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10/15/20 EFI FourStroke Product Introduction

Models Affected

Models Covered	Serial Number Or Year
10/15/20 EFI FourStroke (333 cc)	0R833820

Scope

Worldwide

Situation

The purpose of this bulletin is to highlight some key product information for the 10/15/20 EFI FourStroke (333 cc), regarding:

- Key model attributes
- Specifications
- Rigging components/model shifting kits/accessories
- Diagnostic requirements
- Special tools

Key Model Attributes

- Battery-free electronic fuel injection (EFI)
- Water-separating fuel filter with drain
- Under-cowl maintenance decal
- Newly-designed, fully-adjustable tiller handle
- 14-pin rigging
- Designed for easy model conversion in the field
- Drip-free engine oil change
- Gearcase fill and drain at any tilt angle
- Mercury CDS G3 compatible, with universal fault codes

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Model Specifications

Parameter		Specification
Weight	MH	46.7 kg (103 lb)
	MRC	44 kg (97 lb)
	MLH	48.5 kg (107 lb)
	EH	50.3 kg (111 lb)
	ELH	51.7 kg (114 lb)
	E	47.6 kg (105 lb)
	EL	49 kg (108 lb)
	EPT	52.6 kg (116 lb)
	ELPT	54 kg (119 lb)
	ELHPT	57.6 kg (127 lb)
	ProKicker EXLPT	55.3 kg (122 lb)
ProKicker EXLHPT	59 kg (130 lb)	
Engine idle speed		900–1000 RPM
Recommended RPM range at WOT	SeaPro models	4500–5500 RPM
	15/20 JCI models	5400–6100 RPM
	All other (10/15/20 hp)	5700–6200 RPM
Bore x stroke		61.0 mm x 57.0 mm (2.402 in. x 2.244 in.)
Compression ratio		10.0:1
Starting system		Manual/electric
Tilt range	Manual Tilt	4°–76°
	Power Tilt	4°–75°
Transom height	Short	41.3 cm (16.3 in.)
	Long (L)	56.2 cm (22.1 in.)
	Extra long (XL)	68.9 cm (27.1 in.)

Ignition Specifications at 20 °C (68 °F)

Parameter		Specification
Ignition type		Computer-controlled capacitor discharge ignition (CDI)
Spark plug		NGK DCPR6E
Spark plug gap		0.9 mm (0.035 in.)
Ignition timing at idle		5° ± 5° BTDC
Ignition timing at WOT		28° BTDC
RPM overspeed	SeaPro models	5800 RPM
	15/20 JCI models	6300 RPM
	All other (10/15/20 hp)	6500 RPM
ECM RPM limiter (Guardian)		2800 RPM
Overtemperature		85 °C (185 °F)
Low oil pressure (over 10 seconds)		26.3 kPa (3.8 psi)
Crankshaft position sensor		148–222 Ω
Ignition coil	Primary	0.26–0.35 Ω
	Secondary (with plug wires and caps)	16.8–20.2 kΩ
	Spark plug lead (without spark plug cap)	3.0–7.5 kΩ

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Fuel System Specifications

Parameter	Specification
Fuel system	Computer-controlled split-sequential multiport electronic fuel injection
Fuel type	Automotive unleaded with a minimum pump posted octane rating of 87 (R+M)/2 (90 RON); up to 10% ethanol
Fuel pump type	Mechanical plunger (diaphragm) + Electric high pressure
Fuel pump pressure (mechanical)	30 kPa ± 20 kPa (4.3 psi ± 2.9 psi)
Fuel pump pressure (electric)	256 kPa ± 25 kPa (37.1 psi ± 3.6 kPa)

Oil System Specifications

Parameter		Specification
Oil pump type		Trochoid
Oil type	All temperatures	FC-W@ 10W-30
	Alternate viscosity above 4 °C (40 °F)	FC-W@ 25W-40
Oil capacity		1.0 L (1.1 U.S. qt)
Engine oil pressure at 75 °C (167 °F)	At 950 RPM	50 kPa (7.3 psi) or greater
	At 5000 RPM	100 kPa (14.5 psi) or greater
Oil pump housing inside diameter (service limit)		29.15 mm (1.148 in.)
Outer rotor to oil pump housing inside diameter clearance (service limit)		0.18 mm (0.007 in.)
Outer rotor height (service limit)		14.96 mm (0.589 in.)
Rotor to oil pump cover clearance (service limit)		0.11 mm (0.004 in.)
Inner rotor to outer rotor clearance (service limit)		0.13 mm (0.005 in.)

Cooling System Specifications

Parameter		Specification
Thermostat	Start to open temperature	50–54 °C (122–129 °F)
	Full open temperature	60–64 °C (140–147 °F)
	Valve lift	4.0 mm (0.157 in.)
Water pressure at idle		9–18 kPa (1.3–2.6 psi)
Water pressure at WOT		59–118 kPa (8.6–17.2 psi)

Gearcase Specifications

Parameter	Specification
Gear ratio	2.15:1
Gearcase capacity	460 ml (15.6 fl oz)
Gear lubricant type	Premium Gear Lubricant or GL5 SAE 80W-90
Pinion teeth	13
Pinion height	Floating
Clutch	Dog type (forward–neutral–reverse)
Forward, reverse teeth	28
Forward gear backlash	0.8–1.5 mm (0.030–0.059 in.)

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Rigging Components/Model Shifting Kits/Accessories

Mercury 10/15/20 EFI FourStroke Rigging Components

Remote Controls and Throttle and Shift Cables		
Side mount remote control	14-pin, with power trim	8M0083666-8M0083667
Console remote control	Single console mount, with trim	8M0059686
Platinum plus cables, Gen I	Gen I cable 1.8 m (6 ft) to 12.2 m (40 ft)	8M0082479-8M0082508
Platinum plus cables, Gen II	Gen II cable 0.9 m (3 ft) to 12.2 m (40 ft)	8M0082526-8M0082558

Mechanical Steering Products		
Remote control to tiller handle conversion kit	Converts a remotely steered engine to a tiller model	8M0137854
Tiller handle to remote control conversion kit	Converts a tiller engine model to being remotely steered	8M0140122
Standard rack and pinion steering system	Includes helm, 90° bezel, and steering cable	889935A08-889935A20
Standard rack steering system - tilt	Includes helm, tilt mechanism, and steering cable	889936A08-889936A20
Mechanical steering cables	Rack steering cables	889940A08-889940A50
Standard rotary steering systems	Includes helm, 90° bezel, and steering cable. Planetary gear design.	889930A08-889930A20
Standard rotary steering systems - tilt	Includes helm, tilt mechanism, and steering cable. Planetary gear design.	889931A08-889931A20
Dual cable rotary steering system	Includes helm, 90° bezel, and steering cables. Planetary gear design.	889932A08-889932A20
Rotary steering cables	Rotary steering cables	889939A08-889939A20

Mercury 10/15/20 EFI FourStroke Service Components

Common Maintenance			
Spark plugs	2-cylinder engine gap at 0.9 mm (0.035 in.)	803507	Replace every 300 hrs or every 3 years
Crankcase oil	Quicksilver 10W30 Mineral Based Oil 1.0 L (1.1 U.S. qt)	8M0078616	Replace every 100 hrs or once per year
	Mercury 10W30 Mineral Based Oil 1.0 L (1.1 U.S. qt)	8M0078625	Replace every 100 hrs or once per year
	Quicksilver 25W40 Mineral Based Oil 1.0 L (1.1 U.S. qt)	8M0078619	Replace every 100 hrs or once per year
	Mercury 25W40 Mineral Based Oil 1.0 L (1.1 U.S. qt)	8M0078627	Replace every 100 hrs or once per year
Oil filter	Quicksilver replacement oil filter	8M0065103	Always use OEM products
	Mercury replacement oil filter	8M0065104	Always use OEM products
Filter wrench	Quicksilver matching filter wrench	802653Q02	For use with a 3/8 in. drive ratchet
	Mercury matching filter wrench	802653K02	For use with a 3/8 in. drive ratchet
Gear lube - standard gearcase	Quicksilver 946 ml (32 fl oz) bottle/RH rotation 460 ml (15.6 fl oz)	858064Q01	Replace every 100 hrs or once per year
	Mercury 946 ml (32 fl oz) bottle/RH rotation 460 ml (15.6 fl oz)	858058K01	Replace every 100 hrs or once per year
Propshaft and fitting grease	Quicksilver 103.5 ml (3.5 fl oz) cartridge and gun	74057Q5	Grease at 100 hrs or once per year
	Mercury 103.5 ml (3.5 fl oz) cartridge and gun	74057K5	Grease at 100 hrs or once per year

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Common Maintenance			
Corrosion Guard	Quicksilver - Inhibits corrosion on lower unit and trim system	802878Q55	Do not apply to anodes
	Mercury - Inhibits corrosion on lower unit and trim system	80287855	
Water pump kit complete	Standard gearcase	8M0135821	Replace every 300 hrs or every 3 years
H.D. water pump kit complete (chrome)	-	8M0137849	Replace every 300 hrs or every 3 years
Low pressure fuel filter	FourStroke outboard	8M0134466	Inspect every 100 hrs or once per year and replace as needed

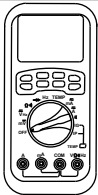
Accessories			
Driveshaft extension kit	Converts 508 mm (20 in.) L model to 635 mm (25 in.) XL model	8M0137852	
Electric start kit	Converts manual start motor to electric start	8M0137846	
Battery charging kit	Adds battery charging capabilities to engine	8M0137842	
Remote control to tiller handle conversion kit	Converts a remotely steered engine to a tiller model	8M0137854	
Tiller handle to remote control conversion kit	Converts a tiller engine model to being remotely steered	8M0140122	
Copilot kit	-	8M0140877	
Propeller hardware kit	-	8M0137844	

Installation	
Engine lifting eye	8M0135579

Diagnostic Tool Requirement


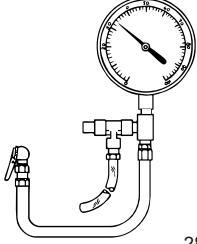

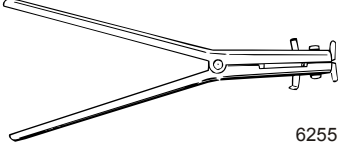
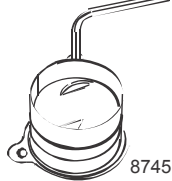

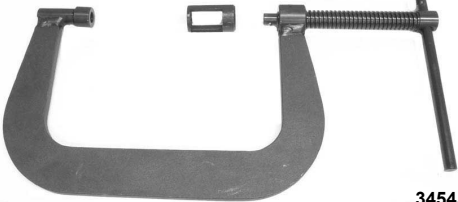
CDS G3 Diagnostic Tool Kit	8M0114141
	Interfaces CDS G3 software to SmartCraft network. NOTE: This kit includes download instructions and a license key.
CDS G3 Cable Kit	8M0137534
	Allows the use of the CDS G3 diagnostic tool on small EFI Fourstroke outboard engines.

Special Tool List

DMT 2004 Digital Multimeter	91-892647A01
	Measures RPM on spark ignition (SI) engines, ohms, amperes, AC and DC voltages; records maximums and minimums simultaneously, and accurately reads in high RFI environments.

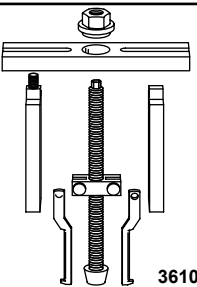




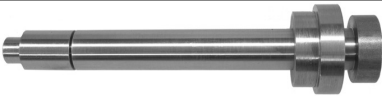
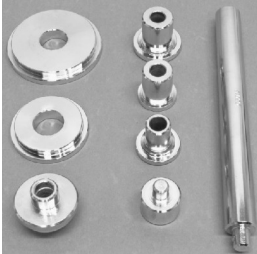
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Flywheel Holding Tool	91- 52344
 <p>4738</p>	Holds and/or turns the flywheel while making engine repairs, also used to torque the flywheel or the engine coupler.
Fuel Pressure Gauge Kit	91-881833A03
 <p>2807</p>	Tests the fuel pump pressure; can be used to relieve fuel pressure.
Clamp Tool	91-803146T
 <p>39648</p>	Used to clamp high pressure (Oetiker®) hose clamps. Part of Clamp Tool Kit (91-803146A04).
Piston Ring Expander	91- 24697
 <p>6255</p>	Expands piston rings for removal and installation.
Piston Ring Compressor	FT2997
 <p>8745</p>	Compresses the piston rings to ease piston installation.
Lockring Pliers	Snap-On SRP4
 <p>4799</p>	Aids in the removal of lockrings and the memory piston.
Valve Spring Compressor	91-809494A 1
 <p>3454</p>	Removes and installs valve springs.

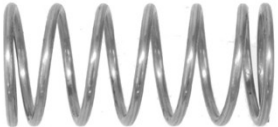

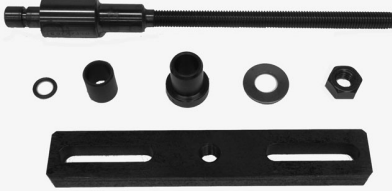
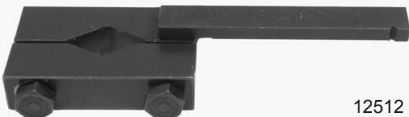


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<p>Bearing Puller Assembly</p>  <p>3610</p>	<p>91- 83165T</p> <p>Removes bearings, races and bearing carriers.</p>
<p>Torch Lamp</p>  <p>8776</p>	<p>91- 63209</p> <p>Heats surfaces to aid in the removal and installation of interference fit engine components.</p>
<p>Spring Pin Removal Tool</p>  <p>3423</p>	<p>91-853996 6</p> <p>Aids in the removal of the spring pins.</p>
<p>Driveshaft Holding Tool</p>  <p>12519</p>	<p>91-804762</p> <p>Holds the driveshaft while removing or installing the pinion gear nut.</p>
<p>Universal Puller Plate</p>  <p>8505</p>	<p>91-37241</p> <p>Removes bearings from gears and the driveshaft.</p>
<p>Pinion Bearing Installation Tool Assembly</p>  <p>37832</p>	<p>8M0038865</p> <p>Guides the removal and installation of the pinion bearing. Part of Pinion Bearing Installation Tool Assembly 91-899015A02.</p>
<p>Bearing Mandrel Kit</p>  <p>3421</p>	<p>91- 83166M</p> <p>Aids in the removal and installation of bearings and bearing races.</p>

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Spring	8M0103092
 <p>37830</p>	Applies upward force to the driveshaft for checking forward gear backlash.
Clamp	8M0033741
 <p>37831</p>	Used as part of an assembly to provide upward force on the driveshaft to check forward gear backlash. Part of Pinion Bearing Installation Tool Assembly, 91-899015A02.
Backlash Preload Tool	8M0116860
 <p>12520</p>	Prevents forward gear movement when checking the forward gear backlash.
Backlash Indicator Arm	91-803133 12
 <p>12512</p>	Aids in determining the forward gear backlash; use with a dial indicator.
Dial Indicator	91- 58222A 1
 <p>9479</p>	Used to obtain a variety of measurements including gear backlash, pinion gear location, and TDC.
Dial Indicator Adapter	91-83155
 <p>2999</p>	Dial indicator holding fixture.

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