



# 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 Mercury Jet Unit

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 a powerhead which is suspended. Powerheads should be attached to work stands, or lowered to ground as soon as possible.

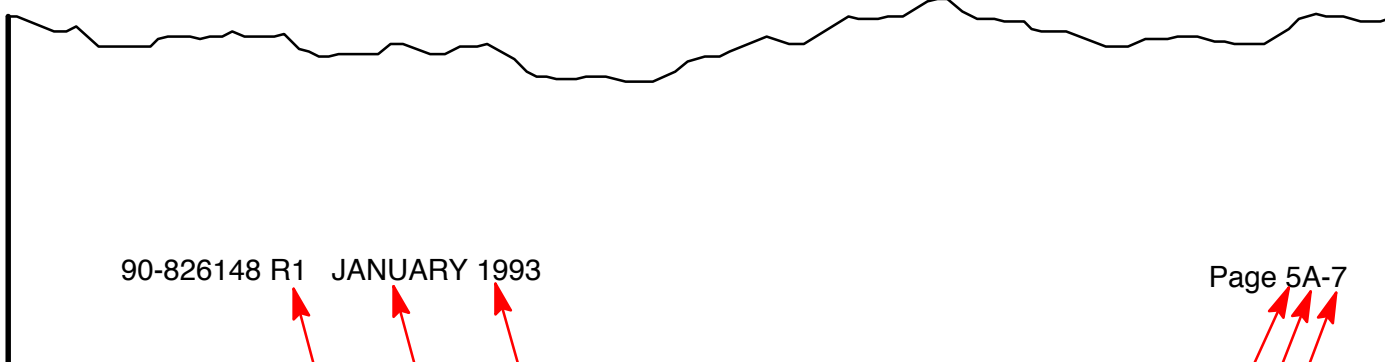
We reserve the right to make changes to this manual without prior notification.

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:



Revision No. 1

Month of Printing

Year of Printing

Section Number

Part of Section Letter

Page Number



# IMPORTANT INFORMATION

## Section 1A - Specifications



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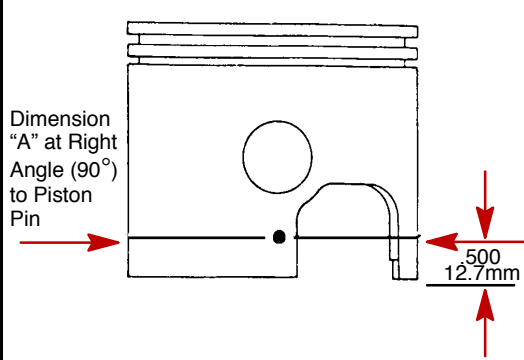
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# Master Specifications

Model 240 EFI Jet Drive		
<b>HORSEPOWER (KW)</b>	<b>Model 240 Full Throttle RPM Idle RPM (In Gear) RPM Limiter</b>	240 (178.9) 5500 - 6000 1000 - 1100 6700
<b>JET DRIVE WEIGHT</b>	<b>Powerhead Pump Unit</b>	231 (105.0 kg) 110 (49 kg)
<b>CYLINDER BLOCK</b>	<b>Type Displacement</b>	V-6 Cylinder, Two Cycle 153 cu. in. (2508 cc) 60° Vee
<b>STROKE</b>	<b>Length (All Models)</b>	2.65 in. (67.3 mm)
<b>CYLINDER BORE</b>	<b>Diameter (Std) Diameter 0.015 in. Oversize Taper/Out of Round/Wear Maximum Bore Type</b>	3.501 in. (88.925 mm) 3.516 in. (89.306 mm) 0.003 in. (0.076 mm) Cast Iron
<b>CRANKSHAFT</b>	<b>Maximum Runout</b>	0.006 in. (0.152 mm)
<b>PISTON</b>	<b>Piston Type Diameter Standard  Diameter 0.015 in. Oversize</b>	Aluminum 3.494 in. ± .001 in. (88.748 mm ± 0.025 mm) 3.509 in. ± 0.001 in. (89.129 mm ± 0.025 mm)
<b>PISTON DIAMETER</b>		3.494 in. ± .001 in. (88.748 mm ± .025 mm) <b>Using a micrometer, measure dimension "A" at location shown. Dimension "A" should be 3.494 in. ± .001 for a STANDARD size piston (new) Dimension "A" will be 0.001 – 0.0015 less if coating is worn off piston (used)</b>
<b>REEDS</b>	<b>Reed Type Reed Stand Open (Max.)</b>	Single Stage Plastic 5 Petal No Reed Stops



<b>Model 240 EFI Jet Drive</b>		
<b>FUEL INJECTION</b>	<b>Idle RPM</b> – All Models <b>Wide Open Throttle (WOT) RPM</b> <b>Float Adjustment (Vapor Separator)</b> <b>Float Level</b> <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>	1000 ± 1100 5500 – 6000 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
<b>FUEL SYSTEM</b>	<b>Fuel</b> <b>Recommended Gasoline</b> <b>Recommended Oil</b>  <b>Gasoline/Oil Ratio</b> – @ Idle – @ WOT	Gasoline w/Oil Injection Unleaded 87 Octane Minimum TC-W3 Premium Plus 2 Cycle Outboard Oil  125:1 40:1



<b>Model 240 EFI Jet Drive</b>		
<b>STARTING SYSTEM</b>	<b>Electric Start – All Models</b> <b>Solenoid Driven Bendix</b> <b>Starter Draw (Under Load)</b> <b>Starter Draw (No Load)</b> <b>Minimum Brush Length</b> <b>Battery Rating</b>	175 Amperes 60 Amperes 0.25 in. (65.4 mm) 670 (Minimum) Marine Cranking Amps 520 (Minimum) Cold Cranking Amps
<b>IGNITION SYSTEM</b>	<b>Type</b> <b>Spark Plug Type</b> <b>Spark Plug Gap</b> <b>Maximum Timing</b> <b>Idle Timing</b> <b>Throttle Position Sensor</b> @ Idle @ WOT <b>Crank Position Sensor</b> <b>Air Gap</b>  <b>Firing Order</b>	Digital Inductive NGK BPZ8HS-10 0.040 in. (1.0 mm) Not Adjustable; Controlled by ECM Not Adjustable; Controlled by ECM  0.19 – 1.0 VDC 3.45 – 4.63 VDC  0.025 in. – 0.040 in. (0.635 mm – 1.01 mm) 1-2-3-4-5-6
<b>CHARGING SYSTEM</b>	<b>Alternator Output (Regulated)</b>  <b>Brush Length</b>  <b>Voltage Output</b> <b>Regulator Current Draw</b>	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)

\*Amperage listed is when battery is in a discharged state. If battery is fully charged, amperage readings will be less.



## Torque Chart

### PUMP UNIT

Special Items	Torque
Inlet Screen Screw (6 mm)	75 lb. in. (8.5 N·m)
Ride Plate Screw	75 lb. in. (8.5 N·m)
Reverse Gate Stop Screw	120 lb. in. (13.6 N·m)
Impeller Shaft Cover Screw	15 lb. ft. (20.3 N·m)
Steering Lever Screw	15 lb. ft. (20.3 N·m)
Pinion Shaft Housing Screw	15 lb. ft. (20.3 N·m)
Inlet Screen Screw (8 mm)	16.5 lb. ft. (22.4 N·m)
Drive Housing Cover Nuts	35 lb. ft. (47.5 N·m)
Nozzle to Stator Bolts	35 lb. ft. (47.5 N·m)
Stator Bolts	35 lb. ft. (47.5 N·m)
Rudder Pivot Bolt	50 lb. ft. (68 N·m)
Reverse Gate Pivot Bolt	80 lb. ft. (108.5 N·m)
Impeller Gear Nut	90 lb. ft. (122 N·m)
Impeller Nut	150 lb. ft. (203.4 N·m)

### POWERHEAD

Special Items	Torque
Reed Block Screws	90 lb. in. (10.2 N·m)
Vapor Separator	140 lb. in. (15.8 N·m)
Air Handler Assembly	14.5 lb. ft. (19.7 N·m)
Crank Case Cover Bolts .312-18x1-1/4 (6 ea)	15 lb. ft. (20.3 N·m)
Crank Case Cover Bolts 3/8-16x3-1/4 (8 ea)	37 lb. ft. (50.2 N·m)
Expansion Chamber Nuts	20 lb. ft. (27.1 N·m)
Connecting Rod Screws	*20 lb. ft. (27.1 N·m) Then Turn Additional 90°
Spark Plug	20 lb. ft. (27.1 N·m)
Cylinder Head	*30 lb.ft. (40.6 N·m) Then Turn Additional 90°
Adaptor Plate to Powerhead	35 lb. ft. (47.5 N·m)
Powerhead to Drive Housing Nuts	35 lb. ft. (47.5 N·m)
Flywheel Nut	125 lb. ft. (169.5 N·m)

**\*NOTE:** Screws should not be reused after removal



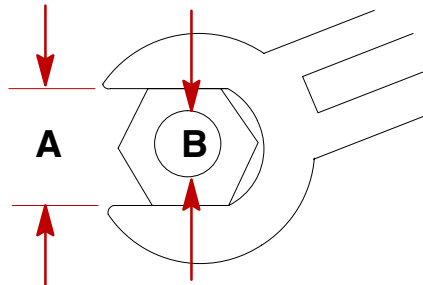


## Standard Hardware

Screw or Nut Size	Torque
6 - 32	9 lb. in. (1.0 N·m)
8 - 32	20 lb. in. (2.3 N·m)
10 - 24	30 lb. in. (3.4 N·m)
10 - 32	35 lb. in. (3.9 N·m)
12 - 24	45 lb. in. (5.0 N·m)
1/4 - 20	70 lb. in. (7.8 N·m)
5/16 - 18	160 lb. in. (18.1 N·m)
3/8 - 16	270 lb. in. (30.4 N·m)

## Metric Hardware

A	B	Torque Specification		
		lb. in.	lb. ft.	N·m
8 mm	M5	36	3	4
10 mm	M6	70	6	8
12 mm	M8	156	13	18
14 mm	M10	312	26	36
17 mm	M12	372	31	42





## 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

**SPECIFICATIONS**

<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