

Service Manual for Chery QQ6

(Electrical, Circuit)

After Sales Service Department of Chery
Automobile Sales Co., Ltd

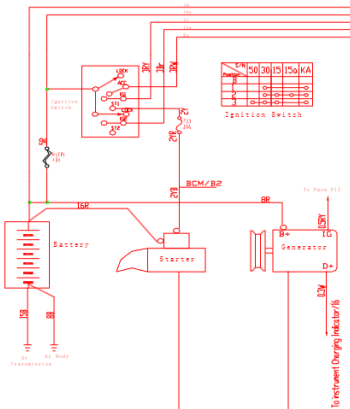
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Chapter One Control Principle of Some Systems

I. Control Principle of Starting System



1. Starting System

When the ignition switch is turned to ST position, the pull-in winding of the starter powers on, and then the starting gear of stater motor is pushed to and engaged with the gear of flywheel. At the same time, when the gears engage, the contact on the pull-in winding works and connects the power supply from the battery to the starter motor so as to turn the motor and start up the engine. When the ignition key returns back to the IG position, the holding coil of the starter powers off, and under the action of spring force of the gear the motor disengages from the flywheel and the flywheel of starter motor disconnects at the same time. The starting signal is transmitted to BCM at the same time. The BCM utilizes the starting signal to determine that the system is in the starting condition. In this case, the BCM will stop the action of motor of window glass regulator so as to ensure that there is electric engergy enough to be supplied to starter motor.

2. Charging System

When the ignition switch is in IG position, the power supply from the ignition switch F17 is used to excite the generator so as to ensure that it can generate electric power during the generator is

operating. When the generator itself can generate electric power, the system will switch to the self-excitation mode. In addition, when the generator is generating electric power, it gives a signal to the relevant instrument via the D+ terminal. After the instrument receive the signal from the generator, the battery indicator on the instrument will be extinguished.

3. Troubleshooting and Elimination

3.1. The starter not operate, low power output or its fuse burnout

Not operate: When the key is in starting position, if the sound of action of pull-in winding can be heard while the motor doesn't operate, this may be caused due to the battery no power output, contact in pull-in winding failure or starter ground poor.

Low power output: The starter can operate while with low power output. The cause may be low power output of battery, or high resistance of engine mechanical parts.

Fuse burnout: If the fuse burns out frequently when starting, it may be caused due to the starter ground poor, wire connection poor or starter interior and engine interior resistance overhigh.

3.2. Generator not work or low power output

Generator not work: Generator's not working may make an influence on many systems, and also result that the battery is used out rapidly. The cause to result the generator doesn't work may be the exciting circuit work poor, and also may be the rotor, carbon brush or rectification regulator inside generator failure. Of course, the generator is now unallowable to be repaired. If the trouble is caused due to the generator problem, please replace the generator assy..

Power output low or overhigh: When the generator's power output is low, it may result that the system voltage is low and many systems fail to work normally. For the vehicle equipped with ABS system, the ABS system is very sensitive to the power output of generator. In case that the power output is low, the system immediately changes to the failure mode. The main cause to result the low power output may be the reguator inside the generator work poor or generator's belt loose and etc. The power output overhigh generally means that the voltage is overhigh, which easily damages the electical devices. This is a very dangerous failure which may result the electrical harness catches a fire. The generator voltage overhigh is mainly caused due to the regulating circuit inside the generator work poor.

II. BCM Control

1. Ceiling Lamp Control

- When any door opens, the ceiling lamp lights automatically, and then extinguishes 15 minutes later after the door opens.
- The ignition switch is placed to OFF position, and, 8s later after all four doors close, the ceiling lamp gradually extinguishes, with duration of 2s.
- During the ceiling lamp delays 8s, if the ignition switch changes OFF position to ON position, the ceiling lamp extinguishes immediately.
- If the ignition switch is in ON position and all four doors close, after any door opens and then closes, the ceiling lamp immediately extinguishes without time delay.
- When all four doors close and the ceiling lamp lights, press down the LOCK button on the remote controller and then the lamp immediately extinguishes.
- Press the UNLOCK button once, then the ceiling lamp lights and keeps lighting for 8s, and the lamp extinguishes slowly within the subsequent 2 s.

Note: When the switch of ceiling lamp is placed to the controlled position, the ceiling lamp control function is available.

2. Window Glass UP/DOWN Function

- The electric window control is allowable only when the ignition switch is in ON position, or only within 1 minute after the ignition key changes from ON to OFF, otherwise, the electric window control is prohibited.
- Temporarily stop the lifting of window glass when starting
- Automatic/manual control
Manual control UP: If the driver-side door or passenger-side door window UP switch is pulled up, the window will be driven by a motor and lift.
Note: Without the automatic window lift function, only with the manual lift function).
Automatic/manual DOWN: If the switch input time $t < 300$ ms, the window will automatically fall down. When t is greater than or equal to 300 ms, the window will manually fall down.
- Press the LOCK pushbutton for 2s every time to remote control the lifting of window glass, and release the pushbutton to stop the lifting of window glass.

3. Central Door Lock

- The front left door key independently control the unlocking/locking of the central door lock.

- The door lock and window glass regulator can't act at the same time, and the former is preferred if conflict.
- Automatic door lock control (pre-reserved signal, suitable for the speed locking of vehicle equipped with air bag and the unlocking after the air bag explodes).

4. Anti-theft Alarm System

4.1. Door lock remote control function

When the remote control key's UNLOCK/LOCK pushbutton is pressed down, the door lock motor will act $0.6\text{ s} \pm 50\text{ ms}$.

When the door unlocks, the right/left turn signal lamp flashes: $0.5\text{ s} \pm 50\text{ ms}$ On; $0.5\text{ s} \pm 50\text{ ms}$ Off; $0.5\text{ s} \pm 50\text{ ms}$ On. And then it extinguishes.

When the door locks, the right/left turn signal lamp flashes: $0.5\text{ s} \pm 50\text{ ms}$.

4.2. Vehicle safety system has five modes:

- ↘ **Arming mode** – When a driver presses down the ALARM button, the vehicle is in arming condition.
- ↘ **Disarm mode** – The arming mode is removed by the driver.
- ↘ **Alarm mode** – When a invasion event is detected, the system may give an alarm (not give an alarm for the vehicle without the alarm horn).
- ↘ **Disalarm mode** – The driver returns back to the side of vehicle and turns off the alarm.
- ↘ **Arming failure mode** – The vehicle fails to successfully establish the arming condition.

4.3. Arming mode:

- a) How to enter into the arming mode:

Condition: ① Four doors close; ② Front hood and rear trunk close.

Operation : Press down the “LOCK” button on the remote controller.

- b) Representation when entering into the arming mode:

Before the body enters into the normal arming mode: ① the left/right turn signal lamp flashes once; ② the body anti-theft horn gives an alarm once (not give an alarm for the vehicle without the alarm horn).

- c) Specific representation when the failure to enter into the arming mode:

When the failure to enter into the arming mode, the system will has the following representations: ① the left/right turn signal lamp continuously flashes twice; ② the body anti-theft horn doesn't give an alarm (not give an alarm for the vehicle without the alarm horn).

- d) Body state after entering into the arming mod:

After the body enters into the normal arming mode: ① the four doors are locked; ② the

arming indicator light continuously flashes; ③ if the ceiling lamp switch is in the controlled position and the ceiling lamp is in OPEN position, the ceiling lamp closes.

4.4. Disarm mode:

- a) How to disarm:

Condition: The body is in the normal arming mode.

Operation: Press down the "UNLOCK" button on the remote controller.

- b) Representation when disarming:

Before the body changes from the normal arming mode to the disarm mode: ① the left/right turn signal lamp continuously flashes twice; ② the body anti-theft horn continuously gives an alarm twice (not give an alarm for the vehicle without the alarm horn).

- c) Body state after disarming:

After the body is disarmed: ① the four doors can be freely opened; ② the arming indicator light stops flashing; ③ the ceiling lamp automatically extinguishes within 8 s after it turns on.

(CAUTION: If no action on the body is implemented within 28 s after disarming, 28 s later, the body control module will automatically make the body enter again into the arming condition.

4.5. Alarm mode:

- a) How to trigger the alarm mode:

Condition: The body is in the normal arming mode.

Operation: ① Enforcedly open any of four doors; ② enforcedly open front hood or trunk; ③ turn on the ignition switch.

- b) Representation when entering the alarm mode:

After the body enters into the alarm mode: ① the left/right turn signal lamp continuously flashes for 28 s; ② the body anti-theft horn continuously give an alarm for 28 s; ③ after stopping alarming, 28 s later, if four door, front hood and trunk close and then open, the left/right turn signal lamp and the body anti-theft horn will be triggered for 28 s, and cycles; ④ if the door open or "ignition" state exists at all times, the alarm is given ten cycles and then stops, with the cycle interval of 2 s (not give an alarm for the vehicle

without the alarm horn).

4.6. Disalarm mode

a) How to disalarm:

After the body enters into the alarm mode: ① press down any pushbutton on the remote controller.

b) Body state after disarming:

1. If the triggered alarm door is in open state (not give an alarm for the vehicle without the alarm horn).

Press down the UNLOCK pushbutton on the remote controller to ① disalarm; ② unlock the central door lock.

Press down the LOCK pushbutton on the remote controller to ① disalarm; ② enable the arming to be failed.

2. If the triggered alarm door is in close state (not give an alarm for the vehicle without the alarm horn):

Press down the LOCK pushbutton on the remote controller to ① disalarm; ② disarm, and carry out the secondary arming after 28 s.

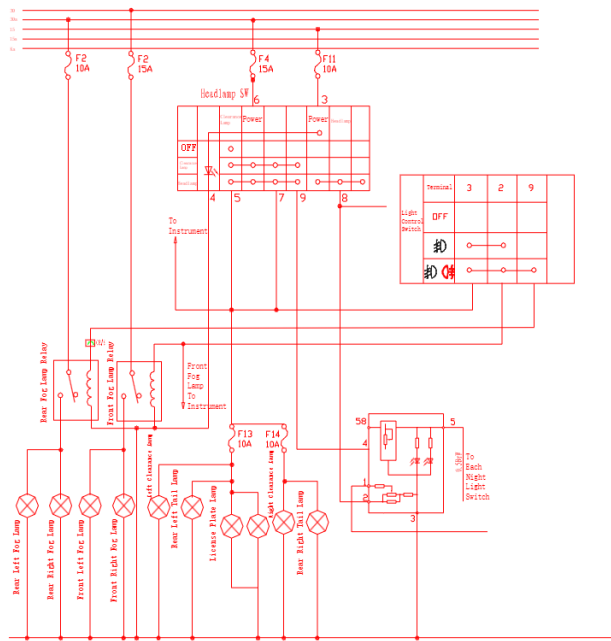
Press down the LOCK pushbutton on the remote controller to ① disalarm; ② enter into the arming mode.

4.7. Arming failure mode

a) If door, engine hood, trunk fail to close at the same time, pressing the Arm key can't set up the arming condition:

After the failure of body arming: ① the left/right turn signal lamp lights.

III. Fog and Position Lamps Control



1. Principle of Fog Lamp Control

The fog lamp is controlled by the combination light switch which is used to control the open/close of the fog lamp relay. When the light switch is turned to the clearance lamp position, the electric power from the fuse F4 is supplied to the fog lamp switch via the angle 7#. When the fog lamp switch is in the front fog lamp position, the 3# terminal of the fog lamp switch is successfully connected to the 2# terminal to make the front fog lamp relay engaged and thus light up the front fog lamp. When the fog lamp switch is in the rear fog lamp position, all terminals 3#, 2# and 9# of the fog lamp switch turn on, and the rear fog lamp relay also engages. In this case, the front and rear fog lamps light at the same time. So, the principle of the fog lamp control is just to turn on the clearance lamp (position lamp) and then turn on the front fog lamp, and the rear fog lamp can be turned on only after the front fog lamp turns on (this is implemented using the switch).

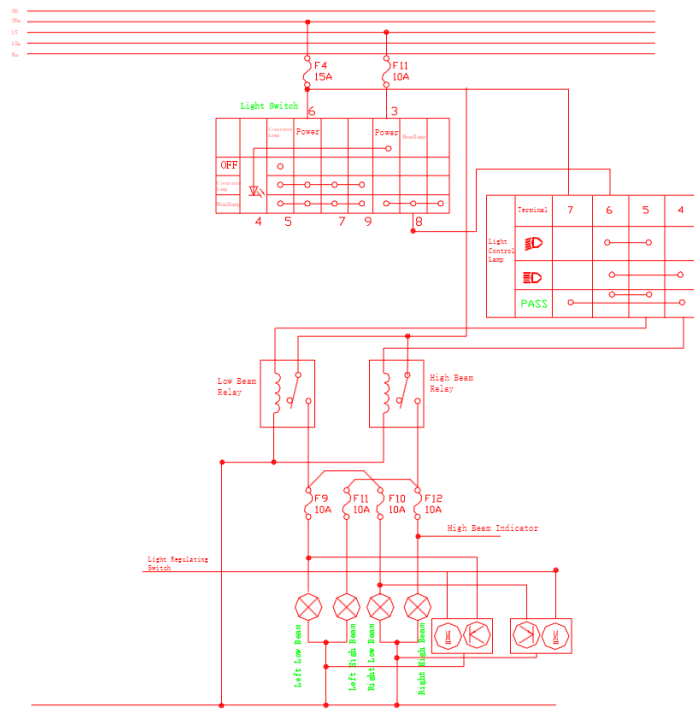
2. Principle of Clearance Lamp Control

The clearance lamp is controlled using a light switch. When the switch is in the clearance lamp position, the terminals 5# and 6# of the light switch will be turned on to make the power supply from the fuse F4 get to the clearance lamp via the angle 5#, and the front and rear clearance lamps connect to the fuses F13 and F14 respectively. In addition, the license plate lamp also lights.

3. Night Light and Electric Headlamp Control

When the light switch is in the clearance lamp position, the terminals 6# and 9# of the light switch are turned on, which supplies the electric power to the terminal 4# of the nightlight regulating switch and thus makes all nightlight circuit power on. Surely, the brightness is controlled by the regulation resistance mounted on the nightlight switch. When the light switch is in the headlamp position, the power supply from the fuse F11 is connected via the angles 3# and 8# of the headlamp switch which are used to supply the electric power to the electric switch and headlamp relay. In this case, the electric switch can employ its slide resistor to control the operation of electric motor. So, from the principles above, it can be concluded that the night light works only when the light switch is in the clearance lamp or headlamp position, and the electric headlamp can be adjustable only when the light switch is in the headlamp position.

IV. Headlamp Control



1. Principle of low beam lamp control

When the light switch is in the headlamp position, the terminal 8# of the light switch offers the light control switch's 6# terminal the electric power. When the light control switch is in the low beam position, the switch will turn on the terminals 6# and 5# to make the low beam relay close and thus light up the low beam lamp.

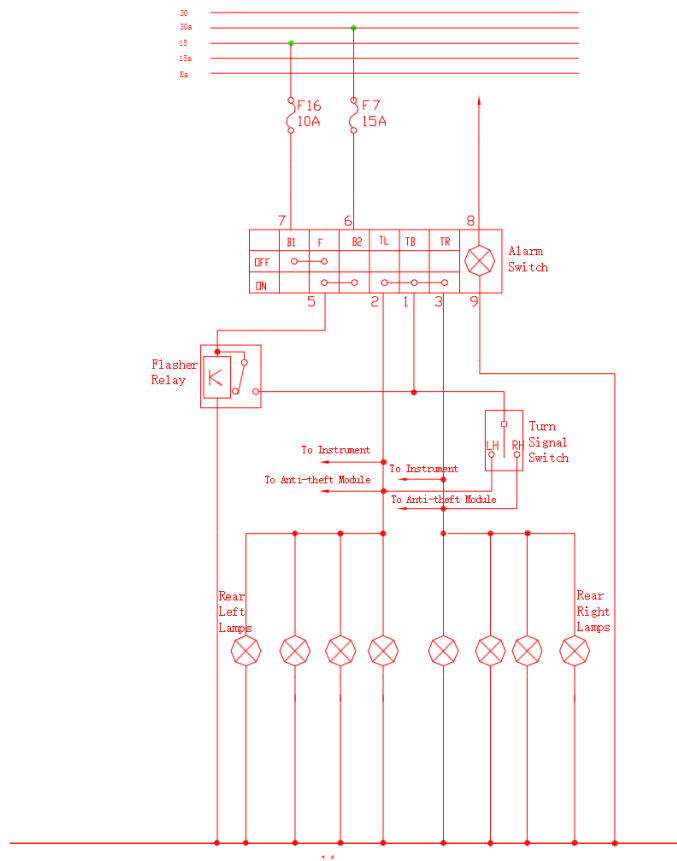
2. Principle of high beam lamp control

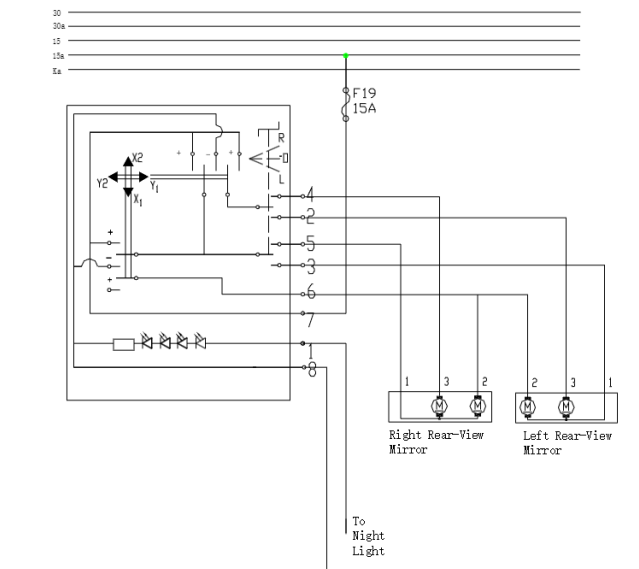
When the light control switch is in the headlamp position, the switch will connect the power supply from the terminal 8# of the light switch and the terminal 4# of light control switch, which makes the high beam relay close and thus lights up the high beam lamp.

3. Principle of the passing lamp control

When the light control switch is in PASS position (passing lamp position), the switch directly offers the high beam relay the electric power from the fuse F4, without via the light switch, which lights up the high beam lamp. So, it is unnecessary to open the light switch when the passing lamp is in service.

V. Turn Signal Lamp Control

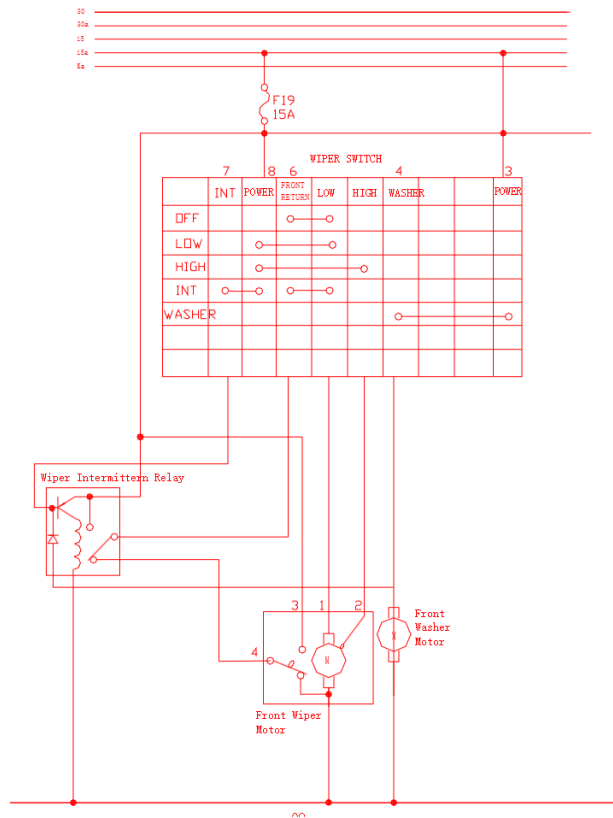




1. Control principle

The electric rear-view mirror is controlled by a switch, without any relay. When the L position is selected, the Nos 2 and 3 circuits form a loop respectively with the internal circuit of the switch. Take the Y1 direction as an example, when pushing the switch in the Y1 direction, the switch connects to the power supply from F19 while the power supply connects with the No 2 circuit (with Nos 2 and 3 circuits when the switch is in L position). So, the current flows across the motor, goes through No 3 circuit and then gets to the ground. Similarly, when the switch is in R position, the Nos 4 and 5 circuits connect to the corresponding circuit and form a loop.

VII. Wiper Motor Control



1. Control principle

This wiper system's control is a switch type one while the intermitten control adopts the intermitten relay. The wiper motor is grounded itself. When the switch is in the Low Speed position, the wiper switch is used to connect the power supply from F19 with the No 1 terminal of the wiper motor, and the wiper starts to operate at low speed. When the switch is in the High Speed position, the wiper switch is employed to connect the power supply from F19 with the No 2 terminal of wiper motor so as to enable the wiper motor to operate at high speed. When the switch is in the Intermittent position, the wiper switch is used to connect the power supply from F19 with the No 7 terminal of the switch, which offers the base electrode of triode of intermitten relay the power supply. The triode controls the internal switches to make the power supply of wiper motor 3 go through No 4 circuit and via the intermitten relay controlled switch and then get to the wiper switch 6. Then, through the low speed circuit, the wiper motor is intermittently controlled.

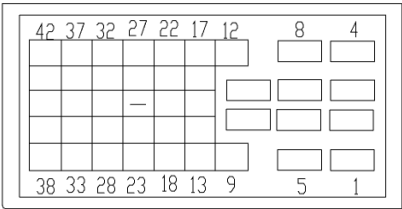
2. Wiper return and stop function

In order to ensure that the wiper can return back to its original position when the wiper stops working, there are two sets of contact mechanisms inside the wiper motor: one is return contact, and the other is stop contact. When the wiper operates at low or high speed, both sets of contacts are out of service. However, when the low or high speed power supply of the wiper disconnects, the wiper motor is powered by the No 3 power supply of motor and keeps continuous operation. When the motor operates to the specified position (the wiper blade returns back to the original position), the No 3 power supply of wiper motor is disconnected while the No 4 applies the power supply from F19 on the normal low level side of the wiper motor by turning on the intermittent relay switch. In this case, it enable the motor to produce the trend of rotation in reverse. This trend just counteracts the movement of wiper motor generated due to the inertia after power off, which makes the motor braked immediately and stop operation.

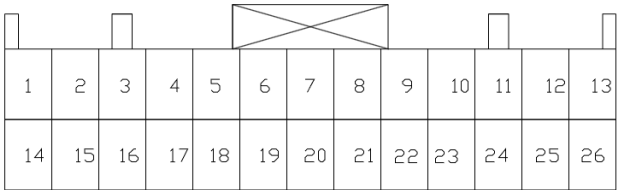
Chapter Two Schematic Diagrams of Circuit Control

I. Definition of Main Harness Connectors

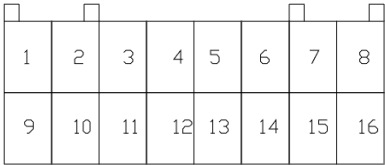
Engine/Compartment (Engine and Compartment Harness's Connector)



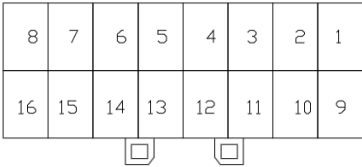
Compartment /Instrument A (Compartment and Instrument Harness's A Connector)



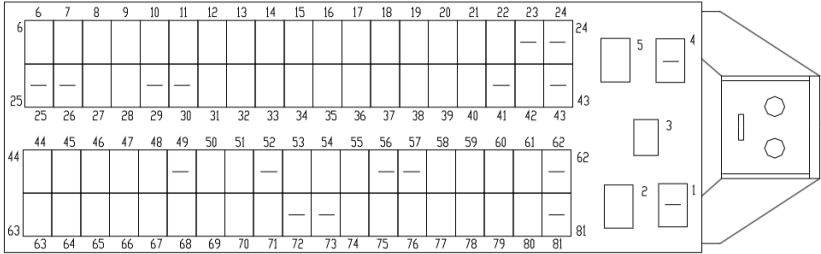
Compartment /Instrument B (Compartment and Instrument Harness's B Connector)



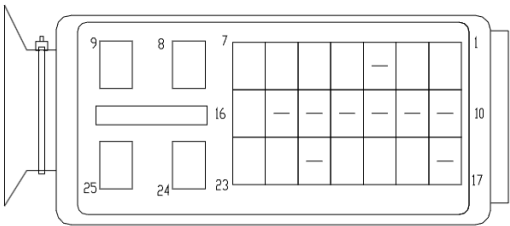
Compartment /Interior (Compartment and Interior Harness's Connector)



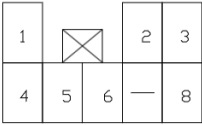
Definition of ECU Pin



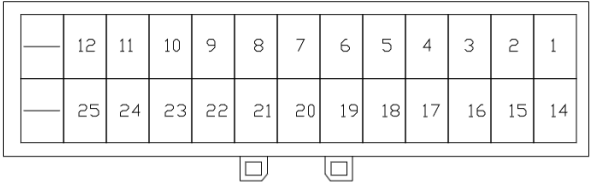
Definition of ABS Pin



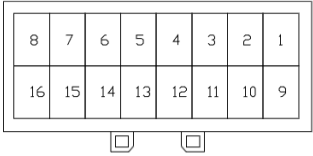
Interior/Instrument B (Interior Harness and Instrument Harness's A Connector)



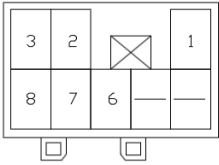
Interior/Instrument A (Interior Harness and Instrument Harness's A Connector)



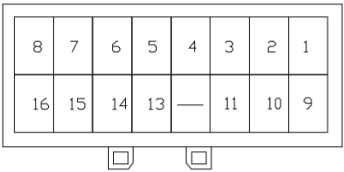
Interior/FL A (Interior Harness and Front Left Door Harness's A Connector)



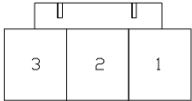
Interior/FL B (Interior Harness and Front Left Door Harness's B Connector)



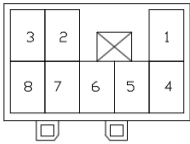
Interior/FR A (Interior Harness and Front Right Door Harness's Connector)



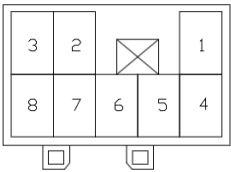
Interior/RL A (Interior Harness and Rear Left Door Harness's A Connector)



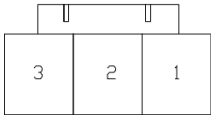
Interior/RL B (Interior Harness and Rear Left Door Harness's B Connector)



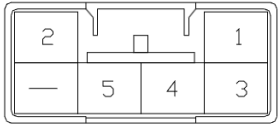
Interior/RR B (Interior Harness and Rear Right Door Harness's B Connector)



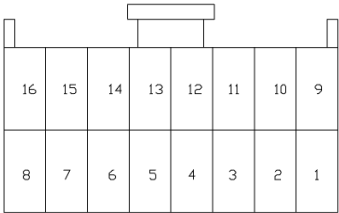
Interior/RR A (Interior Harness and Rear Right Door Harness's A Connector)



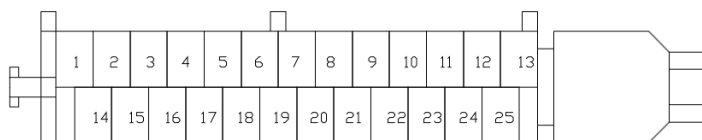
Interior/B (Interior Harness and Back Door Harness's Connector)



BCMA (BCMA Connector Pin Definition)



BCMB (BCMB Connector Pin Definition)



II. Drawing Description

1. Main Symbol Description

Symbol	Meaning	Symbol	Meaning
	Circuit Connection		Motor
	Fuse Position and Specification		Bulb
	Relay		ON/OFF Control
	Shielded Wire		Resistor Element
	Shielded Wire		Solenoid
	This section is not involved in this system		LED
	Connector		Ground

Remark: Please refer to circuit and real object to confirm another symbols.

2. Drawing Description

30: Main positive wire from the battery

30a: Main positive wire from the battery

15: From the ignition switch (IGN1)

15a: From the ignition switch (IGN2)

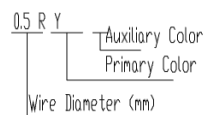
ka: From the ignition switch (ACC, disconnect it when starating)

58b(RHEO): Power supply for night lighting

31- (GROUND): ground cable, from the negative electrode of the battery

Wire diameter and color:

R Red; O Orange; W White; B Black; Y Yellow; V Violet;
G Green; L Blue; Br Brown; Gr Grey; P Pink; Lg Ligth green;



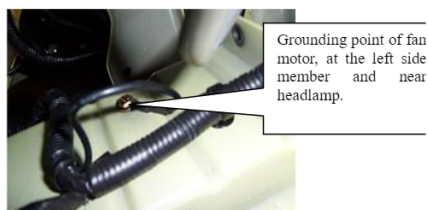
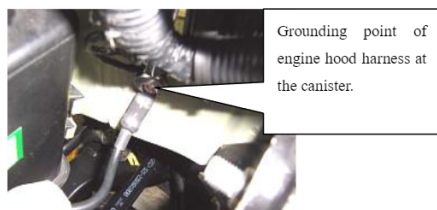
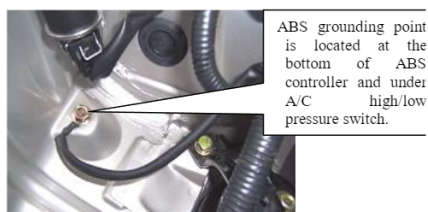
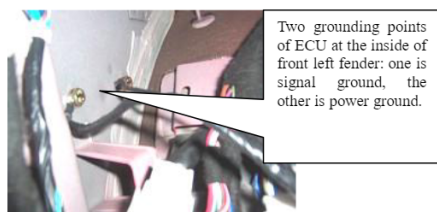
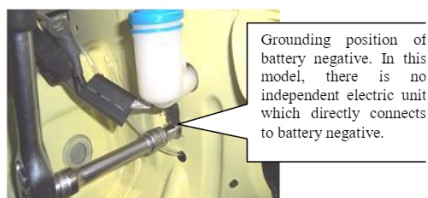
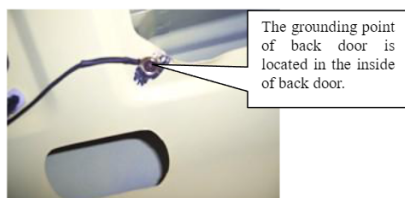
3. Definition of Main Controller

In this schematic diagram of circuit control, “CE/” means the instrument electrical box integrated with relay connector;

In this schematic diagram of circuit control, “ECU” means the engine control computer;

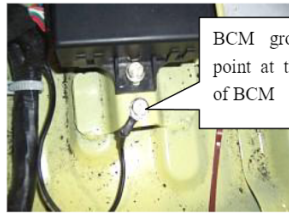
In this schematic diagram of circuit control, “BCM” means body control computer.

4. Position of Body Grounding Points





Grounding point of interior harness under the left A post.



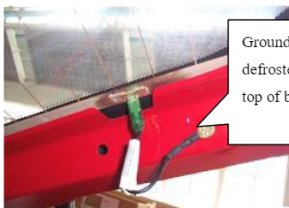
BCM grounding point at the side of BCM



Grounding point of interior harness at the left side of luggage boot.

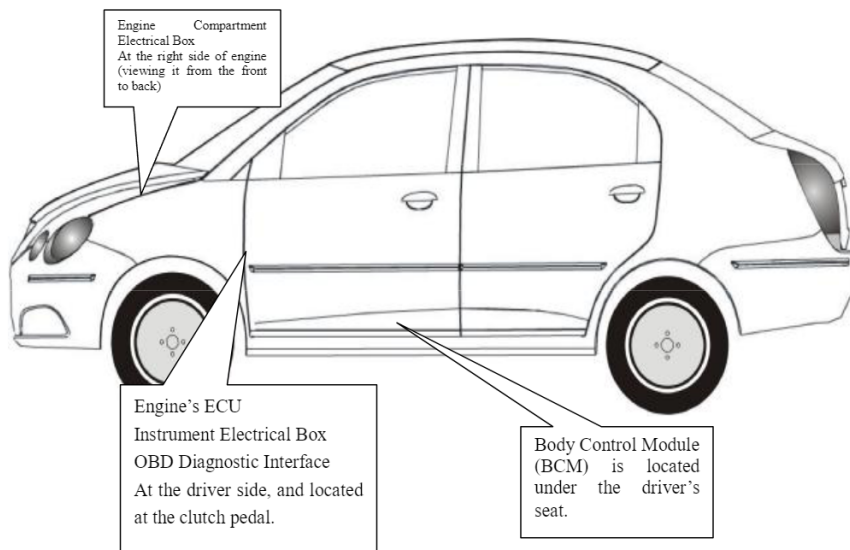


Grounding point of interior harness at the inside of rear right fender.



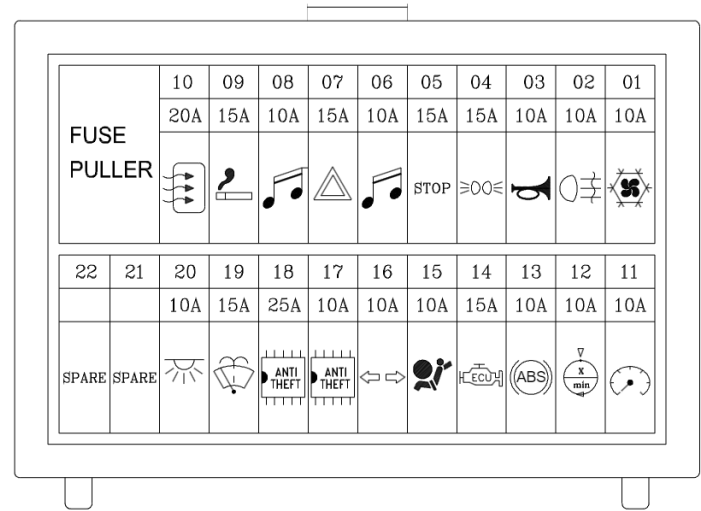
Grounding point of defroster harness at the top of back door.

III. Schematic Diagram of Main Electric Box and Module Position

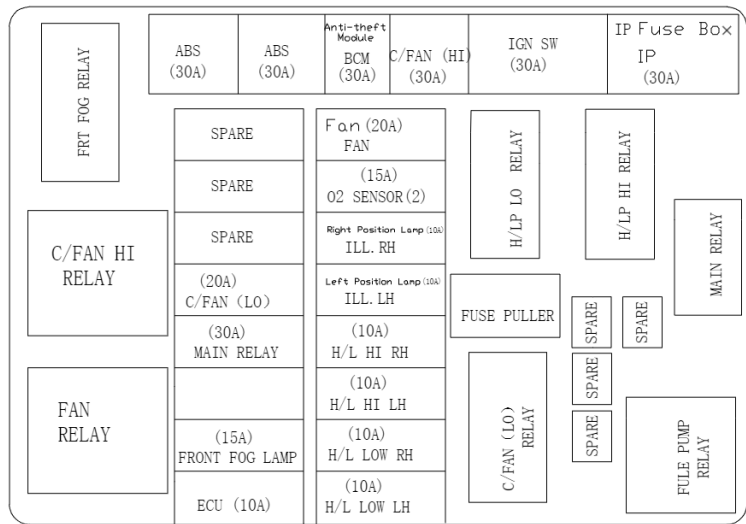


IV. Electrical Box Description

1. Instrument Electrical Box

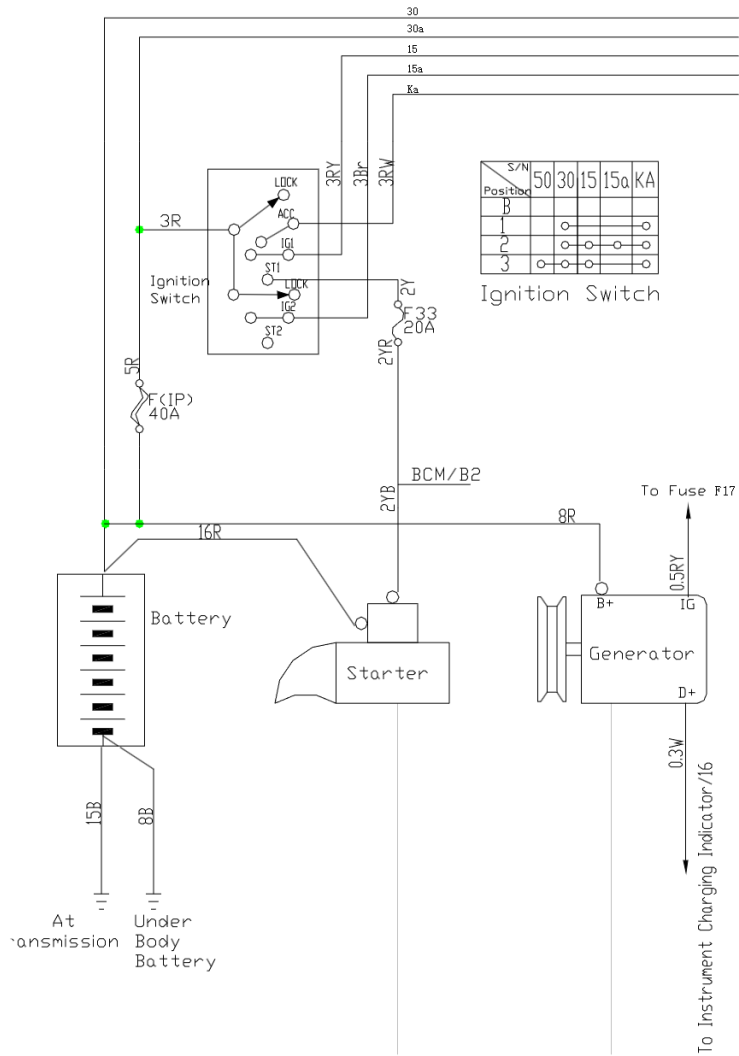


2. Compartment Electrical Box

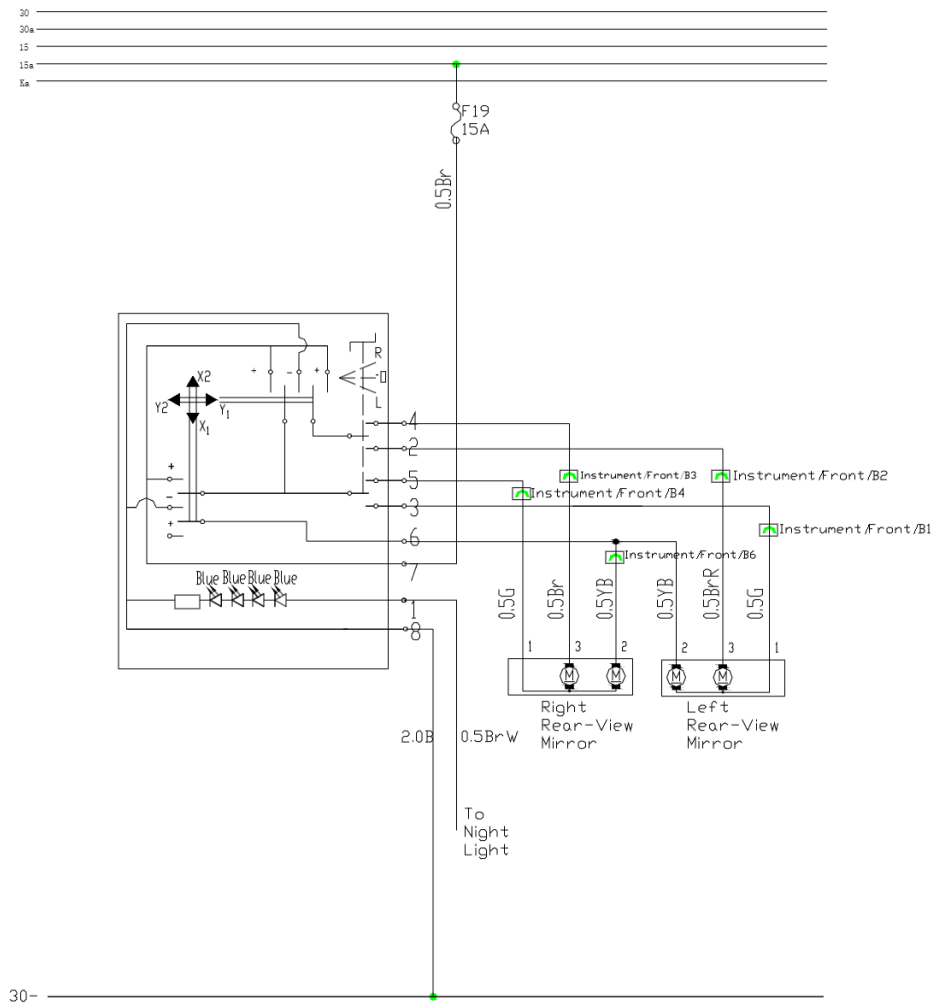


V. Schematic Diagrams of Circuit Control

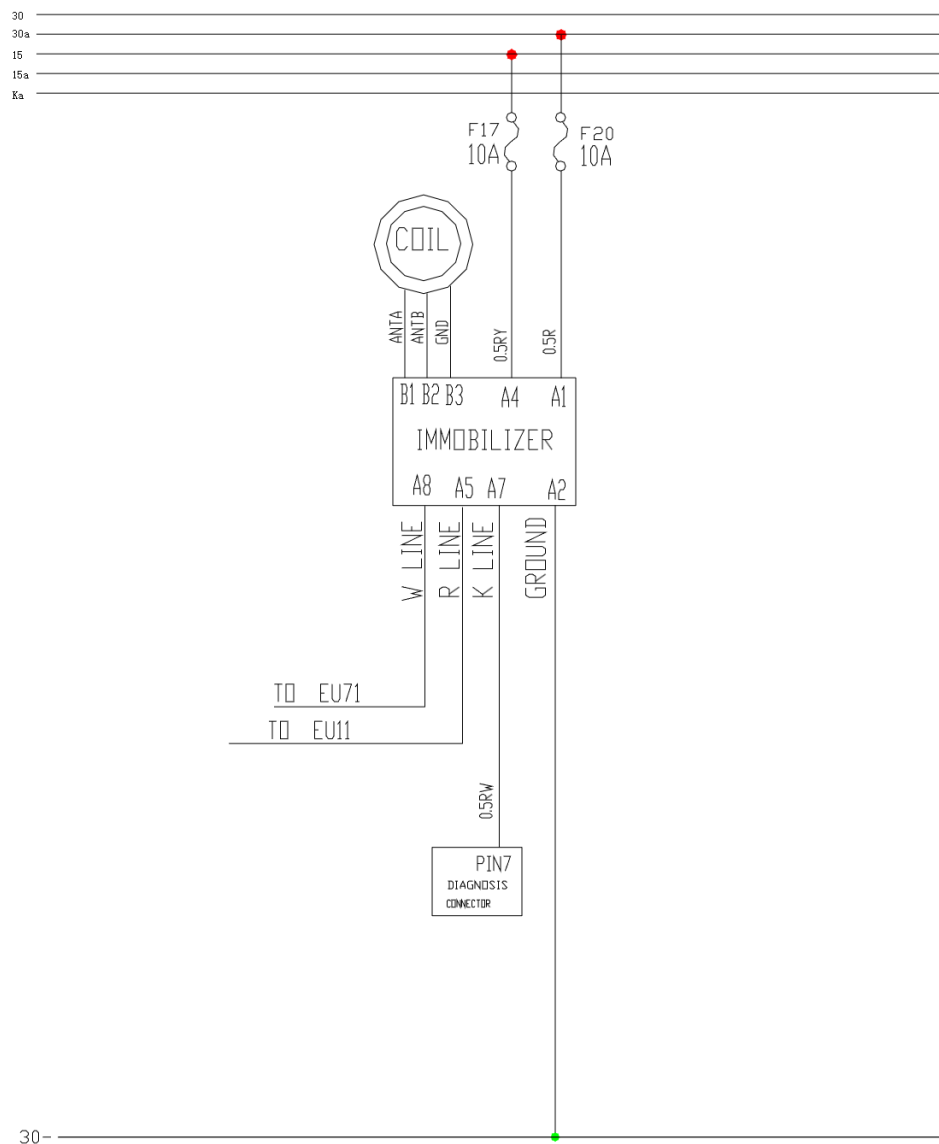
1. Starting and Charging System



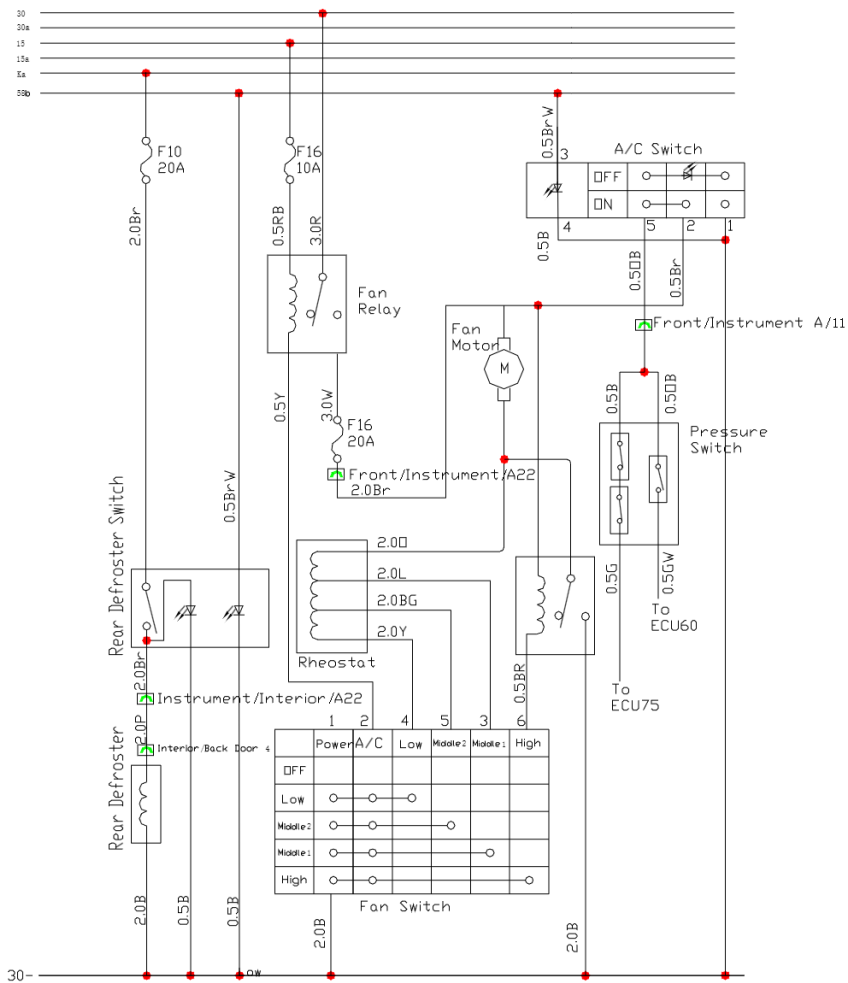
2. Electric Rear-View Mirror



3. Engine's Anti-Theft System

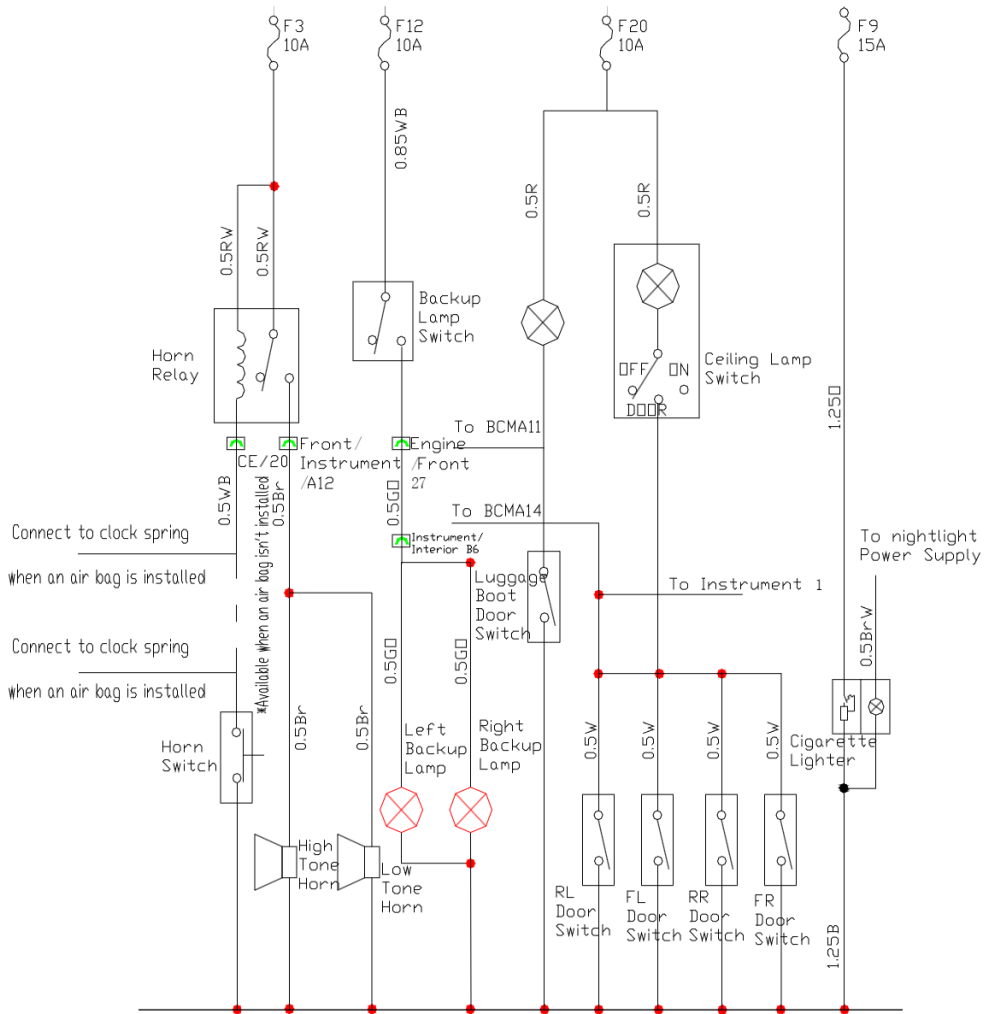


4. A/C and Defrost Systems

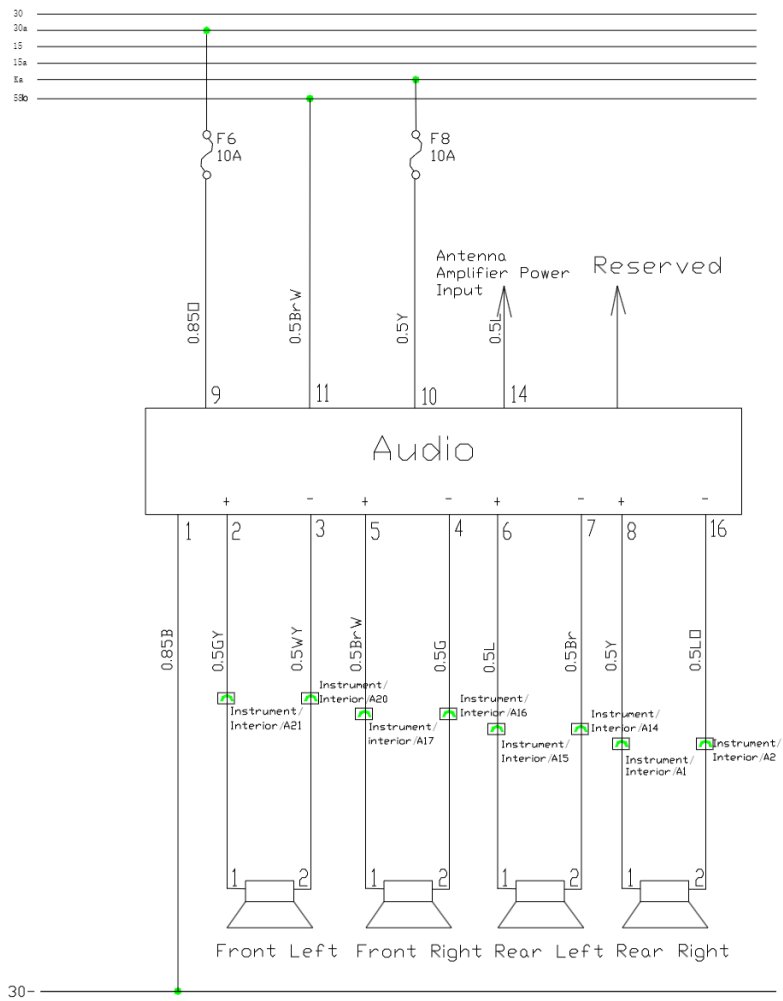


5. Horn, Backup Lamp, Cigaretter Lighter, Ceiling Lamp and Luggage

Boot Light

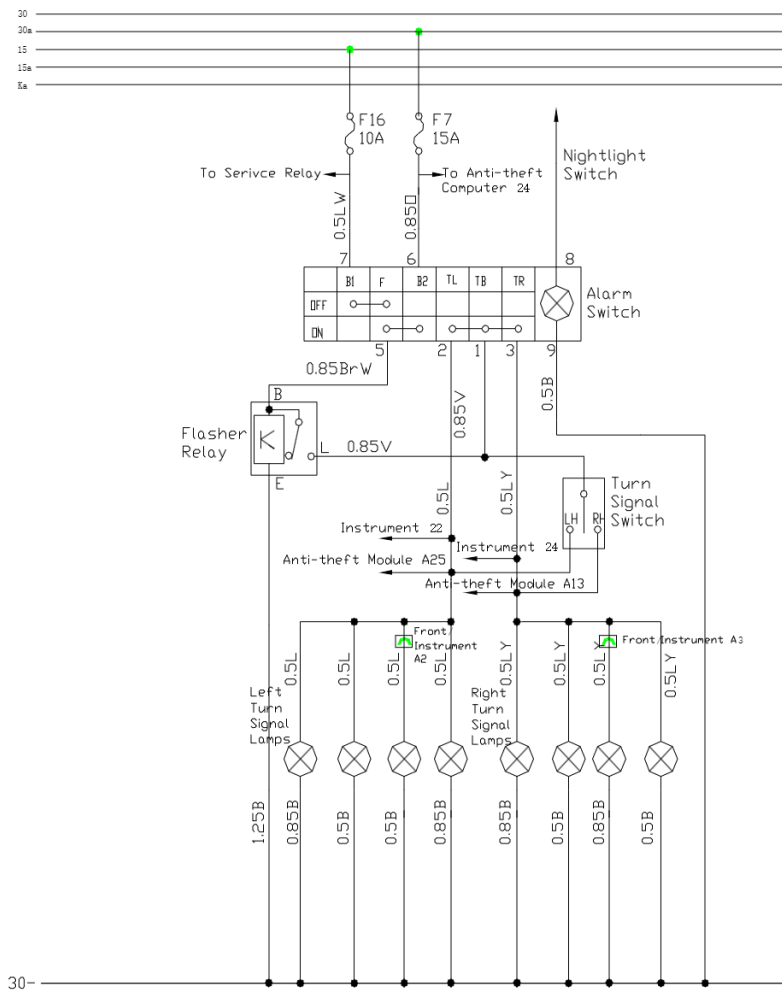


6. Radio

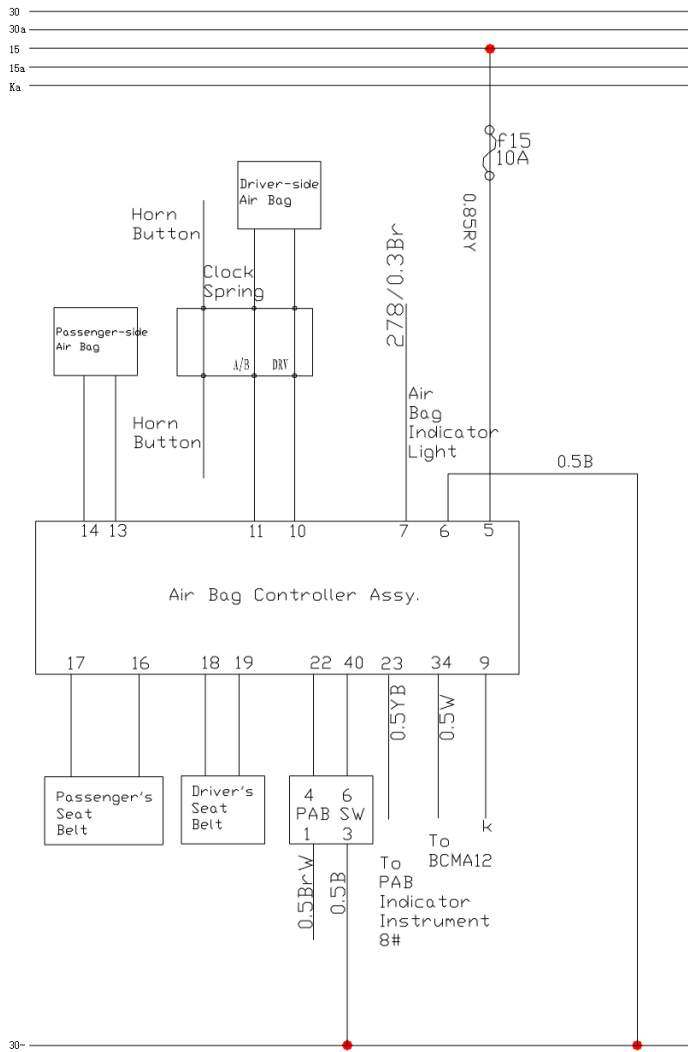


[illegible]

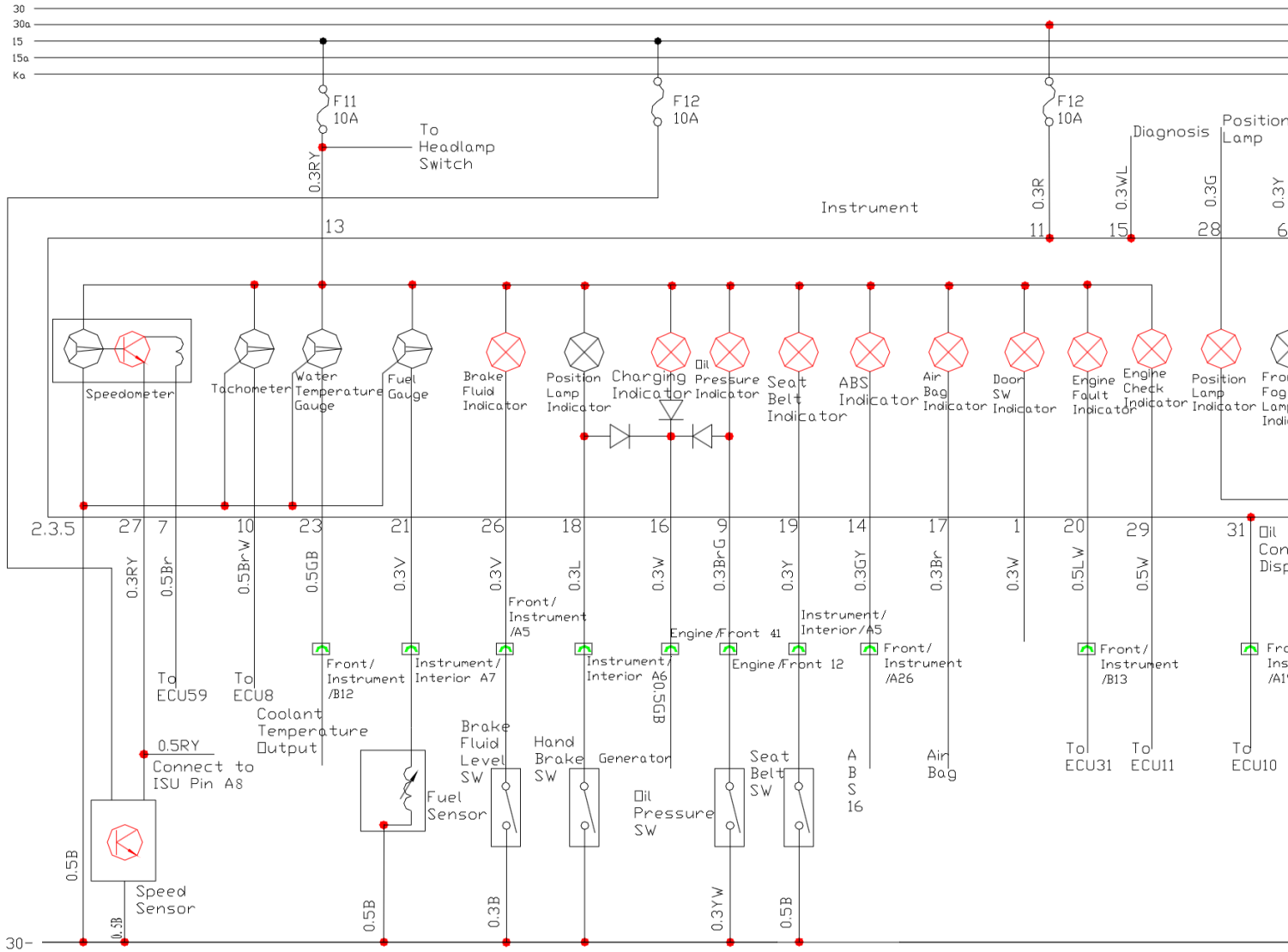
8. Turn Signal Lamp System



9. Air Bag



10. Instrument System



[illegible]

30 —
30a —
15 —
15a —
K_a —

