



**QUEST**

*BY FOUR WINNS*

# OWNERS MANUAL



**FOUR WINNS**

4 WINN WAY  
CADILLAC, MICHIGAN 49601

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# WARRANTY AND SERVICE

## A - 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 Four Winns Owner Protection Plan, included later in this section, defines the warranty coverage on all units manufactured by Four Winns, Inc. 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.

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

## A - 2 HULL STRUCTURE WARRANTY

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

## A - 3 WARRANTY REGISTRATION

A Four Winns Warranty Registration Card is attached to the Four Winns Owner Protection Plan statement. Your Four Winns Dealer is responsible for completing and mailing the warranty card at the time of purchase. This is the sole basis for establishing proof of ownership of the boat and trailer and corresponding warranty validation. Registration of the boat and engines with the manufacturer is required by the Federal Safe Boating Act of 1971.

Other equipment manufacturers also require that their products be registered with the respective companies. These warranty registration cards are provided with this manual.

## A - 4 TRANSFER OF WARRANTY

Four Winns confidence in the product and our warranty commitments can extend long after the original purchaser may choose to move on to a new boat. Four Winns Limited Warranty coverage and Extended Protection Plan, when applicable, are transferable to successive owners of the boat. Registration of the second or successive owners is required. The Four Winns Owner Protection Plan thoroughly describes the action required to transfer warranty coverage.

## A - 5 PRE-OWNED UNIT REGISTRATION

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

Purchasers of all Pre-Owned Four Winns Quest models are encouraged to register ownership with Four Winns. Receipt of this information can be of significant assistance should you, or a later owner, wish to document the vessel with the U.S. Coast Guard, or if Four Winns should encounter the need to contact the current owner.

To register ownership of a "Pre-Owned Four Winns boat," provide Four Winns with your name, address, daytime phone number, purchase date, and hull serial number of the boat purchased.

For your convenience, a blue Pre-Owned Four Winns Boat/Trailer Registration Card is included at the end of this section. Simply complete this card, or provide the information listed above in a letter to the Four Winns Customer Service Department. If you wish to transfer warranty or an extended service plan coverage, be sure to include a check to cover the necessary fees.

The hull serial number is embossed into the starboard side of the transom. The trailer serial number is imprinted on an identification plate affixed to the trailer frame.

Registration of a Pre-Owned Four Winns boat does not extend or in any way affect or modify the specific terms of the Four Winns '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, Inc. welcomes every purchaser of a Four Winns boat, new or used, to our family.

## **A - 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.

Information on the OOPS insurance protection plan on 1991 models (not available for 1992) is included with this manual. Review it carefully. Discuss any questions with your Four Winns dealer.

## **A - 7 SERIAL NUMBER RECORD**

The manufacturer, model, and serial number of major components are recorded during the assembly of each Four Winns Quest boat. Two copies of this completed form are included at the end of this section. One copy should be removed and kept by the dealer in his records. This can assist the dealer in processing warranty claims, or obtaining necessary information. The second copy should be kept in this owners manual.

## **A - 8 PRE-DELIVERY SERVICE**

Four Winns Inc. makes every effort so your boat is in as near as possible to 'turn key' condition upon delivery 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, while the boat is in the water.

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 Service Record form is provided in this section. This form lists the many items encompassed by the pre-delivery service previously described. The Four Winns Pre-Delivery Service Record is a four-part form. 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 Service Record upon completion of the work. You will be asked to sign this form upon accepting delivery of the boat. Both you and your dealer are to retain one copy of the completed Four Winns Pre-Delivery Service Record. The other two copies are to be mailed to the Four Winns Customer Service Department.

## **A - 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, Inc. 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 he does not have the needed item, he has the capability, through direct facsimile 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 how you can obtain necessary items.



## **A - 10 CUSTOMER SATISFACTION SURVEY**

Four Winns, in association with Outboard Marine Corporation, participate in an on-going market study of the purchasers of our products. Our concern and desire for your complete satisfaction is genuine. Should you receive such a survey, please take the few minutes necessary and respond frankly and honestly. Each dealer, the product, and our customer support services are rated based upon the responses received.

## **A - 11 WINN GEAR**

Show your colors! Four Winns offers a complete line of sports clothing designed to complement your new Quest boat. Your Four Winns dealer has a complete catalog and pricing.

# ENGINES AND DRIVE SYSTEMS

## B - 1 GENERAL



DO NOT attempt to service any outboard engine without being totally familiar with the safe and proper service procedures. Certain moving parts are exposed and can prove dangerous to one unfamiliar with the operation and function of the equipment.

Four Winns, Inc. does not manufacture outboard 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 Safe Boating 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 can be found in the pocket inside the front cover of this manual.)

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 outboard 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 F on Fuel Systems, and Section C on Control Systems.

## B - 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.



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. Incoherence
- b. Drowsiness
- c. Loss of Consciousness
- d. Headaches
- e. Nausea
- f. Vomiting

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

For additional information on carbon monoxide, please refer to Section H-4 Carbon Monoxide in this manual.

The following suggestions can help prevent exhaust fumes from entering the boat (Model 257):

1. DO NOT allow the boat to remain stationary with the engines running for an extended period of time.
2. Use extreme caution while operating the engines 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.

- Under certain conditions, exhaust gases can enter the boat through the sink drains. Each sink drain has a water trap installed to help prevent this. To be effective, the sink drains must have water in them. Normal use of the sinks will provide the water necessary.
- Persons sleeping can be easily overcome by carbon monoxide because they are unaware of its presence. Sleeping while the engines are 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. Open forward facing windows or deck hatches to provide fresh air ventilation. Keep hatches, windows, and doorways that face aft or towards the exhaust discharge closed.



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

- Ventilate the cabin while under way. Open a forward hatch, porthole, or window to allow air to travel through the cabin. Be very careful of operating the boat with the cabin door or other windows, hatches, or portholes that face aft, open. The natural vacuum created during operation may allow exhaust gasses to be drawn into the cabin.

### B - 3 OUTBOARD ENGINES

Consult the Engine Owners Manual provided with this manual for additional operation and maintenance information.

#### NOTICE

Always return the engine throttle lever to the extreme low speed position before shifting. NEVER shift when the engine speed is above 1000 rpm.

### B - 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.

#### 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 RPM's an engine will develop. This is due to the greater amount of propeller blade surface in contact with the water. See Figure B7.

#### 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 semi-solid 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 RPM's because of the greater bite taken by the blade with each rotation. See Figure B7.

#### 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. Twenty-five to thirty-five percent prop slip is common for a cruiser type boat operating at cruising speed.

Therefore the deduction can be made that a propeller, of a certain diameter, with a 10 inch pitch, rotating at 3600 revolutions per minute, with a prop slip of 30%, would move the boat at a rate of 24 miles per hour.

Changing either diameter or pitch will have an effect on engine speed and prop slip, and in turn, directly effect the performance of a boat. The propeller(s) included with each Four Winns boat provide 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 or diameter is required. If the engine RPM is too low, a decrease in pitch or diameter is required.

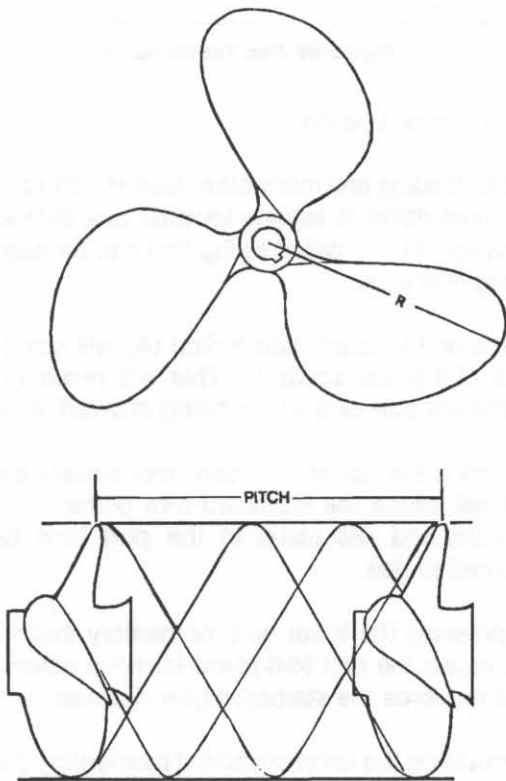


Figure B7 Propeller Pitch & Diameter

An engine that is not developing full power and the load carried in a boat will directly effect 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.

## B - 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 B8. 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 power trim and trim tabs. See Section B-9 Trim Tabs, for information on the use of trim tabs.

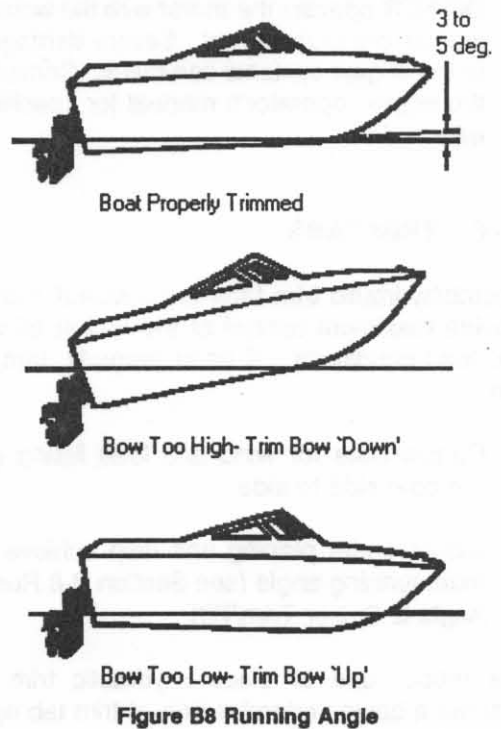


Figure B8 Running Angle

### A. Power Trim

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

The power trim system permits control of the trim angle of the outboard relative to the boat, at the touch of a button.

It allows the motor to be raised for shallow water operation. Power trim also allows the operator to

adjust the motor 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.

## B. Power Tilt

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

### 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.

## B - 6 TRIM TABS

Electric/hydraulic trim tabs are optional and help provide maximum control of the hull in all water and load conditions. If used properly, trim tabs can

- Compensate for wind and load listing (level the boat side to side).
- Induce faster planing and help achieve optimum running angle (see Section B-8 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.

The trim tab control uses two (2) momentary switches. The switches control the attitude or position of the boat. See Figure B9.

Before leaving the dock and utilizing the trim tabs, ensure the trim planes are in the full up position. Depress both upper halves of the momentary rocker switches and hold (for approximately 10 seconds) until the planes are full up.

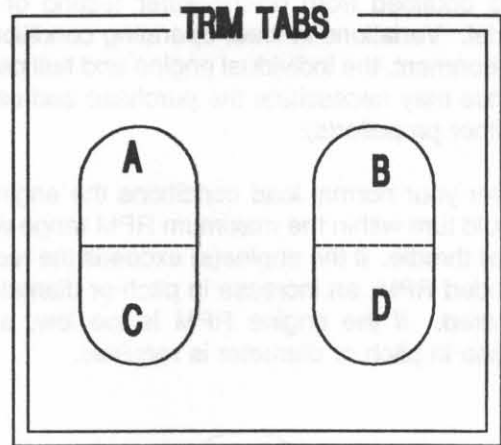


Figure B9 Trim Tab Switches

### 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 upper port switch (A) will move the port trim plane upward. This will result in the starboard bow of the boat being allowed to rise.

Pressing the upper starboard momentary switch (B) will cause the starboard trim plane to move upward and will result in the port bow being allowed to rise.

Depressing the lower port momentary switch (C) will cause the port trim plane to move downward and will force the starboard bow downward.

Depressing the lower starboard momentary switch (D) will cause the starboard trim plane to move downward and will force the port bow downward.

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

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

**WARNING**

Always press the switches in short 1/2 second bursts. If depressed too long, you can overcompensate, and potentially lose control. DO NOT try to correct the situation by depressing the other "Bow Down" toggle switch. Instead, raise the plane slightly by depressing the appropriate "Bow Up" or upper half of the toggle switch.

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

**B. Induce Planing & Control Trim Angle****CAUTION**

The use of trim tabs to attain quicker planing should not be used by inexperienced boaters. The combination of extreme inward drive position and extended trim tabs can dangerously affect the boats handling under certain sea conditions.

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, depress both lower momentary switches (C & D). This will cause both trim planes 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 planes 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, depressing both upper momentary switches (A & B) will cause both trim planes to move upward and will force the bow up. This should be used to adjust the running attitude of the boat to decrease the drag at cruising speed (see Section

B-5 Running Angle & Power Trim/Tilt) 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.

**WARNING**

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

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 planes 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.

**CAUTION**

The combination off extreme inward drive position and extended trim tabs will cause a severe bow down running angle. In certain sea conditions, this will limit the operator's control over the boat.

When running in a displacement (very slow speed) mode, better efficiency will be obtained with the trim planes 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 provided with this manual for specifications on the type of fluid to be

used and other operation and maintenance information.

## B - 7 ENGINE INSTRUMENTATION

The helm station is equipped with a complete set of engine instruments. These instruments allow the pilot to constantly monitor the operational condition of the engine. Close observation of these instruments could save the engine from damage.

### A. Tachometer

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.

Some engines are equipped with devices that limit engine rpm in accordance with the oil pressure, or engine temperature. Refer to the engine manual for information.

### B. Water Pressure Gauge

The water pressure gauge monitors the cooling system of the engine. A decrease in water pressure indicates a problem with the water intake and needs to be checked immediately. A drop in water pressure will result in an increase in engine temperature and could damage the engine.

#### NOTICE

Operation of an overheated engine can result in engine seizure. If the water pressure drops to zero, shut the engine off immediately.

### C. Voltmeter

The voltmeter monitors battery condition and thus alternator performance. See Section E Electrical Systems for additional information on voltmeter operation.

### D. Fuel Gauge

The Fuel Gauge displays the level of fuel that is present in the fuel tank(s). The fuel gauge(s) will operate when the battery selector switch is on (1, 2, or All) and the ignition switch supplying power to the fuel gauge is in the RUN position. Refer to Section E Electrical Systems, for additional information on battery switch 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. Relative adjustments can be made by your Four Winns dealer by bending the fuel sender float arm.

#### NOTICE

Use only clean, dry 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.

### E. Ignition Switch

The ignition switch has three positions: OFF, RUN, and START. 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). Additional information on ignition switch operation is covered in Section O Operation, of this manual.

### F. Emergency Ignition Shut-Off

The emergency ignition shut-off switch is provided on all Quest models. The switch has a lanyard (cord) attached to a clip which must be in position for the engine(s) to run. The helmsman can attach the cord to a belt loop, life jacket, etc. If

the clip is not in position, the starter and other systems will still operate but the engine will not start. Should the operator be thrown from the helm position, the lanyard will pull the clip from the switch and shut off the engine(s).



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

### G. Alarm Systems

Engine alarm systems are installed on all Quest models. The alarm is an audible alarm that is mounted in the helm area; it is actuated by engine water temperature, oil tank level and oil flows. The alarm will sound in the event of low engine oil or high engine coolant temperature. The alarm has different frequencies and additional information can be found in the engine owners manual.

The engine alarm will sound during engine start-up, or whenever the ignition switch is positioned to ON and the engine is not operating. The alarm sounds under these conditions because engine oil pressure is low; the alarm will cease to sound as soon as engine oil pressure rises to the proper level.

#### NOTICE

The engine alarm system installed in Four Winns boats monitors only engine water temperature and engine oil pressure. Always maintain a close visual watch on the transmission(s), engine fluid levels, bilge water level, etc.

### H. Instrument Maintenance

Electrical protection for instruments and ignition circuitry is provided by a fuse or circuit breaker on the instrument panel.

Periodically, spray the ignition switch(s) with a contact cleaner. The ignition switch(s) 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.

#### NOTICE

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 of the gauge face with warm water and mild liquid detergent will help eliminate the static electricity problem and improve gauge accuracy.



# 187, 207, & 217 QUEST PROP CHART

OUTBOARD MODEL -->	120 TL, TX	150 EX, NX	175 EX	200 TX, CX	250 TX
<b>187 QUEST</b> PROP SIZE PART NUMBERS	TX 13 1/4 X 17 ALUMINUM #391199	EX 14 1/2 X 19 ALUMINUM #391201			
SST PROP SIZE PART NUMBERS	TX 13 3/8 X 17 SST II #389948	EX 14 1/2 X 19 SST II #389924			
HA/HL PROP SIZE PART NUMBERS	TX 13 3/4 X 15 ALUM, #391198 SST II, #389949	EX 15 X 17 ALUM, #391200 SST II, #391290			
<b>207 QUEST</b> PROP SIZE PART NUMBERS	TX 13 3/4 X 15 ALUMINUM #391198	EX 15 X 17 ALUMINUM #391200		TX 14 1/2 X 19 ALUMINUM #391201	
SST PROP SIZE PART NUMBERS	TX 13 3/4 X 15 SST II #389949	EX 15 X 17 SST II #391290		TX 14 1/2 X 19 SST II #389924	
HA/HL PROP SIZE PART NUMBERS	N.R.	EX 15 X 16 SST II #389925		EX 15 X 17 ALUM, #391200 SST II, #391290	
<b>217 QUEST</b> PROP SIZE PART NUMBERS	TL & TX 13 X 19 ALUMINUM #390896 LH #390896 RH			TX 15 X 17 ALUM #391200	TX 14 1/2 X 19 ALUMINUM #391201
SST PROP SIZE PART NUMBERS	TL & TX 13 X 19 SST II #389510 LH #389510 RH			TX 15 X 17 SST II #391290	TX 14 1/2 X 19 SST II #389924
HA/HL PROP SIZE PART NUMBERS	TL & TX 13 3/8 X 17 SST II #389948 LH #389948 RH			TX 15 X 16 SST II #389925	USE STANDARD PROP

SST: STAINLESS STEEL (OMC SST II®)  
LH: LEFT HAND PROP  
N.R.: NOT RECOMMENDED

HA/HL: HIGH ALTITUDE/HEAVY LOAD  
RH: RIGHT HAND PROP

NOTE: The props listed above have been thoroughly tested by Four Winns and found to be the best prop for each boat/motor combination. Fuel economy and overall performance were taken into consideration. Under certain conditions, other props may be more appropriate for your boating needs. Consult your Four Winns dealer for his recommendations.

# 237 & 257 QUEST PROP CHART

OUTBOARD MODEL -->	150 EX, NX	175 EX	200 TX, CX	250 TX
<b>237 QUEST</b> PROP SIZE SST PART NUMBERS	EX & NX 14 1/2 X 19 SST II #390821 LH #389924 RH		TX (SINGLE) TX & CX 15 X 16 14 1/4 X 21 SST II SST II #389925 #390822 LH #389923 RH	TX 15 X 17 SST II #391290
HA/HL PROP SIZE PART NUMBERS	EX & NX 15 X 17 SST II #431930 LH #391290 RH		N.R. TX & CX (SINGLE) 14 1/2 X 19 SST II #390821 LH #389924 RH	N.R.
<b>257 QUEST</b> PROP SIZE PART NUMBERS	EX & NX 15 X 17 SST II #431930 LH #391290 RH		TX & CX 14 1/2 X 19 SST II #390821 LH #389924 RH	
HA/HL PROP SIZE PART NUMBERS	N.R.		TX & CX 15 X 17 SST II #431930 LH #391290 RH	

SST: STAINLESS STEEL (OMC SST II®)  
LH: LEFT HAND PROP  
N.R.: NOT RECOMMENDED

HA/HL: HIGH ALTITUDE/HEAVY LOAD  
RH: RIGHT HAND PROP

NOTE: The props listed above have been thoroughly tested by Four Winns and found to be the best prop for each boat/motor combination. Fuel economy and overall performance were taken into consideration. Under certain conditions, other props may be more appropriate for your boating needs. Consult your Four Winns dealer for his recommendations.

# CONTROL SYSTEMS

## C - 1 GENERAL

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

Some models are equipped with single lever controls. These have one lever for each engine. This lever actuates both the throttle and shift function. Neutral is in the center or straight up position. Rotating the control forward shifts the engines into forward. Rotating the control aft shifts the engines into reverse. Moving the lever further forward or aft increases engine speed.

Additional information on controls and their operation is discussed in Section C-2 and the engine manufacturer's information provided with this manual.

The cables are all push-pull type. Two cables per engine are required. The throttle cable connects to the speed control lever (spark advance and fuel control). The other cable connects the shift control to the outboard shift linkage.

## C - 2 CONTROL OPERATION

During the general operation of a dual engine boat, it is advantageous for both engines to be operated at the same engine speed (rpm). This reduces noise and vibration, and can increase propulsion system efficiency. Setting the throttles so the engines are running at the same rpm (synchronized) can be done by engine sounds or by referring to the tachometers. Attempting to synchronize the engines solely by using tachometer readings or control lever placement generally will be effective. When the engines are in proper synchronization, the throttle levers may not necessarily be in the same position. To assist with synchronization, an alternative would be to have your Four Winns dealer install an engine synchronizer.

All controls provide some means of increasing the engine speed during cold starting. On single lever controls, this is usually activated by placing the shift lever in neutral and pulling it outward or depressing the center button. This disengages the shift control mechanism and allows higher engine rpm. Refer to the control manufacturers information for additional details.

### NOTICE

Always return the throttle lever to the extreme low speed position before shifting. Never shift the unit while engine speed is above 1000 rpm's. Also, the control handle should be moved quickly when shifting. Slow movement through shift range can cause gear damage.

Please refer to the sections on trim/tilt (Section B-8), trim tabs (Section B-9), and the steering system (Section D) covered in this manual.

See the information provided by the control manufacturer. Details on control operation and maintenance are provided therein. Also see the Engine Owners Manual.

## C - 3 NEUTRAL SAFETY SWITCH

Every control system has a neutral safety switch incorporated into it. 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 shift lever may be necessary to locate the neutral position and disengage the safety cut-out 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.

## C - 4 CONTROL SYSTEM MAINTENANCE

Periodic inspections of the control(s), cables, and all connections should be made. Signs of loose-

ness, 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. Re-apply the grease if necessary.

Lubrication should be performed as often as necessary to keep the system operating smoothly. Cable manufacturers such as Teleflex, OMC, 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.



**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 included in the information provided by the control manufacturers.

# STEERING SYSTEMS

## D - 1 GENERAL

Four Winns utilizes either a hydraulic steering system or a rotary mechanized system. Hydraulic steering is standard on twin outboard engine installations.

The hydraulic steering system is comprised of the helm pump and reservoir, hydraulic hoses, and the hydraulic cylinder. The helm assembly acts as a pump to move the oil through the system. In many respects this type of steering is similar to the mechanical system. Instead of activating a cable, turning of the helm causes fluid in the hydraulic hoses to flow and activate the hydraulic cylinder to turn the outboard motor.

### NOTICE

If equipped with the hydraulic system, a slight clicking sound may be heard as the wheel is turned. This sound is the opening and closing of valves in the helm unit; this is normal.

In the mechanized 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.

A load is placed on the steering system by the propeller torque or water flowing past the outboard engine. The steering system is designed to normalize the effort required to turn the steering wheel throughout the average operating speed range. This is an advantage when the boat is on plane. This can be somewhat of a disadvantage at lower speeds in that the steering effort is not reduced to a level where it can be wheeled "lock to lock" without a concentrated turning effort.



Steering effort can vary significantly with engine acceleration, steering angle, trim

angle, and sea condition. Be prepared for additional steering loads at all times.

## D - 2 PROPELLER TORQUE

The propeller rotation of a single engine installation will exert a directional force on the steering system. This can cause the steering to be harder in one direction than the other, and is call propeller torque. If this occurs, adjust the outboard's trim tab. Refer to the engine manufacturer's owner's manual for information on adjusting the trim tab.

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.

## D - 3 STEERING SYSTEM 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.

The helm and cable assembly should be so adjusted that the steering wheel is centered with the 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.

All cables, helm assemblies, and steering connections should be periodically lubricated with a light, waterproof grease or as indicated in the manufacturers information provided with this manual.

Hydraulic steering systems must periodically have all air purged from the system. Review the information provided by the hydraulic steering manufacturer for proper specifications and details on system service and maintenance.

# STEERING

# ELECTRICAL SYSTEMS

## E - 1 GENERAL

All electrical equipment on the Four Winns Quest models operates on either 12 volt DC or 120 volt (220 volts on 50 Hertz models) AC electrical power. Dual battery systems are optional on most models and dockside power is available only on the model 257.



### 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 are experienced in making such installations.

## E - 2 BATTERY SYSTEM

### Single Battery System

A single battery is provided as standard equipment (12 volt DC) per Section E-1 above. The dash components are protected by circuit breakers located below the dash panel. See the locator drawing at the end of Section O Operations for the exact location of the battery.

When installing the battery, proceed as follows:

1. Connect the red (positive) cable running from the engine starter solenoid to the positive (+) battery terminal.
2. Connect the black (negative) battery cable running from the engine block to the negative (-) battery terminal. A black/green stripe ten gauge wire must also be installed on the negative battery terminal. This wire connects a negative accessory terminal blocks to ground.



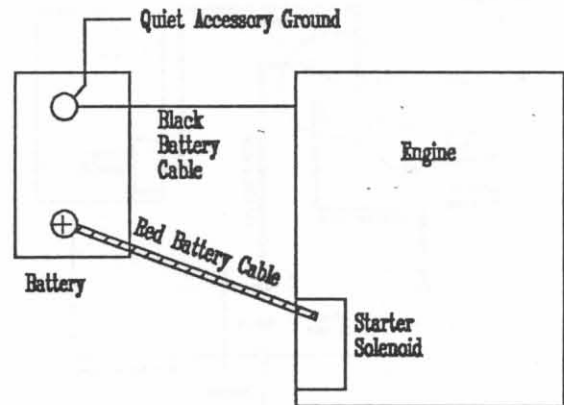
### CAUTION

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

### NOTICE

DO NOT disconnect the battery while the engine is running. Alternator and wiring damage could result.

Monitor the battery's condition regularly with the DC Voltmeter. See Section E-4 Voltmeter Use & Operation for more information.



Single Engine-Single Battery Installation

### Single Engine-Dual Battery System

A battery selector switch is provided on single engine, dual battery installations. This allows DC power to be used from either one or both batteries. See the locator drawing at the end of Section O Operations for the exact location of the battery selector switch.

#### A. Installation

When installing dual batteries, proceed as follows:

1. Connect each of the red battery cables leading from the battery selector switch to the

positive (+) terminal on each of the two batteries.

### NOTICE

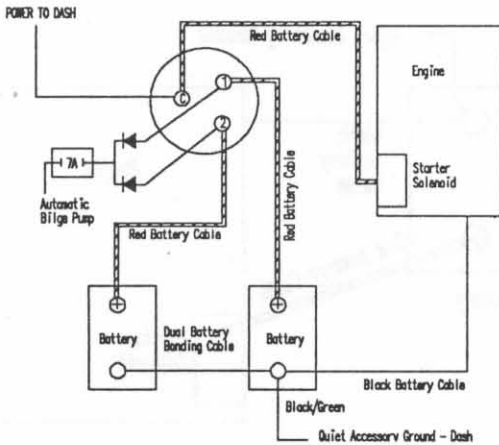
Be sure both cables are installed on the positive (+) battery terminals.

2. Connect the black battery cable and two black/green stripe leads (see Section E-2, 2 above) to the port negative (-) battery terminal. Install the black battery jumper cable between the 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.



Single Engine-Dual Battery Installation

## B. Operation

Power to the engines and all 12 volt electrical equipment (except the automatic bilge pump) is controlled by the battery selector switch. Separate breakers are provided on the battery selector switch panel to protect the automatic bilge pump and cabin DC electrical panel (model 257 only).

Battery selector switch positions:

"OFF" - With the battery selector switch in the OFF position, all 12 volt power to the boat is shut off except to the automatic bilge pump. Always

turn the battery selector 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 the engine is running. Alternator and wiring damage could result.

"1" - Turning the switch to position "1" will use battery #1 to power the engine(s) and 12 volt equipment. Except for the automatic bilge pumps, battery #2 will be isolated and remain in reserve. Only battery #1 will be charged by the alternator.

"2" - Turning the switch to position "2" will use battery #2. Except for the automatic bilge pumps, battery #1 is isolated and remains in reserve. Only battery #2 will be charged by the alternator.

"ALL" - With the battery selector switch in the ALL position, the batteries are connected in parallel. Both batteries will be used by the engine and all 12 volt equipment. Both batteries will be charged by the alternator.

The use of one battery at a time is recommended. Use one battery at a time by positioning the battery selector switch to either the #1 or #2 position.

Avoid using the ALL position. Use the ALL position only when a single battery is not capable of starting the engine.

Alternate battery usage increases battery longevity. Use battery #1 for the first day of a cruise and switch to battery #2 on the second day.

Position the battery selector switch to the battery that has sufficient power to start the engine. After the engine is running, turn the battery selector switch to the battery that has the lowest charge. This will allow the alternator to charge the low battery. Utilizing the battery selector switch in this manner (instead of using the ALL position) will supply a greater charge to the battery.

FOR EXAMPLE: If battery #1 is fully charged and battery #2 is in need of a charge, use battery #1



to start the engine. After the engine is running and warmed-up, turn the battery selector switch to the #2 position. This will permit the alternator to charge the low, #2 battery.

Monitor the battery condition regularly with the DC Voltmeter. See Section E-4 Voltmeter Use & Operation for more information.

### C. Battery Charger

Battery chargers are available only on the model 257. The batteries in a dual battery system may be charged by a battery charger/converter when the boat is connected to dockside power. The BATTERY CHARGER 1 & 2 circuit breakers on the battery selector switch panel protect the DC system during charger operation.

Additional information on the battery charger can be found in Section E-6b 120 Volt AC Equipment in this manual and refer to the manufacturer's literature provided with this manual.

### Dual Engines-Dual Battery System

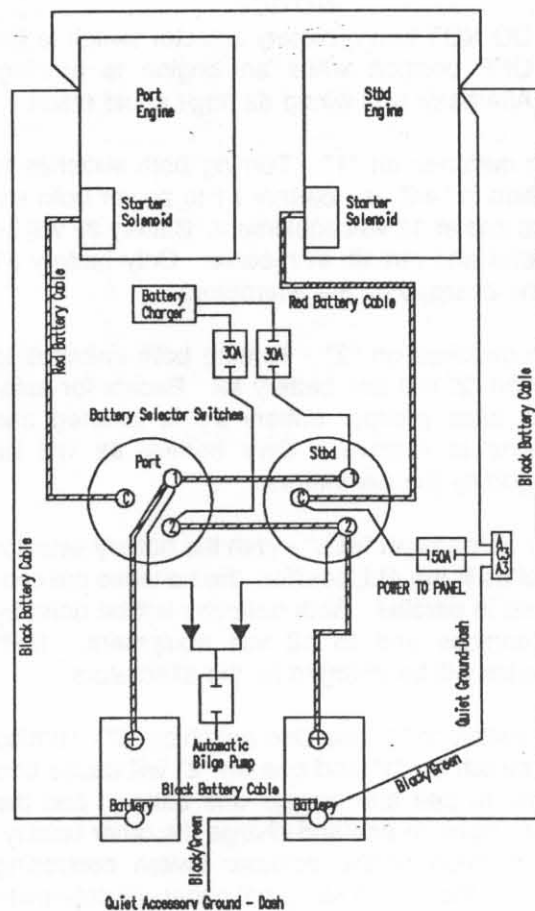
Two battery selector switches are provided on dual engine, dual battery installations. This allows DC power to be used from either one or both batteries. See the locator drawing at the end of Section O Operations for the exact location of the battery selector switches.

#### A. Installation

Installation of cables is the same as the section on Single Engine-Dual Battery System above except the ground cables. An additional black cable running from the other engine is installed on the starboard battery. Refer to the diagram below.

#### B. Operation

Power to the engines and all 12 volt electrical equipment (except the automatic bilge pump) is controlled by the battery selector switch. Separate breakers are provided on the battery selector switch panel to protect the battery charger, automatic bilge pump, cabin DC electrical panel and refrigerator.



**Dual Engine-Dual Battery Installation**

With two battery selector switch positions it is important to fully understand the possible combinations.

Battery selector switch positions:

Both switches "OFF" - With the battery selector switch in the OFF position, all 12 volt power to the boat is shut off except to the automatic bilge pump. Always turn the battery selector switches to the OFF position when the boat is unattended for an extended period.

## NOTICE

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

Both switches on "1" - Turning both switches to position "1" will use battery #1 to power both engines and all 12 volt equipment. Battery #2 will be isolated and remain in reserve. Only battery #1 will be charged by the alternators.

Both switches on "2" - Turning both switches to position "2" will use battery #2. Except for automatic bilge pumps, battery #1 is isolated and remains in reserve. Only battery #2 will be charged by the alternators.

Both switches on "ALL" - With the battery selector switches in the ALL position, the batteries are connected in parallel. Both batteries will be used by the engines and all 12 volt equipment. Both batteries will be charged by the alternators.

One switch on "1" and One switch on "2" - Turning one switch on "1" and one on "2" will cause one engine to use and charge one battery, and the other engine to use and charge the other battery. The position of the selector switch controlling power to the 12 volt electrical panel will determine which battery will be used by the electrical accessories.

One switch on "1" or "2" and One switch on "ALL" - Using the battery selector switches positioned in this manner is not recommended. Proper control of battery usage and charging operations cannot be maintained.

## NOTICE

Start one engine, and then the other. Attempting to start both engines by turning both ignition keys simultaneously may damage electrical components and is not recommended.

Avoid using the ALL position. Use the ALL position only when a single battery is not capable of starting the engine(s).

Position the battery selector switches to the battery that has sufficient power to start the en-

gines. After the engines are running, turn the battery selector switches, one at a time, to the battery position that has the lowest charge. This will allow the alternators to charge the low battery. Utilizing the battery selector switches in this manner (instead of using the ALL position) will supply a greater charge to the battery.

FOR EXAMPLE: If battery #1 is fully charged and battery #2 is in need of a charge, use battery #1 to start the engines. After both engines have started and are running and warmed-up, turn one battery selector switch to the #2 position. Then, turn the other battery selector switch to the #2 position. This will permit both alternators to charge the low, #2 battery.

## E - 3 12 VOLT ELECTRICAL EQUIPMENT

### A. Helm Equipment

The ignition, DC outlet, and panel switches are protected by a separate circuit breaker panel located below the dash or behind the dash panel sliding window (models 187, 207, & 217). Descriptions of individual switches are below.



Use only replacement circuit breakers that are of equal rating to the original circuit breakers. Refer to the circuit breakers or to the electrical schematic at the end of this section for proper fuse size.

Horn - To sound the horn, push the HORN button.

Aft Bilge Pump - The PUMP 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 or if no battery selector switch is installed. The auto-

matic 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.

**Forward Bilge or Sump Pump (Models 237 & 257 only)** - The forward bilge compartment has an automatic bilge pump or sump pump. It can also be activated manually by the FWD PUMP breaker switch. When the water entering the forward bilge cavity or sump from baitwells or drains and reaches a certain level, it is pumped overboard.

**Navigation & Anchor Lights** - Moving the NAV/ANC LTS switch towards the NAV position activates the bow lights and the all-around light or both portions of the mast light (on boats with hard or T-tops). Move the switch to the ANC position to activate the all-around light or both the fore and aft portion of the mast light. The center switch position is OFF.

**Cockpit Lights** - The CKPT LTS switch is used to activate the cockpit (courtesy) lights.

**Instrument Lights** - The INST LTS switch is used to activate the instrument lights on the dash.

**Panel Lights** - The PANEL LTS switch is used to activate the lights behind the switch panel. This switch may not be installed on later models.

**Wipers** - The WIPERS switch on the model 257 activates the windshield wiper(s). Moving the switch upwards will activate the starboard wiper. Moving the switch downwards will activate both wipers. The center switch position is OFF.

**Trim Tabs (Model 257 only)** - If the boat is equipped with electric/hydraulic trim tabs, the trim tabs are controlled by the TRIM TAB switches. Refer to Section B-9 Trim Tabs for more information.

**Accessories** - Accessory equipment such as the spotlight and marine radio have separate controls and are wired to the fuse block below the dash. For more information, refer to Section E-4b Installation of Additional 12 Volt Equipment.

## B. Installation of Additional 12 Volt Equipment

On the circuit breaker block, non-factory installed 12 volt accessory equipment can be connected to the "ACC" terminal blocks. Accessory equipment can also be wired directly to the "ACC" switches on the dash or DC panel.



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 (Model 257 Only)

The 30 amp circuit breaker located on the battery selector switch controls power to the 12 volt cabin panel.

**Pressure Water** - A pressure water pump delivers water to the head and galley faucets, and to the cockpit shower unit. The pressure water pump will operate automatically as long as the POTABLE WATER circuit breaker and switch are on. Turn the POTABLE WATER switch OFF when the water tank becomes empty, or when water will not be required for an extended period. Visual inspection is generally necessary to check the water level in the tank.

**Stereo** - The stereo has a separate switch on the unit and is protected by a circuit breaker labeled STEREO on the 12 volt cabin panel. A separate in-line fuse is provided in the wiring behind the stereo unit. To replace the fuse, remove the screws securing the stereo and DC panels to gain access to the wiring.

**Cabin Lights** - To turn the cabin lights on, activate the CABIN LTS switch on the 12 volt cabin panel.

## E - 4 120 (220) VOLT ELECTRICAL SYSTEM

The model 257 can be equipped with 30 amp, 120 volt, 60 Hertz (or 15 amp, 220 volt, 50 Hertz) AC electrical wiring. When the boat is connected to a shore power outlet, the AC system supplies electrical power to items such as the refrigerator, battery charger, and receptacles.

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.

The distribution box houses the system circuit breakers. The standard dockside system has a main circuit breaker which protects the overall distribution network. The MAIN circuit breaker 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 breaker to trip. To avoid this power spike, turn off the MAIN breaker before plugging in the shore power cord. Securely connect the power inlet of the boat and the shore power receptacle. If the connection is broken and later re-secured, the circuit breaker may trip. Connections must be secure for uninterrupted dockside service.

## E - 5 DOCKSIDE OPERATION



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



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. This connector is approved by National Marine Manufacturers Association and the American Boat and Yacht Council.

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



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 switch before connecting or disconnecting the shore power cable.
2. Connect shore power cable at 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 reversed polarity. If the reversed polarity light is activated, immediately disconnect the shore power cord. See Section E-6c Reverse Polarity Indicator.

- To disconnect shore power, turn off the main breaker switch on the AC electrical panel and disconnect the power cord from the shore power dockside receptacle first. Then, disconnect the cord from the boat.

#### NOTICE

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

### B. 120 Volt AC Equipment

All 12 volt equipment is isolated from the 120 volt AC system (except the refrigerator which is dual voltage). Appropriately labeled circuit breakers protect the refrigerator, charger, and receptacles. The receptacles can be used for 120 volt (220 volts on 50 Hertz models) household appliances. The battery charger is controlled by a circuit breaker on the AC electrical panel in the cabin. With dockside power connected and the BATTERY CHARGER circuit breaker on, the charger will convert 120 volt AC power to 12 volt DC power.

Always use battery selector switch position "1" or "2" when AC power is supplied to the battery charger.

#### NOTICE

If a 120 (220) volt battery charger is used, be sure the neutral lead of the charger is isolated from the ground or bonding circuit. Be sure the battery charger is of the type which properly senses battery requirements and does not overcharge or cause the electrolyte to boil.

The REFRIGERATOR circuit breaker must be on to operate on 120 voltage. If this breaker is off, the refrigerator will automatically operate on the 12 volt system. This can deplete the battery. Excessive drain on the battery may cause irreparable battery damage. The refrigerator will automatically operate on 120 volts when provided. Refer to Section I-1 Galley Equipment in this manual for more information.

The OUTLET circuit breakers supply power to all receptacles except the refrigerator receptacle.

Most receptacle circuits are capable of handling 15 amperes. Below is 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 below by 2. Usually, the power requirement is specified on the electrical item. This is only an approximation of the electric current usage normally experienced.

### Electrical Equipment

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

### 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.



ALWAYS check the Reverse Polarity Indicator Light in the AC distribution panel immediately upon connecting the shore power cord and turning on the AC MAIN circuit breaker. If the light is on, a problem with a reversed electrical connection exists. Turn the AC MAIN circuit breaker off and disconnect the shore power cord immediately. Notify the marina and have

the dock's shore power connection inspected.

The Reverse Polarity Indicator Light can be tested to verify proper operation by pressing the REVERSE POLARITY INDICATOR switch at any time after shore power connection and turning on the AC MAIN circuit breaker on the 120 volt AC electrical panel. The light should activate upon pressing the switch. This is normal and does not indicate a reverse polarity condition. It only indicates that the light works properly.

Under proper operating conditions, the Reverse Polarity Indicator Light will not be on.

#### NOTICE

Some marina shore power systems may be improperly grounded to retard electrolysis (see Section E-8a Electrolysis). Before using any 120 volt equipment, make sure the reverse polarity light does not come on when tested.

#### 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.

## E - 6 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 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 over-use. Alternating battery usage is important. Refer to the battery manufacturer's instructions provided with this manual for more information.

### B. Electrical Wiring Maintenance

Periodically, inspect all wiring for nicks, chaffing, embrittlement, 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.



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.



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.

## E - 7 ELECTROLYSIS & CORROSION

Two types of electrically induced underwater corrosion occasionally affect boats and the related components. This corrosion appears as surface pitting or deterioration. These two types are as follows:

### A. Electrolysis

Electrolysis is the decomposition of chemical compounds by electric current. Electrolysis can be caused by the polarity of the dockside wiring system of the boat being reversed from the power source (reversed polarity) or surrounding boats, an improperly wired battery installation, other boats that are in close proximity that have electrical power leakages, or any other source close to the boat that has electrical power leakage into the water. Stern drive units are especially vulnerable to electrolysis. However, it can attack a fiberglass hull. Periodically inspect the drive components and thru-hull fittings to determine if electrolysis damage exists. Then determine the source of the problem. If the source cannot be found, it may be necessary to change the place of mooring.

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 electrolysis. Have an experienced marine electrician review any battery charger installation to ensure an electrolysis problem will not develop. Be sure the battery connections are properly made. Improper battery connection is a common cause of electrolysis.

### B. Galvanic Corrosion

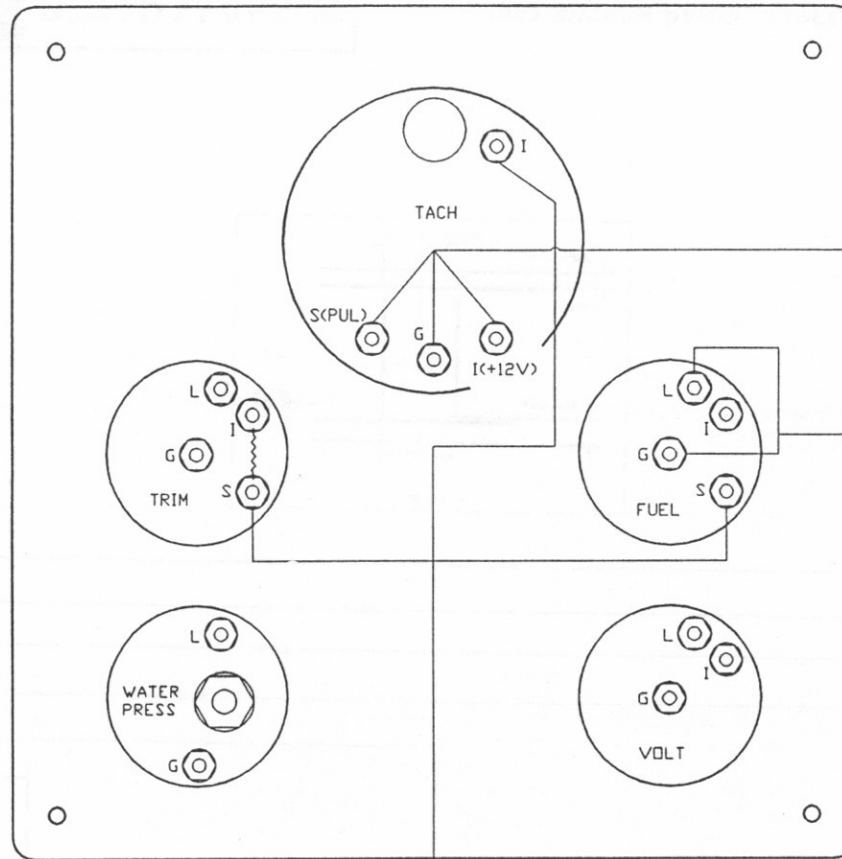
Electrical currents produced by two dissimilar metals in an electrolytic solution is galvanic corrosion. Polluted and salt water are much better electrolytic solutions than clean, fresh water. Stern drive manufacturers provide a sacrificial anode as a metal plate affixed to the stern drive. Periodic inspection of these anodes for decomposition, and replacement when they become worn, will increase the longevity of underwater equipment. If dockage is in salt water, at a steel pier, near large metal boats, or anywhere else where

substantial metal is in contact with the water, additional corrosion protection should be provided.

Additional protection against galvanic corrosion is provided by the installation of a zinc saver. Galvanic currents between dissimilar metals in the water are counteracted by a 1½ volt current through the grounding circuits. The zinc saver is located behind the main electrical panel.

VIEW FROM BACK OF PANEL

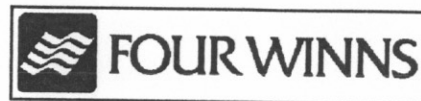
DESIGNATION	WIRE DESCRIPTION	FUNCTION
G	16 AWG BLACK	COMMON GROUND
I	16 AWG PURPLE	COMMON IGNITION
L	16 AWG DK. BLUE	COMMON LIGHT
S	16 AWG PINK	FUEL SENDER
S	16 GREY	TACH SENDER
S	16 WHITE/BROWN	TRIM SENDER



3 POS PVC  
#90014  
TACH SENDER

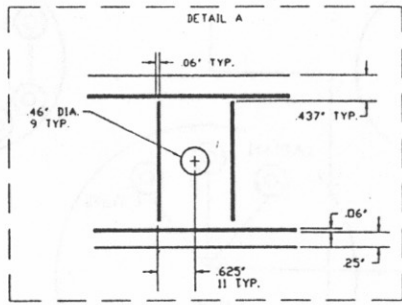
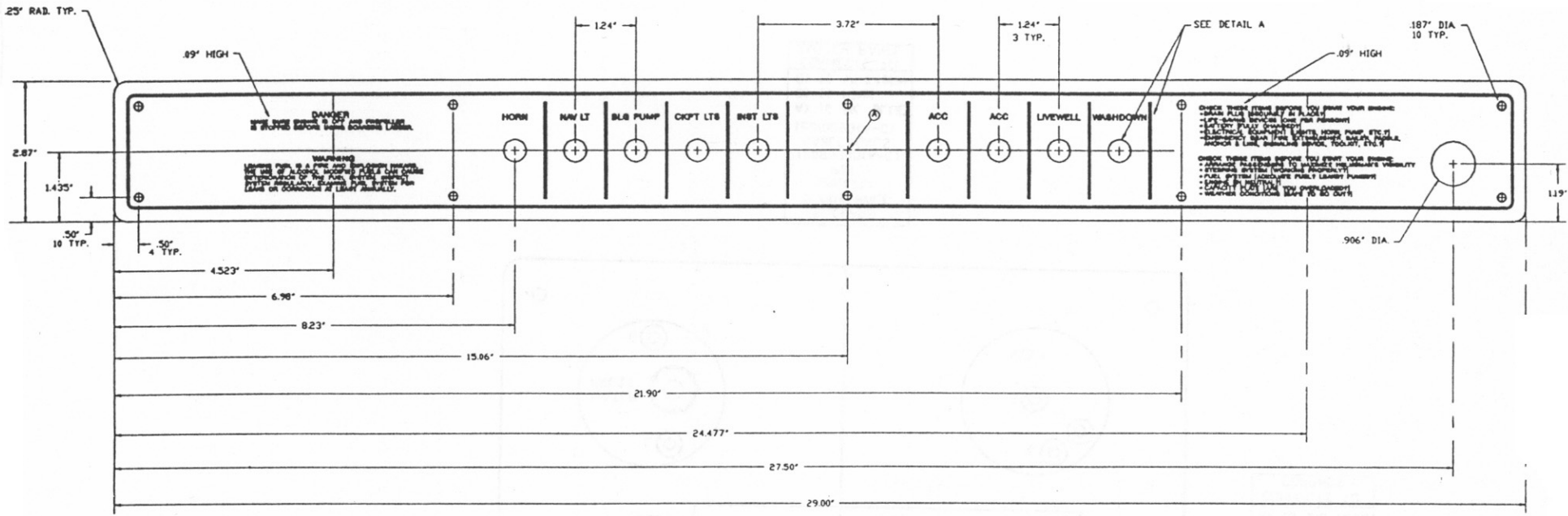
PACKARD  
2 POS FEMALE  
12015792  
SLEEVES  
12010182(A&B)  
CABLESEALS  
12010293(A&B)  
A) 16 BLACK  
B) 16 DK. BLUE  
CONNECTS TO  
COMPASS

PACKARD  
3 POS MALE  
12010717  
PIN  
12089305(A-C)  
CABLESEALS  
12010293(A-C)  
A) 16 DK. BLUE  
B) 16 PINK  
C) 16 WHT/BRN  
CONNECTS TO  
SWITCH PANEL

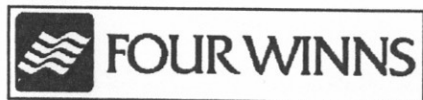
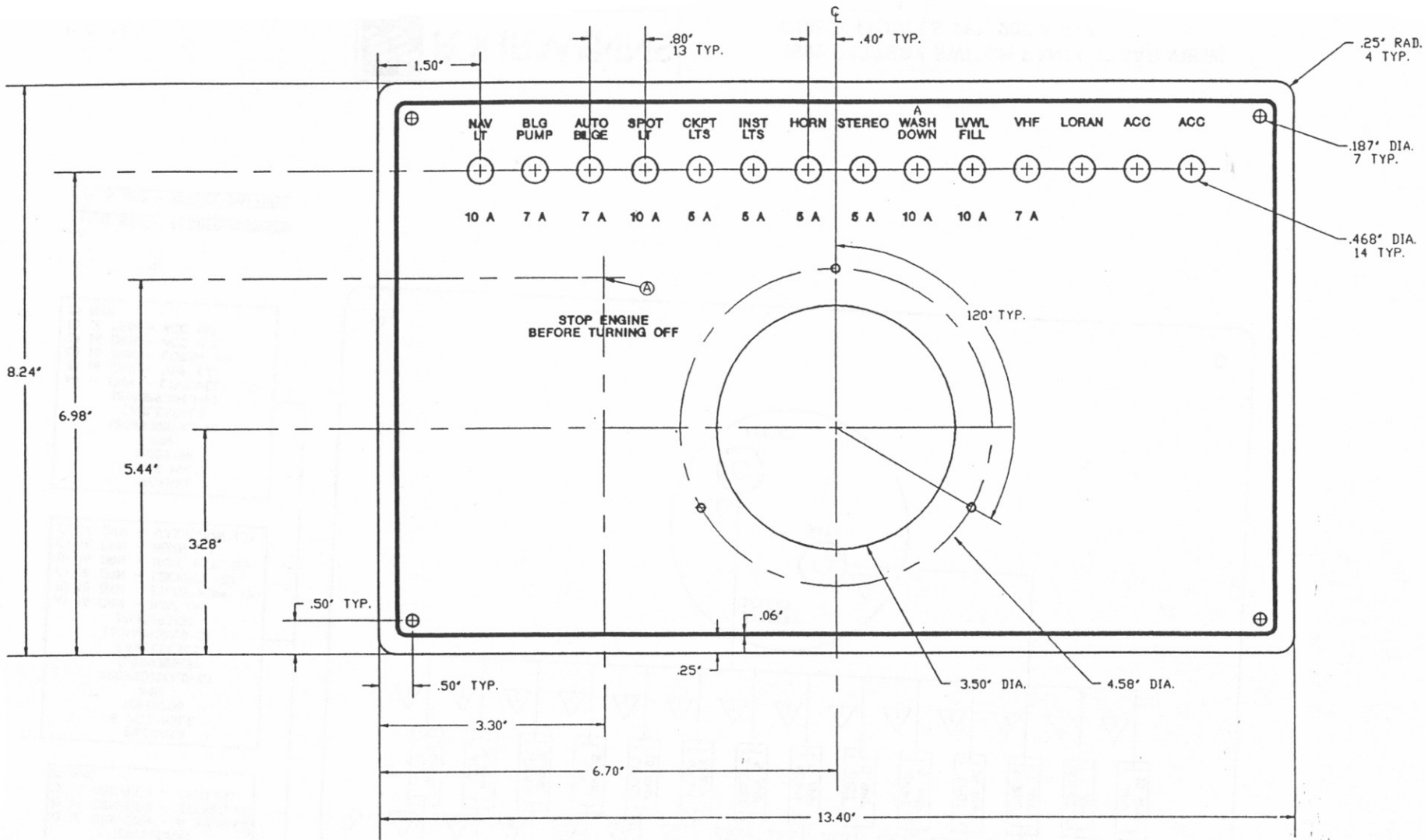


1992 GAUGE PANEL ASSEMBLY  
QUEST MODELS 187, 207 & 217





1992 SWITCH PANEL ASSEMBLY  
 QUEST MODELS 187, 207 & 217



1992 BATTERY SWITCH PANEL ASSEMBLY  
QUEST MODELS 187, 207 & 217

PACKARD  
4 PDS MALE  
12010974  
PIN  
12089305(B&C)  
12089306(A)  
CABLESEALS  
12010293(B&C)  
12015193(A)

A) 12 BRN/DRN - A BILGE (3)  
B) 16 DRN/GRN - STERED (5)  
C) 16 DRN/RED - SPOT (4)  
D) N/C

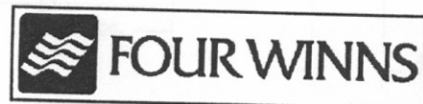
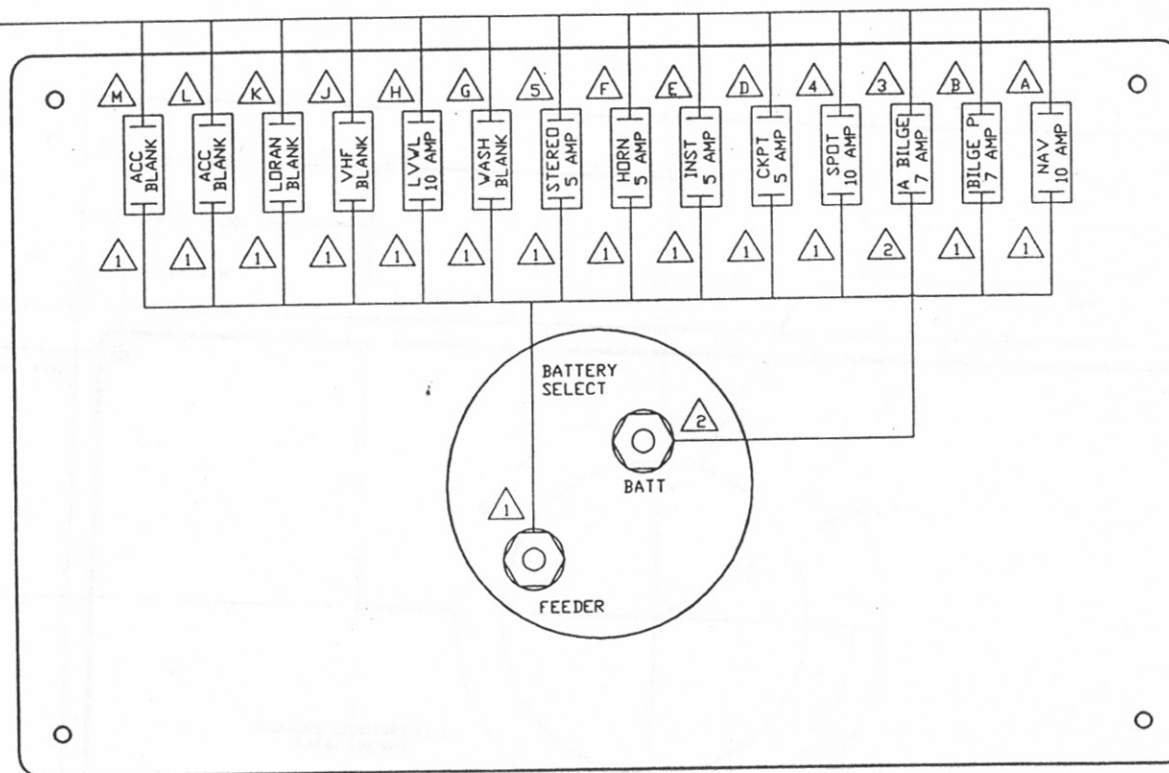
PACKARD  
6 PDS MALE  
12020786  
PIN  
12089305(A,D-G)  
12089306(B)  
CABLESEALS  
12010293(A,D-G)  
12015193(B)

A) 16 DRN - NAV (A)  
B) 12 DRN - BILGE PUMP (B)  
C) 16 DRN - COCKPIT (D)  
D) 16 DRN - INST. LTS. (E)  
E) 16 DRN - HORN (F)  
F) 14 DRN - WASHDOWN (G)

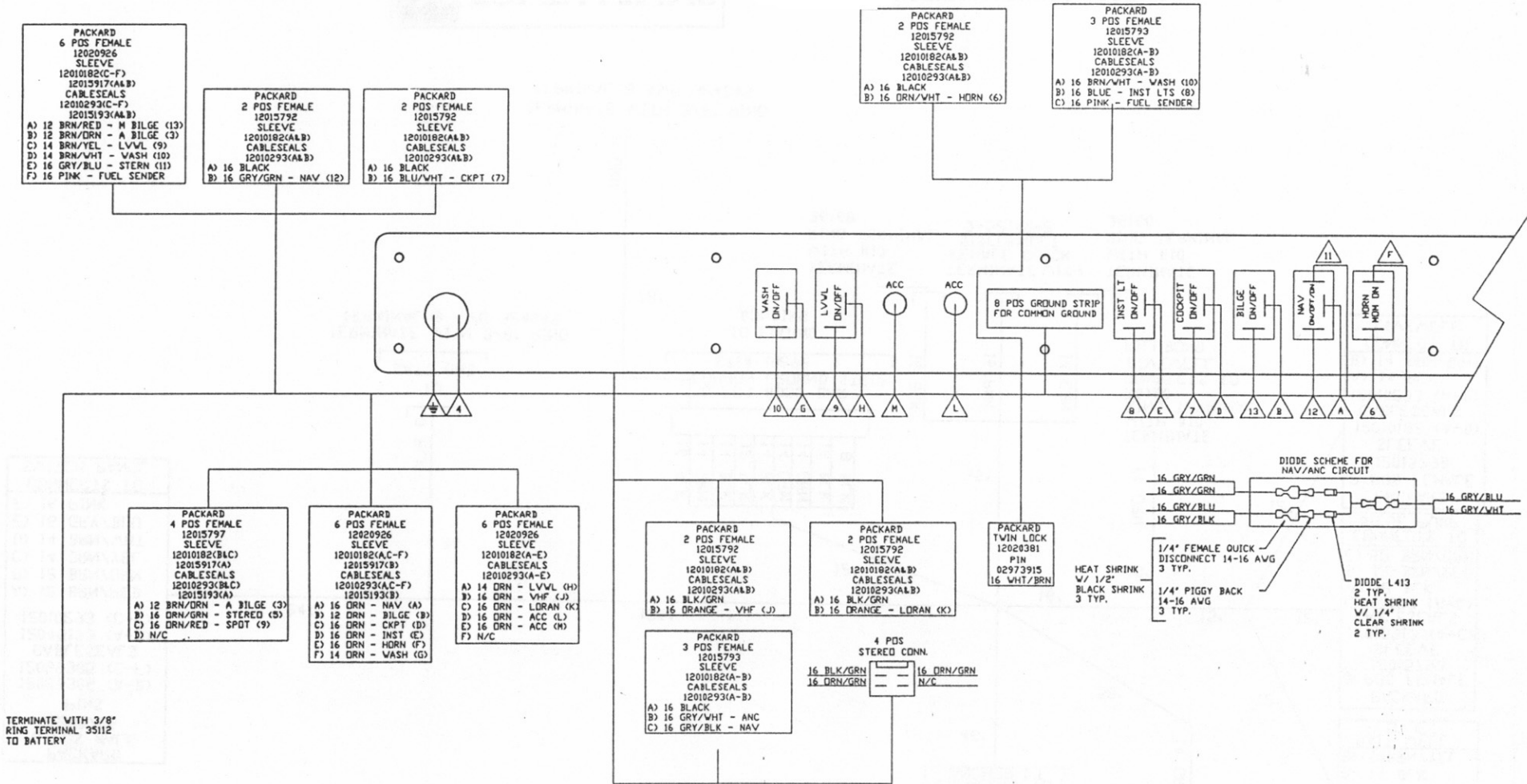
PACKARD  
6 PDS MALE  
12020786  
PIN  
12089305(H,J-M)  
CABLESEALS  
12010293(H,J-M)

A) 14 DRN - LIVEWELL (H)  
B) 16 DRN - VHF (J)  
C) 16 DRN - LDRAN (K)  
D) 16 DRN - ACC (L)  
E) 16 DRN - ACC (M)  
F) N/C

VIEW FROM BACK OF PANEL



1992 BATTERY SWITCH PANEL (REAR VIEW)  
QUEST MODELS 187, 207 & 217



1992 SWITCH PANEL WIRING ASSEMBLY  
QUEST MODELS 187, 207 & 217

PACKARD  
6 POS MALE  
1202786  
PINS  
12089306 (A-B)  
12089305 (C-F)  
CABLESEALS  
12045193 (A-B)  
12010293 (C-F)

A) 12 BRN/RED  
B) 12 BRN/DRN  
C) 14 BRN/YEL  
D) 14 BRN/WHT  
E) 16 GRY/BLU  
F) 16 PINK

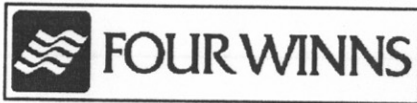
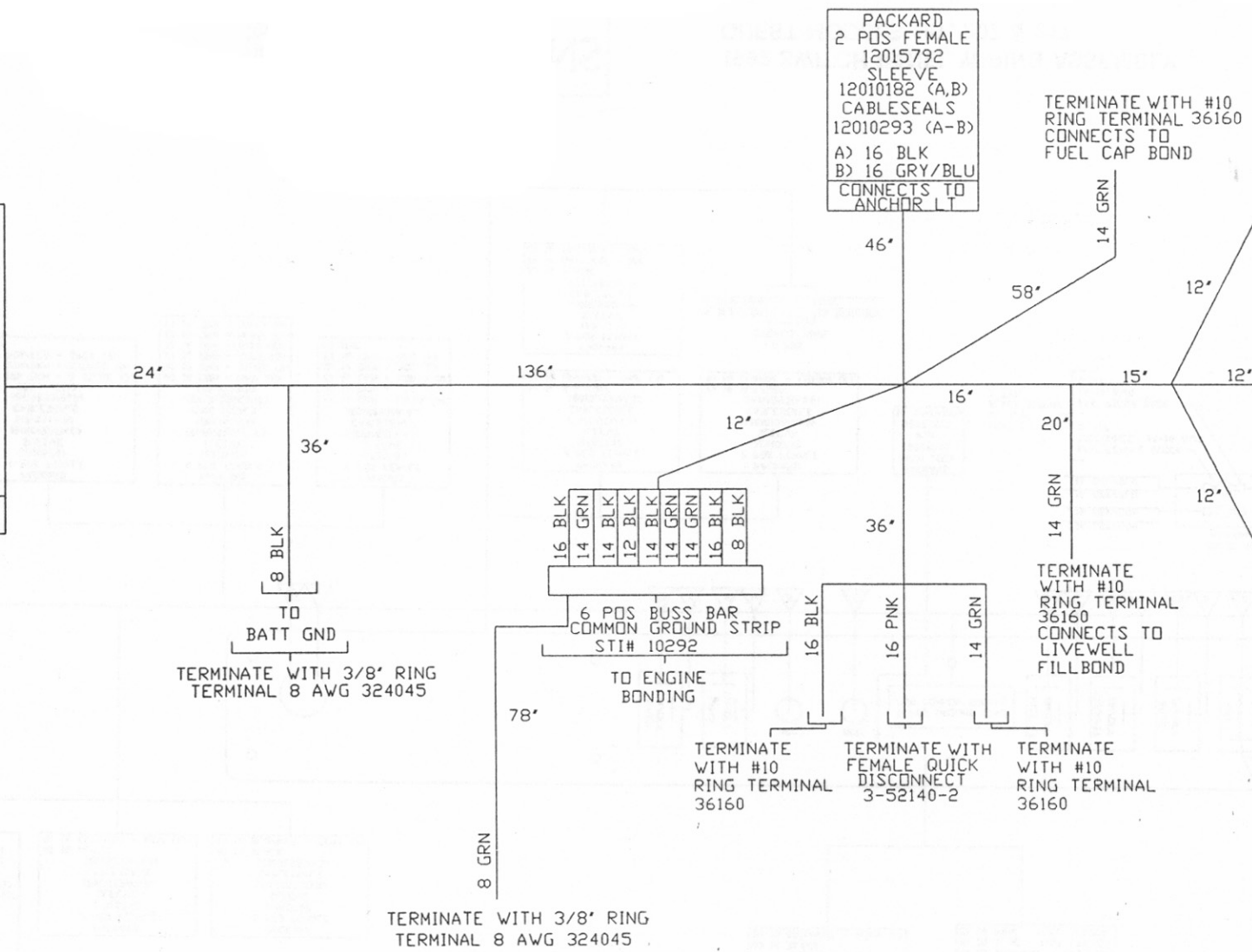
CONNECTS TO  
SWITCH PANEL

PACKARD  
2 POS FEMALE  
12015792  
SLEEVE  
12010182 (A,B)  
CABLESEALS  
12010293 (A-B)  
A) 16 BLK  
B) 16 GRY/BLU  
CONNECTS TO  
ANCHOR LT

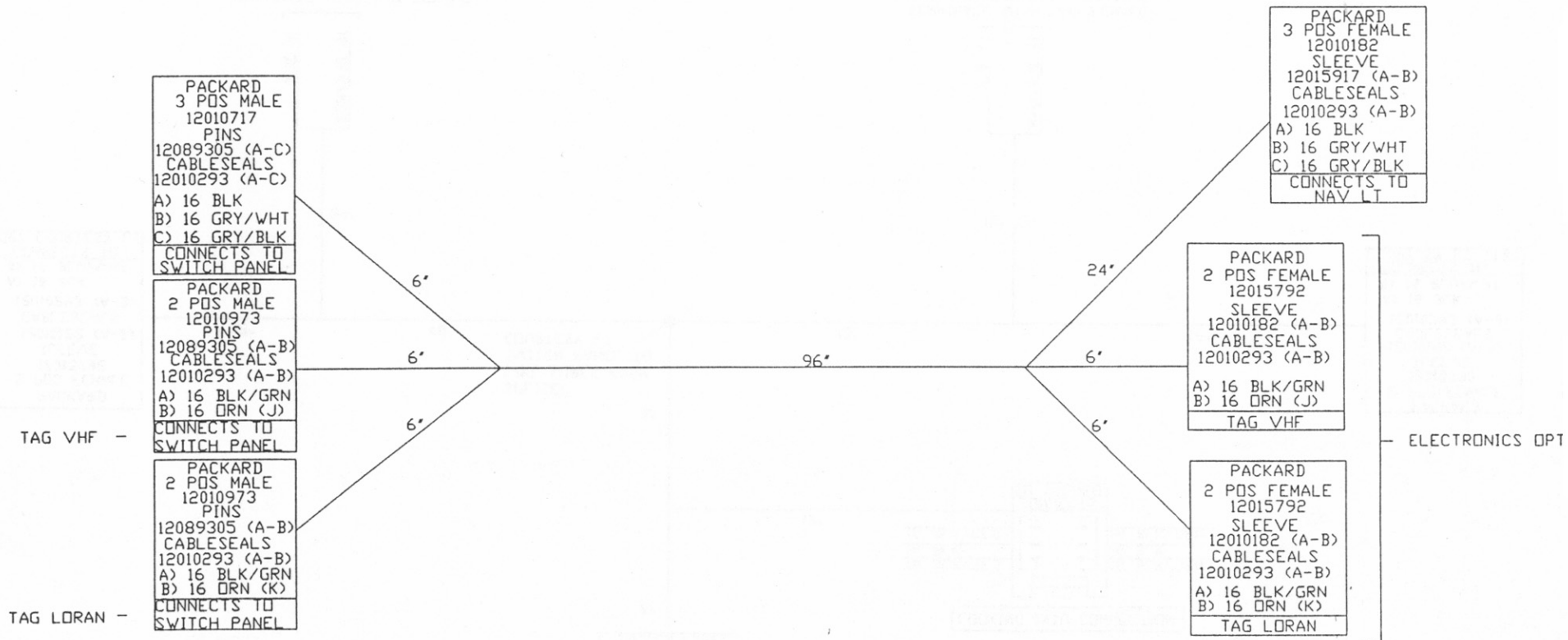
PACKARD  
2 POS FEMALE  
12015792  
SLEEVE  
12010182 (A-B)  
CABLESEALS  
12010293 (A-B)  
A) 14 BLK  
B) 14BRN/YEL  
BAIT WELL  
FLO JET

PACKARD  
3 POS FEMALE  
12015793  
SLEEVE  
12015917 (A-C)  
CABLESEALS  
12045193 (A-C)  
A) 12 BLK  
B) 12 BRN/RED  
C) 12 BRN/DRN  
CONNECTS TO  
BILGE PUMP

PACKARD  
2 POS FEMALE  
12015792  
SLEEVE  
12010182 (A-B)  
CABLESEALS  
12010293 (A-B)  
A) 14' BLK  
B) 14 BRN/WHT  
CONNECT TO  
LIVEWELL

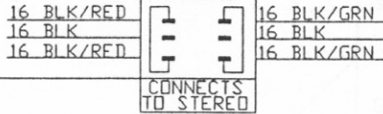


1992 SYSTEM HARNESS ASSEMBLY  
QUEST MODELS 187, 207 & 217



PACKARD  
2 POS MALE  
12010973  
PINS  
12089305 (A-B)  
CABLESEALS  
12010293 (A-B)  
A) 16 BLK  
B) 16 BLU/WHT  
CONNECTS TO  
SWITCH PANEL

LOOKING INTO CONNECTION



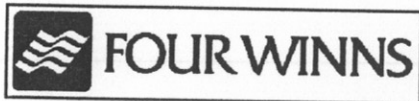
PACKARD  
2 POS FEMALE  
12015792  
SLEEVE  
12010182 (A-B)  
CABLESEALS  
12010293 (A-B)  
A) 16 BLK  
B) 16 BLU/WHT  
CONNECTS TO  
PORT COURTESY LT

SPLICE:  
LIKE WIRES FROM  
SWITCH PANEL TO  
COURTESY LT

PACKARD  
2 POS FEMALE  
12015792  
SLEEVE  
12010182 (A-B)  
CABLESEALS  
12010293 (A-B)  
A) 16 BLK  
B) 16 BLU/WHT  
CONNECTS TO  
COURTESY LT STBD

TERMINATE WITH 1/4" FEMALE  
QUICK DISCONNECT 3-52140-2

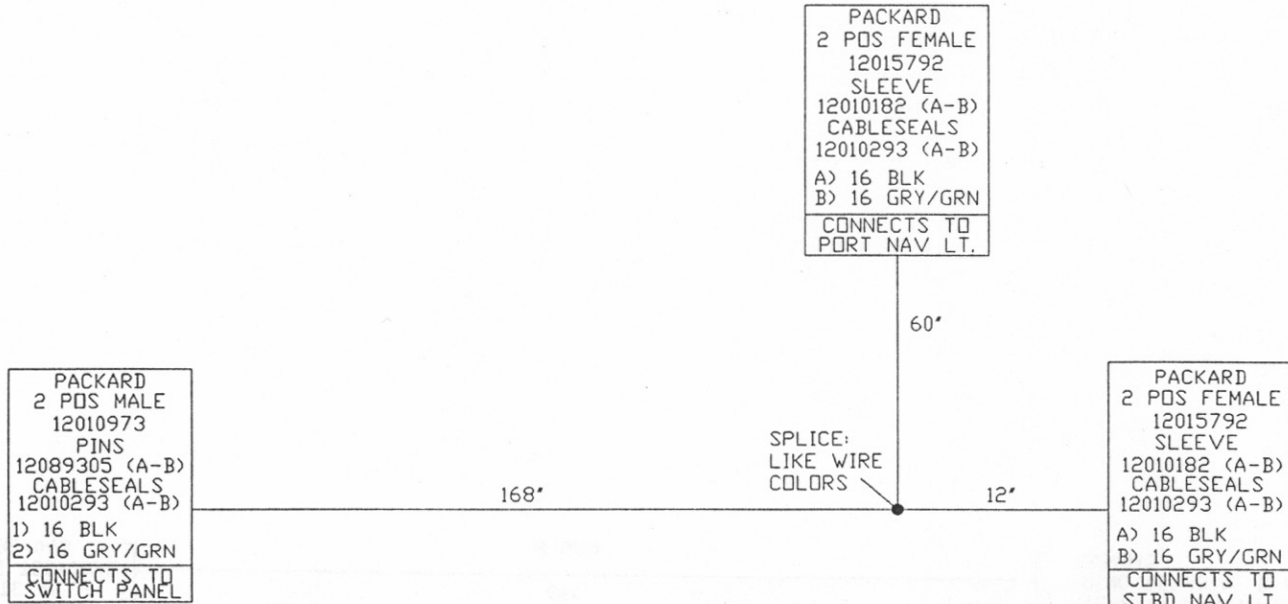
TERMINATE WITH 1/4" FEMALE  
QUICK DISCONNECT 3-52140-2



1992 COURTESY LIGHT & SPEAKER HARNESS ASSEMBLY  
QUEST MODELS 187, 207 & 217



QUEST MODELS 187, 207 & 217  
1992 NAVIGATION LIGHT HARNESS ASSEMBLY



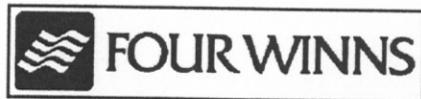
1992 NAVIGATION LIGHT HARNESS ASSEMBLY  
QUEST MODELS 187, 207 & 217



TERMINATE WITH  
#10 RING TERMINAL  
8 AWG 324043

60'  
8 GRN

TERMINATE WITH 3/8"  
RING TERMINAL 8 AWG  
324045



1992 BONDING SYSTEM HARNESS ASSEMBLY  
QUEST MODELS 187, 207 & 217

# BE CAUTIOUS WHEN USING GASOLINE THAT CONTAINS ALCOHOL



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 also creates many safety and performance related problems for boaters.

## PROBLEMS THAT MAY BE EXPERIENCED WHEN USING BLENDED GASOLINE

- A. Premature deterioration of fuel system components**  
Alcohol will attack rubber fuel hoses, fuel tanks, fuel filters, fuel pumps and rubber gaskets. This deterioration will lead to fuel system leakage.
- B. Phase separation of fuel**  
Water that 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 wide-spread. 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 methanol). If alcohol content is not posted, ask and avoid using fuel containing alcohol if possible.

## ASSUME BLENDED GASOLINE IS BEING USED AND FOLLOW THESE RECOMMENDATIONS

- A. 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.
- B. Ventilation**  
DO NOT start the engine(s) if gasoline odors are detected.
- C. Frequently inspect the fuel system fittings**  
Check the fuel tanks, pumps and filters for signs of corrosion. Visually inspect for deteriorating metal fittings at the fuel hose connections.



Fuel leaks in hoses or at fittings are extremely dangerous. 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.

# FUEL SYSTEMS

## F - 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.

### NOTICE

Use only clean, dry 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.

Tanks on Quest boats are located forward of the aft bilge compartment below the floor. Below is a list of fuel tank capacities by model.

**Fuel Tank Capacities**

Model	Tank Capacities
187	Sgl. - 45 gal.
207	Sgl. - 85 gal.
217	Sgl. - 115 gal.
237	Sgl. - 145 gal. Opt. - 195 gal.
257	Sgl. - 250 gal.

### 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 Service Record 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 FUEL or GAS. Be sure to utilize the proper type and grade fuel. See Section F-3 for additional information.



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

The o-ring seals on the fuel fill cap assist in sealing when closed. A missing or damaged o-ring can allow water on the surrounding surfaces to run into the tank.

Periodically inspect the cap and the fuel deck plate. The O-ring seal, if so equipped, should be inspected for cracks or damage and replaced as necessary. Light lubrication with a light water proof grease recommended for such applications can extend the o-rings longevity.

### C. Fuel Vents

Each fuel tank is vented overboard. While the tank is being filled, the air displaced by the fuel escapes through the vent. When the tank is almost full, fuel will be ejected from the fuel vent.



DO NOT overfill or overflow the tank, or allow fuel spills into the hull or bilge.

After fueling, replace the fill cap(s), and wash the areas around the fuel fill plate and below the fuel vent(s). 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.

Periodically, remove the caps from the fuel vent(s), clean the vent of any dirt, wax, etc. Be sure the caps are replaced securely after cleaning. The vents are designed to keep insects and foreign matter from contaminating the fuel and fuel system.

#### D. Anti-Syphon Valves

Fuel withdrawal lines are equipped with anti-syphon valves where the lines attach to the fuel tanks. These valves prevent gasoline from syphoning out of the fuel tank(s) should a line rupture. See Figure F1 for anti-syphon location.

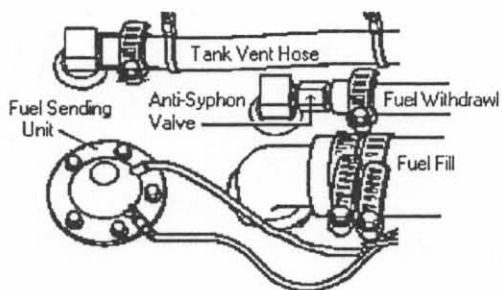


Figure F1 Fuel Tank Fittings

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(s), the relative trim angle of the boat may cause the fuel to flow away from the withdrawal(s).

#### NOTICE

On the Four Winns Quests, access plates are provided for the fuel pick-up and sender.

#### E. Fuel Gauge

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

#### F. Fuel Filters

Fuel filters are installed on each engine. Filters should be cleaned frequently to assure an adequate supply of clean, dry fuel to the engine(s). Refer to the engine manual for additional information.

#### G. Use and Maintenance



#### WARNING

DO NOT let the odor of gasoline go unchecked. If the odor of gasoline is noted, shut off all engines, 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.

Periodically inspect all connections for leakage and all hoses for damage or deterioration. Replace as necessary.



#### WARNING

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

#### F - 2 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 and galley fires (model 257 only).
  - d. Position the Battery Selector Switches to OFF (if boat is so equipped).

3. Before starting to fuel:
  - a. Ensure that boat is moored securely.
  - b. Close all ports, windows, doors and hatches (model 257 only).
  - c. Be sure the proper type of grade of fuel as recommended by your Engine Owners Manual is used.
  - d. Determine how much additional fuel is required to avoid overflow.
4. During fueling:

Keep the fill nozzle in contact with the metal fuel opening at all times to guard against possible static spark.



DO NOT overflow the tank or allow fuel spills into the hull or bilges. Visually monitor the fuel vent located on either the transom or side of the hull. When the tank is full, fuel will flow from the fuel vent.

5. After fueling:
  - a. Replace all fill caps securely.
  - b. Wipe up any spilled fuel.
  - c. Open all ports, windows, doors and hatches.
  - e. Determine that there is no odor of gasoline in the engine compartment or below decks before starting machinery, turning on lights or lighting fires.
  - f. Be prepared to cast off moorings as soon as engines are started.

# WATER AND WASTE SYSTEMS

## G - 1 GENERAL

All Four Winns Quest models use seawater for the livewells and washdown. A separate fresh water system is available only on the model 257. Drawings of the water system are included at the end of this section

## G - 2 FRESH WATER SYSTEM

### A. Components

The fresh water system on the model 257 consists of a 20 gallon water supply tank, water distribution lines and a distribution pump. The water fill deck plate for the fresh water system is located on the deck. Always fill the tank slowly. (Refer to the locator drawing at the end of Section O Operation).



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

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.

The water pump is an automatic, on-off, self-priming pump that can service several outlets at once. The pump will build up water pressure and will turn off when it reaches 35 psi. It will generate 20 psi with the faucets open.

The fresh water pump on the model 257 is located below the center storage lid near the batteries. Refer to the locator drawing at the end of Section O on Operations for more information.

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 Ametek Inc. Also, chemicals such as Sudbury's Aqua-Fresh and Pettibone's Aquabon are effective. The taste will completely dissipate in time.



To prevent water contamination, thoroughly flush the system prior to initial use and at least once each season.

The cockpit and galley 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.

### B. Operation

After filling the water tank, open all faucets partially. Then, activate the water pump circuit breaker on the cabin panel to supply the system with

water. Let the pump run until water comes out of all galley and cockpit faucets.

After all the air has been purged from the system and a steady flow of water is coming from each outlet, turn off the faucets one by one. Begin with the cold water faucets and continue until all faucets are shut off. As the pressure builds, the pump will automatically shut off at 35 psi. Refer to Section E on Electrical Systems and the manufacturers information at the end of this section for additional information.

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 turn on the faucet and water will be delivered. If the system has been recently filled, or has not been used for an extended period of time, air bubbles may accumulate at the pump. If this should happen, re-priming may be necessary.

Whenever the boat will be left unattended for an extended period, the water pump switch should be turned to the OFF position. This switch should also be turned OFF whenever the water tank is to remain empty for an extended period of time.

### G - 3 LIVEWELL SYSTEM

The Four Winns Quest boat is equipped with a system to provide new or "raw" water into the livewell. This system is equipped to use either salt or fresh water.

#### A. Filling the Livewell

To activate this system,

1. Open the ball valve (located below the motorwell access hatch on the model 187 and 207, and through the access plate aft of the cockpit fish boxes on the models 217, 237, and 257).
2. Activate the LIVEWELL switch located on the helm panel.

3. Open the remote control valve located near the washdown silcock. (Refer to Locator drawing at the end of Section O for exact location). This applies to 1991 models only.

The livewell intake is fitted with a scoop strainer which will force water through the system when the boat is running. This will happen even if the livewell fill pump is turned off. To stop water from entering into the livewell, close the remote control valve located by the cockpit washdown silcock. Another alternative is to close the ball valve below the motorwell hatch or aft access plate (as mentioned above).

#### B. Draining the Livewell

##### Models 187, 207 & 217

The livewell on the models 187 and 207 is located above the normal waterline. It is equipped with a removable standpipe in the center of the livewell which serves as an overflow drain when installed. To drain, remove the standpipe and open the ball valve at the thru-hull fitting. The ball valve is located below the motorwell access hatch. Be sure the livewell pump is off when draining the system.

##### Models 217 & 237 Cockpit Sole Livewell

The livewell is located below the cockpit sole (floor-level) and will fill to a level that matches the waterline. The cockpit sole livewell is not available on 1992 models.

To drain the livewell, close the "overflow ball valve" and the "intake ball valve", and activate the livewell drain pump. The livewell will not drain effectively or fill properly if either of the valves are open.



When the boat is heavily loaded, water may splash in the livewell or seep onto the cockpit sole surface. This is not abnormal unless the livewell is not draining and is consistently above the cockpit sole.

If this happens, immediately start the motor(s) and bring the boat on plane. This will cause the water level in the cockpit to drain out the various cockpit drains or bilge. Inspect the bilge compartment by opening the access plates or mechanical rigging locker door only (not through the motorwell access plates). Determine if the bilges have flooded. There may be a bilge pump failure and the boat should be taken to your nearest Four Winns Quest dealer.

### Optional Model 237 Above Deck Livewell

This livewell is equipped with an overflow fitting near the top of the tank which is connected to the drain fitting in the bottom of the tank. Removal of the drain plug will allow the water to drain from the livewell if the ball valve at the thru-hull fitting is open. The livewell pump must be turned off. The ball valve is located below the motorwell access hatches.

### Model 257 Livewell

The livewell is equipped with an overflow fitting near the top of the tank which drains directly overboard (above the waterline). Removal of the drain plug from the bottom of the tank will allow the water to drain from the livewell if the livewell pump is turned off.

#### NOTICE

Some of the latest models may be equipped with a different livewell system. A switch on the dash fills the livewell automatically without using ball valves. Another switch activates the livewell drain.

### G - 4 WASHDOWN

The washdown option is available on all Four Winns models. The washdown is comprised of a silcock which can be turned on or off, and is usually located in the aft cockpit on the port or starboard side. The ball valve must be open at the thru-hull fitting to allow water to enter. To operate, activate the water pump with the switch on the console panel.

As long as there is water pressure, the washdown will operate. The washdown is threaded for garden hose hook-up.

### G - 5 HEADS

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 manufacturers literature provided with this manual.

#### A. Portable Head

The portable head is standard on the model 257 and is available on the model 237. It has separate water and waste tanks built into the unit. A deck plate fitting labeled WASTE, is provided for this purpose.

#### B. Marine Head with Holding Tank

The marine head with separate holding tank is optional on the model 257 only. It is a manually-operated head and the waste tank capacity is 15 gallons. The head utilizes seawater for flushing purposes. A waste deck fitting is provided on the starboard deck for pump out. The tank is located below the center storage lid near the batteries. Refer to the locator drawing at the end of Section O on Operations.

To operate:

1. Move the wet/dry bowl selector to WET BOWL position. Pump the handle up and down a few times to add some water to the bowl.
2. To flush, make sure selector is in the WET BOWL position and pump the handle until the bowl is thoroughly rinsed and evacuated.
3. After flushing, move selector to DRY BOWL position and pump handle until about one cup of water remains in the bottom of the bowl.



Leave wet/dry bowl selector in DRY BOWL position when not in use.

A visual inspection of the waste tank is necessary to determine the waste level. Refer to the Locator Drawing at the end of Section O for location of the tank.

See the appropriate manufacturer's information provided with this manual.

#### D. Dockside Pump-Out

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.

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.

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.

3. Have the pumping station operator activate the pumping equipment. The waste will be drawn from the holding tank and into the pumping stations disposal tank.
4. Remove the pump out connection from the deck plate. Add at least 1 gallon of clean water to the holding tank through the waste deck fitting using a dockside water hose.
5. Repeat steps 2 & 3 above to pump out the water used in 4 to flush the holding tank.
6. Add waste holding tank treatment chemical available from the dockside pumping station operator to the head bowl. Flush at least twice.



Be careful when handling and storing treatment chemicals. Not only are they toxic, but they will also stain and damage surrounding surface.

### G - 6 SYSTEM MAINTENANCE

Information supplied with water and waste system components by the equipment manufacturers is provided with this manual. Refer to this 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. This can also lead to premature damage of the tank monitor system, electric head or Vacu-Flush equipment.



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 un-resolved.

#### A. Clean Vents and Screens

Periodically remove the vent caps and check the water tank vent(s). Clean the thru-hull vent fitting(s) of any dirt, wax, plastic particles, etc. Always replace the caps after cleaning.

#### NOTICE

Failure to keep the water tank vent fittings clean will cause excessive pressure build-up 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 build-up 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.

## 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, spa, ice maker, water tank, waste tank, transom washdown, 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 non-toxic anti-freeze (such as R.V. anti-freeze) 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 anti-freeze solution.

To winterize:

1. Turn on the water pump and drain the water tank by opening a faucet (the pump will run faster when it is empty). The water tanks on some models can be drained by removing withdrawal hose from the tank and allowing water to drain into the bilge.

### NOTICE

DO NOT run the fresh water pump without water in the system on the model 257. Pump damage can result. Be watchful and turn the pump off as soon as the tank becomes empty.

2. Add 5 gallons of R.V. anti-freeze to the water tank.
3. Turn ON all faucets until undiluted antifreeze is seen. Make sure the cockpit faucet and marine head supply line have anti-freeze coming out.

### NOTICE

Be sure to wipe up any anti-freeze that has been spilled on the fiberglass shower surfaces.



Use only non-toxic anti-freeze solutions such as R.V. anti-freeze. DO NOT use ethylene glycol solutions; the type that is used in engine coolant systems. These are toxic.

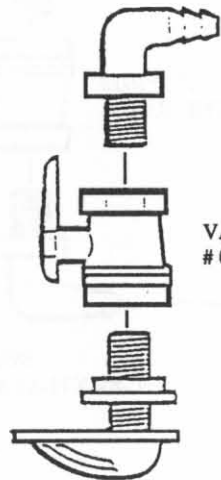
## C. Winterizing the Waste System

To winterize the waste holding tank, flush the tank with soap, water and a deodorizer (e.g., Lysol Liquid). Empty the tank and pour two (2) gallons (4 gallons if equipped with overboard discharge) of R.V. anti-freeze into the bowl and flush.

If the boat is equipped with a head, refer to the manufacturer's instructions for winterization procedures.

For additional information, refer to the manufacturer's manuals at the end of this section and in Section I on Interior Equipment. Also, see Section N on Maintenance.

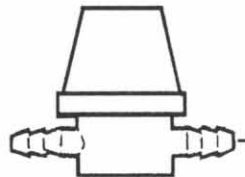
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# 035-0235

STRAINER, SCOOP 3/4"  
# 035-0206

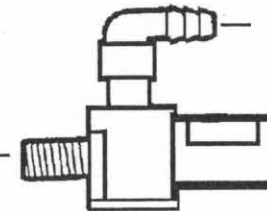
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# 035-0310



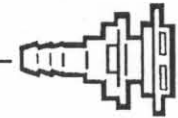
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# 035-0308



PUMP, AERATOR  
# 026-0089



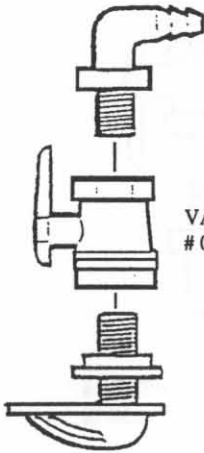
DRAIN, 3/4" W/SCREEN  
# 035-0239



INCLUDED BUT NOT SHOWN:  
HOSE, 3/4" H.D. WATER #022-0041  
CLAMP, 5/8" #021-0031

NOTES: PUMP MUST BE MOUNTED BELOW  
THE WATERLINE. FOR 257 QUEST, ADAPTER & A  
AERATOR PUMP MUST BE REPLACED WITH  
FLO-JET PUMP # 026-0075.

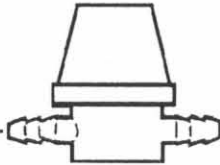
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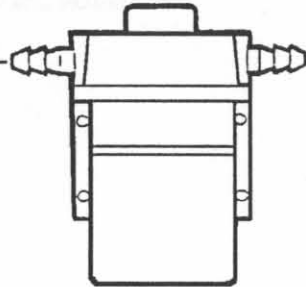
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STRAINER, SCOOP 3/4"  
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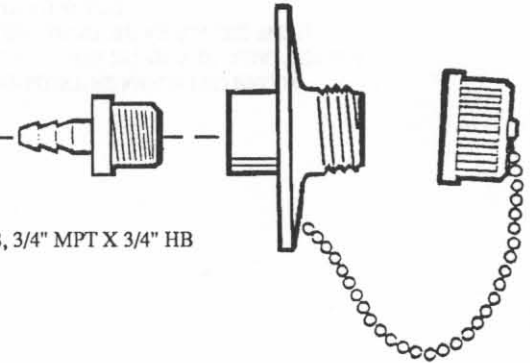
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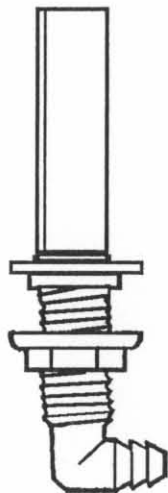


HOSE BARB, 3/4" MPT X 3/4" HB  
# 035-0095



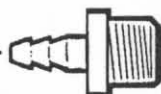
FITTING, WATER OUTLET, REG.  
# 035-0039

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CLAMP, 5/8" # 021-0031



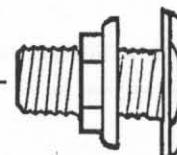
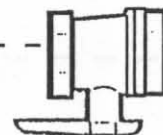
STAND PIPE 1 1/2" 100 DEGREES  
# 035-0262

INCLUDED BUT NOT SHOWN:  
HOSE, 1 1/2" RUBBER # 022-0042  
CLAMP, 1 1/2" #021-0032



ADAPTER, 1 1/2" MPT X 1 1/2" HB  
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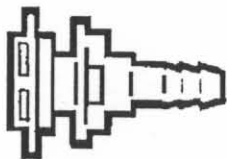
BALL VALVE 1 1/2"  
# 035-0176



THRU-HULL 1 1/2" MARELON THREAD  
# 035-0231

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 CLAMP, 5/8" # 021-0031  
 CIRCUIT BREAKER, 10 AMP #028-0131  
 TOGGLE SWITCH, DPDT # 028-0245

FOR THE 257 QUEST, USE DRAIN WITH  
 SCREEN # 035-0239



FOR THE 217 & 237 QUEST,  
 USE ELBOW DRAIN WITH  
 SCREEN # 035-0238

TEE, 3/4" ALL BARBED  
 # 035-0302

HOSE BARB, 3/4" MPT X 3/4" HB  
 # 035-0095

VALVE, BALL 3/4"  
 # 035-0235

THRU-HULL 3/4" MARELON THREAD  
 # 035-0312

ADAPTER 3/4" FPT X HB  
 # 035-0308

FILTER STRAINER, 3/4"  
 # 035-0310

PUMP, AERATOR  
 # 026-0089

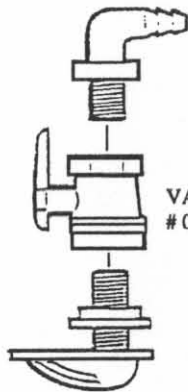
THRU-HULL 3/4"  
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217, 237 & 257 QUEST FISHBOX DRAIN  
 WITH OPTIONAL PUMPOUT SYSTEM

FIGURE D

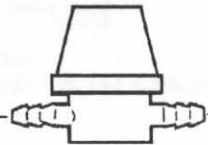
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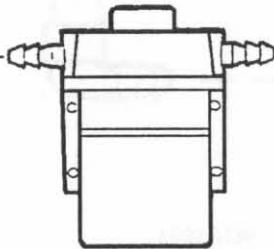
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STRAINER, SCOOP 3/4"  
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FILTER STRAINER, 3/4"  
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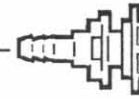


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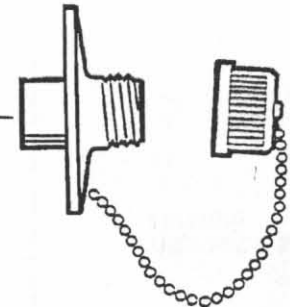


VALVE, REMOTE CONTROL  
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DRAIN, 3/4" W/SCREEN  
# 035-0239

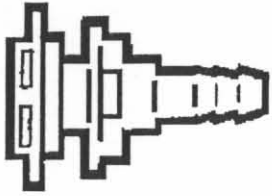


HOSE BARB,  
3/4" MPT X 3/4" HB  
# 035-0095



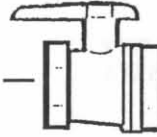
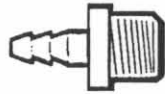
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CLAMP, 5/8" # 021-0031



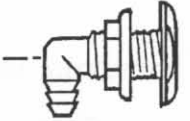
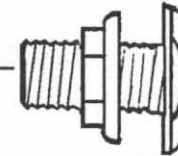
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ADAPTER, 1 1/2" MPT X 1 1/2" HB  
# 035-0126



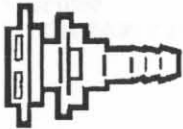
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THRU-HULL, 1 1/2" MARELON THREAD  
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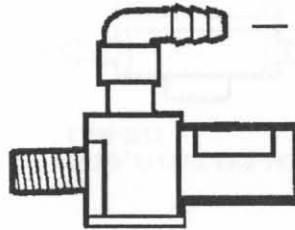


THRU HULL, 3/4"  
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ADAPTER, 3/4" FPT X 3/4" HB  
#035-0308



DRAIN, 3/4" W/SCREEN  
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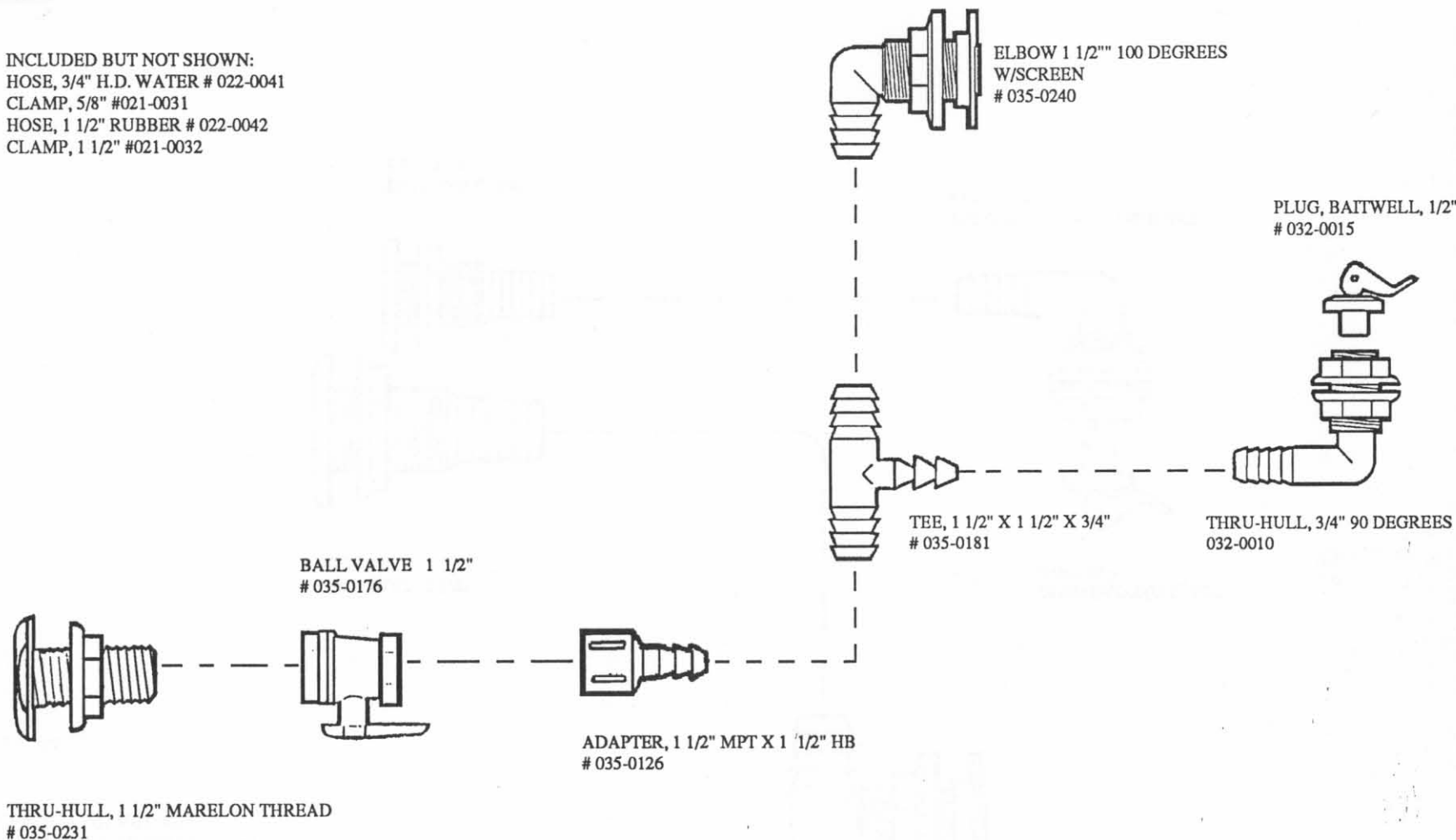


PUMP, AERATOR  
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CLAMP, 5/8" #021-0031  
HOSE, 1 1/2" RUBBER # 022-0042  
CLAMP, 1 1/2" #021-0032

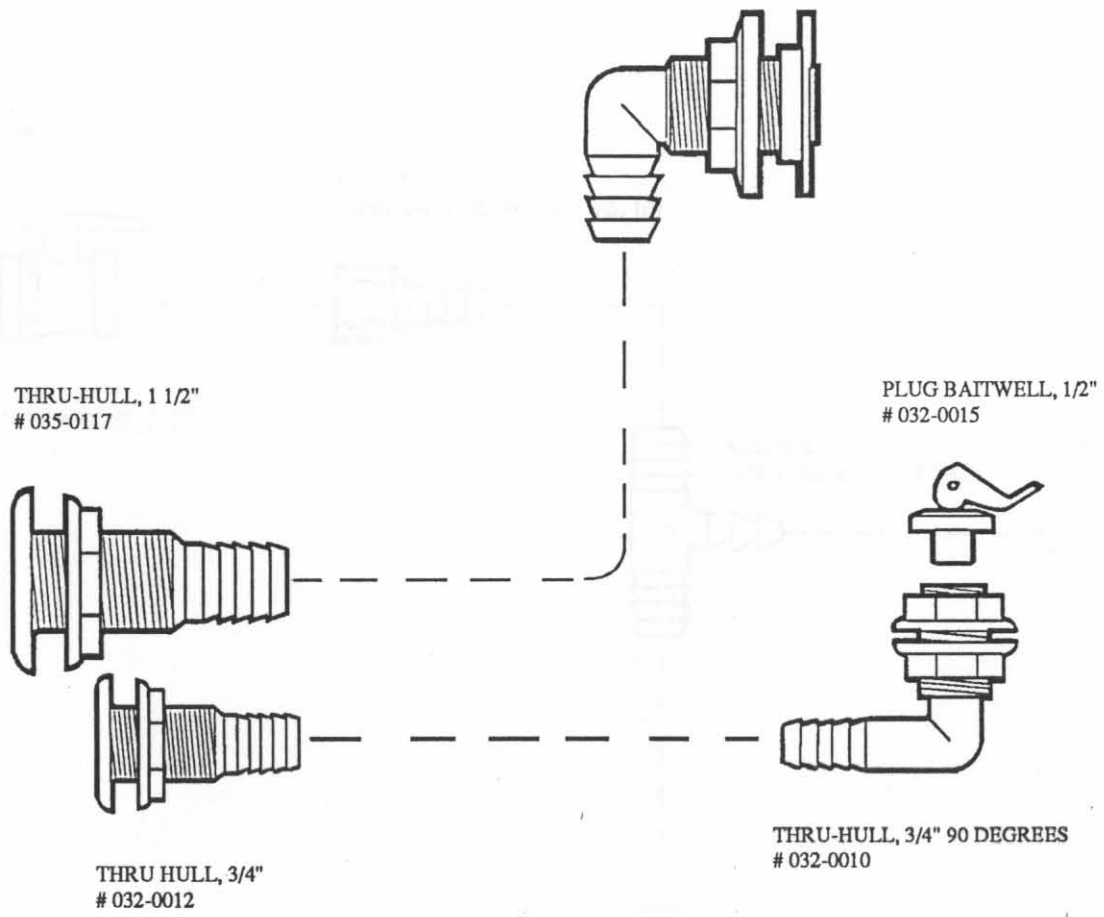


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 CLAMP, 5/8" #021-0031  
 HOSE, 1 1/2" RUBBER # 022-0042  
 CLAMP, 1 1/2" #021-0032



INCLUDED BUT NOT SHOWN:  
HOSE, 3/4" H.D. WATER # 022-0041  
CLAMP, 5/8" #021-0031  
HOSE, 1 1/2" RUBBER # 022-0042  
CLAMP, 1 1/2" #021-0032

ELBOW, 1 1/2" 100 DEGREES  
W/SCREEN  
# 035-0240



THRU-HULL, 1 1/2"  
# 035-0117

PLUG BAITWELL, 1/2"  
# 032-0015

THRU HULL, 3/4"  
# 032-0012

THRU-HULL, 3/4" 90 DEGREES  
# 032-0010

# VENTILATION AND DRAINAGE SYSTEMS

## H - 1 CABIN VENTILATION

Quest model 257 cabin side ports are designed to open to provide adequate cabin ventilation and will have screens provided.



Failure to properly ventilate the boat while the engines are operating may permit carbon monoxide to accumulate inside of the cabin. Refer to Section B-2 Engine Exhaust for information regarding engine exhaust and carbon monoxide.

A screen for the forward deck hatch is available on the model 257 and is removable.

### NOTICE

Be sure the deck hatch is locked in position or secured when underway. Damage to the hatch may occur.

In time, the color on certain plastic deck hatch and port hole assemblies may fade or become weathered. The surface oils in the plastic are removed due to exposure. This is normal. The deep, rich color can easily be restored by periodic applications of mineral oil or silicone lubricant.

## H - 2 HULL DRAINAGE SYSTEMS

### A. Transom Drain

A transom drain with plug is provided to allow water drainage. When the boat is out of the water, the boat and trailer should be positioned so any bilge water accumulating during dry storage will flow towards the transom.



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 excessive water that might accumulate in the hull. The bilge pumps are controlled by the Bilge Pump Switches on the helm control panel (see Section E for a detailed description of the bilge pump switches and the locator drawing in Section O Operations for exact location of the bilge pumps).

All primary bilge pumps are equipped with automatic switches to control pump operation. As the water level rises, the automatic float switch will activate the pump. A separate circuit breaker is provided to supply power directly from the battery(s) regardless of battery selector switch position.

### NOTICE

While at rest, any bilge water accumulation may flow forward. Therefore, operate the bilge pump(s) shortly after getting underway and while the boat is at a substantial running angle. **DO NOT** allow bilge water to accumulate. Damage to the 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(s). 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 pumps and associated hoses are thoroughly dry. Damage to the hull, bilge pumps and other equipment could occur if water is allowed to freeze in the bilge.

Refer to the manufacturers literature at the end of this section for additional information.

## C. Cockpit Drainage

All Quest models incorporate a fiberglass self bailing cockpit. This feature minimizes water entry to the bilge or engine compartment areas by providing means for water to be drained overboard.

Periodically inspect all drains and shut-off valves. Be sure the drains, tubes and fittings are clean and free of leaves, dirt, or other debris.

## H - 3 DECK & FISH BOX DRAINS

The forward deck boxes in the boat drain into an enclosed sump box located in the bilge compartment. This box is accessible on the model 237 through an access plate in the forward vertical wall inside the console. The sump is accessible on the model 217 (1991 model only) through an access plate located in the bottom of the center forward storage box. This pump is automatically activated by the float switch in the sump box.

The fish box drains on the models 217, 237 and 257 (1991 models only) are equipped with a macerator pump to drain them. The pump is activated by the fish box drain switch on the dash panel. To select which fish box will be pumped out, open the door of the mechanical rigging locker and turn the Y-valve to the appropriate box.

## H - 4 CARBON MONOXIDE

Carbon monoxide accumulation is affected by vessel geometry; hatch, window and door openings; ventilation openings; proximity to other structures; wind direction; vessel speed; and a multitude of other variables. The technical information included in this section is to inform the boat owner of possible cause and effects of carbon monoxide. 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 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 F 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. Definition of Carbon Monoxide

1. Carbon Monoxide: Carbon Monoxide (CO) is a gas formed by the combination of one molecule of carbon and one molecule of oxygen. Chemists refer to it as CO, its chemical formula, "C" for carbon and "O" for oxygen.
2. COHb: Carboxyhemoglobin is the molecule formed when Carbon Monoxide combines with blood instead of oxygen.

#### B. Properties and Characteristics of Carbon Monoxide

1. Carbon Monoxide is a colorless, odorless and tasteless gas.
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 (visible and smellable) gases.

#### C. 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.
2. Open flame devices such as:
  - a. Cooking ranges
  - b. Central heating plants
  - c. Space heaters
  - d. Water heaters
  - e. Fireplaces
  - f. Charcoal grills

#### **D. How a Person Is Affected by Carbon Monoxide**

Carbon monoxide is absorbed by the lungs and reacts with blood hemoglobin to form carboxyhemoglobin, 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 prolonged, death of the individual.

#### **E. 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.

#### **F. 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. Ringing in the ears
7. Tightness across the chest
8. Headache
9. Drowsiness
10. Incoherence
11. Nausea
12. Dizziness
13. Fatigue
14. Vomiting
15. Collapse
16. 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.

**The symptoms of Carbon monoxide poisoning may easily be mistaken for seasickness.**

#### **G. Treatment (Evacuate, Ventilate, Investigate, Take Corrective Action)**

1. Move the person to fresh air.
2. Administer oxygen if available.
3. Contact Medical help.
4. If the victim is not breathing, perform artificial respiration per approved CPR procedures until medical help arrives and takes over.

#### **NOTICE**

Prompt action can make the difference between life and death.

5. Ventilate area.
6. Investigate source of CO and take corrective action.

## H. Inspection

Look and listen for leaks in the exhaust systems of both the generator 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 spaces(s).

## I. 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, and
3. Minimize the time spent on getting underway.

## J. Boathouses, Sea Walls and Other Boats

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.

Orient the boat for maximum dissipation of the exhaust or DO NOT run the boat or boat equipment for extended periods under these conditions. See Figure 1.

Running engine or GenSet in confined areas.

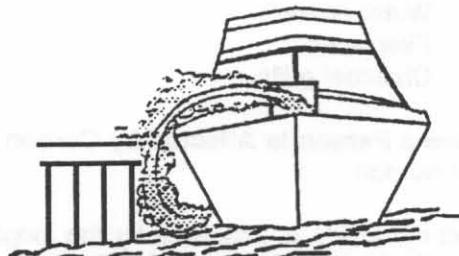


FIGURE 1: THE EFFECT OF SEA WALLS AND OTHER CONFINED SPACES.

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 his actions on other boats. Of prime concern is the operation of an auxiliary generator with boats moored along side each other. Be aware of the effect your exhaust may have on other vessels and be aware that the operation of other vessel's equipment may affect the carbon monoxide concentration on your vessel. See Figure 2.

How boats moored close together can affect each other.



FIGURE 2: 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 of suction area around the stern which can increase CO level on the boat. Backdrafting can be affected by relative wind direction, boat speed, and boat trim angle. See Figure 3 Backdrafting - Airflows Over Boat and Behind Transom".

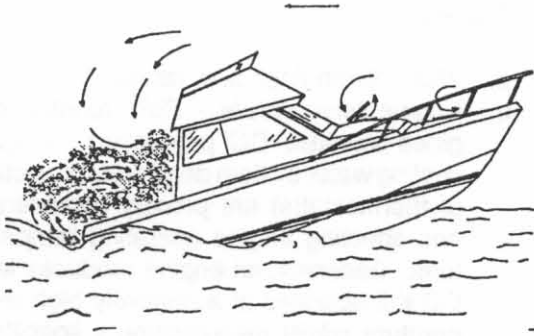


FIGURE 3: BACKDRAFTING - AIRFLOWS OVER BOAT AND BEHIND TRANSOM.

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 vessel. Boat factors which may affect CO concentration:

1. Inefficient trim angle. See Figure 5.

Excessive bow attitude can increase Back Drafting.

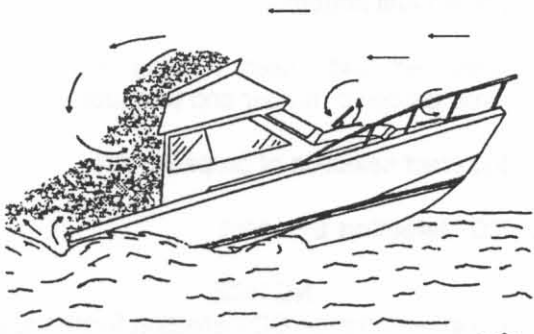


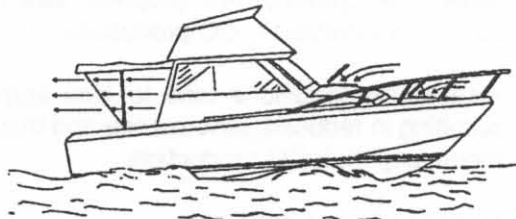
FIGURE 5: INEFFICIENT TRIM ANGLES.

2. Excessive or unequally distributed weight.
3. Canvas Configurations - Under various conditions, adding or removing canvas may raise or lower CO levels. See Figures 3, 4 & 5.
4. Opening and closing ports, hatches, doors, and windows may raise or lower CO levels on board a boat.

## L. Cabin Appliances

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

Desired air flow through the boat.



Certain canvas configurations such as side curtains can increase Back Drafting.

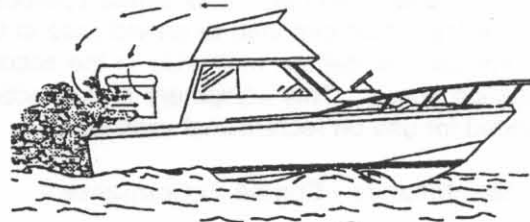


FIGURE 4: THE EFFECT OF CANVAS CONFIGURATIONS.

## M. Air Conditioning

It may be possible for carbon monoxide to be brought into the air conditioned space by the air conditioner. If installed, please refer to the air conditioner manufacturer's literature for additional information.

## N. Ventilation of Accommodation Spaces

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

## O. Altitude and Sea Conditions

Changes in altitude greater than 5,000 feet contribute to inefficient engine performance and may require adjustments to the ignition systems, fuel systems, or changing the propeller's size.

1. Failure to make adjustments to ignition systems, fuel systems, and propeller size may cause an increase in CO production.
2. Heavy sea conditions tend to load engines resulting in reduced performance and thereby increasing their CO production.

## P. Portable Generator Sets

Gasoline powered portable generator sets 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 space. This equipment is not recommended for use on recreational vessels.

## Q. 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 plugs.
- 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.

## R. Maintenance - External Conditions

External conditions that contribute to inefficient engine performance are:

1. Fouled hull bottom.
2. Damaged and fouled running gear (shaft, strut, propeller, rudder and trim tabs).
3. Incorrect selection of propeller size.

## S. CO Detection Systems

### 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 plus utmost care in inspection, operation, and maintenance, hazardous levels of CO may still be present in accommodation spaces under certain conditions. Continuing observation of passengers for symptoms of CO intoxication can be supplemented by an alarm type CO detection device in the accommodation space.

Current CO detector technology can be broken down into three major categories: single-point, multi-point, and fully-integrated; the difference being the degree to which each type of unit considers exposure time.

1. **Single-point Detection:** The single-point detector will sound the alarm whenever the detector senses that a single pre-set PPM (Parts Per Million) level of CO has been exceeded.
2. **Multi-point Detection:** The multi-point detector alarm will sound at a number of selected CO levels. The multi-point detector may include several different measuring time periods with their corresponding different PPM CO level alarm settings.
3. **Fully-integrated Detection:** The fully-integrated detector will sound an alarm to any combination of PPM CO level and exposure time that would cause a health hazard.

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

# INTERIOR EQUIPMENT

## I - 1 GALLEY EQUIPMENT



Care must be exercised while around stoves and other appliances. Keep children away from burners.

### A. Alcohol Stove

Alcohol stoves are standard only on the model 257. If equipped, see the manufacturer's manual at the end of this section.



Be careful while lighting and operating your alcohol stove. Flare-up during ignition can result. Use denatured alcohol only.



To prevent skin burns, be sure the stove is off before closing the lid. Be sure the stove cools totally before storing.

## I - 2 REFRIGERATOR

Dual voltage refrigerators are available only on the model 257. The refrigerator will operate on 120 volt (220 volts on 50 Hertz models) AC power while the boat is connected to dockside power. The refrigerator will automatically transfer to 12 volt operation when dockside power is not available.

Though the refrigerator operates on both voltages, it is much more efficient on 120 volt (220 volt on 50 Hertz models) power. The refrigerator will cool more slowly on 12 volt power. Making ice cubes may be difficult on a warm day unless the unit is operated first on 120 volts to reduce the temperature. Whenever possible, use 120 volt power to initially cool the refrigerator.

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.

### NOTICE

Before installing a shore power battery charger, refer to Section E on Electrical Systems and the refrigerator owner's manual. Damage to the refrigerator may occur from improper installation.

## I - 3 STEREO

Four Winns offers an AM/FM cassette stereo as optional equipment on all Quest models. Stereo and speakers are installed within the interior cabin on the model 257. Stereos are mounted on the dash console on all other models.

For additional information on stereos, refer to the manufacturer's literature at the end of this section.

# EXTERIOR AND SAFETY EQUIPMENT

## J - 1 RAILS & DECK HARDWARE

Hand rails have been installed to provide security for passengers in the cockpit. 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.

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.

The majority of the hardware installed is made of stainless steel. Regardless of the type of hardware used, periodic maintenance is necessary.

Cleaning the hardware with a non-abrasive cleaner will help keep the original shine and beauty. Stainless steel hardware, while quite durable, can become superficially rusted. This can be controlled by cleaning the fittings and applying a coat of wax. Any future rusting can be easily removed by polishing and re-waxing.

### NOTICE

All fittings must be periodically inspected for loosening, wear, and damage. Problems should be corrected immediately!

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.



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 O Operation for addition-

al precautions regarding grounding and towing.

## J - 2 TRANSOM DOOR

Transom doors are provided on all models. The transom door allows access from the swim platform to the cockpit. A slide bolt is used to secure the transom door.



To prevent a possible man overboard situation, make sure the transom door is secure before each cruise.

The transom doors are comprised of star board (see Section M-5 on Star Board) or teak (optional on 1991 models only).



DO NOT sit on or lean against the transom door. This is unsafe and may damage the hinges and door.

## J - 3 COMPANIONWAY DOOR

The companionway door is comprised of a sliding door on the model 257. The door is plexi-glass and slides in behind the helm station.

### NOTICE

To prevent damage to the companionway track, ALWAYS slide the door slowly during use.

## J - 4 WINDOWS

### A. Windshields

The windshield on all Quest models consist of tempered safety glass or plexiglass. The windshield frame is aluminum.

Windshields of tempered glass can be cleaned with automotive glass cleaners or dishwashing soap and water. See the following section for information on the care of plexiglass.

Aluminum can be cleaned with similar products or with non-abrasive cleaners such as Fantastic.

#### NOTICE

Read the label before using any product.  
DO NOT use abrasive cleaners.

### B. Plexiglass

Plexiglass is used for center console windshields, port holes, companionway door assemblies, sliding storage doors, cabinets, and some windshields. Plexiglass will scratch easily and must be handled with care.

To clean, wash gently with dishwashing soap and water. Rinse thoroughly with clean water. To dry, use a soft chamois cloth. DO NOT use paper towels. They will scratch the plexiglass.

Plexiglass or plastic polish may also be used. Read the label first before using any cleaning product.

#### NOTICE

DO NOT use harsh chemicals or strong cleaning solutions on plexiglass. The surface can be etched, scratched, disfigured, or clouded.

### J - 5 FOREDECK HATCH

Foredeck hatches of tempered glass are provided on the model 257 only. The hatch is supported by one arm and can be secured in any position.

#### NOTICE

DO NOT leave deck hatches open while underway. Be sure all hatches are closed and secured by all three latches before boating. Damage to the hatch may otherwise result.

### J - 6 SWIM PLATFORM

Four Winns provides an integrated fiberglass swim platform on all models. For better footing, a non-skid surface is provided. The ladder and hand rails are located for easy access when boarding.



To prevent personal injury, DO NOT use the boarding ladder or swim platform while the engines are operating or the boat is in motion. Engines must be off when using the swim platform or boarding ladder.



Keep hands and fingers away from ladder hinges to prevent injury.

#### NOTICE

When lowering or raising the ladder, the outboard engine must be turned away (port or starboard depending upon the model) to clear the ladder. Damage to the ladder may otherwise result. Always secure the ladder before boating.

### J - 7 BOW PULPIT

When properly equipped, the Four Winns Quest bow pulpit is designed to be functional while anchoring. On some models, "Danforth" style anchors can be stored on the platform. See Figure J1 below.

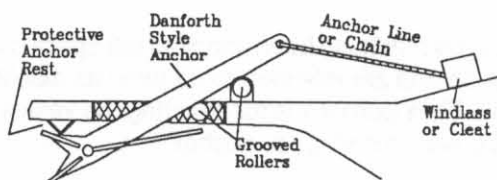


Figure J1 Bow Pulpit & Anchor

**WARNING**

To prevent a possible man overboard situation, NEVER stand on, or try to utilize the bow pulpit in any way while the boat is underway.

The recommended sizes for the anchor and anchor line are listed in the table below.

**Anchor & Anchor Line**

Model	Line Size	Anchor Size
187	3/8"	8 lb.
207	3/8"	8 lb.
217	3/8"	8 lb.
237	1/2"	13 lb.
257	1/2"	13 lb.

## J - 8 NAVIGATIONAL EQUIPMENT

### A. Compass

A compass is available on all Four Winns models. It is a valuable piece of equipment when operating offshore, in unfamiliar waters, or in adverse weather conditions. The safety of those aboard the boat could, at some time, depend upon the compass and your navigational skills.

After all personal equipment is installed, including all electronics (radio, depth sounder, etc.), the compass must be properly calibrated. DO NOT rely on the compass readings until initial adjustment (compensation) has been performed. If the boat has a factory installed compass, the compass must be adjusted by the owner or mechanic prior to use. Refer to the manufacturer's instructions provided with this manual. Most areas have local companies that specialize in compass adjustment. If unsure of the proper compensation techniques, consider having the adjustment done professionally to insure 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.

### B. Depth Sounder (1991 Models Only)

Depth Sounders are available on some Quest models. The thru-hull transducer is factory installed and tested. This transducer will be located in the hull to limit the effect of water turbulence while underway. Rough water conditions and boating at high speeds may give false readings.

Depth sounders provide a relative indication of water depth. 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.

### C. Ship to Shore VHF Radio (1991 Models Only)

A VHF radio is available on some Four Winns models. It provides reliable communication between vessels, and from ship to public or private shore stations. It also provides a weather band.

The VHF radio, and microphone is usually mounted on the helm. If equipped, additional information is included in the manufacturer's literature provided with this manual.

### D. Loran (1991 Models Only)

A Loran is an electronic system through which a navigator can determine his position regardless of weather. It receives high frequency radio signals generated from established points to generate coordinate readings on the display. These readings can then be triangulated on a NOAA navigational Loran coordinate chart to determine the vessel's exact position.

Factory installed Loran system is available on some models. It is normally mounted at the helm. If equipped, refer to the manufacturer's literature provided with this manual.

## J - 9 SPOTLIGHT

A properly operating spotlight is essential for safe cruising at night. Four Winns offers a portable (hand-held) spotlight which plugs into a DC outlet. The spotlight is available as an option only. If equipped, see Section E and the spotlight manufacturer's literature provided with this manual.

The diagram shows a rectangular spotlight with a lens on the front and a handle on the back. It is connected to a DC power source via a plug and cable. The diagram illustrates the internal wiring and the connection points for the power source.

Component	Connection
Spotlight Plug	DC Outlet
Spotlight Handle	DC Outlet

# SEATING AND WEATHER COVERS

## K - 1 INTERIOR SEATING

### A. Cabin Tables (Model 257 Only)

Table bases are "flush" mounted for convenience. Table legs are removable for easy storage by lifting the leg from the base. Rotating the leg while lifting will ease the removal.

The v-berth table on the model 257 has one table leg. The table is stored in the mid-cabin when not in use.

### B. V-berth Filler Cushions

Four Winns provides a filler cushion for the v-berth area on the model 257. The filler cushion drops into place. This will provide additional berth area and still permit easy access to surrounding compartments.



**CAUTION**

To prevent personal injury, be sure the v-berth filler cushion is securely installed before use.

Storage is provided under the v-berth. The storage areas are easily accessible under the cushions.

## K - 2 EXTERIOR SEATING

Leaning posts at the helm station are standard on the model 237 only. All other models are standard with dual captain's chairs. Refer to the seating drawings at the end of this section.



**WARNING**

DO NOT sit on the backrest portion of any cockpit seat. The helmsman could lose control of the boat or passengers could be thrown from the boat. The seat could also be damaged if excessive force is applied.

The bow fishing chair is an option only on the models 187 & 207 (1991 models only). This chair has a removable pedestal. If the boat is equipped with the captain's chairs, the bow fishing chair may be mounted at the helm position.

The stern lounge is available on most models and includes support legs. Make sure legs are vertical and locked before using the seat. Be sure they are folded and secure before storing the seat. Nylon straps, slide bolts, or hooks are provided to secure the seat in the stored position.

Sun pads are available on most models for the forward deck area. Also, bolster seat cushions are available for aft.

## K - 3 INTERIOR UPHOLSTERY CARE

### Cleaning Interior Fabric (Model 257 Only)

The fabric used in the cabin should be treated the same as upholstery in your home. Periodic vacuuming and shampooing will keep the upholstery clean and odor free. Spraying the upholstery with Lysol Spray Disinfectant will help retard mildew.

### Cleaning Kit Includes:

- Westley's Clear Magic  
(to order, call 1-800-545-0982)
- Lendow Glass Cleaner  
(to order, call 313-777-2236)
- Lift-off Spot Remover  
(to order, call 216-881-4070)
- Clean, white towels
- Clothes shaver
- Air hose (if available)

To remove stains, please refer to the following list for recommended cleaners.

**1. Basic Stains/Ink/Grease/Pencil/Dirt:**  
Westley's Clear Magic

**2. Adhesives/Teak Oil/Gum/Tar:**  
Lift-Off Spot Remover

**3. Water Stains:**

- a. While fabric is still wet, use an air hose and nozzle to go over the wet area. This will force the stain into the back of the fabric.
- b. For water stains that have dried, spray Lendow Glass Cleaner over the stained area. Let the foam dissipate, then rub the area with a clean towel. Repeat.

**4. Tough Stains/Set Water Stains:**

- a. Always try the Lendow Glass Cleaner method first!
- b. Spray Westley's Clear Magic on the area, going two (2) inches around the stain or if possible, bring wetness to a break point, such as a bulkhead, etc. Spray water on the same area as directed on the bottle.
- c. Let set approximately five (5) minutes.
- d. Rub the area with a clean towel, rotating the towel as the stain is removed. As you rub, go a little beyond the wetness with the towel, flaring the edges.
- e. Allow to dry or blow complete area with air hose.
- f. Repeat if necessary or try the Lendow cleaner.
- g. After the stain is removed, use a clothes shaver to remove fuzzies.

**B. Interior Carpets**

Four Winns Cruisers use a high quality interior grade carpeting. Vacuuming and occasional rug shampooing are recommended for extended life and appearance.

**C. Draperies**

After a season or more use and exposure, you may wish to remove the draperies. Dry cleaning is recommended. Most draperies can be taken down after removing the screw from the end of the curtain track.

This screw may not be accessible on some models. Should this be the case, remove the screws securing the end of the track. The track is flexible and can be lowered to remove the end screws.

**D. Blinds**

Some boat models are equipped with mini-blinds. The blinds can be taken down by removing the end screws and pulling the tabs that hold the blind in place.

**K - 4 EXTERIOR UPHOLSTERY CARE**

**A. Cleaning Vinyl**

The vinyl material used on the exterior upholstery can be easily cleaned using mild detergent and water. Be sure to thoroughly rinse the seats after washing to remove all soap film. Periodic spraying of the seats with Lysol Spray Disinfectant will help retard mildew.

**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.

**Cleaning Kit Includes:**

- Ivory Dishwashing Liquid and water
- Clean, white towels
- Medium-soft brush
- Fantastik Spray Cleaner
- Denatured Alcohol
- 3M Citrus Cleaner  
(to order, call 404-447-7132)
- Ammonia and hydrogen peroxide



To remove stains, follow the guidelines below.

- 1. Basic Stains/Grease/Pencil/Dirt:**  
Ivory Soap and water or Fantastik Spray Cleaner applied with a medium-soft brush.
- 2. Tough Stains/Adhesive/Teak Oil/Rust:**  
3M Citrus Cleaner; rinse with soap and water.
- 3. Ink:**  
Denatured alcohol.
- 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 with water.
- 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.

#### NOTICE

ALWAYS CLEAN STAINS IMMEDIATELY!  
DO NOT use 409 Cleaner or Armorall on vinyl.

#### NOTICE

All cleaning methods must be followed by a thorough rinse with water.

Certain household cleaners, powered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not recommended. Dry cleaning fluids and lacquer solvent should not be used as they will remove the printed pattern and gloss. Waxes should be used with caution. May contain dyes or solvents that can permanently damage the protective coating.

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 K-6 on 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. DO NOT dry carpeting in an automatic dryer.

#### K - 5 REPLACEMENT UPHOLSTERY

Should upholstery become severely soiled, torn, or in some manner damaged, replacement upholstery cushions and certain jackets are available. However, the original vinyl or fabric patterns may not be available.

Replacement upholstery can be obtained by providing the part number (if available), cushion description, boat serial number, upholstery color, and whether a jacket or complete cushion is needed. Please contact your Four Winns dealer for assistance.

#### K - 6 FOUR WINNS WEATHER COVERS

Weather covers for the cockpit areas are available on all Four Winns models. Bimini tops, side and aft curtains, campers, and cockpit covers are available on most models. Top sets are designed and intended to provide protection of the cockpit seating areas.

Four Winns weather covers are color-coordinated and made of 100% acrylic material such as Sunbrella™. During the manufacture of the weather covers, the smallest possible needle and highest quality UV stabilized, bonded polyester thread is used in the stitching.



## 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.

When snapping covers to the boat, apply direct downward pressure on the snap. When unsnapping, rotate the snap and cover upward at each snap location.

## 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. Installation

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.

The weather cover is water repellant 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.

After use, the top should be rolled up into the boot 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 during outdoor winter storage. The weight of the snow or heavy rain can cause severe damage to the material or top structure.

Refer to K-7 Winter Storage Covers in this manual for more information.

### B. Trailing

High winds encountered during trailing your boat can severely damage most weather covers. Only cockpit covers are specifically designed and intended for use while trailing.

If an extended trip at highway speeds is planned, the top and other weather covers should be in the down position or removed entirely. Cockpit covers may be left in place. This will prevent damage and loss.

### C. Care & Maintenance

Moisture, dirt, chemicals from industrial fallout, heat, ultraviolet rays and in some cases, salt water are factors which affect the longevity of acrylic covers.

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.

### K - 7 WINTER STORAGE COVERS

The boat must be properly protected during winter dry dock storage. A winter storage cover is advisable. See a Four Winns dealer for information on the availability of winter storage covers.

When storing outdoors, ensure that 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 N General Maintenance for additional winter storage information.

### K - 8 CARBON MONOXIDE

When the boat is underway, a natural vacuum may exist with the right wind and sea conditions to draw the exhaust gases (which includes carbon monoxide) into the boat. When the camper or side curtains are installed, this compounds the


possibility of this occurring. Carbon monoxide may also be present when mooring or near sea walls. For more information, refer to Section H-4 Carbon Monoxide in this manual.

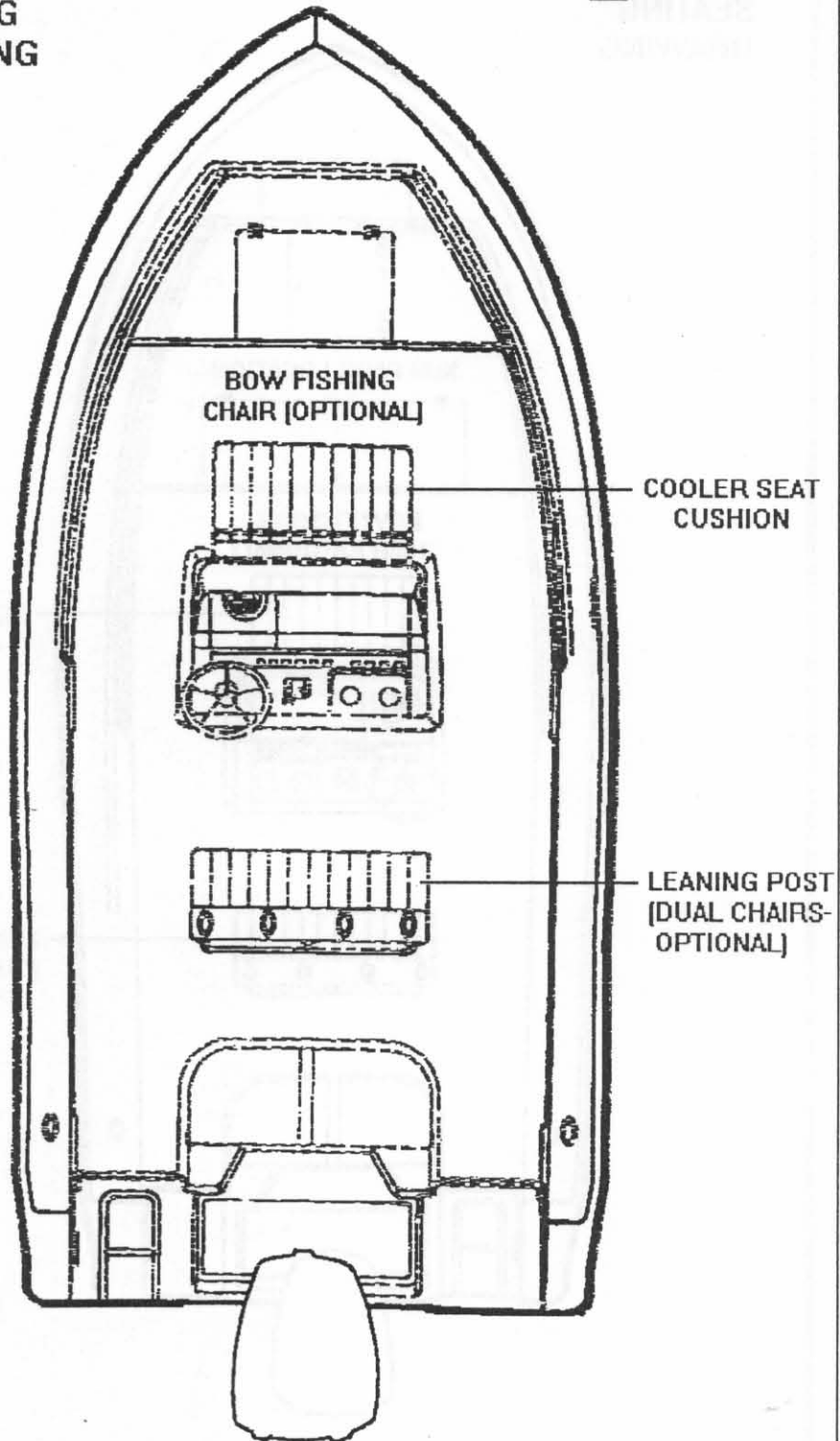
The carbon monoxide in exhaust fumes can be hazardous. It is important for you and your passengers to be aware of the potential safety hazard created by exhaust fumes. Familiarize yourself with the symptoms of individuals overcome by carbon monoxide, and most importantly, ways you can protect yourself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



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

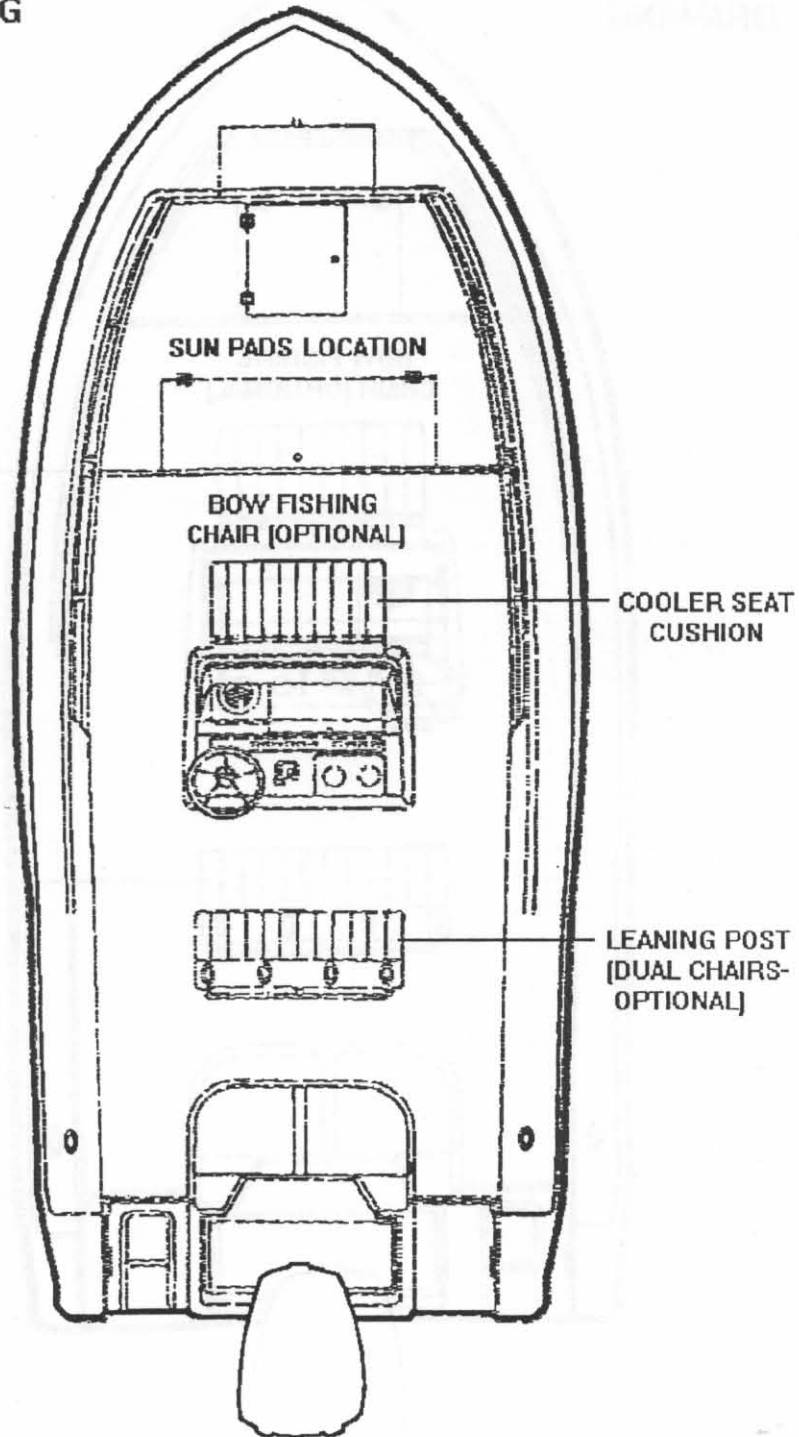
**187 QUEST  
SEATING  
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 **FOUR WINNS**



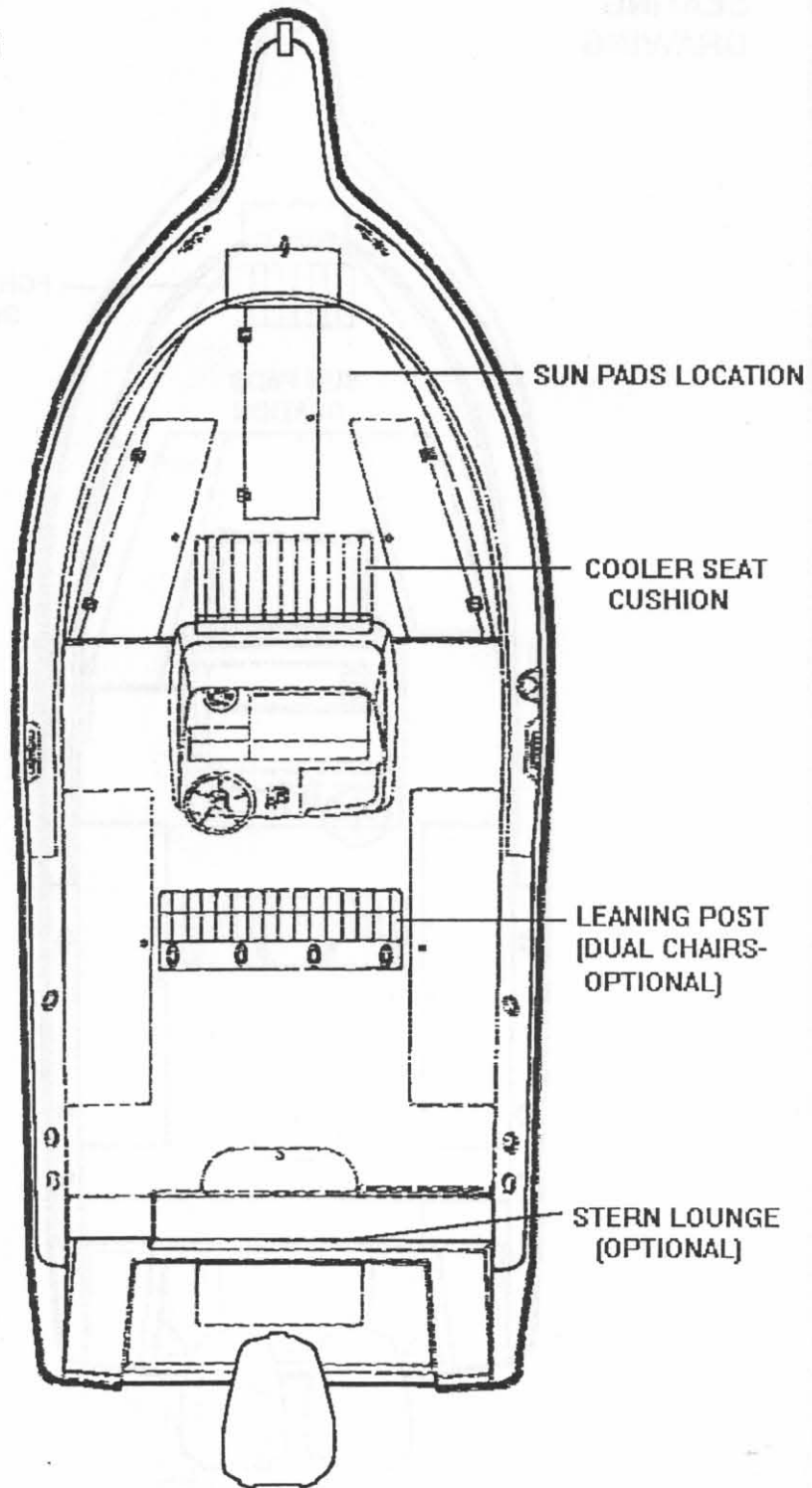
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**FOURWINNS**



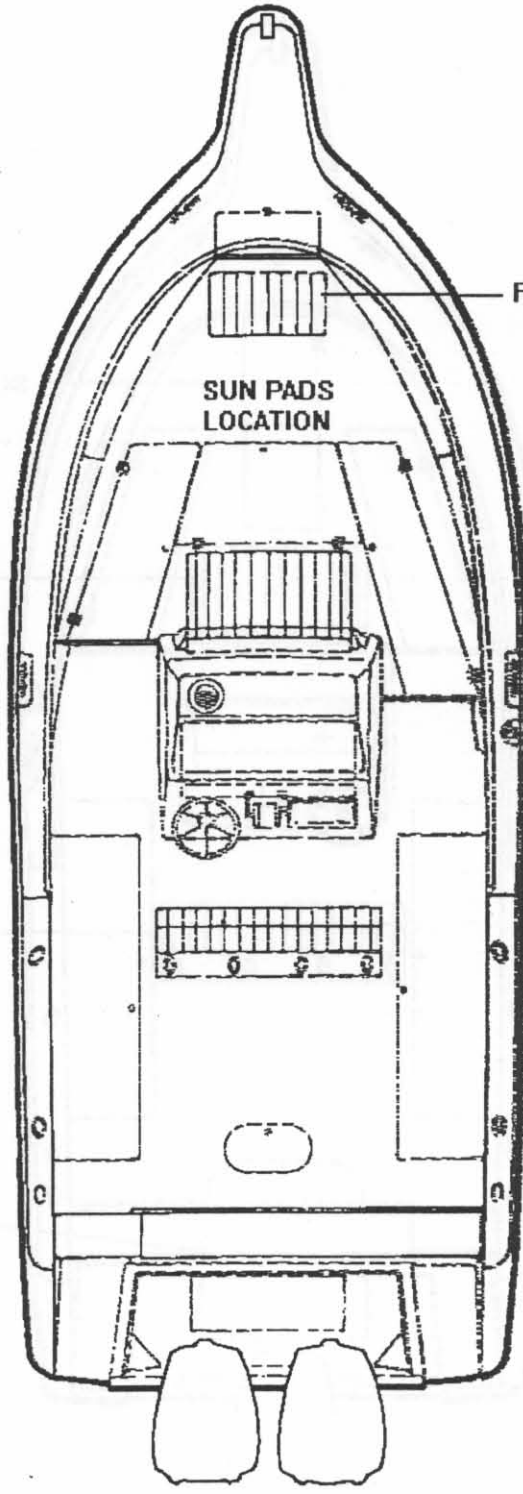
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 **FOUR WINNS**



**237 QUEST  
SEATING  
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 **FOUR WINNS**

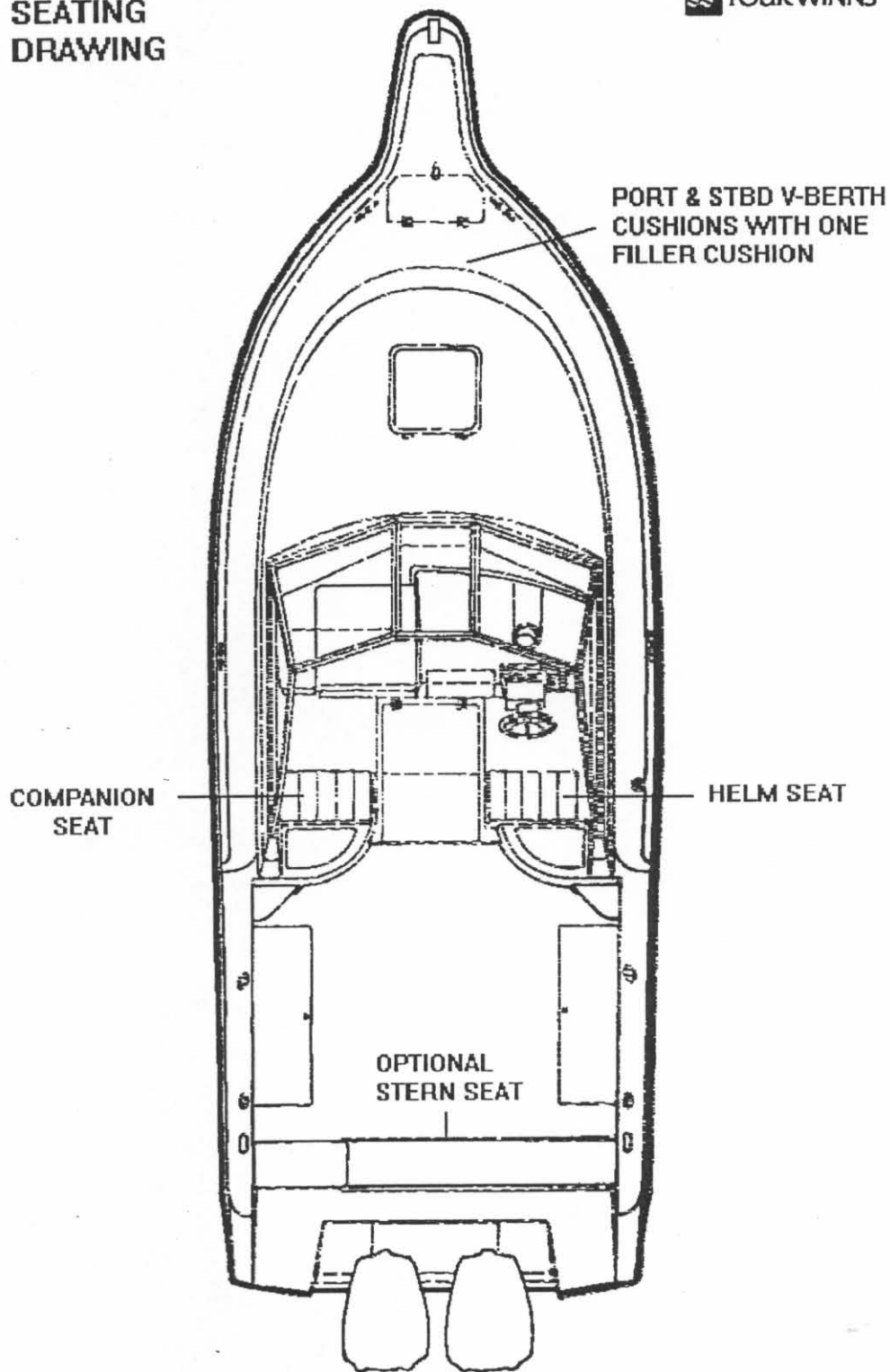


**FORWARD COOLER  
SEAT CUSHION**

**SUN PADS  
LOCATION**

**257 QUEST  
SEATING  
DRAWING**

 **FOURWINNS**





# FIBERGLASS AND HULL INFORMATION

## L - 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.

Four Winns boats utilize a variable deadrise, deep V-hull construction. The sharp V of the hull at the stern will cut the water cleanly to soften the ride in rough water. The strakes in the hull are designed to provide additional lift for easier planing, more stability and to help soften the ride. Four Winns hull designs optimize speed, performance, and handling characteristics.

## L - 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 20 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. This coating will prevent the coarser texture of the later applied fiberglass laminates from printing through and spoiling the cosmetic appearance of the hull.

A number of fiberglass layers and woven roving are applied to the above laminate. Each layer is hand layed 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 into place. They are constructed of fiberglass and help ensure a strong, rigid hull, permanently formed into a solid assembly, free of distortions.

Fiberglass cockpit liners, seat bases, v-berths, and bow pulpits 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.

## L - 3 EQUIPMENT INSTALLATION

Many boats are used for specific purposes or under conditions which require the addition of special equipment to the hull, deck or cabin areas. 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.

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.

#### NOTICE

Always pre-drill fastening holes with a proper size bit. Pre-drilling will help prevent the fiberglass from splintering and thus causing unsightly damage.

### L - 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.

#### A. General Maintenance

For fresh water use, the boat should be washed once or twice a month. When using in a salt water environment, considerable more care will be necessary. Be careful when selecting a cleaning agent. Dishwashing detergents are usually gentle and are recommended for cleaning gel coat. Cleaning products such as Ivory or Dawn 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, Fantastic, 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 non-skid areas, DO NOT attempt to use a wire brush or sandpaper because this will remove the non-skid gel.

Apply wax once a month to maintain gel coat lustre and prevent fading or chalking. Read the label before using any product. Make sure product is applicable to fiberglass. Consult a Four Winns dealer for his recommendations.



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 build-up in the non-skid 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.

#### NOTICE

DO NOT use any carnauba based wax. The gel coat will be permanently discolored.

A darkening or discoloration of the non-skid surfaces can sometimes occur as a result of wax buildup. This can either be from continuous applications of wax, or from the mold release wax left from the manufacturing process. Exposure to the sun and elements can turn the wax darker, or occasionally can cause it to become flaky or powdery. To remove, use 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 when the gel coat top surface is 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 when the gel coat has yellow cast or streaking. Uniform yellowing may be a result of an incorrect coating or application. 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.

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.

## 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 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 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 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.

## L - 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 re-launch.

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, & Blisters

For severe gouges, scrapes, and cracks in the gel coat, consult a Four Winns dealer for professional assistance. Crazing is the appearance of hair-line cracks in the gel coat. The occurrence of blisters, especially below the water-line on the hull, is an unfortunate but common difficulty encountered on fiberglass structures. The appearance of fiberglass crazing or blisters is not a sign of deterioration.

These problems, when present, usually occur in the gel coat finish or the outer "skin coat" fiberglass laminations. Though blisters are basically "cosmetic," repair them as soon as possible after discovery, especially when below the water-line. Allowing blisters to go unresolved for an extended

period can lead to more severe blistering or other fiberglass lamination difficulties.

Blisters can range in size from that of a pin-head to that of a silver dollar and are usually dome-like. Usually blisters will be most apparent immediately after lifting the boat from the water. The blisters may decrease in visual size or "flatten-out" as the hull dries out. Mark the blister location upon discovery. When broken open, fiberglass blisters will usually be shallow in depth and will often have water or a clear, foul smelling liquid inside.

Cosmetic surface damage can be repaired as follows:

1. Sand the surrounding area with medium or fine grit sandpaper. Clean all marine growth, dirt, anti-fouling paint, etc. from the immediate area. DO NOT excessively scratch or gouge the surrounding area.
2. Use a hard, pointed tool to open the blister or gel crack. Take care not to damage the surrounding gel coat.
3. Sand the blister, 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

additional 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 used on Four Winns boats is available through servicing Four Winns dealers. Due to color variations and fading, matching the color of the gel coat may be difficult. Occasionally, tinting of the gel may be necessary.

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 4 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 anti-fouling paint manufacturer's instructions.

Fiberglass 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 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.

## L - 6 ANTI-FOULING PAINT

Anti-fouling or bottom paint is not available from Four Winns on the Quest models. However, it is recommended when the boat will be in the water for extended periods of time.

Anti-fouling paint reacts with the water to retard the growth of algae, barnacles and other marine growth on the hull surfaces. The paint will also fill the microscopic pores of the gel coat and help protect the fiberglass. Four Winns does not recommend keeping the boat in the water without anti-fouling paint applied.

The paint begins reaction upon contact with water. After a season's use or sooner under certain conditions, the anti-fouling 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.

See a Four Winns dealer for recommendations on anti-fouling paint use in your area.

## L - 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 home-made. 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. Four Winns trailers are available for all Quest models.

#### 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.

Always lift the hull using proper lifting straps, at the designated "sling" locations. The only exception to using the designated "sling" marker locations, is when utilizing a lifting machine which has a single lift cable. On certain models, the center of gravity may be aft of mid-ship, due to the engine/drive installation. To compensate for this, some trial-and-error replacement of the lifting straps may be required to lift the boat "level" with the surface. Always use a spreader bar or other lifting equipment that will prevent excessive force from being applied at the gunwale area.

## L - 8 GENERAL TRAILER INFORMATION

The trailer must properly "match" the boat's weight and hull design. Four Winns trailers are designed specifically for each boat model. This will prevent any problems related to trailer capacity or improper support. Four Winns trailers meet or exceed the National Marine Manufacturers Association's trailer requirements.

Four Winns, Inc., manufactures bunk type trailers. The bunks are located specifically for Four Winns boats and adequately support all parts of the boat. It is a "drive-on" type trailer which means winching the boat from the water is not necessary to load the boat onto the trailer.

### NOTICE

DO NOT winch the boat onto trailer when the bunks are dry. This will place additional strain on the winch assembly and may result in damage.

### A. Exterior Finish

Four Winns offers both painted and galvanized trailers. The painted trailer is intended to be used in fresh water and the galvanized trailer in salt/brackish water.

## B. Regulations

Federal law requires that the trailer and tire registration information be compiled and recorded. The Four Winns boat registration card includes trailer registration information. A trailer tire warranty card provided with this manual, is to be filled out and returned to the tire manufacturer.

Laws covering such items as trailer brakes, safety chains, licenses, etc., will vary from state to state. If additional information is needed on trailer regulations, please contact the motor vehicle department in your state. In most cases, your Four Winns dealer will be familiar with regulations in your area and will assist with any minor adjustments or alterations needed.

## C. Load Carrying Capacity

The certification label shows the maximum load-carrying capacity and is located on the port (left) forward side of the trailer. The Gross Vehicle Weight Rating (GVWR) is the load-carrying capacity plus the weight of the trailer itself. DO NOT exceed the GVWR rating for the trailer.

If selecting a trailer from another manufacturer, check the load-carrying capacity. A trailer with a load-carrying capacity that is too low will be unsafe on the highway and could cause sudden failure of critical trailer components or abnormal tire wear. A trailer with too high of a load-carrying capacity that is sprung for heavy loads can damage a lighter boat.

### NOTICE

DO NOT overload your trailer by placing camping gear or other heavy equipment in the boat. DO NOT exceed the GVWR rating. Damage to the hitch, coupler, or trailer could occur.

Improper weight distribution can place excessive strain on the towing vehicle and trailer. It can also cause the trailer to "fishtail" (sway side to side). Be sure gear and other items are distributed evenly in the boat.

## D. Hitches

The load-carrying capacity of trailer hitches will vary between manufacturers and must equal or exceed the GVWR. Four Winns trailers use surge brake systems, and surge brakes require a fixed hitch. Refer to Section L-9g Surge Brakes for additional information.

Before hitching the trailer to the vehicle, make sure the proper size hitch ball is installed to match the coupler. For the Quest models 237 and 257 trailers, the proper ball size is 2 5/16 inches. For all other models, the proper ball size is 2 inches. Consult your Four Winns dealer for his recommendation before purchasing a trailer hitch for your towing vehicle.

### WARNING

To help guard against a sudden failure while in use, DO NOT use a worn hitch ball. Replace all worn or damaged parts.

## L - 9 TRAILER COMPONENTS

### A. Bunk Supports

All bunk boards and wheel boards are made of pressure treated wood. This wood is rot resistant. All boards are covered with a high quality exterior grade carpet to protect the boat from damage during normal use.

Bunk supports run parallel to the keel and support the hull, extending beyond the transom. See Figure L1.

Outer bunk supports provide stability for the boat. The inside bunks are the main weight bearing members. Side guide-on supports help to keep the boat straight while driving the boat onto the trailer. Keeping the tie-downs tightly fastened will prevent the boat from bouncing against the bunk supports. See Figure L2.

### NOTICE

Improper trailer set-up can cause hull damage.

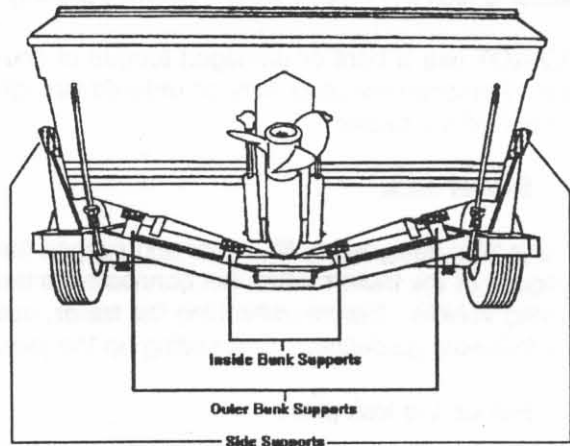


Figure L1

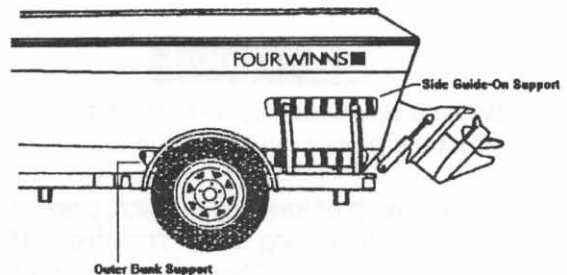


Figure L2

### B. Tongue

The trailer tongue can be removed during storage of the boat and trailer. The tongue slides into the trailer frame and two clevis pins with hair pin cotters are installed to secure the tongue in place.

### CAUTION

Make sure the trailer tongue is secure before hitching to the towing vehicle.

Four Winns trailers are designed with tongue weights between 5% and 10% of the total weight of the boat, fuel, gear and trailer. If the downward weight on the coupling ball does not fall within this range, coupler failure and towing instability may occur.

If using another manufacturer's trailer, have the dealer check the tongue weight before trailering.

DO NOT use a bent or damaged tongue or coupler. Replacement parts may be ordered through a Four Winns dealer.

### C. Swivel Jack

The jack is designed to lift, lower and support the tongues of the trailers when not connected to the towing vehicle. Before unhitching the trailer, use the following guidelines when setting up the jack.

1. Pull on the lock pin.
2. Swivel jack to the vertical position.
3. Release the lock pin and make sure the pin fully engages the attached tongue bracket.



Be sure dirt, sand, ice, etc., does not obstruct the proper seating of the lock pin.

4. When raising or lowering the jack, prevent the caster from rotating while cranking. Make sure the jack is planted on a firm and level surface before unhitching the trailer.



To prevent personal injury, NEVER pull on the lock pin when any trailer weight is on jack.



To prevent personal injury, make sure trailer wheels are chocked before lifting the coupler off the hitch ball when on a grade or incline.

The swivel jack provided on the Four Winns trailer can be removed from the trailer to allow for maintenance or repairs.

Follow the manufacturer's maintenance recommendations provided with this manual.

### D. Coupling Assembly

To unlock the coupler, pull the locking trigger upward with your index finger and lift the locking lever. To lock, push the locking lever handle down. The optional locking pin or a padlock may be inserted in the locking lever hole to secure the trailer. Refer to the drawing in the manufacturer's literature provided with this manual.

#### NOTICE

Keep the coupler clean to prevent damage.

Safety chains are provided and must be used. Cross the safety chains under the coupling and attach to the towing vehicle's frame or bumper. Always allow slack for turns.



To reduce the risk of breakaway accidents, be sure coupler is seated and safety chains crisscrossed before trailering.

Be sure to check the regulations on towing and safety chain requirements in your area. Regulations vary from state to state.

### E. Winch

Winch operating instructions are listed below.

To release the winch, place the ratchet in the REVERSE or NEUTRAL position. The winch handle will spin when pulling on the winch line.



A spinning winch handle can cause injury. Be sure the area is clear.

To rewind the winch, ALWAYS engage the ratchet first. Turn the handle in the appropriate direction to rewind the line.

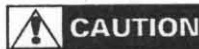




A clicking sound will be heard when the winch is properly engaged. If a clicking sound is not heard, DO NOT release the handle. Handle may spin backwards. Lower the load into a safe position before releasing the handle.



DO NOT release the handle when the ratchet is disengaged. Be sure the ratchet is engaged or no load is on the winch before releasing the handle.



Always inspect the winch line and hook before each use. NEVER use cable (or line) that is worn, frayed or kinked. NEVER let anyone stand in or behind a boat while pulling with the winch.

Refer to the manufacturer's literature provided with this manual for more information on winch operation.

## F. Wheels

Trailer wheel rims are available in white or chrome finish on painted trailers. White rims are standard and are finished with powder coat paint. Chrome wheel rims are available as an option. Galvanized trailers are equipped with matching galvanized rims.

The tires installed on Four Winns trailers meet the trailer load requirements for each model. Before trailering, make sure the tires are inflated according to the manufacturer's recommendation. Examine the tires frequently for snags, bulges, excessive tread wear, separations or cuts.

Lugs must be checked for proper tightness after the first 50 miles and periodically thereafter.

Refer to the manufacturer's literature for more information provided with this manual.

## G. Surge Brakes

Brakes are available on all Quest trailers manufactured by Four Winns, Inc. Surge brakes operate automatically when the tow vehicle's brakes are applied. When the tow vehicle slows down or stops, the forward momentum or "surge" of the trailer against the hitch ball applies pressure to a master cylinder in the trailer coupler. This pressure activates the trailer brakes through the brake's hydraulic system. DO NOT use a trailer hitch with moving parts. The brakes could activate when traveling downhill. Always use a fixed hitch.

### NOTICE

Anti-sway devices as commonly used on recreational vehicles (RV's) are not applicable to surge brake systems and should not be used on Four Winns trailers.

If the brakes are wet from loading, travel at a slow speed and apply the brakes on your towing vehicle several times to "dry" out the trailer brakes.

For maintenance and other information, refer to the manufacturer's literature.

## H. Lights

Four Winns trailers are equipped with taillights, brake lights, turning signals, and clearance lights.

Consult your dealer for state trailer regulations concerning lighting and other optional equipment.

## I. Tie-downs

The boat should be secured to the trailer by tie-downs to prevent damage to the hull. The boat may shift or bounce against the bunks or hull supports if not secured. It may also slide or fall off the trailer while being towed.

There are two types of tie-downs being used:

1. Bow Tie-downs: A bow stop to hold the front of your boat in place is located on the winch stand. It should be positioned so that the winch line pulls straight and is parallel to the trailer frame. A separate tie-down should then be attached to hold the boat. See Figure L3.

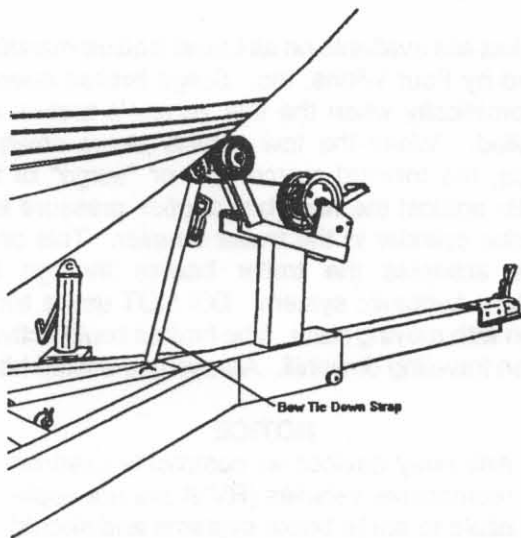


Figure L3

**NOTICE**

DO NOT rely on the winch cable (or line) alone to hold the bow of the boat against the bow stop. A bow tie-down is provided with the Four Winns trailer.

2. Rear Tie-downs: It is very important that the transom is resting securely on the bunk supports at the rear of the trailer. Rear tie-downs are provided to secure the boat to the trailer. Tighten the tie-downs to prevent the boat from moving. See Figure L4.

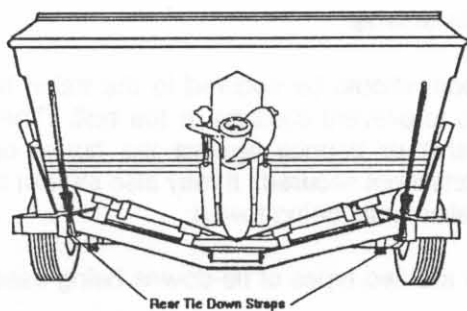


Figure L4.

**L - 10 TRAILERING**

**A. Checklist**

Before trailering, the trailer should be inspected for the following:

1. Check tires for proper inflation. Under-inflated tires heat up rapidly and may blow-out or cause uncontrolled swaying. Also, make sure lug nuts are tight.
2. Be sure the coupler is secured to the trailer hitch and safety chains are attached.
3. Be sure trailer taillights and turning signals are operational.
4. Check the brakes for proper operation prior to departure.
5. Check tie-downs and make sure boat is secured to the trailer.
6. Check the springs and under carriage for loose parts.
7. Before towing, close and secure all hatches, doors, and windows. Securely store all equipment and canvas. Installed tops, side curtains, and aft curtains can be damaged while towing.
8. Carry a spare tire for both the trailer and towing vehicle. On extended trips, carry spare wheel bearings, seals, and races. Be sure and carry the proper tools to complete the repairs.

**⚠ WARNING**

To avoid bearing failure and possible wheel loss, keep wheel bearings properly lubricated. Inspect the wheel bearings periodically and check for damage.

9. When traveling, check the wheel hubs during stops at gas stations, restaurants or other places. If the hub feels abnormally hot, the bearing should be inspected before continuing the trip.

## B. Tactics

### NOTICE

Be sure to check the towing vehicle manufacturer's literature for recommendations on towing.

1. Install outside rear view mirrors on both sides of the towing vehicle to improve vision. Check the rear view mirrors at frequent intervals to be sure trailer and boat are riding smoothly.
2. Allow at least one car and trailer length between vehicles for each 10 mph. DO NOT tailgate.
3. Use low gear (on manual transmissions) when traveling up steep hills or over sand, gravel, or dirt roads.
4. Use care if shifting to a lower gear while traveling downhill. This could activate the trailer's surge brakes for the duration of the downhill run and cause overheating. Extended overheating could result in complete loss of the trailer brakes.

To help prevent overheating, slow down while approaching the crest of a hill and maintain a slow, controlled downhill speed. Apply brakes in short intervals to allow time between braking for the brakes to cool off.

5. When rounding turns on highways or streets, DO NOT cut corners. Also, travel slowly over railroad tracks.
6. If the trailer begins to "fishtail" when accelerating, reduce speed until it ceases. If the trailer "fishtails" again during acceleration, stop to investigate the cause of the problem. Check for improper trailer load and uneven weight distribution inside the boat. Check the winch line and tie-downs. Also check the tires for proper inflation or damage. If necessary, redistribute the load before continuing.

### NOTICE

Before backing the trailer into the water, disconnect the trailer light plug from the towing vehicle. This will greatly reduce

the likelihood of blowing out trailer lights or fuses on the towing vehicle. Be sure to carry extra fuses for the towing vehicle.

For additional information on trailering, refer to the Boating Basics literature provided with this manual.

## L - 11 MAINTENANCE

### A. Care of Exterior Finish

When using the trailer, keep in mind the paint can scratch and become marred during normal use. Paint touch up kits can be ordered from Four Winns Customer Service department. Contact a Four Winns dealer for assistance.

Some maintenance is required to maintain the finish and minimize rusting. The trailer should be washed and rinsed with clean water immediately after each use. On galvanized trailers, rinse only with clean water. Depending upon use, waxing is recommended twice a year. Use paste wax designed for enamel paint.

### B. Bunks

The bunks should be replaced if they are cracked, warped, or evidence of dry-rot is found. The replacement boards should be treated lumber of the same length and width.



DO NOT burn damaged or broken bunks. Toxic fumes will be released. Dispose of bunks properly.

### C. Swivel Jack

Keep the swivel jack clean of dirt, tar, and mud. Lubricate every six months. The swivel jack's inner ram should be lubricated with SAE 30 weight oil. The top cover may be removed to lubricate the gears with wheel bearing grease.

Replace all worn and damaged parts. Be sure to only use the manufacturer's replacement parts. Replacement parts may be ordered through your

Four Winns dealer. For more information on maintenance, refer to the manufacturer's literature provided with this manual.

#### **D. Coupler**

Keep the coupler clean of dirt, tar, and mud. Lubricate the coupler with SAE 30 weight oil every six months or as often as necessary. Replace any worn or defective parts. If the coupler is damaged, contact your Four Winns dealer for replacement parts. DO NOT use a damaged or bent coupler assembly.

For more information on maintenance, refer to the manufacturer's literature provided with this manual.

#### **E. Winch**

The winch should be kept clean of dirt, ice, paint, etc., and the spur gears should have a film of grease on them at all times. Apply several drops of SAE 30 weight oil to the ratchet pawl mechanism, bushings and pinion shaft threads twice per season.

Replace any worn or damaged parts. For more information on maintenance, refer to the manufacturer's literature provided with this manual.

#### **F. Wheels**

Some maintenance is required to maintain the finish and retard rusting. The wheels should be washed and rinsed with clean water immediately after each use. Waxing is recommended three to four times each year. Chrome wheel rims may be cleaned with dishwashing soap and water and chrome cleaner as necessary. After cleaning, apply chrome or paste wax to protect the surface. Always read the manufacturer's instructions on the label before using any product.

#### **G. Brakes and Bearings**

Keep the actuator clean of dirt, tar, and mud. The actuator and internal parts should be lubricated at all times with SAE 30 weight oil. The hitch ball may be lubricated with automotive grease or lubricant made for hitch balls.

Periodically inspect the brake system for leaks. Check all hoses for cuts or wear. Replace all defective hoses. The master cylinder should be filled within 1/2 inch from the top of the reservoir. At the beginning of each year, inspect the brakes for excessive wear, replacing linings if necessary. Wheel bearings and seals should be inspected at this time. Replace any worn or defective parts. Grease bearings and seals at this time and at the end of the boating season. Acura Lube Bearing Protectors should be greased three to four times a year. A grease fitting is provided. For more information on maintenance, refer to the manufacturer's literature provided with this manual.

#### **H. Lights**

Inspect wiring for cuts or bare wire which could cause electrical shorts. Repair or replace defective wiring. Replace cracked or damaged lens and always carry spare bulbs. Replacement parts may be ordered through a Four Winns dealer.

#### **I. Tie-downs**

Replace frayed or damaged tie-downs. Periodically, lubricate the ratchet mechanism with a fine oil or silicone spray. Replacement parts may be ordered through a Four Winns dealer.

# WOODWORK AND COMPOSITES

## M - 1 TEAK

Solid teakwood is being used in some areas on the interior of the model 257 and throughout the cockpit area of all models (option on 1991 models only). This wood gives a rich warm appearance with minimal maintenance. Under normal conditions, teak is resistant to rot and will not structurally deteriorate. Exposure to the sun and elements will only cause the wood to turn grayish white. Teak can be restored to its original appearance with minimal care using teak care products that are commercially available.

For a natural teakwood appearance, Wattco Teakwood Oil or Prelude Marine Oil Finish is recommended. When proper application procedures are followed, these dressings can provide a long lasting, protective coating. Many other fine teakwood finishing materials are available. Check with a Four Winns dealer for recommendations on materials commonly used in the immediate area.

To maintain teak, follow directions below.

1. Extended exposure will cause the grain of the wood to rise. The teak will feel and appear rough. Should this occur, lightly sand teak using a hand sanding block and medium grit sandpaper. Sand the wood only enough to smooth the surface.
2. Liberally apply a teakwood dressing. This will replenish the lost teak oil. Repeat the application in a few days.
3. Periodically apply teakwood dressing to keep the wood dark and rich in appearance. DO NOT varnish or paint the teak. The oil emitted by the teakwood will cause the varnish or paint to peel.

Once the teak becomes excessively gray (weathered) more complex cleaning or bleaching is necessary to restore it. Many teak restoration products are available from any Four Winns

dealer. Consult your Four Winns dealer for his recommendations.

## M - 2 HIGH-PRESSURE LAMINATE CARE

Many interior counter tops, table tops, head door, closet door and drawer fronts consist of a high pressure laminate, "formica" like material. The formica has a "matte texture" finish and can be cleaned with dish washing soap and water or other cleaning solutions such as Fantastic. Always read the label before using any product.

### NOTICE

DO NOT use abrasive cleaners or solvents on formica. DO NOT use SoftScrub soap or similar cleaning products; they will scratch the surface and remove the shine.

## M - 3 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. It is currently being used for trim, step pads, hand rails, transom doors, and seat supports.

To clean star board, use a solvent-free, non-abrasive cleaner such as mild dishwashing soap or Fantastic. 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.

# GENERAL MAINTENANCE

## N - 1 WINTERIZATION

### A. Prior to Lifting for Winter Layup

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 completely 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 OMC 2+4<sup>®</sup> 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 engine.

3. Drain water from the fresh water system.
4. Winterize the outboard engine as recommended in the "Engine Owner's Manual".

### 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.
3. Lower boat onto cradle properly or place boat on trailer. 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 non-toxic, fresh water system anti-freeze is recommended as an alternative to disassembling the water system. Refer to Section G-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 anti-freeze solution and pour it into the head. Transfer some of the anti-freeze to the holding tank by flushing the head. Also, refer to Section G-6 System Maintenance for additional information.
6. Ensure that all water is removed from the sump pump, bilge pumps and bilge pump lines. Dry the hull bilge, and self-bailing cockpit drain troughs. Water freezing in these areas could cause damage. See Section H-2 Hull Drainage Systems.
7. Remove the battery(s) and store it in a cool place. Clean the battery using clear, clean water. Be sure the battery has sufficient water and clean terminals. Keep the battery charged throughout the storage period. Do not store the battery on a concrete floor or other damp or conductive surface.
8. Drain the alcohol out of the stove (if applicable) and store alcohol in a cool, dry place away from heat or spark.
9. Clean the boat interior thoroughly.
10. Scrub the hull bottom and wash exterior fiberglass components, wax lightly.
11. Clean exterior upholstery with mild 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 cooler, ice box or refrigerator. 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, head floor, 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 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.
5. DO NOT use the bimini top or t-top as a winter storage cover. The life of these covers may be significantly shortened if exposed to harsh weather elements for long periods.



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.

## N - 2 GENERAL MAINTENANCE SCHEDULE

\* Or As Required

SERVICE	At Launch and First Operation*	25 Hour Check each Season*	Bi-Seasonally or Every 6 Months or Every 100 Hours*	Seasonally or Every 12 Months or Every 200 Hours*
<b>Engine and Drive Systems</b>		Refer to Section B		
Engine Maintenance	As Recommended by the Manufacturer			
Inspect Oil Lines and Other Hoses	■	■	■	
Check Prop Shaft for Trueness				■
Check Propellers				■
Check Prop Shaft Alignment	■ and 48 hrs after launch	■	■	
Test Emergency Shut-Off Switch	■		■	
Gauge Cleaning			■	■
<b>Control Systems</b>		Refer to Section C		
Throttle and Shift Adjustment		■		■
Neutral Safety Switch Test				■
Cable and Control Lubrication				■
<b>Steering Systems</b>		Refer to Section D		
Linkage and Connection Inspection			■	■
Steering Adjustments				■
Steering System Lubrication				■
<b>Electrical Systems</b>		Refer to Section E		
Inspect Battery Connections			■	■
Check Battery Water		■	■	■
Battery Cable Inspection				■
12 V. Electrical Equipment Operation		■		■
12 V. Wiring and Connection Inspection				■
120 V. Electrical Equipment Operation		■		■
120 V. Wiring Inspection				■
120 V. System Continuity Test				■
Shore Power Cord and Adaptor Inspection			■	■
Polarity Buzzer Operation				■



SERVICE	At Launch and First Operation*	25 Hour Check each Season*	Bi-Seasonally or Every 6 Months or Every 100 Hours*	Seasonally or Every 12 Months or Every 200 Hours*
Receptacle and Connection Inspection			■	■
<b>Fuel Systems</b>		Refer to Section F		
Inspection for Leaks		■	■	■
Fuel Sender Inspection				■
Fuel Filter Inspection		■	■	■
Tank Inspection				■
<b>Fresh Water Systems</b>		Refer to Section G		
Flush Water System				■
Water Tank Inspection				■
System Inspection		■		■
<b>Ventilation and Drainage</b>		Refer to Section H		
Bilge Pump Operation and Cleaning		■	■	■
Sump Pump Operation and Cleaning				
Check Fish Box and Deck Box Drains				
Check Transom Drain Plug	■		■	■
<b>Interior Equipment</b>		Refer to Section I		
Head Maintenance	As Recommended by the Manufacturer			
Thru-Hull Fitting Inspection	■	■	■	■
Ice Box and Refrigerator Cleaning				■
Stove Fuel System		■		■
Stove Maintenance	As Recommended by the Manufacturer			
Stereo Head Cleaning and Demagnetizing				■
Deck Hatch and Screen Cleaning				■
<b>Exterior Equipment</b>		Refer to Section J		
Clean Spotlight			■	■
Check Compass for Magnetic Deviation				■
Check Trim Tab Fluid Level		■	■	■
Check Trim Tab System for Leakage				■

SERVICE	At Launch and First Operation*	25 Hour Check each Season*	Bi-Seasonally or Every 6 Months or Every 100 Hours*	Seasonally or Every 12 Months or Every 200 Hours*
<b>Seating and Weather Cover</b>		Refer to Section K		
Clean Upholstery				■
Spray Upholstery with Lysol				■
Check Seat Hinges and Swivels				■
Wash Weather Covers				■
Spray Weather Covers with Lysol				■
<b>Fiberglass Components and Hull</b>		Refer to Section L		
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				■
Wax Trailer		■	■	■
Lubricate Trailer Jack		■	■	■
Lubricate Trailer Coupler			■	
Lubricate Trailer Winch		■	■	■
Inspect Trailer Brakes			■	
Lubricate Bearings		■	■	
<b>Woodwork Care and Maintenance</b>		Refer to Section M		
Apply Teak Care Products	As Needed			
Clean V-berth Table				■

# OPERATION

## O - 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 pilot brief you on the general operation of your new boat. Perform a "Pre-Cruise Systems Check".

## O - 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 provided to enhance your knowledge of the boat. Read this information carefully.

After becoming familiar with the boat and its systems, re-read this manual. Maintenance and service tips are included to help keep the boat in like-new condition.

## O - 3 SAFETY EQUIPMENT

Besides the equipment installed on the boat by Four Winns, Inc., certain other equipment is required for passenger safety. A brochure listing the Federal equipment requirements is included with this manual. Remember that these laws are for your protection and are minimum requirements. Check your local and state regulations, also.

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.

## O - 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. 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.

## O - 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.

## O - 6 DRINKING AND DRIVING

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 by mariners involves the use of alcohol or drugs. Each year, about half of all accidents involving fatalities are the result of alcohol or drugs.

Laws enacted in 1984 make it a federal offense to operate a boat while intoxicated. Criminal penalties may include the termination of operating privileges for up to one year.

Alcohol or drugs have an inhibiting effect on the judgement and reaction time of the helmsmen. 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.

## O - 7 PRE-CRUISE SYSTEM CHECK

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

1. Check the weather forecast. Determine if the cruise planned can be made safely.
2. Check the bilge water level and bilge pump operation. Inspect for oil, gas or water leaks. Check for the scent of fuel fumes. Look for other signs of potential problems. Keep the bilge in a clean condition to prevent bilge pump damage and fire hazards.
3. Check the oil level of the VRO<sup>®</sup> tank daily. Fill oil as required by the indications on the dip sticks. Trim tabs use automatic transmission fluid. Check the fluid levels in the as often as practical.
4. Lower the outboard engines and make sure the water intakes are under water.

5. Set the Battery Selector Switch to the desired position. See Section E Electrical Equipment.
6. 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.
7. Be sure the dockside shore power cord is disconnected.
8. Ensure an adequate amount of fuel is on board.
9. Be sure you have sufficient water and other provisions on board for the cruise planned.
10. Leave a written message listing details of the planned cruise with a close friend ashore.

## O - 8 ENGINE OPERATIONAL PROCEDURES

### Starting

#### NOTE

Before cranking your engine, make sure the battery is connected. If the engine is started without a battery connected, the electrical system will be damaged. Refer to Section E on Electrical System for more information.

#### NOTE

DO NOT operate the motor out of the water. The water pump can be damaged or the engine can overheat.

1. Lower the motor to the RUN position. Refer to the Operation Section, Power Trim and Tilt or Tilting in the Engine Operation and Maintenance manual.
2. Squeeze primer bulb, outlet end up, until firm. If the boat's fuel system is equipped with an electric primer pump, activate the pump for 20 to 30 seconds.
3. Attach the clip and lanyard assembly to the emergency stop switch. Attach the lanyard to a secure place on your clothing.

4. Move the remote control handle to NEUTRAL.

**NOTE**

To avoid engine damage: DO NOT exceed 2500 RPM in NEUTRAL. DO NOT exceed 1500 RPM in NEUTRAL for extended periods of time.

**Cold Engine**

5. Starting a cold engine normally requires use of the engine primer. To activate the primer, PUSH and HOLD IN the ignition key while cranking or running the engine.

**NOTE**

DO NOT raise the fast idle lever unless you need to clear a flooded engine. Raising the fast idle lever overrides the QuikStart™ electronic starting system. After the cold engine starts, this system will hold the engine at fast idle until warm, then will automatically reduce it to normal idle speed.

Turn the ignition key clockwise to the START position, then push and hold key IN to prime. Crank the engine no longer than 10 seconds. Release the key upon start-up.

**NOTE**

Starter motor can be damaged if operated continuously for more than 10 seconds.



DO NOT attempt to shift the motor into gear when the engine is running at fast idle. Shifting under this condition can cause gear damage, and **the resulting sudden boat movement could cause injury.**

If the engine did not start, release the key momentarily, then try again.

**NOTE**

DO NOT overprime, or the engine will flood. If the engine floods or does not start, refer to the Maintenance Section, Trouble Check Chart in the Engine Operation and Maintenance manual.

**After Engine Starts**

6. If the engine starts but needs more fuel to prevent stalling, briefly push the key IN several times until the engine warms up and runs smoothly.
7. Check the water pump indicator. A steady stream of water indicates the water pump is working.

**NOTE**

If a steady stream of water **is not visible**, stop the engine and refer to the Operation Section, **Engine Overheating** in the Engine Operation and Maintenance manual.

**NOTE**

DO NOT turn the ignition key to the START position while the engine is running, or you will damage the starter and flywheel.

**Warm Engine**

Follow the **Cold Engine** procedure **except** warm engines do not normally require priming. If your engine fails to start, then prime the engine.

**NOTE**

Immediately after the warm engine starts, the QuikStart™ electronic starting system will hold the engine at fast idle for about five (5) seconds, then will automatically reduce it to normal idle speed.



DO NOT attempt to shift the motor into gear when the engine is running at fast idle. Shifting under this condition can cause gear damage, and **the resulting sudden boat movement could cause injury.**

**Shifting and Speed Control**

**NOTE**

DO NOT shift motor into FORWARD or REVERSE when the engine is NOT running.

8. With the engine running, lift the neutral lockout tab on the control handle and move the handle briskly to FORWARD or REVERSE.

After shifting, continue to move the handle slowly in the same direction to increase speed.

#### NOTE

When shifting from FORWARD to REVERSE (or back), pause at NEUTRAL until the motor is at idle speed and the boat has slowed.

### Stopping Engine

Move the control handle to the NEUTRAL position.

Turn the key counterclockwise to the OFF position.

#### NOTE

Leave the key in the OFF position when the motor is not running to prevent the battery from discharging. Remove the key when the boat is unattended.

### Fuel Economy

9. The economy throttle range can save fuel, depending on the boat load and hull design. When the boat reaches top speed, throttle back from FULL SPEED to the economy throttle range. Doing so will result in fuel savings without noticeable loss of speed.

Please refer to the Engine Operation and Maintenance manual included with this owner's manual for additional information on engine operation and maintenance.

## O - 9 GROUNDING AND TOWING



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 U.S. Coast Guard, to safely accomplish the towing task.

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 don life jackets and take a seat in the cabin or other protected area.



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



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.

## O - 10 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.

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: U.S.P.S., P.O. Box 30423, Raleigh, NC 27622.

The Red Cross offers power boating and canoeing classes. Contact: Director of Water Safety, American National Red Cross, 17th & D Streets N.W., Washington, DC 20006.

### B. Boating Manuals or Literature

A good source of information is the U.S. Coast Guard's home study book called "The Skipper's Course". This book may be purchased through: Superintendent of Documents, U.S. 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

U.S. nautical charts are sold throughout the country at Governmental Printing Office stores and other agents. A chart catalog is available by writing to: National Oceanic and Atmospheric Administration, National Ocean Survey, Rockville, MD 20852.

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

Addresses of all state boating agencies are listed in "A Boater's Guide". For a free copy, write to: National Marine Manufacturers Association, 401 N. Michigan Avenue, Chicago, IL 60611.

## O - 11 GLOSSARY

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 strength 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.

**DINGHY** - A small, open boat used for ship to shore transportation.

**DISPLACEMENT** - The weight of water displaced 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 coasts 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 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.

**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.

**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 marker 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, undocking, 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.

**WAVE GRADIENT** - A wave's slope or angle from trough to crest with respect to the horizon.

**WAVE HEIGHT** - From the bottom of a wave's trough to the top of the crest.

**WEATHER DECK** - A deck with no overhead protection.

**WET EXHAUST** - This term refers to an exhaust system where the cooling seawater is mixed with the exhaust gases just after the riser. This mixture is then ejected through the drive or ports located in the transom or hull sides.

**WHARF** - A man-made structure bounding the edge of a dock and built along the shoreline.

**WHIPPING** - The act of wrapping the end of a piece of rope with small line, tape or plastic to prevent it from fraying.

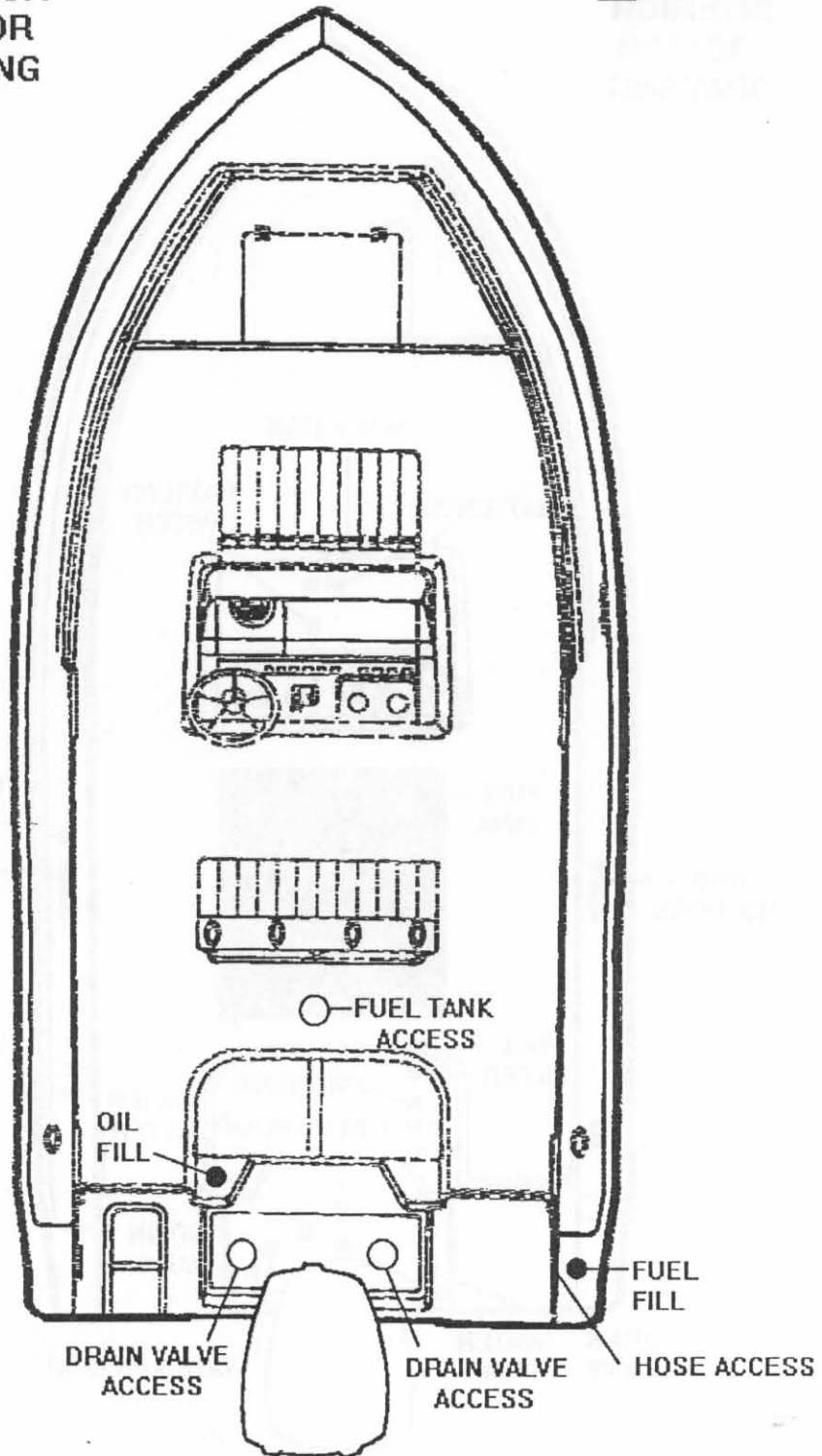
**WINDLASS** - A device used to raise and lower the anchor.

**WINDWARD** - Toward the direction from which the wind is coming.

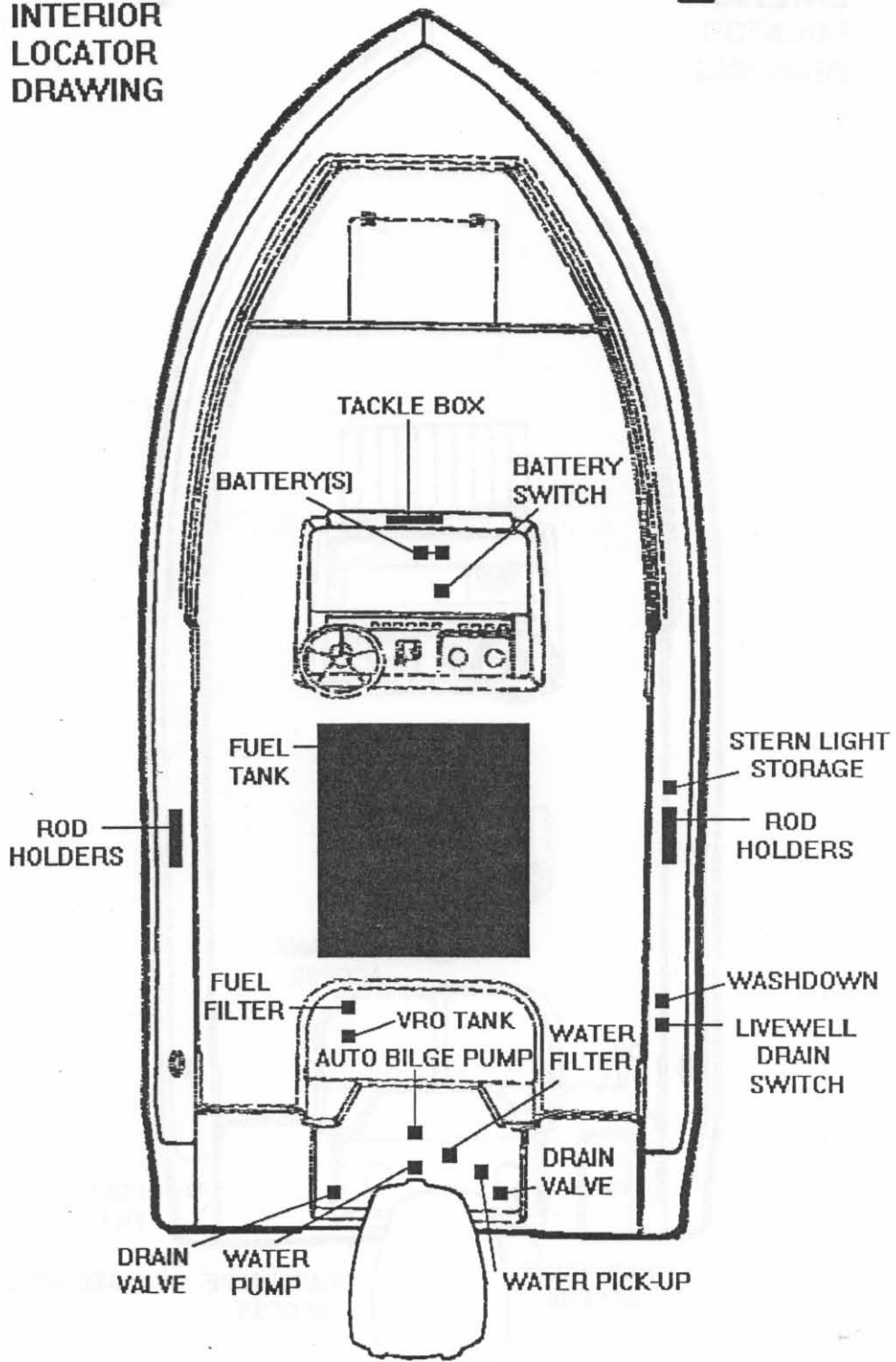
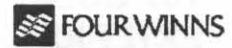
**YAW** - 1. To swing off course, as when due to the impact of a following or quartering sea. 2. Any motion about a vertical axis.

**187 QUEST  
EXTERIOR  
LOCATOR  
DRAWING**

 **FOUR WINNS**

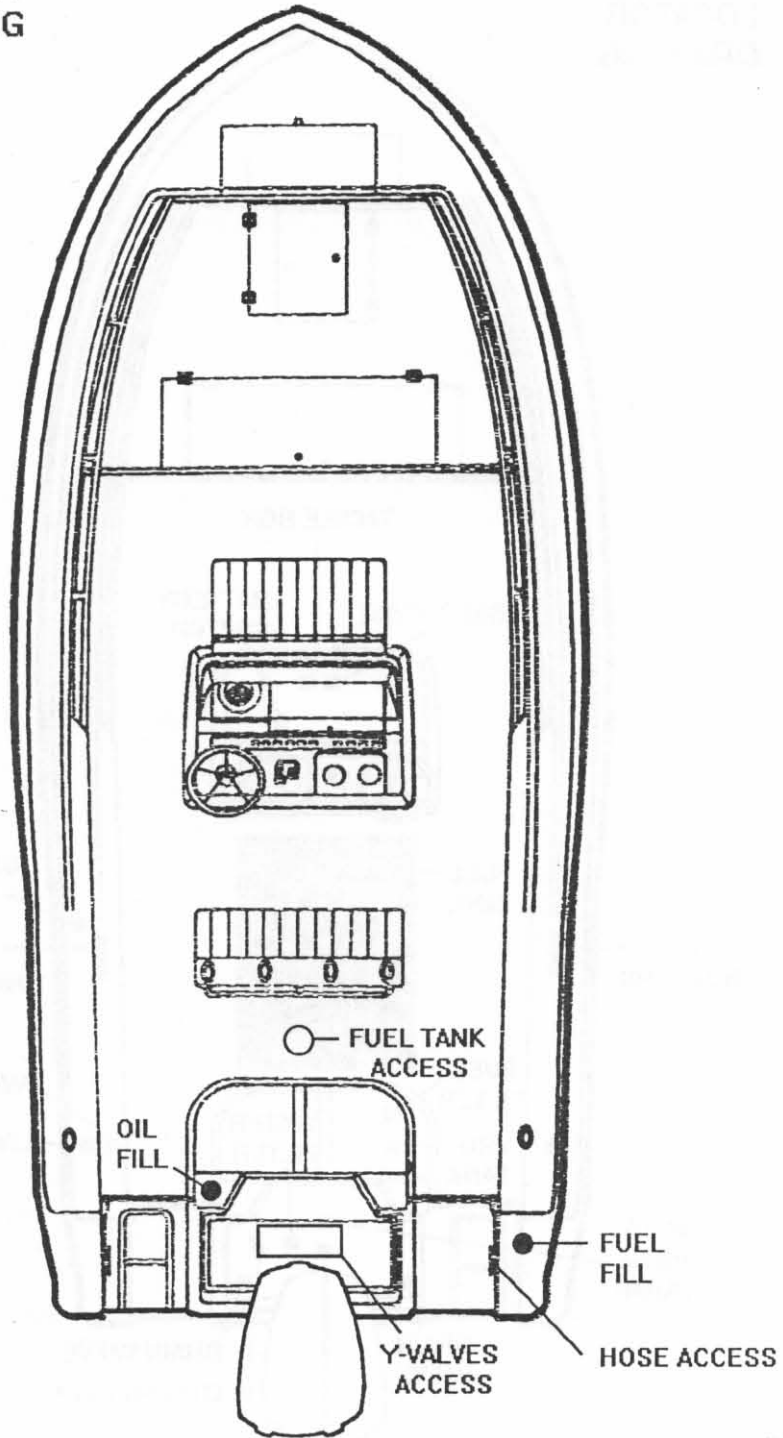


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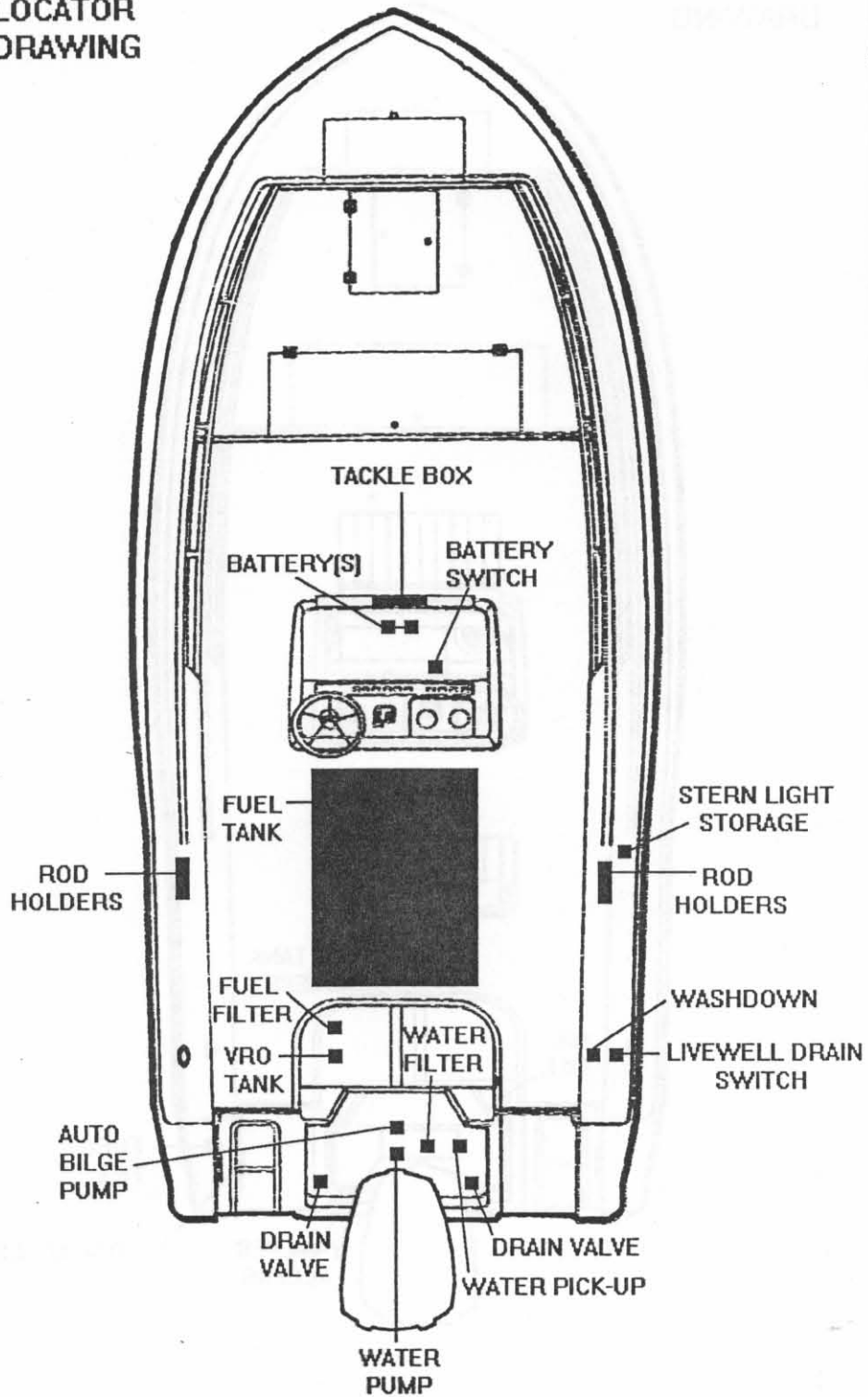




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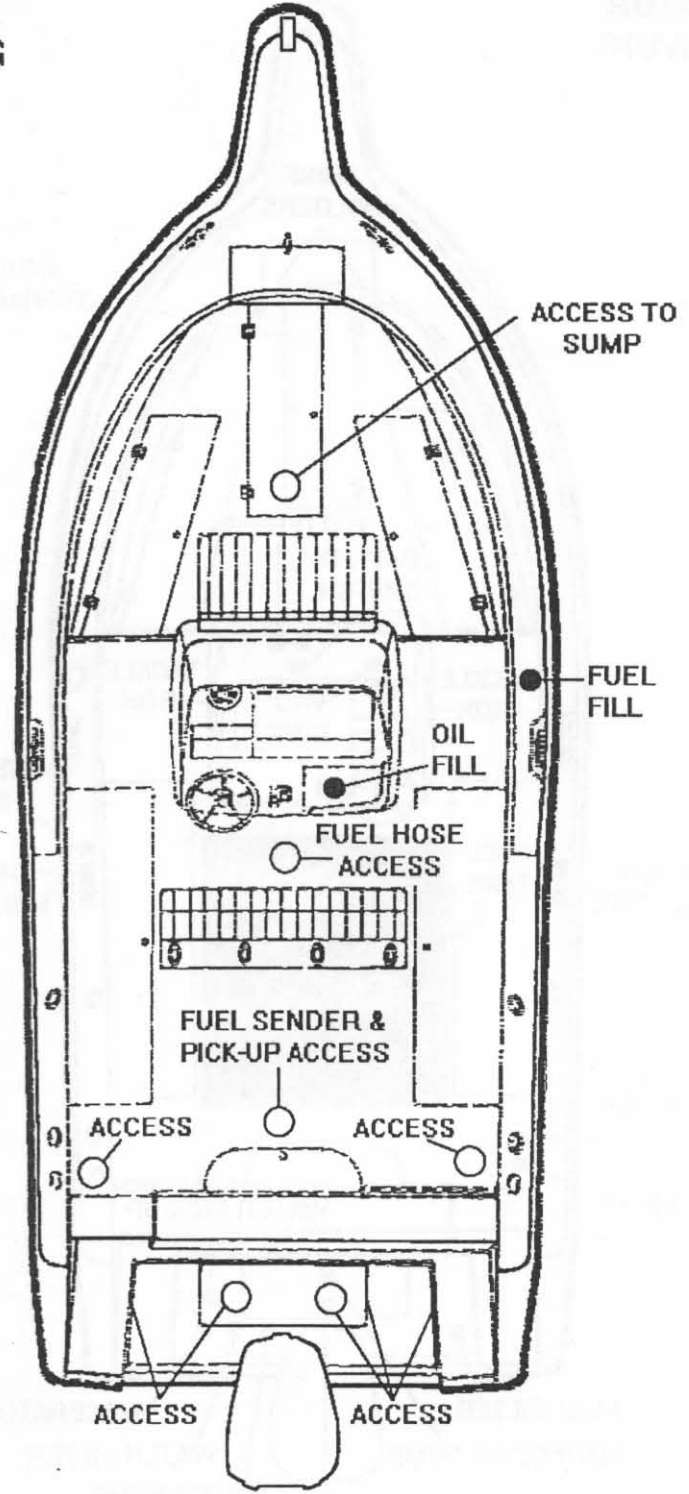


207 QUEST  
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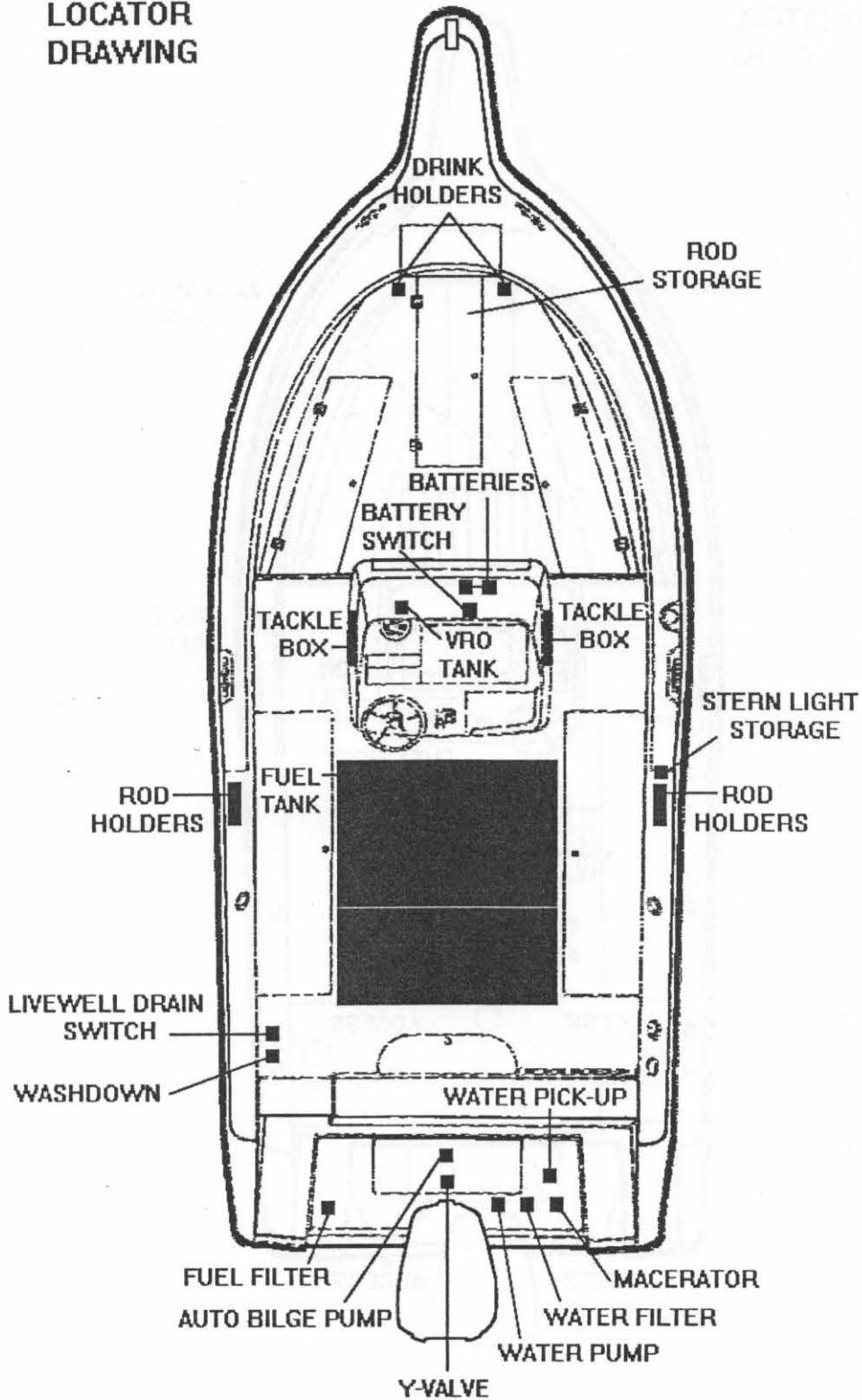
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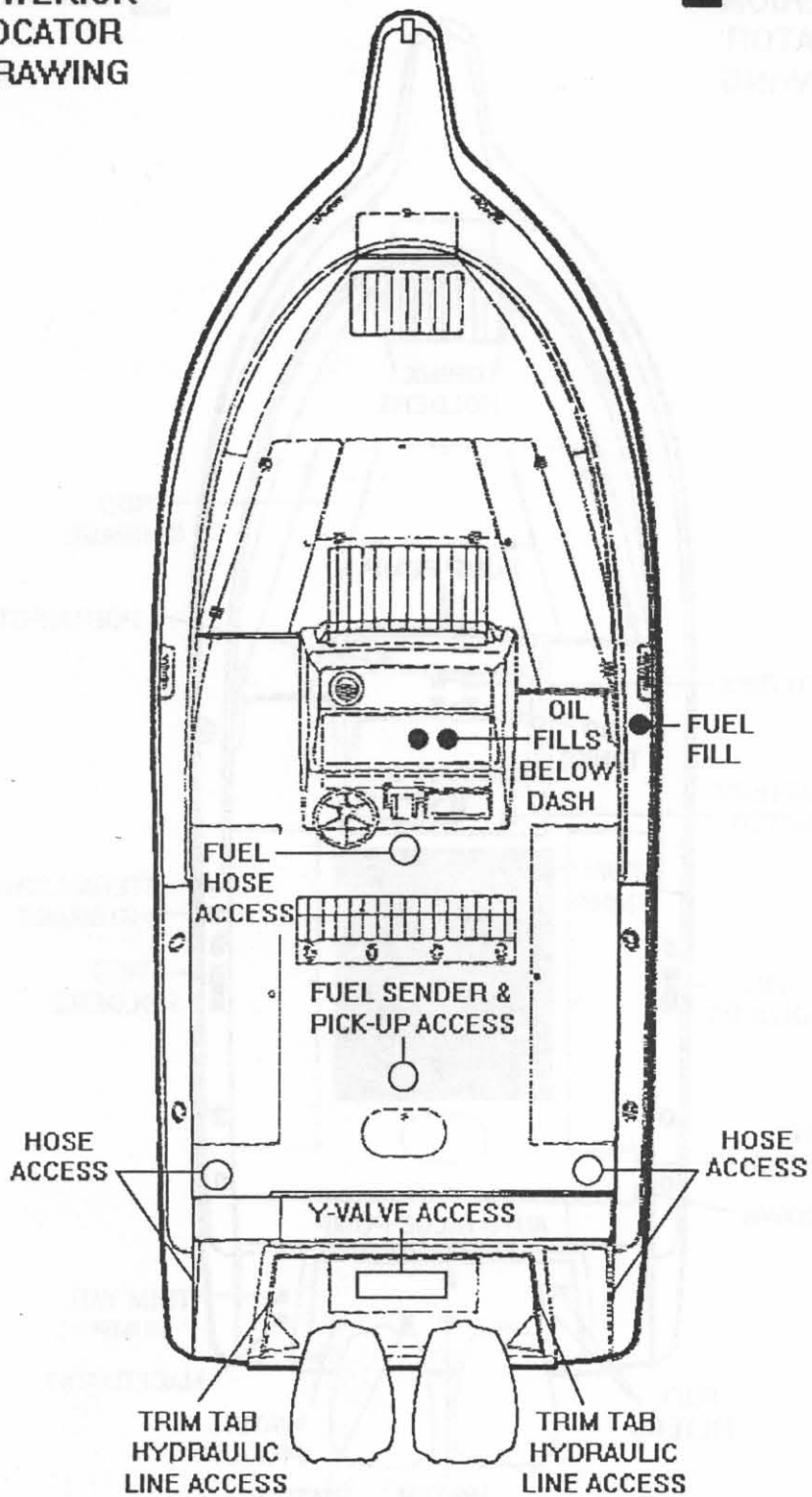


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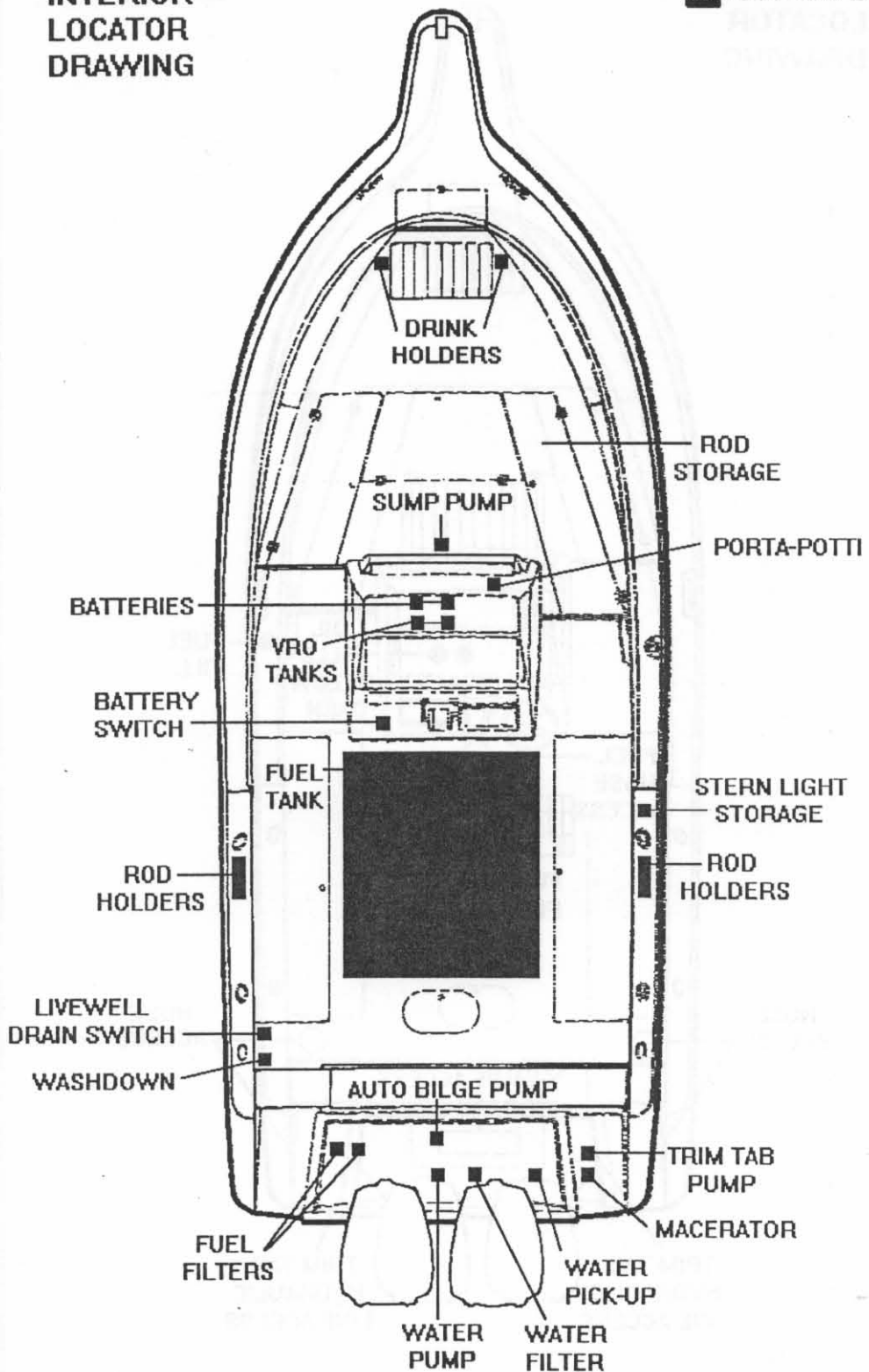


**237 QUEST  
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LOCATOR  
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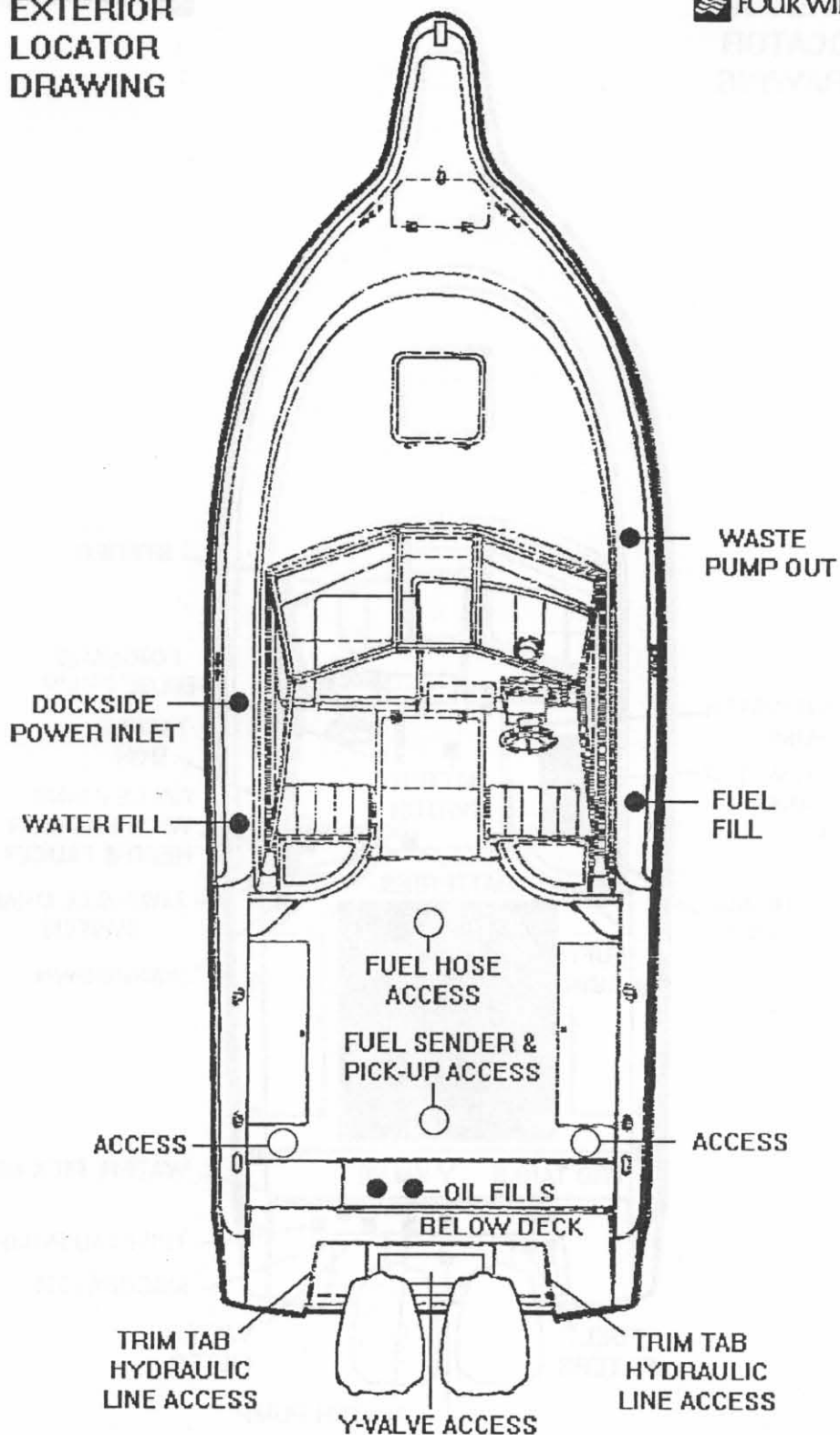


**237 QUEST  
INTERIOR  
LOCATOR  
DRAWING**

**FOUR WINNS**



**257 QUEST  
EXTERIOR  
LOCATOR  
DRAWING**



# 257 QUEST INTERIOR LOCATOR DRAWING

 FOUR WINNS

