

## **2002 ACCESSORIES & EQUIPMENT**

### **Cruise Control Systems - Sedona**

## **GENERAL**

### **DESCRIPTION & OPERATION**

#### **CRUISE CONTROL**

Cruise control system is engaged by "CRUISE" main switch located on center instrument panel, right of steering wheel. System has the capability to cruise, coast, resume speed, and accelerate, and raise "tap-up" or lower "tap-down" set speed. It also has a safety interrupt, engaged upon depressing brake or shifting select lever.

Stepper Motor Cruise Control (SMCC x.5) is a speed control system that maintains a required vehicle speed at normal driving conditions.

The main components of SMCC system are mode control switches, transaxle range switch, brake switch, vehicle speed sensor, cruise control module and control cable that connect throttle body.

SMCC system uses a cruise control module to gain the required vehicle cruise operation. Two important components of the module are an electronic controller and a electric stepper motor.

The controller monitors vehicle speed and operates the electric stepper motor. The motor moves a ribbon and throttle linkage, in response to controller, to maintain the desired cruise speed. The cruise control module contains a low speed limit which will prevent system engagement below a minimum speed of 40Km/h (25mph). The operation of the controller is controlled by mode control switches located on steering wheel.

Transaxle range switch and brake switch are provided to disengage the cruise control system. The switches are on brake pedal bracket and transaxle. When the brake pedal depressed or select lever shifted, the cruise control system is electrically disengaged and the throttle is returned to the idle position.

#### **CRUISE MAIN SWITCH**

SMCC system is engaged by pressing "CRUISE" push button. Releasing "CRUISE" push button release throttle, clears cruise memory speed, and puts vehicle is a non-cruise mode.

#### **SET/COAST SWITCH**

SET/COAST switch located on inside of steering wheel has two positions, "Normal" and "Depressed". The set position - With SET/COAST switch depressed and then release the cruise speed will be set at the speed the vehicle was going when SET/COAST switch was released.

The coast position - With SET/COAST switch fully depressed, driver can lower cruise speed. To decrease cruise speed, Set/Coast switch is held in, disengaging cruise control system. When vehicle has slowed to required cruise speed, releasing SET/COAST switch will re-engage speed at new selected speed.

The tap down - To lower vehicle speed, cruise must be engaged and operating. Tap down is done by quickly pressing and releasing SET/COAST switch. Do not hold Set/Coast switch in depressed position.

Tap down is a function in which cruise speed can be decreased by 1mph (1.6Km/h).

### **RESUME/ACCEL SWITCH**

RESUME/ACCEL switch located on inside of steering wheel has two positions, "Normal" and "Depressed".

The resume position - With RESUME/ACCEL switch depressed and then release, This switch also returns cruise control operation to last speed (which is temporarily disengaged by Cancel switch or Brake pedal), setting when momentarily operating RESUME/ACCEL switch by constant acceleration.

The accel position - With RESUME/ACCEL switch depressed and held in, disengaging cruise control system, when vehicle has accelerated to required cruise speed, releasing RESUME/ACCEL switch will re-engage speed at new selected speed.

The tap up - To increase vehicle speed, the cruise must be engaged and operating.

Tap up is done by quickly pressing and releasing RESUME/ACCEL switch less than 0.75 second. Do not hold RESUME/ACCEL switch in depressed position. Tap up is a function in which cruise speed can be increased by 1 mph(1.6Km/h).

### **CANCEL SWITCH**

SMCC system is temporarily disengaged by pressing CANCEL switch.

Cruise speed canceled by this switch will be recovered by RESUME/ACCEL switch.

### **COMPONENT PARTS AND FUNCTION OUTLINE**

Component part		Function
Vehicle-speed sensor		Converts vehicle speed to pulse.
Cruise control module (CCM)		Receives signals from sensor and control switches; CCM controls all automatic speed control functions
Cruise control indicator		Illuminate when CRUISE main switch is ON (Built into cluster)
Cruise Control switches	CRUISE main switch	Switch for automatic speed control power supply.
	Resume/Accel switch	Controls automatic speed control functions by Resume/Accel switch (Set/Coast switch)
	Set/Coast switch	
Cancel switch	Cancel switch	Sends cancel signals to CCM
	Brake-pedal switch	
	Transaxle range switch(A/T) Clutch switch(M/T)	
Throttle valve		Regulates the throttle valve to the set opening by CCM.

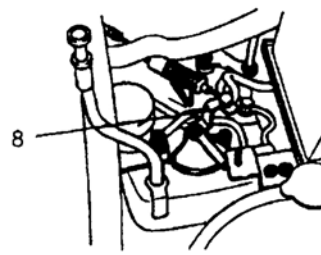
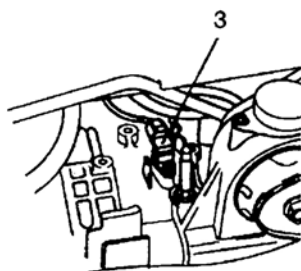
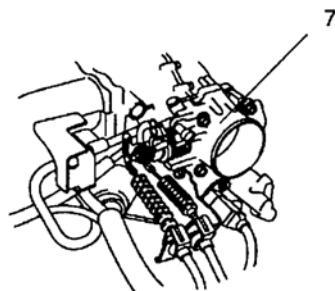
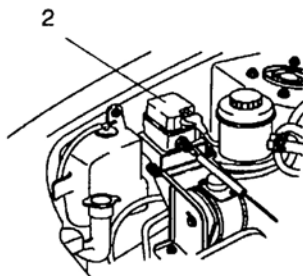
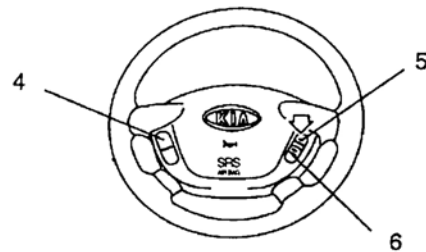
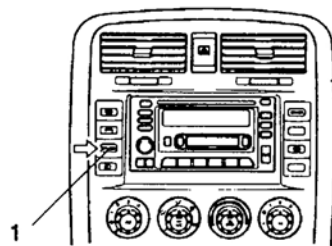
\* CCM : Cruise Control Module

\* CC : Cruise Control

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**Fig. 1: Identifying Components & Function Outline**  
**Courtesy of KIA MOTORS AMERICA, INC.**

**COMPONENTS LOCATION**



1. Cruise Main switch
2. Cruise control module
3. Vehicle speed sensor
4. Cancel switch

5. Coast/Set switch
6. Resume/Accel switch
7. Throttle body
8. Transmission range switch

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**Fig. 2: Locating Cruise Control System Components**  
 Courtesy of KIA MOTORS AMERICA, INC.

## TROUBLESHOOTING

### PRE-TROUBLESHOOTING

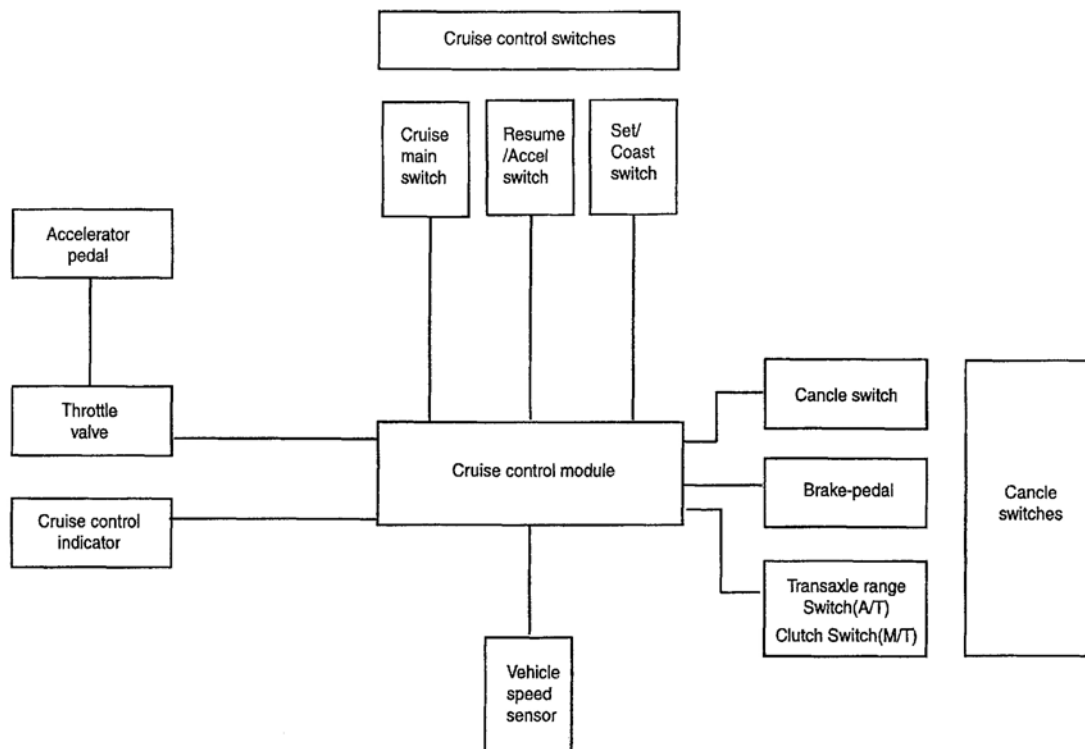
Before starting troubleshooting, inspect each of the following sections, and if there is an abnormality, carry out a repair.

1. Check if the installation and connection routes of the cable is normal.

2. Check if there is no excessive play or tension in each cable.

## TROUBLESHOOTING PROCEDURES

Determine the condition of all function circuits.



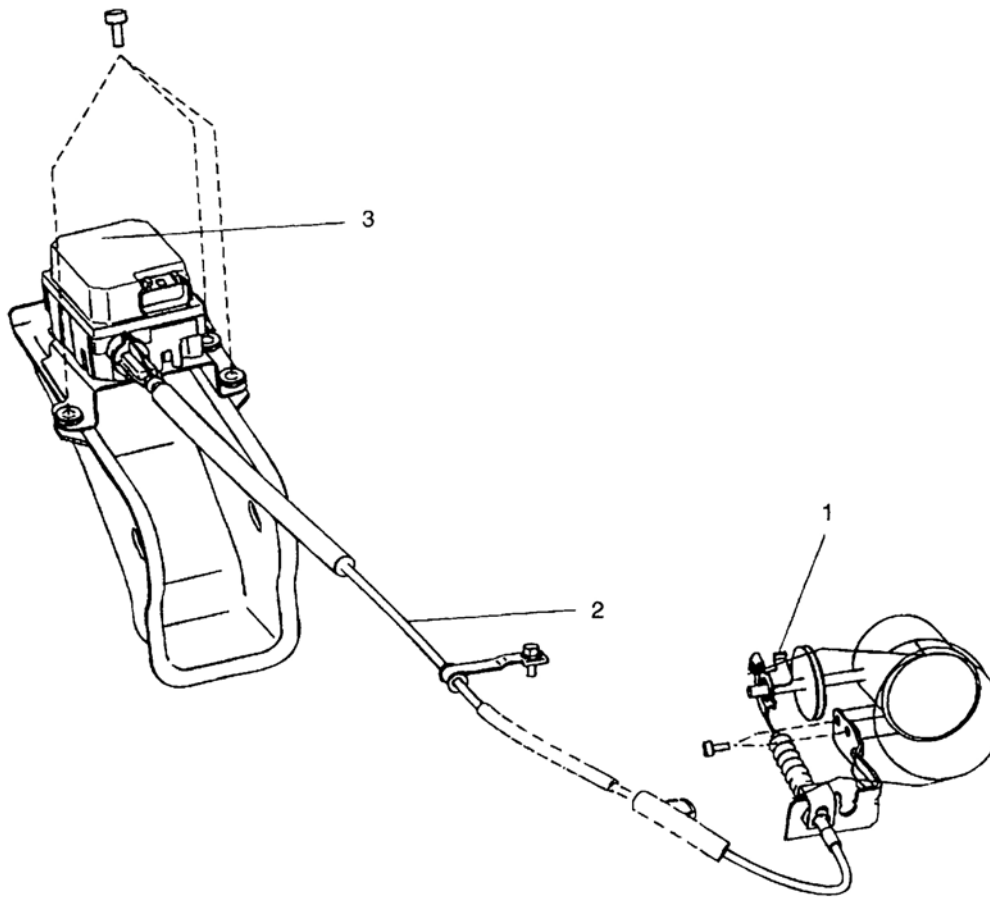
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**Fig. 3: Identifying System Block Diagram**  
Courtesy of KIA MOTORS AMERICA, INC.

1. Make the following preliminary inspections.
  - Check that the installation of the accelerator cable is correct, and that the cables and links are securely connected.
  - Check that the accelerator pedal moves smoothly.
  - Adjust the cable so there is not excessive tension or excessive play on the accelerator cable.
  - Check that the CCM, cruise main and control switch, and the connector of each cancel switch are connected securely.

## COMPONENTS

### CRUISE CONTROL MODULE



1. Throttle body  
2. Control cable

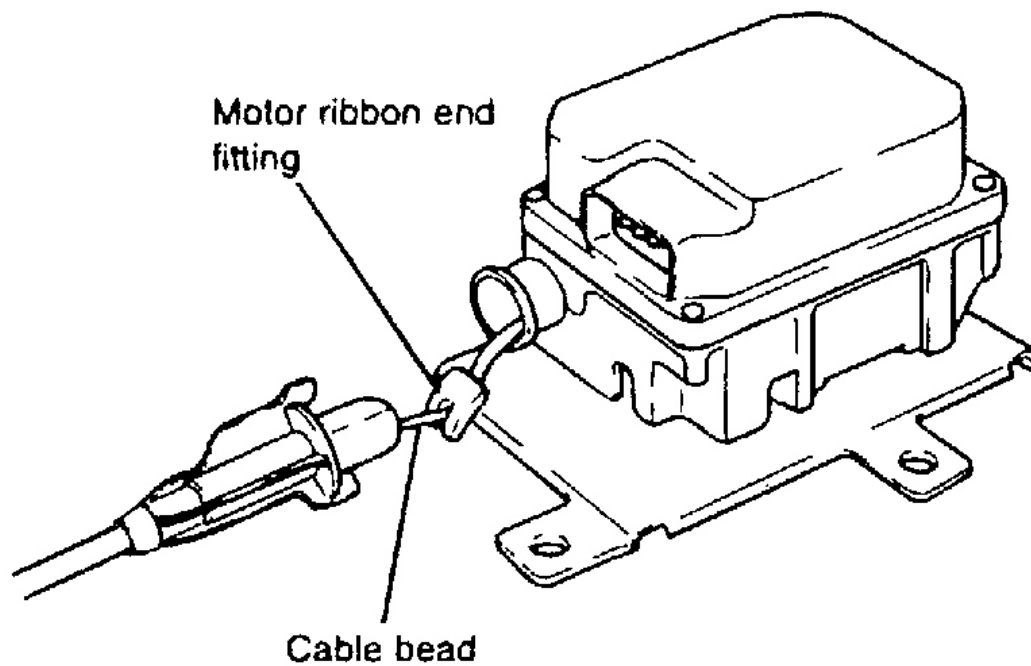
3. Cruise control module

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**Fig. 4: Identifying Cruise Control System Components**  
**Courtesy of KIA MOTORS AMERICA, INC.**

#### **REMOVAL - CRUISE CONTROL MODULE**

1. Disconnect battery negative cable.
2. Disconnect cruise control cable from throttle body.
3. Disconnect cruise control cable from cruise control module.

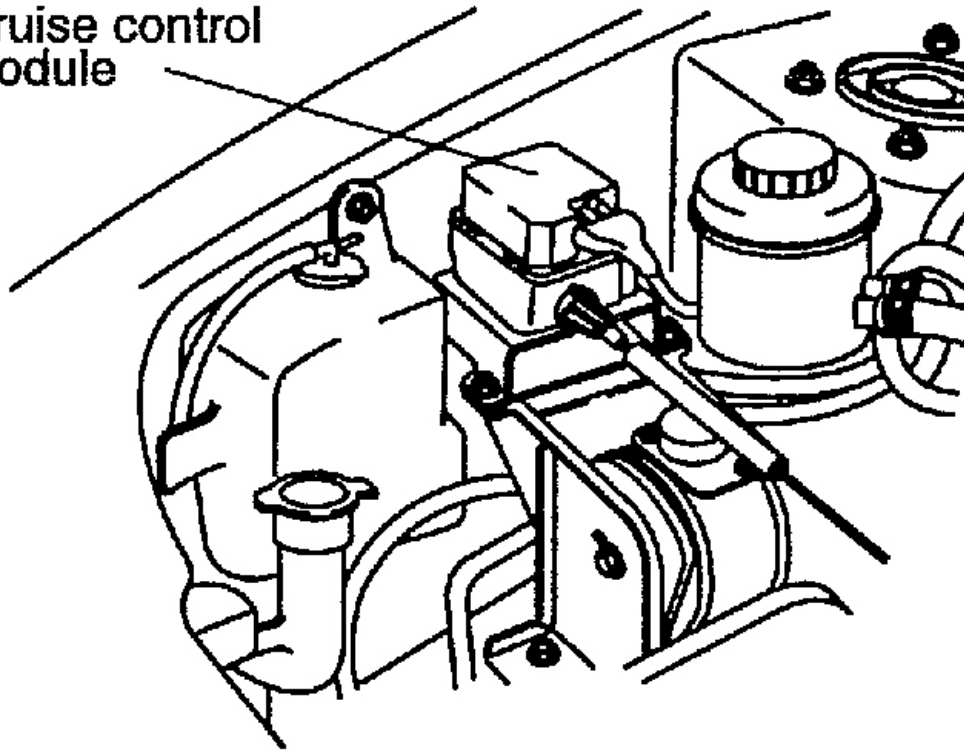


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**Fig. 5: Disconnecting Cruise Control Cable From Cruise Control Module**  
Courtesy of KIA MOTORS AMERICA, INC.

4. Disconnect control module connector from cruise control module.
5. Remove three bolts securing control module with bracket.

Cruise control  
module

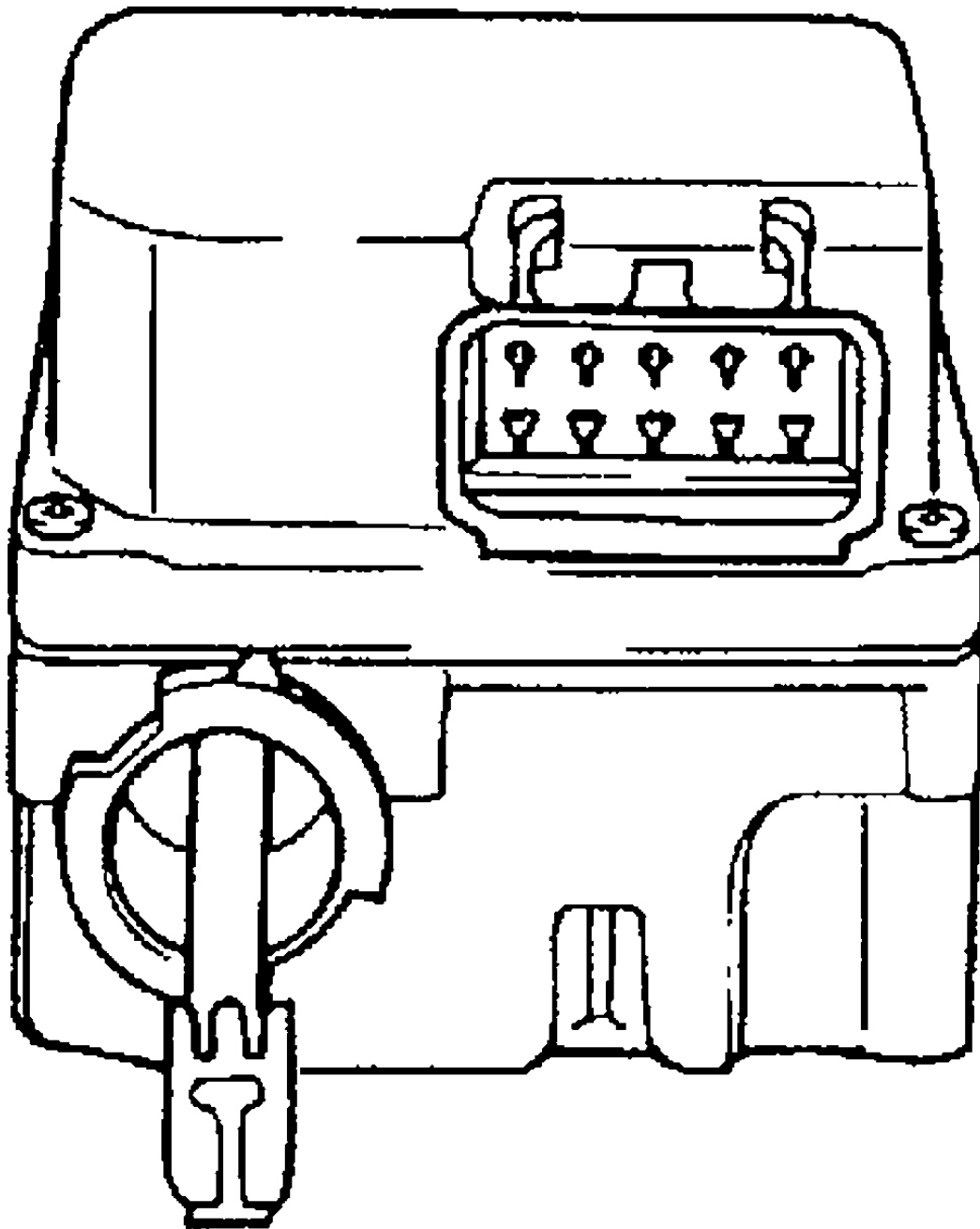


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**Fig. 6: Removing Bolts Securing Control Module With Bracket**  
Courtesy of KIA MOTORS AMERICA, INC.

6. Remove control module with bracket from engine compartment.
7. Remove three bolts attaching cruise control module to bracket.
8. Remove control module from bracket.



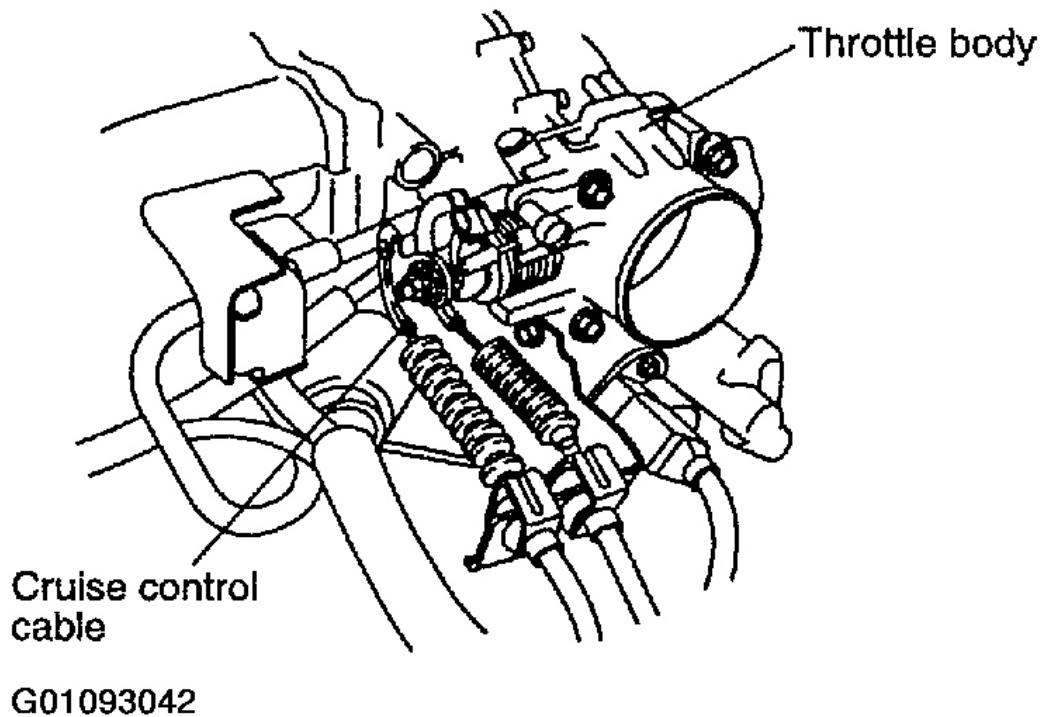


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**Fig. 7: Removing Control Module From Bracket**  
Courtesy of KIA MOTORS AMERICA, INC.

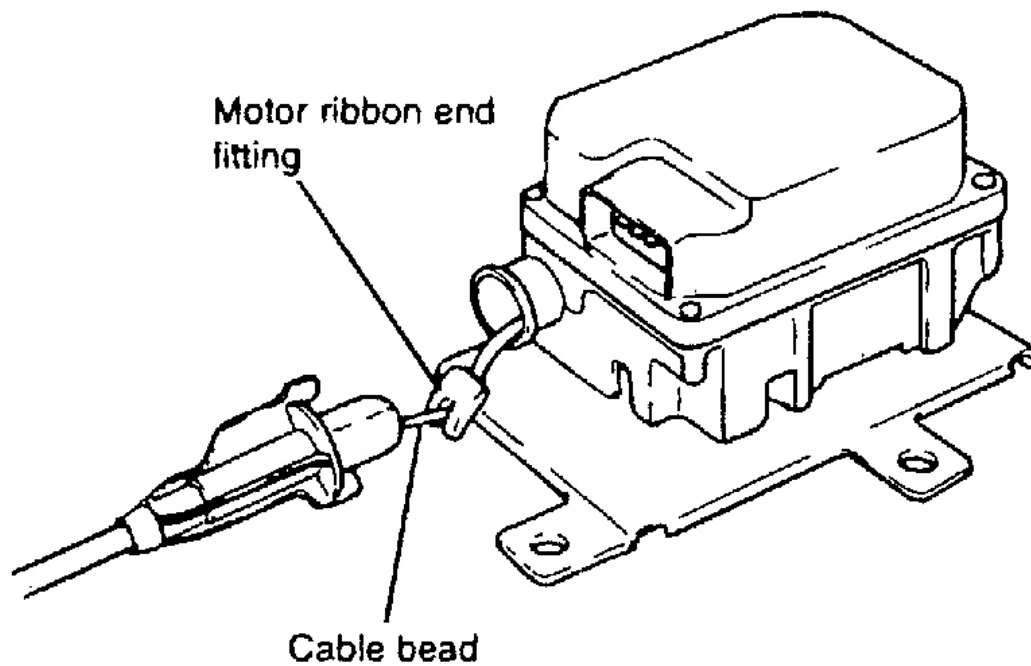
REMOVAL - CRUISE CONTROL CABLE

1. Disconnect cable and conduit from engine bracket.
2. Disconnect cable and fitting from throttle body lever stud.



**Fig. 8: Disconnecting Cable & Fitting From Throttle Body Lever Stud**  
Courtesy of KIA MOTORS AMERICA, INC.

3. Disconnect cable bead from cruise motor ribbon end fitting on cruise control module.



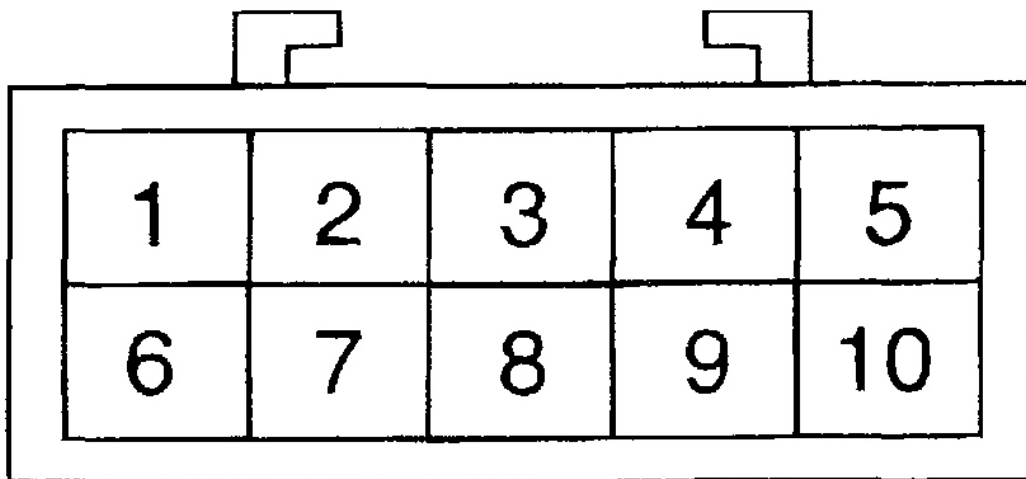
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**Fig. 9: Disconnecting Cable Bead From Cruise Motor Ribbon End Fitting**  
Courtesy of KIA MOTORS AMERICA, INC.

4. Remove cable from vehicle.

#### **INSPECTION**

1. Connect a voltmeter between cruise control unit terminals and ground.
2. Turn ignition switch "ON" and check that terminal voltages are as described.



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**Fig. 10: Identifying Cruise Control Unit Terminals**  
**Courtesy of KIA MOTORS AMERICA, INC.**

Terminal	Connected to	Voltage	Procedure
1	Battery	Approx. 12V	Ignition switch ON and START
2(Output)	Brake pedal switch 2 (N.O.)	Approx. 0V Approx. 12V	Ignition switch ON Brake pedal depressed
3(Input)	Transaxle range switch(A/T) Clutch switch(M/T)	Approx. 0V Approx. 12V	N or P range and cruise control main switch ON Other range and cruise control main switch ON
4	Cruise control indicator	Approx. 12V	Ignition switch ON
5(Input)	Vehicle speed sensor	Pluses be-tween 0-5V	Ignition switch ON While rotating the rear tire
6	Ground	Approx. 0V	N.A.
7(Input)	Brake pedal switch 1 (N.C.)	Approx. 12V Approx. 0V	Cruise main switch ON Brake pedal depressed
8(Input)	Set/Coast switch	Approx. 12V Approx. 0V	Switch depressed and cruise control main switch ON. Switch not depressed and cruise control main switch ON.
9(Input)	Resume/Accel switch	Approx. 12V Approx. 0V	Switch depressed and cruise control main switch ON. Switch not depressed and cruise control main switch ON.
10(Input)	Cruise control main switch	Approx. 12V	Cruise control main switch ON.

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**Fig. 11: Identifying Specified Terminals Voltage**  
**Courtesy of KIA MOTORS AMERICA, INC.**

## INSTALLATION

1. Position control module on control module bracket.

2. Install three bolts.

Tighten three bolts to: 61~113 in. lb. (7~13 N.m, 0.7~1.3 kg-m)

3. Position control module bracket.
4. Secure control module bracket to body using three bolt.

Tighten three bolts to: 15~19 in. lb. (21~36 N.m, 2.1~3.7 kg-m)

5. Connect control module connector.
6. Connect control cable.
7. Connect battery negative cable.