
Engine Troubleshooting

CrossFire 4.4

Section 9-1

No	Problem / Possible Cause	Solution
1	The engine will not turn over.	
1.1	The <i>circuit breaker</i> on the control panel is tripped.	Press the reset button. Inspect the unit to determine the cause of the tripped circuit breaker. Repair as required.
1.2	The <i>battery cable</i> is loose or the terminals corroded.	Clean and tighten the battery terminal connections.
1.3	The <i>battery</i> is dead.	Recharge or replace the battery.
1.4	There is a problem with the <i>fuse link</i> .	Check the link. If it is defective, replace it.
1.5	There is a problem with the <i>starter solenoid</i> .	With the ignition switch in the "Start" position, check the following on the solenoid. Check for + 12 volts on: a. the small terminal with the blue wire from the ignition switch, b. the large terminal with the cable from the battery, and c. the large terminal with the cable going to the starter. If the voltage is present on the first two checkpoints, but not on the large terminal going to the starter, replace the solenoid.
1.6	The <i>ignition switch</i> is defective.	Test the switch for entering voltage. If there is voltage entering the switch but not exiting the center post when the switch is fully engaged, then replace it.

No	Problem / Possible Cause	Solution
1.7	The <i>vacuum blower</i> is seized.	Refer to The Blower, Chapter 10.
1.8	The <i>starter motor</i> is defective.	Remove the belt(s) from the engine. Check to see if the engine will turn over manually. Check that the engine is grounded to the minus side of the battery. With the ignition key in the start position, check the starter motor for + 12 volts. If all of the above conditions are met and the starter will not turn, replace it.
1.9	The <i>engine</i> is malfunctioning.	Refer to the Kawasaki Engine Operation and Maintenance manual included in your owner's manual or see the local Kawasaki engine repair facility.
1.10	The <i>ground cable</i> underneath the motor has fallen or broken off.	Reattach the cable.

No	Problem / Possible Cause	Solution
2	The starter turns the engine over, however the engine will not start. (There is no spark♦.)	♦ Check for spark at the spark plugs. If there is no spark, examine the troubleshooting guide below. However if there is a spark, see troubleshooting problem number 3 on the following page for possible fuel problems.
2.1	A <i>spark plug wire</i> is bad.	While the engine is turning over with the starter, make a visual check to identify a bad spark plug wire. In a dark, well ventilated garage start the engine and look at the plug wires. If there is a break in the wire you will see arcing or sparking at the damaged area. If you notice arcing, replace the wire.
2.2	A <i>spark plug</i> is faulty.	Check for worn, fouled or improperly gapped spark plugs. Replace if necessary. CAUTION: Allow the engine to cool completely before attempting to remove the plugs.
2.3	The <i>coil</i> is faulty (one of two).	See the engine owner's manual and replace the coil(s) if necessary.
2.4	The <i>engine</i> is malfunctioning.	Refer to the Kawasaki Engine Operation and Maintenance manual included in your owner's manual.

No	Problem / Possible Cause	Solution
3	The starter turns the engine over, however the engine will not start. (There is no gas[♦].)	♦ Check for spark at the spark plugs. If there is no spark, see troubleshooting problem number 2 on the previous page. However if there is a spark, examine the following troubleshooting guide for possible fuel problems.
3.1	The <i>lower float in the chemical mix tank</i> is defective.	Push in the freeze guard switch located on the lower control panel. If the engine starts and runs with the switch engaged, then replace the defective float.
3.2	The chemical mix tank is out of water caused by a defective <i>upper float in the mix tank</i> .	When the float is down, the circuit is open. When the float is up, the circuit is closed. Replace the float if it is defective.
3.3	The chemical mix tank is out of water caused by a dirty or defective <i>solenoid valve</i> along side of the mix tank.	The solenoid valve is normally closed and should open with 12 volts across its terminals. Remove any foreign matter from inside the valve. Replace the valve if it is defective.
3.4	The chemical mix tank is out of water caused by a defective <i>chemical relay</i> .	At the Diagnostic Center remove the wire going to terminal 17a. Turn the ignition switch on and check for + 12 volts on terminal 16. If no voltage is present, replace the relay.
3.5	The <i>fuel pump</i> is defective.	Remove the fuel line from the engine and place it in a container to see if the fuel is being pumped when the ignition is on. Replace the fuel pump if it is defective.
3.6	There is a poor <i>battery ground</i> to the fuel pump.	Repair the loose ground connection.

No	Problem / Possible Cause	Solution
3.7	The <i>fuel pump</i> is sucking air between the gas tank and the inlet side of the fuel pump.	Examine the gas inlet side of the fuel pump. Tighten any loose fittings or clamps. Replace any ruptured hose.
3.8	The <i>fuel filter</i> is clogged.	Inspect the filter. Replace if necessary.
3.9	The <i>quick connect</i> in the fuel line is clogged.	Clean or replace the quick connect.
3.10	The <i>carburetor solenoid</i> is defective.	Check for 12 volts at the solenoid valve. If the solenoid valve is not opening with 12 volts going to it, the valve must be replaced.
3.11	There is <i>valve train</i> damage.	See an Authorized Kawasaki Service Station.
3.12	The <i>recovery tank</i> is full.	Empty the tank.
3.13	The <i>recovery tank float</i> is causing the engine to shut down.	Disconnect the float switch. If the unit starts, replace the defective switch.
3.14	The <i>oil pressure switch</i> is causing the engine to shut down.	Check the engine oil level. If the level is correct, then disconnect the oil pressure switch. If the unit starts, then replace the oil pressure switch.
3.15	The <i>lower float in the chemical mix tank</i> is defective.	Push in the freeze guard switch located on the lower control panel. If the engine starts and runs with the switch engaged then replace the defective float.
3.16	The machine's <i>high temperature switch</i> is causing the engine to shut down.	Determine the cause of overheating before restarting the unit. See 4.8 - 4.11 in this chapter.

No	Problem / Possible Cause	Solution
3.17	The machine's <i>high temperature shutdown switch</i> is defective.	Disconnect the switch. If the engine starts then test the switch. The switch operates at 245°. Replace it if it is defective.
3.18	The engine's <i>high temperature switch</i> is causing the engine to shut down.	Examine the radiator for water. Test the switch. It operates between 226° and 237°. If necessary, replace the switch.
3.19	The <i>engine kill relay</i> is defective.	With the ignition switch on and water in the mix tank, check the relay. Check for 12 volts on terminal 30 and 87a. If voltage is present on 87a, but not on 30 or 87, replace the relay.
3.20	The <i>momentary shut down switch</i> is defective.	Unplug the momentary shut down switch and test the leads for continuity. This switch is normally closed.

No	Problem / Possible Cause	Solution
4	The engine runs poorly or dies after running for awhile.	
4.1	The <i>lower float in the mix tank</i> is bad.	If the engine runs better when depressing the freeze guard switch, then replace the lower float.
4.2	The <i>fuel pump</i> is defective.	Remove the fuel line from the engine and place it in a container to see if the fuel is being pumped when the ignition is turned on. Replace the fuel pump if it is defective.
4.3	The <i>air or gas filter</i> is clogged.	Inspect both filters. Replace the clogged one.
4.4	There is a poor <i>battery ground</i> to the fuel pump.	Inspect the electrical grounds. Repair any loose ground connections.
4.5	The <i>fuel pump</i> is sucking air between the gas tank and the fuel pump.	Examine the pump's gas inlet side. Tighten any loose fittings or clamps. Replace ruptured hoses.
4.6	A clogged <i>heat exchanger</i> is causing back pressure. The engine will spit gas from the carburetor and run slow.	Remove the hose from the blower silencer to the copper heat exchanger. If the engine runs better then remove and clean the debris from the copper heat exchanger. If the engine still runs badly then remove the brass plugs from the top of the stainless steel heat exchangers. If the engine runs better then clean the debris from the copper heat exchanger that is attached to the stainless steel exchangers.

No	Problem / Possible Cause	Solution
4.7	There is excessive <i>engine load</i> .	Clean and adjust the recovery tank relief valve. Adjust for 12 inches of lift under a full load.
4.8	The engine overheats from poor <i>ventilation</i> .	Remove any air restriction from around the engine. Add a roof vent or external fan, if necessary.
4.9	The engine overheats from carbon build up in the <i>combustion chamber</i> .	Refer to a local Kawasaki engine dealer.
4.10	The engine overheats from too much oil in the <i>crankcase</i> .	Check the oil level and correct if necessary.
4.11	The engine overheats from low or no water in the <i>radiator</i> .	Refill the radiator. Check for leaks. Tighten any loose fittings or clamps. Replace any ruptured hose.
4.12	The <i>carburetor solenoid valve</i> is defective.	With the ignition switch on, check for 12 volts at the solenoid valve. If the voltage is present, the valve should be open. If the valve is defective, it must be replaced.
4.13	The <i>engine</i> is malfunctioning.	Refer to the Kawasaki Engine Operation and Maintenance manual included in your owner's manual, or see a local Kawasaki engine repair facility.
4.14	On duel tank Fords , the engine is pulling through the ' <i>Tank Switching Valve</i> '.	Do not try to pull gas from both gas tanks.

No	Problem / Possible Cause	Solution
4.15	<i>A spark plug is faulty.</i>	Check for worn, fouled or improperly gapped spark plugs. Replace if necessary. CAUTION: Allow the engine to cool completely before attempting to remove the plugs.
4.16	<i>A spark plug wire is faulty.</i>	While the engine is turning over with the starter, make a visual check to identify any bad spark plug wire. In a dark, well ventilated garage start the engine and look at the plug wires. If there is a break in the wire you will see arcing or sparking at the damaged area. If you notice arcing, replace the wire.
4.17	<i>A PCV valve is defective.</i>	Remove and check the air cleaner for oil saturation. If it is saturated, replace the PCV valve and air filter.