

COMBINATION METER

FUEL GAUGE TEST

1. Remove the fuel gauge unit connector.
2. Dis-connect the battery.
3. Connect a resistor between the fuel gauge and earth terminals (pin 2 & 3). Select the resistor from the following chart for the desired gauge reading:-

Fuel Gauge Position or Reading	Resistor Value Required
Full	10 ohm
Half full	55 ohm
Empty	100 ohm

4. Re-connect the battery. Turn on the ignition switch and check gauge reading.
5. To check another fuel gauge reading or position, repeat steps 2 to 4. When fuel gauge check is completed, dis-connect the battery, re-connect the fuel gauge unit connector and then re-connect the battery.

Note:

The fuel gauge is a microcontroller driven analogue gauge. The memory must be cleared by dis-connecting the battery during and after each test.

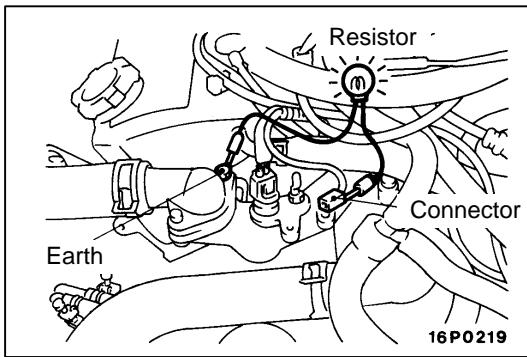
Note:

If the fuel gauge reading displayed differs from the standard value, check all wiring and connections for the combination meter before replacing the meter assembly.

LOW FUEL WARNING LAMP

Note:

The low fuel warning lamp is operated by the internal microcontroller within the combination meter.



ENGINE COOLANT TEMPERATURE GAUGE TEST

1. Remove the engine coolant temperature gauge unit connector.
2. Dis-connect the battery.
3. Connect a resistor between the harness side connector and earth. Select the resistor from the following chart for the desired gauge reading:-

Temperature Gauge Position or Reading	Resistor Value Required
Hot	20 ohm
Half	45 ohm
Cold	203 ohm

4. Re-connect the battery. Turn on the ignition switch and check gauge reading.
5. To check another temperature gauge reading or position, repeat steps 2 to 4. When temperature gauge check is completed, dis-connect the battery, re-connect the temperature gauge unit connector and then re-connect the battery.

Note:

The temperature gauge is a microcontroller driven analogue gauge. The memory must be cleared by dis-connecting the battery during and after each test.

Note:

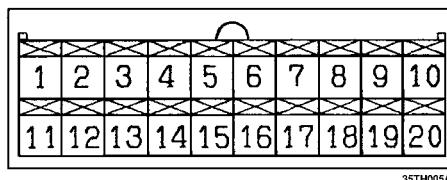
If the temperature gauge reading displayed differs from the standard value, check all wiring and connections for the combination meter before replacing the meter assembly.

TRIP COMPUTER

SERVICE SPECIFICATIONS

Item	Units	Resolution	Minimum	Maximum
Range	km	10	50	1000
Fuel total	litres	0.1	0.1	199.9
		1	200	2500
Average Fuel	ℓ/100 km	0.1	0.1	99.9
Instant Fuel	ℓ/100 km	0.1	0.1	199.9
Time travelled	hh/mm	minutes	0:00	199:59
Total (distance)	km	1	0	9999
Average speed	km/h	0.1	0	199.9
Set speed (Speed alarm)	km/h	5	20	195

PRELIMINARY TROUBLE SYMPTOM CHECKS



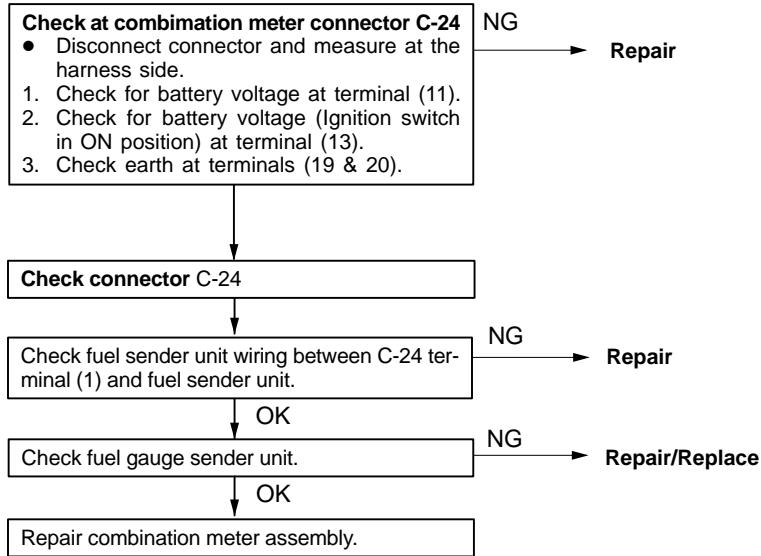
Symptom	Input wire	Symptom/ Connector pin
Fuel gauge reads "EMPTY" continuously. Range to empty displays "—".	Fuel gauge sender unit	1
Engine coolant temperature gauge displays "C" continuously.	Engine Coolant Temperature unit	2
Display illumination does not dim with rheostat.	Rheostat	3
—	—	4
—	—	5
—	—	6
—	—	7
—	—	8
—	—	9
Tachometer displays "0rpm" continuously.	Distributor	10
Meters do not illuminate or function.	Battery (IOD)	11
Meters do not illuminate or function.	Battery (IOD) High contrast only	12
Gauges & trip computer do not function.	Ignition switch	13
—	—	14
Meters do not illuminate.	Taillamp relay High contrast only	15
—	—	16
Instant / average fuel consumption is abnormally small.	No.2 Injector	17
Speedometer and speed alarm do not function.	Vehicle speed sensor	18
Meters and Trip computer do not function.	Earth	19
Meters and Trip computer do not function.	Earth	20

INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom	Inspection procedure No.
Range to empty always displays flashing “---” km.	7
Range to empty does not detect refuels.	8
Total fuel used does not operate. (increase)	9
Total fuel used displays abnormally low/high value.	10
Average fuel always displays “--.” ℓ/100 km.	11
Average fuel always displays “0.1” ℓ/100 km.	12
Average fuel displays abnormally low/high value.	13
Instant fuel always displays “--.” ℓ/100 km.	14
Instant fuel always displays “0.1” ℓ/100 km.	15
Instant fuel displays abnormally low/high result.	16
Total distance travelled does not operate (increase).	17
Average speed always displays “--.” km/h	18
Speed alarm warning “Beeps” do not trigger when set speed is exceeded.	19
Speed alarm set speed cannot be adjusted and/or turned off and/or operating mode cannot be changed.	20

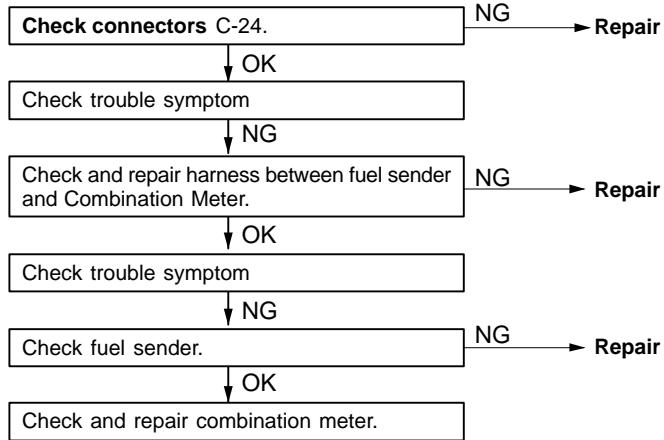
INSPECTION PROCEDURE 7

Range to empty always displays flashing “---” km (even when fuel tank is full)	Probable cause
The Trip Meter Display fuel sender circuit may be defective.	<ul style="list-style-type: none"> • Harness or Connector defective • Fuel sender assembly faulty • Trip Computer malfunction



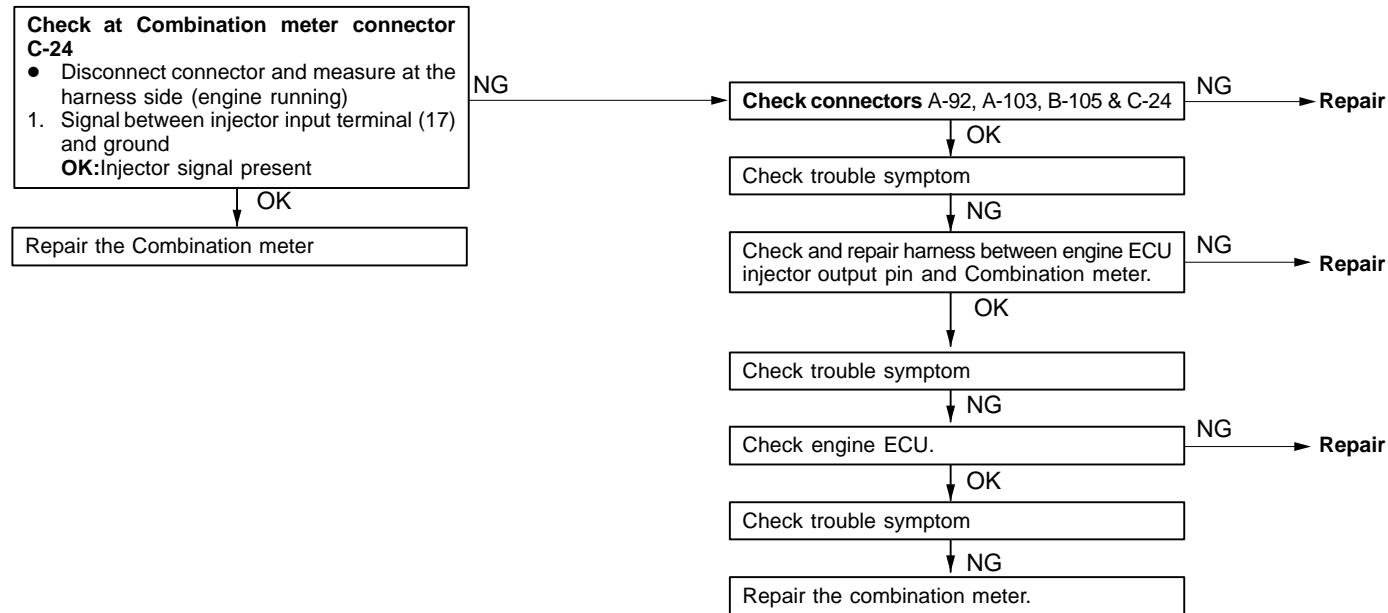
INSPECTION PROCEDURE 8

Range to empty does not detect refuels (even when > 7 litres)	Probable cause
The Trip Computer fuel sender circuit may be defective.	<ul style="list-style-type: none"> • Harness or Connector defective • Fuel sender assembly faulty • Trip Meter malfunction



INSPECTION PROCEDURE 9

Total fuel used does not operate (increase)	Probable cause
The Trip Computer power or ground circuits may be defective.	<ul style="list-style-type: none"> • Harness or Connector defective • Injector assembly faulty • Trip Computer malfunction



INSPECTION PROCEDURE 10

Total fuel used displays abnormally low/high value	Probable cause
The Trip Computer power or ground circuits may be defective.	<ul style="list-style-type: none"> • Harness or Connector defective • Trip Computer malfunction

Check Trip meter vehicle/engine setting

1. Press and hold the "MODE" button while the ignition switch is turned from the Lock position to ACC.
2. The trip computer will display the vehicle type and then the engine type previously set in the trip computer for 2 seconds respectively.
- Flashing "S" = Sedan
- Flashing "W" = Wagon
- Flashing "3.5" = 3.5 litre engine
- Flashing "3.0" = 3.0 litre engine

OK: Correct vehicle and engine type set.

↓ NG

OK

Check connectors C-24, B-105, A-92

NG

Repair

OK

Check trouble symptom

NG

Check and repair harness between engine ECU injector output pin (14) (Manual Trans) / pin (9) (Auto Trans) and Combination Meter.

NG

Repair

OK

Check trouble symptom

NG

Check engine ECU.

NG

Repair

OK

Check trouble symptom

NG

Repair Combination meter

Set correct vehicle/engine type

1. Reset Trip meter by disconnecting negative battery terminal for 5 seconds. (Ignition switch in LOCK position)
2. Set correct vehicle and engine type.

↓ OK

Check trouble symptom

↓ NG

Check at Combination meter

- Disconnect connector and measure at harness side (Ignition switch in ON position and engine running)

1. Signal between injector input pin (17) and ground

OK: Correct injector signal present

↓ OK

NG

Replace Combination Meter

INSPECTION PROCEDURE 11

Average fuel always displays “---” ℓ/100 km

The Trip Computer speed signal input circuit may be defective.

Probable cause

- Harness or Connector defective
- Speed sensor defective
- Trip Computer malfunction

Check at Combination meter connector C-24

- Disconnect connector and measure at the harness side (Simulate a SPEED signal using MUT II. eg. using Cruise Control system.)

1. Signal between SPEED input terminal (18) and ground

OK: Correct SPEED signal present

OK

Repair the Combination Meter

NG

Check connectors C-24, C-09, B-41, A-88

NG

Repair

OK

Check trouble symptom

NG

Check and repair harness between engine ECU speed output pin (80) (Manual Trans) / pin (86) (Auto Trans) and Combination Meter.

NG

Repair

OK

Check trouble symptom

NG

Check the speed sensor.

NG

Repair

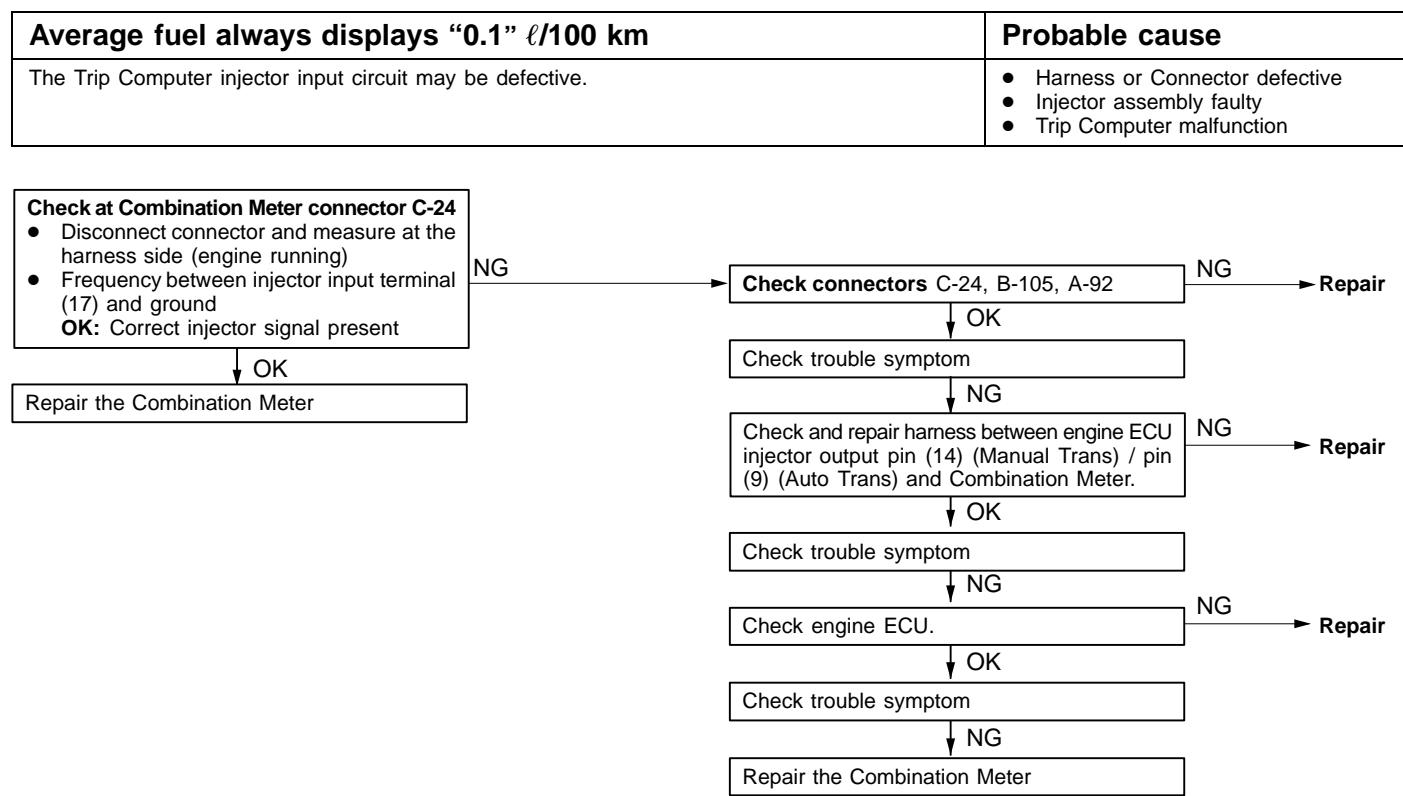
OK

Check trouble symptom

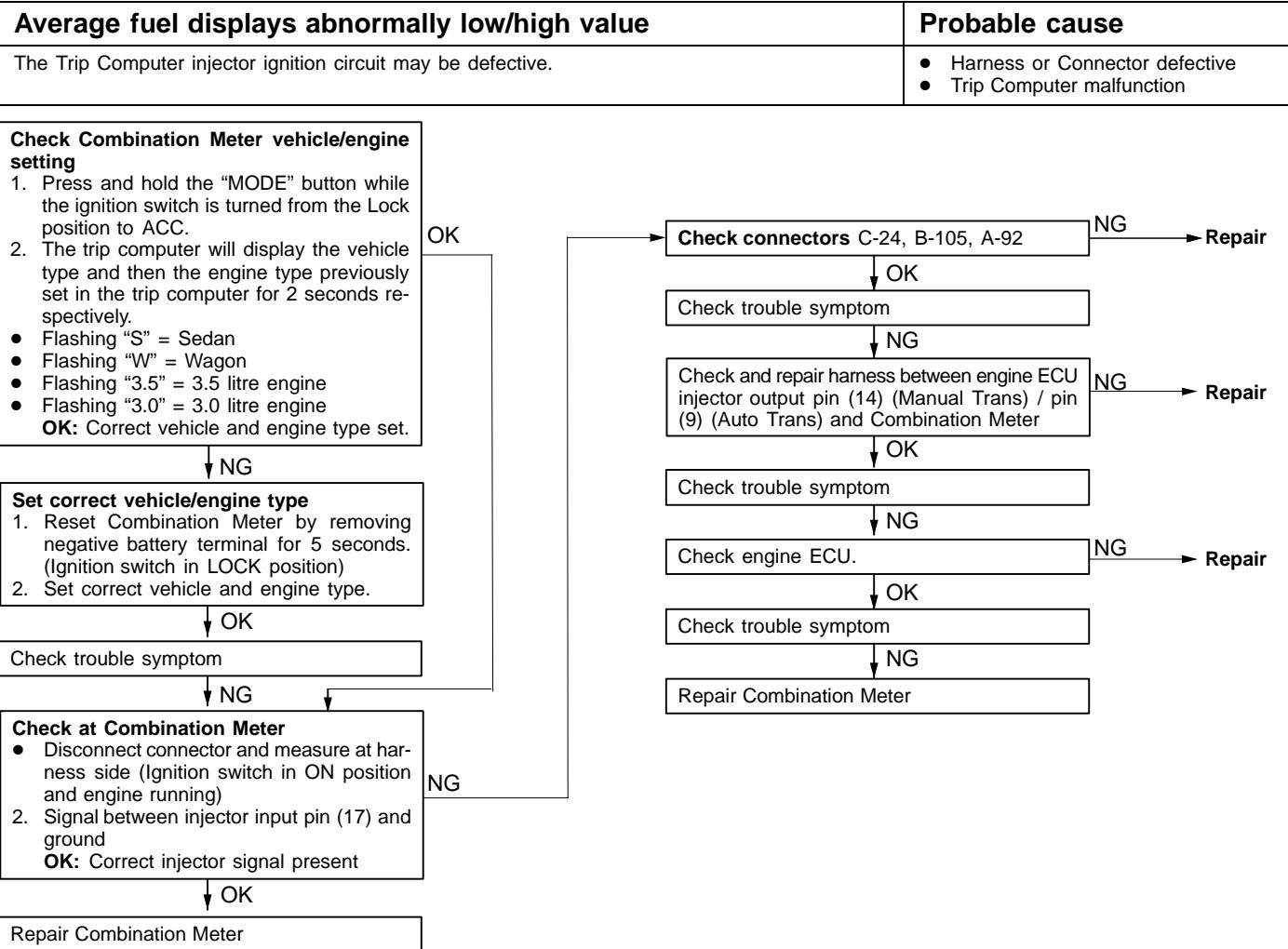
NG

Repair the Combination Meter

INSPECTION PROCEDURE 12

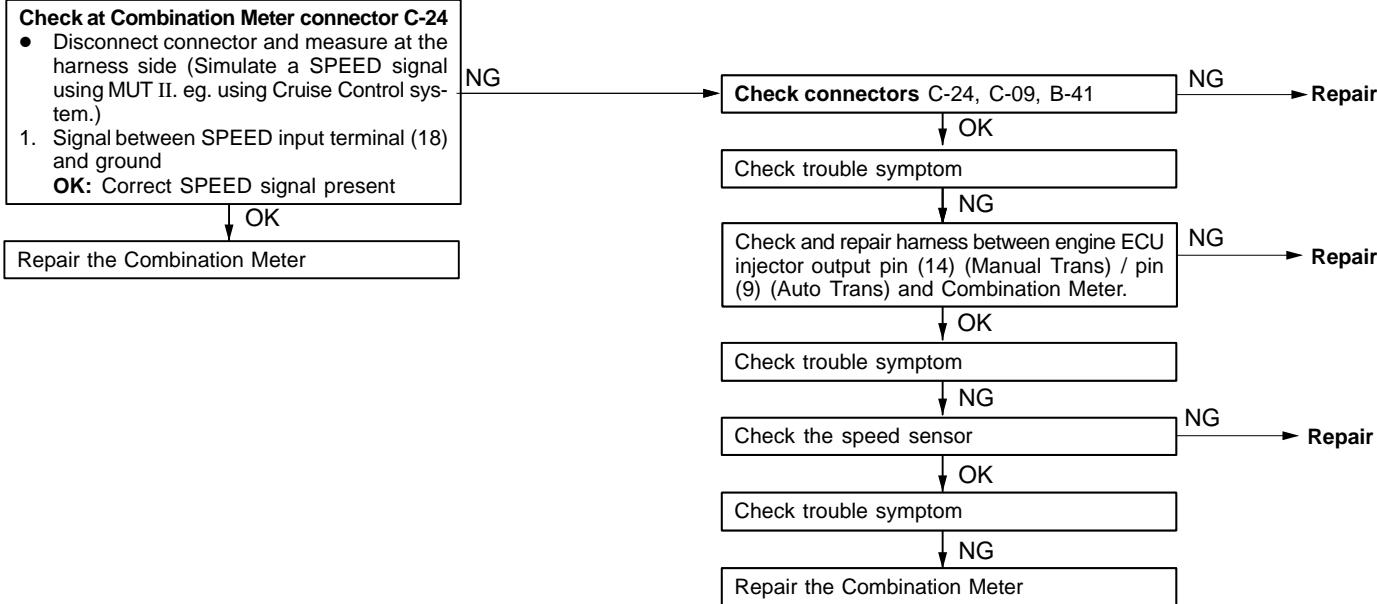


INSPECTION PROCEDURE 13

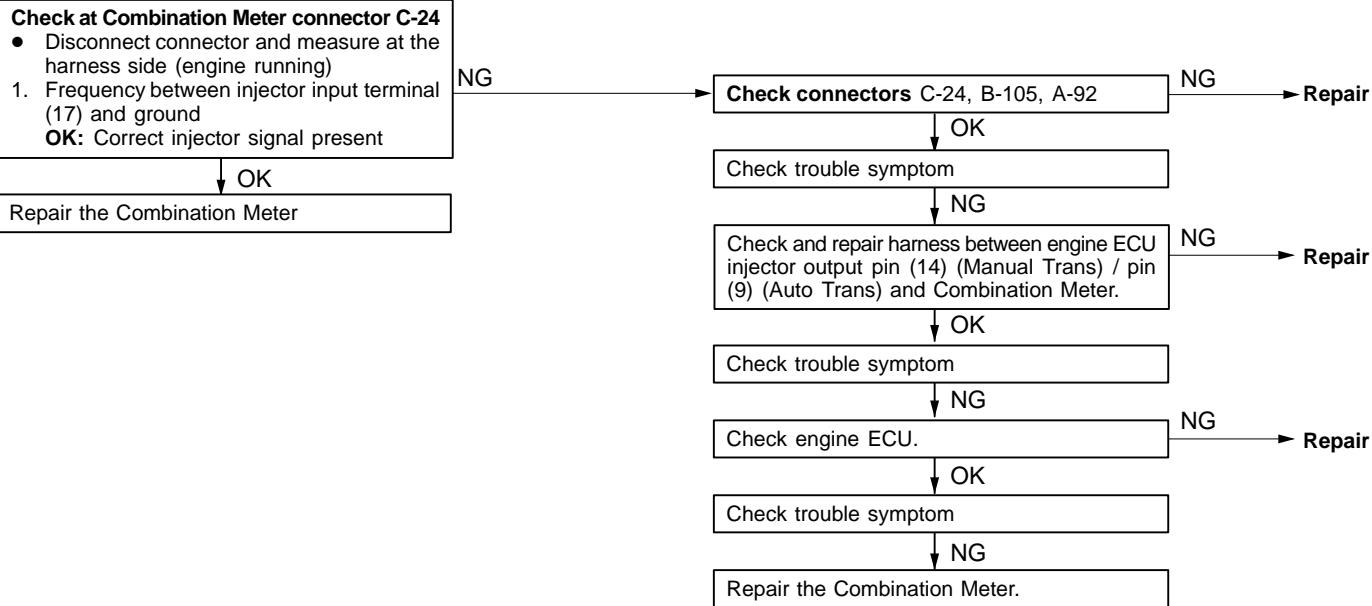


INSPECTION PROCEDURE 14

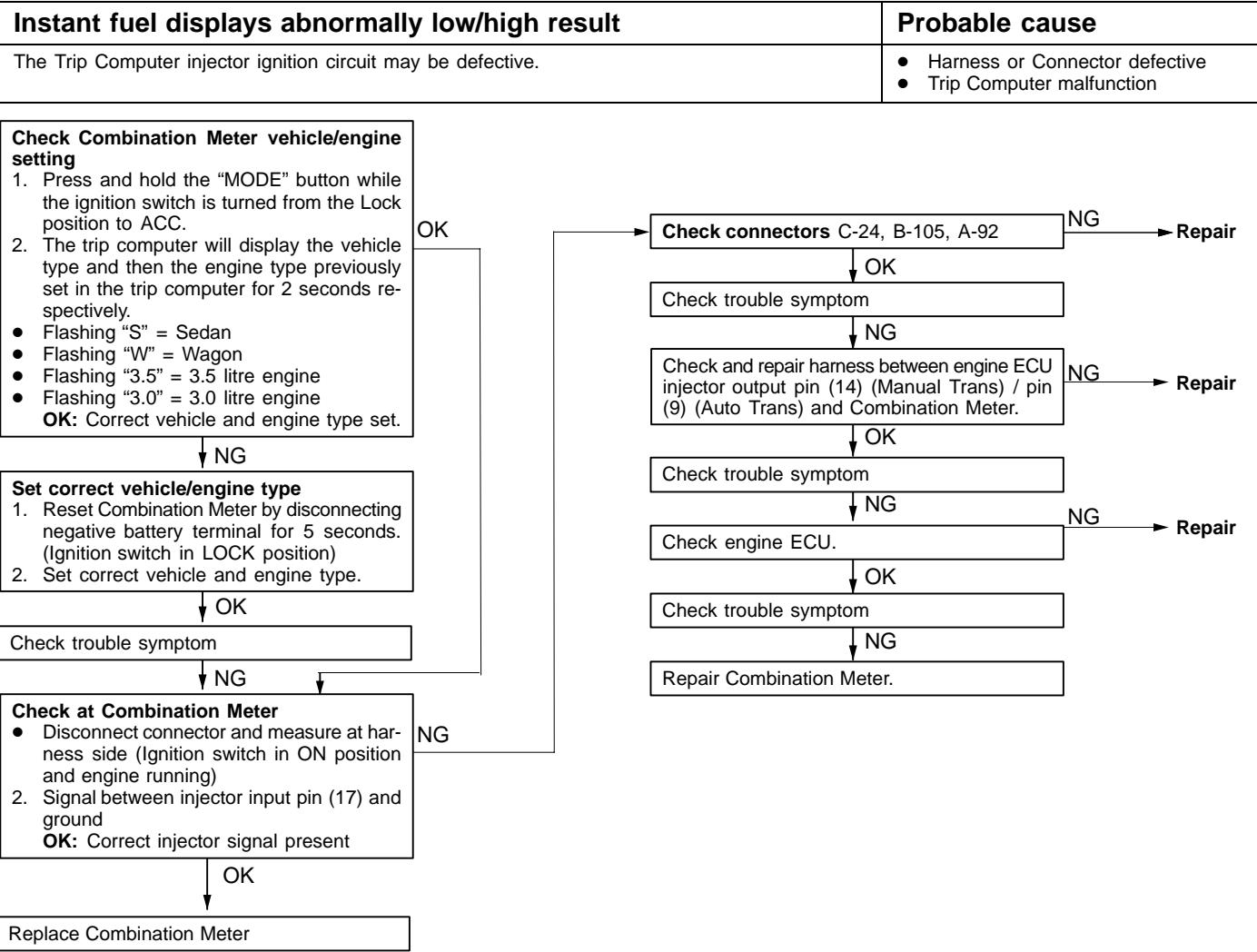
Instant fuel always displays “---” l/100 km	Probable cause
The Trip Computer speed signal input circuit may be defective.	<ul style="list-style-type: none"> • Harness or Connector defective • Speed sensor defective • Trip Computer malfunction



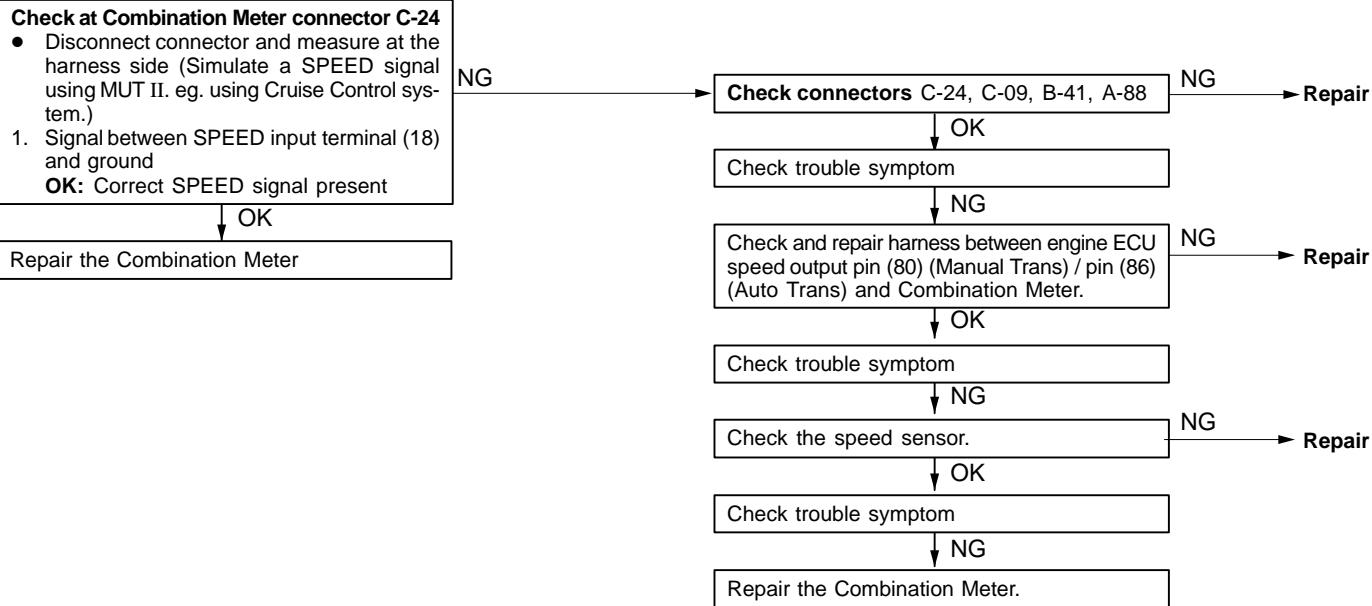
INSPECTION PROCEDURE 15



INSPECTION PROCEDURE 16



INSPECTION PROCEDURE 17



INSPECTION PROCEDURE 18

Average speed always displays “---” km/h

The Trip Computer Speed signal input circuit may be defective.

Probable cause

- Harness or Connector defective
- Speed sender defective
- Trip Computer malfunction

Check at Combination Meter connector C-24

- Disconnect connector and measure at the harness side (Simulate a SPEED signal using MUT II. eg. using Cruise Control system.)

1. Signal between SPEED input terminal (18) and ground

OK: Correct SPEED signal present**OK**

Repair the Combination Meter

NG

Check connectors C-24, C-09, B-41, A-88

NG

Repair

OK

Check trouble symptom

NG

Check and repair harness between engine ECU speed output pin (80) (Manual Trans) / pin (86) (Auto Trans) and Combination Meter.

NG

Repair

OK

Check trouble symptom

NG

Check the speed sensor.

NG

Repair

OK

Check trouble symptom

NG

Repair the Combination Meter.

Repair the Combination Meter.

INSPECTION PROCEDURE 19

Speed Alarm warning “BEEPS” do not trigger when set speed is exceeded

The Trip Computer Speed signal input circuit may be defective.

Probable cause

- Harness or Connector defective
- Speed sender defective
- Trip Computer malfunction

Check at Combination Meter connector C-24

- Disconnect connector and measure at the harness side (Simulate a SPEED signal using MUT II. e.g. using Cruise Control System.)

1. Frequency between SPEED input terminal (18) and ground.

OK: Correct SPEED signal present

2. Voltage between terminal (13) and ground.

OK: Battery positive voltage (ignition switch in ON position)

↓ OK

Repair the Combination Meter.

1 NG

2 NG

Check connectors C-24, C-09, B-41, A-88

↓ OK

Check trouble symptom

↓ NG

Check and repair harness between engine ECU speed output pin (80) (Manual Trans) / pin (86) (Auto Trans) and Combination Meter

↓ OK

Check trouble symptom

↓ NG

Check the SPEED sender.

↓ OK

Check trouble symptom

↓ NG

Repair the Combination Meter.

NG

Repair

NG

Repair

NG

Repair

NG

Repair

Check connectors C-24, B-77, B-80

↓ OK

Check trouble symptom

↓ NG

Check and repair harness between connector B-80 and Combination Meter.

↓ OK

Check trouble symptom

↓ NG

Repair the Combination Meter.

NG

Repair

NG

Repair

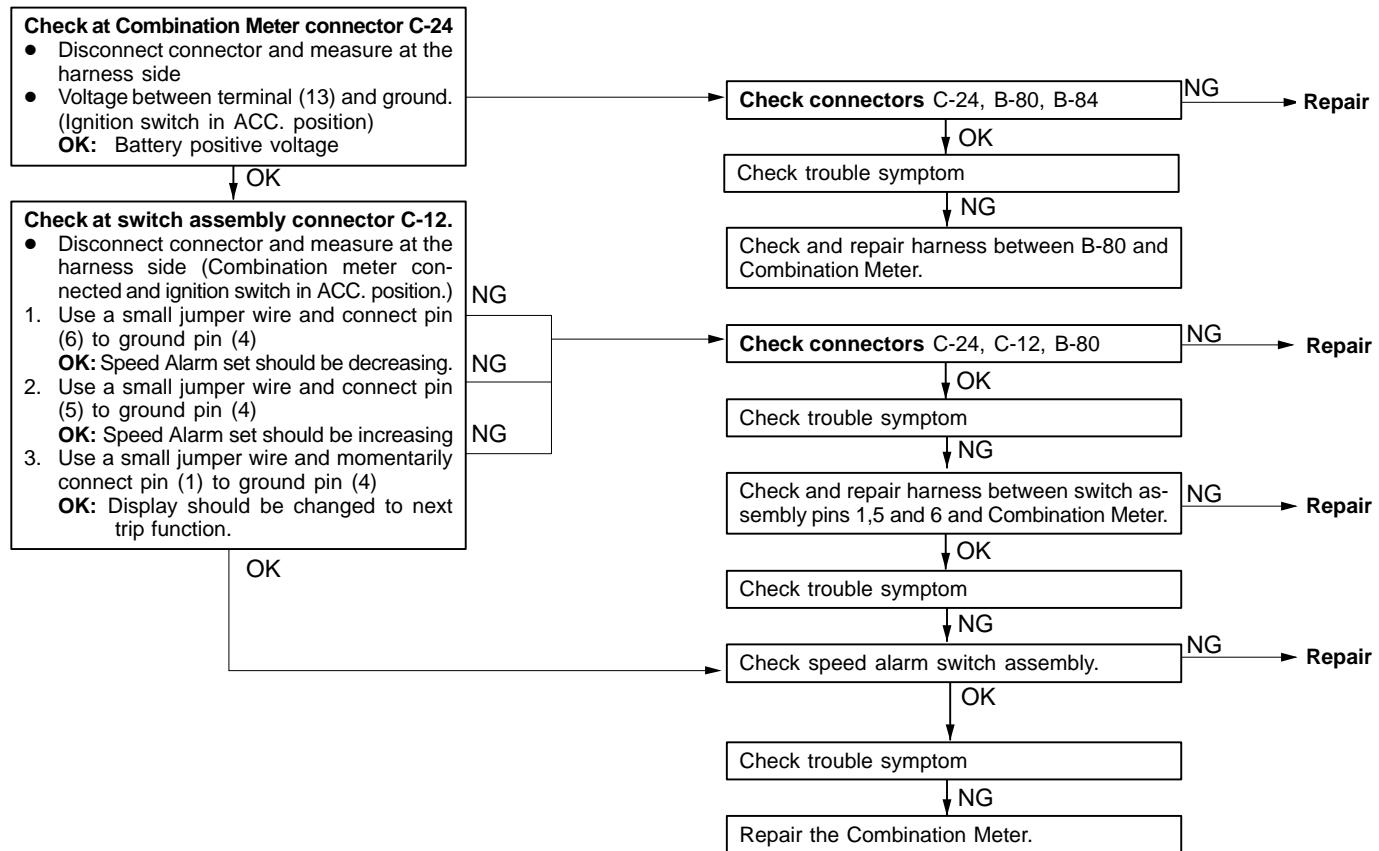
Repair the Combination Meter.

NG

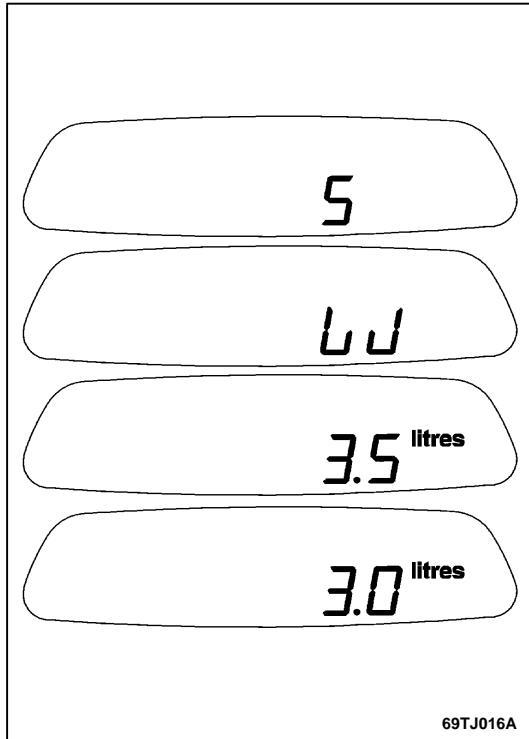
Repair

INSPECTION PROCEDURE 20

Speed Alarm set speed cannot be adjusted and/or turned off and/or operating mode cannot be changed	Probable cause
The Trip Computer switch input circuits may be defective.	<ul style="list-style-type: none"> • Harness or Connector defective • Switch assembly defective • Trip Computer malfunction



TRIP COMPUTER SETTING PROCEDURE



The Trip computer is coded to the vehicle and must be recoded if the power is removed from the unit, ie. the battery is disconnected or the unit is removed from the vehicle.

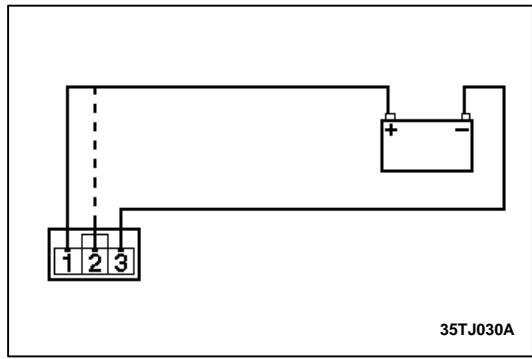
1. Ensure the unit is fitted correctly and the battery is connected.
2. Turn the ignition switch to the "ACC" or "ON" position.
3. The vehicle code screen will appear, displaying an "S" for sedan. If the vehicle is a sedan, press and hold the MODE button for more than 2 seconds to set for sedan. For a wagon, press the MODE button for less than 2 seconds and the display will change to a "W". Press the MODE button for more than 2 seconds to set for wagon.
4. When the vehicle code is selected, the unit will beep and commence flashing the engine code "3.5 litres". If the vehicle engine type is 3.5 litre, press and hold MODE button for more than 2 seconds to set for a 3.5 litre engine. For a 3.0 litre engine type, press the MODE button for less than 2 seconds and the display will change to "3.0 litres". Press the MODE button for more than 2 seconds to set for a 3.0 litre engine.
5. When the engine code is selected, the unit will beep and the unit is programmed.

NOTE

Range to empty will display "—" for the first continuous 5 minutes with the ignition on.

6. The "set" code can be checked by holding the MODE button and turning the key to "ACC".

ANTENNA



INSPECTION

ANTENNA MOTOR

1. To test the antenna, connect the antenna motor connector (G-44) to a battery (as per illustration), terminal/pin 1 to battery positive (12 volt) and terminal/pin 3 to battery negative.
2. Connect terminal /pin 2 to battery positive. Verify that the antenna rises to the full position.
3. Dis-connect the battery positive wire from terminal/pin 2 and verify that the antenna descends all the way to the fully down position.