

AP150 FAULT FINDING – EXISTING INSTALLATION

This Bulletin covers the AP150 model which is identified by a black metal Electronic Module with a black label and white text. This module would normally be mounted behind the vehicle dashboard and has the Cruise Control wiring harness connected with a multi pin plug. If you can locate two Brown wires (one with a White trace line) at the vehicle brake lamp switch they will lead you to this module.



AP150 ELECTRONIC MODULE



AP150 VACUUM ACTUATOR

If your Cruise Control has stopped working for no apparent reason there are some specific areas we should review before proceeding to Diagnostic Tests.

THE IMPORTANCE OF THE VEHICLE BRAKE LIGHT CIRCUIT

Our Diagnostic Test will check correct operation of the brake pedal switch but not the circuit resistance value, so have you stood at the rear of vehicle while another person presses the brake pedal and checked all brake lights are working? A blown brake light bulb or circuit fault will prevent the Cruise Control from engaging. Have you changed the factory brake lamps from bulb type to LEDs? If your vehicle has been fitted with LED brake lamps you will need to increase the resistance of the brake lamp circuit, please refer to LED Brake Lamp Tech Bulletin. Note this does not refer to a third LED brake lamp (such as rear window or spoiler mount) if the primary lamps are still bulb-type.

CONSIDER IF ANY WORK HAS BEEN DONE ON THE VEHICLE SINCE LAST USE OF CRUISE CONTROL

There are too many options to detail, but it may be that some work done on the vehicle since the last successful use of the Cruise Control could have inadvertently affected its operation. Please carefully think back about any work that has been done regardless of whether you feel this is relevant. For example, an accessory may have been fitted and connected to the Cruise Control Orange power or Green earth wires and altered the voltage or resistance values, so this is worth careful consideration.

HAS ANYONE CHANGED THE CALIBRATION SWITCH SETTINGS ON THE ELECTRONIC MODULE?

AP150 calibration is controlled through setting the switches located on the end of the Electronic Module. If you are certain these have not been changed we can disregard this as a possibility. If you believe or are sure they have been changed please remove the module from the vehicle and have it with you when you call TCAG Tech Support. There is no charge for this call **but you must have the module with you when you call.**

PRIMARY WIRING CONNECTIONS

There are wiring connections that must be correct for reliable Cruise Control operation. Further, these connections should be soldered and insulated to avoid potential problems. Using scotch-lock or crimp connectors, or twisting wires and wrapping with insulation tape will create problems, the only question is how quickly.

Orange power wire – should be connected to the ignition switched wire at the rear of ignition key barrel. Simply probing with a test light or multi meter and connecting to any ignition switched wire is not suitable. If you cannot access the rear of the key barrel locate the primary ignition wire at the fuse panel and connect there.

Green earth wire – must be connected to an independent earth point on the vehicle body. Do not connect to an existing earth where one or more wires go to earth, and do not connect to bolt-on metal items such as steering column or dashboard frame.

Brown and Brown with White trace brake switch wires – one wire must go to power input at the brake lamp switch on the pedal, the other to the switched output that supplies voltage to the rear bulbs when the brake pedal is depressed. Before engaging the Cruise Control will check firstly for 12 volts on one wire and 0 volts on the other (disengaging when it registers voltage on both) and then it will test the 0 volt wire for circuit resistance. If both tests are ok the Cruise Control should engage, if the module registers an incorrect reading it will not.

PERFORMING DIAGNOSTIC TESTS

When you have confirmed the above points we are ready to proceed with Diagnostic Testing. To perform these tests you will need to look at the small red LED on our Electronic Module (not the LED on the control switch) to confirm the module is receiving the required input signals. Please locate the module in an appropriate position now.

Enter diagnostic mode – We need to instruct the Cruise Control to enter this mode rather than normal drive mode which is the default setting. To do this press and hold the SET button while you turn the ignition key from the IGNITION OFF to the IGNITION ON position. Release the SET button when ignition is ON. Now switch the Cruise Control ON. You may notice the LED **on the Electronic Module** showing RED for a few seconds, which is the module preparing for signal input, when the LED on the Electronic Module goes off you are ready to proceed.

Diagnostic Test A – Press and hold the SET button and the LED on the Electronic Module should go RED, release and the LED should go off.

Press and hold the RES button and the LED on the Electronic Module should go RED, release and the LED should go off.

Press and hold the brake pedal and the LED on the Electronic Module should go RED, release and the LED should go off.

If all tests fails check Orange power feed connection and fuse in this wire.

If all inputs are correct you are ready to proceed to Diagnostic Test B-1

We are now going to test the actuator in the engine compartment, so you will need to be in a reasonably quiet area with the bonnet and driver's door open. Press and hold the RES button for approx 5 seconds and you should hear the actuator valve clicking until you release the button. Press and hold the SET button for approx 5 seconds and you should hear the actuator valve clicking until you release the button. The pitch and volume of the two valves may be different, this does not indicate a fault. If only one valve or neither valves click, or if a valve clicks once or twice then stops, please contact TCAG Tech Support for advice. There is no charge for this call.

If both valves click you are ready to proceed to Diagnostic Test B-2

We can now perform an actuator idle-up test, ***but read this section carefully before you conduct this test.*** Turn the ignition OFF and then press and hold the SET button while you turn the ignition key from the IGNITION OFF position and start the engine. Release the SET button when the engine is idling, switch the Cruise Control ON. You may notice the LED ***on the Electronic Module*** showing RED as previously mentioned so wait for the LED to go off you and are ready to proceed.

Be prepared to switch the Cruise Control OFF or press the brake pedal quickly if the engine revs rise rapidly. Press and hold the SET button and the engine revs should increase, but be patient as the response time is dependent on how much manifold vacuum is available to open the throttle and can take up to 20-25 seconds. As soon as the engine revs increase release the SET button if the revs are at a comfortable level or switch OFF Cruise Control or press brake pedal if engine revs are too high. The increase in revs confirms we are transmitting signal from switch to actuator and unit is operating correctly so this test is concluded. If revs do not increase after 30 seconds check vacuum hose (from actuator to engine) for splits, holes or disconnection from the engine vacuum point. If there is no apparent problem with the hose contact TCAG Tech Support for advice. There is no charge for this call.

If you have successfully completed actuator idle-up test you are ready to proceed to Diagnostic Test C

We are now going to test for Speed Signal input to confirm the Cruise Control is receiving a speed reference. Drive the vehicle, preferably on a quiet road where there is little traffic. While you must ensure you drive safely, you need to check that the LED on the Electronic Module is flashing steadily ON/OFF/ON/OFF etc when the

vehicle has reached a speed of 15-20kph. At this speed the rate of flash will be quite slow. As you increase the vehicle speed the rate of flash will also increase by a modest margin. If you reach a speed of 50-60kph and the LED is not flashing check the Cruise Control Blue wire is still connected to correct vehicle Speed Signal wire. If it appears intact contact TCAG Tech Support for advice. There is no charge for this call.

If you have successfully completed these tests then the Cruise Control should engage. You will need to turn the vehicle ignition OFF for approx 30 seconds to take the Electronic Module out of Test mode and revert to normal drive mode. Restart the engine, switch the Cruise Control ON, and road test for engagement at different speeds starting at 50kph and working upward within local speed limits.

DISCLAIMER: Command Auto Group Pty Ltd (hereafter referred to as the company) provides this information as a diagnostic support service to customers to assist in fault-finding automotive Cruise Control installations. When followed correctly there is no risk of damage to the Cruise Control, the vehicle to which it is fitted, other property, or personal injury. The company cannot be held liable for damage, loss or injury that occurs through product fitment to non-specified vehicles or other mechanical or electronic devices. Further the company cannot be held liable for damage, loss or injury that occurs from failure to understand and correctly apply this information, or for action taken beyond that described in this or similar technical support documents, or verbal advice provided by TCAG Technical staff.