

SECTION 8

BODY ELECTRICAL SYSTEM

WARNING:

For vehicles equipped with Supplemental Restraint (Air Bag) System:

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render-the system inoperative. Either of these two conditions may result in severe injury.
- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

NOTE:

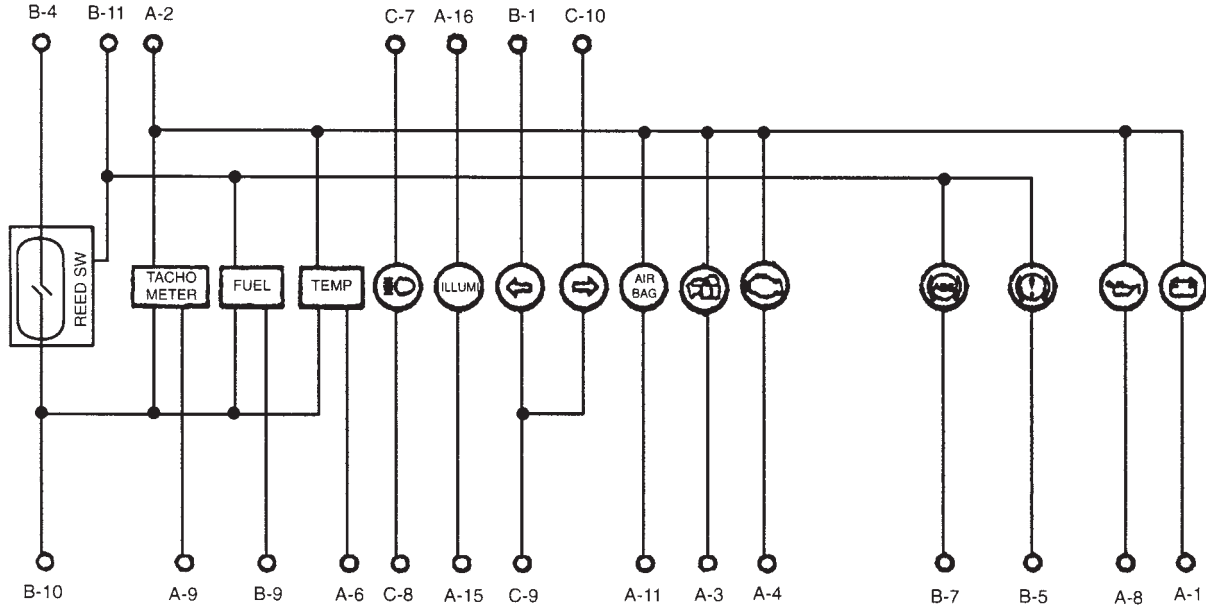
For the descriptions (items) not found in this section, refer to the same section of the Service Manual mentioned in the FOREWORD of this manual.

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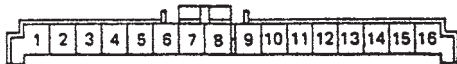
GENERAL DESCRIPTION

COMBINATION METER



NOTE:
Terminal arrangement of coupler viewed from harness side.

Coupler A



Coupler B



Coupler C



Coupler A

- | | |
|----------------------------------|-----|
| 1. To generator | W/R |
| 2. To ignition switch | B/W |
| 3. To ECM | V/G |
| 4. To ECM | V |
| 5. Blank | — |
| 6. To ECT sensor | Y/W |
| 7. Blank | — |
| 8. To engine oil pressure switch | Y/B |
| 9. To ECM | Br |
| 10. Blank | — |
| 11. To SDM (if equipped) | BI |
| 12. Blank | — |
| 13. Blank | — |
| 14. Blank | — |
| 15. To ground | R |
| 16. To combination switch | R/Y |

Coupler B

- | | |
|---|------|
| 1. To combination switch | G/R |
| 2. Blank | — |
| 3. Blank | — |
| 4. To ECM | Y/G |
| 5. To brake fluid level switch and parking brake switch | R/B |
| 6. Blank | — |
| 7. To ABS control module (if equipped) | R/BI |
| 8. Blank | — |
| 9. To fuel level gauge | Y/R |
| 10. To ground | B/BI |
| 11. To ignition switch | B/W |
| 12. Blank | — |
| 13. Blank | — |

Coupler C

- | | |
|---------------------------|------|
| 1. Blank | — |
| 2. Blank | — |
| 3. Blank | — |
| 4. Blank | — |
| 5. Blank | — |
| 6. Blank | — |
| 7. To main fuse | R |
| 8. To combination switch | W/BI |
| 9. To ground | B |
| 10. To combination switch | G/Y |

KEYLESS ENTRY SYSTEM (IF EQUIPPED)

The keyless entry system uses radio wave. When the button on the transmitter is pressed, a signal is transmitted in the form of radio wave to the receiver. Then the signal causes the door lock controller to lock and unlock the door. The door locks can not operated with the transmitter when either of the following conditions applies.

- For 2 seconds after the ignition switch is turned from ON to OFF position.
- The ignition switch is at ON or START position.
- Any door is open.

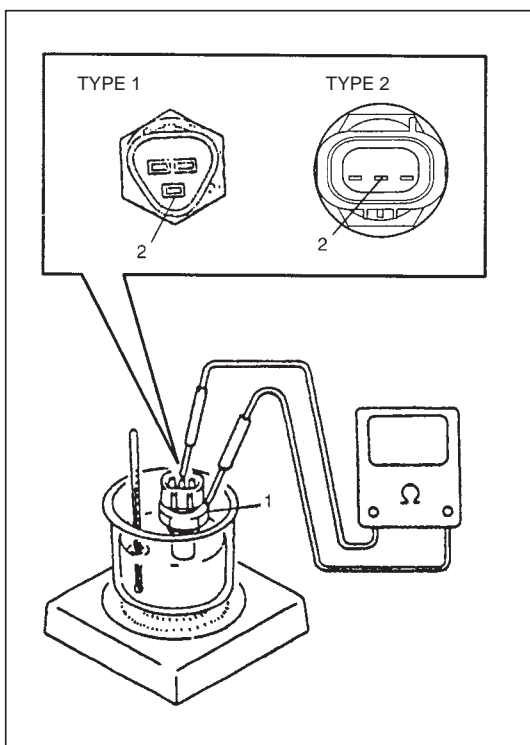
DIAGNOSIS

KEYLESS ENTRY SYSTEM (IF EQUIPPED)

Condition	Possible Cause	Correction
The power door lock function is available but the keyless entry function is not.	<ul style="list-style-type: none"> ● Fuse blown ● Code registration error ● Transmitter battery dead ● Wiring or grounding faulty ● Receiver faulty ● Transmitter faulty 	Replace fuse to check for short. Register code. Replace battery. Repair as necessary. Replace. Replace.
Only one power door lock does not operate.	<ul style="list-style-type: none"> ● Wiring or coupler faulty ● Actuator (door lock motor) faulty 	Repair as necessary Replace.
Operation distance unstable.	<ul style="list-style-type: none"> ● Transmitter battery dead ● Transmitter faulty 	Replace battery. Replace.

NOTE:

- The operation distance of this system varies depending on the position where the transmitter is operated, at the front side, the rear side or the lateral side. The distance can be affected by radio noises from a TV station, a power plant, a broadcasting station and so forth.



ON-VEHICLE SERVICE

ENGINE COOLANT TEMP. (ECT) METER AND SENSOR

ECT SENSOR

INSPECTION

- 1) Warm up ECT sensor (1) observing resistance between sensor terminal (2) and sensor unit (1). Resistance should be decreased with increase of its temperature.
- 2) Check resistance between sensor terminal (2) and sensor unit (1). If check result is not as specified below, replace sensor.

Temperature	Resistance
50°C (122°F)	136 – 216 Ω

KEYLESS ENTRY SYSTEM (IF EQUIPPED) TRANSMITTER

REPLACEMENT OF THE BATTERY

If the transmitter becomes unreliable, replace the battery.

As the battery power is consumed, the operation distance will be shorter.

- 1) Put the edge of a coin or a flat blade screw driver in the slot of the transmitter and pry it open.
- 2) Replace the battery (lithium disc-type CR2025 or equivalent) so its (+) terminal faces the "+" mark of the transmitter.

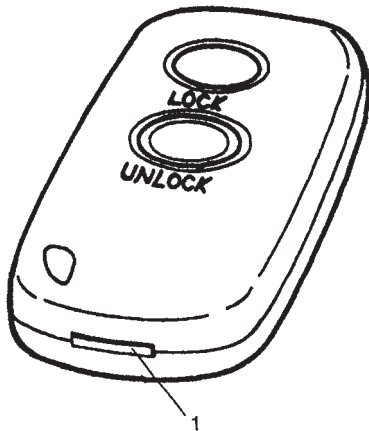
CAUTION:

Use care not to allow grease or dirt to be attached on the printed circuit board and the battery.

- 3) Close the transmitter firmly.
- 4) Make sure the door locks can be operated with the transmitter.

NOTE:

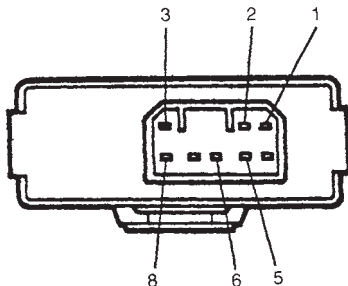
- To prevent theft, be sure to break the transmitter before discarding it.
- Dispose of the used battery properly according to applicable rules or regulations. Do not dispose of lithium batteries with ordinary household trash.



1. Slot

RECEIVER INSPECTION

Using a tester, check for continuity and voltage between each terminal of the connector connected to the receiver and the body ground at the following condition.



1. To power door lock controller (Unlock)
2. To power door lock controller (Lock)
3. To IG switch
5. To door switch
6. To GND
8. To battery

Terminal	Check for	Condition	Standard value
1	Continuity	Unlock the driver's seat side door by using the key.	No continuity → Continuity
2	Continuity	Lock the driver's seat side door by using the key.	No continuity → Continuity
3	Voltage	Insert the ignition key and turn ON the ignition switch.	0 V → 10 – 14 V
5	Voltage	Open any one of all closed doors.	10 – 14 V → 0 V
6	Continuity	Anytime	Continuity
8	Voltage	Anytime	10 – 14 V

CODE REGISTRATION PROCEDURE

- 1) Start of code registration
(Initial conditions: IG switch OFF, all doors closed)
- 2) Open the door and then turn ON the IG switch within 10 seconds.
- 3) Turn OFF the IG switch within 10 seconds after it is turned ON.
- 4) Turn the door switch ON and OFF 3 times within 20 seconds after the IG switch is turned OFF.

- 5) Within 10 seconds after the door switch is turned ON, turn ON the IG switch and then OFF within next 10 seconds.
- 6) After LOCK and UNLOCK operation once, the registration mode is set.
- 7) Press the UNLOCK button of the transmitter once within 60 seconds after the registration mode is set.
- 8) LOCK and UNLOCK operation once again completes the registration procedure.

NOTE:

- Perform the above procedure to register a code.
- Two codes can be registered.
- When a new code is registered, the oldest one will be cleared.

SECTION 8G

IMMOBILIZER CONTROL SYSTEM

WARNING:

For vehicles equipped with Supplemental Restraint (Air Bag) System:

- Service on and around the air bag system components or wiring must be performed only by an authorized SUZUKI dealer. Refer to “Air Bag System Components and Wiring Location View” under “General Description” in air bag system section in order to confirm whether you are performing service on or near the air bag system components or wiring. Please observe all WARNINGS and “Service Precautions” under “On-Vehicle Service” in air bag system section before performing service on or around the air bag system components or wiring. Failure to follow WARNINGS could result in unintentional activation of the system or could render the system inoperative. Either of these two conditions may result in severe injury.
- Technical service work must be started at least 90 seconds after the ignition switch is turned to the “LOCK” position and the negative cable is disconnected from the battery. Otherwise, the system may be activated by reserve energy in the Sensing and Diagnostic Module (SDM).

NOTE:

- Whether the immobilizer indicator lamp is used in the particular vehicle or not depends on specifications. If there is a monitor coupler in the engine room near the left strut assembly, the vehicle is not equipped with immobilizer indicator lamp and if there isn't, it is equipped with immobilizer indicator lamp.
- For the descriptions (items) not found in this section, refer to the section 8G of the Service Manual mentioned in FOREWORD of this manual.

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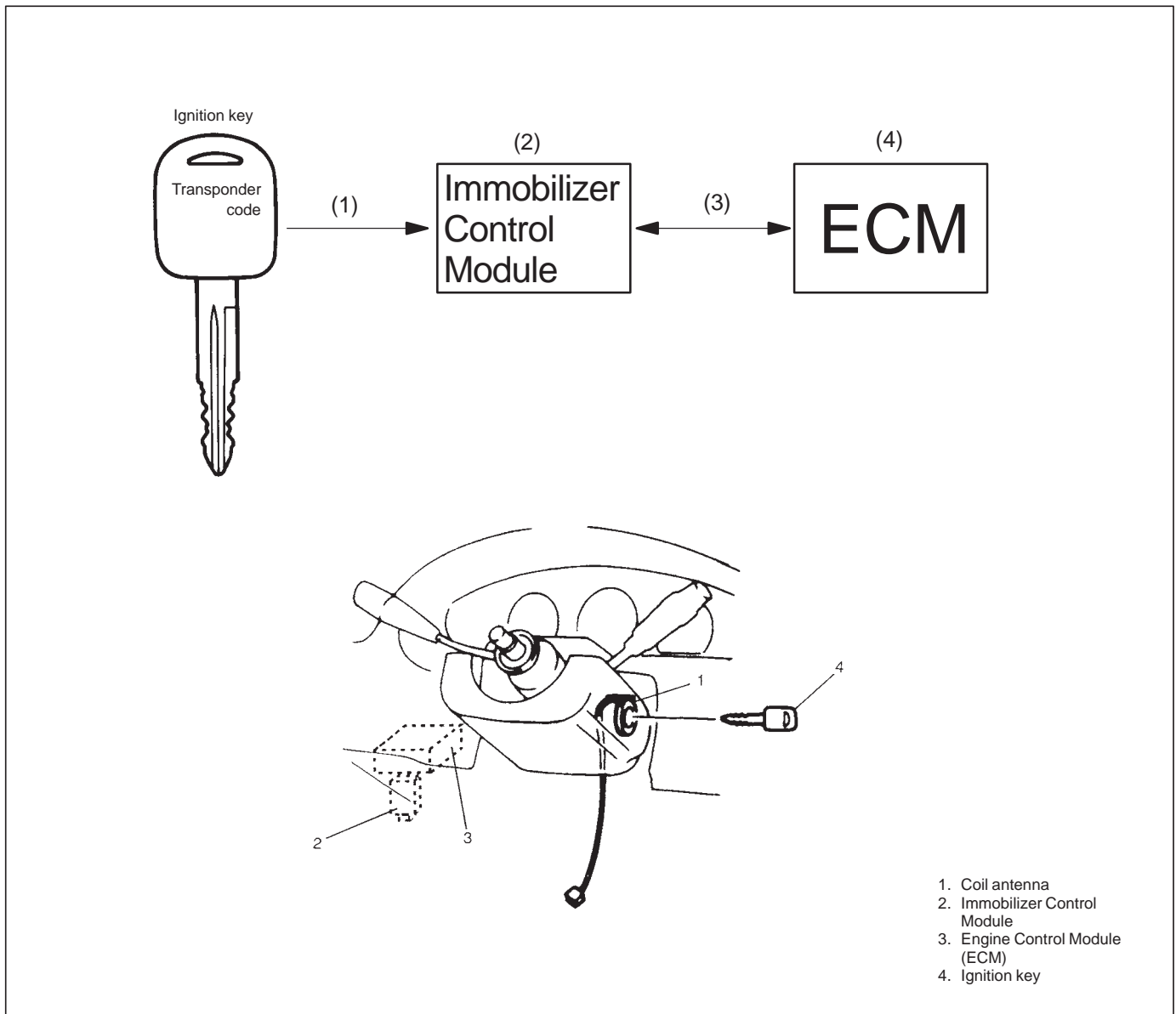
GENERAL DESCRIPTION

The immobilizer control system designed to prevent vehicle burglar consists of following components.

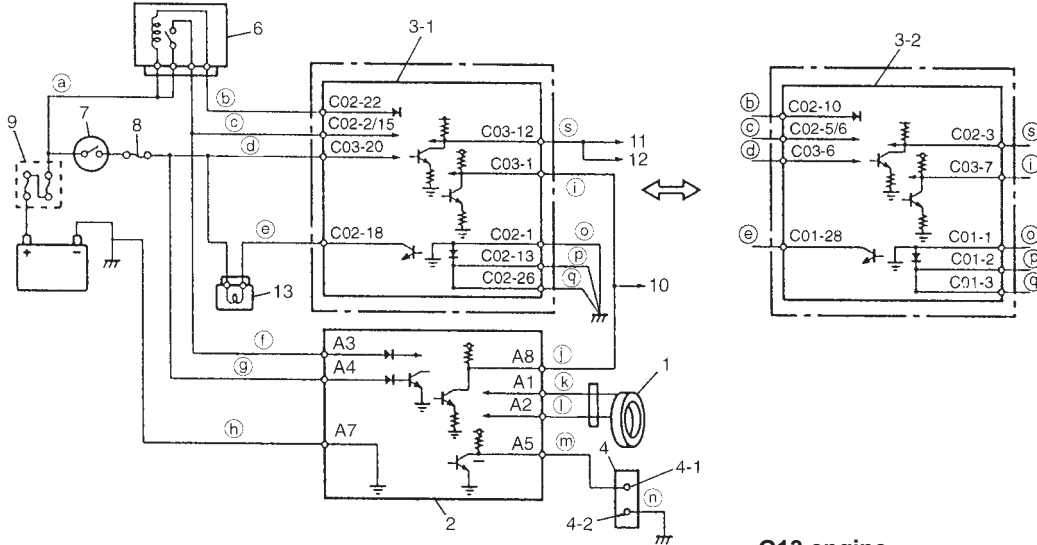
- Engine Control Module (ECM)
- Immobilizer Control Module
- Ignition key (with built-in transponder)
- Coil antenna

Operation of this system is as follows.

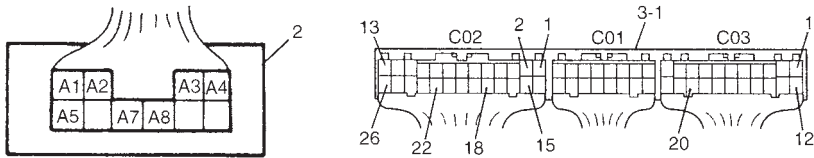
- (1) Each ignition key has its own code (Transponder code) stored in memory. When the ignition switch is turned ON, Immobilizer Control Module tries to read the Transponder code through the coil antenna installed to the steering lock assembly.
- (2) Immobilizer Control Module compares the Transponder code read in (1) and that registered in Immobilizer Control Module and checks if they match.
- (3) When it is confirmed that two Transponder codes match each other as described above, Immobilizer Control Module and ECM check if ECM/Immobilizer Control Module codes registered in them respectively match.
- (4) Only when it is confirmed that ECM/Immobilizer Control Module codes match, the engine starts running. If Transponder codes in Step (2) or ECM/Immobilizer Control Module codes in Step (3) do not match, ECM will stop operation of the injector and the ignitor (i.e., ignition of spark plug).



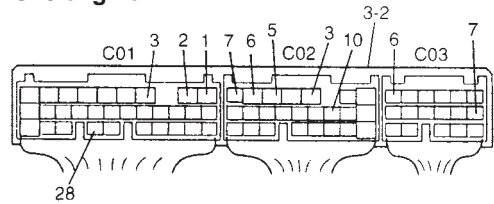
Vehicle without monitor coupler



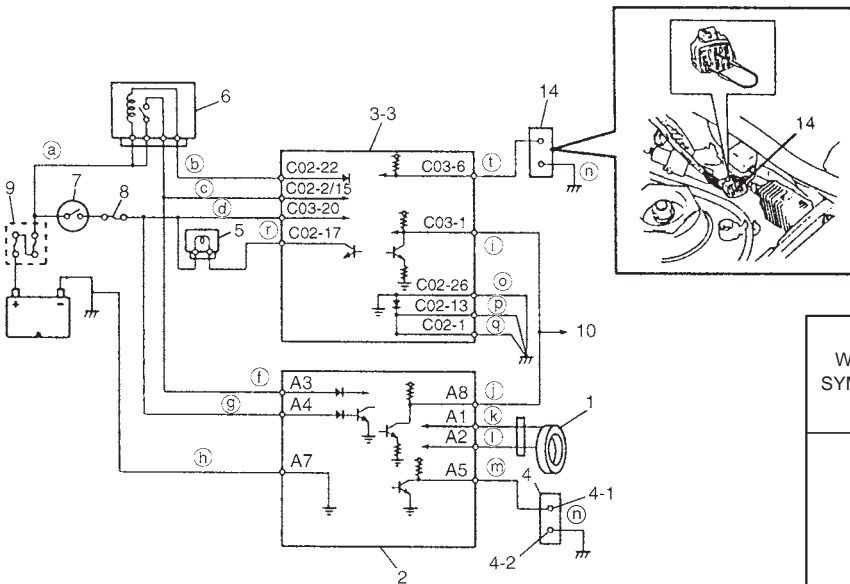
G10 engine



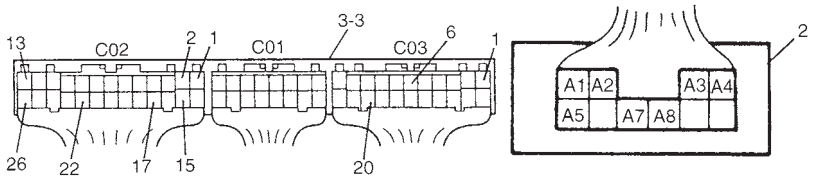
G13 engine



Vehicle with monitor coupler



G13B engine



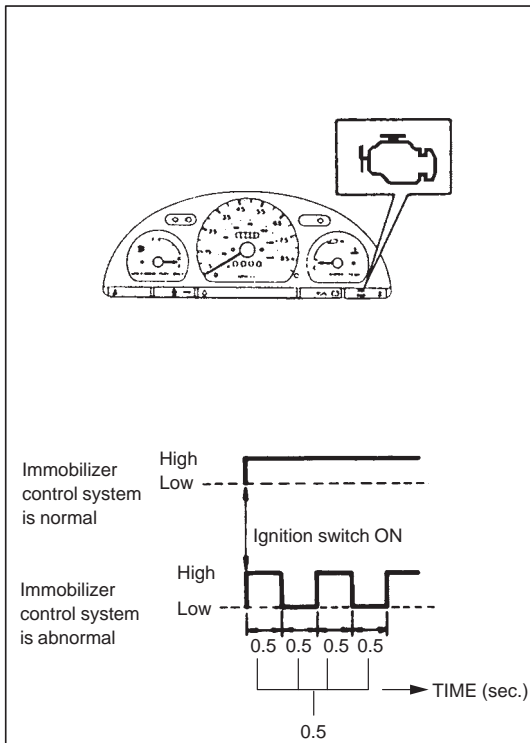
1. Coil antenna
2. Immobilizer Control Module
- 3-1. ECM (G10 engine)
- 3-2. ECM (G13 engine without monitor coupler)
- 3-3. ECM (G13 engine with monitor coupler)
4. Immobilizer diagnostic coupler
- 4-1. Diagnostic output terminal
- 4-2. Ground terminal
5. Malfunction indicator lamp
6. Main relay
7. Ignition switch
8. Fuse
9. Main fuse
10. To #9-pin in Data link connector
11. To #7-pin in Data link connector
12. To ABS control module
13. Immobilizer indicator lamp (Vehicle not equipped with monitor coupler)
14. Monitor coupler (Vehicle not equipped with immobilizer indicator lamp)

WIRE SYMBOL	WIRE COLOR		
	G10 engine	G13 engine without monitor coupler	G13 engine with monitor coupler
(a)	W/R	W/R	W/R
(b)	Bl/B	Gr	G/B
(c)	W/Bl	R/B	W/Bl
(d)	B/W	B/W	B/W
(e)	V/G	V/G	-
(f)	W/Bl	W/Bl	W/Bl
(g)	B/W	B/W	B/W
(h)	B	B	B
(i)	V/W	Y/B	V/W
(j)	V/W	V/W	V/W
(k)	P/B	P/B	P/B
(l)	P/Bl	P/Bl	P/Bl
(m)	P/G	P/G	P/G
(n)	B	B	B
(o)	B	B	B/Bl
(p)	B/Bl	B/Or	B/Bl
(q)	B/R	B/Or	B/G
(r)	-	-	V
(s)	R/G	R/G	-
(t)	-	-	V/Y

ON-BOARD DIAGNOSTIC SYSTEM (SELF-DIAGNOSIS FUNCTION)

Immobilizer Control Module & ECM diagnose troubles which may occur in the area including the following parts when the ignition switch is ON.

- | | | | |
|------|--|-----------------------------|---|
| ECM: | <ul style="list-style-type: none"> ● ECM/Immobilizer Control Module code ● Data link connector wire ● ECM | Immobilizer Control Module: | <ul style="list-style-type: none"> ● Transponder code ● Coil antenna ● ECM/Immobilizer Control Module code ● Data link connector wire ● Immobilizer Control Module |
| | | | <ul style="list-style-type: none"> ● Ignition signal |



<Vehicle equipped with monitor coupler>

With the diagnosis switch terminal of monitor coupler for ECM not grounded, the ignition switch turned ON (but the engine at stop) and regardless of the condition of the engine and emission control system, ECM indicates whether a trouble has occurred in the immobilizer control system or not by causing the malfunction indicator lamp to flash or turn ON.

Malfunction indicator lamp is ON:

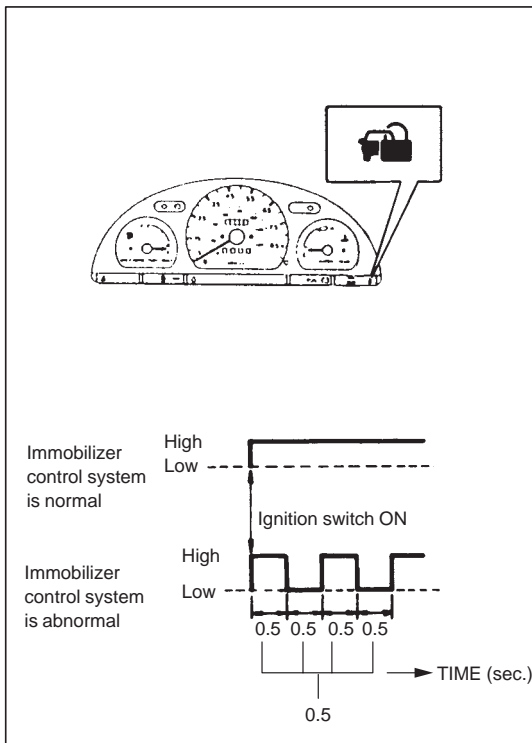
No trouble exists in the immobilizer control system.

Malfunction indicator lamp is flashing:

ECM or Immobilizer Control Module has detected some trouble in the immobilizer control system.

NOTE:

As soon as the ignition switch is turned ON, ECM and Immobilizer Control Module diagnose if a trouble has occurred in the immobilizer control system. While the diagnosis is being made, the malfunction indicator lamp stays ON and if the diagnosis result is "abnormal", it immediately changes to flashing but if the result is "normal", it remains ON. Diagnosis takes about 3 seconds at maximum.



<Vehicle not equipped with monitor coupler>

With the ignition switch turned ON (but the engine at stop) regardless of the condition of the engine and emission control system, ECM indicates whether a trouble has occurred in the immobilizer control system or not by causing the immobilizer indicator lamp to flash or turn ON.

Immobilizer indicator lamp is ON:

No trouble exists in the immobilizer control system.

Immobilizer indicator lamp is flashing:

ECM or Immobilizer Control Module has detected some trouble in the immobilizer control system.

NOTE:

As soon as the ignition switch is turned ON, ECM and Immobilizer Control Module diagnose if a trouble has occurred in the immobilizer control system. While the diagnosis is being made, the Immobilizer indicator lamp stays ON and if the diagnosis result is "abnormal", it immediately changes to flashing but if the result is "normal", it remains ON. Diagnosis takes about 3 seconds at maximum.

When ECM and Immobilizer Control Module detects a trouble, it stores DTC corresponding to the exact trouble area in ECM and Immobilizer Control Module memory.

DTCs stored in memory of each controller (Immobilizer Control Module and ECM) can be read by using the procedure described in "DIAGNOSTIC TROUBLE CODE CHECK (IMMOBILIZER CONTROL MODULE)" and "DIAGNOSTIC TROUBLE CODE CHECK (ECM)" in this section.

DIAGNOSIS

ECM and Immobilizer Control Module have on-board diagnostic system (a system self-diagnosis function) as described previously. Investigate where the trouble is by referring to "DIAGNOSTIC FLOW TABLE" and "DIAGNOSTIC TROUBLE CODE TABLE" on later pages.

PRECAUTIONS IN DIAGNOSING TROUBLES

[PRECAUTIONS IN IDENTIFYING DIAGNOSTIC TROUBLE CODE]

ECM

<Vehicle equipped with monitor coupler>

- Before identifying diagnostic trouble code indicated by malfunction indicator lamp, don't disconnect couplers from ECM, battery cable from battery, ECM ground wire harness from engine. Such disconnection will clear trouble codes for engine and emission control system stored in memory of ECM.
- If abnormality or malfunction lies in two or more areas, malfunction indicator lamp indicates applicable codes three times each. And flashing of these codes is repeated as long as diagnosis terminal is grounded and ignition switch is held at ON position.
- When ECM detects a trouble in both engine and emission control system and immobilizer control system, malfunction indicator lamp indicates trouble codes of both systems alternately while the ignition switch is turned ON and the diagnosis terminal is grounded.
- Take a note of diagnostic trouble code indicated first.

<Vehicle not equipped with monitor coupler>

- Before identifying diagnostic trouble code indicated through Suzuki scan tool, don't disconnect couplers from ECM, battery cable from battery, ECM ground wire harness from engine. Such disconnection will clear trouble codes for engine and emission control system stored in memory of ECM.
- When ECM detects a trouble in both engine and emission control system and immobilizer control system, Suzuki scan tool indicates trouble codes of both systems using Suzuki mode of ECM applications.
- Take a note of diagnostic trouble code indicated first.

Immobilizer Control Module

- Take a note of diagnostic trouble code indicated first.

[INTERMITTENT TROUBLES]

<Vehicle equipped with monitor coupler>

- There are cases where output of diagnostic output terminal and/or malfunction indicator lamp indicate a diagnostic trouble code representing a trouble which occurred only temporarily and has gone. In such case, it may occur that good parts are replaced unnecessarily. To prevent such accident, be sure to follow instructions given below when checking by using "Diagnostic Flow Table".

- * When trouble can be identified, it is not an intermittent one:
Check coil antenna, ignition key, wires and each connection and if they are all in good condition, substitute a known-good ECM and recheck.

- * When trouble can not be identified but output of diagnostic output terminal and/or malfunction indicator lamp indicate a trouble code:

Diagnose trouble by using that code No. and if ignition key, coil antenna, wires and each connection are all in good condition, turn OFF ignition switch and then ON.

Then check what malfunction indicator lamp and/or output of diagnostic output terminal indicate.

Only when they indicate trouble code again, substitute a known-good ECM or Immobilizer Control Module and check again.

If they indicate not trouble code but normal code, it means that an intermittent trouble did occur and has gone. In this case, check wires and connections carefully again.

<Vehicle not equipped with monitor coupler>

- There are cases where output of diagnostic output terminal and/or Suzuki scan tool indicate a diagnostic trouble code representing a trouble which occurred only temporarily and has gone. In such case, it may occur that good parts are replaced unnecessarily. To prevent such accident, be sure to follow instructions given below when checking by using "Diagnostic Flow Table".

- * When trouble can be identified, it is not an intermittent one:
Check coil antenna, ignition key, wires and each connection and if they are all in good condition, substitute a known-good ECM and recheck.

- * When trouble can not be identified but output of diagnostic output terminal and/or Suzuki scan tool indicate a trouble code:

Diagnose trouble by using that code No. and if ignition key, coil antenna, wires and each connection are all in good condition, turn OFF ignition switch and then ON.

Then check what Suzuki scan tool and/or output of diagnostic output terminal indicate.

Only when they indicate trouble code again, substitute a known-good ECM or Immobilizer Control Module and check again.

If they indicate not trouble code but normal code, it means that an intermittent trouble did occur and has gone. In this case, check wires and connections carefully again.

DIAGNOSTIC FLOW TABLE

<Vehicle equipped with monitor coupler>

STEP	ACTION	YES	NO
1	1) Make sure that diagnosis switch terminal in monitor coupler is not grounded by service wire. See Fig. 1. 2) Check malfunction indicator lamp while ignition switch is ON (but without starting engine). See Fig. 2. Dose malfunction indicator lamp flash?	Go to Step 3.	<ul style="list-style-type: none"> ● If malfunction indicator lamp remains ON, go to Step 2. ● If malfunction indicator lamp remains OFF, go to "MALFUNCTION INDICATOR LAMP CHECK" in Section 6.
2	1) Using service wire, ground diagnosis switch terminal in monitor coupler. See Fig. 3. Dose malfunction indicator lamp flash?	Immobilizer control system is in good condition.	Go to "MALFUNCTION INDICATOR LAMP CHECK" in Section 6.
3	Dose malfunction indicator lamp flash as Fig. 4?	Go to Step 4.	Go to "MALFUNCTION INDICATOR LAMP CHECK" in Section 6.
4	1) Check DTC stored in Immobilizer Control Module referring to "DIAGNOSTIC TROUBLE CODE CHECK (IMMOBILIZER CONTROL MODULE)" in this section. Is there any DTC(s)?	Go to flow table for DTC No.	Go to Step 5.
5	1) Check DTC stored in ECM referring to "DIAGNOSTIC TROUBLE CODE CHECK (ECM)" in this section. Is there any DTC(s)?	Go to flow table for DTC No.	Substitute a known-good ECM and recheck. NOTE: After replacing with a known-good ECM, register ECM/ Immobilizer Control Module code in ECM by performing procedure described in "Procedure after ECM Replacement" section.

Fig. 1 for Step 1

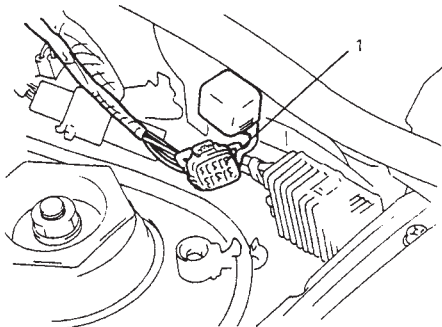


Fig. 2 for Step 1

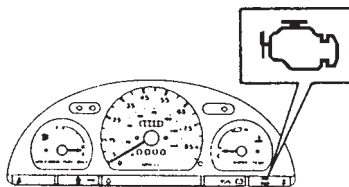
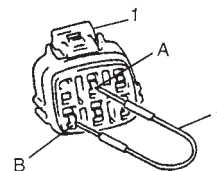
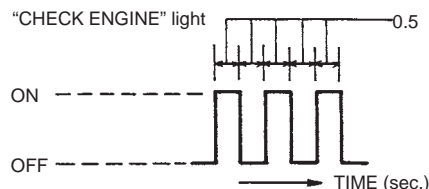


Fig. 3 for Step 2



- 1. Monitor coupler
- 2. Service wire
- A: Diagnosis switch terminal
- B: Ground terminal

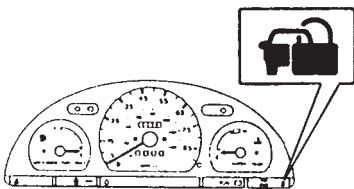
Fig. 4 for Step 3

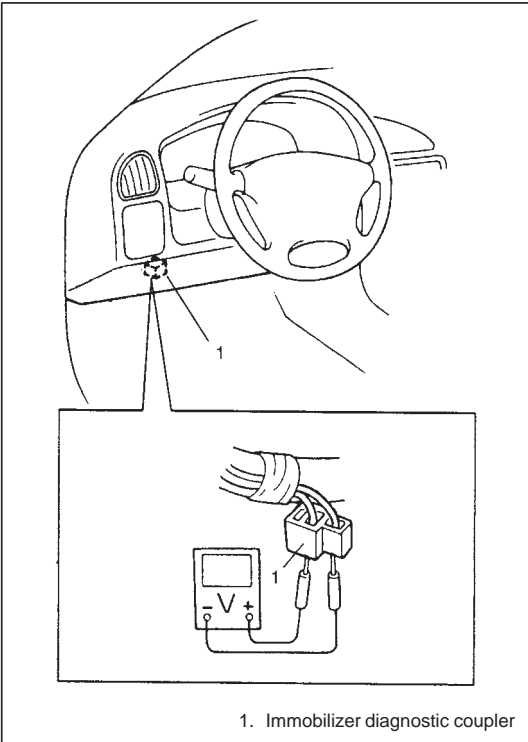


<Vehicle not equipped with monitor coupler>

STEP	ACTION	YES	NO
1	1) Check immobilizer indicator lamp while ignition switch is ON (but without starting engine). See Fig. 1. Does immobilizer indicator lamp flash?	Go to Step 3.	<ul style="list-style-type: none"> ● If immobilizer indicator lamp remains ON, go to Step 2. ● If immobilizer indicator lamp remains OFF, go to "IMMOBILIZER INDICATOR LAMP CHECK" in this section.
2	1) Check DTC stored in ECM referring to "DIAGNOSTIC TROUBLE CODE CHECK (ECM)" in this section. Is there any DTC(s)?	Go to "IMMOBILIZER INDICATOR LAMP CHECK" in this section.	Immobilizer control system is in good condition.
3	1) Check DTC stored in Immobilizer Control Module referring to "DIAGNOSTIC TROUBLE CODE CHECK (IMMOBILIZER CONTROL MODULE)" in this section. Is there any DTC(s)?	Go to flow table for DTC No.	Go to Step 4.
4	1) Check DTC stored in ECM referring to "DIAGNOSTIC TROUBLE CODE CHECK (ECM)" in this section. Is there any DTC(s) for immobilizer control system?	Go to flow table for DTC No.	Substitute a known-good ECM and recheck. NOTE: After replacing with a known-good ECM, register ECM/ Immobilizer Control Module code in ECM by performing procedure described in "Procedure after ECM Replacement" section.

Fig. 1 for Step 1





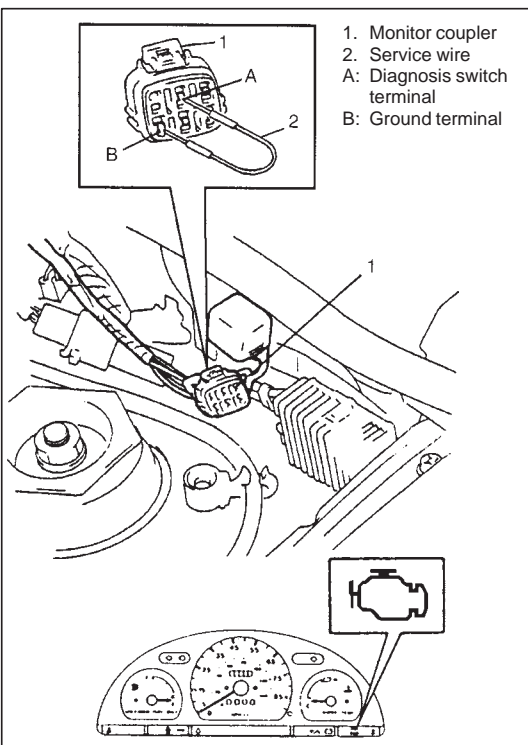
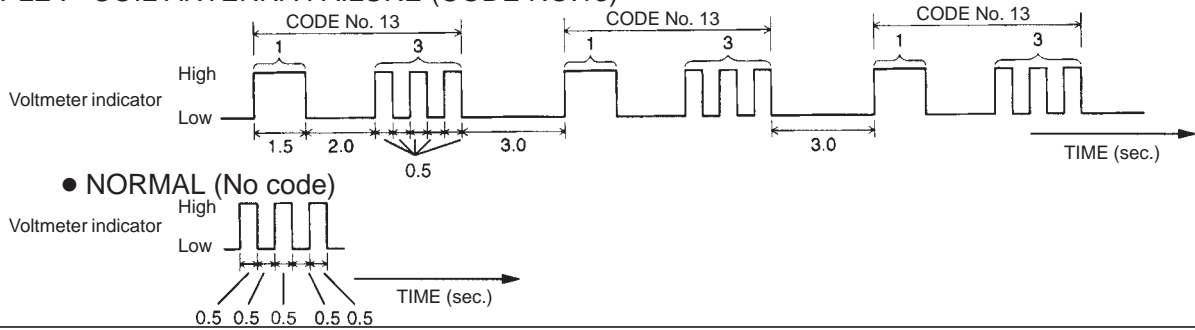
DIAGNOSTIC TROUBLE CODE (DTC) CHECK (IMMOBILIZER CONTROL MODULE)

- 1) Using analog type voltmeter, connect positive probe to diagnostic output terminal and negative probe to ground of immobilizer diagnostic coupler with ignition switch turned ON.
- 2) Read deflection of voltmeter indicator which represents DTC as shown in example below and write it down. For details of DTC, refer to Immobilizer Control Module side in "Diagnostic Trouble Code Table".
If voltmeter indicator dose not deflect, go to "Diagnostic Flow Table A".

NOTE:

If abnormality or malfunction lies in two or more areas, voltmeter indicates applicable codes three times each.

EXAMPLE : ● COIL ANTENNA FAILURE (CODE NO.13)



DIAGNOSTIC TROUBLE CODE (DTC) CHECK (ECM) [Not using SUZUKI scan tool] (Vehicle equipped with monitor coupler)

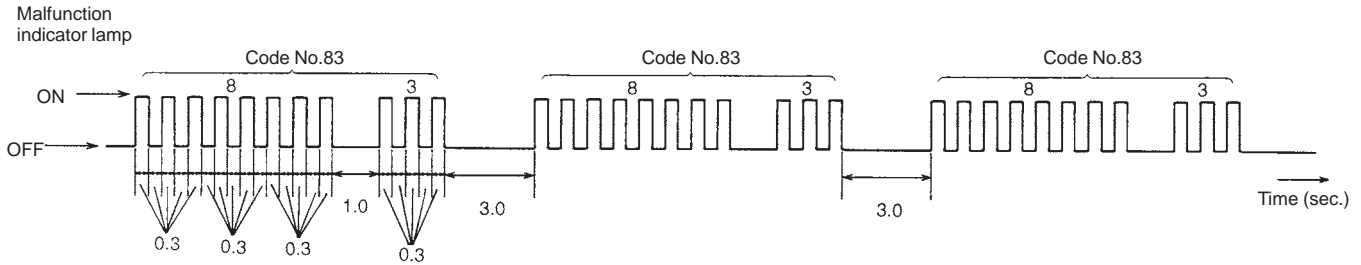
- 1) Using service wire, ground diagnosis switch terminal in monitor coupler.
- 2) Read DTC from flashing pattern of malfunction indicator lamp as shown in example below and write it down. For details of DTC, refer to ECM side in "Diagnostic Trouble Code Table".
If lamp remains ON, go to "Malfunction Indicator Lamp Check" in Section 6.

NOTE:

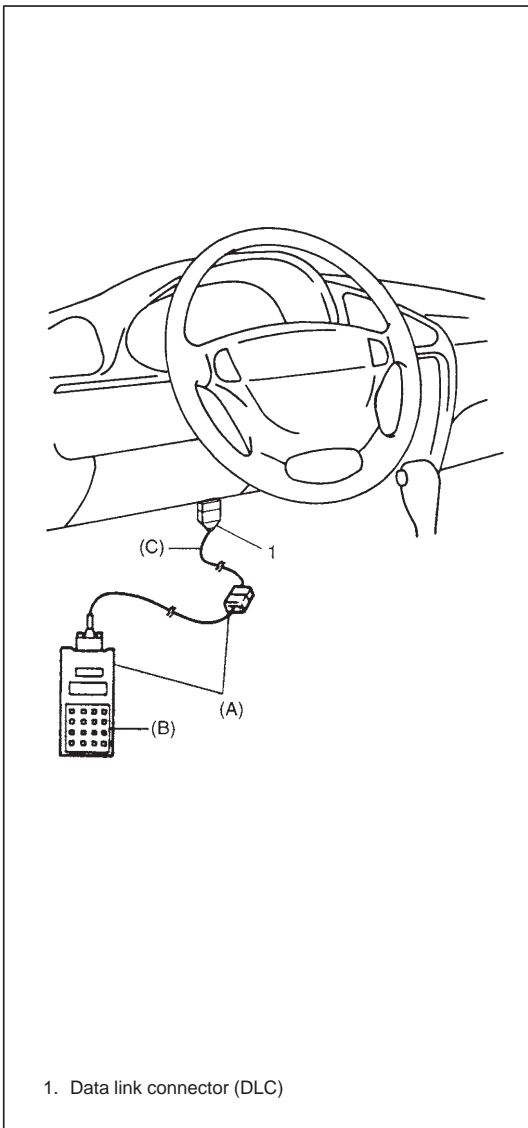
If abnormality or malfunction lies in two or more areas, malfunction indicator lamp indicates applicable codes three times each.

And flashing of these codes is repeated as long as diagnosis terminal is grounded and ignition switch is held at ON position.

EXAMPLE: When serial data link wire is defective (Code No.83)



- 3) After completing the check, turn ignition switch OFF and disconnect service wire from monitor coupler.



1. Data link connector (DLC)

[Using SUZUKI scan tool] (Vehicle not equipped with monitor coupler)

- 1) Turn ignition switch OFF.
- 2) After setting cartridge to Suzuki scan tool, connect it to data link connector (DLC) located on underside of instrument panel at driver's seat side.

Special Tool

- (A): 09931-76011 (Suzuki scan tool)
- (B): Mass storage cartridge
- (C): 09931-76030 (16/14 pin DLC adapter)

- 3) Turn ignition switch ON.
- 4) Read DTC stored in ECM according to instructions displayed on Suzuki scan tool and print it or write it down. Refer to Suzuki scan tool operator's manual for further details.

NOTE:

- When reading DTC stored in ECM using Suzuki scan tool, select "ECM" from the applications menu and "SUZUKI mode" from the communication mode menu displayed on Suzuki scan tool.
- If ECM detects a trouble in both electric fuel injection system and immobilizer control system, Suzuki scan tool indicates trouble codes of both systems using Suzuki mode of ECM application.

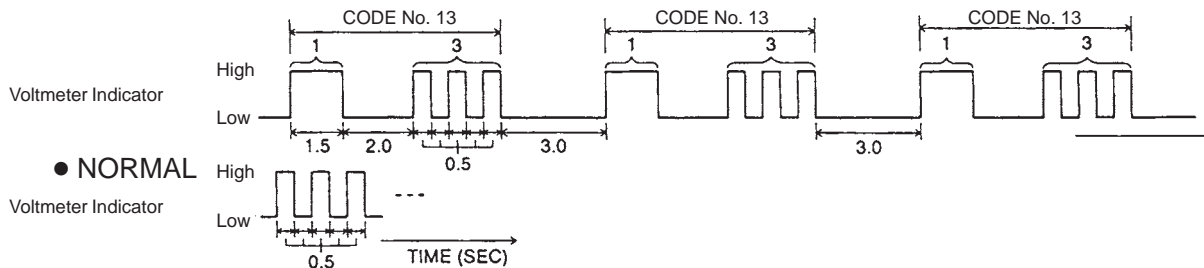
If communication between Suzuki scan tool and ECM is not possible, check if Suzuki scan tool is communicable by connecting it to ECM in another vehicle. If communication is possible in this case, Suzuki scan tool is in good condition. Then check data link connector and serial data line (circuit) in the vehicle with which communication was not possible.

- 5) After completing the check, turn ignition switch OFF and disconnect Suzuki scan tool from data link connector (DLC).

DIAGNOSTIC TROUBLE CODE TABLE

Immobilizer Control Module

EXAMPLE: ● COIL ANTENNA FAILURE (CODE NO.13)

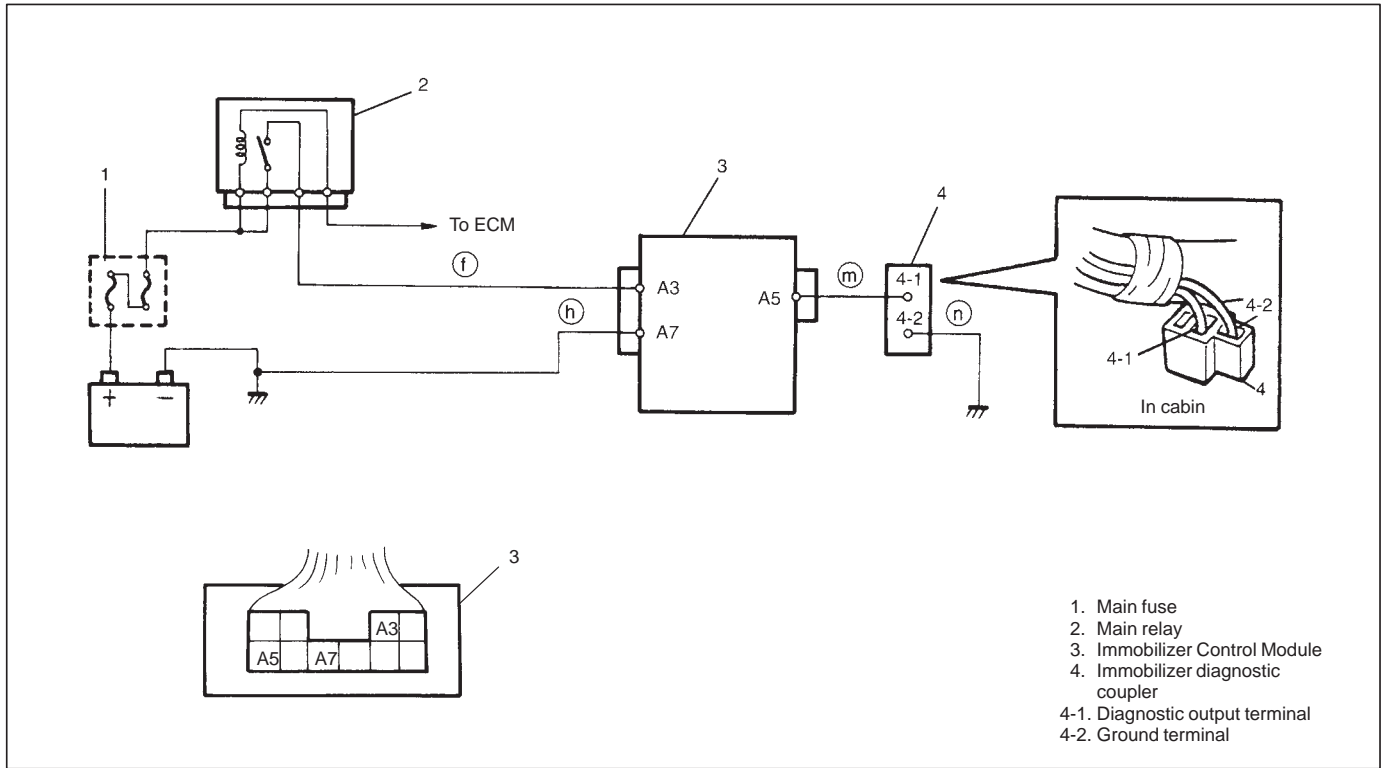


DIAGNOSTIC TROUBLE CODE		DIAGNOSTIC AREA	DIAGNOSIS
NO.	VOLTMETER INDICATION		
-		Normal	This code appears when none of the other codes are identified. Diagnose trouble according to "DIAGNOSTIC FLOW TABLE" corresponding to each code No.
11		Transponder code	
31			
12		Immobilizer Control Module	
13		Coil antenna or ignition key with built-in transponder	
21		ECM/Immobilizer Control Module code	
22		Ignition switch circuit	
23		Serial data link wire	

Engine Control module (ECM)

DTC (indicated on Suzuki scan tool)	DTC (indicated by MIL)	Malfunction Indicator lamp (MIL) flashing pattern	DIAGNOSTIC AREA	DIAGNOSIS
NO DTC	12		Normal	This code appears when it is confirmed that none of other trouble codes is set for immobilizer control system or engine and emission control system.
P1623	81		ECM/Immobilizer Control Module code	
P1620	84		ECM	Diagnose trouble according to "DIAGNOSTIC FLOW TABLE" corresponding to each code No.
P1622	82			
P1621	83		Serial data link wire	

A-1 CODE (DTC) IS NOT OUTPUTTED FROM DIAGNOSTIC OUTPUT TERMINAL OF IMMOBILIZER DIAGNOSTIC COUPLER



Check voltage between A3 terminal and body ground with ignition switch turned ON. Is it 10 – 14 V?

NO → “f” wire open.

YES

1. Connect voltmeter between A5 terminal and body ground.
2. Does voltmeter indicator deflect?

NO → Poor A3, A5 or A7 connection.
• “h” wire of A7 terminal open.
• “m” wire between A5 terminal and diagnostic output terminal of immobilizer diagnostic coupler short.
If wire and connections are OK, substitute a known-good ICM and recheck.
NOTE: After replacing with a known-good ICM, register ECM/ICM code in ECM and TP code and ECM/ICM code in ICM by performing procedure described in “Procedure after ICM Replacement” section.

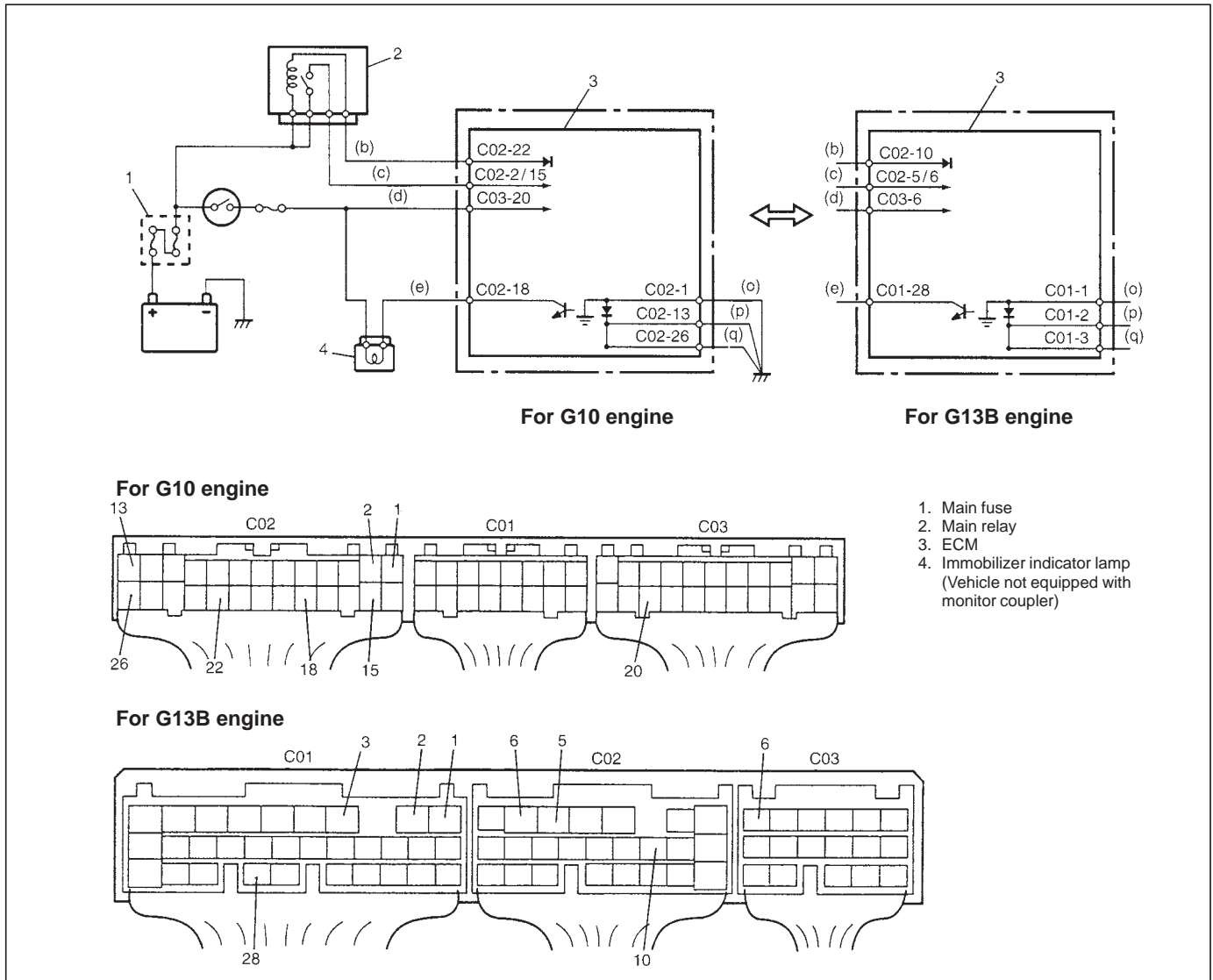
YES

1. Connect voltmeter between diagnostic output terminal of immobilizer diagnostic coupler and body ground.
2. Is it possible to read DTC by checking deflection of voltmeter indicator?

NO → “m” wire between A5 terminal and diagnostic output terminal of immobilizer diagnostic coupler open.

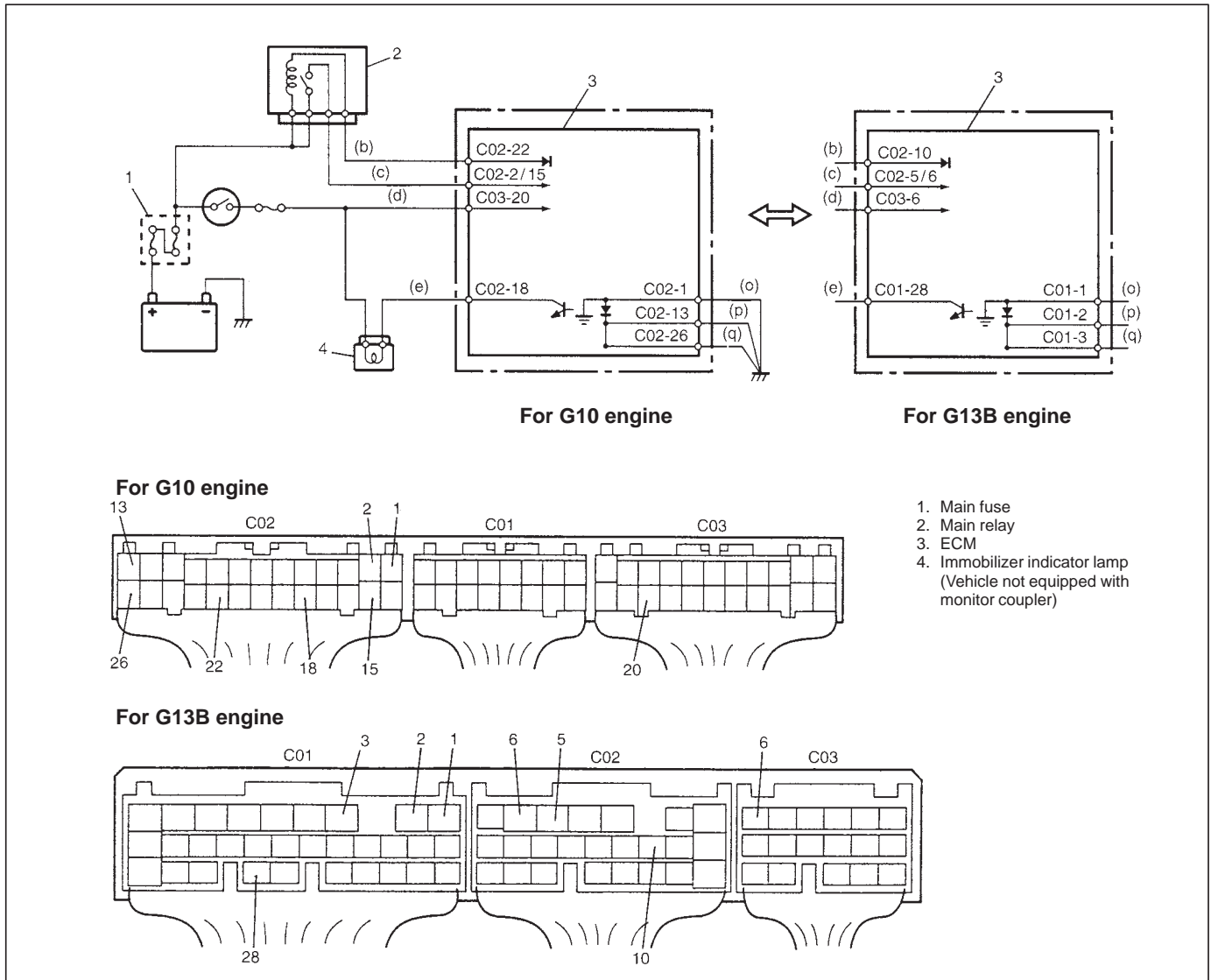
YES → “n” wire of ground terminal for immobilizer diagnostic coupler open.

A-2 IMMOBILIZER INDICATOR LAMP CHECK (IMMOBILIZER INDICATOR LAMP DOSE NOT LIGHT AT IGNITION SWITCH ON)

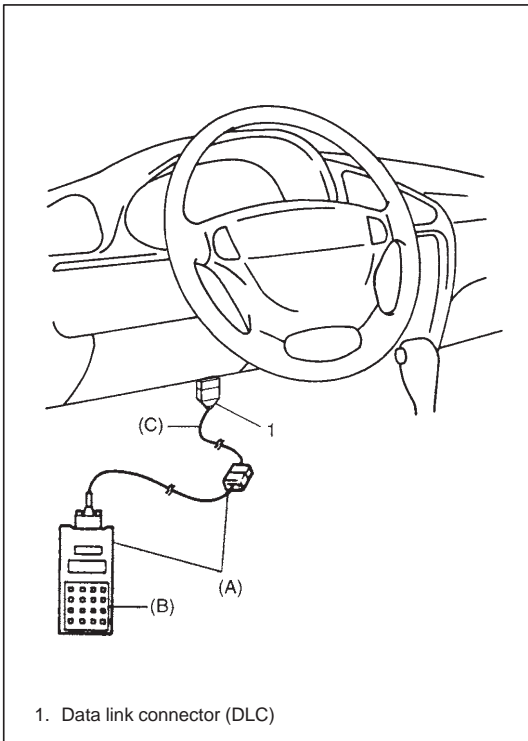


STEP	ACTION	YES	NO
1	1) Turn ignition switch ON. Do other indicator/warning lights in combination meter come ON?	Go to Step 2.	"IG" fuse blown, main fuse blown, ignition switch malfunction, "d" circuit between "IG" fuse and combination meter or poor coupler connection at combination meter.
2	1) Turn ignition switch OFF and disconnect connectors from ECM. 2) Check for proper connection to ECM at terminal C02-18 for G10 engine or C01-28 for G13B engine. 3) If OK, then using service wire, ground terminal C02-18 for G10 engine or C01-28 for G13B engine in connector disconnected. Does immobilizer indicator lamp turn on at ignition switch ON?	Substitute a known-good ECM and recheck.	Bulb burned out or "(P)" wire circuit open.

A-3 IMMOBILIZER INDICATOR LAMP CHECK (IMMOBILIZER INDICATOR LAMP REMAINS ON AFTER ENGINE STARTS)



STEP	ACTION	YES	NO
1	1) With ignition switch OFF, disconnect couplers from ECM. Does immobilizer indicator lamp turn ON at ignition switch ON?	"(p)" wire shorted to ground circuit.	Substitute a known-good ECM and recheck.



HOW TO REGISTER IGNITION KEY

Register the ignition key with a built-in transponder in Immobilizer Control Module by using the following procedure.

- 1) Prepare Suzuki scan tool (TECH 1A kit and cartridge for immobilizer control system).
- 2) With ignition switch OFF, connect Suzuki scan tool to data link connector (DLC) located on underside of instrument panel at driver's seat side.

Special Tool

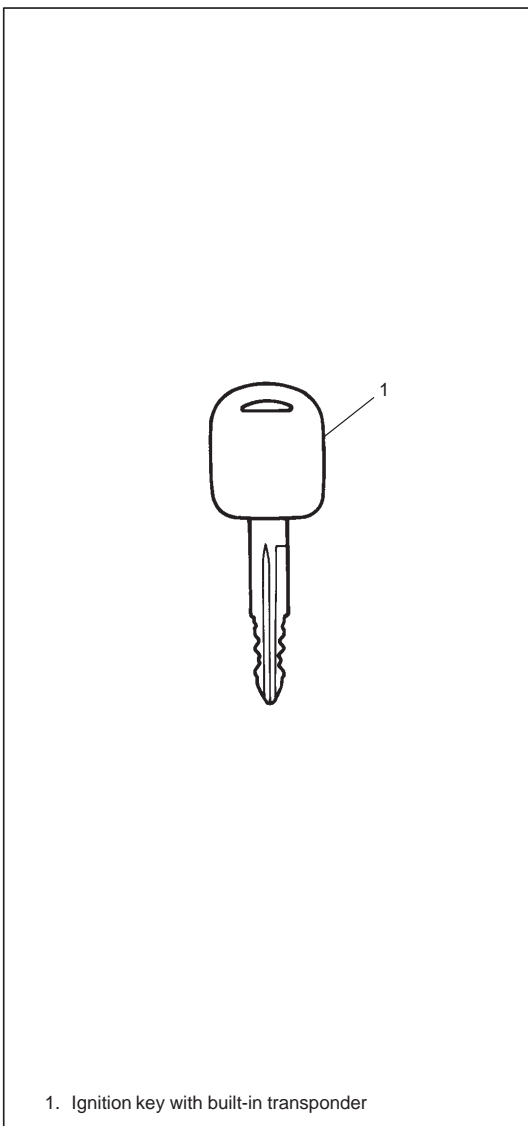
(A): 09931-76011 (Tech 1A)

(B): Immobilizer cartridge

(C): 09931-76030 (16/14-pin DLC cable)

NOTE:

For operation procedure of Suzuki scan tool, refer to Suzuki scan tool operator's manual.



- 3) Prepare ignition key with a built-in transponder. And then turn ignition switch ON by using it.
- 4) Number of Transponder codes for ignition key with a built-in transponder that can be registered in Immobilizer Control Module is limited to 4. If needed, clear all Transponder codes for ignition key with a built-in transponder that have been registered in Immobilizer Control Module by executing the "CLR. TRANS COD (CLEAR TP CODE)" command in the SELECT MODE menu by using Suzuki scan tool.

NOTE:

When "CLR. TRANS COD (CLEAR TP CODE)" command is executed with the malfunction indicator lamp (the lamp for vehicles equipped with the monitor coupler) ON or the immobilizer indicator lamp (the lamp for vehicles equipped with the monitor coupler) ON, it remains ON even after execution of that command is over. It will start flashing when the ignition switch is turned OFF once and then turned ON after some seconds.

- 5) Using Suzuki scan tool, register Transponder code in Immobilizer Control Module by executing "ENT. TRANS COD (ENT. TP CODE)" command in SELECT MODE menu.
- 6) [Vehicle equipped with monitor coupler]
Make sure that malfunction indicator lamp lights when ignition switch is turned OFF once and then ON.
[Vehicle not equipped with monitor coupler]
Make sure that immobilizer indicator lamp lights when ignition switch is turned OFF once and then ON.

- 7) If any other Transponder code for ignition key with a built-in transponder needs to be registered, repeat above Steps 3), 5) and 6).

NOTE:

- Up to 4 Transponder codes for ignition key with a built-in transponder can be registered.
- It is not possible to register the same Transponder code for ignition key with a built-in transponder as the one already registered in Immobilizer Control Module.

PROCEDURE AFTER IMMOBILIZER CONTROL MODULE REPLACEMENT

When Immobilizer Control Module was replaced, including when replaced because rechecking by using a known-good Immobilizer Control Module was necessary during trouble diagnosis, register Transponder code and ECM/Immobilizer Control Module code in Immobilizer Control Module and ECM/Immobilizer Control Module code in ECM by performing following procedure.

- 1) Perform Steps 1) and 2) described in “How to register ignition key” section.
- 2) Prepare ignition key with a built-in transponder. And then turn ignition switch ON by using it.
- 3) Using Suzuki scan tool, clear all transponder codes registered in Immobilizer Control Module by executing “CLR. TRANS COD (CLEAR TP CODE)” command in SELECT MODE menu.

NOTE:

When “CLR. TRANS COD (CLEAR TP CODE)” command is executed with the malfunction indicator lamp (the lamp for vehicles equipped with the monitor coupler) ON or the immobilizer indicator lamp (the lamp for vehicles equipped with the monitor coupler) ON, it remains ON even after execution of that command is over. It will start flashing when the ignition switch is turned OFF once and then turned ON after some seconds.

- 4) Using Suzuki scan tool, register Transponder code in Immobilizer Control Module by executing “ENT. TRANS COD (ENT. TP CODE)” command in SELECT MODE menu.
- 5) Using Suzuki scan tool, register ECM/Immobilizer Control Module code in both Immobilizer Control Module and ECM by executing “RECORD ECU (RECORD ECM/PCM/ICM)” command in SELECT MODE menu.
- 6) [Vehicle equipped with monitor coupler]
Make sure that malfunction indicator lamp lights when ignition switch is turned OFF once and then ON.
[Vehicle not equipped with monitor coupler]
Make sure that immobilizer indicator lamp lights when ignition switch is turned OFF once and then ON.
- 7) If any other Transponder code for ignition key with a built-in transponder needs to be registered, repeat above Steps 2), 4) and 6).

NOTE:

- Up to 4 Transponder codes for ignition key with a built-in transponder can be registered.
- It is not possible to register the same Transponder code for ignition key with a built-in transponder as the one already registered in Immobilizer Control Module.

PROCEDURE AFTER ECM REPLACEMENT

When ECM was replaced, including when replaced because re-checking by using a known-good ECM was necessary during trouble diagnosis, register ECM/Immobilizer Control Module code in ECM by performing following procedure.

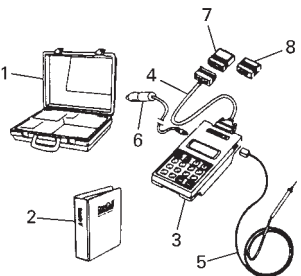
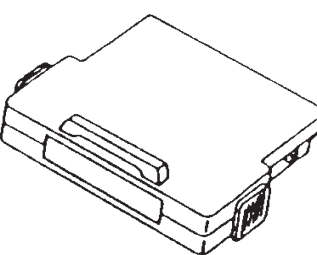
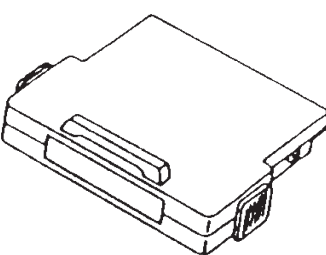
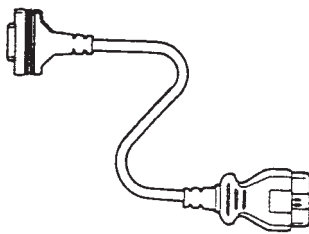
- 1) Perform Steps 1) and 2) described in “How to register ignition key” section. And then turn ignition switch ON.
- 2) Using Suzuki scan tool, register ECM/Immobilizer Control Module code in ECM by executing “RECORD ECU (RECORD ECM/Immobilizer Control Module)” command in SELECT MODE menu.

NOTE:

For operation procedure of Suzuki scan tool, refer to Suzuki scan tool operator’s manual.

- 3) [Vehicle equipped with monitor coupler]
Make sure that malfunction indicator lamp lights when ignition switch is turned OFF once and then ON.
- [Vehicle not equipped with monitor coupler]
Make sure that immobilizer indicator lamp lights when ignition switch is turned OFF once and then ON.

SPECIAL TOOLS

 <ol style="list-style-type: none"> 1. Storage case 2. Operator’s manual 3. Tech 1A 4. DLC cable (14/26 pin, 09931-76040) 5. Test lead/probe 6. Power source cable 7. DLC cable adapter 8. Self-test adapter <p>09931-76011 Suzuki scan tool (Tech 1A kit)</p>	 <p>Immobilizer cartridge of version 1.1 or more</p>	 <p>Mass storage cartridge of version 1.5 or more</p>
 <p>NOTE: Use this cable only with immobilizer cartridge of version 1.1 or more. Use of this cable with 96 immobilizer cartridge will disable 96 immobilizer cartridge from operating properly.</p> <p>09931-76030 16/14 pin DLC cable</p>		

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