

ECU Diagnostics

If any of the main sensors should malfunction while the machine is being driven, the ECU will sense a problem and proceed to an over-rich "fail-safe" mode. An open or shorted circuit in any of the sensor circuits will show the ECU a reading outside of what it normally sees and the ECU will determine that a problem exists. Without this feature, certain kinds of failures could cause the mixture to be leaner than the required ratio and cause engine damage. This feature is important for engine protection. Once the sensor problem is determined and corrected, the ECU will return to the original map.

If any of the injectors or sensors should malfunction during operation, the ECU will record this information and start flashing a Light Emitting Diode (LED) code informing the mechanic/owner which component failed. The LED is on the right of the ECU, in front of the main plug. See ECU photo. If the problem still exists and is ongoing, the LED will continuously flash the code. If the problem occurred but the machine is now operating properly (intermittent), it will be stored in the memory and can be drawn out of the ECU by connecting the gray and black wires together at the diagnostic plug. The LED will then begin blinking long followed by short light pulses; then a pause and the long and short pulses again. The long pulses are the first digit in the code and the short pulses are the second digit. Compare the code to the following trouble code chart to determine the problem. Remember that the problem can exist in the sensor, the power feed to the sensor, the sensor ground, connectors, or the part of the injector or sensor circuit inside the ECU.

Select Monitor Readings

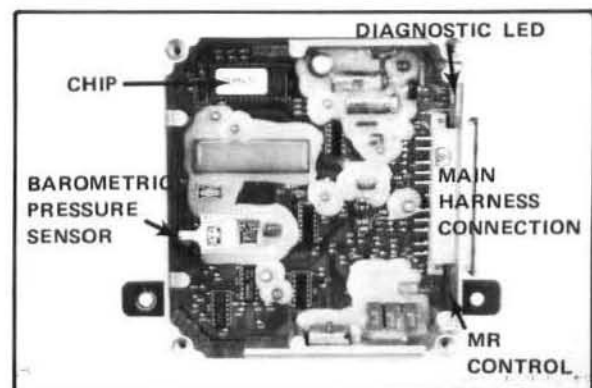
Mode FB0 is for existing problem diagnosis. Press buttons F, B, 0 and enter. If there is an existing problem, a code number and the abbreviation of the problem component will appear. See the chart for an explanation of the code numbers. The LED will also display this code. Example: Code 12- the light will display one long and two short pulses.

Mode FB1 is for retrieving trouble codes from the ECU memory. If a problem happened sometime during the machine's operation, but everything is operating properly at the present time, the ECU memory will verify which component was at fault. This is good for finding intermittent problems such as a wiring open or short. Press the F, B, 1 and enter buttons. If the display shows one of the above codes, check that component and its circuit. If nothing appears, there is nothing in memory. **NOTE:** If the ECU power is disconnected at any time, this memory will be erased.

Mode FC0 is used for erasing problem codes which are stored in the ECU's memory. To erase the problem codes, certain steps must be followed in order. First select the mode for the component which indicated a failure. Next, press F, C, 0 and enter on the monitor. The display will ask "Memory clear? 0=yes and 1=no". By pressing 0 and enter the memory will be erased. Indication of the memory being cleared will be a display of "Please key off".

Monitor and LED Code	System		Abb.	Component
	Type One	Type Two		
11	X	X	THV	Throttle Position Sensor
12	X	X	T Case	Crankcase Temperature Sensor
13	X	X	T Air	Intake Air Temperature Sensor
14	X		ALT	Barometric Pressure Sensor
14		X	TW	Water Temperature Sensor
15		X	ALT	Barometric Pressure Sensor
21	X	X	Inj 1	Mag Side Injector
22	X	X	Inj 2	Center Injector or PTO on Twins
23	X		Inj 3	PTO Injector
31		X	VB	Low Battery Voltage
32		X	VB	Low Charging System Output
33		X	CDI	CDI Output

Mode	Description	Normal Reading
FB0	Existing Trouble Codes	Faults Presently Existing
FB1	Memory Trouble Codes	Faults Which Are Intermittent
FC0	Memory Clear	Used to Remove Stored Information



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The FA modes are for testing the input and output functions from the ignition switch and the relays.

Type I System

With the select monitor on mode FA0, the display should show KY. Whenever the ignition switch and the handlebar kill switch are in the run position, the number 3 LED should also light. Cycle the switches a few times and observe that the LED goes off when the switches are turned off and re-lights when the switches are returned to the run position.

Advance the monitor to mode FA1 and connect the gray and black dealer mode wires together on the monitor's service harness. The monitor display should read DM (Dealer Mode), and the number 5 LED should be lit. During dealer mode operation, the fuel pump will cycle on and off in one second intervals and any stored problem code will flash on the ECU's LED.

Advance the monitor to mode FA2 and the letters FP (fuel pump), SD (self diagnostics) and SS (self shut-off) will appear on the display. Whenever the EFI system is in the normal run mode the number 1 LED will be lit when the fuel pump is required to run. This will be for five seconds when the key is initially turned on, and whenever the ECU senses engine ignition pulses. The number 3 LED will be lit when the key is turned on and will go out ten minutes after the switch is turned off. When the dealer mode wires are connected together at the service harness, the ignition key is cycled off and back on, and the select monitor returned to mode FA2, the number 3 LED will not be lit. The number 2 LED will flash any problem codes which are in memory in the ECU and the number 1 LED will flash off and on in one second intervals.

Type II System

With the select monitor on mode FA0, the monitor should show an ST and DM on the left, and a KY on the right of the display. The number 1 and 5 LEDs will light when the key is rotated to the start/reset position. The number 6 LED will light when the gray and black dealer mode wires are connected together on the service harness. The fuel pump relay will only cycle on and off for three one second runs each time the system is reset while in dealer mode.

Due to the different operational method used in the Type Two system, there is not an FA1 or FA2.