

**Packing list for:
 TRIUMPH Thruxton and Thruxton R 1200
 MCS 7150TBW CAN-BUS Kit**

Pack in small kit carton (MCS 002s)

Standard Fairing <input type="checkbox"/>
Cafe Fairing <input type="checkbox"/>
Standard Switch <input type="checkbox"/>
Slim Switch <input type="checkbox"/>

<u>Qty</u>	<u>Part Number</u>	<u>Description</u>	
1	MCS 10128TBWCAN	Computer configured for Triumph Thruxton and Thruxton R (medium parts bag)	
2 lengths		Self-adhesive Velcro 7cm long	
1 OR	MCS 6154-830B GT-1014-160	Control Switch assembly (medium parts bag) Slim Control Switch	
1	Parts bag	(See below for contents)	
1 OR	MCS 7151 MCS 7153	Cruise Control wiring harness Cruise Control wiring harness	Standard Fairing <input type="checkbox"/> Cafe Fairing <input type="checkbox"/>
1	MCS 6151TPS	Throttle Position Sensor wiring harness	
1		Installation Manual for Triumph Thruxton & R	
1		Information, Set up and Operation Manual (TBW)	
1		Operation and User Manual	
1		Trouble shooting guide (TBW)	
1		Slim switch installation manual (OPTIONAL)	

Parts bag contents (medium parts bag)

10	100mm cable ties
10	150mm cable ties
6	200mm cable ties
1	Wire Paper Clip (terminal insertion tool)



**Motorcycle
Electronic Throttle-By-Wire Cruise
Control Installation Manual ©**

**For Triumph Thruxton and Thruxton R 1200
Model years from 2017**

3 October 2024

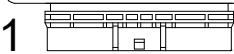
MOTORCYCLE CRUISE CONTROLS

**MotorCycle Setup Pty. Ltd.
A.B.N. 94 798 167 654
AUSTRALIA**

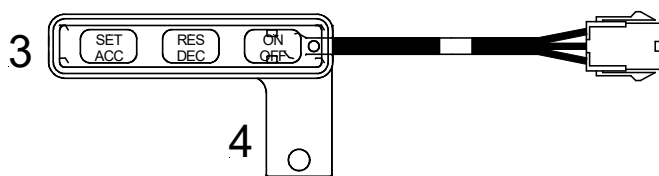
TRIUMPH Thruxton and Thruxton R 1200

Parts list for MCS 7150 TBW CANBUS kit

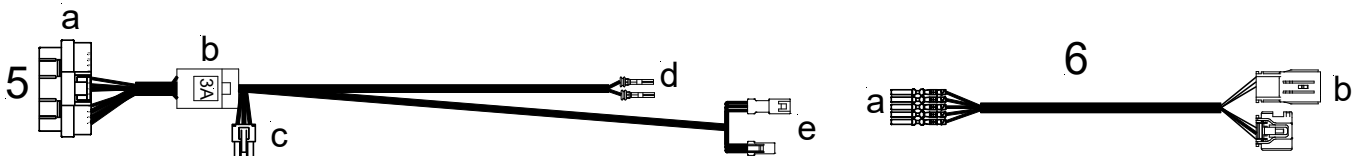
Item	Qty	Part Number	Description
1	1	MCS 10128TBWCB	Computer
2	2 lengths		Self-Adhesive Velcro 7cm long
		<u>MCS 6154</u>	<u>MCS Control Switch Assembly.</u>
3	1	MCS 820-160	Control Switch
4	1	MCS 830B	Control switch bracket
	4		4 gauge x 1/2" pan head self-tap screw
5	1	<u>MCS 7151</u>	<u>Cruise Control Wiring Harness</u>
a			Computer plug (20 pin)
b			Fuse holder (3 amp fuse)
c			Control switch plug (6 pin)
d			CAN-BUS connector (blue/black & blue/white wires)
e			Front brake sensor (pink & brown wires)
6	1	<u>MCS 6151TPS</u>	<u>Throttle Position Sensor Wiring Harness</u>
a			Computer plug terminals
b			TPS connectors
	10		100mm cable ties
	10		150mm cable ties
	6		200mm cable ties
1			Installation Manual
1			Information, Set up and Operation Manual
1			Operation and User Manual
1			Trouble shooting guide



2



4



Some background information for everyone on throttle-by-wire systems and cruise controls.

Frank and I at MCCruise are unapologetically conservative in our approach to this technology. The reasons are simple – even a cursory search for 'sudden unintended acceleration' on Google produces some startling results.

We cannot afford such events occurring on motorcycles – people will die – it is as simple as that. Consequently, we have made modifications and conducted exhaustive tests to ensure our kits will not cause dangerous situations. That said, with throttle-by-wire, we are totally in the hands of the motorcycle manufacturers' over-riding safety and limp-home systems kicking in appropriately. It is an area we have thought long and hard about before entering this market at all.

The other significant issue is what happens when a 'limp-home' event occurs on these vehicles. The most common response to ANY error in the signals from the twist grip/cruise control to the bike's engine management system is that the engine stops responding to throttle completely, and the engine drops to idle and sometimes stops altogether. This means that in the event of any error in signals from the twist grip and cruise control to the bike's engine management, the bike will no longer respond to throttle AT ALL, it behaves as if a throttle cable has broken. To restore control to the twist grip, the ignition switch must be turned off and back on again.

We think riders deserve to know the facts: corrosion, water ingress and electrical noise are serious potential threats on motorcycles and we do not take them lightly.

We still have some reservations generally about throttle-by-wire systems on cars and bikes, we have not heard of any safety issues with bike systems, but a search on Google will find a lot of issues with cars, and bikes use the same type of throttle-by-wire control methods that cars use.

The design of these throttle-by-wire systems means that we physically cannot build in some of the basic safety overrides we built into our previous model cruise controls (for mechanical throttle systems), so more than ever we are reliant on the integrity of the motorcycle manufacturers' throttle control systems and safety overrides and very careful installation on the part of the installer.

Researching all this, designing and testing takes time and costs money. The cost of our product reflects that. We have put a lot of time and effort into making this product as safe as we can, and as easy to install as possible.

From you, the users, point of view, if for some reason an issue does occur, pulling the clutch will prevent the bike accelerating if too much throttle is applied, and if the engine stops producing power, pulling the clutch will allow you to roll to a stop without the engine slowing the vehicle dramatically. The engine may sit on the rev limiter, but engine management systems prevent the engine over revving on all modern motorcycles. You can then use the 'kill', or engine stop switch. With the combination of clutch and kill switch YOU retain control of the motorcycle.

Electronic Cruise Control Installation Manual ©

WARNING: - IN THE EVENT OF ANY UNEXPECTED BEHAVIOUR RELATING TO THE THROTTLE, EITHER WITH THE CRUISE CONTROL TURNED ON OR NOT, PULL THE CLUTCH IN TO DISCONNECT DRIVE FROM THE REAR WHEEL AND USE THE ‘KILL’ OR ENGINE STOP SWITCH TO TURN THE ENGINE OFF.

Testing has resulted in programming to deliver safe, reliable operation on this motorcycle. It is essential that you install the cruise control in accordance with the advice in the installation instructions precisely so that electrical interference does not cause the vehicle or cruise control to behave erratically or be rendered inoperative.

WARNING: - This cruise will function properly only if your vehicle has resistor type (radio suppression) ignition wires (spark plug leads). The cruise control may not function properly if aftermarket SOLID CORE spark plug wires are installed. Please read Section 11, Safety Issues & Features before fitting & using the cruise control.

If, after reading these instructions, you feel you are not competent to install this kit, we strongly urge you to seek the assistance of your local dealer.

NOTE: - It is recommended that on most motorcycles the fuel tank is less than 1/4 full before attempting to fit the cruise control. The fuel tank must be lifted for most installation and can be very heavy when full of fuel.

CONTENTS

Chapters 1 to 5 and 8 to 11 are contained in the separate Information, Set up and Operation manual.

1. INTRODUCTION
2. WARNINGS, CAUTIONS AND NOTES
3. TOOLS REQUIRED
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5. OVERVIEW OF CRUISE CONTROL OPERATION
6. PREPARING THE BIKE FOR CRUISE CONTROL INSTALLATION
7. INSTALLATION
8. TPS CALIBRATION AND DIAGNOSTIC MODE TESTING
9. OPERATING INSTRUCTIONS

1. INTRODUCTION

Congratulations, you have purchased one of the most advanced cruise control systems in the world. All functions are microprocessor controlled, which reduces the complexity of installation.

Before installing your cruise control, take the time to read and understand each step in this manual. Several steps are dependent on others, so it is important know where and how each component is to be mounted before installation commences.

2. WARNINGS, CAUTIONS and NOTES

This manual contains several **cautions**, **warnings** and **notes**, which are prominently displayed. The convention used is:

A **warning** applies whenever injury could result from ignoring the warning;

A **caution** applies whenever damage to the bike or cruise control could result from ignoring the caution; and

A **note** applies where other aspects should be considered before any action to do with installation is undertaken.

EXAMPLES:

WARNING: - Always ensure the bike is properly supported on the side or centre stand and cannot accidentally fall off either stand.

CAUTION: - Before drilling any holes, make sure there are no components that may be damaged on the other side of the surface being drilled. Double check for any wiring harness that might be easily damaged by a drill bit.

NOTE: - Lay the wiring harness in place and connect the components before cable tying the harness in place.

3. TOOLS REQUIRED

NOTE – not all of the tools listed will be required for your installation, but most will be necessary or very helpful to have at hand.

- Socket and/or spanner, Torx and/or hex key set and screwdriver set to suit your motorcycle.
- Side cutters (to cut cable ties).
- Loctite '243' medium strength thread locking compound or equivalent.
- Solvent and a clean cloth to clean surfaces before applying adhesive tape

4. PARTS LIST

Check that all components depicted on the first pages of this manual are included in the cruise control kit. Please phone (03) 9808 2804 within Australia, international (61 3) 9808 2804 or e-mail sales@mccruise.com for advice, if any parts are missing;

5. OVERVIEW OF CRUISE CONTROL OPERATION

Cruise control function

The principles behind your cruise control's operation are very simple:

- The computer continuously monitors the motorcycle's CAN-BUS system for road speed;
- When the SET key on the switch is pressed, the computer stores the speed at the time in memory and then continuously adjusts the throttle electronically, which controls the throttle to maintain the pulse frequency at the same figure to which it was set. If the speed drops below the set speed, the computer applies more throttle. If the speed is above the set speed, the computer releases the throttle. The key is that the computer monitors and reacts to changes very quickly and smoothly so that the speed effectively remains nearly constant.

There are three major components in most installations: the computer, the control switch and the wiring harness. The functions of each are described below:

- The computer - monitors the bike for road speed, engine rpm, clutch operation and brake operation and the control switch for instructions from these components;
- The control switch - sends instructions from the rider to the computer; and
- The electrical wiring harness - which connects the cruise control switch, the cruise control computer, the bike's throttle position sensor (TPS), the bike's brake system and the bike's CAN-BUS system for speed, engine rpm, brake operation and clutch operation.

When the cruise control is operating, the computer electrically duplicates the operation of the throttle position sensor (TPS) which is normally operated by the twist grip.

If the throttle grip is twisted open while the cruise control is engaged the rider over-rides the cruise control. When the throttle is released, the cruise control will resume control, unless it has been disengaged by brake operation or if the motorcycle exceeds the current set speed by a significant amount such as during an overtaking manoeuvre or if the acceleration exceeds the pre-set limits in the cruise control. The cruise will also disengage if the speed drops significantly below the set speed such as when riding up hill. This is unlikely to occur on large capacity motorcycles.

6. PREPARING THE BIKE FOR CRUISE CONTROL INSTALLATION

The following directions may be used to prepare the bike for cruise installation:

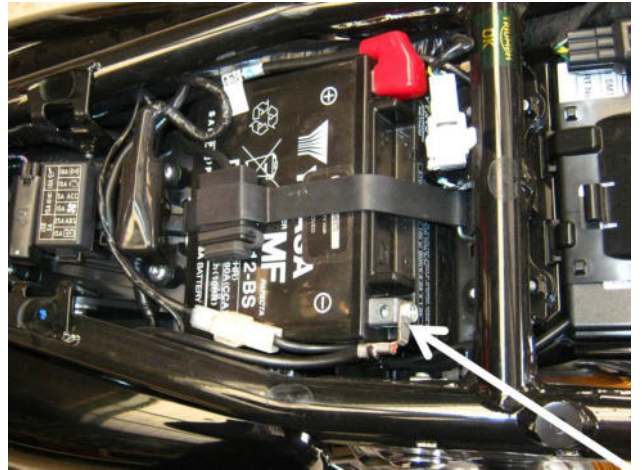
Remove the seat.

Use the key to release the seat, pull the seat to the rear and up to remove it.



Disconnect the battery.

Disconnect the cable from the negative terminal of the battery.



Remove both (left and right) side covers from the bike.

They are mounted with three post & grommet fasteners.

Gently pull the side covers away from the bike to release the fasteners.



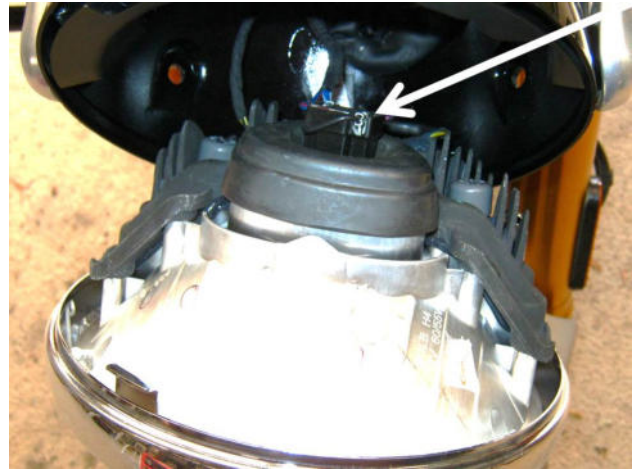
Remove the head light from the headlight shell.

Undo the two mounting screws, one each side of the headlight.

Pull the head light out at the bottom, then disengage the tab at the top of the headlight.

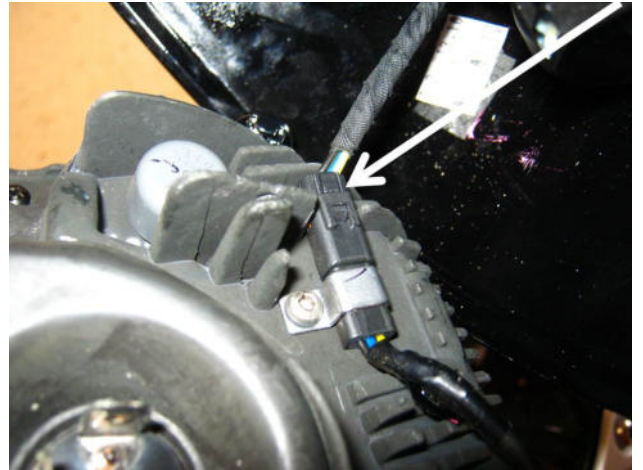


Disconnect the plug on the back of the headlight globe.



Disconnect the plug for the day-riding lights at the bottom of the headlight.

Depress the latch (arrowed) to disconnect the plug.



There is a plastic frame in the headlight shell to 'carry' the electrical connectors.

Undo and remove the two screws holding the frame inside the headlight shell (arrowed).

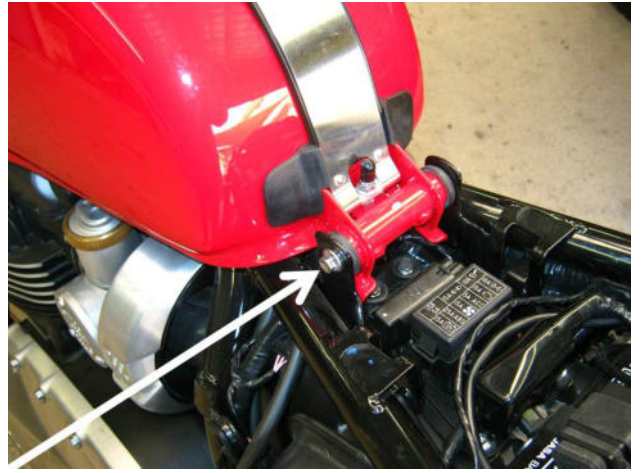


Carefully draw the 'frame' out of the headlight shell to reveal the connectors.



Remove the fuel tank.

Undo and remove the rear fuel tank mounting bolt.



Prop up the tank with a suitable prop such as a piece of timber.



Follow the vent/overflow hose down from the rear of the fuel tank.



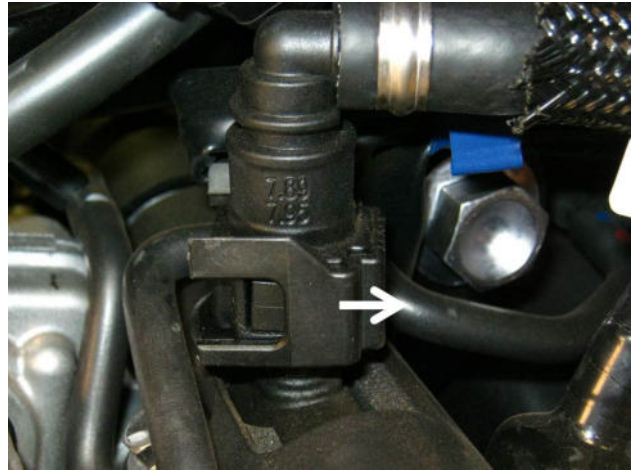
Disconnect the fuel tank vent hose from the valve beside the air filter housing.



Disconnect the fuel pressure hose quick coupler, under the right rear of the fuel tank.

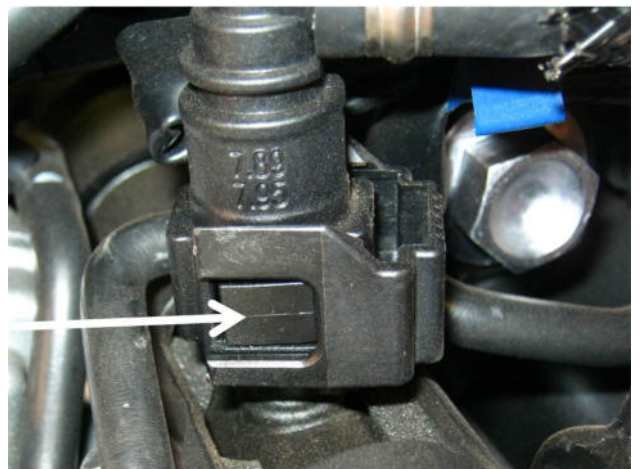


Slide the lock piece forward to release the coupler.



The lock piece in the 'unlocked' position.

While it is possible to release the coupler with fingers, it is very difficult to do. It is much easier to use a pair of fuel coupling pliers to depress the buttons (arrowed) on each side of the coupler.



Disconnect the fuel pump and fuel gauge connectors.

The connectors are mounted to the bike's frame on the right side.



Release the latch at the top of both plugs (arrowed) and slide them up off the frame mounting tabs.



Once they are off the mounting tabs, disconnect both connectors.

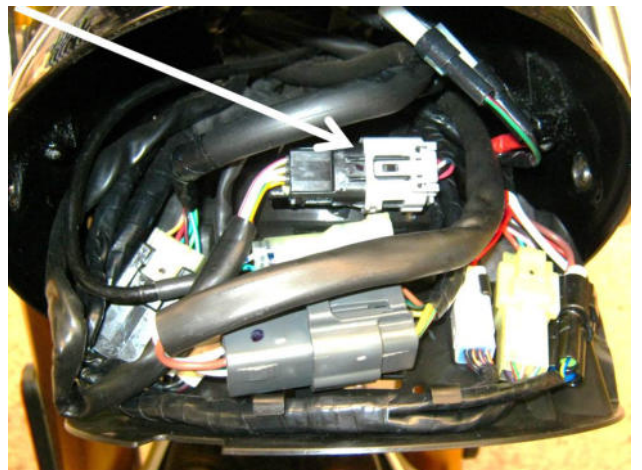
Lift the rear of the fuel tank and slide the tank to the rear of the bike to remove it.



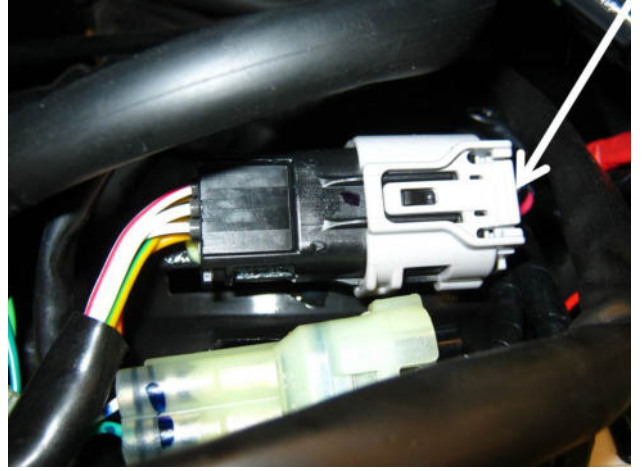
7. INSTALLATION

Preparing for TPS sensor connection.

This connector is the bike's throttle grip position sensor plug.



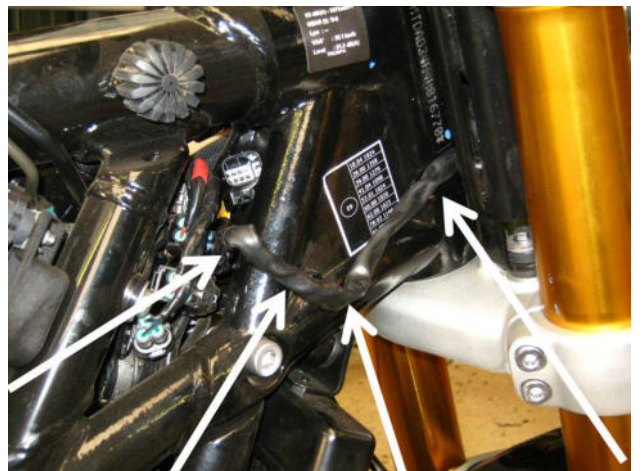
Depress the latch on the back of the female plug and disconnect it from the male plug.



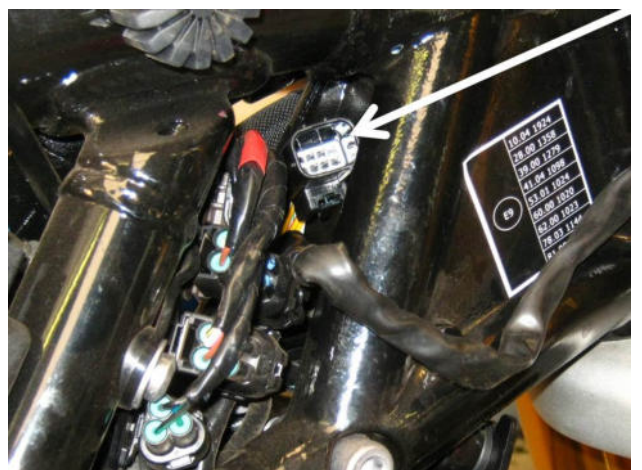
Slide the male plug off the mounting tab inside the headlight shell.



Draw the harness and plug out of the headlight shell, and to the rear beside the steering head on the right side.

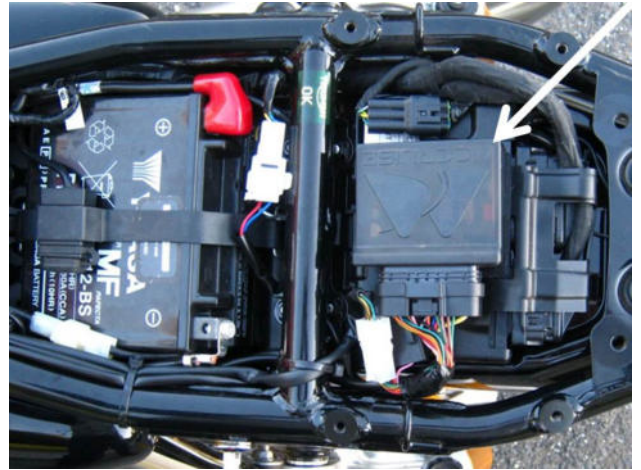


Feed the harness and plug into the cavity behind the steering head, above the other connectors in this cavity.



Installing the cruise control computer.

The computer will be mounted at the rear of the bike, above the bike's ECU.



There is only just enough space for the cruise computer to fit, so the mounting position of the computer is important if it is to fit.

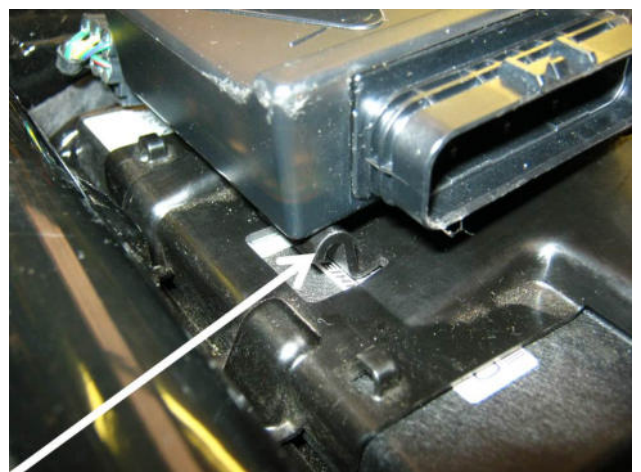
The computer will be mounted with Velcro adhesive tape at the rear edge.



The computer has to sit on the small lug (arrowed) at the front edge.

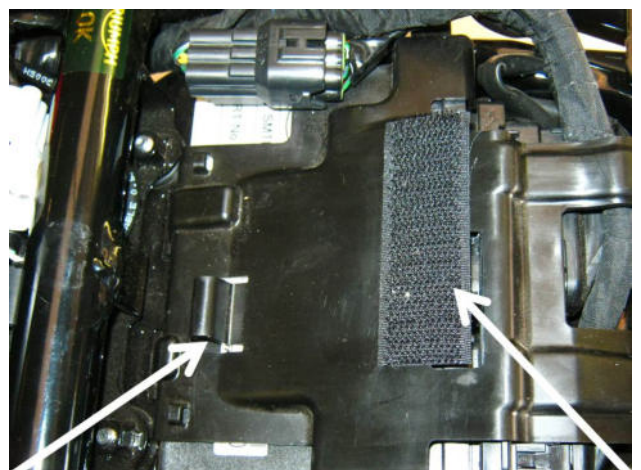
If the computer sits on the lug as shown here, there is only just enough space for the computer to fit under the seat. This lug is used only when the optional alarm module is fitted to the bike, the lug is used to mount the alarm.

If this lug is cut off, the computer can sit flat with two Velcro strips mounting it, and then space is not quite so critical.

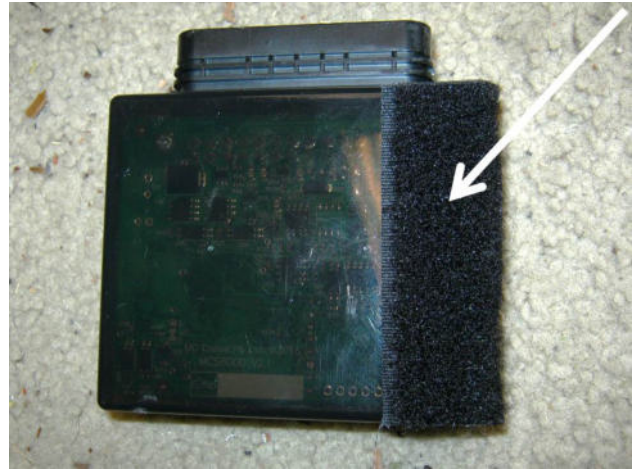


If the lug is going to stay, place a length of the supplied Velcro tape as shown (right arrow).

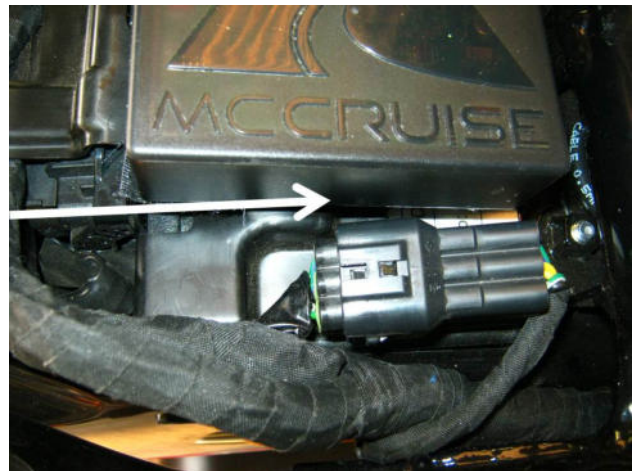
If the lug (left arrow) is removed, place a second length of Velcro tape at the front edge as well.



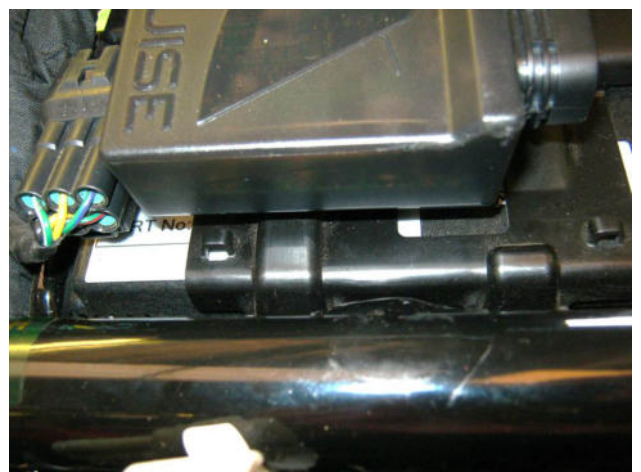
Place one or two lengths of Velcro tape on the bottom of the cruise control computer, to match the Velcro fitted to the bike.



Position the computer on the bike, so there is about a 6mm (1/4") gap between the computer and the 6-way plug behind it.



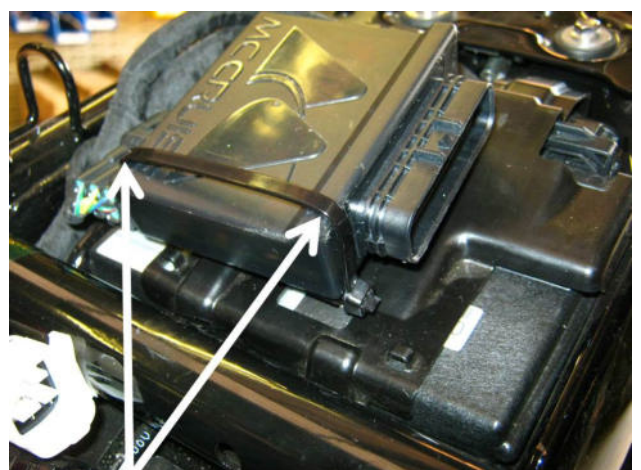
Position the computer on the bike, so it sits on top of the alarm mounting lug, if the lug has not been removed.



If the lug is left in place put a cable tie around the computer and the lug to hold the computer in place.

Otherwise, the two strips of Velcro tape will hold the computer in place.

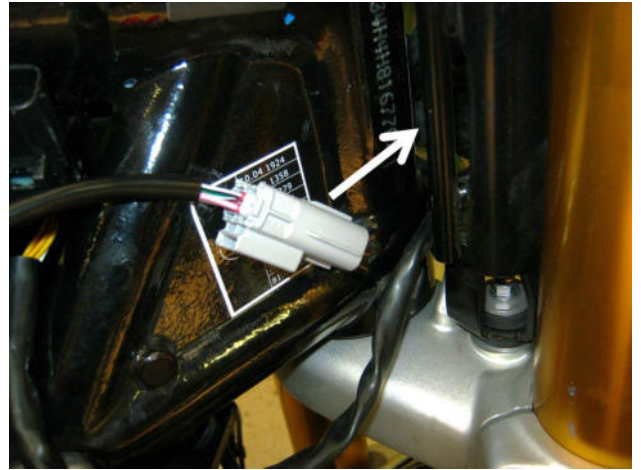
Carefully trial fit the seat to ensure that it fits without causing damage to the computer or the seat base.



Installing the Throttle Position Sensor (TPS) harness.

Locate the TPS harness in the kit.

Feed the male housing on the end of the harness forward on the right side of the steering head.



Feed the connector past the right side of the steering head, between the frame and the front forks, into the headlight shell.

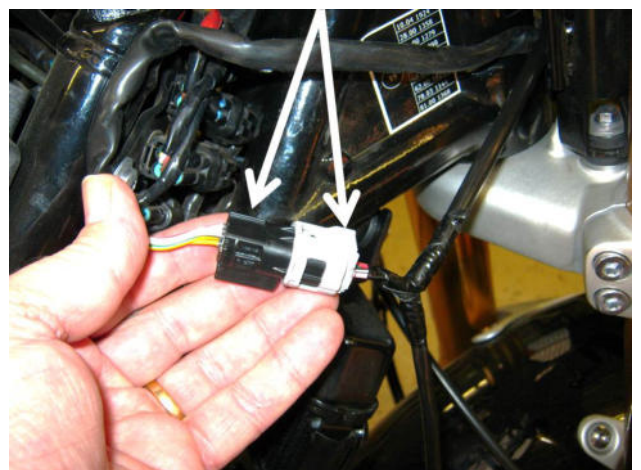


Connect the cruise control's male 8-way TPS plug to the bike's female 8-way TPS plug.

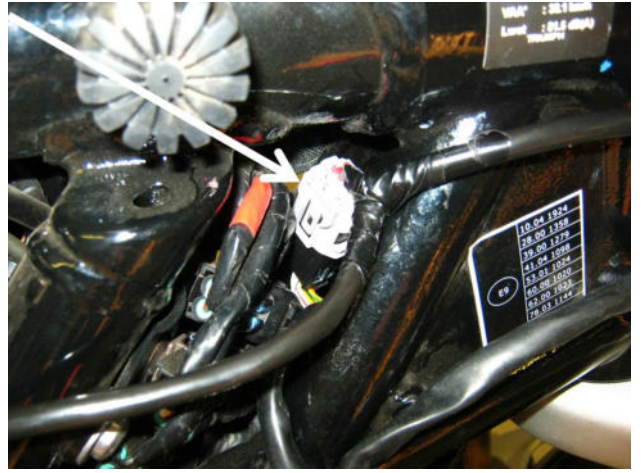
Mount the plugs to the tab on the frame in the headlight shell.



Connect the cruise control's TPS female connector to the bike's twist grip plug.



Tuck the connectors into the cavity behind the bike's steering head.



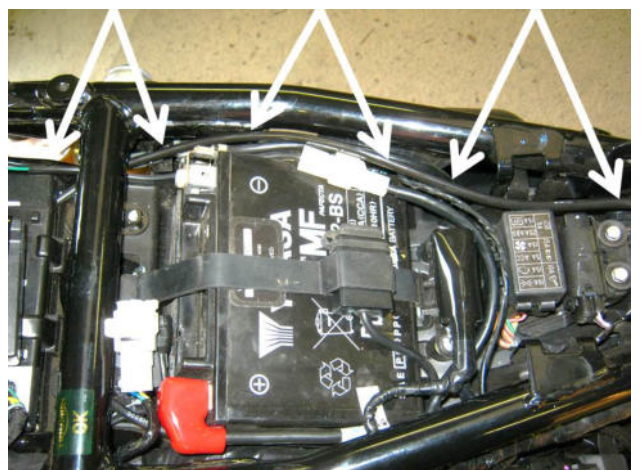
Route the cruise control TPS harness to the rear on the right side of the frame 'spine'.



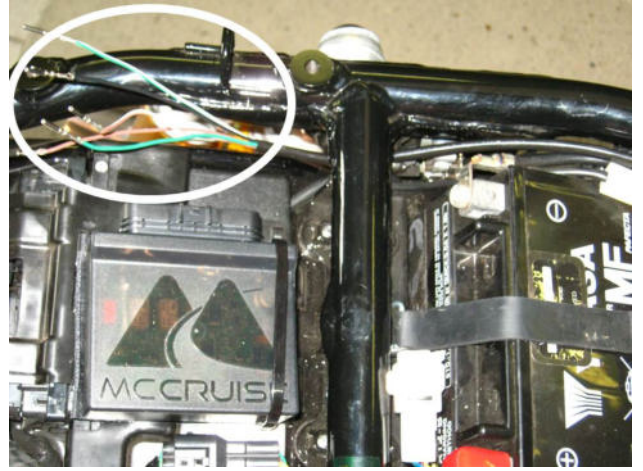
Route the wire under the bike's harness at the rear of the central spine.



Route the TPS wires to the rear of the bike on the left side, next to the frame tube.



The terminals on the end of the harness should be next to the cruise control computer.



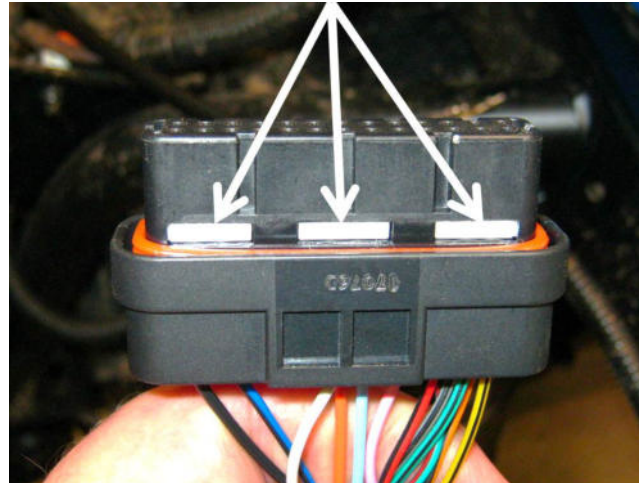
Connecting the TPS harness to the cruise control main harness.

Locate the cruise control main wiring harness in the kit.

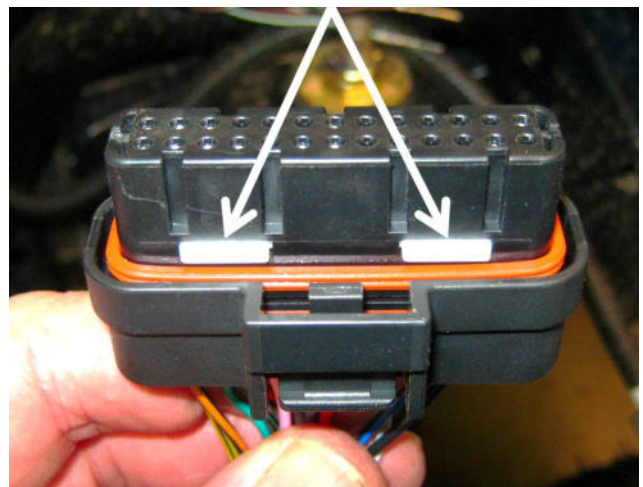
Use a suitable tool (the end of the screwdriver for example) to depress the three white rectangles on the bottom side of the cruise control harness plug.

The white rectangles will depress about 3mm (1/8").

NOTE: - This unlocks the terminals; take care not to pull on the wires.



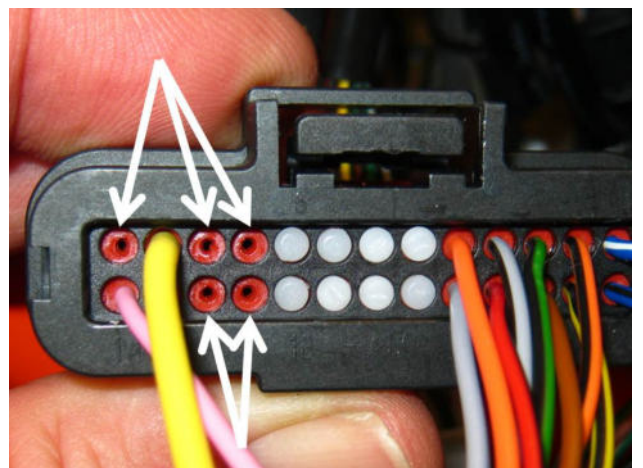
The two tabs on the other side of the plug will come out about 3mm (1/8").



Note that there are 5 empty terminal holes in the cruise control main harness plug.

The TPS sensor harness terminals will be inserted into these holes.

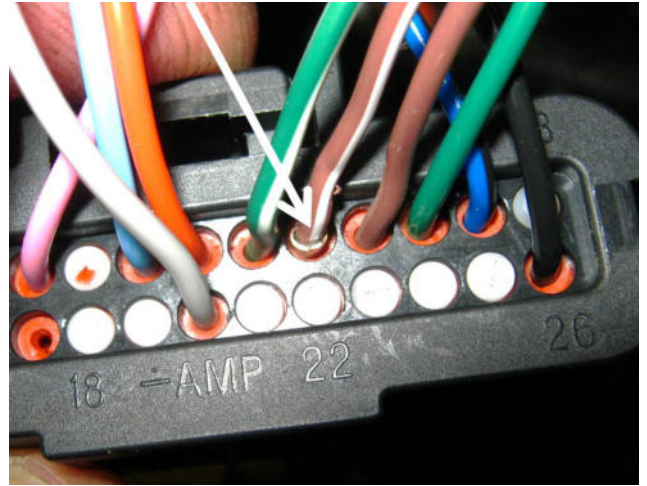
Note that your harness has some wire positions and colours different to the photo, but the TPS wires you insert are the same, and go into the same locations.



See over the page for details on wire colours and positions.

Insert the terminals from the TPS harness into the empty holes. In some cases, the wire is not stiff enough to push the terminal all the way into the hole, see arrow showing one terminal not fully inserted.

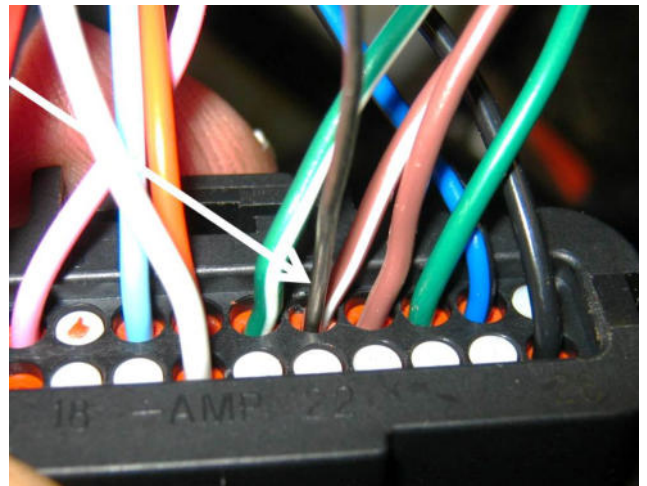
NOTE: - This photo shows an earlier cruise model with different wire positions.



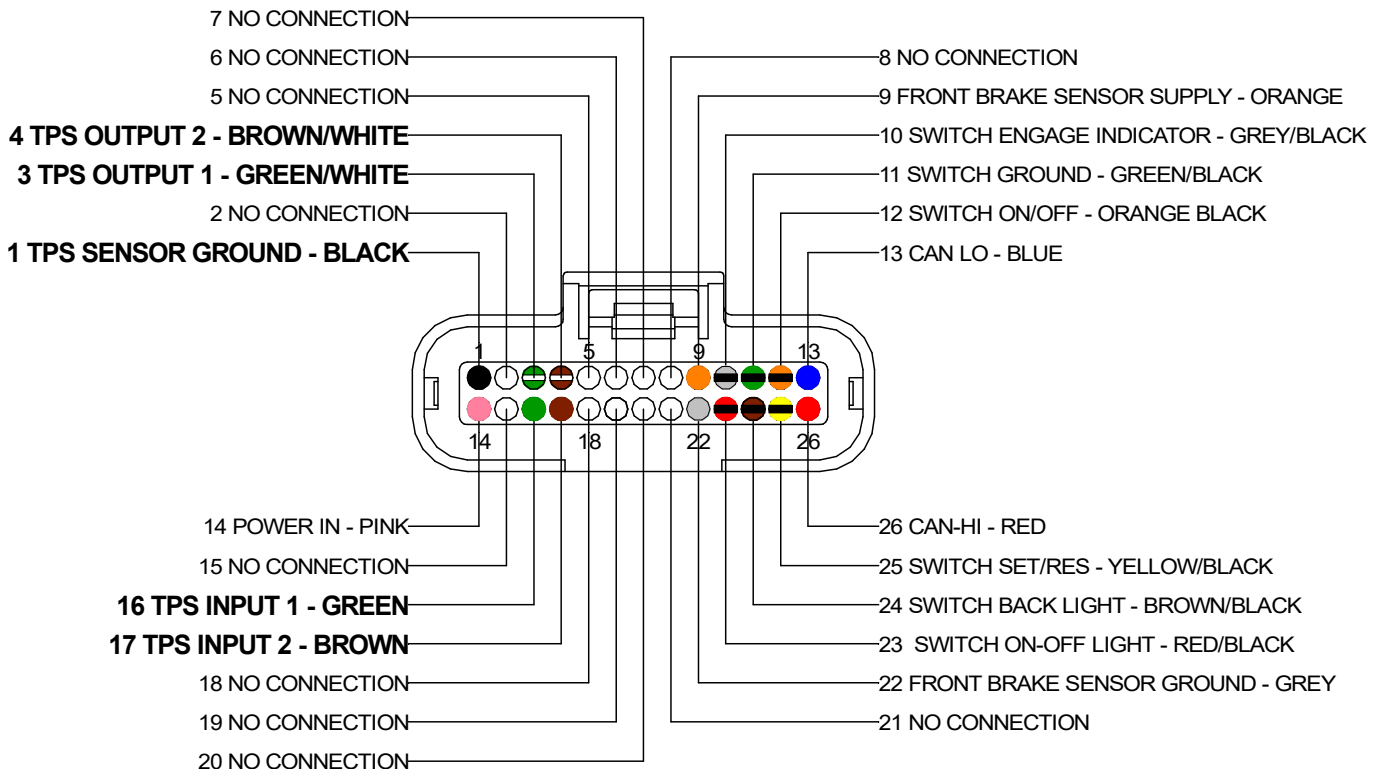
Use the paper clip in the kit as a terminal seating tool.

Unbend the paper clip and place the end of the paper clip on the back of the terminal and push the terminal all the way in to the plug.

NOTE: - This photo shows an earlier cruise model with different wire positions.



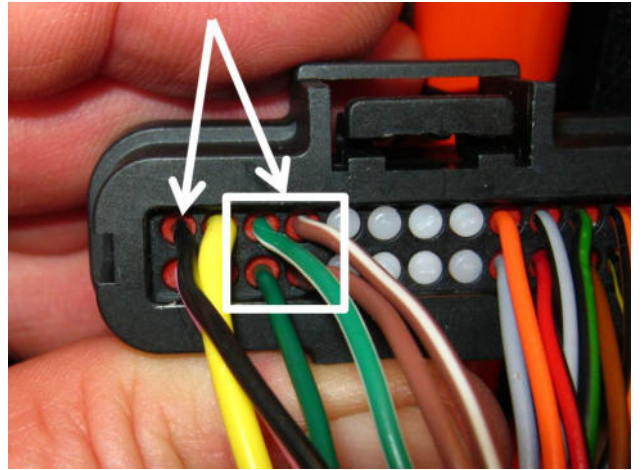
The drawing below shows the TPS harness wire position in the cruise control computer main harness plug.



CRUISE CONTROL 26-WAY RECEPTACLE HOUSING
VIEW FROM BACK (WIRE ENTRY SIDE) OF HOUSING

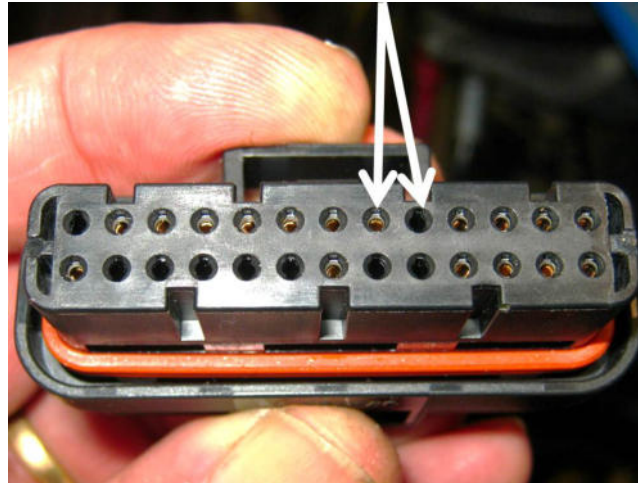
The black wire is in position 1.
The green/white wire is in position 3
The brown/white wire is in position 4.
The green wire is in position 16.
The brown wire is in position 17.

CAUTION: - The wires **MUST** be inserted into the correct holes; if they are not neither the vehicle nor the cruise control will work.

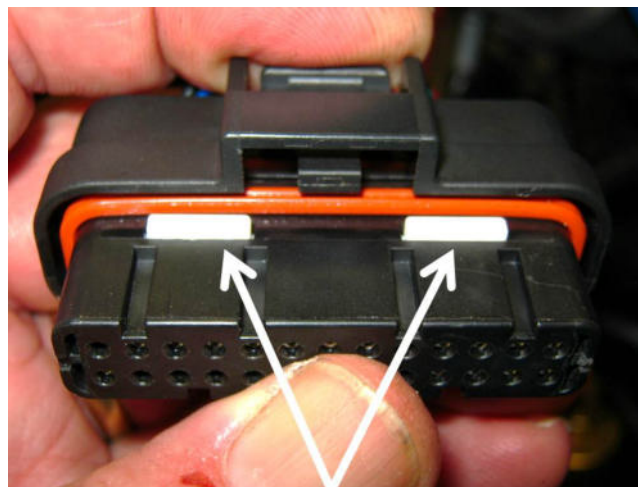


Check that all terminals are fully inserted. The terminal on every wire must be visible in the holes. The arrows show two holes, one with a terminal and one without.

NOTE: - This photo shows an earlier cruise model with different wire positions.



Gently push the two tabs back down so they are flush with the connector.



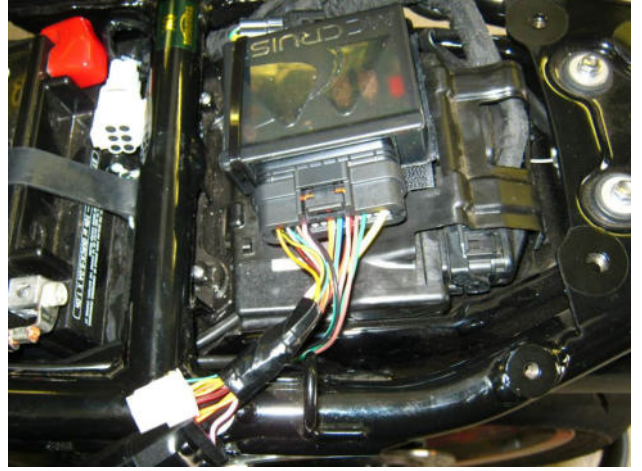
This will lock the terminals into the connector.

If the tabs do not press down fairly easily, one or more of the terminals is not fully inserted.

Re-check that all terminals are fully inserted into the plug.



Connect the harness plug to the cruise control computer.



Installing the control switch.

The switch is to be mounted above the left side handlebar using the clutch lever mount.



Loosen and remove the two bolts holding the clutch lever to the handlebar.

Take note of which end of the handlebar clamp has the upper bolt in it.



Use a file or other suitable tool to remove material from the upper face of the clutch lever clamp.

Remove material roughly equivalent to the thickness of the cruise control switch bracket.

Make sure the new surface is flat and parallel to the original surface.



Replace the clamp on the handle bar with the control switch bracket between the clutch lever bracket and the clamp.

Insert the upper bolt ONLY and tighten firmly. If the correct amount of material has been removed from the clamp, the clutch lever assembly will not be clamped to the bar, but it should not be 'sloppy' on the handlebar either, it should be a neat fit on the bar.

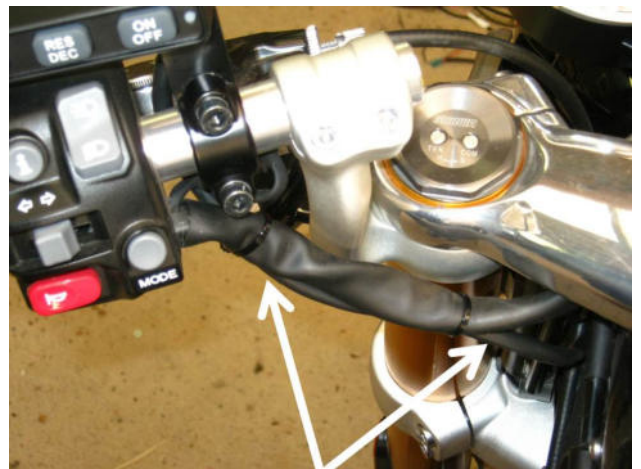
Insert the lower bolt and tighten firmly to clamp the clutch lever to the handlebar.



Route the switch wire down between the bike's switch gear and the clutch lever mount.



Route the switch wire with the bike's wires from the handlebar.



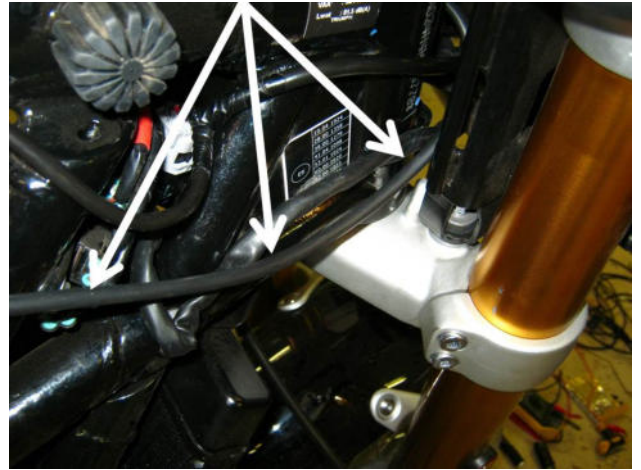
Route the switch wire to the steering head and around the front of the steering head to the right side of the bike.



Route the switch wire to the rear of the bike on the right side, with the TPS harness you routed to the back of the bike earlier.

Check that steering movement does not risk damage to the switch wires from pinching, pulling or cutting the wires.

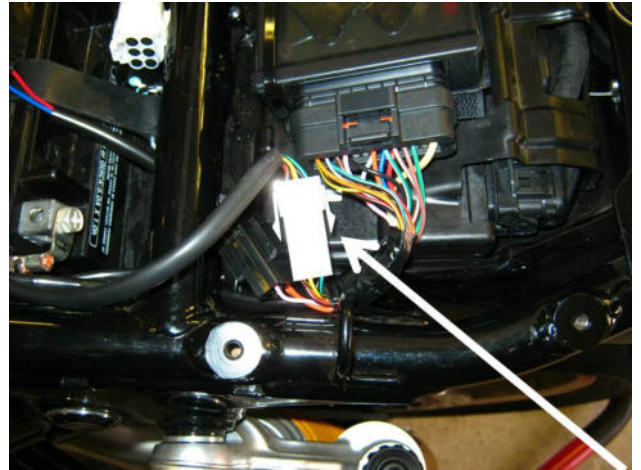
Route the switch wire to the back of the bike all the way with the cruise control TPS harness.



The connector on the switch wire is too big to fit under the frame tube that runs across the bike, in front of the cruise control computer.

Route the wire above the frame tube.

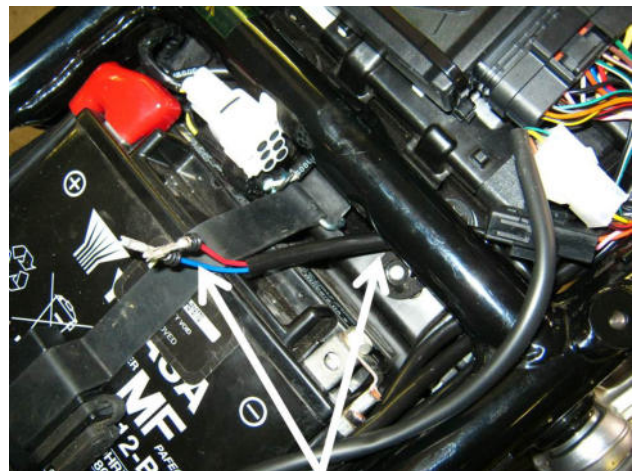
Connect the plug on the switch wire to the matching plug on the cruise control harness.



CAN-BUS connection.

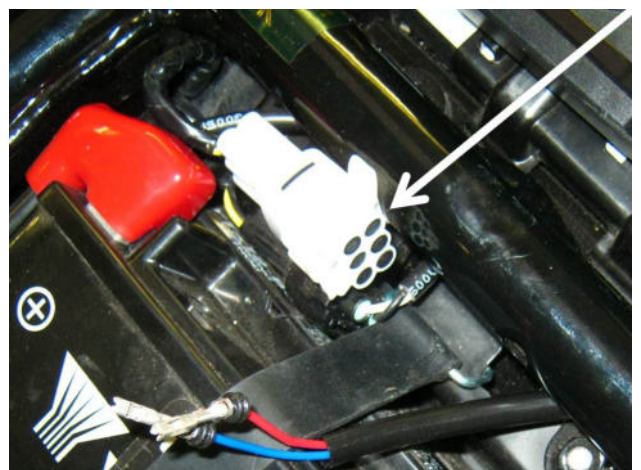
This connection provides the cruise control with several parameters. Road speed, engine speed, brake operation and clutch operation are all 'read' from the CAN-BUS connection.

Route the branch with the red and blue wires under the frame tube into the battery compartment.

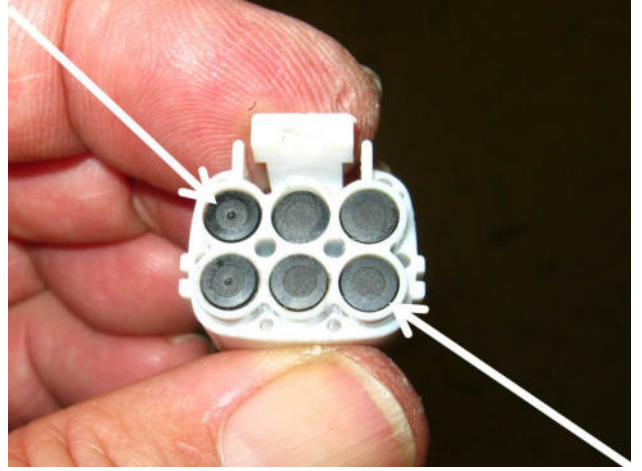


This connector, next to the positive battery terminal, is the connector for the optional alarm system. This plug has CAN-BUS connection wires in it.

Disconnect the blanked plug from the wired plug.



These two holes are the holes for the CAN-BUS wires.



Use a small screwdriver or piece of wire to push the blanking plugs out of these two positions.



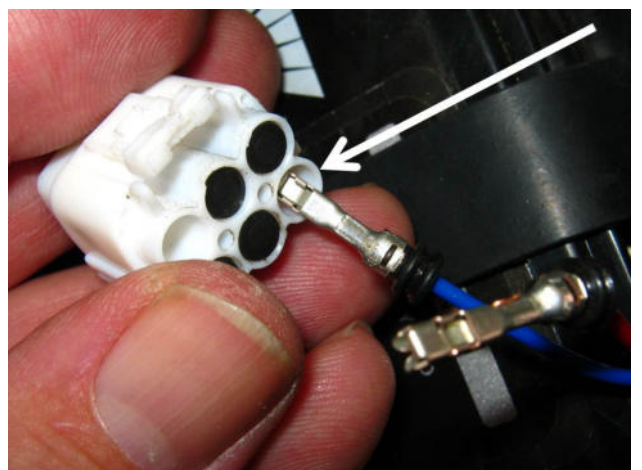
The connector with the blanking pugs removed.



Insert the terminals on the blue and red wires into the holes in the connector.

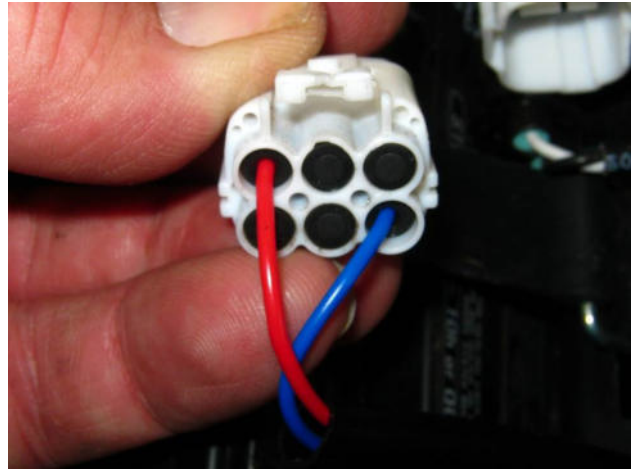
The terminals must be oriented as shown for insertion.

If they are oriented any other way, they will not fit in the connector.

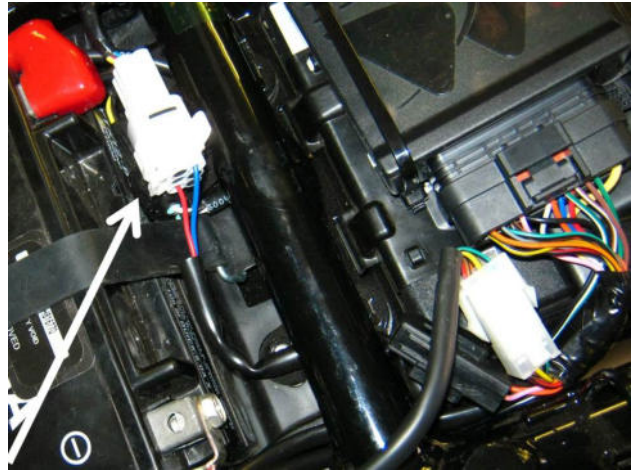


Insert the red wire in the top left hole (left arrow).

Insert the blue wire in the bottom right hole (right arrow).



Re-connect the plug to the bike's alarm connection plug.



Power/Brake sensor connection.

Locate the bike's front brake light switch connectors. These connectors are in the headlight shell.

The connectors are 3-way connectors.

The wire colours at on one end (going to the vehicle's main harness) are yellow, green/blue and green/violet.

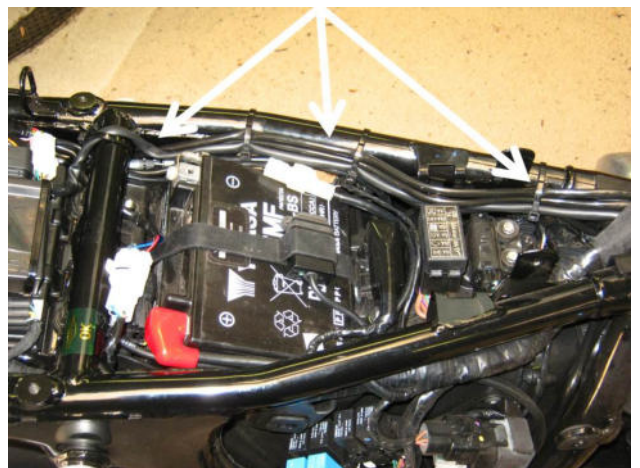
The wire colours at the other end (to the brake light switch) are black, yellow and brown.

Disconnect this plug.

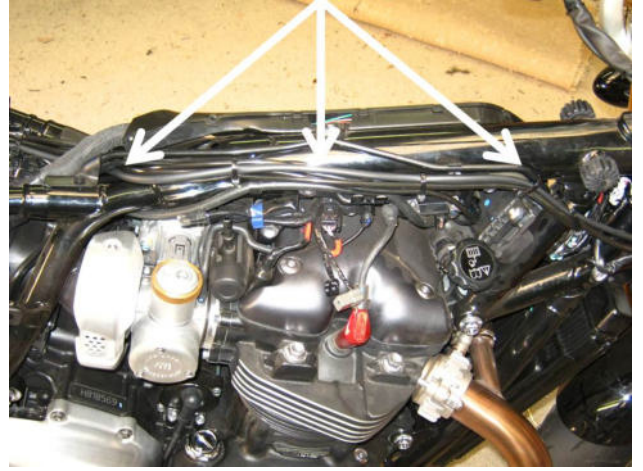


The power/brake sensor branch is the last branch of the harness. Route this branch UNDER the frame tube with the cruise control TPS harness, not above with the switch harness.

Route the brake sensor branch to the front of the bike with the cruise control TPS harness and switch harness.



Route the branch to the front of the bike with the cruise control TPS harness and switch harness.



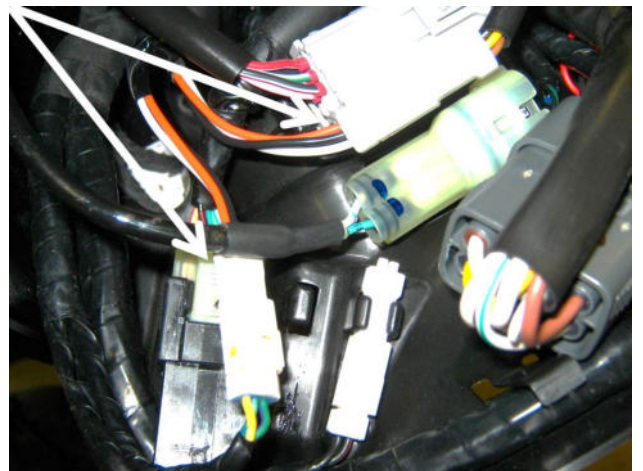
Route the brake sensor branch to the front of the bike with the cruise control TPS harness and switch harness.



Route the harness into the headlight shell.

Connect the plugs on the cruise control harness to the bike's brake light switch plug.

The cruise harness will bridge the connection and take power and brake signal to the cruise control.



Place on connector in the clip in the head light shell frame (left arrow).

Place the other connector in the space indicated (right arrow).



Finishing up.

Check the routing of the wires and fit cable ties where necessary.

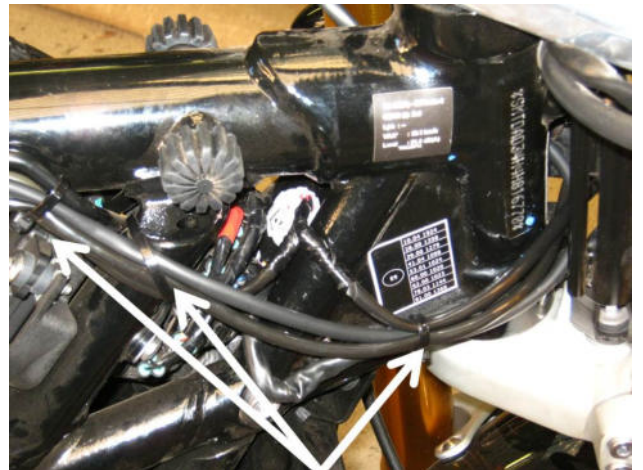
Check carefully for moving or stationary objects that might damage any wires.

Check that all wiring connections are complete and secure.

CAUTION: Take extra care to ensure that no wires will be chafed or damaged when the fuel tank is fitted to the bike.

Check the routing of the wires again and fit cable ties where necessary.

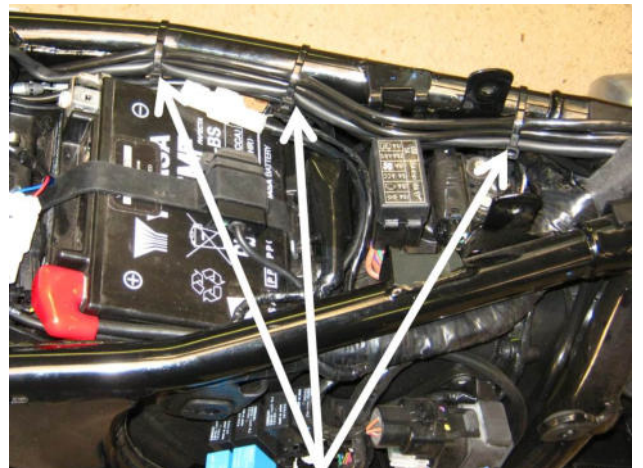
Fit cable ties where indicated to ensure that the harness will not be damaged by any other moving or stationary parts.



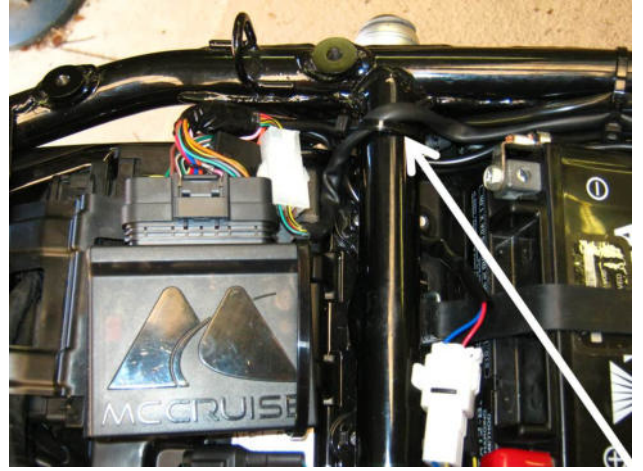
Fit cable ties where indicated to ensure that the harness will not be damaged by any other moving or stationary parts.



Fit cable ties where indicated to ensure that the harness will not be damaged by any other moving or stationary parts.

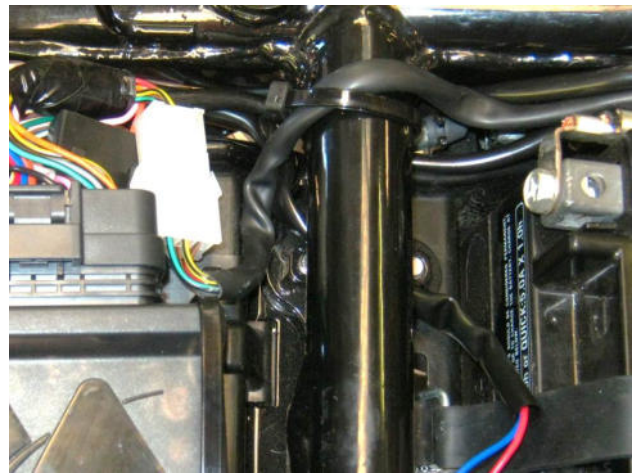


Fit a cable tie around the control switch wire where it crosses above the frame tube (see next photo for more detail).

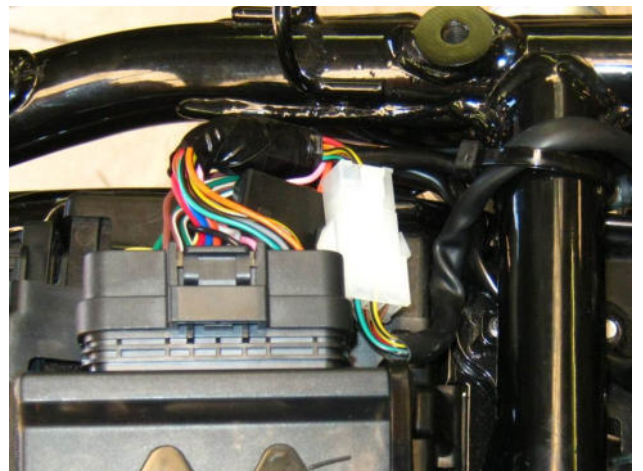


Fit a cable tie around the control switch wire where it crosses above the frame tube.

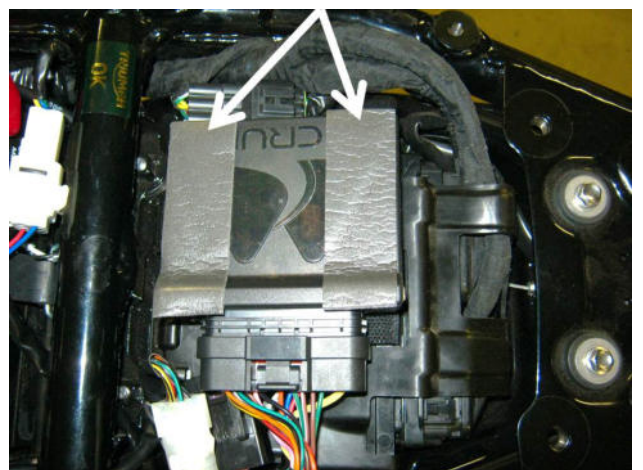
This will keep the switch wire tight against the frame tube and prevent contact with the seat base.



Tuck the switch connector and fuse holder against the harness connector.

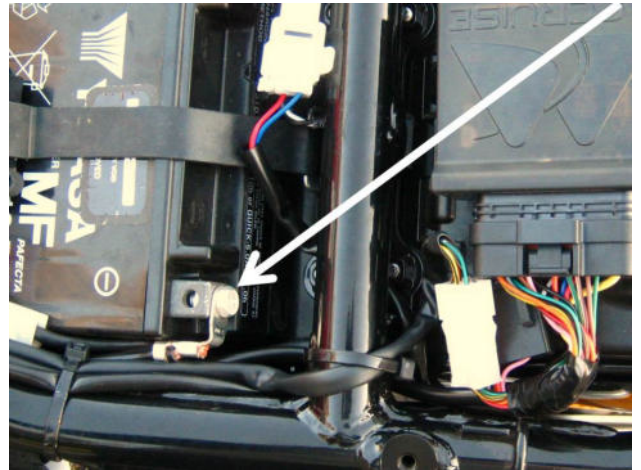


Fit two strips of foam tape to the top of the computer to prevent it rattling against the seat base.



Re-fit the fuel tank to the bike.

Re-connect the battery ground (negative) cable.



Your cruise control is now ready for calibration and testing!

THROTTLE POSITION SENSOR CALIBRATION AND TESTING.

Explanation:

The cruise control has to ‘learn’ how the throttle twist grip on the bike works electrically. The calibration process ‘teaches’ the cruise control what signals to send to duplicate the operation of the throttle twist grip.

Good cruise control response and operation requires that the cruise control knows exactly the point where the engine speed is about to increase from idle. On many TBW (Throttle By Wire) vehicles, the engine does not respond to the throttle until some ‘free play’ is taken up in the grip. In order to respond quickly at low speeds, the cruise control must ‘know’ where the ‘free play’ stops and the engine actually starts to respond to throttle.

The following procedure is designed to do, and test, the throttle twist grip calibration procedure.

Usually this model responds quickly and does not need any ‘free play’ compensation.

NOTE: - During this procedure, the engine must be started while the cruise control is in a calibration mode. If the battery voltage drops too much while starting the engine, the cruise control will ‘reboot’ (turn off and back on again), and this will ‘drop’ the cruise out of calibration mode. This is NOT a disaster, there is an alternate procedure if this happens, but it is simpler if the cruise does stay powered up while the engine is started. In most cases, if you start the engine and warm it up before you perform the following procedures, this will make the cruise more likely to stay powered up, as a warm engine requires less power from the battery to start, AND running the engine will boost the battery voltage bit as well.

For those reasons, we recommend you start the engine and warm it up for a couple of minutes before doing the TPS Calibration and Testing.

Enter diagnostic mode:

Make sure the ignition switch is OFF & the Engine Stop switch (Kill switch) in the ‘ON’ or ‘Engine Run’ position;

Ensure the ‘Engine Stop (Kill) Switch’ is in the ‘Engine Run’ position.

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Press and HOLD the SET and ON-OFF buttons on the cruise control switch. Turn the ignition switch on. DON'T START THE ENGINE. Wait until the indicator light on the switch comes on green momentarily or the back lights behind the buttons come on, then release the SET and ON-OFF buttons. Do NOT start the engine.

Apply and release the front brake, the light on the switch should come on green while brakes are applied and turn off when the brakes are released. If the light does not come on, turn the ignition off and try again from 'Enter diagnostic mode'.

Press and release the SET, RES, and ON-OFF buttons, one at a time, don't press each button more than once or twice as this may cause the bike's engine management to produce a throttle sensor fault. Make sure the light on the switch comes on green when each button is pressed and goes off when the button is released. This test confirms that the buttons are working correctly.

Apply and release the front brake.

Do NOT turn the ignition off, move to the next section below.

Enter TPS (Throttle Position Sensor) Calibration mode:

While still in diagnostic mode, press and HOLD the ON-OFF button (green light). While holding the ON-OFF button, press and release the SET button six (6) times. The green light will go out on the first press, and at the 6th press the light will come back on red. Release the ON-OFF button when the light comes on red.

Make sure the throttle is fully released (idle position).

Press and release the SET button. The light will change to green when the button is pressed and go back to red when released.

Twist the grip to apply full throttle and hold it.

Press and release the RES button. The light will change to yellow when the button is pressed and go back to red when released.

Release the throttle.

If you are not happy that the throttle position is correct in either position, you can repeat the procedure (move the throttle to the appropriate position, hold it there, press SET for idle position or RES for full throttle position).

Do NOT turn the ignition off, move to the next section below.

Confirming the calibration.

Press and HOLD the ON-OFF button until the red light changes to green (about 2 seconds).

Slowly apply the throttle. When the throttle position moves from fully released (idle) the light will start to flash green. It will continue to flash green as you apply more throttle.

At full throttle the light will change to solid yellow.

The calibration is correct if:

Throttle released – the light is solid (not flashing) green.

Between fully released and full throttle – flashing green.

Full throttle – solid (not flashing) yellow.

Past full throttle (should not happen) – flashing red/yellow – This should not occur; it means the calibration is NOT correct.

Less than idle (should not happen) – flashing red/yellow – This should not occur; it means the calibration is NOT correct.

Release the throttle.

Do NOT turn the ignition off, move to the next section below.

Checking throttle operation.

Press and HOLD the ON-OFF button until the green light changes to red (about 2 seconds).

Make sure that the bike is in Neutral gear position.

Observe the red light on the control switch, and start the engine.

NOTE: - The light on the switch should remain solid red while starting the engine. If it does not, the battery does not have enough charge to maintain cruise operation during engine starter operation. If the light does go out, there is an alternative procedure over the page marked with an asterisk (*) that can be used to complete the calibration procedure.

If the red light stays on while starting the engine:

Wait for the engine to run/warm enough to idle at its normal idle speed.

The SET button will apply a small amount of throttle with each press; the RES button will release the throttle a small amount with each press.

Press and release the SET button slowly and regularly (about 1~2 presses per second). Each press will apply a small amount of throttle. The engine will usually start to increase speed within 1 to 3 presses, but some bikes may take more presses (up to 20 or more).

Once the engine is above idle speed, press and release the SET and RES buttons to make sure the engine responds predictably and repeatedly to the SET (increase engine speed) and RES (decrease engine speed) button operation.

Checking throttle 'free-play'.

Note: - This procedure is to establish the exact point where the engine starts to respond to throttle movement.

Apply and release the front brake, the engine should return to idle.

Press and release the SET button slowly and regularly (about 1~2 presses per second). The engine will usually start to increase speed within 1 to 6 presses. **If it takes more than 3 presses to lift the engine off idle, keep the engine running and continue with the rest of the procedure below.**

Usually on this bike, the engine will respond (rpm will start to increase) within 1 to 3 presses, if that is the case there is no need to go any further, you can turn the ignition off. This completes the throttle calibration.

Calibrating throttle 'free-play'.

If it takes more than 3 presses of the SET button to lift the engine off idle keep the engine running and continue with the rest of the procedure below.

If the engine speed gets too high, apply and release the front brake, the engine will return to idle.

Use the buttons to put the engine speed slightly above idle speed, then press the RES button until the engine JUST drops to idle, then press RES one (1) more time.

Press and release the ON-OFF button, the light will change to green while the button is pressed, then go back to red. The cruise control will record the throttle position.

Apply and release the brake.

Press and release the SET button, the engine speed should start to increase within 1~3 presses. Pressing the RES button a few times should return the engine to idle reliably. Applying the front brake will release the throttle completely.

Repeat the last two lines a couple of times to ensure the result is predictable and repeatable.

NOTE: - If the engine does not return to idle using RES or it takes more than 3 presses of SET to lift off idle after brake application, return to the start and repeat the calibration procedure from the start.

Apply and release the brake. Turn the ignition off. This completes the throttle calibration.

Move on 3 pages to 'DIAGNOSTIC MODE TESTING'.

If the red light does NOT stay on while starting the engine.

If the indicator light on the control switch turns off while starting the engine, it means power to the cruise control is turning off while the starter motor is in operation. This will re-boot the cruise control in its normal operating mode. It will retain the calibration you have done, but the rest of the calibration procedure is unable to be completed.

The following different procedure allows you to complete the calibration and test the free play.

Because the cruise is 'turned off' while starting the engine, we now have to make sure the cruise control re-starts in diagnostic mode after the engine is started.

With the ignition switch OFF;

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Press and HOLD the SET and ON-OFF buttons on the cruise control switch. While holding the buttons, turn the ignition switch on and start the engine. Wait until the indicator light on the switch comes on green momentarily or the back lights behind the buttons come on, then release the SET and ON-OFF buttons.

Apply and release the front brake, the light on the switch should come on green while brakes are applied and turn off when the brakes are released. If the light does not come on, turn the ignition off and try again.

Wait for the engine to warm enough to idle at its normal idle speed.

The SET button will apply a small amount of throttle with each press; the RES button will release the throttle a small amount with each press.

Press and release the SET button slowly and regularly (about 1~2 presses per second). Each press will apply a small amount of throttle. The engine will usually start to increase speed within 1 to 3 presses, but some bikes may take more presses (up to 20 or more).

Once the engine is above idle speed, press and release the SET and RES buttons to make sure the engine responds predictably and repeatedly to the SET (increase engine speed) and RES (decrease engine speed) button operation.

Note: - This next procedure is to establish the exact point where the engine starts to respond to throttle movement.

Apply and release the front brake, the engine should return to idle.

Press and release the SET button slowly and regularly (about 1 press per second) and count the number of presses until the engine JUST lifts off idle. The engine will usually start to increase speed within 1 to 6 presses.

Press the RES button ONCE, check that the engine returns to idle. If the engine has not returned to idle, press RES ONCE again.

The **'free play count'** you need to remember is the number of presses of SET, less the number of presses of RES (for example, 6 SET minus 1 RES = 5 presses).

Apply and release the front brake.

Press and release the SET button slowly and regularly (about 1 press per second) the number of times of our **'free play count'**. Check that the engine speed has not increased.

Now press the SET button one more time. The engine speed should just start to increase. If it does, this confirms that your **'free play count'** is correct. DON'T turn the ignition off.

If the **'free play count'** number is 1~3, you have finished the procedure.

If the **'free play count'** number is 4 or above you should follow the rest of this procedure to allow for this in the throttle calibration.

DON'T turn the ignition off. Stop the engine using the 'engine stop' or 'kill' switch.

Turn the 'engine stop switch' back to the 'run' position.

Apply and release the front brake. You should get a green light with the brake applied, and it should go out when the brake is released. This confirms that the cruise control is still in diagnostic mode.

Enter TPS calibration mode. While still in diagnostic mode, press and HOLD the ON-OFF button (green light). While holding the ON-OFF button, press and release the SET button six (6) times. The green light will go out on the first press, and at the 6th press the light will come back on red. Release the ON-OFF button when the light comes on red.

Make sure the throttle is fully released (idle position).

Press and release the SET button. The light will change to green when the button is pressed and go back to red when released.

Twist the grip to apply full throttle and hold it.

Press and release the RES button. The light will change to yellow when the button is pressed and go back to red when released.

Release the throttle.

If you are not happy that the throttle position is correct in either position, you can repeat the procedure (move the throttle to the appropriate position, hold it there, press SET for idle position or RES for full throttle position).

Confirm the calibration. Press and HOLD the ON-OFF button until the red light changes to green (about 2 seconds).

Slowly apply the throttle. When the throttle position moves from fully released (idle) the light will start to flash green. It will continue to flash green as you apply more throttle.

At full throttle the light will change to solid yellow.

The calibration is correct if:

Throttle released – the light is solid (not flashing) green.

Between fully released and full throttle – flashing green.

Full throttle – solid (not flashing) yellow.

Entering the ‘free play count’. Press and HOLD the ON-OFF button until the green light changes to red (about 2 seconds).

Apply and release the front brake.

Press and release the SET button slowly (~1 press per second) the number of times you got in the ‘free play count’. Press and release the ON-OFF button, the light will change to green while the button is pressed, then go back to red. The cruise control will record the throttle position. Apply and release the brake. Turn the ignition off.

Confirm the ‘free play count’. With the ignition switch OFF;

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Press and HOLD the SET and ON-OFF buttons on the cruise control switch. While holding the buttons, turn the ignition switch on and start the engine. Wait until the indicator light on the switch comes on green momentarily or the back lights behind the buttons come on, then release the SET and ON-OFF buttons.

Apply and release the front brake, the light on the switch should come on green while brake is applied and turn off when the brake is released. If the light does not come on, turn the ignition off and try again.

Wait for the engine to warm enough to idle at its normal idle speed.

Press and release the SET button slowly and regularly (about 1 press per second). Each press will apply a small amount of throttle. The engine should now start to increase speed within 1 to 2 presses, 3 is also OK, but it should be 1~2 presses.

Press and release the RES button to reduce speed back to idle.

If the engine speed increases within 1~3 presses or SET, and pressing RES returns the engine to idle, the throttle calibration is complete.

Apply and release the brake. Turn the ignition off. This completes the throttle calibration.

DIAGNOSTIC MODE TESTING.

This procedure tests all the electrical connections other than the TPS sensor connection that was calibrated and tested in the previous procedure.

Enter diagnostic mode:

With the ignition switch OFF;

Press and HOLD the SET and ON-OFF buttons on the cruise control switch. Turn the ignition switch on. DON'T START THE ENGINE. Wait until the indicator light on the switch comes on green momentarily or about 3~5 seconds then release the SET and ON-OFF buttons. Do NOT start the engine.

Apply and release the front brake, the light on the switch should come on green while brakes are applied and turn off when the brakes are released. If the light does not come on, turn the ignition off and try again from 'Enter diagnostic mode'.

Test electrical connections:

1. **Button test** - Press and release the SET, RES, and ON-OFF buttons, one at a time. Make sure the light on the switch comes on green when each button is pressed and goes off when the button is released. This test confirms that the buttons are working correctly.
2. **Front brake test** – (Repeated) Apply and release the front brake, the light on the switch should come on green while brakes are applied and turn off when the brakes are released;
3. **Rear brake test** - Apply and release the rear brake, the light on the switch should come on green while brakes are applied and turn off when the brakes are released;
4. **Clutch test** – *The motorcycle must be in gear (any gear other than neutral) and the side stand (kick stand) retracted (up) for this test on most motorcycles.* Apply and release the clutch, the light on the

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switch should come on green while clutch is pulled in and turn off when released;

This completes the diagnostic tests. Turn the ignition off to exit diagnostic mode.

This completes the installation and testing of your new Throttle-by-Wire Cruise Control.

NOTE: If you are happy with the unit set to 2 KPH speed increment (speed bump) adjustments, no other calibration or setup is required.

If you need the unit set to 1 or 2 MPH or 1 KPH speed increments, please see over the page the page to change the settings.

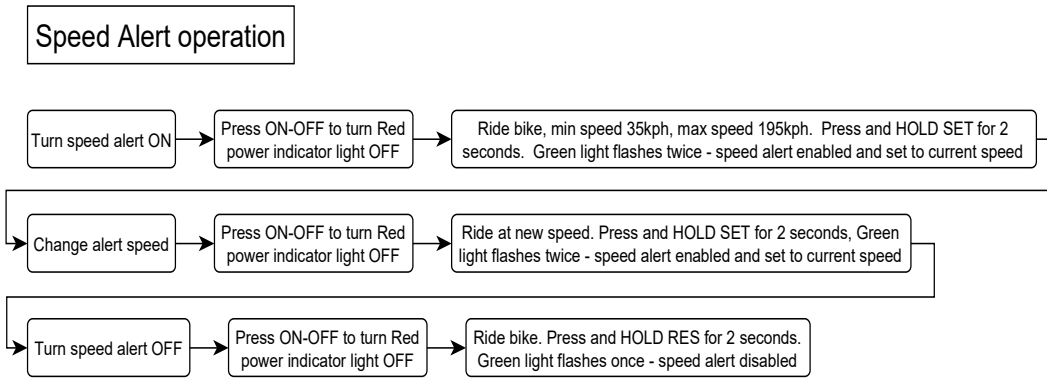
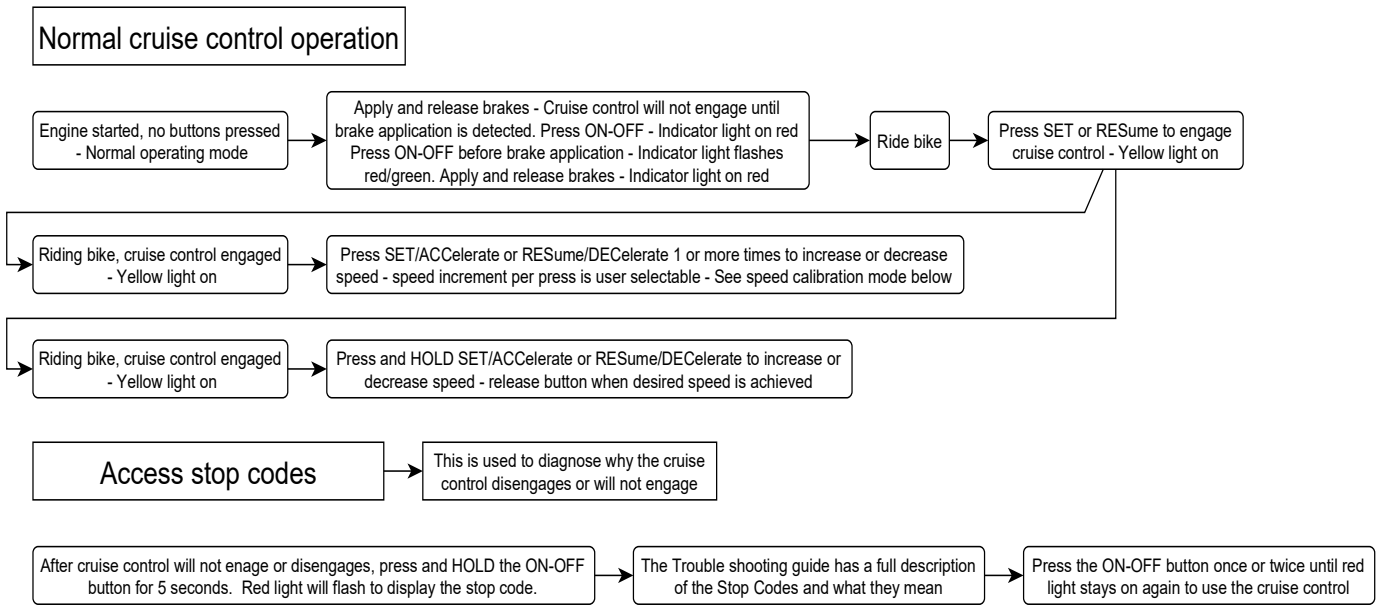
Speed increment adjustment

This function adjusts the how much each press of the SET/ACC or RES/DEC buttons change the set speed (speed bump function). This can be set to 1kph or 2kph or 1mph or 2mph per press of the buttons.

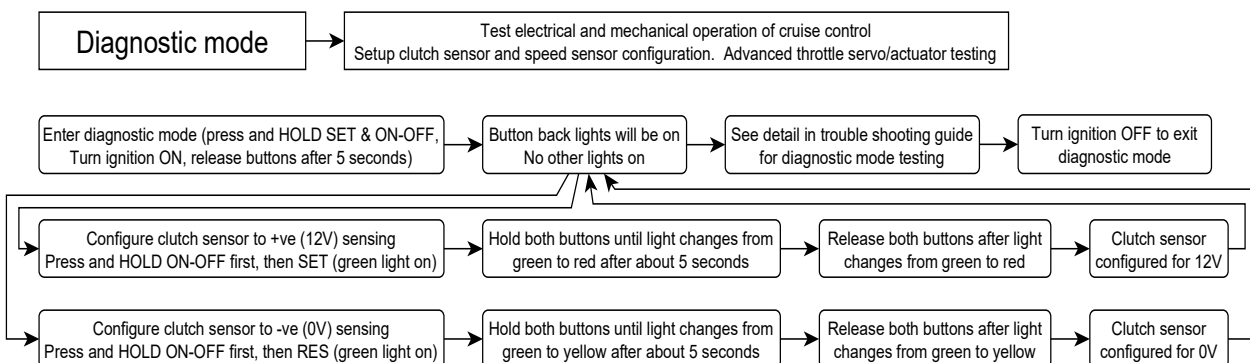
- Turn the ignition switch OFF. Press and HOLD the RES and ON-OFF buttons, turn the ignition switch ON, **HOLD THE BUTTONS UNTIL THE SWITCH INDICATOR LIGHT COMES ON GREEN (a few seconds), then release the buttons.** The cruise control is now in speed pulse rate calibration mode.
- Press and HOLD the ON-OFF button. The indicator light will start flashing green. It will normally flash a number of times to display the setting (twice for setting #2) then pause for a couple of seconds, then flash the number again.
- While HOLDING the ON-OFF button, press SET to increase the number, press RES to decrease the number. #1 = 1 kph (0.6 mph). #2 = 2 kph (1.2 mph). #3 = 1 mph (1.6kph). #4 = 2mph (3.2 kph).
- Count the number of flashes to confirm your selection.
- Release the ON-OFF button when you are finished making this adjustment (the light will go back to green, no flashing), then turn the ignition switch OFF. This completes the speed increment adjustment.

Cruise Control Menu Map

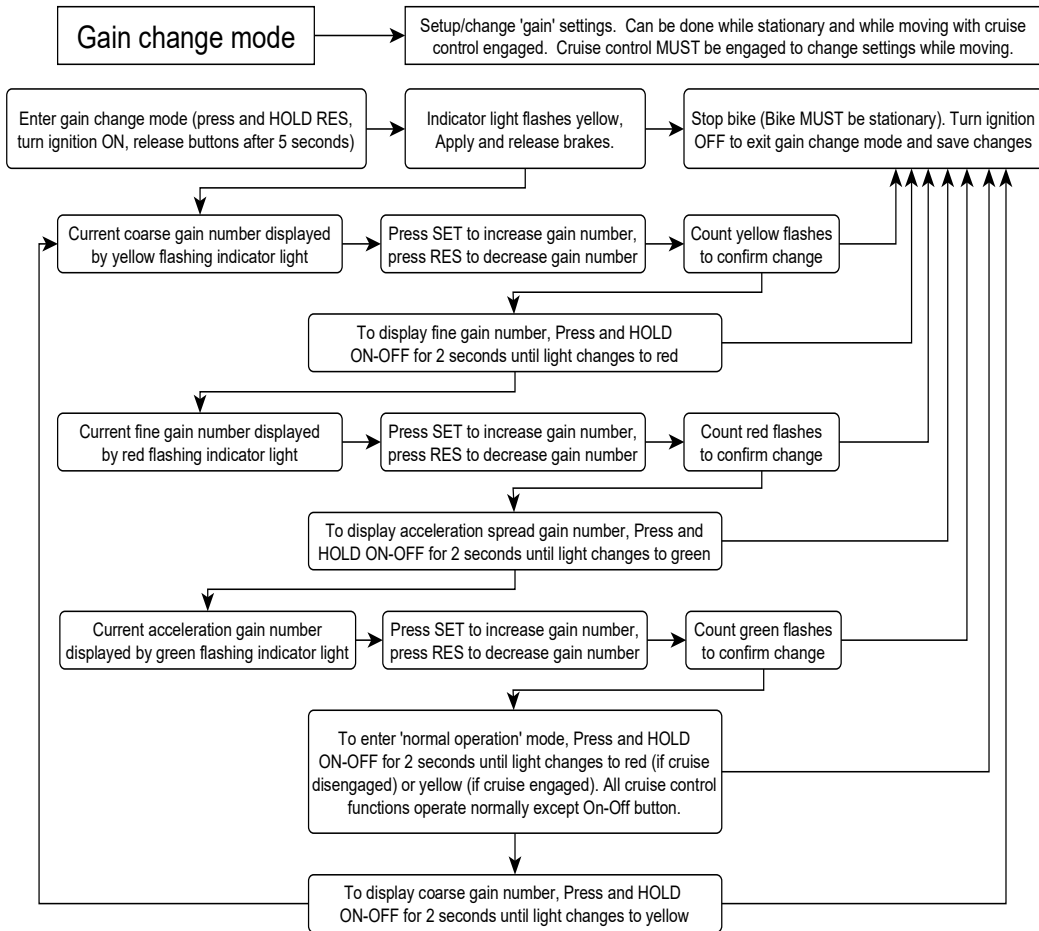
Menus for normal operation



Menus for normal testing after installation.



Menus for 'fine tuning' or adjusting the cruise control performance.



Notes: -