C6 Steering Wheel Swap and NAV Radio Upgrade To Enable Steering Wheel Audio Controls

Any questions about these instructions can be directed to Clark at CWGrizzwold@gmail.com

Overview: This is a step by step how-to to upgrade a 2005-2006 C6 steering wheel without audio controls to a 2007-2011 steering wheel with audio controls (which includes upgrading your base radio or NAV to a 2008+ unit as well) **WITHOUT** replacing the steering column harness. These instructions will NOT tell you how to implement the Bluetooth controls.

Since the 19153095 steering column harness was on national backorder when I upgraded my steering wheel I had to improvise and it's fairly easy, so follow along.

Motivation: http://forums.corvetteforum.com/c6-corvette-general-discussion/2845194-newest-mod-swc-finished.html

I read the post linked above and it motivated me to do this myself as I had recently picked up a 2011 steering wheel with yellow stitching as an upgrade. Thanks KevaKasper on the CorvetteForum for the awesome starting point!

GM Parts Required:

2007+ C6 Steering Wheel with Audio Controls
2007+ Bose Radio or NAV Radio (which has pinouts enabled for steering wheel controls)
19153097 – Coil Kit – Steering Wheel Clock Spring

Other Parts Required:

Various Harness Components which were ordered from www.pcsconnectors.com

I would strongly suggest ordering a few spares of each of the connectors listed below just in case!

Qty 2 – 12146447 - 20/22 gauge Delphi 12146447 Micro-pack 100 female terminal (for the C1/X1 radio connector)
Qty 3 – 12045773 - 18/20 gauge Delphi 12045773 Metri-pack 150 Male terminal (for the jumper harness)
Qty 3 – 12048074 - 16/18 gauge Delphi 12048074 metri-pack 150 Female terminal (for the jumper harness)
Qty 1 – 12110293 - 3 cavity Delphi 12110293 Metripack 150 female connector (for the jumper harness)
Qty 1 – 12129615 - 3 cavity Delphi 12129615 Metripack 150 male connector (for the jumper harness)
Qty 2 – 12052845 - Delphi 12052845 Metri-pack 150 connector TPA lock - 3 cavity (for the jumper harness)
Qty 6 – 15324982 - Delphi 15324982 Connector wire seal 18-20 gauge (for the jumper harness)
Qty 1 – PCS-TAPE – Wiring harness tape (Non-adhesive, dry vinyl) (for the jumper harness)

Some 18-20 gauge wire (which I bought from Radio Shack)

A few thin plastic tie straps

Some black electrical tape (the adhesive kind)

Let's Get Started…

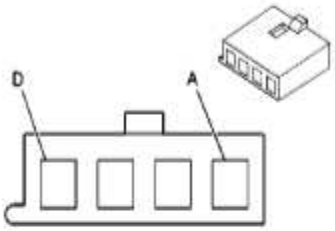
Removing The Steering Wheel and Clock Spring…

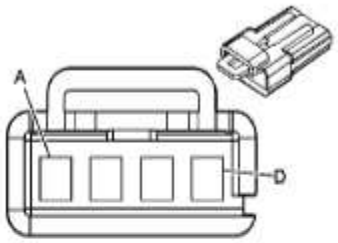
http://forums.corvetteforum.com/c6-corvette-general-discussion/2592778-diy-steering-wheel-removal-and-clock-spring.html

Steering Wheel Wiring 101…

Model year 2005 and 2006 steering wheel coil springs have only four wires which connect to the steering wheel. These wires control the functions shown in the connector diagram below.

277 Inflatable Restraint Steering Wheel Module Coil to Steering Wheel Harness





Connector Part Information	• OEM: 12092162 • Service: See Catalog • 4-Way F Metri-Pack 150 Series (BK)	Connector Part Information	• OEM: 12092163 • Service: See Catalog • 4-Way M Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function	Pin	Wire Color	Circuit No.	Function
A	YE	—	Horn Relay Control	A	TN	28	Horn Relay Control
B	BK	—	Ground	B	BK	1450	Ground
C	PK	—	Ignition 1 Voltage	C	PK	1039	Ignition 1 Voltage
D	PU	—	Remote Shift Selector Signal	D	PU	5526	Remote Shift Selector Signal

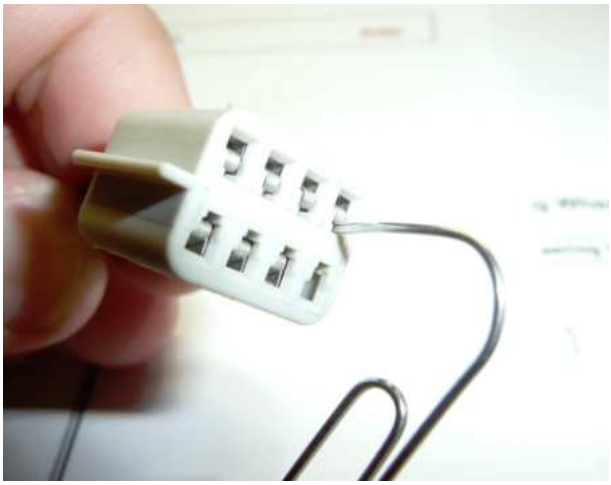
For 2007 through 2011, three additional wires were added to handle steering wheel audio and Bluetooth controls. The pinouts for the new connector are shown below.

X277 Inflatable Restraint Steering Wheel Module Coil to Steering Wheel Harness

Pin	Wire	Circuit	Function	Pin	Wire	Circuit	Function
1	0.35 GY	28	Horn Relay Control	1	0.35 BN	28	Horn Relay Control
2	0.35 D-BU	1450	Ground	2	0.35 BK	1450	Ground
					0.35 BK	1450	Ground (UK3)
3	0.35 D-GN	1039	Ignition 1 Voltage (MYC)	3	0.35 PK	1039	Ignition 1 Voltage (MYC)
4	0.35 BK	5526	Remote Shift Selector Signal (MYC)	4	0.35 PU	5526	Remote Shift Selector Signal (MYC)
5	0.35 PU	1491	Backlight Lamps Control	5	0.35 YE	1491	Backlight Lamps Control
6	0.35 BN	1375	Remote Radio Control Supply Voltage	6	0.35 PU/WH	1375	Remote Radio Control Supply Voltage
7	0.35 RD	1796	Steering Wheel Control Switch Signal	7	0.35 D-BU	1796	Steering Wheel Control Switch Signal

With the old clock spring removed you need to swap the old (black) four pin connector from the old clock spring with the new (white) eight pin connector on the new clock spring harness. Below are pictures of the two connectors.

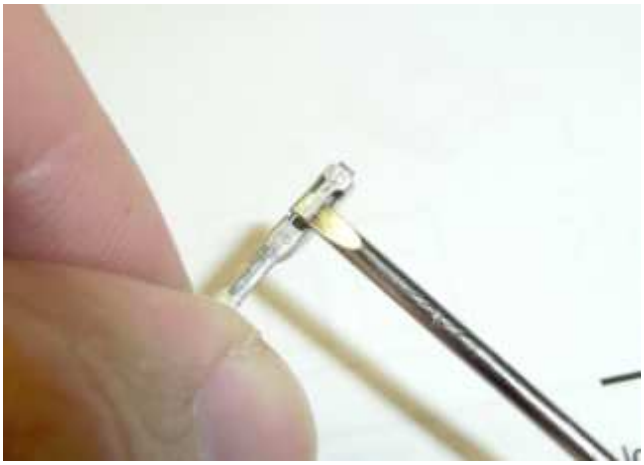
The pins can be easily removed from both connectors by inserting a small diameter pin (in my case a small paper clip) into the squares just below the pins on the end of the connector while pulling gently on the corresponding wire at the rear of the connector.



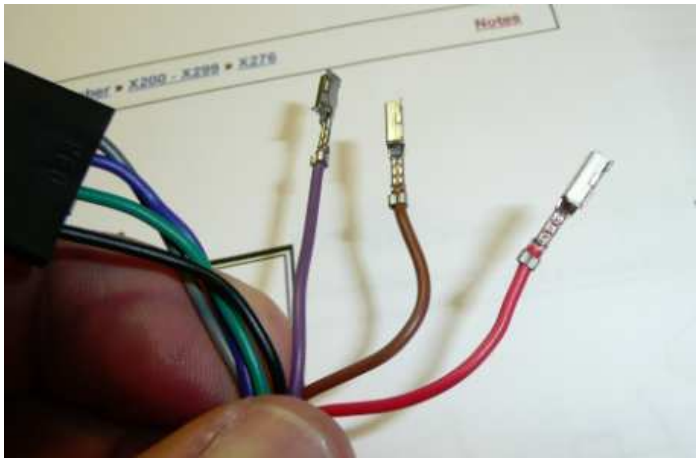
With the wires removed from both connectors (11 in total) it's time to repin the old four pin connector with the corresponding wires on the new clock spring. Since harness wire colors can change from year to year it's better to focus on moving pins from location to location as pin locations within connectors usually don't change.

In this case, pin 1 (Horn Relay Control) from the new white connector was repined to pin A on the old black connector. Likewise, pin 2 (Ground) was inserted in pin B, pin 3 (Ignition 1 Voltage) into pin C and pin 4 (Remote Shift Selector Signal) into pin D.

Don’t forget to pop the little pin tabs back out with a small screwdriver before reinserting them into the connectors to make sure they “click” into place.



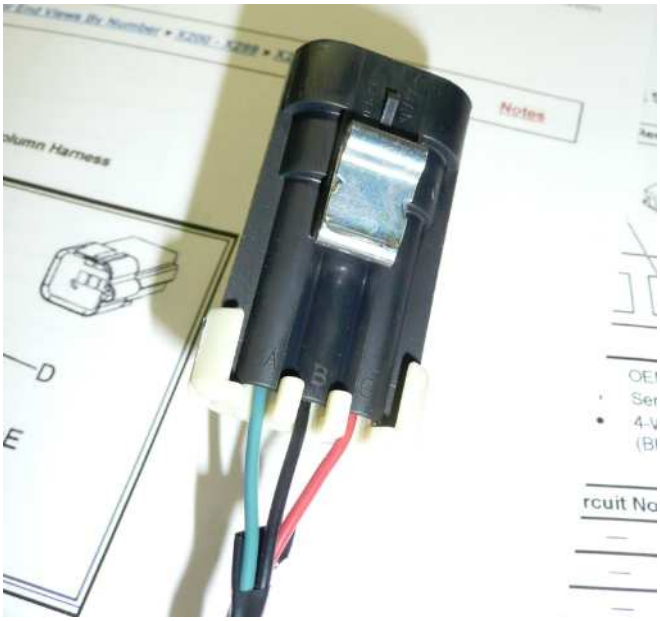
This leaves the three “new” wires on the new clock spring harness without a connector to plug into. This is where I had to improvise since I didn’t have the new steering column harness to plug into.



I inserted the three remaining wires into a new 3-cavity, Metri-pack 150 female connector that I purchased from PCS Connectors. Keep track of which wire you inserted into which cavity as you will be making a new jumper harness to that will connect to this in the next step. In my example pin C was the steering wheel control switch signal (red wire), pin B was the remote radio control supply voltage (brown wire) and pin A was the backlight lamps control (purple wire).

Since we aren’t replacing the steering column harness you need to fabricate a jumper harness from the new 3-cavity clock spring connector to the rear of the radio / NAV unit. I cut three, 3-4 foot long sections of bulk wire and crimped and soldered

Metri-pack 150 **MALE** connectors onto one end and inserted them into a new 3-cavity, Metri-pack 150 male connector. Don't forget to install the connector wire seals over the wires before you crimp and solder on the connectors!



I used red, green and black wire and associated them to the red, purple and brown wires from the clock spring harness so I could keep them straight on the other side of the jumper harness. If color matching isn't for you then just label them with a small piece of masking tape and make sure the labels agree with the pin locations you inserted them into in the male connector.

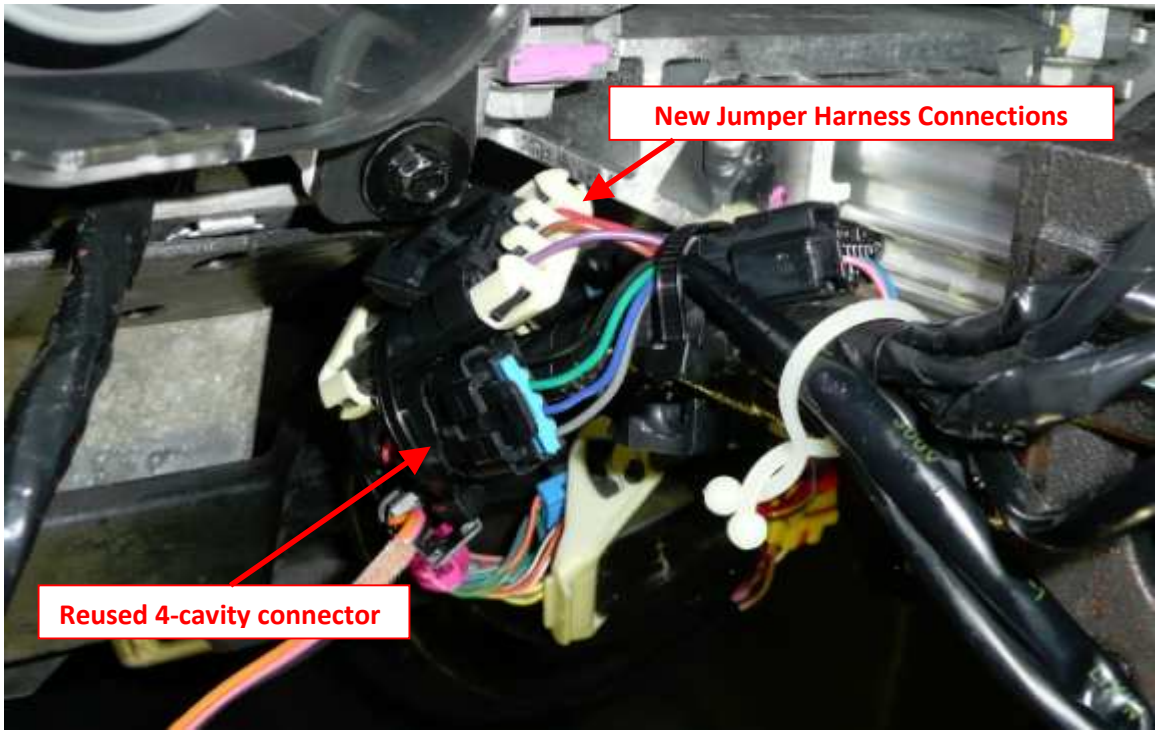
On the Remote Radio Control Supply Voltage wire (brown wire from the clock spring) and the Steering Wheel Control Switch Signal (red wire from the clock spring) you can crimp and solder on two Micro-pack 100 female connectors as those will be inserted into empty cavities in the radio/NAV C1/X1 connector

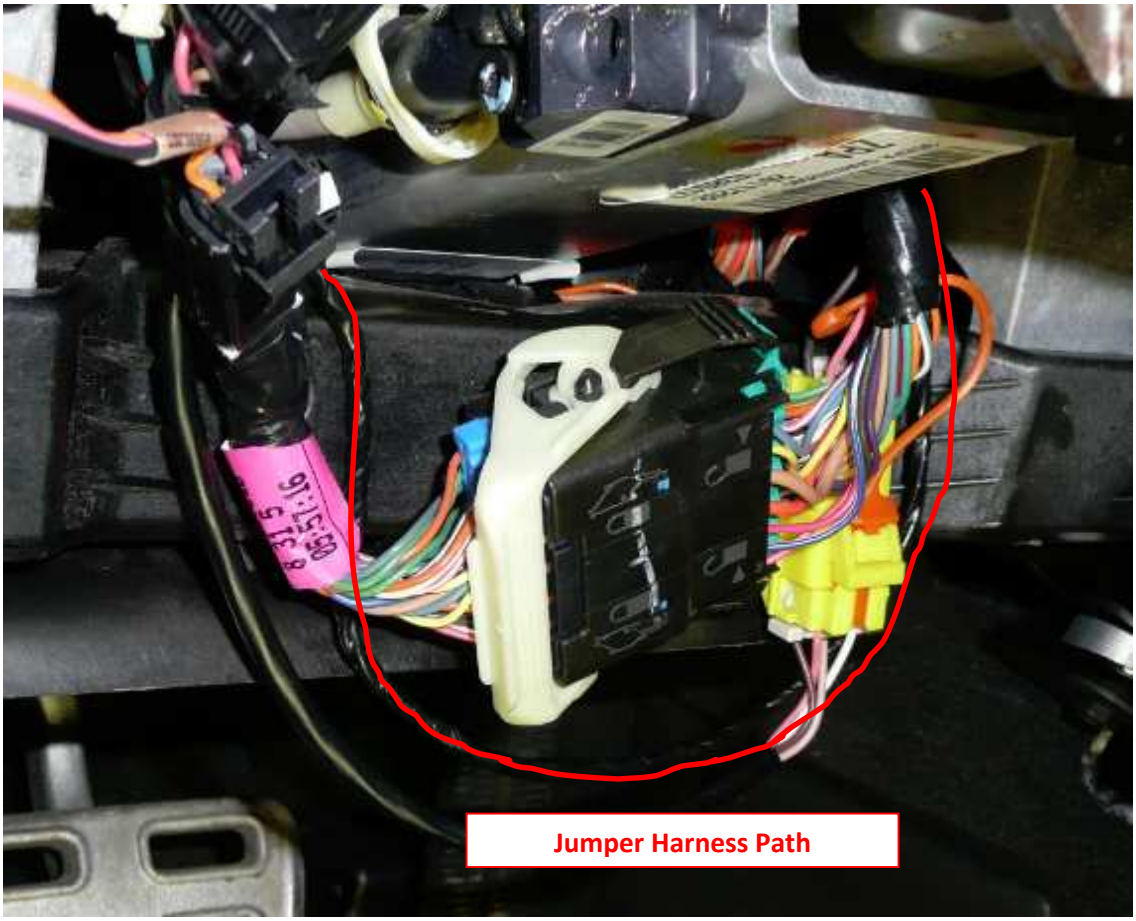
The Backlight Lamps Control wire (purple wire from the clock spring) can be stripped at the end as it will be spliced into one of the wires in an HVAC control connector.

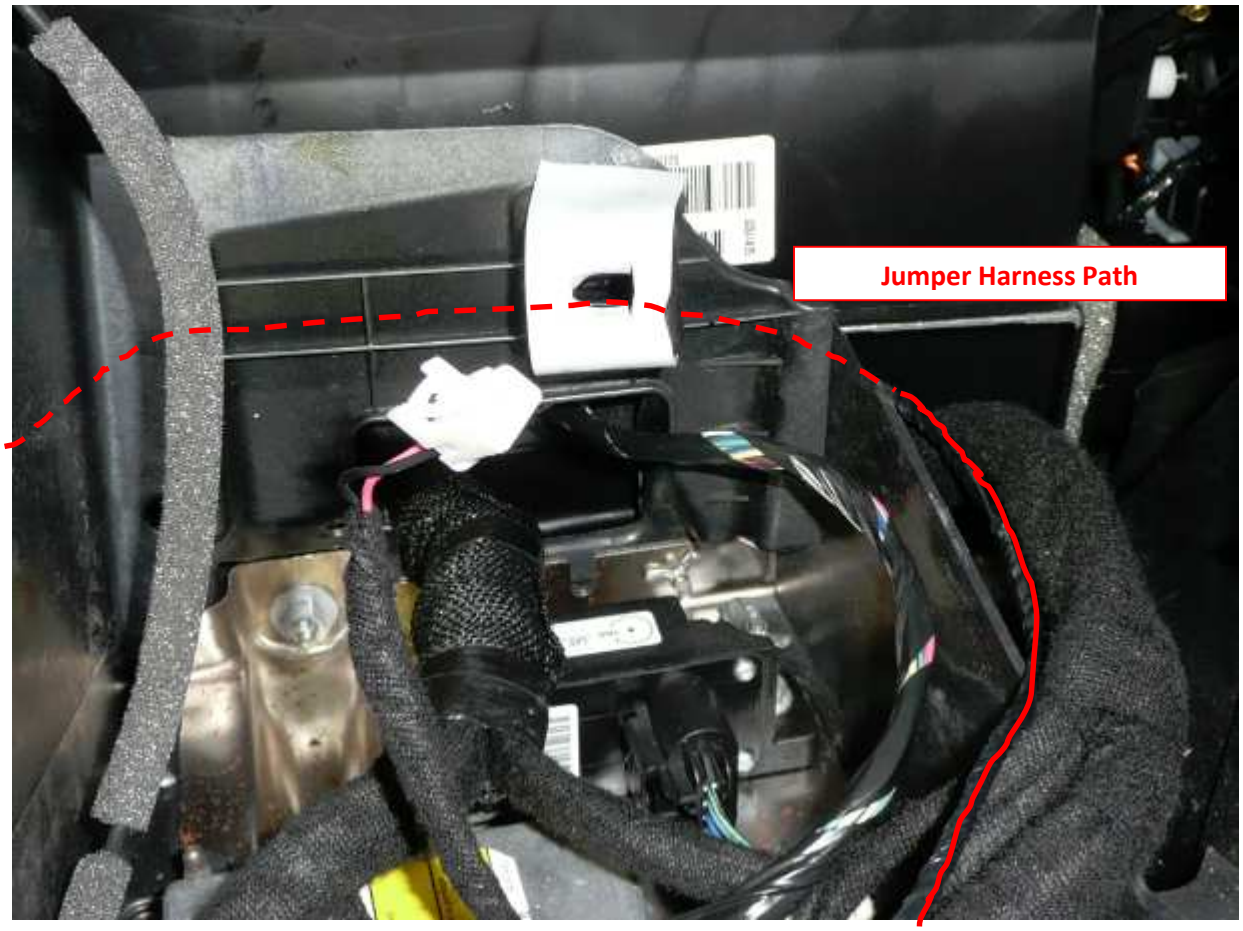
I used the non-adhesive electrical harness tape and secured all three wires together from the rear of the male Metri-pack 150 connector to the other end of the jumper harness and left about six inches of wire free at the radio/NAV end.

At this point you can reassemble the new clock spring to the steering column and route the wires per the clock spring you removed. Reference the instructions linked above if necessary.

With the new clock spring installed you can route / connect the jumper harness to the new clock spring harness. I routed the jumper harness to follow the clock spring harness down the bottom of the dash. From there I went towards the front of the car and around the back of the center console where the radio / HVAC resides (there is another existing harness already in place that I followed).

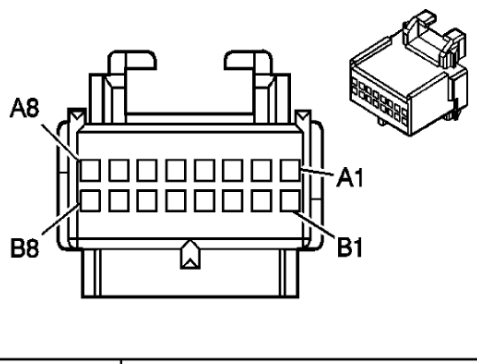






Once the jumper harness is routed to the rear of the radio / NAV we can make the final connections. The Backlight Lamps Control wire needs to be spliced into any number of different lamp control wires that are in the C6. The is basically one in every connector that powers a switch that is backlit. I chose one in the HVAC control harness just below the radio/NAV for proximity.

HVAC Control Module C2

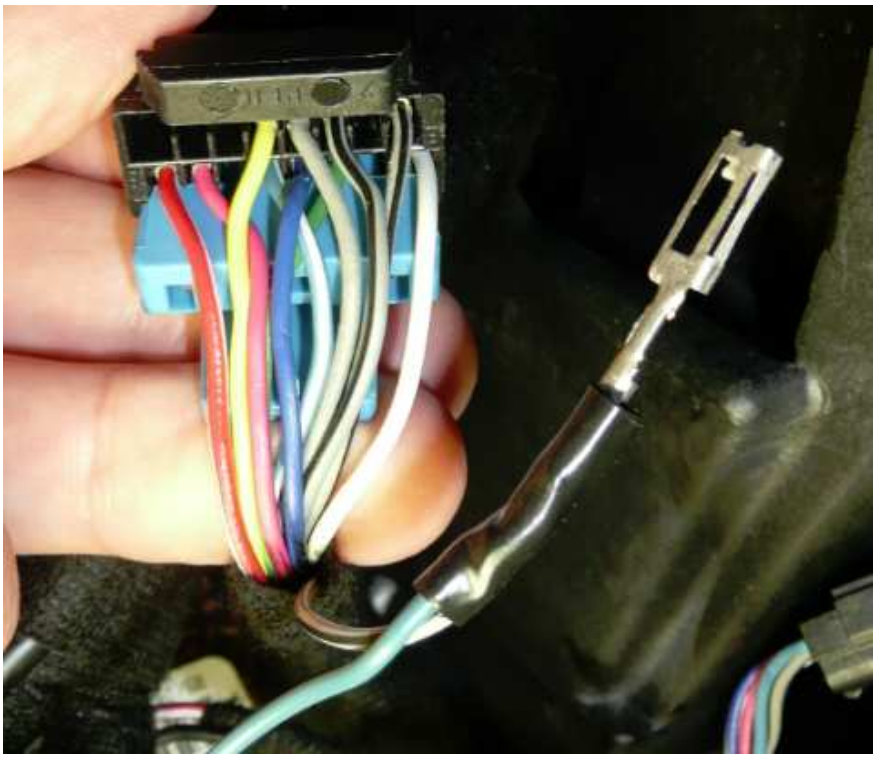


Connector Part Information

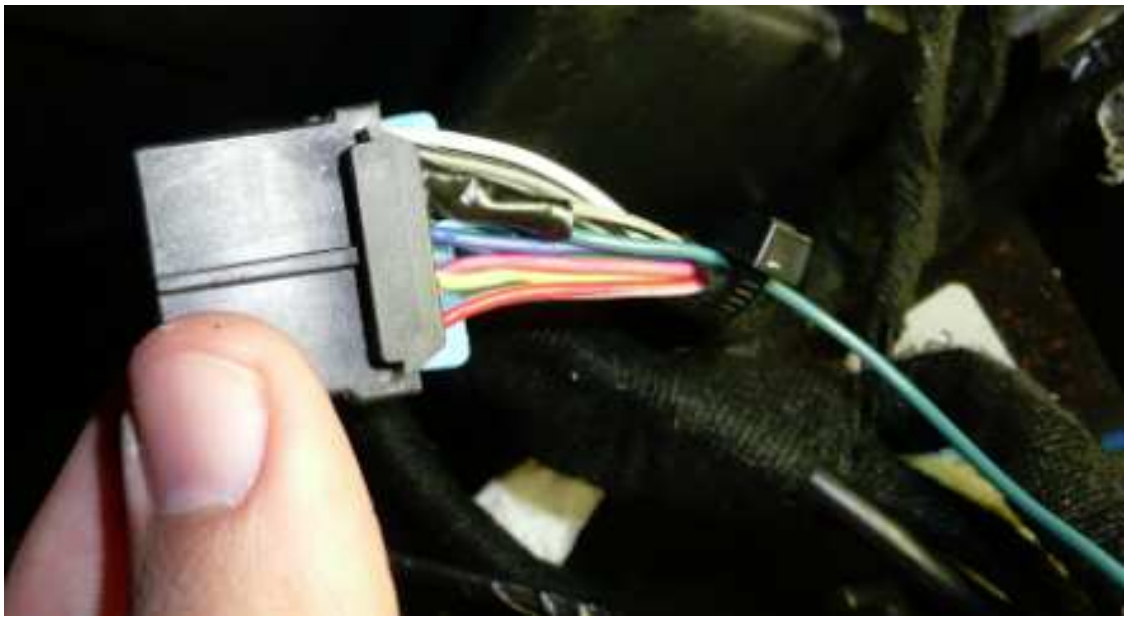
- OEM: 12084944
- Service: 12084944
- 16-Way F Micro-Pack 100 Series (BK)

Pin	Wire Color	Circuit No.	Function
A1	WH	193	Rear Defog Relay Control
A2	—	—	Not Used
A3	L-GN	5962	Inside Air Temperature Sensor Blower Control
A4	D-BU	2181	Passenger Heated Seat Control Module Status Signal
A5	L-BU/WH	181	Driver Heated Seat Control Module Status Signal
A6	—	—	Not Used
A7	PK	639	Ignition 1 Voltage
A8	RD/WH	1240	Battery Positive Voltage
B1	GY/BK	1456	Instrument Panel Lamp Supply Voltage 4
B2	GY/BK	1357	Instrument Panel Lamp Control
B3	GY/BK	754	Blower Motor Speed Control
B4	GY	5961	Passenger Seat Temperature Control Signal
B5	YE	182	Driver Seat Temperature Control Signal
B6–B8	—	—	Not Used

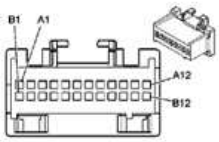
The wire I targeted was in the C2 connector (of the three HVAC control panel connectors it is the one closest to the passenger side of the vehicle) and was in pin location B2 (Instrument Panel Lamp Control). I removed the pin from the connector and spliced into it a ½ inch or so below the end of the pin. Be sure to remove the blue pin lock first.



After splicing into the wire, I secured the two wires together with adhesive electrical tape and reinserted the pin back into the C2 connector. I also added a tie strap to the harness bundle just above the sheathing for more support.



With the only splice out of the way it's time to insert the other two jumper harness pins into the radio / NAV C1/X1 connector. Using the 2007+ connector schematics it was easy to determine which two pin locations were the ones we need to populate. Remove the blue pin lock from the "A" side of the connector first.



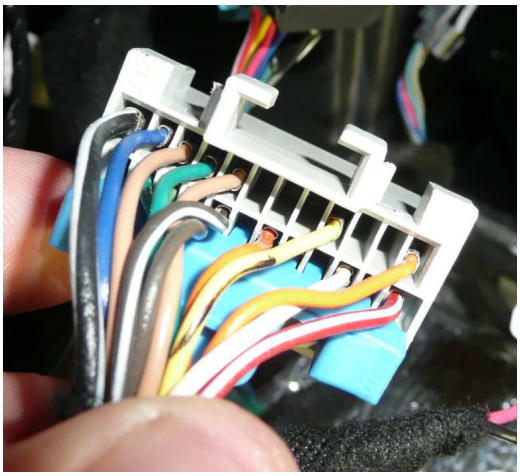
Connector Part Information

- OEM: 12110088
- Service: 12110088
- Description: 24-Way F Micro-Pack 100 Series (GY)

Terminal Part Information

- Pins: A1, A4, A8-A11, B1, B3, B6, B8-B11
- Terminal/Tray: 12146447/3
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12031876-1/J-35616-6 (BN)

- Pins: A12
- Terminal/Tray: 12146448/19
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12031876-1/J-35616-6 (BN)



Radio X1

Pin	Wire	Circuit	Function
A1	0.35 OG	1044	Radio Class 2 Serial Data
A2	-	-	Not Used
A3	0.35 PK	2060	Auxiliary Detection Signal (U65)
A4	0.35 YE	5172	FM Composite Signal
A5	-	-	Not Used
A6	0.35 PU	1375	Remote Radio Control Supply Voltage
A7	0.35 D-BU	1796	Steering Wheel Control Signal

The Remote Radio Control Supply Voltage pin location is A6 and the Steering Wheel Control Signal pin is location A7. Insert the pins from the jumper harness into their respective locations in the C1/X1 connector.

Reinstall the blue pin lock and reassemble the radio/NAV, HVAC and dash. If you installed a new 2008+ Radio/NAV you will most likely need to have your local Chevy dealer remove the Theftlock by reprogramming it with the VIN of your vehicle.

If all was done correctly you should now have steering wheel controls on your 2005-2006 C6 Corvette!