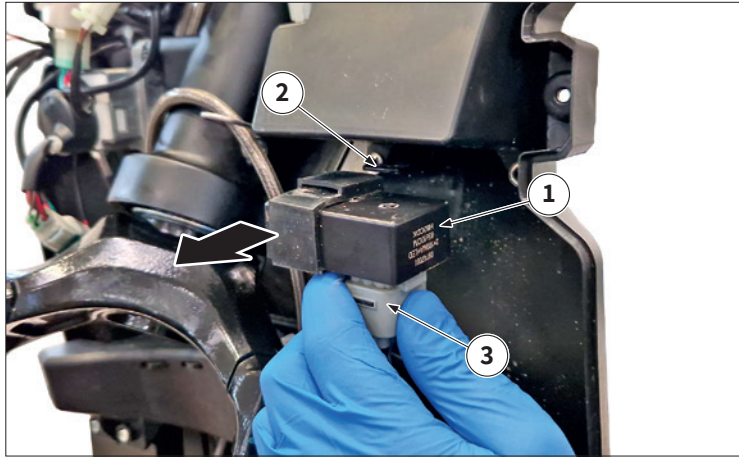




18.1 BLINKER

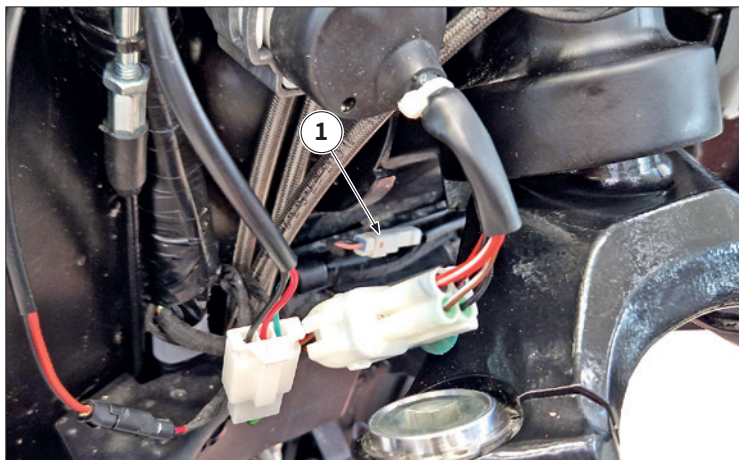
Preliminary operation:

- ⚠ **Disconnect the vehicle batteries before any other operation.**
- ⚠ **Handle the cables and connectors of electronic devices with extreme caution.**

– Remove the front shield (as described on page 40).

Remove blinker "1" from insert "2" of the storage pocket.
Disconnect connector "3" and remove the blinker from the vehicle.

i For the reassembly procedure, proceed in the reverse order.



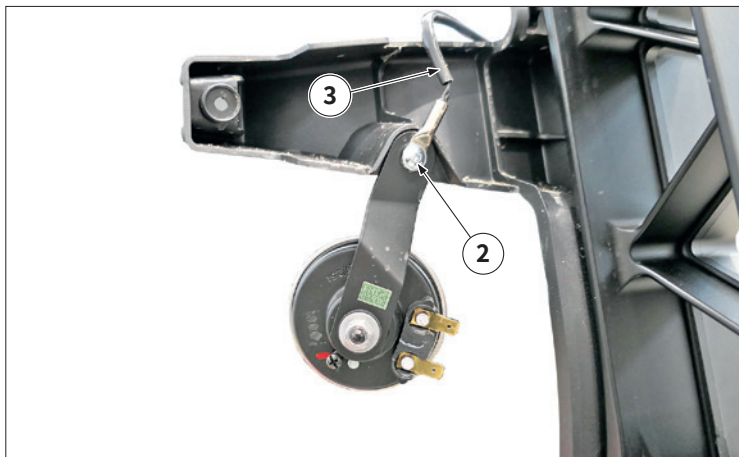
18.2 AMBIENT AIR TEMPERATURE SENSOR

Preliminary operation:

- ⚠ **Disconnect the vehicle batteries before any other operation.**
- ⚠ **Handle the cables and connectors of electronic devices with extreme caution.**

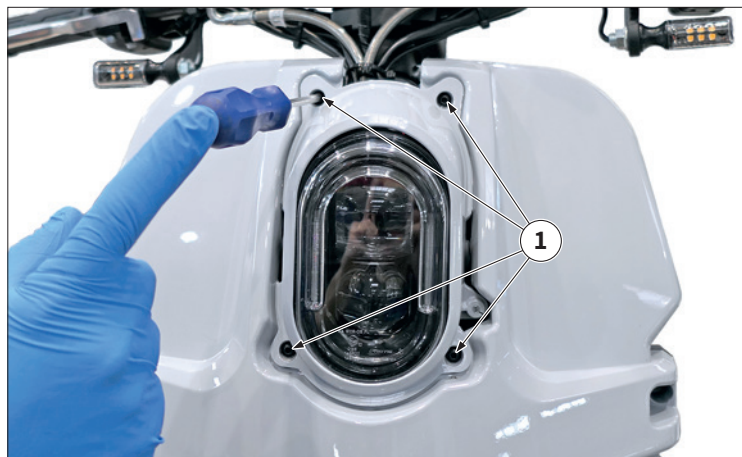
– Remove the Inner shield (as described on page 42).

Disconnect the connector "1".



Remove screw "2" and release the temperature sensor eyelet "3".

i For the reassembly procedure, proceed in the reverse order.



18.3 HEADLIGHT AND COVER

Preliminary operation:

- Remove the front bonnet (as described on page 39).

⚠ Handle the cables and connectors of electronic devices with extreme caution.

Remove the four self-tapping screws "1".

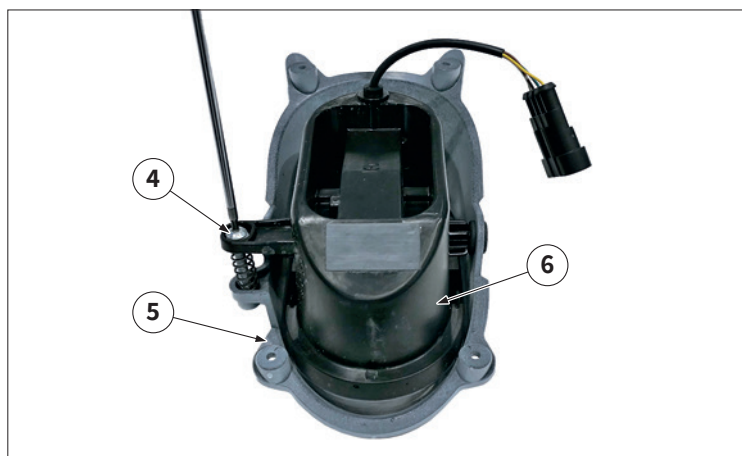
🔧 Tightening torque
Self-tapping screws Ø4x16 "1": 1.2 Nm (0.12 m•kgf, 0.9 ft•lbf)



Pull out the headlight complete with cover "2".



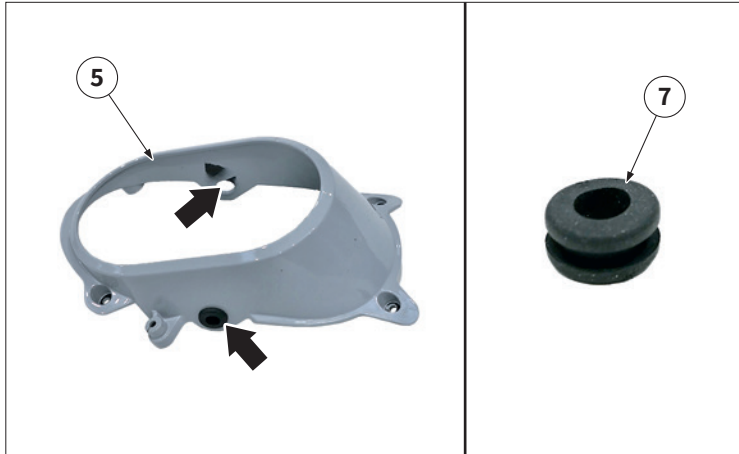
Disconnect connector "3" and remove the headlight complete with cover.



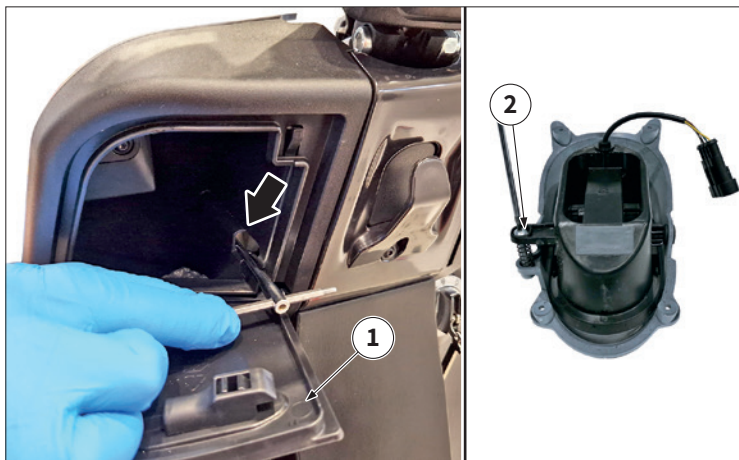
Remove the light adjustment screw "4" together with the plastic washer and spring.

Separate cover "5" from light "6".

i For the reassembly procedure, proceed in the reverse order.

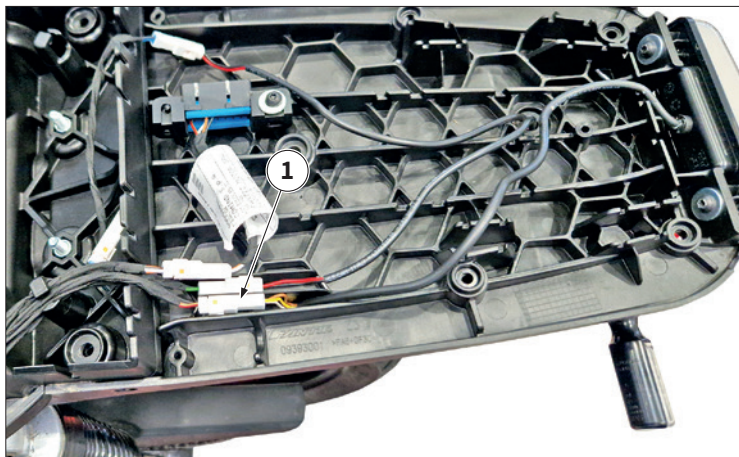


i When replacing the old cover with a new one, make sure to position the two rubber grommets "7" in their respective seats.



18.3.1 Headlight inclination adjustment

Open the left flap "1" and use a wrench at least 20 cm long.
Turn the headlight adjustment screw "2" located inside the inner shield to adjust the inclination of the headlight.



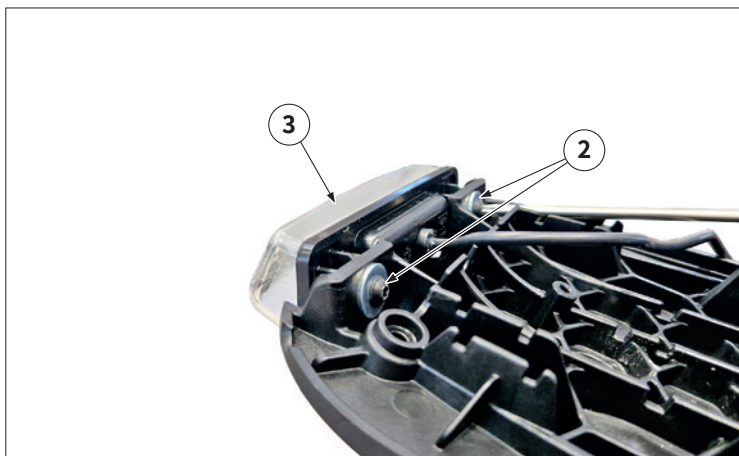
18.4 TAIL LIGHT

Preliminary operations:

- Remove the Handle (as described on page 61);
- Removing the Structural luggage rack (as described on page 61).

! Handle the cables and connectors of electronic devices with extreme caution.

Disconnect the connector "1".

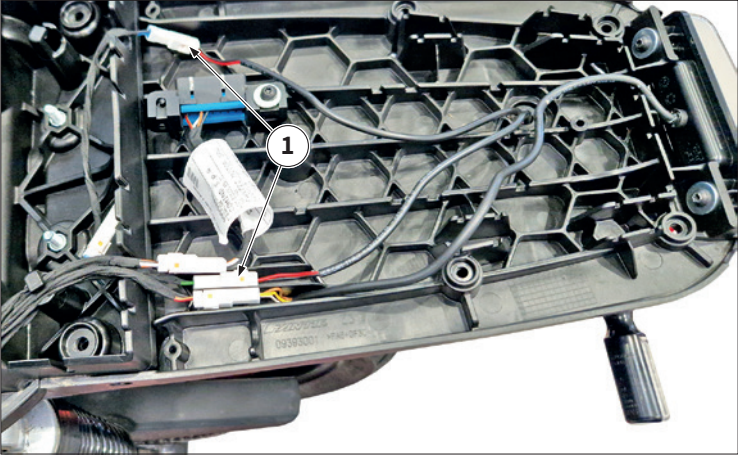


Remove the two self-tapping screws "2" and related washers.

Tightening torque
Self-tapping screws Ø4x16 "2": 1.2 Nm (0.12 m•kgf, 0.9 ft•lbf)

Remove the tail light "3" from the vehicle.

i For the reassembly procedure, proceed in the reverse order.



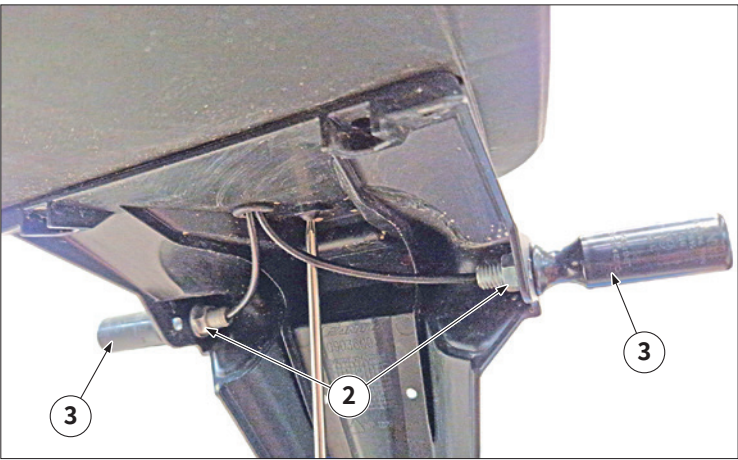
18.5 REAR TURN SIGNALS

Preliminary operations:

- Remove the Handle (as described on page 61);
- Removing the Structural luggage rack (as described on page 61).

⚠ Handle the cables and connectors of electronic devices with extreme caution.

Disconnect the connectors "1".

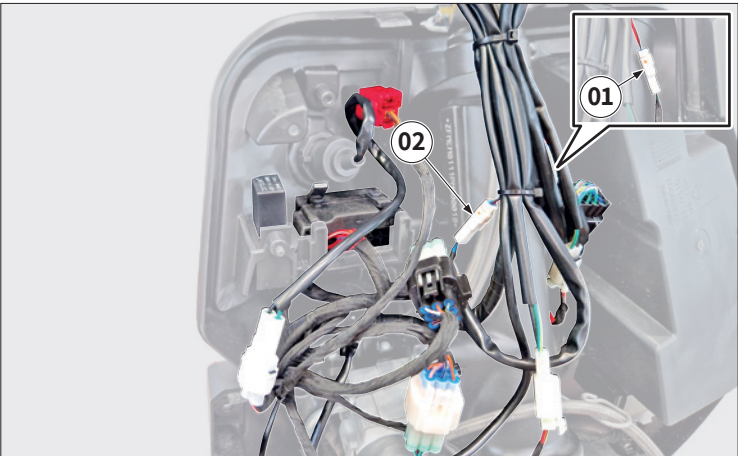


Unscrew nuts "2".

🔧 Tightening torque
Nuts M10 "2": 4 Nm (0.41 m•kgf, 3 ft•lbf)

Remove turn signals "3" from the vehicle.

ℹ For the reassembly procedure, proceed in the reverse order.



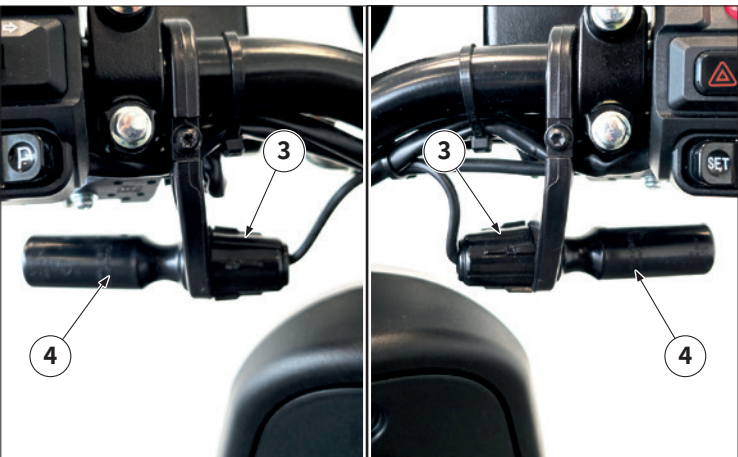
18.6 FRONT TURN SIGNALS

Preliminary operations:

- Remove the front shield (as described on page 40);

⚠ Handle the cables and connectors of electronic devices with extreme caution.

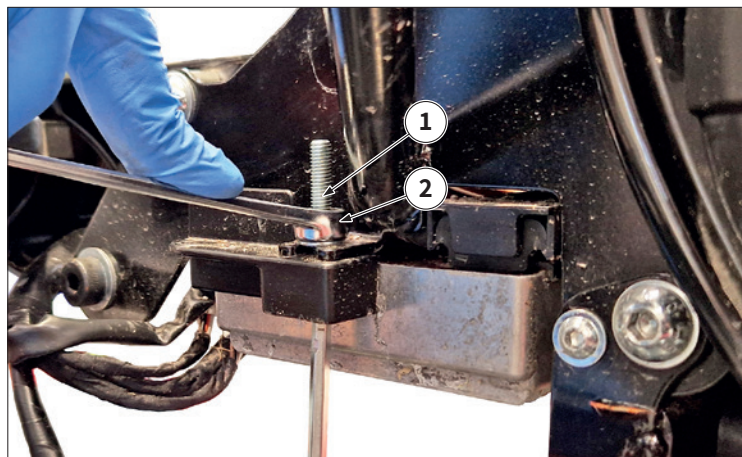
Disconnect the left front turn signal connector "1" and the right front turn signal connector "2".



Remove the cable covers "3".

Unscrew and remove the turn signals "4" from the vehicle.

ℹ For the reassembly procedure, proceed in the reverse order.



18.7 INVERTER

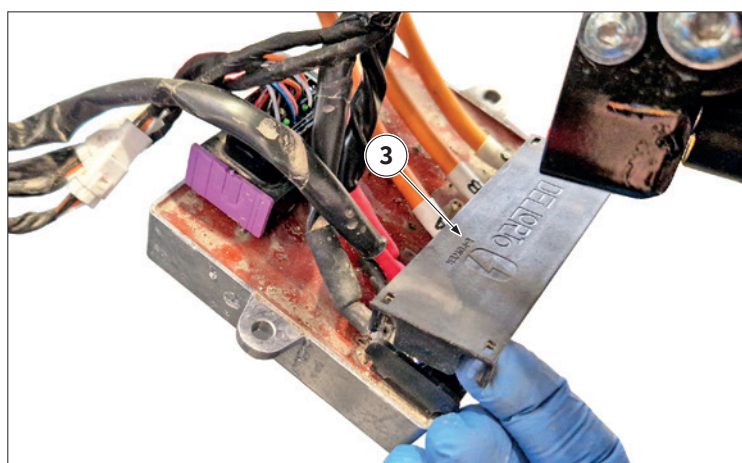
Preliminary operation:

- ⚠ **Disconnect the vehicle batteries before any other operation.**
- Remove the underbody (as described on page 47).

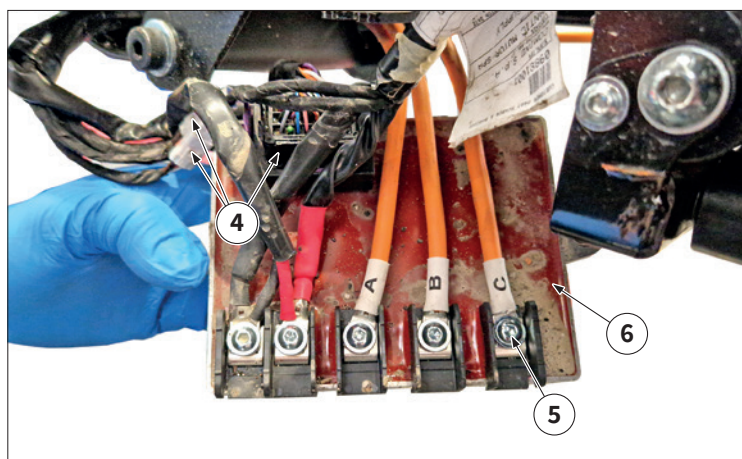
- ⚠ **Handle the cables and connectors of electronic devices with extreme caution.**

Remove screw "1" together with nut "2" (on both sides).

- 🔧 **Tightening torque**
Self-locking nuts M6 (8.8) "2": 2.5 Nm (0.25 m•kgf, 1.8 ft•lbf)



Remove protection "3".

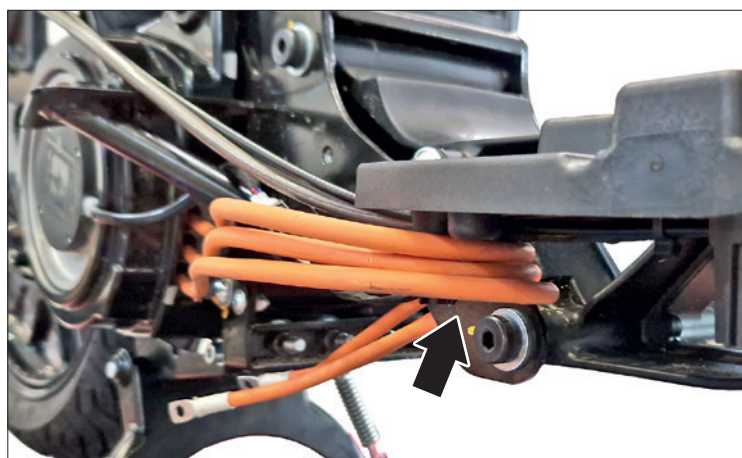


Disconnect the connectors "4".

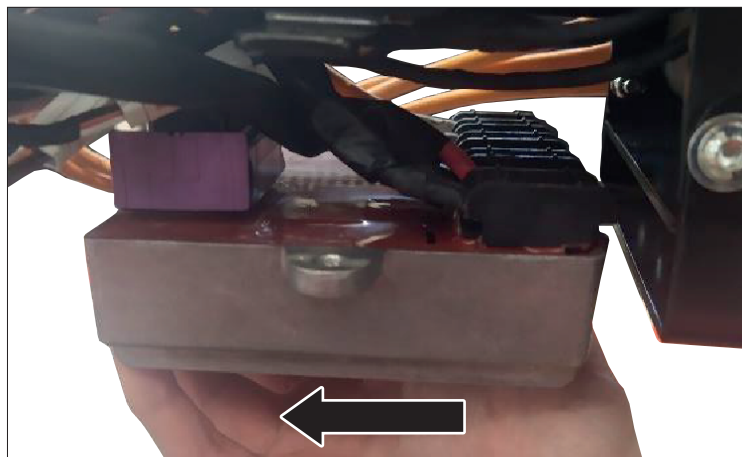
Remove the five "5" screws and disconnect the wire loops.

- 🔧 **Tightening torque**
Screws M6x16 (8.8) TBFL "5": 10.5 Nm (1.1 m•kgf, 7.7 ft•lbf)

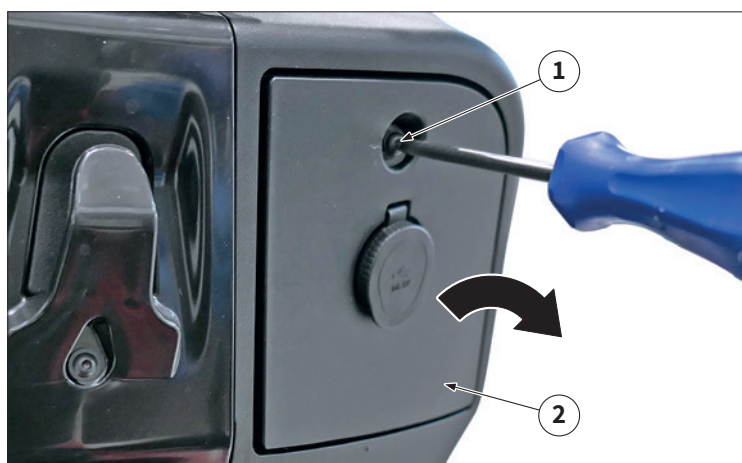
Remove inverter "6" from the vehicle.



- i** **For the reassembly procedure, proceed in the reverse direction, paying attention to the routing of the three motor cables.**



- i** For the reassembly procedure, also pay attention to the positioning of the inverter. The arrow in the picture indicates the direction of travel of the vehicle.



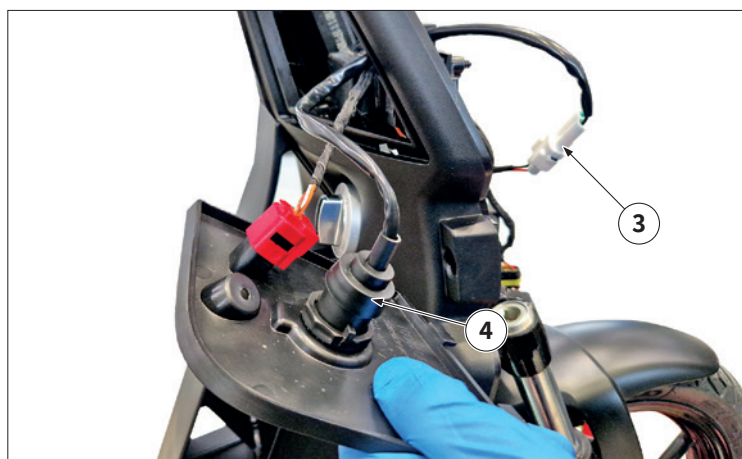
18.8 USB SOCKET

- !** Handle the cables and connectors of electronic devices with extreme caution.

Remove self-tapping screw "1".

- Tightening torque**
 Self-tapping screws Ø4x16 "2": 1.2 Nm (0.12 m•kgf, 0.9 ft•lbf)

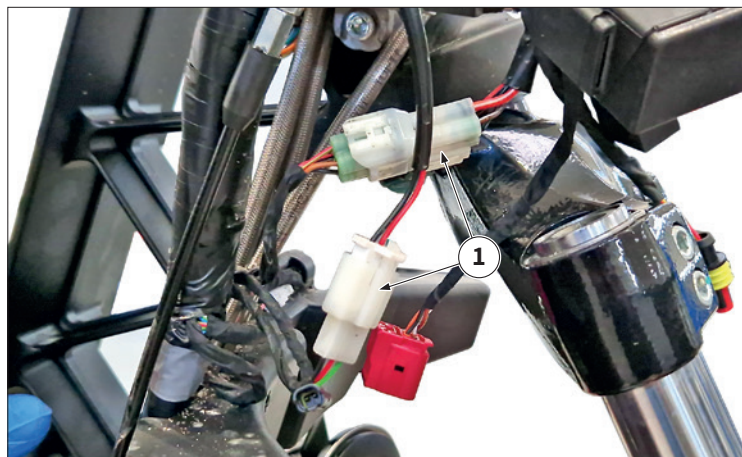
Open the right flap "2".



Disconnect the connector "3".

Remove USB socket "4" from the right flap

- i** For the reassembly procedure, proceed in the reverse order.



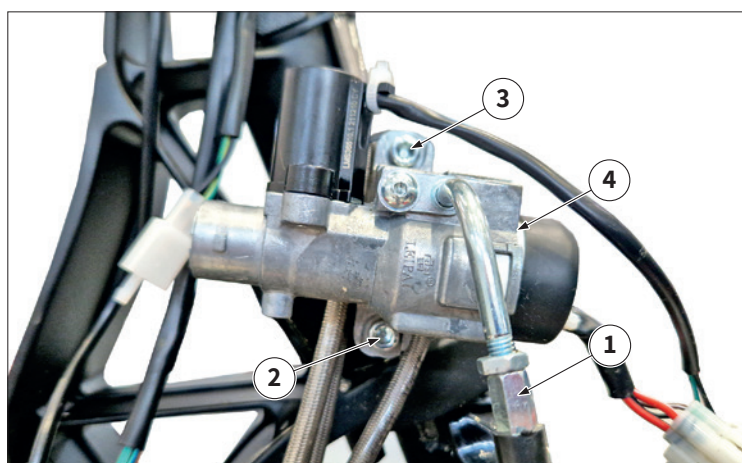
18.9 KEYLESS LOCK

Preliminary operation:

- Remove the Inner shield (as described on page 42).

⚠ Handle the cables and connectors of electronic devices with extreme caution.

Disconnect the two connectors "1".



Release the seat lock cable "1", referring to paragraph "10.1.2 Seat lock cable" on page 60.

Remove the screw "2".

🔧 Tightening torque
Screw M6x16 (8.8) TCEI "2": 10 Nm (1.0 m•kgf, 7.4 ft•lbf)

Remove the tear-off screw "3".

🔧 Tightening torque
Tear-off screw M6x16 (8.8) "3": 10 Nm (1.0 m•kgf, 7.4 ft•lbf)

Remove the keyless lock "4" from the vehicle.

i For the reassembly procedure, proceed in the reverse order.

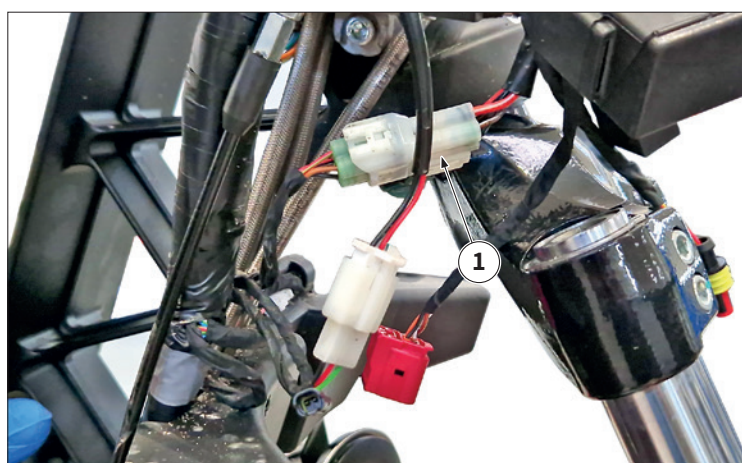
i After tightening the tear-off screw "3" to the specified torque, tighten until the screw head breaks off.

In the event of loss of one of the two keys, this procedure is only feasible if one of the two already paired remote controls is still in the customer's possession; if both are lost, there is no possibility of pairing the new remote controls again and the new control unit and remote controls must be completely replaced.

18.10 REMOTE CONTROLS WITH KEY

In this section, the procedure for pairing a new remote controls to the keyless control unit will be described in detail. This is essential in situations where a lost remote control needs to be replaced. The instructions provided below will offer clear and precise guidance to ensure successful configuration, thus ensuring correct synchronisation between the new remote controls and the vehicle keyless control unit.

- ⚠ - **Check the condition of the wires and electrical connectors.**
 - If there is damage to the electrical system, disconnect the batteries and **DO NOT** continue with this procedure.
 - The vehicle batteries must **NOT** be disconnected in order to perform this procedure.
 - Handle cables and connectors of electronic devices with extreme caution, as all parts are live.
- ℹ This procedure is only possible if one of the two remote controls with keys (previously paired) is still in the customer's possession.
- ℹ If both remote controls with keys are lost, there is no possibility of pairing two new remote controls. It will then be necessary to completely replace the keyless control unit (see section "18.11 Keyless control unit" on page 96).

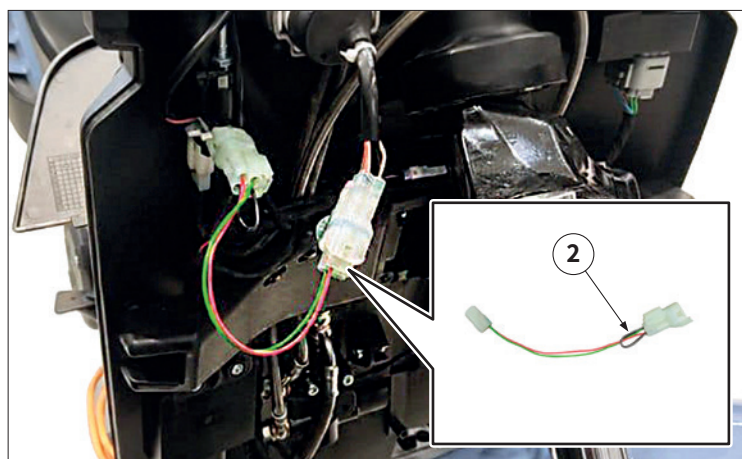


Preliminary operation:

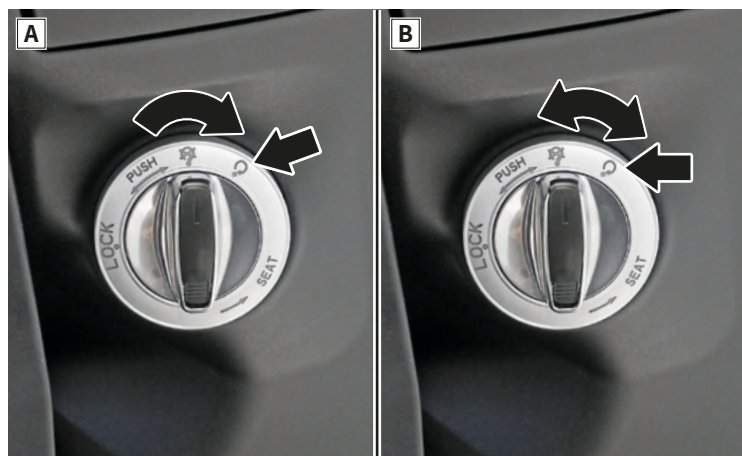
- Remove the front shield (as described on page 40).

ℹ **A maximum number of 2 remote controls can be paired.**

1. Check that the battery connection is not damaged.
2. Disconnect the key switch connector "1" from the keyless control unit.



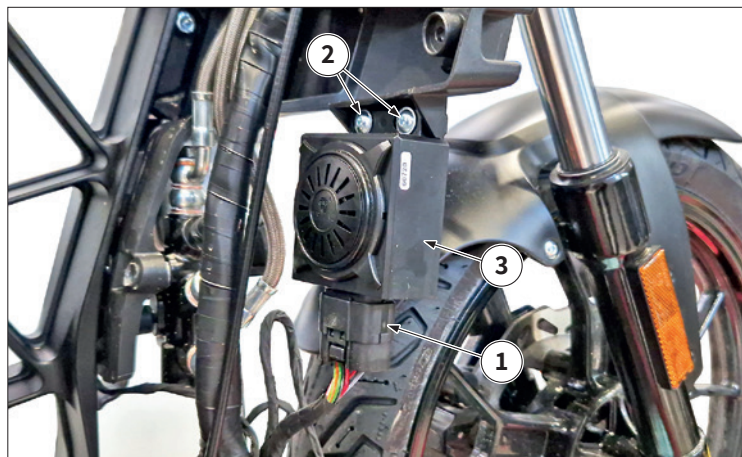
3. Connect the wiring harness "2".
4. The dashboard will turn on.
5. Unlock the moped using the remote control.
6. Turn the selector switch to "Q" (figure "A").



7. Wait at least 3 seconds.
8. Perform the sequence by turning the selector to "Q", then to "Q" 5 times and conclude the sequence by turning the selector to "Q" (figure "B").

ℹ **You have a maximum of 5 seconds to pair the remote controls; otherwise, repeat the sequence from step "8".**

9. At the end of the sequence, an acoustic signal will be heard confirming that the control unit has entered pairing mode.
10. At the acoustic signal, press any button on the remote control to be paired until acoustic confirmation.
11. Next, proceed with the second remote control.
12. The pairing procedure is now complete.



18.11 KEYLESS CONTROL UNIT

Preliminary operation:

- Remove the Inner shield (as described on page 42).

⚠ Handle the cables and connectors of electronic devices with extreme caution.

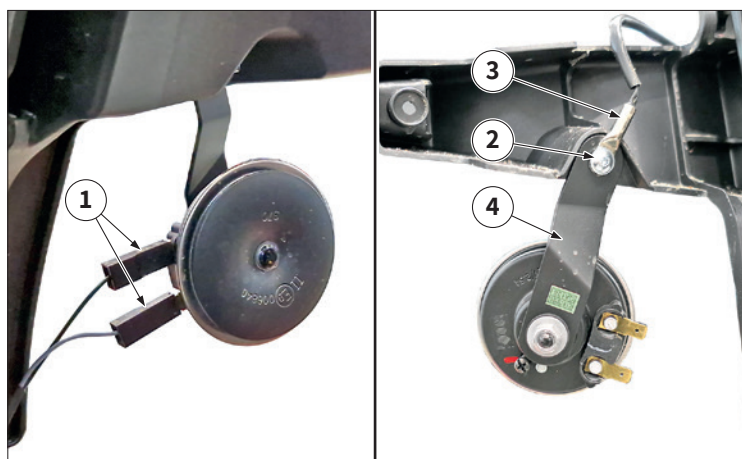
Disconnect the connector "1".

Remove the two screws "2" and their self-locking nuts.

🔧 Tightening torque
Screws M5x16 (8.8) TBB "2": 3 Nm (0.31 m•kgf, 2.2 ft•lbf)

Remove keyless control unit "3" from the vehicle.

i For the reassembly procedure, proceed in the reverse order.



18.12 HORN

Preliminary operation:

- Remove the Inner shield (as described on page 42).

⚠ Handle the cables and connectors of electronic devices with extreme caution.

Disconnect the connectors "1".

Remove screw "2" and release the temperature sensor eyelet "3".

🔧 Tightening torque
Screw M5x16 (8.8) TBB "2": 3 Nm (0.31 m•kgf, 2.2 ft•lbf)

Remove horn "4" from the vehicle.

i For the reassembly procedure, proceed in the reverse order.

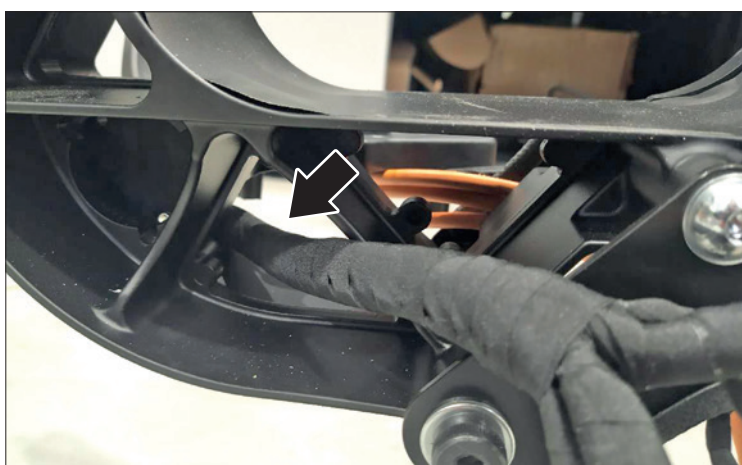


18.13 MAIN WIRING ROUTING

⚠ Handle the cables and connectors of electronic devices with extreme caution.

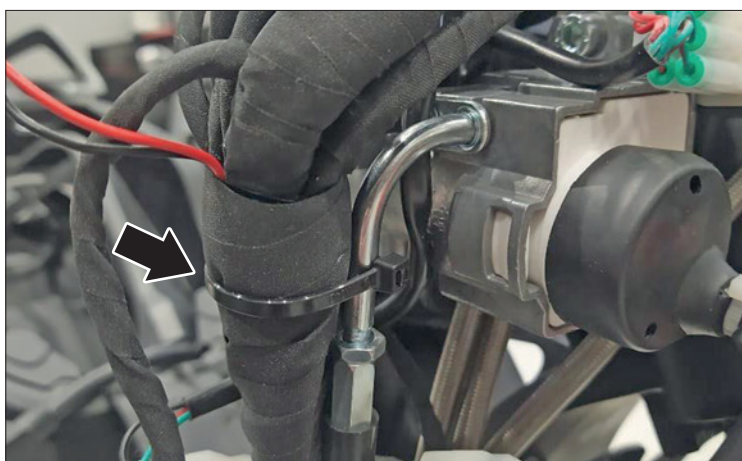
Fastening of the wiring using a clamp to the front support:

- Secure the wiring using the grey tape just above the front shield support as a reference.



Wiring routing from the right to the left side of the vehicle through the chassis:

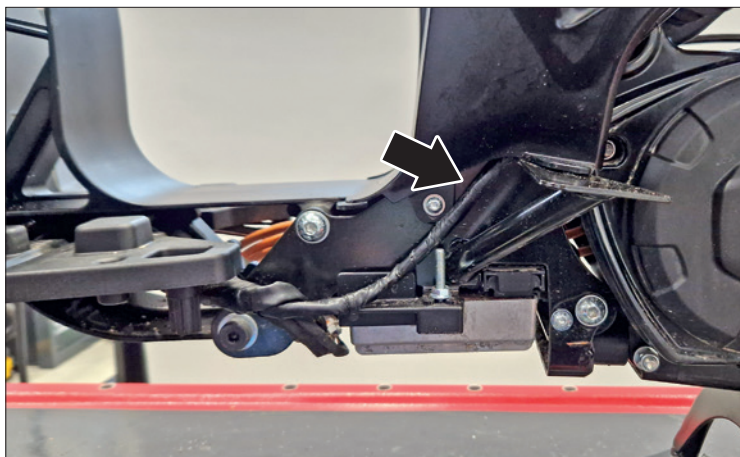
- Route the rear of the wiring inside the indicated rib.



Secure the wiring to the seat lock cable using a clamp.



Insert the fuse box on the fuse holder.



Cable routing in the rear of the vehicle:

- Route the wiring over the left fin of the frame bracket.



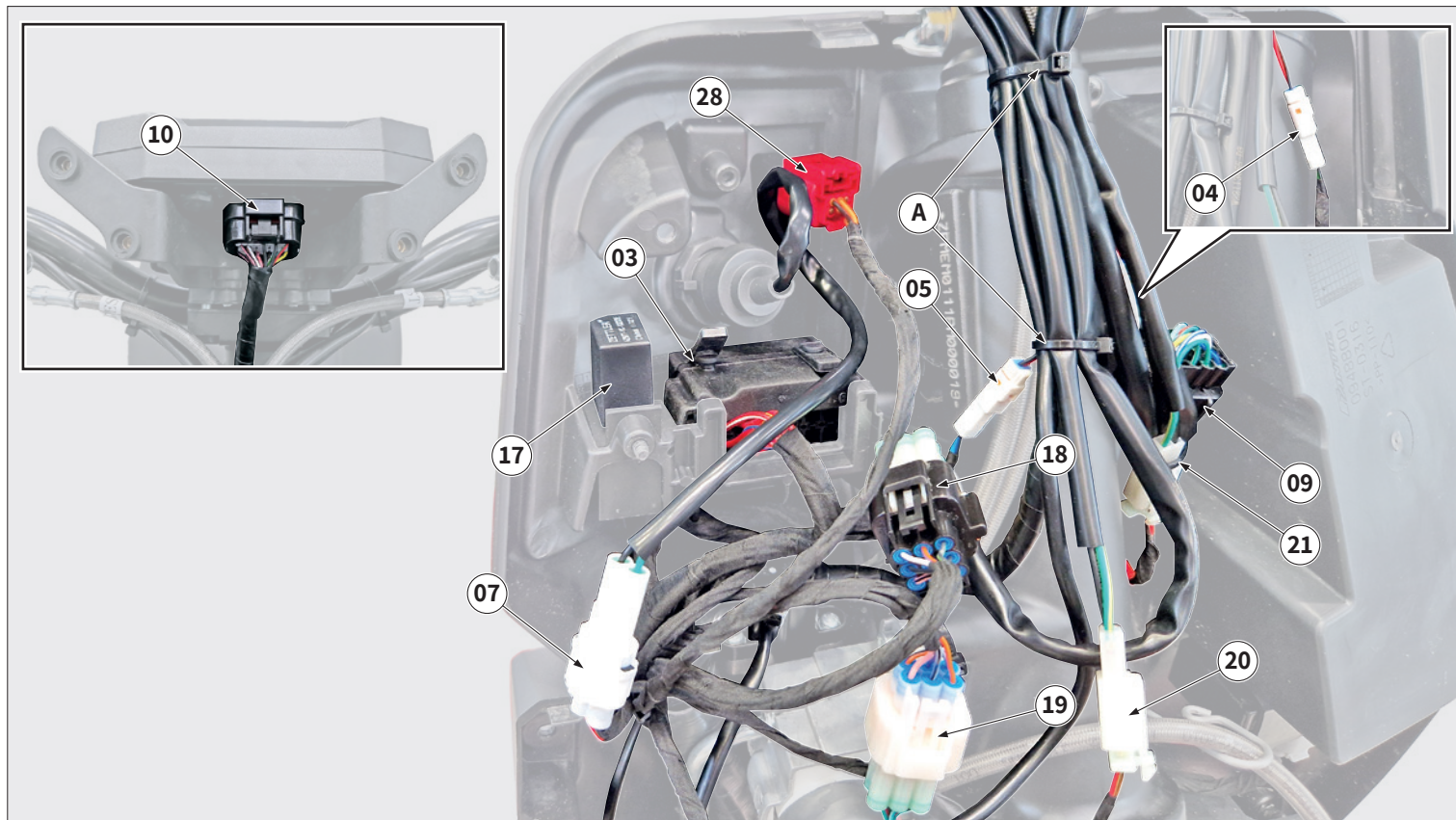
- Route the wiring along the channel on the left side of the lower rear frame.



Cable routing in the luggage rack area.

18.14 DEVICES, WIRING AND CONNECTORS
18.14.1 Upper front part

Connections located under the front shield, between the handlebar and the front mudguard.

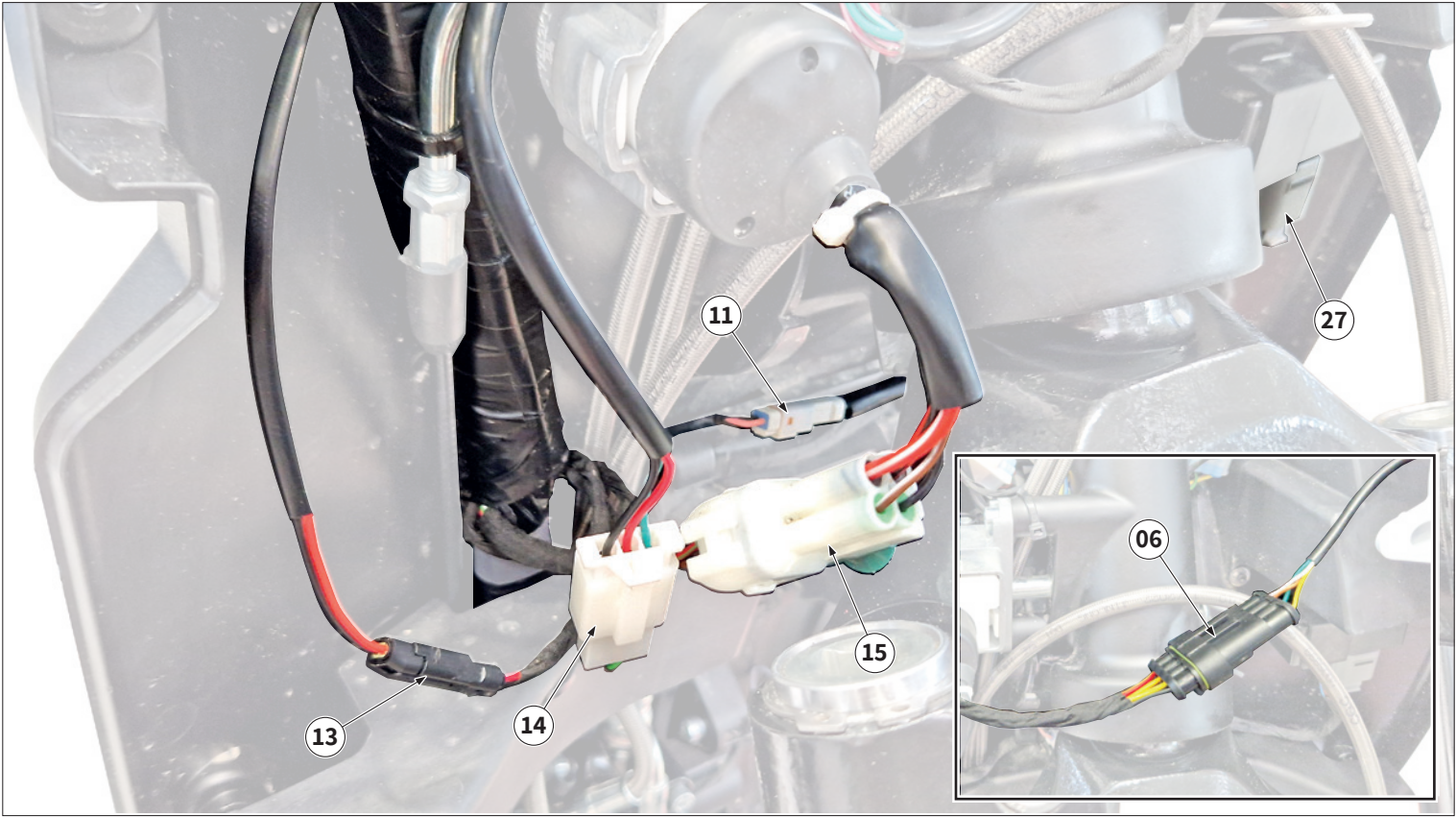


Ref.	Item	Page
03	Fuse box	107
04	Left front turn signal	91
05	Right front turn signal	
07	USB socket	93
09	Left steering switch	37
10	Dashboard	34
17	Keyless relay	43
18	Right steering switch	37
19	Throttle (Traction controller)	37
20	Front stop switch	-
21	Rear stop switch	-
28	OBD socket	-
A	Main cable fixing points on the steering head.	-

To access this portion of the wiring and the connectors present, remove the front shield (as described on page 99).

18.14.2 Front central part

Connections located under the front shield, at the height of the front fork.



Ref.	Note	Item	Page
06	A	Headlight	89
11	B	Ambient air temperature sensor	88
13		Key switch - connector 1	94
14		Key switch - connector 2	
15		Key switch - connector 3	
27		Blinker	88

Note "A"

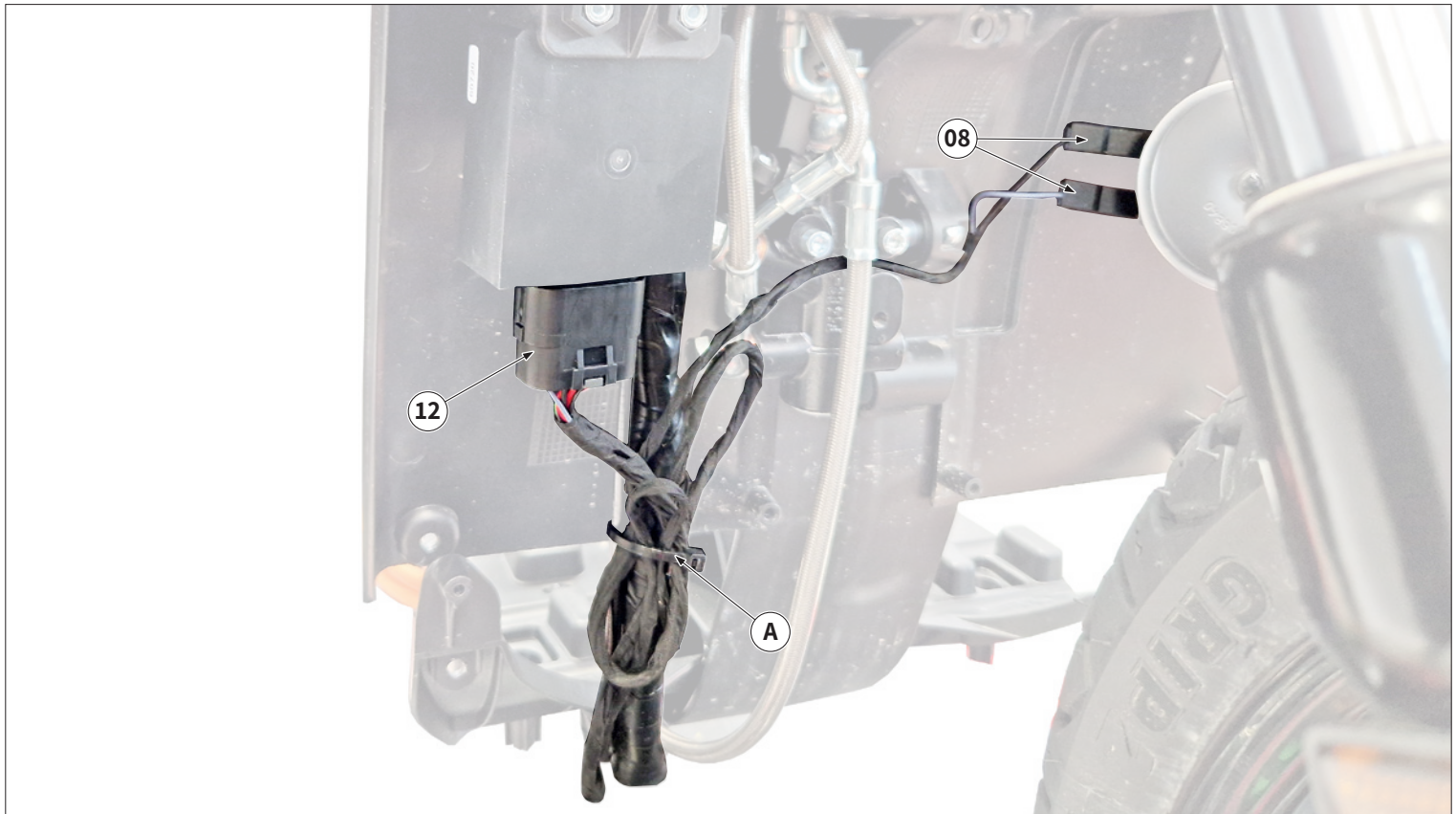
To access this portion of the wiring and the headlight connector, remove the headlight and cover (as described on page 89).

Note "B"

To access this portion of the wiring and the connectors present, remove the front shield (as described on page 40).

18.14.3 Lower front part

Connections located under the front shield, at the height of the front wheel.

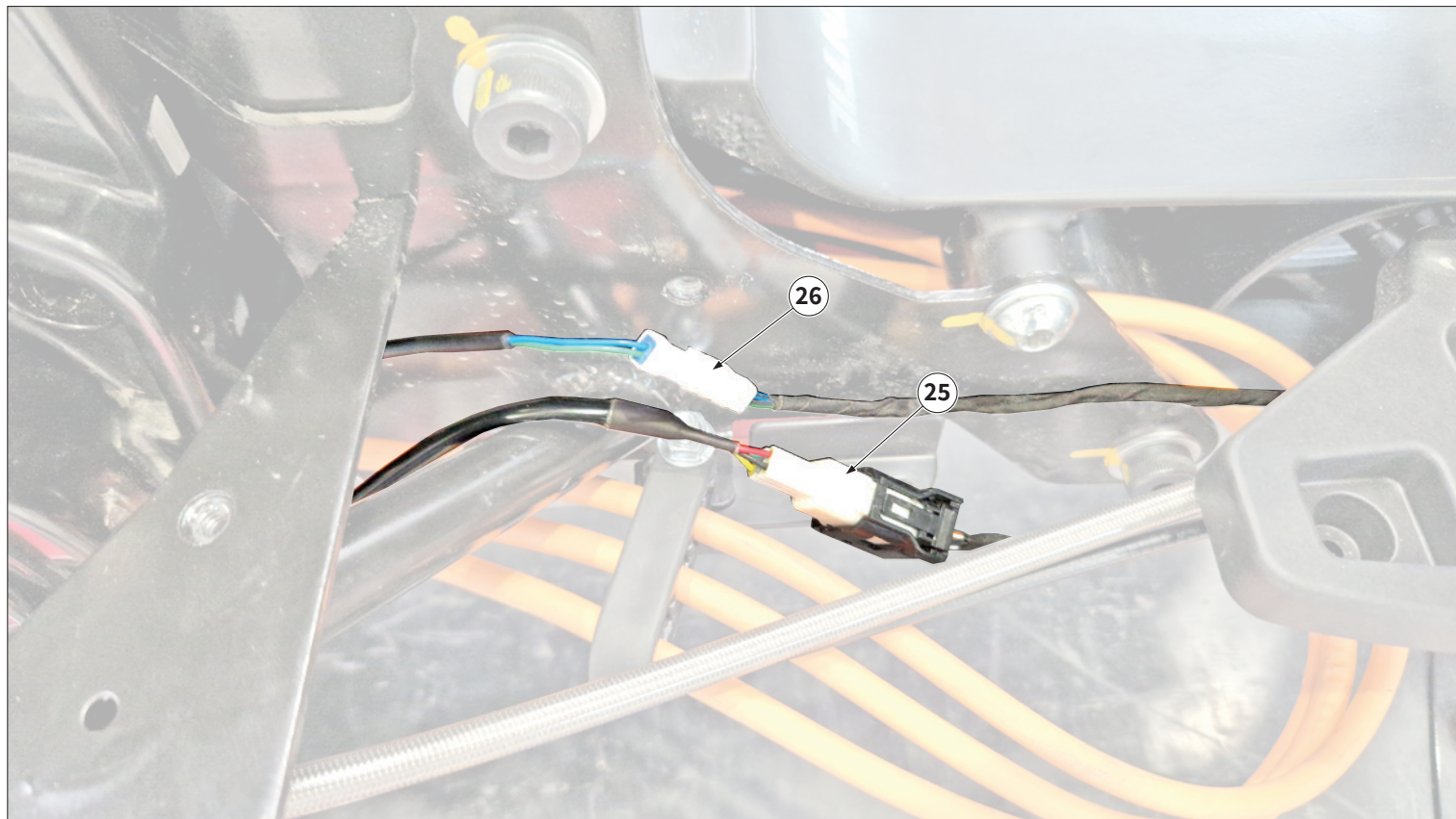


Ref.	Item	Page
08	Horn	96
12	Keyless ECU	96
A	Main cable branching point	–

To access this portion of the wiring and the connectors present, remove the front shield (as described on page 40).

18.14.4 Right side part

Connections located under the right footboard.

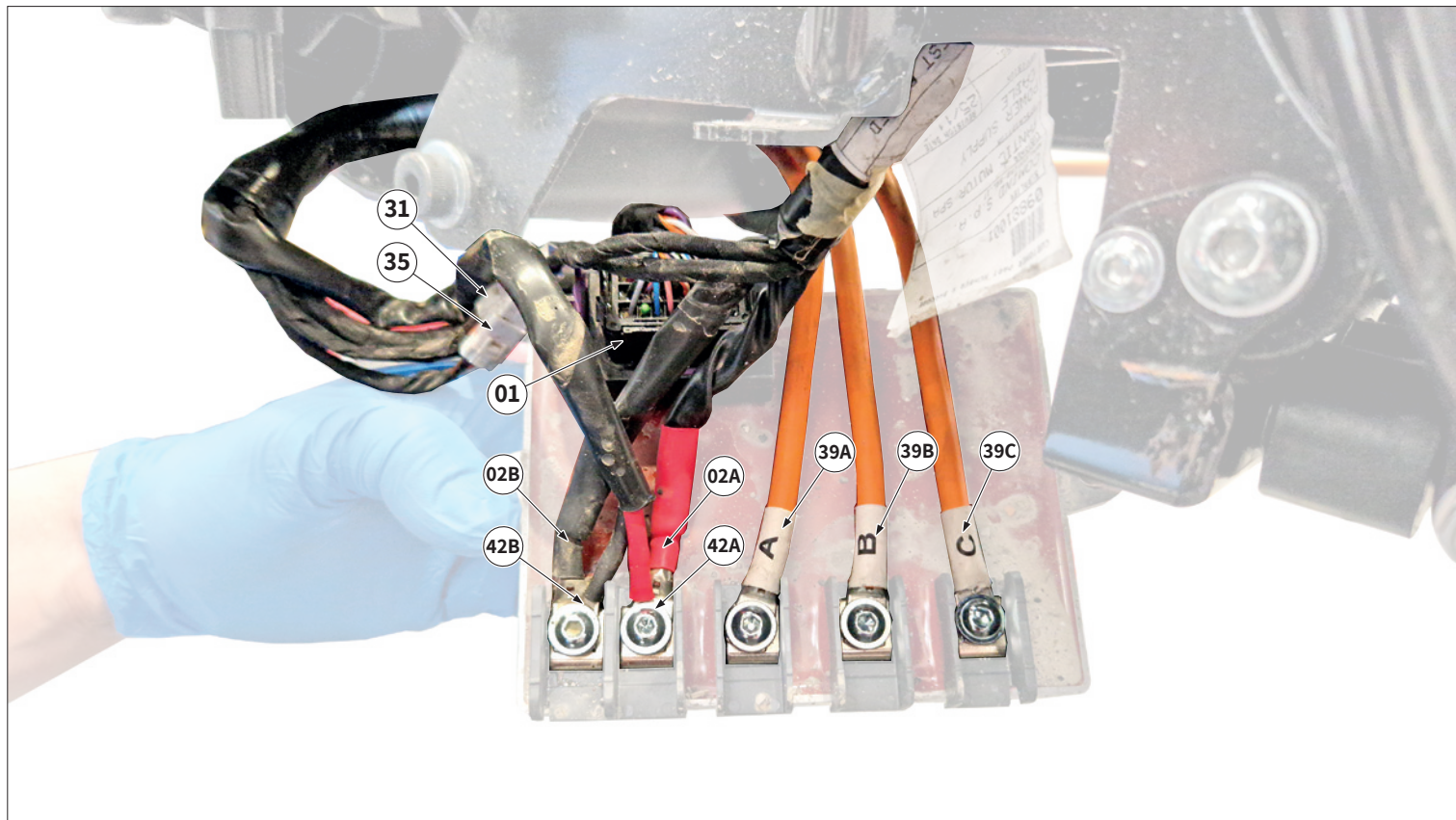


Ref.	Item	Page
25	Motor position sensor	-
26	Motor temperature sensor	-

To access this portion of the wiring harness and the connectors present, remove the right and left footboard(as described on page 45).

18.14.5 Lower part

Connections located under the underbody.

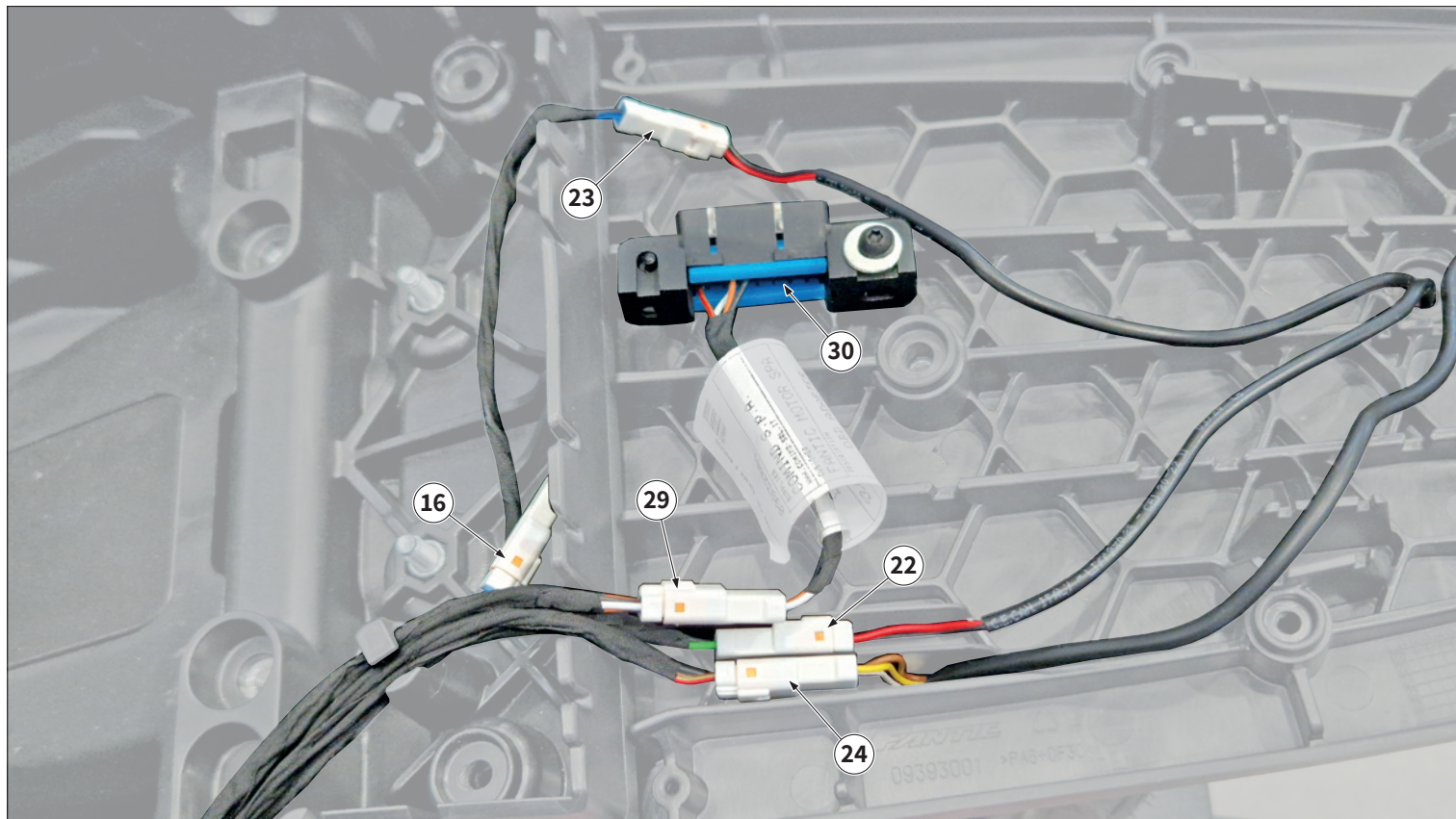


Ref.	Item	Page
01	VMS	92
02A	Motor management control unit (VMS) - power connector (+)	
02B	Motor management control unit (VMS) - power connector (-)	
31	Battery module 1 - main cable data interconnection	
35	Battery module 2 - main cable data interconnection	84
39A	Electric motor - connector A	
39B	Electric motor - connector B	
39C	Electric motor - connector C	
42A	Power supply wiring harness - power connector (+) VMS side	-
42B	Power supply wiring harness - power connector (-) VMS side	-

To access this portion of the wiring and the connectors present, remove the Underbody(as described on page 47).

18.14.6 Rear

Connections located under the structural luggage rack.

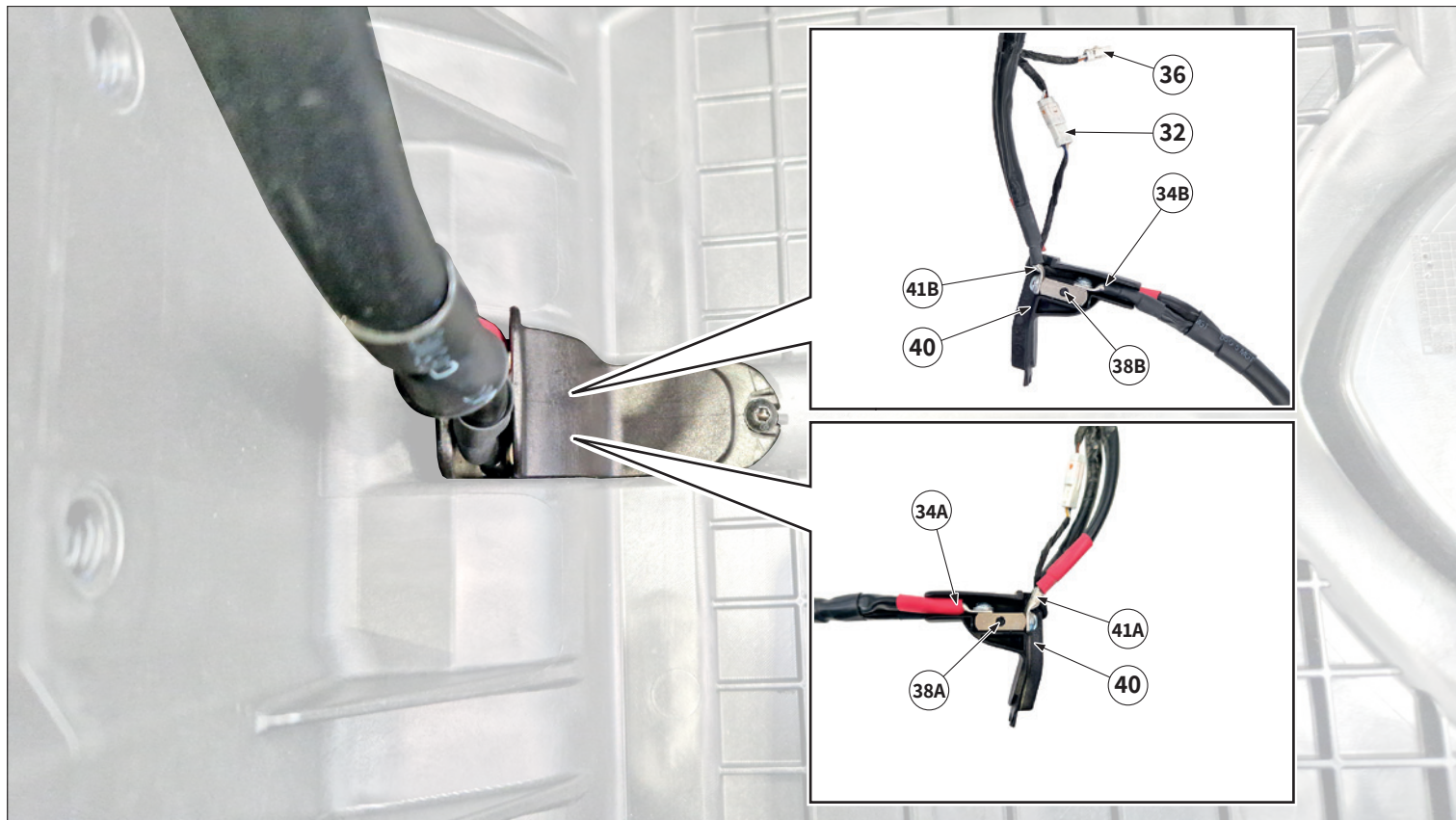


Ref.	Item	Page
16	Auxiliary socket (48V)	-
22	Left rear turn signal	91
23	Right rear turn signal	
24	Tail light	90
29	Connectivity Adapter wiring harness interconection	-
30	Connectivity Socket	-

To access this portion of the wiring and the connectors present, remove the structural luggage rack(as described on page 61).

18.14.7 Central part

Connections located on the rear frame.

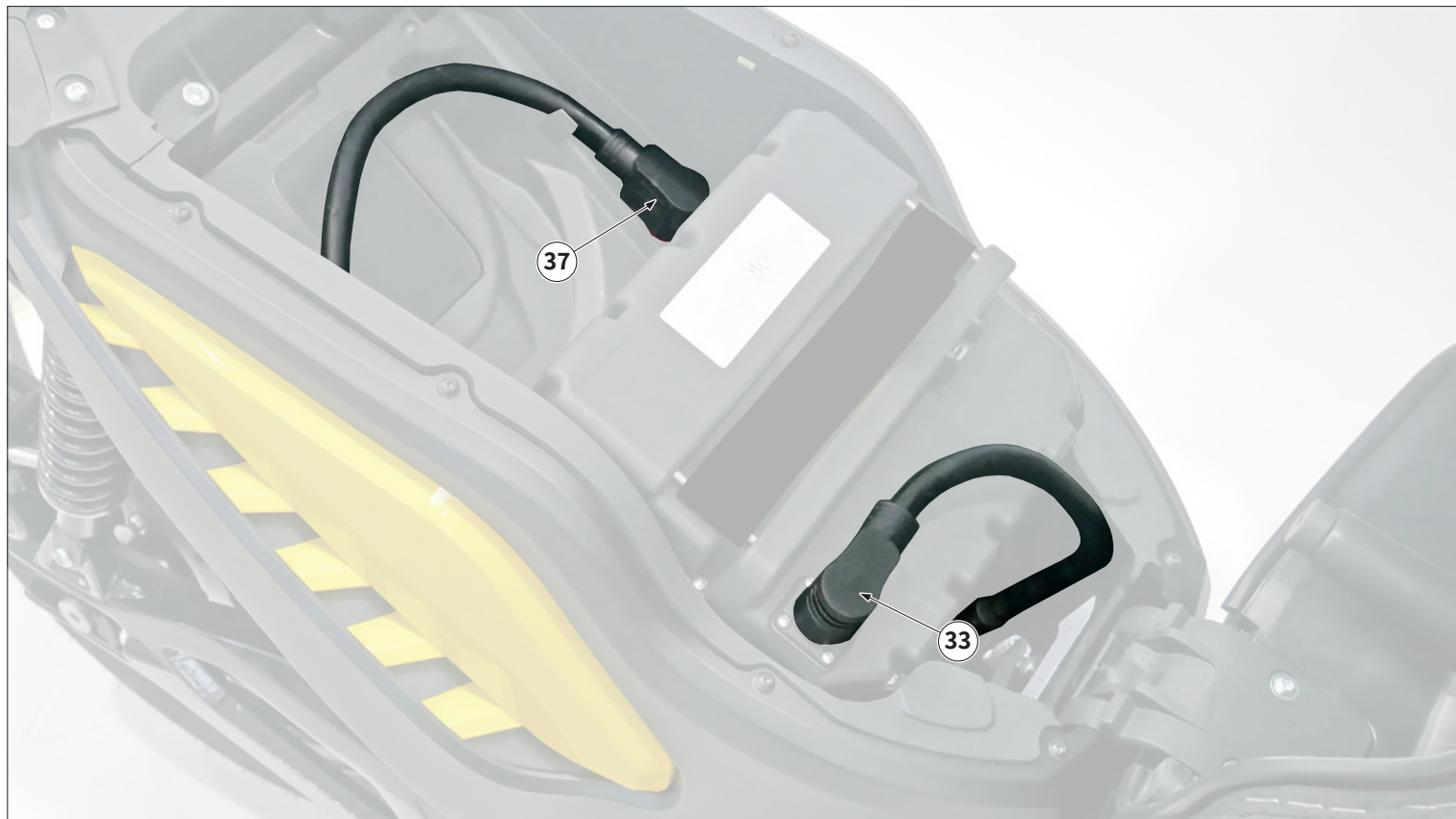


Ref.	Item	Page
32	Battery module 1 - wiring harness data interconnection	78
34A	Battery module 1 - power connector (+) (Battery module 1 wiring harness)	
34B	Battery module 1 - power connector (-) (Battery module 1 wiring harness)	
36	Battery module 2 - wiring harness data interconnection	
38A	Battery module 2 - power connector (+) (Battery module 2 wiring harness)	
38B	Battery module 2 - power connector (-) (Battery module 2 wiring harness)	
40	Power connection node	
41A	Power supply wiring harness - power connector (+) node side	
41B	Power supply wiring harness - power connector (-) node side	

To access this portion of the wiring and the connectors present, remove the rear frame (as described on page 78).

18.14.8 Rear

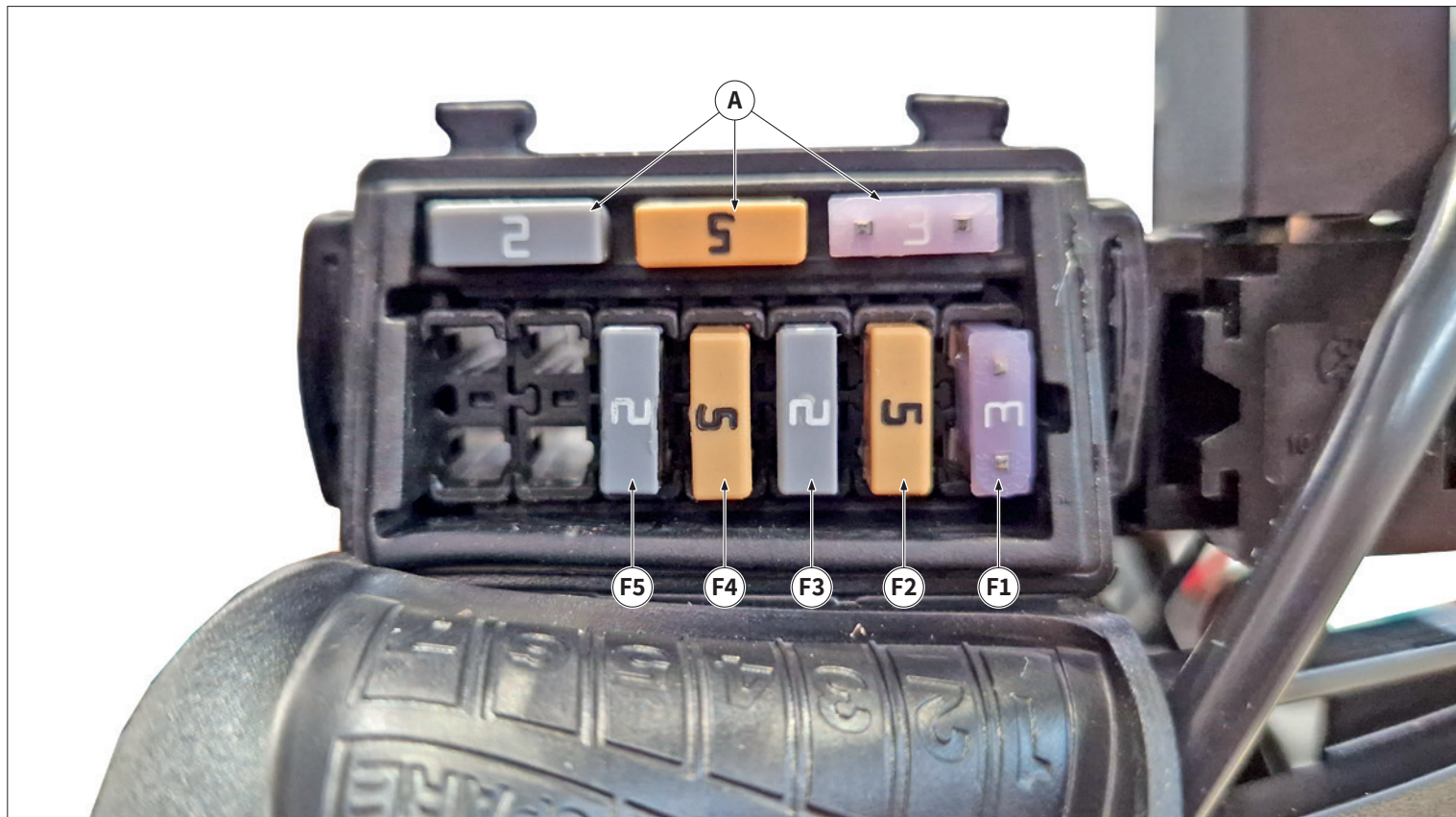
Connections located in the battery compartment.



Ref.	Item	Page
33	Battery module 1 - signal connector (Battery module 1 wiring harness)	108
37	Battery module 2 - signal connector (Battery module 2 wiring harness)	

To access the following connectors, the seat must be opened.

18.15 FUSES



Fuses	Description
F1	Auxiliary socket (48V)
	Keyless ECU
F2	Horn
	USB
F3	Dashboard
	Key switch
	Tail light
	Blinker
F4	Headlight
F5	OBD socket
	Connectivity Socket
A	Backup fuses



18.16 BATTERIES

The scooter models **Fantic Issimo City** and **Fantic Issimo City Pro** are supplied with one battery as original equipment, while the **Fantic Issimo City Max** model is supplied with two batteries as standard.

i In the Fantic Issimo City and Fantic Issimo City Pro models there is the possibility of adding the second battery as an optional extra.

The batteries are located in the battery compartment under the seat (more information on the under-seat compartment at page 59).

Each individual battery has a weight of 12 kg.

Batteries must be charged at an ambient temperature between 0 °C and +45 °C.

A reduction in battery life may occur at temperatures below 0 °C and above 50 °C.

18.16.1 Battery management when first using the moped

With new batteries it is necessary to carry out at least 3 - 4 complete charge/discharge cycles, bringing the charge to 100% and discharging the batteries to a value closer to 0%, this allows the batteries to be aligned correctly in the first period of use.

! In the event of prolonged non-use of the moped, the batteries must be disconnected from the moped, charged to 100% and left disconnected from the moped during the entire period of non-use.

! If not in use for several months, check the state of charge every 30 days, and regardless of the percentage of charge remaining, recharge the batteries to 100% every 60 days.

! Failure to comply with the above instructions will lead to a reduction in performance and the voiding of the battery guarantee.

! If the scooter is left with the engine off for a long period in a low temperature environment (between 0 °C and +10 °C), charging times may be longer.

! The batteries must not be used at an ambient temperature outside the range of -20 °C to +60 °C when installed in a vehicle and must not be recharged at an ambient temperature outside the range of 0 °C to +45 °C.

! Batteries may only be charged using the charger supplied by the manufacturer.

! Batteries must not be subject to shocks.



- !** Batteries, during both charging and storage, must not be exposed to heat/cold, moisture, dust or weather.
- !** The guarantee covers battery malfunctions resulting from manufacturing defects, inability to charge and discharge.
- !** The guarantee does not cover degradation of battery performance due to normal use and ageing.
- !** The manufacturer reserves the right to assess the validity of the warranty based on the analysis of the batteries.
- !** Never disconnect electrical system cables while the engine is running to avoid damage to the battery.
- !** Disassembling and/or tampering with batteries will invalidate the warranty.
- !** With respect for the environment, batteries must be disposed of at the end of their life cycle, collected and disposed of in accordance with current laws.
- !** Do not use this battery for purposes other than those indicated. Use for other than its intended purpose may result in short circuits inside the battery, which could ignite.

18.16.2 Battery range

Under optimal conditions, the batteries give the vehicle the following range:

- **Fantic Issimo City:** 72 km (1 battery) - 143 km (optional second battery)
- **Fantic Issimo City Pro:** 57 km (1 battery) - 115 km (optional second battery)
- **Fantic Issimo City Max:** 115 km (2 batteries)

The indicated range can vary greatly depending on the conditions of use and the age of the battery (on average, after 3-4 years there is a reduction in range of about 20%).

The main factors affecting battery life are:

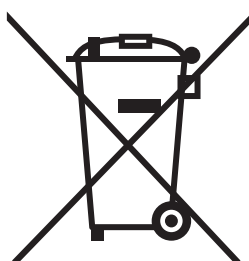
Factors	Relevance	Consequences on range
Riding mode	***	It varies according to the driving style.
Rider and passenger weight	*	It decreases as the rider's weight and any accessory loads increase.
Tire pressure	*	It decreases with tire pressure decrease.
Type of road surface	**	It decreases significantly on mud, fresh grass, uneven ground, increases on smooth ground.
Getting on	***	It decreases as the slope increases.
Outside temperature	*	A reduction in battery life may occur at temperatures below 0 °C and above 50 °C.
Speed	***	It decreases exponentially with increasing speed.
Wind	**	It decreases significantly in headwinds with speeds above 15kmh, almost no change at low speeds.
Restarting from a standstill	**	It decreases as the frequency of stop&go increases because the absorption during acceleration is about 3 times the absorption at constant speed.
* = low significance ** = medium significance *** = high significance		

18.16.3 Disposal of spent batteries

At the end of its service life, a battery pack containing lithium accumulators must be disposed of according to current regulations and may not be thrown away as simple waste.

The European Directive for this type of waste stipulates that the states party to this convention undertake to take "appropriate measures" so that spent batteries are collected separately for possible recovery or disposal.

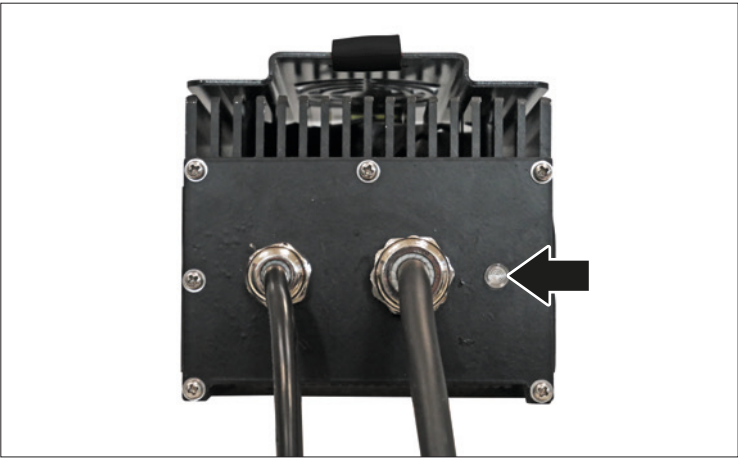
In any case, for the most up-to-date information on this matter, it is advisable to contact the municipal office in charge.





18.17 BATTERY CHARGER

Batteries are charged using the specific charger supplied.
The battery charger is activated only when connected to the mains with its cable and to a battery through the specific connector.



18.17.1 Charger activity

⚠ The charger is intended for use at home and not in an outdoor environment or subject to the weather.

The charging activity of the charger is indicated by the specific LED. Check the LED status using the table below.

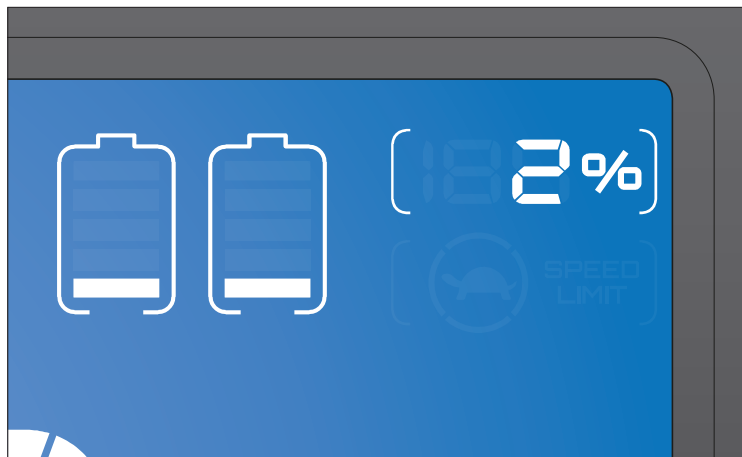
LED status	Description
	Fully charged battery
	Battery charging
	Check battery and charger connectors
	Check battery and charger connectors
	Error on AC input
	Wrong battery connected
	Charger overheating
	Flashing light Steady light



18.17.2 Charging time

The time required to fully recharge a single battery is approximately 3 hours.

When not in use, the charger can be stored in the dedicated space on the battery compartment and secured using the elastic strap.



18.18 BATTERIES CHARGING

The battery charge level is indicated in the digital display area.

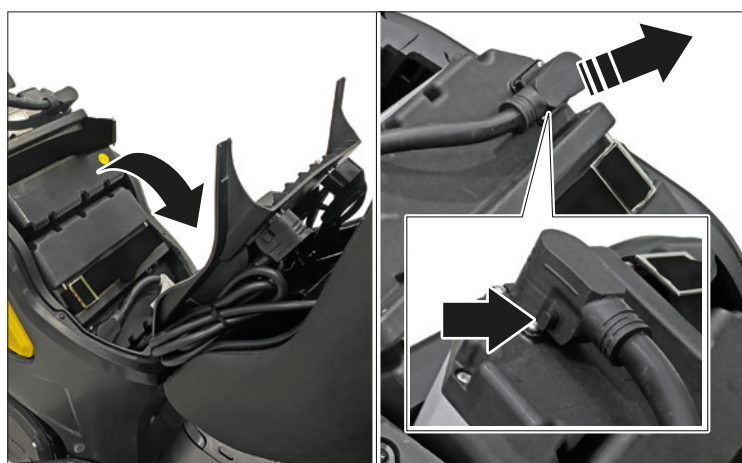
- ⚠ In the event of prolonged non-use of the moped, the batteries must be disconnected from the moped, charged to 100% and left disconnected from the moped during the entire period of non-use.
- ⚠ If not in use for several months, check the state of charge every 30 days, and regardless of the percentage of charge remaining, recharge the batteries to 100% every 60 days.
- ⚠ As a precaution, it is recommended to take the batteries out of their compartment for charging to prevent overheating from damaging the vehicle.
- ⚠ The batteries must ALWAYS be removed and inserted with the vehicle switched off.

18.18.1 Charging with two batteries

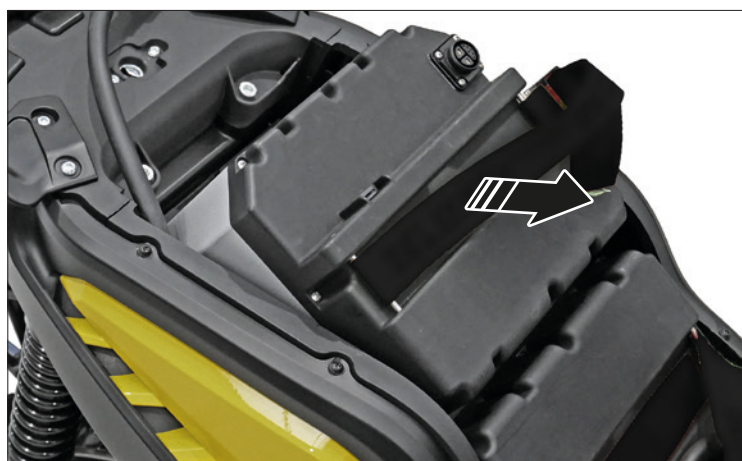
Removing the batteries from the vehicle

Proceed as follows to remove the batteries from the vehicle:

- Open the seat to access the battery compartment (see the relevant section of this manual) and lift up the battery panel.
- Disconnect the connector from the **second** battery, using the release button.



- Remove the **second** battery from the vehicle.



- Disconnect the connector from the **first** battery, using the release button.





- Take the **first** battery out of the vehicle.



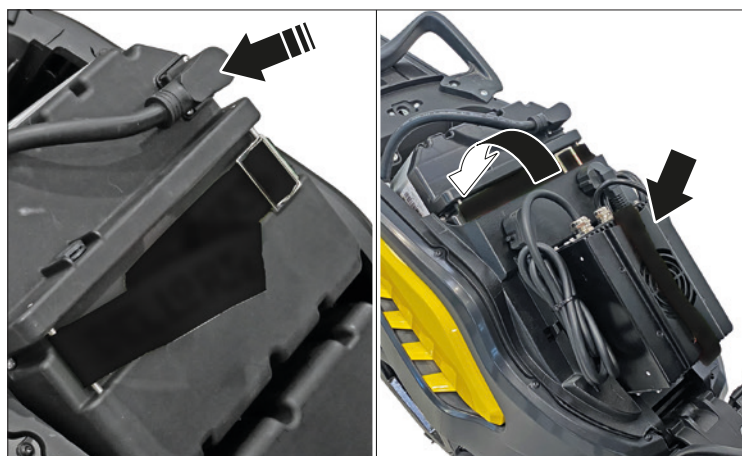
Batteries charging

Once both batteries have been removed from the vehicle, proceed as follows to charge them:

- Connect the charger charging cable to one of the batteries.
- Connect the charger to the mains to start charging (**LED flashing red**).
- When one battery is completely charged (**LED steady green**), disconnect the charger from the mains and repeat the operation for the other battery.



- When charging is complete, place the **first** battery back in the compartment and reconnect the connection cable, pushing it in until you hear a click confirming correct connection.



- After storing the first battery, place the **second** battery in the compartment and reconnect the connection cable, pushing it in until you hear a click that confirms correct connection.
- Lower the battery panel, insert the charger in the space provided on the panel. If desired close the seat.



18.18.2 Charging with one battery

For charging operations in the vehicle equipped with only one battery (where the optional second battery is not present), follow the same indications as for charging with two batteries, but considering only the operations related to the first battery.

- i** When only one battery is used, the connection cable of the second battery can be stored in the compartment and hooked up to the battery retainer.

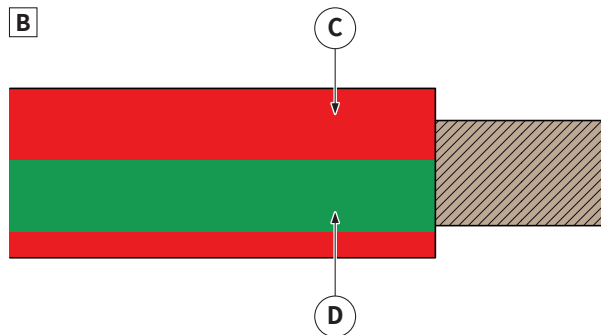
18.19 BATTERIES CONDITION CHECK

- i** Check whether the periodic maintenance scheduled for the batteries and charger as provided for by Fantic has been carried out correctly (see “3.3 Periodic maintenance programme” on page 28).
- ⚠** Never carry out vehicle checks, charging or testing in direct sunlight or in an excessively cold environment (the ambient temperature for battery charging functions must be between 0 °C and +45 °C).
- ⚠** If deformation, swelling or overheating of the battery(ies) is noticed during charging and/or servicing operations on the vehicle, proceed as follows:
 - Stop any operation immediately;
- ⚠** Batteries and the charger can be very hot: be careful not to touch them directly with your hands, and use suitable protective equipment.
 - Disconnect the charger and batteries;
 - Place the vehicle, charger and batteries in a safe and ventilated place so that they can cool down;
 - Check for signs of physical damage to the batteries (such as cracks, bubbles, loss of material or deformation);
- ⚠** If signs of damage are present, **DO NOT** reconnect the batteries, but dispose of them and replace with new ones.
 - Check the compatibility of the charger and the condition of the wiring harness and connectors;
- ⚠** Do not use other charger models, only the charger supplied. If the one supplied is damaged, replace it.
 - If the batteries or charger have been replaced, perform a full recharge test and make sure no further problems persist.

A



B



18.20 WIRING DIAGRAM

18.20.1 Introduction

Wire colour information

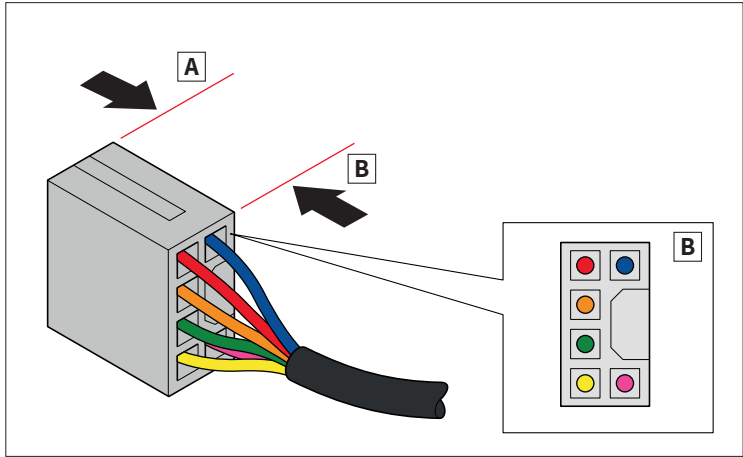
In the wiring diagrams, the colour data of the wires represented correspond to a set of alphabetical colour codes agreed upon with the vehicle manufacturer.

- ① The wire can be in a single colour ("A") or two distinct colours ("B").
 - ① The wire that has two colours is identified by the first colour code (primary "C" or colour of the protective sleeve) followed by the second colour code (secondary "D" or colour strip).
 - ① Colour codes are represented with a single letter for single-colour wires, or with two codes separated by a hyphen ("-").
- Examples:**
- case "A" : Blue (single) = B ;
 - case "B" : Red (primary) and Green (secondary) = RV.

Wire colour codes

The following table shows the codes used in the wiring diagram to identify wire colours.

Code	Wire colour
A	SKY BLUE
B	WHITE
C	ORANGE
G	YELLOW
H	GREY
L	BLUE
M	BROWN
N	BLACK
R	RED
S	ROSE
V	GREEN
Z	VIOLET



Representation of connectors and pins

In each part of the wiring diagram there is a box for each component and connector containing:

- The graphic representation of the connector;
- The specific numbering of the pins;
- The side view of the connector.

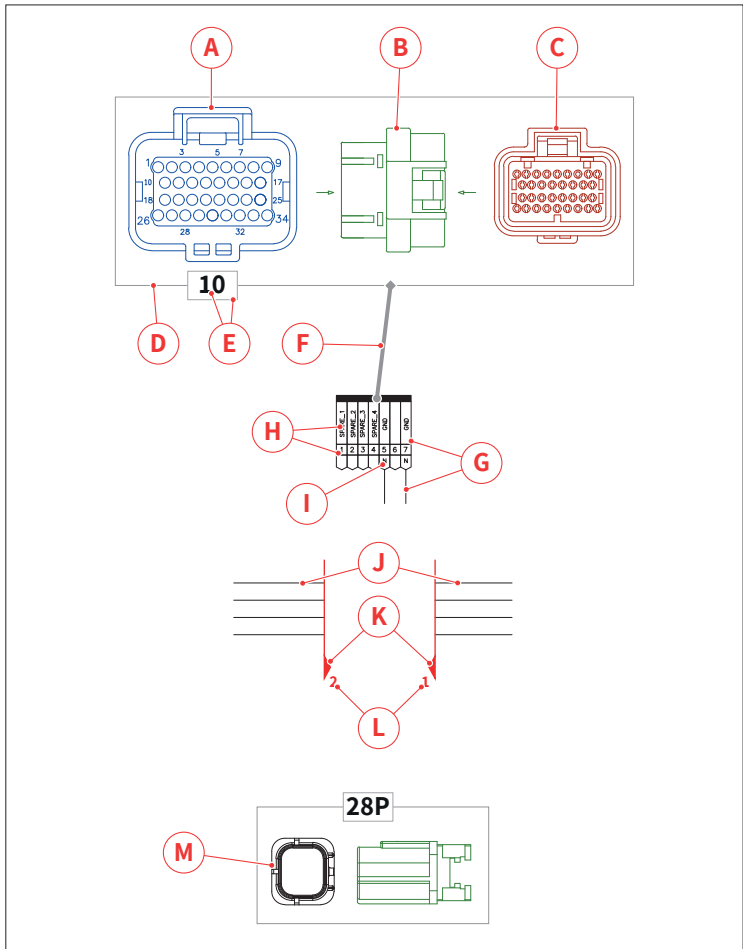
i An electrical device may have one or more connectors.

F. Connection side or front side view.

G. 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.

18.20.2 Information for reading the wiring diagram



R.	DESCRIPTION
A	View of the connector from the cable insertion side. Views from the cable insertion side are represented with "blue" lines.
B	Side view of the connector. Side views are represented with "green" lines.
C	Front view of the connector from the contact side. Side views are represented with "dark red" lines.
D	Containment frame of all connector views of a specific object identified in the diagram.
E	Identification number of the component shown in the diagram.
F	Connecting line between the representation of the component on the diagram and the relevant connector view frame.
G	Representation on the diagram of a component and the connection wires to the connector.
H	Pinout description of the component shown on the diagram.
I	Colour coding of the wire shown on the diagram.
J	Representation of continuous wire, broken for wiring diagram layout requirements.
K	Cut and division direction indicators on multiple pages of the wiring diagram. The arrow indicates the direction of the continuous wires towards the destination page.
L	Part number/page reference to the adjacent part of the wiring diagram. The part/page numbers of the wiring diagram are indicated in the header of each page of the wiring diagram.
M	Front view of the possible end cap and/or arrangement of a particular component/connector. The frame of an end cap is shown to the side of the frame of the reference connector views, with "black" lines.

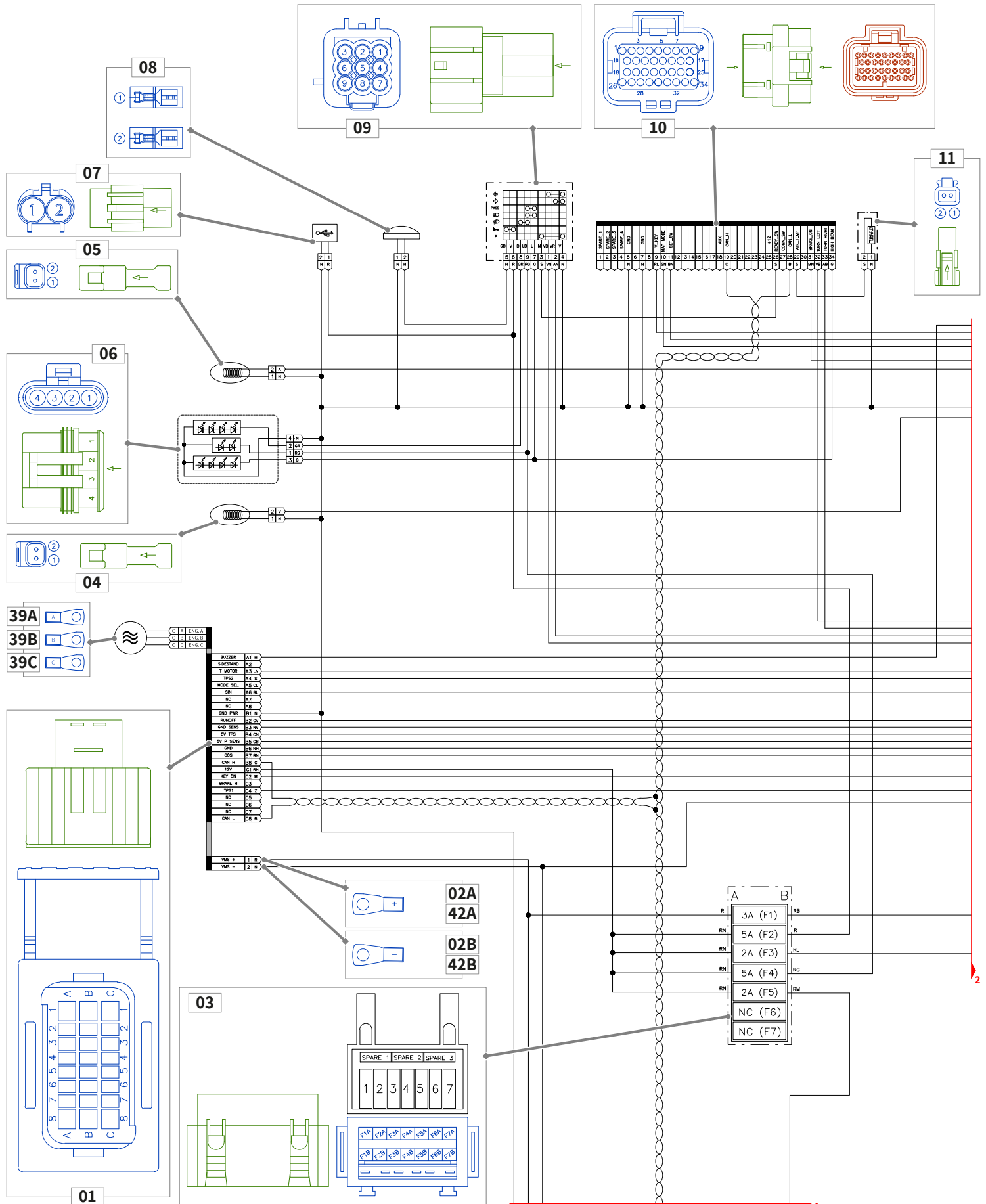
18.20.3 Key to the wiring diagram components

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

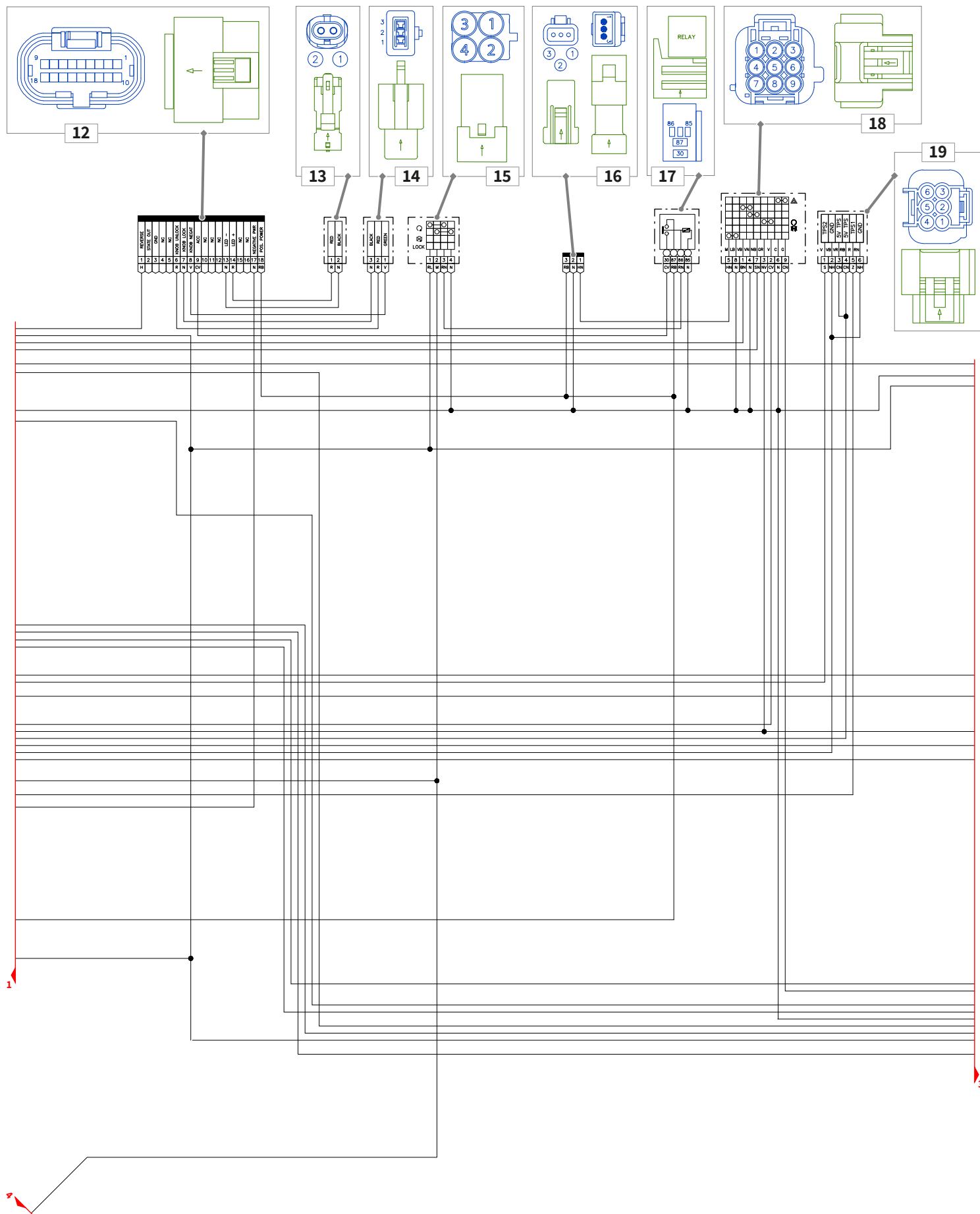
Ref.	Part	Item description
01	1	Motor Management Unit (VMS) - main connector
02A	1	Motor management control unit (VMS) - power connector (+)
02B	1	Motor management control unit (VMS) - power connector (-)
03	1	Fuse box
04	1	Left front turn signal
05	1	Right front turn signal
06	1	Headlight
07	1	USB socket
08	1	Horn
09	1	Left steering switch
10	1	Dashboard
11	1	Ambient air temperature sensor
12	2	Keyless ECU
13	2	Key switch - connector 1
14	2	Key switch - connector 2
15	2	Key switch - connector 3
16	2	Auxiliary socket (48V)
17	2	Keyless Relay
18	2	Right steering switch
19	2	Throttle (Torque Demand)
20	3	Front stop switch
21	3	Rear stop switch
22	3	Left rear turn signal
23	3	Right rear turn signal
24	3	Tail light
25	3	Motor position sensor (MPS)
26	3	Motor temperature sensor
27	3	Blinker
28	4	OBD socket
28P	4	OBD socket cap
29A	4	Wiring harness Connectivity adapter - main cable
29B	4	Wiring harness Connectivity adapter - wiring harness
30	4	Connectivity Socket
31A	4	Battery module 1 - main cable data interconnection
31B	4	Battery module 1 data interconnection - main cable side (power wiring harness)
32A	4	Battery module 1 data interconnection - wiring harness module side (power wiring harness)
32B	4	Data interconnection (Battery module 1 wiring harness)
33	4	Battery module 1 - signal connector (Battery module 1 wiring harness)
34A	4	Battery module 1 - power connector (+) (Battery module 1 wiring harness)

Ref.	Part	Item description
34B	4	Battery module 1 - power connector (-) (Battery module 1 wiring harness)
35A	4	Battery module 2 - main cable data interconnection
35B	4	Battery module 2 data interconnection - main cable side (power wiring harness)
36A	4	Battery module 2 data interconnection - wiring harness module side (power wiring harness)
36B	4	Data interconnection (Battery module 2 wiring harness)
37	4	Battery module 2 - signal connector (Battery module 2 wiring harness)
38A	4	Battery module 2 - power connector (+) (Battery module 2 wiring harness)
38B	4	Battery module 2 - power connector (-) (Battery module 2 wiring harness)
39A	1	Electric motor - connector A
39B	1	Electric motor - connector B
39C	1	Electric motor - connector C
40	4	Power connection node
41A	4	Power supply wiring harness - power connector (+) node side
41B	4	Power supply wiring harness - power connector (-) node side
42A	1	Power supply wiring harness - power connector (+) VMS side
42B	1	Power supply wiring harness - power connector (-) VMS side

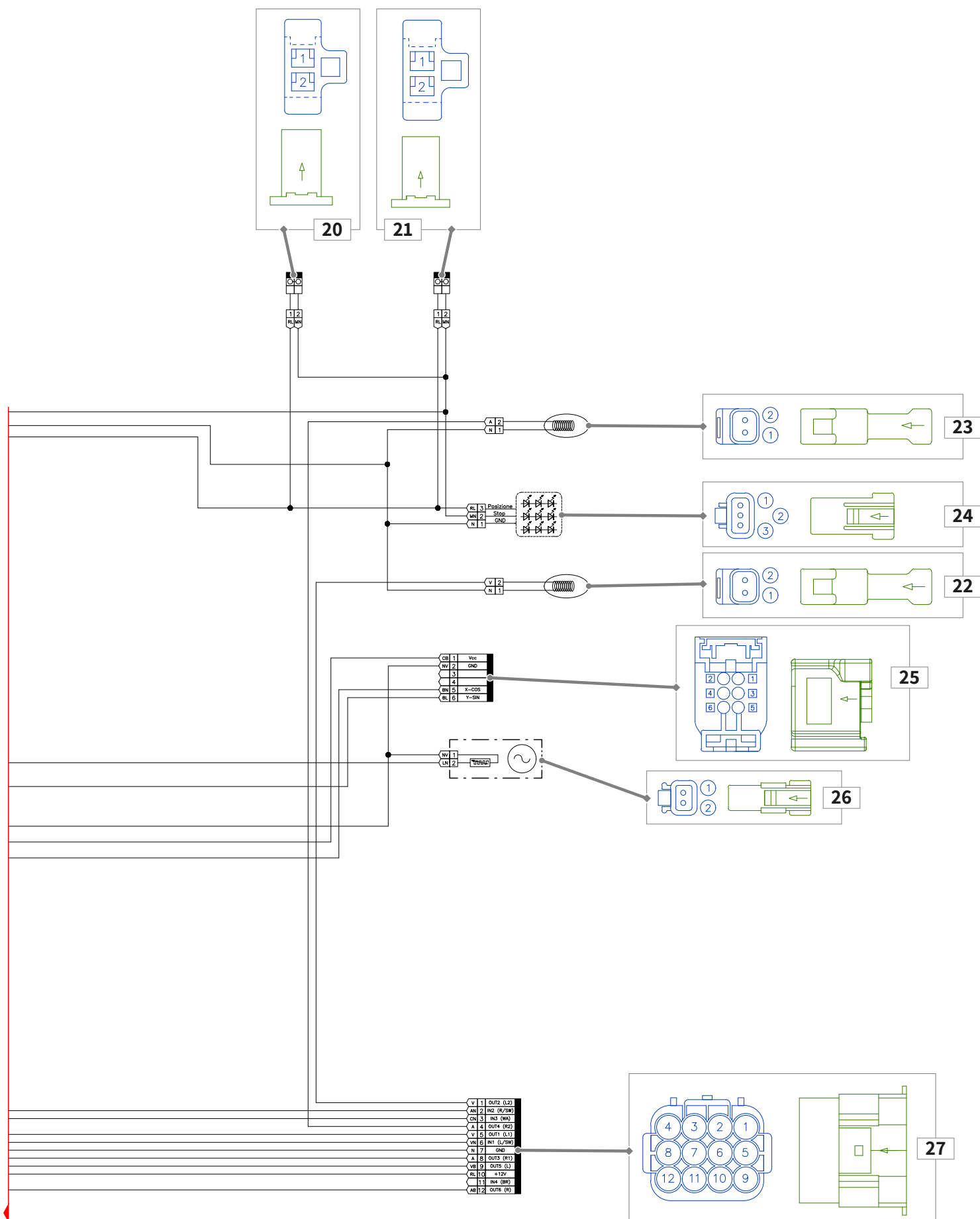
18.20.4 Wiring diagram (part 1/4)



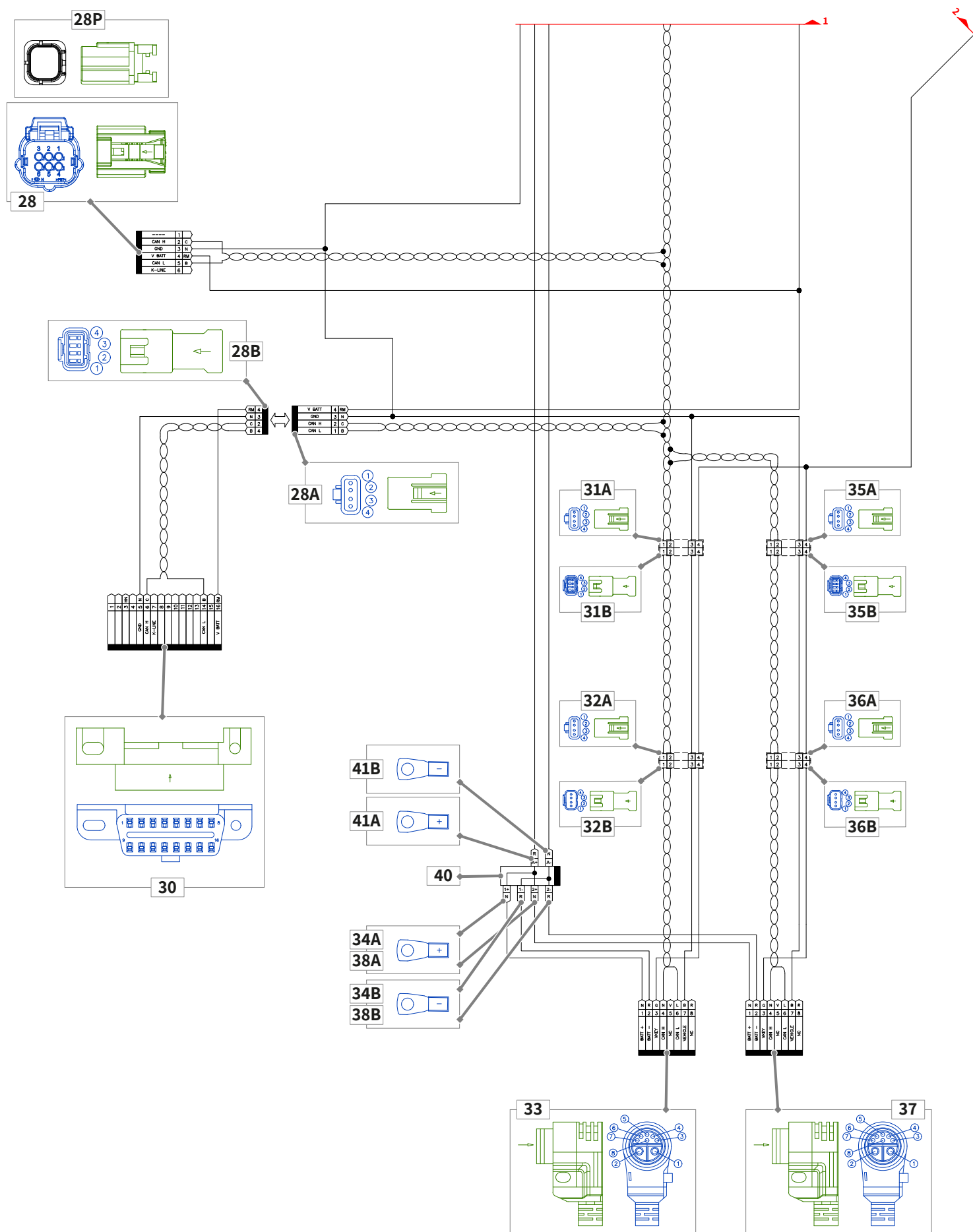
18.20.5 Wiring diagram (part 2/4)



18.20.6 Wiring diagram (part 3/4)



18.20.7 Wiring diagram (part 4/4)



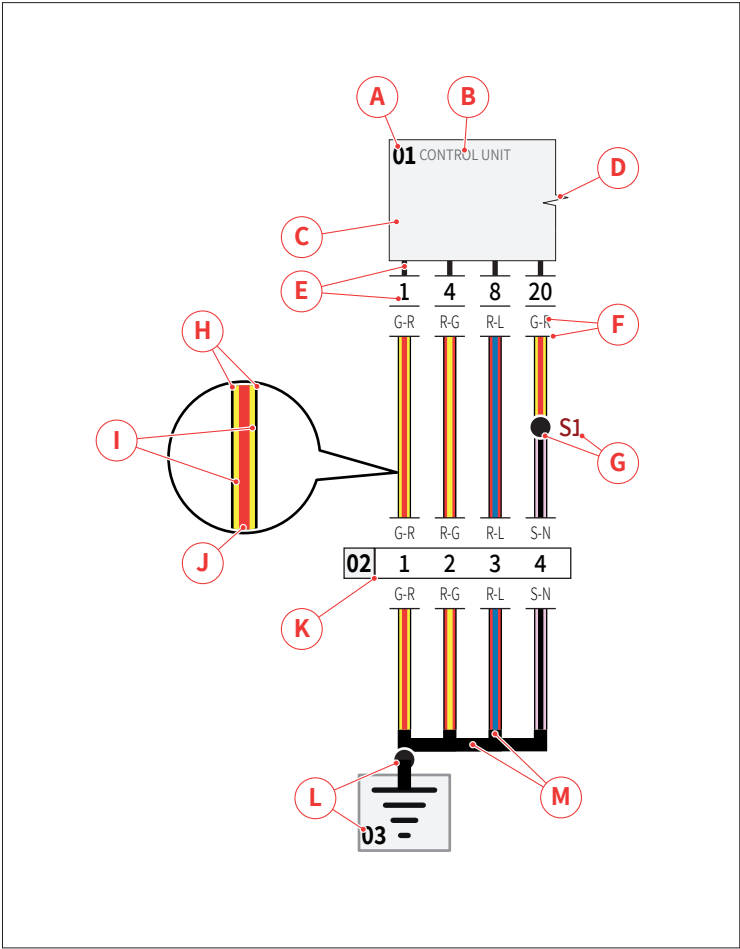
18.21 FUNCTIONAL DIAGRAMS

18.21.1 Introduction

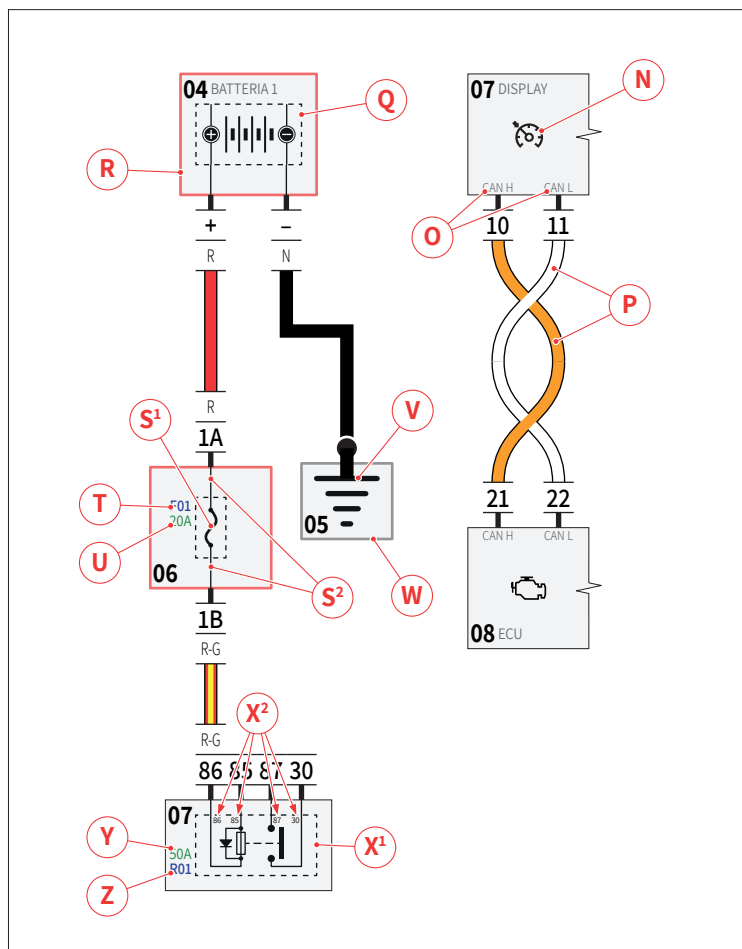
This section shows the electronic functions of the vehicle by displaying specific functional diagrams.

- i** A functional diagram includes all components, connectors and signals that specifically affect the type of function illustrated. These diagrams graphically illustrate the operating logic and all existing connections in the vehicle's electrical system.
- i** A single electronic component can perform several different functions and, therefore, can be represented graphically in several functional diagrams.

18.21.2 Information for reading functional diagrams



R.	DESCRIPTION
A	Component reference number. To obtain more information related to the component, search for this number in the information table for the same functional scheme.
B	Description/acronym of the illustrated component. A short description or acronym relating to the illustrated item may be given.
C	Component frame.
D	Component interruption side. If present, this indicates that the component is not fully illustrated, but only for the pins and signals belonging to the illustrated function system.
E	Pin number of the component/connector.
F	Overall wire colour indication. More information can be found at “Wire colour information” on page 114.
G	Representation and abbreviation of the soldering point.
H	Black wire containment edges.
I	Space dedicated to the chromatic representation of the primary wire colour.
J	Space dedicated to the chromatic representation of the secondary wire colour.
K	Graphic representation with reference number of the interconnection between wiring and wiring harnesses. In sequence to the wires are the pin numbers of the interconnection.
L	Graphical representation with ground point reference number.
M	Graphical representation of groups of soldered and/or crimped wires on a single connector.



R.	DESCRIPTION
N	Icon representing the component. A representative icon can be inserted for a control unit or an object relevant to the vehicle's electrical system.
O	Signal abbreviation/definition. An acronym may be inserted to explain the functional purpose of the indicated signal.
P	Graphical representation of a twisted wire pair. A twisted pair of wires corresponds to two wires twisted together before being taped into the harness or wiring harness: this practice allows the elimination of common mode noise.
Q	Example of a graphic representation of the circuit logic of a component. A drawing enclosed in a dotted box, containing the graphics of the item's operating logic, may be inserted if it is essential to illustrate this information for a better understanding of the diagram.
R	Shade (red) to identify primary and direct fuse-protected power supply components.
S1	Graphical representation of the fuse: electronic drawing.
S2	Graphical representation of the fuse: connections to fuse box pins.
T	Fuse identification code.
U	Value (amperes) of the fuse.
V	Graphical representation of a physical ground point.
W	Shadow (grey) to identify ground points and ground references.
X1	Graphic representation of the relay: electronic drawing.
X2	Graphic representation of the relay: pole identifiers.
Y	Value (amperes) of the relay.
Z	Relay identification code.

18.21.3 Lists and references of functional diagrams

The following table lists the diagrams of the electrical and electronic functions for this vehicle.

#	FUNCTION NAME	FUNCTION DESCRIPTION
1	Power supply	Diagram of battery connections, fuses and power connections to all devices.
2	Ground	Diagram of connections and references to ground points.
3	Ignition	Diagram of the devices and signals involved in vehicle ignition and running enable.
4	Motor management	Diagram of the devices, sensors and signals involved in the management and control of the vehicle's electric motor.
5	Lighting	Diagram of the devices and controls involved in the management of vehicle lights.
6	Controls, dashboard and indicators	Diagram of the controls, sensors and signals involved in dashboard warning lights.
7	Diagnostics	Diagram of sensors, diagnostic sockets and vehicle communication networks.
8	Electric motor and batteries	Diagram of the devices, batteries and signals involved in supplying power to the electric motor.
9	Horn	Specific diagram for horn operation.
10	USB	Specific diagram for power supply and USB socket connection.
11	Auxiliary socket (48V)	Specific diagram for power supply and auxiliary socket connection (48V).
12	Connectivity System	Specific diagram relating to the Connectivity System.

The following table contains a list of wiring references for this vehicle.

① The wiring reference is entered in the summary tables of each individual functional diagram in the "RC" column.

R.	Wiring name
A	Vehicle main cable
B	Power supply wiring harness
C	Battery module cable 1 (all versions)
D	Battery module cable 2 (optional, MAX model)
E	Connectivity wiring harness
-	Single object/item

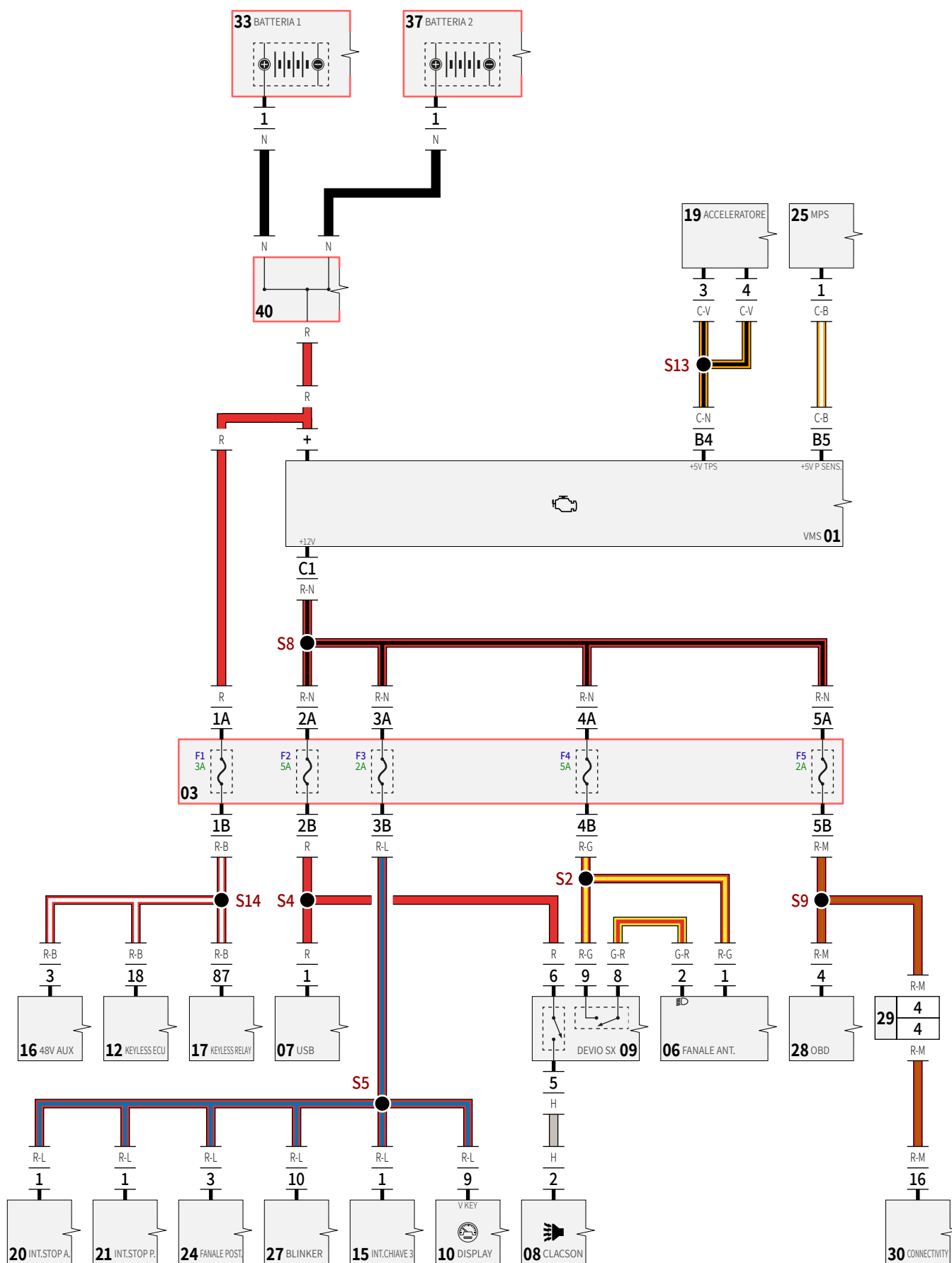
18.21.4 Function: Power supply

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Vehicle control unit
	B2		Motor enable/disable input signal
	B4		Power supply (+5V) throttle sensors
	B5		Power supply (+5V) motor position sensor (TPS)
	C1		Control unit power supply (+12V)
	+	B	Positive connector power supply wiring harness
03		A	Fuse box
	1 A		Power supply from battery module(s) for fuse 1
	1B		Fuse 1 power supply for Keyless control unit, Keyless relay and auxiliary socket (48V)
	2 A		Power supply from battery module(s) for fuse 2
	2B		Power supply protected by fuse 2 for horn, horn button (right steering switch) and USB socket
	3 A		Power supply (+12V) from vehicle control unit for fuse 3
	3B		Power supply protected by fuse 3 for dashboard, key switch, front and rear stop switches, blinker and tail light
	4 A		Power supply (+12V) from vehicle control unit for fuse 4
	4B		Power supply protected by fuse 4 for headlight and high beam switch (left steering switch)
	5A		Power supply (+12V) from vehicle control unit for fuse 5
	5B		Power supply protected by fuse 5 for OBD socket and Connectivity wiring harness
06		A	Headlight
	1		Power supply under fuse 4
	2		Input signal for switching on low beam lights from blinker
07		A	USB socket
	1		USB socket power supply (+12V)
08		A	Horn
	2		Horn operation input signal
09		A	Left steering switch
	5		Horn operation output signal
	6		Power supply under fuse 4
	8		Low beam light output signal
	9		Power supply under fuse 4
10		A	Dashboard
	9		Power supply under key from fuse 3
12		A	Keyless ECU
	18		Power supply under fuse 1
15		A	Key switch - connector 3
	1		Power supply under fuse 3
16		A	Auxiliary socket (48V)
	3		Power supply under fuse 3

#	Pin	RC	Object / Function Description
17		A	Keyless Relay
	87		Power supply protected by fuse 1 for Keyless system (87)
19		A	Throttle (Torque Demand)
	3		Throttle sensor power supply
	4		Throttle sensor power supply
20		A	Front stop switch
	1		Input signal (+) front brake
21		A	Rear stop switch
	1		Input signal (+) front brake
24		A	Tail light
	3		Power supply under fuse 3
25		A	Motor position sensor (MPS)
	1		Motor position sensor power supply (Vdc)
27		A	Blinker
	10		Power supply under fuse 3
28		A	OBD socket
	4		Power supply under fuse 5
29		A/E	Connectivity Adapter wiring harness inter-connection
	4		Power supply under fuse 5
30		E	Connectivity Socket
	16		Power supply under fuse 5
33		C	Battery module 1
	1		Battery positive connector 1
37		D	Battery module 2
	1		Battery positive connector 2
40		-	Power connection node

Functional diagram: Power supply



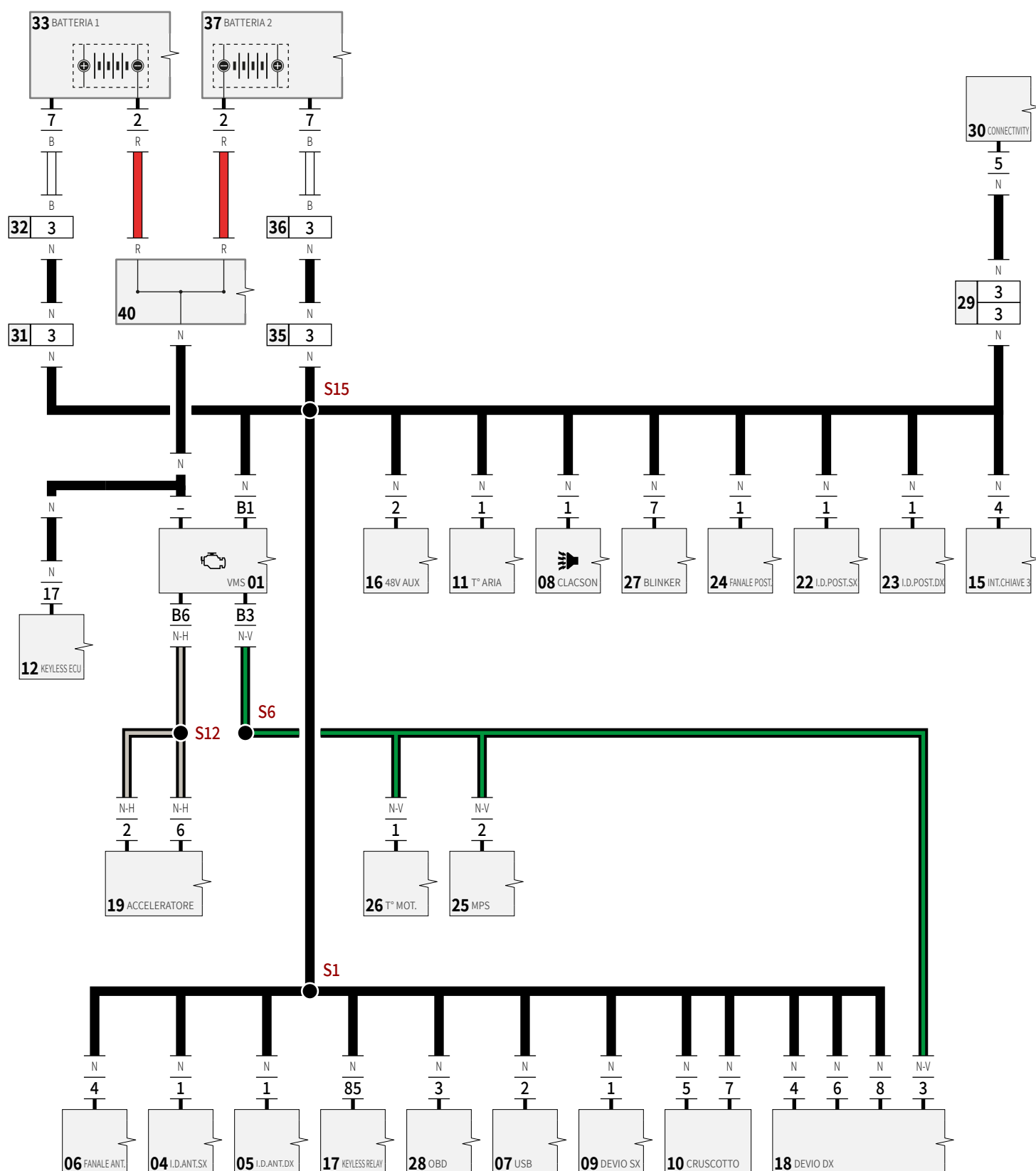
18.21.5 Function: Ground

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	B3		Motor sensor ground
	B6		Throttle sensor ground
	–	B	Negative connector power supply wiring harness
04		A	Left front turn signal
	1		Ground
05		A	Right front turn signal
	1		Ground
06		A	Headlight
	4		Ground
07		A	USB socket
	2		Ground
08		A	Horn
	1		Ground
09		A	Left steering switch
	1		Ground (turn signals and start consent)
10		A	Dashboard
	5		Ground
	7		Ground
11		A	Ambient air temperature sensor
	1		Ground
12		A	Keyless ECU
	17		Ground
15		A	Key switch - connector 3
	4		Key block ground
16		A	Auxiliary socket (48V)
	2		Ground
17		A	Keyless Relay
	85		Key switch consent ground (85)
18		A	Right steering switch
	3		Run-Off switch ground
	4		SET and MAP button ground
	6		Emergency light switch ground (HAZARD)
	8		Auxiliary socket enable switch ground (48V)
19		A	Throttle (Torque Demand)
	2		Throttle position sensor ground 2
	6		Throttle position sensor ground 1
22		A	Left rear turn signal
	1		Ground
23		A	Right rear turn signal
	1		Ground
24		A	Tail light
	1		Ground

#	Pin	RC	Object / Function Description
25		A	Motor position sensor (MPS)
	2		Ground
26		A	Motor temperature sensor
	1		Ground
27		A	Blinker
	7		Ground
28		A	OBD socket
	3		Ground
29		A/E	Connectivity Adapter wiring harness inter-connection
	3		Ground
30		E	Connectivity Socket
	5		Ground
31		A/B	Battery module 1 - main cable data interconnection
	3		Ground
32		B/C	Battery module 1 data interconnection - wiring harness module side
	3		Ground
33		C	Battery module 1 - signal connector
	7		Ground
35		A/B	Battery module 2 - main cable data interconnection
	3		Ground
36		B/D	Battery module 2 data interconnection - wiring harness module side
	3		Ground
37		D	Battery module 2 - signal connector
	7		Ground
40		–	Power connection node

Functional diagram: Ground



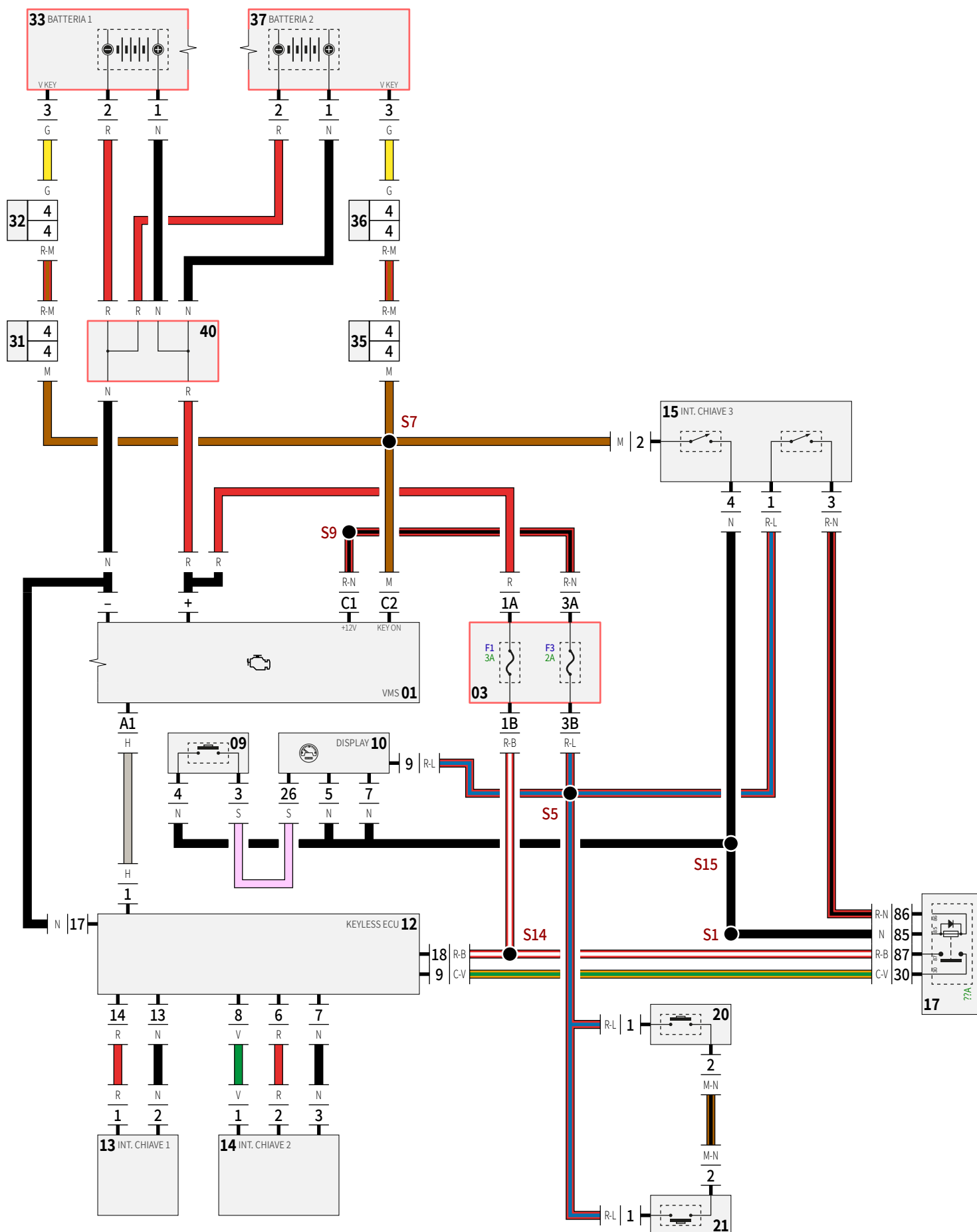
18.21.6 Function: Ignition

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Vehicle control unit
	C1		Control unit power supply (+12V)
	C2		Key-operated signal (V-KEY)
	+	B	Positive connector power supply wiring harness
	-	B	Negative connector power supply wiring harness
03		A	Fuse box
	1 A		Power supply from battery module(s) for fuse 1
	1B		Power supply protected by fuse 1 for Keyless control unit and Keyless relay
	3 A		Power supply (+12V) from vehicle control unit for fuse 3
	3B		Power supply protected by fuse 3 for dashboard, key switch, front and rear brake switches
09		A	Left steering switch
	3		Vehicle enable button consent signal
	4		Ground
10		A	Dashboard
	5		Ground
	7		Ground
	9		Power supply under key from fuse 3
	26		Vehicle enable consent signal
12		A	Keyless control unit
	6		Ignition switch release signal
	7		Ignition switch lockout signal
	8		Negative ignition switch signal
	9		Keyless logic consent output signal
	13		Ignition switch led light reference ground
	14		Ignition switch led light signal (+)
	17		Ground
	18		Fuse-protected power supply F1
13		A	Key switch - connector 1
	1		Ignition switch led light signal (+)
	2		Ignition switch led light ground
14		A	Key switch - connector 2
	1		Negative ignition switch signal
	2		Ignition switch release signal
	3		Ignition switch lockout signal
15		A	Key switch - connector 3
	1		Fuse-protected power supply F3
	2		Key block power supply from battery module(s)
	3		Key consent input signal from Keyless relay
	4		Key block ground
17		A	Keyless system relay
	30		Consent signal (+) from Keyless control unit (30)
	87		F1 fuse-protected power supply for Keyless System (87)

#	Pin	RC	Object / Function Description
	85		Key switch consent ground (85)
	86		Key switch consent input (86)
20		A	Front stop switch
	1		Input signal (+) front brake
	2		Ground
21		A	Rear stop switch
	1		Input signal (+) rear brake
	2		Ground
31		B	Battery module 1 - main cable interconnection wiring harness
	4		Key-operated signal (V-KEY)
32		C	Battery module 1 - supply wiring harness data interconnection
	4		Key-operated signal (V-KEY)
33		C	Battery module 1
	1		Battery positive connector 1
	2		Negative battery connector 1
	3		Key-operated signal (V-KEY)
35		B	Battery module 2 - main cable interconnection wiring harness
	4		Key-operated signal (V-KEY)
36		D	Battery module 2 - supply wiring harness data interconnection
	4		Key-operated signal (V-KEY)
37		D	Battery module 2
	1		Battery positive connector 2
	2		Negative battery connector 2
	3		Key-operated signal (V-KEY)
40		-	Power connection node

Functional diagram: Ignition

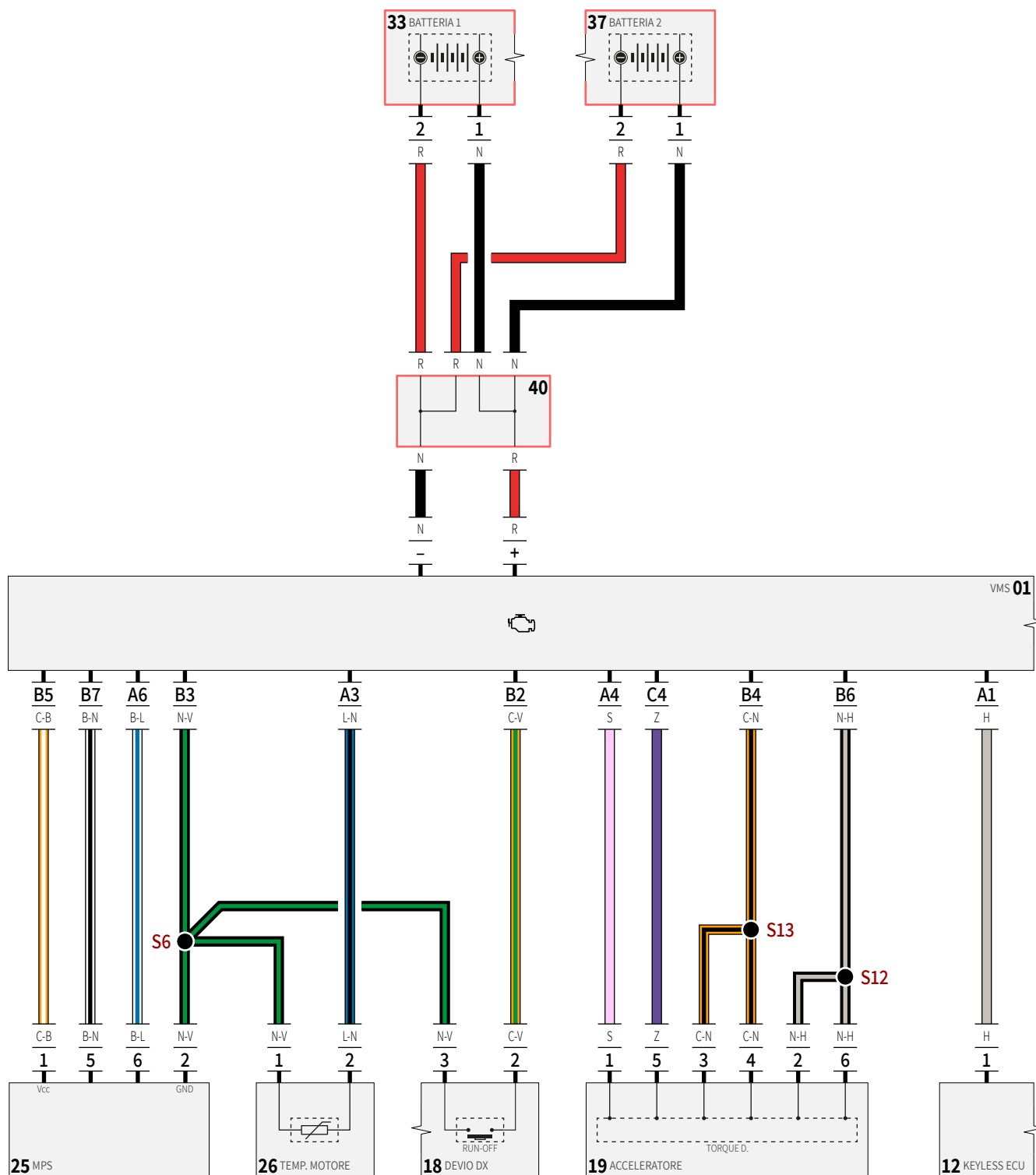


18.21.7 Function: Motor management

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Vehicle control unit (inverter)
	A1		Reverse buzzer activation signal
	A3		Engine temperature input signal
	A4		Throttle sensor input signal 2
	A6		Y-coordinate input signal (TPS)
	B2		Motor enable/disable input signal
	B3		Motor sensor ground
	B4		Power supply (+5V) throttle sensors
	B5		Power supply (+5V) motor position sensor (TPS)
	B6		Throttle sensor ground
	B7		X-coordinate input signal (TPS)
	C4		Throttle sensor input signal 1
	+	B	Positive connector power supply wiring harness
	-	B	Negative connector power supply wiring harness
12		A	Keyless control unit
	1		Reverse buzzer activation input signal
18		A	RH steering switch- Run Off
	2		Motor enable/disable switch signal
	3		Switch ground
19		A	Right steering switch - Torque Demand
	1		Throttle position sensor output signal 2
	2		Throttle position sensor ground 2
	3		Throttle sensor power supply
	4		Throttle sensor power supply
	5		Throttle position sensor output signal 1
	6		Throttle position sensor ground 1
25		A	Motor position sensor (MPS)
	1		Motor position sensor power supply (Vdc)
	2		Motor position sensor ground
	5		X-coordinate output signal (x-cos)
	6		Y-coordinate output signal (y-sin)
26		A	Motor temperature sensor
	1		Motor temperature sensor ground
	2		Engine temperature output signal
33		C	Battery module 1
	1		Battery positive connector 1
	2		Negative battery connector 1
37		D	Battery module 2
	1		Battery positive connector 2
	2		Negative battery connector 2
40		-	Power connection node

Functional diagram: Motor management



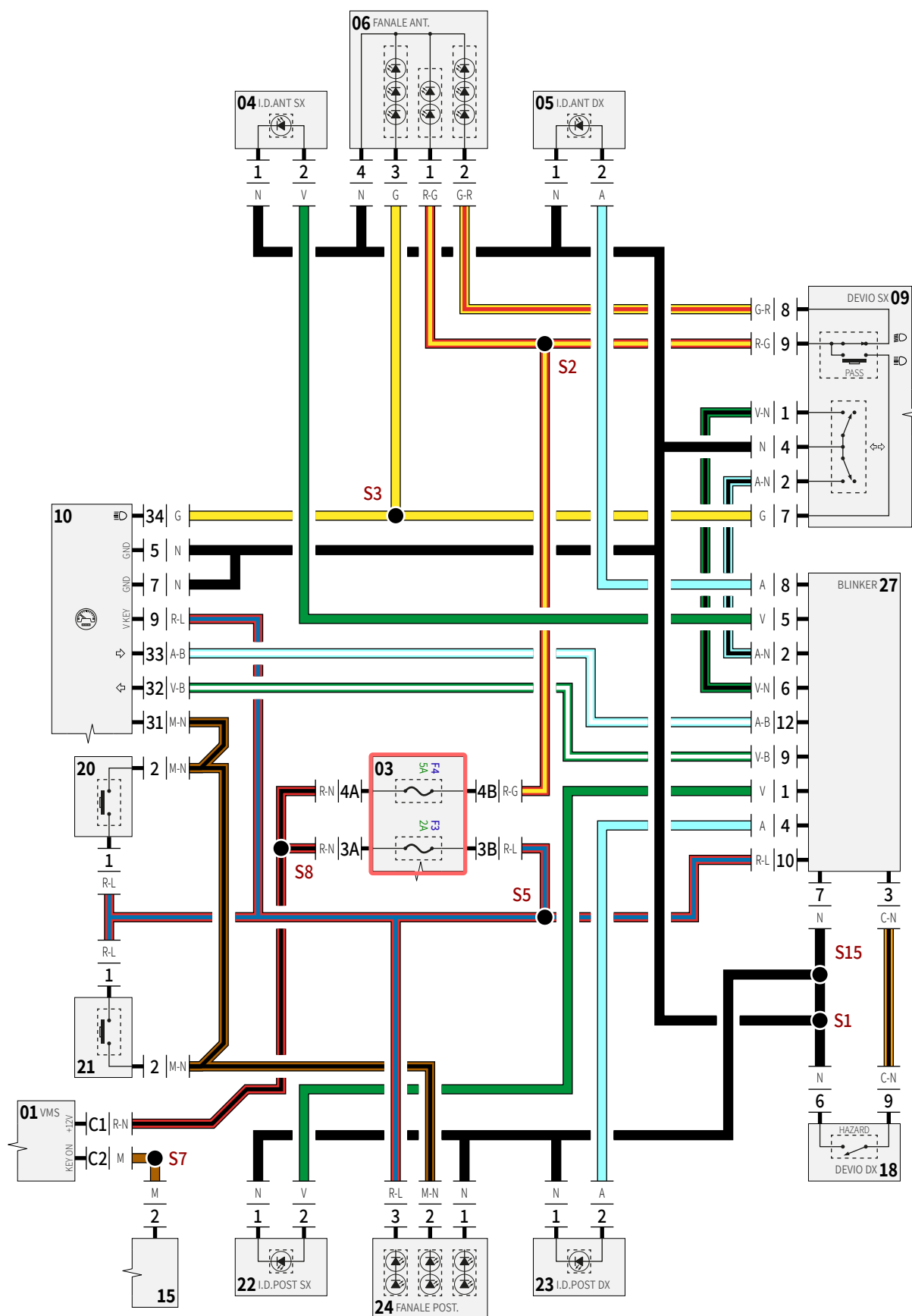
18.21.8 Function: Lighting

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Vehicle control unit (inverter)
	C1		Key-operated power supply (+12V)
	C2		Consent signal from key switch (KEY ON)
03		A	Fuse box
	3 A		Power supply (+12V) from vehicle control unit for fuse 3
	3B		Power supply protected by fuse 3 for tail light, blinker and dashboard icons
	4 A		Power supply (+12V) from vehicle control unit for fuse 4
	4B		Power supply protected by fuse 4 for headlight and high beam switch (left steering switch)
04		A	Front left turn signal
	1		Ground
	2		Input signal (+) from blinker
05		A	Front right turn signal
	1		Ground
	2		Input signal (+) from blinker
06		A	Headlight
	1		Power supply under fuse 4
	2		Input signal for switching on low beam lights from blinker
	3		Input signal for switching on high beam lights from blinker
	4		Ground
09		A	Left steering switch
	1		Left side turn signal ignition output signal
	2		Right side turn signal ignition output signal
	4		Turn signals control ground
	7		High beam light output signal
	8		Low beam light output signal
	9		Power supply under fuse 4
10		A	Dashboard
	5		Ground
	7		Ground
	9		Power supply under key from fuse 3
	31		Brake drive status input signal
	32		Left side turn signal lamps input signal
	33		Right side turn signal lamps input signal
	34		High beam light input signal
15		A	Key switch - connector 3
	2		Key output signal in ON status (KEY ON)
18		A	Right steering switch - controls
	6		Emergency light switch ground (HAZARD)
	9		Emergency light drive output signal
20		A	Front stop switch
	1		Input signal (+) front brake
	2		Ground

#	Pin	RC	Object / Function Description
21		A	Rear stop switch
	1		Input signal (+) rear brake
	2		Ground
22		A	Rear left turn signal
	1		Ground
	2		Input signal (+) from blinker
23		A	Rear right turn signal
	1		Ground
	2		Input signal (+) from blinker
24		A	Tail light
	1		Ground
	2		Rear brake light strip ignition input signal
	3		Power supply under fuse 3
27		A	Blinker
	1		Rear left turn signal output control output signal
	2		Right side turn signal drive input signal
	3		Emergency light drive input signal (HAZARD)
	4		Right rear turn signal control output signal
	5		Front left turn signal control output signal
	6		Left side turn signal drive input signal
	7		Ground
	8		Right front turn signal control output signal
	9		Left side turn signals indicator light control output signal
	10		Power supply under fuse 3
	12		Right side turn signal control output signal

Functional diagram: Lighting



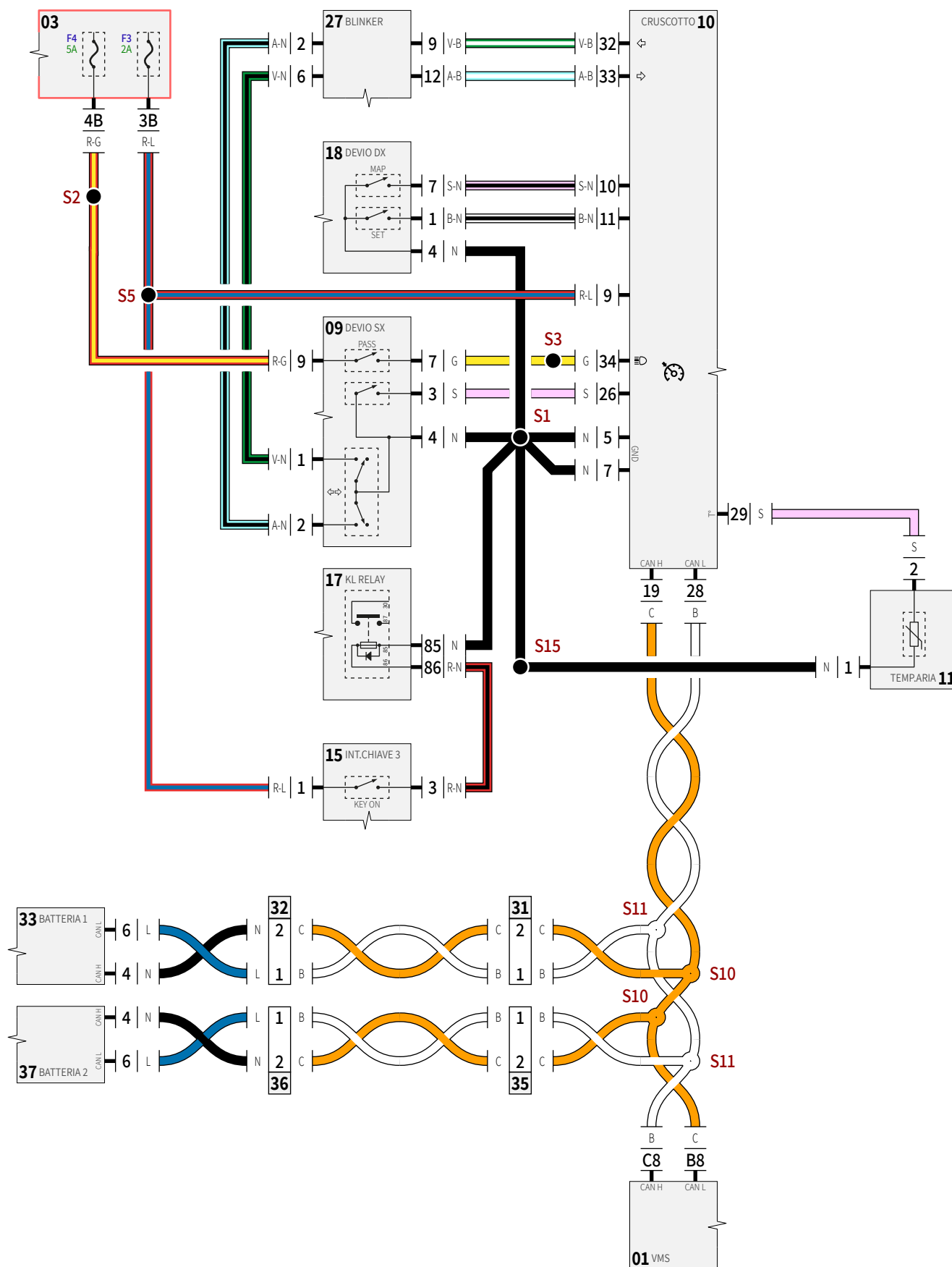
18.21.9 Function: Controls, dashboard and indicators

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B8		CAN Low Line
	C8		CAN High Line
03		A	Fuse box
	3B		Power supply protected by fuse 3 for dashboard, key switch
	4B		Power supply protected by fuse 4 for left steering switch
09		A	Left steering switch
	1		Left side turn signal ignition output signal
	2		Right side turn signal ignition output signal
	3		Vehicle enable button consent signal
	4		Ground
	7		High beam light output signal
	9		Power supply under fuse 4
10		A	Dashboard
	5		Ground
	7		Ground
	9		Power supply under key from fuse 3
	10		MAP button control input signal
	11		SET button control input signal
	19		CAN High Line
	26		Vehicle enable consent signal
	28		CAN Low Line
	29		Ambient air temperature input signal
	32		Left side turn signal lamps input signal
	33		Right side turn signal lamps input signal
	34		High beam light input signal
11		A	Ambient air temperature sensor
	1		Ground
	2		Ambient air temperature output signal
15		A	Key switch - connector 3
	1		Fuse-protected power supply F3
	3		Key consent input signal from Keyless relay
17		A	Keyless Relay
	85		Consent signal (+) key switch (85)
	86		Key switch consent input (86)
18		A	Right steering switch
	1		SET button operation signal
	4		Ground
	7		MAP button operation signal
27		A	Blinker
	2		Right side turn signal drive input signal
	6		Left side turn signal drive input signal
	9		Left side turn signals indicator light control output signal

#	Pin	RC	Object / Function Description
	12		Right side turn signal control output signal
31		B	Battery module 1 - main cable interconnection wiring harness
	1		CAN Low Line
	2		CAN High Line
32		C	Battery module 1 - supply wiring harness data interconnection
	1		CAN Low Line
	2		CAN High Line
33		C	Battery module 1
	4		CAN High Line
	6		CAN Low Line
35		B	Battery module 2 - main cable interconnection wiring harness
	1		CAN Low Line
	2		CAN High Line
36		D	Battery module 2 - supply wiring harness data interconnection
	1		CAN Low Line
	2		CAN High Line
37		D	Battery module 2
	4		CAN High Line
	6		CAN Low Line

Functional diagram: Controls, dashboard and indicators

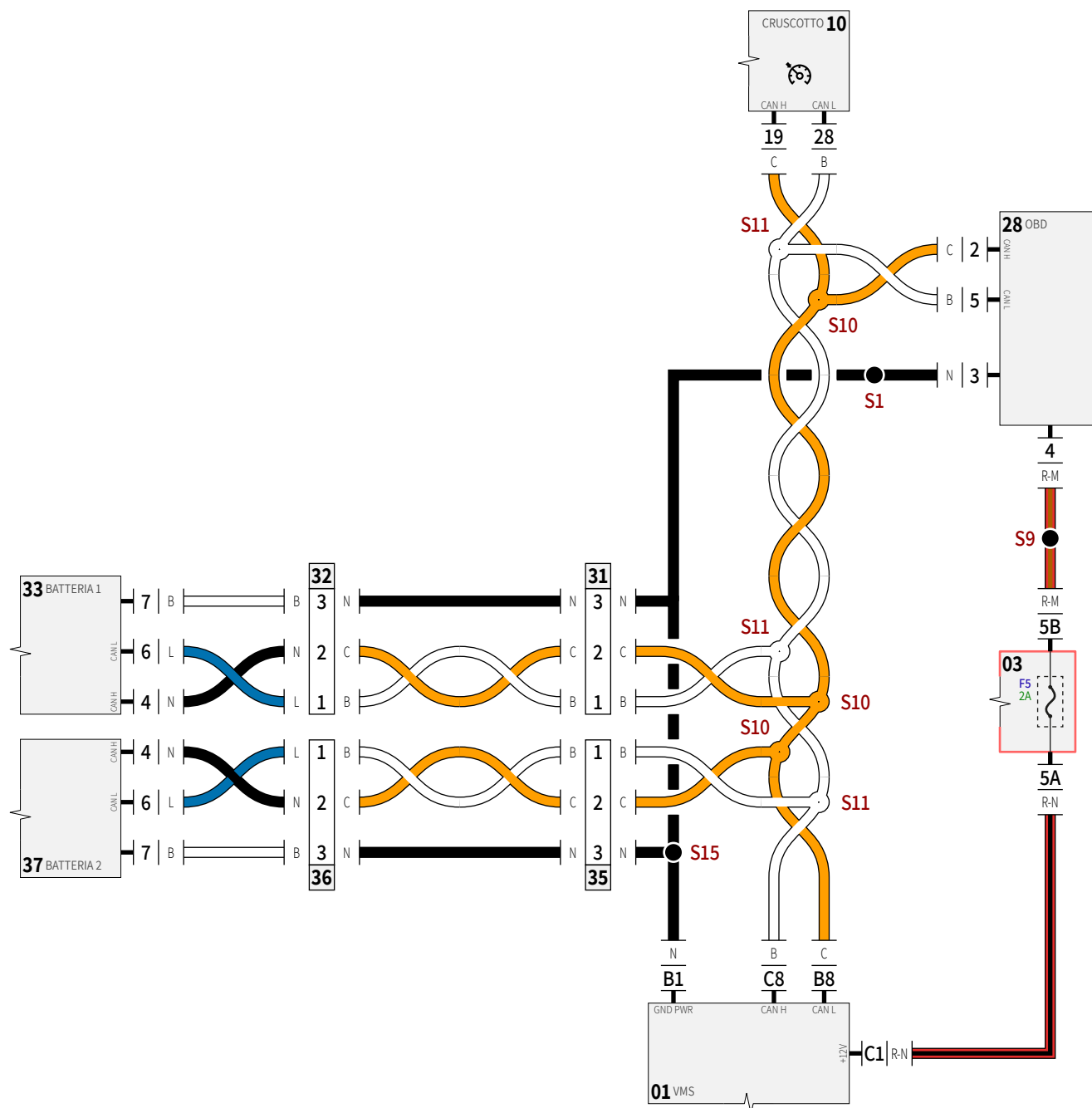


18.21.10 Function: Diagnostics

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	B8		CAN Low Line
	C1		Key-operated power supply (+12V)
	C8		CAN High Line
03		A	Fuse box
	5A		Power supply (+12V) from vehicle control unit for fuse 5
	5B		Power supply protected by fuse 5 for OBD socket and Connectivity wiring harness
10		A	Dashboard
	19		CAN High Line
	28		CAN Low Line
28		A	OBD socket
	2		CAN High Line
	3		Ground
	4		Power supply under fuse 5
	5		CAN Low Line
31		A/B	Battery module 1 - main cable interconnection wiring harness
	1		CAN Low Line
	2		CAN High Line
	3		Ground
32		B/C	Battery module 1 - supply wiring harness data interconnection
	1		CAN Low Line
	2		CAN High Line
	3		Ground
33		C	Battery module 1
	4		CAN High Line
	6		CAN Low Line
	7		Ground
35		A/B	Battery module 2 - main cable interconnection wiring harness
	1		CAN Low Line
	2		CAN High Line
	3		Ground
36		B/D	Battery module 2 - supply wiring harness data interconnection
	1		CAN Low Line
	2		CAN High Line
	3		Ground
37		D	Battery module 2
	4		CAN High Line
	6		CAN Low Line
	7		Ground

Functional diagram: Diagnostics



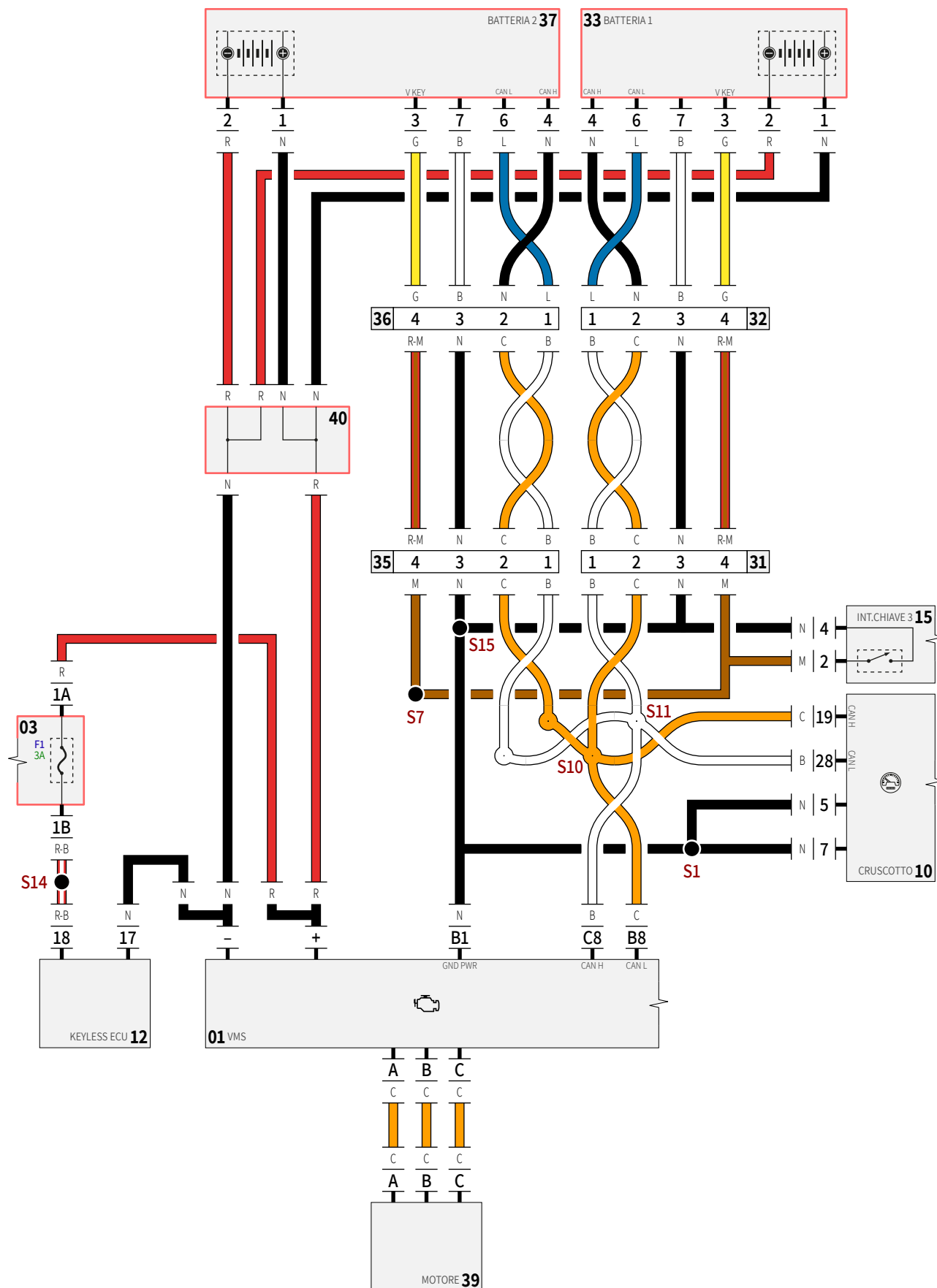
18.21.11 Function: Electric motor and batteries

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	B8		CAN Low Line
	C8		CAN High Line
	+	B	Positive connector power supply wiring harness
	-	B	Negative connector power supply wiring harness
	A	-	Electric motor Connector A
	B	-	Electric motor connector B
	C	-	Electric motor connector C
03		A	Fuse box
	1 A		Power supply from battery module(s) for fuse 1
	1B		Power supply protected by fuse 1 for Keyless control unit
10		A	Dashboard
	5		Ground
	7		Ground
	19		CAN High Line
	28		CAN Low Line
12		A	Keyless control unit
	17		Ground
	18		Fuse-protected power supply F1
15		A	Key switch - connector 3
	2		Power supply from battery module(s)
	4		Input signal (+) from enable button
31		A/B	Battery module 1 - main cable interconnection wiring harness
	1		CAN Low Line
	2		CAN High Line
	3		Ground
	4		Key-operated signal (V-KEY)
32		B/C	Battery module 1 - supply wiring harness data interconnection
	1		CAN Low Line
	2		CAN High Line
	3		Ground
	4		Key-operated signal (V-KEY)
33		C	Battery module 1
	1		Battery positive connector 1
	2		Negative battery connector 1
	3		Key-operated signal (V-KEY)
	4		CAN High Line
	6		CAN Low Line
	7		Ground
35		A/B	Battery module 2 - main cable interconnection wiring harness

#	Pin	RC	Object / Function Description
	1		CAN Low Line
	2		CAN High Line
	3		Ground
	4		Key-operated signal (V-KEY)
36		B/D	Battery module 2 - supply wiring harness data interconnection
	1		CAN Low Line
	2		CAN High Line
	3		Ground
	4		Key-operated signal (V-KEY)
37		D	Battery module 2
	1		Battery positive connector 2
	2		Negative battery connector 2
	3		Key-operated signal (V-KEY)
	4		CAN High Line
	6		CAN Low Line
	7		Ground
39		-	Electric motor
40		-	Power connection node

Functional diagram: Electric motor and batteries

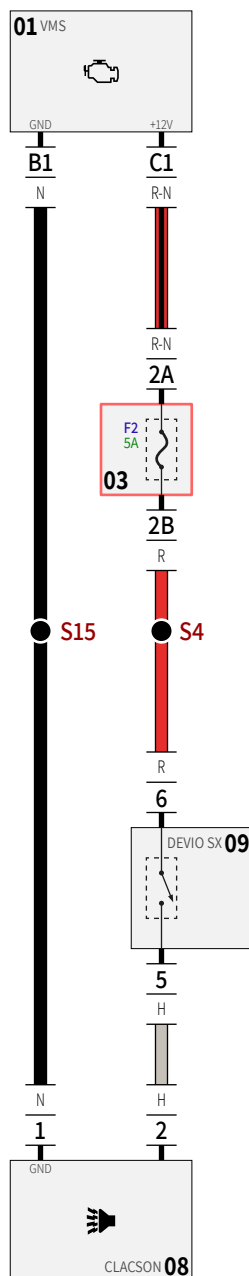


18.21.12 Function: Horn

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	C1		Key-operated power supply (+12V)
03		A	Fuse box
	2 A		Power supply from battery module(s) for fuse 2
	2B		Power supply protected by fuse 2 for horn
08		A	Horn
	1		Ground
	2		Horn operation input signal
09		A	Left steering switch
	5		Horn operation output signal
	6		Power supply under fuse 4

Functional diagram: Horn

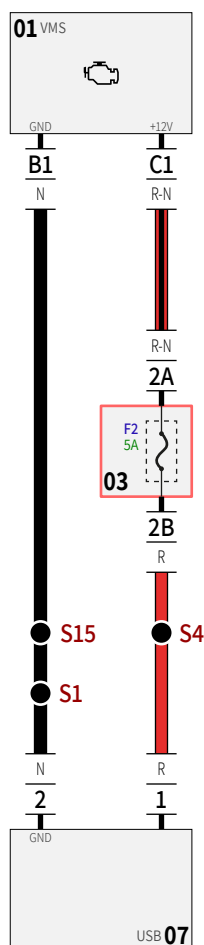


18.21.13 Function: USB

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	C1		Key-operated power supply (+12V)
03		A	Fuse box
	2 A		Power supply from battery module(s) for fuse 2
	2B		Power supply protected by fuse 2 for USB socket
07		A	USB socket
	1		USB socket power supply (+12V)
	2		Ground

Functional diagram: USB

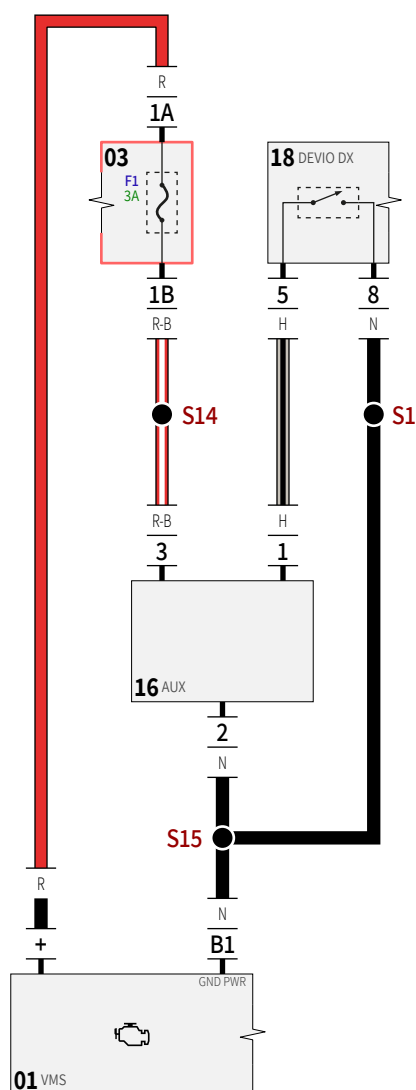


18.21.14 Function: Auxiliary socket (48V)

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	+	B	Positive connector power supply wiring harness
03		A	Fuse box
	1 A		Power supply from battery module(s) for fuse 1 (interconnection on VMS)
	1B		Power supply protected by fuse 1 for auxiliary socket (48V)
16		A	Auxiliary socket (48V)
	1		Power supply under fuse 1
	2		Reference ground
	3		Auxiliary socket enable output signal (48V)
18		A	Right steering switch
	5		Auxiliary socket power supply enable signal (-) (48V)
	8		Auxiliary socket enable switch ground (48V)

Functional diagram: Auxiliary socket (48V)

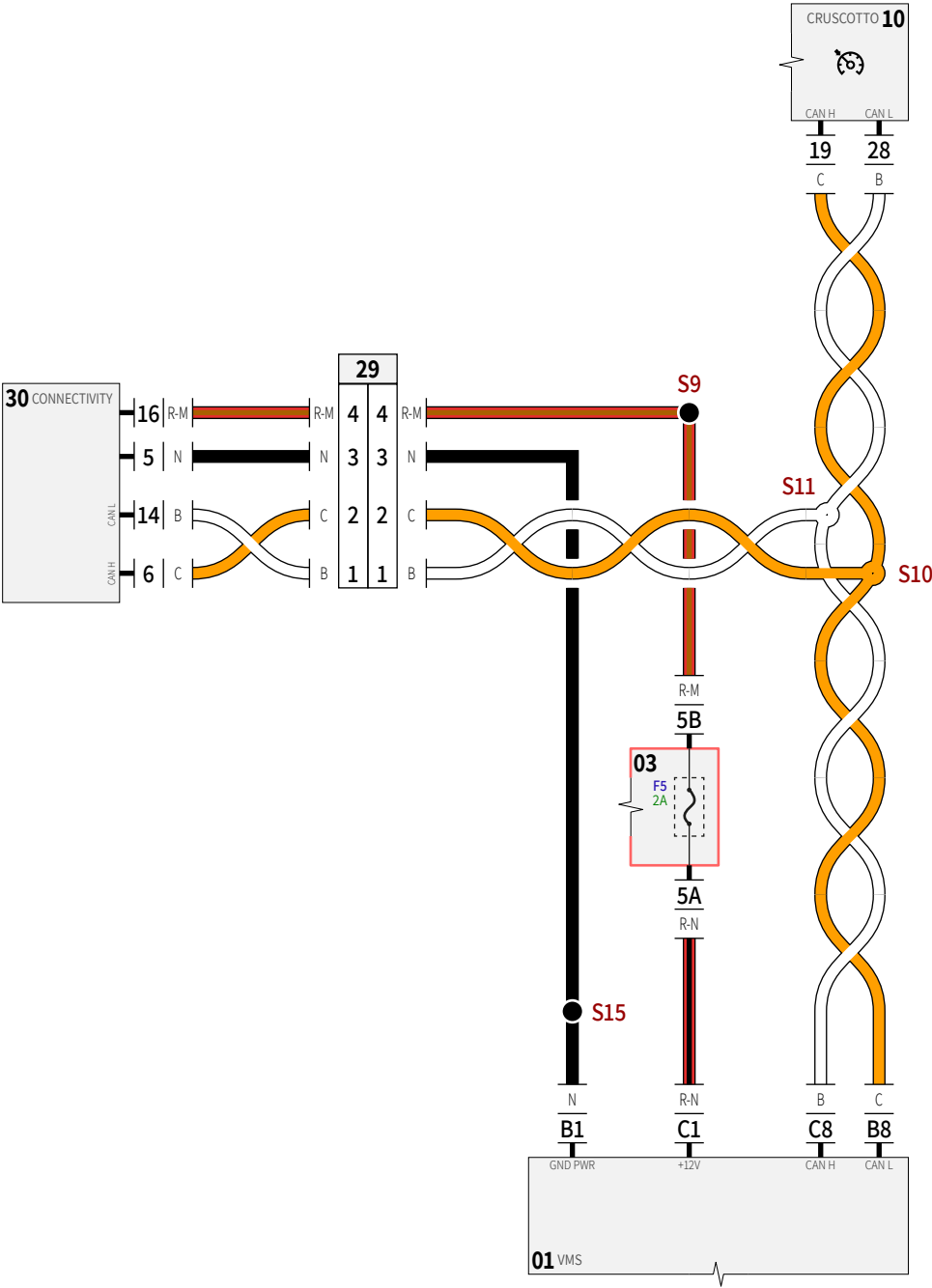


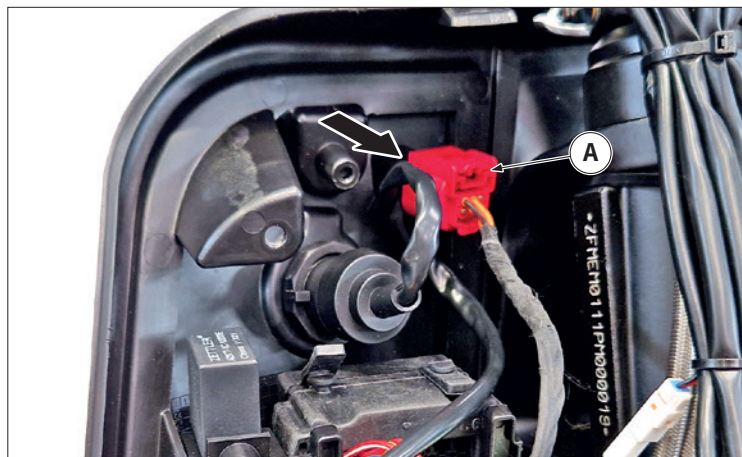
18.21.15 Function: Connectivity System

Functional diagram key

#	Pin	RC	Object / Function Description
01		A	Motor Management Unit (VMS) - main connector
	B1		Power grounding
	B8		CAN Low Line
	C1		Key-operated power supply (+12V)
	C8		CAN High Line
03		A	Fuse box
	5A		Power supply (+12V) from vehicle control unit for fuse 5
	5B		Power supply protected by fuse 5 for OBD socket and Connectivity wiring harness
10		A	Dashboard
	19		CAN High Line
	28		CAN Low Line
29		A/E	Wiring harness Connectivity adapter - main cable
	1		CAN Low Line
	2		CAN High Line
	3		Ground
	4		Power supply under fuse 5
30		E	Connectivity Socket
	5		Ground
	6		CAN High Line
	14		CAN Low Line
	16		Power supply under fuse 5

Functional diagram: Connectivity System





19.1 INSTRUMENTS DIAGNOSIS AND CONNECTION SOCKET

To perform diagnostic tests on the vehicle, it is necessary to access the diagnostic socket and connect a recognized diagnostic tester.

Diagnostic socket "A" is located behind the right flap of the front counter shield. To access it, the right flap must be removed as indicated in the procedure "6.2.3 Front shield" on page 40.

To connect the diagnostic tool, insert the tester connector as shown.

19.2 ERROR CODES

i The following list contains all available error codes for all versions of this vehicle.

DTC	Anomaly Reference component	Checks	#	Function
P0A42	Motor Position Sensor	Check the terminations of the motor position sensor.	25	Motor management (p.131)
P0A41	Motor Position Sensor	Check the terminations of the VMS main connector (pins B5,B7,A6).	01	
P0A4D	Motor Position Sensor	Perform integrity tests.	25	
P0A40	Motor Position Sensor	Check the presence of voltage (5V) in the motor position sensor (pin 1 {5V},2).		
P0A2F	Motor	Check connection to the motor temperature sensor;	26	Motor management (p.131)
		Check the terminations of the motor temperature sensor (pin 1,2)		
		Perform integrity tests;		
		Check the connection with the VMS control unit.	01.26	
P0B26	Battery A	Check the connection with the VMS control unit;	01	Electric motor and batteries (p.139)
		Check the battery power connector.	33.37	
P0B25	Battery A	Check signal connector Battery 1 (soldering points S11,S10,S15,S7);	33,(37)	Electric motor and batteries (p.139)
		Perform battery integrity test.		
U01A0	Battery 1 Signal	Check the connection to Battery A;	33,(37)	Electric motor and batteries (p.139)
		Perform battery integrity test;		
		Check battery signal connector 1 (soldering points S11,S10,S15,S7);		
		Check all connection pins.		
U0140	Dashboard	Check the connection to the dashboard.	10	Controls, dashboard and indicators, Lighting, Diagnostics
P1A05	VMS	Internal operating error.	01	–
P1A06	VMS	Internal operating error.	01	–
P0A3C	VMS	Check the air passage;	01	Motor management (p.131) Electric motor and batteries (p.139)
		Check the voltage between VMS (+) and VMS (-).		
P064F	VMS Calibration	VMS calibration error.	01	–
P0A09	VMS	Check the VMS termination (pin C1);	01	Power supply (p.125)
		Perform integrity tests.		
P0A10	VMS	Perform integrity tests.	01	–
P060B	Motor	Check the terminations of the motor position sensor (pin 5,6);	25	Motor management (p.131)
		Check the VMS main connector termination (pin B7,A6).	01	
P0BFD	Motor	Perform integrity tests.	01	–
P0A1B	Motor	Check the terminations of the VMS main connector (pins B7,A6);	01	Motor management (p.131)
		Perform integrity tests;		
		Check the terminations of the motor position sensor (pin 5,6).	25	
P0A5F	Motor	Check the terminations and connection of the motor phases.	01.39	Electric motor and batteries (p.139)
P0A62	Motor	Check the terminations and connection of the motor phases.	01.39	Electric motor and batteries (p.139)
P0A65	Motor	Check the terminations and connection of the motor phases.	01.39	Electric motor and batteries (p.139)

DTC	Anomaly Reference component	Checks	#	Function
P0A2D	Motor temperature	Check the motor temperature sensor integrity.	26	Motor management (p.131)
P0A2C	Motor temperature	Check the terminations and connection to the main connector of the VMS;	01	Motor management (p.131)
		Check the terminations of the motor temperature sensor (pin 1,2);		
		Perform integrity tests;		
		Check the terminations of the VMS main connector (pin A3).		
P2176	Torque Demand	Check the terminations of the VMS main connector (pins C4,A4);	01	Motor management (p.131)
		Check the terminations of the throttle/Torque Demand connector (pin 3,4 {5V});	19	
		Check the terminations of the throttle control/Torque Demand connector (pin 1,5).		
P1A09	Handle Signal	Check the terminations of the VMS main connector (pins C4,A4).	01	Motor management (p.131)
P1A0A	Handle Signal	Check the terminations of the throttle/Torque Demand connector (pin 3,4 {5V}).	19	Motor management (p.131)
P0123	Handle Signal	Check the terminations of the throttle control/Torque Demand connector (pin 1,5).	19	Motor management (p.131)
P2108	Handle Signal	Check the terminations of the throttle control/Torque Demand connector (pin 1,5).	19	Motor management (p.131)
P0122	Handle Signal	Check the terminations of the throttle control/Torque Demand connector (pin 1,5).	19	Motor management (p.131)
P0A4E	Generator Position	Check the terminations of the VMS main connector (pins C4,A4);	01	Motor management (p.131)
		Check the terminations of the throttle/Torque Demand connector (pin 3,4 {5V});	19	
		Check the terminations of the throttle control/Torque Demand connector (pin 1,5).		
P1A01	Buzzer	Check the VMS main connector termination (pin A1);	01	Motor management
		Check the termination of the Keyless ECU (pin 1).	12	Motor management
P1A02	Buzzer	Perform integrity tests.	12	–
P1A08	BMS	Incompatibility of Battery Management Software.	–	–
P0A7B	BMS	BMS Error.	–	–
P1A03	BMS	Internal BMS error.	–	–
P1A04	Observer error track	Internal VMS error.	01	–
P1A07	ADC Offset	Internal error.	–	–
P0D33	DC/DC Converter	Check Electrical Loads.	–	Electric motor and batteries (p.131)
U0036	Vehicle Communication	Check the integrity of the CAN High and CAN Low signals.	–	Diagnostics (p.137)
P1A0B	L1/L3 vehicle	Incompatibility of the VMS Software.	–	–