QUAD CRUISE

ATV Electronic Cruise Control with Spray/Accessory Control

Operation & User Manual ©

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MOTORCYCLE CRUISE CONTROLS

MotorCycle Setup Pty. Ltd.
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AUSTRALIA

QuadCruise © MCS2000 ISOM V5.101+

OPERATING INSTRUCTIONS

Refer to Section 5, Overview of Cruise Control Information, Set up & Operation Manual for details of how the cruise control works.

NOTE: - THE CRUISE CONTROL COMPUTER TAKES A FEW SECONDS (LESS THAN 5 SECONDS) TO 'BOOT UP'. AVOID PRESSING ANY BUTTONS FOR THE FIRST FEW SECONDS AFTER TURNING THE IGNITION SWITCH ON OR STARTING THE VEHICLE.

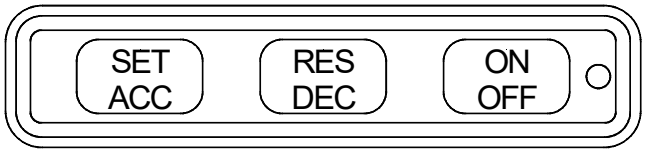
NOTE: - After starting the vehicle, apply the brakes at least once. **The cruise control will not engage until it detects the brakes have been applied.**

Although your cruise control has many operating features, it has been designed to be very easy to operate. Its operating range is from about 2.5kph (1.5mph) to about 25kph (15 mph). On most ATV's the minimum effective speed is about 5kph due to clutch slippage at slower speeds.

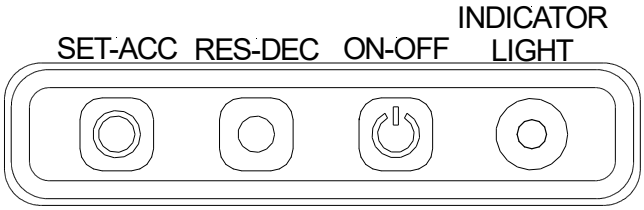
The cruise control operates by monitoring the ground speed of the vehicle and uses a computer to maintain any 'set' speed within its operating range. The computer is instantly de-activated by either front brake lever or rear brake pedal pressure sufficient to operate the brake light switch.

MotorCycle Cruise Controls has three different control switches that can be supplied with the cruise control.

The earlier design has three large buttons and a small indicator light on the end of the switch next to the ON-OFF button. The buttons have text written on them for the functions. This switch will be phased out in late 2020.



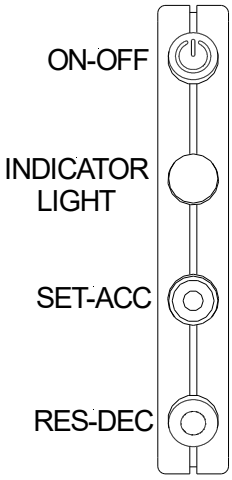
It will be replaced by this switch. The overall size of the switch is the same, it has the same mounting brackets and the same mounting holes. The text has been replaced by pictographs on the buttons. It is a direct replacement for the previous control switch shown above.



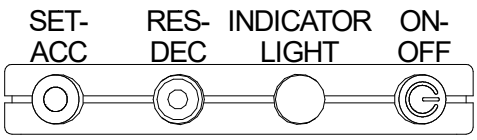
We also have another switch. This design has smaller buttons with no text, only pictographs on the buttons.

The ON-OFF button has a 'standard' power switch pictograph on it.

When it is mounted vertically on the handlebar, as shown here the orientation of the SET and RES buttons is as shown.



In some cases, this switch is also mounted below the bike's switch gear, and is mounted horizontally, the position of the SET and RES button are swapped.



The main functions performed by each switch are as follows:

ON/OFF BUTTON (also COAST button)

- The ON-OFF button 'enables' the SET/ACC (Set/Accelerate) and RES/DEC (Resume/Decelerate) buttons when turned ON (indicator light on RED). Pressing the OFF-ON switch OFF disables the cruise control (indicator light off). Normally the cruise control is turned off when the ignition is turned on, and the ON-OFF button must be pressed to turn the cruise control on. This can be changed so the cruise control starts up in the same state as when the ignition was turned off. **Contact us for the procedure to do this.**

- The ON-OFF button also has a 'Coast' function. If the cruise control is engaged, pressing the ON-OFF button once will disengage the cruise control without turning the cruise control off.

SET/ACC BUTTON

The SET/ACC button has four main functions:

- When the vehicle is in motion within the cruise control's operating range, depressing and releasing the SET button sets the computer to maintain the speed at the time the SET button was depressed;

- While the cruise control is controlling the vehicle's speed, firmly tapping the SET button increases the set speed by the selected speed increment for each tap. This increment can be customised to 0.5mph, 0.5kph, 0.25mph, 0.25kph, 0.1mph, 0.1kph, 0.05mph, 0.05kph or 0.01 kph;

- While the cruise control is controlling the vehicle's speed, depressing and holding the SET button results in the vehicle smoothly accelerating until the SET button is released (or until the vehicle achieves the cruise control's maximum operating speed).

- If the cruise control is turned ON (red light) and has been used and a speed is held in memory applying the brakes and pressing the SET button for 5 seconds will 'lock' the set speed. The cruise control will only 'set' to this speed and the speed cannot be changed to a different speed without unlocking the set speed first (see RES button functions below).

RESume/DEC BUTTON

The RES/DEC button has four main functions:

- If the cruise control has been controlling the vehicle's speed and has been deactivated using the brakes, depressing and releasing the RES key causes the cruise control to return to its previously set speed;

- While the cruise control is controlling the vehicle's speed, firmly tapping the RES button decreases the set speed by the selected speed increment for each tap. This increment can be customised to 0.5mph, 0.5kph, 0.25mph, 0.25kph, 0.1mph, 0.1kph, 0.05mph, 0.05kph or 0.01 kph;

- While the cruise control is controlling the vehicle's speed, depressing and holding the RES button results in the vehicle smoothly decelerating until the RES button is released (or until the vehicle achieves the cruise control's minimum operating speed).

- If the cruise control is turned ON (red light) applying the brakes and pressing the RES button for 5 seconds will 'unlock' the set speed.

INDICATOR LIGHT

The indicator light has two main functions:

- The light will illuminate RED when the cruise control is turned ON using the ON-OFF button.
- When driving the vehicle the cruise control indicator will illuminate YELLOW whenever the cruise control is engaged.
- If, when the ignition is turned on, the cruise control is turned on BEFORE either brake lever is operated, the indicator light will flash red/green alternating. If the brakes are then applied and released, the light will change to red, indicating the cruise control is ready for operation. If the light is flashing red/green the cruise control will not engage.

If the cruise control or vehicle has a fault the indicator can help to diagnose the source of the problem.

The indicator light and the SET, RES and ON-OFF buttons and brakes are also used to set up other functions of the cruise control such as diagnostic mode and set up and calibration of the cruise control.

NOTE: - The control switch indicator light has three colours, RED and GREEN and YELLOW. RED indicates power on. YELLOW indicates cruise control engaged. GREEN is used to confirm the cruise control functions during the diagnostic checks and other modes.

At some times the GREEN light on the COMPUTER is linked to the GREEN light on the CONTROL SWITCH and both will come on and go out at the same time. At other times they operate independently. The RED light on the COMPUTER is for displaying stop (error) codes and also indicates tach sensing when in diagnostic mode. It is only used to diagnose problems. See your trouble-shooting guide for more details on this function. It will flash ON and OFF at various times during cruise control operation. This is normal and can be ignored.

NOTE: - If the vehicle's speed drops below 50% of the current set speed or under the minimum speed (about 2.5km/h or 1.5mph), the cruise control deactivates by itself. This is very uncommon unless the SET speed is already close to the minimum speed. If it does, simply accelerate using the throttle and SET or RESume the cruise control again.

If the vehicle's speed increases to 200% of the current SET speed or over the maximum speed (about 30km/h or 18 mph), the cruise control deactivates by itself. This <u>can</u> happen when accelerating manually. If it does, simply decelerate using the throttle and SET or RESume the cruise control again. If the acceleration rate is higher than the preset limit for the cruise control the cruise control will also disengage. For example, if you overtake another vehicle briskly, it is likely that the cruise control will disengage due to exceeding the acceleration limit.

<u>Brakes</u>

NOTE: - After starting the vehicle, apply the brakes at least once. **The cruise control will not engage until it detects the brakes have been applied.**

Applying either front or rear brake sufficient to operate the brake light will instantly disengage the cruise control.

NOTE: - In the event of a cruise control malfunction, operating the brakes will disconnect power from the cruise control throttle servo after a short delay (about 1 second) thus deactivating the cruise control at all times while the brakes are applied.

Shifting to Neutral

The cruise control is usually connected to the gear shift neutral light.

Selecting neutral will disengage the cruise control. This feature is intended as a safety feature only and is not intended to be used day to day to disengage the cruise control.

SAFETY ISSUES & FEATURES

Electrical 'Noise'.

Noise is a broad term used to describe the electromagnetic radiation of energy. Noise is generated during rapid changes in voltage or current levels or by radio transmitters (ignition systems, alternators, mobile phones and other heavy current carrying wires). If noise gets coupled into the cruise control wiring harness it can create disturbances within the cruise control computer. The cruise control may drop out after engagement or not engage at all, but still pass all diagnostic tests.

The most likely causes of electrical noise interference on a vehicle with a petrol engine is faulty spark plug leads or fitment of non suppressed spark plug leads, or the electrical system could be in poor repair due to age or lack of appropriate preventative maintenance.

WARNING: - It is ESSENTIAL that the spark plug leads are radio suppression type leads and that they are in good condition. Inspect the spark plug leads for any cracks, and replace if required. All original equipment high-tension ignition leads, in optimal condition, should be acceptable, but the cruise control MUST NOT BE USED IF AFTERMARKET, SOLID CORE HIGH TENSION LEADS ARE FITTED.

Ideally all cruise control wiring should be kept as far as possible from all high voltage and high current wiring. This is often difficult to achieve on an ATV due to space limitations, so it is important to FOLLOW THE WIRING HARNESS INSTALLATION INSTRUCTIONS CAREFULLY.

Make sure that the vehicle's battery and charging system are in good condition and the battery electrolyte levels are correct and the battery connections are clean and tight. The battery acts as an electrical 'buffer' and absorbs electrical spike energy and stabilises voltage in the electrical system.

CruiseSafe throttle servo cut off.

As an additional safety measure, MotorCycle Setup has developed a new component for use on motorcycle cruise controls; the CruiseSafe cut off.

The MotorCycle Setup 'CruiseSafe' *throttle servo cut off* cuts power to the cruise control throttle servo whenever the brake is applied. This innovative safety device is unique to the MCS product range and demonstrates the company's dedication to building product to the highest possible levels of safety, quality and reliability.

The 'CruiseSafe' cut off is a simple switch incorporated into the brake circuit so that when the brake light switch operates, power to the cruise control throttle servo is shut down.

WARNING: - In order to stop the vehicle in the event of cruise control electrical malfunction, simply pull on the brakes. This will remove power to the cruise control throttle servo after approx. 1 second delay.

WARNING: - In the event of a major malfunction, the cruise control may re-apply the throttle when the brakes are released. If this occurs, disconnect the loom computer plug from the cruise control computer until the cause can be found and remedied.

WARNING: - Any erratic behaviour from the cruise control should be regarded as suspicious, if the cruise control disengages at random or it fails to engage without turning the ignition switch off and back on, the cruise control computer should be disconnected until the cause can be found and remedied.

The 'CruiseSafe' protects you against accidental damage to the wiring loom or any sort of electrical failure or interference in the cruise control electronics causing a malfunction, because whenever the brakes are applied, the cruise control servo is disconnected from power.

Its operation is failsafe, which means that it if you lose power to the brakes, the brake light globes blow, a wire becomes disconnected or the 'CruiseSafe' fails, the power to the cruise control throttle servo is disconnected. The ONLY electrical failure it cannot protect against is if the brake light switch/s fail. Then you must turn the cruise control and the vehicle OFF using the vehicle's engine kill switch or ignition switch to kill the engine.

MotorCycle Setup has chosen to use a mechanical switch instead of an electronic device, because electrical interference cannot hinder its operation.

Other safety features.

The cruise control can be shut off by any of the following methods:

- Applying the brakes;
- Selecting neutral (as long as the cruise control is connected to the vehicles neutral switch);
- Pressing the ON/OFF button to OFF;
- Accelerating to 200% of the SET speed or exceeding the maximum speed;
- Decelerating to 50% of the SET speed or running under the minimum speed (2.5kph, 1.5mph);
- Turning the engine kill switch OFF (this stops the engine but may NOT turn off the cruise control);
- Turning off the ignition key.

The cruise control will disengage if any of the connectors become separated, if the brake light filament breaks or the brake light system loses power - for example if a fuse blows.

There are numerous safety features designed into the computer and throttle servo to ensure that should one or more components fail there is still a way to turn off your cruise control.

For safe riding NEVER operate this cruise control in heavy traffic conditions or on wet roads or other hazardous conditions.

WARNING: Your cruise control is designed with numerous safety features, but only the vehicle KILL SWITCH or the IGNITION KEY can overcome a runaway condition caused by a tangled or jammed carburettor linkage.

Regular inspection of control cables is recommended to prevent jamming of the throttle, which could occur if cables were frayed or damaged.

ADJUSTING THE CRUISE CONTROL PERFORMANCE AND COMFORT

There are several different adjustments available to change the cruise controls operation. Some change the cruise controls performance, some are only for the driver's preference, some can affect both the performance and be tailored to suit the driver.

The following adjustments are available:

Initial Power ON setting

The cruise control normally is turned off when the vehicle's ignition is turned on, and the driver must press the ON/OFF button to 'enable' the cruise control. This function can be changed so that the cruise control stays in the same state when the ignition was last turned off. ie: If the cruise control was turned ON when the ignition is turned off, it will still be ON when the ignition is turned on the next time. If the cruise was turned OFF, it will still be OFF when the ignition is next turned on.

ACC/DEC button increment.
The speed increment of the SET and RES buttons is adjustable. When the cruise control is engaged' each press of the SET and RES button will change the set speed by a fixed amount. This amount can be tailored to suit the driver. This can be changed so a single button press can adjust the speed by 0.5mph, 0.5kph, 0.25mph, 0.25kph, 0.1mph, 0.1kph, 0.05mph, 0.05kph or 0.01kph.

Initial Throttle Pull
The amount of throttle the cruise control applies when it first engages is a function that can be changed. This can be tailored to suit the drivers preference and also can be adjusted at different speeds so seamless cruise control engagement can be achieved across the full speed range.

Coarse & Fine Gain or Sensitivity
The Gain can be adjusted to suit the vehicle and driver and different load conditions (solo or two up with luggage and/or with a trailer). Coarse Gain is mainly to change the cruise controls response to hills or other influences that tend to changes the vehicle's speed. Fine Gain is mainly to 'fine tune' the cruise control's response when it is in steady state operation to keep it 'locked' on to speed and 'tune out' minor speed errors or minor oscillations in speed.

Acceleration Spread
This adjustment changes how quickly the cruise control 'pushes' the vehicle to return to set speed when there is a difference between the actual speed and the set speed. This can be set to be quite gentle so if there is a speed difference, the cruise control will return back to set speed very gently so it is barely noticeable, or it can be set to be quite aggressive and return to set speed quite rapidly. This adjustment is mainly to suit the driver's preference, but can also help with cruise control performance in some cases.

Refer to section 9 'CALIBRATION, ADJUSTMENTS & ROAD TEST' of the Cruise Control Information, Set up & Operation Manual for full details of setting up and adjusting the cruise control.

FINAL COMMENTS AND RIDING TIPS.

CAUTION: - The computer is basically water proof, but it is advisable to avoid direct water spray onto the computer. The switch assembly and other components are quite water resistant – but are not WATERPROOF. When washing the vehicle, avoid spraying or pouring water directly onto any component.

The staff at MotorCycle Setup hope you enjoy using your new cruise control and use it wisely and safely. Remember that cruise controls are not a license to concentrate less while riding. We recommend you approach

all other road users with greater care when using the cruise control and use substantially larger safety margins when riding in traffic. Its use in built-up areas is not recommended.

You will probably find using the cruise control a bit disconcerting at first until you get used to the throttle moving under your hand and the slight 'hunting' (acceleration and deceleration) of the vehicle when going downhill. It is often not possible to eliminate the latter effect entirely as the computer continuously attempts to balance its set speed with the road speed.

The cruise control engages most smoothly when the engine is under load. We recommend SETTING or RESUMING cruise operation while holding a constant speed. Maintain speed using the throttle for a second or so after pressing the SET key to allow time for the cruise control to take up cable free play and until you feel the cruise take over after pressing RESume.

Practice turning the cruise control off quickly so that you will be ready for any emergency.

TROUBLE SHOOTING

A potential source of problems is electrical interference. Your kit has been developed based on testing to avoid this type of problem by installing the loom and computer in unaffected areas. However, as the speed rises the electrical fields generated by the vehicle increase. Also, older vehicles tend to produce larger electrical fields from old spark plug leads or coils. If you experience this type of problem, check that you have followed the installation instructions precisely. Correct any obvious mistakes. If the problem persists call MotorCycle Cruise Controls for advice. As a last resort, we will refer you to a local installer if you are prepared to pay for him to check the installation and follow his recommendations. If our dealer/installer network is unable to make the unit work properly, you will receive a full refund of the cost of the cruise control (NOT including freight) on return of the kit. If the cruise control was purchased through a dealer (or other third party) it must be returned via that third party.

There is a separate trouble-shooting guide supplied with the kit. See the enclosed trouble-shooting guide for detailed instructions. The trouble-shooting guide has several parts.

The first section has a listing of potential problems and suggested tests to find the cause and remedy them.

The second section shows the cruise control menus with all the various functions.

The third section explains how to use and interpret the diagnostic stop codes. This is useful to see what LAST caused the cruise control to disengage if you are having intermittent disengagement problems, OR what is stopping the cruise control from engaging when SET or RES is pressed.

The fourth part has a comprehensive range of diagnostic trouble shooting tests.

The last section gives comprehensive technical details such as wiring diagrams, connector pin outs, expected resistance and voltage readings.

The most common cause of problems is intermittent/dirty electrical connections and failed brake light globes. Check the connections for continuity at all connection points. Perform a diagnostic mode check (see the trouble shooting guide or section 8 in the installation manual) and check the stop codes, as this will provide an indication of what components are not working correctly. Refer to the installation manual for details on the installation.

SPARE PARTS

Refer to the parts list at the front of the installation manual for a full list of the parts supplied in the cruise kit.