CRUISE CONTROL SYSTEM

1992 Infiniti G20

1991-92 SAFETY EQUIPMENT
Infiniti Cruise Control Systems

G20, M30, Q45

DESCRIPTION & OPERATION

NOTE: For system component locations, see SYSTEM COMPONENT LOCATIONS.

ACTUATOR

Actuator pump, which contains a vacuum pump motor and control valve assembly, supplies vacuum for actuator diaphragm. Control valve assembly regulates vacuum supply to diaphragm based on signals received from cruise control module.

BRAKE CANCEL, BRAKELIGHT & CLUTCH SWITCHES

NOTE: DO NOT confuse brake cancel switch (activated by braking) with CANCEL switch on steering wheel. See STEERING SWITCH.

These switches disengage system. Brake cancel switch and brakelight switch are separate switches. When brake pedal is pressed:

* Brakelight switch allows current flow to control module.
* Brake cancel switch interrupts current flow to control module.

If either condition occurs, control module disengages the system. When clutch pedal is pressed, clutch switch interrupts current flow to control module. This disengages system.

CRUISE CONTROL MODULE

Based on inputs received from various sensors, cruise control module sends signals to actuator control valve assembly to maintain vehicle speed.

INHIBITOR RELAY (A/T)

When transmission is in Park or Neutral, inhibitor relay interrupts current flow to cruise control module, disengaging system.

MAIN SWITCH

Switch is mounted on instrument panel and supplies power for system.

STEERING SWITCH

Steering switch is a system control switch, mounted on steering wheel. Steering switch has 3 different switches, controlling different functions of system. Steering switch contains RESUME/ACCEL, CANCEL and SET/COAST switches.

SYSTEM COMPONENT LOCATIONS

SYSTEM COMPONENT LOCATIONS TABLE

Application	Location
Cruise Control Module (1)	
G20	Under Dash, To Left Of Steering Column
M30	Behind Left Rear Interior Quarter Panel
Q45	Under Dash, On Passenger Side
Cruise Control Relay (1)	
G20 & Q45	In Engine Compartment, On Right Front Inner Fender
M30	Near Cruise Control Module
Vehicle Speed Sensor	
G20	Part Of Speedometer (Reed Switch)
M30 & Q45	Mounted On Transmission

(1) - See Figs. 1-6.

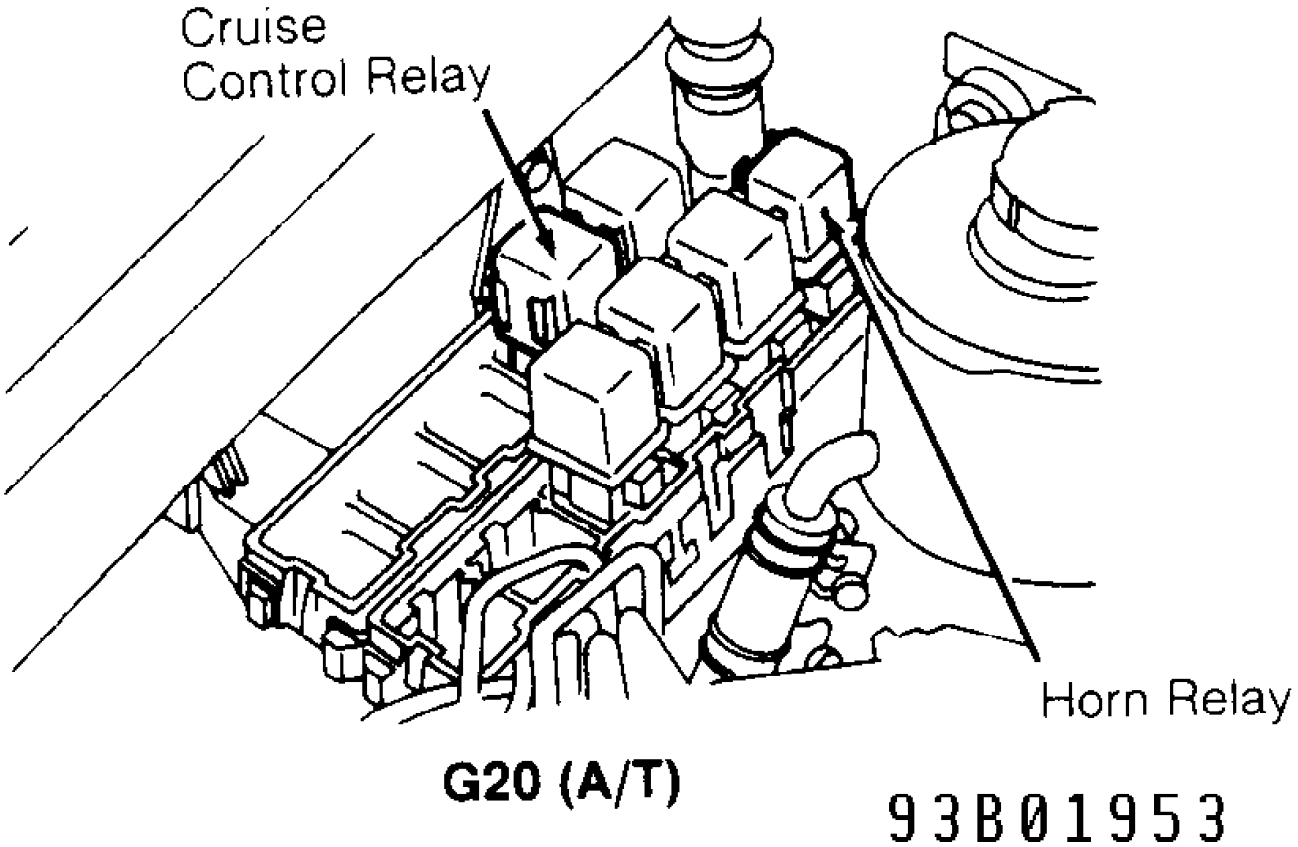

Fig. 1: Locating Cruise Control Components (G20 A/T)
Courtesy of Nissan Motor Co., U.S.A.

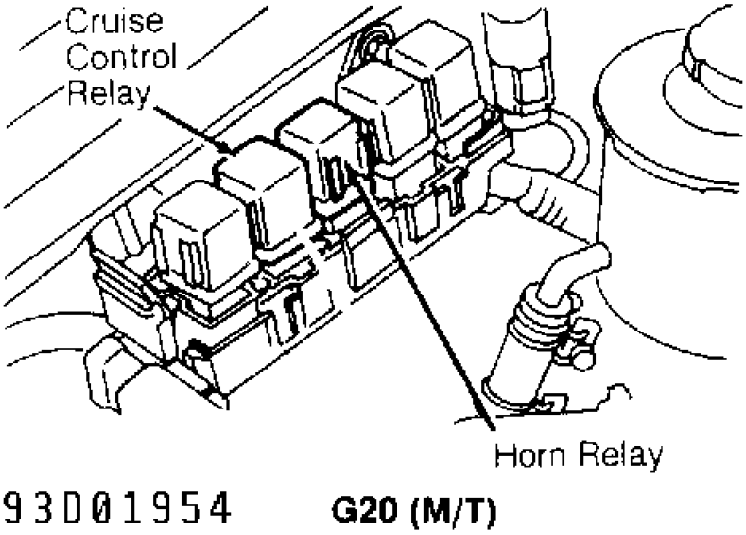

Fig. 2: Locating Cruise Control Components (G20 M/T)
Courtesy of Nissan Motor Co., U.S.A.

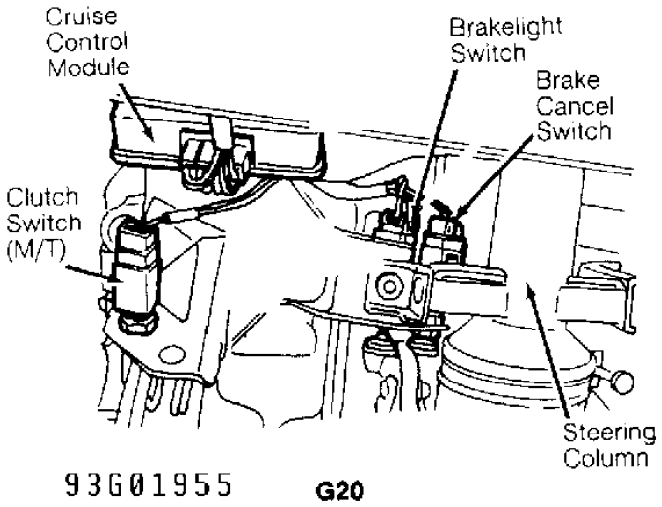

Fig. 3: Locating Cruise Control Components (G20)
Courtesy of Nissan Motor Co., U.S.A.

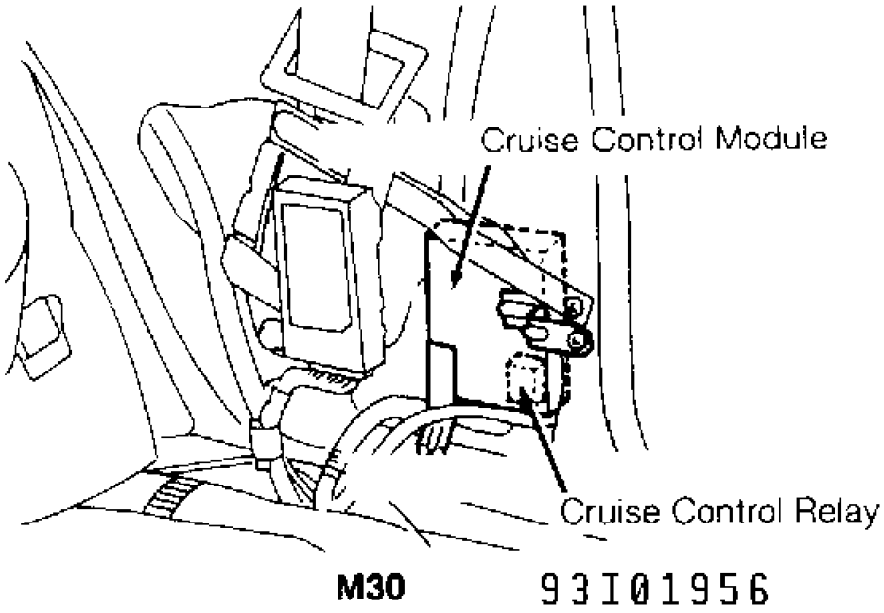

Fig. 4: Locating Cruise Control Components (M30)
Courtesy of Nissan Motor Co., U.S.A.

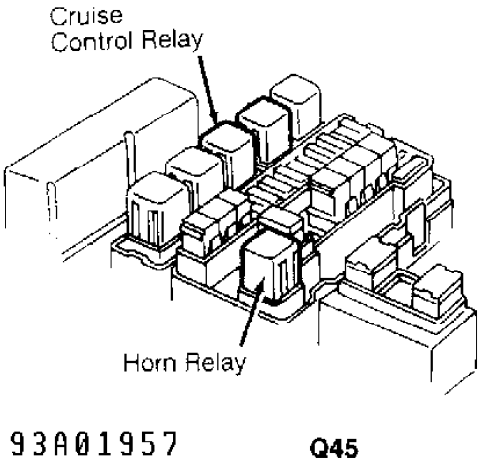

Fig. 5: Locating Cruise Control Components (Q45)
Courtesy of Nissan Motor Co., U.S.A.

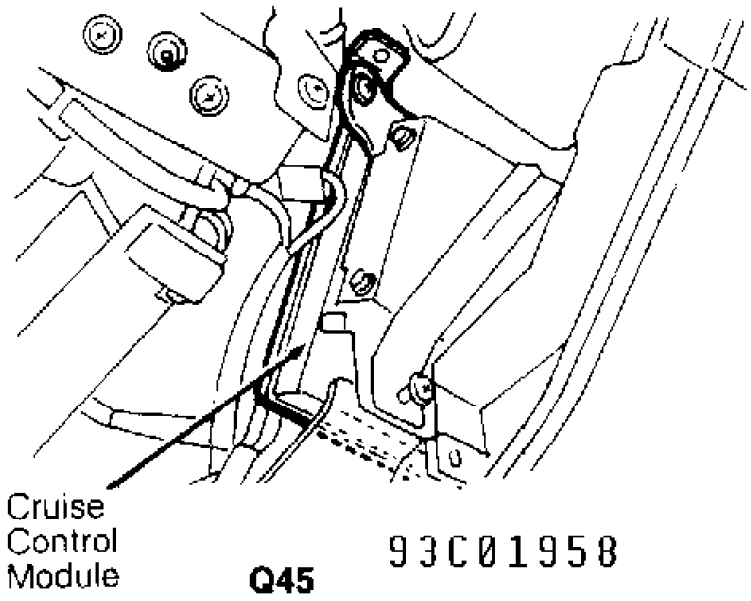

Fig. 6: Locating Cruise Control Components (Q45)
Courtesy of Nissan Motor Co., U.S.A.

TROUBLE SHOOTING

NOTE: For system component locations, see SYSTEM COMPONENT LOCATIONS under DESCRIPTION & OPERATION.

SYSTEM WILL NOT ENGAGE

1) Turn ignition on. Turn cruise control main switch to ON position. If indicator light illuminates, go to next step. If indicator light does not illuminate, check for blown fuse, open in power supply circuit to main switch or faulty cruise control main switch. If these components are okay, check cruise control relay circuit.

2) Perform POWER SUPPLY CIRCUIT TEST under TESTING. If power supply circuit is okay, perform CUT-OFF CIRCUIT TEST under TESTING. If cut-off circuit is okay, perform SET/COAST SWITCH CIRCUIT TEST under TESTING.

3) If SET/COAST switch circuit is okay, perform SPEED SENSOR CIRCUIT TEST under TESTING. If speed sensor circuit is okay, perform ACTUATOR TEST under TESTING. If actuator is okay, turn ignition on. Check voltage between cruise control module connector terminals No. 3 and 8. See Fig. 7 or 8. Voltage should not be present. If voltage is present, check actuator wiring harness. If voltage is not present, turn ignition off. Disconnect cruise control module connector.

4) Using an ohmmeter, measure resistance between cruise control module connector terminal No. 8 and terminals No. 9, 10 and 14. See Fig. 7 or 8. If resistance is not about 8-45 ohms when

measuring between terminals No. 8 and 9, and about 65 ohms when measuring between terminal No. 8 and terminals No. 10 and 14, repair harness. If resistance is as specified, replace cruise control module.

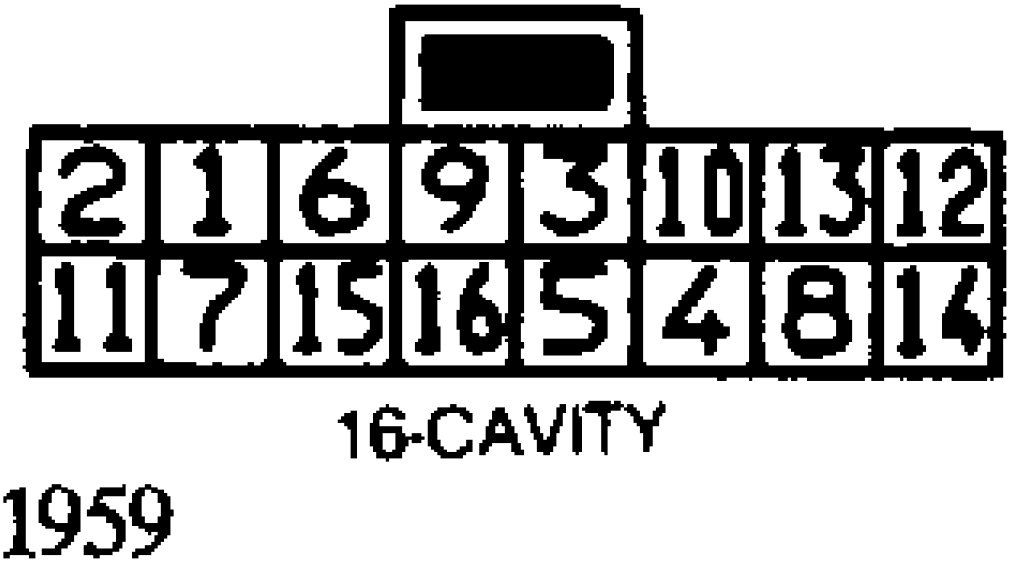

Fig. 7: Identifying Control Module 16-Pin Connector Terminals
Courtesy of Nissan Motor Co., U.S.A.

93G01960

FEB 18 1993

Fig. 8: Identifying Control Module 20-Pin Connector Terminals
Courtesy of Nissan Motor Co., U.S.A.

SYSTEM WILL NOT DISENGAGE

NOTE: Use the following procedure if system will not disengage when pressing brake or clutch pedal, or when shifting automatic transmission into Park or Neutral. If system will not disengage when activating CANCEL SWITCH, see CANCEL SWITCH FUNCTION INOPERATIVE.

1) If system will not disengage when the brake or clutch (M/T) pedals are pressed or when transmission is placed in Park or Neutral, perform CUT-OFF CIRCUIT TEST under TESTING.
2) If cut-off circuit does not test okay, check brake cancel switch, clutch switch (M/T), inhibitor relay (A/T) and inhibitor switch (A/T). If cut-off circuit is okay, perform ACTUATOR TEST under TESTING. If actuator is okay, replace cruise control module.

ENGINE SURGES

Check for loose, cracked or disconnected vacuum hoses. Ensure actuator cable moves smoothly. Repair or replace actuator cable if cable does not move smoothly. If actuator cable moves smoothly, perform ACTUATOR TEST under TESTING. If actuator is okay, replace cruise control module.

CANCEL SWITCH FUNCTION INOPERATIVE

Perform CANCEL SWITCH CIRCUIT (STEERING WHEEL) TEST under TESTING. If CANCEL switch circuit is okay, replace cruise control module.

RESUME FUNCTION INOPERATIVE

Perform RESUME SWITCH CIRCUIT TEST under TESTING. If RESUME/ACCEL switch circuit is okay, replace cruise control module.

ACCEL FUNCTION INOPERATIVE

Perform ACCEL SWITCH CIRCUIT TEST under TESTING. If RESUME/ACCEL switch circuit tests okay, replace cruise control module.

DIFFERENCE BETWEEN SET SPEED & ACTUAL SPEED

Check actuator cable for smoothness of operation. Replace actuator cable if cable does not move smoothly. If actuator cable moves smoothly, check for loose, cracked or disconnected vacuum hoses. If vacuum hoses are okay, perform ACTUATOR TEST under TESTING. If actuator is okay, replace cruise control module.

OVERDRIVE CANCEL FUNCTION INOPERATIVE

NOTE: Symptoms of inoperative overdrive cancel function include:

* When cruise control is set and transmission is in overdrive, overdrive is canceled and it is not possible to shift back into overdrive.
* Overdrive will not be canceled, even if actual speed is 4 MPH lower than set speed (set speed cannot be maintained).
* Overdrive will not be canceled, even if RESUME/ACCEL switch is on.

Perform OVERDRIVE CANCEL CIRCUIT (A/T) TEST under TESTING. If overdrive cancel circuit is okay, replace cruise control module.

EXCESSIVELY DELAYED ENGAGEMENT

NOTE: Some delay of engagement is normal.

Check adjustment of actuator cable. See ACTUATOR CABLE under ADJUSTMENTS. Ensure actuator cable moves smoothly. Replace actuator cable if cable does not move smoothly. Check for loose, cracked or disconnected vacuum hoses. If vacuum hoses are okay, perform ACTUATOR TEST under TESTING. If actuator is okay, replace cruise control module.

CRUISE INDICATOR LIGHT BLINKS

1) If indicator light blinks when cruise control main switch is turned to ON position, go to step 3). If indicator light blinks when brake pedal is pressed slowly, adjust brake cancel and brakelight switches. See BRAKE CANCEL, BRAKELIGHT & CLUTCH SWITCHES under ADJUSTMENTS.

2) If indicator light does not blink when brake pedal is pressed slowly, check steering switch. If steering switch is okay, replace cruise control module.

3) Perform ACTUATOR TEST under TESTING. If actuator is okay, turn ignition on. Measure voltage between cruise control module connector terminals No. 3 and 8. See Fig. 7 or 8. If voltage is present, check wiring harness. If voltage is not present, turn ignition off. Disconnect cruise control module connector.

4) Measure resistance between cruise control module connector terminal No. 8 and terminals No. 9, 10 and 14. See Fig. 7 or 8. If resistance is not about 8-45 ohms between terminals No. 8 and 9, and about 65 ohms between terminal No. 8 and terminals No. 10 and 14, repair harness. If resistance is as specified, replace cruise control module.

ADJUSTMENTS

ACTUATOR CABLE

NOTE: Before adjusting actuator (cruise control) cable, ensure throttle cable is properly adjusted. DO NOT twist or overtighten cable wire during adjustment procedure.

Loosen actuator cable adjusting nuts. Without pressing accelerator pedal, adjust cable until there is no free play. Back off cable adjusting nut 1/2 - 1 turn to allow slight free play in cable. Tighten cable adjusting nuts.

BRAKE CANCEL, BRAKELIGHT & CLUTCH SWITCHES

Loosen lock nut. Turn adjusting nut until clearance between tip of switch and pedal is .012-.040" (.30-1.0 mm).

TESTING

NOTE: For system component locations, see SYSTEM COMPONENT LOCATIONS under DESCRIPTION & OPERATION.

ACCEL SWITCH CIRCUIT TEST

1) Turn ignition off. Press and hold RESUME/ACCEL switch. Check voltage between cruise control module connector terminals No. 1 and 3. See Fig. 7 or 8. If voltage is present, go to next step. If voltage is not present, go to step 3).

2) Check voltage between terminals No. 1 and 3 after releasing RESUME/ACCEL switch. If voltage is present, go to step 3). If voltage is not present, test drive vehicle. If vehicle does not accelerate when RESUME/ACCEL switch is pressed, replace cruise control module. If vehicle does not maintain faster speed when RESUME/ACCEL switch is pressed, replace cruise control module.

3) Press and hold RESUME/ACCEL switch. Using an ohmmeter, check for continuity between terminals No. 1 and 3 at RESUME/ACCEL switch. If continuity does not exist, replace RESUME/ACCEL switch. If continuity exists, check RESUME/ACCEL wiring circuit.

ACTUATOR TEST

1) Turn ignition off. Disconnect actuator pump connector. Connect battery positive lead to actuator pump connector terminal No. 1 and negative lead to terminal No. 4. See Fig. 9.

2) If pump does not operate, replace actuator pump. If actuator pump operates, connect battery positive lead to terminal No. 1 and negative lead to terminals No. 2, 3 and 4 (simultaneously).

3) If actuator wire moves, go to next step. If actuator wire does not move, check for vacuum at actuator hose connection. If no vacuum is present, replace actuator pump. If vacuum is present, replace actuator.

4) With battery leads connected to terminals as in step 2), disconnect negative lead from terminal No. 4. If actuator wire returns to original position 50-60 seconds after disconnecting negative lead from terminal No. 4, go to next step. If actuator wire does not return as specified, replace actuator pump.

5) Disconnect positive lead from terminal No. 1. If actuator wire does not immediately return to original position, replace actuator pump. If actuator wire immediately returns to original Position, actuator and actuator pump are okay.

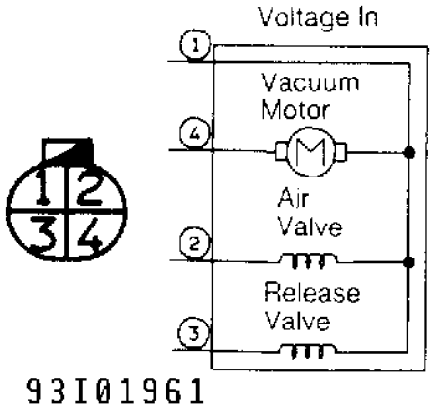

Fig. 9: Identifying Actuator Connector Terminals
Courtesy of Nissan Motor Co., U.S.A.

CANCEL SWITCH CIRCUIT (STEERING WHEEL) TEST

1) Turn ignition on. Press and hold CANCEL switch. Measure voltage between cruise control module connector terminals No. 1 and 3, and terminals No. 2 and 3. See Fig. 7 or 8.

2) If battery voltage is present in each case, CANCEL switch circuit is okay. If battery voltage is not present in each case, check CANCEL switch wiring circuit. If CANCEL switch wiring circuit is okay, replace steering switch.

CUT-OFF CIRCUIT TEST

1) Turn ignition on. Turn cruise control main switch on. Connect voltmeter between cruise control module connector terminals No. 3 and 5. See Fig. 7 or 8. If voltage is present with brake pedal and clutch pedal (M/T) released or when transmission is not in Park or Neutral (A/T), go to next step. If voltage is not present, go to step 3).

2) Check voltage between cruise control module connector terminals No. 3 and 11. With ignition in ON position and brake pedal depressed, voltage should be present. If voltage is not present, check brakelight switch circuit.

3) If voltage was not present in step 1), check brake cancel, inhibitor and clutch switches. Adjust or replace as necessary. See BRAKE CANCEL, BRAKELIGHT & CLUTCH SWITCHES under ADJUSTMENTS. Check inhibitor relay and switch.

GROUND CIRCUIT TEST

Using an ohmmeter, check continuity between ground and cruise control module connector terminal No. 3. See Fig. 7 or 8. If continuity does not exist, repair circuit between cruise control module connector and ground.

OVERDRIVE CANCEL CIRCUIT (A/T) TEST

Q45

Ensure ignition is off. Check continuity between cruise control module connector terminals No. 3 and 12. See Fig. 7 or 8. If continuity exists, overdrive cancel wiring circuit is okay. If continuity does not exist, check overdrive cancel wiring circuit. If circuit is okay, replace cruise control module.

POWER SUPPLY CIRCUIT TEST

1) Release all pressure from brake and clutch pedals. Turn ignition on. Turn cruise control main switch to ON position. Place automatic transmission in Drive.

2) Measure voltage between cruise control module connector terminals No. 3 and 4. If battery voltage is present, power supply circuit is okay. If battery voltage is not present, check continuity between control module terminal No. 4 and cruise control relay.

RESUME SWITCH CIRCUIT TEST

1) Turn ignition off. Press and hold RESUME/ACCEL switch. Measure voltage between cruise control module connector terminals No. 1 and 3. See Fig. 7 or 8. Voltage should be present. Release RESUME/ACCEL switch. Voltage should not be present. If switch does not test as described, go to step 4).

2) If switch passed previous test, test drive vehicle. Set vehicle speed to 50 MPH by pressing SET/COAST switch. While cruising at set speed, depress and release brake pedal. Cruise control should disengage and cruise indicator light should go off. If not, check

brakelight switch, cruise control cancel switch and clutch switch (M/T).

3) If cruise control disengages and cruise indicator light goes off, set speed above 30 MPH. Press and release RESUME/ACCEL switch. Vehicle should return to previous speed of 50 MPH. If speed sets to 50 MPH, system is okay. If speed does not set to 50 MPH, replace cruise control module.

4) If switch does not test as described in step 1), check RESUME/ACCEL switch wiring circuit. If RESUME/ACCEL switch wiring circuit is okay, replace steering switch.

SET/COAST SWITCH CIRCUIT TEST

1) Turn ignition off. Press and hold SET/COAST switch. Measure voltage between cruise control module connector terminals No. 2 and 3. See Fig. 7 or 8. Battery voltage should be present.

2) If battery voltage is not present, check horn operation. If horn does not operate, check fuse and horn relay. If horn operates, check SET/COAST switch wiring circuit. If SET/COAST switch wiring circuit is okay, replace steering switch.

SPEED SENSOR CIRCUIT TEST

G20

1) Raise and support vehicle. Turn ignition on. Connect voltmeter between cruise control module connector terminals No. 3 and 7. See Fig. 7 or 8.

2) While slowly turning front wheels, check for voltmeter needle deflection. If needle deflects, speed sensor and circuit are okay. If needle does not deflect, check speed sensor. If speed sensor is okay, check speed sensor wiring circuit.

M30 & Q45

1) Raise and support vehicle. Turn ignition on. Connect voltmeter between cruise control module connector terminals No. 3 and 7. See Fig. 7 or 8.

2) While slowly turning rear wheels, check for voltmeter needle deflection. If needle deflects, speed sensor and circuit are okay. If needle does not deflect, check speed sensor. If speed sensor is okay, check speed sensor wiring circuit.

SPEED SENSOR TEST

G20

Remove instrument cluster. Disconnect instrument cluster connectors. Connect an ohmmeter between specified terminals of instrument cluster connector. See Fig. 10. While turning speedometer receptacle with a small screwdriver, watch ohmmeter needle. If needle deflects 2 times for each revolution, speed sensor is okay. If needle does not deflect 2 times for each revolution, replace speed sensor.

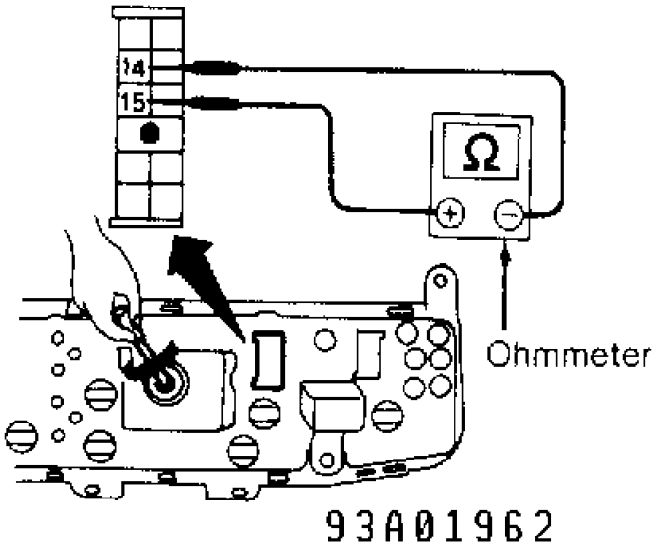

Fig. 10: Testing Speed Sensor (G20)
Courtesy of Nissan Motor Co., U.S.A.

M30 & Q45

Disconnect speed sensor connector. Remove sensor from transmission. While turning sensor gear counterclockwise quickly by hand, measure AC voltage across sensor connector terminals. If about .5 volt is not present, replace sensor.

REMOVAL & INSTALLATION

ACTUATOR

Turn ignition off. Disconnect actuator harness connector, vacuum hose and cable from actuator. Remove actuator attaching bolt. To install, reverse removal procedure.

ACTUATOR CABLE

Disconnect cable from actuator. Remove screw attaching cable bracket. Remove rubber boots. Loosen lock nuts and remove cable from torsion shaft. To install cable, reverse removal procedure. Adjust cable. See ACTUATOR CABLE under ADJUSTMENTS.

BRAKE CANCEL, BRAKELIGHT & CLUTCH SWITCHES

Disconnect negative battery cable. Remove instrument panel lower cover. Disconnect wiring harness from switch. Loosen lock nut and remove switch. To install, reverse removal procedure. Adjust switch. See BRAKE CANCEL, BRAKELIGHT & CLUTCH SWITCHES under

ADJUSTMENTS.

CRUISE CONTROL MODULE

For cruise control module location, see SYSTEM COMPONENT LOCATIONS table under DESCRIPTION & OPERATION. Turn ignition off. Disconnect negative battery cable. Remove cruise control module mounting hardware. Remove cruise control module and disconnect harness connector. To install, reverse removal procedure.

MAIN SWITCH

Disconnect negative battery cable. Push switch out from behind instrument panel. Disconnect harness connector from main switch. To install, reverse removal procedure.

WIRING DIAGRAMS

For 1992 model wiring diagrams, See appropriate chassis wiring diagram in the WIRING DIAGRAMS Section.

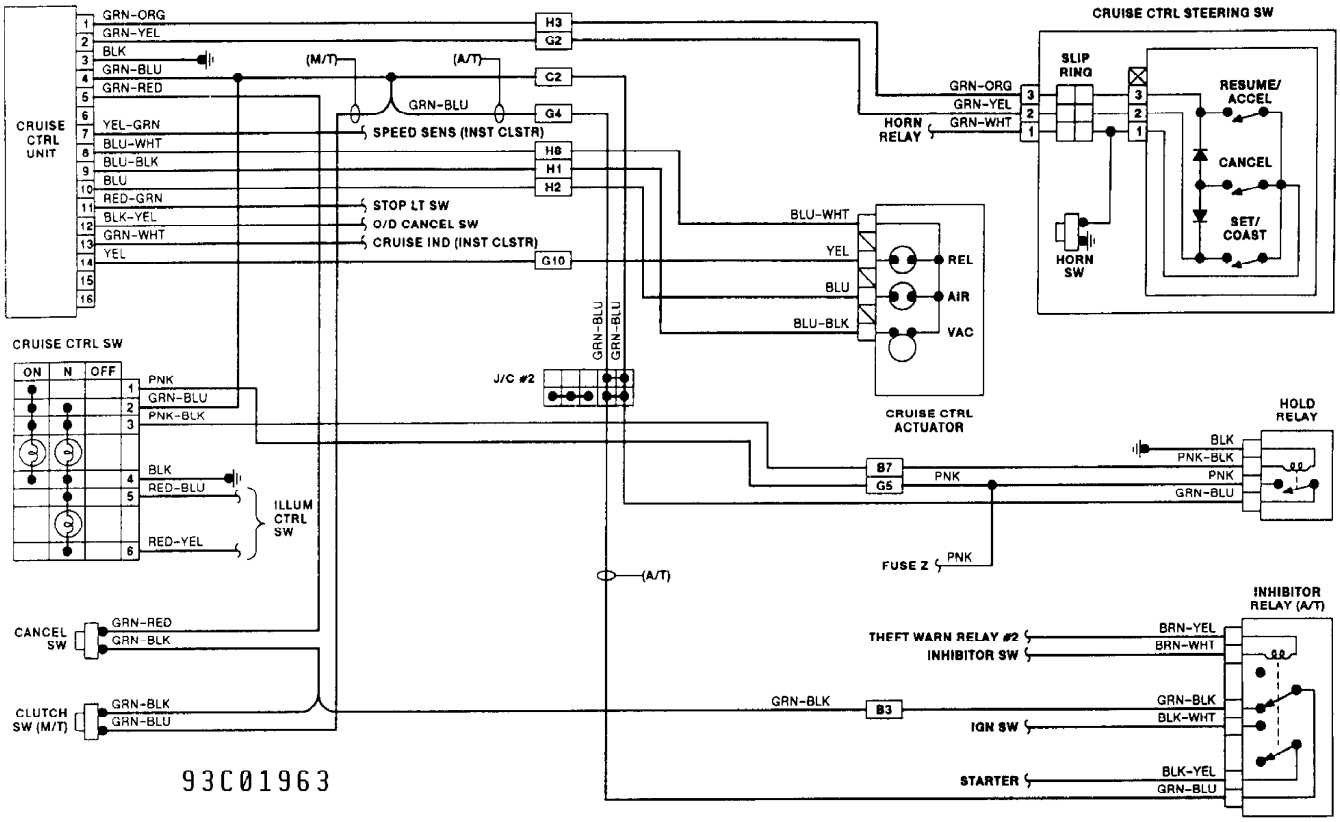

Fig. 11: Cruise Control System Wiring Diagram (1991 G20)

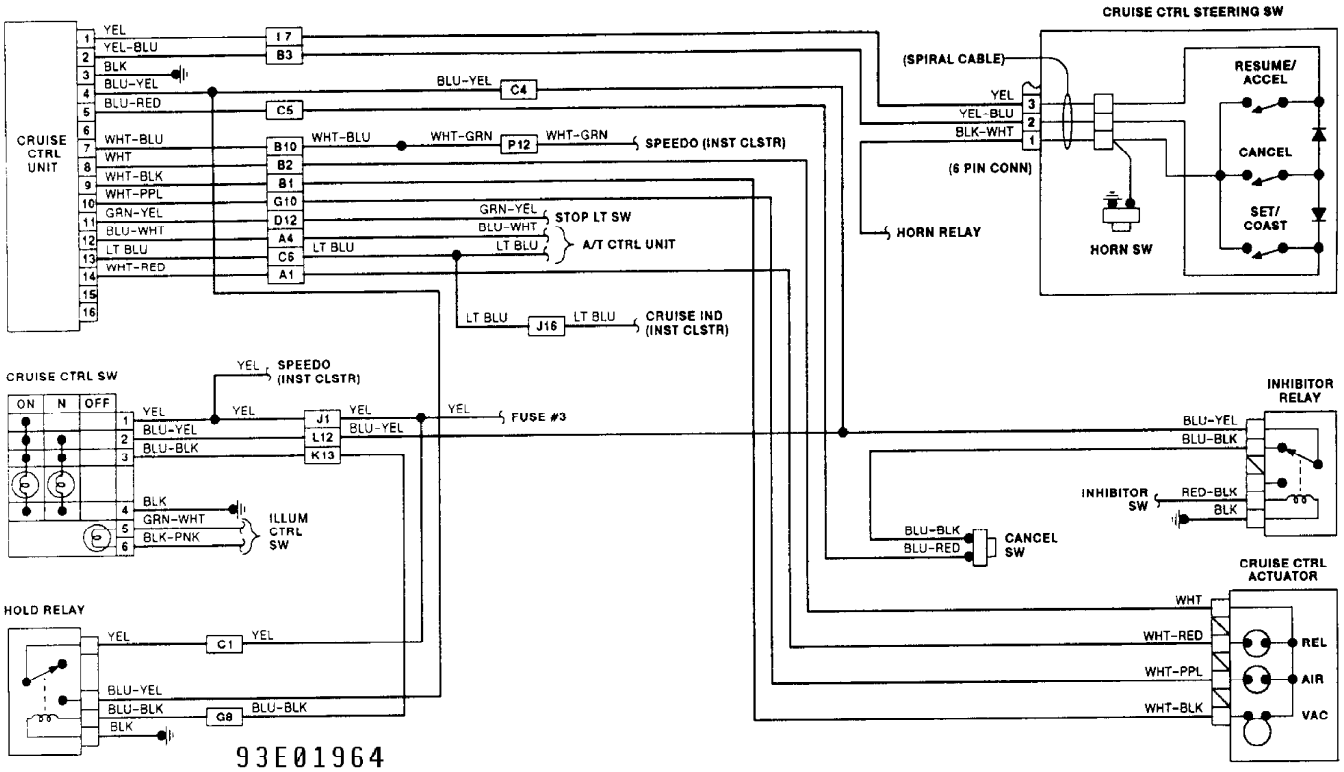

Fig. 12: Cruise Control System Wiring Diagram (1991 M30)

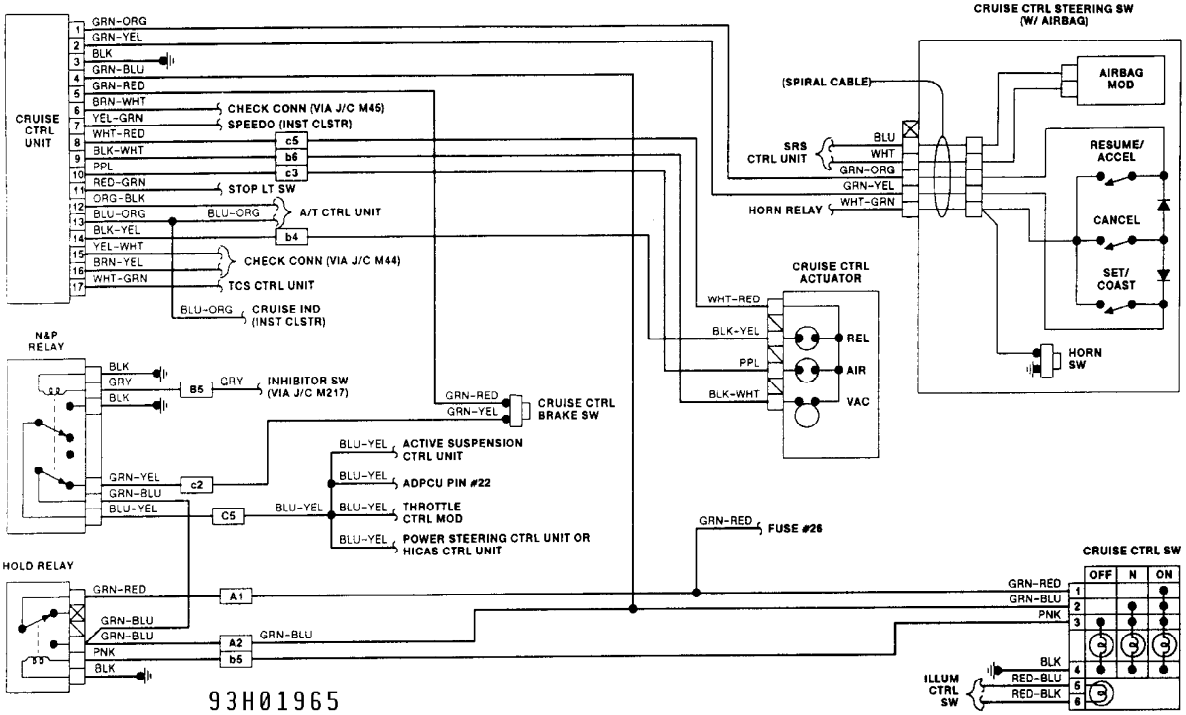

Fig. 13: Cruise Control System Wiring Diagram (1991 Q45)