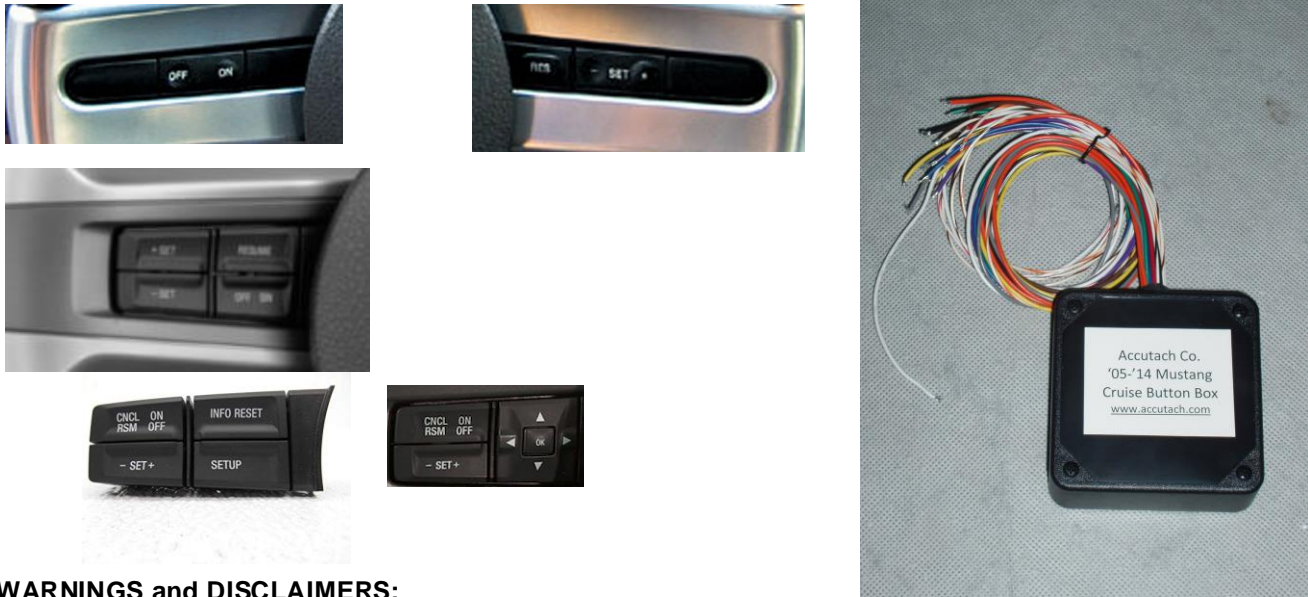


2005-2014 S197 Mustang Cruise Button Box Installation Guide

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Thank you for purchasing the Accutach Co. S197 Cruise Button Box for 2005-2014 S197 Ford Mustangs. It is designed to allow you to repurpose the cruise control buttons on your stock steering wheel to control other accessories.



WARNINGS and DISCLAIMERS:

You use this product at your own risk. Accutach Company is not responsible for personal injury or property damage resulting from the use of this product. While it is possible to use a switch in the steering wheel control wires to switch the cruise control button function from cruise control to accessory control and back again, Accutach Company strongly recommends that users permanently change the button functions from cruise control to control of your accessory. Should you choose to use a switch, you must make certain that you know what state the switch is in. If the vehicle is in accessory control mode, and you try to control your cruise control system, your accessories will be turned on instead. Damage and accidents resulting in serious injury or death can occur. For example, if you activate a transbrake or a line-lock unit at driving speeds, very bad things can happen.

Do not touch the air bag wiring as you modify the radio control wiring near the steering column. Make sure you disconnect the battery and wait at least 10 minutes before doing any electrical work described in this installation guide.

We strongly recommend making wire connections with solder & shrink tubing, although properly made crimp splices can also be reliable. We do not recommend using "Scotch Lock" style connections for our products. Do not use the "twist & tape" method of connecting wires.

Before you begin:

You will need to identify a switched battery voltage power supply wire to splice into for power for the Radio Button Box, and you will need a good chassis ground to ground the unit.

You will also need to locate a suitable place to install the unit inside of the vehicle's cabin, most likely under the dash or in the console near the shifter. It is not intended for use in the engine compartment or anywhere outside of the vehicle. If you wish to create a custom mounting bracket out of ABS plastic you can cement it to the ABS box with standard ABS cement from a hardware store.

2005-2014 Mustang Steering Wheel Button Background Information

All Mustang steering wheel switches are momentary-on pushbutton switches. 2005 to 2009 Mustangs only have one set of 5 momentary-on pushbuttons multiplexed onto one signal wire to let the driver manage the cruise control system without removing a hand from the wheel. The 5 cruise control buttons are: OFF, ON, SET+, SET- and RSM (for Resume). 2010-2012 Mustangs have two additional groups of buttons, a mode group and an audio group. But the 2010-2012 Mustang cruise control buttons are electrically identical to the 2005-2009 cruise control buttons. 2013-2014 Mustang cruise only have 4 buttons: ON/OFF, SET-, SET+ & CNCL/RSM with different resistances compared to the 2005-2012 cars.

You must repurpose all of the buttons in one group since they share the same signal wire. You can only use one button from each group at a time.

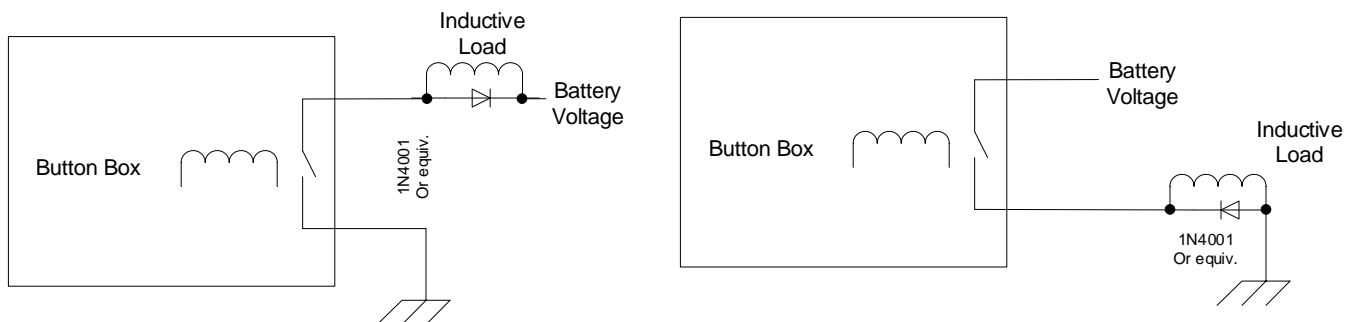
In the 2005-2014 Mustangs, the steering wheel pushbutton wires are shared on the same clockspring mechanism as the driver's steering wheel airbag system, so be very careful when installing the Cruise Button Box. Disconnect the battery and wait at least 10 minutes before working on the installation in order to avoid airbag deployment.

Planning Your Installation

You will need to decide which steering wheel pushbuttons you want to repurpose and what accessories they will control. If you need to control an accessory with a toggle switch function rather than a momentary-on function, you will need to decide if you want to use one pushbutton to turn it on and the same button to turn it off. Alternatively, you can have one button turn it on and another button turn it off. Accutach Co. sells auxiliary boxes that can implement such toggle on-off functions. You can read about them here: <http://www.accutach.com/Documents/ToggleAuxiliarySwitchUnitInstallGuideR1-1.pdf> and here: <http://www.accutach.com/Documents/OnOffAuxiliarySwitchUnitInstallGuideR1-1.pdf>

In a 2005-2009 Mustang, this box will be all you need. In a 2010-2014 Mustang, if you will only be repurposing the cruise control buttons, this box will be all you need. Note that the 2010-2014 Steering Wheel Button Boxes support up to 3 button groups, so if you want to be able to press up to 3 buttons at the same time, the 2010-2014 Steering Wheel Button Box will be a better choice for you.

The relays in the Boxes are rated to 1A of current. If you need to control something that draws more than 1A of current, you must use the output of the Box to control a standard high power automotive relay. When driving an inductive load such as a relay or solenoid, you should use a diode such as a 1N4001 or equivalent to protect the relay contacts from the collapsing magnetic field of the coils when the output relays open:



Locating the Cruise Control Signal Wires

You will need to access the cruise control signal wires that run from the clockspring mechanism in the steering column to the cruise control system. The best place to locate these wires is in the steering column just under the clockspring mechanism. The clockspring mechanism connector is C2274. C2274 is a 9 pin connector on 2005-2009 cars and a 16 pin connector on 2010-2014 cars.

Here are the connector pin assignments for C2274 on 2005-2009 cars:

- Pin 1: GY/OG - Driver Front Airbag #1 Feed (Don't mess with this wire)
- Pin 2: GY/WH - Driver Front Airbag #1 Return (Don't mess with this wire)
- Pin 3: OG/LB - Switch Illumination Power
- Pin 4: TN/OG - Cruise Control Button Signal (This is the wire you want to use with the Cruise Button Box)
- Pin 5: BK - Cruise Control Button Return
- Pin 6: BK - Horn, Switch Illumination Ground
- Pin 7: DB - Horn Signal
- Pin 8: YE/WH - Driver Front Airbag #2 Feed (Don't mess with this wire)
- Pin 9: RD/OG - Driver Front Airbag #2 Return (Don't mess with this wire)

Here are the connector pin assignments for C2274 on 2010-2014 cars:

- Pin 1: VT/BN - Driver Front Airbag #1 Feed (Don't mess with this wire)
- Pin 2: BU - Driver Front Airbag #2 Feed (Don't mess with this wire)
- Pin 3: WH/BN - Message Center Signal
- Pin 4: WH/VT - PHONE, OK, VOICE Return
- Pin 5: BK/VT - Ground
- Pin 6: BU/OG - PHONE, OK, VOICE Signal (This is one of the wires you want to use with the Cruise & Audio unit)
- Pin 7: ??
- Pin 8: BU/WH - Horn Signal, Switch Illumination
- Pin 9: YE/GN - Driver Front Airbag #1 Return (Don't mess with this wire)
- Pin 10: WH - Driver Front Airbag #2 Return (Don't mess with this wire)
- Pin 11: GN/VT - Message Center SignalReturn
- Pin 12: BN/GN - MEDIA, SEEK, VOL Return
- Pin 13: GY/YE - MEDIA, SEEK, VOL Signal (This is one of the wires you want to use with the Cruise & Audio unit)
- Pin 14: GN/BN - Cruise Control Button Return
- Pin 15: WH - Cruise Control Button Signal (This is one of the wires you want to use with the Cruise Button Box)
- Pin 16: VT/GY - Switch Illumination Power

On a 2005-2009 car:

In order to use the cruise control buttons, you must locate the TN/OG cruise button signal wire that goes to Pin 4 on connector C2274.

On a 2010-2014 car:

In order to use the cruise control buttons, you must locate the WH cruise button signal wire that goes to Pin 15 on the clockspring mechanism connector.

Do not use any signal return wire as the power ground for the Box. You can splice into the Horn or Illumination Ground wire as the power ground for the box however, if you prefer not to find a suitable chassis ground.

Legend: BK Black, BN Brown, BU Blue, DB Dark Blue, DG Dark Green, GN Green, GY Gray, LB Light Blue, LG Light Green, NA Natural, OG Orange, PK Pink, RD Red, SR Silver, TN Tan, VT Violet, WH White, YE Yellow.

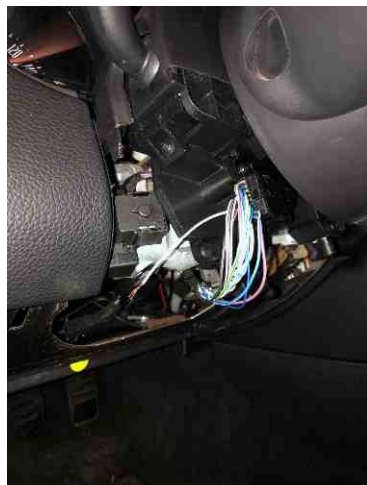
You will need to get access to the wiring harness in the steering column in order to cut and splice into the WH signal wire. This example shows a 2014 Mustang for example. Use a 7mm socket to remove the two screws that hold the plastic driver kick panel, and pull the panel off. That will expose the 3 Torx T20 screws that hold the lower column plastic cover in place. Remove the screws and put the panel aside.



This exposes the wiring harness and connector to the clockspring mechanism. There is also a 10mm bolt just above the OBD2 port that works well as a ground for the Cruise Button Box. Expose the wires in the harness.



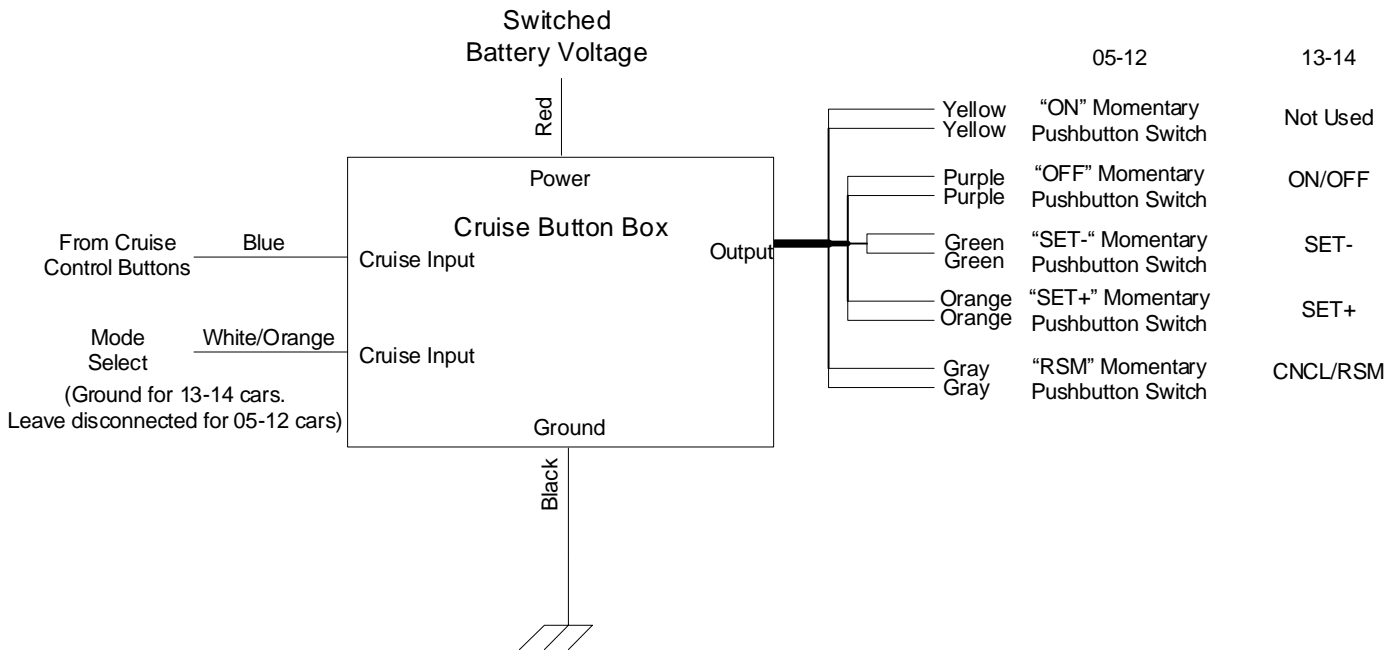
Locate the WH Cruise Button Signal wire and cut it, leaving enough room to slice the Cruise Button Box input wire to the clockspring side of the wire.



Photos courtesy of Chris Crabb.

Wire Descriptions

In addition to the power and ground wires, there are 2 input wires and 10 output wires. If any outputs are unused, they should be left disconnected.



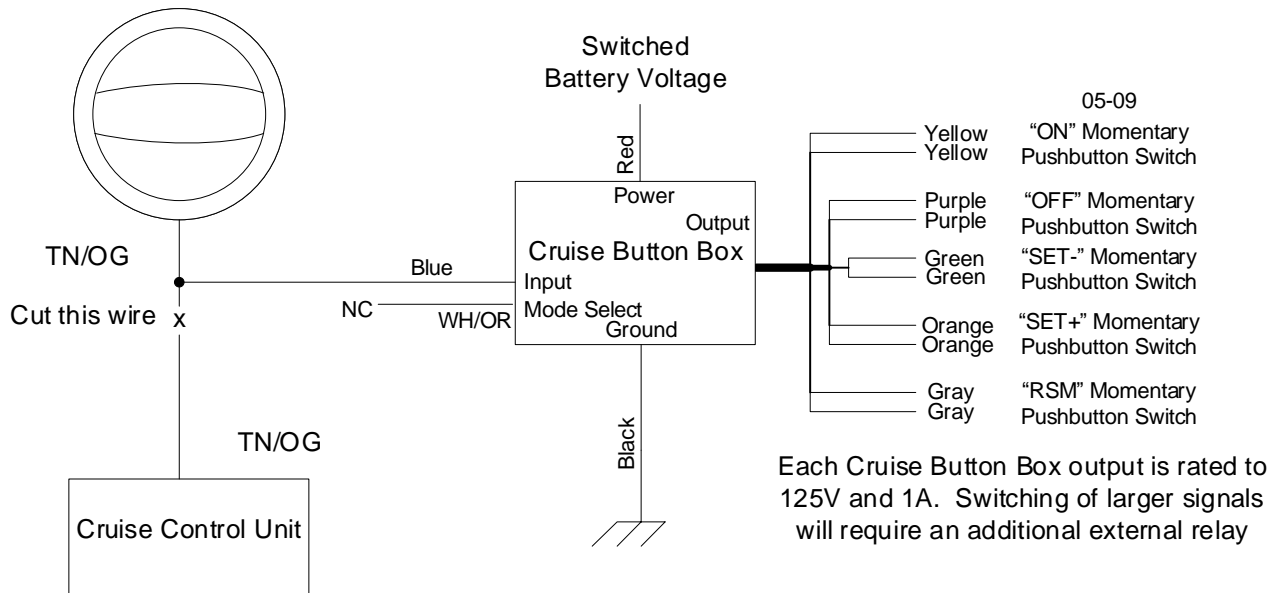
Installing the Cruise Button Box

You will need to cut the previously located signal wire for the buttons that you intend to repurpose. After you have cut them, it would be a good time to test the steering wheel switches to ensure they are working well.

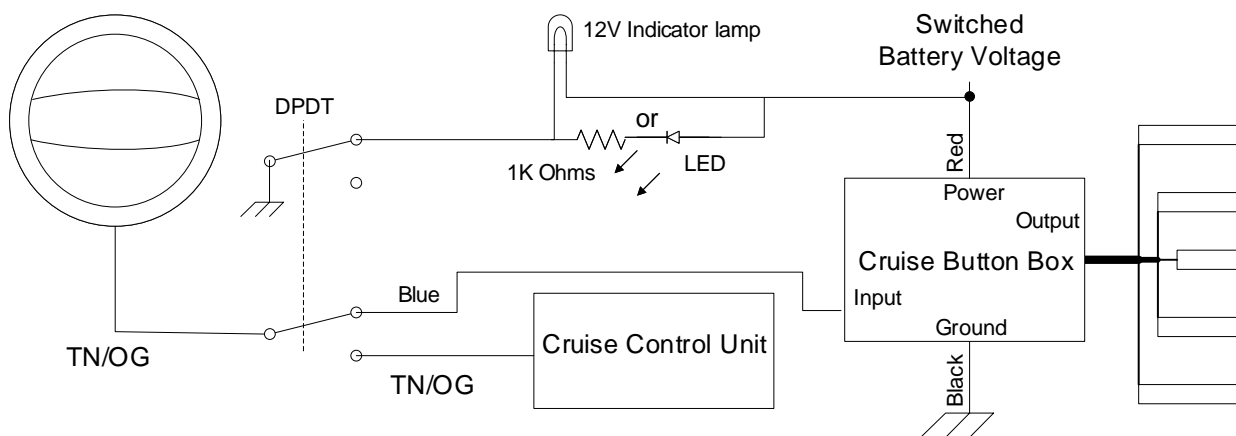
Connect an ohmmeter across the signal wire that goes into the clockspring mechanism and a good chassis ground. Test the resistance with no buttons pushed, and then with each button pushed. You should see resistances close to the ones listed below:

	05-12	13-14
Cruise	Ohms	Ohms
None	4323	2210
ON	2113	NA
RSM	1113	201
SET+	602	182
SET-	301	121
OFF	0	0

Splice the Tan/Orange wire (previously cut) that goes up into the clockspring mechanism to the Blue input wire to the Cruise Button Box. Use shrink tubing on the unused end of the TN/OG wire that goes to the cruise control unit and the WH/OR wire to prevent them from shorting on anything.

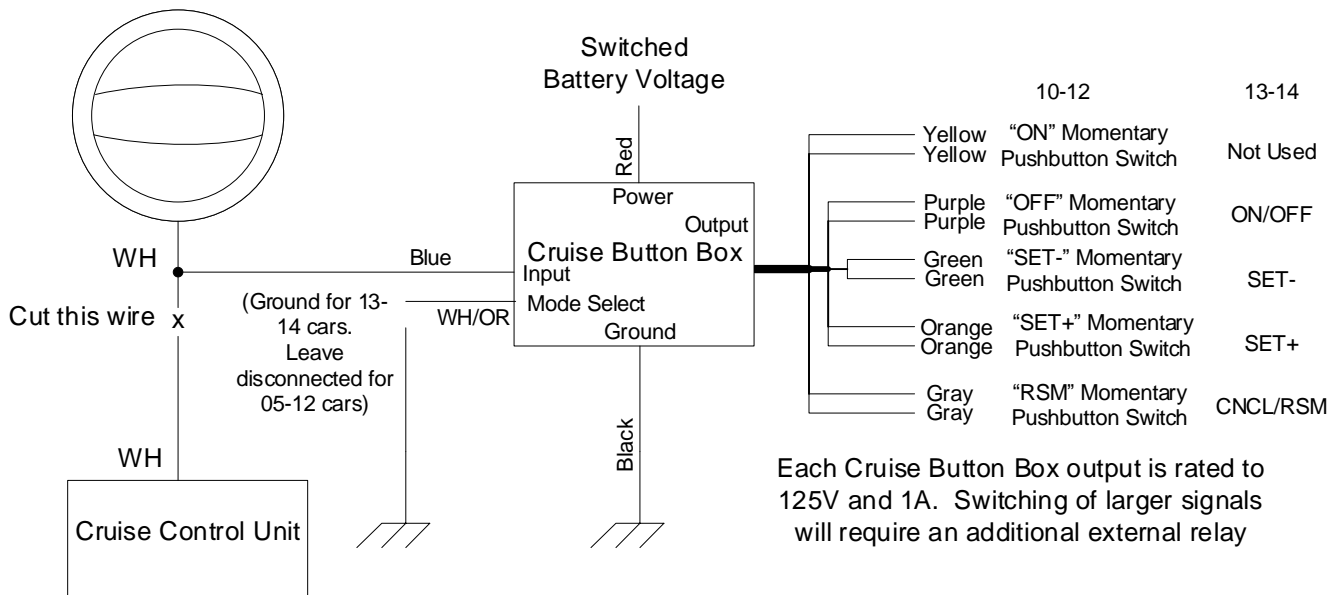


If you choose to go against our recommendations and install a switch to select use between cruise control and an accessory for the cruise control buttons, you should include an indicator light or LED that indicates if you are in Race Mode or Cruise Mode. The switch is a common Double Pole, Double Throw (DPDT) switch. Remember you can damage your car and risk serious injury or death if you have the switch in race mode and try to use your cruise control buttons at road speeds.

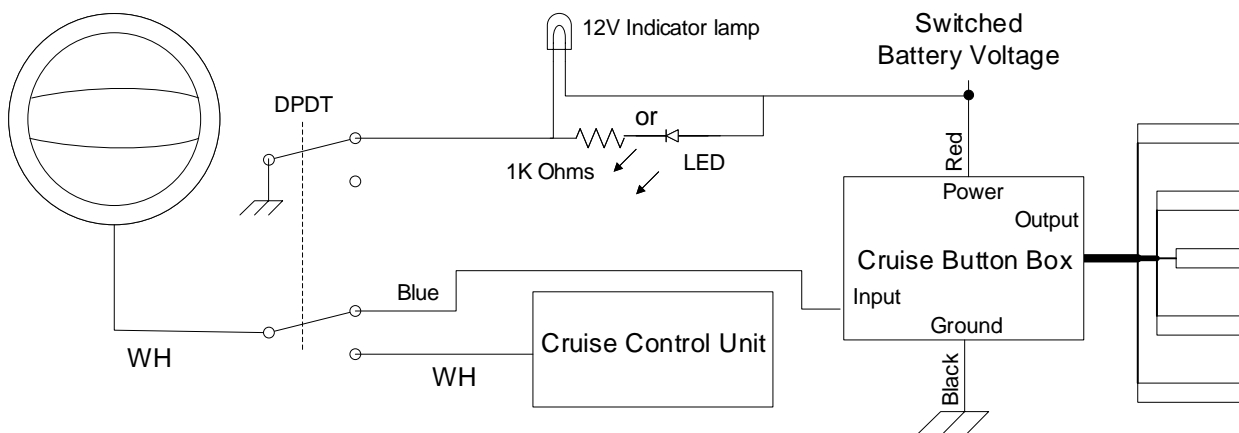


2010-2014 Cruise Control Wiring

Splice the White wire (previously cut) that goes up into the clockspring mechanism to the Blue input wire to the Cruise Button Box. Use shrink tubing on the unused end of the WH wire that goes to the cruise control unit to prevent it from shorting on anything.



If you choose to go against our recommendations and install a switch to select use between cruise control and an accessory for the cruise control buttons, you should include an indicator light or LED that indicates if you are in Race Mode or Cruise Mode. The switch is a common Double Pole, Double Throw (DPDT) switch. Remember you can damage your car and risk serious injury or death if you have the switch in race mode and try to use your cruise control buttons at road speeds.



At this point, it is a good idea to test your installation. Reconnect the car's battery and turn the key on. If you have added a switch, set it to let you control your race accessories. Press each repurposed button and check the corresponding wire pair with an ohmmeter to ensure the switch closes when the button is pushed.

If you do not get these results, make sure that the signal wires in the steering column are cut, and the Cruise Button Box input wire has a good connection to the signal wire that go up towards the steering wheel, not down to the PCM. If the Cruise Control wires are not cut, the PCM will load the wire so the Cruise Button Box will not work.

If the input wire is wired correctly, make sure that the voltage on the red wire is very close to battery voltage. If it is not very close to battery voltage, make sure the connection to power is a good connection. Also, make sure that you have a very good ground connection.

After you have verified that the Cruise Button Box is working with your steering wheel buttons, connect any of the colored wire pairs to whatever accessory you want controlled by the corresponding radio control momentary pushbutton switch.

Each momentary pushbutton switch output is rated to 120V and 1A. Higher rated signals must be controlled by an external automotive relay. If you use an external relay be sure to protect the Box with a diode as described earlier in this document.

The Cruise Button Box typically draws less than 20mA quiescent and less than 70mA when a button is pressed.

Pressing Multiple Buttons at Once

Cruise Control Group:

ON Button – Yellow:	05-12 cars	(Not used: 13-14 cars)
RSM Button – Gray	(Takes precedence over the ON button above)	CNCL/RSM
SET+ Button – Orange	(Takes precedence over the buttons above)	SET+
SET- Button – Green	(Takes precedence over the buttons above)	SET-
OFF Button – Purple	(Takes precedence over the buttons above)	ON/OFF

You can push one button from the cruise control group at any time, but you shouldn't press two buttons from the same group at the same time. If you push multiple buttons from the same group, the lowest button on the list takes precedence.

Auxiliary Switch Units

All of the cruise control buttons function as momentary on pushbutton switches. Some applications require switches that function as a toggle rather than ones that are only momentarily on. Accutach Co. has developed two different auxiliary switch units which can be used in conjunction with any momentary switch (ideal for use with Accutach's Cruise Button Box) to operate devices which normally use a toggle switch (typical on/off function). These two different devices cover just about any application. The Accutach Co. auxiliary switch units can switch circuits up to 120V, 1A. Switching higher voltage and/or current signals will require the use of an external relay. The Accutach Co. "On/Off Auxiliary Switch Unit" and the "Toggle Auxiliary Switch Unit" are described below.

On/Off Auxiliary Switch Unit

Some people will prefer to turn an accessory on with one momentary pushbutton switch and off with another momentary pushbutton switch. The Accutach Co. On/Off Auxiliary Switch Unit provides two such circuits in one small box.

For example, the On button could be used to arm a nitrous system and the OFF button could be used to disarm it. The SET+ button could be used to turn on a bottle warmer and the SET- button could be used to turn the bottle warmer off. That leaves the RSM button to be used as a purge pushbutton. You can learn more about the Accutach Co. On/Off Auxiliary Switch Unit by downloading the Installation Guide here: <http://www.accutach.com/Documents/OnOffAuxiliarySwitchUnitInstallGuideR1-1.pdf>

Toggle Auxiliary Switch Unit

Some people will prefer to turn an accessory on with one momentary pushbutton switch and then off again with the same momentary pushbutton switch. The Accutach Co. Toggle Auxiliary Switch Unit provides one such unit in a small box. One of these boxes will be required for each pushbutton that is to be turned into a toggle switch.

For example, one of the cruise control buttons could be used in conjunction with a Toggle Auxiliary Switch Unit to power a brake line-lock unit during a tire-heating burnout. Hitting the pushbutton a second time would turn it off.

You can learn more about the Accutach Co. Toggle Auxiliary Switch Unit by downloading the Installation Guide here: <http://www.accutach.com/Documents/ToggleAuxiliarySwitchUnitInstallGuideR1-1.pdf>

Feel free to contact Accutach company if you have any questions or issues with the Radio Button Box.

Good luck!