
Sport Boat Owner's Manual

Welcome

Congratulations on becoming the new owner of the world's most prestigious Sport Boat. We at Sea Ray® Boats, Inc. welcome you into our worldwide and ever-expanding family of boating enthusiasts.

Every journey lets you enjoy the excitement of a new adventure. Your new Sport Boat is more than a boat; it is a way of living. Our organization is dedicated to providing pleasure and fulfillment to your boating experience.

Sea Ray's commitment — Excellence by Design — has enabled us to create a superior craft providing you with comfort, performance, safety and dependability. All of our boats comply with safety standards set by the United States Coast Guard and are designed, engineered and manufactured in accordance with applicable recommendations and guidelines of the National Marine Manufacturers Association (NMMA) and the American Boat and Yacht Council (ABYC).

The Owner's Manual Packet, to be kept on board your Sea Ray, introduces you to all the features which make our boats so incomparable. For years of trouble-free boating, take the time now to carefully review the information in your Owner's Manual Packet and really get to know your boat. **Have everyone who will operate your Sport Boat read this manual.**

The Owner's Manual Packet contains the following:

- **Sea Ray Warranty Statement**

Read the Sea Ray Warranty Statement so you will be familiar with the terms.

- **Specification Sheet**

The Specification Sheet lists standard equipment for your boat as well as available optional equipment and useful specifications needed for safe boating.

- **Parts Manual**

The Parts Manual helps you locate items and understand the layout of your Sea Ray. It also makes it easier when ordering replacement parts.

- **Sea Ray Sport Boat Owner's Manual**

The Sea Ray Sport Boat Owner's Manual gives you valuable operating and safety information about your responsibilities as a Sport Boat owner/operator.

- **Original Equipment Manufacturer (OEM) Information**

This section of your Owner's Manual Packet contains information from the manufacturer of equipment installed on your boat. Examples include the engine, steering and VHF radio. Throughout the Owner's Manual Packet you will be referred to information provided by manufacturers of specific systems.

Because our Product Development and Engineering Division is continually upgrading our products, some descriptions in this manual may differ somewhat from equipment on your boat. If this occurs, please refer directly to the updated information in the accompanying Owner's Manual Packet. If such information is not included, consult your authorized dealer for assistance.

Because your purchase represents a substantial investment, we know you will want to take the necessary measures to protect its value. We suggest you plan a program for proper operation, periodic maintenance and safety inspections. If you have questions which are not fully covered by the Owner's Manual Packet or the manufacturer's instructions, please consult your authorized dealer for assistance.

Thank you for selecting a Sea Ray®!

Bon Voyage

Sea Ray

Owner's Manual Packet Contents

	Sea Ray Owner's Manual	Sea Ray Owner's Manual Supplem't Section 12	Sea Ray Specification Sheet	Sea Ray Parts Manual	Engine Operator's Manual	OEM Manual	Sea Ray Owner's Manual Packet
Accident Reporting	X						X
Alarms	X				X	X	
AM/FM Cassette Stereo	X					X	
Anchoring	X						X
Auto-Pilot System						X	
Battery System	X	X		X			
Bilge Layout		X		X			
• Bilge Blower	X					X	
• Bilge Pump	X					X	
Canvas	X			X			
Capacity Plate	X			X			
Carbon Monoxide	X						
Certifications	X	X					
Cleaning	X					X	
Cockpit		X					
Communication Equipment	X					X	
Compass	X					X	
Console		X		X			
Construction Standards	X	X					
Controls	X	X					
Depth Finder						X	
Dimensions		X	X				
Drains	X	X		X			
Education	X						
Electrical System	X	X		X			
Electrolysis	X	X					
Emergency Engine Shutdown	X					X	
Emergency Procedures	X						
Engine	X				X		
Environmental Considerations	X						
Equipment:							
• Recommended	X						
• Required	X						X
• Standard		X	X				
Fire	X						
Fire Suppression Equipment	X					X	X
Flame Arrestor	X				X		X
Flooding, Swamping	X						
Fuel System	X				X	X	
Gauges	X	X					
Gear Shift	X				X		
Global Positioning System (GPS)						X	
Graphics			X	X			
Head System	X	X	X	X			
Homologations (International)	X	X					
Hotlines (Safety)	X	X					X
Identification Numbers	X	X					
Ignition	X	X			X		
Ignition Protection	X	X					
Impaired Operation	X	X					
Instrument Use & Calibration	X	X					

Owner's Manual Packet Contents (Cont'd)

	Sea Ray Owner's Manual	Sea Ray Owner's Manual Supplem't Section 12	Sea Ray Specification Sheet	Sea Ray Parts Manual	Engine Operator's Manual	OEM Manual	Sea Ray Owner's Manual Packet
Layout		X	X			X	
Lifesaving Equipment	X						
Lifting	X	X					
Lightning Protection	X			X			
Lights	X			X			
Load Capacity	X	X					
Maintenance	X				X	X	
Maneuvering	X					X	
Monitors	X					X	
Nautical Terms	X						
Navigation	X						X
Operation	X						
Optional Systems		X					
Personal Flotation Devices	X					X	X
Power Capacity	X		X				
Powertrain	X				X		
Propeller	X				X	X	
Propulsion					X		
Required Equipment	X						
Registration							X
Safety	X						X
Seating		X					
Seaworthiness Inspection	X						
Service Schedule					X	X	
Spare Parts				X			
Specifications		X	X				
Stability	X	X					
Start-In-Gear Protection	X				X		
Steering	X			X			
Sump		X		X			
Symbols	X						
Switches		X					
Tank Capacities		X	X				
Throttle	X			X	X		
Through-Hull Fittings	X	X					
Trim Tabs	X	X		X			
Troubleshooting	X				X	X	
Upholstery	X			X			
Ventilation	X	X					
Warning Labels	X			X			
Warranty		X					X
Water System	X	X		X			
Weight		X	X				
Winterizing	X					X	
Wiring Schematics		X				X	

To replace any material from the Owner's Manual Packet, contact your Sea Ray® dealer.

Information in this publication is based upon the latest product specifications available at printing. Sea Ray Boats, Inc. reserves the right to make changes at any time, without notice, in the colors, equipment, specifications, materials and prices of all models, or to discontinue models. Should changes in production models be made, Sea Ray® is not obligated to make similar changes or modifications to models sold prior to the date of such changes.

* If available at the time of publication of the manual.

Key To Symbols On Prints

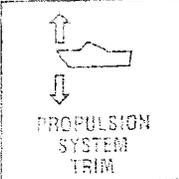
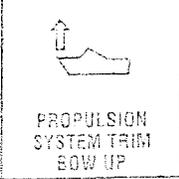
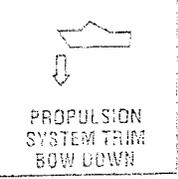
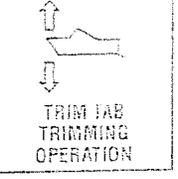
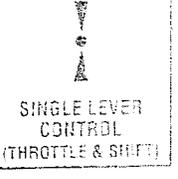
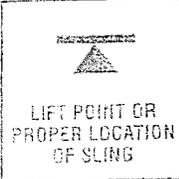
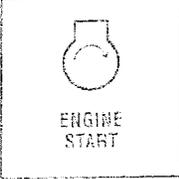
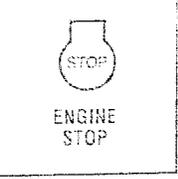
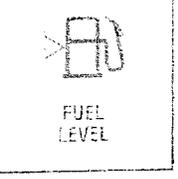
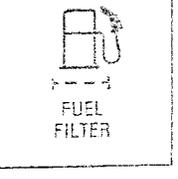
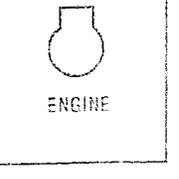
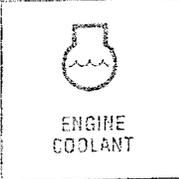
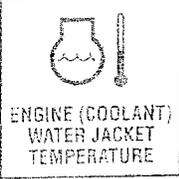
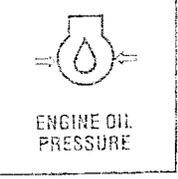
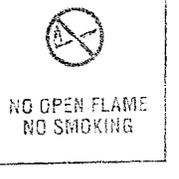
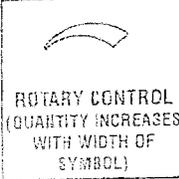
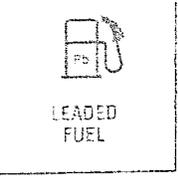
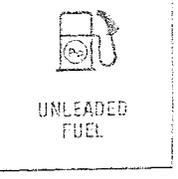
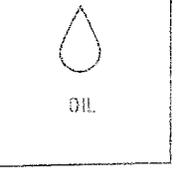
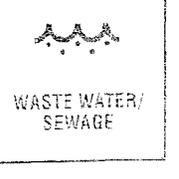
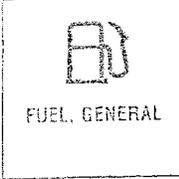
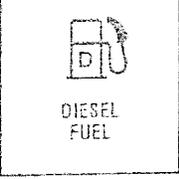
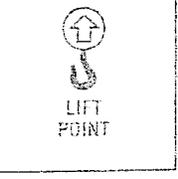
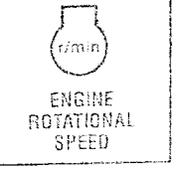
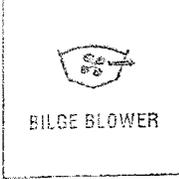
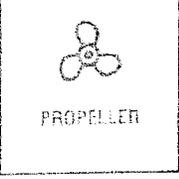
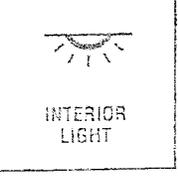
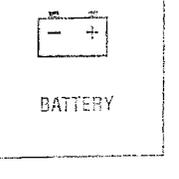
 PROPULSION SYSTEM TRIM	 PROPULSION SYSTEM TRIM BOW UP	 PROPULSION SYSTEM TRIM BOW DOWN	 TRIM TAB TRIMMING OPERATION	 SINGLE LEVER CONTROL (THROTTLE & SHIFT)	 CONTROL LEVER OPERATING DIRECTION
 LIFT POINT OR PROPER LOCATION OF SLING	 ENGINE START	 ENGINE STOP	 FUEL LEVEL	 FUEL FILTER	 ENGINE
 ENGINE COOLANT	 ENGINE (COOLANT) WATER JACKET TEMPERATURE	 ENGINE OIL PRESSURE	 WARNING ELECTRICAL HAZARD	 FIRE RISK	 NO OPEN FLAME NO SMOKING
 ROTARY CONTROL (QUANTITY INCREASES WITH WIDTH OF SYMBOL)	 FRESH WATER BASED COOLANT	 LEADED FUEL	 UNLEADED FUEL	 OIL	 WASTE WATER/ SEWAGE
 FUEL, GENERAL	 DIESEL FUEL	 LIFT POINT	 ELAPSED TIME	 ENGINE ROTATIONAL SPEED	 BILGE PUMP
 BILGE BLOWER	 PROPELLER	 INTERIOR LIGHT	 RUNNING LIGHTS UNDER POWER	 ANCHOR LIGHT	 WINDSHIELD WIPER
 WINDSHIELD WASHER	 WINDSHIELD WIPER AND WASHER	 COMPASS	 ANCHOR	 HORN	 BATTERY

TABLE OF CONTENTS

SECTION 1 • GENERAL INFORMATION

Introduction	1.1
Warranty & Construction Standards	1.1
Registration	1.1
Education	1.1
Dealer's Responsibilities	1.1
Owner/Operator Responsibilities	1.2
Insurance	1.2
Parts & Equipment	1.2
Servicing Your Sea Ray	1.2
Certifications and Specifications	1.3
Manufacturer's Certifications	1.3
Manufacturer's Specifications	1.4
Nautical Terms	1.5
Safety	1.5
Minimum Required Equipment	1.6
Explanation of Safety Precautions	1.7
Warning Labels	1.7
Lifesaving Equipment	1.7
Additional Recommended Equipment	1.8
Impaired Operation	1.8
Load Capacity	1.9
Power Capacity	1.9
Stability	1.10
Maintaining Control	1.10
Weather	1.10
Dam Spillways	1.11
Operating In Shallow Water	1.11
Float Plan	1.12
Paint, Cleaning Agents & Other Substances ..	1.12
Water Sports	1.12
Safety Hotlines	1.13
Operation Guidelines	1.13
Boarding	1.13
Starting, Shifting and Stopping	1.14
Handling Dock Lines	1.14
Casting Off	1.15
Approaching the Dock	1.15
Anchoring	1.16
Maneuvering and Control	1.18
Navigation	1.20
Navigational Buoys and Markers	1.21
Nautical Charts	1.23
Right-Of-Way	1.23
Navigational Lights	1.24
Navigating In Fog	1.24
Emergency Situations	1.25
Distress Signals	1.25
Fire	1.26
Fire Suppression Equipment	1.27
Flooding, Swamping	1.28
Collisions and Leaking	1.28

Water Rescue	1.28
Grounding	1.29
Towing	1.29
Propulsion, Control or Steering Failure	1.30
Exhaust Emissions	1.30
Carbon Monoxide	1.30
Medical Emergency	1.31
Accident Report	1.31
Trailering	1.31
Hitches	1.32
Maneuvering With A Trailer	1.33
Launching and Loading	1.33
Environmental Considerations	1.35
Fuel & Oil Spillage	1.35
Waste Disposal	1.35
Excessive Noise	1.35
Wake/Wash	1.35

SECTION 2 • BILGE & UNDERWATER GEAR

Bilge	2.1
Drain Plug	2.1
Bilge Pump	2.1
Bilge Blower	2.2
Engines	2.3
Engine Exhaust System	2.3
Vibration & Causes	2.3
Underwater Gear	2.4
Outdrive Impact Protection	2.4
Propeller	2.4
Propeller Removal and Installation	2.5

SECTION 3 • INSTRUMENTS & CONTROLS

Steering System	3.1
Power Steering	3.1
Hydraulic Steering	3.1
Mechanical Steering System	3.2
Gear Shift & Throttle Control	3.3
Power Trim & Tilt Operation	3.3
(N/A w/Outboard Engines)	
Power Tilt Operation	3.4
Engine Alarm System	3.4
Ignition Shut Down Switch	3.5
Instrument Gauges	3.5
Tachometer w/Hour Meter	3.5
Hourmeter	3.6
Speedometer	3.6
Oil Pressure Gauge	3.6
(N/A w/Outboard Engines)	
Water Temperature Gauge	3.6
Voltmeter	3.6
Fuel Gauge	3.6
Trim Gauge	3.7
(Inboard/Outboard Engines Only)	

Equipment Switches	3.7
Switch Panel Symbols	3.7
Console Dimmer	3.8
Navigation Lights	3.8
Marine Compass	3.8
Trim Tabs	3.8
Carbon Monoxide Monitor	3.9

SECTION 4 • FUELING & STARTING

Fuel Systems	4.1
Fuel Tank	4.1
Inboard/Outboard Engine Only	4.1
Outboard Engine Only	4.2
Fuel Recommendations	4.2
Fueling Precautions	4.4
Oil Injection System	4.5
(Outboard Engines Only)	
Engine Starting, Shifting & Stopping	4.5
Starting the Engine	4.5
Shifting	4.7
Stopping the Engine	4.7

SECTION 5 • ELECTRICAL SYSTEM

DC Systems	5.1
Battery	5.1
Keeping the Battery Charged	5.2
Ignition Protection	5.2
Battery Switches	5.3
Electrical System Breakers and/or Fuses	5.3
12 Volt Accessory Receptacle	5.3
Lighting	5.5
Navigation Lights	5.5
Wire Color Code	5.5
AC System	5.6
120VAC/60Hz Electrical System	5.6
Shore Power Hook-Up	5.6
Converter	5.7
Ground Fault Interrupter Outlets	5.8
Galvanic Corrosion & Zinc Anodes	5.9
Marine Electronic Cathodic	
Anti-Corrosion System (Mercothode™)	5.10

SECTION 6 • ACCESSORIES

Canvas	6.1
Storage	6.1
Care and Maintenance	6.1
Installation Tips	6.2
Convertible Top and Boot	6.2
Sea Ray's® Patented Interlocking	
Canvas Top Extrusion	6.2
Side Curtains	6.3
Bimini Top and Boot	6.3
Aft Cover	6.3
Camper Aft Cover and Boot	6.3
Cockpit Cover	6.3

Hatch Covers	6.3
Mooring Cover	6.3
Tonneau Cover	6.3
Trailer With Canvas	6.3
Automatic Fire Extinguishing System	6.4
Depth Finder with Transducer	6.5
Head Systems	6.5
Requirements for Operators	6.5
Portable Self-Contained Head	6.5
Portable Self-Contained Head	
With Dockside Pump-Out	6.5
Dockside Pump-Out Option	6.6
VacuFlush® System	6.6
Holding Tank Operation	6.6
Dockside Pump-out	6.6
Macerator	6.7
Vent Filter	6.7
Horn	6.7
Refrigerator/Freezer/Ice Chest	6.7
Seating Accommodations	6.8
Stereo	6.9
Removable Stern Light	6.9
Storage Compartments	6.9
Stove	6.9
Transom Trailer Trim Switch	6.9
Water System	6.10
Gray Water System	6.11
Cockpit Step/Seating	6.12

SECTION 7 • STORAGE PROCEDURES

Laying-Up Instructions	7.1
Lifting The Boat	7.1
Supporting the Boat During Storage	7.1
Trailer	7.1
Draining The Boat	7.2
Winterization Checklist For	
Boats Stored on Land	7.2
Fitting Out After Storage	7.3
Fuel System	7.3
Battery(ies)	7.3
Miscellaneous	7.3
Security Considerations	7.3

SECTION 8 • CARE & REFINISHING

Maintenance and Reconditioning	8.1
Fiberglass/Gelcoat	8.1
Stains & Scratches	8.1
Special Care for Boats that are Moored	8.1
Care For Bottom Paint	8.1
Bilge/Engine Compartment	8.1
Topside Areas	8.2
Acrylic Plastic Sheeting	8.2
Upholsteries	8.2
Cleaning Recommendations	
for Marine Fabrics	8.2

SECTION 9 • SERVICE INFORMATION

Useful Service Information 9.1
Service Guide 9.2
Quick Reference Departure Checklist 9.4
Boarding the Boat 9.4
Preparing to Depart and After Launching 9.5
Starting the Engine 9.5
While Underway 9.6
Returning to Port 9.6
Securing the Boat 9.7
If the Engine Does Not Start 9.7

INDEX

LIST OF ILLUSTRATIONS

Information in this publication is based upon the latest product specifications available at printing. Sea Ray Boats, Inc. reserves the right to make changes at any time, without notice, in the colors, equipment, specifications, materials and prices of all models, or to discontinue models. Should changes in production models be made, Sea Ray® is not obligated to make similar changes or modifications to models sold prior to the date of such changes.

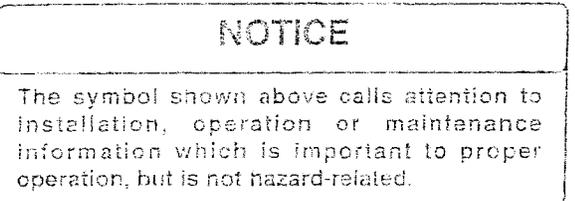
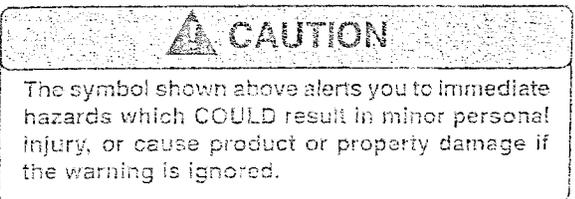
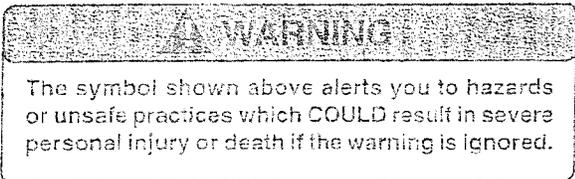
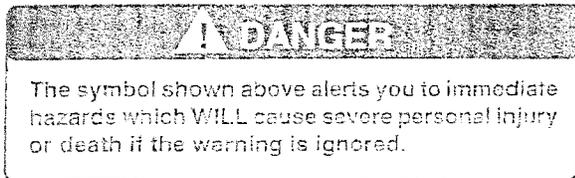
Sport Boat Owner's Manual
Printed in the U.S.A. May 1999
Revised: May 2000, June 2000, October 2000
© Sea Ray Boats, Inc. • A Brunswick Company
MRP #1291897

The following are registered trademarks of the Brunswick Corporation: Sea Ray®, The SR Wave Logo.



Hazard Warning Symbols

The hazard warning symbols shown below are used throughout this manual to call attention to potentially dangerous situations which could lead to either personal injury or product damage. We urge you to read these warnings carefully and follow all safety recommendations.



SECTION 1 • GENERAL INFORMATION

INTRODUCTION

This manual has been compiled to help you operate your Sea Ray® boat safely and pleasurably. It contains details of the craft, typical equipment supplied or fitted, systems and information pertaining to operation and maintenance. Please read this manual carefully, and familiarize yourself with the operation of all systems before using your craft.

If you are not familiar with the Sea Ray® boat you have purchased, for your own comfort and safety, please ensure that you obtain handling and operating experience before taking command. Your dealer or yacht club can direct you to sources of instruction.

Store this manual in a secure area, and transfer it to the new owner when you sell the vessel.

WARRANTY & CONSTRUCTION

STANDARDS

Sea Ray® provides a Warranty Statement describing terms and conditions under which defects in your boat will be repaired. Familiarize yourself with the warranty and follow instructions regarding proper operation and maintenance. Failure to follow instructions can void the warranty.

Sea Ray® also outlines Construction Standards detailing industry standards followed in building your boat (see the *Welcome* page at the beginning of the manual). Consult your marine dealer for any additional information.

REGISTRATION

In addition to the registration requirements for your boat in the state where it is used most frequently, many states require **additional registration** when an out-of-state boat is used within their boundaries. Contact state boating authorities or any marine dealer for registration requirements.

EDUCATION

Although this manual is extremely informative, it does not contain everything you need to know regarding the safe operation of your Sea Ray® boat. We strongly urge you to get instruction in proper handling and navigation before taking command.

Some agencies you may consider which offer boating courses are:

- U.S. Coast Guard Auxiliary
- United States Power Squadrons
- Canadian Power and Sail Squadrons
- Red Cross
- State Boating Offices
- Yacht Clubs

Consult your marine dealer for an agency near you or check your telephone directory. Information is also available by calling 1-800-336-BOAT for the Boat U.S. Foundation. **International owners/operators should consult their marine dealer.**

Many books provide information that is valuable to you as a boat owner/operator. A book that is considered to be the most well-rounded is *Chapman – Piloting, Seamanship and Small Boat Handling*, by Elbert S. Maloney, published by Hearst Marine Books. In addition, there are many free pamphlets available from your local Coast Guard Auxiliary. It is highly recommended that you read additional publications other than just this owner's manual to become a well-informed boat owner/operator.

DEALER RESPONSIBILITIES

Although your boat has undergone a series of rigid inspections throughout the manufacturing process, the final factory check is not the last one before you take delivery. Your dealer must perform additional pre-delivery checks and service your Sea Ray® in preparation for delivery. Dealer responsibilities include providing:

- An adequate orientation in the general operation of your Sea Ray® boat.
- An "In Service Form" to be completed and signed by both the dealer and the consumer after inspection of boat by consumer.
- An explanation of safety considerations regarding the use of containment systems and components.
- A complete Owner's Manual Packet containing literature and information regarding your Sea Ray® boat and its separate warranted products, warranty and registration cards, and operation, installation and maintenance instructions.
- A review of all warranties, pointing out the importance of mailing warranty and registration

forms to various manufacturers within the required time limits and assistance in accomplishing same.

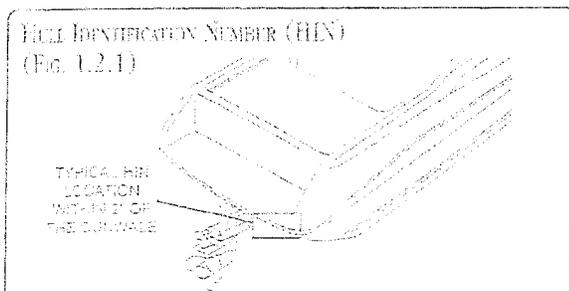
- Instructions on obtaining local and out-of-area service during and out of warranty periods.

OWNER/OPERATOR RESPONSIBILITIES

The owner/operator is responsible for examining the boat before accepting delivery to ensure all systems are working properly. In addition, the owner/operator is responsible for understanding and compliance with the following procedures and operational requirements:

- State registration
- Warranty registration
- Warranty terms and conditions
- Rules of the road
- Break-in procedure
- Return boat to dealer for inspection after 50 hours of operation in salt water, 100 hours fresh water, or at the end of the first year, whichever comes first
- Proper maintenance of boat and its systems
- Safety equipment
- Safety training of passengers and crew
- Insurance
- Knowledge of boat systems
- Seaworthiness/operational inspection
- Safe operating practices
- Avoiding use of drugs/alcohol
- Environmental regulations
- Accident reports
- Assistance to other boaters

The "Hull Identification Number," located on the transom, is on permanent file with Sea Ray® Boats, Inc. Data is kept regarding equipment and accessories, as well as dealer/shipping information. It is the most important identifying factor and must be included in all correspondence and orders. Failure to include this number will only create delays. Also of vital importance are the engine serial



numbers and parts numbers. When writing about or ordering parts for your engine always include these numbers.

INSURANCE

You must establish insurance coverage before operating your boat for the first time. As the boat owner, you are legally responsible for damage or injury caused by your boat. Insurance also protects against loss by fire, theft or other causes and provides liability protection against accidents.

PARTS & EQUIPMENT

Personal equipment and supplies accumulated on a boat can amount to a great deal more weight than the owner realizes, and may result in a loss of speed. Keep such weight to a reasonable minimum. When accessories or extra items are added, consider their weight and select their location to maintain the desired trim of the boat, fore, aft and athwartship. A drop in RPM will be noted as weight is added, and it may be advisable to change propeller size to compensate. Because of these variables, Sea Ray® cannot guarantee performance standards such as speed. Consult your Sea Ray® dealer when considering the addition of any item of major weight.

WARNING

Use only Marine Rated parts to replace such items as starters, distributors, alternators, generators, carburetors, fuel pumps, etc. Do not use Automotive Parts because they are not ignition protected and could cause a fire or explosion.

SERVICING YOUR SEA RAY

It is important that the owner/operator follow the recommended maintenance outlined by the Service Guide (see pg. 9.2). Please keep in mind that this guide is based on average operating conditions and recommended maintenance should be increased if above average use or severe operating conditions exist.

Replacement parts or additional equipment may be purchased through your Sea Ray® dealer.

To find a SEA RAY® dealer in your area, call:

Sea Ray® Customer Service:

Phone: 1-800-SREOATS

FAX: 1-314-213-7676

To find repair and parts facilities for equipment installed on your boat, refer to the original equipment manuals which can be found in your owners packet.

CERTIFICATIONS & SPECIFICATIONS

MANUFACTURER'S CERTIFICATIONS

A **CE mark** means that your Sea Ray® Boat has been certified with applicable International Organization for Standardization directives.

NMMA certification means that your Sea Ray® Boat has been judged by the National Marine Manufacturers Association to be in compliance with

applicable federal regulations and American Boat and Yacht Council standards.

The following information is furnished in compliance with ISO directives and RSG guidelines in effect as of the date of publication of this manual. Sea Ray® will provide additional information if standards are amended.

The following information, required for export of the vessel, must be filled out by the dealer:

Boat Model:	_____
Design Category:	<input type="checkbox"/> Ocean <input type="checkbox"/> Offshore <input type="checkbox"/> Inshore <input type="checkbox"/> Sheltered Waters
Hull Identification Number:	_____
Maximum Recommended Load:	_____
Recommended Number of Passengers:	_____
Maximum Rated Engine Power:	_____
<u>Engine Installed</u>	
Manufacturer:	_____
Model and Number:	_____
<u>Weight of Craft</u>	
With Engine and Permanently Attached Items:	_____
Without Engine:	_____

CERTIFICATION DESIGN CATEGORIES

The definitions of the Design Category are as follows:

- **Ocean:** Designed for extended voyages where conditions may exceed wind force 8 (Beaufort scale) (47 mph and above) and significant wave heights of 4 meters (13.12 feet) and above, and vessels largely self-sufficient.
- **Offshore:** Designed for offshore voyages where conditions up to, and including, wind force 8 (39-46 mph) and significant wave heights up to, and including, 4 meters (13.12 feet) may be experienced.
- **Inshore:** Designed for voyages in coastal waters, large bays, estuaries, lakes and rivers

where conditions up to, and including, wind force 6 (25-31 mph) and significant wave heights up to, and including, 2 meters (6.56 feet) may be experienced.

- **Sheltered Waters:** Designed for voyages on small lakes, rivers, and canals where conditions up to, and including, wind force 4 (13-18 mph) and significant wave heights up to, and including, 0.5 meters (1.64 feet) may be experienced.

The "significant wave height" is considered to be the primary factor for determining design category and other parameters (e.g. meteorological) are descriptions of when these wave heights may be expected to occur. (Refer to page 1.10 for weather information.)

MANUFACTURER'S SPECIFICATIONS

Sea Ray® provides specific information about your boat in compliance with ISO 10240, American Boat and Yacht Council (ABYC) Technical Report T-24 and other applicable standards and directives. The following is included in the Owner's Manual Packet supplied with the boat.

US—DOMESTIC BOATS

- Warranty Terms & Conditions
 - Hull Identification Number
 - Engine/Transmission Serial Numbers
 - Type of Boat/Series Name
 - Dimensions – Feet (Meters):
 - Length
 - Beam
 - Vertical Clearance
 - Draft
 - General Arrangements:
 - Deck Plan
 - Interior Plan
 - Profile
 - Propulsion:
 - Engine Type
 - Propeller
 - Electrical:
 - Rated Amperage
 - Voltages – Frequency – Phases
 - Battery Capacity
 - Switches, Fuses, Circuit Breakers (location, type)
 - Wiring Diagrams
 - Tank Capacities – Gallons (Liters):
 - Fuel
 - Fresh Water
 - Holding Tanks
- System Diagrams:
 - Water
 - Fuel
 - Exhaust
 - Ventilation
 - Bilge Pumping
 - Steering
 - Engine Cooling
 - Stability/Flotation Capability
 - Strong Points for Docking & Lifting
 - Warning Labels, Part Numbers & Ordering Procedure
 - Standard Equipment
 - Optional Equipment
 - Reference Manuals for Other Equipment
 - Contacting Manufacturers of Other Systems
 - Contacting Factory Service Department
 - Construction Features
 - Construction Standards

INTERNATIONAL—NON DOMESTIC BOATS

- Type of Boat/Series Name
- Hull Identification Number
- Maximum Recommended Load
- Propulsion:
 - Maximum Rated Engine Power
 - Manufacturer
 - Model and Number
- Stability/Flotation Capability
- Weight
 - With Engine
 - Without Engine

NAUTICAL TERMS

Abeam – object 90 degrees to center line on either side of boat.

Abaft – a point on a boat that is aft of another.

Aft – toward the rear or stern of the boat.

Beam – the width of a boat.

Bow – the fore part of a boat.

Bow Eye – Bolt with looped head mounted on extreme forward part of bow.

Bulkhead – vertical partition in a boat.

Chine – meeting juncture of side and bottom of boat.

Chock – deck fitting, used as guides for mooring or anchor lines. Also, a wedge to stop wheels from rolling.

Cleat – deck fitting with arms or horns on which lines may be made fast.

Cockpit – an open space from which a boat is operated.

Deck – upper structure which covers the hull between gunwales.

Draft – depth of water required to float boat and its propulsion system.

Fathom – six feet.

Fenders – rope or plastic pieces hung over the side to protect the hull from chafing.

Freeboard – height of exposed hull from water line to deck.

Ground tackle – general term referring to anchors, anchor lines, etc.

Gunwale (pronounced gun'l) – meeting juncture of hull and deck.

Hatch – an opening in deck to provide access below.

Head – toilet or toilet area in a boat.

Headroom – vertical distance between the deck and cabin or canopy top.

Helm – steering console.

Hull – the basic part of a boat that provides buoyancy to float the weight of the craft and its load.

Keel – the major longitudinal member of a hull; the lowest external portion of a boat.

Knot – unit of speed in nautical miles per hour.

Lee – the side that is sheltered from the wind.

PFD – Personal Flotation Device; life preserver.

Port – term designating left side of the boat.

Rudder – Movable fixture at the stern used for steering.

Sport Boats

Scupper – hole permitting water to drain overboard from deck or cockpit.

Sheer – curve or sweep of the deck as viewed from the side.

Snub – to check or tighten a line suddenly.

Starboard – term designating right side of the boat

Stern – the aft end of a boat.

Stern drive – outboard unit of an inboard/outboard (I/O) engine installation.

Stringer – longitudinal members fastened inside the hull for additional structural strength.

Transom – transverse part of stern.

Wake – disturbed water that a boat leaves behind as a result of forward motion.

Windward – toward the direction from which the wind is blowing.

SAFETY

WARNING

A qualified operator must be in control of the boat at all times. Do not operate the boat while under the influence of alcohol or drugs. Never operate your boat at speeds which exceed the operator's ability to react if an emergency develops. At night, turn on the appropriate navigation lights and cruise at a reduced speed that will allow you plenty of time to avoid dangerous situations.

NOTICE

The law requires the owner/operator to assist any person or boat in distress as long as he does not endanger his boat.

The tremendous feeling of freedom inherent in boating can be overshadowed by disaster if you ignore safety precautions. This manual presents basic guidelines, but it does not address every possible risk you may encounter. You are strongly urged to:

- Take a boating safety course.
- Get hands-on training from your boat dealer.
- Regularly review safety requirements.

MINIMUM REQUIRED EQUIPMENT

Consult your national boating law enforcement agency.

EQUIPMENT	CLASS A <i>(Less than 4.8 meters [16 feet])</i>	CLASS 1 <i>(4.8 to less than 7.9 meters [16 to less than 26 feet])</i>	CLASS 2 <i>(7.9 to less than 12.2 meters [26 to less than 40 feet])</i>	CLASS 3 <i>(12.2 to less than 19.8 meters [40 to less than 65 feet])</i>
Bell, Whistle	Some means of making efficient sound signal, for example, whistle or air horn and a bell audible for .5 nautical mile.			
Fire Extinguisher -Portable <i>(if no fixed fire extinguishing system is installed in machinery spaces)</i>	At least one (ABYC recommends two for boats 4.8 to less than 7.9 meters [16 to 26 feet]) B-I type Coast Guard approved portable marine fire extinguisher. (Not required on outboard motor boats less than 7.9 meters [26 feet] in length without permanently installed fuel tanks and not carrying passengers for hire, provided construction of boat will not permit entrapment of explosive or flammable gases or vapors.)		At least two (ABYC recommends at least three) B-I type approved portable marine fire extinguishers, or at least one B-II type Coast Guard approved portable marine fire extinguishers.	At least three (ABYC recommends at least four) B-I type approved portable marine fire extinguishers, or at least one B-I type plus one B-II type Coast Guard approved portable marine fire extinguisher.
Fire Extinguisher -Portable <i>(if fixed fire extinguishing system is installed in machinery spaces)</i>	None	None	At least one B-I type approved portable marine fire extinguisher.	At least two B-I type approved portable marine fire extinguishers, or at least one B-II type Coast Guard approved portable marine fire extinguisher.
Lights	Required between sunset and sunrise or in reduced visibility.			
Muffling	Efficient muffling device or system to prevent excessive or unusual engine noise.			
Personal Flotation Devices (PFDs)	One Coast Guard approved Type I, II or III device for each person aboard, plus one throwable Type IV device. Type V device is acceptable if worn for approved use. Always wear a PFD when boating.			
Ventilation	Boats with closed compartments or permanently installed fuel tanks must be equipped with an efficient natural or mechanical bilge ventilator or meet applicable Coast Guard construction standards for fuel and electrical systems.			

- Maintain your boat and its systems.
- Have your boat inspected at least annually by a qualified mechanic or dealer.

Refer to the table of minimum required safety equipment on page 1.6.

EXPLANATION OF SAFETY PRECAUTIONS

This manual provides safety precautions which must be observed when operating or servicing your boat.

The following precautions appear throughout the manual. Learn to recognize the degree of precaution and understand the associated instructions. The precautions listed are not all-inclusive. Always use common sense in the operation of your boat.

WARNING LABELS

Mounted at key locations throughout the boat, warning labels advise the owner/operator of imperative safety precautions to follow when operating and/or servicing equipment. **Do not remove or obstruct any warning label.** Replace any label which becomes illegible. See the Parts Manual for replacement part numbers and ordering procedure.

Four basic types of labels include:

⚠ DANGER

DANGER – Immediate hazards which **WILL** result in severe personal injury or death if the warning is ignored.

⚠ WARNING

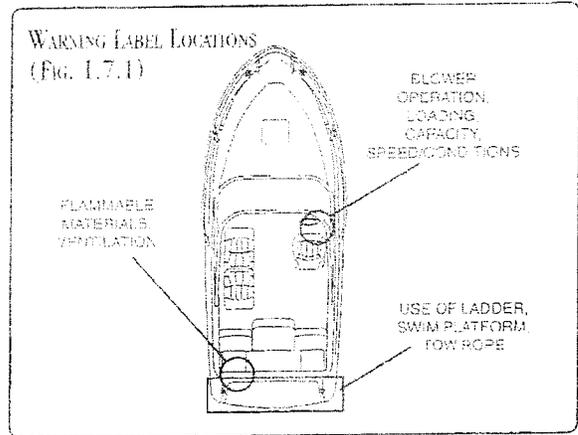
WARNING – Hazards or unsafe practices which **COULD** result in severe personal injury or death if the warning is ignored.

⚠ CAUTION

CAUTION – Hazards or unsafe practices which could result in minor injury or product or property damage if the warning is ignored.

NOTICE

Information which is important to proper operation or maintenance, but is not hazard-re-



LIFESAVING EQUIPMENT

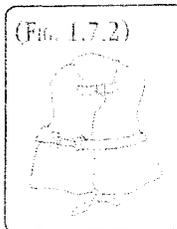
⚠ WARNING

Always wear a personal Flotation Device (PFD) when boating.

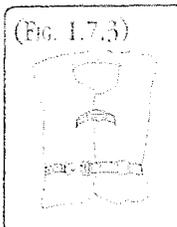
Even strong swimmers can tire quickly in the water and drown due to exhaustion, hypothermia, or both. The buoyancy provided by a personal flotation device (PFD) will allow the person who has fallen overboard to remain afloat with far less effort and heat loss, extending survival time necessary to find and retrieve them.

Boat operators are required to carry one wearable personal flotation device (Type I, II, III or V) for every person on board. Boats must also have at least one throwable device (Type IV).

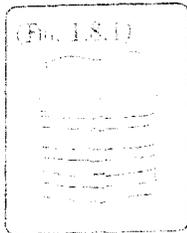
PFD Classifications:



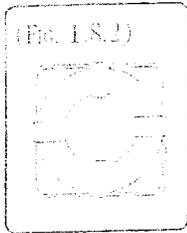
(Fig. 1.7.2)
Off-Shore Life Jacket (Type I) – most buoyant, it is designed to turn an unconscious person face up; used in all types of waters where rescue may be slow, particularly in cold or rough conditions.



(Fig. 1.7.3)
Near-Shore Life Vest (Type II) – “keyhole” vest with flotation-filled head and neck support is also designed to turn a person face up, but the turning action is not as pronounced; used in calm, inland waters or where quick rescue is likely.



Flotation Aid (Type III) – vest is designed so conscious wearers can turn face up; often designed for comfort while engaged in sports such as skiing



Throwable Devices (Type IV) – horseshoe buoys, ring buoys and buoyant cushions are designed to be grasped, not worn.



Special-Use Devices (Type V) – sailboat harnesses, white-water vests, float coats, and hybrid vests which have minimum inherent buoyancy and an inflatable chamber.

Before purchasing PFDs, ensure that there is an attached tag indicating they are approved by the U.S. Coast Guard or by your national boating law enforcement agency.

Children and non-swimmers must wear PFDs at all times when aboard. All passengers and crew should wear them. A loose PFD is often useless in an emergency.

WARNING

The law requires that PFDs must be readily accessible, if not worn, that is, removed from storage bags and unbuckled.

Throwable devices must also be readily available and right at hand.

The operator is responsible for instructing everyone aboard on the location and use of PFDs.

Size PFDs for the wearer. Children require special attention in the use of PFDs.

Test PFD buoyancy at least once a year.

ADDITIONAL RECOMMENDED EQUIPMENT

In addition to the required equipment, the following list includes items which would be wise to include onboard your boat.

- Visual distress signals for day and night use (required in some areas; consult local regulations)

- Marine radiotelephone
- Charts of your intended cruising area
- Spare keys
- Emergency position-indicating radio beacon
- Portable radio with weather band
- Waterproof flashlight(s)
- Extra batteries
- Mooring lines
- Fenders
- Lead line
- Ground tackle (at least 2 anchors, rode, shackles)
- Boat hook
- Manual bilge pump
- Spare parts kit (spark plugs, fuses, etc.)
- Instruction manuals for engine and accessories
- First aid kit
- Tool kit:
 - Assorted screwdrivers (Phillips and flat blade)
 - Pliers (regular, vise-grip, and tongue & groove)
 - Wrenches (box, open-end, allen, adjustable)
 - Socket set (metric or U.S. standard as appropriate)
 - Electrical tape

IMPAIRED OPERATION

Special attention must be given to the effects of alcohol and drugs while boating. No other single factor is involved in so many marine accidents and deaths. The detrimental effects of alcohol and drugs are increased by the wind, waves and sun, quickly impairing your ability to react. Boating laws are far more strict today than in the past, and enforcement is tougher on those who use alcohol and drugs when boating.

WARNING

CONTROL HAZARD – Federal laws prohibit operating a boat while under the influence of alcohol or drugs. These laws are vigorously enforced.

FAILURE TO USE HANDHOLD

Handholds are for your safety. Hold onto handholds to maintain safety and balance. Failure to use handholds could result in losing balance, hitting parts of the boat, falling overboard or even ejection from the boat.

! WARNING

PERSONAL INJURY HAZARD

Use handholds wherever they are provide.

LOAD CAPACITY

The certification plate, located on the hull near the helm or transom indicates maximum weight and number of persons your boat can handle under normal sea conditions. **Do not exceed the load capacities stated.**

The U.S. Coast Guard requires boats less than 6.4 meters (20 feet) to have a certification plate stating the maximum number of persons and the maximum weight the vessel will handle safely under normal conditions.

International (ISO) requirements state that any craft up to 24 meters (78.7 feet) must display a certification plate.

The information present on the certification plate does not relieve the operator from responsibility. Use common sense and sound judgement when placing equipment and/or passengers in your boat.

- The number of seats does not necessarily indicate how many people a boat can safely carry.
- When operating on-plane (above idle speed), allow no more passengers than there are real seats, and insist that passengers sit down in those seats.

! WARNING

PERSONAL INJURY HAZARD

When underway, keep passengers clear of areas not designed for riding. Especially hazardous areas include seat backs, bow, gunwale, transom platform and fore and aft decks.

- Do not permit passengers to ride on parts of your boat not designed for such use.
- Overloading violates regulations. Do not carry more weight or passengers than indicated on the certification plate.

! DANGER

EXTREME HAZARD – Do not use sun pads (if equipped) while craft is underway.

- Overloading, improper loading and distribution of weight are significant causes of accidents. Allow yourself an extra margin of safety in rough water.

CERTIFICATION PLATES (EXAMPLES)
Fig. 1.9.1

U.S. COAST GUARD MAXIMUM CAPACITIES	U.S. COAST GUARD MAXIMUM CAPACITIES
PERSONS OR SEATS	PERSONS OR SEATS
THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION. MANUFACTURER: SEA RAY BOATS, INC. MODEL: _____	THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION. MANUFACTURER: SEA RAY BOATS, INC. MODEL: _____
DESIGN COMPLIANCE WITH HAMA REQUIREMENTS BELOW. VERIFIED BY: _____ RESPONSIBLE FOR PRODUCTION CONTROL.	DESIGN COMPLIANCE WITH HAMA REQUIREMENTS BELOW. VERIFIED BY: _____ RESPONSIBLE FOR PRODUCTION CONTROL.
LOAD AND HP CAPACITY STEERING AND ELECTRICAL SYSTEMS VENTILATION - LEVEL FLUTATION MANEUVERABILITY - NAVIGATION LIGHTS NATIONAL MARINE MANUFACTURERS ASSN.	LOAD AND HP CAPACITY STEERING AND ELECTRICAL SYSTEMS VENTILATION - LEVEL FLUTATION MANEUVERABILITY - NAVIGATION LIGHTS NATIONAL MARINE MANUFACTURERS ASSN.
U.S. COAST GUARD MAXIMUM CAPACITIES	U.S. COAST GUARD MAXIMUM CAPACITIES
PERSONS OR SEATS	PERSONS OR SEATS
THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION. MANUFACTURER: SEA RAY BOATS, INC. MODEL: _____	THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION. MANUFACTURER: SEA RAY BOATS, INC. MODEL: _____
DESIGN COMPLIANCE WITH HAMA REQUIREMENTS BELOW. VERIFIED BY: _____ RESPONSIBLE FOR PRODUCTION CONTROL.	DESIGN COMPLIANCE WITH HAMA REQUIREMENTS BELOW. VERIFIED BY: _____ RESPONSIBLE FOR PRODUCTION CONTROL.
LOAD AND HP CAPACITY STEERING AND ELECTRICAL SYSTEMS VENTILATION - LEVEL FLUTATION MANEUVERABILITY - NAVIGATION LIGHTS NATIONAL MARINE MANUFACTURERS ASSN.	LOAD AND HP CAPACITY STEERING AND ELECTRICAL SYSTEMS VENTILATION - LEVEL FLUTATION MANEUVERABILITY - NAVIGATION LIGHTS NATIONAL MARINE MANUFACTURERS ASSN.

POWER CAPACITY

Do not exceed the maximum engine power rating stated on the builder's plate attached to your boat (outboard only), or the largest available engine option for your boat offered by Sea Ray® (see Fig. 1.9.1).

PROPELLERS

Your Sea Ray® has been equipped with a propeller which our tests have shown to be the best suited for general use under normal conditions and load. In some situations you may wish to change propellers to give your boat slightly different performance characteristics. In general, changing to a lower pitch propeller will increase acceleration and load-pulling ability, but with a slight decrease in top speed. Conversely, moving to a higher pitch propeller will attain higher top speed with a light load, but will sacrifice acceleration and power. Your particular requirements should be discussed with your Sea Ray® dealer. **Under no circumstances use a propeller which allows the engine to operate at higher than recommended RPM.**