

2004 KIA RIO

AUTOMATIC TRANSMISSION VEHICLE

CRUISE CONTROL INSTALLATION INSTRUCTIONS PART No. 250-1766

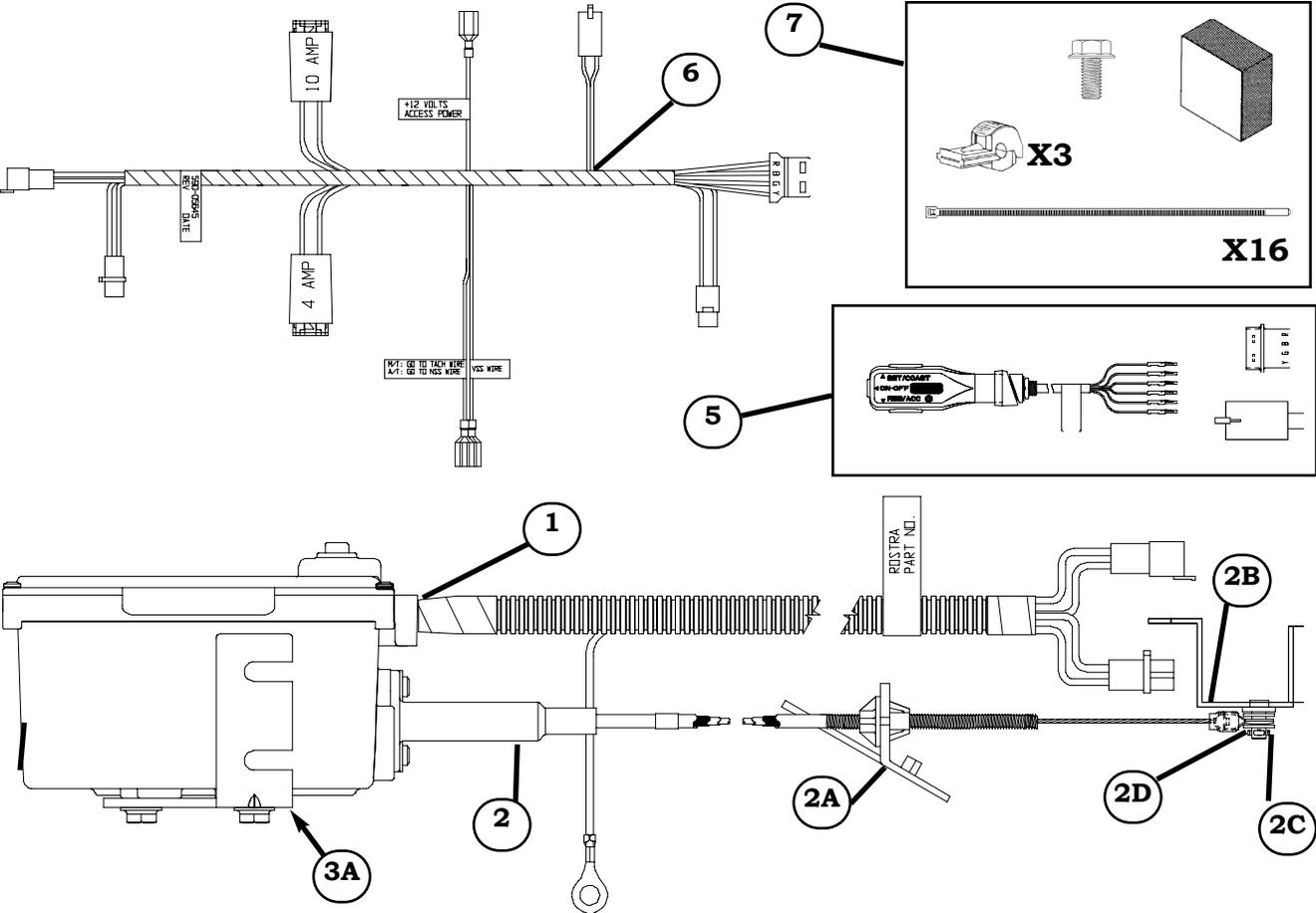


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PARTS IDENTIFICATION

ITEM	QUANTITY	SERVICE NUMBER	DESCRIPTION
1	1	250-2606	MODULE/HARNESS ASSEMBLY CABLE SCREWS/GASKET
A	2	**	
2	1	250-2607	CABLE ASSEMBLY CABLE BRACKET THROTTLE LEVER BRACKET COTTER PIN WASHER-PLAIN #10
A	1	250-2608	
B	1	250-2609	
C	1	**	
D	2	**	
3	1	250-2610	MODULE BRACKET 6 MM BOLT
A	1	**	
5	1	250-3717	CONTROL SWITCH ASSEMBLY NUT-HEX 3/8"-24 THIN CONNECTOR-FEMALE 2 PIN CONNECTOR-FEMALE 4 PIN LOCKWASHER-3/8" INTERNAL WEDGE-17.5 DEGREES
A	1	***	
B	1	***	
C	1	***	
D	2	***	
E	2	***	
6	1	250-2611	HARNESS ASSEMBLY
7	1	250-2612	HARDWARE PACKAGE: M8-1 BOLT, M6-1 BOLT, FEMALE T-TAP (3), TIE STRAPS (10), PUTTY



HELPFUL HINTS

1. BEFORE STARTING INSTALLATION:

FAMILIARIZE YOURSELF WITH THE INSTALLATION INSTRUCTIONS AND CRUISE CONTROL COMPONENTS.

2. MATING CONNECTORS:

A. WHEN DISCONNECTING CONNECTORS, HOLD CONNECTOR AND PRESS THE LOCK DOWNWARD WHILE PULLING CONNECTORS APART. **FIGURE 1**

CAUTION: DO NOT PULL ON WIRES

B. WHEN CONNECTING MATING CONNECTORS, PUSH CONNECTORS TOGETHER UNTIL LOCKING MECHANISMS ARE FIRMLY LOCKED TOGETHER. **FIGURE 2**

3. ANTI-THEFT RADIO:

IF VEHICLE IS EQUIPPED WITH AN ANTI-THEFT RADIO, THE RADIO CODE MUST BE WRITTEN DOWN PRIOR TO DISCONNECTING BATTERY CABLE. THE CODE MUST BE REENTERED WHEN THE NEGATIVE BATTERY CABLE IS REINSTALLED.

4. REMOVAL OF NEGATIVE BATTERY CABLE:

REMOVE THE NEGATIVE BATTERY CABLE BEFORE INSTALLING THE CRUISE CONTROL COMPONENTS FOR SAFETY PRECAUTIONS. **FIGURE 3**

5. FEMALE T-TAP CONNECTOR:

WHEN INSTALLING FEMALE **T-TAP CONNECTORS**, ENSURE WIRE IS INSIDE GROOVE OF THE FEMALE **T-TAP CONNECTOR** BEFORE CLOSING ON WIRE WITH PLIERS. **FIGURE 4**

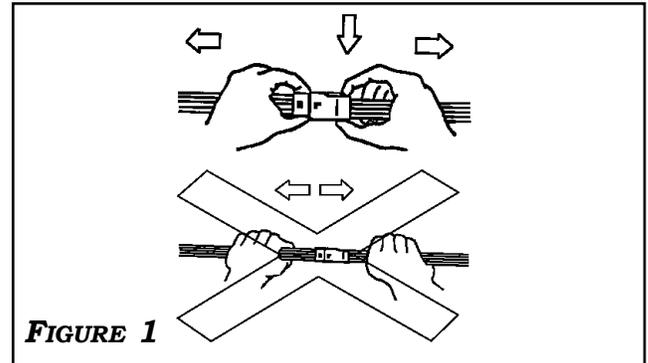


FIGURE 1

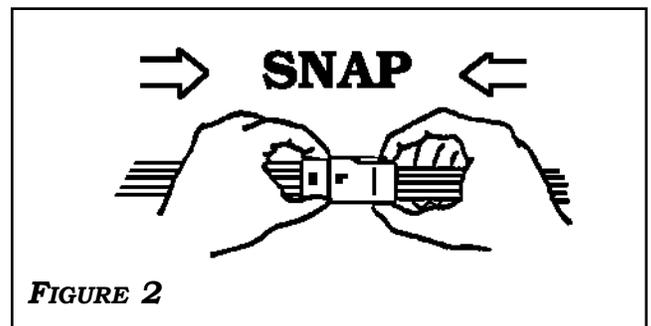


FIGURE 2

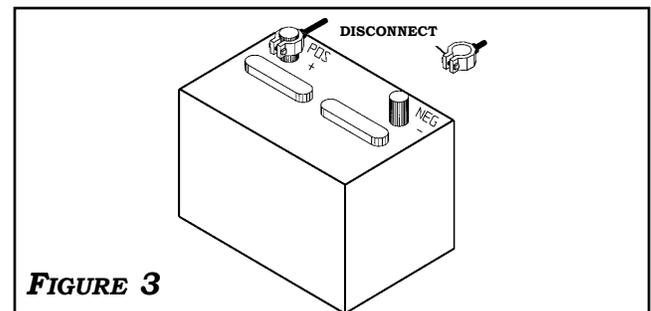


FIGURE 3

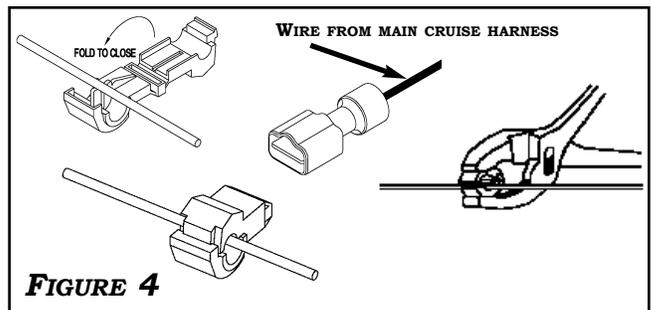


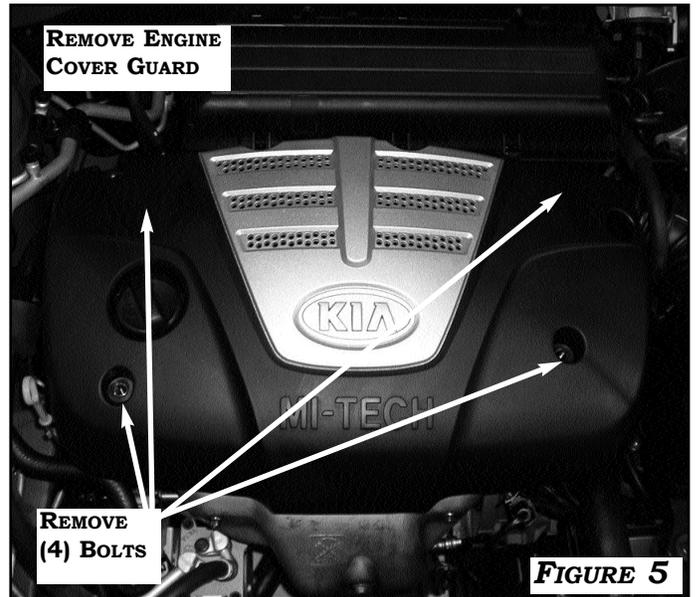
FIGURE 4

INSTALLATION

STEP 1: VEHICLE PREPARATION

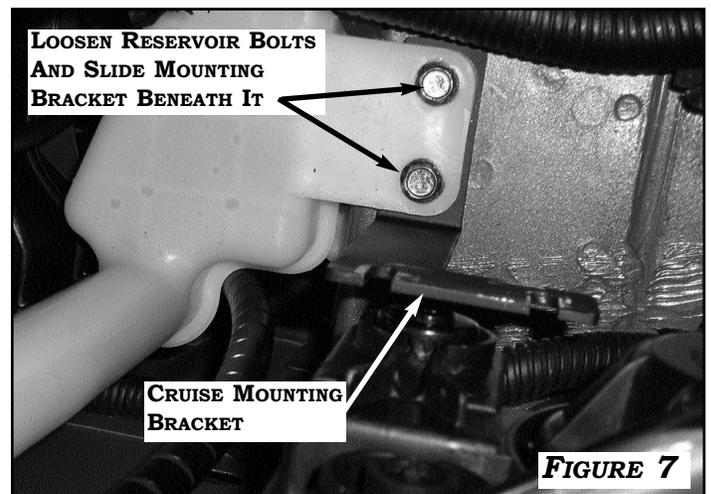
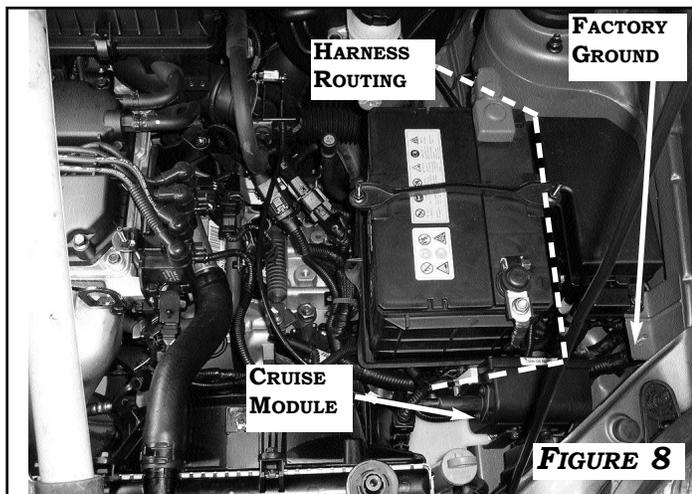
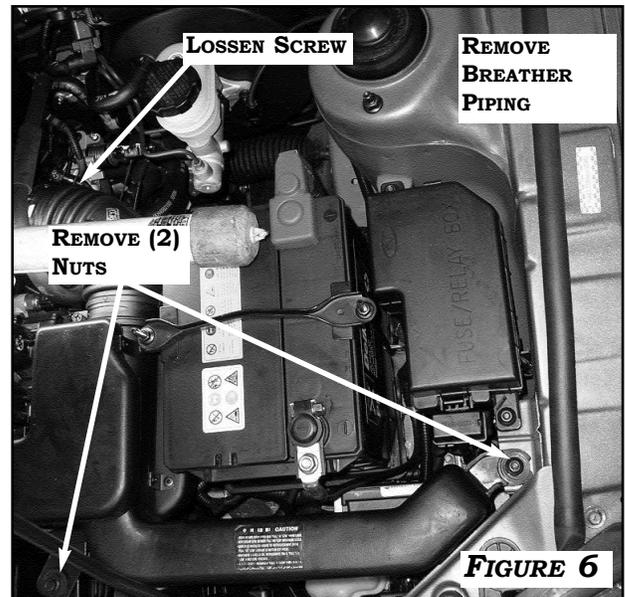
LOCATION: DRIVER'S SIDE ENGINE COMPARTMENT.

1. REMOVE (4) BOLTS SECURING THE PLASTIC ENGINE COVER GUARD TO EXPOSE ENGINE. **FIGURE 5**
2. REMOVE (2) 10MM BOLTS SECURING FUSE BOX AND (1) ONE 10MM BOLT SECURING POWER STEERING FLUID RESERVOIR TO BATTERY TRAY. **FIGURE 5**
3. LOOSEN (1) PHILIPS SCREW AND (2) NUTS RETAINING THE BREATHER PIPING AND REMOVE TO MAKE ROOM FOR CRUISE CABLE ROUTING. **FIGURE 6**
4. LOOSEN (2) 10MM BOLTS SECURING THE ENGINE COOLANT RESERVOIR AND SLIDE CRUISE MOUNTING BRACKET BENEATH. RETIGHTEN BOLTS. DO NOT OVERTIGHTEN WHICH MAY CAUSE DAMAGE TO THE PLASTIC CANISTER. **FIGURE 7**



STEP 2: WIRE HARNESS ROUTING

1. ATTACH WIRE HARNESS GROUND TO FACTORY GROUND POINT ALONG FENDERWELL. **FIGURE 8**
2. SECURE CRUISE CONTROL TO MOUNTING BRACKET AND ROUTE HARNESS AROUND BATTERY ALONG VEHICLE HARNESS TOWARDS FIREWALL GROMMET UNDER BRAKE BOOSTER AS ILLUSTRATED IN **FIGURE 8**.
3. ROUTE HARNESS THROUGH GROMMET IN FIREWALL TO ACCESS THE PASSENGER COMPARTMENT.



INSTALLATION

STEP 5: THROTTLE ATTACHMENT

LOCATION: ENGINE THROTTLE SHAFT AREA

1. MOUNT CRUISE CONTROL CABLE BRACKET IN THE HOLE LOCATED ON THE VEHICLE CABLE BRACKET UTILIZING SERRATED NUT AND BOLT PROVIDED IN THE KIT. **FIGURE 9**
2. REMOVE VEHICLE THROTTLE WASHER AND NUT AND PLACE CRUISE THROTTLE BRACKET ON STUD. REINSTALL VEHICLE THROTTLE WASHER AND NUT. **FIGURE 10**
3. SECURE CRUISE CABLE TO VEHICLE CABLE WITH TIE STRAPS PROVIDED AND REINSTALL BREATHER DUCTWORK. **FIGURE 11**
4. AFTER ASSEMBLY IS SECURED, MAKE SURE THE **CABLE ASSEMBLY** IS NOT HOLDING THE THROTTLE OPEN IN ANY WAY. THERE SHOULD BE **0.06-0.10"** SLACK BETWEEN IN CRUISE CONTROL CABLE PLAY.

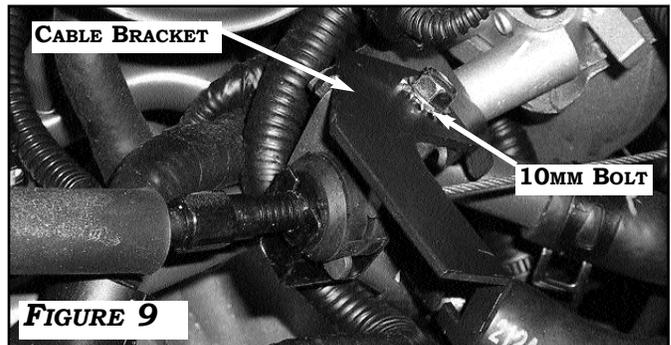


FIGURE 9

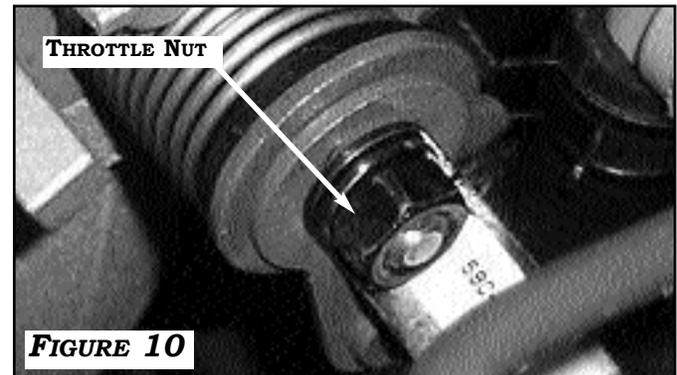


FIGURE 10

STEP 6A: HARNESS CONNECTIONS

LOCATION: PASSENGER COMPARTMENT, ACCESS HARDWARE: MATING CONNECTORS

1. LOCATE FIREWALL ACCESS GROMMET FROM PASSENGER COMPARTMENT AND PULL **CRUISE CONTROL MODULE HARNESS CONNECTORS** INSIDE VEHICLE.
2. LOCATE **NSS (LIGHT GREEN WIRE)** AND **TACH (DARK BLUE WIRE)** CIRCUIT TERMINALS THAT ARE TAPED IN HARNESS. **FIGURE 12**

AUTOMATIC TRANSMISSION: INSTALL LIGHT GREEN NSS WIRE IN EMPTY CAVITY OF **CRUISE HARNESS CONNECTOR**.

MANUAL TRANSMISSION: INSTALL DARK BLUE TACH WIRE IN EMPTY CAVITY OF **CRUISE HARNESS CONNECTOR**.

3. CONNECT MATING **CRUISE CONTROL CONNECTORS**. **FIGURE 12 & 13**

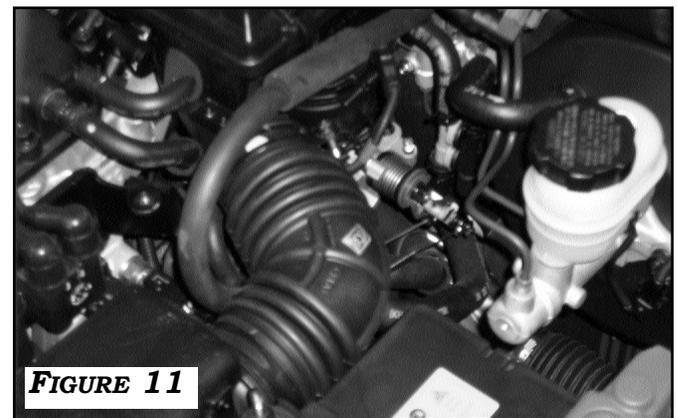


FIGURE 11

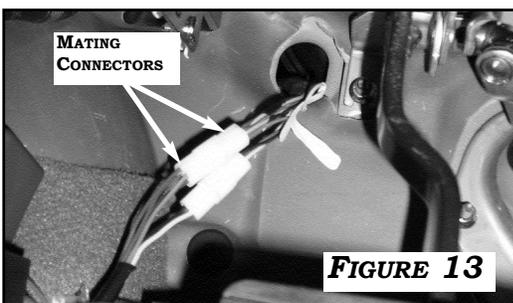


FIGURE 13

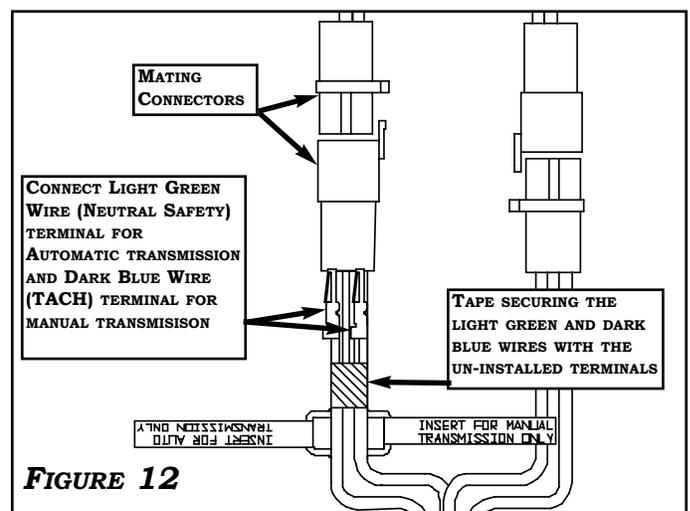


FIGURE 12

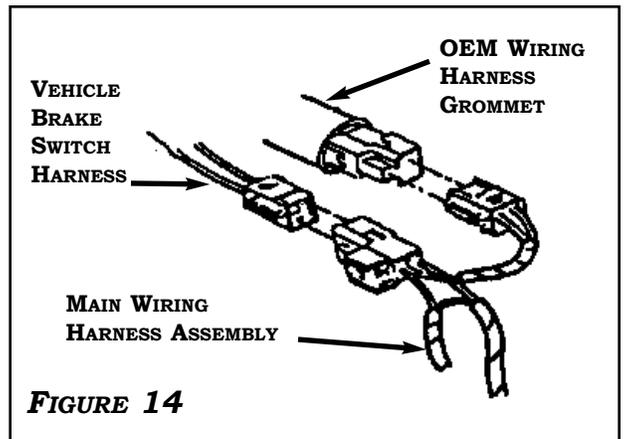
INSTALLATION

STEP 6B: BRAKE SWITCH CONNECTION

LOCATION: BRAKE PEDAL ASSEMBLY

HARDWARE: MATING CONNECTORS

1. DISCONNECT VEHICLE BRAKE SWITCH HARNESS FROM BRAKE SWITCH. **FIGURE 14**
2. CONNECT MATING CONNECTORS OF **CRUISE MAIN HARNESS ASSEMBLY** TO THE VEHICLE BRAKE SWITCH AND HARNESS. **FIGURE 14**
3. ROUTE **HARNESS ASSEMBLIES** SO THAT THEY DO NOT INTERFERE WITH ANY MOVING COMPONENTS.



STEP 6C: ECU CONNECTIONS **FIGURE 15**

LOCATION: DRIVER'S SIDE FIREWALL, COCKPIT

HARDWARE: (3) FEMALE T-TAP CONNECTORS (RED)

1. LOCATE THE VEHICLE COMPUTER LOCATED INSIDE THE PASSENGER'S COMPARTMENT, ON THE DRIVER'S SIDE, ALONG THE FIREWALL JUST ABOVE THE CONTROL PEDALS.

2. **IGNITION POWER:** LOCATE **RED/BLUE IGNITION POWER WIRE** IN IGNITION WIRE HARNESS AND INSTALL **BLUE T-TAP**. CONNECT THE **BROWN WIRE** FROM **CRUISE HARNESS** TO T-TAP PREVIOUSLY INSTALLED.

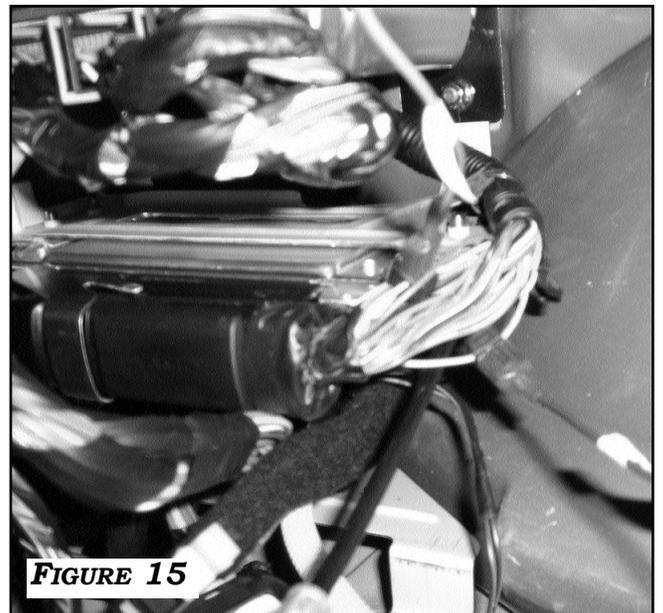
3. **NSS/TACH CONNECTIONS:**

FOR AUTOMATIC TRANSMISSION VEHICLES: LOCATE **PINK NSS WIRE** IN **ECM WIRE HARNESS** AND INSTALL **RED T-TAP**. CONNECT THE **DARK BLUE WIRE** FROM **CRUISE HARNESS** TO T-TAP PREVIOUSLY INSTALLED.

FOR MANUAL TRANSMISSION VEHICLES: LOCATE **BROWN/RED TACH WIRE** IN **ECM WIRE HARNESS** AND INSTALL **RED T-TAP**. CONNECT THE **DARK BLUE WIRE** FROM **CRUISE HARNESS** TO T-TAP PREVIOUSLY INSTALLED.

4. **VSS CONNECTION:** LOCATE **LIGHT GREEN/YELLOW VEHICLE SPEED SIGNAL WIRE** IN **ECM WIRE HARNESS** AND INSTALL **RED T-TAP**. CONNECT THE **GRAY WIRE** FROM **CRUISE HARNESS** TO T-TAP PREVIOUSLY INSTALLED.

5. SECURE ALL WIRES UNDER DASH WITH **CABLE TIES**.



INSTALLATION

STEP 7: CONTROL SWITCH

LOCATION: LEFT SIDE LOWER STEERING COLUMN COVER

1. REMOVE LOWER STEERING COLUMN COVER. **FIGURE 16**
2. USING THE **LEVER WEDGE** AS AN ANGLE TEMPLATE, DRILL **9.5MM (3/8")** HOLE IN LOWER SHROUD AS SHOWN IN **FIGURE 16**
3. ENSURE **LEVER WEDGES** ARE ASSEMBLED AS SHOWN IN **FIGURE 17**. TO PREVENT THE CRUISE CONTROL SWITCH FROM ROTATING AND CREATING A MORE POSITIVE LOCK WHEN MOUNTING, POSITION THE **LOCKWASHERS** AS SHOWN IN **FIGURE 17**. START NUT AND POSITION LETTERING FOR DRIVER'S BEST VIEW. FULLY SECURE NUT AT **22-25 IN LBS. DO NOT OVERTIGHTEN.**
4. ROUTE **CONTROL SWITCH WIRE HARNESS** SO THERE IS NO INTERFERENCE WITH ANY MOVING PARTS. OPERATE TILT COLUMN IF EQUIPPED. SECURE STEERING COLUMN SHROUD.
5. ENSURE THAT THE SWITCH CAN BE SEEN DURING NORMAL DRIVING SEATING POSITIONING. **FIGURE 18**

CONTROL SWITCH CONNECTION TO MODULE ASSEMBLY HARNESS

6. INSTALL **4-PIN CONNECTOR** ON **RED, BROWN, GREEN, AND YELLOW** WIRES. INSTALL **2-PIN CONNECTOR** ON TO **BLUE AND BLACK** WIRES OF SWITCH HARNESS. **FIGURE 19**

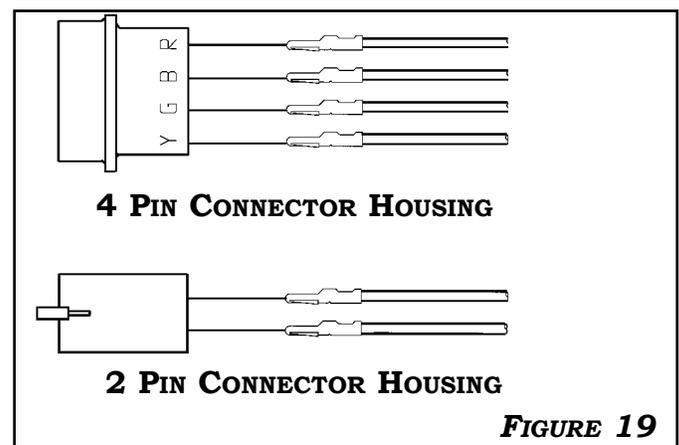
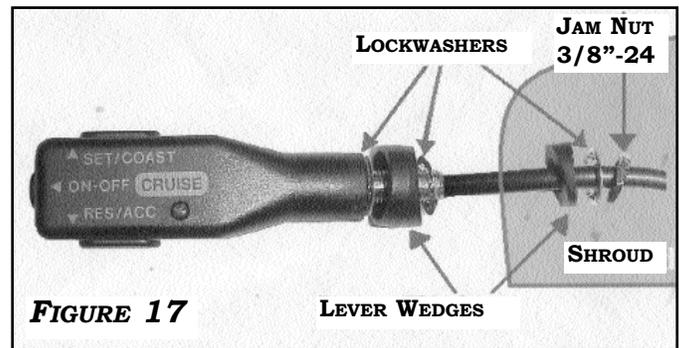
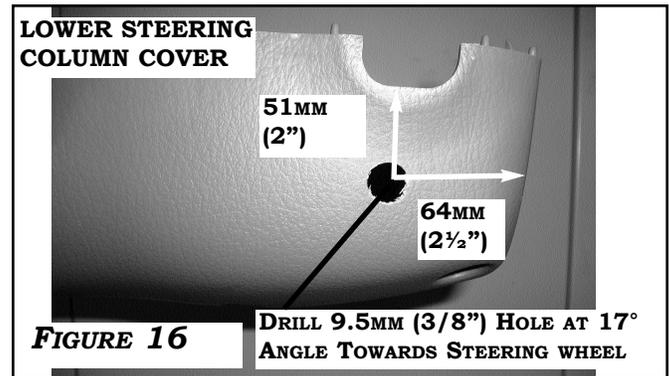
NOTE: THE MATING CONNECTOR TO THIS 4-PIN CONNECTOR WILL HAVE A RED WIRE MATING TO THE BROWN WIRE, ALL OTHER COLORS SHOULD MATCH.

CONNECT 4-PIN AND 2-PIN CONNECTORS TO **MODULE ASSEMBLY HARNESS**. ENSURE THAT ALL PINS LOCK INTO CONNECTOR.

7. SECURE **MODULE ASSEMBLY HARNESS** WITH **CABLE TIES** TO PREVENT HARNESS FROM COMING INTO CONTACT WITH **HOT, SHARP OR MOVING OBJECTS.**

STEP 8: REASSEMBLY

1. RECONNECT NEGATIVE BATTERY CABLE AND TORQUE TO **35 IN LBS. FIGURE 3**
2. IF EQUIPPED WITH ANTI-THEFT RADIO, REENTER THE CODE AND PRE-RECORDED STATIONS



WIRING DIAGRAM

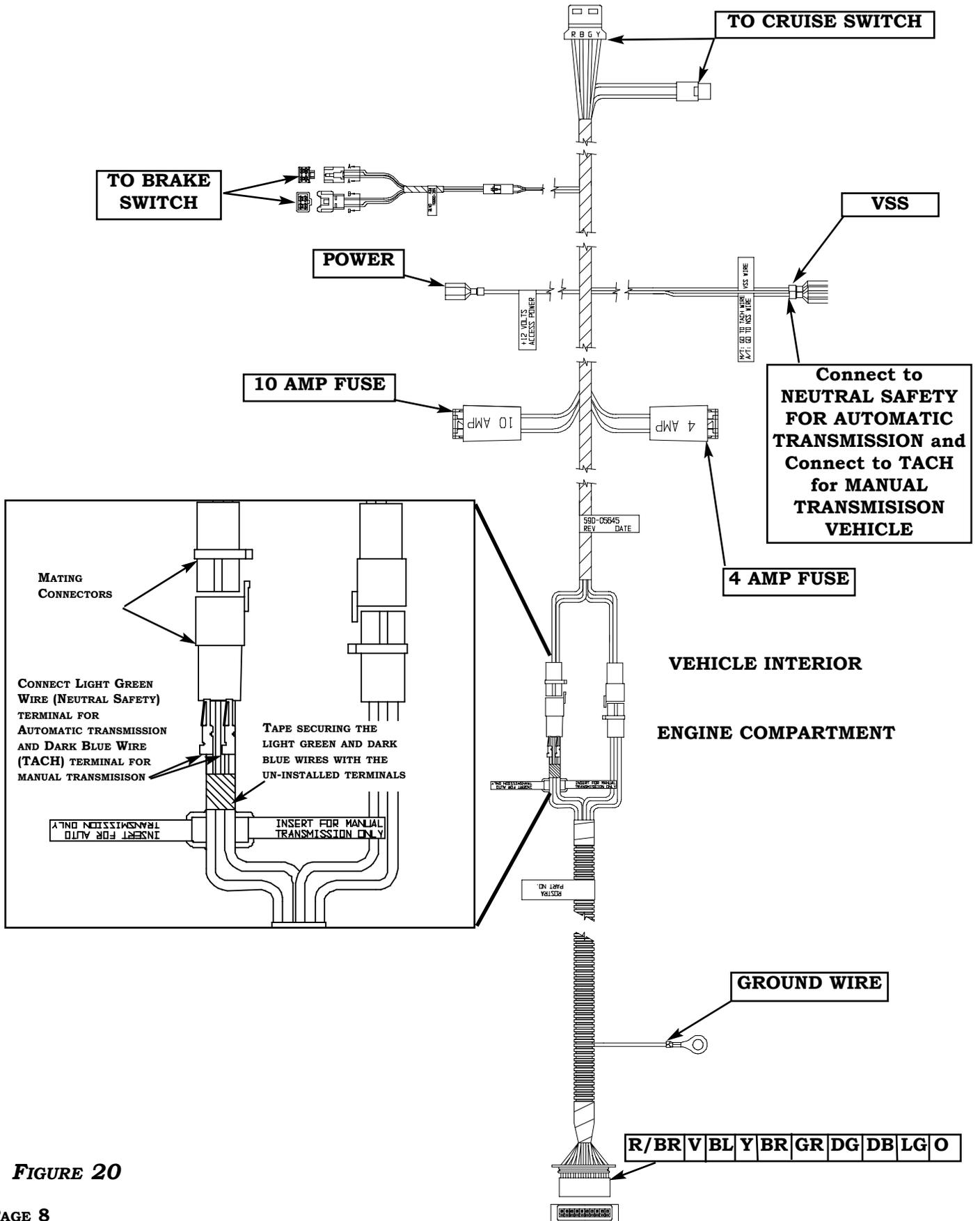


FIGURE 20

TROUBLESHOOTING

A. ELECTRICAL TESTING:

1. TESTING OF THE CRUISE CONTROL SYSTEM IS BEST DONE AT THE **(10)** WIRES AT THE CRUISE CONTROL MODULE.
2. DEPENDING UPON THE TEST BEING CONDUCTED, A VOLT OR OHM METER MUST BE USED FOR ACCURATE RESULTS. A TEST LIGHT WILL **NOT** PROVIDE ACCURATE INFORMATION IN SOME CIRCUITS BEING TESTED

WARNING: TEST LIGHTS MAY CAUSE DAMAGE TO THE VEHICLE.

3. USING A VOLT/OHM METER, CONDUCT THE FOLLOWING TESTS WHERE THE WIRING HARNESS ENTERS THE CRUISE CONTROL MODULE. **VIEW FIGURE 21 FOR WIRE COLOR AND LOCATION AT REAR OF CRUISE CONTROL MODULE.**

R/BR | V | BL | Y | BR | GR | DG | DB | LG | O

FIGURE 21

CONNECTOR AS VIEWED FROM THE HARNESS SIDE

<p>R/BR=RED/BROWN=CONTROL SWITCH POWER V=VIOLET=BRAKE LIGHT GROUND BL=BLACK=MODULE GROUND Y=YELLOW=ACCEL/RESUME DB=DARK BLUE=NO CONNECTION</p>	<p>BR=BROWN=IGNITION POWER GR=GRAY=VSS SIGNAL CIRCUIT DG=DARK GREEN=SET/COAST LG=LIGHT GREEN=NEUTRAL SAFETY O=ORANGE=NO CONNECTION</p>
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TEST	FUNCTION	CONDITION	DESIRED RESULTS	OK	NG
A-1	"OFF"	IGNITION "OFF"	ZERO VOLTS AT ALL WIRES	A-2	B-1
A-2	SYSTEM POWER	CONTROL SWITCH "OFF" IGNITION "ON"	12VDC ON BROWN WIRE ONLY	A-3	B-2
A-3	CRUISE SWITCH	CONTROL SWITCH "OFF" IGNITION "ON"	12VDC ON BROWN WIRE	A-4	B-3
A-4	POWER BRAKE CIRCUIT	CONTROL SWITCH "ON" IGNITION "ON"	12VDC ON RED WIRE	A-5	B-1
A-5	SET/COAST	CONTROL SWITCH "ON" PUSH BRAKE PEDAL IGNITION "ON"	12VDC ON DARK GREEN WIRE	A-6	B-4
A-6	ACCEL/RESUME	CONTROL SWITCH "ON" PUSH SET BUTTON IGNITION "ON"	12VDC ON YELLOW WIRE	A-7	B-4
A-7	VEHICLE SPEED SENSOR	CONTROL SWITCH "ON" PUSH ACCEL BUTTON IGNITION "ON"	4.5VDC TO ZERO VOLTS ON GRAY WIRE, 3-4 TIMES IN 10 FEET	A-8	B-5
A-8	SYSTEM GROUND (OHM METER)	ROLL VEHICLE 10 FEET IGNITION "ON"	CONTINUITY TO GROUND ON BLACK WIRE	A-9	B-6
A-9	NEUTRAL SAFETY AUTOMATIC ONLY (VOLT METER)	CONTROL SWITCH "ON" IGNITION "ON" CONTROL SWITCH "ON" MOVE SHIFT LEVER FROM "P" OR "N" TO ANY GEAR POSITION	ZERO TO 0.5 VOLTS IN "P" OR "N" ON LIGHT GREEN WIRE	A-10	B-7
A-10	CLUTCH SWITCH MANUAL (OHM METER)	IGNITION "ON" CONTROL SWITCH "ON" PUSH ON CLUTCH PEDAL	CONTINUITY TO GROUND WITH CLUTCH PEDAL NOT DEPRESSED AND " NO " CONTINUITY TO GROUND WITH CLUTCH PEDAL DEPRESSED ON THE VIOLET WIRE	C-1	B-8

TROUBLESHOOTING

B. ELECTRICAL TESTING DIAGNOSTIC:

- B-1....CHECK BRAKE LIGHT FUSE, BULBS, WIRES & CONNECTORS TO BRAKE SWITCH AND CLUTCH SWITCH IF MANUAL**
- B-2.....CHECK IGNITION SWITCH LINK WIRES, CONNECTOR AND IGNITION FUSE.**
- B-3.....CHECK IGNITION SWITCH LINK WIRES, CONNECTOR AND IGNITION FUSE, CRUISE SWITCH WIRES AND CONNECTOR.**
- B-4.....CHECK CRUISE CONTROL SWITCH WIRES AND CONNECTOR.**
- B-5.....CHECK VEHICLE ECU WIRE AND CONNECTOR, T-TAP AT VSS WIRE.**
- B-6.....CHECK VEHICLE BATTERY GROUND, MODULE GROUND WIRE CONNECTION.**
- B-7.....CHECK IGNITION LINK HARNESS, WIRES AND CONNECTOR, VEHICLE NEUTRAL SAFETY SWITCH.**
- B-8....CHECK WIRES AND CONNECTOR, CLUTCH SWITCH FOR DAMAGE AND/OR ADJUST SWITCH.**

C. MECHANICAL TESTING PROCEDURES:

C-1 VERIFY CABLE AND/OR LINKAGE:

VISUALLY INSPECT ALL RELATED PARTS OF THE THROTTLE CONNECTION. ENSURE THAT CABLE OPERATES FREELY AND ALL BRACKETS ARE SECURED AND NOT DAMAGED. REPLACE ANY DAMAGED OR WORN PARTS.

NOTES

OPERATING INSTRUCTIONS

SPEED CONTROL OPERATING INSTRUCTIONS

ON- To operate the cruise control, push the cruise “ON/OFF” button “ON”. (GREEN INDICATOR WILL LIGHT.) WAIT 3 SECONDS BEFORE SETTING SPEED.

SET SPEED- To engage system, drive at any speed above 33 MPH, press “SET/COAST” or press “RESUME/ACCEL” and release, then remove your foot from the accelerator pedal. AUTOMATIC CONTROL WILL BE AT THE SPEED OF THE VEHICLE WHEN BUTTON IS RELEASED PLUS OR MINUS 1- 1/2 MPH. PRESS ACCELERATOR AND SPEED WILL INCREASE, RELEASE ACCELERATOR AND YOU WILL RETURN TO SET SPEED. THE RESUME/ACCEL BUTTON WILL SET THE CRUISE CONTROL WITHOUT PRESSING THE SET BUTTON FIRST.

COAST- PRESS AND HOLD THE “SET/COAST” BUTTON AND YOUR SPEED WILL DECREASE. RELEASE BUTTON AND SPEED OF VEHICLE AT TIME BUTTON IS RELEASED WILL BE NEW SET SPEED IF ABOVE 33 MPH.

ACCEL- PRESS AND HOLD THE “RESUME/ACCEL” BUTTON AND YOUR SPEED WILL INCREASE. RELEASE BUTTON AND YOU WILL HAVE A NEW HIGHER SET SPEED.

TAP-UP- YOU CAN GRADUALLY INCREASE YOUR SPEED BY QUICKLY PRESSING AND RELEASING THE “RESUME/ACCEL” BUTTON. EACH TIME YOU PRESS AND RELEASE THE BUTTON YOUR SPEED WILL INCREASE BY ONE TO TWO MPH.

TAP-DOWN- YOU CAN GRADUALLY DECREASE YOUR SPEED BY QUICKLY PRESSING AND RELEASING THE “SET/COAST” BUTTON. EACH TIME YOU PRESS AND RELEASE THE BUTTON YOUR SPEED WILL DECREASE BY ONE OR TWO MPH.

DISENGAGE- DEPRESS BRAKE PEDAL SLIGHTLY - AUTOMATIC SPEED CONTROL WILL CEASE BUT SET SPEED WILL STAY IN SYSTEM’S MEMORY. ALSO, YOU CAN DISENGAGE BY PRESSING BUTTON TO OFF POSITION, BUT THIS ERASES THE MEMORY. TO GET THE RESUME FEATURE TO WORK AGAIN, YOU MUST FIRST SET A SPEED. TURNING OFF THE IGNITION ALSO CLEARS THE SYSTEM’S MEMORY.

RESUME- AFTER DISENGAGING SYSTEM WITH BRAKE OR CLUTCH, RETURN TO SET SPEED BY DRIVING ABOVE 33 MPH. THEN PRESS “RESUME/ACCEL” BUTTON AND RELEASE IT. IF ACCELERATION RATE IS FASTER OR SLOWER THAN YOU LIKE, DRIVE TO WITHIN A FEW MPH OF YOUR SET SPEED, THEN PRESS AND RELEASE THE RESUME/ACCEL BUTTON.

THINGS YOU SHOULD KNOW ABOUT YOUR CRUISE CONTROL

THE PERFORMANCE OF THE CRUISE CONTROL IS DEPENDENT UPON THE CONDITION OF THE ENGINE, ITS SIZE AND EVEN BY THE TYPE OF EMISSION CONTROL EQUIPMENT IT HAS. DRIVING AT HIGHER ALTITUDE WILL HAVE AN EFFECT ON THE VEHICLE CRUISE CONTROL PERFORMANCE.

UNDER NORMAL CONDITIONS AND WITH PROPER REGULATOR ADJUSTMENTS, SPEED SHOULD BE CONTROLLED WITHIN PLUS OR MINUS 1- 1/2 MPH. THERE MAY BE SITUATIONS; HOWEVER, WHICH MAKE IT SEEM AS IF THE CRUISE CONTROL IS NOT CAPABLE OF FUNCTIONING ACCURATELY, SUCH AS AN EXTRA HEAVY LOAD, A VERY STEEP HILL, OR A SEVERE HEADWIND.

CAUTION: DO NOT USE CRUISE CONTROL ON A SLIPPERY ROAD NOR IN HEAVY TRAFFIC.

CAUTION: (MANUAL TRANSMISSION) WHILE DRIVING WITH CRUISE CONTROL “ON”, DO NOT SHIFT TO NEUTRAL WITHOUT DEPRESSING THE CLUTCH PEDAL, AS THIS MAY CAUSE ENGINE RACING OR OVERREVING. IF THIS HAPPENS, DEPRESS THE CLUTCH PEDAL OR TURN “OFF” THE MAIN CRUISE CONTROL SWITCH IMMEDIATELY.

