FOUR WINNS®

090-2858

310 HORIZON™ OWNERS MANUAL

FOUR WINNS®

Dear Four Winns Owner,

On behalf of everyone at Four Winns, congratulations – and thank you for choosing a Four Winns boat.

Four Winns is committed to customer satisfaction. If you are not completely satisfied with any aspect of your boat's condition upon delivery – or if it does not meet your expectations at any time during your ownership experience – please contact your Four Winns Dealer or our customer service department. In the event they are unable to assist you, or if you do not receive the response you expect, I invite you to contact me directly. Your feedback is invaluable to us as we strive to become the world's most customer-focused recreational boat brand.

A thorough review of this Owner's Manual will help you make the most of your boating experience. It not only includes information specific to the model you have purchased, but guidelines for better boating as well. Please take time to familiarize yourself with its contents, and to read – and reread often – important sections.

Once again, thank you and welcome to the Four Winns family.

Sincerely,

Jeffrey Olson
President

Phone: 231 775-1351
Fax: 231 779-2345
Email: boating@fourwinns.com

FOUR WINNS®

Table of Contents

PREFACE 9

SAFETY MESSAGES 10

OPERATION 16

A - 1 GENERAL 16
A - 2 COMPONENT SYSTEMS 16
A - 3 SAFETY EQUIPMENT 16
A - 4 PASSENGER SAFETY 16
A - 5 RULES OF THE ROAD 16
A - 6 LIGHTNING 16
A - 7 DRUGS AND ALCOHOL 17
A - 8 PRE-CRUISE SYSTEM CHECK 17
A. Before Starting The Engines 17
B. After Starting The Engine 17
A - 9 ENGINE OPERATIONAL PROCEDURES 17
A. Before Starting 17
B. Cold/Warm Engine Start - EFI Engines 18
F. Shifting and Control Speed 18
G. Stopping Engine 19
A - 10 GROUNDING AND TOWING 19
A - 11 BOATING EDUCATION 20
A. Boating Courses 20
B. Boating Manuals or Literature 20
C. Charts and Maps 20
D. Laws and Regulations 20
A - 12 BOAT OWNER REGISTRATION 20
A - 13 ACCIDENT REPORTING 21
A - 14 DISCHARGE OF OIL 21
A - 15 DISPOSAL OF PLASTICS & OTHER GARBAGE 21
A - 16 MARPOL TREATY 21

BOATING SAFETY 23

B - 1 GENERAL 23
A. Required Safety Equipment 23
B. Personal Flotation Devices (PFD's) 23
C. PFD Types 23
D. PFD Pointers 24
E. Fire Extinguisher 24
F. Visual Distress Signal Devices 25
G. Sound Signaling Devices 25
H. Navigation Lights 26
I. Additional Recommended Equipment 26
B - 2 CARBON MONOXIDE 26
A. Properties and Characteristics of Carbon Monoxide 27
B. What Makes Carbon Monoxide 27
C. How a Person is Affected by Carbon Monoxide 27
D. Effects of Carbon Monoxide 27
E. Symptoms 27
F. Treatment (Evaluate, Ventilate, Evacuate, Investigate, Take Corrective Action) 27
G. Inspection 28
H. Operation 28

I. Boathouses, Sea Walls and Confined Spaces 28
J. The Effect of Boats Moored Along Side....29
K. Backdrafting (Station Wagon Effect)....29
L. Accumulation of Exhaust Gases-Swim Platform....30
M. Dangerous Activity - “Teak Surfing”/“Dragging” 30
N. Cabin Appliances 30
O. Air Conditioning....30
P. Ventilation of Accommodation (Occupied) Spaces 30
Q. Running of Engines in Idle....30
R. Altitude and Sea Conditions 30
S. Portable Generator Sets....31
T. Maintenance - Engine Performance 31
U. Maintenance - External Conditions....31
V. Maintenance - Exhaust System Integrity 31
W. Maintenance - Ventilation Systems 32
X. Maintenance - Bulkhead and Deck Integrity 32
Y. Maintenance - Air Conditioning....32
Z. Maintenance - Liquid Drains....32
AA. Carbon Monoxide Monitor 32
B - 3 SAFE BOATING PRACTICES....33
A. Drugs and Alcohol....33
B. Safe Operation....33
C. Passenger Safety....34
D. Propeller....34
E. First Aid....34
F. Operation By Minors 34
G. “Rules of the Road” 34
H. Voluntary Inspections....35
I. Safe Boating Courses 35
J. Anchoring....35
B - 4 WATER SPORTS....36
A. Water Sport Guidelines 36
B. Water Skiing/Wakeboarding/Kneeboarding 37

BASIC SEAMANSHIP....38

C - 1 GENERAL....38
A. Boating Regulations 38
B. Rules of Seamanship 38
C - 2 NAVIGATIONAL AIDS 40
A. International Association of Lighthouse Authorities System B (IALA-B) 40
B. Lateral Markers 40
C. Safe Water Markers 40
D. The Uniform State Waterway Marking System....41
E. A Special Sign....41
F. Noise....41
C - 3 RECOMMENDED READING....41
C - 4 CONTACTS 41
C - 5 OWNER’S LOGS AND RECORDS....42
C - 6 NAVIGATIONAL AIDS CHART 42

WARRANTY AND SERVICE 43

D - 1 FOUR WINNS WARRANTY POLICY 43
D - 2 DECK/HULL STRUCTURE WARRANTY 43
D - 3 WARRANTY REGISTRATION 43
D - 4 TRANSFER OF WARRANTY 43
D - 5 PRE-OWNED UNIT REGISTRATION 43
D - 6 INSURANCE COVERAGE 44
D - 7 SERIAL NUMBER RECORD 44
D - 8 PRE-DELIVERY SERVICE 44
D - 9 REPLACEMENT PARTS 44
D - 10 OWNER'S RESPONSIBILITIES 44
D - 11 CONSTRUCTION STANDARDS 45
D - 12 WINNGEAR 45
D - 13 NAME/ADDRESS CHANGE FORM 46
D - 14 WARRANTY REGISTRATION TRANSFER REQUEST 48

ENGINES AND INSTRUMENTATION 50

E - 1 GENERAL 50
E - 2 ENGINE EXHAUST 50
E - 3 ENGINES 51
E - 4 PROPELLERS 51
A. Diameter 51
B. Pitch 51
C. Prop Slip 51
E - 5 RUNNING ANGLE & POWER TRIM/TILT 52
A. Power Trim 52
B. Power Tilt 52
E - 6 TRIM TABS 52
A. Control Listing 53
B. Induce Planing & Controlling Trim Angle 53
C. Trim Tab Maintenance 54
E - 7 INSTRUMENTATION 54
A. Tachometer/Hour Meter Combination Gauge 54
B. Speedometer 55
C. Temperature Gauge 55
D. Oil Pressure Gauge 55
E. Voltmeter 55
F. Fuel Gauge 56
G. Power Trim Gauge 56
H. Depth Sounder 56
I. Four Position Ignition Switch 57
J. Emergency Stop Switch 57
K. Alarm Systems 58
L. Compass 58
M. Navigational Equipment 58
N. Instrument Maintenance 59

CONTROL SYSTEMS 60

F - 1 CONTROL OPERATION - GENERAL 60
F - 2 CONTROL OPERATION - Engine Starting 60
F - 3 NEUTRAL SAFETY SWITCH 60

F - 4 CONTROL SYSTEM MAINTENANCE 61

STEERING SYSTEMS 62
G - 1 GENERAL 62
A. Rotary Steering 62
B. Tilt Steering 62
C. Power Steering 62
G - 2 PROPELLER TORQUE 63
G - 3 STEERING SYSTEM MAINTENANCE 63
A. General Maintenance 63
B. Rotary System Maintenance 63
C. Winter Storage 64

ELECTRICAL SYSTEMS 65

H - 1 GENERAL 65
H - 2 SINGLE ENGINE - DUAL BATTERY SYSTEM 66
A. Installation 66
B. Battery Switch Operation - Single 66
H - 3 DUAL ENGINE - TRIPLE BATTERY SYSTEM 67
A. Installation 67
B. Battery Switch Operation - Dual 67
H - 4 BATTERT CHARGER 68
H - 5 VOLTMETER 68
H - 6 12 VOLT ELECTRICAL EQUIPMENT 68
A. Helm Equipment 68
B. Installation of Additional 12 Volt Equipment 70
C. Interior Equipment 70
H - 7 12 VOLT ELECTRICAL SYSTEM SHUTDOWN PROCEDURES 70
H - 8 120 (220) VOLT ELECTRICAL SYSTEM 70
H - 9 DOCKSIDE OPERATION 71
A. Shore Power Connections 71
B. 120 Volt AC Equipment 72
C. Reverse Polarity Indicator 72
D. Ground Fault Current Interrupters (GFCI) 73
H - 10 GENERATOR 73
H - 11 ELECTRICAL SYSTEM MAINTENANCE 74
A. Battery Maintenance 74
B. Electrical Wiring Maintenance 74
H - 12 STRAY CURRENT CORROSION 75
A. General 75
B. Galvanic Corrosion 75
C. Corrosion Prevention 75

FUEL SYSTEMS 76

I - 1 GASOLINE FUEL SYSTEMS 76
A. System Testing 76
B. Fuel Fills 76
C. Anti-Syphon Valves 77
D. Fuel Gauge 77
E. Fuel Senders 77
F. Fuel Filters 78
G. Use and Maintenance 78

I - 2 FUEL STANDARDS 78
A. Problems With Alcohol in Gasoline 78
B. Recommendations 79
I - 3 FUELING INSTRUCTIONS 79

WATER AND WASTE SYSTEMS 81

J - 1 GENERAL 81
J - 2 DISINFECTING THE WATER SYSTEM 81
J - 3 FRESH WATER SYSTEMS 82
A. Cockpit Refreshment Center 82
B. Aft Shower 82
C. Head Shower 83
J - 4 GRAY WATER SYSTEM OPTION 83
J - 5 HEADS 83
A. Enclosed Heads 83
B. Porcelain Head - Standard 84
C. VacuFlush® Sanitation System - Optional 84
D. Dockside Waste Pump-Out 85
E. Head With Overboard Discharge - Optional 86
J - 6 SYSTEM MAINTENANCE 86
A. Clean Vents and Screens 87
B. Winterizing the Water System 87

VENTILATION AND DRAINAGE SYSTEMS 98

K - 1 ENGINE COMPARTMENT VENTILATION 98
A. Natural Ventilation System 98
B. Forced Air Ventilation 98
C. Engine Ventilation System Maintenance 98
K - 2 DAY BERTH & HEAD VENTILATION 98
K - 3 HULL DRAINAGE SYSTEMS 98
A. Transom Drain 98
B. Bilge Pumps 99
C. Sump Pump 99
D. Liner Drains 99
E. Bilge Compartment Drainage 99

INTERIOR EQUIPMENT 100

L - 1 DAY BERTH EQUIPMENT 100
A. Microwave 100
B. Stereo System 100
C. TV and DVD Player Option 100
L - 2 COCKPIT EQUIPMENT 101
A. Refreshment Center 101
B. Refrigerator (Optional) 101
C. Cockpit Table with Mount 101
D. Glovebox 102
E. In-Floor Storage Locker and Ski Locker 102
F. Walk-thru Doors 102
G. Fire Extinguishing System (Optional) 103
H. Inflator (Optional) 103
L - 3 AIR CONDIIONING (Optional) 103

EXTERIOR EQUIPMENT 104

M - 1 RAILS & DECK HARDWARE 104
A. Rails 104
B. Cleats 104
C. Transom Ski Tow 104
D. Bow Scuff Plate Option 105
E. Maintenance 105
M - 2 WINDSHIELDS 105
M - 3 INTEGRATED SWIM PLATFORM - LADDER 106
M - 4 DOCKING LIGHTS 107
M - 5 THRU-HULL EXHAUST 107
M - 6 WINDLASS (Optional) 107
M - 7 WINDSHIELD WIPER (Optional) 108
M - 8 STAINLESS STEEL ARCH (Optional) 108

UPHOLSTERY 110

N - 1 SEATING 110
A. Bow Seating 110
B. Port Lounger 110
C. Bow Fill-in Cushions 110
D. Double-Wide Helm Seat 110
E. Engine Hatch with Electric Lifts 111
F. U-Shaped Cockpit Seating 112
G. Motorhood Walk-over Backrest and Cushion (Fill-in) 113
H. Stern Loungers (Sunpads) 113
N - 2 EXTERIOR UPHOLSTERY CARE 116
A. Cleaning Vinyl 116
B. Exterior Carpets 118
C. Cleaning and Maintenance 118
D. Stain Removal Testing 118
E. Stain Removal Procedures 118
N - 3 REPLACEMENT UPHOLSTERY 119

WEATHER COVERS 120

O - 1 GENERAL INFORMATION 120
A. Bimini Top 120
B. Camper Canvas (Optional) 121
C. Forward Cover (Optional) 122
D. Cockpit Cover 122
E. Mooring Cover 123
O - 2 TRAILERING 123
O - 3 WINTER STORAGE 124
O - 4 CARBON MONOXIDE AND USE OF WEATHER COVERS 124
O - 5 MAINTENANCE 124

FIBERGLASS AND HULL 126

P - 1 HULL DESIGN INFORMATION 126
P - 2 FIBERGLASS CONSTRUCTION 126
P - 3 EQUIPMENT INSTALLATION 126
P - 4 FIBERGLASS CARE & MAINTENANCE 126

A. General Maintenance....126
B. Weathering Effects on Gel Coat....127
C. Stains....127
P - 5 FIBERGLASS REPAIRS....128
A. Scratches....128
B. Gouges & Cracks....128
C. Osmotic Blistering....129
P - 6 ANTI-FOULING PAINT....130
P - 7 HULL SUPPORT....130

WOODWORK AND COMPOSITES....131

Q - 1 HIGH-PRESSURE LAMINATE CARE....131
Q - 2 STAR BOARD....131
Q - 3 BURLWOOD TRIM....131
Q - 4 LAMINATED FIBERGLASS....131
Q - 5 SOLID SURFACE MATERIAL....132
Q - 6 ACRYLYC PLASTIC....132
Q - 7 FLEXITEEK (Optional)....133

GENERAL MAINTENANCE....134

R - 1 WINTERIZATION....134
A. Prior to Lifting for Winter Lay up....134
B. After Lifting....134
C. Prior to Winter Storage....135
R - 2 ENGINE FLUSH OUT....135
A. Volvo Penta® Engine Flush Out (Four Winns Installation)....135
B. MerCruiser® Engine Flush Out Option....136
R - 3 GENERAL MAINTENANCE SCHEDULE....137

PRE-LAUNCH AND UNDERWAY....140

S - 1 LAUNCH & CRUISE CHECKLIST....140
S - 2 FUELING....141
A. Recommendations....141
B. Preliminary Guidelines....141
C. Pumping Fuel....141
D. After Fueling....141
S - 3 LOADING PASSENGERS & GEAR....142
S - 4 STARTING PROCEDURES....143
A. Preliminary Checks....143
B. Starting....143
S - 5 MANEUVERING....144
A. Leaving the Dock....144
B. Stopping....144
S - 6 ACCELERATION....145
S - 7 TRIMMING YOUR BOAT....145
A. Trim Tabs (Applicable Models Only)....145
B. Tilt/Trim Control Switches....146
S - 8 NAVIGATION LIGHTS....147
S - 9 HAZARDOUS CONDITIONS....147
A. Storms....147

B. Fog....148
C. Running Aground....148
D. Warning Markers....148
S - 10 REACTING TO EMERGENCIES....148
A. Flooding....148
B. Capsizing and Man Overboard....149
C. Capsizing....149
D. Man Overboard....149
E. Collision....149
F. Fire....149
G. Medical Emergency....150
H. Propulsion Failure....150
I. Control Failure....150
J. Steering Failure....150
K. Additional Underway Information....150
S - 11 RETURNING TO SHORE....151
A. Docking....151
B. Mooring....151

GLOSSARY....152

FLOAT PLAN....159

FUEL LOG....160

SERVICE LOG....163

SERVICE INFORMATION....166

LOCATOR DRAWING....167

Congratulations on your new boat purchase and welcome to our boating family!

We want your boating experience to be the most enjoyable possible. The more you know about your new boat, the more you'll enjoy the time you spend aboard. That's why we prepared this manual. It's your guide for safe operation as well as understanding your boat's system and equipment. It has been written for the beginning boater but experienced boaters will find helpful information as well. Be sure to read the contents thoroughly.

This manual will acquaint you with the use and maintenance of your new Four Winns boat. This manual also provides special information critical to the safety of the passengers, and longevity of the equipment. The information on the following page lists the graphics used to increase the visibility of these important messages. Also included in your owner's packet is the "Boating Basics, A Guide to Responsible Boating". This guide covers boating basics and should be read along with your Four Winns owner's manual before operating your boat. Review this information completely before using your new boat.

Four Winns continually strives to improve its products. Unit specifications, including standard and optional equipment are constantly being modified. **Equipment availability is also subject to change without notice. The most current and accurate information available at the time of publication is included in this manual. Some variation in material, equipment, description, location, and details can result. Please refer to our website for further updated information and possible revisions to this manual.**

The information in this manual focuses upon the equipment designed and manufactured by Four Winns on specific models. When appropriate, please utilize the information pertinent to your specific boat model.

Equipment such as engines, and other accessories are manufactured by others. **The information provided in this manual is intended to be used in conjunction with the information provided by the manufacturers of this equipment.** All information available at the time of manufacture has been included with your owner's packet. In many cases, replacement of manufacturer's literature may be obtained via their respective websites.

Read this entire manual carefully before operating your new boat. Many instructions may require direct performance of the activity to fully understand the correct method. If you choose to read this manual at home, remember to take it to the boat with you.

Your Four Winns dealer knows your boat best and is committed to your complete satisfaction. Return to the dealer for service or other assistance. If you find it necessary to contact Four Winns directly, please refer to the contact information listed below. Be sure to include the boat model, hull identification number, your daytime telephone number, and specifics of the information desired.

This manual has been specifically developed for the 310 Horizon™ models. Please record the model and hull identification number information below.

Model Hull Identification Number

This manual should be considered part of the boat. Should you sell the boat, pass this manual on to the new owner. Take special care of this manual. Certain information in this manual may not be available in a replacement manual. An electronic version of this manual may be viewed on our website at www.fourwinns.com.

Thank you for joining the Four Winns family. We appreciate your purchase and welcome the opportunity to demonstrate our commitment to you.

Four Winns Customer Service Department
925 Frisbie Street
Cadillac, Michigan 49601
231 775-1343 (Phone) 231 779-2345 (Fax)
E-Mail Address: boating@fourwinns.com

The popularity of boating and other water sports has grown tremendously in the past few years. Because of this, safety is an important issue for everyone who shares our waterways.

Remember that along with the freedom and exhilaration of boating comes the responsibility that you have for the safety of your passengers and the other boaters who share the water with you. Throughout this manual, specific precautions and symbols identify safety-related information. Be sure to pay close attention to them.

NOTICE

Boxes that are gray require your special attention. Notice boxes include helpful boating practices and law reminders.

⚠

This symbol means "pay attention!" Here is important information for your safety. If you don't follow these instructions, you can damage your boat, hurt yourself or someone else or, even worse, have a fatal accident.

⚠ **CAUTION**

This symbol and signal word indicate a potentially hazardous situation. If you ignore this safety message, property damage or minor or moderate personal injury MAY or CAN result.

⚠ **WARNING**

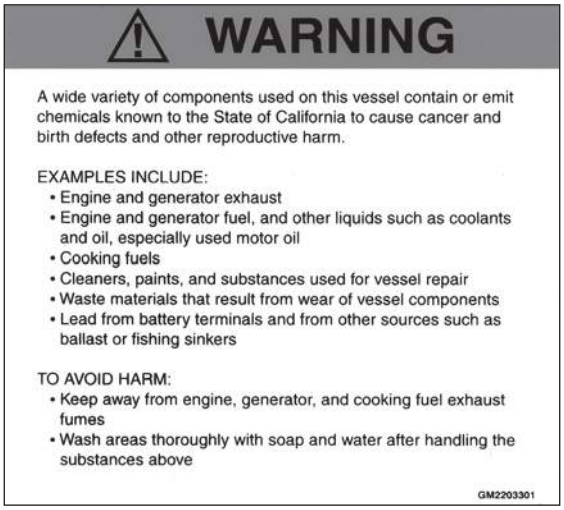
This symbol and signal word indicate a potential hazard. If you ignore this safety message, serious injury or death CAN result.

⚠ **DANGER**

This symbol and signal word indicates an immediate hazard. If you ignore this safety message, serious personal injury or death WILL result.

The precautions in this manual can not and do not cover every boating situation. If a specific method or procedure is not recommended, you must make sure that what you do is safe for you and others. Always use common sense when boating! Remember to make sure that every safe boating excursion is a happy experience.

IMPORTANT HEALTH AND SAFETY INFORMATION ABOUT YOUR NEW BOAT

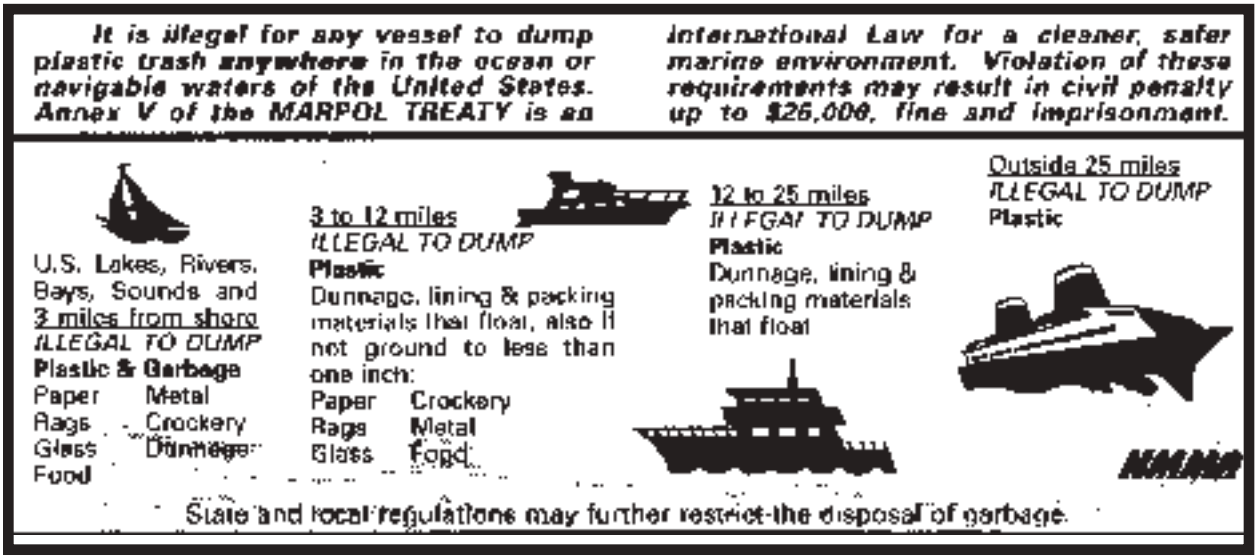


We'd also like to remind you to be kind to our environment while you're boating. Don't throw garbage and other refuse overboard. Do your best to keep harmful compounds like gasoline, oil and antifreeze out of the water. Please see the notifications below:

DISCHARGE OF OIL PROHIBITED

THE FEDERAL WATER POLLUTION CONTROL ACT PROHIBITS THE DISCHARGE OF OIL OR OILY WASTE INTO OR UPON THE NAVIGABLE WATERS OF THE UNITED STATES, OR THE WATERS OF THE CONTIGUOUS ZONE, OR WHICH MAY EFFECT NATURAL RESOURCES BELONGING TO, APPERTAINING TO, OR UNDER THE EXCLUSIVE MANAGEMENT AUTHORITY OF THE UNITED STATES, IF SUCH DISCHARGE CAUSES A FILM OR DISCOLORATION OF THE SURFACE OF THE WATER OR CAUSES A SLUDGE OR EMULSION BENEATH THE SURFACE OF THE WATER. VIOLATORS ARE SUBJECT TO SUBSTANTIAL CIVIL PENALTIES AND/OR CRIMINAL SANCTIONS INCLUDING FINES AND IMPRISONMENT.

Oil Discharge Plate - (Specific Models Only - Location Not Shown)



Trash Overboard Decal - (Specific Models Only - Location Not Shown)

This manual has been compiled to help you operate your boat with safety and pleasure. It contains the details of the boat, the equipment supplied or fitted, its systems, and information on its operation and maintenance. Please read it carefully and familiarize yourself with the boat before using it.

If this is your first boat, or if you are changing to a type of boat you are not familiar with, for your own comfort and safety, please ensure that you obtain handling and operating experience before "assuming command" of the boat. Your dealer or national sailing federation or yacht club will be pleased to advise you of local sea schools and competent instructors.

PLEASE KEEP THIS MANUAL IN A SECURE PLACE, AND HAND IT OVER TO THE NEW OWNER WHEN YOU SELL THE BOAT.

LABEL LOCATIONS

The yacht certification plate and various warning labels are placed at different locations on the 310 Horizon™ model for your safety. Additional warnings for fuel leakage, blower operation, and other important information will be imprinted or located on the dash. Many of these stickers and labels are not required by the U.S. Coast Guard but are important to ensure the safe operation of your Four Winns® boat. In addition, the Hull Identification Number plate is permanently attached below the deck-hull joint at the stern on the starboard side.

Below are letters corresponding to the various locations for each item in the photos. See pages 14-16 for the actual wording of each of the various warning labels found on your boat.

(A) Hull Identification Number Plate
(B) Gasoline Vapor-Blower Warning
(C) Boarding Ladder Warning - Helm
(D) Rotating Prop Boarding Ladder
(E) Leaking Fuel
(F) Yacht Certification Plate
(G) CO - Helm Warning
(H) Ski Tow Warning Label
(I) Winning Edge Sticker
(J) NMMA Certified
(K) Dockside/Shore Power Warning Label
(L) CO - Swim Platform & Lounging Area Warning
(M) CO - Cabin Warning Label (Day Berth)

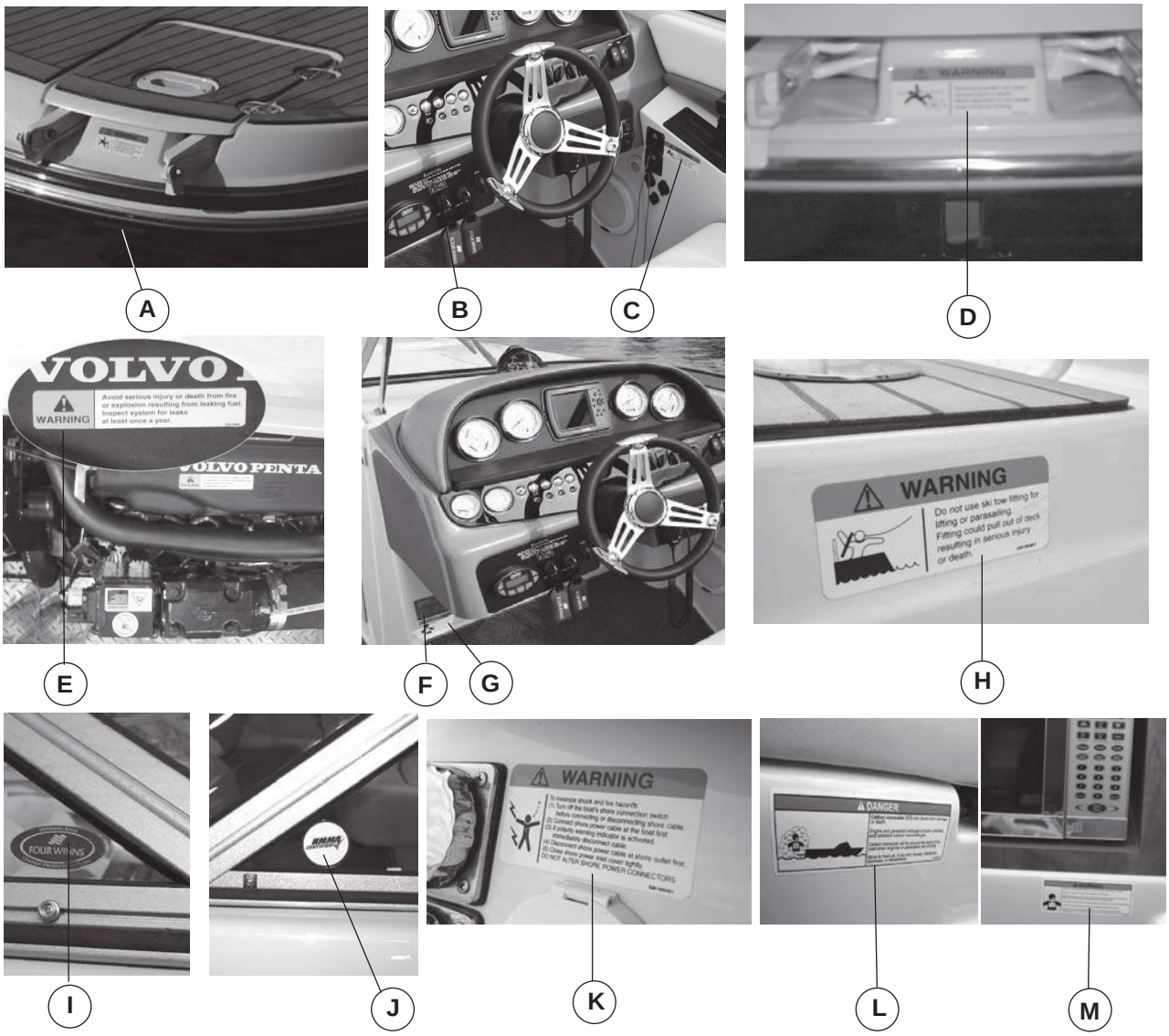
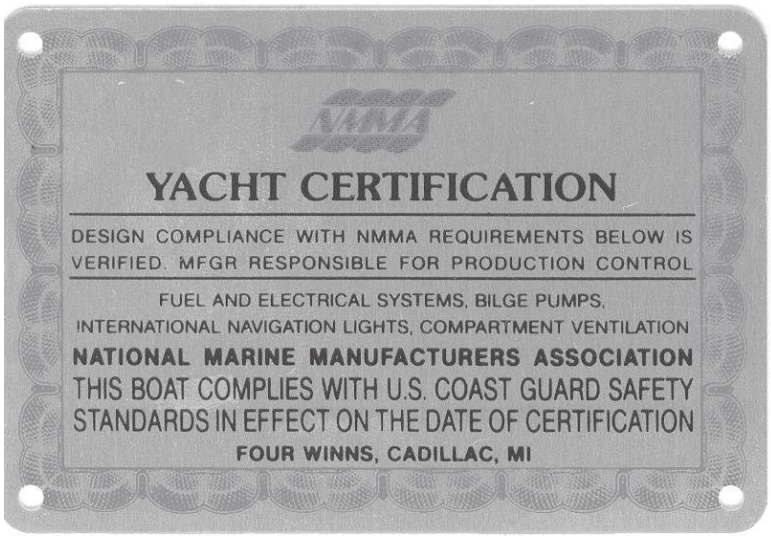


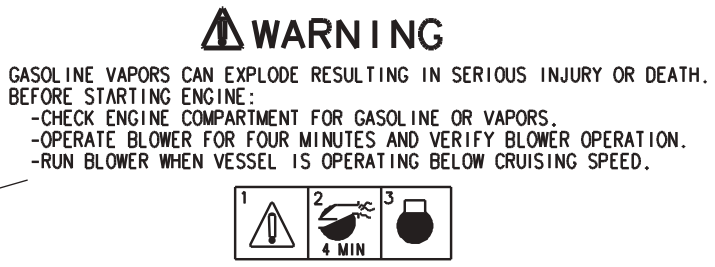
Figure 1: Warning and Other Label Locations - Reference Only (Locations may vary depending on model)

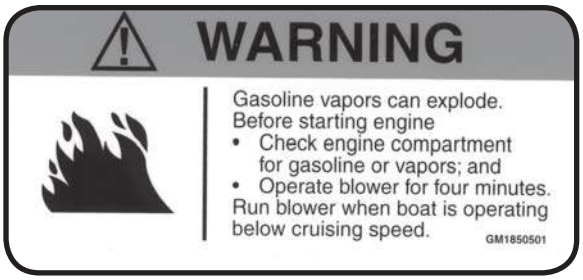
CAPACITY & WARNING LABELS



NMMA Yacht Certification Plate

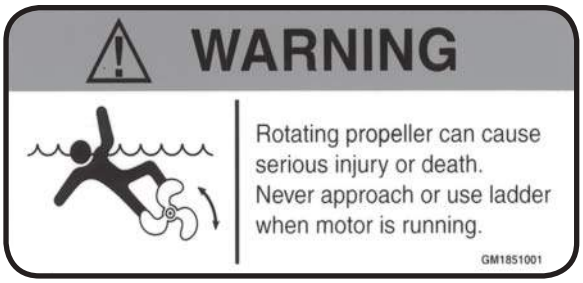
Imprinted Label on Ignition Panel





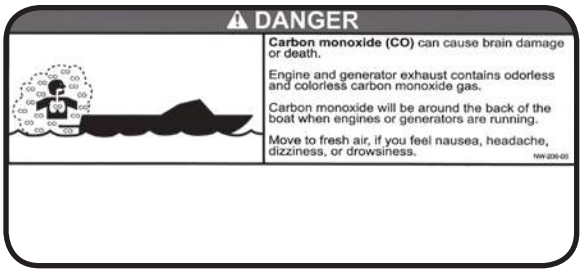
Gasoline Vapor-Blower Warning Label

Rotating Propeller - Helm Warning Label



Rotating Propeller - Ladder Warning Label

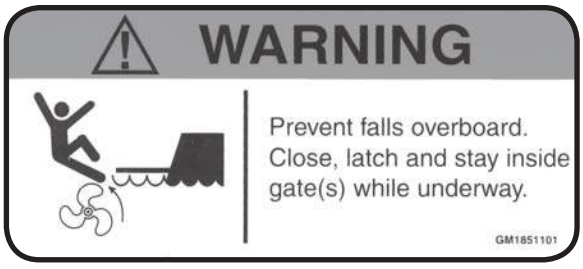
Leaking Fuel Warning Label



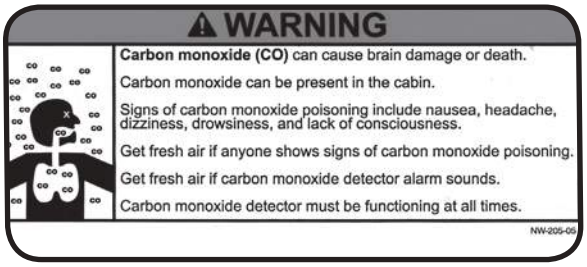
CO Swim Platform and Lounging Area Warning Label

Ski Tow Warning Label

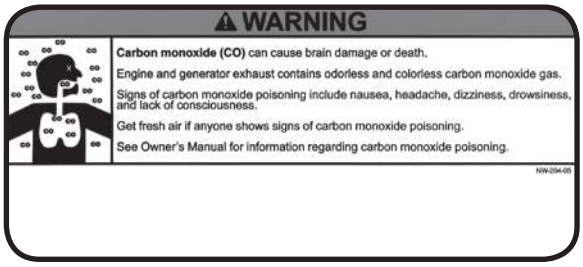
No Ventilation - Do Not Store Fuel Warning Label



Transom/Side Door Warning Label



CO-CABIN WARNING LABEL



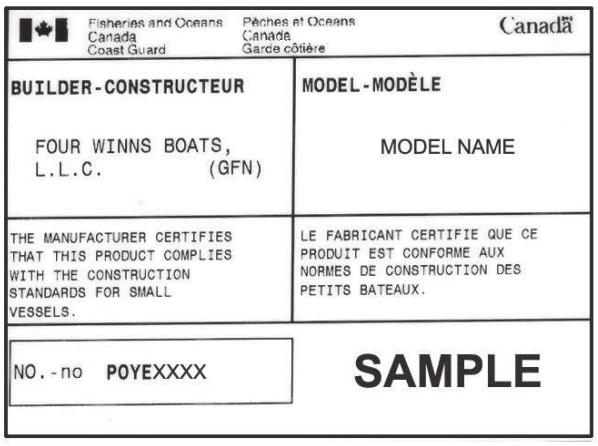
CO-HELM WARNING LABEL

Swim Platform Lounging Seats Warning Label

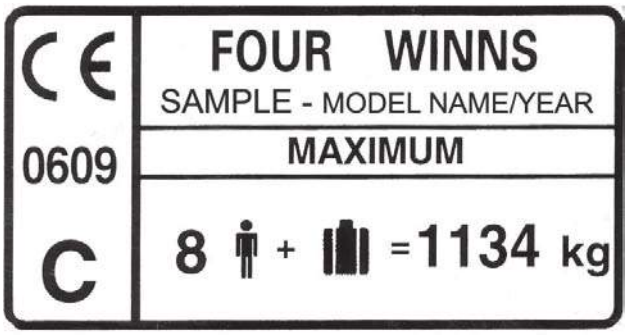
Winning Edge Sticker

NMMA Certified Sticker

Flush Out Warning Label (Optional)



Canadian Conformity Label



EU Builders Plate - CE Certification Plate (Export)

A - 1 GENERAL

Before starting the boat, become familiar with all of the various systems and related operations. Be sure all necessary safety equipment is on-board. Know the “Rules of the Road”. Have an experienced operator brief you on the general operation of your new boat. Perform a “PreCruise Systems Check”. This manual is a part of your boat’s equipment. Always keep it on board.

A - 2 COMPONENT SYSTEMS

Before you can really enjoy your boat, a thorough understanding of its systems and their operation is essential. This manual and the associated manufacturers information are included in the owner’s packet. This information is provided to enhance your knowledge of the boat. Read this information carefully.

After becoming familiar with the boat and its systems, reread this manual and other material provided in the owner’s packet. Maintenance and service tips are included to help keep the boat in like-new condition.

A - 3 SAFETY EQUIPMENT

Besides the equipment installed on the boat by Four Winns, certain other equipment is required for passenger safety. The “Boating Basics, A Guide to Responsible Boating”, describes the Federal equipment requirements and is included in the owners’ packet . These Federal requirements may also be found on the United States Coast Guard’s website: www.uscgboating.org/safety. Remember that these laws are for your protection and are minimum requirements. Check your local and state regulations, also. More information on safety equipment is provided in Section B.

Items like a sea anchor, working anchor, extra dock lines, flare pistol, a line permanently secured to your ring buoy, etc. could at some time save your passengers lives, or save your boat from damage.

The Coast Guard Auxiliary offers a “Courtesy Examination.” This inspection will confirm the boat is equipped with all of the necessary safety equipment.

A - 4 PASSENGER SAFETY

You are responsible for the safety of your passengers as well as for their behavior while aboard. Make sure:

1. Each passenger is properly instructed in Personal Flotation Device (PFD) use and keeps one within reach in case of emergency. All non-swimmers and children should wear a PFD at all times when underway.

2. Passengers do not sit on gunwales, open decks, elevated pedestal seats or on seat backs when the boat is underway. This could cause them to be thrown overboard during a sudden maneuver.

3. At least one other person knows how to operate the boat in case of an emergency.

A - 5 “RULES OF THE ROAD”

As in driving an automobile, there are a few rules that must be known if safe boating operation is to be maintained. The Coast Guard, Coast Guard Auxiliary, Department of Natural Resources or your local boat club sponsor courses in boat handling, including “rules of the road”. Such courses are strongly recommended. Books on this subject are also available from local libraries.

A - 6 LIGHTNING

When boating, it is important to be aware of the weather around you. When the weather changes for the worse, DO NOT jeopardize your safety by trying to “ride out the storm”. If possible, return to safe harbor and dock your vessel immediately.

If caught in a storm, seek shelter inside the cabin and wait for the storm to pass. With open bow models, suntops and campers will provide some protection, but should not be relied on if you are able to return to shore. Exercise care when high winds are present!

⚠ WARNING

DO NOT swim or dangle legs or arms into the water during a lightning storm. Stay out of the water!

Lightning will seek a ground when it strikes. Avoid contact with metal parts such as bow rails, control handle, or windshield.

WARNING

NOTICE: Four Winns boats are not equipped with a lightning protection system.

A - 7 DRUGS AND ALCOHOL

Please keep in mind that along with the fun of boating comes responsibility. As the owner or operator of a pleasure boat, you are obligated (morally and legally) to use good judgement while underway in providing for the safety and well-being of your passengers and other boaters around you.

A common and flagrant violation of good judgement and the law by boaters involves the use of alcohol or drugs. Each year, about half of all accidents involving fatalities involve the use of alcohol or drugs.

It is a federal offense to operate a boat while intoxicated. Criminal penalties may include the termination of operating privileges for up to one year. Many states have passed similar laws.

Alcohol or drugs have an inhibiting effect on the judgement and reaction time of the boat operator and his/her passengers. Heed the advice of experts and statisticians: DO NOT drink or use drugs when operating a boat. NEVER allow an obviously intoxicated person to take the helm.

Have fun in your Four Winns® boat but also, have the good sense to be mentally alert and physically capable of operating the boat in a safe manner.

A - 8 PRE-CRUISE SYSTEM CHECK

Before leaving the dock, the following items should be checked:

A. Before Starting The Engine

1. Check the weather forecast. Determine if the cruise planned can be made safely.

2. Be sure all necessary safety equipment is on board and operative. This includes items such as the running lights, horn, spotlight, life-saving devices, etc.

3. Check the bilge water level and bilge pump operation. Check the engine and drive fluid levels. Look for other signs of potential problems. Check for the scent of fuel fumes.

4. Activate the bilge blower. Check the blower output.

WARNING

Gasoline vapors can explode resulting injury or death. Before starting the engine, check engine compartment bilge for gasoline or vapors. Operate blower for four minutes, and verify blower operation. ALWAYS run the blower when the vessel is operating below cruising speed.

5. Ensure an adequate amount of fuel is on board.

6. Be sure you have sufficient water and other provisions on board for the cruise planned.

7. Leave a written message listing details of the planned cruise with a close friend ashore.

B. After Starting The Engine

1. Visibly check the engine to be sure there are no apparent water or oil leaks.

2. Check the gauges. Make sure the oil pressure, water temperature, voltmeter, etc., are reading normally.

3. Have a safe cruise and enjoy yourself.

A - 9 ENGINE OPERATIONAL PROCEDURES

Notice: Consult engine manual. Additional engine information is located in Prelaunch and Underway section.

A. Before Starting

1. Check the engine compartment for water, gas, and/or oil leaks of any kind. Keep the bilge in a clean condition to prevent blower and bilge pump damage, and fire hazards.

2. Check the fluid levels of the engine oil and power steering system daily. Fill oil or steering fluid as

required by the indications on the dip sticks. Refer to Table 1: "SAE Viscosity Chart" and your engine manual included in the owner's packet. Follow engine manufacturer's recommendations.

DO NOT USE MULTIGRADE OIL. Power steering and power trim use automatic transmission fluid. Check the fluid levels in the vertical drive units or transmission as often as practical.

IF THE LOWEST ANTICIPATED TEMPERATURE IS*	THE FOLLOWING SAE VISCOSITY OILS ARE RECOMMENDED
32° F (0° C) and above	SAE 30
0° F (-18° C) to 32° F (0° C)	SAE 20W-20
Below 0° F (-18° C)	SAE 10W
*Temperature range you expect to operate. Note: Use only single viscosity oils.	

Table 1: SAE Viscosity Chart

3. Start and operate the bilge blower system for at least four (4) minutes before start-up.

4. Lower the vertical outdrive units using trim switch(s) making sure the water intakes are under the water.

B. Cold / Warm Engine Start (EFI Engines)

1. Moving the black gaffrig shifter control(s), Figure A1, to the center or straight up position places the engine(s) in neutral. Notice as you push the shifter control(s) to the neutral position you will feel the neutral detent engage thus indicating you are in neutral. Note: A "start-in-neutral-only" feature prevents starting the engine(s) while in gear.

Figure A1: Gaffrig Shifter and Throttle Controls (Twin Controls Shown)

2. Move the throttle control(s) to the idle position (lever(s) is all the way rearward).

3. Turn the key switch to start position and hold until engine starts, but for no longer than 10 seconds. If engine does not start, let go momentarily, then try again.

4. As soon as engine starts, release key to ON or RUN.

NOTICE
Priming is not necessary for EFI engines. Refer to the engine owner's manual for additional information.

C. Shifting and Control Speed

1. Move shifter control(s) to the neutral detent (idle) position. This will engage neutral start switch and allow engine to start. Move the throttle control(s) to the idle position.

⚠ CAUTION
DO NOT shift into FORWARD or REVERSE unless engine is running. Damage to the shift system could result from trying to shift without the engine running. Carefully check function of all control and engine systems before leaving the dock.

2. To go FORWARD - move the shifter control forward.

3. To go in REVERSE - move the shifter control rearward.

NOTICE
DO NOT shift from forward to reverse when the boat is planing.

NOTICE
DO NOT shift if engine speed is over 800 rpm.

4. To go from FORWARD to REVERSE, or REVERSE to FORWARD; always pause at NEUTRAL and allow engine speed to return to idle.

5. After shifting is completed, move the red throttle control lever(s) forward to increase engine(s) speed.

⚠ WARNING

Any time the boat is operated, be aware of changes in shift system operation. A sudden increase in shift effort at the remote control handle, or other abnormal operation, indicates a possible problem in the shift system. If this occurs, the following precautions must be taken:

- *With engine running and boat securely tied to the dock, shift drive into forward and reverse to ensure there is gear engagement.*
- *When docking the boat, all docking maneuvers must be performed at slowspeed. Pay special attention to other boaters. Passengers should be informed of potential problems and precaution taken.*

If you suspect there is a problem, see your engine manufacturer's authorized service center as soon as possible for proper diagnosis and required service or adjustment. Continued operation could result in damage to the shift mechanism and loss of control.

G. Stopping Engine

1. Move control handle to the NEUTRAL position.
2. Turn ignition key to the OFF position.

NOTICE

DO NOT stop engine at speeds above idle or "speed up" engine while turning off ignition. Engine damage could result.

A - 10 GROUNDING AND TOWING

⚠ WARNING

If the boat should become disabled, or if assisting another craft that is disabled, great care must be taken. The stress applied to a boat during towing may become excessive. Excessive stress can damage the structure of the boat and create a safety hazard for those aboard.

Four Winns® boats are not designed nor intended to be used as a towing vessel. The mooring cleats on Four Winns® boats are not designed or intended to be used for towing purposes. These cleats are specifically designed as mooring cleats for securing the boat to a dock, pier, etc. DO NOT use these fittings for towing or attempting to free a grounded vessel.

Freeing a grounded vessel or towing a boat that is disabled requires specialized equipment and knowledge. Line failure and structural damage caused by improper towing have resulted in fatal injuries. Because of this, Four Winns strongly suggests that these activities be left to those who have the equipment and knowledge such as the US Coast Guard or Sea Tow® to safely accomplish the towing task.

⚠ CAUTION

Running aground can cause serious damage to a boat and associated underwater gear. If the boat should become grounded, distribute personal flotation devices and inspect the boat for possible damage. Thoroughly inspect the bilge area for signs of leakage. An experienced service facility should check the hull and underwater gear at the first opportunity. DO NOT continue to use the boat if the condition of the hull or underwater equipment is questionable.

If towing or being towed is absolutely necessary, use the strongest lines available, and attach them to the bow eyes or stern eyes only. Have all passengers slip on life jackets and take a seat in the cabin or other protected area.

⚠ WARNING

Lines can snap or other hardware can be loosened or broken while towing. Under certain conditions, this can cause severe injury or fatality.

A - 11 BOATING EDUCATION

A. Boating Courses

Boating education classes are offered throughout the country. The United States Coast Guard Auxiliary offers free courses on different topics usually during the off-season. The most popular course is the "Boating Skills & Seamanship Course," and information can be obtained by calling 1 800-336-BOAT (2628) or by visiting their website at: www.boatus.com/courseline.

The United States Power Squadron also offers free courses ranging from basic seamanship to celestial navigation. For information, contact your local Power Squadron, or write: USPS, P.O. Box 30423, Raleigh, NC 27622 or visit their website at: www.usps.org.

The World Wide Web contains many websites devoted to boating and boating safety. One such site is www.discoverboating.com which contains many informative articles and website links for both the new boater as well as the experienced boater alike.

The Canadian Power and Sail Squadron offers seamanship courses. Information may be obtained by visiting their website at www.cps-ecp.ca/.

B. Boating Manuals or Literature

A good source of information is the US Coast Guard's home study book called "The Skipper's Course". This book may be purchased through Superintendent of Documents, US Government Printing Office, Washington, DC 20402, Stock # 050-012-00159-6.

Another good source of boating information is Chapman's "Piloting, Seamanship and Small Boat Handling". Also, check the local library or bookstore for additional information on boating.

C. Charts and Maps

US nautical charts are sold throughout the country at Governmental Printing Office stores and other agents. Chart catalogs are available by visiting the National Oceanic and Atmospheric Administration website at http://nauticalcharts.noaa.gov/mcd/ccatalogs.htm#state.

In addition, many federal agencies publish recreational maps, including the US Army Corp of Engineers, the Forest Service, the National Park Service, and the Tennessee Valley Authority.

Addresses of all state boating law administration offices are found in the "Boating Basics, A Guide to Responsible Boating", included in your owner's packet. Additional copies may be purchased by contacting Outdoor Empire Publishing at www.outdoorempire.com.

D. Laws and Regulations

The US Coast Guard is the authority of the waterways; they are there to help the boating public. State boating regulations are enforced by local authorities. You are subject to marine traffic laws and "Rules of the Road" for both federal and state waterways; you must stop if signaled to do so by enforcement officers, and permit to be boarded if asked.

There are many pamphlets, prepared by the US Coast Guard, available to you. These pamphlets explain "Rules of the Road," signal lights, buoys, safety, international and inland regulations and other information which goes beyond the scope of this manual. For more information contact your local US Coast Guard Unit or call the Coast Guard info line at 1 800 368-5647, or visit the US Power Squadron website at www.usps.org.

A - 12 BOAT OWNER REGISTRATION

Federal and state laws require that every boat equipped with propulsion machinery of any type must be registered in the primary state of usage. Registration numbers and validation stickers must be displayed on the boat according to regulations. In most states, this means registration with the designated state agency. In a few jurisdictions, the Coast Guard retains registration authority. Your dealer will either supply registration forms or tell you where they may be obtained. The registration agency will issue you a certificate that must be carried on board when the boat is in use. Some states require additional registration when an out of state boat is used within their boundaries.

Your boat has a hull identification number on the starboard side of the hull. Figure A2 shows a typical identification number. Use this hull identification number for registration and to identify your boat for warranty service.

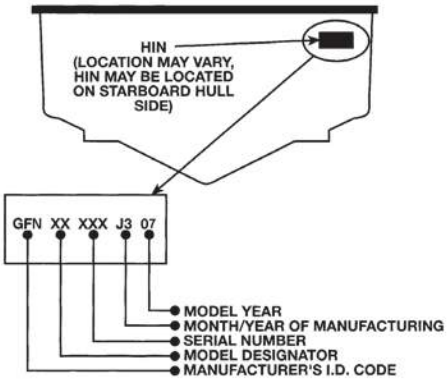


Figure A2: HIN

In most states, the boat owner is legally responsible for damages or injuries he or she causes, even if someone else is operating the boat at the time of the accident. Common sense dictates that you carry adequate personal liability and property damage insurance on your boat, just as you would on an automobile. You should also protect your investment by insuring your boat against physical damage or theft.

A - 13 ACCIDENT REPORTING

The operator of the boat is responsible for filing a report with the appropriate authorities. In general, reports are necessary for accidents involving loss of life, injury, or damage over $500. In the case of accidents with reportable injuries or death, a formal report is required within 48 hours. If only property damage is involved, a report must be made within ten days. The 1971 Boating Safety Act may impose a $1,000 civil fine for people who fail to submit a boating accident report.
Ask your insurance agent for more information.

If you see a distress signal, you must assume it is a real emergency and render assistance immediately. The master or person in charge of a boat is obligated by law to provide assistance to any individual in danger at sea. However, you should not put your boat or crew in a dangerous situation which exceeds your capabilities or those of your boat. The 1971 Boating Safety Act grants protection to a Good Samaritan boater offering good faith assistance, and absolves a boater from any civil liability arising from assistance given.

A - 14 DISCHARGE OF OIL

The Federal Water Pollution Control Act prohibits the discharge of oil waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or a discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of $5,000.

A - 15 DISPOSAL OF PLASTICS & OTHER GARBAGE

Plastic refuse dumped in the water can kill fish and marine wildlife and can foul boat propellers and cooling water intakes. Other forms of waterborne garbage can litter our beaches and make people sick. US Coast Guard and most state regulations prohibit the dumping of plastic refuse or other garbage mixed with plastic into the water anywhere, and restrict the dumping of other forms of garbage within specified distances from shore.

A - 16 MARPOL TREATY

Boats 26 feet or longer must display a sign stating the disposal regulations of the Federal Water Pollution Control Act. The US Coast Guard has issued these regulations to implement Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, commonly known as Annex V of the MARPOL (Marine Pollution) Treaty 73/78. They apply to all U.S. boats wherever they operate (except waters under the exclusive jurisdiction of a State) and foreign boats operating in US waters out to and including the Exclusive Economic Zone (200 miles). It is important to know these regulations and adhere to them.

The regulations require US recreational boaters, if your boat is 26 feet or more in length, to affix one or more USCG Trash Dumping Restrictions placards to your boat. The placard warns against the discharge of plastic and other forms of garbage within the navigable waters of the United States and specify discharge restrictions beyond the territorial sea. (The territorial sea generally ends three nautical miles from the seashore.) In addition, the placard must contain the warning that a person who violates these requirements is liable to civil ($25,000) and criminal (imprisonment) penalties. The placard also

must note that State and local regulations may further restrict the disposal of garbage.

Operators shall display one or more placards in a prominent location and in sufficient numbers so they can be observed and read by crew and passengers. These locations might include embarkation points, food service areas, galleys, garbage handling spaces and common deck spaces frequented by crew and passengers. We recommend that these placards may be purchased from local marinas, boat dealerships and marine equipment suppliers. A special placard is available for boats operating on the Great Lakes.

NOTICE

IMPORTANT: It is illegal to discharge waste from your marine sanitary device (toilet) into the water in most areas. It is your responsibility to be aware of and adhere to all local laws concerning waste discharge. Consult with the Coast Guard, local marina or your dealer for additional information.

NOTICE

NOTE: Some states and localities have legal limits on speed, noise and trailer specifications. It is your responsibility to be aware of these laws and limits and to insure that your boat (and trailer) comply. Consult with your local Marine Patrol or local Coast Guard office.

B - 1 GENERAL

As the owner/operator of the boat, you are responsible for assuring that all required safety equipment is aboard. You should also consider supplying additional equipment as needed for your safety and that of your passengers. Check state and local regulations and call the US Coast Guard Info line at 1-800-368-5647 for information about required safety equipment. Also visit the United Power Squadron website at www.usps.org.

A. Required Safety Equipment

Minimum requirements include the following:

- Personal Flotation Devices (Life Jackets)
- Visual Distress Signal
- Bell or Whistle
- Fire Extinguisher
- Navigation Lights

NOTICE

As the owner/operator of the boat, you are responsible for assuring that all required safety equipment is aboard and meets the boating regulations as prescribed by both federal and local authorities in your area.

B. Personal Flotation Devices (PFDs)

Federal regulations require that you have at least one Coast Guard approved personal flotation device (PFD) for each person in a recreational boat. You should not use your boat unless all PFDs are in serviceable condition, readily accessible, legibly marked with the Coast Guard approval number, of an appropriate size (within the weight range and chest size marked on the PFD) for each person aboard.

A PFD provides buoyancy to help keep your head above the water and to help you remain in a satisfactory position while in the water. Body weight and age should be considered when selecting a PFD. The buoyancy provided by the PFD should support your weight in water.

The size of the PFD **must** be appropriate for the wearer. Body weight or chest size are common methods used to size PFDs. It is your responsibility to ensure that you have the proper number and types of PFDs on board and that your passengers know where and how to use them.

C. PFD Types

Five types of PFDs have been approved by the US Coast Guard. The PFDs are described as follows:

PFD Type 1, Wearable (Figure B1) has the greatest required buoyancy. Its design allows for turning most unconscious persons in the water from face down position to a vertical or slightly backward, face-up position. It can greatly increase the chances of survival. Type 1 is most effective for all waters, especially offshore when rescue may be delayed. It is also the most effective in rough waters.

Figure B1: Type I, Wearable

PFD Type II, Wearable (Figure B2) turns its wearer in the same way as Type I, but not as effectively. The Type II does not turn as many persons under the same conditions as a Type I. You may prefer to use this PFD where there is a probability of quick rescue such as in areas where other people are commonly involved in water activities.

Figure B2: Type II, Wearable

PFD Type III, Wearable (Figure B3) allows the wearer to place themselves in a vertical or slightly backward position. It does not turn the wearer. It maintains the wearer in a vertical or slightly backward position and has no tendency to turn the wearer face down. It has the same buoyancy as a Type II PFD and may be appropriate in areas where other people are commonly involved in water activities.

Figure B3: Type III, Wearable

PFD Type IV, Throwable (Figure B4) is required in addition to the PFDs previously discussed. The most common Type IV PFD is a buoyant cushion or ring buoy. It is designed to be thrown to a person in the water, grasped and held by the user until he or she is rescued. A Type IV PFD should always be in serviceable condition and immediately available for use. Grasping this PFD may be difficult if the rescue is delayed or if the user is overcome by hypothermia (loss of body heat).

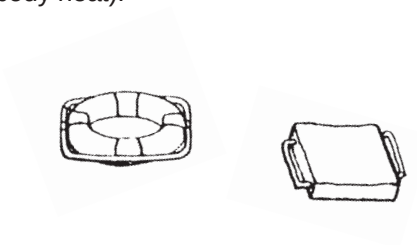


Figure B4: Type IV, Throwable

PFD Type V, Wearable (Figure B5) when inflated, it provides buoyancy equivalent to Type I, II, or III PFDs. When it is deflated, however, it may not support some people.

Figure B5: Type V, Wearable

D. PFD Pointers

The purpose of a PFD is to help save your life. If you want it to support you when you are in the water, it needs to fit, float, and be in good condition.

1. Try the PFD on and adjust it until it fits comfortably in and out of the water. Mark your PFD if you are the only wearer.

2. To make sure the PFD works, wear it in the water. This will show you how it works and give you confidence when you use it.

3. Teach children how to put a PFD on and allow them to try it in the water. That way, they know what the PFD is for and how it works. They will feel more comfortable with it if they suddenly find themselves in the water.

4. If the PFD is wet, allow it to dry thoroughly before storing it. Do not dry it in front of a radiator or heater. Store it in a well ventilated area.

5. Keep PFDs away from sharp objects which can tear the fabric or puncture the floatation pads.

6. For their own safety and the safety of others, all nonswimmers, poor swimmers, and small children should wear PFDs at all times, whether the boat is stationary or moving.

7. Check the PFD frequently to make sure that it is not torn, that flotation pads have no leaks, and that all seams and joints are securely sewn.

8. If a PFD contains kapok, the kapok fibers may become waterlogged and lose their buoyancy after the vinyl inserts are punctured. If the kapok becomes hard or if it is soaked with water, replace it. It may not work when you need it.

E. Fire Extinguisher

As the owner/operator of the boat, you are responsible for supplying a fire extinguisher approved by the US Coast Guard.

Hand-held portable extinguisher(s) should be mounted in a readily accessible location(s) away from the engine compartment. All persons aboard should know the location(s) and proper operation of the fire extinguisher(s).

⚠ WARNING

FIRE

In case of fire do not open the engine compartment. Shut down engine(s), generator(s), and blower(s). Discharge entire contents of fixed fire suppression system, if equipped. If using a portable CO2 fire extinguisher, continuously discharge entire contents. On European models, discharge contents through fire port.

NOTICE

Using a portable fire extinguisher with an access/fire port in the engine compartment is preferred to opening the engine compartment to fight the fire. However, using a portable extinguisher in this way provides less protection against fire than a fixed suppression system.

NOTICE

Do not test fire extinguishers by squirting small amounts of the extinguishing compound. The fire extinguisher might not work when you really need it.

Four Winns sport boat and deck boat models are considered to be Class 1 powerboats (16 to less than 26 feet). Since they have permanently-installed fuel tanks, they are required to carry one (1) B1 type hand-held portable fire extinguisher. If the boat is equipped with a fixed fire extinguishing system in the engine compartment, one (1) B1 type hand-held portable fire extinguisher is still required.

Sport boats and deck boats that are Class 2 powerboats (26 to less than 40 feet) are required to carry two (2) B1 type approved hand-held portable fire extinguishers or one (1) B2 type approved hand portable fire extinguisher. When a fixed fire extinguishing system is installed in machinery space(s), at least one (1) B1 type approved hand portable fire extinguisher is required.

An automatic FE241 agent fire extinguisher system is optional on the 310 Horizon™ models. The equipment utilized has been so chosen, and located, to provide sufficient volume and coverage of the entire engine compartment. While the system ensures excellent overall bilge fire protection, **it does not eliminate the USCG requirement for hand-held fire extinguishers.** Refer to the extinguisher manufacturer's literature included in the owner's packet if so equipped.

F. Visual Distress Signal Devices

Visual distress signal devices approved by the US Coast Guard are required on all recreational boats operating on coastal waters and to boats owned in the United States when they are operating on the high seas. Coastal waters include territorial seas and those waters directly connected to the Great Lakes and the territorial seas up to a point where the waters are less than two miles (3.2km) wide. Visual distress signal equipment may be of the pyrotechnic or non-pyrotechnic type. Regulations prohibit display of visual distress signals on the water under any circumstances except when assistance is required to prevent immediate or potential danger to persons on board a vessel.

The equipment must be approved by the US Coast Guard, be in serviceable condition, and be stowed in a readily accessible location. Equipment having a date for serviceable life must be within the specified usage date shown. Careful selection and proper stowage of visual distress equipment is very important if young children are aboard.

DAY USE ONLY	NIGHT USE ONLY	DAY AND NIGHT USE
Three orange smoke signals (one hand held and two floating) or one orange flag with black square and disk.	One S-O-S electric distress light.	Three flares of the hand held, meteor or parachute type.

Distress Signal Table

The minimum visual distress signals required in coastal waters for a Class 1 or Class 2 powerboat is the following:

One orange flag with black square and disc (daytime); and an S-O-S electric light (nighttime); or three orange smoke signals, hand-held or floating (daytime); or three red flares of hand-held, meteor, or parachute type (daytime/nighttime).

NOTICE

No single signaling device is appropriate for all purposes. Consider keeping various types of equipment on board.

G. Sound Signaling Devices

Class 1 and Class 2 powerboats are required to carry a hand, mouth or power operated horn or whistle. It must produce a blast of two-second duration and audible at a distance of at least one-half (1/2) mile.

The following are standard whistle signals:

- One Prolonged Blast = Warning Signal
- One Short Blast = Pass on my Port Side
- Two Short Blasts = Pass on my Starboard Side
- Three Short Blasts = Engines in Reverse
- Five or More Blasts = Danger Signal

H. Navigation Lights

Navigation lights are intended to keep other vessels informed of your presence and course. If you are out on the water between sunset and sunrise, you are required to display appropriate navigation lights.

I. Additional Recommended Equipment

Four Winns® recommends that you acquire additional equipment for safe, enjoyable cruising. This list, while not all-inclusive, suggests items you should consider acquiring.

Basic Gear

Flashlight	Spare batteries	Tow line
Oar, paddle	Mooring lines	Compass
Dock fenders	Distress signals	First aid kit
Boat hook	VHF radio	EPIRB*
Sunscreen	Extra warm clothing	Charts

Second anchor & line
Dewatering device (pump or bailer)
Emergency supply of drinking water and food
*Emergency Position Indicating Radio Beacon

Tools

Spark plug wrench	Hammer	Screwdriver
Jackknife	Pliers	
Electrical tape	Duct tape	
Adjustable wrench	Lubricating oil	Prop wrench

Spare Parts

Extra bulbs	Spare prop	Extra fuses
Extra drain plug	Spark plugs	Spare wire
Extra prop nut/washer		

Gear For Extended Cruises

Foul weather gear	Parallel rulers	Dividers

Global Positioning System navigation equipment

B - 2 CARBON MONOXIDE

⚠ DANGER

CARBON MONOXIDE!

Carbon monoxide (CO) can be harmful or fatal if inhaled. Brain damage or death can result from prolonged exposure to carbon monoxide. Keep exhaust outlets clear of blockage. Provide adequate ventilation. Open hatches, doors, windows and vents to insure adequate ventilation. Close engine compartment doors and hatches when engine or generator is running. Avoid operating the boat for extended periods of time at idle speed, and be sensitive to weather conditions that may prevent CO from dissipating into the air. Do not stand or swim near engine or generator exhausts when engines are running.

Carbon monoxide accumulation is affected by many variables (e.g., boat geometry, hatch, window and door opening, ventilation openings, proximity to other structures, swim platforms, canvas enclosures, location of exhaust outlets, vessel attitude, wind direction, vessel speed, boat systems maintenance, etc.) The technical information included in this section is to inform the boat owner of possible cause and effects of carbon monoxide exposure. This information has been reprinted with permission from the American Boat and Yacht Council's (ABYC) technical information report: "Educational Information About Carbon Monoxide". This information pertains to all gasoline-powered boats manufactured by Four Winns.

NOTICE

The boat owner should be aware that other factors may contribute to carbon monoxide accumulation. The most common ones are listed in this section. If a person is exhibiting carbon monoxide-type symptoms (Refer to B-2E Symptoms), be sure to take the necessary precautions as prescribed later in this section.

NOTICE

Boats fueled by diesel have limited carbon monoxide present in the exhaust in comparison to gasoline engine exhaust. However, the boat owner should still be aware of the causes and effects of carbon monoxide which may occur in different boating situations.

A. Properties and Characteristics of Carbon Monoxide

1. Carbon monoxide is a colorless, odorless and tasteless gas. It is commonly referred to as CO.

2. Its weight is about the same as air so it cannot be expected to rise or fall like some other gases, but will distribute itself throughout the space.

NOTICE

DO NOT rely on the use of smell or sight of other gases to detect CO, because it diffuses in the air much more rapidly than easily detectable vapors (i.e., visible and aromatic vapors).

B. What Makes Carbon Monoxide

Any time a material containing carbon burns such as gasoline, natural gas, oil, propane, coal, or wood, CO is produced.

Common sources of carbon monoxide are:

1. Internal combustion engines such as:

    a. Propulsion engines
    b. Generators

2. Open flame devices such as:

    a. Cooking ranges
    b. Central heating plants
    c. Space heaters
    d. Water heaters
    e. Fireplaces
    f. Charcoal grills

C. How a Person is Affected by Carbon Monoxide

Carbon monoxide is absorbed by the lungs and reacts with blood hemoglobin to form carboxy-hemoglobin, which reduces the oxygen carrying capacity of the blood. The result is a lack of oxygen for the tissues with the subsequent tissue death and, **if exposure is prolonged, death of the individual.**

D. Effects of Carbon Monoxide

Carbon monoxide in high concentrations can be fatal in a matter of minutes. Lower concentrations must not be ignored because the effects of exposure to CO are cumulative and can be just as lethal.

Certain health related problems and age will increase the effects of CO. People who smoke or are exposed to high concentrations of cigarette smoke, consume alcohol or have lung disorders or heart problems, are particularly susceptible to an increase in the effects from CO. However, all occupants' health should be considered. Physical exertion accelerates the rate at which the blood absorbs CO.

E. Symptoms

One or more of the following symptoms can signal the adverse effect of CO accumulation:

1. Watering and itchy eyes
2. Flushed appearance
3. Throbbing temples
4. Inattentiveness
5. Inability to think coherently
6. Loss of physical coordination
7. Ringing in the ears
8. Tightness across the chest
9. Headache
10. Drowsiness
11. Incoherence
12. Slurred speech
13. Nausea
14. Dizziness
15. Fatigue
16. Vomiting
17. Collapse
18. Convulsions

NOTICE

The order of the above list is generally the sequence of appearance of symptoms. However, the order of appearance may change for different people.

NOTICE

The symptoms of carbon monoxide poisoning may easily be mistaken for seasickness or alcohol intake.

F. Treatment (Evaluate, Ventilate, Evacuate, Investigate, Take Corrective Action)

1. Evaluate the situation and ventilate the area if possible.

2. Evacuate the area and move affected person(s) to a fresh air environment.

3. Observe the victim(s).

4. Administer oxygen if available.

5. Contact medical help. If the victim is not breathing, perform rescue breathing or approved cardiopulmonary resuscitation (CPR), as appropriate, until medical help arrives and takes over.

6. Investigate source of CO and take corrective action.

NOTICE

Prompt action can make the difference between life and death.

G. Inspection

Look and listen for leaks in the exhaust systems of both the generator (if applicable) and propulsion engine(s). Look for discoloration around joints in the system (water leaks, carbon, stains, etc.).

1. Make sure all exhaust clamps are in place and secured.

2. Make sure ventilation systems work and are not obstructed or restricted.

3. Make sure gaps around the engine room plumbing and cableways and exhaust system doors, hatches, and access panels are minimized to reduce the opportunity for CO to enter the accommodation space(s).

H. Operation

Cold Start vs. Warm Start: CO production is greater while the combustion chamber surfaces and gas passages are cold versus when they are warm.
A boat operator should:

1. Pay attention to ventilating the boat.

2. Orient the boat so it will allow the maximum dissipation of CO.

3. Minimize the time spent on getting underway.

4. In order to minimize CO buildup, do not warm up or run propulsion engine(s) for extended periods while the vessel is stationary.

WARNING

*The following are examples of possible situations where carbon monoxide can accumulate within your boat while docked, anchored, or underway. Become familiar with these examples and their precautions to prevent **dangerous** accidents or death.*

I. Boathouses, Sea Walls and Confined Spaces

A boat operator should be aware that dangerous concentrations of CO can accumulate when a boat, generator or other engine operated device is operated while the boat is moored in a confined area such as:

1. Boathouses,

2. Proximity to sea walls, or

3. Proximity to other boats.

Keep engine room hatches and doors closed when operating engines, including the generator (if applicable).

Pay attention to prevailing conditions and provide for ventilation to induce fresh air and minimize exhaust re-entry. Orient the boat for maximum dissipation of the exhaust. DO NOT run the boat or boat equipment for extended periods under these conditions.
See Figure B6.

Figure B6: Minimize Exhaust Re-enty

Be aware that cockpit and deck drains can be a source of CO ingress into boats, especially boats with cockpit or decks enclosed with canvas or permanent boat structures.

J. The Effect of Boats Moored Along Side

A boat operator should be aware that carbon monoxide is emitted from any boat's exhaust. The operation, mooring, and anchoring in an area containing other boats may be in an atmosphere containing CO not of the operator's making. An operator likewise needs to be aware of the effect of their boat on other boats in the area. Of prime concern is the operation of an auxiliary generator where boats are moored along side each other. Be aware of the effect your exhaust may have on other boats and be aware that the operation of other boats' equipment may affect the carbon monoxide concentration on your boat.
See Figure B7.

Figure B7: The effect of boats moored along side

K. Backdrafting (Station Wagon Effect)

Backdrafting or the "station wagon effect" is caused by air movement over or around a boat creating a low pressure area or suction area around the stern that can increase CO level on the boat. Backdrafting can be affected by relative wind direction, boat speed, and boat trim angle. See Figure B8 Backdrafting – Airflows Over Boat and Behind Transom".

Figure B8: Backdrafting - Air flows over boat and behind transom

Under certain speed and operating conditions, the low pressure area may form in other regions and permit carbon monoxide to enter the hull through openings that are not on the back of the boat. Boat factors which may affect CO concentration:

1. Intentional or unintentional excessive trim angle causing high bow angle. See Figure B9.

2. Excessive or unequally distributed weight.

Figure B9: Inefficient trim angles

3. Canvas configurations – Under various conditions, adding or removing canvas may raise or lower CO levels. See Figures B8, B9 & B11.

DANGER

EXHAUST FUMES!

Hull exhaust from your boat can cause excessive accumulation of poisonous carbon monoxide gas within cockpit areas when using protective weather coverings (while underway or while stationary). Provide adequate ventilation when the canvas top, side curtains and/or back (aft) curtains are in their closed protective positions.

4. Opening and closing ports, hatches, doors, and windows may raise or lower CO levels on board a boat. When airflow is moving forward inside the boat, CO may be entering the boat. See Figures B10 and B11.

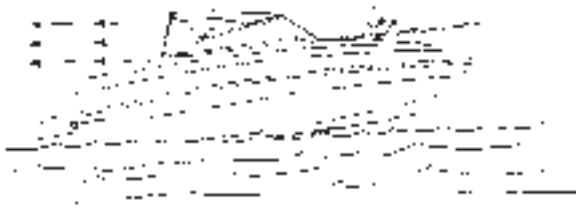


Figure B10: Desired air flow through the boat

Figure B11: The effect of canvas configurations

5. Operating a boat at slow speeds with a following wind should be avoided. Consider changing direction, adjusting speed, or both. See Figure B12.

Figure B12: Operating at Slow Speed with Following Wind

6. Be aware that cockpit and deck drains can be a source of CO ingress into boats, especially boats with cockpit or decks enclosed with canvas or permanent boat structures.

L. Accumulation of Exhaust Gases- Swim Platform

When the propulsion engine(s) or generator is running, CO is produced and may remain in the vicinity of the exhaust outlet (including underwater exhaust outlets).

1. Do not occupy aft lounging area(s) or swim platform.

2. Do not swim under or around swim platform.

3. Do not swim in the vicinity of the exhaust outlet.

Refer to Figure B13.

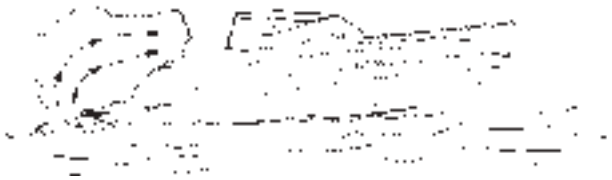


Figure B13: Exhaust Gas Accumulation at Swim Platform

M. Dangerous Activity - "Teak Surfing"/"Dragging"

Do not sit on, occupy or hang on any stern appendages (e.g., swim platforms, boarding ladders, etc.) while underway. Do not body surf, commonly known as "teak surfing" or "dragging", etc., in the wake of the boat. Do not tow persons in close proximity to the stern of the boat. See Figure B14. This activity can also increase the possibility of injury due to contact with a rotating propeller.

Figure B14: Exhaust Gas Accumulation- Dangerous Activity

N. Cabin Appliances

Boats having fuel burning appliances in accommodation areas should be provided with adequate ventilation and the appliance should be maintained to function properly.

O. Air Conditioning (Applicable Models Only)

Lack of system maintenance may cause CO to be brought into the air-conditioned spaces by the air conditioner. If applicable, please refer to the air conditioner manufacturer's literature for additional information. Please consult with your Four Winns Dealer regarding availability.

P. Ventilation of Accommodation (Occupied) Spaces

Accommodation spaces need to be ventilated to introduce fresh air into the spaces. Ventilation methods (e.g., windows, hatches, doors, and blowers) used to accomplish this may, under certain conditions, bring hazardous levels of CO into the occupied spaces. Care should be taken to be aware of all prevailing conditions when using these ventilating methods.

Q. Running of Engines in Idle

Engines running in idle exhaust carbon monoxide that can accumulate near the hull of the boat. Do not stand or swim near the engine exhaust or outdrive when engines are idling or generator is running.

R. Altitude and Sea Conditions

Operation at altitudes greater than 5,000 feet contributes to inefficient engine performance and may require adjustments to the ignition systems, fuel systems, or changing the propeller's size or gear ratio.

1. Failure to make adjustments to ignition systems and/or fuel systems for altitude conditions may cause an increase in CO production.

2. Reduced power resulting from increased altitude may require adjustments to propeller size.

3. Heavy sea or out of trim conditions tend to load engines resulting in reduced performance and thereby increasing their CO production.

S. Portable Generator Sets

DANGER

Never use a portable generator on a boat.

Gasoline-powered portable generators are available in the marine market place and are not an option available through Four Winns. Portable generators will produce CO. These sets discharge their exhaust products in locations which can lead to an increase in the accumulation of carbon monoxide in the accommodation occupied space. **Do not use gasoline-powered portable generators on Four Winns® boats.**

T. Maintenance - Engine Performance

Efficient engine performance is vital to minimizing CO production. The following items are those considered to have the greatest effect on increased CO production:

1. Fuel Systems - Fuel that is contaminated, stale or incorrect octane number

2. Carburetors/Injectors

   a. Dirty or clogged flame arrester

   b. Malfunctioning automatic choke plate or faulty adjustment of manual choke plate

   c. Worn float needle valve and seat

   d. High float level

   e. Incorrect idle mixture adjustment

   f. Dirty or worn injectors

3. Ignition System

   a. Fouled or worn spark plug.

   b. Worn points or incorrect gap on points

   c. Shorted or opened circuit high tension spark plug cables

   d. Incorrect ignition timing.

4. General

   a. Worn piston rings and valves

   b. Engine temperature - Cold running engines increase CO production. Engine cooling water system design and selection of thermostat(s) are primary considerations affecting engine operating temperature. Generally, an engine produces less CO if it operates at a relatively high temperature within manufacturer's specifications.

   c. Exhaust Back-Pressure - Certain alterations to the exhaust system may increase engine exhaust back pressure and CO production.

   d. Restricted engine room or compartment ventilation

U. Maintenance - External Conditions

External conditions that contribute to inefficient engine performance can include:

1. Fouled hull bottom

2. Damaged and fouled running gear (i.e., outdrive shaft, strut propeller, rudder and trim tabs, if applicable)

3. Incorrect selection of propeller size

V. Maintenance - Exhaust System Integrity

Gas tight integrity of exhaust systems must be maintained to insure that leakage of CO within the boat does not occur. Disassembly may be required to carry out a thorough inspection. Repair or replace components as indicated. Inspect the following:

1. Gaskets at cylinder head connection
2. Casting and pipe fittings in the dry section
3. All joints
4. Hoses
5. Clamps
6. Mufflers and their drain plugs
7. Thru-hull fittings
8. Hangers and other supports

W. Maintenance - Ventilation Systems

Boats are equipped with ventilation systems to eliminate gasoline vapors. Blowers and fans may also be provided for ventilation and to mitigate the migration of CO into occupied compartments. Attention should be paid to the following:

1. Keeping ventilation intakes clear of debris
2. Replacing damaged hardware
3. Maintaining the integrity of the ducting material and its connections
4. Ensuring that position of ducting intake is not obstructed or restricted, collapsed, kinked, or crushed
5. Eliminating sags in ducting that can form a water trap
6. Checking hangers and other supports
7. Ensuring blower/fan is operational
8. Ensuring that airflow is present at discharge
9. Inspecting wiring to equipment

X. Maintenance - Bulkhead and Deck Integrity

1. Seal all visible openings (e.g., cracks, crevices, holes, including openings around wiring and piping runs) in bulkheads and decks that separate machinery compartments from occupied compartments. These openings can permit migration of CO vapors.
2. Check gaskets and sealing surfaces on hatches, doors, and access panels.

Y. Maintenance - Air Conditioning Systems

These systems can be a source of CO ingress and migration of CO vapors.

1. Keep grilles and filters clean.
2. Seal bulkhead voids and openings at wiring and piping runs in return air ducting, plenums, and air handling equipment enclosures, especially those adjacent to machinery compartment bulkheads.
3. Check that water traps and condensate drains are present. These may be in the form of a double loop in the drain line or prefabricated p-traps. Any drain that discharges below the waterline when the boat is underway is sealed, by virtue of its design, against CO intrusion.

Z. Maintenance - Liquid Drains

Sink, shower and condensate drains can be a source of CO ingress. Ensure that water traps are present and contain fluid. These traps may be in the form of a double loop in the drain line or prefabricated p-traps. Any drain that terminates below the waterline is, by virtue of its design, sealed against CO intrusion. Some drains that are below the waterline when boat is underway will be above the waterline when the boat is at rest. The location of drains, relative to the waterline, can be affected by the dynamics of boat motion (i.e., underway or at rest).

AA. Carbon Monoxide Monitor

Four Winns has included two CO detectors as a standard feature. One of the CO detectors is located in the Day-berth and the other is located in the head. Check systems and maintain in accordance with the manufacturer's instructions.

WARNING

Never disarm a CO detector. If a CO detector alarms, immediately ventilate the area and check passengers for symptoms of CO intoxication. See your Four Winns dealer for assistance in diagnosing the cause for the alarm.

NOTICE

For information on CO Detection Systems, see American Boat and Yacht Council (ABYC Manual) Section A-24, "Carbon Monoxide Detectors".

Even with the best of boat design and construction along with the utmost care in inspection, operation, and maintenance of boat systems, hazardous levels of CO may still be present in accommodation spaces and exterior areas under certain conditions. Vigilant observation of passengers for CO sickness symptoms should be supplemented by a marine CO detection device in the accommodation space.

WARNING

A CO detector is not a gas/fuel vapor detector. Gas/fuel vapor detectors do not monitor the buildup of carbon monoxide in an enclosed area. For further information on the design, construction, and testing of boats in consideration of carbon monoxide, see ABYC TH-23.

NOTICE

Detection devices shall meet the requirements of ABYC A-24 "Carbon Monoxide Detection Systems on Boats".

B - 3 SAFE BOATING PRACTICES

NOTICE

***YOU** are responsible for your own safety, the safety of your passengers, and the safety of fellow boaters.*

A. Drugs and Alcohol

WARNING

Alcohol consumption and boating do not mix! Operating under the influence endangers the lives of your passengers and other boaters. Federal laws prohibit operating a boat under the influence of alcohol or drugs.

Do not use drugs or drink alcohol while operating a boat. Like driving a car, driving a boat requires sober, attentive care. Operating a boat while intoxicated or under the influence of drugs is not only dangerous, but it is also a Federal offense carrying a significant penalty. These laws are vigorously enforced. The use of drugs and alcohol, singly or in combination, decreases reaction time, impedes judgement, impairs vision, and inhibits your ability to operate a boat.

B. Safe Operation

Safe operation means that you do not misuse your boat nor do you allow your passengers to do so. Safe operation means using good judgement at all times. It includes, without limitation, the following actions:

- Observe all safety signs and warnings both inside the boat and in the immediate boating area.
- Become familiar with, and adhere to, the "Rules of the Road".
- Maintain boat speed at or below the legal limits. Avoid excessive speed or speeds not appropriate for operating conditions.
- Be sure at least one other passenger is familiar with the operation and the safety aspects of the boat in case of an emergency, and knows how to use and locate all safety equipment.

- Load the boat within the limits listed on the capacity plate. Balance loads bow and stern and port to starboard. Passengers are to sit only on seats, not seat backs, gunwales, engine cover, or any other unsafe locations.
- Do not use the boat in bad weather or sea conditions beyond the skill or experience of the operator or the comfortable capability of the boat or passengers.
- Make sure the passengers and gear do not obstruct the operator's view or impede his ability to move.
- Do not exceed the maximum engine power rating stated on the certification plate located inside the boat.

C. Passenger Safety

Before getting underway, show all passengers where emergency and safety equipment is stowed, and explain how to use it. Everyone aboard should wear rubber-soled shoes which resist slipping on wet surfaces. While underway, passengers should remain seated inside the deck rails and gates. Do not allow passengers to drag their feet or hands in the water. Always use handholds and other safety hardware to prevent falls. All nonswimmers, poor swimmers and small children should wear PFDs at all times.

D. Propeller

⚠ WARNING

PERSONAL INJURY

Do not allow anyone near a propeller, even when the engine is off. Propeller blades can be sharp and continue to turn even after the engine is shut off. Do not allow anyone near the propeller when the throttle is in neutral position. Accidently engaging the shift can result in a serious injury or death. (See actual ladder warning labels and helm boarding ladder warning label below).

⚠ DANGER

Never approach or use ladder when motor is running. Severe injury or death will result from contact with rotating propeller.

Ladder Warning Label

⚠ DANGER

Shut off motor when near swimmers. Severe injury or death will result from contact with rotating propeller.

Helm Boarding Ladder Warning Label

⚠ WARNING

When pulling skiers do not turn on the engine until you are at least a boat length away from the person in the water. When approaching a downed skier, turn off the engine at least one boat length away before reaching the skier in the water.

E. First Aid

As a boater, you should be familiar with the basic first aid procedures that may be needed while you are out far from help. Fish hook accidents or minor cuts and abrasions may be the most serious mishaps on board a boat but you should also learn the proper procedures and be ready to deal with the truly serious problems like mouth-to-mouth resuscitation, excessive bleeding, hypothermia, and burns. First aid literature and courses are available through most Red Cross chapters.

F. Operation By Minors

Minors should always be supervised by an adult whenever operating a boat. Many states have laws regarding the minimum age and licensing requirements of minors. Be sure to check local laws or contact the state boating authorities for information.

G. "Rules of the Road"

As a responsible boater, you must comply with the "Rules of the Road," the marine traffic laws enforced by the US Coast Guard. Navigating a boat is much the same as driving an automobile. Operating either one responsibly means complying with a set of rules intended to prevent accidents. Just as you assume other car drivers know what they are doing, other boaters assume you know what you are doing. Information regarding navigational rules and the "Rules of the Road" are discussed in further detail in C-1 & C-2 of the next section.

H. Voluntary Inspections

State boating officials in many states or the US Coast Guard Auxiliaries offer courtesy inspections to check out your craft. They will check for compliance with safety standards and required safety equipment. You may voluntarily consent to one of these inspections, and you are allowed to make corrections without prosecution. Check with the appropriate state agency or the Coast Guard Auxiliary for details.

I. Safe Boating Courses

The local US Coast Guard Auxiliary and the US Power Squadrons offer comprehensive safe boating classes several times a year. You may contact the Boat/U.S. Foundation at 1-800-336-BOAT (2628) for a course scheduled in your area. Also contact the US Coast Guard Auxiliary or Power Squadron Flotilla for the time and place of their next scheduled class.

J. Anchoring

The weight of the anchor and diameter of anchor line should be governed by the size and weight of your boat. Keep anchor secure while underway to prevent damage or injury due to sudden shifting in the boat's attitude.

Use two or more anchors if anchoring overnight or for extended periods. If not using two anchors, make certain there is sufficient clearance for your boat to swing in a full circle to prevent damage in case of shifting winds.

Make certain you have enough anchor line (or scope) for the depth of water. Your anchor line should be 6 to 7 times the depth of water anchored in. For example, if you are in 20 feet of water, use 120 to 140 feet of anchor line.

⚠ CAUTION

Secure anchor line to bow eye or deck cleat. Never tie anchor line to a rail, rail fitting or other hardware not designed to support this stress.

To drop anchor:

Approach your selected anchoring site from downwind and come to a dead stop over the spot where you want to drop anchor. Lower the anchor manually or by using the windlass if applicable.

Maneuver the boat slowly backwards until length of anchor line is 6 or 7 times the depth of the water.

Fasten the anchor line around the bow eye or deck cleat. Anchor flukes should dig in and catch. Watch for anchor drag by checking shoreline landmarks at the time the anchor is dropped and one-half hour later. If the boat has drifted away from these reference marks, the anchor is dragging and must be reset.

To weigh anchor:

Start the engine running before pulling in anchor.

Slowly maneuver the boat forward to reduce tension on the line and make retrieval of the anchor line easier.

Raise the anchor manually or by using the windlass if applicable. Make sure the chain stop is engaged if windlass is used. Properly stow anchor and anchor line.

⚠ WARNING

Always be sure to raise and secure the anchor prior to operating your boat. Failure to raise and secure anchor before getting underway could result in severe injury or damage to boat from rebounding anchor.

⚠ WARNING

Always utilize the chain stop provided with the windlass/bow roller combination. The chain stop prevents the anchor from accidently releasing while the boat is moving thus preventing damage to the boat or possible injury or death to individual(s) aboard the boat.

If the anchor becomes stuck, attach the vertical line to the mooring cleat. Wave action on the bow may lift flukes from the bottom and free the anchor. If the anchor is still stuck, feed out a few feet of line and attach it to the bow cleat. Maneuver the boat around the anchor, keeping the line firm. Determine the angle that will work to pull the anchor free.

Anchors are available in different shapes, sizes and weights to fit different boats, uses, and conditions.

Your Four Winns dealer can tell you which anchor will work best for your boat.

B - 4 WATER SPORTS

WARNING

PERSONAL INJURY

Four Winns® boats are not designed for and should not be used for pulling parasails, kites, gliders or any device which can become airborne. Use boat only for appropriate water sports. (See Preface for actual warning label).

Water skiing, wakeboarding, kneeboarding, or riding a towed, inflatable apparatus are some of the more popular water sports. Taking part in any water sport requires increased safety awareness by the participant and the boat operator. If you have never pulled someone behind your boat before, it is a good idea to spend some hours as an observer, working with and learning from an experienced driver. It is also important to be aware of the skill and experience of the person being pulled. Always have a second person on board to observe the person in the water so the driver can concentrate on operating the boat.

A. Water Sport Guidelines

Everyone participating in a water sport should observe these guidelines:

1. Allow only capable swimmers to take part in any water sport.

2. Always wear a personal floatation device (PFD) approved by the US Coast Guard. Wearing a properly designed PFD helps a stunned or unconscious person stay afloat.

3. Be considerate of others with whom you share the water.

4. Give immediate attention to a person who has fallen. He or she is vulnerable in the water alone and may not be seen by other boaters.

5. Approach a person in the water from the lee side (opposite the direction of the wind). **Turn off the motor at least a boat length from the person.**

6. Turn engine off and anchor before swimming.

7. Always participate in water sports in safe areas. Stay away from other boats, beaches, restricted areas, swimmers and heavily traveled waterways.

8. Swim only in areas designated as safe for swimming. These are usually marked with a swim area buoy (see Figure B15). Do not swim alone or at night.

Figure B15: Swim Area Buoy

WARNING

Rotating Propeller!

Rotating propeller can cut or sever causing serious injury or death. Shut engine off and remove ignition key when anyone is swimming nearby. (See Section B-3D).

9. Do not allow anyone near the propeller(s), even-when the engine is off. Propeller blades are sharp and can continue to turn even after the engine is off. Stay at least 150 feet away from areas marked by diver down float. See Figure B16.

Figure B16: Diver Down Float

10. Do not drive the boat directly behind a water skier. At 25 miles per hour, the boat will overtake a fallen skier who was 200 feet in front in about 5 seconds.

B. Water Skiing/Wakeboarding/Kneeboarding

The popular sport of water skiing has brought a special set of safety precautions to observe in boating. The following guides help prevent accidents while water skiing.

1. Water ski only in safe areas, away from other boats and swimmers, out of channels, and in water free of underwater obstructions.

2. Allow no one who can not swim to water ski. Skiers must wear a USCG approved floatation device. A Type III water-ski vest is an approved and practical PFD.

3. Have a second person aboard to observe the skier and inform the driver about the skier's hand signals (Figure B17). The driver must give full attention to operating the boat and the waters ahead.

4. Give immediate attention to a fallen skier. Be careful not to swamp the boat while taking the skier on board.

5. Always participate in water sports in safe areas. Stay away from other boats, beaches, swimmers, and heavily traveled waterways.

6. Be considerate of others with whom you share the water.

7. Give immediate attention to a person who has fallen. He or she is vulnerable in the water alone and may not be seen by other boaters.

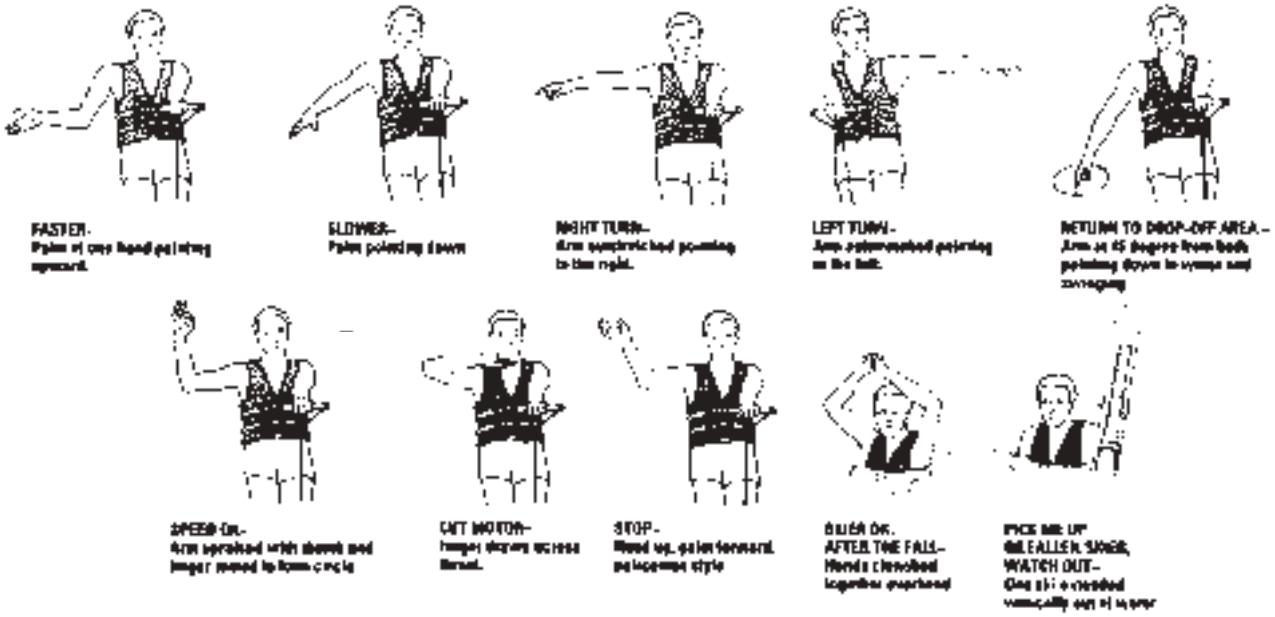


Figure B17: Skier's Hand Signals

C - 1 GENERAL

Basic rules of seamanship, general information about navigational aids, and sources for additional reading and boater education are presented in this portion of your owner's manual.

A. Boating Regulations

The US Coast Guard is the authority of the waterways. State boating regulations are enforced by local authorities. Your boat is subject to the marine traffic laws known as "Rules of the Road," which are enforced by the US Coast Guard. You are subject to marine traffic laws and "Rules of the Road" for both federal and state waterways; you must stop if signaled to do so by enforcement officers, and permit them to board if asked. The "Navigational Rules, International-Inland Rules of the Road" can be obtained from the US Coast Guard website at www.uscgboating.org.

Many pamphlets prepared by the US Coast Guard are available. They explain signal lights, buoys, safety, international and inland regulations and other information which goes beyond the scope of this manual. "Aids to Navigation" (US Coast Guard pamphlet #123) explains the significance of various lights and buoys. Because of proposed alterations to buoys and markers, contact the US Coast Guard or visit their website to stay informed of changes. Other pamphlets, including the "Boating Safety Training Manual" and "Federal Requirements For Recreational Boats," are also available from the US Coast Guard.

NOTICE

The spoken word "MAYDAY" is the international signal for distress. "MAYDAY" should NEVER be used unless there is grave or imminent danger, and you are in need of immediate assistance.

B. Rules of Seamanship

1. Right-of-way

In general, boats with less maneuverability have right-of-way over a more agile craft. You must stay out of the way of the following vessels:

A vessel not under command or aground.	These vessels have no maneuverability.
A vessel restricted in its maneuverability.	These vessel are performing work which limits their maneuverability such as surveying, dredging, laying pipe or cable, servicing navigational markers among others.
A vessel engaged in fishing.	These include boats fishing with lines, trawl or nets; but not trolling lines.
Sailboats	Sailboats have the right-of-way over power boats; however, if a sailboat is using a propeller to move forward, it is considered a power boat even if its sails are up.

2. Meeting Head-On

When two boats meet head-on neither boat has right-of-way. Both boats should decrease speed and pass; port to port. However, if both boats are on the left side of a channel, each vessel should sound two short horn blasts and pass to starboard to starboard. See Figure C1.

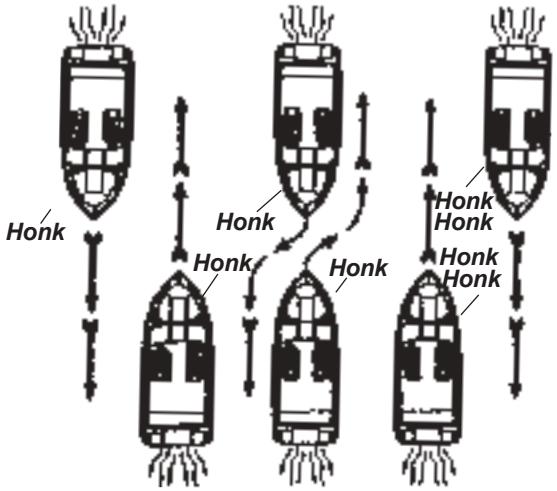


Figure C1: Meeting Head-On

3. Crossing Situations

In a crossing situation, the boat on the right from the 12-4 o'clock position has the right-of-way. It must hold course and speed. The boat without the right-of-way must keep clear and pass to the stern. See Figure C2.

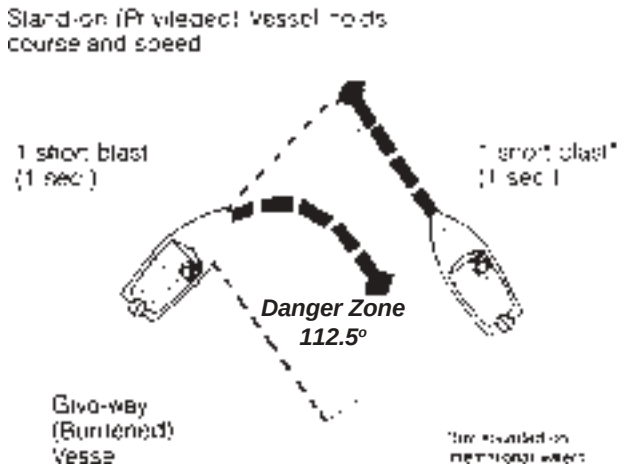


Figure C2: Crossing Situation

4. Overtaking

The boat overtaking the one ahead must yield the right-of-way to the boat being passed. The overtaking boat must make necessary adjustments to keep out of its path. The boat being passed should hold its course and speed. See Figure C3.

Inland Rules	Stand-on (Privileged) Vessel Being Overtaken	Inland Rules
"I want to pass you on your port side. 2 short blasts (1 sec.) "Proceed" 2 short blasts (1 sec.) International Rules "I am altering my course to port." 2 short blasts (1 sec.) International Rules in Narrow Channels "I intend to pass you on your port side." 2 prolonged blasts (4-6 sec.) 2 short blasts (1 sec.) "Proceed." 1 prolonged, 1 short 1 prolonged, 1 short	 Give-way (Burdened) Vessel Overtaking	"I want to pass you on your starboard side. 1 short blast (1 sec.) "Proceed" 1 short blast (1 sec.) International Rules "I am altering my course to starboard." 1 short blast (1 sec.) International Rules in Narrow Channels "I intend to pass you on your starboard side." 2 prolonged blasts (4-6 sec.) 1 short blast (1 sec.) "Proceed." 1 prolonged, 1 short 1 prolonged, 1 short blast

Figure C3: Overtaking

5. The General Prudential Rule

The general prudential rule regarding right-of-way is that if a collision appears unavoidable, neither boat has right-of-way. As prescribed in the "Rules of the Road", both boats must act to avoid collision.

6. Night Running

Boats operating between sunset and sunrise (hours vary by state), or in conditions of reduced visibility, must use navigational lights. Nighttime operation, especially during bad weather or fog, can be dangerous. All "Rules of the Road" apply at night, but it is best to slow down and stay clear of all boats regardless of who has right-of-way.

To see more easily at night, avoid bright lights when possible. Also, it is helpful to have a passenger keep watch for other boats, water hazards, and navigational aids.

To determine the size, speed and direction of other vessels at night, you should use running lights. A green light indicates the starboard side, and the red light indicates the port side. Generally, if you see a green light, you have the right-of-way; if you see a red light, give way to the other vessel. See Figure C4.

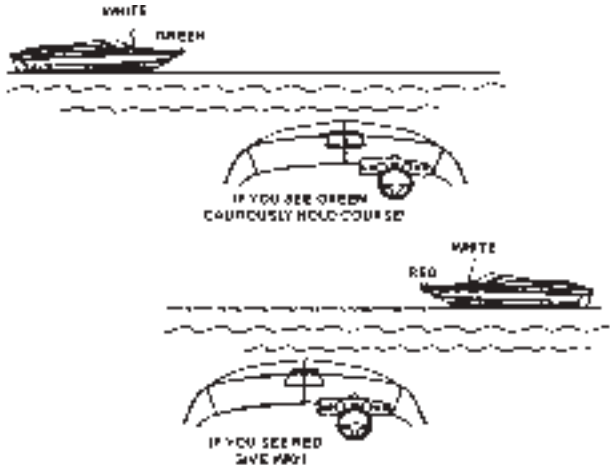


Figure C4: Night Running

7. Whistle Signal

Out on the water, whistle signals are commonly used. Although using a whistle signal is not necessary every time a boat is nearby, operators must signal their intentions when necessary to avoid potentially confusing or hazardous situations. Use whistle blasts early enough to be noticed and understood by other boaters.

It is customary for the privileged boat to signal first and the yielding boat to return the same signal to acknowledge she understands and will comply. Use the danger signal (five or more short and rapid

blasts) if intent is not clear. A short blast is one or two seconds long. A long blast is 4 to 6 seconds long. The Navigational Aids Chart at the end of this section lists the meanings of the various whistle signals.

C - 2 NAVIGATIONAL AIDS

Aids to navigation (ATONS) help you to travel safely on the water. They help you get from one place to another and are most helpful if you have a nautical chart. A navigational aids chart is at the end of this section.

⚠ DANGER

NEVER tie your vessel to an ATON. It is illegal because it blocks the ATON from view of other boaters. Decreased visiblility can contribute to a serious accident which may result in property damage, personal injury, or death.

There are two ATON systems. The system used on federal waters is known as the International Association of Lighthouse Authorities System B (IALA-B). The Coast Guard maintains this system. The second system is the Uniform State Waterway Marking System (USWMS). This system is maintained by state authorities.

A. International Association of Lighthouse Authorities System B (IALA-B)

IALA-B uses four types of ATONS. This section discusses the two most common markers: lateral markers and safe water markers. Other federal markers include special markers and isolated danger markers. The Navigational Aids Chart at the end of this section shows these aids.

B. Lateral Markers

Lateral markers indicate the sides of navigable channels. They consist of lighted can or nun buoys and daymarks. Each has a number and is either red or green. The numbers on the green markers are odd. Red markers have even numbers.

Buoys are red or green floating ATONS. If lighted, they have either red or green lights. Unlighted green buoys, called cans, look like cylinders. Unlighted red nun buoys have a cone shaped top with their points cut off. Do not pass too close to a buoy. You may foul the propeller in its chain.

NOTICE

Buoys are anchored floating objects and may not always be in exactly the same position.

Daymarks are red or green boards with numbers. They are on posts or groups of pilings tied together and called dolphins. Daymarks and their supports are daybeacons. Daybeacons may or may not have lights. If a red or green daybeacon has a light, it is the same color as the marker-red or green. Red daymarks are triangular and have even numbers. Green daymarks are square and have odd numbers.

Red Right Returning is a basic rule to assist you in using lateral markers. When you are returning from seaward, keep red markers on the starboard (right) side when you pass them. Keep green markers to the port side.

Returning from seaward is very clear if you have been on the ocean. You are returning to port. By agreement, going upstream on a navigational river is returning from seaward. The outlet ends of the Great Lakes are also the seaward ends. Traveling from a large body of water to a smaller one is considered returning from seaward.

C. Safe Water Markers

Safe water markers have vertical red and white stripes and mark the center of navigable channels and fairways. Safe water markers included both lighted and unlighted buoys and daymarks. If a marker is lighted, the light is white and flashes the letter “A” is Morse Code.

Preferred Channel markers have horizontal red and green bands. If lighted, the color of the light is the same as the top of the band. They show the preferred channel for you to use at a junction point. Be sure to notice the color of the top of the band, and treat it as any other marker you would of that color. If the band is red and you are returning from seaward, keep the marker to the right.

Most lights on markers flash on and off. Others such as lights on aids with no lateral significance are fixed. They stay on all night. ATON lights flash in regular patterns. For example, they may flash every three seconds, or in groups such as two flashes and a pause. There are a number of flashing patterns, which help you identify the light at night. To identify

a light, note its color and pattern or timing of flashes, and compare it to your chart to find its location.

D. The Uniform State Waterway Marking System

This section discusses three kinds of markers in this system: Regulatory, Informational, and Lateral.

Regulatory markers in this system are either signs or buoys. Signs are square with orange borders. Regulatory buoys are white and shaped like cylinders. They have horizontal orange bands near their tops and just above the water's surface. An orange circle on a marker means a controlled area. A message such as "No Wake, Idle Speed, No Skiing, or 5 M.P.H." may appear on a marker. An orange diamond means danger. If a diamond has an orange cross inside it, do not enter the area. The reason you should stay out, such as "Swim Area" may be printed in black on the marker.

Informational Markers are white signs with orange borders. They give information such as direction, distance, and location.

Lateral markers in the USWMS system are either numbered red or black buoys. Black buoys may have green reflectors or lights. They are the equivalent of green buoys in the IALA-B system. Red buoys may have red reflectors or lights. They are the same as red buoys in the IALA-B system. Red or black buoys are usually found in pairs – pass between them.

E. A Special Sign

In Florida, you may see a special sign: "Caution, Manatee Area". When you see this sign, slow down to idle speed. Manatees, an endangered species, are passive, large, slow-moving mammals. Many manatees are seriously injured or killed each year by boat propellers.

F. Noise

Always be aware of local laws on noise limits. Noise means engine noise, radio noise or even yelling by people on your boat. Good seamanship demands that you operate your boat quietly so as not to infringe on the rights of others. Do not use thru-hull exhaust unless you are well offshore.

C - 3 RECOMMENDED READING

We recommend that you read the boating literature published by your state boating agency and the US Coast Guard. Other suggested reading includes the following:

Damford, Don. Anchoring. (ISBN 0-915160-64-1). Seven Seas.

United States Coast Guard Auxiliary. Boating Skills and Seamanship. LC74-164688.(illus.). (ISBN 0-930028-00-7). US Coast Guard.

Bottomley, Tom. Boatman's Handbook, (illus.). 316 p.
(ISBN 0-688-03925-1, Hearst Marine Book). Morrow.

Whiting, John and Bottomley, Tom. Chapman's Log and Owner's Manual. 192 p.(ISBN 0-686-96737-2). Hearst Marine Book.

Chapman, Charles F. and Maloney, E.S. Chapman's Piloting, Seamanship and Small Boat Handling. (illus.). 62 p. (ISBN 0-87851-814-2, Pub. by Hearst Bks.); deluxe ed. (ISBN 0-87851-815-0). Morrow.

National Fire Protection Association. Fire Protection Standard for Pleasure and Commercial Motor Craft. (ISBN 0-317-07388-5, NFPA 302). National Fire Protection Association.

Brotherton, Miner. Twelve-Volt Bible.
(ISBN 0-915160-81-1). Seven Seas.

C - 4 CONTACTS

There are many good boating publications that have information about your area and what other boats are doing, such as clubs and other activities. Educational programs are sponsored by publications and organizations such as the US Power Squadron, US Coast Guard Auxiliary and the American Red Cross. See your dealer about special courses available in the area. For detailed information contact:

American Red Cross
Local address (see local telephone directory)
website: www.redcross.org

Boat US Foundation for Boating Safety
1 800-336-BOAT

website: www.boatus.com/courseline

US Coast Guard Info Line
1 800 368-5647

Skippers Course
GPO Superintendent of Documents
Washington, DC 20012
202 512-1800
202 512-2250 (fax)

United States Coast Guard Auxiliary
Local Flotilla or contact appropriate Coast Guard District Headquarters
website: www.cgaux.org

United States Coast Guard Headquarters
2100 2nd St., SW
Washington, D.C. 20593-0001
202 267-1060
website: www.uscgboating.org

United States Power Squadron
P.O. Box 30423
Raleigh, NC 27617
website: www.usps.org

C - 5 OWNER'S LOGS AND RECORDS

At the end of this owner's manual are several forms which you will find very helpful.

The **Float Plan** provides a record of your destination, departure and return times, boat description, passenger list, and other information about the trip you have planned. At the bottom of the form is space for listing emergency telephone numbers in case your return is delayed past the expected time. It also has space for indicating information about the person filing this report. Leave the completed form ashore with a responsible person. We recommend you make several copies of this form each boating season to assure an ample supply.

The **Fuel Log** is a handy way to record information covering engine hours, fuel consumption, miles traveled, as well as RPM (revolutions per minute), average MPH (miles per hour) and GPH (gallons per hour).

The **Service/Maintenance Log** provides a record of maintenance work completed, the date of completion, and the engine hour reading. This log also helps you identify the frequency of routine maintenance work, such as engine oil changes. If you should decide to sell your boat, it demonstrates to perspective buyers that you have done a good job taking care of it.

The **Service Information Sheet** allows you to record all the pertinent information regarding your Four Winns® boat. This sheet will be extremely helpful when ordering additional/optional parts for your boat or when having service work done.

C - 6 NAVIGATIONAL AIDS CHART

The illustrated Navigational Aids Charts contain information concerning whistle signals, storm warnings, bridge signals, and buoy descriptions. See the inside back cover of this manual.

D - 1 FOUR WINNS WARRANTY POLICY

The Four Winns Winning Edge™ Owner Protection Plan provides the new Four Winns purchaser with one of the most comprehensive corporate commitments in the marine industry today. The Winning Edge™ Owner Protection Plan defines the warranty coverage on all units manufactured by Four Winns. It thoroughly describes the warranty policies and those procedures to be followed to obtain warranty coverage. Review the Four Winns Owner Protection Plan and limited warranty statements carefully.

All engines utilized in the Four Winns® product are warranted by the engine manufacturer. Your Four Winns dealer is authorized to repair your engines and will work closely with the engine manufacturer to resolve any problems you have.

D - 2 DECK/HULL STRUCTURE WARRANTY

Each unit manufactured by Four Winns is encompassed by a separate warranty providing specific coverage on the deck/hull structure. The Winning Edge™ Owner Protection Plan thoroughly describes this coverage.

D - 3 WARRANTY REGISTRATION

A Four Winns Warranty Registration Card is attached to the Winning Edge™ Owner Protection Plan statement. Your Four Winns Dealer is responsible for completing and mailing the warranty card at the time of purchase. The receipt of the warranty card is the sole basis for establishing proof of ownership of the boat and corresponding warranty validation.

By signing the warranty registration card you, the new owner, indicate an understanding of the terms and conditions of the Limited Warranty. The warranty registration card should be properly completed by the dealer, signed by the new owner, and returned to us within fifteen (15) days after the original purchase in order to validate the warranty. This is a dealership's responsibility. Be sure to keep the Owner's Registration Card for your records.

All boat manufacturers are required by The Federal Boat Safety Act of 1971 to notify first time owners in the event any defect is discovered "which creates a substantial risk of personal injury to the public." In order for us to notify you if necessary, be sure to verify the accuracy of the embossed Winning Edge™ card upon receipt. You should receive your Winning Edge™ card within approximately 30 days from the day of your boat purchase. If you have not received your Winning Edge™ card within this time frame please contact your Four Winns selling dealer for resolution. If upon receipt of the card you discover a discrepancy, please notify Four Winns at 231 775-1343. A corrected Winning Edge™ card will then be sent to you.

Other equipment manufacturers also require that their products be registered with the respective companies. Warranty registration cards are provided in the owner's information packet.

D - 4 TRANSFER OF WARRANTY

Four Winns' confidence in the product and our warranty commitments can extend after the original purchaser may choose to move on to a new boat. The remainder of the Four Winns warranty coverage is transferable to the second owner of the boat for a fee. The warranty may be transferred only once. Registration of the second owner is required and the amount of the transfer fee is indicated on the warranty statement of the Warranty Registration Card. Transfer of the remainder of the warranty must occur within five (5) years of the original retail sale. The transfer fee must be paid within fifteen (15) days of purchase of the used boat by check, money order or cashier's check payable to Four Winns. Proof of purchase date is required. We will notify the appropriate engine manufacturer of the boat warranty transfer. The Winning Edge™ Owner Protection Plan thoroughly describes the action required to transfer warranty coverage.

D - 5 PRE-OWNED UNIT REGISTRATION

Section E-4 Transfer of Warranty discusses the need to properly register the purchase of a pre-owned boat with Four Winns in order to transfer applicable warranty coverage.

Purchasers of all Pre-Owned Four Winns models, regardless of the decision to transfer warranty coverage, are encouraged to register ownership with Four Winns. To register ownership of a "Pre-Owned Four Winns® boat," provide Four Winns with your name, address, daytime phone number, e-mail address, purchase date, and hull serial number of the boat purchased. The hull serial number plate is permanently affixed to the starboard side of the transom. Registration of a Pre-Owned Four Winns® boat does not extend or in any way affect or modify the specific

terms of the Winning Edge™ Owner Protection Plan or Limited Warranties. We provide this service to the purchasers of Pre-Owned Four Winns® boats in the interest of better boating. Four Winns welcomes every purchaser of a Four Winns® boat, new or used, to our family.

D - 6 INSURANCE COVERAGE

One of your responsibilities as a new boat owner is to acquire proper insurance protection. Insurance should include comprehensive and general liability coverage appropriate to your financial needs. Please contact your local agent for assistance on insurance coverage.

D - 7 SERIAL NUMBER RECORD

The manufacturer, model, and serial number of major components are recorded during the assembly of each Four Winns® boat. A copy of this form is included in the owner's packet. Using this form, you may want to have your dealer help you complete the service information form at the back of this manual. A copy of the serial number record should be made and kept by the dealer in his records. This can assist the dealer in processing warranty claims, or obtaining necessary information. The original copy of the serial number record should be kept in the owner packet. The service information form should remain in the owners manual for easy reference.

D - 8 PRE-DELIVERY SERVICE

Four Winns makes every effort to deliver your boat in "turn key" condition to the dealer. The process of transporting and handling the boat necessitates certain inspections and adjustments prior to delivery to you. Also, various aspects of operation must be checked and adjusted immediately prior to final delivery and use.

The selling Four Winns dealer must perform this thorough review of the boat and its numerous systems during the commissioning or "dealer pre-delivery service" of the craft.

A Four Winns Pre-Delivery Inspection Form is part of the Warranty Registration Card. It lists the many items encompassed by the pre-delivery service previously described. The dealer is to check off the items as they are completed, and complete the form as indicated providing specific performance related information appropriately.

Your Four Winns dealer will sign the Pre-Delivery Inspection Form of the Warranty Registration Card upon completion of the work. You will also be asked to sign the Pre-Delivery Inspection Form upon accepting delivery of the boat. You are to retain the two copies marked "Boat Owner". Your dealer is to retain the copy marked "Dealer copy" for his records. The Manufacturer's copy is electronically sent to the Four Winns Customer Service Department.

D - 9 REPLACEMENT PARTS

Four Winns dealers are equipped with a Four Winns parts manual that details the components of each model and their appropriate part numbers. Many Four Winns dealers inventory common replacement components.

In addition, Four Winns maintains specific records on the components used in the manufacture of each unit and makes a concerted effort to maintain components specifically to fill replacement part needs.

The Four Winns dealer from whom you purchased your boat is in the best position to meet your needs. If the dealer does not have the needed item, the dealer has the capability, through direct contact with the Four Winns Customer Service Department, to obtain it quickly. Four Winns will only sell replacement parts to established Four Winns dealers. If you relocate and cannot find a Four Winns dealer close to you, contact the Four Winns Customer Service Department for information on the nearest dealer in your area.

D - 10 OWNER'S RESPONSIBILITIES

1. Sign the warranty registration card verifying your address, model and hull serial number. The dealer is responsible for mailing the warranty registration card to us.
2. Inspect the boat at the time of delivery to verify that all systems and components are operating safely and acceptably. Read all manuals and instructions.
3. Operate all equipment in compliance with the manufacturer's instructions.
4. Review the pre-delivery checklist for the boat and engine with your dealer when you take delivery.

5. Schedule your 20-hour boat and engine checkup with your dealer.
6. Know how to safely operate your boat and the rules of the road before you use your boat.

   IMPORTANT: Make sure that your dealer checks the engine alignment during your boat's 20-hour checkup. The engine alignment check should be performed in accordance with recommended procedures as stated by the engine manufacturer in your engine owner's manual. Failure to do so could result in drive train damage which is not covered under the warranty.

7. We recommend that you review your engine owners manual and warranty certificate for break-in advice, initial inspection and service requirements.
8. Perform or provide for the scheduled maintenance checks outlined in this manual and all related service guides and manuals.
9. You are responsible for any modifications made to the boat or its equipment that could affect the safe operation of the boat.

Along with boating, comes responsibility. Responsibility for safety, boating laws, and the environment. Please think about the future of our waterways, oceans and marine life while you're out enjoying them and take all necessary measures to help protect what natural habitats we have left. Keeping our waterways and marine habitats free from debris, and showing consideration for the creatures who thrive in these environments are some ways you can help assure the pleasure of boating for years to come.

The operator is also responsible for complying with the following procedures and operational requirements:

- State registration
- Insurance
- Warranty registration
- Warranty terms and conditions
- Rules of the road
- Break-in procedure
- Proper maintenance of the boat and its systems
- Safety equipment
- Safety training of passengers and crews
- Knowledge of boat systems
- Seaworthiness/operational inspection
- Safe operating practices
- Avoiding use of drugs/alcohol
- Environmental regulations
- Accident reporting

D - 11 CONSTRUCTION STANDARDS

All Four Winns® boats meet or exceed the construction standards set by the US Coast Guard and the American Boat and Yacht Council (ABYC) concerning:

- Navigational lights
- Factory-installed fuel systems
- Engine and fuel tank compartment ventilation
- Flotation
- Steering systems
- Backfire flame arresters

We recommend that you see your dealer if you wish to modify factory-installed equipment or add new equipment. Your dealer is qualified to make such modifications or additions without placing the safety or design integrity of your boat at risk and without invalidating the warranty.

D - 12 WINNGEAR

Show your colors! Four Winns offers a complete line of sports clothing designed to complement your new boat. The WinnGear™ line is on display on our website at www.fourwinns.com. See Figure D1 for a glimpse.

Figure D1: Winngear™ Sample
(Subject to Change Without Notice).

FOUR WINNS®

NAME / ADDRESS CHANGE FORM

Name & Address:
Please print clearly.

_____

_____

_____

_____

Telephone & E-Mail Address: _____

Hull Identification Number: _____

Boat Model: _____

Date of Purchase: _____

NOTE: For warranty transfer please use the Warranty Transfer Request Form also included in this manual.

Please place in envelope and mail to: Four Winns
925 Frisbie Street | Cadillac, MI 49601

FOUR WINNS®

NAME / ADDRESS CHANGE FORM

Name & Address:
Please print clearly.

_____

_____

_____

_____

Telephone & E-Mail Address: _____

Hull Identification Number: _____

Boat Model: _____

Date of Purchase: _____

NOTE: For warranty transfer please use the Warranty Transfer Request Form also included in this manual.

Please place in envelope and mail to: Four Winns
925 Frisbie Street | Cadillac, MI 49601

FOUR WINNS®

NAME / ADDRESS CHANGE FORM

Name & Address:
Please print clearly.

_____

_____

_____

_____

Telephone & E-Mail Address: _____

Hull Identification Number: _____

Boat Model: _____

Date of Purchase: _____

NOTE: For warranty transfer please use the Warranty Transfer Request Form also included in this manual.

FOUR WINNS L.L.C., 925 Frisbie Street, Cadillac, MI 49601 Phone (231) 775-1343

WARRANTY REGISTRATION TRANSFER REQUEST

Original Owner Name & Address: _____

_____

_____

Original Date of Purchase: _____

Hull Identification Number: _____

Boat Model: _____

Selling Dealer: _____

Name and address of new purchaser: _____

_____

_____

Telephone & E-Mail Address: _____

Date of Purchase: _____

The warranty may be transferred only once. Registration of the second owner is required and the amount of the transfer fee* is indicated on the warranty statement of the Warranty Registration Card. Transfer of the remainder of the warranty must occur within five (5) years of the original retail sale. The transfer fee must be paid within fifteen (15) days of purchase of the used boat by check, money order or cashier's check payable to Four Winns. We will notify the appropriate engine manufacturer of the boat warranty transfer.

This warranty registration request if accepted, transfers the warranty coverage remaining on the boat to the new purchaser. Acceptance of this request does not create any additional warranties or obligation on Four Winns.

Warranty Expiration Date: _____

Four Winns Transfer Acceptance Date: _____

Four Winns Authorized Signature: _____

Mail to Four Winns L.L.C., 925 Frisbie Street, Cadillac, MI 49601, Attn: Customer Service Department.

***Subject to change without notice.**

E - 1 GENERAL

⚠ WARNING

DO NOT attempt to service any engine without being totally familiar with the safe and proper service procedures. Do not attempt to maintain or adjust an engine while it is running. Certain moving parts are exposed and failing to shut off the engine can result in serious injury or death.

Four Winns does not manufacture engines. Because of the technical nature of the engines, all manufacturers of these items require that warranty and service problems be taken directly to an authorized dealer for resolution. The Four Winns dealer from whom you purchased your boat will handle all warranty and service matters with the engine manufacturer for you.

In compliance with the Federal Boat Safety Act of 1971, all engine manufacturers require their products to be registered. A registration card is furnished with each new engine. When selling a Four Winns® boat, the dealer, along with the purchaser, should complete the information requested on these cards and return them to the respective engine manufacturers. Engine registration cards are provided with the engine and will usually be found with the owner's information packet.

Each manufacturer of the various marine power components provides an owners information manual with their product. This publication is included with this manual. It is important that you read the manual(s) carefully and become completely familiar with proper care and operation of the engine system. Be sure to read the section on winterization. Replacement costs associated with frozen engine components are quite substantial.

Also review the other sections in this manual, especially Sections I on Fuel Systems, and Section F on Control Systems.

E - 2 ENGINE EXHAUST

The carbon monoxide in exhaust fumes can be hazardous. It is important for you and your passengers to be aware of the potential safety hazard created by exhaust fumes. Familiarize yourself with the symptoms of individuals overcome by carbon monoxide, and most importantly, ways you can protect yourself and your guests.

⚠ WARNING

DO NOT inhale exhaust fumes! Exhaust contains carbon monoxide which is colorless and odorless. Carbon monoxide is a dangerous gas that is potentially lethal.

Persons overcome by carbon monoxide may exhibit the following symptoms:

a. Watering and itchy eyes
b. Flushed appearance
c. Throbbing temples
d. Inattentiveness
e. Inability to think coherently
f. Ringing in the ears
g. Tightness across the chest
h. Headache
i. Drowsiness
j. Incoherence
k. Nausea
l. Dizziness
m. Fatigue
n. Vomiting
o. Collapse
p. Convulsions

IF YOU THINK EXHAUST FUMES ARE ENTERING YOUR BOAT, DETERMINE THE CAUSE AND HAVE IT CORRECTED IMMEDIATELY!

The following suggestions can help prevent exhaust fumes from entering the boat:

1. DO NOT allow the boat to remain stationary with the engine running for an extended period of time. Do not stand or swim near the exhaust output or outdrive when the engine is idling.

2. Use extreme caution while operating the engine in confined areas such as enclosed slips or congested piers. Operation under such conditions could easily lead to exhaust gasses (carbon monoxide) entering even though you may have all the hatches, windows, doors and portholes closed.

3. Persons sleeping can be easily overcome by carbon monoxide because they are unaware of its presence. Sleeping while the engine is running is not recommended. If persons are sleeping aboard while underway, those awake should monitor for carbon monoxide accumulation in the cabin; especially the sleeping areas.

⚠ WARNING

NEVER operate the propulsion engine while everyone on-board is sleeping. Fatal carbon monoxide poisoning can occur.

For additional information, refer to Section B-2 Carbon Monoxide.

E - 3 ENGINES

Consult the Engine Owners Manual included in the owner's packet for additional operation and maintenance information.

E - 4 PROPELLERS

Knowledge of the propeller is most easily gained through better understanding of the terminology used to refer to the aspects of propeller size and performance.

NOTICE

Never run with a damaged propeller. You can damage the engine or drive unit. Keep a spare propeller on board.

A. Diameter

Diameter is twice the distance from the center of the prop shaft to the extreme tip of a propeller blade. Increasing or decreasing propeller size will have a direct bearing on the RPMs (revolutions per minute) an engine will develop. This is due to the greater amount of propeller blade surface in contact with the water. See Figure E1.

B. Pitch

Pitch is a measure of helix angle, or angle of attack, of the rotating blade. Pitch is easily understood if one imagines the propeller rotating through a semisolid such as butter or jello. The distance the propeller will travel in one revolution is called "Pitch." Increasing or decreasing pitch will also have a direct bearing on engine RPMs because of the greater bite taken by the blade with each rotation. See Figure E1.

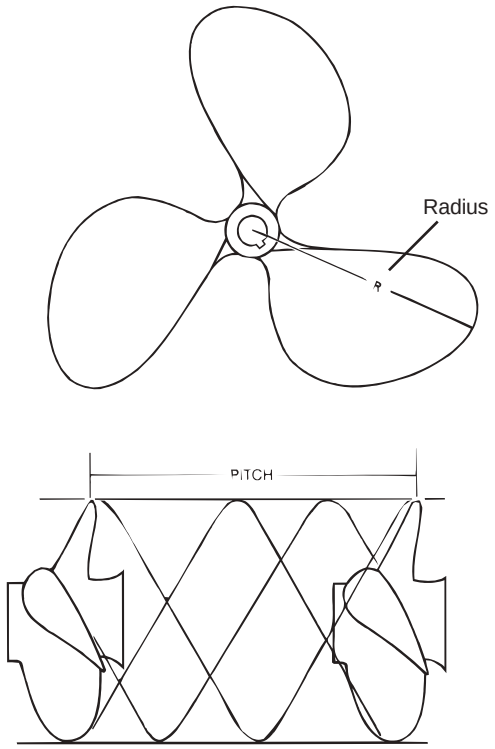


Figure E1: Propeller Pitch & Diameter

C. Prop Slip

When traveling through water, a propeller is unable to get a complete bite because of the fluidity of water. "Prop slip" is usually expressed as a percent of the computed theoretical speed. Fifteen to twenty-five percent prop slip is common for a sport-type boat operating at cruising speed.

Changing either diameter (Rx2) or pitch will have an effect on engine speed and prop slip, and in turn, directly affect the performance of a boat. The propeller(s) included with each Four Winns® boat provides the best general performance based on data obtained from on-the-water testing of that model. Variations in load, operating conditions, environment, the individual engine and hull performance may necessitate the purchase and use of another propeller(s).

Under your normal load conditions the engine(s) should turn within the maximum RPM range when at full throttle. If the engine(s) exceeds the recommended RPM, an increase in pitch and/or diameter is required. If the engine RPM is too low, a decrease in pitch and/or diameter is required.

An engine that is not developing full power and the load carried in a boat will directly affect performance of the engine. Always be sure the engine is properly tuned and load conditions are those normally experienced, before changing propellers.

For additional information on factors affecting performance, please consult your Four Winns dealer.

E - 5 RUNNING ANGLE & POWER TRIM/TILT

Hull planing surfaces have the least amount of drag at a three to five degree angle with the water. This is the preferred running angle when boating. The running angle has a significant impact on top speed and handling. See Figure E2. Heavy load or certain water conditions may make it difficult to achieve the optimum running angle. The running angle can be controlled through the use of the power trim.

A. Power Trim

Trim angle is how far in or out, the drive is positioned in relation to the bottom of the boat. The trim angle of the drive has a distinct affect on the running angle of the boat.

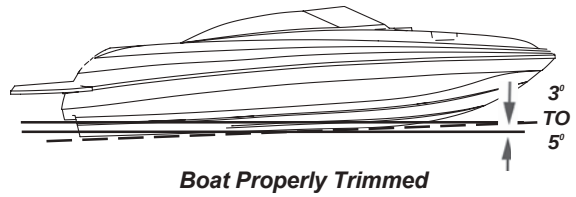
The power trim system permits control of the trim angle of the drive relative to the boat, at the touch of a button. It allows the drive to be raised for shallow water operation. Power trim also allows the operator to adjust the drive while underway to provide the ideal running angle for a given load and water condition. Additional information can be found in the engine operator's manual included in the owner's packet.

B. Power Tilt

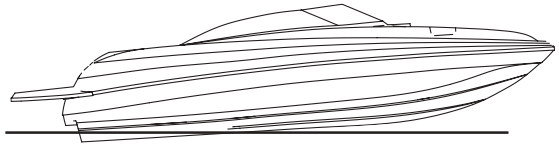
Power tilt allows the operator to raise and lower the drive for trailering, launching, and beaching. Additional information on power tilt can be found in the engine operator's manual included in the owner's packet.

NOTICE

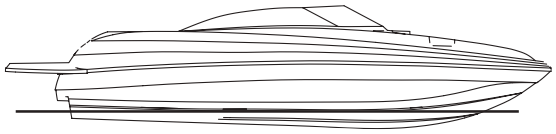
DO NOT operate the motor with the water intakes out of the water. Severe damage to the engine systems can result. Consult the engine operator's manual for specific information.



Boat Properly Trimmed



Boat Too High - Trim Bow "Down"



Boat Too Low - Trim Bow "Up"

Figure E2: Running Angle

E - 6 TRIM TABS

Electric/hydraulic trim tabs are standard on the 310 Horizon™ models. Trim tabs help provide maximum control of the hull in all water and load conditions. Used properly, trim tabs can:

a. Compensate for wind and load listing (level the boat side to side).

b. Induce faster planing and help achieve optimum running angle (see Section E5 - Running Angle & Power Trim/Tilt).

The proper use of electric/hydraulic trim tabs requires a basic understanding of trim tab operation and some practice in calm water. Be sure to read the manufacturer's literature included in the owner's packet.

The trim tab control uses two (2) momentary-type rocker switches. See Figure E3. The trim tab switches control the attitude or position of the boat. The trim tab switches are labeled for "Port" and "Stbd".

Figure E3: Trim Tab Switches

Before leaving the dock and utilizing the trim tabs, ensure the trim tabs are in the full up position. Press both lower halves of the trim tab switches and hold (for approximately 10 seconds) until the tabs are full up.

A. Control Listing

Wind, loading and many other factors can result in the boat tilting or leaning towards one side while running. This is called listing and can be negated using trim tabs.

Pressing the lower port trim tab switch will move the starboard trim tab upward. This will result in the port bow of the boat being allowed to rise.

Pressing the lower starboard trim tab switch will cause the port trim tab to move upward and will result in the starboard bow being allowed to rise.

Pressing the upper port trim tab switch will cause the starboard trim tab to move downward and will force the port bow downward.

Pressing the upper starboard trim tab switch will cause the port trim tab to move downward and will force the starboard bow downward.

Always establish your intended heading and attain desired cruising speed before trying to adjust running attitude (using the trim tabs).

⚠ WARNING

Always press the trim tab switches in short one (1) second bursts. If pressed too long, you can overcompensate, and potentially lose control. DO NOT try to correct the situation by pressing the other upper trim tab switch. Instead, raise the tab slightly by pressing the appropriate lower half of the trim tab switch.

After stabilization of speed and direction, press the upper half of the appropriate trim tab switch to achieve a level side to side running attitude. Be sure to press the correct trim tab switch to obtain the desired result.

After pressing a trim tab switch, always wait and allow time for the change in trim tab position to take effect. DO NOT continue to press the trim tab switch while awaiting trim tab reaction. By the time the effect is noted, the trim tab will move too far and thus overcompensate.

B. Induce Planing & Controlling Trim Angle

Trim tabs can also be used to facilitate faster planing and allow better control of the running angle.

Before accelerating and trying to gain plane, press both upper trim tab switches. This will cause both trim tabs to move downward and force the bow down when running. This can also be used when running the boat with a heavy load aboard.

Moving the trim tabs downward will increase the lift and the boat will achieve plane faster, or stay on plane at a lower engine and boat speed.

After gaining plane and establishing cruising speed, pressing both lower trim tab switches will cause both trim tabs to move upward and will allow the bow to rise. This should be used to adjust the running attitude of the boat to decrease the drag at cruising speed or above, or when running in a following sea.

When running at an engine speed that results in the boat falling off plane or causes the boat to plane inefficiently, lowering both tabs slightly (bow down) will improve the running angle and improve operating efficiency.

Optimum efficiency is obtained when operating at a 3 to 5 degree running angle. Utilizing too much “Bow Down” trim tab can reduce operating efficiency and

cause substantial steering and handling difficulties. Be extremely careful when running in a following sea. The effect of trim tabs is amplified under such conditions. Steering and handling difficulties can result from improper trim tab usage, especially in a following sea. If unsure of proper trim tab positioning, raise the trim tabs to the full-up position.

⚠ WARNING

When running at high engine speeds, be sure the trim tabs are in the full up position. Trim tab action should be only enough to compensate for any listing. Trim tab adjustments at high speeds are extremely critical. Be prepared to slow down should handling difficulties arise.

When running in a displacement (very slow speed) mode, better efficiency will be obtained with the trim tabs in the full-up position.

C. Trim Tab Maintenance

Check the fluid level of the trim tab reservoir often. Always keep the fluid level between the designated marks on the trim tab pump-reservoir. Refer to the manufacturers information for specifications on the type of fluid to be used and other operation and maintenance information.

E - 7 INSTRUMENTATION

The helm stations on Four Winns® models are equipped with a complete set of individual engine instrument gauges. These instrument gauges allow the boat operator to constantly monitor the operational condition of the engine. Close observation of these instrument gauges could save the engine from damage.

A. Tachometer/Hour Meter Combination Gauge

The tachometer indicates the speed of the engine in revolutions per minute (RPM). This speed is not the boat speed or necessarily the speed of the propeller. The tachometer may not register zero with the ignition key in the OFF position.

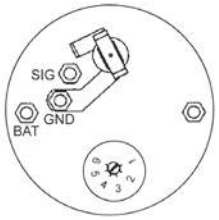
NOTICE

Never exceed the maximum recommended operating RPM of your engine. Maintaining maximum, or close to maximum RPM for extended periods can reduce the life of the engine(s).

Some engines are equipped with devices that limit engine RPM in accordance with the oil pressure, or engine temperature. Refer to the engine manual included in the owner' packet for additional information.

The tachometer must be set for different engines installed. This is typically done at the factory. The tach-ometer gauge is shown along with the table detailing the tachometer settings. See Figure E4.

TACHOMETER SETTINGS



Set switch to match your engine.
CAUTION: Depress switch slightly while turning.

TACHOMETER SETTINGS	
NUMBER OF CYLINDERS	ENGINE SETTING
4*	1
6*	2
8*	3
12 POLE	4
(OB ALT)	
* 4 CYCLE ONLY	

Note: Setting information is labeled on the back of the tachometer.

Figure E4: Tachometer Settings

The tachometer/hour meter combination gauge allows for hour meter viewing at the helm. See Figure E5. The hour meter provides a numeric record of elapsed engine operating time. This information is important in determining scheduled maintenance intervals, ship's log data, cruise information, etc.

The hour meter is connected to the ignition switch. Be sure the ignition switch is in the OFF position when the engine is not operating or the hour meter will record additional time.

Figure E-5: Tachometer/Hour Meter

B. Speedometer

The speedometer is a water pressure sensitive unit. It has a pick-up (pitot tube) assembly mounted on the transom and a small plastic hose (speedo tube) that connects it to the speedometer gauge on the dash. See Figure E6. The pitot tube extends below the hull. Water strikes the tube inlet and creates positive pressure. The faster the boat speed, the greater the pressure, and the higher the speed indication on the speedometer.

Figure E6: Speedo Sender

If the pick-up becomes clogged, the speedometer will not register. Clean the opening with a piece of wire or disconnect the tubing and blow out the pick-up with compressed air.

When winterizing the boat, the speedometer tubing must be drained of water. Disconnect the speedometer hose at the pick-up assembly and at the gauge and blow through the tubing to remove the water.

NOTICE

Speedometers are not precision instruments. The indications are relative and should never be used for navigational purposes or similar critical situations.

⚠ CAUTION

DO NOT rely on the speedometer when trying to achieve a "NO WAKE" condition in a harbor or other enclosed waterway. ALWAYS reduce throttle! Speedometers are not effective at measuring low operational speeds. You are responsible for damage caused by the wake of your boat.

C. Temperature Gauge (4-in-1 Gauge - Twin)

The temperature gauge (included in the 4-in-1 gauges on twin engine applications) monitors the cooling system of the engine. A sudden increase in water temperature could be a signal of a blocked cooling passage or a water pump malfunction.

NOTICE

Operation of an overheated engine can result in engine seizure. If an unusually high temperature reading occurs, shut the engine off immediately.

D. Oil Pressure Gauge (4-in-1 Gauge - Twin)

The oil pressure gauge (included in the 4-in-1 gauges on twin engine applications) indicates the pressure in the engine lubrication system. A significant drop in oil pressure is a possible indication of an oil pump or other leakage problem.

The engine(s) has been equipped with an audible engine alarm, the alarm should sound if the oil pressure drops below the normal operating range of the engine. Please see your engine owner's manual for specific engine information.

NOTICE

Operation of an engine with abnormally low oil pressure can lead to engine damage and possible seizure. Have the engine serviced immediately upon a reduced oil pressure indication.

E. Voltmeter (4-in-1 Gauge - Twin)

The voltmeter (included in the 4-in-1 gauges on twin engine applications) monitors battery condition and thus alternator performance. See Section H for additional information regarding electrical systems.

F. Fuel Gauge

The fuel gauge displays the level of fuel that is present in the fuel tank. The fuel gauge will operate when the ignition switch supplying power to the fuel gauge is in the RUN position.

Due to the mechanical nature of the fuel sender, variations in readings during various speeds of operation may occur. This system is merely a relative indication of the available fuel supply and not a calibrated instrument. Refer to Section I-1E - Fuel Senders for additional information.

NOTICE

Use only clean fuel of the type and grade recommended by the engine manufacturer. The use of incorrect or contaminated fuel can cause engine malfunction and serious damage. Refer to Section I - Fuel Systems for additional information.

G. Power Trim Gauge

A trim gauge (included in the 4-in-1 gauges on twin engine applications) is located on the instrument panel. This gauge provides a visual indication of the inward-outward (trim angle) position of the outdrive in relationship to the bottom of the boat. There is not a trailer travel mode on the gauge.

H. Depth Sounder

The depth sounder is available standard on the 310 Horizon™ models.

The depth sounder consists of two main components, the transducer and the depth sounder. The transducer is mounted to the hull and the depth sounder is installed in the dash. The transducer and depth sounder communicate by means of a cable, and are powered by your boat's 12-volt DC battery. The transducer and depth sounder use the basic principle of sonar to indicate the water's depth.

General description:

1 The depth sounder will display depth of 2-199ft, 1-92m, or 1-54F. To allow greater depths to be displayed in the "ft" (Feet) mode, the depth sounder will automatically change to "F" (Fathoms) mode and continue to display depths to approximately 54 fathoms.

Operation:

1. **Power on.** The depth sounder will activate automatically when the power to it is initially turned on. You do not have to press the combination "ON /OFF MODE" keypad. The LCD will illuminate showing the depth and will also show the type of units selected, feet (FT), meters (M), or fathoms (F). To turn the depth sounder off, press and hold the "ON / OFF MODE" keypad for 4 seconds. Pressing the "ON / OFF MODE" keypad again will reactivate the unit.

   NOTE: The instrument is designed to have the internal LED lighting remain on as long as power is supplied even if the unit is turned "off" at the keypad.

2 **Depth alarm – Shallow mode:** Pressing the "ON / OFF MODE" keypad again displays the "SH" shallow depth alarm setting. This is the shallowest water that will activate the alarm. Press and hold the up or down arrow keypads to adjust the reading to the desired depth.

   Depth alarm – Deep mode: Pressing the "ON / OFF MODE" keypad again displays the "DP" deep depth alarm setting. This is the deepest water that will activate the alarm. Press and hold the "Up" or 'Down" arrow keypads to adjust the reading to the desired depth. When the shallow depth setting is read by the depth sounder, the "SH" will flash on the LCD and the audible alarm will sound rapidly. When the deep depth setting is read by the depth sounder, the "DP" will flash on the LCD and the audible alarm will sound at 2 beeps per second.

   NOTE: To fully deactivate an alarm, reset it to zero. Pressing the "ON / OFF MODE" keypad temporarily deactivates the alarm. To reactivate the alarm press the "ON / OFF MODE" keypad until the depth reading appears.

3. **Keel offset**. Pressing the "ON / OFF MODE" keypad again displays the "KL" keel offset setting. This can be set so that the depth sounder either shows the depth below the keel or the depth below the transducer. Press the up or down arrow keypads to adjust the reading to the desired depth no more than 19.9 ft. For example if the bottom of the keel is 2 feet below the transducer and you want the depth sounder to read the depth below the keel, the display should be adjusted to read 2.0 FT.

NOTE: Once a keel offset is programmed, the shallow and deep alarms will be activated by the depth below the keel.

4. **Units**. pressing the " O N / O F F MODE" keypad again displays "Un" on the LCD indicating the units mode. Press either the up or down arrow keypads to set the units desired to feet (FT), meters (M), or fathoms (F). These units once set, will remain the same for all modes. Pressing the "ON / OFF MODE" keypad again returns the depth sounder to normal operation.

⚠ WARNING

Do not rely on depth sounder to avoid submerged objects. Depth sounders provide a relative indication of water depth only.

NOTICE

DO NOT depend solely upon the depth sounder for water depth. It is important to have navigational charts of the waters in which you are operating.

I. Four Position Ignition Switch

Most models use an ignition switch with four positions: OFF, RUN, ACCESSORIES, and START. Just like the three position switch, the START position is spring loaded and the key should be held in this position until the engine starts. The key will return to the RUN position once released. Always turn the key to the OFF position when the engine is not running. This will prevent discharging of the battery(s). The ACCESSORIES position allows the operator to run the stereo without activating the other ship's systems. Additional information on ignition switch operation is covered in Section A Operation, of this manual.

J. Emergency Stop Switch

This safety device automatically stops the engine if the lanyard is attached to the operator and the operator falls from his work station. Refer to the engine manual for detailed information about using this switch.

The emergency stop switch (Figure E7) incorporates a shutoff switch, switch clip, lanyard, and lanyard clip. The lanyard clip must be securely attached to the operator's PFD, clothing, arm, or leg. Be sure to attach the lanyard to a place where it is free of obstructions and to something that will move with the operator if he or she leaves the helm station. If the engine shuts down because this switch was activated, the clip may have to be reinstalled on the interrupter switch before the engine can be started.

⚠ WARNING

Keep emergency stop switch lanyard free from obstructions that could interfere with its operation. Do not modify or remove emergency stop switch or bypass its safety features. The proper use of the emergency stop switch will prevent a runaway boat situation which can cause severe personal injury or death.

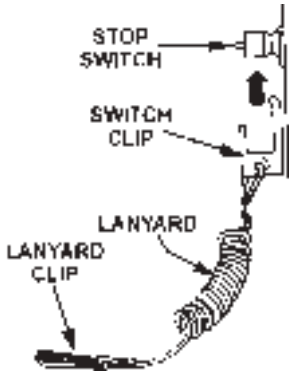


Figure E7: Emergency Stop Switch

The emergency stop switch can only be effective when in good working condition. Observe the following:

1. Lanyard must always be free of entanglements that could hinder its operation.

2. Once a month, check the switch for proper operation. With engine running, pull lanyard. If the engine does not stop, see your Four Winns Dealer.

3. Once a month, inspect both the clip and lanyard for cuts, breaks or wear. Replace worn or damaged parts.

In an emergency situation, any occupant of the boat can restart the engine. Just press in and hold the emergency stop switch button, then follow normal starting procedures. When the button is released, the engine will stop.

⚠ WARNING

Avoid knocking or pulling the clip or lanyard from the switch during regular boating operation. Occupants may be thrown forward or possible engine damage may occur by the sudden loss of engine power.

K. Alarm Systems

Engine alarm systems are standard. The alarm is audible and is actuated by various engine sensors. The sensors monitor such things low oil pressure, high water temperature levels and high exhaust manifold temperatures. Consult your engine owner's manual for information regarding the specific systems monitored by the alarm.

L. Compass

A compass is standard on the 310 Horizon™ models. The compass can provide directional information when operating offshore, in unfamiliar waters, or in adverse weather conditions.

The compass must be properly calibrated after all personal equipment is installed including all electronics (radio, depth sounder, etc.). DO NOT rely on the compass readings until initial adjustment (compensation) has been performed. If the boat has a factory-installed compass, the manufacturer's instructions are provided in the owner's packet. Most areas have local companies that specialize in compass adjustment. If unsure of the proper compensation techniques, consider having the adjustment done professionally to ensure accuracy and confidence in the compass.

NOTICE

During use, keep all extraneous metal objects away from the compass. The close proximity of metal objects (e.g., beverage cans) can cause compass deviation.

M. Navigational Equipment

Four Winns offers a navigational package as an option. See Figure E8. Please consult the manufacturer's literature included in the owner's packet for operation and maintenance of the navigational system (if installed).

NOTICE

Four Winns does not limit you to this specific navigational package mentioned above. There are many navigational systems on the market today. You may desire to use a different system based on your needs, personal preference, and mounting space available.

NOTICE

Four Winns continually strives to improve its products. Unit specifications, including standard and optional equipment are constantly being modified. Equipment availability is also subject to change. The most current and accurate information available at the time of publication is included in this manual. Some variation in equipment, description, location, and details can result.

NOTICE

These devices are only an aid to navigation. Their accuracy can be affected by many factors including equipment failure or defects, environmental conditions, and improper handling or use. It is the user's responsibility to exercise common prudence and navigational judgement. These devices should not be relied upon as a sole means of navigation nor as a substitute for such prudence and judgement.

Figure E-8: Navigation Package
(Representative View - Models & Equipment May Vary)

1. Ship to Shore VHF Radio

A VHF radio is optional equipment offered with the selection of the navigation package option. It provides reliable communication between vessels, and from ship to public or private shore stations. It is programmed for two-way communication on all the International, US and Canadian channels plus reception on separate weather channels, and the international calling and safety channels (16/9). The VHF radio with microphone is mounted on the helm. If equipped, additional information is included in the manufacturer's literature included in the owner's packet.

2. GPS/Map

A GPS/Map is an electronic system through which a navigator can determine his position regardless of weather. The GPS sensor receives high frequency radio signals generated from satellites to generate coordinate readings on the display. The GPS navigational unit takes this information and uses it to determine the vessel's exact position and indicates the vessels position on the chart plotter. The chart plotter allows one's course to be plotted electronically. Factory installed GPS/Map system is the optional navigational package offered for the 310 Horizon™ models. It is mounted at the helm. If equipped, refer to the manufacturer's literature included in the owner's packet.

NOTICE

You should not rely on these displays as your primary source of navigation. Rather, you should use the GPS/Map as a backup to official government charts and traditional methods of navigation.

N. Instrument Maintenance

Electrical protection for instruments and ignition circuitry is provided by fuses. The fuse block is located underneath the starboard dash on most models or on the starboard side, below the throttle control, near the floor on other models.

Periodically, spray the ignition switch with a contact cleaner. The ignition switch and all instruments, controls, etc. should be protected from the weather when not in use. Four Winns offers appropriate weather covers for each model. Excessive exposure can lead to gauge and ignition switch difficulties.

⚠ CAUTION

DO NOT use a product such as WD-40 as a contact cleaner. Be sure to read the label before using any product.

Electronic gauges are affected by static electricity that builds-up on the glass face. Periodic washing on the gauge face with warm water and mild liquid detergent will help eliminate the static electricity problem and improve gauge accuracy.

F - 1 CONTROL OPERATION - GENERAL

Control systems permit operation of the engine's throttle and shift mechanisms. They consist of three major components; the shifter control, the throttle control and shift control cables.

A gaffrig style shift and throttle controls are featured on the 310 Horizon™ models. See Figures F1 and F2. These controls allow you to select forward or reverse gear, regulate engine speed, and ensures shifting is done at low engine speeds.

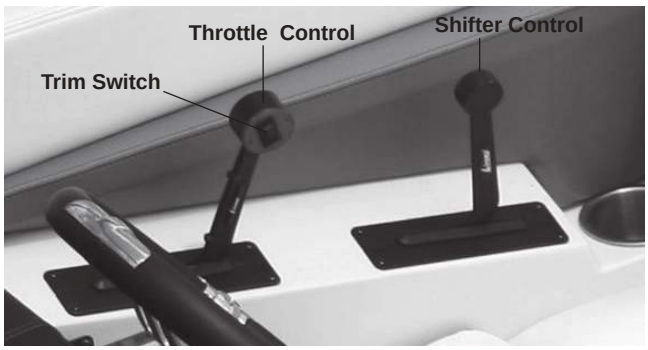


Figure F1: Gaffrig Shifter and Throttle Controls (Single)

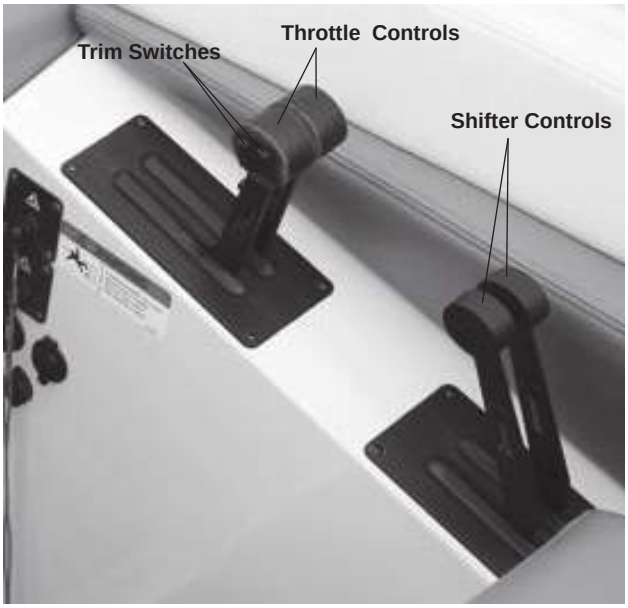


Figure F2: Gaffrig Shifter and Throttle Controls (Twin)

A "start-in-neutral-only" feature which prevents starting in gear is included. Refer to F-3 Neutral Safety Switch in this section.

A trim control switch is installed into the gaffrig's throttle control. A twin engine application would have two trim control switches installed. The trim control switch(s) allows the driver to adjust the position of the outdrive. Pressing the upper portion of the switch moves the outdrive out and away from the transom thus raising the bow. Pressing the lower portion of the switch(s) moves the outdrive in closer to the transom pushing the bow down. The switch(s) returns to its center neutral position when released. For additional information see Section E-5.

Moving the black gaffrig shifter control(s) to the center or straight up position places the engine(s) in neutral. Notice as you push the shifter control(s) to the neutral position you will feel the neutral detent engage thus indicating you are in neutral. Pushing the shifter control(s) forward shifts the engine into forward. Pulling the shifter control(s) rearward shifts the engine(s) into reverse. Before shifting is done first move the throttle control(s) to the idle position (lever(s) is all the way rearward). Once forward or reverse engagement has been made move the red throttle control lever(s) forward to increase engine(s) speed.

NOTICE

When shifting, ensure engine speed is below 800 RPM to avoid damaging the shifting mechanism.

NOTICE

Allow the engine to warm up before engaging the shift control. Monitor all instruments while engine is idling during warm-up.

Additional information on controls and their operation may be found in the engine manufacturer's manual included in the owner's packet.

F - 2 CONTROL OPERATION - Engine Starting

On fuel injected engines, starting the engine is very straight forward. First, place the shifter control(s) in the neutral position and the throttle control(s) in the idle position. Once controls are in the proper position, turn the ignition key(s) and allow the engine(s) to warm up. For additional information, refer to the engine manufacturer's manual included in the owner's information packet.

F - 3 NEUTRAL SAFETY SWITCH

Control systems usually incorporate neutral safety switches within their design. This device prevents the engine from being started while the shift lever is in

any position other than the neutral position. If the engine will not start, slight movement of the shifter control lever may be necessary to locate the neutral position and disengage the safety cutout switch. Control or cable adjustments are required to correct this condition should it persist. See your Four Winns dealer for necessary control and cable adjustments.

F - 4 CONTROL SYSTEM MAINTENANCE

Periodic inspections of the control, cables, and all connections should be made. Signs of looseness, rust, corrosion, wear, cable jacket cracks or other deterioration require immediate system servicing. Replace all damaged components.

Generally, periodic lubrication of all moving parts and connections with a light, waterproof grease is in order. Cables can be lubricated by positioning them to their fullest extension and applying light grease to the inner cable near the jacket. Working the cables back and forth will distribute the grease in the inner cable. Reapply the grease if necessary.

Lubrication should be performed as often as necessary to keep the system operating smoothly. Cable manufacturers such as Teleflex and Morse often offer special tools to make cable lubrication easier.

Cable and control adjustments may become necessary. Adjustment screws in the control, on the cables and in the linkage are provided.

⚠ WARNING

DO NOT attempt control adjustments unless you are familiar with control systems service procedures. Control misadjustment can cause loss of control.

Other lubrication, adjustment and maintenance instructions are provided by the control manufacturer and are included in the owner's information packet.

G - 1 GENERAL

Four Winns® boats are equipped with a rotary steering system. Tilt and power steering are available on most models.

A. Rotary Steering

In the rotary system, a rotary drum assembly is mounted under the dash behind the steering wheel with a one-piece cable running through the boat into the engine compartment. At the transom, the cable turns and is connected to the engine.

B. Tilt Steering

If equipped with tilt steering, depress the release lever (adjusting tab) with your thumb to tilt the steering wheel. Be sure to hold the top of the wheel to assist in positioning. Release the lever once the steering wheel is in the position desired. See Figures G1 and G2. Refer to the steering manufacturer's literature, included in the owner's packet, for additional information.

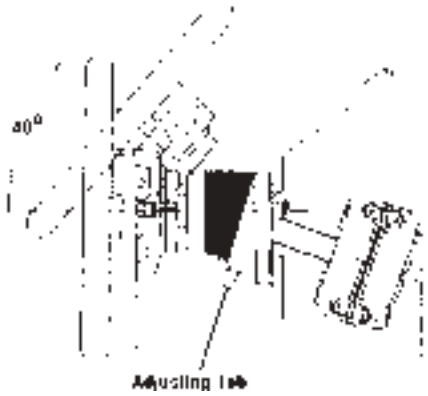


Figure G1: Tilt Steering

Figure G2: Adjusting Tab

WARNING

The tilt mechanism should not be adjusted when the boat is moving. Sudden boat movement may cause loss of balance resulting in loss of control and/or injury.

WARNING

The tilt mechanism is spring loaded. Due to the variation in steering wheel offerings, the wheel may spring up rapidly when depressing the release lever. ALWAYS KEEP ONE HAND ON THE WHEEL DURING TILT ADJUSTMENT OR INJURY MAY OCCUR.

C. Power Steering

Power steering, featured on 310 Horizon™ models, is comprised of an engine-mounted pump, hoses and steering cylinder. Power steering works in conjunction with the helm and steering cable to move the transom mount tiller arm and vertical drive more smoothly.

This is a "power assist" system and can greatly reduce steering effort required. It is not, however, a full power steering system as is used in automobiles. Some steering tension remains in the system.

On 310 Horizon™ models with power steering, restricting movement of the steering cable will limit or stop the steering system's hydraulic assist.

NOTICE

DO NOT interfere with or restrict steering cable movement through the last 90° of bend at the engine. DO NOT use cable retainers, clamps or tie straps. Using one or all of these could restrict the cable movement near the engine. DO NOT tie wiring harnesses or other control cables to the steering cable. Make sure the deck coaming pads and bulkheads allow for steering cable movement in all positions of trim.

If the power steering becomes inoperative, steering will be harder and more effort will be needed to steer the boat. Check for a broken or loose belt on the power steering pump. Also, low fluid levels in the power steering pump reservoir will cause hard steering. If these items are not the source of the problem, check for equipment or other items lying on or up

against the steering cable at the back of the boat. The cable must be free and clear to slide back and forth. Any item blocking free movement of the cable will result in harder steering and possible damage to the steering cable.

If the power steering system cannot be corrected on board, proceed at a reduced speed. The boat will be steerable, but with increased effort. Return the boat to your Four Winns dealer as soon as possible to correct the power steering system.

CAUTION

Check the power steering fluid level in the reservoir periodically. Low power steering fluid levels may increase steering difficulty.

CAUTION

After the first two hours of running time, check the entire steering system for loose bolts, nuts and fasteners which could adversely affect steering control.

NOTICE

When storing equipment in the engine compartment, be sure to avoid contact with the steering cable. Cables may become kinked or damaged and may increase steering effort.

NOTICE

DO NOT force the steering unit to either extreme. This can place undue strain on the unit and can lead to hydraulic line or seal failure.

It is important that the power steering fluid be maintained at the proper level. Do not over fill the power steering pump reservoir. Please consult the section in the engine manual regarding steering system and maintenance. The engine manual is included in the owner's packet.

G - 2 PROPELLER TORQUE

The propeller rotation of a single engine operation will exert a directional force on the steering system. Propeller torque can also cause the boat to wander (not follow a straight line) when operated at low speeds. This condition is normal and can be corrected only by increasing engine RPM. Wind, water currents and play in steering components can cause equivalent effects.

CAUTION

Steering effort can vary significantly with engine acceleration, steering angle, trim angle, and sea condition. Be prepared for additional steering loads at all times.

G - 3 STEERING SYSTEM MAINTENANCE

A. General Maintenance

A periodic inspection of all steering cables, linkage and helm assemblies should be made. Signs of corrosion, cracking, loosening of fastenings, excessive wear, or deterioration should be immediately corrected. Failure to do so could lead to steering system failure and corresponding loss of control.

NOTICE

Check all bolts, nuts and fasteners for tightness.

B. Rotary System Maintenance

The helm and cable assembly should be so adjusted that the steering wheel is centered with the drive or outboard engine in the straight ahead position. There should be an equal number of turns to port and starboard from the straight ahead position. If adjustment becomes necessary, see your Four Winns dealer.

Check all metal parts at the cable output end for corrosion. Remove any old grease from the cable ram and motor swivel connections using a mild solvent such as WD-40. Spray the cleaned areas with a moisture-displacing lubricant and apply a light coat of good quality marine grease. Do this with the ram fully extended. See Figure G3.

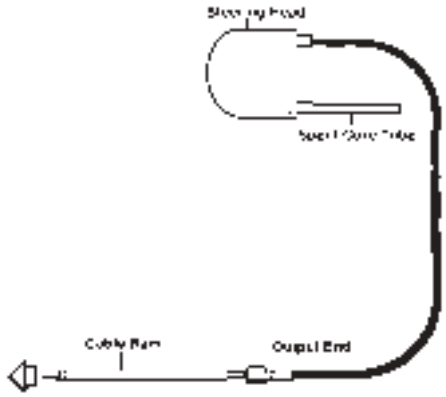


Figure G3: Steering Cable

C. Winter Storage

If the boat is placed in winter storage or used infrequently, clean the cable ram as instructed earlier. Cycle the steering several times when applying lubricant. If at any time the steering system becomes stiff, has an excessive amount of free play or shows any change in its operating characteristics, contact your Four Winns dealer to have the system inspected.

H - 1 GENERAL

All electrical equipment on the Four Winns 310 Horizon™ models operates on 12 volts DC or 120 volts (220 volts on 50 Hertz models) AC electrical power (when equipped with optional dockside power). The 310 Horizon™ is either equipped with a dual or a triple battery system. Batteries are located in the engine compartment. See Figures H1 and H2.

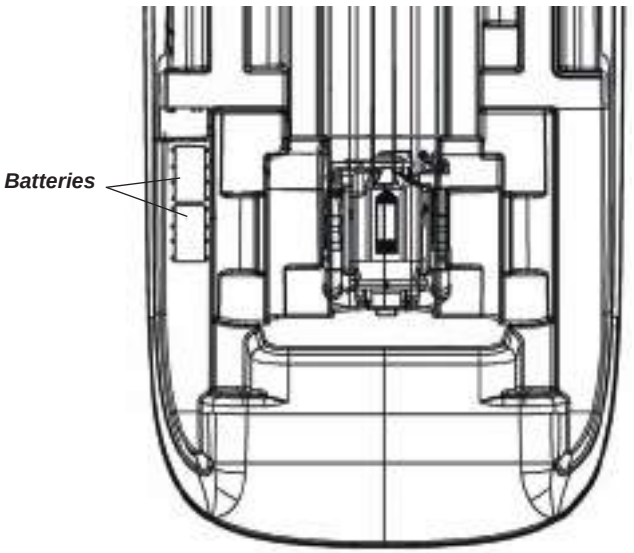


Figure H1: Dual Battery Location

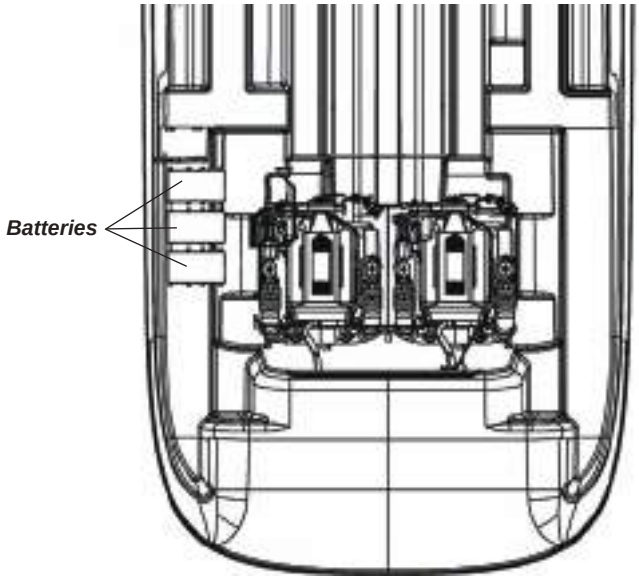


Figure H2: Triple Battery Location

WARNING

Fire or Explosion Hazard!

Electrical system parts are designed by and manufactured to comply with the US Coast Guard requirements to minimize risks of fire or explosion. ***Never substitute automotive parts for marine parts.*** *Automotive parts do not provide the necessary ignition spark protection.*

WARNING

DO NOT tamper with any electrical connection, panel or harness, or attempt installation of any electrical equipment unless thoroughly familiar with the systems and experienced in making such installations.

Circuit breakers are installed on the battery switch panel to protect various system components. The SHIP SYSTEMS breaker supplies power to all DC electrical components except the aft bilge pump, shower sump, stereo, ignition and instrumentation. The circuit breakers and fuses are labeled for amperage and use.

Figure H3: Battery Switch - Twin Engine

A helm circuit breaker panel is located underneath the driver's seat. These circuit breakers provide protection for certain component wiring which are identified on the panel itself. See Figures H4 and H5.

Figure H4: Helm Circuit Breaker Panel Location

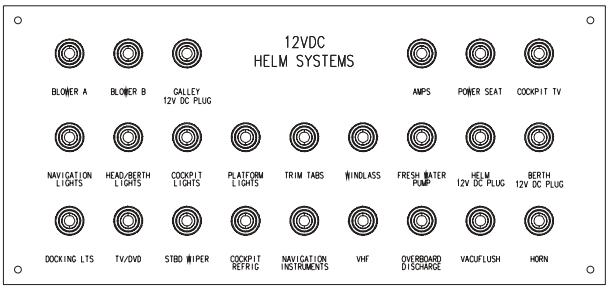


Figure H5: Helm Circuit Breaker Panel

NOTICE

Failure to first bend the spring stay away from you or in the wrong direction prior to closing the helm circuit breaker door could result in damage to the spring stay. If damage does occur to the spring stay it will need to be replaced.

H - 2 SINGLE ENGINE - DUAL BATTERY SYSTEM

A battery selector switch is installed on the dual battery system. Each, the ships' systems and engine, has an individual battery designated to it.

A. Installation

1. Connect each of the red (positive) battery cables leading from the battery selector switch to the positive (+) terminal on each of the two batteries.

NOTICE

Be sure the two red (positive) cables are installed on the positive (+) battery terminals.

2. Connect each of the black (negative) battery cables leading to the engine block to the negative (-) battery terminal on each of the two batteries.

WARNING

When disconnecting the cables from the battery, make sure all switches are off and disconnect the black negative cable(s) first to prevent spark.

B. Battery Switch Operation - Single

Power to the engine and all 12 volt electrical equipment is controlled at the battery switch panel. Separate circuit breakers are provided on the battery selector switch panel to protect the windlass (if applicable), engine hatch lift, shower sump, aft bilge pump, stereo and ship systems. The "SHIP'S SYSTEM" circuit breaker must be placed in the "ON" position to provide power to all non-engine related 12 volt electrical equipment.

A description of the various positions for this battery switch is as follows:

"OFF" - With the battery selector switch in the "OFF" position and the "SHIPS SYSTEMS" circuit breaker in the "OFF" position, all 12 volt power to the boat is shut off except to the automatic bilge pumps, stereo memory and windlass (if applicable). Always turn the battery selector switch and the ship systems breaker switch (if applicable) to the "OFF" position when the boat is unattended for an extended period.

NOTICE

DO NOT turn the battery selector switch to the "OFF" position while the engine is running. Alternator and wiring damage could result.

"ON" - Turning the switch to position "ON" will use the engine battery to power the engine and 12 volt engine related equipment. The ships system battery will not be used for any engine related equipment, but will power all other 12 volt equipment on the boat (when "SHIP SYSTEM" circuit breaker is on). The isolator will

allow the alternator to fully charge the two batteries, but not allow the operator to drain down the engine start battery.

If the designated engine battery fails to start the engine, place the switch to the “EMERGENCY START” position and attempt to start the engine. Current is drawn from both batteries (the engine and ship’s systems batteries) to start the engine. Once engine has been started return the switch to the “ON” position. Once back at port, be sure to have the failed engine battery checked for possible service or replacement.

Note: An added feature is positive and negative studs incorporated into the battery switch panel. These studs are used for raising the engine hatch should the battery fail to start the engine even in EMERGENCY START position.

NOTICE

The positive and negative studs incorporated into the battery switch panel are intended to raise the engine hatch when properly attached to an external 12 volt source (12 volt battery). Once properly attached to the 12 volt source use the engine hatch switch at the helm to raise the engine hatch. ***These studs are not designed for jump-starting a dead battery.***

H - 3 DUAL ENGINE - TRIPLE BATTERY SYSTEM

A battery selector panel with two battery selector switches are installed on dual engine, triple battery installations. Each, the ship’s systems and engines, has an individual battery designated to it.

A. Installation

1. Connect each of the red (positive) battery cables leading from the battery selector switch to the positive (+) terminal on each of the three batteries. Refer to Figure H1.

NOTICE

Be sure all three red (positive) cables are installed on the positive (+) battery terminals.

2. Connect each of the black (negative) battery cables leading to the engine block to the negative (-) battery terminals on each of the three batteries.

B. Battery Switch Operation - Dual

Power to the engines and all 12 volt electrical equipment is controlled at the battery selector panel. Separate breakers are provided on the battery selector switch panel to protect the stereo, shower sump, aft bilge pump, hatch lift, ship systems and windlass (if applicable). Note: The “SHIP’S SYSTEM” circuit breaker must be placed in the “ON” position to provide power to all non-engine related 12 volt electrical equipment.

The battery selector switch positions for the dual battery selector switch is as follows:

“OFF” - With the battery selector switches in the “OFF” position and the “SHIPS SYSTEMS” circuit breaker in the “OFF” position, all 12 volt power to the boat is shut off except to the shower sump and aft automatic bilge pumps, stereo memory, and windlass. Always turn the battery selector switches and the SHIPS SYSTEMS” circuit breaker switch to the “OFF” position when the boat is unattended for an extended period.

NOTICE

DO NOT turn the battery selector switch to the “OFF” position while its corresponding engine is running. Alternator and wiring damage could result.

Port Engine Battery Switch:

“ON” - Turning the switch to position “ON” will use the port engine battery to power the port engine and 12 volt engine related equipment. The ships system battery will not be used for any engine related equipment, but will power all other 12 volt equipment on the boat. The isolator will allow any alternator to charge all three batteries. “ON” is the recommended switch position for normal boat operation.

Starboard Engine Battery Switch:

“ON” - Turning the switch to position “ON” will use the stbd engine battery to power the stbd engine and 12 volt engine related equipment. The ships system battery will not be used for any engine related equipment, but will power all other 12 volt equipment on the boat. The isolator will allow any alternator to charge all three batteries. “ON” is the recommended switch position for normal boat operation.

Emergency Start Procedures:

If one of the designated engine batteries fails to start its respective engine, place both battery switches to the “EMERGENCY START” position and attempt to start the engine. Current is drawn from the other batteries to start the engine. Once engine has been started return the battery switches from “EMERGENCY START” position to the “ON” position. Once back at port, be sure to have the failed engine battery checked out for possible service or replacement.

Note: An added feature is positive and negative studs incorporated into the battery switch panel. These studs are used for raising the engine hatch should the battery fail to start the engine even in EMERGENCY START position.

NOTICE

The positive and negative studs incorporated into the battery switch panel are intended to raise the engine hatch when properly attached to an external 12 volt source (12 volt battery). Once properly attached to the 12 volt source use the engine hatch switch at the helm to raise the engine hatch. ***These studs are not designed for jump-starting a dead battery.***

H - 4 BATTERY CHARGER

The battery charger becomes available when the 310 Horizon™ is equipped with optional dockside power. The battery charger is mounted in the engine compartment. The batteries will be charged when the boat is connected to dockside power and the AC MAIN circuit breakers and the battery charger breaker are “ON”. If a generator option is installed and operating, it too will allow the batteries to be charged when the battery charger breaker is “ON”.

Additional information on the battery charger can be found in Section H-9B - 120 Volt AC Equipment in this manual and refer to the manufacturer’s literature included with the owner’s packet.

H - 5 VOLTMETER

Depending upon engine selection, either a single or dual voltmeters are installed in the dash panel to monitor the condition of the engine battery(s). Note: With a twin engine application, the voltmeters are incorporated in the “four-in-one” gauges. When the voltage is checked during engine operation, the voltage of the respective battery will be indicated on the respective voltmeter. Additional information on voltmeters may be found in the engine owner’s manual.

H - 6 12 VOLT ELECTRICAL EQUIPMENT

A. Helm Equipment

Ignitions are protected by circuit breakers located on the ignition switch panel itself. Equipment on the helm as well as various other equipment is protected by a helm circuit breaker panel. This panel is located underneath the helm seat. The circuit breakers provide protection for certain component wiring which are identified on the panel itself. Note: Certain optional equipment may be identified on the panel and will be protected by this helm circuit breaker panel if installed. See Figure H6.

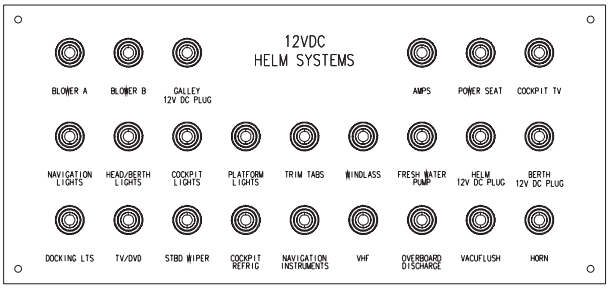


Figure H6: Helm Circuit Breaker Panel

(Note: Certain options listed on the above panel may not be available on your model and are subject to change without notice. See your dealer for inquiries).

To assist you, we have listed the descriptions of individual switches, receptacles and their uses:

CAUTION

To prevent electrical problems, use only replacement fuses or breakers that are of equal rating to the originals.

Accessories - Additional 12 volt equipment may be added to the boat by the using the accessory switches (ACC). Certain options or accessories may be wired to the helm circuit breaker panel. See Figures H6 and H7. For additional information on adding accessories, refer to Section H-5B.

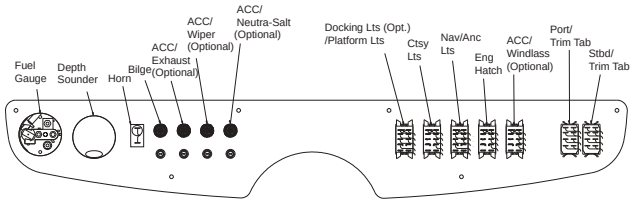


Figure H7: Helm Switch Panel

12 Volt DC Receptacle - Permits the use of additional 12 volt equipment such as a cell phone. Using the appropriate adaptor, the equipment draws power from the boat's batteries.

Aft Bilge Pump - The BILGE switch is used to manually activate the bilge pump in the engine compartment. The bilge pump is used to remove water from the bilge (bottom of the hull) area of the boat by pumping that water overboard. The aft bilge pump is equipped with an automatic bilge switch and will operate whenever bilge water rises to a level that will cause the float to move upward.

This automatic bilge pump is active even if the battery selector switch is in the "OFF" position. The automatic bilge pump circuitry is connected directly to the batteries. When leaving your boat unattended for an extended period, check the charge on the battery(s) periodically. Also check the water level in the bilge and make sure the float switch is functional.

If the automatic bilge pump must be disabled, disconnect the wiring plug near the bilge pump.

Blower - The BLOWER switch is used to activate the bilge blower. Rotating the switch to the "ON" position, activates the electric bilge blowers, changing the air in the engine compartment that may contain gas vapors.

⚠ WARNING

Gasoline vapors can explode resulting in injury or death. Before starting the engine, check engine compartment bilge for gasoline or vapors. Operate blower for four minutes, and verify blower operation. ALWAYS run the blower when the vessel is operating below cruising speed.

Courtesy (Cockpit) Lights - The CTSY LTS switch is used to activate the courtesy lights. A key fob remote control allows you to activate the courtesy lights on your boat from a distance. This feature when used can make nighttime boarding much easier and safer.

Horn - To sound the horn, press the HORN switch.

Navigation & Anchor Lights - Moving the rotary NAV/ANC LTS switch towards the NAV position activates the bow lights, the all-around light and the instrument lights on the dash. Move the switch to the ANC position to activate the all-around light. The center switch position is "OFF".

Docking Lights/Platform Lights - The optional docking lights (if equipped) may be activated by moving the rotary DOCK/TRANS switch to the DOCK/BOTH position. To activate the courtesy lights for the swim platform move the switch to the TRANS position. The center switch position is "OFF".

Trim Tabs - The boat is equipped with electric-hydraulic trim tabs, the trim tabs are controlled by the TRIM TAB switches. Refer to Section E-6 - Trim Tabs for more information.

Windlass - The WINDLASS switch activates the optional windlass. Directional arrows are imprinted on the helm switch panel above the switch to assist you. By moving the rotary switch to the "UP" position (indicated by the upward arrow) raises the anchor. Moving the switch to the "DOWN" position (indicated by the downward arrow) lowers the anchor. A circuit breaker is located on the battery switch panel and must be in the "ON" position to operate the windlass. A circuit breaker is also located in the helm circuit breaker panel to protect the windlass circuitry. Refer to the Section M-12 in this manual and the manufacturer's literature for additional information.

Engine Hatch - The ENG HATCH switch is used to raise and lower the engine lid by activating two linear screw jacks. Directional arrows are also imprinted on the helm switch panel above the switch to assist you. By moving the rotary switch to the "UP" position (indicated by the upward arrow) raises the engine lid. Moving the switch to the "DOWN" position (indicated by the downward arrow) lowers the engine lid. A circuit breaker is located on the battery switch panel to protect the linear screw jacks.

Power Seat Option - Activating the optional power seat switch (installed on the double-wide helm seat base) allows the driver to move his or her seat forward or aft to the desired position. The seat will adjust approximately six (6) inches.

Wiper - The WIPER switch activates the optional starboard windshield wiper. The wiper will self park.

B. Installation of Additional 12 Volt Equipment

Non-factory installed 12 volt accessory equipment can be connected to the “ACC” switch on the dash.

> **⚠ CAUTION**
>
> *Be sure to provide proper fuse or circuit breaker protection for all 12 volt equipment that is installed. DO NOT overload the accessory circuitry by installing too much additional 12 volt equipment.*

C. Interior Equipment

Much of the 12 volt cabin equipment will be protected by the 12 volt DC helm circuit breaker panel. Cabin equipment information is listed as follows:

CO Monitor - The CO monitor in the head is protected by the head light circuit breaker in the helm 12 VDC circuit breaker panel. The CO monitor in the Day-berth is protected by the TV/DVD circuit breaker in the helm 12 VDC circuit breaker panel.

Day-berth/Head Courtesy Lights - Use the corresponding BERTH LIGHTS “ON/OFF” switch located on Day-berth step or the LIGHTS “ON/OFF” switch located at the head step to operate the courtesy lights.

Head Vent - A blower is installed in the head compartment. A separate “ON/OFF” switch marked “HEAD VENT” is located on the head switch panel.

Pressure Water - A pressure water pump delivers water to the faucets, shower, and aft shower. The pressure water pump will operate automatically as long as the FRESH WATER switch is “ON”. The fresh water pump circuitry is protected by the FRESH WATER PUMP circuit breaker in the helm 12 VDC circuit breaker panel.

Cockpit Refrigerator Option - The refrigerator has a separate “ON/OFF” switch. The refrigerator has a dual voltage system which means it can operate either on 12 VDC or 110 VAC. The refrigerator is operated by the ship’s systems battery. A circuit breaker is provided on the 12 VDC helm systems circuit breaker panel.

If the 310 Horizon™ is equipped with the dockside power option then the refrigerator can run on 110 VAC when supplied and with the cockpit refrigerator circuit breaker on the AC panel is “ON” position. If 110 VAC is not available the refrigerator automatically switches to 12 VDC operation unless the refrigerator is turned off. The generator (if equipped) may also provide AC power to the cockpit refrigerator. Refer to Section L-2 in this manual and to the manufacturer’s literature for additional information.

Stereo - The stereo has a separate switch on the unit and is protected by a circuit breaker labeled STEREO on the battery switch panel.

Sump Pump - A sump pump is used to discharge water from the shower and sink drains overboard. The sump pump has a float switch which will activate the pump when the water level rises in the sump. This pump is protected by the SHOWER SUMP circuit breaker located on the battery switch panel.

If the boat is equipped with a gray water system, the water from the shower and sinks is pumped into a holding tank instead of overboard.

H - 7 12 VOLT ELECTRICAL SYSTEM SHUTDOWN PROCEDURES

When leaving your boat unattended for an extended period of time it is advisable to shutdown the electrical system to reduce battery drainage and/or possible electrical draw.

To shutdown:

1. Turn the battery switch(s) to the “OFF” position.
2. Move the SHIP SYSTEMS circuit breaker switch to the “OFF” position.

H - 8 120 (220) VOLT ELECTRICAL SYSTEM

The boat is equipped with 30 amp, 120 volt, 60 Hertz (or 15 amp, 220 volt, 50 Hertz) AC electrical wiring only if equipped with optional dockside power and/or optional generator. When the boat is connected to a shore power outlet or during generator operations the AC system supplies electrical power to the following items (if so equipped): battery charger, microwave, cockpit refrigerator, outlets, and air conditioning. The dockside system uses three-wire, color-coded circuitry. The black or hot wire is the ungrounded current

carrying conductor. The white or neutral wire is the grounded current carrying conductor. The green wire, referred to as the “equipment ground,” is a grounded conductor, and under normal conditions is not a current carrying wire. The neutral wires are connected together at a buss bar. The equipment grounds are similarly connected together at another buss bar. Each hot wire is connected to, and protected by, a circuit breaker in the distribution box located at the AC power panel assembly in the Day-berth identified “120V AC 60HZ”. See Figure H8.

Figure H8: AC Power Panel

The optional dockside system has a main circuit breaker which protects the overall distribution network. The MAIN dockside inlet is located at the port transom. The MAIN breakers on the AC panel along with the MAIN breakers at the transom must be turned “ON” and the boat must be connected either to shore power or generator operation for AC system operation. The MAIN circuit breakers protects both the hot and neutral input leads. This breaker is sensitive. The resulting power surge which occurs when connecting the shore power cord may cause the MAIN breakers to trip. To avoid this power spike, turn off the MAIN breakers before plugging in the shore power cord. Securely connect the power inlet of the boat and the shore power receptacle. Once the shore power is securely connected, turn the MAIN breakers back on. If the connection is broken and later re-secured, the circuit breaker may trip. Connections must be secure for uninterrupted dockside service.

The AC voltage for the generator or shore power AC system may be monitored with the AC voltmeter in the AC panel.

H - 9 DOCKSIDE OPERATION

WARNING

If any abnormalities appear during dockside operation, DISCONNECT the system immediately to prevent electric shock hazards! Have the boat’s electrical system and the shoreside receptacles checked as soon as possible.

A. Shore Power Connections

WARNING

To prevent electric shock hazards, use only equipment with approved three wire electrical plug connections. Be sure each item being used has been tested and is free of electrical shorts and ground faults.

Fifty foot, ten gauge, three-wire, shore power cords are provided with dockside wiring. The shore power cords on 60 Hertz systems have 30 amp twistlock-type connectors. They have a power ”ON” indicator light to ease in connecting and troubleshooting. This connector complies with the American Boat and Yacht Council (ABYC) standards.

Some marinas are not equipped with approved twistlock-type receptacles. An adaptor is available from Four Winns which converts the twist-lock shore plug to a three-wire grounded household type plug. Use only an approved adaptor when an adaptor is necessary.

WARNING

DO NOT use a two-wire adaptor to connect to a three-wire system. These adaptors do not provide adequate grounding.

Shore power connection procedure is as follows:

1. Turn off the boat’s main breaker switches before connecting or disconnecting the shore power cable.

2. Connect shore power cable to the dockside inlet receptacle of the boat first, then connect it to dockside shore power outlet.

NOTICE
Always connect the cord to the power inlet receptacle of the boat before making connections to the shore power source.

3. Check for reverse polarity on the AC panel. If the reverse polarity light is activated, immediately disconnect the shore power cord. See Section H-8C - Reverse Polarity Indicator.

4. Turn on the boat's main breaker switches and all other breaker switches desired on the AC panel for the various equipment installed.

5. To disconnect shore power, turn off the MAIN breaker switches on the AC electrical panel and at the transom. Then disconnect the power cord from the shore power dockside receptacle. Then, disconnect the cord from the boat.

NOTICE
Always disconnect the shore power cord from the dockside first before disconnecting from the boat.

NOTICE
Always remember to disconnect the shore power cord from the dockside first before leaving the dock. Properly store shore power cord.

B. 120 Volt AC Equipment

The 120 volt AC power is supplied when the dockside power option and/or the generator option is installed. All 12 volt equipment is isolated from the 120 volt AC system (except the cockpit refrigerator which is dual voltage). Appropriately labeled circuit breakers protect all AC systems on the boat. The receptacles can be used for 120 volt (220 volts on 50 Hertz models) household appliances. Refer to the following list for information on appliances and other equipment.

Battery Charger - Available with the dockside power option is controlled by a circuit breaker on the AC electrical panel in the Day-berth labeled BATTERY CHARGER. In order for the charger to charge the battery(s) the circuit breaker must be "ON" while connected to dockside power. If a generator is available and operating it too will allow the batteries to be charged by the battery charger.

Microwave Option - This option requires the dockside power option. The MICROWAVE breaker must be activated and the boat connected to dockside power or use the generator (optional) to supply power to the microwave.

Receptacles - The OUTLETS circuit breakers supply power to the corresponding receptacles in the AC system.

Air Conditioner Option - Note: This option requires the dockside power option. Refer to Section L-4 - Air Conditioning in this manual for more information.

Most receptacle circuits are capable of handling 15 amperes. Refer to Table III for a list of equipment and the electrical currents usually required to operate these items. For 220 volt, 50 Hertz models, divide all of the current ratings by 2. Usually, the power requirement is specified on the electrical item. This is only an approximation of the electric current usage normally experienced.

EQUIPMENT	ELECTRICAL LOADS
Air Conditioners	See motor load plate
Battery Chargers	Up to 800 watts (7.3 amps)
Blankets (Electric)	50 to 200 watts (2 amps)
Coffee Makers	550 to 700 watts (6.3 amps)
Electrical Drills	See motor load plate
Fans	25 to 75 watts (0.7 amps
Fry Pan	1350 watts (12.3 amps)
Heater	1500 watts (13.7 amps)
Lights	Wattage as marked
Television	1500 watts (10.5 amps)
Vacuum Cleaners	See motor load plate

Table III: Electrical Equipment

C. Reverse Polarity Indicator

Improper grounds or reversed polarity at shore power are a source of serious electrical hazard. The reverse polarity light will indicate if a problem exists at the 120 AC electrical system shore connection.

If a problem exists, the reverse polarity indicator light will come on when the shore power cable is attached to the inlet. DO NOT activate the shore power switch in the cabin when the reverse polarity light is on.

WARNING

ALWAYS check the reverse polarity indicator light in the AC distribution panel immediately upon connecting the shore power cord before turning on the AC SHORE POWER circuit breaker. If the light is on, a problem with a reversed electrical connection exists. Disconnect the shore power cord immediately. Notify the marina and have the dock's shore power connection inspected.

Under proper operating conditions, the reverse polarity indicator light will not be on. A green light is provided for the shore power and will be "ON" when dockside power is being used.

NOTICE

Some marina shore power systems may be improperly grounded to retard electrolysis (see Section H-11 - Stray Current Corrosion). Before using any 120 volt equipment, make sure the reverse polarity light does not activate when connecting the cord to the inlet.

D. Ground Fault Current Interrupters (GFCI)

The ground fault current interrupter (GFCI) is a device which protects against hazardous electrical shock from improper ground. An appliance electrical cord with worn insulation or damp equipment may have stray current which will run through electrical grounds. Stray current as above will result in an electrical shock.

One GFCI receptacle will protect all of the receptacles on the circuit. A GFCI may be used as a receptacle as well as an interrupter.

To test:

Push the black test button and the red reset button should pop out from the inner surface. The receptacle and the circuit are now off.

Push the reset button in until it clicks to reset it. If it does not reset, there is either a short in the circuit or the equipment being used, or a ground fault in the equipment. Unplug all appliances and reset the GFCI. One at a time, plug the equipment back in and turn it on. The item that causes the GFCI to trip is the problem item and should not be used.

H - 10 GENERATOR

A generator is optional on the 310 Horizon™ models. It provides 120 Volt AC power when the boat is away from the dock. The generator can be operated while running at or below cruising speed. The generator should not be operated when the boat is being run at high speeds. Insufficient cooling water may be available due to the speed.

A generator factory installed by Four Winns is capable of providing sufficient power for most electrical needs including microwaving, refrigeration, and air conditioning. It is possible to overload the generator by trying to operate too much equipment at one time. The circuit breaker that protects the output circuits on the generator set will trip should that occur. See the generator manufacturers information for specifications and additional details.

If you wish to use dockside power, be sure the generator is off, connect the shore power cords as explained in Section H8A. Place the selector switch to the "SHORE" position and turn on the Shore Power MAIN breakers on the AC cabin panel and at the transom

If you wish to use generator power:

1. Be sure the shore power cord(s) are disconnected.
2. Check the bilge for fumes, operate the blower for at least 4 minutes, and verify blower operation.
3. Open the generator's seacock valve (labeled GENERATOR) to allow water flow to the generator for cooling purposes.

NOTICE

In order to use the generator, you must first open the seacock valve (handle parallel to the flow of valve). Failure to open seacock valve while running generator will cause generator to overheat and possible failure. When not using the generator be sure to close the seacock.

4. Turn the selector switch on the AC panel to the "GEN" position.
5. Start the generator using the remote generator start switch on the AC cabin panel.

⚠ WARNING

Be sure to operate the bilge blower for at least four (4) minutes before starting engine or generator, or whenever operating the engine(s) at idle speed. Check the bilge blower output before each use.

⚠ WARNING

Generator exhaust contains carbon monoxide. Review information regarding carbon monoxide at Section B-2 - Carbon Monoxide and Section E-2 - Engine Exhaust.

Periodic generator maintenance as outlined in the generator owner's manual is necessary. Refer to the manufacturer's literature for more information.

H - 11 ELECTRICAL SYSTEM MAINTENANCE

A. Battery Maintenance

Be sure to keep the batteries charged. Also, keep the batteries clean, especially the terminals and connection lugs. Be sure the batteries are fastened securely while in use.

Check the battery fluid level often, especially when a charger/converter is being used. Replenish a battery indicating a low charge. Determine the reason for the discharge. Lack of battery usage is as detrimental to battery longevity as is overuse. Alternating battery usage is important. Refer to the battery manufacturer's instructions included with your battery.

⚠ DANGER

Batteries produce hydrogen and oxygen gases when being charged. These explosive gases escape through the vent/fill caps and may form an explosive atmosphere around the battery if the ventilation is poor. This gas may remain around the battery for several hours after charging. Sparks or flames can ignite the gas and cause an explosion.

⚠ WARNING

Fire or Explosion Hazard!

Only qualified personnel should install batteries and perform electrical system maintenance. Do not expose batteries to open flame or sparks. Do not smoke near batteries.

⚠ WARNING

Poison!

Sulfuric acid in batteries can cause severe burns. Avoid contact with skin, eyes, or clothing. Wear goggles, rubber gloves and protective apron when working with batteries. In case of skin contact, flush with water at least 15 minutes. If swallowed, drink large quantities of water or milk. Follow with Milk of Magnesia, beaten egg or vegetable oil. Get medical attention immediately.

⚠ WARNING

Disconnect the battery before working on electrical or ignition system to prevent electrical shock and accidental ignition.

B. Electrical Wiring Maintenance

Periodically, inspect all wiring for nicks, chaffing, brittleness, improper support, etc. Examine the shore power cord closely for insulation cracks and corrosion in the electrical devices. Spraying the receptacles and electrical connections with an electrical connection cleaner will reduce corrosion and improve electrical continuity.

⚠ WARNING

DO NOT allow corrosion to build up on connections. Shorts or ground faults can result.

The entire 120 (220) volt circuitry, especially the shore power cord, should be seasonally tested for proper continuity by an experienced marine electrician. This will help detect any short, open wire, or ground fault. Also, check the polarity indicator system for proper operation.

WARNING

120 (220) volt AC electrical power can be dangerous. DO NOT attempt to service a system unless you are familiar with, and experienced in, performing such service.

H - 12 STRAY CURRENT CORROSION

A. General

Electrically induced underwater corrosion occasionally affects boats and their related components. This is referred to as “Stray Current Corrosion” and appears as surface pitting or deterioration. Stray current corrosion is the decomposition of chemical compounds by electric current.

Stray current corrosion can be caused by surrounding boats; an improperly wired battery/charger installation or other boats that are in close proximity which have electrical power leakages. Stern drive units are especially vulnerable to stray current corrosion.

Periodically inspect the engine components to determine if corrosion damage exists. If stray current corrosion damage is found, determine and correct the cause of the stray current to prevent further damage. Consult an experienced marine electrician or contact your Four Winns dealer for assistance.

The use of some shore power battery chargers, while the boat is in the water and the battery is connected to the system, can cause stray current corrosion. Have an experienced marine electrician review any battery charger installation to ensure a stray current corrosion problem will not develop. An improper battery connection is a common cause of stray current corrosion.

NOTICE

Use only UL Marine-ignition protected battery charger(s) designed to meet US Coast Guard regulations for external ignition protection.

Corrosion is usually more prevalent in polluted or salt water than in fresh water. It is also more likely to occur when dockage is in an area with steel piers, large metal boats, or where shore power is in use.

B. Galvanic Corrosion

Galvanic corrosion results from a potential electrical difference existing between dissimilar metals immersed in a conductive solution (e.g., salt or brackish water). If these metals touch or are otherwise electrically connected, this potential difference produces an electron flow between them. The attack on the more active metal is usually increased and the attack on the less active metal is decreased, as compared to when these metals are not touching.

C. Corrosion Prevention

Anticorrosion anodes are attached to the bottom of the gimbal housing of your stern drive to prevent corrosion to your electrical systems and underwater parts. These anodes will be slowly eroded away by galvanic action and require periodic inspection. Please refer to the section on “Anti-Corrosion Anodes” in your engine manufacturer’s manual for additional information.

I - 1 GASOLINE FUEL SYSTEMS

Gasoline fuel systems used in Four Winns® boats are designed to meet or exceed the requirements of the U.S. Coast Guard, the National Marine Manufacturers Association, and the American Boat and Yacht Council in effect at the time of manufacture.

Fuel tanks on Four Winns® boats are located forward of the aft bilge compartment below the floor. Please visit our website at www.fourwinns.com for fuel tank capacities.

NOTICE

Use only clean fuel of the type and grade recommended by the engine manufacturer. Engine damage resulting from the use of a lower octane gasoline is considered misuse of the engine and will void the engine warranty. Refer to the section on Gasoline Requirements in the engine manual for information on octane specifications.

A. System Testing

All gasoline fuel systems have been factory inspected and pressure tested in accordance with regulations in effect at the time of manufacture. Additionally, each fuel tank must pass rigid tests and inspections performed by the fuel tank manufacturer.

Prior to taking delivery, it is important that a full inspection be made of the entire fuel system by the selling dealer. An entry on the Four Winns® Pre-Delivery Inspection Form portion of the Warranty Registration Card will attest to the dealer's performance of this service.

B. Fuel Fills

Fuel fill deck plates are located either on the aft deck or side decks, and are marked "GAS". To open, insert the deck plate key into the holes on the cap and rotate counterclockwise. A bead chain connects the cap to body to help prevent loss overboard. Be sure to utilize the proper type and grade of fuel as recommended by the engine manufacturer. See Section I-2 for additional information.

The fuel fill fitting allows for venting below the fill cap. While the tank is being filled, the air displaced by the fuel escapes through the fuel fill/vent. This reduces the amount of fuel spillage. Always open the lid slowly to allow air to escape. See Figure I1.

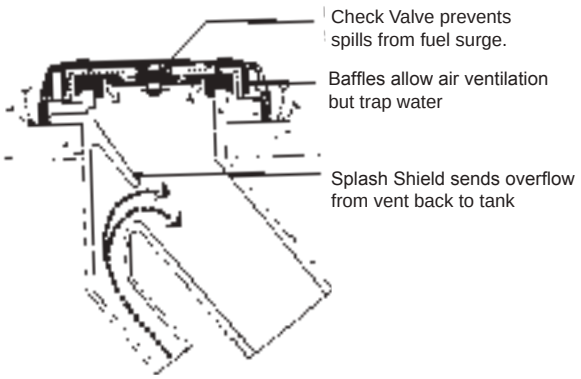


Figure I1: Fuel Fill

The gasket seal on the fuel fill cap assists in sealing when closed. A missing or damaged gasket can allow water on the surrounding surfaces to run into the tank. Periodically inspect the gasket and the fuel deck plate for damage.

WARNING

DO NOT confuse GAS deck fill plate with WATER or WASTE deck plates. Deck fill plates are labeled according to the intended use.

WARNING

Spilled fuel is a fire hazard. DO NOT overfill or overflow the tank, or allow fuel spills into the hull or bilge. If spillage occurs, clean up immediately and dispose of soiled rags/towels in a proper container.

NOTICE

When fueling at a marina, DO NOT overfill. Fuel may spill into the water.

WARNING

Avoid overboard spills. When tank is almost full the sound from the fuel vent will change. The pitch will become higher indicating the tank is close to being full. Stop pumping fuel into tank. ***DO NOT TOP OFF.***

After fueling, replace the fill cap, and wash the areas around the fuel fill plate. Residual fuel left on the deck and hull sides can be dangerous, and will yellow the fiberglass. It will also damage the tape stripes and logos.

C. AntISyphon Valves

The fuel withdrawal line is equipped with an anti-syphon valve where the line attaches to the fuel tank. This valve prevents gasoline from syphoning out of the fuel tank should a line rupture. See Figure I2 for antIsyphon location.

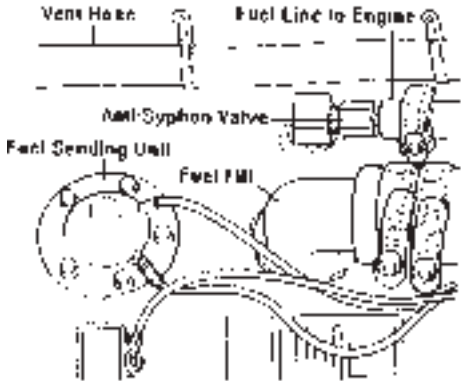


Figure I2: Fuel Tank Fittings

CAUTION

The fuel withdrawals are positioned in the fuel tanks to achieve optimum fuel usage, and fuel line routing. At certain speeds and hull trim angles, the fuel supply at the withdrawal tank location can increase or decrease accordingly. Be extremely careful when attempting to operate the boat on a minimum amount of fuel. Though some fuel may be in the tank, the relative trim angle of the boat may cause the fuel to flow away from the withdrawal.

NOTICE

Access plates or lids are provided in the floor for easier access to the fuel pick-up, anti-syphon valve and sender.

D. Fuel Gauge

The fuel gauge indicates the amount of fuel in the tank. See Section E-7F - Fuel Gauge for additional information on fuel gauge use.

E. Fuel Senders

The fuel sender consists of a float which travels up and down a stationary tube. The float measures the level of the fuel in the tank and sends a signal to the fuel gauge. See Figure I3.

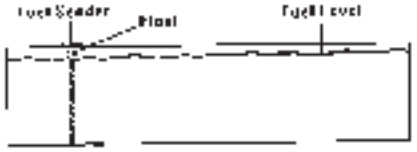


Figure I3: Fuel Sender Operation

Due to the mechanical nature of the fuel sender, variations in readings during various speeds of operation may occur. This system is merely a relative indication of the available fuel supply and not a calibrated instrument. With this type of sending unit a more accurate measurement of fuel level is obtained with the boat in a level position.

The gauge readings will also vary with the trim angle of the boat. When sitting at a dock and the boat is nearly level, the fuel gauge will register accurately. Refer to Figure I3. When boating, the trim angle of the boat changes and affects the gauge readings. Under these conditions, the fuel sender will register “full” for the first few hours of running time until the fuel level drops below the 3/4 or 1/2 mark. This is caused by the angle of the fuel in the tank as shown in Figure I4.

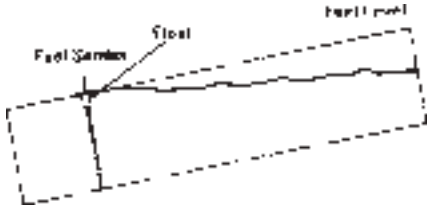


Figure I4: Effects of Trim Angle

It is very important to keep track of hours and fuel consumption to obtain an average gallon per hour consumption figure. Refer to the fuel log located at the back of this manual. This will help to prevent any problems with running out of fuel on the water.

Dealers are equipped with some general figures on consumption which can be used as a guide until specific information on your boat is determined. Because of boating conditions, speed, weight and other factors common to your situation, fuel consumption will vary between your boat and consumption figures developed by Four Winns.

When the fuel gauge begins to register below the “full” mark, the gauge readings will drop much faster until it reads” empty”. When this occurs, the trim angle has affected the sender reading. When the gauge registers “empty”, the sender has bottomed out and there may be 3 to 4 gallons of fuel in the tank. See Figure I5.

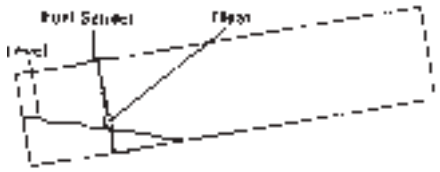


Figure I5: Trim Angle Effect with Low Fuel

F. Fuel Filters

Fuel filters are installed on each engine. Filters should changed frequently to assure an adequate supply of fuel to the engine. Refer to the engine manual for additional information. The engine manual is included in the owner’s information packet.

NOTICE

Canister-type filters should be changed annually.

G. Use and Maintenance

WARNING

DO NOT let the odor of gasoline go unchecked. If the odor of gasoline is noted, DO NOT START ENGINE. If engine is running, SHUT OFF ENGINE, ELECTRICAL AND HEAT GENERATING EQUIPMENT. Investigate and correct the situation immediately! Have all passengers put on personal flotation devices and keep fire extinguishers at hand until the situation is resolved.

WARNING

Avoid serious injury or death from fire or explosion resulting from leaking fuel. Inspect systems for leaks at least once a year.

WARNING

To help guard against damage, avoid the storage or handling of gear near the fuel lines, fittings and tanks.

I - 2 FUEL STANDARDS

Be cautious when using gasoline that contains alcohol. The fuel system components on the plastic fuel tanks used by Four Winns® will withstand up to 10% alcohol content in the gasoline. Also refer to the section on gasoline requirements in your engine manual for additional information.

CAUTION

To conform to Federal Air Quality Standards, the petroleum industry reduced the amount of tetraethyl lead in gasoline. Alcohol is being blended with gasoline to help restore the octane rating lost when the lead was removed. While blending alcohol with gasoline increases the octane level of the fuel, it can also create certain safety and performance related problems for boaters.

A. Problems with Alcohol in Gasoline

Below is a list of problems which may be experienced when using blended gasoline.

1. Premature deterioration of fuel system components may occur. Alcohol will attack rubber fuel hoses, fuel tanks, fuel filters, fuel pumps and rubber gaskets. This deterioration will lead to fuel system leakage.

2. Phase separation of fuel will cause contamination. Water which accumulates in the tank through contamination or condensation will be absorbed by the alcohol. This water-heavy alcohol will settle at the bottom of the tank. This phase separation will lead to fuel tank corrosion. This may also result in a lean mixture to the carburetor and cause engine stalling or possible engine damage.

The use of alcohol additives in gasoline has become more widespread. Regulations on public notification of the existence of additives is currently controlled by the Environmental Protection Agency (EPA). Some states do require that gasoline pumps display information on additives (especially alcohol). If alcohol content is not

posted, ask and avoid using fuel containing alcohol if possible.

B. Recommendations

Assume blended gasoline is being used and follow these recommendations below.

1. Inspect fuel hoses often. A deteriorated hose containing alcohol blended gasoline will normally be soft and swollen. A deteriorating hose containing no fuel will normally be hard and brittle. In both cases the hose should be replaced.

2. Ventilate the engine compartment before starting the engine(s). Operate the engine compartment blower for four (4) minutes. Then, prior to starting the engine(s), check the bilge area for the scent of gasoline fumes; DO NOT start the engine(s) if the odor of gasoline is detected.

3. Frequently inspect the fuel system fittings. Inspect the fuel tank, pump and filter for signs of leaks or corrosion. Visually inspect for deteriorating metal fittings at the fuel hose connections.

> ⚠ WARNING
> *Avoid serious injury or death from fire or explosion resulting from leaking fuel. Inspect system for leaks at least once a year.*

If areas are found within the fuel system that appear questionable, have a qualified marine technician inspect the system. A thorough fuel system examination should be made by an experienced marine technician at least once a year.

I - 3 FUELING INSTRUCTIONS

1. Avoid fueling at night except in emergencies.

2. When moored at fueling pier:

   a. Do not smoke, strike matches, or throw switches.

   b. Stop all engines, motors, fans, and devices that could produce sparks.

   c. Put out all lights.

3. Before starting to fuel:

   a. Ensure that boat is moored securely.

   b. Be sure the proper type and grade of fuel as recommended by your Engine Owners Manual is used.

   c. Determine how much additional fuel is required to avoid overflow.

4. During fueling: Keep the fill nozzle in contact with the fuel opening at all times to guard against possible static spark. See Figure I6.

> ⚠ WARNING
> *Spilled fuel is a fire or explosion hazard. DO NOT overflow the tank or allow fuel spills into the hull or bilges. Avoid overboard spills. When tank is almost full the sound from the fuel vent will change. The pitch will become higher indicating the tank is close to being full. Stop pumping fuel into the tank.*
> ***DO NOT TOP OFF**.*

(Nozzle in contact with fuel opening. Grounding the fuel hose - proper)

(Nozzle not in contact with fuel opening. Not grounding the fuel hose - Improper)

Figure I6: Grounding Fuel Hose

5. After fueling:

   a. Replace all fill caps securely.

   b. Wipe up any spilled fuel.

c. Determine that there is no odor of gasoline in the engine compartment or below decks before starting machinery, turning on lights or lighting stove. Operate the bilge blower system for at least four (4) minutes before engine start-up.

d. Be prepared to cast off moorings as soon as engine is started.

J - 1 GENERAL

The 310 Horizon™ models are equipped with a fresh water supply system. This system consists of a water supply tank, water distribution lines and a distribution pump. Refer to Figures J11 and J12. at the end of this section for general water system diagram. See Figure J1.

Figure J1: Water Fill

⚠ CAUTION

The water deck plate is appropriately labeled WATER. DO NOT fill the system with anything other than water. Should the system become contaminated with fuel or other toxic solution, complete system or component replacement may be necessary.

The fresh water tank is located on the port side of the boat. (Location may vary depending upon options installed). The fresh water deck plate used for filling the tank is also located on the port side. The fresh water deck fill is clearly mark “WATER”. The water tank is equipped with an overboard vent. Maintain a close visual watch on the overboard vent while filling the water tank. Always fill the tank slowly. When the tank is almost full, water will spurt out of the vent.

NOTICE

When filling the tank, never seal the hose to the deck plate. The tank would become pressurized and could rupture.

NOTICE

DO NOT overfill the water tank. Tank damage may result. Water capacity and tank location may vary due to other equipment that may be installed on the boat.

For information concerning fresh water tank capacities, please visit our website at www.fourwinns.com or contact your Four Winns dealer.

The materials from which the components of the water system are made may give the water supply a peculiar taste, especially when new. This condition is normal and can be reduced somewhat through the use of a water filter; such as that produced by PuriTec™. The taste should completely dissipate in time.

J - 2 DISINFECTING THE FRESH WATER SYSTEM

⚠ CAUTION

The fresh (potable) water system should be disinfected prior to initial use.

The water system should be disinfected before first use and at the beginning of each season. The following information is a general guide to disinfecting the fresh water system.

1. Flush the boat’s water system thoroughly with fresh water. Make sure all non-toxic antifreeze is removed from the system.
2. The water system should be drained completely.
3. To disinfect the water system, use one gallon of water and 1/4 cup of Clorox® or Purex® household bleach (5% sodium hypochlorite solution). This is recommended for each 15 gallons of tank capacity.
4. Allow to stand for three (3) hours. If time is a factor, greater concentrations of chlorine solution will be needed to disinfect the water system.
5. Drain the system.
6. Flush the system thoroughly with fresh water.
7. Fill the system with fresh water.

To remove excessive chlorine taste or odor which might remain in the system, prepare a solution of one quart vinegar to five gallons water and allow this solution to agitate in the tank for several days during boating. Then drain tank and refill with fresh water.

The cockpit sinks are equipped with traps, and the water will drain slowly. If the system is not operating properly, have it checked by your authorized Four Winns dealer.

J - 3 FRESH WATER SYSTEMS

There are two switches marked “FRESH WATER”. One is located at the refreshment center, inside the storage compartment underneath, and the other one is located in the head. Either switch will activate the fresh water pump. This switch must be in the “ON” position in order to have running water.

After the tank has been filled, operate the pump switch until water comes out of the faucet. After all the air has been purged from the system and a steady flow of water is coming from the faucet, turn off the pump until needed. Note: The same fresh water pump provides water to all faucets and showers. An in-line fuse is included to protect the water pump. The pump is generally located in the vicinity of the fresh water tank.

NOTICE

If the line is routed improperly, kinked or is dislocated, the water pump may not operate properly. Inspect and correct the hose routing (if necessary). If a problem still exists, contact your Four Winns dealer for assistance.

NOTICE

DO NOT operate the pump with an empty tank. Damage to the water pump may result. Be sure the pump switch is off when not in use.

A. Cockpit Refreshment Center

The 310 Horizon™ models come equipped with a refreshment center located inside the cockpit. The refreshment center includes common features such as a trash receptacles, sink with pressurized water system and solid surface counter top. Convenient storage for the 36-quart removable cooler is located inside the storage compartment underneath the refreshment center.

Figure J2: Typical Refreshment Center

B. Aft Shower

The aft shower is standard. The shower unit is located on the port side of the transom. The water supply system can be used for showering or washdown purposes at the transom. The switch to operate the water pump is located at the refreshment center or in the head and is marked “FRESH WATER”. See Figure J3.

Figure J3: Aft (Transom) Shower

To operate the aft shower place the “FRESH WATER” switch “ON”, push the spray nozzle button to purge any air that may be in the system. When a steady flow of water is coming from the washdown nozzle the air has been purged. Release the spray nozzle when finished. As the pressure builds, the pump will automatically shut off at 35 psi.

When properly primed and activated, the pressurized water system can be used in the same manner as the water system in a home. An automatic pressure sensor in the water pump keeps the system pressurized. Simply operate the spray nozzle and water will be delivered.

C. Head Shower

A head shower is standard. The shower unit is actually a combination faucet and shower. See Figure J6. The switch to operate the water pump is located at the refreshment center or in the head and is marked “FRESH WATER”.

To operate the head shower place the “FRESH WATER” switch “ON”. Pull the faucet/shower out from its holder (located at the sink) and push the spray nozzle lever to purge any air that may be in the system. When a steady flow of water is coming from the shower nozzle the air has been purged. Release the spray nozzle when finished. As the pressure builds, the pump will automatically shut off at 35 psi.

NOTICE

After showering thoroughly dry areas that may have gotten wet to prevent possible damage to any finishes due too excessive wetness.

A shower sump pump is incorporated into the drain system of the shower. The shower drains into the sump pump located in the forward bilge compartment, starboard of the fuel tank. The water will then be pumped overboard. If an optional gray water system is installed, the water will be pumped into the gray water holding tank.

The sump pump includes an automatic switch and is protected by a circuit breaker (“SHOWER SUMP”) at the battery switch panel. The sump pump will automatically start as soon as the water in the sump reaches a level that will cause the float on the switch to rise.

After showering, let the water flow for a period of time to flush the pump of soap residue. Check the sump for excess residue. As necessary clean and rinse the sump. After rinsing, the pump will automatically shut off.

If water flow from the shower head appears to be restricted, it may be due to sediment accumulating at the shower head. If necessary, remove the shower head and clean the discharge holes with a fine wire.

Periodically check the sump pump screen for clogs to prevent drainage problems from occurring in the shower drain. Refer to the manufacturer’s literature included in the owner’s packet.

J - 4 GRAY WATER SYSTEM OPTION

The gray water system is optional. The water from the galley sink, head sink and shower will drain into a sump and is pumped into a gray water holding tank respectively. A pumpout fitting labeled WASTE but designated for gray water is provided on the deck. See Figure J4. Refer to the drawings at the end of this section.

Figure J4: Waste Fittings

NOTICE

Certain geographical areas have restrictions on gray water being pumped or drained overboard. Be sure to check all local, state and federal laws in the boating area.

J - 5 HEADS

A. Enclosed Head

The various anti-pollution laws presently in effect have necessitated the use and availability of a wide variety of heads. The heads that have been factory installed in Four Winns® boats have been chosen to provide reasonable longevity and reliable service, at a realistic cost. Refer to the drawings at the end of this section. Also, refer to the manufacturers literature included in the owner’s packet.

A fully enclosed fiberglass head is a standard feature built into the starboard console. This roomy head offers a solid surface countertop, vanity, mirror, medicine cabinet, sink, courtesy light with switch, CO monitor, an opening port light, fiberglass liner, porcelain toilet, storage locker, and overhead lighting. See Figure J5.

Figure J5: Enclosed Head

B. Porcelain Head - Standard

The 310 Horizon™ models come with a porcelain head and a waste holding tank. For the holding capacity, please refer to our Four Winns website at www.fourwinns.com. The toilet is a right hand, manually-operated toilet and is surprisingly easy to operate. The toilet obtains sea/fresh water from a pick-up for rinsing the bowl. The pick-up and strainer are located in the aft bilge compartment. Please refer to the following toilet operation instructions, the manufacturer's literature in the owner's packet, and Figures J6 - J8.

To operate toilet:

1. Move the wet/dry selector to the WET bowl position (left) and pump handle up and down a few times to add some water to the bowl prior to use.
2. After using, flush again by pumping the handle up and down (in WET bowl position) until bowl is thoroughly rinsed and evacuated.

3. Then move the wet/dry bowl selector to the DRY bowl position (right) and continue pumping until only about one cup of water remains in the bottom of the bowl.

4. Leave the wet/dry bowl selector in the dry bowl position when not in use.

Figure J6: Wet/Dry Toilet Operations Label

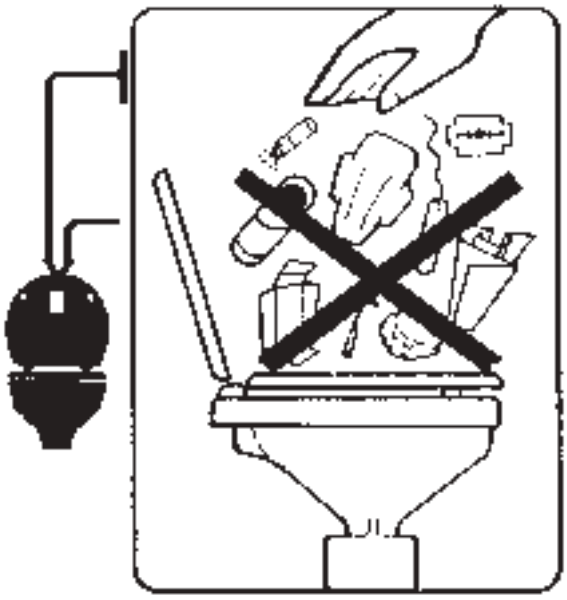


Figure J7: Do Not Place These Items in Toilet Label

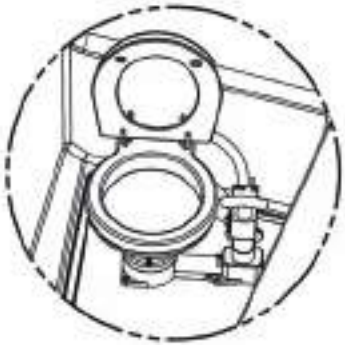


Figure J8: Porcelain Toilet - Right Hand

WARNING

HAZARD OF FLOODING

Close all waste system seacocks when toilet is not in use. Failure to do so may result in flooding which can cause loss of property and life.

C. VacuFlush® Sanitation System - Optional

The VacuFlush® sanitation system is optional. The system eliminates the unpleasant sulfide odors which plague saltwater systems. Flush water is no longer drawn through the through-hull fittings, seacock, and vented loop. It also extends the life of the system components by eliminating salt water and impurities from accumulating in the system over time.

The VacuFlush® toilet operates in a different way from other marine toilets. VacuFlush® systems use a small amount of water (a little more than a pint) per flush in addition to a simple vacuum. The toilet is connected to the fresh water system. Fresh water is the key to an odor free bathroom compartment. VacuFlush® toilets are equipped with an integrated vacuum breaker which prevents the possible contamination of the potable/fresh water supply. See Figure J9. Also refer to the manufacturer's literature included in the owner's packet.

NOTICE

The VacuFlush® (TOILET) switch located in the head must be ON in order for the toilet to flush & recharge.

To operate:

1. To add water to the toilet before using, raise flush lever until desired water level is reached. Generally, more water is required only when flushing solids. See Figure J8.

2. To flush toilet, press flush lever sharply down to the floor until contents clear bowl. A sharp popping noise is normal when the vacuum seal is broken and the flushing action begins. **Be sure to hold lever down for 3 seconds.** If flush lever is accidentally released before waste clears bowl, do not attempt to flush toilet again until vacuum pump stops running. A small amount of water should remain in the bowl after flushing.

3. Do not dispose of sanitary napkins or other non-dissolving items in toilet, such as facial tissue or paper towels. These items can cause plugging of the system. Refer to the "Deodorants and Special Tissue" section in the manufacturer's manual for more information.

Figure J9: VacuFlush Operations

D. Dockside Waste Pump Out

On the 310 Horizon™ models waste pump out capability is standard. Waste can be removed from the holding tank by taking the boat to a dockside waste pumping station. Most marina fueling facilities provide such services.

The waste holding tank should be emptied upon visual inspection of the waste holding tank and determining the waste holding tank's capacity is almost full. Waste level indicators are typically located in the head. DO NOT ALLOW THE WASTE TANK TO BECOME OVERFILLED.

To pump out the holding tank:

1. Be sure the head has some water in the bowl.

2. Connect the dockside pump out connection to the WASTE plate located on the deck.

NOTICE

Usually the dockside pump out connection will screw into the waste deck plate or has a rubber sleeve that inserts into the plate and must be held in position during the pump out operation. If the hose is not air tight or connected properly, waste could spurt out or leak around the deck fitting and into the boat.

3. Have the pumping station operator activate the pumping equipment. The waste will be drawn from the holding tank and into the pumping station's disposal tank.

4. Remove the pump out connection from the deck plate. Add at least 5 gallons of clean water to the holding tank on most models through the waste deck fitting using a dockside water hose.

5. Repeat steps 2 & 3 above to pump out the water used in step 4 to flush the holding tank.

6. Add waste holding tank treatment chemical to the head bowl. It is available from the dockside pumping station or can be obtained from your dealer. Flush at least twice.

⚠ CAUTION

Be careful when handling and storing treatment chemicals. Not only are they toxic, but they will also stain and damage surrounding surface.

E. Head With Overboard Discharge - Optional

This option is available on the 310 Horizon™ models. The head toilet operations are the same as the systems described earlier. The head operates the same as the porcelain head system described earlier but an additional line with a "wye" has been installed for overboard discharge. The waste will be pumped into the holding tank from the head. The macerator pump is installed before the "wye". Refer to Figure J10.

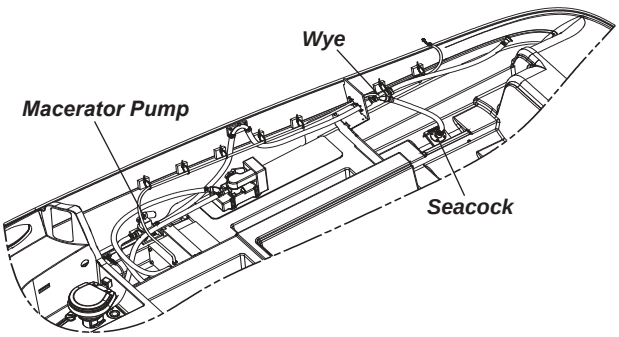


***Figure J10: Overboard* Discharge Option**

NOTICE

The discharge pump must be used to discharge waste overboard. However, DO NOT use the discharge pump to discharge waste at a pumping station.

To operate the overboard discharge system:

1. The discharge valve is located in the engine compartment labeled "HEAD DISCHARGE". To open, turn the valve so that the handle is parallel to the flow of the valve. The waste deck plate cover must be tightened securely for the overboard discharge system to operate.

2. Turn ON the overboard discharge switch which is located in the head on the switch panel. Allow the discharge pump to run until the storage tank is empty. The sound of the pump's motor load and speed will change when the tank becomes empty.

3. Turn the overboard discharge switch off.

4. Turn the head discharge valve handle to the closed position, and secure it. This thru-hull valve (seacock) must be closed to prevent water from being forced back into the system.

NOTICE

Discharging waste overboard is illegal in most US waters today. Discharge is limited to certain coastal waters, a designated distance offshore. Check with your local boating regulations before proceeding with any discharge activities.

Some local regulations require overboard discharge systems be physically secured in a closed position during use of the boat in waters designated as "no discharge" areas. Check with local boating regulations. Refer to the manufacturer's literature for additional information.

J - 6 SYSTEM MAINTENANCE

Information supplied with water and waste system components by the equipment manufacturers is included with this manual. Refer to this literature for additional operation and service information.

Be sure the batteries in the boat are properly charged. Operating the pressure pump from a battery with a low charge will result in pump cycling. This could lead to premature pump failure.

⚠ CAUTION

The decomposition of waste produces a colorless, odorless gas, methane, that is lighter than air, combustible, and extremely lethal. Always provide sufficient ventilation when effecting repairs to the waste system and allow no odor from the waste system to go unresolved.

A. Clean Vents and Screens

Periodically, inspect the water tank vents and thru-hull vent fittings for any dirt, wax, etc. Carefully remove any obstruction with a pipe cleaner or similar device. **Be sure not to puncture the screen**. The stainless steel vent cap is not removable.

NOTICE

Failure to keep the water tank vent fittings clean will cause excessive pressure buildup within the tank during filling. This can cause water tank damage.

Periodically remove the filter screens from the faucet discharge spouts and shower head. Remove the accumulation of sediment from the screens. If necessary, clean out the holes using a fine wire. A buildup of debris in the faucet filter screens can create enough restriction to cause the pump to cycle on and off.

Check the in-line water filter/screen for sediment and blockage. It is located between the water tank and the pressure water pump. If obstructed, remove from the water line and either clean or replace the part. The filter unit will twist apart.

Inspect and clean the shower sump every 30 days. Some water will always be in the compartment. Sediment and other debris will buildup and affect the automatic bilge switch and pump operation. Remove the pump's cover and clean the screen. The screen will become blocked and the pump will not operate properly. To clean the compartment, use baking soda and a fine wire brush to remove dirt and other debris. This will also serve to disinfect the area.

B. Winterizing the Water System

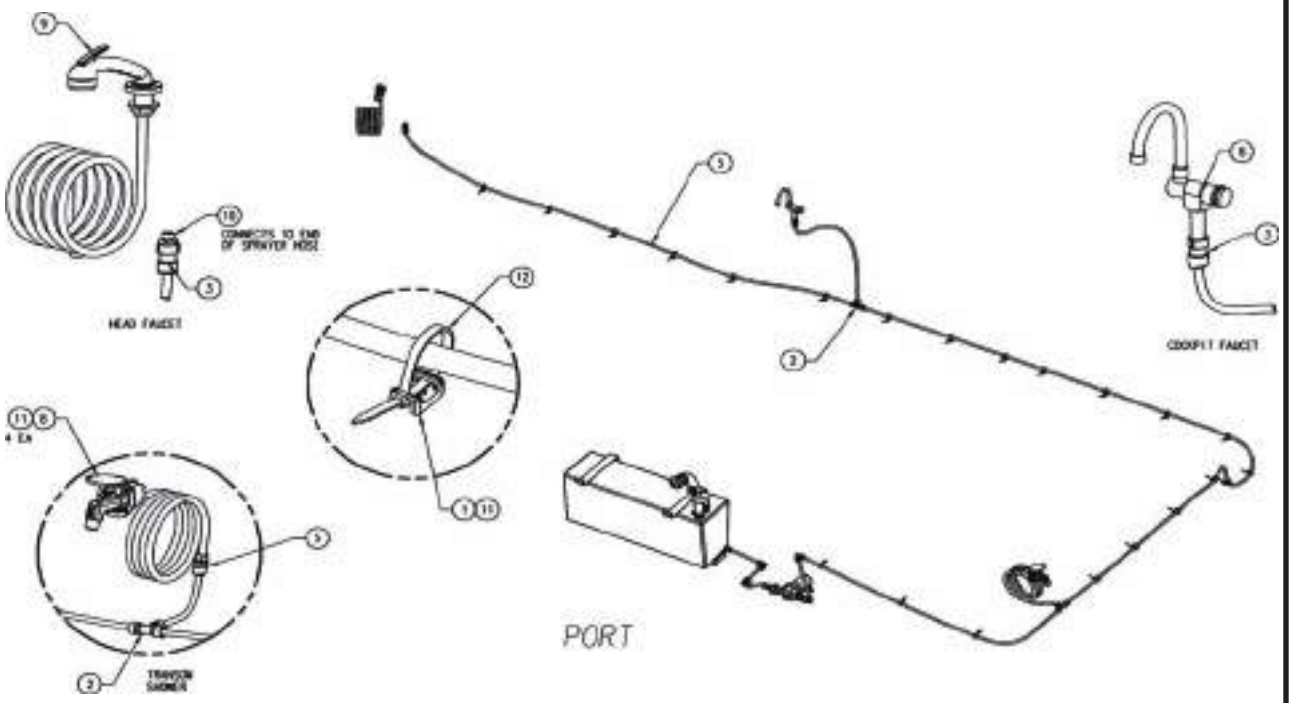
Winter lay-up service procedures should include a thorough draining of the water system. Disconnect all accessible fittings. Blow out all lines. Be sure the hot water heater, fresh and gray water tanks, transom shower, pumps and lines are completely dry. Leave all faucets open. Freezing water can cause severe damage to all water system components.

NOTICE

Always winterize the fresh water system prior to winterization of the hull drainage (bilge pump) system.

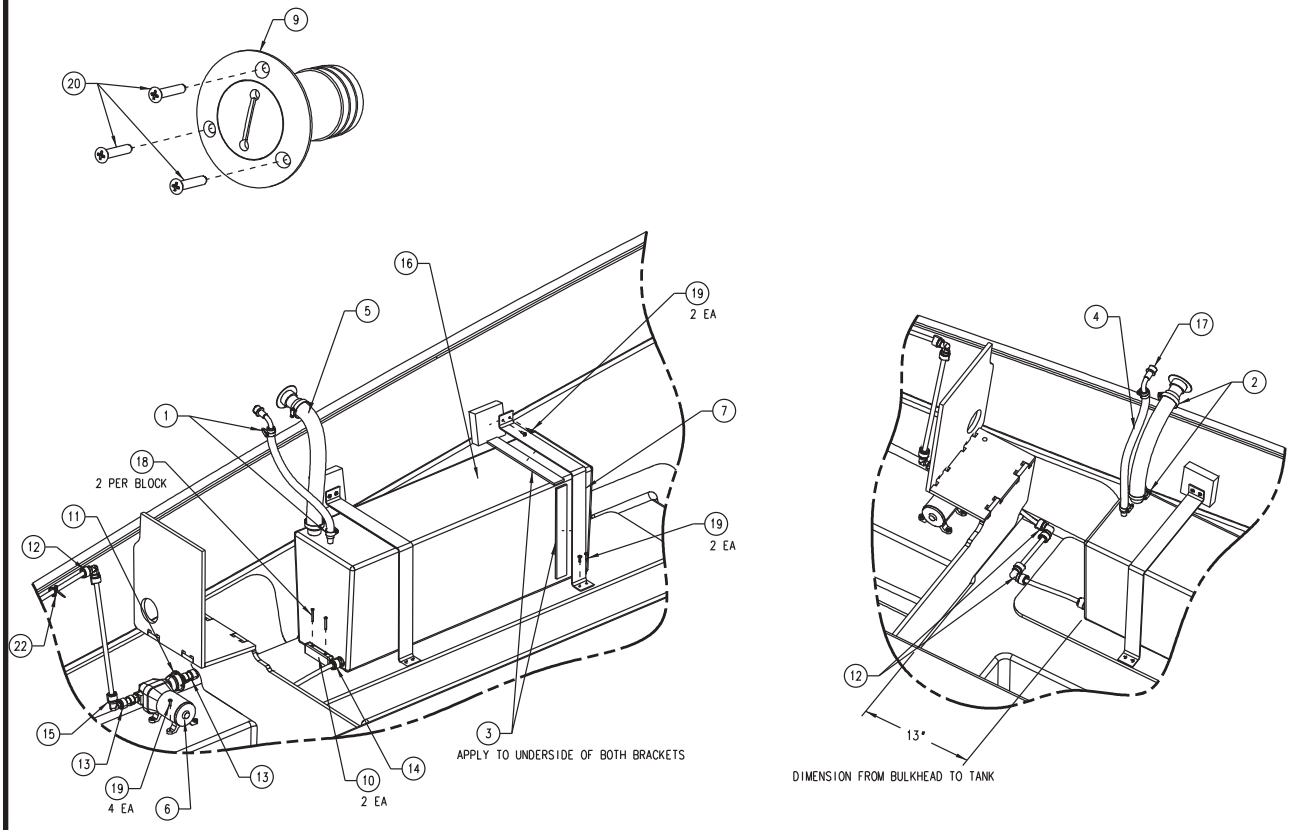
Draining the system as mentioned can be very tedious and an incomplete job can result in expensive repairs. The use of nontoxic antifreeze (such as RV antifreeze) designed for fresh water systems considerably reduces the work necessary and is a more positive means of winterizing the system. Follow the directions included with the antifreeze solution.

FIGURE J11: 310H FRESH WATER SYSTEM (1 OF 2)



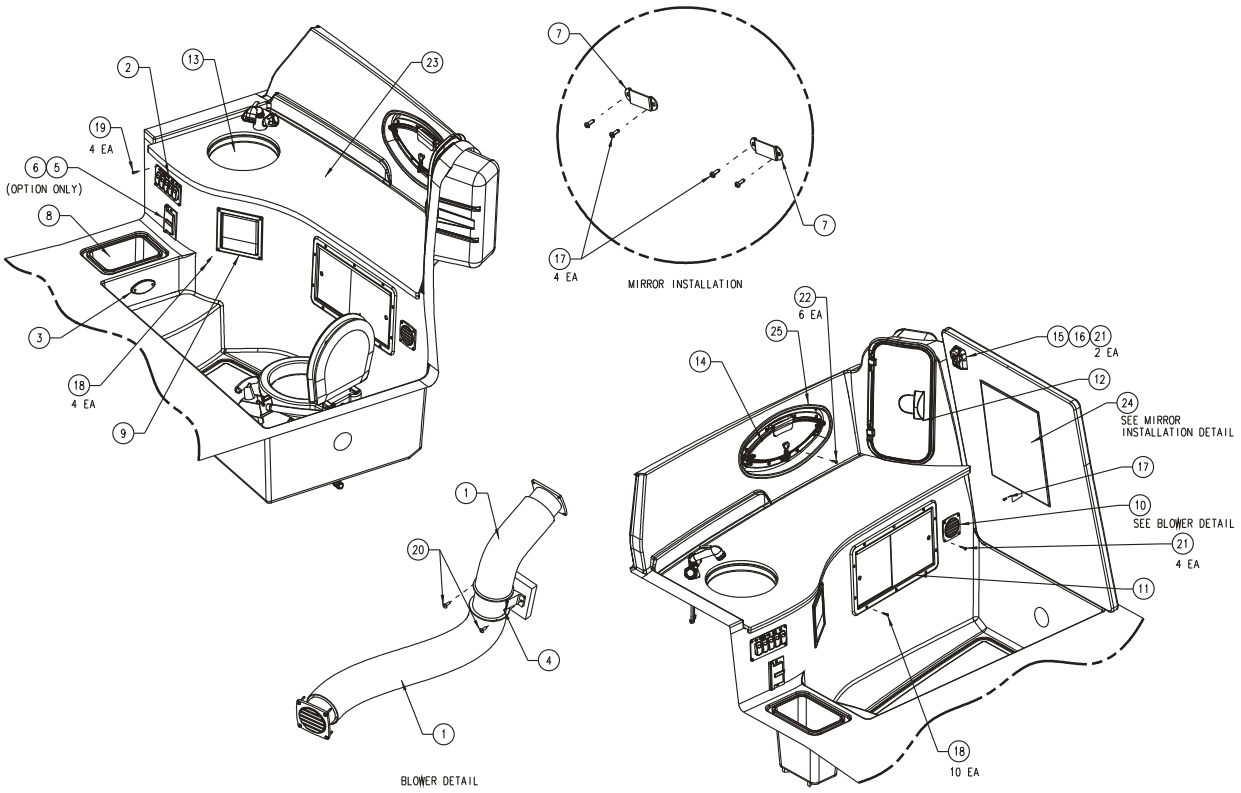
#	DESCRIPTION	PART #	QTY	U/M
1	BLOCK- TIE WRAP- SCREW MOUNT	032-0584	A/R	EA
2	TEE 15MM	035-0928	2	EA
3	ADAPTER 1/2 IN BSP 15MM	035-0933	2	EA
4	ADAPTER MALE 1/2 IN BSP X 15 MM	035-0934	2	EA
5	TUBING- BLUE 15MM X 50M	035-0936	42	FT
6	FAUCET- FOLD DOWN SS #97260-CP	035-1261	1	EA
7	PLUG- END- BRASS 15MM #WX1508B	035-1369	1	EA
8	SHOWER TRANSOM	035-1375	1	EA
9	SPRAYER- 6 ft. FLEX CHROME #14066	035-1426	1	EA
10	ADAPTER 3/8 BSP M-1/2 NPT M#10961	035-1432	1	EA
11	SCREW- #8 X 3/4 IN POHSMS	080-0022	A/R	EA
12	TIE- CABLE 7.4 IN W/O HOLE	080-0286	A/R	EA

FIGURE J12: 310H FRESH WATER SYSTEM (2 OF 2)



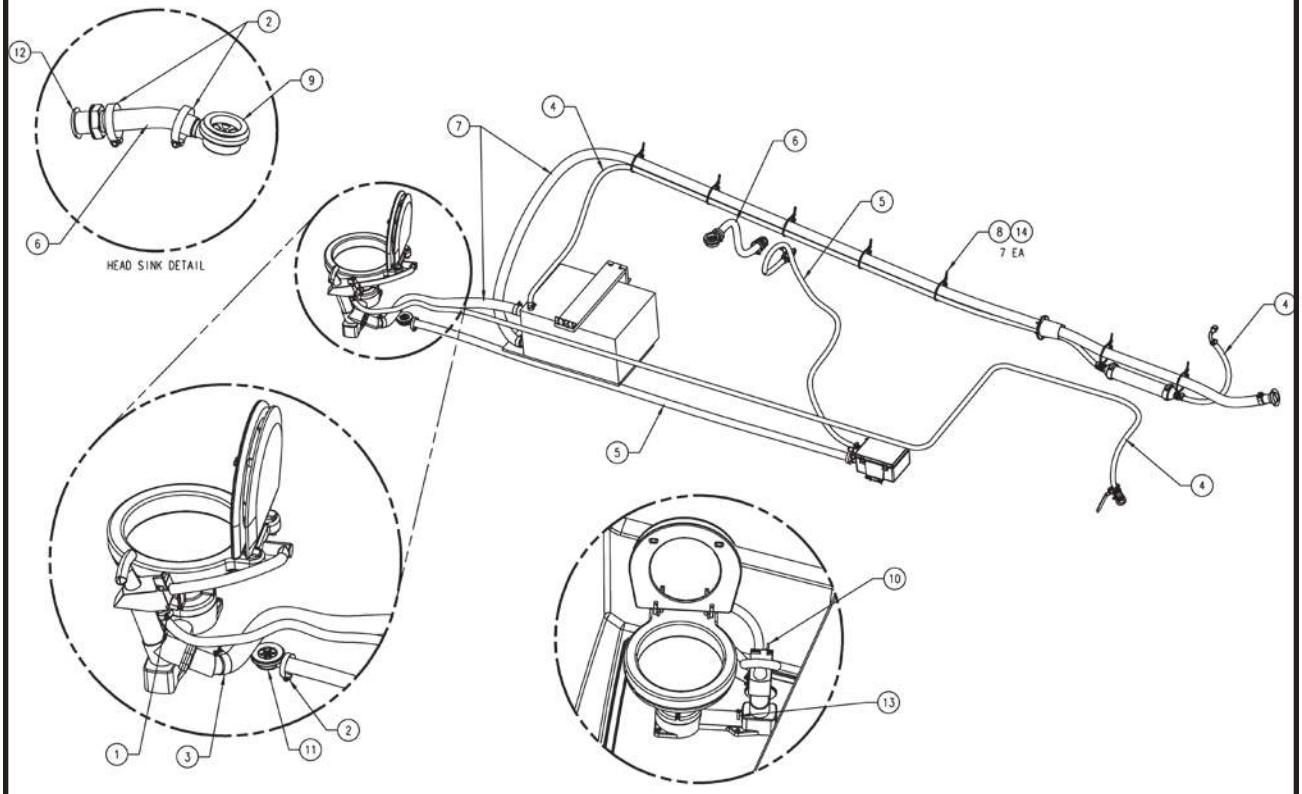
#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP- 5/8 IN #10H FUEL VENT HOSE	021-0031	2	EA
2	CLAMP- 1-1/2 IN #24 FILL HOSE	021-0032	2	EA
3	TAPE- FUEL TANK SUPPORT	021-0425	50	IN
4	HOSE 5/8 WASTE #148-0580	022-0013	15	IN
5	HOSE- 1-1/2 IN SANITATION WHT 116-148-1126	022-0055	15	IN
6	PUMP FLOJET #4405-143B W CONN	026-0331-02	1	EA
7	BRACKET- FRESH/GREY WATER 310H	029-0543	2	EA
8*	BOOT- HOSE CLAMP	030-0864	4	EA
9	FILL WATER 1-1/2 MARINE HDWR	030-1887	1	EA
10	BLOCK- 4 3/8 in. x 1 1/4 in.	032-0144	2	EA
11	FILTER IN LINE SHURFLO #170-06	035-0158	1	EA
12	ELBOW 15 MM WX1503B	035-0929	3	EA
13	ADAPTER 1/2 IN BSP 15MM	035-0933	2	EA
14	ADAPTER MALE 1/2 IN BSP X 15 MM	035-0934	1	EA
15	ELBOW- STEM	035-1002	1	EA
16	TANK- 20-GAL FRESH WTR 280/285 WT2008-10	035-1032	1	EA
17	VENT 90 DEG ELBOW	035-1332	1	EA
18	SCREW- #10 X 1 1/2 IN POHSMS	080-0032	4	EA
19	SCREW- #10 X 3/4 IN PTHSMS	080-0033	4	EA
20	SCREW- #10 X 1 IN POHSMS	080-0035	3	EA
21	TIE- CABLE 7.4 IN W/O HOLE	080-0286	A/R	
22	TIE- CABLE- 7.9 IN W/MOUNTING HOLE	080-0287	A/R	

FIGURE J13: 310H HEAD HARDWARE



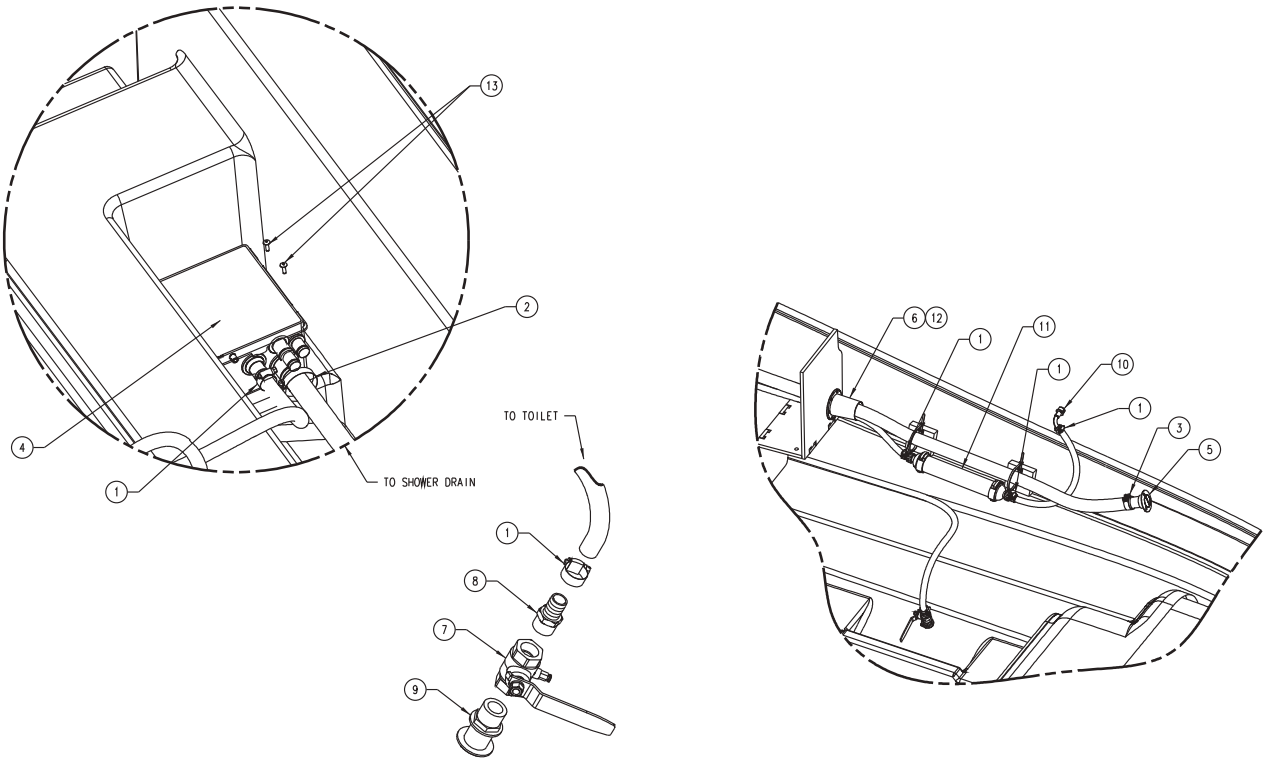
#	DESCRIPTION	PART #	QTY	U/M
1	HOSE- 3 in. BILGE VENT	022-0002	3	FT
2	PANEL ASSY HEAD SWITCH	025-3427	1	EA
3	LIGHT- OVAL COURTESY LIGHT (UNI) #80495	026-0354-02	1	EA
4	BLOWER - (UNI)3in INLINE BILGE RULE #140M	026-0612-02	1	EA
5	COVER - GFCI WATERPROOF	028-1137	1	EA
6	BOX W TAB FLUSH 3M VIMAR	028-1965	1	EA
7	CLIP-UPHOLSTERY-DECK-BRKT-SS	029-0147	2	EA
8	WASTE BASKET - RUBBERMAID #2952	030-1676	1	EA
9	HOLDER - TOILET PAPER #30800005	032-0293	1	EA
10	VENT - HEAD DECK FITTING 278V #337315	032-0669	1	EA
11	STORAGE LOCKER- RECESSED W/DOORS 461000	032-1731	1	EA
12	HEAD BOX - SSI II 46102805	032-2552	1	EA
13	SINK- 11 1/4 in. X 5 in. MIRROR #10201	035-0782	1	EA
14	PORTLIGHT-OPENING 7-3/4 x 18 ELIPTICAL	060-2069	1	EA
15	DETECTOR- CO SENTINEL CMD-4M-FBC	065-1620	1	EA
16	DETECTOR- CO BACK PANEL CMD-4M-BPA	065-1621-02	1	EA
17	SCREW- #6 X 1/2 IN PPHSMS	080-0010	5	EA
18	SCREW- #8 X 3/4 IN POHSMS	080-0022	14	EA
19	SCREW- #8 X 3/4 IN PPHSMS BLACK	080-0025	4	EA
20	SCREW- #10 X 3/4 IN PTHSMS	080-0033	2	EA
21	SCREW- #8 X 1 IN PTHSMS	080-0269	6	EA
22	SCREW- #10 X 3/4 IN POHSMS	080-0714	6	EA
23	COUNTERTOP ASS'Y- HEAD SINK 310H 07	101-20342	1	EA
24	MIRROR ASS'Y- HEAD 310H 07	101-20409	1	EA
25	TRIM RING- HEAD PORTLIGHT 278V 05	110-50380	1	EA

FIGURE J14: 310H WASTE WATER SYSTEM (1 OF 3)



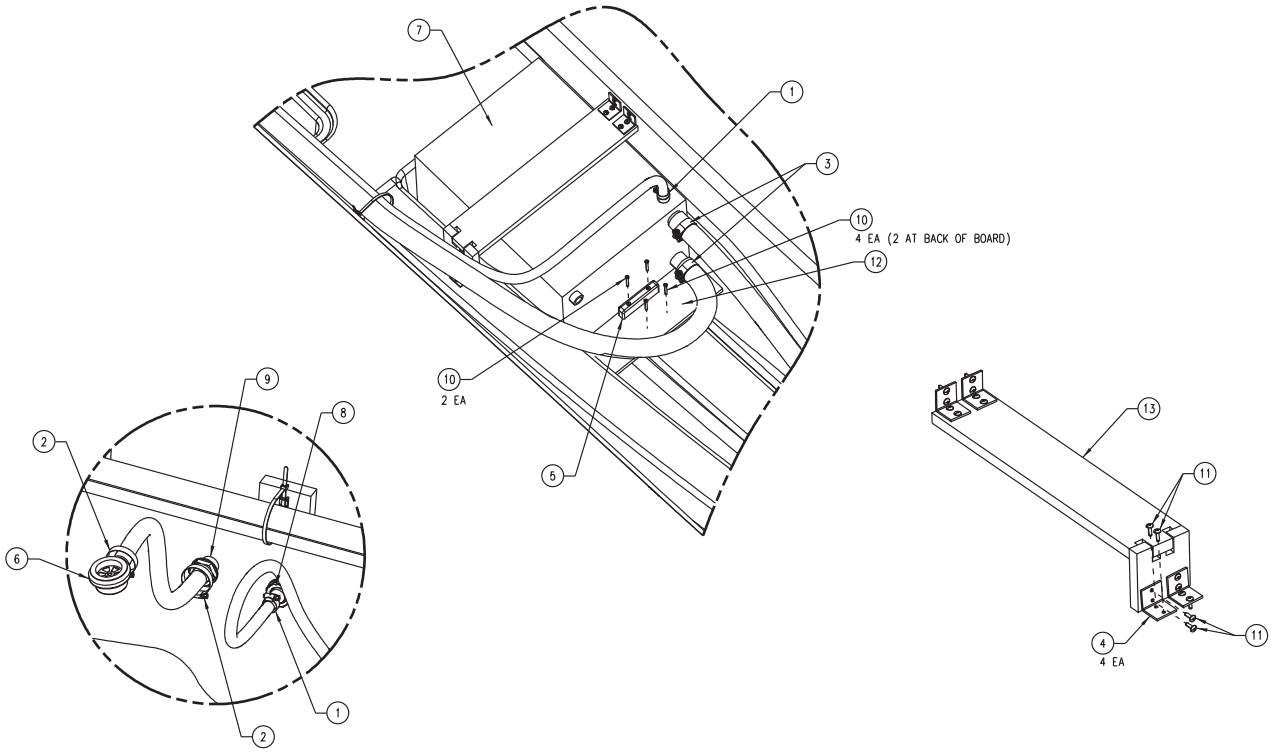
#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP- 5/8 IN #10H FUEL VENT HOSE	021-0031	1	EA
2	CLAMP- 1 1/4 in, HOSE #67165-52	021-0035	3	EA
3	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	1	EA
4	HOSE 5/8 WASTE #148-0580	022-0013	30	FT
5	HOSE 1 IN BLACK PVC #149-1000	022-0047	21	FT
6	HOSE- 1 1/8 in, BLACK PVC	022-0048	4	FT
7	HOSE- 1-1/2 in, ODORSAFE #306342871	022-0146	20	FT
8	BLOCK- TIE WRAP- SCREW MOUNT	032-0584	A/R	EA
9	DRAIN - SINK #10306-00	035-0225	1	EA
10	TOILET- MANUAL RIGHT HAND #29090-2000	035-0378	1	EA
11	DRAIN - SHOWER FLOOR #10307-00	035-0616	1	EA
12	THRU HULL 1 IN STALON SS	035-1366	1	EA
13	SCREW- #14 X 1-1/2 IN PPHSMS	080-0043	4	EA
14	TIE- CABLE 14.5 BLK W/O HOLE	080-1104	A/R	EA

FIGURE J15: 310H WASTE WATER SYSTEM (2 OF 3)



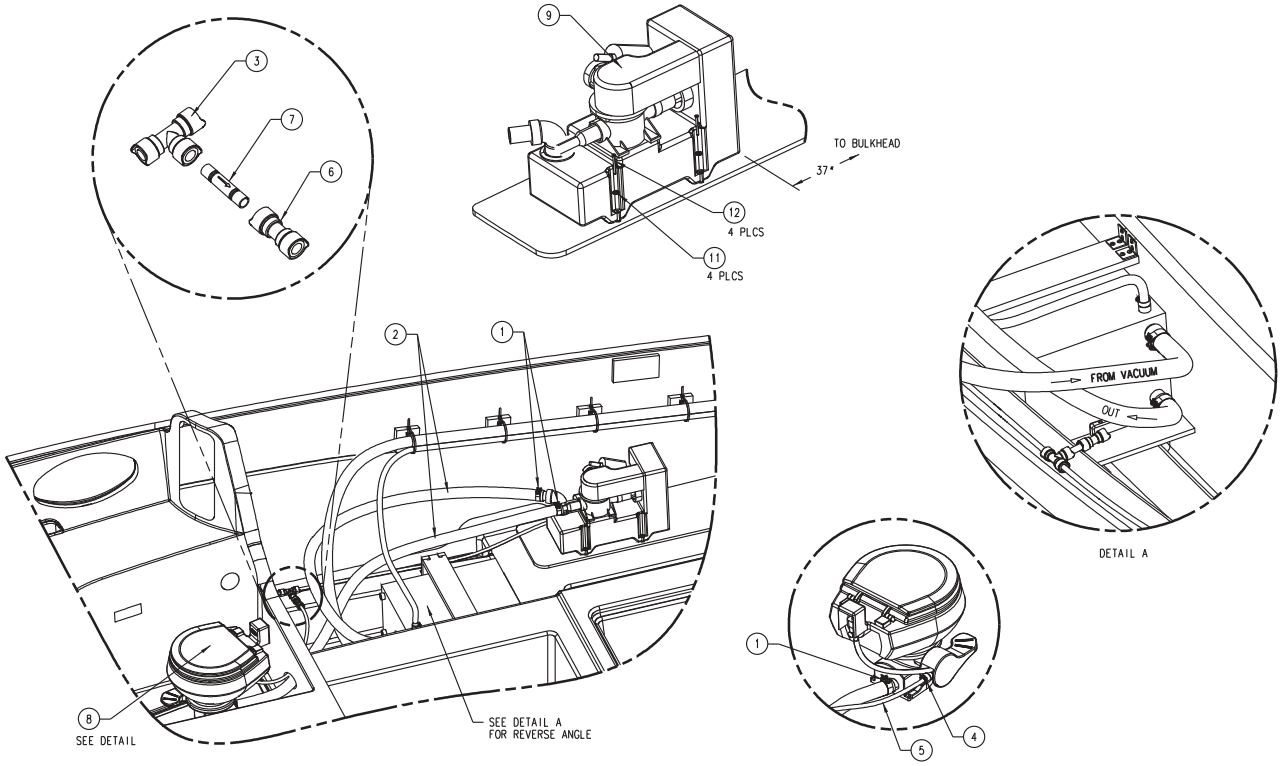
#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP- 5/8 IN #10H FUEL VENT HOSE	021-0031	5	EA
2	CLAMP- 1 1/4 in. HOSE #67165-52	021-0035	1	EA
3	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	1	EA
4	SUMP- SHOWER #4141	026-0665	1	EA
5	FILL- WASTE 1-1/2 in. MARINE HDWR	030-1886	1	EA
6	BOOT- VINYL W/WIRE TIE 3 in.	032-0105	1	EA
7	VALVE- BALL 3/4 in. #4726K12	035-0118	1	EA
8	HOSE BARB- 3/4 MPT X 3/4 HB (BRASS)	035-0327	1	EA
9	THRU HULL- 3/4 in. BRONZE #322-005	035-0552	1	EA
10	VENT 90 DEG ELBOW	035-1332	1	EA
11	FILTER- SANX #310002	065-0070-1	1	EA
12	SCREW- #8 X 3/4 IN POHSMS	080-0022	6	EA
13	SCREW- #10 X 3/4 IN PTHSMS	080-0033	4	EA

FIGURE J16: 310H WASTE WATER SYSTEM (3 OF 3)



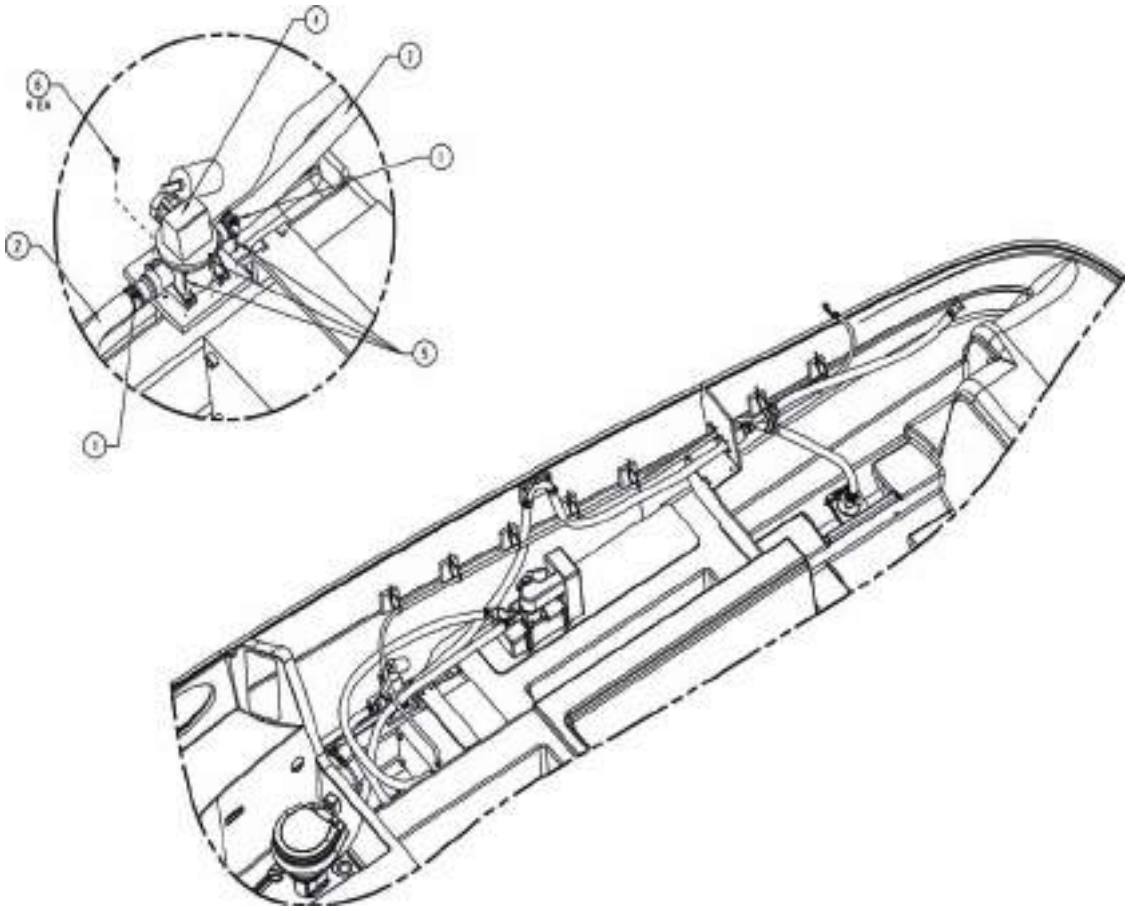
#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP- 5/8 IN #10H FUEL VENT HOSE	021-0031	2	EA
2	CLAMP- 1 1/4 in. HOSE #67165-52	021-0035	2	EA
3	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	2	EA
4	BRACKET- ENGINE BOX 1-1/2 IN x 1-1/2 IN	029-0009	4	EA
5	BLOCK- 4 3/8 in. x 1 1/4 in.	032-0144	1	EA
6	DRAIN - SINK #10306-00	035-0225	1	EA
7	TANK- FRESH/GRAY WATER 12-GAL WT1202-10	035-1004	1	EA
8	THRU HULL- 3/4 in. STALON SS #9005242	035-1365	1	EA
9	THRU HULL 1 IN STALON SS	035-1366	1	EA
10	SCREW- #10 X 1 1/2 IN POHSMS	080-0032	6	EA
11	SCREW- #10 X 3/4 IN PTHSMS	080-0033	16	EA
12	SLT- 1/2 in. x 13 in. x 24 1/2 in.	100-60944	1	EA
13	HOLDDOWN- BLACKWATER TANK 310H 07	101-20382	1	EA

FIGURE J17: 310H VACUFLUSH SYSTEM OPTION



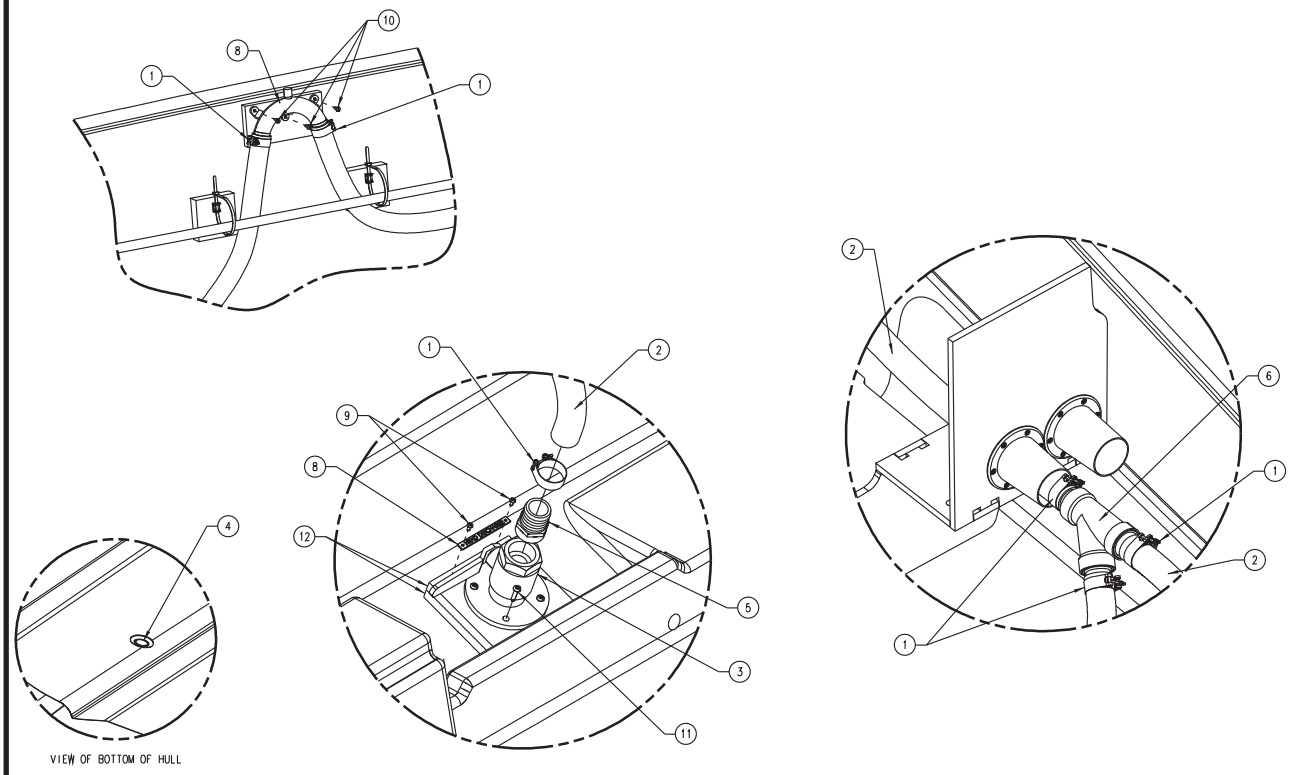
#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	2	EA
2	HOSE- 1-1/2 in. ODORSAFE #306342871	022-0146	9	FT
3	TEE 15MM	035-0928	1	EA
4	ADAPTER 1/2 IN BSP 15MM	035-0933	1	EA
5	TUBING- BLUE 15MM X 50M	035-0936	4	FT
6	CONNECTOR EQUAL STRAIGHT 15MM	035-0959	1	EA
7	CHECK VALVE 15MM	035-0985	1	EA
8	TOILET- ECOVAC #317014801	035-1074	1	EA
9	VACUUM GENERATOR- 12V VACUFLUSH	065-0832	1	EA
10	GIFT BASKET- SEALAND VACUFLUSH TOILETS	065-1517	1	EA
11	WASHER- #8 FLANGE FINISH WASHER S/S	080-0091	4	EA
12	SCREW- #10 X 2 IN POHSMS	080-0109	4	EA

FIGURE J18: 310H OVERBOARD DISCHARGE OPTION (1 OF 2)



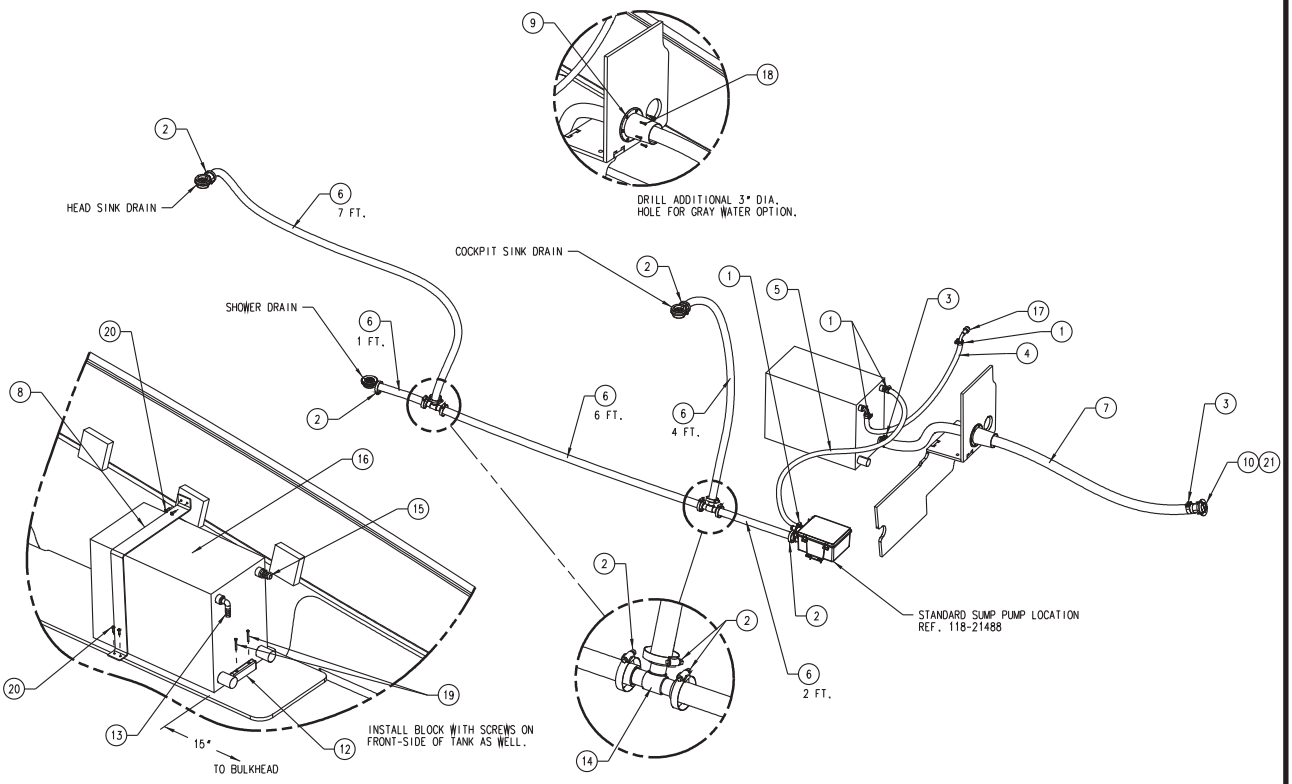
#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	2	EA
2	HOSE- 1-1/2 in. ODORSAFE #306342871	022-0146	7	FT
3*	HARNESS ASS'Y- 55 BDG #10-3/8	027-2962	1	EA
4	PUMP- T-12 MACERATOR	065-0081	1	EA
5	SCREW- #10 X 1 1/2 IN POHSMS	080-0032	3	EA
6	SCREW- #14 X 1-1/4 IN PPHSMS	080-0233	4	EA
7	SHELF ASS'Y- MACERATOR PUMP 310H 07	101-20407	1	EA

FIGURE J19: 310H OVERBOARD DICHARGE OPTION (2 OF 2)



#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	6	EA
2	HOSE- 1-1/2 in. ODORSAFE #306342871	022-0146	8	FT
3	SEACOCK- 1 1/2 in. #805008 PLB	035-0105	1	EA
4	THRU-HULL- 1 1/2 in. BRONZE #322-008 PLB	035-0204	1	EA
5	HOSE BARB- 1.5 in. MPT x 1.5 in. HB #76008PLB	035-0263	1	EA
6	KIT- SINGLE WYE 1 1/2 in. #238798	035-0305	1	EA
7	VENT LOOP- 1 1/2 in. W/CAP #903000 MF840	035-1377	1	EA
8	PLATE- HEAD DISCHARGE (ENGRAVED) 258/278V	056-0183	1	EA
9	SCREW- #10 X 1/2 IN PPHSMS	080-0031	2	EA
10	SCREW- #10 X 3/4 IN PTHSMS	080-0033	3	EA
11	SCREW- #14 X 1-1/4 IN PPHSMS	080-0233	4	EA
12	SHIM- OVERBOARD DISCHARGE 280H/285S	100-22159	2	EA

FIGURE J20: 310H GRAY WATER SYSTEM



#	DESCRIPTION	PART #	QTY	U/M
1	CLAMP- 5/8 IN #10H FUEL VENT HOSE	021-0031	4	EA
2	CLAMP- 1 1/4 in. HOSE #67165-52	021-0035	10	EA
3	CLAMP T-BOLT 1-7/8 IN #70STBC18	021-0371	2	EA
4	HOSE 5/8 WASTE #148-0580	022-0013	5	FT
5	HOSE 1 IN BLACK PVC #149-1000	022-0047	4	FT
6	HOSE- 1 1/8 in. BLACK PVC	022-0048	21	FT
7	HOSE- 1-1/2 in. ODORSAFE #306342871	022-0146	8	FT
8	BRACKET- FRESH/GREY WATER 310H	029-0543	1	EA
9	BOOT- HOSE CLAMP	030-0864	14	EA
10	DECK FILL S.S. WASTE #66126-1	031-0086	1	EA
11	BOOT- VINYL W/WIRE TIE 3 in.	032-0105	1	EA
12	BLOCK- 4 3/8 in. x 1 1/4 in.	032-0144	2	EA
13	ELBOW- 1/2 in. MP X 5/8 in. HB #901000	035-0035	1	EA
14	TEE- 1 in. ALL BARBED PLASTIC #75053	035-0252	2	EA
15	ADAPTER- 1/2 MALE NPT X 3/4 HB #NY220J	035-0982	1	EA
16	TANK- FRESH/GRAY WATER 12-GAL WT1202-10	035-1004	1	EA
17	VENT 90 DEG ELBOW	035-1332	1	EA
18	SCREW- #8 X 3/4 IN POHSMS	080-0022	6	EA
19	SCREW- #10 X 1 1/2 IN POHSMS	080-0032	4	EA
20	SCREW- #10 X 3/4 IN PTHSMS	080-0033	4	EA
21	SCREW- #10 X 1 IN POHSMS	080-0035	3	EA

K - 1 ENGINE COMPARTMENT VENTILATION

All Four Winns® stern drive models are equipped with engine compartment ventilation. This system is designed to meet or exceed the requirements (in effect at the time of manufacture) of the U.S. Coast Guard, the National Marine Manufacturers Association, and the American Boat and Yacht Council.

A. Natural Ventilation System

This system includes air intake and exhaust components. The exhaust ducting reaches to the lower bilge area. This provides adequate air movement while underway and during bilge blower operation.

B. Forced Air Ventilation

All Four Winns® models are equipped with an electric bilge blower. The bilge blower provides the ventilation required prior to starting the engines and while at idle. See Section H - Electrical Systems for blower operation instructions.

⚠ WARNING

Gasoline vapors can explode resulting in injury or death. Before starting the engine, check the engine compartment bilge for gasoline or vapors, and operate blower for four (4) minutes, and verify blower operation. Run blower when vessel is operating below cruising speed. ALWAYS operate the bilge blower while the engines are at idle.

C. Engine Ventilation System Maintenance

Periodic inspection and cleaning of the ventilation ducts is necessary to ensure adequate air circulation. A buildup of leaves, twigs, or other debris can severely reduce ventilation. Be sure bilge water does not accumulate to a level that would obstruct the ventilation ducts.

Blower operation can be tested by placing a hand over the vents. DO NOT rely on the sound of the blower. Be sure a substantial amount of air is being exhausted by the bilge blower. Check the bilge blower system often, preferably before each cruise.

Should blower noise and vibration be excessive, loosening the bilge blower mounting screws and then tightening evenly usually reduces noise considerably.

K - 2 DAY BERTH & HEAD VENTILATION

The Day Berth and Head compartment are equipped with hatches which can be placed in the open position for ventilation purposes. The Day Berth window also slides opens to provide ventilation. See Figure K1. The side windows (portlights) may be opened to provide additional ventilation for both the Day Berth and Head compartment areas.

Figure K1: Day Berth Window

⚠ WARNING

Failure to properly ventilate the boat while the engines or generator are operating may permit carbon monoxide to accumulate inside the accommodation (occupied) spaces. Refer to Section E-2 - Engine Exhaust and Section B-2 - Carbon Monoxide for additional information.

NOTICE

Be sure hatches are secured while underway. Damage to the hatches may result.

K - 3 HULL DRAINAGE SYSTEMS

A. Transom Drain

A transom drain with plug is provided in the engine compartment to allow water drainage. When the boat is out of the water, the boat and trailer should be positioned so any bilge water accumulation during dry storage will flow towards the transom.

⚠ CAUTION

Be sure the drain plug is securely in place prior to launching the boat. Upon shipment of the boat, the drain plug is usually taped to the steering wheel.

B. Bilge Pumps

Bilge pumps are provided in the bottom of the hull to remove miscellaneous water accumulations that might occur during normal boating or weather conditions. The bilge pump is controlled by the bilge pump switch on the dash panel. See Section H-3 for a detailed description of the bilge pump switches.

A bilge pump equipped with automatic switch is standard on most models. As the water level rises, the automatic float switch will activate the pump. When leaving the boat unattended for long periods of time or during excessive rain storms, it is a good idea to check on the boat for excessive water accumulation. Be sure both the bilge pump and automatic float switch are operating properly. The operating time of the bilge pump will be limited to the battery capacity.

NOTICE

While at rest, any bilge water accumulation may flow forward. Therefore, operate the bilge pump shortly after getting underway and while the boat is at a substantial running angle. DO NOT allow bilge water to accumulate. Damage to the engine or other components may result.

Periodically, clean the bilge pump strainers. DO NOT allow dirt and debris to clog the bilge pump intakes. Check operation of the bilge pump float switch often to ensure movement of the switch is not restricted by debris, portions of the hull, etc.

Wipe up any oil accumulation in the bilge prior to activation of the bilge pump. Pumping oil overboard will pollute the water, and is subject to fine.

After winterization of the fresh water systems, be sure the bilge area, bilge pump and associated hoses are thoroughly dry. Damage to the hull, bilge pump and other equipment could occur if water is allowed to freeze in the bilge.

C. Sump

A sump box is installed in the forward bilge compartment, starboard of the fuel tank. See the 310 Horizon™ locator drawing at the back of this manual. It is equipped with an automatic float switch and will pump water from the shower overboard or into the gray water tank (if available). Refer to Section J-2C on using the shower and for additional information on sump pump operation.

D. Liner Drains

Fiberglass liners with liner drains are standard on the 310 Horizon™ models. Fiberglass liners can be cleaned easily by hosing the floor. The water will drain into the bilge and be pumped overboard by the bilge pump.

E. Bilge Compartment Drainage

Certain bulkhead areas of Four Winns® boats are sealed in accordance with U.S. Coast Guard regulations effective at the date of manufacture. Drainage is provided and water can be removed with the bilge pump.

L - 1 DAY BERTH EQUIPMENT

A. Microwave

A microwave oven is optional on the 310 Horizon™ models. See Figure L1. (Note this option requires the dockside power option also be installed). The MICROWAVE circuit breaker on the 120 Volt AC electrical panel must be activated and the boat must be connected to dockside power in order to use the microwave. If the generator option is installed, operating and the MICROWAVE circuit breaker is ON, will also allow you to use the microwave. Refer to the manufacturer's literature provided in the owner's packet for microwave operation instructions.

> **⚠ CAUTION**
> *Do not restrict air flow while microwave is in use, or damage to microwave oven or cabinet may result.*

Figure L1: Microwave Option

B. Stereo System

Four Winns offers a AM/FM/CD stereo and iPOD/MP3 port in the berth as standard equipment along with stereo remote with display feature and iPod/MP3 port at the helm. See Figures L2 and L3. Speakers are also installed in the Day Berth and exterior cockpit areas to provide excellent sound quality. In addition, the berth speakers can be turned off by placing the speaker switch in the "OFF" position. This switch is located on the berth switch at the entertainment panel. For stereo operation, please refer to the manufacturer's manual included in the owner's information packet.

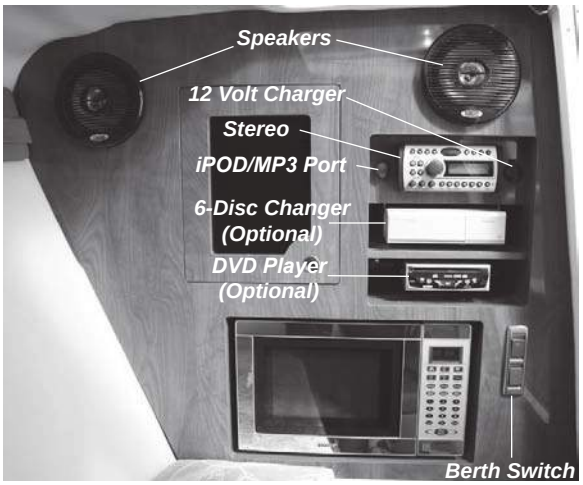


Figure L2: Stereo & DVD Player Locations

Figure L3: Helm Stereo Remote and iPod/MP3 Port & 12 Volt Receptacles

Also, the 310 Horizon™ comes equipped with a satellite stereo receiver (domestic only). Please see your Four Winns dealer for information and activation.

Available options include 6-disc CD changer, stereo upgrade (which includes amplifier, 10" subwoofer and tweeters) and an additional stereo remote with display feature at the transom. Please consult your Four Winns dealer for details and availability.

C. TV and DVD Player Option

A flat screen TV and DVD player with remote is optional on the 310 Horizon™. It uses an internal speaker only. The TV is not wired into the stereo speaker system. Please read the manufacturer's information on the TV and DVD player in the owner's packet. See Figures L2 and L4.

Figure L4: Flat Screen Television

L - 2 COCKPIT EQUIPMENT

A. Refreshment Center

A refreshment center is standard on the 310 Horizon™ models. The refreshment center comes with a solid surface countertop, trash receptacles and sink with swivel spout faucet. See Figure L5.

Figure L5: Cockpit Refreshment Center

B. Refrigerator (Optional)

The cockpit refrigerator (if applicable) operates automatically on 120 volt AC or 12V DC power supply. See Figure L6. Note the refrigerator also operates continuously. When both power sources are supplied to the refrigerator, it defaults to AC. When the refrigerator is disconnected from shore power (when AC power is no longer available) the refrigerator switches to DC operation.

Figure L6: Cockpit Refreshment Center

Care should be exercised while operating the refrigerator on the 12 volt system. The refrigerator requires a substantial amount of current. Excessive current draw can severely drain a battery through extended use.

A magnetic strip is used inside the seal of the refrigerators. The magnetic strip allows the seal to draw tight to the inside of the refrigerator when the door is closed. Also, make sure retaining latch is in place to secure refrigerator door while underway.

Most refrigerator models have a thermostat that will maintain the temperature desired. According to the refrigerator manufacturer's operations manual, select the temperature setting by turning the thermostat dial to the various numbered positions. The refrigerator may be turned off by turning the thermostat to the "OFF" position. See the manufacturer's literature included in the owner's packet for specific information on the model used in your Horizon™.

C. Cockpit Table with Mount

An aft cockpit table is standard. See Figure L7. The table's angled leg easily fits into the side-mount bracket installed on the seat base. This mounting system is designed to provide more leg room, convenience and safety.

Figure L7: Aft Cockpit Table

To set up the cockpit table:

1. Insert the angled table leg into the side-mount bracket located on the seat base. See Figure L8.

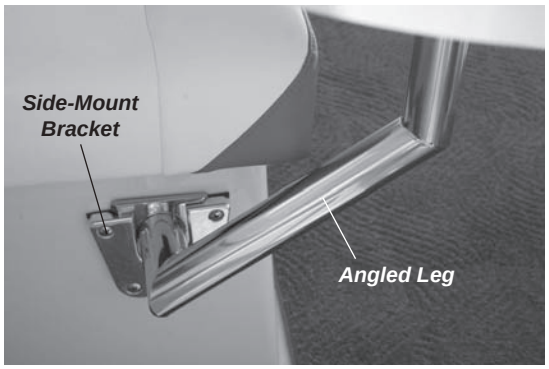


Figure L8: Table Side-Mount & Angled Leg

2. Mount the cockpit table onto the angled leg.

To remove the cockpit table simply reverse the procedure.

An additional table with side-mount bracket is an available option and is installed in the bow. See Figure L9.

Figure L9: Additional Cockpit Table Option for Bow

NOTICE

To prevent damage to cockpit table and/or cockpit interior ensure the cockpit table and legs are properly stored when not in use.

D. Glovebox

The 310 Horizon's port console is equipped with a lockable glovebox for added security of your valuables See Figure L10.

Figure L10: Lockable Glovebox

E. In-Floor Storage Locker and Ski Locker

Standard featured on the 310 Horizon™ models is an in-floor storage locker along with a ski locker. The in-floor storage locker is located in the cockpit floor, between the helm seat and day-berth compartment. See Figure L11. The locker allows for storage of such things as the cockpit table, stern light pole, personal flotation devices and various canvas pieces, etc.

Figure L11: In-Floor Storage Locker

The ski locker is located in the bow area of the 310 Horizon™. See Figure L12. The ski locker allows for storage of skis, knee boards, wake boards, tow ropes, most towable toys, personal flotation devices, etc. The ski storage lid is hinged and includes a gas assist shock for ease of use.

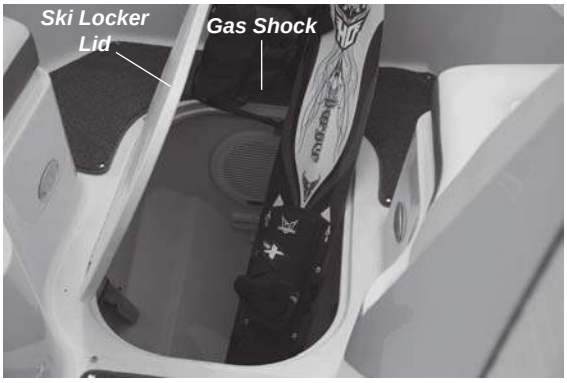


Figure L12: Ski Locker

F. Walk-thru Doors

A walk-thru doors are standard. The walk-thru doors are designed to keep out the wind and weather, making for a warmer cockpit area. See Figure L13. Follow the cleaning directions for plexiglass described in Section Q-6 - Acrylic Plastic - (Plexiglass).

Figure L13: Walk-thru Doors

G. Fire Extinguishing System (Optional)

An automatic FE241 agent fire extinguisher system is optional on the 310 Horizon™ models. The system, if equipped, is installed inside the engine compartment. See Figure L14.

Figure L14: Optional Fire Extinguishing System

While the system ensures excellent overall bilge fire protection, **it does not eliminate the USCG requirement for hand-held fire extinguishers.** Refer to the extinguisher manufacturer's literature included in the owner's packet if so equipped.

H. Inflator (Optional)

With the huge rise in popularity of tubing and towable toys, the 310 Horizon models can be equipped with an optional inflator. This inflator allows for the quick inflation of the towable when your ready to tube. It is not necessary to have to inflate the tube and transport it prior to getting to your tubing site. Simply plug the inflator into the 12 volt receptacle and inflate the towable upon your arrival. Storage for the inflator is under the starboard aft sunpad seat cushion. See Figure L15.

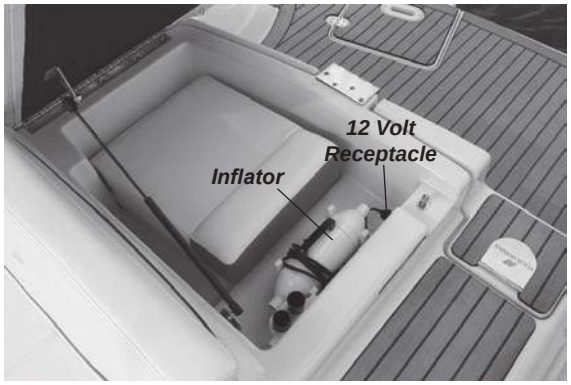


Figure L15: Optional Inflator

L - 3 AIR CONDITIONING (Optional)

The optional air conditioner provides cooling to the day berth. The unit operates on 120 volt AC power thus the dockside power option is required. If the generator option is installed, this too can supply power to the air conditioner. The output of the air conditioner may be found on our website at www.fourwinns.com.

The air conditioning breaker must be turned on to activate the air conditioning unit when connected to shore power or with an optional generator operating. This breaker is located on the AC panel. Depending upon humidity, the air conditioner will condense approximately 5 to 15 gallons of water a day and this water drains into the sump pump.

The seawater inlet valve (seacock) is identified with a plate inscribed with the words "Air Conditioner Seawater". Access to the seacock is gained through engine compartment.

NOTICE

In order to use the air conditioner, you must first open the seawater inlet valve - seacock (handle parallel to the flow of valve). When not using the air conditioner be sure to close the valve/seacock.

If equipped, please read the manufacturer's information on the air conditioner contained in the owner's packet for operation instructions.

NOTICE

Most air conditioners utilize surface water as the cooling medium. Prior to using the air conditioning, the boat must be in the water and the seacock to the air conditioning water intake must be in the open position. Operating air conditioners without proper cooling water will cause damage to the air conditioning system.

Clean the sea water strainer often. Also, clean the return air filter screens, located behind the louvered grills, at least once a month.

To winterize, refer to the manufacturer's literature included in the owner's packet.

M - 1 RAILS & DECK HARDWARE

A. Rails

Grab handles have been installed to provide security for passengers in the cockpit. See Figure M1. Limiting passenger movement while underway is recommended. All those on board should be safely seated whenever possible. Additional care must be taken when in rough seas or foul weather.

Figure M1: Grab Handle

The rail system and hardware fittings have been selected and installed to perform specific functions. Fenders or mooring lines should not be secured to the rails or stanchions. Be certain that a clear lead exists when running dock lines or an anchor line. A line inadvertently threaded around a stanchion or over the rail could cause damage.

B. Cleats

The cleats that have been installed are specifically designed and are intended to be used as mooring cleats. Their purpose is for securing the vessel to a dock, pier, mooring, or anchor.

A pull-up style cleat is standard. The pull-up cleat gives your boat a more sleek style. When you desire to use the cleat, simply pull up on the cleat. When finished with the cleat, push in and the cleat will remain in its retracted position until the next time you desire to use it. See Figures M2 and M3.

Figure M2: Pull-Up Cleat - Extended

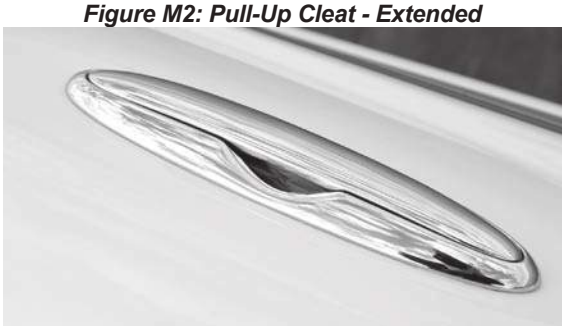


Figure M3: Pull-Up Cleat - Retracted

⚠ WARNING

Four Winns® Boats are not equipped with any hardware designed for towing purposes. The mooring cleats that are installed on the boat are not to be used for towing another vessel or having the boat towed. Refer to Section A - Operation for additional precautions regarding grounding and towing.

C. Transom Ski Tow

The stainless steel transom ski tow is mounted on the transom. A removable ski pylon is an available option. See Figure M4. Four Winns recommends no more than two skiers be pulled behind the boat at any time.

Figure M4: Removable Ski Pylon Option

⚠ WARNING

Do not use any ski tow fitting for lifting or parasailing. Fitting could pull out of deck resulting in serious injury or death.

⚠ WARNING

To prevent personal injury or damage to the boat, DO NOT tow more than two water skiers with the transom mounted ski tow ring.

NOTICE

Skier's weight, boating conditions, amount of gear, and operator's experience will affect the number of skiers which can be pulled.

D. Bow Scuff Plate Option

Available on the 310 Horizon™ models is an optional stainless steel bow scuff plate. The bow scuff plate is designed to provide added protection for the bow in addition to a stylish look. See Figure M5. Please see your Four Winns Dealer for further information.

Figure M5: Bow Scuff Plate

E. Maintenance

The majority of the hardware installed is made of stainless steel. Regardless of the type of hardware used, periodic maintenance is necessary.

The manufacturer of our hardware recommends the following when washing your boat:

1. Rinse the hardware with fresh water after each exposure to saltwater.

2. Periodically wash the hardware with mild soap, warm water, and a sponge. Then dry it with a soft cloth.

3. Avoid cleaners, abrasives, waxes, and most of all, do not use steel wool.

NOTICE

All fittings must be periodically inspected for loosening, wear, and damage. Problems should be corrected immediately!

M - 2 WINDSHIELDS

A windshield is standard equipment. Windshields consisting of tempered safety glass and the windshield frame consists of a painted or polished aluminum. For easy accessibility to and from the bow, a walk-thru center windshield is standard. Stainless steel supports or braces are used in the windshield assemblies. See Figure M6.

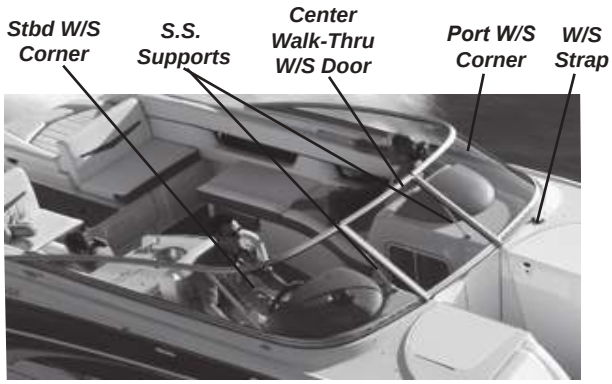


Figure M6: Windshield

A stainless steel windshield header is an available option. See Figure M7.

Figure M7: Stainless Steel Windshield Header Option

⚠ CAUTION

Four Winns recommend you close and secure the walk-thru windshield while underway. Damage to the windshield could result.

⚠ CAUTION

Secure windshield with strap when in open position. Securing the walk-thru windshield will help prevent the windshield from accidently slamming closed due to high wind and/or wake condition, thus reducing the chance of damage to windshield or injury.

Windshields made of tempered glass can be cleaned with automotive glass cleaners or dishwashing soap and water. Ensure that a clean cloth is used to prevent scratching the glass.

Aluminum can be cleaned with mild dishwashing soap and water or a cleanser specifically formulated for painted or polished aluminum.

NOTICE

Read the label before using any product. DO NOT use abrasive cleaners.

M - 3 INTEGRATED SWIM PLATFORM - LADDER

Four Winns provides an integrated swim platform on the 310 Horizon™ models. See Figure M8. The integrated swim platform creates more space for water sport activities and has a skid-resistant surface. The swim platform is also recessed for the ladder and a hinging ladder lid is provided. With this design, the ladder is concealed and you do not lose valuable platform space. In addition, a hand hold has been placed in the ladder lid to assist in boarding.

Figure M8: Swim Platform

The stern ladder is “deep” and “angled” mounted which makes it easier to climb. Its starboard location means you’re not approaching a down skier on your “blind side”. See Figure M9.

Figure M9: Stern Boarding Ladder

⚠ WARNING

Keep hands and fingers away from ladder hinges to prevent injury.

⚠ WARNING

Never approach or use ladder when the motor is running. Severe injury or death will result from contact with rotating propeller.

⚠ WARNING

Shut off motor when near swimmers. Severe injury or death will result from contact with rotating propeller.

⚠ WARNING

To prevent personal injury, swim platform and transom entry area must not be occupied while engine(s) are running and/or boat is underway.

NOTICE

Always secure the ladder before boating. Damage to the ladder may otherwise result.

M - 4 DOCKING LIGHTS (Optional)

The 310 Horizon™ models are available with optional docking lights. Equipped with these lights, docking your boat becomes easier during periods of reduced visibility. Please see your Four Winns dealer for information and availability. See Figure M10.

Figure M10: Docking Light

M - 5 THRU-HULL EXHAUST

An optional thru-hull exhaust system is available. With a flick of the helm mounted control switch the exhaust system changes from standard operation to a full throaty rumble. Another flick of the switch returns the exhaust system back to standard exhaust. See Figure M11. For inquiries regarding the thru-hull exhaust option, please contact your Four Winns dealer.

Figure M11: Thru-Hull Exhaust

NOTICE

Always be aware of local laws on noise limits. Noise means engine noise, radio noise or even yelling by people on your boat. Good seamanship demands that you operate your boat quietly so as not to infringe on the rights of others. Do not use thru-hull exhaust unless you are well offshore.

M - 6 WINDLASS (Optional)

An optional windlass is an electrically controlled winch mechanism for retrieving the anchor available on the 310 Horizon™ model. The mechanical winch portion is mounted inside the anchor locker, at the bow. See Figure M12. The windlass can be controlled by a set of foot pads (electrical switches) mounted on the foredeck or it can be operated from the helm. A circuit breaker on the battery switch is provided to protect the windlass from a possible overload situation. A circuit breaker at the 12VDC helm breaker panel is also provided to protect the windlass circuit. Refer to the manufacturer's literature included in the owner's packet for windlass operation.

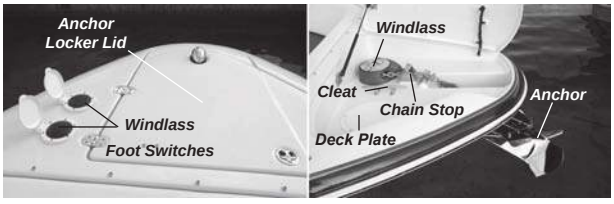


Figure M12: Windlass

Along with the windlass comes an anchor, rope and chain. The anchor line is stored in the anchor line locker located underneath the anchor locker. The locker keeps the line secure while underway and keeps the deck clear of unsightly anchor line when docked. A deck plate provides access to the anchor line locker.

Refer to Section B-3 - Safe Boating Practices of this manual for anchoring guidelines.

WARNING

To prevent personal injury, keep clear of the windlass at all times.

WARNING

Always be sure to raise and secure the anchor prior to operating your boat. *Failure to raise and secure anchor before getting underway could result in severe injury or damage to boat from rebounding anchor.*

WARNING

Always utilize the chain stop provided with the windlass/bow roller combination. The chain stop prevents the anchor from accidently releasing while the boat is moving thus preventing damage to the boat or possible injury or death to individual(s) aboard the boat. See Figures M12 and M13.

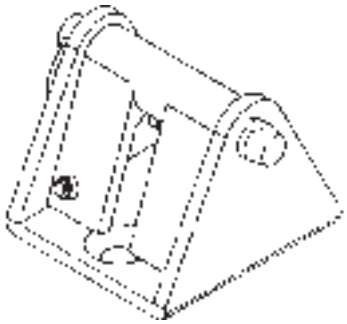


Figure M13: Chain Stop

M - 7 WINDSHIELD WIPER (Optional)

A driver's side windshield wiper is an available option. See Figure M14. The wiper is activated by a switch on the helm's dash just like an automobile. When the wiper switch is placed in the "OFF" position the wiper will self-park. Please contact your Four Winns Dealer for further information.

Figure M14: Starboard Wiper Option

M - 8 STAINLESS STEEL ARCH (Optional)

An optional stainless steel arch available. See Figure M15. The arch is used for towing wakeboarders, kneeboarders and water skiers. See Figure M15. Please see your Four Winns dealer for information regarding this option. Refer to Section B-4 - Water Sports of this manual for safety guidelines.

Figure M15: Stainless Steel Arch Option

WARNING

Do not use any ski tow fitting or optional stainless steel arch for lifting or parasailing. Fittings could pull out of deck resulting in serious injury or death.

⚠ WARNING

Misuse of arch can over stress arch or dangerously imbalance boat. Failure to follow these guidelines can result in injury or death. This tow arch is to be used for towing wakeboard and ski devices only. Do not tow more than two persons at a time from this arch. Do not use arch for lifting, parasailing or towing other watercraft. Do not allow passengers to sit behind rope attachment point when arch is in use. Do not allow loose tow rope ends to dangle. Do not climb on, hang on, sit on, jump or dive off this arch. Check all arch fasteners for tightness before using arch.

N - 1 SEATING

A. Bow Seating

Bow seating is provided on the 310 Horizon™ models. Certain bow cushions have hinges to allow for access to storage areas below. See Figures N1, N2 & N3.

Figure N1: Bow Seating

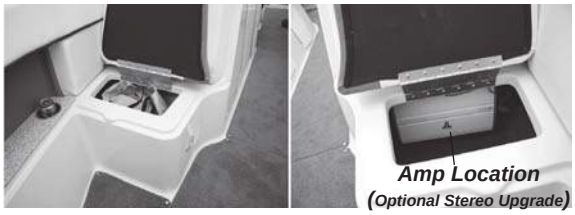


Figure N2: Hinged Bow Cushions (Port & Starboard)

Figure N3: Hinged Bow Cushion (Bow)

B. Port Lounger

A port lounge with backrest provides a comfortable seating area for sunning and/or observing water sports activities. It is built into an integrated fiberglass base. Due to the day berth configuration, storage is not available under the lounger cushion. See Figure N4.

Figure N4: Port Lounge

C. Bow Fill-In Cushions

Bow fill-in cushions are optional. With the bow fill-in cushions installed you can turn the bow into a sun-deck. See Figure N5. These bow fill-in cushions can be easily removed or installed in a matter of minutes. The bow fill-in cushions may be stored in the various storage areas of the boat. Please contact your Four Winns dealer regarding inquiries about this option.

Figure N5: Bow Fill-In Cushions

D. Double-Wide Helm Seat

An adjustable double wide helm seat is standard on the 310 Horizon™ models. The helm seat comes standard with flip-up bolster. By simply flipping up the bolster the driver is able to sit higher in the seat. This is designed to give the driver greater flexibility, increased visibility, and riding comfort. See Figure N6.

Figure N6: Bucket Seat with Flip-Up Bolster

To manually adjust the position of the seat lift up on the seat adjustment lever under the seat. Slide the seat forward or aft to the desired position. The seat will adjust approximately six (6) inches.

An optional power seat adjustment is available. This option allows the seat to be positioned by simply holding the switch in the desired position. The seat will then automatically move in the direction you have placed the switch. Once at the desired position, release the switch. See Figure N7. The seat will again adjust approximately six (6) inches.

Figure N7: Helm Seat Power Adjustment Switch

⚠ WARNING

DO NOT sit on the backrest portion of any cockpit seat. The operator could lose control of boat or passengers could be thrown from boat. \Also, the seat may be damaged from improper use.

E. Engine Hatch with Electric Lifts

An engine hatch with electric screw jacks (lifts) is standard. See Figure N18. The screw jacks lift and lower the engine hatch by pressing the switch located on the helm. The screw jacks run off the ship's systems battery. The prop rod should always be utilized to help support the weight of the engine hatch and to provide added safety while working on the engine(s).

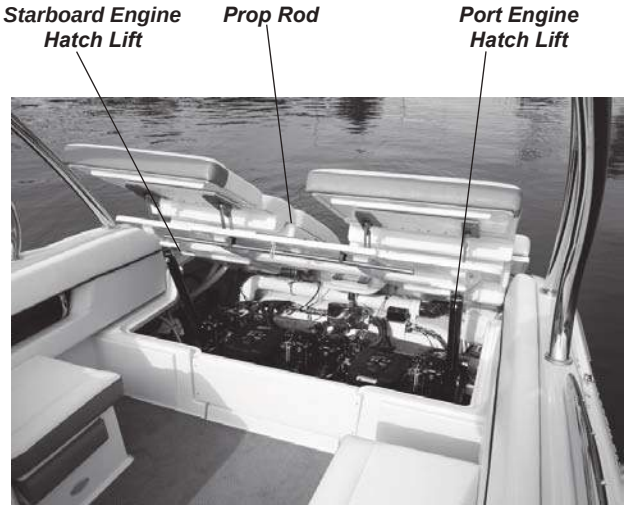


Figure N8: Engine Hatch Electric Lifts

To raise the engine hatch:

1. Remove the motorhood walk-thru cushion and backrest (if applicable). Stow the cushion and backrest to prevent loss or damage. See Figures N9 & N10.

Figure N9: Motorhood Walk-Thru Cushion & Backrest

Figure N10: Walk-Thru Cushion & Backrest Storage (Location: Under Starboard Aft Lounger Cushion)

2. Press the engine hatch switch or manually raise the engine hood to its open position.

> **⚠ CAUTION**
> *The engine hatch can be lifted without the screw jack(s). Use care and proper lifting techniques to prevent possible back injury. Prop rod must be properly placed to keep engine hatch in open position when lifting manually.*

3. Place the prop rod into the prop rod holders in the hatch and lower the hatch so the prop rod supports the hatch. Note: Ensure you lower the screw jacks to allow the engine hatch to rest on the rod.

> **⚠ CAUTION**
> *Always use the engine hatch's prop rod when working on the engine. This provides added safety while helping to prolong the life of the screw jacks and engine hatch.*

> **NOTICE**
> *Never operate or trailer your boat with the engine hatch in its open position. Doing so could result in damage to the engine hatch, hardware, and/or loss of cushions.*

To lower the engine hatch:

1. Raise the hatch slightly and remove the prop rod from its holders. Place prop rod in storage position.

2. Press the engine hatch switch or manually lower the engine hatch to its closed position. If closing the engine hatch manually, gently lower it to the deck. Do not allow it to just drop to the deck.

3. Replace and secure motorhood walk-thru backrest and cushion (if desired).

> **⚠ CAUTION**
> *If closing the engine hatch manually, do not allow the engine hatch to "slam" shut. Allowing the engine hatch to "slam" shut can damage the fiberglass and/or cause bodily injury.*

> **NOTICE**
> *Cushions, if not properly stored and secured, can blow out of the boat.*

F. U-Shaped Cockpit Seating

U-shaped seating is found in the stern cockpit area of the 310 Horizon™ models. Storage space is located under the hinged port & starboard seat cushions and in the coaming pads. The jumpseats may also be stored in the storage space located under these hinged cushions. See Figures N11, N12 & N13.

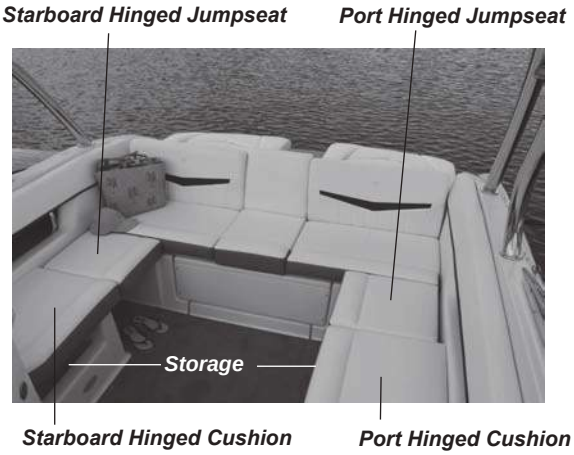


Figure N11: U-Shape Cockpit Seating

Figure N12: Jumpseats in Stored Position

Figure N13: Jumpseat Storage or Storage

G. Motorhood Walk-over Backrest and Cushion (Fill-in)

A backrest and cushion are removable to allow walk-over access from the swim platform to the cockpit. See Figure N14. To secure the motorhood walk-over backrest and cushion fill-in, place the male end of the hold down into the female portion of the assembly. Push down to ensure the cushion is firmly seated. Place the backrest portion of fill-in against the fiber-glass portion of the sunpad base. See Figure N15. Note the sew pattern of the cushion should match the port and starboard cockpit seat cushions. To prevent a possible man overboard situation, make sure the swim platform area is unoccupied and the motorhood walk-over backrest and cushion fill-in is in place before each cruise.

Figure N14: Walk-Over Transom

Figure N15: Walk-Over Backrest Door & Fill-In Cushion

⚠ WARNING

Prevent falls overboard. Secure the motorhood walk-over backrest and cushion fill-in *and stay inside cockpit while underway.*

⚠ WARNING

To prevent personal injury, swim platform must not be occupied and the motorhood walk-over backrest and cushion fill-in *must be in place while engines are running.*

⚠ CAUTION

To prevent personal injury, DO NOT sit on the the motorhood walk-over backrest portion of fill-in.

NOTICE

If towing at highway speeds, be sure the fill-in cushions and backrests are properly secured (locked in position). Air currents (created within the interior when traveling) will lift the cushions/backrests up and out of the boat under certain conditions; especially when semi-trucks or other large vehicles pass by.

H. Stern Loungers (Sunpads)

The 310 Horizon™ models are equipped with unique stern seats which convert to two separate loungers or sunpads. Storage compartments are located beneath the aft lounger cushions. See Figure N16, N17 and N18.

⚠ WARNING

Falling overboard can cause serious injury or death. Do not sit in platform lounging seats when engine is running.

Figure N16: Separate Sunpads in Flat Position

Figure N17: Separate Sunpads w/Raised Headrest (Lounger Position)

Figure N18: Aft Sunpad Storage

Sunpad operation:

1) Lift up on the seat cushion at the hand-hold and then pull the front portion of the seat cushion towards the bow.

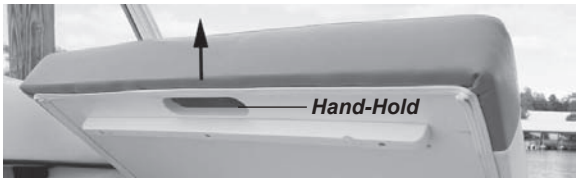


Figure N19: Sunpad Hand-hold

2) Extend the cushion and backrest until they are in the reclining (flat) position. If necessary, push down on the backrest to even this pad with the rest of the cushions. See Figure N20.

Figure N20: Sunpad - Flat Position

3) The sunpad's forward seat cushion may be inclined to create a "so-called" lounger position if desired. See Figure N21.

Figure N21: Sunpad w/Inclined Headrest (Lounger Position)

Underneath each forward seat cushion is a headrest support leg. Simply raise the seat cushion and swivel the headrest support leg into the recessed hole positions of the cushion support to incline the cushion. Lift up on the cushion and place the headrest support leg into its storage position to allow the cushion to lay flat. See Figure N22.

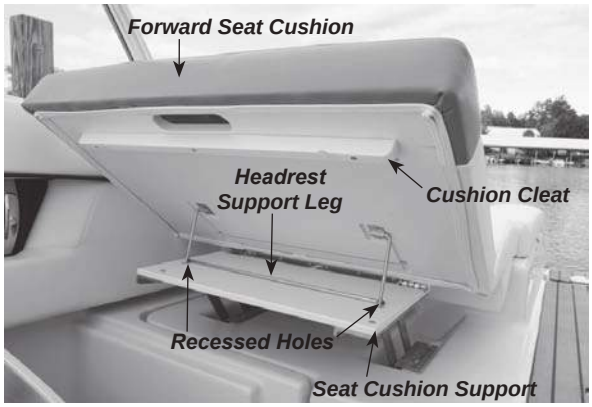


Figure N22: Lounger Headrest Support Leg

⚠ CAUTION

To prevent personal injury and/or damage to the sun lounger/sunpad headrest support leg, seat cushion and hinge mechanism, do not sit and/or stand on the seat cushion when deployed in the headrest/inclined position.

5) The same procedure is used for the other sun lounge.

To convert the sunpads back to stern seating:

1) Lift up on the cushion and place the headrest support leg into its storage position to allow the cushion to lay flat (if applicable).

2) Lift up on lounger backrest and push the forward seat cushion back into seat position. Ensure the cushion cleat securely locks the cushion in place. See Figures N22 & N23.

Figure N23: Returning Loungers/Sunpads to Seat Positions

3) Repeat this procedure for the other lounger/ sunpad if required.

4) Insert walk-over backrest and cushion fill-in if applicable. Store any cushion not being used to prevent loss or damage.

⚠ WARNING

Prevent falls overboard. Secure the motorhood walk-over backrest and cushion fill-in *and stay inside cockpit while underway.*

I. Day Berth Cushions

The Day Berth includes a bench seat which is cushioned for comfort. See Figure N24.

Figure N24: Bench Seat Cushion

Three fill-in cushion along with three supports boards are used to create a sleeping area in the Day Berth. The cushions and support boards can be removed to reveal a large storage compartment underneath. See Figures N25, N26 and N27.

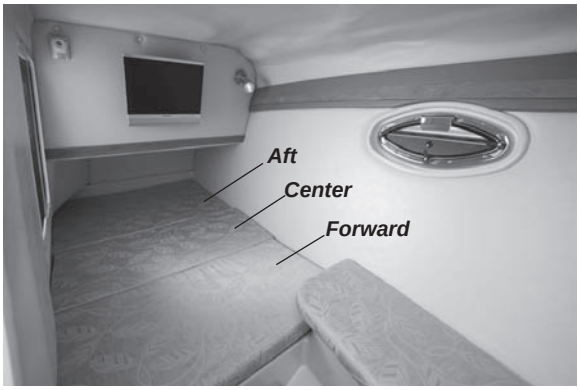


Figure N25: Berth Cushions

Figure N26: Berth Fill-in Support Boards

Figure N27: Berth Storage

N - 2 EXTERIOR UPHOLSTERY CARE

A. Cleaning Vinyl

NOTICE

Vinyl upholstery should be cleaned and maintained in accordance with the manufacturer's recommendations and instructions.

The vinyl material used on the exterior upholstery should be cleaned regularly with warm water and a mild dish soap or Vinyl Finish Vinyl Cleaner® using a soft clean cloth, then rinse with a soft clean cloth. For dirt buildup, spray Vinyl Finish Vinyl Cleaner®, let soak for approximately ten (10) minutes, then gently scrub with a soft bristle brush. Be sure to thoroughly rinse the vinyl after washing with mild dish soap or Vinyl Finish Vinyl Cleaner® to remove all residue. Towel dry the vinyl. Periodic spraying of the seats with Lysol Spray Disinfectant™ will help retard mildew.

To further protect the vinyl from early degradation, use 303 Aerospace Vinyl Protectant®. Spray on, then wipe dry. 303 Vinyl Protectant should be applied every 3-5 weeks when boat is in use. Regular cleaning with mild soap and water or Vinyl Finish Cleaner will not remove the 303.

NOTICE

DO NOT apply vinyl protectants such as Armorall®. The manufacturer does not recommend this product because it removes the oils present in vinyl that keeps vinyl soft.

A recommended "Cleaning Kit" includes:

- Ivory Dishwashing Liquid™ and water
- Clean, white towels
- Soft bristle brush
- Denatured Alcohol
- Hemisphere Ink Remover® - (for ordering information call 800-247-9901)
- Vinyl Finish Vinyl Cleaner® - (everyday cleaning & care, call 800-247-9901)
- 303 Aerospace Vinyl Protectant® - (for ordering information call 800-247-9901)
- Tough Duty Cleaner™ - (to locate the nearest distributor, call 800-537-8990)
- Ammonia and hydrogen peroxide

To remove stains, follow the general guidelines listed below and/or refer to the Step-by Step Cleaning Instructions table:

General Stain Removal Guidelines

1. Basic Stains/Grease/Pencil/Dirt:

   Ivory (mild) Dishwashing Soap™ and water, applied with a medium-soft brush or Vinyl Finish Vinyl Cleaner® using a soft clean cloth, then rinse with a soft clean cloth.

2. Tough Stains/Adhesive/Teak Oil/Rust:

   Tough Duty Cleaner™; rinse with soap and water or spray with Vinyl Finish Vinyl Cleaner®, let soak for approximately ten (10) minutes, then gently scrub with a soft bristle brush. Thoroughly rinse vinyl and dry.

NOTICE

To prevent possible damage to the vinyl, rinse with soap and water after applying the Tough Duty Cleaner™ or Vinyl Finish Vinyl Cleaner®. Then rinse and dry.

3. Ink:

   Denatured alcohol or Hemisphere Ink Remover®.

4. Mildew Stains:

   To kill bacteria creating the mildew, vigorously brush the stained area with a 4-to-1 mixture of water and ammonia; rinse thoroughly with water and dry.

5. Tough Mildew Stains:

   Apply a mixture of one (1) teaspoon ammonia, one-fourth (1/4) cup of hydrogen peroxide, and three-fourths (3/4) cup of distilled water; rinse with water and dry.

Step-by-step cleaning instructions

Type of Stain	STEPS: 1,	2,	3
General Care	A	B	
Dirt Build-up	A	B	
Ballpoint ink*	E	B	A
Chewing gum	D	A	
Coffee, tea, chocolate	B		
Grease	D	B	
Household soil	A	B	
Ketchup	A	B	
Latex paint	A	B	
Lipstick	A	B	
Mildew or wet leaves*	C	B	A
Motor oil	B		
Oil-based paint	D	B	
Permanent marker*	E	B	C
Spray paint	B		
Suntan lotion*	A	B	
Tar / Asphalt	D	B	
Yellow mustard	A	B	C

Legend

A. Medium-soft brush, warm soapy water Rinse / Dry

B. Vinyl Finish Vinyl Cleaner® Rinse / Dry

C. One (1) tablespoon of ammonia; one-forth (1/4) cup of water Rinse / Dry

D. Wipe or scrape off excess (chill gum with ice before hand)

E. Hemisphere Ink Remover Rinse / Dry

All cleaning methods must be followed by a thorough rinse with clean warm water.

Certain household cleaners, powdered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not recommended. Dry cleaning fluids and lacquer solvents should not be used as they will remove the printed pattern and gloss. Waxes should be used with caution as many contain dyes or solvents that can permanently damage the protective coating.

*Suntan lotion, tree pollen, wet leaves and some other products can contain dyes that stain permanently. Care should be exercised and boat covers should be utilized.

Step-By-Step Vinyl Cleaning Instructions Table

Do's

- Vinyl Finish Vinyl Cleaner
- Dish Soap (Dawn, Ivory
- 303 Aerospace Protectant

Don'ts

- Formula 409
- Fantastik
- Simple Green
- Armorall
- Murphy's Oil Soap,
- Son-of-a-Gun
- Bleach / Baking Soda
- Turtle Wax
- Tar Remover

NOTICE

Failure to care for your vinyl properly, or use of improper cleaners may void your warranty and damage your vinyl.

NOTICE

When docking or mooring your boat be aware of your surroundings i.e. trees with pollen, wet leaves, berries etc. These and other items can contain dyes that stain permanently. Utilize weather covers whenever possibly to protect vinyl from potential stains.

NOTICE

ALWAYS CLEAN STAINS IMMEDIATELY! DO NOT use Formula 409™ Fantastk™, Simple Green™, Armorall™, Murphy's Oil Soap™, Son-of-a-Gun™, Bleach / Baking Soda, Turtle Wax™ or Tar Remover on vinyl. Do not use kerosine, gasoline or acetone as they will remove the protective marine topcoat.

NOTICE

All cleaning methods must be followed by a thorough rinse with water and drying.

Additional cleaning information is provided by the manufacturer and is included with this manual.

Four Winns offers a variety of optional weather covers for protection of the boat and associated equipment. Continued exposure can damage the upholstery and seating. The seating can become thoroughly saturated with water if not adequately protected. Refer to Section O - Weather Covers for more information.

NOTICE
The appearance and longevity of the exterior upholstery will be affected by water saturation. Protect these items appropriately.

B. Exterior Carpets

The removable exterior grade carpeting may be periodically washed with mild laundry soaps or shampooed, dried and reinstalled. It is 100% UV stabilized Olefin™ polypropylene fiber with rubber backing. See Figure N28.

NOTICE
Prior to using any mild laundry soaps or carpet shampoo, always conduct a color-fast test on a small inconspicuous portion of carpet before applying to entire carpet.

NOTICE
DO NOT dry carpeting in an automatic dryer.

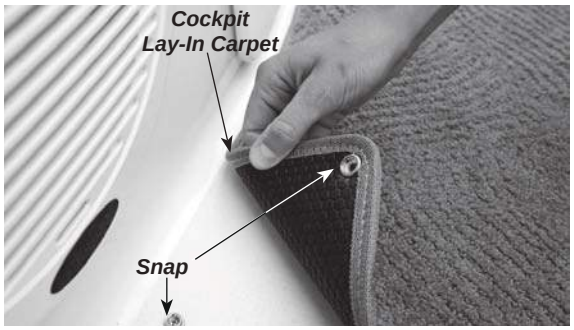


Figure N28: Cockpit Lay-in Carpet

C. Cleaning and Maintenance

The following information should be useful in helping you keep your carpet looking well maintained.

Carpet made with Olefin™ fiber possesses built-in stain and soil release for easy, less costly maintenance. Regular vacuuming and occasional shampooing will help it stay attractive and serviceable.

D. Stain Removal Testing

Even the most stubborn stains can be removed from Olefin fiber following the procedures outlined. Stains were selected as being representative of spills commonly occurring on carpets. Stains were pressed into the carpet to simulate foot pressure following a spill. Stains were applied to a two-inch square section and allowed to penetrate. Removal was performed after two weeks. Carpets were tested for stain removal by an independent laboratory. Stain removal was effective for the all the stains selected. Results are shown in the table on the following page.

E. Stain Removal Procedures

Regular maintenance such as vacuuming, hosing or washing should be performed. Most stains and mildew are easily removed from carpet made with Olefin fiber using common household cleaners. Refer to Table I. Olefin™ fiber is so resistant to chemical attack that Clorox™ bleach may be used to clean up any mildew that may result from excessive wetness.

Code for stain removal procedure (See Table 1):

"A" Apply warm water and household detergent in minimal amounts to stained area. Sponge or scrape until stain is removed. Rinse with clean water.

"B" Apply warm water and household detergent. Work well into stained area then flush with warm water.

Most stains should be easily removed however, if the stain persists, the cleaning procedure should be repeated to insure stain removal. Remember, the sooner the stain removal process begins, the easier the stain will be to remove.

NOTICE
Do not use dry cleaning solvents on carpet or vinyl. Permanent damage to the fiber will result.

STAIN	REMOVAL PROCEDURE
Automotive Grease	A
Automotive Oil (New or Used)	A
Bacon Grease	A
Berry Stain	A
Blood	A
Butter	A
Catsup or Mustard	A
Chewing Gum	A (Repeat)
Chlorine Bleach (5%)	A
Chocolate (Melted)	A
Clay	A
Coffee or Tea	A
Cola	A
Crayon	B
Dye	A
Egg	A
Feces	A
Fish Formula	A
Fruit Juice	A
Furniture Polish	A
Gravy	A
Ice Cream	A
Ink (Permanent Black)	B
Ink (Scripto, Ballpoint)	B
Iron Rust	A
Lipstick	B
Mayonnaise	A
Milk	A
Latex Paint	A
Oil Base Paint	B
Polish	B
Rust	A
Salad Dressing	A
Shaving Cream or Lotion	A
Tar	B
Urine	A
Vomit	A
Water Colors	A
Wax	B
Wine	A

Table I: Stain Removal

N - 3 REPLACEMENT UPHOLSTERY

Should upholstery become severely soiled, torn, or in some manner damaged, replacement upholstery cushions are available. Larger upholstery items have separate component parts for easier serviceability.

Depending upon the year and model of the boat, most upholstery parts can be obtained through your Four Winns servicing dealer within a short period of time.

O - 1 GENERAL INFORMATION

Weather covers for the cockpit areas are available on the 310 Horizon™ models. Four Winns® covers are designed and intended to provide protection of the cockpit seating areas.

Four Winns utilizes acrylic-type material for all its covers. All 310 Horizon™ canvas except mooring covers consist of 100% acrylic material and is color matched to the boat. The mooring covers are made of 9 ounce acrylic and come in tan only.

⚠ WARNING

Never use any form of open flame cooking device while under, in any area fully enclosed, or near any acrylic weather cover. This material is flammable.

During the manufacture of the weather covers, the smallest possible needle and highest quality UV stabilized, bonded polyester thread is used in the stitching.

The weather cover is water repellent but not water proof. During a hard rain, you may notice a light mist permeating through a weather cover. This is normal. If the seams leak, they can be sprayed with Scotchguard™ or similar water repellent or a seam sealing compound can be applied. Keep objects from contacting the inside of the cover. Leakage may occur at point of contact.

Weather covers must be installed taut or will be damaged by accumulation of rain water.

NOTICE

Periodically check weather covers for accumulation of water. Damage to the bow assemblies may otherwise result. Make sure cover is taut to avoid puddling of water.

After use, the top canvas should be rolled up into the boot (if supplied) and secured.

NOTICE

NEVER fold or store a wet weather cover.This can lead to mildew or shrinkage. Roll rather than fold the enclosure curtains. Sharp folds increase the chance of cracking the clear vinyl.

NOTICE

DO NOT use the weather covers for outdoor winter storage. The weight of the snow or heavy rain can cause severe damage to the material or top structure. Refer to O-3 Winter Storage in this manual for more information.

Four Winns is utilizing snaps for the canvas. The snap sockets are a standard type. When snapping covers to the boat, apply direct downward pressure on the snap. To unsnap, gently lift on the snap.

NOTICE

Remove snaps one at a time to prevent damage. DO NOT rip off or pull the weather cover as a whole; acrylic material may tear at snaps.

A. Bimini Top

A bimini top is standard on the 310 Horizon™ models. This style is a “freestanding” top and is supported only by the bow assembly. Note: This style of canvas when deployed permits most occupants the ability to stand and walk about the cockpit while the boat is at rest. Refer to Figure O1.

To install:

1. Attach the bimini main bow to the deck mounts (if not already attached) and unboot the bimini from its canvas storage boot.
2. Extend the rear portion of the bimini and attach the aft brace rod to the aft deck mount.
3. Extend the forward portion of the bimini and attach the forward brace rod to the forward deck mount.

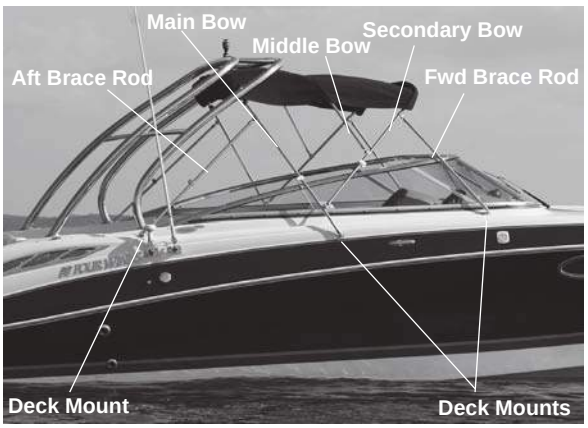


Figure O1: Bimini Top
(Note: Optional Stainless Steel Arch Shown)

4. Extend the bimini's secondary bow, by pressing in on the button and simultaneously extending the bow until the button locks into the upper position. Repeat for the other side.

To close and boot (mounted storage) the bimini top:

1. Place secondary bow into lower position by pressing in on the button and simultaneously pulling the bow downward until the button locks into the lower position. Repeat for the other side.

2. Remove the forward brace rod from its deck mounts. Snap the forward brace rods, into storage clips for safe keeping while booted.

3. Place boot over bimini top and zip boot closed. Tucking the bimini top inside boot while zipping is required. See Figure O2.

Figure O2: Bimini Top Booted

You may choose to run your 310 Horizon™ with the bimini top either fully deployed or folded together (closed) and secured with the boot provided. Either way it is designed to remain mounted. No storage is provided for this top in your boat.

NOTICE

Use two people to remove the bimini top (winter storage). This will help minimize the risk of injury and help prevent damage to the upholstery, the bimini top, and/or the boat.

NOTICE

Aft/Main bimini canvas deployment should only be utilized at or below moderate cruising speed (approximately 0-40 mph). Avoid full throttle operation of boat while having canvas deployed. Four Winns recommends booting the canvas before running at or close to maximum speed. In so doing you will help to maintain the life of the canvas and hardware. Also, the wind should be taken into consideration when determining operating speed with canvas deployed. The boat speed plus (+) wind speed should not be exceed 40 mph.

B. Camper Canvas (Optional)

The camper canvas is an option available on the 310 Horizon™ models which encloses the cockpit area and allows for overhead space. The camper utilizes the existing bimini top. Covers roll up to expose the window screens. See Figure O2. Your Four Winns dealer can assist you with your canvas selection as well as the installation.

To install:

1. Install bimini top as previously instructed.

2. To ease installation of the windshield connector, lock the secondary bow into its lower position by pressing in on the button and simultaneously pulling the bow downward until the button locks into the lower position. Repeat for the other side.

3. Snap the lower portion of the windshield connector to the windshield frame.

4. Zip forward windshield connector section to the bimini top.

5. Extend the bimini's secondary bow, by pressing in on the button and simultaneously extending the bow until the button locks into the upper position. Repeat for the other side.

6. Partially zip in the bimini side curtains to the bimini top (approximately 6"). Snap canvas to windshield beginning at forward edge. Finish zipping curtains to bimini top after snapping is complete.

7. Attach camper bow extension to existing bimini bow if not already done.

8. Lock the secondary bow into its upper position by pressing in on the button and simultaneously extending the bow until button locks into the upper position. Repeat for the other side. (Note: The secondary bow's button is placed in the lower position for storage purposes only).

9. Zip camper to bimini. See Figure O3.

10. Partially zip the camper side curtains to the bimini top and bimini side curtains (approximately 6"). Snap the edge portion of these curtains to the deck. It may prove easiest to start snapping the curtains at the forward portion of the canvas and work your way down along the deck. Finish zipping camper curtains to bimini side curtains and camper.

11. Unroll the aft camper curtain and zip the curtain to the camper. See Figure O4.

12. Attach the bottom portion of the aft curtain to the deck using the shock cords.

Figure O3: Camper Top

(Note: Optional Stainless Steel Arch Shown)

Figure O4: Camper w/Side and Aft Curtains

For camper removal, reverse the procedure described above.

This camper is designed as temporary shelter only. It should not be left up unattended for any extended length of time. Violent weather could result in expensive damage. Misuse is not covered under warranty.

FOUR WINNS®

C. Forward Cover (Optional)

The forward cover is optional and must be ordered with the optional cockpit cover. It is installed over the bow seating area and is snapped to the deck. An adjustable pole is provided to adjust the canvas for tautness and prevent the build up of water. Refer to Figure O5.

NOTICE

The front center snap of the forward cover should be centered on the center windshield snap on the windshield track. The front center snap is located at the front of the forward cover at the center seam.

Figure O5: Forward Cover

D. Cockpit Cover (Optional)

The optional cockpit cover is used to cover the complete cockpit area and is intended as a short term storage cover. Contact your Four Winns dealer for further details. See Figure O6.

Figure O6: Cockpit Cover
(Note: Optional Forward Cover Shown)

To install:

1. Snap the forward edge of the cockpit cover to the bottom edge of the windshield track. Snaps can be adjusted on the windshield track if necessary.

NOTICE
The front center snap of the cockpit cover should be centered on the center windshield snap on the windshield track. The front center snap is located at the front of the cockpit cover at the center seam.

2. Snap the cockpit cover sides to the deck just past the windshield.

3. Place the adjustable poles in position by inserting the top portion of pole into the straps and snap on the top of the pole into the snap on the cover. The adjust-able poles are provided to adjust the canvas for tautness and prevent puddling.

4. Finish snapping the cockpit cover sides to the deck.

5. Secure the aft edge of the cockpit canvas with the elastic (shock) cords. See Figure O7.

To store the cockpit cover we recommend folding the cover in half, lengthwise and then rolling the cover up.

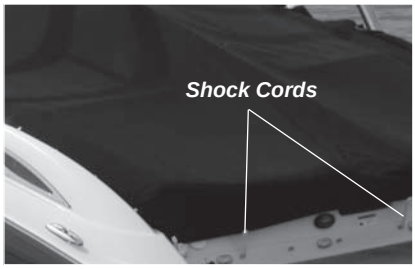


Figure O7: Cockpit Cover Shock Cords

E. Mooring Cover (Optional)

An optional mooring cover is available. These covers are intended for longer term storage and spread over the entire boat. If used in areas with snow accumulation, be sure to support the canvas adequately and inspect frequently for snow loads or damage will occur. Refer to O3 Winter Storage for additional information. See Figure O8.

Figure O8: Mooring Cover

To install:

1. Spread mooring cover over entire boat.

2. Install adjustable poles in the rear cockpit and forward bow areas. Be sure the canvas is taut and no pockets (sags) exist.

3. Tie off at the transom.

4. Nylon loops are provided for attaching rope or bungie cords to the trailer or from side to side (under the boat).

O - 2 TRAILERING

High winds encountered during trailering your boat can severely damage most weather covers. If an extended trip at highway speeds is planned, the top and other weather covers should be in the down posi-

tion or removed entirely. This will prevent damage and loss.

NOTICE

DO NOT tow your boat at highway speeds with weather covers in place. High winds encountered during trailering your boat can severely damage most weather covers. Damage to weather covers incurred as a result of trailering your boat is not covered under warranty.

O - 3 WINTER STORAGE

The boat must be properly protected during winter dry dock storage. A winter storage cover is advisable. Many marine dealers offer shrink-wrap enclosures for outdoor storage. See a Four Winns dealer for information on the availability of winter storage covers or other alternatives for storage.

When storing outdoors, make sure the supporting framework keeps the weight of the snow and rain from accumulating on the storage cover. Proper ventilation must also be provided or dry rot and mildew will occur. See Section R - General Maintenance for additional winter storage information.

O - 4 USE OF WEATHER COVERS AND CARBON MONOXIDE

When an engine is running, a natural vacuum may exist with the right wind and sea conditions to allow exhaust gases (which includes carbon monoxide) to seep into the boat. When canvas is utilized, this compounds the possibility of this occurring and inhibits natural ventilation. For more information, refer to Section B-2 - Carbon Monoxide in this manual.

The carbon monoxide in exhaust fumes can be hazardous. It is important for you and your passengers to be aware of the potential safety hazard created by exhaust fumes. Familiarize yourself with the symptoms of individuals overcome by carbon monoxide, and most importantly, ways you can protect yourself and your guests. See Figure O9 - Carbon Monoxide Canvas Warning Label and Figure O10 - Carbon Monoxide Warning Label.

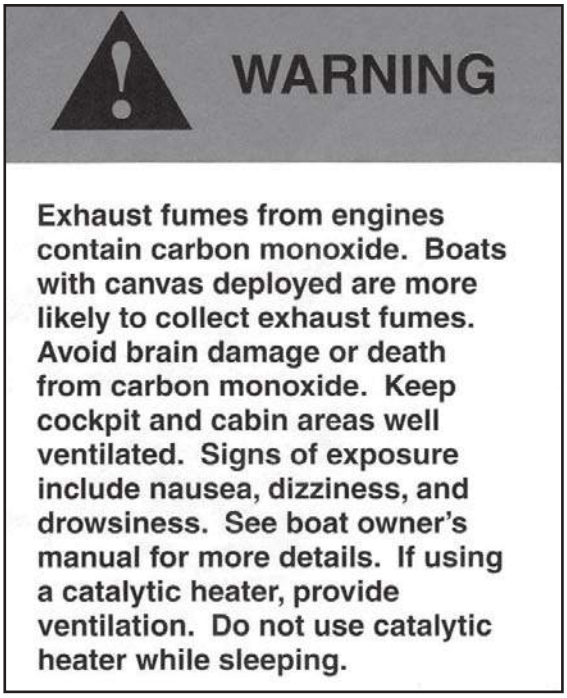


Figure O9: Carbon Monoxide Canvas Warning Label

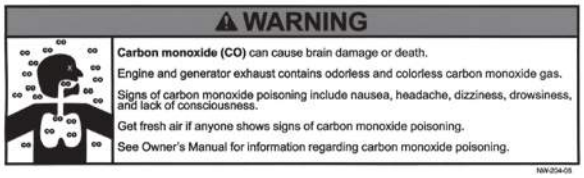


Figure O10: CO Helm Warning Label

O - 5 MAINTENANCE

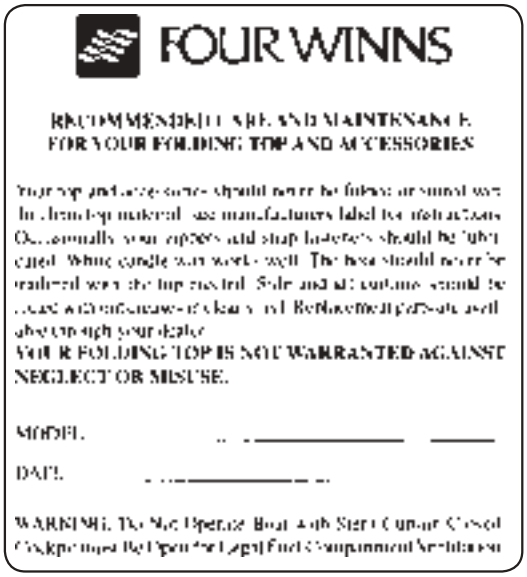


Figure O11: Canvas Care & Maintenance Tag

Moisture, dirt, chemicals from industrial fallout, heat, ultraviolet rays and in some cases, salt water are factors which affect the longevity of acrylic covers. See Figure O11.

1. Moisture can cause shrinkage and mildew. Allow the cover to dry thoroughly before disassembling tops. Keep it clean and well ventilated to prevent mildew. Spraying the weather cover with Lysol Disinfectant™ or similar product will help prevent mildew.

2. Dirt creates a starting point for mildew when moisture is present. Clean the top with a sponge or soft scrub brush and mild detergent when the cover is installed. Make sure cover is taut to help prevent shrinkage.

3. Chemicals cause decay if allowed to accumulate for long periods of time. Keep the cover clean to prevent decay.

4. Heat can cause cracks in vinyl components and stiffening of fabric when enclosed in plastic or polyethylene. DO NOT store the weather cover in polyethylene under direct sunlight or high temperature situations.

5. Ultraviolet degradation may occur under prolonged exposure to direct sunlight. Store the top in the boot when not in use.

6. Salt water can corrode brass, aluminum, or stainless steel fittings and fasteners. Keep fittings clean, lubricated, and waxed to prevent corrosion.

Clear vinyl curtains and windows demand extra care to prevent scratching. DO NOT use cloth or chamois skin. Dirt or grit in the cloth will scratch the vinyl window. Hose clean water onto vinyl to rinse off salt, dirt, or grime.

NOTICE

DO NOT use hot water. DO NOT dry in an automatic dryer. DO NOT dry clean or steam press.

Leakage after cleaning may be the result of insufficient rinsing. Re-rinse. If leakage continues, apply a coat of silicone air drying water repellent, such as Scotchguard™. See your Four Winns dealer for additional information on weather covers.

P - 1 HULL DESIGN INFORMATION

Four Winns® boats are designed using the sound engineering and mathematical principles of hydrostatics, hydrodynamics, structure, and strength of materials. The materials utilized provide optimum strength at the lightest possible weight. The exact fiberglass laminate schedule and construction techniques of each part is determined in accordance with the strength and rigidity required.

P - 2 FIBERGLASS CONSTRUCTION

The fiberglass components of Four Winns® boats are of the finest quality materials, workmanship and construction techniques available. This ensures the structural integrity to provide years of boating enjoyment with minimal maintenance.

The construction of a Four Winns® hull begins with the application of gel coat to the mold. The gel coat is approximately 25 mils thick. A coat of resin and chopped fiberglass is then sprayed into the hull and carefully hand rolled until it is securely affixed to the gel coat.

A number of fiberglass layers and woven roving are applied to the above laminate. Each layer is hand-laid and hand-rolled. The keel and chine areas have fiberglass woven roving overlapped in these areas to provide additional strength. Some models utilize encapsulated end-grain balsa core or coremat laminates to achieve additional rigidity. Others utilize additional laminations of woven roving to maintain strength and rigidity.

The hull support stringers are located using special tools, and are fiberglassed/bonded into place. This ensures a strong, rigid hull, permanently formed into a solid assembly, free of distortions.

Fiberglass cockpit liners and seat base are constructed similar to the hull. Balsa core or coremat laminations are utilized when necessary.

In addition to a thorough visual inspection of each fiberglass component, samples are measured using special equipment, for fiberglass reinforcement to resin ratio, laminate configuration, weight and thickness. By these procedures Four Winns ensures proper composition.

P - 3 EQUIPMENT INSTALLATION

Many boats are used for specific purposes or under conditions which require the addition of special equipment to the hull or deck. Special care must be taken during the installation of any equipment to a fiberglass component. A polysulfide or butyl based sealant should be used to seal installations below the water line. Silicone “marine” seal or similar bedding compound should be used elsewhere.

NOTICE

DO NOT install any item onto or through the hull without adequately sealing the hull area penetrated by the installed item or related fasteners. Improper installations could cause leakage or allow water absorption and thus cause serious hull damage.

Always predrill fastening holes with a proper size bit. Predrilling will help prevent the fiberglass from splintering and thus causing unsightly damage. Also, countersink holes to prevent the gel coat from chipping.

Any equipment which will be subjected to cyclic loading or significant force should be through-bolted to a fiberglass component. A butt block or backing plate should be used to strengthen any area onto which an item will be mounted.

P - 4 FIBERGLASS CARE & MAINTENANCE

Fiberglass is affected by weathering processes and requires maintenance on a periodic basis to help maintain the beauty and shine. The effects upon the gel coat will be dependent upon boating conditions, storage, type of use, and the care given to the boat during the boating season.

Four Winns® utilizes fade-fighting gel coat in the exterior finish. It is specially formulated to resist fading and yellowing, and retain more of its original gloss than lesser grade gel coats. However, it is still important to maintain the gel coat to protect the finish.

A. General Maintenance

For freshwater use, the boat should be washed once or twice a month. When using in a salt water environment, considerably more care will be necessary. Be careful when selecting a cleaning agent. Hand dishwashing detergents are usually gentle and are recommended for cleaning gel coat. Cleaning

products such as Ivory or Dawn hand dishwashing liquid can be safely used. Always read the label before using any product.

NOTICE

DO NOT use acetone, paint thinner, solvents, or strong alkaline based detergents, nor cleaners with a "gritty" and abrasive texture. Avoid products which contain sodium phosphate. Common examples of these types of household cleaning agents are: Tide™, Oxydol™, Janitor-in-a-Drum™, Formula 409™, Clorox™, etc. Always read the label before using an agent.

There are several products available which are specifically designed to clean fiberglass exterior finishes. Many companies like Johnson & Johnson®, Turtle Wax®, etc. manufacture cleaning fluids mild enough to clean without stripping the wax.

NOTICE

Treading on a soiled fiberglass surface can severely scratch and mar the finish. Keep the fiberglass as clean as possible.

When cleaning nonskid areas, DO NOT attempt to use a wire brush or sandpaper because this will remove the nonskid gel.

Apply wax once or twice a year to maintain gel coat lustre. Read the label before using any product. Make sure product is formulated for gel coat surfaces. Also, consult a Four Winns dealer for their recommendations.

NOTICE

Do not use carnuba-based waxes. This type of wax yellows over time and makes the fiberglass appear yellow.

⚠ DANGER

Waxing decks, cockpit floors or other areas on which one walks is not recommended. Waxing will produce a very slippery surface, especially when wet. Wax may also buildup in the nonskid surfaces. Be sure all persons wear deck shoes while aboard the boat. Footing will be improved and feet will be protected from accidental cuts and bruises.

A darkening or discoloration of the nonskid surfaces can sometimes occur as a result of wax buildup. Exposure to the sun and elements can turn the wax darker, or occasionally can cause it to become flaky or powdery. To remove, use fine rubbing compound and a low RPM buffer (1200 to 2000 RPM). Apply light pressure and keep the buffer moving at all times to prevent heat build up. Read the directions before using any equipment.

B. Weathering Effects on Gel Coat

Weathering occurs from direct sunlight, water, chemicals, and dust. Some of the terms below describe the changes that can occur to the gel coat surface.

Chalking is a result of the gel coat's top surface being broken down into an extremely fine powder. When this happens, the color whitens. The chalk is present on the surface only.

Fading is the uniform change in color. This happens when the actual pigments have changed color, especially from excessive chalking, or when the gel coat has either been stained or bleached by something.

Yellowing is gel coat which has a yellow cast and streaking usually deals with a stain or contact with another surface.

Gloss refers to the shine of the surface. This can change from sanding action, chalk, residues, or exposure.

Blistering refers to a condition in which the unprotected gel coat surface below the waterline has absorbed water and formed bubbles. See Section P5 for additional information.

Follow the instructions below for boats that have weathered and chalked.

1. Wash.

2. Wax. If this does not work, then use a fine rubbing compound. If this does not work use 400 or 600 wet or dry sandpaper, followed by fine rubbing compound and wax.

When using wax or fine rubbing compounds, make sure to read the label and follow the directions. Some helpful tips are listed below.

1. Avoid working in direct sunlight. This dries out the wax or compound, and can stain the surface.

2. Use clean pads or cloths to apply a thin coating of wax or rubbing compound to a small area such as three feet by three feet. Remove any excess, and then rub the area with a buffing pad, or power buffer. Apply pressure only as necessary to restore the surface finish. Applying too much pressure or buffing in one place too long can permanently damage the surface.

3. After applying compound, always follow with waxing.

NOTICE
If using a power buffer, use a low RPM buffer with light pressure. Keep the pad wet and the buffer moving at all times to prevent heat build up.

NOTICE
When sanding, DO NOT use a power or belt sander to prevent gouges, uneven areas, or other damage. For best results, block sand the gel coat.

C. Stains

Stains can appear anywhere on the exterior of the boat and may be a result of contact with tar, plant sap, leaves, rust from metal fittings, and other materials. Surface stains may be removed with hand dishwashing soap, mild cleansers, or some household detergents. DO NOT use chlorine or ammonia products. These products can affect the color of gel coat. Commercial car washes use strong cleaners and should be avoided.

To remove stains, refer to the procedures below.

1. Wash area with hand dishwashing soap.

2. Begin with a small area such as three feet by three feet and apply a mild cleanser.

3. Rinse with clean water.

4. Follow with compound and waxing as outlined in procedure above.

If the stain is not removed by the hand dishwashing soap or mild cleanser, then the next procedure is to use either denatured or rubbing alcohol. If this does not work, consult your Four Winns dealer for professional assistance.

NOTICE
DO NOT use acetone, ketone, or other solvents to remove stains. These chemicals are flammable and may damage the gel coat.

P - 5 FIBERGLASS REPAIRS

Fiberglass is one of the most durable, strong, and forgiving construction materials afloat. It is resilient and normal repairs can be made without affecting the strength or structural integrity of the boat.

⚠ WARNING
Striking docks, other boats, or submerged objects could create a very hazardous situation or severely damage the fiberglass. In the event an object is struck below or near the waterline, proceed directly and cautiously to the nearest service facility and remove the boat from the water. Closely inspect the hull for damage. If the outer fiberglass laminate was penetrated, repairs must be made prior to relaunch.

Occasionally, blisters, crazing, scratches, or damage to the fiberglass can occur. Repairs may be necessary to correct the problem.

A. Scratches

Scratches occur during normal use. Below is a step by step procedure to repair scratches.

1. Clean area with soap and water.

2. Apply a fine rubbing compound and buff.

3. Wax. If this does not work, clean the area and sand lightly with 400 to 600 wet or dry sandpaper and follow with rubbing compound and wax.

B. Gouges & Cracks

Stress cracks and crazing are the appearance of hairline cracks in the gel coat surface. When present, these problems usually occur in the gel coat finish or the outer “skin coat” fiberglass laminate. The appearance of these cracks does not pose a threat to the

structural integrity of the boat. In most cases, they are cosmetic and can be treated. Cosmetic surface damage can be repaired as follows:

1. Sand the surrounding area with medium or fine grit sandpaper. Clean all marine growth, dirt, antifouling paint, etc. from the immediate area. DO NOT excessively scratch or gouge the surrounding area.
2. Use a hard, pointed tool to open the gel crack. Take care not to damage the surrounding gel coat.
3. Sand the crack or gouge so the edges are smooth and will allow proper “feathering” of the area.
4. Clean the area thoroughly. Make sure the area is dry before proceeding.

NOTICE

Be sure the structure and the ambient temperature are above 60 degrees F (15 degrees C) and the relative humidity below 70% immediately before, during, and after the repair.

5. If the nick or gouge is deep and penetrates through the gel coat, fill the area with fiberglass patching paste. Follow the directions on the can when mixing the paste with the catalyst.
6. After the gouge is filled and has dried, sand the patched area. Begin by using medium-fine grade sandpaper. Progressively use finer grade sandpaper until the surface is very smooth. If necessary, add filler and then sand the surface again.
7. Apply two or three light coats of matching fiberglass gel coat to the repaired area. Enough gel coat should be used so that the entire area is covered.

The gel coat must be catalyzed using up to 2% MEK Peroxide which can be purchased at a supplier handling fiberglass reinforced products. Contact your Four Winns dealer for assistance.

8. After ample drying time, sand the area using very fine wet/dry sandpaper. If the appearance of the area is still not satisfactory, repeat steps 2 through 8 as necessary.
9. If above the waterline, polish the area using a fiberglass rubbing compound and then wax. If the repaired area is below the waterline, the area should be primed and painted in accordance with the antifouling paint manufacturer’s instructions.

Gel coat, like paint, will change colors with time and exposure to sunlight (ultraviolet). For this reason, “matching” gel coat obtained from Four Winns may not match the gel color of a boat that has been exposed. However, this is the closest match commercially available. A fiberglass/gel coat technician can tint the gel to be used in the repair to provide a closer color match.

More severe fiberglass damage, especially when structural, requires the expertise of an experienced fiberglass repair technician. See your Four Winns dealer for assistance.

NOTICE

Improper repair techniques can lead to further fiberglass component damage.

C. Osmotic Blistering

Osmotic blistering or “boat pox” is an unfortunate but not uncommon occurrence in fiberglass boats. Fiberglass is water retardant, not waterproof. When a boat is left in the water for a period of time, the fiberglass will absorb water. It is a natural process that can not be eliminated in production methods or material selection and usage. However, there are ways to control and possibly prevent blisters (see Section P6). If you do encounter blisters, be assured that the blisters are merely cosmetic. They do not indicate a defect in the boat structure or lamination. Four Winns, along with most boat manufacturers, regard gel blisters as a standard maintenance item.

The repair procedure for gel coat blisters is similar to the procedures outlined in the previous section on cracks and gouges. There is an exception however, in that the hull must dry out for several days or possibly weeks before repairs can proceed.

To determine if the hull has dried sufficiently, tape one square foot of household plastic wrap securely to the hull bottom. Make sure all edges are sealed and let it stand for twenty-four hours. If condensation has accumulated under the plastic, the hull is still “wet” and must be allowed to dry longer before repairing.

When the repair is completed, an application of an epoxy barrier coat should be considered. This will help prevent the possibility of reoccurrence of blisters. Your Four Winns dealer or local ship store will have information on barrier coat products.

P - 6 ANTIFOULING PAINT

Four Winns recommends antifouling or bottom paint for boats which will be kept in the water for extended periods of time. Antifouling paint reacts with water to retard the growth of algae, barnacles and other marine growth on the hull. In addition to marine growth, it offers protection against excessive water pollution.

Antifouling paint begins reaction upon contact with water. After a season's use or sooner under certain conditions, the antifouling paint may appear to be dissolving. This is due to the paint's chemical emission that in turn retards marine growth. When this occurs, refinishing is in order.

Four Winns recommends reapplication of the antifouling paint seasonally. The effectiveness of the paint will be drastically reduced if used longer. Though Four Winns has found the antifouling paints used to provide good marine growth protection in most water, other paints may be more effective in certain water conditions. See a Four Winns dealer for recommendations on antifouling paint use in your area.

NOTICE

During surface preparation, the hull should be sanded only enough to remove any foreign matter, and loose paint. DO NOT sand deeply into the gel coat, fiberglass cosmetic problems could later result. After sanding, the surface should be wiped with a rag treated with a cleaner recommended by the antifouling paint manufacturer. The surface must be clean and slightly rough to ensure paint adhesion.

Prior to application of the antifouling paint, the boat owner may consider coating the hull bottom with an epoxy coating. Four Winns recommends this procedure as a preventive and effective means of controlling osmotic blistering. Most major antifouling paint manufacturers also supply a line of epoxy undercoatings. Consult your Four Winns dealer for recommendations on epoxy undercoatings.

P - 7 HULL SUPPORT

Proper support of the hull while it is out of the water is imperative. Due to the design complexities, Four Winns does not recommend trailers or storage cradles be homemade. The boat is a valuable piece of equipment. DO NOT risk permanent damage to the hull structure in an attempt to save the cost of an adequate support. Improper support can lead to serious and permanent hull deformation.

⚠ CAUTION

Failure to adequately support the hull may result in permanent hull structure damage and will invalidate the hull structure warranty.

NOTICE

When attempting to raise the hull, never allow one end of the boat to rise first, while letting the opposite rest momentarily on the outdrives or underwater gear. Serious damage to these components could result. DO NOT place lifting straps on underwater gear. Be sure the strap is against the hull surface only.

A trailer, or storage cradle designed for a larger or smaller boat will not provide proper support for the hull. This could lead to hull deformation and thus serious performance deficiencies.

Four Winns® does not manufacture a custom trailer for the 310 Horizon™ model, however a special order trailer is available through Phoenix Trailers, LLC. Please ask your Four Winns dealer for details.

Q - 1 HIGH-PRESSURE LAMINATE CARE

Many of interior components such as the electrical panel (Day Berth), shelving, storage lids and drawer fronts consist of a high pressure laminate material. The finish may be that of either a synthetic cherry or off-white laminate depending on the item. See Figures Q1 and Q2. The laminate may have either a matte texture or smooth finish and can be cleaned with hand dish washing soap and water or other non-abrasive cleaner. Always read the label before using any product.

Figure Q1: Electrical Panel (Day Berth)

Figure Q2: Storage Lids (Day Berth)

NOTICE

DO NOT use abrasive cleaners or solvents on formica. DO NOT use Soft Scrub™ soap or similar cleaning products; they will scratch the surface and remove the shine.

Q - 2 STAR BOARD

Star board is a high density polyethylene (plastic) and is very durable and fade resistant. Star board requires little maintenance, and is being used in place of wood in many areas of the boat. The ski locker lid is one example of where star board is used. See Figure Q2.

Figure Q2: Ski Locker Lid

To clean star board, use a solvent-free, non-abrasive cleaner such as dishwashing soap. Read the label before using any cleaning product.

NOTICE

Star board will stain when exposed to certain oils or chemicals. Always wipe up any spills immediately.

Q - 3 BURLWOOD TRIM

Burlwood trim panels are standard on the 310 Horizon™ models. They consist of a finished burlwood. This burlwood is found in the helm switch panel. See Figure Q4.

Figure Q4: Helm Switch Panel

To clean, a damp cloth will usually suffice.

Q - 4 LAMINATED FIBERGLASS

The 310 Horizon™ models come with a standard cockpit table which consists of a laminated fiberglass material. An additional table with mount for the bow is an available option. See Figures Q5 & Q6. The table may be cleaned with mild dishwashing soap and water. Always read the label before using any product.

Figure Q5: Cockpit Table (Standard)

Figure Q6: Bow Table (Optional)

NOTICE

DO NOT use abrasive cleaners or solvents on cockpit table. DO NOT use Soft Scrub™ soap or similar cleaning products; they will scratch the surface and remove the shine.

NOTICE

DO NOT use cockpit table as a cutting board. The knife will leave gouges/marks in the surface of the table.

Q - 5 SOLID SURFACE MATERIAL

A solid surface material is used for the countertops for both the head vanity and refreshment center. This solid surface gives the vanity and refreshment center a rich “granite” look and makes for an extremely strong yet lightweight top. It can be cleaned with mild dishwashing soap and water, or other non-abrasive cleaning solutions . Always read the label before using any product. See Figures Q7 and Q8.

Figure Q7: Head Vanity Countertop

Figure Q8: Head Vanity Countertop

NOTICE

DO NOT use abrasive cleaners or solvents on cockpit table. DO NOT use Soft Scrub™ soap or similar cleaning products; they will scratch the surface and remove the shine.

NOTICE

DO NOT use countertop as a cutting board. The knife may leave gouges/marks in the countertops surface.

Q - 6 ACRYLIC PLASTIC - (Plexiglass)

Acrylic plastic is utilized in most walk-thru doors, hatches, Day Berth doors, head doors, portlight windows, certain opening windows and electrical panel doors.

To clean acrylic plastic:

1. Rinse with plenty of water to wash off as much dirt as possible.

2. Using your bare hand, along with plenty of water, feel and remove any dried-on dirt or mud.

3. Wash using a soft, grit-free cloth or sponge and mild, nonabrasive soap or detergent.

4. Rinse thoroughly with water.

NOTICE

Never use a dry cloth, duster, glass cleaning solutions or citrus cleaner on acrylic plastic.

NOTICE

Do not use solvents such as acetone, silicone spray, benzine, carbon tetrachloride, fire extinguisher fluid, dry cleaning fluid, lacquer thinner or ammonia. These solutions damage the acrylic surface.

You can use fine automotive acrylic rubbing and polishing compounds to remove fine scratches on acrylic. Always read the label before using any product.

Q - 7 FLEXITEEK (Optional)

An available option is a flexiteek swim platform. Flexiteek is made up of a composite PVC based material with a surprising similarity and look to that of real teak. See Figure Q9. Flexiteek can be cleaned with mild dishwashing detergent. Please contact your Four Winns dealer for further details.

Figure Q9: Flexiteek Swim Platform Option

R - 1 WINTERIZATION

A. Prior to Lifting for Winter Lay-up

1. Pump out the head (dockside discharge), and be sure the holding tank is empty. Flush the head holding tank with soap, water and a deodorizer (e.g., Lysol Liquid™). Add more water if necessary. Have the cleaning solution pumped out.

2. Have the fuel tank either full or completely empty. See the Engine Owner's manual for recommendations. Also, check with the dry dock operators for recommendations. If winter storing with a full fuel tank, gasoline winterizer such as Sta-bil® fuel conditioner, will reduce varnishing, condensation, etc.

NOTICE

If the fuel has been treated with winterizer, run engines for ten minutes to make sure the treated fuel is present in all lines and parts of the engines.

3. Drain water from the fresh water system and the hot water heater.

4. Winterize the engine and drive systems as recommended in the engine owner's manual (applies to both gas and diesel systems). Portions of this winterization procedure may require that the boat be lifted. Winterization of engine and boat systems should be performed by qualified service personnel.

5. If the boat is to be lifted or taken off a trailer, see Section P-7 - Hull Support in this manual for additional details.

B. After Lifting

1. Remove the drain plug.

2. Thoroughly wash the fiberglass exterior, especially the hull bottom. Remove as much marine growth as possible. Wax lightly.

3. Lower boat onto cradle properly or place boat on trailer (if applicable). Be sure boat is adequately supported. The boat should be raised slightly under the forward supports or trailer tongue to improve drainage to the transom drain.

4. Be sure all the water is completely drained from the fresh water system. Disconnect all hoses, check valves, etc. and blow all the water from the system using very low air pressure. The use of nontoxic, fresh water system antifreeze is recommended as an alternative to disassembling the water system. Refer to Section J-7 - System Maintenance in this manual for information on winterizing the water system.

5. Winterize the head as recommended by the head manufacturer. If the boat is equipped with a holding tank, mix some antifreeze solution and pour it into the head. Transfer some of the antifreeze to the holding tank by flushing the head. Also, refer to Section J-7 - System Maintenance for additional information.

6. Drain or winterize the air conditioning and generator system (if applicable). Follow the appropriate manufacturer's directions. Be sure all water intake filters are drained thoroughly.

7. Ensure that all water is removed from the sump pump, bilge pump and bilge pump lines. Dry the hull bilge, and self-bailing cockpit drain troughs. Water freezing in these areas could cause damage. See Section K-3 - Hull Drainage Systems.

8. Remove the batteries and store in a cool place. Clean the batteries using clear, clean water. Be sure the battery has sufficient water and clean terminals. Keep the batteries charged throughout the storage period. DO NOT store the batteries on a concrete floor or other damp or conductive surface.

9. Clean the boat interior thoroughly. Vacuum carpets, and dry clean drapes and upholstery jackets as necessary.

10. Wash exterior fiberglass components, wax lightly.

11. Clean exterior upholstery with hand dish washing soap and water, rinse, and dry thoroughly.

12. Remove all oxidation from exterior hardware and apply a light film of moisture - displacing lubricant.

C. Prior to Winter Storage

1. Remove as many cushions as possible. Remove storage lids or hatches. Open as many locker doors, as possible. Open the refrigerator door. Leave these areas open to improve ventilation.

2. Spray the weather covers and the boat upholstery with Lysol Spray Disinfectant™. Enclosed areas such as the refrigerator, shower basin, storage locker areas, etc. should also be sprayed with Lysol Disinfectant™.

3. Place small dishes of rodent poison such as D-Con™ in a number of areas around the boat. Be sure dishes are placed near the head and the engines, as rodents will destroy upholstery, water intake and discharge hoses.

4. If the boat will be in outside storage, properly support a storage cover and secure it over the boat. DO NOT secure the cover tightly to the boat. This does not allow adequate ventilation and can lead to dry rot. DO NOT store the boat in a damp storage enclosure. Excessive dampness can cause electrical problems, corrosion, and dry rot.

⚠ WARNING

Placing an electric or fuel burning heating unit in the bilge of the boat during cold weather could cause fire or explosion and is not recommended.

5. DO NOT use the bimini top or camper top as a winter storage cover. The life of these covers may be significantly shortened if exposed to harsh weather elements for long periods.

NOTICE

Boats stored outside in areas with heavy snow accumulation are more susceptible to damage, and should be inspected regularly during the winter months.

R - 2 ENGINE FLUSH OUT

The optional engine flush out (if applicable) should be used to clean the engine of unwanted salt, mud, sludge, etc. which may have accumulated in the engine cooling system. Before winterizing the engine, flush out the system for about ten minutes.

A. Volvo Penta® Engine Flush Out (Four Winns Installation)

⚠ CAUTION

Make sure that no section of flush hoses is in contact with moving or hot engine parts or abrasive surfaces such as screw threads, sharp edges, etc., which could damage the hoses. Damage to the hoses could cause leaks and possible flooding of the engine compartment. Periodically check hoses for abrasions.

NOTICE

The Four Winns installed flush out kit for Volvo Penta® engines is identified by a transom deck mounted coupler & cap. This type of flush out may be used with the boat in or out of the water and the engine OFF.

Volvo Penta's engine flush out is directly attached to the engine itself and is identified by a blue cap. If the engine comes with this type of flush out kit installed from Volvo Penta, ***follow the procedure included in the engine operator's manual only****.*

To flush out the engine with Four Winns installed flush out kit, follow the instructions below:

1. **Do not run engine during flushing procedure.**

2. Remove cap from coupling and attach water supply hose.

3. Turn water on and allow water to flush the engine and exhaust manifold for about ten minutes.

4. Turn water off. Disconnect hose; replace and tighten cap securely.

⚠ CAUTION

Reinstall cap onto coupler after flushing for both types of flush outs. The cap must be secured after flushing of engine to prevent air from entering the system and resulting in possible engine damage.

B. MerCruiser® Engine Flush Out Option

> **⚠ CAUTION**
>
> *MerCruiser® engine flush out procedures if not followed in accordance to their specific instructions can result in costly engine damage. Follow MerCruiser's specific instructions for flush-out procedures located in the Engine operator's manual. Consult engine manufacturer's authorized service center for additional assistance should further questions arise.*

> **⚠ CAUTION**
>
> *Make sure that no section of flush hoses is in contact with moving or hot engine parts or abrasive surfaces such as screw threads, sharp edges, etc., which could damage the hoses. Damage to the hoses could cause leaks and possible flooding of the engine compartment. Periodically check hoses for abrasions.*

> **NOTICE**
>
> *The Four Winns installed flush out kit for MerCruiser® engines may be used with the boat in or out of the water and the engine ON. See MerCruiser's engine operator's manual for the specific engine flushout procedure.*

> **⚠ WARNING**
>
> *For out of water flushing, avoid possible injury by removing the propeller and ensure that no people or animals are in the area of the drive unit while flushing. Contact with moving drive components and the propeller can cause personal injury or death.*

To flush out the Mercruiser® engine follow the guidelines below as well as the specific procedure outlined in MerCruiser's engine operator's manual:

1. Remove cap from coupling and attach water supply hose.
2. Turn on water supply - See Engine owner's manual.
3. **The engine must be running at idle during flushing procedure.**
4. Allow water to flush the engine and exhaust manifold for about ten minutes.
5. Turn engine OFF and turn water off. Disconnect hose; replace and tighten cap securely.

> **⚠ CAUTION**
>
> *Reinstall cap onto coupler after flushing. The cap must be secured after flushing of engine to prevent air from entering the system and resulting in possible engine damage.*

R - 3 GENERAL MAINTENANCE SCHEDULE

SERVICE	AT LAUNCH AND FIRST OPERATION*	25 HOUR CHECK EACH SEASON*	BI-SEASONAL-LY OR EVERY 6 MONTHS OR EVERY 100 HOURS*	SEASONALLY OR EVERY 12 MONTHS OR EVERY 200 HOURS*
Engine and Instrumentation	Refer to Section E			
Engine Maintenance	As Recommended by the Manufacturer			
Inspect Exhaust System Hoses and Connections				
Inspect Cooling System Hoses, Connections and Impellers				
Check Propellers				
Check All Thru-Hull Fittings				
Test Emergency Shut-Off Switch				
Gauge Cleaning				
Controls Systems	Refer to Section F			
Throttle and Shift Adjustment				
Neutral Safety Switch Test				
Cable and Control Lubrication				
Steering Systems	Refer to Section G			
Linkage and Connection Inspection				
Stern Drive Torque Tab Adjustment				
Power Steering Service	As Recommended by the Manufacturer			
Steering Adjustments				
Steering System Lubrication				
Electrical Systems	Refer to Section H			
Inspect Battery Connections				
Check Battery Water				
Battery Cable Inspection				
12 Volt Electrical Equipment Operation (If Applicable)				
12 Volt Wiring and Connection Inspection (If Applicable)				
120 Volt Electrical Equipment Operation				
120 Volt Wiring Inspection				
120 Volt System Continuity Test				
Shore Power Cord and Adapter Inspection				
Polarity Light Operation				
Receptacle and Connection Inspection				
Generator Maintenance (If Applicable)	As Recommended by the Manufacturer			
Inspect Generator Water Intake and Exhaust				

*** Or as Required**

SERVICE	AT LAUNCH AND FIRST OPERATION*	25 HOUR CHECK EACH SEASON*	BI-SEASONAL-LY OR EVERY 6 MONTHS OR EVERY 100 HOURS*	SEASONALLY OR EVERY 12 MONTHS OR EVERY 200 HOURS*
Fuel System	Refer to Section I			
Inspect for Leaks				
Fuel Sender Inspection				
Fuel Filter Inspection				
Fuel Tank Inspection				
Water Systems	Refer to Section J			
Inspect All Water Systems				
Fresh, Grey & Holding Tank Inspections				
Drain & Flush Fresh Water System				
Drain & Flush Waste Water System				
Drain & Flush Grey Water System				
Ventilation and Drainage	Refer to Section K			
Engine Blower Operation	Before Every Use			
Head Blower Operation				
Blower Vent System Cleaning				
Bilge Pump Operation and Cleaning	Before Every Use			
Check Transom Drain Plug				
Deck Hatch, Porthole & Day Berth Window				
Interior Equipment	Refer to Section L			
Air Conditioner (If Applicable)	As Recommended by the Manufacturer			
Head Maintenance	As Recommended by the Manufacturer			
Thru-Hull Fitting Inspection				
Cockpit Refrigerator Cleaning (If Applicable)				
Clean Cooler	As Required			
Exterior Equipment	Refer to Section M			
Check PFD's for Serviceability and Correct Number	As Required			
Check Charge of Fire Extiguishers	As Required			
Check Compass for Magnectic Deviation				
Windlass Maintenance (If Applicable)	As Recommended by the Manufacturer			
Check Trim Tab Fluid Level				
Check Trim Tab System for Leakage				

*** Or as Required**

SERVICE	AT LAUNCH AND FIRST OPERATION*	25 HOUR CHECK EACH SEASON*	BI-SEASONAL-LY OR EVERY 6 MONTHS OR EVERY 100 HOURS*	SEASONALLY OR EVERY 12 MONTHS OR EVERY 200 HOURS*
Clean Windshield	As Needed			
Upholstery	Refer to Section N			
Clean Upholstery				
Clean Carpet				
Spray Upholstery with Lysol				
Check Seat Hinges and Mounting Hardware				
Weather Covers	Refer to Section O			
Wash Weather Covers				
Spray Weather Covers with Lysol				
Fiberglass Components and Hull	Refer to Section P			
Check All Fastenings (securing rails, seats, etc.)				
Clean Fiberglass Thoroughly				
Wax Hull Sides and All Non-Tread Areas				
Inspect Fiberglass Areas for Damage				
Perform Minor Touch-Up Repairs				
Sand Hull and Re-Apply Anti-Fouling Paint*				
Woodwork & Composite Maintenance	Refer to Section Q			
Clean Wood Trim & Wood Table	As Needed			
Clean Star Board	As Needed			
Clean Cockpit Tables / Countertops	As Needed			
Clean Plexiglass Components	As Needed			

*** Or as Required**

S - 1 LAUNCH AND CRUISE CHECKLIST

- ☐ Get a current weather report. If the weather will not be favorable, postpone your trip.
- ☐ If your boat has been out of the water, check to see that all bilge water has drained out.
- ☐ Install hull drain plugs.
- ☐ Inspect the hull and propeller for damage. Excessive dirt or marine growth will effect your boat's performance and fuel efficiency.
- ☐ Check the electrical system and navigation lights.
- ☐ If your boat has been in the water, run the bilge pump until the flow of water stops.
- ☐ Check that all required safety equipment is on board and in good working condition. Examples include personal flotation devices (PFDs), horn, fire extinguisher, visual distress signals, etc. Take along extra drinking water.
- ☐ Check that other important equipment is on board. Examples include mooring lines, anchor and line, tool kit, first aid kit, etc.
- ☐ Open engine compartment. Inspect for fuel odors and visible leaks in the fuel, oil, coolant, exhaust and power steering systems.
- ☐ Visually inspect engine for cracked hose, defective belts, or other signs of engine problems. Check engine oil and battery water levels. Check power steering fluid level. Check battery electrolyte range.
- ☐ Check fuel level. Fuel tanks should be filled to slightly less than capacity. Allow for fuel expansion.
- ☐ Check that all engine drains are closed (stern drives).
- ☐ Make sure navigation charts and equipment are on board.
- ☐ Check operation of steering system, navigation lights, and operation of horn.
- ☐ Make sure passengers and crew know what to do in case of an emergency and how to operate safety equipment.
- ☐ Make sure all required documents are on board.
- ☐ File a float/trip plan with a responsible party ashore.
- ☐ Keep an eye on the weather. Be aware of possible changing conditions by monitoring local weather broadcasts prior to departure. The captain or first mate should personally monitor strong winds and electrical storms.
- ☐ Always keep accurate up-to-date charts of your boating area on board.

S - 2 FUELING

> **WARNING**
> *Do not smoke; extinguish all open flames, STOP all engines and other devices that could cause sparks, including the bilge blower. Do not use electrical switches or accessories. Shut OFF all stoves that may produce a spark or flame. Close all openings into the cabin area of the boat.*

A. Recommendations

> **WARNING**
> *When fueling or having your boat fueled by an attendant, be sure the waste pump-out or fresh water fitting is not mistaken for the gas fill.*

Although alcohol boosts the octane level of gasoline, it also attacks the rubber fuel distribution lines and even metal fuel system components. Alcohol will permeate most fuel hoses and other components such as fuel pump, gaskets and seals, and can also contribute to fuel system contamination.

The hoses we use in our boats are alcohol-resistant as are the materials used by the engine manufacturers. If only fuel containing alcohol is available, or the presence of alcohol is unknown, you must perform more frequent inspections for leaks and abnormalities. Any sign of leakage or deterioration requires your immediate attention. Refer to the engine manufacturer's recommendations on fuel type and octane ratings.

B. Preliminary Guidelines

1. Safely secure your boat to the dock.
2. Close all hatches, windows, doors and compartments to prevent accumulation of fuel vapors.
3. Ensure that a fire extinguisher is readily available.
4. Do not store fuel in areas that are not adequately ventilated.
5. Use only fuel lubricants recommended by the engine manufacturer.

C. Pumping Fuel

> **WARNING**
> *Follow engine manufacturer's recommendations for types of fuel and oil. Use of improper products can damage the engine and void the warranty.*

1. Be sure to fuel in a well-lit area gasoline spills are unnoticeable under poor lighting or in the dark.
2. Remove the gas fill cover.
3. Insert the fuel supply nozzle, keeping it in contact with the fuel fill plate to guard against static produced sparks.
4. Stand away from the fuel tank vent and gas fill during fueling. Splashback may occur and can be an eye irritant and/or a fire hazard.
5. Avoid spillage. Wipe up any excess fuel immediately.
6. After pumping approximately 10 gallons of fuel into the fuel tank, inspect the engine and fuel tank area for any signs of leakage. If no leaks or other problems are detected, resume fueling.
7. Allow space at the top of the tank for thermal expansion.
8. If fuel cannot be pumped in at a reasonable rate, check for fuel vent blockage or a kink in the line.

D. After Fueling

1. Replace the gas fill cover and wipe up any fuel spilled. Discard rags used in a safe place ashore.
2. Open the engine compartment and all hatches, windows, doors and other compartments that were closed during fueling. Inspect these areas for the odor of fuel vapors and visible fuel leakage.

> **WARNING**
> *Investigate and correct any sign of fuel leakage or indication of vapors before starting engine. Do not run blower or operate any electrical switch until problem is corrected. Fire or explosion may result.*

S - 3 LOADING PASSENGERS AND GEAR

NOTE: All boats under 20 feet in length must have a capacity rating plate showing the recommended person capacity as well as the maximum capacity of the boat including persons and gear.

When loading your boat, remember to distribute the load evenly. Keep the load low and do not overload. On certain Horizon™ models a capacity label is affixed to your boat which states the maximum load capacity. The label shows in pounds, the amount of persons and gear that the boat will safely handle under normal conditions. US Coast Guard regulations establishes these load capacity ratings. Position passengers and gear so that the load is balanced.

NOTICE

The NMMA Yacht Certification rating (indicated by a yacht certification plate - see Preface page 13) places the responsibility on the captain to make the determination as to the appropriate load, load placement and number of passengers permitted aboard the vessel.

When loading, always step into the boat, never board by jumping. Have someone on the dock pass your gear aboard. Secure all gear firmly so it doesn't move or interfere with operation of the boat. Passengers should board the boat one-at-a-time and be seated. Passengers should remain seated during loading of the boat to maintain an even trim.

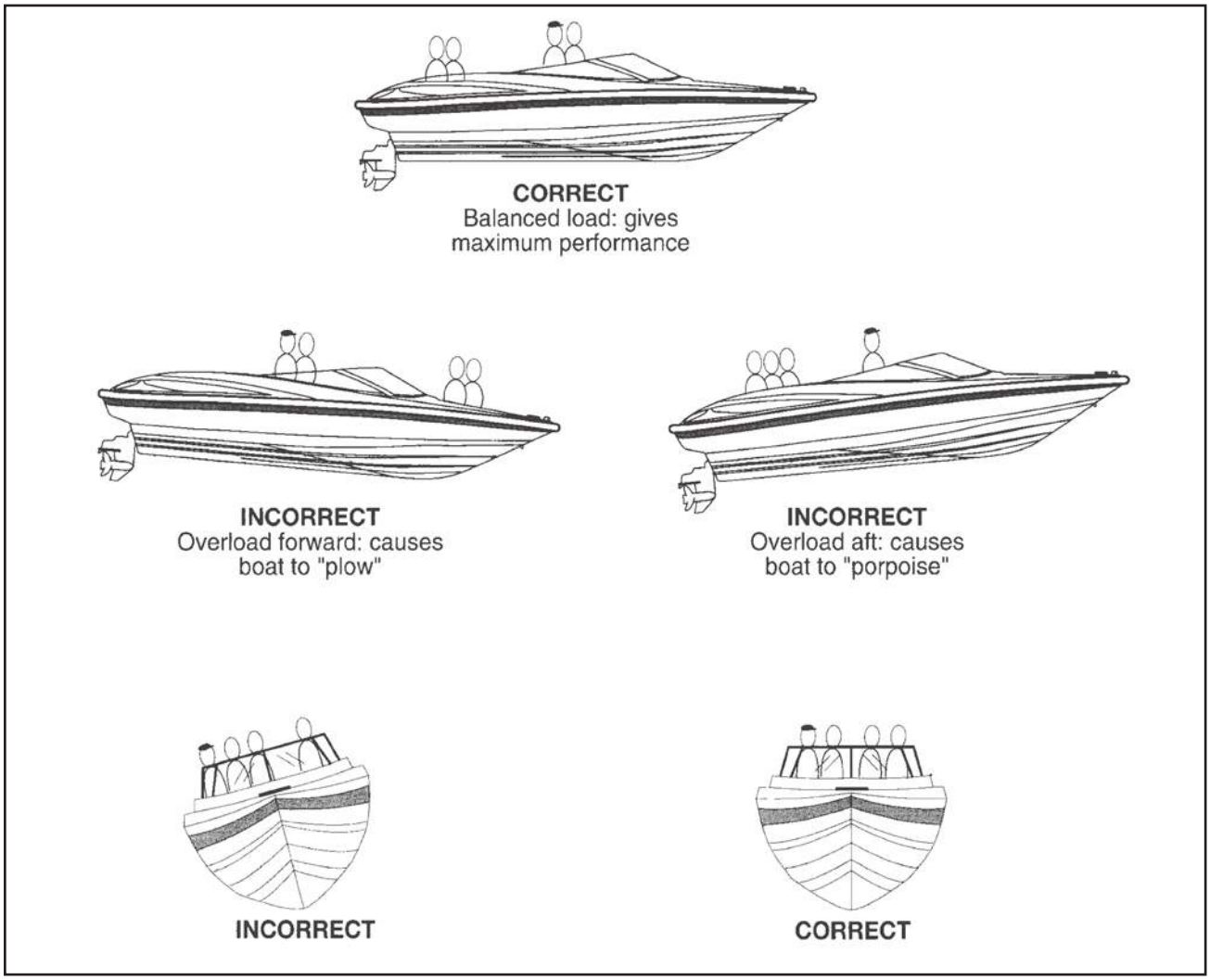


Figure S1: Loading Passengers and Gear

WARNING

Passengers seated in the bow area should not obstruct the driver's vision.

IMPORTANT: Passengers are prohibited from riding on the bow with feet hanging over the side or ride while sitting on the stern, gunwales or seatbacks. The Coast Guard considers these acts to be negligent or grossly negligent operation. They are prohibited by law because falls from moving boats are a major cause of fatal recreational boating accidents.

IMPORTANT: The presence of the capacity plate does not relieve the boat operator from the responsibility of using common sense or sound judgment. Turbulent waters and adverse weather conditions will reduce the maximum load capacity rating of the boat.

S - 4 STARTING PROCEDURES

The operation and maintenance manual supplied with your engine provides pre-start, starting and cold-starting instructions. The following information is merely a guide and not intended to explain in detail all starting procedures and instructions. Refer to your engine owner's manual.

A. Preliminary Checks

1. Secure boat to the dock before attempting to start engine. The boat should be kept secure until the engine is running and warmed up.

2. Operate the bilge pump until the flow of water stops.

3. Make sure the throttle is in the neutral position and stern drive is lowered into water.

4. Make sure passengers seated in the bow area do not obstruct the driver's vision.

B. Starting

DANGER

To prevent excessive exposure and reduce the possibility of carbon monoxide accumulation in the cockpit areas of the boat, the operator should provide adequate ventilation in each of these areas. Utilize hatches, doors, windows and side vents to increase air movement. See Section B-2 for information about the dangers of Carbon Monoxide.

Notice: Additional starting information is located in Section A.

1. Check all electrical systems and navigation lights.

2. Your boat is equipped with either a single or dual battery selector switch, turn the engine battery switch to ON position or EMERGENCY START ONLY position (if necessary).

3. Activate the bilge blower. Check the blower output.

WARNING

Gasoline vapors can explode resulting injury or death. Before starting the engine, check engine compartment bilge for gasoline or vapors. Operate blower for four minutes, and verify blower operation. ALWAYS run the blower when the vessel is operating below cruising speed.

4. Attach the ignition interrupt lanyards securely to your body. In the event that you move away from the helm area and beyond the length of the lanyard, the engine will be turned off.

5. Turn the key to start the engine. Engine will not turn over if throttle is not in the neutral position.

6. Once engine has warmed up, check water temperature gauge to ensure engine temperature stays within optimum range. If temperature reading is abnormally high, stop engine immediately and inspect for cause of high reading.

7. With engine running, voltmeter should show a reading between 12 and 15 volts.

8. Check steering operation. Turn steering wheel full to port and starboard while observing outdrive movement.

9. Inspect for fuel odors and visible leaks in the fuel, oil, coolant, exhaust and power steering systems.

10. Make sure boat is securely moored to the dock and engine is idling. Then move the throttle forward and then aft and back to neutral to check for proper operation of the shifting motion. Be careful. Leave the engine in gear for only a split-second.

S - 5 MANEUVERING

⚠ WARNING

Boat steering is not self-centering. Steering is effected by engine and propeller torque, trim tab setting, wave and current action and the speed of the hull through the water. Constant attention to steering is required for safe operation.

When all your pre-departure checks have been completed and the engine has warmed up, you will be ready to leave the dock. Take into account the amount of wind, tide current, and other forces that may affect your maneuvering as you leave the dock. Idle speeds work best when maneuvering to and from the dock. Do not forget to release the mooring lines.

A. Leaving the Dock

You are ready to leave the dock after the engine has warmed up. Check all gauges for appropriate readings before casting off. If oil pressure is abnormally low or engine temperature is abnormally high, stop the engine immediately. Check voltmeter to be sure the charging system is working properly. Check for fuel, oil, and exhaust leaks. Correct the cause of any abnormal condition before getting underway.

⚠ WARNING

Make sure passengers sitting in the bow area do not obstruct the operator's vision when casting off or while underway.

After making sure your boat is ready, check wind, tide, current and other forces that will affect the way you maneuver your boat away from the dock. Throw mooring lines off to your boat. Shift your boat's engine into forward or reverse depending on whether you want to move the bow or the stern away from the dock first. Run your engine at a slow speed as you move away from the dock. If you move the bow out first, watch that the stern of the boat does not swing into the dock or a piling.

Once away from the dock, devote some time to learning how to maneuver. Practice docking using an imaginary dock. Practice stopping and reversing.

B. Stopping

Boats have no brakes. Stopping is accomplished by backing down on the throttle. Practice stopping maneuvers and learn early how your boat reacts. From forward motion, pull the throttle back towards NEUTRAL. Depending on your speed, the distance the boat travels until it comes to a complete stop will vary. The ability to measure the distance will only be acquired through experience.

Once the boat has slowed and motor is idling, place the shift in REVERSE. Gradually increasing reverse power with the throttle will allow you to stop the boat in a very short distance.

NOTE: A boat will not respond to steering in reverse nearly as well as it does when going forward, so do not expect to accomplish tight turning maneuvers when backing up.

Remember that all boats steer by the stern (the feeling is much like steering your automobile in reverse). This means that the stern of your boat will swing in the direction opposite to your turn. For example, when you turn the helm wheel to the left, the stern of your boat will swing in the direction opposite to your turn. This is especially important to keep in mind when docking, operating in close quarters with other boats, or when approaching a swimmer or downed skier in the water.

Always look behind you and to both sides of the boat before slowing down. Tell your passengers your intentions to allow them time to make adjustments to their balance or positions.

Slowly pull back on throttles, glance back and see if a large following wave is approaching the transom. If so give the engines a little throttle as the wave arrives to keep wave from rolling over the transom.

Once you have spent enough time practicing maneuvers and have a feel for how the boat handles, you will be ready to run in open waters.

S - 6 ACCELERATION

> **⚠ WARNING**
>
> *Before accelerating to bring you boat on plane, be sure that the area in front of your boat is clear. The bow will rise out of the water momentarily before you plane and may temporarily obstruct your vision.*

If you have never had your boat on plane before, choose a calm day for your first on plane experience. Never boat beyond your ability and experience.

Before bringing your boat “on plane”, check the entire area to make sure you have a clear, safe path. As you throttle up to accelerate, your boat will increase its angle of trim, causing the bow to ride high. From a maximum angle, the boat will level out to its planing attitude with continued acceleration. This maximum angle is known as the “hump”. Because visibility, handling, and performance are reduced, it is advisable to get “over the hump” as soon as possible.

A few seconds at full throttle should get the boat over the hump and into its planing attitude.

After getting over the hump, accelerate until reaching a comfortable plane, then throttle down to cruising speed. This also will provide for better fuel efficiency.

S - 7 TRIMMING YOUR BOAT

A. Trim Tabs (Applicable Models Only)

Trim tabs are used to add lift to the boat’s stern, thereby changing the boat’s attitude (see Figure S2). This lift can help the boat get on plane faster and remain on plane at slower speeds than if no tabs were used. Used independently, tabs can also correct listing conditions caused by crosswinds, unbalanced loading and quartering seas. Trimming your boat properly involves two separate procedures, trimming or tilting the lower unit and setting the trim tabs.

When you are sitting dead in the water, your drive should be down and the trim tab switches are in the BOW UP position. Accelerate until you get onto plane. At this point your boat will be plowing through the water with the bow down too far. Trim the lower unit up slightly until the bow comes up. If you trim the lower

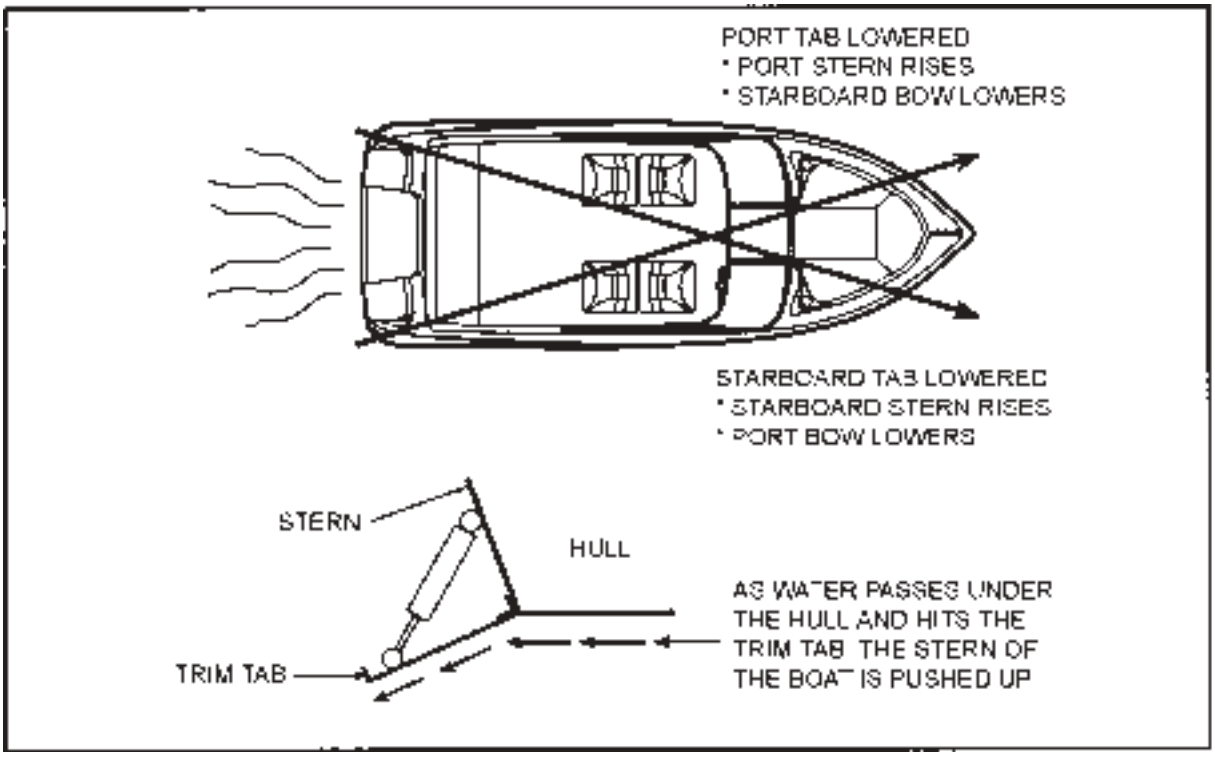


Figure S2: Trimming the Boat with Trim Tabs

unit out too far, your boat will porpoise or the propeller will cavitate, and the bow will slam up and down on the water. Your boat is trimmed correctly when it is just short of porpoising or propeller cavitation, under ideal running conditions.

Trim your boat to compensate for seas, winds, or uneven loads.

Head Seas	Trim drives in more than usual. Use tabs to keep bow down and move at a slower speed.
Following Seas	To prevent taking seawater over the bow, trim drives out and keep tabs up to keep bow up.
Listing Due to Quartering Seas, Beam Wind, or Uneven Load	Use tabs independently to adjust for list. If listing to starboard, press port bow down switch. If listing to port, press starboard bow down switch.

Remember that most boats react very slowly to trim tabs. Often boat owners do not give trim tabs time to work. Press the trim tab switches for only one second at a time and then allow some time for the boat to react. If the boat is still listing after a minute or two, press the trim tab switch again for a one second interval. The labels on the trim tab switches indicate what you want your boat to do, not what you want the tabs to do.

It is a good idea to take your boat out onto open water shortly after you get it and experiment with the trim tabs. After you get your boat onto plane, set the tabs in various positions and note how your boat reacts. This will give you a feel for how the trim tabs work.

It is possible to extend the cylinder life expectancy on your trim tabs. To do this, keep the cylinders retracted while at dockside. Press both trim tab controls down until tabs reach their full up position.

B. Tilt/Trim Control Switches

NOTE: Trim refers to the angle of the lower unit in relation to the bottom of the boat. With respect to trimming, the words in, down, under, and forward, have the same meaning as do up, out, and aft.

1. The standard trim control switch is located on the control lever handle.
2. The switch controls the position of the stern drive. Proper trim is very important in boating.
3. In the case of low or heavy bow attitude, the boat tends to “plow” (Figure S3. The lower unit is trimmed too far under or forward. Trim the unit UP (out) to correct this situation.
4. If the bow is too high, the boat tends to “porpoise” (Figure S5). The drive unit is trimmed up or out too far. Trim DN (in) to correct.
5. A good practice is to get underway (especially when fully loaded or pulling a skier) with the unit trimmed all the way DN (under). After the boat is on plane, adjust the trim out slightly to obtain the proper bow attitude and engine speed.
6. Trim also affects propeller selection and fuel efficiency. All models should be “propped” to be in the upper half of the maximum rpm range with the boat lightly loaded and the drive trimmed up to maximum.

   This configuration allows the engine to operate within the recommended rpm range with a heavy load.

   The power unit should never be trimmed up to a point where the propeller cavitates (or slips). A rapid increase in engine rpm’s is evidence of cavitation. If this occurs accidentally while running at full throttle, immediately lower the drive trim and reduce the throttle until the slipping stops. If necessary, have your dealer reset the trim limit switch (if provided) to avoid over-trimming in the future.

   If the prop slips at lower planing speeds, the drive may be trimmed too high. Immediately lower the drive unit until the prop grabs again to restore efficiency.
7. Trimming out, in addition to raising the bow, also lifts the boat higher, gaining speed because less hull is in the water.
8. The trailering position of some stern drives is controlled by a separate switch on the dash switch panel or throttle/shift control. Do not activate this switch while engine is running. Doing so can severely damage the lower unit and engine.

NOTE: Refer to the control instructions regarding the power trim controls installed on your boat.

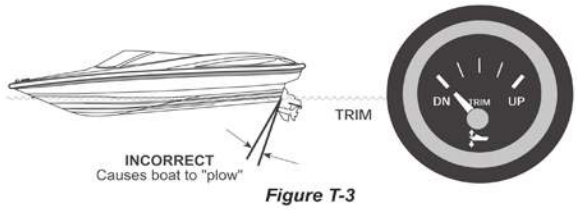


Figure T-3

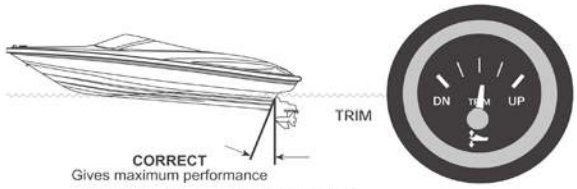


Figure T-4

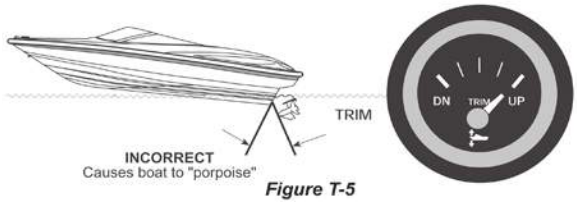


Figure T-5

Figures S3-S5: Trimming the Boat with Outdrive

S - 8 NAVIGATION LIGHTS

Although night activities are limited, cruising at night can be very pleasurable. It can also be dangerous if you don't pay close attention to water levels and obstacles. Be especially careful of shallow waters and watch for submerged debris, rocks and other obstacles in the water. Your navigation lights are intended only to prevent collision, not to improve your night vision. You may choose to use a spotlight instead.

NOTE: It is illegal to use your spotlight as a headlight. Use it only temporarily to check the position of your boat and the surrounding area.

Your boat has one white (stern), one red (port) and one green (starboard) light. The stern light may be a removable pole light. To use the light, line up the two-prong plug in the pole with the receptacle in the base. Plug the light in, and lock it into place with lever/slide lock. When not in use, stow the light inside your boat for safekeeping. This light can be turned on or off at the helm.

Check lights for proper operation before heading out at night. You should also learn to identify the running light combinations for other vessels. We recommend that you participate in a boating safety course to further learn about navigation lights and safe boating practices.

The anchor lights and navigation lights are controlled by a switch at the helm. The anchor light switch allows you to turn on just the stern (white) light when anchored or moored. While underway, use the navigation light switch to turn on the stern (white), port (red) and starboard (green) lights. Lights are off when switches are in the OFF position.

S - 9 HAZARDOUS CONDITIONS

A. Storms

Storms sometimes appear without advance notice. Although weather information from meteorological observation and reporting stations is available, weather bureaus are known to have failures in their predictions or information gathering equipment. There is no substitute for a strong understanding of what action to take when the weather takes a turn for the worse. Many marinas fly weather signals. You should learn to recognize these signals and monitor your local weather forecasts before leaving port.

The present and forecasted weather conditions are of primary consideration, but a threat of possible storms should always be a concern. Observance of the following information will help in your safety afloat if storms do occur:

- Keep a watch on the horizon for approaching storm indicators.
- Turn radio ON. Dial in local weather station and monitor forecast. If your boat has a VHF radio, check the weather channels.
- The best possible situation is to return to a safe port if time allows.
- Close and secure all portals and hatches. Stow all loose gear below deck and tie down any gear required to remain on deck.
- Reduce speed as the seas build. Make sure all passengers are wearing their PFDs.
- If you lose power, keep the boat headed into the waves by rigging a sea anchor off the bow. If there is no sea anchor on board, use a canvas bucket or any object that will offer resistance.
- Radar reflectors (if installed on your boat) should be 18 inches diagonally and placed 12 feet above the waterline.

B. Fog

Fog is a result of either warm surface or cold surface conditions. You can judge the likelihood of fog formation by periodically measuring the air temperature and dew point temperature. If the spread (difference) between these two temperatures is small, you likely will incur a fog situation. Remember the following guidelines:

- Turn on running lights.
- As fog sets in, take bearings and mark your position on the chart while continuing to log your course and speed.
- Make sure all persons aboard are wearing their PFDs.
- If your boat has depth finding equipment, take sounding and match them with soundings on your charts.
- Station a person forward on the boat as a lookout.
- Reduce your speed. From time to time, stop engine and listen for fog signals.
- Sound the proper horn or fog bell at proper intervals to warn other boaters.
- If there is any doubt in continuing boat movement, anchor. Listen for other fog signals while continuing to sound the proper fog horn or bell for a boat at anchor.

C. Running Aground

⚠ WARNING

To prevent boat damage, DO NOT use deck hardware or water ski pylon for towing. Use a commercial towing service.

Operating in shallow water can present a number of hazards. Sand bars in narrow inlets are constantly shifting, making it difficult to mark them with buoys. Sometimes sand bars are indicated by waves as they form into breakers when passing over sand bars. In coastal areas, tides can change water levels by as much as 30 feet. Check with local marinas or Coast Guard stations for tide tables and current charts.

If your boat runs aground, first check persons aboard for injury. Then check for damage to the boat. If the drive unit strikes an underwater hazard, check for boat and drive unit damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller. If vibration is noticeable, return to port slowly to prevent further drive and engine damage from an out-of-balance condition. Watch the temperature gauge to make sure you do not overheat the engine.

If the boat is not taking on any water, it may be possible to rock the boat by shifting the weight of the passengers and gear and by raising the drive unit while reversing the engine.

If you ground your boat on a sand bar, shut down the engine and seek help from another boater or radio for help. See your dealer as soon as possible, as sand ingested in the engine cooling system can cause major engine damage.

D. Warning Markers

It is a good idea to find out about hazardous areas and how they are marked by asking your local authorities.

- Boaters must also recognize the flag designs which indicate that scuba divers are present and keep well clear of the area.
- Watch for swimmers. Swimming areas may not be marked. Steer clear from the area and always remain alert.
- Distress flags indicate a fellow boater is in need of assistance.
- Navigation markers serve as a means of identifying navigable routes and indicate water hazards. Boaters should become familiar with navigation markers and stay within marked boundaries and clear of hazards.

S - 10 REACTING TO EMERGENCIES

Be prepared to deal with emergencies before they happen. Try to formulate a plan for each type of emergency in advance so that decisions can be made quickly and without hesitation. Precious moments lost can mean the difference between losing and saving a life.

A. Flooding

If your boat starts taking on water, activate the bilge pump immediately. Make sure all passengers are wearing their PFDs. Open the engine compartment,

look for the cause of the flooding. Check all hoses, through hull fittings, seacocks and strainers. If flooding occurs as a result of collision or grounding damage, call for assistance and head for shore if possible.

B. Capsizing and Man Overboard

By far, the largest number of boating fatalities involve capsizing and falling overboard accidents. By being prepared ahead of time with an appropriate plan of action, you can greatly lower your chances and your passengers' chances of becoming seriously injured.

C. Capsizing

Wear PFDs or have them readily available at all times. If your boat capsizes, and others were on board, locate them and guide them to the safety of the hull. Even if the boat floats in an upside-down position, stay with it. The boat hull is much easier for rescuers to spot than a human head sticking out of the water. DO NOT attempt to swim ashore, it may be further than it looks.

D. Man Overboard

Think through and follow these procedures if someone in your boat falls overboard.

- Remember, every second counts, you must act fast.
- Move throttles to idle position immediately and yell "MAN OVERBOARD. "
- Throw some floating object overboard immediately. Keep your required Type IV PFD accessible at all times for such an emergency.
- Keep the person in the water in sight at all times. Have a passenger do nothing but watch the person. Do not go into the water to help the victim. One person in the water is enough trouble.
- Circle around quickly, approaching into the wind and waves. When the person is alongside, put the engine in neutral and throw them a Type IV PFD with a line attached or extend a paddle or boat hook within his/her reach.

E. Collision

If a serious collision occurs, you should first check the condition of all passengers aboard, then inspect your boat to determine the extent of damage.

1. Make sure all persons aboard are wearing their PFDs.
2. If you need help and your boat has a ship-to-shore radio, first contact the U. S. Coast Guard (VHF Channel 16) or other rescue authorities immediately.
3. Prepare to assist the other vessel unless your passengers and/or boat are in danger.
4. If the bow of the other boat penetrated your boat's hull, prepare to block the opening once the boats are separated.
5. Shore up the hole with a spare PFD or bunk cushion from your boat.
6. While blocking the hole, trim the boat so that the hole is out of the water.

F. Fire

Most fires are caused by electrical problems or careless fueling practices. A fire on board your boat is a serious emergency. You must work quickly to implement safety procedures. If a fire occurs, immediately stop the engine.

1. Make sure all persons aboard are wearing their PFDs.
2. If the fire is small, attempt to put it out with your fire extinguisher. If the fire is in the engine compartment, turn off the bilge blower. Do not open the engine compartment. This feeds oxygen to the fire and may cause it to flare up.
3. If the fire gets out of control, execute a distress signal and call for help if equipped with a ship-to-shore radio.
4. All persons aboard should jump overboard and swim a safe distance away from the flames.

IMPORTANT: All persons aboard should know the location and proper operation of the fire extinguishers.

Guidelines

- Use only approved marine cooking and heating systems.

- Open flames demand constant attention.
- Keep flammable materials in approved containers in a overboard vented locker sealed from the interior of the boat.
- Ensure ventilation systems are unobstructed.
- Remove mooring covers before starting engine.
- Check the bilge for fuel leaks.
- Extinguish smoking materials carefully.
- Use special care with flame or high temperatures around urethane foam.
- Check cleaning products for flammability.
- Ventilate when cleaning or painting.
- Disconnect electrical system from its power source before performing maintenance.
- Replace breaker or fuse with same amperage device.
- Electrical appliances must be within rated amperage of boat circuits. Observe the boat carefully while the electrical system is being energized.
- Allow only a qualified marine electrician to service the boats electrical system.

G. Medical Emergency

Accidents while boating can and may happen. Be prepared to handle these emergencies when they happen. Keeping a first aid kit and dry blankets on board can assist during these situations. It is also a good idea to contact your local Red Cross for information and training on first aid and CPR.

H. Propulsion Failure

Before you call for help regarding an engine or drive unit failure, it is a good idea to eliminate the possibility of simple problems. Turn off the engine and check to see that (1) there is fuel in the tank; (2) the engine cooling intakes on the outdrive are not clogged; (3) props are clean and free of weeds, netting, etc.; (4) no hoses are leaking; (5) there is oil in the engine.

Once you have checked out the possibilities listed above and find they are not the problem, call for help giving your position and a detailed description of your boat.

I. Control Failure

In the unlikely event of a shift/throttle failure, shut down the engine immediately. Carefully check the control connections in the engine compartment to see if they are secure. If not, try to locate the attaching hardware and reassemble. If that is not possible, try to use whatever is available such as paper clips, hair clips, tape, etc., to secure the connections. If a temporary repair is made, return to port at the slowest steerable speed and be prepared to take emergency action should the temporary repair fail also. Have your dealer make repairs before using the boat again.

J. Steering Failure

If a problem with the steering occurs, shut down the engine immediately. Check the connections to the drive unit in the engine compartment. Some boats have a push/pull cable while others will have hydraulic hose connections. With cable connections, check the attaching hardware and tighten it if necessary. If you have hydraulic hose connections, check to see if they are leaking. If so, tighten the connections and check the hydraulic fluid reservoir level. Most stern drives are power assisted and have their own hydraulic reservoir and engine mounted drive pump; check the level of reservoir and drive pump belt. If the steering is not operating properly, do not operate the boat and call for assistance.

K. Additional Underway Information

- Always be aware of local laws on noise limits. Noise means engine noise, radio noise or even yelling by people on your boat. Good seamanship demands that you operate your boat quietly so as not to infringe on the rights of others. Don't use thru-transom exhaust unless you are well off shore.

- You are responsible for any damage or injury caused by your boat's wake. Observe no wake speed zone warnings. Operate your boat with regard for the safety of other boats and people in your boating area.

- Keep your engine well tuned to decrease exhaust hydrocarbon emissions that pollute the air and water.

S - 11 RETURNING TO SHORE

A. Docking

Always approach the dock slowly. Think before acting. If you are wondering whether your boat will fit in a space against a dock, remember that pilings are often (but not always) spaced 10 feet apart.

Remember that it is easier to control a boat in reverse because a boat steers from the stern. When backing into a slip, back so that bow swings into the wind if possible. You will have more control.

If possible, come in against the wind or current, whichever is stronger. Approach the dock at a 30-45° angle. As the boat nears the dock, slowly swing parallel to it. Tie the bow line first; then the stern. If wind or current is moving toward the dock, move parallel to the dock further out. Let the wind or current push you in. Tie the stern first, then the bow.

Use extreme caution if wind or current is from your stern. Back in towards the dock slowly at a slight angle with engine in slow reverse. Gently swing parallel. Tie stern first, then the bow.

If the weather looks bad, use spring-lines from the bow and stern to dock amidships of the boat. Tie up on the downwind side of the dock. If the wind is changeable, place fenders over the side between the boat and the dock.

B. Mooring

After you have positioned your boat next to the dock, you must secure it with mooring lines to keep it in position. Mooring lines must be long enough to secure your boat in any docking situation. For example, the length of the lines for a 16-foot runabout should be at least 15 feet. An eye splice at the end of each line works well with bow or stern cleats.

The mooring lines you will use most often are the bow line, the stern line, and spring lines as shown on Figure S6. Each line has a specific purpose. The bow line and the stern line secure your boat's bow and stern. The two spring lines keep your boat from moving forward or backward when you are moored alongside a dock.

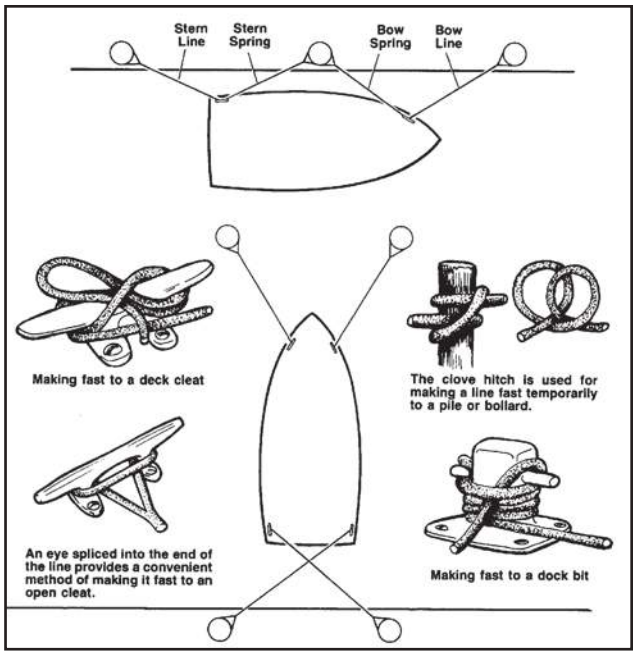


Figure S6: Mooring Lines

If you are mooring your boat for a short time, bow and stern lines may be the only lines you will need. If you are mooring your boat for a longer time or the currents are swift, you should use spring lines. The stern spring line leads from the boat's stern cleat forward to the piling or cleat on the dock. The bow spring line leads from the bow cleat aft to the dock.

If you are mooring your boat in a slip, bow and spring lines, port and starboard, will keep your boat in position.

NOTE: If tides are a consideration, be sure to leave slack in the lines to make up for the rise and fall of the water while your boat is docked.

ABAFT - Toward the rear of a boat.

ABEAM - At right angles to the keel of the boat.

ABOARD - On the boat.

ABREAST - Side by side.

ADRIFT - Loose, not on moorings or towline.

AFT - Moving toward the stern, you are going aft.

AGROUND - Stuck fast to the bottom.

AHEAD - In a forward direction.

ALEE - Away from the direction of the wind; opposite of windward.

ALOFT - Above the deck.

AMIDSHIPS - 1. An object or area midway between the bow and stern. 2. An object or area midway between the port side and the starboard side of a vessel.

AMPERE - The standard unit used to measure the draw of an electrical current.

ANCHOR RODE OR ROPE - The line (chain) connecting a vessel to its anchor.

ANCHOR BALL - A black, circular, day signal hoisted to show that a vessel is anchored. Replaced at dusk by the anchor light.

ASTERN - Anywhere behind the boat, a reverse direction, opposite of ahead.

ATHWARTSHIPS - A line, or anything else, running perpendicular to the fore-and-aft center line of a boat.

BATTEN - A strip of wood or metal used to secure tarpaulin(s) in place over a hatch. To batten down means to secure for rough weather.

BEAM - 1. The widest distance across a boat from the outside skin on one side to the outside skin on the other. 2. A transverse structural member that stiffens and supports a portion of the deck.

BEAM WIND - A wind blowing against the side of the vessel, perpendicular to the long axis of the vessel.

BILGE - The lowest interior area of a hull, used to collect water that has entered.

BILGE PUMP - A pump intended for removal of spray, rainwater, and the normal accumulation of water due to seepage and spillage; not intended for damage control.

BINNACLE - The stand or support for a magnetic compass occasionally used to mean helm.

BITT - A heavy and firmly mounted piece of wood or metal used for securing lines.

BLOCK - A wooden or metal case enclosing one or more pulleys and having a hook, eye, or strap by which it may be attached.

BOLLARD - A single post (wood, metal, or concrete) on a dock, pier, or wharf used to secure a vessel's lines.

BONDING - The electrical connection of exposed metallic, non-current carrying components to a common point on the main engine block.

BOW - The front end of the boat.

BOW LINE - A docking line leading from the bow.

BREAKER - A single breaking, plunging or spilling wave.

BREAKER LINE - The outer limit of the surf. However, all breakers may not be in a line. They can occur outside the breaker line.

BRIDGE - The main vessel control station.

BROACH - The turning of a boat parallel to the waves, subjecting it to possible capsizing.

BULKHEADS - The interior walls of a boat.

BULWARK - The side of a vessel when carried above the level of the deck.

BUOY - An anchored float used for marking a position on the water, a hazard, or a shoal.

CAPSIZE - To turn over.

CAPSTAN - A machine that moves a cylindrical device on a shaft for the purpose of hauling up an anchor.

CAST OFF - To let go.

CATAMARAN - A twin-hulled boat, with the hulls being side-by-side.

CHINE - The intersection of a boat's bottom and side. If this intersection is rounded, it is a "soft" chine. If the intersection is squared off, it is a "hard" chine.

CHOCK - 1. A fitting or hole in a railing or deck through which a mooring or anchor line is routed. 2. A wedge used to secure an item in place.

CIRCUIT BREAKER - A device used to interrupt an electrical circuit when current flow exceeds a predetermined level.

CLEAT - A double-ended deck fitting to which lines are secured; usually anvil-shaped.

COAMINGS - Raised lips around cockpits or hatches used to keep water from entering

COCKPIT - An exposed deck area (usually aft) that is substantially lower than the adjacent deck.

COMBER - A wave on the point of breaking. A comber has a thin line of white water on its crest, known as "feathering."

COMPANIONWAY - The steps or ladder leading downward from a deck.

COMPARTMENTS - Rooms divided by bulkheads.

COUNTER - The overhang at the stern of a boat.

CRADLE - A framework, generally made of wood, used to support a boat when it is out of the water.

CREST - The top of a wave, breaker or swell.

CUDDY - A small sheltered cabin in a boat.

CURRENT - 1. The movement of water, 2. The flow of electrical charge.

DEAD AHEAD - Directly in front of the boat.

DEAD RECKONING - A plot of courses steered and distances traveled through the water.

DECK - A permanent covering over a compartment, hull or any part thereof.

DESIGNATOR - Model identifier or model name.

1. to mark or point out; indicate; show; specify.
2. to denote; indicate; signify.
3. to name; entitle; style.

DINGHY - A small, open boat used for ship to shore transportation.

DISPLACEMENT - The weight of water dislocated by the hull of a vessel.

DISPLACEMENT HULL - A hull that "displaces" a volume of water equal to the weight of the boat. A hull designed to run in the water rather than on top of the water. When a displacement hull moves through the water, it pushes that water out of the way. Water will then flow around the hull and fill the "hole" the boat leaves astern.

DOCUMENTED VESSEL - Documented yachts have been specially registered with the U.S. Coast Guard. All documented yachts must have their name and home (hailing) port marked on some conspicuous place on the hull. Numbering is not required. Advantages include legal authority to fly the yacht ensign, privilege of recording bills of sale, and other instruments of title with federal officials, and preferred status for mortgages. Documentation does not exempt the unit from any State or Federal taxes. All safety and equipment regulations still apply.

DOLPHIN - A group of piles driven close together and bound with wire cables into a single structure.

DRAFT - 1. The depth of a boat from the actual water line to the bottom of the lowest part of the boat (e.g., the propeller tip or rudder). 2. The depth of water necessary to float a boat.

DROGUE - Any device streamed astern to check a vessel's speed, or to keep its stern up to the waves in a following sea.

DYE MARKER - A brightly colored chemical that spreads when released into water; normally used to attract attention.

EBB TIDE - A receding tide.

EVEN KEEL - To be floating evenly without listing to either side.

EXHAUST SYSTEM - The means by which the hot engine (or generator) exhaust gases are moved from the engine to an outboard port and then released into atmosphere.

EYE SPLICE - A permanent loop spliced in the end of a line.

FAST - Said of an object that is secured to another.

FATHOM - Six feet.

FENDER - A device (usually constructed of rubber or plastic) positioned so as to absorb the impact between vessels or dock.

FETCH - The unobstructed distance that the wind can blow over the water to create waves.

FLARE - 1. Outboard curve of the hull as it comes up the side from the waterline; the reverse of tumble home. 2. A pyrotechnic device used for emergency signaling.

FLAT - A small deck that is built below decks, specifically to support a piece of equipment.

FLEMISH - To coil down a line or rope on deck in a flat, circular, concentric arrangement.

FLOTSAM - Floating wreckage, trash or debris.

FLUKE - The palm of an anchor.

FOAM CREST - The top of the foaming water that speeds toward the beach after a wave has broken, commonly referred to as “white water.”

FOLLOWING SEA - A sea (waves) moving in the same direction as a vessel.

FORE-AND-AFT - A line, or anything else, that runs parallel to the longitudinal center line of a boat.

FOREFOOT - The portion of a vessel’s keel that curves upward to meet the stem.

FOREPEAK - A compartment in the bow of a boat.

FORWARD - Toward the bow.

FREEBOARD - The minimum vertical distance from the surface of the water to the gunwale.

FREQUENCY - The number of crests passing a fixed point at a given time.

FRONTS - Where opposing warm and cold air masses meet, generally producing a band of wet, stormy weather wherever they meet.

GALLEY - The kitchen area of a boat.

GALVANIC CORROSION - A potential electrical difference exists between dissimilar metals immersed in a conductive solution (e.g., salt water). If these metals touch or are otherwise electrically connected, this potential difference produces an electron flow between them. The attack on the less corrosion resistant metal is usually increased and the attack on the more resistant metal is decreased, as compared to when these metals are not touching.

GANGWAY - The area of a ship’s side where people board and disembark.

GASKET - A strip of sealing material, usually rubber, set along the edge of a water or gas tight door, port, cover or hatch.

GELCOAT - The thin outer layer of pigmented plastic covering a fiberglass vessel.

GLAND - The movable part of a stuffing box, which when tightened, compresses the packing.

GROUND - Electrical term meaning the electrical potential of the earth’s surface, which is zero.

GROUND SPEED - A vessel’s speed made good over the earth’s surface along a course or track.

GROUND TACKLE - The anchor, anchor rodes, and other fittings that are used to secure a vessel at anchor or dockside.

GUNWALE - 1. The line where the upper deck and the hull meet. 2. The upper edge of a boat’s side.

HALYARD - A line used to hoist a flag or pennant.

HATCHES - Cover on hatchways.

HATCHWAYS - Access ways through decks.

HARDTOP - A permanent cover over the cabin or cockpit.

HAWSER - A heavy rope or cable used for mooring or towing.

HEAD - A toilet or lavatory area.

HEADING - The direction that a vessel is going with reference to true, magnetic, or compass north.

HEADWAY - The forward motion of a vessel through the water.

HEAVE TO - To bring a vessel up in a position where it will maintain little or no headway, usually with the bow into the wind.

HEAVY WEATHER - Stormy weather with high seas and strong winds.

HEEL - To tip to one side.

HELM - The wheel or tiller that manually controls the boat's steering system.

HELMSMAN - The individual steering the vessel.

HIGHS - A center of pressure surrounded by lower pressure on all sides. Caused by a mass of cooler, sinking, drier air. This raises the area ground level air pressure and provides clear skies.

HULL - The main body of a boat.

INBOARD - 1. From either the port or starboard side of a boat toward the fore-and-aft centerline of a boat. 2. The dock side of a moored boat.

INLAND RULES - Nautical "Rules-of-the-Road" that apply in U.S. lakes, rivers, and coastal waters.

INTERNATIONAL RULES - Nautical "Rules-of-the-Road" that are in effect by international agreement to the high seas.

ISOBARS - Lines of equal air pressure that connect all the local points on a weather map. These lines are usually closed and define high or low pressure air masses.

ISOTHERMS - Isotherms are lines that are similar to Isobars except that Isotherms connect all the points that are of equal temperature.

JETSAM - Refuse that sinks when discharged overboard.

KEDGE(S) - One or more anchors set out from a grounded vessel, usually astern, to 1) keep it from being driven further aground and 2) to aid in refloating.

KEEL - 1. The centerline of a boat hull bottom running fore and aft, 2. The backbone of a vessel.

KNOT - 1. A maritime unit of speed equal to one nautical mile per hour (6076 feet). 2. A term for hitches and bends.

LANYARD - A short line made fast to an object to secure it.

LATITUDE - The measure of angular distance in degrees, minutes, and seconds, north or south of the equator.

LAZARETTE - Storage compartment in the deck at the stern.

LEADLINE - A weighted line used to take depth measurements.

LEE - The direction opposite that of the wind.

LEEWARD - Away from the wind.

LIST - A vessel that inclines to port or starboard.

LORAN - Long Range Navigation. An electronic system whereby a navigator can determine position regardless of weather.

LONGITUDINAL - Running lengthwise.

LOWS - A region of low atmospheric pressure. Hurricanes are extremely concentrated low pressure systems.

LUBBER LINE - A mark or line on the compass parallel to the keel indicating forward.

MAST - A spar that is set upright to support lighting, rigging, or sails.

MODEL DESIGNATOR - Model identifier or model name.

MOORING - An arrangement for securing a boat to a mooring buoy or pier.

NAVIGATION LIGHTS - A set of red and green or white lights which must be shown by all vessels between dusk and dawn.

OVERHEAD - A ceiling or roof of a vessel.

OVERBOARD - Over the side of the boat.

OUTBOARD - 1. From the fore-and-aft centerline of a boat toward both the port and starboard sides. 2. The seaward side of a moored boat. 3. An engine that is mounted externally onto the transom of a boat.

PAINTER - A line to the bow of a small boat used for making fast.

PASSAGEWAY - A corridor or hallway aboard ship.

PENNANT - The line by which a boat is made fast to a mooring buoy; also pendant.

PERSONAL FLOATATION DEVICE (PFD) - A life preserver.

PIER - A loading platform that extends at an angle from the shore.

PILASTER - A rectangular structural support column that is an extension of the port and starboard aft cabin sides and which supports the hardtop and flybridge.

PILING - Support, or protection for wharves, piers, etc.

PITCH - 1. The vertical (up and down) motion of a bow in a seaway, about the athwartships axis. 2. The axial advance of a propeller during one complete revolution.

PITCHPOLING - A boat being thrown end-over-end.

PLACARD - A board or stiff card bearing a notice, advertisement, message, etc.

PLANING HULL - At slow speeds, a planing hull will displace water in the same manner as a displacement hull. As speed is increased, the hull provides a lifting effect up onto the surface of the water.

POINT - One of 32 points of the compass that is equal to 11-1/4 degrees.

PORT - 1. Looking forward, the left side of a boat, 2. A harbor, 3. An opening for light or ventilation or passage of material in the side of a boat.

PORT BEAM - The left-center of a boat.

PORT BOW - Facing the bow, the front left side.

PORT QUARTER - Looking forward, a vessel's left rear section.

QUARTER - The sides of a boat aft of amidships.

QUARTERING SEA - Sea coming on a boat's quarter.

RED-RIGHT-RETURNING - A term for helmsmen that buoys and day markers are on the right when returning from seaward.

REEF - A shallow underwater barrier.

REEVE - To pass a line through a block or other opening.

RIDGES - High pressure fingers extending out from a high.

RODE - The anchor line or chain.

RUNNING LIGHTS - Lights required to be shown on boats underway between sundown and sunup.

RUDDER - A vertical plate for steering a boat.

SALON - The main social cabin on a vessel, usually the largest area, occasionally referred to as the deckhouse.

SCREW - A propeller.

SCUPPER - A drain from the edge of a deck that discharges overboard.

SEACOCK - A positive action shut-off valve connected directly to the hull seawater intake and discharge piping.

SERIES - A group of waves which seem to travel together and at about the same speed.

SHACKLE - A “U” shaped connector with a pin or bolt across the open end.

SHAFT - The long, round member that connects the engine or transmission to the propeller.

SHAFT LOG - A fitting at the hull bottom where the shaft connecting an engine to its propeller penetrates the hull. A shaft log permits the shaft to rotate while simultaneously preventing water from entering the hull.

SHEER - The top of the hull’s curvature at the deck line from the bow to the stern.

SHEER STRAKE - The upper edge of the hull, immediately below the deck.

SHEET BEND - A knot used to join tow ropes.

SHOAL - An area of shallow water.

SILENCER - A baffled chamber installed in an exhaust system to reduce the noise.

SOLE - Term for deck, cabin or cockpit floor.

SPAR - A general term for booms, masts, yards etc.

SPRING LINE - A pivot line used in docking, undoc king, or to prevent the boat from moving forward or astern while made fast to a dock.

STARBOARD - Looking forward, the right side of a boat.

STARBOARD BEAM - The right-center of a boat.

STARBOARD BOW - When facing the bow, the front right side.

STARBOARD QUARTER - When looking forward, the right rear section of the boat.

STEERAGEWAY - The lowest speed at which a vessel can be controlled by the steering wheel.

STEM - The leading edge of a boat’s hull.

STERN - The back of a boat.

STRINGER - A fore and aft continuous member used to provide a vessel longitudinal strength.

STRUT - A propeller shaft support that is below the hull.

SUMP - A pit or well into which water is drained.

SUPERSTRUCTURE - Deck houses and other structures extending above the deck.

THWART - A seat or brace running laterally across a boat.

THWARTSHIPS - At right angles to the centerline.

TILLER - A bar or handle for turning a boat’s rudder, or motor.

TOPSIDE - To go up to the top deck.

TRANSOM - The stern cross-section of a square sterned boat

TRANSVERSE - Across the vessel; athwartships.

TRIM - Fore and aft balance of a boat.

TROUGH - 1. The valley that exists between waves. 2. A trough is the opposite of a ridge in that it is an elongated low-pressure area extending out from a low. A trough normally indicates unsettled weather.

TUMBLE HOME - The opposite of flare. The shape of the hull as it moves outboard going down from the gunwale to the waterline or chine.

UNDERWAY - Movement. Usually referring to a vessel proceeding forward.

V-BOTTOM - A hull with the bottom section in the shape of a “V.”

V DRIVE - A drive system that has the output of the engine facing forward and coupled to a transmission. The prop shaft is then coupled to the transmission.

WAKE - Moving waves, track or path that a boat leaves behind it when moving across the water.

WATER LINE - The line of the water on the hull when the vessel is afloat.

WATCH - A 4 hour duty period while at sea.

WAVES - Waves are periodic disturbances of the sea's surface, caused by wind, seaquakes, and the gravitational pull of the moon and the sun.

FOUR WINNS®

Float Plan

Copy this page and fill out before going boating. Leave the completed copy with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return as scheduled. DO NOT file this plan with the Coast Guard.

Name _____ **Telephone** _____

Description of Boat _____ **Type** _____ **Color** _____ **Trim** _____

Registration Number _____

Length _____ **Name** _____ **Make** _____

Four Winns® Hull Identification Number _____

Other Information _____

Persons Aboard: Name	Age	Address	Telephone

Engine Type _____ **HP** _____

Number of Engines _____ **Fuel Capacity** _____

Survival Equipment:

PFDs _____ **Flares** _____ **Mirror** _____

Smoke Signals _____ **Flashlight** _____ **Food** _____

Paddles _____ **Water** _____ **Anchor** _____

Raft or Dinghy _____ **EPIRB** _____ **Sea Anchor** _____

Navigation Equipment:

Compass _____ **Loran** _____ **GPS** _____ **Radar** _____

Radio: Yes _____ **No** _____ **Type** _____ **Frequency** _____

Phone: Yes _____ **No** _____ **Phone Number** _____

Destination _____ **Estimated Time of Arrival** _____

Expected to Return By _____

AutoType _____ **License No.** _____ **Where** _____

If not returned by _____ **call the Coast Guard, or** _____
Local Marine Authority

Coast Guard Telephone Number: _____

Local Marine Authority Telephone Number: _____

Fuel Log

DATE	HOURS RUN	FUEL (GAL.)	RANGE (MILES)	RPM	MPH	GPH

Fuel Log

DATE	HOURS RUN	FUEL (GAL.)	RANGE (MILES)	RPM	MPH	GPH

Fuel Log

DATE	HOURS RUN	FUEL (GAL.)	RANGE (MILES)	RPM	MPH	GPH

DATE	HOURS	MAINTENANCE PERFORMED

DATE	HOURS	MAINTENANCE PERFORMED

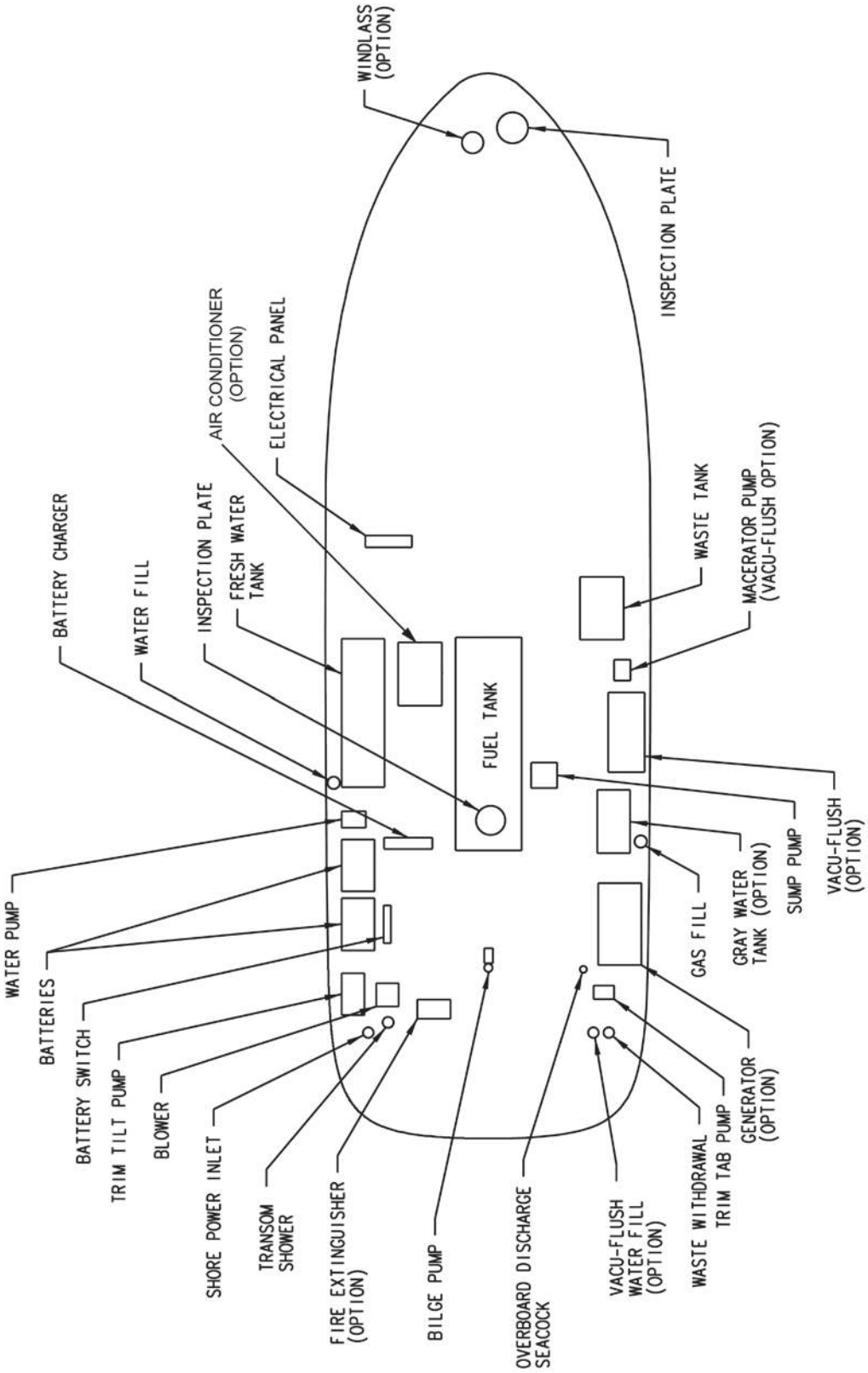
Service Log

DATE	HOURS	MAINTENANCE PERFORMED

BOAT MODEL	
HULL IDENTIFICATION NUMBER	
ENGINE MODEL	
ENGINE SERIAL NUMBER(S)	
DRIVE MODEL	
DRIVE SERIAL NUMBER(S)	
PROPELLER DIAMETER	
PROPELLER PITCH	
PROPELLER PART NUMBER(S)	
OIL FILTER NUMBER	
BOAT COLOR	
COCKPIT UPHOLSTERY COLOR	
CABIN UPHOLSTERY COLOR	
FUEL CAPACITY	
FUEL: ESTIMATED AVG. GALLON/HR USAGE	
IGNITION KEY NUMBER(S)	
GLOVE BOX KEY NUMBER	
COMPANIONWAY KEY NUMBER	
TRAILER MODEL	
TRAILER COLOR	
TRAILER SERIAL NUMBER	
TRAILER TIRE SIZE & MANUFACTURER	
SELLING DEALER	
ADDRESS	
CITY & STATE	
PHONE NUMBER	
MISCELLANEOUS	

310 Horizon™ Locator Drawing

(Note: Representative Location Only - availability and locations of equipment may vary depending on optional equipment installed. Locations and availability is subject to change without notice).



Navigational Aids Chart

REMEMBER THESE RULES

1. OVERTAKING - PASSING: Boat being passed has the right-of-way. KEEP CLEAR.
2. MEETING HEAD ON: Keep to the right.
3. CROSSING: Boat on right has the right-of-way. Slow down and permit boat to pass.

← PORT — STARBOARD →

Yield right-of-way to boats in your DANGER ZONE!

DANGER ZONE (Dead ahead to 2 points abaft your starboard beam)

STORM WARNINGS

RED FLAG — Small craft (winds to 33 knots)

2 RED FLAGS — Gale (winds up to 47 knots)

SQUARE RED FLAG BLACK BOX — (Storm)

2 SQUARE RED FLAGS BLACK BOX — (Hurricane)

WHISTLE SIGNALS

ONE LONG BLAST: Warning signal (Coming out of slip)

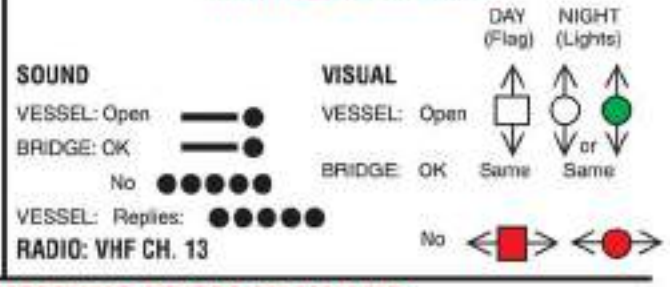
ONE SHORT BLAST: Pass on my port side

TWO SHORT BLASTS: Pass on my starboard side

THREE SHORT BLASTS: Engine(s) in reverse

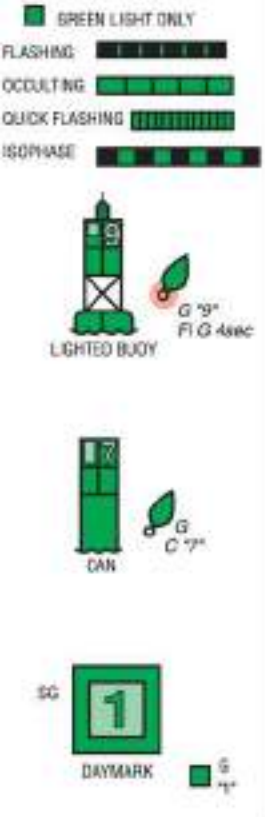
FIVE OR MORE BLASTS: Danger signal

BRIDGE SIGNALS

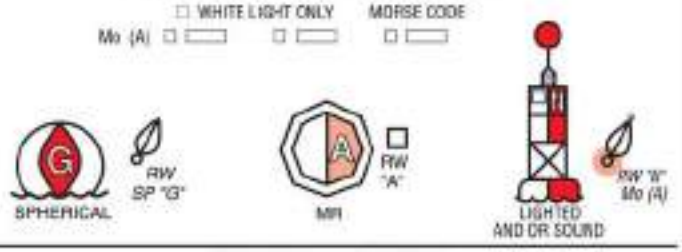


LATERAL AIDS AS SEEN ENTERING FROM SEAWARD

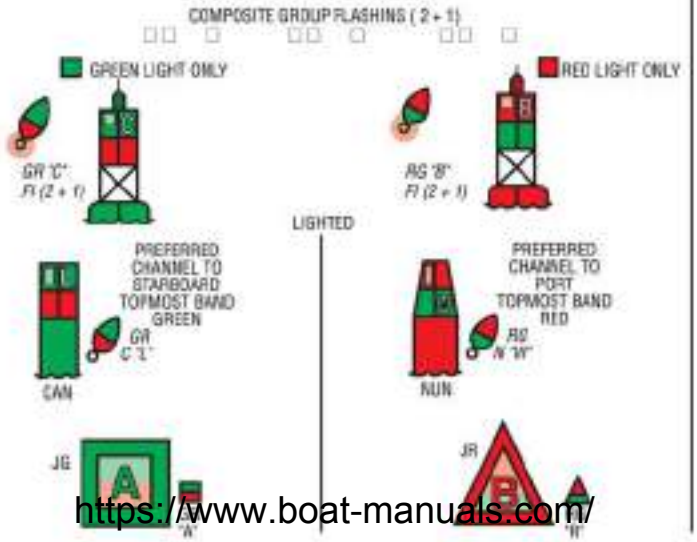
PORT SIDE
ODD NUMBERED AIDS



SAFE WATER MID-CHANNELS OR FAIRWAYS
NO NUMBERS — MAY BE LETTERED



PREFERRED CHANNEL



STARBOARD SIDE
EVEN NUMBERED AIDS