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MERCURY

150/150 SeaPro/150 Pro XS FourStroke

SERVICE MANUAL

90-8M0146867
DECEMBER 2018

Serial Numbers
1B905505 and Above

MERCURY

150/150 SeaPro
150 Pro XS
FourStroke



SERVICE

MANUAL

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Notice to Users of This Manual

Throughout this publication, safety alerts labeled WARNING and CAUTION (accompanied by the International HAZARD Symbol ⚠) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe these alerts carefully.

These safety alerts alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus common sense operation, are major accident prevention measures.

⚠ WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Additional alerts provide information that requires special attention:

NOTICE

Indicates a situation which, if not avoided, could result in engine or major component failure.

IMPORTANT: Indicates information essential to the successful completion of the task.

NOTE: *Indicates information that helps in the understanding of a particular step or action.*

This manual has been written and published by the Mercury Marine Service Department to aid our dealers' mechanics and company service personnel when servicing the products described herein. It is assumed that these personnel are familiar with marine product servicing procedures. Furthermore, it is assumed that they have been trained in the recommended service procedures of Mercury Marine power products, including the use of mechanics' common hand tools and the special Mercury Marine tools or recommended tools from other suppliers.

We could not possibly know of and advise the marine trade of all conceivable procedures and of the possible hazards and results of each method. Therefore, anyone who uses a service procedure or tool that is not recommended by the manufacturer must first completely satisfy himself that neither his nor the product's safety will be endangered.

All information, illustrations, and specifications contained in this manual are based on the latest product information available at the time of publication. As required, revisions to this manual will be sent to all dealers contracted by us to sell or service these products. We reserve the right to make changes to this manual without prior notification.

Refer to dealer service bulletins, operation and maintenance manuals, and installation manuals for other pertinent information concerning the products described in this manual.

Precautions

While working on the product, keep in mind that the electrical and ignition systems are capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the battery cables should be disconnected at the battery.

Any time the intake or exhaust openings are exposed during service they should be covered to protect against accidental entrance of foreign material into the cylinders, which could cause extensive internal damage when the engine is started.

During any maintenance procedure, replacement fasteners must have the same measurements and strength as those removed. Numbers on the heads of the metric bolts and on the surfaces of metric nuts indicate their strength. American bolts use radial lines for this purpose, while most American nuts do not have strength markings. Mismatched or incorrect fasteners can result in damage or malfunction, or possibly personal injury. Therefore, fasteners removed should be saved for reuse in the same locations whenever possible. Where the fasteners are not satisfactory for reuse, care should be taken to select a replacement that matches the original.

Personnel should not work on or under an engine that is suspended. Engines should be attached to workstands, or lowered to the ground as soon as possible.

Replacement Parts

Use of parts other than the recommended service replacement parts will void the warranty on those parts that are damaged as a result.

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⚠ WARNING

Avoid fire or explosion hazard. Electrical, ignition, and fuel system components on Mercury Marine products comply with federal and international standards to minimize risk of fire or explosion. Do not use replacement electrical or fuel system components that do not comply with these standards. When servicing the electrical and fuel systems, properly install and tighten all components.

Cleanliness and Care of Product

A Mercury Marine power product is a combination of many machined, honed, polished, and lapped surfaces with tight tolerances. When any product component is serviced, care and cleanliness are important. Proper cleaning and protection of machined surfaces and friction areas is an implied part of the repair procedure. This is considered standard shop practice even if not specifically stated.

Whenever components are removed for service, they should be retained in order. At the time of installation, they should be installed in the same locations and with the same mating surfaces as when removed.

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Important Information

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Master Specifications

General Specifications

Model Specifications		
Kilowatts (horsepower)		110 kW (150 hp)
Number of cylinders		4
Outboard weight	150 L	206 kg (455 lb)
	150 XL/CXL	213 kg (470 lb)
Displacement		3.0 liter (183 in.^{3})
Cylinder bore		101.609 mm (4.0 in.)
Stroke		92.00 mm (3.62 in.)
RPM	Idle	650 ± 50
	Idle charge compensation*	650–800
	Troll control limit (if equipped)	550–1000
	150 WOT	5000–5800
	150 Pro XS WOT	5200–6000
	150 SeaPro WOT	4800–5300
Fuel system		Computer controlled multiport electronic fuel injection
Ignition system		SmartCraft engine control module (ECM) 70 digital inductive
Spark plug type		NGK ZFR5F
Spark plug gap		0.8 mm (0.0314 in.)
Spark plug hex size		16 mm
Spark plug torque		27 Nm (20 lb-ft)
Spark plug hole size		14 mm
Firing order		1-3-4-2
Charging system		Regulated belt driven 55 A alternator
Exhaust system		Through-the-propeller
Cooling system		Water-cooled - thermostat
Lubrication system		
Integrated dry sump		6.0 Liter (6.3 US qt)
Trim system		
Maximum tilt range		73° (–6° to 67°)
Maximum trim range		20° (–6° to 14°)

* The idle charging compensation RPM may automatically increase up to 800 RPM to compensate for a low battery charge condition. The increased idle RPM will charge the battery at a higher rate. Activating the troll control (optional accessory) will override this low battery charge condition feature.

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Ignition Specifications

Ignition Specifications		
Idle		650 ± 50 RPM
Troll control limit (if equipped)		550–1000 RPM
WOT	150	5000–5800 RPM
	150 Pro XS	5200–6000 RPM
	150 SeaPro	4800–5300 RPM
Ignition type		Digital inductive
Spark plug type		NGK ZFR5F
Spark plug gap		0.8 mm (0.032 in.)
Spark plug hex size		16 mm
Spark plug torque		27 Nm (20 lb-ft)
Spark plug hole size		14 mm
Firing order		1-3-4-2
Ignition timing at idle		Approximately 2° BTDC; ECM controlled
Ignition timing at WOT		ECM controlled
ECM overspeed limit (forward and reverse)	150	Activates at 5900 RPM
	150 Pro XS	Activates at 6100 RPM
	150 SeaPro	Activates at 5400 RPM

Charging and Starting Specifications

Charging and Starting Specifications		
Alternator output (regulated)		
Output at battery (at 1000 RPM)		23–30 A
Output at battery (at 3000 RPM)		44–51 A
Output at alternator (at 1000 RPM)		32–40 A
Output at alternator (at 3000 RPM)		54–62 A
Voltage set point		14.4 ± 0.4 V
Regulator current draw[1]	Ignition switch "OFF"	1.0 mA or less
	Ignition switch "ON"	350 mA or less
Starter internal drive reduction ratio		6:1
Starter draw (under load) at 25 °C (77 °F)		150–225 A
Starter draw (no load) at 25 °C (77 °F)		50–70 A
Starter solenoid	Pull in coil	30 A
	Hold coil	10 A
	Pull in coil resistance	0.2 ± 10%
	Hold coil resistance	0.8 ± 10%
Minimum brush length		6.54 mm (0.25 in.)
Starting battery rating		
Required USA and Canada (SAE) starting battery type		1000 minimum marine cranking amps (MCA), 800 cold cranking amps (CCA, or 180 amp hour (Ah)

1. All model alternator specifications require an amperage draw of less than 1.0 mA with the ignition key in the "OFF" position and an amperage draw of not more than 350.0 mA with key in the "ON" position.

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Fuel System Specifications

Fuel System Specifications	
Type of fuel	Automotive unleaded with a minimum pump posted octane rating of 87 (90 RON)
Approximate fuel pressure at idle	280–320 kPa (40.6–46.4 psi)
Approximate fuel pressure engine not running	335–375 kPa (48.6–54.4 psi)
Fuel filtration	
Fuel inlet	20 microns
High pressure	Design 1—20 microns, Design 2—46 microns
Amperage draw*	10 A ± 3 A

*Measurement performed at engine idle, fully primed fuel system (no air entrained) and fully charged battery (normal system voltage).

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