



Validating Connected Car Communications

2010-13' Club Car Precedent Excel with OBC



Overview

Connected car is achieved through communication between the Visage Display Unit (VDU) and the Club Car Motor Controller and Onboard Computer (OBC). With connected car, Visage provides speed control, real-time battery status, and alerts.

Use this document to validate communication and diagnose symptoms like “Unknown Battery” status or Car Control not functioning.

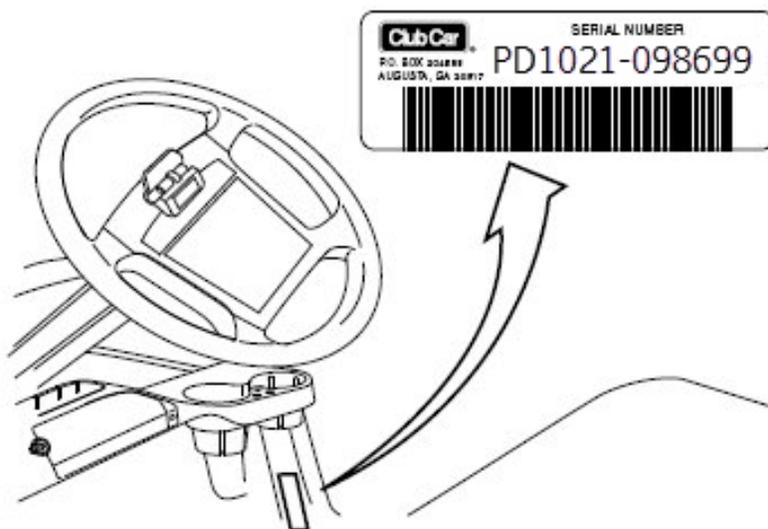
Car Identification

This document covers Club Car Precedent Excel cars manufactured from October 2009 to Q3 2013 with OBC. These cars are easily identified with serial number prefix P.

Cars manufactured after this use the Motor Controller for charge and battery status, these cars will be identified with a serial number prefix of J.

If it is determined you have a car equipped without an OBC, please refer to the *Validating Connected Car Communications – 2013-14’ Excel* document.

The serial number of each vehicle is printed on a bar code decal mounted below the passenger side cup holder.



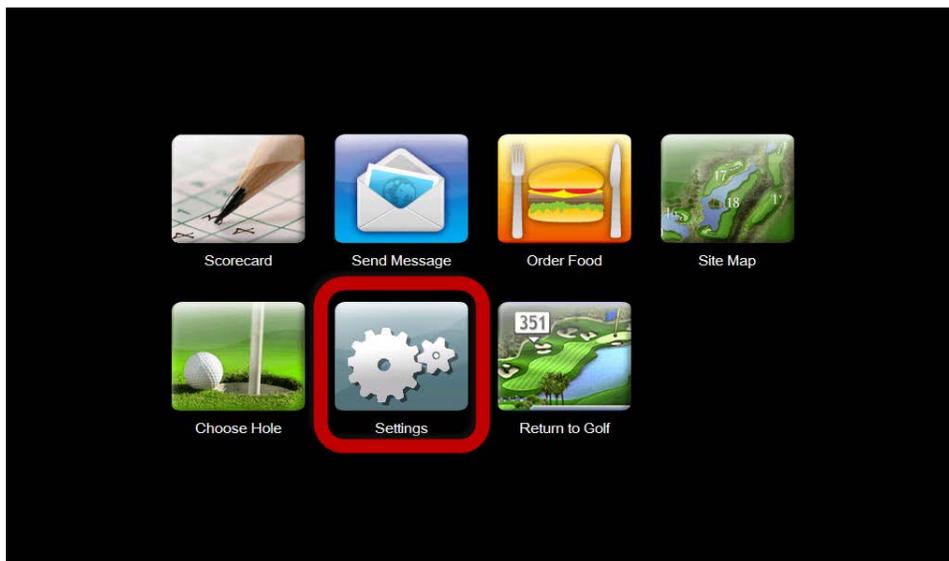
Validating Communications

Validation of connectivity can be achieved by accessing the Health Summary page.

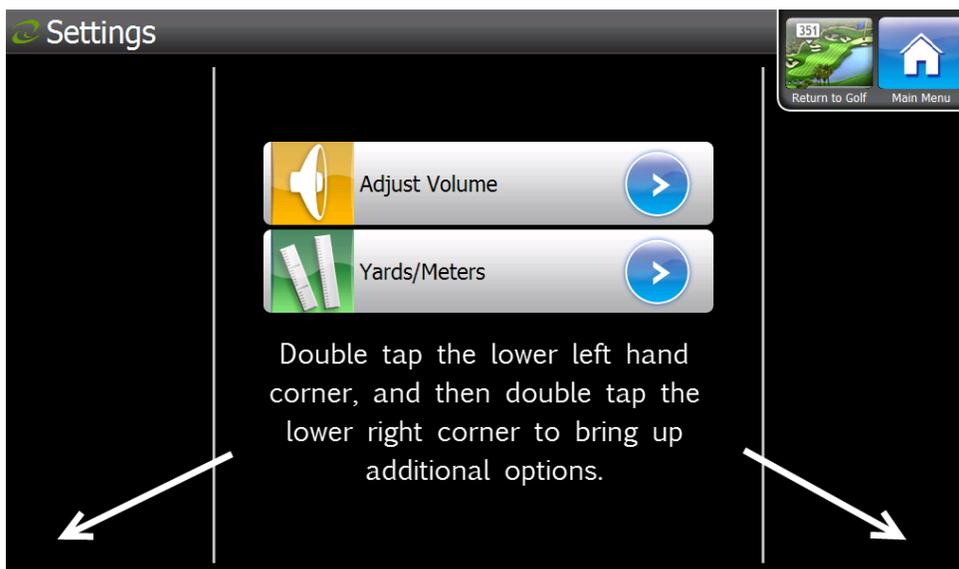
Accessing the VDU Health Summary

From the main Menu, starting from any corner sequentially touch all 4 corners of the screen.

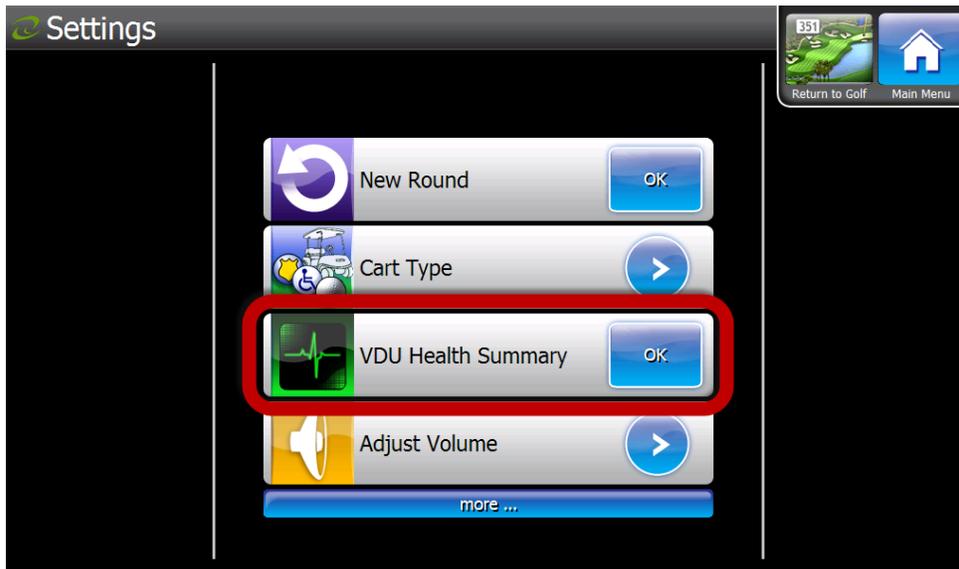
- From the main Menu, touch the settings icon



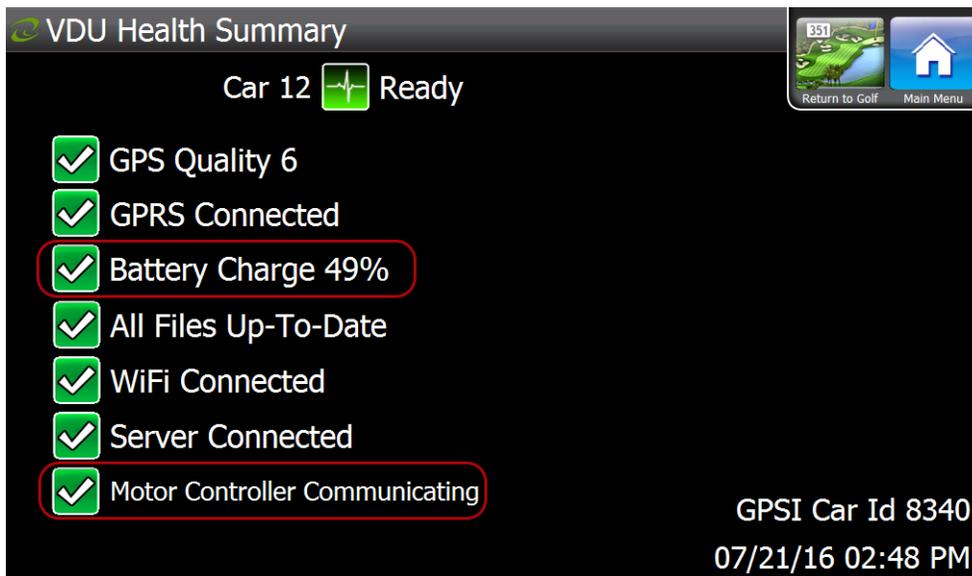
- Once on the settings page, you will need to input a code to bring up the VDU Health summary option.



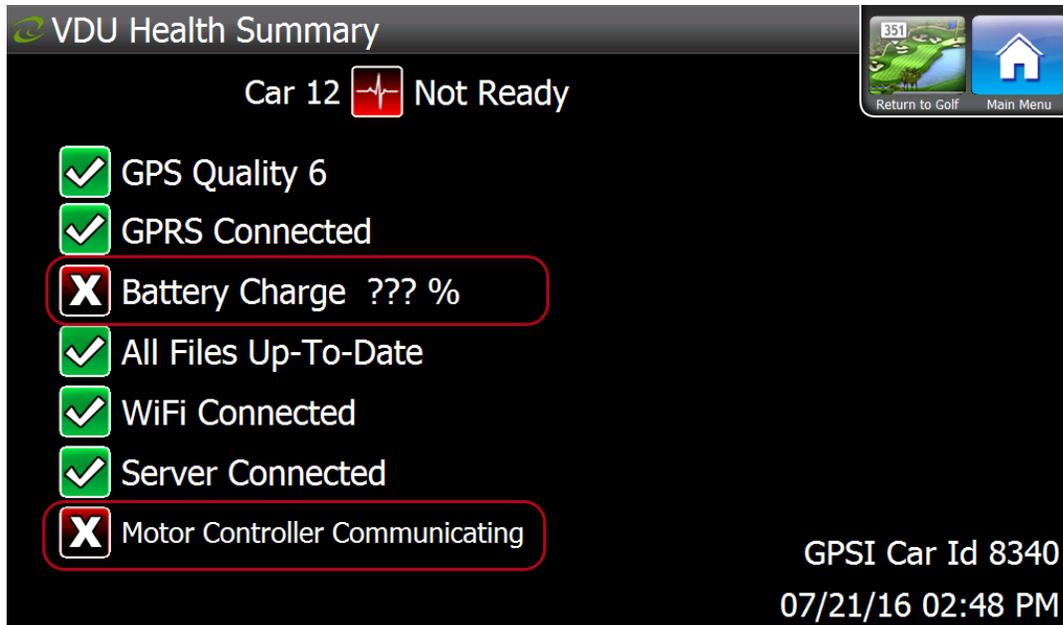
- New options will now be displayed, touch the VDU Health Summary “OK” icon.



- If connected car is functioning there will be a green box with a check mark will be next to the Charge and Motor Controller Communicating fields.



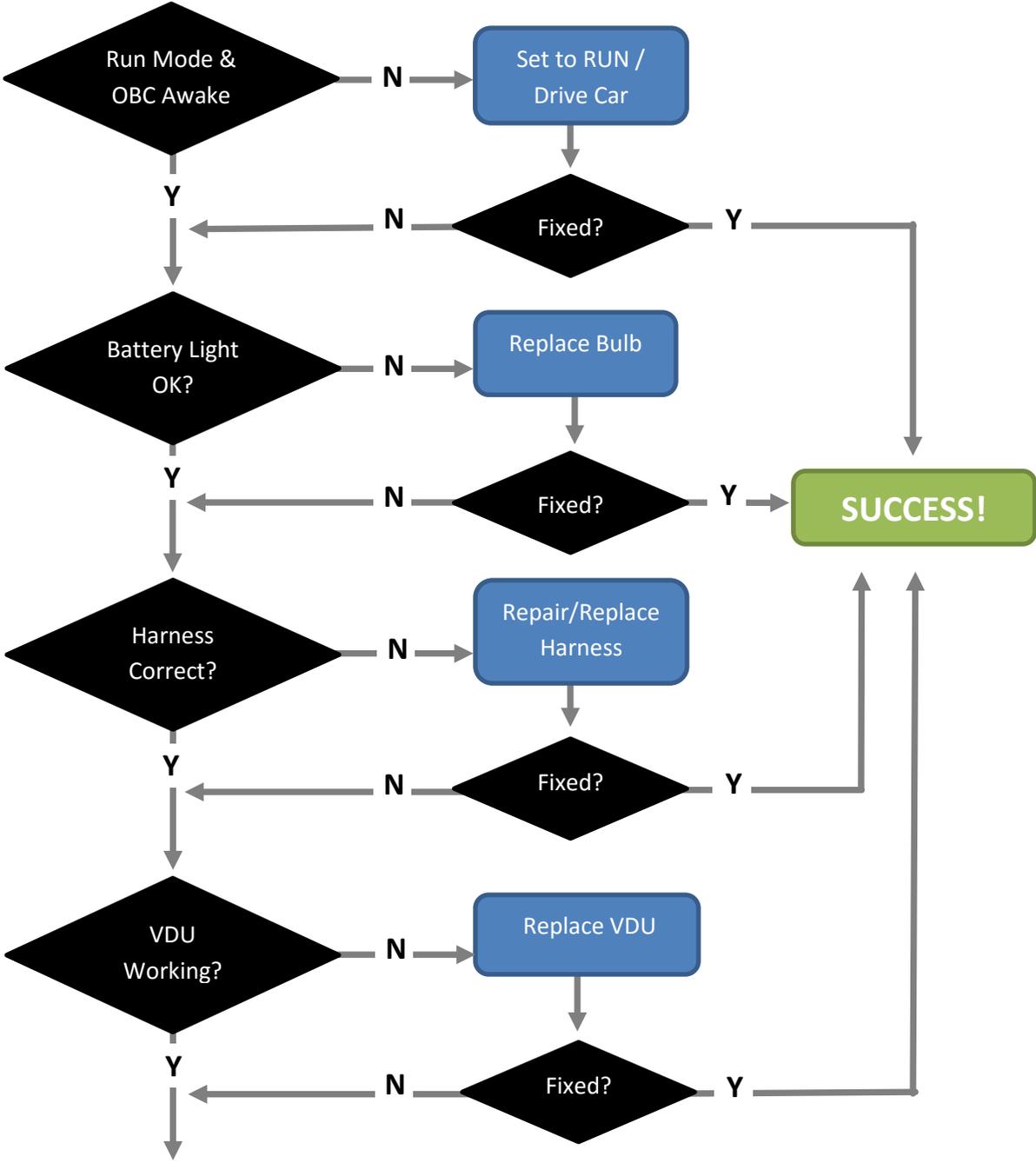
- A VDU that is not communicating with the car will display a red box with an “X” next to Motor Controller Communicating and Battery Charge % field.
 - An “X” next to Battery Charge with no % displayed indicates that there is no communication with the OBC.
 - And “X” next to Motor Controller Communicating means there is no communication with the Motor Controller.



If the VDU to Motor Controller and / or OBC communications are not functioning properly, use the Flow Chart and documentation to diagnose and repair the problem.

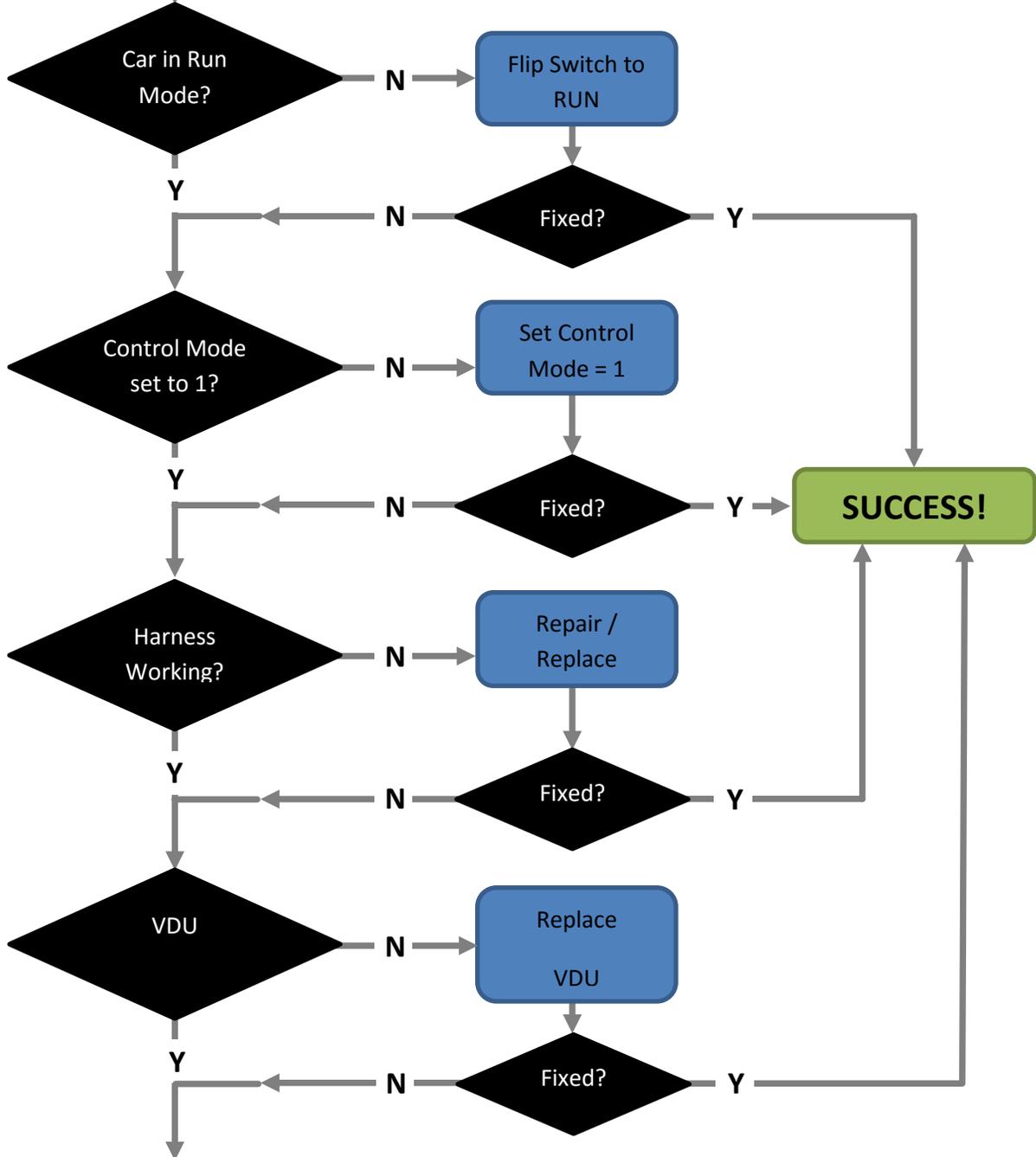
For additional assistance with Visage, contact GPSi at (888) 575-2901 or visit VisageHelp.com.

On Board Computer (OBC) NOT Communicating



Club Car Authorized technician must find the fault in the OBC or factory wiring harness.

Motor Controller NOT Communicating



Club Car authorized technician must find the problem with the Motor Controller or factory wiring harness.

Making sure the OBC is awake

If a car has been sitting idle for a specified amount of time, the OBC goes to sleep, causing an interruption in communications. The first step that should be taken is to press on the accelerator pedal; however it is recommended that the car be taken for a short drive.

Tow/Run Switch

In order for the car's Motor Controller & OBC to communicate with Visage, the car must be set to RUN.

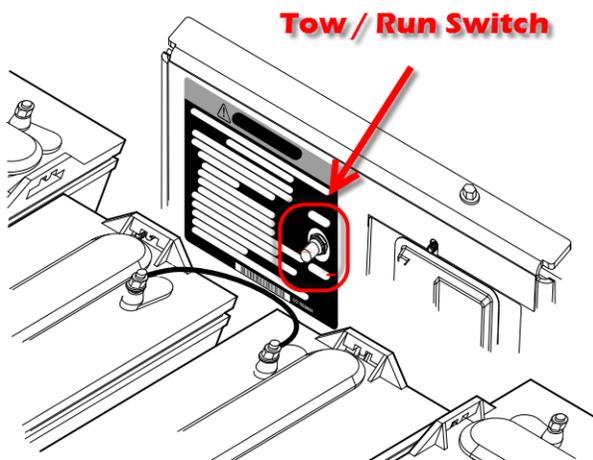
Warning

- Place Tow/Run switch in TOW position before disconnecting or connecting the batteries. Failure to heed this warning could result in a battery explosion or sever personal injury.
- When the Tow/Run switch is in the TOW position, all motor braking functions, including walk away braking, are disabled.

The Precedent electric vehicles are equipped with a Tow/Run switch, located under the seat behind the batteries. The switch must be in RUN position in order to operate the vehicle. When the switch is in TOW position, power to the vehicle electrical components is turned off and the vehicle will not operate.

NOTE: After placing the Tow/Run switch in the TOW position, allow 10 seconds to elapse before switching back to the RUN position.

After placing the Tow/Run switch in the RUN position, allow 10 seconds to elapse before operating the vehicle.



Setting Control Mode

In order for communication to occur between Visage and the CC Motor Controller, the Control Mode must be set to 1 using the Club Car IQDM or CDT.

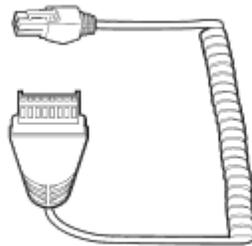
Note: While setting control mode, this is a good time to verify the serial number and decal number entered in the controller match the physical car.

IQDM & Accessories:

The IQDM is obsolete for the year 2014 and has been replaced by the CDT. If you will be using the IQDM to change control mode, keep reading. If using the CDT, skip to the next section.



IQDM SERIES 2 HANDSET
102241804



IQDM SERIES 2 CABLE
102241502

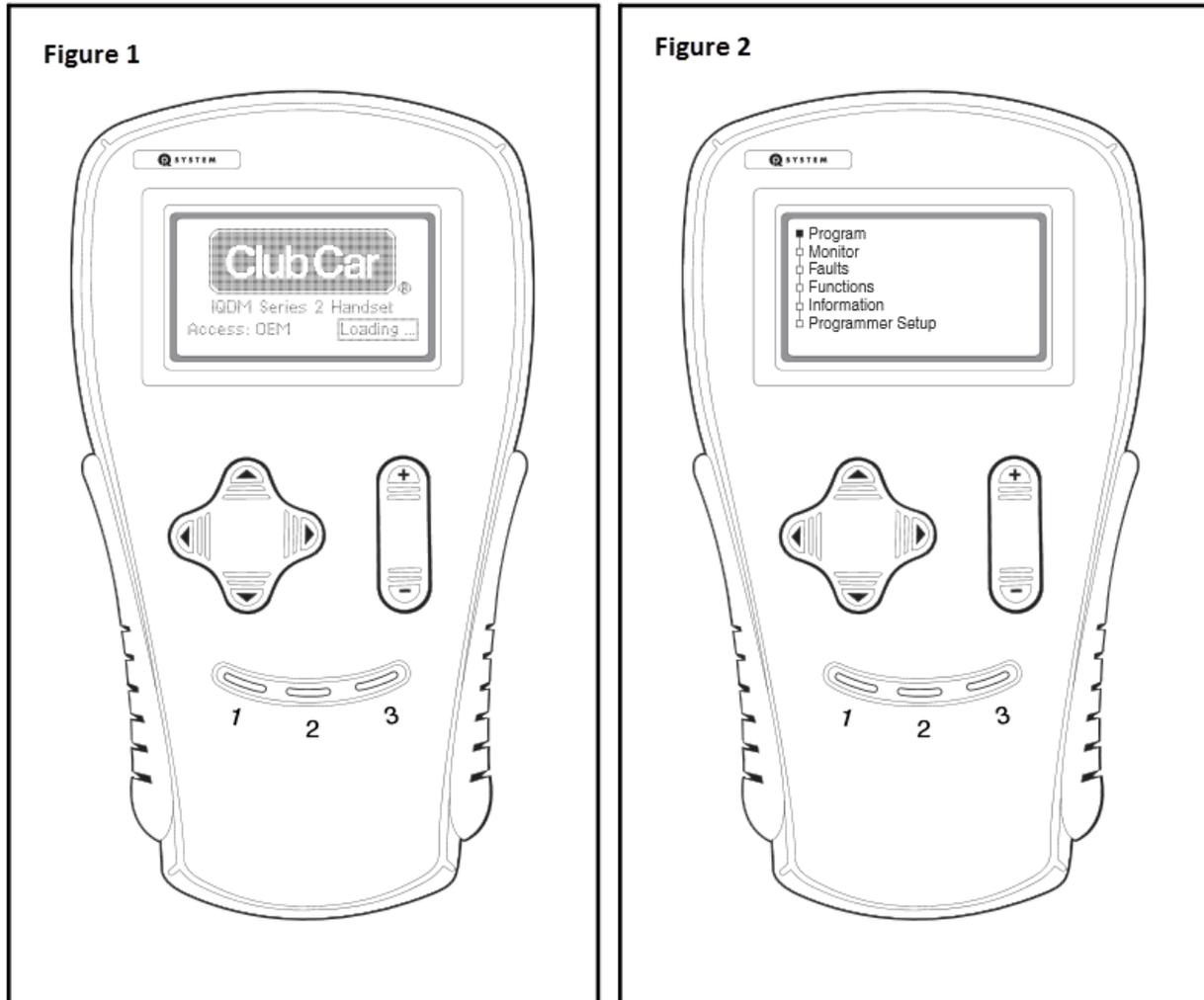


CABLE ADAPTER
102251501

STEP 1 – Plug the IQDM into the vehicle

- Connect one end of the cable to the jack located on the bottom of the IQDM.
- Connect the cable adaptor to the IQDM cable.
- Remove the dust cap from the IQDM jack.
- Align the keyed portion of the plug with the IQDM jack and connect the plug to the jack.

STEP 2 – Wait for the IQDM to power up. It will first display an introductory screen, and then the main menu. See Figures 1 and 2 on the following page.



STEP 3 – Set Control Mode

With Program selected, follow these steps to navigate to and change the control mode to 1:

1. Press the right arrow key, this will select Settings
2. Press the right arrow key, this will open the Settings menu.
3. Press the down arrow 5 times to select Control Mode.
4. Press the right arrow key to access control mode.
5. Use the plus key to change control mode from 0 to 1.
6. You can now unplug the IQDM from the IQDM car jack.

CDT & Accessories:

The CDT 1313 hand held programmer has replaced the IQDM for 2014.



1313 HHP Programmer Cable Options	Part Number
Cable RJ11	17926302
Cable 4-Pin Molex	17926303
Cable XLR	17926304-02



STEP 1 – Plug the CDT into the vehicle

- Connect one end of the cable to the jack located on the bottom of the IQDM.
- Connect the cable adaptor to the IQDM cable.
- Remove the dust cap from the IQDM jack.
- Align the keyed portion of the plug with the IQDM jack and connect the plug to the jack.

STEP 2 – The programmer automatically powers up, and displays a loading screen while it loads information from the controller (Fig. 1). Once the programmer has uploaded the information from the controller, it displays the Main Menu (Fig. 2).

Fig. 1



Fig. 2



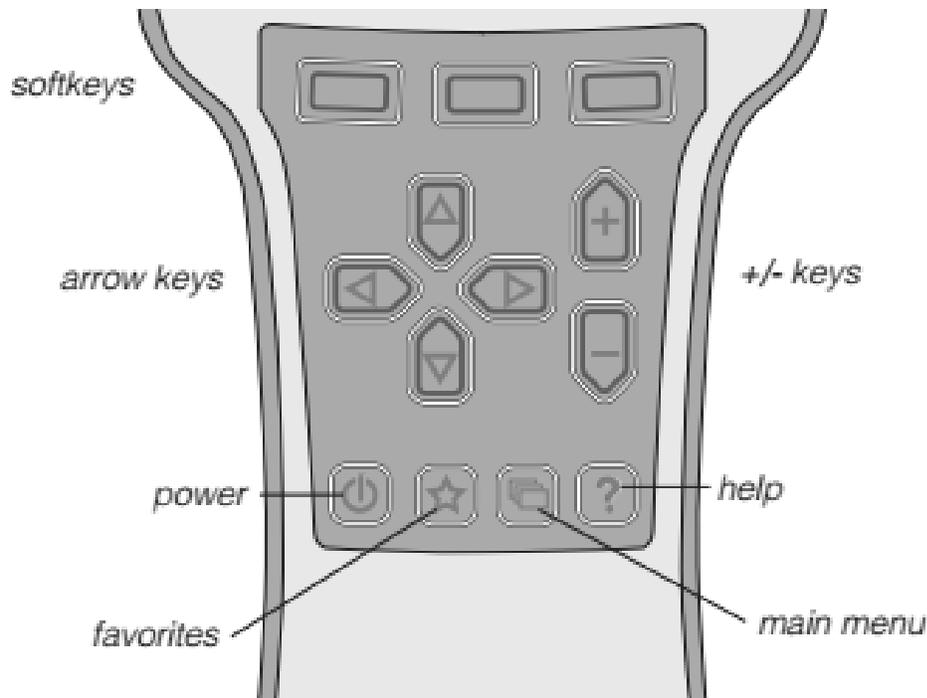
STEP 3 – Set Control Mode

With System Info highlighted, follow these steps to navigate to and change the control mode to 1:

Note: See Figure 3 below for button locations

1. Press the right arrow key and highlight parameters. With parameters highlighted, press the top right soft key under the word select to make the selection.
2. Press the right arrow key, this will open the Settings menu.
3. Press the down arrow 5 times to select Control Mode.
4. Press the right arrow key to access control mode.
5. Use the plus key to change control mode from 0 to 1.
6. You can now unplug the IQDM from the IQDM car jack.

Fig. 3



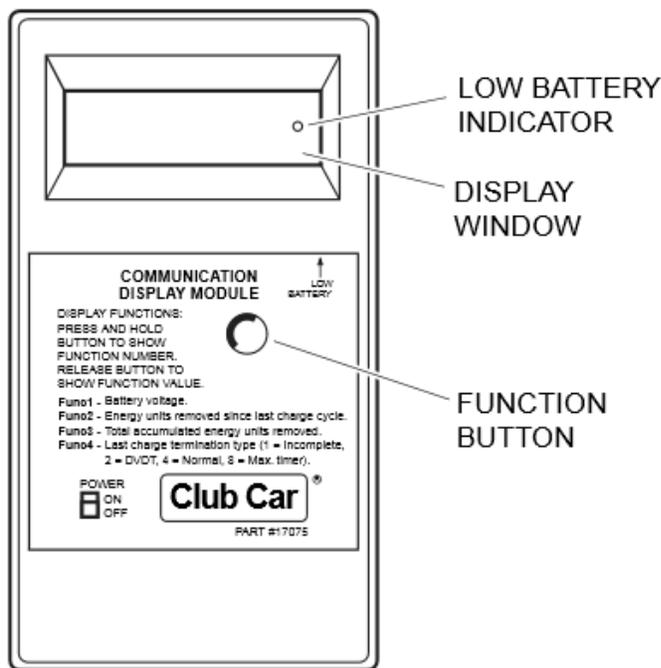
Battery Light Continuity

In order for communication to occur between Visage and the On Board Computer (OBC) the signal must pass through two lights in the dash, the infrared LED and the Warning light. These bulbs are wired in series, subsequently if one of these bulbs burn out, OBC communication is lost.

CDM Tool

An easy check to make sure the bulbs are functioning and the circuit is closed is to use the Communication Display Module (CDM). The CDM is used for determining energy unit consumption data of the batteries, for proper fleet rotation. The CDM also displays charging errors stored in the OBC.

For our use, we will be looking to see if we can get battery voltage.



STEP 1 – Using the POWER ON/OFF switch, turn the power ON.

STEP 2 – Position the CDM so it is aligned directly with the battery warning light. Ensure CDM infrared LED receiver is no more than 6 inches away pointed at the battery warning light and that there is a clear path between them.

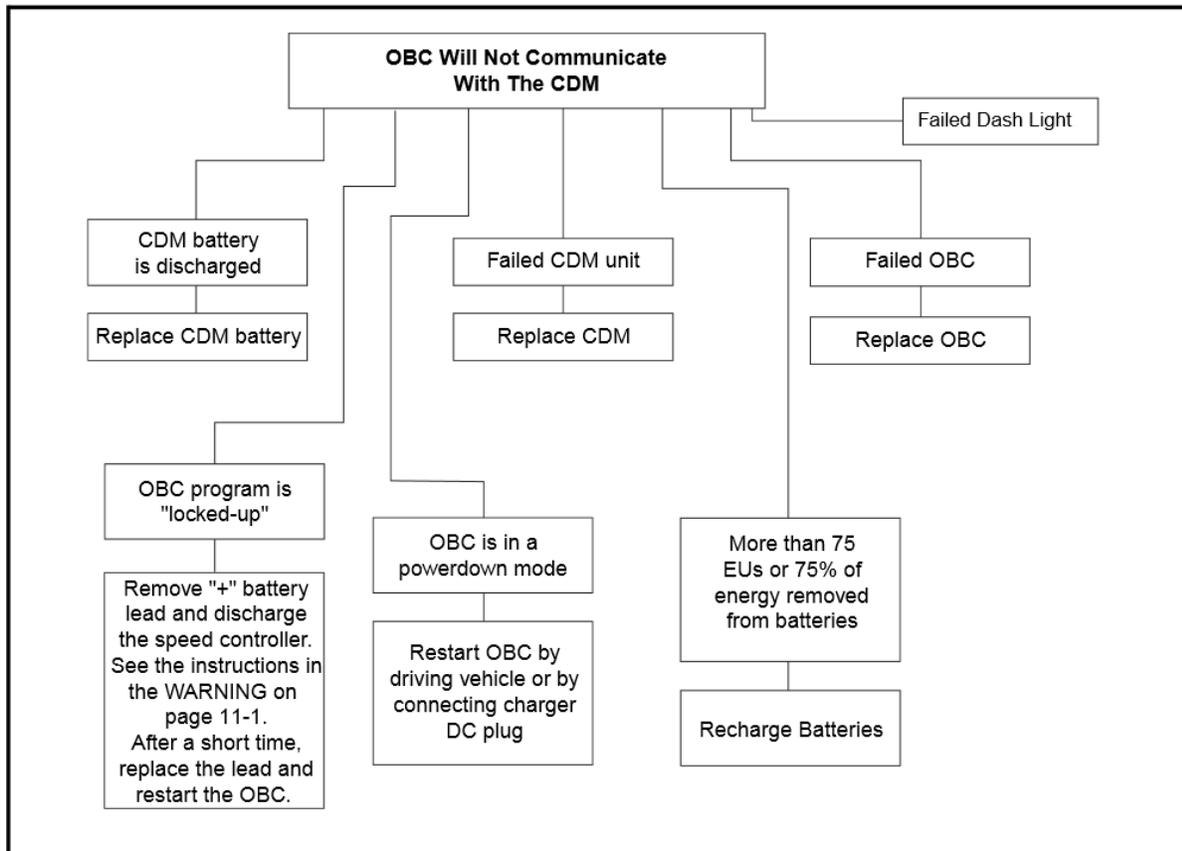
STEP 3 – Wait approximately 30 seconds for a value to appear in the window.

STEP 4 – If a value doesn't appear in the display window after 30 seconds, try adjusting the aim of the CDM and repeating STEP 3 until a value appears. If there is still no reading, check the following:

- Check for weak batteries in the CDM
- Drive the vehicle a short distance to ensure that the OBC is not in sleep mode

CDM Troubleshooting

Use the following chart as starting point for troubleshooting problems with communication between the CDM and OBC. Contact the Club Car Distributor for more comprehensive information.

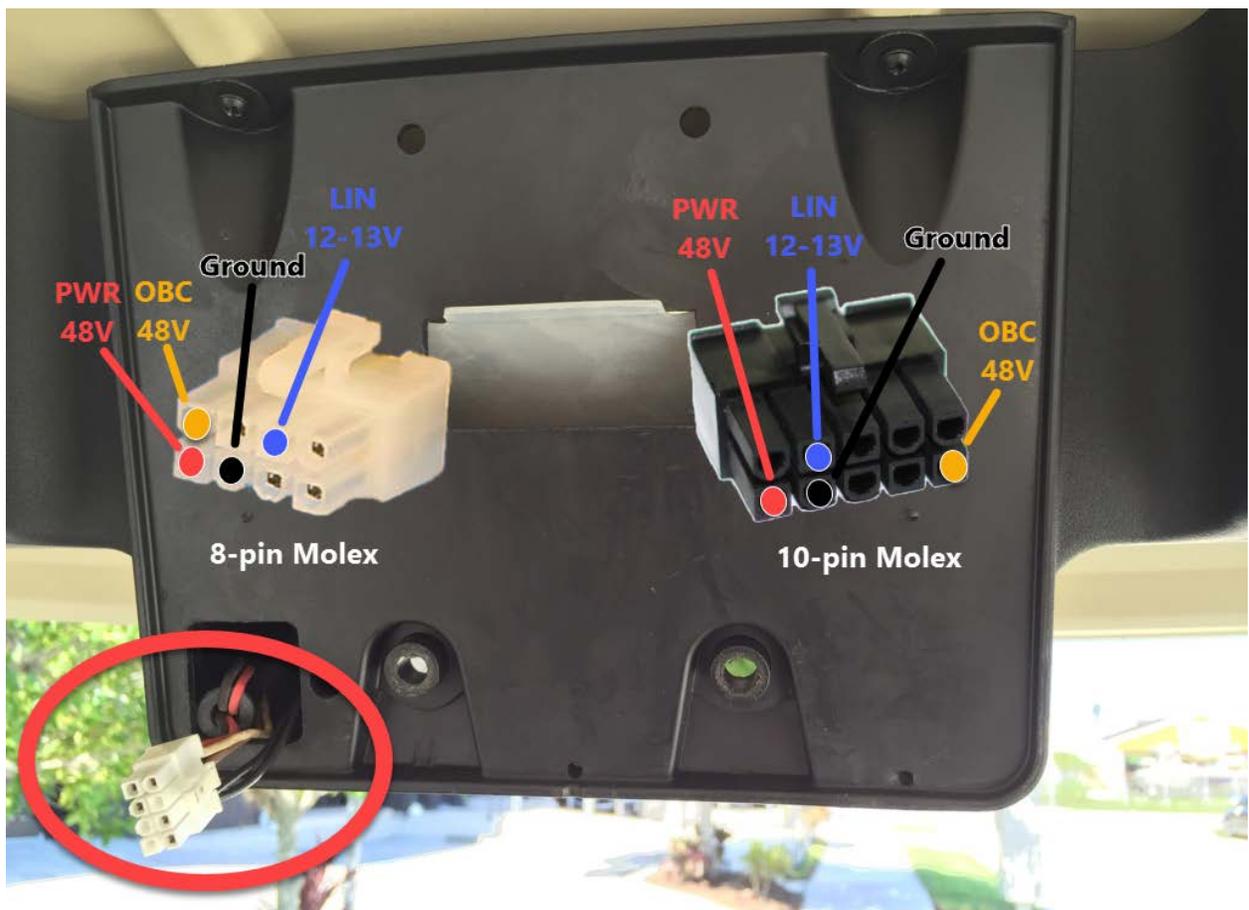


Verifying the strut is wired properly

Check for OBC Voltage at Molex connector:

** Some VDUs manufactured with a revised motherboard require an 8 to 10-pin adapter. If the car / VDU being diagnosed are equipped with this adapter, make sure to check voltage both at the 8-in and 10-pin to verify the adapter itself is not defective.*

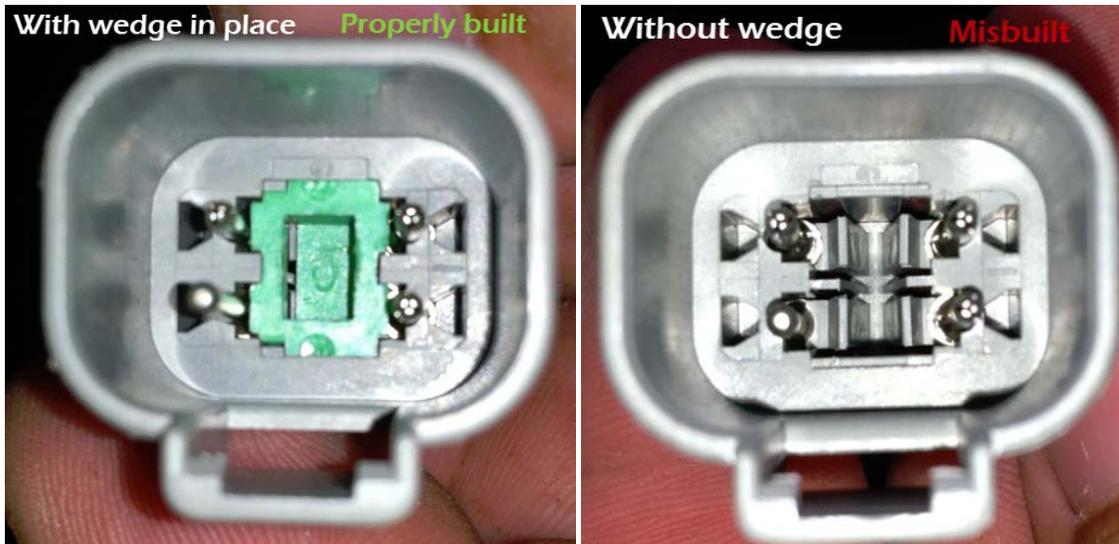
1. Remove the VDU to expose the 8-pin or 8 with a 10-pin adapter Molex Connector.
2. Using a multi-meter, verify that your OBC voltage is around 48V. This reading could fluctuate within a few volts either direction depending on battery charge.



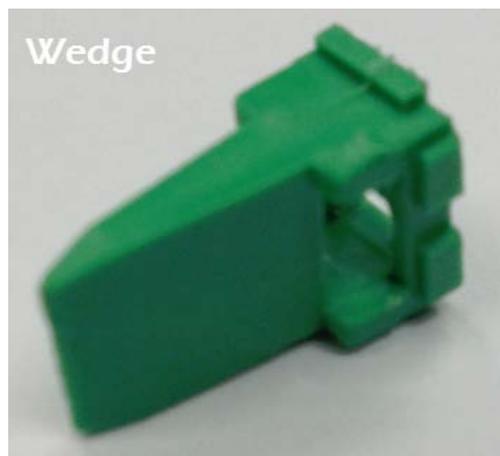
If during these tests it is determined that power cannot be verified, or incorrect readings are being displayed you must move on to the Deutsch connector under the dash.

Check the Deutsch connector for defects:

1. **Verify the Wedge is installed** – It has been found that in some instances the connector was built without the green wedge that holds the pins into position.

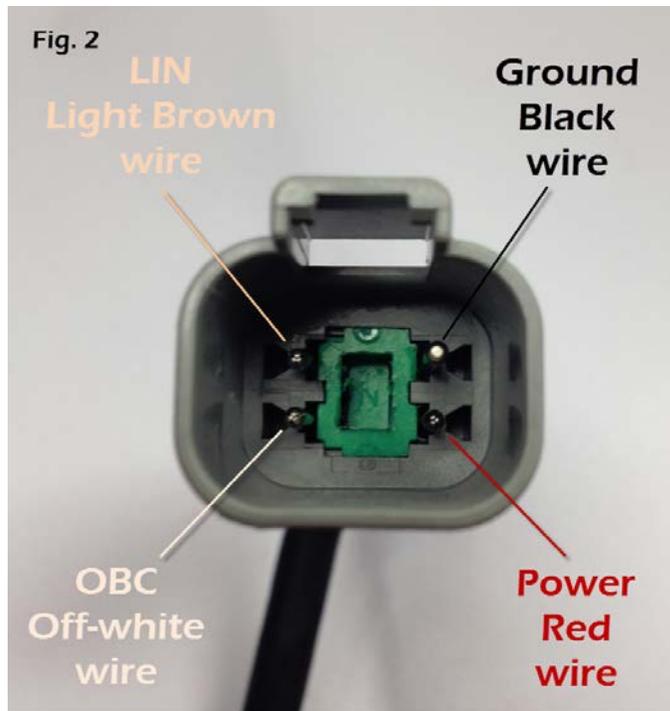
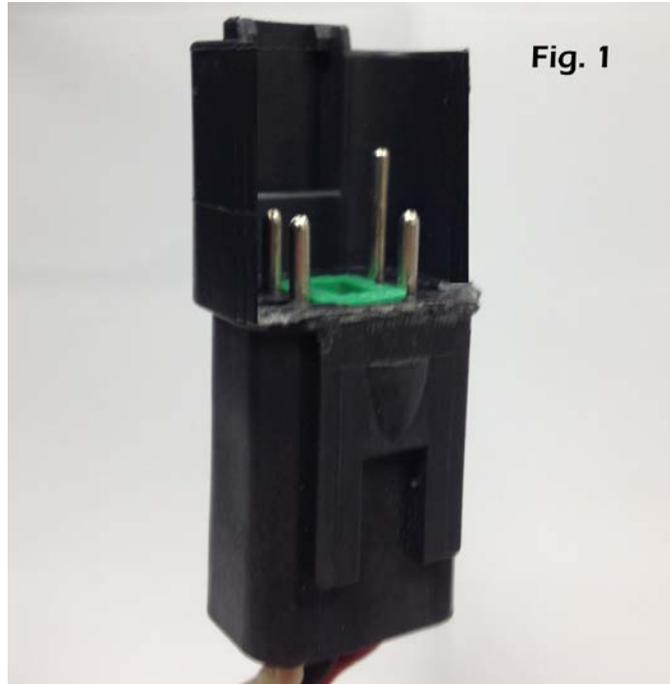


If the Deutsch connector was misbuilt without the wedge in place, a replacement wedge can be ordered through the GPSi parts department. **DO NOT** order a replacement strut.



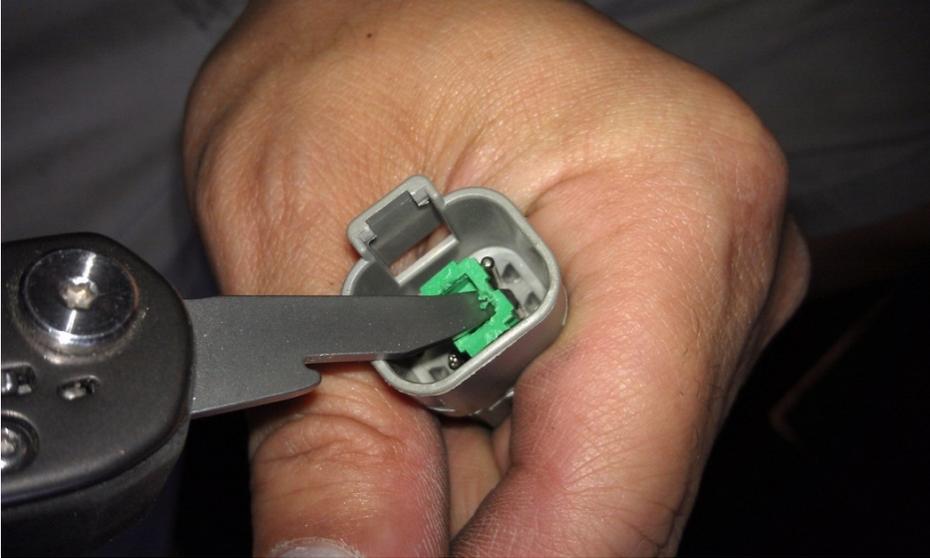
The replacement wedge can be installed by inserting the narrow end first, and locking it into place by pushing down with a small flathead screw driver or pick tool.

2. **Verify the pins are seated and in their proper locations** – All pins should be of equal length, with the exception of the ground pin which is approximately twice as long (see figure 1). Inspect the cable to make sure the pins are in their proper locations (see figure 2).

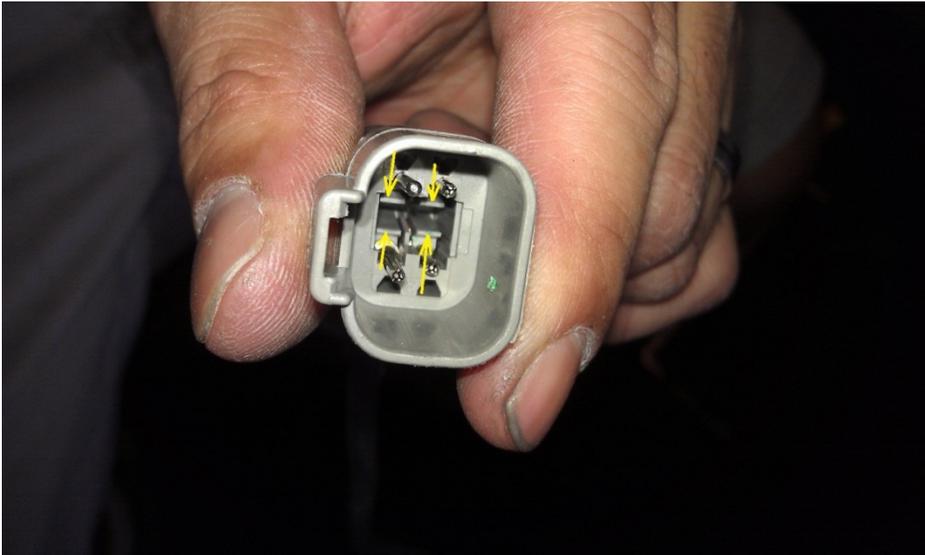


Repairing a mis-pinned male end Deutsch connector

1. Remove the wedge with a small flathead screwdriver, or like device by prying up on the wedge. Be careful, although the wedge doesn't have wings, it can fly!



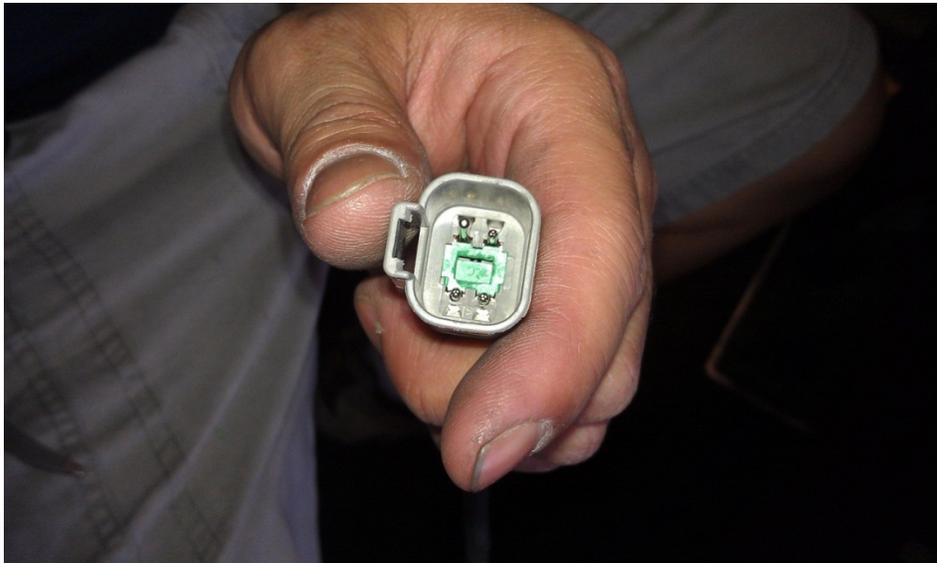
2. Once the wedge has been removed, you will see the clips which lock the pins into position. Move the tab away from the pin to release it, and towards the pin to lock it into position.



3. Make the appropriate pin adjustments using a pair of needle nose pliers and then reassemble the connector.



4. The wedge should be flush with the base of the connector, and the pins should all be fully extended.



Replace the VDU

If all else fails, try replacing the VDU. Use either a spare unit, or take a VDU of a known “good” car.



If all of the previous components have been verified as functioning properly, the communication malfunction is somewhere in the motor controller, or supporting wiring and circuitry. A Club Car Factory Authorized Technician should be contacted to rectify the issue.