



**Motorcycle
Electronic Cruise Control
Instruction Manual ©**

Diagnosing a stuck vacuum solenoid shuttle on an MCC Cruise control

MotorCycle Cruise Controls

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Background:

Poor fuel quality and possibly corn-based ethanol, are causing an increasingly frequent problem with vacuum actuator-based MCCruise units. This problem is manifesting itself in the USA and Canada – particularly when bikes are stored over winter, and in New South Wales and Queensland in Australia more recently but even lack of use in normal running can sometimes see the problem occur. If the cruise is used regularly, it virtually never occurs.

The Symptoms: You ride the bike normally and having turned on the cruise control, you press the SET key, but it does not engage. The LED on the switch turns yellow but the cruise does not hold throttle.

The Cause: Vapours from the poor quality fuels have passed back down the vacuum hose from the vacuum port on the manifold and adhered to the vacuum shuttle and walls – which is a bit like a needle and seat fuel shut-off in a carburettor. This causes the shuttle to ‘stick’ and ultimately not open at all meaning no force is available to pull on the throttle linkage.

Diagnosis: The owner or mechanic can go through the MCCruise diagnostic mode process and quickly check the cause by doing the following:

1. Put the cruise in diagnostic mode by depressing the SET and ON/OFF keys at the same time and holding them in while you turn on the ignition key - KEEP both buttons depressed until the yellow back lights behind the switch buttons come on.....then release the SET and ON/OFF keys. (on older MCCruise this is virtually instantaneous – on later model software there is a boot up delay of 1~2 seconds);

2. Test you are in diagnostic mode by depressing the brake (either one) – the LED on the switch should come on GREEN with brake application, and turn off when the brake is released. If not, repeat procedure above;
3. Do NOT start the engine so you can hear the actuator click easily;
4. In diagnostic mode, the SET and RES buttons activate the solenoids in the actuator. Understanding how they work is crucial to diagnosing problems.
 - a. The first time you press either SET or RES keys, the vacuum shuttle opens momentarily with a click then shuts again. At the same time, the dump solenoid AND safety dump solenoid shuttles close and stay closed and they also make a click, but louder than the vacuum shuttle typically;
 - b. Subsequent presses of the SET key momentarily activate (open) the vacuum shuttle which clicks softly;
 - c. Subsequent presses of the RES key momentarily activate (open) the dump solenoid which clicks a bit more loudly;
 - d. The brakes release the safety dump solenoid and close the vacuum shuttle and open the dump solenoid concurrently - all together.
5. Since you should be in diagnostic mode, press the SET key ONCE and listen for a click from the actuator. Note that if the vacuum shuttle is not working, it is masked by the sound of the dump and safety dump solenoids working, so you can't tell on this first click;
6. Press the SET key again – now ONLY the vacuum shuttle should work. Listen and feel the actuator to see if it is responding at all. Press the SET key up to 20 times – sometimes they break free in diagnostic mode and start working again. If you can't hear the clicks, then the actuator needs servicing – a separate MCCruise service document, the 'MCS020 & MCS574 Actuator Solenoid Repair' tells you how to service the actuator;
7. Start the engine and let it idle. If the vacuum shuttle is clicking, but the engine revs never rise, then you probably have a vacuum source issue – check the vacuum line for cracks and the one-way check valve for proper operation. (You can start the engine in diagnostic mode as long as the key is left on and the voltage does not drop below a critical threshold. On a very few bikes, starting the engine kills power to the cruise control and this complicates the issue of staying in diagnostic mode, but this can be resolved by pressing the SET and ON/OFF buttons while the engine is being started.
8. In the latest software, there is a mode which can be entered from within diagnostic mode which makes the SET key activate the vacuum shuttle ONLY; the RES key activates the dump solenoid ONLY and the ON/OFF button activates the safety dump solenoid ONLY. This enables you to definitively test the actuator operation. To enter this mode you must already be in Diagnostic Mode, then press the ON/OFF button for 15 seconds until the GREEN LED turns RED, then release the ON/OFF button. Conduct the tests and then act as needed to fix the unit.

I hope that helps you get to the bottom of the problem and gets your MCCruise working properly again.