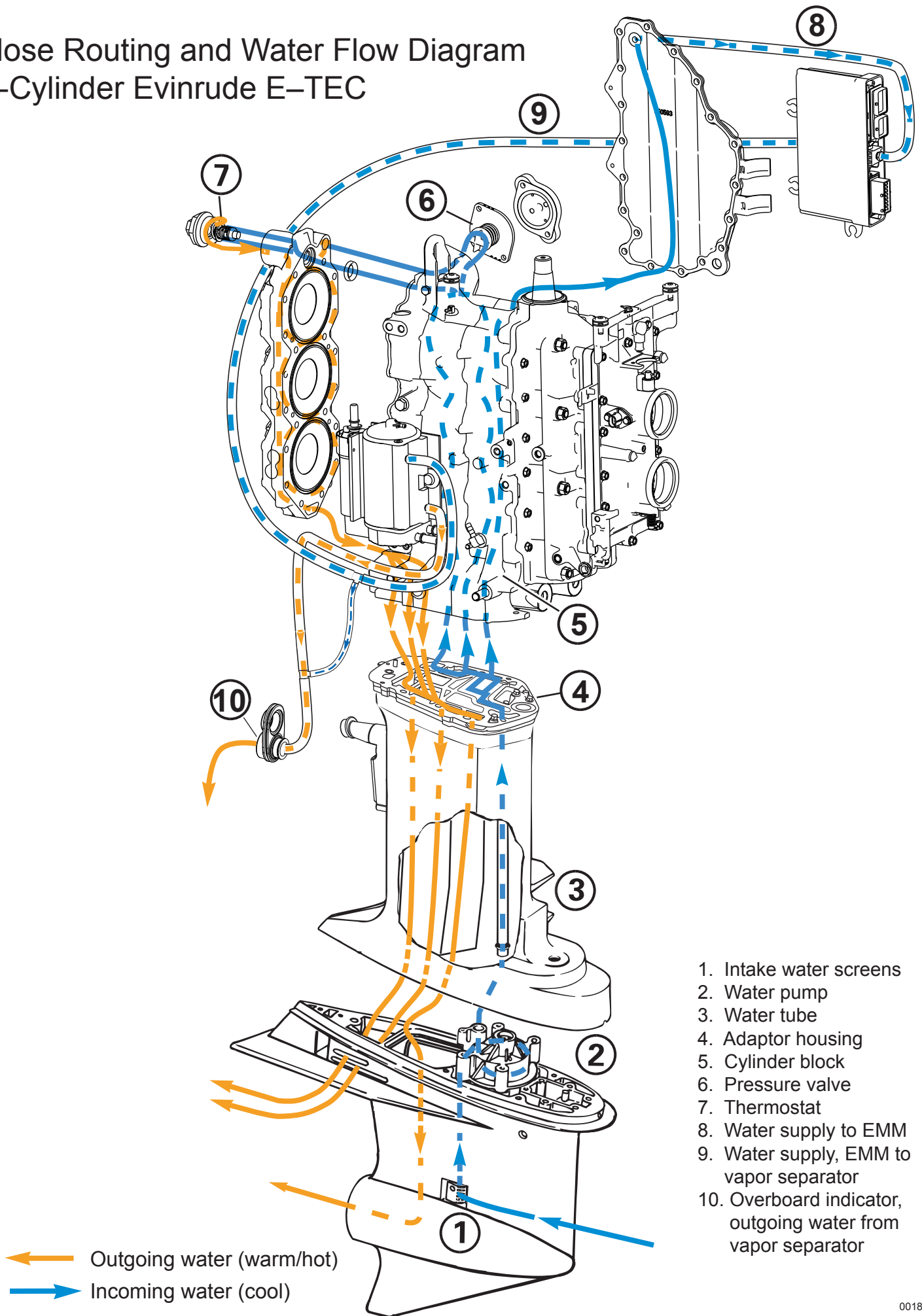
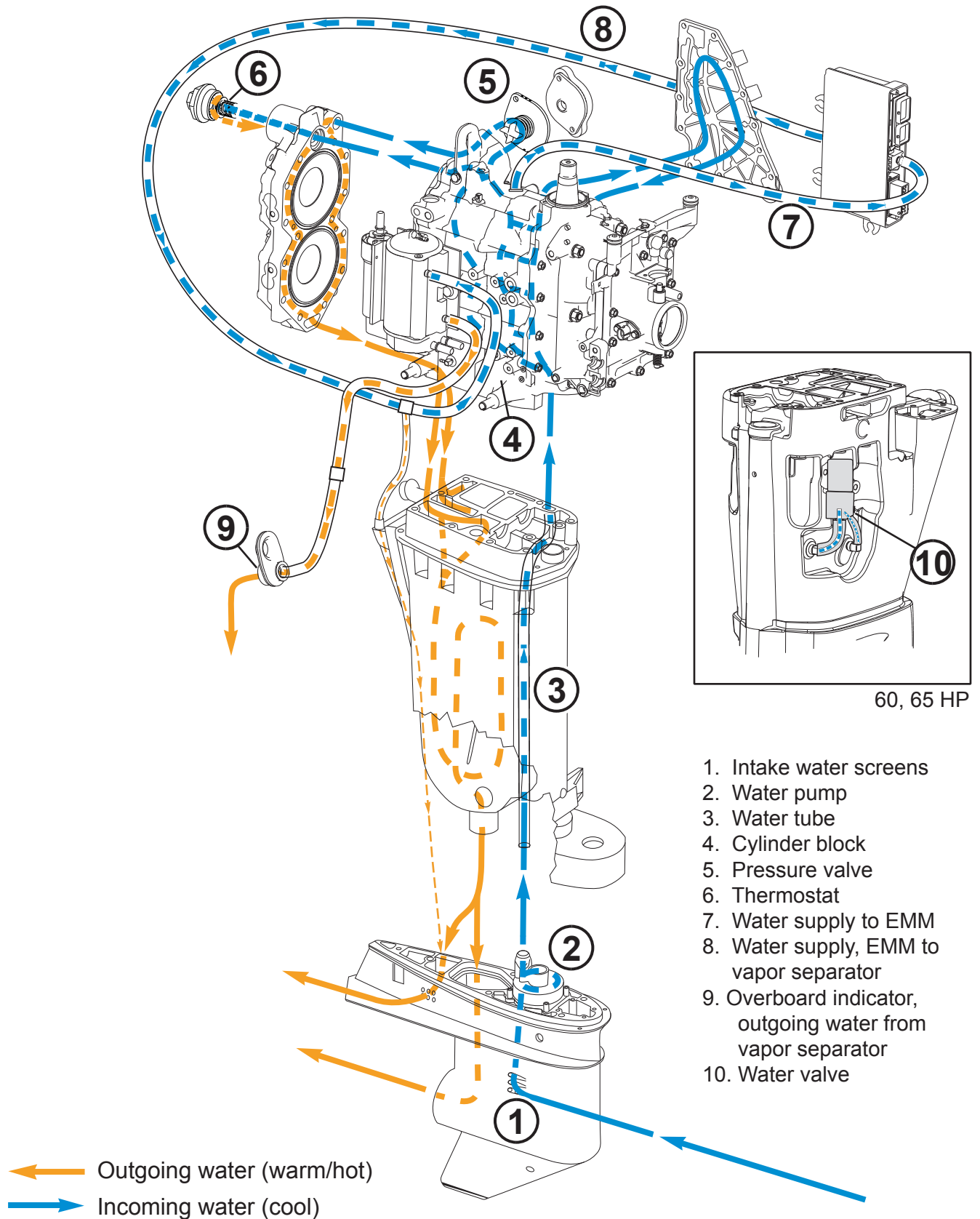


Hose Routing and Water Flow Diagram 3-Cylinder Evinrude E-TEC

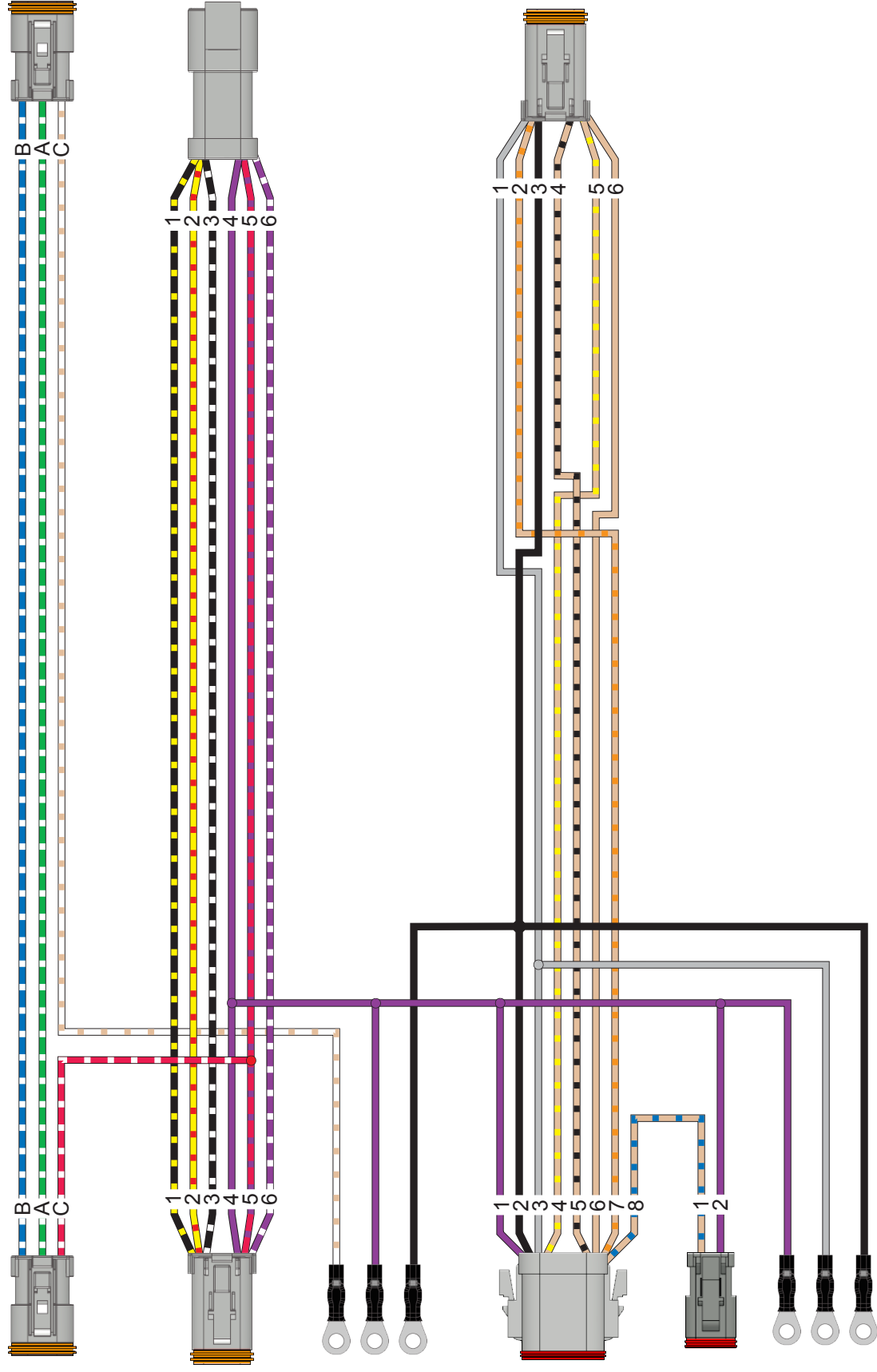


Hose Routing and Water Flow Diagram 2-Cylinder Evinrude E-TEC



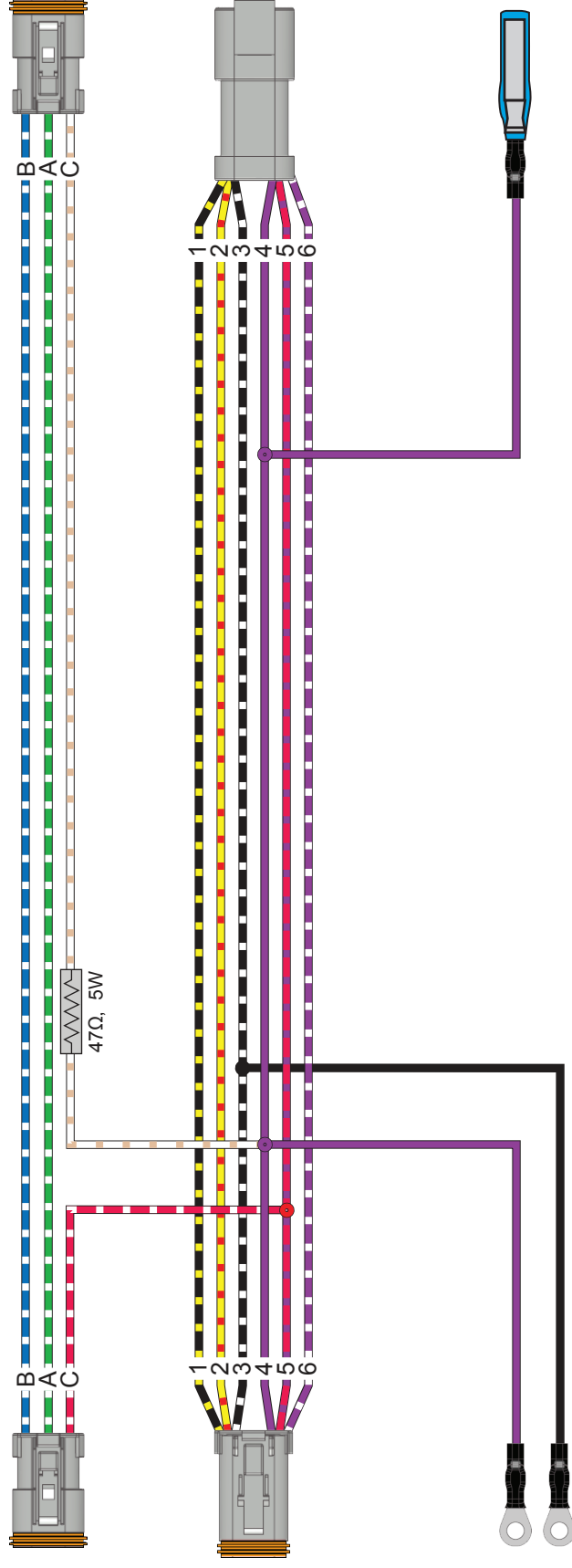
MWS Harness Diagram

Revision – Original



I-COMMAND KEY SWITCH /TNT HARNESS DIAGRAM

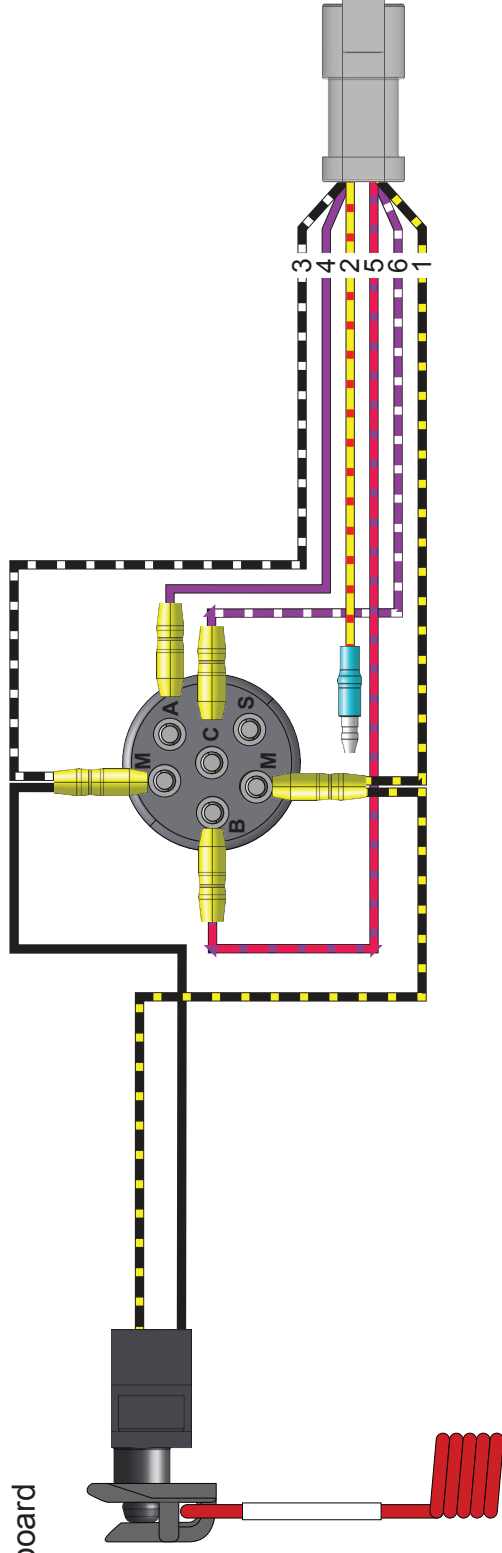
REVISION – ORIGINAL



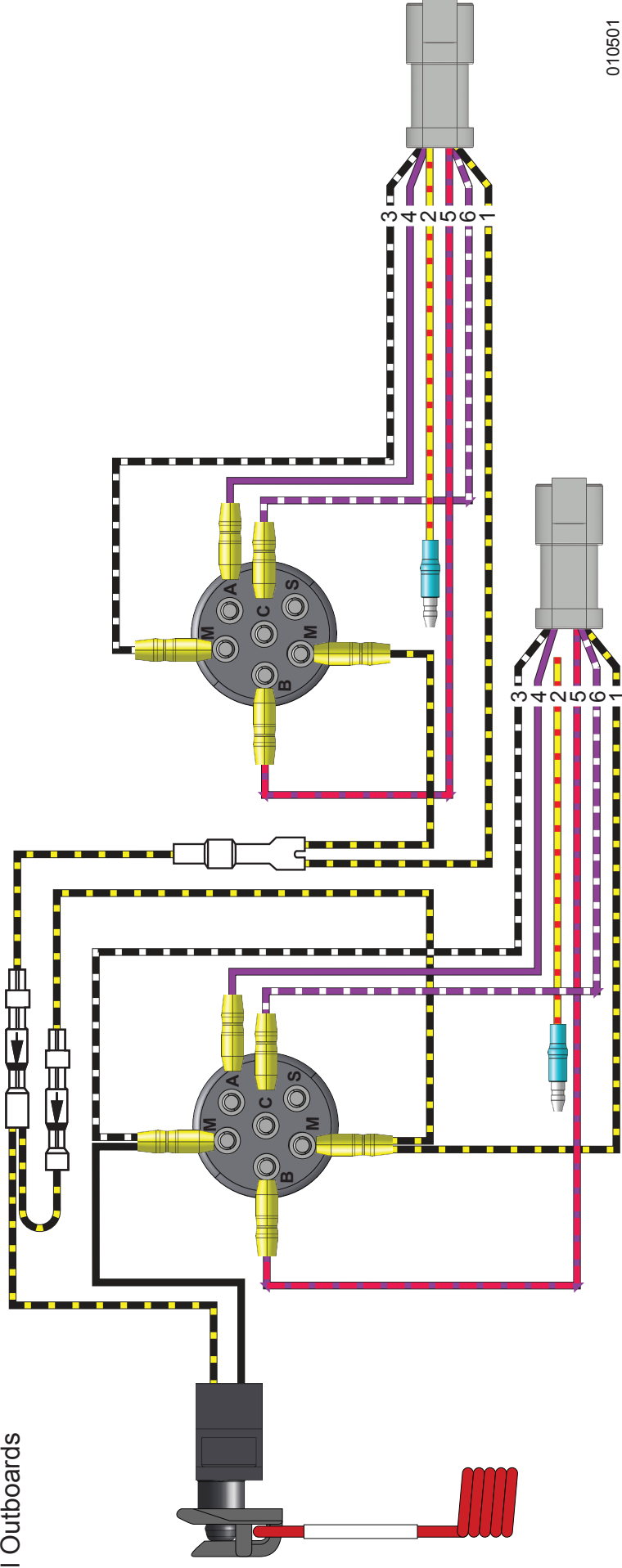
Emergency Stop Circuits Diagram

Revision – Original

Single Outboard

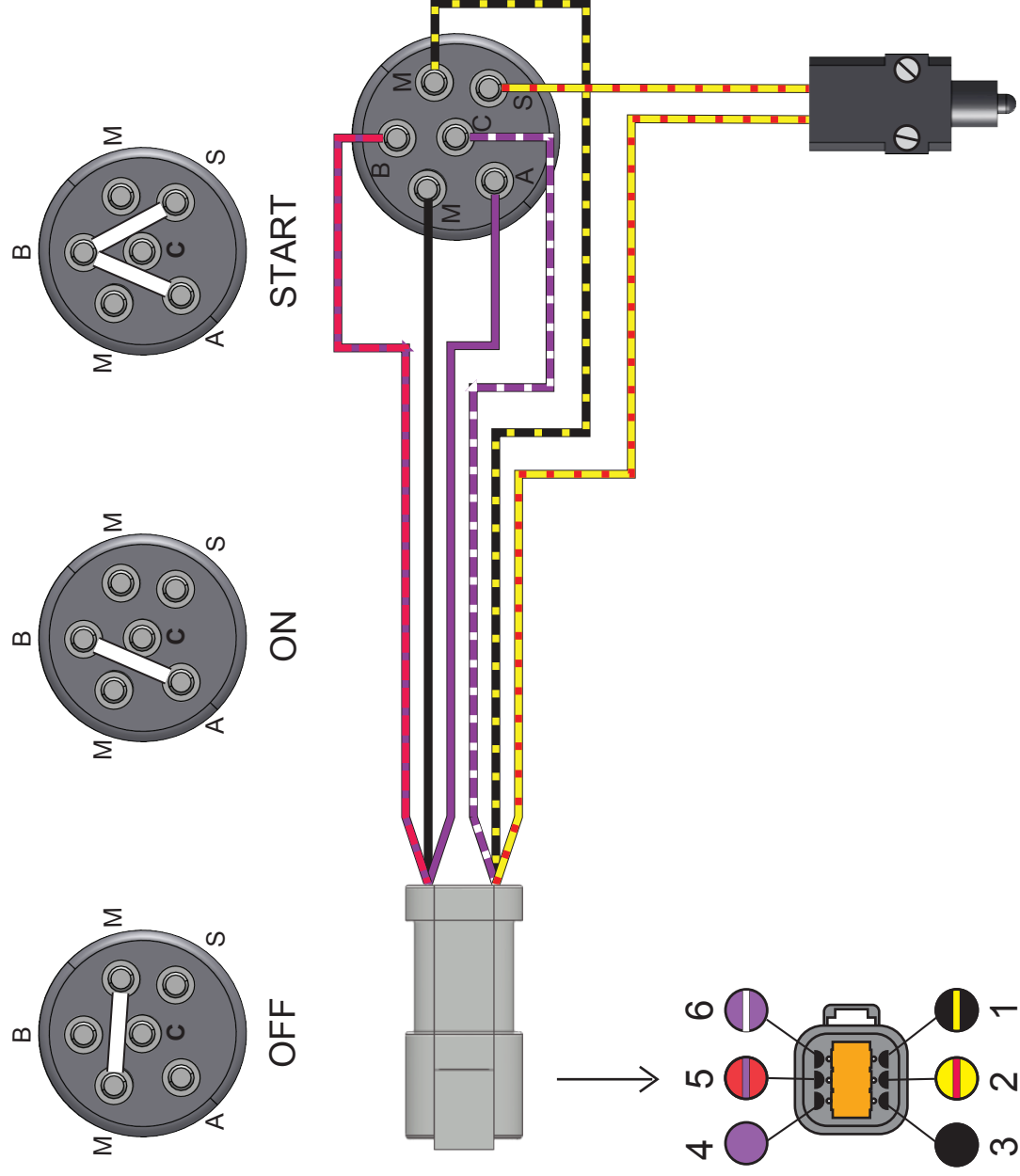


Dual Outboards



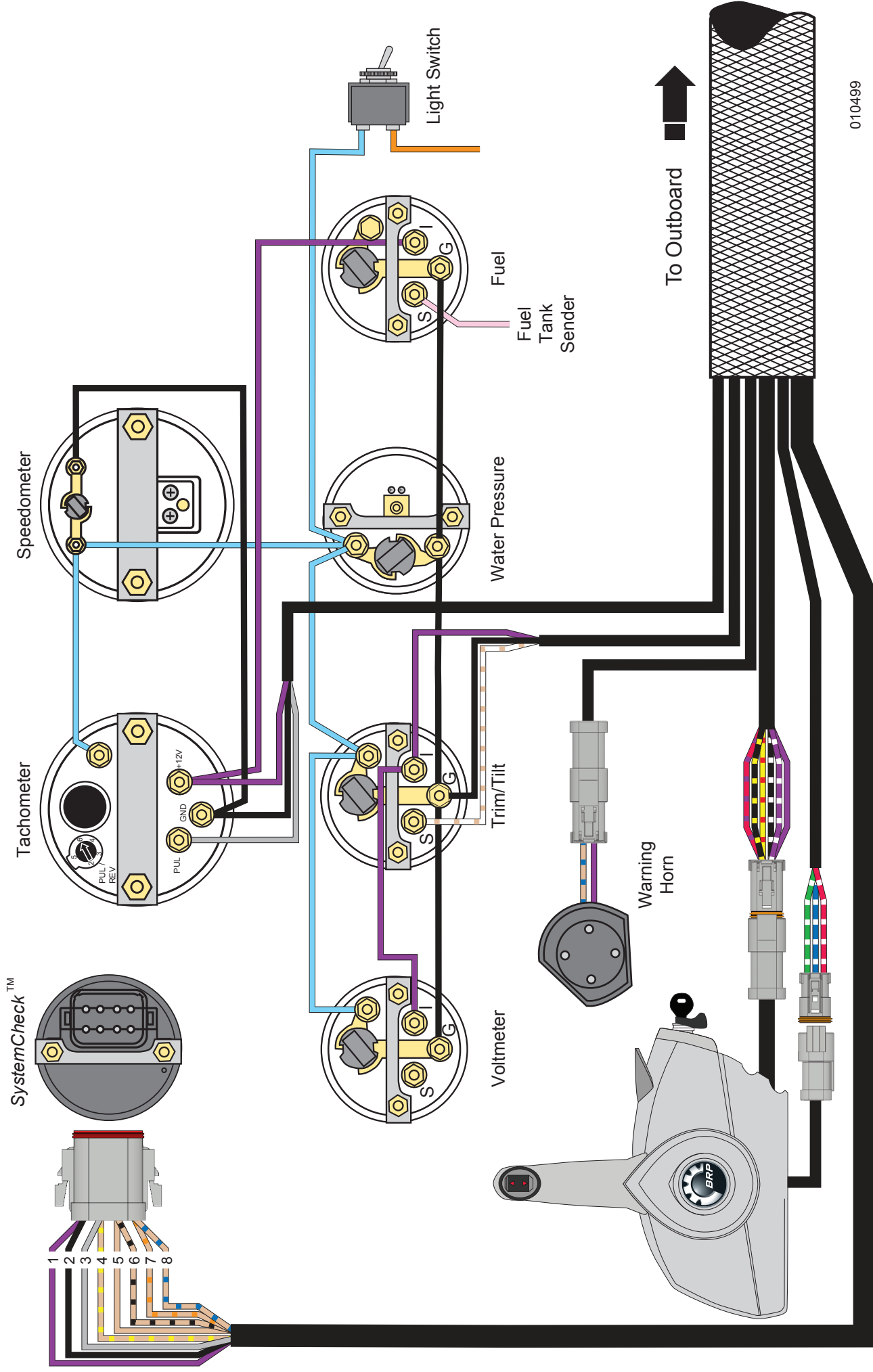
MWS Key Switch and Neutral Safety Switch

Revision – Original



MWS Dashboard Diagram

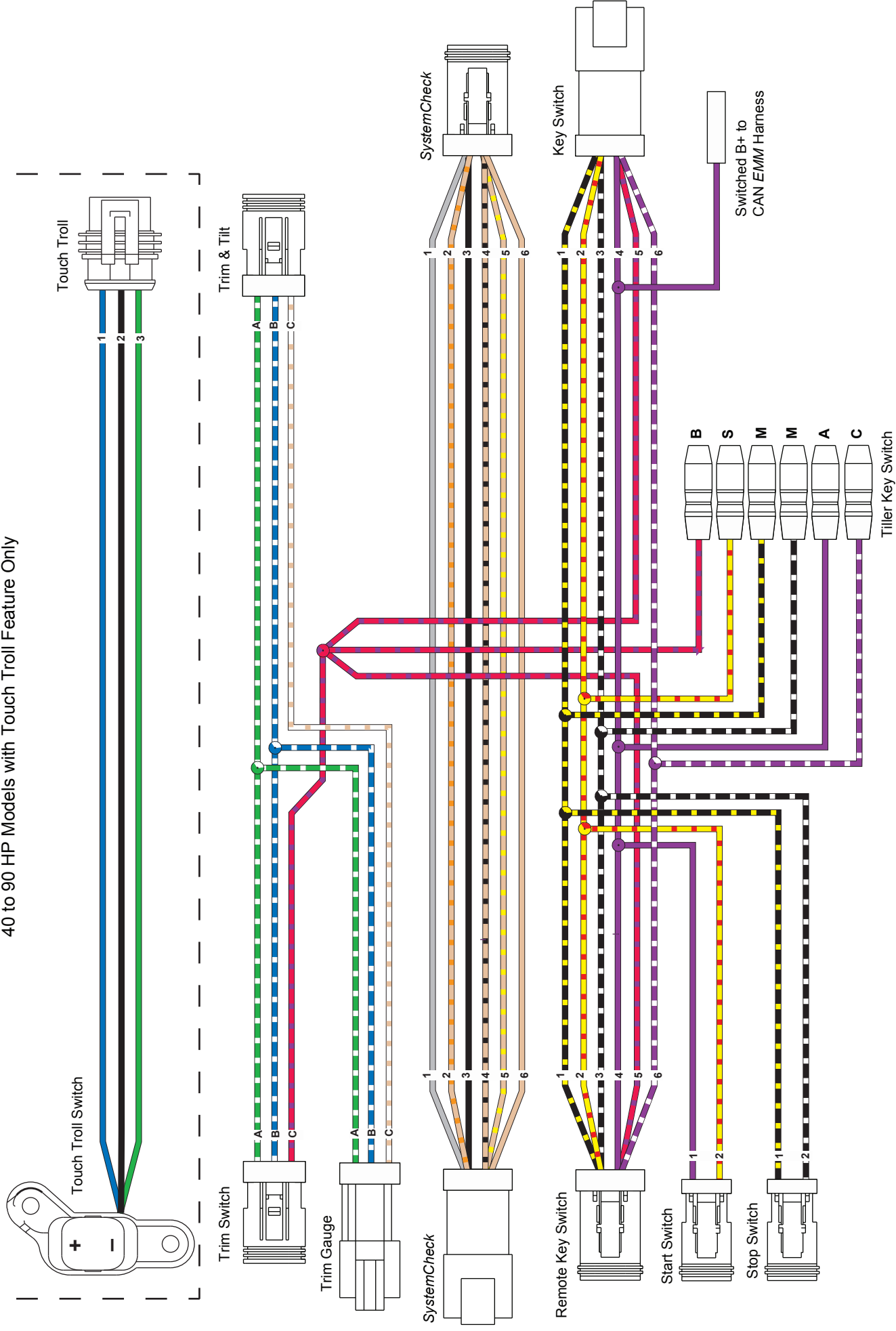
Revision – Original



TILLER

ENGINE

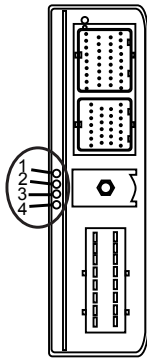
40 to 90 HP Models with Touch Troll Feature Only



Evinrude E-TEC

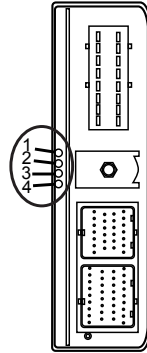
EMM LED Diagnostic Indicators

In-line Models



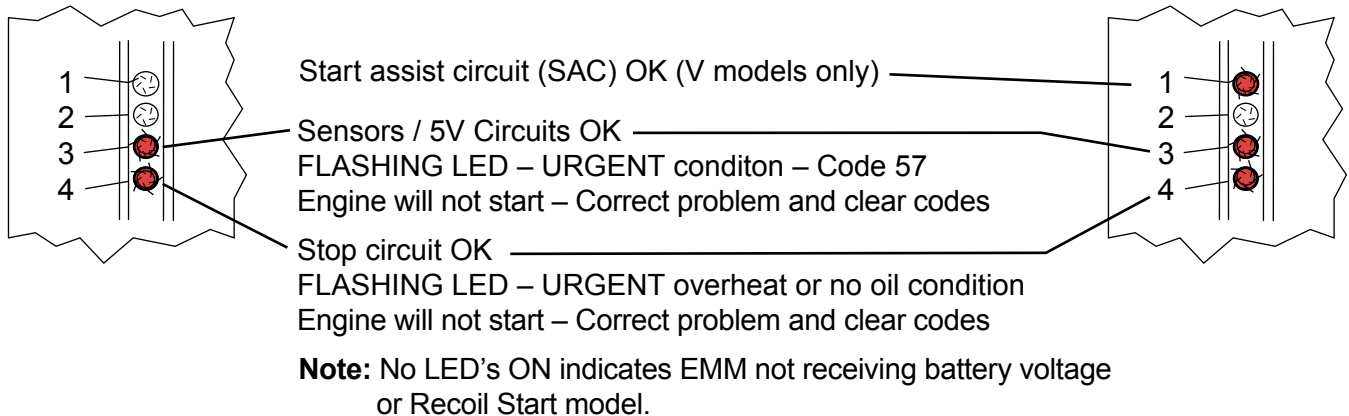
- | | | | | | | |
|---|---|---|---|-----------------------------------|---|---|
| 1 | — | ⦿ | — | Charging / 55V Circuit | ⦿ | 1 |
| 2 | — | ⦿ | — | CPS OK - Injection/Ignition/Fault | ⦿ | 2 |
| 3 | — | ⦿ | — | Sensors / 5V Circuits | ⦿ | 3 |
| 4 | — | ⦿ | — | Stop Circuit - No Oil/Overheat | ⦿ | 4 |

V Models

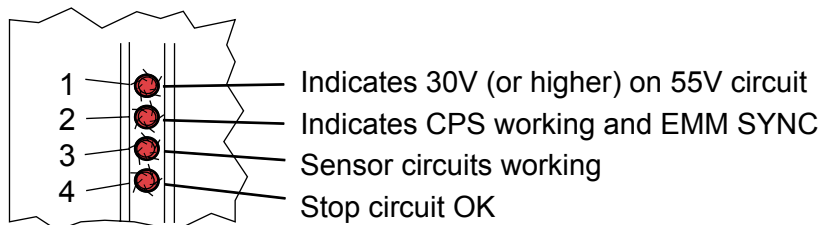


For more information, refer to **SYSTEM ANALYSIS** in the Service Manual.

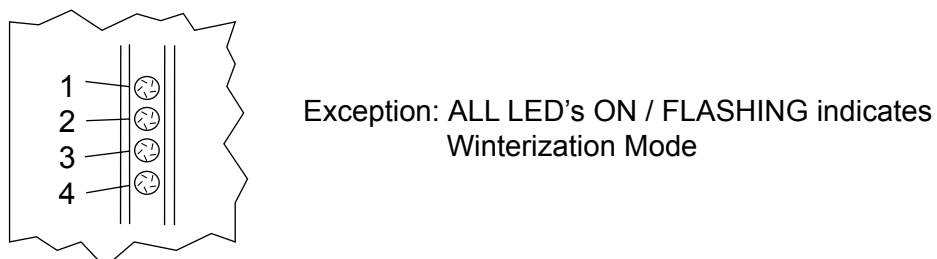
KEY ON : LED's illuminate to indicate circuit function



STARTING : LED's illuminate to indicate circuit function



RUNNING : LED's illuminate to indicate circuit fault



EVINRUDE 40 – 90 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
11	Throttle Position Sensor (TPS) out of idle range				-	-	2 seconds	TPS Voltage > 0.78 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.
12	Throttle Position Sensor (TPS) circuit fault				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	0.8 seconds	TPS Voltage: < 0.14 V, or > 4.92 V. Engine limited to idle speed. Check sensor resistance—3000 to 7000 Ω (between pins A and B) & 4000 to 8000 Ω (between pins A and C)
13	TPS below range				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	8 seconds	TPS Voltage < 0.2 V. Check linkage and IDLE stop.
14	TPS above range				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	8 seconds	TPS Voltage > 4.85 V. Check linkage and WOT stop.
15	ROM (EMM program)	✓			-	-	-	ROM “CHECKSUM” failure. Check software program number in EMM. Reload or replace with proper program.
16	Crankshaft Position Sensor (CPS) Intermittent loss of SYNC				LED 2: OFF (Cranking) LED 3: ON (Running)	-	10 instances	EMM 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 minute	System Voltage < 45 V. 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. 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	EMM Temperature Sensor circuit fault	✓			LED 3: OFF (Cranking) / ON (Running)	-	8 seconds	EMM Temperature < -71° F (-57.4° C), or > 313° F (156° C).
24	EMM Temperature BELOW range	✓			LED 3: OFF (Cranking) / ON (Running)	-	8 seconds	EMM Temperature < -22 ° F (-30° C).
25	EMM Temperature ABOVE range	✓	✓		LED 4: ON (Running)	WATER TEMP/HOT	8 seconds	EMM 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 < 12.5 V. 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.
29	EMM Temperature OVER range	✓		✓	LED 4: FLASHING	WATER TEMP/HOT (FLASHING)	4 seconds	EMM Temperature > 212° F (100° C). Engine SHUTDOWN. Will NOT restart until EMM temperature returns to operating range. Check outboard and EMM cooling systems.
31	Engine temperature OVER range			✓	LED 4: FLASHING	WATER TEMP/HOT (FLASHING)	8 seconds	2-Cylinder models: Engine Temperature > 248° F (120° C) 3-Cylinder models: Engine Temperature > 212° F (100° C) above 3500 RPM, or 3-Cylinder models: Engine Temperature > 230° F (110° C) below 3500 RPM 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)	3 hours	Outboard has run three hours with code 34 or 117. 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—22 Ω.
40	Engine Temperature ABOVE range—Low speed		✓		LED 4: ON (Running)	WATER TEMP/HOT	8 seconds	3-Cylinder models only. Engine Temperature > 212° F (100° C) below 3500 RPM.
41	Engine Temperature Sensor circuit fault				LED 3: OFF (Cranking) / ON (Running)	-	8 seconds	Engine Temperature < -15° F (-26.2° C), or > 332° F (166.5° C). Check 5 V circuit and ground (NEG), and sensor resistance—9000 to 11000 Ω @ 77°F (25°C).
42	Engine Temperature BELOW range				LED 3: OFF (Cranking) / ON (Running)	-	8 seconds	Engine Temperature < -4° F (-20° C). Check engine temperature and sensor resistance.
43	Engine Temperature ABOVE range		✓		LED 4: ON (Running)	WATER TEMP/HOT	8 seconds	2-Cylinder models: Engine Temperature > 212° F (100° C). 3-Cylinder models: Engine Temperature > 194° F (90° C) above 3500 RPM Engine limited to 1200 RPM. Check cooling system.
44	Barometric Pressure (BP) Sensor circuit fault	✓			-	-	8 seconds	Pressure < 3.9 in. Hg (13.3 kPa), or > 35.1 in. Hg (119.0 kPa). Make sure EMM BP sensor tube is NOT plugged. Check atmospheric condition for comparison. Clear code and retest.
45	BP Sensor BELOW range	✓			-	-	8 seconds	Pressure < 20.7 in. Hg (70 kPa).
46	BP Sensor ABOVE range	✓			-	-	8 seconds	Pressure > 31 in. Hg (105 kPa).

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
47	Air Temperature (AT) circuit fault				LED 3: OFF (Cranking) / ON (Running)	CHECK ENGINE	8 seconds	Air temperature < -58° F (-49.9° C), or > 218° F (103.2° 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)	-	8 seconds	Air temperature < -22° F (-30° C).
49	Air Temperature ABOVE range				LED 3: OFF (Cranking) / ON (Running)	-	8 seconds	Air temperature > 158° F (70° C).
51	Fuel injector circuit #1 OPEN				LED 2: ON (Running)	-	2 seconds	Check injector/circuit resistance—2 to 3 Ω @ 72°F (22°C).
52	Fuel injector circuit #2 OPEN				LED 2: ON (Running)	-	2 seconds	
53	Fuel injector circuit #3 OPEN				LED 2: ON (Running)	-	2 seconds	
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				LED 3: OFF (Cranking) / ON (Running)	-	10 minutes	Engine temperature < 104° F (40° C) with engine speed < 2300 RPM. Check thermostat and pressure relief valve.
61	Fuel injector circuit #1 SHORTED				LED 2: ON (Running)	-	8 seconds	Check injector/circuit resistance—2 to 3 Ω @ 72°F (22°C).
62	Fuel injector circuit #2 SHORTED				LED 2: ON (Running)	-	8 seconds	
63	Fuel injector circuit #3 SHORTED				LED 2: ON (Running)	-	8 seconds	
78	Sensor supply voltage fault	✓			LED 3: OFF (Cranking) / ON (Running)	-	10 seconds	Sensor voltage < 4.75 V. Check sensors and related wiring. Check for pinched or chafed wiring.
81	Ignition timing circuit #1 OPEN				LED 2: ON (Running)	-	10 instances	EMM counts failed ignition events. Check wiring. Test with known good ignition coil.
82	Ignition timing circuit #2 OPEN				LED 2: ON (Running)	-	10 instances	
83	Ignition timing circuit #3 OPEN				LED 2: ON (Running)	-	10 instances	
90	Water injection solenoid SHORTED				LED 2: ON (Running)	-	8 seconds	Check circuit resistance—295 Ω ± 20 @ 77°F (25°C).
91	Fuel pump circuit OPEN				LED 2: ON (Running)	-	8 seconds	Check pump/circuit resistance—2 to 3 Ω @ 77°F (25°C).
93	Water injection solenoid OPEN				LED 2: ON (Running)	-	8 seconds	Check circuit resistance—295 Ω ± 20 @ 77°F (25°C).
94	Fuel pump circuit SHORTED				LED 2: ON (Running)	-	2 seconds	Check pump/circuit resistance—2 to 3 Ω @ 77°F (25°C).
101	Ignition timing circuit #1 SHORTED				LED 2: ON (Running)	-	20 instances	EMM counts failed ignition events. Check wiring. Test with known good ignition coil.
102	Ignition timing circuit #2 SHORTED				LED 2: ON (Running)	-	20 instances	
103	Ignition timing circuit #3 SHORTED				LED 2: ON (Running)	-	20 instances	
117	Critical LOW OIL detected	✓	✓		LED 4: ON (Running)	NO OIL	4800 Pulses (2-Cyl) 6000 Pulses (3-Cyl)	EMM counts oil pump pulses after LOW OIL switch closes. Engine limited to 1200 RPM. Stop outboard and add oil to tank. Warning resets after three oil pump pulses.
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.								