

EVINRUDE 115 – 300 HP EMM SERVICE CODE CHART

CODE	EMM CIRCUIT/SENSOR	INTERNAL SENSOR	S.A.F.E	SHUT DOWN	EMM LED DISPLAY	DASHBOARD GAUGE WARNING DISPLAY	TIME TO ACTIVATE	SENSOR: CIRCUIT VOLTAGE / RESISTANCE (Ω) / INFORMATION
1-6	Excessive knock detected		✓		LED 3: ON (Running)	CHECK ENGINE	Immediate	Code number indicates affected cylinder. 20 knock events in 100 combustion cycles with maximum correction applied. Make sure sensor is securely fastened to the cylinder head. Check timing adjustments. Test fuel and cooling systems. Check fuel quality.
7	Knock Sensor circuit OPEN – Port				LED 3: ON (Running)	CHECK ENGINE	5 seconds	Integrated sensor output in <i>EMM</i> less < 0.15 V. Check sensor connection.
8	Knock Sensor circuit OPEN – Stbd				LED 3: ON (Running)	CHECK ENGINE	5 seconds	Integrated sensor output in <i>EMM</i> less < 0.15 V. Check sensor connection.
11	Throttle Position Sensor (TPS) out of idle range				-	-	2 seconds	TPS Voltage > 0.65 V with key ON (or cranking). Becomes stored fault when outboard starts. When both hard and stored faults are present, check for improperly adjusted throttle cable. If voltage is > .78 V, engine speed is limited to idle.
12	Throttle Position Sensor (TPS) circuit fault				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	2 seconds	TPS Voltage: < 0.14 V, or > 4.92 V. Engine limited to idle speed. Check sensor resistance—3000 Ω (between pins A and B) & 4000 Ω (between pins A and C)
13	TPS below range				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	10 seconds	TPS Voltage < 0.2 V. Check linkage and IDLE stop.
14	TPS above range				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	10 seconds	TPS Voltage > 4.85 V. Check linkage and WOT stop.
15	ROM (<i>EMM</i> program)	✓			-	-	15 seconds	ROM "CHECKSUM" failure. Check software program number in <i>EMM</i> . Reload or replace with proper program.
16	Crankshaft Position Sensor (CPS) Intermittent loss of SYNC				LED 2: OFF (Cranking) LED 3: ON (Running)	-	5 losses, rpm<2000 1 loss, rpm >2000	<i>EMM</i> counts losses of synchronization with crankshaft sensor. Check CPS mounting and resistance. Air gap range: .00.036 to 0.110 in. (1 to 2.8 mm), nominal 0.073 in. (1.85 mm) Resistance: 560 Ω ± 10% @ 77°F (25°C)
17	55 V circuit BELOW range	✓	✓		LED 1: ON (Running)	CHECK ENGINE	1 min: V4–3.3L V6 10 sec: 3.4L V6	55 V alternator output < 45 V at 500 to 1000 RPM, or < 52 V above 1000 RPM. Engine limited to 1200 RPM. Perform stator/charging tests.
18	55 V circuit ABOVE range	✓	✓		LED 1: ON (Running)	CHECK ENGINE	1 minute	System Voltage > 57 V. Engine limited to 1200 RPM. Perform stator/charging tests. Check for loose connections in 55 V circuit. Check capacitor.
19	Start-in-gear				LED 3: OFF (Cranking)	CHECK ENGINE	-	Attempted engine start while in gear (<i>EMM</i> in tiller mode). Engine will not start.
21	Winterization activated				All LEDs FLASHING	All Lights FLASHING	-	Engine is speed limited, and stops after 360 oil pulses. Refer to Maintenance or Operator's Guide.
23	<i>EMM</i> Temperature Sensor circuit fault	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	<i>EMM</i> Temperature < -67° F (-55° C), or > 311° F (155° C).
24	<i>EMM</i> Temperature BELOW range	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	<i>EMM</i> Temperature < -22 ° F (-30° C).
25	<i>EMM</i> Temperature ABOVE range	✓	✓		LED 4: ON (Running)	WATER TEMP/HOT	10 seconds	<i>EMM</i> Temperature > 176°F (80°C). Engine limited to 1200 RPM. See Code 29.
26	12 V circuit BELOW range	✓			LED 1: ON (Running)	LOW BATTERY	5 minutes	Battery voltage <12 V below 2000 RPM or < 12.5 V above 2000 RPM. Perform stator/charging tests.
27	12 V circuit ABOVE range	✓			LED 1: ON (Running)	LOW BATTERY	5 minutes	Battery voltage > 15.5 V. Check battery connections and wiring.
28	Shift switch malfunction				LED 3: ON (Running)	-	10 seconds	Check shift switch linkage and switch activation. Check continuity of switch: normally open / continuity depressed. 90°V6 models only.
29	<i>EMM</i> Temperature OVER range	✓		✓	LED 4: FLASHING	WATER TEMP/HOT (FLASHING)	5 seconds	<i>EMM</i> Temperature > 212° F (100° C). Engine SHUTDOWN. Will NOT restart until <i>EMM</i> temperature returns to operating range. Check outboard and <i>EMM</i> cooling systems.
31	Engine temperature OVER range			✓	LED 4: FLASHING	WATER TEMP/HOT (FLASHING)	3 seconds	Engine Temperature > 248° F (120° C). Engine SHUTDOWN. Check cooling system. Check temperature sensor resistance—9000 to 11000 Ω @ 77°F (25°C).
33	Critical NO OIL detected	✓		✓	LED 4: FLASHING	NO OIL (FLASHING)	5 hours	Outboard has run five hours with code 34 or 38. Engine SHUTDOWN. Will restart and run for 1 minute intervals.
34	Oil injection pump circuit OPEN		✓		LED 4: ON (Running)	NO OIL	4 seconds	Engine limited to 1200 RPM. Check oil injection pump circuit resistance—2-3 Ω.
37	Water in fuel				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	10 seconds	Check fuel supply, 5 V circuit, and ground (NEG). Resistance between probes should be infinite (no continuity).
38	Oil pressure feedback NOT detected		✓		LED 4: ON (Running)	NO OIL	V4 100 oiler cycles V6 150 oiler cycles	Loss of oil manifold pressure. Engine limited to 1200 RPM. Check oil supply. Test injection pump. Monitor oil flow to distribution hoses.
40	Engine Temperature ABOVE range (port)–low speed		✓		LED 4: ON (Running)	WATER TEMP/HOT	3 seconds	60° V4 & V6 Models: Engine Temperature > 230° F (110° C) below 3000 RPM 90° V6 Models: Engine Temperature > 212° F (100° C) below 2000 RPM
41	Engine Temperature Sensor circuit fault (port)				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Engine Temperature < -13° F (-25° C), or > 329° F (165° C). Check 5 V circuit and ground (NEG), and sensor resistance—9000 to 11000 Ω @ 77°F (25°C).
42	Engine Temperature BELOW range (port)				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Engine Temperature < -4° F (-20° C). Check engine temperature and sensor resistance.
43	Engine Temperature ABOVE range (port)		✓		LED 4: ON (Running)	WATER TEMP/HOT	3 seconds	60° V4 & V6 Models: Engine Temperature > 194°F (90°C) above 3000 RPM activates S.A.F.E. 90° V6 Models: Engine Temperature > 185° F (85° C) above 2000 RPM for 60 seconds activates warning light and horn; 90° V6 Models: Engine Temperature > 194°F (90°C) above 2000 RPM for 3 seconds activates S.A.F.E. Engine limited to 1200 RPM. Check cooling system.
44	Barometric Pressure (BP) Sensor circuit fault	✓			-	-	10 seconds	Pressure < 3.8 in. Hg (13 kPa), or > 35.1 in. Hg (119.0 kPa). Make sure <i>EMM</i> BP sensor tube is NOT plugged. Check atmospheric condition for comparison. Clear code and retest.
45	BP Sensor BELOW range	✓			-	-	10 seconds	Pressure < 20.7 in. Hg (70 kPa).
46	BP Sensor ABOVE range	✓			-	-	10 seconds	Pressure > 31 in. Hg (105 kPa).
47	Air Temperature (AT) circuit fault				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Air temperature < -67° F (-55° C), or > 212° F (100° C). Check 5 V circuit and ground (NEG), and sensor resistance—9000 to 11000 Ω @ 77°F (25°C).
48	Air Temperature BELOW range				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Air temperature below -22°F (-30°C)
49	Air Temperature ABOVE range				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Air temperature above 158°F (70°C)

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51-6	Fuel injector circuit OPEN				LED 2: ON (Running)	-	10 seconds	2nd digit indicates affected cylinder. Check injector/circuit resistance—2 to 3 Ω @ 72°F (22°C).
57	High RPM with low TPS setting	✓		✓	LED 3: FLASHING	CHECK ENGINE (FLASHING)	10 seconds	TPS < 5% and RPM > 3000. Engine SHUTDOWN. Will NOT restart until code has been cleared. The problem could be caused by uncontrolled fuel entering the engine. DO NOT attempt to start the outboard until the problem has been found and repaired.
58	Operating temperature not reached (port)				LED 3: OFF (Cranking) / ON (Running)	-	10 minutes	Engine temperature < 122°F (50°C) with engine speed < 1000 RPM. Check thermostat and pressure relief valve.
59	Operating temperature not reached (stbd)				LED 3: OFF (Cranking) / ON (Running)	-	10 minutes	Engine temperature < 122°F (50°C) with engine speed < 1000 RPM. Check thermostat and pressure relief valve.
61-6	Fuel injector circuit SHORTED				LED 2: ON (Running)	-	10 seconds	2nd digit indicates affected cylinder. Check injector/circuit resistance—2 to 3 Ω @ 72°F (22°C).
67	Engine Temperature Sensor circuit fault (stbd)				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Engine Temperature < -13° F (-25° C), or > 329° F (165° C). Check 5 V circuit and ground (NEG), and sensor resistance—9000 to 11000 Ω @ 77°F (25°C).
68	Engine Temperature BELOW range (stbd)				LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Engine Temperature < -4° F (-20° C). Check engine temperature and sensor resistance.
69	Engine Temperature ABOVE range (stbd)		✓		LED 4: ON (Running)	WATER TEMP/HOT	3 seconds	60° V4 & V6 Models: Engine Temperature > 194°F (90°C) above 3000 RPM activates S.A.F.E. 90° V6 Models: Engine Temperature > 185° F (85° C) above 2000 RPMfor 60 seconds activates warning light and horn; 90° V6 Models: Engine Temperature > 194°F (90°C) above 2000 RPM for 3 seconds activates S.A.F.E. Engine limited to 1200 RPM. Check cooling system.
70	Engine Temperature ABOVE range (stbd)—low speed		✓		LED 4: ON (Running)	WATER TEMP/HOT	3 seconds	60° V4 & V6 Models: Engine Temperature > 230° F (110° C) below 3000 RPM 90° V6 Models: Engine Temperature > 212° F (100° C) below 2000 RPM
71	Oil pressure circuit sensor fault detected				LED 3: ON (Running)	-	10 seconds	< 0.15 V , > 4.85 V
72	Oil pressure BELOW expected range				LED 3: ON (Running)	-	10 seconds	< 0.4 V
73	Oil pressure ABOVE expected range				LED 3: ON (Running)	-	10 seconds	> 4.6 V
74	Water pressure sensor circuit fault detected				LED 3: ON (Running)	-	10 seconds	< 0.15 V , > 4.85 V. <i>EMM</i> water pressure option (<i>I-Command</i>) active
75	Water pressure BELOW expected range				LED 3: ON (Running)	-	10 seconds	< 0.4 V. <i>EMM</i> water pressure option (<i>I-Command</i>) active
76	Water pressure ABOVE expected range				LED 3: ON (Running)	-	10 seconds	> 4.6 V. <i>EMM</i> water pressure option (<i>I-Command</i>) active
77	S.A.C. overcurrent fault	✓			LED 1: OFF (Key On) / ON (Running)	-	10 instances	SAC current > 2 amps and/or < 20 V. Check for shorted 55 V wiring (injector circuits). Check for pinched or chafed wiring.
78	Analog 5V circuit overload detected	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Sensor voltage < 4.75 V. Check sensors and related wiring. Check for pinched or chafed wiring.
79	Starter solenoid circuit OPEN				LED 3: OFF (Key On)	CHECK ENGINE	10 seconds	Check starter solenoid circuit for continuity (key switch OFF) and for 12 V with key switch ON.
81-6	Ignition timing circuit OPEN				LED 2: ON (Running)	-	16 instances	2nd digit indicates affected cylinder. <i>EMM</i> counts failed ignition events (crankshaft revolutions). Check circuit resistance.
87	Exhaust pressure circuit fault	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	< -85 in. water or > 85 in. water. Check for plugged or pinched hose or exhaust fitting.
88	Exhaust pressure BELOW expected range	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	< 40 in. water
89	Exhaust pressure ABOVE expected range	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	> 80 in. water
91	Fuel pump circuit OPEN				LED 2: ON (Running)	-	10 seconds	Check pump/circuit resistance—2 to 3 Ω @ 77°F (25°C).
92	Exhaust valve solenoid OPEN (V4)				LED 2: ON (Running)	-	10 seconds	Refer to exhaust valve relay tests.
94	Fuel pump circuit SHORTED				LED 2: ON (Running)	-	2 seconds	Check pump/circuit resistance—2 to 3 Ω @ 77°F (25°C).
97	Intermittent switched B+ detected				LED 3: ON (Running)	-	10 seconds	Switched battery voltage < 7 V. Check connections and wiring
101-6	Ignition timing circuit SHORTED				LED 2: ON (Running)	-	9 events at low RPM, 3 events at high RPM	2nd digit indicates affected cylinder. <i>EMM</i> counts failed ignition events. Check wiring. Test with known good ignition coil.
NOTE: Always note service codes before clearing codes. Clear stored codes using diagnostic software. Clearing some codes requires turning EMM “OFF” and then “ON” again.								