

# TROUBLESHOOTING CHART

The following is provided to help in diagnosing the probable source of troubles. It is a guideline and should not be assumed to show all causes for all problems.

**NOTE:** On RFI models, always check for fault codes. If a fault code is detected, service the fault code and recheck operating conditions. Refer to DIAGNOSTIC PROCEDURES in ENGINE MANAGEMENT section.

## ENGINE WILL NOT START

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Engine does not turn over	Wrong safety lanyard	Use one that has been programmed
	DESS operation non functional	If 2 short beeps are not heard when installing safety lanyard, refer to ELECTRICAL SYSTEM and ENGINE MANAGEMENT
	Safety lanyard switch faulty or disconnected or harness damaged	Replace
	Burnt fuse: battery, starting system. Also fuel pump on RFI models	Check wiring then replace fuse
	Starting system fuse keeps on burning	Check wiring, starting system solenoid and MPEM or ECM (RFI models)
	Discharged or disconnected battery	Check/recharge
	Defective or disconnected start/stop switch	Check, refer to STARTING SYSTEM or ENGINE MANAGEMENT
	Battery connections	Check/clean/tighten
	Poor/bad or corroded ground contacts (engine, starter etc.)	Check/clean/repair
	Water/fuel hydro-lock	Check, refer to MAINTENANCE
	Starter malfunction	Check, refer to ELECTRICAL SYSTEM
	Starter solenoid	Check, refer to ELECTRICAL SYSTEM
	Obstructed starter drive gear ass'y	Check/repair, refer to PTO HOUSING/MAGNETO
	Seized or obstructed engine	Check/repair, refer to the appropriate ENGINE SHOP MANUAL
	Seized jet pump	Check, refer to PROPULSION SYSTEM
Faulty sensor or ECM (RFI models)	Check fault codes, refer to ENGINE MANAGEMENT	

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OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Engine turns slowly	Loose battery cable connections	Check/clean/tighten
	Discharged/weak battery	Check/charge/replace
	Restriction in jet pump	Check/clean pump
	Partial seizure in jet pump	Inspect, refer to PROPULSION SYSTEM
	Partial engine hydro-lock	Check, refer to MAINTENANCE
	Partial engine seizure	Check compression, refer to ENGINE
	Worn starter	Check, refer to ELECTRICAL SYSTEM
Engine turns over	Faulty component in the fuel injection system (RFI models)	Check for fault codes. Refer to DIAGNOSTIC PROCEDURES in ENGINE MANAGEMENT
	Engine drowned mode is active (RFI models)	Release throttle lever
	Low battery voltage	Recharge or replace battery
	Low or no fuel pressure (RFI models)	Check fuel pump pressure output
		Check fuel pump fuse Check wiring harness
	Fuel injectors not working (RFI models)	Check fuel injector operation. Replace as necessary Check output signal from ECM
	No spark at the spark plug	Check spark plugs condition and replace as necessary
	Defective MPEM or ECM	Check ignition system and repair Replace MPEM or ECM (as applicable)
Inverted spark plug cables (RFI models)	Reposition cables properly.	

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OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Engine turns over (cont'd)	Defective CPS (RFI models)	Check operation of CPS and replace if necessary
	Water-contaminated fuel	Check/siphon and refill
	Dirty fuel filter	Clean/replace
	Fouled or defective spark plug	Replace
	Water in engine	Check, refer to MAINTENANCE
	Carburetion (carburetor models)	Check, refer to FUEL SYSTEM
	Defective ignition circuit	Check, refer to ELECTRICAL SYSTEM
	Flooded engine: Carburetor needle valve stuck open (carburetor models)	Check, refer to FUEL SYSTEM
	Excessive rotary valve clearance	Check, refer to the appropriate ENGINE SHOP MANUAL
	Incorrect rotary valve timing	Check, refer to the appropriate ENGINE SHOP MANUAL
	Internal engine damage	Check, refer to the appropriate ENGINE SHOP MANUAL
	Defective trigger wheel (RFI models)	Check, refer to MAGNETO SYSTEM in the appropriate ENGINE SHOP MANUAL
	Incorrectly aligned flywheel and rotor (RFI models)	Properly position flywheel and rotor, refer to MAGNETO SYSTEM in the appropriate ENGINE SHOP MANUAL
Insufficient engine compression	Replace defective part(s)	
No spark at spark plugs	Faulty rev limiter in MPEM (carburetor models)	Replace MPEM
	Spark plug faulty, fouled or worn out	Check spark plug condition
	Ignition	Check, refer to ELECTRICAL SYSTEM
	Faulty ECM (RFI models)	Replace ECM

**NOTE:** Prior to replacing an ECM, refer to the ENGINE MANAGEMENT section and read carefully the tests to do before replacing an ECM that could otherwise be good.

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#### ENGINE HARD TO START

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	Wrong TPS zero setting (RFI models)	Refer to ENGINE MANAGEMENT
	Throttle cable adjustment (RFI models)	Refer to ENGINE MANAGEMENT
	Air lock in fuel rail (RFI models)	Refer to ENGINE MANAGEMENT
	Water in fuel reservoir or contaminated fuel	Flush reservoir and refill with fresh gas
	Mechanical engine failure	Check cylinder compression Check for cylinder head leaks Check starting system
	Spark plug faulty, fouled or worn out	Check spark plug condition
	Low fuel pressure (RFI models)	Check fuel pump operation. Refer to FUEL SYSTEM Check fuel pressure regulator. Refer to FUEL SYSTEM
	Missing shim under CPS (RFI models)	Refer to COMPONENT ADJUSTMENT, INSPECTION AND REPLACEMENT

#### ENGINE STARTS BUT RUNS ONLY AT IDLE SPEED

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	The system is in limp home mode (RFI models)	Refer to ENGINE MANAGEMENT and check the fault codes
	Broken or loose throttle cable	Change/readjust

#### ENGINE STARTS BUT RUNS ONLY ON ONE CYLINDER (RFI MODELS)

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	In normal conditions engine runs only on one cylinder at idle after engine warm-up is completed.	Engine should run on both cylinders with 3 percent or more of throttle opening. Use the VCK (Vehicle Communication Kit) with B.U.D.S. software to validate.

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**ENGINE RUNS ON BOTH CYLINDERS AT IDLE AFTER ENGINE IS WARM-UP (RFI MODELS)**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	<ul style="list-style-type: none"> <li>- Water temperature sensor (WTS) and its circuit</li> <li>- ECM parameters</li> <li>- Closed TPS.</li> </ul>	Refer to COMPONENT ADJUSTMENT, INSPECTION AND REPLACEMENT.

**ENGINE MISFIRES, RUNS IRREGULARLY**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Weak spark	Fouled, defective, worn spark plugs	Check/verify heat range/gap/replace
	Faulty ECM (RFI models)	Check, refer to ENGINE MANAGEMENT
	Defective trigger wheel/CPS (RFI models)	Check, refer to ENGINE MANAGEMENT
	Too much oil supplied to engine	Adjust oil injection pump
	Bad ignition coil wiring	Check wiring condition and proper grounding of ignition coil
	Faulty ignition coil, or bad connector	Check coil. Refer to ENGINE MANAGEMENT or ELECTRICAL SYSTEM
	Poor engine ground	Check/clean/repair

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OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Lean fuel mixture Dry spark plug (except when water fouled)	Low fuel level ( <b>carburetor models</b> )	Check/refill
	Carburetion dirty ( <b>carburetor models</b> )	Check/clean, refer to FUEL SYSTEM
	Low fuel pressure ( <b>RFI models</b> )	Check pump, regulator and injectors. Replace if necessary
		Check if filter is plugged.
		Check if a hose pincher is still installed.
	Leaking crankshaft seal(s) or intake manifold ( <b>carburetor models</b> )	Pressure check engine, to the appropriate ENGINE SHOP MANUAL
	Restricted fuel valve ( <b>carburetor models</b> )	Check/replace
	Loose carburetor ( <b>carburetor models</b> )	Tighten carburetor
	Stale or water fouled fuel	Check/siphon and refill
	Fuel filter dirty or restricted	Check/clean/replace
	Clogged fuel injectors ( <b>RFI models</b> )	Remove and clean fuel injectors
	Defective sensor or ECM ( <b>RFI models</b> )	Check faulty codes in ECM memory, refer to ENGINE MANAGEMENT
Rich fuel mixture Fouled spark plug	Flame arrester dirty or restricted	Check/replace
	Partially closed choke ( <b>carburetor models</b> )	Check/adjust choke cable
	Loose main jet ( <b>carburetor models</b> )	Check, refer to FUEL SYSTEM
	Faulty fuel injector(s) ( <b>RFI models</b> )	Remove and replace fuel injector(s), refer to ENGINE MANAGEMENT
	Defective sensor or ECM ( <b>RFI models</b> )	Check faulty codes in ECM memory, refer to ENGINE MANAGEMENT
	Rotary valve shaft seal leaking	Check/replace, refer to the appropriate ENGINE SHOP MANUAL
	Oil injection pump adjustment	Check/adjust, refer to LUBRICATION SYSTEM
	Worn needles and seals ( <b>carburetor models</b> )	Check, refer to section FUEL SYSTEM
	Excessive rotary valve clearance (if so equipped)	Check, refer to the appropriate ENGINE SHOP MANUAL
	Fuel pressure fluctuating ( <b>RFI models</b> )	Inspect fuel pressure regulator. Refer to FUEL SYSTEM
High fuel pressure ( <b>RFI models</b> )	Check pump, regulator, injectors or if filter is plugged. Replace if necessary	

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OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Starts, but runs poorly	Check spark plug condition, check fault codes, check fuel pressure (RFI models).	Check, refer to ENGINE MANAGEMENT and FUEL SYSTEM.
	Bent or missing tooth on trigger wheel (RFI models)	Check, refer to MAGNETO SYSTEM in the appropriate ENGINE SHOP MANUAL
Also fuel injection misinjecting (RFI models)	Damaged fuel injector	Check, refer to ENGINE MANAGEMENT
	Incorrect rotary valve timing	Check/adjust, refer to the appropriate ENGINE SHOP MANUAL
	Excessive rotary valve clearance	Check, refer to the appropriate ENGINE SHOP MANUAL

**NOTE:** Prior to replacing an ECM, refer to the ENGINE MANAGEMENT section and read carefully the tests to do before replacing an ECM that could otherwise be good.

### ENGINE CONTINUALLY BACKFIRES

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Weak spark	Fouled, defective spark plugs	Clean/replace
Spark plugs	Ignition coil leads or wiring reversed	Refer to WIRING DIAGRAM
Ignition timing	Incorrect setting	Check/reset, refer to ELECTRICAL SYSTEM
	Defective trigger wheel/CPS (RFI models)	Check, refer to ENGINE MANAGEMENT
Rotary valve	Incorrect timing	Check/reset, refer to the appropriate ENGINE SHOP MANUAL
Carburetor (if so equipped)	Carburetion too lean	Check, refer to FUEL SYSTEM

### ENGINE DETONATION OR PINGING

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Ignition	Timing too far advanced	Check/reset
	Spark plug heat range too high	Check/change to correct range
Engine/exhaust high temperature	Engine overheats and exhaust overheats	Check, see ENGINE OVERHEATS in this section
	Fuel octane too low or poor fuel quality	Use good quality fuel

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#### ENGINE LACKS ACCELERATION OR POWER

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	Weak spark	Check/replace, refer to ELECTRICAL SYSTEM
	Carburetion, jetting too rich/lean (carburetor models)	Check/replace, refer to FUEL SYSTEM
	Throttle does not open fully	Check/readjust, refer to FUEL SYSTEM or ENGINE MANAGEMENT
	Low compression	Check/repair, refer to the appropriate ENGINE SHOP MANUAL
	Water in fuel	Check/siphon/replace
	Debris in carburetor needle valve (carburetor models)	Check/clean, refer to FUEL SYSTEM
	Impeller leading edge damaged	Check/replace, refer to PROPULSION SYSTEM
	Poor fuel quality	Siphon then refill with fresh fuel
	Clogged fuel injectors (RFI models)	Remove and clean fuel injectors
	Low fuel pressure (RFI models)	Check fuel line and fuel pump pressure
	Incorrect throttle position sensor (TPS) adjustment (RFI models)	Check and adjust TPS, refer to ENGINE MANAGEMENT
	Overheated engine	See ENGINE OVERHEATS in this chart
Engine revs lower than its maximum operational RPM	RAVE valve does not open (if so equipped)	Check, refer to the appropriate ENGINE SHOP MANUAL
	Limp home mode activated (RFI models)	Refer to ENGINE MANAGEMENT
Peak performance is delayed until higher RPM range is reached	RAVE valve is stuck opened (if so equipped)	Check, refer to the appropriate ENGINE SHOP MANUAL

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## ENGINE STOPS RUNNING

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Engine dies during operation (piston seizure)	Spark plug heat range too high	Check/change to correct range
	Improper ignition timing	Check/reset
	Compression ratio is too high	Check combustion chamber volume
	Poor injection oil quality	Use proper XP-S™ 2-stroke oil
Engine stalls at idle	Contaminated or inappropriate fuel	Syphon reservoir and refill with fresh fuel
	Air in fuel rail (RFI models)	Refill fuel tank
Engine start but stops after approximately 2 seconds	Engine running out of fuel	Check fuel delivery system for proper fuel pressure and delivery
	Air in fuel rail (RFI models)	Refill fuel tank

## ENGINE CANNOT REACH MAXIMUM RPM

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	RAVE valve does not open (if so equipped)	Check, refer to the appropriate ENGINE SHOP MANUAL and to COOLING SYSTEM
	Faulty water regulator valve (if so equipped)	Check, refer to COOLING SYSTEM
	Low fuel pressure (RFI models)	Check fuel pump pressure
	Jet pump related problem	Check propulsion components. Refer to JET PUMP
	Limp home mode activated (RFI models)	Refer to ENGINE MANAGEMENT
	Exhaust system blockage/muffler damage	Check and repair
	Exhaust gases in bilge (leak)	Check exhaust system for leaks
	Battery voltage is too low (RFI models)	Check/repair, refer to CHARGING SYSTEM

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**ENGINE OVERHEATS**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Monitoring beeper sounds continuously	Temperature sensor defective (RFI models)	Check/replace. Refer to ENGINE MANAGEMENT
	Cooling system restriction	Check/flush, refer to MAINTENANCE
	Grounded temperature sensor or sensor wire (carburetor models)	Check/repair/replace

**VEHICLE CANNOT REACH ITS TOP SPEED**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Engine RPM to low	Faulty rev limiter	Check/replace MPEM or ECM
	Improper impeller pitch	Check/replace, refer to PROPULSION SYSTEM
Engine RPM too high	Improper impeller pitch	Check/replace, refer to PROPULSION SYSTEM
Jet pump cavitation	Damaged leading or trailing edge of impeller	Check/replace <b>NOTE:</b> Leading edge damage contributes to poor performance from start. Trailing edge damage contributes to poor top performance and stator vanes erosion.
	Sealing of ride plate, jet pump support or jet pump	Check/reseal, refer to section PROPULSION SYSTEM or HULL/BODY

**O.T.A.S. SYSTEM FAULTS**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
Engine RPM does not increase when throttle lever is released and steering is turned.	Improper sequence or timing of events when trying it.	Refer to O.T.A.S. SYSTEM

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**ABNORMAL NOISE FROM PROPULSION SYSTEM**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	Weeds/debris caught in intake grate or impeller	Check/clean
	Low oil level in jet pump	Check/troubleshoot source of leak/refill supply, refer to PROPULSION SYSTEM
	Worn anti-rattle system	Check/replace pusher in cover, refer to PROPULSION SYSTEM
	Damaged or bent drive shaft	Check/replace, refer to PROPULSION SYSTEM
	Idle speed too low	Adjust (carbureted models) Check fault codes (RFI models)
	Broken engine mounts	Check/replace, refer to ENGINE

**STEERING POLE IS HEAVIER THAN USUAL (3D SERIES)**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	Steering pole return spring adjustment	Set the adjuster to reduce the weight at the handlebar. Refer to STEERING SYSTEM.
	Steering pole return spring is broken	Refer to STEERING SYSTEM.

**STEERING POLE IS STIFFER THAN USUAL (3D SERIES)**

OTHER OBSERVATION	POSSIBLE CAUSE	REMEDY
	Dirty/damaged parts	Clean. If parts are damaged, refer to STEERING SYSTEM.