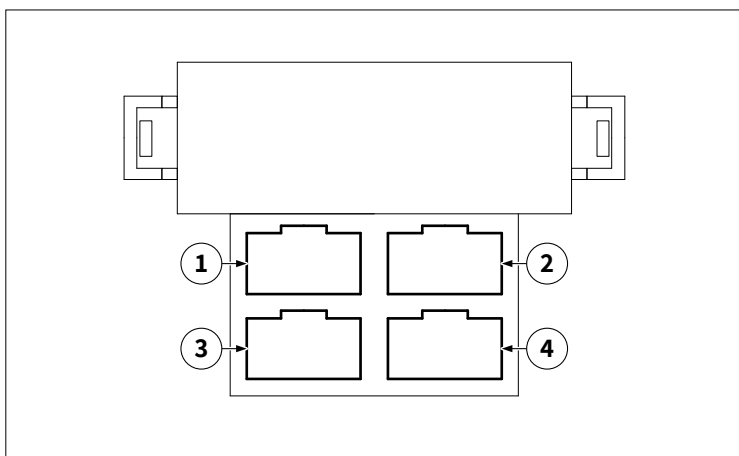


The connector “A” of the starter remote control switch receives the power load from the battery, using a wiring harness “D”.

The starter remote control switch connector “B” supplies the power load to the engine starter motor by means of a specific wiring harness “E”.

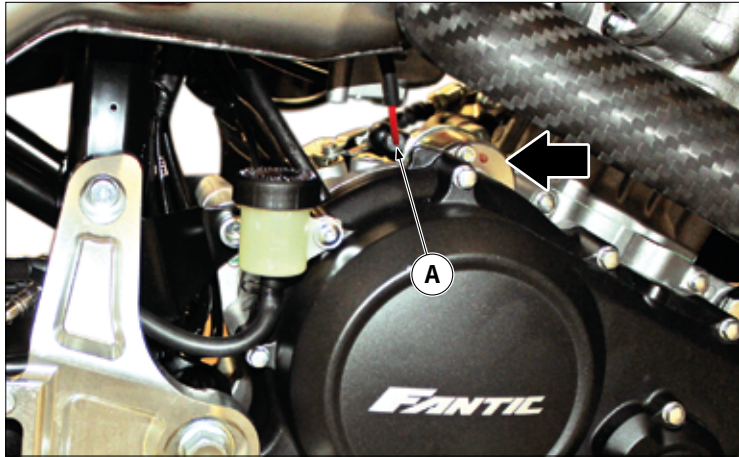


**i** The connecting wiring harness “E” is a power wiring harness to bring the charge to the starter motor to turn the vehicle on.



Pin	Colour	Function
1	R	Battery power supply
2	Gr-Az	Power loads output from the main fuse
3	R	Consent input from engine start button
4	Bi	Consent input (+) from left light stalk



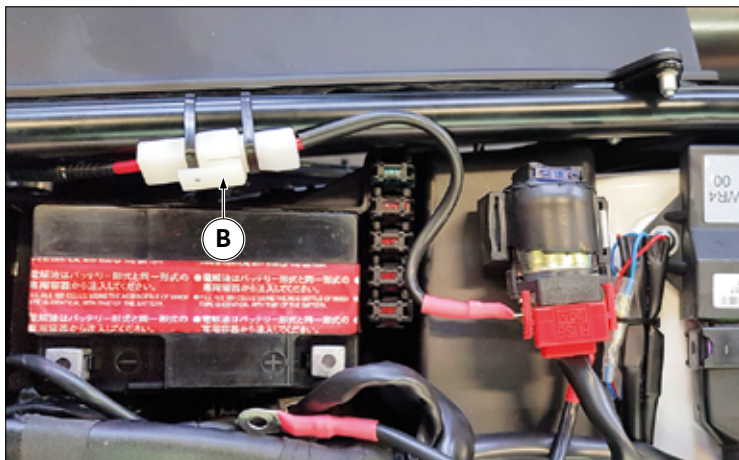


**10.3.25 Starter motor**

The engine starter motor is in a central position, located outside the engine unit at the cylinder base.

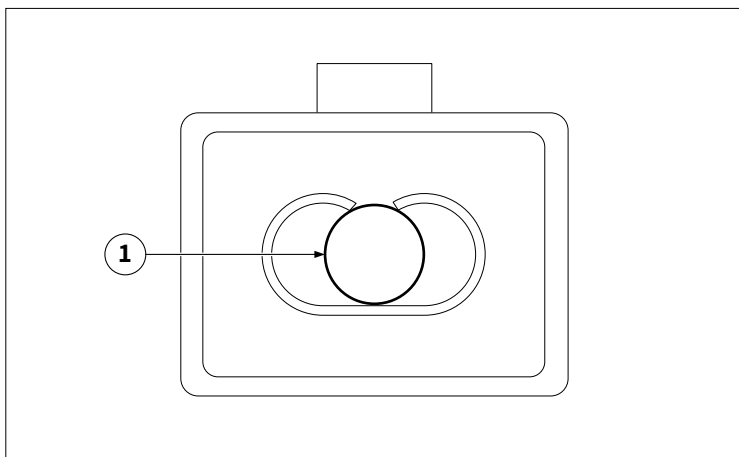
Access to the power connection “A” is direct from the right side of the vehicle.

**⚠ If access to instrumental tests is difficult, remove the exhaust silencer. Refer to “12.20.1 Silencer removal” on page 151.**

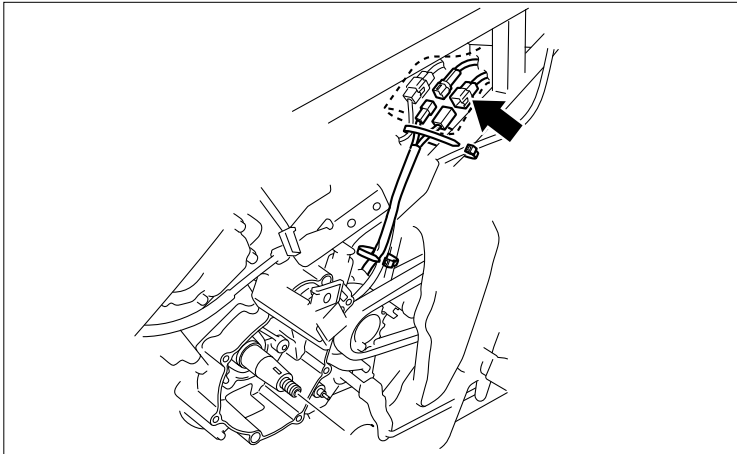


The power connection “B” of the starter motor is located under the seat. Refer to “12.1 Seat removal” on page 117.

The connection “B” connects the wiring harness connected to the engine starter remote control switch.



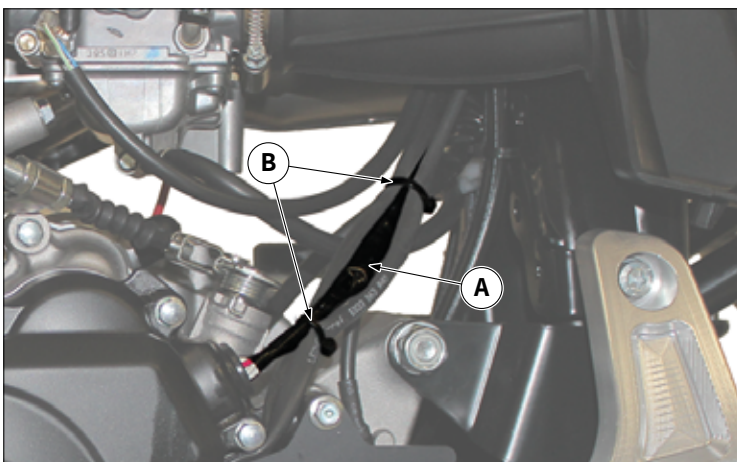
Pin	Colour	Function
1	R	Starter motor power supply input



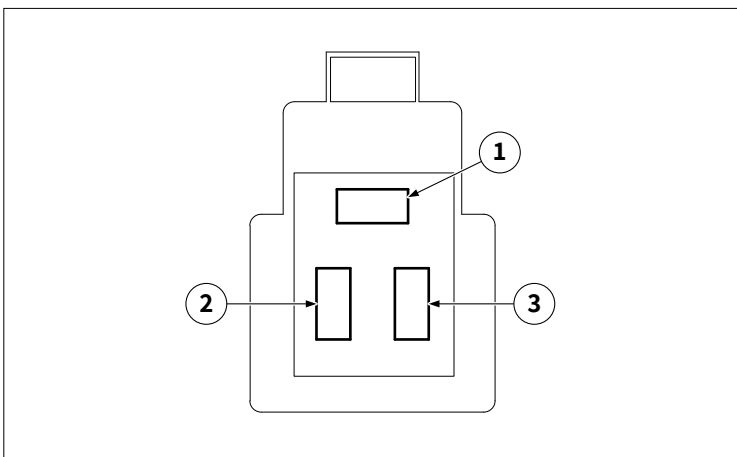
**10.3.26 Generator**

The generator connector is accessible removing:

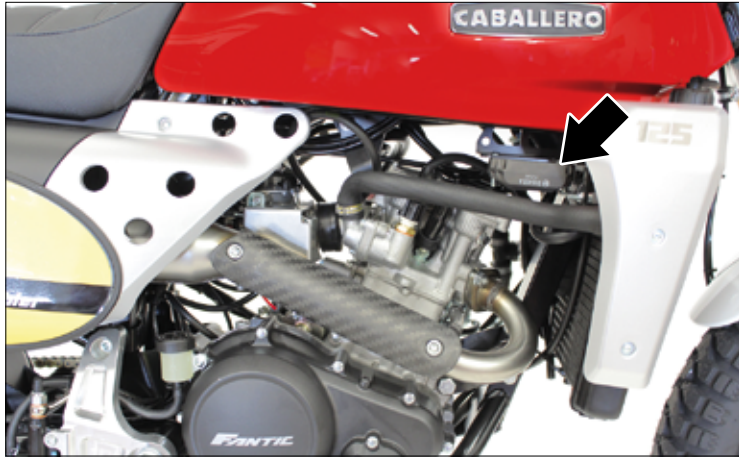
- Left lateral side panel: refer to “12.5.1 Left side panel removal” on page 121;
- Air filter: refer to “12.6 Air filter removal” on page 122;
- Air conveyor tube to the carburettor.



**!** If the wiring with the generator connector is difficult to reconnect, operate on the wiring “A” removing and reinstalling the clamps “B”.



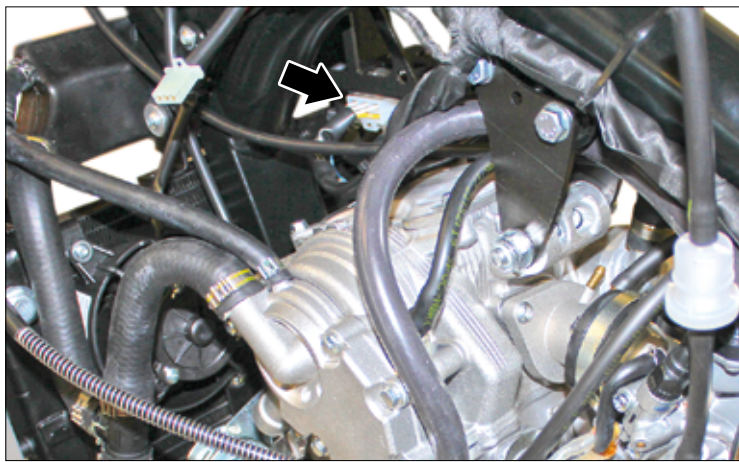
Pin	Colour	Function
1	Bi	Power supply from generator
2	Bi	Power supply from generator
3	Bi	Power supply from generator



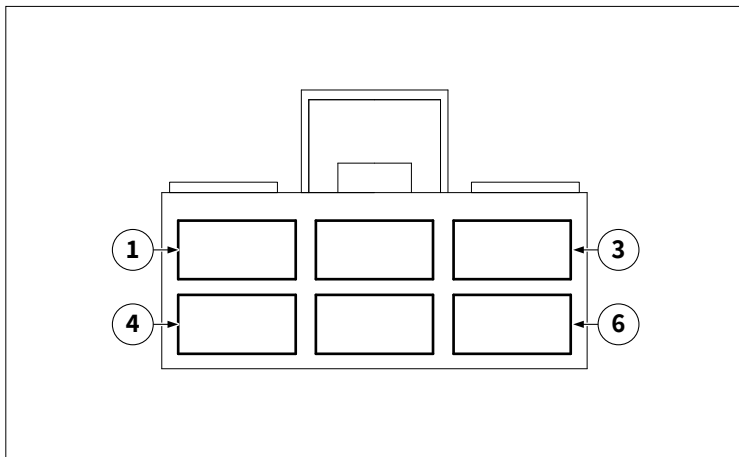
**10.3.27 Voltage regulator**

The voltage regulator is located at the engine head side on the right side of the vehicle.

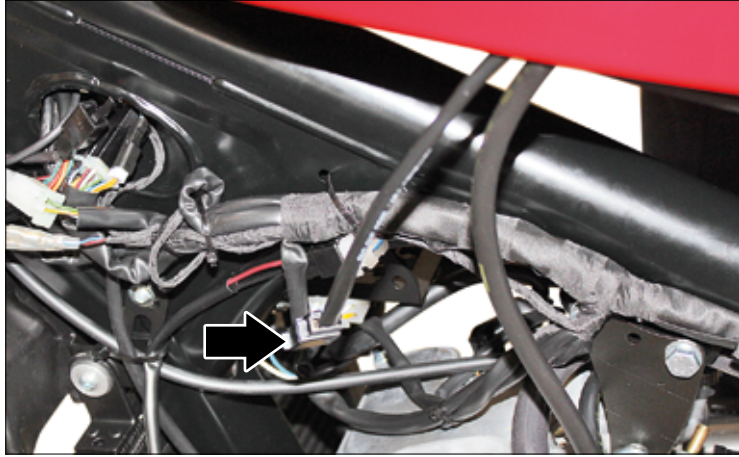
- ⓘ The regulator (or rectifier) is a device that has the function of rectifying the current produced by the generator (or stator).
- ⓘ It also has the function of regulating the current supplied by the alternator according to the battery voltage. The more the battery is exhausted, the greater the current supplied will be, in order to maintain the best operating conditions of the accumulator itself and vice versa.



Access to the voltage regulator connector to perform diagnostic and functional tests is easier on the left side of the vehicle.



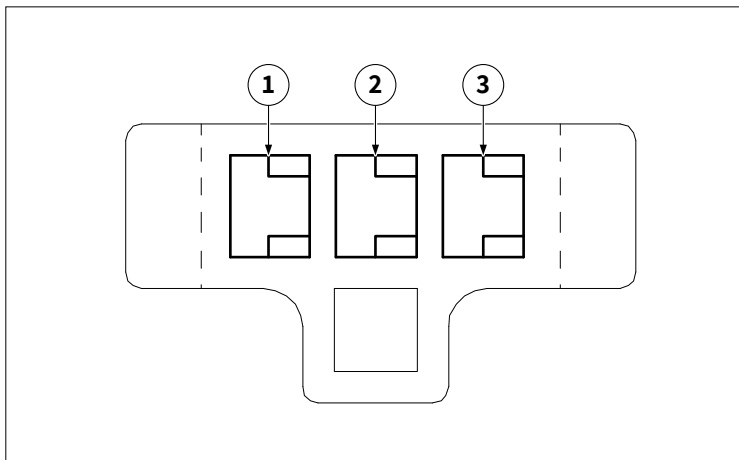
Pin	Colour	Function
1	G	Voltage regulator output for diode
2	-	-
3	B	Ground
4	Bi	Power supply from generator
5	Bi	Power supply from generator
6	Bi	Power supply from generator



**10.3.28 Fuel level sensor**

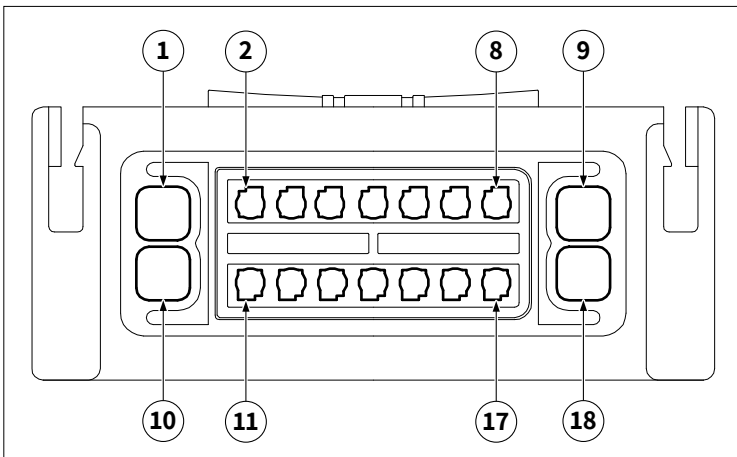
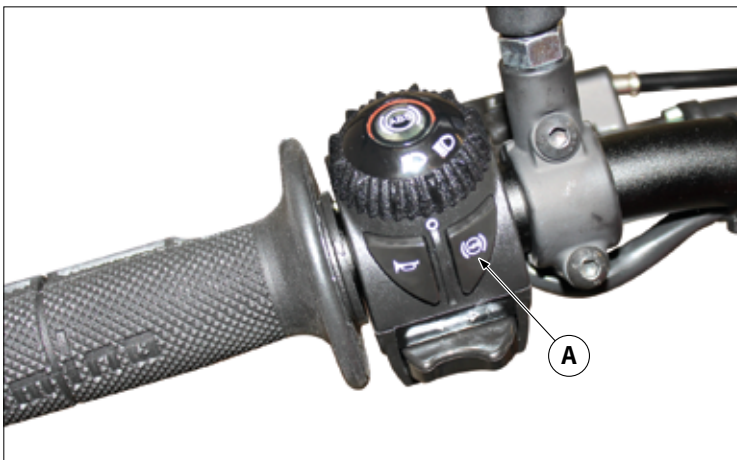
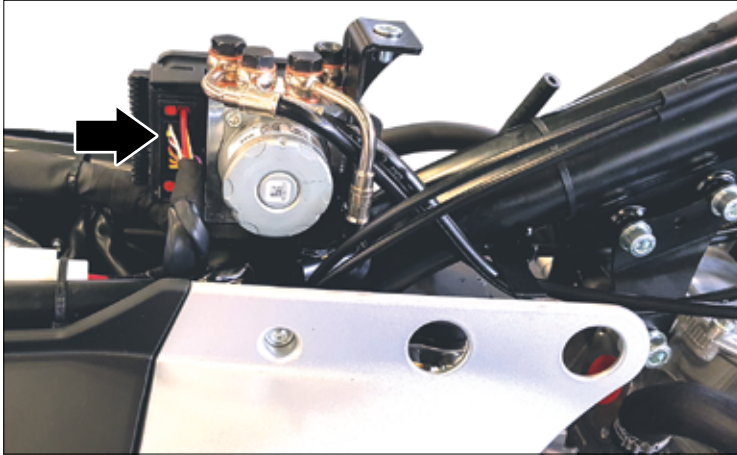
The fuel level sensor connector is located under the fuel tank.

The level sensor connector becomes accessible at the end of the fuel tank removal operation: refer to “12.8 Fuel tank removal” on page 123.



Pin	Colour	Function
1	B	Ground
2	B-V	Output signal for fuel level indicator light
3	Ar-V	Fuel level output signal





**10.3.29 ABS module**

The connector of the ABS module is positioned under the seat; to access it, refer to “12.1 Seat removal” on page 117.

The vehicle is equipped with an ABS system that operates on both wheels. The ABS system is composed of an electro-hydraulic device which limits the pressure inside the braking system at the moment of braking.

This occurs by the detection of the tendency to block of the phonic wheels installed on the brake discs (see “12.19.7 Front ABS phonic wheel removal” on page 150) carried out by the angular speed sensors on the swingarms (see “12.19.5 Front ABS sensor removal” on page 149).

**i** When the key is turned to the “ON” position, the ABS indicator light comes on and flashes for a few seconds, then it switches off.

**!** In the event of a battery malfunction, the ABS system is deactivated.

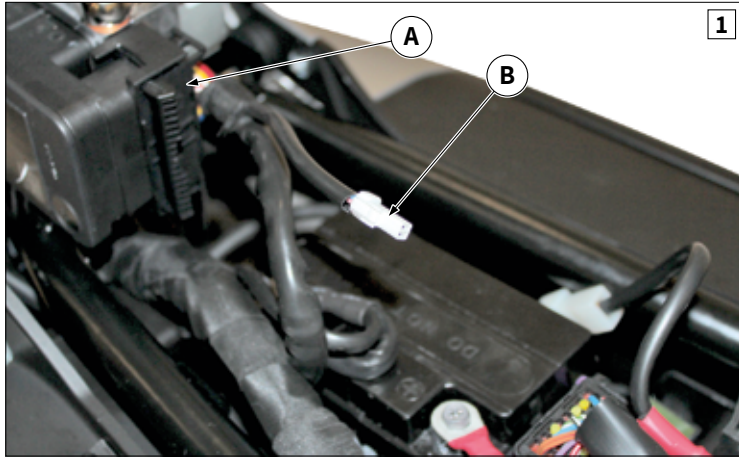
**i** The ABS can be activated/deactivated by pressing, for a few seconds, the ABS button “A”.

**!** In case of failure of the ABS system, the indicator light turns on, the vehicle retains the characteristics of a traditional braking system.

**!** At low speed the ABS system is not active.

**i** The ABS module is connected through CAN to the vehicle OBD diagnostic socket.

Pin	Colour	Function
1	-	-
2	G	CAN line H
3	G-R	ABS deactivation indicator control signal
4	V	Power supply from fuse 1
5	M-R	Diagnosis line K
6	Bi-R	Signal (+) from rear ABS sensor
7	-	-
8	Bi	Signal (+) from front ABS sensor
9	-	-
10	B	Ground
11	Bi-B	CAN line L
12	Ar-Bi	ABS mode
13	Vi	Vehicle speed input signal from the ignition module
14	Ro	ABS mode selection input signal
15	R-N	Reference signal (-) from rear ABS sensor
16	-	-
17	Bi-G	Reference signal (-) from front ABS sensor
18	R	Power supply to ABS hydraulic unit from fuse 5

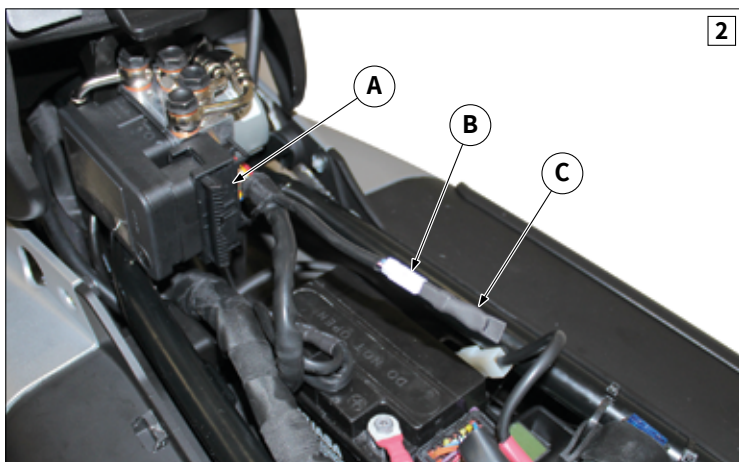


**10.3.30 ABS mode selection connector**

The ABS mode selection connector is used to define the ABS system setting, depending on the vehicle model:

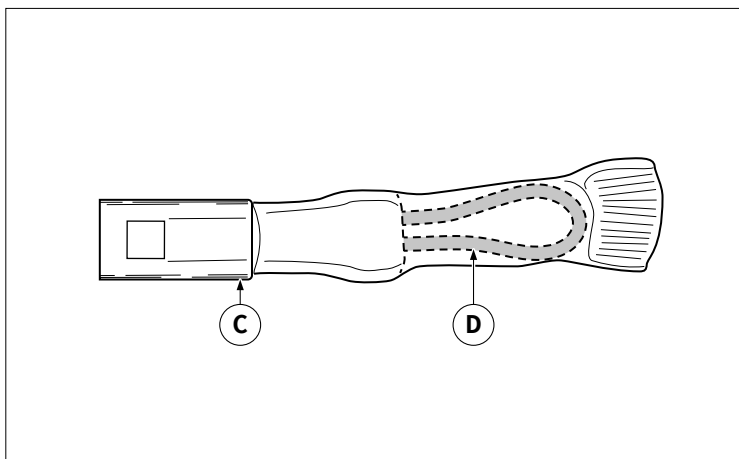
The configuration “1” is valid for the Scrambler version and there is no jumper “C”.

**⚠ If the vehicle does not have a “C” jumper, do not add it or close the circuit manually.**

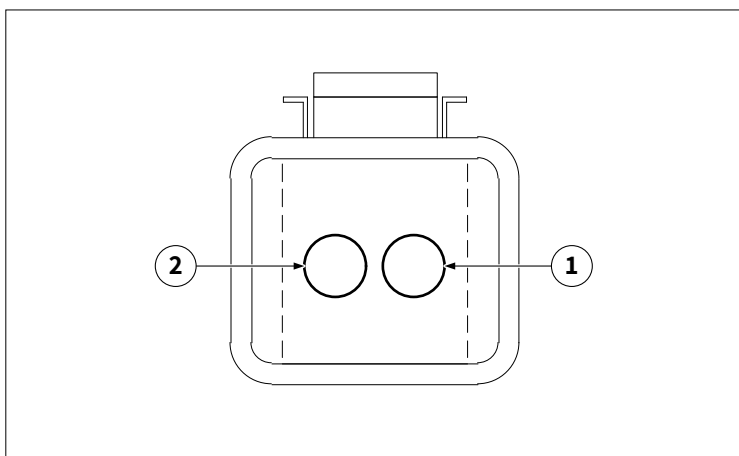


The configuration “2” is valid for the Flat Track version and requires the presence of the jumper “C”.

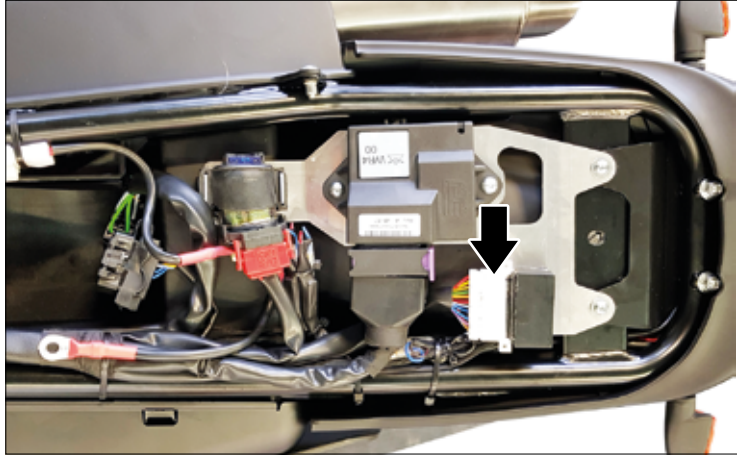
**⚠ If the vehicle has a “C” jumper, do not remove it, damage it or modify it.**



The jumper “C” consists in the presence of a wire “D”: the presence of the jumper brings a positive voltage from the voltage regulator to the pin number 14 of the ABS module.



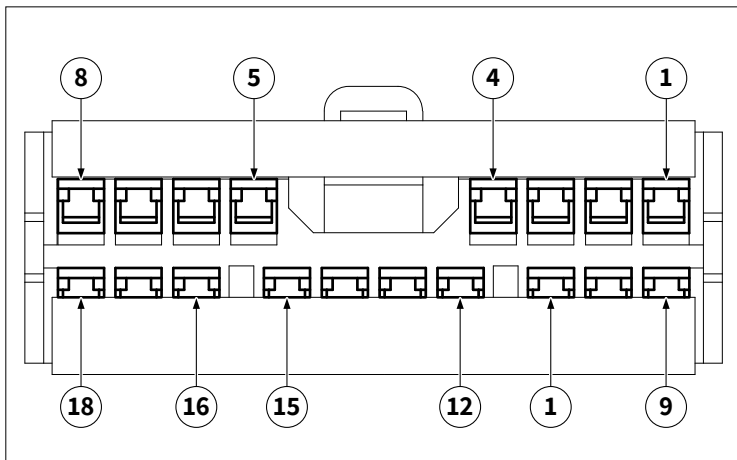
Pin	Colour	Function
1	Ro	ABS configuration input
2	B	Ground



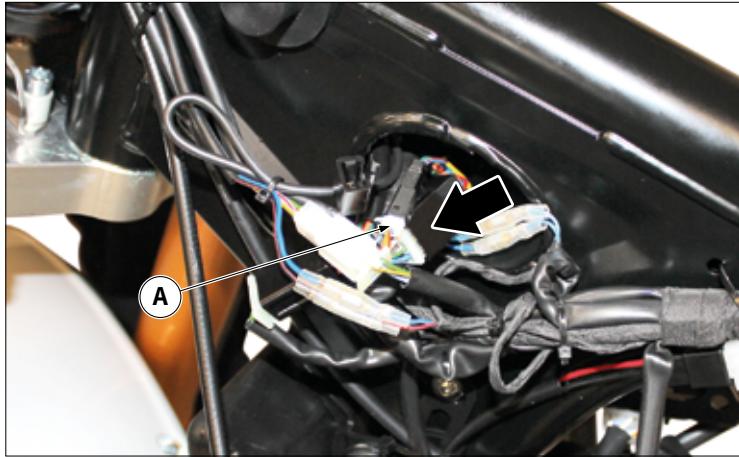
**10.3.31 Relay and diodes box**

The connector of the relay and diodes box and the related device are positioned under the seat. To access remove the seat (refer to “12.1 Seat removal” on page 117).

**i** This device contains some relays and diodes to manage the operating logic of the start-up safety, the lights and the engine cooling fan.

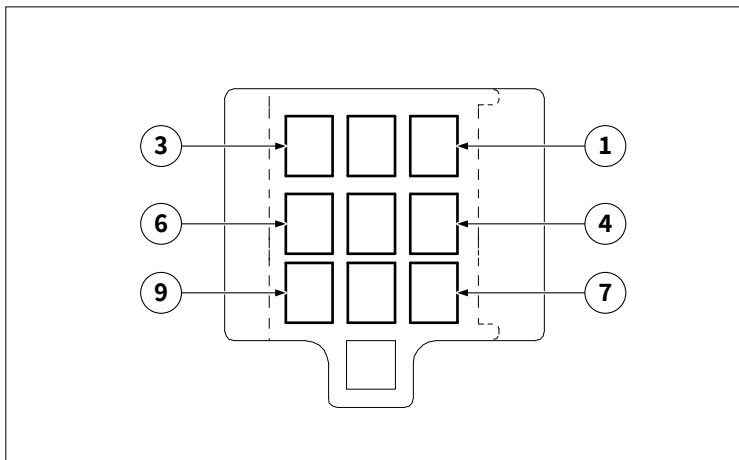


Pin	Colour	Function
1	R	Battery power supply
2	G	Input from voltage regulator for diode
3	G-N	Signal from brake buttons
4	V-N	Power supply under key from fuse 4
5	-	-
6	-	-
7	Ar-N	Signal (-) from neutral gear switch
8	Bi	Vehicle safety relay input signal (Kill)
9	-	-
10	-	-
11	-	-
12	Ar	Engine cooling fan relay input signal
13	R-N	Engine cooling fan control signal
14	Gr-Az	Power supply under fuse 2
15	B	Ground
16	B	Ground
17	Vi	Input signal from RUN/OFF switch
18	M-G	Side kickstand position signal

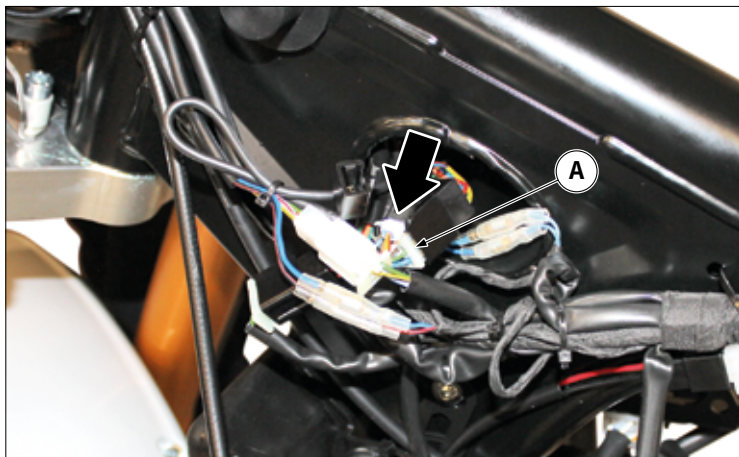


**10.3.32 Left light stalk**

The main connector (9-pin) of the left light stalk is located under the tank on the left side of the vehicle frame. To access remove the tank (refer to “12.8.2 Complete tank removal” on page 123).

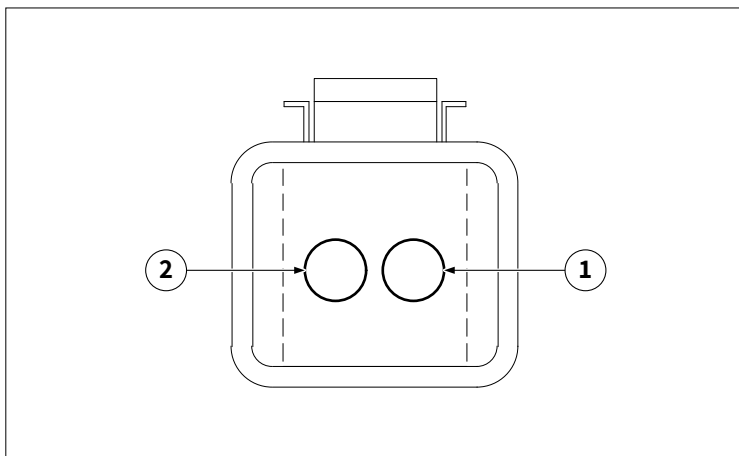


Pin	Colour	Function
1	Gr-R	Low beam light control
2	N	High beam light control
3	B	Ground
4	G	Power supply under key from fuse 3
5	Gr	Horn drive control
6	V	Power supply under key from fuse 1
7	Az	Left side turn signal control
8	R-N	Right side turn signal control
9	Bi	Consent signal (+) for starter relay



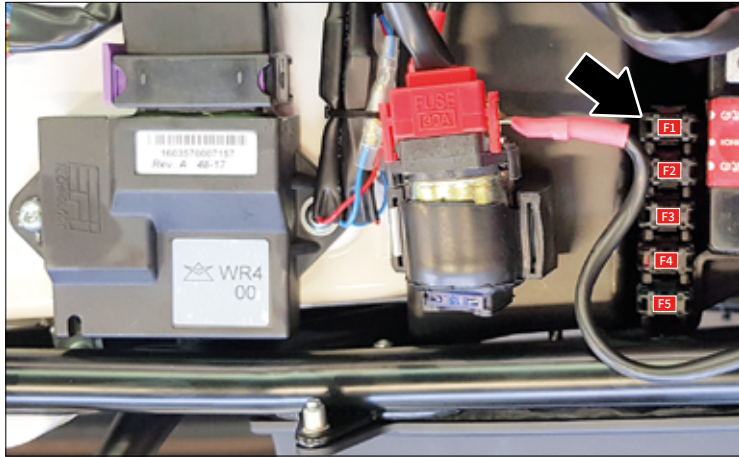
**10.3.33 Left light stalk - secondary connector**

The secondary connector (2-pin) of the left light stalk is located under the tank on the left side of the vehicle frame. To access remove the tank (refer to “12.8.2 Complete tank removal” on page 123).



Pin	Colour	Function
1	Ar-Bi	ABS mode
2	G-R	ABS deactivation indicator light signal

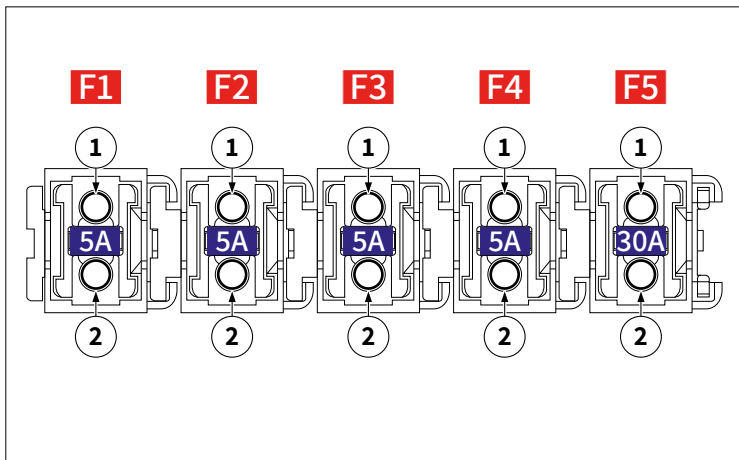




**10.3.34 Fuse box**

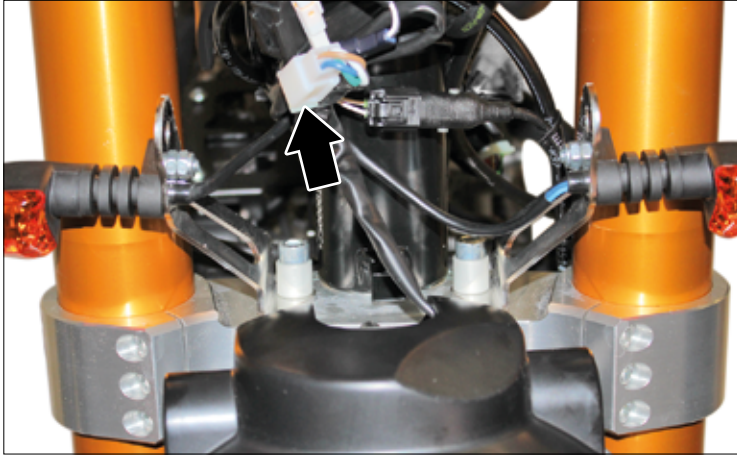
The fuse box is accessible removing the seat (refer to “12.1 Seat removal” on page 117).

To check the operation of the protection fuses, carry out a visual check as indicated in the procedure “10.4 Fuses and relays” on page 76, or perform a continuity test between the fuse pins.



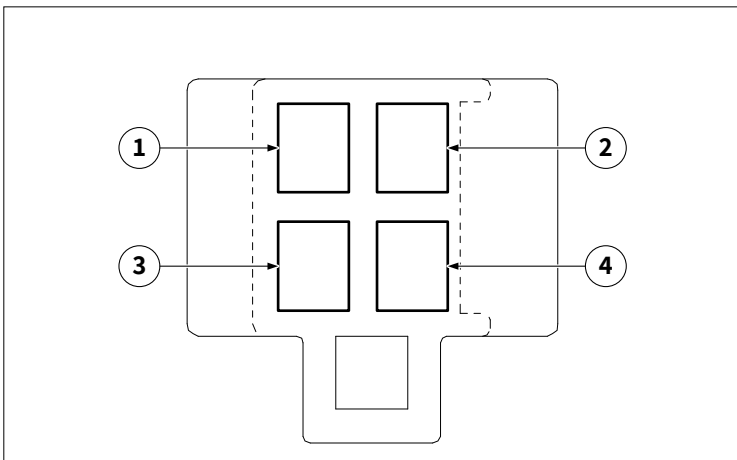
Fuse/Amp.	Pin	Col.	Function
F1 (5A)	1	V	Power supply under fuse 1 for left light stalk (horn and turn signals), ABS module (electronics), dashboard, fuel reserve warning light and ignition module
	2	V	Power supply under key.
F2 (5A)	1	Gr-Az	Power supply under fuse 2 for diagnosis socket and relay box
	2	Gr-Az	Power supply under main fuse
F3 (5A)	1	G	Power supply under fuse 3 for left light stalk (front headlight)
	2	G	Power supply under voltage regulator for fuse 3
F4 (5A)	1	V-N	Power supply under fuse 4 for relay box
	2	V	Power supply under key for fuse 4.
F5 (30A)	1	R	Supply under fuse 5 for ABS module (hydraulic)
	2	R	Power supply under main fuse for fuse 5.

**⚠ To access the wires entering the fuse box, carefully pull the fuse box removing it from the recessed compartment.**

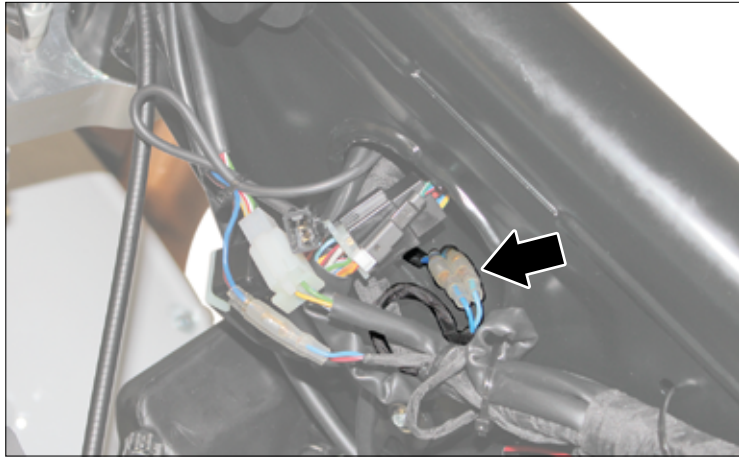


**10.3.35 Front headlight**

The front headlight connector is located behind the lower cover of the digital dashboard. To access, refer to “10.7 Dashboard” on page 78.

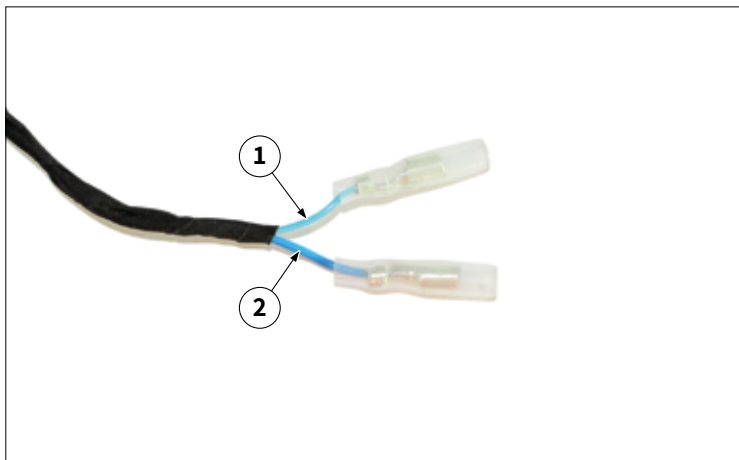


Pin	Colour	Function
1	G-N	Input signal (+) front headlight (position light)
2	N	High beam headlight input signal
3	Gr-R	Low beam light input signal
4	B	Ground



**10.3.36 Left front turn signal**

The left front turn signal connectors are located under the fuel tank inside the cable path slot on the front of the frame. To access remove the tank: refer to “12.8.2 Complete tank removal” on page 123.

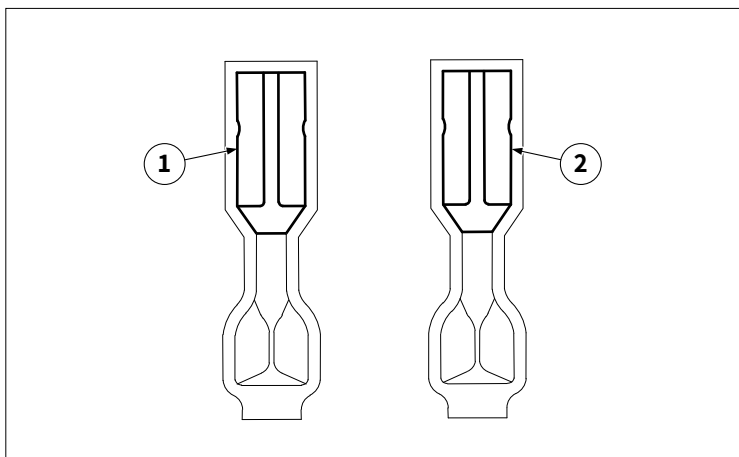


The connectors on the vehicle wiring side are identified as shown in the figure.

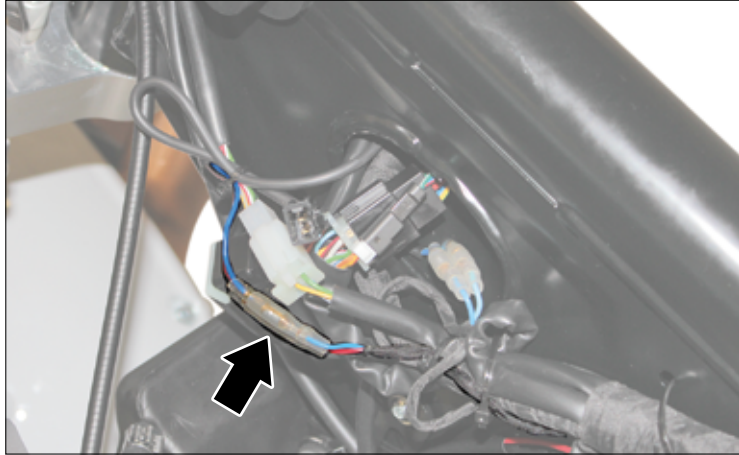
The connectors of the rear left turn signal light are Blue (“1”) and Sky Blue (“2”).

The coupling is as follows:

1. Sky Blue (system side) to be connected to the Sky Blue one (device side);
2. Blue (system side) to be connected to the Blue (device side).

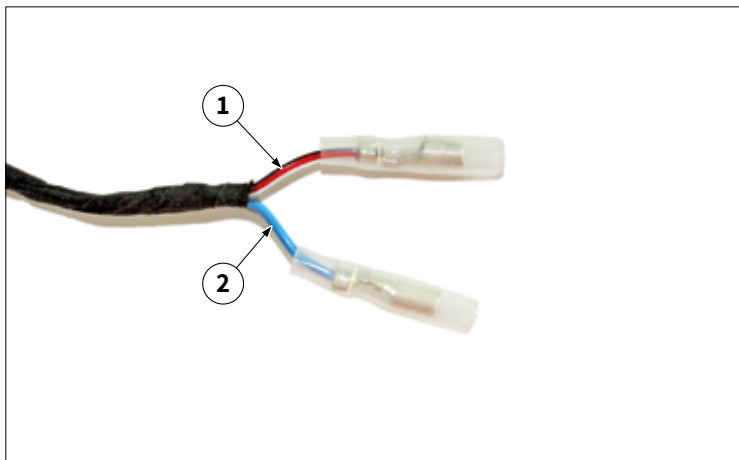


Pin	Colour	Function
1	Az	Left front turn signal control signal
2	B	Ground



**10.3.37 Right front turn signal**

The right front turn signal connectors are located under the fuel tank inside the cable path slot on the front of the frame. To access remove the tank: refer to “12.8.2 Complete tank removal” on page 123.

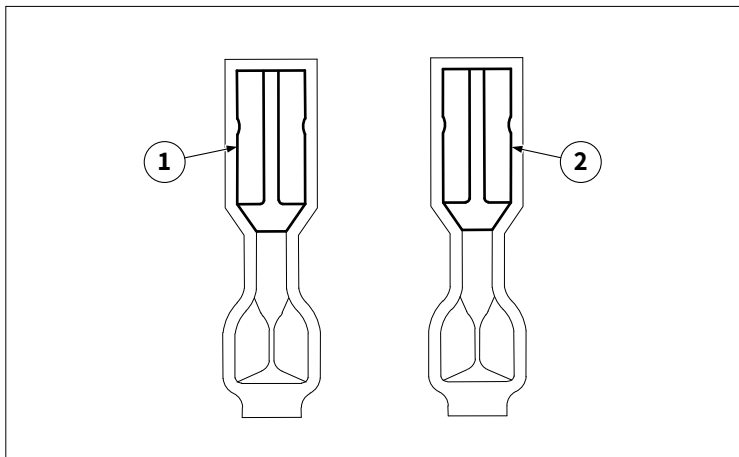


The connectors on the vehicle wiring side are identified as shown in the figure.

The front right turn signal connectors are Red-Black (“1”) and Blue (“2”).

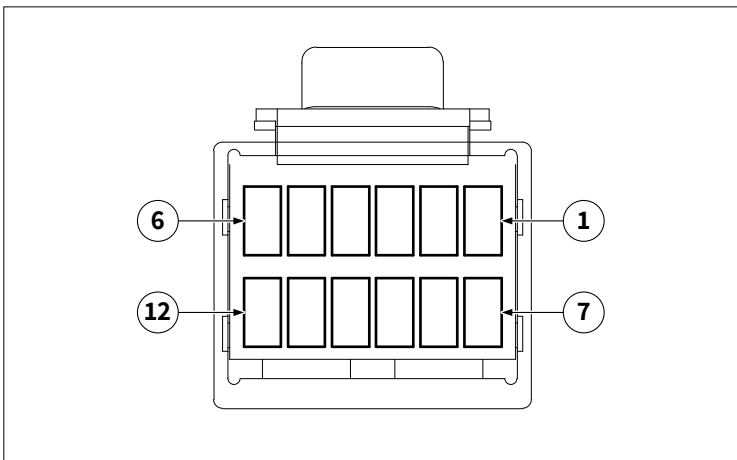
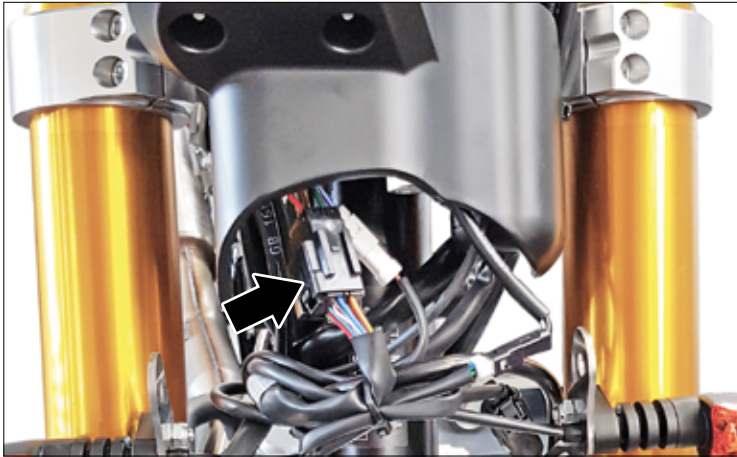
The coupling is as follows:

1. Red-Black (system side) to be connected to Black-Red one (device side);
2. Blue (system side) to be connected to Blue one (Device side);



Pin	Colour	Function
1	R-N	Right front turn signal control signal
2	B	Ground

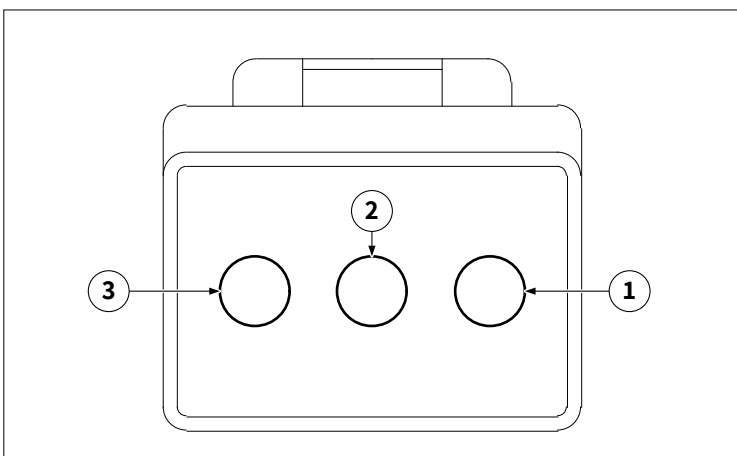
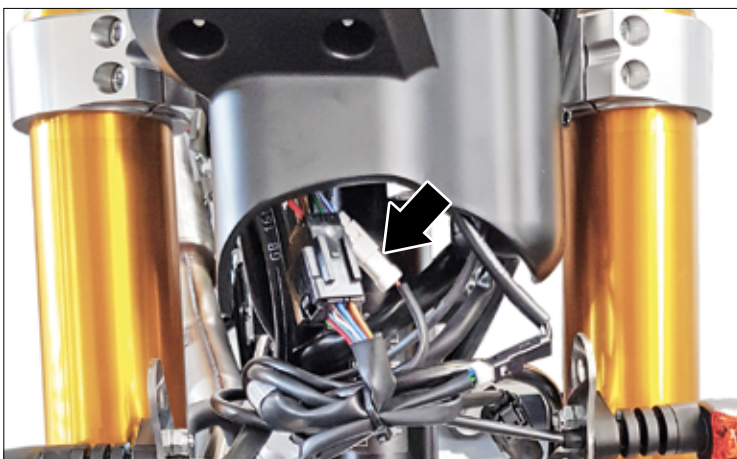




**10.3.38 Dashboard**

The main connector (12 pins) of the dashboard is located under the lower cover of the dashboard and the ignition lock. To access, refer to “10.7.1 Dashboard removal” on page 78.

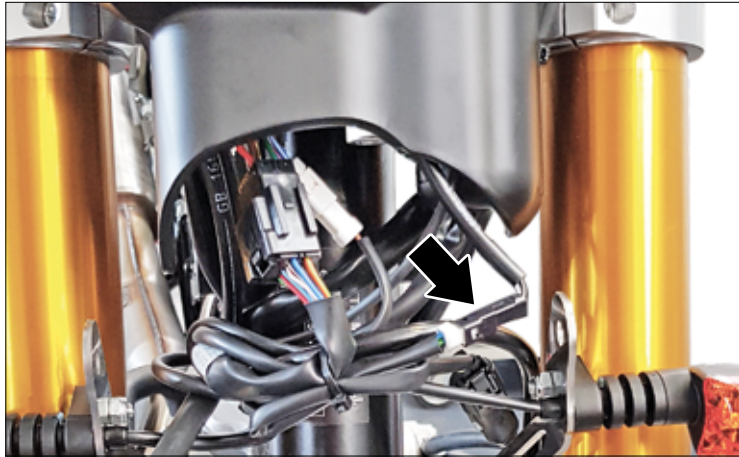
Pin	Colour	Function
1	B	Ground
2	Bi-N	Engine attention input signal (MIL warning light)
3	Bi-R	Signal from coil
4	Az	Input signal for left side turn signal lamps
5	R-N	Input signal for right side turn signal lamps
6	V	Fuel reserve indicator light control signal
7	Ar-V	Fuel level input signal
8	Ar-N	Signal (-) from neutral gear switch
9	Gr-Az	Consent signal (+) from the key
10	-	-
11	V	Consent signal (+) from the key
12	N	High beam indicator light signal



**10.3.39 Dashboard - secondary connector**

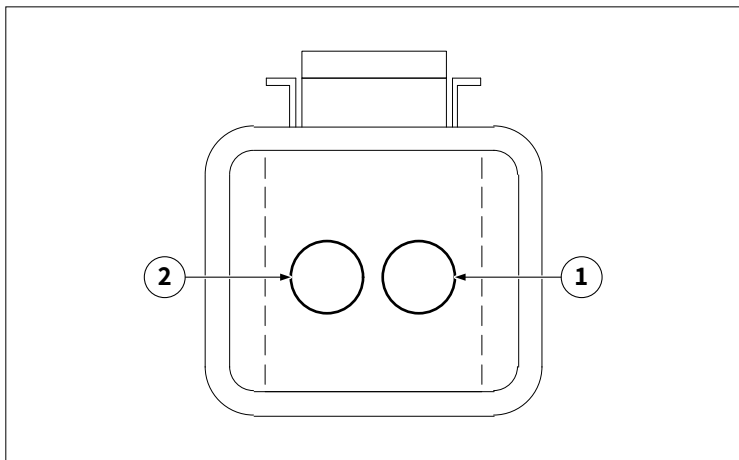
The secondary connector (3 pins) of the dashboard is located under the lower cover of the dashboard and the ignition lock. To access, refer to “10.7.1 Dashboard removal” on page 78.

Pin	Colour	Function
1	M	Vehicle speed input signal from the ignition module
2	-	-
3	-	-

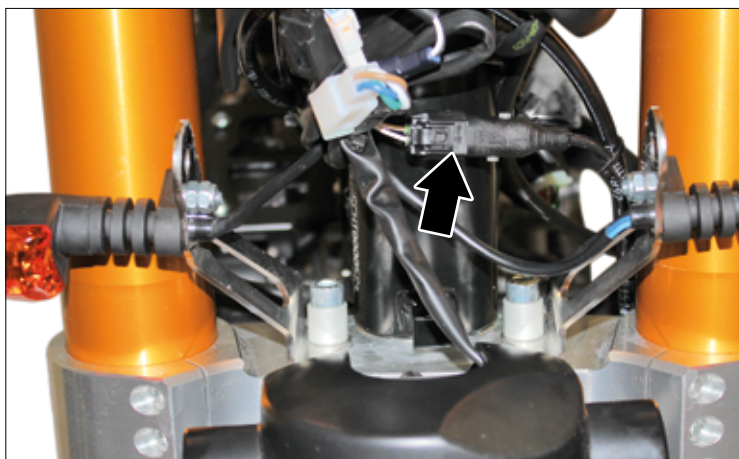


**10.3.40 Fuel reserve indicator light**

The fuel reserve warning light connector is located under the lower cover of the dashboard and ignition lock. To access, refer to “10.7.1 Dashboard removal” on page 78.

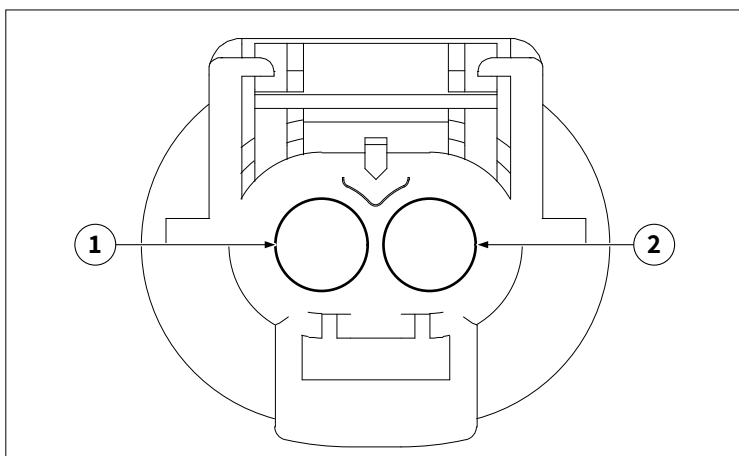


Pin	Colour	Function
1	V	Fuel reserve indicator light input signal
2	B-V	Fuel reserve indicator light output

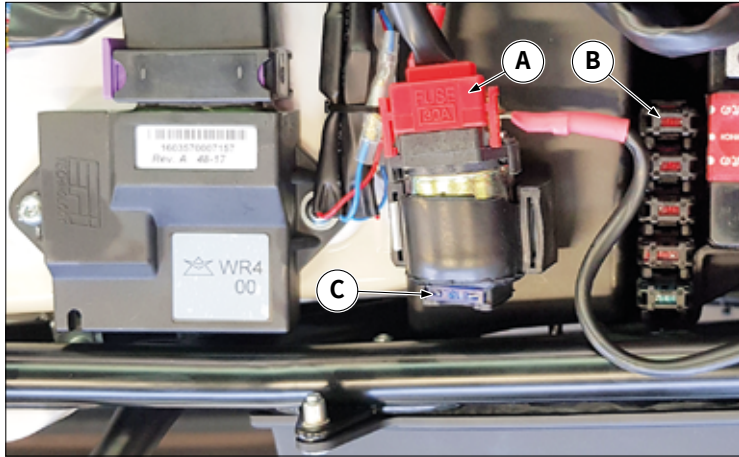


**10.3.41 Front ABS sensor**

The front ABS sensor connector is located under the lower cover of the dashboard and ignition lock. To access, refer to “10.7.1 Dashboard removal” on page 78.



Pin	Colour	Function
1	Bi-G	Reference signal (-) front ABS sensor
2	Bi	Signal (+) front ABS sensor

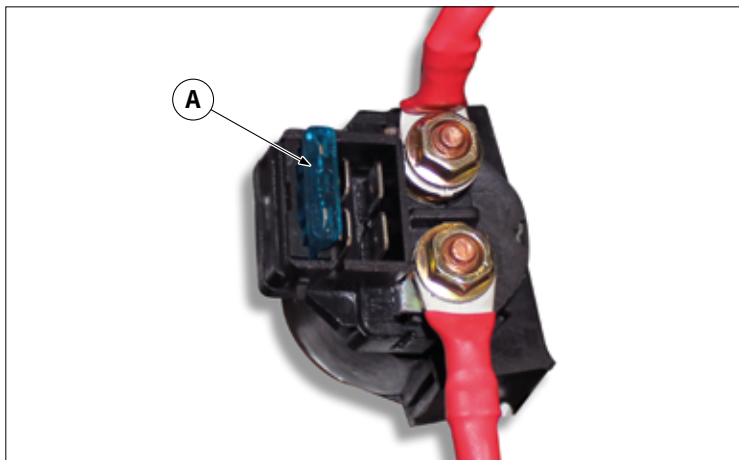


**10.4 FUSES AND RELAYS**

To check the fuses, set the ignition switch to “OFF” to avoid the risk of a short circuit.

Remove one fuse at a time and check if the filament is broken.

Replace the fuse, if damaged, with a type of the same amperage.



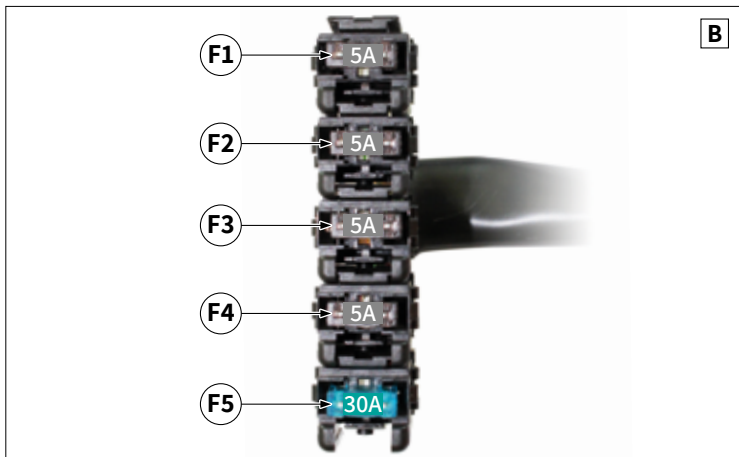
**Fuses arrangement**

The fuses are located under the seat: to access them remove the seat (refer to “12.1 Seat removal” on page 117).

A. Main fuse (30A)

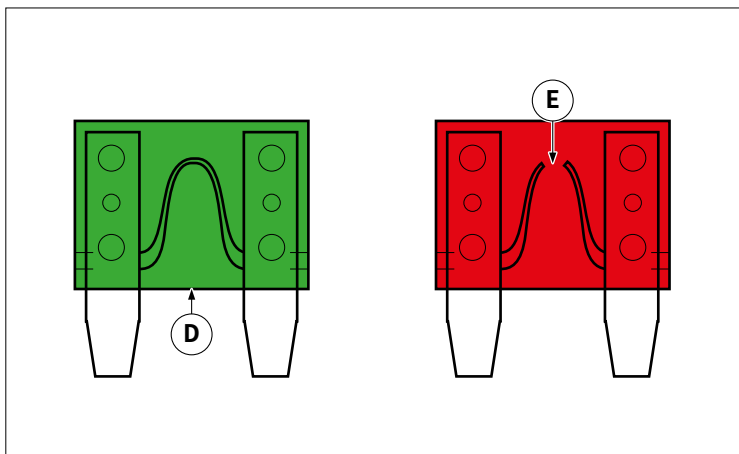
B. Fuse box

C. Spare fuse (30A)



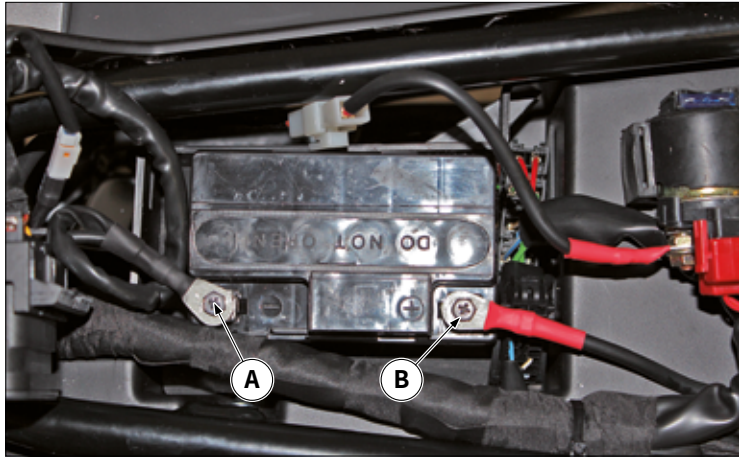
**Fuses list**

Fuse	Amp	Description
F1	5A	Fuse for ignition module, ABS module (electronics), dashboard, left light stalk (horn and turn signals), fuel reserve warning light.
F2	5A	Fuse for diagnosis socket and relay and diodes box.
F3	5A	Fuse for left light stalk (front headlight).
F4	5A	Fuse for relay and diodes box.
F5	30A	Fuse for ABS module (hydraulic).



**⚠ Do not repair faulty fuses and never use a fuse of a different power than specified, it could cause a short circuit and consequently the risk of fire.**

**⚠ A blown fuse “E” can be recognized by a working fuse “D” for the blown or interrupted internal conductor filament.**



**10.5 BATTERY**

**10.5.1 Battery replacement**

Remove:

- Seat.
- Remove screw “A” and disconnect the negative cable.
- Remove screw “B” and disconnect the positive cable.
- Remove the battery.

**i** Proceed in the reverse order for reassembling.

**10.5.2 Notes on the battery**

The battery supplied is sealed and the acid level can not be checked.

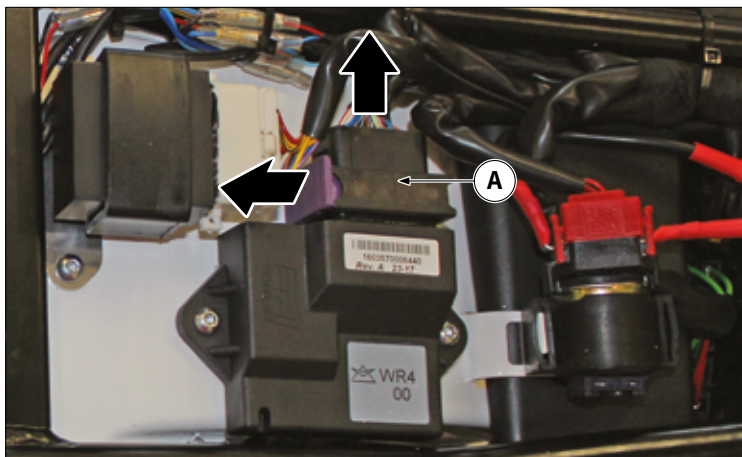
**i** In the event of a battery malfunction, it is recommended to replace it.

**!** Do not attempt to open or tamper with the battery.

**!** The battery fluid is corrosive. Do not pour it or spread it, especially on plastic parts.

**!** Keep out of the reach of children.

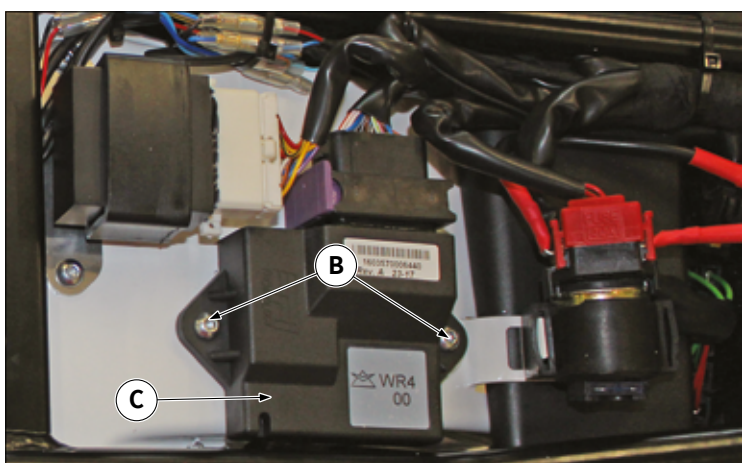




**10.6 IGNITION MODULE**

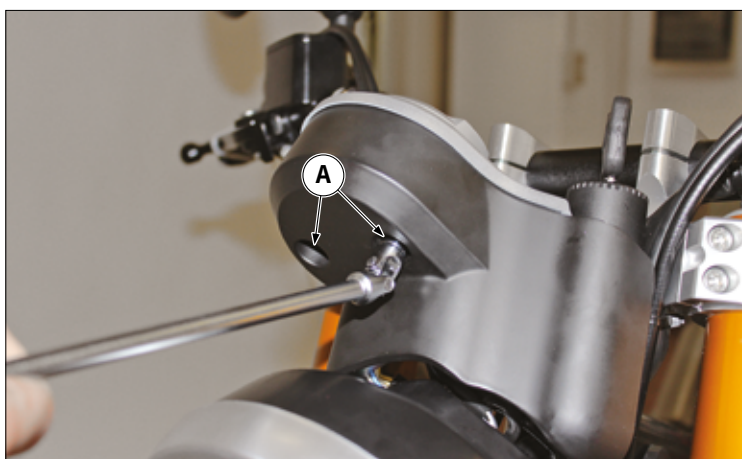
**10.6.1 Ignition module removal**

Remove the connector "A".



Remove the screws "B", then remove the module "C".

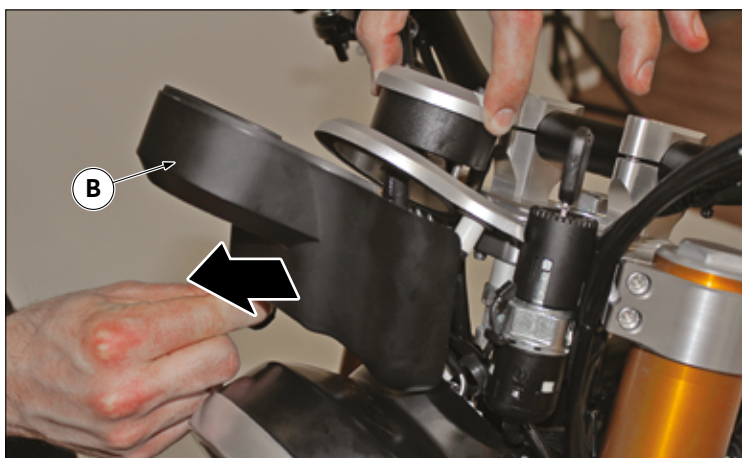
**i** Proceed in the reverse order for reassembling.



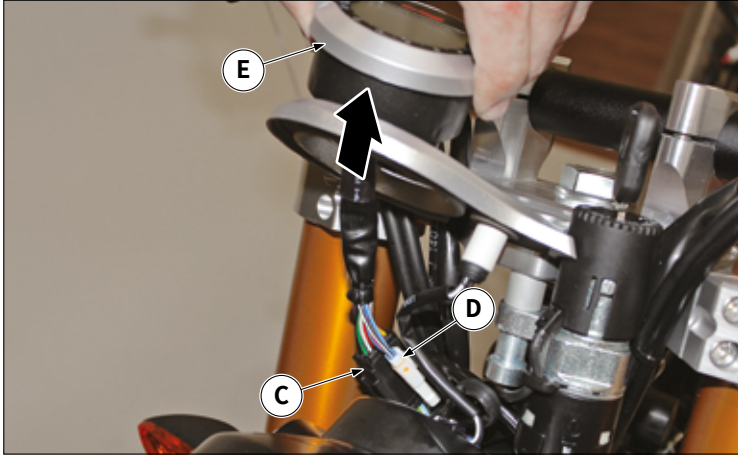
**10.7 DASHBOARD**

**10.7.1 Dashboard removal**

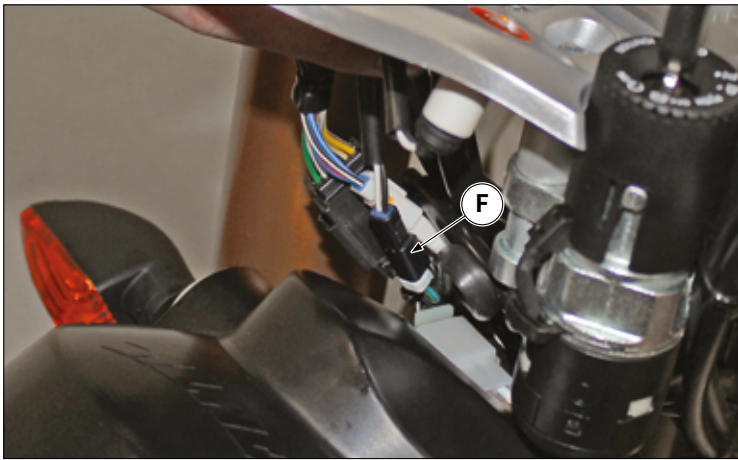
Remove the screws "A".



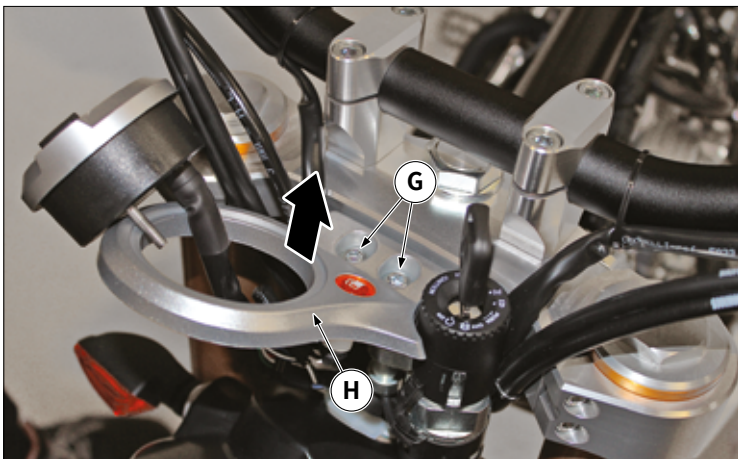
Remove the dashboard cover "B".



Disconnect the connectors “C” and “D”, then remove the speedometer “E”.



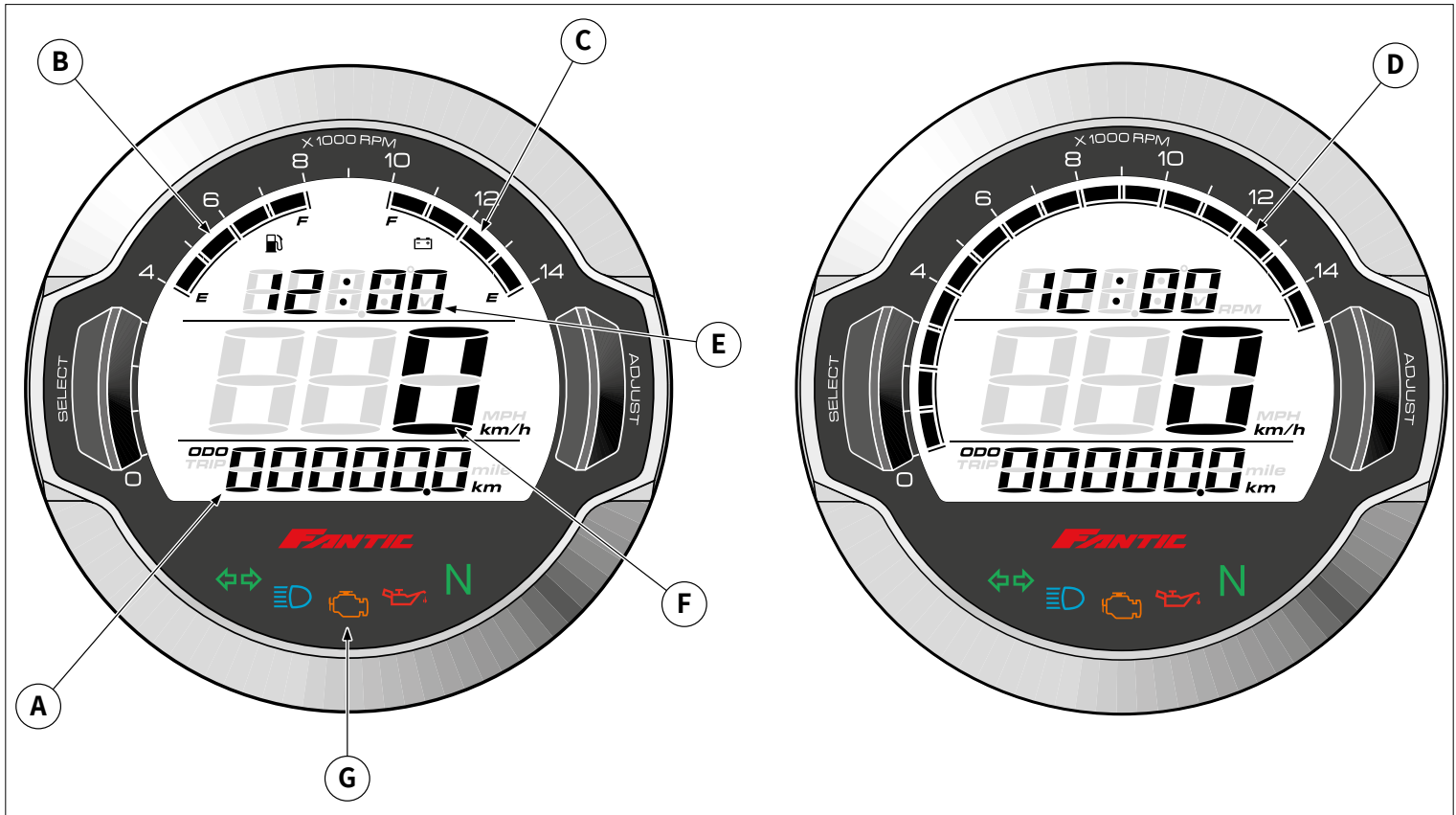
Disconnect the connector “F” of the fuel level indicator light.



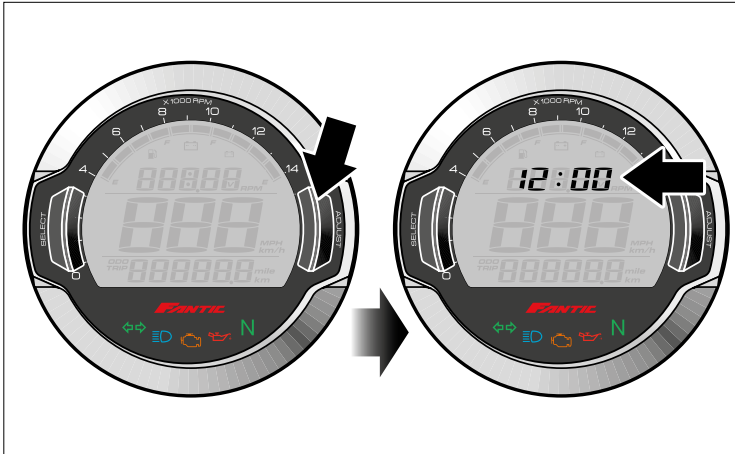
Remove the screws “G”, then remove the dashboard “H”.

**i** Proceed in the reverse order for reassembling.

**10.7.2 Dashboard settings**



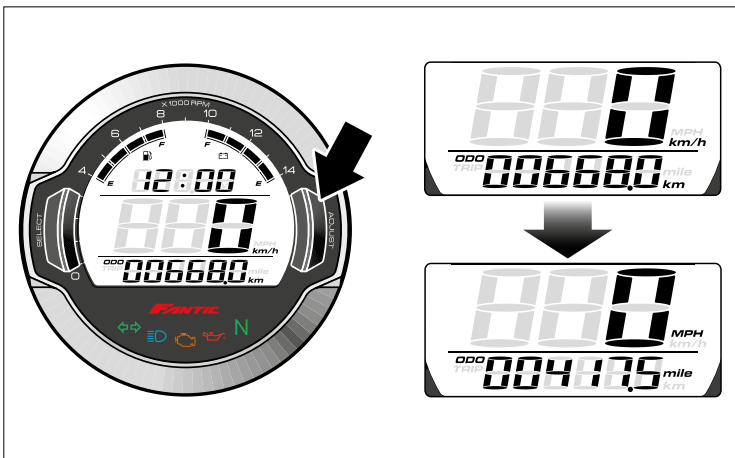
Key to Components	
A	Odometer
	Total trip distance recorder
	Partial trip distance recorder "A"
	Partial trip distance counter "B"
	Remaining Fuel/Distance
B	Fuel level
C	Digital voltmeter
D	Tachometer
E	Clock
F	Speedometer
G	Indicator light



**Functions instructions with dashboard in stand-by**

When the dashboard is off, press the adjustment button (“ADJUST”) or the selection button (“SELECT”) to activate the clock.

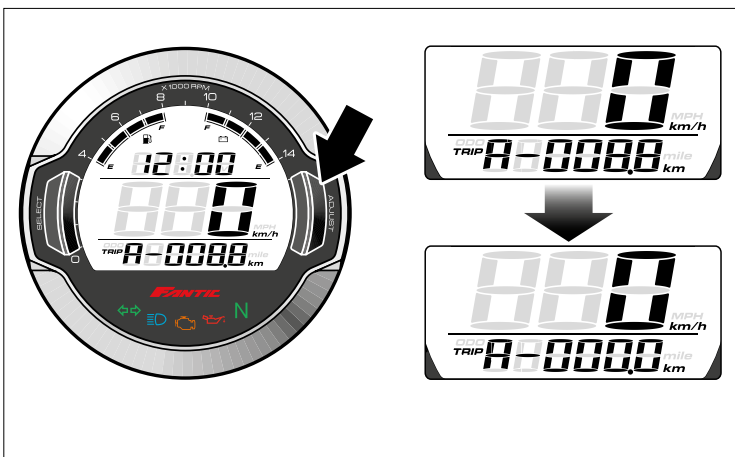
The clock will remain visible on the screen for 30 seconds after activation.



**Adjustment button instructions (“ADJUST” button)**

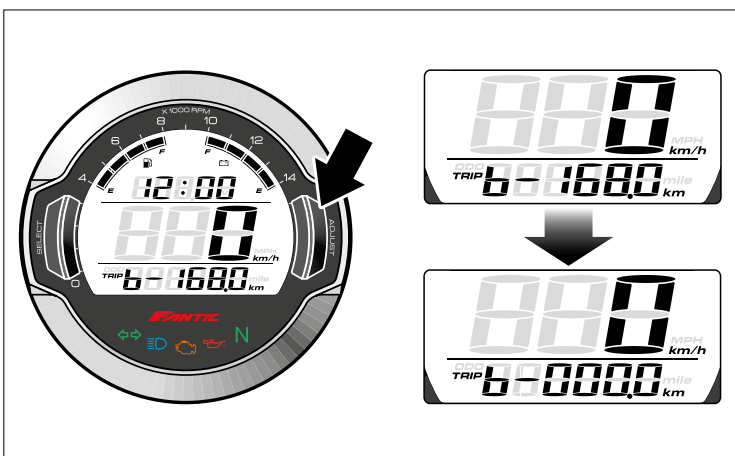
In the main screen (ODO) press once the adjustment button (“ADJUST”), to activate the partial trip distance recorder A.

Press and hold the adjustment button (“ADJUST”) for three seconds to change the Odometer measurement units, from kilometres (“km”) to miles (“mile”), and the speedometer measurement units, from kilometres per hour (“km/h”) to miles per hour (“MPH”), and vice versa.



In the partial trip distance counter A screen press once the adjustment button (“ADJUST”) to activate the partial trip distance counter B.

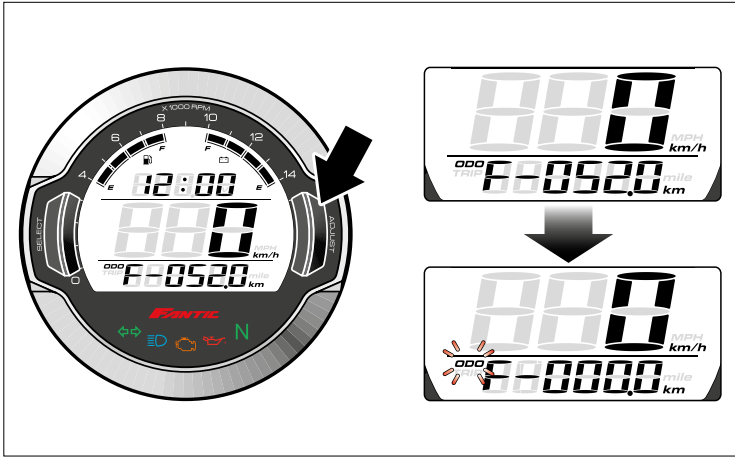
Press and hold the adjustment button (“ADJUST”) for three seconds, to reset the partial trip distance counter A.



In the partial trip distance counter B screen press once the adjustment button (“ADJUST”), to activate the remaining fuel/distance screen.

Press and hold the adjustment button (“ADJUST”) for three seconds to reset the partial trip distance counter B.

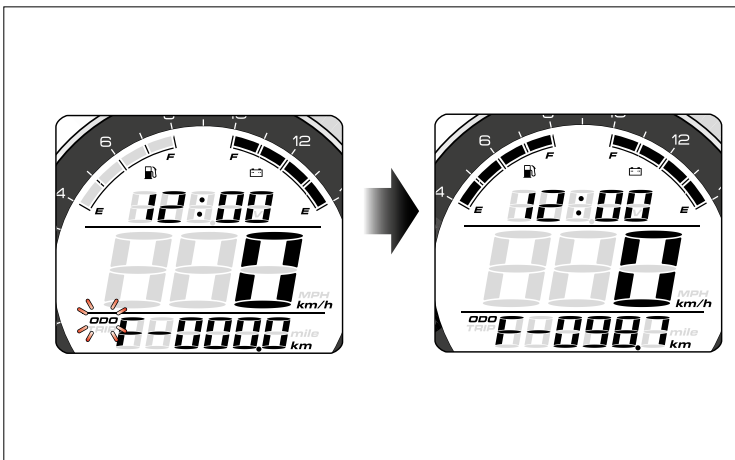




In the remaining fuel/distance screen, press once the adjustment button (“ADJUST”), to reactivate the main screen (Odometer function).

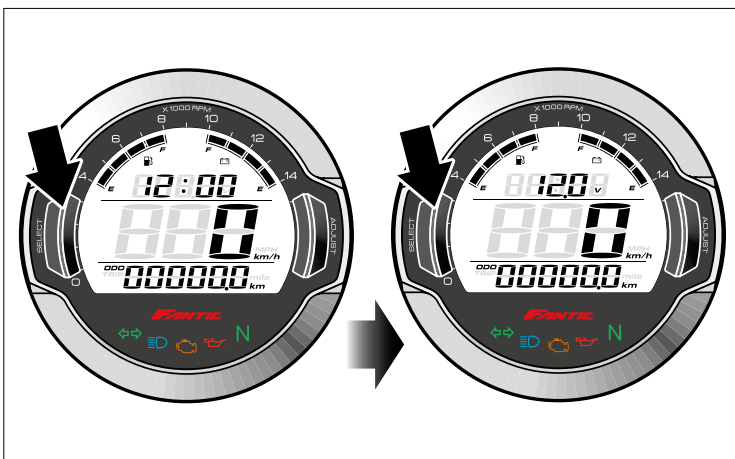
**Remaining distance learning procedure**

Fill with fuel and, in the remaining fuel/distance screen, press and hold the adjustment button (“ADJUST”) for ten seconds; the symbol ODO flashes, the remaining distance is reset to 0 and the learning is restarted.



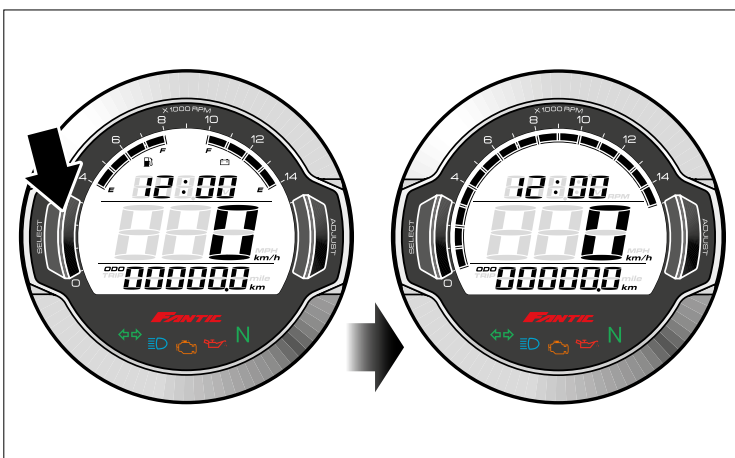
When the fuel level reaches 0, refuel. At the end of this operation, the ODO symbol stops flashing; this means that the remaining distance learning has been completed.

**⚠ The actual remaining distance indicated may be different from the calculated distance, depending on the road conditions, the vehicle conditions, the type of driving and so on. For these reasons the remaining distance is only a reference for the rider.**



**Selection button instructions (“SELECT” button)**

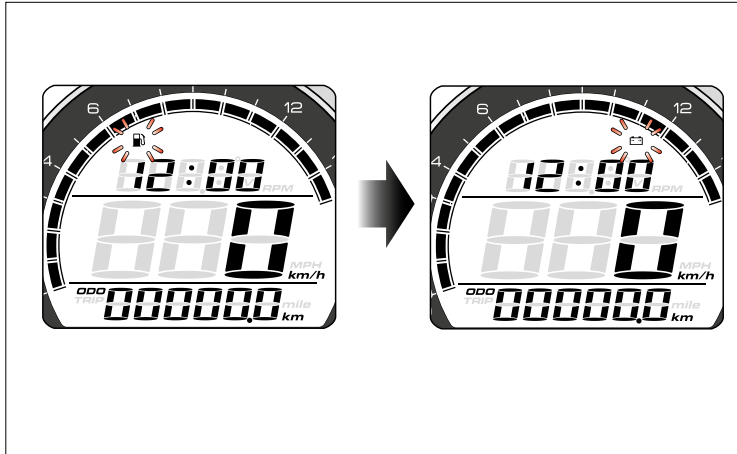
In the clock screen, press once the selection button (“SELECT”) to display the battery voltage screen. In the battery voltage screen, press once the selection button (“SELECT”) to activate the clock.



**RPM (ENGINE SPEED) operating instructions**

On the screen showing the remaining fuel/distance and battery voltage, press and hold the selection button (“SELECT”) for three seconds to display the RPM (engine speed) screen.

In the RPM (engine speed) screen, press and hold the selection button (“SELECT”) to display to the remaining fuel/distance screen and battery voltage screen.

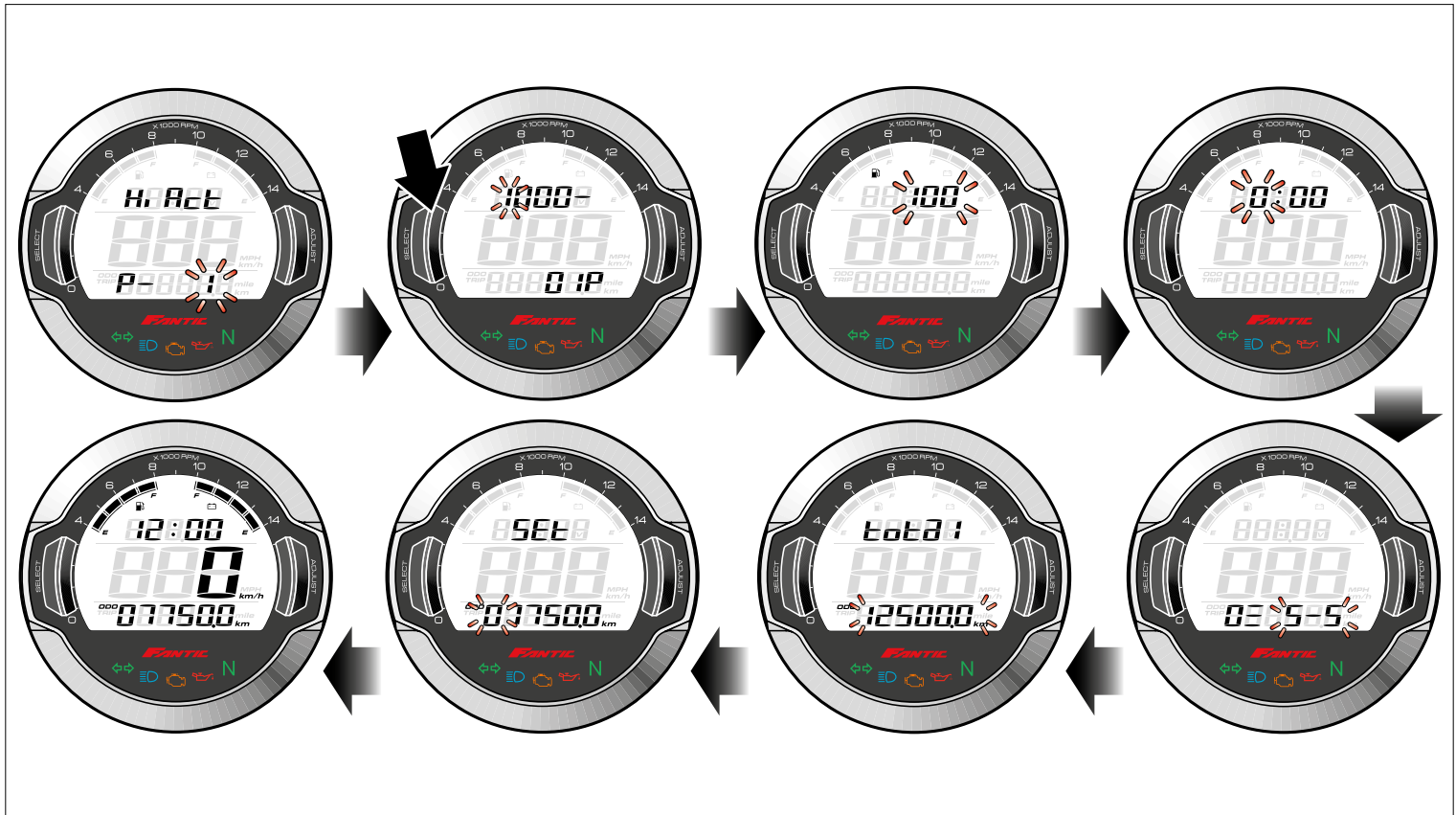


**RPM (ENGINE SPEED) screen**

When the remaining fuel level is at 1 the fuel symbol flashes as a warning.

When the remaining battery voltage level is at 1 the Battery symbol flashes as a warning.

**Settings screen instructions**



In the settings screen, it is possible to press the selection button (“SELECT”) to access the settings. The settings screen has the following order of options:

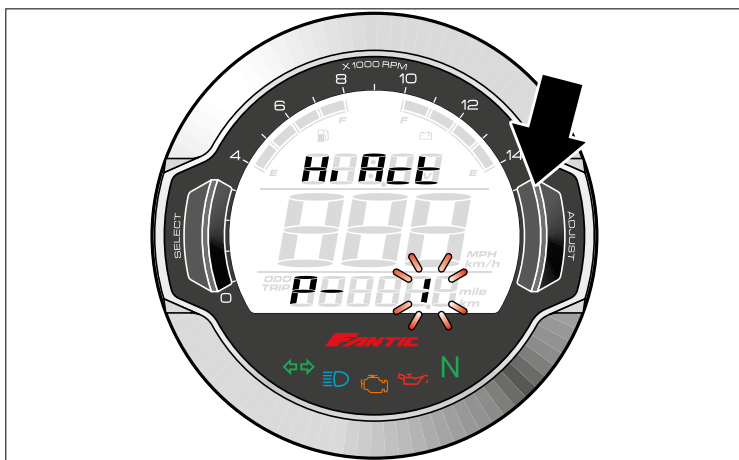
- input pulse setting (RPM function);
- tire circumference setting;
- fuel resistance setting;
- clock setting; dashboard backlight setting;
- total internal odometer screen setting;
- total external odometer screen setting.

**⚠ If no action is taken within 30 seconds, the dashboard automatically returns to display the main screen.**



**Access the settings screen**

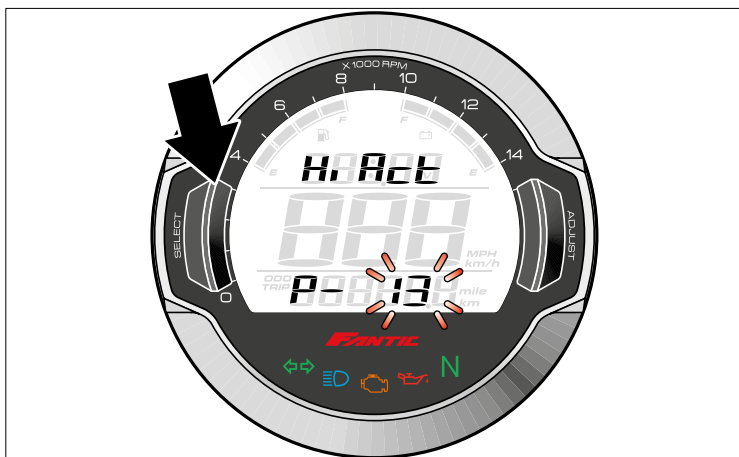
On the main screen, press and hold the selection (“SELECT”) and adjust (“ADJUST”) buttons simultaneously for three seconds to activate the settings screen.



**Input signal setting (RPM)**

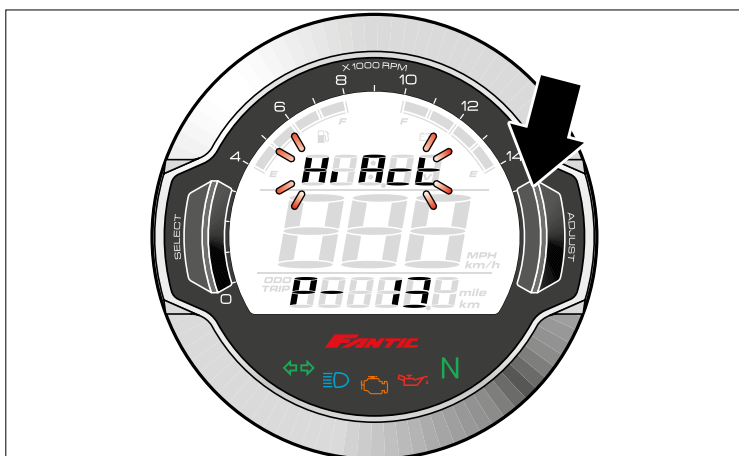
Press the adjustment button (“ADJUST”) to change the setting. The setting digit flashes during the modification operations.

**Adjustment range: 0.5, 1~24.**



Press the selection button (“SELECT”) until the desired input pulses value is reached.

**The standard reference value is: 1.**



Press the adjustment button (“ADJUST”) to select the correct waveform.

**The RPM pulse is defined as “Hi” (positive pulse) and “Lo” (negative pulse).**

**The standard reference value is: “Lo”.**

The writing that identifies the waveform setting, flashes during the modification operations.

**If the speed (RPM) is incorrect or not correctly displayed, select another setting and try again.**





**⚠ Check with the engine running idle if the RPM indicator indicates a notch and if, with a slight rotation of the gas, it indicates two. In this case, the configuration adopted is correct, otherwise try again.**

In the event that the standard configuration values are not successful, try the following combinations:

**✈ No. of pulses / waveform:**  
"1"/"Lo", "1"/"Hi", "2"/"Lo", "2"/"Hi".

After completing the settings, press one and hold the selection button ("SELECT") to display the next setting view.



**Tire circumference compensation setting**

**⚠ When tires of another size are installed it is necessary to reset the setting value.**

Press and hold the selection button ("SELECT") until the specific value to be entered is reached.

It is possible to calculate the value to be inserted suitable for the wheels used.

- A. Circumference of the new tire.
- B. Circumference of the original tire.

The calculation to define the value to insert is the following:

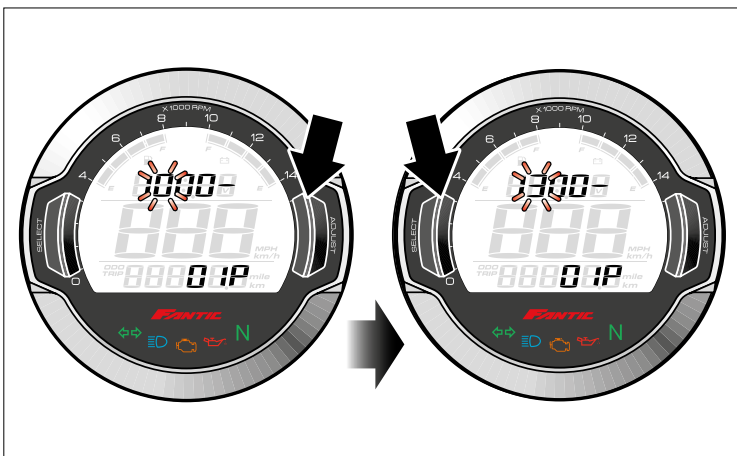
$$A \div B \cdot 100\%.$$



**⚠ Setting values:**  
Scrambler version: 2202 mm;  
Flat Track Version: 2250 mm.

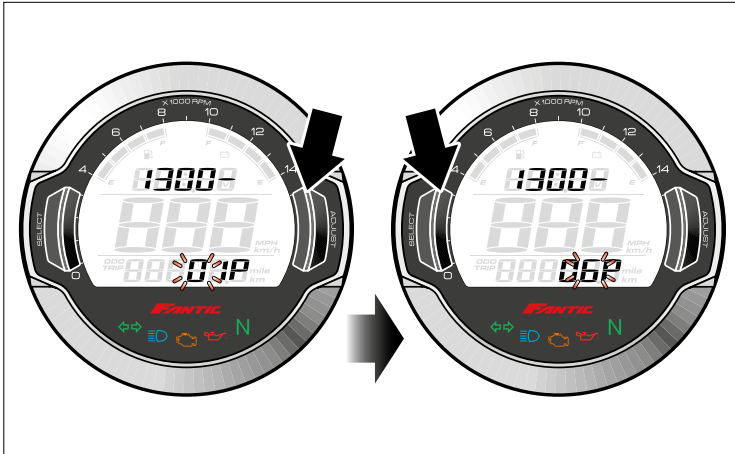
**⚠ The number that identifies the setting flashes during the modification operations.**

- i Range displayed: 300~2500. Unit of measure: 1 mm.**
- i It is possible to define the valve as the starting and ending point to measure the wheel circumference with a tape measure.**



Press the adjustment button ("ADJUST") to change the wheel circumference value.

At the end of the setting, press once and hold the selection button ("SELECT") to display the next setting view.



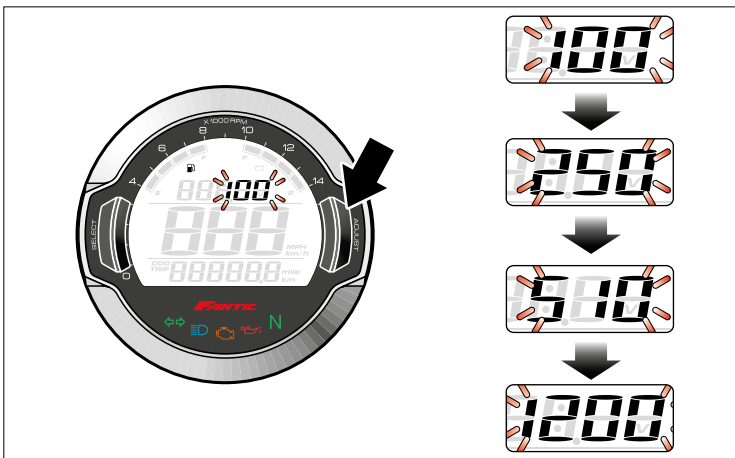
Press the adjustment button ("ADJUST") to change the setting.

**⚠ The number that identifies the setting flashes during the modification operations.**

**ⓘ Value range: 1~20 points.**

**⚠ Standard value to set:  
9 pulses (points).**

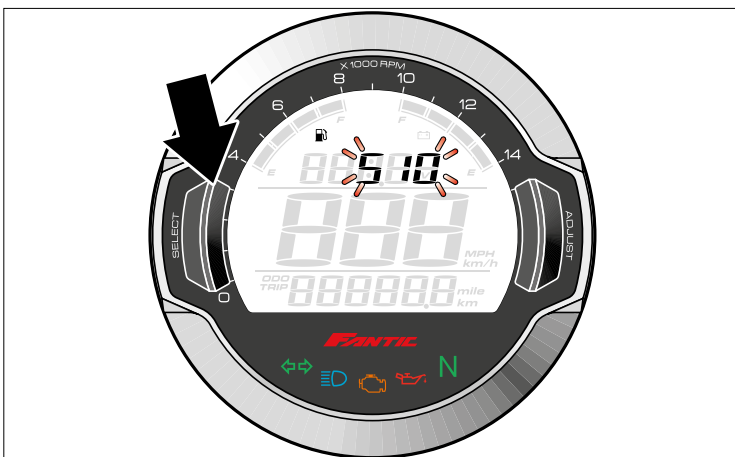
At the end of the setting, press once and hold the selection button ("SELECT") to display the next setting view.



**Fuel resistance setting**

Press the adjustment button ("ADJUST") to select the number to be set.

**ⓘ The resistance values which can be selected are:  
100 Ω, 250 Ω, 510 Ω and 1200 Ω.**



After completing the setting, press once and hold the selection button ("SELECT") to display the next setting view.

**ⓘ When the fuel resistance value is changed, the remaining distance is reset to 0 and learning is restarted.**

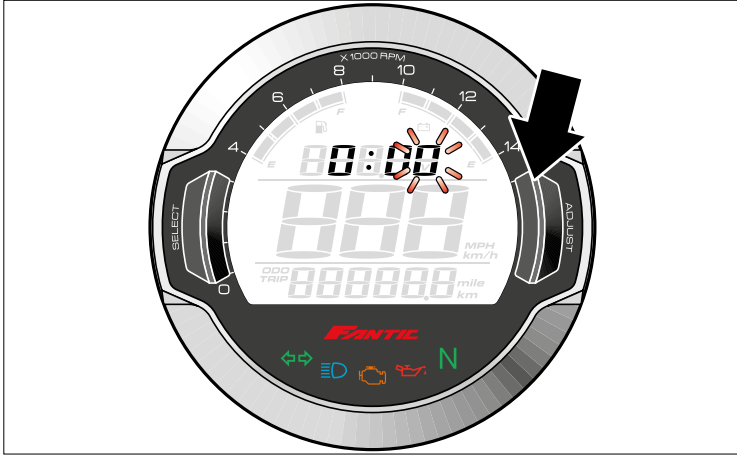


**Clock setting**

Press and hold the selection button ("SELECT") and release it when the desired digit is displayed.

**⚠ During the modification, the selected digit will continue to flash.**

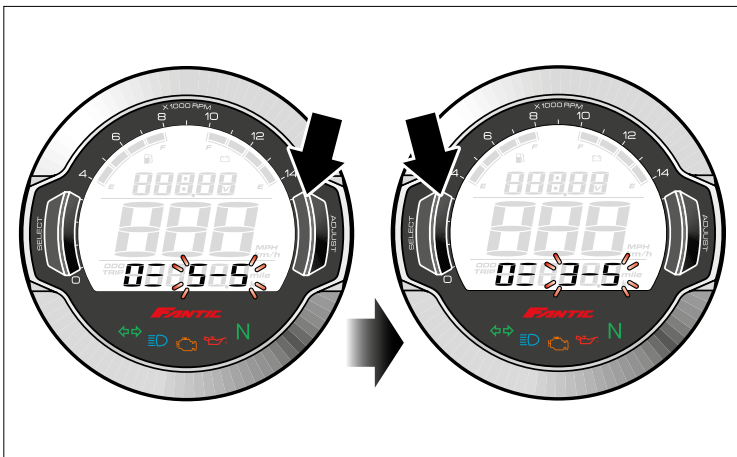
**ⓘ This is a clock with 24-hour format. The setting follows the order from hours to minutes.**



Press the adjust button (“ADJUST”) to select another digit to change.



At the end of the adjustment, press once and hold the selection button (“SELECT”) to display the next setting view.

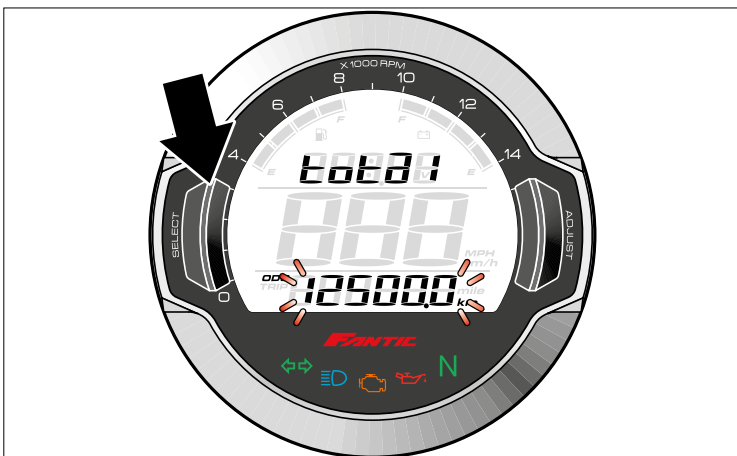


**Dashboard backlight setting**

Press and hold the adjustment button (“ADJUST”) and release it when the desired illumination value is selected.

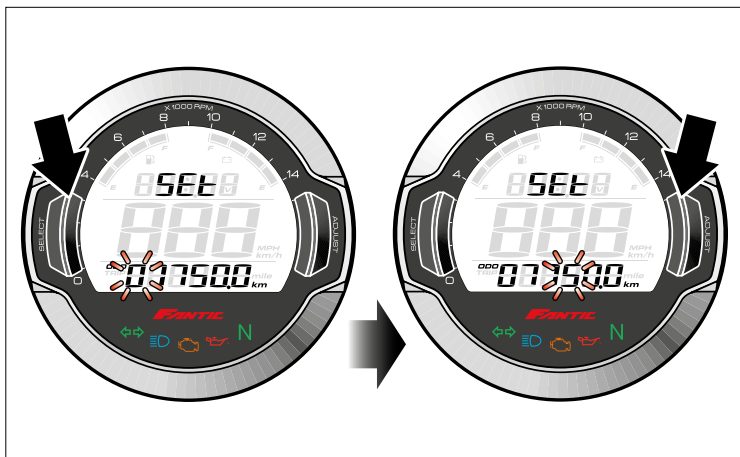
**i** Lighting values range from 1-5 (darker) to 5-5 (lighter). The brightness of the dashboard changes immediately after setting the value.

At the end of the, press once and hold the selection button (“SELECT”) to confirm and to display the next setting view.



**Internal total odometer screen setting**

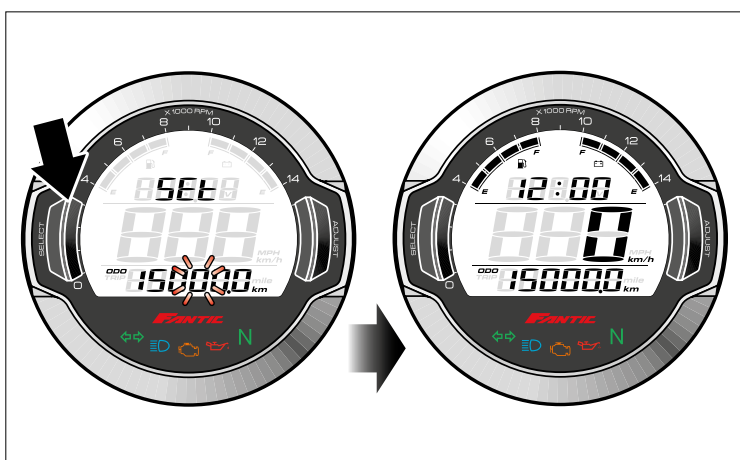
Press once and hold the selection button (“SELECT”) to display the next setting view.



**External total odometer screen setting**

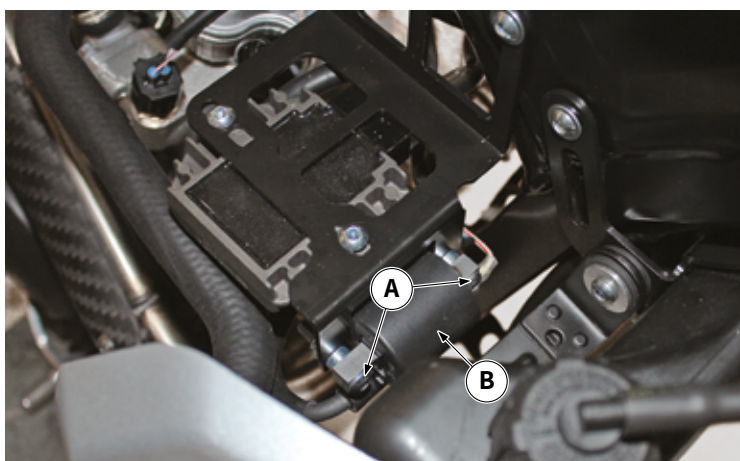
Press and hold the selection button (“SELECT”) until the desired digit is displayed.

Then, press the adjust button (“ADJUST”) to change the digit to be changed.



Once the desired value has been set, press once and hold the selection button (“SELECT”) to confirm and return to the main screen.

Dashboard main screen after applying the customized settings.



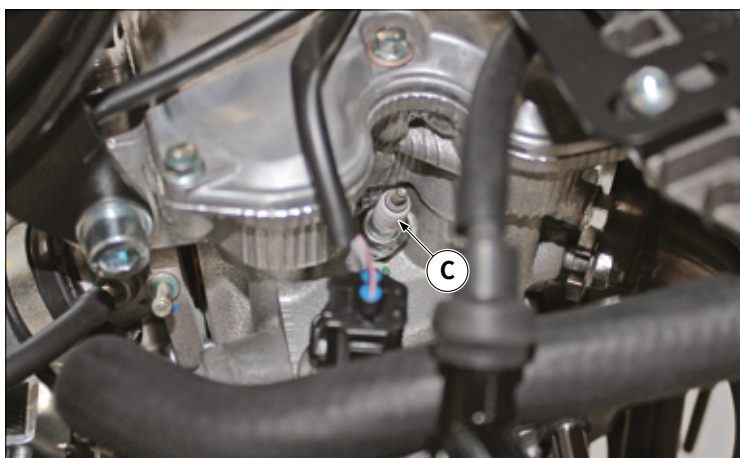
**10.8 IGNITION**

**10.8.1 Ignition coil removal**

Disconnect the tube from the spark plug.

Remove the screws “A” and remove the coil “B”.

**i** Proceed in the reverse order for reassembling.



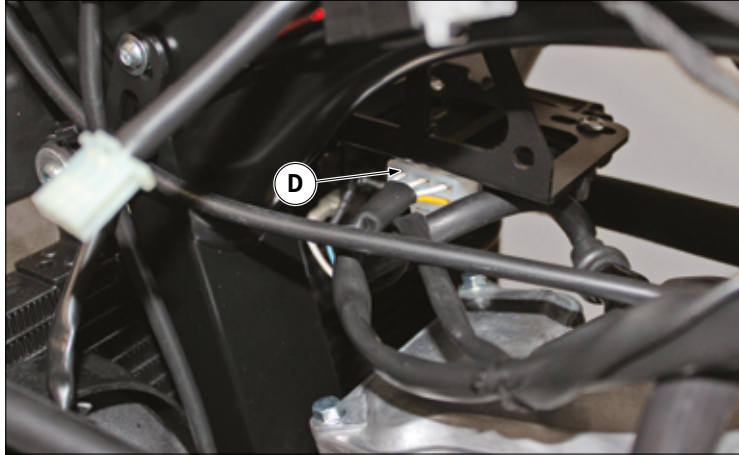
**10.8.2 Spark plug removal**

Disconnect the tube from the spark plug.

Unscrew and remove the spark plug “C”.

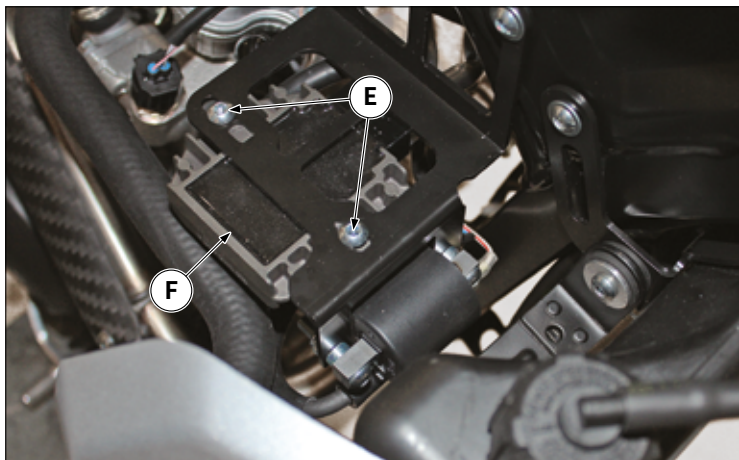
**i** Proceed in the reverse order for reassembling.





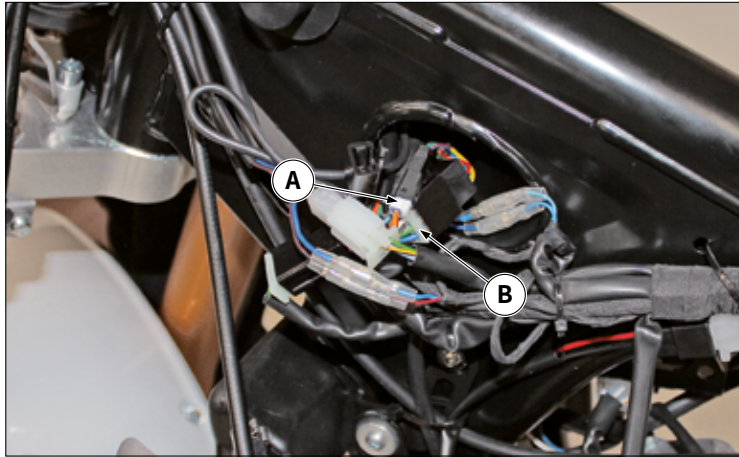
**10.8.3 Voltage regulator removal**

Disconnect the connector “D”.



Remove the screws “E”, then remove the voltage regulator “F”.

**i** Proceed in the reverse order for reassembling.

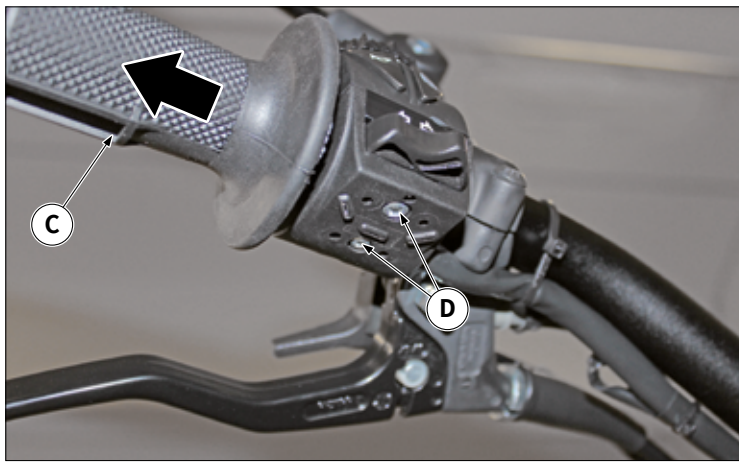


**10.9 LIGHT STALK**

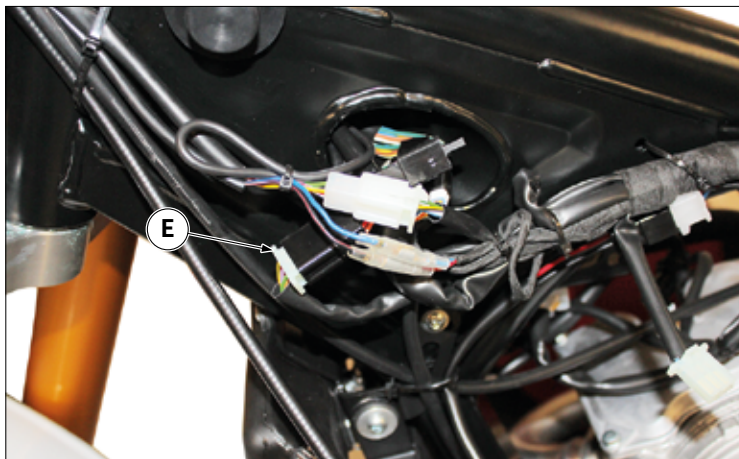
**10.9.1 Left light stalk**

Remove:

- Tank: refer to "12.8.2 Complete tank removal" on page 123.
- Reconnect the connectors "A" and "B".



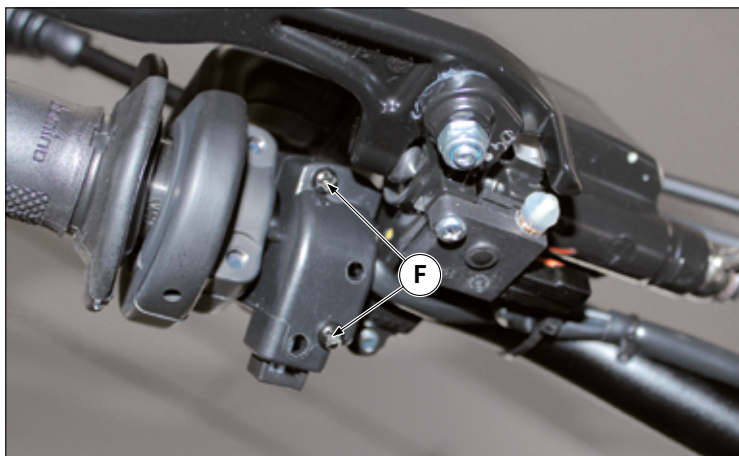
Remove the knob "C", remove all the clamps that lock the cable of the light stalk connector then loosen the screws "D" and remove it.



**10.9.2 Right light stalk**

Remove:

- Tank: refer to "12.8.2 Complete tank removal" on page 123.
- Throttle control knob; refer to "12.27.1 Throttle control knob removal" on page 163.
- Disconnect the connector "E".



Remove the cable ties that lock the cable of the light stalk connector then loosen the screws "F" and remove it.