CRS-2000 & CRS-3000

Electronic Cruise Control System

This manual covers all aspects of installation, operation and troubleshooting for the CRS-series of cruise controls.
Dakota Digital has created an installation video as a compliment to these instructions.
Please visit: **dakotadigital.com/cruise**

Installation manual table of contents:

Quick Reference

Basic operation requires the following wire connections:

RED: Connect to constant 12 volt source. This should go to the fused terminal that feeds power to the brake lights.

BROWN: Connect to switched 12 volt source. This should be connected to an accessory terminal of the fuse panel capable of supplying 10 amps. This wire should have 12 volts when the ignition key is in the accessory and run positions, but not in the off or start positions.

BLACK: Connect to a good ground point on the engine (preferred), frame, or fire wall.

VIOLET: Connect to cold side of brake light switch. This wire should have 12 volts only when the brake is depressed. When the brake is not depressed it should be grounding through the brake light bulbs. If the brake light bulbs are not connected or are burned out, the system will not operate. **LED brake lights will not provide proper grounding**. If you have LED brake lights, use a relay as shown on page 22.

BLUE: Connect to negative side of ignition coil. On GM HEI ignitions or MSD ignitions connect to TACH terminal. Do not route the BLUE tach wire and GRAY speed wires along side each other. The tach wire can cause interference with the speed signal wire.

GRAY: see following section on SPEED CONNECTION.

Throttle connection:
The Cruise Control installation manual provides detailed images for connecting the servo to the throttle. These images cover basic OEM factory throttle hook-ups. It may be necessary to use a slight variation of one of the images with your configuration or with aftermarket carburetors.

Control switch:
There are various types of turn signal and dash mount control switches that are available. The type of control switch that we supply with the cruise control is a closed circuit type for a turn signal handle control and open circuit for dash mount switches. If you will be connecting to a factory GM 4 wire control switch, they are open circuit type. GM switches which do not have 4 wires are not compatible with this cruise control. Ford cruise control switches are not compatible with this cruise control.

Speed connection:
Vehicle Speed Signal can come from a variety of sources, and the set setup switches must be configured to match the input.
The CRS modules cannot read high speed signals from many Tremec and GM electronic transmissions.
The CRS can use the single gray wire to get speed from a Dakota Digital HDX, RTX, VFD3, or VHX control box. It can also read the signal out of most ECMs with a speed output wire.
The CRS-2000 comes with a SEN-01-4160 pass through generator that provides a dedicated 8,000 pulse per mile signal.

Common switch settings:

Switch**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Application 1	**ON**	OFF	**ON**	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	***ON**
Application 2	**ON**	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	**ON**	***ON**
Application 3	**ON**	OFF	OFF	OFF	**ON**	**ON**	OFF	OFF	OFF	**ON**	**ON**	***ON**

* SW 12 will be OFF for **HND-2** applications
11 = automatic transmission

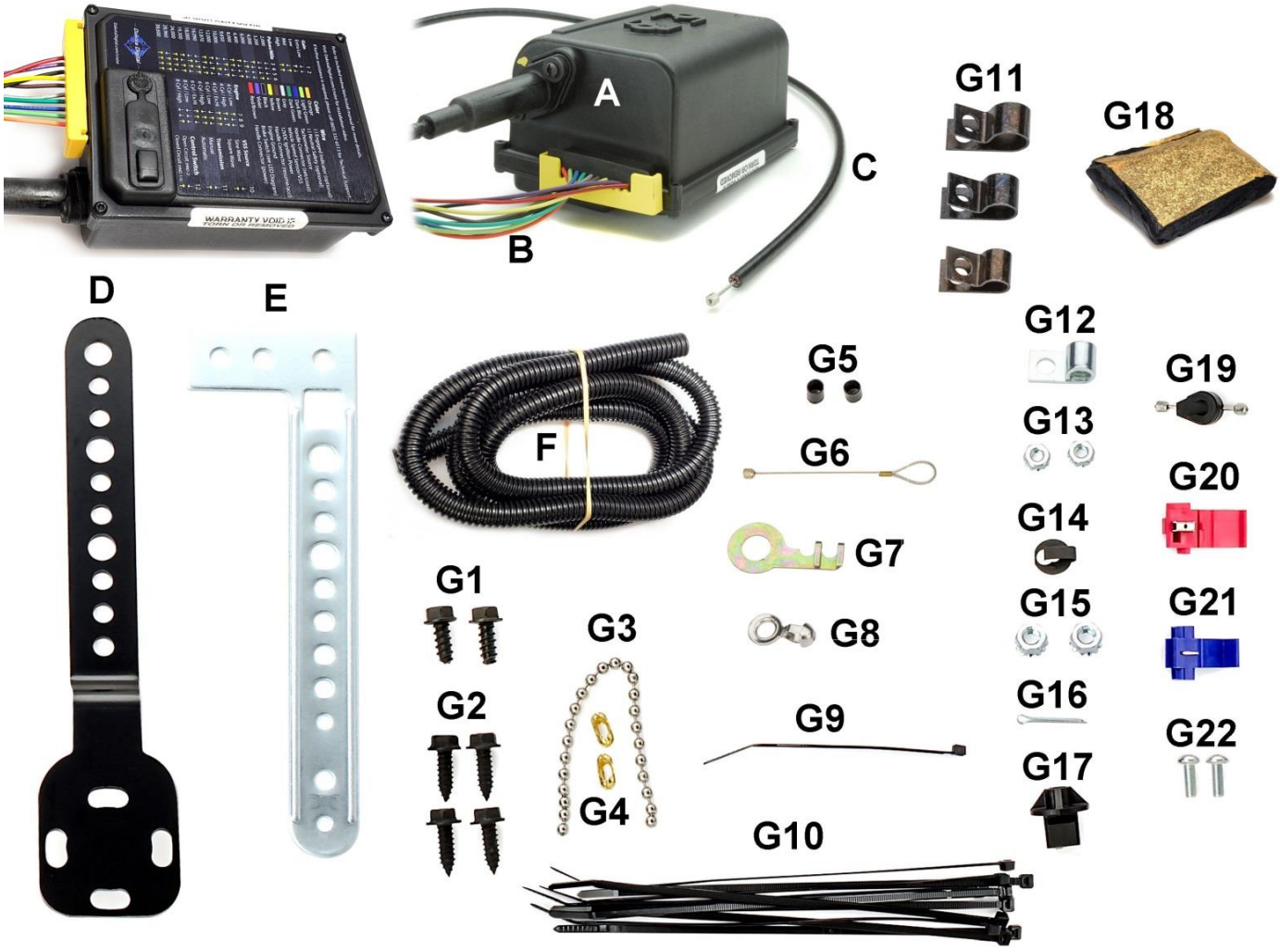
Application 1: Dedicated 8K PPM pulse generator, or shared with a Dakota Digital STR control box
Application 2: Using the **SPD OUT/2K OUT** from a Dakota Digital control box, (2K PPM Square Wave)
Application 3: Using a **3-wire pulse generator,** either Dakota Digital or a VDO type, (16K, Square Wave)

The description of the switch functions are found on page 6 of the Cruise manual. If you experience a surging when the cruise control engages then turn switch number 1 off.

Troubleshooting:
If the system fails to operate after making all of the proper connections, consult the self diagnostics procedure on page 27. The Diagnostics LED is located beside the programming switches, under the rubber plug on the actuator.

In order for the cruise to regulate the speed properly under load, <u>the vehicle must be tested on the road</u> and not with the tires elevated off the ground.

Included components



Qty.	Description
1-	A - CRUISE MODULE
1-	B - CRUISE HARNESS
1-	C - CRUISE CABLE
1-	D - MODULE BRACKET
1-	E - CABLE BRACKET
1-	F - CONVOLUTED TUBING (58”)
	HARDWARE PACKAGE
2-	G1 - MODULE BOLT 2
2-	G2 - SELF-THREADING BOLT (M6 X 19) 4
1-	G3 - BEAD CHAIN 1
2-	G4 - BEAD CHAIN CONNECTOR
2-	G5 - CONNECTOR COVER
1-	G6 - LOOP CABLE (2.6 INCHES)
1-	G7 - THREE BEAD CONNECTOR
1-	G8 - EYELET CONNECTOR

Qty.	Description
1-	G9 - TIE STRAP (4 INCHES)
10-	G10 - TIE STRAP (7.105 INCHES)
3-	G11 - TUBE CLAMPS
1-	G12 - FLAG NUT (THREADED TUBE CLAMP)
2-	G13 - M5 NUT
1-	G14 - GM HATCLIP
2-	G15 - LOCKWASHER NUT (1/4-20)
1-	G16 -COTTER PIN (2MM X 16MM)
1-	G17 -SNAP-IN ADAPTER
1-	G18 - PUTTY SEALING
1-	G19 - ADAPTER THROTTLE CLIP W/CABLE
2-	G20 - CONN, SELF-STRIP (16-22 AWG)
2-	G21 - CONN, SELF-STRIP (16-18 AWG)
2-	G22 - SCREW, ROUND HEAD (M5)
	CRS-2000 also includes a signal generator SEN-01-4160

Safety Procedures

This unit 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 FUNCTIONING, NORMALLY OPEN DISENGAGEMENT SWITCH ON THE CLUTCH PEDAL ASSEMBLY.

Throughout the instructions there are WARNINGS, CAUTIONS, AND NOTES that are meant to make it easier for you to install the Cruise Control 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 Judgment 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 Cruise Control needs no regular service.

WARNING
Failure to follow the instruction manual could not only cause the system 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.
If you question the applications of the Cruise Control, 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 Cruise Control. 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 Cruise Control 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 Cruise Control 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 are 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 Cruise Control 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 Cruise Control or vehicle malfunction, component damage, and or personal injury for you and/or your passengers.

Helpful hints

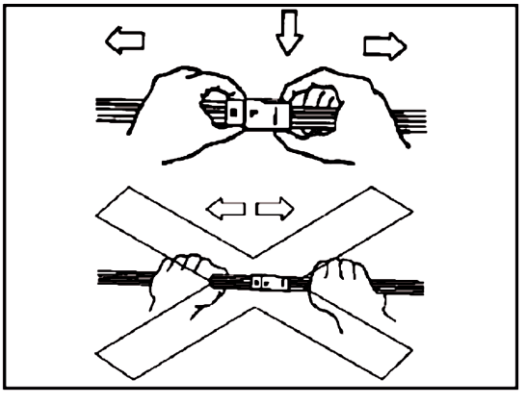


Figure A

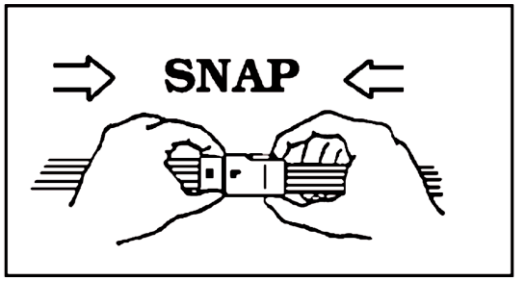
1. BEFORE STARTING INSTALLATION:
Familiarize yourself with the Installation Instructions and Cruise Control components.

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.



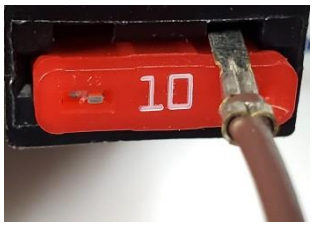
3. AIRBAG AND ANTI-THEFT RADIO:

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 Cruise Control for safety precautions. Remember to reconnect the cable after installation.

5. ACCESSORY POWER:
When installing the accessory power connection, make sure you use the appropriate connector at the fuse box, or damage to your vehicle's fuse box and/or electrical system may occur.
We prefer soldering into an ignition source or a spade connector to the fused IGN terminal on your fuse panel. However, these images show how to get power from a fuse without cutting wires.
Make certain you are on the fused side for protection.
Insulating the exposed metal tab with heat shrink, or electrical tape, would be wise and not to have a hot lead exposed.



NOTE 1: Both the VSS (Gray) and TACH (Dark Blue) wires must be connected.
(The lone Gray wire will not be used if the Magnetic Sensor kit is used as it plugs direct to the "Optional Speed Sensor" plug).
* VEHICLE'S COMPUTER (or 3 wire pulse generator)
** AUXILIARY VSS SOURCE (signal generator or magnet kit)

Installation: mounting the module

NOTE: DO NOT MOUNT THE CRUISE MODULE IN THE FOLLOWING AREAS:
* Under the fender, under the vehicle, directly to the engine, near sharp, hot or moving objects, near ignition coil [no closer than **10"** (255mm)], or where it will interfere with service checks. The internal servo noise may be a distraction, so we do not recommend putting the module in the passenger compartment.

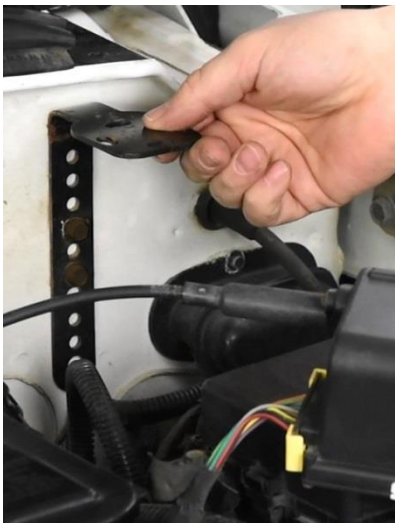
A. Select a possible location to mount your cruise module with supplied black mounting bracket. Make certain the cruise cable can reach the throttle body or carburetor, and the wire harness can reach into the cabin far enough to complete the wiring.

B. Position the module so the cable exits level to the car. An upward or downward angle makes it hard to engage and operate correctly.

C. Once you have selected a location, install the module bracket (**D**) to the vehicle with at least two of the self-threading bolts (**G2**) using a 10mm socket. It may be necessary to cut and bend the module bracket to achieve a custom fit.

D. Mount the cruise module to the bracket using the two course thread self-threading screws (**G1**) provided with the bracket with a 10mm socket. You may set the programming switches located underneath the rubber grommet of the cruise module before securing the module, but make the module accessible in case they need to be changed or you need to perform diagnostics. See page 26 for switch settings.
DO NOT OVERTIGHTEN! The screws are self-tapping but the case could be stripped out.

WARNING
Failure to follow the instruction manual could not only cause the Cruise Control 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.



Bending the mount bracket worked in this application

Note the cable exiting level to the pickup

Installation: Anchoring the cruise cable - snap-in adapter

There are three (3) types of connectors used to anchor the cruise cable:

Snap-in adapter
General Motors™ blank anchor
Flag nut

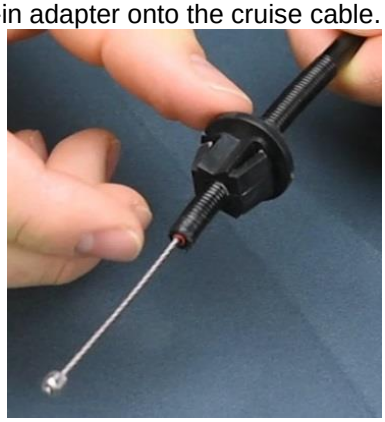
Snap-in adapter:

1. 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 one ¼”-20 lock washer nut (G15) on the end of the cruise cable with your fingers. Then using a 7/16” (or 11mm) box end wrench and turning clockwise until the desired amount of threads have been formed.



Creating threads about 2” long should suffice for most applications.

2. After the threads have been formed, screw the snap-in adapter onto the cruise cable.

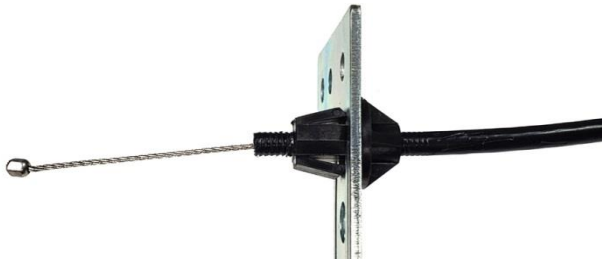



The 2” threading should allow for enough adjustment of the snap-in adapter to adjust the length needed to extend past the cable bracket once installed. This threaded adjustment range can help the snap-in adapter take out any slack when the throttle is at idle.

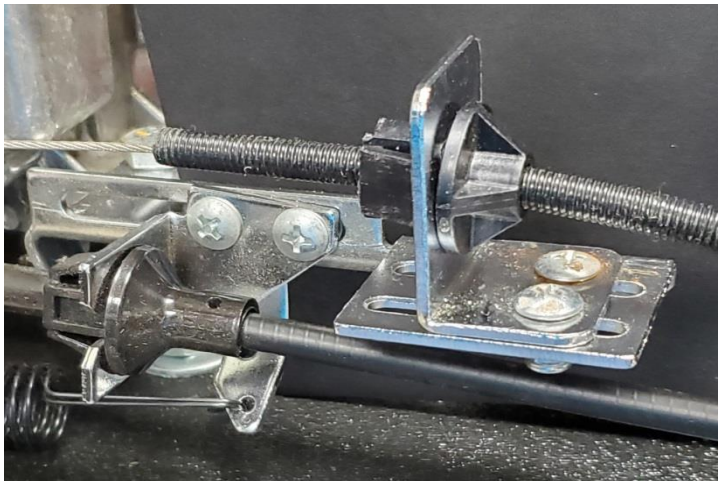
NOTE: Insulation on the cruise cable must extend past the end of the snap-in adapter on all applications.

Installation: Anchoring the cruise cable - snap-in adapter continued

3. The snap-in adapter snaps into the square hole of the cable bracket or snaps into an existing square hole on the vehicle (common on GM™ vehicles).



4. Aftermarket throttle / cruise / kick down brackets also work very well with the snap-in adapter.

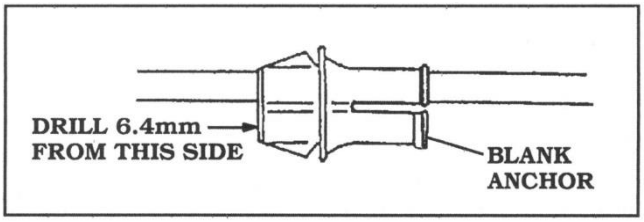


Installation: Anchoring the cruise cable - GM blank anchor

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 ¼" (6.4mm) bit drill to drill through the tubing:

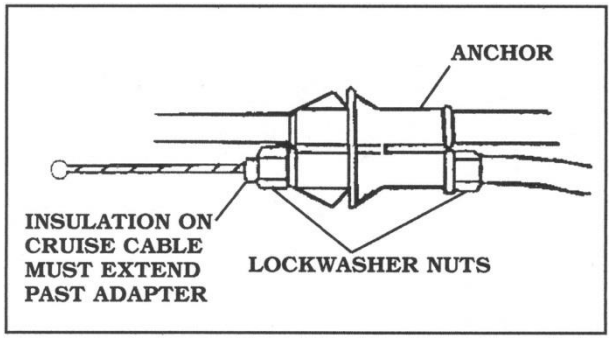


3. Use one lock washer nut to form threads on the end of the cruise cable as previously shown on page 10.

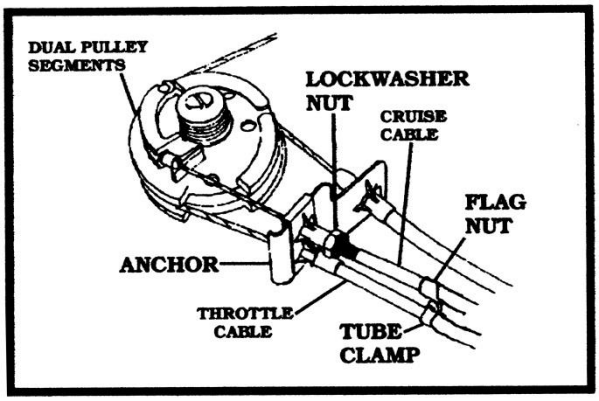
4. Thread on one of the ¼”-20 lock washer nuts with the lock washer facing toward the end of the cruise cable.

Insert the cruise cable through the back of blank anchor and thread the other lock washer nut in place.

Any adjustment in positioning of eth cable will require working with both nuts. Make sure you form enough threads on the cruise cable.



Use the other lock washer nut to secure the cruise cable to the anchor; this will keep the cruise cable from backing out of the anchor. Install the smaller tube clamp, and flag nut (see next section) together, six to seven inches from the anchor point to align the cruise cable to the anchor bracket.



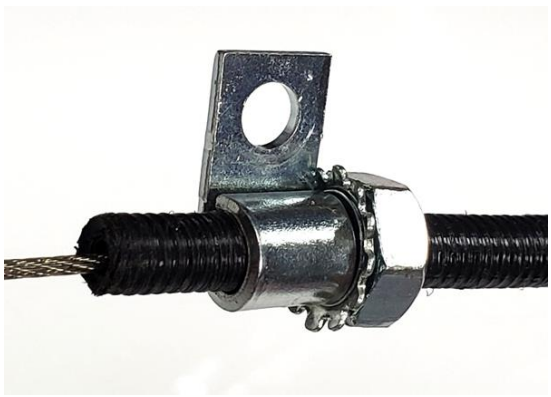
5. The lock washer nuts can also be used if there is a pre-existing ¼” hole in a bracket on the vehicle, or if it is possible to drill a ¼”hole in a bracket on the vehicle.

Installation: Anchoring the cruise cable - flag nut

Flag nut:

1. Before using the flag nut, it will be necessary to form threads on the end of the cruise cable, as shown on page 7.

2. After the threads have been formed, thread on a ¼”-20 lock washer nut as shown, then thread on the flag nut onto the cruise cable. The lock washer should face flag nut to secure it.

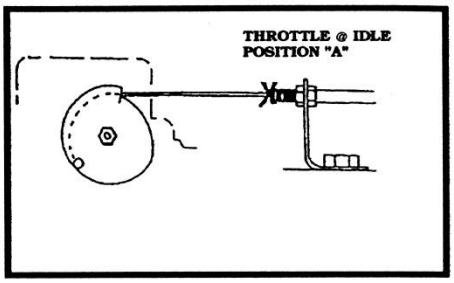


3. The flag nut may be used to anchor the cruise cable to the existing throttle cable bracket. In some cases there is an existing hole; in other cases you can drill a hole in the bracket.

A common 7/32” bit will make only a slightly larger hole, while a number 8 bit would work best for the 5mm hole needed.

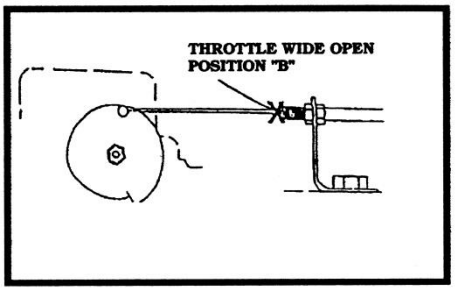
3. The flag nut may also be used to anchor the cruise cable using the silver cable bracket (part E on page 2). The silver cable bracket can be cut and bent as needed.

Installation: Measuring throttle cable travel



THIS IS A VERY IMPORTANT STEP. FAILURE TO DETERMINE THROTTLE CABLE TRAVEL COULD CAUSE DAMAGE TO YOUR VEHICLE AND/OR THE CRUISE CONTROL MODULE. MEASURE THE LENGTH ONLY WITH THE ENGINE OFF.
Note: The cruise cable exposes 2-1/4” of cable, but retracts only 1-5/8” (41mm) when operating. The remaining 5/8” is able to slide into the cruise without harm.

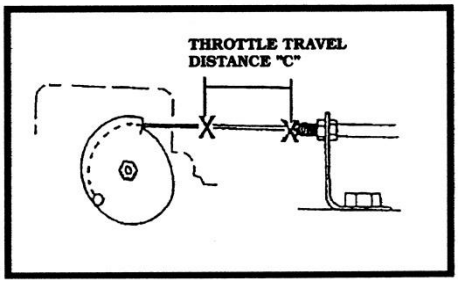
To measure throttle travel: measure the distance from Position “A” (Idle) to Position “B” (Wide Open Throttle).



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

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

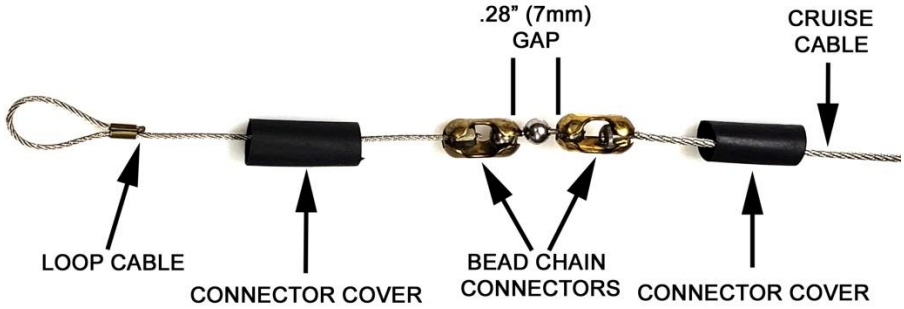
C. Measure the Distance “C” between the two marks. If the distance is less than 1-5/8” (41mm), skip to step 3) ATTACHING CRUISE CABLE TO THROTTLE (page 12).



D. If the throttle travel is greater than 1-5/8” (41mm), you must add length to the cruise cable to provide slack when throttle pushes back more than what the cruise module can take in.
NOTE: For normal operation, virtually no slack should exist when the throttle is at rest. The slack will occur as the cruise cable is pushed back in by the throttle.

E. Slide a connector cover on the on the cruise cable and either the loop cable or T-bar cable. Install a bead chain connector on the end of the loop cable or T-bar cable and one on the end of the cruise cable. The bead chain connector ends may need to be spread slightly with a flat screwdriver, for the 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 connector do not count towards adding length.
NOTE: Each bead of the bead chain added between the bead chain connectors will give you 7mm (.28") of slack.



Every ¼" (0.25") of extra travel beyond 1-5/8" you will need one bead added
Example: If your throttle travels 1-7/8", add one (1) bead between connector.

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.

Installation: Attaching cruise cable to throttle

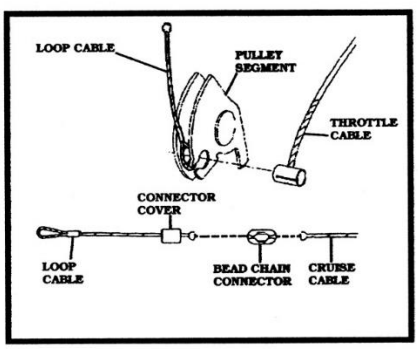
This section will cover the proper ways to use the hardware available. Each method contains sample illustrations showing how the connector is used in an actual installation. It must be noted, however, that you should have an understanding of how each attachment method works so that a proper installation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

There are several different types of throttle connections. We will cover few most common connections

A. Pulley Assembly Using the loop cable (**G6**)
B. Pulley Assembly Using T-bar adapter (*not part of the kit*)
C. Pedal Attachment.
D. Ford™ Throttle
E. General Motors™ and Chrysler™ Throttle (Using three bead connector: **G7** & **G3**)
F. General Motors™
F. Aftermarket Carburetors

A. Pulley Assembly Using the loop cable (**G6**)

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.
4. Connect the loop cable to the cruise cable using the bead chain connector as follows:

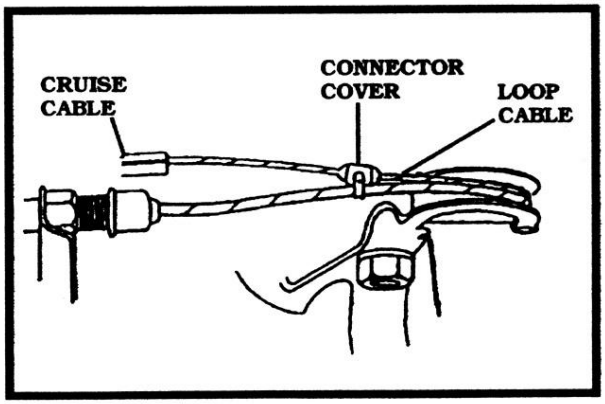


Installation: Attaching cruise cable to throttle continued

Slide a connector cover on the loop cable. Install a bead chain connector onto the loop cable and then onto the cruise cable. The 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.

5. To secure the loop cable to the throttle cable, punch a small hole in the connector cover and slide the 4 inch tie strap through the hole and secure to the throttle cable.
NOTE: Firmly tighten the 4 inch tie strap and remove excess to prevent possible throttle interference.

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.



B. Pulley Assembly (Dual) Using the T-bar adapter (not included with the kit)

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

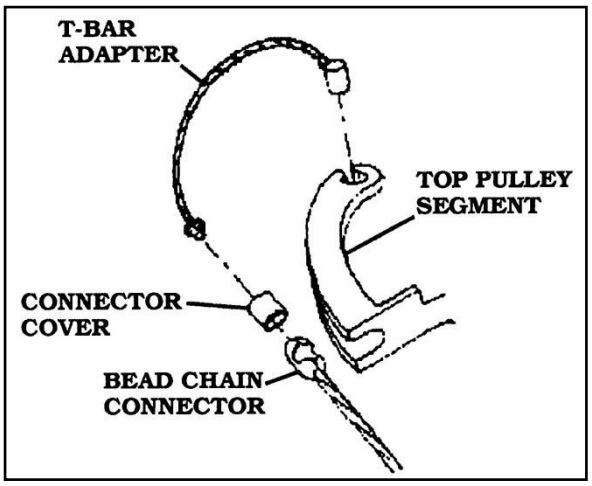
2. Find the blank anchor that is located above the throttle anchor. Follow the previous instructions for anchoring the cruise cable.

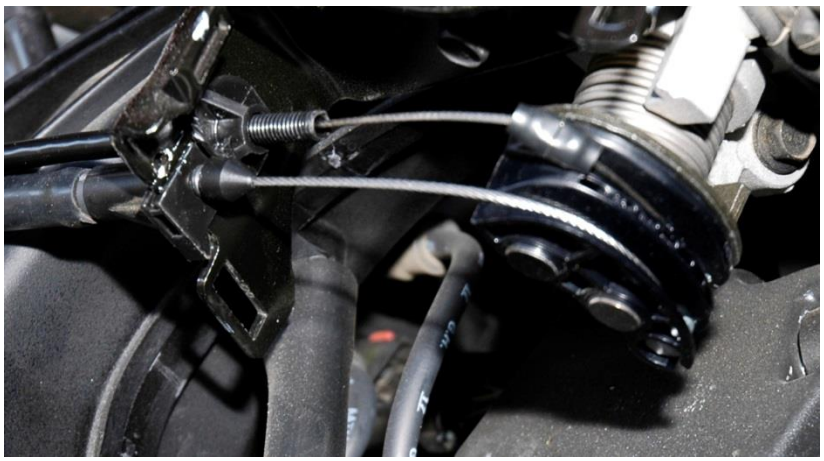
3. Attach a bead chain connector onto the cruise cable

4. Attach the T-bar adapter to the top pulley segment. Slide the connector cover onto the T-bar adapter.

Installation: Attaching cruise cable to throttle continued

5. Attach the T-bar adapter to the bead chain connector. Make sure to slide the connector cover over the bead chain connector.





At top, the cruise cable is attached to T-bar adapter with one bead chain connector (G4).
A second bead connector and beads may be needed in some cases.
The cruise cable was threaded and the snap in adapter (G17) was threaded on.

It fits into the Chrysler factory bracket.

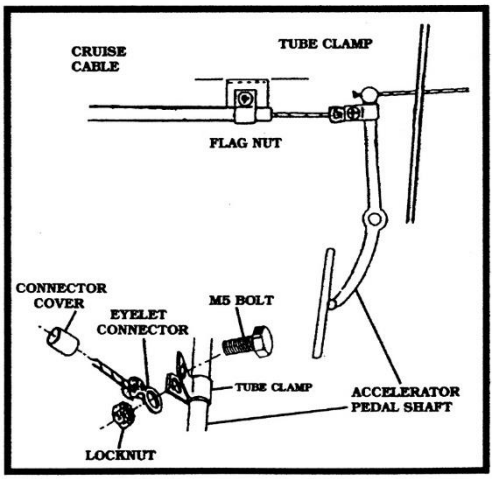
The Chrysler throttle cable had to be removed to let the cruise T-bar adapter slide in.

*T-bar adapter is not included with the kit.

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 screw through the holes in the tube clamp. Slide the eyelet connector over the bolt. Thread the smaller 5mm locknut onto the screw and tighten.



Installation: Attaching cruise cable to throttle continued

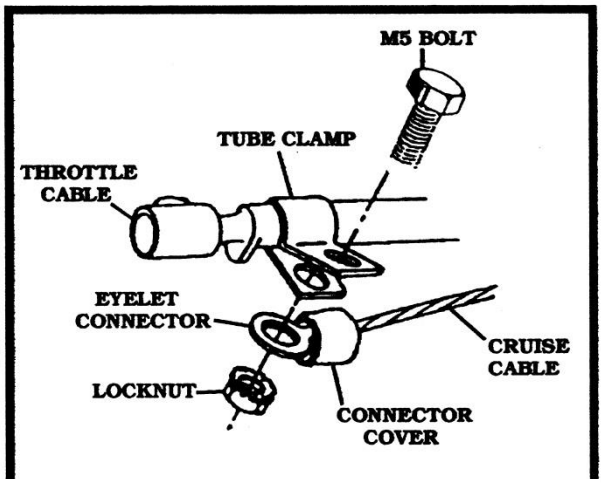
D. Ford™ Throttle

1. Select a tube clamp that fits the throttle cable. Make sure the tabs of the tube clamp point away from the carburetor or throttle body; this will prevent the throttle from hanging.

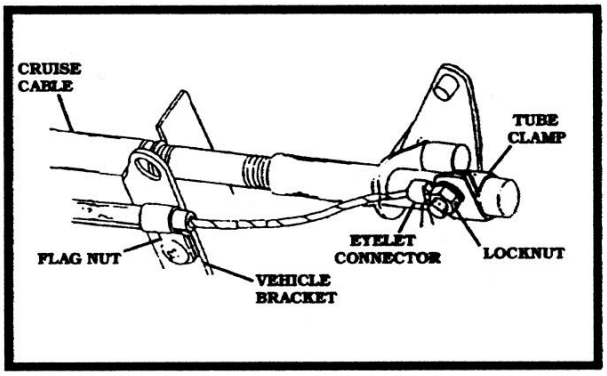
2. Attach cruise cable to the eyelet connector.
NOTE: Use the connector cover.

3. Put the M5 screw through the holes in the tube clamp. Slide the eyelet connector over the bolt. Thread the smaller 5mm locknut onto the screw and tighten.

4. Here is an example of a Ford ™ Throttle connection using the tube clamp.



WARNING
Failure to follow the instruction manual could not only cause the Cruise Control 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.

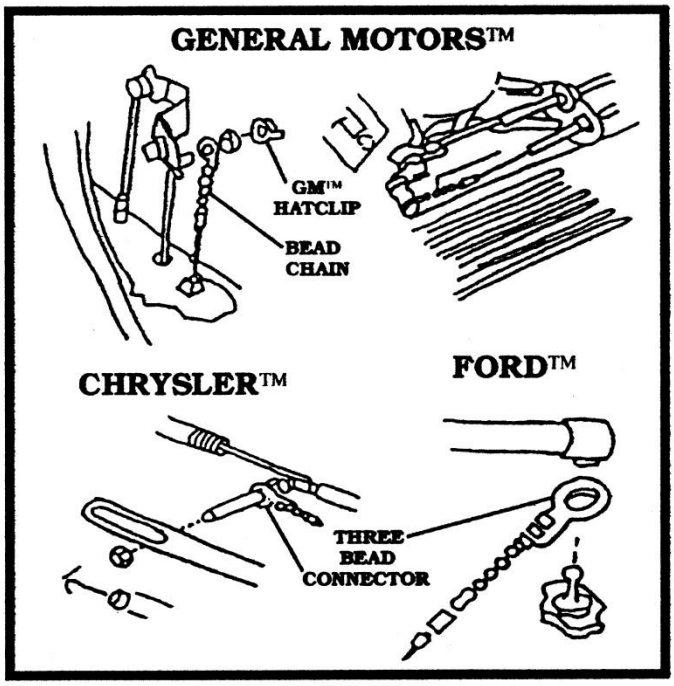


E. General Motors™ and Chrysler™ Throttle using three bead connector.

1. Most General Motors™ vehicles and many Chrysler™ vehicles can use the three bead connector to attach the cruise cable.

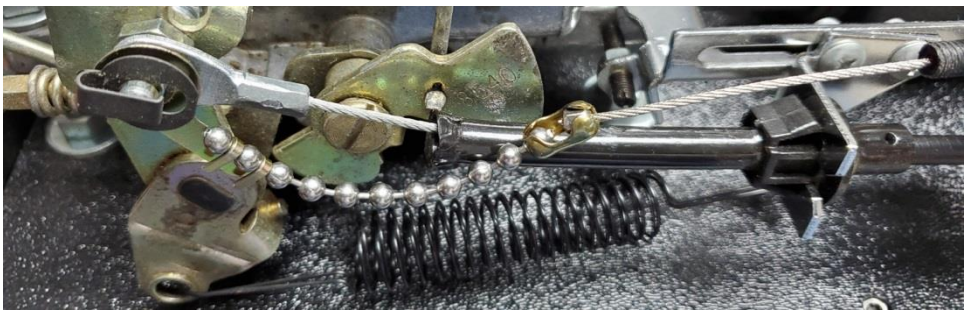
2. Attach the bead chain to the three bead connector. Secure beads by folding the metal tabs.

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).



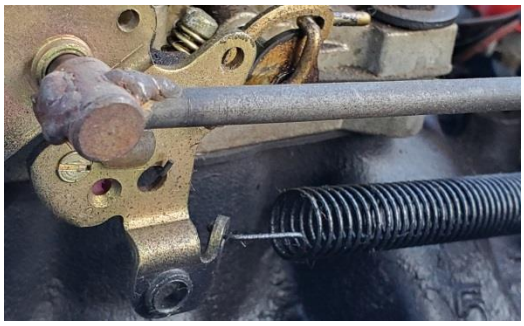
4. The three bead connector may need to be bent so that it clears the throttle cable. The GM hatclip (**G14**) is used to secure the connectors from sliding off the linkage.

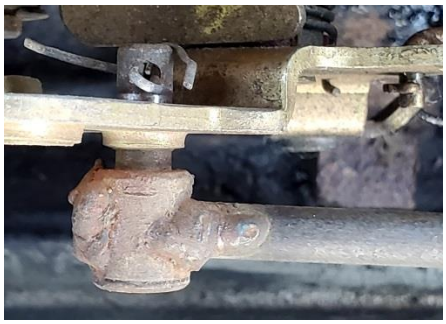
5. The beads of the three bead connector will create slack when the throttle is moved, in the extreme configuration shown here, if the throttle movement is greater than the 1-5/8" of the cruise operation.



E. General Motors™

1. Some rod linkages on GM carburetors are held on by a cotter pin.





2. Remove the cotter pin to slide the linkage out of the throttle arm and then attach the three bead connector.

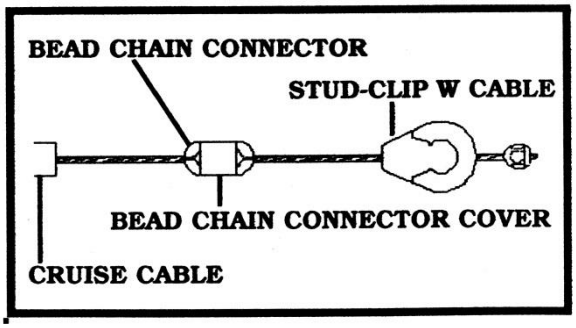
Installation: Attaching cruise cable to throttle continued

3. The loop cable could also be used in this situation


4. The Cotter Pin could be worn, or lost, and we have included another pin as a replacement (**G16**)

F. General Motors™

Ford™ and Chrysler™ Throttle using STUD-CLIP W CABLE



1. Some General Motors™, Ford™ and Chrysler™ vehicles have an attachment stud on the throttle pulley.

2. Slide a connector cover over the cruise cable, and then attach the bead chain connector to the cable.
Attach the stud-clip w-cable to the bead chain connector and slide the connector cover over the bead chain connector.

3. Slide the stud-clip w-cable over the throttle pulley attachment stud. Push the stud-clip onto the vehicle stud until it snaps firmly onto the stud.
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.



WARNING
Failure to follow the instruction manual could not only cause the Cruise Control 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: Attaching cruise cable to throttle continued

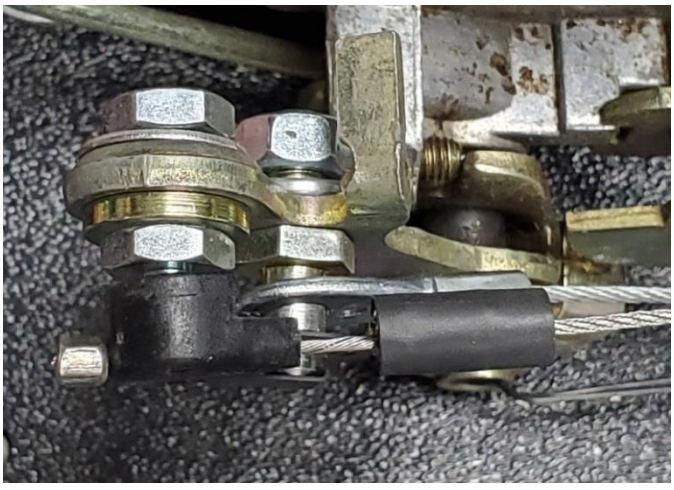
G. Aftermarket carburetors

1. Holley and Edelbrock carburetors, FAST and MSD throttle bodies, (as well as some OEM) typically have a large opening on the throttle lever designed for a secondary location for the throttle cable or forward-reaching return spring to attach to.
   With a carburetor linkage bushing kit and throttle stud (not included), in addition to the supplied throttle clip adapter (**G19**) a bead connector (**G4**), and connector cover (**G5**), the upper opening and be transformed into a great location to mount the cruise cable. NOTE this setup may require a revised throttle return spring installation.

2. The opening will accept the bushing needed to hold the stud in place.
   a. A carb stud may need the loop (**G6**) or three bead connector (**G7**) and the GM hatclip (**G14**)
   b. The transmission kick down stud uses the stud-clip (**G19**)



3. Assembled bushing, stud, and adapter clip in place

Installation: Attaching cruise cable to throttle continued

Once the cruise has been properly mounted, cable routed, cable attached to carburetor or throttle body, and everything is secured, the cruise cable itself must be secured as not to float or flex during cruise operation.

The enclosed tie strip, (zip ties), are to be used to secure the cruise cable. One can also use the smaller of the enclosed tube clamps, and use either the enclosed 5M screw and 5mm nut, or self-tapping screw of your choice to mount the tube clamp to a fixed object.

When using the tie strips, (zip ties), you can secure the cruise cable to the throttle cable or any other hard point that will not allow the cruise cable to flex during operation.
At least ONE tube clamp or tie strip, (zip tie), should be used during the cruise cable run between the cruise module and anchor point by the carburetor or throttle body.

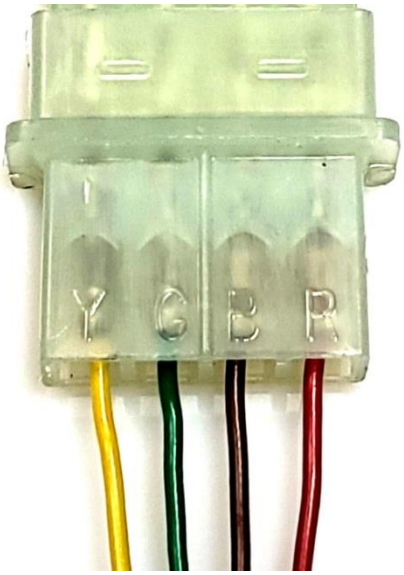
Installation: Wiring

Wiring layout and notations.

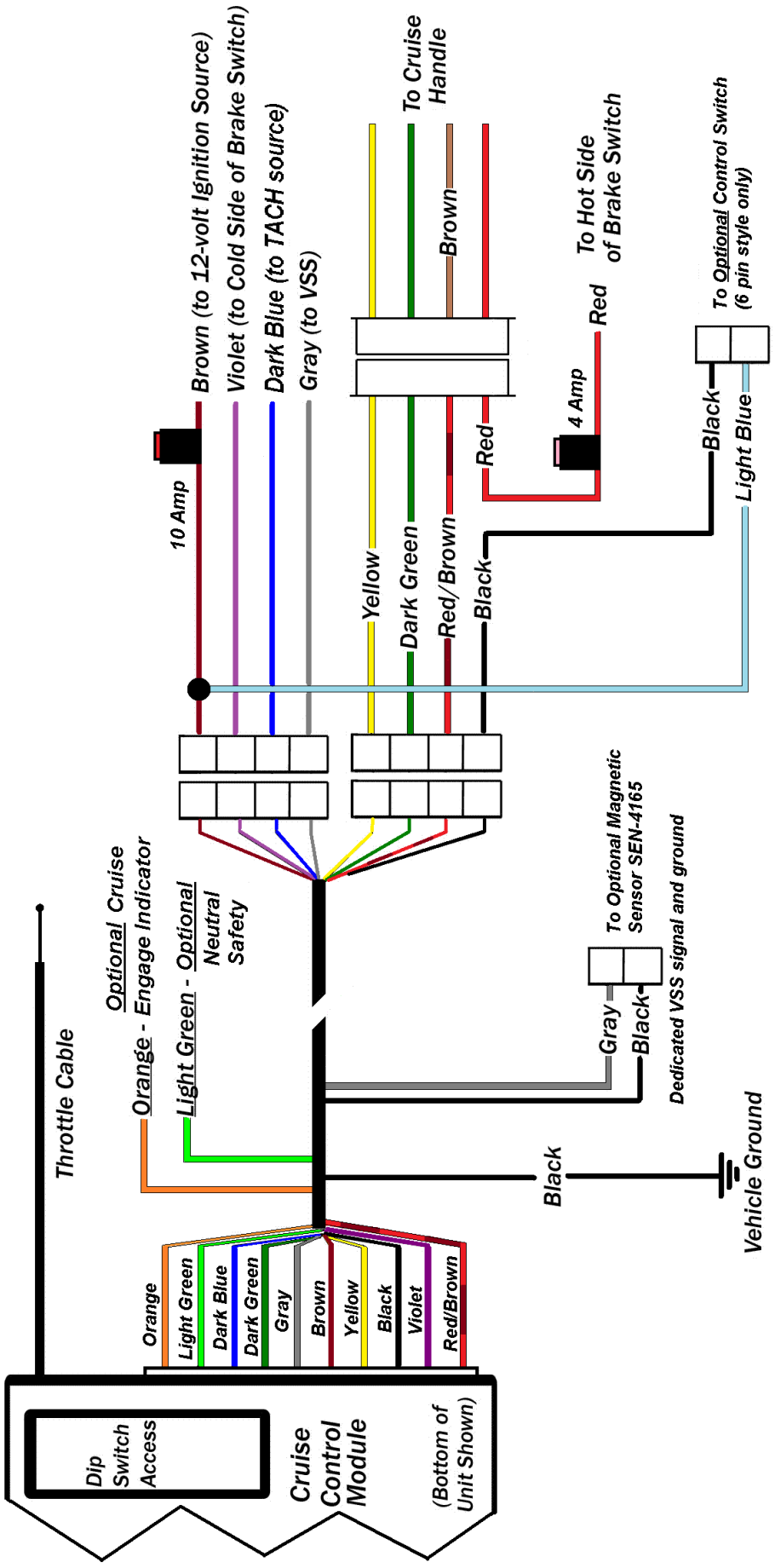
Orange Indicator and Light Green Neutral Safety – only six inches long and taped off within harness.
Extend if to be used.

Two pin Light Blue and Black inside car – not used.

Two pin Gray and Black – designed as direct connect to optional magnetic sensor SEN-4165.



When pinning the HND plug, each wire has corresponding letters to each color:
Y for Yellow (Res/Acl)
G for Green (Set/Cst)
B for Brown (Pwr Out)
R for Red (Pwr In)

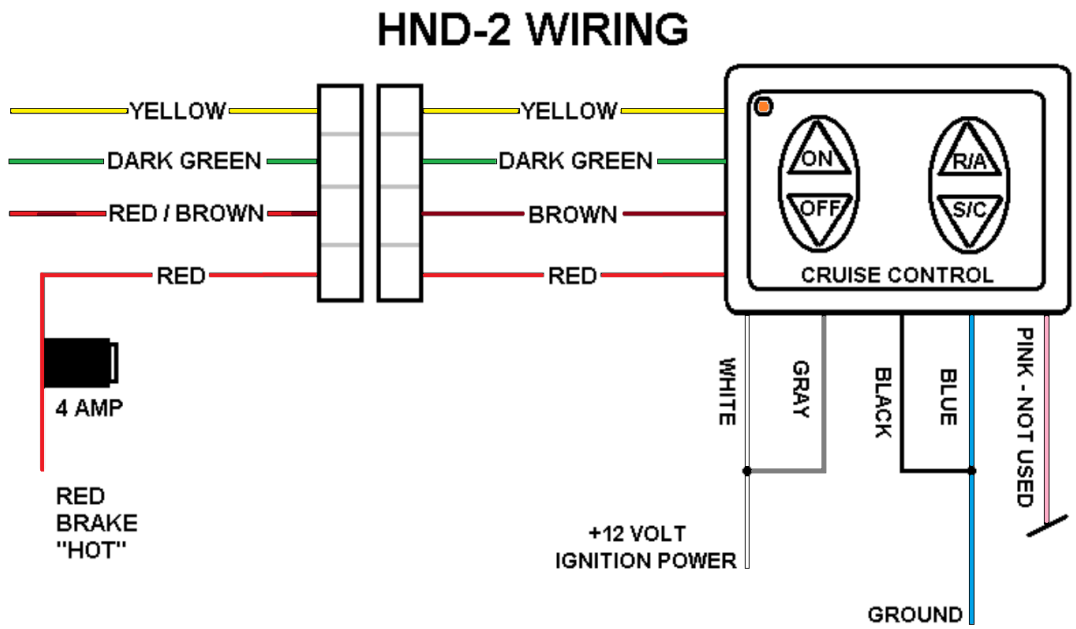


Installation: Control switch / HND-2 & stock GM switch wiring

Follow the instructions supplied with your choice of control switch for the HND-2 dash-mount and HND-1 universal turn signal. HND-3 is a direct replacement for early GM and most popular aftermarket steering columns; follow factory service manual for HND-3 installation. Most steering columns have a tunnel to route the four wire harness through before installing the white four-pin connector.

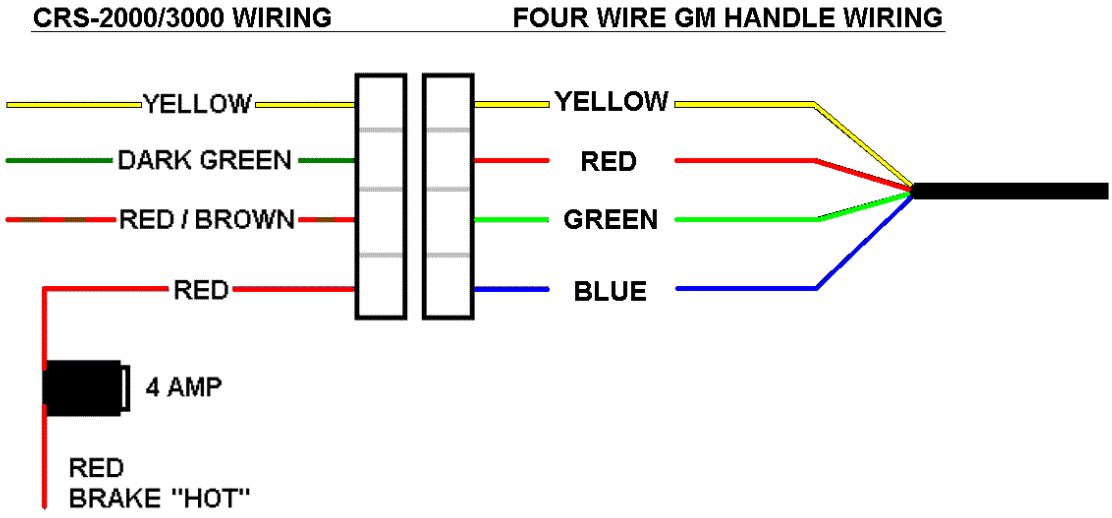
NOTE: Both HND-2 and four-wire GM switches will require programming switch #12 be turned OFF on the cruise module (page 26)

Wiring Dakota Digital HND-2 switch to CRS-2000/3000 cruise module



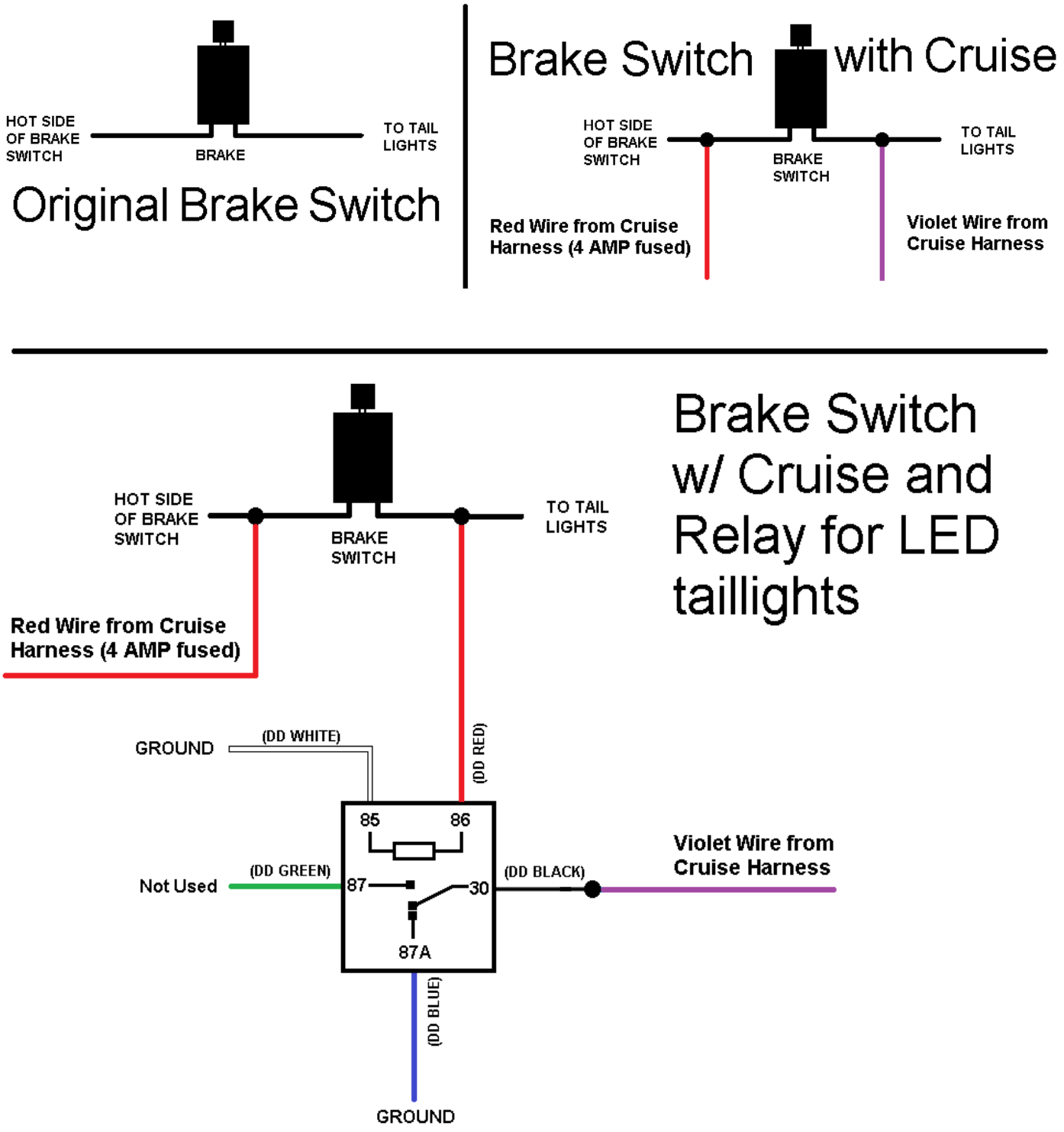
Using an older existing GM stock cruise handle with the CRS-2000/3000 cruise module

CRS Cruise Module	GM Wire Colors
Yellow	Gray/Black
Green	Blue
Red/Brown	Gray
Red	Pink



Installation: Wiring - brake switch / LED taillight relay

Please Note: If you are using L.E.D. taillights, please wire a relay as shown here to allow for proper Cruise Control operation. Use a Dakota Digital RLY-1, or any 5 pin SPDT normally open relay.



Adding the relay, as shown above, will also take care of situations where operating the turn signals, may disengage the cruise. The Dakota Digital RLY-1 can work and will come with the wires listed.

Installation: Wiring - harness routing

A. Straighten the CRUISE HARNESS and find the 2- & 4-pin mating connectors. Separate the 2- & 4-pin connectors. A small screwdriver may be needed.

B. CRUISE HARNESS needs a 3/4" (19mm) 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 and pass through the wires. If an existing hole is not available, drill a 3/4" (19mm) hole in bulkhead to route the wires through.

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

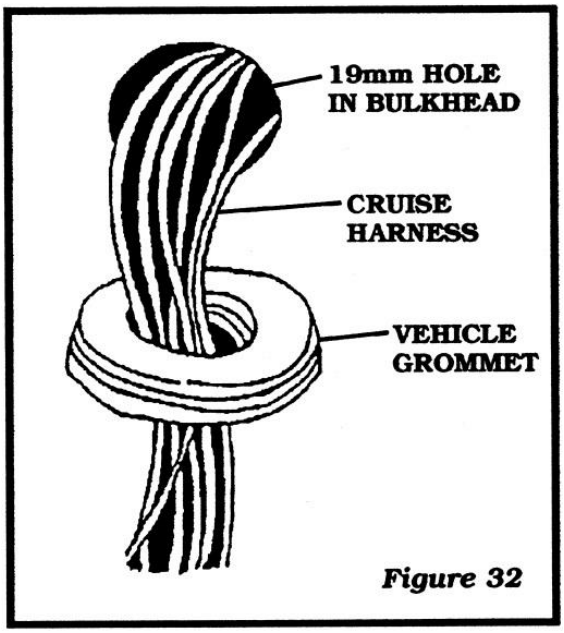


Figure 32

C. 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. Reattach the 2-& 4-pin mating connectors and make the necessary wire connections.

***In many cases, it is best to obtain the tach direct from the engine without routing the tach lead inside the car.**

SEALING BULKHEAD

Seal hole in bulkhead with sealing putty to avoid moisture from getting inside the vehicle.

Installation: Wiring connections

Utilize the wiring information below 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 vehicle's electrical system.

The cruise kit comes with two different sizes of "Scotch Lock" inline splice connectors, for tapping into the existing wires such as those at the brake light switch.
While they are useful in some situations, we prefer soldering for reliable connections.

Black - Ground Wire
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: A rear mounted battery may not provide a good ground through the frame.
A heavy ground wire should be run to the engine as the primary ground reference.

Do not use the cable bracket as a grounding point, nor any other panel component not properly grounded.

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.

Red - Brake Positive
"Hot" side of brake switch: Use the wire at the brake switch connector with constant +12 volts

Violet - Brake Negative
"Cold" side of brake switch: Use the wire at the brake switch connector with close to zero (0) resistance when brake is not pressed, and +12 volts or open resistance when brake is pressed. If you have LED tail lights or an LED brake light please refer to page 22 with the alternate wiring method with a relay.

Dark Blue - Tachometer (TACH) Wire
The tach function is a safety feature of the Cruise Control. If the vehicle is accidentally "knocked" into neutral while the vehicle is in motion and the Cruise Control is active, the tach wire, when connected, will disengage the Cruise Control before engine over-rev.
If the tach wire is not connected, the cruise control could function, however the tach over-rev safety feature will be inactive.
If you choose not to use the over-rev feature, ground the dark blue wire to prevent stray radio interference which may cause the cruise to disengage.
Dakota Digital, INC. always recommends connecting the tach wire.

On a vehicle with a manual transmission, the tach wire connection is not required if the clutch pedal is outfitted with a normally-open clutch disengagement switch; this will take into account 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.

Installation: Wiring connections continued

Gray - Vehicle Speed Sensor (VSS) Wire
The Gray Vehicle Speed Signal (VSS) wire is how the Cruise Control "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.

- Any Dakota Digital instrument system built after 2004 will have 2K OUT or SPD OUT terminal.
- An LS engine system will have a dedicated speed output wire for the speedometer and/or cruise.
- Older vehicles with a GM-type speedometer cable would use the supplied pass through VSS generator in the CRS-2000 kit, or will require the Dakota Digital part SEN-01-4160.
- Ford cars with a speedometer cable could not use the pass through VSS generator and must the Magnet & Coil Pick-Up Kit, Dakota Digital part SEN-4165.
- High frequency VSS signals from certain transmissions may require the SGI-5E or SGI-100BT to reduce the frequency signal.
- Other aftermarket speedometers may need the SGI-5E or SGI-100BT to split the signal between the two devices without signal loss or interference.
- If a VSS cannot be located on the vehicle, or if there is no speedometer cable, the Magnet & Coil Pick-Up Kit Dakota Digital P/N SEN-4165 will be needed.
    - The SEN-4165 has the connectors to plug direct to the optional two pin Gray & Black VSS plug.
    - If you use the optional two pin Gray & Black VSS plug, cut back the lone Gray VSS wire short as not to pick-up any stray signals (*DO NOT GROUND LONE VSS WIRE*).

NOTE: High frequency VSS signals from a Tremec, or 700R4, are too fast for the cruise control to read. In such applications, the Dakota Digital SGI-5E or SGI-100BT Speed Interface Module would be needed to alter the VSS to the Gray wire.

Consult a vehicle-specific shop manual to locate the VSS and TACH signals in your vehicle.

Light Green – ***Optional*** Neutral Safety (NSS) - ***(wire is taped in harness, 6 inches out of module)***
The NSS function is an optional safety feature of the Cruise Control that wires to a neutral safety switch.
If a vehicle's transmission goes into the Neutral position, the NSS wire will disengage the Cruise Control before engine over-rev.
This is a good option for manual transmissions, if a clutch disengagement switch is not installed
If the NSS wire is not "hooked-up", the cruise control will still function; but the Dark Blue tachometer wire must then be used. This light green wire terminates in the harness. (*DO NOT GROUND THE NSS WIRE*)

Orange – ***Optional*** Enable Output (ENO) Wire - ***(wire is taped in harness, 6 inches out of module)***
The ENO Function allows you to use the Cruise Control as a driver for an external LED The ENO Wire will supply a ground to an LED (the positive side of an LED has ignition power), when the system is engaged.
This will also provide a ground trigger to the CRUISE terminal found on all Dakota Digital instrument systems since 2004.
This orange wire terminates in the harness.

Auxiliary Speed Sensor Connector - This connector is utilized when the Gray VSS wire is not used as the vehicle speed source. Please contact Dakota Digital regarding the Magnet & Coil Pick-Up Kit should your particular installation require one.

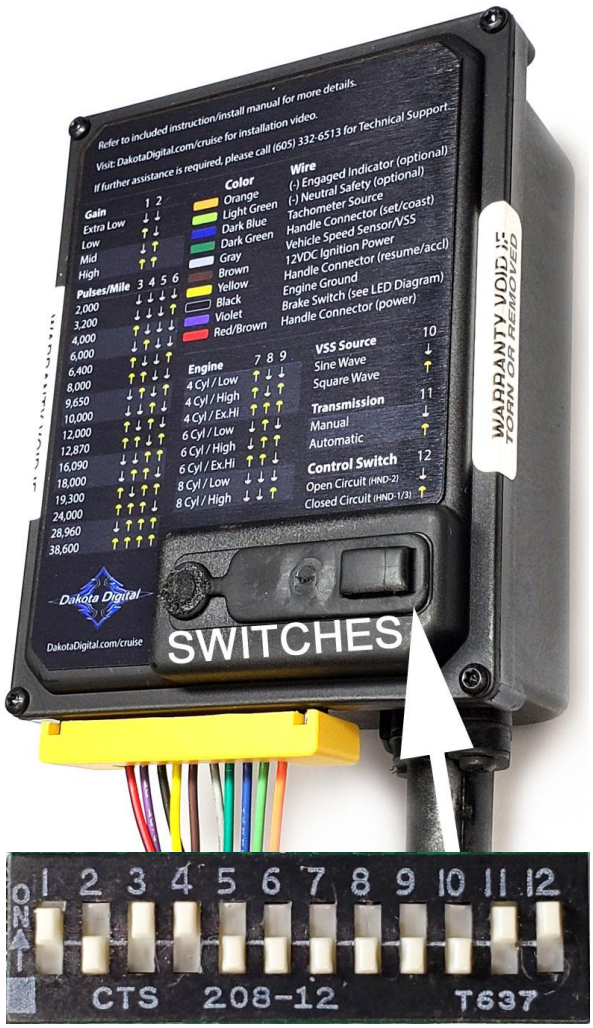
4-Pin Switch Connector - This connector is utilized by the control switch. The control switch included with your purchase has a mating connector which plugs into this connector.

2-Pin Switch Connector - This connector was used in conjunction with the 4-Pin Switch Connector. The 2-Pin Switch Connector was utilized by now obsolete switches and currently is not used.

Bulkhead Connectors - These connectors simplify the installation of the wiring harness through the engine bulkhead (firewall). Simply disconnect the connectors, run them through any 3/4" (19mm) hole in the firewall (preferably near the steering column), and reconnect them once inside the passenger compartment.

Programming 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 Cruise Control to operate properly. The switches are found under the rubber boot that must be lifted to gain access.



Switch groups

Switches 1 & 2 – Gain Sensitivity: these control how fast, or slow, the cruise will respond to adjust the speed of the vehicle.
The default setting is “Low”. Lower settings means less response time: good for V8 engines. Smaller engines will need a faster response time to adjust the speed.

Switches 3, 4, 5, 6 - Pules Per Mile (Pulses/km)**:** the frequency of a speed signal. Different engines, speed sensors, and speedometers may put out different frequencies relating to speed. These need to be matched to the signal for proper operation.
Knowing what VSS source you have is very important to proper setup.

Switches 7, 8, 9 – Engine timer: cylinder count and engagement response.
First: it matches the engine RPMs for the type of engine. **8 Low** for a points or HEI engine. **4 Low** for a LS engine.
Second: it controls how fast the initial engagement takes place (***has nothing to do with Gain Sensitivity***). If the pedal drops off and the car slows by 5 mph when first engaging the cruise, switch to a **Mid** or **High** setting.

Switch 10 – VSS Source: the type of VSS signal. Speed signals use two different wave forms:
Sine: a rolling positive to negative signal, native to two wire speed sensors.
Square Wave: a sharp zero volt to a positive volt pulse, generated by ECMs or Dakota Digital SPD OUT terminals.

Switch 11 –Transmission: Manual / Automatic

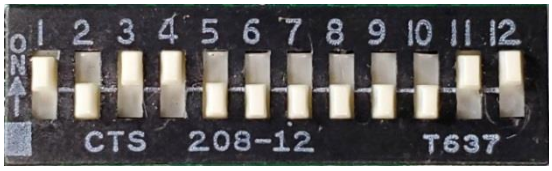
Switch 12 – Control switch: Open or Closed circuit. The **HND-1** and **HND-3** turn signal switches are of a closed circuit design. The **HND-2** dash mount switch, (and OEM GM turn signal switches), are an open circuit design.

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

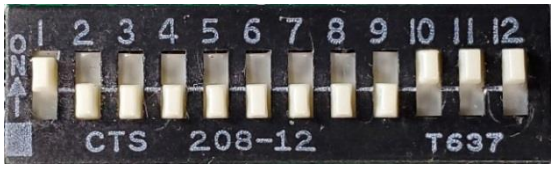
Switch setting examples

For PPM and VSS Source (Gain, Transmission & Switch remain the same):

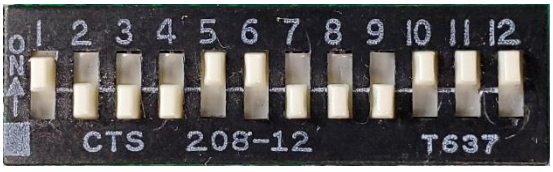
8,000 PPM, Sine Wave from SEN-01-4160 or SEN-4165 (with four magnets) – 1, 3, 4, 11, 12 ON



2,000 PPM Square Wave from the SPD OUT of a HDX, VFD3, VHX, RTX control box – 1, 10, 11, 12 ON



16,000 PPM Square Wave signal from a SEN-01-5 or VDO Hall Effect three wire VSS – 1, 5, 6,10,11,12 ON

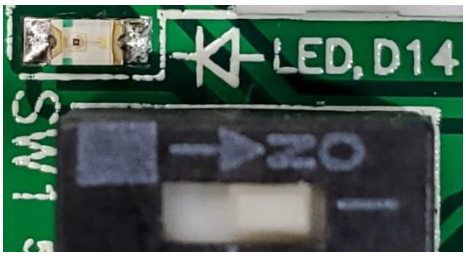


Programming switch functions

Programming Switches	1	2	3	4	5	6	7	8	9	10	11	12
Gain Sensitivity												
Extra Low	**OFF**	**OFF**										
Low	**ON**	**OFF**										
Mid	**OFF**	**ON**										
High	**ON**	**ON**										
Pulses Per Mile (Pulses/km)												
2,000 / (1,250)			**OFF**	**OFF**	**OFF**	**OFF**						
3,200 / (2,000)			**OFF**	**OFF**	**OFF**	**ON**						
4,000 / (2,500)			**ON**	**OFF**	**OFF**	**OFF**						
6,000 / (3,700)			**OFF**	**ON**	**OFF**	**OFF**						
6,400 / (4,000)			**ON**	**OFF**	**OFF**	**ON**						
8,000 / (5,000)			**ON**	**ON**	**OFF**	**OFF**						
9,650 / (6,000)			**OFF**	**ON**	**OFF**	**ON**						
10,000 / (6,200)			**OFF**	**OFF**	**ON**	**OFF**						
12,000 / (7,500)			**ON**	**OFF**	**ON**	**OFF**						
12,870 / (8,000)			**ON**	**ON**	**OFF**	**ON**						
16,090 / (10,000)			**OFF**	**OFF**	**ON**	**ON**						
18,000 / (11,200)			**OFF**	**ON**	**ON**	**OFF**						
19,300 / (12,000)			**ON**	**OFF**	**ON**	**ON**						
24,000 / (15,000)			**ON**	**ON**	**ON**	**OFF**						
28,960 / (18,000)			**OFF**	**ON**	**ON**	**ON**						
38,600 / (24,000)			**ON**	**ON**	**ON**	**ON**						
Engine Timer												
4 cylinder / Low							**ON**	**OFF**	**OFF**			
4 cylinder / High							**ON**	**OFF**	**ON**			
4 cylinder / Extra High							**ON**	**ON**	**ON**			
6 cylinder / Low							**OFF**	**ON**	**OFF**			
6 cylinder / High							**OFF**	**ON**	**ON**			
6 cylinder / Extra High							**ON**	**ON**	**OFF**			
8 cylinder / Low							**OFF**	**OFF**	**OFF**			
8 cylinder / High							**OFF**	**OFF**	**ON**			
VSS Source												
Sine Wave										**OFF**		
Square Wave										**ON**		
Transmission												
Manual											**OFF**	
Automatic											**ON**	
Control Switch												
Open Circuit												**OFF**
Closed Circuit												**ON**

Troubleshooting

SELF DIAGNOSTIC TESTING PROCEDURE
The Cruise Control is equipped with a Red Self Diagnostic Surface Mount Light Emitting Diode (LED) located underneath the rubber grommet on the cruise module.
Utilize the following Self Diagnostic Procedure to troubleshoot your cruise control if it does not function properly once installed.



Troubleshooting continued

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: Control switches *HND-1 & 3*: Press and hold the RESUME/ACCEL slide switch while you turn the ignition switch to the ON position without starting the engine. Now release the RESUME/ACCEL slide switch.

HND-2 Control Switch: 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. 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 enter 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. 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.

Step 6:
Press and release the RESUME/ACCEL slide switch / button. The LED should light each time the slide switch / 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 enter 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.

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 enter 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:
NOTE: THIS ONLY TESTS FOR "A" SIGNAL, DOES NOT VERIFY THE SIGNAL IS CORRECT!

A. Vehicle's own computer as VSS source: Roll the vehicle at least six feet forward or backward, the LED should flash and continue to flash at a steady rate. If so, continue to Step 9; if not, go to Step 8Ai.

i. Check steps to enter 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 six feet. 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. Manually spin the drive wheel as fast as possible. The LED should flash and continue to flash at a steady 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. Inspect 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 5 MPH or faster in order to test an auxiliary speed signal.) The LED should begin to flash and continue to flash at a steady rate. If so, continue to Step 9; if not, go to Step 8Bi.

i. Check steps to enter 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.

If testing fails to read a speed signal, probe the Gray wire for an AC voltage signal when spinning the wheels. We should be able to read at least 0.5 volts AC. If not, check the Gray at other locations for breaks. If the bulkhead connectors were pulled on when unplugging, a wire could have become dislodged.

Troubleshooting continued

Step 9:
Your Cruise Control 2 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: Control switches *HND-1 & 3*: 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.

HND-2 Control Switch: 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 enter 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.

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 10-pin connector** from the CRUISE MODULE to perform these tests.
(*Push away the yellow retaining clip and pull the white plug out*)

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

Control Switches HND-1 & HND-3

Ignition Switch	Control Switch Position	Red Wire to HND	Dark Green Wire	Yellow Wire	Red/Brown Wire
Off	Off	+12 V	O V	O V	O V
Off	**On**	+12 V	+12 V	O V	+12 V
Off	**On** Press & Hold **Set/Coast**	+12 V	O V	+12 V	+12 V
Off	**On** Press & Hold **Resume/Accel**	+12 V	+12 V	+12 V	+12 V

HND-2 Control Switch

Ignition Switch	Control Switch Position	Red Wire to HND-2	Dark Green Wire	Yellow Wire	Red/Brown Wire
Off	Off	+12 V	O V	O V	O V
On	On, (amber LED on)	+12 V	O V	O V	+12 V
On	**On** Press & Hold **Set/Coast**	+12 V	+12 V	O V	+12 V
On	**On** Press & Hold **Resume/Accel**	+12 V	O V	+12 V	+12 V

CANNOT ENTER DIAGNOSTICS

Symptom	**Possible Cause**	**Test or Resolution**
LED Will Not Turn On	Open fuse	Test for power on both sides of fuse with key on.
	Bulkhead connections damaged	Test on both sides of connectors
	Poor ground at Black wire ring terminal	Provide good ground from engine or firewall
	Switch 12 set wrong	Set Switch 12 to match HND (page 26)
	Perform Switch power test at module	Unplug main harness to test (page 29)
LED Stays On	Violet wire is not seeing ground	Test by putting Violet wire direct to ground
		Tail light bulb may be burned out - replace Tail light socket might be corroded – clean LED tail lights require relay (page 22)
	Poor ground at Black wire ring terminal	Provide good ground from engine or firewall
	Light Green Neutral Safety sees ground	If not used, do not ground If used, temporally disconnect for diagnostics

Troubleshooting continued

CRUISE DOES NOT ENGAGE

Symptom	Possible Cause	Test or Resolution
Poor ground to Violet	Connect Violet wire direct to ground (**testing ONLY**)	Cruise will not disengage with brake
	Has LED tail lights	Install relay for LED lights (page 22)
	Added LED third brake light	Install relay for LED lights (page 22)
	Incandescent bulb burned out	Replaced tail light bulb
	Poor ground at bulb sockets	Clean bulb sockets and bulb bases
No VSS signal on Gray	Test for AC volts with wheels moving	Min of 0.5 VAC with 2 wire generator Min of 2.5 VAC from ECM
Bulkhead wires damaged	Bulkhead wires were pulled on	Verify signals are on both sides Both powers, Violet ground, VSS
Radio Frequency Interference	Dark Blue tach wire is picking up RFI/EMI	Ground tach wire
	Cruise is mounted within the 10” minimum to a coil / MSD box / HEI	Move box away from interference sources – more distance is good
	Solid core plug wires install	Use EMI suppression plug wires
	Gray VSS picking up RFI / EMI	Route Gray wire away from sources
Wrong Switch Selection	Research and verify VSS PPM	Set PPM to match (page 26)
	Research and verify VSS signal type	Set Switch 10 to match (page 26)
	Verify type of HND being used	Set switch 12 to match (page 26)
Cruise Not Level	Cruise cable must be level with vehicle	Mount module level (page 6)
Testing on Jack Stand	Cruise must be under load to work	Test only on the road
Cable Slides	Cable not secure with correct parts	Thread cable and use flag nut, snap in adapter or two lock nuts (pages 7-10)

CRUISE PASSES DIAGNOSTICS BUT WON’T ENGAGE

Symptom	Possible Cause	Test or Resolution
Wrong Switch Selection ***Tests only for a VSS signal, does not verify it’s the correctly set***	Research and verify VSS PPM	Set PPM to match (page 26) Use SGI-5 or SGI-100BT to correct VSS signal
	Research and verify VSS signal type	Set Switch 10 to match (page 26)
	Verify type of HND being used	Set switch 12 to match (page 26)
Weak power or ground	Poor connections or sources Solder power and ground lead over using Scotch locks	Run Brown power and Black ground direct to battery, ground Violet and Dark Blue wires (**testing only**) A rear mounted battery should have a heavy ground strap ran to the engine block
Cable Slides	Cable not secure with correct parts	Thread cable and use flag nut, snap in adapter or two lock nuts (pages 7-10)
Testing on Jack Stand	Cruise must be under load to work	Test only on the road
Radio Frequency Interference	Dark Blue tach wire is picking up RFI/EMI	Ground tach wire
	Cruise is mounted within the 10” minimum to a coil / MSD box / HEI	Move box away from interference sources – more distance is good
	Solid core plug wires install	Use EMI suppression plug wires
	Gray VSS picking up RFI / EMI	Route Gray wire away from sources
Cable Cannot Pull	Too much slack to engage	Take up slack – no pulling at idle
	Cable came loose at box	Remove T-10 screws, pull sheath back to verify cable is in notch

Troubleshooting continued

CRUISE SURGES

Symptom	Possible Cause	Test or Resolution
Over adjusting	Gain set incorrectly	Set gain to “Low” or “Extra Low”
	Too much slack in cable	Remove slack - no pull at idle
	VSS out of range due to tire size	Adjust VSS up / down one setting (page 27)
	Cable attached with throttle cable	Mount cable to high point on linkage (pg 18)
	High HP, sensitive throttle	Reduce throw by moving mount point higher or with throttle adapter (found online)
Cable moving	Cable not secured between module and throttle adapter	Secure cable with zip ties or tube clamp

CRUISE DROPS OUT

Symptom	Possible Cause	Test or Resolution
Turn signals cancels	Voltage feedback from tail lights	Install relay as if LED tail lights (page 22)
Drops out at high RPMs	Dark Blue tach wire picking up RFI	Ground tach wire
	Cruise is mounted within the 10” minimum to a coil / MSD box / HEI	Move box away from interference sources – more distance is good
	Solid core plug wires install	Use EMI suppression plug wires
	Gray VSS picking up RFI / EMI	Route Gray wire away from sources
Cruise randomly drops	Losing ground to Violet	Use solder to connect wires
	Poor ground at bulb sockets	Clean bulb sockets and bulb bases
	Cruise is mounted within the 10” minimum to a coil / MSD box / HEI	Move box away from interference sources – more distance is good
	Solid core plug wires install	Use EMI suppression plug wires
	Cruise cable not level with vehicle	Mount module with level cable (page 6)

CRUISE ENGAGES BRIEFLY, THE DISENGAGES

Symptom	Possible Cause	Test or Resolution
Power or ground loss	Poor connections	Redo power connections with solder
	Blown fuses	Check both cruise fuses & sockets
	Damaged bulkhead connectors	Check both sides of connectors for power
	Poor ground	Provide clean ground to engine or firewall
Speed signal loss	Poor connections	Solder VSS connections
	Poor ground with two wire sensor	Ground sensor to cruise ground
	Damaged bulkhead connectors	Check both sides of connectors for VSS
Pulls quick & disengages	Gain sensitivity set high	Set gain to “Low” or “Extra Low”
Radio Frequency Interference	Dark Blue tach wire is picking up RFI/EMI	Ground tach wire
	Cruise is mounted within the 10” minimum to a coil / MSD box / HEI	Move box away from interference sources – more distance is good
	Solid core plug wires install	Use EMI suppression plug wires
	Gray VSS picking up RFI / EMI	Route Gray wire away from sources

WARRANTY

The Manufacturer warrants to the original retail purchaser of the Dakota Digital Cruise Control that should this product or any part thereof, under normal use and conditions, be proven defective material or workmanship within 36 months or 36,000 miles of the original purchase, such defect(s) will be repaired or replaced (at The Manufacturer's option) without charge for the parts.

To obtain repair or replacement within the terms of this Warranty, the product is to be delivered with proof of warranty coverage (e.g. bill of sale), specification of defect(s), transportation prepaid to an approved warranty station.

This WARRANTY does not cover the costs incurred for removal, reinstallation, or shipping costs of the product if sent back to Dakota Digital, or damage to vehicle electrical systems.

This WARRANTY does not apply to any product or part thereof which in the opinion of The Manufacturer has been damaged through alteration, improper installation, mishandling, misuse, neglect or accident.

This WARRANTY is in lieu of all other express warranties or liabilities. ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, SHALL BE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. ANY ACTION FOR BREACH OF ANY WARRANTY HERE UNDER INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY MUST BE BROUGHT WITHIN A PERIOD OF 18 MONTHS FROM THE DATE OF ORIGINAL PURCHASE. IN NO CASE SHALL DAKOTA DIGITAL, INC. BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WHATSOEVER. No person or representative is authorized to assume for the Company any liability other than expressed herein in connection with the sale of this product.

THE EXTENT OF THE COMPANY'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT PROVIDED ABOVE AND, IN NO EVENT, SHALL THE COMPANY'S LIABILITY EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER OF THE PRODUCT.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damage so the above limitations or exclusions may not apply to you. This WARRANTY gives you specific legal rights and you may also have other rights which vary from state to state.

OWNER'S WARRANTY RECORD
(To Be Completed by selling dealer and retained by customer)

Customer Name_____

Address_____

City_____State_____Zip_____

Dealer Name_____

Dealer Address_____

City_____State_____Zip_____

Date Purchased_____ Date Installed_____

Year/Make/Model Vehicle_____

Mileage at time of Installation_____

Operating instructions

ON: To operate the Cruise Control, 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 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.

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 11/2 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 systems 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.

About the Dakota Digital 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 altitudes will have an effect on Cruise Control's 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 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 the Cruise Control on a slippery road or in heavy traffic.

CAUTION: (Manual Transmission) While driving with the Cruise Control ON, do not shift to neutral without depressing the clutch pedal, as this may cause engine racing or overrevving. If this happens, depress the clutch pedal or turn OFF the main Cruise Control Switch immediately.

Please visit: **dakotadigital.com/cruise**

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 (605) 332-6513 (USA) OR FAX AT (605) 339-4106 (USA).

⚠**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

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