



Name of vehicle manufacturer

BYD

Vehicle model

BYD ATTO3, BYD DOLPHIN, BYD SEAL, BYD TANG EV 2023, BYD SEAL U

Installation document for alcohol interlocks

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Connection schematics

Figure 1 shows a general wiring diagram. When alcohol detection is not performed or the breath test fails, the starter relay is in break mode. At this time, the grey cable outputs a high-level signal to the vehicle, and the vehicle cannot shift. Only when the handset detects that a breath alcohol concentration (BrAC) is below the preset limit ($\leq 20\text{mg}/100\text{mL}$, different detection concentration limits can be set in different countries and regions) will the starter relay be turned off. The grey cable outputs a low-level signal to the vehicle, at which time the vehicle can shift normally. Figure 2 shows the flow chart of alcohol interlocks, which meets the 3b requirement in EN 50436-7:2016 Annex C.

(Reserved for holes)

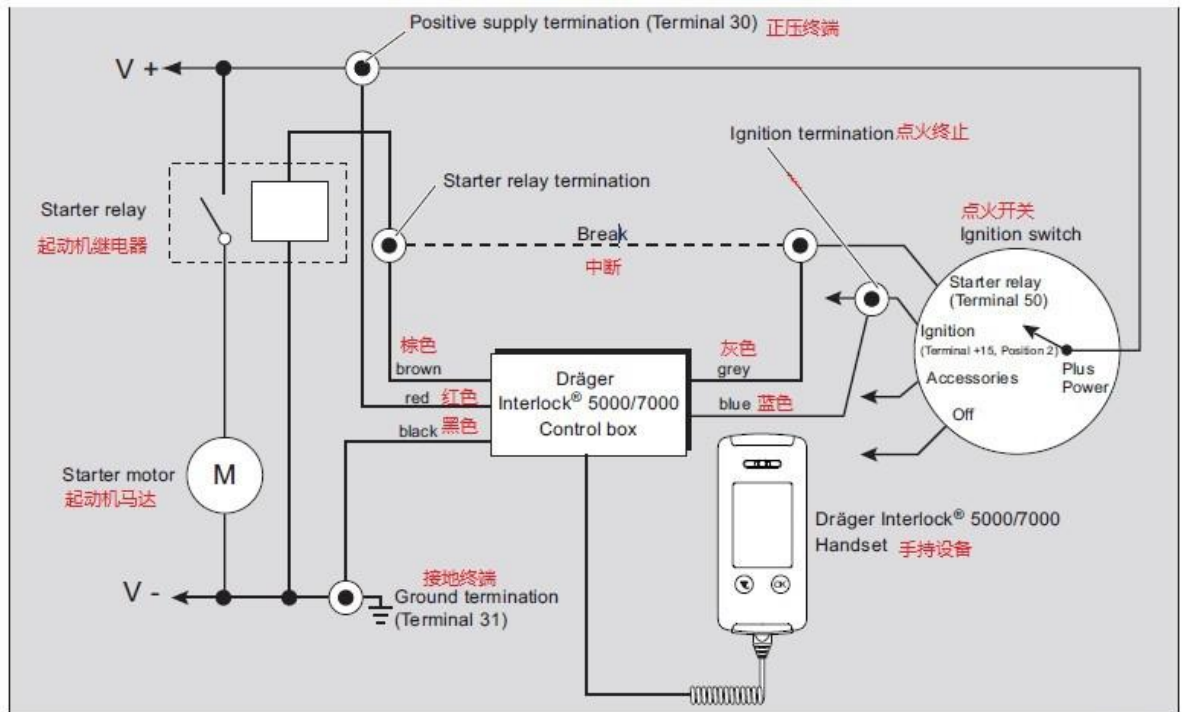


Figure 1



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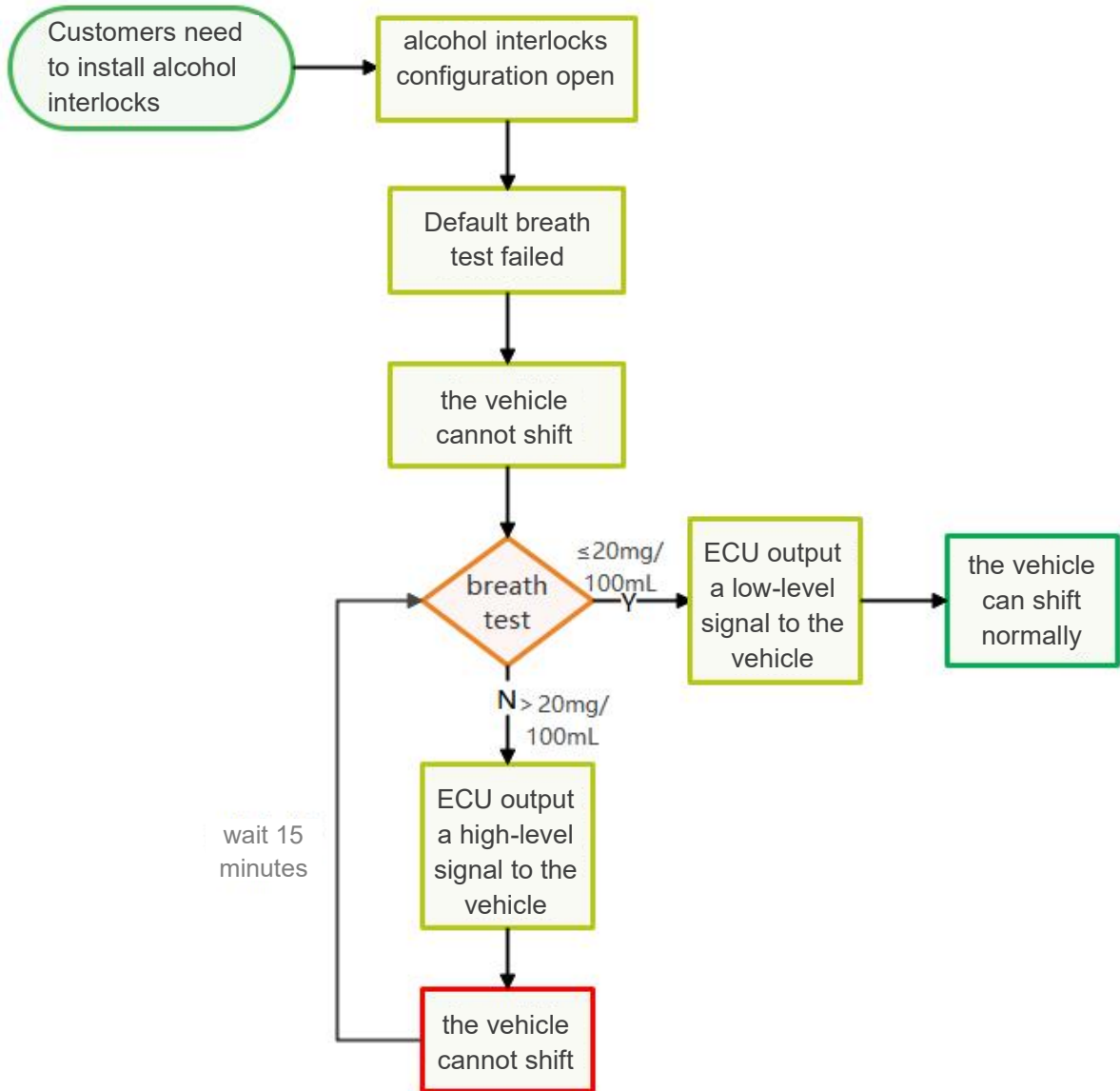


Figure 2

Connection diagram

Figure Connectors connected to the alcohol monitoring device reserved for the end of the vehicle harness. The five terminal definitions are listed in Table 1. Figure 4 shows the wiring harness connector of the product end of the alcohol lock device.



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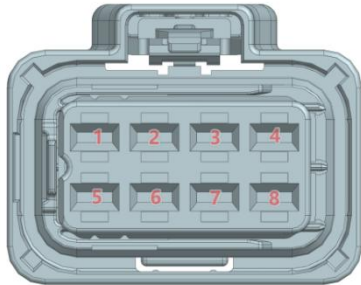


Figure 3

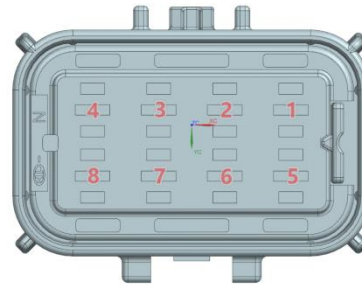


Figure 4

Table 1 Interface of the vehicle

	function	wiring/pin	Connection position
1	Battery feed, 12V, uninterrupted	Pin 1 Red cable, 0.25mm ²	Pin 1 (figure 2) in the connector, the connector is under the carpet under the passenger seat.
2	Ground	Pin 2 Black cable, 0.25mm ²	Pin 2 (figure 2) in the connector, the connector is under the carpet under the passenger seat.
3	Alcohol monitor switch input signal When the signal is high-level, not allowed to shift; When the signal level is low, allow shifting.	Pin 3 grey cable, 0.25mm ²	Pin 3 (figure 2) in the connector, the connector is under the carpet under the passenger seat.
4	Activation electrical signal 12V, Vehicle control unit, Continuous output after activation	Pin 4 Blue cable, 0.25mm ²	Pin 4 (figure 2) in the connector, the connector is under the carpet under the passenger seat.
5	Ground	Pin 5 Brown cable, 0.25mm ²	Pin 5 (figure 2) in the connector, the connector is under the carpet under the passenger seat.

Table 2 Hardware list

	Information	Material code	Remarks
1	Drager Interlock 7000 alcohol interlock device	8322570	Includes handset and ECU control unit and mouthpiece (3 pieces)
2	Drager Interlock 7000 GPRS module	8322534	
3	Drager Interlock 7000 LTE	8327080	



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	module		
4	Drager Interlock 7000 camera	8322413	
5	Mouthpiece(3 pieces) individually packed	8326550	
6	Mouthpiece(50 pieces) individually packed	8327627	
7	Mouthpiece(300 pieces) individually packed	83225978	
8	Protective cover for handset	8322458	
9	Handset holder I	8322497	
10	Handset holder II	8322610	

Table 2 Software list

	Hardware version	Software version	Remarks
1	Left body controller V04	3.00.01	



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Safety risk at installation and items to be considered

- 1、 This manual is intended for use only by trained technicians having a knowledge of vehicle electronic systems and the unique installation requirements.
- 2、 Disconnect battery earth lead before further work.
- 3、 Fire hazard! A clean and reliable connection between the leads must be ensured!
- 4、 Please be careful when removing the co-driver's seat, pay attention to the impact on the interior, and do not damage or scratch the interior.
- 5、 The ground connection should be made first to prevent any damage to the ECU.
- 6、 It is necessary to avoid installing the Handset machine in front of the airbag and attach the high voltage components, and it is necessary to avoid falling off.
- 7、 The connection between the Handset machine and the control box needs to be fixed to avoid shaking or interfering with the operation of the driver and the passenger.

Assembly instruction

Step 1. After parking the car, turn off and break the low-voltage battery.

Step 2. Open the co-driver's door, loosen and place the fixed bolts of the co-driver's seat with tools, and move the seat outside the car. Please be careful when removing the co-driver's seat, pay attention to the impact on the interior, and do not damage or scratch the interior.

Step 3. Find the inspection port on the carpet under the co-driver's seat, open the inspection port, and locate the harness connector shown in Figure 5. The connector may be hidden near the inspection port. (Figure 6)

Step 4. Separate the harness with the connector from the main harness, and now we can see the five cables that correspond to the five in Table 1. (Figure 7)

Step 5. Locate the Ground termination (Black cable) on the connector, using the wire strippers, and expose a 2 cm section of the wire. Twist the Ground cable of the alcohol interlock device to the Ground cable on the connector. Use crimp nails for crimping or welding to ensure that they do not fall off. After crimping is complete, wrap with insulating tape or hot melt adhesive to ensure insulation. Of course, it is also possible to dock with the connector of the corresponding model, depending on the conditions at the time of installation.

Step 6. Locate the Battery feed termination (Red cable) on the connector, using the wire strippers, and expose a 2 cm section of the wire. Twist the Battery feed cable of the alcohol interlock device to the Battery feed cable on the connector. Use crimp nails for crimping or welding to ensure that they do not fall off. After crimping is complete, wrap with insulating tape or hot melt adhesive to ensure insulation. Of course, it is also possible to dock with the connector of the corresponding model, depending on the conditions at the time of installation.



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Step 7. Locate the Active power termination (Blue cable) on the connector, using the wire strippers, and expose a 2 cm section of the wire. Twist the active power cable of the alcohol interlock device to the active power cable on the connector. Use crimp nails for crimping or welding to ensure that they do not fall off. After crimping is complete, wrap with insulating tape or hot melt adhesive to ensure insulation. Of course, it is also possible to dock with the connector of the corresponding model, depending on the conditions at the time of installation.

Step 8. Locate the Ground of signal termination (Brown cable) on the connector, using the wire strippers, and expose a 2 cm section of the wire. Twist the active power cable of the alcohol interlock device to the active power cable on the connector. Use crimp nails for crimping or welding to ensure that they do not fall off. After crimping is complete, wrap with insulating tape or hot melt adhesive to ensure insulation. Of course, it is also possible to dock with the connector of the corresponding model, depending on the conditions at the time of installation.

Step 9. Locate the signal input termination (grey cable) on the connector, using the wire strippers, and expose a 2 cm section of the wire. Twist the active power cable of the alcohol interlock device to the active power cable on the connector. Use crimp nails for crimping or welding to ensure that they do not fall off. After crimping is complete, wrap with insulating tape or hot melt adhesive to ensure insulation. Of course, it is also possible to dock with the connector of the corresponding model, depending on the conditions at the time of installation.

Step 10. When all applicable cables are connected, and the insulation has been tested, proceed to mount the control box. To mount the control box to the vehicle, use adhesive buckle straps or cable ties. We can install the control box in the reserved space of the car. (Figure 8)

Step 11. Mount the handset bracket in an accessible location for the driver. Make certain that it does not obstruct any of the vehicle controls. The handset bracket can be mounted on the dashboard of the vehicle using adhesive buckle straps or using screws. If screws are being used, attach the handset bracket to a flat part. However, it is necessary to communicate with customers in advance to avoid customer complaints due to damage to the interior.

Step 12. Plug the handset cable into the control box and the other end into the handset. Place the handset in the handset bracket.

Step 13. Move the co-driver's seat back into its original position, secure the cable under the seat with cable ties to avoid affecting the driver and passengers, and ensure that the seat adjusted does not cause pressure or damage to the cable.

Step 14. After completing all the steps above, reconnect the low-voltage battery, use VDS (BYD Diagnostic Equipment) to connect to the vehicle OBD port, and enter the vehicle diagnostic system. Then turn on the alcohol interlock switch with VDS to complete the function configuration. (Figure 9)

Step 15. Start the vehicle and try to shift gear, at this moment it should not be shifted unless the alcohol test is carried out and passed.



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Modification of vehicle operation

- 1、 After you have completed all the steps of Assembly instruction, it represents the vehicle that is already equipped with the alcohol monitoring systems. Before passing the alcohol test or failing the test, the driver or the passenger cannot shift gears and drive the vehicle, but it will not affect the normal use of the vehicle start, air conditioning, multimedia, instrumentation, lights, horns, and other systems.
- 2、 Before passing the alcohol test or failing the test, if you try to shift the gear, instrumentation will remind the driver "Please pass the alcohol test first and then shift gears and drive". At the same time, the buzzer will ring one time.
- 3、 The alcohol interlock device may remain on standby for 30 minutes after the vehicle is turned off, at which point the alcohol interlock device has less operating current so do not worry about the SOC (the device generally sleeps in 30 minutes).
- 4、 For other tips from the handset and control box, please refer to the instruction manual for the alcohol interlock device.

Mounting position of alcohol interlock handset and the alcohol interlock control-unit

- 1、 About the installation position of the control box

On BYD vehicles, the installation position of the control box is reserved, it is under the co-driver's seat. We will cut an inspection port on the carpet and hollow out the sponge. The control box can be installed in this space.

- 2、 About the installation position of the handset

You can choose to place the handset in the armrest box or co-driver's drawer for easy use by the driver when needed. It can also be mounted on the dashboard using adhesive buckle straps or using screws, but it is necessary to avoid mounting within the range of the steering wheel and airbag.



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Example with pictures



Figure 5



Figure 6

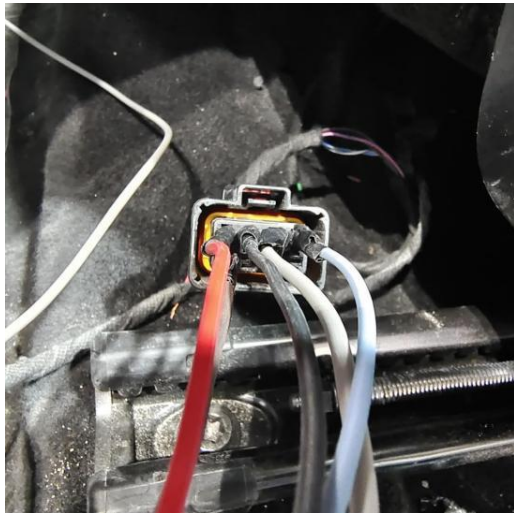


Figure 7

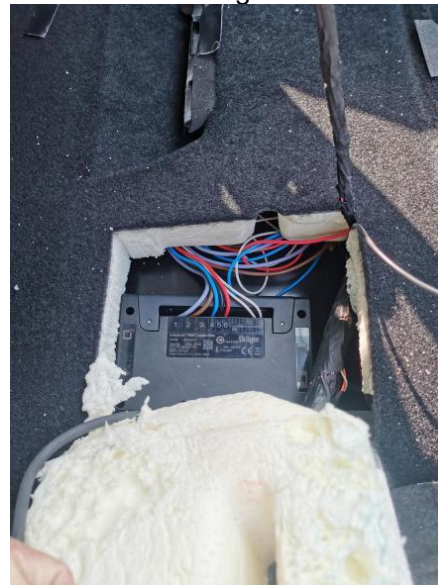


Figure 8

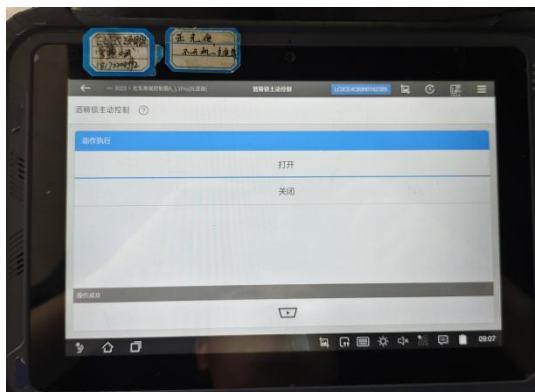


Figure 9