WorldCruise

ELECTRIC CRUISE CONTROL

KIT# 250-1311
INSTALLATION & OWNER'S MANUAL

CONTENTS

Form# 2976
Rev B 2/00

SAFETY PROCEDURES

The WorldCruise is a microprocessor based Cruise Control. It is designed for ease of installation and can be used with most cars, light trucks and vans. Carefully follow the installation procedures in this manual for best results.

DO NOT INSTALL THIS SYSTEM ON A DIESEL POWERED VEHICLE WHICH HAS A MANUAL TRANSMISSION WITHOUT A DISENGAGEMENT SWITCH *(Kit# 250-4206)* ON THE CLUTCH PEDAL ASSEMBLY.

Your vehicle must have a **VSS** *(Vehicle Speed Signal)* wire or an available signal generator for installation of the WorldCruise. Please consult vendor's application guide.

Throughout the instructions there are *WARNINGS, CAUTIONS*, AND *NOTES* that are meant to make it easier for you to install the WorldCruise on your vehicle and make it safer to use. We have gathered these tips from people across the country who have informed us of their problems and solutions. Even with all these reports from the field, we cannot cover every condition which you might encounter, there are just too many different vehicle makes and models. We do our best to tell you how to handle most vehicles, but we must **Depend on Your Good Judgement** for dealing with the rest.

Therefore, we believe you can understand why we ***strongly*** urge you to think carefully about what could happen to you, your passengers, and your vehicle if you use any tools, parts, fastening methods, routing or procedures which are not described in this manual.

There is **NO** drain on the battery if the control switch is left on. The WorldCruise needs no regular service.

WARNING

Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

WARNING

If you question the applications of the WorldCruise, please consult the applicable application guide. Only install on approved applications.

The product described in this manual was developed, manufactured and tested in line with recognized technical standards and is in compliance with the fundamental safety requirements.

Nevertheless, there are residual risks!

It is therefore important to read this manual before installing and connecting the product. Keep the manual in a place that is readily accessible at all times.

Throttle Adapter

In order to cover certain vehicles with a universal cruise control, we have designed throttle adapters for performance and safety. Consult current Application Guides and Vehicle Technical Information Guides to see if your vehicle needs a Throttle Adapter before you install the WorldCruise. If an adapter is listed, it must be used with that application.

Target Group and Qualified Installation

This description is intended for those persons who install the product in the motor vehicle. In order to be able to operate properly, the WorldCruise must be correctly installed. The system may therefore be installed and wired by persons who know and have understood the installation instructions of this manual and are familiar with automotive electrical and mechanical systems. Installation by nonqualified personnel can lead to injury to the driver or third parties, or damage to property or the environment.

Modifications to the product

The WorldCruise is designed, manufactured and tested with due regard to safety and reliability.

Modifying or tampering with the product can affect its safety. This can lead to death, serious or slight injury to the driver or third parties, or damage to property or the environment. For this reason, the product must not be modified or tampered with!

Inform the user

Hand the Operating Manual for the cruise to the user. The Operation Manual is an integral part of the product!

If the cruise has not been fitted with a clutch switch, Please inform the user that the engine speed briefly increases when the function is switched off via the clutch.

WARNING

The information in this manual has been carefully compiled through actual vehicle testing and manufacturers service manual research and to the best of our ability is accurate. However, we do not warrant the accuracy of this information against changes in vehicle design, the use or misuse of this information or typographical errors. It is the responsibility of the installer to verify the signal and color on the wire attachments prior to and after the installation of the WorldCruise to assure proper operation. We do not accept any responsibility for damage to the vehicle or injury to its occupants caused by the use of this information. Improper installation and/or connection to the incorrect wires could cause WorldCruise or vehicle malfunction, component damage, and or personal injury for you and/or your passengers.

HELPFUL HINTS

1. BEFORE STARTING INSTALLATION:

Familiarize yourself with the Installation Instructions and WorldCruise components.

2. MATING CONNECTORS:

A. When disconnecting, hold connector and press the lock downward while pulling connectors apart. ***Figure A***

CAUTION
Do not pull on wires.

B. When inserting, push mating connectors together until locking mechanisms are firmly locked together. ***Figure B***

3. AIRBAG AND ANTI-THEFT RADIO:

A. 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.

B. If vehicle is equipped with an Airbag (SRS), it is advisable to disconnect the negative battery cable. However, remember that some vehicles retain power to the airbag system when battery is disconnected.

4. REMOVAL OF NEGATIVE BATTERY CABLE:

Disconnect the negative battery cable before installing the WorldCruise for safety precautions. Remember to reconnect the cable after installation. ***Figure C***

5. ACCESSORY POWER:

When installing the special terminal into the fuse panel of vehicle, See ***Figure D.***

WARNING
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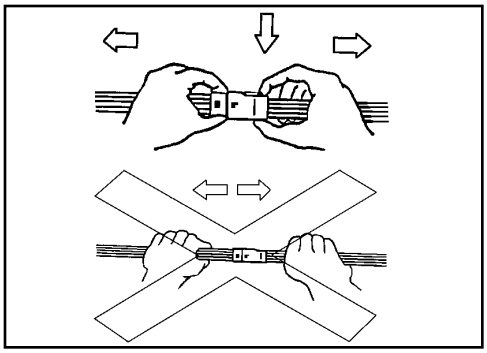


Figure A

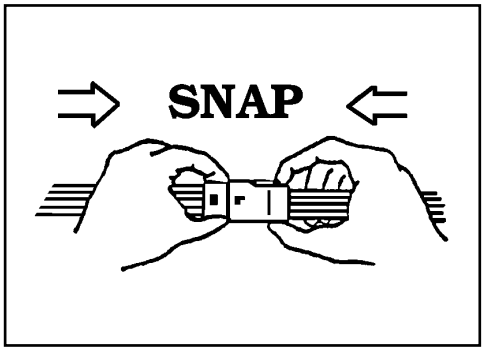


Figure B

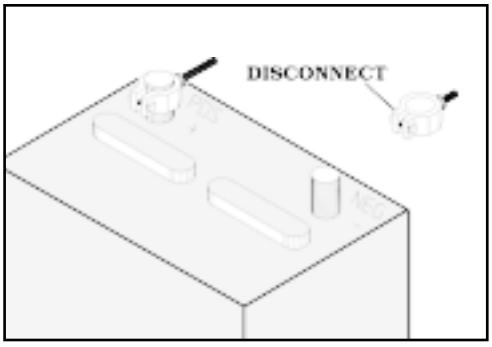


Figure C

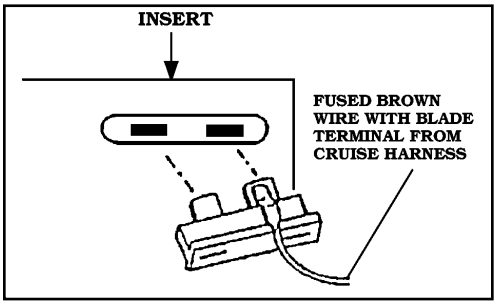


Figure D

PARTS LIST

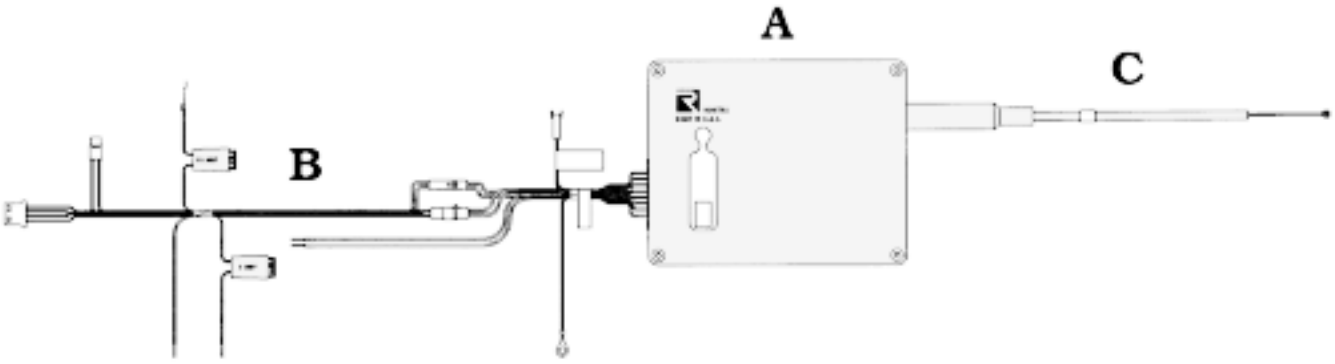
ITEM	SERVICE PART #	DESCRIPTION	QTY
A	250-3779	CRUISE MODULE	1
B	250-3695	CRUISE HARNESS	1
C	250-3607	CRUISE CABLE	1
D	250-3702	MODULE BRACKET	1
E	250-3700	CABLE BRACKET	1
F	250-3425	CONVOLUTED TUBING *(58")*	1
G	250-3947	HARDWARE PACKAGE	1

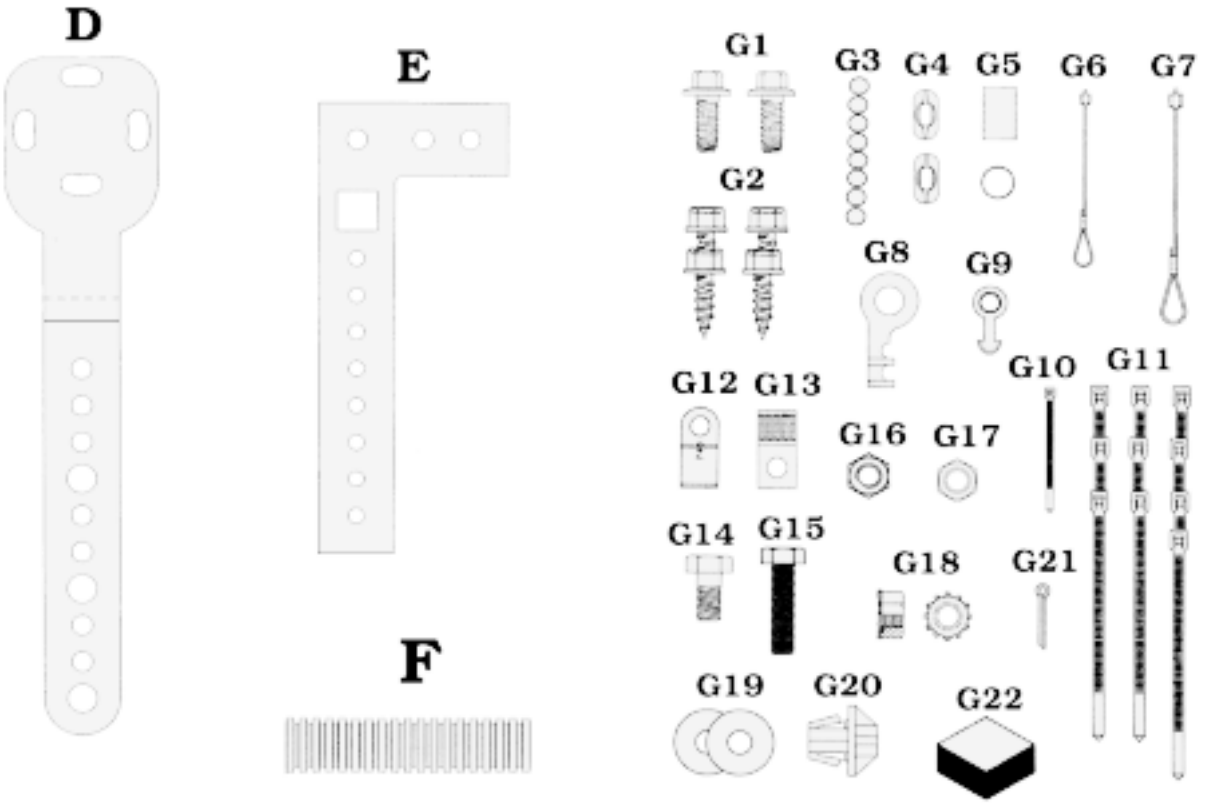
1	MODULE BOLT	2
2	SELF-THREADING BOLT *(M6 x 19)*	4
3	BEAD CHAIN	1
4	BEAD CHAIN CONNECTOR	2
5	CONNECTOR COVER	2
6	LOOP CABLE *(67MM)*	1
7	LOOP CABLE *(81MM)*	1
8	THREE BEAD CONNECTOR	1
9	EYELET CONNECTOR	1
10	TIE STRAP *(102MM)*	1
11	TIE STRAP *(190MM)*	10
12	TUBE CLAMP *(10MM)*	1
13	FLAG NUT *(THREADED TUBE CLAMP)*	1
14	M5 BOLT *(M5-.8 x 10)*	1
15	M5 BOLT *(M5-.8 x 20)*	1
16	M5 NUT	1
17	LOCKNUT *(NYLON INSERT, M5-.8)*	1
18	LOCKWASHER NUT *(1/4-20)*	2
19	PLAIN WASHER	2
20	SNAP-IN ADAPTER	1
21	COTTER PIN *(2MM x 16MM)*	1
22	SEALING PUTTY	1

Use **CLUTCH DISENGAGEMENT SWITCH *(Kit# 250-4206)*** for manual transmission vehicle when the ***Dark Blue*** **TACH** wire cannot be obtained from vehicle or fails to disengage the WorldCruise.

Service Parts are available to replace any part in this kit *(See **Service Part Numbers** above).*
Additional Hardware is available on ***Page 6.***

PARTS DIAGRAM





WARNING

Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle And injury and/or death to you and your passengers.

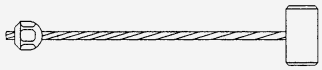
SUPPLEMENTAL PARTS

The following parts are available for your convenience and may simplify the installation of your *WorldCruiuse.* Contact your local dealer or **ROSTRA** representative for details.

ITEM	SERVICE PART #	DESCRIPTION	QTY
A. LOOP CABLES			
	250-2248	1.83" (47MM)	10
	250-3089	2.62" (67MM)	10
	250-2250	2.91" (74MM)	10
	250-2249	3.20" (81MM)	10
	250-2251	3.81" (97MM)	10
B. T-BAR ADAPTERS			
	250-2252	1.65" (42MM)	10
	250-2247	2.74" (70MM)	10
	250-2253	3.03" (77MM)	10
	250-2254	3.53" (90MM)	10
	250-4248	5.93" (151MM)	10
C. STUD-CLIP W CABLE			
	250-2261	1.00" (25MM)	10
	250-4255B	1.25" (32MM)	10
	250-4242	2.40" (61MM)	10
	250-2260	2.80" (71MM)	10
D. THROTTLE COUPLERS*			
	250-4291	M6	10
	250-4292	M8	10
E. TUBE CLAMPS			
	250-2255	3/16" (5MM)	10
	250-2256	1/4" (6MM)	10
	250-2257	5/16" (8MM)	10
	250-2258	3/8" (10MM)	10
	250-2259	1/2" (13MM)	10
MISCELLANEOUS			
F.	250-3440	GM™ HATCLIP	10
G.	250-2262	PEDAL BRACKET ASSEMBLY**	1

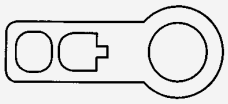
A

B



C

D



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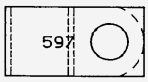
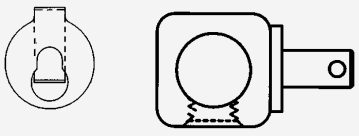


F G



* The **THROTTLE COUPLER** Sets ***(250-4291 and 250-4292)*** come complete with **THROTTLE COUPLER, STUD CAP** and **ELASTOMER RETAINER.**

** The **PEDAL BRACKET ASSEMBLY** ***(250-2262)*** comes complete with a **PEDAL BRACKET,** a **SELF-LOCKING PIN**, an **M5-.8 X 12 BOLT**, an **M5 NUT** and two ***(2)*** **PLAIN WASHERS.**

SWITCH SETTINGS

The **CRUISE MODULE** must be programmed for the vehicle on which it is installed. The ***twelve (12)*** programming switches must be set according to the chart below in order for the WorldCruise to operate properly. ***Figure 1***

NOTE 1: Both the **VSS *(Gray)*** and **TACH *(Dark Blue)*** wires must be connected. *(If the **Gray** wire is not used, an auxiliary road speed source must be used.)* See ***Page 18.***

NOTE 2: If using an "Open Circuit" control switch with the WorldCruise, Switch number ***seven (7)*** will have to be **OFF.** If you are unsure as to whether the control switch is "Open Circuit" or "Closed Circuit", look at the label of the packaging in which the switch came, or See ***Page 22.***

NOTE 3: If any of the ***twelve (12)*** switches need to be changed after installation of the WorldCruise, the control switch and the vehicle ignition must be in the **OFF** position; this is to allow the WorldCruise to **RESET.**

The twelve *(12)* programming switches are located under the *Black* rubber grommet on top of the CRUISE MODULE.

Figure 1

Figure 1 represents the ***twelve (12)*** programming switches for a vehicle characterized by:
Switch ***(1 & 2)*** High Gain,
Switch ***(3 , 4, 11 & 12) 4000 PPM,***
Switch ***(5 & 6) 4*** Cylinder, Low,
Switch ***(10)*** Square Wave Input,
Switch ***(9)*** Manual Transmission
Switch ***(8)*** High Set-Up Timer, and
Switch ***(7)*** Closed Circuit Control Switch

Programming Functions	1	2	3	4	5	6	7	8	9	10	11	12
Gain (Sensitivity)												
Low	OFF	OFF										
Medium	OFF	ON										
High	ON	ON										
Pulses/Mile (Pulses/Kilometer)												
2000 (1250)			ON	ON							OFF	OFF
3200 (2000)			ON	ON							OFF	OFF
4000 (2500)			OFF	ON							OFF	ON
6000 (3750)			ON	OFF							OFF	ON
6400 (4000)			OFF	ON							OFF	OFF
8000 (5000)			OFF	OFF							OFF	ON
9650 (6000)			ON	OFF							OFF	OFF
10000 (6250)			ON	ON							ON	ON
12000 (7500)			OFF	ON							ON	ON
12870 (8000)			OFF	OFF							OFF	OFF
16090 (10000)			ON	ON							ON	OFF
18000 (11250)			ON	OFF							ON	ON
19300 (12000)			OFF	ON							ON	OFF
24000 (15000)			OFF	OFF							ON	ON
28960 (18000)			ON	OFF							ON	OFF
38600 (24000)			OFF	OFF							ON	OFF
Engine												
Auto Transmission												
4 Cyl HI (7200RPM)					OFF	ON						
4 Cyl LO(5500RPM)					ON	OFF						
6 Cyl HI (5200RPM)					OFF	OFF						
6 Cyl LO(4800RPM)					OFF	ON						
8 Cyl HI (4800RPM)					ON	ON						
8 Cyl LO(4000RPM)					OFF	OFF						
Man Transmission												
4 Cyl					ON	OFF						
6 Cyl					OFF	ON						
8 Cyl					OFF	OFF						
Control Switch												
Closed Circuit							ON					
Open Circuit							OFF					
Centering (Set-Up)												
High								ON				
Low								OFF				
Transmission												
Automatic									ON			
Manual									OFF			
VSS Source												
Vehicle's Own VSS										ON		
Aux VSS Source (Sig Gen/Mag)										OFF		

INSTALLATION

I. CRUISE MODULE MOUNTING

NOTE
DO NOT MOUNT THE CRUISE MODULE IN THE FOLLOWING AREAS:

* Under the fender.
* Under the vehicle.
* Directly to the engine.
* With the cable pointed down.
* Near sharp, hot or moving objects.
* Near ignition coil *[No closer than 255mm (10")]*.
* In the passenger compartment *(Noise)*.
* Where it will interfere with service checks.

A. Select a possible location to mount your **CRUISE MODULE**, set the **CRUISE MODULE** unmounted in that area. The reason for leaving the **CRUISE MODULE** unmounted is to make sure the **CRUISE HARNESS** will reach the passenger compartment and the **CRUISE CABLE** will reach the throttle attaching point.

B. Once you have selected a location, install the **MODULE BRACKET** to the bottom of the **CRUISE MODULE** with the ***two (2)*** **MODULE BOLTS** provided. It may be necessary to cut and bend the **MODULE BRACKET** to achieve a custom fit. ***Figure 2***

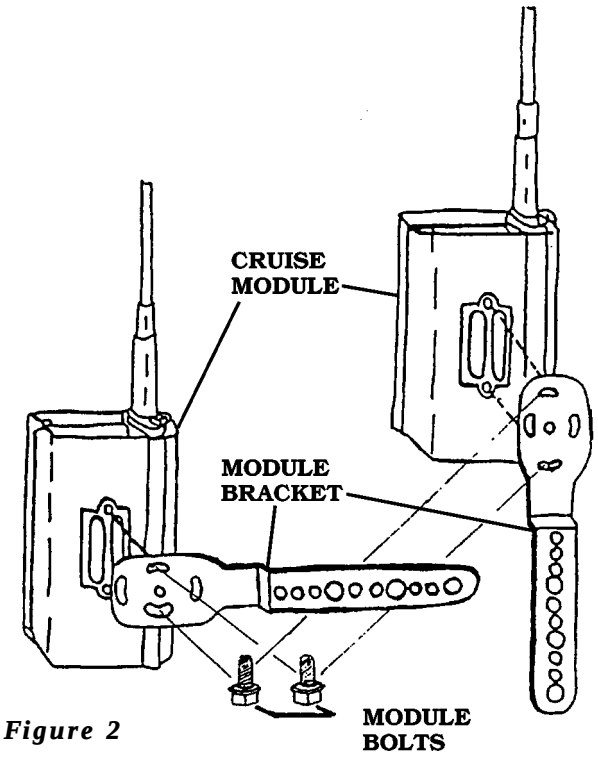


Figure 2

NOTE
DO NOT OVERTIGHTEN! DAMAGE TO THE CRUISE MODULE WILL OCCUR IF THE BOLTS ARE OVERTIGHTENED.

C. Mount the **CRUISE MODULE** in the spot you have selected using ***two (2)*** of the **SELF-THREADING BOLTS** provided in the kit. Be sure to set the programming switches located underneath the rubber grommet on top of the **CRUISE MODULE** *(See **Page 7**)* before mounting the WorldCruise. ***Figure 3***

POSSIBLE MOUNTING LOCATIONS FOR CRUISE MODULE

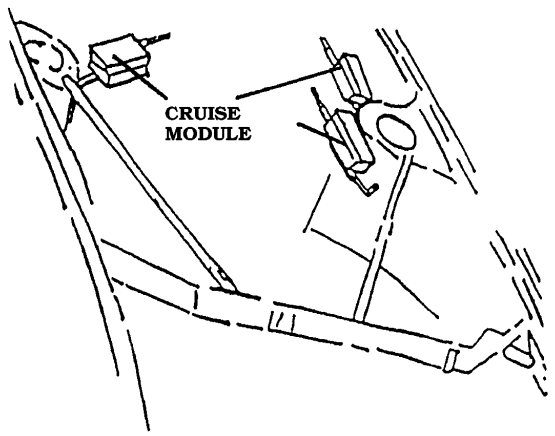


Figure 3

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

INSTALLATION

II. MEASURING THROTTLE CABLE TRAVEL

THIS IS A VERY IMPORTANT STEP. FAILURE TO DETERMINE THROTTLE CABLE TRAVEL COULD CAUSE DAMAGE TO YOUR VEHICLE AND/OR WorldCruise.

MEASURE ONLY WITH THE ENGINE OFF. The **CRUISE CABLE** moves ***41mm (1-5/8").***

To measure throttle travel, measure the distance from Position **"A"** *(Idle)* to Position **"B"** *(Wide Open Throttle).*

A. Make a mark on the throttle cable when the throttle is in the idle position. ***Figure 4***

B. Depress accelerator pedal and make a mark on the throttle cable when the throttle is in the wide open position. ***Figure 5***

C. Measure the Distance **"C"** between the two marks. ***Figure 6*** If the distance is greater than ***41mm (1-5/8"),*** go to ***Page 9;*** If it is less, go to **Step D.**

D. If the throttle travel is less than ***41mm (1-5/8"),*** you must add length to the **CRUISE CABLE** to provide slack.

NOTE: Slack is the distance the **CRUISE CABLE** moves before the throttle starts to move.

E. Slide a **CONNECTOR COVER** on the throttle **LOOP CABLE** and on the **CRUISE CABLE.** Install a **BEAD CHAIN CONNECTOR** on the end of the **LOOP CABLE** and on the end of the **CRUISE CABLE.** The **BEAD CHAIN CONNECTOR** may need to be spread slightly for cable to enter.

F. Install the end bead of the **BEAD CHAIN** in each **BEAD CHAIN CONNECTOR** with a bead *(or beads)* between them to add additional length. The beads inside the **BEAD CHAIN CONNECTORS** do not add length.

NOTE: Each bead of the **BEAD CHAIN** added between the **BEAD CHAIN CONNECTORS** will give you ***7mm (.28")*** of slack.

Example: If your throttle travels ***35mm (1-3/8"),*** you will need to add ***one (1)*** bead between connectors. ***Figure 7***

G. After the **BEAD CHAIN** is installed, lightly crimp the **BEAD CHAIN CONNECTORS** without pinching the cables and center the **CONNECTOR COVERS** over the **BEAD CHAIN CONNECTORS**.

NOTE: You must always use the **CONNECTOR COVERS.**

After determining your throttle cable travel, continue to **Section III.**

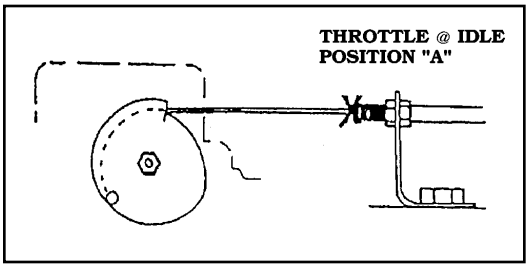


Figure 4

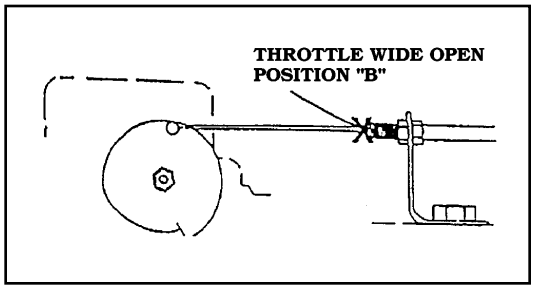


Figure 5

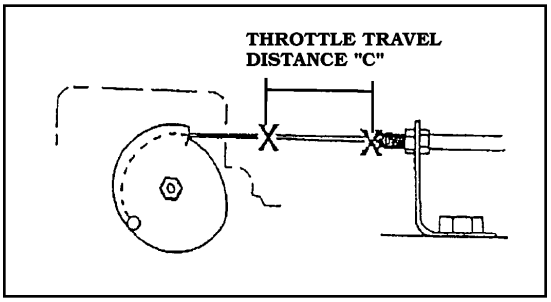


Figure 6

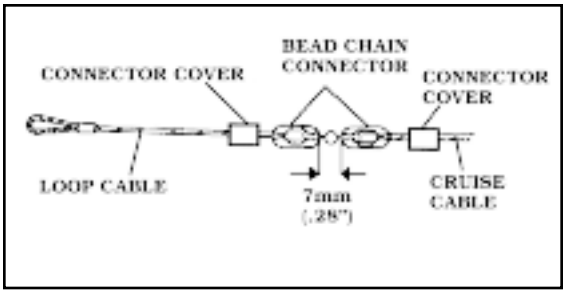


Figure 7

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INSTALLATION

III. ATTACHING CRUISE CABLE TO THROTTLE

This section will cover the proper ways to use the hardware available. Each method contains sample illustrations showing how the connector is used in an actual installation. It must be noted, however, that you should have an understanding of how each attachment method works so that a proper installation is achieved.

There are ***five (5)*** different types of throttle connections.

A. Pulley Assembly Using The **LOOP CABLE**
B. Pulley Assembly Using **T-BAR ADAPTER** (See ***Page 6***)
C. Pedal Attachment.
D. Ford™ Throttle
E. General Motors™ and **Chrysler™** Throttle Using **THREE BEAD CONNECTOR**

NOTE
When using the **BEAD CHAIN CONNECTOR** to connect the **BEAD CHAIN** to the **CRUISE CABLE** you must always use the **CONNECTOR COVER.** ***Figure 8*** Failure to use the **CONNECTOR COVER** could possibly cause the **BEAD CHAIN** or **CRUISE CABLE** to hang in the **BEAD CHAIN CONNECTOR** causing the throttle to be held in a partially open position. This condition may even occur when the cruise control is not being used.

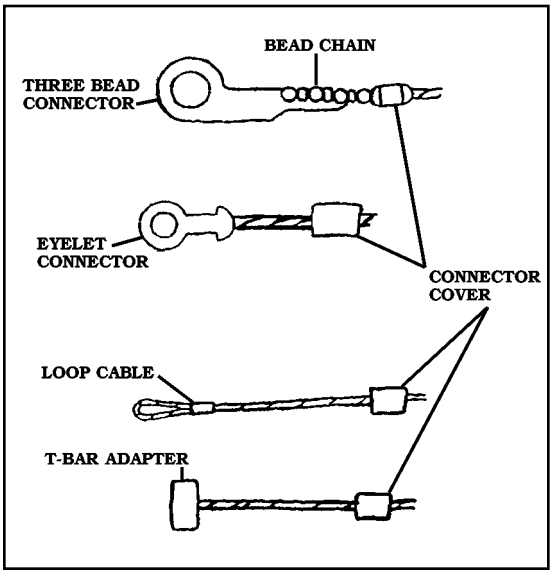

Figure 8

A. Pulley Assembly Using The **LOOP CABLE**

1. On some vehicles it may be necessary to remove the air cleaner to access the throttle pulley segment.

2. Set the pulley segment in an **OPEN** throttle position, and remove the throttle cable from the pulley.

3. Hold the **LOOP CABLE** between the holes in each side of the pulley. Slide the barrel at the end of the throttle cable through the slotted hole, then through the **LOOP CABLE** and into the second hole. ***Figure 9***

4. Connect the **LOOP CABLE** to the **CRUISE CABLE** using the **BEAD CHAIN CONNECTOR** as follows:

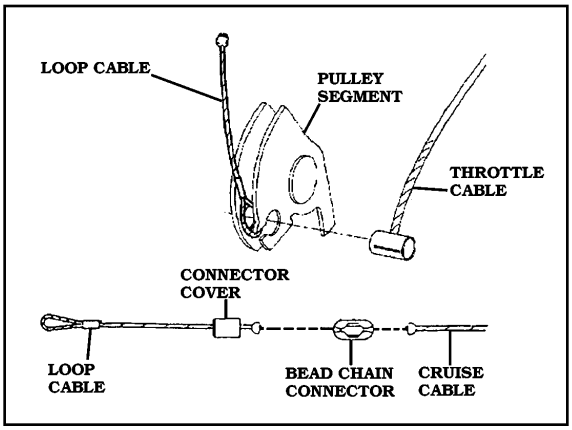

Figure 9

Slide a **CONNECTOR COVER** on the **LOOP CABLE.** Install a **BEAD CHAIN CONNECTOR** onto the **LOOP CABLE** and then onto the **CRUISE CABLE. BEAD CHAIN CONNECTOR** may need to be spread slightly for cables to enter. After the **BEAD CHAIN CONNECTOR** is installed, lightly crimp the connector without pinching the cables. Then slide the **CONNECTOR COVER** over the center of the **BEAD CHAIN CONNECTOR.**

NOTE
You must always use the **CONNECTOR COVER.** Failure to do so could possibly cause the **LOOP CABLE** or the **CRUISE CABLE** to hang in the **BEAD CHAIN CONNECTOR** causing the throttle to be held in a partially open position.

5. To secure the **LOOP CABLE** to the throttle cable, punch a small hole in the **CONNECTOR COVER** and slide the **TIE STRAP *(102MM)*** through the hole and secure to the throttle cable. ***Figure 10***

NOTE: Firmly tighten the **TIE STRAP *(102MM)*** and remove excess to prevent possible throttle interference.

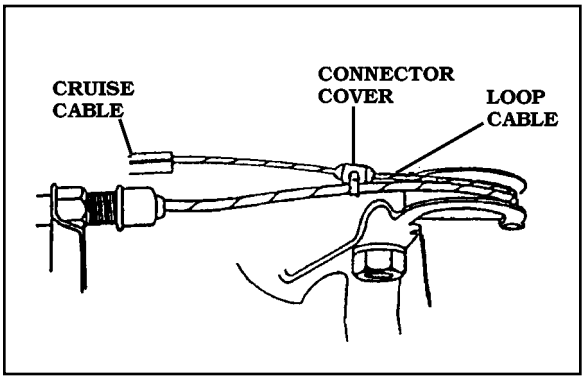

Figure 10

WARNING
If the **LOOP CABLE** is not secured to the existing throttle cable, it could come out of the pulley segment possibly causing the throttle to be held in a partially open position.

INSTALLATION

III. ATTACHING CRUISE CABLE TO THROTTLE (Continued)

B. Pulley Assembly *(Dual)* Using The **T-BAR ADAPTER**

1. Remove air cleaner to expose the dual pulley segments.

2. Find the blank anchor that is located above the throttle anchor. Follow the instructions for anchoring the **CRUISE CABLE,** See ***Page 14.***

3. Attach a **BEAD CHAIN CONNECTOR** onto the **CRUISE CABLE.** ***Figure 11***

4. Attach the **T-BAR ADAPTER** to the top pulley segment. Slide the **CONNECTOR COVER** onto the **T-BAR ADAPTER.**

5. Attach the **T-BAR ADAPTER** to the **BEAD CHAIN CONNECTOR** Make sure to slide the **CONNECTOR COVER** over the **BEAD CHAIN CONNECTOR.** ***Figure 12***

C. Pedal Attachment

1. Select a **TUBE CLAMP** that fits around the top of the accelerator pedal shaft. Make sure the tabs of the **TUBE CLAMP** point away from the bulkhead.

2. Attach the **BEAD CHAIN** to the **CRUISE CABLE** with a **BEAD CHAIN CONNECTOR.** Make sure to use a **CONNECTOR COVER.**

3. After you determine the length of **BEAD CHAIN** needed to attach to the accelerator pedal shaft, cut **BEAD CHAIN** and attach to the **EYELET CONNECTOR.** Make sure to use a **CONNECTOR COVER.**

4. Put **M5 BOLT** through the holes in the **TUBE CLAMP.** Slide the **EYELET CONNECTOR** over the bolt. Thread **LOCKNUT** onto the bolt and tighten. ***Figure 13***

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

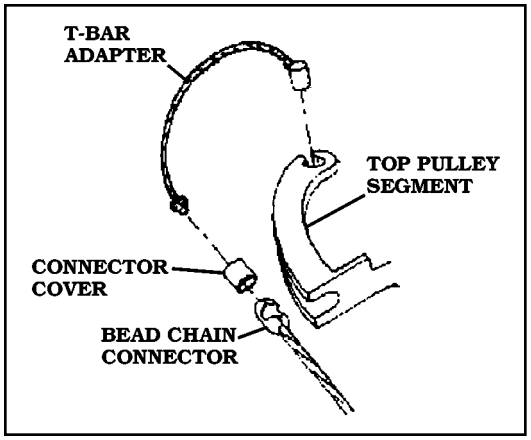

Figure 11

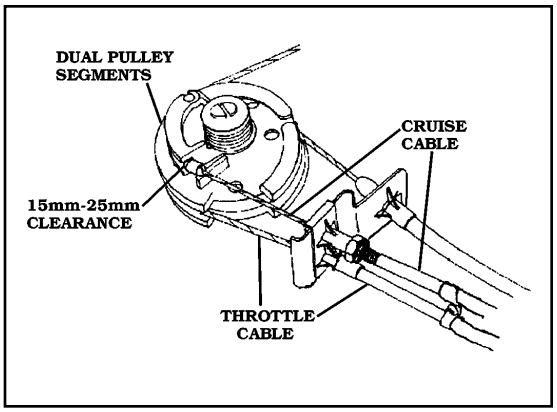

Figure 12

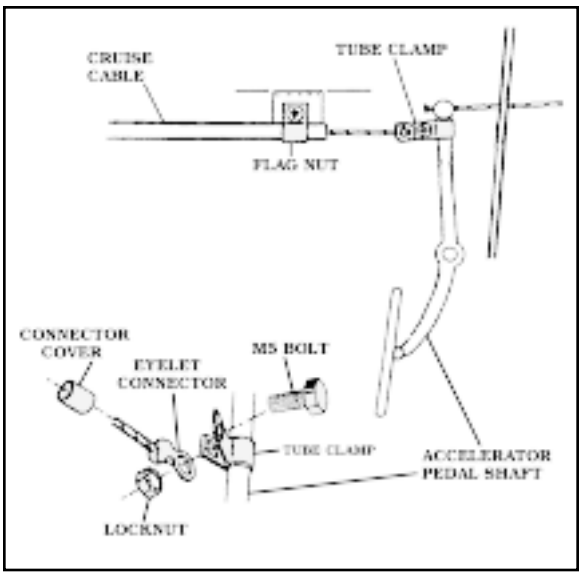

Figure 13

INSTALLATION

III. ATTACHING CRUISE CABLE TO THROTTLE (Continued)

D. Ford™ Throttle

1. Select a **TUBE CLAMP** that fits the throttle cable. Make sure the tabs of the **TUBE CLAMP** point away from the carburetor or air throttle, this will prevent the throttle from hanging. ***Figure 14***

2. Attach **CRUISE CABLE** to the **EYELET CONNECTOR.**

NOTE: Use the **CONNECTOR COVER.**

3. Put the **M5 BOLT** through the holes in the **TUBE CLAMP.** Slide the **EYELET CONNECTOR** over the bolt. Thread the **LOCKNUT** onto the bolt and tighten. ***Figure 14***

4. ***Figure 15*** is an example of a **Ford™** Throttle connection using the **TUBE CLAMP.**

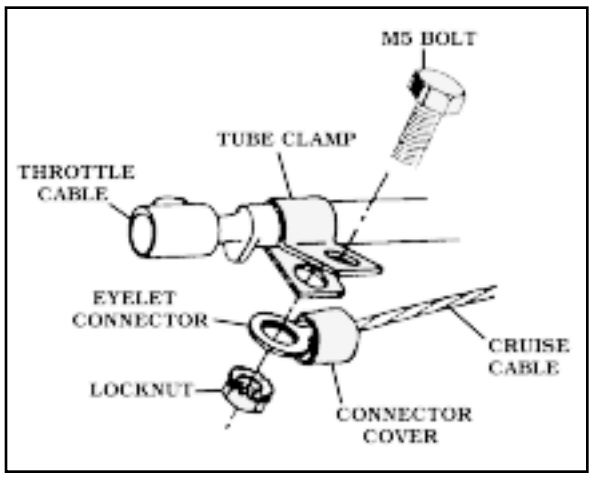

Figure 14

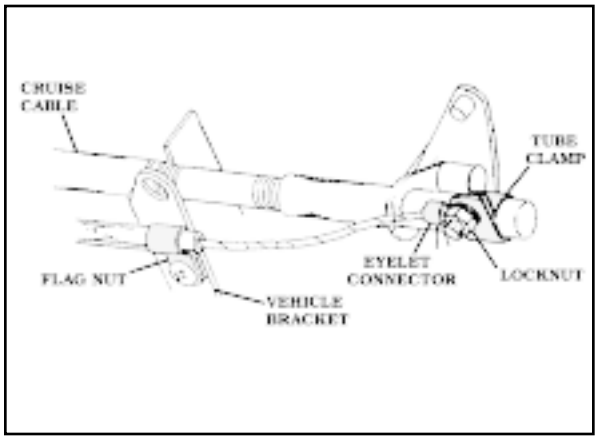

Figure 15

E. General Motors™ and **Chrysler™** Throttle using **THREE BEAD CONNECTOR.**

1. Most **General Motors™** vehicles and many **Chrysler™** vehicles can use the **THREE BEAD CONNECTOR** to attach the **CRUISE CABLE.** ***Figure 16***

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

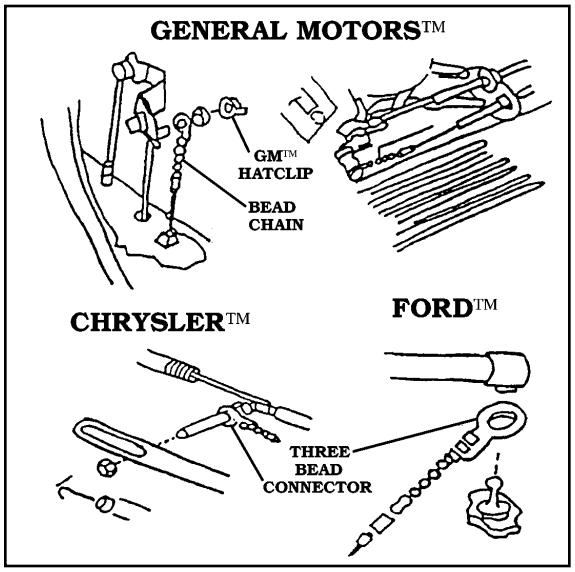

Figure 16

INSTALLATION

III. ATTACHING CRUISE CABLE TO THROTTLE (Continued)

E. General Motors™ and **Chrysler™** Throttle using **THREE BEAD CONNECTOR.** (Continued)

2. Attach the **BEAD CHAIN** to the **THREE BEAD CONNECTOR.** Secure beads by folding the metal tabs. ***Figure 17***

3. Remove clip or pin which retains throttle cable *(and washer if provided)* and install **THREE BEAD CONNECTOR** on the same side of throttle cable that the **CRUISE CABLE** will be anchored *(this is necessary so that **CRUISE CABLE** and throttle cable will not cross).*

4. The **THREE BEAD CONNECTOR** may need to be bent so that it clears the throttle cable. ***Figure 18*** Use the **TIE STRAP *(102MM)*** to hold the **THREE BEAD CONNECTOR** to the sleeve of the throttle cable. ***Figure 18***

5. When the **THREE BEAD CONNECTOR** is properly used, the following parts will be required:

THREE BEAD CONNECTOR
CONNECTOR COVER
BEAD CHAIN CONNECTOR
BEAD CHAIN

See *Figure 19*

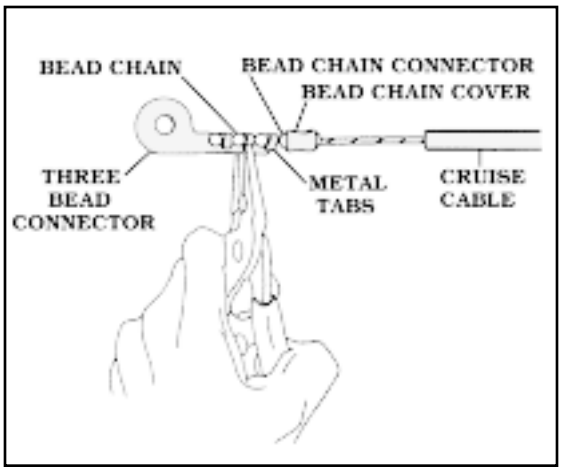

Figure 17

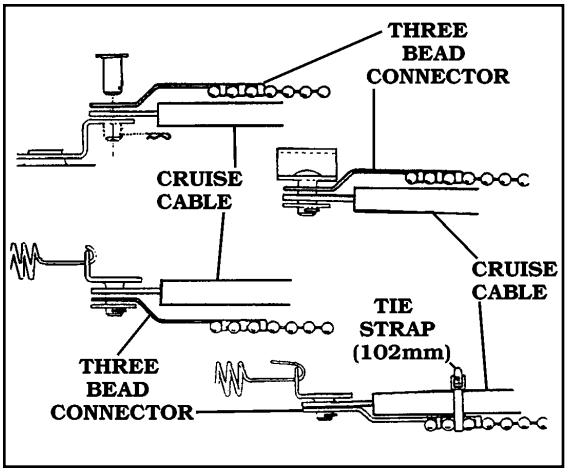

Figure 18

NOTE
After the **CRUISE CABLE** has been attached, manually move the throttle to assure the **CRUISE CABLE** does not hang up on any part of the vehicle.

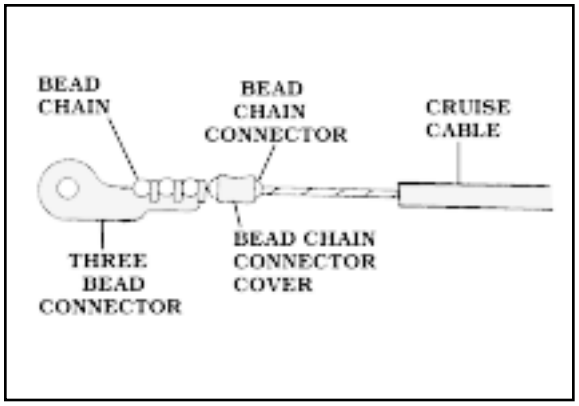

Figure 19

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

INSTALLATION

IV. ANCHORING CRUISE CABLE

There are ***three (3)*** types of connectors used to anchor the **CRUISE CABLE:**

A. SNAP-IN ADAPTER
B. General Motors™ Blank Anchor
C. FLAG NUT

A. SNAP-IN ADAPTER

1. Before using the **SNAP-IN ADAPTER,** remove the Adjustable Sleeve from the **CRUISE CABLE.** To use the **SNAP-IN ADAPTER,** it will be necessary to form threads on the end of the **CRUISE CABLE.** This is easily accomplished by placing the **LOCKWASHER NUT** on the end of the **CRUISE CABLE** with your fingers. Then using an ***11mm*** box end wrench and turning clockwise until the desired amount of threads have been formed. ***Figure 20***

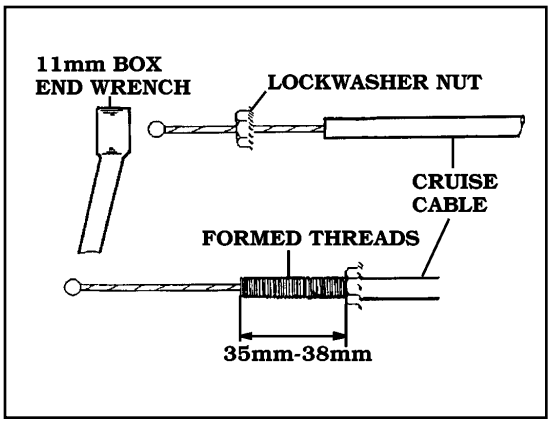

Figure 20

2. After the threads have been formed, screw the **SNAP-IN ADAPTER** onto the **CRUISE CABLE.** ***Figure 21***

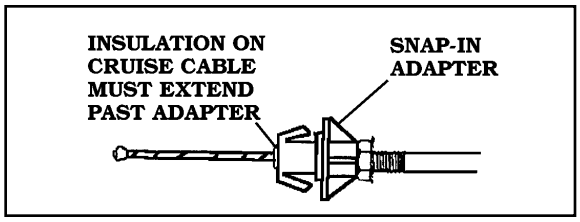

Figure 21

NOTE
Insulation on the **CRUISE CABLE** must extend past the end of the **SNAP-IN ADAPTER** on all applications.

3. The **SNAP-IN ADAPTER** snaps into the square hole of the **CABLE BRACKET** ***Figure 22*** or snaps into an existing square hole on the vehicle (*common on* ***GM™*** *vehicles).* ***Figure 23***

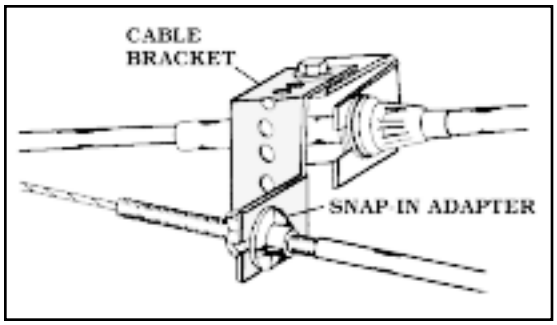

Figure 22

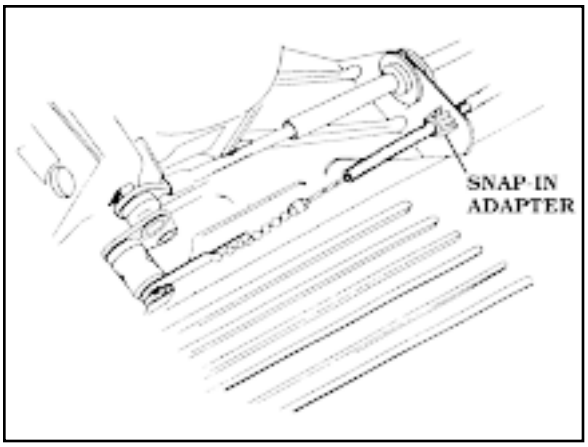

Figure 23

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

INSTALLATION

IV. ANCHORING CRUISE CABLE (CONTINUED)

B. General Motors™ Blank Anchor

1. To locate the blank anchor on **General Motors™** vehicles, it is necessary to remove the air cleaner. The blank anchor is located above the throttle anchor.

2. This anchor is hollow except at one end. Use a ***6.4mm (.25")*** bit drill as shown in ***Figure 24.***

3. Before using the **LOCKWASHER NUT,** remove the Adjustable sleeve from the **CRUISE CABLE.** Then use the **LOCKWASHER NUT** to form threads on the end of the **CRUISE CABLE.** This is easily accomplished by placing the **LOCKWASHER NUT** on the end of the **CRUISE CABLE** with your fingers. Then use an ***11mm*** box end wrench and turn clockwise until the desired amount of threads have been formed. ***Figure 20, Page 14***

4. Insert the **CRUISE CABLE** through the blank anchor and thread the other **LOCKWASHER NUT** in place. ***Figure 25***

NOTE
If you do not use the other **LOCKWASHER NUT,** install a **TUBE CLAMP** ***152mm-178mm*** from the anchor point. ***Figure 26*** This will keep the **CRUISE CABLE** from backing out of the anchor.

5. The **LOCKWASHER NUT** can also be used if there is a pre-existing ***6.4mm*** hole in a bracket on the vehicle or if it is possible to drill a ***6.4mm*** hole in a bracket on the vehicle.

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

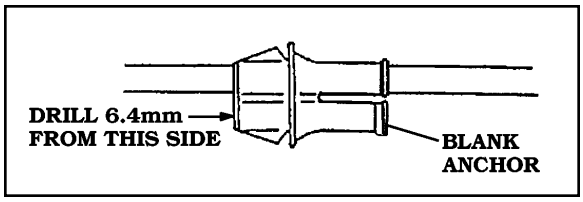

Figure 24

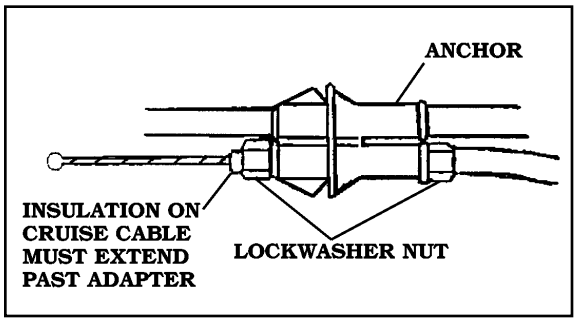

Figure 25

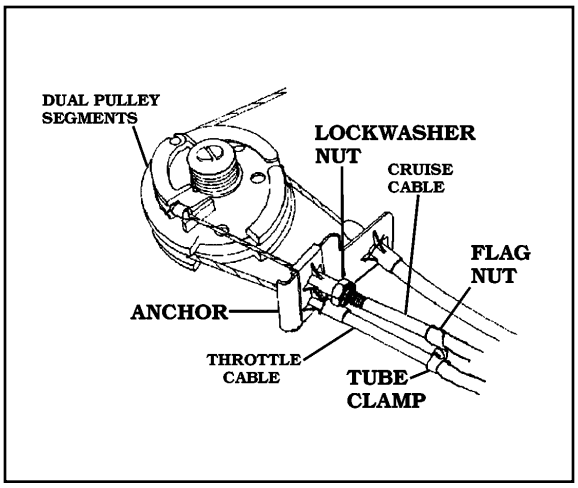

Figure 26

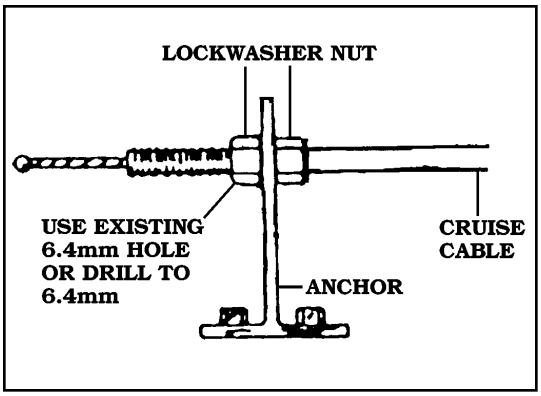

Figure 27

INSTALLATION

IV. ANCHORING CRUISE CABLE (CONTINUED)

CAUTION
When using the **FLAG NUT** on the **CRUISE CABLE** the Adjustable Sleeve **MUST** be **REMOVED.**

When using a **TUBE CLAMP** on the **CRUISE CABLE** the adjustable sleeve **MUST** be **USED** to prevent slippage or binding of cable.

C. FLAG NUT

1. Before using the **FLAG NUT**, it will be necessary to form threads on the end of the **CRUISE CABLE.** This is easily accomplished by placing the **LOCKWASHER NUT** on the end of the **CRUISE CABLE** with your fingers. Then use an ***11mm*** box end wrench and turn clockwise until the desired amount of threads have been formed. ***Figure 20, Page 14***

2. After the threads have been formed, screw the **FLAG NUT** onto the **CRUISE CABLE.** ***Figure 28***

3. The **FLAG NUT** may be used to anchor the **CRUISE CABLE** to the existing throttle cable bracket. ***Figure 29*** In some cases there is an existing hole, in other cases you can drill a ***5mm (.20")*** hole in the bracket.

4. The **FLAG NUT** may also be used to anchor the **CRUISE CABLE** using the **CABLE BRACKET.** ***Figure 30***

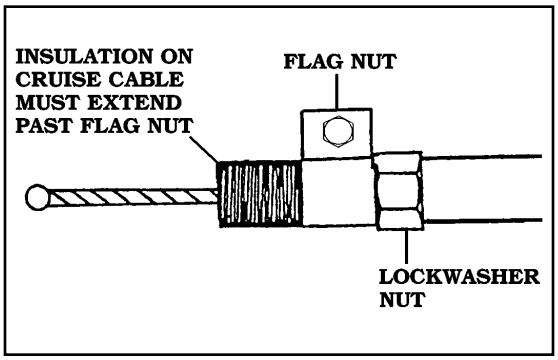

Figure 28

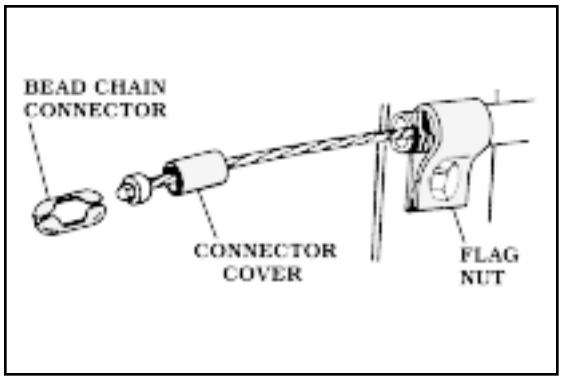

Figure 29

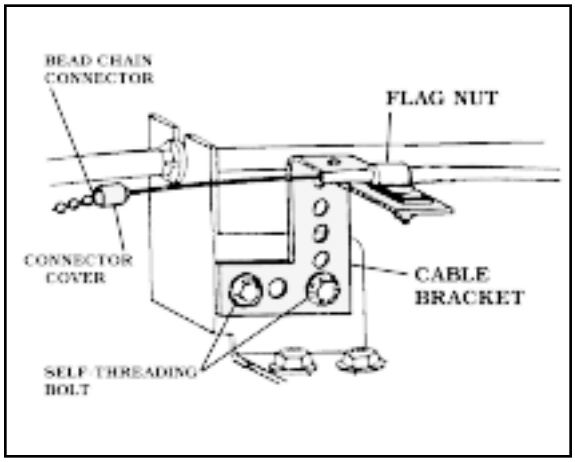

Figure 30

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

INSTALLATION

V. CRUISE HARNESS

A. Push Rubber Grommet securely into place on the cover of the **CRUISE MODULE.** ***Figure 31***

B. Straighten the **CRUISE HARNESS** and find the ***2- & 4-***pin mating connectors. Seperate the ***2- & 4-***pin connectors. A small screwdriver may be needed *(See **K** in **Figure 34**).*

C. CRUISE HARNESS needs a ***19mm (.75")*** hole to pass through bulkhead. You may find one nearby, such as the speedometer cable hole or a small one you can file larger. If you find the right size hole in the right place, remove vehicle grommet. If not, drill, saw, or punch a ***19mm*** hole in bulkhead. A hole a few millimeters to the left or slightly higher than the steering column is usually a good place. ***Figure 32***

> *NOTE*
> Check inside before drilling, sawing, or filing so you don't damage anything.

D. From engine side, pass the ***2-*** & ***4-***pin connectors through hole. If you do not hook up the ***Dark Blue*** **TACH** wire and the ***Gray*** **VSS** wire under the hood, pass them through to the inside of the vehicle, also.

E. Reattach the ***2-*** & ***4-***pin mating connectors and make the necessary wire connections. *(See **Page 18** for wiring instructions)*

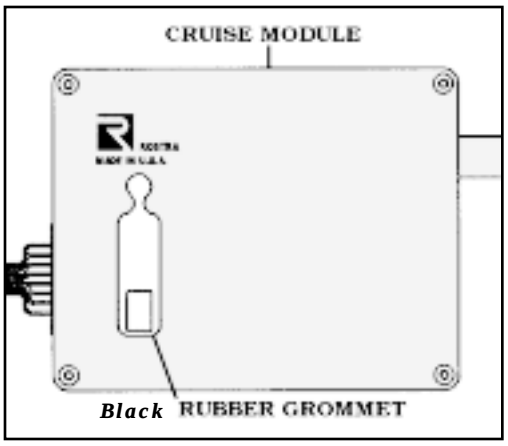

Figure 31

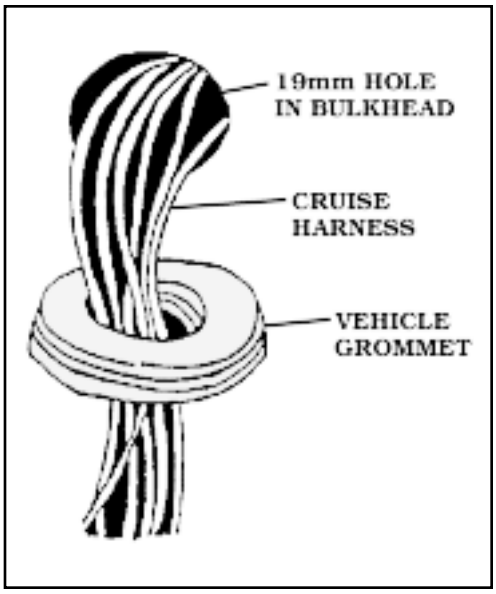

Figure 32

VI. SEALING BULKHEAD

Seal hole in bulkhead with **SEALING PUTTY** as shown in ***Figure 32.***

VII. CONTROL SWITCH INSTALLATION

If your cruise control switch is the type which clamps on the turn signal lever, requires cutting the turn signal lever, or is mounted on the instrument panel, follow the instructions packaged with it. If you have a switch which replaces the complete original equipment turn signal lever, remove the existing lever and install the cruise control switch and lever assembly as instructed in the vehicle shop service manual.

> *WARNING*
> Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

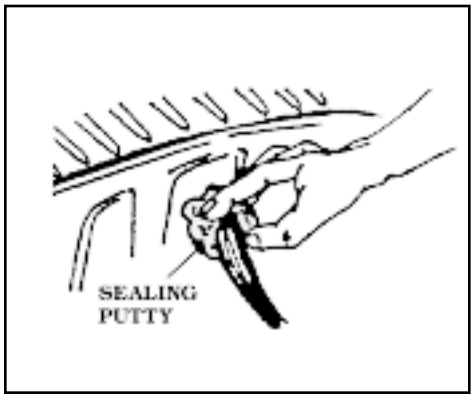

Figure 33

INSTALLATION

VIII. WIRING ATTACHMENTS TO VEHICLE

Utilize ***Figure 34*** to make the necessary wiring harness connections to your vehicle.

CAUTION
Before making any wiring connections, be sure to disconnect your vehicle's negative battery cable to avoid electrical shock and/or damage to the the vehicle's electrical system.

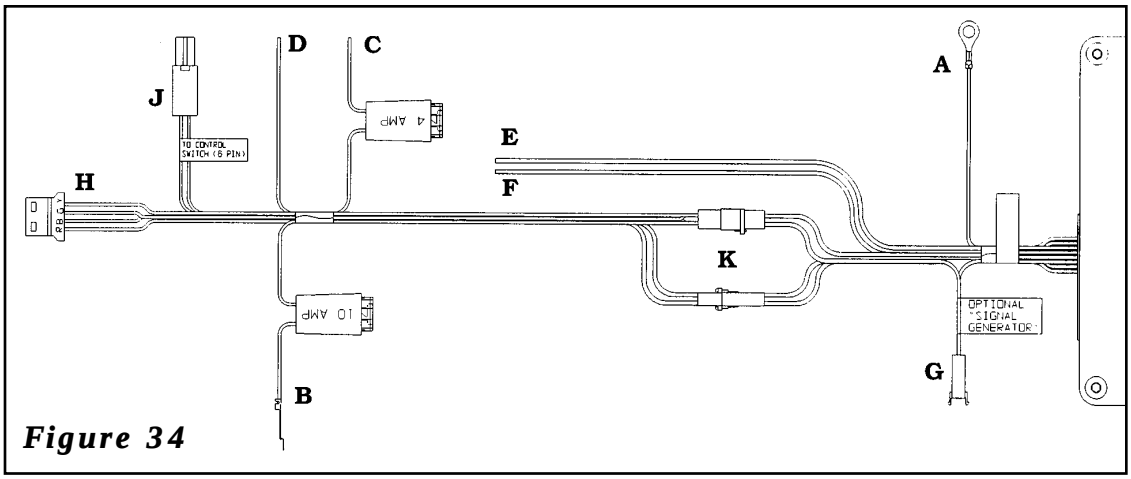

Figure 34

A. *Black* Ground Wire

In order to find a good ground for the cruise system, find a vehicle ground point which is a clean unpainted metal surface. If the cruise control does not "see" ground at all times, it will not function.

NOTE: Do not use the engine as a grounding point. Do not use the cable bracket as a gounding point.

NOTE: To find a place to get electrical power you will need to ground one lead of your test light or volt-ohmmeter. Find electrical ground by turning **ON** the ignition switch and touching one lead to a "Hot" fused terminal at fuse panel; touch other lead to unpainted metal part of vehicle. The metal you touch, if it makes continuity, is ground. The bracket for the parking brake lever is usually a good ground. Turn the ignition **OFF.**

B. *Brown* Accessory Power

Find a fuse at the fuse panel that supplies power to one of the vehicles accessories. It should be **+12** volts when the key is **ON** and ***zero (0)*** volts when the key is **OFF** or in the **START** ***(CRANK)*** position.

C. *Red* Brake Positive

"Hot" side of brake switch: Use the wire at the brake switch connector with constant **+12** volts

D. *Violet* Brake Negative

"Cold" side of brake switch: Use the wire at the brake switch connector with ***zero (0)*** resistance when brake is not pressed, and **+12** volts or open resistance when brake is pressed.

E. *Dark Blue* Tachometer *(TACH)* Wire

The **TACH** function is a safety feature of the *WorldCruise.*

If a vehicle with an automatic transmission is accidentally "knocked" into neutral while the vehicle is in motion and the *WorldCruise* is active, the **TACH** wire, when connected, will disengage the *WorldCruise* before engine over-rev. If the **TACH** wire is not "hooked-up", the cruise control will function; however the **TACH** over-rev safety feature will be inactive; this is dangerous and not recommended. **ROSTRA PRECISION CONTROLS, INC.** always recommends the attachment of the **TACH** wire.

E. *Dark Blue* Tachometer *(TACH)* Wire (CONTINUED)

On a vehicle with a manual transmission, the **TACH** wire connection is not required only when **CLUTCH DISENGAGEMENT SWITCH *(Kit# 250-4206)*** has been installed; this will take into acount the **TACH** over-rev safety feature. The **TACH** wire should be grounded when using a clutch disengagement switch to ensure that the wire does not introduce "trashy" signals into the system.

In order to locate the **TACH** signal, consult a **Vehicle Shop Manual,** our **Vehicle Technical Guide *(ROSTRA Form# 2482),*** try our **Fax-Back System** at **(910) 610-4191,** call our **Technical Service Department** at **(910) 277-1828, Fax** us at **(910) 276-3759 (USA)** or visit us on the web at **www.rostra.com.**

F. *Gray* Vehicle Speed Sensor *(VSS)* Wire

The ***Gray* Vehicle Speed Signal *(VSS)*** wire is how the *WorldCruise* "knows" how fast the vehicle is moving. The **Pulses Per Mile/Kilometer *(PPM/PPK)*** are a characteristic of the vehicle and must be set accordingly *(See **Page 7**).* If **VSS** cannot be located on the vehicle then an auxiliary road speed sensor must be used *[**SIGNAL GENERATOR** or **MAGNET & COIL PICK-UP KIT (KIT# 250-4165)**].* If you use an auxiliary speed sensor, plug it into auxiliary speed sensor connector ***(G** in **Figure 34)*** and trim the ***Gray* VSS** wire as not to pick-up any stray signals.

In order to locate the **VSS** signal, consult a **Vehicle Shop Manual,** our **Vehicle Technical Guide *(ROSTRA Form# 2482),*** try our **Fax-Back System** at **(910) 610-4191,** call our **Technical Service Department** at **(910) 277-1828, Fax** us at **(910) 276-3759 (USA)** or visit us on the web at **www.rostra.com.**

G. Auxiliary Speed Sensor Connector

This connector is utilized when the ***Gray* VSS** wire is not used as the vehicle speed source. Both **ROSTRA** *[**SIGNAL GENERATOR** and **MAGNET & COIL PICK-UP KIT (KIT# 250-4165)**]* have a mating connector which plugs right into the wiring harness.

H. 4-Pin Switch Connector

This connector is utilized by the control switch. All **ROSTRA** control switches contain a mating connector which plugs right into the main wiring harness.

J. 2-Pin Switch Connector

This connector is used in conjunction with the **4-Pin Switch Connector *(H** in **Figure 34).*** The **2-Pin Switch Connector *(J** in **Figure 34)*** is utilized by control switches which require an additional power and ground source such as those containing an **LED** indicator light or **ROSTRA Radio Frequency *(RF)*** models.

K. Bulkhead Connectors

These connectors simplify the installation of the wiring harness through the engine bulkhead *(firewall).* Simply disconnect the connectors, run them through any **19mm *(.75")*** hole in the firewall *(preferably near the steering column),* and reconnect them once inside the passenger compartment.

WARNING
Failure to follow the instruction manual could not only cause the WorldCruise to work improperly, but could cause the throttle to hang up, possibly causing damage to your vehicle and injury and/or death to you and your passengers.

TROUBLESHOOTING

IX. SELF DIAGNOSTIC TESTING PROCEDURE

The WorldCruise is equipped with a **Self Diagnostic Light Emitting Diode *(LED)*** located underneath the rubber grommet on top of the **CRUSE MODULE.** Utilize the following **Self Diagnostic Procedure** to troubleshoot your cruise control if it does not function properly once installed.

DIAGNOSTIC LED

FIGURE 35

The twelve *(12)* programming switches and diagnostic LED are located under the *Black* rubber grommet on top of the CRUISE MODULE.

Carefully follow the procedures below to enter your cruise control into **Self Diagnostic Mode.**

Step 1: Turn the cruise control switch **OFF.**

Step 2: Turn the ignition to the **OFF** position.

Step 3 **Closed Circuit Control Switch** *(See **Page 22**):* Press and hold the **RESUME/ACCEL** button while you turn the ignition switch to the **ON** position ***without starting the engine.*** Now release the the **RESUME/ACCEL** slide switch.

Open Circuit Control Switch *(See **Page 22**):* Turn the ignition switch to the **ON** position ***without starting the engine,*** hold the **RESUME/ACCEL** button down while you turn the cruise control switch to the **ON** position.

Step 4: The **Diagnostic LED** should be **OFF** at this time. You are now in **Self Diagnostic Mode.**

Continue to follow the procedures below to test your cruise control switch, brake switch connections and **VSS** signal.

Step 5: Press and Release the **SET/COAST** button. The **LED** should light each time the button is pressed and go out when it is released. If so, continue to **Step 6;** if not, go to **Step 5a.**

a. Check steps to entering **Diagnostic Mode** and test again.
b. Check **Programming Switch# 12.** It should be **ON** for a **Normally Closed Circuit Control Switch** and **OFF** for a **Normally Open Circuit Control Switch.** *(See **Page 22**):* If set incorrectly, reset and reenter **Diagnostic Mode.**
c. Check power to the **CRUISE MODULE** if none of the diagnostic commands are functioning.
d. Check Cruise Control Switch *(See **Page 22**).*

Step 6: Press and release the **RESUME/ACCEL** button. The **LED** should light each time the button is pressed and go out when it is released. If so, continue to **Step 7**; if not, go to **Step 6a.**

a. Check steps to entering **Diagnostic Mode** and test again.
b. Check power to the **CRUISE MODULE** if none of the diagnostic commands are functioning.
c. Check Cruise Control Switch *(See **Page 22**).*

Step 7: You will need a second person to help you perform this test. Press and release the **Brake Pedal.** The **LED** should light each time the brake is pressed and go out when it is released. If so, continue to **Step 8;** if not, go to **Step 7a.**

a. Check steps to entering **Diagnostic Mode** and test again.
b. Check power to the ***Red* Brake Positive** wire.
c. Check power to the **CRUISE MODULE** if none of the diagnostic commands are functioning.
d. Check Brake Switch Connector and wiring to brake switch.

Step 8:

a. Vehicle's own computer as **VSS** source: Roll the vehicle at least **two *(2)*** meters forward or backward, the **LED** should flash and continue to flash at the same rate. If so, continue to **Step 9;** if not, go to **Step 8ai.**

i. Check steps to entering **Diagnostic Mode** and test again.
ii. Check **Programming Switch# 10.** It should be **ON** for **Square Wave Input.** If set incorrectly, reset and reenter **Diagnostic Mode.**
iii. Some vehicles need to be pushed more than **two *(2)*** meters. In that case, raise **one *(1)*** of the vehicle drive wheels *(both drive wheels on a limited slip differential)* and block the non drive wheels. Use a support stand for safety. Spin the drive wheel by hand as fast as possible. The **LED** should flash and continue to flash at the same rate. If so, continue to **Step 9;** if not, go to **Step 8aiv.**
iv. Either your **VSS** wire is incorrect or your connection is bad. Inpect your **VSS** connection and reenter **Self Diagnostic Mode.**

b. Auxiliary Speed Sensor *([**SIGNAL GENERATOR** or **MAGNET & COIL PICK-UP KIT (KIT# 250-4165)**]* Raise **one** ***(1)*** of the vehicle drive wheels *(both drive wheels on a limited slip differential)* and block the non drive wheels. Use a support stand for safety. Spin the drive wheel by hand as fast as possible *(You must spin the wheel at least **4.8 KPH (3 MPH)** or faster in order to test an auxiliary speed signal.)* The **LED** should flash and continue to flash at the same rate. If so, continue to **Step 9;** if not, go to **Step 8bi.**

i. Check steps to entering **Diagnostic Mode** and test again.
ii. Check **Programming Switch# 10.** It should be **OFF** for **Sine Wave Input.** If set incorrectly, reset and reenter **Diagnostic Mode.**

Step 9: Your WorldCruise has successfully passed the **Self Diagnostic Testing Procedure.** If it still does not function, test your **TACH** signal.

X. TACH SIGNAL TESTING PROCEDURE

Step 1: Turn the cruise control switch **OFF.**

Step 2: Turn the ignition to the **OFF** position.

Step 3 **Closed Circuit Control Switch** *(See **Page 22**):* Press and hold the **RESUME/ACCEL** button while you turn the ignition switch to the **ON** position and **start the engine.** Now release the the **RESUME/ACCEL** slide switch.

Open Circuit Control Switch *(See **Page 22**):* Turn the ignition switch to the **ON** position and **start the engine,** hold the **RESUME/ACCEL** button down while you turn the cruise control switch to the **ON** position.

Step 4: The **Diagnostic LED** should be flashing. Rev the engine, the **LED** should flash faster at higher RPM's. If so, your **TACH** signal is valid, if not, go to **Step 4a.**

a. Check steps to entering **Diagnostic Mode** and test again.
b. Either your **TACH** wire is incorrect or your connection is bad. Inspect your **TACH** connection and reenter **Self Diagnostic Mode.**

General Wiring Diagram
WorldCruise **System**

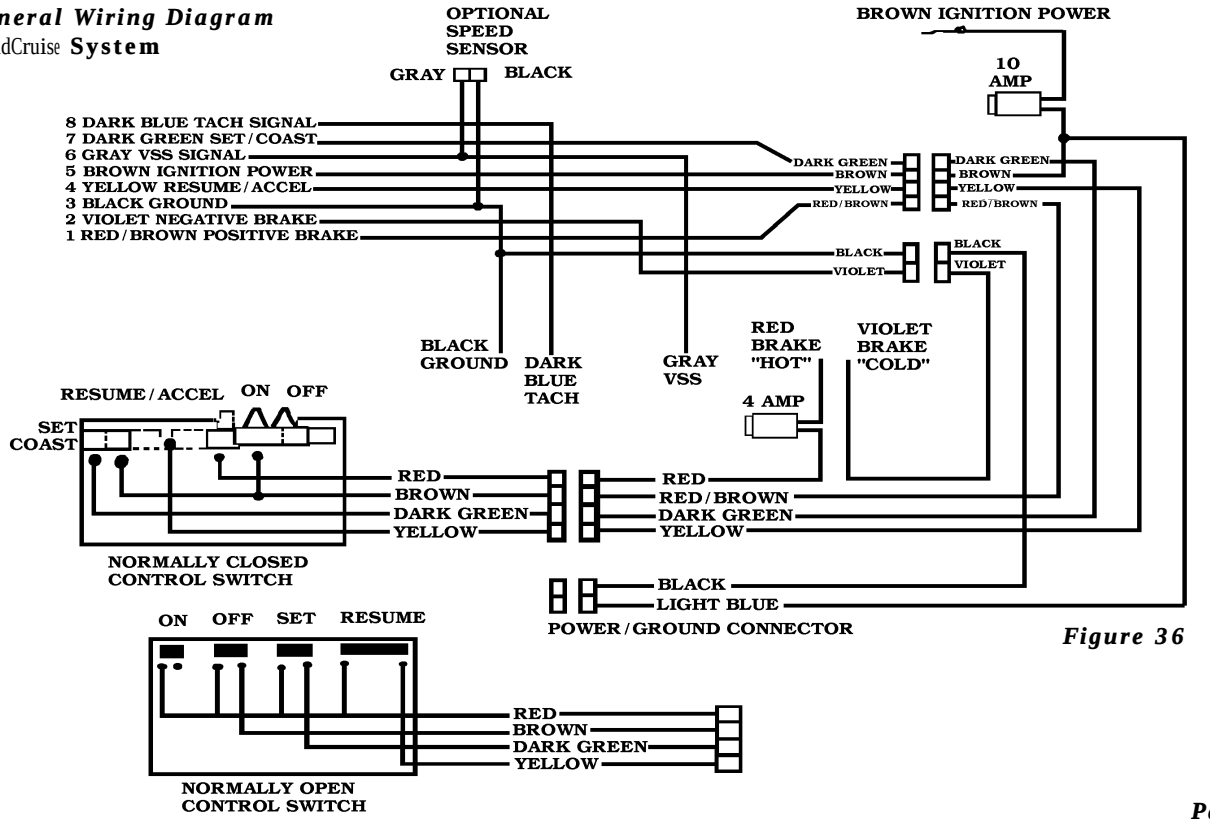

Figure 36

TROUBLESHOOTING

XI. CONTROL SWITCH TESTING PROCEDURE

Utilize the following continuity charts to test your control switch if you suspect that it is not functioning properly. You need to unplug the 8-pin connector from the **CRUISE MODULE** to perform these tests.

1. Ground the test light lead and verify that the light works by probing a known power source.
2. Follow the test charts below using the appropriate chart for your control switch.

Your control switch is a **Closed Circuit Control Switch** if:

1. Its **ROSTRA** part number is **250-3002, 250-3018, 250-3020, 250-3021, 250-3026, 250-3032, 250-3084, 250-3091, 250- 3100, 250-3120, 250-3125, 250-3126, 250-3127, 250-3133, 250-3167, 250-3168, 250-3169, 250-3175, 250-3180, 250-3194, 250-3304, 250-3328, 250-3421, 250-3446**

OR

2. You must push the control button to the ***left*** for the **RESUME/ACCEL** function.

Your control switch is an **Open Circuit Control Switch** if:

1. Its **ROSTRA** part number is **250-3357, 250-3358, 250-3443, 250-3444, 250-3592, 250-3593, 250-3632, 250-3633, 250-3594, 250-3595, 250-3742, 250-3743.**

OR

2. You must push the control button to the ***right*** for the **RESUME/ACCEL** function.

OR

3. It has a ***Green*** **LED Indicator Light.**

OR

4. It is a **ROSTRA Radio Frequency *(RF)*** control switch.

CLOSED CIRCUIT CONTROL SWITCH

IGNITION SWITCH POSITION	CONTROL SWITCH POSITION	*RED* WIRE	*DARK GREEN* WIRE	*YELLOW* WIRE	*BROWN* WIRE
OFF	OFF	OFF	OFF	OFF	OFF
OFF	ON	ON	ON	OFF	OFF
OFF	ON press and hold SET/COAST	ON	OFF	ON	OFF
OFF	ON press and hold RESUME/ACCEL	ON	ON	ON	OFF
ON	ON	ON	ON	OFF	ON
CRANK or START	ON	ON	ON	OFF	OFF

OPEN CIRCUIT CONTROL SWITCH

IGNITION SWITCH POSITION	CONTROL SWITCH POSITION	*RED* WIRE	*DARK GREEN* WIRE	*YELLOW* WIRE	*BROWN* WIRE
OFF	OFF	OFF	OFF	OFF	OFF
OFF	ON	ON	OFF	OFF	OFF
OFF	ON press and hold SET/COAST	ON	ON	OFF	OFF
OFF	ON press and hold RESUME/ACCEL	ON	OFF	ON	OFF
ON	ON	ON	OFF	OFF	ON
CRANK or START	ON	ON	OFF	OFF	OFF

The **CRANK** or **START IGNITION SWITCH POSITION** refers to the momentary state when the key starts the engine just before it returns to the **RUN IGNITION SWITCH POSITION.**

OPERATING INSTRUCTIONS

XII. WorldCruise **OPERATING INSTRUCTIONS**

ON: To operate the WorldCruise, turn the power button **ON**. *(**Green LED Indicator** will light, if equipped.)* Wait three ***(3)*** seconds before setting speed.

SET SPEED: To engage system, drive at any speed above **50 KPH *(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 the button is released plus or minus **3 KPH *(1-1/2 MPH)*** Press accelerator and speed will increase, release accelerator and you will return to set speed.

NOTE: The **RESUME/ACCEL** button will **SET** the WorldCruise 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 **50 KPH *(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 **1-1/2 to 5 KPH *(2 to 3 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 **1-1/2 to 5 KPH *(2 to 3 MPH).***

DISENGAGE: Depress brake pedal slightly; automatic speed control will cease but set speed will stay in the 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 **50 KPH *(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 **KPH *(MPH)*** of your set speed, then press and release the **RESUME/ACCEL** button.

THINGS YOU SHOULD KNOW ABOUT YOUR WorldCruise

The performance of the WorldCruise is dependent upon the condition of the engine, its size and even by the type of emission control equipment it has. Driving at higher altitudes will have an effect on WorldCruise performance.

Under normal conditions and with proper switch settings, speed should be controlled within plus or minus **3 KPH *(1-1/2 MPH)***. There may be situations; however, which make it seem as if the WorldCruise is not capable of functioning accurately, such as an extra heavy load, a very steep hill, or a severe headwind.

CAUTION: **Do not use the** WorldCruise **on a slippery road nor in heavy traffic.**

CAUTION: ***(Manual Transmission)*** While driving with the WorldCruise **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.

OUR QUALIFIED EXPERT TECHNICAL SERVICE DEPARTMENT IS READY TO ASSIST YOU WITH ANY QUESTIONS OR PROBLEMS THAT YOU MAY HAVE ABOUT OUR PRODUCT. CONTACT US VIA PHONE AT (910) 277-1828 (USA) OR FAX AT (910) 276-3759 (USA).

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