

AST PRO (AUTO START TOYOTA) V 5.1

Toyota / Lexus emergency engine start unit

➤ PURPOSE OF THE DEVICE

- Emergency engine start of Toyota and Lexus cars in case of lost keys or certification system malfunction.
- Adaptation of Smart ECU to certification system of the car (new or used Smart ECU with a key bound to this block).
- Smart keys registration.



➤ SUPPORTED MODELS

Toyota / Lexus: AST Pro supports all-new models of 2015-2019 with Smart keys 39, 88, 98, A8, A9, AA.

AST Pro v5.1 is not intended for permanent use, only for a temporary solution in an emergency!!!

➤ THE KIT

- The autostart device (Fig.3A);
- OBD programmer (Fig. 3B);
- Adapter to steering column lock actuator (Fig. 3C);
- Set of SmartECU adapterst with the control console (fig. 3D,3E);
- The cable with the needles for connection to BodyECU (Fig.3F);
- USB cable (**Only the USB 3.0 cable is used!*) (Fig. 3G);





Fig.3

➤ **APPLICATION AND CONNECTION OPTIONS**

❖ **Emergency start:**

- Connection via Smart ECU;
- Connection via steering column lock actuator (car alarm is off);
- Connection via steering column lock actuator (car alarm is on);
- Connection via steering column lock actuator (old type certification system with 98 key, car alarm is off);

❖ **Adaptation of SmartECU to certification system of the car:**

- Connection via Smart ECU;
- Connection via the steering column lock actuator;

❖ **Smart Keys Registration (AddKey).**

➤ **OPERATION SEQUENCE** (Step-by-step instruction)

1. **EMERGENCY ENGINE START** (Connection via Smart ECU)

- 1.1. Disconnect the upper and lower connectors from the Smart ECU.
(for hybrids only the upper connector, except key 39).
- 1.2. Connect the SmartECU to the disconnected plugs through the appropriate adapter. (Fig .3D, Select the adapter depending on the car model and key type) (Fig. 8A-8D).
- 1.3. Switch **CAN** mode on the control console to position **ON**. (Fig. 3E)
- 1.4. Connect the control console (Fig.3E) to the autostart device (Fig.3A) using a USB cable (Fig.3G). The LED on the device will flash **green**.
- 1.5. If the autostart procedure is successful, the LED on the device will light **green** permanently. The steering column unlocks automatically, the ignition turns on and the engine starts automatically. All this actions occur **in automatic mode**.

Attention!!!

- ✓ When in automatic mode the ignition does not turn on, the engine does not start, and the LED blinks green, starting is possible in manual mode. In this case, activate the system using the door jamb switch. (Fig.4) Then turn on the ignition with **IGN** button and start engine with **START button** on the control console (Fig.3E).
- ✓ If you need to disconnect the autostart device and leave the engine turned on, press **IGN** button on the control console and disconnect the autostart device. The engine will continue to run until you turn off the ignition with the **IGN** button on the control console.
- ✓ When the car alarm is armed the procedure of emergency engine start is performed as described above (Section 1). During this procedure, the Panic mode will be activated!

2. **EMERGENCY ENGINE START** (connection via the steering column lock actuator, the car **alarm is OFF**).

- 2.1. Unplug the connector from the steering column lock actuator.
- 2.2. Plug this connector to the steering column lock actuator through the appropriate adapter (Fig.3C).
- 2.3. Connect the USB cable of the adapter (Fig.3C) to the autostart device (Fig.3A). The LED on the device will flash **green**.
- 2.4. Insert the autostart device into the OBD connector.
- 2.5. Activate the system with the door jamb switch (Fig.4).
- 2.6. If the autostart procedure is successful, the led on the device will light **green** permanently. The steering column unlocks automatically, the ignition turns on and the engine starts automatically. All this actions occur **in automatic mode**.



Fig.4

3. **EMERGENCY ENGINE START** (connection via the steering column lock actuator, the car **alarm is ON**).

- 3.1. Unplug the connector from the steering column lock actuator.

- 3.2. Plug this connector to the steering column lock actuator through the appropriate adapter (**Fig.3C**).
- 3.3. Connect the cable jack (**Fig. 3F**) to the autostart device AUX terminal (**Fig.3A**). Connect two needles of cable (CAN signal) to the appropriate pins **BODY ECU (Fig.7A,7B)**.



Attention! Wiring of CAN signal is twisted pair. If the procedure is performed for a car not specified in the instructions (**Fig.7**), find the twisted pair and connect the probes to these wires.

- 3.4. Connect the USB cable of the adapter (**Fig.3C**) to the autostart device (**Fig.3A**).
 - * **DO NOT insert the autostart device in OBD connector of the car!!!**
- 3.5. The LED on the device will flash **green**.
- 3.6. If the autostart procedure is successful, the LED on the device will light **green** permanently. The steering column unlocks automatically, the ignition turns on and the engine starts automatically. All this actions occur **in automatic mode**.

Attention!!!

- ✓ The procedure of emergency auto start does not deactivate the alarm when car alarm is armed. During execution of emergency auto start procedure, Panic mode is activated.
- ✓ If the Gateway ECU is not used in the car (Toyota RAV4, Camry, Corolla, etc.), the emergency engine start procedure does not require connecting additional needles to BODY ECU. The procedure is performed as described in sections 1 and 2.

4. EMERGENCY ENGINE START for old type certification system with 98 key
(connection via the steering column lock actuator, the car **alarm is OFF**).

- 4.1. Unplug the connector from the steering column lock actuator (**Fig.5C, Fig.6**).
- 4.2. Plug this connector to the steering column lock actuator through the appropriate adapter (**Fig.3C**).
- 4.3. Connect the USB cable of the adapter (**Fig.3C**) to the autostart device (**Fig.3A**).
- 4.4. The LED on the device will flash **green**.
- 4.5. Activate the system with the door jamb switch (**Fig.4**).
- 4.6. If the autostart procedure is successful, the led on the device will light **green** permanently.
- 4.7. To start the engine, press engine **START** button on **dash panel of the car**.

5. ADAPTATION OF SMART ECU TO CERTIFICATION SYSTEM (connection via Smart ECU)

- 5.1. Disconnect the upper and lower connectors from Smart ECU.
(**for hybrids only the upper connector, except key 39**).
- 5.2. Connect the Smart ECU to the disconnected plugs through appropriate adapter (**Fig .3D**). Select this adapter depending on the car model and key type (**Fig. 8A-8D**).
- 5.3. Switch **CAN** mode on the control console to position **OFF** (**Fig. 3E**).



- 5.4. Connect the control console (**Fig.3E**) to the autostart device (**Fig.3A**) using the USB cable (**Fig.3G**).
The LED on the device will flash **green**.
- 5.5. Activate the system with the door jamb switch (**Fig.4**).
- 5.6. Set the switch of the OBD programmer (**Fig.3B**) to position **#1**.
- 5.7. Insert the OBD programmer into the car OBD connector.
- 5.8. After connecting the sound beep **once**. The immobilizer lamp goes out.
The LED on OBD programmer blinks **green**, and the autostart device starts flashing quickly in **orange**.

Attention!!! If the immobilizer lamp continues to flash after connecting the OBD programmer, you need disconnect OBD programmer and connect again to OBD connector. The immobilizer lamp should go out, and the autostart device LED should blink **orange**.

- 5.9. Touch surface of the engine START button with the appropriate smart key.
(**for new block use new key, for used block use the key bound to this SmartECU**).
- 5.10. The LED on the autostart device will light **green** permanently, the immobilizer lamp starts blinking.
OBD programmer can be disconnected.
- 5.11. SmartECU adaptation procedure is complete. You can start the car.

6. **ADAPTATION OF SMART ECU TO CERTIFICATION SYSTEM** (connection via the steering column lock actuator).

- 6.1. Unplug the connector from the steering column lock actuator.
- 6.2. Plug this connector to the steering column lock actuator through the appropriate adapter (**Fig.3C**).
- 6.3. Connect the USB cable of the adapter (**Fig.3C**) to the autostart device (**Fig.3A**).
- 6.4. The LED on the device will flash **green**.
- 6.5. Activate the system with the door jamb switch (**Fig.4**).
- 6.6. Set the switch of the OBD programmer (**Fig.3B**) to position **#1**.
- 6.7. Insert the OBD programmer into the OBD connector.
- 6.8. After connecting the sound beep **once**. The immobilizer lamp goes out, and the autostart device starts flashing quickly in **orange**.



Attention!!! If the immobilizer lamp continues to flash after connecting the OBD programmer, you need disconnect OBD programmer and connect again to obd connector. The immobilizer lamp should go out, and the autostart device LED should blink **orange**.

- 6.9. Touch surface of the engine START button with the appropriate smart key.
(**for new block use new key, for used block use the key bound to this SmartECU**).
- 6.10. The LED on the autostart device will light **green** permanently, the immobilizer lamp starts blinking.
OBD programmer can be disconnected.
- 6.11. SmartECU adaptation procedure is complete. You can start the car.

7. **SMART KEYS REGISTRATION (ADD KEYS)**

- 7.1. Turn off the car ignition.
- 7.2. Set the switch of OBD programmer (**Fig.3B**) to position #2.
- 7.3. Connect the OBD programmer to OBD connector of the car.
- 7.4. After connecting, a beep sounds twice. The immobilizer lamp on the dashboard goes out.



Attention!!! If the immobilizer lamp continues to flash after connecting the OBD programmer, you must disconnect OBD programmer and connect again to OBD connector. The immobilizer lamp should go out.

- 7.5. Within 30 seconds, touch surface of engine START button with the registered smart key. One beep will sound and LED will light up.
- 7.6. Remove the smart-key from vehicle.
- 7.7. Within 30 seconds, touch surface of engine START button with the additional smart key.
- 7.8. After a single beep, remove the smart-key from START button.
- 7.9. If the second single beep sounded, it means the additional key is registered 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.**

- 7.10. To continue registering additional smart keys, you need to repeat **steps 7.6 - 7.8.**
- 7.11. After you finish the registering of the last smart key, you need to wait OBD programmer emits three beeps. Disconnect this programmer from OBD connector.
- 7.12. AddKey procedure is complete. After completion of the procedure the immobilizer lamp starts flashing on the dashboard.

The key cannot be registered for the following reasons:

- ✓ **Type of smart key does not match the type of key used in the vehicle. In this case, 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

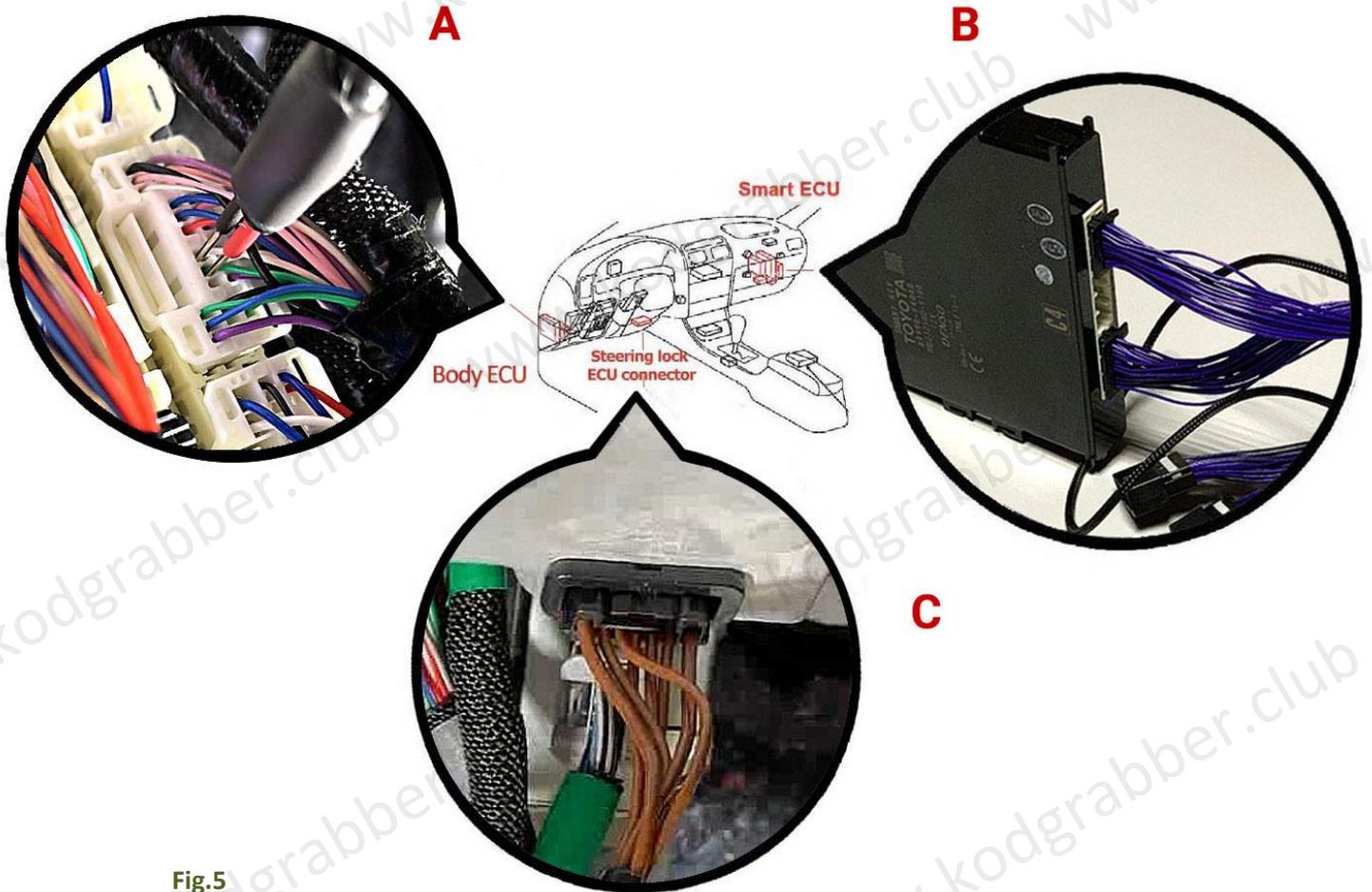


Fig.5

➤ CONNECTION VIA THE STEERING COLUMN LOCK ACTUATOR



Fig.6

➤ **CONNECTING ADDITIONAL CONTACTS (CAN SIGNAL) TO THE BODY ECU**

CH-R, GX, Highlander, LX, NX, RX - contacts 13-14 (Fig.7A)

Camry, Rav4 - contacts 5-6 (Fig. 7B)

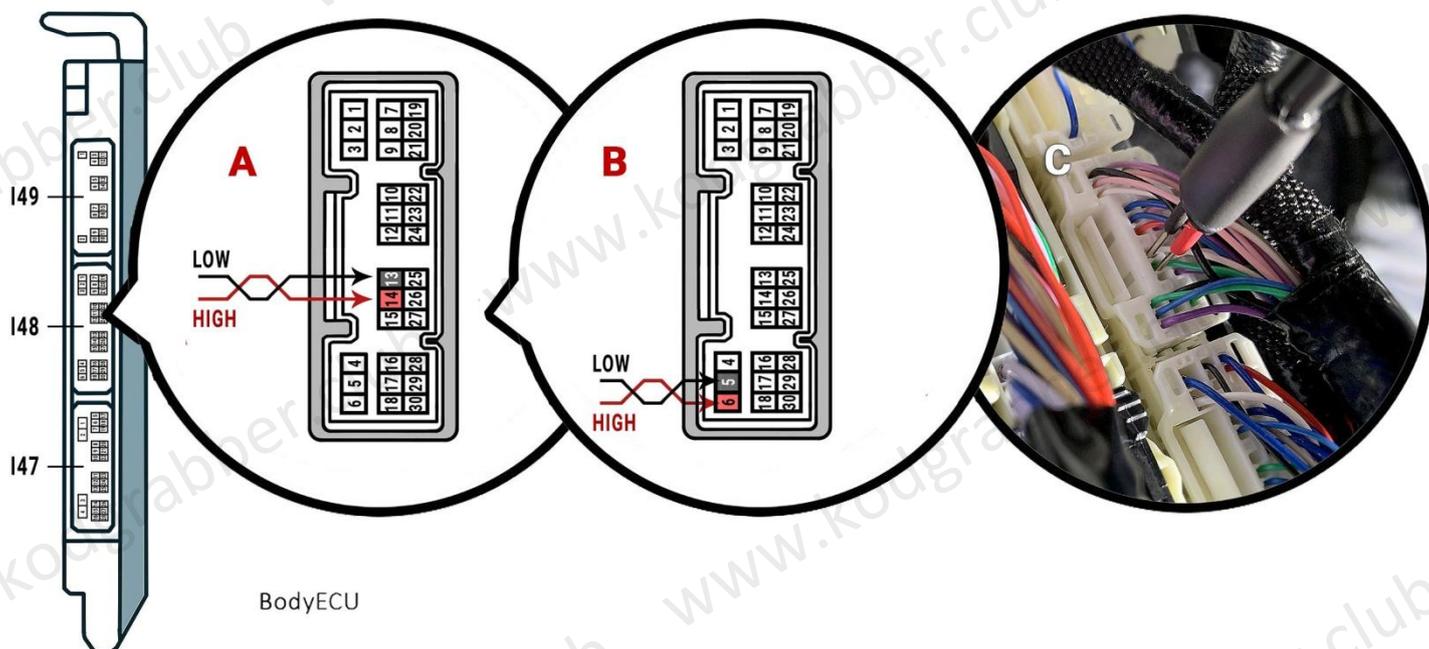


Fig.7

Connection for IS, LX, LS, NX, Alphard, Highlander, LC150, LC200, Prado

(Key A8)

(for hybrids do not connect the lower connector)

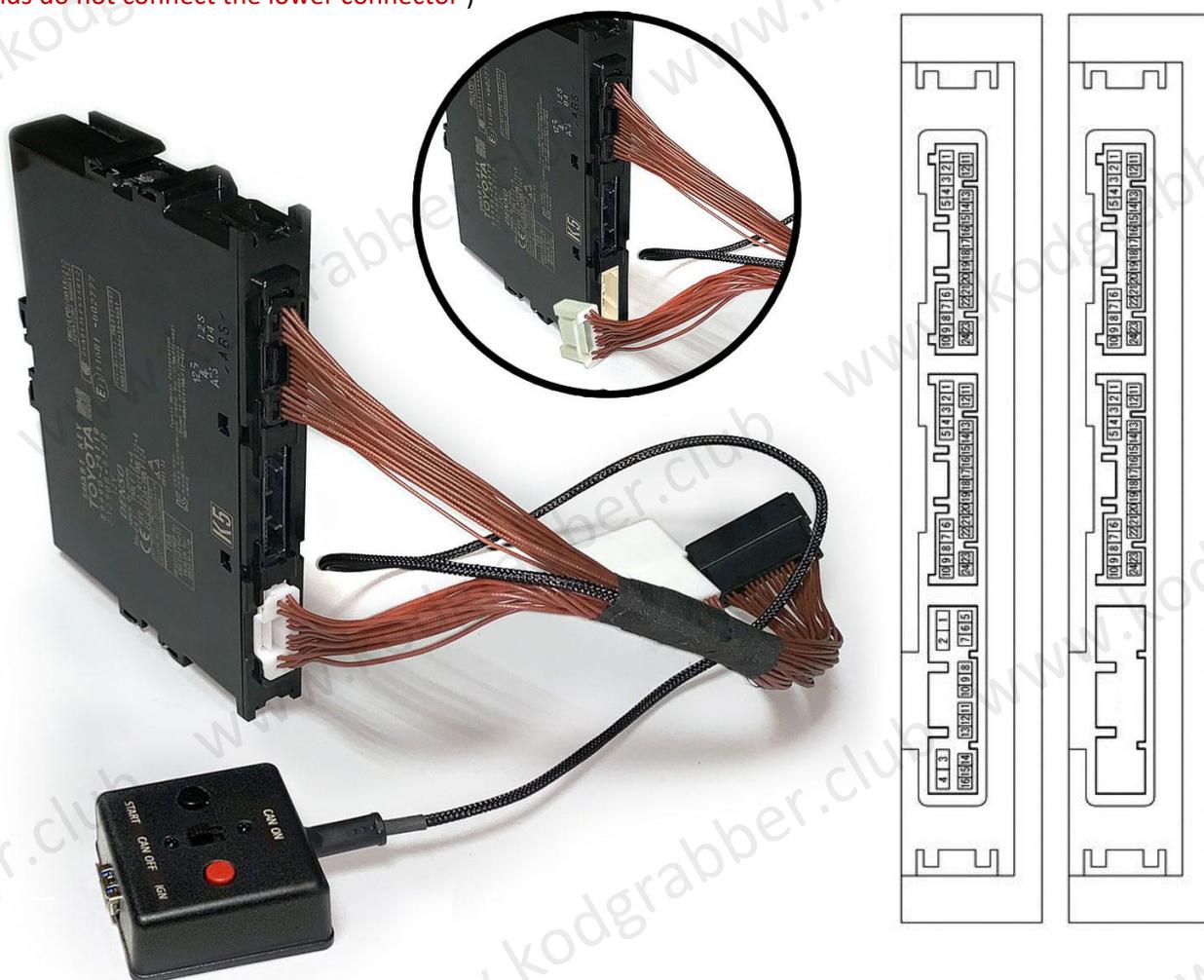


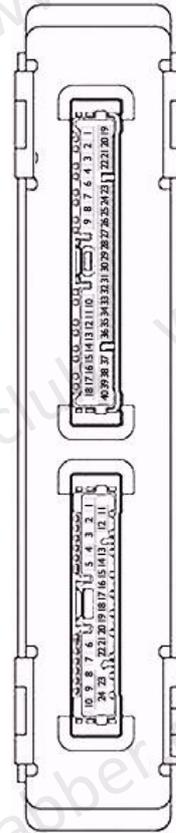
Fig.8A

Connection for Fortuner, Hilux (from 2015 to 2018+)

(Key 39)



Fig.8D



➤ THE TYPES OF ADAPTERS FOR SMART ECU UNITS

(Adapters for SmartECU differ in the type of key - 39, 88, A8, A9)

- ✚ A8 - (IS, LX, LS, NX, Alphard, Highlander, LC200, Prado);
- ✚ A9 - (RX, LS500, CH-R, Camry and RAV4 (since 2018);
- ✚ 39 - (Fortuner, Hilux (since 2015 till 2019);
- ✚ 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