

EVINRUDE EMM SERVICE CODE CHART

CODE	EMM CIRCUIT/SENSOR	Evinrude E-TEC V-EMM	Evinrude E-TEC 40-90HP	INTERNAL SENSOR	SHUT DOWN	S.A.F.E.	SYSTEM CHECK WARNING LIGHT ACTIVATION	EMM LED ACTIVATION	TIME TO ACTIVATE	SENSOR: CIRCUIT VOLTAGE / RESISTANCE (Ω) / INFORMATION
11	Throttle Position Sensor (TPS) out of idle range	✓	✓							TPS Voltage > 0.65 with key ON. Becomes stored fault when outboard starts. When both hard and stored faults present, check for improperly adjusted throttle cable.
12	Throttle Position Sensor (TPS) circuit fault	✓	✓				CHECK ENGINE (IDLE ONLY)	SENSOR FAULT (LED 3) (IDLE ONLY)	0.8 seconds/ 1.6 seconds for 90°V6	5 V* circuit Voltage range: < 0.15 V , > 4.925 V* 3000 to 7000 Ω (between pins A and B) 4000 to 8000 Ω (between pins A and C)
13	TPS below range	✓	✓				CHECK ENGINE	SENSOR FAULT (LED 3)	8 seconds	Circuit failure range voltage: 0.15 to 4.925 V*
14	TPS above range	✓	✓				CHECK ENGINE	SENSOR FAULT (LED 3)	8 seconds	Voltage below 0.2 V. Confirm linkage and IDLE stop. Voltage above 4.85 V. Confirm linkage and WOT stop.
15	ROM (EMM program)	✓	✓	✓						(ROM "CHECKSUM" verification) Verify software program number in EMM. Reload or replace with proper program.
16	Crankshaft Position Sensor (CPS) Intermittent loss of SYNC	✓	✓					SENSOR FAULT (LED 3)	10 instances	Generates current, separate Ground (NEG) 560 ± 10% @ 77°F (25°C) Verify tachometer reading. Check CPS mounting and resistance. Inspect flywheel encoder ribs. Air gap range: 00.036 to 0.110 in. (1 to 2.8 mm), nominal 0.073 in. (1.85 mm)
17	55 V circuit BELOW range	✓	✓	✓		✓	CHECK ENGINE	CHARGING FAULT (LED 1)	1 minute	55 V alternator output less than 45 V at 500 to 1000 RPM, or less than 52 V above 1000 RPM. Perform stator/charging tests.
18	55 V circuit ABOVE range	✓		✓		✓	CHECK ENGINE	CHARGING FAULT (LED 1)	1 minute	55 V alternator output above 57 V. Perform stator/charging tests. Eliminate loose connections in 55 V circuit. Check capacitor.
19	Start-in-gear		✓						0.5 seconds	Tiller models only
21	Winterization activated	✓	✓				ALL LIGHTS ON	ALL LED's ON		The outboard stops automatically after successful completion of winterization. Refer to Maintenance or Operator's Guide.
22	Engine temperature switch closed					✓	WATER TEMP/HOT			Test engine temperature and switch operation
23	EMM Temperature Sensor	✓	✓	✓				NO OIL/OVERHEAT (LED 4)	8 seconds	Refer to associated codes 24 or 25.
24	EMM Temperature BELOW range	✓	✓	✓				NO OIL/OVERHEAT (LED 4)	8 seconds	EMM temperature less than -22°F (-30°C).
25	EMM Temperature ABOVE range	✓	✓	✓		✓	WATER TEMP/HOT	NO OIL/OVERHEAT (LED 4)	8 seconds	EMM temperature greater than 176°F (80°C). Code 25 activates S.A.F.E. See Code 29.
26	12 V circuit BELOW range	✓	✓	✓				CHARGING FAULT (LED 1)	5 minutes	Battery voltage less than 12 V @ 500 to 2000 RPM or less than 12.5 V @ 2000 RPM or higher. Perform stator/charging tests.
27	12 V circuit ABOVE range	✓	✓	✓				CHARGING FAULT (LED 1)	5 minutes	Battery voltage exceeded 15.5 V. Check battery connections and wiring.
28	Shift switch malfunction	✓						SENSOR FAULT (LED 3)		Check shift switch linkage and switch activation. Check continuity of switch: normally open / continuity depressed. Not utilized on 60°V4 (remote models) or 60°V6 models.
29	EMM temperature OVER range	✓	✓	✓	✓		WATER TEMP/HOT (FLASHING)	Flash NO OIL/OVERHEAT (LED4)	4 seconds	Outboard will crank but will NOT RESTART until EMM temperature falls below 212°F (100°C). Verify EMM cooling and outboard cooling system operation.
31	Engine temperature OVER range	✓	✓		✓		WATER TEMP/HOT (FLASHING)	Flash NO OIL/OVERHEAT (LED 4)	4 seconds	Check engine temperature and cooling system operation. Check temperature sensor resistance. Code 31 activates SHUTDOWN at 248°F (120°C) and Code 43 or 69 activates S.A.F.E. at 212°F (100°C) or 194°F (90°C) on 200-250 HP, (90°V), models.
32	Oil pressure switch, CONSTANT							SENSOR FAULT (LED 3)	255 oiler cycles	Oil pressure switch not "switching" between oil pulses, EMM not detecting change in manifold pressure.
33	Excessive no oil faults	✓	✓	✓	✓		NO OIL – FLASHING	Flash NO OIL/OVERHEAT (LED4)	5 hours	Outboard has run 5 hours with code 34 or 38. SHUTDOWN mode initiated. Outboard restarts and runs for 1 minute intervals.
34	Oil injection pump circuit OPEN (E-TEC / DI)	✓	✓			✓	NO OIL	NO OIL/OVERHEAT (LED 4)	4 seconds	Check oil injection pump circuit resistance
35	No oil pressure (1997-2000 DI)					✓	NO OIL			Test for oil movement in system
37	Water in fuel	✓					CHECK ENGINE			5 V* circuit and Ground (NEG) Resistance infinite, no continuity between probes
38	Oil pressure feedback NOT detected	✓	✓			✓	NO OIL	NO OIL/OVERHEAT (LED 4)	255 oiler cycles (150 for 60°V6 and 90°V6)	Loss of oil manifold pressure. Check oil supply. Perform injection pump tests. Monitor oil flow to distribution hoses.
39	Oil pressure prime failure					✓	NO OIL			Lack of pressure after rapid cycling injector. Check oil supply to injector. Perform injector static test. Monitor oil flow to distribution hoses.
41	Engine Temperature Sensor (port/inline)	✓	✓					SENSOR FAULT (LED 3)	8 seconds	5 V* circuit and Ground (NEG) 9000 to 11000 Ω @ 77°F (25°C)
42	Engine Temperature BELOW range (port/inline)	✓	✓					SENSOR FAULT (LED 3)	8 seconds	Engine temperature below -4°F (-20°C). Check engine temperature and sensor resistance.
43	Engine Temperature ABOVE range (port/inline)	✓	✓			✓	WATER TEMP/HOT	NO OIL/OVERHEAT (LED 4)	8 seconds	Engine temperature: 40 - 90 HP models ≥ 212°F (100°C); 115-250 HP 60°V & 90°V models ≥ 212°F (100°C) below 3000 RPM or ≥ 194°F (90°C) above 3000 RPM. Check engine temperature and cooling system operation. Check temperature sensor resistance. Code 31 activates SHUTDOWN at 248°F (120°C) and Code 43 or 69 activates S.A.F.E. at 212°F (100°C) on 40 - 90 HP models or 194°F (90°C) on 115-250 HP 60°V & 90°V models.
44	Barometric (Atmospheric) Pressure Sensor circuit fault (BP Sensor)	✓	✓	✓				SENSOR FAULT (LED 3)	8 seconds	Make sure EMM's BP sensor tube is NOT plugged (possible "rich" running condition). Check atmospheric condition for comparison. Clear code and retest. Circuit failure range: less than 3.9 in. Hg (13.3 kPa) or greater than 35.1 in. Hg (119.0 kPa)
45	BP Sensor BELOW range	✓	✓	✓				SENSOR FAULT (LED 3)	8 seconds	Below 20.7 in. Hg (70 kPa)
46	BP Sensor ABOVE range	✓	✓	✓				SENSOR FAULT (LED 3)	8 seconds	Above 31 in. Hg (105 kPa)
47	Air Temperature (AT) circuit	✓	✓					SENSOR FAULT (LED 3)	8 seconds	5 V* circuit and Ground (NEG) 9000 to 11000 Ω @ 77°F (25°C) Circuit failure range: less than -14.98°F (-26.1°C) or greater than 331.7°F (166.5°C)
48	AT circuit BELOW range	✓	✓					SENSOR FAULT (LED 3)	8 seconds	Air temperature below 14°F (-10°C)
49	AT circuit ABOVE range	✓	✓					SENSOR FAULT (LED 3)	8 seconds	Air temperature above 149°F (65°C)

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51	Fuel injector circuit #1 OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds	Check circuit resistance	
52	Fuel injector circuit #2 OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
53	Fuel injector circuit #3 OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
54	Fuel injector circuit #4 OPEN	✓						INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
55	Fuel injector circuit #5 OPEN	✓						INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
56	Fuel injector circuit #6 OPEN	✓						INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
57	High RPM with low TPS setting	✓	✓	✓	✓		CHECK ENGINE (FLASHING)	Flash SENSOR FAULT (LED 3)	5 seconds	EMM has detected abnormally high RPM relative to TPS position. This could be caused by uncontrolled fuel entering the combustion cycle. DO NOT attempt to clear code and START the outboard until the problem has been evaluated and repaired.	
58	Operating temperature not reached (port/ inline)	✓	✓					SENSOR FAULT (LED 3)	9 minutes/ 10 minutes for 90°V	Engine operating temperature less than 104° F (40° C) with engine speed less than 2300 RPM or 122°F (50°C) on 115-250 HP 60°V & 90°V models.	
59	Operating temperature not reached (stbd)	✓						SENSOR FAULT (LED 3)	9 minutes/ 10 minutes for 90°V6	Engine operating temperature less than 104° F (40° C) with engine speed less than 2300 RPM or 122°F (50°C) on 115-250 HP 60°V & 90°V models.	
61	Fuel injector circuit #1 SHORTED	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds	Test for shorts to ground. Check wiring and perform resistance test on injector circuits. Check for pinched or chafed wiring.	
62	Fuel injector circuit #2 SHORTED	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
63	Fuel injector circuit #3 SHORTED	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
64	Fuel injector circuit #4 SHORTED	✓						INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
65	Fuel injector circuit #5 SHORTED	✓						INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
66	Fuel injector circuit #6 SHORTED	✓						INJECTOR/IGNITION FAULT (LED 2)	8 seconds		
67	Engine Temperature Sensor (starboard)	✓						SENSOR FAULT (LED 3)	8 seconds	5 V* circuit and Ground (NEG)	9000 to 11000 Ω @ 77°F (25°C)
68	Engine Temperature BELOW range (stbd)	✓						SENSOR FAULT (LED 3)	8 seconds	Engine temperature below -4°F (-20°C). Check engine temperature and sensor resistance.	
69	Engine Temperature ABOVE range (stbd)	✓				✓	WATER TEMP/HOT	NO OIL/OVERHEAT (LED 4)	8 seconds	Engine temperature: 40 - 90 HP models ≥ 212°F (100°C); 115-250 HP 60°V & 90°V models ≥ 212°F (100°C) below 3000 RPM or ≥ 194°F (90°C) above 3000 RPM. Check engine temperature and cooling system operation. Check tempera;ture sensor resistance. Code 31 activates SHUTDOWN at 248°F (120°C) and Code 43 or 69 activates S.A.F.E. at 212°F (100°C) on 40 - 90 HP models or 194°F (90°C) on 115-250 HP 60°V & 90°V models.	
71	Oil pressure circuit sensor fault detected	✓						SENSOR FAULT (LED 3)	4 seconds	< 0.12 V , > 4.88 V	
72	Oil pressure BELOW expected range	✓						SENSOR FAULT (LED 3)	8 seconds	< 0.5 V	
73	Oil pressure ABOVE expected range	✓						SENSOR FAULT (LED 3)	8 seconds	> 4.5 V	
74	Water pressure sensor circuit fault detected	✓				CANBus Option		SENSOR FAULT (LED 3)	8 seconds	Use Evinrude Diagnostic Software to activate option < 0.12 V , > 4.88 V	
75	Water pressure BELOW expected range	✓						SENSOR FAULT (LED 3)	8 seconds	< 0.5 V	
76	Water pressure ABOVE expected range	✓						SENSOR FAULT (LED 3)	8 seconds	> 4.5 V	
77	S.A.C. overcurrent fault	✓		✓				CHARGING FAULT (LED 1)	8 seconds	Check for shorted 55 V wiring (injector circuits). Check for pinched or chafed wiring.	
78	Analog 5V circuit overload detected	✓		✓			CHECK ENGINE	SENSOR FAULT (LED 3)	8 seconds	Sensor voltage reference fault. Check sensors and related wiring. Check for pinched or chafed wiring.	
79	Starter solenoid circuit OPEN	✓					CHECK ENGINE	SENSOR FAULT (LED 3)	8 seconds	Check starter solenoid circuit for continuity (key switch OFF) and for 12 V with key switch ON.	
81	Ignition primary circuit #1 OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	100 instances	Check circuit resistance	
82	Ignition primary circuit #2 OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	100 instances		
83	Ignition primary circuit #3 OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	100 instances		
84	Ignition primary circuit #4 OPEN	✓						INJECTOR/IGNITION FAULT (LED 2)	100 instances		
85	Ignition primary circuit #5 OPEN	✓						INJECTOR/IGNITION FAULT (LED 2)	100 instances		
86	Ignition primary circuit #6 OPEN	✓						INJECTOR/IGNITION FAULT (LED 2)	100 instances		
87	Exhaust pressure circuit fault	✓		✓				SENSOR FAULT (LED 3)	8 seconds	< 0.12 V , > 4.88 V	Check for plugged or pinched hose or exhaust fitting.
88	Exhaust pressure BELOW expected range	✓		✓				SENSOR FAULT (LED 3)	8 seconds	< 40 in. water	
89	Exhaust pressure ABOVE expected range	✓		✓				SENSOR FAULT (LED 3)	8 seconds	> 80 in. water	
91	Fuel pump circuit OPEN	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	2 seconds	55 V engine running (40-90HP Inline) 12 V key ON / engine running (200-250HP “90°V”)	approximately 1Ω @ 77°F (25°C)
92	Exhaust valve solenoid OPEN (115HP)	✓								Check exhaust valve control module circuit for continuity. (EMM J1-B connector between pins 5 &12, electric fuel pump wiring connector disconnected.) Refer exhaust valve relay test. Use Evinrude Diagnostic Software for “static” test of actuator motor.	
93	Water injection solenoid OPEN (60HP)		✓								
94	Fuel pump circuit SHORTED	✓	✓					INJECTOR/IGNITION FAULT (LED 2)	8 seconds	Test for shorts to ground. Check wiring and perform resistance test on pump circuit.	
97	Intermittent switched B+ detected	✓								Check connections and wiring	

* Sensor voltages are listed for description purposes only. Sensor voltage readings should be viewed using Diagnostic Program.

NOTE: Always note service codes before clearing codes. Clear stored codes using diagnostic software. Some hard codes, such as code 57, are cleared by turning EMM “OFF” and then “ON” again.