

WORKSHOP MANUAL

TF-SERIES

Isuzu TFR/S Immobilizer System

**Service management procedure
and workshop manual**

ISUZU

ISUZU



International Service & Parts
Tokyo, Japan

NOTICE

Before using this Workshop Manual to assist you in performing vehicle service and maintenance operations, it is recommended that you carefully read and thoroughly understand the information contained in Section 0A under the headings “GENERAL REPAIR INSTRUCTIONS” and “HOW TO USE THIS MANUAL”.

**All material contained in this Manual is based on the latest product information available at the time of publication.
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No DTC indicates

- 1.12V power is not supplied to ICU**
- 2.Engine does not start after steering assembly is repaired**
- 3.If engine does not start after ICU replacement, check part number (01MY)**

DTC appears

- B8011 TRANSPONDER KEY PROBLEM**
- B8012 WRONG TRANSPONDER KEY**
- B8013 IMMOBILIZER NOT PROGRAMED**
- B8014 NO TRANSPONDER KEY PROGRAMED**
- B8055 EEPROM ERROR**
- B8015 VEHICLE SPEED SIGNAL Lo (Gasoline Engine)**
FREQUENCY SIGNAL Lo (Diesel Engine)
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- B8023 ANTENNA COIL OPEN**
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System guidance

Diagnostic Trouble Code (DTC) list

No DTC indicates

- 1.12V power is not supplied to ICU**
- 2.Engine does not start after steering assembly is repaired**
- 3.If engine does not start after ICU replacement, check part number (02MY)**

DTC appears

- B8001 REPLACE ELECTRONIC CONTROL UNIT (ECU) (IMMOBILIZER FAULT)**
- B8002 IMMOBILIZER NOT PROGRAMMED**
- B8003 TRANSPONDER KEY PROBLEM**
- B8004 IMMOBILIZER COIL CIRCUIT (ANTENNA COIL FAULT)**
- B8005 COMMUNICATION LINE W VOLTAGE Low**
- B8006 COMMUNICATION LINE W VOLTAGE High**
- B8007 NO ENGINE REQUEST RECEIVED**
- B8008 WRONG TRANSPONDER KEY**
- B8009 NO TRANSPONDER KEY PROGRAMMED**
- B8010 UNKNOWN TRANSPONDER KEY**

Immobilizer system electrical wiring

Gasoline Engine (6VD1 3.2L)

Gasoline Engine (C22NE 2.2L/22LE 2.2L/20LE 2.0L)

Diesel Engine (Mechanical Control , 4JG2 3.1L/4JB1 2.8L/4JA1 2.5L)

Diesel Engine (Electrical Control , 4JA1-TC 2.5L/4JH1-TC 3.0L)

Immobilizer System Introduction

This manual is an introduction of immobilizer system for service readiness view.

An electrical immobilizer is available as of Model Year 2002 TFR/S to prevent unauthorized persons from starting the engine. To support customers, there are some important items your organization needs to provide. If fails, your organization and Isuzu Motors may face severe customer complains.

What your organization should provide for your customer

- **Car Pass** For a new owner, your dealership must hand Car Pass card, which has identification numbers of new owner's vehicle immobilizer system. This information is very important in case of repair or lost of transponder.
The followings are necessary items provided by your responsibility.
 - 1) Car Pass with Identification for a new owner
 - 2) Blank Car Pass Card when it is for reissue
 - 3) Instruction to dealers how to use Car Pass Card
- **Security code management** Your organization must keep security codes for all vehicles as confidential data. Once the security codes are lost, anybody who have the security code can access immobilizer system. Your organization has responsibility of any missing vehicles caused by stolen security code.
- **Customer Support** Lost Car Pass may happen when customer needs security code. Your organization sets up release security code process with verification procedure.
Sometimes customer needs security code in urgent manner. Therefore Isuzu recommends your organization organizes 24 hours support.
- **Essential tool** Your dealership must have Tech-2, and Tech-2 updated software for immobilizer system.
- **Dealer training** Dealer technician must be trained how to diagnose, program, reprogram immobilizer system. Even though no problem happens, customer may request additional transponders when releases new vehicle to customer, or even afterward.
Before Sales start, dealer training must be done.

System description

The immobilizer system consists of the four major components. which are Engine Control Module (ECM), Immobilizer Control Unit (ICU), transponder, DDS-1 and scan tool (Tech-2). See page 4 for Gasoline engine, page 5 for Mechanical Control Diesel Engine, page 6 for Electrical Control Diesel Engine.

This system can be activated by a correctly programmed transponder and starter switch is set to OFF. This system can be deactivated by a correctly programmed Transponder Key connected with a correctly programmed ECM and a correctly programmed ICU.

While the system is on

In case of Gasoline engine and Electrical Control Diesel engine;

The starter cut off relay deactivates function of starter, and the fuel injector power source is deactivated also.

In case of Mechanical Control Diesel engine;

The starter cut off relay deactivates function of starter, and the pump is deactivated also.

What happens without proper transponder operation?

One of the function of transponder is to deactivate or activate starter function. If the proper transponder is not used, starter cannot be operated. Because starter cut off relay stays on, cranking engine is not possible.

After the starter cut off relay is deactivated, transponder signal triggers to let ICU calculate by transponder address signal and immobilizer algorithm.

When the result matches with necessary condition, it makes injector power source be activated.

If transponder does not send correct signal, ICU and ECM do not activate injector system on.

Therefore the vehicle cannot be operated.

No proper transponder is available, what should be done for the system?

When any proper transponder is not available, a new transponder should be programmed. Up to 5 transponders can be provided with Tech-2 and by proper procedure. See pages 12 to13.

In addition to the absence of proper transponder, it may happen particular secret code to the particular vehicle is missing. In this case, the secret code must be provided by your organization (refer to 'loss of car pass' on pages 23,24). Otherwise transponder cannot be programmed in any Way.

If the essential tool Tech-2 for programming and proper software for Tech-2 are not available, there is no permanent way to fix system. Temporary replace with new ECM, new ECM and new transponder without any secret code can make the system be deactivated, but it does not last long. Such a replacement does not solve any condition. Even after replacement, the system is activated automatically in short time and then no operation of the vehicle can be made in any Way.

Tech-2 should be provided in your organization. Refer to page 10.

Caution to the operation

If an attempt is made to start the engine while the immobilizer system is activated, the CHECK ENGINE Lamp flashes and the engine will not start. See the illustration at the bottom of this Page.

Summary of operation

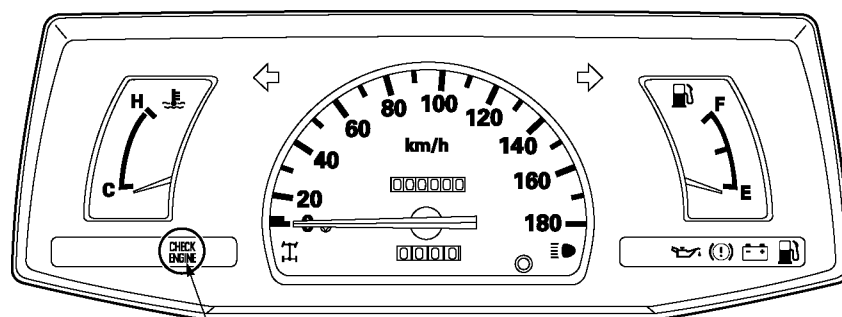
Switch on: Set the ignition and starter Switch to OFF.

(Activate)

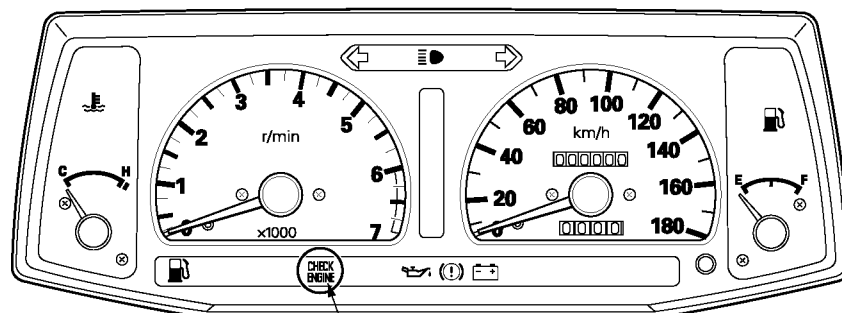
Switch off: Set the ignition and starter switch to ON by using the transponder key.

(Deactivate)

Illustration of Instrument panel

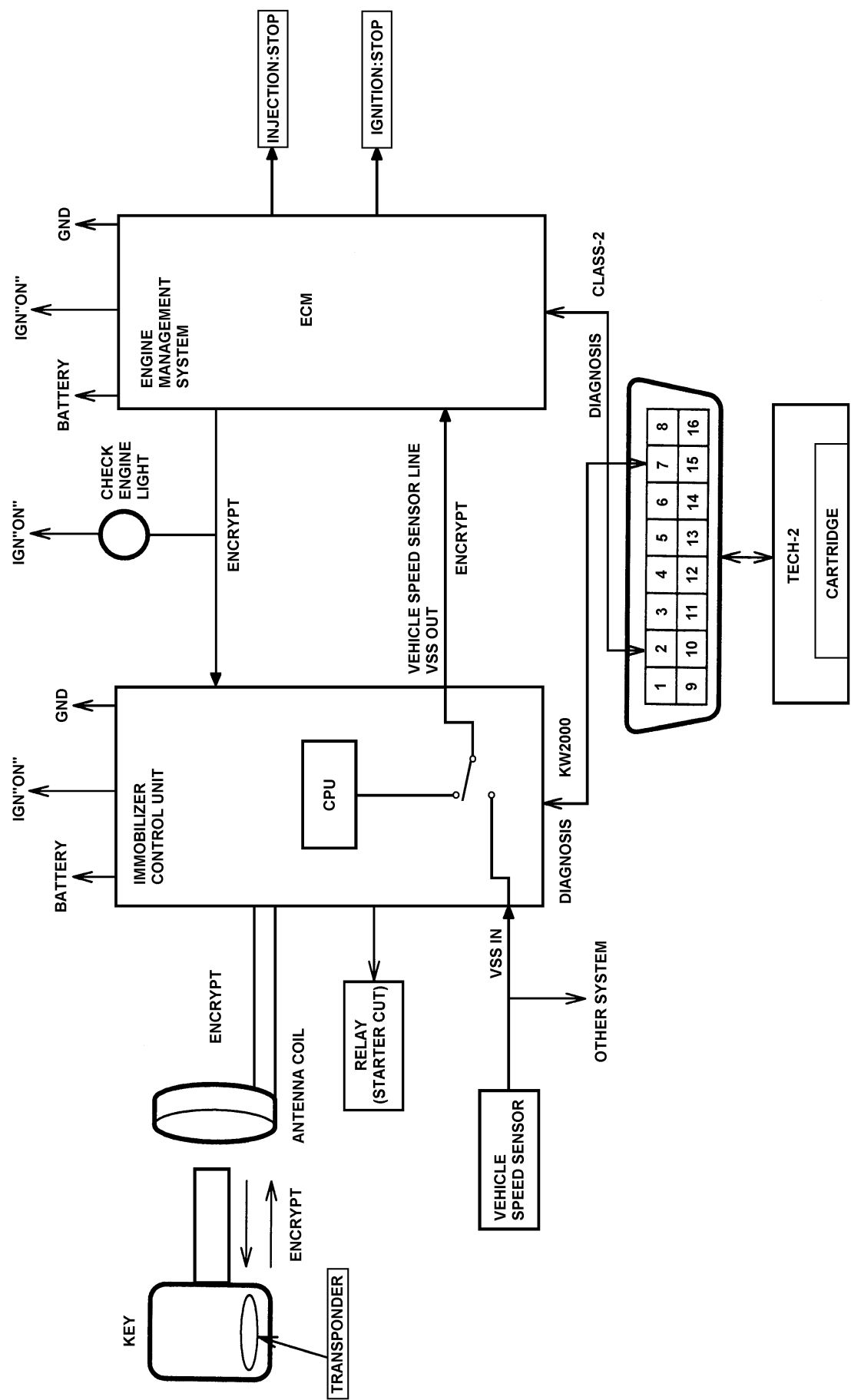


Check Engine Lamp

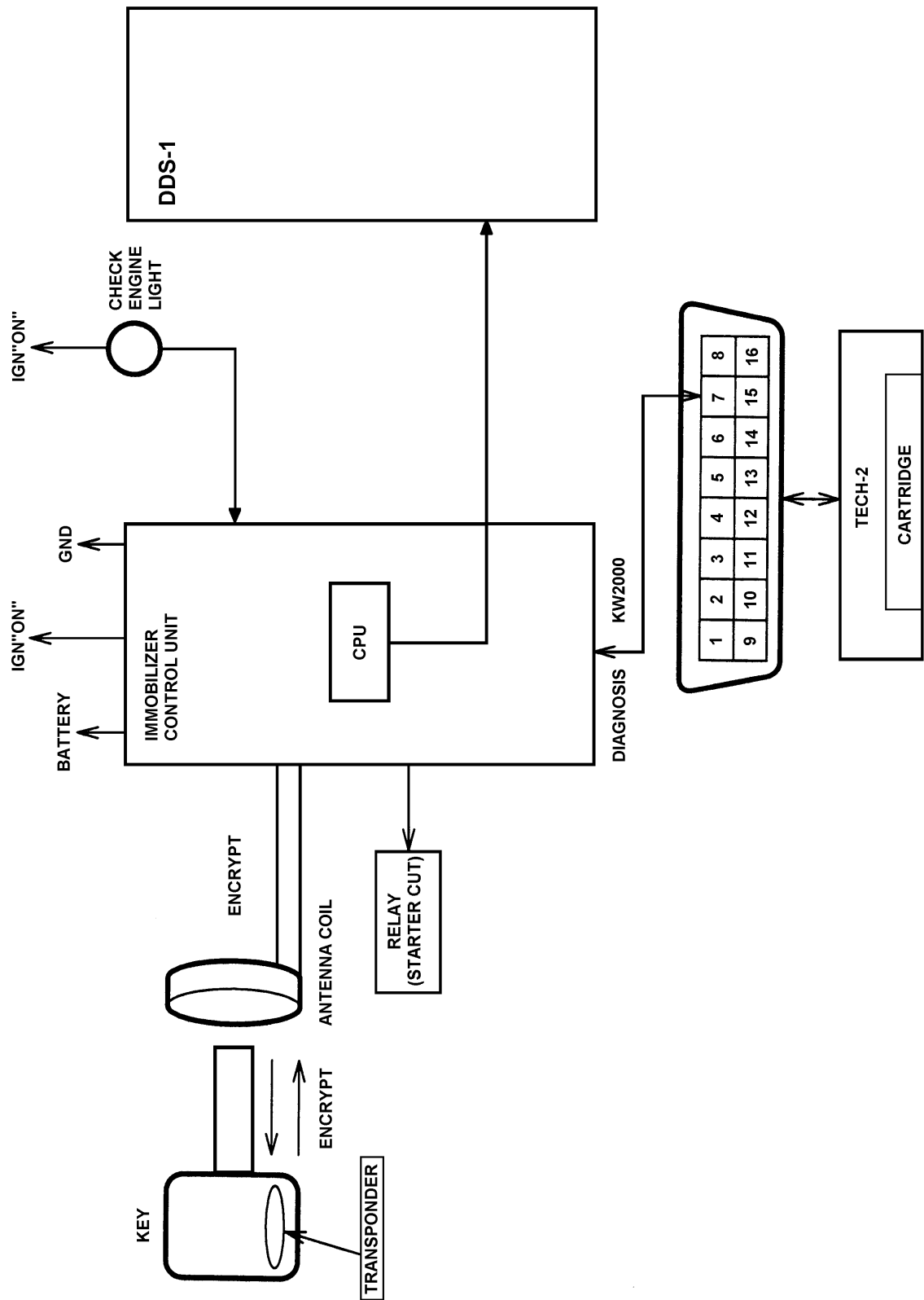


Check Engine Lamp

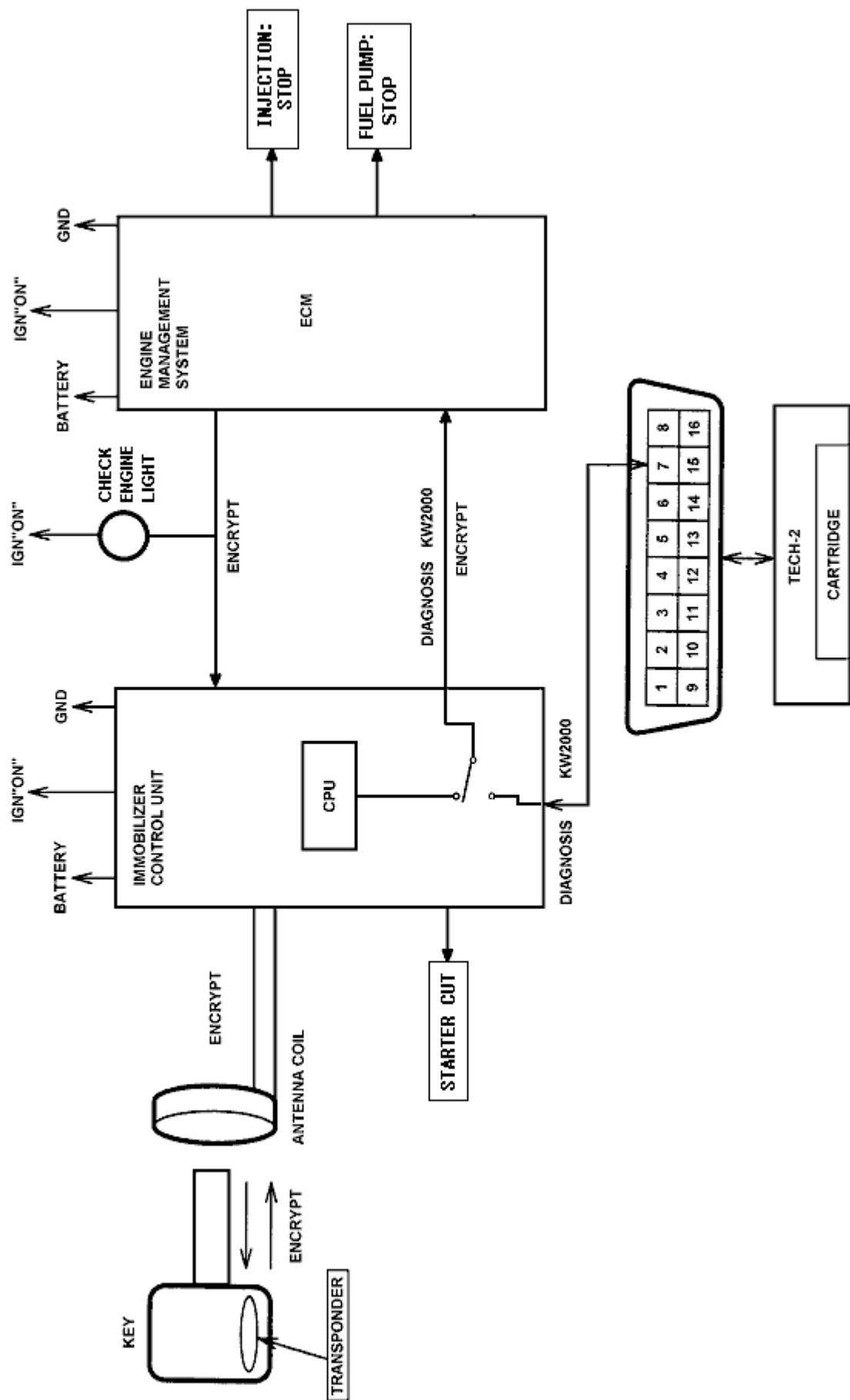
Immobilizer system for Gasoline Engine
(6VD1 3.2L/C22NE 2.2L/22LE 2.2L/20LE 2.0L)



Immobilizer system for Mechanical Control Diesel Engine
(4JG2 3.1L/4JB1 2.8L/4JA1 2.5L)

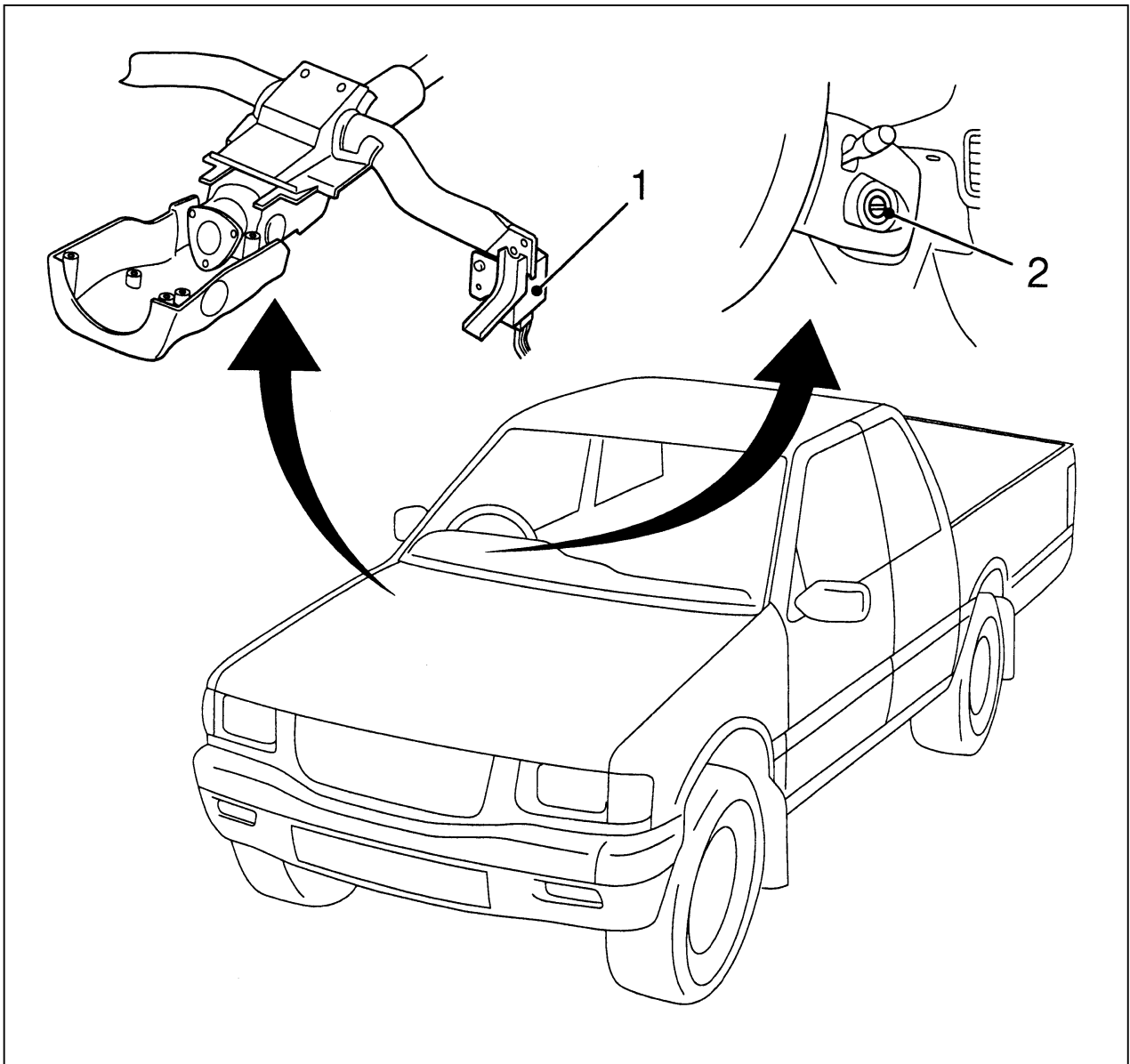


Immobilizer system for Electrical Control Diesel Engine
(4JA1-TC 2.5L/4JH1-TC 3.0L)



Electrical Equipment – Instruments

Location of Components

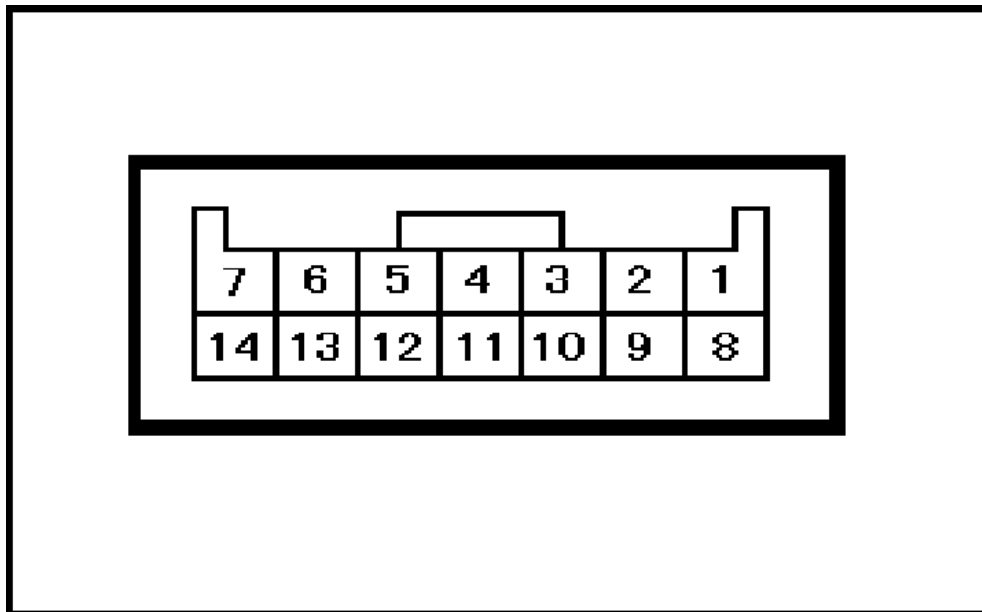


- 1 Control unit; electronic immobilizer (located at the under cross Beam)
- 2 Antenna coil

Electrical Equipment – Instruments

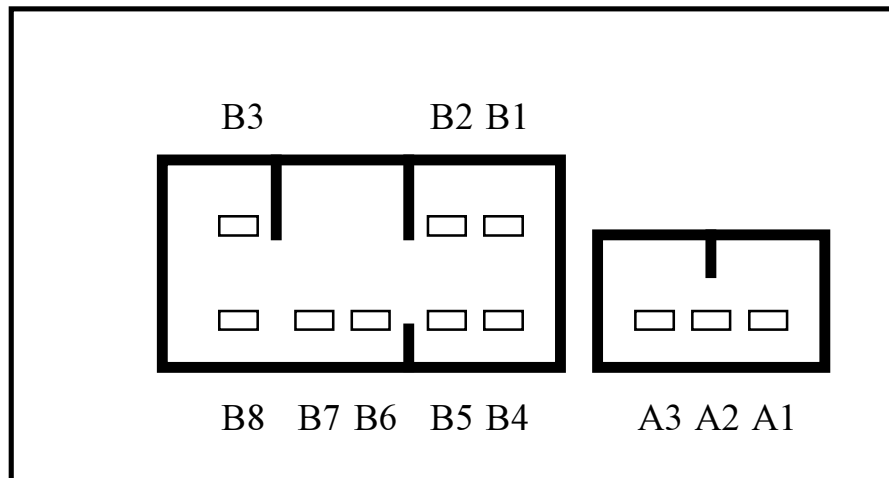
Immobilizer Control Unit (ICU) : Connector Pin Assignment

(6VD1 3.2L/C22NE 2.2L/22LE 2.2L/20LE 2.0L/4JG2 3.1L/4JB1 2.8L/4JA1 2.5L)



- 1 Back up Voltage supply
- 2 Voltage from ignition switch ON
- 3 Communication: carry on line from ECM to immobilizer (Gasoline Engine)
Check Engine Lamp (Diesel Engine)
- 4 N.C
- 5 N.C
- 6 Antenna coil positive
- 7 Ground
- 8 Communication: carry on line from immobilizer to ECM (Gasoline Engine)
Communication: carry on line from immobilizer to DDS-I (Diesel Engine)
- 9 To Tech-2
- 10 Speed sensor voltage (Gasoline Engine)
- 11 N.C
- 12 N.C
- 13 Antenna coil negative
- 14 Starter relay

Immobilizer Control Unit (ICU) : Connector Pin Assignment
(4JA1-TC 2.5L/4JH1-TC 3.0L)



A-1	Antenna coil positive
A-2	N.C
A-3	Antenna coil negative
B-1	Starter relay
B-2	Ground
B-3	Voltage from ignition switch ON
B-4	Back up Voltage supply
B-5	To Tech-2
B-6	N.C
B-7	Communication: carry on line from ECM to immobilizer (Check Engine Lamp)
B-8	Communication: carry on line from immobilizer to ECM

Car pass Card

Each vehicle has a car pass, which is issued to the customer on delivery of the vehicle along with the other papers. For this, a card is used, similar to the conventional radio passes.

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CAR PASS

1 → VIN. XXXXXXXXXXXXXXXX

2 → Security Code. XXXX

3 → Engine Type/No. XXXXXX-X

4 → Key No. XXXXX

VIN. _____

Security Code. _____

Engine Type/No. _____

Key No. _____

Notes:

This car pass is an important document and must be treated with the same care as the vehicle papers. It must not be kept in the vehicle. The customer must present the car pass for operations involving the immobilizer or the engine control unit.

Checking Component Required

Tech-2

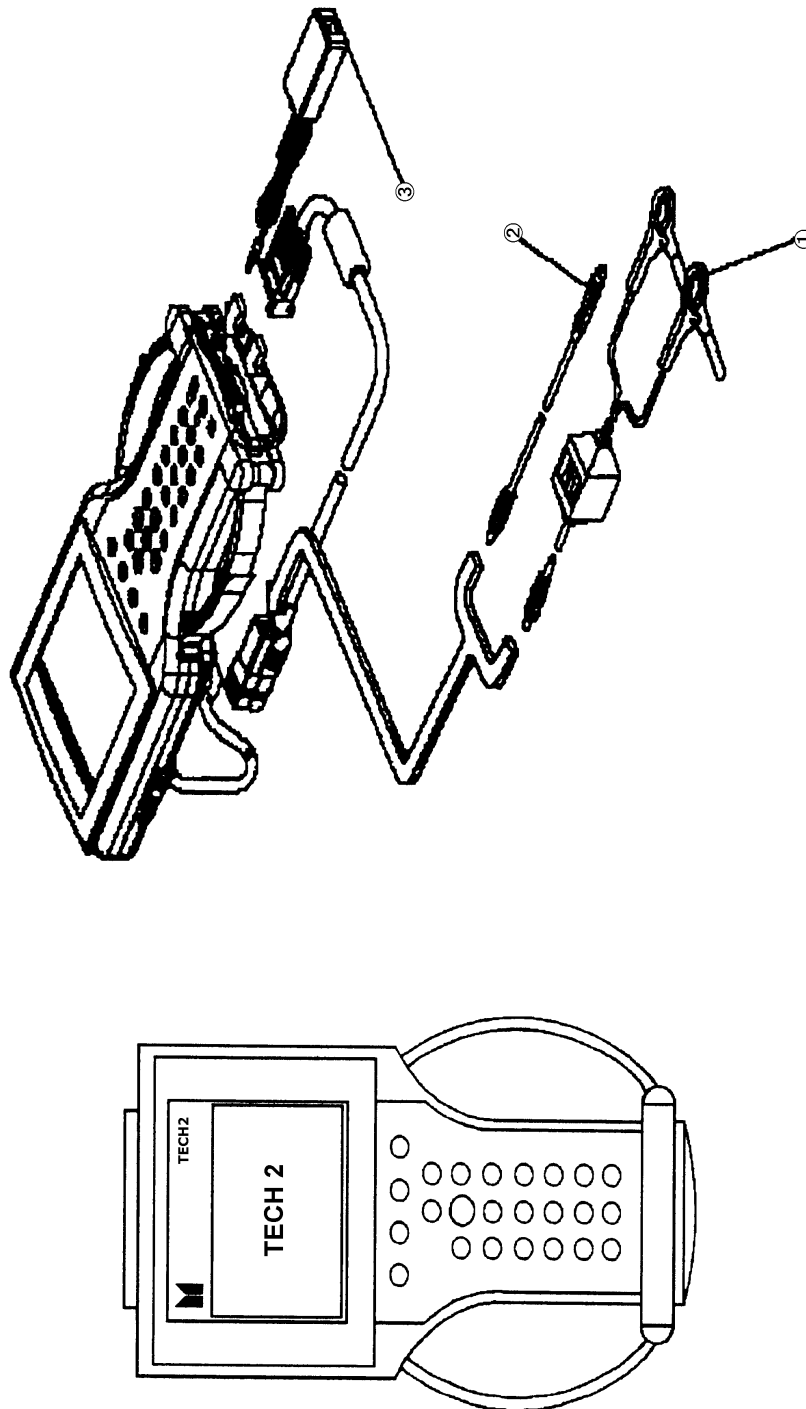
Tech-2 software TFR/S immobilizer system

DLC kit for 16 pin diagnostic plug

Key cutter

Tech-2 illustration

About Tech 2 (Power Supply)



Important information on Programming

Security code

The security code protects the immobilizer control unit against unauthorized programming and data access from Tech-2. The security code consists of a 4 digit code number and is programmed into the immobilizer control unit and Engine Control Module (ECM). (ECM : Gasoline Engine only)

New ECM is not programmed with a security code. If the control units are replaced, the security code entered in the car pass, transponder ID, etc. must be programmed into the new ECM with Tech-2.

The security code can only be programmed with Tech-2 once and must therefore be performed with great care. Once programmed, the security code cannot be overwritten.

An already used immobilizer can be reused in a different car by initializing the immobilizer.

After that you can program the security code again. For initializing command you need the current security code.

If the immobilizer control unit is returned (e.g. warranty cases), always enclosed the security code that is allocated to that control unit. If this is not done, we can not process the case and the warranty will not be recognized.

1. Entering a code

If the Tech-2 display requests that the

- security code
- mechanical key number
- Vehicle Identification No.

be entered, process as follows;

To input a digit you need to use the up and down buttons of the Tech-2. By using the numeric buttons the according digit will be displayed at the current position and the cursor will move to the next position.

For letters you need to use the up and down buttons of the Tech-2. The up and down key might be used for digits as well. By using the up and down buttons the displayed digit or letter will be increased or decreased. To move to the next position you need to use the move-to-right-button.

With the two buttons, move-to-right and move-to-left you can select the position of number you want to change. This will allow you to correct a wrong number.

After the number is completed you need to press the Enter button to accept the number.

Correction is now no longer possible.

Use the OKAY soft key to program the number and the NOT OKAY soft key to abort the programming.

2. Getting started (Tech-2 Operation)

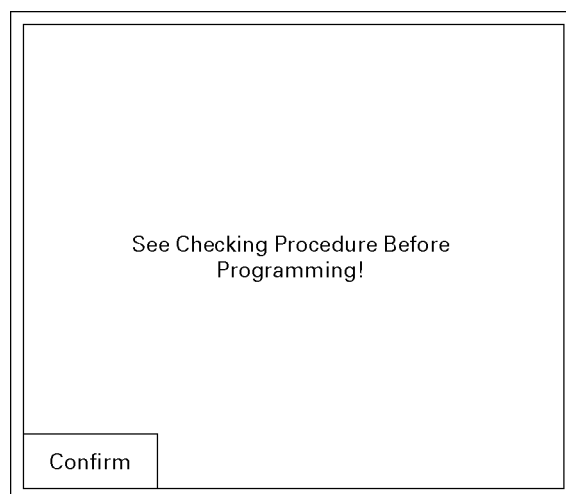
Operate Tech-2 to get the following screen as start.

- Select "Body" in System Selection Menu.
- The following table shows.

F0:Diagnostic Trouble Codes
F0:Read DTC Info Ordered By Priority
F1:Read DTC Info As Stored By ECU
F2:Clear DTC Information
F1:Data Display
F2:Snapshot
F3:Actuator Test
F0:Immobiliser Relay Output Test
F4:Additional Functions
F0:Read ECU Identification
F1:Reset Immobiliser
F2:Reset Engine Control Module
F3:Erase Transponder-Keys
F5:Programming
F0:Program Immobiliser Function
F1:Program Transponder-Keys

Notes:

Before going to programming process, Tech-2 indicates instruction as follows.



3. Transponder

If a transponder key is lost;

If a transponder key is lost, all transponder keys in the immobilizer control system must be erased. Transponder keys can be ordered via the "Your proper organization name such as Parts and accessory department" as previously by providing the mechanical key number.

The mechanical key number is provided on the car pass.

Thereafter, existing and new transponder keys are programmed consecutively using Tech-2. The vehicle can then no longer be started using lost key.

5 transponder keys can be provided:

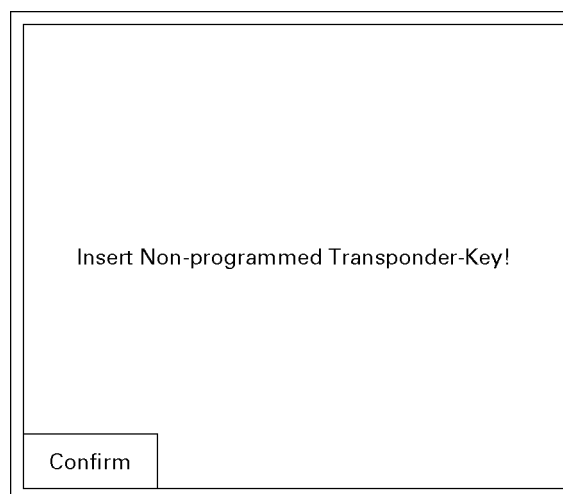
Each transponder has different Identifications. If a customer wants more than 2 transponder keys, maximum 5 transponder keys can be provided by additional programming by Tech-2.

If a new ignition key with different mechanical key number needs to be installed; If installation of an ignition lock with a different mechanism key number is necessary (an ignition lock which belongs to the mechanical key number has to be ordered first), all transponder keys must first be erased and the two transponder keys which belong to the ignition lock that is now installed must be programmed.

The new mechanical key number must be programmed now into the immobilizer. The mechanical key number in the car pass is to be changed as well.

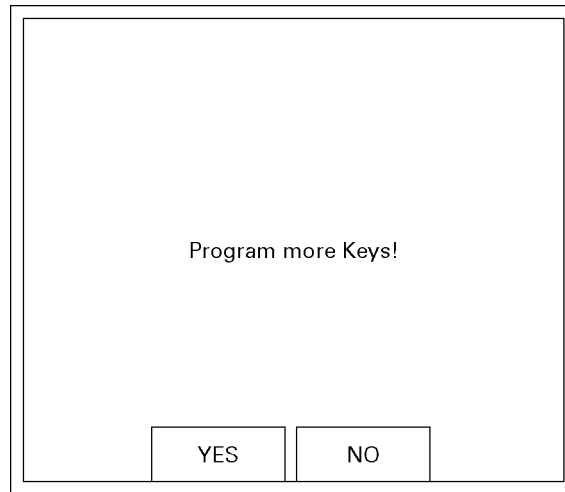
Transponder program

1. Connect Tech-2, select "Body" and "Immobilizer".
2. Select program Transponder (TP) - Key mode.
3. See immobilizer status on Tech-2 screen, and enter security code. If the status does not allow the programming, only immobilizer status is displayed.
4. Insert Non-programmed Transponder-key and press soft key of "Confirm".



5. "Turn On ignition key", is displayed if the ignition is off.
6. The transponder status is displayed if the status does not allow the programming.
7. When programming starts "Programming Transponder - key!" is displayed.

8. Turn off Ignition key.
9. Turn On Ignition.
10. If the programming was not successful, the transponder status is only displayed.
11. To program more illustration press soft key

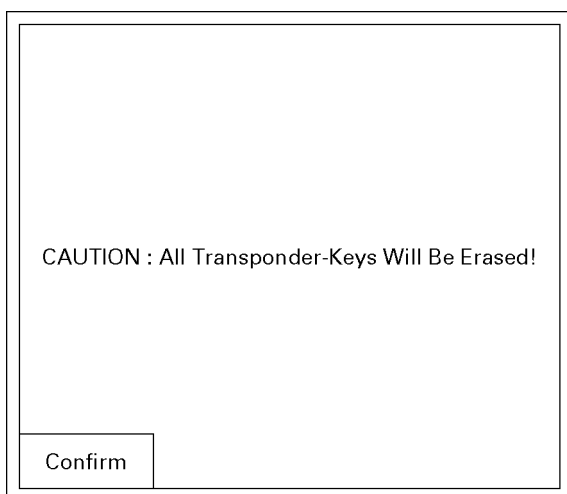


12. See programming result.

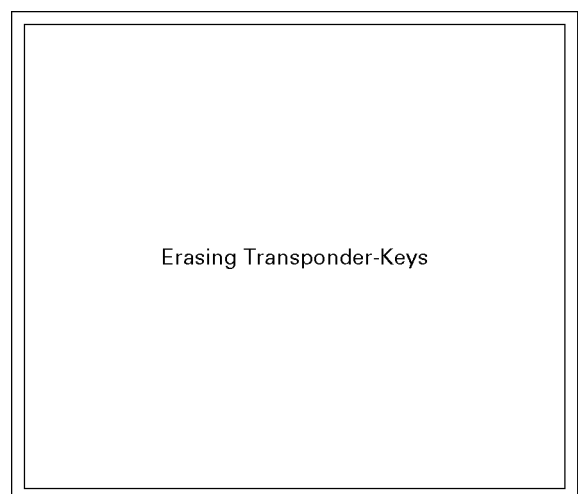
Erase transponder key

1. Select Erase Transponder (TP) - Key mode.
2. See immobilizer status on Tech-2 screen and type security code. If the status dose not allow the programming, only immobilizer status is displayed.
3. See illustration of caution.

CAUTION



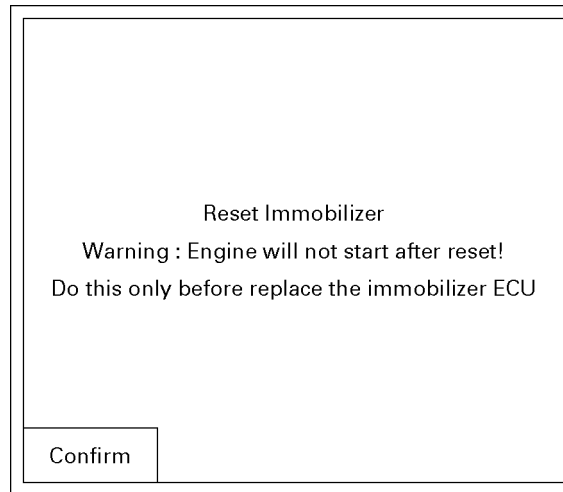
Erase



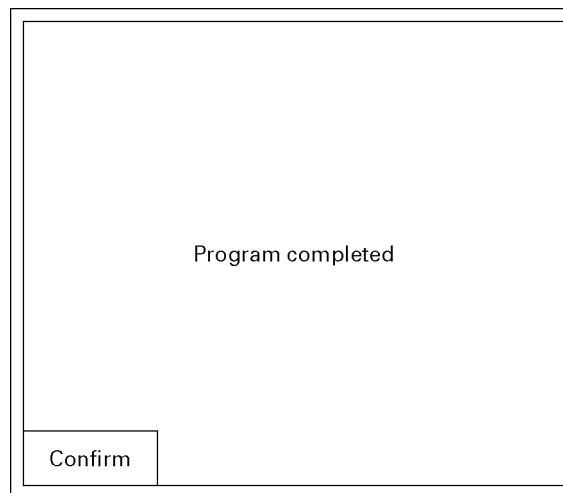
4. See programming result on display.

4. Reset Immobilizer ICU (Immobilizer Control Unit)

1. Select "Body" and "Immobilizer".
2. Select "Additional Function" and "Reset Immobilizer".
3. Enter the security code and press Confirm.
4. Reset Immobilizer screen shows up with warning. See the following screen.

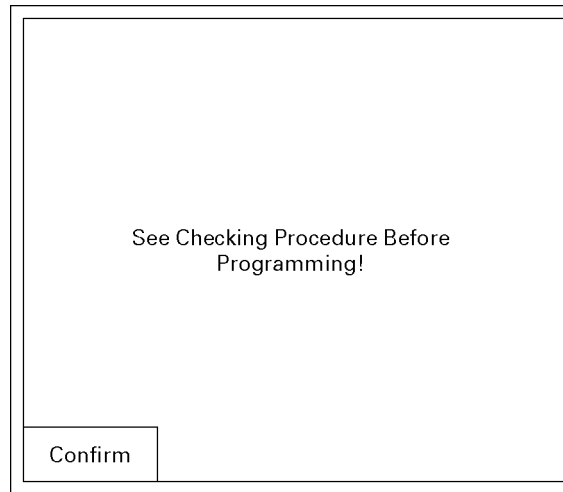


5. When reset is completed, the following screen shows up.



5. Reset Function

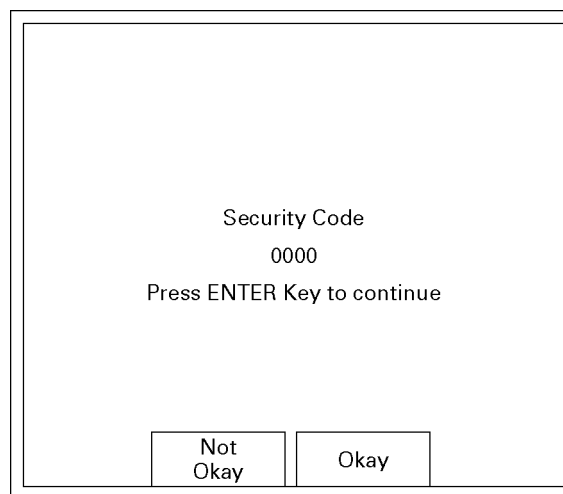
1. Select “Body” and F4 “Additional Functions”.
2. Select “Reset Engine Control Module”
3. The following screen shows up.



See Checking Procedure Before
Programming!

Confirm

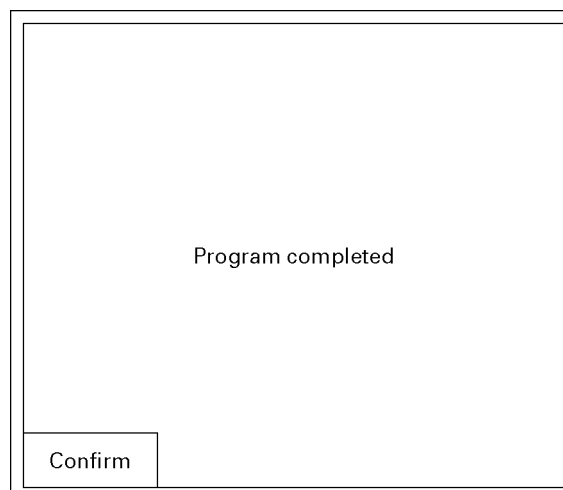
4. Confirm the following screen shows up.
5. Input the security code, then press the soft key of “Not Okay” or “Okay”.
6. The following screen shows up.



Security Code
0000
Press ENTER Key to continue

Not Okay Okay

7. Programming is completed.



Program completed

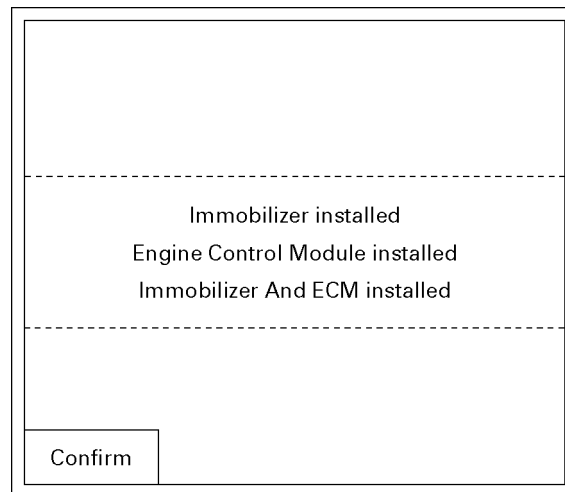
Confirm

8. When the procedure is completed waits 10 seconds and then turn the Key on.
The fail lamp begins to flash.
9. Turn the ignition on, then engine dose not run.
10. Reset is completed.

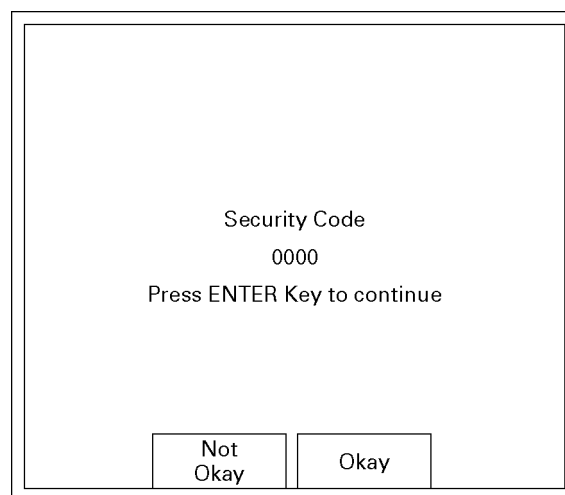
6. Programming ICU, ECM

- Program ICU

1. Select “Body” and “immobilizer”.
2. See immobilizer status on the display of Tech-2.
3. Enter the security code.
4. See ECM status.
5. Input a program option, by moving the cursor on the selection, then press “Enter”.



6. Input the security code, then press the soft key of “Okay” or “Not Okay”.



7. Enter VIN.

Vehicle Identification Number :
000000000000000000
Press ENTER Key to continue

Not
Okay

Okay

8. Enter Mechanical key number.

Mechanical Key Number :

Press ENTER Key to continue

Not
Okay

Okay

9. Turn ON ignition.

Ignition Status
Off OV

Turn Ignition On!

10. Select an engine system.

11. See the programming result.

Tech-2 displays the result of programming as the following.
Follow those instructions.

Selected Programming is not possible due to wrong System Status!
Immobilizer Not Programmed!
Immobilizer Already Programmed!
ECM Not Programmed!
ECM Already Programmed!

12. Transponder key must be reprogrammed, because all transponder information is erased.
when ICU is programmed. See Transponder programming.

- Program ECM

1. Procedure is the same as program ICU procedure steps 1 through 5.
6. Turn on the Ignition.
7. Select an Engine system.
8. See the display of programming result.

- Program ICU / ECM

- Caution 1) Do not replace ICU and ECM at the same time
 2) Change ICU at first or ECM and other one change follows.

Follow Program ICU steps 1 through 6, procedure is the same as program ECM procedure
steps 1 through 6.

7. Input the security code.
8. Enter VIN
9. Enter Key No.
10. Select an engine system.
See programming result display and follow instructions of the display.
11. Transponder key must be reprogrammed, because all transponder information on ICU is
Erased when ICU is programmed. See Transponder programming.
12. Follow program ECM steps 1 through 8.

Important

After successful programming, the engine control can only be used for vehicles with immobilizer and transponder. Faults that occur in connection with the immobilizer control unit are recognized by the engine control unit and as long as "IMMOBILIZER" is not programmed, are indicated by a flashing of the engine check lamp.

If the immobilizer and engine control unit are replaced at the same time, the immobilizer control unit must be programmed first before the "IMMOBILIZER" function in the engine control unit can be activated.

Loss of car pass

If the car pass is lost, the data can be requested from your proper organization name. This request will only be processed if accompanied by the enclosed form and proof of ownership. Once the data is received, it can be entered in a blank car pass and given to the customer. The unused car pass should be destroyed.

- Instructions on Filling Out the form "Data request, car pass"
To be provided by the dealership
The data requested under items 1-10 must be provided completely, including the authorized dealership number, the vehicle Identification number(VIN) and engine type/number (Engine type/No)

Mark missing data / desired data with a cross:

- 19. Security code (for diagnosis and programming with Tech-2)
- 20. Mechanical key Number

Complete the form by entering the data and signature/authorized dealership stamp and send it along with proof of ownership(Vehicle ID or invoice) to address provided in the form. The requested data will be sent by Fax to the dealership that made the request after your organization has confirmed that the info is corrected.

Important Instructions:

Only data corresponding to the delivery status of the vehicle can be issued. Car pass data requests will only be processed if the first column is filled out completely. signed and sent to your organization along with proof of ownership.

Information via telephone is only possible in exceptional circumstances via your service organization.

As for the delivery of new vehicles, the customer must be informed about all features of the car pass that are relevant to vehicle security, for example, that the car pass should be kept in a safe place(not in the vehicle) and should be presented when an authorized your organization name workshop is visited, The exact phrasing can be found in the relevant Owner's Manual.

Data Request Car Pass

Your organization name

[illegible]

Diagnostic procedure

(6VD1 3.2L/C22NE 2.2L/22LE 2.2L/20LE 2.0L/4JG2 3.1L/4JB1 2.8L/4JA1 2.5L)

System guidance

Note:

Immobilizer may detect a history DTC by the timing of ON-OFF of a ignition switch.

Don't remove the ECM and ICU recklessly.

- Engine dose not run when any Diagnostic Trouble Code (DTC) is flagged, starting from 01MY TFR/S.
- Once the cause of DTC is repaired or gone, engine can be operated normally, and present DTC becomes history code.
- History code is canceled by no repeat failure on 25 consequence ignition key on afterward.
- History code cannot be canceled by battery connector disconnected, starting from 01MY.

Diagnostic Trouble Code (DTC) list

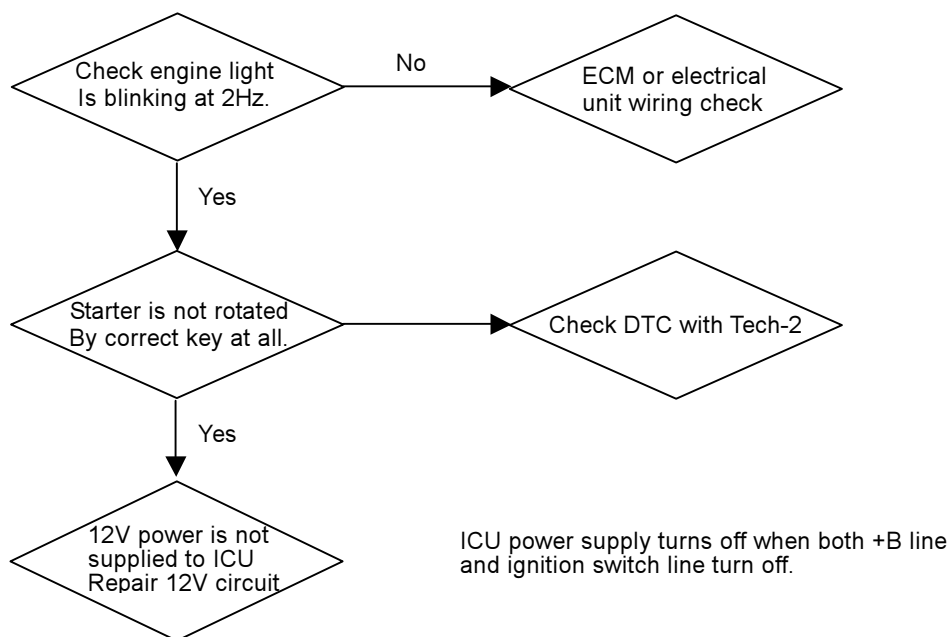
Code (BCD)	Item	Detecting Condition
B8011	TRANSPONDER KEY PROBLEM	Transponder code unsuccessfully read 5 consecutive time. (Not completely read in 500ms transponder code)
B8012	WRONG TRANSPONDER KEY	Transponder code read from the ignition key does not match the transponder code stored in the control unit.
B8013	IMMOBILIZER NOT PROGRAMMED	Immobilizer program no executed.
B8014	NO TRANSPONDER KEY PROGRAMMED	Processing to save the transponder key in the control unit not Executed.
B8015	VEHICLE SPEED SIGNAL Lo (Gasoline) FREQUENCY SIGNAL Lo (Diesel)	Lo level (2.5v or less) input during the Hi level was being output In the immobilizer Signal. (Gasoline Engine) Lo level (2.5v or less) input during the Hi level was being output to the communication line. (Diesel Engine)
B8016	VEHICLE SPEED SIGNAL Hi (Gasoline) FREQUENCY SIGNAL Hi (Diesel)	Hi level (more than 2.5v) input during the Lo level was being output in the immobilizer Signal. (Gasoline Engine) Hi level (more than 2.5v) input during the Lo level was being output to the communication line. (Diesel Engine)
B8017	NO ENGINE REQUEST RECEIVED	No request signal received from the engine control unit in a second after the ignition key has been placed at ON. (Gasoline engine only)
B8023	ANTENNA COIL OPEN	Antenna coil not connected.
B8024	WRONG TRANSPONDER RESPONSE	Transponder response signal with the challenge is wrong.
B8025	WRONG ENGINE REQUEST	The challenge signal from the engine control unit is invalid. (Gasoline engine only)
B8055	EEPROM ERROR	Write and read cannot be correctly made to and from the EEPROM in the control unit.

Diagnostic procedure

No DTC indicates

Engine does not start to run even though all engine and electrical system are OK, and no DTC appears.

1. 12V power is not supplied to ICU.



2. Engine does not start after steering assembly is repaired.

Check if connector for Antenna coil circuit at steering shaft is correct, or missing connection.
If not correct, replace the steering assy with corrector.

3. If engine does not start after ICU replacement, check part number (01MY).

Proper parts Numbers are following.

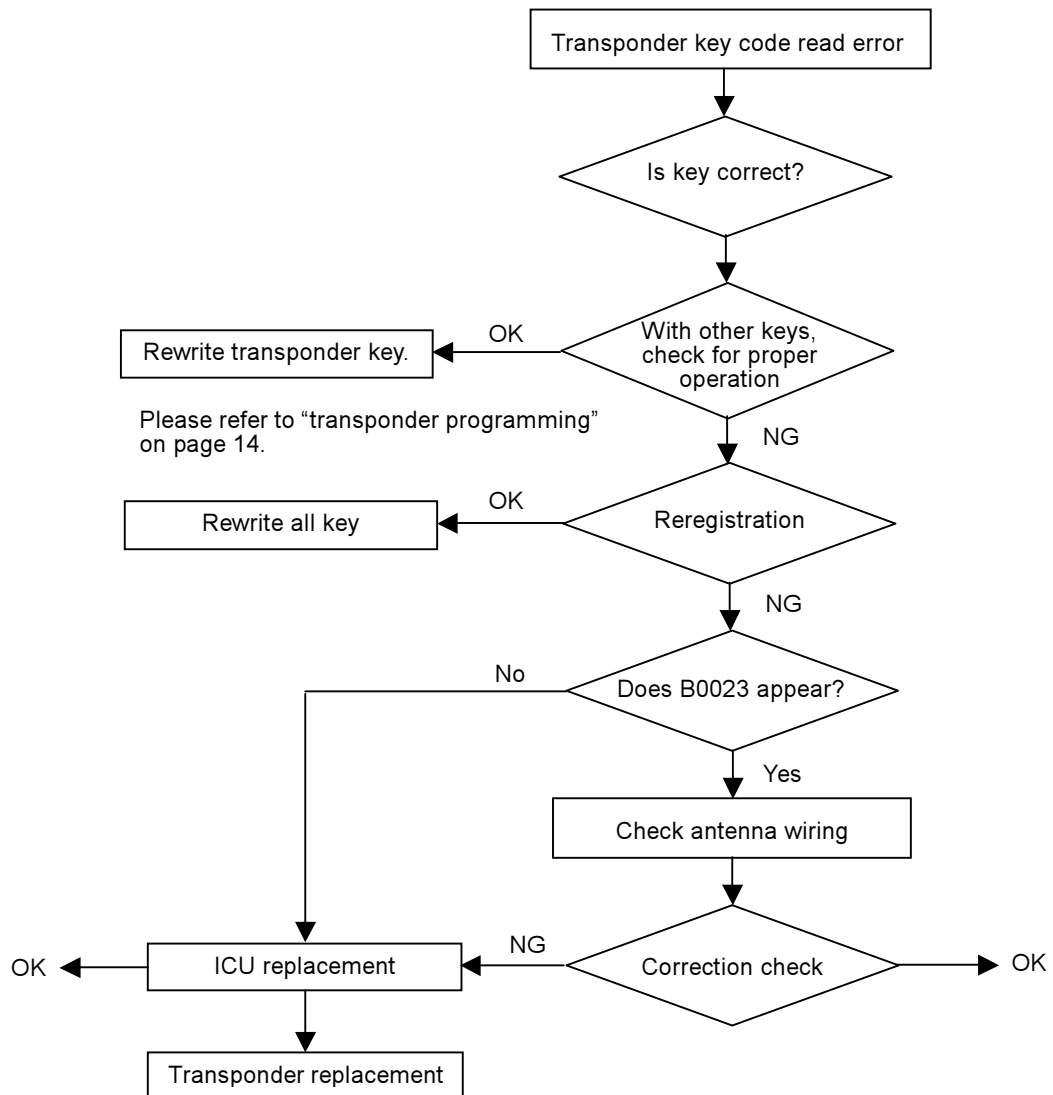
Gasoline Engine 897228-184X
 Suffix number

Diesel Engine 897228-183X

↑
Suffix number

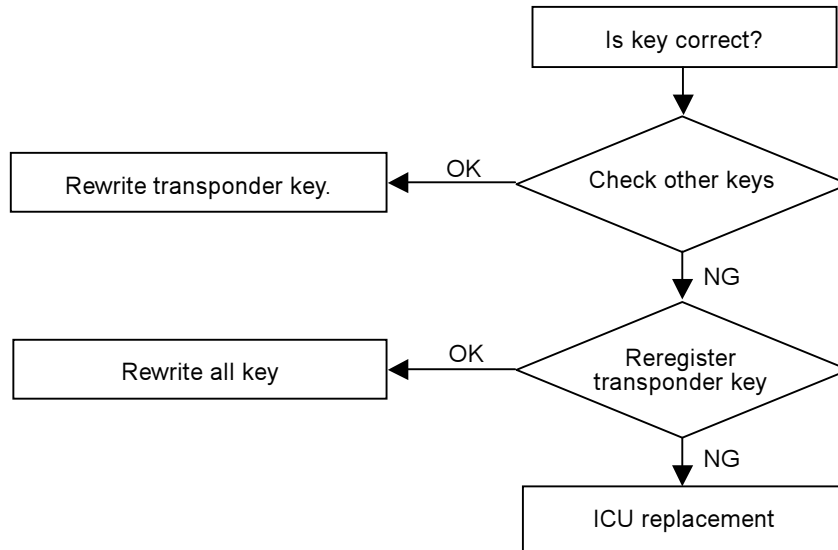
DTC appears

B8011 TRANSPONDER KEY PROBLEM



Note : B0011 means Body category Number 0011 Diagnostic Trouble Code.

B8012 WRONG TRANSPONDER KEY



B8013 IMMOBILIZER NOT PROGRAMED

Replace ICU

B8014 NO TRANSPONDER KEY PROGRAMED

Replace ICU

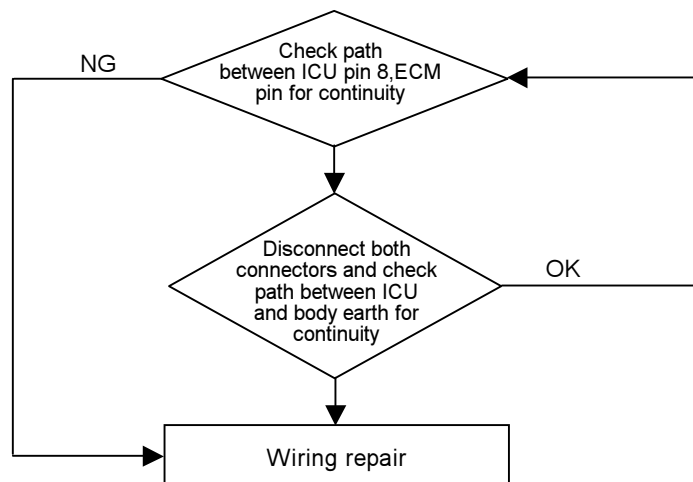
B8055 EEPROM ERROR

Replace ICU

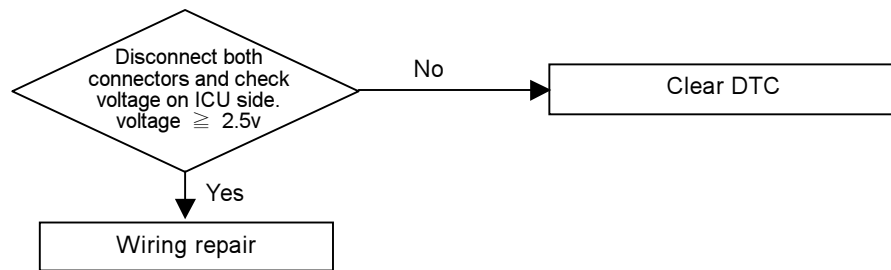
B8015 VEHICLE SPEED SIGNAL Lo (Gasoline Engine)
FREQUENCY SIGNAL Lo (Diesel Engine)

*Speed sensor signal voltage lower than 2.5v. (Gasoline Engine)

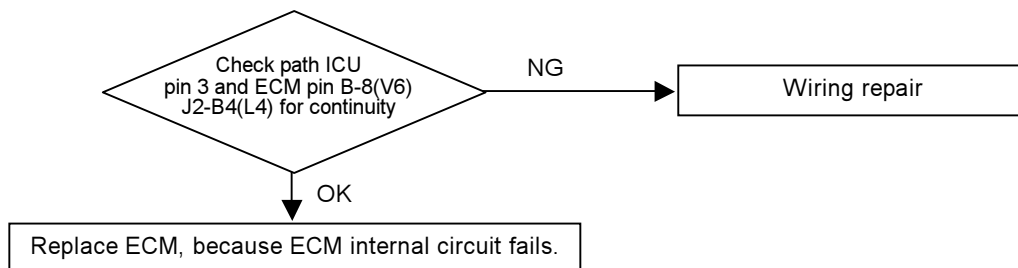
*Frequency signal voltage lower than 2.5v (Diesel Engine)



B8016 VEHICLE SPEED SIGNAL Hi (Gasoline Engine)
FREQUENCY SIGNAL Hi (Diesel Engine)

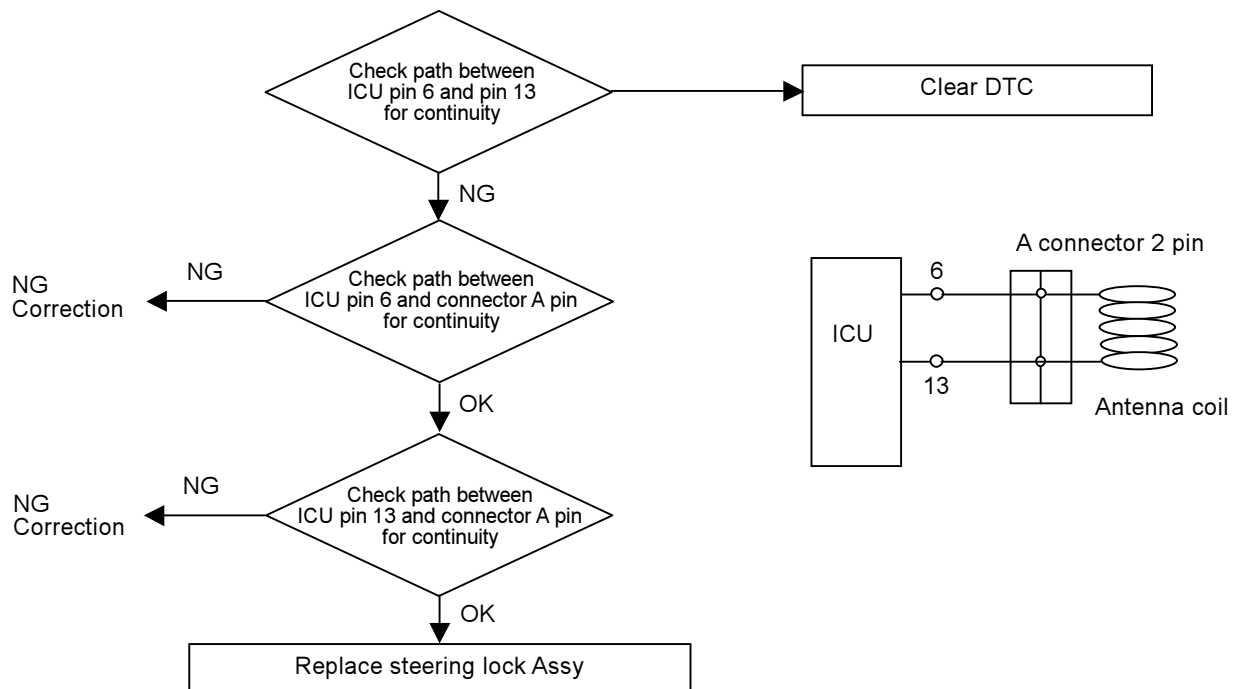


B8017 NO ENGINE REQUEST RECEIVED (Gasoline Engine)



B8023 ANTENNA COIL OPEN

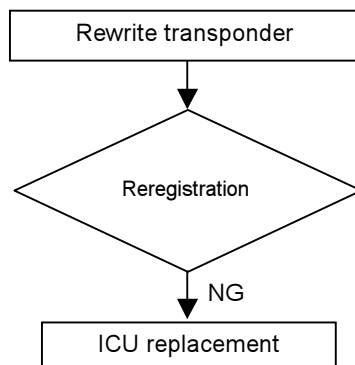
Antenna coil open



Need following repair
1. Key replacement
2. Rewrite transponder
3. Replace door key cylinder

B8024 WRONG TRANSPONDER RESPONSE

Wrong Transponder code



Diagnostic procedure

(4JA1-TC 2.5L/4JH1-TC 3.0L)

System guidance

Note:

Immobilizer may detect a history DTC by the timing of ON-OFF of a ignition switch.

Don't remove the ECM and ICU recklessly.

- Engine dose not run when any Diagnostic Trouble Code (DTC) is flagged, starting from 02MY TFR/S.
- Once the cause of DTC is repaired or gone, engine can be operated normally, and present DTC becomes history code.
- History code is canceled by no repeat failure on 25 consequence ignition key on afterward.
- History code cannot be canceled by battery connector disconnected, starting from 01MY.

Diagnostic Trouble Code (DTC) list

No	Code (BCD)	Detecting Condition
1	B8001	Replace Electronic Control Unit(ECU) This error code appears if a RAM /ROM Error was detected or the EEPROM Is defect.
2	B8002	Immobiliser Not Programmed
3	B8003	Transponder Key Problem Reading of Transponder information failed with ignition on transponder has a fault. Hardware fault in reading circuit.
4	B8004	Immobiliser Coil Circuit
5	B8005	Communication Line W Voltage Low
6	B8006	Communication Line W Voltage High
7	B8007	No Engine Request Received (Check Engine Lamp disconnected?)
8	B8008	Wrong Transponder Key
9	B8009	No Transponder Key Programmed
10	B8010	Unknown Transponder Key

Electrical Die Engine 897234-671X

↑
Suffix number

DTC appears

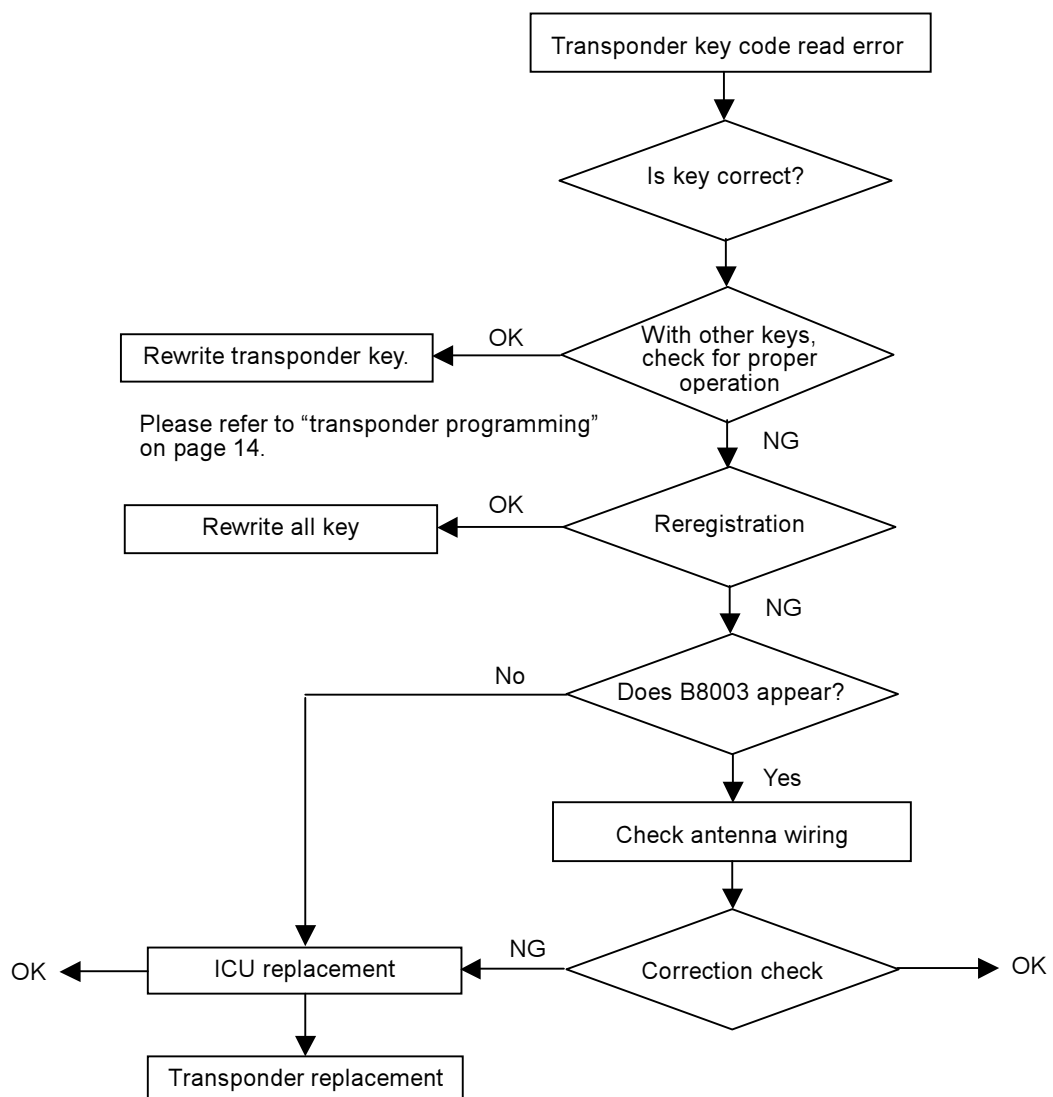
B8001 REPLACE ELECTRONIC CONTROL UNIT (ECU) (IMMOBILIZER FAULT)

Replace ICU

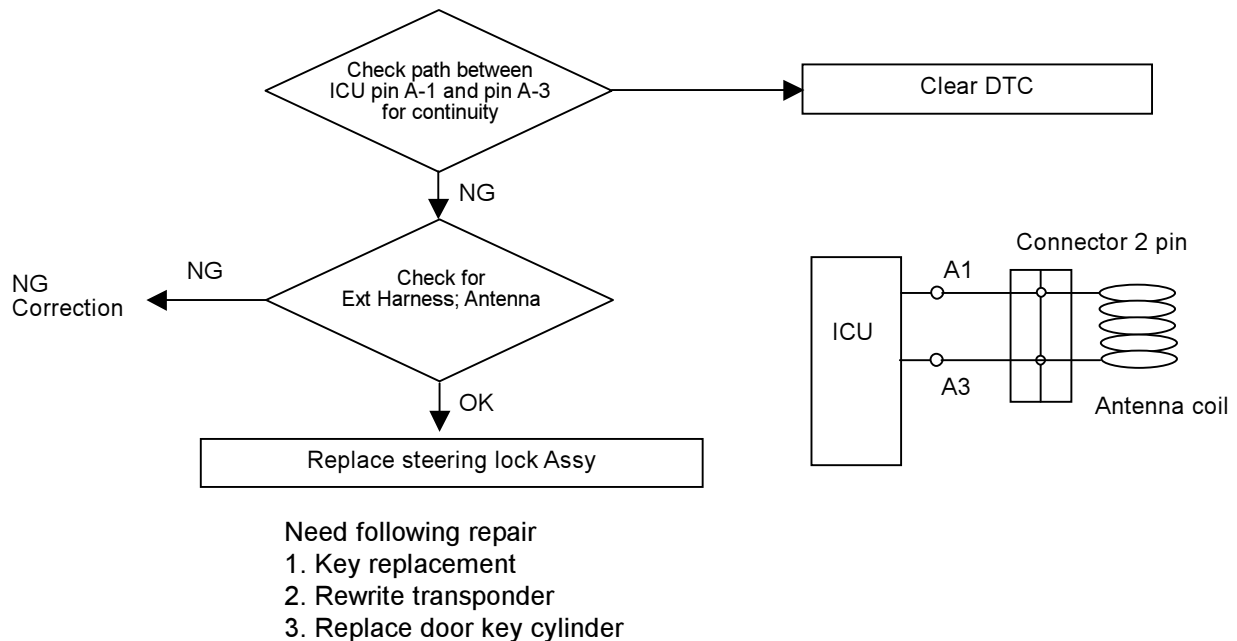
B8002 IMMOBILIZER NOT PROGRAMMED

Programming Immobilizer Function.

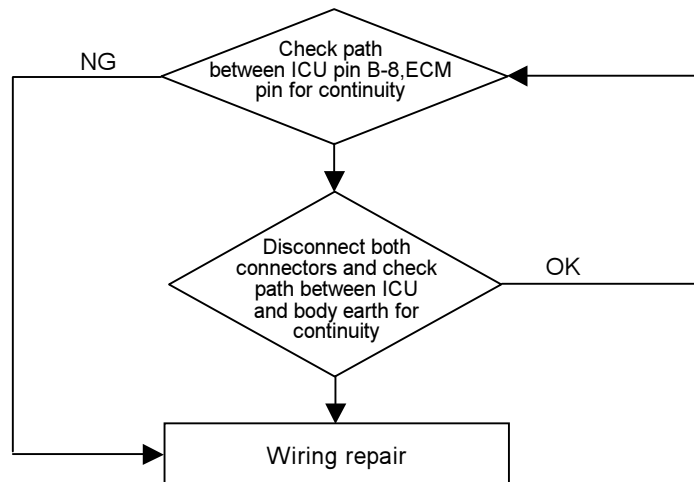
B8003 TRANSPONDER KEY PROBLEM



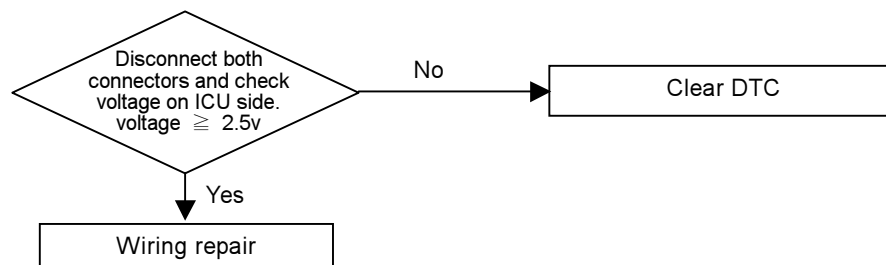
B8004 IMMOBILIZER COIL CIRCUIT (ANTENNA COIL FAULT)



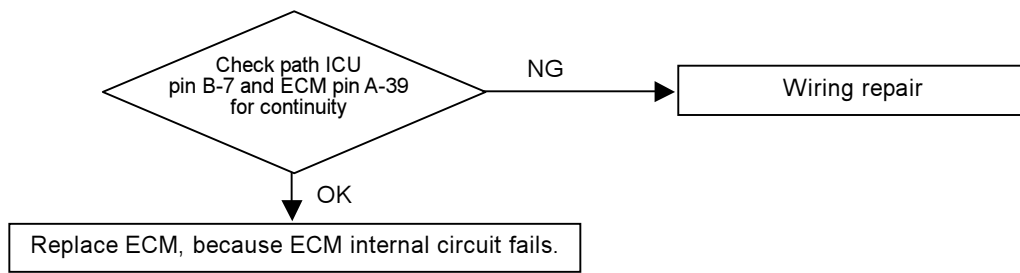
B8005 COMMUNICATION LINE W VOLTAGE Low



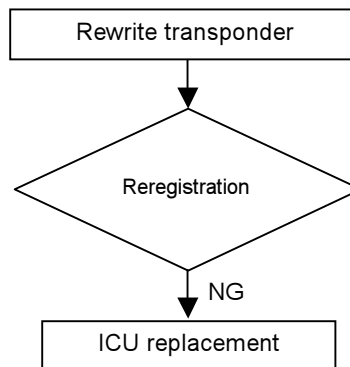
B8006 COMMUNICATION LINE W VOLTAGE High



B8007 NO ENGINE REQUEST RECEIVED

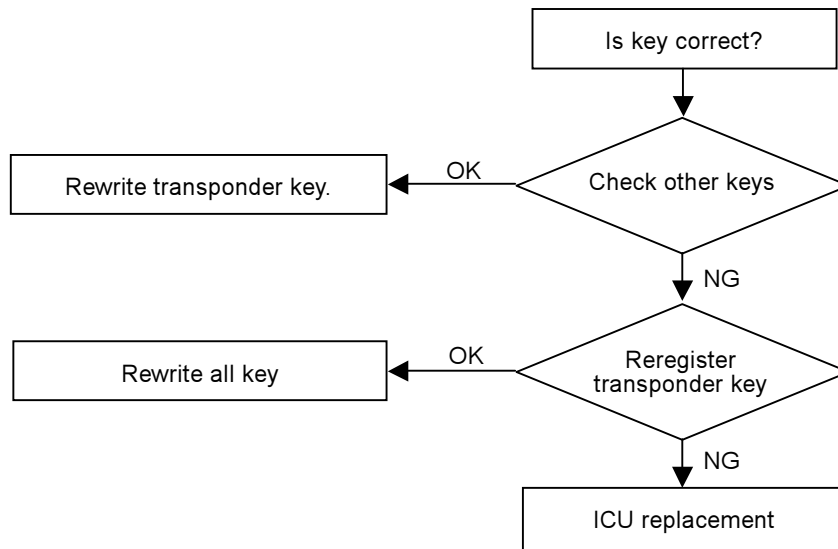


B8008 WRONG TRANSPONDER KEY

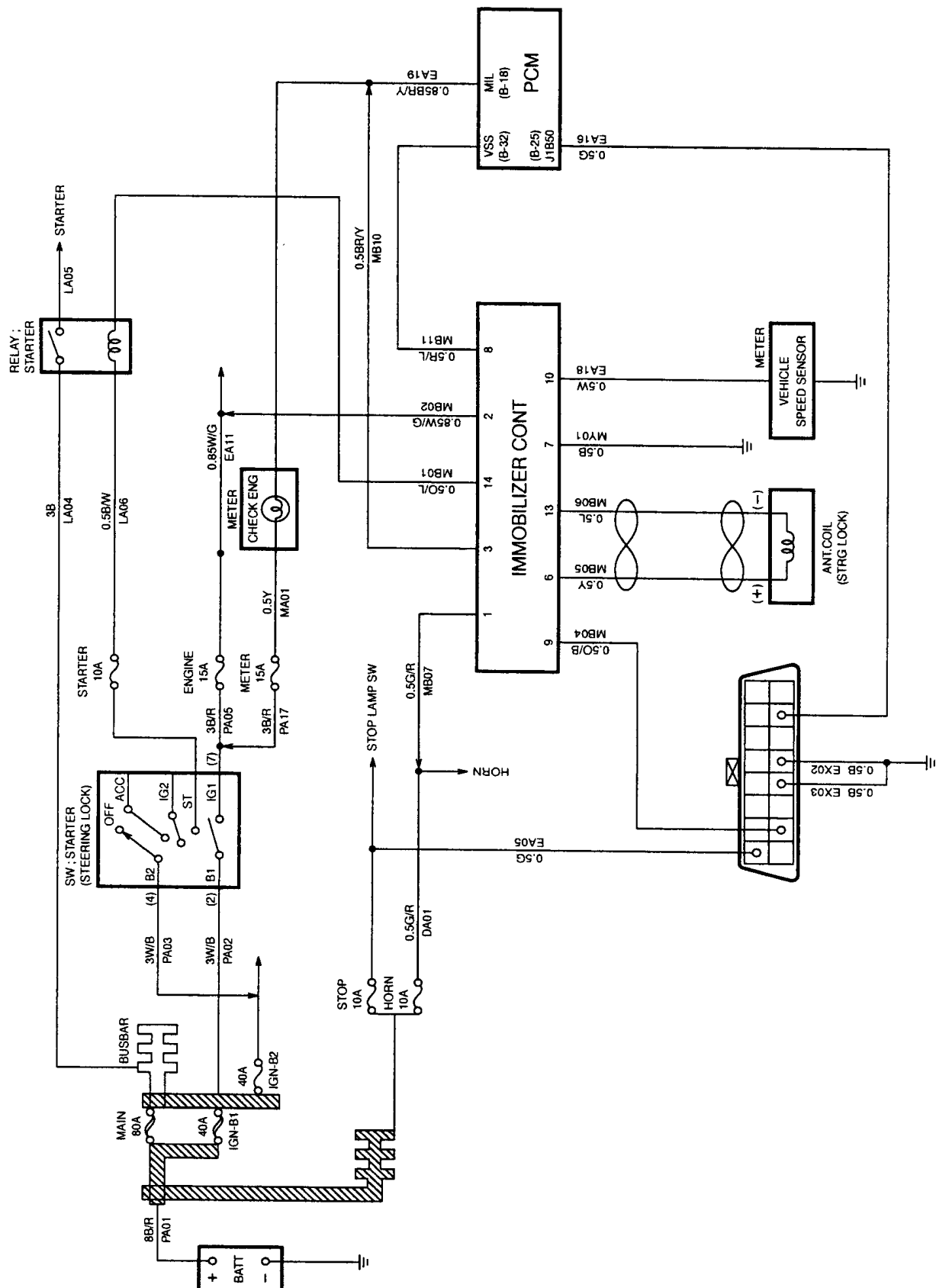


B8009 NO TRANSPONDER KEY PROGRAMMED

B8010 UNKNOWN TRANSPONDER KEY

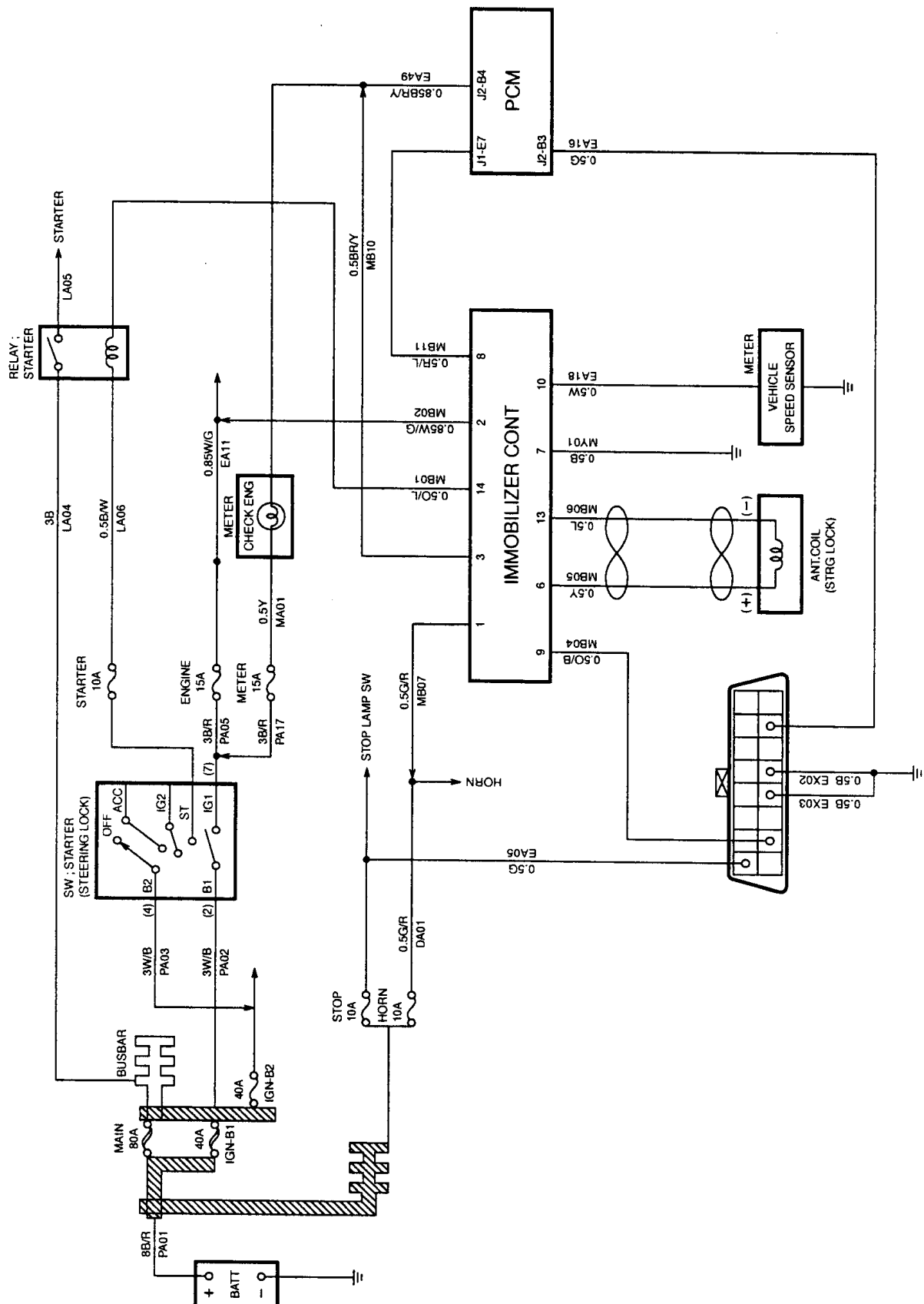


Gasoline Engine (6VD1 3.2L)

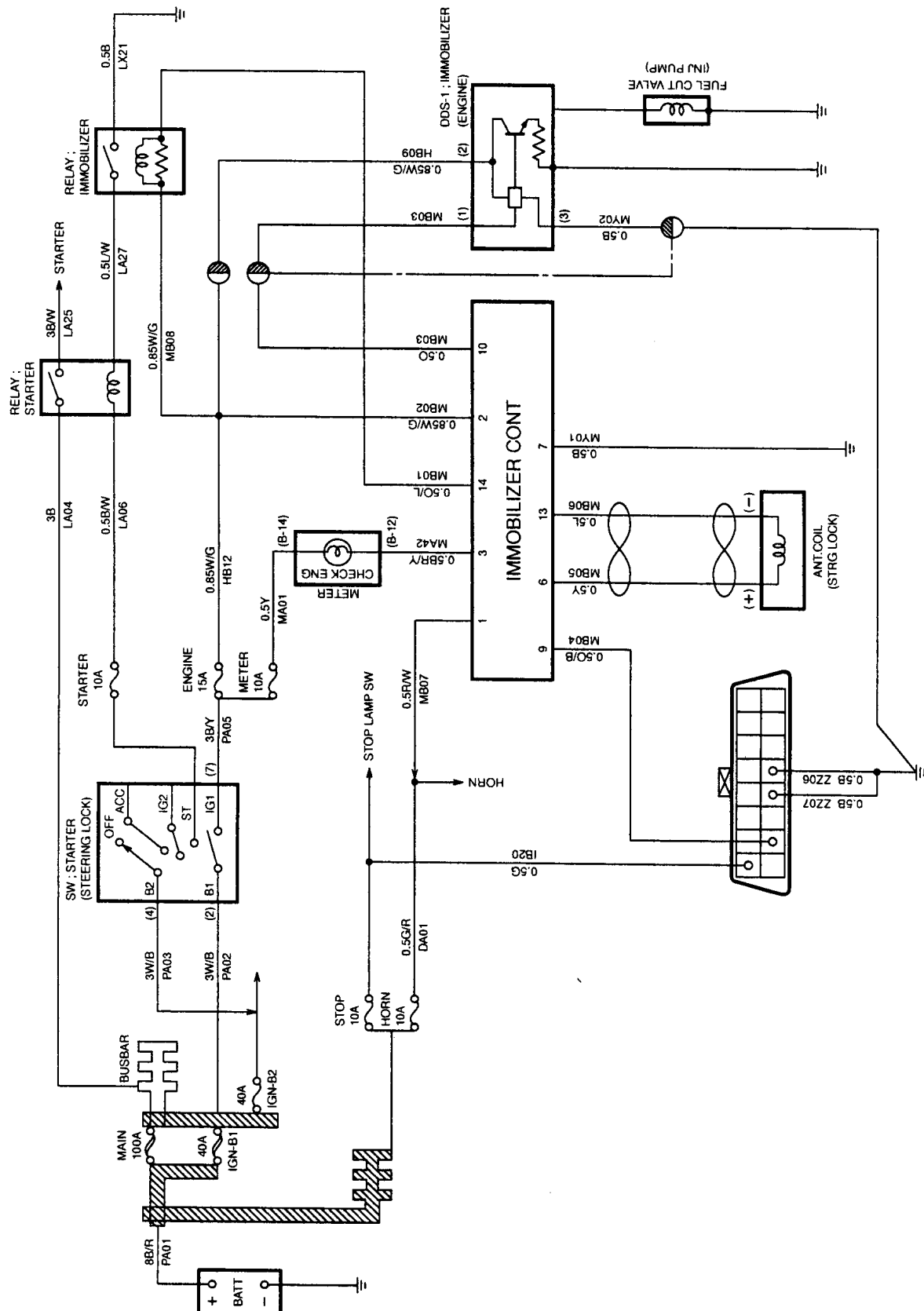


Immobilizer system Electrical wiring

Gasoline Engine (C22NE 2.2L/22LE 2.2L/20LE 2.0L)

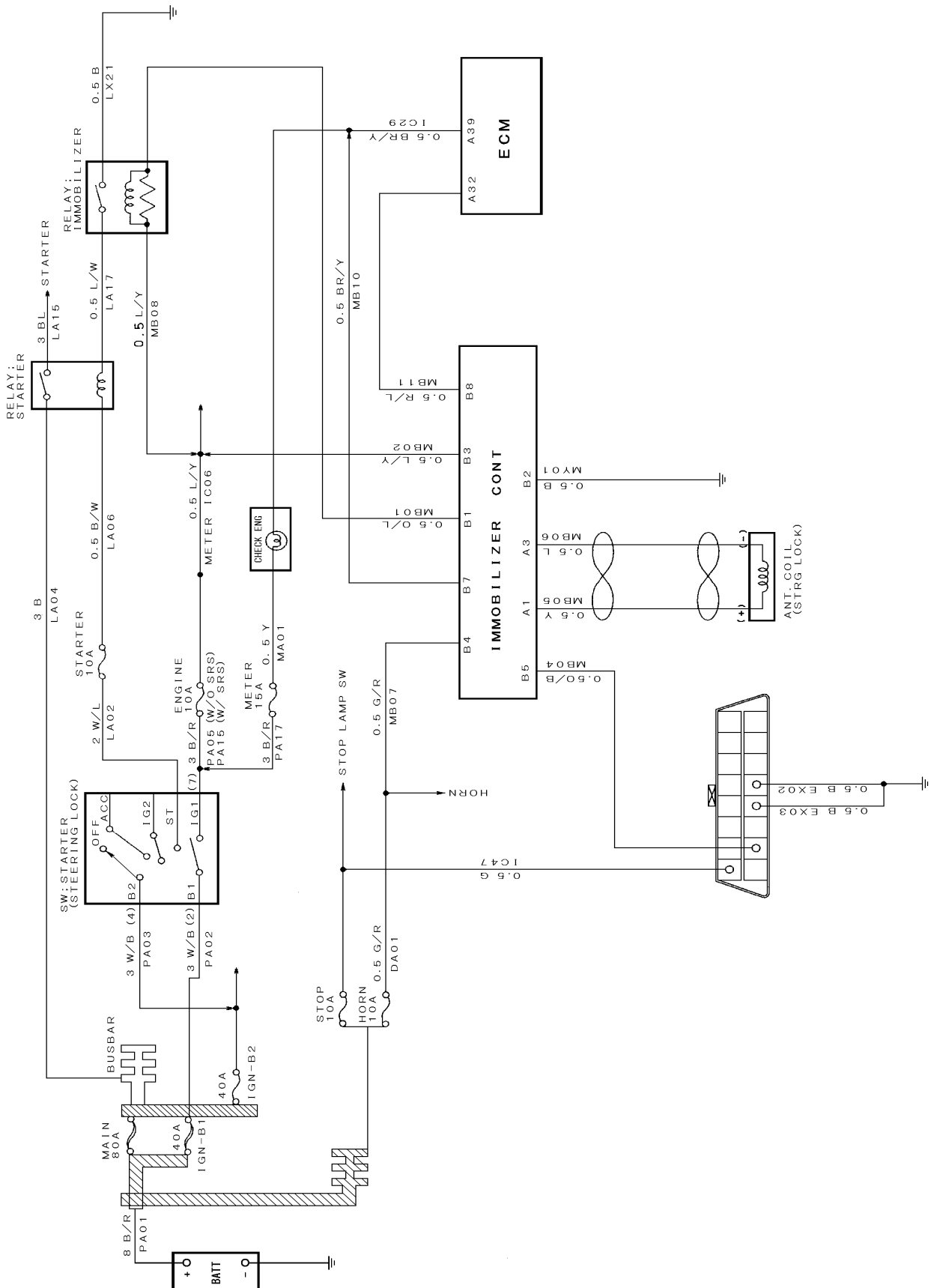


Diesel Engine (Mechanical Control , 4JG2 3.1L/4JB1 2.8L/4JA1 2.5L)



Immobilizer system Electrical wiring

Diesel Engine (Electrical Control , 4JA1-TC 2.5L/4JH1-TC 3.0L)



IMM-WE-0121

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