Trouble Shooting Guide

Problem:

1 Cruise will not engage.

Undertake the following test Perform diagnostic test on next page FIRST

NOTE: - The most common cause of cruise control malfunction is loose or dirty electrical connections. Disconnect, clean and reconnect ALL electrical connections if the cruise control will not operate in diagnostic mode. The usual connections are: computer plug, control switch plug, actuator plug, fuse, 'CruiseSafe' relay, speed sensor or speedometer connection, brake light switch, ground (usually battery negative) and either tach (ignition primary) or the bike's clutch switch.

- a. Check computer dip switch settings
- b. Computer power test.
- c. Speed sensor test if sensor installed
- d. Actuator test
- e. CruiseSafe actuator power relay test
- f. Vacuum test
- g. Actuator cable test
- h. Brake wire test
- i. CIU test
- j. Control switch test
- k. Loom continuity and voltage/resistance tests
- a. Adjust gain/check dip switch settings
- b. Check carburettor cable free play
- c. Speed sensor test if sensor installed
- d. Actuator test
- e. Vacuum test
- f. Actuator cable test
- g. CIU test if CIU installed
- a. Adjust gain/check dip switch settings
- b. Actuator test
- c. Vacuum test
- d. Actuator cable test
- e. CIU test if CIU installed
- a. Tach sensor test
- b. Brake light switch adjustment
- c. Brake wire test
- d. Actuator test
- a. Actuator test
- b. Vacuum test
- a. Brake light switch faulty
- b. Brake wire test
- c. Actuator test
- d. Actuator cable test
- a. Check carburettor cable free play
- b. CIU test if CIU installed
- c. Actuator cable test
- d. Broken throttle spring or sticking carburettors
- a. Speed sensor test / gap too small
- b. Too many magnets installed
- c. Incorrect calibration, check dip switch settings
- a. Speed sensor test / gap too large
- b. Magnet/s missing
- c. Incorrect calibration, check dip switch settings

2 Cruise control erratic, surges or looses/gains speed.

- 3 Cruise lags or overshoots when engaged
- 4 Cruise disengages (Note: Carefully check all wiring for intermittent connections)
- 5 Cruise accelerates too slow
- 6 Cruise will not disengage with brake
- 7 Carburettor will not return to idle
- 8 Cruise will not operate at higher speeds (above 80 kph / 50 mph)
- 9 Cruise will not operate at lower speeds (below 60 kph / 35 mph)

MOTORCYCLE CRUISE TROUBLE SHOOTING TESTS

Cruise control diagnostic test





Speed sensor test



Start anging	7	
Start engine		
NOTE: - use caution with this test. Engine revs will inc	crease RAP	IDLY when yellow wire is grounded.
Ground brown & green wires. Momentarily ground yellow wir		
wire removed, then r	eturn to idle	
DDM risss than falls to julia 2		Defense estudion collected
RPM rises then falls to idle?	→ (No)→	Perform actuator cable test then vacuum test
(Yes)	L	then vacuum test
Repeat above, but hold rpm at about 2000-3000 by ho	Iding brown	& green, tapping yellow to ground.
RPM hold reasonably steady?	→N0→	Increase or decrease in RPM,
\downarrow		Replace valve pack or diaphragm.
Yes		
	7	
Actuator OK		
ruiseSafe actuator power relay test		
indisesale actuator power relay test		
Locate power relay. It is attached to the wiring loom, near the	cruise cont	rol computer
Turn ignition switch ON, turn cruise switch ON*	*Note:	- Most models only require the ignition
ŭ		urned on, others must have the engine
Operate brake lever and pedal	g	oing to have power to the cruise.
Relay 'clicks' with brake light operation	→(No)→	Go to brake wire test
		Faulty relay coil. Replace relay*
(Yes)		Faulty loom. Replace/repair loom
V on both red wires to relay when brakes are applied		Go to computer power test
(brake lights ON)		Faulty loom. Replace/repair loom
	-	Faulty relay. Replace relay*
Yes	-	
Ţ		
12V on both red wires on relay when brakes are released	→(No)→	Go to computer power test
		Faulty loom. Replace/repair loom
(Yes)	* No:	Faulty relay. Replace relay* te:- Replacement relay MUST have
Relay OK		istor suppressed coil or the cruise
iteldy off		introl computer will be damaged
acuum test		
Engine at idle, remove hose from actuator.	٦	
ÿ		
Engine should run rough, vacuum pulses should	be felt by fir	nger over the end of the hose
Vacuum detected and/or engine runs rough?	_→(No)→	Kinked/pinched/blocked vacuum
t (Var)		hose or vacuum stop valve faulty or installed backwards
(Yes)	L	
Disconnect actuator cable from throttle or CIU. Disconne	ct four way	olug at actuator. Start engine, turn cruise
switch on. Use hook up wire or clip leads to reconnect red v		
wires from act		
Cable retracts in under 4 secs?	→N0→	Perform actuator test
<u> </u>		Check for vacuum blockage
Yes	<u>l</u>	or faulty vacuum stop valve
	7	
Vacuum OK	1	

Actuator Cable test





CIU test

(Only models that don't have the actuator cable connected directly to the carburettors)





Control switch test#

Note: - refer to switch voltage and resistance values at end of guide for detailed check of switch



Tach sensor test

Note: - This test can be used if the cruise control disengages at random without any input from the rider.

									wiring loom' wh
									tion sensor'.
In this sec	tion you v	will be sho	wn now to	connect		sensor wire	e to the dik	e's ignition	coil or tachome
		i			signal.				
Dia	oonnoot th		uiro on the		ontrol loo	m from the	biko'o igni	tion coil or	taabamatar
									tachometer.
Reconi	lect the bi								be up the yellow
				or whe ic	prevent e	Hectrical Si	hort circuit	5.	
	Т	• est ride the	a hika ta c	hock if th		ontrol still	disonagao	s randomly	
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	10 The						OL IS ENG		
								AGLD.	
Does the c	ruise one	rate norm	ally withou	ıt disena	aning at			MotorCvc	le Setup for pos
Does the cruise operate normally without disengaging at random?					aging at		Contact	-	utions
								0010	
		(Yes	3						
		Ŷ							
	Reco	nnect tach	sensor w	ire					
Re		ner tests fo			3				
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HIGH Switch 1 DIP 4&5 LOW MEDUIM DIP4 Coarse _ _ 0 0 0 +++_ DIP5 Fine _ 0 +0 +_ 0 +_

Switch 2 Down for low pulse/mile Up for high pulse/mile _____





Loom wiring pin configuration and tests

Loom computer plug pin configuration Check continuity of all wires and that the wires go to the correct pins.



Resistance values at loom computer plug for suspected ground connection fault (check with ignition switch OFF and computer UNPLUGGED from loom) Touch the ohmmeter probes to the pin numbers or locations indicated Pin 8 (ground) & vehicle frame $0 \Omega(ohms)$ Resistance values at loom computer plug for suspected Speed Sensor fault (check with ignition switch OFF and computer UNPLUGGED from loom) Touch the ohmmeter probes to the pin numbers indicated Pin 14 (sensor active) & pin 6 (sensor sheild) 350~600 Ω (ohms) if using supplied speed sensor Unknown if units taps into motor cycle speedo. Voltage checks Voltage values at loom computer plug (check with ignition ON (engine running on some models) and cruise control in diagnostic mode. See the next line to put cruise control in diagnostic mode. Use a speed sensor magnet and place it above OR below the control switch, about half way between the front and back of the switch, and aligned with the left (outside) edge of the SET button. Hold the magnet in position. Press and hold SET key. Turn ignition switch ON. Release SET key and remove magnet. Place +ve probe in the back of the computer plug to measure voltages and -ve probe to motor cycle frame or on pin 8, ground. **Control switch** 0V Pin 1 (switch ground, green) Pin 2 (SET & RES switch signal, yellow) 0V (ON-OFF switch MUST be ON) 11~14V with SET pressed (ON-OFF switch ON) 3~5V with RES pressed (ON-OFF switch ON) Pin 5 (power to switch, orange) 11~14V Pin 9 (ON-OFF switch signal, brown) 11~14V with ON-OFF switch OFF 3~6V with ON-OFF switch ON * Pin 9 Clutch and/or neutral sensor (on some models only) 11~14V when clutch operated or neutral selected * Note: - On some bikes if clutch and neutral switch are connected to cruise control, the bike will have to be in gear to read the 3~6V. When the clutch is operated or neutral selected pin 9 will be at 11~14V always. Actuator (throttle servo) Pin 11 (actuator power, red) 10~13V with brakes released 0V with brakes applied Pin 12 (actuator dump, green) 10~13V with brakes released 0V with brakes applied 0~1V with SET key pressed 0V with 10~13V pulses with RES key pressed 10~13V with brakes released Pin 13 (actuator vacuum, yellow) 0V with brakes applied 10~13V with 0V pulses with SET key pressed 10~13V with RES key pressed Pin 15 (actuator safety dump, brown) 0V **Speed Sensor** Pin 14 (speed sensor active signal, blue) See note 1 below Pin 6 (speed sensor ground, black) 0~0.1V Note 1: - Speed sensor signal with MCS 027 passive coil speed sensor will be about 0.1V pulse when the magnet passes the wheel. Meter needle will flicker on 0.5v range. If the cruise is connected to the motorcycles speedometer sender is may produce a similar signal (some BMW use this type of speedo sender) or it will be a 0V to 4~8V pulse that occures with wheel rotation. **Tach Sensor**

Pin 16 (Tach sensor, yellow) DO NOT CHECK VOLTAGE. THIS IS AN TACHO (IGNITION PRIMARY) INPUT AND MAY BE HIGH VOLTAGE. Ignition signal may be checked with an oscilloscope if tach input is not working.

Brake Sensor Pin 3 (brake power, orange) Pin 4 (brake light sensor, grey)

11~14V, max 1V drop with brakes applied 0~1V with brakes released 11~14V with brakes applied

Power	
Pin 10 (12V power in , pink)	11~14V
Ground	
Pin 7 (diode ground, black)	0V
Pin 8 (ground, black)	0V