



Service Bulletin

Bulletin No. 2014-01

Circulate to: Sales Manager Accounting Service Manager Technician Parts Manager

Important New Model Information—75/80/90/100/115 FourStroke (2.1L)

Models Affected

Models Covered	Serial Number Or Year
75/80/90/100/115 FourStroke (2.1L)	2B095049 and Above

Scope

Worldwide

Situation

The purpose of this bulletin is to highlight some key product information for the 75/80/90/100/115 FourStroke (2.1L) in regards to:

- Specifications
- Recommended transom height
- Propeller/hub kit selection
- Steering trim tab
- Shift cable binding
- Fuel system priming at initial installation
- 75/80/90/100/115 FourStroke (2.1L) gauge options
- Power tilt sensor converter/tilt limit module kit
- Analog gauge interface (AGI) kit
- Analog trim sender (standard feature)
- Analog tachometer requirements
- Block water pressure—SmartCraft digital block water pressure kit
- Block water pressure—Analog adapter fitting
- Speedometer connection—SmartCraft digital pitot sensor kit
- Big Tiller kits
- Mechanical steering
- Fuel line primer bulb
- Water separating fuel filter
- SmartCraft boat harness "Fuel 2/Other"
- 75/80/90/100/115 FourStroke (2.1L) diagnostic tool requirements

Specifications

NOTE: 80 and 100 hp are international models.

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Important New Model Information—75/80/90/100/115 FourStroke (2.1L)

Models	75	80	90	100	115
Horsepower	75	80	90	100	115
Kilowatts	55.2	58.8	66.2	73.6	84.6
Full throttle RPM range	4500–5500		5000–6000		
Idle speed in neutral gear (engine at operating temperature)	700 RPM				
Number of cylinders	4				
Piston displacement	2,061 cc (125.8 cid)				
Cylinder bore	90 mm (3.54 in.)				
Stroke	81 mm (3.19 in.)				
Recommended spark plug	NGK ZFR5F				
Spark plug gap	0.8 mm (0.032 in.)				
Spark plug hex size	16 mm				
Valve clearance (cold)					
Intake valve	0.050–0.102 mm (0.002–0.004 in.)				
Exhaust valve	0.128–0.179 mm (0.005–0.007 in.)				
Gear ratio	Standard: 2.07:1				
	Command Thrust: 2.38:1				
Gearcase lubricant capacity	Standard: 800 ml (27.1 fl oz)				
	Command Thrust: 760 ml (25.7 fl oz) (right-hand and left-hand rotation)				
Recommended gasoline	<p>USA and Canada—having a posted pump octane rating of 87 (R+M)/2 minimum. Premium gasoline (92 [R+M]/2 Octane) is also acceptable. Do not use leaded gasoline. Maximum alcohol tolerance is 10%.</p> <p>Outside USA and Canada—having a posted pump octane rating of 90 RON minimum. Premium gasoline (98 RON) is also acceptable. Do not use leaded gasoline. Maximum alcohol tolerance is 10%.</p>				
Recommended oil	<p>Mercury or Quicksilver NMMA FC-W certified SAE 10W-30 4-Stroke Marine Engine Oil is recommended for general, all-temperature use. As optional choices, Mercury or Quicksilver NMMA FC-W SAE 25W-40 Mineral Marine 4-Stroke Engine Oil or SAE 25-W40 Synthetic Blend Marine 4-Stroke Engine Oil may be used. If the recommended Mercury or Quicksilver NMMA FC-W certified oils are not available, a major outboard manufacturer's brand of NMMA FC-W certified 4-Stroke outboard oil of similar viscosity may be used.</p>				
Engine oil capacity with oil filter replacement	5.2 L (5.5 US qt)				
Battery rating	1000 marine cranking amps (MCA), 800 cold cranking amps (CCA), or 65 amp hour (Ah)				

Recommended Transom Height

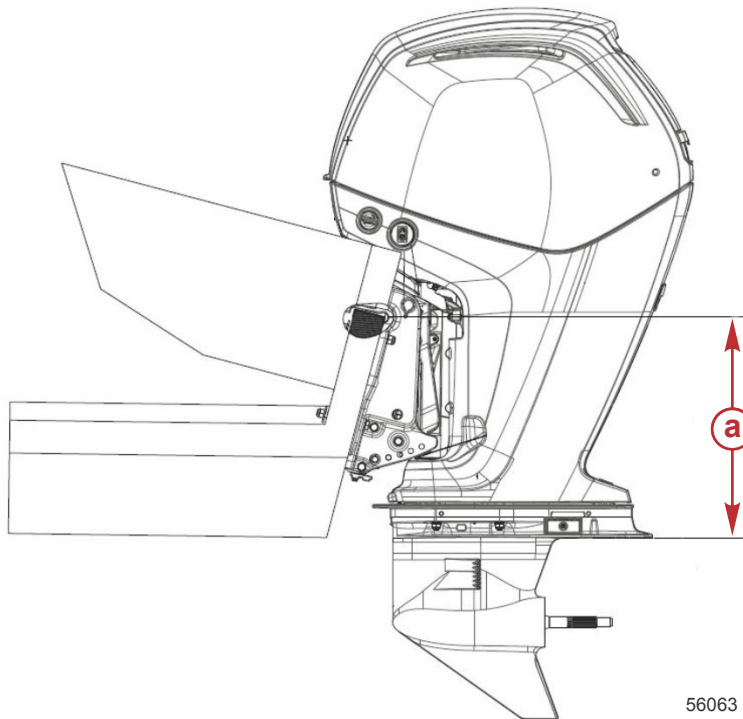
The transom heights, as measured between the bottom side of the transom bracket hook and the anti-ventilation plate for the 75/80/90/100/115 FourStroke (2.1L) are as follows:

Model	Transom Height
Long shaft (L)	50.8 cm (20 in.)
Extra long shaft (XL)	63.5 cm (25 in.)

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These true transom heights are approximately 19 mm (0.75 in.) shorter than the 75–125 outboards (both two-stroke and four-stroke) currently offered by Mercury Marine. When installing this new FourStroke outboard as a replacement for one of the earlier designs, install the outboard lower on the transom by one set of transom mounting holes (19 mm [0.75 in.]).



a - Transom height (measured between the bottom side of the transom bracket hook and the anti-ventilation plate)

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Propeller/Hub Kit Selection

Gearcase	Propeller Series	Propeller Hub Kit
Standard	4.25 in. tube	Flo-Torq II or Flo-Torq III ¹ .
Command Thrust (CT)	4.75 in. tube	Flo-Torq II, Flo-Torq III, or Flo-Torq IV ² .

IMPORTANT: When installing this new 2.1L FourStroke outboard as a repower on an existing boat, it is critical that the propeller selection process be followed. These engines have two gearcase sizes (standard, and Command Thrust [CT]) and two gear ratios (2.07:1 and 2.38:1) available, which span two propeller series. Additionally, there are two full throttle RPM ranges (4500–5500 and 5000–6000) depending on the model horsepower.

There are two gearcase torpedo-size models available with the new 75/80/90/100/115 FourStroke (2.1L) outboard. The standard gearcase utilizes the 4.25 in. diameter propeller tube series, and the Command Thrust (CT) gearcase utilizes the 4.75 in. diameter propeller tube series. Also, there are options when selecting a propeller hub kit (Flo-Torq II, Flo-Torq III, or Flo-Torq IV).

New Steering Trim Tab—Standard Gearcase

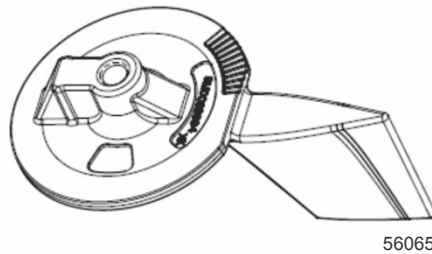
Description	Part Number
Steering trim tab with screw	8M0091534

1. For standard gearcase, use Flo-Torq III hub kit to reduce clutch rattle with stainless steel propellers 13 in. pitch or lower.
2. For Command Thrust (CT) gearcase, use Flo-Torq IV hub kit to reduce clutch rattle with stainless steel propellers 19 in. pitch or lower.

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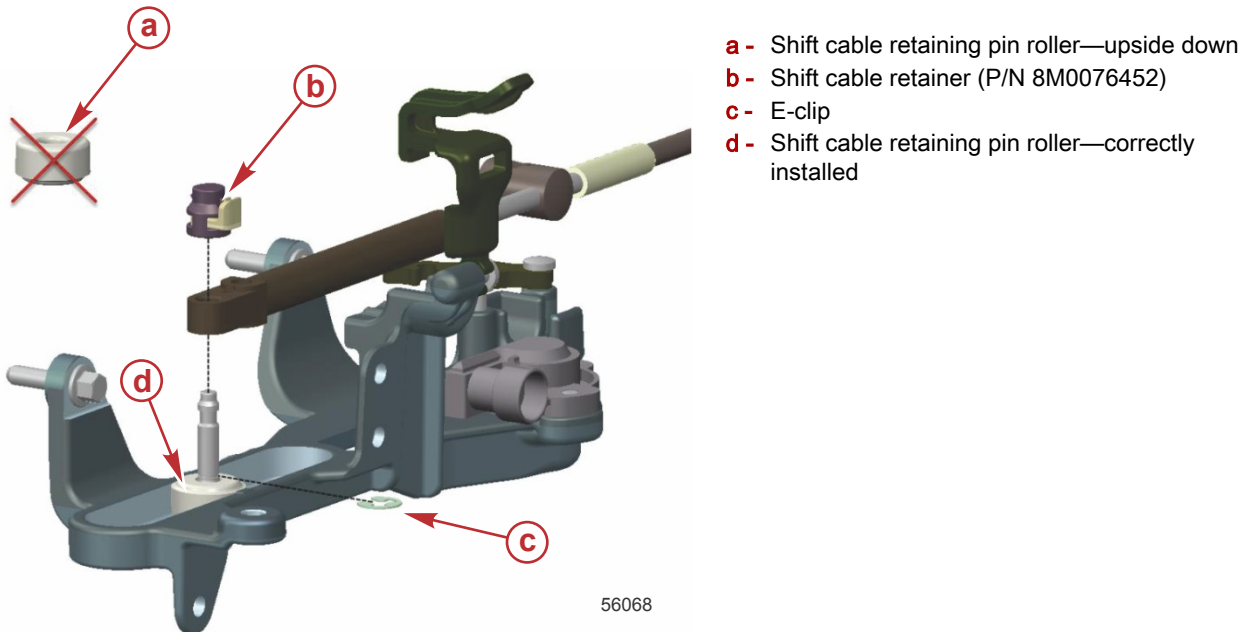
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A new steering trim tab has been developed for the standard gearcase used on the 75/80/90/100/115 FourStroke (2.1L) outboard. The new trim tab ensures propeller clearance and helps offset steering torque feedback at the helm on mechanical steering installations. This torque tab will be added to the outboard as a running change.



Shift Cable Binding

If you experience high shift loads, check for proper assembly of the shift cable retaining pin roller. The stepped end of the roller should face up. The sides of the roller are slightly tapered (draft angle) to match the tapered walls of the shift rail opening. With the roller upside down (tapers not matching), it is possible that a slight drag could occur, creating increased effort while shifting. During the installation of the shift cable or when checking the shift cable adjustment, verify that the shift cable retaining pin roller is correctly installed.



Fuel System Priming at Initial Installation

During the initial fuel system priming process, it is normal for the engine to run rough for approximately 30 seconds as air in the fuel rail/system is being purged by the fuel injectors. This initial rough running condition can cause the engine to sound an alarm (six beeps) and log an EST1 or EST2 Output Fault. This fault will clear as soon as the engine begins to idle smoothly. The EST1 or EST2 Output Fault will be stored in the freeze frame and can be cleared using CDS G3.

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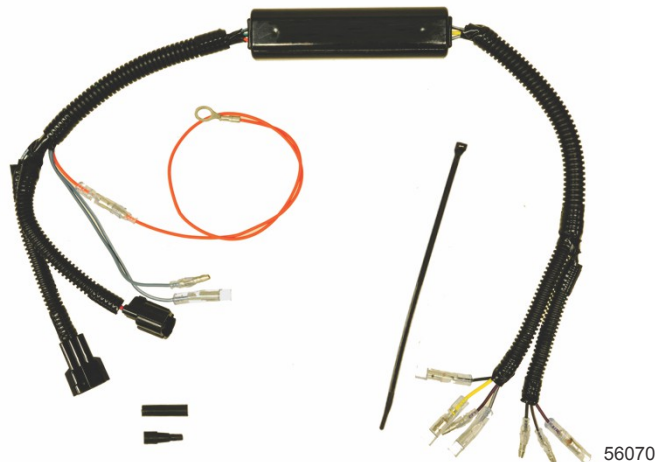
75/80/90/100/115 FourStroke (2.1L) Gauge Options

Function	Digital (SmartCraft)	Analog
Trim	New kit—power trim sensor converter/tilt limit kit P/N 8M0087542	Standard—sensor on outboard
Block coolant temperature	Standard—sensor on outboard	AGI kit P/N 892486K08 required to convert digital signal to analog
Block coolant pressure	New SmartCraft digital block water pressure sender kit P/N 8M0089111 Sender has M10 x 1.5 threads and threads into a port located on the top of the engine block.	New block water pressure adapter fitting P/N 22-8M0022199. Fitting has M10 x 1.5 threads and threads into port located on the top of the engine block.
Engine oil temperature	Not available.	Not available.
Engine oil pressure	Standard—sensor on engine.	AGI kit P/N 892486K08 required to convert digital signal to analog.
Tachometer	Standard—data on CAN bus for SmartCraft gauges.	Tachometer signal is defaulted to analog signal for use with an analog gauge.
Fuel	Install SmartCraft boat sensor harness P/N 84-859743T03. Provides connections for Tank 1 only. Tank 2 connection is dedicated for use with optional remote water separating fuel filter kit P/N 8M0075215.	Make wiring connections according to the gauge installation instructions.
Water-in-fuel (WIF)	Remote water separating fuel filter kit P/N 8M0075215.	Remote water separating fuel filter kit P/N 8M0075215.
Pitot speed	New SmartCraft digital pitot sensor kit P/N 8M0090447.	Extend pitot hose from engine to gauge at helm.
Sea temperature	Install temperature transducer or sensor. Various options and part numbers.	Not available.

Power Tilt Sensor Converter/Tilt Limit Module Kit

Description	Part Number
Power tilt sensor converter/tilt limit module kit	8M0087542

The new FourStroke outboard is equipped for analog accessory gauges and requires a power tilt sensor converter when using SmartCraft digital trim position gauges. This kit also functions as the tilt limit module for this outboard for both analog and digital installations.



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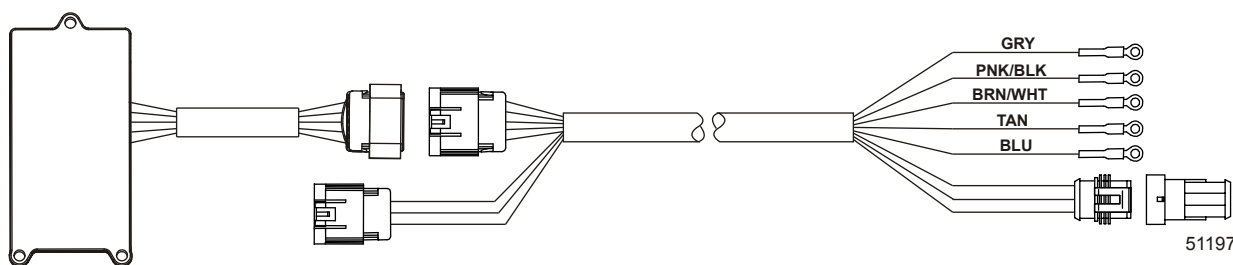
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Analog Gauge Interface (AGI) Kit

Wire Color Abbreviations				
BLK	Black		BLU	Blue
BRN	Brown		GRY	Gray
GRN	Green		ORN or ORG	Orange
PNK	Pink		PPL or PUR	Purple
RED	Red		TAN	Tan
WHT	White		YEL	Yellow
LT or LIT	Light		DK or DRK	Dark

Description	Part Number
Analog gauge interface (AGI) kit	892486K08

An AGI kit will be required if additional analog gauges are used. These gauges include: engine coolant temperature, engine oil pressure, tachometer, and fuel tank level.



Analog Trim Sender (Standard Feature)

The 75/80/90/100/115 FourStroke (2.1L) outboard is shipped with an analog trim position sender as a standard feature. This analog sender can be converted to function with SmartCraft digital trim position gauges by using the power tilt sensor converter/tilt limit module kit.

Analog Tachometer Requirements

The 75/80/90/100/115 FourStroke (2.1L) outboard requires a 7000 RPM tachometer set up for a 12 pole alternator (6 pulses per revolution). Adjustable tachometers from Mercury Marine need to be set to 6P, or 4 if not using an AGI module. When using an AGI with a Mercury Marine adjustable tachometer, the tachometer switch needs to be set to 4P.

Block Water Pressure—SmartCraft Digital Block Water Pressure Kit

Description	Part Number
SmartCraft digital block water pressure kit	8M0089111

IMPORTANT: Use care when removing the brass plug from the top of the cylinder block water passage. Use hand tools to avoid damaging the 4 mm internal hex pocket plug.

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The block water pressure sender is threaded into the top of the cylinder block water passage. The engine wiring harness is equipped with a water pressure sensor harness connector.



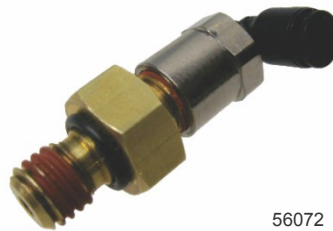
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Block Water Pressure—Analog Adapter Fitting

Description	Part Number
Block water pressure—analog sensor fitting	8M0022199
Block water pressure—analog sensor kit with 15.8 m (52 ft) hose and Legris fitting adapter	8M0088855

IMPORTANT: Use care when removing the brass plug from the top of the cylinder block water passage. Use hand tools to avoid damaging the 4 mm internal hex pocket plug.

The block water pressure adapter fitting is threaded into the top of the cylinder block water passage. The adapter fitting allows for attachment of a 4 mm Legris hose that will connect to an analog block water pressure gauge.



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Speedometer Connection—SmartCraft Digital Pitot Sensor Kit

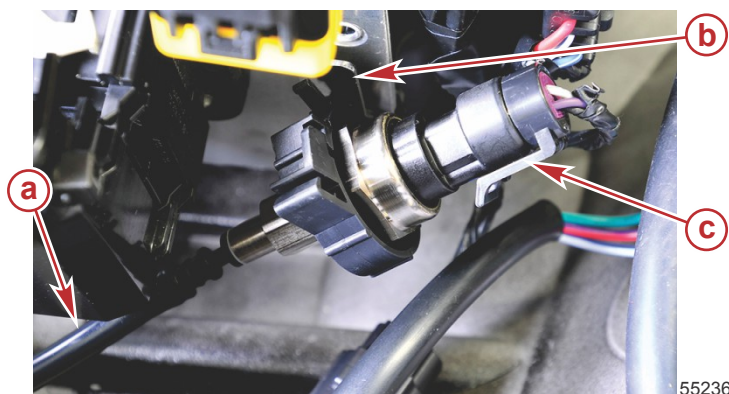
Description	Part Number
SmartCraft Digital Pitot Sensor Kit	8M0090447

The SmartCraft digital pitot sensor is secured with a supplied bracket to the lower port mounting bolt of the ECU. The engine's speedometer hose fitting is cut off and the hose is connected to the sensor with a kit supplied Legris fitting. The engine wiring harness is equipped with a pitot sensor harness connector.

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Analog speedometers are connected to the engine's speedometer hose connection.



- Pitot sensor mounted to the ECU**
- a** - Speedometer hose
 - b** - ECU bracket
 - c** - Engine harness connector

Big Tiller Kits

Description	Part Number
Big Tiller—mechanical without power steering	8M0093581
Big Tiller—mechanical with power steering	8M0094637
Throttle and shift cable kit—without power steering	8M0090686
Throttle and shift cable kit—with power steering	8M0061103



Mechanical Steering

Description	Part Number
Mechanical steering link rod attaching kit	92876A12

The 75/80/90/100/115 FourStroke (2.1L) is shipped with the mechanical steering link rod installed as standard equipment.

Fuel Line Primer Bulb

IMPORTANT: Do not install a fuel line primer bulb into the fuel system of this outboard.

The 75/80/90/100/115 FourStroke (2.1L) outboard does not utilize a fuel primer bulb to prime the fuel system. However, the fuel system is not adversely affected with a primer bulb installed (as in the case of repowering an existing boat).

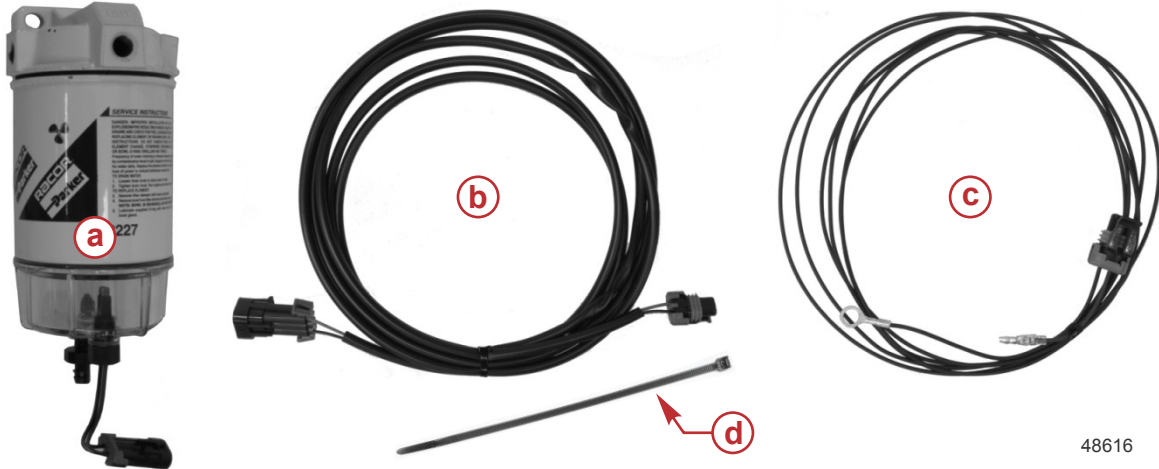
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Water Separating Fuel Filter

Description	Part Number
Remote water separating fuel filter kit	8M0075215

The 75/80/90/100/115 FourStroke (2.1L) outboard uses the same kit used on the 150 FourStroke. The kit contains a serviceable boat mounted water separating fuel filter assembly with water-in-fuel (WIF) sensor. Wiring harnesses are included to either connect the WIF sensor directly to the engine's 6-pin harness connector or to adapt into the boat sensor harness.



- a - Fuel/water separating filter assembly
- b - 6-pin harness
- c - Adapter harness
- d - Cable tie

SmartCraft Boat Harness "Fuel 2/Other"

IMPORTANT: If a SmartCraft boat harness is being used without a WIF sensor, the unused "Fuel 2/Other" bullet connector lead must be plugged or isolated. Failure to isolate this unused connector could cause false water-in-fuel warnings.

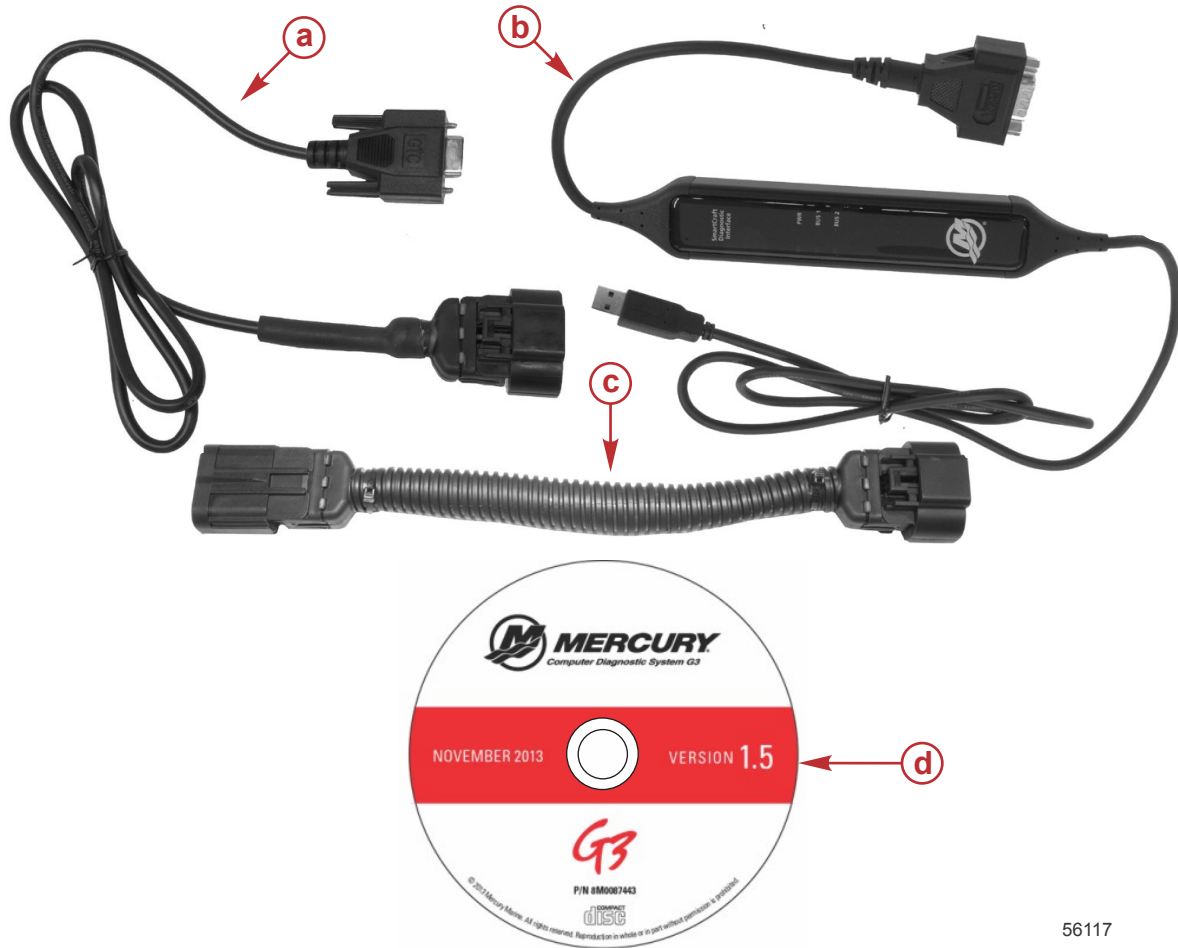
When using a SmartCraft boat harness on the 75/80/90/100/115 FourStroke (2.1L) outboard, the "Fuel 2/Other" wire is dedicated to the WIF sensor for the water separating fuel filter and will no longer support a second tank.

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75/80/90/100/115 FourStroke (2.1L) Diagnostic Tool Requirements

Description	Part Number
CDS G3 version 1.5.3 (software only)	8M0087443
CDS G3 complete kit	8M0087444



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- a** - CAN P/CAN H adapter harness
- b** - CDS G3 SmartCraft diagnostic interface
- c** - G3 engine harness adapter (with resistor)
- d** - Mercury Computer Diagnostic System G3 program disc

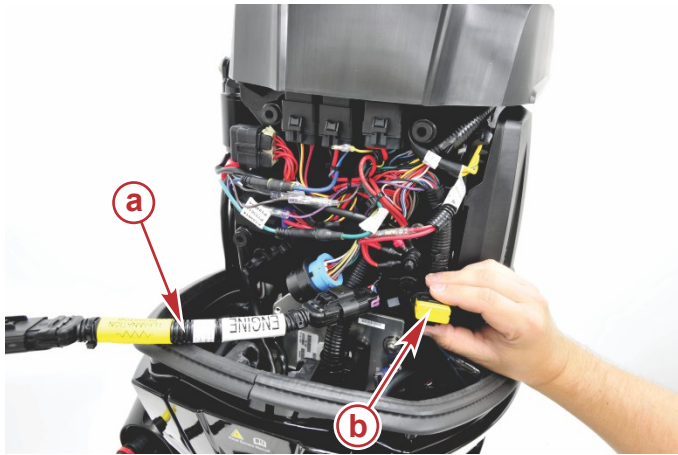
The 75/80/90/100/115 FourStroke (2.1L) outboard requires CDS G3 version 1.5.3 or greater. Along with the standard data fault support in this version, the following active diagnostics are also supported for this outboard:

- Injector pulse test
- Ignition spark gap test
- Tachometer output test
- Fuel pump output test
- IAC output test
- Horn output test
- Cylinder misfire test
- Smart start test

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To connect the CDS G3 SmartCraft interface cable to the engine, you must remove the yellow resistor cap from below the electrical box cover and replace it with the SmartCraft interface adapter harness P/N 8M0046081. The adapter harness contains the proper termination for the CAN bus circuit. Proper termination is required to ensure reliable communication. The adapter allows the SmartCraft diagnostic interface to connect directly to the 10-pin connector on the engine.



- a** - SmartCraft diagnostic interface adapter with resistor P/N 8M0046081
- b** - Resistor cap from engine

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CDS G3 versions explained: The "3" in the version number indicates the number of production builds within the "major" release. Following the version sequence, 1 is equal to the major version number, 5 is equal to the minor version number, and 3 is equal to the number of released builds. At this time Mercury Marine releases major and minor version changes on physical media like a compact disc at a cost of US \$50. Any build that doesn't come packaged on a physical media is provided at no cost and is distributed through the software's web update mechanism.



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- a** - Major version number
- b** - Minor version number
- c** - Number of released builds

You can also verify which version of CDS G3 is installed by selecting **About** from the **Help** menu tab in CDS G3.

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