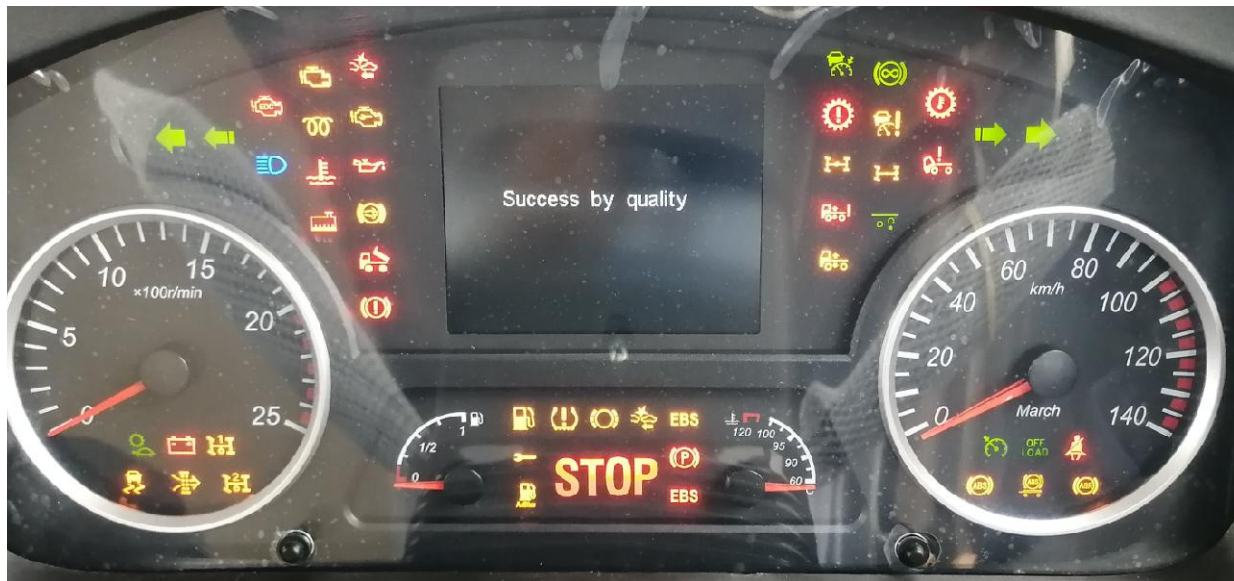


X3000车型组合仪表介绍

Section II Introduction of new X3000 combination meter



零件号: DZ97189584116 ;

Part Number: DZ97189584116 ;

名称: 组合仪表-X3000;

Name: Combination meter - X3000

应用车型: X3000车型。

Application models: X3000 models





高配组合仪表有4个指针，47个指示灯；
常电模式下，静态功耗 $\leq 3\text{mA}$ ；

Constant power mode, static power consumption $\leq 3\text{mA}$;
正常工作时，功率约为15W；

In normal operation, the power is about 15W;



- ◆ 仪表后面有两个32孔插接器，蓝色，绿色。
- ◆ 组合仪表插接器插接时注意颜色与组合仪表上的插座颜色相互对应。
- ◆ There are two 32-pin connectors on the back of the meter, blue and green.
- ◆ When connecting the instrument cluster connector, pay attention to the color corresponding to the color of the socket on the instrument cluster.



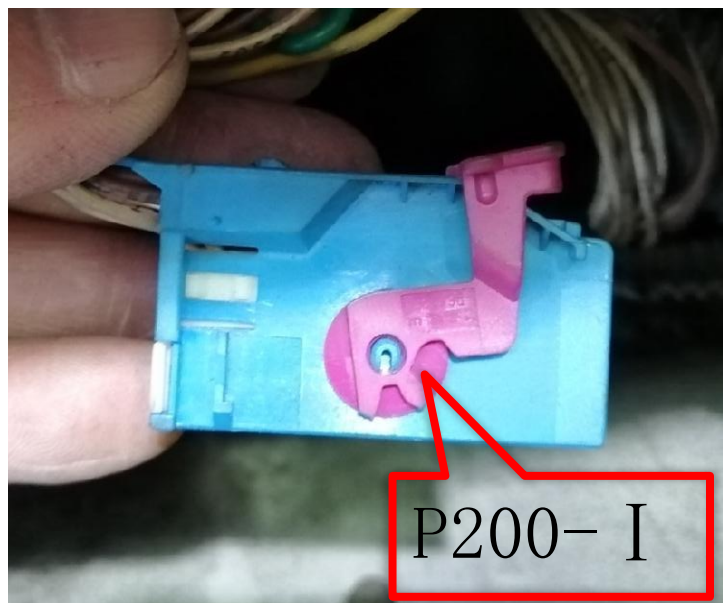
组合开关插接器的插接与摘除:

插接时, 先将插接器上的锁止杆完全打开, 将插接器对准插座后旋动紫色锁止杆, 在旋动的过程中插接器自然下沉, 将锁止杆完全锁紧后插接器上的锁舌弹起卡死锁止杆, 防止锁止杆松脱。组合仪表插接器的**摘除**: 将插接器上的限位舌按下, 使紫色锁止杆能自由活动, 此时向上扳起锁止杆同时插接器自然向上脱离插座, 待锁止杆完全张开后即可摘除插接器。

Insertion and removal of combination switch connector:

When plugging, first fully open the locking lever on the connector, and turn the purple locking lever after aligning the connector with the socket. During the rotation, the connector naturally sinks and the locking lever is completely After locking, the locking tongue on the connector springs up and locks the locking lever to prevent the locking lever from coming loose. Removal of the instrument cluster connector: Press the limit tongue on the connector to make the purple lock lever move freely. At this time, pull up the lock lever, and at the same time, the connector naturally leaves the socket upwards, waiting for locking The connector can be removed when the lever is fully open.





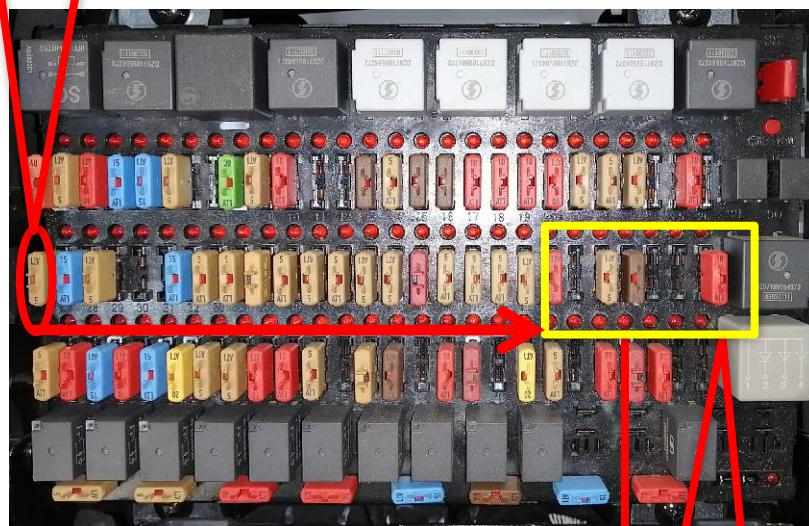
驾驶室线束的P200- I 插接到了仪表的B孔位是蓝色的，
P200- II 插接到了仪表的G孔位是绿色的。

The P200-I of the cab wiring harness is plugged into the B hole of the instrument, which is blue.
P200-II is plugged into the G hole of the instrument, which is green.

组合仪表的常通电源（T30）由第27号保险丝5A提供，位置如图，其30005线通过A100电器装置板背面的A-14插接器连接到仪表的 I -6 针脚。

Always-on power supply for combination meter (T30)

Provided by No. 27 fuse 5A, the location is shown in the figure, and its 30005 wire is connected to the I-6 pin of the instrument through the A-14 connector on the back of the A100 electrical device board.



30005 T30

A100-A-14

P200- I -6



组合仪表的电源负极线由棕色线从X242搭铁点连接到仪表的P200-I-1针脚, 位置如图:

The power supply negative line of the combination meter is connected to the P200-I-1 pin of the meter by the brown line from the ground point of X242, as shown in the figure:



L棕色线

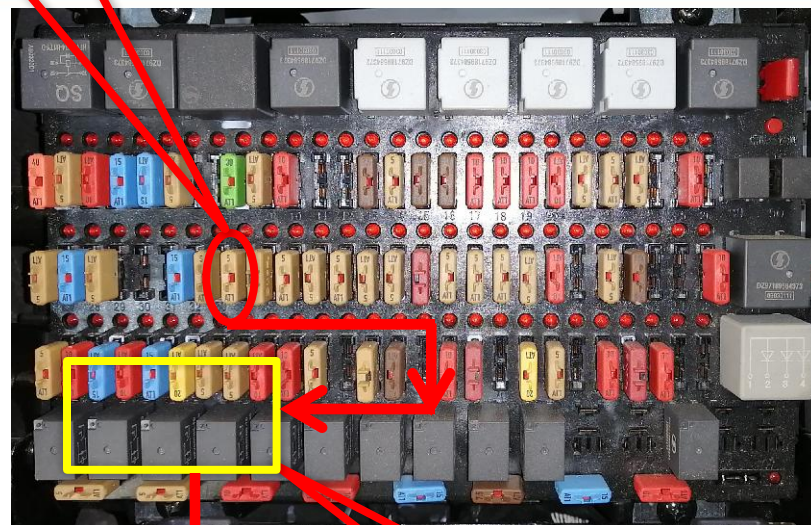
X242右搭铁点
ground point



P200-I-1

组合仪表的钥匙电源(T15)是由34号保险丝5A提供仪表钥匙电源,位置如图,其15001线从电器装置板A100-F-20插接器连接到仪表的P200-I-5针脚。

The key power supply (T15) of the combination meter is provided by the No.34 fuse 5A to provide the key power supply of the meter. The location is as shown in the figure. The 15001 line is connected from the A100-F-20 connector of the electrical device board to the P200-I-5 pin of the meter.



15001线 T15

A100-F-20



P200-I-5

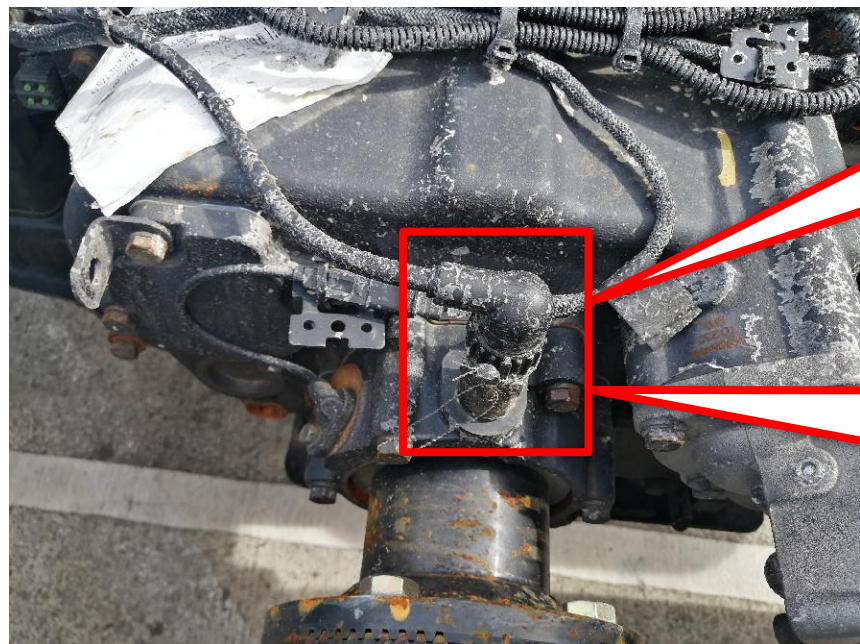
X3000车型仪表显示界面主要由4个表头和一个液晶显示器组成：
4个表头分别是车速表、转速表、油量表、水温表。

The X3000 model combination meter display interface consists of four heads and one LCD:
the 4 meter heads are the speedometer, the tachometer, the fuel gauge, and the water temperature gauge.

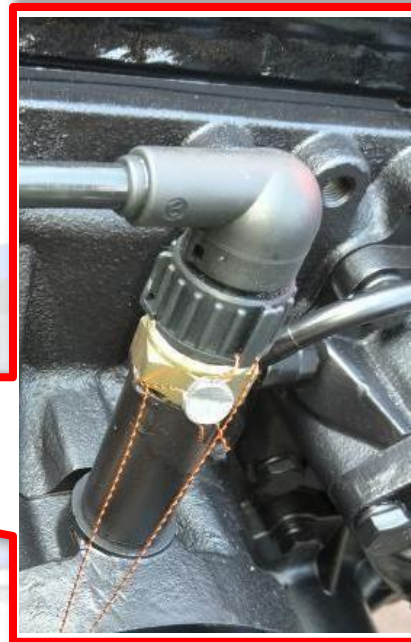


车速表（里程表）显示的速度单位是公里每小时，车速表的车速信号来自安装于变速箱输出法兰处的车速传感器，输出为频率信号。传动轴每转一圈里程表传感器发出8个脉冲信号。

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.

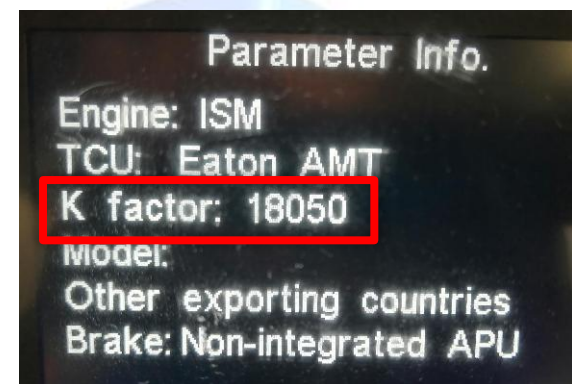


里程表传感器
speed sensor



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 speed 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.



车速里程表

车速里程表K值计算公式:

$K = (8000000 \times \text{后桥速比}) / (\text{变速箱一级传动} \times 3.14 \times \text{轮胎直径mm})$;
一级传动比=1;

Speedometer K value calculation formula:

$K = (8000000 \times \text{speed ratio of rear axle}) / (\text{first-stage transmission of gearbox} \times 3.14 \times \text{tire diameter mm})$;
first gear ratio = 1;

转速表经济运行提示，利用**绿色区间**（1200-1500rpm）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** (1200-1500rpm) to prompt the driver's engine operating conditions, regulate the driver's operating habits, achieve intelligent fuel economy, and reduce fuel consumption.

绿色区域
green zone

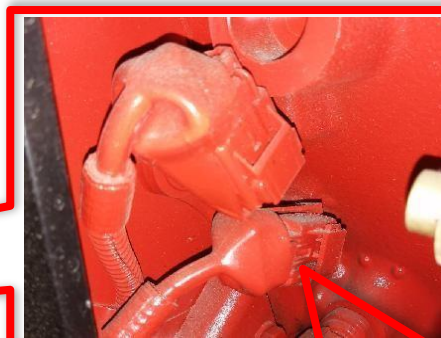
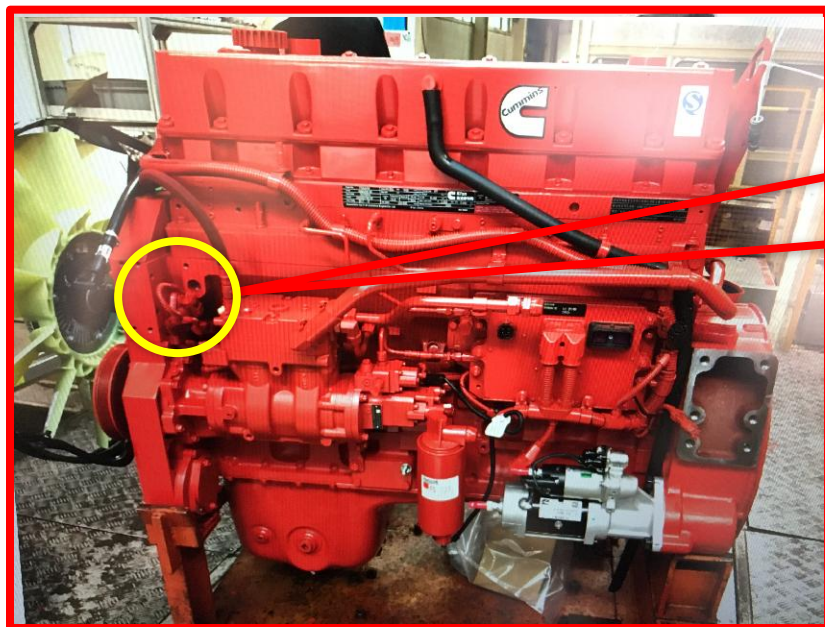


转速表的信号源:

康明斯电喷发动机车型的转速表信号来自转速传感器，转速信号先连接到ECM，通过CAN总线传输到组合仪表。

tachometer source:

The tachometer signal of the Cummins EFI engine model comes from the REV sensor. The REV signal is sent to the ECM and transmitted to the combination instrument through the CAN bus.

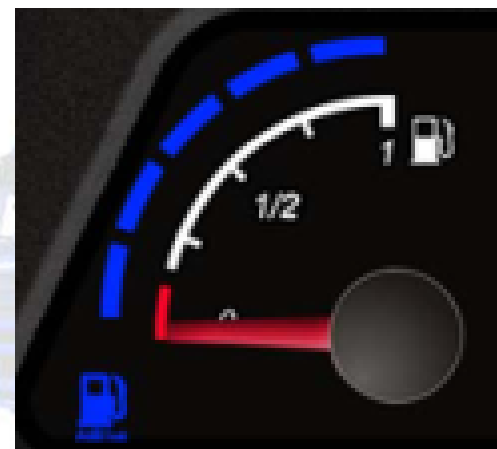


100r/min

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。

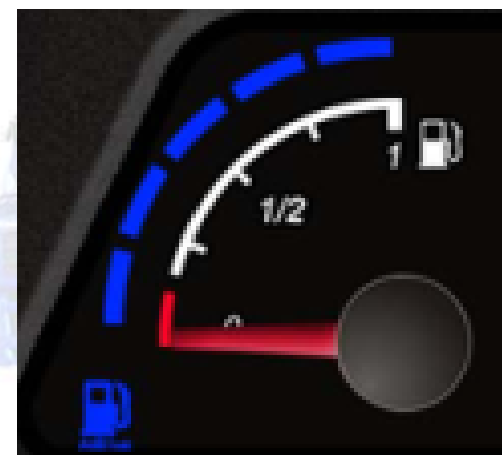
Fuel gauge display, each unit is 1/4. The signal source of the fuel gauge is the fuel quantity sensor of the fuel tank. The resistance value of the fuel quantity sensor varies from 72Ω to 10Ω . When the gauge is 72Ω , the gauge shows no fuel. When the gauge is 10Ω , the gauge shows the tank is full,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

油量传感器
fuel
sensor



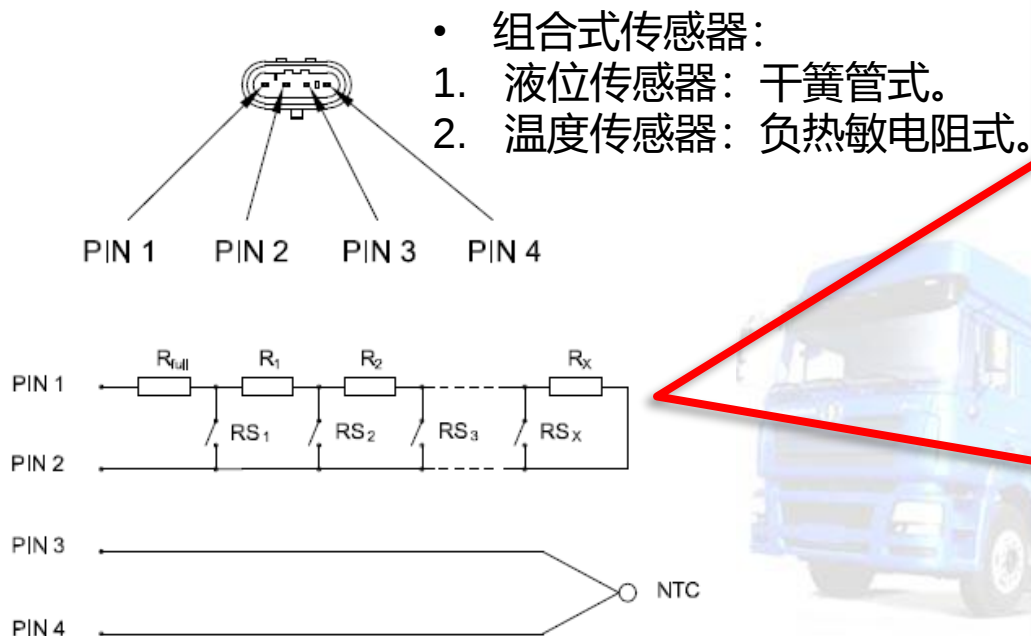
尿素箱液位的显示，通过燃油表外侧的蓝色圆弧显示，单位是1/6。尿素液位的信号源是尿素箱的尿素液位传感器，尿素液位信号传输到ECM，再通过CAN总线传输到组合仪表，仪表显示出尿素液位，通过蓝色柱状长条显示尿素箱的尿素液位。当尿素液 $\leq 13\%$ 时，尿素液位低指示灯常亮，同时车辆故障指示灯亮，蜂鸣器鸣响5s。

The display of the liquid level of the urea tank is displayed by the blue arc on the outside of the fuel gauge, and the unit is 1/6. The signal source of the urea level is the urea level sensor of the urea tank. The urea level signal is transmitted to the ECM, and then transmitted to the combination meter through the CAN bus. liquid level. When the urea liquid is less than or equal to 13%, the low urea liquid level indicator light is always on, and the vehicle fault indicator light is on, and the buzzer sounds for 5s.



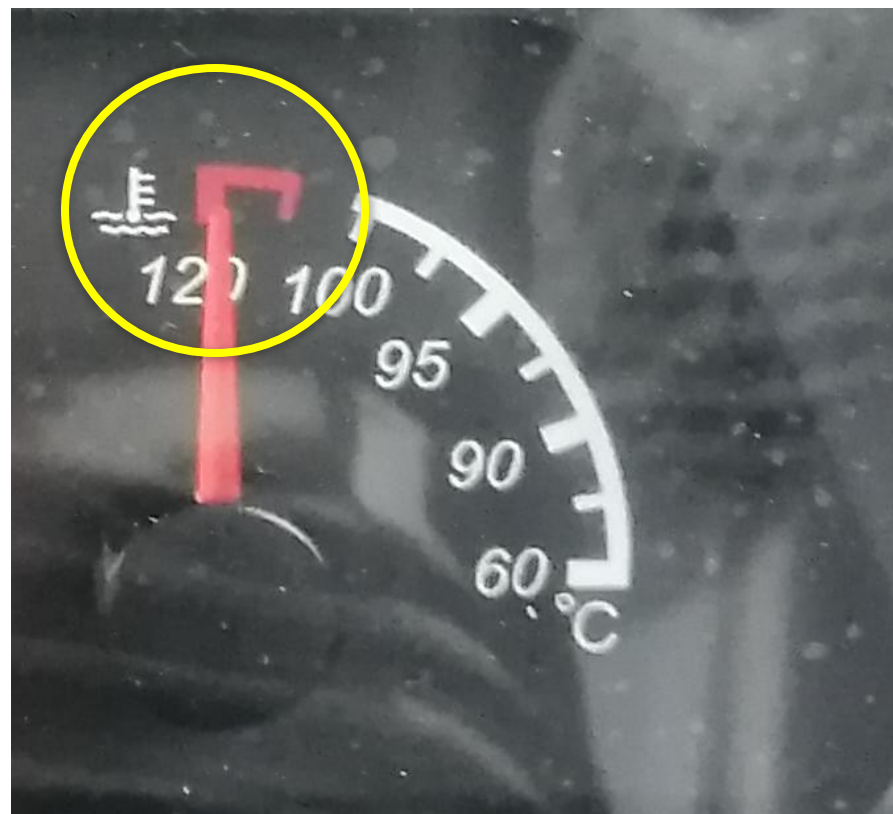
尿素的液位有变化时，黑色磁性浮子跟随液位的变化改变高度，磁性浮子吸引传感器内部的干簧管触点接通，传感器电阻值相应变化，电阻值信号传输到ECM，经过ECM计算得出相应的尿素液位数值，再通过CAN总线传输到仪表，仪表显示出尿素液位。

When the liquid level of urea changes, the black magnetic float changes its height with the change of the liquid level, the magnetic float attracts the reed switch contacts inside the sensor to connect, the resistance value of the sensor changes accordingly, and the resistance value signal is transmitted to the ECM, which is calculated by the ECM. The corresponding urea liquid level value is output, and then transmitted to the instrument through the CAN bus, and the instrument displays the urea liquid level.



水温表用来显示发动机冷却液温度。它的单位是 $^{\circ}\text{C}$ ，量程 $40\text{--}120^{\circ}\text{C}$ ，柴油发动机的冷却液报警点是 100°C ，刻度盘红色区是 $98\text{--}120^{\circ}\text{C}$ 。

The water temperature gauge is used to display the engine coolant temperature. Its unit is $^{\circ}\text{C}$, range $40\text{--}120^{\circ}\text{C}$, the coolant alarm point is 100°C , red zone is $98\text{--}120^{\circ}\text{C}$.

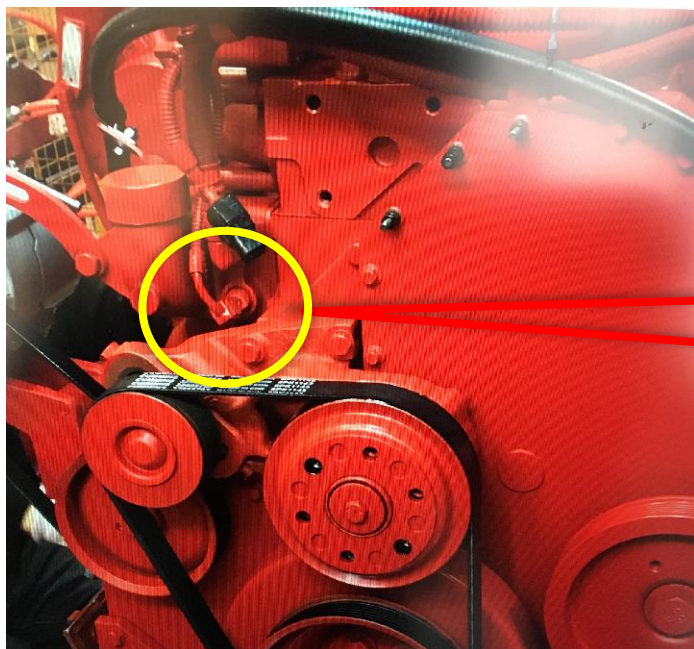


水温表的信号源是发动机的水温传感器，水温传感器的电阻值在 $5000\ \Omega$ — $220\ \Omega$ 之间变化， $700\ \Omega$ 时水温表显示 50°C ， $150\ \Omega$ 时水温表显示 100°C 。

The signal source of the water temperature gauge is the water temperature sensor of the engine. The resistance value of the water temperature sensor varies between $5000\ \Omega$ and $220\ \Omega$. When the temperature is $700\ \Omega$, the water temperature gauge displays 50°C , and when it is $150\ \Omega$, the water temperature gauge displays 100°C .

温度传感器参数

温度 ($^{\circ}\text{C}$)	电阻 (Ω)
0	5k至7k
25	1700至2500
50	700至1000
75	300至450
100	150至220



水温传感器 water temperature sensor

水温报警灯



气压表的显示，单位是bar，量程0-12bar，低气压报警区域是0-6bar。气压表的信号源是两个气压传感器，这一种气压传感器输出的是电压信号，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.



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.



中间的液晶屏幕区域可以显示小时计、气压表、机油压力表、档位信息、电压表、总/短里程、仪表菜单信息显示故障码。

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.

发动机运行时间表
engine working time

气压表air
pressure gauge

机油压力表
oil pressure gauge



档位信息
short mileage

电压表
Voltmeter

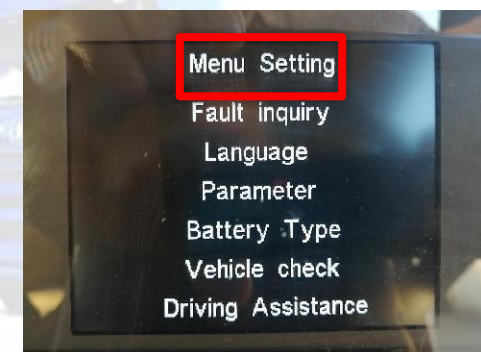
累计里程
Total mileage



按压仪表左键，或者右组合开关的翻页键，中间的液晶屏幕区域可以循环滚动显示：短里程油耗，平均油耗，总共耗油量，瞬时油耗，发动机工作时间，仪表菜单信息。

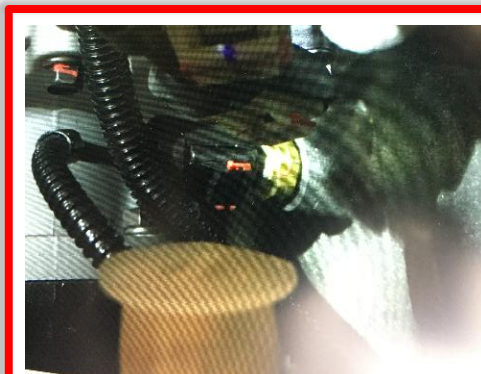
Press the left button of the instrument, or the page key of the right combination switch, the LCD screen area in the middle can scroll and display:

short-range fuel consumption,
average fuel consumption,
total fuel consumption,
Instant fuel consumption,
engine working time,
instrument menu information.



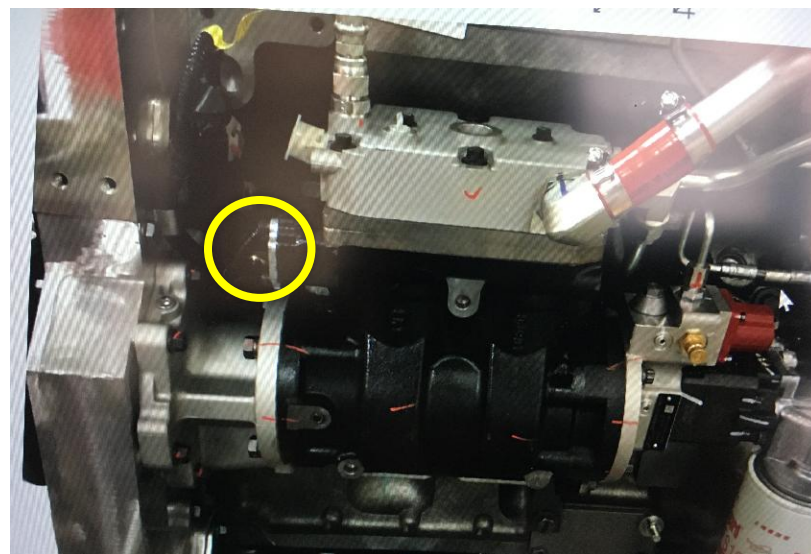
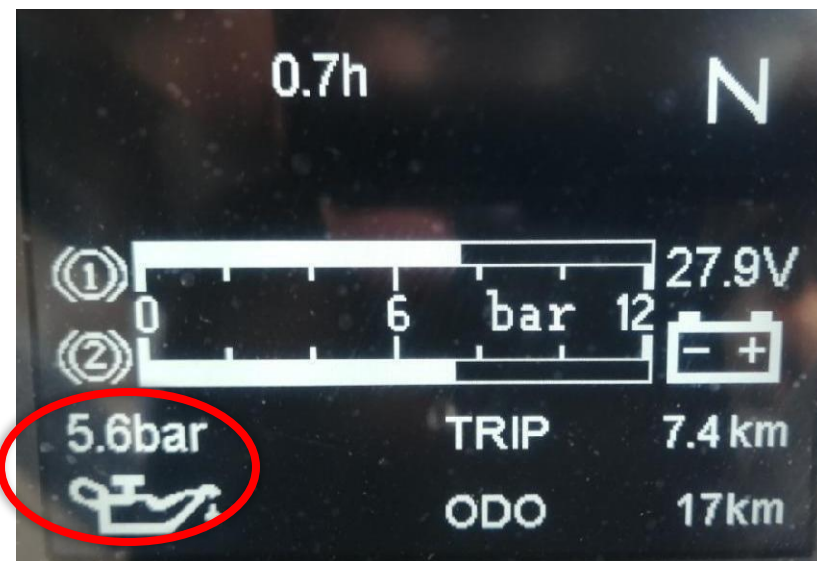
机油压力表用来显示发动机的机油压力。单位是bar（100kPa），量程0-10 bar，油压报警区域是0-0.7 bar。

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，传感器输出电压值在0—5伏之间变化，0.6伏时机油压力表显示0 bar，1.6伏时机油压力表显示1.7 bar，4.2伏时机油压力表显示3.4 bar。

The signal source of the oil pressure gauge is the oil pressure sensor of the engine. The output voltage of the sensor varies between 0 and 5 volts. When the oil pressure gauge is 0.6 volts, it shows 0 bar, when it is 1.6 volts, the oil pressure gauge shows 1.7 bar, and when it is 4.2 volts, the oil pressure gauge shows 1.7 bar. The pressure gauge showed 3.4 bar.



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, range 18-32V. 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.

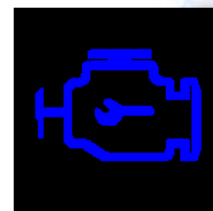


信号灯板：在组合仪表板中间是信号灯板，各信号灯符号、名称如图所示。信号灯的颜色主要有红、黄、绿、蓝四种颜色。其中红、黄、绿颜色表示不同的危险等级，

红色信号灯的危险级别最高，表明可能会危及生命或对车辆造成严重损坏，如果在车辆行驶过程中红色信号灯点亮应立即停车检查相关部位。

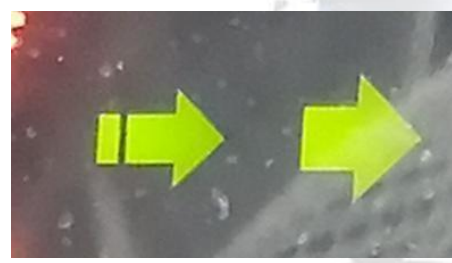
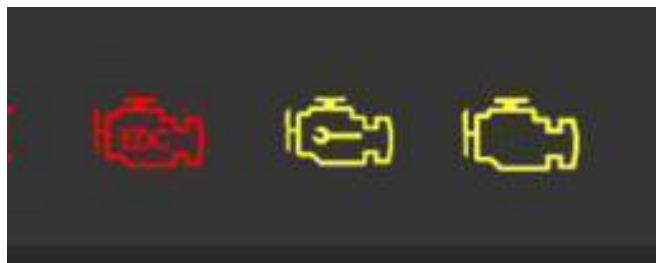
Signal board: In the middle of the instrument cluster is a signal board. The symbol and name of each signal lamp are shown in the figure.

The colors of the signal lights are mainly red, yellow, green and blue. The red, yellow, and green colors indicate different levels of danger, and the red signal lights have the highest danger levels, indicating that they may be life-threatening or cause serious damage to the vehicle. If the red signal lights are on while the vehicle is running, stop and inspect the relevant parts immediately.

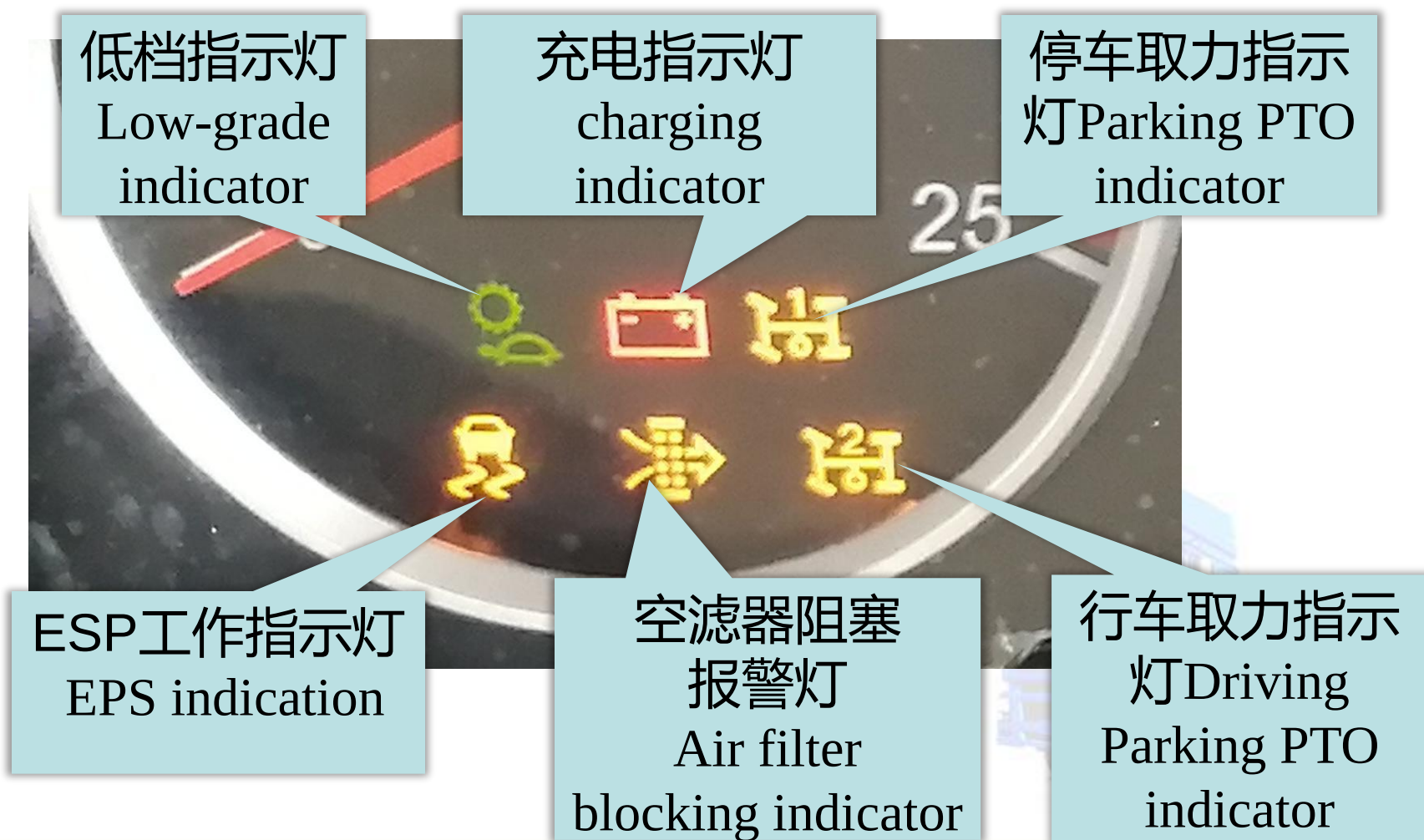


黄色信号灯表示不会危及生命或对设备造成严重损坏，但会影响设备的性能，当黄色信号灯点亮时应注意维修保养相关部件。**绿色**信号灯无任何危险警示，是车辆目前正常工作状态的指示。**蓝色**信号灯有远光指示灯和油中有水报警灯，当远光灯打开时远光指示灯点亮，当燃油粗滤器（带报警装置的，主要是WP国三车型）中水杯集满后提示排水。

The yellow signal light indicates that it will not endanger life or cause serious damage to the device, but it will affect the performance of the device. When the yellow signal light is on, you should pay attention to maintenance and related parts. The green signal light is without any danger warning, it is an indication of the current normal working state of the vehicle. The blue beacon has a high beam indicator and a water alarm in the oil. When the high beam is turned on, the high beam indicator lights up. After prompting drainage.



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





SHACMAN

2. 5. 4.

陕西重型汽车进出口有限公司
SHAANXI HEAVY DUTY AUTOMOBILE IMPORT & EXPORT CO.,LTD

盘式制动器磨损报警灯
Disc brake wear warning light

胎压报警灯
tire pressure warning light

燃油液位低报警灯
Low fuel level warning light

车辆故障指示灯
vehicle malfunction indicator

AdBlue
液位低报警灯
AdBlue
Low liquid level warning light

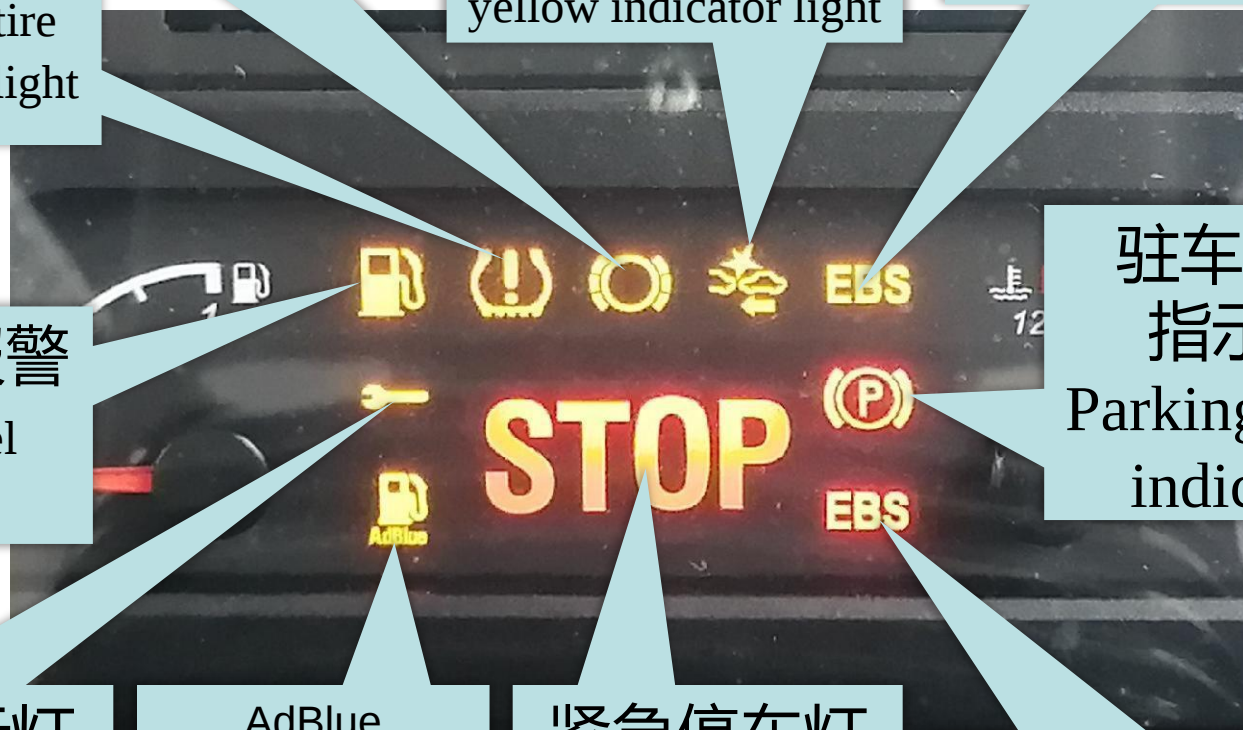
紧急停车灯
emergency stop light

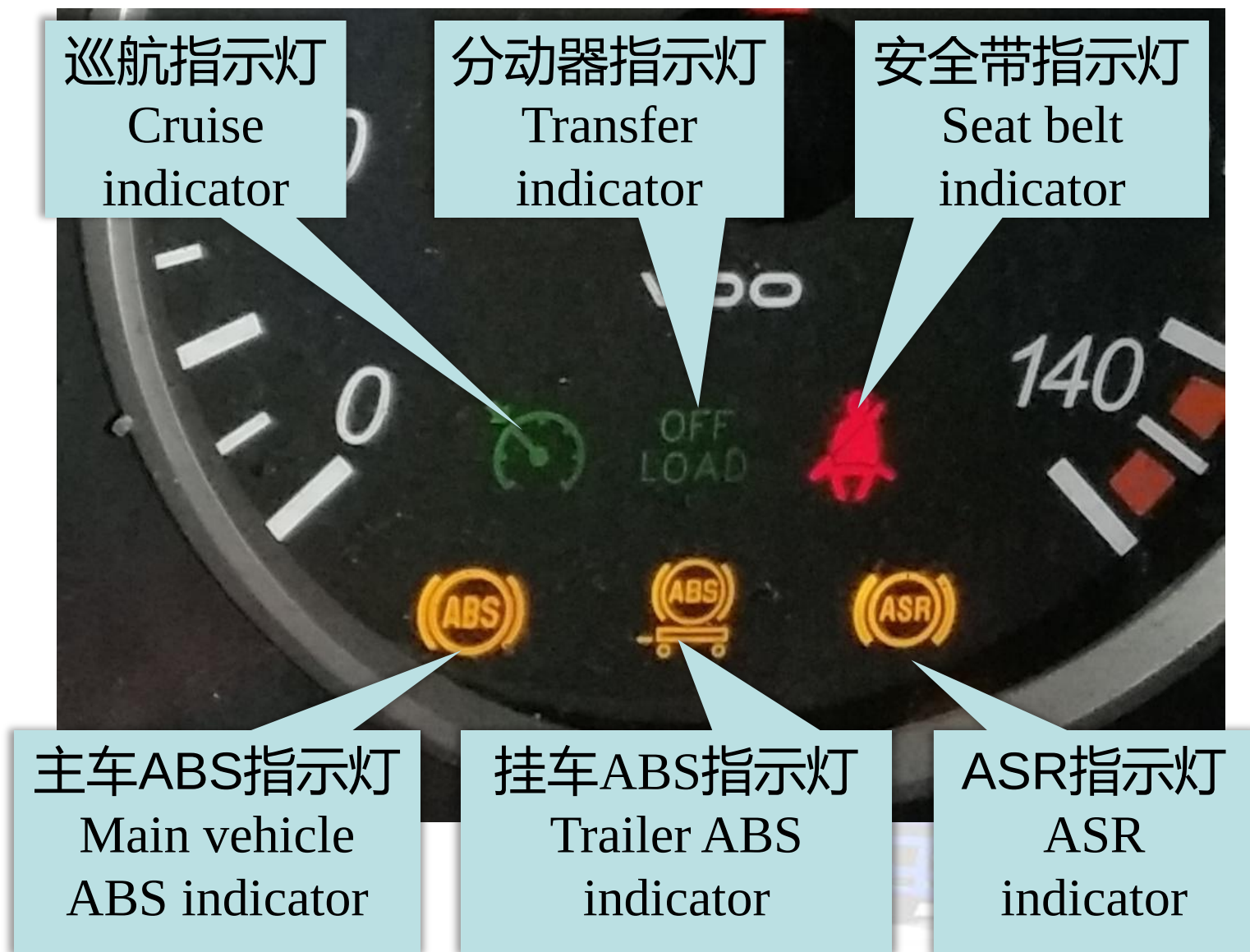
碰撞报警黄色
指示灯
Crash warning
yellow indicator light

EBS黄色指示灯
EBS yellow indicator

驻车制动
指示灯
Parking brake
indicator

EBS红色指示灯
EBS red indicator







SHACMAN

2. 5. 6.

陕西重型汽车进出口有限公司
SHAANXI HEAVY DUTY AUTOMOBILE IMPORT & EXPORT CO.,LTD

主车左转
指示灯
Vehicle left
turn indicator

EDC诊断
报警灯 EDC
diagnostic
warning light

OBD报警灯
OBD warning
indicator

进气预热指示灯
Air intake warm-
up indicator

挂车左转
指示灯
Trailer left
turn indicator

远光指示灯
High beam
indicator

冷却液位低
报警灯
Low coolant
level indication

冷却液温度
高报警灯
coolant over
heating
indicator



EDC维修
指示灯
EDC Repair
indicator

碰撞报警红
色指示灯
Crash
warning red
indicator

机油压力报警
灯Oil pressure
warning light

排气制动指示
灯Exhaust
brake indicator

车厢举升指示灯
bin Lift indicator

制动气压低
报警灯
Low brake
air pressure
warning light



ACC巡航指
示灯 Cruise
control
indicator

变速器故障指示
灯 Transmission
fault indicator

轴差速锁指示灯-
Axle differential
lock indicator

ECAS故障报警
灯 ECAS fault
warning light

ECAS工作
指示灯
ECAS work
indicator





SHACMAN

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重汽进出口有限公司
WEI DUTY AUTOMOBILE IMPORT & EXPORT CO.,LTD

缓速器工作指示灯 Retarder working indicator

变速器油温高报警灯 AMT over heating indicator

主车右转指示灯 Main vehicle right turn indicator

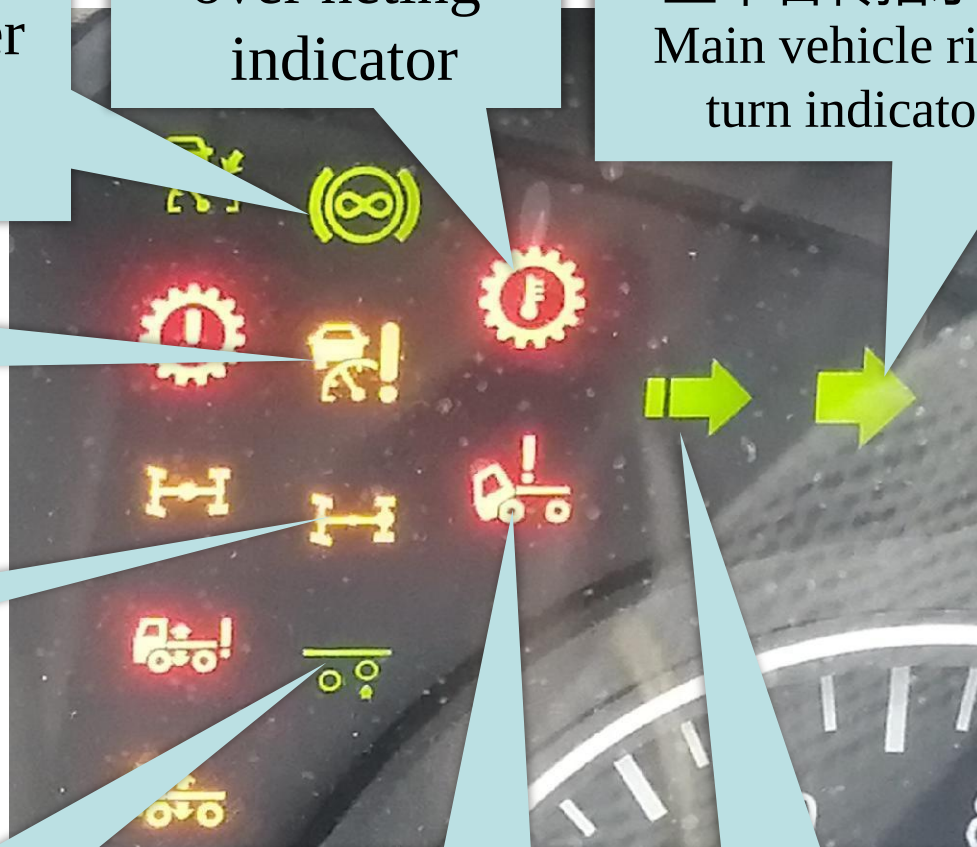
ACC巡航故障指示灯 Cruise control malfunction indicator light

轮差速锁指示灯 Wheel differential lock indicator

浮动桥指示灯 Tag Axle Indicator

驾驶室锁止指示灯 Cab lock indicator

挂车右转指示灯 Trailer right turn indicator



紧急停车灯 STOP 当驾驶室锁止报警灯 、气压报警灯 、水温报警灯 、油压报警灯 、举升报警信号灯 、发动机停机信号灯 、变速器报警灯 、有任意一个被点亮时 **STOP** 即被点亮，表明应立即停车检查，否则危急乘员生命或导致车辆严重损坏。

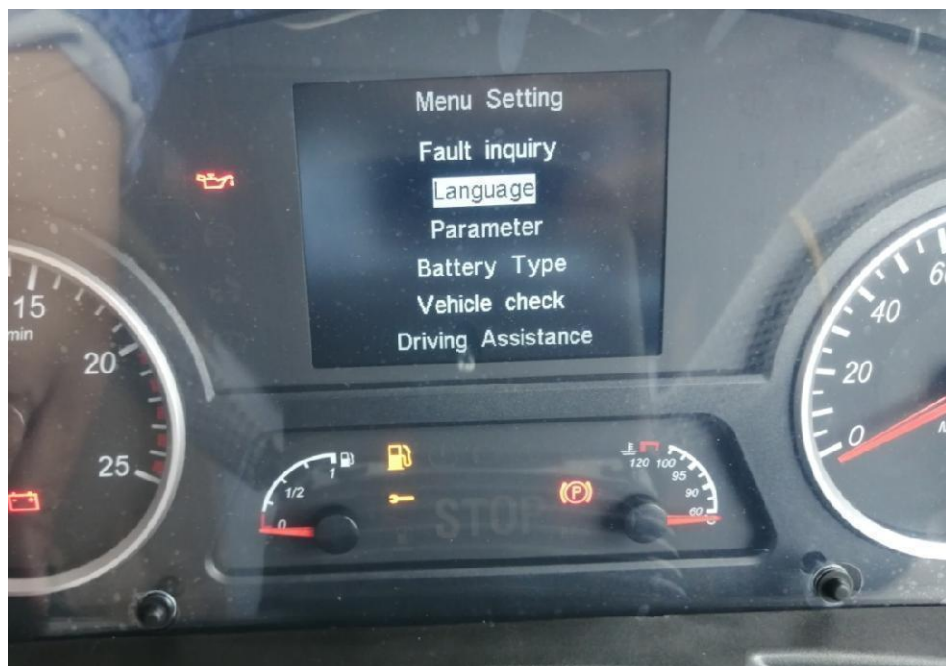
Emergency stop lights: **STOP** When the cab lock warning light , air pressure warning light , water temperature warning light , oil pressure warning light , lift warning signal light , engine stop signal light , transmission alarm light , any one is lit **STOP**. It indicates that the vehicle should be stopped for inspection immediately, otherwise the life of the occupant may be endangered or the vehicle may be seriously damaged.



车辆故障灯  : 当充电指示灯  、空滤堵塞信号灯  、离合器磨损报警灯  、ECAS报警灯  、发动机报警灯  、冷却液液位过低报警灯  、燃油不足报警灯  、安全带指示灯  、主车ABS报警灯  、挂车ABS报警灯  、发动机诊断灯  , 有任意一个被点亮时  即被点亮, 表明车辆有一般、普通故障, 性能会有所下降, 应尽快检修。

Vehicle fault light  when charging indicator light  , air filter clogging signal light  , clutch wear alarm light  , ECAS alarm light  , engine alarm light  , low coolant level alarm light  , insufficient fuel alarm light  , seat belt indicator light  , main vehicle ABS alarm Any of the lights  , trailer ABS warning lights  , and engine diagnostic lights  are lit when they are lit, indicating that the vehicle has general and ordinary faults,  and the performance will be reduced. It should be repaired as soon as possible.

比如在仪表常用菜单界面的语言白色显示时，此时按压右键，则确认进入语言设置。此时显示的是常用语言设置界面，有简体中文，繁体中文，英语，俄语，阿拉伯语共5种语言。For example, when the language of the common menu interface of the instrument is displayed in white, press the right button at this time to confirm entering the language setting. At this time, the common language setting interface is displayed, and there are 5 languages: Simplified Chinese, Traditional Chinese, English, Russian, and Arabic.



其中干燥器重置菜单，用于国六排放的车辆，需要额定时间段给空气干燥筒进行保养或者更换之后的仪表设置。

Among them, the dryer reset menu is used for vehicles with National VI emission, and the air dryer needs to be maintained or replaced in a rated time period.

