

# SECTION **ACS**

## AUTO CRUISE CONTROL SYSTEM

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# PRECAUTIONS

## PRECAUTIONS

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### Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

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The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

### Wiring Diagrams and Trouble Diagnosis

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When you read wiring diagrams, refer to the following:

- [GI-13, "How to Read Wiring Diagrams"](#), and
- [PG-8, "POWER SUPPLY ROUTING"](#) for power distribution circuit.

When you perform trouble diagnosis, refer to the following:

- [GI-9, "HOW TO FOLLOW TEST GROUPS IN TROUBLE DIAGNOSES"](#).
- [GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

Check for any Service bulletins before servicing the vehicle.

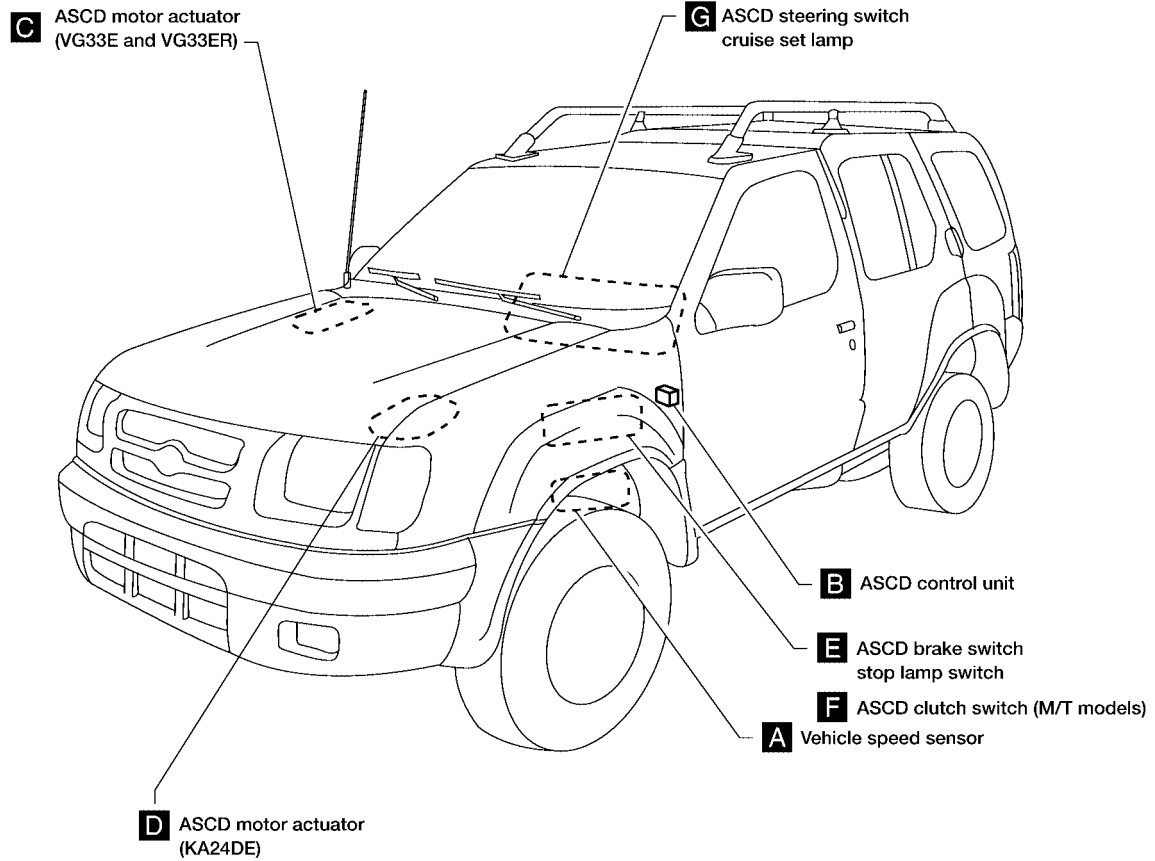
# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## AUTOMATIC SPEED CONTROL DEVICE (ASCD)

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### Component Parts and Harness Connector Location

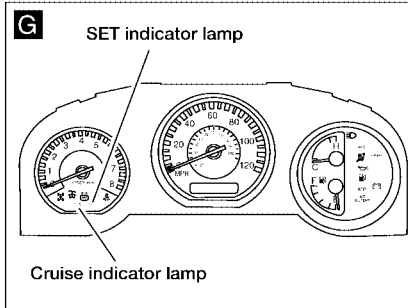
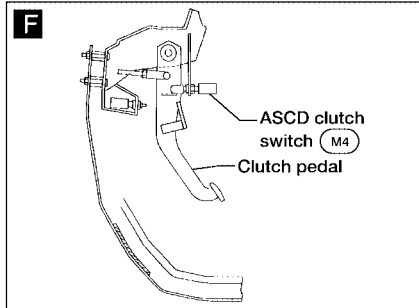
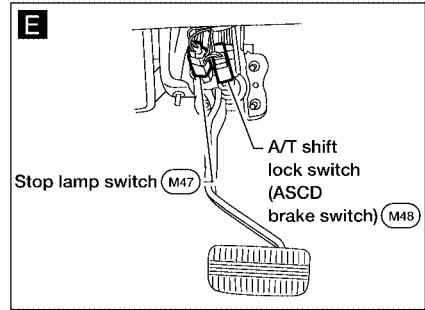
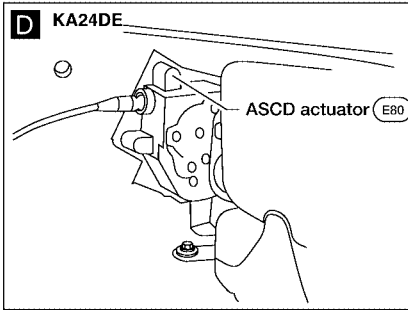
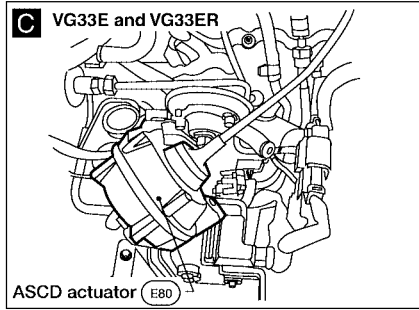
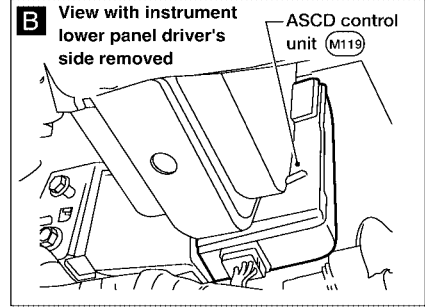
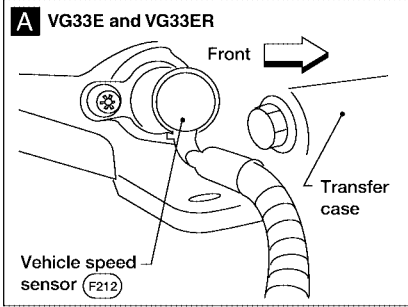
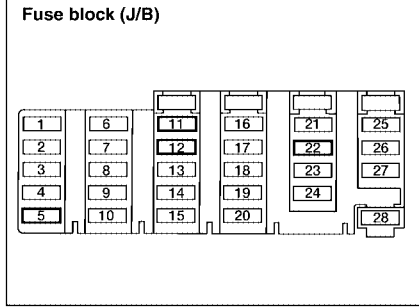
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)



# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

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## System Description

Refer to Owner's Manual for ASCD operating instructions.

### POWER SUPPLY AND GROUND CIRCUIT

Power is supplied at all times

- through 15A fuse [No. 22, located in the fuse block (J/B)]
- to the stop lamp switch terminal 1.

When ignition switch is in the ON or START position, power is supplied

- through 10A fuse [No. 5, located in the fuse block (J/B)]
- to ASCD control unit terminal 5,
- through 10A fuse [No. 12, located in the fuse block (J/B)]
- to park/neutral position switch terminal 1,
- through 10A fuse [No. 11, located in the fuse block (J/B)]
- to combination meter terminals 32 and 38.

When park/neutral position switch (A/T) is in the P or N position, ground is supplied

- to park/neutral position switch terminal 2
- through ASCD relay terminal 1 to ASCD relay terminal 2
- through body grounds M68 and M14.

When ASCD ON-OFF switch is depressed (ON), ground is supplied

- to ASCD control unit terminal 11
- from ASCD steering switch terminal 13
- to ASCD steering switch terminal 14
- from ASCD control unit terminal 24.

Then ASCD control unit illuminates CRUISE indicator.

Ground is supplied

- to combination meter terminal 36
- from ASCD control unit terminal 15.

Ground is supplied

- to ASCD control unit terminal 17
- through body grounds M14 and M68.

### OPERATION

#### Set Operation

To activate the ASCD, all of following conditions must exist

- ASCD control unit receives ASCD ON-OFF switch ON signal
- Power supply to ASCD control unit terminal 8 [Brake and clutch pedal are released (M/T), and brake pedal is released and A/T selector lever is in other than P or N position. (A/T)]
- Vehicle speed is between 40 km/h (25 MPH) and 144 km/h (89 MPH). (Signal from combination meter)

When the COAST/SET switch is depressed, ground is supplied

- to ASCD control unit terminal 11
- from ASCD steering switch terminal 13.

Then ASCD motor actuator is activated to control throttle wire and ASCD control unit supplies ground

- to combination meter terminal 37 to illuminate SET indicator.

#### A/T Overdrive Control During Cruise Control Driving (A/T Models)

When the vehicle speed is approximately 5 km/h (3 MPH) below set speed, a signal is sent

- from ASCD control unit terminal 10
- to TCM terminal 24.

When this occurs, the TCM cancels overdrive.

When vehicle speed returns to approximately 0.6 km/h (0.4 MPH) below set speed, overdrive is reactivated.

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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

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## Coast Operation

When the COAST/SET switch is depressed during cruise control driving, ASCD motor actuator returns the throttle cable to decrease vehicle set speed until the switch is released. Then ASCD will keep the new set speed.

If COAST/SET switch is pressed and released quickly during cruise control driving, vehicle set speed will be reduced by 1.6 km/h (1.0 MPH).

## Accel Operation

When the RES/ACCEL switch is depressed, ground is supplied

- from ASCD steering switch terminal 13
- to ASCD control unit terminal 11.

If the RES/ACCEL switch is depressed during cruise control driving, ASCD motor actuator pulls the throttle cable to increase the vehicle speed until the switch is released or vehicle speed is reached to maximum controlled speed by the system. Then ASCD will keep the new set speed.

If RES/ACCEL switch is pressed and released quickly during cruise control driving, vehicle set speed will be increased by 1.6 km/h (1.0 MPH).

## Cancel Operation

When any of following conditions exist, cruise operation will be canceled

- CANCEL switch is depressed. (Ground is supplied to ASCD control unit terminal 11.)
- Brake pedal is depressed. (Power is supplied to ASCD control unit terminal 23 from stop lamp switch.)
- Brake or clutch pedal is depressed (M/T), brake pedal is depressed or A/T selector lever is shifted to P or N position (A/T). (Power supply to ASCD control unit terminal 8 is interrupted.)

If ON-OFF switch is turned to OFF when ASCD is activated, all of ASCD operation will be canceled and vehicle speed memory will be erased.

## Resume Operation

When the RES/ACCEL switch is depressed (after cancel operation other than depressing ON-OFF switch is performed) vehicle speed will return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions:

- Brake pedal is released.
- Clutch pedal is released (M/T).
- A/T selector lever is in other than P or N position (A/T).
- Vehicle speed is between 40 km/h (25 MPH) and 144 km/h (89 MPH).

## ASCD MOTOR ACTUATOR OPERATION

When the ASCD activates, power is supplied

- from terminal 7 of ASCD control unit
- to ASCD motor actuator terminal 1, and
- from terminal 12 of ASCD control unit
- to ASCD motor actuator terminal 6.

Ground is supplied

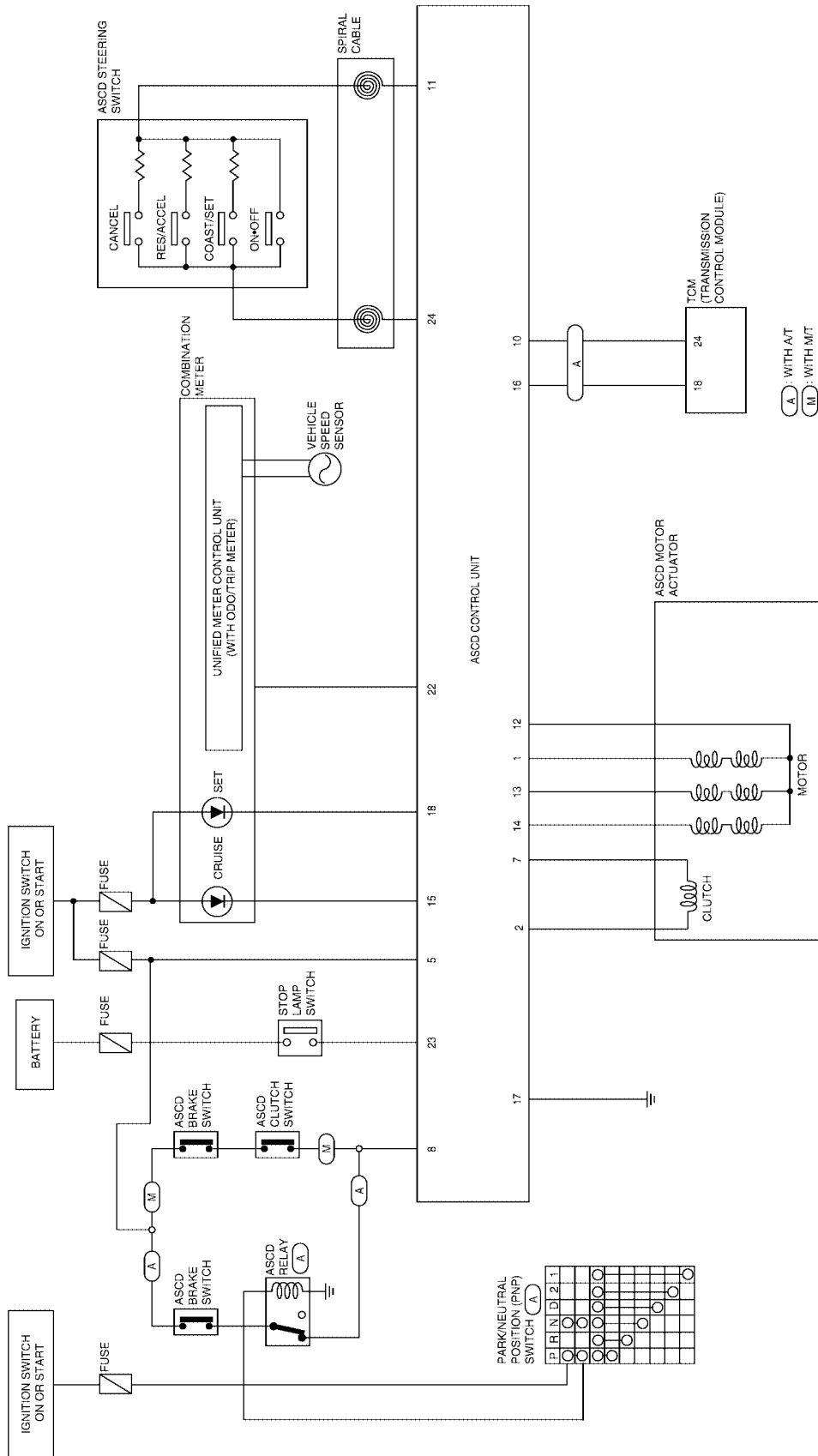
- from ASCD control unit terminals 1, 13, and 14
- to terminals 3, 5, and 2 of ASCD motor actuator.

Power to the actuator motor is supplied constantly from the ASCD control unit. The ASCD control unit then switches the actuator motor ground signals ON and OFF to control actuator motor operation and vehicle speed.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Circuit Diagram

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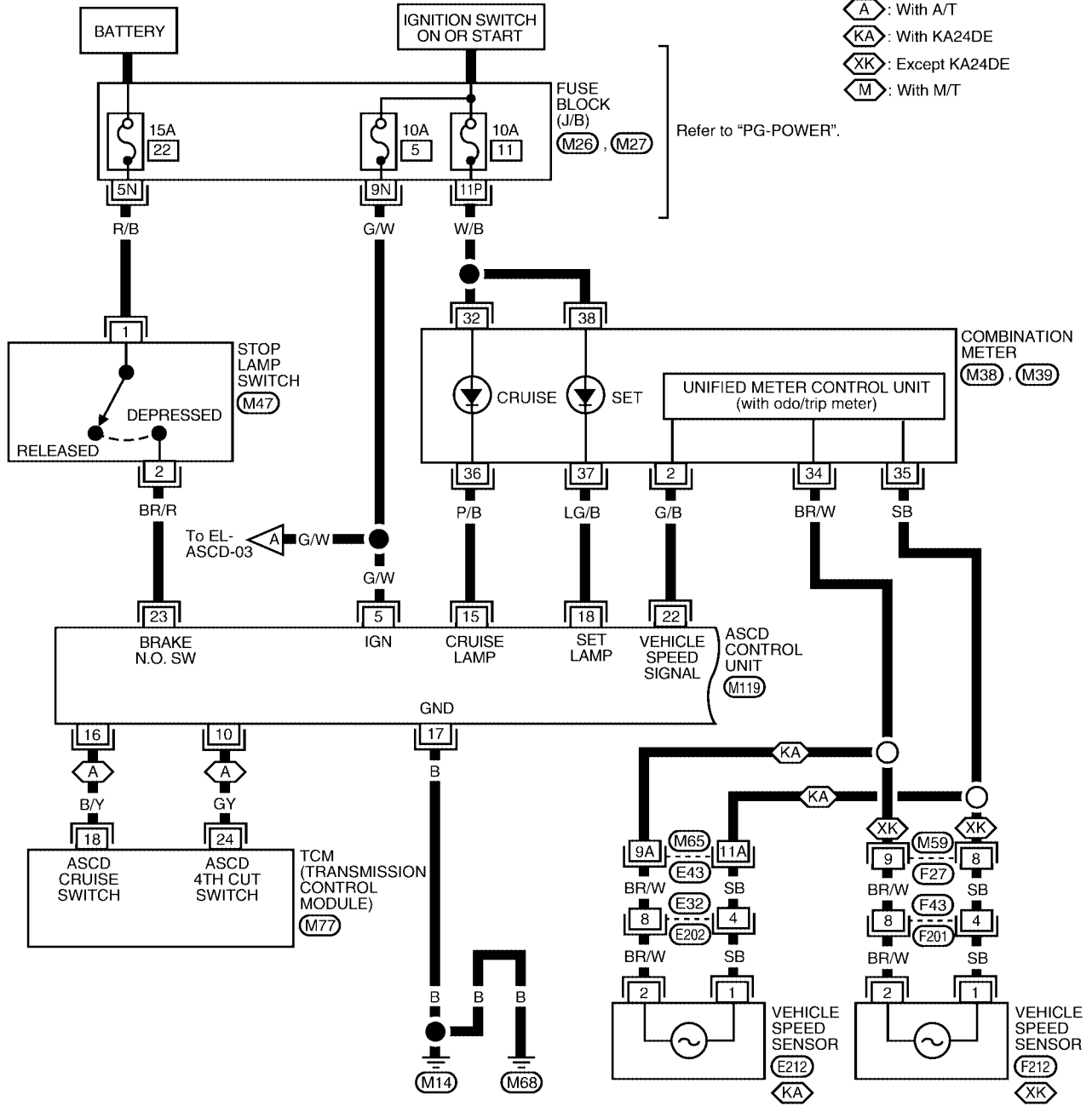
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

**Wiring Diagram — ASCD —**  
**FIG. 1**

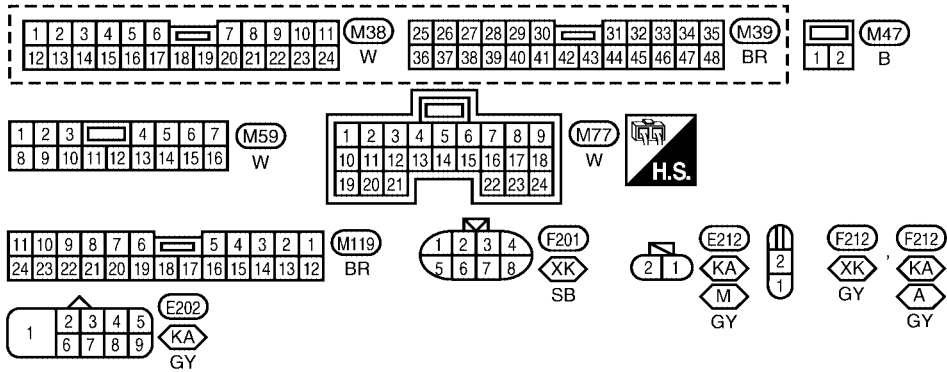
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## ASC-ASC01



- ⬡ A : With A/T
- ⬡ KA : With KA24DE
- ⬡ XK : Except KA24DE
- ⬡ M : With M/T

Refer to "PG-POWER".



Refer to the following.  
 E43 - SUPER  
 MULTIPLE JUNCTION (SMJ)  
 M26, M27 - FUSE BLOCK (J/B)

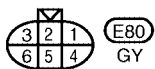
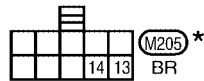
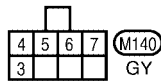
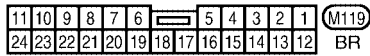
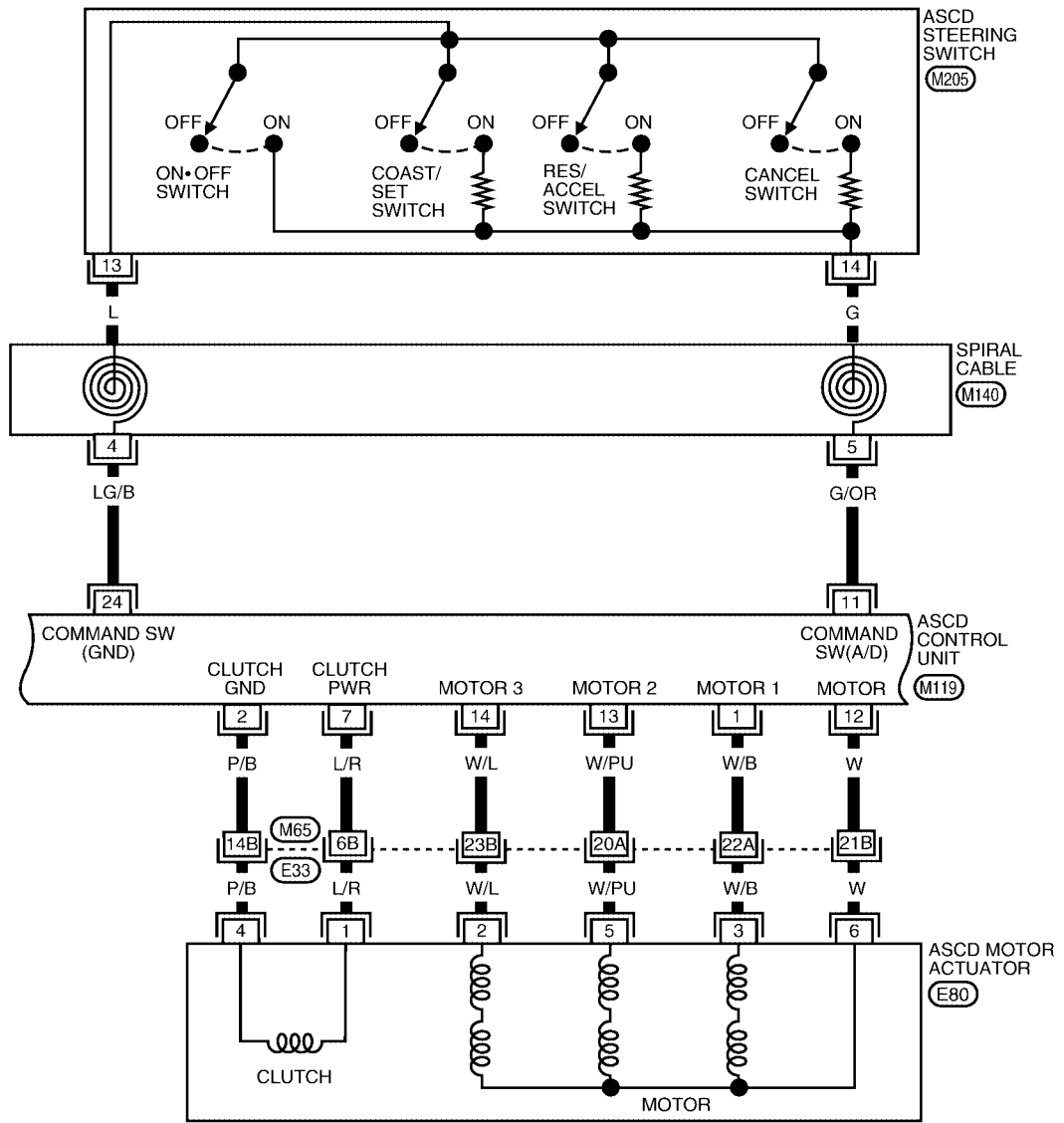
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

FIG. 2

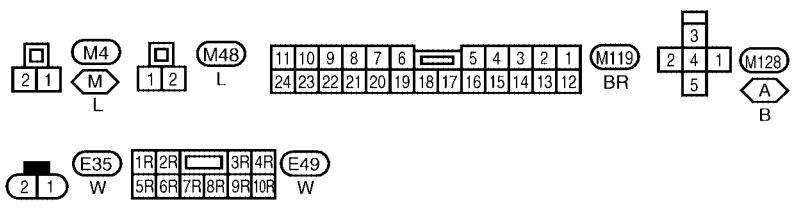
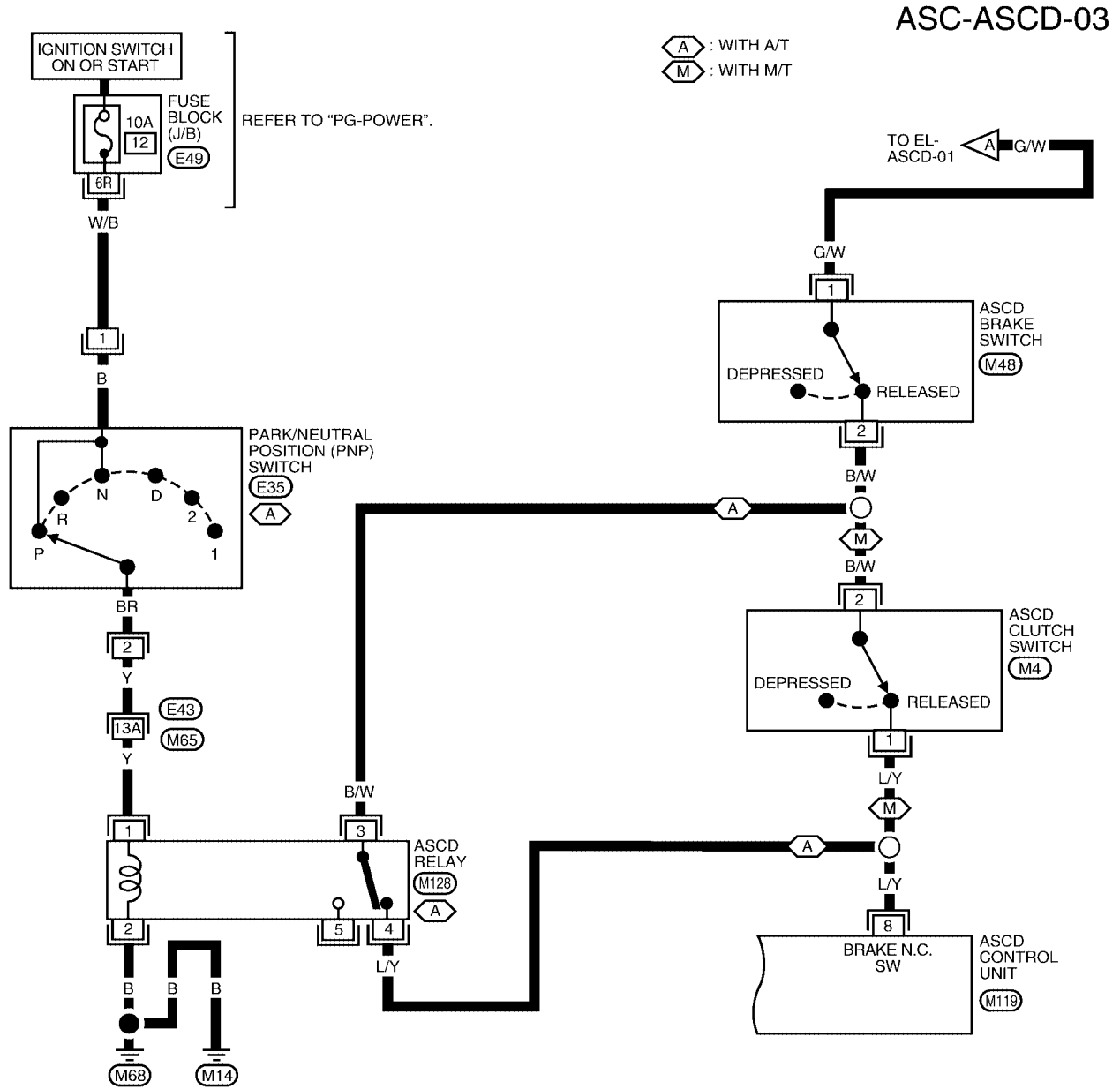
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\* : This connector is not shown in "HARNESS LAYOUT" of PG section.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

**FIG. 3**



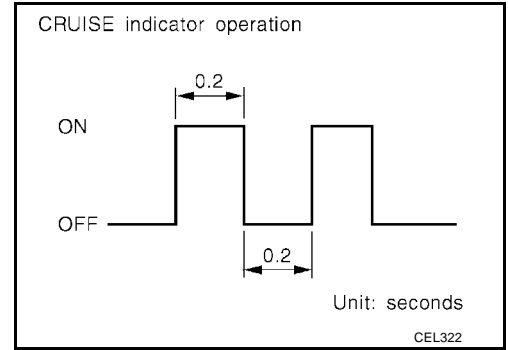
Refer to the following.  
E43 - SUPER MULTIPLE JUNCTION (SMJ)

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

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## Fail-safe System DESCRIPTION

When the fail-safe system senses a malfunction, it deactivates ASCD operation. The CRUISE indicator in the combination meter will then flash.



## MALFUNCTION DETECTION CONDITIONS

Detection conditions	ASCD operation during malfunction detection
<ul style="list-style-type: none"> <li>● ASCD steering (RES/ACCEL, CANCEL, COAST/SET) switch is stuck.</li> <li>● ASCD motor actuator has internal malfunction.</li> <li>● ASCD motor actuator ground circuit or power circuit is open or shorted.</li> <li>● Vehicle speed sensor is faulty.</li> <li>● ASCD control unit internal circuit is malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>● ASCD is deactivated.</li> <li>● Vehicle speed memory is canceled.</li> </ul>
<ul style="list-style-type: none"> <li>● ASCD brake switch or stop lamp switch is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>● ASCD is deactivated.</li> <li>● Vehicle speed memory is not canceled.</li> </ul>

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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

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## Trouble Diagnoses SYMPTOM CHART

PROCEDURE	Diagnostic procedure						
REFERENCE PAGE	<a href="#">ACS-11</a>	<a href="#">ACS-14</a>	<a href="#">ACS-15</a>	<a href="#">ACS-17</a>	<a href="#">ACS-18</a>	<a href="#">ACS-18</a>	<a href="#">ACS-20</a>
SYMPTOM	FAIL-SAFE SYSTEM CHECK	POWER SUPPLY AND GROUND CIRCUIT CHECK	ASCD BRAKE/STOP LAMP SWITCH CHECK	ASCD STEERING SWITCH CHECK	VEHICLE SPEED SENSOR CHECK	ASCD MOTOR ACTUATOR CIRCUIT CHECK	ASCD MOTOR ACTUATOR CHECK
ASCD cannot be set. ("CRUISE" indicator lamp does not turn ON.)		X		*3			
ASCD cannot be set. ("SET" indicator lamp does not turn ON.)			X	X	X		
ASCD cannot be set. ("SET" indicator lamp blinks. *1)	X		X	X	X	X	
Vehicle speed does not decrease after COAST/SET switch has been pressed.				X			X
Vehicle speed does not return to the set speed after RES/ACCEL switch has been pressed. *2				X			X
Vehicle speed does not increase after RES/ACCEL switch has been pressed.				X			X
System is not released after CANCEL switch (steering) has been pressed.				X			X
Large difference between set speed and actual vehicle speed.					X	X	X
Deceleration is greatest immediately after ASCD has been set.					X	X	X

\*1: It indicates that system is in fail-safe. After completing diagnostic procedures, perform [ACS-13, "FAIL-SAFE SYSTEM CHECK"](#) to verify repairs.

\*2: If vehicle speed is greater than 40 km/h (25 MPH) after system has been released, pressing RES/ACCEL switch returns vehicle speed to the set speed previously achieved. However, doing so when the ON●OFF switch is turned to "OFF", vehicle speed will not return to the set speed since the memory is canceled.

\*3: Check only ON●OFF switch built into steering switch.

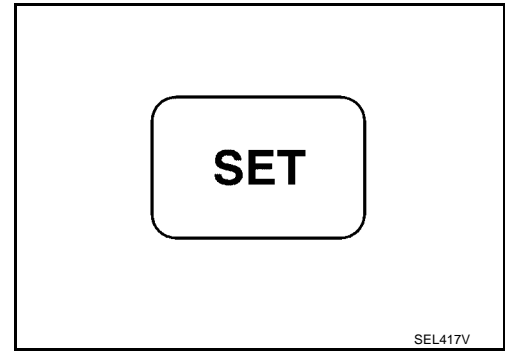
# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## FAIL-SAFE SYSTEM CHECK

1. Turn ignition switch to ON position.
2. Turn ON-OFF switch to ON and check if the "SET" indicator blinks.

**If the indicator lamp blinks, check the following.**

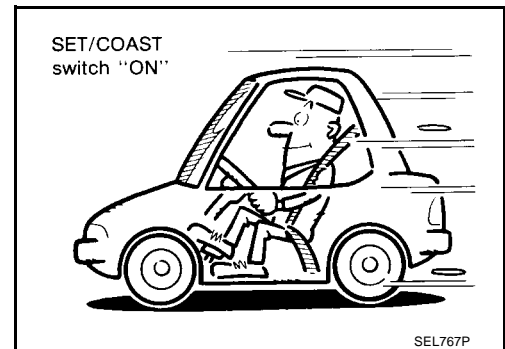
- ASCD steering switch. Refer to [ACS-17, "ASCD STEERING SWITCH CHECK"](#).



3. Drive the vehicle at more than 40 km/h (25 MPH) and push COAST/SET switch.

**If the indicator lamp blinks, check the following.**

- Vehicle speed sensor. Refer to [ACS-18, "VEHICLE SPEED SENSOR CHECK"](#).
- ASCD motor actuator circuit. Refer to [ACS-18, "ASCD MOTOR ACTUATOR CIRCUIT CHECK"](#).
- Replace control unit.



4. Drive the vehicle at more than 20 km/h (12 MPH).

If the indicator lamp blinks, check the following.

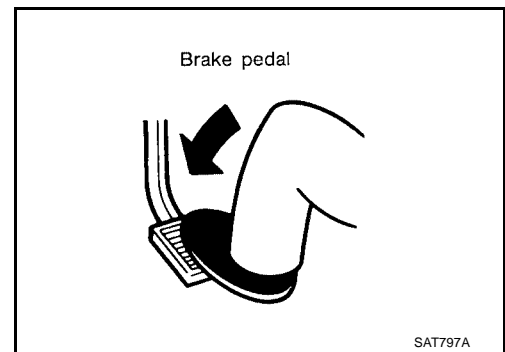
- Replace ASCD motor actuator.

5. Depress brake pedal slowly (brake pedal should be depressed more than 5 seconds).

**If the indicator lamp blinks, check the following.**

- ASCD brake/stop lamp switch. Refer to [ACS-15, "ASCD BRAKE/STOP LAMP SWITCH CHECK"](#).

6. END. (System is OK.)



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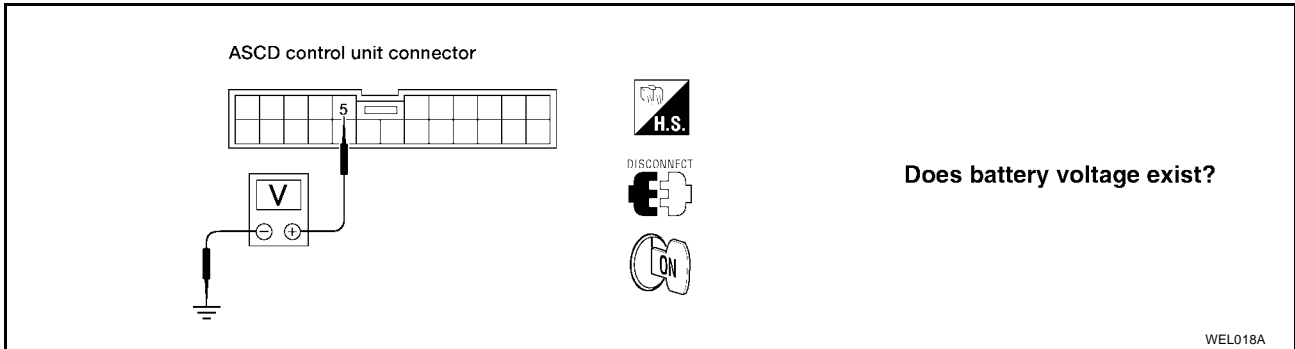
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## POWER SUPPLY AND GROUND CIRCUIT CHECK

### 1. CHECK POWER SUPPLY CIRCUIT FOR ASCD CONTROL UNIT

1. Disconnect ASCD control unit harness connector.
2. Turn ignition switch ON.
3. Check voltage between ASCD control unit harness connector M119 terminal 5 (G/W) and ground.

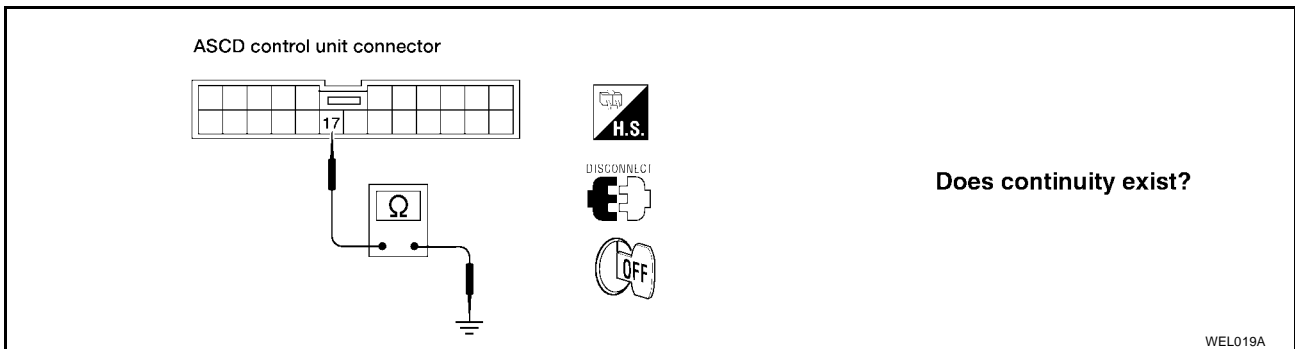


Refer to [ACS-8, "Wiring Diagram — ASCD —"](#) .

- Yes >> GO TO 2.  
No >> Check the following.
- 10A fuse (No. 5 located in the fuse block)
  - Harness for open or short

### 2. CHECK GROUND CIRCUIT FOR ASCD CONTROL UNIT

Check continuity between ASCD control unit harness connector M119 terminal 17 (B) and body ground.



Refer to [ACS-8, "Wiring Diagram — ASCD —"](#) .

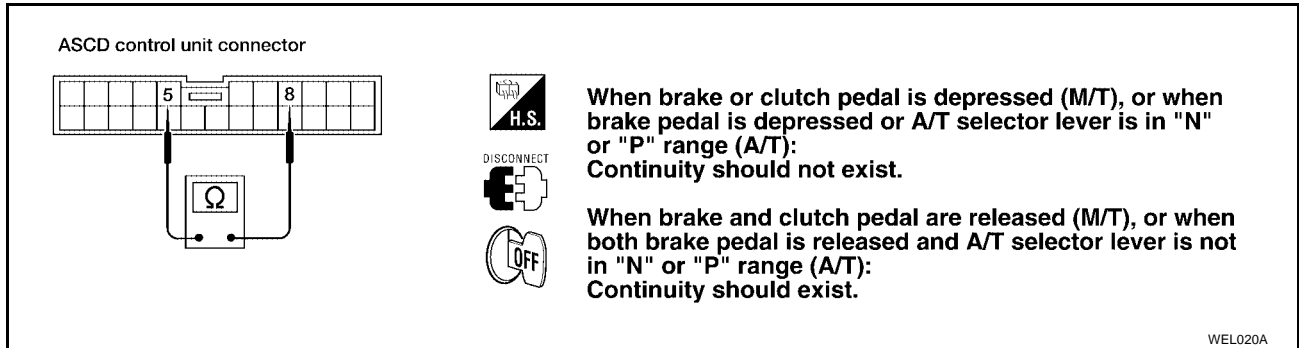
- Yes >> Power supply and ground circuit is OK.  
No >> Repair harness.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## ASCD BRAKE/STOP LAMP SWITCH CHECK

### 1. CHECK ASCD BRAKE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ASCD control unit harness connector.
3. Check continuity between ASCD control unit harness connector M119 terminal 8 (L/Y) and terminal 5 (G/W).



#### OK or NG

OK >> GO TO 2.

NG >> Check the following.

- ASCD brake switch  
Refer to [ACS-21, "ASCD BRAKE SWITCH AND STOP LAMP SWITCH"](#) .
- Park/neutral position switch (A/T)  
Refer to [ACS-21, "PARK/NEUTRAL POSITION SWITCH \(A/T\)"](#) .
- Park/neutral position relay (A/T)  
Refer to [ACS-22, "ASCD RELAY \(A/T MODELS\)"](#) .
- ASCD clutch switch (M/T)  
Refer to [ACS-21, "ASCD CLUTCH SWITCH \(M/T\)"](#) .
- Harness for open or short
- ASCD control unit

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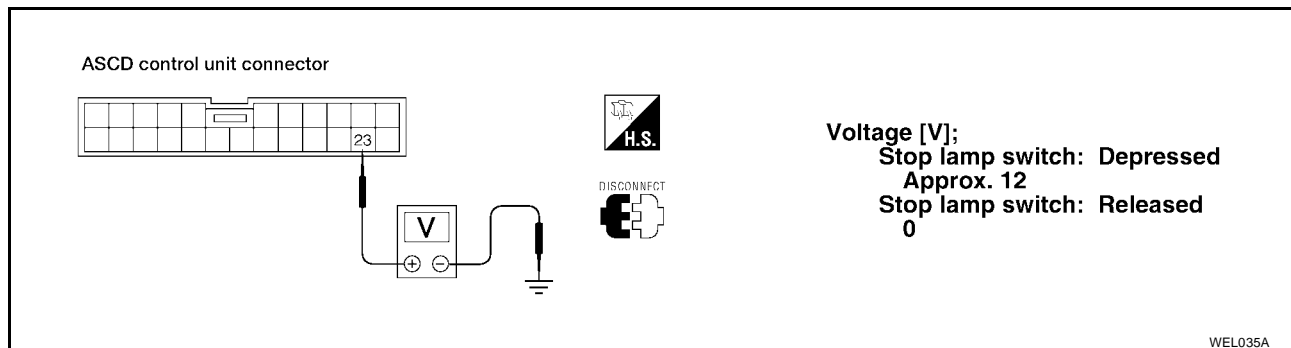
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## 2. CHECK STOP LAMP SWITCH CIRCUIT

1. Disconnect ASCD control unit harness connector.
2. Check voltage between ASCD control unit harness connector M119 terminal 23 (BR/R) and ground.



Refer to [ACS-8, "Wiring Diagram — ASCD —"](#) .

### OK or NG

OK >> ASCD brake/stop lamp switch is OK.

NG >> Check the following.

- 15A fuse [No. 22, located in the fuse block (J/B)]
- Harness for open or short between ASCD control unit and stop lamp switch
- Harness for open or short between fuse and stop lamp switch
- Stop lamp switch

Refer to [ACS-21, "ASCDC BRAKE SWITCH AND STOP LAMP SWITCH"](#) .

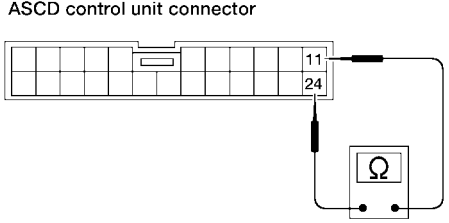


# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## ASCD STEERING SWITCH CHECK

### 1. CHECK ASCD STEERING SWITCH CIRCUIT FOR ASCD CONTROL UNIT

Check resistance between ASCD control unit harness connector M119 terminals 11 (G/OR) and 24 (LG/B).



ASCD control unit connector

	Terminal No.	Resistance (k $\Omega$ )
CRUISE/ON-OFF SW	11 - 24	Approx. 0
SET/COAST SW		1.47 - 1.53
ACCEL/RES SW		3.24 - 3.36
CANCEL SW		5.00 - 5.20

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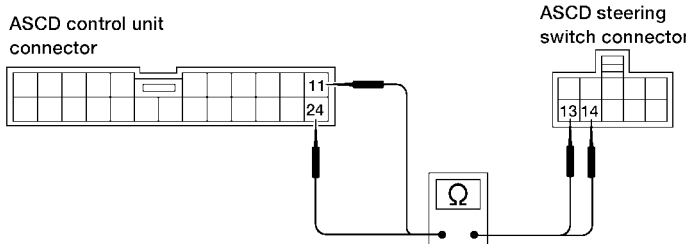
Refer to [ACS-8, "Wiring Diagram — ASCD —"](#).

OK or NG

- OK >> ASCD steering switch is OK.
- NG >> GO TO 2.

### 2. CHECK CIRCUIT CONTINUITY

1. Disconnect ASCD steering switch and ASCD control unit connector.
2. Check continuity between ASCD steering switch connector M205 terminals 14 (G) and 13 (L), and ASCD control unit connector M119 terminals 24 (LG/B) and 11 (G/OR).



ASCD control unit connector

ASCD steering switch connector

Continuity should exist.

LEL326A

Refer to [ACS-8, "Wiring Diagram — ASCD —"](#).

OK or NG

- OK >> Replace ASCD steering switch.
- NG >> Repair or replace harness or connectors.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## VEHICLE SPEED SENSOR CHECK

### 1. CHECK SPEEDOMETER OPERATION

Refer to [ACS-8, "Wiring Diagram — ASCD —"](#).

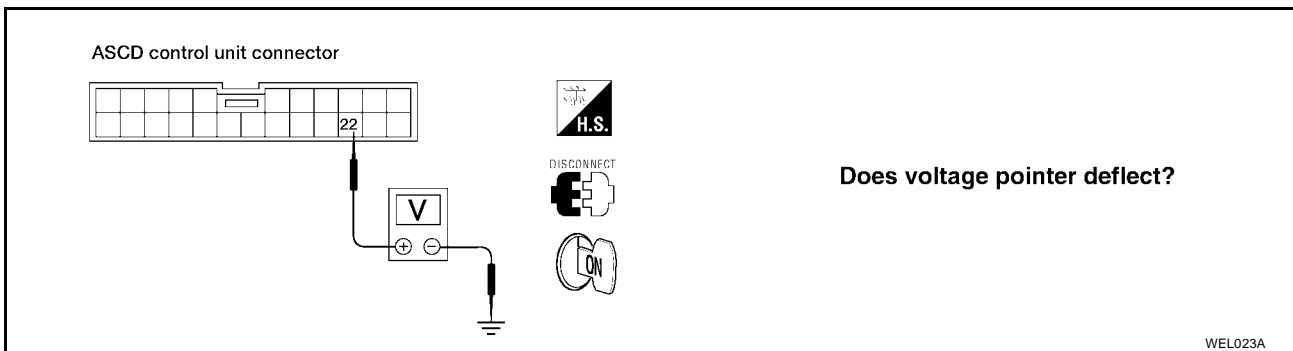
Does speedometer operate normally?

Yes >> GO TO 2.

No >> Check speedometer and vehicle speed sensor circuit. Refer to [ACS-12, "Trouble Diagnoses"](#).

### 2. CHECK VEHICLE SPEED INPUT

1. Apply wheel chocks and jack up drive wheel.
2. Disconnect ASCD control unit harness connector.
3. Check voltage between control unit connector M119 terminal 22 (G/B) and ground while turning drive wheel slowly by hand.



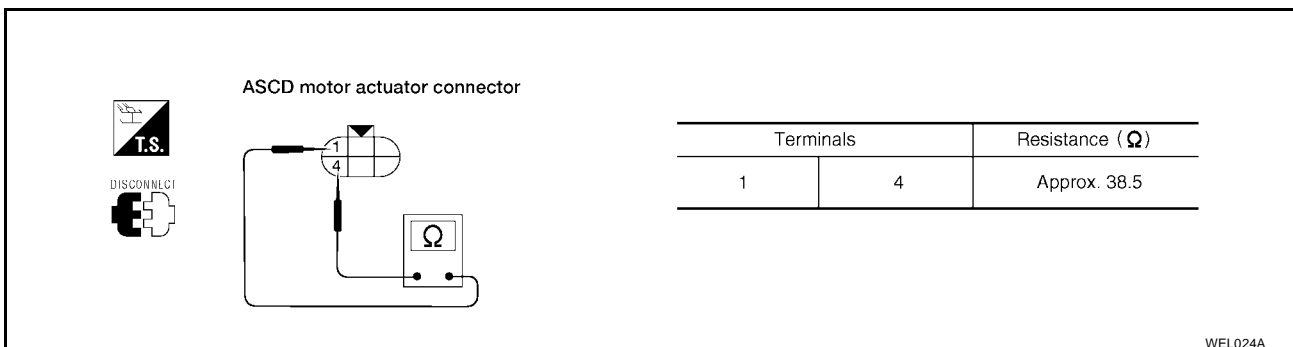
Yes >> Vehicle speed sensor is OK.

No >> Check harness for open or short between ASCD control unit connector M119 terminal 22 (G/B) and combination meter connector M39 terminal 37 (G/B).

## ASCD MOTOR ACTUATOR CIRCUIT CHECK

### 1. CHECK ASCD MOTOR ACTUATOR (CLUTCH)

1. Disconnect ASCD motor actuator connector.
2. Measure resistance between ASCD motor actuator connector E80 terminals 1 and 4.



Refer to [ACS-8, "Wiring Diagram — ASCD —"](#).

OK or NG

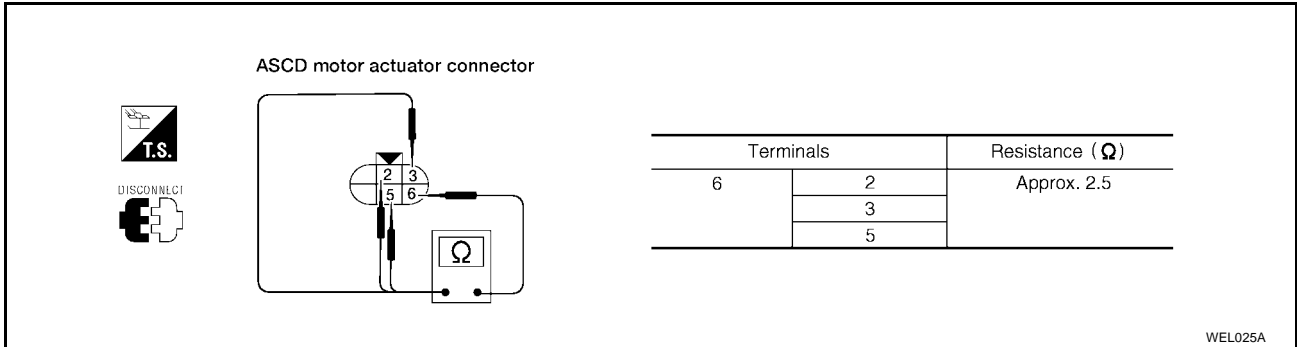
OK >> GO TO 2.

NG >> Replace ASCD motor actuator.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## 2. CHECK ASCD MOTOR ACTUATOR (MOTOR)

1. Disconnect ASCD motor actuator connector.
2. Measure resistance between ASCD motor actuator connector E80 terminal 6 and terminals 2, 3, and 5.



### OK or NG

OK >> Check the following.

- Harness for open or short between ASCD motor actuator and ASCD control unit
- ASCD motor actuator (clutch) ground circuit

NG >> Replace ASCD motor actuator.

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

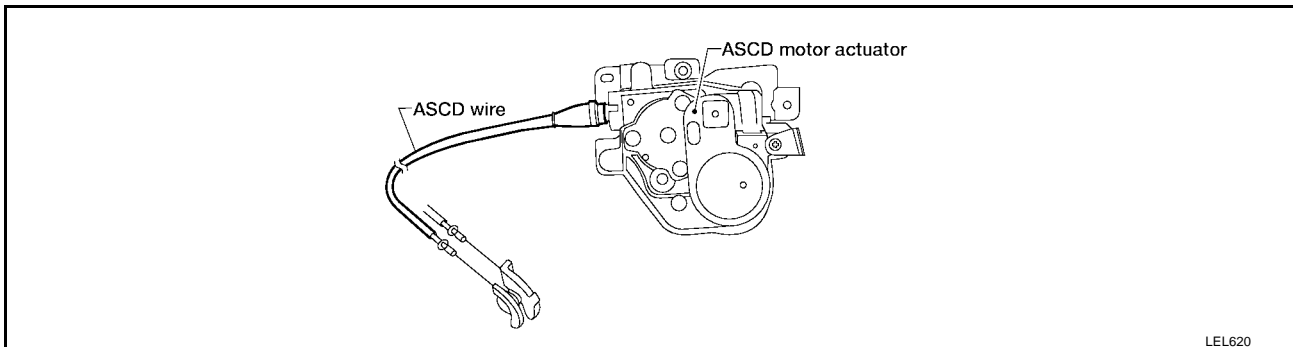
ACS

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## ASCD MOTOR ACTUATOR CHECK

### 1. CHECK ASCD WIRE

Check wire for improper installation, rust formation or breaks.



LEL620

OK or NG

OK >> Replace ASCD motor actuator.

NG >> Repair or replace wire. Refer to [ACS-23, "ASCD Wire Adjustment"](#) .

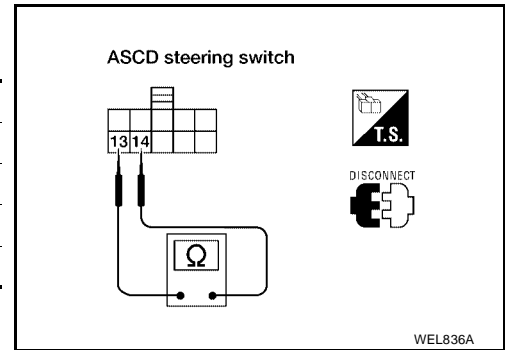
# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

EKS0036J

## Electrical Component Inspection ASCD STEERING SWITCH

Check continuity between ASCD steering switch connector M205 terminals 14 and 13 by pushing each button.

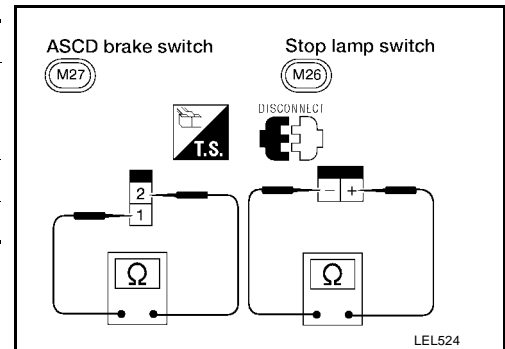
Button	Terminals	Resistance (kΩ)
CRUISE/ON-OFF	13 - 14	Approx. 0
COAST/SET		1.47 - 1.53
RES/ACCEL		3.24 - 3.36
CANCEL		5.00 - 5.20



## ASCD BRAKE SWITCH AND STOP LAMP SWITCH

Condition	Continuity	
	ASCD brake switch connector M48	Stop lamp switch connector M26
When brake pedal is depressed	No	Yes
When brake pedal is released	Yes	No

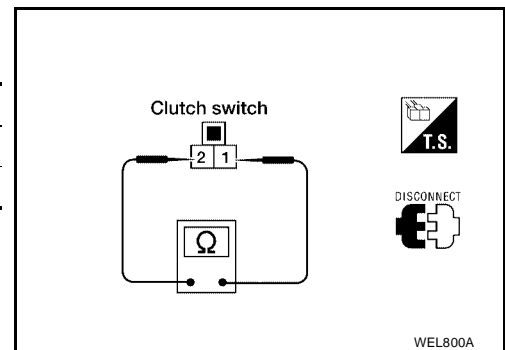
Check brake pedal adjustment after checking each switch. Refer to [BR-7, "Adjustment"](#).



## ASCD CLUTCH SWITCH (M/T)

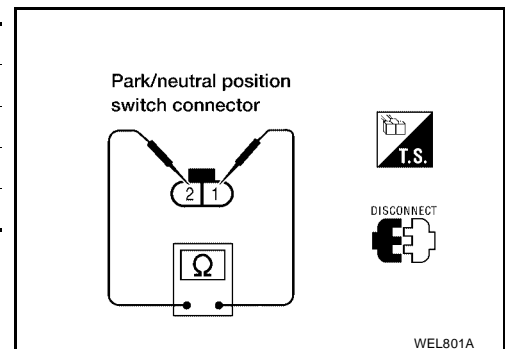
Check continuity between clutch switch connector M4 terminals 1 and 2.

Condition	Continuity
When clutch pedal is depressed	No
When clutch pedal is released	Yes



## PARK/NEUTRAL POSITION SWITCH (A/T)

A/T selector lever position	Continuity
	Between terminals 1 and 2
"P"	Yes
"N"	Yes
Except "P" and "N"	No



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
L  
M

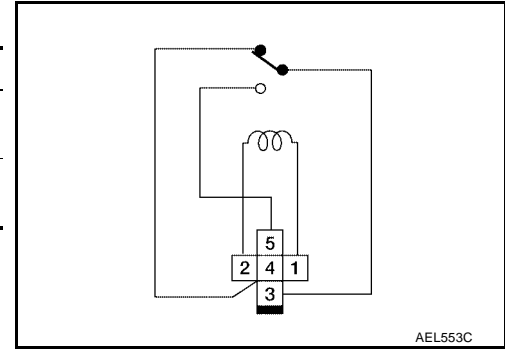
ACS

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## ASCD RELAY (A/T MODELS)

Check continuity between ASCD relay terminals 3 and 4, 3 and 5.

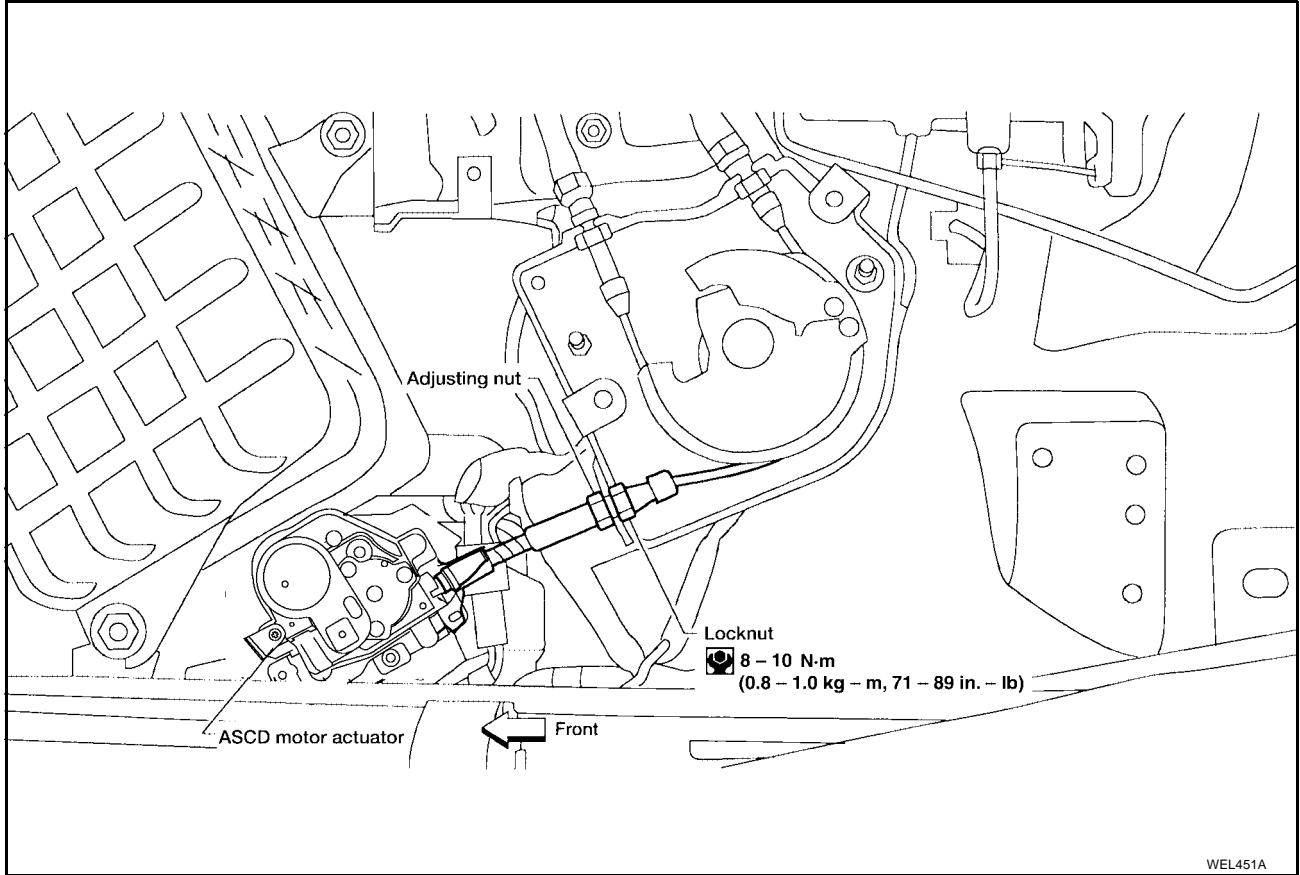
Condition	Continuity
12V direct current supply between terminals 1 and 2	Between terminals 3 and 5
No current supply	Between terminals 3 and 4



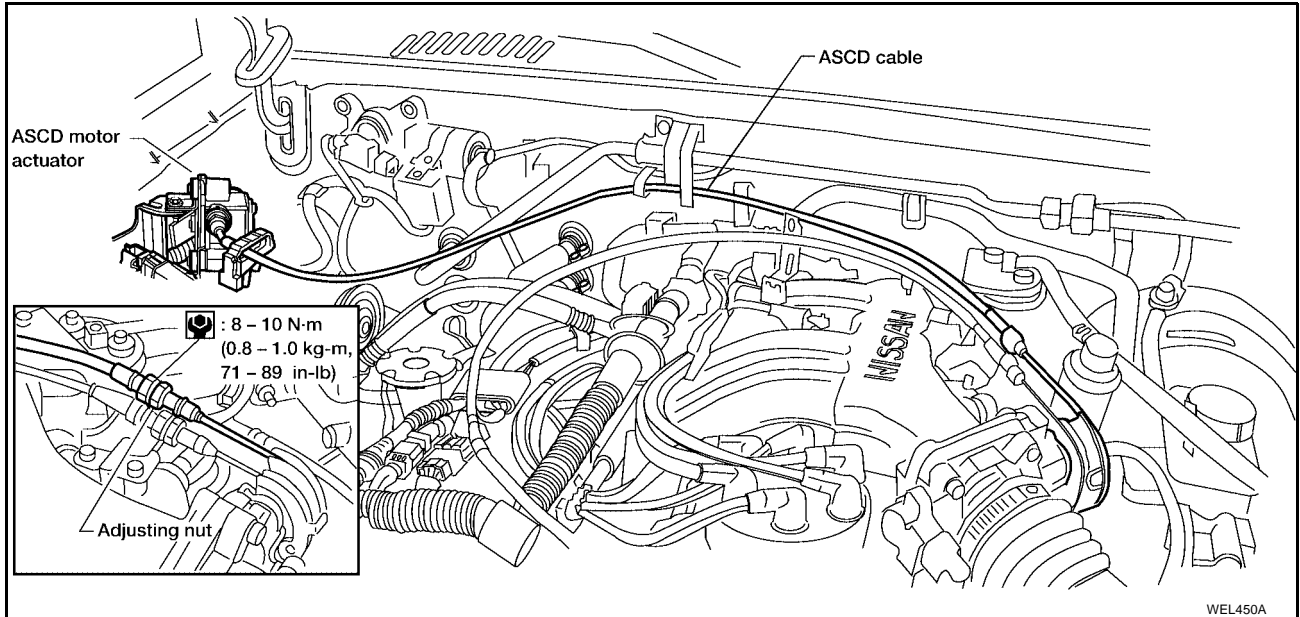
# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

EKS0036K

## ASCD Wire Adjustment WITH KA24DE



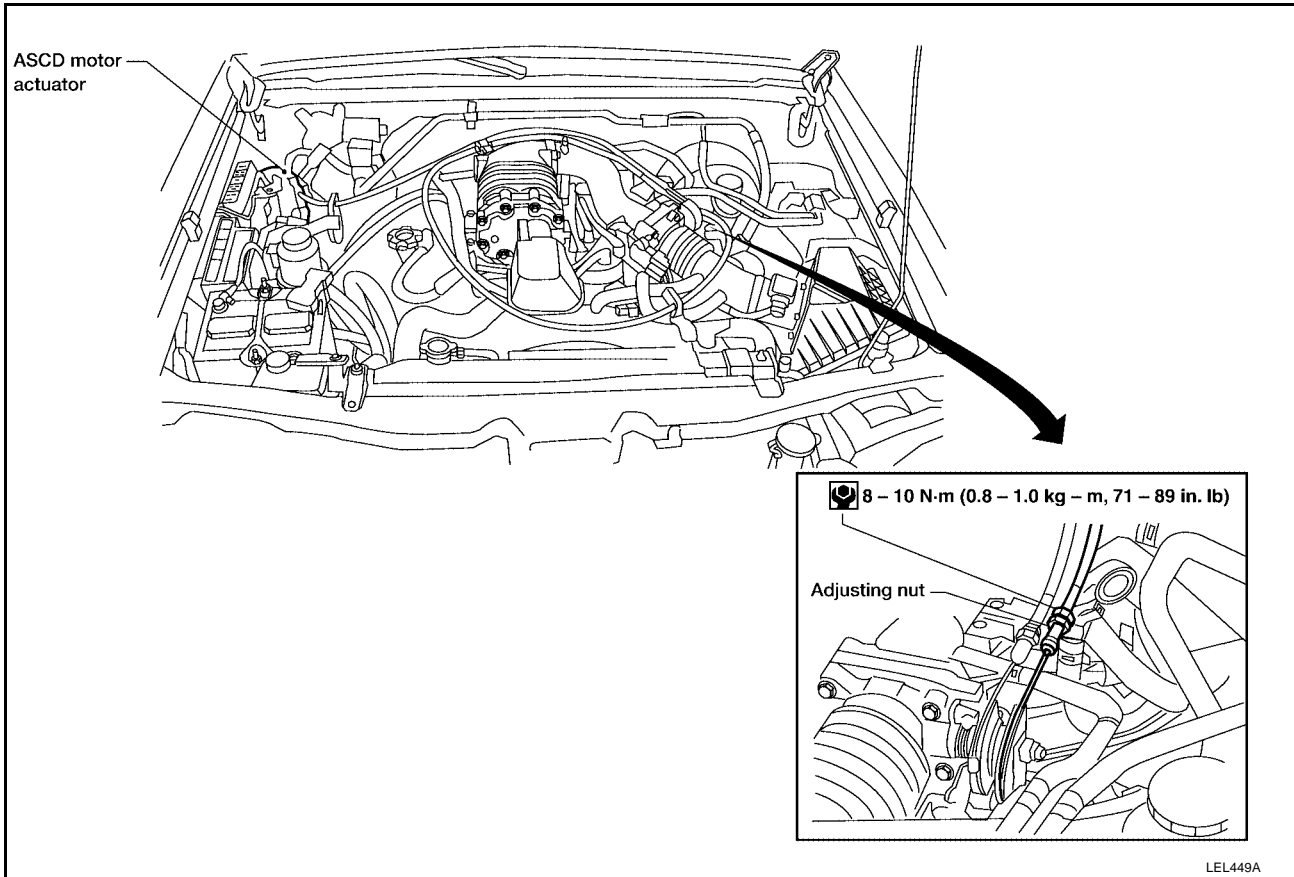
## WITH VG33E



A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
ACS  
L  
M

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

WITH VG33ER



## CAUTION:

- Be careful not to twist ASCD wire when removing it.
- Do not tense ASCD wire excessively during adjustment.

Adjust the tension of ASCD wire in the following manner.

1. Loosen lock nut and adjusting nut.
2. Make sure that accelerator wire is properly adjusted. Refer to [ACC-2, "Adjusting Accelerator Wire"](#).
3. Tighten adjusting nut just until throttle drum starts to move.
4. Loosen adjusting nut again 1/2 to 1 turn.
5. Tighten lock nut.