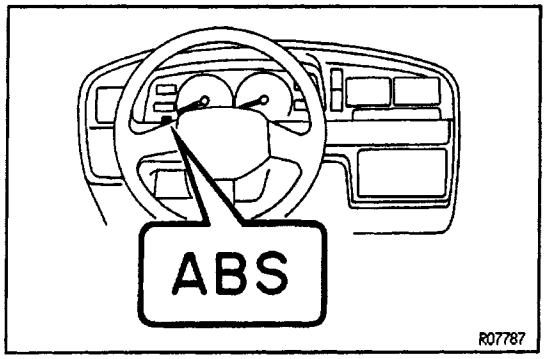


DIAGNOSIS SYSTEM

DESCRIPTION

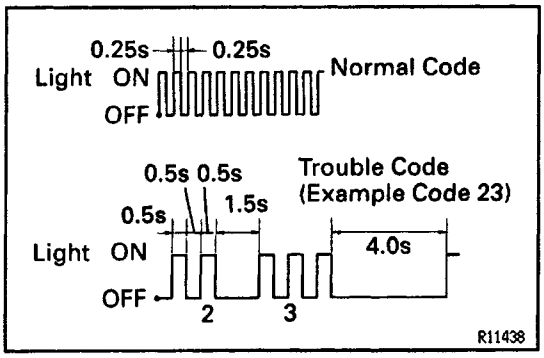
If a malfunction occurs, the system will identify the problem and the ECU will store the codes for the trouble items.

At the same time, the system informs the driver of a malfunction via the "ABS" warning light in the combination meter.

By turning ON the ignition switch, disconnecting the service connector and using SST to connect Tc and E1 of the data link connector 1, the trouble can be identified by the number of blinks (diagnostic trouble code) of the warning light.

In the event of 2 codes, that having the smallest numbered code will be identified 1 st.

HINT: The warning light does not show the diagnostic trouble codes while the vehicle is running.



DIAGNOSIS SYSTEM INSPECTION

1. INSPECT BATTERY POSITIVE VOLTAGE

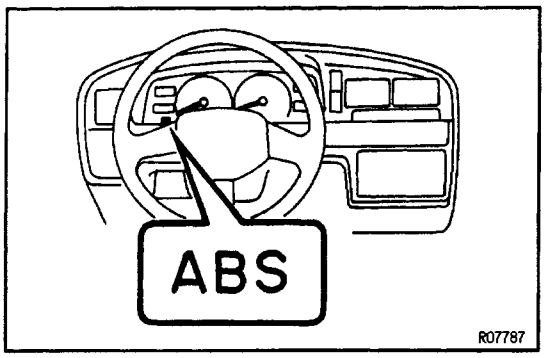
Inspect that the battery positive voltage is 10 – 14 V.

2. CHECK THAT WARNING LIGHT TURNS ON

(a) Turn the ignition switch ON.

(b) Check that the "ABS" warning light turns on for 3 seconds.

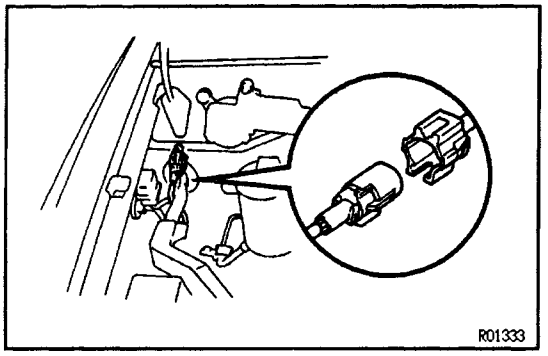
If not, inspect and repair or replace the fuse, bulb and wire harness.



3. READ DIAGNOSTIC TROUBLE CODE

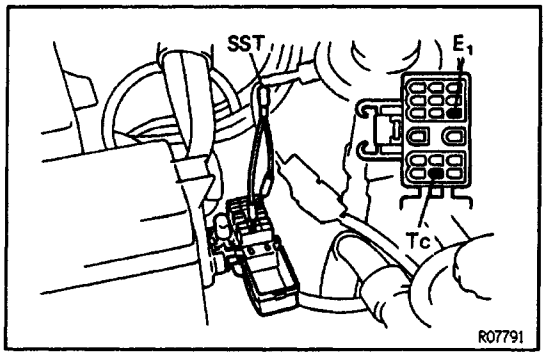
(a) Turn the ignition switch ON.

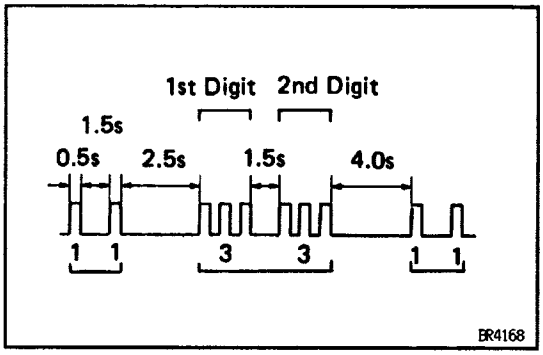
(b) Disconnect the service connector.



(c) Using SST, connect terminals Tc and E1 of the data link connector 1.

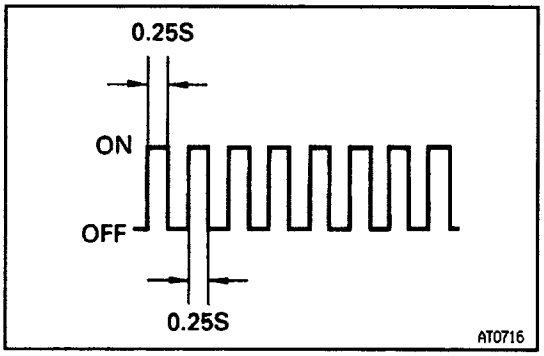
SST 09843–18020





(d) In event of a malfunction, 4 seconds later the warning light will begin to blink. Read the number of blinks. (See page BR–79)

HINT: The 1 st number of blinks will equal the 1 st digit of a 2 digit diagnostic trouble code. After a 1.5 second pause, the 2nd number of blinks will equal the 2nd number of a 2 digit code. If there are 2 or more codes, there will be a 2.5 second pause between each, and indication will begin after 4.0 second pause from the smaller value and continue in order to larger.

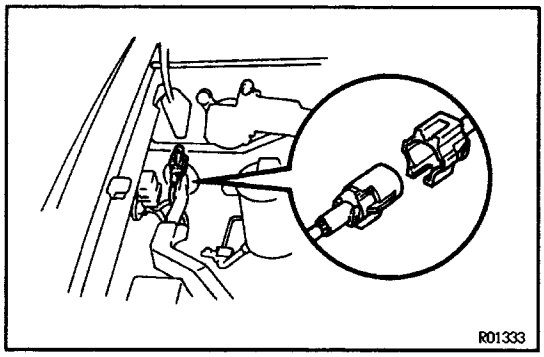


(e) If the system is operating normally (no malfunction), the warning light will blink once every 0.5 seconds.

(f) Repair the system.

(g) After the malfunctioning components has been repaired, clear the diagnostic trouble codes stored in the ECU.
(See page BR–80)

HINT: If you disconnect the battery cable while repairing, all diagnostic trouble codes in the ECU will erased.



(h) Remove the SST from terminals Tc and E1 of the data link connector 1.
SST 09843–18020

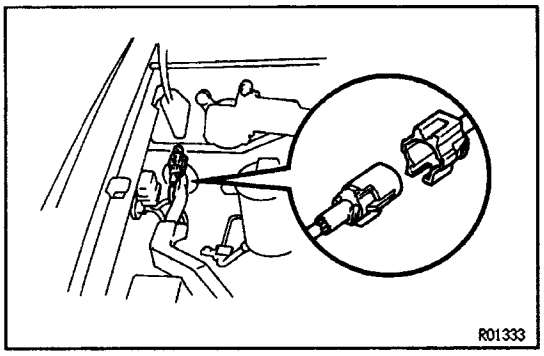
(i) Connect the service connector.

(j) Turn the ignition switch ON, and check that the ”ABS” warning light goes off after the warning light goes on for 3 seconds.

DIAGNOSTIC TROUBLE CODE

HINT: Using SST 09843–18020, connect the terminals Tc and E1, and disconnect the service connector.

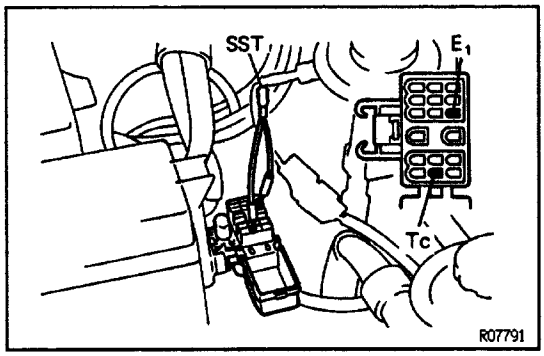
Code No.	Light Pattern	Diagnosis	Trouble Part
11		Open circuit in solenoid relay circuit	• Actuator inside wire harness • Solenoid relay • Wire harness and connector of solenoid relay circuit (Include AST circuit)
12		Short circuit in solenoid relay circuit	
13		Open circuit in pump motor relay circuit	• Actuator inside wire harness • Pump motor relay • Wire harness and connector of pump motor relay circuit (include MT circuit)
14		Short circuit in pump motor relay circuit	
21		Open or short circuit in 2 position solenoid of right front wheel	• Actuator solenoid • Wire harness and connector of actuator solenoid circuit
22		Open or short circuit in 2 position solenoid of left front wheel	
23		Open or short circuit in 2 position solenoid of rear wheel	
31		Right front wheel speed sensor signal malfunction	• Speed sensor • Sensor rotor • Wire harness and connector of speed sensor
32		Left front wheel speed sensor signal malfunction	
33		Right rear wheel speed sensor signal malfunction	
34		Left rear wheel speed sensor signal malfunction	
35		Open circuit in left front or right rear wheel speed sensor	
36		Open circuit in right front or left rear wheel speed sensor	
37		Neither front speed sensor rotor is missing	• Front sensor rotor
41		Abnormally high or low battery voltage	• Battery • Voltage regulator
43		Malfunction in deceleration sensor	• Deceleration sensor • Deceleration sensor installation • Wire harness and connector of deceleration sensor
44		Open or short circuit in deceleration sensor	
51		Pump motor of actuator locked or open circuit in pump motor circuit in actuator	• Pump motor, relay and battery • Wire harness, connector and • Ground bolt or actuator pump motor circuit • (Include MT circuit)
Always on		Malfunction in ECU	• ECU



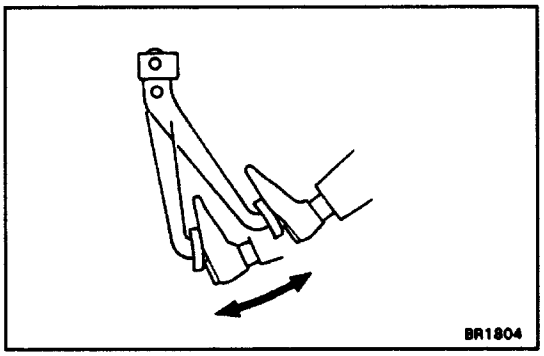
DIAGNOSTIC TROUBLE CODES CLEARING

CLEAR DIAGNOSTIC TROUBLE CODES

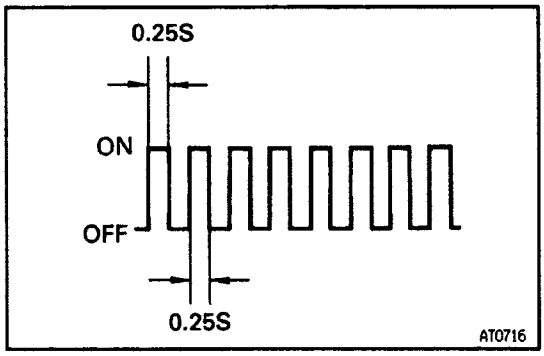
(a) Turn the ignition switch ON.
(b) Disconnect the service connector.
HINT: Keep the vehicle stationary.



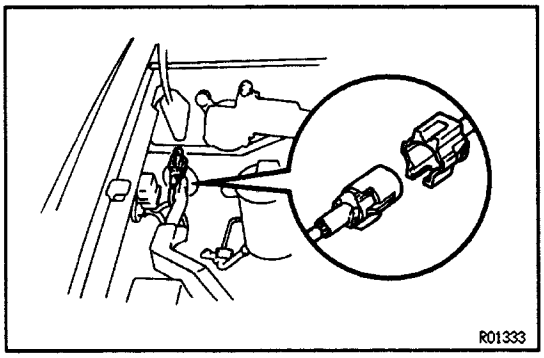
(c) Using SST, connect terminals Tc and E1 of the data link connector 1.
SST 09843–18020



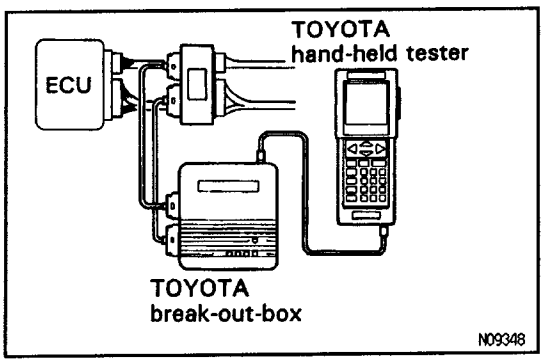
(d) Clear the diagnostic trouble codes stored in ECU by depressing the brake pedal 8 or more times within 3 seconds.
HINT: Cancellation can also be done by removing the DOME fuse, but in this case, other memory systems will also be cancelled out.



(e) Check that the warning light shows the normal code.



(f) Remove the SST from terminals Tc and E1 of the data link connector 1.
SST 09843–18020
(g) Connect the service connector.
(h) Check that the warning light goes off.



ECU TERMINAL VALUES MEASUREMENT USING TOYOTA BREAK–OUT–BOX AND TOYOTA HAND–HELD TESTER

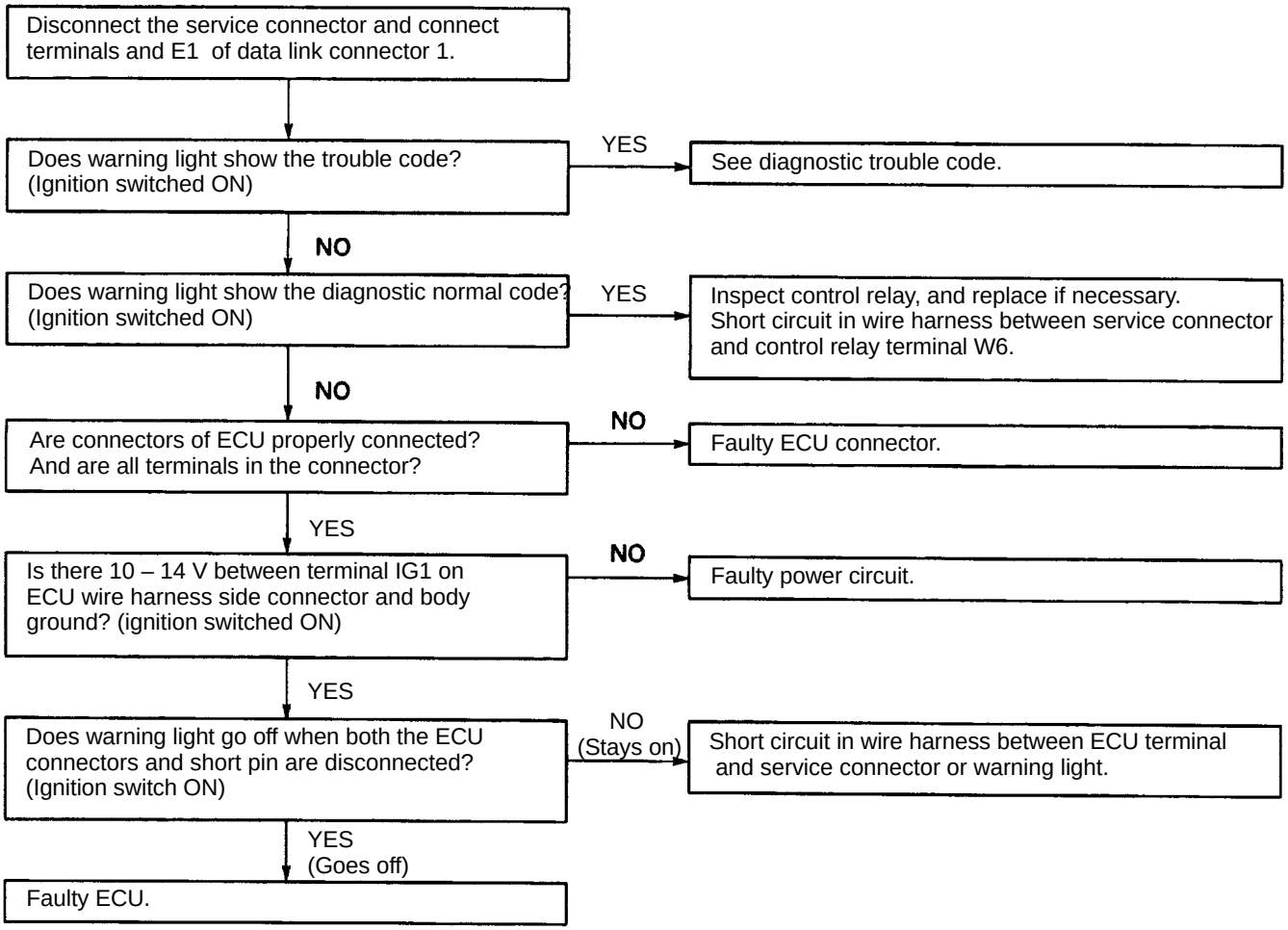
1. Hookup the TOYOTA hand–held tester and TOYOTA break–out–box to the vehicle.
2. Read the ECU input/output values by following the prompts on the tester screen.
   HINT: TOYOTA hand–held tester has a ”Snapshot” function. This records the measured values and is effective in the diagnosis of intermittent problems.
   Please refer to the TOYOTA hand – held tester / TOYOTA break–out–box operator’s manual for further details.

TROUBLESHOOTING

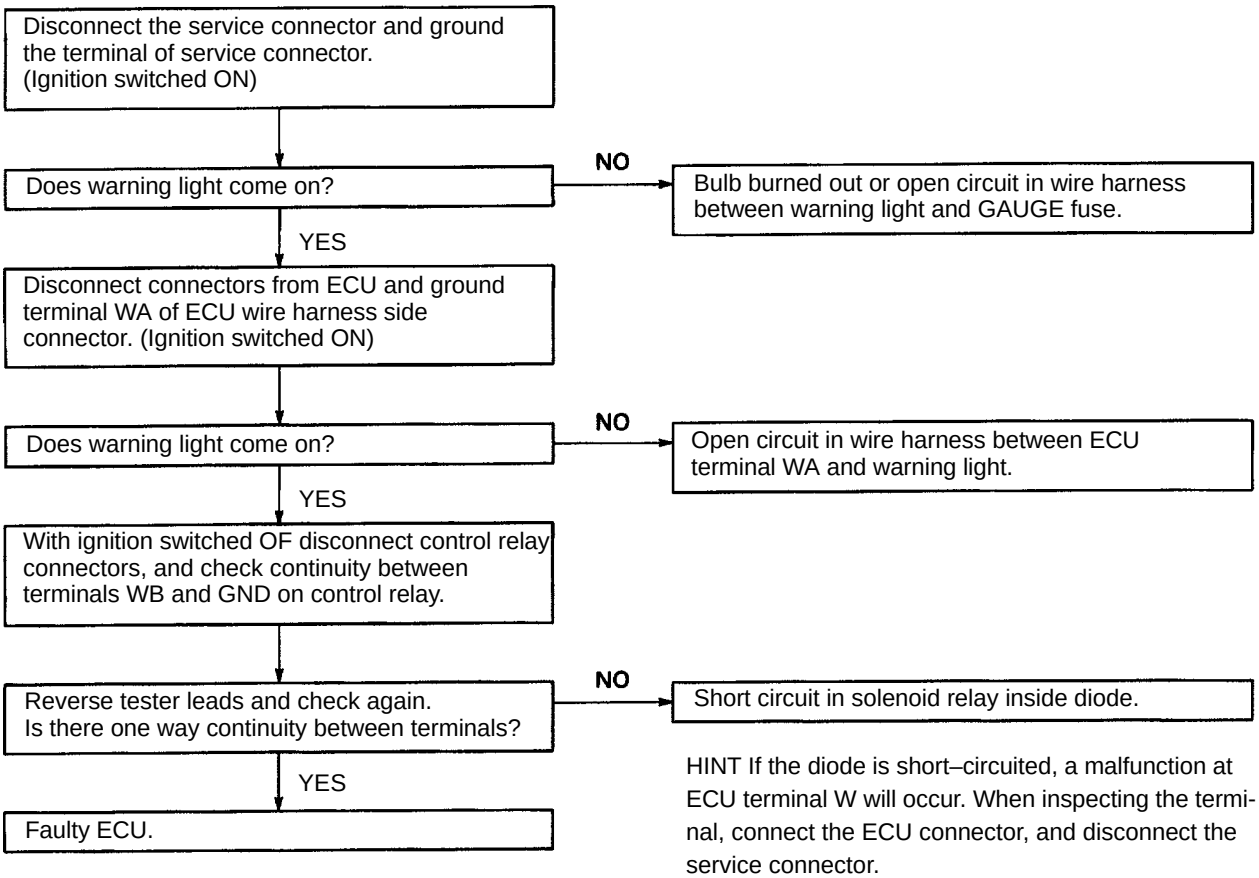
Problem		No.
”A6S” warning light	Always comes on after ignition switched ON .	1
	Does not come on for 3 seconds after ignition switched ON .	2
	Goes on and off.	3
	Comes on while running.	1
Brake condition	Brakes pull. *	4
	Braking inefficient.*	4
	A8S operates during normal braking.	4
	A6S operates just before stopping during normal braking.	4
	Brake pedal pulsates abnormally while ABS is operating.	4
	Skidding noise occurs while ABS operating. (ABS operates inefficiently)	5

*Also check the parts of the brake system (brake cylinders, pads, hydraulic lines, etc.) not specifically part of the ABS.

1	”ABS” warning light comes ON.



2	”ABS” warning light does not come on for 3 seconds after ignition switched ON.

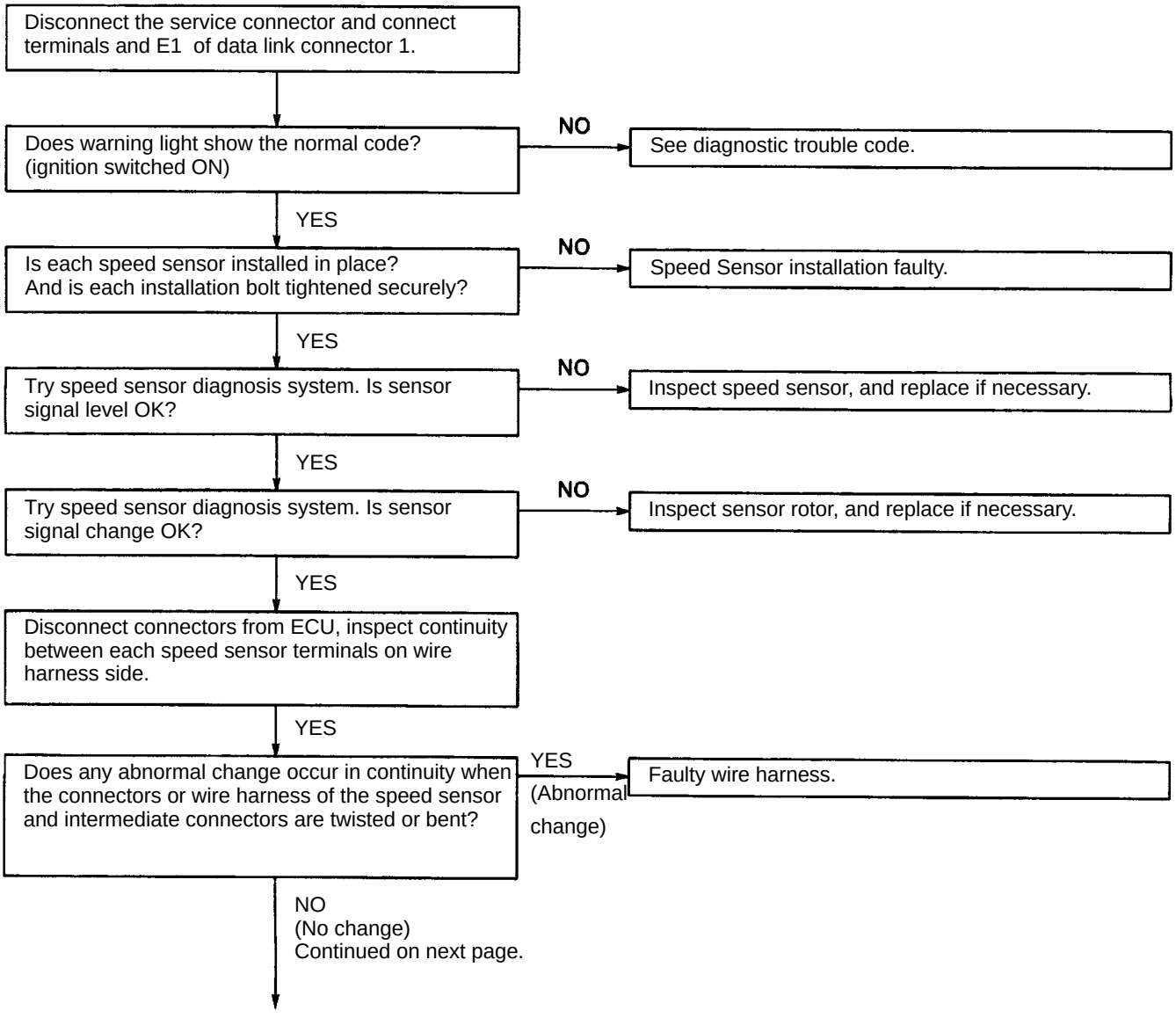


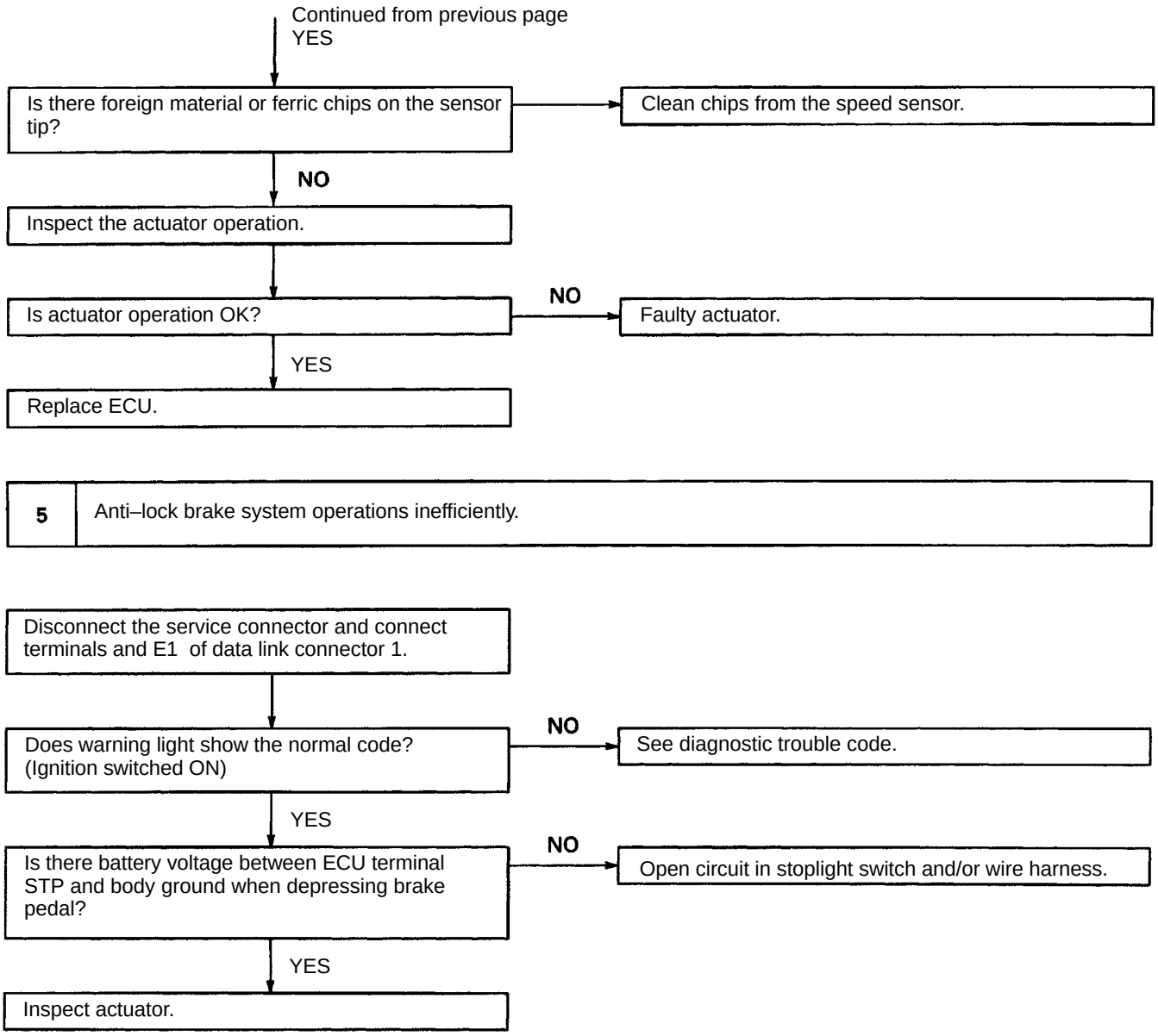
HINT If the diode is short–circuited, a malfunction at ECU terminal W will occur. When inspecting the terminal, connect the ECU connector, and disconnect the service connector.
Then turn the ignition switch on, and check that the warning light goes on. If it does, the ECU terminal is OK.

3	”ABS” warning light goes on and off.

Check for short circuit in wire harness between terminal or and E1 of data link connector 1

4	• Brakes pull. • Braking inefficient. • ABS operates during normal braking. • ABS operates just before stopping during normal braking. • Brake pedal pulsates abnormally while ABS is operating.

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YES
Is there foreign material or ferric chips on the sensor tip?
Clean chips from the speed sensor.
NO
Inspect the actuator operation.
Is actuator operation OK?
NO
Faulty actuator.
YES
Replace ECU.
5
Anti–lock brake system operations inefficiently.
Disconnect the service connector and connect terminals and E1 of data link connector 1.
Does warning light show the normal code? (Ignition switched ON)
NO
See diagnostic trouble code.
YES
Is there battery voltage between ECU terminal STP and body ground when depressing brake pedal?
NO
Open circuit in stoplight switch and/or wire harness.
YES
Inspect actuator.