Trouble Check Chart

Outboard Will Not Start

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
Outboard does not turn over	Battery switch not ON	Check battery switch operation
	Discharged battery	Check battery, recharge or replace
	Battery cables and connections	Clean and tighten connections. Check for voltage drop in starter circuit.
	Faulty connection or ground, damaged electrical harness	Check all grounds, connections and wiring
	Fuse	Check wiring, then replace faulty fuse
	Wiring harness	Check for 12 V at terminal “B” of key switch
	Key switch	Check key switch operation
	Starter solenoid	Check wiring and test solenoid
	Starter or bendix/drive gears	Check starter, inspect bendix/drive gears
	Seized powerhead or gearcase	Check and repair as needed
Outboard turns slowly	Discharged battery	Check battery, recharge or replace
	Battery cables and connections	Clean and tighten connections. Check voltage drop in starter circuit.
	Powerhead hydro-locked	Check cylinders for water
	Partially seized powerhead or gearcase	Check and repair as needed
	Starter or bendix/drive gears	Check starter, inspect bendix/drive gears

Outboard Will Not Start

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
Outboard turns over	Stop circuit grounded	Check wiring and emergency stop switch. Check the safety lanyard is installed and stop circuit is not grounded.
	No Fuel	Check for fuel in fuel tank
	Water in fuel	Check fuel filter, sample fuel from fuel return manifold.
	Contaminated or poor fuel quality	Check or replace fuel supply
	Fuel supply restricted	Check anti-siphon valve, and fuel pick-up. Prime fuel system to fill vapor separator with fuel.
	Air in fuel system	Check for air in fuel supply manifold, refer to **Fuel System** (vapor separator venting and fuel supply)
	Low or no fuel pressure to injectors	Check fuel manifold pressure, refer to **Fuel System**
	Incorrect, fouled, or worn spark plugs	Replace spark plugs
	Fuel injectors not working	Check voltage at injectors
	Excessive fuel or oil, engine flooded	Check for leaking injectors, leaking fuel or oil lift pump, or leaking vapor separator vent, refer to **System Analysis**
	Low or no 55 V alternator output	Check voltage on 55 V circuit, refer to **System Analysis** and **Electrical and Ignition**
	Capacitor or 55 V circuit wiring	Check capacitor and 55 V circuits, refer to **System Analysis** and **Electrical and Ignition**
	Ignition	Check ignition, refer to **System Analysis** and **Electrical and Ignition**
	CPS input to *EMM,* no sync	Check RPM reading while cranking
	No ignition system primary voltage output from *EMM* to ignition coils	Check cranking RPM (300 minimum), refer to **System Analysis**
	Low or no compression	Check compression
	Water in engine	Check condition of spark plugs and cylinders
	Internal powerhead damage	Check and repair as needed
	Leaking cylinder/crankcase, intake manifold, or reed valves	Check and repair as needed
	EMM program, timing, or operation	Check *EMM* program and timing; check injector information (by location and serial number)

Outboard Hard To Start

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
Outboard eventually starts, may or may not run properly once started	Weak battery	Check battery, recharge or replace
	Battery cables and connections	Clean and tighten connections, check voltage drop on high amperage circuit
	Starter or bendix/drive gears	Check starter, inspect bendix/drive gears
	Water in fuel system	Check water separator/fuel filter, sample fuel from fuel return manifold test port
	Contaminated or poor fuel quality	Check or replace fuel supply
	Air in fuel system	Check for air in fuel supply manifold, refer to **Fuel System** (vapor separator venting and fuel supply)
	Incorrect, fouled, or worn spark plugs	Replace spark plugs
	Low fuel pressure	Check pressure, refer to **Fuel System**
	Fuel supply restricted	Check anti-siphon valve, and fuel pick-up, check for fuel system air leaks
	Low or no alternator output (55 V)	Check voltage on 55 V circuit, refer to **System Analysis** and **Electrical and Ignition**
	Capacitor or 55 V circuit wiring	Check capacitor and 55 V circuit (white/red), refer to **System Analysis** and **Electrical and Ignition**
	Restricted or leaking fuel injector(s)	Check injectors, refer to **Fuel System**
	Weak or erratic ignition operation	Check ignition, refer to **System Analysis** and **Electrical and Ignition**
	Crankshaft Position Sensor (CPS)	Check CPS air gap and *EMM* LED indicators
	Excessive fuel or oil, engine flooding	Check for leaking injectors, leaking fuel or oil lift pump, or leaking vapor separator vent. Refer to **System Analysis**.
	EMM program, timing, or operation	Check *EMM* program and timing; check injector coefficients; and monitor injector circuits and ignition primary outputs
	Internal powerhead damage	Check and repair as needed
	Low compression	Check compression
	Leaking cylinder/crankcase, intake manifold, or reed valves	Check and repair as needed

Outboard Will Not Shut Off

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
Outboard starts and runs, normal performance while running	Key switch or wire harness ground	Check key switch and ground to key switch, refer to **System Analysis** and **Electrical and Ignition**
	Stop circuit wiring	Check *EMM* LED indicators. Check wire harness (black/yellow) and key/stop switch(s).
	EMM failure	Check *EMM* LED indicators and eliminate stop circuit as possible cause. Stop wire (black/yellow) has 4.0 VDC from *EMM* with key on or outboard running.

Outboard Starts And Stalls

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
Outboard may not run for more than a few seconds	Faulty wiring, connections, or grounds	Check all grounds, connections, and wiring
	Incorrect, fouled, or worn spark plugs	Replace spark plugs
	Low or no alternator output (55 V)	Check voltage on 55 V circuits, refer to **System Analysis** and **Electrical and Ignition**
	Capacitor or 55 V circuit wiring	Check capacitor and 55 V circuit, refer to v and **Electrical and Ignition**
	Contaminated or poor fuel quality	Check or replace fuel supply
	Low fuel pressure	Check pressure, refer to **Fuel System**
	Air in fuel system	Check for air in fuel supply manifold, refer to **Fuel System** (vapor separator venting and fuel supply)
	Fuel supply restricted	Check anti-siphon valve, and fuel pick-up, check for fuel system air leaks
	Injector electrical circuit or control function	Check voltage at injectors, refer to **System Analysis**
	Restricted or leaking fuel injector(s)	Check injectors, refer to **Fuel System**
	EMM program, timing, or operation	Check *EMM* program and timing; check injector coefficients; and monitor injector control wires and ignition primary outputs
	Weak or erratic ignition output	Check ignition, refer to **System Analysis** and **Electrical and Ignition**
	Internal powerhead damage	Check and repair as needed

Outboard Starts, Low Maximum RPM

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
SystemCheck light	Outboard is in *S.A.F.E.*	Access *EMM* fault codes and check *SystemCheck* warning
Setup or rigging change	Incorrect propeller	Refer to specifications, check recommended WOT RPM; water test and install correct pitch propeller
	Incorrect outboard mounting height	Refer to installation guidelines
Performance of outboard at lower speeds appears normal	Throttle plate opening	Check throttle plate and WOT opening
	Incorrect, fouled, or worn spark plugs	Replace spark plugs
	Contaminated or poor quality fuel	Check or replace fuel supply
	Fuel supply restricted	Check anti-siphon valve, and fuel pick-up, check for fuel system air leaks
	Low alternator output (55 V)	Check voltage on 55 V circuits, refer to **System Analysis** and **Electrical and Ignition**
	Weak or erratic ignition operation	Check ignition, refer to **System Analysis** and **Electrical and Ignition**
	Fuel injector electrical circuit or control function	Check voltage at injectors, refer to **System Analysis**
	Restricted or leaking fuel injectors	Check injectors, refer to **Fuel System**
	Low fuel pressure	Check circulation pump operation, refer to **Fuel System**
	EMM programming, timing, or operation	Check *EMM* program and timing; check injector coefficients; and monitor injector circuits and ignition primary outputs
	Restricted engine exhaust	Check and repair as needed

Excessive Smoking

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
May coincide with increased oil consumption (normal if occurs after winterization)	Contaminated or poor fuel	Check or replace fuel supply
	Excessive fuel or oil consumption	Check fuel system for fuel supply air leaks or leaking fuel injectors
	Outboard in break-in mode	Use diagnostic program to confirm
	Outboard mounted too low	Check installation height of outboard
	Vapor separator vent	Check vapor separator assembly for proper venting/float valve operation
	Faulty/leaking fuel injector(s)	Check injectors, refer to **Fuel System**
	Damaged fuel lift pump	Check for internal leaks

Outboard Surges, Runs Rough

OBSERVATION	POSSIBLE CAUSE	PROCEDURE
1200 RPM and above	*S.A.F.E.*	Access *EMM* fault codes
May be erratic or inconsistent	Incorrect, fouled, or worn spark plugs	Replace spark plugs
	Water in fuel system	Check water separator/fuel filter, sample fuel from fuel return manifold test port
	Contaminated or poor fuel quality	Check and replace fuel supply
	Low or erratic fuel pressure	Check pressure, refer to **Fuel System**
	Air in fuel system	Check for air in fuel supply manifold, refer to **Fuel System** (vapor separator venting and fuel supply)
	Fuel supply restricted	Check anti-siphon valve, and fuel pick-up, check for fuel system air leaks
	Restricted or leaking fuel injector(s)	Check injectors, refer to **Fuel System**
	Faulty wiring, connections, grounds, or CPS air gap	Check all grounds, connections, and wiring. Check CPS air gap.
	Low alternator output (55 V)	Check voltage on 55 V circuit, refer to **System Analysis** and **Electrical and Ignition**
	EMM program, timing, or operation	Check *EMM* program and timing; check injector coefficients; and monitor injector circuits and ignition primary outputs
	Weak or erratic ignition operation	Check ignition, refer to **System Analysis** and **Electrical and Ignition**
	Capacitor or 55 V circuit wiring	Check capacitor and 55 V circuit (white/red), refer to **System Analysis** and **Electrical and Ignition**
	Restricted engine exhaust	Check and repair as needed
	Propping	Change propeller type or size as needed
Audible noise	Internal powerhead damage	Check and repair as needed
	Damaged gearcase	Inspect gearcase and lubricate