MERCURY MerCruiser

Service Bulletin

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OEM No. 2008-02R1

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PCM 09 Power Harness Requirements and Engine Controller Pinout Diagrams

Models Affected

Model	Serial Number
All engine models with Emissions Control	0W697154 and above

Situation

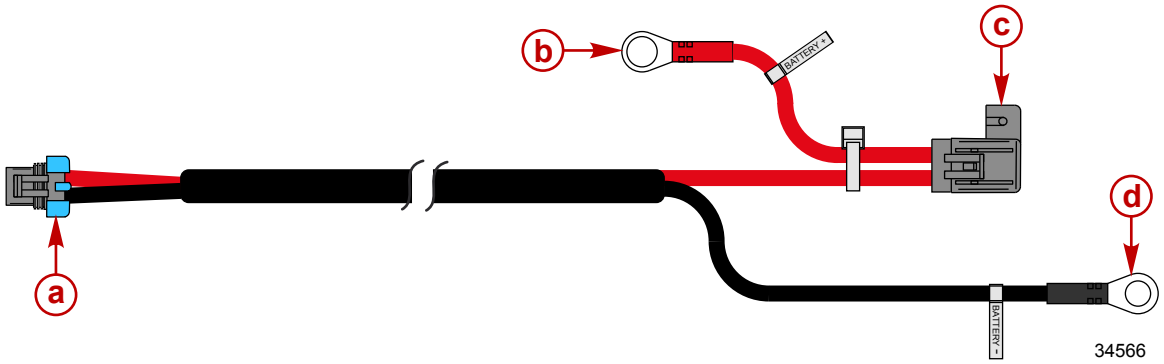
To meet emissions output regulations mandated by the California Air Resource Board, and to enable use of Onboard Diagnostic Marine (OBDM) technology, all engine models with Emissions Control have a new 112-pin propulsion control module (PCM). The new PCM requires the installation of a power harness during engine installation. The PCM manages closed-loop engine operation and associated fault maintenance according to feedback from the oxygen sensors. The power harness supports the battery power requirements of the PCM.

Install a power harness of the appropriate length to the vessel battery terminals and to the 2-pin clean power connector on the engine. (A 4.3 m (14 ft) power harness is supplied with the engine.) Refer to the appropriate engine installation manual for instructions on installing the power harness.

Available Parts

IMPORTANT: If the application requires a longer power harness, the 7.6 m (25 ft) harness assembly may be ordered separately.

Qty.	Description	Part Number
1	14 ft Power Harness Assembly (supplied)	888416T04
1	25 ft Power Harness Assembly	889244T01



a - 2-pin connector
b - Positive terminal
c - 5 A fuse (10 A fuse for Axius)
d - Negative terminal

Installation Procedure

⚠ WARNING

Prevent serious injury or death from a loss of boat control. Pulling on or flexing connectors can loosen terminals and cause open or intermittent electrical connections, which will interrupt control of throttle and shifting. Do not pull on cable connectors when pulling cables through the boat. Do not allow cables to flex at connection points. Fasten all electrical harnesses within 25 cm (10 in.) of any connection.

⚠ WARNING

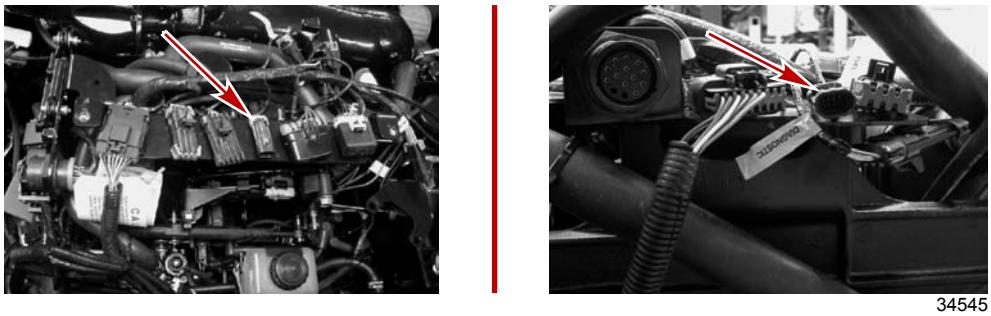
Damaged wires can cause electrical problems, resulting in system failure. In some cases, this can affect boat operation, leading to personal injury. Use conduit, hose clamps, grommets, or other appropriate measures to protect all electrical wires. Do not overtighten clamps and keep harnesses away from heat sources during installation.

IMPORTANT: Each engine must be equipped with its own battery. Each engine must have a power harness connecting its battery and the engine harness 2-pin Clean Power connector.

IMPORTANT: Inspect each electrical connector component for loose pins, damaged locks and seals, and wiring damage. Repair or replace damaged components. Ensure that connectors are free of any contaminants before installation. Do not force connectors together. Confirm that connector locks are engaged.

1. Disconnect the battery cables.

2. Connect the 2-pin power harness connector to the engine clean power connector. Refer to the application specific-engine installation instructions for the clean power connector's location.



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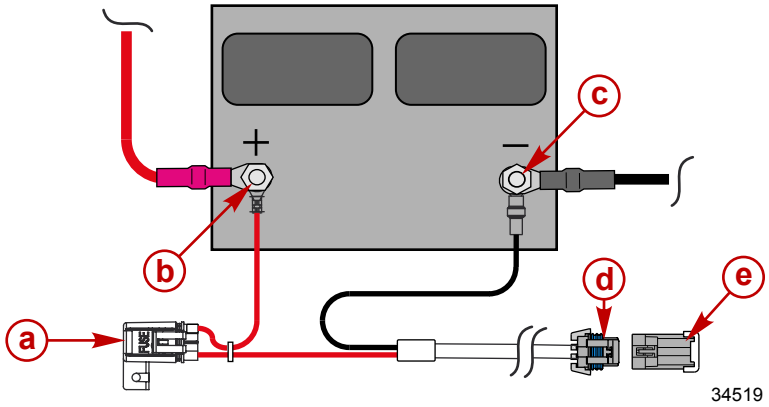
Typical connector locations

IMPORTANT: Do not route cables near sharp edges, hot surfaces, or moving parts. Avoid sharp bends in the cable. The minimum bend radius is 7.6 cm (3 in.).

3. Route the power harness from the engine to its battery. Confirm that the harness is of adequate length.
4. Secure the power harness every 25.4 cm (10 in.) with a suitable cable anchor.
5. Anchor the power harness fuse package within 15 cm (6 in.) of the battery.
6. Connect the red positive lead of the power harness to its battery positive terminal.



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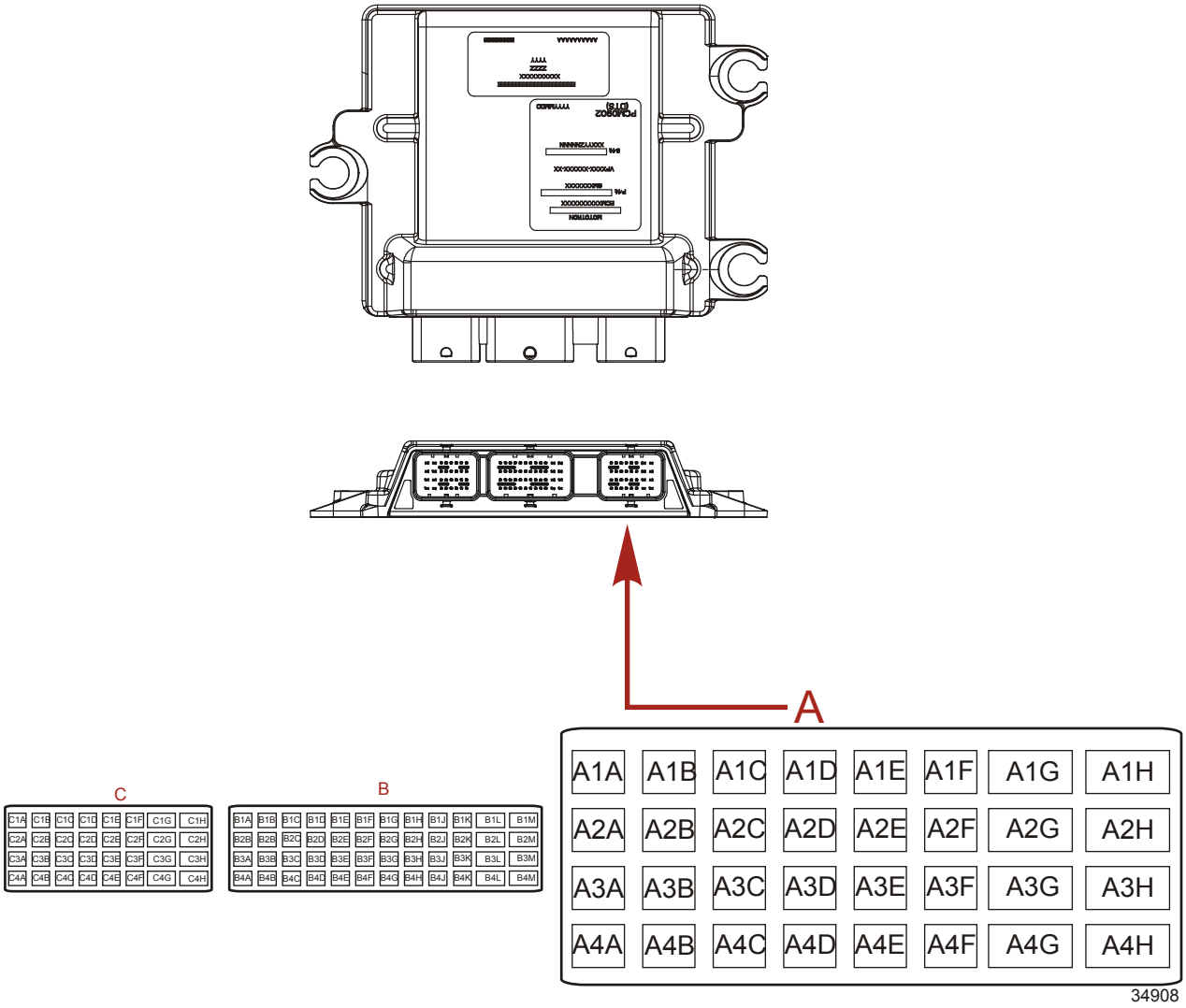
a - Power harness fuse
b - Positive battery connections
c - Negative battery connections
d - 2-pin power harness connector
e - Engine 2-pin clean power connector

7. Connect the black negative lead of the power harness to the negative terminal on its battery .
8. Reconnect the positive and negative battery cables.
9. Tighten both battery cable nuts to specification.

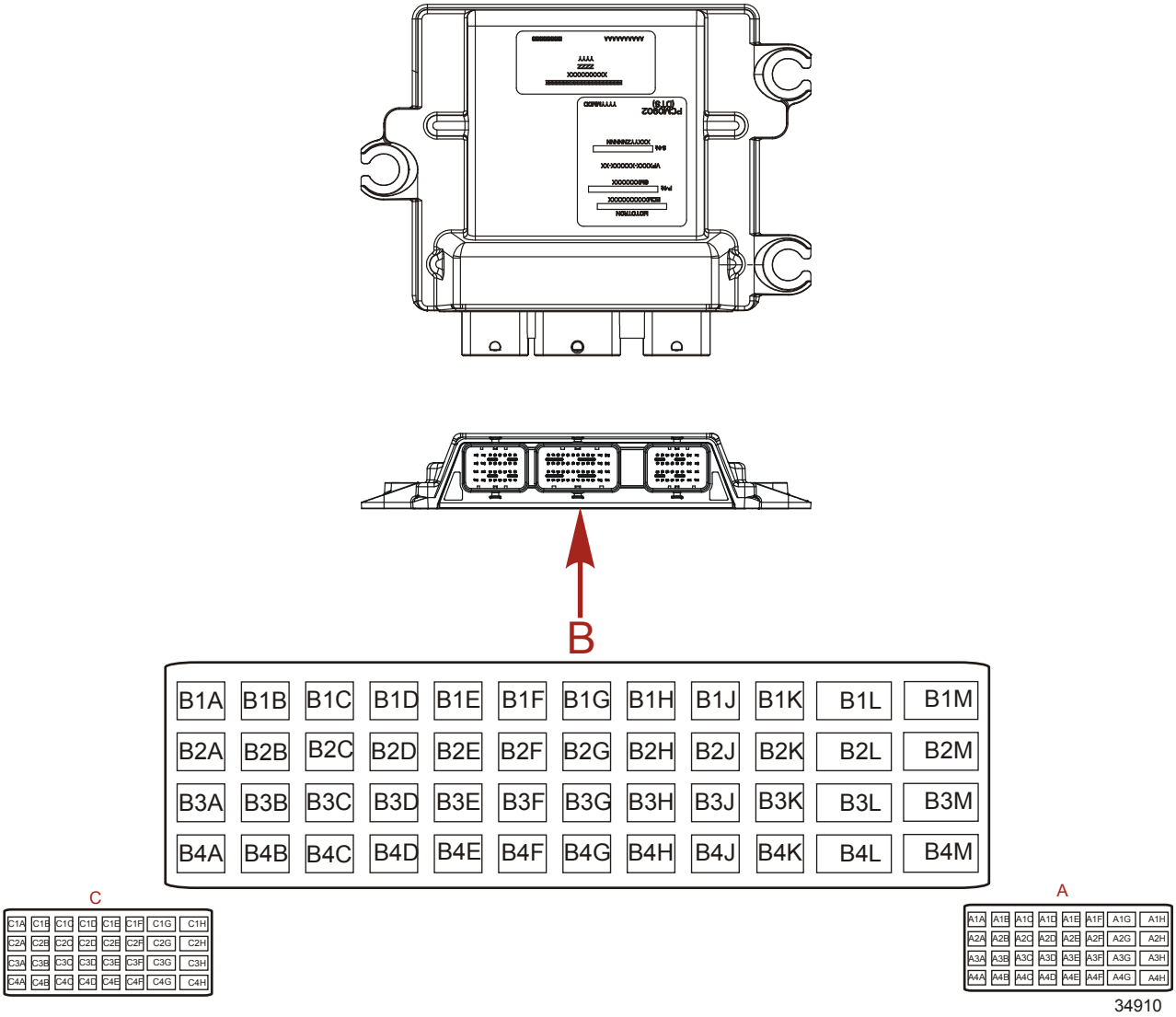
Description	Nm	lb–in.	lb–ft
Battery cable nut	13.5	120	–

PCM 09 Connector Pinout Diagrams



PCM 09 Connector Pinout Diagrams

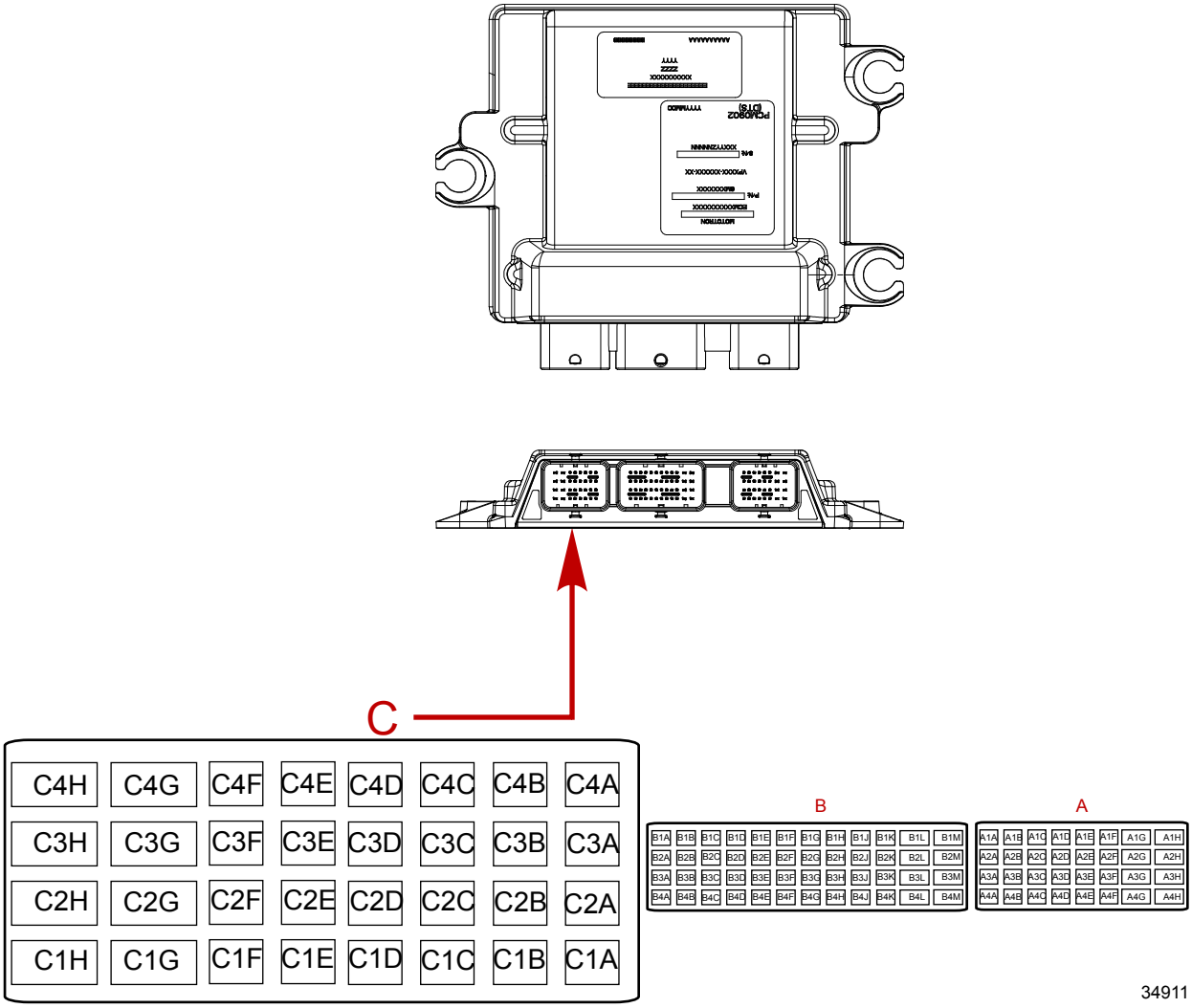
PCM Connector A				
Pin	**Description**		**Pin**	**Description**
A1A	EST drive—cylinder 4		A3A	EST driver—cylinder 2
A1B	EST driver—cylinder 8		A3B	EST driver—cylinder 6
A1C	Tachometer output signal (TachLink)		A3C	RS485 (+) Mercury diagnostics
A1D	Not used		A3D	Main power relay control
A1E	Warning horn driver		A3E	Trim up relay control
A1F	Malfunction indicator lamp (MIL) driver		A3F	Injector driver—cylinder 7
A1G	Injector driver—cylinder 5		A3G	Injector driver—cylinder 3
A1H	Injector driver—cylinder 1		A3H	Not used
A2A	EST driver—cylinder 3		A4A	EST driver—cylinder 1
A2B	EST driver—cylinder 7		A4B	EST driver—cylinder 5
A2C	RS485 (–) Mercury diagnostics		A4C	Battery ground (12 V–)
A2D	Fuel pump relay control		A4D	Sensor ground (–) 2 (5 V SmartCraft)
A2E	Starter relay control—DTS		A4E	Trim down relay control—DTS
A2F	Idle air control (IAC) driver—non-DTS		A4F	Injector driver—cylinder 8
A2G	Injector driver—cylinder 6		A4G	Injector driver—cylinder 4
A2H	Injector driver—cylinder 2		A4H	Not used



PCM 09 Connector Pinout Diagrams

PCM Connector B			
Pin	**Description**	**Pin**	**Description**
B1A	CAN P (+) signal	B3A	Not used
B1B	J1939 OBD-M (–) diagnostics	B3B	Not used
B1C	CAN X (+) signal—DTS	B3C	Not used
B1D	Port knock sensor signal (+)	B3D	Sensor ground 1 (5 V engine sensors)
B1E	STBD knock sensor signal (–)	B3E	Manifold absolute pressure (MAP) sensor signal
B1F	Oil pressure sensor signal	B3F	Pitot pressure sensor signal
B1G	Camshaft position sensor (CMPS) signal	B3G	EST transmission pressure sensor B signal—Inboard
B1H	Not used	B3H	Safety lanyard circuit (E-stop)
B1J	Crankshaft position sensor (CPS) (–)—Vazer 100 and 3.0L MPI only	B3J	Port post-catalytic converter O2 sensor signal (–)
B1K	Port pre-catalytic converter O2 sensor signal (+)	B3K	Port post-catalytic converter O2 sensor signal (+)
B1L	Port pre-catalytic converter O2 sensor signal (–)	B3L	Not used
B1M	Port post-catalytic converter O2 sensor heater (+)	B3M	Port pre-catalytic converter O2 sensor heater (+)
B2A	CAN P (–) signal	B4A	Trim position sensor signal—non-DTS (2-wire, analog)
B2B	J1939 OBD-M (+) diagnostics	B4B	Seawater temperature sensor signal
B2C	CAN X (–) signal—DTS	B4C	Fuel level 1 sensor signal
B2D	Port knock sensor signal (–)	B4D	Tank level 2 sensor signal
B2E	STDB knock sensor signal (+)	B4E	Not used
B2F	Block pressure sensor signal	B4F	EST transmission pressure sensor A signal—Inboard DTS
B2G	Paddle wheel sensor signal	B4G	Ignition switch battery (+) (Wake up)
B2H	Not used	B4H	Crankshaft position sensor (CPS) signal—V8 engines
B2J	Crankshaft position sensor (CPS) (+)—Vazer and 3.0 MPI only	B4J	STDB post-catalytic converter O2 sensor signal (–)
B2K	STDB pre-catalytic converter O2 sensor signal (+)	B4K	STDB post-catalytic converter O2 sensor signal (+)
B2L	STDB pre-catalytic converter O2 sensor signal (–)	B4L	EST signal return from ignition coils
B2M	STDB post-catalytic converter O2 sensor heater (+)	B4M	STDB pre-catalytic converter O2 sensor heater (+)

IMPORTANT: Port and starboard engines are determined by their position as viewed from the stern. For V-drive applications, port and starboard engines are determined by their position as viewed from the bow.



PCM 09 Connector Pinout Diagrams

PCM Connector C			
Pin	**Description**	**Pin**	**Description**
C1A	Not used	C3A	Trim position sensor signal—Bravo DTS (3-wire, digital)
C1B	STDB exhaust manifold coolant temperature (EMCT) sensor signal	C3B	Shift anticipate switch signal—Alpha
C1C	Low drive lube switch signal	C3C	Throttle position sensor (TPS 1) signal 1
C1D	Throttle position sensor (TPS) signal—DTS	C3D	Not used
C1E	Oil pressure switch signal—Vazer 100 and 3.0L MPI	C3E	Not used
C1F	Shift position sensor signal from ESC—Bravo DTS	C3F	Not used
C1G	Battery ground (12 V–)	C3G	Driver power (12 V+ from main power relay)
C1H	ESC Motor B (DTS) or ESC solenoid B (Inboard)	C3H	Driver power (12 V+ from main power relay)
C2A	Intake air temperature or manifold air temperature (IAT or MAT) sensor signal	C4A	Neutral switch signal
C2B	Port exhaust manifold coolant temperature (EMCT) sensor signal	C4B	Transmission over-temperature switch signal
C2C	Not used	C4C	Not used
C2D	Not used	C4D	Sensor power 1 (5 V+) engine sensors
C2E	Drive or rudder sensor signal	C4E	Sensor power 2 (5 V+) SmartCraft sensors
C2F	Engine coolant temperature (ECT) sensor signal	C4F	Battery positive (12 V+)
C2G	Battery ground (12 V–)	C4G	ETC motor B control—DTS
C2H	ESC Motor A (DTS) or ESC solenoid A (Inboard)	C4H	ETC motor A control—DTS