

# PGM-FI Troubleshooting Tips

## PGM-FI Engine Symptoms Are Different

If you have been working on Honda motorcycles for several years, you have probably discovered that a carbureted engine with poor compression runs lean. That is, it takes longer to warm up and may not perform as well as other examples of the same model. The lower compression reduces the intake port vacuum applied to the carburetor circuits and less fuel is drawn into the engine, hence the lean running symptoms. Fuel injected engines don't act the same when the compression is low. Since the fuel is injected regardless of intake vacuum, these engines will generally run rich when they have low compression. Compression pressures vary between models, always check the Service Manual specification for the engine you are testing.

## PGM-FI Symptoms

### Engine will not start, has no spark or fuel injection.

- Check for normal power on operation. The MIL light on the dash and the fuel pump should operate for two seconds. If the MIL light stays on or the fuel pump does not operate, inspect the fuses and confirm power and ground circuits to the ECM including the bank angle sensor.
- Short the service check connector and check for stored Diagnostic Trouble Codes (DTC) by turning the Ignition and engine stop switches ON.
- Check for a failed crankshaft position sensor or camshaft position sensor. If these sensors fail, a DTC is triggered **only** after the engine has cranked for 15 seconds.
- Test for these failures by cranking the engine for 15 seconds. If no DTC is triggered these components are electrically OK.
- Inspect the crank and camshaft position sensor rotors for damage. A bent finger on one of these rotors can cause a no run condition.

### Engine starts, but runs poorly.

- Is the engine running poorly on all cylinders or less than all cylinders? Test the spark plug firing voltage with a peak voltage tester to confirm which cylinders may not be firing normally.
- If only one cylinder is failing, test mechanical and electrical specifics for that cylinder.
- If two cylinders are failing, test for what they have in common, perhaps a common ignition coil.

# PGM-FI Troubleshooting Tips

## **Engine runs poorly and/or erratically on all cylinders.**

- Check that the battery terminals are tight.
- Check crankshaft and camshaft position sensors for poor contact at their connectors.
- Check that ground wires are tight at the ground bolt.
- Check engine compression and cam timing.

## **Engine starts, runs rich on all cylinders**

- Disconnect the throttle position sensor and test for changes in running.
- Measure throttle sensor output voltage with the throttle closed. Voltage should be 0.40 – 0.60 V with the throttle closed.
- Inspect fuel pressure; it should be at, or one - two psi above specification. Test fuel pressure with the vacuum hose to the regulator disconnected, or pinched off.
- Inspect for a disconnected MAP sensor hose.
- Inspect the fuel return hose connecting the fuel pressure regulator and fuel tank for signs of crushing. Reposition the return hose as needed.
- Inspect for insufficient or excessive battery voltage

## **Engine starts, runs rich on some but not all cylinders.**

- Check the fuel pressure regulator for a leaking diaphragm; that allows fuel into the vacuum hose. The regulator should hold vacuum when tested.
- Check compression.
- Compare spark plug color between cylinders.
- Visually inspect the fuel injectors for leaking.
- Test for fuel pressure drop. Pressure should not drop in 10 minutes.

## **Engine is hard to start, or has a misfire at mid to high rpm.**

- Measure the peak voltage from crankshaft and camshaft position sensors. It should be above 0.7 V at cranking speeds.
- Inspect these sensors for air gap of 1 - 2 mm.
- Inspect crankshaft and camshaft position rotors for damaged or bent fingers.