Audi RS 3 LMS

DRIVER QUICK BRIEFING 2020

This document quickly introduces how the driver can handle the Audi RS 3 LMS for driving it safely, efficiently and faster.

Audi Sport customer racing

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1. INTRODUCTION

This documents introduces to the driver the basic knowledge needed for driving the Audi RS 3 LMS safely, efficiently and faster.

This quick briefing will teach the driver how to start/stop the engine and the car correctly, where are the main functions needed for racing and how to interpret the different message and warmings the car will generate.

This racing car have several systems of interaction driver-car that consist on:

- **Central console** with switch on & off buttons as well as a keypad with twelve additional functions
- **Steering wheel module** with twenty additional buttons that will be quickly available for the driver
- **Advance Display Unit** with different layout ready for racing & qualifying. It will be also the main indicator of the alarms and warnings for the driver interest

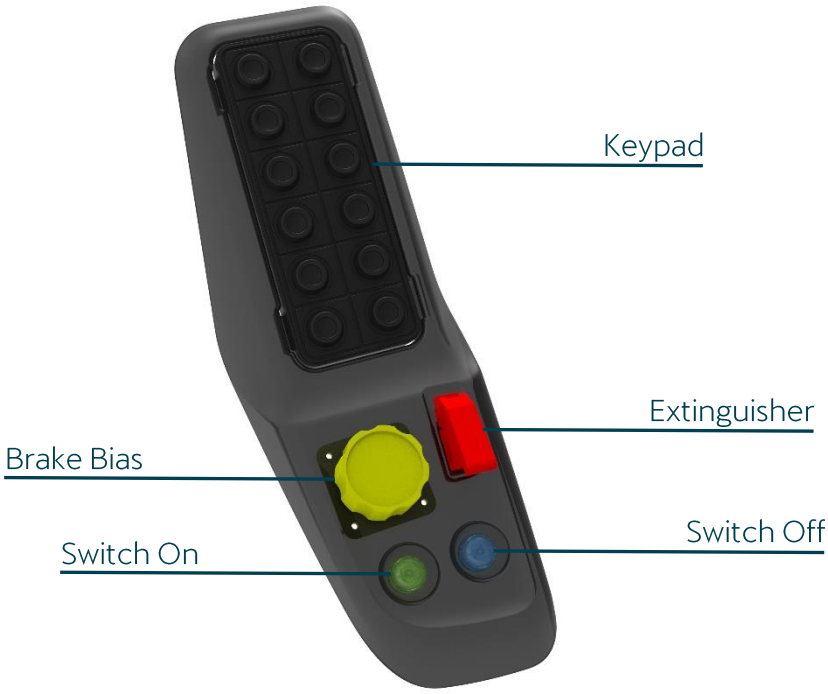
2. DRIVER'S CONTROLS

2.1. CENTRAL CONSOLE FUNCTIONS

The following tables and images explains the functions of the central console.

TABLE 1. MAIN CONSOLE FUNCTIONS

FUNCTION	REMARKS
Switch On **(KL-30)**	Press the button to wake up the car. Battery connected. Power supply on. Once pressed, the button do not have others functions
Switch Off	Press the button to completely kill the car Battery disconnected. Power supply off.
Extinguisher	Press the button in case of emergency to actuate the extinguisher. Battery disconnected. Power supply off.
Brake Bias	Turn the wheel to balance the brake pressure Do no press the brake pedal while turning Balance may be checked in the *Brakes* page



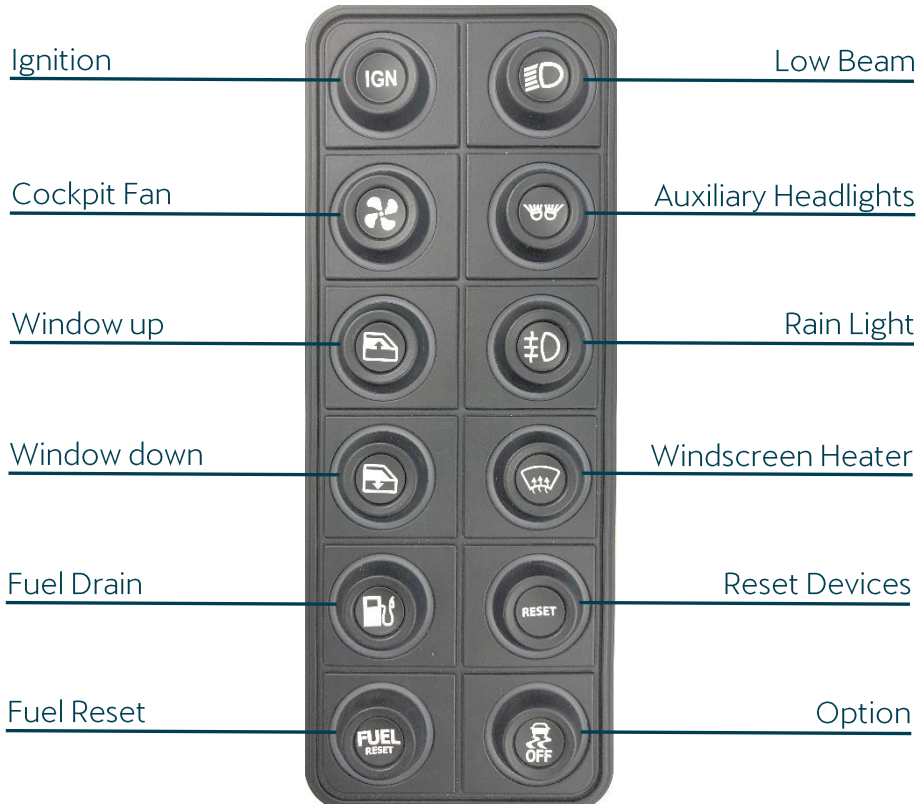


TABLE 2. KEYPAD FUNCTIONS

FUNCTION	REMARKS
Ignition **(KL-15)**	Press to activate power supply to all the devices. It is a necessary previous step before start the engine Immediately after the switch on button is pressed, Ignition will be white backlight illuminated. Then, when Ignition is pressed, its backlight will turn to red.
Cockpit Fan	Press to switch on/off the cockpit fan
Widow up	Maintain pressed to move the window upwards
Widow down	Maintain pressed to move the window downwards
Fuel Drain	Press to empty the fuel tank (used only by mechanics) Maintain pressed to manually force the fuel flow
Fuel Reset	Press to enter the *Fuel Management Mode*

	Fuel Management Mode is further explained in the *Electronics User Manual*
Low Beam	Press to switch on/off low beam headlights When the headlights are activated, a white backlight turns on the whole keypad. Ignition required
Auxiliary Headlight	Press to switch on/off auxiliary headlight Ignition required
Rain Light	Press to switch on/off rain light Ignition required
Windscreen Heater	Press to switch on/off windscreen heater Ignition required
Reset Devices	Press to reset the power supply of the malfunctioning devices. If the resulting backlight is green, means that all the devices are working correctly If the backlight is blinking in red means that at least one of the device of the car is not working properly. To identify which are the devices affected go to the *Device Diagnostic Mode* in the Electronics User Manual
Option	This button has several function depending on what mode the car is. For example, if the car is on Fuel Management Mode it modifies the type of fuel refilling By pressing it for 2 seconds, you will enter the scrutineering page.

2.2. STEERING WHEEL FUNCTIONS

FIGURE 1. STEERING WHEEL LAYOUT

The electronic steering wheel module permits activating different functions without removing hands from the steering wheel. Notice that some buttons have double functionalities.

TABLE 3. STEERING WHEEL FUNCTIONS

FUNCTION	REMARKS
Radio	Maintain pressed to talk
Launch	Press to activate the *Launch* aid (rpm limitation) If the conditions are met Launch symbol will be illuminated in the screen until the limitation exits by itself More information in section 4.1 Ignition required

Left turn light	Press to activate / deactivate the left turn light. Rear left button Ignition required
Drink	Press to activate the water pump The water pump is not supplied by the car
FCY **120 limiter**	Press to activate/deactivate the Full Course Yellow speed limiter The speed limiter limitation will be the last saved value To modify the value read the section 4.2 Ignition required Long push FYC button to activate the 120 km/h limitation. Press again to deactivate it
High Beam	Short push to flash Long push to activate / deactivate the high beams Ignition required
Marker	Press to highlight in the logged data that specific moment. This function is useful if the driver detects something wrong with the car, then it will be easier to go at that specific moment when checking the data. Press to remove warnings and messages from the display
Right Turn Light	Press to activate / deactivate the right turn light. Rear right button Ignition required
Wiper	Short push to roll low speed / high speed / deactivated Maintain pushed to activate the water splash + high speed

Starter	Maintain pressed to activate the starter if the following conditions are met: \ Ignition \ Neutral gear OR clutch pressed \ RPM < 500 If the conditions are fulfilled, the indicator led will show up in green. Otherwise, it will be yellow
Pit Limiter	Press to activate / deactivate the Pit Limiter This function is available when RPM > 500. If the engine stops, it will use the last value when restarts By killing the car completely, Pit Limiter will be set to OFF
Anti-Lag System (ALS)	Press to activate /deactivate the ALS Notice that the engine will be under higher stress when using this function. Activate it when maximum performance is needed such as qualification laps.
Neutral	Press to enter neutral from R (reverse) OR 1st gear
Level up & down	Press up or down to modify different parameters of the car as the speed limiters values or fuel level
Option (ABS)	This button is only used in cars with an ABS mounted
Map (Pedal Map)	Press with level up/down to modify pedal map when engine is stopped. There are three levels of pedal map that may be used depending on the track conditions.
Page up & down	Press up or down to move thought the different display pages

3. READY TO DRIVE PROCESS

In order to START the engine and get the car *ready to drive mode*, the driver should always proceed in this order:

3.1. START THE ENGINE

- Switch On button
- Ignition On button
- Starter, meeting the necessary conditions
  - Neutral gear OR clutch pressed
  - RPM < 500

3.2. STOP THE ENGINE

The proper procedure to STOP the engine will be:

- Ignition Off button

To disconnect the power supply and to complete switch off the car, once the engine is stopped:

- Check in the display if the turbo temperature indicator is green
- Switch Off button

4. DRIVING AIDS

4.1. LAUNCH LIMITER

This driving aid is activated by maintaining pressed the Launch button in the Steering wheel module. Even under 100% of throttle, the engine will be still limited to 5100 rpm.

The recommended launch process consists on:

- Completely stop the car in the grid line and press the launch button
- Press the clutch, engage the 1st gear and use hand brake to keep the car stopped
- Preload the car by realising the clutch slowly. Still keep the car stopped using handbrake. Practise will need to obtain the optimum feeling.
- When the red lights turn off, release the hand brake and control the start with the clutch an throttle pedals
- The car will exit launch limiter when ONE of these conditions is fulfilled:
    - Launch button released, or
    - The car reaches more than 70km/h, or
    - Automatically after 7 seconds once the car is moving

Notice that if the car is accidentally moving once the launch button is pressed; the 7-seconds countdown will start.

Other remarks:

- It is possible to start at lower engine speed without using the launch limiter by playing with the throttle pedal. It is recommended not below 3500rpm
- Take care of the time you are keeping the car preloaded. The clutch and engine temperatures may increase quickly. It is recommended no more than 5 seconds
- During testing, it is strongly recommended to do two laps between each start to cool down the clutch.

4.2. SPEED LIMITERS' SETUP

There are different speed limiters that limit the velocity of the car during the different race situations. They consist on:

- **Pit Limiter**: to be activated when entering the pit. There are five levels of velocity that will be used depending on the track regulations
- **Full Course Yellow**: to be activated when race conditions demand it. There are five levels of velocity that will be used depending on the track regulations
- **120 limiter**: consist on a fast mode of FCY. By pressing twice the FCY button, the car will be directly limited at 120km/h

In order to change the values of the Pit Limiter or FCY the, engine must be stopped. Notice that to modify Pit Limiter speed it requires just Switch On (KL-30) while the FCY will require Ignition (KL-15). The process will consist on:

- Pressing the button of the function to be changed (Pit Limiter or FCY)
- While pressing the button press level up or down buttons of the steering wheel module, which are the selectors on the left
- The velocity limiter selected will appear in the display
- Once the limiter is the right one, wait until the display indicator disappear.

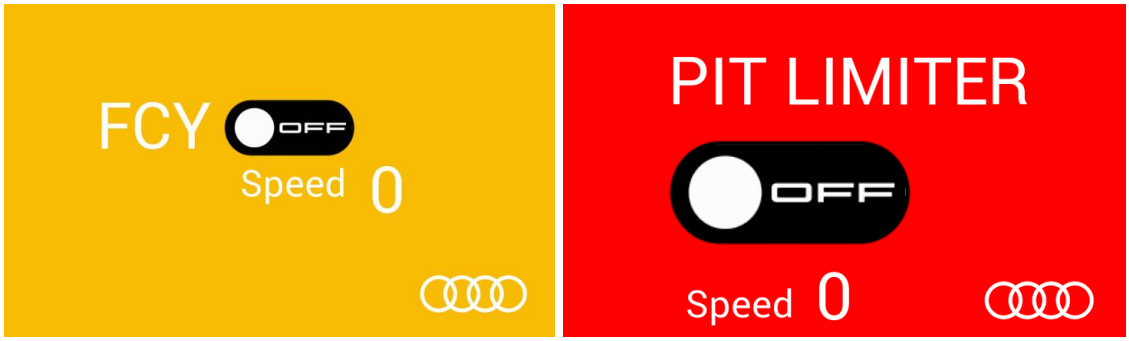


FIGURE 2. OVERLAY PAGES SHOWN IN THE DISPLAY WHEN SETTING UP THE SPEED LIMITERS

5. DRIVER'S DISPLAY

5.1. DRIVER'S ALARMS

TABLE 4. DISPLAY LED FUNCTIONS

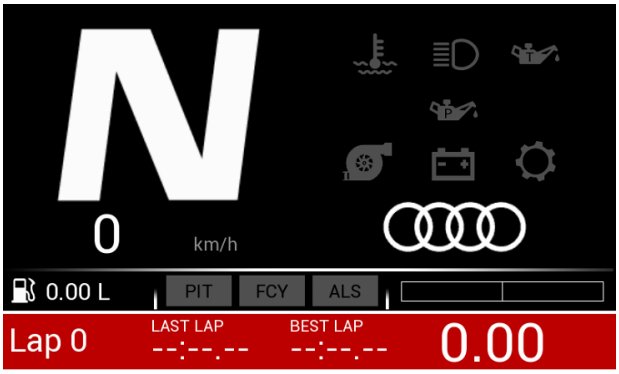
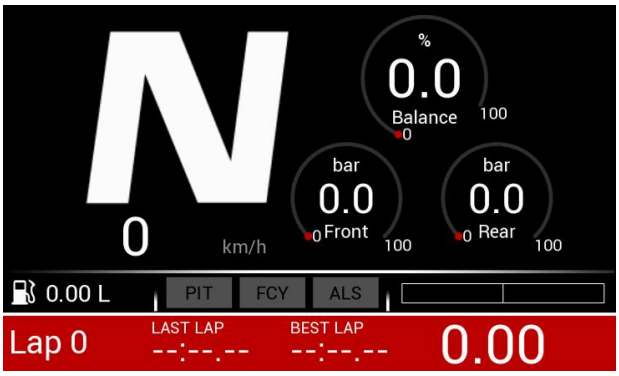
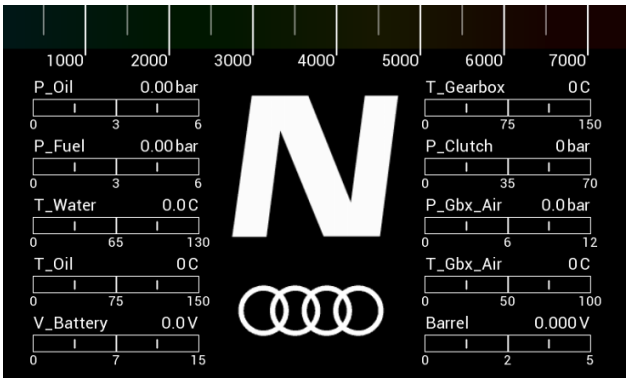
LED	COLOUR	FUNCTION
LED 1	Violet	WARNING. High gearbox oil temperature Drive out of the slipstream and keep checking the temperature value
	Violet - Blinking	MAJOR WARNING. Very high gearbox oil temperature Drive out of the slipstream and keep checking the temperature value. If it is not decreasing, the recommendation is to retire the car.
LED 2	Blue	High intake temperature Drive out of the slipstream and keep checking the temperature value since it may cause a torque reduction

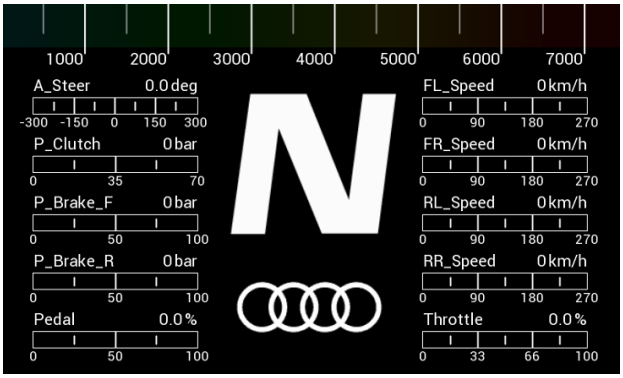
LED 3	Orange	WARNING. High engine water temperature Drive out of the slipstream and keep checking the temperature value. If no red alarm appears, you can continue. If the alarm disappears, keep pushing
	Red - Blinking	MAJOR WARNING. Very high engine water temperature Drive out of the slipstream and keep checking the temperature value. If it is not decreasing, the recommendation is to retire the car.
LED 4	Orange	WARNING. High engine oil temperature Drive out of the slipstream and keep checking the temperature value.
	Red - Blinking	MAJOR WARNING. Low engine oil pressure Major risk of breaking engine components. It is highly recommended to slow down the car. If the alarm stays, stop the car in a safe location.
LED 5	White	Low fuel pressure Check the fuel level
LED 6	Cyan	Battery low voltage Check the alternator and the poly-V belt
	Violet	Low pressure at the gearbox pneumatic accumulator Check the compressor and the pneumatic circuit

5.2. PAGE LAYOUTS

Once the car is delivered to the customers, the display will have some page layouts ready for racing, qualifying and main checks.

TABLE 5. MAIN PAGES MANAGED BY THE PAGE UP/DOWN BUTTONS

MAIN PAGES	REMARKS
	**Racing Layout** Gear, velocity and warning indicators Last & best lap time, delta time, lap number Fuel Level
	**Brakes Layout** RPM bar and gear Brake pressure bars and brake balance
	**Engine & Gearbox checks** Main values of the engine and the gearbox are shown to be checked if necessary

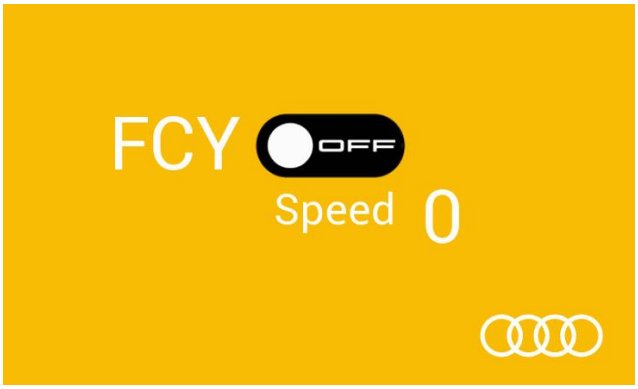


Driver's inputs & wheel speeds

Current values of the different driver's inputs (i.e. Steering angle, clutch pressure, etc.) as well as other sensor values are shown

TABLE 6. OVERLAY PAGES APPEAR WITH A SPECIFIC BUTTON COMBINATION

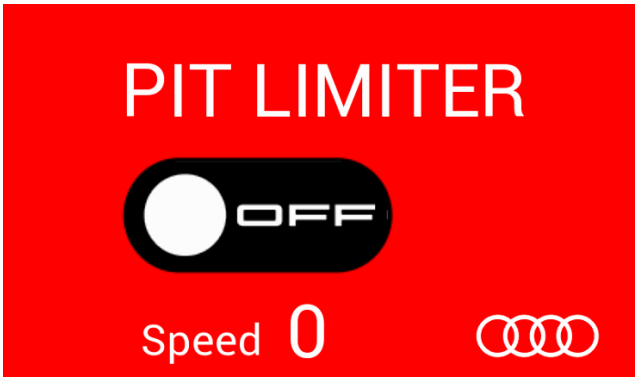
OVERLAY PAGES	REMARKS
	**Launch Layout** This overlay page automatically appears when the driver is pressing the launch button. It contains the interesting values during launch situations
	**ALS Layout** It appears when pressing the ALS button in the steering wheel module It disappears after 2 seconds



FCY Layout

It appears when pressing the FCY button in the steering wheel module or when the driver modifies the FCY speed limiter

It disappears after 2 seconds



Pit Limiter Layout

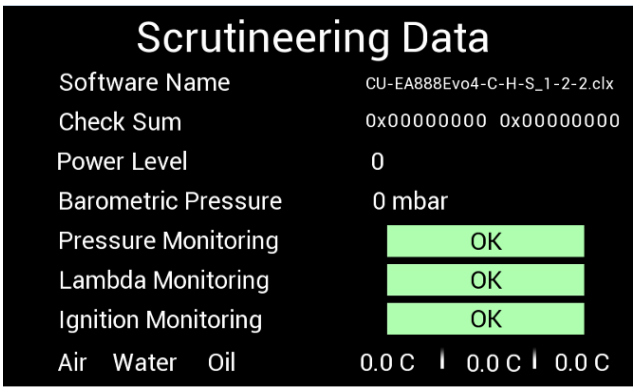
It appears when pressing the Pit Limiter button in the steering wheel module or when the driver modifies the Pit Limiter speed

It disappears after 2 seconds

New Brake Pads Layout

It appears when the mechanic program it after brake pad change

It disappears after a long push of Marker button in the steering wheel module



Scrutineering Layout

It appears when pressing the mode button of the keypad for 2 seconds.

It disappears after pressing up/down page of the steering wheel module.

5.3. SHIFT LIGHTS

Shift lights and alarms can be customizable by the teams, for more information, read the user car user manual. Shift Lights configured by default are the following:

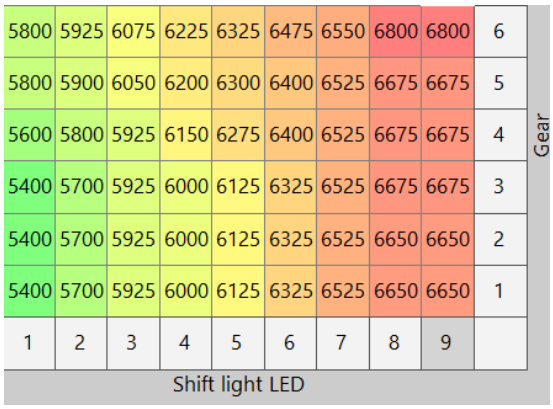


FIGURE 3. SHIFT LIGHTS BY DEFAULT

6. GEARBOX OPERATION

GEAR	REMARKS
R - Reverse	It is possible to gear the reverse if the car is completely stopped and the clutch pressed
N - Neutral	Press the Neutral button in the steering wheel module to enter this mode when Reverse or 1st are geared. To enter neutral, clutch is not needed but it is needed to exit it When neutral is geared, it is possible to push the car externally
Driving Mode	To go from R to 1st gear the car must be completely stopped and the clutch pedal pressed To go from 1st to 6th gear and the other way around, clutch is not necessary. Use the steering wheel paddle to upshift and downshift Remember that the shifting is completely manual, when the engine reaches maximum rpm, the power is limited but no upshift will happen
Parking Mode	With Neutral geared, lock manually the hand brake by using the locking hook. The case will be locked because of the rear brake pressure, not locked gearbox. To lock the gearbox stop the car on 1st or Reverse.

7. DRIVER CONSIDERATIONS

The driver should consider that:

- \ Follow the engine start and stop procedure stated in section 3 of this document.
- \ Learning and memorizing the steering wheel buttons location and function will make them faster as well as able to be more focused on the track
- \ Engine warm up is needed before starting. The minimum water temperature recommended before loading the engine is 80ºC
- \ Brake pedal stiffness should be checked when car is stopped
- \ Warm up the tyres before attacking. Without the use of blankets, rear tyres may need two laps to get warm
- \ Shift up gears when shift lights indicates to do so. The shift lights were optimized taking into account gear ratios and engine power
- \ In-laps: cool down brakes and engine water progressively to avoid thermal shocks.
- \ If a **WARNING** appears occupying the whole display, this is a critical message, it is recommended to stop the car as soon as possible on a safe location.
- \ If the car must be abandoned on the track, leave the gearbox in Neutral, to avoid damages in the transmission if the car is towed (consider the regulations).
- \ If fire extinguisher button is pressed, notice that the car will be completely stopped which means that that battery will be disconnected.