Alcohol Interlock - Installation Guide
General Description

The INEOS Grenadier can be equipped with an Alcohol Interlock (AI). It is an optional device that can be assembled by Aftersale service.

The function implementation is based on EN50436-4(2022) (european standard for ignition interlock devices).

The AI is part of the immobilizer system. The location of the AI connector is behind the cover under the steering wheel in front of the driver. The device communicates via LIN bus (LIN V2.1) to the Body Control Module (BCM).

If the coding parameter “Alcohol Interlock” is set to “with” in BCMs Coding Data String (DID 0xF108), the function will be activated. When the ignition is switched on the driver must perform a breath test via the AI to enable the start of the vehicle. The alcohol interlock sends the lock / release command on the LIN bus. Depending on the result of the breath test, which will be sent via LIN bus, the BCM will send the result on CAN bus.

Once the breath test is **passed**, it will be decpicted on the AI’s display and the BCM will send a signal (AI_FB::AI_FB_1 = 0x1 “passed”) to the Entry Terminal System with Gateway to enable the engine start. As soon as the driver turn the ignition to Cl.50, the engine will start.

Otherwise, if the breath test is **not passed**, the result will be be decpicted on the AI’s display and the vehicle is still in blocking mode, engine start will be denied (AI_FB::AI_FB_1 = 0x0 “not passed”).

Components

Function is implemented since following BCM PN:
BCM Assembly Number: EE-0000002708
Following device shall be connected:
Alcohol Interlock device based on EN50436-4(2022)

Coding Parameters and Description

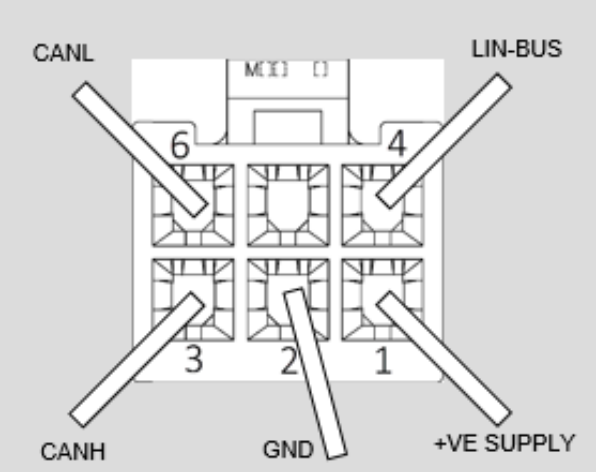
Depending on the coding parameter “Alcohol Interlock” within the Coding Data String (CDS) 0xF108 of the BCM the Alcohol Interlock function can be enabled (0x00 “with”) or disabled (0x00 “without”) via OBD interface.

Excerpt of the ODX_Template_BCM:

Parameter	BytePos (from 0)	BitPos	BitLength	DataType	MethodType	PhysicalDefaultValue
Alcohol Interlock	40	0	8	MSB/LSB BITPATTERN	type=texttable 0x00=Without 0x01=With 0xFF=Invalid	0x00

Connector Pinout

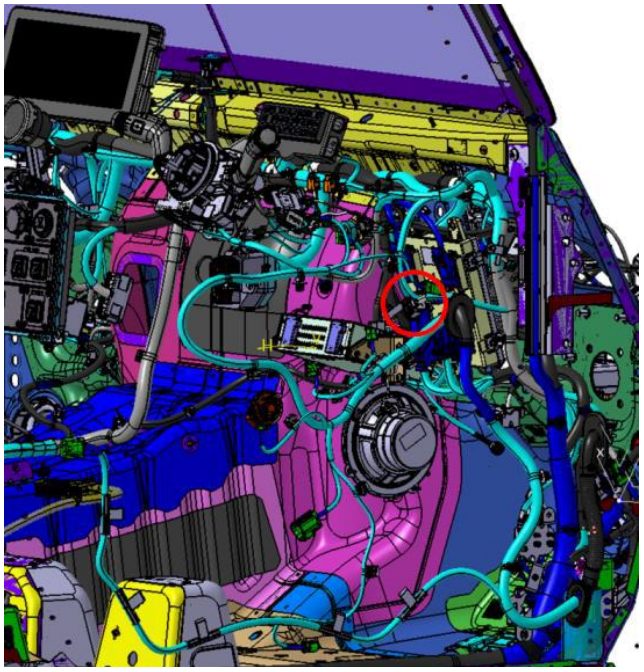
Following pins of the Alcohol Interlock connector are used:
1 - Supply voltage (Voltage +9V to 36V, connected to Cl.30)
2 - GND (0V, connected to Cl.31)
3 - not used
4 - LIN-Bus (V2.1)
5 - not used
6 - not used



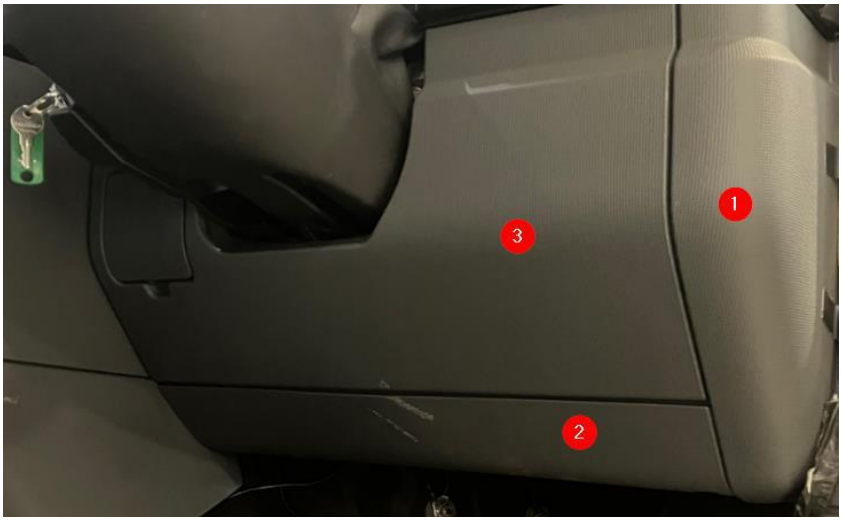
	Connector 3D
Alcohol Interlock (male)	
Vehicle (female)	

Assembly Instruction

The location of the AI connector is behind the cover under the steering wheel in front of the driver. The example of the assembly instruction is given for RHD (position for LHD is mirrored):

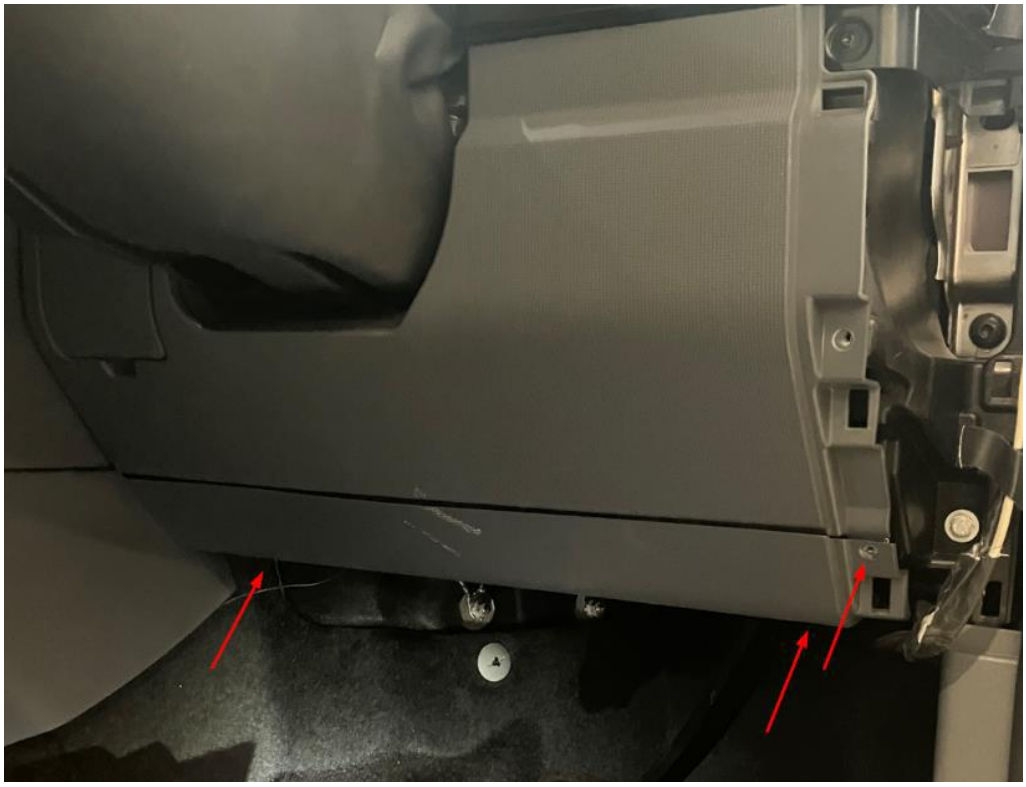


1 Remove three covers under under the steering wheel, please follow the detailed instruction below.

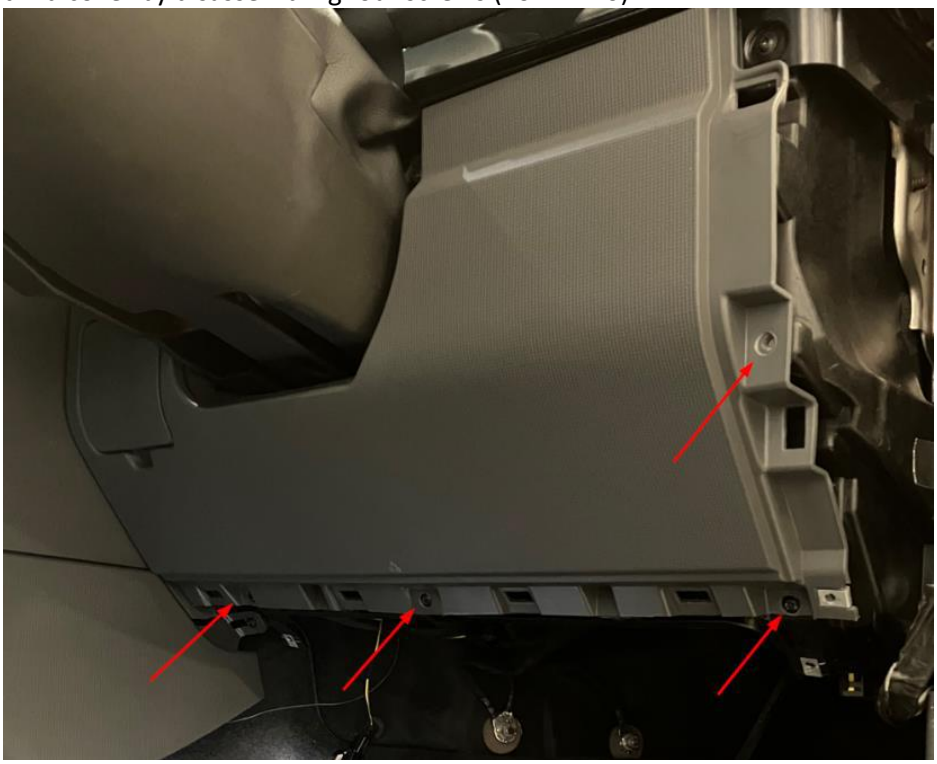


Step 1 Remove first the side cover by bending it towards the driver's door:

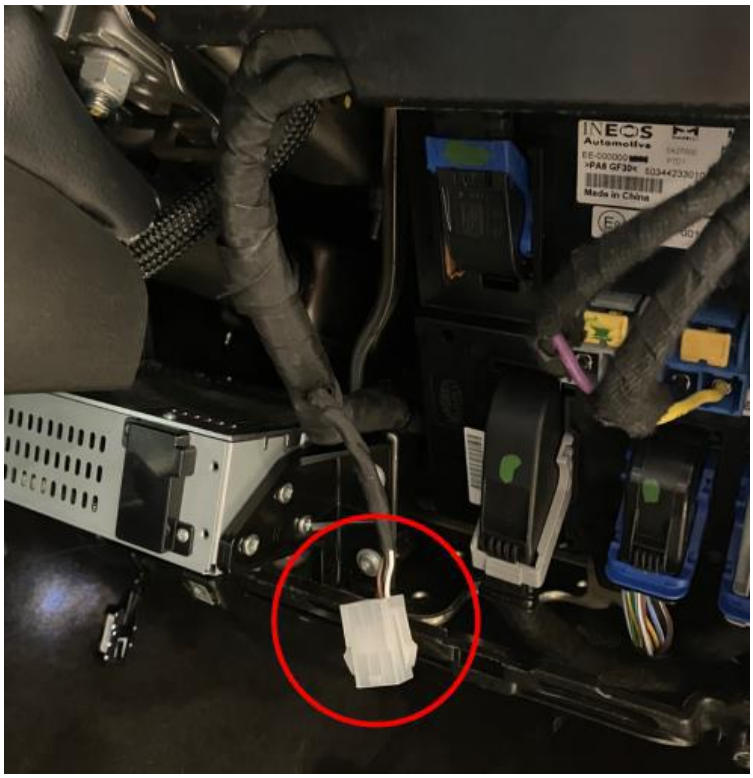
Step 2 Remove second cover by disassembling three screws (Torx TX20).

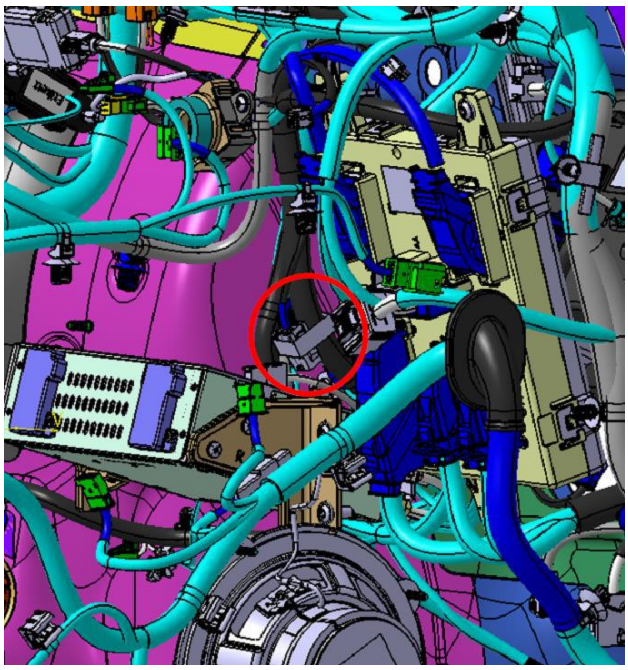


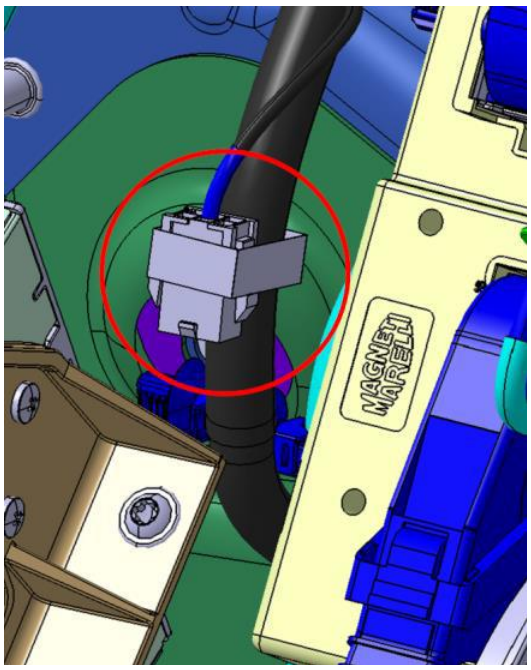
Step 3 Remove third cover by disassembling four screws (Torx TX20).



2. Connector







3. connect the Alcohol Interlock to the connector.

4. BCM must be coded accordingly: CDS (0xF108) byte 40: Coding parameter Alcohol Interlock = 0x01 “with” (instead of 0x00 “without”).

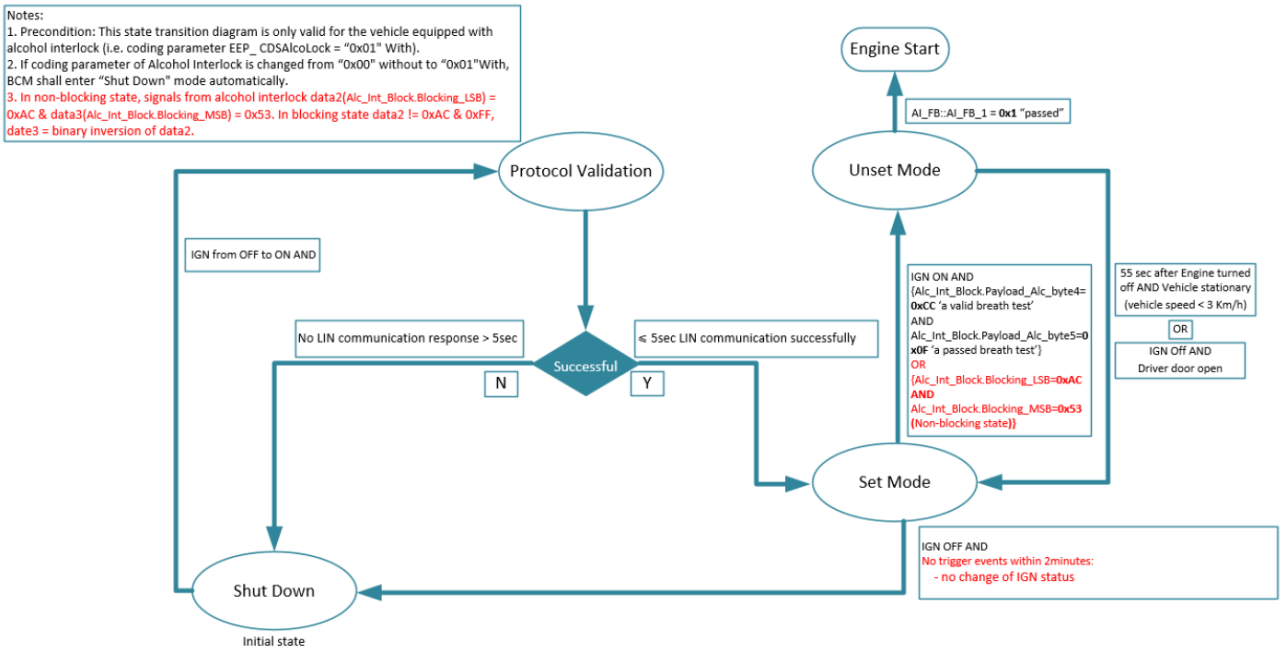
5. The Alcohol Interlock shall be placed in the driver’s compartment.

Function Description

If the ignition is switched on the Alcohol Interlock procedure will be started. It will initiate the request for a breath test.

As soon as the breath test is passed, the engine can be started. The information will be displayed on the Alcohol Interlock.

State Diagram



Modes:

1. Shutdown: Vehicle OFF
2. Protocol Validation: LIN protocol validation; communication start with Alcohol Interlock
3. Set Mode: breath test will be requested; Alcohol Interlock in blocking state; engine start denied
4. Unset Mode: passed breath test; Alcohol Interlock in non-blocking state; engine start allowed

If ignition is switched from OFF to ON the protocol validation (LI V2.1) will be started. If the AI is not connected or the communication is not possible, it will go to "Shutdown Mode" and engine start will not be possible. Otherwise, if the communication is successful it will go to the "Set Mode". Then the breath test will be requested by the AI. As soon as the breath test is passed, the BCM will go to "Unset Mode" and set the signal AI_FB_1 to 0x1 "passed". Then the engine start will be enabled if the key is turned in starting position (Cl.50 - crancking).

When the engine is deactivated (IGN OFF), the Alcohol Interlock will go in shutdown mode.