

AST PRO (AUTO START TOYOTA) V4.5.2

Toyota / Lexus emergency engine start unit

AST Pro V4.5 unit consists of the autostart device (Fig. 1A) and OBD programmer (Fig. 1B). This new kit is designed for:

1. Emergency engine start on Toyota and Lexus passenger vehicles in case of key authorization unit malfunction or loss of keys.
2. Restoring all systems to initial state in case of emergency start and adaptation of new SmartECU.
3. Programming the keys using another SmartECU, new or used block with a key bound to this ECU.



AST Pro is not intended for permanent use, only as a temporary solution in an emergency!

Supported vehicles:

Toyota/Lexus: All models till 2017-2018 MY.

* *AST Pro v4.5 can be connected either via the Smart ECU connector or the Steering lock ECU connector.*

The kit:

AST Pro consists of the Autostart device (**Fig. 1A**), OBD programmer (**Fig. 1B**), and the adapters with the needle probes for connection (**Fig. 3B**).

Operation sequence (step-by-step instruction)

➤ **FUNCTION of EMERGENCY AUTOSTART** (connection via SmartECU).

1. **Unplug all connectors from Smart ECU !!!**
2. Connect the needle probes to the upper SmartECU connector (large connector) and the lower (small connector) in accordance with the figure (fig. 6A-6E), but without connecting the red needle to «START» pin (See diagram of connections in accordance with the vehicle model).

Attention! Red needle probe with a green label must be connected to "IGN" pin !!!

3. Plug all connectors back into the Smart ECU. Connect the mini-USB plug to the autostart device. (fig.1A)
The LED on the device will flash **green**.
4. To start the mode, press and hold the button on the device until the **orange** LED lights up.
5. After unlocking the steering column, the **green** LED will light constantly.
6. Turn on the ignition using the rocker switch located on mini-USB wire. Set the switch to position « | » .
The dashboard lights up.
7. To start the engine, connect the red needle probe to «START» pin for 3 seconds.
(Use the starter relay under the bonnet or appropriated pin in SmartECU connector).

After starting the engine, this needle probe must be disconnected immediately !!!

8. Once the engine starts, the device can be disconnected.
9. To stop the engine and turn off the ignition, set the switch located near the mini-USB connector to position «0».

➤ **FUNCTION of EMERGENCY AUTOSTART** (connection via steering lock ECU connector).

1. Connect the autostart device (Fig. 1A) to steering lock ECU connector via the adapter (Fig. 3A- 3B), but without connecting the red needle to «START» pin (See diagram of connections in accordance with the vehicle model).

Attention! For Camry, RX, LX, T200 red needle probe "IGN" with a green label must be connected to BodyECU* (fig. 4A – 4C) !!!

2. Connect the mini-USB plug to the autostart device.
3. The LED on the device will flash **green**.
4. To start the mode, press and hold the button on the device until the **orange** led lights up.
5. After unlocking the steering column, the **green** led will light constantly.
6. Turn on the ignition using the rocker switch located on mini-USB wire*. Set the switch to position « | » .
The dashboard lights up.

*** For Camry, RX, LX, T200**, you must connect additional ignition pin to the BodyECU.
For LX, T200 – pin 17, connector 2H (Fig. 4A), for Camry – pin 13, connector 3H (Fig. 4B), for RX – pin 12, connector 2C (fig. 4C). For other cars, you DO NOT need to connect an additional ignition pin, the Ignition is supplied through **the rocker switch** on the mini-USB wire (fig. 3B).

7. To start the engine, connect red needle probe to «START»** pin for 3 seconds.
(Use the relay under the hood or appropriated pin in SmartECU connector).

**** For Lexus RX**, to start engine connect **red needle probe** for 3 seconds to **21** pin of **Engine Start-Stop ECU**. The Start-Stop ECU is located to the right of BodyECU (Fig. 5).

After starting the engine, this needle probe must be disconnected immediately !!!

8. To stop the engine and turn off the ignition, set the switch located near the mini-USB connector to position «0».

➤ **FUNCTION of RESTORING ALL SYSTEMS TO INITIAL STATE** (connection via SmartECU).

1. **Unplug all connectors from Smart ECU !!!**
2. Connect the needles of autostart device (**Fig. 1A**) to the upper SmartECU connector (large connector) and the lower (small connector) in accordance with the figure (see **wiring diagram to the car model, fig. 6A – 6E**).

Attention! The rocker switch of ignition must be off (position «0») and red needle probes not connected to the «START» pin and the «IGN» pins.

3. Plug all connectors back into the Smart ECU. Connect the mini-USB plug to the autostart device.
4. Set the switch of the OBD adapter to position #1.
5. Insert the OBD programmer into the OBD connector.
6. After connecting the sound beep **once**.
7. The LED on OBD adapter blinks green, and the autostart device starts flashing quickly in **orange**.
8. Bring smart-key to **START** button.
9. The **green** LED will light for 3 seconds. When the LED flashes slowly, the device can be disconnected.
10. System restored.



- ✓ **If the red led lights up after the device is turned on, it indicates a problem with the LIN bus (open circuit, short circuit to ground, unsuitable type of car);**
- ✓ **If the device emits 3 short beeps 5 seconds after connecting to OBD programmer, this means no CAN bus connection !**

➤ **FUNCTION of RESTORING ALL SYSTEMS TO INITIAL STATE** (connection via steering lock ECU connector).

1. Connect the autostart device (**fig.1A**) to steering lock ECU connector via an adapter (**Fig. 3A-3B**).

Attention! The rocker switch of ignition must be off (position «0») and red needle probes not connected to the «START» pin and the «IGN» pins !!!

2. Connect the mini-USB plug to the autostart device.
3. Set the switch of the OBD adapter to position #1.
4. Insert the OBD programmer into the OBD connector.
5. After connecting the sound beep **once**.
6. The LED on OBD adapter blinks green, and the autostart device starts flashing quickly in **orange**.
7. Bring smart-key to **START** button.



8. The **green** LED will light for 3 seconds. When the LED flashes slowly, the device can be disconnected.
9. System restored.

➤ **FUNCTION of BINDING SMART ECU and KEYS PROGRAMMING** (connection via SmartECU).

1. **Unplug all connectors from Smart ECU !!!**
2. Connect the needles of autostart device (Fig. 1A) to the upper SmartECU connector (large connector) and the lower (small connector) in accordance with the figure (see wiring diagram to the car model, fig. 6A – 6E).

Attention! The rocker switch of ignition must be off (position «0») and red needle probes not connected to the «START» pin and the «IGN» pins !!!

3. Plug all connectors back into the Smart ECU (**new or used ECU with a key bound to this unit**).
4. Connect the mini-USB plug to the autostart device.
5. Set the switch of the OBD adapter to position # 1.
6. Insert the OBD programmer into the OBD connector.
7. After connecting the sound beep **once**.
8. The device starts flashing quickly in **orange**.
9. Bring **correct** smart-key to **START** button (**for new block use new key, for used block use the key bound to this SmartECU**).



10. The **green** LED will light for 3 seconds. When the LED flashes slowly, the device can be disconnected.
11. The SmartECU binding procedure is complete. You can start your car.

➤ **FUNCTION of BINDING SMART ECU and KEYS PROGRAMMING** (connection via steering lock ECU connector).

1. **Unplug the necessary connectors from Smart ECU!!!** (see wiring diagram to the car model, fig. 6A – 6E).
2. Plug SmartECU (**new or used ECU with a key bound to this unit**).
3. Connect the autostart device (**fig.1A**) to steering lock ECU connector via an adapter (**Fig. 3A-3B**).

Attention! The rocker switch of ignition must be off (position «0») and red needle probes not connected to the «START» pin and the «IGN» pins !!!

4. Connect the mini-USB plug to the autostart device.
5. Set the switch of the OBD adapter to position # 1.
6. Insert the OBD programmer into the OBD connector.
7. After connecting the sound beep **once**.
8. The device starts flashing quickly in **orange**.
9. Bring **correct** smart-key to **START** button (**for new block use new key, for used block use the key bound to this SmartECU**).



10. The **green** LED will light for 3 seconds. When the LED flashes slowly, the device can be disconnected.
11. The SmartECU binding procedure is complete. You can start your car.

➤ FUNCTION of ADDING KEYS

1. **Turn off the car ignition;**
2. Set the switch of the OBD adapter to position **# 2**;
3. Insert the OBD programmer into the OBD connector.
4. After connecting the adapter emits double beep. The immobilizer lamp on the dashboard will stop flashing.;
5. Within 30 seconds, bring the bound smart key to the **START** button. One beep will sound and LED will light up;
6. Remove the smart-key from the car;
7. Within **30 seconds**, bring new key to the **START** button;
8. After a single beep, remove smart-key from **START** button;
9. If the second single beep sounded, it means the additional key is bound successfully. After that, you need to remove the smart key from the vehicle.



** If the second audio signal does not sound, this means the smart key is not registered.*

10. To continue adding smart keys, you need to repeat **steps 6-8**.
11. After you finish the binding of last smart key, you need to wait OBD adapter emits **three beeps**.
12. AddKey procedure is complete, disconnect the adapter from the OBD connector.
After completion of the procedure the immobilizer lamp starts flashing on the dashboard.

The key may not be registered for the following reasons:

- ✓ **Type of smart key does not match the type of key used in the vehicle (you must use the appropriate smart-key);**
- ✓ **Smart key is locked (the key is bound to another car). You need to unlock this key using a special programmer, or use a new smart key.**

Location of connectors and ECU blocks in the car:

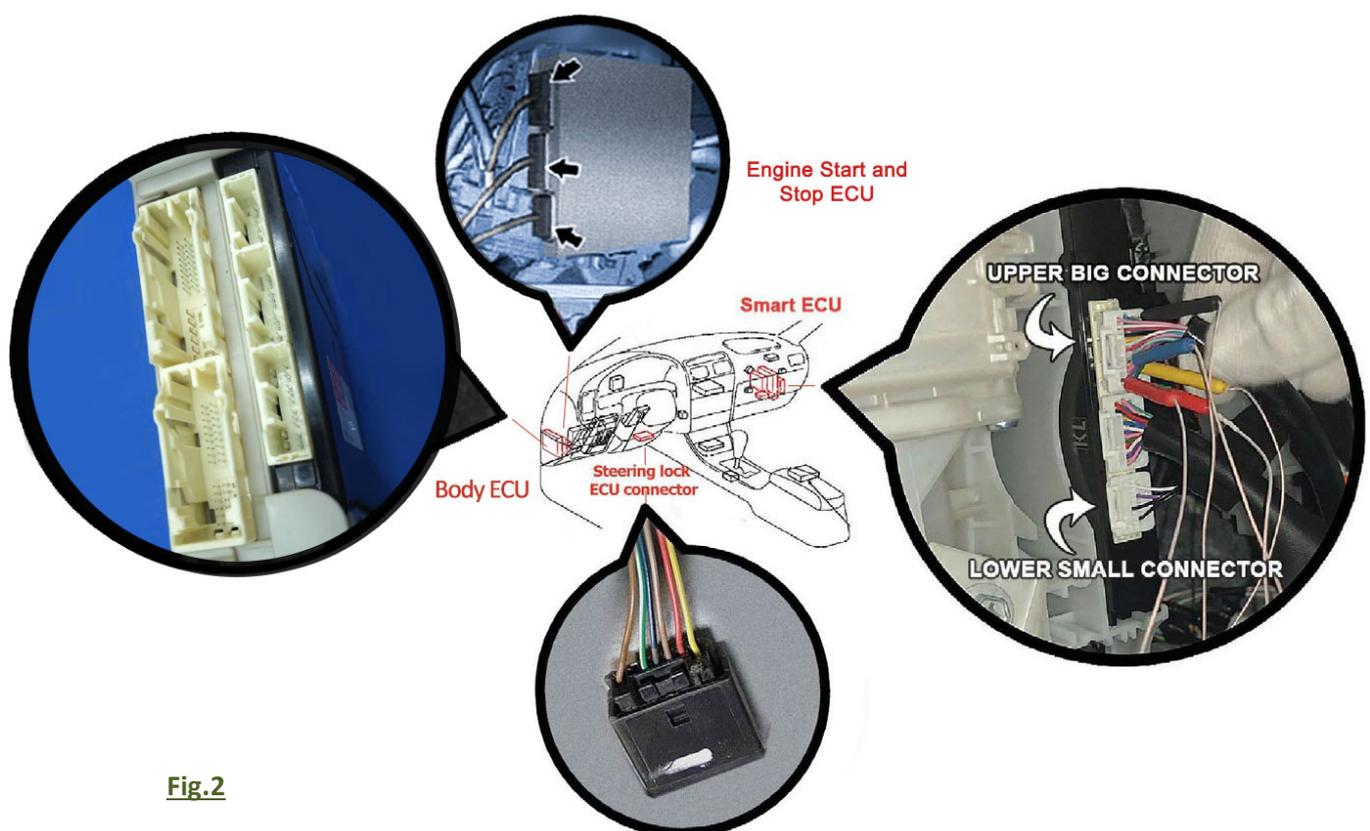


Fig.2

Connection via steering lock ECU connector:

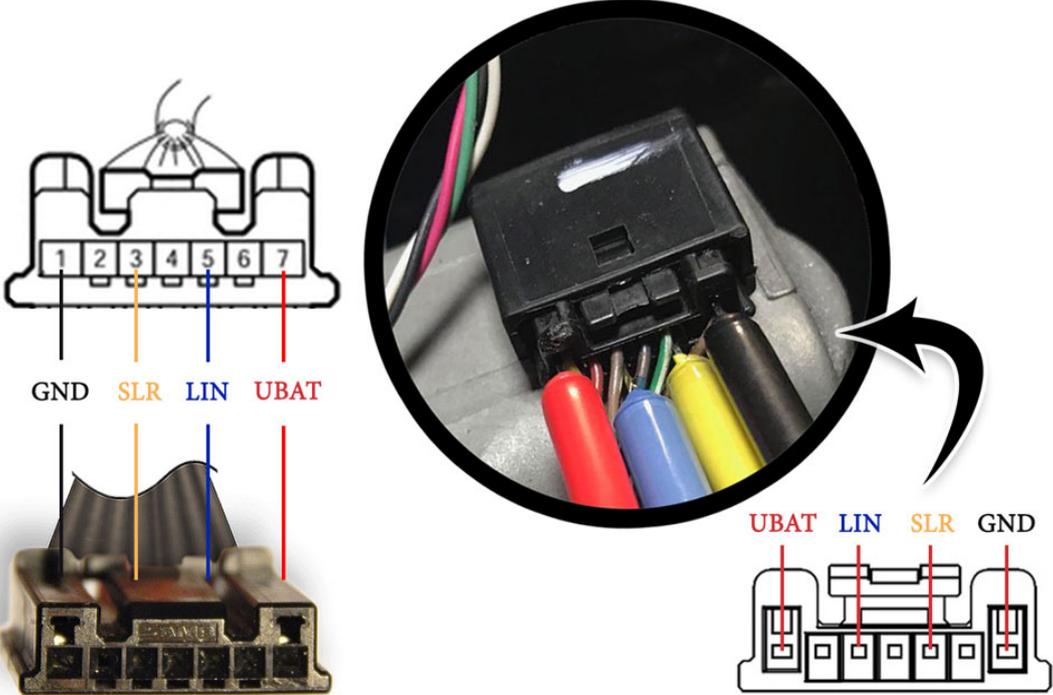
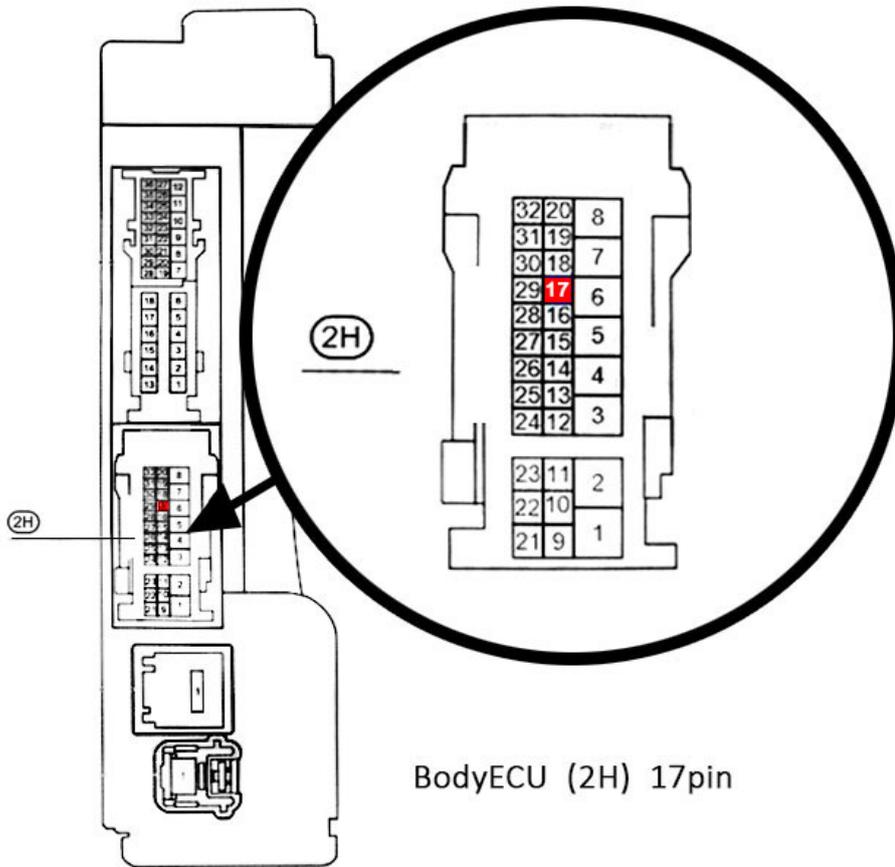


Fig.3A



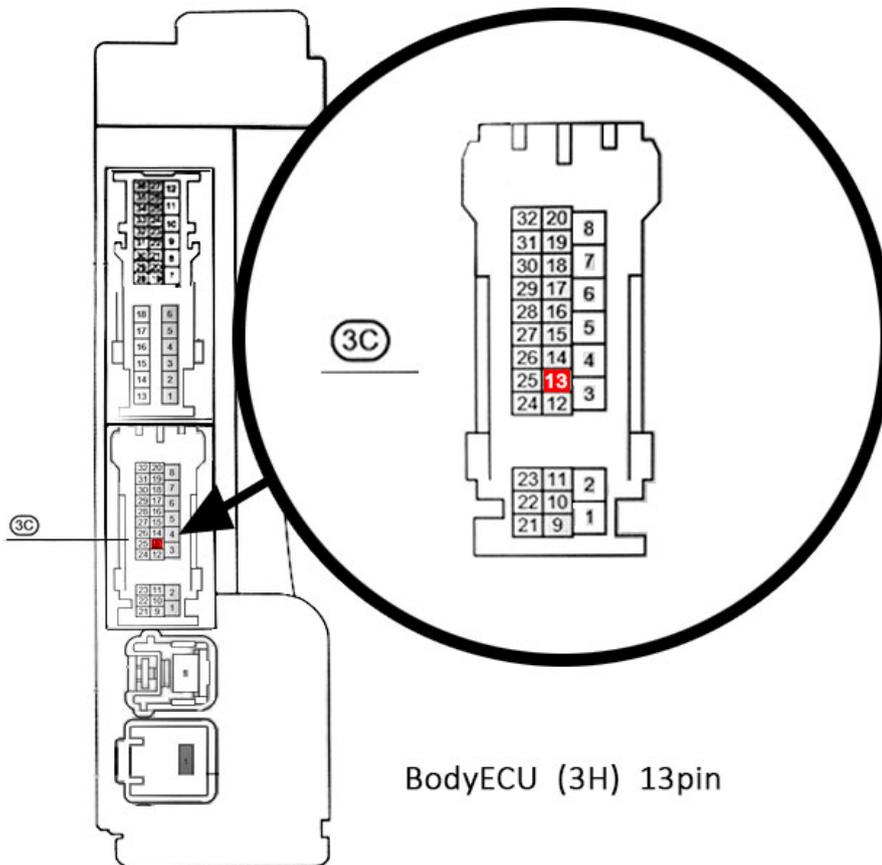
Fig.3B

Connection diagram of additional ignition contact to BodyECU:



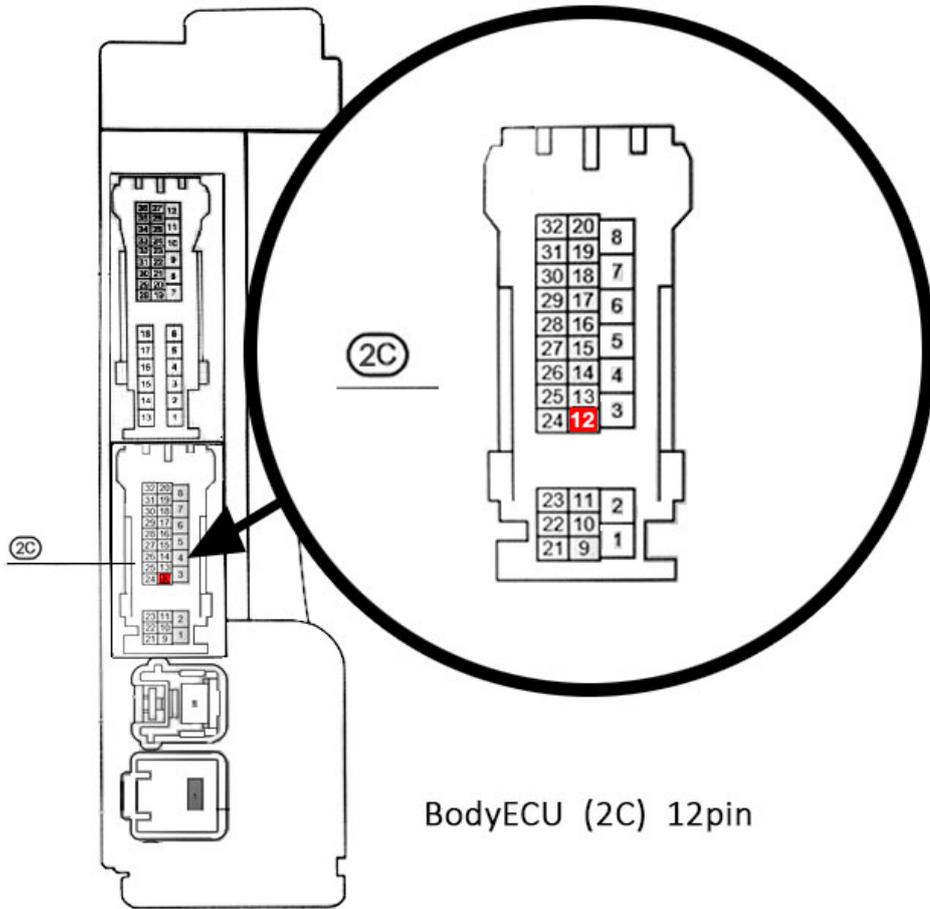
LX, T200

Fig.4A



Toyota Camry

Fig.4B

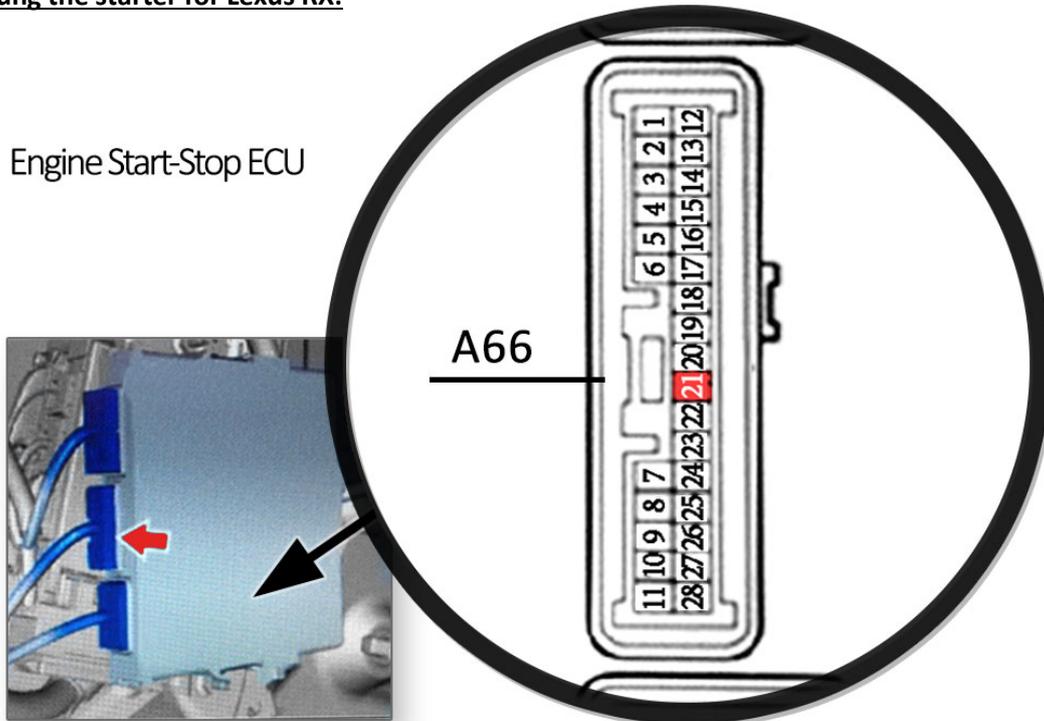


BodyECU (2C) 12pin

Lexus RX

Fig.4C

**** Running the starter for Lexus RX:**



Engine Start-Stop ECU

A66

Fig.5

The pinout for IS, LX, LS, NX, Alphard, Highlander, LC150, LC200, Prado:

(Key A8)

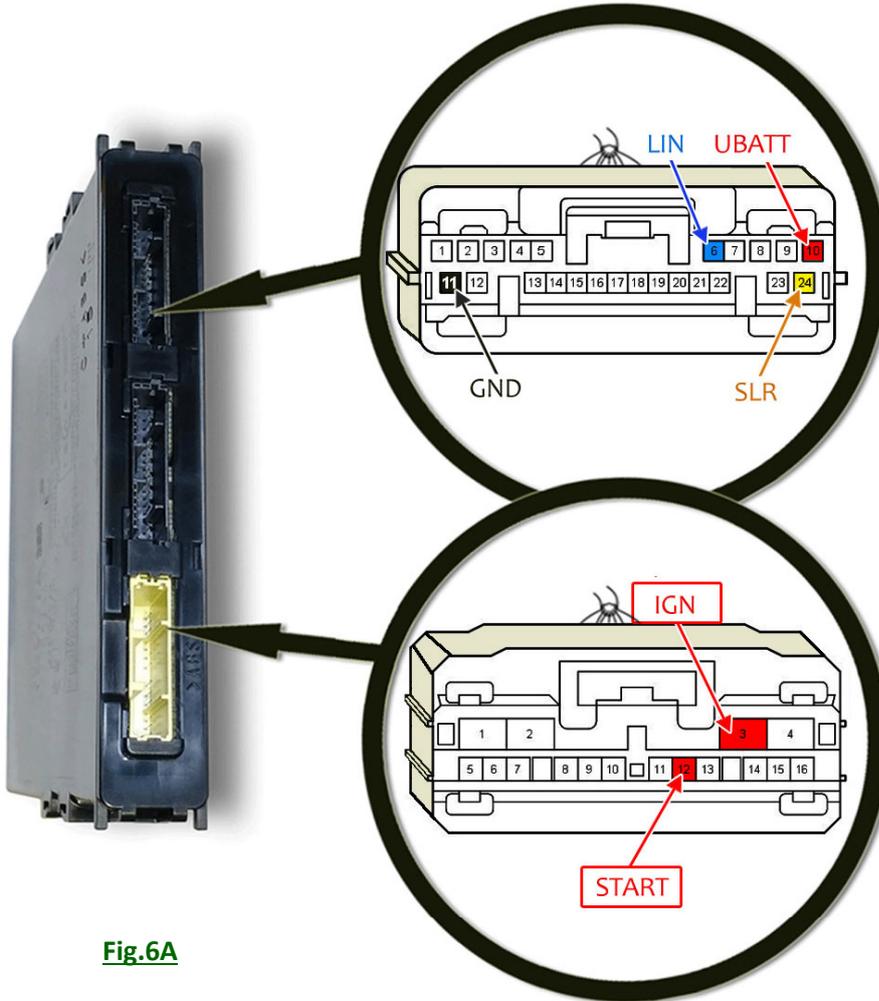
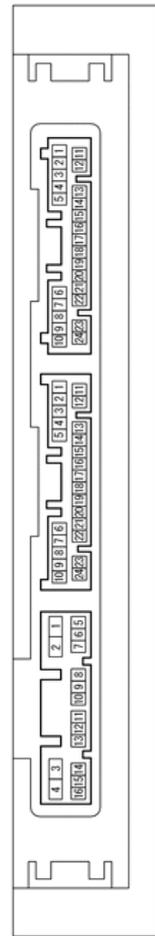


Fig.6A



The pinout for RX, LS500, CH-R, Camry (since 2018):

(Key A9)

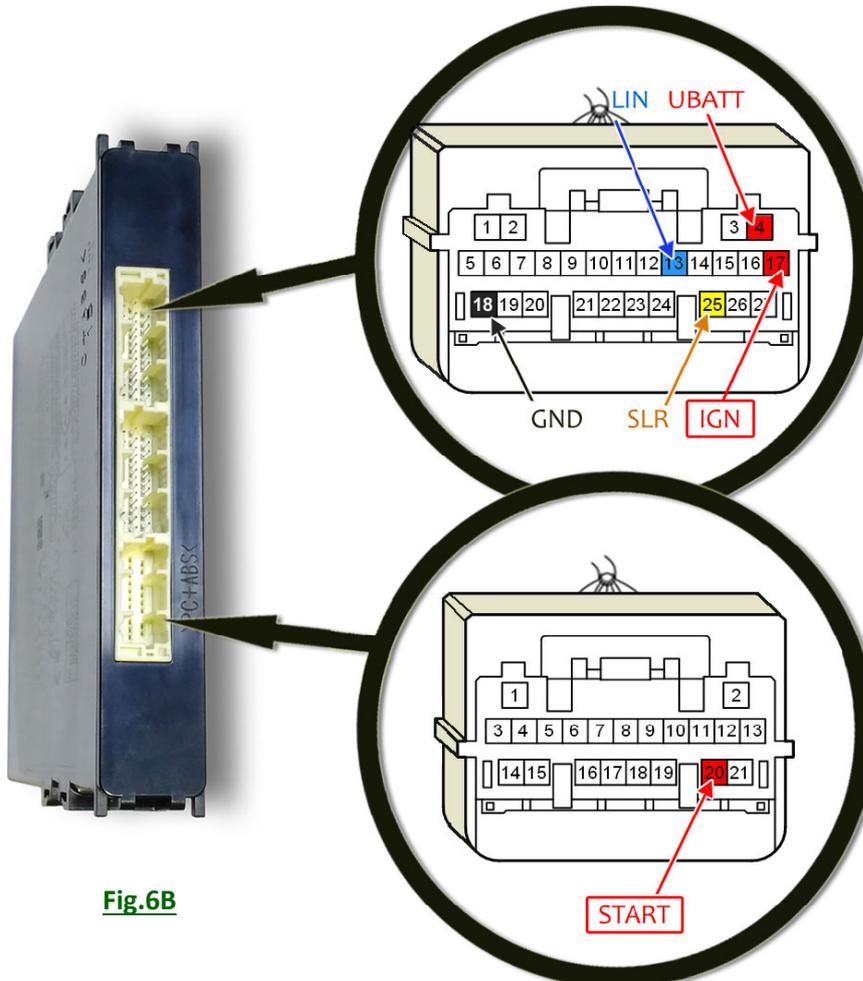
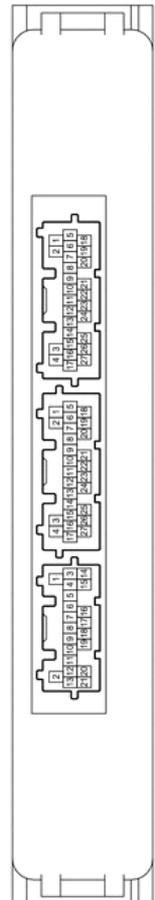


Fig.6B



The pinout for hybrids RX 2017, LS 500H 2018:

(Key A9)

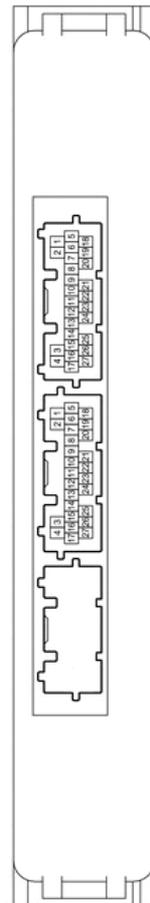
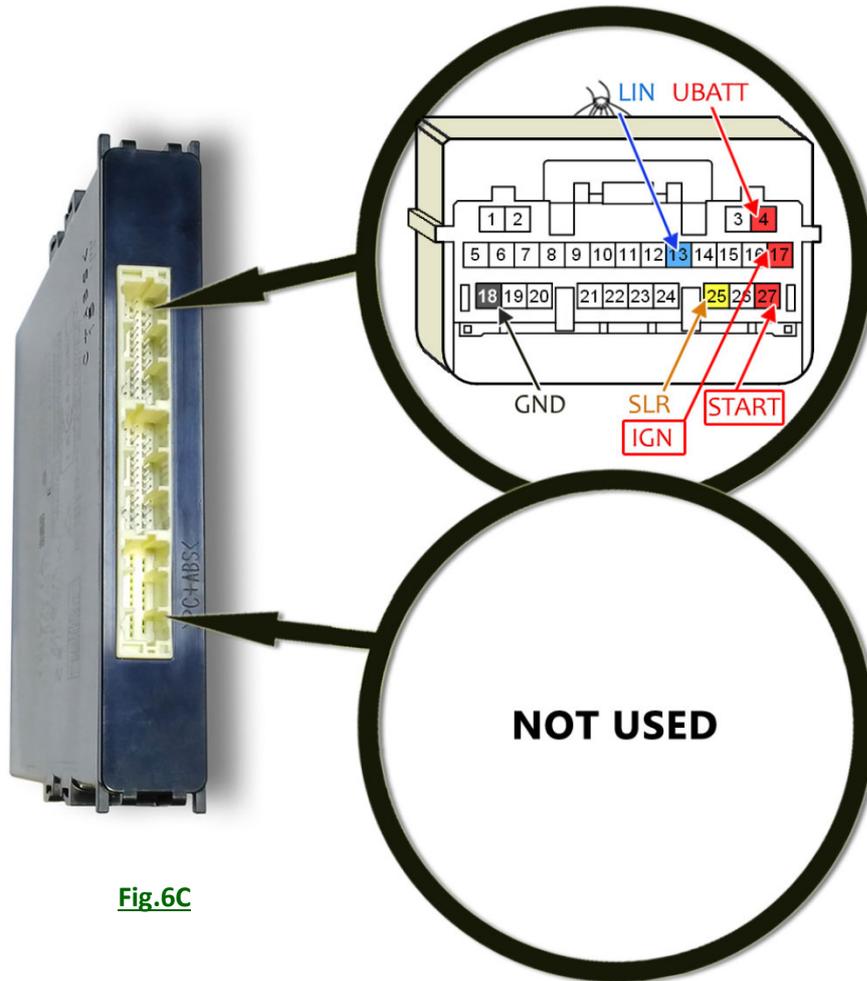


Fig.6C

The pinout for ES, GS, Rav4, Camry (till 2018):

(Key 88)

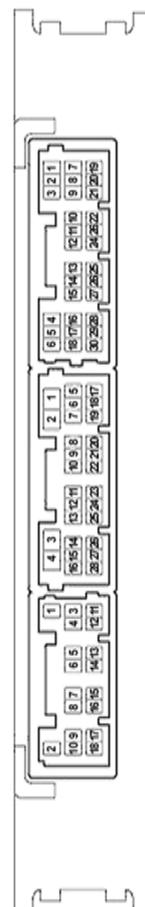
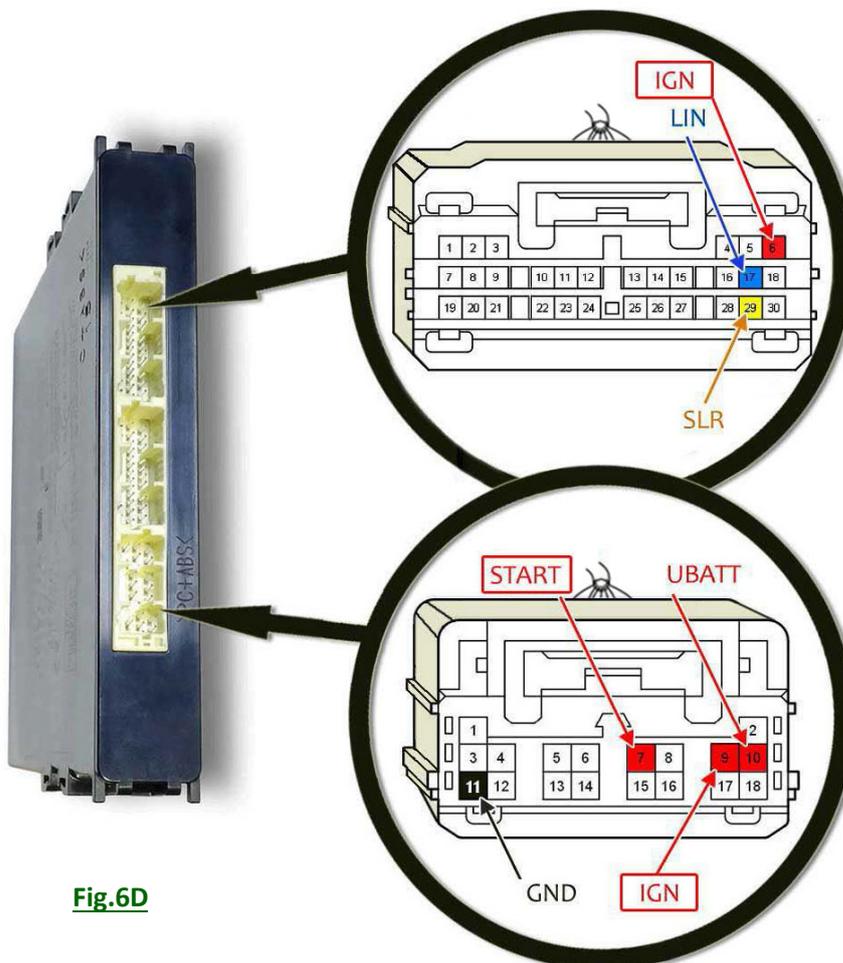


Fig.6D

The pinout for Fortuner, Hilux (from 2015 to 2018+):

(Key 39)

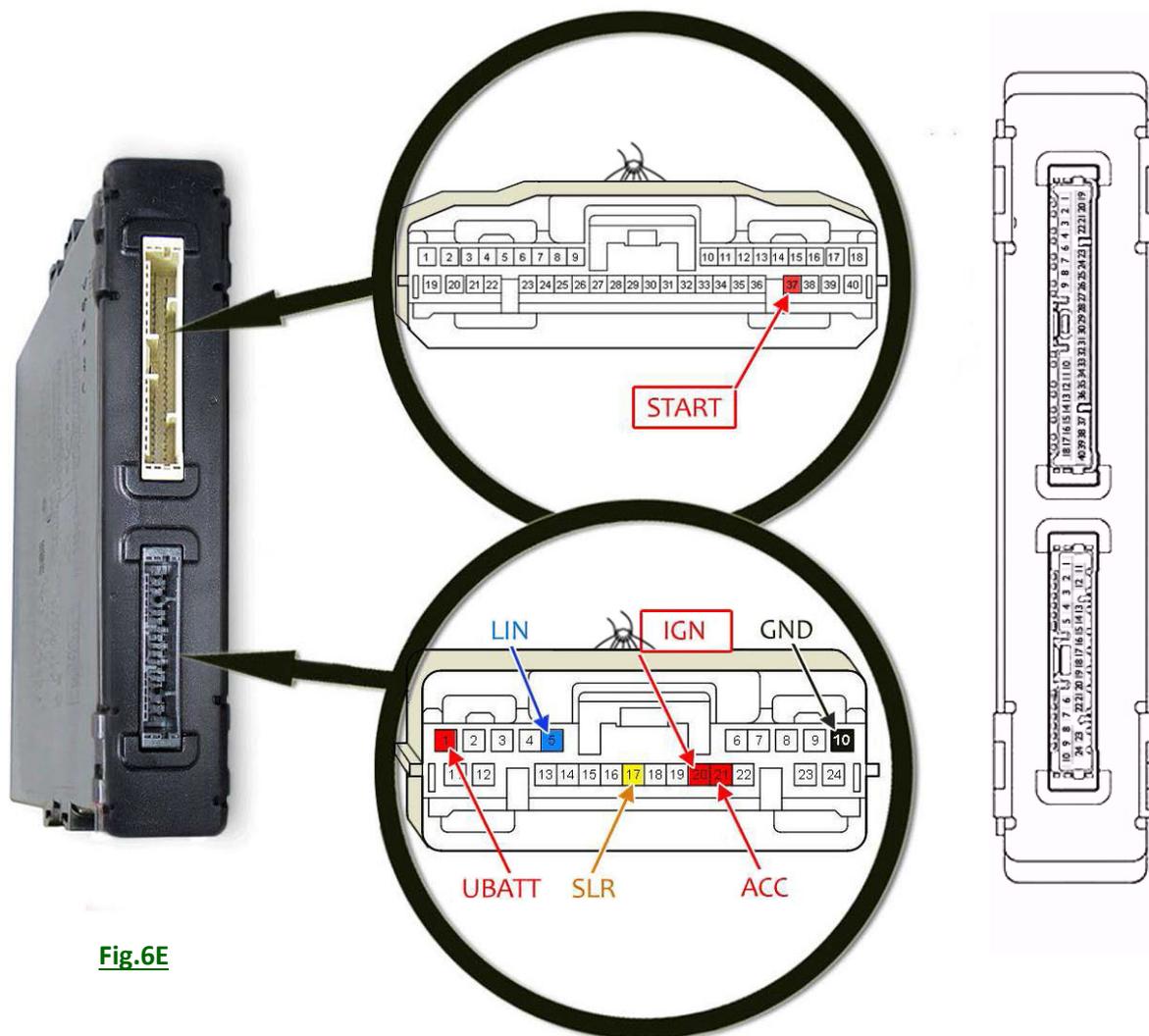


Fig.6E

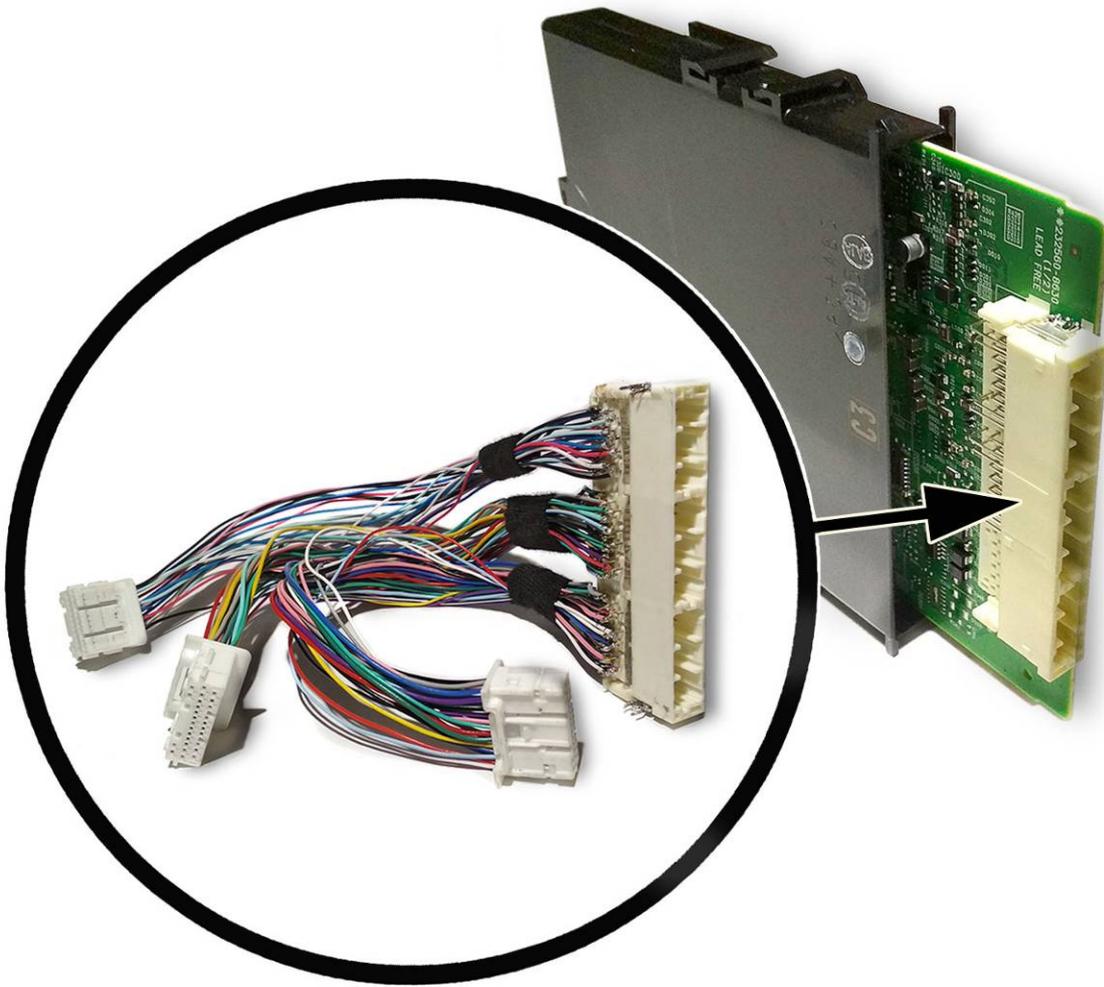
Attention !!! The binding used ECU is possible only if you have **smart-key bound to this block!** The device works with SmartKey system that uses new generation SmartEcu (See SKU numbers of Smart ECU units).

❖ **Additional adapters:**

* For convenience, you can use adapters. We provide some adapters in the kit, but some adapters you can make yourself.

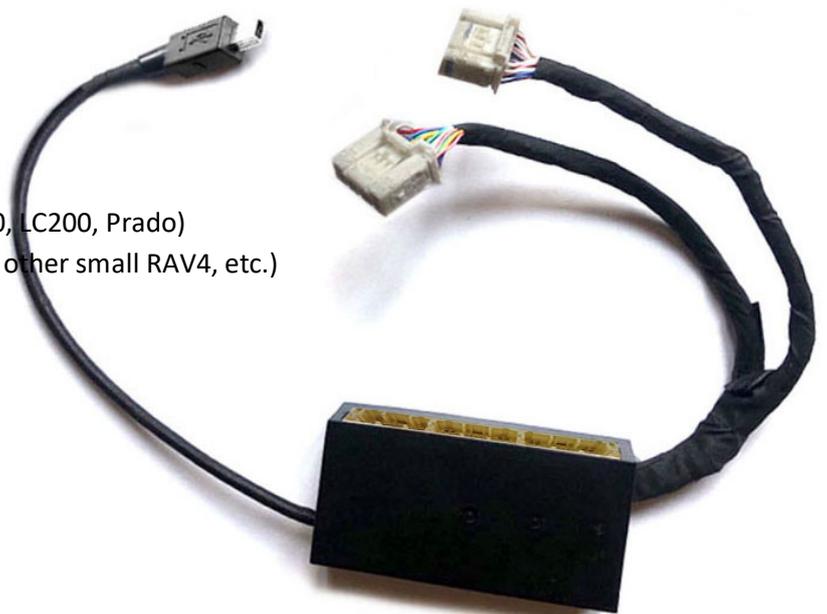
- ✓ Homemade adapter to SmartECU unit. **To make this adapter use part of native standart wiring with connectors from Smart ECU (faulty or not new unit)*** (Fig.7). The adapter must fit the key type. There are four kinds of connectors differing in the type of key - **A8, A9, 39, 88**.
- ✓ For making the adapter of steering lock ECU connector, use transponder coil socket for simple metal key and the steering lock ECU connector (Fig.3B).

* You can make such adapters by yourself:



The types of adapters for Smart ECU units:

- ✚ A8 (IS, LX, LS, NX, Alphard, Highlander, LC150, LC200, Prado)
- ✚ A9 (RX, LS500, CH-R, Camry (since 2018) and other small RAV4, etc.)
- ✚ 39 (Fortuner, Hilux (since 2015 to 2018+)
- ✚ 88 (ES, GS, Rav4, Camry (till 2018)



❖ **SKU numbers:**

* SKU numbers of SmartECU new generation (2017-2018)

Model	Petrol (Gasoline)	Diesel	Hybrid	Key
Lexus ES	89990-33412 (2018) 89990-33411 (2017)	-	-	88
Lexus GS	89990-30441	-	-	88
Lexus IS	89990-53381	-	-	A8
Lexus LS 500	899H0-50010	-	899H0-50020	A9
Lexus LX 570	89990-60291	(till 07/2017) 89990-60470 (since 08/2017) 89990-60471	-	A8
Lexus NX	89990-78080	-	89990-78100	A8
Lexus RX	(since 2015-18) 89990-48430 (since 2017-18) 89990-48431	-	(since 2015-18) 89990-48450 (since 2017-18) 89990-48451	A9
Lexus UX	-	-	89990-76190	-
Toyota Alphard	89990-58110, 89990-58210 89990-58240	-	-	A8
Toyota Camry	89990-33400, 89990-33690	-	89990-33480	A9
Toyota CH-R	89990-F4010	-	89990-F4050	A9
Toyota Hilux	89990-0K081, 89990-0e080	-	-	39
Toyota Highlander	89990-0E081	-	89990-0E150	A8
Toyota LC 200	89990-60471	89990-60280	-	A8
Toyota Prado	89990-60196, 89990-60430	89990-60205, 89990-60440	-	A8
Toyota RAV4	89990-42112	89990-42112	89990-42091	88

TO PURCHASE THE EQUIPMENT, AS WELL AS CONSULTING, MAINTENANCE,
PLEASE CONTACT US:

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Email: info@autodevice.net