20. IMMOBILIZER SYSTEM (Except U, BR type)

SERVICE INFORMATION	20-1	IMMOBILIZER INDICATOR	20-10
KEY REGISTRATION PROCEDURES	20-2	ENGINE CONTROL MODULE (ECM)	20-10
DIAGNOSTIC CODE INDICATION	20-5	IMMOBILIZER RECEIVER	20-11
TROUBLESHOOTING	20-7	REQUIRED PARTS FOR PROBLEM	20-12

SERVICE INFORMATION

GENERAL

- When checking the immobilizer system, always follow the steps in the troubleshooting flow chart (page 20-7).
- Keep the immobilizer key away from the other vehicle's immobilizer key when using it. The jamming of the key code signal may occur and the proper operation of the system will be obstructed.
- The key has built-in electronic part (transponder). Do not drop and strike the key against a hard material object, and do not leave the key on the dashboard in the car, etc. where the temperature will rise. Do not leave the key in the water for a prolonged time such as by washing the clothes.
- The engine control module (ECM) as well as the transponder keys must be replaced if all transponder keys have been lost.
- The system does not function with a duplicated key unless the code is registered into the transponder with the immobilizer system.
- The ECM can store up to four key codes. (The four keys can be registered.)
- Do not modify the immobilizer system as it can cause the system failure. (The engine cannot be started.)
- For ignition system inspection, see section 17.
- For ignition switch and combination meter servicing, see section 19.

TOOL

Inspection adaptor 07XMZ-MBW0100

KEY REGISTRATION PROCEDURES

When the key has been lost, or additional spare key is required:

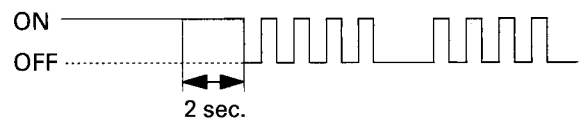
1. Obtain a new transponder key.

2. Grind the key in accordance with the shape of the original key.

3. Apply 12 V battery voltage to the ignition pulse generator lines of the engine control module (ECM) using the special tool (page 20-5).

4. Turn the ignition switch ON with the original key. The immobilizer indicator comes on and it remains on.
   - The code of the original key is recognized by the ECM.
   - If there is any problem in the immobilizer system, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-5).

5. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds, then it blinks four times repeatedly.



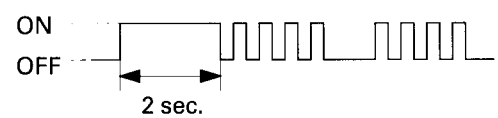
   - The immobilizer system enters the registration mode. Registrations of all key except the original key inserted in the ignition switch are cancelled. (Registration of the lost key or spare key is cancelled.)

NOTE:

The spare key must be registered again.

6. Turn the ignition switch OFF and remove the key.

7. Turn the ignition switch ON with a new key or the spare key. (Never use the key registered in previous step.) The indicator comes on for two seconds then it blinks four times repeatedly.



   - The new key or spare key is registered in the ECM.
   - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-6).

CAUTION:

Keep the other transponder key away from the immobilizer receiver more than 50 mm (2.0 in).

8. Repeat the steps 6 and 7 when you continuously register the other new key.

NOTE:

The ECM can store up to four key codes. (The four keys can be registered.)

9. Turn the ignition switch OFF, remove the inspection adaptor and connect the ignition pulse generator connector.

10. Turn the ignition switch ON with the registered key.
    - The immobilizer system returns to the normal mode.

11. Check that the engine can be started using all registered key.

When the ignition switch is faulty:

1. Obtain a new ignition switch and two new transponder keys.

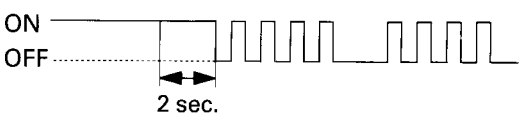
2. Remove the ignition switch (page 19-19).

3. Apply 12 V battery voltage to the ignition pulse generator lines of the engine control module (ECM) using the special tool (page 20-5).

4. Set the original (registered) key near the immobilizer receiver so that the transponder in the key can communicate with the receiver.

5. Connect a new ignition switch to the wire harness and turn it ON with a new transponder key. (keep the ignition switch away from the receiver.) The immobilizer indicator comes on and it remains on.
   - The code of the original key is recognized by the ECM.
   - If there is any problem in the immobilizer system, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-5).

6. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds then it blinks four times repeatedly.

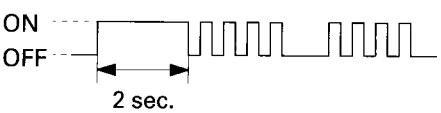


   - The immobilizer system enters the registration mode. Registrations of all key except the original key set near the receiver are cancelled.

7. Turn the ignition switch OFF and remove the key.

8. Install the ignition switch onto the top bridge (page 19-19).

9. Turn the ignition switch ON with a first new key. The indicator comes on for two seconds then it blinks four times repeatedly.



   - The first key is registered in the ECM.
   - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-6).

10. Turn the ignition switch OFF and disconnect the red clip of the inspection adaptor from the battery positive (+) terminal.

11. Turn the ignition switch ON (with the first key registered in step 9). The immobilizer indicator comes on for two seconds then it goes off.
    - The immobilizer system returns to the normal mode.

12. Turn the ignition switch OFF and connect the red clip of the inspection adaptor to the battery positive (+) terminal.

13. Turn the ignition switch ON (with the first key registered in step 9). The immobilizer indicator comes on and it remains on.
    - The code of the first key is recognized by the ECM.
    - If there is any problem in the immobilizer sysytem, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-5).

14. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds then it blinks four times repeatedly.
    - The immobilizer system enters the registration mode. Registration of the original key used in step 4 is cancelled.

15. Turn the ignition switch OFF and remove the key.

16. Turn the ignition switch ON with a second new key. (Never use the key registered in previous step.) The indicator comes on for two seconds then it blinks four times repeatedly.
    - The second key is registered in the ECM.
    - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-6).

CAUTION:

Keep the other transponder key away from the immobilizer receiver more than 50 mm (2.0 in).

17. Repeat the steps 15 and 16 when you continuously register the other new key.

NOTE:

The ECM can store up to four key codes. (The four keys can be registered.)

18. Turn the ignition switch OFF, remove the inspection adaptor and connect the ignition pulse generator connector.

19. Turn the ignition switch ON with the registered key.
    - The immobilizer system returns to the normal mode.

20. Check that the engine can be started using all registered key.

When all keys have been lost, or the engine control module (ECM) is faulty:

1. Obtain a new ECM and two new transponder keys.

2. Grind the keys in accordance with the shape of the original key (or use the key number plate when all key have been lost).

3. Replace the ECM with new one.

4. Turn the ignition switch ON with a first new key. The immobilizer indicator comes on for two seconds, then it blinks four times repeatedly.
    - The first key is registered in the ECM.
    - If there is any problem in the registration, the system will enter the daignostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-6).

5. Turn the ignition switch OFF and remove the first key.

6. Turn the ignition switch ON with a second new key. The immobilizer indicator comes on for two seconds, then it blinks four times repeatedly.
    - The second key is registered in the ECM.
    - If there is any ploblem in the registration, the system will enter the daignostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 20-6).

7. Turn the ignition switch OFF and remove the second key.

NOTE:

- The system (ECM) will not enter the normal mode unless the two keys are registered in ECM.
- The third new key cannot be continuously registered. When it is necessary to register the third key, follow the procedures "When the key has been lost, or additional key is required" (page 20-2).

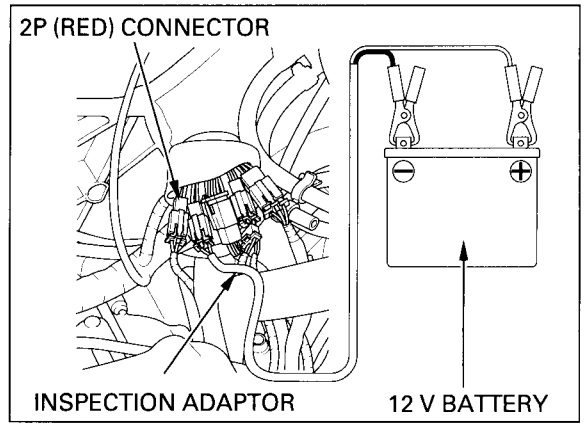
8. Check that the engine can be started using all registered keys.

DIAGNOSTIC CODE INDICATION

Support the front end of the fuel tank (page 3-5).

Disconnect the ignition pulse generator 2P (red) connector.
Connect the inspection adaptor to the wire harness side connector.
Connect the red clip of the adaptor to the 12 V battery positive (+) terminal and green clip to the negative (−) terminal.

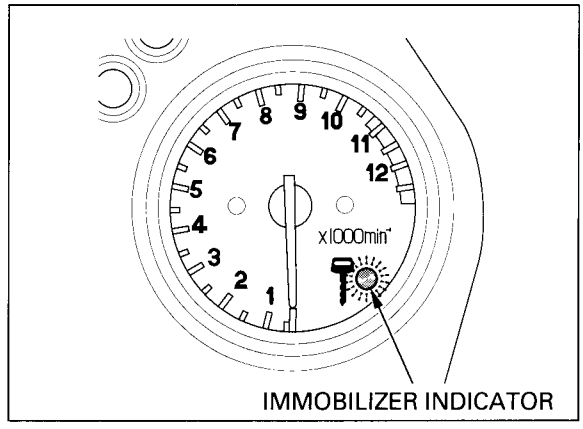
TOOL:
Inspection adaptor 07XMZ-MBW0100



Turn the ignition switch ON with the properly registered key.
The immobilizer indicator will come on for approx. ten seconds then it will start blinking to indicate the diagnostic code if the system is abnormal.
The blinking frequency is repeated.

NOTE:

The immobilizer indicator remains on when the system is normal. (The system is in the normal mode and the diagnostic code does not appear.)

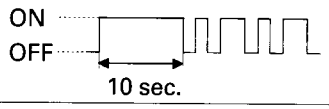


DIAGNOSTIC CODE

When the system (ECM) enters the diagnostic mode from the normal mode:

BLINKING PATTERN	SYMPTOM	PROBLEM	PROCEDURE
ON OFF 10 sec.	Engine control module (ECM) data is abnormal.	Faulty ECM	Replace the ECM
	Code signals cannot send or receive.	Faulty receiver or wire harness	Follow the trouble-shooting (page 20-9).
	Identification code is disagree	Jamming by the other transponder	Keep the other vehicle's transponder key away from the immobilizer receiver more than 50 mm (2.0 in).
	Secret code is disagree		

When the system (ECM) enters the diagnostic mode from the registration mode:

BLINKING PATTERN	SYMPTOM	PROBLEM	PROCEDURE
	Registration is over-lapped.	The key is already registered properly.	Use a new key or cancelled key.
	Code signals cannot send or receive.	Communication fails.	Follow the trouble-shooting (page 20-9).
	Registration is impossible	The key is already registered on the other system.	Use a new key.

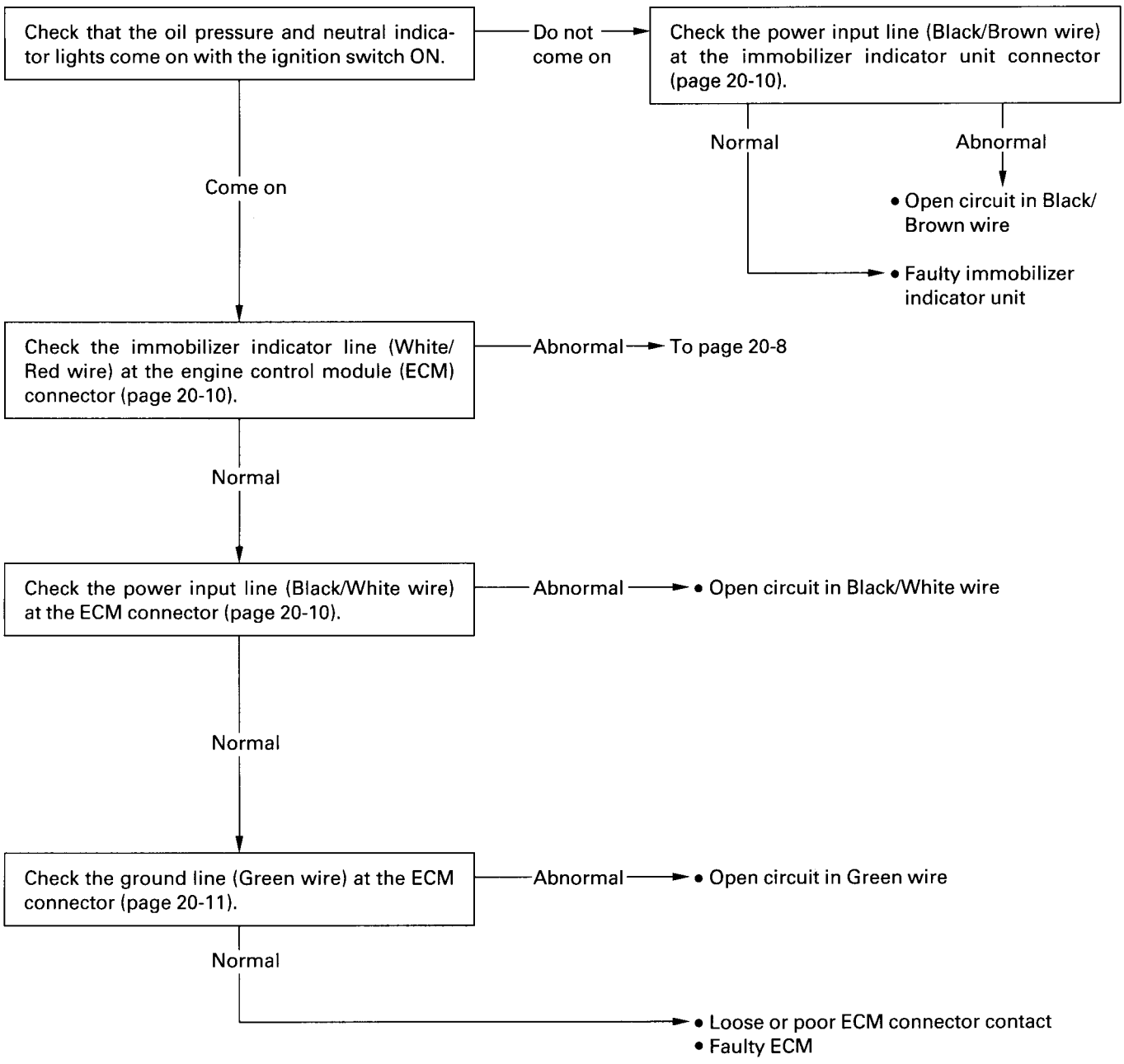
TROUBLESHOOTING

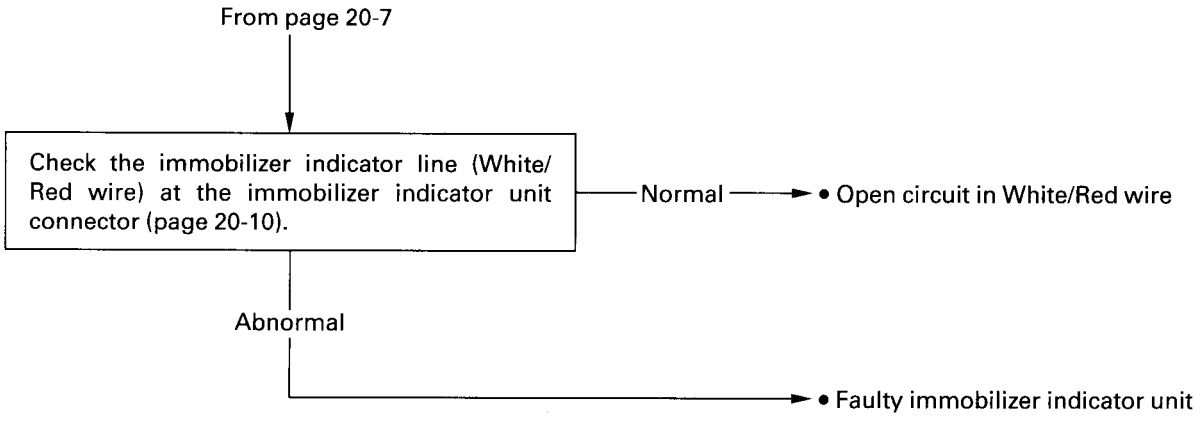
NOTE:

The immobilizer indicator comes on for approx. two seconds then it goes off, when the ignition switch is turned ON with the properly registered key and the immobilizer system functions normally. If there is any problem or the properly registered key is not used, the indicator will remains on.

Immobilizer indicator does not come on when the ignition switch is turned ON

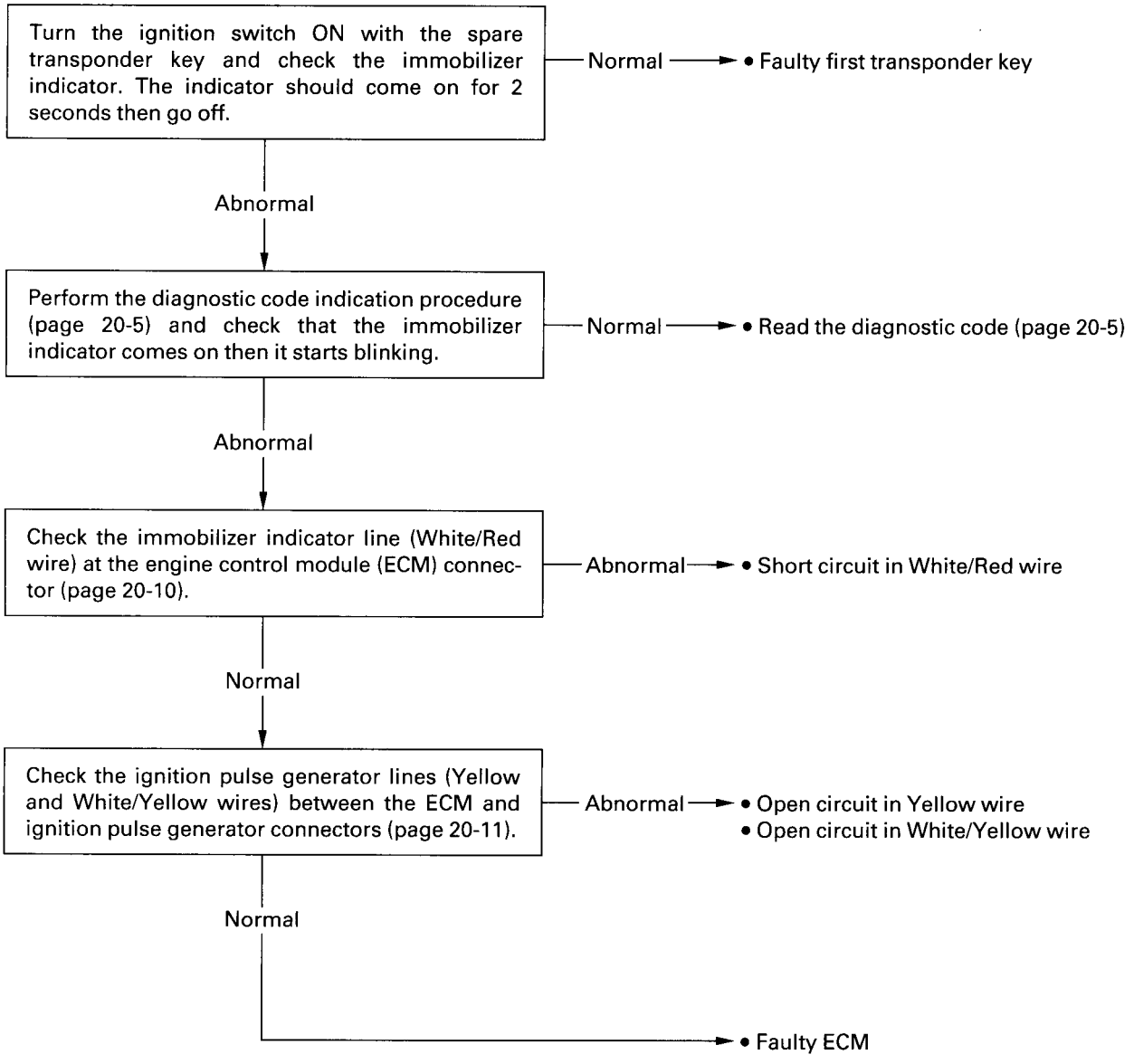
- Check for a blown fuses (10 A).





Immobilizer indicator remains on with the ignition switch ON

- Check that there is any metal obstruction or the other vehicle's transponder key near the immobilizer receiver and key. If so, remove it and recheck.



Diagnostic code  **is indicated (Code signals cannot send or receive)**

Check the power input line at the immobilizer receiver connector (page 20-11).
- Abnormal → • Open or short circuit in Yellow/Red wire

Normal ↓

Check the ground line at the immobilizer receiver connector (page 20-11).
- Abnormal → • Open circuit in Green/Orange wire

Normal ↓

Check the signal lines between the immobilizer receiver and ECM connectors (page 20-12).
- Abnormal → • Open or short circuit in Pink wire
  • Open or short circuit in Orange/Blue wire

Normal ↓

- → • Faulty immobilizer receiver

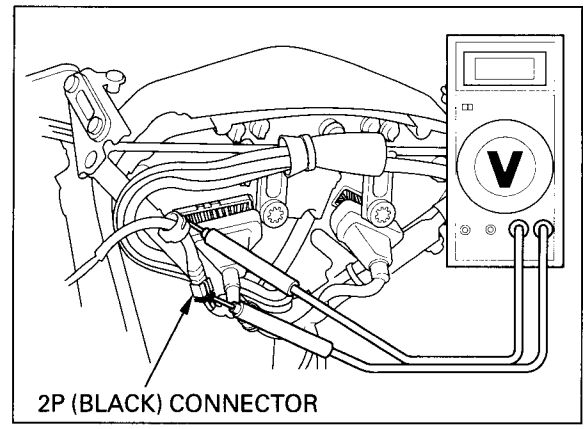
IMMOBILIZER INDICATOR

Remove the upper cowl (page 2-8).

Perform the following inspections with the immobilizer indicator 2P (Black) connector connected.

POWER INPUT LINE INSPECTION

Measure the voltage between the Black/Brown (+) and Green (−) wire terminals.
Turn the ignition switch ON.
There should be battery voltage.

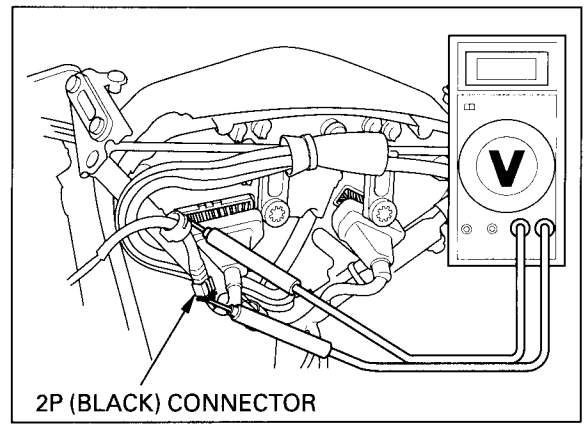


IMMOBILIZER INDICATOR LINE INSPECTION

Measure the voltage between the White/Red (+) and Green (−) wire terminals.
Turn the ignition switch ON.
There should be battery voltage.

NOTE:

There should be no voltage for approx. two seconds after the ignition switch is turned ON, then the battery voltage should appear, if the system is normal.



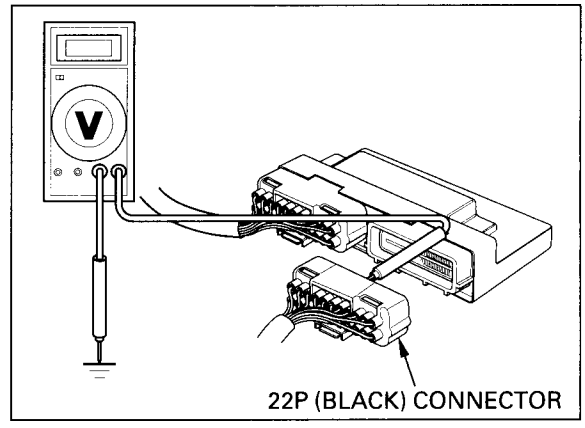
ENGINE CONTROL MODULE (ECM)

Remove the seat (page 2-2).

Disconnect the ECM 22P multi- connector.
Perform the following inspections at the wire harness side connector of the ECM.

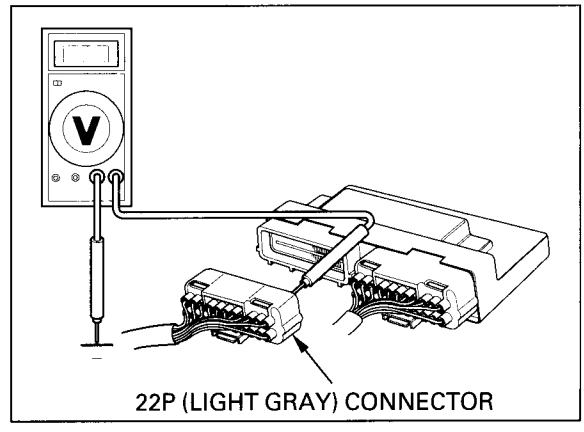
IMMOBILIZER INDICATOR LINE INSPECTION

Measure the voltage between the White/Red wire terminal (+) and ground (−).
Turn the ignition switch ON.
There should be battery voltage.



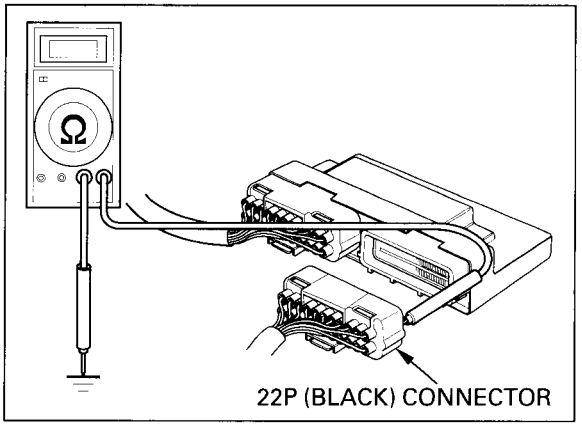
POWER INPUT LINE INSPECTION

Measure the voltage between the Black/White wire terminal (+) and ground (−).
Turn the ignition switch ON.
There should be battery voltage.



GROUND LINE INSPECTION

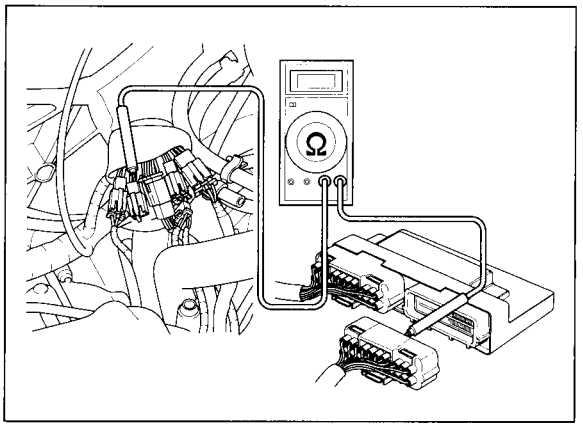
Check for continuity between the Green wire terminal and ground.
There should be continuity at all times.



IGNITION PULSE GENERATOR LINE INSPECTION

Disconnect the ignition pulse generator 2P (red) connector (page 20-5).

Check the Yellow and White/Yellow wires for continuity between the ECM and ignition pulse generator connectors.
There should be continuity between the same color wire terminals.



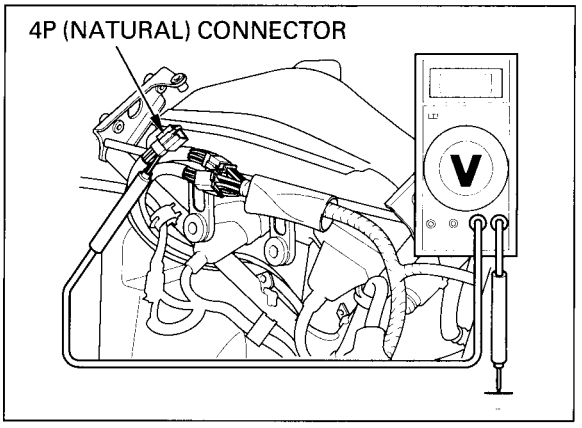
IMMOBILIZER RECEIVER

Remove the upper cowl (page 2-8).

Disconnect the immobilizer receiver 4P (Natural) connector.

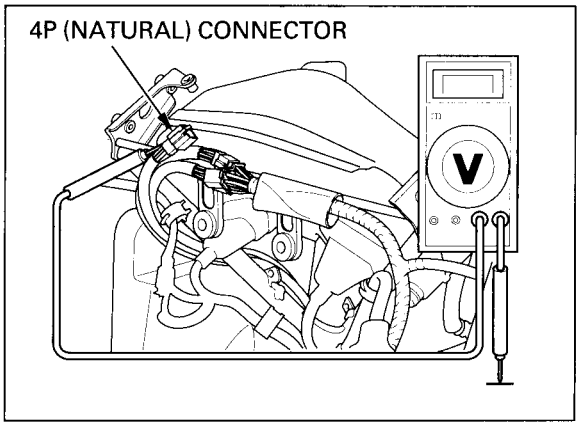
POWER INPUT LINE INSPECTION

Measure the voltage between the Yellow/Red wire terminal (+) of the wire harness side connector and ground (−).
Turn the ignition switch ON.
There should be approx. 5 V.



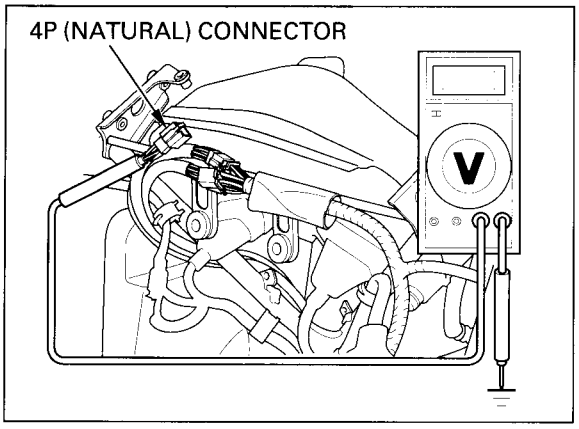
GROUND LINE INSPECTION

Check for continuity between the Green/Orange wire terminal of the wire harness side connector and ground.
There should be continuity at all times.



SIGNAL LINE INSPECTION

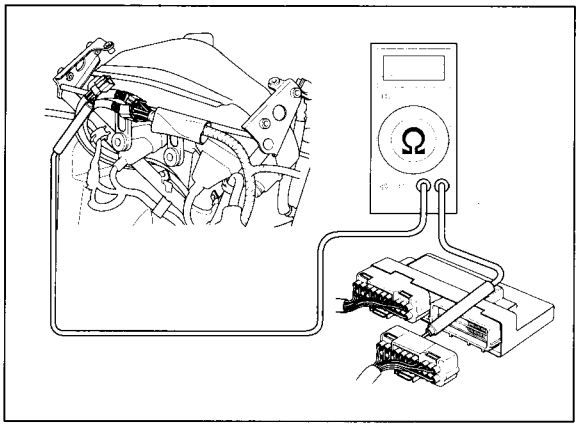
Measure the voltage between the Pink wire terminal (+) of the wire harness side connector and ground (−).
Turn the ignition switch ON.
There should be approx. 5 V.



Remove the seat (page 2-2).

Disconnect the engine control module (ECM) connector.
Check the Orange/Blue wire for continuity between the immobilizer receiver and ECM connectors.
There should be continuity.

Check for continuity between the Orange/Blue wire terminal and ground.
There should be no continuity.

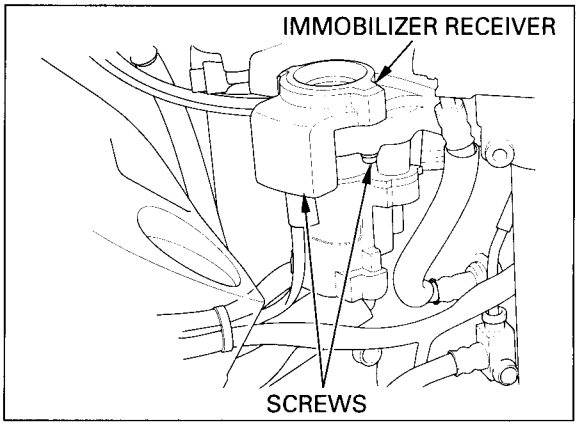


REPLACEMENT

Remove the wire band.
Remove the two screws and the immobilizer receiver.

Install a new receiver and tighten the two screws.
Route the receiver wire properly (page 1-24).

Install the removed part in the reverse order of removal.



REQUIRED PARTS FOR PROBLEM

Problem	Replacement parts				
	Transponder key	Immobilizer receiver	ECM	Ignition switch	*Accessory lock and key
One key has been lost, or additional spare key is required	○				
All keys have been lost, or engine control module (ECM) is faulty	○		○		
Immobilizer receiver is faulty		○			
Ignition switch is faulty	○			○	
*Accessory lock is faulty					○

*Accessory lock means the seat lock, fuel fill cap or helmet holder.