

Service Manual Outline

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Important
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Models Covered in This Manual

Transom Assemblies

Model	Serial Number
MC 120R/140B/185R/488R/898R/228R/260R	6216687 – 6849289
MC 120MR/140MR/170MR/185MR/190MR/200MR/230MR/260MR/300 Tempest MR	6849290 – 0A471374
MC Alpha One/Alpha One SS	0A471375 and Above

Sterndrive Units

MC 120R-260R		
Original Ratio	Ratio If Serviced With 13:21 Gears	Serial Number
1.98:1	1.94:1	6237861-6854392
1.84:1	1.81:1	6225577-6862701
1.65:1	1.62:1	6268065-6810537
1.50:1	1.47:1	6229158-6847029
1.32:1	1.29:1	6231571-6663947

MC 120 MR - 300 TEMPEST MR		
Original Ratio	Ratio If Serviced With 13:28 Gears	Serial Number
1.98:1	1.94:1	6854393-0A476746
1.84:1	1.81:1	6862702-0A470164
1.65:1	1.62:1	6810538-0A475786
1.50:1	1.47:1	6847030-0A479506

MC ALPHA ONE / ALPHA ONE SS			
Original Ratio	Ratio If Serviced With 13:28 Gears	R.H. Serial Number	L.H. Serial Number
1.98:1	1.98:1	0A476747 and Above	0C881740 and Above
1.84:1	1.84:1	0A470165 and Above	0C884040 and Above
1.65:1	1.65:1	0A475787 and Above	0C881790 and Above
1.50:1	1.50:1	0A479507 and Above	0C852908 and Above
1.32:1	1.32:1	0A613927 and Above	
Alpha One SS 1.50:1/1.32:1	1.50/1.32:1	0A545004 and Above	

Sea Ray Sterndrive Units and Transom Assembly (Oyster White)

Original Ratio	Ratio If Serviced With 13:21 Gears	Serial Number
1.98:1		0B803866-0C348031
1.84:1		0B800854-0C343526
1.50:1		0B796473-0C340666
1.32:1		0B804807-0C340030
Transom Assembly		0B815811-0C340333

When making repairs to Sea Ray (Oyster White) sterndrives, follow procedures as outlined for corresponding MerCruiser models as shown in the cross-reference chart below.

Sea Ray	MerCruiser
3.0L	3.0L Alpha One
4.3L2	4.3L Alpha One
4.3L4	4.3LX Alpha One
5.7L	5.7L Alpha One
SRX 5.7L	350 Magnum Alpha One
SRX 7.4L	454 Magnum Alpha One

Notice

Throughout this publication, “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

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

IMPORTANT: Indicates information or instructions that are necessary for proper operation and/or maintenance.

Notice To Users of This Manual

This service manual has been written and published by the service department of the manufacturer to aid our dealers’ mechanics and company service personnel when servicing the product described herein. It is assumed that these personnel are familiar with the servicing procedures of this product, or like or similar products. That they have been trained in the recommended servicing procedures of these products which includes the use of mechanics’ common hand 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 all possible hazards and/or result of each method. We have not

undertaken any such wise 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 product’s 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 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.

Replacement Parts

⚠ WARNING

Electrical system components on gasoline engines and MerCruiser Stern Drives are designed and manufactured to comply with U.S. Coast Guard Rules and Regulations to minimize risks of fire or explosion.

Use of replacement electrical system components, which do not comply to these rules and regulations, could result in a fire or explosion hazard and should be avoided.

When servicing electrical systems, it is extremely important that all components are properly installed and tightened. If not, any electrical component opening would permit sparks to ignite fuel vapors from fuel system leaks, if they exist or develop.

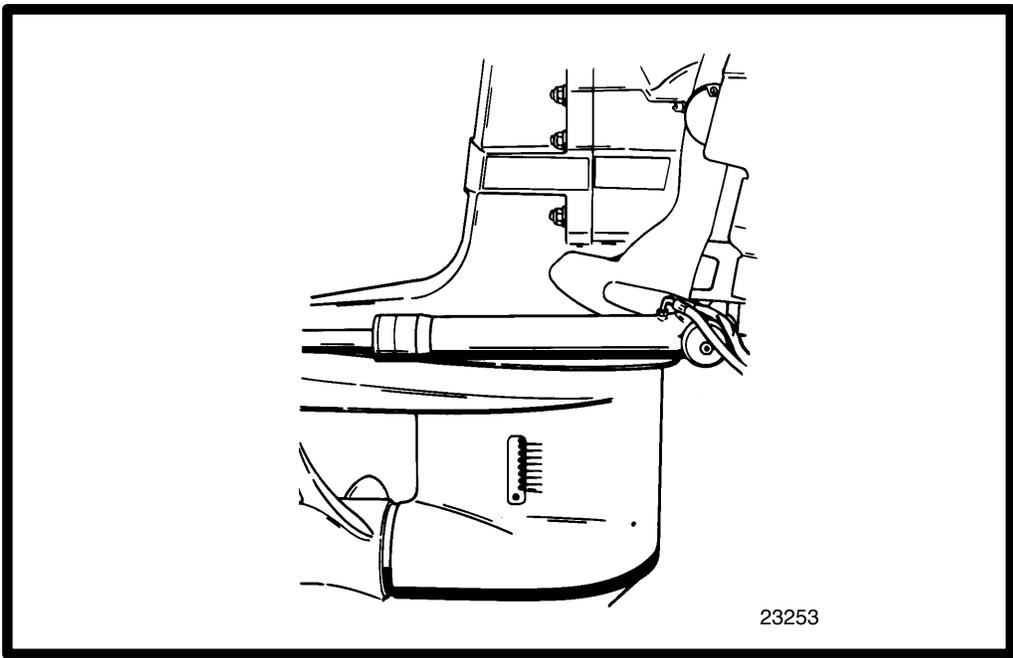
⚠ WARNING

Electrical system components on diesel engines are not external ignition protected. **DO NOT STORE OR UTILIZE GASOLINE ON BOATS EQUIPPED WITH THESE ENGINES, UNLESS PROVISIONS HAVE BEEN MADE TO EXCLUDE GASOLINE VAPORS FROM ENGINE COMPARTMENT (ref: 33 CFR).** Failure to comply could result in fire, explosion and/or severe personal injury.

GENERAL INFORMATION

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A



IMPORTANT INFORMATION

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How To Use This Manual

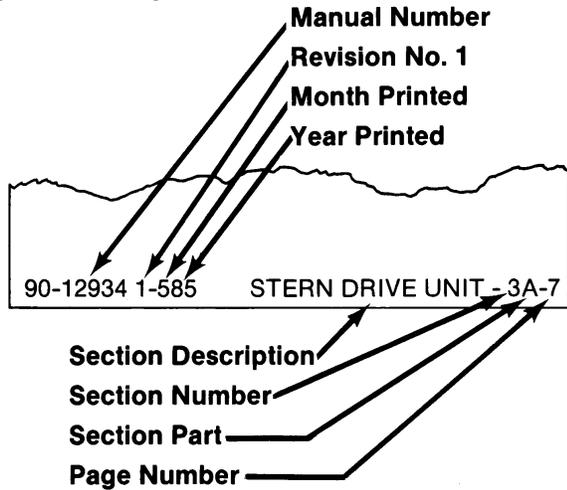
This Manual is divided into sections which represent major components and systems.

Some sections are further divided into parts which more fully describe the component.

Sections and parts are listed on page.

Page Numbering

Two number groups appear at the bottom of each page. Following is an example and description.



Introduction

This comprehensive overhaul and repair manual is designed as a service guide for the MerCruiser models previously listed. It provides specific information, including procedures for disassembly, inspection, assembly and adjustment, to enable dealers and service mechanics to repair these products.

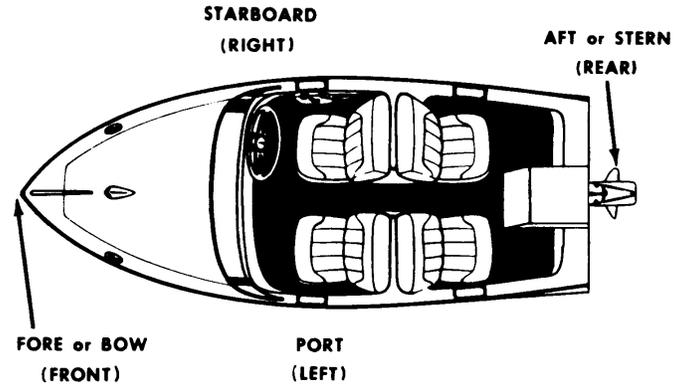
Before attempting repairs, it is suggested that procedure first be read through to gain knowledge of the methods and tools used and the cautions and warnings required for safety.

Special Product Information

During production of these models, special product improvements and changes have been made to increase product reliability and performance. Such changes to a sterndrive assembly component(s) are covered in the "Special Information" portion of the appropriate sterndrive assembly section. (Refer to the section "Index".) Serial number breaks are provided, where applicable, for ease of identification.

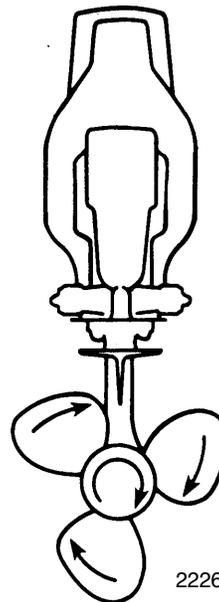
Directional References

Front of boat is bow; rear is stern. Starboard side is right side; port side is left side. In this service manual, all directional references are given as they appear when viewing boat from stern, looking toward bow.

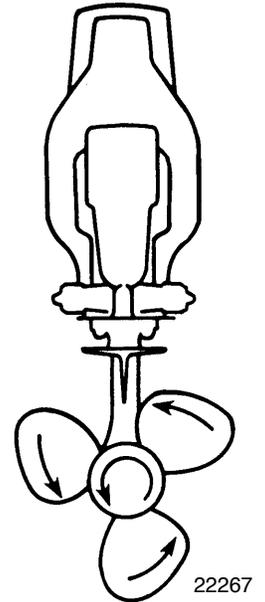


Propeller Rotation

Propeller rotation for sterndrive can be right hand or left hand rotation as viewed from the aft end of the propeller.

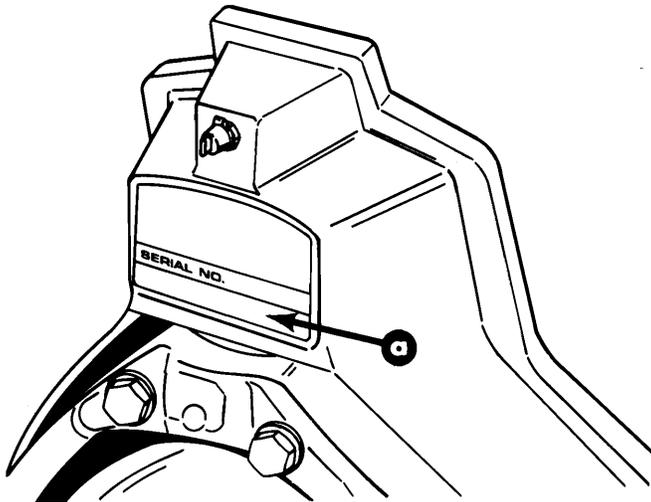


Right Hand Rotation



Left Hand Rotation

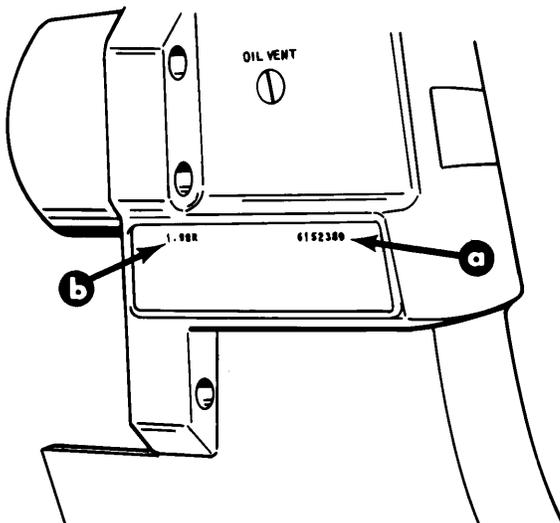
Serial Number Locations



23254

Transom Assembly Serial Number Location

a - Transom Assembly Serial Number



23254

Sterndrive Unit Serial Number Location – Port Decal

a - Sterndrive Unit Serial Number

b - Sterndrive Unit Gear Ratio

Hi-Performance Boating

Written by marine engineers, order Part No. 90-86168, entitled "Hi-Performance Boat Operation."

Sterndrive Unit 10-Hour Break-In Period (New or with Replacement Gears)

1. Avoid full throttle starts.
2. DO NOT operate at any one constant speed for extended periods of time.
3. DO NOT exceed 75% of full throttle during the first 5 hours. During the next 5 hours, operate at intermittent full throttle.
4. Drive unit should be shifted into forward gear a minimum of 10 times during break-in, with run-in time at moderate RPM after each shift.

Decal Application

Decal Removal

1. Mark decal location before removal to assure proper alignment of new decal.
2. Carefully soften decal and decal adhesive with a heat gun or heat blower while removing old decal.
3. Clean decal contact area with a 1:1 mixture of isopropyl alcohol and water.
4. Thoroughly dry decal contact area and check for a completely cleaned surface.

TEMPERATURE

IMPORTANT: Installation of vinyl decals should not be attempted while in direct sunlight. Air and surface temperature should be between 60°F (15°C) and 100°F (38°C) for best application.

SURFACE PREPARATION

IMPORTANT: Do not use a soap or any petroleum based solvents to clean application surface.

Decal Application

NOTE: Ensure area where decal will be applied is clean.

1. Remove backing from decal.
2. Apply to drive unit.
3. Carefully smooth decal on surface.

Painting Procedures

Cleaning & Painting Aluminum Propellers & Gear Housings

WARNING

Avoid serious injury from flying debris. Avoid serious injury from airborne particles. Use eye and breathing protection with proper ventilation.

PROPELLERS

1. Sand the entire area to be painted with 3M 120 Regalite Polycut or coarse Scotch-Brite, disc or belts.
2. Feather edges of all broken paint edges. Try not to sand through the primer.
3. Clean the surface to be painted using PPG Industries DX330 Wax and Grease Remover or equivalent (Xylene or M.E.K.).
4. If bare metal has been exposed, use Quicksilver's Light Gray Primer.
5. Allow a minimum of 1 hour dry time and no more than 1 week before applying the finish coat.
6. Apply the finish coat using Quicksilver's EDP Propeller Black.

GEAR HOUSINGS

The following procedures should be used in refinishing gear housings. This procedure will provide the most durable paint system available in the field. The materials recommended are of high quality and approximate marine requirements. The following procedure will provide a repaint job that compares with a properly applied factory paint finish. It is recommended that the listed materials be purchased from a local Ditzler Automotive Finish Supply Outlet. The minimum package quantity of each material shown following is sufficient to refinish several gear housings.

Procedure:

1. Wash gear housing with a muriatic acid base cleaner to remove any type of marine growth and rinse with water, if necessary.
2. Wash gear housing with soap and water, then rinse.

3. Sand blistered area with 3M 180 grit sandpaper or P180 Gold Film Disc to remove paint blisters only. Feather edge all broken paint edges.
4. Clean gear housing thoroughly with (DX-330) wax and grease remover.
5. Spot repair surfaces where bare metal is exposed with (DX-503) alodine treatment.

IMPORTANT: Do not use any type of aerosol spray paints as the paint will not properly adhere to the surface nor will the coating be sufficiently thick to resist future paint blistering.

6. Mix epoxy chromate primer (DP-40) with equal part catalyst (DP-401) per manufacturer's instructions, allowing proper induction period for permeation of the epoxy primer and catalyst.
7. Allow a minimum of one hour drying time and no more than one week before top coating assemblies.
8. Use Ditzler Urethane DU9000 for Mercury Black and DU33414M for Sea Ray White. Catalyze all three colors with Ditzler DU5 catalyst mixed 1:1 ratio. Reduce with solvents per Ditzler label.

CAUTION

Be sure to comply with instructions on the label for ventilation and respirators. Using a spray gun, apply one half to one mil even film thickness. Let dry, flash off for five minutes and apply another even coat of one half to one mil film thickness. This urethane paint will dry to the touch in a matter of hours, but will remain sensitive to scratches and abrasions for a few days.

9. The type of spray gun used will determine the proper reduction ratio of the paint.

IMPORTANT: Do not paint sacrificial trim tab or anode.

10. Cut out a cardboard "plug" for trim tab pocket to keep paint off of mating surface to maintain good continuity circuitry between trim tab and gear housing.