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# Service Manual Outline

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## Notice

Throughout this publication, “Dangers”, “Warnings” and “Cautions” (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 THEM 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.

### **DANGER**

**DANGER - Immediate hazards which WILL result in severe personal injury or death.**

### **WARNING**

**WARNING - Hazards or unsafe practices which COULD result in severe personal injury or death.**

### **CAUTION**

**Hazards or unsafe practices which could result in minor personal injury or product or property damage.**

## Notice to Users of This Manual

This service manual has been written and published by the Service Department of Mercury Marine to aid our dealers’ mechanics and company service personnel when servicing the products described herein.

It is assumed that these personnel are familiar with the servicing procedures of these products, or like or similar products manufactured and marketed by Mercury Marine, that they have been trained in the recommended servicing procedures of these products which includes the use of mechanics’ common hand tools and the special Mercury Marine or recommended tools from other suppliers.

We could not possibly know of and advise the service trade of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by the manufacturer, first must completely satisfy himself that neither his nor the products safety will be endangered by the service procedure selected.

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 and/or service these products.

It should be kept in mind, while working on the product, that the electrical system and ignition system 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 which could enter the cylinders and cause extensive internal damage when the engine is started.

It is important to note, 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 re-use, care should be taken to select a replacement that matches the original.

## Cleanliness and Care of Outboard Motor

A marine power product is a combination of many machined, honed, polished and lapped surfaces with tolerances that are measured in the ten thousands of an inch/mm. When any product component is serviced, care and cleanliness are important. Throughout this manual, it should be understood that proper cleaning, and protection of machined surfaces and friction areas is a 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.

Personnel should not work on or under an outboard which is suspended. Outboards should be attached to work stands, or lowered to ground as soon as possible.

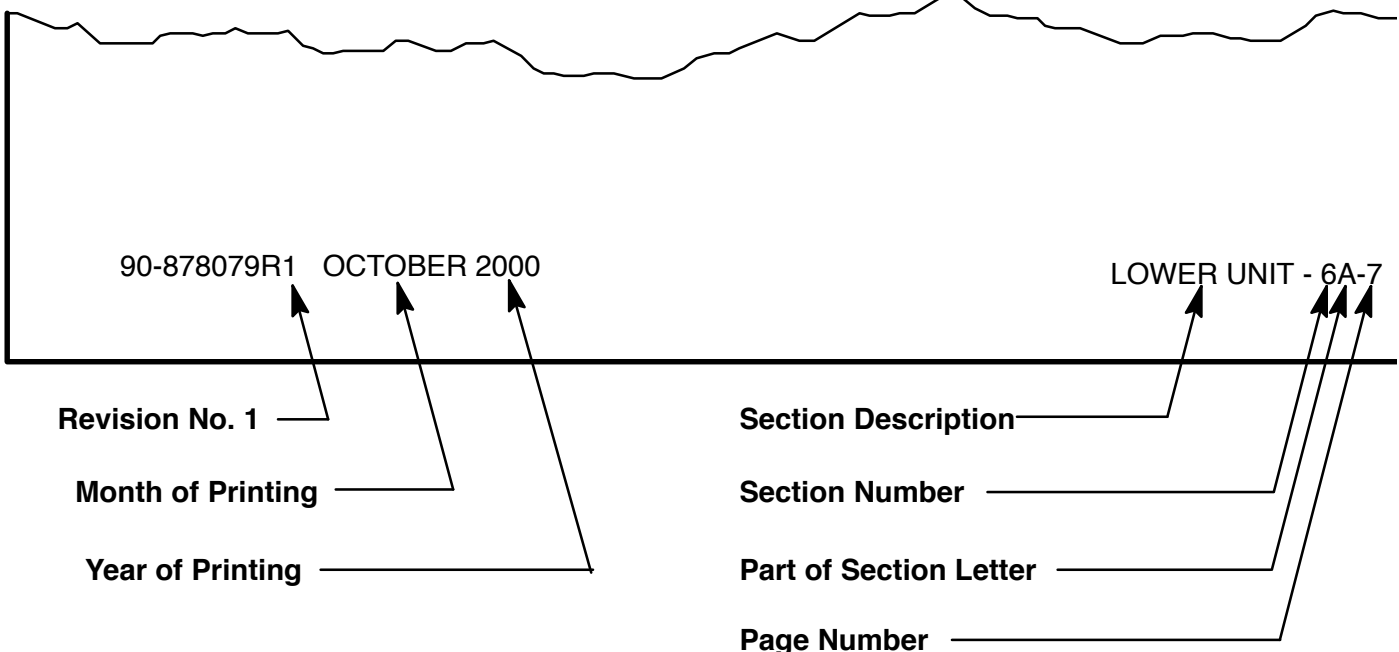
We reserve the right to make changes to this manual without prior notification.

Refer to dealer service bulletins for other pertinent information concerning the products described in this manual.

## Page Numbering

Two number groups appear at the bottom of each page. The example below is self-explanatory.

### EXAMPLE:





# IMPORTANT INFORMATION

## Section 1A - Specifications

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A**

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### Specifications

<b>Model 150XRI/175XRI/200XRI</b>		
<b>HORSEPOWER (KW)</b>	<b>Model 150XRI</b> <b>Model 175XRI</b> <b>Model 200XRI</b> <b>Full Throttle RPM (150/175/200)</b> <b>Idle RPM (In Gear) (150/175/200)</b> <b>RPM Limiter</b> <b>All Models</b>	150 (111.8) 175 (130.5) 200 (149.1) 5250 – 5750 650 ± 50  Refer to System Information in the Digital Diagnostic Terminal (DDT) for latest information
<b>OUTBOARD WEIGHT</b>	<b>Model 150XRI/175XRI/200XRI</b> <b>Long Shaft</b> <b>X-Long Shaft</b>	425.0 lb (192.8 kg) 434.0 lb. (196.8 kg)
<b>CYLINDER BLOCK</b>	<b>Model 150XRI/175XRI/200XRI</b> <b>Type</b>  <b>Displacement</b> <b>Thermostat</b>	V-6 Cylinder, Two Cycle, Loop Charged 153.0 cu. in. (2507cc) 143°F (61.7°C)
<b>STROKE</b>	<b>Length (All Models)</b>	2.650 in. (67.31 mm)
<b>CYLINDER BORE</b>	<b>Diameter (Std)</b> <b>Models 150XRI/175XRI/200XRI</b> <b>Taper/Out of Round/Maximum Wear</b> <b>Bore Type</b>	3.501 in. (88.925 mm) 0.003 in. (0.076 mm) Cast Iron
<b>CRANKSHAFT</b>	<b>Maximum Runout</b>	0.006 (0.152 mm)
<b>PISTON</b>	<b>Piston Type</b> <b>Models 150XRI/175XRI/200XRI</b> <b>Standard</b>  <b>0.015 in. (0.381 mm) Oversize</b>	Aluminum  3.494 in. ± 0.001 in. (88.748 mm ± 0.025 mm) 3.509 in. ± 0.001 in. (89.129 mm ± 0.025 mm)
<b>COMPRESSION</b>	<b>All Models – Using a fully charged battery, throttle shutters wide open and cylinder block warm</b>	110 – 135 psi (753.3 – 924.5 kPa) Variance between cylinders should not exceed 15 psi (102.7 kPa)
<b>REEDS</b>	<b>Model 150XRI/175XRI/200XRI</b> <b>Reed Type</b> <b>Reed Stand Open (Max.)</b> <b>Reed Stop (Max.)</b>	Steel 0.020 in. (0.50 mm) Not Adjustable



**SPECIFICATIONS**

<p><b>MID SECTION</b></p>	<p><b>Power Trim (Total Tilt Range)</b>  <b>Power Trim (Tilt Range)</b>  <b>Maximum Allowable Leak down in 24 hrs.</b>  <b>Tilt Pin Adjustment Positions</b>  <b>Steering Pivot Range</b>  <b>Allowable Transom Thickness</b></p>	<p>75°  20°  1 in. (25.4 mm)  5  60°  2-3/8 in. (6.03 cm) Maximum</p>
<p><b>FUEL SYSTEM</b></p>	<p><b>Fuel</b>  <b>Recommended Gasoline</b>  <b>Recommended Oil</b>    <b>Gasoline/Oil Ratio</b></p>	<p>Gasoline w/Oil Injection  Unleaded 87 Octane Minimum  Quicksilver or Mercury Precision Lubricants  NMMA/BIA Certified TC-W3  2 Cycle Outboard Oil  50:1 (25:1 Break-In) ECM Controlled –  no premix</p>
<p><b>STARTING SYSTEM</b></p>	<p><b>Electric Start – All Models</b>  <b>Centrifugal Bendix</b>  <b>Starter Draw (Under Load)</b>  <b>Starter Load (No Load)</b>  <b>Minimum Brush Length</b>  <b>Solenoid Driven Bendix</b>  <b>Starter Draw (Under Load)</b>  <b>Starter Load (No Load)</b>  <b>Minimum Brush Length</b>  <b>Battery Rating</b></p>	<p>165 Amperes  30 Amperes  0.25 in. (25.4 mm)    175 Amperes  60 Amperes  0.25 in. (25.4 mm)  Min. 630 Marine Cranking Amps (MCA)  or 490 Cold Cranking Amps (CCA)</p>
<p><b>IGNITION SYSTEM</b></p>	<p><b>Type</b>  <b>Spark Plug Type</b>  <b>Spark Plug Gap</b>  <b>Firing Order</b>  <b>Idle Timing</b>  <b>Maximum Timing</b>  <b>Throttle Position Sensor</b></p>	<p>Digital Inductive  NGK BPZ8HS-10  0.040 in. (1.0 mm)  1-2-3-4-5-6  Not Adjustable; Controlled by ECM  Not Adjustable; Controlled by ECM  Not Adjustable; Controlled by ECM</p>
<p><b>CHARGING SYSTEM</b></p>	<p><b>Alternator Output (Regulated)</b>    <b>Brush Length</b>    <b>Voltage Output</b>  <b>Regulator Current Draw</b></p>	<p>42 – 48 Amperes @ 2000 rpm @ Battery  52 – 60 Amperes @ 2000 rpm @ Alternator  Std. Exposed Length: 0.413 in. (10.5 mm)  Min. Exposed Length: 0.059 in. (1.5 mm)  13.5 to 15.1 Volts  0.15 mA (Ign, Switch Off)  30.0 mA (Ign. Switch On)</p>



<b>GEAR HOUSING</b>	<b>Gear Ratio</b> – Models 150XRI – Models 175XRI/200XRI <b>Gear Ratio – High Altitude</b> – Models 150XRI/175XRI/200XRI <b>Gearcase Capacity</b> – 1.87:1/2.00:1 <b>Pinion Height</b> – All Models <b>Forward Gear Backlash</b> – 1.87:1 Ratio  – 2.00:1 Ratio  <b>Water Pressure @ rpm</b>	 2.00:1 (14/28 teeth) 1.87:1 (15/28 teeth)  2.00:1 (14/28 teeth)  22.5 fl oz (665.4 ml)  0.025 in. (0.64 mm)  0.018 in. – 0.027 in. (0.460 mm – 0.686 mm) 0.015 in. – 0.022 in. (0.381 mm – 0.558 mm) 12 psi Minimum @ 5500 rpm
<b>OIL INJECTION</b>	<b>Recommended Oil</b>  <b>Oil Tank Capacity</b> <b>Approx. Time</b> – Model 150XRI/175XRI/200XRI <b>Reserve Capacity/Approx. Time</b>  <b>Oil Pump Output</b> – Model 150XRI/175XRI/200XRI	Quicksilver or Mercury Precision Lubricants NMMA/BIA Certified TC-W3 2 Cycle Outboard Oil 3 gal. (11.4 Liter)  6.6 hrs. Approx. 0.74 qt. (0.70 Liter) 20 – 25 min.  26cc during auto prime time period
<b>FUEL INJECTION</b>	<b>Idle RPM</b> – All Models <b>Wide Open Throttle (WOT) RPM</b> – Model 150XRI/175XRI/200XRI <b>Float Adjustment (Vapor Separator)</b> Float Level <b>Injectors</b> – All Models (Quantity) – Injectors are Crank Angle Driven by ECM – #1 Cylinder – #2 Cylinder – #3 Cylinder – #4 Cylinder – #5 Cylinder – #6 Cylinder <b>Line Pressure @ Injectors</b> <b>Injector Resistance</b> <b>Electric Fuel Pump Resistance</b> <b>Electric Fuel Pump Amperage Draw</b>	 625 ± 50  5250 – 5750  Preset @ Factory  6  RED + BRN Leads RED + WHT Leads RED + ORG Leads RED + YEL Leads RED + LT BLUE Leads RED + PUR Leads 41 psi – 45 psi (283 kPa – 310 kPa) 12.3 ohms ± 0.5 ohms 0.7 ± 0.3 ohms 4 amperes ± 0.5 amperes



## Mercury/Quicksilver Lubricants and Sealants

Description	Mercury Part Number	Quicksilver Part Number
Needle Bearing Assy. Lubricant [8 oz. (226.8 grams)] tube	92-802868A1	N/A
Dielectric Grease [8 oz. (226.8 grams)] can	92-823506-1	92-823506-1
Loctite 271 – Thread Locker (10 ml) tube	92-809819	92-809819
Loctite 567 PST Pipe Sealant (50 ml) tube	92-809822	92-809822
Loctite Master Gasket Kit	92-12564-2	92-12564-2
2 Cycle Premium Outboard Oil [1 Gallon (3.7 liter)]	92-802815A1	92-802815Q1
Perfect Seal [16 oz. (0.45 kg)] can	92-34227-1	92-34227-1
Liquid Neoprene [8 oz. (226.8 grams)] can	92-25711-3	92-25711-3
Cyanacrylate Adhesive	Obtain Locally	Obtain Locally
Bellows Adhesive	N/A	92-86166Q1
Loctite 680 Retaining Compound (10 ml) tube	92-809833	92-809833
Loctite 222 Thread Locker (10 ml) tube	92-809818	92-809818
3M Permabond #3M08155	Obtain Locally	Obtain Locally
Loctite 242 Thread Locker (10 ml) tube	92-809821	92-809821
Loctite 609	Obtain Locally	Obtain Locally
Loctite 405	Obtain Locally	Obtain Locally



<b>Description</b>	<b>Mercury Part Number</b>	<b>Quicksilver Part Number</b>
RTV 587 Silicone Sealer [3 oz. (85.05 grams)]	92-809825	92-809825
Loctite 262	Obtain Locally	Obtain Locally
Premium Gear Lubricant [1 Quart (0.94 liter)]	92-802846A1	92-802846Q1
Loctite 7649 Primer [4.5 oz (127.57 grams)]	92-809824	92-809824
Anti-Corrosion Grease [8 oz. (226.8 grams)] tube	92-802867A1	92-802867Q1
2-4-C with Teflon [8 oz. (226.8 grams)] tube	92-802859A1	92-802859Q1
Loctite Quick Tite	Obtain Locally	Obtain Locally
Isopropyl Alcohol	Obtain Locally	Obtain Locally
Hot Glue	Obtain Locally	Obtain Locally
Special Lubricant 101 [8 oz. (226.8 grams)] tube	92-802865A1	92-802865Q1
4 Stroke 10W30 Outboard Oil [1 Quart (0.94 liter)]	92-802833A1	92-802833Q1
4 Cycle 25W40 Engine Oil [1 Quart (0.94 liter)]	92-802837A1	92-802837Q1
Power Trim & Steering Fluid [8 oz. (226.8 grams)]	92-802880A1	92-802880Q1
Engine Coupler Spline Grease [14 oz. (0.39 kg)] cartridge	92-802869A1	92-802869Q1





# IMPORTANT INFORMATION

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## Specifications

### Gear Case Lubricant Capacity

Gear Case Ratio	Capacity
1.87:1	22.5 fl. oz. (717 ml)
2.00:1	22.5 fl. oz. (717 ml)