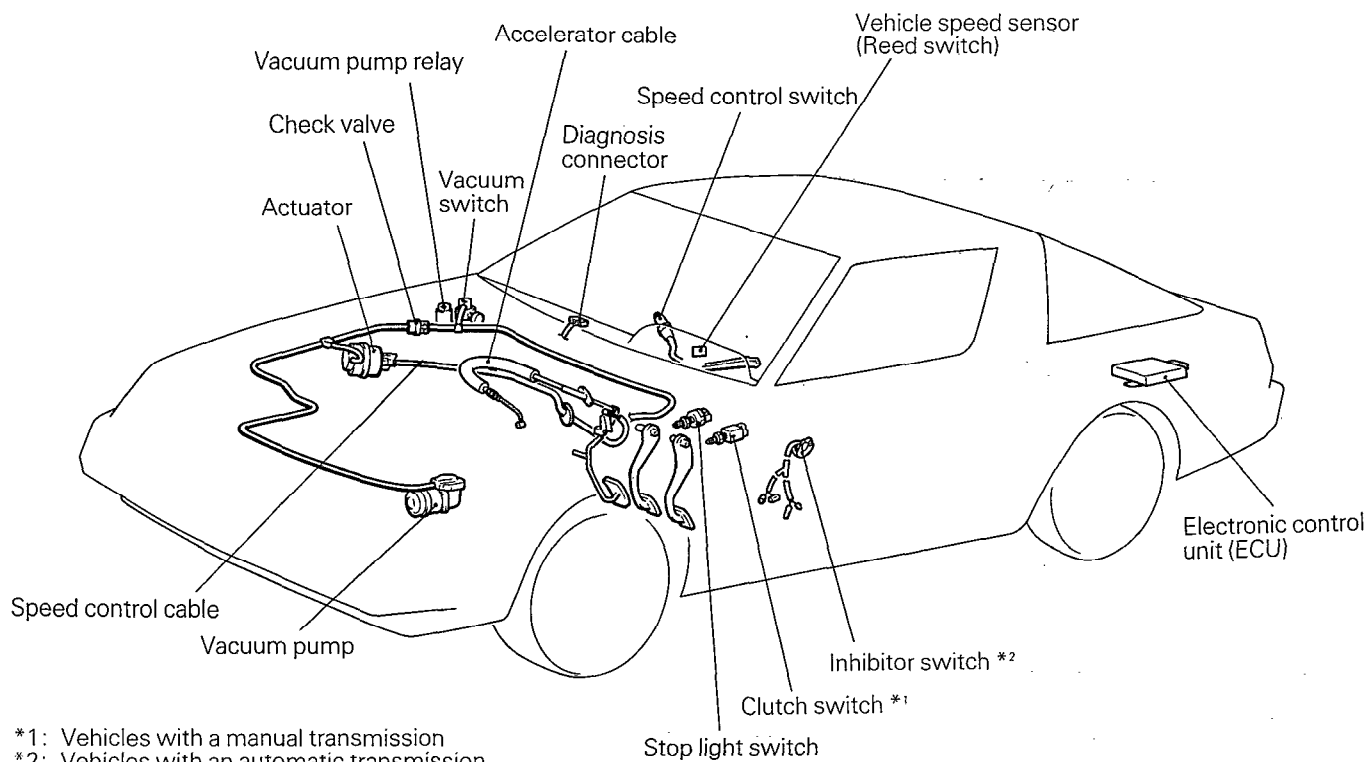


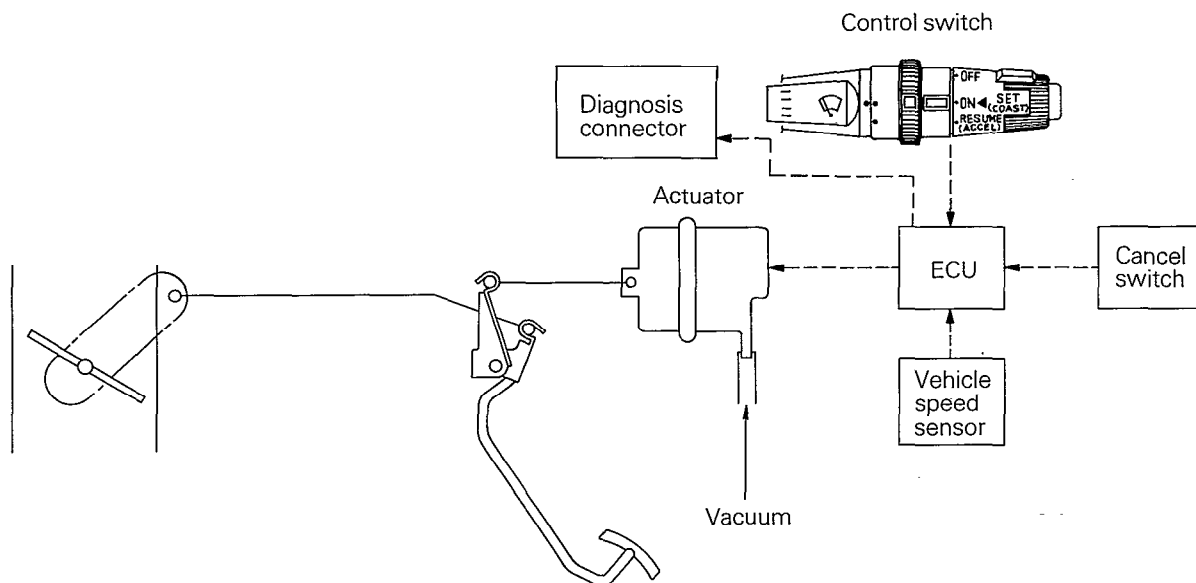
# OUTLINE

## AUTOMATIC SPEED CONTROL CONFIGURATION



16Y2904

## System Block Diagram



16Y2922

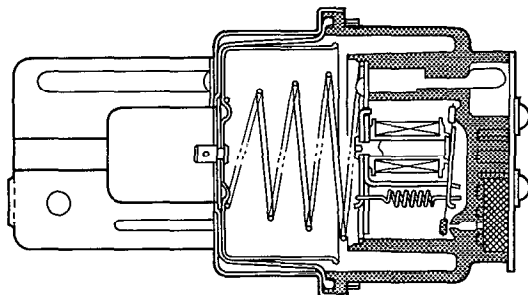
## Components and functions

Component		Function
Electronic control unit (ECU)		Receives signals from sensors and controls all functions of ASC by computer
Control switch	MAIN switch	Turns on/off ASC power
	SET switch	Controls ASC functions by SET (Coarse) and RESUME (Accel)
	RESUME switch	
	MAIN switch indicator	Lights when MAIN switch is on (Incorporated in column lever)
Actuator		Adjusts the throttle valve opening according to ECU signal
Vacuum system	Vacuum pump	Generates vacuum to make up vacuum (intake manifold pressure) when it is insufficient to drive the actuator
	Vacuum switch	Detects drop of intake manifold vacuum
Vehicle speed sensor		Generates pulse signal corresponding to vehicle speed
Cancel switch	Stop light switch	Outputs ASC cancel signal
	Clutch switch (vehicles with a manual transmission)	
	Inhibitor switch (vehicles with an automatic transmission)	
Diagnosis connector		By connecting a voltmeter, allows ECU diagnosis and input check codes to be read

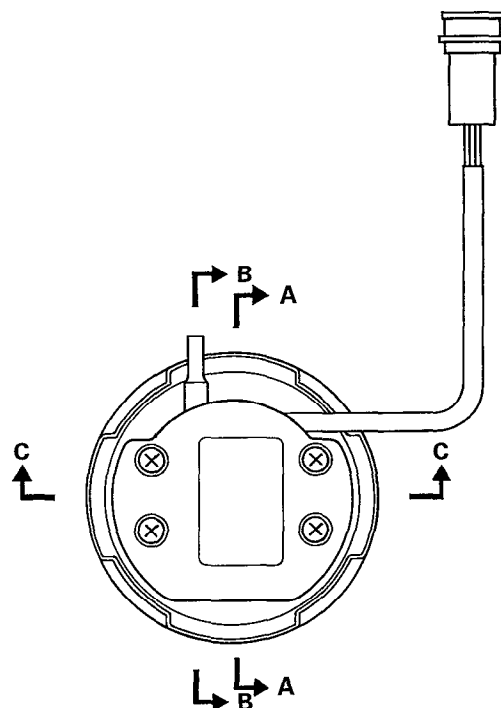
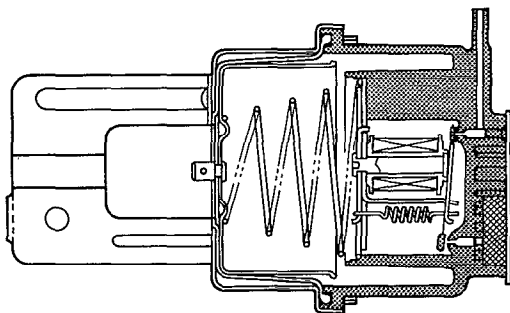
# CONSTRUCTION AND OPERATION ACTUATOR

N14TBAC

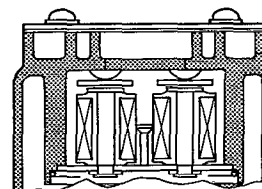
Section A-A



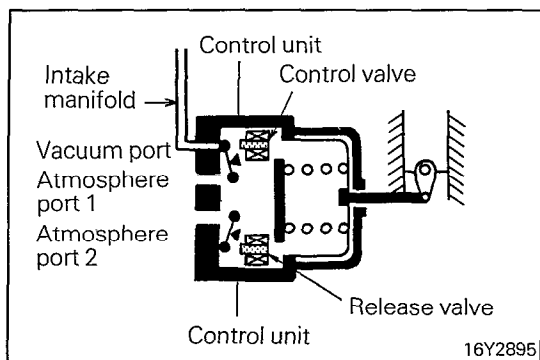
Section B-B



Section C-C



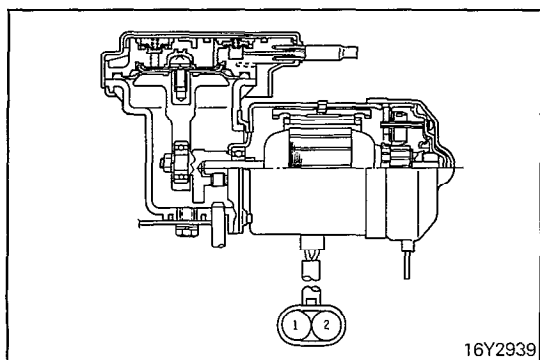
16Y2921



16Y2895

The actuator is a diaphragm type vacuum servo which consists of a diaphragm, return spring and two solenoid valves (control valve and release valve) to control the vacuum.

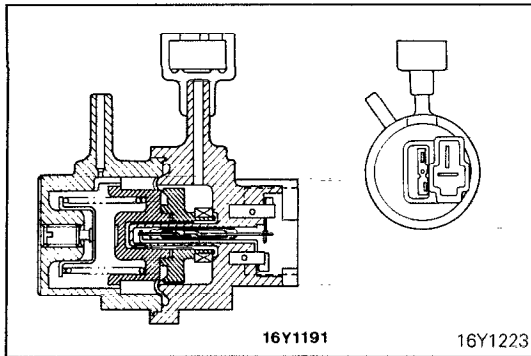
In absence of signals from the ECU, the vacuum port is closed and the atmosphere ports 1 and 2 are open as illustrated. When the control valve is turned on, the atmosphere port 1 is closed and the vacuum port is open, vacuum is introduced to open the throttle valve.



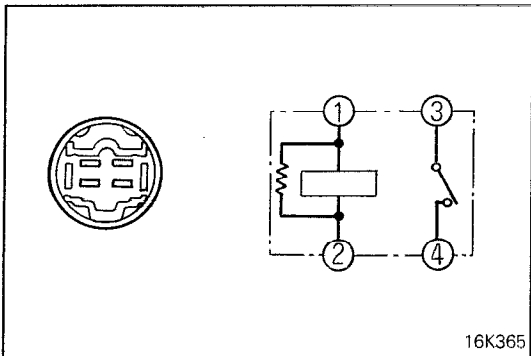
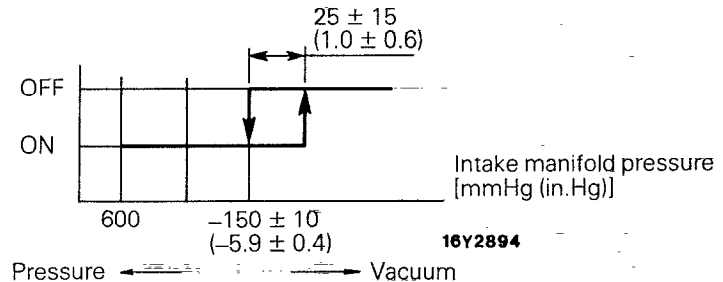
16Y2939

## VACUUM PUMP

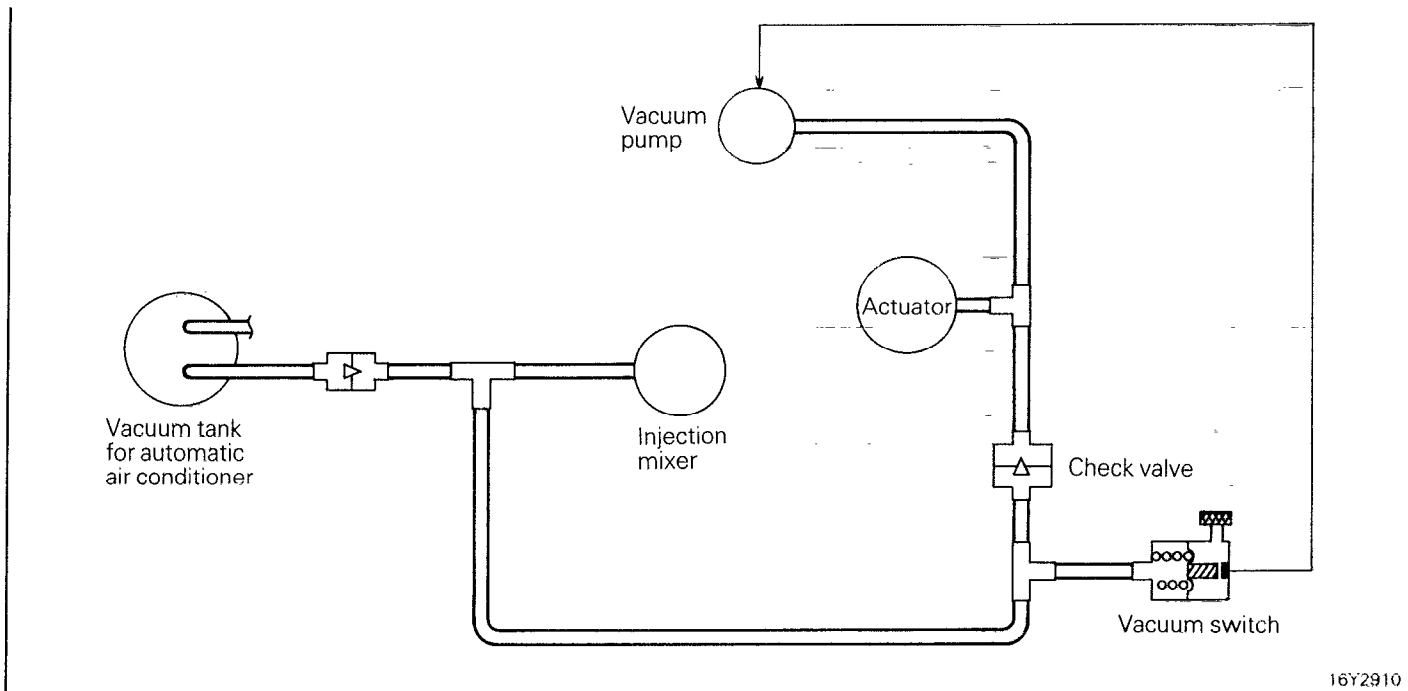
This pump which is a diaphragm type generates vacuum to secure control function when the intake manifold vacuum is insufficient due to high load or other conditions.

**VACUUM SWITCH**

This switch detects the pressure in the intake manifold and operates according to that pressure as shown below, transmitting the signal to operate the vacuum pump to the vacuum pump relay.

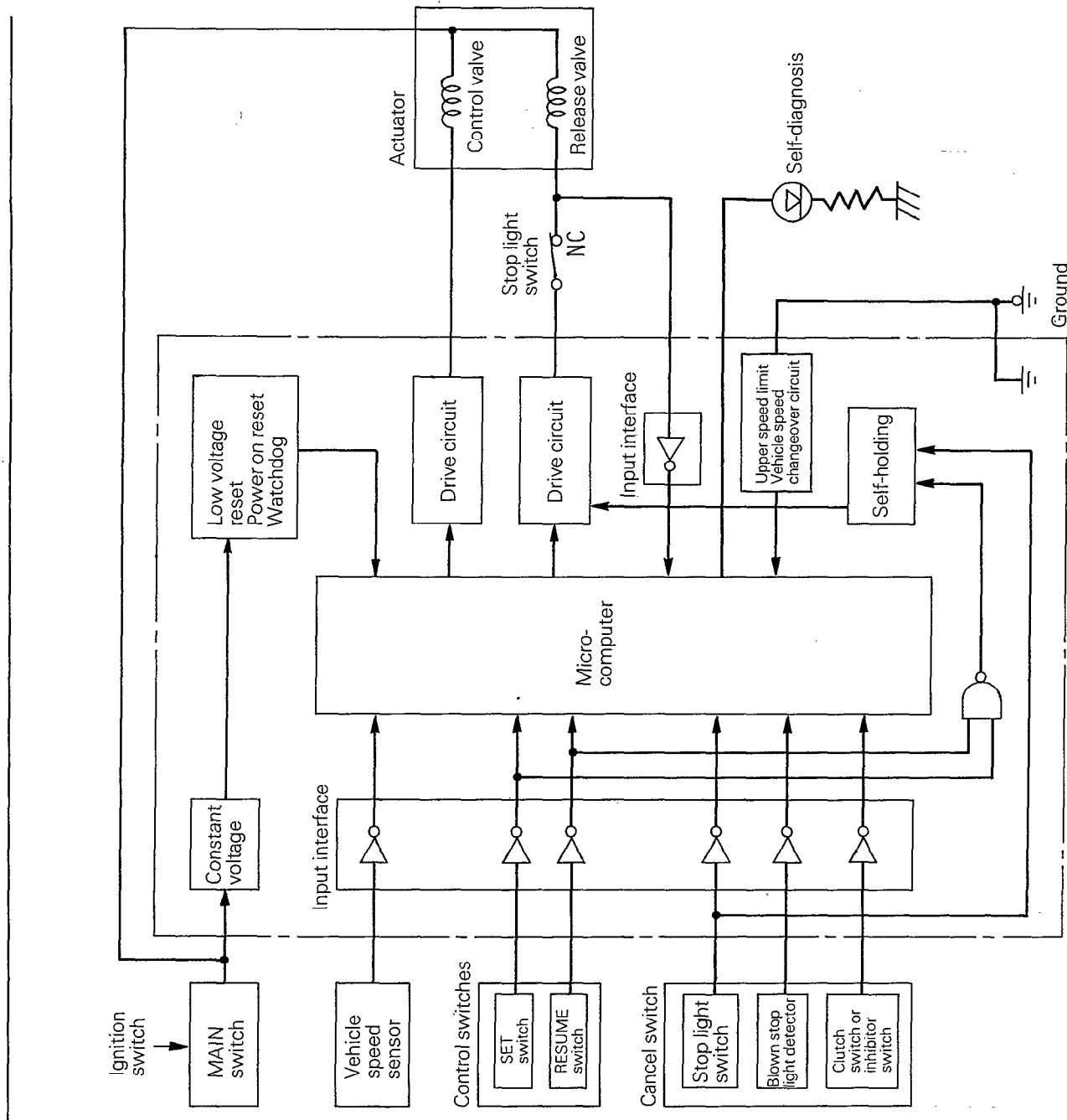
**VACUUM PUMP RELAY**

This relay operates the vacuum pump when the vacuum switch is turned on.

**VACUUM PIPINGS**

The actuator is driven by the vacuum of the injection mixer. In case the vacuum drops to such level as to actuate the vacuum switch, however, the vacuum pump is started and the vacuum generated by the pump is used to drive the actuator. The check valve serves to prevent flow from the injection mixer side when the vacuum pump is in operation and to prevent application of positive pressure due to turbocharging.

## ELECTRONIC CONTROL UNIT (ECU) BLOCK DIAGRAM



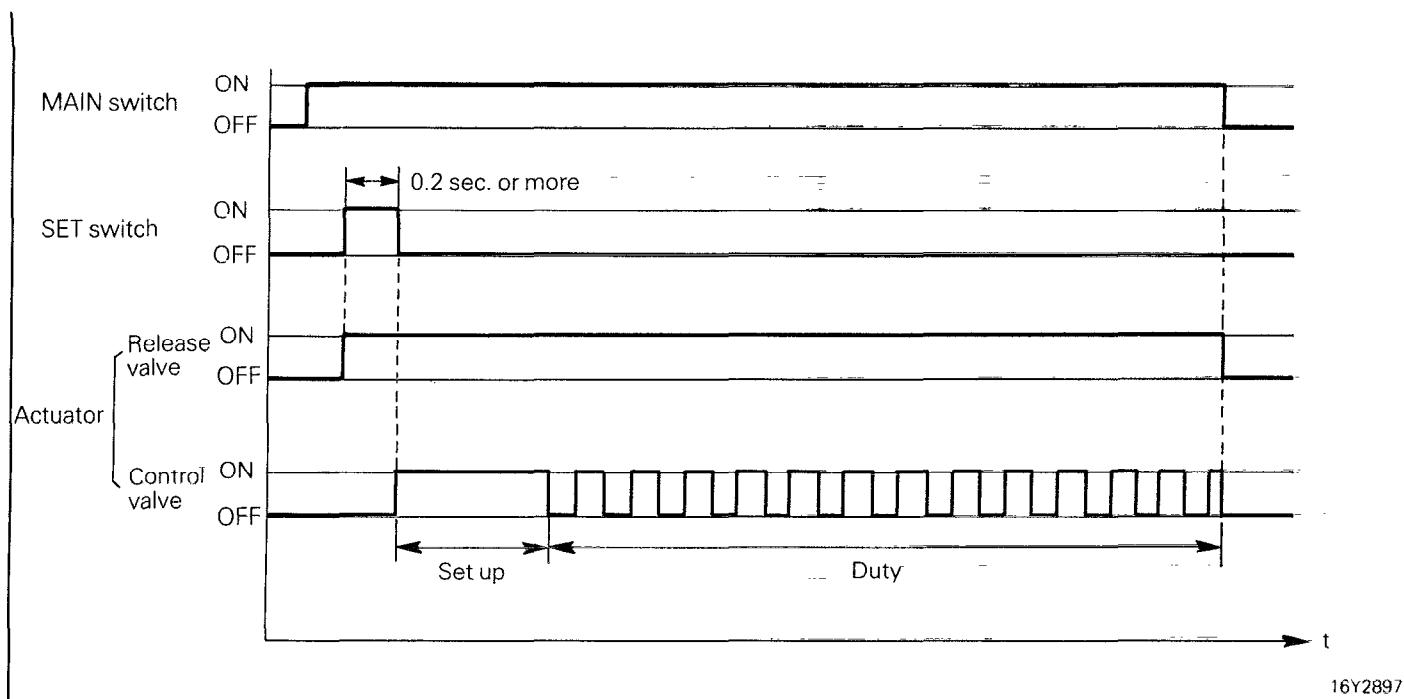
16Y2916

The ECU with a built-in microcomputer has the current vehicle speed set, deceleration set, acceleration set, resume, cancel, low speed limit and high speed limit functions and the fail-safe function.

The microcomputer outputs the control signals to the two solenoid valves (release and control) of the actuator according to the signals from the vehicle speed sensor and the switches. The ASC operates only when the MAIN switch is on.

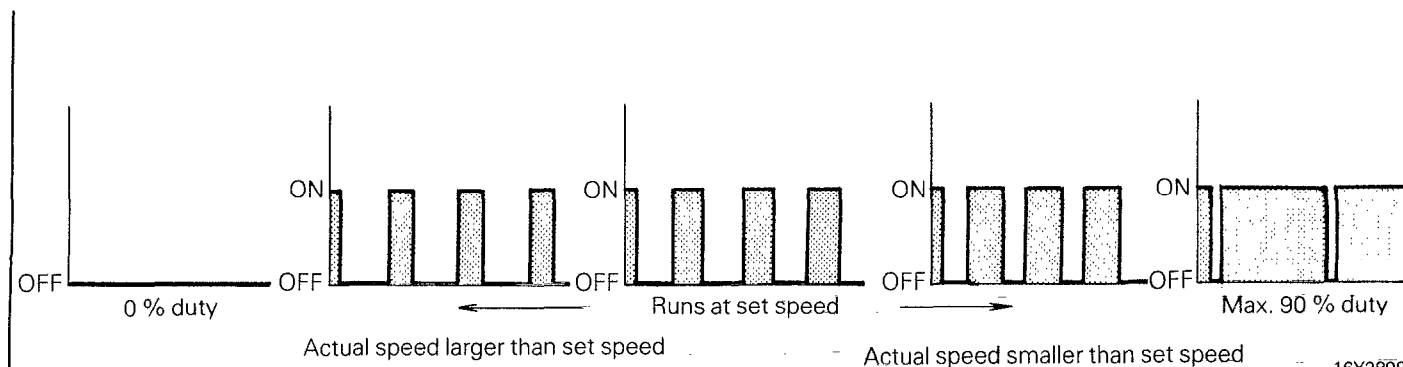
(1) Current vehicle speed set function

When the SET switch is pressed while driving within the vehicle speed setting range of  $40 \pm 3$  to  $200 \pm 5$  km/h ( $25 \pm 2$  to  $124 \pm 3$  mph), the vehicle speed when the switch is turned from on to off is stored as the set vehicle speed and thereafter the actuator is so controlled as to keep that speed. The timing chart is shown below.



16Y2897

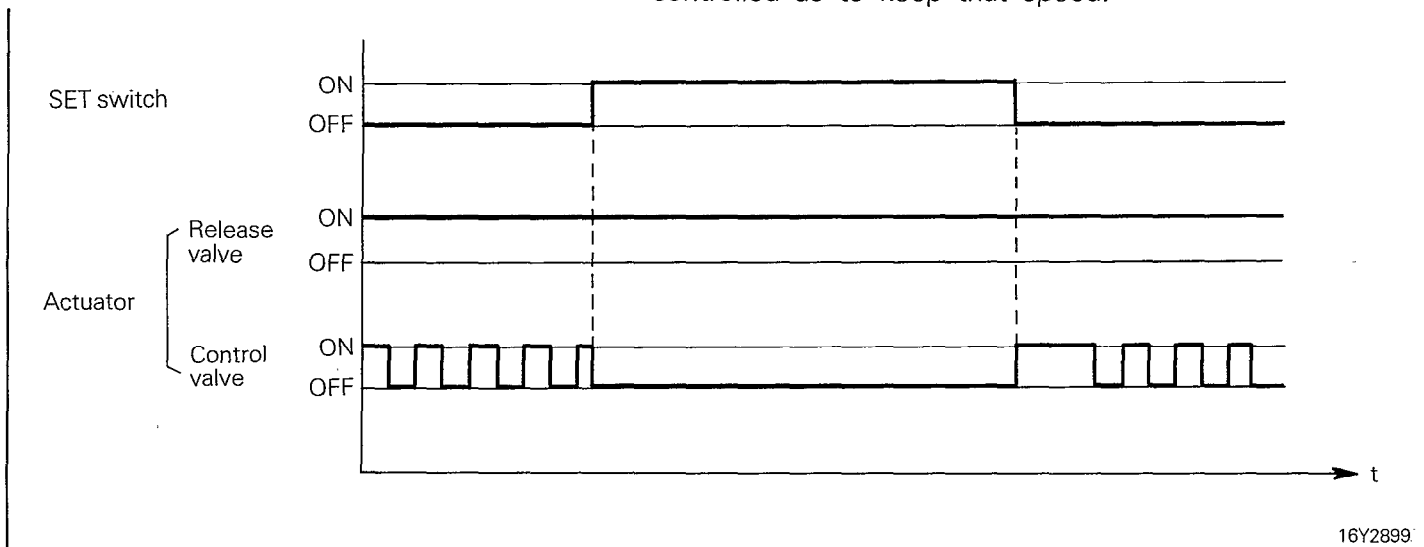
- **Set up**  
In order to quickly control the throttle to specified opening and to minimize vehicle speed variations after the ASC has been set, a signal is output whose pulse width is set based on the relationship between the vehicle speed on a level road and with the actuator operation delay and cable play amount taken into account.
- **Duty**  
After set up, the vehicle speed is measured successively by the vehicle speed sensor and the set speed and the actual speed are compared. Based on this comparison, the energization time (duty) of the control valve and consequently the throttle opening are controlled. When the actual speed is higher than the set speed, the control valve energization time is decreased for smaller throttle valve opening. On the other hand, when the actual vehicle speed becomes smaller than the set speed, the control valve energization time is increased for larger throttle valve opening.



16Y2898

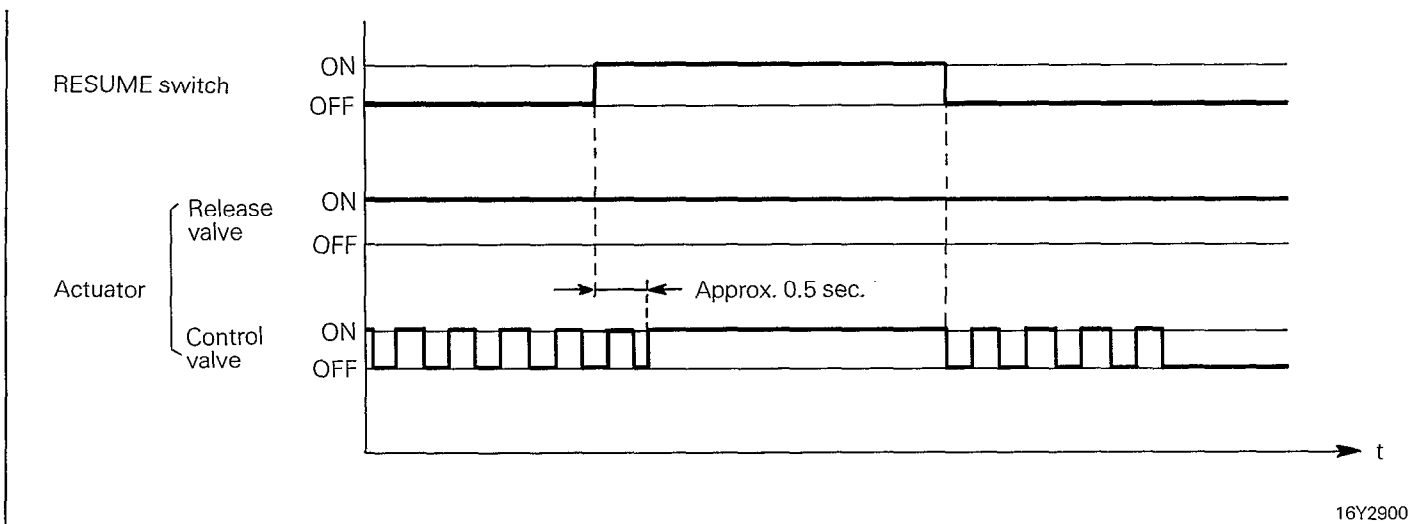
## (2) Deceleration set function

When the SET switch is held down while driving in the ACS mode, the vehicle continues to decelerate and when the switch is released, the vehicle speed at that moment is stored as the set speed. Thereafter, the actuator is so controlled as to keep that speed.



## (3) Acceleration set function

When the RESUME switch is held down (ON) while driving in the ACS mode, the vehicle continues to accelerate and when the switch is released (OFF), the vehicle speed at that moment is stored as the set speed. Thereafter, the actuator is so controlled as to keep that speed.



## (4) Resume function

After cancelling the ASC mode by the method described in ①, ② or ③ of item (5), if the RESUME switch is turned on while driving within the speed setting range, the vehicle speed that was stored before cancelling the ASC mode is resumed and thereafter the vehicle is run at that speed. In case the speed has once dropped below the lower limit speed [item (6)] or cancelling has been made by the method given in ④ or ⑤ of item (5), the stored vehicle speed is cleared and hence this function does not work.

## (5) Cancel function

When any of the following signals is input while the vehicle is running in the ASC mode, signals to the two solenoid valves of the actuator are cut off to cancel the ASC mode.

- (1) Stop light switch ON (the brake pedal depressed)
- (2) Clutch switch ON (the clutch pedal depressed) ..... Vehicles with a manual transmission
- (3) Inhibitor switch ON (the selector lever set to N position) ..... Vehicles with an automatic transmission
- (4) MAIN switch OFF
- (5) Ignition switch OFF

In case the ASC mode has been cancelled by the signal (1), (2) or (3), the set vehicle speed is kept stored.

## (6) Low speed limit function

When the vehicle speed drops to the low limit speed of  $40 \pm 3$  km/h ( $25 \pm 2$  mph) or lower, the ASC mode is cancelled automatically.

## (7) High speed limit function

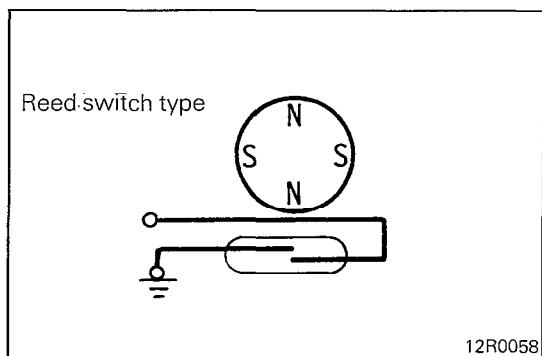
In case the acceleration operation described in item (3) is made while running at a speed lower than the high speed limit of  $200 \pm 5$  km/h ( $124 \pm 3$  mph), the vehicle is accelerated to the high speed limit and thereafter runs in the ASC mode at that speed.

In case the current vehicle speed setting [item (1)] is made while running at a speed higher than the high speed limit, the high limit speed is stored as the set speed and control is made to keep that speed.

## (8) Auto cancel function (including fail-safe function)

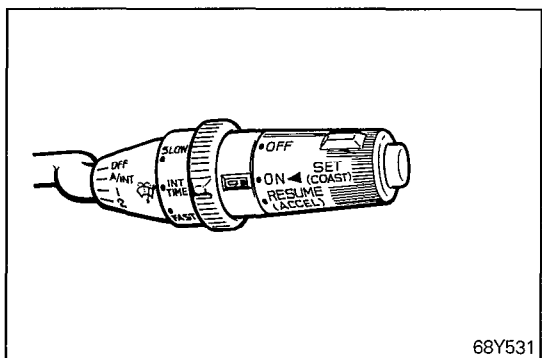
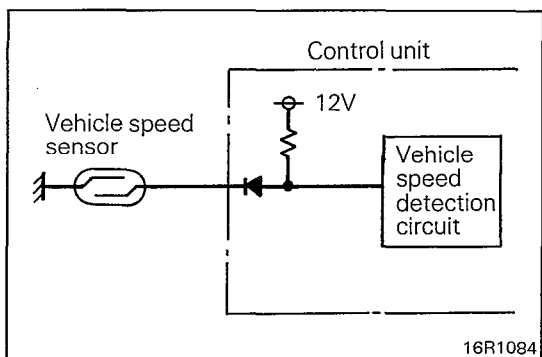
When any of the following signals is input while the vehicle is running in the ASC mode, signals to the two solenoid valves of the actuator are cut off to cancel the ASC mode.

- (1) When the vehicle speed drops to the low speed limit or lower.
- (2) When the vehicle speed drops to a speed about 20 km/h (12 mph) lower than the set speed.
- (3) When the vehicle speed once recovers to the set speed less about 10 km/h (6 mph) and then drops again more than 20 km/h (12 mph) during the RESUME mode.
- (4) When depression of the brake pedal causes the stop light switch to turn on in case the stop light fuse has been blown.
- (5) When the stop light switch has an open circuit.
- (6) When the vehicle speed signal has not been input for a fixed time.
- (7) When the SET switch and the RESUME switch are turned on simultaneously.
- (8) When the SET switch or the RESUME switch is turned on simultaneously with the CANCEL switch.
- (9) When the control/release valve drive output transistor has a short circuit.



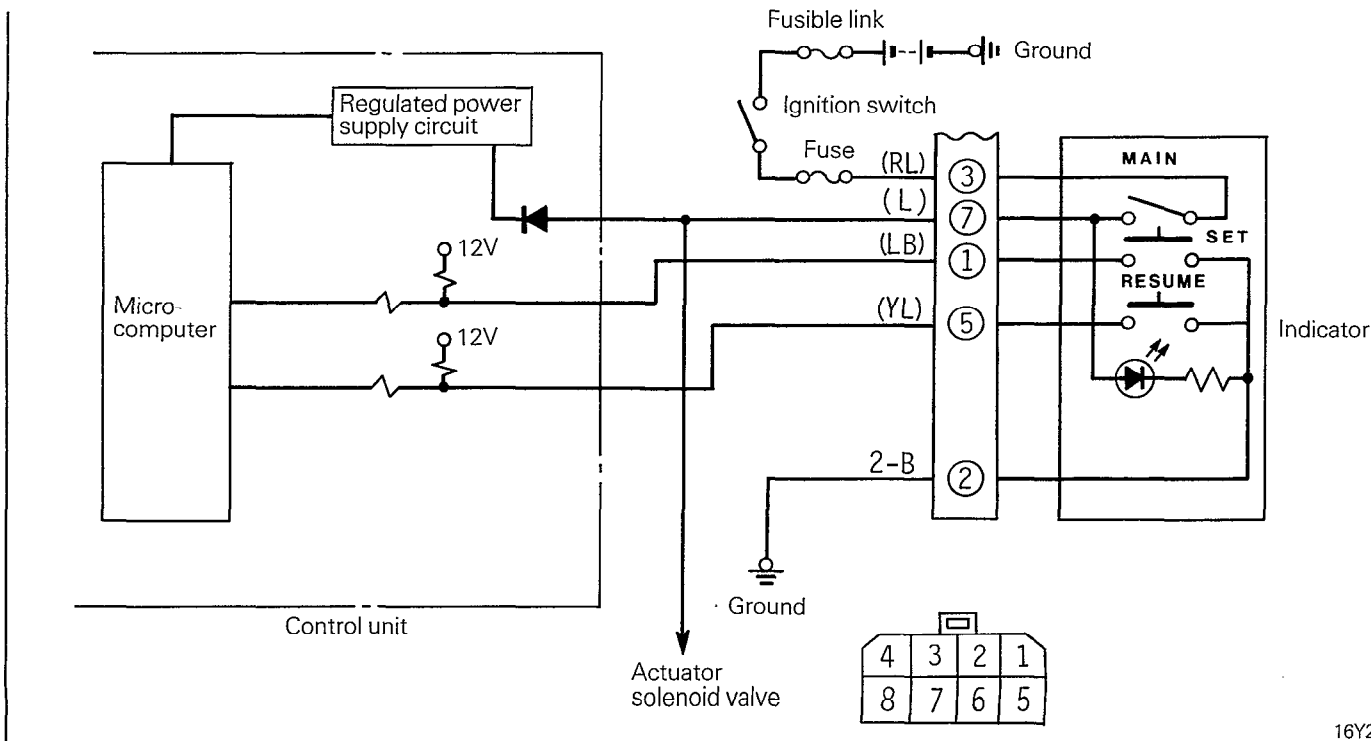
### VEHICLE SPEED SENSOR

The vehicle speed sensor sends to the ECU a pulse signal proportional to the rotating speed (vehicle speed) of the output gear of the transmission. It is mounted in the speedometer. The sensor is of the reed switch type, and generates four pulse signals at every rotation of the output gear. The sensor is shared in common by other electronic control systems and in the event of failure of the sensor itself, some troubles will occur in all systems using it so that the failure of the sensor can be known easily. The vehicle speed sensor input terminal of the ECU is pulled up to about 12 V power via a diode and resistor as illustrated.



### ASC CONTROL SWITCH

The MAIN switch to turn on/off the ASC control unit power and the ASC command input switches (SET switch and RESUME switch) are mounted on the column switch lever to the right of the driver.



## (1) MAIN switch

This switch turns on/off the power. When the switch is turned on while the ignition switch is in the ON position, power is supplied to the ECU and the indicator in the switch lights up. At the same time, power is also supplied to the solenoid valves of the actuator, to enable ASC operation.

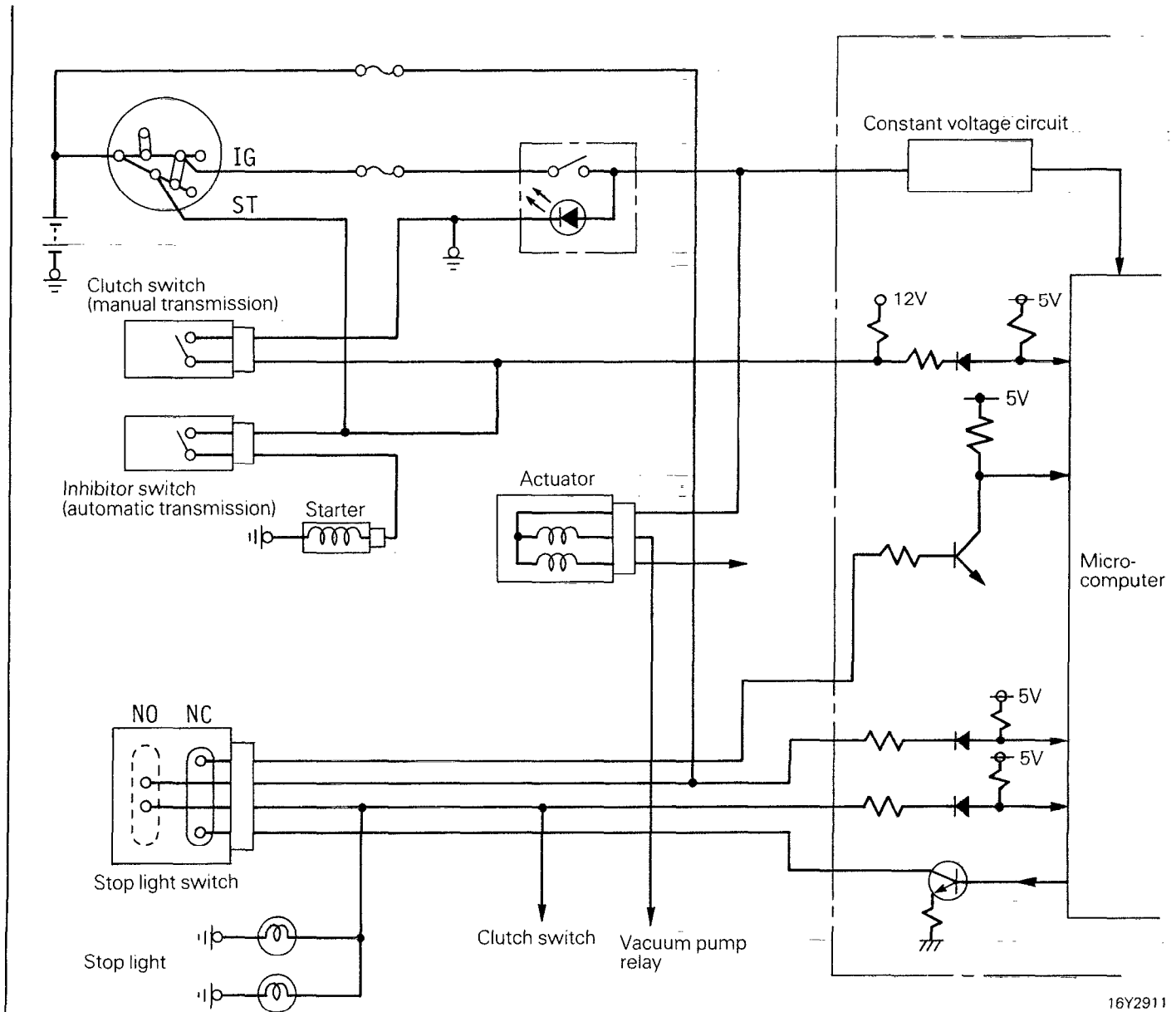
## (2) ASC command input switches (SET and RESUME switches)

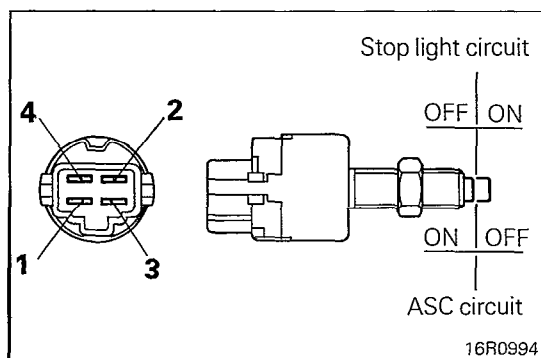
The SET switch and the RESUME switch are both used to input the ASC control signals. Both are auto reset, normal open type switches.

The ECU input interface is pulled up by the battery voltage and the terminal voltage goes low (0 V) when the switch is on and goes high (approx. 12 V) when it is off.

**CANCEL SWITCHES**

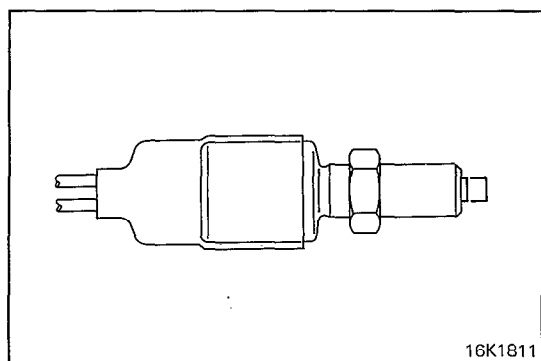
The cancel switches include the stop light switch, the clutch switch (vehicles with a manual transmission) and inhibitor switch (vehicles with an automatic transmission) and the ASC is cancelled when any of these is operated.





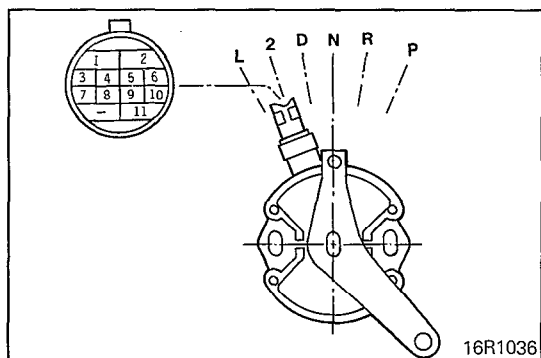
## (1) Stop light switch

The switch is highly reliable with the stop light contact and the ASC contact provided separately. When the brake pedal is depressed, the ASC cancel contact of the stop light switch opens to cut the signal to the actuator release valve, thus cancelling the ASC. For auto cancel (fail-safe) function, the power side and load side signals of the stop light switch are also input to the control unit.



## (2) Clutch switch

The contact of this switch closes when the clutch pedal is depressed. When the clutch pedal is depressed during driving in the ASC mode, the mode is cancelled.



## (3) Inhibitor switch

The starter circuit and the inhibitor switch (provided for automatic transmission control) signals are input to the ECU as in the case of the stop light switch circuit. When the selector lever is set to the neutral (N) position while driving in the ASC mode, this signal causes the ASC to be cancelled.

**SELF-DIAGNOSIS AND INPUT CHECK FUNCTIONS**

## (1) Self diagnosis

When there is a cancellation of the ASC system operation not intentionally made by the driver, it is possible to determine which circuit or what operation caused the cancellation of the ASC system by (without stopping the engine) stopping the vehicle (with the MAIN switch still ON) and then connecting the diagnosis tester or a voltmeter to the diagnosis harness connector.

**NOTE**

The display of the malfunction data starts if the vehicle speed decreases to less than approximately 20 km/h (12 mph) after the cancellation of the ASC system function, and stops if the vehicle speed increases to approximately 20 km/h (12 mph) or higher.

## Self-diagnosis descriptions and displays

Code No.	Diagnosis item	Display patterns	Self-diagnosis description
—	—		[Display pattern (when ECU normal) when vehicle speed is approximately 20 km/h (12 mph) or higher, and before fixed-speed driving has been set.]
11	Actuator drive circuit	<p>(Example) Code No. 13</p>	The control valve or its driving transistor, the release valve or its driving transistor, or the brake switch is damaged (open).
12	Vehicle speed signal circuit malfunction		Vehicle speed signal is not input for one second or longer.
13	Low-speed limiter circuit		When the vehicle speed decreases to 40 km/h (25 mph) or lower.
14	Redundant brake		When actual vehicle speed decreases to approximately 20 km/h (12 mph) or more below the memorized vehicle speed.
15	Control switch malfunction		When the SET switch and the RESUME switch are switched ON at the same time.
16	When cancel signal is input	<p>① Pause time: 3 seconds OFF            ② "Tens" rank signal: 1.5 second ON (called "10")            ③ Rank division: 2 seconds OFF            ④ "Units" rank signal: 0.5 second ON, 0.5 second OFF signal (The number of ON periods is the number of "unit" ranks.)</p>	When the stop light switch, clutch switch or inhibitor switch is switched ON, or there is damaged or disconnected wiring of the stop light switch input wire.

03R0195

## (2) Input check function

When the ignition switch is ON, and with the SET switch and the RESUME switch ON (simultaneously pressed), the input check mode can be selected by switching ON the MAIN switch, thus permitting checking of the input circuits in the same way as for self-diagnosis.

## NOTE

1. The input check mode can be canceled by switching the MAIN switch OFF.
2. The ASC system does not function during the input check mode.
3. All of the code numbers in the table below are sequentially displayed in order from the lowest number.

## Input check mode

Code No.	Input signal condition	Display patterns.
21	SET switch ON signal received.	(Example) Code No. 23 <p>① Pause time: 3 seconds OFF</p> <p>② "Tens" rank signal: 1.5 second ON, 0.5 second OFF; then 1.5 second ON (called "20")</p> <p>③ Rank division: 2 seconds OFF</p> <p>④ "Units" rank signal: 0.5 second ON, 0.5 second OFF signal (The number of ON periods is the number of "unit" ranks.)</p>
22	RESUME switch ON signal received.	
23	Cancel switch ON signal received. (Stop light switch ON, clutch switch or inhibitor switch ON)	
24	Vehicle speed 40 km/h (25 mph) or higher signal received.	
25	Vehicle speed less than 40 km/h (25 mph) signal received.	

# **SPECIFICATIONS**

N14CA-B

## **GENERAL SPECIFICATIONS**

Items	Specifications
Speed control switch Rated load A ON SET, RESUME Voltage drop between terminals V ON SET, RESUME	Max. 1 0.1 – 0.3  0.15 or less 0.1 or less
Stop light switch Rated load A Voltage drop between terminals V	12.5 0.15 or less
Clutch switch Rated load A Voltage drop between terminals V	15 0.15 or less
Speed control unit Speed control range km/h (mph) Set error [At 80 km/h (50 mph)] km/h (mph) Vehicle speed memory variation [80 km/h (50 mph), 30 minutes at normal temperature] km/h (mph)	40 (25) or more $\pm 1 (\pm 0.6)$ $\pm 1 (\pm 0.6)$
Actuator Servo type Diaphragm stroke mm (in.) Effective diameter mm (in.) Effective area cm <sup>2</sup> (in. <sup>2</sup> )	Diaphragm type 36 (1.4) 70.5 (2.8) 39 (6.0)
Vacuum check valve Type	Ball seat type
Vacuum pump Type Rated current A Generated vacuum mmHg/min. (in.Hg/min.)	Diaphragm type 1.6 or less 150 (5.9) or more
Vacuum switch Cut-in vacuum mmHg (in.Hg) Cut-out vacuum mmHg (in.Hg)	140 – 160 (5.5 – 6.3) 160 – 190 (6.3 – 7.5)
Vacuum pump relay Excitation coil rated current A Maximum contact current capacity A Voltage drop between terminals V	0.135 – 0.215 22 0.2 or less

**SERVICE SPECIFICATIONS**

N14CB-B

Items	Specifications
Speed control system	
Terminal resistance of solenoid valve in actuator	
Release valve $\Omega$	Approx. 60
Control valve $\Omega$	Approx. 30
Actuator stroke    mm (in.)	36 (1.4)
Vacuum pump vacuum    mmHg (in.Hg)	150 (5.9) or more
Control cable play    mm (in.)	0 – 3 (0 – .12)

**LUBRICANT**

N14CD - -

Items	Specified lubricant	Quantity
Grease for the moving points of the accelerator arm	MOPAR Multi-mileage Lubricant Part No. 2525035 or equivalent	As required

## TROUBLESHOOTING

N14EBDC

### BEFORE STARTING TROUBLESHOOTING

The ASC system controls setting and canceling of constant driving speed based on various input signal information. For this purpose, the electronic control unit (ECU) has the self-diagnosis function to store the causes for canceling of the ASC system operation regardless of whether the system is normal or faulty and to display the causes in predetermined patterns and the input check function to check whether or not the ECU input switch or sensor is normal.

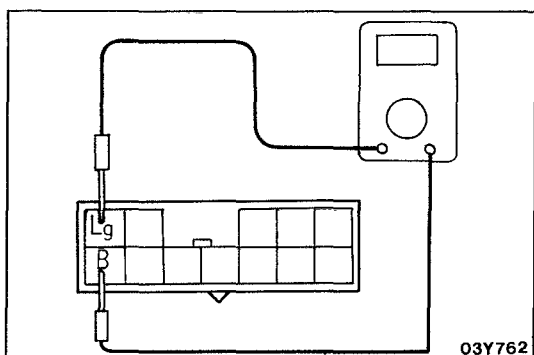
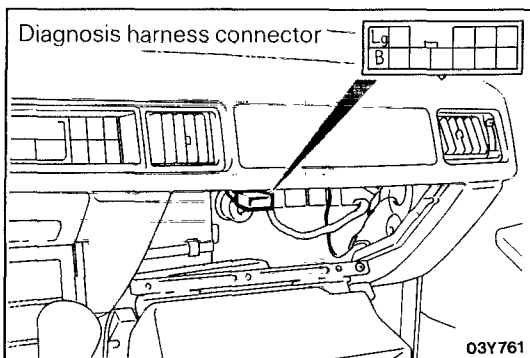
Through effective use of these functions, you can shorten the time taken to troubleshoot, check and repair the system.

### SELF-DIAGNOSIS CHECK

The self-diagnosis check is to be made when the ASC system is automatically canceled even if no attempt is made to cancel the system.

#### Caution

**The diagnosis code memory is cleared if the ECU power (ignition switch or MAIN switch) is turned off. Keep the power on, therefore, until the check is completed.**



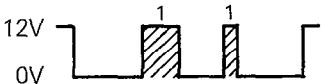
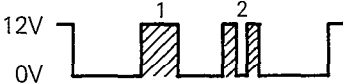
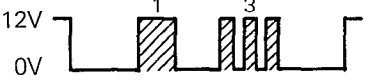



1. Connect a voltmeter between the ASC terminal and ground terminal of the diagnosis harness connector located at the top in the glove compartment.
2. By checking the voltmeter reading against the display patterns shown below, the causes for canceling can be known.
3. In case diagnosis code No. 11, 12, 15 or 16 is displayed, check according to the check chart of number corresponding to that code.

#### NOTE

There are six diagnosis items including those of normal state. The normal states mean such states as code No. 16 being stored as the cancel switch ON signal input when the ASC system is canceled by depressing the brake pedal or code No. 13 or 14 being stored when the ASC system is canceled automatically due to decreased vehicle speed resulting from driving along a sharp hill in the constant speed driving mode.

In case the system is canceled contrary to the driver's intention, however, the same code No. 16 can mean an open circuit in the stop light switch input wire, stop light switch ON failure or other troubles.

**Diagnosis display patterns**

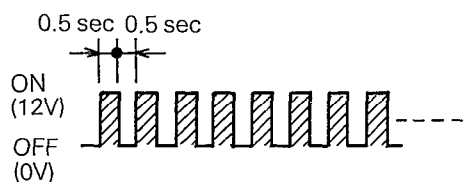
Code No.	Display patterns (output codes)	Probable cause
11		Abnormal condition of actuator drive system
12		Abnormal condition of vehicle speed signal system
13*		Low-speed limiter activation (The system is normal if it can be reset)
14*		Automatic cancelation activated by vehicle speed reduction (The system is normal if it can be reset)
15*		Control switch malfunction (When SET and RESUME switches switched ON simultaneously)
16*		Cancel switch ON signal input (including stop light switch input wiring damage or disconnection)

03R0193

**NOTE**

- Codes indicated by the \*symbol are displayed, if the conditions are satisfied, even if the system is normal. In either case, the system is normal if it can be reset. If there is an automatic cancelation not intentionally made by the driver, however, excluding cancelations explicitly made by the cancel procedure, there may be a temporary malfunction such as poor contact of a harness connector even though the system can be reset, and for that reason it is necessary to check according to each individual check chart that is applicable.

Display when vehicle speed is approximately 20 km/h (12 mph) or higher, or before the ASC system is set.



03R0196

- Diagnosis codes are displayed when, after cancelation of the ASC system, the vehicle speed decreases to less than approximately  $40 \pm 3$  km/h ( $24.9 \pm 1.9$  mph), and are erased by switching OFF the ignition switch or the MAIN switch. When, after the diagnosis memory has been erased, the ECU power supply is once again switched ON, the diagnosis output code will change to ON and OFF signals at 0.5-second intervals (as shown in the illustration at the left) if the ECU is normal, regardless of whether or not the system is normal.

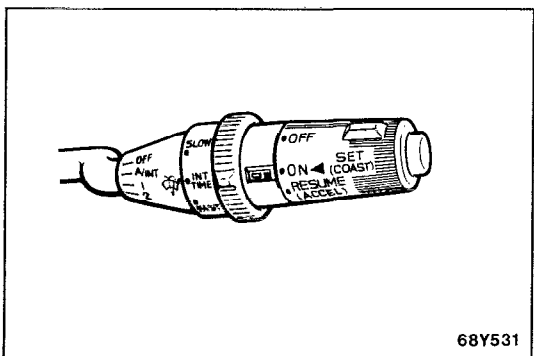
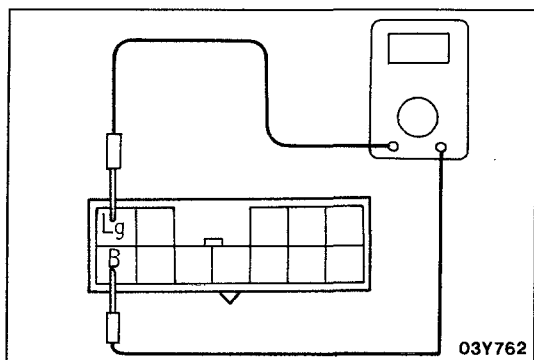
## 14-100 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

### INPUT CHECKING

Input checks should be made when the ASC system cannot be set, and when it is necessary to check (when a malfunction related to the ASC system occurs) whether or not the input signals are normal.

#### NOTE

1. Input checks can be made by certain fixed operations, and the terminal that outputs the display patterns is also used as the self-diagnosis terminal.
2. Display codes are displayed only if the circuit is normal according to the conditions shown in the table on the next page.
3. Connect a voltmeter between ground and the diagnosis harness connector's ASC terminal (located at the inside upper part of the glove compartment).
4. Turn the ignition key to ON. (Check No. 1 to No. 3 of the input check table.)
5. Start the engine. (Check No. 4 and No. 5 of the input check table.)



4. Code call-out
  - (1) Turn ON the SET switch with the RESUME switch kept ON.
  - (2) This procedure makes it possible to display the results of the input check.

#### Caution

**The ASC cannot be set during input check display. If it is necessary to check the self-diagnosis, check the input (after checking the diagnosis code) before switching OFF the MAIN switch.**






5. Code read-out
  - (1) Perform each input operation according to the input check table and read out the codes.

#### NOTE

Each code will be displayed in an order of priority beginning from No. 1.

If there is no display, it is possible that there is a malfunction of the ECU power-supply circuit or the SET and RESUME switch, so check according to check charts 0, 1 and 2. (Refer to P.14-108.)

## Input check table

No.	Input operation	Code No.	Display patterns (output codes)	Check results
1	SET switch ON	21		SET switch circuit normal
2	RESUME switch ON	22		RESUME switch circuit normal
3	Each cancel switch ON 1. Stop light switch (brake pedal depressed) 2. Clutch switch * <sup>1</sup> (clutch pedal depressed) 3. Inhibitor switch * <sup>2</sup> (shift lever to "N" range)	23		Each cancel switch circuit normal
4	Driving at approximately 40 km/h (25 mph) or higher	24		When both No. 4 and No. 5 can be confirmed, vehicle speed sensor circuit normal
5	Driving at less than approximately 40 km/h (25 mph) or stopped	25		

03R0192

### NOTE

\*1: Vehicles with a manual transmission

\*2: Vehicles with an automatic transmission

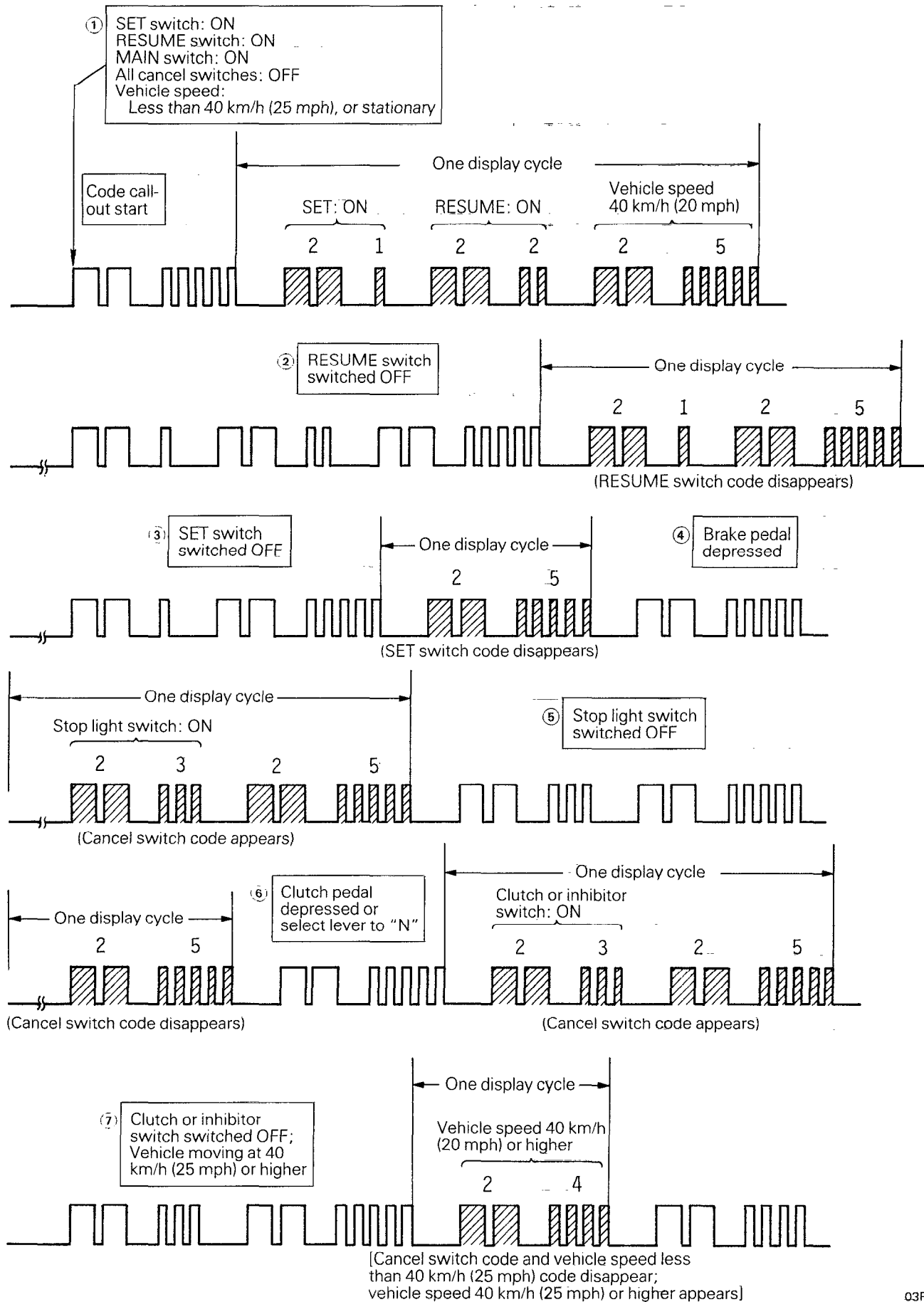
(2) Switch the MAIN switch OFF.

### NOTE

- When each input operation is performed and the signals for the conditions are received by the computer, each output code will be repeatedly displayed in the sequence of priority for as long as that signal continues.
- If, during the display of output codes, the input operation is canceled (if, for example, the SET switch is set from ON to OFF), the code will be displayed for one cycle of the display, but will not be displayed during the next cycle.  
This makes it possible, therefore, to check the OFF condition (existence or not of a short-circuit of the input line or the switch).
- The standard input check procedures and the display patterns at that time are shown on the following page.

# 14-102 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## Input Check Procedures and Display Pattern Examples (when system is normal)



## **HOW TO TROUBLESHOOT**

### **Caution**

**In case the system is canceled contrary to the driver's intention during constant speed driving, do not turn off the ignition switch or the system MAIN switch or disconnect the battery as such switch operation or battery disconnection causes the data stored in the computer (self-diagnosis) to be lost for ever.**

1. Select the corresponding trouble symptom from the Flowchart by Trouble Symptom (Symptom 1, 2) and from Other Trouble Symptom Chart (Symptom 3 to 10).
2. Perform preliminary check (in the case of Symptom 2 to 10).
3. Check in the order shown in the Flowchart by Trouble Symptom or List.
4. If the check indicates all are okay, replace the ECU.

### **PRELIMINARY INSPECTIONS**

1. Check that the accelerator and accelerator wires are installed normally and wires are connected normally.
2. Check that the accelerator moves smoothly.
3. Adjust so that the control cable may not have excessive play or tension.
4. Check that control unit, actuator, control switch and cancel switch connectors have been connected securely.

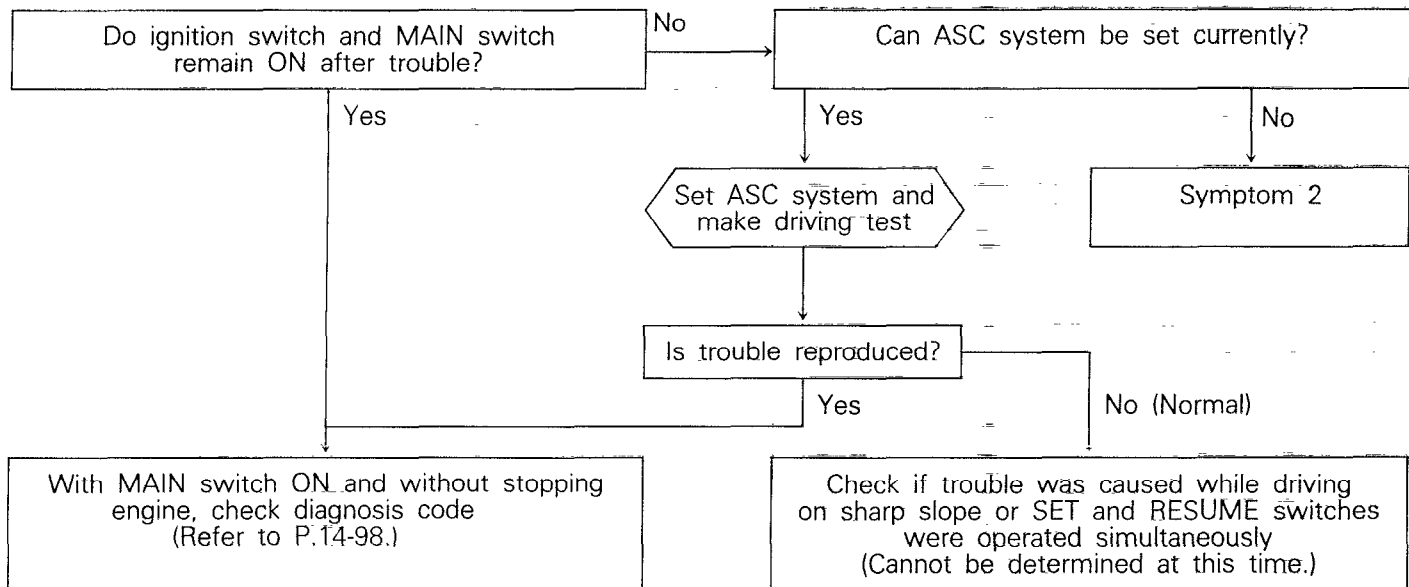
## 14-104 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

### FLOWCHART BY TROUBLE SYMPTOM

#### SYMPTOM 1

ASC system is canceled without canceling operation or ASC system cannot be set after it has been automatically canceled

ASC: Automatic speed control  
ECU: Electronic control unit



## SYMPTOM 2

ASC system cannot be set

Prepare for input check  
(Refer to P.14-100.)

Is code No. 21, 22 or 25 displayed when  
input check code is called up with the  
vehicle stopped?

No

### NOTE

If the ignition switch and MAIN switch are kept ON after occurrence of the trouble, the system that is responsible for canceling can be known by checking the diagnosis output code.

This chart indicates troubleshooting method in case self-diagnosis function is not available.

- Open circuit in ECU power supply circuit  
[go to check chart 0 (P.14-108)]
- Open circuit in SET or RESUME switch  
[go to check chart 1, 2 (P.14-109)]

Yes

Are input check results okay?

Yes

No

Check result	Probable cause	Remedy	Check chart No.
Code No. 21 does not go out when SET switch is turned off	SET switch ON failure	Replace control switch	1 (P.14-109)
	Short circuit in SET switch input wire	Correct harness	
Code No. 22 does not go out when RESUME switch is turned off	RESUME switch ON failure	Replace control switch	2 (P.14-110)
	Short circuit in RESUME switch input wire	Correct harness	
Code No. 23 does not go out when cancel switch is turned off	Cancel circuits faulty (ON failure)	Check and correct cancel circuits	5-1, 5-2, 5-3 (P.14-114)
Code No. 2 does not go out and code No. 24 is not displayed when vehicle speed is increased to 40 km/h (20 mph) or more	Vehicle speed sensor circuit faulty (open or short circuit)	Check and correct vehicle speed sensor circuit	3 (P.14-111)

- Check actuator circuit  
[go to check chart No. 4 (P.14-112)]
- Check vacuum circuit  
[go to check chart No. 7 (P.14-120)]
- Check vacuum pump circuit  
[go to check chart No. 6 (P.14-118)]

### NOTE

If results of each circuit check and independent part check are okay, replace the electronic control unit (ECU).

# 14-106 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## OTHER TROUBLE SYMPTOM CHART

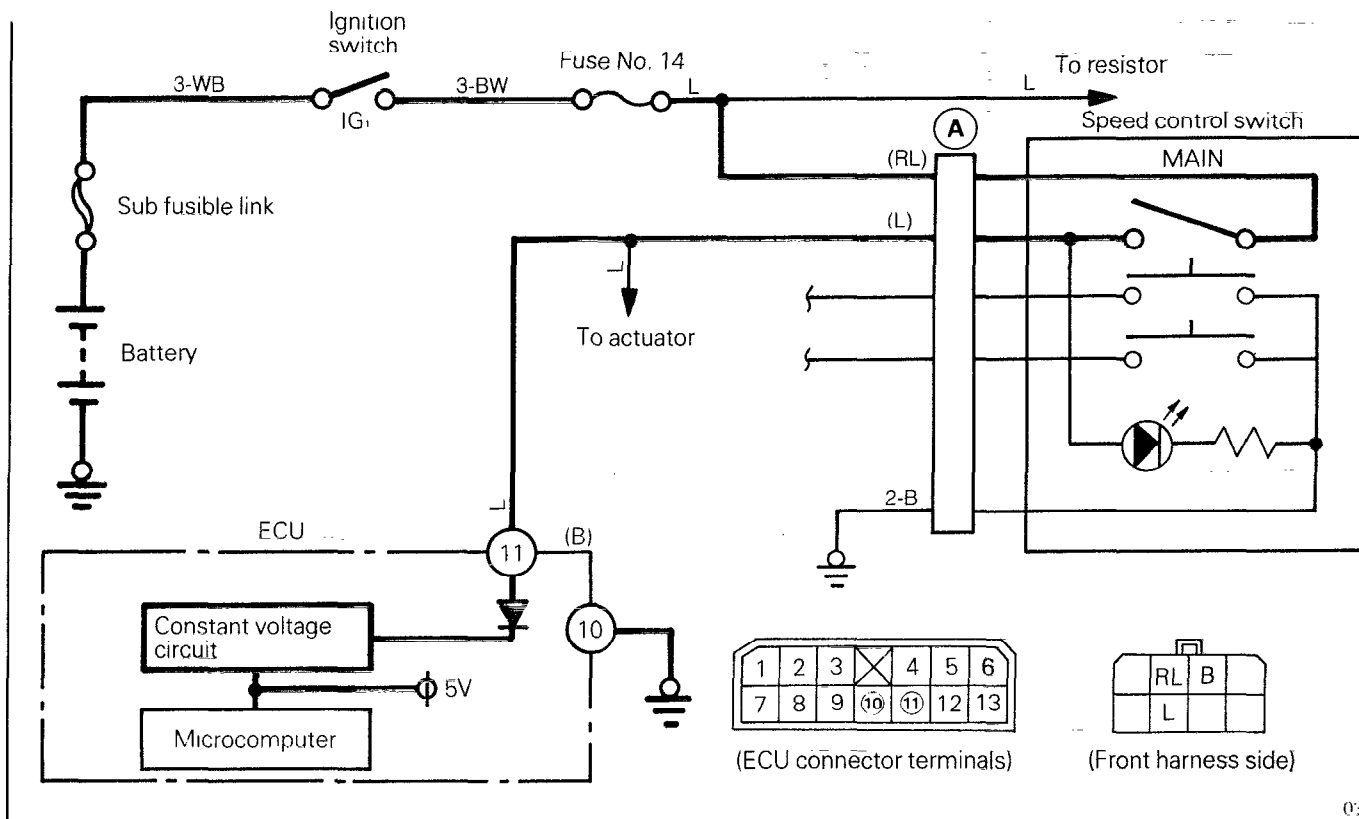
No.	Symptom	Probable cause	Check method	Remedy
3	<ul style="list-style-type: none"> <li>Set speed deviates much toward high or low speed side</li> <li>Hunting occurs when speed is set (acceleration and deceleration are repeated)</li> </ul>	Vehicle speed sensor circuit faulty	Check according to check chart No. 3 (P.14-111)	Correct vehicle speed sensor system or replace part
		Speedometer cable or speedometer driven gear faulty		
		Actuator circuit poor contact	Check according to check chart No. 4 (P.14-112)	Correct actuator system or replace part
		Actuator faulty		
		Vacuum circuit faulty	Check according to check chart No. 6, 7 (P.14-118)	Correct vacuum system or replace part
		ECU faulty	—	Replace ECU
4	ASC system is not canceled when brake pedal is depressed	Open circuit in stop light switch or ASC brake switch ON failure (short circuit)	Check input code No. 23 (P.14-100) If result is NG, check according to check chart No. 5-1 (P.14-114)	Correct harness or replace stop light switch
		Short circuit in actuator clutch coil drive circuit	Check according to check chart No. 4 (P.14-112)	Correct harness or replace actuator
		ECU faulty	—	Replace ECU
5	ASC system is not canceled when clutch pedal is depressed (vehicles with a manual transmission) [ASC system is canceled, however, when brake pedal is depressed]	Open circuit in clutch switch input circuit	Check input code No. 23 (P.14-100) If result is NG, check according to check chart No. 5-2 (P.14-115)	Correct harness, or correct or replace clutch switch
		Clutch switch installed incorrectly (fails to turn on)		
		ECU faulty	—	Replace ECU
6	ASC system is not canceled when shift lever is set to "N" (vehicles with an automatic transmission) [ASC system is canceled, however, when brake pedal is depressed]	Open circuit in inhibitor switch input circuit	Check input code No. 23 (P.14-100) If result is NG, check according to check chart No. 5-3 (P.14-116)	Correct harness, or correct or replace inhibitor switch
		Inhibitor switch adjusted incorrectly		
		ECU faulty	—	Replace ECU
7	Speed cannot be reduced by SET switch (coast)	Temporary open circuit in SET switch input circuit	Check according to check chart No. 1 (P.14-109)	Correct harness or replace SET switch
		Poor actuator circuit contact	Check according to check chart No. 4 (P.14-112)	Correct harness or replace actuator
		Actuator faulty		
		ECU faulty	—	Replace ECU

# AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting 14-107

No.	Symptom	Probable cause	Check method	Remedy
8	ACCEL or RESUME by SET switch is impossible	Open or short circuit in RESUME switch input circuit	Check according to check chart No. 2 (P.14-112)	Correct harness or replace RESUME switch
		Poor actuator circuit contact	Check according to check chart No. 4 (P.14-113)	Correct harness or replace actuator
		Actuator faulty		
		ECU faulty	—	Replace ECU
9	ASC system can be set or is not automatically canceled when vehicle speed is below 40 km/h (20 mph)	Vehicle speed sensor circuit faulty	Check according to check chart No. 3 (P.14-111)	Correct vehicle speed sensor system or replace part
		Speedometer cable or speedometer driven gear faulty		
		ECU faulty	—	Replace ECU
10	When ASC system is set while driving over about 110 km/h (68 mph), vehicle is decelerated to about 110 km/h (68 mph) and keeps that speed	Open circuit in ECU terminal No. 6 (High-speed change-over input terminal) grounding wire	Check ECU terminal No. 6 grounding wire	Correct harness
		ECU faulty	—	Replace ECU

# 14-108 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## 0. Checking ECU power supply circuit



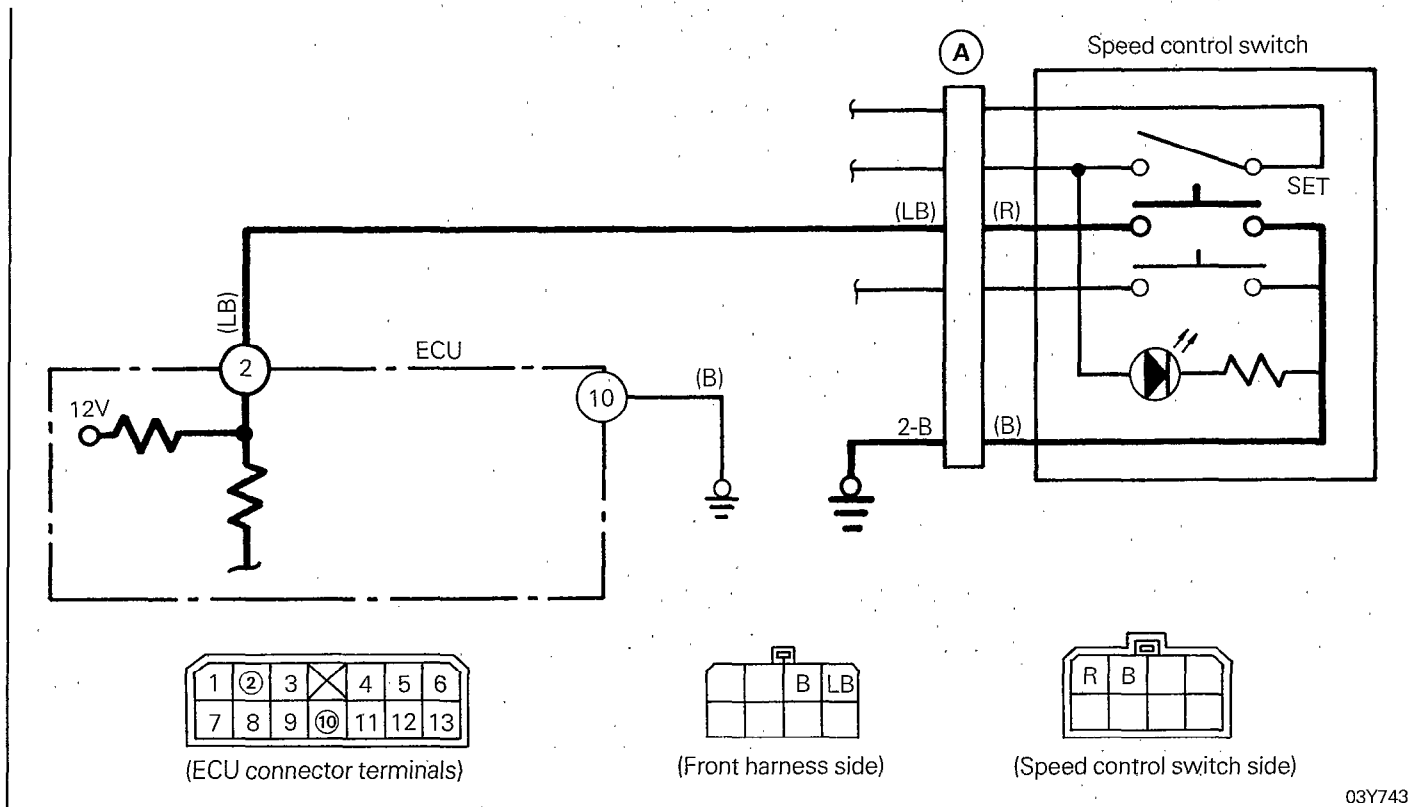
03Y147

Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Ignition switch: ON position	Ⓐ connector terminal voltage [(RL) – Ground]	Battery voltage	0 V	Blown fuse No. 14	Replace fuse
					Open circuit in harness	Correct harness
2	Ignition switch: ON position MAIN switch: ON ↔ OFF	Ⓐ connector terminal voltage [(L) – Ground]	Battery voltage ↑ 0 V	Remains at battery voltage	Open or short circuit in MAIN switch or harness	Replace speed control switch or correct harness (Refer to P.14-134.)
				Remains at 0 V		
3	Ignition switch: ON position MAIN switch: ON position	ECU terminal voltage (11 – Ground)	Battery voltage	0 V	Open circuit in harness	Correct harness
4	Ignition switch: OFF position Disconnect ECU harness connector	ECU ground circuit continuity (10 – Ground)	With continuity (0 Ω)	Without continuity (∞ Ω)	Open circuit in harness	Correct harness

### NOTE

- If the diagnosis codes or input check codes can be confirmed, the ECU power supply circuit can be judged as normal. In this case, checking with this chart is unnecessary.
- For measurement of the terminal voltage or continuity test, use extra-fine check probes and apply them to correct terminals.
- If all above check results are normal, the ECU power supply circuit is okay.

## 1. Checking SET switch circuit



03Y743

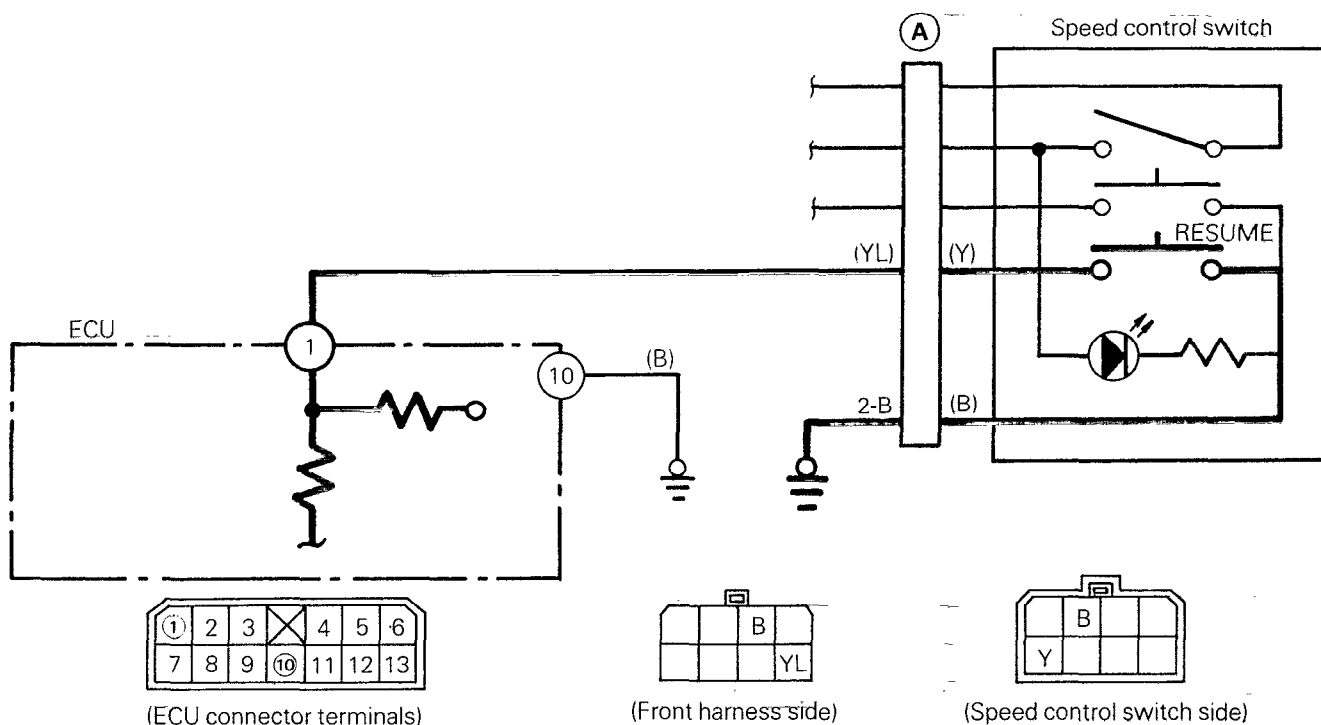
Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Ignition switch: OFF position Ⓐ connector: Disconnect SET switch: ON ↔ OFF	Continuity between Ⓐ connector terminals [(R) – (B)]	With continuity (0 Ω) ↕ Without continuity (∞ Ω)	With continuity, remaining at 0 Ω  Without continuity, remaining at ∞ Ω	Open or short circuit in SET switch or harness	Replace speed control switch or correct harness (Refer to P.14-134.)
2	Ignition switch: OFF position Ⓐ connector: Connect ECU connector: Disconnect SET switch: ON ↔ OFF	Continuity between ECU terminal and ground (2 – Ground)	With continuity (0 Ω) ↕ Without continuity (∞ Ω)	With continuity, remaining at 0 Ω	Short circuit in wire (LB) between ECU and Ⓐ connector	Correct harness
				Without continuity, remaining at ∞ Ω	Short circuit in Ⓐ connector wire 2-B or wire (LB) between ECU and Ⓐ connector	Correct harness

### NOTE

- If the indicator light comes on when the MAIN switch is turned on with the ignition switch in the ON position, the Ⓐ connector 2-B wire is okay.
- For measurement of the terminal voltage or continuity test, use extra-fine check probes and apply them to correct terminals.
- If all above check results are normal, the SET switch circuit is okay.

# 14-110 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## 2. Checking RESUME switch circuit



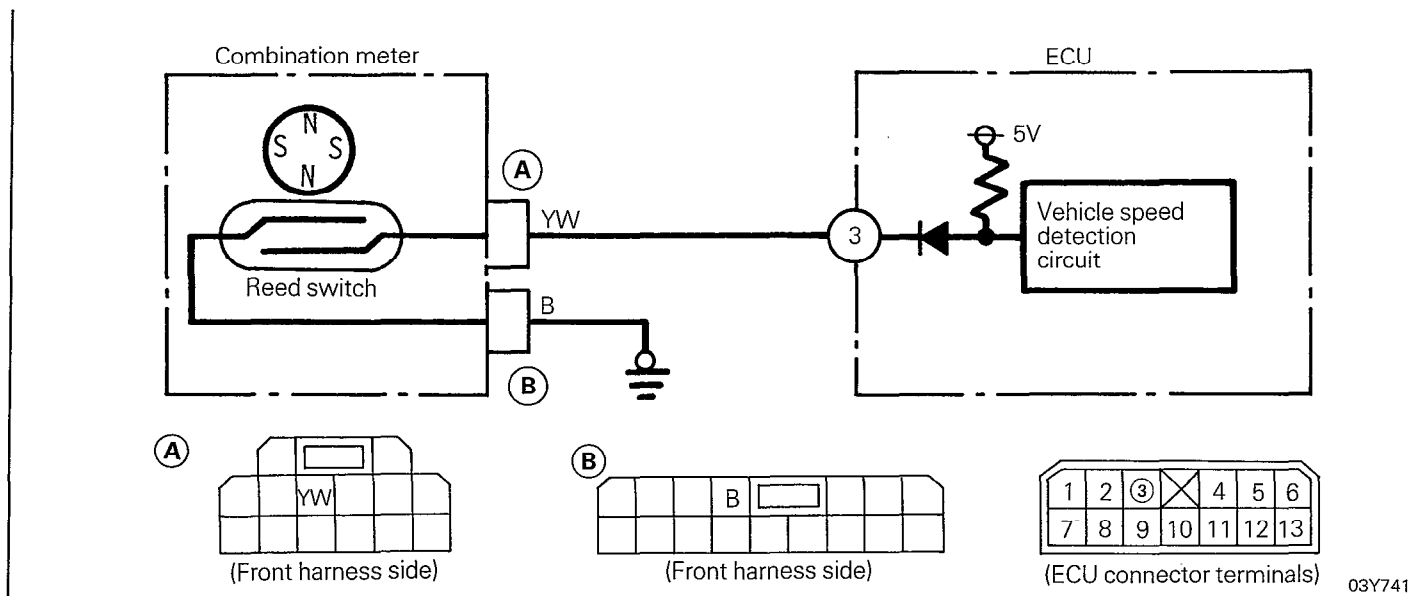
03Y742

Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Ignition switch: OFF position Ⓐ connector: Disconnect RESUME switch: ON ↔ OFF	Continuity between Ⓐ con- nector terminals [(Y) – (B)]	With continuity (0 Ω) ↑ Without continuity (∞ Ω)	With continuity, remaining at 0 Ω	Open or short circuit in RESUME switch or harness	Replace speed control switch or correct harness (Refer to P.14-134.)
				Without conti- nuity, remaining at ∞ Ω		
2	Ignition switch: OFF position Ⓐ connector: Connect ECU connector: Disconnect RESUME switch: ON ↔ OFF	Continuity between ECU terminal and ground (1 – Ground)	With continuity (0 Ω) ↑ Without continuity (∞ Ω)	With continuity, remaining at 0 Ω	Short circuit in wire (YL) be- tween ECU and Ⓐ connector	Correct harness
				Without conti- nuity, remaining at ∞ Ω	Short circuit in Ⓐ connector wire 2-B or wire (YL) between ECU and Ⓐ connector	Correct harness

### NOTE

1. If the indicator light comes on when the MAIN switch is turned on with the ignition switch in the ON position, the Ⓐ connector 2-B wire is okay.
2. For measurement of the terminal voltage or continuity test, use extra-fine check probes and apply them to correct terminals.
3. If all above check results are normal, the RESUME switch circuit is okay.

## 3. Checking vehicle speed sensor circuit



Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Drive with MAIN switch in OFF position	Speedometer indication error (Refer to Service Manual Vol. 2 GROUP 8 ELECTRICAL – Meters and gauges.)	When driving at 40 km/h (25 mph), +4 km/h 0 km/h ±1.5 mph	Error exceeds specified limit or large pointer deflection	Poor speedometer cabling or oil entering	Correct or replace speedometer cable (Refer to GROUP 21 TRANSMISSION – Service Adjustment Procedures.)
					Speedometer driven gear faulty	Replace speedometer driven gear (Refer to GROUP 21 TRANSMISSION – Speedometer Sleeve Assembly.)
2	Disconnect speedometer cable from transmission Ignition switch: ON position MAIN switch: OFF position	ECU terminal voltage (3 – Ground) when speedometer inner cable is turned slowly	10 V or more ↑ 0 V (changes 4 times per every cable rotation)	Remains at 10 V or more	Open circuit in vehicle speed sensor (reed switch) or in harness	Replace meter assembly or correct harness (Refer to Service Manual Vol. 2 GROUP 8 ELECTRICAL – Meters and Gauges.)
				Remains at 0 V	Short circuit in vehicle speed sensor (reed switch) or in harness	
				Unstable voltage change	Poor connector terminal contact	Check connector terminal contact pressure and correct

### NOTE

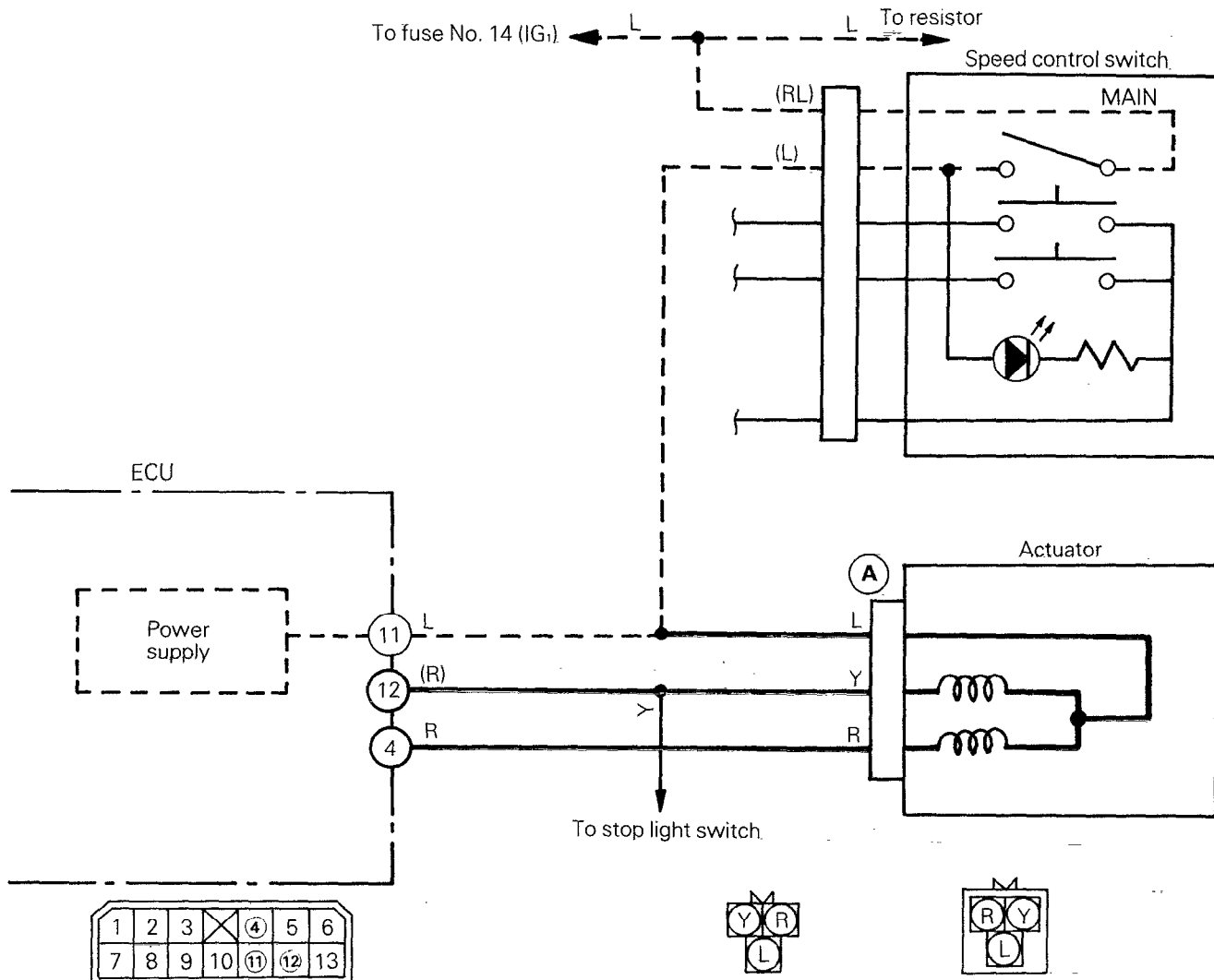
- For measurement of the ECU terminal voltage, use extra-fine check probes and apply them to correct terminals.
- If all above check results are normal, the vehicle speed sensor system is okay.

### Caution

**When speedometer indication error is checked with a speedometer tester, apply chocks to the driven wheels to prevent the car from running away.**

# 14-112 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## 4. Checking actuator circuit



# AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting 14-113

## NOTE

The following check chart assumes that the circuit (ECU power supply circuit) indicated by broken lines in the illustration is normal.

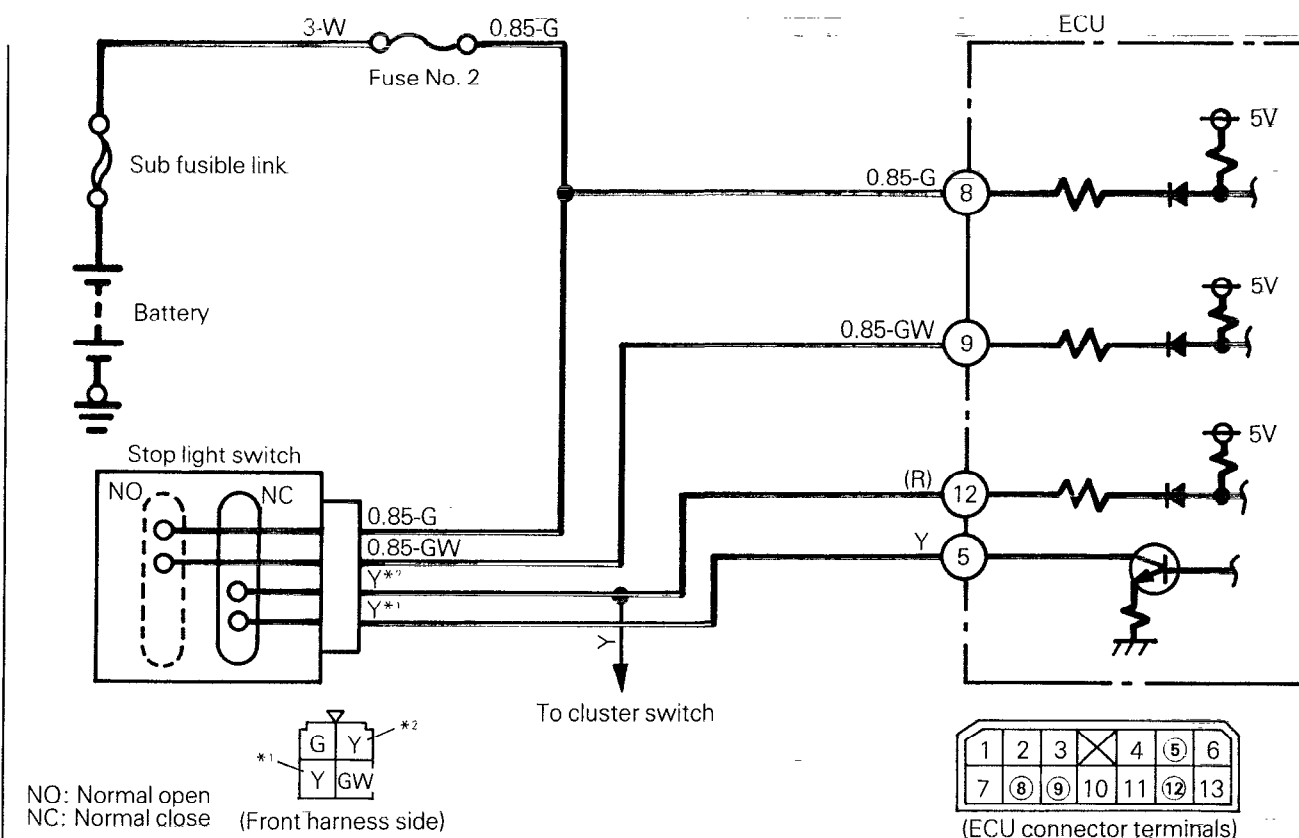
Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Disconnect ECU harness connector Ignition switch: ON position MAIN switch: ON position	Ⓐ connector (harness side) terminal voltage (L – Ground)	Battery voltage	0 V	Open circuit in harness L wire between column switch and Ⓐ connector	Correct harness
2	Ignition switch: OFF position Disconnect Ⓐ connector	Resistance between Ⓐ connector (actuator side) terminals (of solenoid) (L – R) (L – Y)	Approx. 30 $\Omega$ (L – R) Approx. 60 $\Omega$ (L – Y)	$\infty \Omega$	Open circuit in solenoid	Replace actuator (Refer to P.14-135.)
				Resistance too small	Short circuit in solenoid	
3	Connect Ⓐ connector and disconnect ECU harness connector Ignition switch: ON position MAIN switch: ON position	ECU terminal voltage (12 – Ground) (4 – Ground)	Battery voltage	0 V	Open circuit in harness [(R), Y, R] wires between actuator and ECU	Correct harness

## NOTE

For measurement of the ECU terminal voltage or resistance, use extra-fine check probes and apply them to correct terminals.

# 14-114 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## 5-1. Checking stop light switch circuit



03Y745

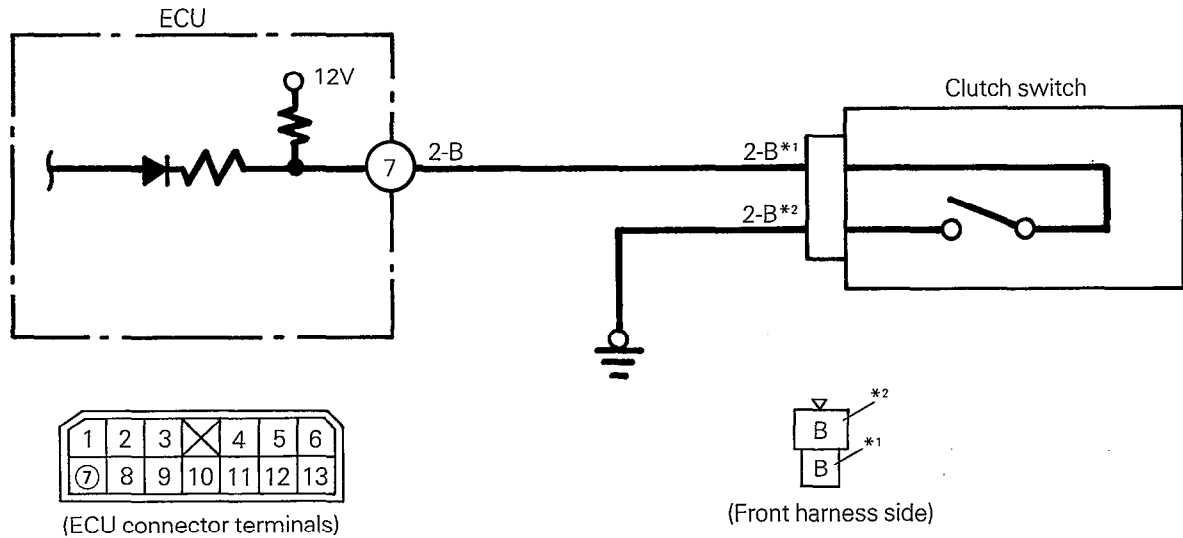
Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Disconnect ECU harness connector	ECU harness side connector terminal voltage (8 – Ground)	Battery voltage	0 V	Open circuit in harness between fuse No. 2 and ECU terminal No. 8	Correct harness
					Blown fuse No. 2	Replace fuse
2	Disconnect ECU harness connector ON ↔ OFF	ECU harness side connector terminal voltage (9 – Ground)	Battery voltage ↕ 0 V	Remains at battery voltage	Stop light switch ON failure	Replace stop light switch
				Remains at 0 V	Open circuit in stop light switch or incorrect installation	Replace stop light switch or correct installation
					Open circuit in harness	Correct harness
3	Disconnect ECU harness connector Stop light switch: ON ↔ OFF	Continuity between ECU terminals (5 – 12)	With continuity (0 Ω) ↕ Without continuity (∞ Ω)	Remains with continuity (0 Ω)	Stop light switch ON failure	Replace stop light switch
				Remains without continuity (∞ Ω)	Open circuit in stop light switch or incorrect installation	Replace stop light switch or correct installation
					Open circuit in harness	Correct harness

### NOTE

- For measurement of the terminal voltage, use extra-fine check probes and apply them to correct terminals.
- If all above check results are normal, the stop light switch circuit is normal (the stop light must come on).

## 5-2. Checking clutch switch circuit

### Vehicles with a manual transmission



03Y744

Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Disconnect ECU harness connector	Continuity between ECU harness side terminal and ground (7 – Ground) when clutch switch is turned ON ↔ OFF	With continuity (0 Ω) ↓ Without continuity (∞ Ω)	Remains with continuity (0 Ω)	Clutch switch ON failure	Replace clutch switch
				Remains without continuity (∞ Ω)	Open circuit in clutch switch or incorrect installation	Replace clutch or correct installation
					Open circuit in harness	Correct harness

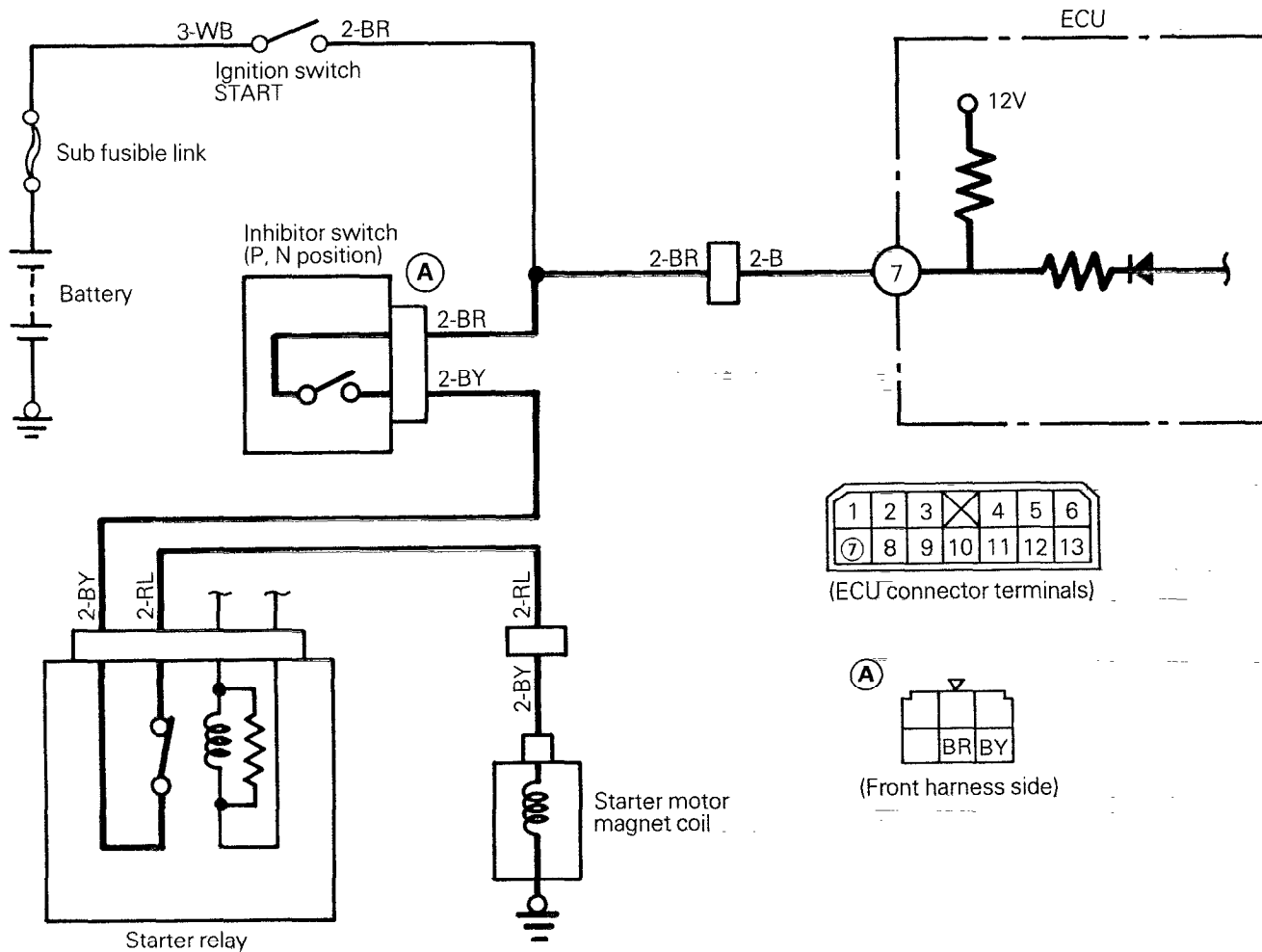
#### NOTE

- For measurement of the terminal voltage, use extra-fine check probes and apply them to correct terminals.
- If all above check results are normal, the clutch switch circuit is normal.

## 14-116 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

### 5-3. Checking inhibitor switch circuit

#### Vehicles with an automatic transmission



# AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting 14-117

Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Selector lever at P or N	Starter motor rotates when ignition switch is set at START	Motor rotates	Motor does not rotate	Starting circuit faulty	Refer to Service Manual Vol. 2 GROUP 8 ELECTRICAL – Starting System.
2	Selector lever at D, 2 or L	Starter motor rotates when ignition switch is set at START	Motor does not rotate	Motor rotates	Inhibitor incorrectly adjusted	Refer to GROUP 21 TRANSMISSION – Service Adjustment Procedures.
3	Disconnect ECU harness connector Selector lever at P or N	Continuity between ECU harness side connector terminal and ground (7 – Ground)	With continuity (0 $\Omega$ )	Without continuity ( $\infty$ $\Omega$ )	Open circuit in harness between ECU and inhibitor switch	Correct harness

## NOTE

If all above check results are normal, the inhibitor switch circuit is normal.

[illegible]

### 6. Checking vacuum switch, pump and relay circuit



## NOTE

The following check chart assumes that the circuit (ECU power supply circuit) indicated by broken lines and the circuit (actuator circuit) indicated by double-dot-and dash line in the illustration are normal.

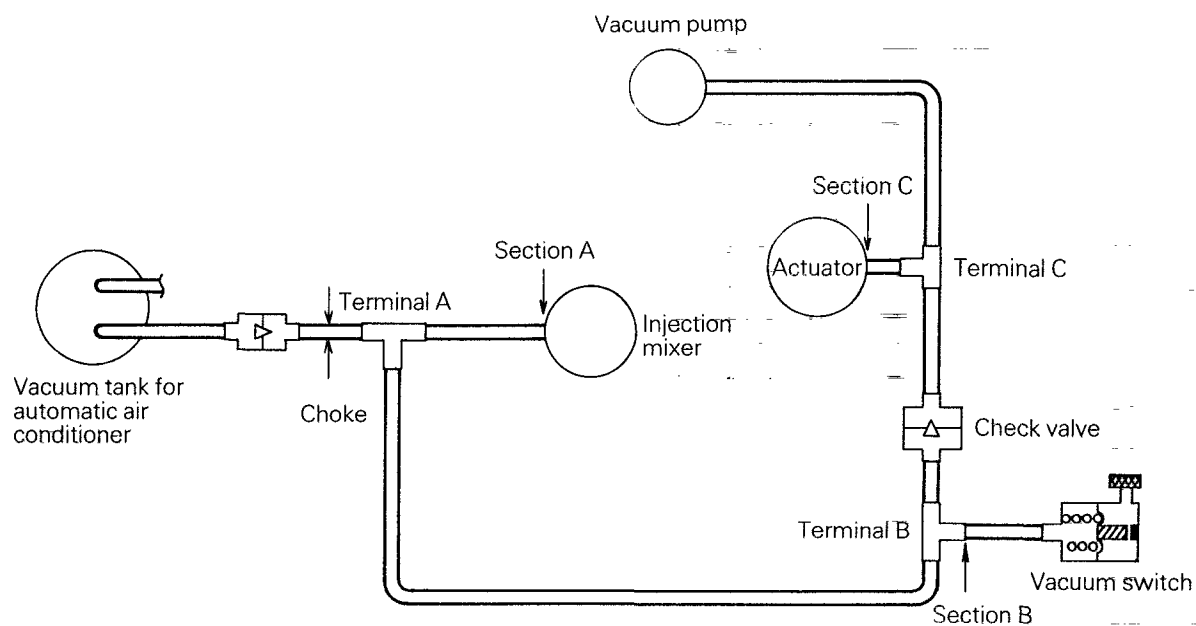
Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Disconnect ECU harness connector Ignition switch: ON position MAIN switch: ON position	Ⓐ connector terminal voltage (L – Ground)	Battery voltage	0 V	Open circuit in harness L wire between column switch and Ⓐ connector	Correct harness
2	Disconnect ECU harness connector and disconnect vacuum switch piping Ignition switch: ON position MAIN switch: ON position	Ⓐ connector terminal voltage (G – Ground)	Battery voltage	0 V	Open circuit in vacuum switch	Replace vacuum switch (Refer to P.14-135.)
3	Disconnect ECU harness connector and disconnect vacuum switch piping Ignition switch: ON position MAIN switch: ON position	Ⓑ connector terminal voltage (G – Ground)	Battery voltage	0 V	Open circuit in harness G wire between Ⓐ connector and Ⓑ connector	Correct harness
4	Disconnect ECU harness connector and disconnect vacuum switch piping Ignition switch: ON position MAIN switch: ON position	Ⓑ connector terminal voltage [(Y) – Ground]	Battery voltage	0 V	Open circuit in vacuum pump relay coil	Replace vacuum pump relay
5	Disconnect ECU harness connector and disconnect vacuum switch piping Ignition switch: ON position MAIN switch: ON position	ECU terminal voltage (12 – Ground)	Battery voltage	0 V	Open circuit in harness (Y) wire	Correct harness
6	Disconnect ECU harness connector and disconnect vacuum switch piping Ignition switch: ON position MAIN switch: ON position	Ⓒ connector terminal voltage (R – Ground)	Battery voltage	0 V	Open circuit in harness 2-WB or 2-R wire or poor vacuum pump relay contact	Correct harness or replace vacuum pump relay
7	Disconnect Ⓒ connector	Continuity between Ⓒ connector and ground (B – Ground)	With continuity (0 Ω)	Without continuity (∞ Ω)	Open circuit in harness 0.85-B wire	Correct harness

## NOTE

- For measurement of the terminal voltage or continuity test, use extra-fine check probes and apply them to correct terminals.
- If all above check results are normal, the vacuum pump is suspected faulty. Then, check the vacuum pump. (Refer to P.14-131.)

## 14-120 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

### 7. Checking vacuum circuit



16Y2910

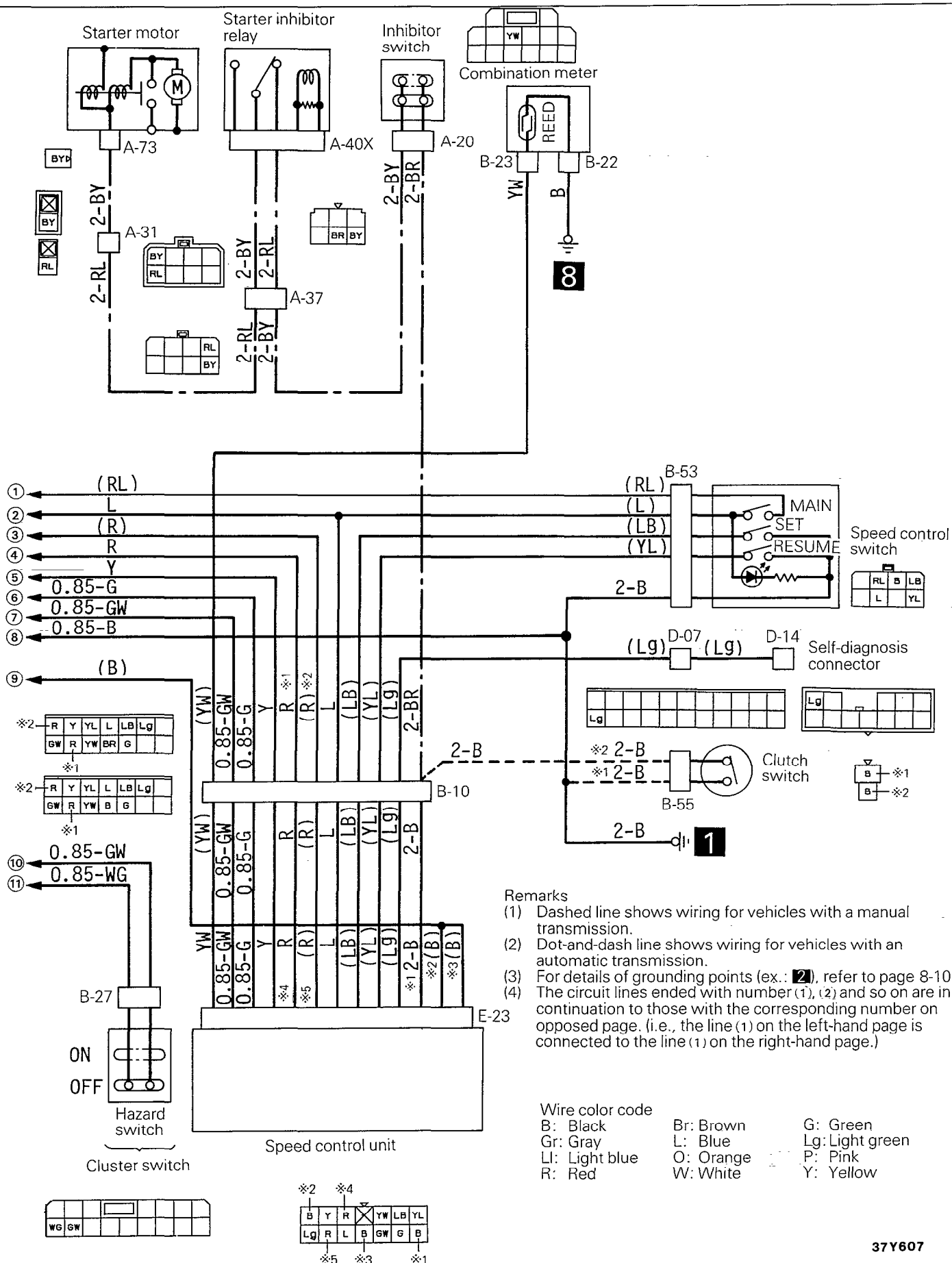
# AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting 14-121

Step	Check method		Judgement		Probable cause	Remedy
	Condition	Check item	Normal	Faulty		
1	Disconnect terminal B at section B Apply vacuum to switch side using a hand vacuum pump	Generation of vacuum	Generated	Not generated	Faulty vacuum switch	Replace vacuum switch
2	Choke automatic air conditioner side of terminal A Connect section B of terminal B Disconnect section A Apply positive pressure to section A on pipe side using a hand vacuum pump	Generation of positive pressure	Generated	Not generated	Check valve faulty, terminal A, B faulty, vacuum pipe (check mixer) faulty	Replace check valve Replace terminal A, B Replace vacuum pipe valve to injection
3	Disconnect section C of actuator Apply vacuum to pipe side of section C using a hand vacuum pump	Generation of vacuum	Generated	Not generated	Vacuum pump faulty, terminal C faulty, vacuum pipe (vacuum pump to check valve and terminal C to actuator) faulty	Replace vacuum pump Replace terminal C Replace vacuum pipe

## NOTE

1. Check that connectors and vacuum hose are free of detrimental cracks or collapse.
2. If all above check results are normal, check the actuator. (Refer to P.14-130.)





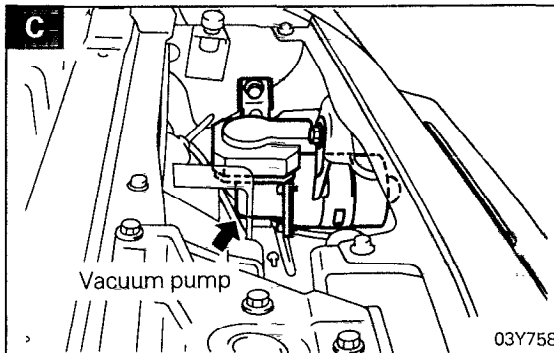
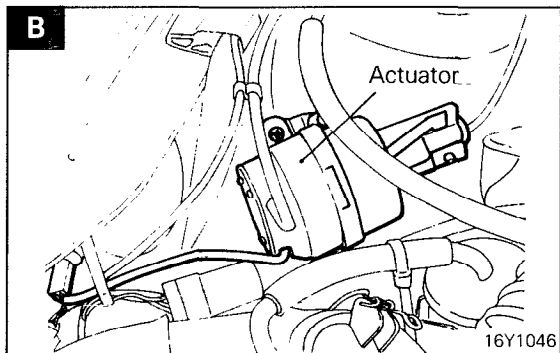
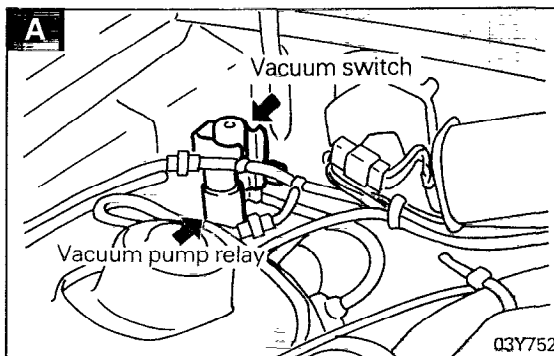
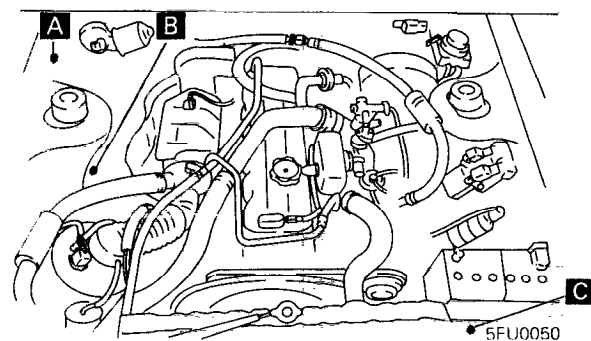
# 14-124 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Troubleshooting

## CONTROL SECTION PARTS LAYOUT

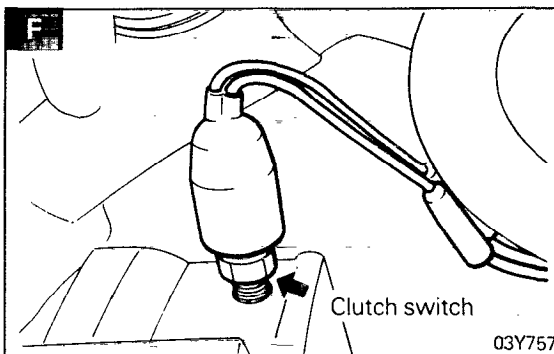
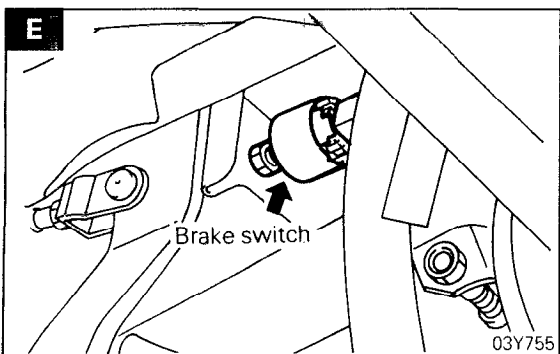
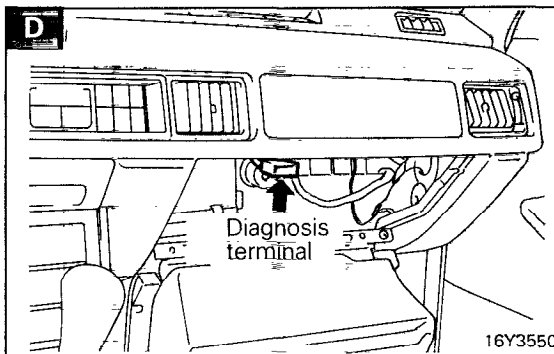
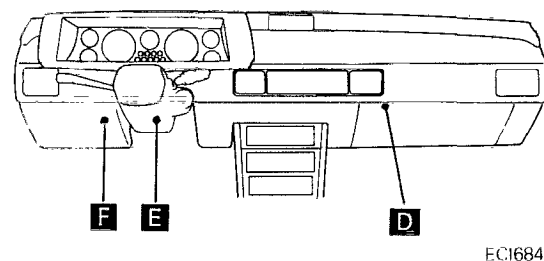
N14ED-A

Name	Symbol	Name	Symbol
Actuator	B	Electronic control unit (ECU)	G
Brake switch	E	Vacuum pump	C
Clutch switch (Vehicles with manual transmission)	F	Vacuum pump relay	A
Diagnosis terminal	D	Vacuum switch	A

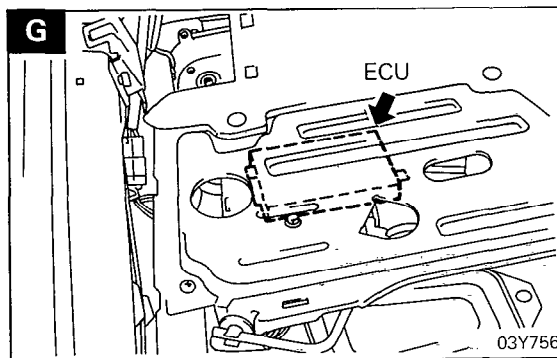
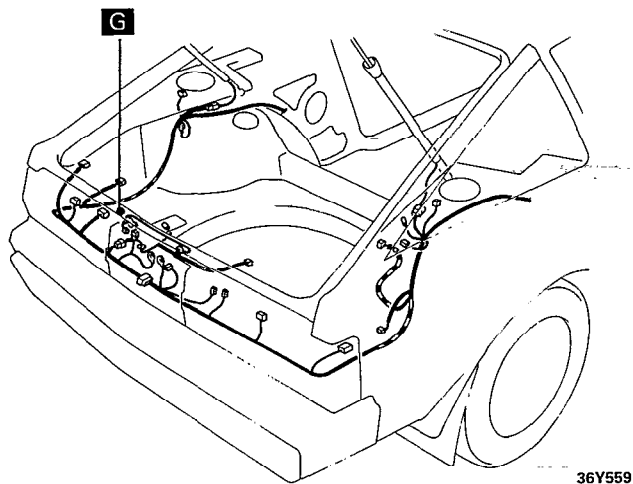
### ENGINE COMPARTMENT



### INSTRUMENT PANEL



**LUGGAGE COMPARTMENT**

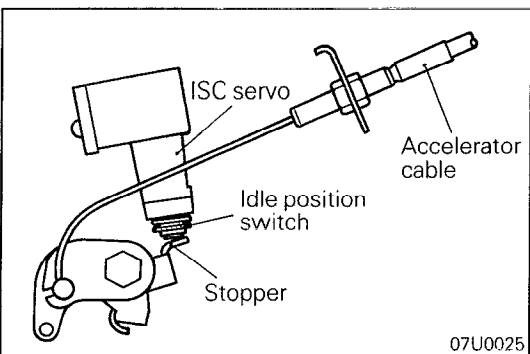
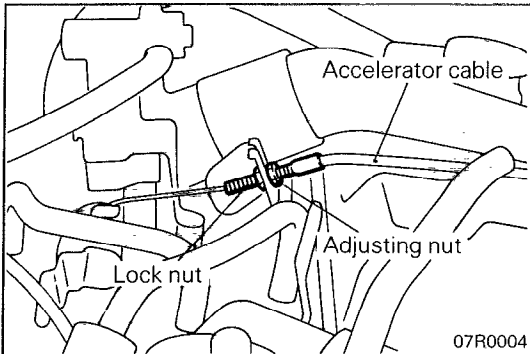


## SERVICE ADJUSTMENT PROCEDURES

N14FBBB

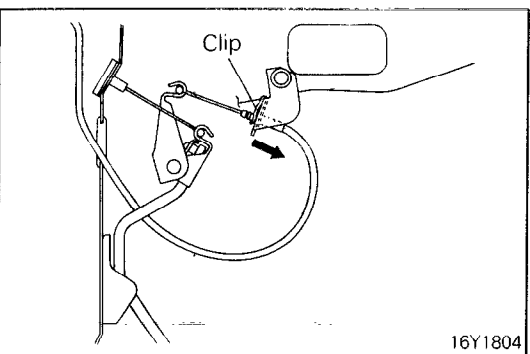
### ACCELERATOR CABLE FREE PLAY INSPECTION AND ADJUSTMENT

- (1) Run the engine until it reaches the specified idle speed.
- (2) Turn the ignition switch to "OFF" to stop the engine.
- (3) Check the accelerator cable for sharp bends.
- (4) Check the inner cable that it has proper slackness.
- (5) If there is excessive or no slackness, adjust as follows.



- ① Turn the ignition switch to "ON" for 15 seconds. (Do not run the engine.)
- ② Loosen the adjusting nut so that the throttle lever is free.
- ③ Turn the accelerator adjusting nut to the point where the throttle lever just starts moving, then back off 1/2 turn and secure the lock nut.

- (6) Confirm that the idle position switch touches to the stopper after the idle speed control adjustment.



### SPEED CONTROL CABLE ADJUSTMENT

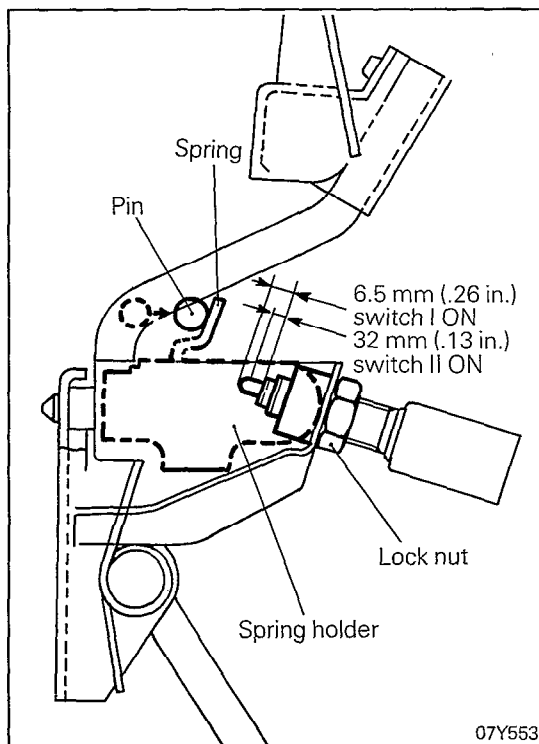
N14FAAA

- (1) Adjust the play of accelerator cable.
- (2) Slide the speed control cable in the direction of the arrow up to a point just before the accelerator pedal begins to move, and secure the speed control cable by inserting a clip.
- (3) Check to ensure that the play of speed control cable is up to standard value.

**Standard value: 0 – 3 mm (0 – .1 in.)**

#### NOTE

If the play adjustment is incorrect, either an increase of idle speed or lack of speed control in the high speed range will result.



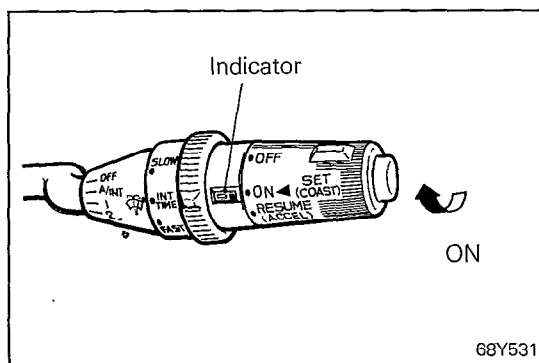
## KICKDOWN SWITCH ADJUSTMENT

- (1) Loosen the lock nut.
- (2) Turn the kickdown switch to adjust it so that when pedal stroke is between 36 and 38 mm (1.4 and 1.5 in.), switch I is ON and when pedal stroke is between 45 and 49 mm (1.8 and 1.9 in.), switch II is ON.

### NOTE

Make sure that overall pedal stroke is 57 mm (2.2 in.) or more.

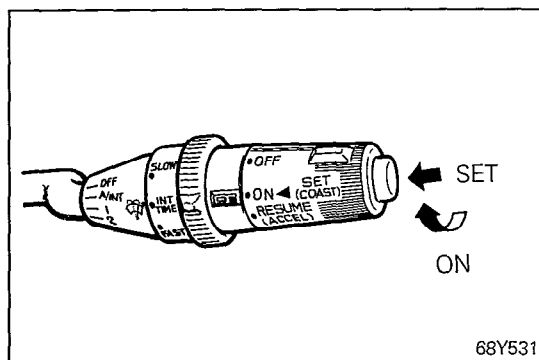
- (3) After adjustment of kickdown switch, move the spring holder to make adjustment so that as soon as the switch I of kickdown switch is ON, the pin of accelerator arm may contact the spring.



## SPEED CONTROL SYSTEM CHECK

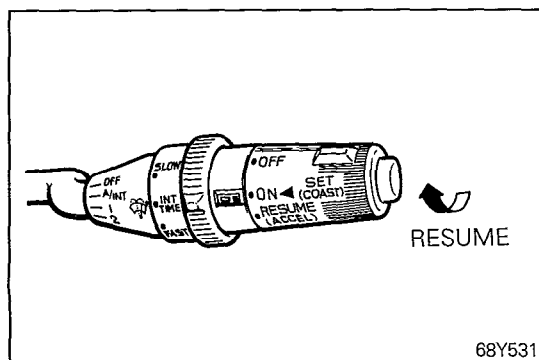
### MAIN SWITCH CHECK

1. Turn the ignition key to ON.
2. Check that the indicator lights when the MAIN switch is set to ON.



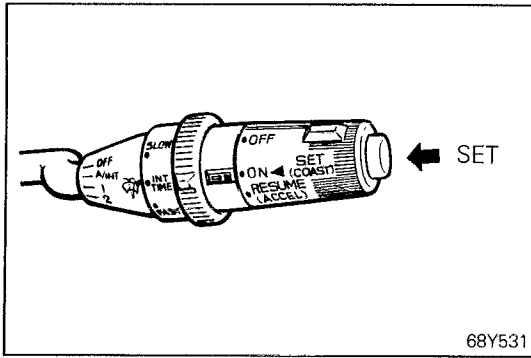
### SPEED CONTROL SET CHECK

1. Set the MAIN switch to ON.
2. Run the vehicle at a desired speed over approximately 40 km/h (25 mph).
3. Press the SET switch of the control switch.
4. Check that the vehicle runs constantly at the desired speed when the switch is released.



### ACCELERATION SET CHECK

1. Set to the desired speed.
2. Turn the control switch to the RESUME position.
3. Check that acceleration continues while the switch is in the RESUME position and after release, the vehicle keeps the speed at which it was running when the switch was released.



### DECELERATION SET CHECK

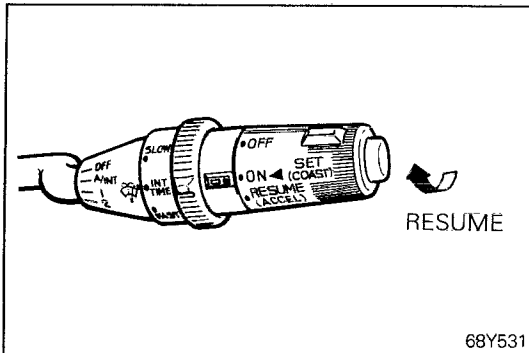
1. Set at the desired speed.
2. Press the SET switch of the control switch.
3. Check that deceleration continues while the switch is held down and after release, the vehicle keeps the speed at which it was running when the switch was released.

#### NOTE

If the vehicle speed reaches the lower speed limit [approx. 40 km/h (25 mph)] during deceleration, the speed control is cancelled automatically.

### SPEED CONTROL CANCEL CHECK

1. Set the speed control.
2. Check that the vehicle returns to normal running mode when any of the following operations is made.
  - (1) Depress the brake pedal.
  - (2) Depress the clutch pedal. (Vehicles with a manual transmission)
  - (3) Set the gear select lever to "N" (Neutral).
  - (4) Turn OFF the speed control MAIN switch.



### SET SPEED RESUMPTION CHECK

1. Set the speed control.
2. Cancel the speed control by making any of the following operation.
  - (1) Depress the brake pedal.
  - (2) Depress the clutch pedal. (Vehicles with a manual transmission)
  - (3) Set the gear select lever to "N" (Neutral).
3. Turn the control switch to the RESUME position while the vehicle speed is approximately 40 km/h (25 mph) or higher.
4. Turn the control switch to check that the vehicle runs again at the speed that was set before cancelling of the speed control.

#### NOTE

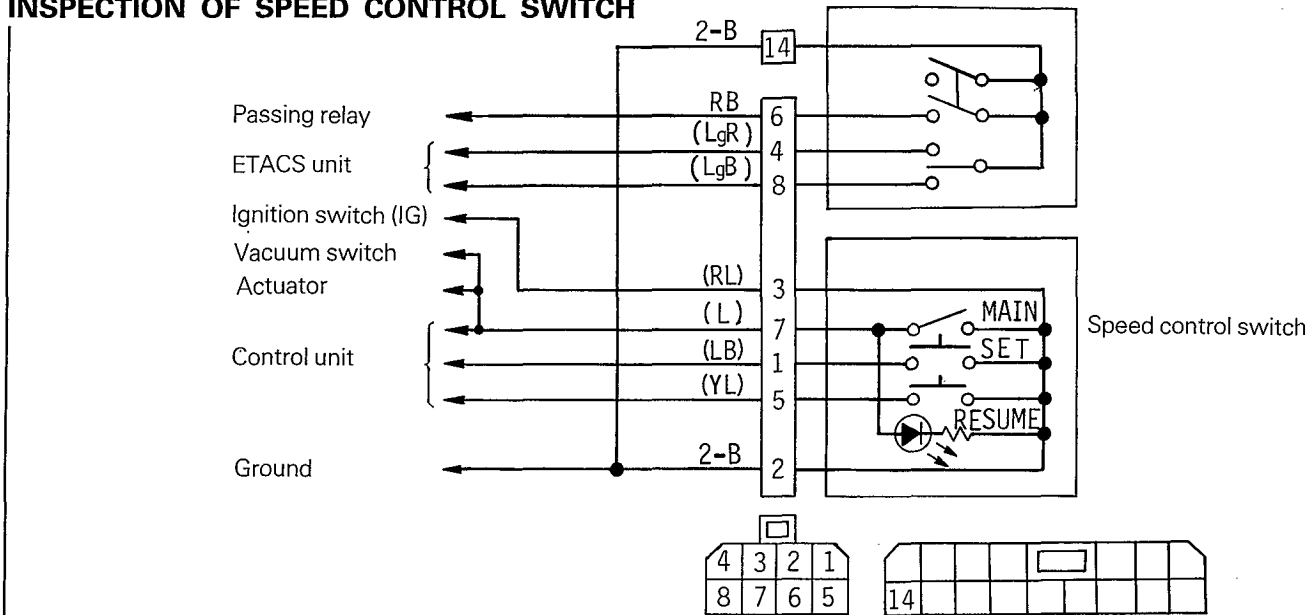
When the vehicle speed once recovers to the set speed less about 10 km/h (6 mph) and then drops again more than 20 km/h (12 mph) during the RESUME mode, the ASC mode is automatically cancelled.

## INSPECTION

N14TCAC

## CHECKING CIRCUIT AND INDIVIDUAL PARTS

## INSPECTION OF SPEED CONTROL SWITCH



16Y2906

## INSPECTION OF HARNESS

Disconnect the column switch connectors and check at the vehicle body side connector.

Terminal	Destination	Measuring item	Tester connection	Check conditions	Standard
3	Ignition switch (IG)	Voltage	3 – Ground	Ignition switch: OFF → ON	0 V → Battery voltage
2	Ground	Continuity	2 – Ground	Normal	With continuity

## INSPECTION OF SWITCHES

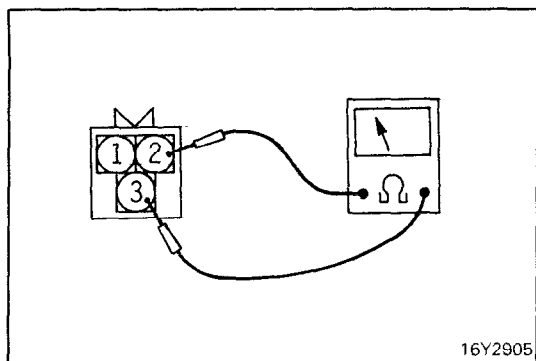
Disconnect the column switch connectors and check at the switch side connector.

No.	Check item	Measuring item	Tester connection	Check conditions	Standard
1	MAIN switch	Continuity	3 – 7	MAIN switch OFF	Without continuity
				MAIN switch ON	With continuity
2	Indication light	Continuity	7 – 2 (→)*	Normal	With continuity
		Continuity	7 – 2 (←)*	Normal	Without continuity
3	SET switch	Continuity	1 – 2	SET switch OFF	Without continuity
				SET switch ON	With continuity
4	RESUME switch	Continuity	5 – 2	RESUME switch OFF	Without continuity
				RESUME switch ON	With continuity

## NOTE

- Replace the switch if out of specification.
- An asterisk (\*) denotes tester polarity. To check for light (LED) open or short circuit, apply the circuit tester probes in such a manner that the current will flow in the forward direction of the diode symbol.

## 14-130 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Inspection



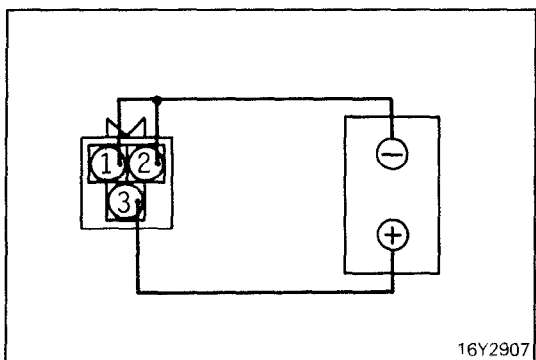
### INSPECTION OF ACTUATOR

#### RESISTANCE CHECK

Measure resistance of each coil.

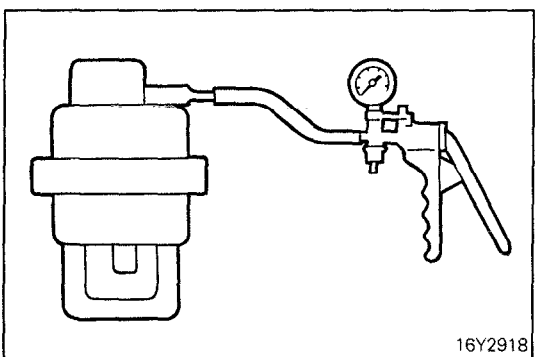
**Terminals 1 and 2 (control valve coil): Approx. 30  $\Omega$**

**Terminals 1 and 3 (release valve coil): Approx. 60  $\Omega$**

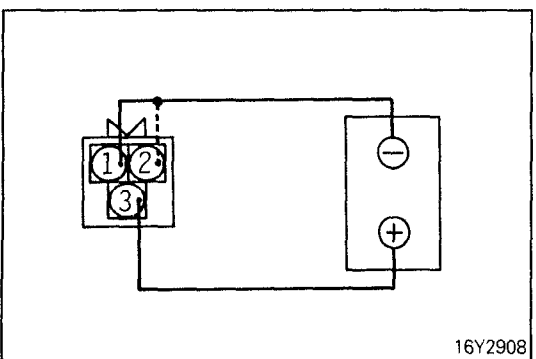


#### OPERATION CHECK

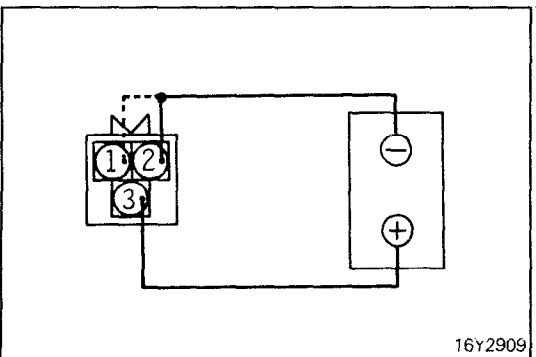
- (1) Connect battery  $\oplus$  to terminal 3 and battery  $\ominus$  to terminals 1 and 2.



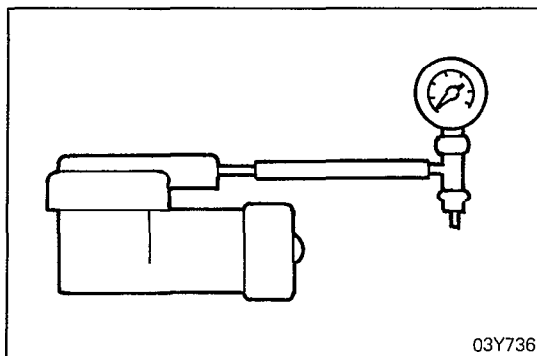
- (2) Use vacuum pump to apply vacuum to the vacuum port of the actuator and check that the accelerator cable is smoothly drawn in and held at drawn-in position.



- (3) Disconnect battery  $\ominus$  for terminal 2 in the state of (2) above and check that the accelerator cable connecting point smoothly moves back to the initial position.

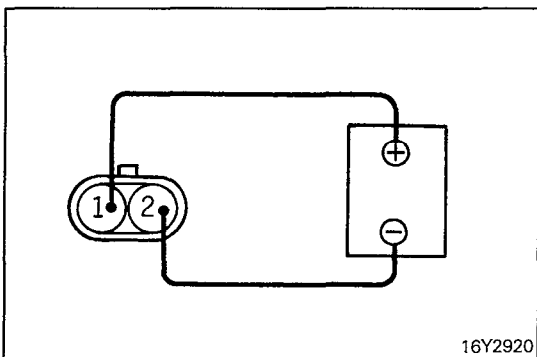


- (4) Repeat steps (1) and (2) above to check that the accelerator cable connecting point smoothly moves back to the initial position when battery  $\ominus$  is disconnected from terminal 1.



### INSPECTION OF VACUUM PUMP

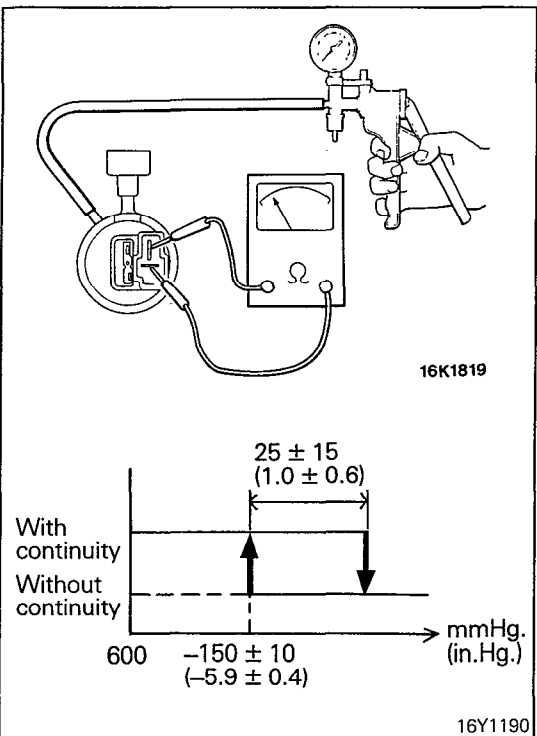
(1) Connect a vacuum gauge to the vacuum pump.



(2) Connect battery ⊕ to terminal 1 and battery ⊖ to terminal 2 and operate the vacuum pump to check that a vacuum of 150 mmHg (5.9 in.Hg) or higher is generated.

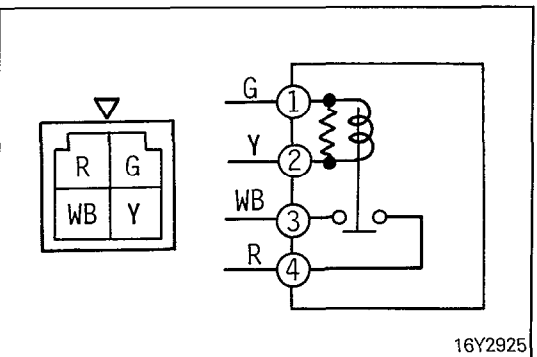
(3) After releasing the vacuum, reconnect the battery and generate a vacuum of 200 mmHg (7.9 in.Hg). Then disconnect the battery.

(4) In 2 minutes, check that vacuum is held at 150 mmHg (5.9 in.Hg) or higher.



### INSPECTION OF VACUUM SWITCH

Connect a vacuum pump to the vacuum port of the vacuum switch and apply a vacuum to check for continuity between switch terminals.

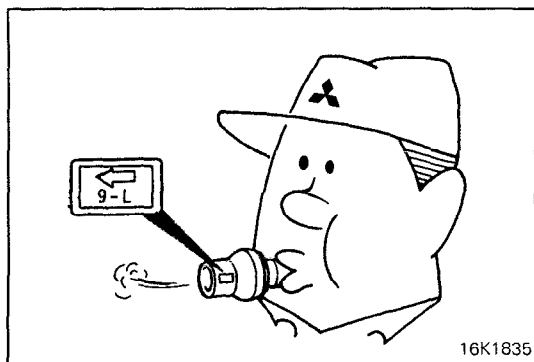


### INSPECTION OF VACUUM PUMP RELAY

Check the continuity between terminals when relay coil is energized and when not.

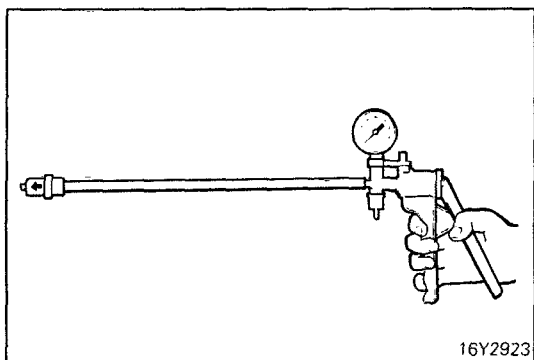
Not energized	Between terminals ① and ②	Approx. 70 Ω
	Between terminals ③ and ④	No continuity (∞ Ω)
Power is applied between terminals ① and ②	Between terminals ③ and ④	Continuity (Approx. 0 Ω)

## 14-132 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Inspection



### INSPECTION OF VACUUM CHECK VALVE

- (1) Blow into B tap and check that air blows out from A tap side as illustrated.



- (2) With a vacuum pump connected at B tap side, apply a vacuum and check that the vacuum does not drop sharply.

### INSPECTION OF VEHICLE SPEED SENSOR

Refer to Service Manual Vol. 2 GROUP 8 ELECTRICAL – Meters and Gauges.

### INSPECTION OF STOP LIGHT SWITCH

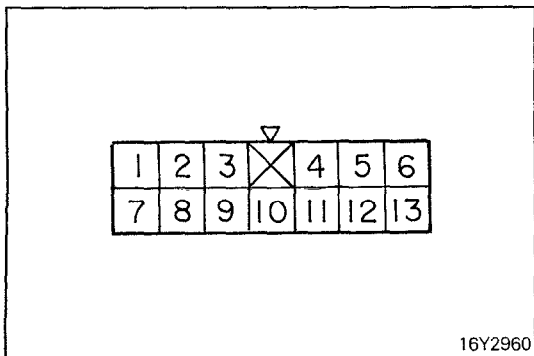
Refer to GROUP 5 BRAKES – Brake Pedal.

### INSPECTION OF CLUTCH SWITCH

Refer to GROUP 6 CLUTCH – Clutch Pedal.

### INSPECTION OF INHIBITOR SWITCH

Refer to GROUP 21 TRANSMISSION – Service Adjustment Procedures.



### ELECTRONIC CONTROL UNIT (ECU) SIGNAL CIRCUIT CHECK

With the ECU connector disconnected, check at the body side connector.

Terminal No.	Destination of part to be measured	Measurement item	Tester connection		Measuring condition	Standard
			⊕ side	⊖ side		
1	RESUME switch	Resistance	1 – Ground		Steady state	Without continuity
					RESUME switch ON	With continuity (100 Ω or less)
2	SET switch	Resistance	2 – Ground		Steady state	Without continuity
					SET switch ON	With continuity (100 Ω or less)
3	Vehicle speed sensor	Resistance	3 – Ground		Vehicle running at speed of 1 km/h or less	To alternate between continuity (100 Ω or less) and discontinuity
4	Control solenoid	Resistance	11 – 4		Steady state	Approx. 30 Ω
5	Release solenoid	Resistance	11 – 5		Steady state	Approx. 60 Ω (vacuum switch connector disconnected)
6	Selection port	Resistance	6 – Ground		Steady state	With continuity (100 Ω or less)
7*1	Clutch switch	Resistance	7 – Ground		Steady state	Without continuity
					Clutch switch ON	With continuity (100 Ω or less)
7*2	Inhibitor switch	Resistance	7 – Ground		Steady state	Without continuity
					Inhibitor switch	With continuity (100 Ω or less)
8	Stop light circuit fuse	Voltage	8 – Ground		Steady state	Equivalent to battery voltage
9	Stop light switch	Voltage	9 – Ground		Steady state	0 V
					Brake ON	Equivalent to battery voltage
10	Ground	Resistance	10 – Ground		Steady state	With continuity
11	ECU power	Voltage	11 – Ground		Ignition switch ON MAIN switch OFF	0 V
					Ignition switch ON MAIN switch ON	Equivalent to battery voltage
12	Stop light switch	Resistance	12 – 5		Steady state	With continuity
					Brake ON	Without continuity
		Voltage	12 – Ground		Ignition switch ON MAIN switch ON	Equivalent to battery voltage
13*3	Self-diagnosis	–	–		–	–

## NOTE

\*1 Vehicles with a manual transmission

\*2 Vehicles with an automatic transmission

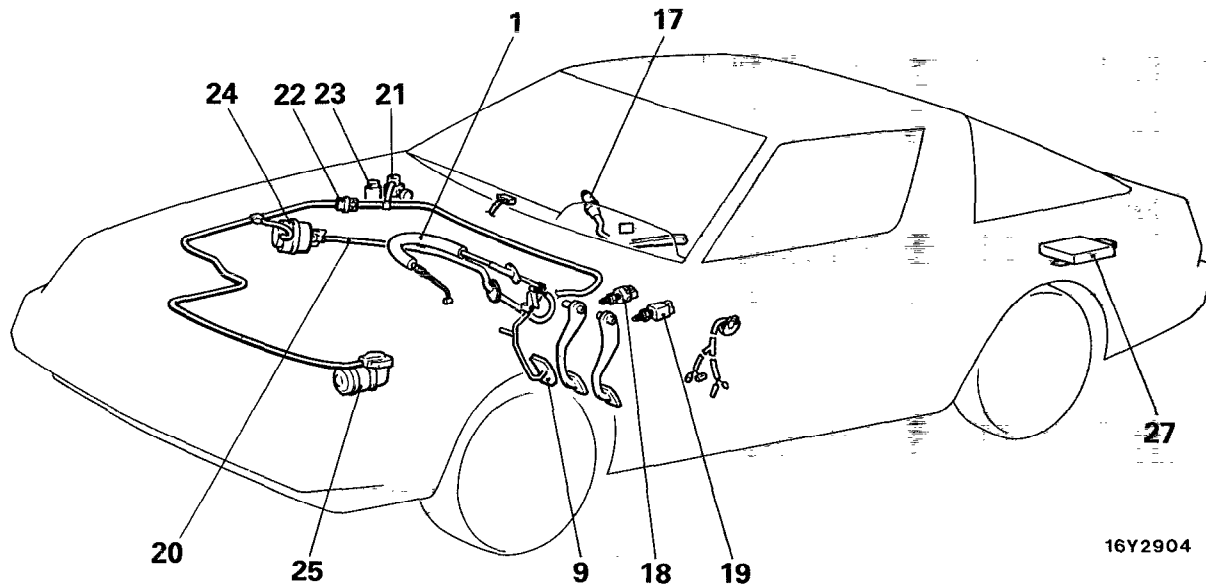
\*3 Terminal No. 13 is okay if the self-diagnosis code can be confirmed when the ignition switch and MAIN switch are turned on, with the ECU harness connector as connected. (Refer to P.14-98.)

# 14-134 AUTOMATIC SPEED CONTROL (ASC) SYSTEM – Engine Control

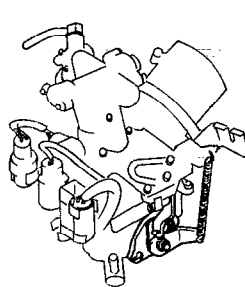
## ENGINE CONTROL

N140A-

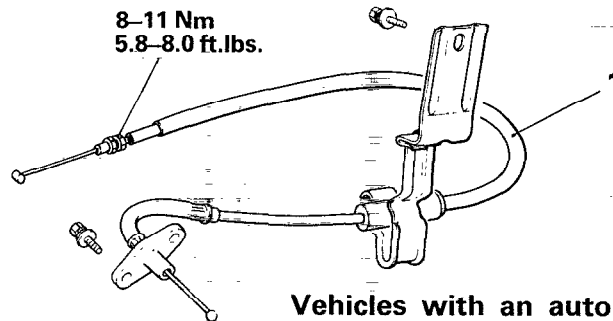
## REMOVAL AND INSTALLATION



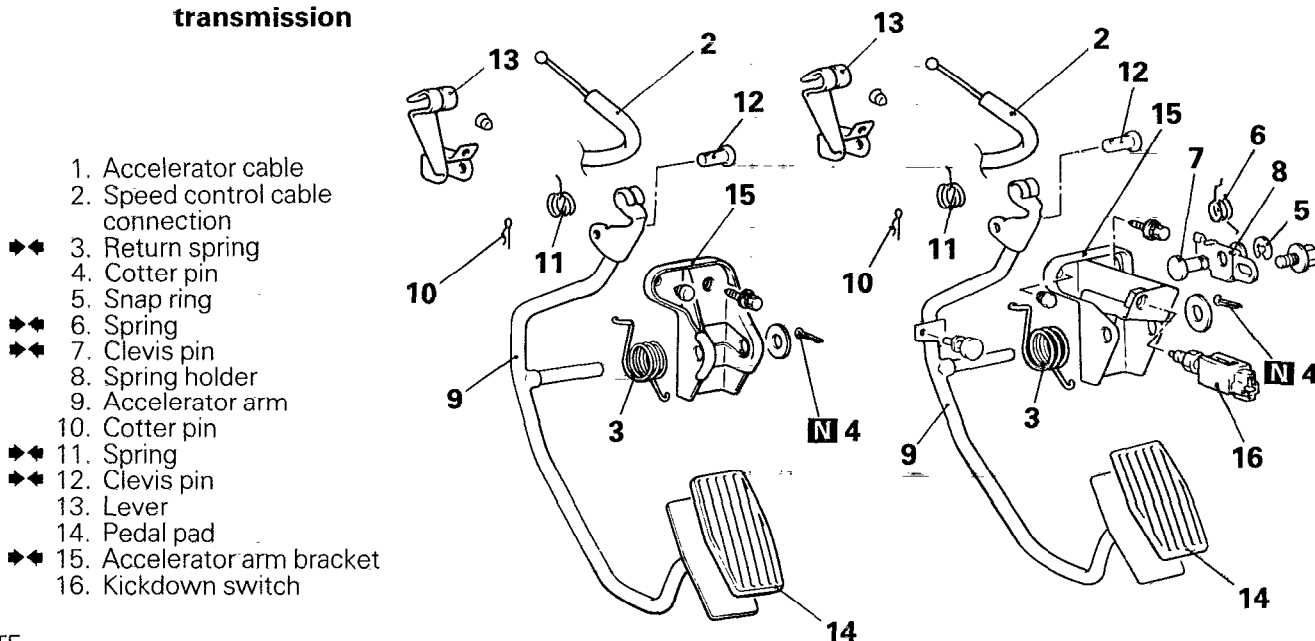
16Y2904



**Vehicles with a manual transmission**

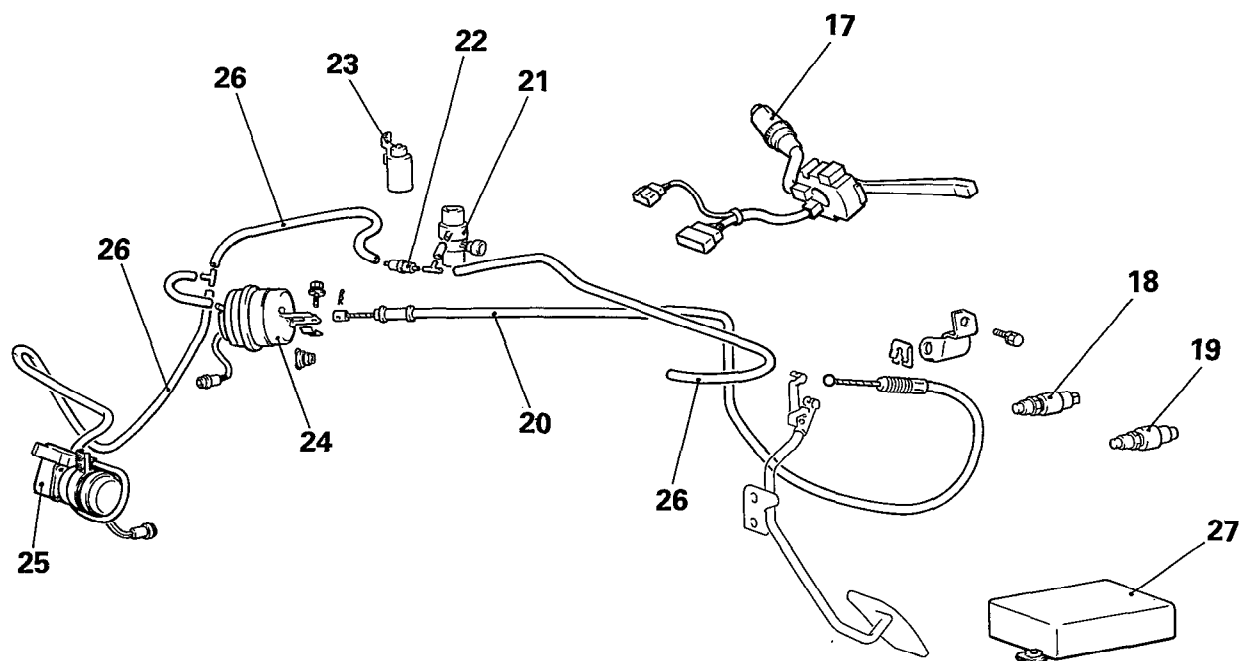


**Vehicles with an automatic transmission**



### NOTE

- (1) ♦♦♦: Refer to "Service Points of Installation".  
 (2) [N]: Non-reusable parts



16Y1855

- 17. Speed control switch
- 18. Brake switch
- 19. Clutch switch
- 20. Speed control cable
- 21. Vacuum switch
- 22. Vacuum check valve
- 23. Vacuum pump relay
- 24. Actuator
- 25. Vacuum pump
- 26. Vacuum hose
- 27. Electronic control unit (ECU)

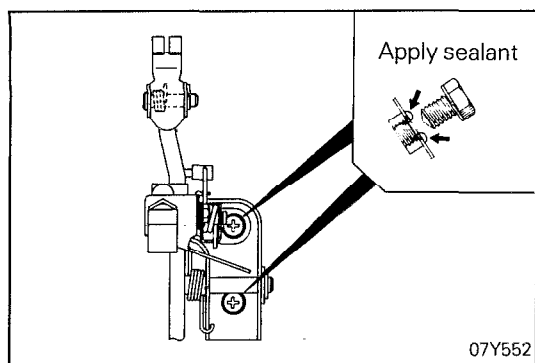
## Post-installation Operation

- Adjustment of Accelerator Cable Free Play (Refer to P.14-126.)
- Adjustment of Speed Control Cable Play (Refer to P.14-126.)
- Inspection of Speed Control System (Refer to P.14-127.)
- Adjustment of Kickdown Switch (Refer to GROUP 21 TRANSMISSION – MANUAL AND AUTOMATIC – On-vehicle Service.)

## INSPECTION

N140CAD

- Check the inner and outer cables for damage.
- Check the cable for smooth movement.
- Check the accelerator arm for bending.
- Check the return spring for weakness.
- Check the kickdown switch for operation. (Refer to GROUP 21 TRANSMISSION – On-vehicle Service.)

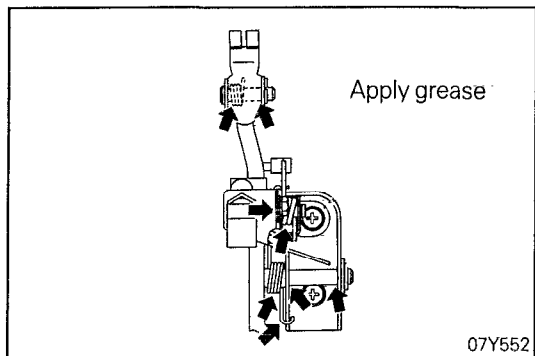


### SERVICE POINTS OF INSTALLATION

N140DAJ

#### 15. APPLICATION OF SEALANT TO ACCELERATOR ARM BRACKET

Apply drying type sealant to accelerator arm bracket bolt hole as shown in the illustration.



#### 12. APPLICATION OF GREASE TO CLEVIS PIN / 11. SPRING / 7. CLEVIS PIN / 6. SPRING / 3. RETURN SPRING

Apply specified grease to the positions shown in the illustration.

**Specified grease: MOPAR Multi-mileage Lubricant Part No. 2525035 or equivalent**