H3000系列车型电器技术培训

陕西汽车进出口有限公司服务部培训科
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第一节　电器维修工艺守则

Section 1　Electrical maintenance code

电器维修工艺守则为每个电器维修人员要遵守的基本作业规范，涵盖范围为：安全操作，线束敷设、捆扎规范，线束连接，汽车电器装配、操作，汽车电路检修。

Electrical maintenance code is the basic operation specification that every electrical maintenance personnel should follow ,include : safe operation , harness laying and binding specification , harness connection , electrical assembly and operating , electrical repair .

第一节　电器维修工艺守则

Section 1　Electrical maintenance code

符号说明：Symbol description

警告：不正确的操作可能会导致人身伤亡事故，用警告表示。

Warning : Incorrect operation may lead to personal injury and death, indicated by a warning.

小心：不正确的操作可能毁坏设备，用小心表示。

Beware : Incorrect operation may damage the equipment, indicated by beware.

安全操作
Safe operation

◆在整车电路未连接完整时不得打开电源总开关。

◆ The main power switch must can not be turned on when the entire harness is not connected.

小心：在车辆电路未连接完毕时打开电源总开关可能会导致短路事故，烧毁线路。

Be careful: Turning on the main power switch when the vehicle harness is not connected may cause a short circuit accident and burn the harness.

- 在无法确定档位是否处于空档的情况下禁止通过应急起动按钮（部分车型的起动继电器上装有应急起动按钮）来起动发动机。
- If it is impossible to determine whether the gear is in neutral, it is prohibited to start the engine through the emergency start button (on some models of truck ,there is an emergency start button on the start relay).

⚠ 警告：应急起动按钮会绕过空档保护电路起动发动机，若此时变速箱在档，将会导致车辆意外起步，产生危险。

Warning: The emergency start button will bypass the neutral protection circuit to start the engine . If the transmission is in gear at this time, it will cause the vehicle to start accidentally, causing danger.

安全操作

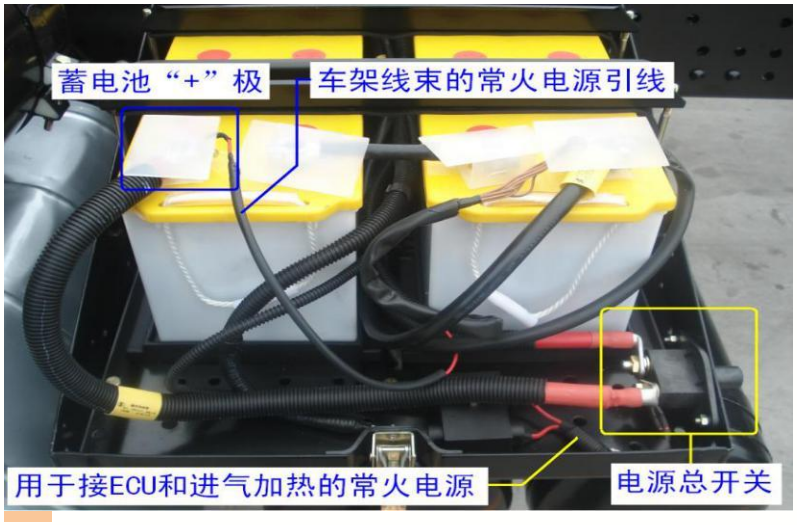
- 起动车辆前,检查驾驶室的锁紧状态（驾驶室翻转指示灯应处于熄灭状态）；手刹阀处于制动位置（此时信号灯板上驻车制动信号灯点亮），档位处于空档位置；确认周围人员处于安全位置（车辆前后5m范围、左右1.5米范围不得有人，车架上下不得有人）并告知。 Before starting the vehicle, check the locking state of the cab (cab flip indicator should be in the off state); Parking brake handle is in the pull-up position (at this time, the parking brake signal light on the signal light board is on), the gear is in the neutral position . Confirm that the surrounding people are in a safe position (nobody in the range of 5m before and after the vehicle, 1.5m in the left and right, and there must be no people on the frame).

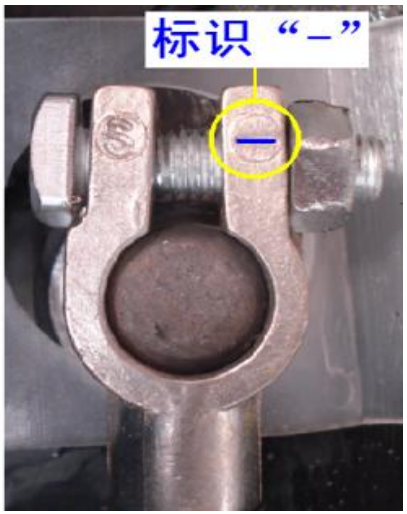
警告：驾驶室未锁紧会导致在车辆行驶过程中制动时驾驶室向前倾覆，导致安全事故。

Warning: Unlocking the cab can cause the cab to tip over when the vehicle is in motion, resulting in a safety incident.

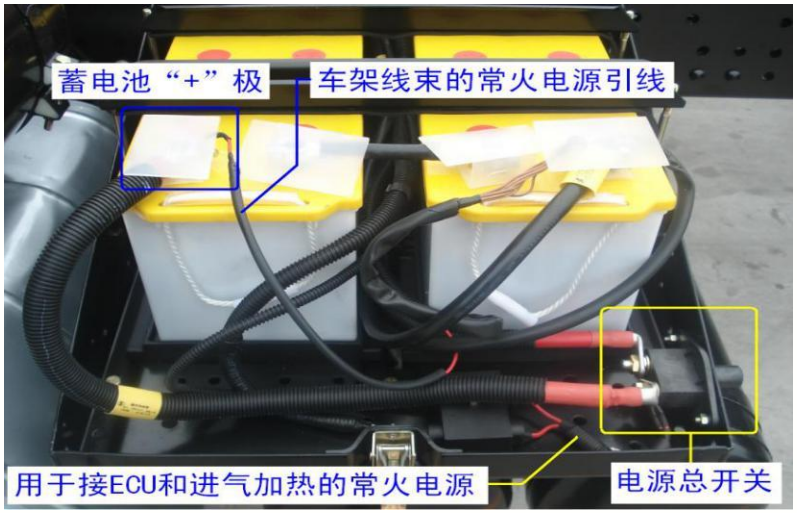
小心：带电更换线束可能会导致线束烧毁。

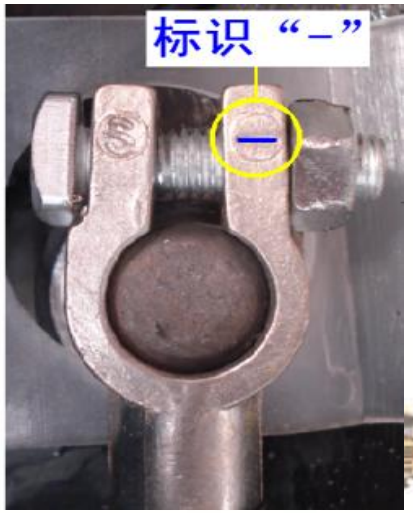
Caution: Replacement of the harness by charging may cause the harness to burn out.





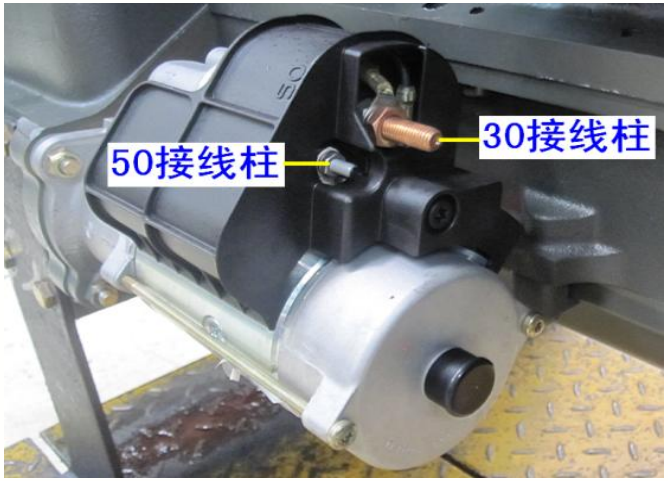
因车辆电器有部分是经过常火电源，关闭电源总开关并不能完全保证线路上不带电，所以首先从搭铁端开始接线，最后再接电源端。如果能够明确接线为常火电源则应在接线前摘除蓄电池正极接线端子。 Because part of the vehicle's electrical equipment is connected to the power supply at all times, turning off the main power switch does not completely guarantee that the line is not energized. Therefore, the wiring must be started from the ground terminal first, and then the power supply terminal . If it is clear that the wiring is a normal-fire power supply, remove the battery positive terminal before wiring.





例如拆除起动机30接线柱接线端子时，应关闭电源总开关，在拆除前应在测试一下接线端是否有电（用试灯或万用表），防止电路短路灼伤人体。

For example, when removing the terminal block 30, the main switch of the power supply should be turned off. Before dismantling, it should be tested whether there is electricity at the terminal (using a test lamp or a multicombination meter) to prevent the short circuit to burn the human body.



更换电源总开关时应首先摘除蓄电池正极接线柱端子。

When replacing the main power switch, remove the battery positive terminal.

◆摘除或安装蓄电池接线端子时应尽量选用带有绝缘手柄的扳手；如用普通扳手则拆卸时应小心不要碰触连接两接线柱。

⚠ When removing or installing battery terminals, try to use a wrench with an insulated handle. If using an ordinary wrench, be careful not to touch the negative terminal and the positive terminal at the same time.

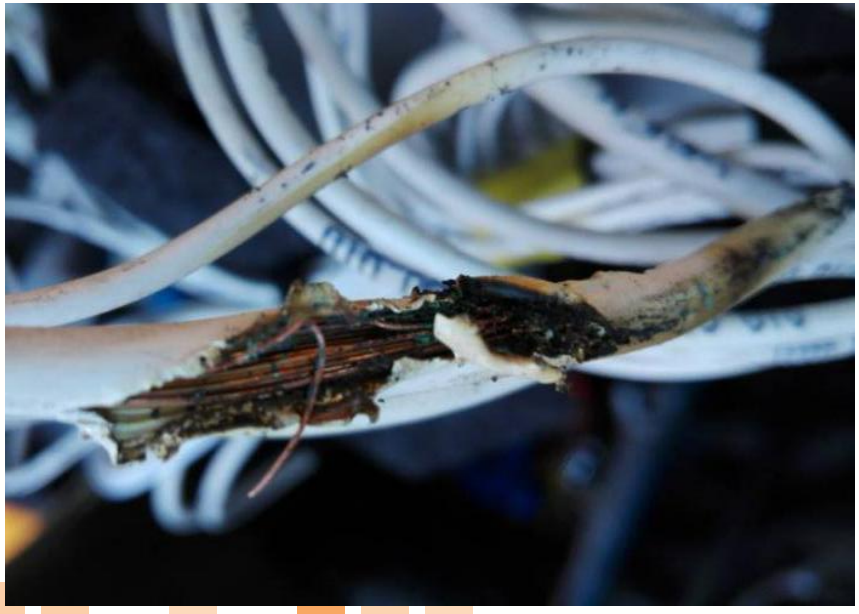
警告：蓄电池短路路会产生大量热量，灼伤人体。
蓄电池两接线柱之间间距较近，在安装时不注意扳手就可能搭接到两接线柱从而导致短路。

Warning: Battery short circuits will generate a lot of heat and burn the human body.

The distance between the two terminals of a battery is short. The spanner may be connected to the two terminals, which may cause a short circuit.

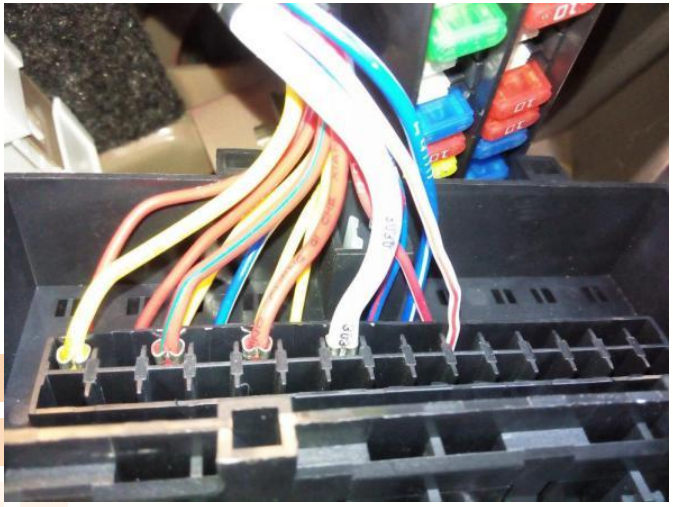
◆在车辆行驶中发现有短路起火现象时，应首先将车辆停靠到安全位置，关闭钥匙电源及整车电源，然后再作进一步处理。

When a short-circuit fire occurs during driving, the vehicle should first be parked in a safe position, and the key power and vehicle power should be turned off before further processing.



◆F3000，M3000车型电器板的保险丝及电器板背面暴露在外的接线端子没有绝缘保护，在检修时注意不要与驾驶室本体接触或将其他金属物品（如扳手、改锥、钥匙等）置于其上，以免发生短路事故。

◆The fuses on the F3000 and M3000 models of electrical board and the exposed terminals on the back of the electrical board are not insulated. Take care not to touch the cab body or place other metal items (such as wrenches, screwdrivers, keys, etc.) during inspection. To avoid short circuit accidents.



线束敷设、捆扎规范
Harness laying and binding specifications

线束敷设应避开高温热源，严禁与其它高温零部件接触，应与其它高温零部件保持一定安全距离及保护措施，安装隔热保护装置以保护线束装置，防止线束早期老化失效。**注意：**线束被烫坏可能会导致线束短路。

Harnesses should avoid high temperature heat sources, and must not be in contact with other high-temperature components. Maintain a certain safety distance and protective measures with other high-temperature components. Install thermal protection devices to protect harness and prevent early failure.

Note: Burned harness may cause a short circuit.

整车的高温热源：

1. 排气管、排气消声器。
2. 涡轮增压器。

High temperature heat source :

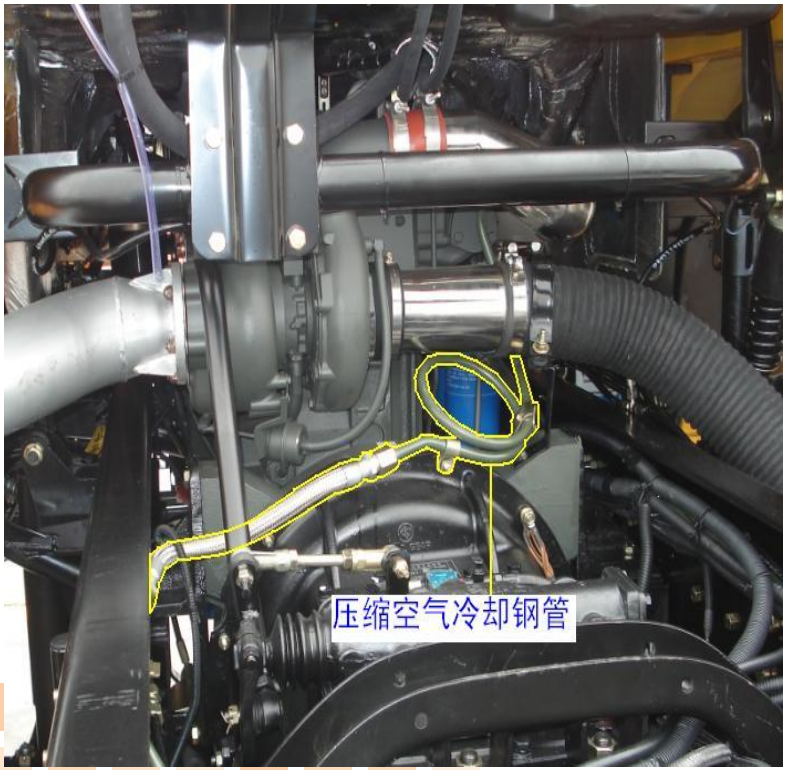
1. Exhaust pipe, exhaust muffler.
2. Turbocharger.

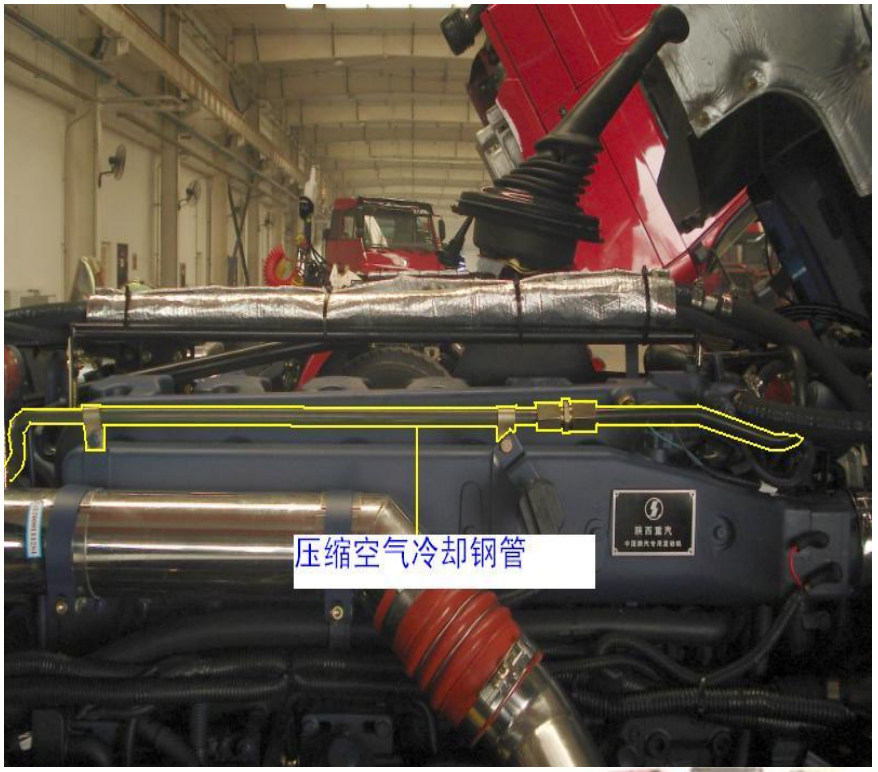
整车的高温热源：

3. 压缩空气冷却钢管。
4. 发动机本体。

High temperature heat source:

3. Compressed air cooling pipe.
4. Engine body.



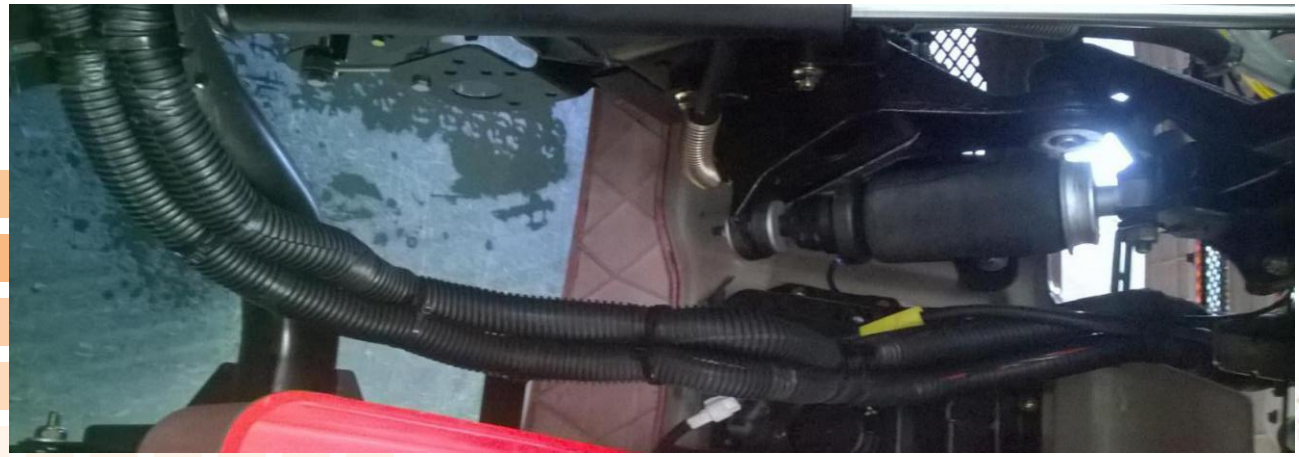


◆线束敷设时应避开旋转、震动、跳动较大的部位（如发动机冷却风扇、车轮、传动轴、取力器输出轴、悬架、转向柱等）。小心：线束被卷入传动轴等旋转部件会导致电线断路、短路等故障。

◆Wiring harnesses should avoid rotating, vibration, and jumping parts (such as engine cooling fan, wheels, transmission shaft, power takeoff output shaft, suspension, steering column, etc.). **Caution:** Harnesses caught in rotating parts such as a drive shaft may cause open circuit, short circuits, or other troubles.

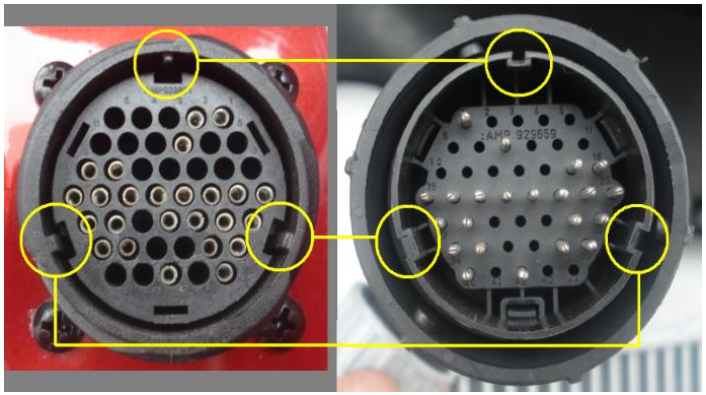
- 暴露在外部环境中的线束应尽量置于遮盖物下，或者使用防护包裹。
- Harnesses exposed to the outside environment should be placed under the cover as much as possible, or use protective wraps.

- 线束的固定和捆扎。应在固定点用紧固带、隔环、固定夹捆扎固定，固定点最大间距500mm；捆扎带分布均匀，捆扎点最大间距200mm，；线束不得长距离悬空；紧固带拉紧后需剪掉多余部分。
- Harness fixing and strapping. Should be fixed at a fixed point with a fastening strap, spacer, and a fixed clip for binding. The maximum spacing of the fixing points is 500mm; the strapping is evenly distributed; the maximum spacing of the strapping points is 200mm; the wiring harness must not be hung long; The excess part must be cut after the fastening straps .

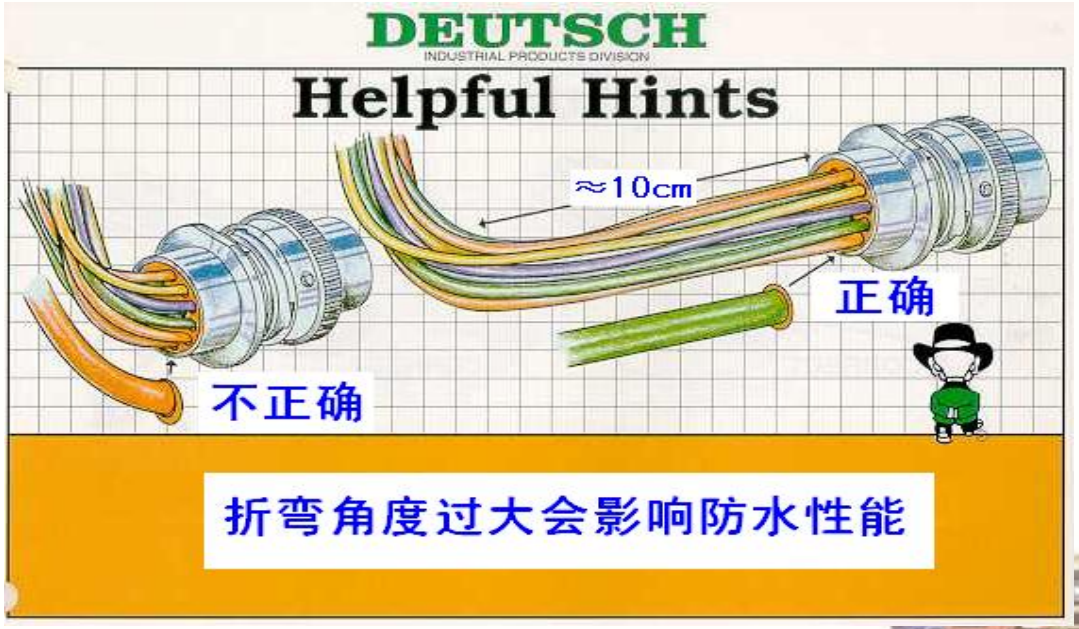


线束连接　Harness connetion

- **插接器上有锁紧装置的应插接到锁紧装置锁紧（即锁片与锁扣相互挂住）。**带锁紧螺帽的应旋紧螺帽，部分需旋至感到螺帽轻跳一下并听到“嗒”一声脆响才真正锁紧。在插接器对插完毕后，如发现插接件被顶出，应及时恢复。
- **There should be a plug-in position of the locking device on the plug connector (ie, the locking plate and the latch hook each other).** Screw nuts with locking nuts should be tightened. Some of them must be screwed to the nut to make a light jump and hear a "click" sound and then they are really locked. If the connector is found to be ejected, it should be restored in time.

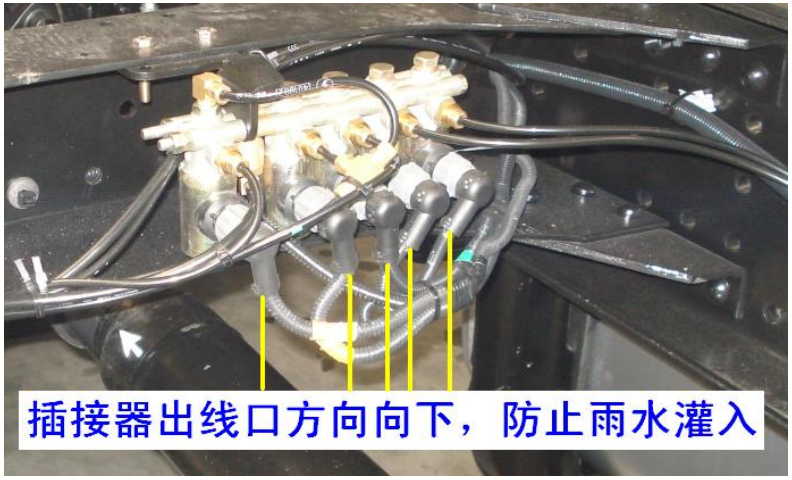


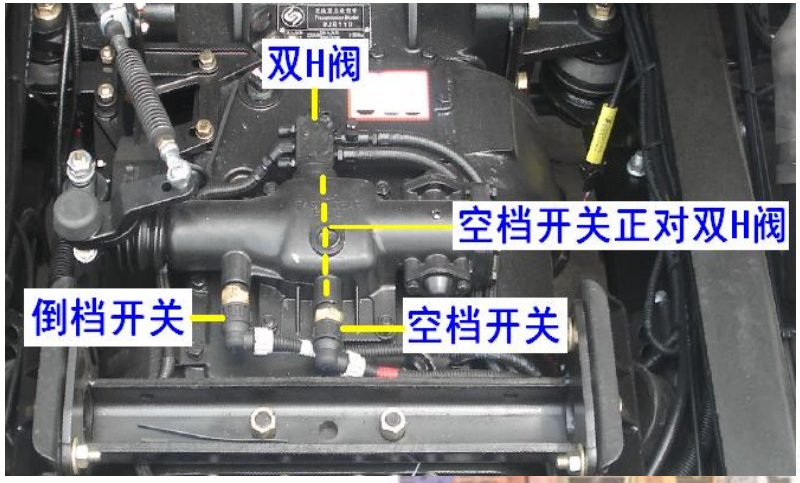
- 暴露在外部环境中的对接插接器应尽量置于遮盖物下，如无法遮盖则尽量保证接线端口与地面平行放置，以免因进水、积水造成线路故障。
- The docking connector exposed in the external environment should be placed under the covering as much as possible. If it cannot be covered, try to ensure that the connection port is placed parallel to the ground so as to avoid line failure caused by water .



◆线束连接时：
暴露在外部环境中的直角插接器的出线口位置应向下，防止雨水灌入（如电磁阀插接器、变速箱信号开关插接器）。

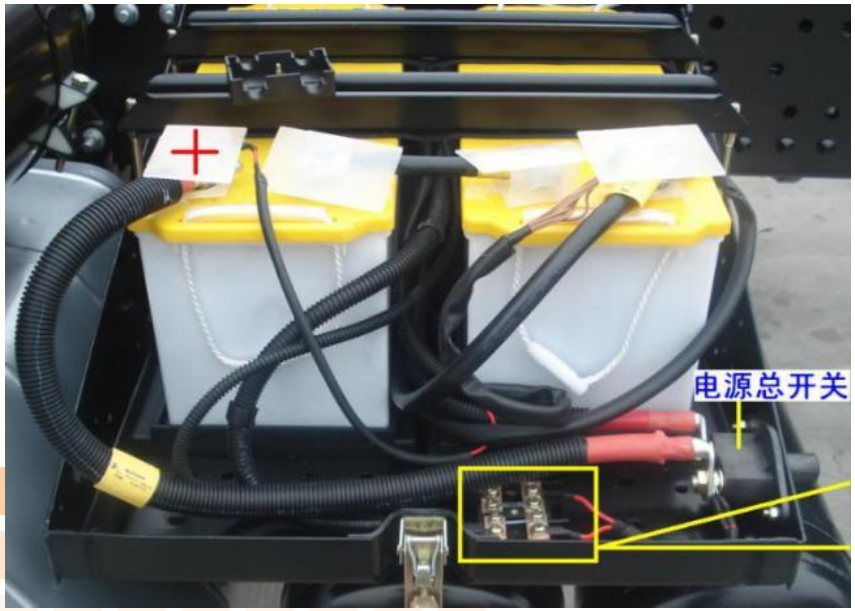
◆**When connecting the harnesses:**
The outlet of the right-angle connector exposed to the external environment shall be located downwards to prevent rainwater pouring (such as solenoid valve connector, gearbox signal switch connector).

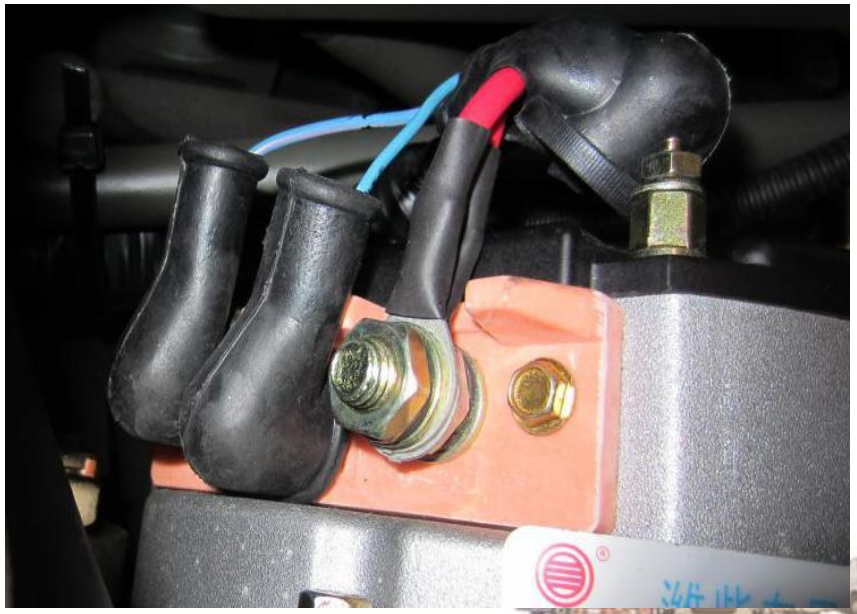




◆ 在接线柱上接线（除搭铁线外）时，电线接头不得裸露在外，应戴绝缘护套（如蓄电池、起动机、发电机等）或加装隔离装置（如配电盒等装置）。

◆When wiring on the terminal post (except for the ground wire), the wire connector shall not be exposed. Use an insulating sheath (such as battery, starter, generator, etc.) or an isolation device (such as power distribution box).



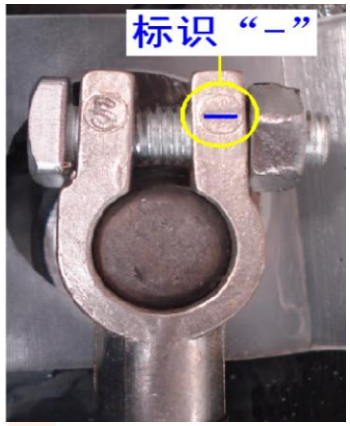


蓄电池接线柱有大小之分，较大的旁边有“＋”字符，较小的接线柱旁边有“－”字符。更换新的蓄电池时注意正负极接线柱的位置是否相同。

有的蓄电瓶正极柱在左边，有的蓄电瓶正极柱在右边，需要特别注意。

The battery terminals are divided into two sizes: On larger terminal there is a "+" character, and "-" character on the smaller terminal. When replacing a new battery, note whether the positions of the positive and negative terminals are the same.

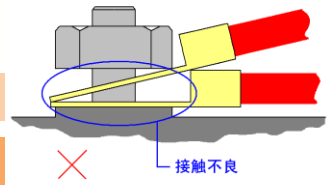
Some battery positive poles are on the left and some others are on the right. Special attention is required.

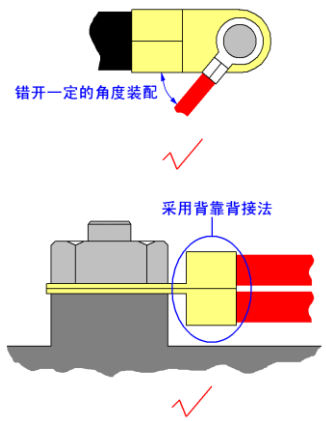


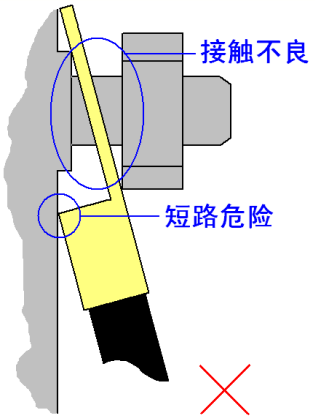
电线在接线柱接线时应保证接线端子接触良好，不发生短路。
When wires are connected to the terminals, ensure that the terminals are in good contact and no short circuit occurs.

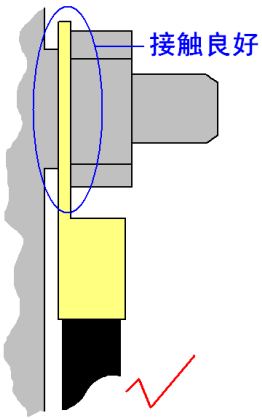
两根电线接到一个接线柱时，则采用背对背接法，若有多根电线接到同一接线柱时，则采用相互错开接线，以便线束装配时，接头压紧牢靠。电源线不得与金属壳体接触。

When two wires are connected to one terminal, the back-to-back connection method is used. If multiple wires are connected to the same terminal, the wirings are staggered with each other so that when the wire harness is assembled, the connector is pressed tightly. The power cord must not come into contact with the metal housing.









◆电器接线柱相应的拧紧力矩要求如下：

起动机 30 接线柱螺母（M10）的拧紧力矩为：24.5 Nm～27.5Nm

起动机 50 接线柱螺母（M6）的拧紧力矩为：2.4～3.0Nm

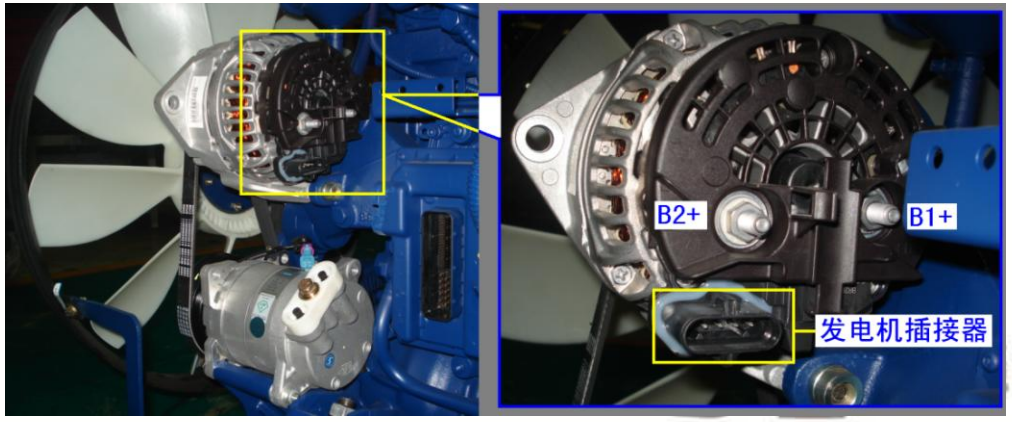
发电机 B＋ 接线柱螺母（M8）的拧紧力矩为：13～15Nm。

The tightening torque of the electrical terminal is as follows:

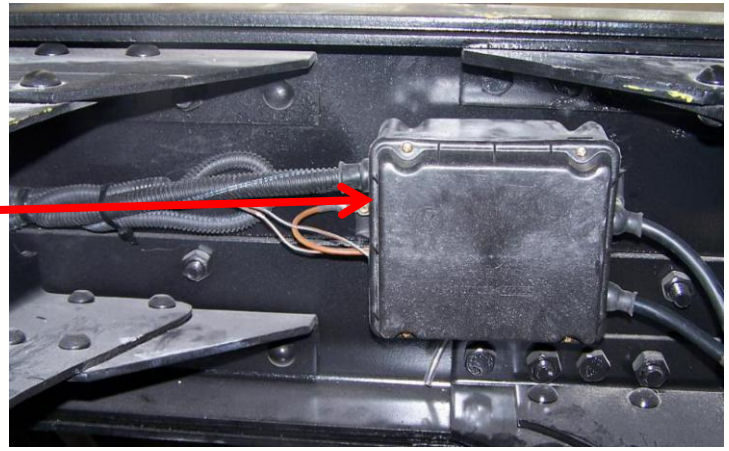
Starter 30 Tightening torque for terminal nut (M10): 24.5 Nm to 27.5 Nm

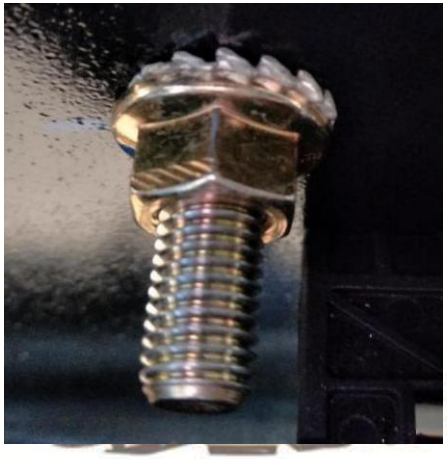
Starter 50 Tightening torque for terminal nut (M6): 2.4 to 3.0 Nm

The tightening torque for the generator B+ terminal nut (M8) is 13 to 15 Nm.



- 保险丝盒处接线依次装平垫、接线端子、弹垫、螺母。
- The wiring at the fuse box is loaded with flat pads, terminal blocks, spring washers and nuts.
- 后分线盒、电磁阀等，靠车架本体搭铁的接线柱，需要在搭铁线螺母与车架之间装齿形垫圈，可以刮开车架上漆层，增强导电效果。
- The terminal of the frame body iron must be equipped with a tooth-shaped washer between the ground wire nut and the frame, which can scratch the paint layer of the frame and enhance the conductive effect.



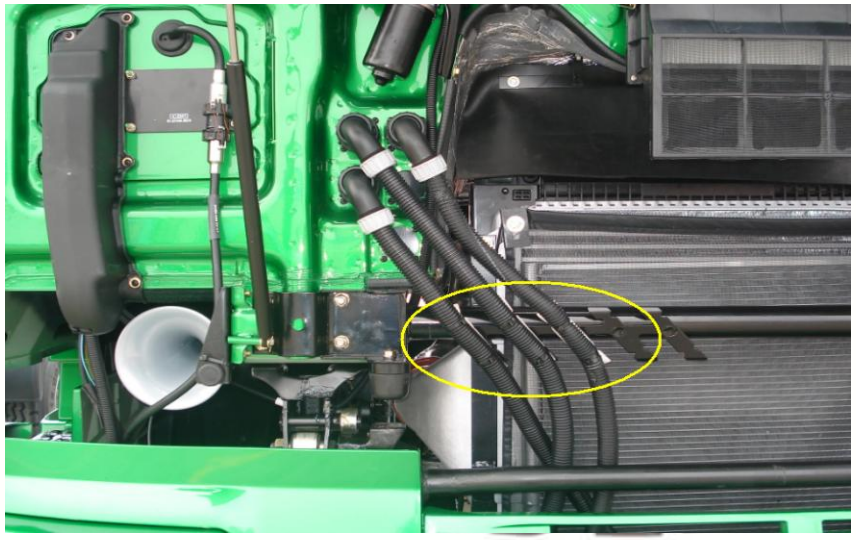


线束插接器应尽量避免受外力作用

插接器应固定，或捆扎到附近。线束敷设在两相对运动部件之间时需要留余量，余量应大于两相对运动部件可能出现的最大距离。插接器不能直接承受重力、拉力，线束不能绷紧。

Harness connector should be avoided by external force

Plug connectors should be fixed or bundled nearby. When the wiring harness is laid between two relatively moving parts, it is necessary to make allowance, and the remaining amount should be greater than the maximum distance that the two relative moving parts may appear. Plug connector can not directly withstand tension, wire harness can not be tight.



电焊作业时：

在对车辆进行电焊作业时需关闭电源总开关并拆下蓄电池“＋”、“－”接线柱上的电线。焊接电流回路严禁通过电器元件、油路、油缸、气路、运动面、转动轴承等零部件处。

When welding work:

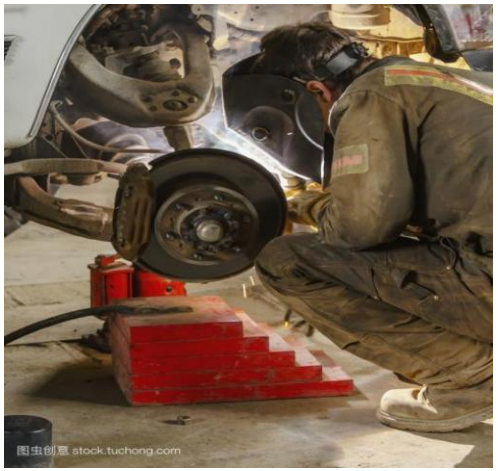
When carrying out electric welding work on the vehicle, turn off the main power switch and remove the wires on the “+” and “-” terminals of the battery. Welding current loops are strictly prohibited through electrical components, oil circuits, fuel tanks, gas lines, moving surfaces, rotating bearings and other parts.

电焊作业时：

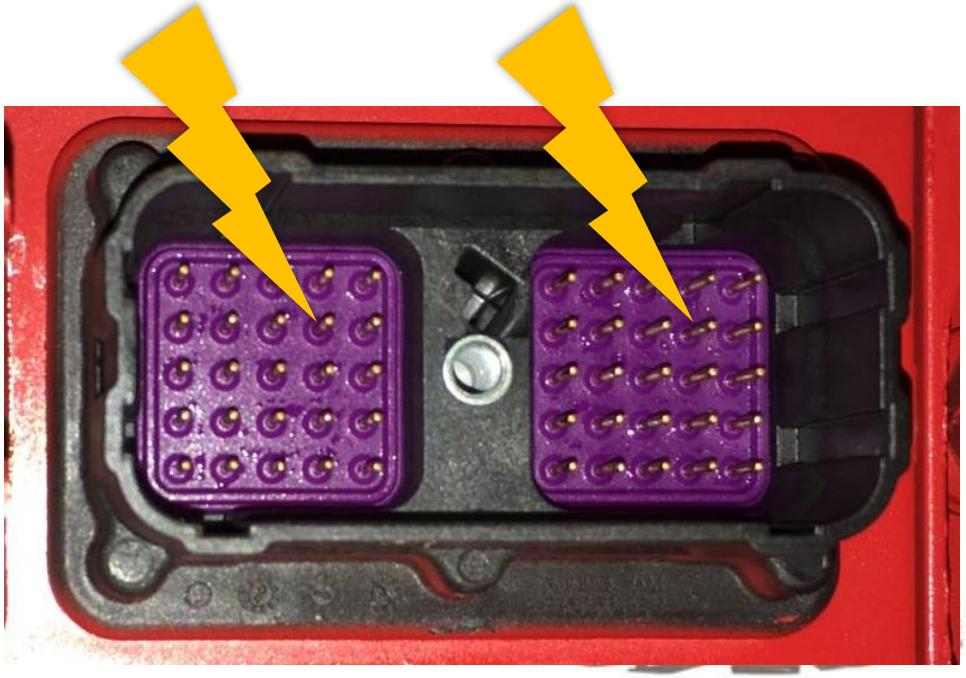
装配潍柴国三或康明斯电喷发动机的机型需摘除ECU插接器，BCM控制器，ABS控制器的所有电路连接。焊接搭铁点选择尽量远离车辆线束，远离搭铁点，并靠近焊接点。

When welding work:

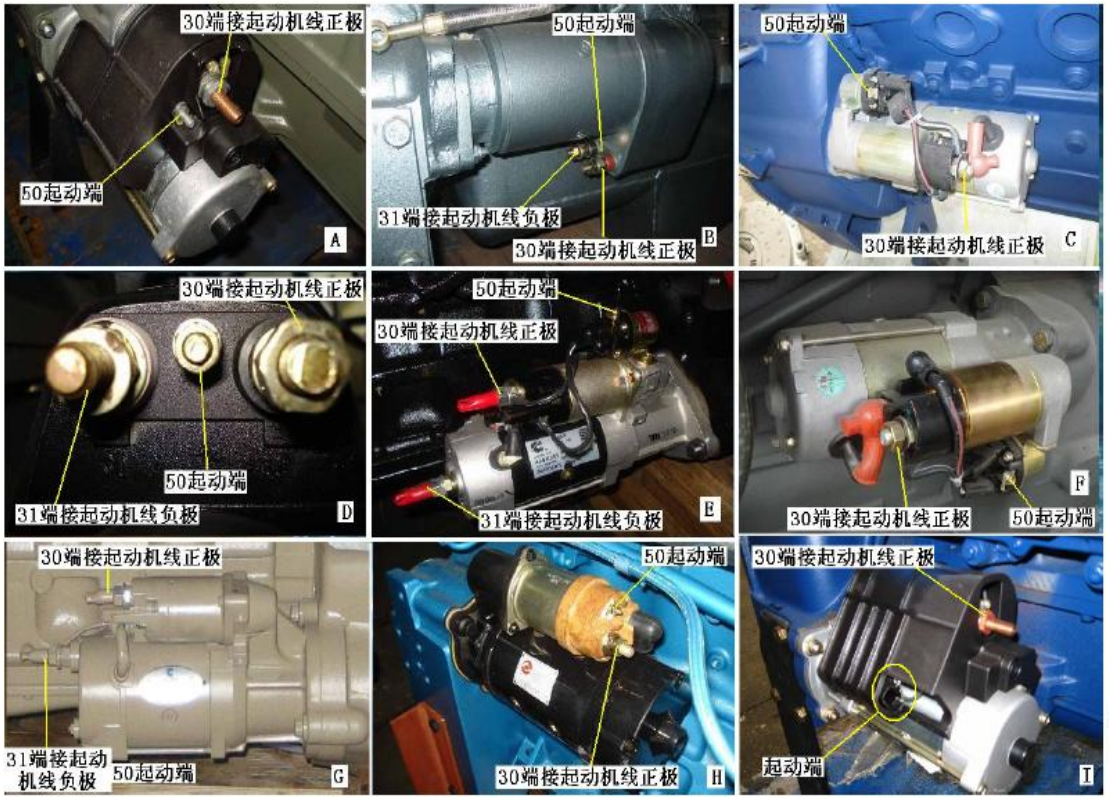
Weichai Euro III engine or Cummins EFI engine need to remove all circuit connections of ECU connector, BCM controller and ABS controller. The choice of welding ground point should be far away from the wiring harness, away from the grounding point, and near the welding point.



- 在维修过程中不得用手碰触电子装置（如ABS、电控发动机ECU ，BCM等）裸露的针脚，以免造成针脚歪斜、沾到油污或因人体静电作用，影响产品质量。
- Do not touch the bare pins of electronic devices (such as ABS, electronically controlled engine ECU, BCM, etc.) during the maintenance process to prevent the pins from being skewed, oil stained, or the electrostatic effect of the human body, which will affect the product quality.

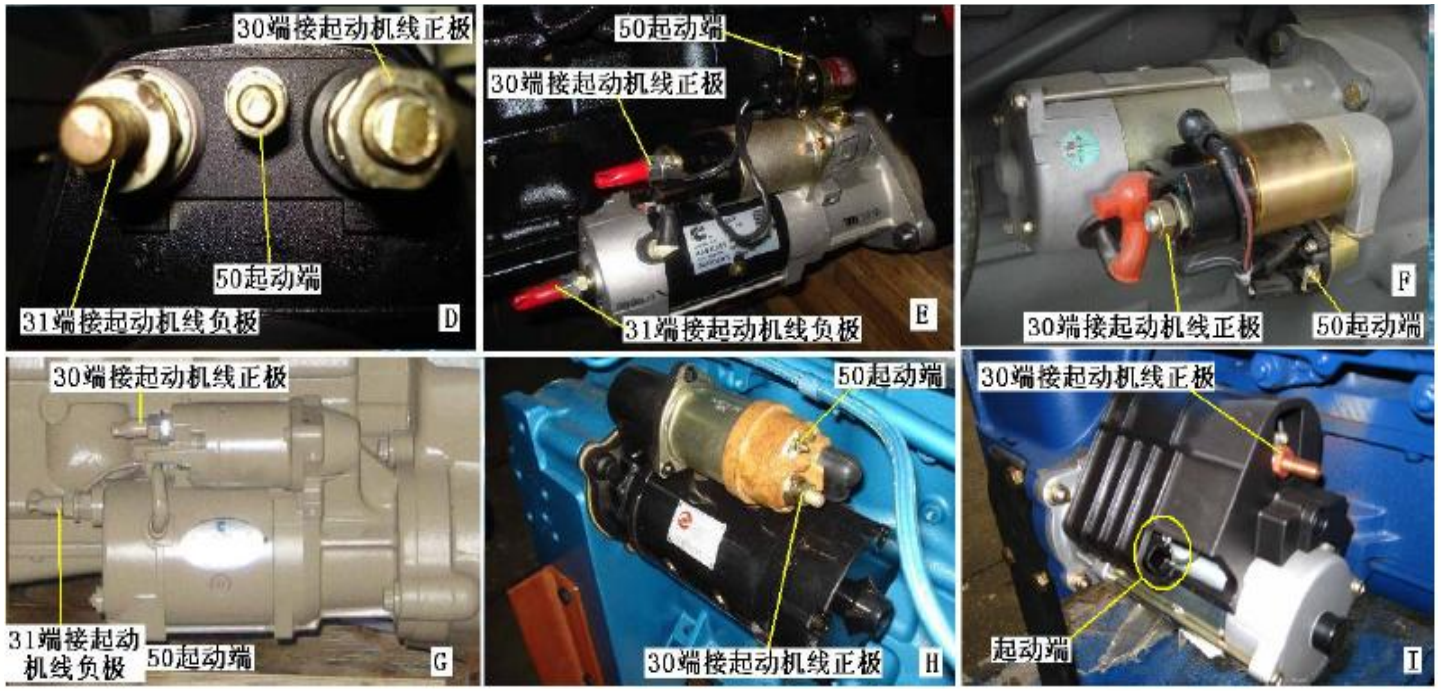


起动机操作应遵守相关规范，康明斯发动机起动机单次起动时间不得超过12s，潍柴EGR发动机起动机单次起动时间不得超过6. 5s。
The operation of the starter shall comply with relevant regulations. The time for a single start of a Cummins engine starter shall not exceed 12 s, and for Weichai EGR engine shall not exceed 6.5 s.



起动机操作应遵守相关规范，连续起动从第一次起动结束到第二次起动开始间隔时间不小于60s，发动机开始运转时说明起动成功，应立即松开点火钥匙，断开起动档。

The interval between the end of the first start and the second start shall not be less than 60 s. When the engine starts running, it means the start is successful. Immediately release the ignition key and disconnect the starter.



◆ 禁止在车辆起动后直接关闭电源总开关，以免造成电压不稳影响电器设备正常工作甚至损坏电器设备。

小心：蓄电池在整车电路还起动稳定电压的作用，断开蓄电池的连接将会导致车辆电器设备间的干扰加剧从而引起故障。

It is forbidden to turn off the main power switch directly after starting the vehicle, so as to prevent the voltage instability from affecting the normal operation of the electrical equipment and even damaging the electrical equipment.

Caution: The battery also acts as a stable voltage in the circuit of the vehicle. Disconnecting the battery will cause the interference between the vehicle's electrical equipment to increase and cause a malfunction.

汽车电路检修时注意事项：

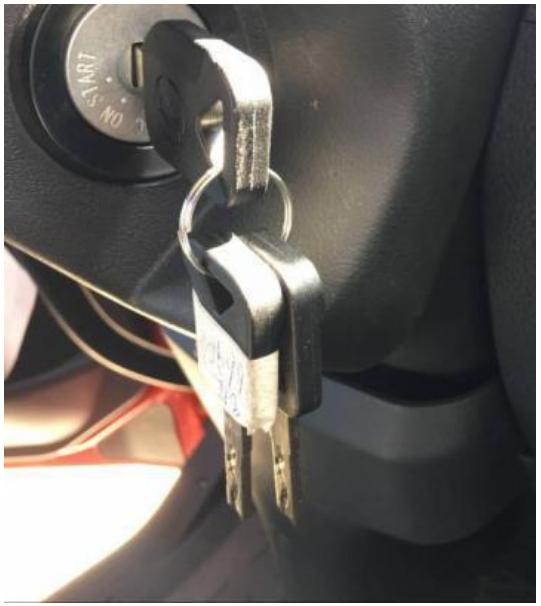
Precautions for maintenance of automotive electrical appliances:

◆ 各插接器或保险不得带电插拔，以免插接时引起电弧烧蚀电线接头，影响连接质量.

Each plug connector or fuse must not be hot plug, so as not to cause arc burning wire joints when plugged, affecting the connection quality.

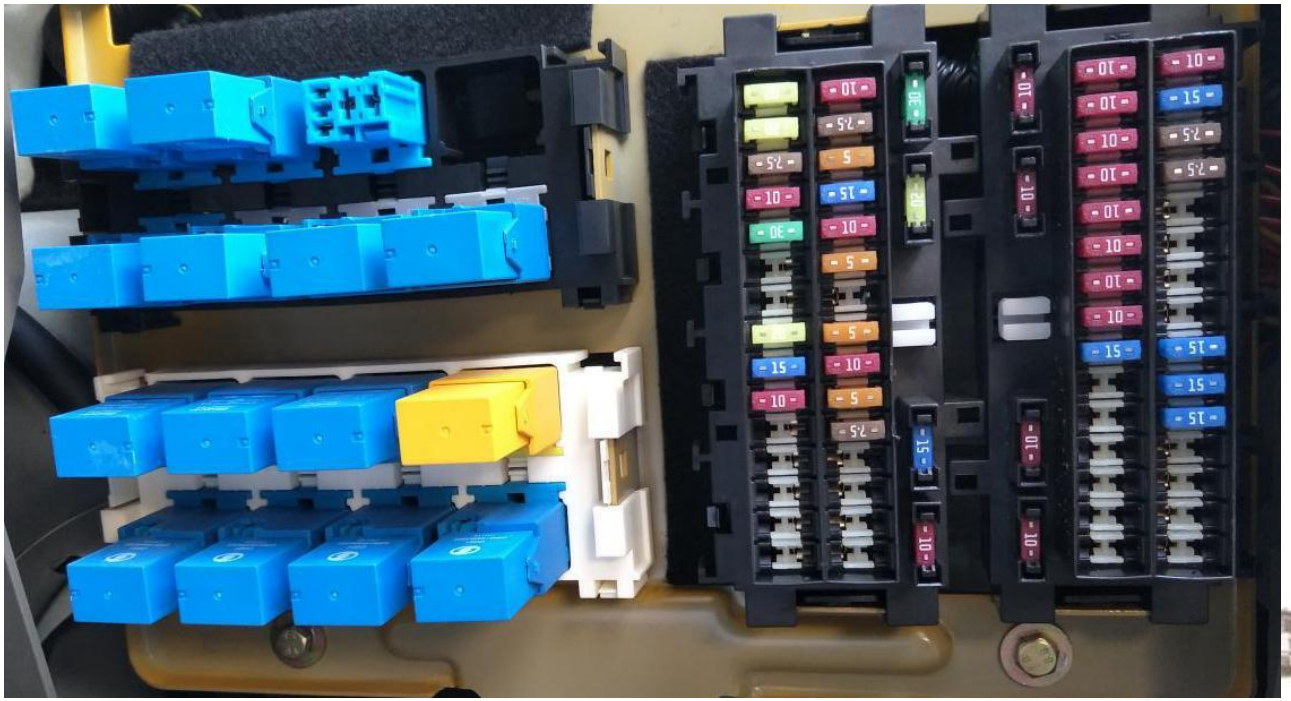
更换线束或已熔断的保险时需关闭电源（一般是钥匙电源，特殊的如常电保险需关闭电源总开关并摘除蓄电池正极接线端子，防止出现短路将触点烧蚀）。

The power supply must be turned off when replacing the wire harness or the fuse has been blown (usually a key power supply, in special circumstances , such as a normal power fuse, the power switch must be turned off and the battery positive terminal must be removed to prevent short circuit and ablation of contacts).



小心：更换保险丝或继电器时严禁带电插拔，否则保险座触点烧蚀会导致保险无法插接或插接后接触电阻增大，工作时产生热量，有引起火灾的危险。

Caution: When replacing fuses or relays, it is strictly prohibited to insert or pull hot, otherwise the ablation of the fuse base will cause the fail to insert the fuse or increased contact resistance after plugging. The heat will be generated during the work, which may cause fire.



◆ 整车无电故障需关闭电源总开关后再进行检测。

◆ **If the vehicle can not powered on, turn off the power switch and check it.**

小心：如果起动机30接线柱未接线，在检修时不关闭电源总开关极易发生电源短路事故。

Caution: If the terminal of the starter 30 is not wired, the main switch of the power supply is not turned off during inspection. A power short-circuit accident may easily occur.

第二节、H3000车型组合仪表介绍

Section II　Introduction of new M3000 combination meter

零件号：DZ93189584110；
Part Number: DZ93189584110；
名称：组合仪表-H3000（BH-DZ42503760010）；
Name: Combination meter - New M3000
应用车型：H3000-EGR车型。
Application models: New M3000-EGR models.

H3000电控发动机车型组合仪表
New M3000 Electronic Control Engine combination meter

零件号：DZ96189584140；名称：组合仪表(电控发动机、CAN、H3000、BH：DZ42503760030）；

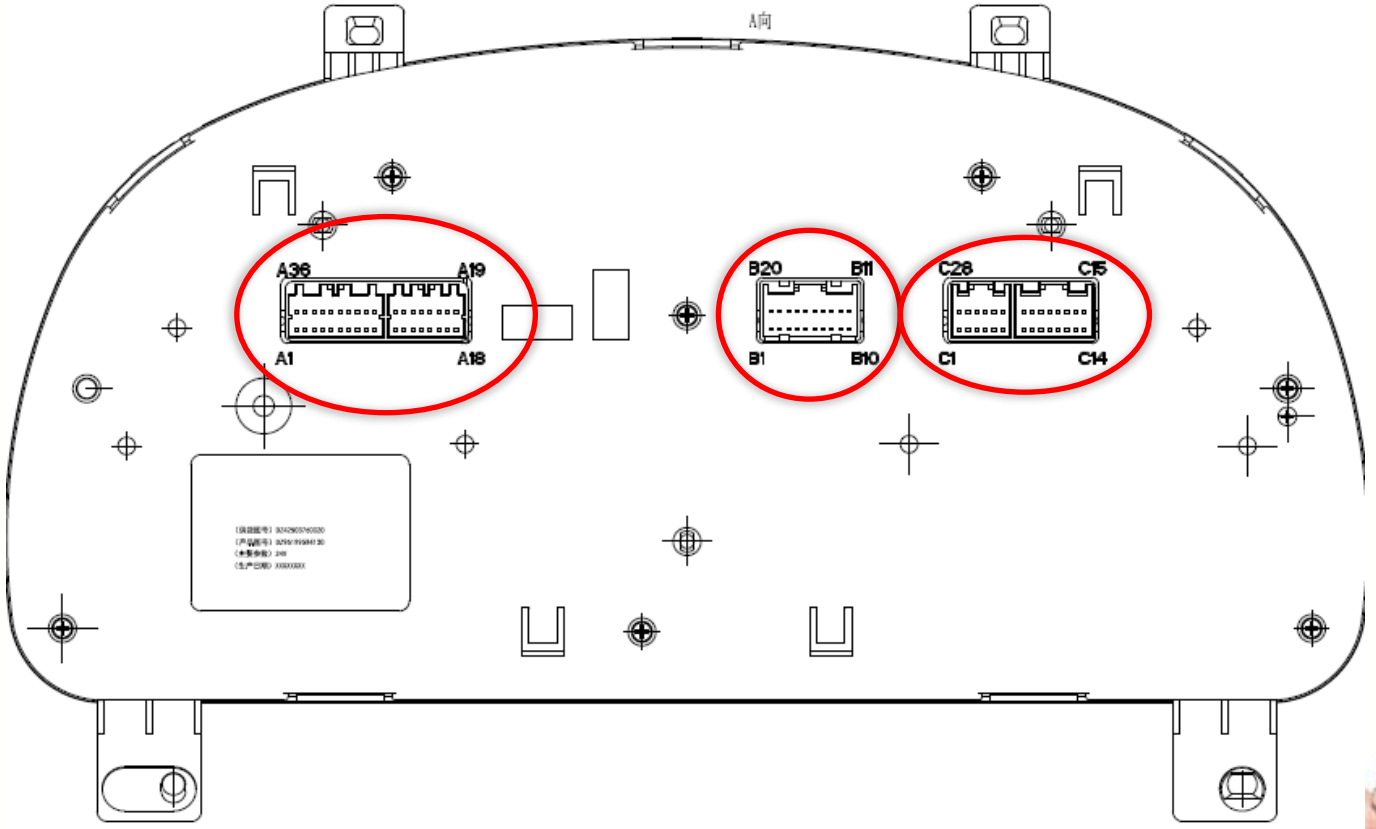
Part Number: DZ96189584140; Name: combination meter (Electric Control Engine, CAN, New M3000,BH：DZ42503760030)

应用车型：H3000国三、国四、天然气、康明斯车型。

Application models: New M3000 Euro III, Euro IV, natural gas, and Cummins models.

组合仪表后面有三个电器插接器，A、B、C，其中A和C插接器为组合插接器。

There are three electrical connectors behind the combination meter, A, B, and C, the A and C connectors are modular connectors.



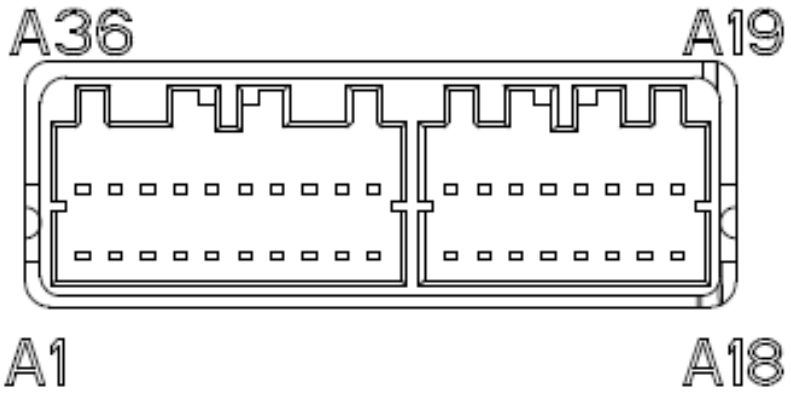
P200-Ⅰ P200-Ⅱ P200-Ⅲ P200-Ⅳ P200-Ⅴ

驾驶室线束的P200-Ⅰ和P200-Ⅱ插接到了仪表的A孔位，P200-Ⅲ插接到了仪表的B孔位，P200-Ⅳ，P200-Ⅴ插接到了仪表的C孔位。

The P200-I and P200-II of the cab wiring harness are plugged into the A hole of the combination meter. P200-III is plugged into the B hole of the combination meter. P200-IV and P200-V are plugged into the C hole of the combination meter.

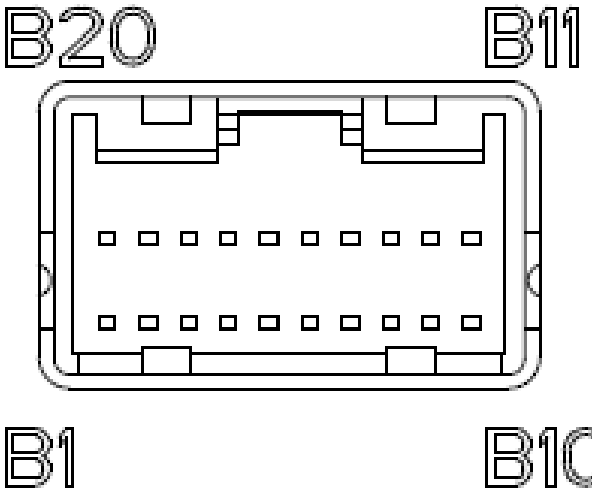
仪表插接器A是36针连接，其36个针脚排列位置如图所示：

Combination meter connector A is a 36-pin connector , pins arranged as shown:



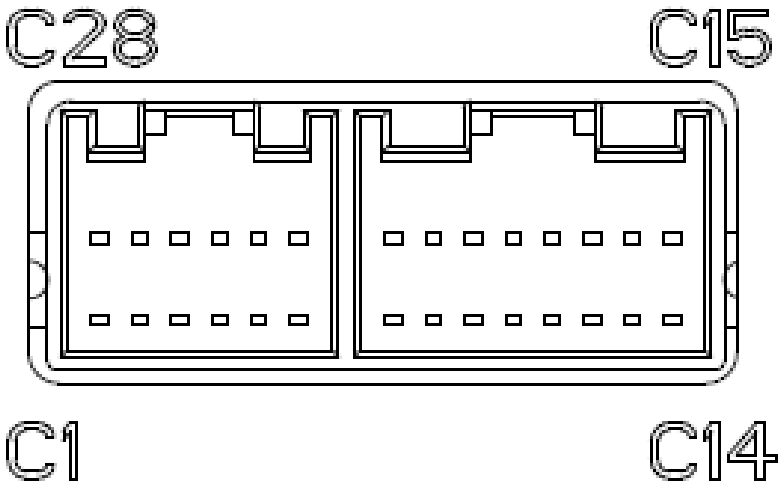
仪表插接器B是20针连接，其20个针脚排列位置如图所示：

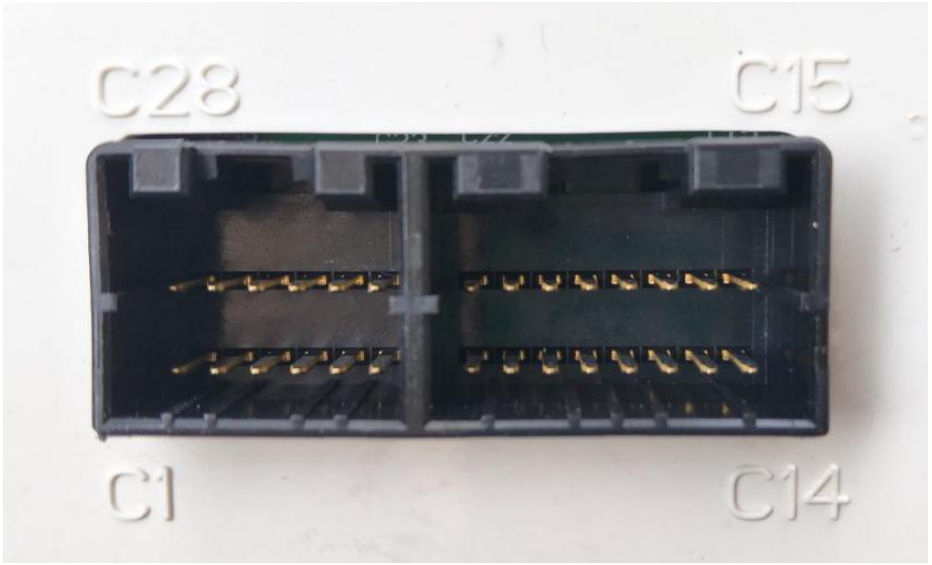
Combination meter connector B is a 20-pin connector , pins arranged as shown:



仪表插接器C是28针连接，其28个针脚排列位置如图所示：

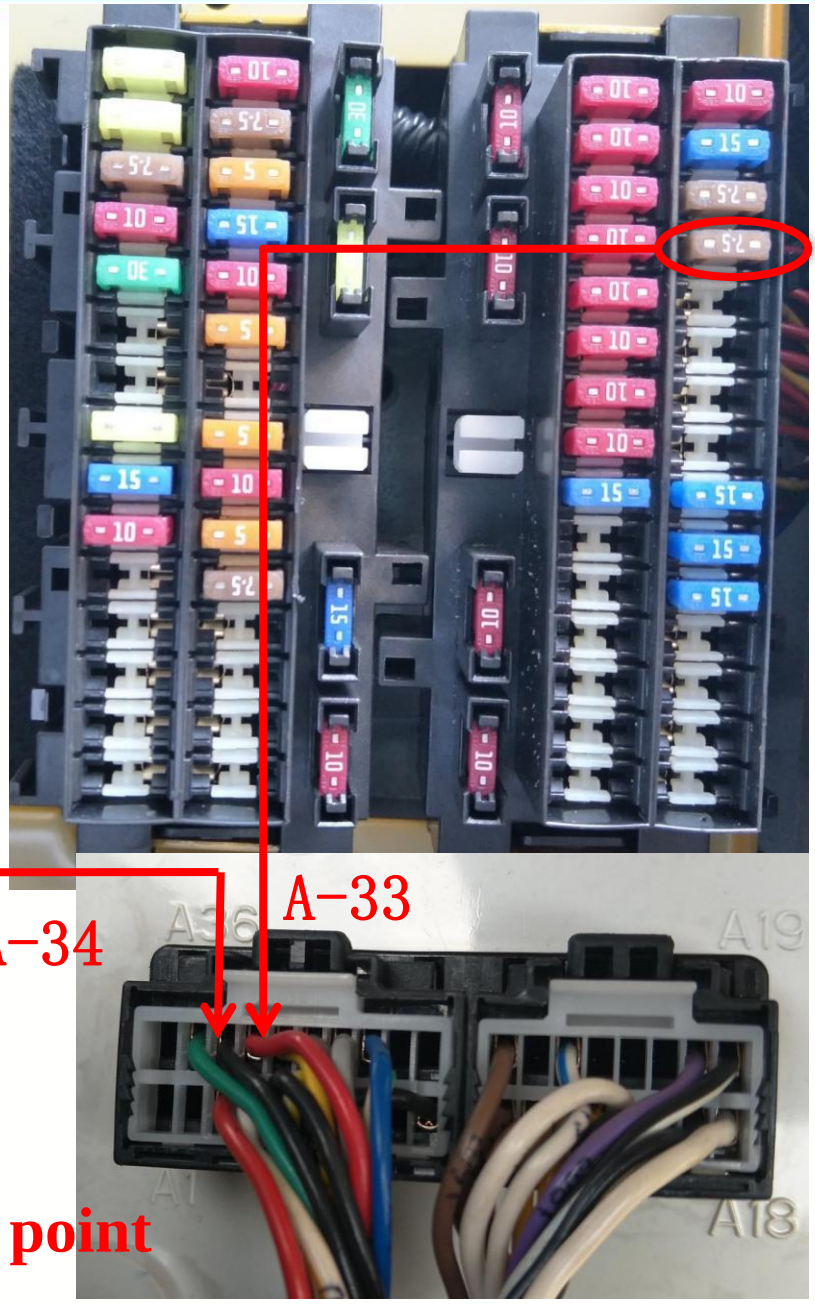
Combination meter connector C is a 28-pin connector , pins arranged as shown:





组合仪表的常电电源（T30）由第四组4号保险丝提供，位置如图，其红色线连接到仪表的A-33针脚。仪表的电源负极线由黑色线从Z1搭铁点连接到仪表的A-34针脚：

The constant current power supply (T30) of the combination meter is provided by the fourth set of 4sd fuses. The position is shown in the picture. The red wire is connected to the A-33 pin of the combination meter. The negative wire of the combination meter's power supply is connected by a black wire from the Z1 ground point to the A-34 pin of the combination meter:



组合仪表的钥匙电源(T15)是由第二组2号保险丝7.5A提供仪表指示灯电源，由第二组8号保险丝5A提供仪表指针电源，位置如图，其白色线连接到仪表的A-18，A-15针脚。

The combination meter's key power supply (T15) is powered by a second set of No. 2 fuses 7.5A to provide meter indicator power, and a second set of No. 8 fuses 5A to provide the meter pointer power, located as shown, its white wire connected to the meter's A- 15, A-18 pins.

EGR车型仪表显示界面主要由六个表头和一个液晶显示器组成：六个表头分别是车速表、转速表、油量表、水温表、气压表1、气压表2。

The EGR model combination meter display interface consists of six heads and one LCD : the six heads are the speedometer, tachometer, fuel gauge, water temperature gauge, barometer 1 and barometer 2.

车速表（里程表）显示的速度单位是公里每小时，车速表的车速信号来自安装于变速箱输出法兰处的车速传感器，输出为频率信号。传动轴每转一圈里程表传感器发出8个脉冲信号。
Speedometer (odometer) shows the speed ,the unit is kilometers per hour, speedometer's speed signal comes from the speed sensor installed in the output flange of the transmission , output frequency signal. The odometer sensor sends 8 pulses per revolution of the drive shaft.

里程表传感器
speed sensor

车速里程表需要设置的参数就是K值的设置，车速K值（每公里脉冲数）在液晶界面中设置。K值需要由后桥速比和轮胎型号直径计算。

The parameter that needs to be set in the speedometer is the K value, and the speed K value (pulse per kilometer) is set in the LCD interface. The K value needs to be calculated from the rear axle ratio and the tire diameter.

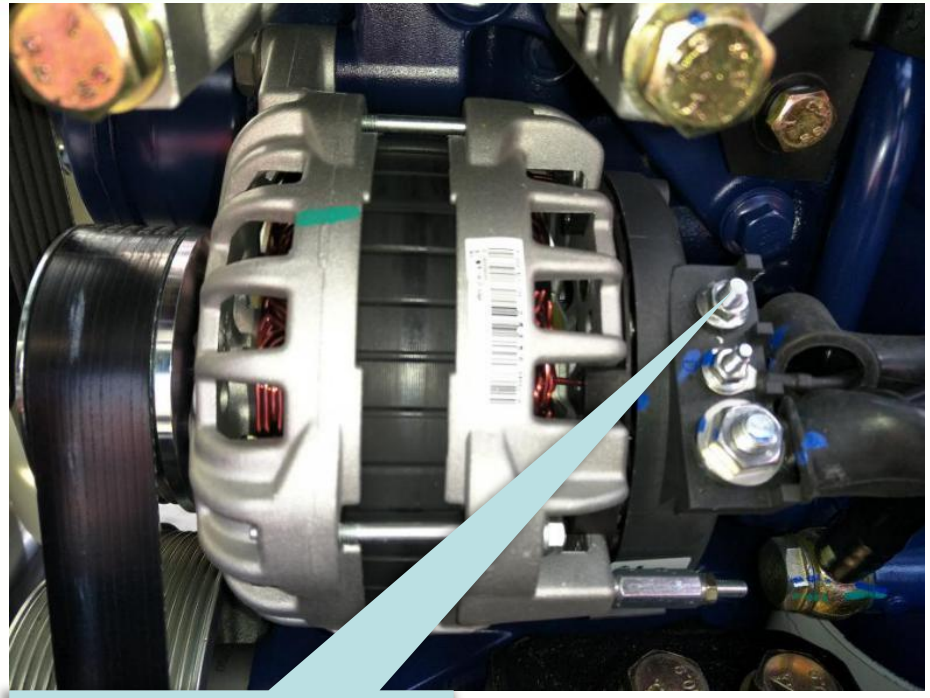
车速里程表显示的车速数值是把计算的轮胎线速度扩大10%再增加4公里，所以车速里程表显示的车速数值稍微偏大，是正常现象。

The speed value displayed on the speedometer is to increase the calculated tire line speed by 10% and then increase it by 4km. Therefore, the vehicle speed displayed by the speedometer is slightly larger, which is a normal phenomenon.

2，转速表经济运行提示，利用**绿色区间**（1100-1900rpm)@（1200-1600rpm)主动提示驾驶员发动机运行工况，规范驾驶员的操作习惯，实现智能节油，降低油耗。

The tachometer uses the **green zone**（1100-1900rpm）@（1200-1600rpm)to prompt the driver's engine operating conditions, regulate the driver's operating habits, achieve intelligent fuel economy, and reduce fuel consumption.

转速表的信号源：
EGR车型来自发电机W端。
tachometer source:
The EGR model comes from the generator W terminal.



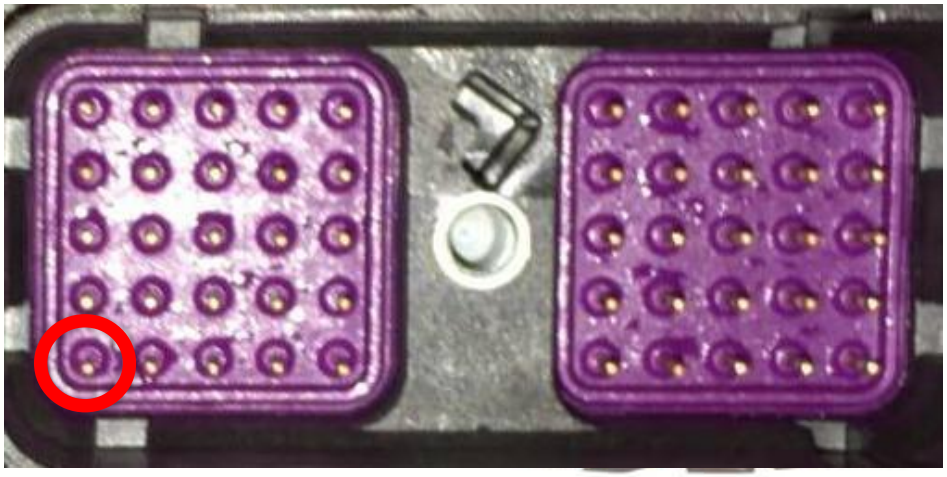
发电机W端
Generator W terminal

转速表的信号源，康明斯车型来自于ECM的41号针脚。

tachometer source:

The Cummins model comes from ECM's No. 41 pin.

ECM的41号
ECM's No. 41 pin



转速表的显示，单位是100r/min。转速表需要调整设置的速比可以在仪表液晶屏选择，转速表速比就是发动机皮带轮和发电机皮带轮的直径之比值。

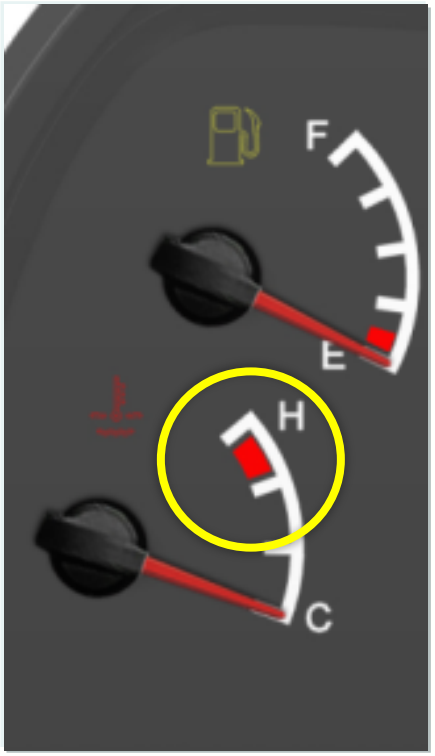
Tachometer display, the unit is 100r/min. The speed ratio of the tachometer that needs to be adjusted can be selected on the LCD screen of the combination meter. The speed ratio is the ratio of the diameters of the engine pulley and the generator pulley.

3，燃油表的显示，单位是1/4。燃油表的信号源是油箱的油量传感器，油量传感器的电阻值在72Ω—10Ω之间变化，72Ω时仪表显示没有燃油，10Ω时仪表显示油箱满油，刻度盘红色区域表示油量0-1/8。

Fuel gauge display, each unit is 1/4. The signal source of the fuel gauge is the fuel quantity sensor of the fuel tank. The resistance value of the fuel quantity sensor varies from 72Ω to 10Ω. When the gauge is 72Ω, the gauge shows no fuel. When the gauge is 10Ω, the gauge shows the tank is full, and the red area indicates the oil amount is 0- 1/8.

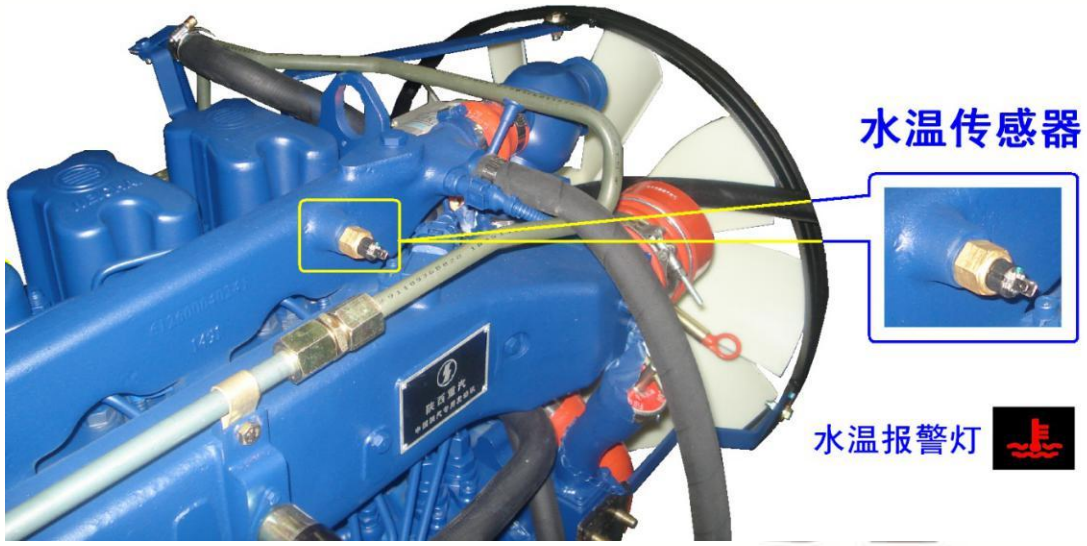
4，水温表用来显示发动机冷却液温度。它的单位是℃，量程40-120℃，柴油发动机的冷却液报警点是100℃，刻度盘红色区是98-120℃。

The water temperature gauge is used to display the engine coolant temperature. Its unit is ℃, range 40-120 ℃, the coolant alarm point is 100 ℃, red zone is 98-120 ℃.



水温表的信号源是发动机的水温传感器，水温传感器的电阻值在287Ω—22.7Ω之间变化，287Ω时水温表显示40℃，22.7Ω时水温表显示120℃。

The signal source of the water temperature meter is the water temperature sensor of the engine. The resistance value of the water temperature sensor varies from 287 Ω to 22.7 Ω, the water temperature meter at 287 Ω shows 40℃, and at 22.7 Ω shows 120 ℃.



5，气压表的显示，单位是bar，量程0-12bar，刻度盘红色区是0-6bar。气压表的信号源是气管路的气压传感器，这一种气压传感器，信号更稳定，不会因环境温度变化引起信号漂移。

The unit of the barometer is bar, the range is 0-12 bar, and the red zone of the dial is 0-6 bar. The signal source of the barometer is the gas pipeline pressure sensor. This type of barometric pressure sensor has a more stable signal output and will not cause signal drift due to changes in ambient temperature.

气压传感器直接将测量的气压数值转换为电压信号再传输到仪表，信号电压值在0.5—3.77伏之间变化，0.5伏时气压表显示0 bar，3.77伏时气压表显示12 bar。通常气压表1是前桥制动储气筒气压，气压表2是后桥制动储气筒气压。

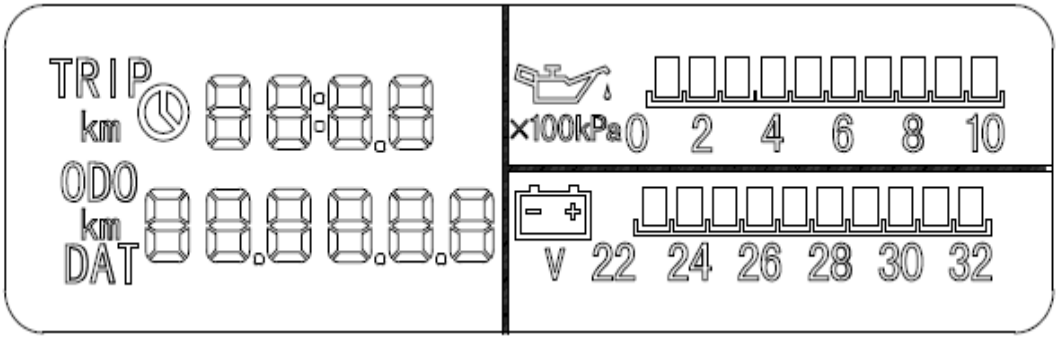
The air pressure sensor directly converts the measured air pressure value into a voltage signal and transmits it to the combination meter. The signal voltage value varies between 0.5-3.77 volts. At 0.5 volt, the barometer shows 0 bar and at 3.77 volt, the barometer shows 12 bar. Normally, the barometer 1 is the pressure of the front axle brake air reservoir, and the barometer 2 is the air pressure of the rear axle brake air reservoir.

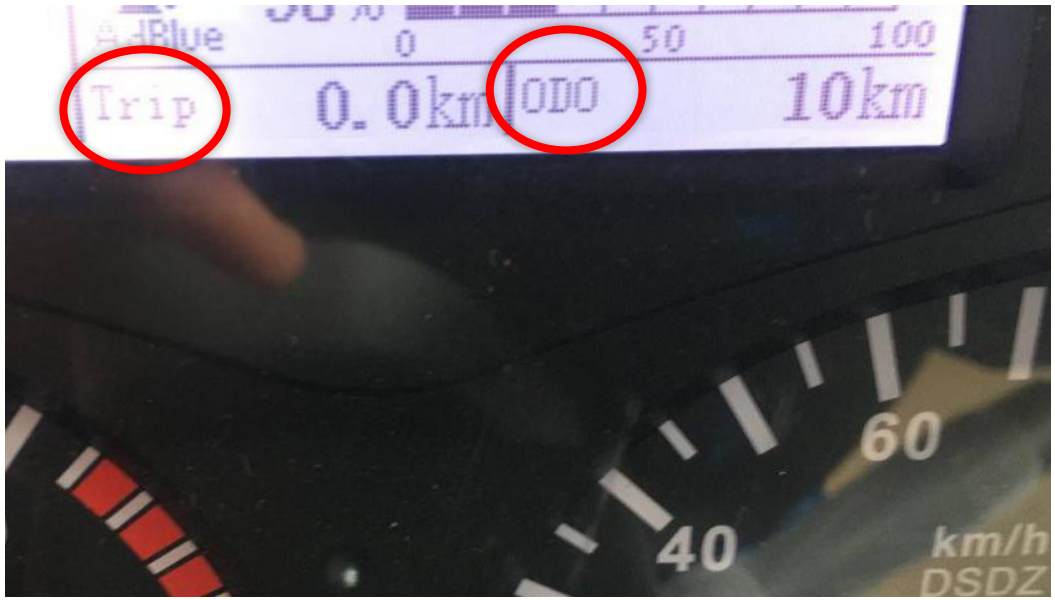
6， 中间的液晶屏幕区域可以显示机油压力表、电量表、瞬时油耗、当前/综合油耗、总/短里程、发动机总工作时间、发动机累计油耗、故障码、变速箱档位。

The middle LCD screen area can display oil pressure gauge, power gauge,instantaneous fuel consumption, current/comprehensive fuel consumption, total/short mileage, total engine operating time, cumulative engine fuel consumption, fault code, gearbox gear position

短按仪表左键，可以切换总/短里程、或时间日期等等信息。在仪表总里程/短里程显示界面下长按仪表左键，可以将短里程清零。

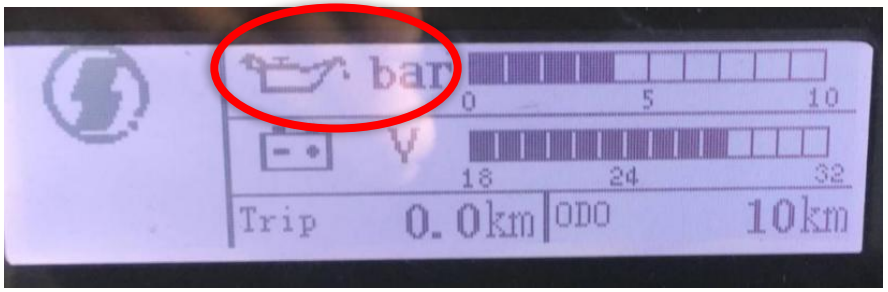
Short press the left button of the combination meter to switch total/short mileage, or time and date. Press the left button of the combination meter under the total meter/short mileage display interface and hold for a while to clear the short range.





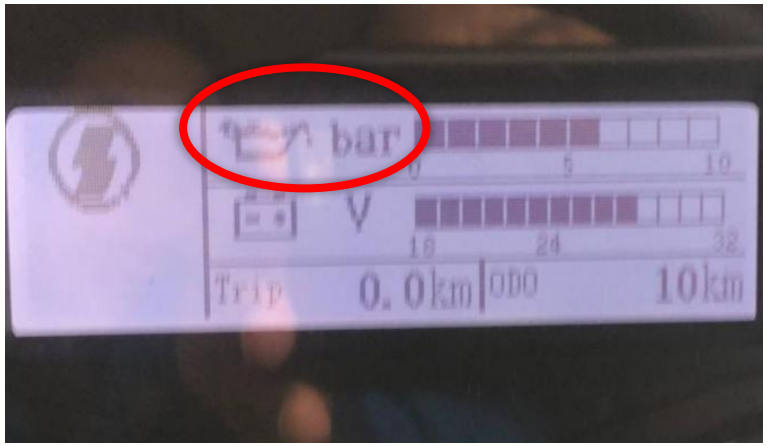
7，机油压力表油压表用来显示发动机的机油压力。单位是bar（100kPa），量程0-10 bar，油压报警区域是0-0.7 bar。

The oil pressure gauge is used to display the engine oil pressure. The unit is bar (100kPa) with a scale of 0-10 bar , the oil pressure alarm zone is 0-0.7 bar.



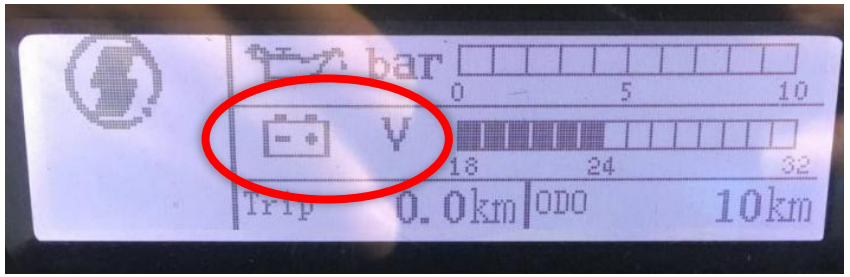
机油压力表的信号源是发动机的机油压力传感器，传感器电阻值在10—330Ω之间变化，10Ω时机油压力表显示0 bar，330Ω时机油压力表显示8 bar。

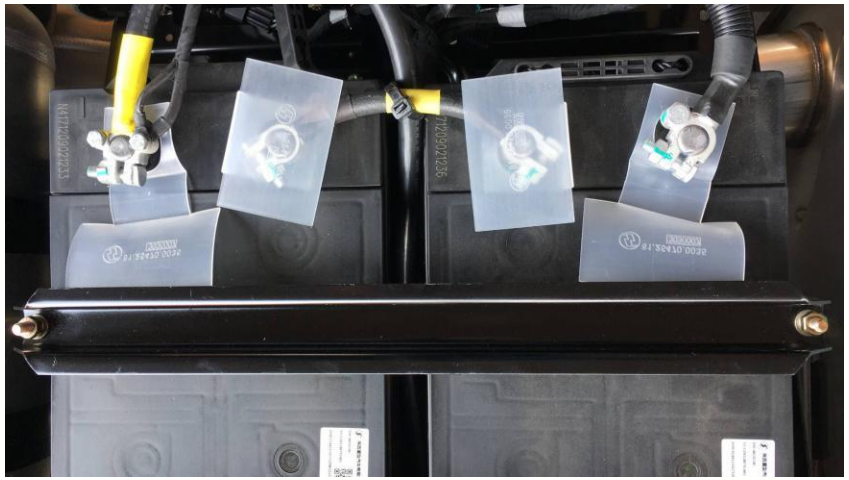
The signal source of the oil pressure gauge is the oil pressure sensor of the engine. The resistance value of the sensor varies between 10-330Ω. When the pressure is 10Ω, the oil pressure gauge shows 0 bar, and when the pressure gauge is 330Ω, the oil pressure gauge shows 8 bar.



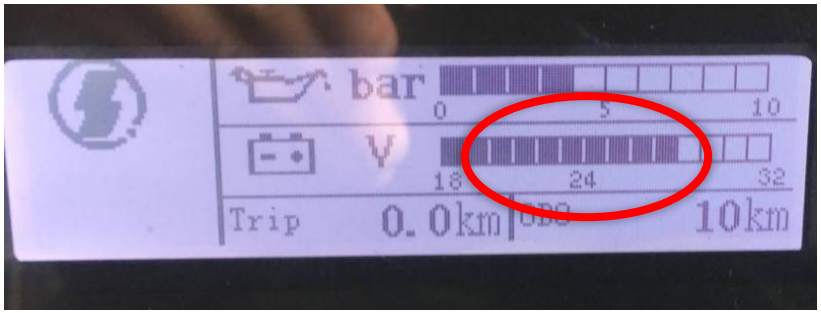
8，电压表的显示，单位是V伏，量程18-32V。电压表表示蓄电池当前的电压。当发电机未工作时电压一般为24V左右，电压过低表明蓄电池电量不足。

Voltmeter display unit is volt, range18-32V. The voltmeter shows the current battery voltage. When the generator is not working, the voltage is generally about 24V. When the voltage is too low, it indicates that the battery power is insufficient.



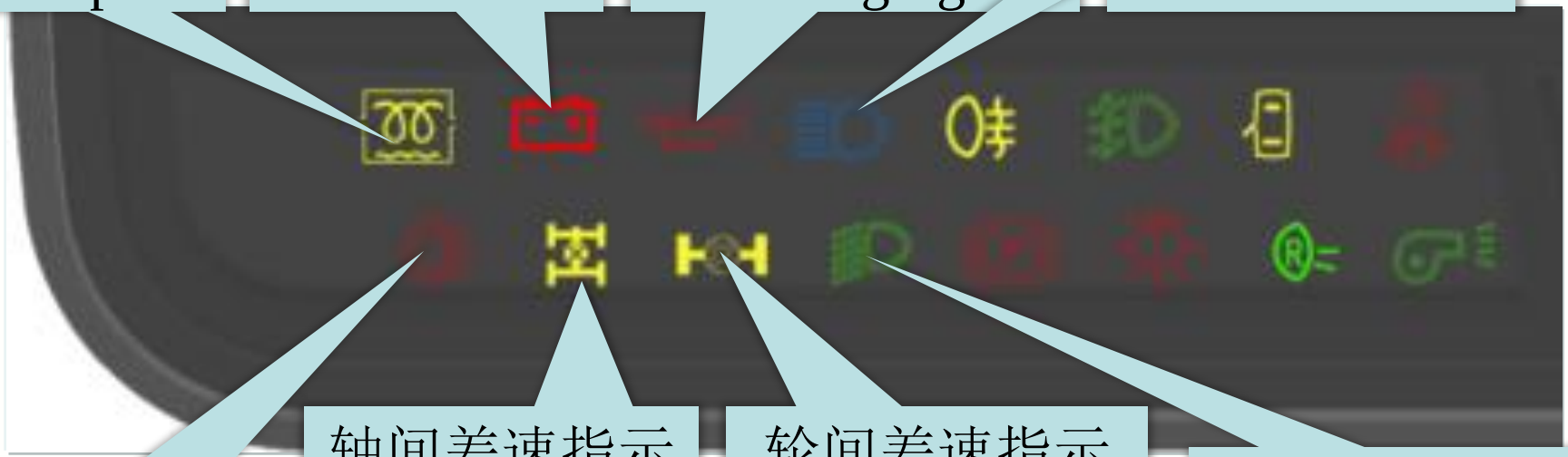


在发电机开始工作后，整车电路电压应稳定在26-28V左右，若低于24V或者高于28V则表明发电机的电压调节器可能损坏，应及时维修，否则过高的电压会对车辆电器系统造成破坏。



After the generator starts working, the circuit voltage of the vehicle should be stable at about 26-28V. If it is lower than 24V or higher than 28V, it indicates that the voltage regulator of the generator may be damaged and should be repaired in time. Otherwise, excessive voltage will damage the electrical system.

9，仪表显示的各个信号灯或者报警灯，具体含义如图。
The meaning of the signal or warning light of the combination meter are as shown



燃油预热灯
Fuel preheat lamp

充电指示灯
charging indicator

机油压力报警灯
Oil pressure warning light

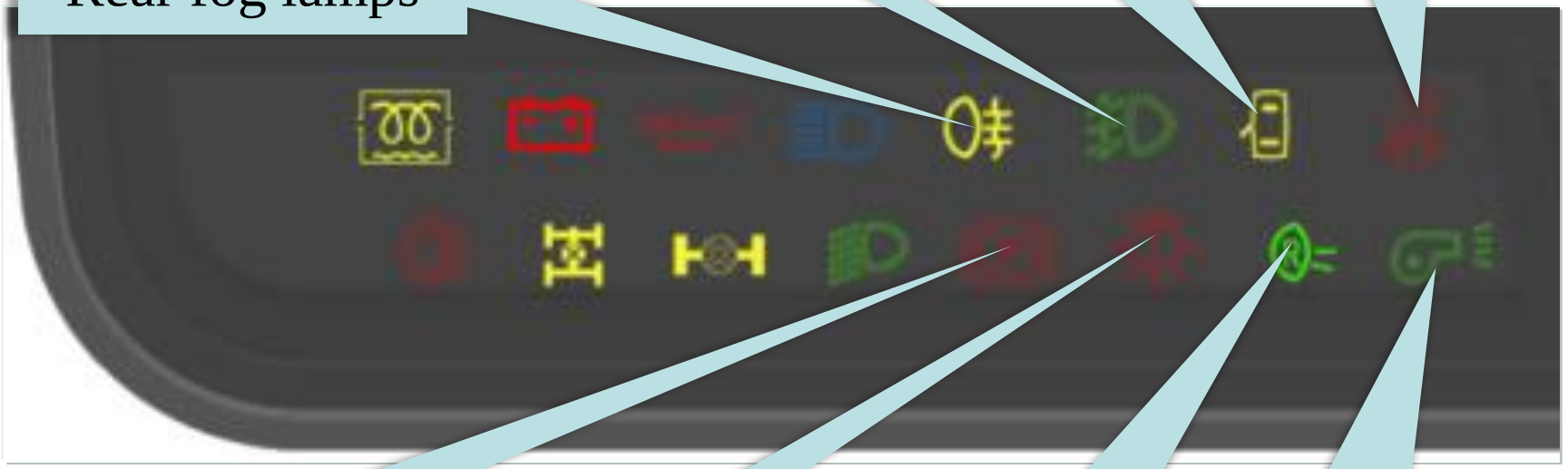
远光指示灯
High beam indicator

取力器指示灯
Power take-off indicator

轴间差速指示
Inter-axle differential indication

轮间差速指示
Inter-wheel differential indication

近光指示灯
Low beam indicator



前雾灯
Front fog lights

门开指示灯
Door open indicator

安全带指示灯
Seat belt indicator

后雾灯
Rear fog lamps

驻车制动指示灯
Parking brake indicator

灯丝检测
Filament detection

倒车指示灯
Reversing indicator

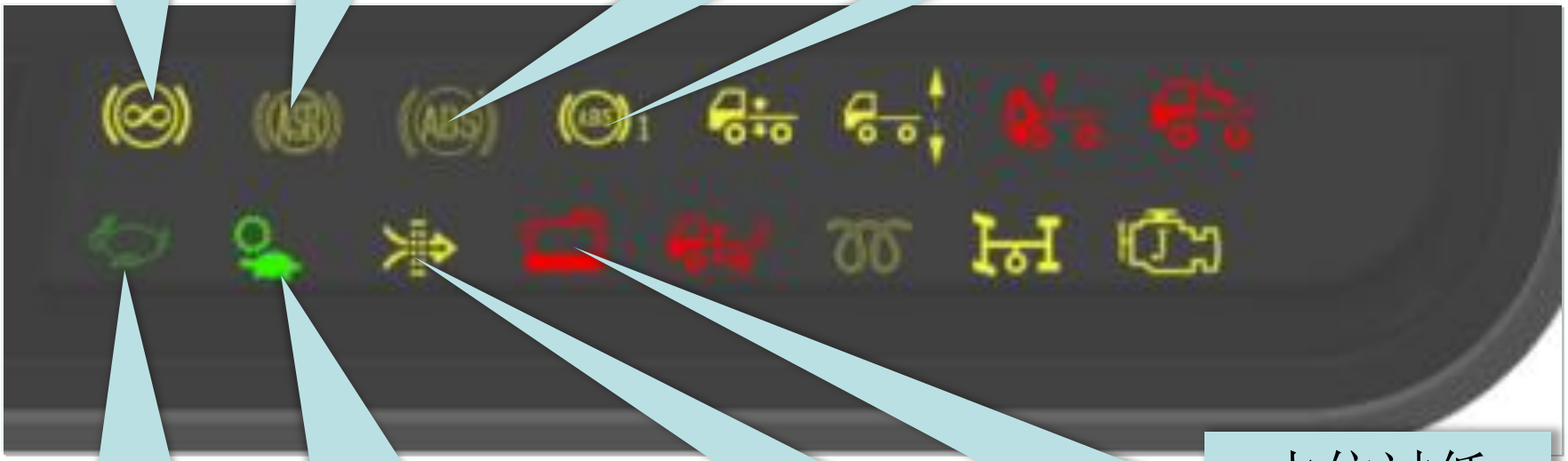
干燥器指示灯
Air dryer indicator

缓速器指示
Retarder indication

ASR指示灯
ASR indicator

主车ABS指示灯
Main vehicle ABS indicator

挂车ABS指示灯
Trailer ABS indicator



高档指示灯
High-grade indicator

低档指示灯
Low-grade indicator

空滤器阻塞报警灯
Air filter blocking indicator

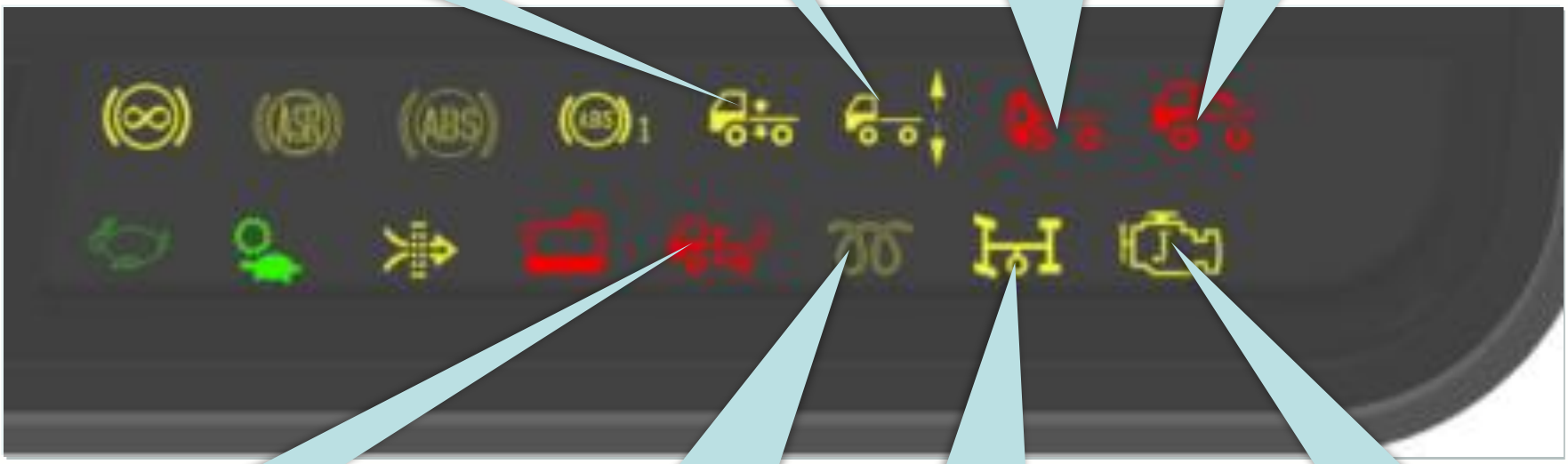
水位过低报警灯
Low water level warning

EACS警告灯
EACS warning

空气悬架指示灯Air suspension indicator

驾驶室锁止指示灯
Cab lock indicator

车厢举升指示灯
Lift indicator

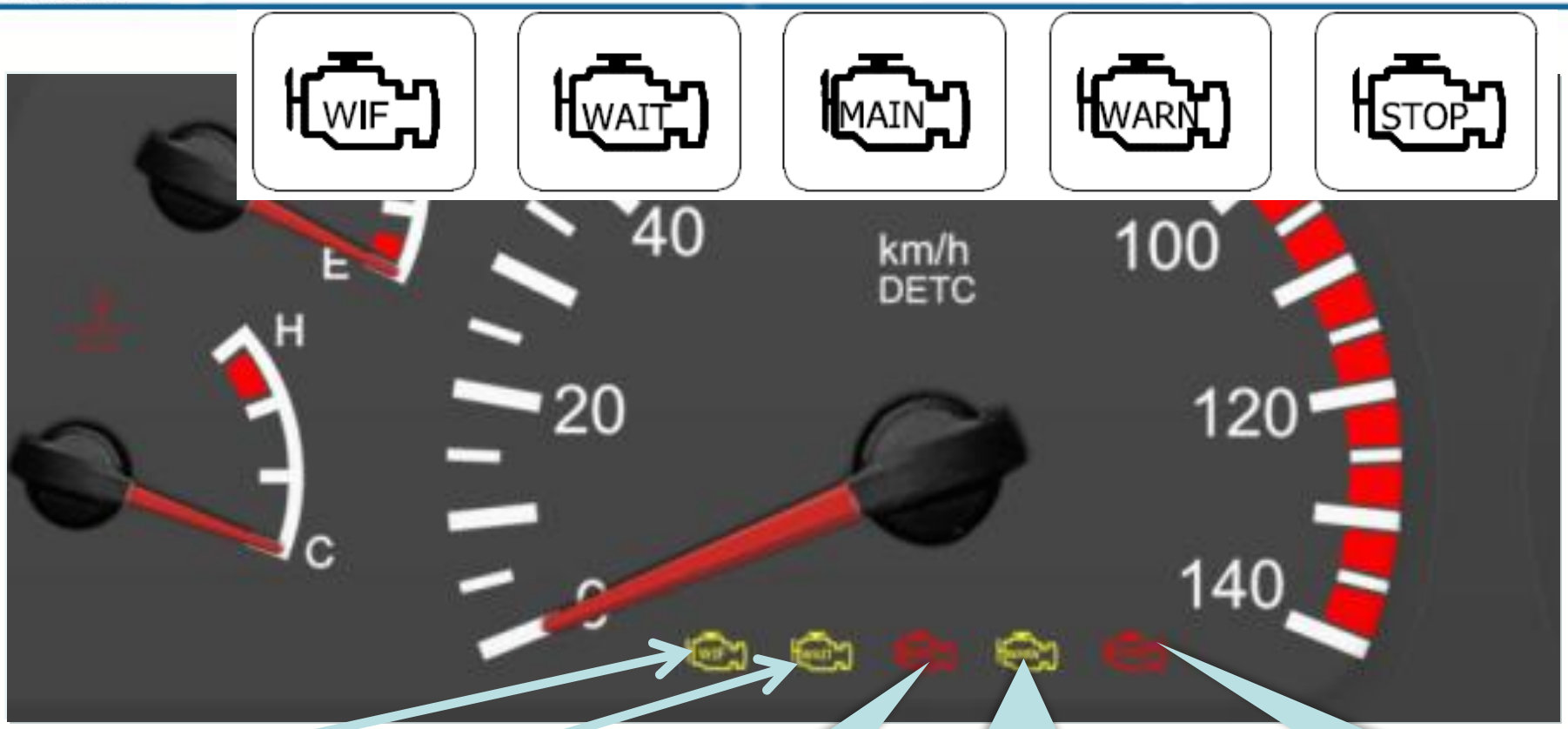


EACS失效灯
EACS failure indicator

进气预热指示灯
Air intake warm-up indicator

功率输出指示
Power output indication

发动机制动指示灯
Engine brake indicator



油中有水报警灯
Water in oil alarm

等待启动指示灯
Wait for start indicator

车辆维护报警灯
Vehicle maintenance alarm

发动机故障闪码黄灯
Engine failure flash code yellow light

发动机故障闪码红灯
Engine failure flash code red light

低速发动机制动指示灯
Low speed engine brake indicator

高速发动机制动指示灯
High speed engine brake indicator

空档指示灯
Neutral gear indicator

前进档指示灯
Forward speed indicator

停车档指示灯
Parking gear indicator

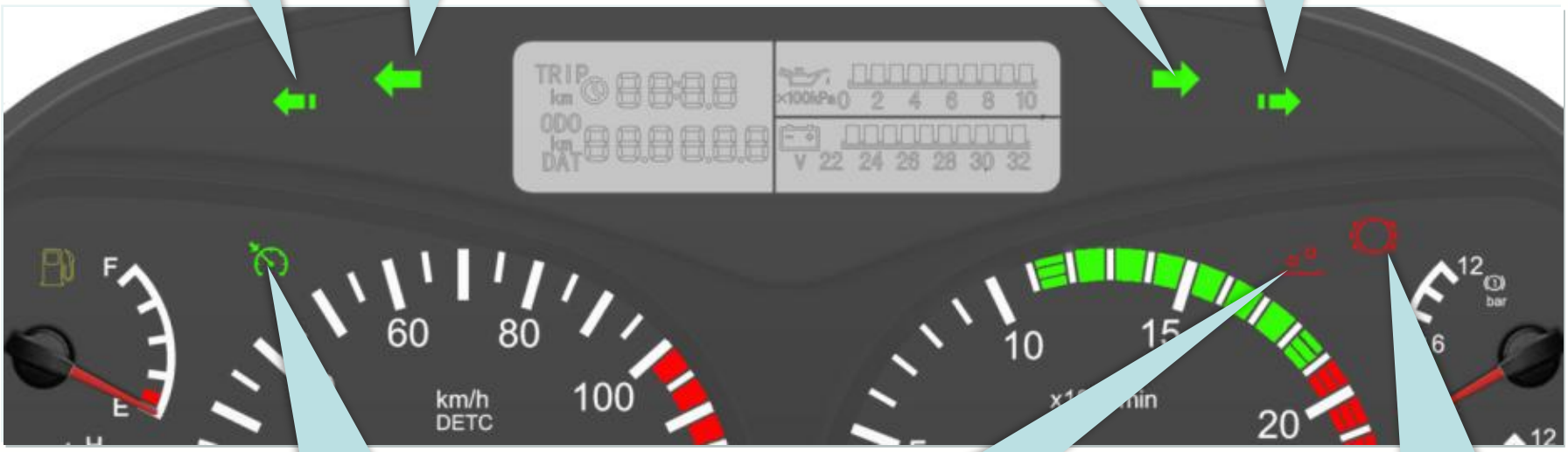
倒车档指示灯
Reverse gear indicator

挂车左转指示灯
Trailer left turn indicator

主车左转向指示灯
Vehicle left turn indicator

主车右转向指示灯
Vehicle right turn indicator

挂车右转向指示灯
Trailer right turn indicator



巡航指示灯
Cruise indicator

浮动桥故障报警灯
Floating Bridge Fault Warning

盘式制动器磨损报警灯
Disc brake wear warning

排气制动指示灯
Exhaust brake indicator

水溶于油指示灯
Water in oil indicator

左按键
Left button

右按键
Right button

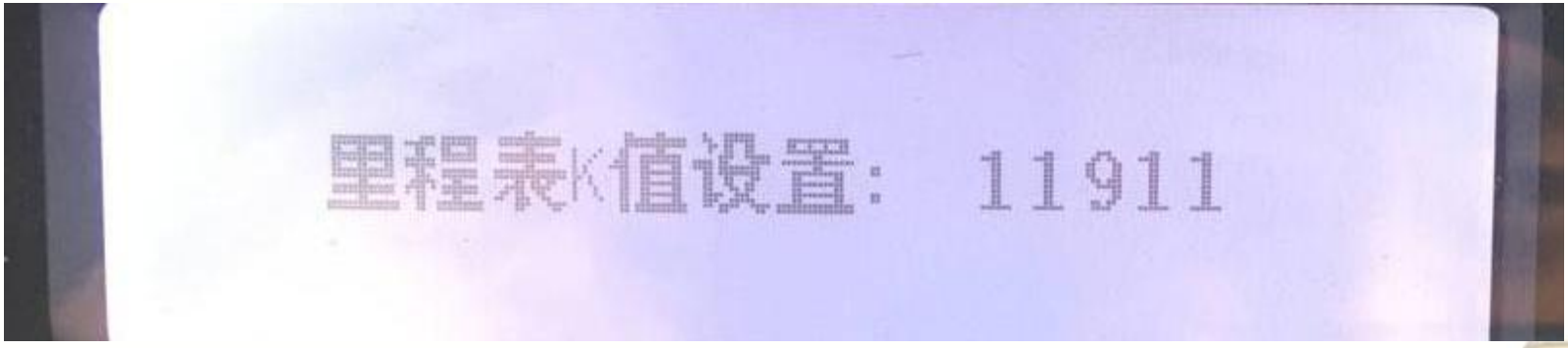
10，仪表设置简要说明。Combination meter setup instructions.

电瓶总开关接通，先按住仪表左边按钮不放，然后打开钥匙开关，左按钮超过2s以上松开，仪表液晶显示屏进入“发动机状态选择”显示界面：在该界面下，短按左键，“潍柴柴油”、“康明斯”、“LNG”、“CNG”依次闪烁。当需要选择的发动机状态闪烁时，短按右键，该发动机状态被保存。

Turn on the battery main switch, press and hold the left button of the combination meter first, then open the key switch, press and hold the left button for more than 2 seconds, then release, the LCD screen enters the “engine status selection” display interface: in this interface, short press Left button, "Weichai Diesel", "Cummins", "LNG", and "CNG" flash in sequence. When the engine state to be selected is flashing, a short press of the right button will save the engine state.

然后仪表设置界面，跳转到里程表K值设置界面，同时左边第一位数字开始闪烁。短按左键，左第一位停止闪烁，左第二位闪烁，依次类推。若在上述闪烁状态下，左键右旋，数字从0-9递增；左键左旋，数字从9-0递减。在K值设置过程中，短按右键，所有数字均停止闪烁，该数字被保存。

Then the meter jumps to the odometer K value setting interface, and the first digit on the left begins to flash. Short press the left button, the left first digit stops flashing, the second digit flashes, and so on. If in the above flashing state, the left key rotates right and the number increases from 0-9; the left key rotates left and the number decreases from 9-0. In the K value setting process, short press the right button, all the digits are stopped flashing, the number is saved.



转速表速比可以按压仪表左右键进行选择，WP10发动机设置为3.39:1，WP12（WD12）发动机设置为4:1，康明斯车型不需要设置。

Tachometer speed ratio can be selected by pressing the left and right buttons of the meter. The WP10 engine setting is 3.39:1, the WP12 (WD12) engine setting is 4:1, and the Cummins model. No need to set.

在设置过程中，短按右键，所有数字均停止闪烁，该数字被保存，2s后液晶显示“DONE,参数设置完毕”，3s后仪表自动重启，仪表显示正常的主界面。

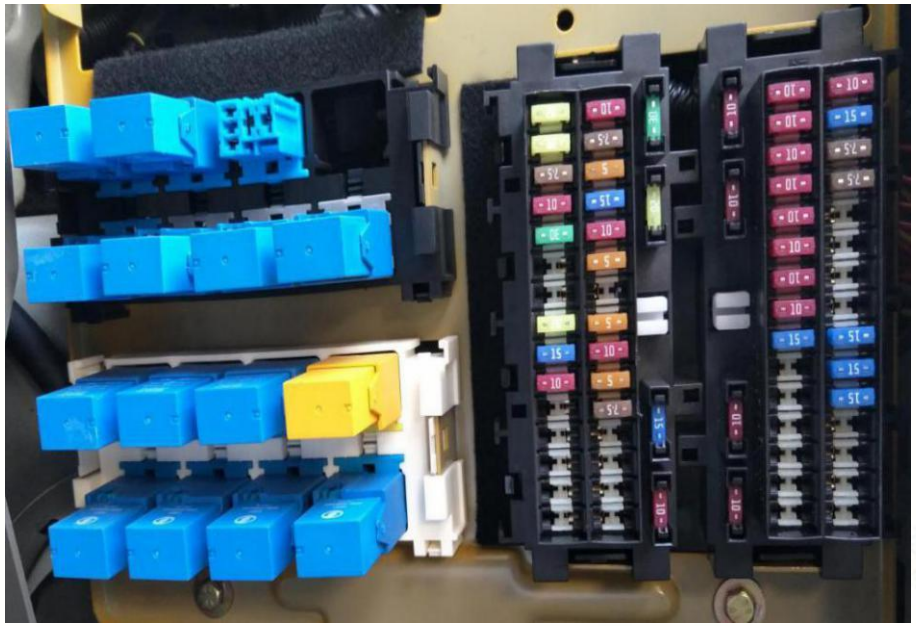
In the setting process, short press the right button, all the digits are stopped flashing, the number is saved, LCD display "DONE parameter setting is complete" after 2s, the meter automatically restarts after 3s, the meter displays the normal main interface.

第三节，H3000车型电器装置板介绍

Section 3　Electrical device board introduction

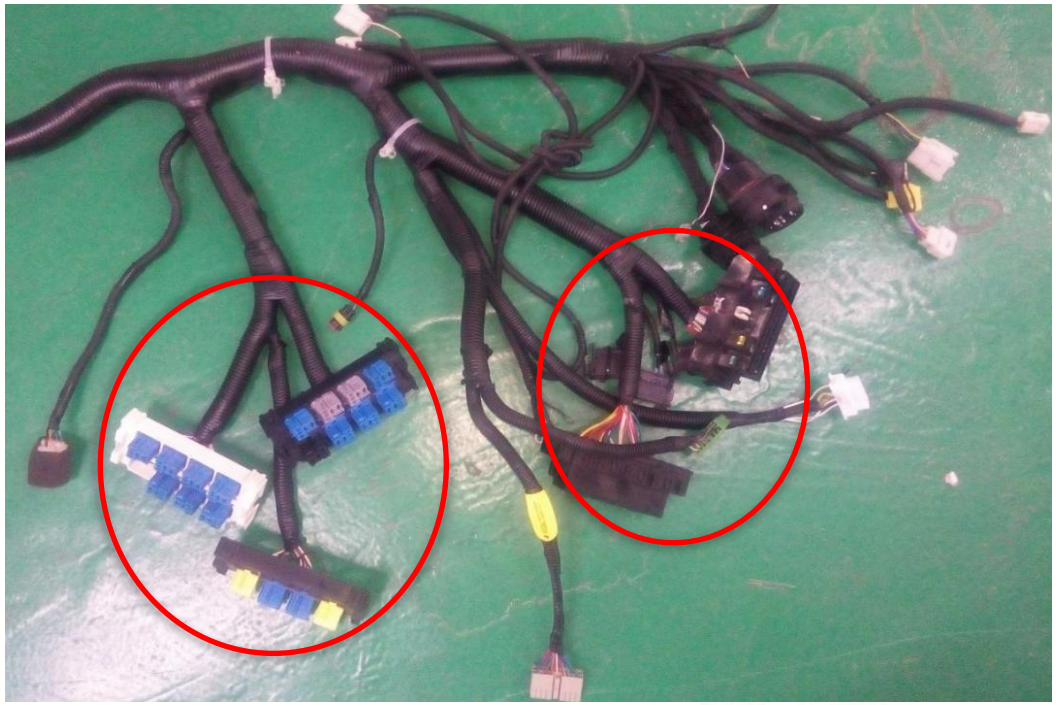
H3000车型电器装置板是集成式结构布局，包括有31个熔断丝、15个小继电器、3个大继电器、1个诊断接口，其安装位置在副驾驶前方的仪表台内部, 方便检查维修。

The new M3000 model electric device board is an integrated structure, including 31 fuses, 15 small relays, 3 large relays, 1 diagnostic interfaces, and it is located inside the panel in front of the co-driver.



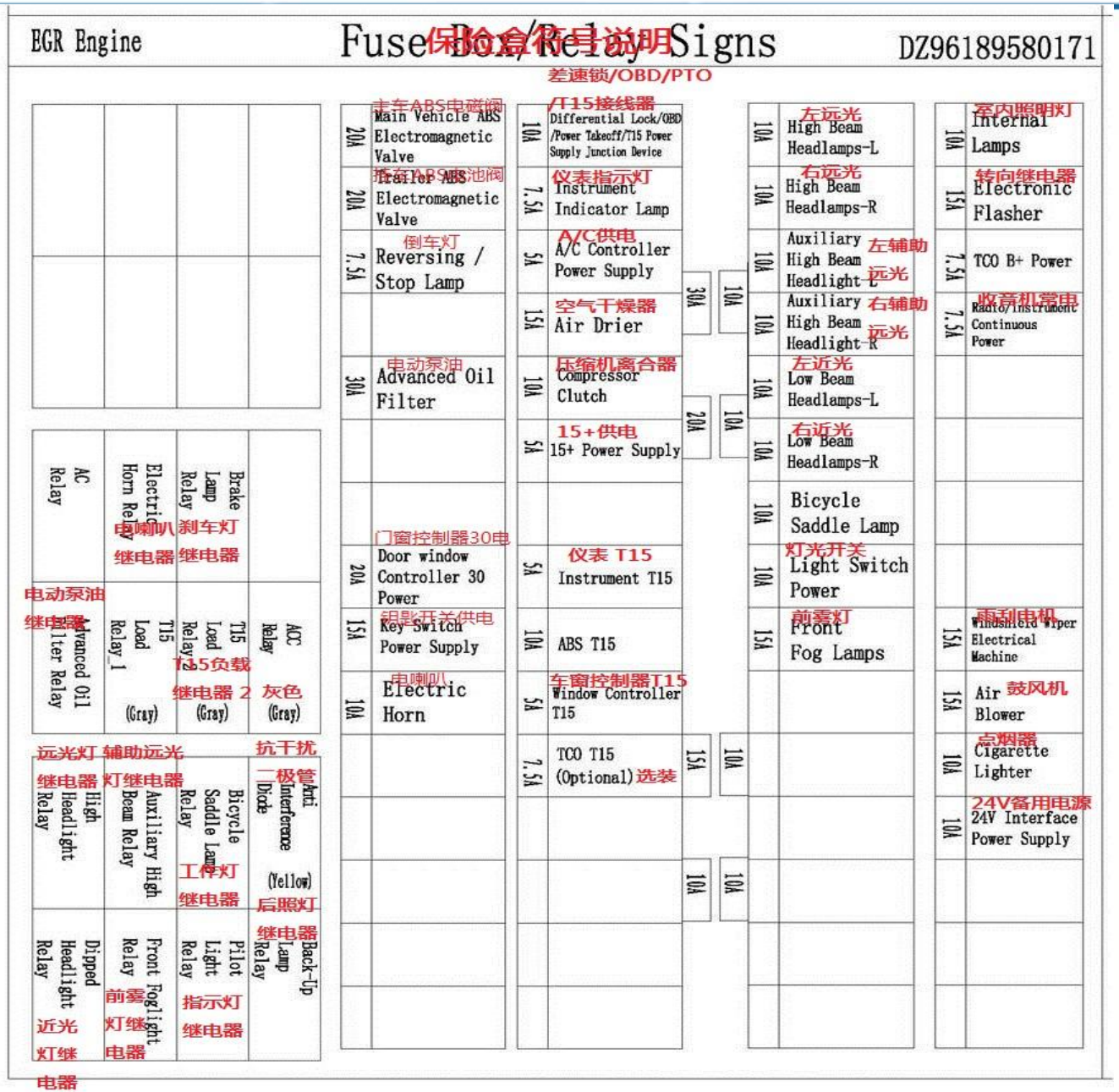
H3000车型电器装置板实际上是驾驶室线束总成的一个部分，其各个保险丝和继电器均直接连接到了线束各分支接口，这种连接免去了插接器，大幅降低电器故障率。

The new M3000 model electric device board is actually a part of the cab wiring harness assembly. Each of its fuses and relays is directly connected to each branch interface of the harness. This connection eliminates the connector and greatly reduces the electrical failure rate.

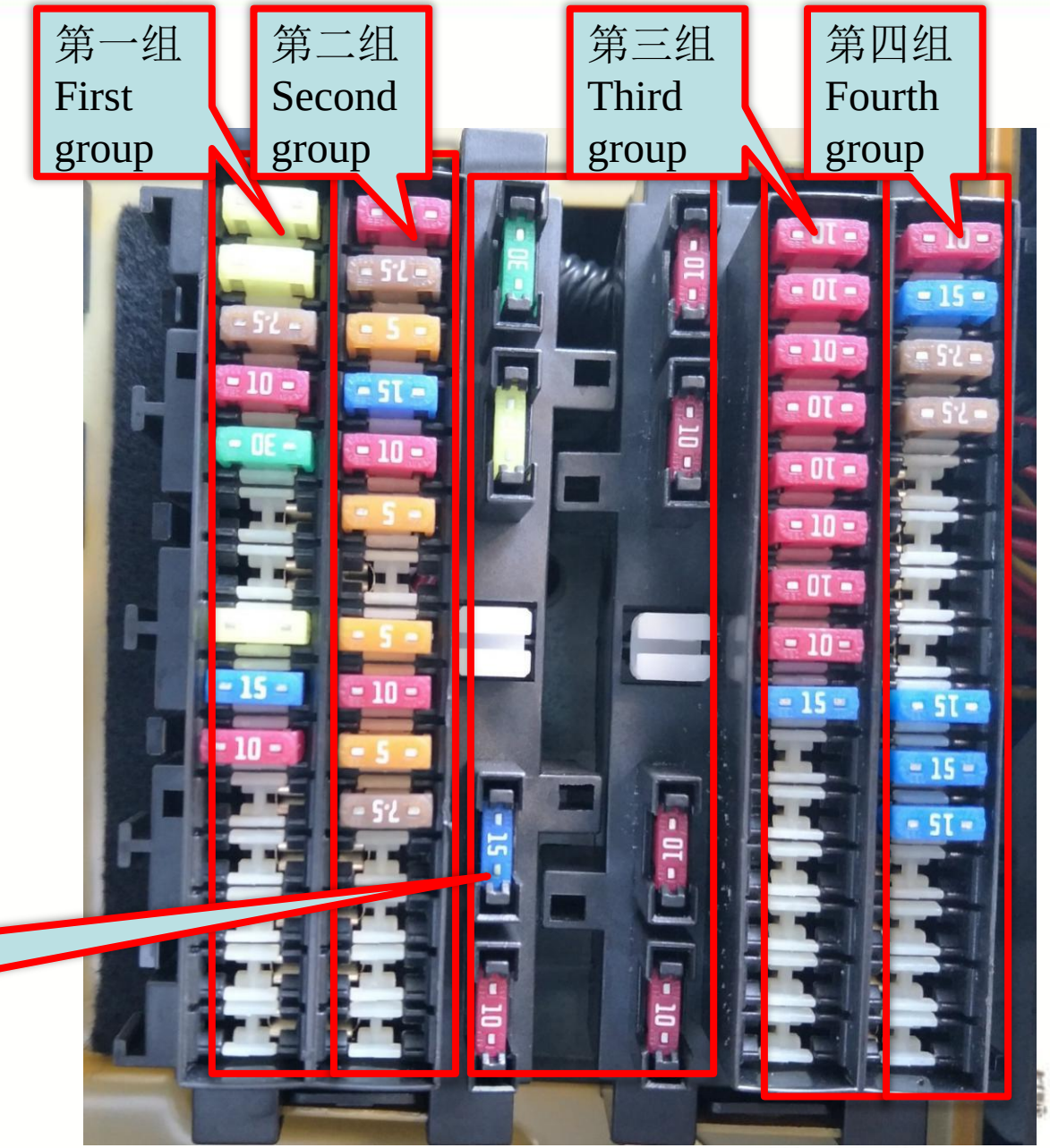


H3000车型电器装置板的简要说明书采用电器符号表示，方便检查维修。

The brief description of the new M3000 model electric device board adopts electrical symbols to facilitate inspection and maintenance



H3000车型EGR电器装置板的保险丝盒有4组，中间竖立安装的是备用保险丝。
The fuse box of the new M3000 electric device board has four groups, and the standby fuse is installed upright in the middle.



H3000第一组保险丝

- 主车ABS电磁阀保险丝Main vehicle ABS solenoid valve fuse
- 挂车ABS电磁阀保险丝Trailer ABS solenoid valve fuse
- 倒车灯保险丝Reversing light fuse
- 延时继电器保险丝Time delay relay fuse
- 电动泵油保险丝Electric pump oil fuse
- 门窗控制器T30保险丝Door and window controller T30 fuse
- 钥匙电源保险丝Key power fuse
- 电喇叭保险丝Electric horn fuse

New M3000 EGR first group fuse

H3000第二组保险丝

- T15(排气制动)保险丝 T15 fuse
- 仪表指示灯保险丝Instrument indicator fuse
- 空调电源保险丝 Air conditioning power fuse
- 干燥器保险丝 Air dryer fuse
- 空调压缩机保险丝 Air-conditioning compressor fuse
- 钥匙电2保险丝 Key electric 2 fuse
- 仪表指针保险丝 Meter pointer fuse
- ABS-T15保险丝 ABS-T15 fuse
- 门窗控制器T15保险丝 Door and window controller fuse
- 天行健保险丝 GPS fuse

New M3000 EGR second group fuse

H3000第三组保险丝

- 左远光灯保险丝 Left high beam fuse
- 右远光灯保险丝 Right high beam fuse
- 左辅助远光灯保险丝 Left auxiliary high beam fuse
- 右辅助远光灯保险丝 Right auxiliary high beam fuse
- 左近光灯保险丝 Left-low beam fuse
- 右近光灯保险丝 Right-low beam fuse
- 后工作灯保险丝 Rear work light fuse
- 小灯保险丝 Small lamp fuse
- 前雾灯保险丝 Front fog light fuse

New M3000 EGR third group fuse

H3000第四组保险丝

室内照明灯保险丝 Indoor light fuse

转向灯保险丝 Turn light fuse

天行健T30保险丝 GPS T30 fuse

收音机,仪表T30保险丝 Radio meter T30 fuse

雨刮电机保险丝 Wiper motor fuse

鼓风机保险丝 Blower fuse

点烟器保险丝 Cigarette lighter fuse

New M3000 EGR fourth group fuse

H3000第一二组继电器

空调压缩机继电器Air conditioning compressor relay

电喇叭继电器 Electric horn relay

制动灯继电器 Brake light relay

电动泵油继电器 Electric pump oil relay

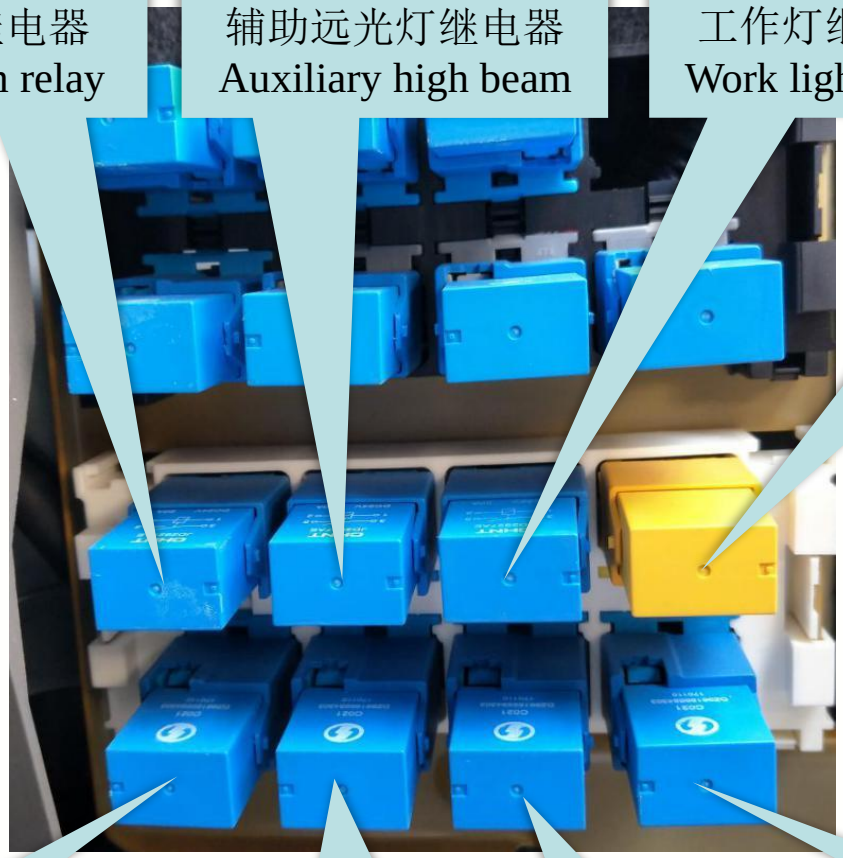
钥匙电1继电器 Key power 1 relay

钥匙电2继电器 Key power 2 relay

ACC电继电器 ACC power relay

New M3000 first and second group relay

H3000第三四组继电器



远光灯继电器
High beam relay

辅助远光灯继电器
Auxiliary high beam

工作灯继电器
Work light relay

抗干扰二极管
Anti-interference diode

倒车灯继电器
Reversing light relay

近光灯继电器
Low beam relay

前雾灯继电器
Front fog light relay

小灯继电器
Small lamp relay

New M3000 third and fourth group relay

第四节，H3000车型驾驶室电器Section 4　Cab electrical

其驾驶室电器都是以主驾驶员为中心，前面有组合仪表，组合开关。左前侧有前雾灯开关，后雾灯开关，灯光高度调节开关。右前部上侧有电源开关，轴间差速锁开关，轮间差速锁开关，室内灯开关，干燥器开关，燃油预热开关。右前部下侧有熄火开关，危急报警开关，电气喇叭转换开关，发动机预热开关，远光辅助开关，取力器开关，后工作灯开关。

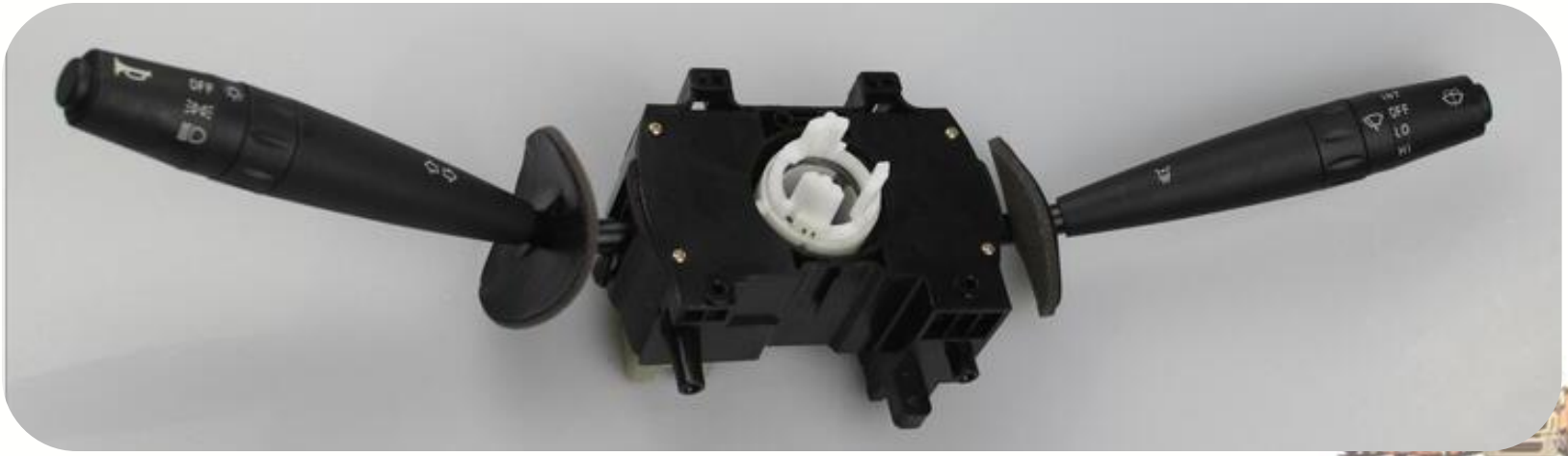
第四节，H3000车型驾驶室电器Section 4　Cab electrical

Cab electrical appliances are centered on the main driver, with a combination meter and combination switch in front. There is a front fog light switch, a rear fog light switch, and a light height adjustment switch on the left front side. The upper front right side has a power switch, a differential lock switch between shafts, a wheel differential lock switch, a room light switch, a dryer switch, and a fuel preheat switch. There is a flameout switch on the lower right side of the front, emergency alarm switch, electrical horn switch, engine preheat switch, auxiliary high beam switch, power take off switch, rear work light switch.

2，组合开关。 combination switch

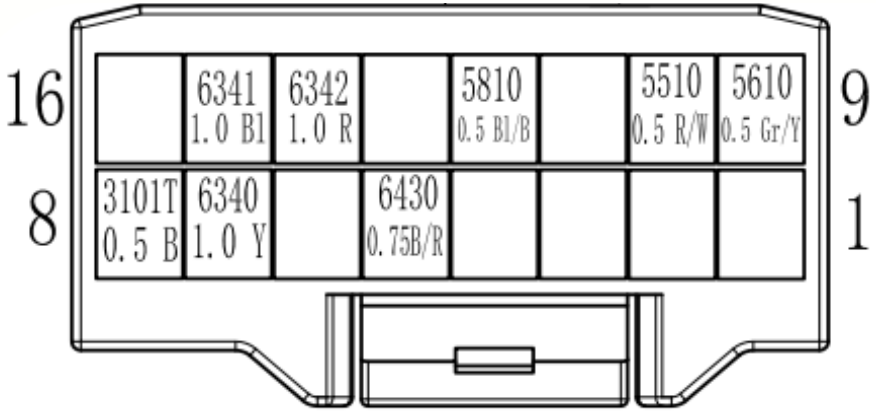
H3000车型的组合开关是多功能的组合开关，其左置和右置车型的组合开关是相同的。它集成了灯光总开关，前大灯灯光控制，雨刮组合开关、排气制动组合开关、转向灯组合开关、电喇叭按钮开关等功能。

The combination switch of the new M3000 model is a multi-functional combination switch. It integrates the functions of main lighting switch, headlight lighting control, wiper switch, exhaust brake switch, turn signal switch and electric horn button switch etc.



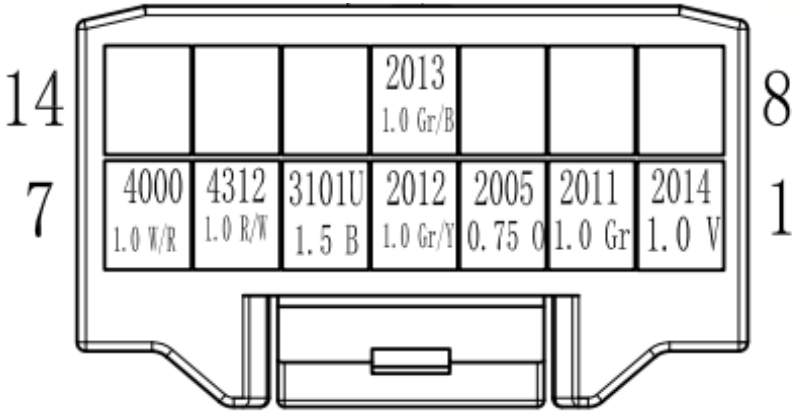
这些电器功能全部是由S108-1和S108-2这两个插接器与驾驶室线束总成连接，其中S108-1插接器是16孔插接器，S108-2插接器是14孔插接器。

These electrical functions are all connected by the S108-1 and S108-2 connector connect to the cab wiring harness assembly. The S108-1 connector is a 16-hole connector and the S108-2 connector is a 14-hole connector.



AMP936201-1

接组合开关（灯光部分）
S108/1



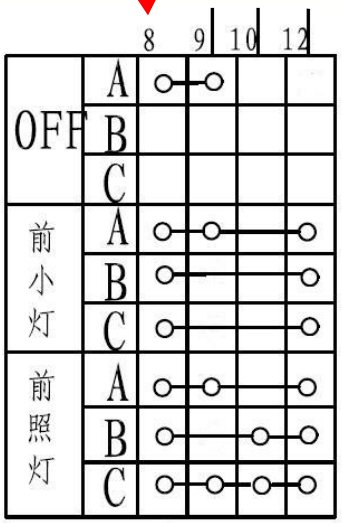
AMP936199-1

接组合开关（雨刮部分）
S108/2

H3000车型的组合开关S108-1灯光控制如下图。其中组合开关S108-1插接器的灯光总开关控制使用了8，9，10，12这四个端子。8 号端子是公共端，连接到了黑色线作为控制信号搭铁线使用，就是公共端搭铁。

The lighting control of the combination switch S108-1 of the new M3000 model is shown below. The main switch control of the combination switch S108-1 connector uses the four terminals 8, 9, 10 and 12. The No. 8 terminal is a common terminal. It is connected to the black wire and used as the control signal . It is the public ground terminal.

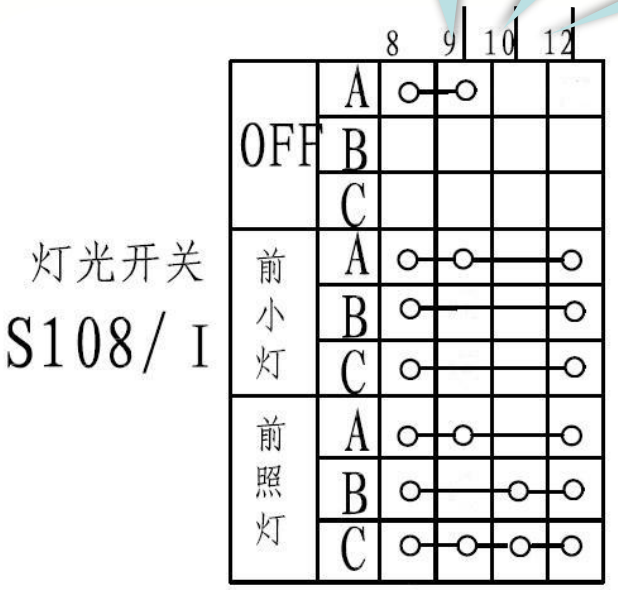
公共端搭铁
public ground terminal

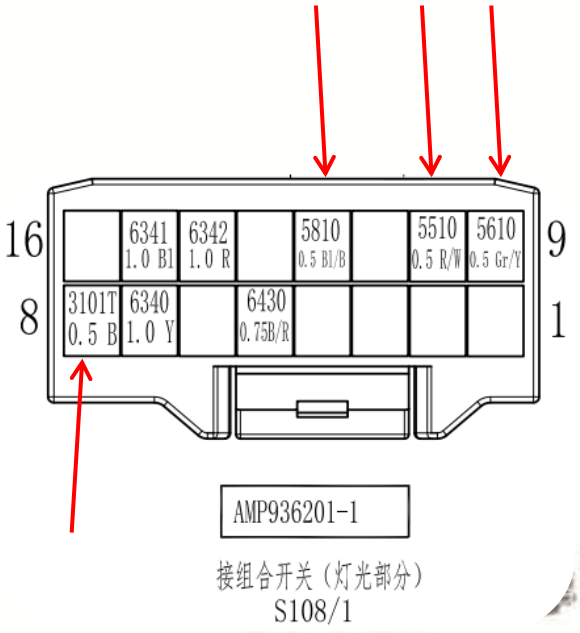


9 号端子控制远光灯继电器
Terminal 9 controls high beam relay

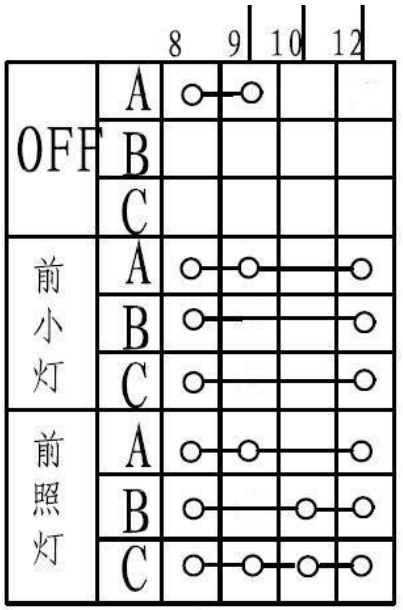
10 号端子近光灯继电器
Terminal 10 controls low beam relay

12 号端子控制小灯继电器
Terminal 12 controls small lamp relay

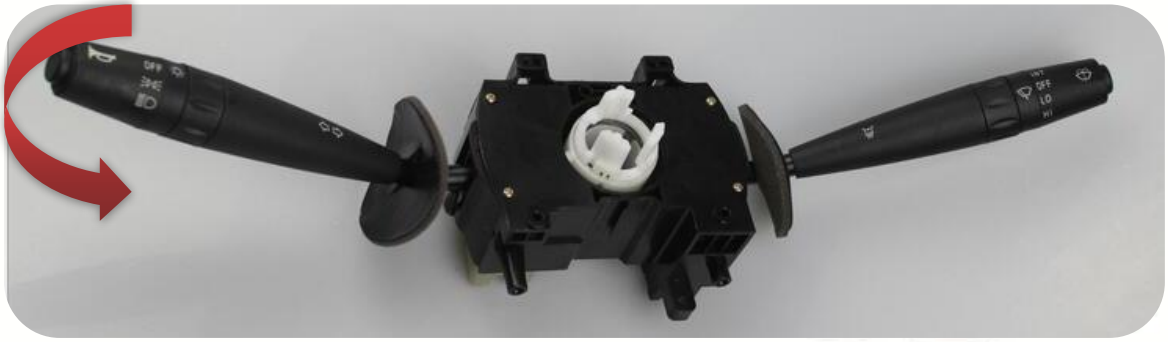




S108-1组合开关灯光控制部分，其中的OFF、前小灯、前大灯表示组合开关灯光控制部分有3个可以旋转操作的档位。
OFF档位表示关闭，
旋转操作一档是前小灯功能，
旋转操作二档是前大灯功能。



The S108-1 combination switch light control section includes three gears that can be operated in rotation:
OFF position indicates off.
Rotary operation first gear is the front light function
Rotary operation second gear is the headlight function.



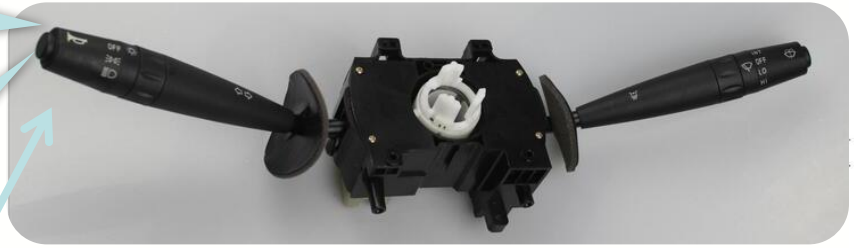
H3000车型的组合开关S108-1灯光控制前大灯手柄操作。

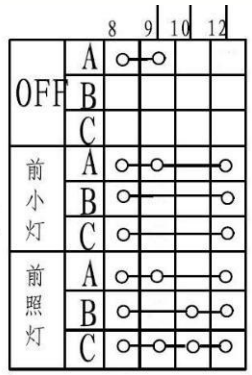
The new M3000 combination switch S108-1 controls the headlamp.

向上抬是A位置，超车灯点亮。
Lift up to position A and the overtaking lamp lights up.

手松开是B位置，近光灯点亮。
Hand release is B position,
Low beam lights up.

向下压是C位置，远光灯点亮。
Down pressure is C position,
High beam lights up.





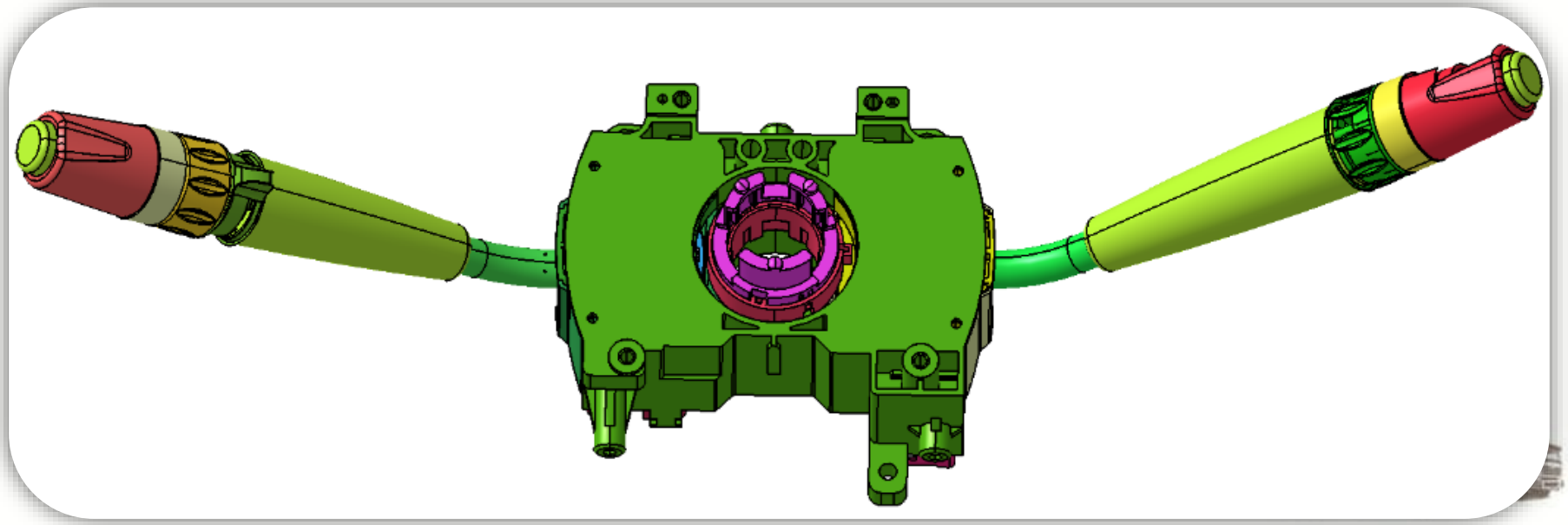
控制杆向上扳动到A位置会接通超车灯。此时组合开关的8号和9号端子相互接通。9号端子连接到了灰黄线控制远光灯继电器K121的吸合。远光灯点亮。

Turning the lever up to position A will turn on the overtaking lights. Then, the No. 8 and No. 9 terminals of the combination switch are connected to each other. The No. 9 terminal is connected to the pull-in of the high beam lamp relay K121. High beam lights up.

4，组合开关的其他电器功能。 H3000车型的组合开关还有转向灯组合开关、雨刮组合开关、排气制动开关和电喇叭按钮开关功能。

Other electrical features of the combination switch.

The new M3000 model combination switch also has turn signal switch, wiper switch, exhaust brake switch and electric horn switch function.

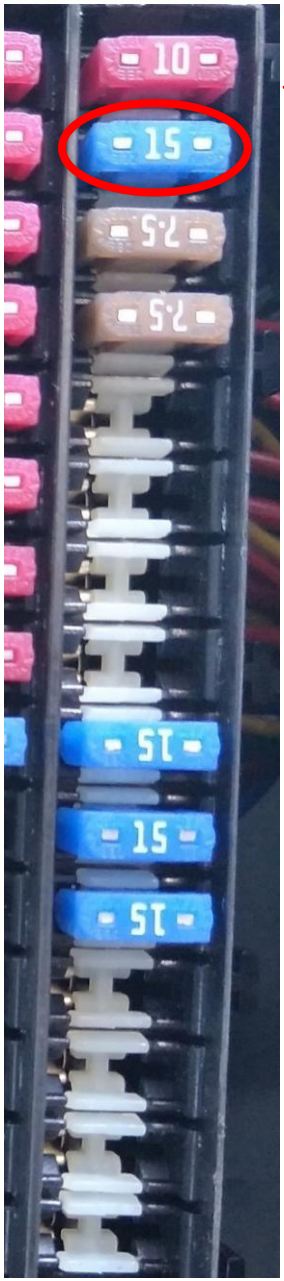


1，H3000车型转向灯电路组成：

The composition of the turn signal circuit of the new M3000 model:

转向灯系统由（第四组）2号保险丝F133、转向控制继电器K110、转向开关(组合开关)S108I、紧急闪光开关S109以及各个转向灯。

The turn signal system consists of (forth group) second fuse F133, steering control relay K110, steering switch (combination switch) S108I, emergency flash switch S109, and each turn



Ⅳ

H3000转向灯继电器
Turn signal relay for new M3000 models

Ⅳ

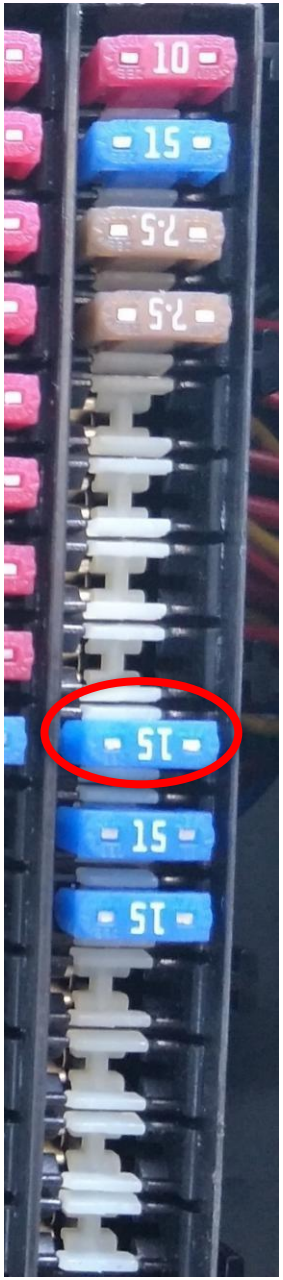
H3000左置车型的雨刮部分

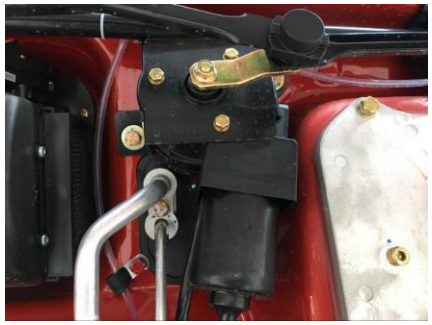
雨刮电路组成：

Wiper control circuit for new M3000 models:

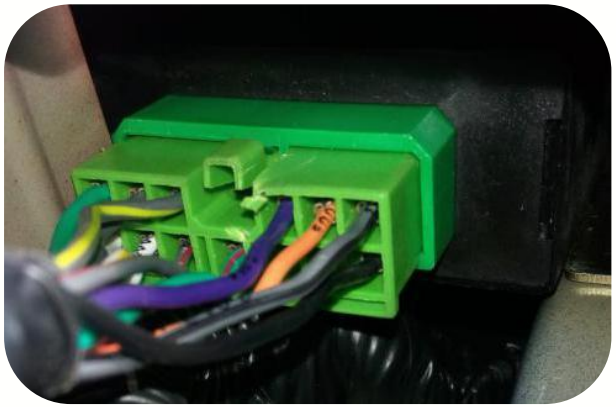
雨刮电路系统由（第四组）9号保险丝F112、雨刮控制继电器K106、雨刮器开关(组合开关)S108II、雨刮电机M2、喷淋电机M1组成。

The wiper circuit system consists of (fourth group) No. 9 fuse F112, wiper control relay K106, wiper switch (combination switch) S108II, wiper motor M2, and spray motor M1.





H3000雨刮控制继电器
Windshield wiper control relay for new M3000 models



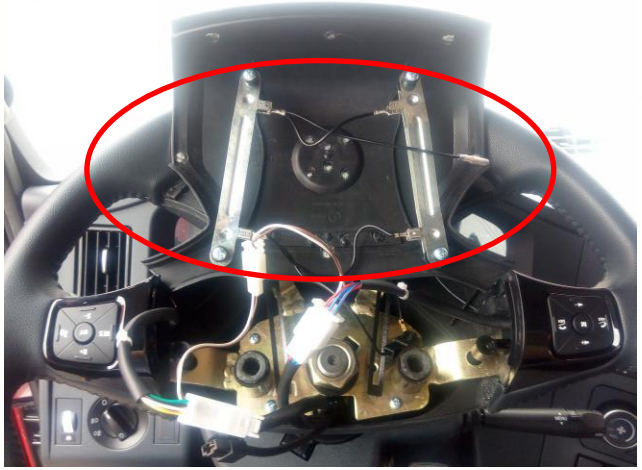
II

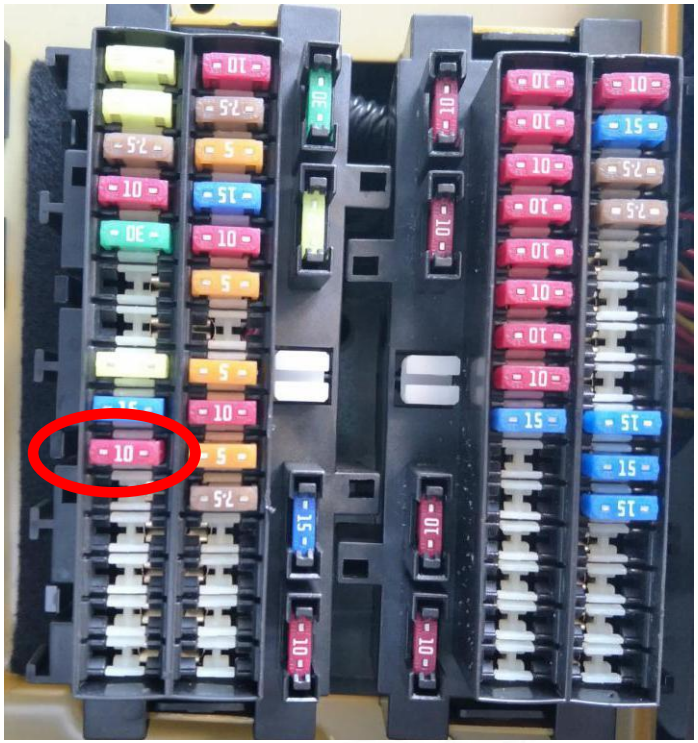
H3000车型的组合开关的排气制动功能，电路系统组成：由F108号保险丝、F110号保险丝、延时继电器K104、排气制动开关(组合开关)S108-II，离合器开关S159组成。

The new M3000 model exhaust brake function circuit consists of: F108 fuse, F110 fuse, delay relay K104, exhaust brake switch (combination switch) S108-II, clutch switch S159.

H3000车型的组合开关的电喇叭按钮开关功能，电路系统组成：由F107号保险丝、喇叭继电器K640、喇叭转换开关S226，喇叭按钮S108-1，气电喇叭Y18，电喇叭H102组成。

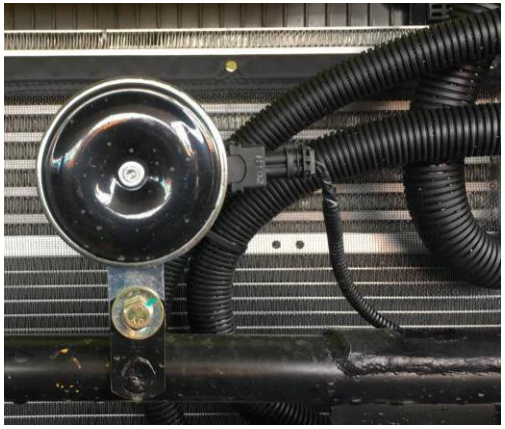
The electric horn circuit system of the new M3000 model consists of fuse F107, K640 horn relay, S226 horn change-over switch, S108-1 horn switch, Y18 electric air horn, and H102 electric horn.

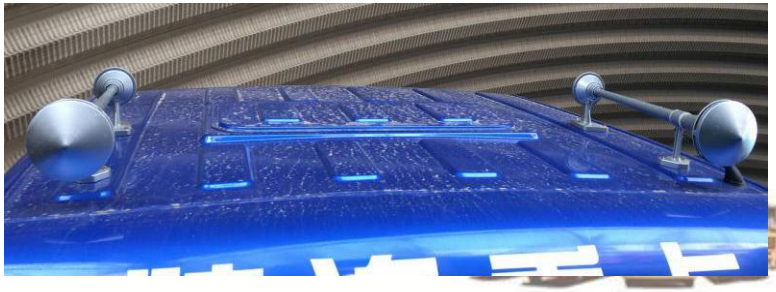




H3000车型的组合开关的气喇叭按钮开关功能，电路系统组成：由F107号保险丝、喇叭继电器K640、喇叭转换开关S226，喇叭按钮S108-1，气电喇叭Y18，电喇叭H102组成。

The air horn circuit of the new M3000 model consists of fuse F107, K640 horn relay, S226 horn change-over switch, S108-1 horn switch, Y18 electric air horn, and H102 electric horn.





3，M3000驾驶室其他翘板开关。喇叭转换开关的线束是S226，危险灯开关的线束是S109，工作灯开关的线束是S225，取力器开关的线束是S222，取力器选择开关的线束是S275。

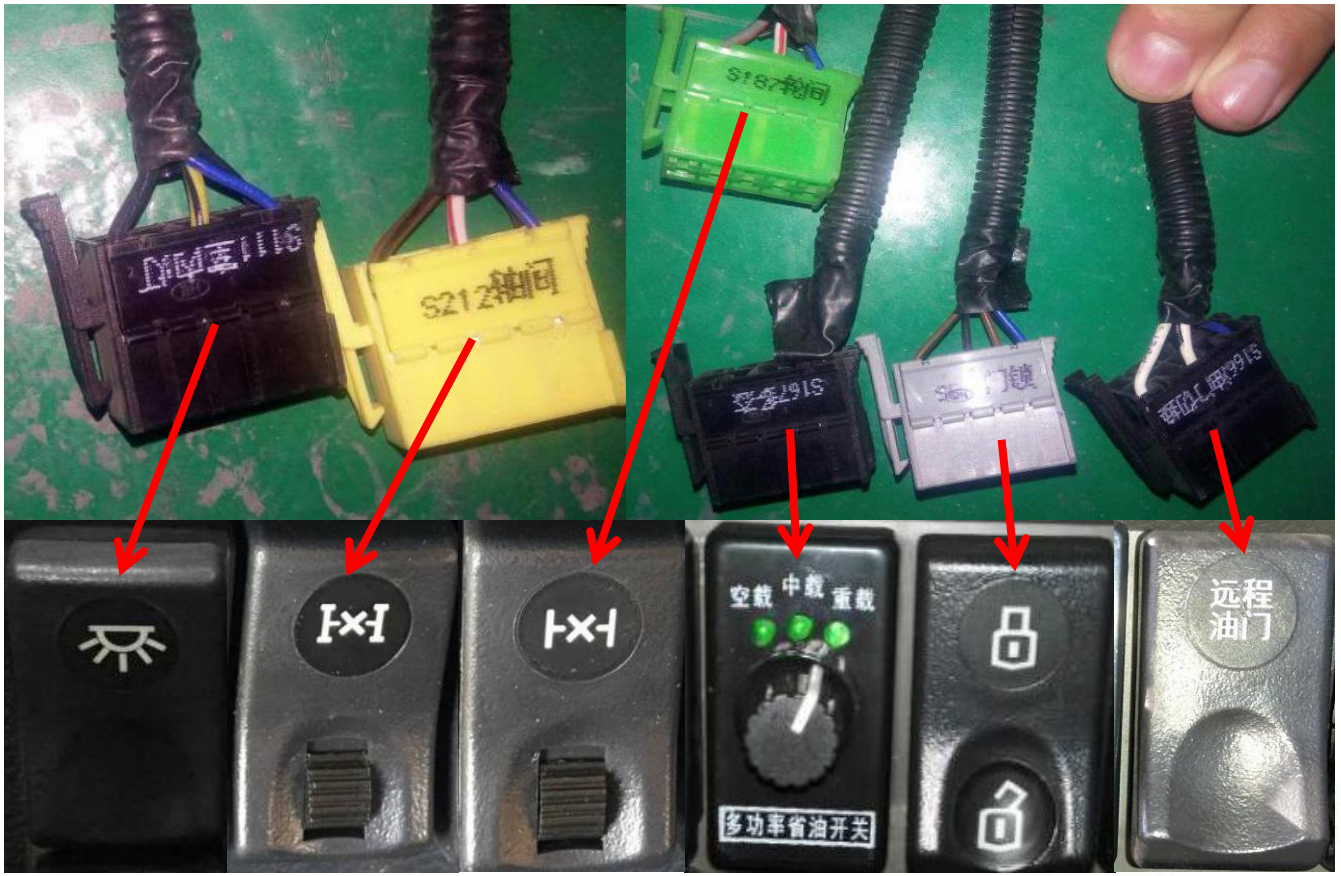
Other rocker switches in the M3000 cab： The harness of the horn change-over switch is S226, the harness of the emergency flash light switch is S109, the harness of the work light switch is S225, the harness of the power takeoff switch is S222, and the harness of the power takeoff selection switch is S275.

前雾灯开关的连接线束是S293-Ⅰ，后雾灯开关的连接线束是S293-Ⅱ灯光控制部分。

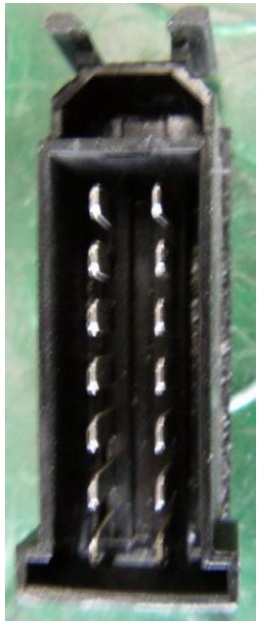
The wiring harness for the front fog lamp switch is S293-I, and for the rear fog lamp switch is the light control part of S293-II.

室内灯开关的线束是S111, 轴差开关的线束是S212，轮差开关的线束是S187，多态开关的线束是S167，中控锁开关的线束是SB01，远程油门开关的线束是S166。

The wiring harness for the indoor light switch is S111, for the axial difference switch is S212, for the wheel differential switch is S187, for the multi-state switch is S167, for the central lock-ing switch is SB01, for the remote thro-ttle switch is S166.



14线分线器：在驶室主线束上，分布着若干14线分线器，其作用是将相同功能的电线连接起来（一般来说电线编号或颜色也相同），主要用于加装附加线束时从主线束引工作电源、照明电源等功能。



14-line splitters: There are 14 wire splitters on the main harness of the drive room. The function is to connect the same function wires (generally, the wire number or color is also the same), mainly used to install the additional harness from the main harness to draw the working power, lighting power and other functions.

14线分线器：分线器起连接作用的是其附带的后盖，后盖脱落会导致其上的电线之间失去连接，所以要求用塑料紧固带将后盖捆扎到分线器上。EGR车型的14线分线器接线编号及其功能是：

14-line splitter: The splitter plays the role of the connection is its accompanying back cover, the back cover off will cause the loss of connection between the wires, so we use plastic fastening straps to bind the back cover to the splitter . The EGR model's 14-wire splitter wiring numbers and their functions are:

X362： 接BR黑红色线（4000），T15钥匙电源1。

X363： 接B黑色线（3100），负极线，搭铁线。

X364： 接BL蓝色线（5801），小灯电源线。

X362: Connect BR black red wire (4000), T15 key power supply 1.

X363: Connect B black wire (3100), negative wire, ground wire.

X364: Connect BL blue wire (5801), small lamp power wire.

第五节，驾驶室线束结构：
Section 5, cab wiring harness structure:

整车线束结构分为驾驶室线束和底盘线束。驾驶室线束总成可以连接到：左车门线束总成（包含左前大灯线束）、右车门线束总成、顶棚线束、右前大灯线束、地板线束总成等内容。

The vehicle harness is divided into a cab harness and a chassis harness. The cab wiring harness is divided into: cab harness assembly, left and right door harness assembly, ceiling harness, right headlight harness, floor harness assembly, and so on.

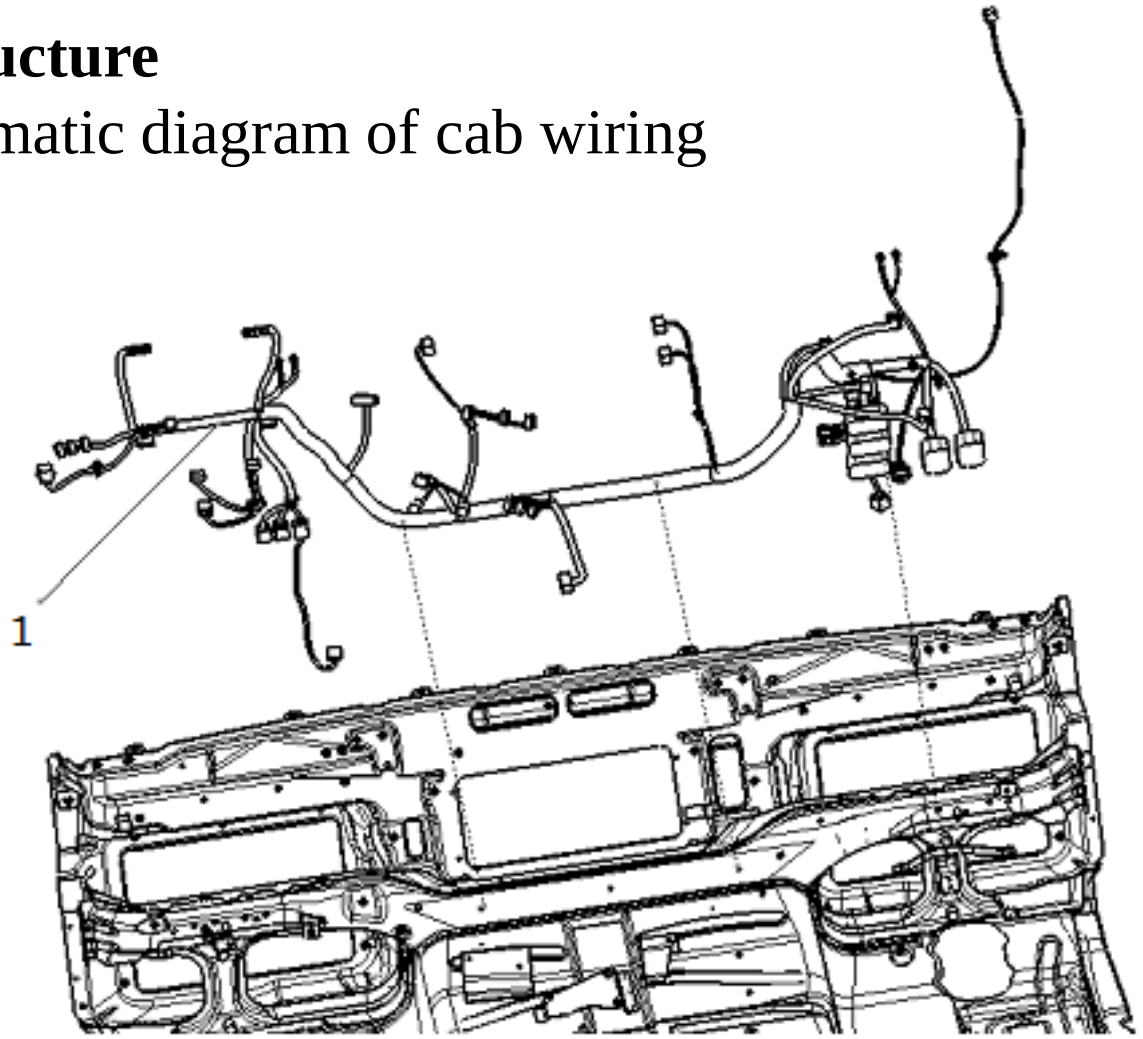
Wiring harness structure

驾驶室线束结构

DZ96189771315，驾驶室线束结构布置示意图。

Cab wiring harness structure

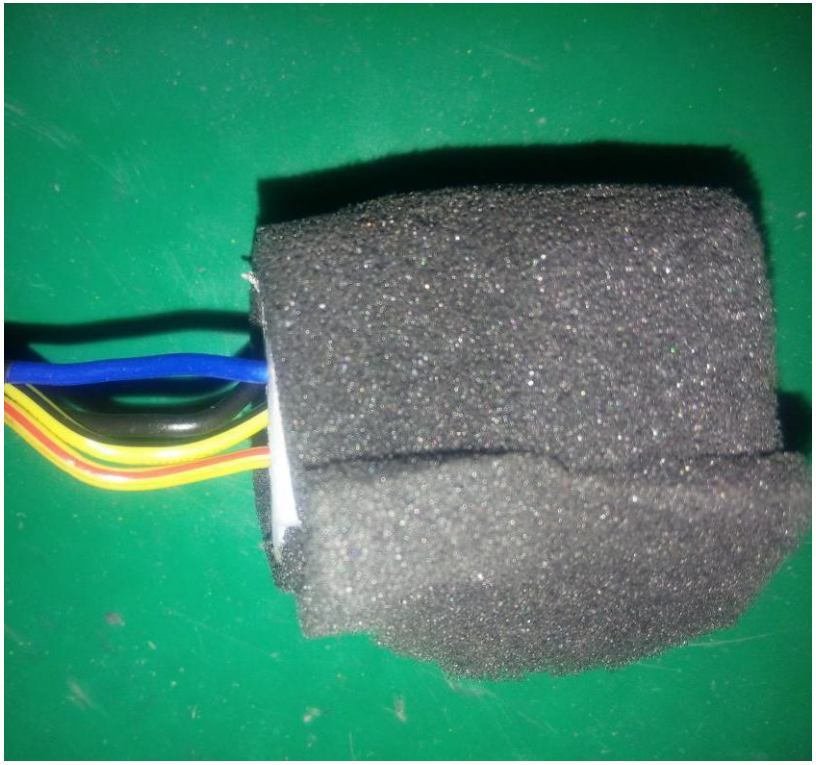
DZ96189771315, Schematic diagram of cab wiring layout.



驾驶室线束结构1
Cab wiring harness structure 1

驾驶室线束的最左端是X395插头连接的是顶棚线束插头，左部的包裹海绵条插头。

At the far left end of the cab wiring harness is the X395 plug , which is connected to the ceiling harness connector, and the left side is wrapped in the sponge plug.



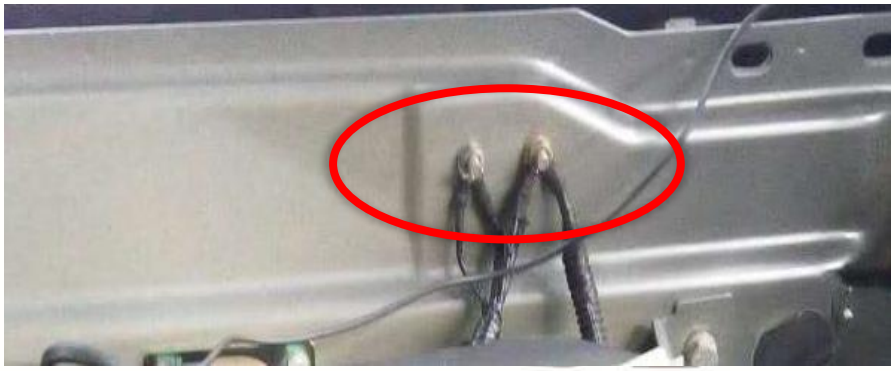
驾驶室线束结构2 Cab wiring harness structure 2

驾驶室线束的X373插头连接的是左车门线束1插头，X374插头连接的是左前大灯线束，X375插头连接的是左车门线束2插头。
The X373 plug of the cab wiring harness is connected to the left door harness 1 connector, the X374 plug is connected to the left headlamp harness, and the X375 connector is the left door harness connector 2.

驾驶室线束结构3
Cab wiring harness structure 3

驾驶室线束的X242连接的是左搭铁点，使用螺栓连接到驾驶室本体左侧。X244连接的是右搭铁点，使用螺栓连接到驾驶室本体右侧。

The X242 of the cab harness is connected to the left ground point and is bolted to the left side of the cab body. The X244 is connected to the right ground point and bolted to the right side of the cab body.



驾驶室线束结构4 Cab wiring harness structure 4

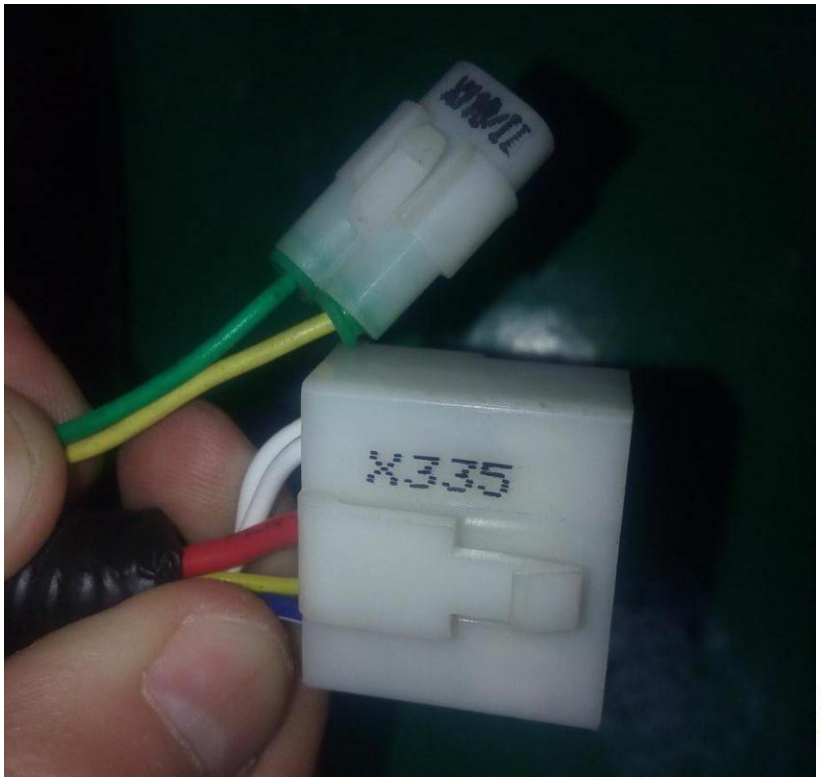
驾驶室线束的X401，X402连接的是天行健设备（选装功能），X148-1连接的是收音机电源线，X148-2连接的是收音机喇叭线。

The X401 and X402 cab wiring harnesses are connected to GPS(optional feature). X148-1 is connected to the radio power cord. X148-2 is connected to the radio speaker cable

驾驶室线束结构5 Cab wiring harness structure 5

驾驶室线束的X110-II连接的是预留CAN总线接口2，X335连接的是ABS附加线束插头，主要是ABS电源和信号线。

The X110-II cab wiring is reserved for the CAN main harness connecter 2, X335 is connected to the ABS additional wiring harness plug, mainly ABS power supply and signal lines.



驾驶室线束结构6 Cab wiring harness structure 6

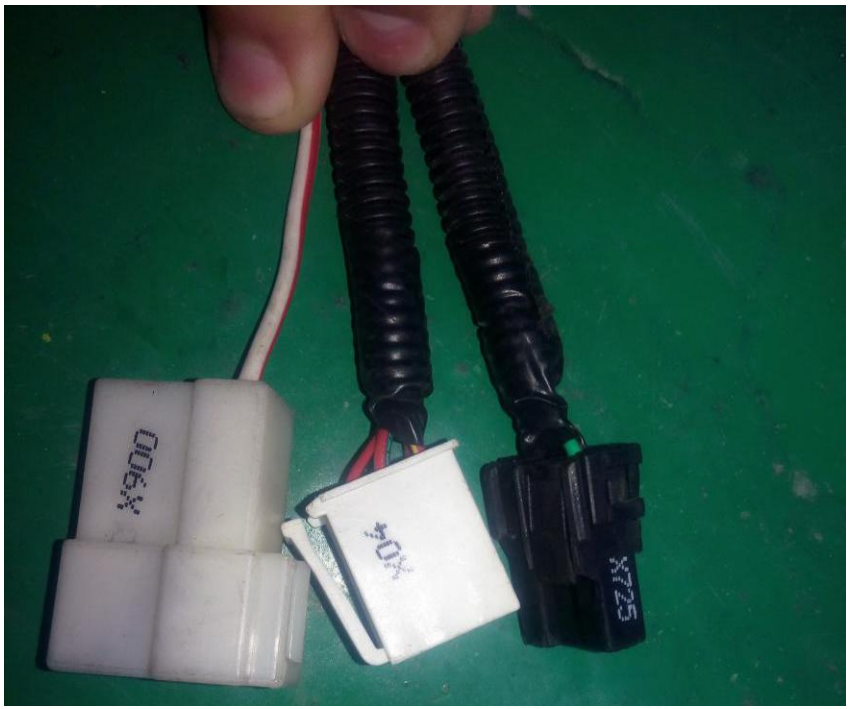
驾驶室线束的X238插头连接是发动机变速器线束，X337插头连接是发动机线束（ISM发动机配置），X316插头连接是底盘车架线束。

The X238 plug connection for the cab harness is the engine transmission harness, the X337 plug connection is the engine harness (ISM engine configuration), and the X316 plug connection is the chassis frame harness

驾驶室线束结构7　Cab wiring harness structure 7

驾驶室线束的X900插头连接的是电动泵油线束（燃油水寒宝），X04插头连接的是取力器底盘线束，X725插头连接的是喷淋水泵电机。

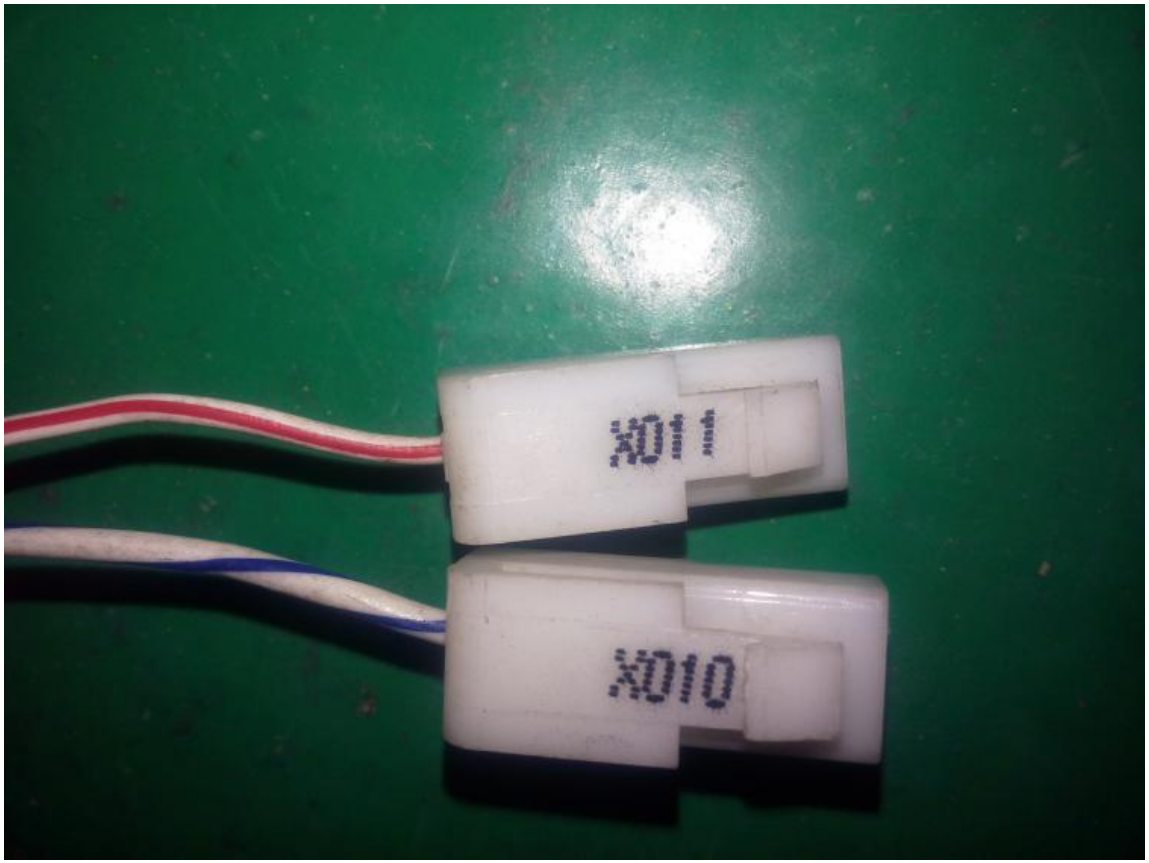
The X900 plug of the cab wiring harness is connected to the electric pump oil harness, the X04 plug is connected to the power take-off chassis harness, and the X725 plug is connected to the spray pump motor.



驾驶室线束结构8 Cab wiring harness structure 8

驾驶室线束的X010插头连接的是倒车灯信号接口，X011插头连接的是发电机D+信号接口。

The X010 plug of the cab harness is connected to the reversing lamp signal connector, and the X011 plug is connected to the generator D+ signal connector.



驾驶室线束结构9 Cab wiring harness structure 9

驾驶室线束的X392插头连接的是右前大灯线束，X2插头连接的是前轴制动磨损报警线束，X01插头连接的是工作灯线束。

The X392 plug of the cab wiring harness is connected to the right headlamp harness. The X2 plug is connected to the front axle brake wear alarm harness. The X01 plug is connected to the work light harness.

驾驶室线束结构10 Cab wiring harness structure 10

驾驶室线束的X372插头连接的是右车门线束，X336插头连接的是ABS挂车附加线束，X110-III连接的是预留CAN总线接口3。

The X372 plug of the cab harness is connected to the right door harness, the X336 plug is connected to the ABS trailer additional harness, and the X110-III is connected to the reserved CAN main harness connecter 3.

驾驶室线束结构11 Cab wiring harness structure 11

驾驶室线束的X205插头连接的是故障诊断接口。

The X205 connector of the cab harness is connected to the diagnostic interface.

驾驶室线束结构12 Cab wiring harness structure 12

驾驶室线束的R108插头连接的是点烟器，X751插头连接的是24伏电源插头（第2个点烟器）。

The R108 plug of the cab wiring harness is connected to the cigarette lighter, and the X751 plug is connected to the 24 volt power plug (the second cigarette lighter).

驾驶室线束结构13 Cab wiring harness structure 13

驾驶室线束的A104插头连接的是右车门线束，X1132插头连接的是空调控制器。

The A104 plug of the cab wiring harness is connected to the right door harness, and the X1132 plug is connected to the air conditioning controller.

驾驶室线束结构14　Cab wiring harness structure 14

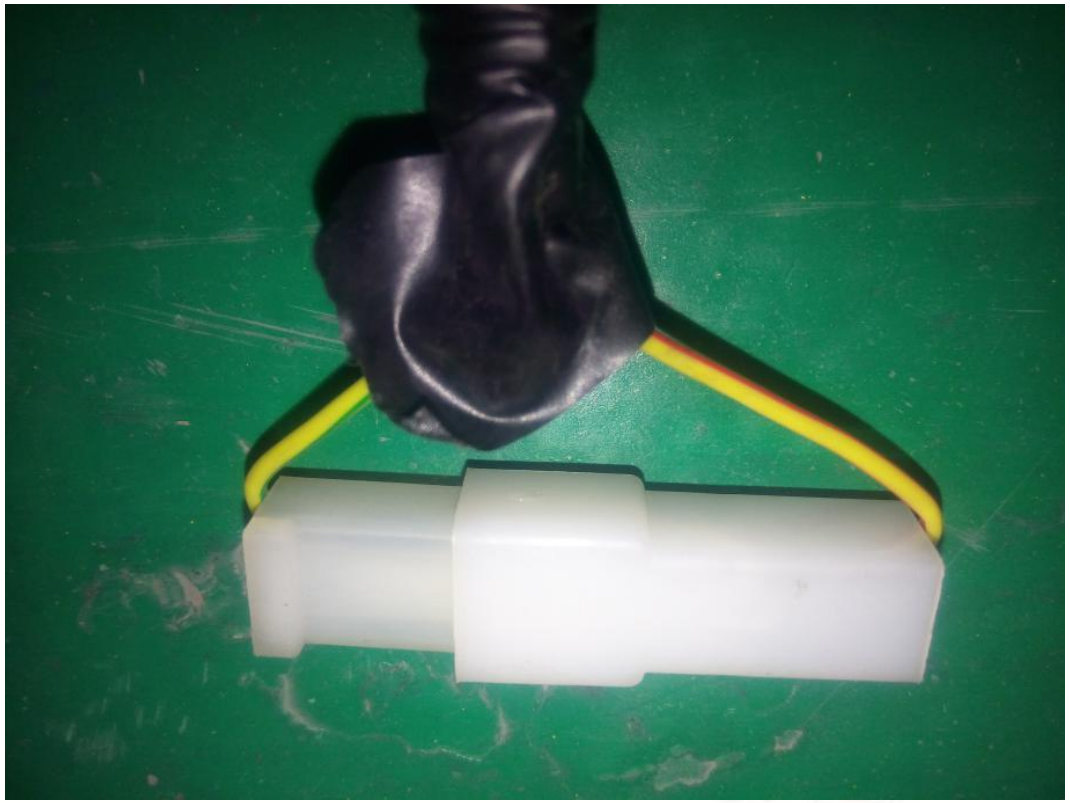
驾驶室线束的Y299插头连接的是气喇叭电磁阀线束。

The Y299 plug of the cab wiring harness is connected to the air horn solenoid valve harness.

驾驶室线束结构15 Cab wiring harness structure 15

驾驶室线束的黄绿线、黄红线单线插头互相对插，连接的是油量传感器信号。

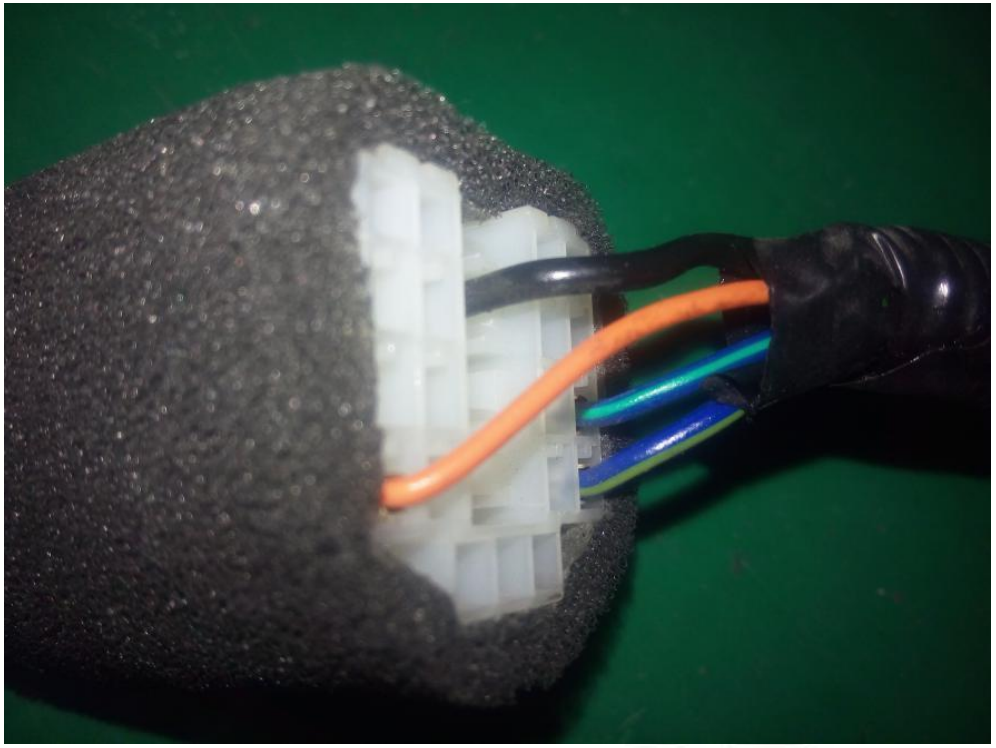
The yellow-green and yellow-red wires of the cab wiring harness are plugged into each other, then the fuel sensor signal is connected.



驾驶室线束结构16 Cab wiring harness structure 16

驾驶室线束的X430插头连接的是底板线束插头，右部的包裹海绵条插头。

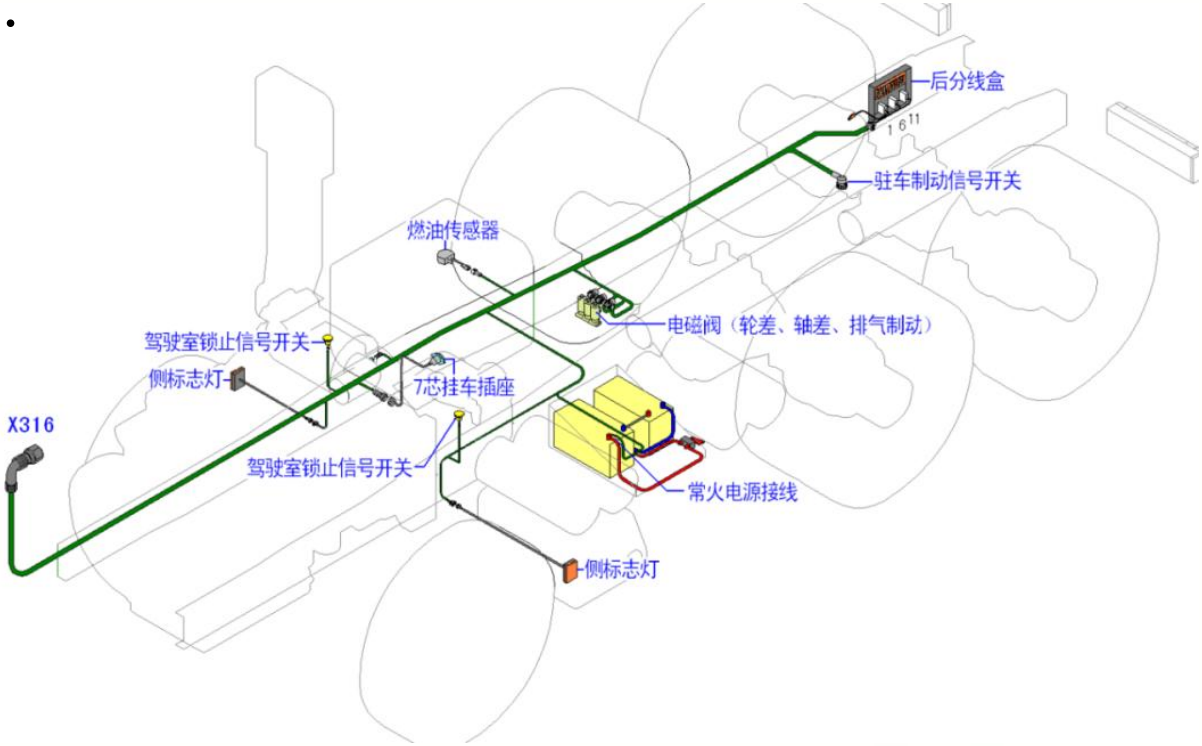
The X430 plug of the cab harness is connected to the backplane harness connector and the right side is wrapped around the sponge plug.



第六节　　底盘线束结构
Section 6　Chassis Harness Structure

底盘线束分为：车架线束总成、发动机线束总成、起动机线束总成、尾部线束（尾灯线、轮轴差线等）。

Chassis wiring harness is divided into: frame harness assembly, engine wiring harness assembly, starter harness assembly, tail harness (taillight line, axle differential, etc.).



底盘线束结构1 Chassis wiring harness structure 1

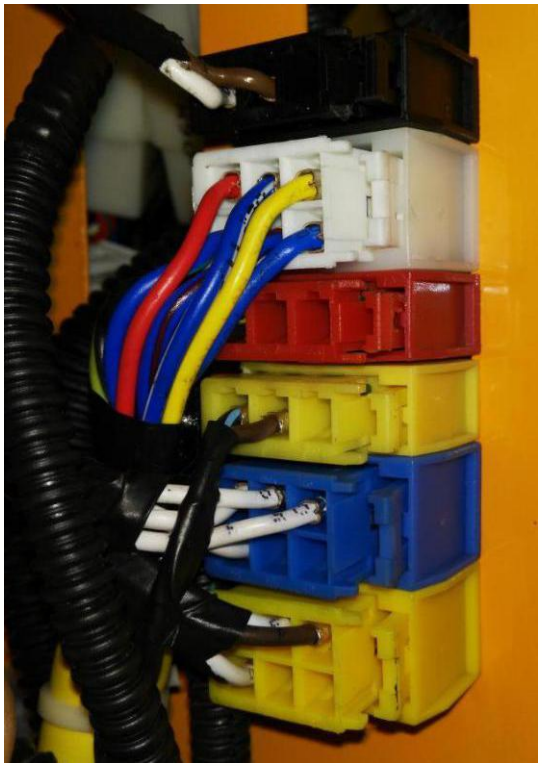
驾驶室线束和底盘线束的对接通过X238，X316圆形插接器连接。

The cab wiring harness and the chassis harness is connected via X238, X316 circular connectors.

底盘线束线束结构2　Chassis wiring harness structure 2

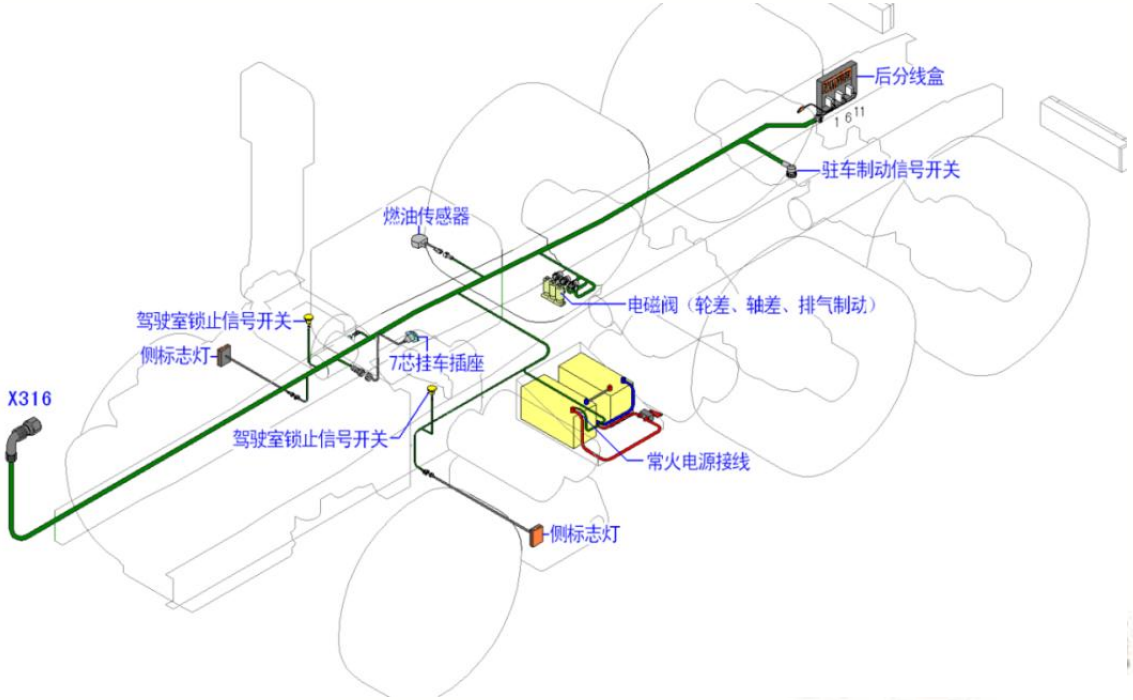
驾驶室线束和底盘线束还通过底盘线束分线盒里面的方形插接器连接。

The cab harness and chassis harness are also connected through a few of square connectors in the chassis harness box.



车架线束3:又称底盘线束，主要功能是向底盘输出，尾灯信号，电磁阀控制信号，给驾驶室输入常火电源、驾驶室锁止信号，燃油油量信号，轮、轴差（锁止）信号。

Frame harness 3: also known as the chassis harness, the main function is to the chassis output, taillight signal, solenoid valve control signal, to the cab input constant fire power, cab lock signal, fuel oil signal, wheel, axle difference (lock) signal.

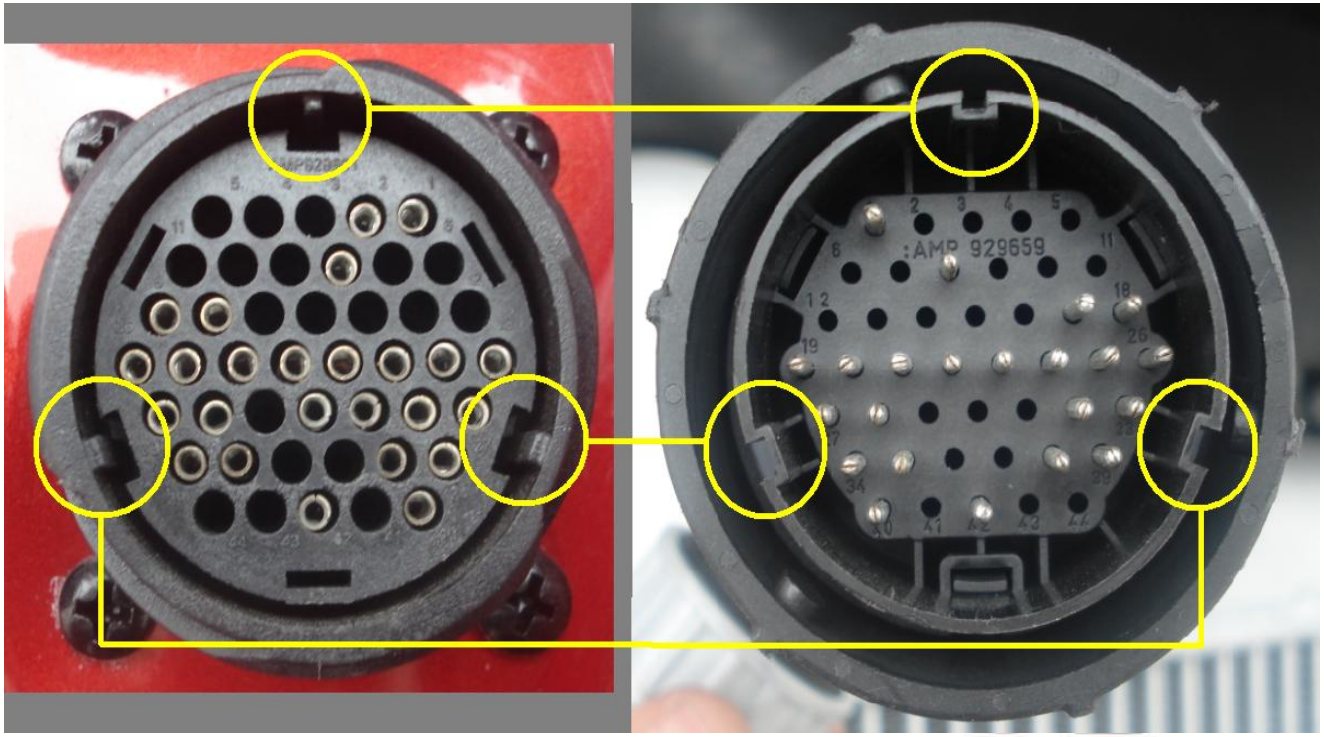


车架线束4： 前端为44孔插接器X316，与驾驶室前端的驾驶室与底盘接口对接见图。

Frame harness 4: The front is a 44-pin connector X316, mated with the cab and chassis interface at the front of the cab.

X316插接时注意对准插头和插座的定位标记，将插接器上的锁紧螺帽锁紧后会感到锁紧螺帽轻跳一下并发出“嗒”的一声脆响，表明插接器已经插紧。

When inserting the X316, pay attention to aligning the positioning marks of the plug and the socket. After locking the locking nut on the connector, you will feel that the locking nut jumps lightly and a “beep” sounds, indicating the connector has been inserted tightly.

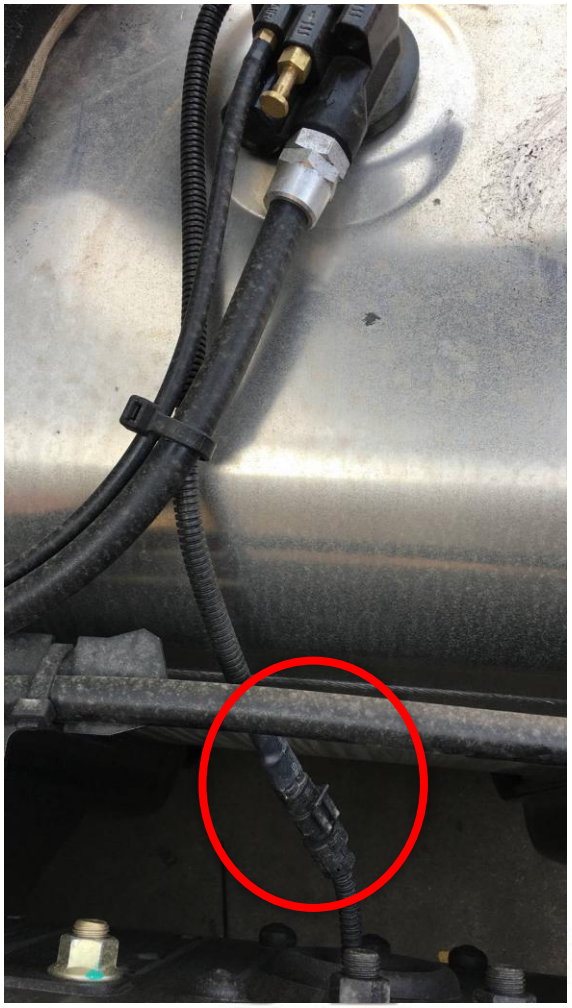


车架线束5：线束的主干沿车架右纵梁敷设，向后依次接有侧标志灯，驾驶室锁止信号开关。

Frame harness 5: The main trunk of the harness is laid along the right longitudinal beam of the frame, and the side marker lamp is connected to the rear and then connected to the cab lock signal switch.

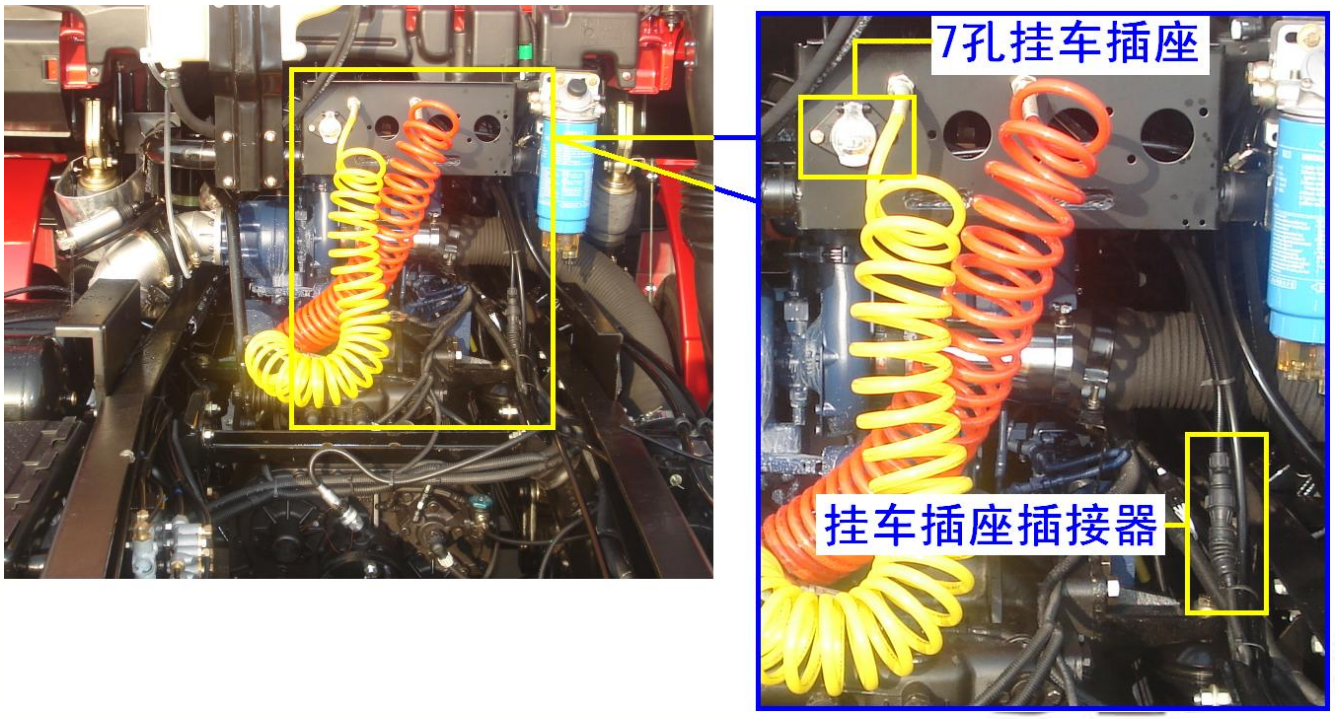
车架线束6： 车架线束继续向后是燃油传感器线束。

Frame harness 6: The frame harness continues to be the fuel sensor harness.



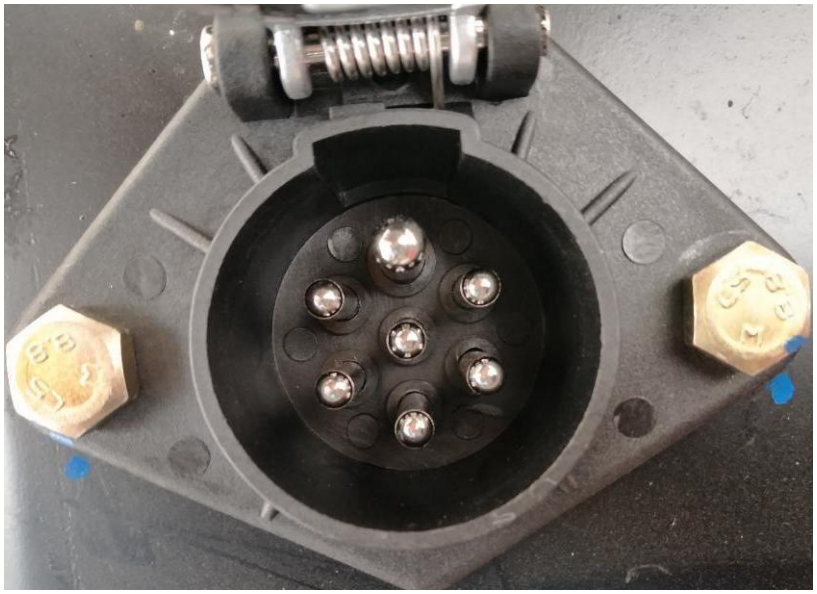
车架线束7： 车架线束继续向后是7孔挂车插座插接器，牵引车需安装7孔挂车插座。

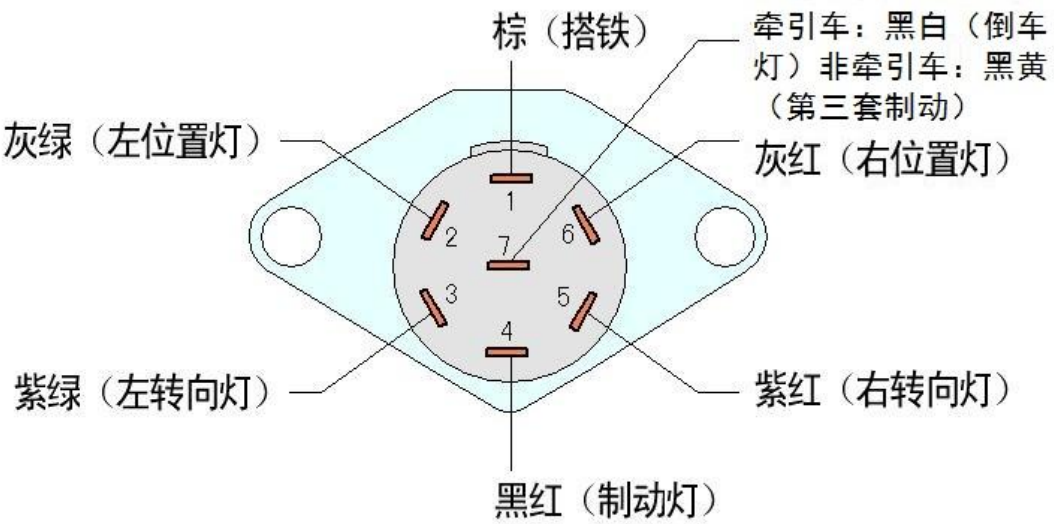
Frame harness 7: The frame harness continues with the rearward 7-hole trailer socket connector, and the tractor must have a 7-hole trailer socket.



挂车插座线束：用于M3000牵引车，直接从驾驶室引出挂车信号，将左、右位置灯、左、右转向灯、制动灯、倒车灯信号引到挂车上。其挂车插座接线，1号接棕色线，2号接灰绿线，3号接紫绿线，4号接黑红线，5号接紫红线，6号接灰红线，7号接黑白线。

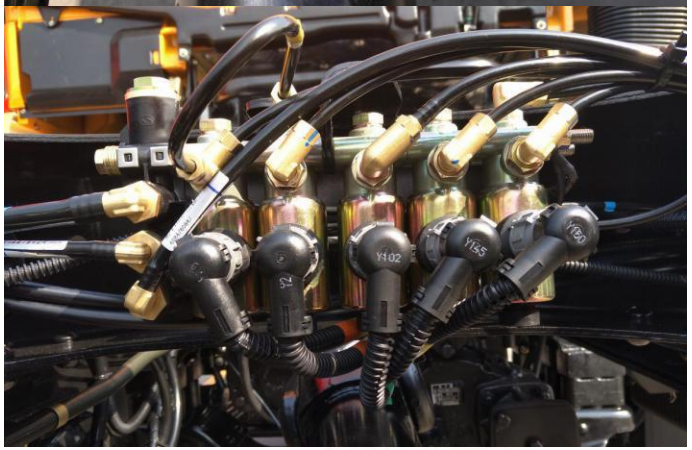
Trailer socket wiring harness: used for M3000 tractors, leads the trailer signal directly from the cab, and guides the left and right position lights, left and right turn signals, brake lights and reversing light signals to the trailer. Its trailer socket connection: No. 1 is connected to the brown line, No. 2 to the gray-green line, No. 3 to the purple green line, No. 4 to the black-red line, No. 5 to the red-violet line, No. 6 to the gray-red line, and No. 7 to the black-and-white line.





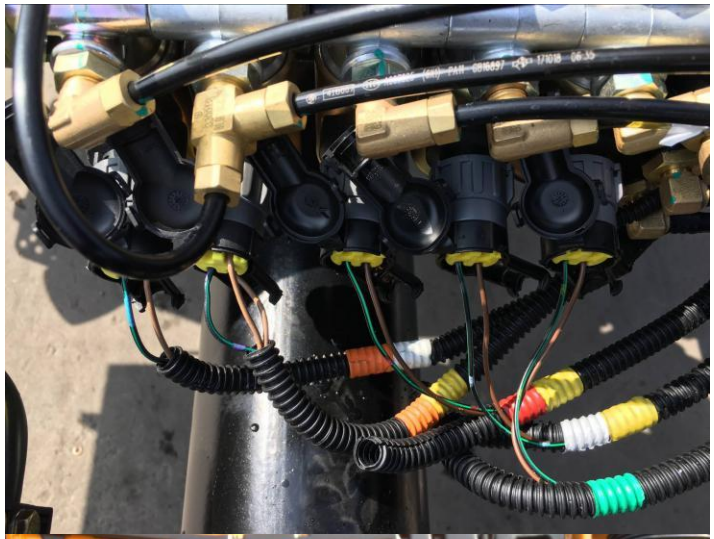
车架线束8：底盘线束继续向后敷设，在变速箱后的横梁处与电磁阀对接，各电磁阀线束上的色标，与气管色标对应关系为：
气管黄红色标—轮差电磁阀（Y145）—黑绿红/棕线束
气管黄白色标—轴差电磁阀（Y150）—黑绿黄/棕线束

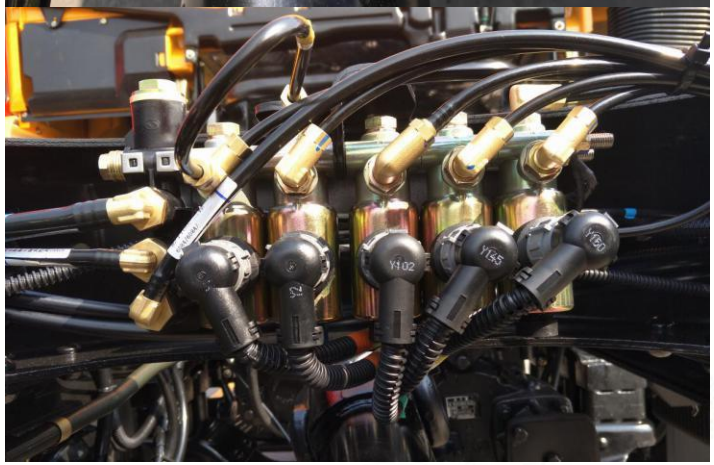
The frame wire harness 8: The chassis harness is continuously laid back, and is connected with the electromagnetic valve at the crossbeam behind the gearbox. The correspondence between the color mark on the solenoid valve harness and the tracheal color code is:
Trachea yellow red standard - wheel differential solenoid valve (Y145) - black green red / brown wire harness
Trachea yellow-white axis solenoid valve (Y150) - black green yellow / brown wire harness



气管绿色标—排气制动电磁阀（Y102）—黑绿白/棕线束
气管白橙色标—取力器空档电磁阀（Y1）—黑绿/棕
气管黄橙色标—取力器电磁阀（Y2）—黑绿紫/棕线（取力器线束）

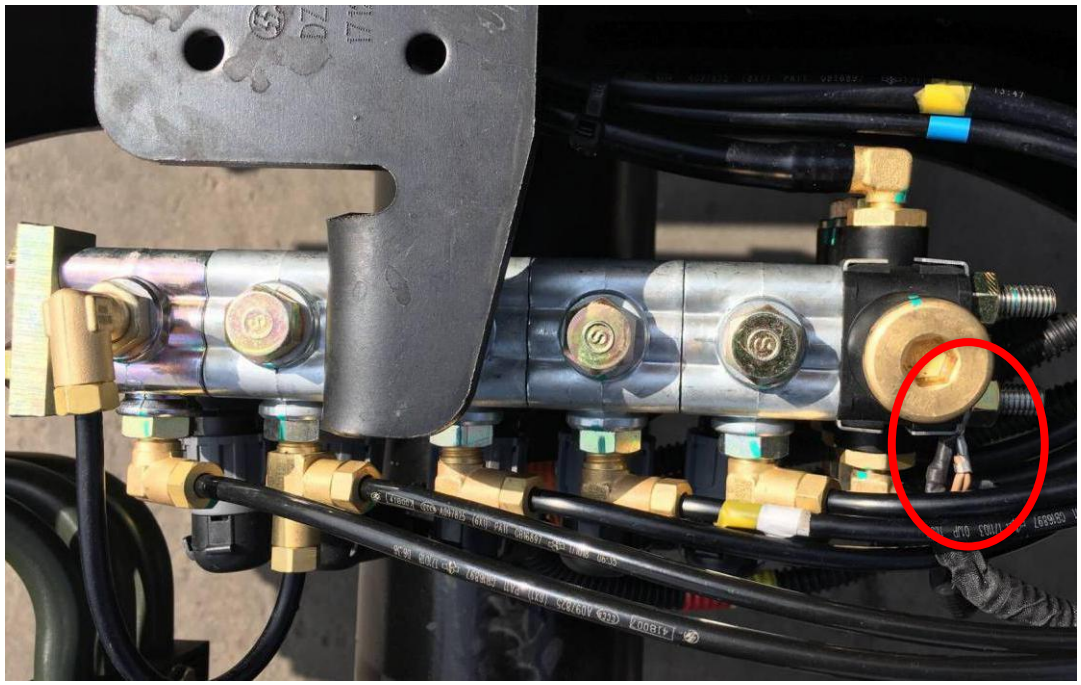
Trachea green standard - exhaust brake solenoid valve (Y102) - black green white / brown wire harness
White orange tube - PTO neutral solenoid valve (Y1) - black green/brown
Trachea yellow orange standard - power take-off solenoid valve (Y2) - black green purple/brown wire (power take-off harness)

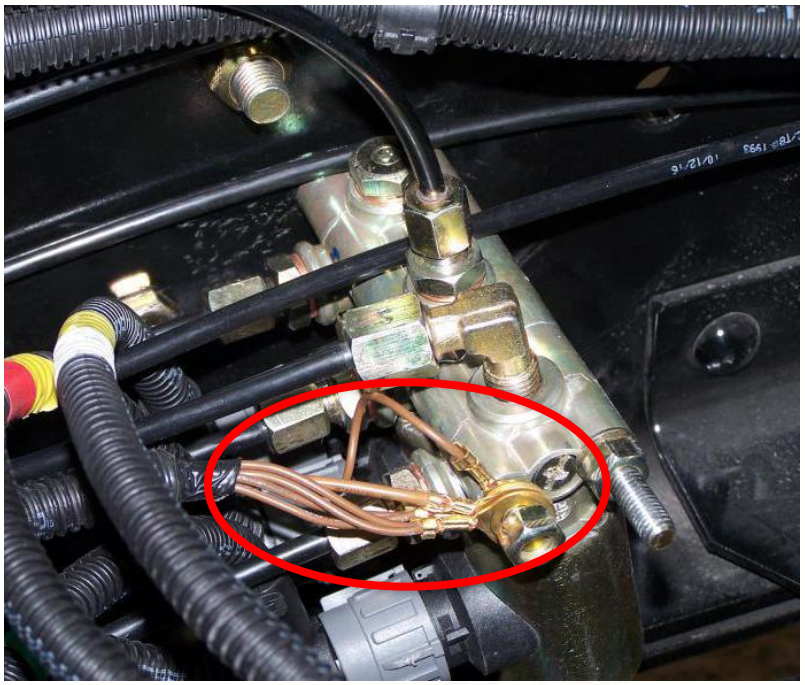




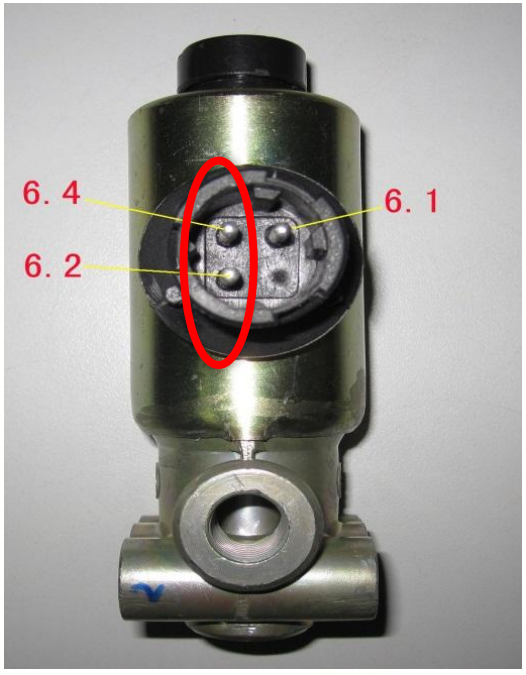
底盘线束在电磁阀侧面的搭铁点，其连接的棕色线多是电磁阀的负极线。（有些车型的电磁阀搭铁线连接到变速器搭铁点）

The grounding point of the chassis harness on the side of the solenoid valve. The brown wire connected to the chassis is mostly the negative pole of the solenoid valve. (Some models the negative pole of the solenoid valve was connected to the transmission ground point)





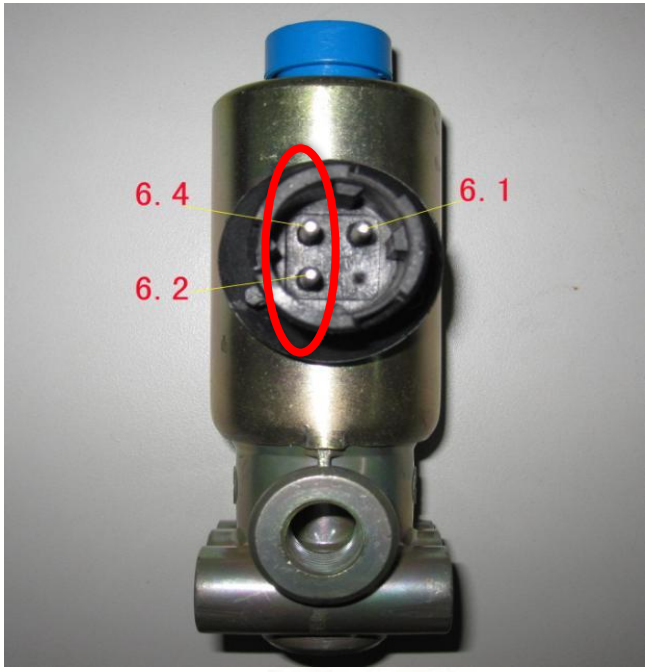
车架线束9：常断式电磁阀（81.52160.6115）：通电时气路连通，断电时气路切断，接线方式6.1端和6.2端通电，其中图中6.1为控制线圈一端，6.2和6.4端子是电路直接连通的，共同接控制线圈另一端。外部特征为排气消声帽为黑色。主要用于德龙车型轮差、轴差、排气制动、取力器控制。



Frame Harness 9: Normally-off solenoid valve (81.52160.6115): The air path is connected when the power is turned on, the air path is cut off when the power is turned off, and the wiring mode 6.1 and 6.2 terminals are energized, in which 6.1 is the control coil end, 6.2 and 6.4 Terminals are directly connected to the circuit and commonly connected to the other end of the control coil. External features are the exhaust muffler caps are black. It is mainly used for wheel differential, exhaust brake and power take-off control.

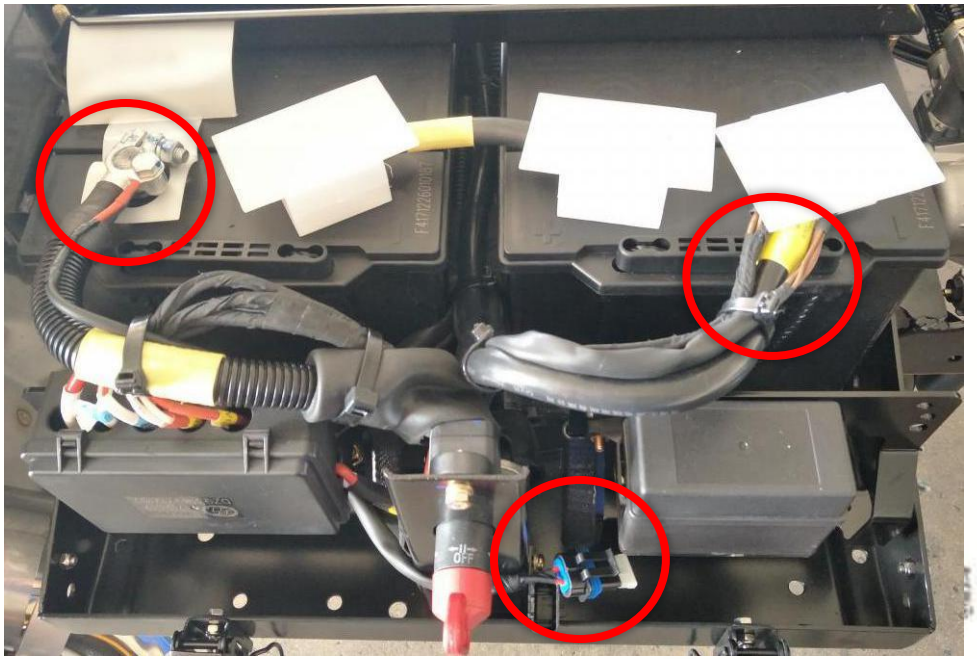
车架线束9：常通式电磁阀DZ9100916009如图所示，断电时气路连通，通电时气路不连通，接线方式6.1端和6.2端通电，其中图中6.1为控制线圈一端，6.2和6.4端子是电路直接连通的，共同接控制线圈另一端。其外部特征为排气消声帽颜色为蓝色。主要用于德龙自卸车取力器工作模式选择。

Frame harness 9: Normally-on solenoid valve **DZ9100916009** As shown in the figure, when the power is disconnected, the air path is connected, and the air path is not connected when the power is turned on. The wiring mode is 6.1 and 6.2 terminals are energized, in which 6.1 is the control coil end, 6.2 and The 6.4 terminals are directly connected to the circuit and commonly connected to the other end of the control coil. Its external feature is the color of exhaust muffler cap is blue. Mainly used in PTO work mode selection.



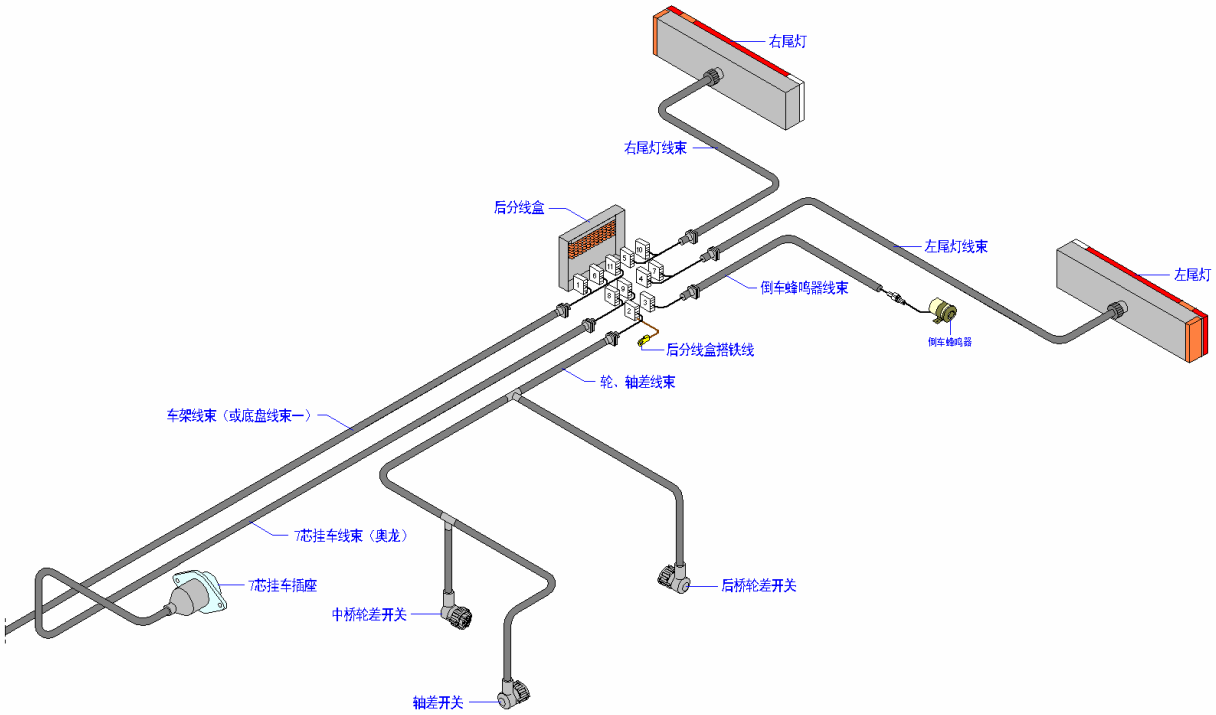
车架线束10：底盘线束继续向后敷设，在电瓶箱处的电瓶正极线，负极线，和10A常通电保险丝线束。

Frame harness 10: The chassis harness continues to be laid back, the battery positive line at the battery box, the negative line, and the 10A normally-lived fuse harness.



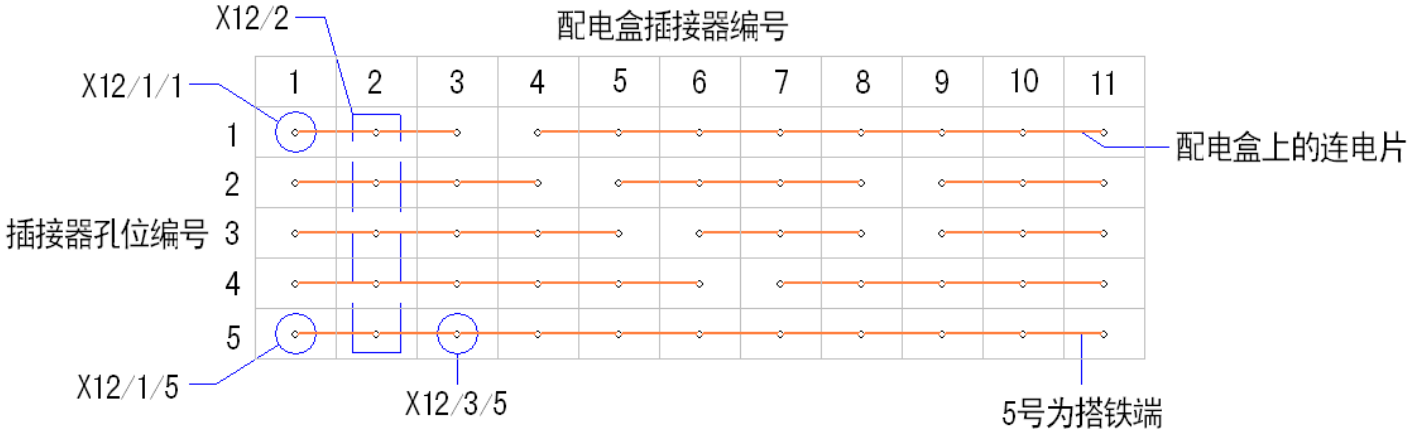
车架线束11：底盘线束继续向后敷设，在车架尾部有后分线盒，左右尾灯插接器，差速器信号开关插接器，和倒车蜂鸣器线束。（注意：有的车型取消了后分线盒。）

Frame harness 11: The chassis harness continues to be laid rearward. There is a rear junction box at the rear of the frame, a left and right tail light connector, a differential signal switch connector, and a reverse buzzer harness. (Note: Some models have eliminated the rear junction box.)



车架线束12：后分线盒内配电盒结构：打开后分线盒盖，可以看见里面的配电盒，配电盒在原理图中编号是X12，在其上方有数字标识，指的插接器的编号，如图中2号位置对应的插接器原理图编号为X12/2。每个插接器有5个孔位，自上而下为1～5号孔位，

Frame harness 12: Rear distribution box structure: After opening the distribution box cover, you can see the inside, the distribution box is numbered X12 in the schematic diagram, there is a digital identification on the top, refers to the plug. The serial number of the connector, such as the connector diagram number corresponding to position 2 in the figure, is X12/2. Each connector has 5 holes, and holes 1 to 5 from top to bottom.



后分线盒内配电盒结构如图：

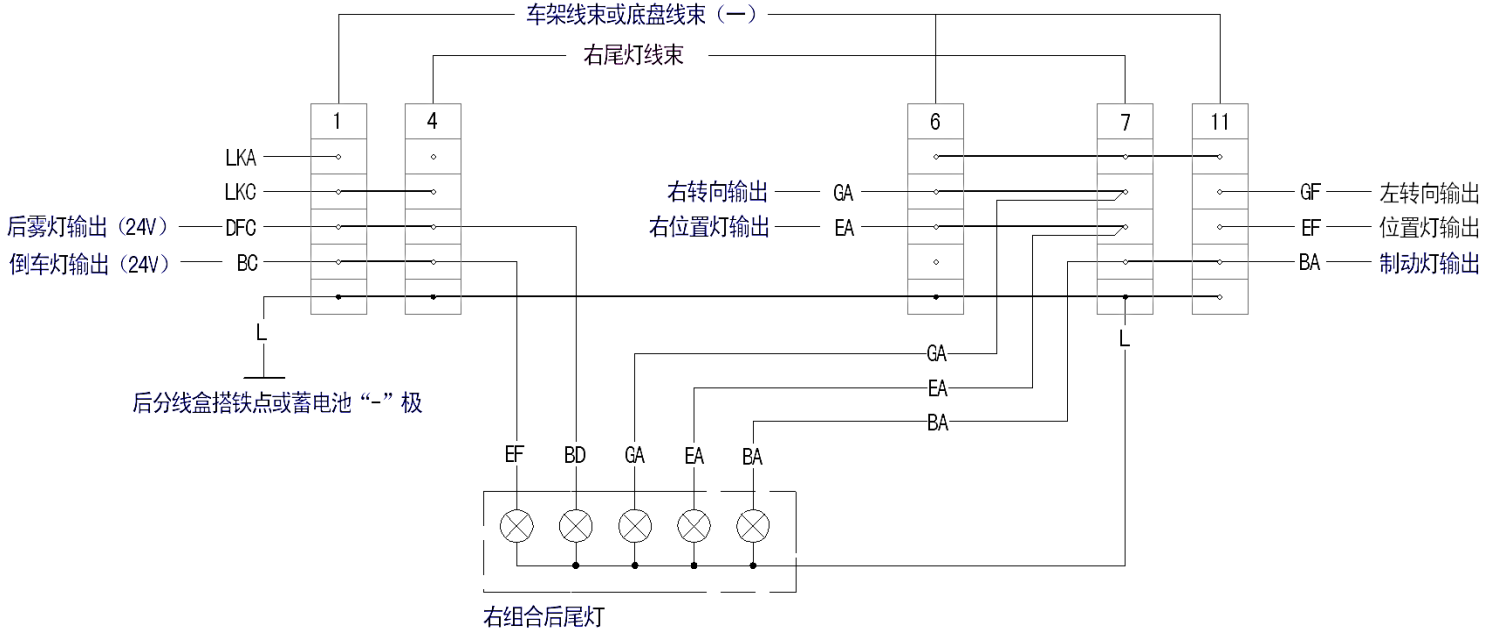
Rear distribution box structure shown in Figure:

车架线束13：后分线盒的接线输入端：

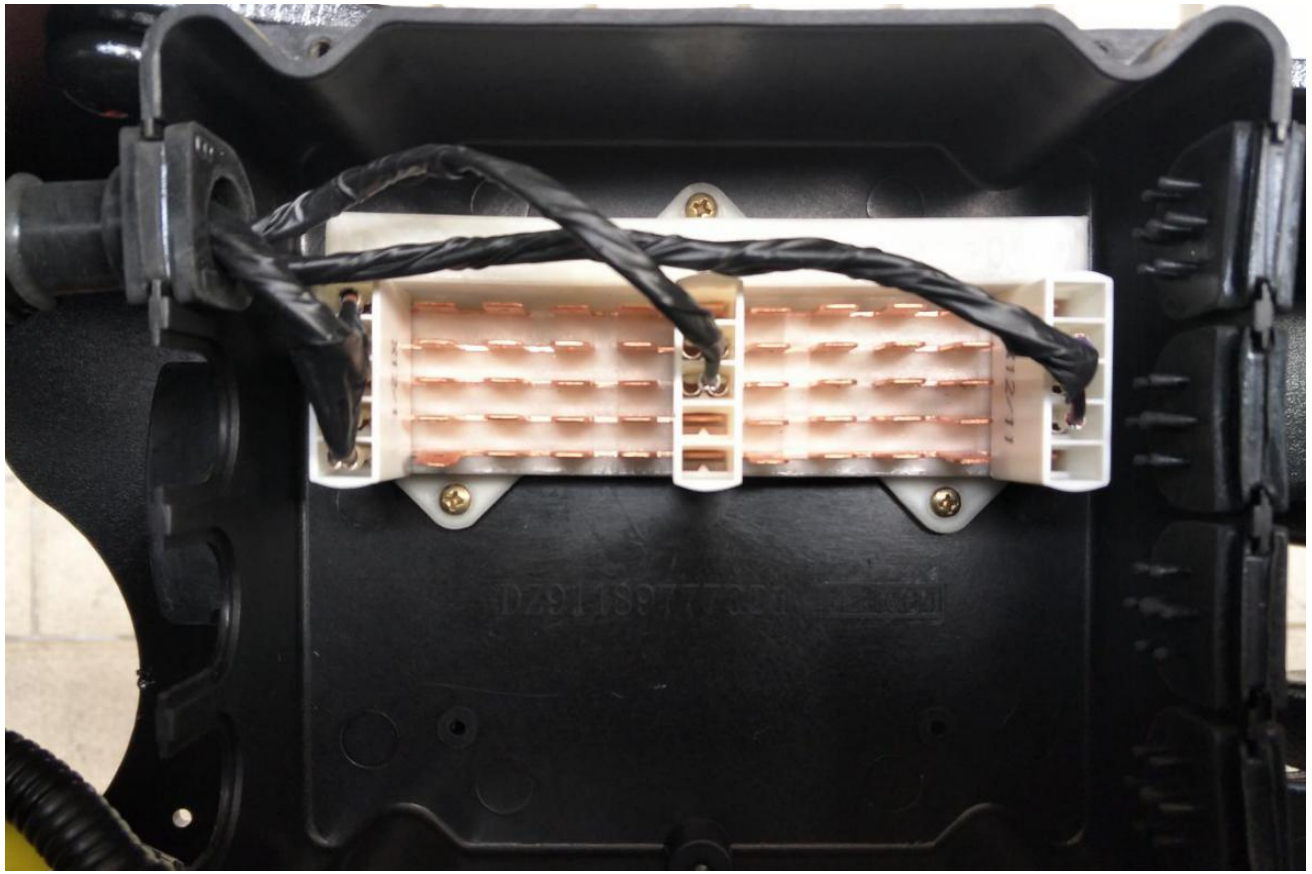
输入端接后分线盒内配电盒（以下简称后分线盒）的1、6、11孔位，各插接器功能如下：1号插接器：接线为棕蓝红（轮差锁止信号）、棕蓝白（轴差锁止信号）、黄绿白（后雾灯输出）、黑白（倒车灯输出）、棕（搭铁）。

Frame harness 13: Wiring input terminal for rear splitter box:

Inputs are connected to the 1, 6, and 11 holes in the splitter box, the function of each connector is as follows: Connector No. 1: The connection is brown-blue red (wheel differential lock signal), brown blue (axle differential lock signal), yellow green (rear fog lamp output), black and white (reverse lamp output), brown (ground point).



车架线束13：后分线盒的接线输入端：
Frame harness 13: Wiring input terminal for rear splitter box:



车架线束14：后分线盒的接线输入端：

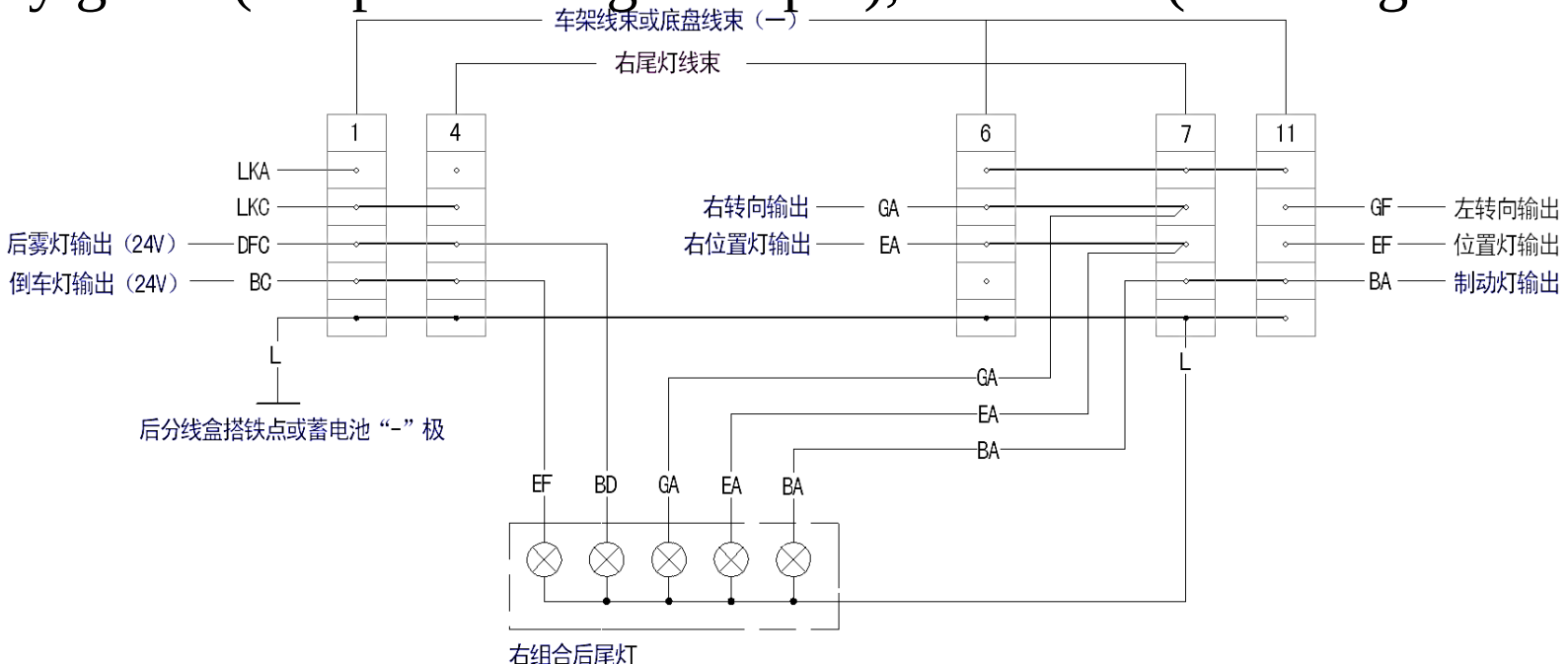
6号插接器：接线为紫红（右转向灯输出）、灰红（右位置灯输出）。

11号插接器：接线为紫绿（左转向灯输出）、灰绿（左位置灯输出）、黑红（制动灯输出）。

Frame harness 14: Wiring input terminal of rear splitter box:

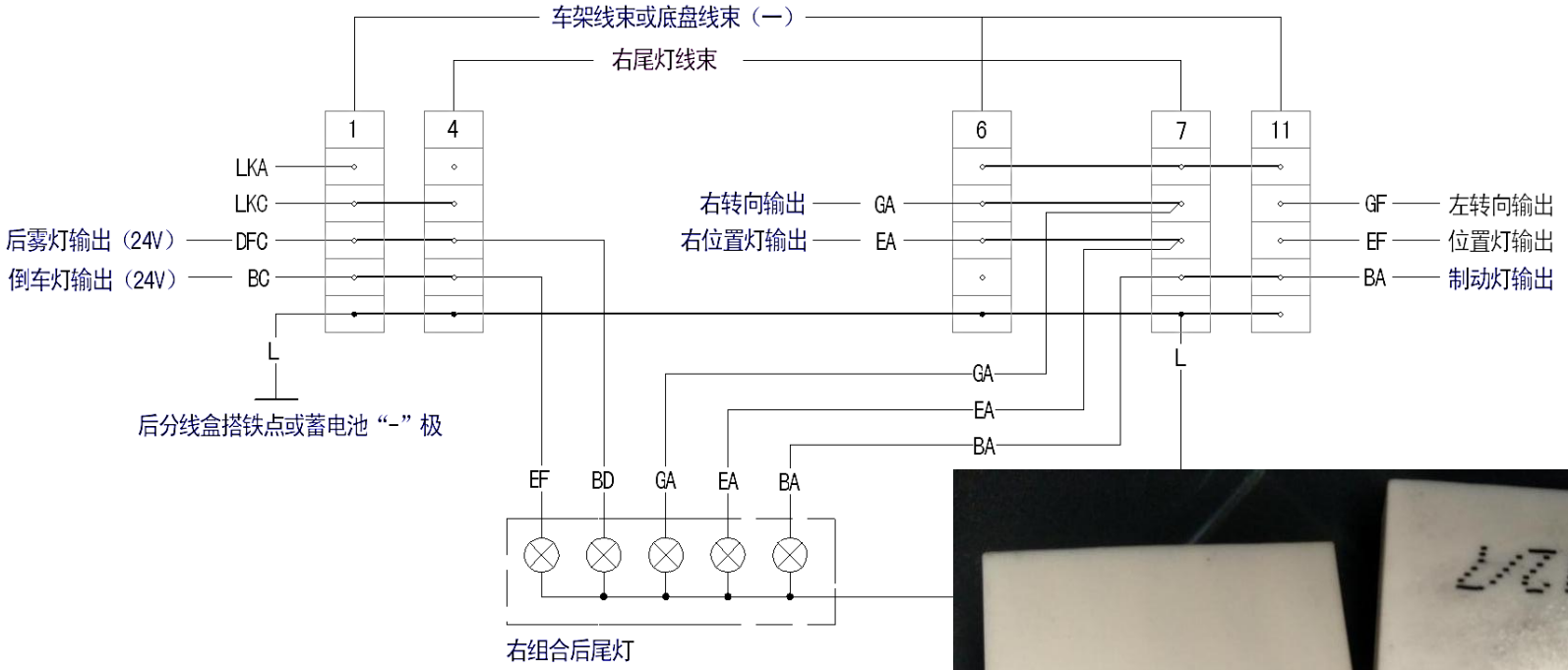
Plug connector No. 6: The wiring is purple (right turn signal output), gray red (right position light output).

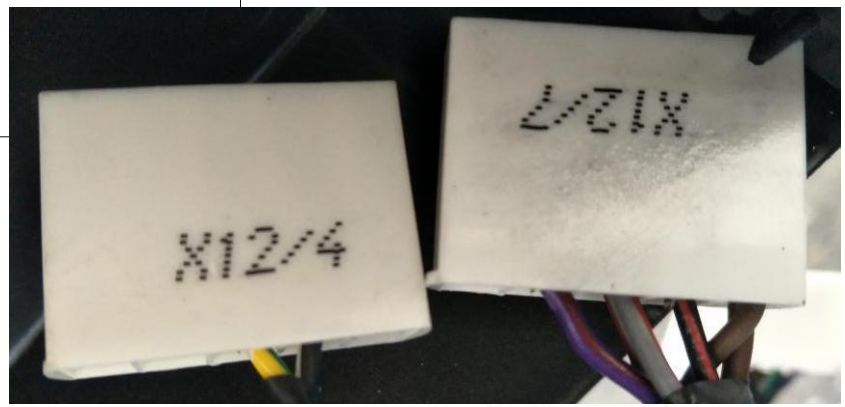
Plug connector No.11: the connection is purple green (left turn signal output), gray green (left position light output), black red (brake light output).



车架线束15：右尾灯线束：接后分线盒的4、7孔位，其电路结构如图所示。

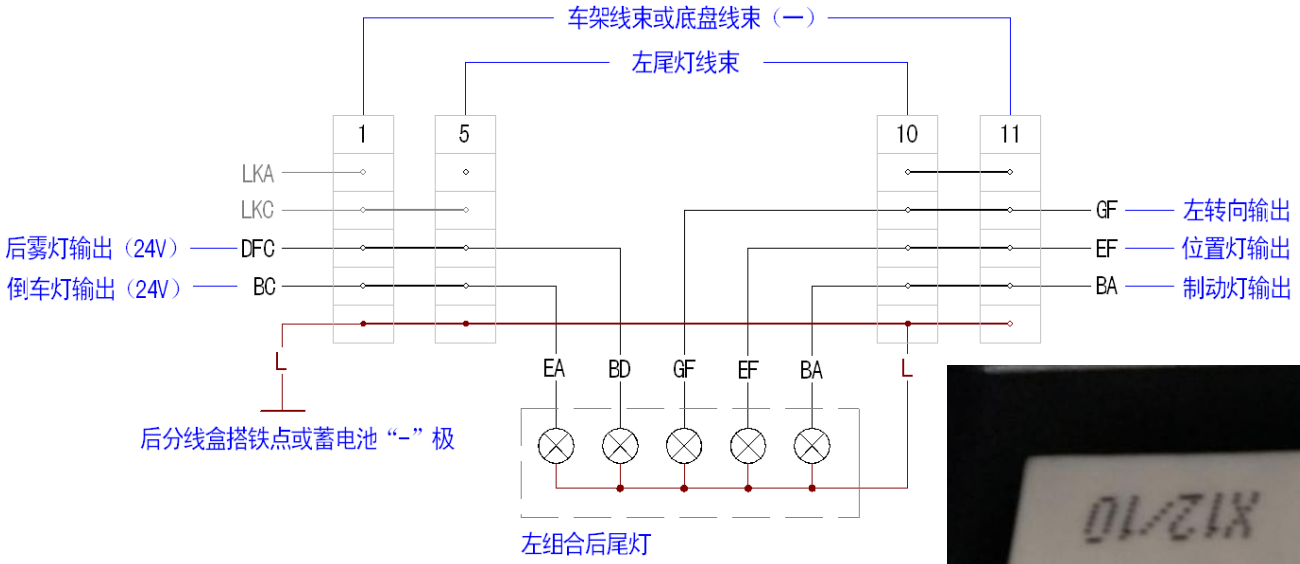
Frame harness 15: Right rear light harness: Connect to the 4 and 7 holes of the rear junction box. Its circuit structure is shown in the figure.





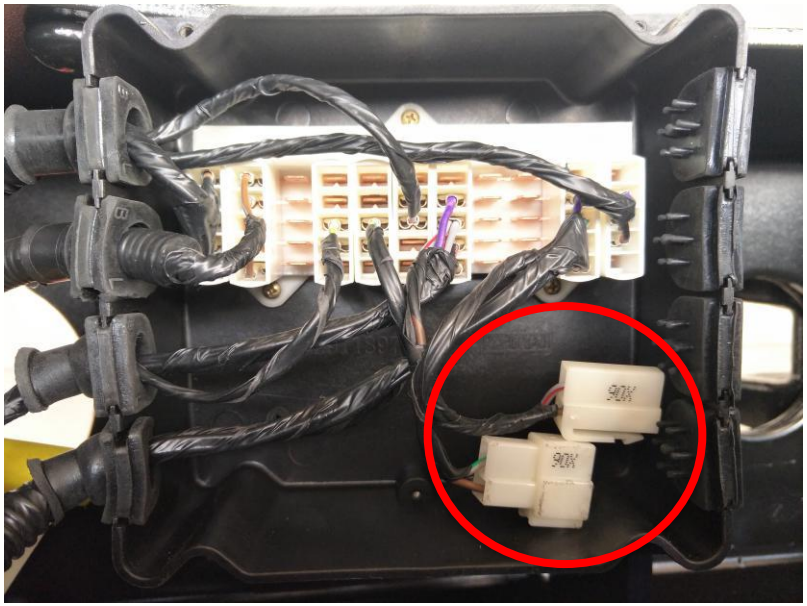
车架线束16：左尾灯线束：接后分线盒的5、10孔位，其电路结构如图所示。

Frame harness 15: Left rear light harness: Connect to the 5 and 10 holes of the rear junction box. Its circuit structure is shown in the figure.



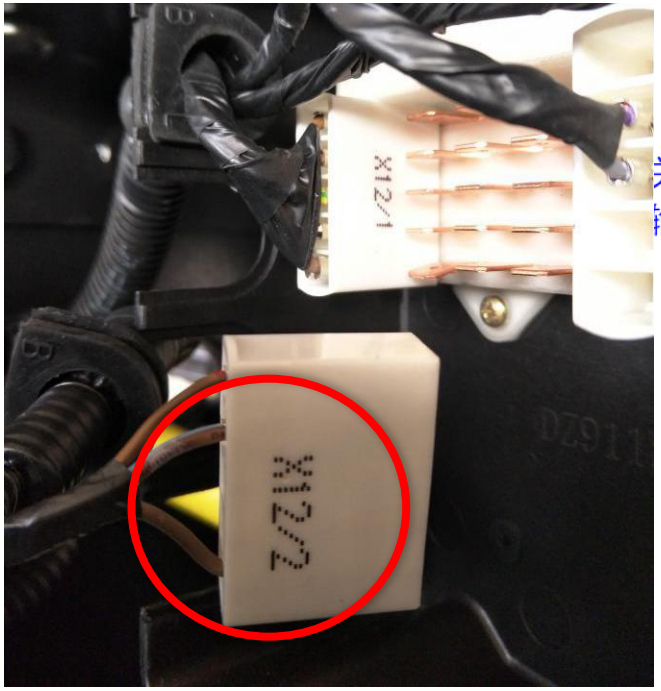
车架线束17：后尾梁还有侧标志灯预留接口X06L，X06R，接后分线盒的7、10孔位可以连接上装的大箱灯线束插接器。

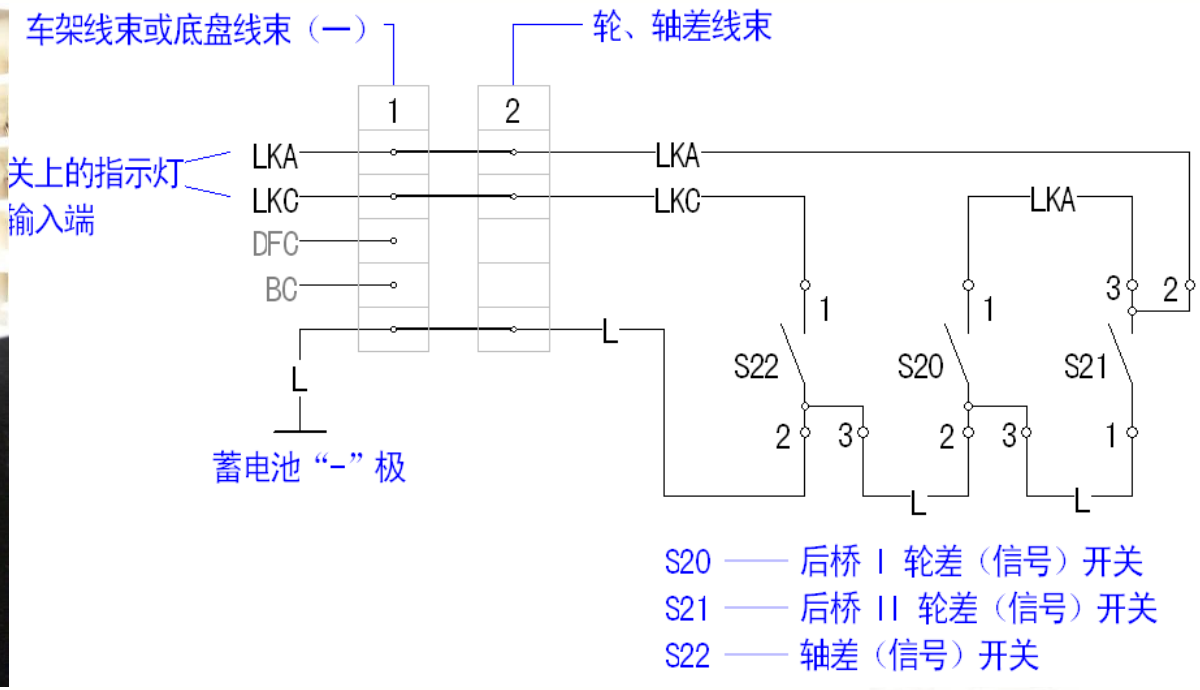
Frame wire harness 17: The rear tail girder also has a side sign light reserve interface X06L, X06R, and then the 7 and 10 hole position of the splitter box can be connected to the tipper light harness connector.



车架线束18：轮、轴差信号开关线束接后分线盒的2孔位，后分线盒搭铁线通过底盘线束1号插接器至蓄电池“–”极。

Frame wire harness 18: The wheel and axis differential signal switch harness is connected to the 2 hole of the rear junction box. The rear junction box ground wire passes through the chassis harness 1 connector to the battery “-” pole.





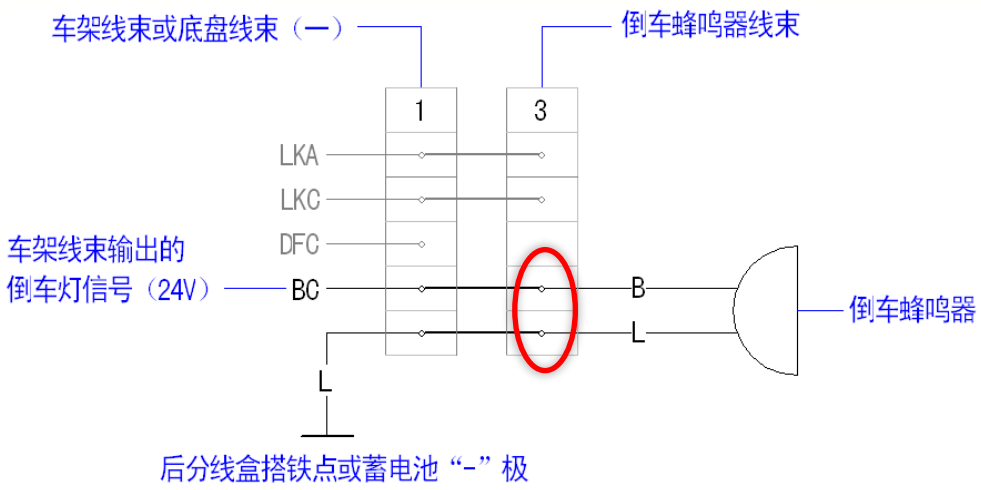
车架线束18：轮差、轴差信号开关一种是差速器活塞缸上面附带的信号开关，控制仪表差速信号灯点亮，另外一种是差速器控制气缸上面附带的信号开关，信号开关均与底盘线束连接。

Frame wire harness 18: Wheel differential, shaft differential signal switch is a signal switch that is attached to the differential piston cylinder, controls the instrument differential light, and the another kind is the differential switch attached to the cylinder. The switches are all connected to the chassis harness.

倒车蜂鸣器线束： Reversing buzzer harness:

接后分线盒的3号孔位。主要用于连接倒车蜂鸣器报警。

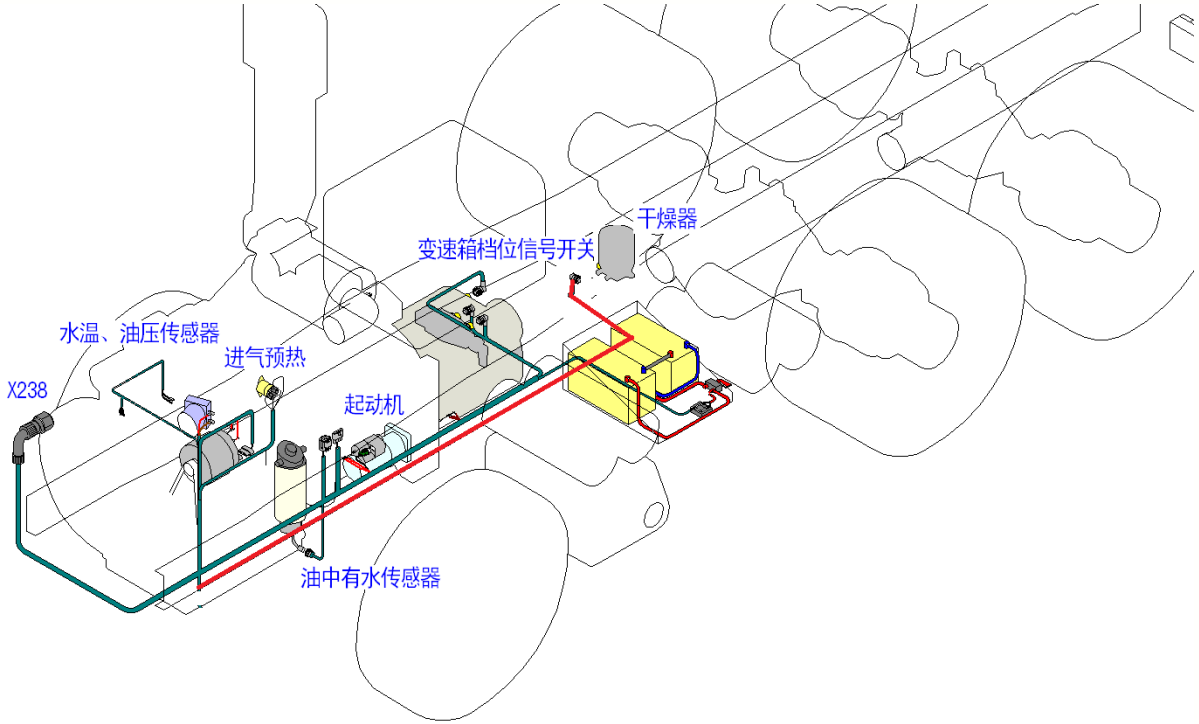
Connect to hole 3 of the rear junction box. Mainly used to connect the reverse buzzer alarm.



发动机变速箱线束结构
Engine Transmission Harness Structure

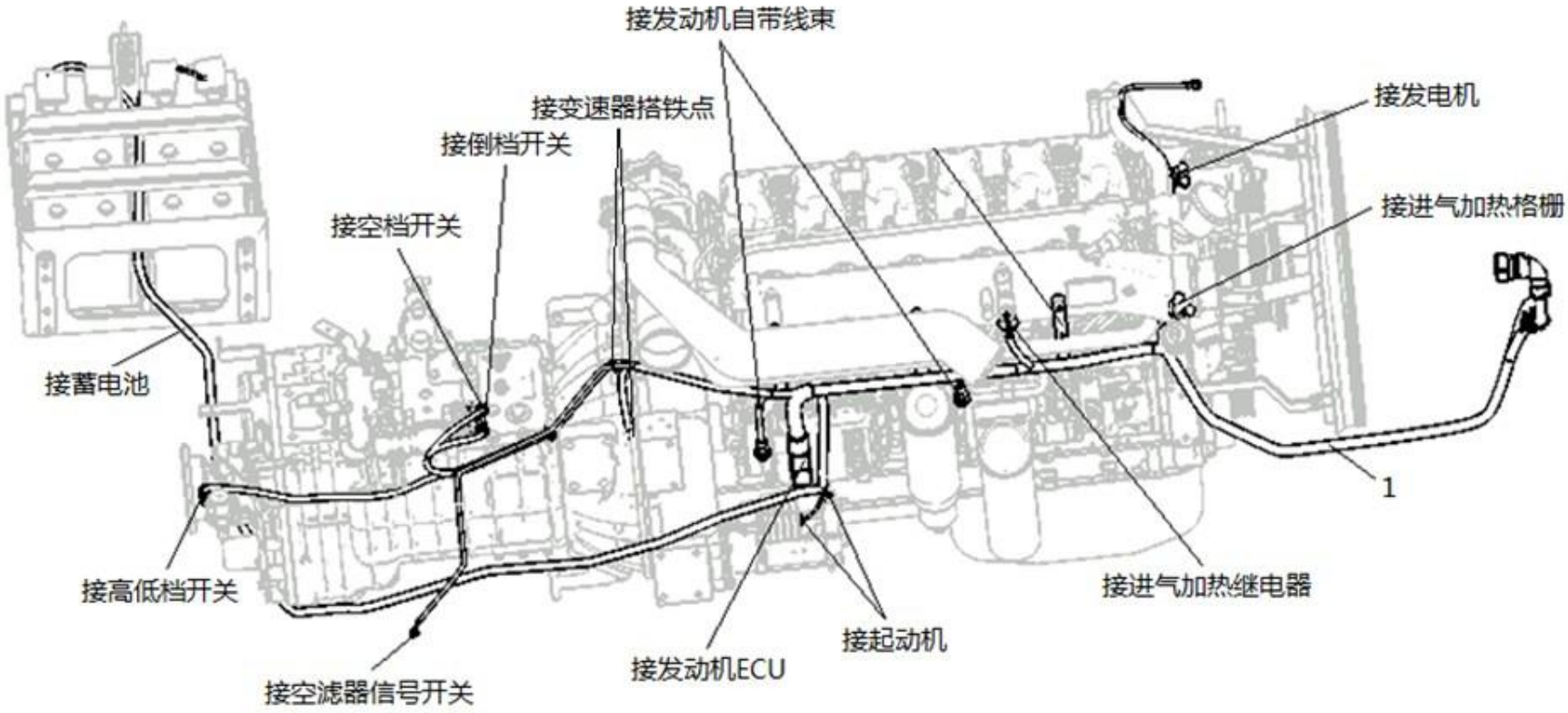
发动机变速箱线束：主要向是连接驾驶室插接器X238向驾驶室输入总电源（受电瓶总开关控制），变速箱档位信号，水温、油压等传感器信号，对底盘的起动机、进气预热进行控制。

Engine transmission harness: mainly used to connect the cab connector X238 to the cab total power input (controlled by the main battery switch), transmission gear signal, water temperature, oil pressure and other sensor signals, to control the starter ,and the intake air preheating.



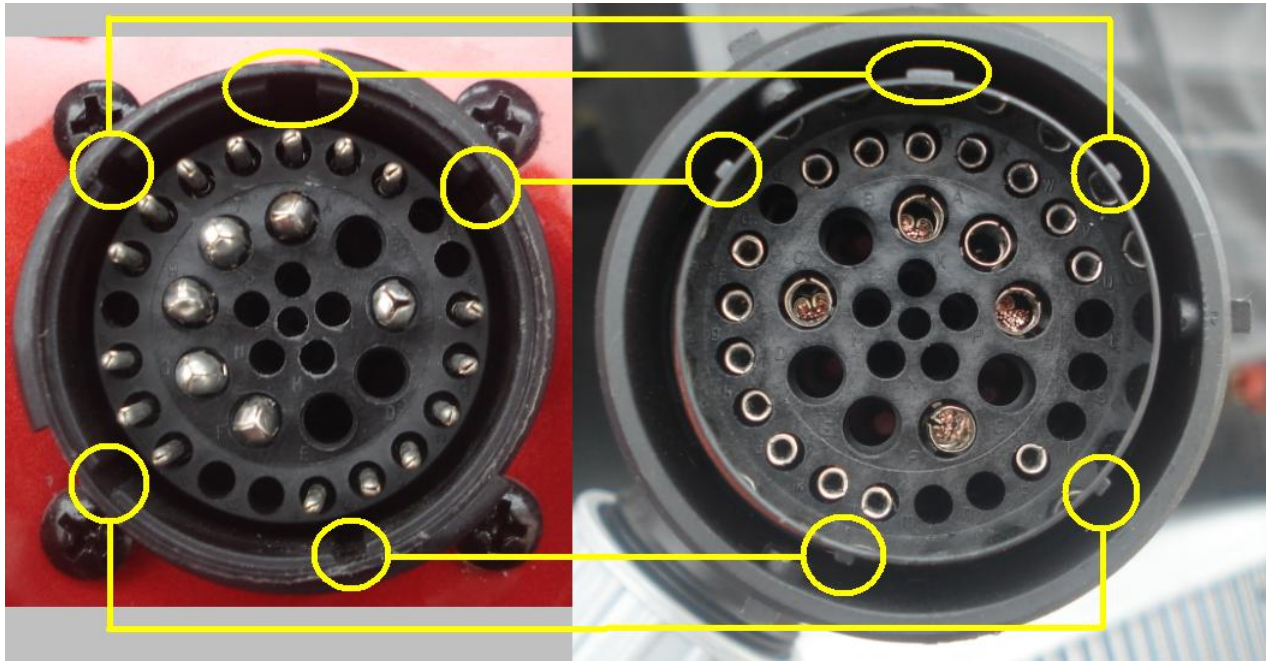
发动机变速箱线束1：线束主要分支布置图如图所示。

Engine Transmission Harness 1: Wire harness main branch layout as shown.



发动机变速箱线束2：线束在驾驶室最前端是35孔插接器X238，与驾驶室对接。插接器插接时注意对准插头和插座的定位标记。

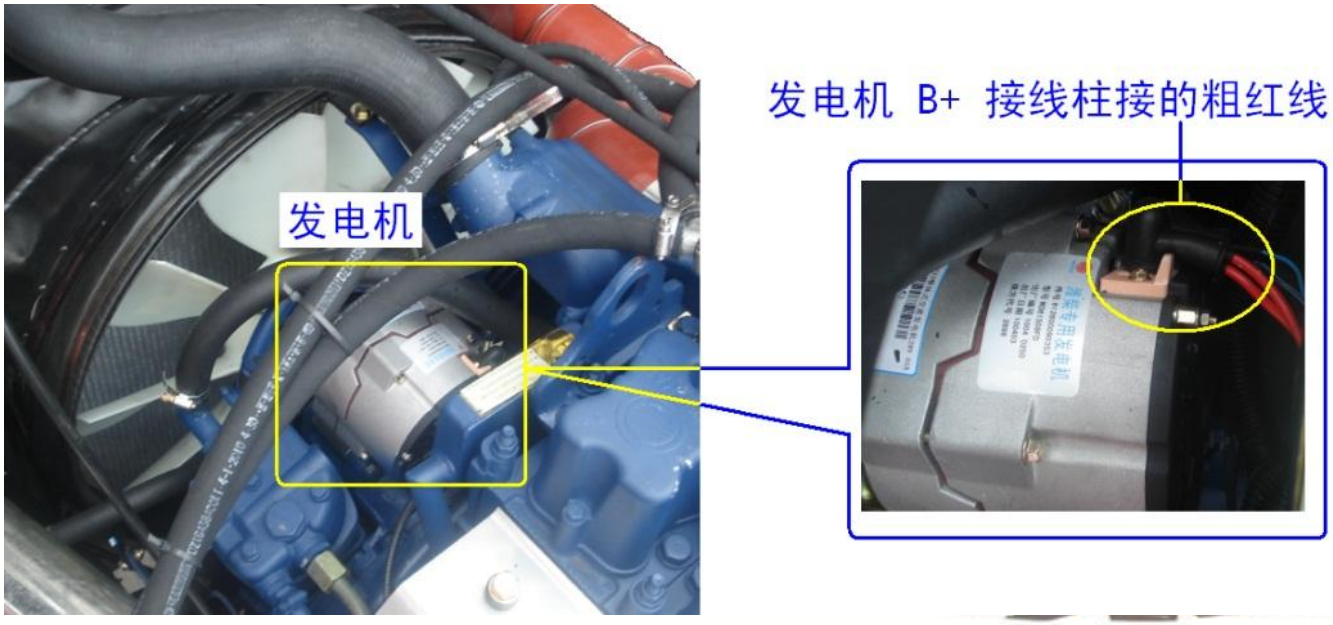
Engine Transmission Harness 2: The harness is a 35-hole connector X238 at the forefront of the cab and interfaces with the cab. When inserting the connector, pay attention to the alignment mark on the plug and socket.



发动机变速箱线束3： Engine Transmission Harness 3:

线束向后敷设（WP12车型在左纵梁，WP10、EGR车型在右纵梁），在发动机前端分出发动机线束分支，此处线束主要连接发电机及水温、油压传感器。

The wiring harness is laid backwards (WP12 models are on the left side rails, WP10, EGR models are on the right side rails), and branches of engine harnesses are branched at the front of the engine. The wiring harness is mainly connected to generators, water temperature, and oil pressure sensors.

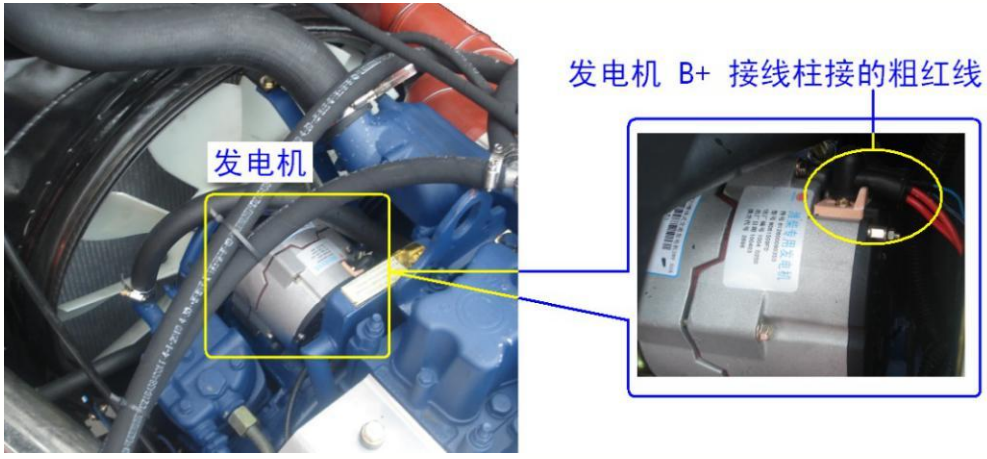


发动机变速箱线束3： Engine Transmission Harness 3:

发电机接线为： Generator wiring is:

B+端接2个粗红线，将发电机的B+接线柱至起动机30接线柱连接起来，主要向整车电路提供电源并给蓄电池充电。

The B+ terminal is connect with two thick red wires, connects the B+ terminal of the generator to the terminal of the starter 30, and supplies power to the vehicle circuit and charges the battery.



发动机变速箱线束3： Engine Transmission Harness 3:

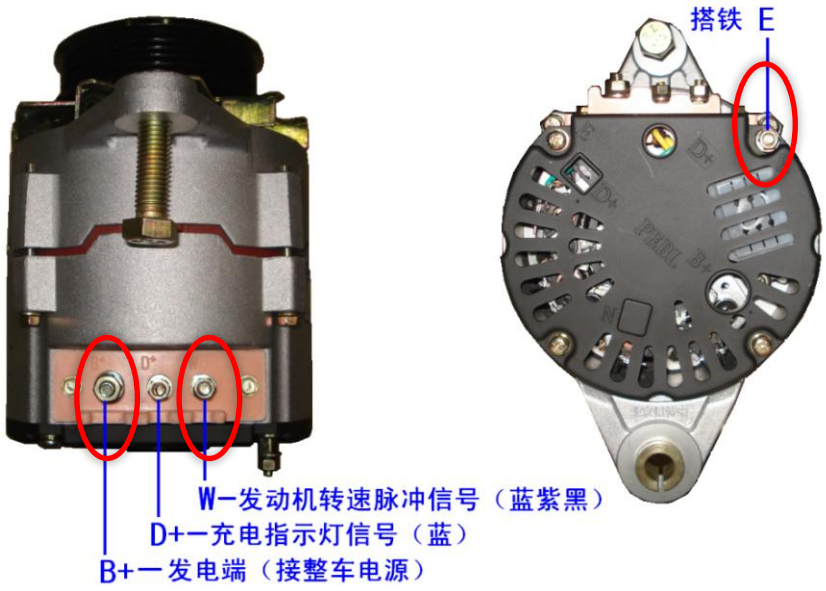
发电机接线为： Generator wiring :

W端接蓝紫黑线，为向发动机转速表输出转速脉冲信号。

W is connected to the blue-violet black line, output the speed pulse signal to the engine tachometer.

E端接棕线，为搭铁线。

The E-terminated brown line is a ground wire.

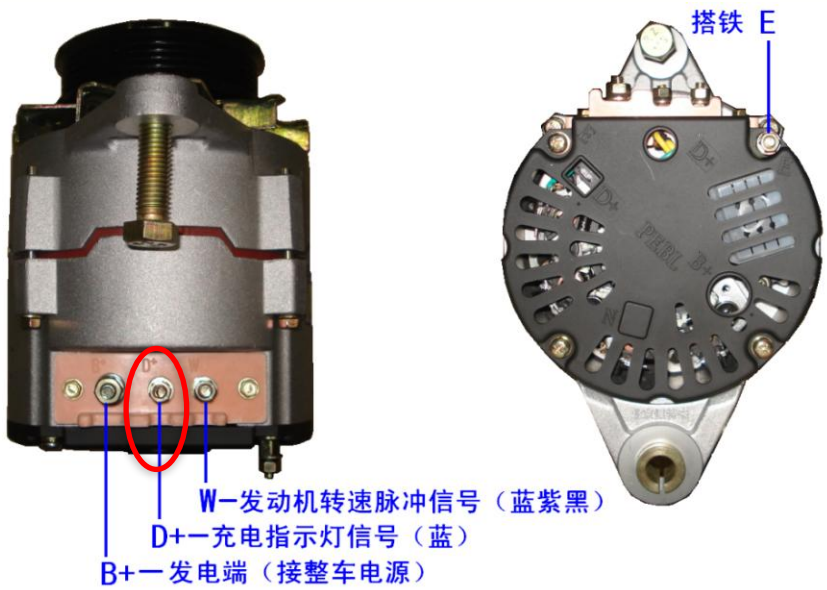


发动机变速箱线束3： Engine Transmission Harness 3:

发电机接线为： Generator wiring:

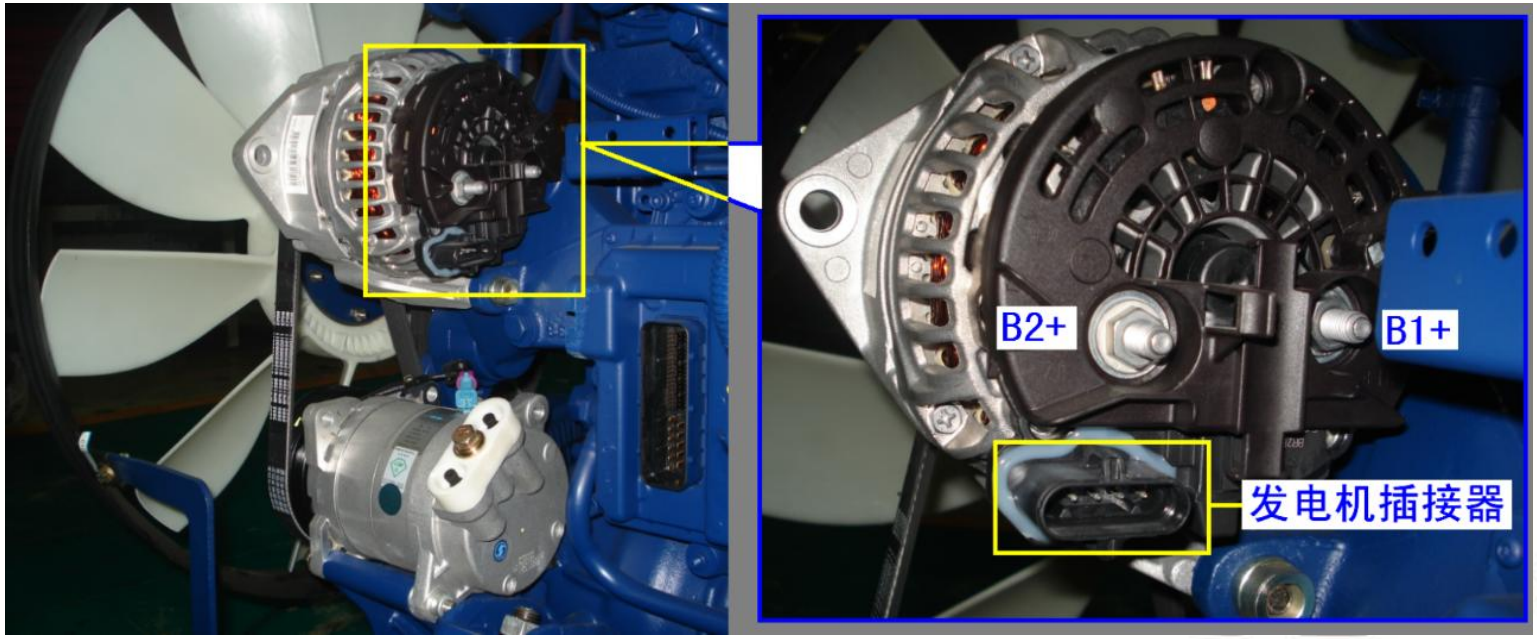
D+端接蓝线，接充电指示灯 ，当发电机没有发电时此端电压为0，充电指示灯点亮（充电指示灯另一端为钥匙电源T15），当发电机开始发电时，此端为高电压，充电指示灯熄灭。

D+ is connected to the blue line and the charging indicator. When the generator is not generating power, this terminal voltage is 0 and the charging indicator is on (the other side of the charging indicator is the key power supply T15). When the generator starts to generate electricity, this terminal is High voltage, charging indicator goes out.



关于发电机接线的补充说明：WP12发动机用的发电机与常规发电机接线形式稍有区别，有两个B+端，接粗红线（电源线），其余端子集成到一个5孔插座，通过5孔插接器与线束连接。

Supplementary Note on Generator Wiring: The WP12 engine generator has a slightly different wiring form from the conventional generator. There are two B+ terminals and a thick red wire (power cord). The rest of the terminals are integrated into a 5-hole socket, connect to the harness by the 5 holes connector.



发动机变速箱线束4： Engine Transmission Harness 4:

油压传感器接线为棕黄/蓝绿棕，两接线端子大小不同，大接线端子接棕黄线，小接线端子接蓝绿棕线。

注意：康明斯发动机的车型，仪表的水温、油压信号来自ECM，所以不连接水温传感器、油压传感器线束。

The oil pressure sensor is brown/blue-green brown. The size of the two terminals is different. The large terminal is connected to the brown-yellow wire and the small terminal is connected to the blue green brown wire.

Attention: For the Cummins engine models, the water temperature and oil pressure signals come from the ECM, so the water temperature sensor and the oil pressure sensor harness are not connected.

发动机变速箱线束5： Engine Transmission Harness 5:

水温传感器接线为棕绿/蓝绿，两接线端子大小不同，大接线端子接棕绿线，小接线端子接蓝绿线。

Water temperature sensor wiring is brown-green/blue-green. The size of the two terminals is different. The large terminal is connected to the brown green line, and the small terminal is connected to the blue-green line.

发动机变速箱线束5：Engine Transmission Harness 5:

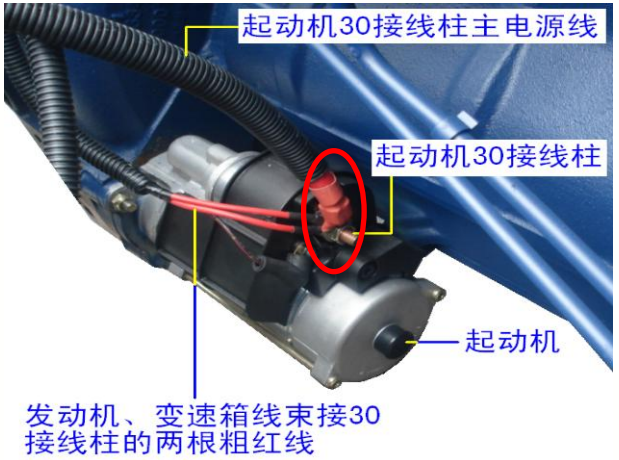
空调压缩机制冷信号线通过发动机变速器线束最终到达空调压缩机插接器，在发动机前端处，空调压缩机靠其金属壳体搭铁，只引入一根正极电源线，当电源接通时，压缩机内部的电磁离合器接通，压缩机被发动机带动开始工作（制冷）。

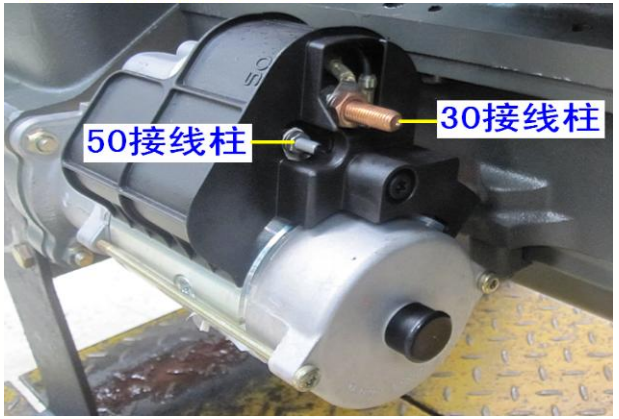
The air conditioner compressor refrigerating signal cable finally reaches the air conditioner compressor connector through the engine transmission wiring harness. At the front end of the engine, the air conditioner compressor is grounded by its metal housing, and only a positive power supply cable is introduced. When the power supply is turned on, the electromagnetic clutch inside the machine is turned on, and the compressor is driven by the engine to start working (cooling).

发动机变速箱线束6： Engine Transmission Harness 6:

潍柴起动机接线柱，潍柴EGR发动机的起动机是壳体搭铁，所以其主电源接线柱有1个，就是30接线柱，另外30端还连接有2个粗红线，就是连接到发电机的主电源线。起动机50端接线柱是将ST起动信号线（黑红黄线）接到这里。

Weichai starter terminal, Weichai EGR engine starter is a shell ground, so it only has one main power terminal, is the 30 terminal, the other end of the 30 is connected to the generator by 2 thick red line. The start control method is to connect the start signal(ST) line (black, red, and yellow) to the starter 50.





发动机变速箱线束7： Engine Transmission Harness 7:

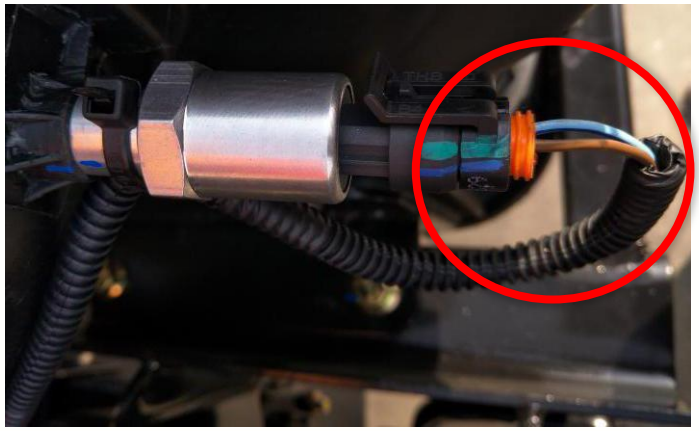
发动机飞轮壳搭铁点，依靠变速器上部壳体紧固螺栓搭铁，其接线柱有多个搭铁线，就是31000棕色线。

The flywheel shell of the engine has a ground point, and it depends on the fastening bolts of the upper shell of the transmission. It has many ground wires on the terminal , they are the 31000 brown wire.

发动机变速箱线束8： Engine Transmission Harness 8:

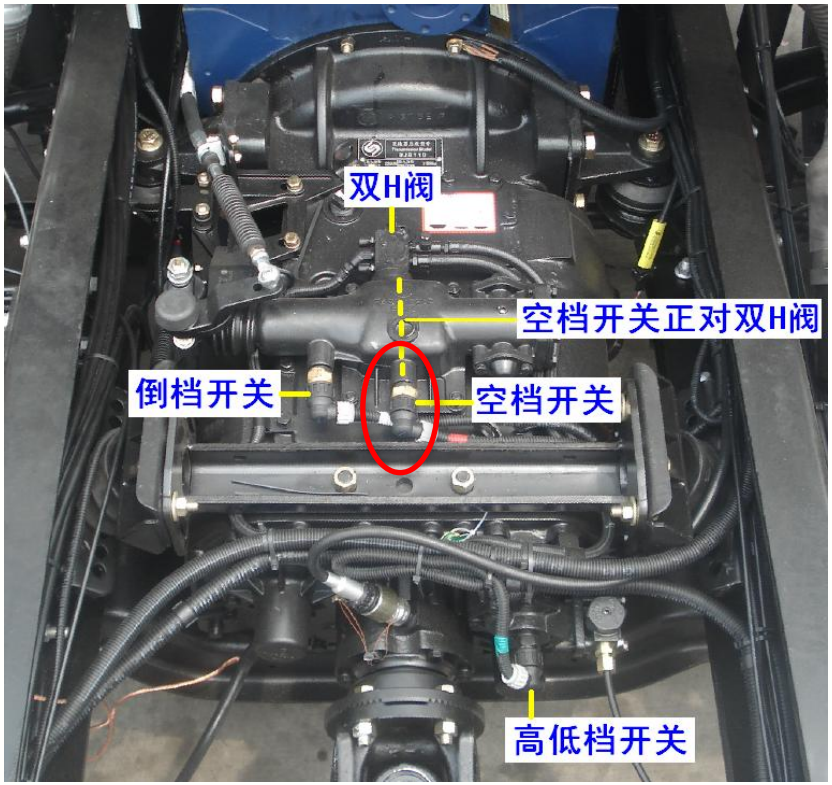
线束继续向后是空滤堵塞信号开关接线，空滤堵塞信号开关安装在空滤器上，接线有正负极性，“+”极接浅蓝深蓝线，“-”极接棕线。

The wiring harness continues to be connected with air filter plugging signal switch. The air filter plugging signal switch is installed on the air filter. The harness has positive and negative polarity, the “+” pole is connected to the blue and deep blue line, and the “-” pole is connected to the brown line. Misconnection will cause air filter to block and the alarm light will be on



发动机变速箱线束9：在变速箱上的信号开关包括空档开关、倒档开关、高低档开关。

Engine Transmission Harness 9: The signal switches on the gearbox include the neutral switch, reverse switch, and high and low gear switches

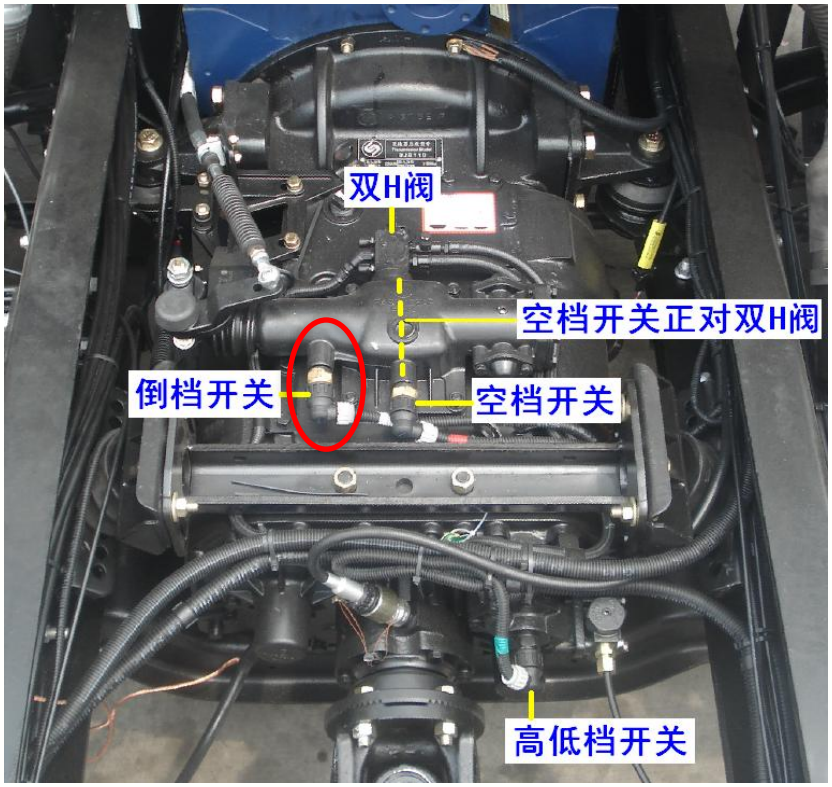


空档开关：用于起动电路的空档保护，在变速箱不在空档时将断开启动电路，防止出现安全事故。空档开关线束外壳色标为红色，线束为黑红白/黑红黄。

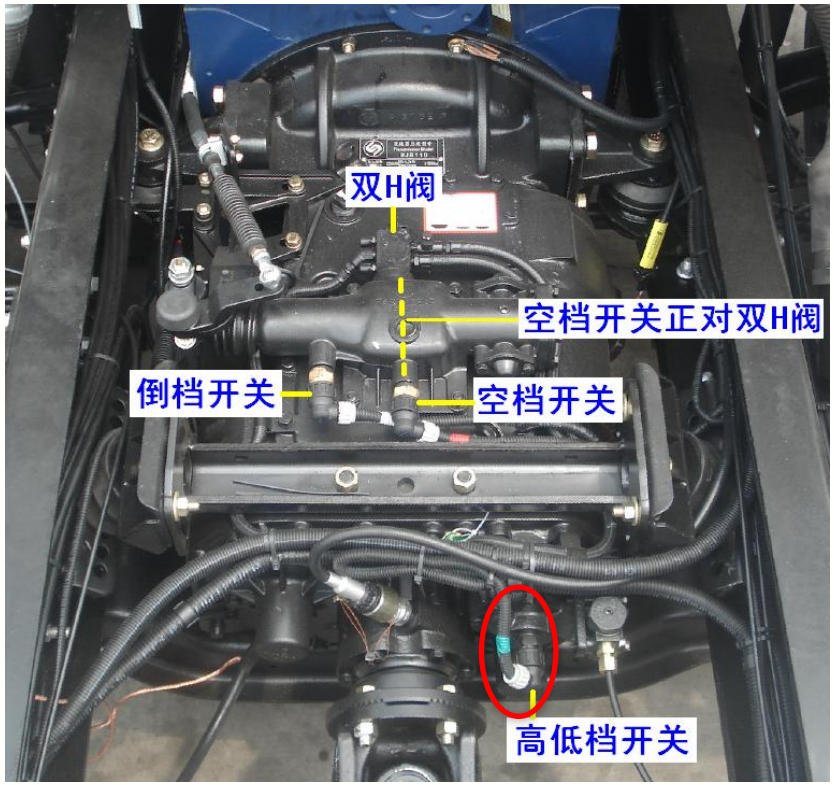
Neutral switch: Used for the neutral protection of the starting circuit. When the transmission is not in neutral, the starting circuit will be disconnected to prevent safety accidents. The mark color of the neutral switch harness is red, and the harness is black, red, white/black, red, yellow.

倒档开关：主要用于控制倒车灯及倒车蜂鸣器，倒档开关接通时倒车灯点亮，倒车蜂鸣器发出音响报警。倒档开关线束外壳色标为白，线束为黑白/黑白色。

Reverse switch: It is mainly used to control the reversing light and reversing buzzer. When the reverse switch is turned on, the reversing light is on, and the reversing buzzer sounds an alarm. The reverse switch harness mark color is white and the harness is black and white/black and white.



发动机变速箱线束10：
Engine Transmission Harness 10:



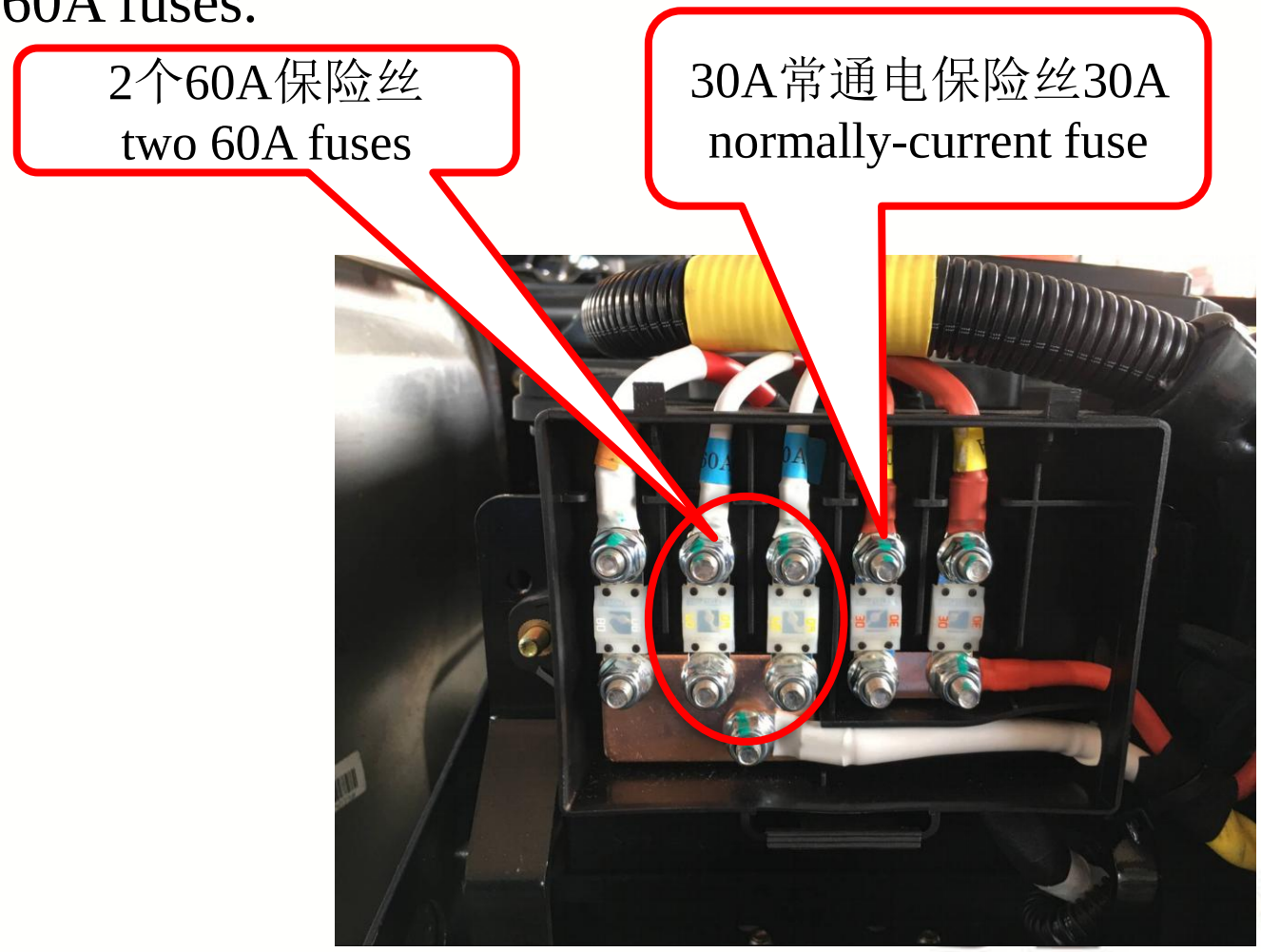
高低档开关：用于在仪表上显示变速箱当前所在的高、低档区，当变速箱处于低档区时，高低档开关接通，驾驶室内的变速箱低档区指示灯点亮。高低档开关线束外壳色标为绿，线束为棕绿灰/棕色。自卸车不安装高低档开关。

Upper and lower gear switch: Used to display on the instrument the high and low gear zone in which the gearbox is currently located. When the gearbox is in the low gear range, the high and low gear switches are turned on, and the low gear indicator of the gearbox in the cab lights up. The upper and lower switch harness mark color is green, and the wire harness is brown green gray/brown.

发动机变速箱线束11： Engine Transmission Harness 11:

在电瓶箱电器盒里面，连接1个30A常通电保险丝，2个60A保险丝。

Inside the electrical box in the battery box, there is a 30A normally-current fuse and two 60A fuses.



第七节　起动机线束结构 Section 7 Starter Harness Structure

起动机线束1：潍柴EGR发动机的起动机线束主要是连接起动机、变速箱及蓄电池箱是全车电路的总电源。结构布置如下：起动机工作电流可达到400-1000A，所以起动机线束是全车电线直径最粗的70～95mm² 。

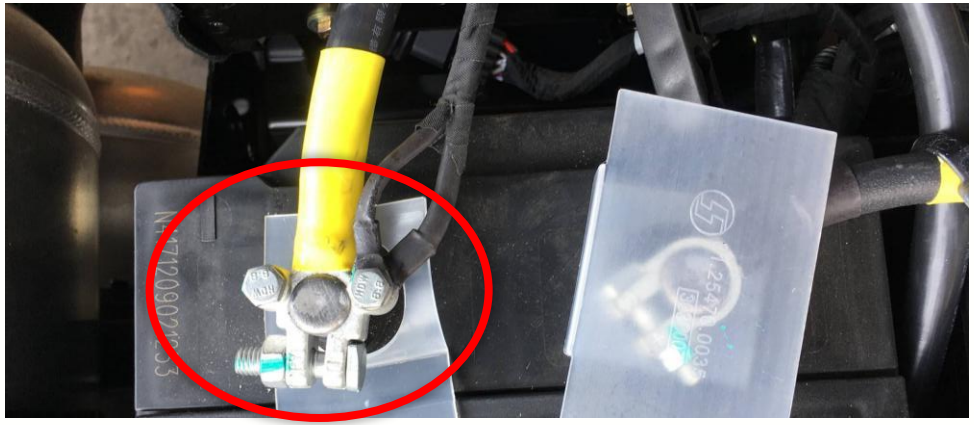
Starter harness 1: The starter harness of the Weichai EGR engine is mainly connected to the starter, gearbox, and battery box as the main power supply for the entire vehicle circuit. The structural arrangement is as follows: The working current of the starter can reach 400-1000A, so the starter wiring harness is the thickest wire diameter of the entire car 70-95mm² .

起动机线束2：正极电缆的连接：将电源连接线一端连接到电源总开关输出端，再将正极电缆另一端连接到起动机30接线柱。

Starter harness 2: Connection of the positive cable: Connect one end of the power cable to the output of the main power switch, and the other end to the terminal of the starter 30.

起动机线束3：潍柴EGR发动机的起动机的负极线是利用外壳搭铁。负极电缆的连接：负极电缆一端连接到蓄电池负极接线柱，另一端连接到车架搭铁点，然后还有连接线从车架搭铁点到变速箱搭铁点。

Starter harness 3: The negative wire of the starter of the Weichai EGR engine uses case ground. Connection of negative cable: One end of the negative cable is connected to the negative terminal of the battery, and the other end is connected to the ground point on the frame, there is also a wire used to connect the frame ground point and the gear box ground point.

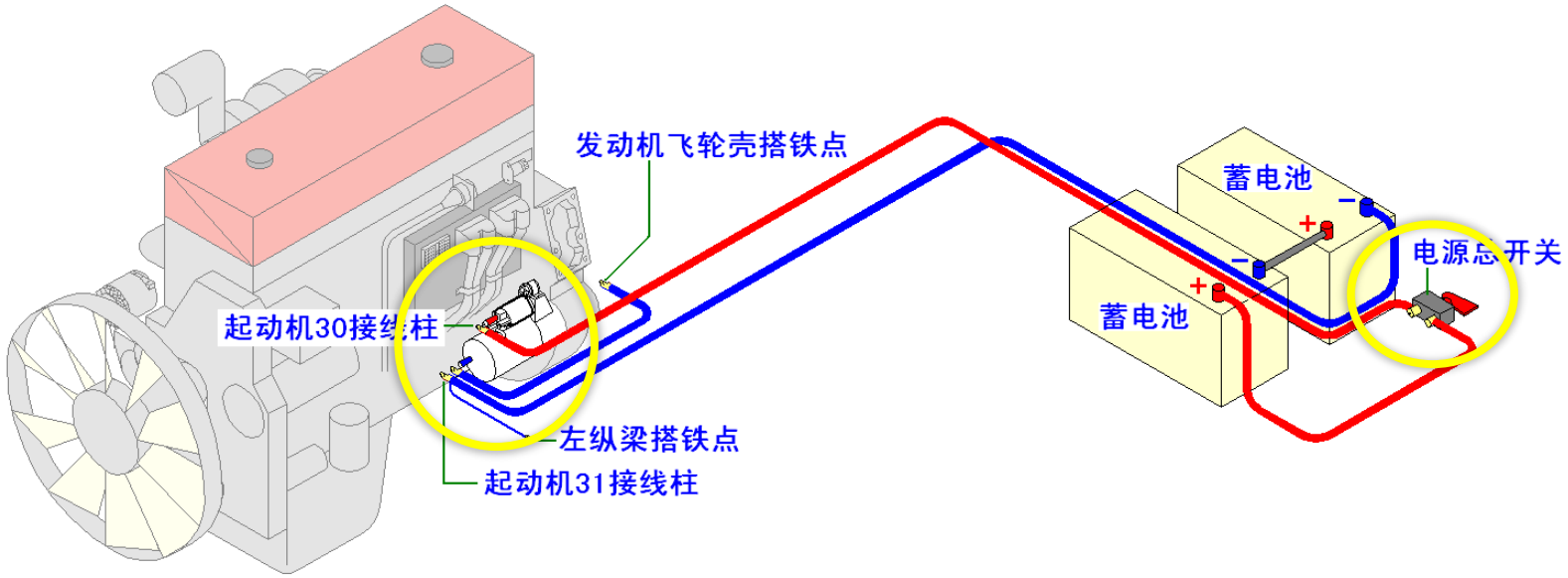


起动机线束4：康明斯起动机线束接线如图所示。

正极电缆的连接：将电源连接线一端连接到电源总开关输出端，再将正极电缆另一端连接到起动机30接线柱。

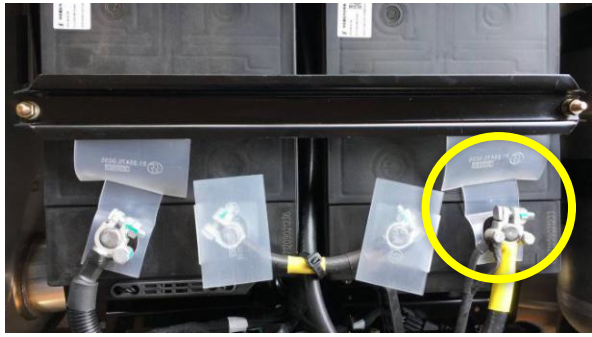
Starter harness 4: Cummins starter harness wiring as shown.

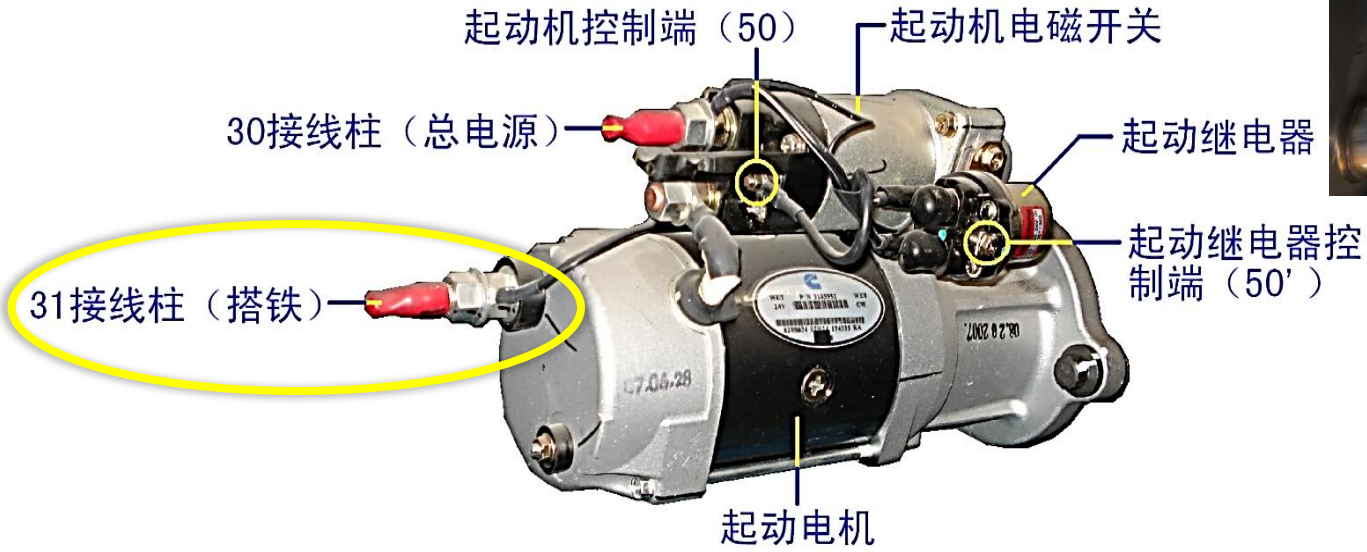
Connection of the positive cable: Connect one end of the power cable to the output of the main power switch, and connect the other end to the terminal of the starter 30.



起动机线束5：康明斯起动机负极电缆的连接：起动机负极电缆一端连接到蓄电池负极，另一端连接到起动机31接线柱，并将其上附带的其他搭铁线另一端连接发动机飞轮壳搭铁点。

Starter harness 5: Connection of the negative cable of the Cummins starter: connect one end of the negative cable of the starter to the negative pole of the battery, and connect the other end to the terminal of the starter 31 and connect the ground wire attached to the starter to the flywheel housing iron Point





第八节，H3000车型灯光介绍

Section 8, Introduction to the Lighting of the New M3000

H3000车型灯具概述：

New M3000 Model Lamps Overview:

H3000车型灯具包含，前大灯，示廓灯，侧转向灯，侧标志灯，后尾灯，顶灯，卧铺灯，踏步灯，实现车辆夜间基本照明，满足安全行车需求。

The new M3000 models include headlights, positioning lights, side turn lights, side sign lights, tail lights, ceiling lights, sleeper lights, and step lights to provide night-time basic lighting for vehicles that meet safety requirements

H3000车型灯光1:

New M3000 Lights 1:

前照灯1介绍：

Headlamp 1 Introduction:

H3000车型前照灯为组合整体式前照灯，主要功能有近光灯、远光灯、位置灯、转向灯、前雾灯和辅助远光灯，所有灯泡均为24V，各功能的划分如下图：

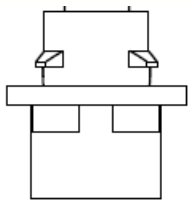
The headlamps of the new M3000 are integrated headlamps. The main functions are low beam, high beam, position lamp, turn signal, front fog lamp and auxiliary high beam. All bulbs are 24V. As shown below:

灯具名称 name	型号 type	功率 power	单车数量 quantity
近光灯 Low beam	H1	70W	2
远光灯 High beam	H7	70W	2
前位置灯 Position lamp	W5W	5W	2
前雾灯 Front fog lamp	H3	70W	2
前转向灯 Front turn lamp	P21W	21W	2

H3000车型灯光2: New M3000 Lights 2:

前照灯1插接器针脚定义如图：

Headlamp 1 connector pin definition as shown:



M

Turn lamp (yellow)

转向灯(黄色)

雾灯(绿线)

Fog lamp (green)

辅助远光(白线)

Auxiliary high lamp (white)

前位置灯(棕线)

Front position lamp (brown)

远光灯(蓝线)

High lamp (blue)

地线(黑线)

Ground wire(black)

诗兰姆7806388

近光灯(红线)

Low lamp (red)

H3000，H3000车型灯光3: New M3000 /H3000 Lights 3:

前照灯2介绍：

Headlamp 2 Introduction:

H3000，H3000车型前照灯为组合整体式前照灯，主要功能有近光灯、远光灯、位置灯、转向灯、前雾灯，如图：

The headlamps of the new M3000 model are integrated headlamps. The main functions include low beam, high beam, position lamp, turn signal, and front fog lamp.

H3000，H3000车型灯光4: New M3000 Lights 4:

前照灯2所有灯泡均为24V，配置灯泡明细如图：

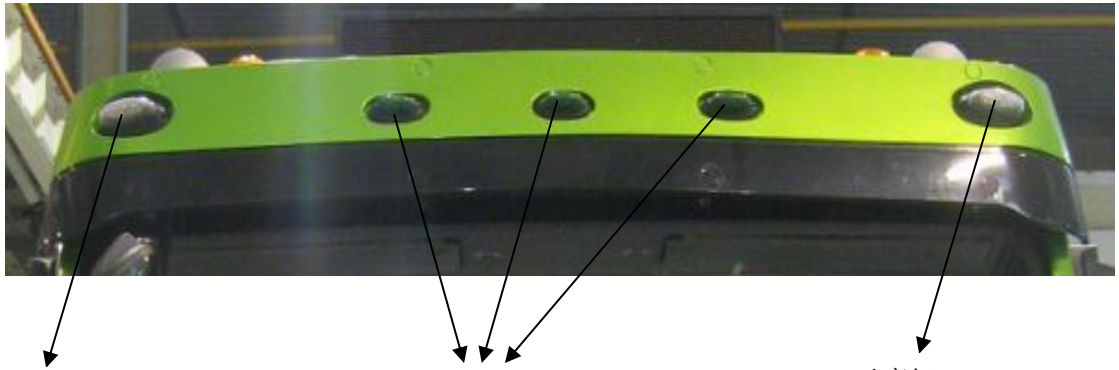
All headlamps 2 bulbs are 24V, configuration of light bulbs as shown in Figure:

灯具名称 Name	灯泡型号 Type	灯泡功率 Power	单车数量 Quantity
近光灯 Low beam	H1	70W	2
远光灯 High beam	H7	70W	2
前位置灯 Front position lamp	LED	1.35W	2
前雾灯 Front fog lamp	H3	70W	2
前转向灯 Front turn lamp	P21W	21W	2
昼行灯 Daytime running light	LED	3.78W	2

H3000车型灯光4: New M3000 Lights 4:

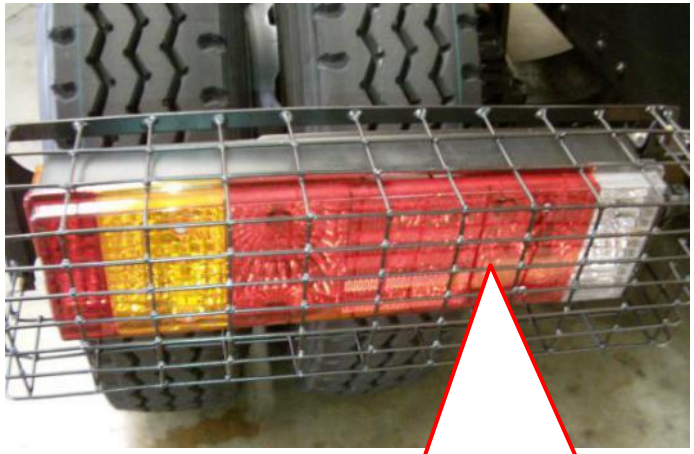
示廓灯、装饰灯介绍：H3000车型的示廓灯、装饰灯安装在驾驶室前风挡正上方，主要功能为示廓功能的小灯。其中示廓灯左右各1个，装饰灯在中间有3个，所有灯泡均为24V的LED灯，各灯具的安装布局如下图。

Positioning lights, decorative lights Introduction: The new M3000 models of the positioning lights, decorative lights installed in the front of the cab directly above the windshield, the main function is the contour features of the small lights. Among them, there are 1 left and right side lights, 3 decorative lights in the middle, and all light bulbs are 24V LED lights. The layout of each light fixture is shown in the figure.



H3000车型灯光5：H3000车型的后尾灯安装在车架尾部位置的左右两端，主要功能有示廓灯，转向灯，制动灯，牌照灯，位置灯，后雾灯，倒车灯。灯具的安装布局如下图。

The new M3000 lights 5: The rear lights of the new M3000 are installed at the left and right ends of the rear frame position. The main functions are the profile light, turn signal, brake light, license plate light, position light, rear fog light, and reversing light. The layout of the lighting installation is shown below.



H3000七组合后尾灯
Combination Rear Taillight

M3000车型灯光6:　M3000 Lights 6:

7组合后尾灯的功能排列方式，从外侧往内侧，依次是示廓灯（5W），转向灯(21W)，制动灯(21W)，牌照灯(5W)，位置灯(5W+5W)，后雾灯(21W)，倒车灯(21W)。后尾灯是24V普通白炽灯泡。图中所示为左后尾灯图例，右后尾灯据此图左右对称排布。如图所示。

The functional arrangement of the taillights, from the outside to the inside is followed by the layout light (5W), turn signal (21W), brake light (21W), license plate light (5W), position light (5W+5W) , Rear fog lights (21W), Reversing lights (21W). The rear taillights are 24V ordinary incandescent bulbs. The figure shows the legend of the left rear taillight. The right rear taillights are symmetrically arranged according to this figure. as the picture shows.

H3000车型灯光7: H3000车型的后尾灯安装在车架尾部位置的左右两端，主要功能有示廓灯，转向灯，制动灯，牌照灯，位置灯，后雾灯，倒车灯。后尾灯具的安装布局如下图。

The new M3000 lights 7: The rear lights of the new M3000 models are installed at the left and right ends of the rear end of the frame. The main functions include the **marker lights**, **turn lights, brake lights, license plate lights, position lights, rear fog lamps, and reversing lights**. The installation layout of the new rear tail light is as follows.

M3000四组合后尾灯
Combination Rear Taillight

H3000车型灯光8：The new M3000 lights 8:

示廓灯
Positioning lamp
4 red led lamp 2w

转向灯
Turn lamp
21W incandescent bulbs

后雾灯
Rear fog lamp
21W incandescent bulbs

倒车灯
reversing lights
21W incandescent bulbs

位置灯
Positioning lamp
4 red led lamp 2w

制动灯 brake lights
12 red LED lamps
4W

The figure shows the legend of the left rear taillight. The right rear taillights are symmetrically arranged according to this figure.

H3000车型灯光9: New M3000 lights 9:

侧转向灯介绍：在左右翼子板外侧安装有2个侧转向灯，其侧转向灯和前面的左右转向灯电路相连接，与转向灯同步闪亮，如图所示。

Side Turn Signal Description: Two side turn lights are installed on the outer side of the left and right fenders. The side turn lights are connected with the left and right turn signal circuits in the front, and turn on synchronously with the turn signals, as shown in the figure.

H3000车型灯光10： New M3000 Lights 10:

翼子板小灯：在左右翼子板外侧下方安装有2个侧小灯，其侧小灯和前面的小灯电路相连接，与小灯同步点亮，如下图所示。

Small lamps on the fenders: There are two side lights on the outer side of the left and right fenders. The side lights are connected to the front small lamp circuit and are lit synchronously with the small lamp, as shown in the figure below .

H3000车型灯光11：New M3000 Lights 11:

室内灯具介绍： M3000车型室内灯具包括：阅读灯、驾驶室顶盖照明灯、卧铺灯、踏步灯，其中驾驶室顶盖照明灯仅高顶驾驶室配置。所有灯具均为LED灯，额定电压24V。

Indoor Lighting Introduction: The indoor lighting of M3000 models includes: reading lights, roof lights, sleeper lights, step lights, the roof lights are only equipped with high ceiling cabs. All lamps are LED lights, rated voltage 24V.

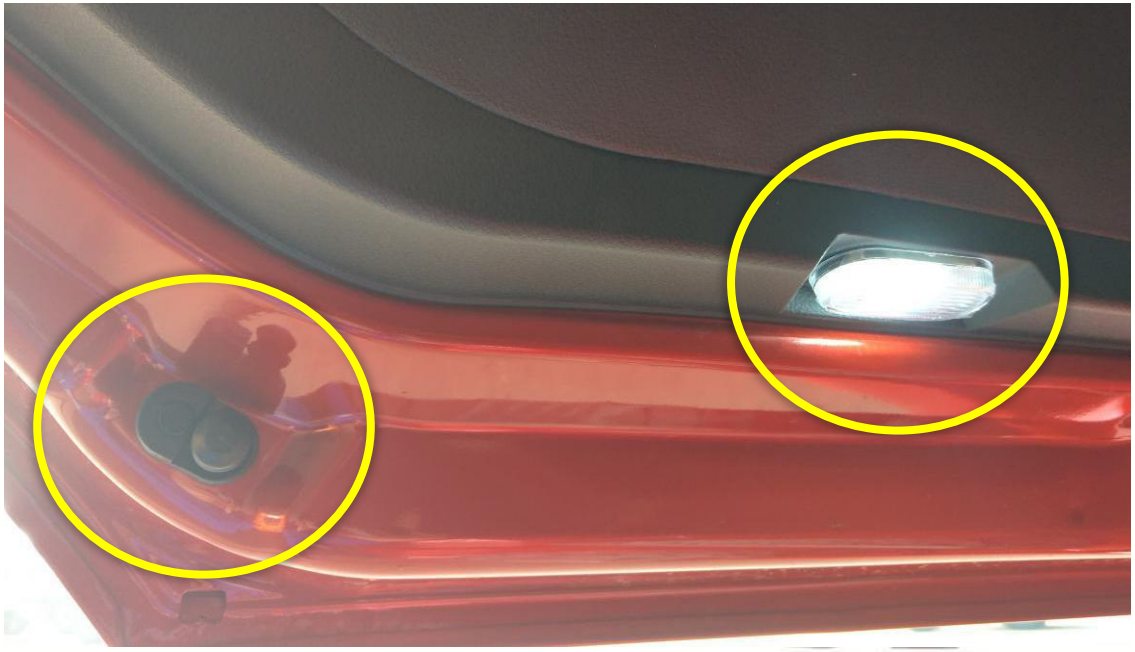
卧铺灯： 卧铺灯额定功率0.27W，其结构如图所示：按压它的开关就可以控制点亮。

The sleeper lamp: The sleeper lamp has a rated power of 0.27 W. The structure is as shown in the figure. Pressing it on the lamp can control the lighting.

H3000车型灯光12：New M3000 Lights 12:

踏步灯：踏步灯额定功率0.8W，其结构如图所示：踏步灯由车门两边的门灯开关控制，当某一侧的车门打开时，门灯开关的触点接通，两个踏步灯就会点亮。

Step lamp: Step lamp has a rated power of 0.8W. Its structure is shown in the figure: The step lamp is controlled by the door light switch on both sides of the door. When the door of one side is opened, the contact of the door light switch is turned on. The light will light up.



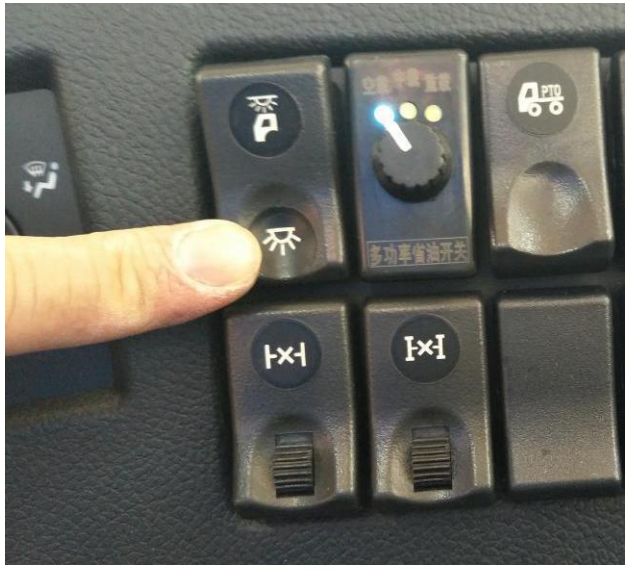
H3000车型灯光13: New M3000 Lights 13:

驾驶室顶灯：顶灯额定功率0.72W，其结构如图所示：

顶灯由仪表台的顶灯开关控制，当顶灯开关向下打开时，顶灯开关的触点接通，驾驶室顶灯就会点亮。

Cab ceiling light: ceiling light rated power is 0.72W, the structure as shown:

The ceiling light is controlled by the ceiling light switch of the instrument panel. When the ceiling light switch is turned down, the contact of the ceiling light switch is turned on, and the ceiling lights lights up.



第九节，H3000车型门控模块介绍

Section 9, Introduction to the New M3000 Door Control Module

1、H3000车型门窗升降电路：

The new M3000 door window lifting circuit:

汽车的门窗玻璃电动摇窗机升降器装置，使得驾驶员在汽车的行驶过程中，不再手工摇动操作车窗玻璃，实现了电力自动升降，降低驾驶员工作强度，提高驾乘舒适性，丰富车辆豪华配置。

The electric glass lifting device of the automobile enables the driver to no longer manually shake the window glass during the running of the car, thereby realizing the automatic lifting by the electric power, reducing the driver's working intensity, improving the driving comfort. Luxury vehicle configuration.

电动摇窗机的操纵开关：

Electric window regulator operating switch:

电动摇窗机的操纵开关安装在左右车门衬板上面，其中主驾驶员一侧配置两个操纵开关，靠近前面开关操纵主窗玻璃，靠近后面开关操纵副窗玻璃。其中副驾驶员侧配置一个操纵开关，这一个开关只操纵副窗玻璃。

The operating switch of the electric window regulator is installed on the left and right door linings. Two steering switches are arranged on the side of the main driver, and the main window glass is operated by the front switch, and the secondary window glass is operated by the rear switch. The front passenger side is equipped with a control switch, which only operates the sub-window.

电动摇窗机电器原理图：

Electric window shaker electrical schematic:

H3000车型门窗升降电路包含的电器设备有: A180 门窗控制器，F134 电动玻璃中控锁保险、M157 左侧中控锁执行器、M158右侧中控锁执行器、M101 左侧门玻璃升降执行器、M102 右侧玻璃升降执行器。

The electrical equipments included in the new M3000 model door and window lift circuit are: A180 door and window controller, F134 electric glass central locking actuator, M157 left central locking actuator, M158 right central locking actuator, M101 left door glass lift actuator , M102 right side glass lift actuator.

电动摇窗机的电动机是额定电压24伏的直流电动机。它通过蜗轮蜗杆机构减速，带动一个扇形半圆齿轮的连接杆作局部上下摆动，连接杆拖动门窗玻璃上下运行，实现门窗玻璃打开和关闭动作。此电动摇窗机的电动机和连接杆机构是一个总成，需要区分左右。

The motor of the electric window shaker is a DC motor rated at 24 volts. It decelerates through the worm gear and drives a connecting rod of a fan-shaped semi-circular gear to make a local up-and-down swing. The connecting rod drags the door window glass up and down to realize the opening and closing of the window glass. The motor and connecting rod mechanism of this electric window shaker is an assembly and **needs to distinguish between left and right.**

电动摇窗机的门控单元控制器，即门控模块，零件号：DZ95189586600。安装在主驾驶员一侧车门的门板内部。

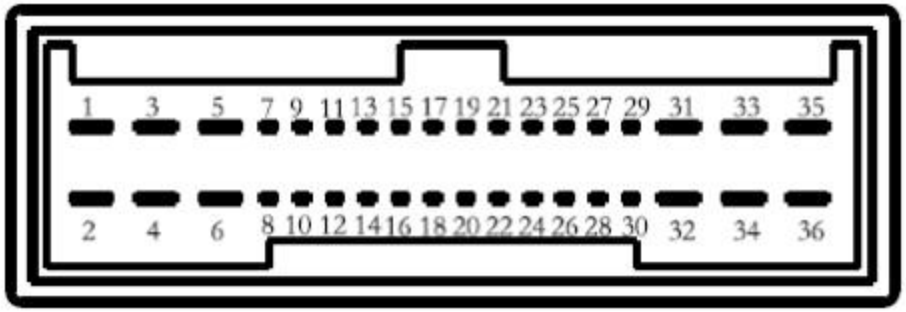
The electric control unit of the electric window regulator is a door control module, part number: DZ95189586600. Installed inside the door panel of the main driver's side door.

它是新式的模块化自动控制电子元器件。

It is a new type of modular automatic control electronic components.

它安装固定在主驾驶位置的车门饰板内部的车门板上面，使用一个36孔的插接器与车门线束相连接，如上图所示的孔位布置。

It is mounted on the door panel inside the door trim of the main driving position and is connected to the door harness using a 36-hole connector, the pins position as shown.



此门控模块内部具有短路自动保护功能，如果其中的某一个车门开关控制端线束（或者某一个车门电动机线束）短路搭铁，则控制器短路保护起作用，这一个车门的其他开关控制信号就会不再动作。直至车门开关控制端线束短路搭铁故障排除为止。所以，要注意，当控制器短路保护起作用时，并不是控制器损坏有故障，而是连接的线束或负载有短路故障。

This gate control module has an automatic short circuit protection function. If one of the door switch control terminal harnesses (or one of the door motor harnesses) is short-circuited, the controller short-circuit protection is active. The other switch control signal of this door will no longer move. Until the door switch control terminal harness short circuit fault troubleshooting.

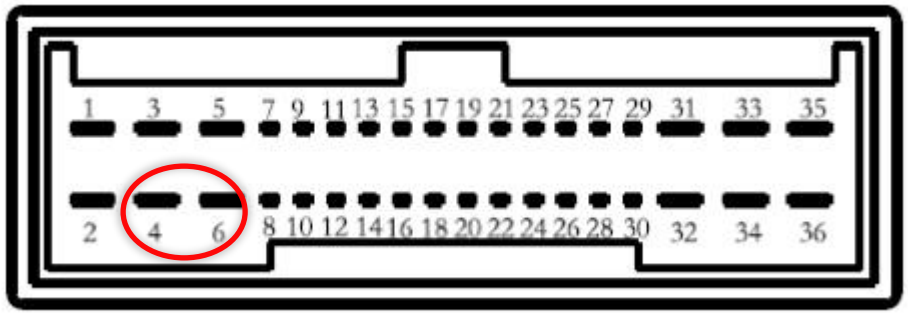
Therefore, it should be noted that when the controller short-circuit protection is active, it is not the controller that is damaged or faulty, but the connected wiring harness or load has a short-circuit fault.

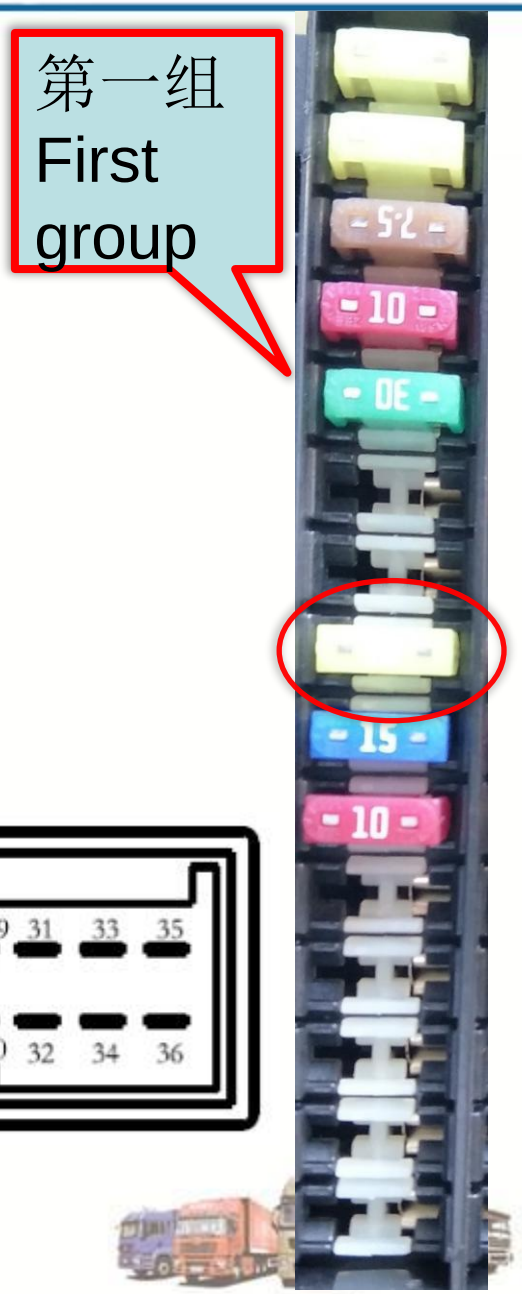
6，门控模块电路的电源：

6, gate module circuit power supply:

电路的常电电源由安装在电器装置板第一组14号保险丝的F134，电流30A，此保险丝通过绿黄线连接到门控模块4号和6号孔位。

The circuit's normal power supply is installed on the F134 of the first group 14 fuse of the electrical device board, and the current is 30A. This fuse is connected to the 4th and 6th hole positions of the gating module through the green-yellow wire.



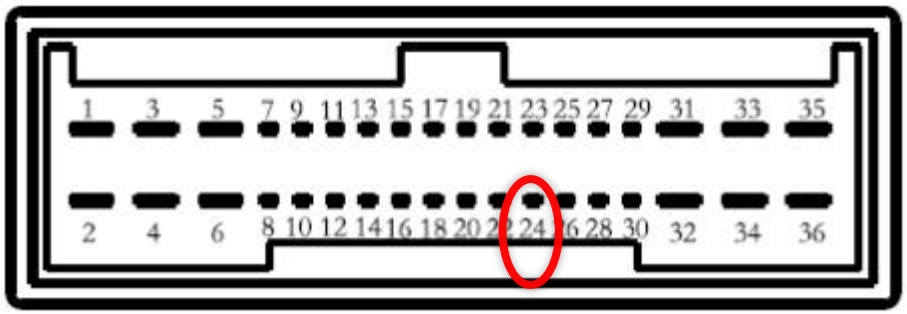


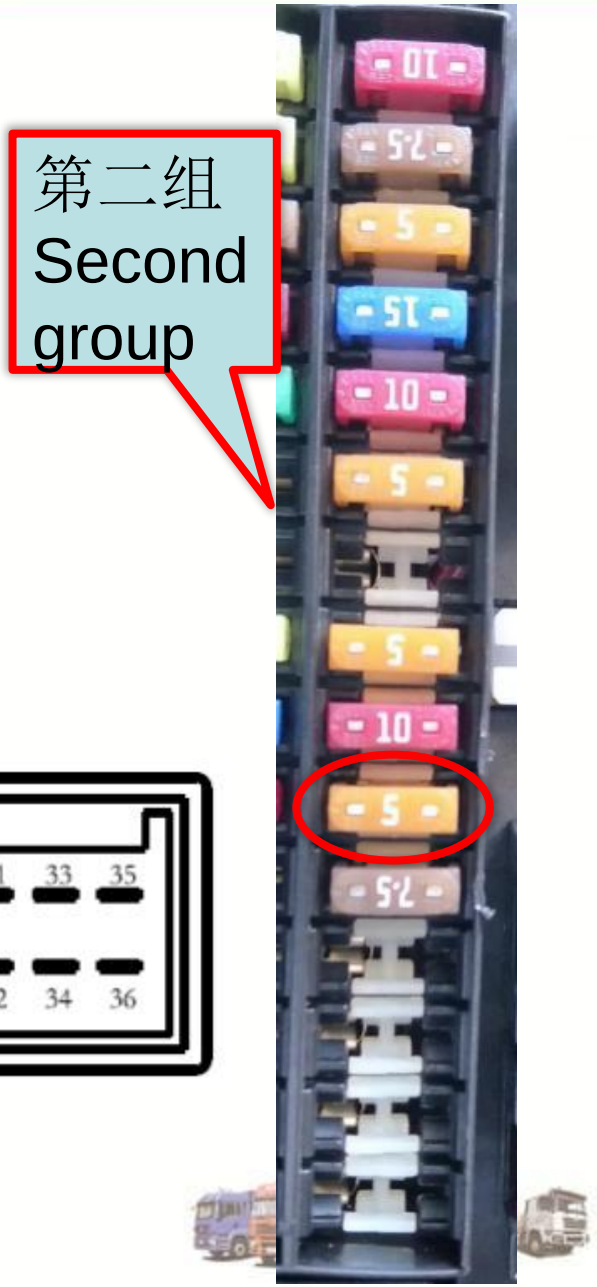
6，门控模块电路的电源：

Power supply for gated module circuits:

电路的钥匙电T15电源通过蓝白线连接到门控模块控制器24号孔位。

The circuit key T15 power supply, is connected to the 24-pin position of the gating module controller through the blue-white wire.



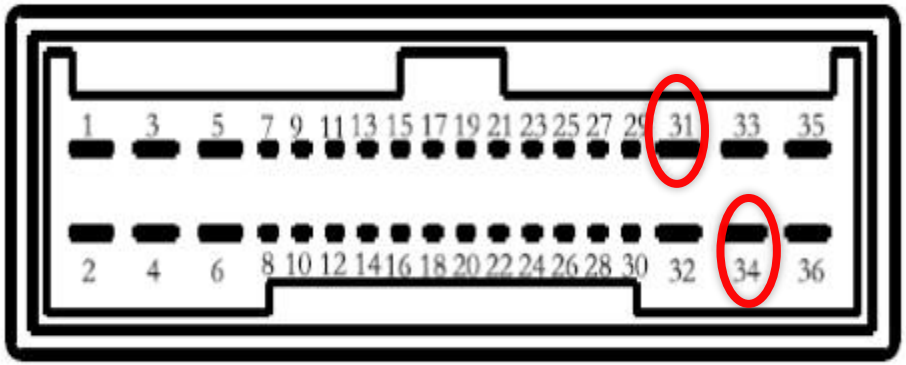


6，门控模块电路的电源：

Power supply for gated module circuits:

电路的负极搭铁线是通过黑色线由控制器31号和34号孔位直接连接到驾驶室搭铁点Z1。

The negative pole ground wire of the circuit is directly connected to the cab’s ground point Z1 through the black wire from the controller 31 and 34 hole positions.



7，H3000车型中控锁电路介绍

中控锁电路包括：

①中控锁控制器是和电动摇窗机同一个控制器。

②中控锁遥控器。

③中控锁翘板开关。

④中控锁锁闭电机。

⑤中控锁位置传感器。

7, introduction of the new M3000 control lock circuit

The central locking circuit includes:

① The central locking controller is the same controller as the electric window shaker.

② Central lock remote control.

③ Central lock rocker switch.

④ Central lock locking motor.

⑤ Central lock position sensor.

8，H3000车型中控锁电路介绍

introduction of the new M3000 control lock circuit

上图是：中控锁锁闭电机。

下图是：中控锁位置传感器和中控锁锁闭电机。

中控锁电路和门控模块电路共用相同的模块，电源电路相同。

The picture above is: Central lock locking motor.

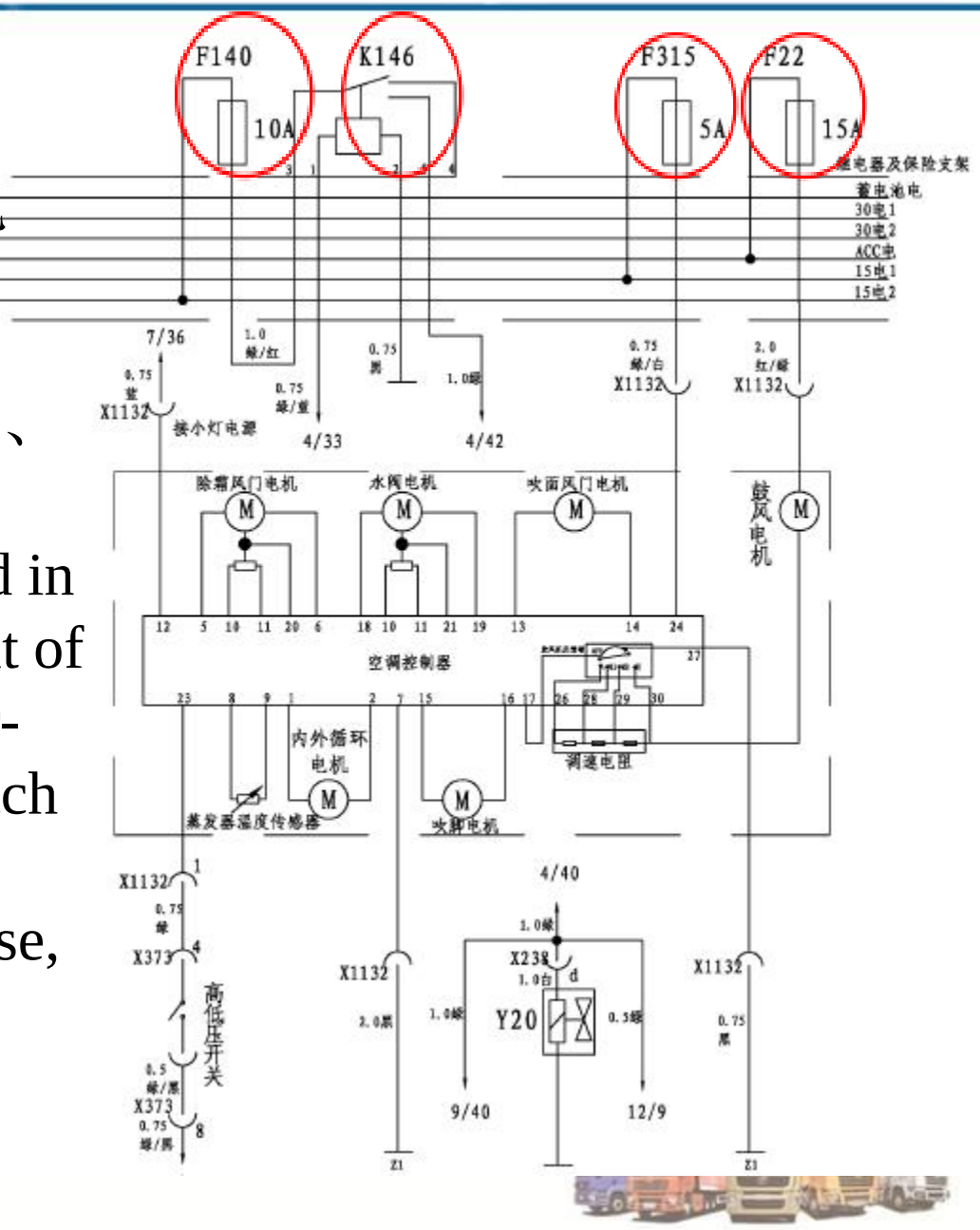
The following picture is: central lock position sensor and central lock locking motor.

The central control lock circuit and the gate control module circuit share the same module, and the power supply circuit is the same.

第十节，H3000汽车空调介绍
Air-conditioning introduction

1，H3000-EGR车型空调系统电路包含的电器设备有：F140 空调电磁离合器保险，F315空调T15电保险、F22 暖风电机保险、K146 空调电磁离合器继电器、

The electrical equipment included in the air-conditioning system circuit of the new M3000-EGR is: F140 air-conditioning electromagnetic clutch fuse, F315 air-conditioning T15 electric fuse, F22 heater motor fuse, K146 air-conditioning electromagnetic clutch relay



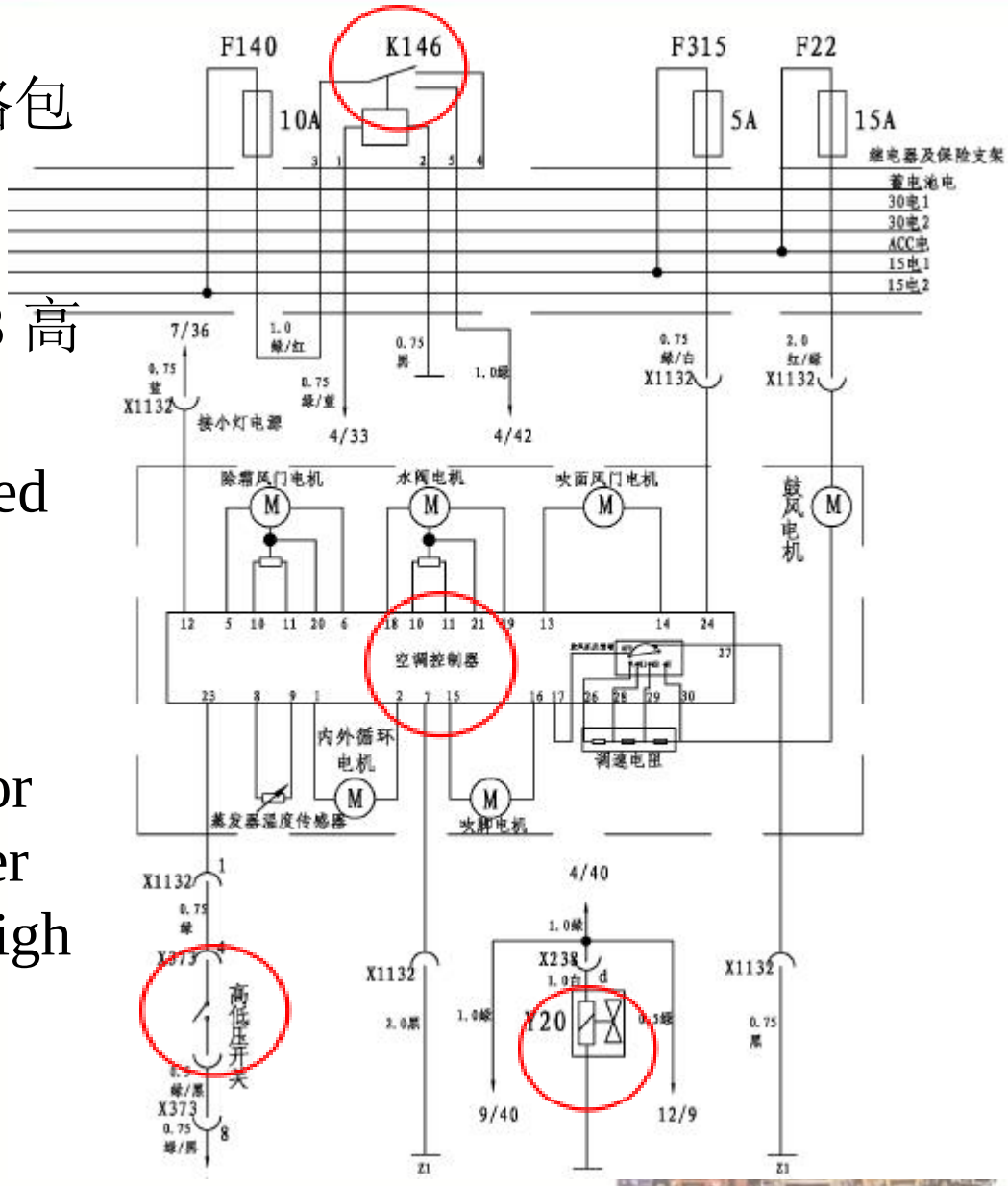
2，M3000空调系统电器

H3000-EGR车型空调系统电路包含的电器设备有:

Y20空调压缩机电磁线圈、X1132空调电源插接器、X373 高低压开关、空调控制器。

The electrical equipment included in the air conditioning system circuit of the new M3000-EGR model includes:

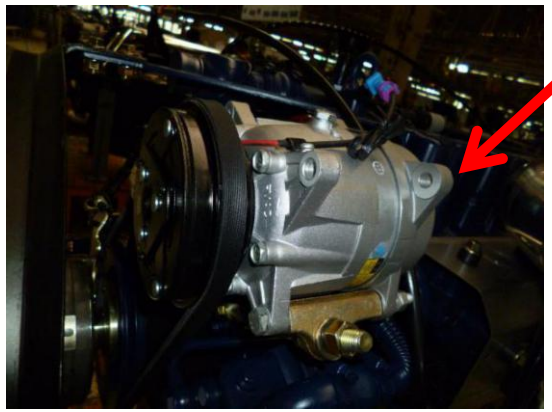
Y20 Air Conditioner Compressor Solenoid, X1132 Air Conditioner Power Plug Connector, X373 High and Low Pressure Switch, Air Conditioning Controller.

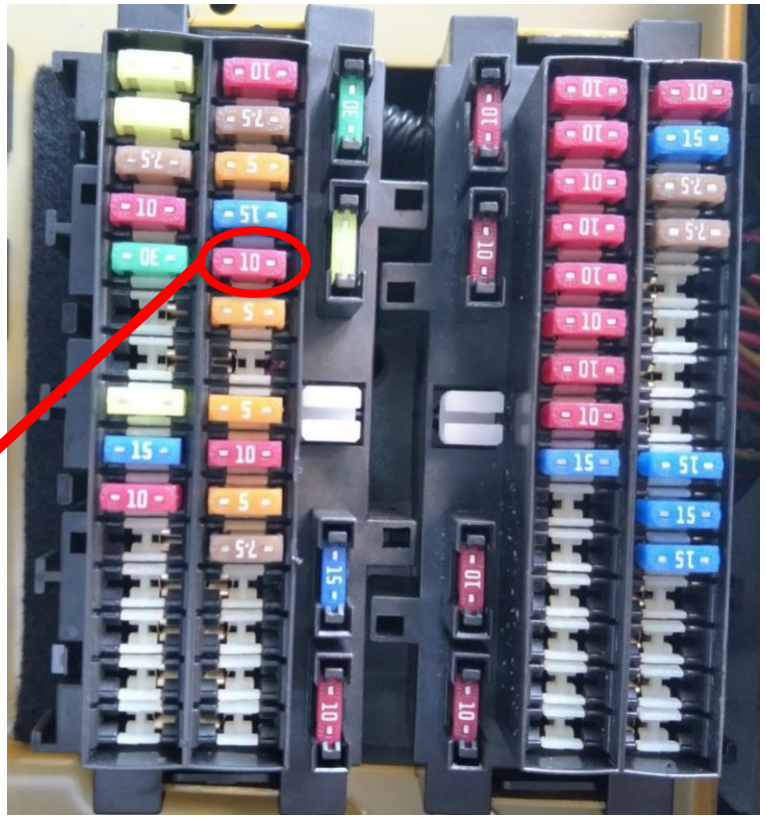


3，H3000-EGR车型空调系统电路的电源：

Power supply for the air conditioning system circuit of the new M3000-EGR :空调系统电路的电源有三个保险丝，F140，F315，F22 。其中F140 空调电磁离合器保险，它连接到K146 空调电磁离合器继电器的30端，只用于给Y20空调压缩机电磁线圈提供工作电流。

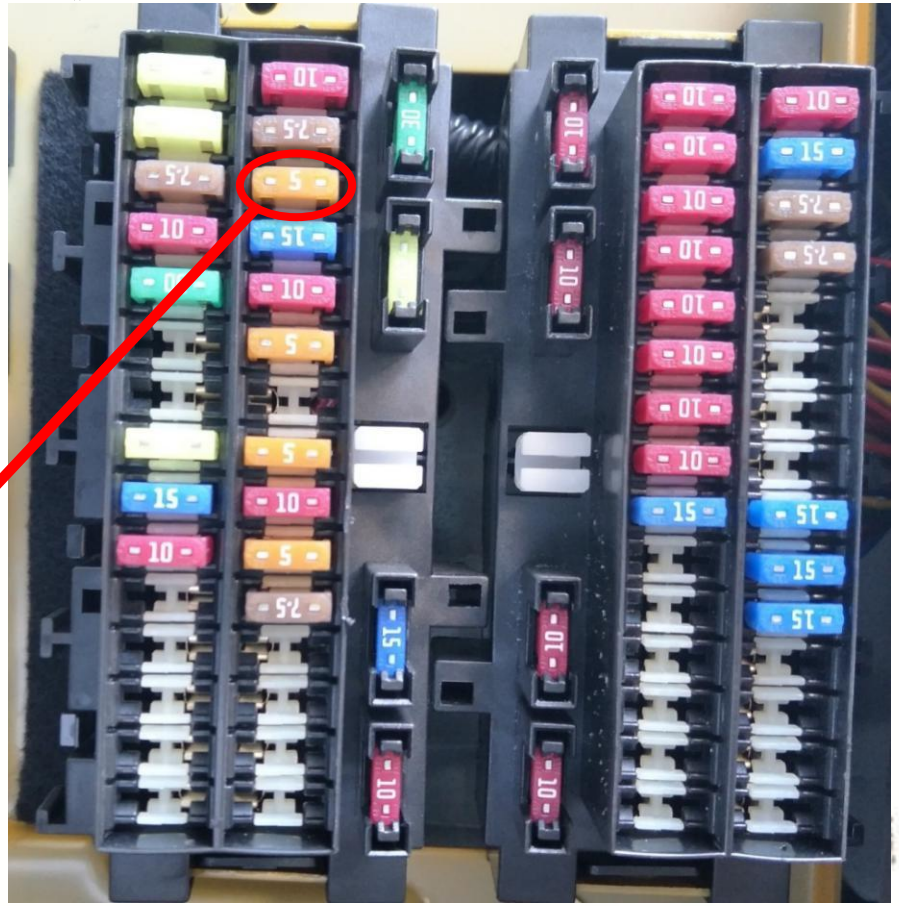
The power supply for the air conditioning system circuit has three fuses, F140, F315, F22.Among them, the F140 for the air-conditioning electromagnetic clutch. It is connected to the 30 side of the K146 air-conditioning electromagnetic clutch relay and is only used to provide operating current to the Y20 air-conditioning compressor solenoid.





H3000-EGR车型空调系统电路的电源：
Power supply for the air conditioning system circuit of the new M3000-EGR
其中F315空调T15电保险，它通过绿白线连接到空调控制器的24号针脚，只用于给空调控制器提供工作电流。

The F315 air-conditioning T15 electric fuse, which is connected to the 24th pin of the air-conditioning controller through the green and white wire, is only used to provide operating current to the air-conditioning controller.

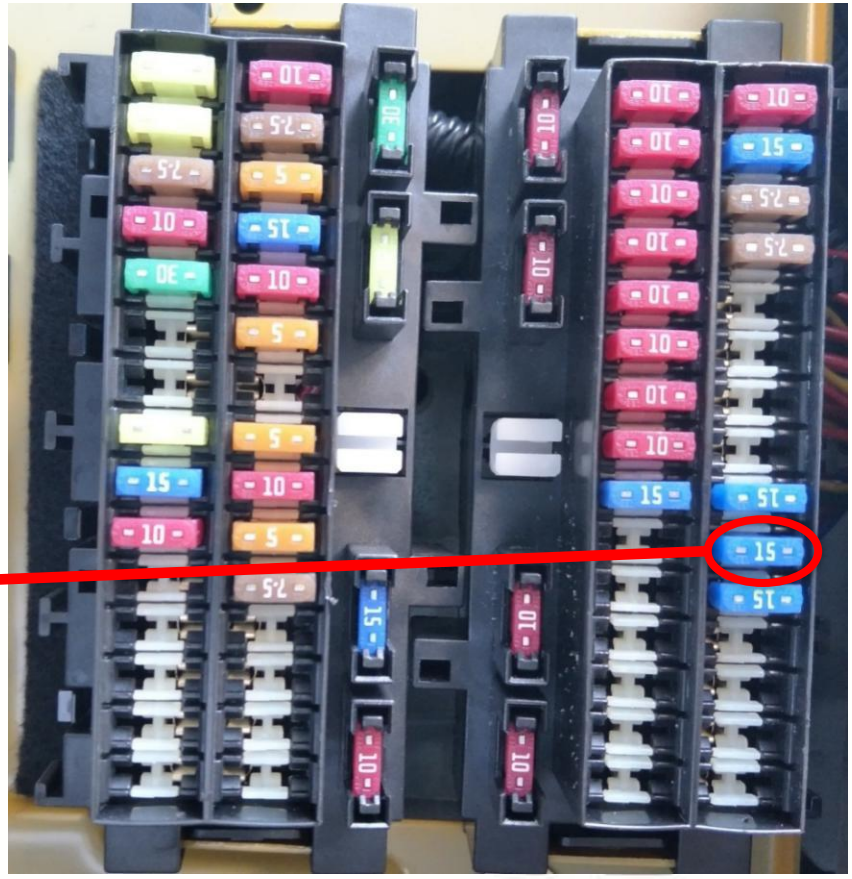


H3000-EGR车型空调系统电路的电源：

Power supply for the air conditioning system circuit of the new M3000-EGR

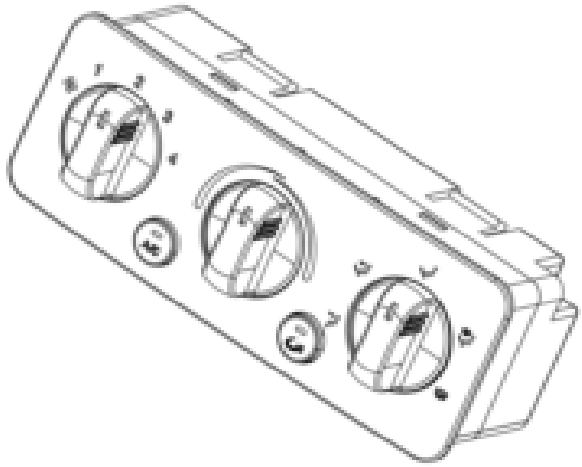
其中F22 暖风电机保险，它通过红绿线连接到鼓风电机的电源端，只用于给鼓风电机提供工作电流。

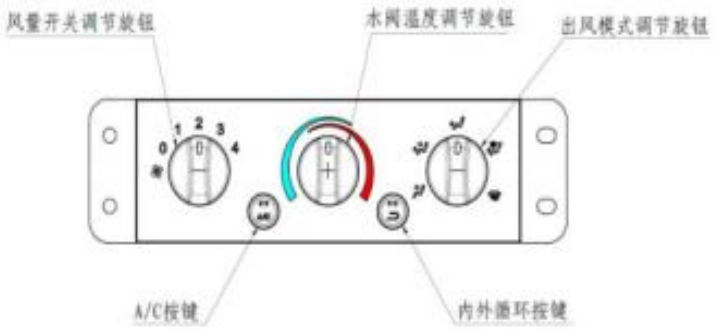
Among them, F22 warm air motor fuse, which is connected to the power supply end of the blower motor through the red and green lines, is only used to provide operating current to the blower motor.



4，H3000-EGR车型空调系统的空调控制器是手动调节空调。

The air conditioning controller of the new M3000-EGR model air-conditioning system is manually adjusted.





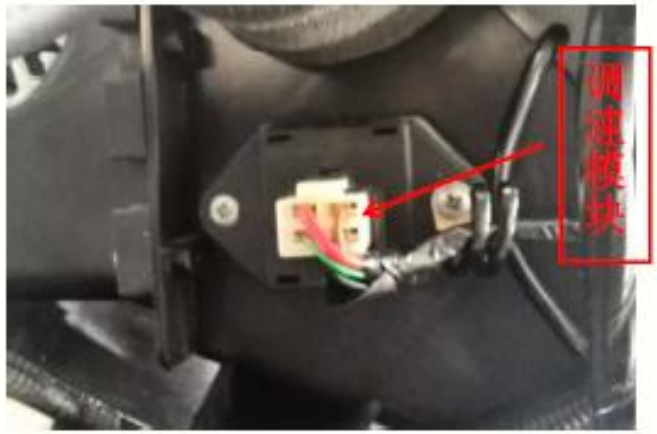
空调控制器的操作面板有三个调节旋钮，从左到右依次是，风量开关调节旋钮，水阀温度调节旋钮，出风模式调节旋钮。
空调控制器的操作面板有两个按键，A/C按键和内外循环按键。
The air conditioner controller's operation panel has three adjustment knobs, from left to right, the air volume switch adjustment knob, the water valve temperature adjustment knob, and the air mode adjustment knob.
The operation panel of the air conditioner controller has two buttons, A/C button and internal and external circulation buttons.

5，M3000空调系统 M3000 air conditioning system

H3000车型的空调控制器通过后面的两个插接器与驾驶室线束连接，一个是6针插接器，一个是20针插接器。

The new M3000 air-conditioning controller is connected to the cab wiring harness via two rear connectors, one is a 6-pin connector and the other is a 20-pin connector.

6，M3000空调的鼓风机采用调速模块，可实现模式切换时降风挡，提高模式执行器的寿命。



6. The M3000 air-conditioner blower adopts the speed control module, which can realize the wind-shielding when the mode is switched and improve the life of the model actuator.

7，M3000空调系统的暖风水阀，可实现制热模式下的热风功能，以及制冷模式下吹风温度的动态调节，也就是制冷的同时稍微进入一部分热风，提高驾驶室舒适性。

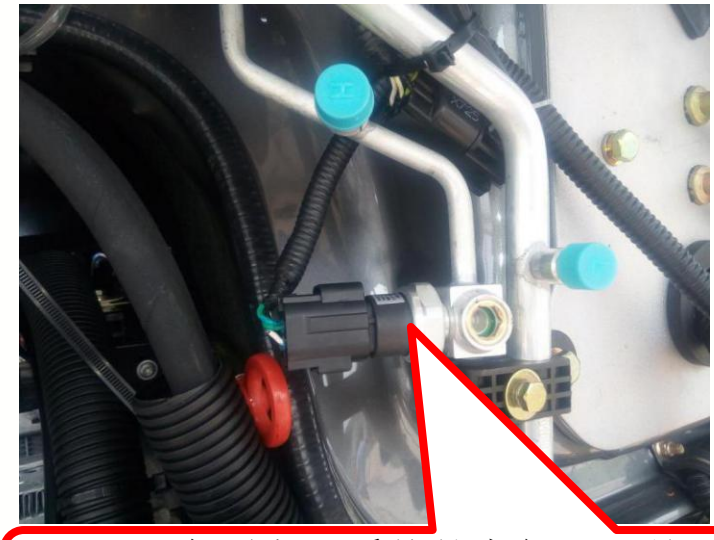
7. The heater valve of M3000 air conditioning system can realize the hot air function in heating mode, and the dynamic adjustment of blowing temperature in cooling mode, that is, it also enters a part of hot air while cooling to improve the comfort of the cab.

8，H3000-EGR车型空调系统的制冷电路：

8, the refrigeration circuit of the new M3000-EGR model air conditioning system:

当车辆空调制冷工作时，如果车辆空调系统无故障，则空调控制器的23号针脚输出24伏电压，通过X373左车门线束插接器的绿黑线，电压信号到达高低压开关，当空调系统内的制冷剂压力在0.21MPa<P<2.5MPa的状态范围内，此时高低压开关是导通状态，然后电压信号经过高低压开关，

When the vehicle air conditioning and cooling work, if the vehicle air conditioning system is not faulty, the 23rd pin of the air conditioner controller outputs 24 volts and passes the green black line of the X373 left door harness connector. The voltage signal reaches the high and low pressure switch. When the pressure of the refrigerant inside the air conditioning system is within the range of 0.21MPa<P<2.5MPa. At this time, the high-low pressure switch is in a conducting state, and then the voltage signal passes through the high and low voltage switches.



H3000车型空调系统的高低压开关

High and low pressure switch

9，H3000-EGR车型空调系统的制冷电路：

9, Refrigeration circuit of the new M3000-EGR model air conditioning system:

由绿棕线传递到电器装置板的K146 空调电磁离合器，控制K146 继电器的吸合。于是F140 空调电磁离合器保险的电源经过继电器的触点，此电流由绿色线经过X238/d驾驶室底盘插接器，最后到达Y20空调压缩机电磁线圈，控制压缩机电磁线圈吸合，然后空调压缩机在发动机皮带轮的拖动下运转，空调系统就能正常工作制冷了。

The K146 air-conditioning electromagnetic clutch transmitted from the green brown wire to the electrical device board controls the pull-in of the K146 relay. Then F140 air-conditioning electromagnetic clutch fuse power supply through the relay contacts, this current from the green line through the X238 / d cab chassis connector, and finally reached the Y20 air-conditioning compressor solenoid coil, control the compressor solenoid coil pull, and then compressed air conditioning .The machine runs under the drag of the engine pulley, and the air conditioning system can work normally and cool.

空调压缩机继电器
Air-conditioning compressor relay

10，总结：H3000车型空调制冷控制输出电路是简单串联连接关系，从空调控制器的23号制冷信号输出，到X373左车门线束插接器，然后到高低压开关，到K146空调压缩机继电器，到X238/d插接器，最后到压缩机线圈Y20。

10. Summary: The new M3000 model air-conditioning refrigeration control output circuit is a simple series connection relationship, from the 23rd floor air conditioner controller cooling signal output, to the X373 left door harness connector, and then to the high and low pressure switch to the K146 air conditioning compressor relay , to the X238/d connector, and finally to the compressor coil Y20.

第十一节　H3000整车电源的连接路径

Section 11 The connection path of the new M3000 vehicle power supply

1，常电电源的底盘部分1 the chassis part of the constant power supply 1:

整车电源为两组蓄电池串联而成，每组电压12V，总电压为24V。在底盘主电源线路首先自蓄电池正极至电瓶总开关，从电瓶总开关另一端引出的电源线从蓄电池箱穿过车架，由变速箱的上方敷设至起动机30接线柱处。

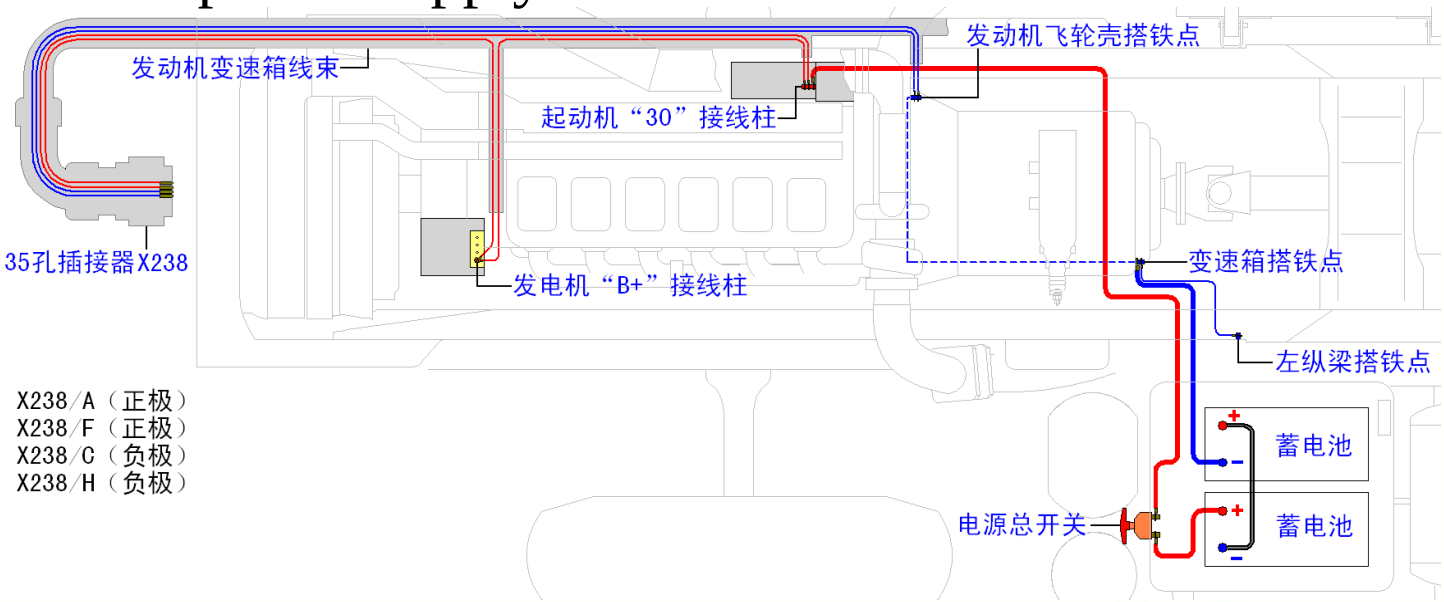
The vehicle's power supply is made up of two sets of batteries in series. Each set has a voltage of 12V and a total voltage of 24V. The main power line in the chassis is first from the battery positive terminal to the battery main switch. The power cord led from the other end of the battery main switch passes through the frame from the battery box, and is laid at the terminal of the starter 30 from the top of the gear box.

2，常电电源的底盘部分2：

2, Chassis part of the permanent power supply 2:

图为M3000车型在底盘主电源电路在底盘的敷设示意图。当电源总开关闭合时，启动机“30”端接线柱通电，和“30”接线柱连接的发电机“B+”端接通常电电源。

The picture shows the laying of the main power circuit of the M3000 in the chassis. When the main power switch is closed, the “30” terminal of the starter is energized, and the line connected to the “30” terminal is connected to the normal power supply.

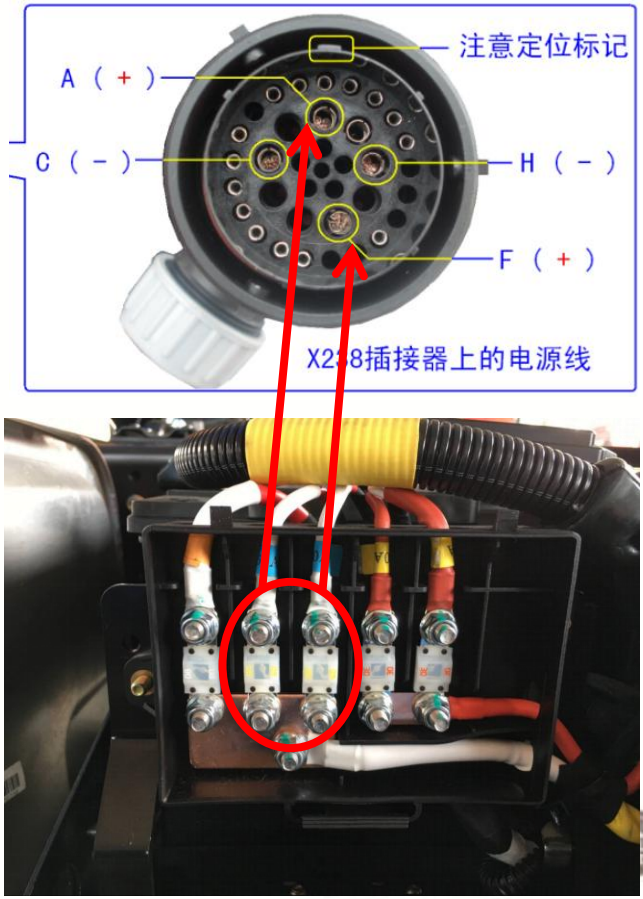


3，常电电源的底盘部分3：

The chassis part of the constant power supply 3

驾驶室的常电电源正极线共分两路，一路从电瓶箱保险盒60A保险丝至35孔插接器X238/A接线端子，另一路从电瓶箱保险盒60A保险丝至35孔插接器X238/F接线端子连接起来形成并联的常电电源。

the cab line of the chassis's constant power supply is divided into two ways, one from the battery fuse box 60A fuse to the 35-hole connector X238/A terminal block, the other way from the battery fuse box 60A fuse to the 35-hole connector X238/F Terminals, connected to form a parallel power supply.

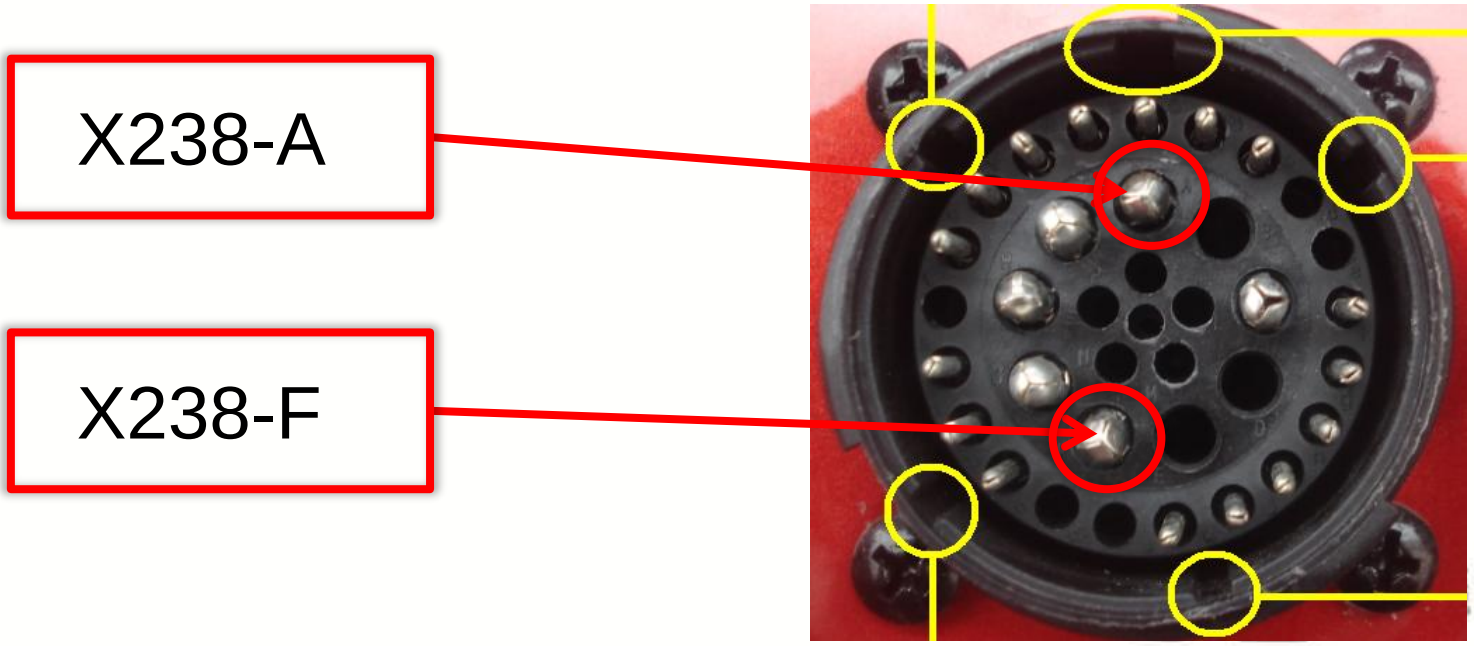


5，常电电源的驾驶室部分1：

Cab part of the permanent power supply 1:

然后，在驾驶室内部，驾驶室线束总成的35孔插接器X238的“A”号接线端子的一根6平方毫米的3030白色线把整车电源直接连至电器装置板，

Then, inside the cab, a 30mm white wire of 6mm2 at terminal “A” of the 35-hole connector X238 of the cab harness assembly connects the vehicle power directly to the electrical device board.



5，常电电源的驾驶室部分1：

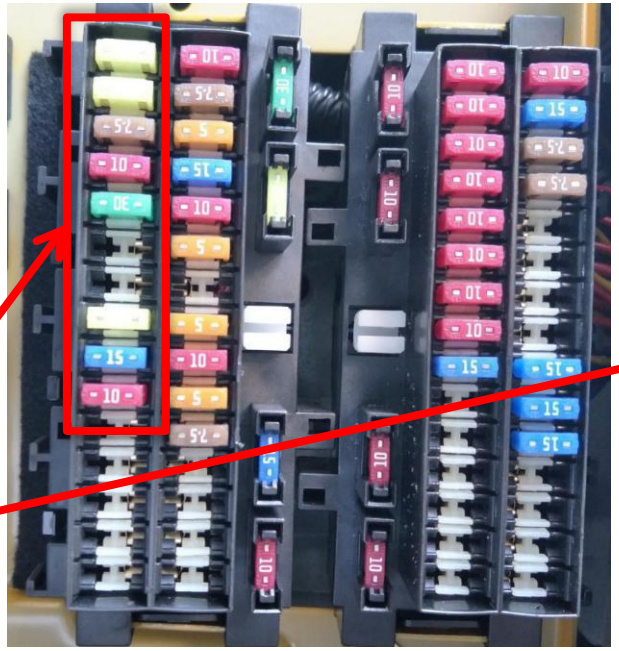
Cab part of the permanent power supply 1:

此电源分配给近光灯继电器K119，近光灯继电器K121，辅助远光继电器K980，ACC继电器K981，5300工作灯保险丝，5800小灯保险丝，5900前雾灯保险丝。由此使驾驶室主电源接通。

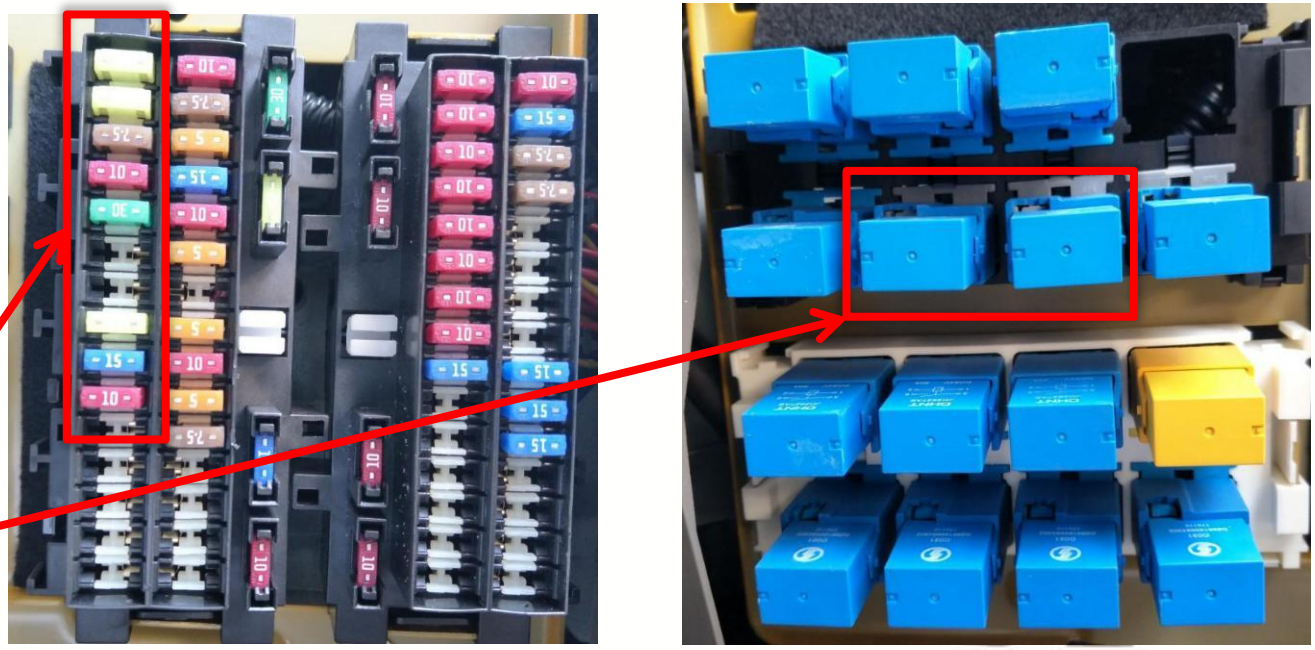
This power distribution For low beam lamp relay K119, low beam lamp relay K121, auxiliary high beam relay K980, ACC relay K981, 5300 work light fuse, 5800 small lamp fuse, 5900 front fog lamp fuse. As a result, the driver's main power supply is switched on.

6，常电电源的驾驶室部分2：Cab part of the permanent power supply 2:然后，在驾驶室内部，驾驶室线束总成的35孔插接器X238的“F”号接线端子的一根6平方毫米的白色线3031把整车电源直接连至电器装置板，此电源分配给钥匙电1继电器K171-I，钥匙电2继电器K171-II，Then, inside the cab, a 6mm square white wire 3031 at the "F" terminal of the 35-hole connector X238 of the cab harness assembly connects the vehicle power supply directly to the electric device board. Key power1 relay K171-I, key power 2 relay K171-II.

X238-F



6，常电电源的驾驶室部分2：Cab part of the permanent power supply 2:8100主车ABS常电保险丝，8200挂车ABS常电保险丝，6200制动灯保险丝,1750电动泵油继电器保险丝,9000门窗控制器常电保险丝,3040钥匙电源保险丝,6400电喇叭保险丝。由此使驾驶室主电源线接通。8100 tractor ABS permanent power fuse, 8200 trailer ABS permanent power fuse, 6200 brake light fuse, 1750 electric pump relay fuse, 9000 door & window controller permanent power fuse, 3040 key power fuse, 6400 electric horn fuse. This causes the cab main power line to be turned on.



7，常电电源的驾驶室部分3：

Cab part of the permanent power supply 3:

这2个整个驾驶室的主电源受电瓶总开关控制，凡与“X238-A，X238-F”电源线连接的电器线路均接通常电源。其通过电器装置板引出配电线路输往电器、继电器或保险。换句话说：只要打开电瓶总开关，这些电器设备是就已经通电了。

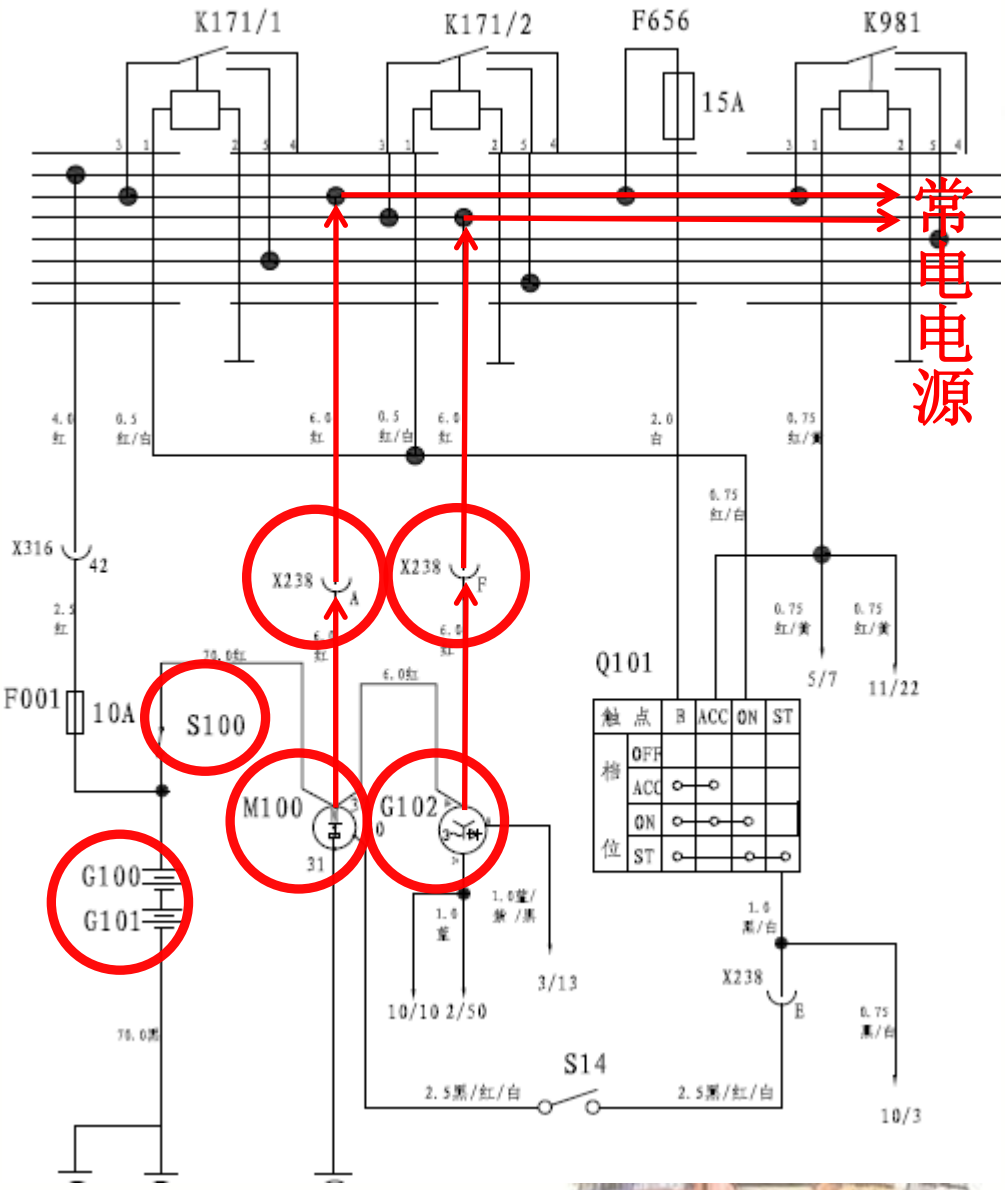
This two main cab power supply are controlled by the main battery switch, and all the electric wires connected to the “X238-A，X238-F” power cord are connected to the normal power supply. It leads out of the distribution line to electrical appliances, relays or fuses through the electrical device board. In other words: as long as the main battery switch is turned on, these electrical devices are already energized.

8，常电电源的驾驶室部分4：

Cab part of the permanent power supply 4:

如图所示，整个驾驶室的主电源连接路径，凡通过“ X238-A”连接电源线是30电1，凡通过“ X238-F”连接电源线是30电2。

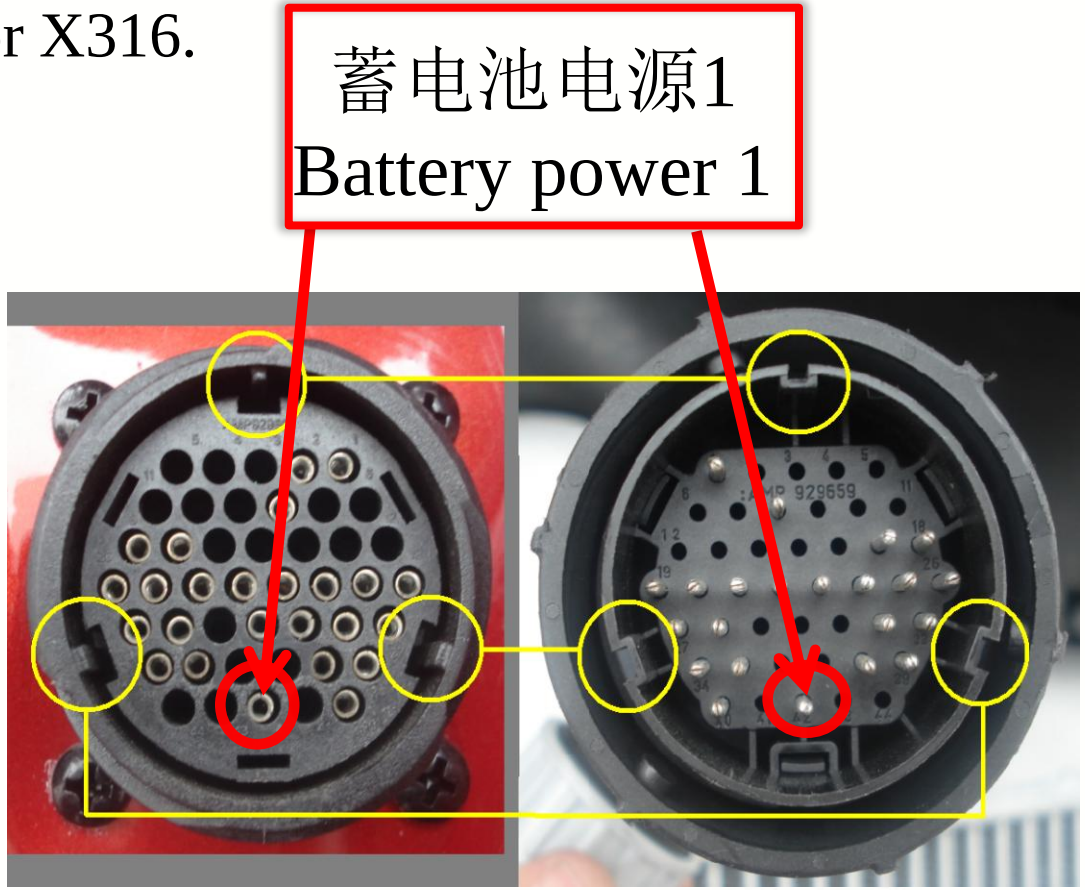
As shown in the figure, the main power connection path of the entire cab, where the power line is connected through “X238-A” is 30-1, and where the power line is connected through “X238-F” is 30-2.



9，蓄电池电源1： Battery power supply 1:

整车还有蓄电池电源，从电瓶箱保险10A保险丝通过44孔插接器**X316的“42”**号接线端子接入驾驶室内部。

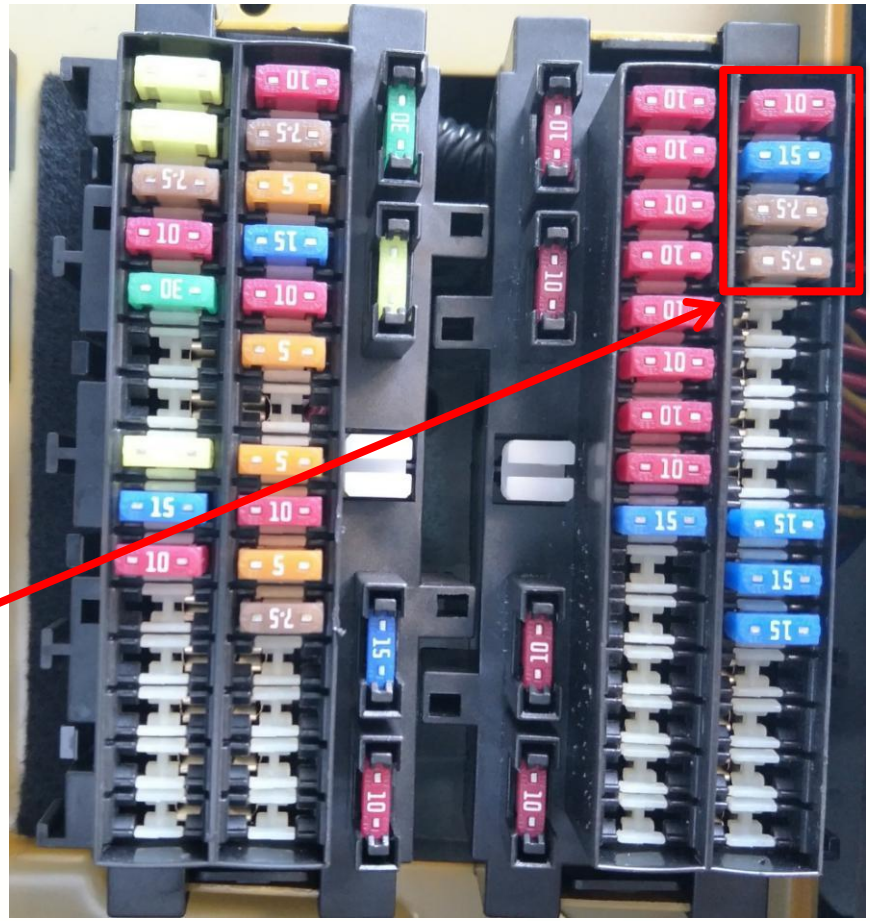
The vehicle also has a battery power supply. The 10A fuse from the battery box is connected to the inside of the cab through the “42” terminal of the 44-pin connector X316.



9，蓄电池电源1： Battery power supply 1:

蓄电池电源，通过红色线3000连接至电器装置板，此电源分配给5400室内顶灯保险丝，6300转向灯保险丝，7600天行健常电保险丝，7500组合仪表（收音机）常电保险丝，

The battery power is connected to the electrical device board through the red wire 3000. This power is allocated to the 5400 indoor ceiling light fuse, 6300 turn signal fuse, 7600 GPS permanent power fuse, 7500 combination meter (radio) permanent power fuse.



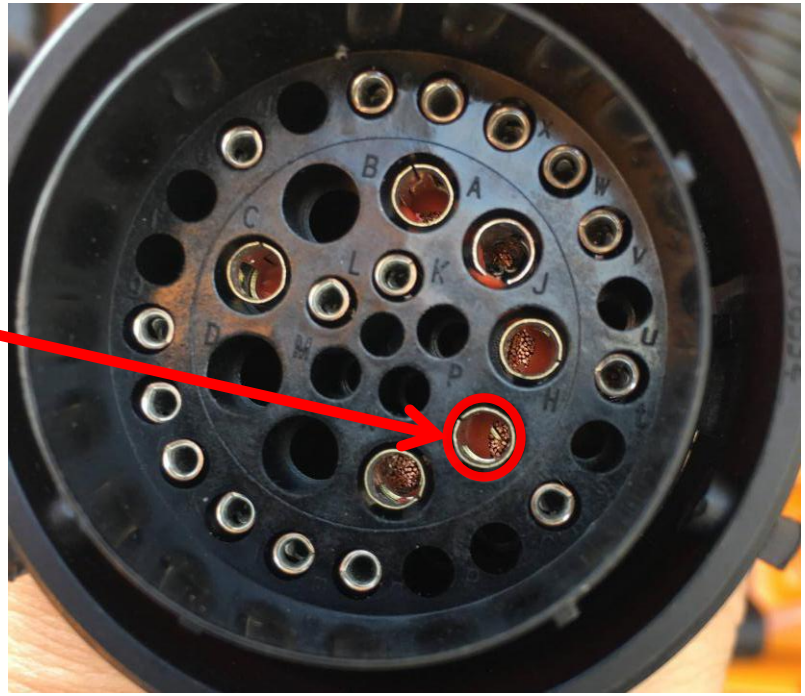
X316-42

9，蓄电池电源2： Battery power supply 2:

有的车型蓄电池电源，从电瓶箱保险盒30A保险丝至35孔插接器**X238的“G”**号接线端子接入驾驶室内部。

Some model battery power sources are connected to the inside of the cab from the 30A fuse of the battery fuse box to the “G” terminal of the 35-hole connector X238.

蓄电池电源2
Battery power 2

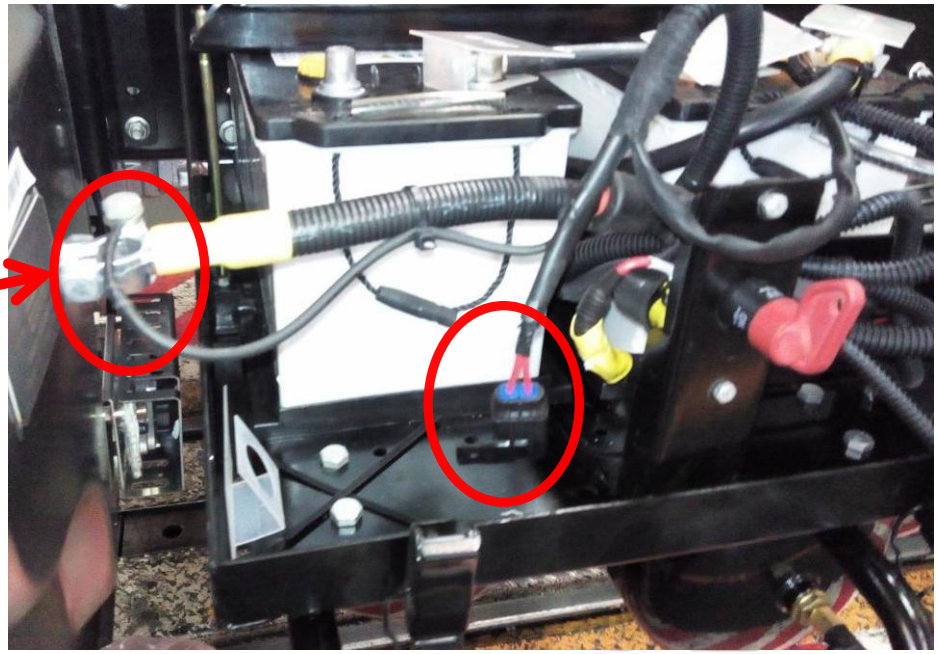


9，蓄电池电源2： Battery power 2:

蓄电池电源的接入点在电瓶总开关之前，不受电瓶总开关控制，线束直接与电瓶正极柱连接，经过10A常电保险丝接入驾驶室内部，此电源故障维修时必须断开电瓶正极连接线才可以彻底断电。

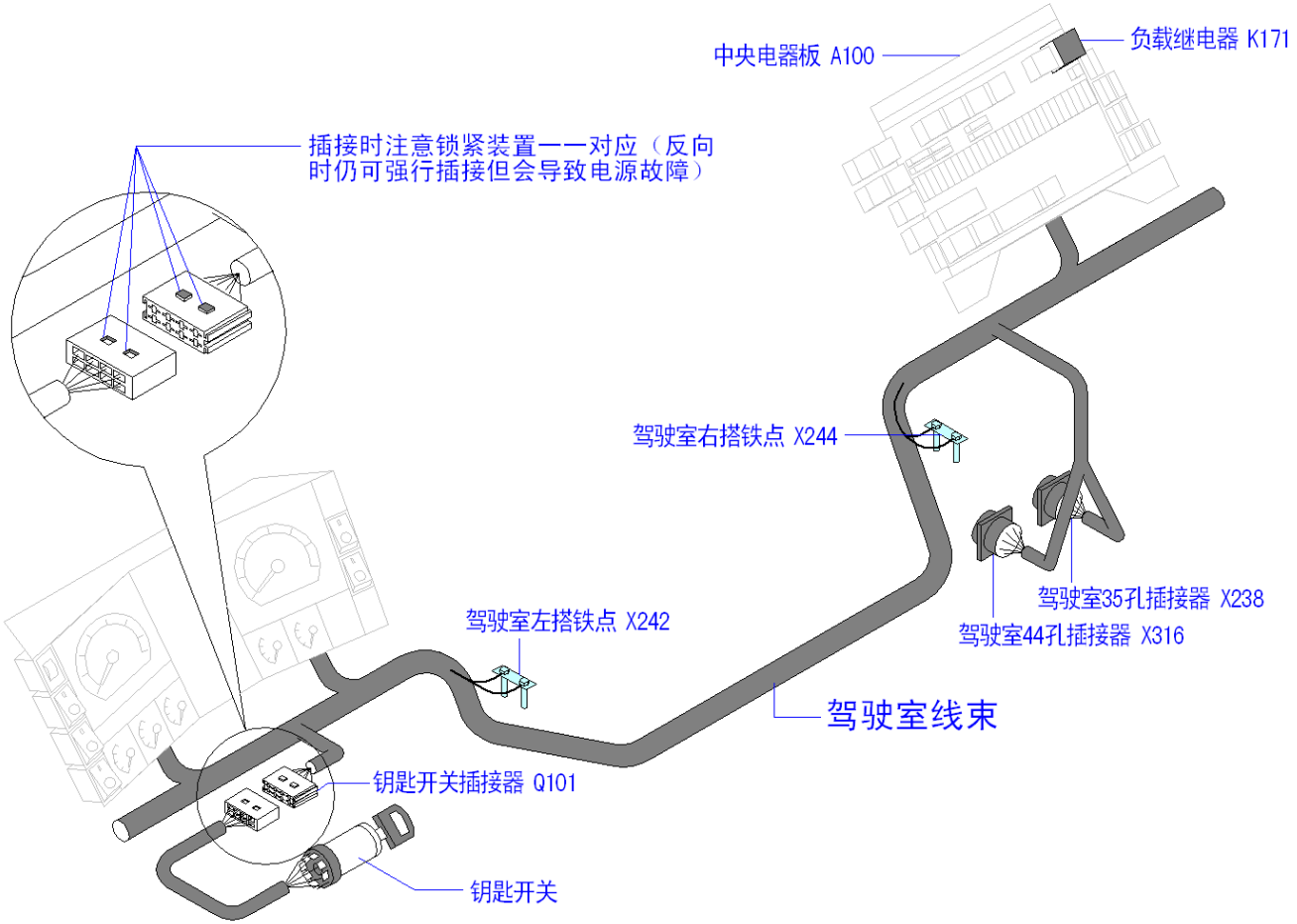
The access point of the battery power supply is not controlled by the battery master switch, the harness is directly connected to the battery positive pole and then connected to the cab interior through a 10A fuse. This battery must be disconnected from the battery positive connection when troubleshooting.

蓄电池电源
Battery power



第十二节 H3000钥匙电源及起动电路

Section 12 New M3000 Key Power Supply and Starting Circuit

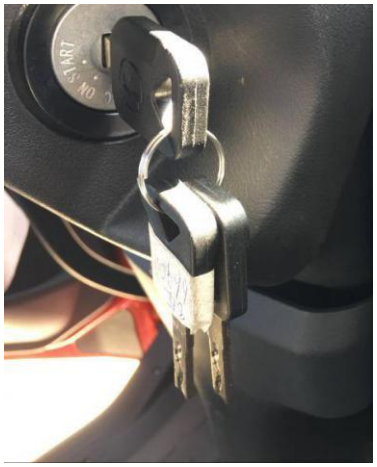


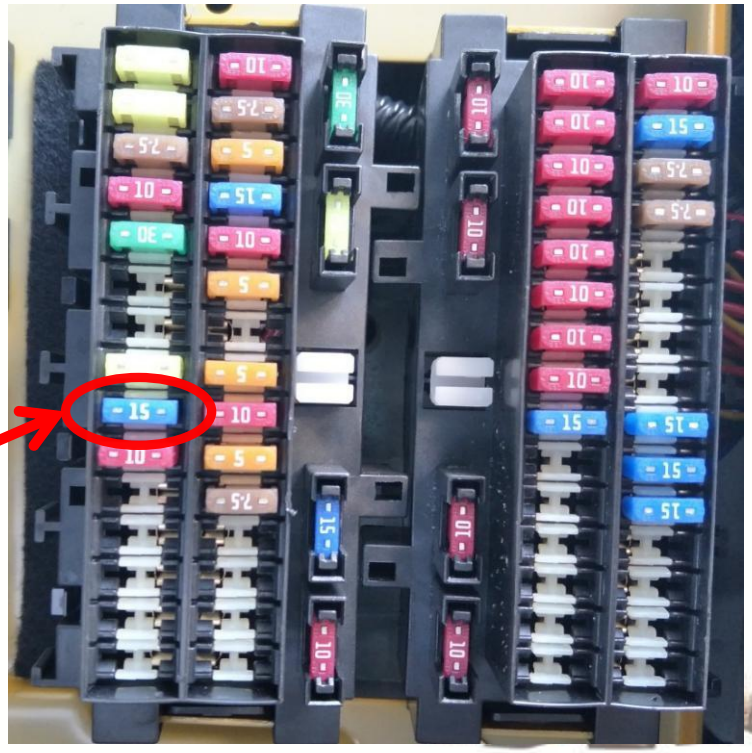
H3000钥匙电源1:

M3000钥匙电源控制电路如图所示：钥匙开关主电源通过电器板保险丝F565端口引出，通过3040号白色线接到钥匙开关插接器Q101的5号位置。

New M3000 Key Power Supply 1:

The M3000 key power supply control circuit is shown in the figure: The key switch main power is led through the F565 port of the electrical board fuse, and is connected to the No. 5 position of the key switch connector Q101 through the white line No. 3040.





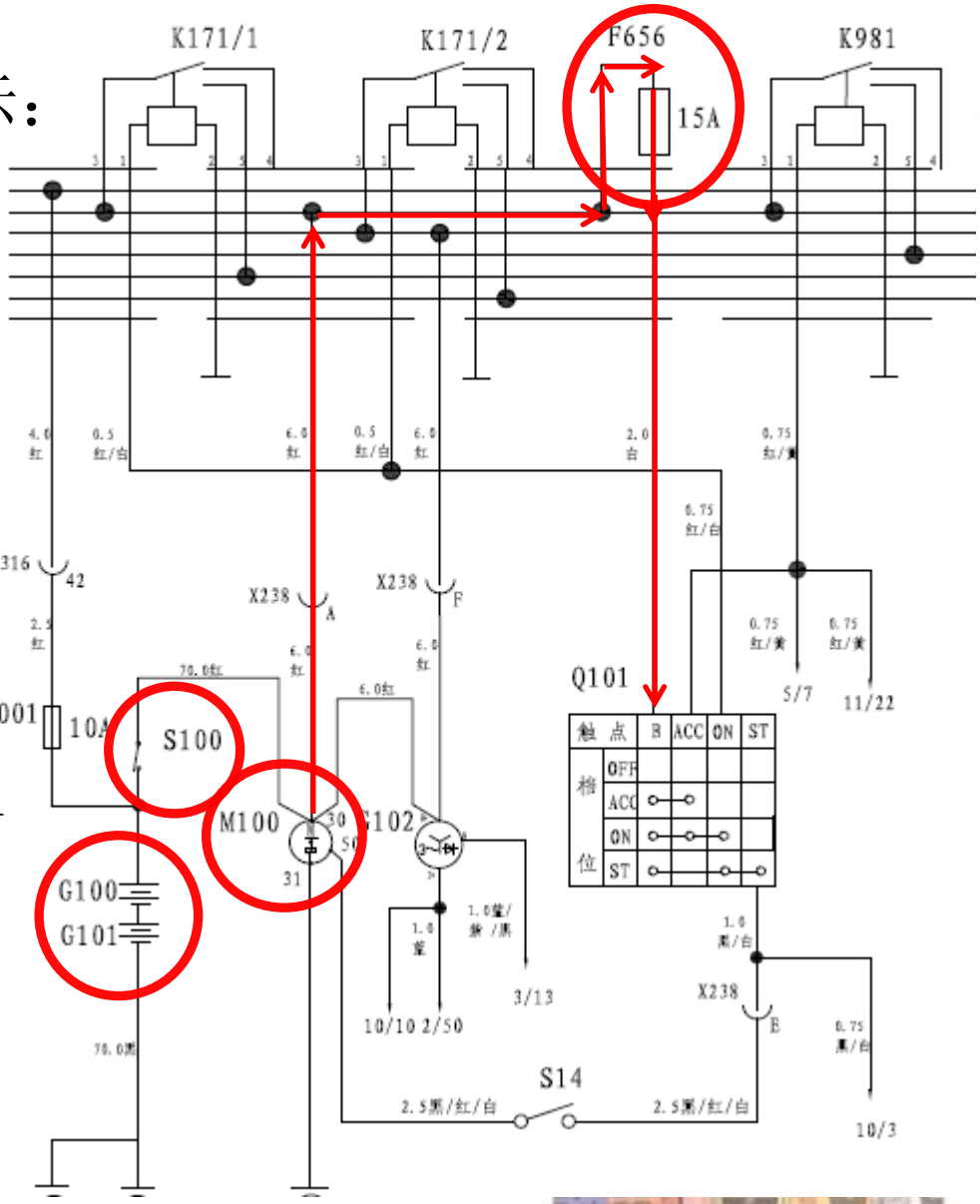
钥匙电源
Key Power

H3000钥匙电源2：

M3000钥匙电源控制电路如图所示：钥匙开关主电源通过电器板保险丝F565端口接出电器板，通过3040号白色线接到钥匙开关插接器Q101的5号位置。

New M3000 Key Power Supply 1:

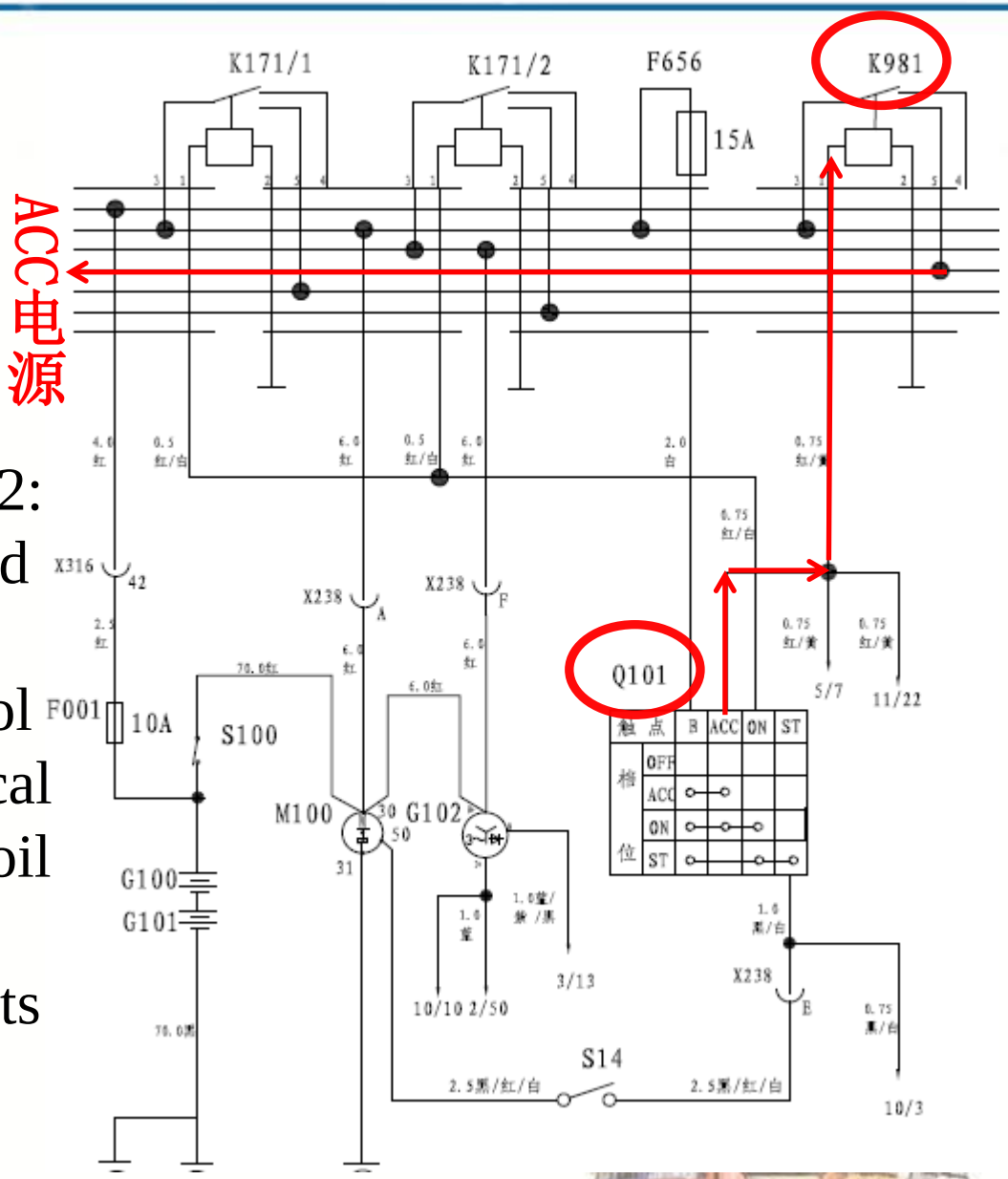
The M3000 key power supply control circuit is shown in the figure: The key switch main power supply is connected to the electrical board through the F565 port of the electrical board fuse and is connected to the No. 5 position of the key switch connector Q101 through the white wire No. 3040.



H3000钥匙电源3：

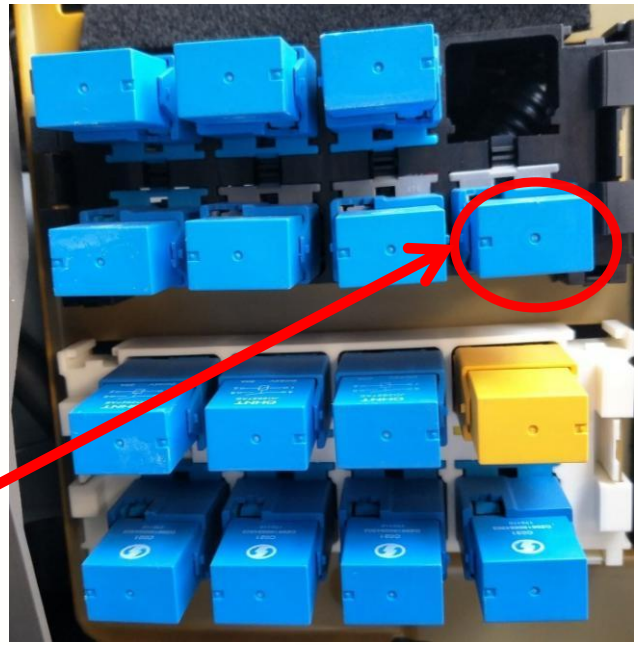
当钥匙开关接通ACC档位时，Q101的1号端子输出3012控制信号通过红黄线接入电器装置板K981-ACC继电器线圈，ACC继电器吸合，输出ACC电源。

New M3000 Key Power Supply 2: When the key switch is connected to the ACC position, Q101's terminal No.1 output 3012 control signal is connected to the electrical device board K981-ACC relay coil through the red yellow lines, and the ACC relay pulls in and outputs ACC power.



H3000钥匙电源4:
当钥匙开关接通ACC档位时，Q101的1号端子输出3012控制信号通过红黄线接入电器装置板K981-ACC继电器线圈，ACC继电器吸合，输出ACC电源。

New M3000 Key Power Supply 2:
When the key switch is connected to the ACC position, Q101's terminal No.1 output 3012 control signal is connected to the electrical device board K981-ACC relay coil through the red and yellow lines, and the ACC relay pulls in and outputs ACC power。



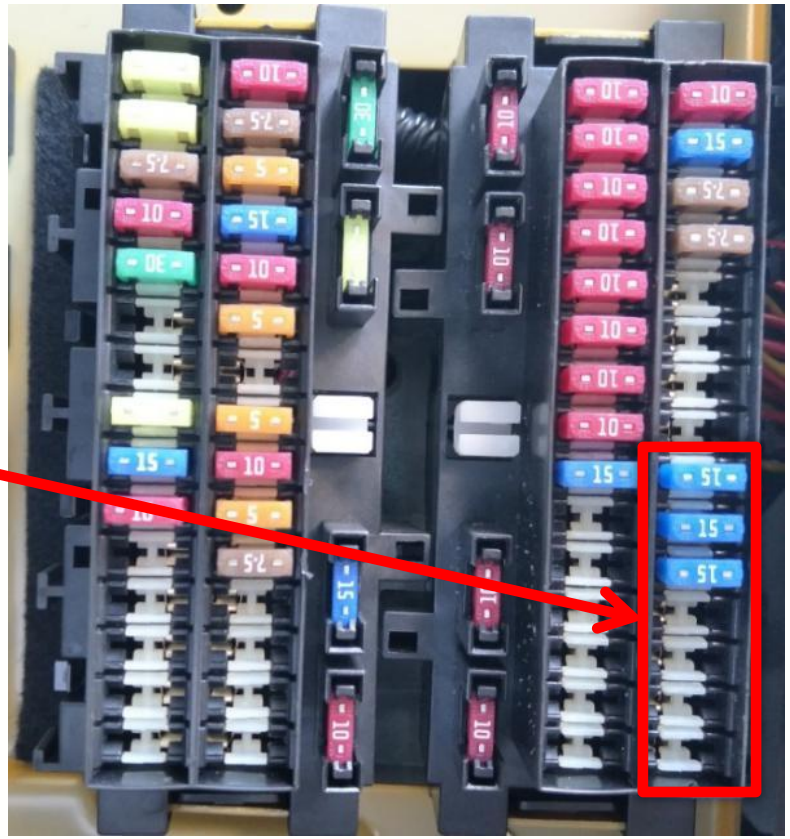
ACC继电器
ACC relay

H3000钥匙电源5:

它控制的ACC电继电器，主要是给收音机，行驶记录仪,暖风机，点烟器，雨刮器提供工作电源。

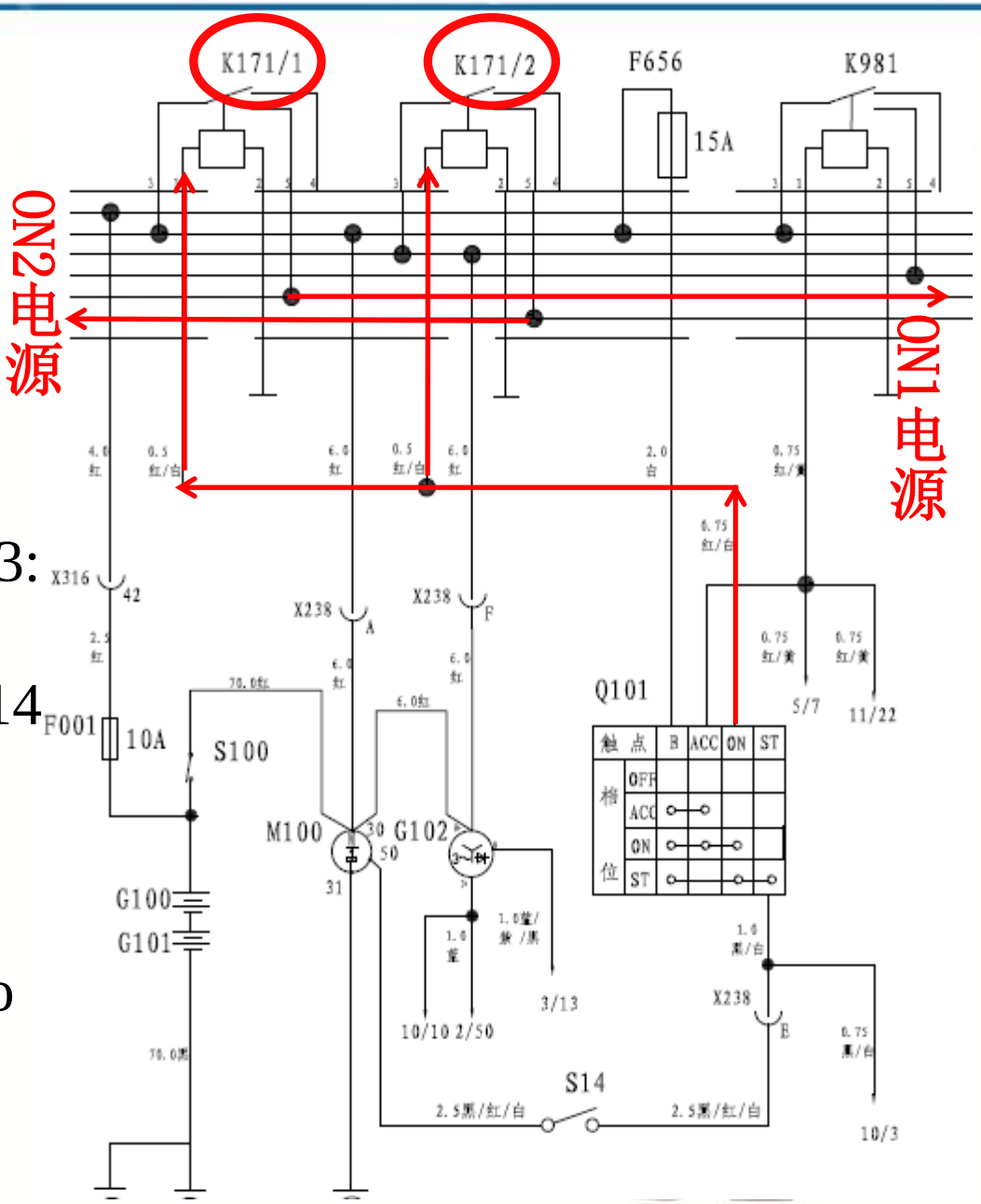
It controls the ACC electrical relay, mainly for the radio, driving recorder, heater, cigarette lighter and wiper.

ACC继电器
ACC relay



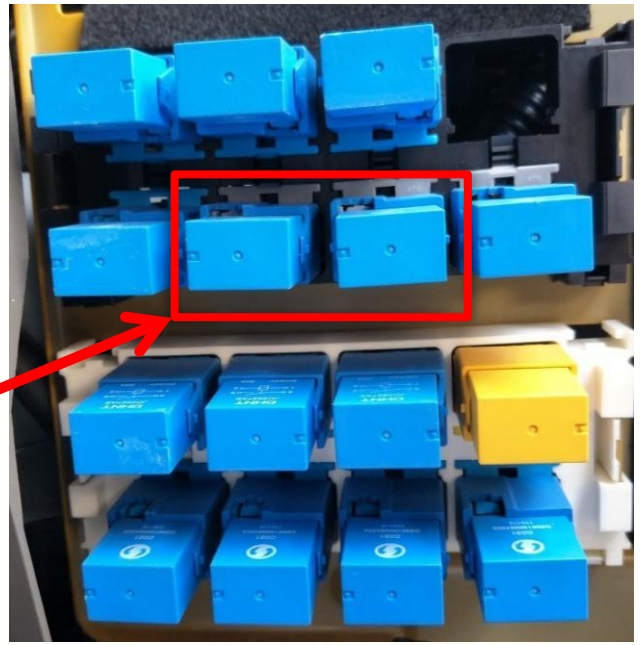
H3000钥匙电源6：
当钥匙开关接通ON档位时，Q101的3号端子输出3014控制信号通过红白线接入电器装置板K171-1，K171-2，继电器线圈，ON1，ON2继电器吸合，输出两路钥匙电源ON1，ON2。

New M3000 Key Power Supply 3:
When the key switch is ON, Q101's terminal No. 3 output 3014 control signal is connected to the electrical device board K171-1, K171-2, ON1 and ON2 relays through the red and white lines to pull in and output the two keys. Power ON1, ON2。



H3000钥匙电源3:
当钥匙开关接通ON档位时，Q101的3号端子输出3014控制信号通过红白线接入电器装置板K171-1，K171-2，继电器线圈，ON1，ON2继电器吸合，输出两路钥匙电源ON1，ON2。

New M3000 Key Power Supply 3:
When the key switch is ON, Q101's terminal No. 3 output 3014 control signal is connected to the electrical device board K171-1, K171-2, ON1, and ON2 relays through the red and white lines to pull in and output the two keys. Power ON1, ON2.



ON1，ON2继电器
ON1, ON2 relays

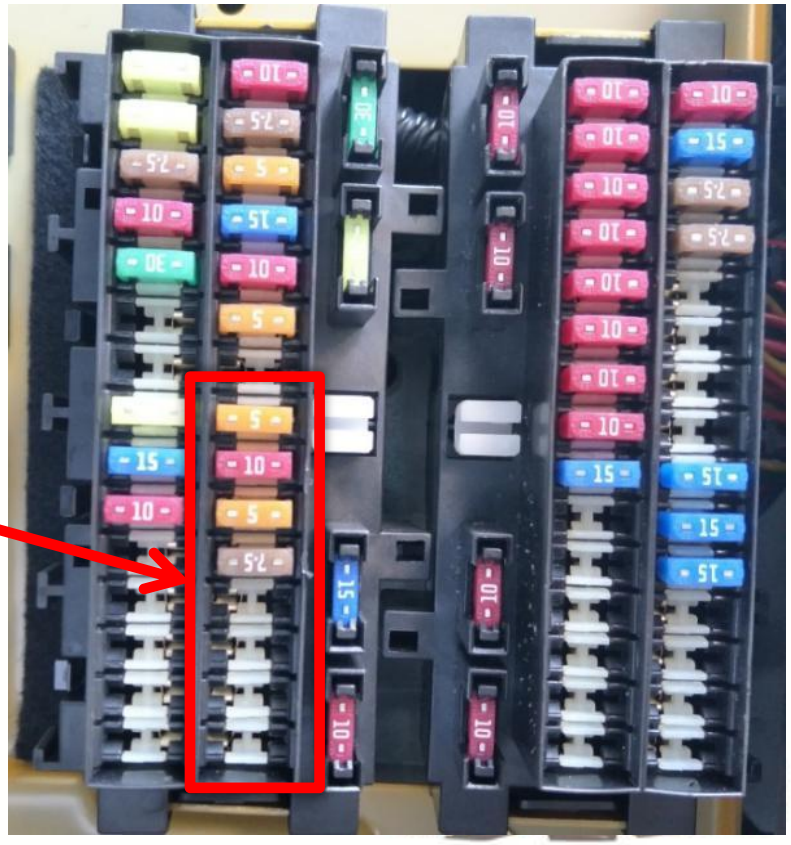
它控制的N0-1继电器主要是提供15电1的电源，是制动灯，倒车灯，组合仪表，空调控制器，差速器，取力器，发动机电磁风扇，排气制动，天行健的工作电源。The N0-1 relay is mainly used to provide power for 15-1, is the working power for brake light, reversing light, combination meter, air conditioning controller, Differential, power take-off, engine electromagnetic fan and exhaust brake,GPS.

ON1继电器
ON1 relays

它控制NO-2继电器主要是提供15电2的电源，15电2是空气干燥器，空调压缩机，ABS控制器，门窗控制器的工作电源。

The controls the NO-2 relay to provide power for 15-2, and 15-2 is the operating power for the air dryer, air conditioning compressor, and ABS controller，door&window controller.

ON2继电器ON2 relays



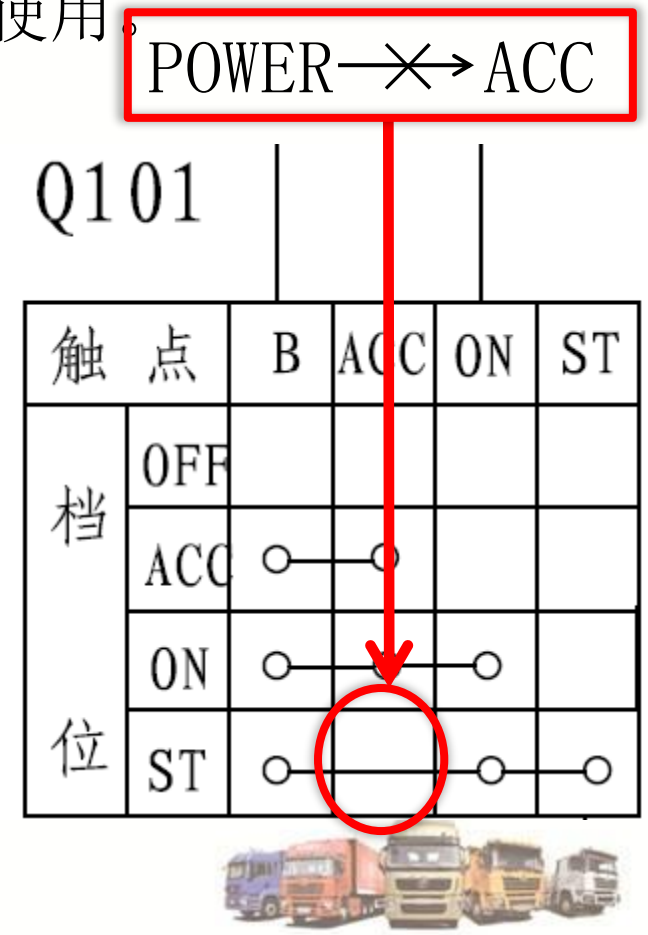
钥匙开关Q101的有3个输出信号，第3个是ST电，主要是给启动机提供启动信号（T50）。

The third output signal of the key switch Q101 is the ST power and mainly provides a start signal (T50) to the starter.

START

注意：钥匙开关Q101旋转到ST档进行发动机起动时，此时的ACC电就会暂时性断电，起动完成后，松开钥匙开关自动断开ST档，同时ACC电恢复接通。所以说是发动机起动过程中收音机，行驶记录仪，暖风机，点烟器，雨刮器等电器是暂时性不工作的，目的是为了节约电能给启动机使用。

Note: When the key switch Q101 is rotated to the ST position to start the engine, the ACC power at this time will be temporarily de-energized. After the start is completed, the key switch is released and the ST position is automatically disconnected, and the ACC power is restored. Therefore, it is said that radios, driving recorders, heaters, cigarette lighters, and wipers are temporarily disabled during the engine start-up. The purpose is to save energy for starters.



H3000起动电路1，
电路组成:
G100-G101蓄电瓶
S100电瓶总开关
Q101 钥匙开关
S14 空档开关
M100 起动机

New M3000 starter circuit 1,
Circuit composition:
G100-G101 Battery
S100 battery switch
Q101 key switch
S14 neutral gear switch
M100 starter



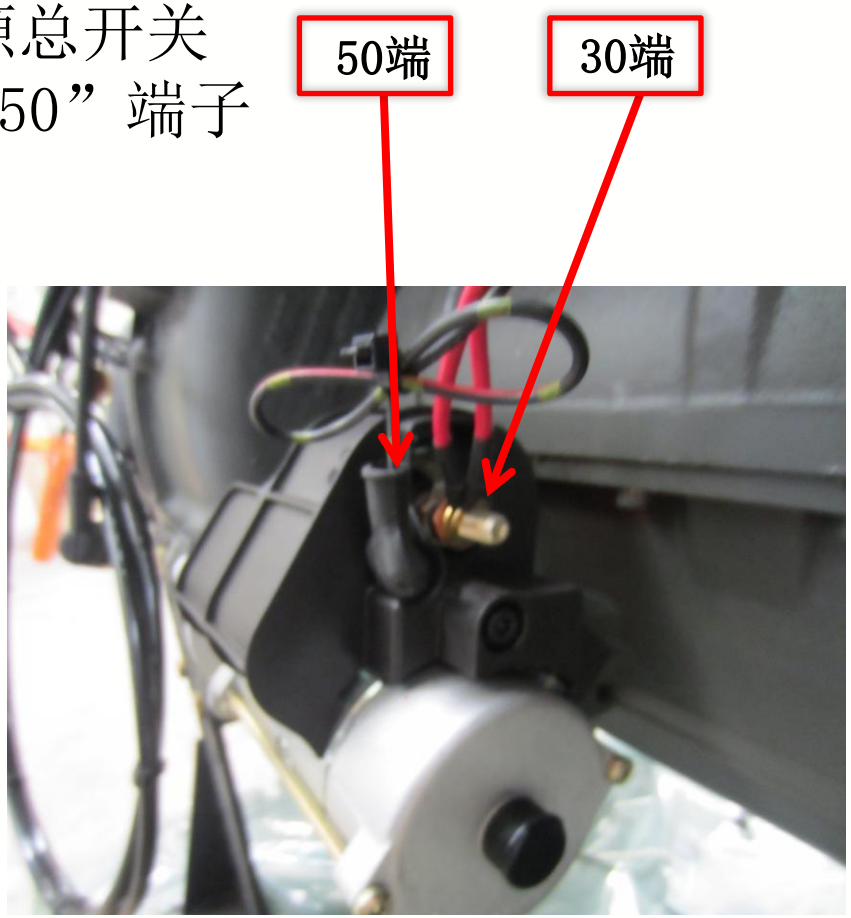


H3000起动电路2:

如图，启动马达M100共有2个接线端子，“30”端子由70-90mm²的黑线直接接至电源总开关S149，为启动马达提供工作电源，“50”端子接启动信号黑红黄线。

New M3000 starter circuit 2:

As shown in the figure, the starter motor M100 has two terminals. The “30” terminal is connected directly from the 70-90mm² black line to the main power switch S149 to provide the operating power for the starter motor. The “50” terminal is connected to the start signal black red yellow lines.



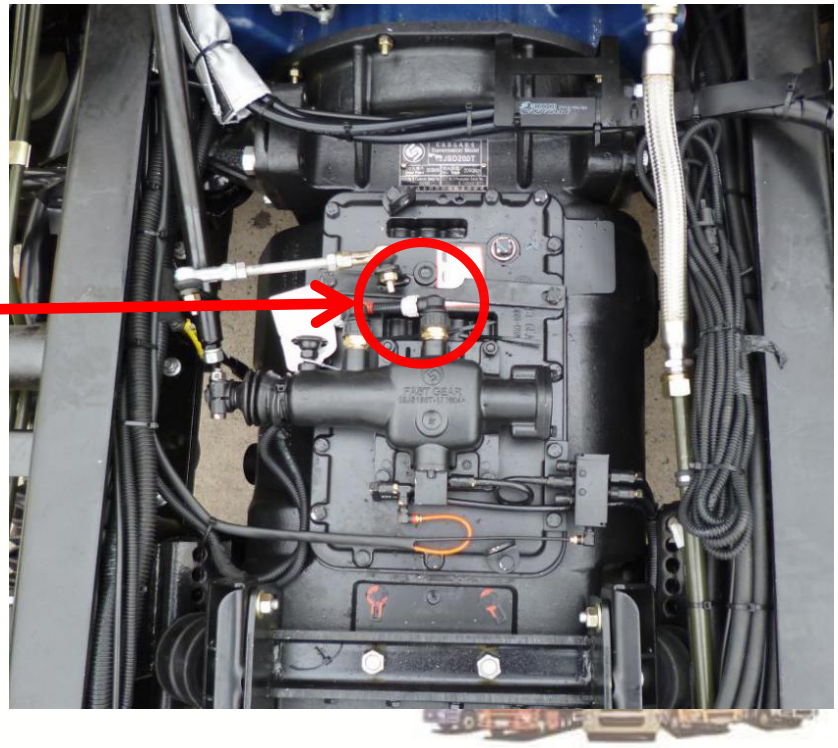
H3000起动电路3:

New M3000 starter circuit 3:

变速箱空档开关S14串接在起动机50端的控制回路上，当变速箱在空档位置时，空档开关S14闭合。

The transmission neutral switch S14 is connected in series with the control circuit of the starter 50. When the transmission is in the neutral position, the neutral switch S14 is closed.

空档开关
neutral switch



H3000起动电路3:

New M3000 starter circuit 3:

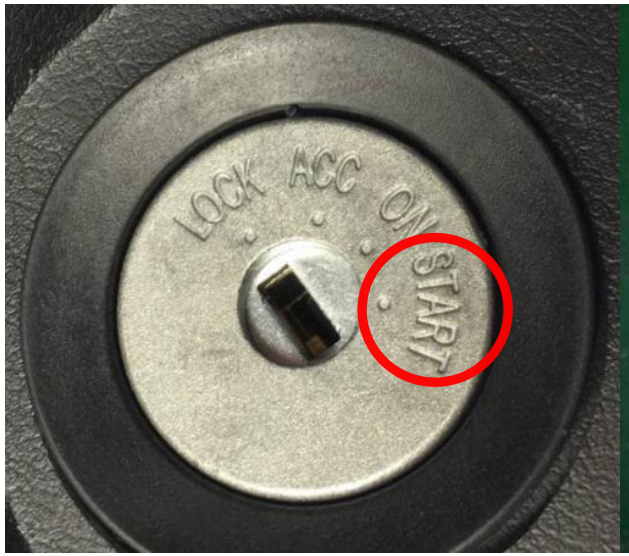
如果在启动操作时，变速箱挂合任何一个档位、空档开关S14均断开，启动电路均断路，启动马达都不能被接通，从而确保车辆的安全。

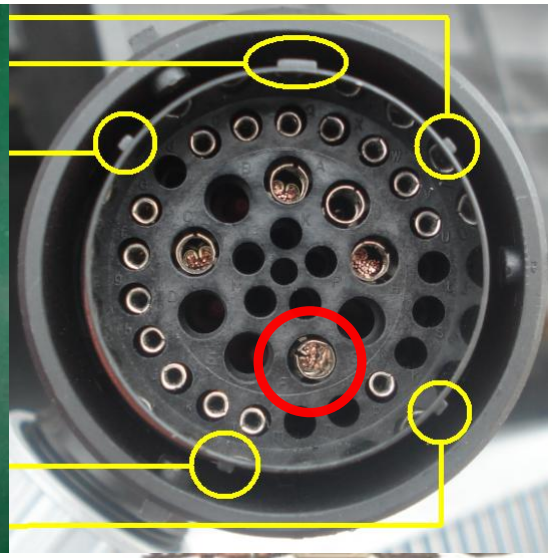
If the gearbox is engaged in any gear during the start-up operation, the neutral switch S14 is open, the starting circuit is open and the starter motor cannot be switched on to ensure the safety of the vehicle.

H3000起动电路4:New M3000 starter circuit 4:

车辆启动时，钥匙开关Q101旋至启动“ST”档位置时，Q101的8号端子输出的启动信号5030电源经通过水龙头X238-E端子，由BAD线经过空档开关S14接通起动机的50端，起动机收到T50启动信号，起动机旋转推动发动机启动。

When the starting the vehicle, the key switch Q101 is turned to the starting position, the start signal 5030 output from the No. 8 terminal of the Q101 is passed through the X238-E terminal, and the BAD line is connected to the starter 50 through the neutral switch S14. At the end, the starter receives the T50 start signal and the starter rotates to drive the engine.



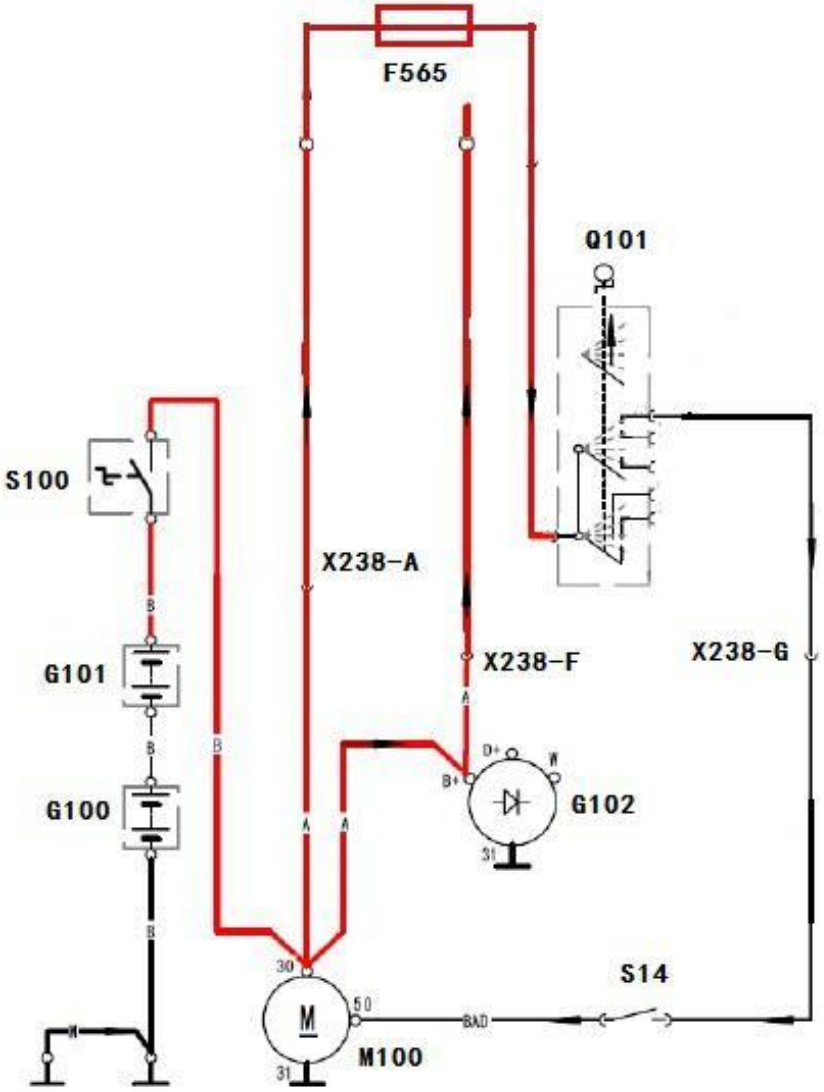


H3000起动电路5:

New M3000 starter circuit 5:

如图，车辆启动电流方向，电瓶G100→G101→95电缆→起动机M100-30端→红色线→插接器X238-A→保险丝F565→3040线→钥匙开关Q101-5→

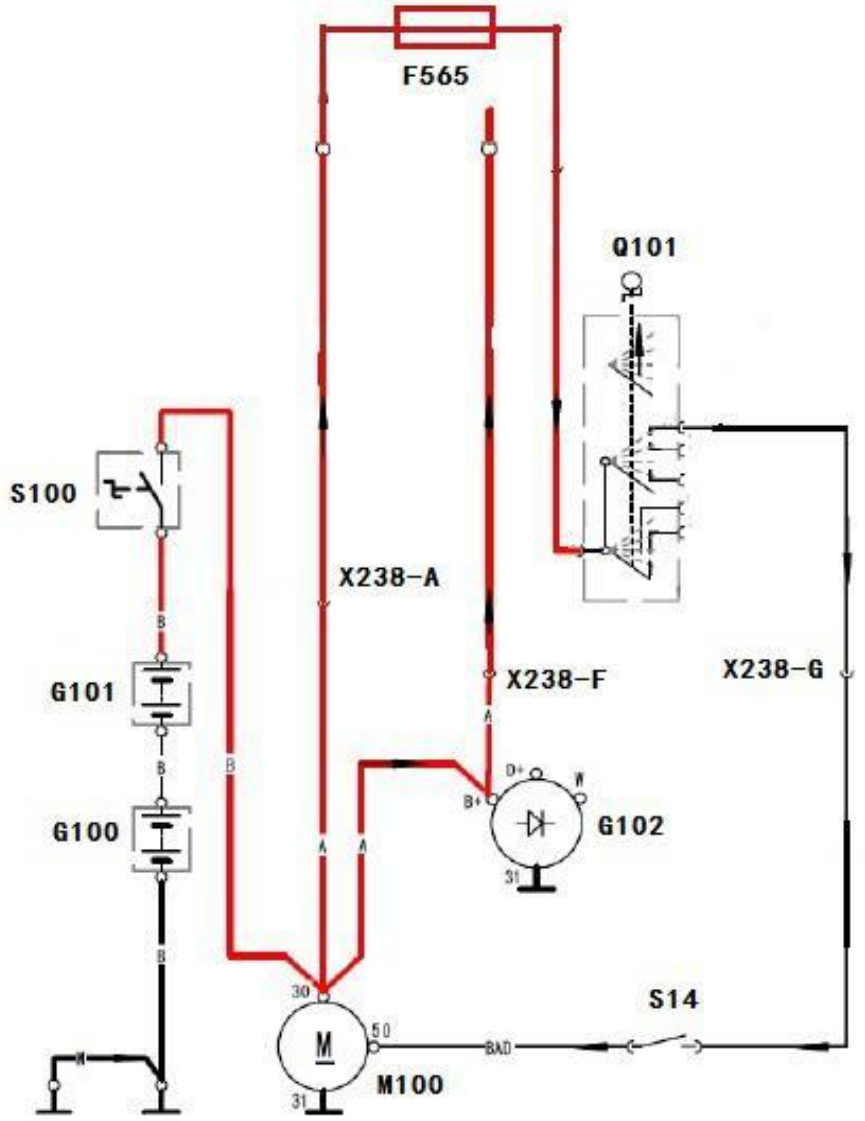
As shown, the vehicle start current direction, battery G100 → G101 → 95 cable → starter M100-30 end → red line → connector X238-A → fuse F565 → 3040 line → key switch Q101-5 →



New M3000 starting circuit 5:

旋至启动“ST”档→钥匙开关Q101-4→启动信号5030线→插接器X238-E→BAC黑红白线→空档开关S14→BAD黑红黄线→起动机M100-50端→开始启动。

rotate to the start "ST" gear→ the key switch Q101-4 → start signal line connector 5030 → connector X238-E → BAC black red white line → neutral gear switch S14 → BAD black red yellow line → M100-50 terminal to start starter.



END & THANKS