

 **FOUR WINNS®**

378 VISTA OWNERS MANUAL



Vista
378



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

WARRANTY REGISTRATION TRANSFER REQUEST

Original Owner Name & Address: _____

Original Date of Purchase: _____

Hull Identification Number: _____

Boat Model: _____

Selling Dealer: _____

Name and address of new purchaser: _____

Telephone & E-Mail Address: _____

Date of Purchase: _____

Transfer Fee*: \$100.00 – All models.

The warranty may be transferred only once. Registration of the second owner is required and the amount of the transfer fee is \$100.00. Transfer of the remainder of the warranty must occur within five (5) years of the original retail sale. The transfer fee must be paid within fifteen (15) days of purchase of the used boat by check, money order or cashier's check payable to Four Winns. We will notify the appropriate engine manufacturer of the engine warranty transfer.

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

Warranty Expiration Date: _____

Four Winns Transfer Acceptance Date: _____

Four Winns Authorized Signature: _____

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

***Subject to change without notice.**



FOUR WINNS®

NAME / ADDRESS CHANGE FORM

Name & Address:

PLEASE PRINT CLEARLY.

Telephone & E-Mail Address:

Hull Identification Number:

Boat Model:

Date of Purchase:

_____ **NOTE:** For warranty transfer please use the Warranty Transfer Request Form also included in front of manual.

PLEASE FOLD IN HALF & SEAL.



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PLEASE FOLD IN HALF & SEAL.

TO: Four Winns L.L.C.
925 Frisbie Street
Cadillac, MI 49601

Attn: Customer Service Department.

PLEASE
PLACE
STAMP
HERE.

TO: Four Winns L.L.C.
925 Frisbie Street
Cadillac, MI 49601

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PREFACE

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

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

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

Equipment such as engines, and other accessories are manufactured by others. The information provided in this manual is intended to be used in conjunction with the information provided by the manufacturers of this equipment. All information available at the time of manufacture has been included with your owner's packet.

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

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

This manual has been specifically developed for the 378 Vista™ model. Please record the model and hull identification number information below.

Model

Hull Identification Number

This manual should be considered part of the boat. Should you sell the boat, pass this manual on to the new owner. Take special care of this manual. Certain information in this manual may not be available in a replacement manual.

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


**Four Winns Customer Service Department
925 Frisbie Street
Cadillac, Michigan 49601
231-775-1343 (Phone)
231-779-2345 (FAX)
E-Mail Address: boating@fourwinns.com
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Congratulations on your new boat purchase and welcome to our boating family!

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

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

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

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

 **CAUTION**

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

 **WARNING**

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

 **DANGER**

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

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

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

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

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

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

SPECIFICATIONS

378 VISTA

SPECIFICATIONS*	US	METRIC
LOA:	41'3"	12.6 m
Length w/o Swim Platform:	37'9"	11.5 m
Maximum Sleeping Depth (V-Berth):	80"	2.03 m
Maximum Sleeping Width (V-Berth):	66"	1.68 m
Maximum Sleeping Depth (Mid Cabin):	62"	1.58 m
Maximum Sleeping Width (Mid Cabin):	81"	2.06 m
Beam:	12'9"	3.89 m
Keel to W/S Shelf:	9'3"	2.82 m
Keel to Top of Windshield:	10'11"	3.33 m
Total Height:	13'4" w/arch	4.07 m w/arch
Deadrise:	19°	19°
Bridge Clearance:	11'6" w/arch	3.51 m w/arch
Cockpit Height (stern):	30"	76 cm
Cockpit Height (helm):	25"	64 cm
Headroom (max):	6'5"	1.96 m
Freeboard (min.):	58"	1.47 m
Draft (static):	42"	107 cm
Fuel:	300 gal	1134 L
Potable Water:	66 gal	249 L
Holding:	42 gal	159 L
Gray Water:	45 gal	170 L
Passengers:	14	14
Maximum Capacity:	Yacht	Yacht
Generator: gasoline	7.3 kw @ 110 VAC	
	6.5 kw @ 220 VAC	
diesel	8.0 kw @ 110 VAC	
	6.5 kw @ 220 VAC	

*Dimensional diagram is located on page 184.

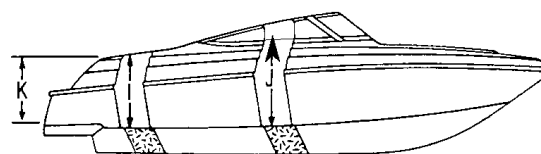
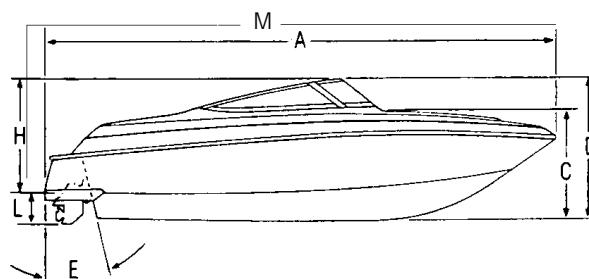
POWER RATINGS & WEIGHTS

Engine Type	Propshaft Power		Boat & Engine Weights	
	HP	KW	LBS	KG
Twin MC8.1S	370 EA	276 EA	18000	8160
Twin VPTAMD63P	370 EA	276 EA	20000	9070
Twin VP8.1Gi	375 EA	280 EA	18000	8160
Twin CAT3126	385 EA	287 EA	20000	9070
Twin MC8.1SHO	420 EA	313 EA	18000	8160
Twin VP8.1GXl	420 EA	313 EA	18000	8160

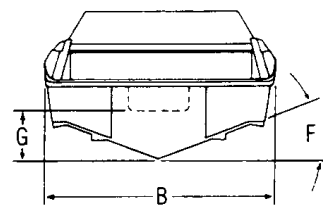
RECOMMENDED /ENGINE(S)/EQUIPMENT AVG. WEIGHTS

Model	Eng. Type	Boat	Eng.	Battery	Fuel	Access.
LBS						
378V	Twin VP8.1Gi	16000	2000	240	1800	1300
KG						
348V	Twin VP8.1Gi	7260	907	109	816	590

DIMENSIONAL DATA



- A. LOA
- B. BEAM
- C. KEEL TO W/S SHELF
- D. TOTAL HEIGHT
- E. TRANSOM ANGLE
- F. DEAD RISE
- G. OB TRANSOM HEIGHT
- H. BRIDGE CLEARANCE
- I. COCKPIT HEIGHT STERN
- J. COCKPIT HEIGHT HELM
- K. FREEBOARD
- L. DRAFT
- M. STORAGE LENGTH - With outdrive in raised position



LABEL LOCATIONS

The NMMA Yacht Certification plate and various warning labels are placed at different locations on your 378 Vista™ for your safety. Additional warnings for fuel leakage, blower operation, and other important information will be imprinted or located on the dash. Many of these stickers and labels are not required by the U.S. Coast Guard but are important to ensure the safe operation of your Four Winns® boat. In addition, the Hull Identification Number plate is permanently attached below the deck-hull joint on the starboard aft corner.

NOTICE

Not all of the warning label stickers are depicted in the following pages. Some of these stickers will be found on appliances i.e. microwave, TV/DVD player, generator, shore power cord. Be sure to read and follow all manufacturer’s literature and warning label(s) relating to their product(s).

Below are locations along with the descriptions of some of the labels found on the boat. See the following pages for the actual wording of each of these various warning labels found on your boat. Additional labels are also included however the locations may not be shown.



Hull Identification Number Plate



Gasoline Vapor-Blower Warning



Rotating Prop Boarding Ladder



Leaking Fuel



NMMA Yacht Certification Plate
Helm Boarding Ladder Warning



Prevent Falls Overboard Label



Winning Edge Sticker



NMMA Certified Sticker



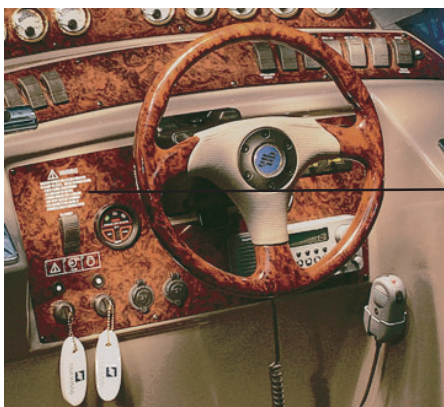
Shore Power Inlet Dockside Inlet Air Warning Label
Conditioning Label

Figure 1: Label & Sticker Locations

CAPACITY & WARNING LABELS



NMMA Yacht Certification Plate



Gasolone Vapors - Blower Warning Label



WARNING

GASOLINE VAPORS CAN EXPLODE RESULTING IN INJURY OR DEATH. BEFORE STARTING ENGINE -CHECK ENGINE BILGE COMPARTMENT FOR GASOLINE OR VAPORS, AND -OPERATE BLOWER FOR FOUR MINUTES, AND VERIFY BLOWER OPERATION. RUN BLOWER WHEN VESSEL IS OPERATING BELOW CRUISING SPEED.



Shaft Alignment Tag

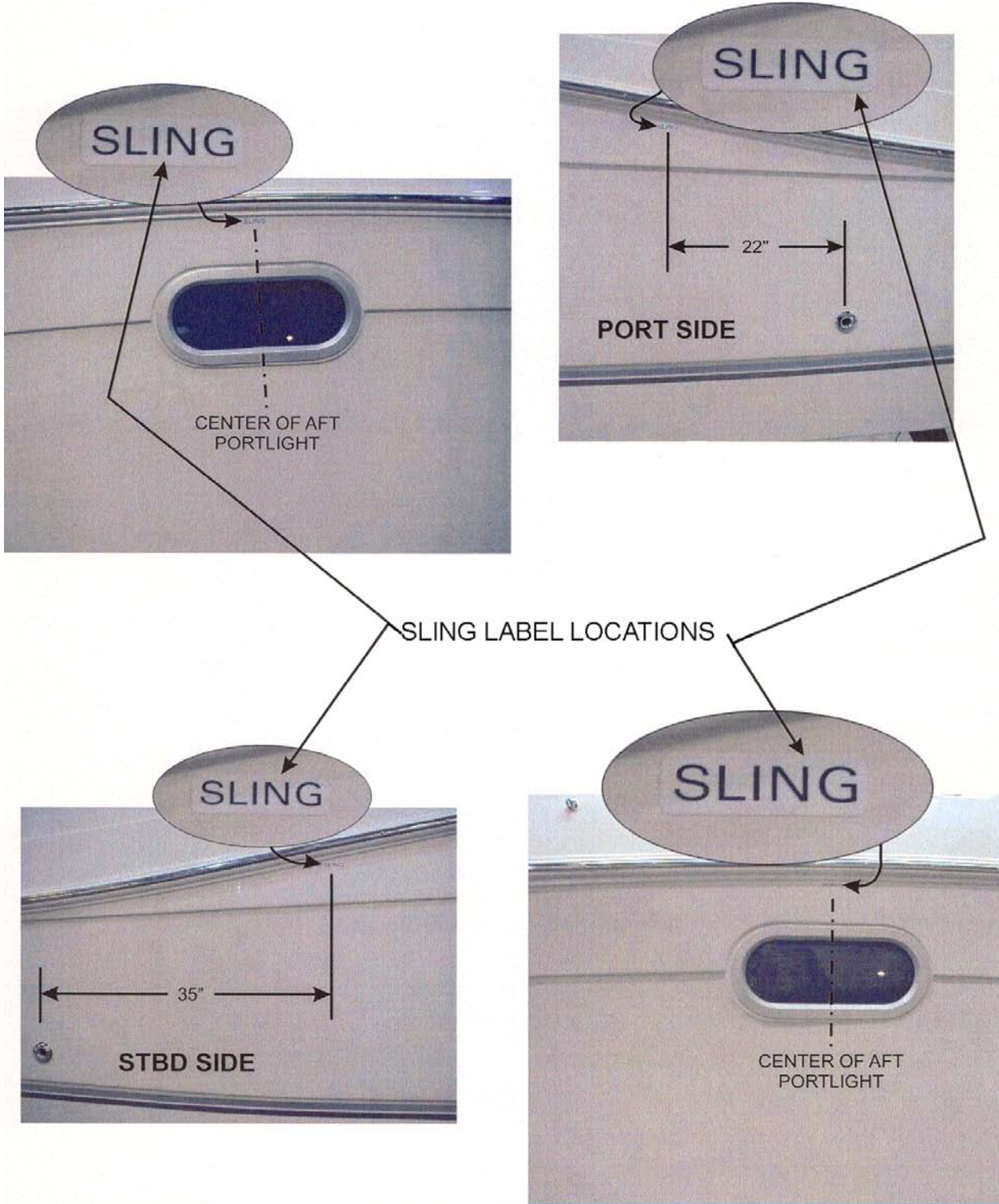


CAUTION

ENGINES MUST BE ALIGNED AND COUPLINGS SECURED PRIOR TO COMMISSIONING.

CAUTION

Ensure slings are in proper location as indicated by the sling label location. Failure to do so may result in permanent hull structure damage and will invalidate the hull structure warranty.



Sling Location Labels






DISCHARGE OF OIL PROHIBITED

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

Oil Discharge Plate

It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States. Annex V of the MARPOL TREATY is an

International Law for a cleaner, safer marine environment. Violation of these requirements may result in civil penalty up to \$25,000, fine and imprisonment.

	<p>U.S. Lakes, Rivers, Bays, Sounds and <u>3 miles from shore</u> ILLEGAL TO DUMP Plastic & Garbage</p> <p>Paper Metal Rags Crockery Glass Dunnage Food</p>		<p><u>3 to 12 miles</u> ILLEGAL TO DUMP Plastic</p> <p>Dunnage, lining & packing materials that float, also if not ground to less than one inch:</p> <p>Paper Crockery Rags Metal Glass Food</p>		<p><u>12 to 25 miles</u> ILLEGAL TO DUMP Plastic</p> <p>Dunnage, lining & packing materials that float</p>	<p><u>Outside 25 miles</u> ILLEGAL TO DUMP Plastic</p>		
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State and local regulations may further restrict the disposal of garbage.

Trash Overboard Decal



Dockside Air Conditioning Inlet Label



Microwave Caution Label

WARNING

Gasoline vapors can explode. Before starting engine

- Check engine compartment for gasoline or vapors; and
- Operate blower for four minutes. Run blower when boat is operating below cruising speed.

GM1850501

Gasoline Vapor-Blower Warning Label

WARNING

Rotating propeller can cause serious injury or death. Shut off motor when near persons in water.

GM1850901

Rotating Propeller - Helm Warning Label

WARNING

Rotating propeller can cause serious injury or death. Never approach or use ladder when motor is running.

GM1851001


Rotating Propeller - Ladder Warning Label


WARNING

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

GM1850601

Leaking Fuel Warning Label


 **WARNING**




Carbon monoxide is produced by all gasoline engines and generator sets. To avoid brain damage or death from carbon monoxide, keep cockpit and cabin area well ventilated, and avoid blockage of exhaust outlets. Do not occupy swim platform or aft lounging area when engine or generator is running. Signs of exposure include nausea, dizziness and drowsiness. See owner's manual for more information.

GM1850101

Carbon Monoxide - Swim Platform & Lounging Area Warning Label

 **WARNING**




To minimize shock and fire hazards:


- (1) Turn off the boat's shore connection switch before connecting or disconnecting shore cable.
- (2) Connect shore power cable at the boat first.
- (3) If polarity warning indicator is activated, immediately disconnect cable.
- (4) Disconnect shore power cable at shore outlet first.
- (5) Close shore power inlet cover tightly.

DO NOT ALTER SHORE POWER CONNECTORS

GM1850401

Shore Power Inlet Warning Label

 **WARNING**



Fuel vapors are a fire and explosion hazard. To avoid injury or death, do not store fuel or flammable liquids here.

GM1850701

No Ventilation - Do Not Store Fuel Warning Label

 **WARNING**



Prevent falls overboard. Close, latch and stay inside gate(s) while underway.

GM1851101

Prevent Falls Overboard Warning Label



WARNING

Carbon monoxide is produced by all gasoline engines and generator sets. Avoid brain damage or death from carbon monoxide. Keep cockpit and cabin areas well ventilated. Avoid blockage of exhaust outlets. Signs of exposure include nausea, dizziness, and drowsiness. See boat owner's manual for more details. If using a catalytic heater, provide ventilation. Do not use catalytic heater while sleeping.

056-0866

Carbon Monoxide Warning Label



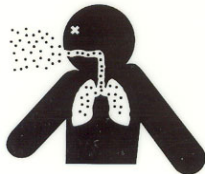
WARNING

Exhaust fumes from engines contain carbon monoxide. Boats with canvas deployed are more likely to collect exhaust fumes. Avoid brain damage or death from carbon monoxide. Keep cockpit and cabin areas well ventilated. Signs of exposure include nausea, dizziness, and drowsiness. See boat owner's manual for more details. If using a catalytic heater, provide ventilation. Do not use catalytic heater while sleeping.

Carbon Monoxide - Canvas Warning Label



WARNING



Exhaust fumes from engines contain carbon monoxide. To prevent fumes from entering cabin, keep door closed when engine or generator are running.

GM1850301

Carbon Monoxide - Cabin Doors Warning Label



I. Winning Edge Sticker



J. NMMA Certified Sticker



K. Flush Out Warning Label (Optional)

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OPERATION

A - 1 GENERAL

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

A - 2 COMPONENT SYSTEMS

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

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

A - 3 SAFETY EQUIPMENT

Besides the equipment installed on the boat by Four Winns, L.L.C., certain other equipment is required for passenger safety. A brochure listing the Federal equipment requirements is included in the owner’s packet or is available through your local U.S. Coast Guard Station. 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.

A - 4 PASSENGER SAFETY

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

1. Each passenger is properly instructed in Personal Flotation Device (PFD) use and keeps one within reach in case of emergency. All non-swimmers and children should wear a PFD at all times when underway.
2. Passengers do not sit on gunwales, open decks, elevated pedestal seats or on seat backs when the boat is underway. This could cause them to be thrown overboard during a sudden maneuver.
3. At least one other person knows how to operate the boat in case of an emergency.

A - 5 “RULES OF THE ROAD”

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

A - 6 LIGHTNING

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

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

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

A - 7 DRUGS AND ALCOHOL

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

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

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

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

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

A - 8 PRE-CRUISE SYSTEM CHECK

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

A. Before Starting The Engine

1. Check the weather forecast. Determine if the cruise planned can be made safely.
2. Be sure all necessary safety equipment is on board and operative. This includes items such as the running lights, horn, spotlight, life saving devices, etc.

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

4. Activate the Bilge Blower. Check the blower output.

WARNING

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

5. Ensure an adequate amount of fuel is on board.
6. Be sure you have sufficient water and other provisions on board for the cruise planned.
7. Leave a written message listing details of the planned cruise with a close friend ashore.

B. After Starting The Engine

1. Visibly check the engine to be sure there are no apparent water or oil leaks.
2. Check the gauges. Make sure the oil pressure, water temperature, voltmeter, etc. are reading normally.
3. Have a safe cruise and enjoy yourself.

WARNING

Always be sure to raise the anchor and ensure the chain stop is engaged prior to operating your boat. Failure to raise and secure anchor before getting underway could result in damage to boat and even severe injury or death from a rebounding anchor.

A - 9 ENGINE OPERATIONAL PROCEDURES

Notice: Additional engine information is located in Section S.

A. Before Starting

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

2. Check the fluid levels of the engine oil and power steering system daily. Fill oil or steering fluid as required by the indications on the dip sticks. Refer to the Table 1: "SAE Viscosity Chart - Gas" and your engine manual included in the owner's packet. **DO NOT USE MULTIGRADE OIL.**

Diesel engines use a Series IIID oil, SAE15W/40. Refer to your diesel engine owner's manual for further information.

The hydraulic steering uses a fluid which meets Mil H5606 specifications. Please note that automatic transmission fluid (Dexron II) may be used in an emergency. Never use brake fluid. Check the fluid level of the transmission as often as practical.

IF THE LOWEST ANTICIPATED TEMPERATURE IS*	THE FOLLOWING SAE VISCOSITY OILS ARE RECOMMENDED
32° F (0° C) and above	SAE 30
0° F (-18° C) to 32° F (0° C)	SAE 20W-20
Below 0° F (-18° C)	SAE 10W

*Temperature range you expect to operate.
Note: Use only single viscosity oils.

Table 1: SAE Viscosity Chart - Gas

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

B. Cold Engine Start (EFI Engines)

1. Move the twin lever shifter to the neutral detent position. Place the twin lever throttle levers in the idle position. See Figure A1. When in the neutral detent, the detent buttons will click into place. To move the levers to the desired positions after starting you simply push or pull the shifter and throttle levers. The buttons are color coded. Black buttons represent the shifter and red buttons represent the throttles.

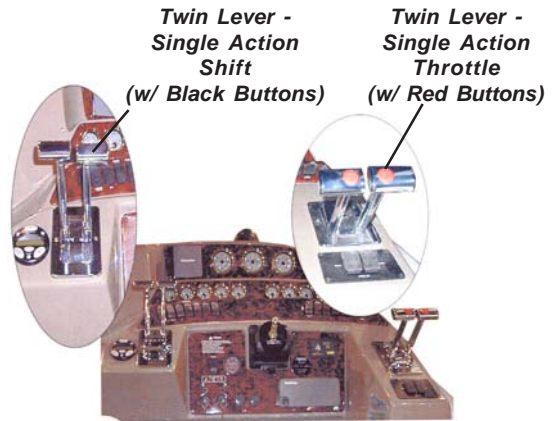


Figure A1: 378V Helm Station

2. For gasoline engines, turn key switch to START position and hold until engine starts. **DO NOT** hold in START position for more than ten seconds.
- 2b. For diesel engines, you must first turn the ignition key to the ON position and wait 30 seconds, allowing preheaters to activate. After 30 seconds, turn key switch to START position and hold until engine starts. **DO NOT** hold in START position for more than ten seconds.

If engine floods:

- The shifter levers remain in the neutral detent position. Move throttle levers to full throttle position.
- Turn key switch to the START position.
- Immediately move the throttle levers to the idle position when the engine starts.

NOTICE

Failure to move the throttle handle to the idle position immediately when engine starts will allow engine to "over-rev" and engine damage could result. "Over-revving" engine after off-season storage could also damage the water pump impeller. **When starting engine for the first time after off-season storage, always idle engine for one minute to allow the water pump to prime.**

3. As soon as engine starts:
 - a. Release key to the ON or RUN position.

NOTICE

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

C. Warm Engine Starting

1. Move shifter levers to the neutral detent position and throttle levers to the idle position.
2. Turn key switch to START position and hold until engine starts, but DO NOT hold in start position for more than ten seconds. If engine does not start, let go momentarily, then try again.
- 2b. For diesel engines, you must first turn the ignition key to the ON position and wait 30 seconds, allowing preheaters to activate. After 30 seconds, turn key switch to START position and hold until engine starts. DO NOT hold in START position for more than ten seconds.
3. As soon as engine starts, release key to the ON or RUN position.

NOTICE

NEVER turn key to START position when engine is running.

D. Shifting and Control Speed

NOTICE

If your boat is equipped with a non-OEM remote control system, ask your dealer how to properly operate it.

1. Move shifter levers to the neutral detent position and throttle levers to the idle position. Placing the shifter levers in the neutral detent position will engage neutral start switch and allow engine to start.

 **CAUTION**

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

2. To go FORWARD - Briskly move the shifter levers forward. Once forward gear engagement is complete, push throttle levers forward until desired speed is achieved.

3. To go in REVERSE - Briskly move the shifter levers rearward. Once rearward gear engagement is complete, push throttle levers forward until desired speed is achieved.

 **WARNING**

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

NOTICE

DO NOT shift if engine speed is above 800 RPM.

4. To go from FORWARD to REVERSE, or REVERSE to FORWARD; always pause at NEUTRAL and allow engine speed to return to idle.
5. After shifting is completed, slowly push throttle levers forward until desired speed is achieved.

 **WARNING**

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

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

If you suspect there is a problem, see your MerCruiser®, Caterpillar® or Volvo Penta® dealer as soon as possible for proper diagnosis and required service or adjustment. Continued operation could result in damage to the shift mechanism and loss of control.

E. Stopping Engine

1. Move shifter levers to the NEUTRAL position. Place throttle levers in idle position.
2. Turn ignition key to the OFF position.

NOTICE

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

A - 10 GROUNDING AND TOWING

 **WARNING**

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

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

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

 **CAUTION**

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

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

 **WARNING**

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

A - 11 BOATING EDUCATION

A. Boating Courses

Boating education classes are offered throughout the country. The United States Coast Guard Auxiliary offers free courses on different topics usually during the off-season. The most popular course is the “Boating Skills & Seamanship Course,” and information can be obtained by calling 1-800-336-BOAT.

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.

The Canadian Power and Sail Squadron offers seamanship courses. Information can be obtained by calling 1-800-268-3579 (Canada only).

B. Boating Manuals and 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 Corps 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.

D. Laws and Regulations

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

There are many pamphlets, prepared by the Coast Guard, available to you. These pamphlets explain "Rules of the Road," signal lights, buoys, safety, international and inland regulations and other information which goes beyond the scope of this manual. For more information contact your local U.S. Coast Guard Unit or call the Coast Guard Boating Safety Hotline at 1-800-368-5647.

A - 12 BOAT OWNER REGISTRATION

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

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

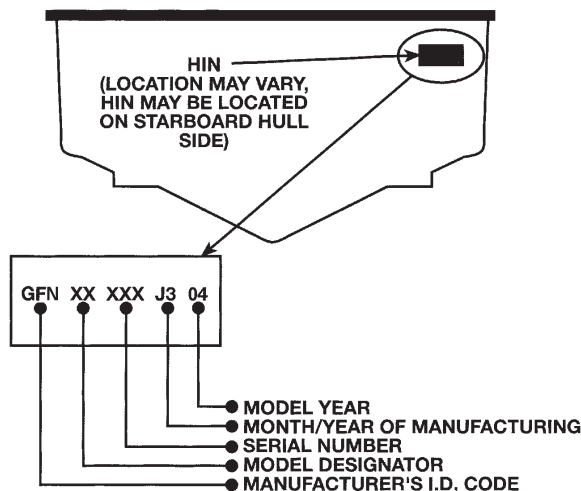


Figure A2: HIN

A - 13 INSURANCE

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

A - 14 ACCIDENT REPORTING

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

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

Good Samaritan boater offering good faith assistance, and absolves a boater from any civil liability arising from assistance given.

A - 15 DISCHARGE OF OIL

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

A - 16 DISPOSAL OF PLASTICS & OTHER GARBAGE

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

A - 17 MARPOL TREATY

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

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

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

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

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

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

SAFETY & SAFETY EQUIPMENT

B - 1 GENERAL

As the owner/operator of the boat, you are responsible for assuring that all required safety equipment is aboard. You should also consider supplying additional equipment as needed for your safety and that of your passengers. Check state and local regulations and call the U.S. Coast Guard Boating Safety Hotline at 1-800-368-5647 for information about required safety equipment.

A. Required Safety Equipment

Most of the safety equipment required by federal regulations is provided as standard equipment. Personal Floatation Devices (life jackets) must fit the person wearing it. If local regulations require additional equipment, it must be approved by the U.S. Coast Guard (USCG). Minimum requirements include the following:

- Personal Floatation Devices
- Visual Distress Signal
- Bell or Whistle
- Fire Extinguisher
- Navigation Lights

NOTICE

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

B. Personal Floatation Devices (PFDs)

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

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

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

C. PFD Types

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

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

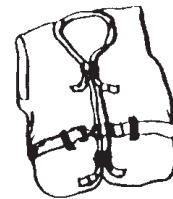


Figure B1: Type I, Wearable

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



Figure B2: Type II, Wearable

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



Figure B3: Type III, Wearable

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



Figure B4: Type IV, Throwable

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



Figure B5: Type V, Wearable

D. PFD Pointers

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

1. Try the PFD on and adjust it until it fits comfortably in and out of the water. Mark your PFD if you are the only wearer.
2. To make sure the PFD works, wear it in the water. This will show you how it works and give you confidence when you use it.
3. Teach children how to put a PFD on and allow them to try it in the water. That way, they know what the PFD is for and how it works. They will feel more comfortable with it if they suddenly find themselves in the water.
4. If the PFD is wet, allow it to dry thoroughly before storing it. Do not dry it in front of a radiator or heater. Store it in a well ventilated area.
5. Keep PFDs away from sharp objects which can tear the fabric or puncture the floatation pads.
6. For their own safety and the safety of others, all nonswimmers, poor swimmers, and small children should wear PFD's at all times, whether the boat is stationary or moving.
7. Check the PFD frequently to make sure that it is not torn, that floatation pads have no leaks, and that all seams and joints are securely sewn.
8. If a PFD contains kapok, the kapok fibers may become waterlogged and lose their buoyancy after the vinyl inserts are punctured. If the kapok becomes hard or if it is soaked with water, replace it. It may not work when you need it.

E. Fire Extinguisher

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

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



WARNING

Fire!

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

NOTICE

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

NOTICE

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

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

F. Fire Extinguisher System

A self-contained, FE241 agent fire extinguisher system is a standard feature on the 378 VistaTM model. The equipment utilized has been so chosen, and located, to provide sufficient volume and coverage of the entire engine compartment. While the system ensures excellent overall bilge fire protection, **it does not eliminate the U.S.C.G. requirement for hand-held fire extinguishers.** Refer to the manufacturer's literature included in the owner's packet.

G. Visual Distress Signal Devices

Visual distress signal devices approved by the U.S. Coast Guard are required on all recreational boats operating on coastal waters and to boats owned in the United States when they are operating on the high seas. Coastal waters include territorial seas and those waters directly connected to the Great Lakes and the ter-

ritorial seas up to a point where the waters are less than two miles (3.2km) wide. Visual distress signal equipment may be of the pyrotechnic or non-pyrotechnic type. Regulations prohibit display of visual distress signals on the water under any circumstances except when assistance is required to prevent immediate or potential danger to persons on board a vessel.

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

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

Distress Signal Table

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

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

NOTICE

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

H. Sound Signaling Devices

Class 2 powerboats (26 to less than 40 feet) are required to carry a hand, mouth or power operated horn or whistle. It must produce a blast of two-second duration and audible at a distance of at least one-half (1/2) mile. The 378 VistaTM model is equipped with a dual trumpet horn which meets this requirement. See Figure B6.

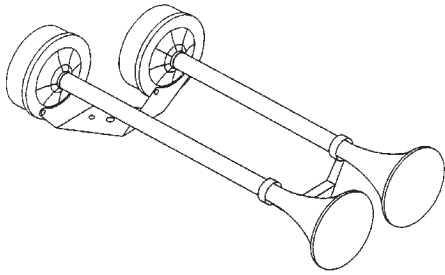


Figure B6: Dual Trumpet Horn

The following are standard whistle signals:

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

I. Navigation Lights

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

J. Additional Recommended Equipment

Four Winns recommends that you acquire additional equipment for safe, enjoyable cruising. This list, which is not all inclusive, includes items you should consider acquiring.

Basic Gear

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

- Second anchor & line
- Dewatering device (pump or bailer)

Emergency supply of drinking water and food.

*Emergency Position Indicating Radio Beacon

Tools

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

Spare Parts

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

Gear For Extended Cruises

- Foul weather gear
- Parallel rulers
- Dividers
- Loran or Global Positioning System navigation equipment

B - 2 CARBON MONOXIDE



Carbon Monoxide!

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

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

NOTICE

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

NOTICE

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

A. Properties and Characteristics of Carbon Monoxide

1. Carbon Monoxide is a colorless, odorless and tasteless gas. It is commonly referred to as CO.
2. Its weight is about the same as air so it cannot be expected to rise or fall like some other gases, but will distribute itself throughout the space.

NOTICE

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

B. What Makes Carbon Monoxide

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

Common sources of carbon monoxide are:

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

C. How a Person is Affected by Carbon Monoxide

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

D. Effects of Carbon Monoxide

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

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

E. Symptoms

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

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

NOTICE

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

NOTICE

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

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

1. Evaluate the situation and ventilate the area if possible.
2. Evacuate the area and move affected person(s) to a fresh air environment.
3. Observe the victim(s).
4. Administer oxygen if available.
5. Contact medical help. If the victim is not breathing, perform rescue breathing or approved cardiopulmonary resuscitation (CPR), as appropriate, until medical help arrives and takes over.

NOTICE

Prompt action can make the difference between life and death.

6. Investigate source of CO and take corrective action.

G. 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 space(s).

H. Operation

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

1. Pay attention to ventilating the boat.

2. Orient the boat so it will allow the maximum dissipation of CO.
3. Minimize the time spent on getting underway.
4. In order to minimize CO buildup, do not warm up or run propulsion engine(s) for extended periods while the vessel is stationary.

 **WARNING**

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

I. Boathouses, Sea Walls and Confined Spaces

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

1. Boathouses,
2. Proximity to sea walls, or
3. Proximity to other boats.

Keep engine room hatches and doors closed when operating engines, including the generator.

Pay attention to prevailing conditions and provide for ventilation to induce fresh air and minimize exhaust re-entry. Orient the boat for maximum dissipation of the exhaust. **DO NOT** run the boat or boat equipment for extended periods under these conditions. See Figure B7.

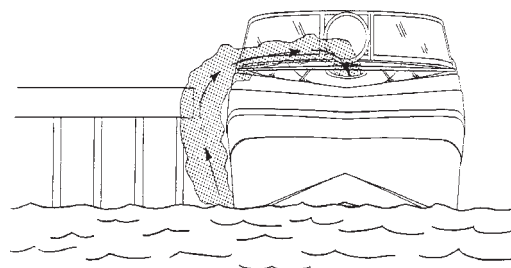


Figure B7: The effect of sea walls and other confined spaces.

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

J. The Effect of Boats Moored Along Side

A boat operator should be aware that carbon monoxide is emitted from any boat's exhaust. The operation, mooring, and anchoring in an area containing other boats may be in an atmosphere containing CO not of the operator's making. An operator likewise needs to be aware of the effect of their boat on other boats in the area. Of prime concern is the operation of an auxiliary generator where boats are moored along side each other. Be aware of the effect your exhaust may have on other boats and be aware that the operation of other boats' equipment may affect the carbon monoxide concentration on your boat. See Figure B8.

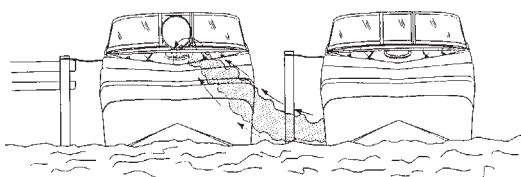


Figure B8: The effect of boats moored along side.

K. Backdrafting (Station Wagon Effect)

Backdrafting or the "station wagon effect" is caused by air movement over or around a boat creating a low pressure area or suction area around the stern that can increase CO level on the boat. Backdrafting can be affected by relative wind direction, boat speed, and boat trim angle. See Figure B9 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 boat. Boat factors which may affect CO concentration:

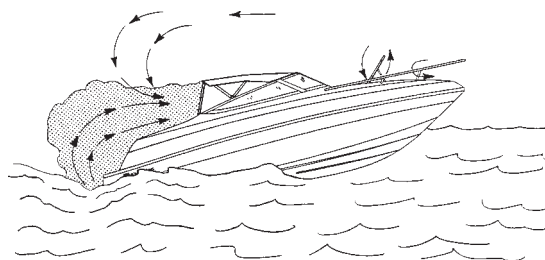


Figure B9: Backdrafting - Air flows over boat and behind transom.

1. Intentional or unintentional excessive trim angle causing high bow angle. See Figure B10.
2. Excessive or unequally distributed weight.

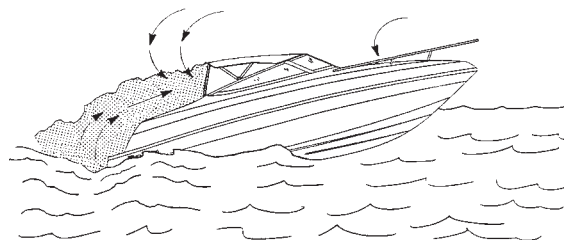


Figure B10: Inefficient trim angles.

3. Canvas Configurations - Under various conditions, adding or removing canvas may raise or lower CO levels. See Figures B9, B10 & B12.

WARNING
Exhaust Fumes!

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

4. Opening and closing ports, hatches, doors, and windows may raise or lower CO levels on board a boat. When airflow is moving forward inside the boat, CO may be entering the boat. See Figures B11 and B12.

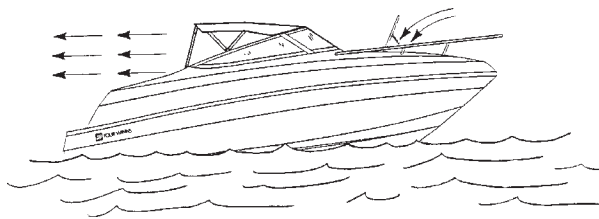


Figure B11: Desired air flow through the boat.

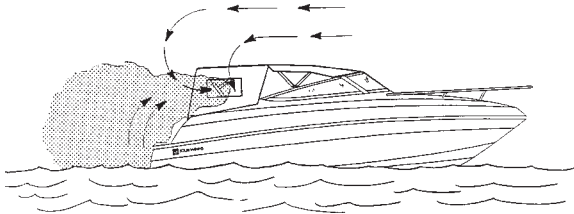


Figure B12: The effect of canvas configurations.

- Operating a boat at slow speeds with a following wind should be avoided. Consider changing direction, adjusting speed, or both. See Figures B13.

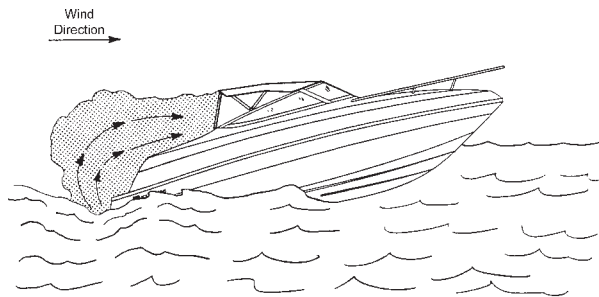


Figure B13: Operating at Slow Speed with Following Wind

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

L. Accumulation of Exhaust Gases-Swim Platform

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

- Do not occupy aft lounging area(s) or swim platform.
- Do not swim under or around swim platform.

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

Refer to Figure B14.

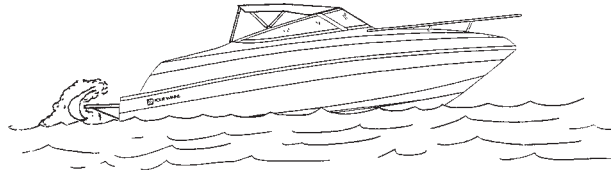


Figure B14: Exhaust Gas Accumulation at Swim Platform

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

Do not sit on, occupy or hang on any stern appendages (e.g., swim platforms, boarding ladders, etc.) while underway. Do not body surf, commonly known as "teak surfing" or "dragging", etc. in the wake of the boat. Do not tow persons in close proximity to the stern of the boat. See Figure B15.

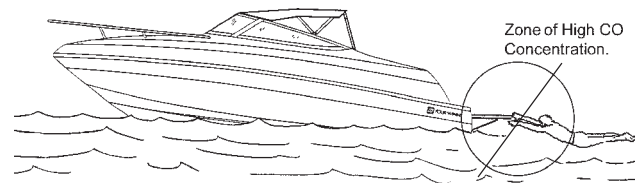


Figure B15: Exhaust Gas Accumulation - Dangerous Activity

N. Cabin Appliances

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

O. Air Conditioning

Lack of system maintenance may cause CO to be brought into the air-conditioned spaces by the air conditioner. Please refer to the air conditioner manufacturer's literature for additional information.

P. Ventilation of Accommodation (Occupied) Spaces

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

Q. Running of Engines in Idle

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

R. Altitude and Sea Conditions

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

1. Failure to make adjustments to ignition systems and/or fuel systems for altitude conditions may cause an increase in CO production.
2. Reduced power resulting from increased altitude may require adjustments to propeller size.
3. Heavy sea or out of trim conditions tend to load engines resulting in reduced performance and thereby increasing their CO production.

S. Portable Generator Sets

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

T. Maintenance - Engine Performance

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

1. Fuel Systems - Fuel that is contaminated, stale or incorrect octane number
2. Carburetors/Injectors
 - a. Dirty or clogged flame arrester
 - b. Malfunctioning automatic choke plate or faulty adjustment of manual choke plate
 - c. Worn float needle valve and seat

- d. High float level
- e. Incorrect idle mixture adjustment
- f. Dirty or worn injectors

3. Ignition System

- a. Fouled or worn spark plug.
- b. Worn points or incorrect gap on points
- c. Shorted or opened circuit high tension spark plug cables
- d. Incorrect ignition timing.

4. General

- a. Worn piston rings and valves
- b. Engine temperature - Cold running engines increase CO production. Engine cooling water system design and selection of thermostat(s) are primary considerations affecting engine operating temperature. Generally, an engine produces less CO if it operates at a relatively high temperature within manufacturer's specifications.
- c. Exhaust Back-Pressure - Certain alterations to the exhaust system may increase engine exhaust back pressure and CO production.
- d. Restricted engine room or compartment ventilation

U. Maintenance - External Conditions

External conditions that contribute to inefficient engine performance can include:

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

V. Maintenance - Exhaust System Integrity

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

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

W. Maintenance - Ventilation Systems

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

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

X. Maintenance - Bulkhead and Deck Integrity

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

Y. Maintenance - Air Conditioning Systems

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

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

Z. Maintenance - Liquid Drains

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

AA. CO Detection System

Four Winns has included two CO detectors as a standard feature. One of the CO detectors is located in the forward V-berth and the other is located in the aft/mid cabin. Check systems and maintain in accordance with the manufacturer's instructions.

 **WARNING**

CO monitors should be professionally installed and calibrated. Failure to do so may result in the improper function of the CO detector.

 **WARNING**

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

NOTICE

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

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

NOTICE

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

NOTICE

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

B - 3 SAFE BOATING PRACTICES

NOTICE

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

A. Drugs and Alcohol

 **WARNING**

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

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

B. Safe Operation

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


- Observe all safety signs and warnings both inside the boat and in the immediate boating area.
- Become familiar with, and adhere to, the "Rules of the Road".
- Maintain boat speed at or below the legal limits. Avoid excessive speed or speeds not appropriate for operating conditions.
- Be sure at least one other passenger is familiar with the operation and the safety aspects of the boat in case of an emergency.
- Load the boat within the limits listed on the capacity plate. Balance loads bow and stern and port to starboard.
- Do not use the boat in bad weather or sea conditions beyond the skill or experience of the operator or the comfortable capability of the boat or passengers.

- Make sure the passengers and gear do not obstruct the operator's view or impede his ability to move.
- Do not exceed the maximum engine power rating stated on the certification plate located inside the boat.

C. Passenger Safety

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

D. Propeller


WARNING


Personal Injury!

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


DANGER


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

Ladder Warning Label


DANGER

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

Helm Boarding Ladder Warning Label


WARNING

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

E. First Aid

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

F. Operation By Minors

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

G. "Rules of the Road"

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

H. Voluntary Inspections

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

Check with the appropriate state agency or the Coast Guard Auxiliary for details.

I. Safe Boating Courses

The local U.S. Coast Guard Auxiliary and the U.S. Power Squadrons offer comprehensive safe boating classes several times a year. You may contact the Boat/U.S. Foundation at 1-800-336-BOAT (2628) or, in Virginia, 1-800-245-BOAT (2628) for a course scheduled in your area. Also contact the U.S. Coast Guard Auxiliary or Power Squadron Flotilla for the time and place of their next scheduled class.

B - 4 WATER SPORTS

WARNING

Personal Injury!

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

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

A. Water Sport Guidelines

Everyone participating in a water sport should observe these guidelines:

1. Allow only capable swimmers to take part in any water sport.
2. Always wear a personal floatation device (PFD) approved by the U.S. Coast Guard. Wearing a properly designed PFD helps a stunned or unconscious person stay afloat.

3. Be considerate of others you share the water with.
4. Give immediate attention to a person who has fallen. He or she is vulnerable in the water alone and may not be seen by other boaters.
5. Approach a person in the water from the lee side (opposite the direction of the wind). **Turn off the motor at least a boat length from the person.**
6. Turn engine off and anchor before swimming.
7. Always participate in water sports in safe areas. Stay away from other boats, beaches, restricted areas, swimmers and heavily traveled waterways.
8. Swim only in areas designated as safe for swimming. These are usually marked with a swim area buoy (see Figure B13). Do not swim alone or at night.



Figure B13: Swim Area Buoy

WARNING

Rotating Propeller!

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

9. Do not allow anyone near the propeller(s), even when the engine is off. Propeller blades are sharp and can continue to turn even after the engine is off. Stay at least 150 feet away from areas marked by diver down float. See Figure B14.



Figure B14: Diver Down Float

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

BASIC SEAMANSHIP

C - 1 GENERAL

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

A. Boating Regulations

The U.S. Coast Guard is the authority of the waterways. State boating regulations are enforced by local authorities. Your boat is subject to the marine traffic laws known as "Rules of the Road," which are enforced by the U.S. Coast Guard. You are subject to marine traffic laws and "Rules of the Road" for both federal and state waterways; you must stop if signaled to do so by enforcement officers, and permit them to board if asked. The "Rules of the Road" can be obtained from the local U.S. Coast Guard Unit or the United States Coast Guard Headquarters by calling (202) 512-1800 or faxing your request to (202) 512-2250, and asking for the publication titled "Navigational Rules, International-Inland.

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

NOTICE

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

B. Rules of Seamanship

1. Right-of-way

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

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

2. Meeting Head-On

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

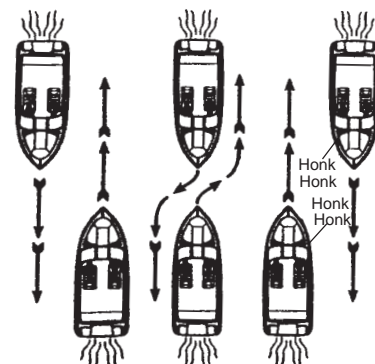


Figure C1: Meeting Head-On

3. Crossing Situations

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

Stand-on (Privileged) Vessel holds course and speed.

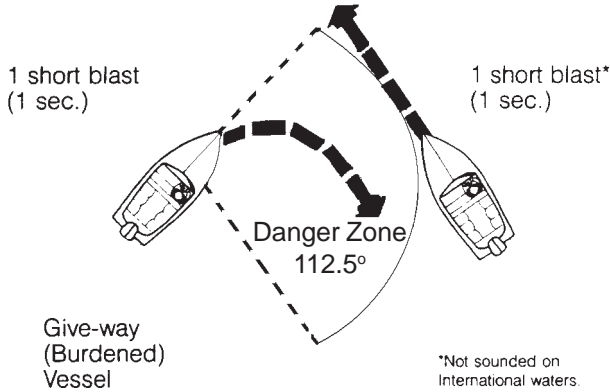


Figure C2: Crossing Situation

4. Overtaking

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

Inland Rules

"I want to pass you on your port side."

2 short blasts (1 sec.)

"Proceed"

2 short blasts (1 sec.)

International Rules

"I am altering my course to port."

2 short blasts (1 sec.)

International Rules in Narrow Channels

"I intend to pass you on your port side."

2 prolonged blasts (4-6 sec.)
2 short blasts (1 sec.)

"Proceed."

1 prolonged, 1 short
1 prolonged, 1 short

Inland Rules

"I want to pass you on your starboard side."

1 short blast (1 sec.)

"Proceed"

1 short blast (1 sec.)

International Rules

"I am altering my course to starboard."

1 short blast (1 sec.)

International Rules in Narrow Channels

"I intend to pass you on your starboard side."

2 prolonged blasts (4-6 sec.)
1 short blast (1 sec.)

"Proceed."

1 prolonged, 1 short
1 prolonged, 1 short blast

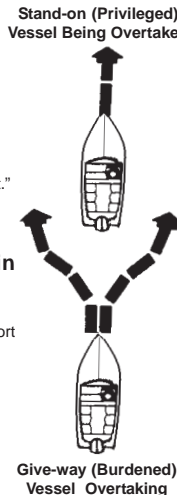


Figure C3: Overtaking

5. The General Prudential Rule

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

6. Night Running

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

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

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

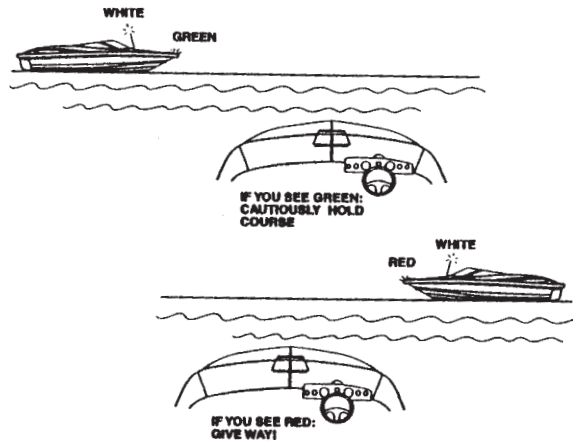


Figure C4: Night Running

7. Whistle Signal

Out on the water, whistle signals are commonly used. Although using a whistle signal is not necessary every time a boat is nearby, operators must signal their intentions when necessary to avoid potentially confusing or

hazardous situations. Use whistle blasts early enough to be noticed and understood by other boaters.

It is customary for the privileged boat to signal first and the yielding boat to return the same signal to acknowledge she understands and will comply. Use the danger signal (five or more short and rapid blasts) if intent is not clear. A short blast is one or two seconds long. A long blast is 4 to 6 seconds long. The Navigational Aids Chart at the end of this section lists the meanings of the various whistle signals.

C - 2 NAVIGATIONAL AIDS

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



WARNING

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

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

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

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

B. Lateral Markers

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

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

NOTICE

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

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

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

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

C. Safe Water Markers

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

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

Most lights on markers flash on and off. Others such as lights on aids with no lateral significance are fixed.

They stay on all night. ATON lights flash in regular patterns. For example, they may flash every three seconds, or in groups such as two flashes and a pause. There are a number of flashing patterns, which help you identify the light at night. To identify a light, note its color and pattern or timing of flashes, and compare it to your chart to find its location.

D. The Uniform State Waterway Marking System

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

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

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

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

E. A Special Sign

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

F. Noise

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

G. Anchoring

The weight of the anchor and diameter of anchor line should be governed by the size and weight of your boat. The 378 Vista™ comes standard with a windlass and a 35-pound Talon Plow XT™ anchor and 200 feet of 5/8" rope and chain. Refer to the manufacturer's literature included in the owner's packet.

Keep anchor secure while underway to prevent damage or injury due to sudden shifting in the boat's attitude.

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

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



CAUTION

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

To drop anchor:

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

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

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

To weigh anchor:

Start the engine running before pulling in anchor.

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

Raise the anchor using the windlass. Make sure the chain stop is engaged.



WARNING

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



WARNING

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

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

Anchors are available in different shapes, sizes and weights to fit different boats, uses, and conditions. Your Four Winns dealer can tell you which anchor will work best for your boat.

C - 3 RECOMMENDED READING

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

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

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

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

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

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

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

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

C - 4 CONTACTS

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

American Red Cross
Local address (see local telephone directory)

Boat U.S. Foundation for Boating Safety Hotline
1-800-336-BOAT
1-800-245-BOAT (in Virginia)

U.S. Coast Guard Info Line
1-800-368-5647

NMMA Sources of Waterways Information - National Marine Manufacturers Association has five (5) booklets which list sources for safety, cruising, and local waterway information. Each covers a different region of the U.S. (North Central, South Central, Northeastern, Southeastern and Western). For single copies, write Sources of Waterways information, NMMA, 401 N. Michigan Avenue, Chicago, Illinois 60611. Ask for the booklet for your region.

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

United States Coast Guard Auxiliary
Local Flotilla or contact appropriate Coast Guard District Headquarters

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

United States Power Squadron
P.O. Box 30423
Raleigh, NC 27617

C - 5 OWNER'S LOGS AND RECORDS

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

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

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

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

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

C - 6 NAVIGATIONAL AIDS CHART

The illustrated Navigational Aids Charts contain information concerning whistle signals, storm warnings, bridge signals, and buoy descriptions. See Figure C5 on the following page.

Navigational Aids Chart

REMEMBER THESE RULES

- OVERTAKING - PASSING:** Boat being passed has the right-of-way. **KEEP CLEAR.**
- MEETING HEAD ON:** Keep to the right.
- CROSSING:** Boat on right has the right-of-way. **Slow down and permit boat to pass.**

<p>← PORT</p> <p>Yield right-of-way to boats in your DANGER ZONE!</p> <p>STARBOARD →</p> <p>DANGER ZONE (Dead ahead to 2 points abaft your starboard beam)</p>	<p>STORM WARNINGS</p> <table style="width: 100%;"> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>RED FLAG Small craft (winds to 33 knots)</td> <td>2 RED FLAGS Gale (winds up to 47 knots)</td> <td>SQUARE RED FLAG BLACK BOX (Storm)</td> <td>2 SQUARE RED FLAGS BLACK BOX (Hurricane)</td> </tr> </table>					RED FLAG Small craft (winds to 33 knots)	2 RED FLAGS Gale (winds up to 47 knots)	SQUARE RED FLAG BLACK BOX (Storm)	2 SQUARE RED FLAGS BLACK BOX (Hurricane)																						
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<p>WHISTLE SIGNALS</p> <p>ONE LONG BLAST: Warning signal (Coming out of slip)</p> <p>ONE SHORT BLAST: Pass on my port side</p> <p>TWO SHORT BLASTS: Pass on my starboard side</p> <p>THREE SHORT BLASTS: Engine(s) in reverse</p> <p>FOUR OR MORE BLASTS: Danger signal</p>	<p>BRIDGE SIGNALS</p> <table style="width: 100%;"> <tr> <td rowspan="2">SOUND</td> <td>VESSEL: Open</td> <td></td> <td rowspan="2">VISUAL</td> <td>VESSEL: Open</td> <td></td> <td>DAY (Flag)</td> <td>NIGHT (Lights)</td> </tr> <tr> <td>BRIDGE: OK</td> <td></td> <td>BRIDGE: OK</td> <td></td> <td>Same</td> <td>Same</td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> <td>No</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>VESSEL: Replies:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>RADIO: VHF CH. 13</p>	SOUND	VESSEL: Open		VISUAL	VESSEL: Open		DAY (Flag)	NIGHT (Lights)	BRIDGE: OK		BRIDGE: OK		Same	Same		No			No					VESSEL: Replies:						
SOUND	VESSEL: Open			VISUAL		VESSEL: Open		DAY (Flag)	NIGHT (Lights)																						
	BRIDGE: OK		BRIDGE: OK			Same	Same																								
	No			No																											
	VESSEL: Replies:																														

LATERAL AIDS AS SEEN ENTERING FROM SEAWARD

<p>PORT SIDE ODD NUMBERED AIDS</p> <p> GREEN LIGHT ONLY</p> <p>FLASHING </p> <p>OCCULTING </p> <p>QUICK FLASHING </p> <p>ISOPHASE </p> <p> LIGHTED BUOY G "9" Fl G 4sec</p> <p> CAN G C "7"</p> <p> DAYMARK SG G "1"</p>	<p>SAFE WATER MID-CHANNELS OR FAIRWAYS NO NUMBERS — MAY BE LETTERED</p> <p><input type="checkbox"/> WHITE LIGHT ONLY MORSE CODE</p> <p>Mo (A) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p> SPHERICAL RW SP "G"</p> <p> MR RW "A"</p> <p> LIGHTED AND OR SOUND RW "N" Mo (A)</p> <hr/> <p>PREFERRED CHANNEL</p> <p>COMPOSITE GROUP FLASHING (2 + 1)</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p> LIGHTED BUOY GR "C" Fl (2 + 1)</p> <p> CAN GR C "L"</p> <p> DAYMARK JG GR "A"</p> <p> LIGHTED BUOY RG "B" Fl (2 + 1)</p> <p> CAN RG N "W"</p> <p> DAYMARK JR RG "B"</p>	<p>STARBOARD SIDE EVEN NUMBERED AIDS</p> <p> RED LIGHT ONLY</p> <p>FLASHING </p> <p>OCCULTING </p> <p>QUICK FLASHING </p> <p>ISOPHASE </p> <p> LIGHTED BUOY R "8" Fl R 4sec</p> <p> NUN R N "6"</p> <p> DAYMARK TR R "2"</p>
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Figure C5: Navigational Aids Chart

WARRANTY AND SERVICE

D - 1 FOUR WINNS WARRANTY POLICY

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

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

D - 2 DECK/HULL STRUCTURE WARRANTY

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

D - 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. The receipt of the warranty card is the sole basis for establishing proof of ownership of the boat and corresponding warranty validation.

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

All boat manufacturers are required by The Federal Boat Safety Act of 1971 to notify first time owners in the event any defect is discovered "which creates a substantial risk of personal injury to the public." In order for us to comply with this law if it becomes necessary, it is essential that your warranty registration card with the owner's name, address, and boat serial number be completed and mailed to Four Winns L.L.C., 925 Frisbie Street, Cadillac, MI 49601.

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

D - 4 TRANSFER OF WARRANTY

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

D - 5 PRE-OWNED UNIT REGISTRATION

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

Purchasers of all Pre-Owned Four Winns® models, regardless of the decision to transfer warranty coverage, are encouraged to register ownership with Four Winns. To register ownership of a "Pre-Owned Four Winns®

boat,” provide Four Winns with your name, address, daytime phone number, e-mail address, purchase date, and hull serial number of the boat purchased. The hull serial number plate is permanently affixed to the starboard side of the transom.

Registration of a Pre-Owned Four Winns® boat does not extend or in any way affect or modify the specific terms of the Four Winns Owner Protection Plan or Limited Warranties.

We provide this service to the purchasers of Pre-Owned Four Winns® boats in the interest of better boating. Four Winns welcomes every purchaser of a Four Winns® boat, new or used, to our family.

D - 6 INSURANCE COVERAGE

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

D - 7 SERIAL NUMBER RECORD

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

D - 8 PRE-DELIVERY SERVICE

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

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

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

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

D - 9 REPLACEMENT PARTS

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

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

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

D - 10 OWNER'S RESPONSIBILITIES

1. Sign the warranty registration card verifying your address, model and hull serial number. The dealer is responsible for mailing the warranty registration card to us.
2. Inspect the boat at the time of delivery to verify that all systems and components are operating safely and acceptably. Read all manuals and instructions.
3. Operate all equipment in compliance with the manufacturer's instructions.
4. Review the pre-delivery checklist for the boat and engine with your dealer when you take delivery.
5. Schedule your 20-hour boat and engine checkup with your dealer.
6. Know how to safely operate your boat and the rules of the road before you use your boat.

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

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

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

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

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

D - 11 CONSTRUCTION STANDARDS

All our boats meet or exceed the construction standards set by the U.S. Coast Guard and the American Boat and Yacht Council (ABYC) concerning:

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

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

D - 12 WINN GEAR™

Show your colors! Four Winns offers a complete line of sports clothing designed to complement your new boat. Your Four Winns dealer has a complete catalog and pricing. Our Winn Gear line is also on display on our website at www.fourwinns.com.

ENGINE AND DRIVE SYSTEMS

E - 1 GENERAL



WARNING

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

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

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

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

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

E - 2 ENGINE EXHAUST

A. Carbon Monoxide

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



WARNING

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

Persons overcome by carbon monoxide may exhibit the following symptoms:

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

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

The following suggestions can help prevent exhaust fumes from entering the boat or injuring people in the vicinity:

1. DO NOT allow the boat to remain stationary with the engines running for an extended period of time. Do not stand or swim near the exhaust output or outdrive when the engine is idling.
2. Use extreme caution while operating the engines in confined areas such as enclosed slips, congested piers, or in any area where the exhaust outlets are facing or near a bulkhead or wall structure of any kind. Operation under such conditions could easily lead to exhaust gasses (carbon monoxide) entering even though you may have all the hatches, windows, doors and portholes closed.
3. Never operate your generator while the boat is moored against any other boat, dock or wall structure that is against or near the exhaust outlet. Again, operation under such conditions could easily lead to exhaust gases (carbon monoxide) entering your boat or the boat to which you are moored, even though you may have all the hatches, windows, doors, and portholes closed.
4. 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 needed for this to occur.
5. Persons sleeping can be easily overcome by carbon monoxide because they are unaware of its presence. Sleeping while the engines or generator are running is not recommended. If persons are sleeping aboard while underway, or while the generator is running, 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.



WARNING

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

6. If possible, ventilate your cabin while under way. Open a forward hatch or window to allow air to travel through the cabin. Be very careful of operating the

boat with the cabin door or windows that face aft, open. The natural vacuum created during operation may allow exhaust gasses to be drawn into the cabin.

NOTICE

Current deck hatches are designed to allow ventilation when locked in a partially open position.

7. Inspect the engine exhaust system frequently for water and exhaust gas leakage, hose deterioration, and loose hose clamps. See Section R - General Maintenance for additional information.
8. Have a competent marine engine service technician inspect your exhaust system whenever your boat is in for service, or if you notice a change in the sound of your engines.

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

B. Carbon Monoxide Monitor

A carbon monoxide (CO) monitor(s) will sound an alert should carbon monoxide reach an unsafe level in the cabin of your Vista™. The CO Monitors are standard equipment and are located in the aft cabin and forward cabin. Refer to the manufacturer's literature included with the owner's packet.



WARNING

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

E - 3 ENGINE & DRIVE SYSTEM

A. Engine

Powering your 378 Vista™ inboard is your choice of twin Mercruisers® (gas), twin Volvo-Penta® (gas/diesel), or twin Caterpillar® (diesel) inboard engines. Please consult the engine owner's manual provided with this manual for operation and maintenance information.

B. Inboard V-drives

On the V-drive propulsion system of the 378, all shifting and gearing components are installed inside of the hull, only the propeller shafts and associated equipment are

under water. The V-drive system has the engine mounted in the extreme stern of the boat with the output shaft facing forward. A transmission which performs shifting functions is mounted directly onto the engine. A V-drive reduction gearbox is mounted directly to the transmission. The prop shaft is then connected to the V-drive output coupling. See Figure E1.

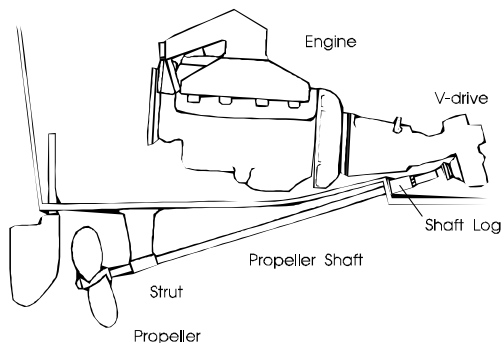


Figure E1: V-drive

NOTICE
Always return the engine throttle lever to the extreme low speed position before shifting. NEVER shift the unit while engine speed is above 800 rpm.

E - 4 UNDERWATER EQUIPMENT (Inboards)

WARNING
Avoid running aground or striking a (submerged) object. Serious damage to the engine(s) or inboard underwater gear can result and the boat can take on water. In the event of such an occurrence, proceed at low speed to the nearest service facility and have an immediate inspection made of the prop shafts and struts before further use of the craft. Keep all life saving devices at hand while driving to a dock area. If the boat cannot be immediately removed from the water, thoroughly inspect the bilge area for leaks so that the boat does not sink while moored.

A. Shaft Log

The shaft log allows the propeller shaft to extend and rotate through the hull with only limited water leakage occurring. Minor dripping may occur and is not abnormal during operation. See Figure E1 & E2.

Proper performance of the shaft seal is directly dependent upon correct propeller shaft alignment. Propeller damage, a bent strut or shaft, or abnormal wear, settling, etc., are common reasons for misalignment. Therefore, periodically have the shaft alignment checked and have adjustments made when necessary.

WARNING
To prevent personal injury, keep away from the propulsion machinery during its operation or whenever the boat is in motion. Movement of water past a propeller can cause the propeller, propeller shaft, and other propulsion machinery to rotate even if that equipment is not being operated intentionally.

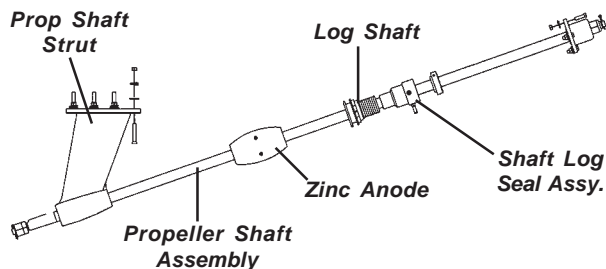


Figure E2: Underwater Equipment

WARNING
To prevent water from entering into the boat, always be sure the lock nuts are tightened securely to prevent the packing nuts from loosening. DO NOT attempt to tighten the lock nuts without the proper equipment to hold the packing nut stationary.

B. Strut

The strut secures the lower end of the propeller shaft. Seasonal inspection of each strut should be made to insure no damage has incurred and the strut bearing is not worn excessively.

When the boat is removed from the water for winterization or general maintenance, apply a light water proof grease to the strut bearing (rubber sleeve in the strut) and the shaft where it penetrates the strut bearing. This will keep the strut bearing from drying out. Replace the strut bearing should it become worn or cracked.

C. Propeller Shaft

NOTICE

When lifting the boat, always position the lifting straps at the corresponding “sling” labels. Lifting the boat with lifting straps over the prop shafts will cause the shafts to become bent. Improper lifting technique will not be covered under warranty.

The prop shafts of all our V-drive boats are aligned at the factory. Prop shaft alignment should be checked by your dealer during pre-delivery service. Shaft alignment should be checked again forty-eight hours after initial commissioning. Periodic checks of shaft alignments, and engine V-drive mounting bolts should be made; especially if noise or vibration occurs.

NOTICE

Excessive vibration, abnormal shaft log wear, or broken propeller shaft coupling bolts are an indication of misalignment. Misalignment can also cause severe damage to shaft logs, struts, shafts and the engine transmission or v-drive. Realignment should only be performed by a qualified service person. The following procedures are provided so a boat owner can determine if service work is required.

The propeller shaft coupling and engine/V-drive output flange coupling must be aligned to within 0.004 inches. Always be sure the prop shaft is centered in the strut bearing and shaft log before alignment adjustments are made. Refer to Figure E3.

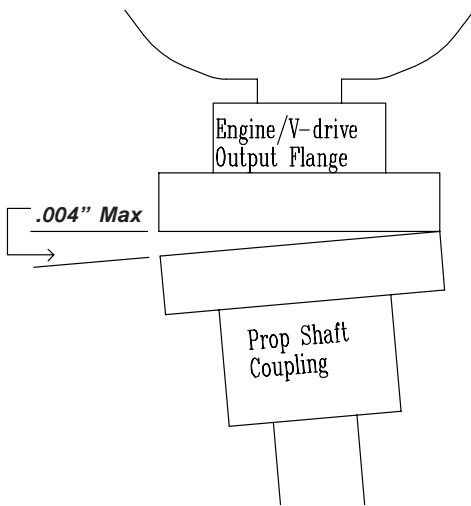


Figure E3: Coupling Alignment

Coupling Alignment Procedure:

1. Boat must be in water for at least 24 hours before alignment is started.
2. Check to be sure that the shaft can be turned with one hand on the coupling.
3. Assure that all shaft coupling nuts and bolts are installed but loose.
4. Separate coupling face from transmission output flange.
5. Using a set of feeler gauges, measure the gap between the coupling face and the transmission output face, next to each bolt, without rotating the shaft.
6. Subtract the smallest measurement from the largest.
 - A. If the difference is .004" or less, snug up each nut and bolt, then tighten each nut to 10 to 15 ft.-lbs of torque, then re-tighten each nut to 30 to 35 ft.-lbs. of torque.
 - B. If the difference is greater than .004", adjust engine and transmission mounts up or down, sideways and/or fore and aft until the difference between the highest of the measurements and lowest is .004" or less. Snug up each nut and bolt, then tighten each nut to 10 to 15 ft.-lbs of torque, then re-tighten each nut to 30 to 35 ft.-lbs. of torque.
7. Check to be sure that the shaft can be turned with one hand on the coupling.
8. If the shaft can not be turned with one hand on the coupling, readjust the engine and transmission mounts up and down, sideways, and/or fore and aft until the difference between the highest of the measurements and lowest is .004" or less. Snug up each nut and bolt, then tightening each nut to 10 to 15 ft.-lbs. of torque, then re-tightening each nut to 30 to 35 ft.-lbs of torque. Be sure the shaft can be turned with one hand on the coupling.
9. Repeat this procedure on the other side.

D. 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. It should be noted that the 378 VistaTM is equipped with nibral propellers.

1. 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 E4.

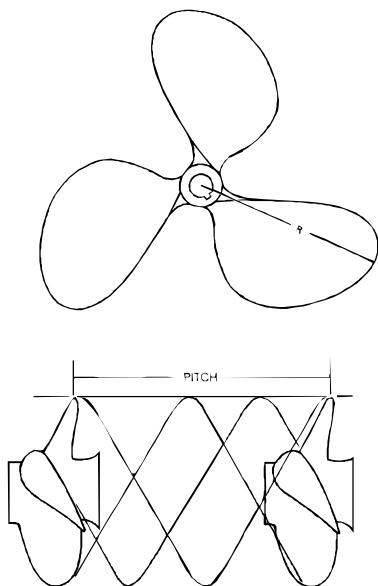


Figure E4: Propeller Pitch & Diameter

2. Pitch

Pitch is a measure of helix angle, or angle of attack, of the rotating blade. Pitch is easily understood if one imagines the propeller rotating through a semisolid such as butter or gelatin. 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 E4.

3. 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.

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 propellers 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 engines should turn within the maximum RPM range when at full throttle. If the engines exceed 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.

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

NOTICE

For twin engine installations, always check drive shaft rotation before propeller installation. A right hand rotation propeller must be installed on the starboard propeller shaft. Similarly, a left hand prop must be installed on the port propeller shaft.

For shipping reasons, the propellers are not factory installed. Initial installation of the propellers will be performed by the dealer during pre-delivery service. See Figure E5.

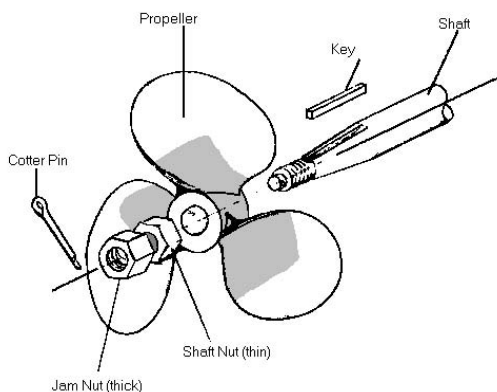


Figure E5: Prop Installation

NOTICE

Should it be necessary to change propellers, always use an appropriate propeller removal tool or "Prop Puller." DO NOT attempt removal using a hammer. Damage to the propeller or propeller shaft can result.

Always check shaft rotation before propeller installation. A right hand rotation propeller must be installed on the prop shaft connected to a starboard engine. Similarly, a left hand prop must be connected to the port engine shaft. The propellers **must** rotate outboard not inboard.

Be sure the propellers are of the correct blade configuration, diameter, pitch, and shaft size to assure good performance. For additional information on factors affecting performance and/or assistance with your selection, please consult your Four Winns dealer.

E - 5 ENGINE COOLING SYSTEM

Your 378 Vista™ includes a "closed water cooling" system as standard equipment. This system provides adequate engine cooling without exposing the internal engine to the detrimental effects of surface water, including salt, highly polluted or silt-laden water. The engine owners manual provides additional information regarding service and maintenance of this equipment.

The 378 Vista uses surface water as a cooling medium for the heat exchanger. The cooling water employed enters the system through a water intake and is relinquished through the exhaust manifold system.

Inboards utilize thru-hull water intake scoops. These types of intakes have an external strainer. Be sure strainers are kept free of mud, weeds and other debris. Some boating areas require that additional strainers or water intake filters be installed. Reference Section P-3 - Equipment Installation, in this manual for installation instructions and consult your Four Winns dealer regarding any special equipment that may be required.

A gate valve or seacock is provided at each engine intake scoop previously described. Be sure these valves are in the open position (lever is parallel with the valve) when operating the engines and in the closed positions (lever is perpendicular to valve) when engines are not operating for an extended period of time.

CAUTION

Serious engine damage could result if seacock valve(s) is not open during engine(s) operation. Ensure seacock valve(s) are in the open position when operating engine(s).

WARNING

Should an engine intake or an exhaust or cooling hose rupture, turn the engine off and close the seacock immediately. Proceed under tow, if necessary, to a service facility for appropriate repairs; maintain a close visual watch on the problem hose and also on the bilge water level.

Inboard boats utilize exhaust hose to relinquish cooling water. A periodic inspection of the hose, muffler and related parts should be made to insure that leaks or heat deterioration have not resulted. Replace them as necessary.

E - 6 RUNNING ANGLE

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. Heavy load or certain water conditions may make it difficult to achieve the optimum running angle. See Figure E6.

The running angle can be controlled through the use of trim tabs. See Section E-7 - Trim Tabs and Section T-7 - Trimming Your Boat for information on the use of trim tabs.

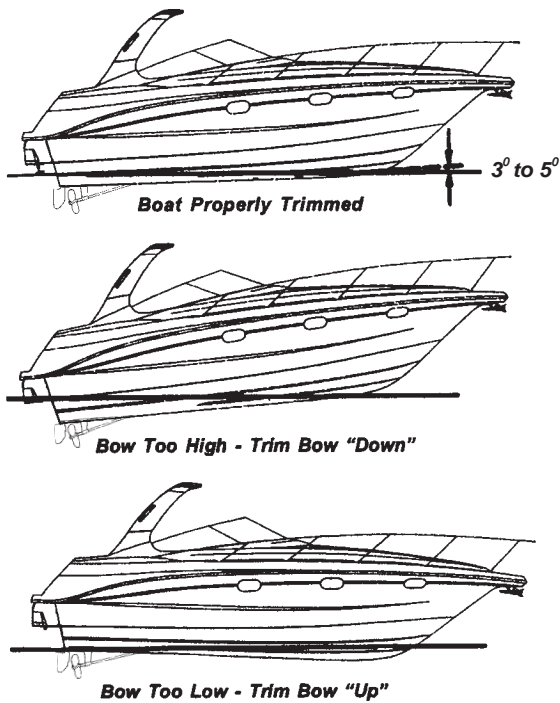


Figure E6: Running Angle

E - 7 TRIM TABS

Electric/hydraulic trim tabs are standard equipment 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 E-6 - Running Angle).

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

The trim tab control uses two (2) momentary-type rocker switches. The trim tab switches control the attitude or position of the boat. The trim tab switches are labeled by position such as "Bow Up" and "Bow Down". They are also labeled for "Port" and "Stbd". When pressed, the label indicates what happens to the bow of the boat.

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

A. Control Listing

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

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

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

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

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

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

WARNING

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

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

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

B. Induce Planing & Controlling Trim Angle

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

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

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

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

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

Optimum efficiency is obtained when operating at a 3 to 5 degree running angle. Utilizing too much "Bow Down" trim tab can reduce operating efficiency and cause substantial steering and handling difficulties. Be extremely careful when running in a following sea. The effect of trim tabs is amplified under such conditions. Steering and handling difficulties can result from improper trim tab usage, especially in a following sea. If unsure of proper trim tab positioning, raise the trim tabs to the full-up position.

⚠ WARNING

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

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

C. Trim Tab Maintenance

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

E - 8 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.

The 378 Vista™ has individual gauges in the dash panel as standard instrumentation. See Figure E7.



Figure E7: 378V Helm Station

A. Tachometer

The tachometers indicate the speed of the engines in revolutions per minute (rpm) and are preset by Four Winns. This speed is not the boat speed or necessarily the speed of the propeller. They may not register zero with the ignition key in the OFF position.

NOTICE

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

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

B. Speedometer

A speedometer is **not** available on the 378 Vista™. With the optional GPS/Navigational package the ability to monitor your speed becomes available. Please refer to the manufacturer's literature for programming the GPS unit for speed readings. This information is included in the owner's packet when the boat is ordered with the navigation package.

NOTICE

Speed indicators are not precision instruments. The indications are relative and should never be used for navigational purposes or similar critical situations alone. Use other navigation systems in conjunction with the speedometer.

NOTICE

DO NOT rely on the speed indicator when trying to achieve a "NO WAKE" condition in a harbor or other enclosed waterway. ALWAYS be cognizant of the size of your waves your boat is making and reduce throttle until you are sure that they will not cause any damage. You are responsible for damage caused by the wake of your boat.

C. Temperature Gauge

The temperature gauge monitors the cooling system of the engine. A sudden increase in the temperature could be a signal of a blocked cooling passage or a water pump malfunction.

NOTICE

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

D. Oil Pressure Gauge

The oil pressure gauge indicates the pressure in the engine lubrication system. A drop in oil pressure is a possible indication of oil pump or leakage problems.

NOTICE

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

E. Voltmeter

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

F. Fuel Gauge

The Fuel Gauge displays the level of fuel that is present in the fuel tank. Refer to Section I - Fuel System for additional information.

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 bending the fuel sender float arm.

NOTICE

Fuel gauges are not precision instruments. The reading is relative, and should never be relied upon as the sole indicator of fuel availability.

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. Refer to Section I - Fuel System for additional information.

G. Depthsounder

A depthsounder is included in the optional navigation packages. Please consult the manufacturer's literature included in the owner's packet for operation and care of the depthsounder.

H. Gas Vapor Detector

The Gas Vapor Detector is standard equipment on the 378 Vista™. The gauge mounts in the dash. Additional information can be found in Section I-1H in this manual.

I. Engine Hour Meter

Engine hour meters are standard on the 378 Vista® model and provides a numeric record of elapsed engine operating time. This information is important in determining scheduled maintenance intervals, ships log data, cruise information, etc. The hour meters are located in the engine compartment near the engines.

J. 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 batteries. Additional information on ignition switch operation is covered in Section A - Operation of this manual.

K. Engine Synchronizer Gauge

An engine synchronization gauge is standard on the 378 dash. It is located between the tachometers on the dash. This instrument compares the electrical signals generated by the engines and converts those signals to a visual meter indication of engine speed difference. The meter movement responds to changes in throttle position.

This instrument does not physically synchronize the engines, but only provides a visual indication so the operator can take corrective action. See Section F-2 - Control Operation and the engine manufacturer's literature for additional information on throttle usage and engine synchronization.

L. Alarm Systems

An engine alarm system is installed on the 378 Vista™ (gas or diesel engines). This is an audible alarm that is mounted in the helm area; it is actuated by engine water temperature and engine oil pressure senders. The alarm will sound in the event of low engine oil pressure or high engine coolant temperature.

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 monitors only engine water temperature and engine oil pressure. Always maintain a close visual watch on the drive(s), transmission(s), engine fluid levels, bilge water level, etc. Refer to the engine manufacturer's literature for additional information.

M. Rudder Angle Indicator Gauge

This gauge provides you with the information regarding the angle of the rudders relative to the straight ahead position. A rudder angle sender sends the angle information to the rudder angle indicator gauge mounted on the lower instrument gauge panel. See Section G-4 for more information regarding the rudder angle indicator.

N. Navigational Packages (Optional)

Four Winns offers navigational packages as options. See Figure E20. Please consult the manufacturer's literature included in the owner's packet for operation and maintenance of these navigational systems (if installed).

NOTICE

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

NOTICE

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

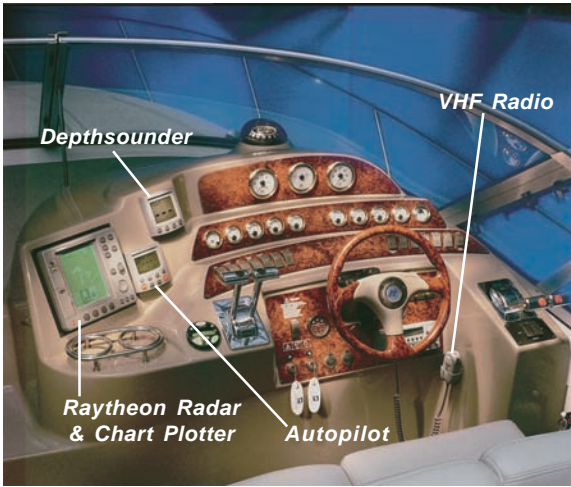


Figure E20: 378V Navigation Package 2

O. Instrument Maintenance

Electrical protection for instruments and ignition circuitry is provided by a circuit breaker on the ignition panel. Periodically, spray the ignition switches with a contact cleaner. The ignition switches 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.

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.

CONTROL SYSTEMS

F - 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.

The 378 Vista™ model is equipped with twin lever, single action shifter and throttle levers. See Figures F1 & F2. The port shifter lever operates the port engine and the starboard shifter lever operates the starboard engine. This is also true for the throttle levers. See Section F2 - Control Operation for further details.

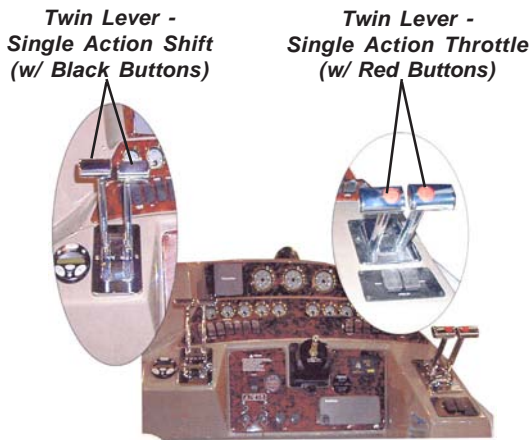


Figure F1: 378V Helm Station

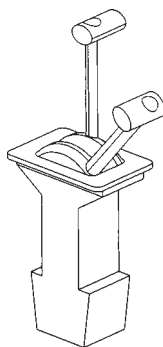


Figure F2: 378V Control Lever

NOTICE

When reversing direction at an engine speed over 800 RPM, hesitate in neutral long enough to let the propeller slow its turning to avoid damaging the shifting mechanism.

NOTICE

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

Additional information on controls and their operation is discussed in Section F-2 and the engine manufacturer's information included in the owner's packet.

F - 2 CONTROL OPERATION

A. General

NOTICE

Do not run a cold motor any faster than necessary to keep motor from stalling. Do not exceed 2500 RPM in NEUTRAL.

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 an engine synchronizer gauge (as described in Section E-8K). Attempting to synchronize the engines solely by using tachometer readings or throttle lever placement generally will not be effective. When the engines are in proper synchronization, the throttle levers may not necessarily be in the same position.

B. Shifting and Control Speed

NOTICE

If your boat is equipped with a non-OEM remote control system, ask your dealer how to properly operate it.

1. Move shifter levers to the neutral detent position and throttle levers to the idle position. Placing the shifter levers in the neutral detent position will engage neutral start switch and allow engine to start.



CAUTION

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

2. To go FORWARD - Briskly move the shifter levers forward. Once forward gear engagement is complete, push throttle levers forward until desired speed is achieved.
3. To go in REVERSE - Briskly move the shifter levers rearward. Once rearward gear engagement is complete, push throttle levers forward until desired speed is achieved.



WARNING

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

NOTICE

DO NOT shift if engine speed is above 800 RPM.

4. To go from FORWARD to REVERSE, or REVERSE to FORWARD; always pause at NEUTRAL and allow engine speed to return to idle.
5. After shifting is completed, continue to move the throttle levers slowly in the desired direction to increase speed.

F - 3 NEUTRAL SAFETY SWITCH

Every control system has a neutral safety switch incorporated into it. This device prohibits 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 control levers may be necessary to locate the neutral position and disengage the safety cutout switch. Control or cable adjustments are required to correct this condition should it persist. See your Four Winns dealer for necessary control and cable adjustments.

F - 4 CONTROL SYSTEM MAINTENANCE

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

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

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

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



WARNING

DO NOT attempt control adjustments unless you are familiar with servicing 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 manufacturer.

STEERING SYSTEMS

G - 1 GENERAL

378 Vista™ model is equipped with tilt steering wheel and hydraulic steering as standard features.

A. Tilt Steering

The steering wheel can be tilted up or down so as to enhance the driver's comfort and enjoyment. The tilt steering is also hydraulic. See Section G-1B for details.

To tilt the steering wheel, depress the release lever with your thumb. See Figure G1. Be sure to hold the top of the wheel to assist in positioning. Refer to the steering manufacturer's literature for additional information.

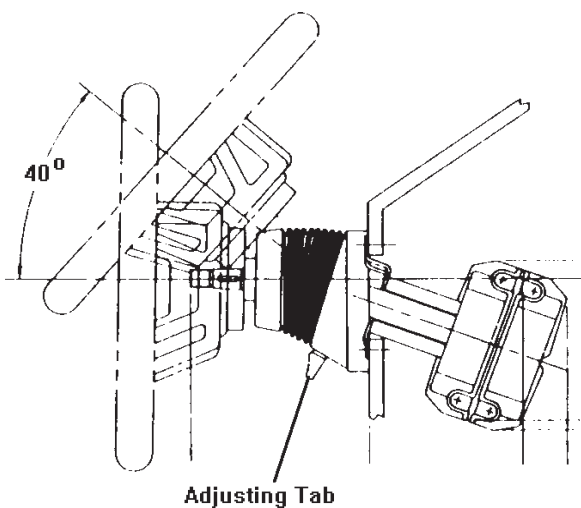


Figure G1: Tilt Steering

WARNING

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

WARNING

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

B. Hydraulic Steering

NOTICE

DO NOT force the steering wheel to either extreme position. This can place undue strain on the unit and can lead to hydraulic steering damage.

Upon commissioning the boat, it is necessary to purge the system of air. This is performed by your Four Winns dealer during pre-delivery service. Should steering difficulty increase with time, it is possible additional bleeding of the system is required. See your Four Winns dealer for assistance. This and other adjustments on hydraulic steering units are critical and should be performed only by a qualified service technician.

CAUTION

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

NOTICE

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

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 fluid through the system. In many aspects 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 causing the rudders to turn. See Figures G3 & G4.

NOTICE

Only use manufacturer's suggested hydraulic fluid. The hydraulic steering uses a fluid which meets Mil H5606 specifications. Please note that automatic transmission fluid (Dexron II) may be used in an emergency. **Never use brake fluid.**

NOTICE

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.

Additional information on steering operation can be found in your Engine Owner's manual.

G - 2 STEERING LOAD

A load is placed on the steering system by the propeller torque, and/or water flowing past the rudder. The steering system is designed to normalize the effort required to turn the steering wheel throughout the average operating speed range and general rudder position. 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.

CAUTION

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

G - 3 RUDDER

The 378's dual v-drives have two rudders. These are coupled together at the tiller arms by a tie bar. The rudders are toed-in at the front to provide maximum stability on straight ahead runs and proper tracking through corners. Rudder alignment is preset at the Four Winns factory. Further alignment adjustments should not be necessary unless the rudder or steering system incurs damage. See Figures G2, G3, & G4.

Rudder Alignment Procedures:

1. Dimension A must be 1/2" to 3/4" larger than dimension B.
2. Dimension A & B must be measured between the inside faces and at the bottom of the rudders.

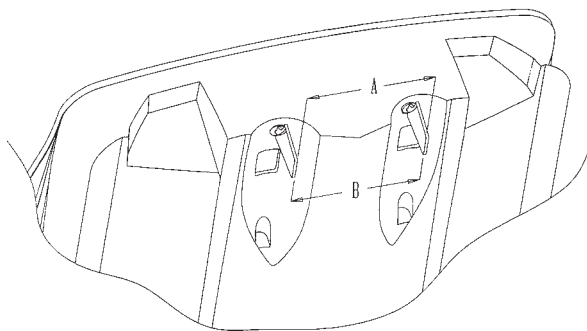


Figure G2: Rudder Alignment Specifications

G - 4 RUDDER ANGLE/POSITION INDICATOR

A rudder angle/position indicator is a device that indicates the location of the rudders relative to the straight ahead position. Such a unit is provided on the 378 Vista™ and consists of a gauge on the dash and an electrical sending unit connected to a rudder tiller arm or the steering assembly. See Figures G2 & G3.

The reading on the gauge can be adjusted by loosening the three screws securing the electrical sending unit and turning the sending unit either clockwise and counter-clockwise slightly. The reading will vary accordingly.

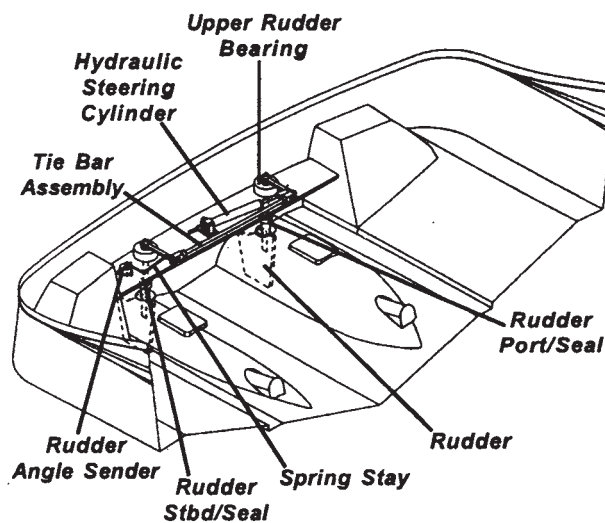


Figure G3: Hydraulic Steering

G - 5 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.

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.

G - 6 STEERING SYSTEM MAINTENANCE

A periodic inspection of the helm pump and reservoir, hydraulic hoses, the hydraulic cylinder, tie bar assembly, bearing, seals, rudder angle sender and rudder should be made. See Figures G4 - G6. 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 should be so adjusted that the steering wheel is centered with the rudders 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 in the owner's packet.

Inboard boats should also be inspected for leakage around the rudder port seal. The packing nut(s) should be tight enough to prevent leakage, yet loose enough so excessive drag is not placed on the rudder shafts. Hard steering could otherwise result. If the leakage cannot be stopped without exerting excessive drag on the rudder shaft, replacement of the seal is required.

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.



WARNING

To prevent water from entering into the boat, always be sure the lock nuts are tightened securely to prevent the packing nuts from loosening.

Figure G4: Hydraulic Steering Parts Breakdown

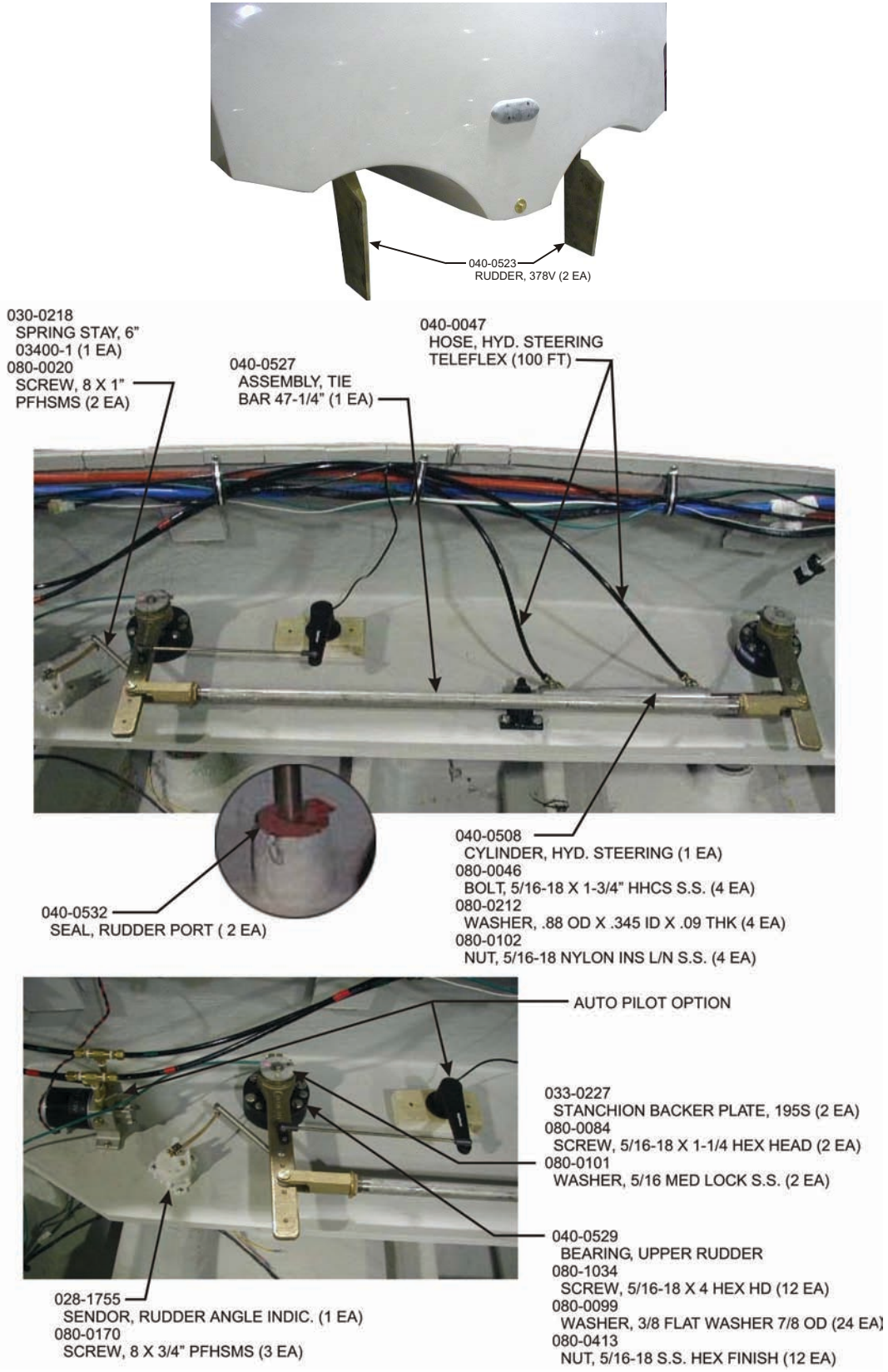
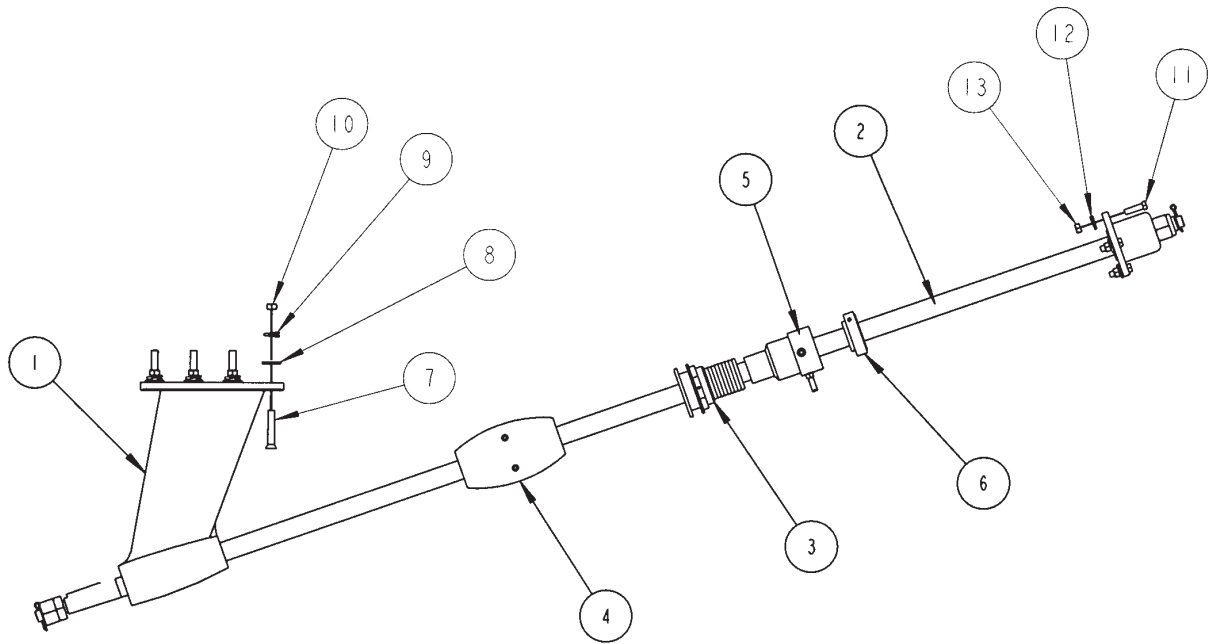


Figure G5: 378V Inboard Propulsion System

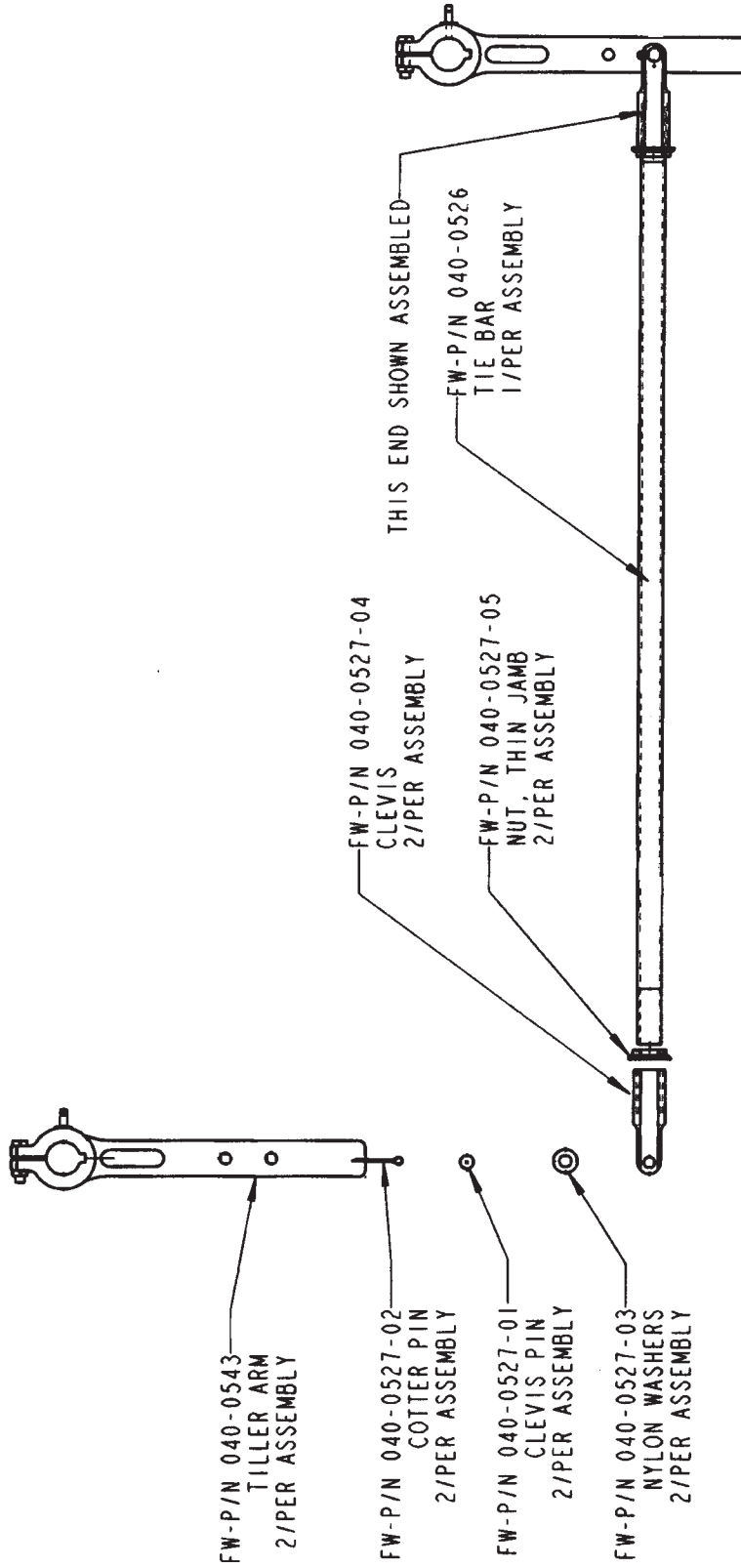


- BEFORE RUNNING BOAT:
- 1) SNUG EACH BOLT WHILE HOLDING NUT
 - 2) TORQUE EACH BOLT TO 25 FT-LBS OF TORQUE
 - 3) TORQUE EACH BOLT TO 50 FT-LBS OF TORQUE

*NOT SHOWN

#	DESCRIPTION	PART#	QTY			
1	STRUT, 1-1/2 PROP SHAFT	040-0539	2 EA			
2	SHAFT ASSEMBLY, 1-1/2"	040-0538	2 EA			
3	SHAFT LOG, 1-1/2", #00SLL15FG	040-0537	2 EA			
4	ANODE ZINC, COLLAR SHAFT 1-1/2" X -7	040-0282	2 EA			
5	SEAL, SHAFT LOG ASS'Y	040-0528	2 EA			
6	CARRIER KIT, SPARE SEAL #K-1500	040-0536	2 EA			
7	BOLT, 1/2-13 X 3" FH-SOC. MC	080-0292	16 EA			
8	WASHER, .530X1.44X.150 FENDER	080-0747	16 EA			
9	WASHER, 1/2" MED LOCK WASHER SS	080-0038	16 EA			
10	NUT, 1/2-13 HEX FINISH NUT S.S.	080-0039	16 EA			
11	BOLT, 7/16-20 UNF X 1-1/2" HEX	080-0350	8 EA			
12	WASHER, 1/2" MED LOCK WASHER SS	080-0353	8 EA			
13	BOLT, 7/16-20 UNF X 1-1/2" HEX	080-0352	8 EA			
14	*CAULK, 1/4" BEAD #3M 4200 PER INCH	084-0175	30 IN			


Figure G6: Tie Bar 47 1/4" Tiller Arm Assembly



ELECTRICAL SYSTEMS

H - 1 GENERAL

All electrical equipment on the Four Winns Vista® models operates on either 12 volts DC or 120 volts (220 volts on 50 Hertz models) AC electrical power. A quadruple (4) battery system along with dockside power (including battery charger) is standard on the 378 Vista™. One battery is designated for the port engine, one is for the starboard engine and two batteries are designated for the ships systems. Batteries are located in the engine compartment. See Figure H2.

 **WARNING**

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

Circuit breakers are installed on the battery switch to protect various system components. The SHIP SYSTEMS breaker supplies power to all DC electrical components except the aft and forward bilge pumps, ignition, and instrumentation. Additional breakers are located in the cabin circuit breaker panel. The circuit breakers and fuses are labeled for amperage and use.

H - 2 DUAL ENGINE - QUAD BATTERY SYSTEM

Two battery selector switches are installed on the battery switch panel of a dual engine, quad battery system. Please note that only in an emergency start situation can DC power be drawn from any one of the batteries. At any other time, DC power is drawn only from the designated battery(s). The battery switch panel is located inside the ship systems door, which is located at the port cockpit bulkhead, near the stern. See Figure H1. Refer to the battery switch schematic in the back of the manual for wiring information.

*Ships System Door
(Battery Switch & Breakers Inside)*



Figure H1: Battery Switch Location

A. Installation

Connect each of the red (positive) battery cables leading from the battery selector switch to the positive (+) terminal on each of the batteries. Refer to Figure H2.

NOTICE

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

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



Battery Storage Cover

Figure H2: Battery Location

B. Operation

Power to the engines and all 12 volt electrical equipment is controlled at the battery selector panel. On the 378 Vista™ model, separate breakers are provided on the battery selector switch panel to protect the windlass, forward and aft bilge pump, battery charger outputs, and ship systems.

1. Battery Selector Switch

The battery selector switch positions for the 378 Vista™ are as follows:

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

NOTICE

Twelve volt power to the cabin panel is supplied by the “SHIPS SYSTEMS” circuit breaker on the battery selector panel. This must be turned on to operate any 12 volt accessories on the cabin panel. The bilge pumps receive power from the ships system battery and remain on at all time regardless of battery selector or ship systems switch positions.

NOTICE

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

2. Port Engine Battery Switch:

“ON” - Turning the switch to position “ON” will use the port engine battery to power the port engine and 12 volt engine related equipment. The ships system battery will not be used for any engine or engine related equipment with only one exception - an emergency start situation. The ships system battery will power all other 12V equipment on the boat. The isolator will allow the engine alternator to fully charge all four batteries. “ON” is the recommended switch position for normal boat operation.

3. Starboard Engine Battery Switch:

“ON” - Turning the switch to position “ON” will use the stbd engine battery to power the stbd engine and 12 volt engine related equipment. The ships system batteries will not be used for any engine or engine related equipment with only one exception - an emergency start situation. The ships system battery will power all other 12V equipment on the boat. The isolator will allow the engine alternator to fully charge all four batteries. “ON” is the recommended switch position for normal boat operation.

4. Emergency Start Procedures

If one of the designated engine batteries fails to start its respective engine, place the “EMERGENCY START” switch to the “ON” position and attempt to start the engine. See the electrical schematic titled “378 Vista™ Battery Switch Panel Assembly” at the end of this manual. Current is drawn from the other batteries to start the engine. Once engine has been started return the battery selector switch to the “ON” position. Once back at port, be sure to have the failed engine battery checked out for possible service or replacement.

C. Battery Charger

The battery charger is standard equipment and is located in engine compartment on the port side. The batteries will be charged by the battery charger when the boat is connected to dockside power.

Additional information on the battery charger can be found in Section H-6B - 120 Volt AC Equipment in this manual and refer to the manufacturer’s literature included with the owner’s packet.

H - 3 VOLTMETER

On the 378 Vista™, two voltmeters are installed in the dash panel to monitor the condition of the batteries when the ignition is on. When the voltage is checked during engine or battery charger operation, the voltage of the respective battery will be indicated on the voltmeter. It is common to have a 12-14 volt reading when the engines are running. It should be noted that located in the cabin panel are voltmeters which monitor the “SHIPS SYSTEMS” voltage. Additional information on voltmeters may be found in the engine owner’s manual.

H - 4 12 VOLT ELECTRICAL EQUIPMENT

A. Helm Equipment

Ignition systems and gauges are protected by circuit breakers at the helm, near the ignition key on all Vista™ models. Equipment switched “ON” at the helm is protected by circuit breakers in the cabin’s AC/DC panel.

NOTICE

On the 378 Vista™, a separate SYSTEMS breaker on the battery switch panel can be used to shut down all DC equipment (except bilge pump) on the cabin panel.

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



CAUTION

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

Accessory - Accessory equipment that is customer or dealer installed. This circuit is wired to a circuit breaker in the 378. For additional information on adding accessories, refer to Section H-4B.

Aft Bilge Pump - The AFT BILGE 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. The automatic bilge pump circuitry is connected directly to the batteries. When leaving your boat unattended for an extended period, check the charge on the battery(s) periodically. Also check the water level in the bilge and make sure the float switch is functional.

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

Arch Light - The ARCH LIGHTS switch is used to activate the radar arch lights.

Blower - The BLOWER switch is used to activate the bilge blower. The bilge blower is used to remove any gas vapors that may have accumulated in the bilge or engine areas.



WARNING

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

Cockpit Lights - The COCKPIT LIGHTS switch is used to activate the cockpit (courtesy) lights.

Emergency Start - Allows for an engine to draw current from the other batteries should the engine battery be too low to start the engine.

Engine Hatch - The ENGINE HATCH switch is used to raise and lower the engine lid by activating a linear screw jack. Pressing the upper portion of the switch marked “UP” allows the engine lid to be raised. Pressing the lower portion of switch marked “DOWN” lowers the engine lid.

Engine Room Lights - The ENGINE ROOM LIGHTS switch is used to activate the lights in the engine room compartment.

Fuel Tank Control - The FUEL TANK CONTROL switch allows you to select which fuel tank you want to draw fuel from. Pressing the upper portion of the switch marked “PORT FUEL TANK” allows fuel to be drawn from the port fuel tank. Pressing the lower portion of switch, marked “STBD FUEL TANK”, draws fuel from the starboard fuel tank. Placing the fuel tank control switch in the center position allows for the fuel to be drawn from both tanks simultaneously. When ignition is placed in “OFF” position fuel is no longer drawn from the tanks. Please refer to Section I - Fuel Systems for more information regarding fuel systems and the fuel tank selector panel (if applicable).

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

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

Instrument Lights - On the 378, the INSTRUMENT LIGHTS switch is used to activate the instrument lights on the dash. It has a two position switch that provides bright and dim lights.

Navigation & Anchor Lights - Moving the NAV/ANCHOR LIGHTS switch towards the NAV position activates the bow lights and the all-around light. Move the switch to the ANC position to activate the all-around light. The center switch position is OFF.

Platform Lights - The PLATFORM LIGHTS switch is used to activate the swim platform lights.

Trim Tabs - The boat is equipped with electric-hydraulic trim tabs, the trim tabs are controlled by the TRIM TAB switches. Refer to Section E-7 - Trim Tabs for more information.

Windlass - The WINDLASS switch activates the windlass. Refer to the Section M-12 in this manual and the manufacturer's literature for additional information.

Wipers - The WIPERS switch activates the windshield wipers. The wipers will self park to port.

B. Installation of Additional 12 Volt Equipment

Accessories may be added to the boat by wiring directly to the cabin panel. Non-factory installed 12 volt accessory equipment can be connected to the "ACC" switch on the dash.



CAUTION

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

C. Interior Equipment

Cabin equipment is protected by the 12 volt DC cabin panel on the 378 Vista™. Cabin equipment information is listed as follows:

CO Monitor - The CO monitors are protected by a circuit breaker in the cabin panel.

Cabin Lights - To turn the overhead lights on, use the corresponding ON/OFF switch located on cabin lights panel or V-berth switch panel to activate the desired lighting.

Forward Bilge Pump - The forward bilge compartment can be activated manually by the FWD BILGE breaker switch.

Any water from the stringers or from other sources within the cabin will drain into the forward bilge compartment. The pump is equipped with an automatic float switch and will operate whenever bilge water rises to a level that will cause the float to move upward. The water will be pumped overboard.

Head Compartment Vent/Blower - A blower is installed in the head compartment. A separate ON-OFF switch is provided in the head compartment. The head blower is protected by a circuit breaker on the cabin DC panel.

Pressurized Water - A pressure water pump delivers water to the faucets, shower, and transom washdown. The pressure water pump will operate automatically as long as the FRESH WATER breaker is ON in the 378 Vista™.

Turn the FRESH WATER switch OFF when the water tank becomes empty, or when water will not be required for an extended period. The 378 comes standard with tank monitoring systems to check water levels. Refer to Section J-1 and J-2 in this manual for additional information.

Refrigerators - Circuit breakers are provided on the DC cabin panel. The refrigerators have a separate ON-OFF switch. Refer to Section L-1C in this manual and to the manufacturer's literature for additional information.

Stereo - The stereo has a separate switch on the unit and is protected by a circuit breaker labeled STEREO/AMPLIFIER on the 12 volt cabin panel of the 378.

Sump Pump - A sump pump is used to discharge water from the shower and sink drains overboard. It is installed on all Vista™ models. The sump pump has a float switch which will activate the pump when the water level rises in the sump. This pump is protected by the SUMP circuit breaker located in the 12 volt cabin panel.

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

H - 5 120 (220) VOLT ELECTRICAL SYSTEM

The boat is equipped with 30 amp, 120 volt, 60 Hertz (or 15 amp, 220 volt, 50 Hertz) AC electrical wiring. When the boat is connected to a shore power outlet, the AC system supplies electrical power to the following items: battery charger, refrigerator, water heater, range, microwave, icemaker, and outlets. The air conditioner has its own dockside power plug. 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 AC distribution box located at the top section of the AC/DC main panel

The distribution box houses the system circuit breakers. The standard dockside system has a main circuit breaker which protects the overall distribution network. The 378's dockside inlets are in the aft shore power tub. See Figure H3. The 378 has a MAIN circuit breaker located underneath the starboard cockpit aft seat which must be in the “ON” position in order to indicate a reverse polarity situation. See Figure H4. Also, a second set of MAIN circuit breakers are located on the AC cabin panel. Both MAIN breakers must be turned “ON” for AC system operation. 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, ensure the MAIN breaker at the AC cabin panel is turned off before plugging in the shore power cord. Securely connect the power inlet of the boat and the shore power receptacle. Once the shore power is securely connected, turn the MAIN breaker on. If the connection is broken and later re-secured, the circuit breaker may trip. Connections must be secure for uninterrupted dockside service.

Transom Shower Dockside Inlets TV/Phone



Transom Shower Mixer Shore Water Hose

Figure H3: Shore Power Tub

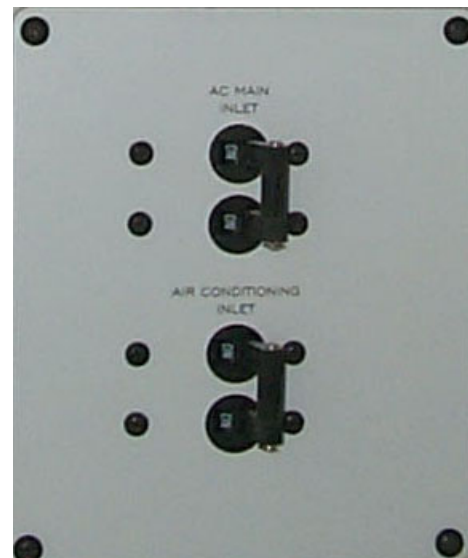


Figure H4: Additional Main Circuit Breakers for Dockside Power (located under Stbd Aft Seat)

H - 6 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



WARNING

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

Fifty foot, ten gauge, three wire, shore power cords are provided with dockside wiring. The shore power cords on 60 Hertz systems have 30 amp twistlock-type connectors. This connector complies with the American Boat and Yacht Council (ABYC) standards.

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



WARNING

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

Shore power connection procedure is as follows:

1. Turn off the boat's main breaker switches at the AC panel off before connecting or disconnecting the shore power cord(s). Ensure the main breakers located underneath the stbd cockpit aft seat are on.
2. Connect shore power cord(s) at the boat first, then connect it to dockside shore power outlet(s).

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 prior to turning on the main shore power breaker switches. If the reversed polarity light is activated, immediately disconnect the shore power cord(s). See Section H-6C - Reverse Polarity Indicator.
4. To disconnect shore power, turn off the main breaker switch on the AC electrical panel and disconnect the power cord(s) from the shore power dockside receptacle(s) first. Then, disconnect the cord(s) 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 all AC systems on the boat. The receptacles can be used for 120 volt (220 volts on 50 Hertz models) household appliances. Refer to the Table I: Electrical Equipment for information on appliances and other equipment.

Battery Charger - The battery charger AC input is controlled by a circuit breaker on the AC electrical panel in the cabin labeled BATTERY CHARGER

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

Water Heater - The WATER HEATER circuit breaker supplies 120 VAC power to the water heater. Refer to Section J-2C - Water Heating Systems in this manual for more information.

NOTICE

DO NOT supply electrical power to an empty water heater. Activate the FRESH WATER circuit breaker and switch to start the water pump and prime the system. Be sure there is adequate water in the system before turning on the water heater. Failure to comply will result in immediate damage to the heater element.

Electric Stove - The RANGE circuit breaker must be activated to supply 120 VAC power to the electric stove on all Vista[™] models. Refer to Section L-1A - Galley Equipment in this manual for more information.

Microwave - The MICROWAVE breaker must be activated to supply 120 VAC power to the microwave on all Vista[™] models.

Ice maker - The ICEMAKER breaker must be ON to supply 120 VAC power to the icemaker. The icemaker is standard on the 378 Vista™.

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

Air Conditioner - The AIR CONDITIONER (AC SYSTEM 2) circuit consist of two of MAIN circuit breakers which allow power to flow to the air conditioner. Both breakers must be in the ON position for air conditioner operation when using dockside power. Dual Dockside is installed on the 378 which allows independent power to be supplied to the air conditioner. Refer to Section L-4 - Air Conditioning in this manual for more information.

Most receptacle circuits are capable of handling 15 amperes. Refer to Table I for a list of equipment and the electrical currents usually required to operate these items. For 220 volt, 50 Hertz models, divide all of the current ratings 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.

Table I: 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

If a problem exists, the reverse polarity indicator light will come on when the shore power cable is attached to the

inlet. DO NOT activate the shore power breaker switch on the main AC panel when the Reverse Polarity light is on.

WARNING

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

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

NOTICE

Some marina shore power systems may be improperly grounded to retard electrolysis (see Section H-9 - Stray Current Corrosion). Before using any 120 volt equipment, make sure the reverse polarity light does not activate when connecting the cord to the inlet.

D. Ground Fault Current Interrupters (GFCI)

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

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

To test:

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

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

causes the GFCI to trip is the problem item and should **not** be used.

H - 7 GENERATOR

A generator is standard on the 378 Vista™. It provides 120 Volt (220V) AC power when the boat is away from the dock. The generator can be operated while running at or below cruising speed. The generator should not be operated when the boat is being run at high speeds. **An insufficient supply of water for generator cooling may occur due to the boat's high rate of speed.**

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

If you wish to use dockside power, be sure the generator is off, connect the shore power cords as explained in Section H-6A, and turn on the shore power breakers on the AC cabin panel and underneath the stbd stern seat.

If you wish to use generator power follow the steps below:

1. Be sure the shore power cord(s) are disconnected.
2. Check the bilge for fumes, operate the blower for at least 4 minutes, and verify blower operation. A blower start switch is located on the main AC/DC cabin panel.
3. Start the generator using the remote generator start switch located on the main AC/DC cabin panel.
4. Turn on the generator's main breakers located in the AC cabin panel.

 **WARNING**

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

 **WARNING**

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

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

H - 8 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 an AC charger/converter is being used. Replenish a battery indicating a low charge. Determine the reason for the discharge. Lack of battery usage is as detrimental to battery longevity as is overuse. Alternating battery usage is important. Refer to the battery manufacturer's instructions included with your battery.

 **DANGER**

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

 **WARNING**

Fire or Explosion Hazard!

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



WARNING

Poison!

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



WARNING

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

B. Electrical Wiring Maintenance

Periodically, inspect all wiring for nicks, chaffing, 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.



WARNING

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

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



WARNING

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

H - 9 STRAY CURRENT CORROSION

A. General

Electrically induced underwater corrosion occasionally affects boats and their related components. This is referred to as "Stray Current Corrosion" and appears as metal

surface pitting or deterioration. Stray current corrosion is the decomposition of chemical compounds by electric current.

Stray current corrosion can be caused by surrounding boats in close proximity which have electrical power leakages or an improperly wired battery/charger installation.

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

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

NOTICE

Use only a battery charger designed to meet U.S. Coast Guard regulations for external ignition protection.

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

B. Galvanic Corrosion

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

C. Corrosion Prevention

Anticorrosion anodes are attached to the transom and propeller shafts to prevent corrosion to your electrical systems and underwater parts. These anodes will slowly erode away by galvanic action and require periodic inspection. Please refer to the section on “Anti-Corrosion Anodes” in your engine manufacturer’s manual for additional information. See Figure H5.

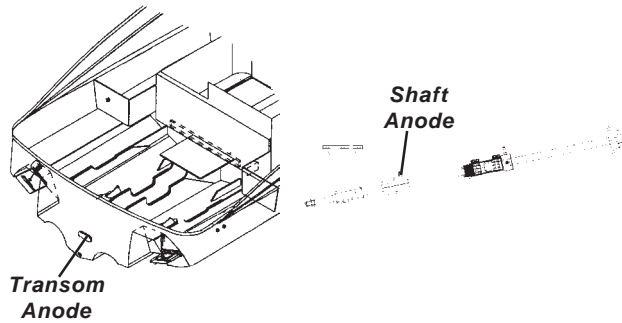


Figure H5: Transom & Shaft Anodes

FUEL SYSTEMS

I - 1 GASOLINE FUEL SYSTEMS

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

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. Engine damage resulting from the use of a lower octane gasoline is considered misuse of the engine and will void the engine warranty. Refer to the section on gasoline requirements in the engine manual for information on octane specifications.

The port and starboard fuel tanks are located forward of the respective engines. See Figure I1 and the locator drawing at the back of this manual. The capacity of each fuel tank is 150 gallons. The 378 Vista™ is equipped with a fuel tank control switch at the helm which in turn operates the fuel valves for the tanks. Earlier 378 Vista™ models were equipped with a manual fuel tank selector panel. See Figure I2. Each system allows you to choose which fuel tank(s) you want your engines and/or your generator to draw from.

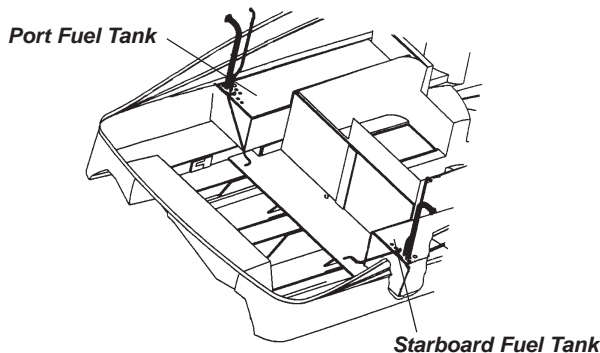


Figure I1: 378V Fuel Tank Locations

A. Fuel Tank Selector Switch & Fuel Tank Selector Panel Operation

By pressing the top portion of the fuel tank control switch, marked “PORT FUEL TANK”, opens the port

fuel tank valve. The red light on the top portion of the switch will be lit to notify you of activation. Fuel will be drawn from the port fuel tank to run the engines and/or the generator.

Pressing the bottom portion of the switch, marked “STBD FUEL TANK”, opens the starboard fuel tank valve and allows fuel to be drawn for both engines and/or generator. The red light on the bottom portion of the switch will be lit.

Placing the fuel tank control switch in the center position allows for the fuel to be drawn from both tanks simultaneously. When the boat ignition switches are placed in the “OFF” position (“powered down”) the fuel pumps no longer pump fuel to the engines and/or generator.

Utility Hatch (In Front of Engine Lid)



Figure I2: 378V Fuel Tank Selector Panel

For earlier 378 Vista™ models equipped with a fuel tank selector panel, manually turn the indicator lever to the desired position. Depending upon where the indicator lever is positioned will determine which valve(s) is opened or closed and from which fuel tank(s) your engine and/or generator draws fuel from.

B. System Testing

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

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

C. Fuel Fills

The fuel fill deck plates are located on the port and starboard rear decks and are marked "GAS". Be sure to utilize the proper type and grade fuel. Refer to Section I-3 for information regarding fueling instructions.

WARNING

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

The gasket/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 should be inspected for cracks or damage and replaced as necessary. Lubricating with a light, waterproof oil or grease is recommended and can extend the o-ring's longevity.

D. Fuel Vents

The 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.

WARNING

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

NOTICE

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

After fueling, replace the fill cap, and wash the areas around the fuel fill plate and below the fuel vent. 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, inspect the vent for any dirt, wax, etc. Carefully remove any obstruction with a pipe cleaner or similar device. **Be sure not to puncture the screen.** The vents are designed to keep insects and foreign matter from contaminating the fuel and fuel system. The stainless steel cap is not removable.

E. Anti-Syphon Valves

The fuel withdrawal line is equipped with an anti-syphon valve where the line attaches to the fuel tank. The valve prevents gasoline from syphoning out of the fuel tank should a line rupture. See Figure I3 for anti-syphon location.

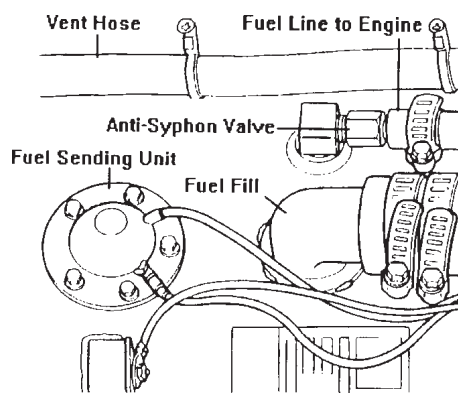


Figure I3: Fuel Tank Fittings

CAUTION

DO NOT remove the anti-syphon valve(s) from the system. Should the valves become clogged, clean and reinstall or replace.

CAUTION

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

NOTICE

On all Vista™ models, access to the anti-syphon valve and fuel sender is by either an access plate or through the engine compartment.

F. Fuel Gauge

The fuel gauges indicate the amount of fuel in the fuel tanks respectively. See Section E-8F - Fuel Gauge for additional information on fuel gauge use.

NOTICE

Fuel gauges are not precision instruments. The reading is relative, and should never be relied upon as the sole indicator of fuel availability.

G. Fuel Sender

The fuel sender consists of a mechanical arm with float which measures the fuel in the tank. The sender arm adjusts with the amount of fuel in the tank and sends a signal to the fuel gauge. See Figure I4.

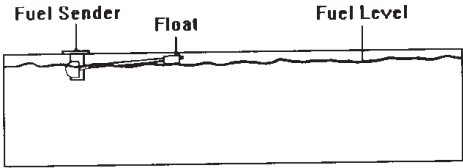


Figure I4: Fuel Sender Operation

Due to the mechanical nature of the fuel sender, variations in readings during various speeds of operation may occur. This system is merely a relative indication of the available fuel supply and not a calibrated instrument. Relative adjustments can be made by your Four Winns dealer by bending the fuel sender float arm.

The gauge readings will also vary with the trim angle of the boat. When sitting at a dock and the boat is nearly level, the fuel gauge will register accurately. Refer to Figure I4. When boating, the trim angle of the boat changes and affects the gauge readings. Under these conditions, the fuel sender will register “full” for the first few hours of running time until the fuel level drops below the 3/4 or 1/2 mark. This is caused by the angle of the fuel in the tank as shown in Figure I5.

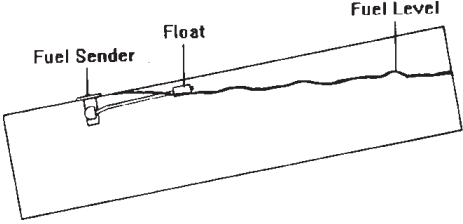


Figure I5: Effects of Trim Angle

It is very important to keep track of hours and fuel consumption to obtain an average gallon per hour consumption figure. This will prevent any problems with running out of fuel on the water.

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

When the fuel gauge begins to register below the “full” mark, the gauge readings will drop much faster until it reads “empty”. When this occurs, the trim angle has affected the sender reading. When the gauge registers “empty”, the sender has bottomed out and there may be 3 to 4 gallons of fuel in the tank. See Figure I6.

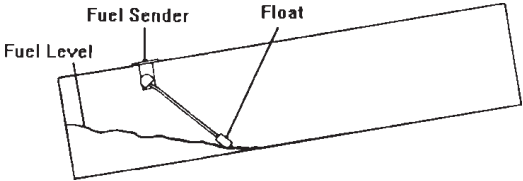


Figure I6: Trim Angle Effect with Low Fuel

H. Fuel Filters

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

NOTICE

Canister-type filters should be changed annually.

I. Gas Vapor Detector

A gas vapor detector is standard on 378 Vista™ model. The gas vapor detector will monitor the engine compartment and notify the operator of an accumulation of gasoline vapors. The operator must take immediate action upon warning to avoid the possibility of an explosion.

The sensing unit is usually mounted towards the rear of the engine compartment. The alarm unit is mounted at the dash.



WARNING

Always personally inspect the engine compartment and sniff for fuel vapors before starting the engine. Remember, a gas vapor detector is a mechanical device. DO NOT rely exclusively on its operation.

J. Use and Maintenance



WARNING

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



WARNING

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

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



WARNING

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

I - 2 FUEL STANDARDS

Be cautious when using gasoline which contains alcohol.



CAUTION

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

A. Problems With Alcohol In Gasoline

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

1. Premature deterioration of fuel system components may occur. Alcohol will attack rubber fuel hoses, fuel tanks, fuel filters, fuel pumps and rubber gaskets. This deterioration will lead to fuel system leakage.
2. Phase separation of fuel will cause contamination. Water which accumulates in the tank through contamination or condensation will be absorbed by the alcohol. This water-heavy alcohol will settle at the bottom of the tank. This phase separation will lead to fuel tank corrosion. This may also result in a lean mixture to the carburetor and cause engine stalling or possible engine damage.

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

B. Recommendations

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

1. Inspect fuel hoses often. A deteriorated hose containing alcohol blended gasoline will normally be soft and swollen. A deteriorating hose containing no fuel

will normally be hard and brittle. In both cases the hose should be replaced.

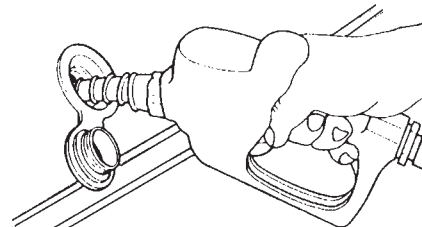
2. Ventilate the engine compartment before starting the engine(s). Operate the engine compartment blower for four (4) minutes. Then, prior to starting the engine(s), check the bilge area for the scent of gasoline fumes; DO NOT start the engines if the odor of gasoline is detected.
3. Frequently inspect the fuel system fittings. Inspect the fuel tank, pump and filter for signs of leaks or corrosion. Visually inspect for deteriorating metal fittings at the fuel hose connections.
4. If areas are found within the fuel system that appear questionable, have a qualified marine technician inspect the system. Have those fuel system components that do not pass inspection replaced. A thorough fuel system examination should be made by an experienced marine technician at least once a year.

I - 3 FUELING INSTRUCTIONS

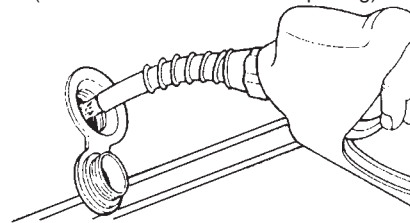
1. Avoid fueling at night except in emergencies.
2. When moored at fueling pier:
 - a. Do not smoke, strike matches, or throw switches.
 - b. Stop all engines, motors, fans, and devices that could produce sparks.
 - c. Put out all lights and galley stove.
 - d. Position the Battery Selector Switch to OFF.
3. Before starting to fuel:
 - a. Ensure that boat is moored securely.
 - b. Close all ports, windows, doors and hatches.
 - c. Be sure the proper type of grade of fuel as recommended by your engine owner's 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 fuel opening at all times to guard against possible static spark. See Figure 17.



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



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

Figure 17: Grounding Fuel Hose

 **WARNING**

Spilled fuel is a fire and explosion hazard. DO NOT overflow the tank or allow fuel spills into the hull or bilges. Avoid overboard spills. 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.
- d. Determine that there is no odor of gasoline in the engine compartment or below decks before starting machinery, turning on lights or lighting stove. Operate the bilge blower system for at least four (4) minutes before engine start-up.
- e. Be prepared to cast off moorings as soon as engines are started.

WATER AND WASTE SYSTEMS

J - 1 GENERAL

All Four Winns Vista™ models are equipped with a fresh water supply system. This system consists of a water supply tank, water distribution lines and a distribution pump. The water fill deck plate for the fresh water system is located on the forward port deck. Always fill the tank slowly.

CAUTION

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 will become pressurized and could rupture.

The capacity of the fresh water tank for the 378 Vista™ is 66 gallons/249 liters. This model comes standard with tank monitoring system, located in the head, to check water/waste level. The tank location is in the floor of the main cabin. Access to the tank is gained through an access in the cabin floor. See Figure J1.

Fresh Water Access Lid

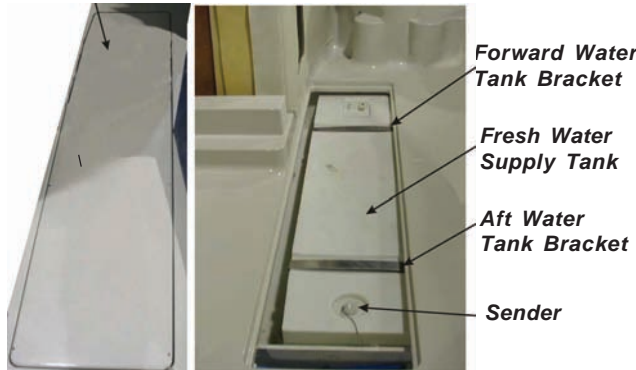


Figure J1: 378 Vista™ Water Tank Location

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

CAUTION

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

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

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

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

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

J - 2 PRESSURIZED WATER SYSTEM

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. Refer to Figure J2.

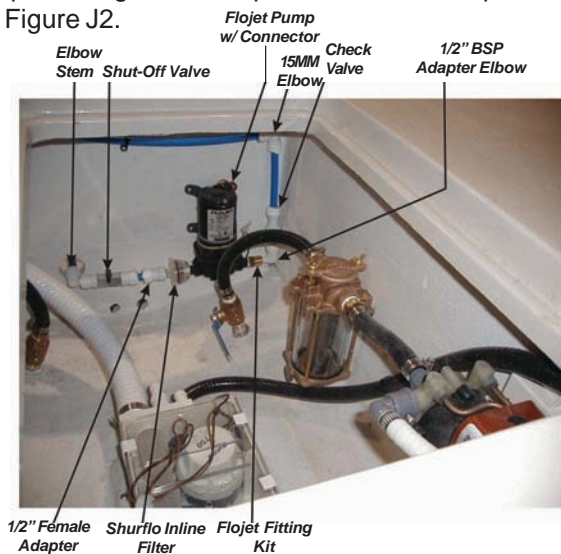


Figure J2: Fresh Water Pump Location

A. Priming The System

After filling the water tank, open all faucets partially. Then, activate the FRESH WATER switch on the cabin AC/DC panel to supply the system with water. Let the pump run until water comes out of the galley faucet, head faucet and transom shower.

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 H-4 - 12 Volt Electrical Equipment and the manufacturer's literature included in the owner's packet for additional information.

B. System Operation

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.

To obtain the most consistent mixture of hot and cold water, turn the cold water on full, then mix in hot water until the desired temperature is obtained. If water pump cycling occurs, some minor variations in water temperature can be expected.

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.

C. Water Heating Systems

The water heater used on 378 VistaTM has a 20 gallon capacity. The water heater is installed center-aft, inside the engine compartment. Refer to the locator drawing at the back of the manual.

The water heater utilizes 120 volt (220 volt on 50 Hertz models) power. The water heater breaker switch is located on the cabin 120 Volt AC panel.

NOTICE

DO NOT supply 120 volt power to an empty water heater. Damage to the heater will result immediately. The water system must be filled and primed before attempting to use the water heater.

A water heater that incorporates a heat exchanger is standard on the 378. The heat exchanger allows the engine coolant to heat a portion of the fresh water supply while the engines are operating. This feature provides hot water at times when 120 volt power is not available. Additional information on heat exchangers is covered in the engine and hot water heater manufacturers' manuals. Please refer to Section H - Electrical Systems for additional information.

D. Using The Shower

Turn on the faucets to desired temperature, remove the shower spout from its holder, move the diverter lever on the shower head, and the shower is operational.

When using the shower, draw the shower door closed before using the shower. Damage to the finish can result if surrounding walls and flooring are allowed to become excessively wet. Thoroughly dry these areas after showering.



CAUTION

The water temperature can vary during shower use as the pressure pump cycles on and off. For greatest consistency, turn the cold water on full, then mix in hot water until the desired temperature is obtained.

A shower sump pump is incorporated into the drain system of the shower. The shower drains into the sump pump located in the floor, forward of the aft cabin. The water will be pumped overboard. If an optional grey water system is installed, the water will be pumped into the grey water holding tank.

The sump pump includes an automatic bilge switch and is protected by a circuit breaker at the cabin panel. The sump pump will automatically start as soon as the water in the sump reaches a level that will cause the float on the switch to rise.

After showering, let the water flow for a period of time to flush the pump of soap residue. Check the sump for excess residue. When rinsed out, the pump will automatically shut off.

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

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

J - 3 GREY WATER SYSTEM

The grey water system is optional on 378 Vista™ models. The water from the galley sink, head sink and shower will drain into a sump and is pumped into a 30 gallon (114 liters) holding tank. The waste level indicator is located in the head compartment. A pump-out fitting labeled WASTE but designated for grey water is provided on the port deck, amidships. Refer to the locator drawing at the back of this manual for the locations of the pump-out fitting and grey water holding tank.

NOTICE

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

J - 4 SHORE WATER CONNECTION

Shore water connection is standard on all Vista™ models. This feature allows the direct connection of a city or shoreside water supply to the boat's water system to provide a constant supply of fresh water without the need to constantly refill the water supply tank. This minimizes pressure pump operation thus extending the life span of the pump.

Dockside shore water pressure can vary dramatically. Excess pressure could damage the boat's water system so the shore connection also regulates the water pressure to a maximum of 35 psi.

To use shore water, connect the female inlet of the hose from the potable water hose reel to the shore water faucet and turn on the shore water. The water system of the boat will then be pressurized by city water if the system was previously primed. The female inlet of the shore water hose is located in the shore power tub. See Figure J3.

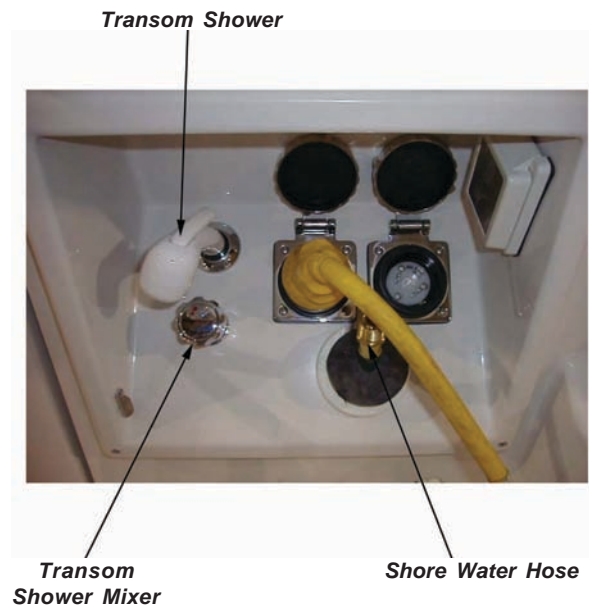


Figure J3: Shore Power Tub

The water pump should be turned off when using city water. City water pressure varies from area to area. If the pump is ON and water pressure drops below 35 psi, the pump will activate to maintain pressure at 35 psi. It will draw water out of tank and bypass city water.

If the pump is OFF, the pump will not function and the water in the storage tank of the boat will not be utilized.

NOTICE

Always remember to disconnect the shore water supply hose before leaving the dock.

Always turn off the shore water whenever the boat is left unattended. If a major water leak did occur and went undetected, the boat could fill with water and sink.

DO NOT alter or repair the pressurized water system or shore water connection without having proper knowledge of the system. Damage to the water system can occur.

See Section J-1 for general water system information and instructions on filling the water tank. The water tank will not be filled while connected to shore water.

J - 5 TRANSOM SHOWER

The transom shower is standard on the Four Winns 378 VistaTM model. The shower unit is located on the starboard side of the transom near, inside the shore power tub. Refer to Figure J3 and to the locator drawing at the back of this manual.

The water supply system can be used for showering or washing down the transom. As long as there is water pressure, the shower faucet will operate. A transom shower mixer, below the transom shower handle, allows one to select the temperature of the water.

Fresh water tank capacity is limited. Connect the boat to shore water before using large amounts of water as required when washing down the boat.

J - 6 HEADS

The various antipollution 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. Also, refer to the manufacturers literature included in the owner's packet.

A. VacuFlush[®] Sanitation System

The 378 has the VacuFlush[®] sanitation system as a standard feature. The system eliminates the unpleasant sulfide odors which plague saltwater systems. Flush water is no longer drawn through the through hull fittings, seacock and vented loop. It also extends the life of the system components by eliminating salt water and impurities from accumulating in the system over time.

The VacuFlush[®] toilet operates in a different way from other marine toilets. VacuFlush[®] system uses a small amount of water (a little more than a pint) per flush in addition to a simple vacuum. The toilet is connected to a fresh water system. Fresh water is the key to an odor free bathroom compartment. VacuFlush[®] toilets are equipped with an integrated vacuum breaker which prevents the possible contamination of the potable/fresh water supply. See Figures J4 & J5 and refer to the drawings at the end of this section. Also, refer to the manufacturers literature included in the owner's packet.

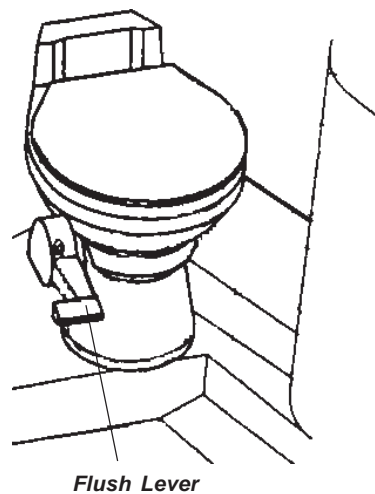


Figure J4: VacuFlush Toilet

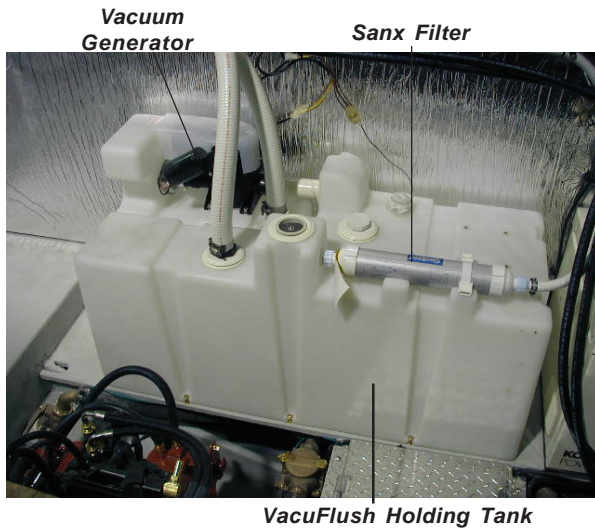


Figure J5: VacuFlush Vacuum Generator and Holding Tank

To operate:

1. To add water to the toilet before using, raise flush lever until desired water level is reached. Generally, more water is required only when flushing solids. See Figure J6.
2. To flush toilet, press flush lever sharply down to the floor until contents clear bowl. A sharp popping noise is normal when the vacuum seal is broken and the flushing action begins. **Be sure to hold lever down for 3 seconds.** If flush lever is accidentally released before waste clears bowl, do not attempt to flush toilet again until vacuum pump stops running. A small amount of water should remain in the bowl after flushing.
3. Do not dispose of sanitary napkins or other non-dissolving items in toilet, such as facial tissue or paper towels. These items can cause plugging of the system. Refer to the Deodorants and Special Tissue section in the manufacturer's manual for more information.

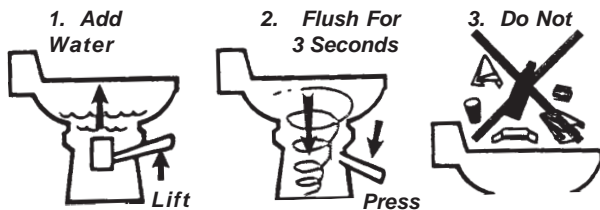


Figure J6: VacuFlush Operations

B. Head With Overboard Discharge

This option is available on the 378 Vista™ model. The head operates the same as the VacuFlush system above but an additional line with a “Y” has been installed for overboard discharge. The waste will be pumped into the holding tank from the head. The macerator pump is installed after the “Y”. Refer to Figures J4 & J7.

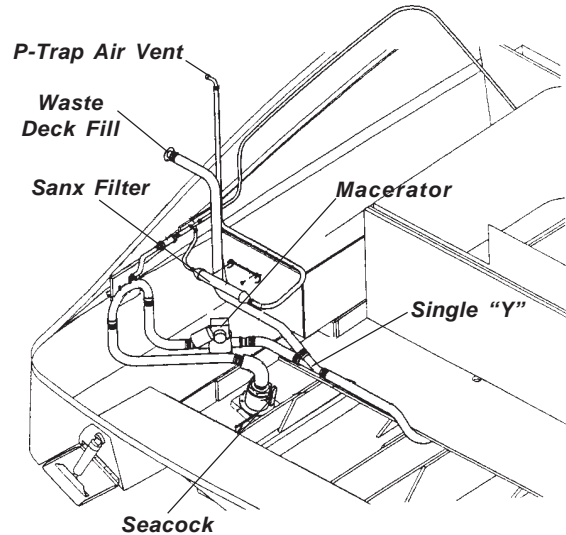


Figure J7: Overboard Discharge Option

NOTICE

The macerator pump must be used to discharge waste overboard. However, **DO NOT** use the macerator pump to discharge waste at a pumping station. If the hose is not air tight or connected properly, waste could spurt out or leak around the deck fitting and into the boat.

To operate the overboard discharge system:

1. The discharge valve is located in the engine compartment. To open, turn the valve so that the handle is parallel to the flow of the valve. The waste deck plate cover must be tightened securely for the overboard discharge system to operate.
2. Turn ON the macerator pump switch which is located in the head on the switch panel. Allow the pump to run until the storage tank is empty. The sound of the pump's motor load and speed will change when the tank becomes empty.
3. Turn the switch off.

- Turn the discharge valve handle to the closed position, and secure it. The thru-hull valve must be closed to prevent water from being forced back into the system.

NOTICE

Discharging waste overboard is illegal in most U.S. waters today. Discharge is limited to certain coastal waters, a designated distance offshore. Check with your local boating regulations before proceeding with any discharge activities.

Some local regulations require overboard discharge systems be physically secured in a closed position during use of the boat in waters designated as 'no discharge' areas. Check with local boating regulations. Refer to the manufacturer's literature for additional information.

C. 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:

- Be sure the head has some water in the bowl.
- 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.
- Have the pumping station operator activate the pumping equipment. The waste will be drawn from the holding tank and into the pumping station's disposal tank.
- Remove the pump out connection from the deck plate. Add at least 5 gallons of clean water to the holding tank through the waste deck fitting using a dockside water hose.
- Repeat steps 2 & 3 above to pump out the water used in 4 to flush the holding tank.
- Add waste holding tank treatment chemical to the head bowl. It is available from the dockside pumping station or can be obtained from your dealer. Flush at least twice.



CAUTION

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

J - 7 SYSTEM MAINTENANCE

Information supplied with water and waste system components by the equipment manufacturers is included with this manual. Refer to this literature for additional operation and service information.

Be sure the batteries in the boat are properly charged. Operating the pressure pump from a battery with a low charge will result in pump cycling. This could lead to premature pump failure.



WARNING

The decomposition of waste produces a colorless, odorless gas, methane, that is lighter than air, combustible, and extremely lethal. Always provide sufficient ventilation when effecting repairs to the waste system and allow no odor from the waste system to go unresolved.

A. Clean Vents and Screens

Periodically, inspect the water tank vents and thru-hull vent fittings for any dirt, wax, etc. Carefully remove any obstruction with a pipe cleaner or similar device. **Be sure not to puncture the screen.** The stainless steel cap is not removable.

NOTICE

Failure to keep the water tank vent fittings clean will cause excessive pressure buildup within the tank during filling. This can cause water tank damage.

Periodically remove the filter screens from the faucet discharge spouts and shower head. Remove the accumulation of sediment from the screens. If necessary, clean out the holes using a fine wire. A buildup of debris in the faucet filter screens can create enough restriction to cause the pump to cycle on and off.

Check the in-line water filter/screen for sediment and blockage. It is located between the water tank and the pressure water pump. If obstructed, remove from the water line and either clean or replace the part. The filter unit will twist apart.

Inspect and clean the shower sump every 30 days. Some water will always be in the compartment. Sediment and other debris will buildup and affect the automatic bilge switch and pump operation. Remove the pump's cover and clean the screen. The screen will become blocked and the pump will not operate properly. To clean the compartment, use baking soda and a fine wire brush to remove dirt and other debris. This will also serve to disinfect the area.

B. Winterizing the Water System

Winter lay-up service procedures should include a thorough draining of the water system. Disconnect all accessible fittings. Blow out all lines. Be sure the hot water heater, fresh and grey water tanks, transom shower, pumps and lines are completely dry. Leave all faucets open. Freezing water can cause severe damage to all water system components.

NOTICE

Always winterize the fresh water system prior to winterization of the hull drainage (bilge pump) system.

Draining the system as mentioned can be very tedious and an incomplete job can result in expensive repairs. The use of nontoxic antifreeze (such as R.V. antifreeze) designed for fresh water systems considerably reduces the work necessary and is a more positive means of winterizing the system. Follow the directions included with the antifreeze solution.

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).

NOTICE

Be sure the circuit breaker for the water heater in 120 Volt AC panel is in the OFF position. The water heater will be damaged immediately by supplying electrical power to an empty water heater.


DO NOT run the water pump without water in the system. Pump damage will result. Be watchful and turn the pump off as soon as the tank becomes empty.

2. Add 15 gallons of R.V. antifreeze to the water tank.

NOTICE

The hot water heater will require approximately five gallons of antifreeze before the hot water lines will have antifreeze running through them. The cold water faucet should be turned OFF at some point to test for antifreeze in the hot water line.

3. Turn ON faucets (both hot and cold) one at a time until undiluted antifreeze is seen. Make sure the transom shower, head faucet and galley faucet have antifreeze coming out, too.
4. Activate the shower sump pump and pour approximately 1 quart of nontoxic antifreeze down the shower drain. The shower sump will discharge some of the antifreeze overboard.

 **DANGER**

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

NOTICE

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

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 (3 gallons if equipped with overboard discharge) of R.V. antifreeze into the bowl and flush.

If the boat is equipped with overboard discharge capabilities, follow the normal procedures above. Run the discharge pump only long enough until the antifreeze solution is being pumped overboard.

For additional information, refer to the manufacturer's manuals in the owner's packet.

NOTICE

The instructions listed in this section provide a working knowledge to winterize the water and waste systems. However, to prevent possible damage to components in your boat, Four Winns recommends having the boat winterized by your Four Winns dealer.

VENTILATION AND DRAINAGE SYSTEMS

K - 1 ENGINE COMPARTMENT VENTILATION

All Four Winns Vista™ models are equipped with engine compartment ventilation. This system is designed to meet or exceed the requirements (in effect at the time of manufacture) of the U.S. Coast Guard, the National Marine Manufacturers Association, and the American Boat and Yacht Council.

A. Gravity Ventilation System

This system includes air intake and exhaust components. The exhaust ducting reaches to the lower bilge area. This provides adequate air movement while underway and during bilge blower operation.

B. Forced Air Ventilation

All Four Winns Vista™ models are equipped with an electric bilge blower. The bilge blower provides the ventilation required prior to starting the engines and while at idle. See Section H - Electrical Systems for blower operation instructions.

WARNING

Before starting the engine(s) or generator, operate the engine compartment bilge blower for four (4) minutes. Then check the engine compartment for gasoline vapors. ALWAYS operate the bilge blower while the engines are at idle or the generator is in use. Failure to comply could cause explosion and thereby inflict serious injury or death.

WARNING

Fumes can come from batteries while charging. A concentration of hydrogen fumes can be explosive under the right conditions. Ensure to follow the above warning.

NOTICE

A gas vapor detector is a monitor which will alert the operator of an accumulation of gasoline fumes in the engine compartment. It is standard on the 378 Vista™. DO NOT rely solely on detectors or similar equipment. ALWAYS conduct a physical inspection of the engine compartment.

C. Engine Ventilation System Maintenance

Periodic inspection and cleaning of the ventilation ducts is necessary to ensure adequate air circulation. A buildup of leaves, twigs, or other debris can severely reduce ventilation. Be sure bilge water does not accumulate to a level that would obstruct the ventilation ducts.

Blower operation can be tested by placing a hand over the vents. DO NOT rely on the sound of the blower. Be sure a substantial amount of air is being exhausted by the bilge blower. Check the bilge blower system often, preferably before each cruise.

K - 2 CABIN VENTILATION

All Vista™ cabins are equipped with deck hatches for ventilation. The aft cabin window also opens to provide ventilation. The cabin side windows (portlight) on the 378 Vista™ may be opened to provide additional ventilation.

WARNING

Failure to properly ventilate the boat while the engines or generator are operating may permit carbon monoxide to accumulate inside of the cabin. Refer to Section E-2 - Engine Exhaust and Section B-2 - Carbon Monoxide for additional information.

Screens for the forward deck hatches are standard for the 378 Vista™. The screens are removable and must be stored properly when not in use.

NOTICE

Be sure deck hatches are secured while underway. Damage to the hatch may result. When not in use store screens in a safe place to prevent damage.

K - 3 HULL DRAINAGE SYSTEMS

A. Transom Drain

A transom drain with plug is provided in the engine compartment to allow water drainage. When boat is out of the water, the boat and cradle should be positioned so

any bilge water accumulation during dry storage will flow towards the transom.



CAUTION

Be sure the drain plug is securely in place prior to launching the boat. Upon shipment of the boat, the drain plug is usually taped to the steering wheel.

B. Bilge Pumps

Bilge pumps are provided in the bottom of the hull to remove miscellaneous water accumulations that might occur during normal boating or weather conditions. The aft bilge pump is controlled by the AFT BILGE PUMP switch on the helm upper switch panel (see Section H for a detailed description of the bilge pump switch).

The aft bilge pump is equipped with an automatic switch 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 "SHIP SYSTEMS" battery(s) regardless of battery selector switch position.

NOTICE

While at rest, any bilge water accumulation may flow forward. Therefore, operate the bilge pumps shortly after getting underway and while the boat is at a substantial running angle. DO NOT allow bilge water to accumulate. Damage to the engine or other components may result.

When leaving the boat unattended for long periods of time or during excessive rain storms, it is a good idea to check on the boat for excessive water accumulation. Be sure the bilge pump and automatic float switch are operating properly. The operating time of the bilge pump will be limited to the battery capacity.

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 pumps. 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 included in the owner's packet for additional information.

C. Sump

A sump box is installed in the floor forward of the aft cabin. It is equipped with an automatic bilge switch and will pump water overboard or into the grey water tank. Refer to Section J-2D on using the shower and for additional information on sump pump operation.

D. Bilge Compartment Drainage

Certain bulkhead areas of Four Winns® boats are sealed in accordance with U.S. Coast Guard regulations effective at the date of manufacture. Drainage is provided and water can be removed with the bilge pump.

E. Cockpit Drainage

The 378 incorporates 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 open all engine hatches and clean the aft bilge compartment. Be sure the drains, tubes and fittings are clean and free of leaves, dirt, or other debris.

INTERIOR EQUIPMENT

L - 1 GALLEY EQUIPMENT



CAUTION

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

A. Electric Stove

An electric stove is standard on the 378 Vista™ cruiser model. The stove is equipped with dual burners and flush mounted. A circuit breaker is provided in the 120 Volt AC cabin electrical panel. Refer to the Section H-6B and the manufacturer’s literature included in the owner’s packet. See Figure L1 for stove and other appliance locations.

B. Microwave Oven

A microwave oven is standard on the 378 Vista™. A circuit breaker is provided in the 120 Volt AC cabin electrical panel. Refer to the manufacturer’s literature provided in the owner’s packet.



CAUTION

Do not restrict air flow while microwave is in use, or damage to microwave oven or cabinet may result.



Figure L1: Galley

C. Refrigerator

A galley refrigerator is standard equipment. The refrigerator is designed to operate efficiently on AC Shore Power (120 volt) or battery power (12 volt). The refrigerator will automatically transfer to 12 volt operation when dockside power is not available and the 12 volt refrigerator breaker is on.

A full range thermostat maintains the unit at the temperature you desire. Turning the control all the way to the right (clockwise) will give you the coldest position, and turning to the left (counterclockwise) will give you a warmer temperature in the refrigerator. The control is also an on/off switch and if you turn it to the “O” position (hard left) you turn off the refrigerator. A good setting to start with is #2. See the manufacturer’s information included in the owner’s packet for additional information.

Care should be exercised while operating the refrigerator on the 12 volt system. The refrigerator requires a substantial amount of current. Excessive current draw can severely drain a battery through extended use.

A magnetic strip is used inside the seal of the refrigerators. The magnetic strip allows the seal to draw tight to the inside of the refrigerator when the door is closed. Also, make sure retaining latch is in place to secure refrigerator door while underway.

L - 2 REFRESHMENT CENTER - ICEMAKER AND REFRIGERATOR

An icemaker and refrigerator is a standard feature on the 378 Vista™. The icemaker or refrigerator is mounted underneath the cockpit refreshment center. See Figure L2.

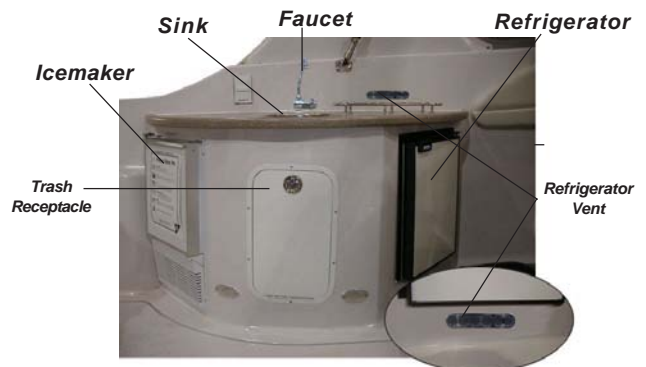


Figure L2: Refreshment Center

The refrigerator operates on 12V DC electrical system. It runs continuously and does not utilize water. Unlike the icemaker, no winterization is required. Please follow the manufacturer's instructions regarding the use, care and maintenance of the refrigerator. These instructions are found in the owner's packet.

The icemaker operates on 120 volt (220 volt on 50 Hertz models) AC power and will only function when plugged into dockside power or when the generator is running. The icemaker is controlled by the Icemaker Circuit Breaker on the main cabin electrical panel. Refer to Section H - Electrical Systems for more information.

To operate, make sure the unit is plugged in and the main water supply is on. Ensure the "ice bin arm" is in the DOWN position. The first ice cubes may take approximately 45 minutes to be made.

To control the temperature, turn the temperature control clockwise to make it colder or turn control counterclockwise to make it warmer. Remember, a warmer setting increases the rate of ice production (maximum ice is achieved at the warmest setting). Refer to the manufacturer's information in the owner's packet for further information.

To winterize, unplug the unit and follow the normal cleaning and maintenance instructions included in the manufacturer's manual to drain the system. For instructions on winterizing with antifreeze, refer to Section J-7 on Water System Maintenance in this manual.

CAUTION

Thoroughly flush the water supply lines and system prior to initial use, and at least once each season. This will remove any additives and possible contaminants present in the system.

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 substantially by adding a water filter to the system such as one produced by PuriTek. The taste will completely dissipate in time.

L - 3 ENTERTAINMENT CENTER

A. Stereo System

Four Winns offers an AM/FM CD stereo and multi-disc CD changer as standard equipment and are located in the electronics panel. See Figure L3. Speakers are installed within the interior cabins and exterior cockpit areas to provide excellent sound quality. In addition, the cabin and cockpit speakers can be faded in or out depending on the effect desired. A remote stereo keypad is installed at the helm and at the transom for convenience. For stereo operation, please refer to the manufacturer's manual included in the owner's information packet.



Figure L3: Electronics Panel

B. TV/DVD PLAYER

A TV/DVD player with flat screen is standard and located in the main cabin. A ceiling mounted flip-down TV is located in the V-berth cabin. They use their internal speakers only. The TV/DVD player is not wired into the stereo speaker system. The TV antenna is mounted on the radar arch. Please read the manufacturer's information on the TV/DVD player in the owner's packet. The TV/DVD remote control is also found in the owner's packet. See Figures L4 and L5.

Included with this feature is a dockside cable TV inlet. The deck connection for the TV is mounted in the shore power inlet panel located in the transom storage compartment.



Figure L4: Flat Screen Television



Figure L5: Flip-Down Television

L - 4 AIR CONDITIONING

Air Conditioner/Heater provides either cooling or heating and is standard on the 378 VistaTM. The unit operates on 120 volt (220 volt on 50 hertz models) AC power. The output of the air conditioner is 16,000 BTU. Be sure the shore power cord is connected to the appropriate shore power inlet labeled "AIR CONDITIONER" or the generator is running whenever the air conditioning is to be used.

The air conditioning circuit breakers must be turned on to activate the air conditioning unit. Depending upon humidity, the air conditioner will condense 5 to 15 gallons of water a day and this water drains into the aft bilge.

The air conditioner is located underneath the couch/bed (futon) fill-in cushion. Air conditioner vents are located throughout the cabin to provide good air circulation. The 378 has a vent in the head for additional air circulation. The vents are adjustable to change air flow direction and can be closed. See Figure L6.



Figure L6: Air Conditioner Location

NOTICE

In order to use the air conditioner, you must first open the seacock valve (handle parallel to the flow of valve). When not using the air conditioner be sure to close the seacock.

The seacock for the air conditioner is located next to the bilge pump in the engine compartment and is labeled "Air Conditioner Seawater".

The air conditioning control panel is mounted above the AC/DC panel door, next to the cabin light panel. See Figure L7. Please read the manufacturer's literature on air conditioner operation contained in the owner's packet.

NOTICE

Most air conditioners utilize surface water as the cooling medium. Prior to using the air conditioning, the boat must be in the water and the seacock to the air conditioning water intake must be in the open position. The air conditioning seacock for water intake is below the aft cabin access panel. Operating air conditioners without proper cooling water will cause damage to the air conditioning system.

A/C Control Panel



Figure L7: Air Conditioner Control Panel

Air conditioners utilized in Four Winns boats are equipped with reverse cycle heat. Thus, some heat effect can be derived from the unit. It must be noted that the amount of heat that can be obtained is limited by the temperature of the raw cooling water pumped through the system. When the water temperature drops to 40 degrees Fahrenheit, the output is about 50% of the maximum. At 36 degrees Fahrenheit, the output is very low.

NOTICE

During cold conditions, an alternate or supplemental heating system should be used.

Clean the sea water strainer often. Also, clean the return air filter screens, located behind the louvered doors and grills, at least once a month.

To winterize, refer to the manufacturer's literature included in the owner's packet.

L - 5 CENTRAL VACUUM

Central vacuum has been included as a standard feature on the 378 Vista™. Simply raise the inlet cover, insert the vacuum hose into the central vacuum's inlet, turn the power on and you are ready to clean. See Figure L8. Please refer to the manufacturer's literature for additional information.



Central Vacuum Vacuum Inlet Switch



Vacuum Hose

Figure L8: Seavac II Central Vacuum

EXTERIOR EQUIPMENT

M - 1 RAILS & DECK HARDWARE

Hand and bow rails have been installed to provide security for passengers while outside the cockpit area (i.e. swim platform and bow areas). 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. Access to the foredeck should be through the foredeck hatch when running in adverse conditions.

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 nonabrasive 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 rewaxing.

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.

 **WARNING**


Four Winns® Boats are not equipped with any hardware designed for towing purposes. The mooring cleats that are installed on the boat are not to be used for towing another vessel or having the boat towed. Refer to Section A - Operation for additional precautions regarding ground- ing and towing.

M - 2 TRANSOM DOOR

A transom door is provided and 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.

 **WARNING**

Prevent falls overboard. Close, latch, and stay inside gate(s) while underway.

 **DANGER**

To prevent personal injury, swim platform must not be occupied and transom door must be closed while engines are running.

 **CAUTION**

To prevent personal injury, DO NOT sit on or lean against the transom door.

M - 3 COMPANIONWAY DOOR

The 378 Vista™ has a combination hinged door (w/ screen) and sliding hatch assembly for gaining access to and from the cabin. See Figures M1 and M2. A door stop secures the hatch in the open position. The door may be kept open with the use of a chrome hook. To utilize the screen door, simply separate the two doors. Hook the solid door open and close the screen door. A lock is provided to secure the cabin.

NOTICE

Always secure companionway door and hatch before operating the boat. Acrylic plastic is impact resistant but in extreme cases it can crack and/or hardware such as hinges may become damaged if not secured.

To clean acrylic plastic:

- 1) Rinse with plenty of water to wash off as much dirt as possible.
- 2) Using your bare hand, along with plenty of water, feel and remove any dried on dirt or mud.

- 3) Wash using a soft, grit free cloth or sponge and mild, nonabrasive soap or detergent.
- 4) Blot dry using a clean, damp chamois.

NOTICE

Never use a dry cloth, duster, glass cleaning solutions or citrus cleaner on acrylic plastic.

See Section Q - 7 for additional information on the care of acrylic plastic.



Figure M1: Companionway Door




Figure M2: Companionway Door - Open

M - 4 WINDOWS

A. Windshields and Cabin Windows

The windshield consist of tempered safety glass and cabin port lights consist of plexiglass. The windshield frame is aluminum.

A walk-thru windshield is standard. Steps are provided between the companionway and helm station to allow easy access through the walk-thru windshield opening.

 **WARNING**

DO NOT use walk-thru during bad weather or on rough seas. Make sure deck hatches are closed when using walk-thru to prevent injury.

NOTICE

Make sure walk-thru is closed and secured when boating. Damage to the windshield will otherwise result.

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

Aluminum can be cleaned with similar products or with nonabrasive cleaners such as Fantastic™.

NOTICE

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

B. Plexiglass

Plexiglass (acrylic plastic) is used for port holes, companionway door assemblies, transom doors, sliding storage doors, electrical panel doors, cabinets and cabin windows. Plexiglass will scratch easily and must be handled with care.

To clean, follow the instructions located in Sections M-3 and Q-7. Companionway Door. 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. See Section Q - 7 Acrylic Plastic - (Plexiglass).

M - 5 FOREDECK HATCHES

The foredeck hatches consist of a translucent plexiglass. The hatch is supported by one locking hinge and can be secured in a partially open position for ventilation. See Figure M3. Hatch screens are provided on all VistaTM models. Follow the cleaning directions for plexiglass described above.

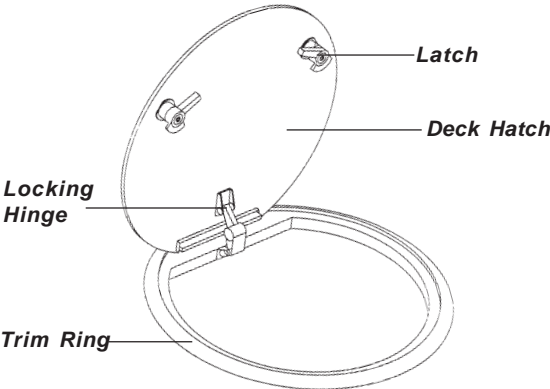


Figure M3: Forward Deck Hatch

NOTICE
DO NOT close the foredeck hatch with the hatch screen in place. Damage to the screen can result. Be sure deck hatches are secured while underway. Damage to the hatch may result.

M - 6 EXTENDED SWIM PLATFORM

Four Winns provides an integrated fiberglass swim platform on all models. An extended swim platform is a standard feature and lengthens the platform to approximately 42"/1.06m on the 378. For better footing, a skid-resistant surface is provided. The ladder and grab handle are located for easy access when boarding. Additionally, storage tubs with lids are built into the swim platform. See Figure M4.

WARNING
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. See Preface for specific label information.

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

NOTICE
Always secure the ladder before boating. Damage to the ladder may otherwise result.

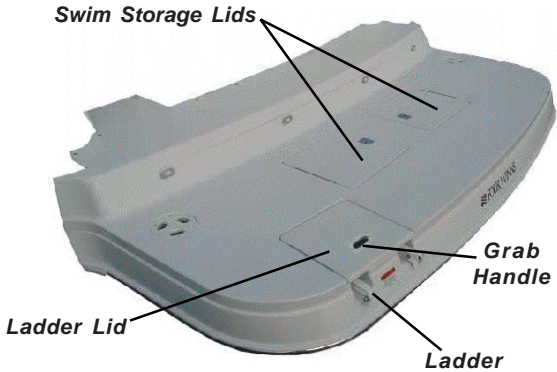


Figure M4: Add-On Swim Platform

M - 7 COCKPIT STORAGE

Storage compartments are provided throughout the cockpit area. See Figure M5 and M6. The doors have latches and roller-type catches for easy opening and closing. Storage space or shelves behind the doors are easily accessible.



Figure M5: Helm Seat Storage



Figure M6: Door Storage Locker

M - 8 ENGINE DAY HATCH w/ ELECTRIC LIFT

The 378 Vista model features a engine day hatch with an electric lift or screw jack. The screw jack lifts and lowers the engine hatch by pressing the switch located on the dash. The screw jack runs off the ship systems's battery. See Figures M7 & M8.



Engine Day Hatch

Engine Inspection Lid

Figure M7: Engine Day Hatch

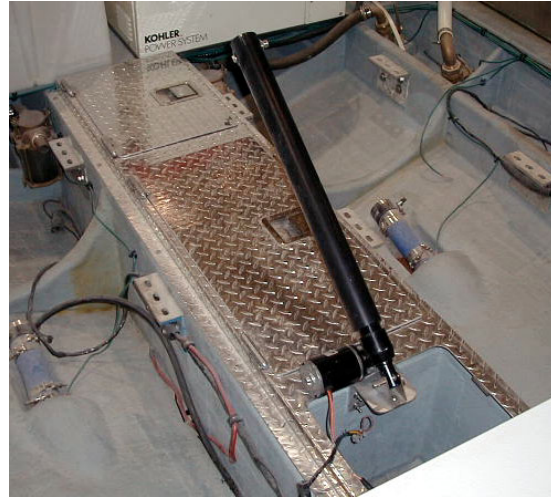


Figure M8: Engine Hatch Screw Jack

To raise the engine hatch:

1. Remove the cockpit table (if currently installed).
2. Press the engine hatch switch ("UP") to raise the engine hood to its open position.

The engine hatch can be lifted manually if the screw jack fails to operate.

To raise the engine hatch manually:

1. Remove the engine inspection hatch.
2. Reach into engine compartment and release either one of the release pins of the screw jack.
3. Carefully raise the engine hatch and prop open.

CAUTION

Without properly propping engine hatch open during manual lifting procedure, engine hatch may fall resulting in possible personal injury and/or damage to engine hatch and components.

CAUTION

The engine hatch can be lifted without the screw jack. Use care and proper lifting techniques to prevent possible back injury.

CAUTION
 Do not have person(s) sitting in stern seat or on engine hatch while attempting to raise engine hatch. Possible injury to person(s) and/or damage to engine hatch and components may result.

NOTICE
 Never operate or trailer your boat with the engine hatch in its open position. Doing so could result in damage to the engine hatch, hardware, and/or loss of cushions.

To lower the engine hatch:

1. Press the engine hatch switch (“DOWN”) to lower the engine hatch to its closed position.
- 1b. If lowering engine hatch manually, raise the hatch slightly and remove the prop rod. Gently lower the engine hatch to its closed position. Do not allow it to just drop to the deck.

CAUTION
 If closing the engine hatch manually, **do not** allow the engine hatch to “slam” shut. Allowing the engine hatch to “slam” shut can damage the fiberglass and/or cause bodily injury.

2. Reinstall the cockpit table (if so desired).

NOTICE
 Cushions, if not properly stored and secured, can blow out of the boat.

M - 9 TRANSOM STORAGE LOCKER

The transom storage provides fender storage and dockside power cord storage. The storage locker are latched closed and can be locked. To open, lift the handle. The latches are flush mounted to prevent injury or accidental opening while underway. See Figure M9.



Figure M9: Transom Storage Locker

M - 10 BOW PLATFORM w/ ANCHOR ROLLER

The Four Winns 378 Vista™ is designed with an integrated bow platform. This bow platform provides a functional base for anchoring. The anchor is stored in the anchor chute of the platform. The anchor roller provides support for the chain and rope and allows for easier retrieval of the anchor. It also protects the hull/deck from surface abrasions or gouges when either moored or when retrieving the anchor. See Figures M10 & M11 below. Refer to Chapman’s Piloting, Seamanship and Small Boat Handling or local anchorage authority for anchor type and size recommendation.

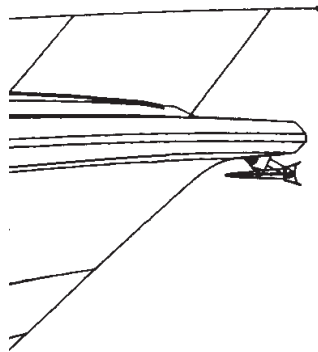


Figure M10: Bow Platform

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



Figure M11: Anchor Chute and Bow Roller

M - 11 ANCHOR STORAGE LOCKER

The anchor line is stored in a compartment, below the anchor locker. The compartment keeps the line secure, and free from fouling while also keeping the deck clear. A deck plate is included for access to the anchor line compartment. Also contained inside the anchor locker is the windlass. Please see Section M-12 below for details regarding the windlass. Refer to Figures M12 & M13.



Figure M12: Anchor Storage Lid

M - 12 WINDLASS

A windlass is an electrically controlled winch mechanism for retrieving the anchor. The mechanical winch portion is mounted inside the anchor locker, at the bow. See Figures M12, M13 and M14. The windlass can be controlled by a set of foot pads (electrical switches) mounted on the foredeck or it can be operated from the helm. A circuit breaker on the battery switch is provided to protect the windlass from possible overload situation. The windlass is standard on the 378. Along with the windlass comes a 35-pound Talon Plow XT™ anchor and 200 feet of 5/8" rope and chain. Refer to the manufacturer's literature included in the owner's packet.

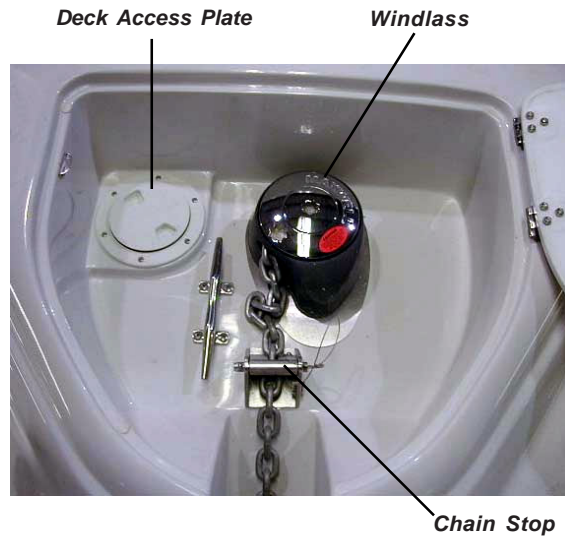


Figure M13: Windlass



Figure M14: Windlass Foot Switches

⚠ WARNING

To prevent personal injury, keep clear of the windlass at all times.

⚠ WARNING

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



WARNING

Always utilize the chain stop provided with the windlass/bow roller combination. The chain stop prevents the anchor from accidentally releasing while the boat is moving thus preventing damage to the boat or possible injury or death to individual(s) aboard the boat. See Figure M15.

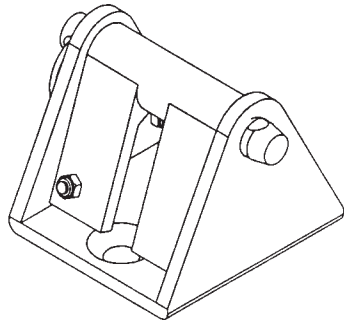


Figure M15: Chain Stop

M - 13 NAVIGATIONAL EQUIPMENT

A. Compass

A compass is standard on the Four Winns 378 Vista™. 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 (VHF radio, GPS, chart plotter, etc.), the compass must be properly calibrated. DO NOT rely on the compass readings until initial adjustment (compensation) has been performed. The boat has a factory installed compass, the manufacturer's instructions are provided in the owner's packet. Most areas have local companies that specialize in compass adjustment. If unsure of the proper compensation techniques, consider having the adjustment done professionally to 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. Depthsounder

A depthsounder is included with the navigation package options. Please consult the manufacturer's literature included in the owner's packet for operation and care of the depthsounder.

C. Ship to Shore VHF Radio

A VHF radio is optional equipment offered with a selection of one of the navigation packages offered on the 378. It provides reliable communication between vessels, and from ship to public or private shore stations. It is programmed for two-way communication on all the International, U.S. and Canadian channels plus reception on separate weather channels, and the international calling and safety channels (16/9).

The VHF radio with microphone is mounted on the helm. If equipped, additional information is included in the manufacturer's literature included in the owner's packet.

D. GPS/Chart Plotter

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

E. Auto Pilot and Radar

Another optional navigation package offered is an auto pilot and radar package. The auto pilot once programmed and engaged steers the course set by the operator. The radar detects objects/targets and displays them for the operator to see.

NOTICE

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

F. Radar Arch

The radar arch is a standard feature and is swept forward in design. This presents a sleek, look while providing an adequate platform necessary for installation of radar equipment. See Figure M16. The 378 helms provide plenty of space for such instrumentation i.e.. GPS, auto pilot, radar, fish finder, tridata, etc.

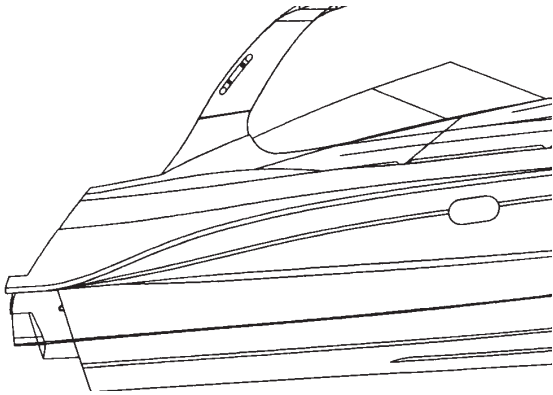


Figure M16: Radar Arch

M - 14 SPOTLIGHT

A properly operating spotlight is essential for safe cruising at night. Four Winns offers a remote controlled spotlight as standard equipment on the 378. See Figure M17. The spotlight uses an electric motor and helm-mounted, remote switch controls to direct the spotlight's beam. Refer to the spotlight manufacturer's literature included in the owner's packet.



Figure M17: Spotlight

UPHOLSTERY

N - 1 INTERIOR

A. Cabin Tables

A couch and dinette table are standard on the 378 and is conveniently located in the main cabin, across from the galley. The table leg height is easily adjustable. In essence, you can turn the dinette table into a coffee table when desired and back again. It can be raised or lowered approximately 10 inches (25.4 cm) utilizing “gas assistance”. Table bases are “flush” mounted for convenience. Table legs are also removable. Rotating the leg while lifting will ease the removal. See Figure N1.



Figure N1: Cabin Seating & Tables

To raise or lower dinette table:

- 1) Turn the leg’s locking knob counterclockwise to loosen.
- 2) Gently lift upward or press downward on table depending on height of table desired. Table height ranges from approximately 23” - 33” (58.4 - 83.8cm).

- 3) Turn the leg’s locking knob clockwise to tighten and lock the dinette table in place.

A mid cabin table is also provided. The mid cabin table can be raised and lowered in the same manner as the dinette table described earlier.

B. V-berth or Forward Cabin

The V-berth/forward cabin area is raised to allow for storage below. For added comfort, an inner spring mattress is placed on the raised V-berth surface. A flip-down television can be viewed from the berth or from the couches. See Figures N2 and N3. Refer to television manufacturer’s literature in owner’s packet regarding operating instructions.



Figure N2: Forward Cabin / V-Berth



Figure N3: Flip-Down Television

The forward cabin also comes with a privacy curtain or optional bulkhead with doors and hanging, cedar-lined locker.

C. Mid Cabin (Aft Cabin) Berth

The mid cabin provides wide open access yet with the use of the privacy curtains or the optional bulkhead with doors immediately becomes a private berth. Overhead lighting and an opening window with a screen make the mid cabin more comfortable for your guests. Storage space is available beneath the seats, in the cedar lined hanging closet and in the side wall closet. Push button latches are used to secure the storage compartments and prevent drawers/doors from opening while underway.

To operate button latches:

1. Press button latch completely to lock. When locked button will remain depressed.
2. Press button latch again completely to unlock. The button latch will remain extended for use as a handle to assist with opening the drawer/door.

The mid cabin area can be converted into sleeping quarters. The futon couch/bed assembly converts to a bed with the aid of power assist.

To convert the mid cabin couch/bed assembly into a berth follow the steps below:

1. Press the left portion of the switch below the mid cabin sliding window to activate the screw jack which in turn extends the base of the couch aft.
2. Once base is extended, lift and pull out futon seat cushion which turns the couch into a bed.

Reverse this procedure to return the futon back to the couch position.

N - 2 EXTERIOR SEATING

A. Helm Seat

The helm seat is adjustable and double wide so it can seat two people comfortably. A manual, slider mechanism is mounted under the driver's seat. This allows the driver of the boat to adjust his portion of the helm seat to meet his or her needs. To adjust, lift the lever below the pilot's seat and slide the seat forward or aft to the desired position. There is approximately six inches of adjustment available. The helm seat includes a driver's side flip-up bolster. By simply flipping up the bolster the driver is able to sit higher in the seat. This is designed

to give the driver greater flexibility, increased visibility, and riding comfort. See Figures N4 and N5.



Figure N4: Helm Seat & Bolster



Figure N5: Helm Seat Slider Mechanism

WARNING

DO NOT sit on the backrest portion of any cockpit seat. The operator 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.

B. Stern Seat

The custom U-shape stern seat includes support legs and fiberglass base. The U-shape seating arrangement continues around the back of the boat to create more usable seating area. The starboard cockpit seat cushion is mounted on hinge seat sliders which allows access to the under seat storage. See Figures N6, N7 & N8.



Figure N6: Stern Seating



Cockpit Fill-in Support

Figure N7: Stern Seating & Fill-in Support-Stored



Figure N8: Starboard Cockpit Seat Storage

A fill-in cushion is also provided to extend the cushion area for such things as sunbathing, napping or overnight sleeping. Refer to Figures N9 and N10.

To install fill-in cushion:

1. From its stored position, loosen screw knob on coupler and retract end from holder and swing the cockpit fill-in support away from storage position.
2. Extend the support into the fill-in support block under the aft stern seat. Re-tighten screw knob coupler.
3. Undo the velcro strap and place the crutch leg perpendicular to the deck for support.
4. Place folded cockpit table/fill-in assembly onto the 17" (short) leg which has already been inserted into the cockpit table floor mount.
5. Unfold cockpit table using the "dog bone" sliding supports. Simply slide "dog bone" sliding supports into support positions.
6. Place fill-in cushions on top of the cockpit table/fill-in support.

To remove the cockpit fill-in cushion simply reverse the process described above.



Figure N9: Fill-in Cockpit Cushion



Figure N10: Fill-in Support Assembly

The aft cockpit stern seat uses hydraulic hinges. The hinged cushion allows the aft cockpit cushion to fold up against the transom. Access to the engine compartment is possible without the removal of the stern seat cushion. Refer to Figure N11.



Figure N11: Aft Cockpit Stern Seat w/ Hinge Assembly

C. Port Helm Lounger

The port helm lounger provides seating capacity for two people and is positioned to permit conversations with those seated at the helm or stern. It is fastened to a fiberglass base. See Figure N12.

Port Helm Lounger



Figure N12: Cockpit Overhead View

D. Cockpit Table

The aft cockpit table is standard on the 378. Table bases are “flush” mounted for convenience. The cockpit table and 32” leg is be stored underneath the starboard cockpit seat. Note: The cockpit table is also used as the fill-in cushion support using the 17” leg. See Section N2-B for installation and removal of cockpit fill-in cushion.

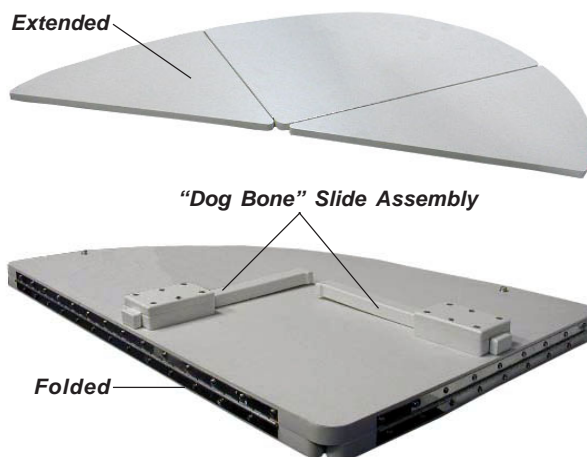


Figure N13: Cockpit/Fill-In Table

To set up the cockpit table:

1. Raise the starboard cockpit seat up to gain access to the 32” (long) table leg and cockpit table. Remove table and leg from storage compartment.
2. Insert 32” leg into floor mount.
3. Place folded cockpit table (mount) onto the leg.
4. Unfold cockpit table, be sure to utilize the “dog bone” sliding supports. Simply slide “dog bone” sliding supports into support positions. See Figure N13.

To remove the cockpit table simply reverse the procedure above.

NOTICE

To prevent damage to cockpit table and/or cockpit interior ensure the cockpit table and legs are properly stored.

E. Deck Sunpads

These sunpads are optional. These cushions securely snap in place and provide comfort while sunbathing on the foredeck. See Figure N14.



Fwd Deck Sunpad Cushion
Figure N14: Sundeck Pads

N - 3 INTERIOR UPHOLSTERY CARE

A. Cleaning Interior Fabric/Upholstery

The fabric used in the cabin should be treated the same as fabrics in your home. Periodic vacuuming and gentle cleaning will keep the fabric and upholstery clean and odor free. Spraying the fabric/upholstery with Lysol Spray DisinfectantTM will help retard mildew. For vinyl care see N-4A.

A recommended "Cleaning Kit" includes:

- Westley's Clear MagicTM
 (for ordering information call 1-800-416-1600 or 800-321-8577; website address www.westleys.com)
- Fast & Easy Glass CleanerTM
 (to locate the nearest distributor, call 800-537-8990)
- Tough Duty CleanerTM
 (to locate the nearest distributor, call 800-537-8990)
- Clean, white towels
- Portable/Compact Deep Cleaner Vacuum (Bissell Spot LifterTM or similar product)
- 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 MagicTM

2. Adhesives/Teak Oil/Gum/Tar:

Tough Duty CleanerTM

3. Water Stains:

- a. While fabric is still wet, use a deep cleaner vacuum to go over the wet area. This will remove the stain from the fabric. It is always best to get the stain before it dries.
- b. For water stains that have dried, use a deep cleaner vacuum system. Follow the instructions that come with the deep cleaner system. Repeat if necessary.
- c. If this does not work we recommend a professional cleaning service. One such service is Service Master®. Please call 1-800-937-3783 for the Service Master location nearest you.

4. Tough Stains/Set Water Stains:

- a. Spray Westley's Clear MagicTM 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.
- b. Let set approximately five (5) minutes.
- c. 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.
- d. Use a deep cleaner type vacuum to remove excess wetness. Allow to dry.
- e. Repeat if necessary.
- f. If stain still persists, use a professional cleaning service.

B. Interior Carpets

Four Winns® cruisers use a high quality interior grade carpeting. Interior carpeting should be cleaned in the same manner as the carpeting in your home. Vacuum-

ing and occasional rug shampooing are recommended for extended life and appearance. Always conduct a color-fast check on a small area of carpet prior to applying the cleaning solution/shampoo on the entire carpet.

C. Privacy Curtains

After a season or more use and exposure, you may wish to remove the curtains. 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.

N - 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.

A recommended "Cleaning Kit" includes:

- Ivory Dishwashing Liquid™ and water
- Clean, white towels
- Medium-soft brush
- Fantastik Spray Cleaner™
- Denatured Alcohol
- Vinyl Finish Vinyl Cleaner - (everyday cleaning & care, call 800-247-9901).
- 303 Aerospace Protectant - for ordering information call 800-247-9901).
- Tough Duty Cleaner™ - (to locate the nearest distributor, call 800-537-8990).

- Ammonia and hydrogen peroxide

To remove stains, follow the guidelines listed.

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:

Tough Duty Cleaner™ ; rinse with soap and water.

NOTICE

To prevent possible damage to the vinyl, rinse with soap and water after applying the Tough Duty Cleaner™.

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, powdered 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 O - Weather Covers for more information.

NOTICE

The appearance and longevity of the exterior upholstery will be affected by water saturation. Protect these items appropriately.

B. Exterior Carpets

The removable exterior grade carpeting may be periodically washed with mild laundry soaps or shampooed, dried and reinstalled. It is 100% UV stabilized OlefinTM Polypropylene fiber with rubber backing. See Figure N-15.

NOTICE

DO NOT dry carpeting in an automatic dryer.



Figure N15: Cockpit Lay-in Carpet

C. Cleaning and Maintenance

The following information should be useful in helping you keep your carpet looking well maintained.

Carpet made with OlefinTM fiber possesses built-in stain and soil release for easy, less costly maintenance. Regular vacuuming and occasional shampooing will help it stay attractive and serviceable.

D. Stain Removal Testing

Even the most stubborn stains can be removed from Olefin fiber following the procedures outlined. A total of thirty-four stains were selected as being representative of spills commonly occurring on carpets. Stains were pressed into the carpet to simulate foot pressure following a spill. Stains were applied to a two-inch square section and allowed to penetrate. Removal was performed after two weeks. Carpets were tested for stain removal by an independent laboratory. Stain removal was effective for all 34 stains. Results are shown in the table.

E. Stain Removal Procedures

Regular maintenance such as vacuuming, hosing or washing should be performed. Most stains and mildew are easily removed from carpet made with Olefin fiber using common household cleaners. Refer to Table I. OlefinTM fiber is so resistant to chemical attack that CloroxTM bleach may be used to clean up any mildew that may result from excessive wetness.

Code for stain removal procedure (See Table 1):

- “A” Apply warm water and household detergent in minimal amounts to stained area. Sponge or scrape until stain is removed. Rinse with clean water.
- “B” Apply warm water and household detergent. Work well into stained area then flush with warm water.

Most stains should be easily removed however, if the stain persists, the cleaning procedure should be repeated to insure stain removal. Remember, the sooner the stain removal process begins, the easier the stain will be to removed.

N - 5 REPLACEMENT UPHOLSTERY

Should upholstery become severely soiled, torn, or in some manner damaged, replacement upholstery cushions are available. Larger upholstery items have separate component parts for easier serviceability.

Depending upon the year and model of the boat, most upholstery parts can be obtained through your Four Winns servicing dealer within a short period of time.

Table I: Stain Removal

STAIN	REMOVAL PROCEDURE
Automotive Grease	A
Automotive Oil (New or Used)	A
Bacon Grease	A
Berry Stain	A
Blood	A
Butter	A
Catsup or Mustard	A
Chewing Gum	A (Repeat)
Chlorine Bleach (5%)	A
Chocolate (Melted)	A
Clay	A
Coffee or Tea	A
Cola	A
Crayon	B
Dye	A
Egg	A
Feces	A
Fish Formula	A
Fruit Juice	A
Furniture Polish	A
Gravy	A
Ice Cream	A
Ink (Permanent Black)	B
Ink (Scripto, Ballpoint)	B
Iron Rust	A
Lipstick	B
Mayonnaise	A
Milk	A
Latex Paint	A
Oil Base Paint	B
Polish	B
Rust	A
Salad Dressing	A
Shaving Cream or Lotion	A
Tar	B
Urine	A
Vomit	A
Water Colors	A
Wax	B
Wine	A

WEATHER COVERS

O - 1 GENERAL INFORMATION

Weather covers for the cockpit areas are available on all Four Winns® models. A bimini top and camper is standard on the 378 Vista™. Four Winns® covers are designed and intended to provide protection of the cockpit seating areas.

Four Winns utilizes 100% acrylic-type material. During the manufacturing 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 in any area fully enclosed or near weather covers. This material is flammable.

The weather cover is water repellent but not water proof. During a hard rain, you may notice a light mist permeating through a weather cover. This is normal. If the seams leak, they can be sprayed with Scotchguard™ or similar type water repellent or a seam sealing compound can be applied. Keep objects from contacting the inside of the cover. Leakage may occur at point of contact.

Weather covers must be installed “snug” to prevent sags. The material relies on swelling to seal itself. If too taut or overly tight, the material will not seal and may tear.

NOTICE

Periodically check weather covers for accumulation of water. Damage to the bow assemblies may otherwise result. Make sure cover is snug to avoid puddling of water.

After use, the top canvas should be rolled up into the boot (supplied) and secured.

NOTICE

NEVER fold or store a wet weather cover. This can lead to mildew or shrinkage. Roll rather than fold the enclosure curtains. Sharp folds increase the chance of cracking the clear vinyl.

NOTICE

DO NOT use the weather covers for outdoor winter storage. The weight of the snow or heavy rain can cause severe damage to the material or top structure. Refer to O-6 - Winter Storage in this manual for more information.

Four Winns is utilizing a different snap for the canvas. The snap socket is notched towards the outer edge of the canvas. To unsnap, just lift on the side by the notch.

NOTICE

Remove snaps one at a time to prevent damage. DO NOT rip off or pull the weather cover as a whole; acrylic material will tear at snaps.

O - 2 TRAILERING

High winds encountered during trailering your boat can severely damage most weather covers. If an extended trip at highway speeds is planned, the top and other weather covers should be booted or removed entirely. This will prevent damage and loss. See Figure O-1.



Figure O1: Bimini & Camper Tops - Booted

NOTICE

DO NOT tow your boat at highway speeds with weather covers in place. High winds encountered during trailering your boat can severely damage most weather covers. Damage to weather covers incurred as a result of trailering your boat is not covered under warranty.

O - 3 BIMINI TOP

The bimini top is standard and provides cover/shade for the forward cockpit area. It is designed to be fastened to the radar arch with the use of snaps. See Figure O-2.



Figure O2: Bimini Top & Camper Canvas

A clear plastic visor is provided and once installed it connects the forward windshield and the bimini top. Side bimini curtains are also made of clear plastic for visibility and connect the side portion of the windshield to the bimini top. The helm area is protected from the elements once the bimini top, forward windshield connector and bimini side curtains are installed. See Figure O3 below and for hardware installation see Figure O7 at the end of this section.

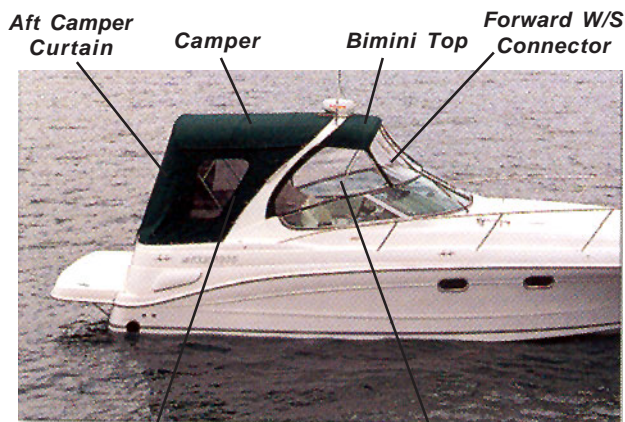


Figure O3: Forward, Side & Aft Curtains

The bimini top is factory installed, therefore, minimal adjustment is necessary. To utilize the bimini top:

1. Remove the canvas boot from the bimini top and unroll top.

2. Snap edge of bimini canvas to radar arch. Starting at the center and working outward may prove to be easiest.
3. Zip in forward windshield connector (clear visor) section to the bimini top and snap to windshield. Starting at the walk-thru windshield may prove to be easiest. Windshield snaps can be adjusted to match snaps in canvas.
4. Zip in the side curtains to the bimini top. Snap canvas to windshield beginning at forward edge.

For bimini storage, reverse the previously described procedure.

NOTICE

Canvas should be snug. If too taut or extremely tight, canvas could tear or pull at seams.

NOTICE

Both the bimini and camper canvas have been designed and are intended to remain installed on the boat in the upright “stored” position. Four Winns does not recommend the bimini and/or camper assembly be removed from the boat unless absolutely necessary.

NOTICE

Two people are recommended if removal or installation becomes necessary. Care must be exercised so the radar arch does not become damaged. Use a protective covering to prevent damage to arch.

NOTICE

In the event the canvas requires some maintenance or repair, remove the bimini camper canvas from the bow assembly. Unzip the bow sleeves, unsnap all snaps and straps, and remove the canvas.

O - 4 CAMPER

The camper is standard and provides cover/shade for the aft portion of the cockpit area. It too, is designed to be fastened to the radar arch with the use of snaps. See Figure O2. The camper aft curtain and camper side curtains can be installed to enclose the aft cockpit area. The camper and camper curtains used in conjunction with the bimini top, forward connector and bimini side curtains completely encloses the cockpit area when desired. See Figure O3. For hardware installation see

Figure O7 at the end of this section.

To install:

1. Install bimini top, forward windshield connector and bimini side curtains as previously instructed.
2. Remove the canvas boot from the camper top.
3. Unscrew the camper boot retainer knobs from each side of the radar arch. This will release the camper retainer bows and camper from its stored position. Be sure to be supporting the camper top to prevent it from deploying prematurely. Reinsert retainer knobs into arch for safe keeping.

NOTICE

Premature camper canvas deployment can damage the canvas as well as the canvas hardware.

4. Extend the primary camper bows aft until taut and attach the aft secondary camper bow to the rear most deck mounts.
5. With the velcro straps supplied, attach the retainer bows to the primary bows when camper is deployed. This will prevent the retainer bows from racking around loose and possibly damaging the arch or bows.
6. Snap edge of camper canvas to radar arch. Starting at the center and working outward may prove to be easiest.
5. Zip the camper side curtains to the camper top. Snap the edge portion of these curtains to radar arch and the deck. It may prove easiest to start snapping the curtains at the upper portion of the arch and work your way down and then along the deck.
6. Unroll the aft camper curtain and zip the curtain to the camper.
7. Snap the bottom portion of the aft curtain to the transom and attach the straps to the transom rail and tighten.

For camper storage, reverse the procedure described above.

O - 5 COCKPIT COVER

The 378 Vista's optional cockpit cover is used to cover the complete cockpit area and is intended as a short term storage cover.

To install:

1. Snap the forward edge of the cockpit cover to the bottom edge of the windshield track. Snaps can be adjusted on the windshield track if necessary.
2. Snap the cockpit cover sides to the deck and arch.
3. Secure the rear corners and aft edge of the cockpit canvas. This is done with the use of snaps and straps which are placed around the transom rail and tightened.
4. Place the adjustable poles in position. The adjustable poles are provided to adjust the canvas for tautness and prevent puddling.

To store the cockpit cover we recommend folding the cover in half, lengthwise and then rolling the cover up.

O - 6 USE OF WEATHER COVERS AND CARBON MONOXIDE

When an engine is running, a natural vacuum may exist with the right wind and sea conditions to allow exhaust gases (which includes carbon monoxide) to seep into the boat. When canvas is utilized, this compounds the possibility of this occurring and inhibits natural ventilation. For more information, refer to Section B-2 - Carbon Monoxide in this manual.

The carbon monoxide in exhaust fumes can be hazardous. It is important for you and your passengers to be aware of the potential safety hazard created by exhaust fumes. Familiarize yourself with the symptoms of individuals overcome by carbon monoxide, and most importantly, ways you can protect yourself and your guests. See Figure O4 - Carbon Monoxide Canvas Warning Label and Figure O5 - Carbon Monoxide Warning Label.

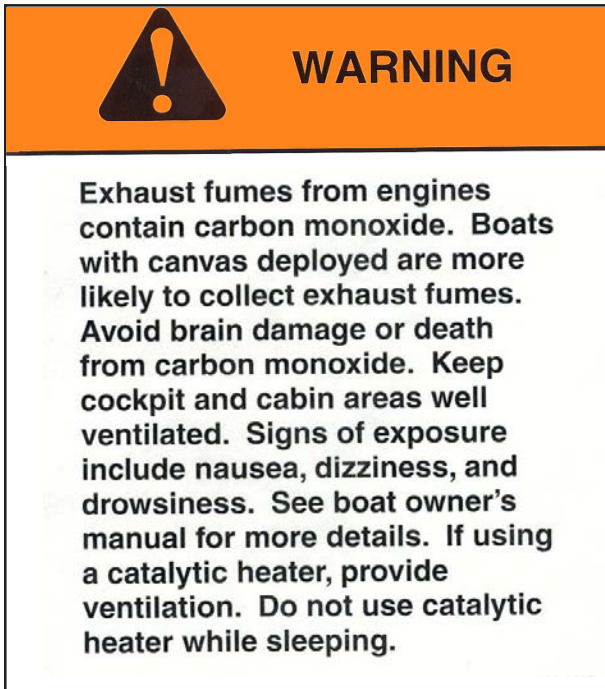


Figure 04: Carbon Monoxide Canvas Warning Label

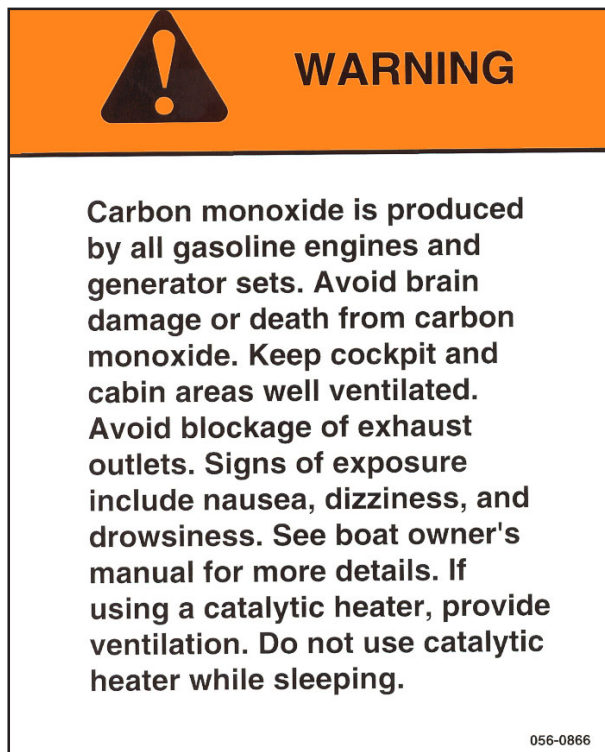



Figure 05: Carbon Monoxide Warning Label

O - 7 WINTER STORAGE

The boat must be properly protected during winter dry dock storage. A winter storage cover is advisable. Many marine dealers offer shrinkwrap enclosures for outdoor storage. See a Four Winns dealer for information on the availability of winter storage covers or other alternatives for storage.

When storing outdoors, make sure the supporting framework keeps the weight of the snow and rain from accumulating on the storage cover. Proper ventilation must also be provided or dry rot and mildew will occur. See Section R - General Maintenance for additional winter storage information.

O - 8 MAINTENANCE



FOUR WINNS

**RECOMMENDED CARE AND MAINTENANCE
FOR YOUR FOLDING TOP AND ACCESSORIES**

Your top and accessories should never be folded or stored wet. To clean top material, see manufacturers label for instructions. Occasionally your zippers and snap fasteners should be lubricated: White candle wax works well. The boat should never be trailered with the top erected. Side and aft curtains should be rolled with out creases in clear vinyl. Replacement parts are available through your dealer.

**YOUR FOLDING TOP IS NOT WARRANTED AGAINST
NEGLECT OR MISUSE.**

MODEL _____

DATE _____

**WARNING: Do Not Operate Boat with Stern Curtain Closed.
Cockpit must Be Open for Legal Fuel Compartment Ventilation.**

Figure 06: Canvas Care & Maintenance Tag

Moisture, dirt, chemicals from industrial fallout, heat, ultraviolet rays and in some cases, salt water are factors which affect the longevity of acrylic covers. See Figure O6.

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 snug 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.

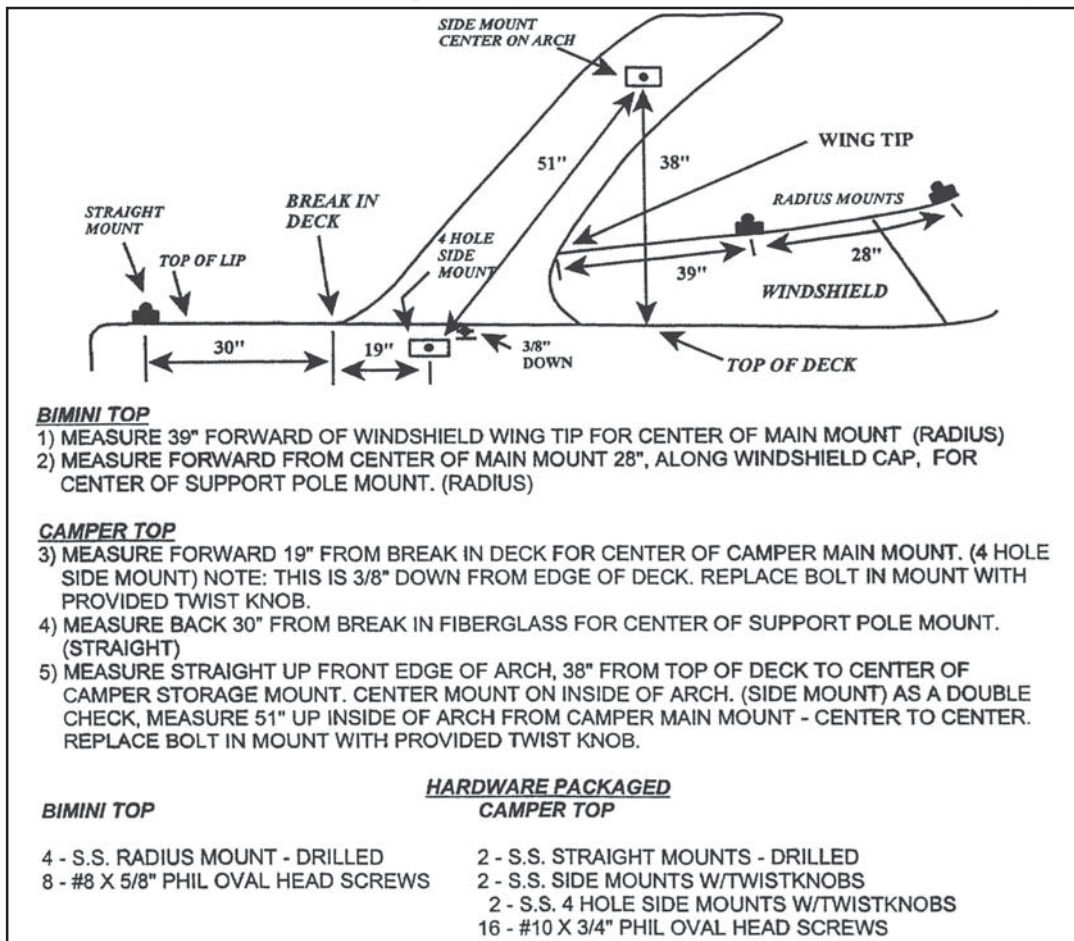


Figure 07: Canvas Hardware Installation

FIBERGLASS AND HULL INFORMATION

P - 1 HULL DESIGN INFORMATION

Four Winns® boats are designed using the sound engineering and mathematical principles of hydrostatics, hydrodynamics, structure, and strength of materials. The materials utilized provide optimum strength at the lightest possible weight. The exact fiberglass laminate schedule and construction techniques of each part is determined in accordance with the strength and rigidity required.

All Four Winns Vista™ models include our patented **Stable-Vee™** hull design. Pods on either side of the outdrive extend the running surface beyond the transom. These pods, plus the unique distribution of deadrise from transom to bow, allows Four Winns to place more hull in the water than deep-vee designs of similar length and beam. This results in better boat handling whether on plane, during turns, or at rest.

P - 2 FIBERGLASS CONSTRUCTION

The fiberglass components of Four Winns® boats are of the finest quality materials, workmanship and construction techniques available. This ensures the structural integrity to provide years of boating enjoyment with minimal maintenance.

The construction of a Four Winns® hull begins with the application of gel coat to the mold. The gel coat is approximately 25 mils thick. A coat of resin and chopped fiberglass is then sprayed into the hull and carefully hand rolled until it is securely affixed to the gel coat.

A number of fiberglass layers and woven roving are applied to the above laminate. Each layer is hand laid and hand rolled. The keel and chine areas have fiberglass woven roving overlapped in these areas to provide additional strength. Some models, of which the 378 Vista™ is one, 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. This ensures a strong, rigid hull, permanently formed into a solid assembly, free of distortions.

Fiberglass cockpit liners and seat base are constructed similar to the hull. Balsa core or coremat laminations are utilized when necessary.

In addition to a thorough visual inspection of each fiberglass component, samples are measured using special equipment, for fiberglass reinforcement to resin ratio, laminate configuration, weight and thickness. By these procedures Four Winns ensures proper composition.

P - 3 EQUIPMENT INSTALLATION

Many boats are used for specific purposes or under conditions which require the addition of special equipment to the hull or deck. Special care must be taken during the installation of any equipment to a fiberglass component. A polysulfide or butyl based sealant should be used to seal installations below the water line. Silicone “marine” seal or similar bedding compound should be used elsewhere.

NOTICE

DO NOT install any item onto or through the hull without adequately sealing the hull area penetrated by the installed item or related fasteners. Improper installations could cause leakage or allow water absorption and thus cause serious hull damage.

Always pre-drill fastening holes with a proper size bit. Pre-drilling will help prevent the fiberglass from splintering and thus causing unsightly damage. Also, countersink holes to prevent the gel coat from chipping.

Any equipment which will be subjected to cyclic loading or significant force should be through-bolted to a fiberglass component. A butt block or backing plate should be used to strengthen any area onto which an item will be mounted.

P - 4 FIBERGLASS CARE & MAINTENANCE

Fiberglass is affected by weathering processes and requires maintenance on a periodic basis to help maintain the beauty and shine. The effects upon the gel coat will be dependent upon boating conditions, storage, type of use, and the care given to the boat during the boating season.

Four Winns utilizes fade-fighting gel coat in the exterior finish. It is specially formulated to resist fading and yellowing, and retain more of its original gloss than better grade gel coats. However, it is still important to maintain the gel coat to protect the finish.

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. Hand dish washing detergents are usually gentle and are recommended for cleaning gel coat. Cleaning products such as Ivory™ or Dawn™ hand dish washing 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™, Fantastik™, 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 skid-resistant areas, DO NOT attempt to use a wire brush or sandpaper because this will remove the skid-resistant gel.

Apply wax once or twice a year to maintain gel coat lustre. Read the label before using any product. Make sure product is formulated for gel coat surfaces. Also, consult a Four Winns dealer for their recommendations.

NOTICE

Do not use carnuba based waxes. This type of wax yellows over time and makes the fiberglass appear yellow.

 **CAUTION**

Waxing decks, cockpit floors or other walking areas is not recommended. Waxing will produce a very slippery surface, especially when wet. Wax may also buildup in the skid-resistant surfaces. Be sure all persons wear deck shoes while aboard the boat. Footing will be improved and feet will be protected from accidental cuts and bruises.

A darkening or discoloration of the skid-resistant surfaces can sometimes occur as a result of wax buildup. Exposure to the sun and elements can turn the wax darker, or occasionally can cause it to become flaky or powdery. To remove, use fine rubbing compound and a low RPM buffer (1200 to 2000 RPM). Apply light pressure and keep the buffer moving at all times to prevent heat buildup. Read the directions before using any equipment.

B. Weathering Effects on Gel Coat

Weathering occurs from direct sunlight, water, chemicals, and dust. Some of the terms below describe the changes that can occur to the gel coat surface.

Chalking is a result of the gel coat’s top surface being broken down into an extremely fine powder. When this happens, the color whitens. The chalk is present on the surface only.

Fading is the uniform change in color. This happens when the actual pigments have changed color, especially from excessive chalking, or when the gel coat has either been stained or bleached by something.

Yellowing is gel coat which has a yellow cast and streaking usually deals with a stain or contact with another surface.

Gloss refers to the shine of the surface. This can change from sanding action, chalk, residues, or exposure.

Blistering refers to a condition in which the unprotected gel coat surface below the waterline has absorbed water and formed bubbles. See Section P-5 for additional information.

Follow the instructions below for boats that have weathered and chalked.

1. Wash.
2. Wax. If this does not work, then use a fine rubbing compound. If this does not work use 400 or 600 wet or dry sandpaper, followed by fine rubbing compound and wax.

When using wax or fine rubbing compounds, make sure to read the label and follow the directions. Some helpful tips are listed below.

1. Avoid working in direct sunlight. This dries out the wax or compound, and can stain the surface.
2. Use clean pads or cloths to apply a thin coating of wax or rubbing compound to a small area such as three feet by three feet. Remove any excess, and then rub the area with a buffing pad, or power buffer. Apply pressure only as necessary to restore the surface finish. Applying too much pressure or buffing in one place too long can permanently damage the surface.
3. After applying compound, always follow with waxing.

NOTICE

If using a power buffer, use a low RPM buffer with light pressure. Keep the pad wet and the buffer moving at all times to prevent heat buildup.

NOTICE

To prevent gouges, uneven areas, or other damage from occurring, **DO NOT** use a power or belt sander when sanding. For best results, block sand the gel coat.

C. Stains

Stains can appear anywhere on the exterior of the boat and may be a result of contact with tar, plant sap, leaves, rust from metal fittings, and other materials. Surface stains may be removed with hand dish washing soap, mild cleansers, or some household detergents. **DO NOT** use chlorine or ammonia products. These products can affect the color of gel coat. Commercial car washes use strong cleaners and should be avoided.

To remove stains, refer to the procedures below.

1. Wash area with hand dish washing soap.
2. Begin with a small area such as three feet by three feet and apply a mild cleanser.
3. Rinse with clean water.
4. Follow with compound and waxing as outlined in procedure above.

If the stain is not removed by the hand dish washing soap or mild cleanser, then the next procedure is to use either denatured or rubbing alcohol. If this does not work, consult your Four Winns dealer for professional assistance.

NOTICE

DO NOT use acetone, ketone, or other solvents to remove stains. These chemicals are flammable and may damage the gel coat.

P - 5 FIBERGLASS REPAIRS

Fiberglass is one of the most durable, strong, and forgiving construction materials afloat. It is resilient and normal repairs can be made without affecting the strength or structural integrity of the boat.



WARNING

Striking docks, other boats, or submerged objects could create a very hazardous situation or severely damage the fiberglass. In the event an object is struck below or near the waterline, proceed directly and cautiously to the nearest service facility and remove the boat from the water. Closely inspect the hull for damage. If the outer fiberglass laminate was penetrated, repairs must be made prior to relaunch.

Occasionally, blisters, crazing, scratches, or damage to the fiberglass can occur. Repairs may be necessary to correct the problem.

A. Scratches

Scratches occur during normal use. Below is a step by step procedure to repair scratches.

1. Clean area with soap and water.
2. Apply a fine rubbing compound and buff.
3. Wax.

If this does not work, clean the area and sand lightly with 400 to 600 wet or dry sandpaper and follow with rubbing compound and wax.

B. Gouges & Cracks

Stress cracks and crazing are the appearance of hairline cracks in the gel coat surface. When present, these problems usually occur in the gel coat finish or the outer “skin coat” fiberglass laminate. The appearance of these cracks does not pose a threat to the structural integrity of the boat. In most cases, they are cosmetic and can be treated.

Cosmetic surface damage can be repaired as follows:

1. Sand the surrounding area with medium or fine grit sandpaper. Clean all marine growth, dirt, antifouling paint, etc. from the immediate area. **DO NOT** excessively scratch or gouge the surrounding area.
2. Use a hard, pointed tool to open the gel crack. Take care not to damage the surrounding gel coat.
3. Sand the crack or gouge so the edges are smooth and will allow proper “feathering” of the area.

4. Clean the area thoroughly. Make sure the area is dry before proceeding.

NOTICE

Be sure the structure and the ambient temperature are above 60 degrees F (15 degrees C) and the relative humidity below 70% immediately before, during, and after the repair.

5. If the nick or gouge is deep and penetrates through the gel coat, fill the area with fiberglass patching paste. Follow the directions on the can when mixing the paste with the catalyst.
6. After the gouge is filled and has dried, sand the patched area. Begin by using medium-fine grade sandpaper. Progressively use finer grade sandpaper until the surface is very smooth. If necessary, add filler and then sand the surface again.
7. Apply two or three light coats of matching fiberglass gel coat to the repaired area. Enough gel coat should be used so that the entire area is covered.

The gel coat must be catalyzed using up to 2% MEK Peroxide which can be purchased at a supplier handling fiberglass reinforced products. Contact your Four Winns dealer for assistance.

8. After ample drying time, sand the area using very fine wet/dry sandpaper. If the appearance of the area is still not satisfactory, repeat steps 2 through 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.

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.

C. Osmotic Blistering

Osmotic blistering or “boat pox” is an unfortunate but not uncommon occurrence in fiberglass boats. Fiberglass is water retardant, not waterproof. When a boat is left in the water for a period of time, the fiberglass will absorb water. It is a natural process that can not be eliminated in production methods or material selection and usage. However, there are ways to control and possibly prevent blisters (see Section P-6). If you do encounter blisters, be assured that the blisters are merely cosmetic. They do not indicate a defect in the boat structure or lamination. Four Winns, along with most boat manufacturers, regard gel blisters as a standard maintenance item.

The repair procedure for gel coat blisters is similar to the procedures outlined in the previous section on cracks and gouges. There is an exception however, in that the hull must dry out for several days or possibly weeks before repairs can proceed.

To determine if the hull has dried sufficiently, tape one square foot of household plastic wrap securely to the hull bottom. Make sure all edges are sealed and let it stand for twenty-four hours. If condensation has accumulated under the plastic, the hull is still “wet” and must be allowed to dry longer before repairing.

When the repair is completed, an application of an epoxy barrier coat should be considered. This will help prevent the possibility of reoccurrence of blisters. Your Four Winns dealer or local ship store will have information on barrier coat products.

P - 6 ANTIFOULING PAINT

Four Winns recommends antifouling or bottom paint for boats which will be kept in the water for extended periods of time. Antifouling paint reacts with water to retard the growth of algae, barnacles and other marine growth on the hull. In addition to marine growth, it offers protection against excessive water pollution.

Antifouling paint begins reaction upon contact with water. After a season’s use or sooner under certain conditions, the antifouling paint may appear to be dissolving.

This is due to the paint’s chemical emission that in turn retards marine growth. When this occurs, refinishing is in order. For bottom paint line location, refer to the Figure P1 at the end of this section.

Four Winns recommends reapplication of the antifouling paint seasonally. The effectiveness of the paint will be drastically reduced if used longer. Though Four Winns has found the antifouling paints used to provide good marine growth protection in most water, other paints may be more effective in certain water conditions. See a Four Winns dealer for recommendations on antifouling paint use in your area.


NOTICE

During surface preparation, the hull should be sanded only enough to remove any foreign matter, and loose paint. **DO NOT** sand deeply into the gel coat, fiberglass cosmetic problems could later result. After sanding, the surface should be wiped with a rag treated with a cleaner recommended by the antifouling paint manufacturer. The surface must be clean and slightly rough to ensure paint adhesion.

Prior to application of the antifouling paint, the boat owner may consider coating the hull bottom with an epoxy coating. Four Winns recommends this procedure as a preventive and effective means of controlling osmotic blistering. Most major antifouling paint manufacturers also supply a line of epoxy undercoatings. Consult your Four Winns dealer for recommendations on epoxy undercoatings.

P - 7 HULL SUPPORT

Proper support of the hull while it is out of the water is imperative. Due to the design complexities, Four Winns does not recommend trailers or storage cradles be homemade. The boat is a valuable piece of equipment. **DO NOT** risk permanent damage to the hull structure in an attempt to save the cost of an adequate support. Improper support can lead to serious and permanent hull deformation.

 **CAUTION**

While lifting the boat, ensure slings are in the proper locations as indicated by the sling location labels . **Failure to do so may result in permanent hull structure damage and will invalidate the hull structure warranty.**

NOTICE

When attempting to raise the hull, never allow one end of the boat to rise first, while letting the opposite rest momentarily on the 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 and are in proper location as indicated by the sling label location.

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.

378 VISTATM

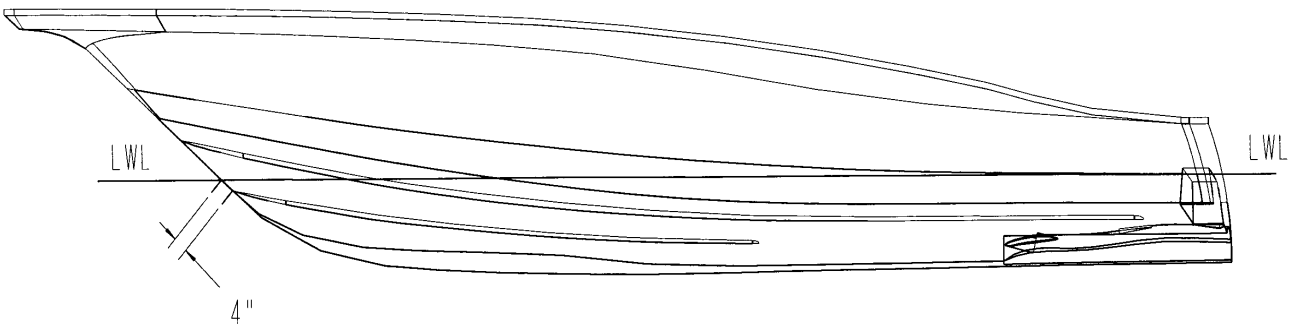


Figure P1: Bottom Line Paint Location

WOODWORK AND COMPOSITES

Q - 1 HIGH-PRESSURE LAMINATE CARE

Much of the 378 Vista™ interior components such as the shelving, head door, closets, closet door and drawer fronts consist of a high pressure laminate material. The finish is that of a synthetic cherry and can be cleaned with hand dish washing soap and water or other cleaning solutions such as Fantastik™. Always read the label before using any product.

NOTICE

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

Q - 2 CHERRY

Four Winns utilizes cherry trim for Vista™ model interiors. The wood is prepared with a light stain followed by a polyurethane finish. To clean, a damp cloth will usually suffice. Care should be similar for cherry as it is for fine, household furniture.

Q - 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. The fill-in cockpit table is one example of where star board is used.

To clean star board, use a solvent-free, nonabrasive cleaner such as hand dish washing 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.

Q - 4 BURLWOOD MAHOGANY ENHANCEMENTS

Mahogany enhancements are standard on the Vista™ models. They consist of a finished synthetic burlwood

mahogany. This mahogany is found in the instrument gauge panels, switch panel, steering wheel and ignition switch panels of the Vista™ series.

To clean, a damp cloth will usually suffice.

Q - 5 GRANICOAT™ GALLEY COUNTERTOP

The 378's countertop for your cabin galley is made of laminated fiberglass with an exterior skin of Granicoat™ gel coat. This makes for an extremely strong yet lightweight countertop. The Granicoat™ gel coat gives the appearance of "granite" and is both temperature and stain resistant. It can be cleaned with hand dish washing soap and water or other cleaning solutions such as Fantastik™. Always read the label before using any product. Please read the notices below.

NOTICE

DO NOT use abrasive cleaners or solvents on countertop. DO NOT use Soft Scrub™ soap or similar cleaning products; they will scratch the surface and remove the shine.

NOTICE

DO NOT set hot pans or dishes directly on the countertop. The countertop may become burnt and/or discolored. Use of a hot pad will prevent any discoloration from occurring.

NOTICE

DO NOT use countertop as a cutting board. The knife will leave gouges/marks in the surface of the countertop. A cutting board that fits over the sink is provided.

Q - 6 CORIAN® MATERIAL

Corian® material is utilized in the entertainment center counter top and head sink counter top of the 378. The Corian® gives the 378 Vista™ a rich look and makes for an extremely strong yet lightweight top. It can be cleaned with hand dish washing soap and water, or other cleaning solutions such as Fantastik™. Always read the label before using any product.

Q - 7 ACRYLIC PLASTIC - (PLEXIGLASS)

Acrylic plastic is utilized in the companionway doors, transom doors, deck hatches, portlight windows, sliding storage doors, electrical panel doors, cabinets and cabin windows.

To clean acrylic plastic:

- 1) Rinse with plenty of water to wash off as much dirt as possible.
- 2) Using your bare hand, along with plenty of water, feel and remove any dried on dirt or mud.
- 3) Wash using a soft, grit free cloth or sponge and mild, nonabrasive soap or detergent.
- 4) Blot dry using a clean, damp chamois.

NOTICE

Never use a dry cloth, duster, glass cleaning solutions or citrus cleaner on acrylic plastic.

NOTICE

Do not use solvents such as acetone, silicone spray, benzine, carbon tetrachloride, fire extinguisher fluid, dry cleaning fluid, lacquer thinner or ammonia. These solutions attack the acrylic surface.

You can use fine automotive acrylic rubbing and polishing compounds to remove fine scratches on acrylic.

GENERAL MAINTENANCE

R - 1 WINTERIZATION

A. Prior to Lifting for Winter Lay-up

1. Pump out the head (dockside discharge), and be sure the holding tank is empty. Flush the head holding tank with soap, water and a deodorizer (e.g., Lysol Liquid™). Add more water if necessary. Have the cleaning solution pumped out.
2. Have the fuel tank either 75%-80% full (to allow for expansion) or completely empty. See the Engine Owner's manual for recommendations. Also, check with the dry dock operators for recommendations. If winter storing with a full fuel tank, gasoline winterizer such as Sta-bil® fuel conditioner, will reduce varnishing, condensation, etc.

NOTICE

If the fuel has been treated with winterizer, run engines for ten minutes to make sure the treated fuel is present in all lines and parts of the engines.

3. Drain water from the fresh water system and the hot water heater.
4. Winterize the engine and drive systems as recommended in the engine owner's manual (applies to both gas and diesel systems). Portions of this winterization procedure may require that the boat be lifted. Winterization of engine and boat systems should be performed by qualified service personnel.
5. Lift the boat only at the designated "sling" labels. See Section P-7 Hull Support in this manual for additional details.

B. After Lifting

1. Remove the drain plug.
2. Thoroughly wash the fiberglass exterior, especially the hull bottom. Remove as much marine growth as possible. Wax lightly.

3. Lower boat onto cradle properly or place boat on trailer. Be sure boat is adequately supported. The boat should be raised slightly under the forward supports or trailer tongue to improve drainage to the transom drain.
4. Be sure all the water is completely drained from the fresh water system. Disconnect all hoses, check valves, etc. and blow all the water from the system using very low air pressure. The use of nontoxic, fresh water system antifreeze is recommended as an alternative to disassembling the water system. Refer to Section J-7 - System Maintenance in this manual for information on winterizing the water system.
5. Winterize the head as recommended by the head manufacturer. If the boat is equipped with a holding tank, mix some antifreeze solution and pour it into the head. Transfer some of the antifreeze to the holding tank by flushing the head. Also, refer to Section J-7 - System Maintenance for additional information.
6. Drain or winterize the air conditioning and generator system. Follow the appropriate manufacturer's directions. Be sure all water intake filters are drained thoroughly.
7. Ensure that all water is removed from the sump pump, bilge pump and bilge pump lines. Dry the hull bilge, and self-bailing cockpit drain troughs. Water freezing in these areas could cause damage. See Section K-3 - Hull Drainage Systems.
8. Remove the batteries and store in a cool place. Clean the batteries using clear, clean water. Be sure the battery has sufficient water and clean terminals. Keep the batteries charged throughout the storage period. DO NOT store the batteries on a concrete floor or other damp or conductive surface.
9. Drain the alcohol out of the stove (if applicable) and store alcohol in a cool, dry place away from heat or spark.
10. Clean the boat interior thoroughly. Vacuum carpets, and dry clean drapes and upholstery jackets as necessary.

11. Wash exterior fiberglass components, wax lightly.
12. Clean exterior upholstery with hand dish washing soap and water, rinse, and dry thoroughly.
13. Remove all oxidation from exterior hardware and apply a light film of moisture - displacing lubricant.

C. Prior to Winter Storage

1. Remove as many cushions as possible. Remove storage lids or hatches. Open as many locker doors, as possible. Open the refrigerator door. Leave these areas open to improve ventilation.
2. Spray the weather covers and the boat upholstery with Lysol Spray Disinfectant™. Enclosed areas such as the refrigerator, shower basin, storage locker areas, etc. should also be sprayed with Lysol Disinfectant™.
3. Place small dishes of rodent poison such as D-Con™ in a number of areas around the boat. Be sure dishes are placed near the head and the engines, as rodents will destroy upholstery, water intake and discharge hoses.
4. If the boat will be in outside storage, properly support a storage cover and secure it over the boat. DO NOT secure the cover tightly to the boat. This does not allow adequate ventilation and can lead to dry rot. DO NOT store the boat in a damp storage enclosure. Excessive dampness can cause electrical problems, corrosion, and dry rot.



WARNING

Placing an electric or fuel burning heating unit in the bilge of the boat during cold weather could cause fire or explosion and is not recommended.

5. DO NOT use the bimini top or camper top as a winter storage cover. The life of these covers may be significantly shortened if exposed to harsh weather elements for long periods.

R - 2 GENERAL MAINTENANCE SCHEDULE

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*
Engine and Instrumentation	Refer to Section E			
Engine Maintenance	As Recommended by the Manufacturer			
Inspect Exhaust System Hoses and Connections				
Inspect Cooling System Hoses, Connections and Impellers				
Check Propellers				
Check All Thru-Hull Fittings				
Gauge Cleaning				
Controls Systems	Refer to Section F			
Throttle and Shift Adjustment				
Neutral Safety Switch Test				
Cable and Control Lubrication				
Steering Systems	Refer to Section G			
Linkage and Connection Inspection				
Power Steering Service	As Recommended by the Manufacturer			
Steering Adjustments				
Steering System Lubrication				
Electrical Systems	Refer to Section H			
Inspect Battery Connections				
Check Battery Water				
Battery Cable Inspection				
12 Volt Electrical Equipment Operation				
12 Volt Wiring and Connection Inspection				
120 Volt Electrical Equipment Operation				
120 Volt Wiring Inspection				
120 Volt System Continuity Test				
Shore Power Cord and Adapter Inspection				
Polarity Light Operation				
Receptacle and Connection Inspection				
Generator Maintenance	As Recommended by the Manufacturer			
Inspect Generator Water Intake and Exhaust				

* Or as Required

SERVICE	AT LAUNCH AND FIRST OPERATION*	25 HOUR CHECK EACH SEASON*	BI-SEASONALLY OR EVERY 6 MONTHS OR EVERY 100 HOURS*	SEASONALLY OR EVERY 12 MONTHS OR EVERY 200 HOURS*
Fuel System	Refer to Section I			
Inspect for Leaks				
Fuel Sender Inspection				
Fuel Filter Inspection				
Fuel Tank Inspection				
Water Systems	Refer to Section J			
Inspect All Water Systems				
Fresh, Grey & Holding Tank Inspections				
Drain & Flush Fresh Water System				
Drain & Flush Waste Water System				
Drain & Flush Grey Water System				
Ventilation and Drainage	Refer to Section K			
Engine & Head Blower Operationn				
Blower Vent System Cleaning				
Bilge Pump Operation and Cleaning				
Check Transom Drain Plug				
Deck Hatch & Aft Window Cabin Operation				
Interior Equipment	Refer to Section L			
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				
Cabin Hatch & Aft Cabin Window Operation				
Exterior Equipment	Refer to Section M			
Clean Spotlight				
Check Compass for Magnectic Deviation				
Check Trim Tab Fluid Level				
Check Trim Tab System for leakage				
Upholstery	Refer to Section N			
Clean Upholstery				
Clean Carpet				

* 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*
Spray Upholstery with Lysol				
Check Seat Hinges and Mounting Hardware				
Weather Covers	Refer to Section O			
Wash Weather Covers				
Spray Weather Covers with Lysol				
Fiberglass Components and Hull	Refer to Section P			
Check All Fastenings (securing rails, seats, etc.)				
Clean Fiberglass Thoroughly				
Wax Hull Sides and All Non-Tread Areas				
Inspect Fiberglass Areas for Damage				
Perform Minor Touch-Up Repairs				
Sand Hull and Re-Apply Anti-Fouling Paint				
Woodwork & Composite Maintenance	Refer to Section Q			
Clean Star Board	As Needed			
Clean Cherry Trim & Tables				As Needed

* Or as Required

GENERAL MAINTENANCE

R - 1 WINTERIZATION

A. Prior to Lifting for Winter Lay-up

1. Pump out the head (dockside discharge), and be sure the holding tank is empty. Flush the head holding tank with soap, water and a deodorizer (e.g., Lysol Liquid™). Add more water if necessary. Have the cleaning solution pumped out.
2. Have the fuel tank either 75%-80% full (to allow for expansion) or completely empty. See the Engine Owner's manual for recommendations. Also, check with the dry dock operators for recommendations. If winter storing with a full fuel tank, gasoline winterizer such as Sta-bil® fuel conditioner, will reduce varnishing, condensation, etc.

NOTICE

If the fuel has been treated with winterizer, run engines for ten minutes to make sure the treated fuel is present in all lines and parts of the engines.

3. Drain water from the fresh water system and the hot water heater.
4. Winterize the engine and drive systems as recommended in the engine owner's manual (applies to both gas and diesel systems). Portions of this winterization procedure may require that the boat be lifted. Winterization of engine and boat systems should be performed by qualified service personnel.
5. Lift the boat only at the designated "sling" labels. See Section P-7 Hull Support in this manual for additional details.

B. After Lifting

1. Remove the drain plug.
2. Thoroughly wash the fiberglass exterior, especially the hull bottom. Remove as much marine growth as possible. Wax lightly.

3. Lower boat onto cradle properly or place boat on trailer. Be sure boat is adequately supported. The boat should be raised slightly under the forward supports or trailer tongue to improve drainage to the transom drain.
4. Be sure all the water is completely drained from the fresh water system. Disconnect all hoses, check valves, etc. and blow all the water from the system using very low air pressure. The use of nontoxic, fresh water system antifreeze is recommended as an alternative to disassembling the water system. Refer to Section J-7 - System Maintenance in this manual for information on winterizing the water system.
5. Winterize the head as recommended by the head manufacturer. If the boat is equipped with a holding tank, mix some antifreeze solution and pour it into the head. Transfer some of the antifreeze to the holding tank by flushing the head. Also, refer to Section J-7 - System Maintenance for additional information.
6. Drain or winterize the air conditioning and generator system. Follow the appropriate manufacturer's directions. Be sure all water intake filters are drained thoroughly.
7. Ensure that all water is removed from the sump pump, bilge pump and bilge pump lines. Dry the hull bilge, and self-bailing cockpit drain troughs. Water freezing in these areas could cause damage. See Section K-3 - Hull Drainage Systems.
8. Remove the batteries and store in a cool place. Clean the batteries using clear, clean water. Be sure the battery has sufficient water and clean terminals. Keep the batteries charged throughout the storage period. DO NOT store the batteries on a concrete floor or other damp or conductive surface.
9. Drain the alcohol out of the stove (if applicable) and store alcohol in a cool, dry place away from heat or spark.
10. Clean the boat interior thoroughly. Vacuum carpets, and dry clean drapes and upholstery jackets as necessary.

11. Wash exterior fiberglass components, wax lightly.
12. Clean exterior upholstery with hand dish washing soap and water, rinse, and dry thoroughly.
13. Remove all oxidation from exterior hardware and apply a light film of moisture - displacing lubricant.

C. Prior to Winter Storage

1. Remove as many cushions as possible. Remove storage lids or hatches. Open as many locker doors, as possible. Open the refrigerator door. Leave these areas open to improve ventilation.
2. Spray the weather covers and the boat upholstery with Lysol Spray Disinfectant™. Enclosed areas such as the refrigerator, shower basin, storage locker areas, etc. should also be sprayed with Lysol Disinfectant™.
3. Place small dishes of rodent poison such as D-Con™ in a number of areas around the boat. Be sure dishes are placed near the head and the engines, as rodents will destroy upholstery, water intake and discharge hoses.
4. If the boat will be in outside storage, properly support a storage cover and secure it over the boat. DO NOT secure the cover tightly to the boat. This does not allow adequate ventilation and can lead to dry rot. DO NOT store the boat in a damp storage enclosure. Excessive dampness can cause electrical problems, corrosion, and dry rot.



WARNING

Placing an electric or fuel burning heating unit in the bilge of the boat during cold weather could cause fire or explosion and is not recommended.

5. DO NOT use the bimini top or camper top as a winter storage cover. The life of these covers may be significantly shortened if exposed to harsh weather elements for long periods.

R - 2 GENERAL MAINTENANCE SCHEDULE

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*
Engine and Instrumentation	Refer to Section E			
Engine Maintenance	As Recommended by the Manufacturer			
Inspect Exhaust System Hoses and Connections				
Inspect Cooling System Hoses, Connections and Impellers				
Check Propellers				
Check All Thru-Hull Fittings				
Gauge Cleaning				
Controls Systems	Refer to Section F			
Throttle and Shift Adjustment				
Neutral Safety Switch Test				
Cable and Control Lubrication				
Steering Systems	Refer to Section G			
Linkage and Connection Inspection				
Power Steering Service	As Recommended by the Manufacturer			
Steering Adjustments				
Steering System Lubrication				
Electrical Systems	Refer to Section H			
Inspect Battery Connections				
Check Battery Water				
Battery Cable Inspection				
12 Volt Electrical Equipment Operation				
12 Volt Wiring and Connection Inspection				
120 Volt Electrical Equipment Operation				
120 Volt Wiring Inspection				
120 Volt System Continuity Test				
Shore Power Cord and Adapter Inspection				
Polarity Light Operation				
Receptacle and Connection Inspection				
Generator Maintenance	As Recommended by the Manufacturer			
Inspect Generator Water Intake and Exhaust				

* Or as Required

SERVICE	AT LAUNCH AND FIRST OPERATION*	25 HOUR CHECK EACH SEASON*	BI-SEASONALLY OR EVERY 6 MONTHS OR EVERY 100 HOURS*	SEASONALLY OR EVERY 12 MONTHS OR EVERY 200 HOURS*
Fuel System	Refer to Section I			
Inspect for Leaks				
Fuel Sender Inspection				
Fuel Filter Inspection				
Fuel Tank Inspection				
Water Systems	Refer to Section J			
Inspect All Water Systems				
Fresh, Grey & Holding Tank Inspections				
Drain & Flush Fresh Water System				
Drain & Flush Waste Water System				
Drain & Flush Grey Water System				
Ventilation and Drainage	Refer to Section K			
Engine & Head Blower Operationn				
Blower Vent System Cleaning				
Bilge Pump Operation and Cleaning				
Check Transom Drain Plug				
Deck Hatch & Aft Window Cabin Operation				
Interior Equipment	Refer to Section L			
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				
Cabin Hatch & Aft Cabin Window Operation				
Exterior Equipment	Refer to Section M			
Clean Spotlight				
Check Compass for Magnetic Deviation				
Check Trim Tab Fluid Level				
Check Trim Tab System for leakage				
Upholstery	Refer to Section N			
Clean Upholstery				
Clean Carpet				

* 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*
Spray Upholstery with Lysol				
Check Seat Hinges and Mounting Hardware				
Weather Covers	Refer to Section O			
Wash Weather Covers				
Spray Weather Covers with Lysol				
Fiberglass Components and Hull	Refer to Section P			
Check All Fastenings (securing rails, seats, etc.)				
Clean Fiberglass Thoroughly				
Wax Hull Sides and All Non-Tread Areas				
Inspect Fiberglass Areas for Damage				
Perform Minor Touch-Up Repairs				
Sand Hull and Re-Apply Anti-Fouling Paint				
Woodwork & Composite Maintenance	Refer to Section Q			
Clean Star Board	As Needed			
Clean Cherry Trim & Tables				As Needed

* Or as Required

PRE-LAUNCH AND UNDERWAY

S - 1 LAUNCH AND CRUISE CHECKLIST

- Get a current weather report. If the weather will not be favorable, postpone your trip.
- If your boat has been out of the water, check to see that all bilge water has drained out.
- Install hull drain plugs.
- Inspect the hull and propeller for damage. Excessive dirt or marine growth will effect your boat's performance and fuel efficiency.
- Check the electrical system and navigation lights.
- If your boat has been in the water, run the bilge pump until the flow of water stops.
- Check that all required safety equipment is on board and in good working condition. Examples include personal flotation devices (PFDs), horn, fire extinguisher, visual distress signals, etc. Take along a gallon of drinking water.
- Check that other important equipment is on board. Examples include mooring lines, anchor and line, tool kit, first aid kit, etc.
- Open engine compartment. Inspect for fuel odors and visible leaks in the fuel, oil, coolant, exhaust and power steering systems.
- Visually inspect engine for cracked hose, defective belts, or other signs of engine problems. Check engine oil and battery water levels. Check power steering fluid level. Check battery electrolyte range.
- Check fuel level. Fuel tanks should be filled to slightly less than capacity. Allow for fuel expansion.
- Check that all engine and accessory seacocks are operational.
- Make sure navigation charts and equipment are on board.
- Check operation of steering system, navigation lights, and operation of horn.
- Make sure passengers and crew know what to do in case of an emergency and how to operate safety equipment.
- Make sure all required documents are on board.
- File a float plan with a responsible party ashore.
- Keep an eye on the weather. Be aware of possible changing conditions by monitoring local weather broadcasts prior to departure. The captain or first mate should personally monitor strong winds and electrical storms.
- Always keep accurate up-to-date charts of your boating area on board.

S - 2 FUELING



Do not smoke, extinguish all open flames, STOP all engines and other devices that could cause sparks, including the bilge blower. Do not use electrical switches or accessories. Shut OFF all stoves that may produce a spark or flame. Close all openings into the cabin area of the boat.

A. Recommendations



When fueling or having your boat fueled by an attendant, be sure the waste pump-out or fresh water fitting is not mistaken for the gas fill.

Although alcohol boosts the octane level of gasoline, it also attacks the rubber fuel distribution lines and even metal fuel system components. Alcohol will permeate most fuel hoses and other components such as fuel pump, gaskets and seals, and can also contribute to fuel system contamination.

The hoses we use in our boats are alcohol-resistant as are the materials used by the engine manufacturers. If only fuel containing alcohol is available, or the presence of alcohol is unknown, you must perform more frequent inspections for leaks and abnormalities. Any sign of leakage or deterioration requires your immediate attention. Refer to the engine manufacturer's recommendations on fuel type and octane ratings.

B. Preliminary Guidelines

1. Safely secure your boat to the dock.
2. Close all hatches, windows, doors and compartments to prevent accumulation of fuel vapors.
3. Ensure that a fire extinguisher is readily available.
4. Do not store fuel in areas that are not adequately ventilated.
5. Use only fuel lubricants recommended by the engine manufacturer.

C. Pumping Fuel



Follow engine manufacturer's recommendations for types of fuel and oil. Use of improper products can damage the engine and void the warranty.

1. Be sure to fuel in a well-lit area gasoline spills are unnoticeable under poor lighting or in the dark.
2. Remove the gas fill cover.
3. Insert the fuel supply nozzle, keeping it in contact with the fuel fill plate to guard against static produced sparks.
4. Stand away from the fuel tank vent and gas fill during fueling. Splashback may occur and can be an eye irritant and/or a fire hazard.
5. Avoid spillage. Wipe up any excess fuel immediately.
6. After pumping approximately 10 gallons of fuel into the fuel tank, inspect the engine and fuel tank area for any signs of leakage. If no leaks or other problems are detected, resume fueling.
7. Allow space at the top of the tank for thermal expansion.
8. If fuel cannot be pumped in at a reasonable rate, check for fuel vent blockage or a kink in the line.

D. After Fueling

1. Replace the gas fill cover and wipe up any fuel spilled. Discard rags used in a safe place ashore.
2. Open the engine compartment and all hatches, windows, doors and other compartments that were closed during fueling. Inspect these areas for the odor of fuel vapors and visible fuel leakage.



Investigate and correct any sign of fuel leakage or indication of vapors before starting engine. Do not run blower or operate any electrical switch until problem is corrected. Fire or explosion may result.

S - 3 LOADING PASSENGERS AND GEAR

When loading your boat, remember to distribute the load evenly. Keep the load low and do not overload. Always step into the boat, never board by jumping. Have someone on the dock pass your gear aboard. Secure all gear firmly so it doesn't move or interfere with operation of the boat. Passengers should board the boat one-at-a-time and be seated.

IMPORTANT: Passengers are prohibited from riding on the bow with feet hanging over the side or ride while sitting on the stern, gunwales or setbacks. The Coast Guard considers these acts to be negligent or grossly negligent operation. They are prohibited by law because falls from moving boats are a major cause of fatal recreational boating accidents.

S - 4 STARTING PROCEDURES

The operation and maintenance manual supplied with your engine provides pre-start, starting and cold-starting instructions. The following information is merely a guide and not intended to explain in detail all starting procedures and instructions. Refer to your engine owner's manual.

A. Preliminary Checks

1. Secure boat to the dock before attempting to start engine. The boat should be kept secure until the engine is running and warmed up.
2. Operate the bilge pump until the flow of water stops.
3. Make sure the throttle is in the neutral position.

B. Starting



To prevent excessive exposure and reduce the possibility of carbon monoxide accumulation in the cockpit areas of the boat, the operator should provide adequate ventilation in each of these areas. Utilize hatches, doors, windows and side vents to increase air movement. See Section B-2 for information about the dangers of Carbon Monoxide.

Notice: Additional starting information is located in Section A.

1. Check all electrical systems and navigation lights.
2. Your boat is equipped with a battery selector switch, turn the battery switch to ON position.
3. If your boat has fuel injection, turn the key to start the engine. Engine will not turn over if throttle is not in the neutral position.

If your boat does not have fuel injection, depress the engine warm-up button to advance the throttle several times and leave it in the SLOW/START position. This will actuate the carburetor accelerator pump and feed fuel to the engine. Turn ignition key to START position.

4. When engine is cold, run engine approximately one (1) to two (2) minutes at fast idle speed (1200 to 1500 RPM). This step is not necessary with fuel injected engines.
5. Once engine has warmed up, check water temperature gauge to ensure engine temperature stays within optimum range. If temperature reading is abnormally high, stop engine immediately and inspect for cause of high reading.
6. With engine running, voltmeter should show a reading between 12 and 15 volts.
7. Check steering operation. Turn steering wheel full to port and starboard while observing rudder movement.
8. Inspect for fuel odors and visible leaks in the fuel, oil, coolant, exhaust and power steering systems.
9. Make sure boat is securely moored to the dock and engine is idling. Then move the throttle forward and then aft and back to neutral to check for proper operation of the shifting motion. Be careful. Leave the engine in gear for only a second or two.

S - 5 MANEUVERING



Boat steering is not self-centering. Steering is effected by engine and propeller torque, trim tab setting, wave and current action and the speed of the hull through the water. Constant attention to steering is required for safe operation.

When all your pre-departure checks have been completed and the engine has warmed up, you will be ready to leave the dock. Take into account the amount of wind, tide current, and other forces that may affect your maneuvering as you leave the dock. Idle speeds work best when maneuvering to and from the dock. Do not forget to release the mooring lines.

A. Leaving the Dock

You are ready to leave the dock after the engine has warmed up. Check all gauges for appropriate readings before casting off. If oil pressure is abnormally low or engine temperature is abnormally high, stop the engine immediately. Check voltmeter to be sure the charging system is working properly. Check for fuel, oil, and exhaust leaks. Correct the cause of any abnormal condition before getting underway.



WARNING

Make sure passengers do not obstruct the operator's vision when casting off or while underway.

After making sure your boat is ready, check wind, tide, current and other forces that will affect the way you maneuver your boat away from the dock. Throw mooring lines off to your boat. Shift your boat's engine into forward or reverse depending on whether you want to move the bow or the stern away from the dock first. Run your engine at a slow speed as you move away from the dock. If you move the bow out first, watch that the stern of the boat does not swing into the dock or a piling.

Once away from the dock, devote some time to learning how to maneuver. Practice docking using an imaginary dock. Practice stopping and reversing.

B. Stopping

Boats have no brakes. Stopping is accomplished by backing down on the throttle. Practice stopping maneuvers and learn early how your boat reacts. From forward motion, pull the throttle back towards NEUTRAL. Depending on your speed, the distance the boat travels until it comes to a complete stop will vary. The ability to measure the distance will only be acquired through experience.

Once the boat has slowed and motor is idling, place the shift in REVERSE. Gradually increasing reverse power with the throttle will allow you to stop the boat in a very short distance.

NOTE: A boat will not respond to steering in reverse nearly as well as it does when going forward, so do not expect to accomplish tight turning maneuvers when backing up.

Remember that all boats steer by the stern (the feeling is much like steering your automobile in reverse). This means that the stern of your boat will swing in the direction opposite to your turn. For example, when you turn the helm wheel to the left, the stern of your boat will swing in the direction opposite to your turn. This is especially important to keep in mind when docking, operating in close quarters with other boats, or when approaching a swimmer or downed skier in the water.

Always look behind you and to both sides of the boat before slowing down. Tell your passengers your intentions to allow them time to make adjustments to their balance or positions.

Slowly pull back on throttles, glance back and see if a large following wave is approaching the transom. If so give the engines a little throttle as the wave arrives to keep wave from rolling over the transom.

Once you have spent enough time practicing maneuvers and have a feel for how the boat handles, you will be ready to run in open waters.

S - 6 ACCELERATION



WARNING

Before accelerating to bring your boat on plane, be sure that the area in front of your boat is clear. The bow will rise out of the water momentarily before you plane and may temporarily obstruct your vision.

If you have never had your boat on plane before, choose a calm day for your first on plane experience. Never boat beyond your ability and experience.

Before bringing your boat "on plane", check the entire area to make sure you have a clear, safe path. As you throttle up to accelerate, your boat will increase its angle of trim, causing the bow to ride high. From a maximum angle, the boat will level out to its planing attitude with continued acceleration. This maximum angle is known

as the “hump”. Because visibility, handling, and performance are reduced, it is advisable to get “over the hump” as soon as possible. A few seconds at full throttle should get the boat over the hump and into its planing attitude.

After getting over the hump, accelerate until reaching a comfortable plane, then throttle down to cruising speed. This also will provide for better fuel efficiency.

S - 7 TRIMMING YOUR BOAT

Trim tabs are used to add lift to the boat’s stern, thereby changing the boat’s attitude (see Figure S1). This lift can help the boat get on plane faster and remain on plane at slower speeds than if no tabs were used. Used independently, tabs can also correct listing conditions caused by crosswinds, unbalanced loading and quartering seas. Trimming your inboard boat properly involves setting the trim tabs.

When you are sitting dead in the water, your trim tab switches are in the BOW UP position. Accelerate until you get onto plane. At this point your boat will be plowing through the water with the bow down too far. Trim the tabs down slightly until the bow comes up. If you trim the tabs down too far, the propeller will cavitate. Your boat is trimmed correctly when it is just short of propeller cavitation, under ideal running conditions.

Trim your boat to compensate for seas, winds, or uneven loads.

Head Seas	Use tabs to keep bow down and go at a slower speed.
Following Seas over	To prevent taking seawater over the bow, keep tabs up to keep bow up.
Listing Due to Quartering Seas, Beam Wind, or Uneven Load	Use tabs independently to adjust for list. If listing to starboard, press port bow down switch. If listing to port, press starboard bow down switch.

Remember that most boats react very slowly to trim tabs. Often boat owners do not give trim tabs time to work. Press the trim tab switches for only one second at a time and then allow some time for the boat to react. If the boat is still listing after a minute or two, press the trim tab switch again for a one second interval. The labels on the trim tab switches indicate what you want your boat to do, not what you want the tabs to do.

It is a good idea to take your boat out onto open water shortly after you get it and experiment with the trim tabs. After you get your boat onto plane, set the tabs in various positions and note how your boat reacts. This will give you a feel for how the trim tabs work.

It is possible to extend the cylinder life expectancy on your trim tabs. To do this, keep the cylinders retracted while at dockside. Press both trim tab controls down until tabs reach their full up position.

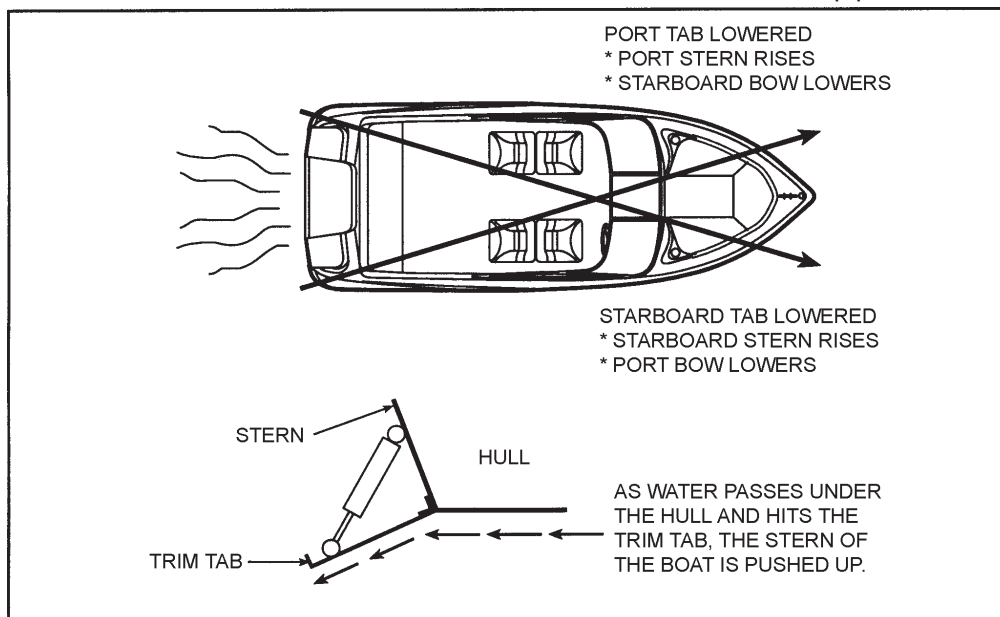


Figure S1: Trimming the Boat with Trim Tabs

S - 8 NAVIGATION LIGHTS

Although night activities are limited, cruising at night can be very pleasurable. It can also be dangerous if you don't pay close attention to water levels and obstacles. Be especially careful of shallow waters and watch for submerged debris, rocks and other obstacles in the water. Your navigation lights are intended only to prevent collision, not to improve your night vision. You may choose to use a spotlight instead.

NOTE: It is illegal to use your spotlight as a headlight. Use it only temporarily to check the position of your boat and the surrounding area.

Your boat has one white (stern), one red (port) and one green (starboard) light. The stern light may be a removable pole light. To use the light, line up the two-prong plug in the pole with the receptacle in the base. Plug the light in, and lock it into place with lever/slide lock. When not in use, stow the light inside your boat for safekeeping. This light can be turned on or off at the helm.

Check lights for proper operation before heading out at night. You should also learn to identify the running light combinations for other vessels. We recommend that you participate in a boating safety course to further learn about navigation lights and safe boating practices.

The anchor lights and navigation lights are controlled by a switch at the helm. The anchor light switch allows you to turn on just the stern (white) light when anchored or moored. While underway, use the navigation light switch to turn on the stern (white), port (red) and starboard (green) lights. Lights are off when switches are in the OFF position.

S - 9 HAZARDOUS CONDITIONS

A. Storms

Storms sometimes appear without advance notice. Although weather information from meteorological observation and reporting stations is available, weather bureaus are known to have failures in their predictions or information gathering equipment. There is no substitute for a strong understanding of what action to take when the weather takes a turn for the worse. Many marinas fly weather signals. You should learn to recognize these signals and monitor your local weather forecasts before leaving port.

The present and forecasted weather conditions are of primary consideration, but a threat of possible storms should always be a concern. Observance of the following information will help in your safety afloat if storms do occur:

- Keep a watch on the horizon for approaching storm indicators.
- Turn radio ON. Dial in local weather station and monitor forecast. If your boat has a VHF radio, check the weather channels.
- The best possible situation is to return to a safe port if time allows.
- Close and secure all portals and hatches. Stow all loose gear below deck and tie down any gear required to remain on deck.
- Reduce speed as the seas build. Make sure all passengers are wearing their PFDs.
- If you lose power, keep the boat headed into the waves by rigging a sea anchor off the bow. If there is no sea anchor on board, use a canvas bucket or any object that will offer resistance.
- Radar reflectors (if installed on your boat) should be 18 inches diagonally and placed 12 feet above the waterline.

B. Fog

Fog is a result of either warm surface or cold surface conditions. You can judge the likelihood of fog formation by periodically measuring the air temperature and dew point temperature. If the spread (difference) between these two temperatures is small, you likely will incur a fog situation. Remember the following guidelines:

- Turn on running lights.
- As fog sets in, take bearings and mark your position on the chart while continuing to log your course and speed.
- Make sure all persons aboard are wearing their PFDs.
- If your boat has depth finding equipment, take soundings and match them with soundings on your charts.

- Station a person forward on the boat as a lookout.
- Reduce your speed. From time to time, stop engine and listen for fog signals.
- Sound the proper horn or fog bell at proper intervals to warn other boaters.
- If there is any doubt in continuing boat movement, anchor. Listen for other fog signals while continuing to sound the proper fog horn or bell for a boat at anchor.

C. Running Aground



WARNING

To prevent boat damage, **DO NOT** use deck hardware or water ski pylon for towing. Use a commercial towing service.

Operating in shallow water can present a number of hazards. Sand bars in narrow inlets are constantly shifting, making it difficult to mark them with buoys. Sometimes sand bars are indicated by waves as they form into breakers when passing over sand bars. In coastal areas, tides can change water levels by as much as 30 feet. Check with local marinas or Coast Guard stations for tide tables and current charts.

If your boat runs aground, first check persons aboard for injury. Then check for damage to the boat. If the drive unit strikes an underwater hazard, check for boat and drive unit damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller. If vibration is noticeable, return to port slowly to prevent further drive and engine damage from an out-of-balance condition. Watch the temperature gauge to make sure you do not over-heat the engine.

If the boat is not taking on any water, it may be possible to rock the boat by shifting the weight of the passengers and gear and by raising the drive unit while reversing the engine.

If you ground your boat on a sand bar, shut down the engine and seek help from another boater or radio for help. See your dealer as soon as possible, as sand ingested in the engine cooling system can cause major engine damage.

D. Warning Markers

It is a good idea to find out about hazardous areas and how they are marked by asking your local authorities.

- Boaters must also recognize the flag designs which indicate that scuba divers are present and keep well clear of the area.
- Watch for swimmers. Swimming areas may not be marked. Steer clear from the area and always remain alert.
- Distress flags indicate a fellow boater is in need of assistance.
- Navigation markers serve as a means of identifying navigable routes and indicate water hazards. Boaters should become familiar with navigation markers and stay within marked boundaries and clear of hazards.

S - 10 REACTING TO EMERGENCIES

Be prepared to deal with emergencies before they happen. Try to formulate a plan for each type of emergency in advance so that decisions can be made quickly and without hesitation. Precious moments lost can mean the difference between losing and saving a life.

A. Flooding

If your boat starts taking on water, activate the bilge pump immediately. Make sure all passengers are wearing their PFDs. Open the engine compartment, look for the cause of the flooding. Check all hoses, through hull fittings, seacocks and strainers. If flooding occurs as a result of collision or grounding damage, call for assistance and head for shore if possible.

B. Capsizing and Man Overboard

By far, the largest number of boating fatalities involve capsizing and falling overboard accidents. By being prepared ahead of time with an appropriate plan of action, you can greatly lower your chances and your passengers' chances of becoming seriously injured.

C. Capsizing

Wear PFDs or have them readily available at all times. If your boat capsizes, and others were on board, locate them and guide them to the safety of the hull.

Even if the boat floats in an upside-down position, stay with it. The boat hull is much easier for rescuers to spot than a human head sticking out of the water. DO NOT attempt to swim ashore, it may be further than it looks.

D. Man Overboard

Think through and follow these procedures if someone in your boat falls overboard.

- Remember, every second counts, you must act fast.
- Move throttles to idle position immediately and yell “MAN OVERBOARD.”
- Throw some floating object overboard immediately. Keep your required Type IV PFD accessible at all times for such an emergency.
- Keep the person in the water in sight at all times. Have a passenger do nothing but watch the person. Do not go into the water to help the victim. One person in the water is enough trouble.
- Circle around quickly, approaching into the wind and waves. When the person is alongside, put the engine in neutral and throw them a Type IV PFD with a line attached or extend a paddle or boat hook within his/her reach.

E. Collision

If a serious collision occurs, you should first check the condition of all passengers aboard, then inspect your boat to determine the extent of damage.

1. Make sure all persons aboard are wearing their PFDs.
2. If you need help and your boat has a ship-to-shore radio, first contact the U.S. Coast Guard (VHF Channel 16) or other rescue authorities immediately.
3. Prepare to assist the other vessel unless your passengers and/or boat are in danger.
4. If the bow of the other boat penetrated your boat’s hull, prepare to block the opening once the boats are separated.

5. Shore up the hole with a spare PFD or bunk cushion from your boat.
6. While blocking the hole, trim the boat so that the hole is out of the water.

F. Fire

Most fires are caused by electrical problems or careless fueling practices. A fire on board your boat is a serious emergency. You must work quickly to implement safety procedures. If a fire occurs, immediately stop the engine.

1. Make sure all persons aboard are wearing their PFDs.
2. If the fire is small, attempt to put it out with your fire extinguisher. If the fire is in the engine compartment, turn off the bilge blower. Do not open the engine compartment. This feeds oxygen to the fire and may cause it to flare up.
3. If the fire gets out of control, execute a distress signal and call for help if equipped with a ship-to-shore radio.
4. All persons aboard should jump overboard and swim a safe distance away from the flames.

IMPORTANT: All persons aboard should know the location and proper operation of the fire extinguishers.

Guidelines

- Use only approved marine cooking and heating systems.
- Open flames demand constant attention.
- Keep flammable materials in approved containers in a overboard vented locker sealed from the interior of the boat.
- Ensure ventilation systems are unobstructed.
- Remove mooring covers before starting engine.
- Check the bilge for fuel leaks.
- Extinguish smoking materials carefully.
- Use special care with flame or high temperatures around urethane foam.

- Check cleaning products for flammability.
- Ventilate when cleaning or painting.
- Disconnect electrical system from its power source before performing maintenance.
- Replace breaker or fuse with same amperage device.
- Electrical appliances must be within rated amperage of boat circuits. Observe the boat carefully while the electrical system is being energized.
- Allow only a qualified marine electrician to service the boat's electrical system.

G. Medical Emergency

Accidents while boating can and may happen. Be prepared to handle these emergencies when they happen. Keeping a first aid kit and dry blankets on board can assist during these situations. It is also a good idea to contact your local Red Cross for information and training on first aid and CPR.

H. Propulsion Failure

Before you call for help regarding an engine or drive unit failure, it is a good idea to eliminate the possibility of simple problems. Turn off the engine and check to see that (1) there is fuel in the tank; (2) the engine cooling intakes on the outdrive are not clogged; (3) props are clean and free of weeds, netting, etc.; (4) no hoses are leaking; (5) there is oil in the engine.

Once you have checked out the possibilities listed above and find they are not the problem, call for help giving your position and a detailed description of your boat.

I. Control Failure

In the unlikely event of a shift/throttle failure, shut down the engine immediately. Carefully check the control connections in the engine compartment to see if they are secure. If not, try to locate the attaching hardware and reassemble. If that is not possible, try to use whatever is available such as paper clips, hair clips, tape, etc., to secure the connections. If a temporary repair is made, return to port at the slowest steerable speed and be prepared to take emergency action should the temporary repair fail also. Have your dealer make repairs before using the boat again.

J. Steering Failure

If a problem with the steering occurs, shut down the engine immediately. Check the connections to the outboard motor or drive unit in the engine compartment. Some boats have a push/pull cable while others will have hydraulic hose connections. With cable connections, check the attaching hardware and tighten it if necessary. If you have hydraulic hose connections, check to see if they are leaking. If so, tighten the connections and check the hydraulic fluid reservoir level. Most stern drives are power assisted and have their own hydraulic reservoir and engine mounted drive pump; check the level of reservoir and drive pump belt. If the steering is not operating properly, do not operate the boat and call for assistance.

K. Additional Underway Information

- Always be aware of local laws on noise limits. Noise means engine noise, radio noise or even yelling by people on your boat. Good seamanship demands that you operate your boat quietly so as not to infringe on the rights of others. Don't use thru-transom exhaust unless you are well off shore.
- You are responsible for any damage or injury caused by your boat's wake. Observe no wake speed zone warnings. Operate your boat with regard for the safety of other boats and people in your boating area.
- Keep your engine well tuned to decrease exhaust hydrocarbon emissions that pollute the air and water.

S - 11 RETURNING TO SHORE

A. Docking

Always approach the dock slowly. Think before acting. If you are wondering whether your boat will fit in a space against a dock, remember that pilings are often (but not always) spaced 10 feet apart.

Remember that it is easier to control a boat in reverse because a boat steers from the stern. When backing into a slip, back so that bow swings into the wind if possible. You will have more control.

If you have a twin engine boat, center the steering wheel. Use the throttles and shifters to control the boat's movement.

If possible, come in against the wind or current, whichever is stronger. Approach the dock at a 30-45° angle. As the boat nears the dock, slowly swing parallel to it. Tie the bow line first; then the stern.

If wind or current is moving toward the dock, move parallel to the dock further out. Let the wind or current push you in. Tie the stern first, then the bow.

Use extreme caution if wind or current is from your stern. Back in towards the dock slowly at a slight angle with engine in slow reverse. Gently swing parallel. Tie the stern first, then the bow.

If the weather looks bad, use spring-lines from the bow and stern to dock amidships of the boat. Tie up on the downwind side of the dock. If the wind is changeable, place fenders over the side between the boat and the dock.

B. Mooring

After you have positioned your boat next to the dock, you must secure it with mooring lines to keep it in position. Mooring lines must be long enough to secure your boat in any docking situation. For example, the length of the lines for a 16-foot runabout should be at least 15 feet. An eye splice at the end of each line works well with bow or stern cleats.

The mooring lines you will use most often are the bow line, the stern line, and spring lines as shown on Figure S2. Each line has a specific purpose. The bow line and the stern line secure your boat's bow and stern. The two spring lines keep your boat from moving forward or backward when you are moored alongside a dock.

If you are mooring your boat for a short time, bow and stern lines may be the only lines you will need. If you are mooring your boat for a longer time or the currents are swift, you should use spring lines. The stern spring line leads from the boat's stern cleat forward to the piling or cleat on the dock. The bow spring line leads from the bow cleat aft to the dock.

If you are mooring your boat in a slip, bow and spring lines, port and starboard, will keep your boat in position.

NOTE: If tides are a consideration, be sure to leave slack in the lines to make up for the rise and fall of the water while your boat is docked.

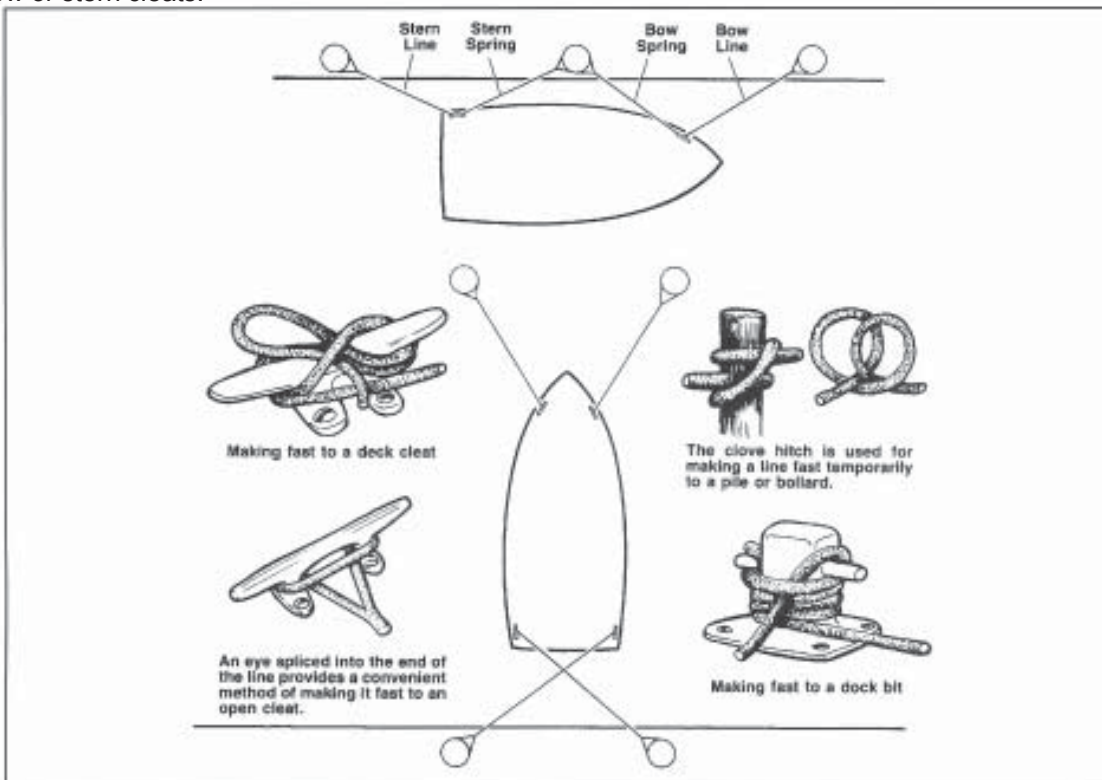


Figure S2: Mooring Lines

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 draw of an electrical current.

ANCHOR RODE OR ROPE - The line (chain) connecting a vessel to its anchor.

ANCHOR BALL - A black, circular, day signal hoisted to show that a vessel is anchored. Replaced at dusk by the anchor light.

ASTERN - Anywhere behind the boat, a reverse direction, opposite of ahead.

ATHWARTSHIPS - A line, or anything else, running perpendicular to the fore-and-aft center line of a boat.

BATTEN - A strip of wood or metal used to secure tarpaulin(s) in place over a hatch. To batten down means to secure for rough weather.

BEAM - 1. The widest distance across a boat from the outside skin on one side to the outside skin on the other. 2. A transverse structural member that stiffens and supports a portion of the deck.

BEAM WIND - A wind blowing against the side of the vessel, perpendicular to the long axis of the vessel.

BILGE - The lowest interior area of a hull, used to collect water that has entered.

BILGE PUMP - A pump intended for removal of spray, rainwater, and the normal accumulation of water due to seepage and spillage; not intended for damage control.

BINNACLE - The stand or support for a magnetic compass occasionally used to mean helm.

BITT - A heavy and firmly mounted piece of wood or metal used for securing lines.

BLOCK - A wooden or metal case enclosing one or more pulleys and having a hook, eye, or strap by which it may be attached.

BOLLARD - A single post (wood, metal, or concrete) on a dock, pier, or wharf used to secure a vessel's lines.

BONDING - The electrical connection of exposed metallic, non-current carrying components to a common point on the main engine block.

BOW - The front end of the boat.

BOW LINE - A docking line leading from the bow.

BREAKER - A single breaking, plunging or spilling wave.

BREAKER LINE - The outer limit of the surf. However, all breakers may not be in a line. They can occur outside the breaker line.

BRIDGE - The main vessel control station.

BROACH - The turning of a boat parallel to the waves, subjecting it to possible capsizing.

BULKHEADS - The interior walls of a boat.

BULWARK - The side of a vessel when carried above the level of the deck.

BUOY - An anchored float used for marking a position on the water, a hazard, or a shoal.

CAPSIZE - To turn over.

CAPSTAN - A machine that moves a cylindrical device on a shaft for the purpose of hauling up an anchor.

CAST OFF - To let go.

CATAMARAN - A twin-hulled boat, with the hulls being side-by-side.

CHINE - The intersection of a boat's bottom and side. If this intersection is rounded, it is a "soft" chine. If the intersection is squared off, it is a "hard" chine.

CHOCK - 1. A fitting or hole in a railing or deck through which a mooring or anchor line is routed. 2. A wedge used to secure an item in place.

CIRCUIT BREAKER - A device used to interrupt an electrical circuit when current flow exceeds a predetermined level.

CLEAT - A double-ended deck fitting to which lines are secured; usually anvil-shaped.

COAMINGS - Raised lips around cockpits or hatches used to keep water from entering

COCKPIT - An exposed deck area (usually aft) that is substantially lower than the adjacent deck.

COMBER - A wave on the point of breaking. A comber has a thin line of white water on its crest, known as "feathering."

COMPANIONWAY - The steps or ladder leading downward from a deck.

COMPARTMENTS - Rooms divided by bulkheads.

COUNTER - The overhang at the stern of a boat.

CRADLE - A framework, generally made of wood, used to support a boat when it is out of the water.

CREST - The top of a wave, breaker or swell.

CUDDY - A small sheltered cabin in a boat.

CURRENT -1. The movement of water, 2. The flow of electrical charge.

DEAD AHEAD - Directly in front of the boat.

DEAD RECKONING - A plot of courses steered and distances traveled through the water.

DECK - A permanent covering over a compartment, hull or any part thereof.

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 coastal waters.

INTERNATIONAL RULES - Nautical "Rules-of-the-Road" that are in effect by international agreement to the high seas.

ISOBARS - Lines of equal air pressure that connect all the local points on a weather map. These lines are usually closed and define high or low pressure air masses.

ISOTHERMS - Isotherms are lines that are similar to isobars except that isotherms connect all the points that are of equal temperature.

JETSAM - Refuse that sinks when discharged overboard.

KEDGE(S) - One or more anchors set out from a grounded vessel, usually astern, to 1) keep it from being driven further aground and 2) to aid in refloating.

KEEL - 1. The centerline of a boat hull bottom running fore and aft, 2. The backbone of a vessel.

KNOT - 1. A maritime unit of speed equal to one nautical mile per hour (6076 feet). 2. A term for hitches and bends.

LANYARD - A short line made fast to an object to secure it.

LATITUDE - The measure of angular distance in degrees, minutes, and seconds, north or south of the equator.

LAZARETTE - Storage compartment in the deck at the stern.

LEADLINE - A weighted line used to take depth measurements.

LEE - The direction opposite that of the wind.

LEEWARD - Away from the wind.

LIST - A vessel that inclines to port or starboard.

LORAN - Long Range Navigation. An electronic system whereby a navigator can determine position regardless of weather.

LONGITUDINAL - Running lengthwise.

LOWS - A region of low atmospheric pressure. Hurricanes are extremely concentrated low pressure systems.

LUBBER LINE - A mark or line on the compass parallel to the keel indicating forward.

MAST - A spar that is set upright to support lighting, rigging, or sails.

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 markers are on the right when returning from seaward.

REEF - A shallow underwater barrier.

REEVE - To pass a line through a block or other opening.

RIDGES - High pressure fingers extending out from a high.

RODE - The anchor line or chain.

RUNNING LIGHTS - Lights required to be shown on boats underway between sundown and sunup.

RUDDER - A vertical plate for steering a boat.

SALON - The main social cabin on a vessel, usually the largest area, occasionally referred to as the deckhouse.

SCREW - A propeller.

SCUPPER - A drain from the edge of a deck that discharges overboard.

SEACOCK - A positive action shut-off valve connected directly to the hull seawater intake and discharge piping.

SERIES - A group of waves which seem to travel together and at about the same speed.

SHACKLE - A "U" shaped connector with a pin or bolt across the open end.

SHAFT - The long, round member that connects the engine or transmission to the propeller.

SHAFT LOG - A fitting at the hull bottom where the shaft connecting an engine to its propeller penetrates the hull. A shaft log permits the shaft to rotate while simultaneously preventing water from entering the hull.

SHEER - The top of the hull's curvature at the deck line from the bow to the stern.

SHEER STRAKE - The upper edge of the hull, immediately below the deck.

SHEET BEND - A knot used to join tow ropes.

SHOAL - An area of shallow water.

SILENCER - A baffled chamber installed in an exhaust system to reduce the noise.

SOLE - Term for deck, cabin or cockpit floor.

SPAR - A general term for booms, masts, yards etc.

SPRING LINE - A pivot line used in docking, 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.

FLOAT PLAN

Copy this page and fill out before going boating. Leave the completed copy with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return as scheduled. DO NOT file this plan with the Coast Guard.

Name _____ Telephone _____

Description of Boat _____ Type _____ Color _____ Trim _____

Registration Number _____

Length _____ Name _____ Make _____

Four Winns® Hull Identification Number _____

Other Information _____

Persons Aboard: Name	Age	Address	Telephone

Engine Type _____ HP _____

Number of Engines _____ Fuel Capacity _____

Survival Equipment:

PFDs _____ Flares _____ Mirror _____

Smoke Signals _____ Flashlight _____ Food _____

Paddles _____ Water _____ Anchor _____

Raft or Dinghy _____ EPIRB _____ Sea Anchor _____

Navigation Equipment:

Compass _____ Loran _____ GPS _____ Radar _____

Radio: Yes _____ No _____ Type _____ Frequency _____

Phone: Yes _____ No _____ Phone Number _____

Destination _____ Estimated Time of Arrival _____

Expected to Return By _____

AutoType _____ License No. _____ Where _____

If not returned by _____ call the Coast Guard, or _____

Local Marine Authority

Coast Guard Telephone Number: _____

Local Marine Authority Telephone Number: _____

FUEL LOG

DATE	HOURS RUN	FUEL (GAL.)	RANGE (MILES)	RPM	MPH	GPH

FUEL LOG

DATE	HOURS RUN	FUEL (GAL.)	RANGE (MILES)	RPM	MPH	GPH

FUEL LOG

DATE	HOURS RUN	FUEL (GAL.)	RANGE (MILES)	RPM	MPH	GPH

SERVICE LOG

DATE	HOURS	MAINTENANCE PERFORMED

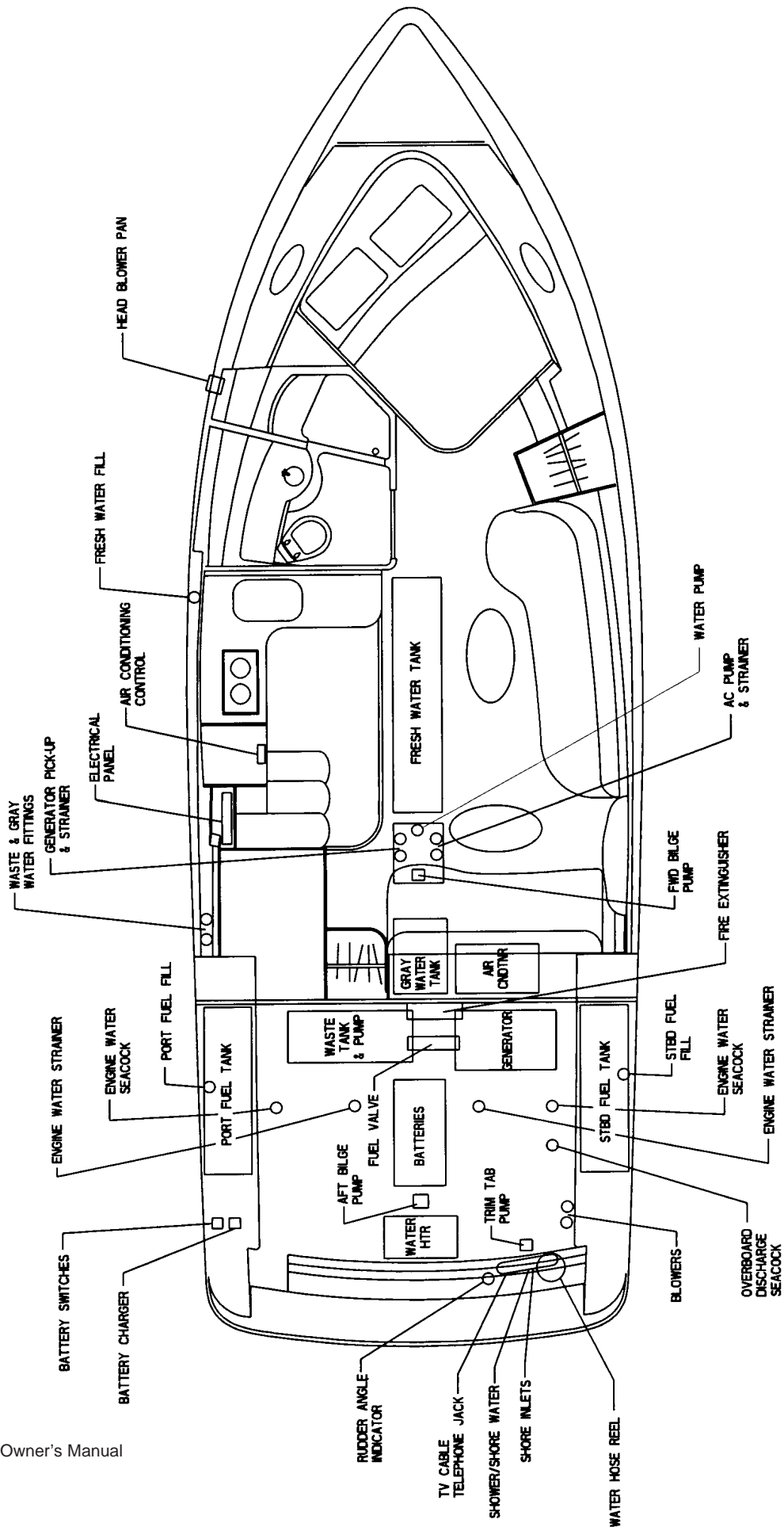
SERVICE LOG

DATE	HOURS	MAINTENANCE PERFORMED

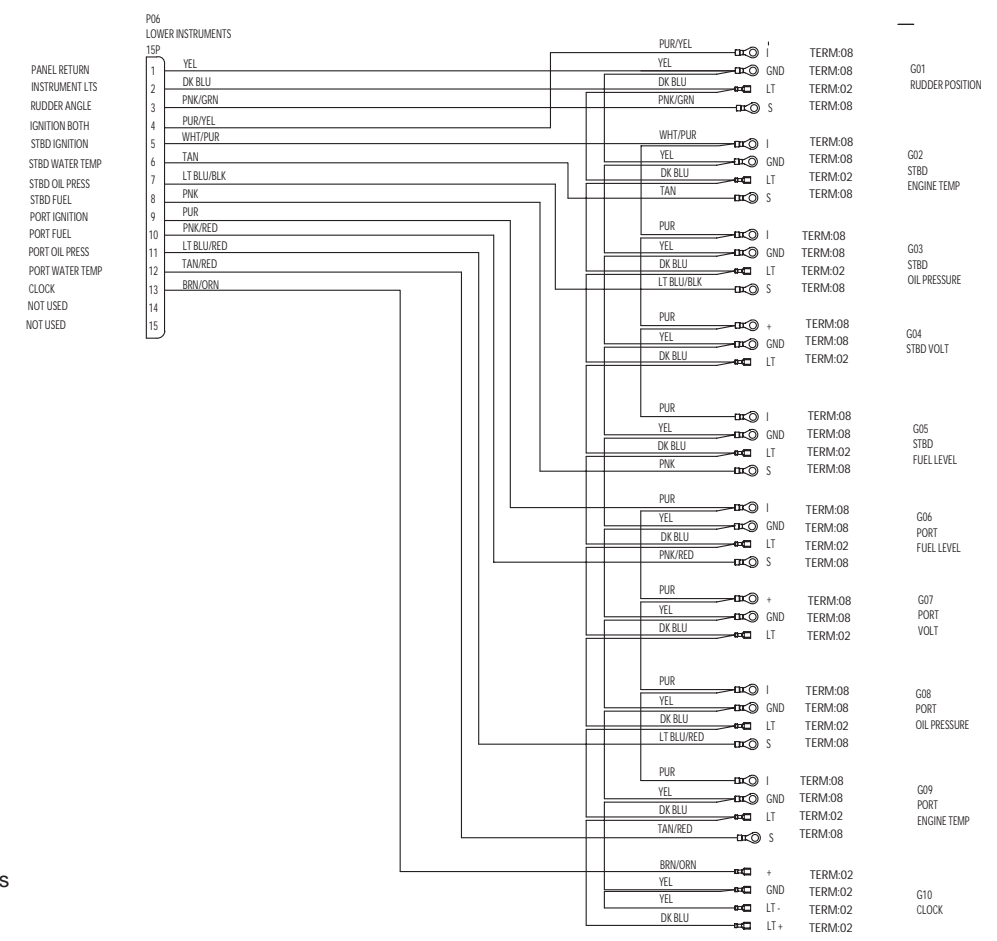
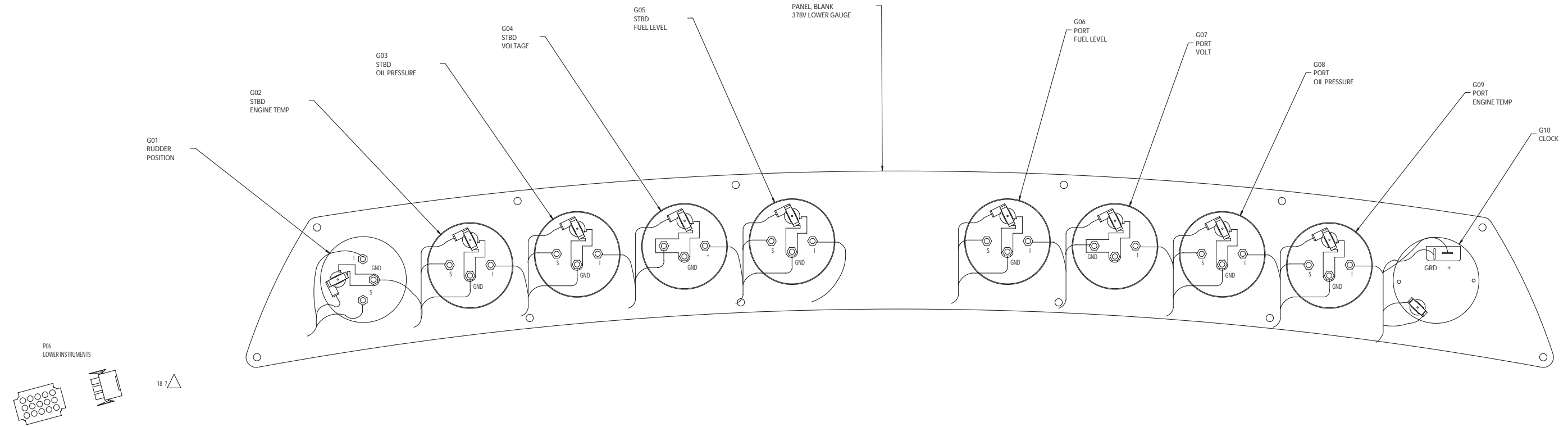
SERVICE INFORMATION

BOAT MODEL	
HULL IDENTIFICATION NUMBER	
ENGINE MODEL	
ENGINE SERIAL NUMBER(S)	
DRIVE MODEL	
DRIVE SERIAL NUMBER(S)	
PROPELLER DIAMETER	
PROPELLER PITCH	
PROPELLER PART NUMBER(S)	
OIL FILTER NUMBER	
BOAT COLOR	
COCKPIT UPHOLSTERY COLOR	
CABIN UPHOLSTERY COLOR	
FUEL CAPACITY	
FUEL: ESTIMATED AVG. GALLON/HR USAGE	
IGNITION KEY NUMBER(S)	
GLOVE BOX KEY NUMBER	
COMPANIONWAY KEY NUMBER	
TRAILER MODEL	
TRAILER COLOR	
TRAILER SERIAL NUMBER	
TRAILER TIRE SIZE & MANUFACTURER	
SELLING DEALER	
ADDRESS	
CITY & STATE	
PHONE NUMBER	
MISCELLANEOUS	

378 VISTA LOCATOR DRAWING



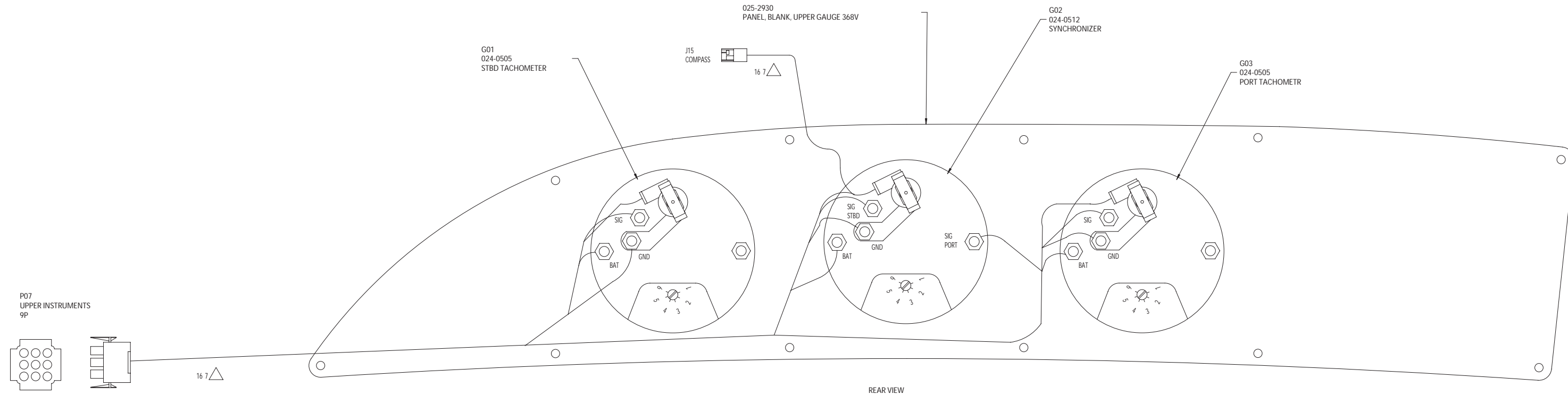
025-2932
PANEL BLANK
378V LOWER GAUGE



FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	14	TERM.FASTON,250,18-14	02	AMP
	028-0189	25	TERMINAL,RING,PG.#8,16-14	08	AMP
	028-0390	14	SOCKET,UMNL,18-14	41	AMP
	025-2932	1	PANEL BLANK, LOWER GAUGE, 378V	LOWER INSTRUMENTS	AMP
P06	028-0452	1	PLUG,UMNL,15 CKT		
G01	024-0504	1	GAUGE, RUDDER ANGLE	RUDDER ANGLE	FARIA
G02	024-0507	1	GAUGE, WATER TEMP, FARIA	STBD WATER TEMP	FARIA
G03	024-0509	1	GAUGE, OIL PRESSURE, FARIA	STBD OIL PRESSURE	FARIA
G04	024-0510	1	GAUGE, VOLTAGE, FARIA	STBD VOLTAGE	FARIA
G05	024-0511	1	GAUGE, FUEL, FARIA	STBD FUEL QUANTITY	FARIA
G06	024-0511	1	GAUGE, FUEL, FARIA	PORT FUEL QUANTITY	FARIA
G07	024-0510	1	GAUGE, VOLTAGE, FARIA	PORT VOLTAGE	FARIA
G08	024-0509	1	GAUGE, OIL PRESSURE, FARIA	PORT OIL PRESSURE	FARIA
G09	024-0507	1	GAUGE, WATER TEMP, FARIA	PORT WATER TEMP	FARIA
G10	024-0513	1	CLOCK	CLOCK	FARIA

378 VISTA
LOWER GAUGE
PANEL ASSEMBLY

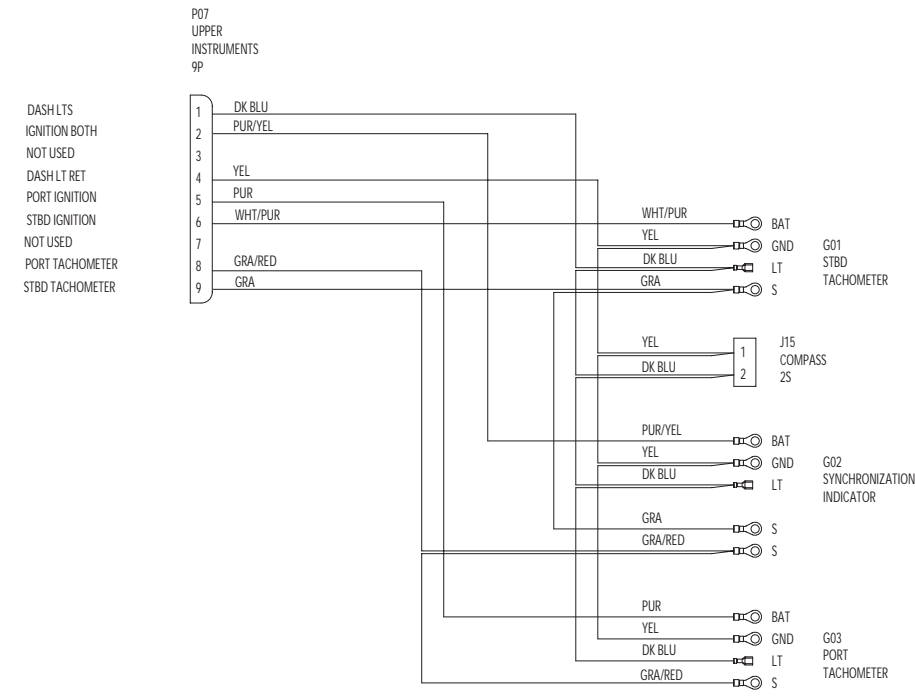


FOUR WINNS PARTS LIST

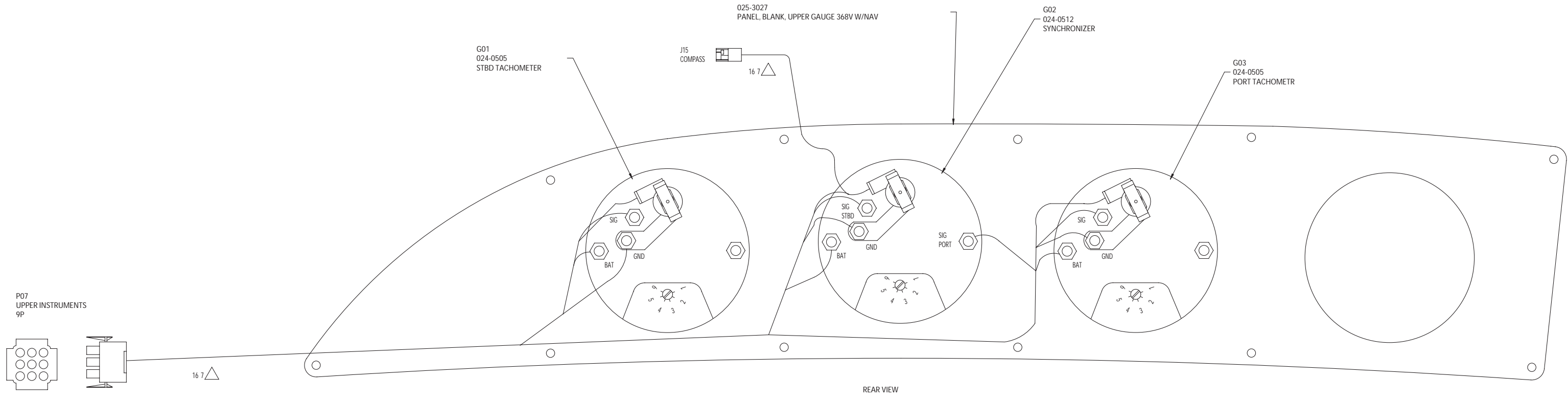
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	3	TERM,FASTON, 250,18-14	02	AMP
	028-0189	10	TERM,RING,#8,16-14	08	AMP
	028-0390	7	PIN,UMNL,18-14	41	AMP
	028-0454	2	SOCKET,UMNL,18-14	42	AMP
	025-2930	1	PANEL,BLANK,IGNI/SWTICH, 338V		
P07	028-0449	1	PLUG,UMNL,9 CKT	UPPER INSTRUMENTS	AMP
J15	028-0441	1	RECEPT,UMNL, 2 CKT	COMPASS	AMP
G01	024-0505	1	GAUGE,TACH, FARIA 6000RPM, TC9395	STBD TACHOMETER	FARIA
G02	024-0512	1	GAUGE, SYNCRO, FARIA	SYNCHRONIZER	FARIA
G03	024-0505	1	GAUGE,TACH, FARIA 6000RPM, TC9395	PORT TACHOMETER	FARIA

FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
DK BLU	16	P07	1	41		G01	LT	02	SA	STBD TACH LT
PUR/YEL	16	P07	2	41		G02	BAT	08		SYNC POWER
YEL	16	P07	4	41		G01	GND	08	SD	STBD TACH GND
PUR	16	P07	5	41		G03	BAT	08		PORT TACH POWER
WHT/PUR	16	P07	6	41		G01	BAT	08		STBD TACH POWER
GRA/RED	16	P07	8	41		G02	S	08	SG	SYNC PORT TACH SIGNAL
GRA	16	P07	9	41		G01	S	08	SH	STBD TACH SIGNAL
DK BLU	16	G01	LT	02	SA	J15	2	42	SB	COMPASS LT
DK BLU	16	J15	2	42	SB	G02	LT	02	SC	SYNC LT
DK BLU	16	G02	LT	02	SC	G03	LT	02		PORT TACH LT
GRA/RED	16	G02	S	08	SG	G03	S	08		PORT TACH SIGNAL
YEL	16	G01	GND	08	SD	J15	1	42	SE	COMPASS RET
YEL	16	J15	1	42	SE	G02	GND	08	SF	SYNC RET
YEL	16	G02	GND	08	SF	G03	GND	08		PORT TACH RET



**378 VISTA
UPPER GAUGE PANEL
ASSEMBLY W/ OUT NAV**



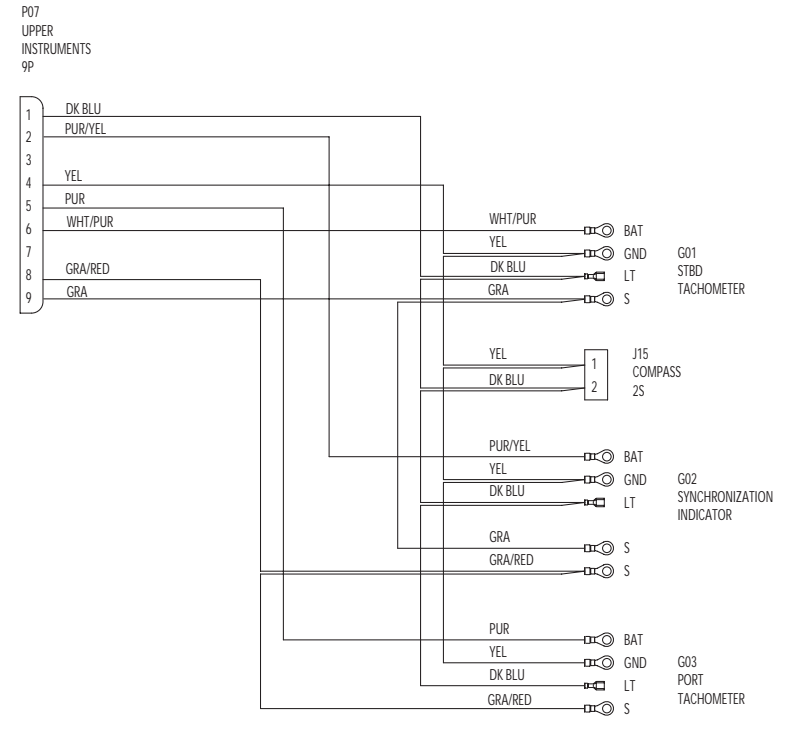
FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	3	TERM.FASTON, 250,18-14	02	AMP
	028-0189	10	TERM.RING,#8,16-14	08	AMP
	028-0390	7	PIN,UMNL,18-14	41	AMP
	028-0454	2	SOCKET,UMNL,18-14	42	AMP
	025-3026	1	PANEL,BLANK, 378V UPPER GAUGE W/NAV		
P07	028-0449	1	PLUG,UMNL,9 CKT	UPPER INSTRUMENTS	AMP
J15	028-0441	1	RECEPT,UMNL, 2 CKT	COMPASS	AMP
G01	024-0505	1	GAUGE,TACH, FARIA 6000RPM, TC9395	STBD TACHOMETER	FARIA
G02	024-0512	1	GAUGE, SYNCRO, FARIA	SYNCHRONIZER	FARIA
G03	024-0505	1	GAUGE,TACH, FARIA 6000RPM, TC9395	PORT TACHOMETER	FARIA

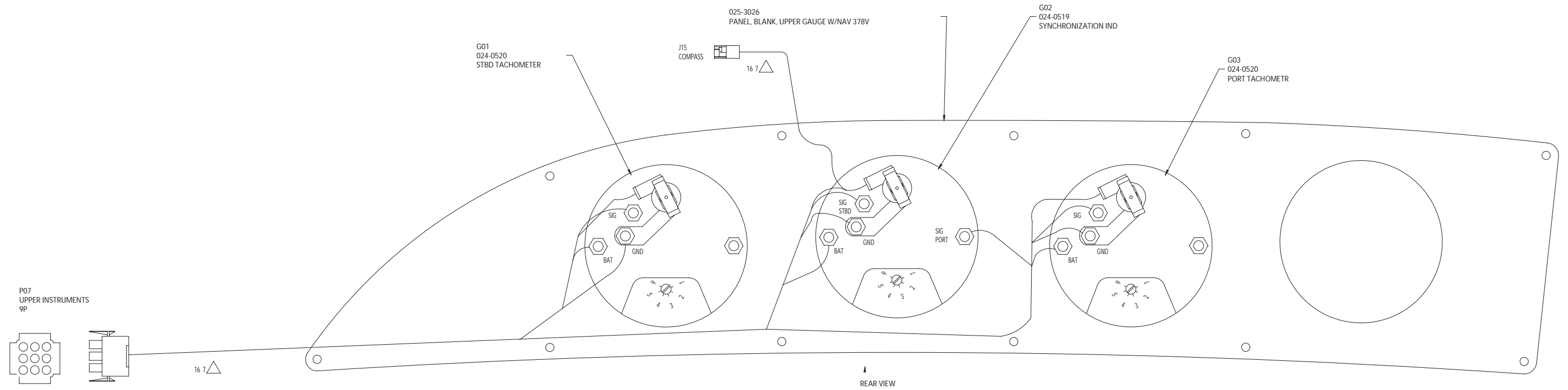
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
DK BLU	16	P07	1	41		G01	LT	02	SA	STBD TACH LT
PUR/YEL	16	P07	2	41		G02	BAT	08		SYNC POWER
YEL	16	P07	4	41		G01	GND	08	SD	STBD TACH GND
PUR	16	P07	5	41		G03	BAT	08		PORT TACH POWER
WHT/PUR	16	P07	6	41		G01	BAT	08		STBD TACH POWER
GRA/RED	16	P07	8	41		G02	S	08	SG	SYNC PORT TACH SIGNAL
GRA	16	P07	9	41		G01	S	08	SH	STBD TACH SIGNAL
DK BLU	16	G01	LT	02	SA	J15	2	42	SB	COMPASS LT
DK BLU	16	J15	2	42	SB	G02	LT	02	SC	SYNC LT
DK BLU	16	G02	LT	02	SC	G03	LT	02		PORT TACH LT
GRA/RED	16	G02	S	08	SG	G03	S	08		PORT TACH SIGNAL
YEL	16	G01	GND	08	SD	J15	1	42	SE	COMPASS RET
YEL	16	J15	1	42	SE	G02	GND	08	SF	SYNC RET
YEL	16	G02	GND	08	SF	G03	GND	08		PORT TACH RET

DASH LTS
IGNITION BOTH
NOT USED
DASH LT RET
PORT IGNITION
STBD IGNITION
NOT USED
PORT TACHOMETER
STBD TACHOMETER



378 VISTA
UPPER GAUGE PANEL
ASSEMBLY W/ NAV



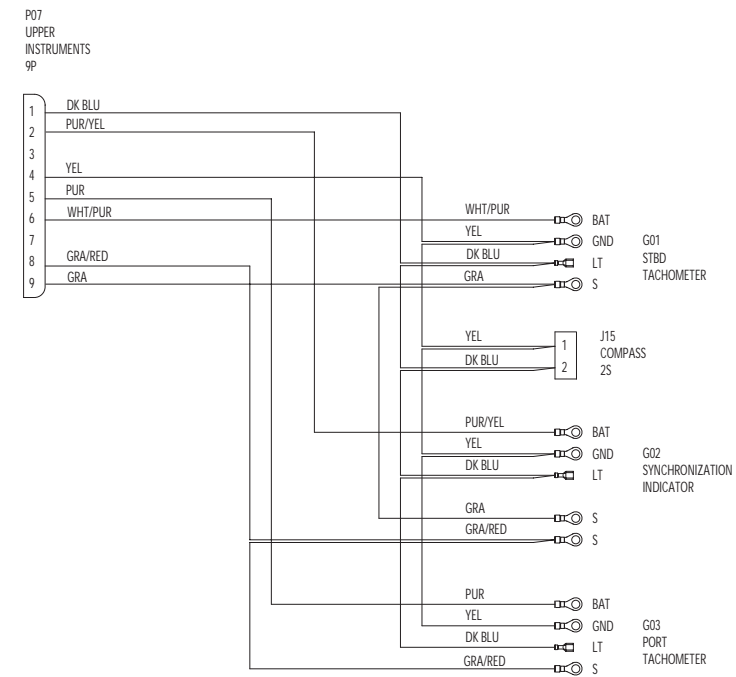
FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	3	TERM,FASTON,.250,18-14	02	AMP
	028-0189	10	TERM,RING,#8,16-14	08	AMP
	028-0390	7	PIN,UMNL,18-14	41	AMP
	028-0454	2	SOCKET,UMNL,18-14	42	AMP
	025-3026	1	PANEL,BLANK,UPPER GAUGE W/NAV, 378V		
P07	028-0449	1	PLUG,UMNL,9 CKT	UPPER INSTRUMENTS	AMP
J15	028-0441	1	RECEPT,UMNL, 2 CKT	COMPASS	AMP
G01	024-0520	1	GAUGE,TACH,DIESEL FARIA, TC9943	STBD TACHOMETER	FARIA
G02	024-0519	1	GAUGE, SYNCRO, FARIA, SY9758	SYNCRONIZER	FARIA
G03	024-0520	1	GAUGE,TACH, DIESEL FARIA, TC9943	PORT TACHOMETER	FARIA

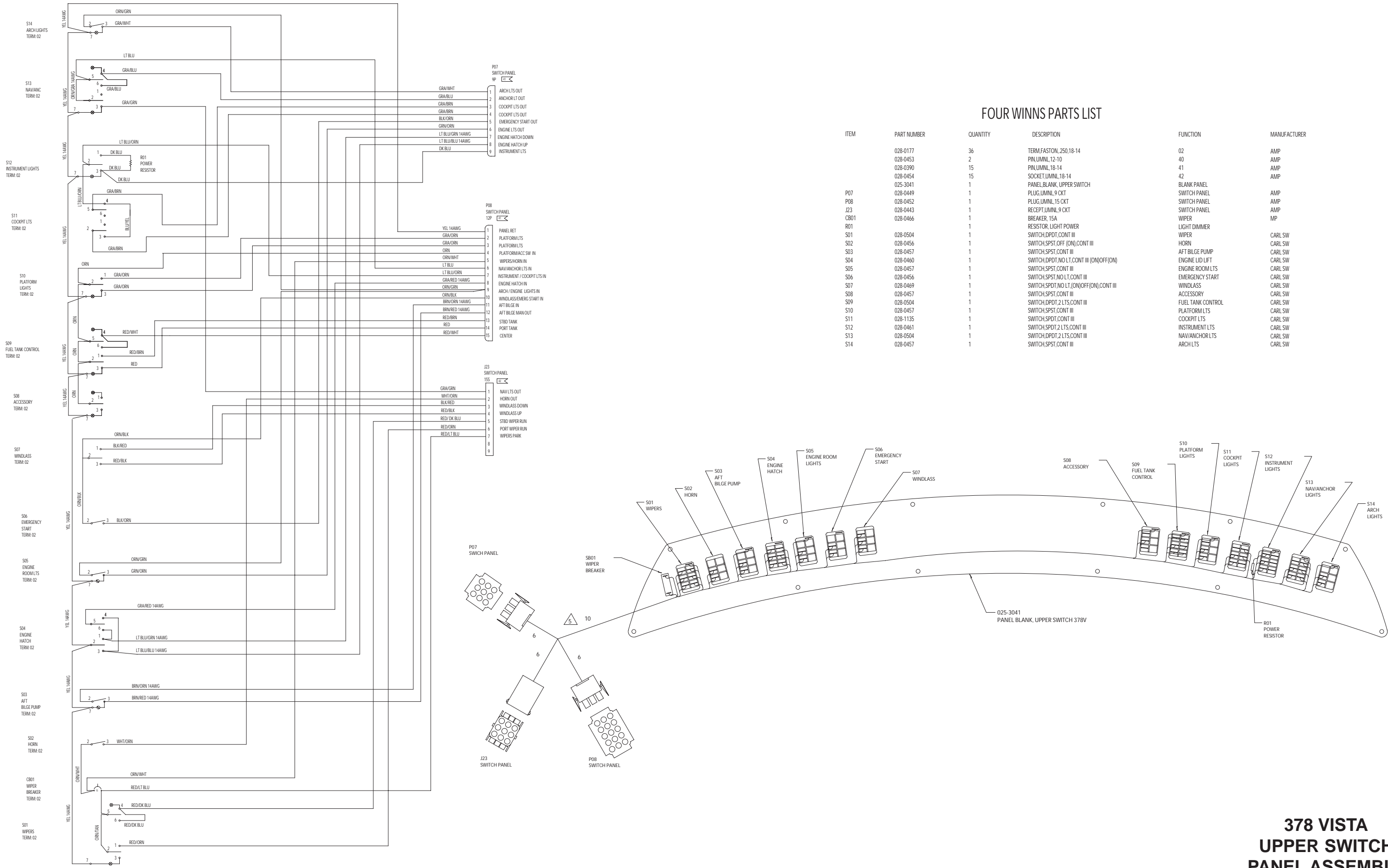
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
DK BLU	16	P07	1	41		G01	LT	02	SA	STBD TACH LT
PUR/YEL	16	P07	2	41		G02	BAT	08		SYNC POWER
YEL	16	P07	4	41		G01	GND	08	SD	STBD TACH GND
PUR	16	P07	5	41		G03	BAT	08		PORT TACH POWER
WHT/PUR	16	P07	6	41		G01	BAT	08		STBD TACH POWER
GRA/RED	16	P07	8	41		G02	S	08	SG	SYNC PORT TACH SIGNAL
GRA	16	P07	9	41		G01	S	08	SH	STBD TACH SIGNAL
DK BLU	16	G01	LT	02	SA	J15	2	42	SB	COMPASS LT
DK BLU	16	J15	2	42	SB	G02	LT	02	SC	SYNC LT
DK BLU	16	G02	LT	02	SC	G03	LT	02		PORT TACH LT
GRA/RED	16	G02	S	08	SG	G03	S	08		PORT TACH SIGNAL
YEL	16	G01	GND	08	SD	J15	1	42	SE	COMPASS RET
YEL	16	J15	1	42	SE	G02	GND	08	SF	SYNC RET
YEL	16	G02	GND	08	SF	G03	GND	08		PORT TACH RET

DASH LTS
IGNITION BOTH
NOT USED
DASH LT RET
PORT IGNITION
STBD IGNITION
NOT USED
PORT TACHOMETER
STBD TACHOMETER

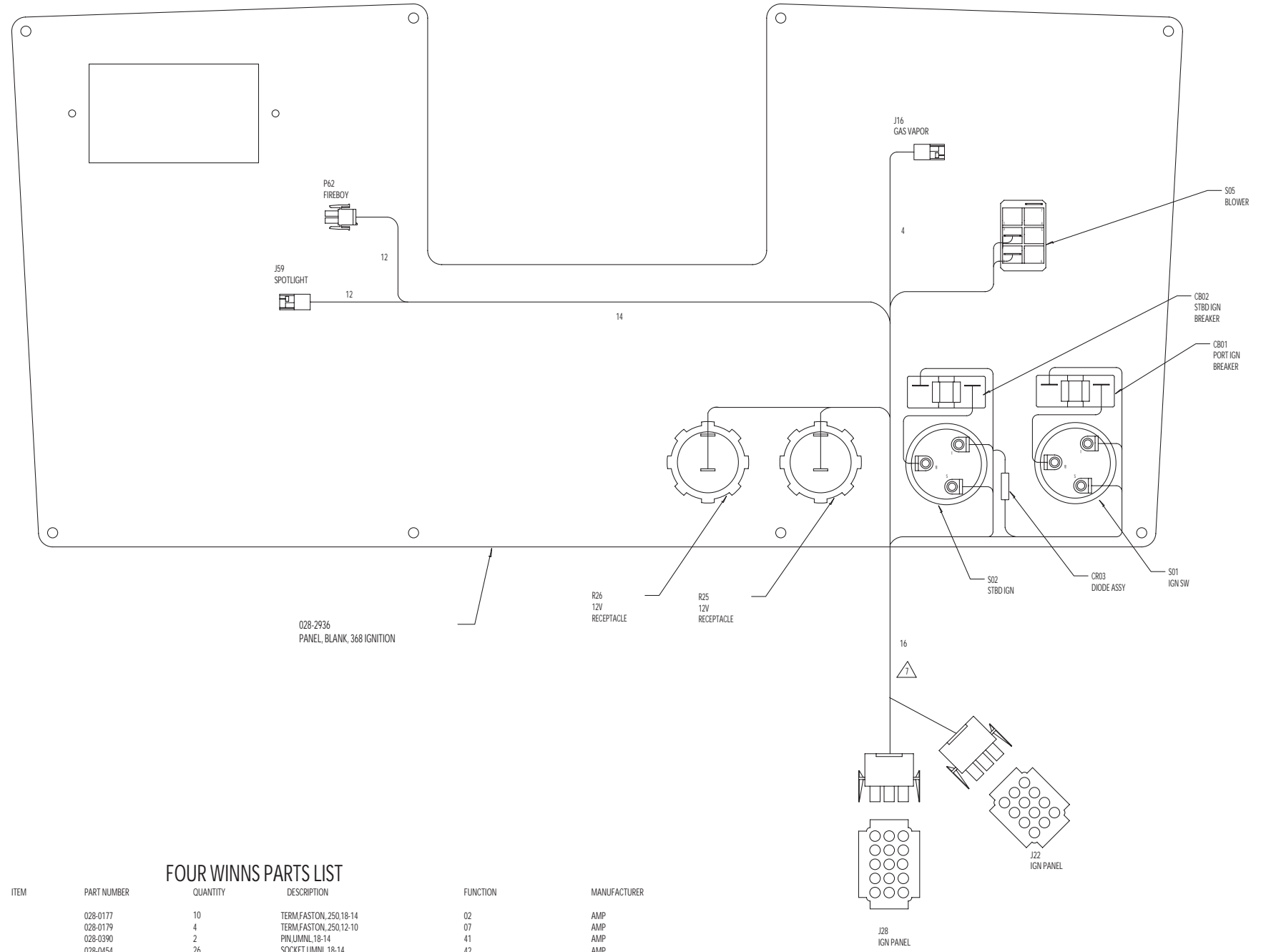
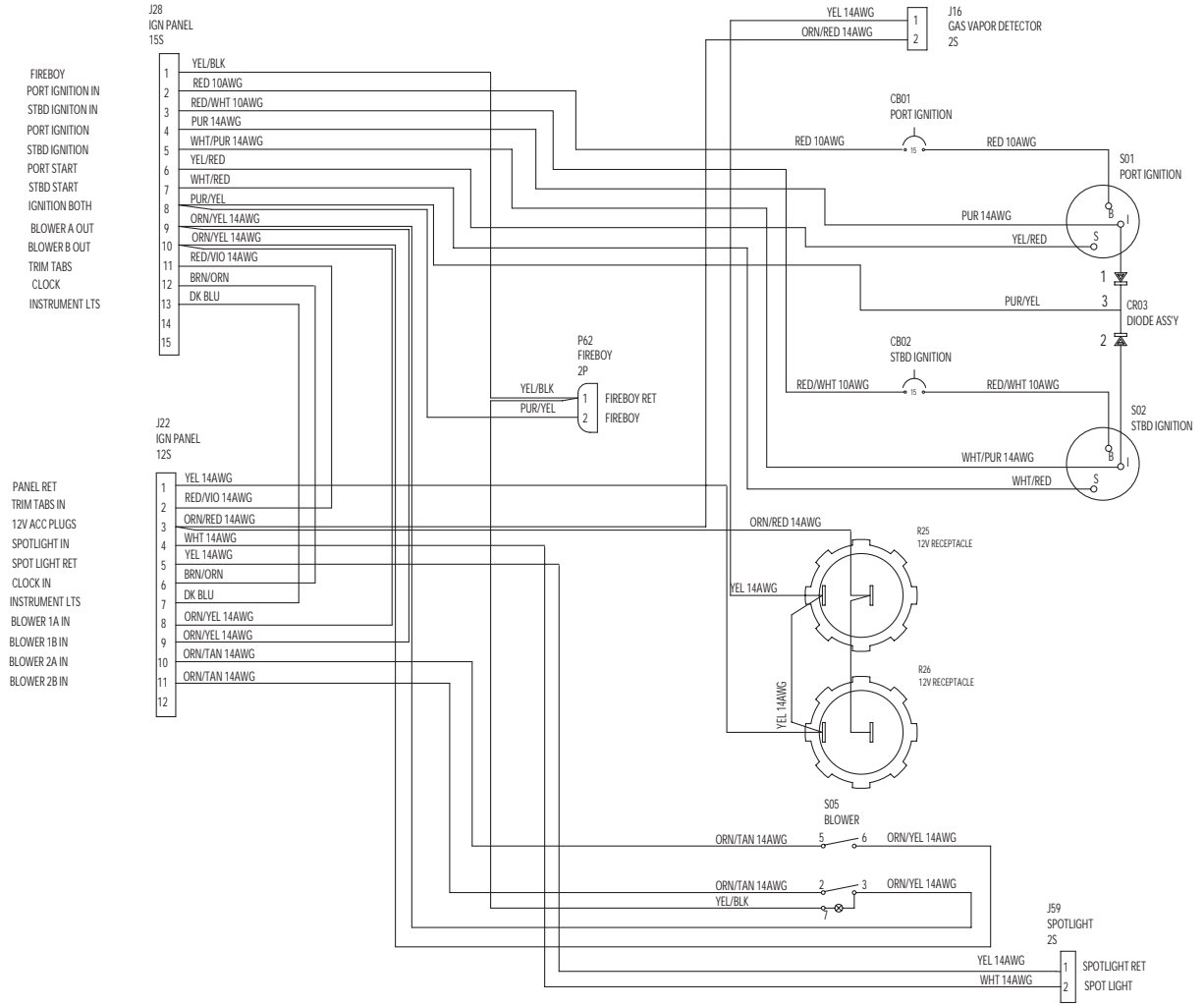


378 VISTA (DIESEL) UPPER GAUGE PANEL ASSEMBLY W/ NAV



FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	36	TERM.FASTON, 250,18-14	02	AMP
	028-0453	2	PN,UMNL,12-10	40	AMP
	028-0390	15	PN,UMNL,18-14	41	AMP
	028-0454	15	SOCKET,UMNL,18-14	42	AMP
	025-3041	1	PANEL,BLANK, UPPER SWITCH		
P07	028-0449	1	PLUG,UMNL,9 CKT		AMP
P08	028-0452	1	PLUG,UMNL,15 CKT		AMP
J23	028-0443	1	RECEPT,UMNL,9 CKT		AMP
CB01	028-0466	1	BREAKER, 15A		MP
R01		1	RESISTOR, LIGHT POWER		
S01	028-0504	1	SWITCH,DPDT,CONT III		CARL SW
S02	028-0456	1	SWITCH,SPST,OFF (ON),CONT III		CARL SW
S03	028-0457	1	SWITCH,SPST,CONT III		CARL SW
S04	028-0460	1	SWITCH,DPDT,NO LT,CONT III (ON/OFF) (ON)		CARL SW
S05	028-0457	1	SWITCH,SPST,CONT III		CARL SW
S06	028-0456	1	SWITCH,SPST,NO LT,CONT III		CARL SW
S07	028-0469	1	SWITCH,SPDT,NO LT,(ON/OFF) (ON),CONT III		CARL SW
S08	028-0457	1	SWITCH,SPST,CONT III		CARL SW
S09	028-0504	1	SWITCH,DPDT,2 LTS,CONT III		CARL SW
S10	028-0457	1	SWITCH,SPST,CONT III		CARL SW
S11	028-1135	1	SWITCH,SPDT,CONT III		CARL SW
S12	028-0461	1	SWITCH,SPDT,2 LTS,CONT III		CARL SW
S13	028-0504	1	SWITCH,DPDT,2 LTS,CONT III		CARL SW
S14	028-0457	1	SWITCH,SPST,CONT III		CARL SW



change to pins 41

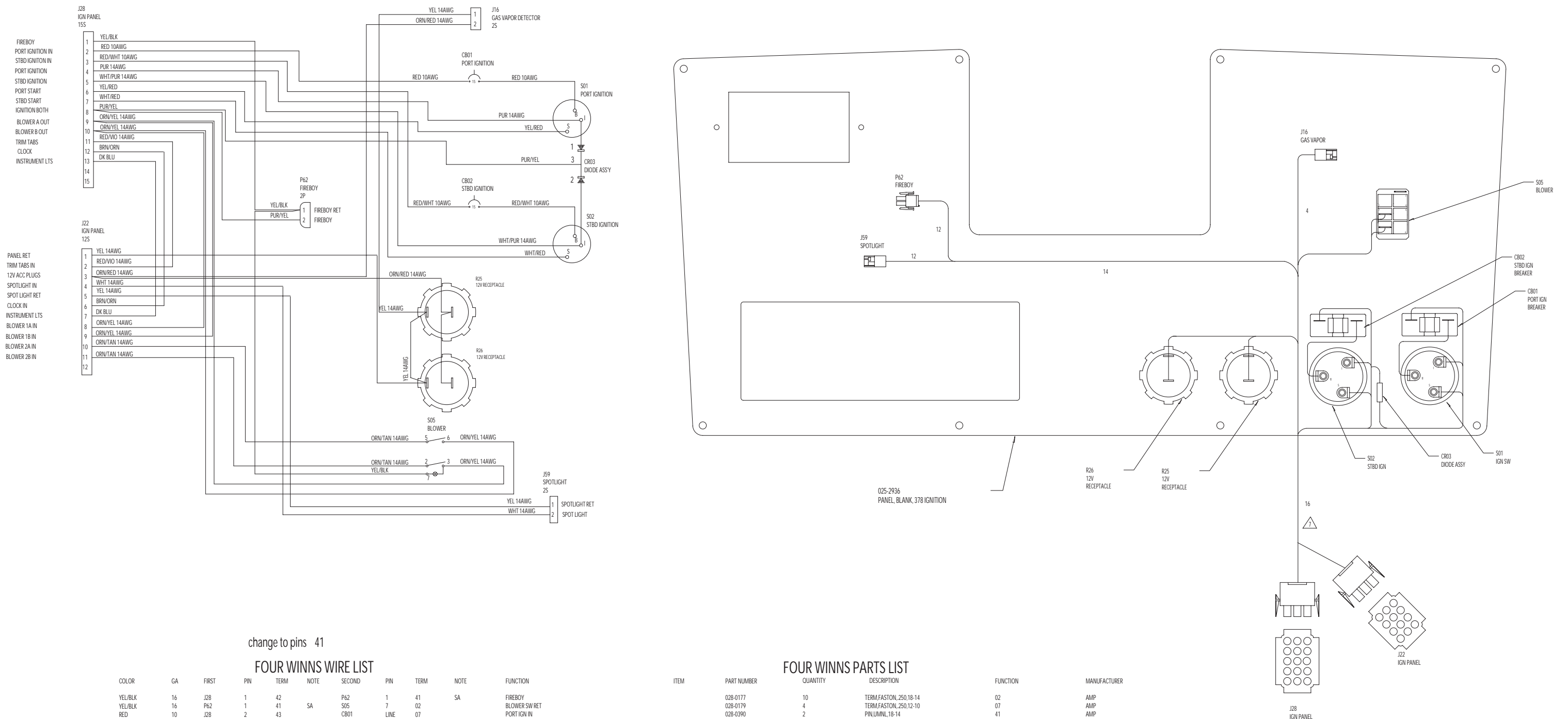
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
YEL/BLK	16	J28	1	42		P62	1	41	SA	FIREBOY
YEL/BLK	16	P62	1	41	SA	S05	7	02		BLOWER SW RET
RED	10	J28	2	43		CB01	LINE	07		PORT IGN IN
RED/WHIT	10	J28	3	43		CB02	LINE	07		STBD IGN IN
PUR	14	J28	4	42		S01	I	02		PORT IGN
WHT/PUR	14	J28	5	42		S02	I	02		STBD IGN
YEL/RED	16	J28	6	42		S01	S	02		PORT START
WHT/RED	16	J28	7	42		S02	S	02		STBD START
PUR/YEL	16	J28	8	42	SB	CR03	CATHODE	50		IGNITION BOTH
PUR/YEL	16	J28	8	42	SB	P62	2	41		FIREBOY
ORN/YEL	14	J28	9	42	SC	S05	3	02		BLOWER 1B IN
ORN/YEL	14	J28	9	42	SC	J22	9	42		BLOWER 1B IN
ORN/YEL	14	J28	10	42	SD	S05	6	02		BLOWER 1A IN
ORN/YEL	14	J28	10	42	SD	J22	8	42		BLOWER 1A IN
RED/VIO	14	J28	11	42		J22	2	42		TRIM TABS
BRN/ORN	16	J28	12	42		J22	6	42		CLOCK
DK BLU	16	J28	13	42		J22	7	42		INSTRUMENT LTS
YEL	14	J22	1	42		R26	-	02		ACC PLUG RET
YEL	14	R26	-	02	SG	R25	-	02	SH	ACC PLUG RET
ORN/RED	14	J22	3	42		J16	2	42		GAS VAPOR
ORN/RED	14	J22	3	42		SE	+	02	SF	12V ACC RECEPT
ORN/RED	14	R25	+	02	SF	R26	+	02		12V ACC RECEPT
WHT	14	J22	4	42		J59	2	42		SPOTLIGHT
YEL	14	R25	-	02	SH	J16	1	42		GAS VAPOR RET
YEL	14	J22	5	42		J59	1	42		SPOTLIGHT RET
RED	10	CB01	LOAD	07		S01	B	02		PORT IGN IN
RED/WHIT	10	CB02	LOAD	07		S02	B	02		STBD IGN IN
ORN/TAN	14	J22	10	42		S05	5	02		BLOWER 2A IN
ORN/TAN	14	J22	11	42		S05	2	02		BLOWER 2B IN

FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	10	TERM.FASTON, 250,18-14	02	AMP
	028-0179	4	TERM.FASTON, 250,12-10	07	AMP
	028-0390	2	PIN,UMNL,18-14	41	AMP
	028-0454	26	SOCKET,UMNL,18-14	42	AMP
	028-0455	2	SOCKET,UMNL,12-10	43	AMP
	025-2936	1	PANEL,BLANK,IGNITION, 368V		
CB01	028-0467	1	BREAKER,15A	PORT IGNITION	MP
CB02	028-0467	1	BREAKER,15A	STBD IGNITION	MP
CR03	025-0024-6	2	DIODE,DUAL	IGNITION BOTH	
J16	028-0441	1	RECEPT,UMNL,2 CKT	GAS VAPOR DETECTOR	AMP
J28	028-0446	1	RECEPT,UMNL,15 CKT	IGNITION PANEL	AMP
J22	028-0445	1	RECEPT,UMNL,12 CKT	IGNITION PANEL	AMP
J59	028-0441	1	RECEPT,UMNL,2 CKT	SPOTLIGHT	AMP
P62	028-0447	1	PLUG,UMNL,2 CKT	FIREBOY	AMP
R25	028-1100	1	RECEPT,12V AFI	12V RECEPTACLE	AFI
R26	028-1100	1	RECEPT,12V AFI	12V RECEPTACLE	AFI
S01	028-1286	1	SWITCH,IGNITION,I/O	PORT IGNITION	GENERAL
S02	028-1286	1	SWITCH,IGNITION,I/O	STBD IGNITION	GENERAL
S03	028-0459	1	SWITCH,DIPST,CONT III	BLOWER	CARL SW

378 VISTA
IGNITION/SWITCH
PANEL ASSEMBLY
W/OUT NAV PACKAGE



change to pins 41

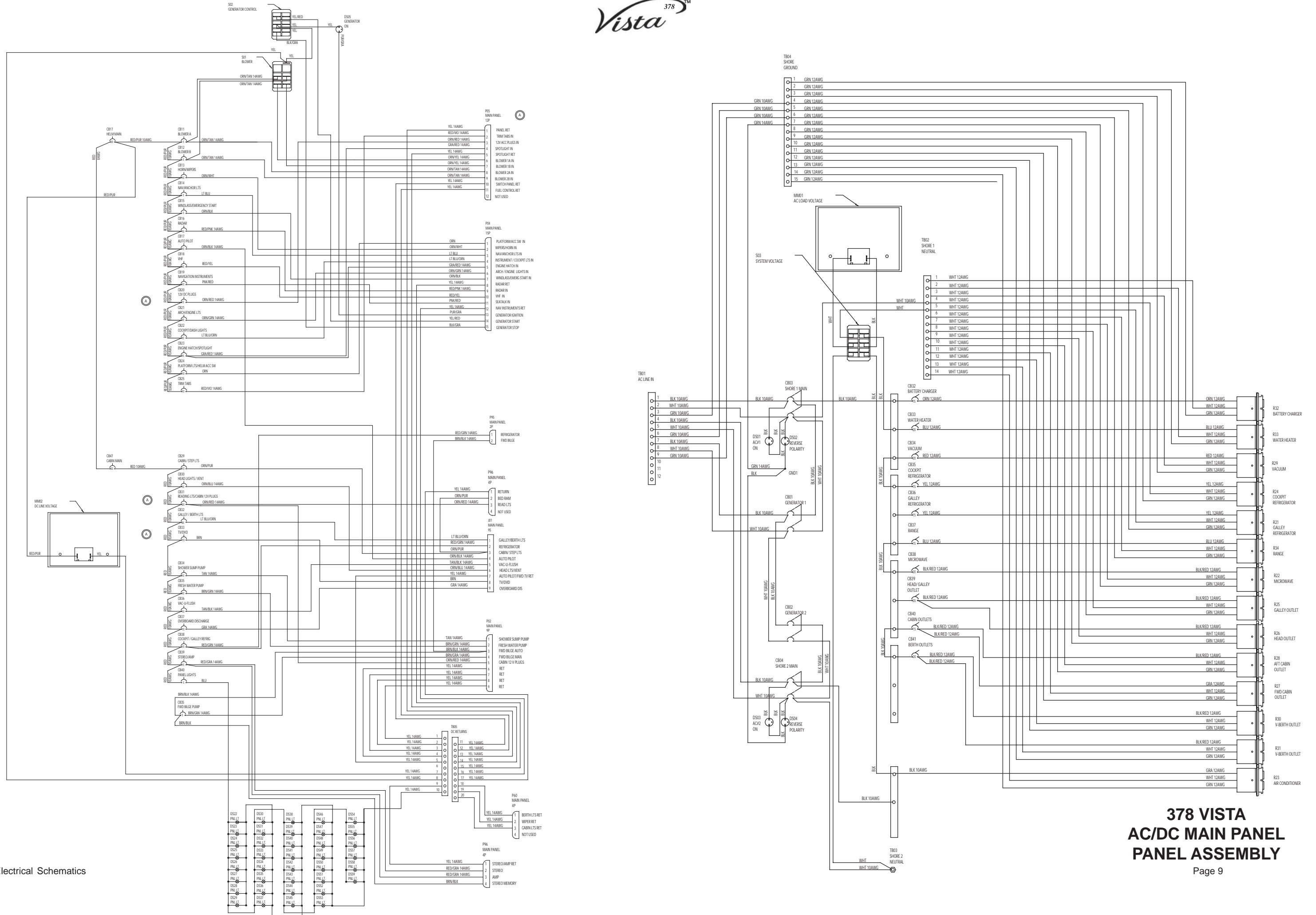
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
YEL/BLK	16	J28	1	42		P62	1	41	SA	FIREBOY
YEL/BLK	16	P62	1	41	SA	S05	7	02		BLOWER SW RET
RED	10	J28	2	43		CB01	LINE	07		PORT IGN IN
RED/WHT	10	J28	3	43		CB02	LINE	07		STBD IGN IN
PUR	14	J28	4	42		S01	1	02		PORT IGN
WHT/PUR	14	J28	5	42		S02	1	02		STBD IGN
YEL/RED	16	J28	6	42		S01	5	02		PORT START
WHT/RED	16	J28	7	42		S02	5	02		STBD START
PUR/YEL	16	J28	8	42	SB	CR03	CATHODE	50		IGNITION BOTH
PUR/YEL	16	J28	8	42	SB	P62	2	41		FIREBOY
ORN/YEL	14	J28	9	42	SC	S05	3	02		BLOWER 1B IN
ORN/YEL	14	J28	9	42	SC	J22	9	42		BLOWER 1B IN
ORN/YEL	14	J28	10	42	SD	S05	6	02		BLOWER 1A IN
ORN/YEL	14	J28	10	42	SD	J22	8	42		BLOWER 1A IN
RED/VIO	14	J28	11	42		J22	2	42		TRIM TABS
BRN/ORN	16	J28	12	42		J22	6	42		CLOCK
DK BLU	16	J28	13	42		J22	7	42		INSTRUMENT LTS
YEL	14	J22	1	42		R26	-	02		ACC PLUG RET
YEL	14	R26	-	02	SG	R25	-	02	SH	ACC PLUG RET
ORN/RED	14	J22	3	42	SE	J16	2	42		GAS VAPOR
ORN/RED	14	J22	3	42	SE	R25	+	02	SF	12V ACC RECEPT
ORN/RED	14	R25	+	02	SF	R26	+	02		12V ACC RECEPT
WHT	14	J22	4	42		J59	2	42		SPOTLIGHT
YEL	14	R25	-	02	SH	J16	1	42		GAS VAPOR RET
YEL	14	J22	5	42		J59	1	42		SPOTLIGHT RET
RED	10	CB01	LOAD	07		S01	8	02		PORT IGN IN
RED/WHT	10	CB02	LOAD	07		S02	8	02		STBD IGN IN
ORN/TAN	14	J22	10	42		S05	5	02		BLOWER 2A IN
ORN/TAN	14	J22	11	42		S05	2	02		BLOWER 2B IN

FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	10	TERM,FASTON,250,18-14	02	AMP
	028-0179	4	TERM,FASTON,250,12-10	07	AMP
	028-0390	2	PIN,UMNL,18-14	41	AMP
	028-0454	26	SOCKET,UMNL,18-14	42	AMP
	028-0455	2	SOCKET,UMNL,12-10	43	AMP
	025-2936	1	PANEL,BLANK,IGNITION,378V		
CB01	028-0467	1	BREAKER,15A	PORT IGNITION	MP
CB02	028-0467	1	BREAKER,15A	STBD IGNITION	MP
CR03	025-0024-6	2	DIODE,DUAL	IGNITION BOTH	
J16	028-0441	1	RECEPT,UMNL,2 CKT	GAS VAPOR DETECTOR	AMP
J28	028-0446	1	RECEPT,UMNL,15 CKT	IGNITION PANEL	AMP
J22	028-0445	1	RECEPT,UMNL,12 CKT	IGNITION PANEL	AMP
J59	028-0441	1	RECEPT,UMNL,2 CKT	SPOTLIGHT	AMP
P62	028-0447	1	PLUG,UMNL,2 CKT	FIREBOY	AMP
R25	028-1100	1	RECEPT,12V AFI	12V RECEPTACLE	AFI
R26	028-1100	1	RECEPT,12V AFI	12V RECEPTACLE	AFI
S01	028-1286	1	SWITCH,IGNITION,NO	PORT IGNITION	GENERAL
S02	028-1286	1	SWITCH,IGNITION,NO	STBD IGNITION	GENERAL
S03	028-0459	1	SWITCH,DPSST,CONT III	BLOWER	CARL SW

378 VISTA
IGNITION/SWITCH
PANEL ASSEMBLY
W/ NAV PACKAGE



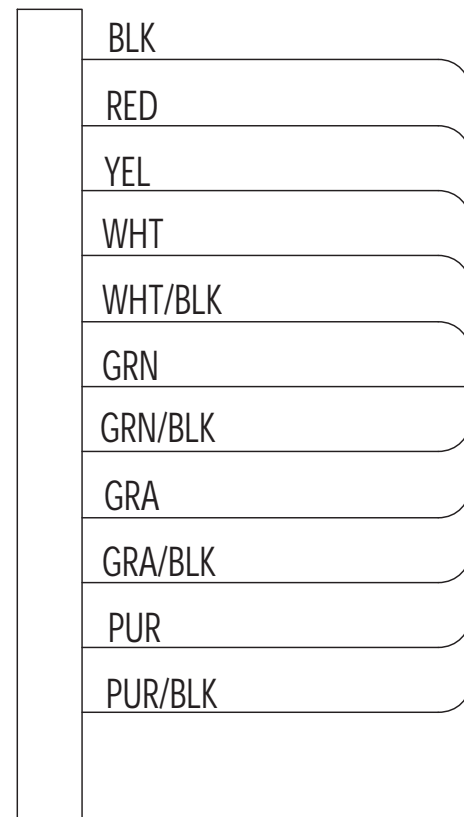
**378 VISTA
AC/DC MAIN PANEL
PANEL ASSEMBLY**

FOUR WINNS PARTS LIST

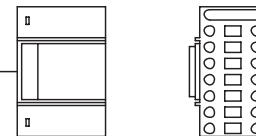
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	028-0390	3	PIN,UMNL,18-14	41	AMP
	028-1036	8	PIN,UMNL,24-18	57	AMP
J04	028-0448	1	RECEPT,UMNL,12 CKT	STEREO ADAPTOR	AMP
S01	027-1823	1	SONY STEREO HARNESS	SONY STEREO	SONY

J04
STEREO
12P

- STEREO RET 1
- STEREO 2
- STEREO MEMORY 3
- LEFT FRONT SPKR 4
- LEFT FRONT SPKR RET 5
- LEFT REAR SPKR 6
- LEFT REAR SPKR RET 7
- RIGHT FRONT SPKR 8
- RIGHT FRONT SPKR RET 9
- RIGHT REAR SPKR 10
- RIGHT REAR SPKR RET 11
- NOT USED 12



S01
SONY STEREO HARNESS



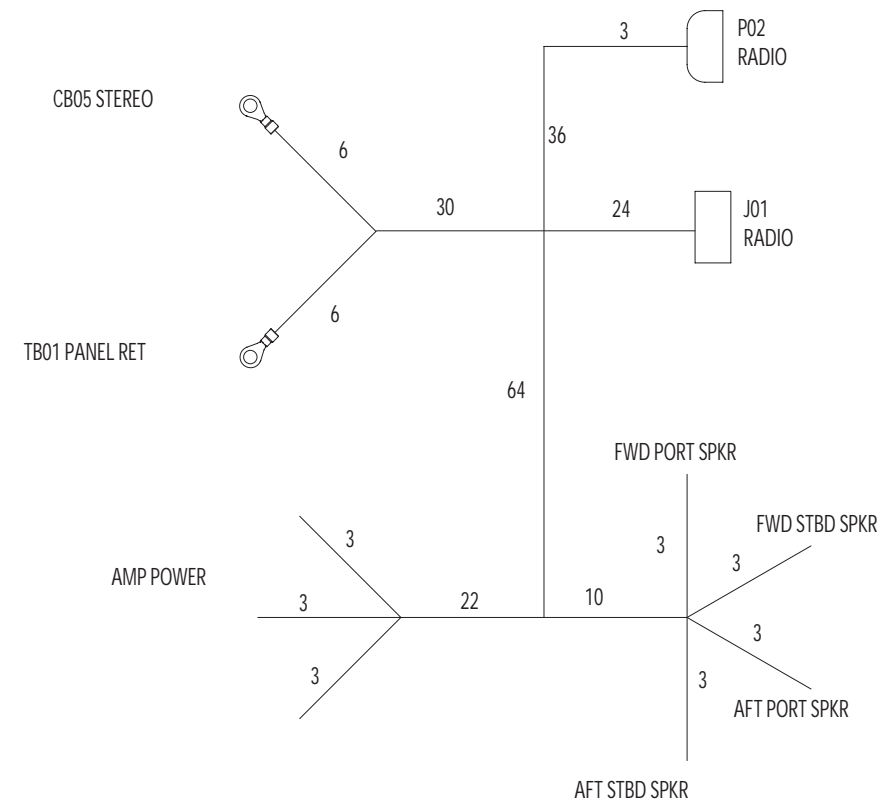
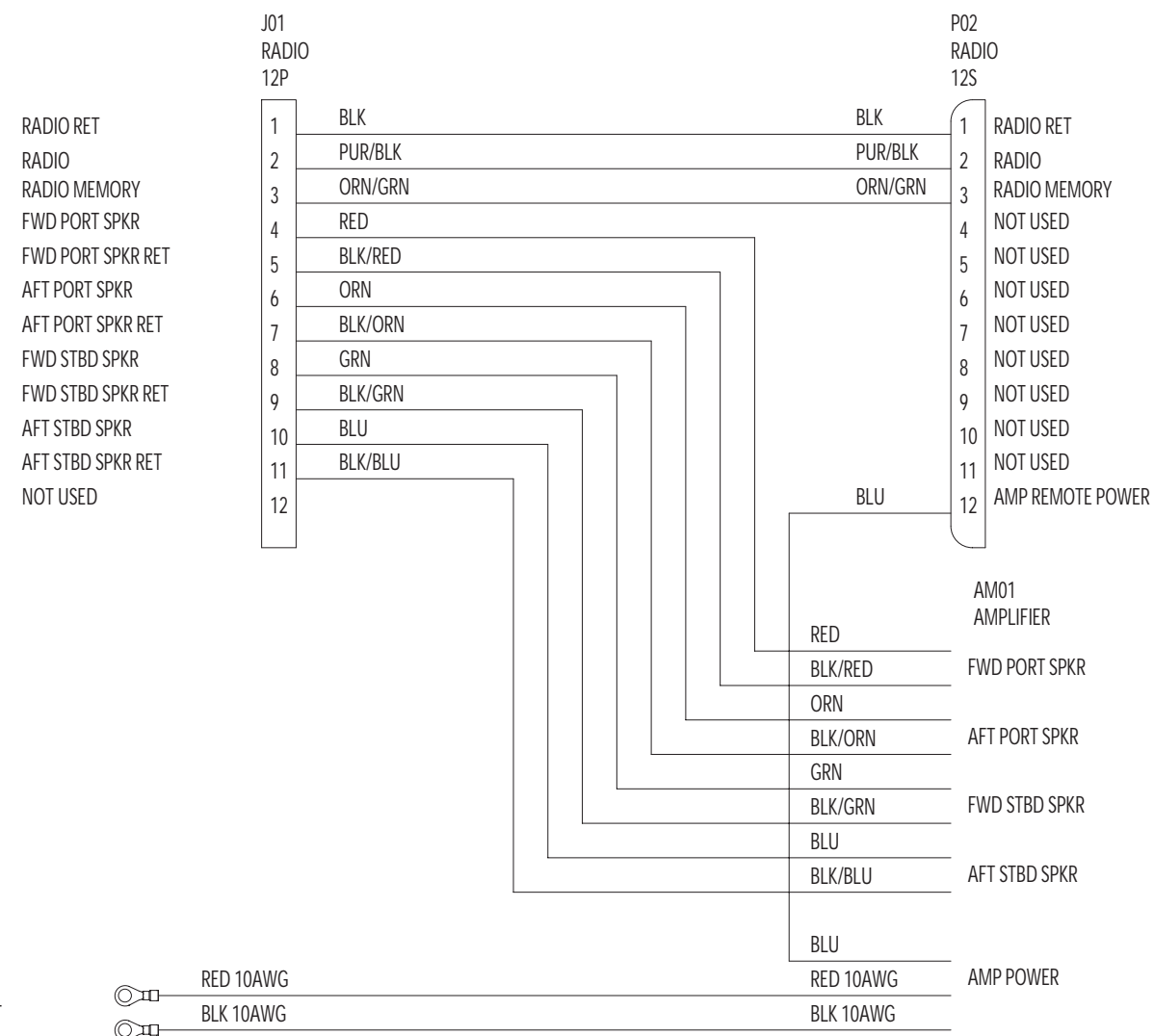
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
BLK	16	KW1		51		J04	1	41		STEREO RET
RED	16	KW1		51		J04	2	41		STEREO
YEL	16	KW1		51		J04	3	41		STEREO MEMORY
WHT	20	KW1		51		J04	4	57		LEFT FRONT SPKR
WHT/BLK	20	KW1		51		J04	5	57		LEFT FRONT SPKR RET
GRN	20	KW1		51		J04	6	57		LEFT REAR SPKR
GRN/BLK	20	KW1		51		J04	7	57		LEFT REAR SPKR RET
GRA	20	KW1		51		J04	8	57		RIGHT FRONT SPKR
GRA/BLK	20	KW1		51		J04	9	57		RIGHT FRONT SPKR RET
PUR	20	KW1		51		J04	10	57		RIGHT REAR SPKR
PUR/BLK	20	KW1		51		J04	11	57		RIGHT REAR SPKR RET

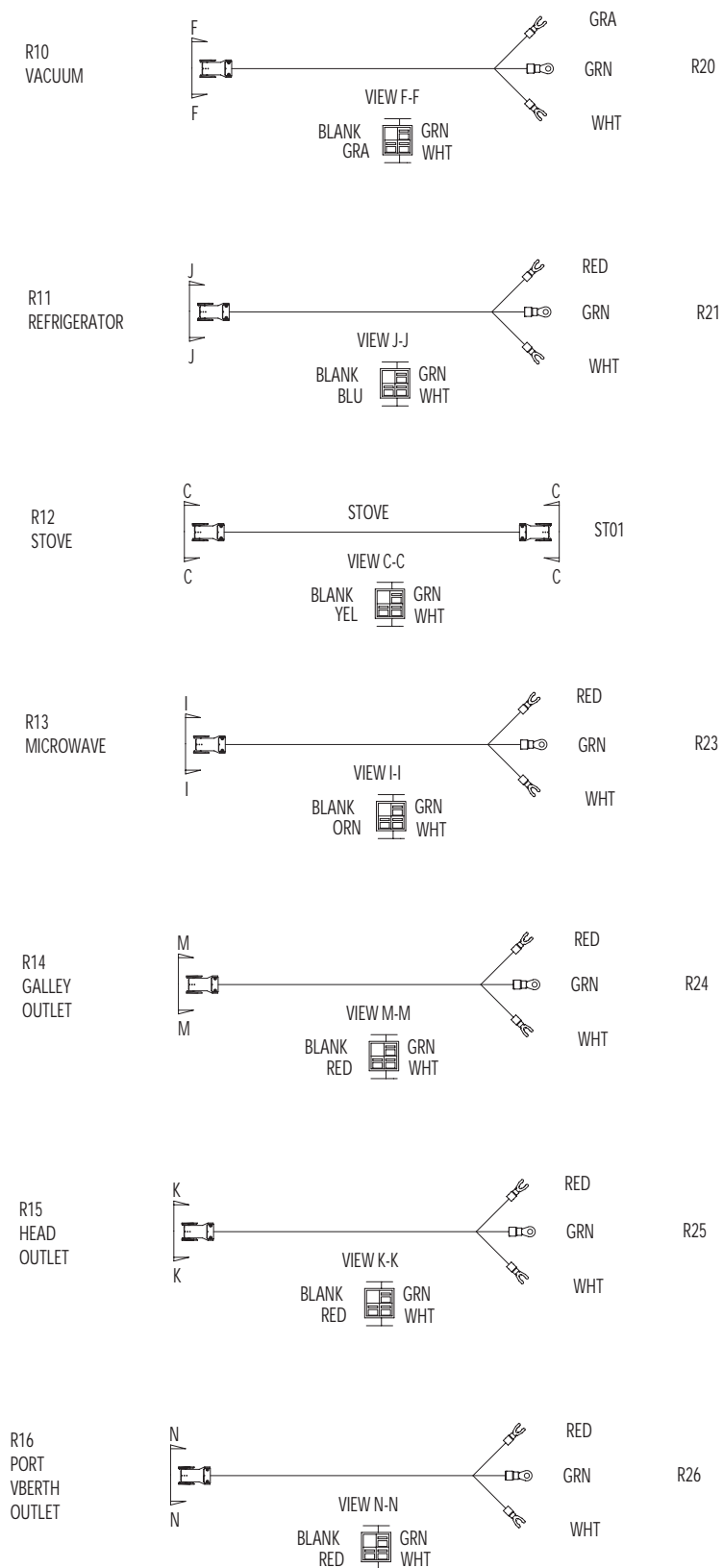
378 VISTA
SONY STEREO W/ AMP
HARNESS ASSEMBLY

FOUR WINNS PARTS LIST

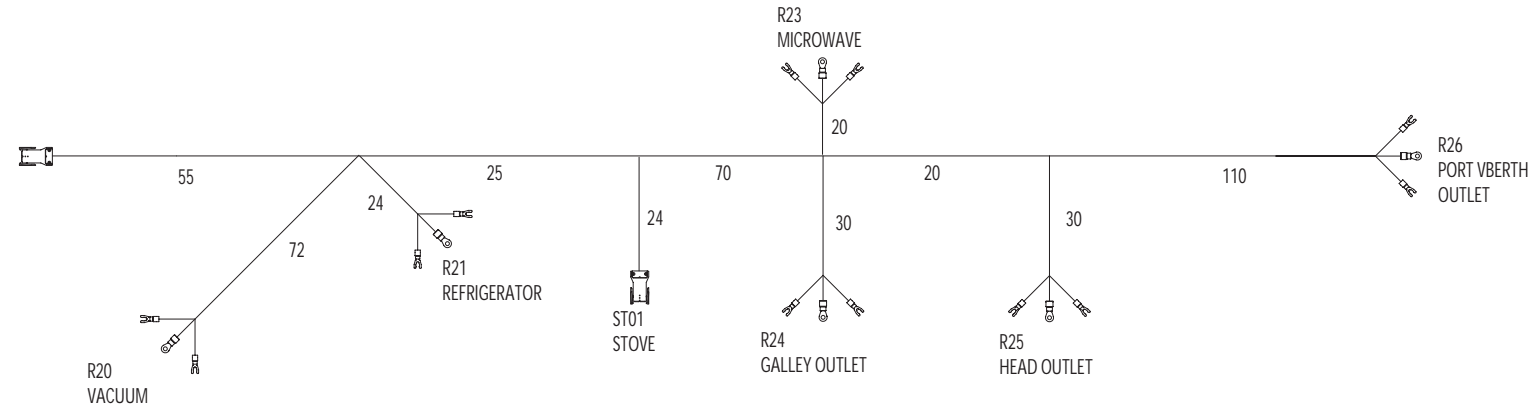
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0195	2	TERM,RING,#10,12-10	13	AMP
	028-0390	11	PIN,UMNL,18-14	41	AMP
	028-0454	4	SOCKET,UMNL,18-14	42	AMP
AM01		REF	AMPLIFIER,SONY 754	AMPLIFIER	
CB05		REF	BREAKER,10A	STEREO BREAKER	
J01	028-0445	1	RECEPT,UMNL,12 CKT	RADIO	AMP
P01	028-0451	1	PLUG,UMNL,12 CKT	RADIO	AMP
TB01		REF	TERMINAL BLOCK,10 POS	DC RET	



378 VISTA SONY AMPLIFIER HARNESS ASSEMBLY



R10 THROUGH R16
AC CONNECTIONS
7 PLACES

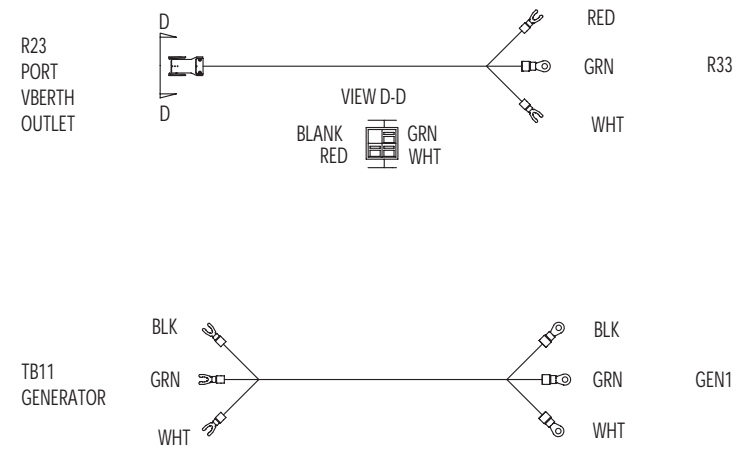
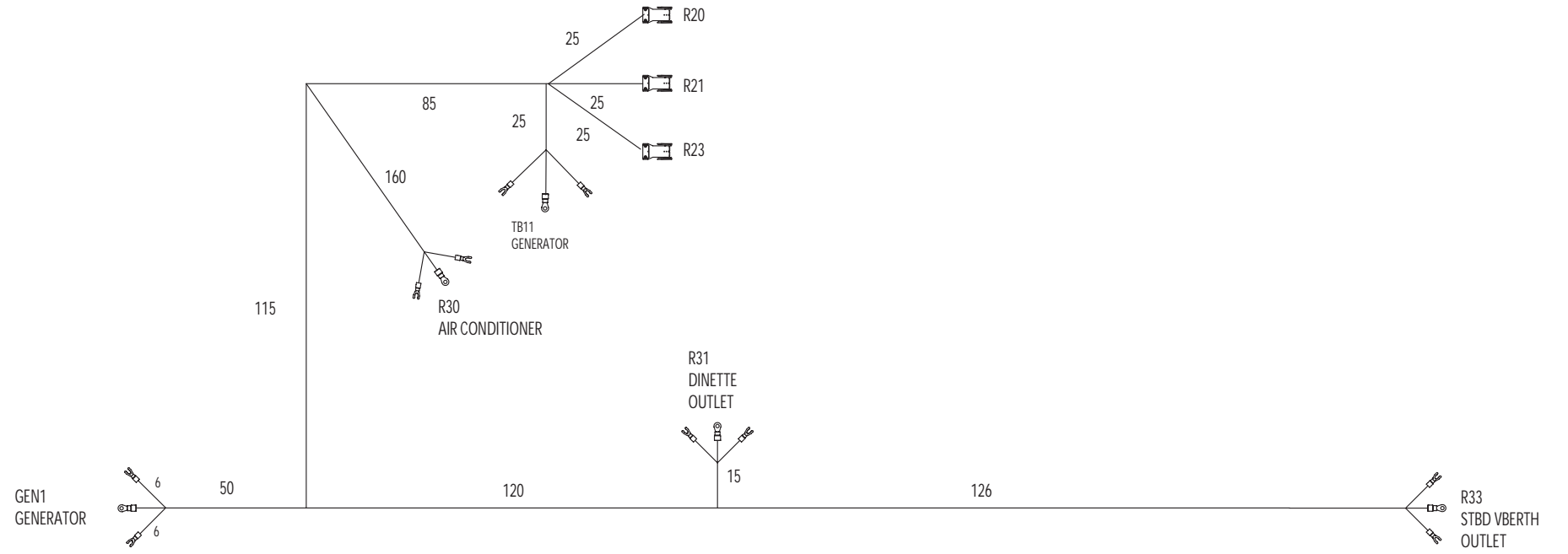
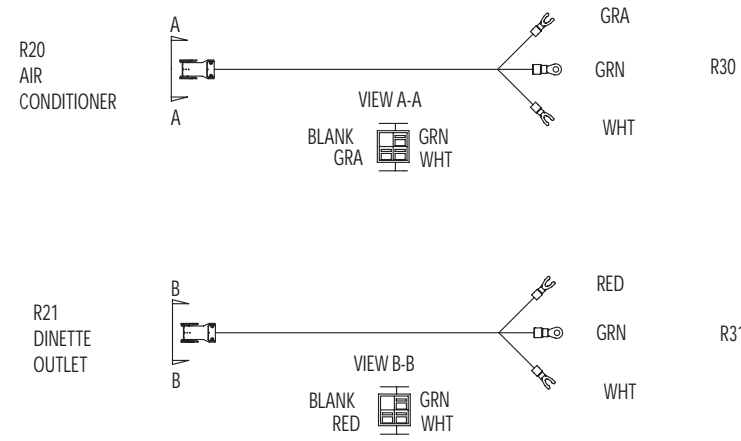


FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0194	6	TERM,RING,#8,12-10	12	AMP
	028-0200	12	TERM,SS,#10,12-10	21	AMP
	028-0498	24	TERM,ANDERSON,30A	23	ANDERSON
R23		REF	RECEPTACLE,AC	MICROWAVE	
R24		REF	RECEPTACLE,AC	GALLEY OUTLET	
R25		REF	RECEPTACLE,AC	HEAD OUTLET	
R26		REF	RECEPTACLE,AC	PORTR VBERTH OUTLET	
R10	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	VACUUM	ANDERSON
R11	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	REFRIGERATOR	ANDERSON
R12	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	STOVE	ANDERSON
R13	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	MICROWAVE	ANDERSON
R14	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	GALLEY OUTLET	ANDERSON
R15	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	HEAD OUTLET	ANDERSON
R16	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	PORT VBERTH OUTLET	ANDERSON
ST01	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	STOVE	ANDERSON

FOUR WINNS WIRE LIST

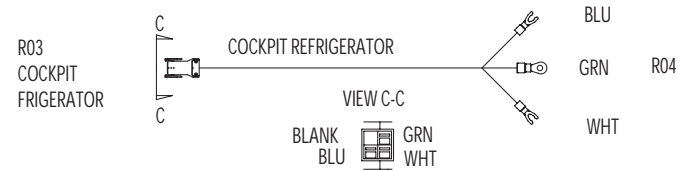
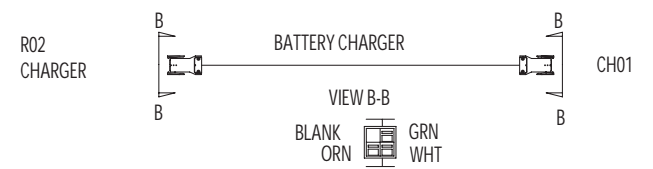
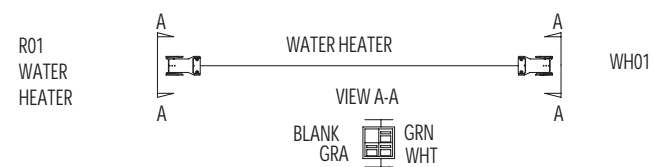
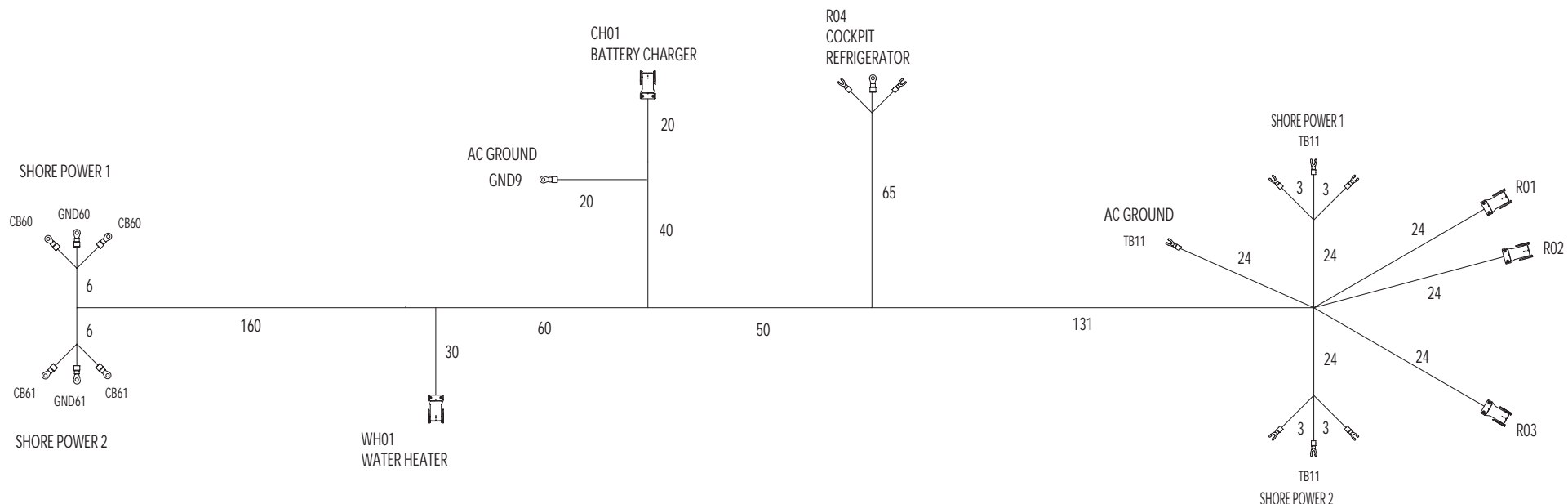
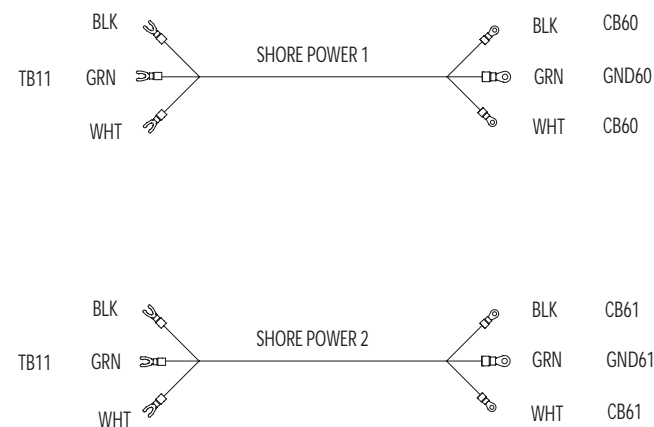
COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
GRA	12	R10	1	23	BA	R20	L1	21		VACUUM HOT
WHT	12	R10	2	23	BA	R20	L2	21		VACUUM NEUTRAL
GRN	12	R10	3	23	BA	R20	G	12		VACUUM GROUND
BLU	12	R11	1	23	BB	R21	L1	21		REFRIGERATOR HOT
WHT	12	R11	2	23	BB	R21	L2	21		REFRIGERATOR NEUTRAL
GRN	12	R11	3	23	BB	R21	G	12		REFRIGERATOR GROUND
YEL	12	R12	1	23	BC	ST01	1	23		STOVE HOT
WHT	12	R12	2	23	BC	ST01	2	23		STOVE NEUTRAL
GRN	12	R12	3	23	BC	ST01	3	23		STOVE GROUND
ORN	12	R13	1	23	BD	R23	L1	21		MICROWAVE HOT
WHT	12	R13	2	23	BD	R23	L2	21		MICROWAVE NEUTRAL
GRN	12	R13	3	23	BD	R23	G	12		MICROWAVE GROUND
RED	12	R14	1	23	BE	R24	L1	21		GALLEY OUTLET HOT
WHT	12	R14	2	23	BE	R24	L2	21		GALLEY OUTLET NEUTRAL
GRN	12	R14	3	23	BE	R24	G	12		GALLEY OUTLET GROUND
RED	12	R15	1	23	BF	R25	L1	21		HEAD OUTLET HOT
WHT	12	R15	2	23	BF	R25	L2	21		HEAD OUTLET NEUTRAL
GRN	12	R15	3	23	BF	R25	G	12		HEAD OUTLET GROUND
RED	12	R16	1	23	BG	R26	L1	21		PORT VBERTH OUTLET HOT
WHT	12	R16	2	23	BG	R26	L2	21		PORT VBERTH OUTLET NEUTRAL
GRN	12	R16	3	23	BG	R26	G	12		PORT VBERTH OUTLET GROUND



FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0194	3	TERM,RING,#8,12-10	12	AMP
	028-0195	2	TERM,RING,#10,12-10	13	AMP
	028-0196	1	TERM,RING,1/4,12-10	14	AMP
	028-0200	6	TERM,SS,#10,12-10	21	AMP
	028-0498	12	TERM,ANDERSON,30A	23	ANDERSON
GEN1		REF	GENERATOR, KOHLER 4CZ	GENERATOR	
R30		REF	RECEPTACLE,AC	AIR CONDITIONER	
R31		REF	RECEPTACLE,AC	DINETTE OUTLET	
R33		REF	RECEPTACLE,AC	STBD VBERTH OUTLET	
R20	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	AIR CONDITIONER	ANDERSON
R21	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	FWD CABIN OUTLET	ANDERSON
R23	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	STBD VBERTH OUTLET	ANDERSON

378 VISTA STARBOARD AC SYSTEMS HARNES ASSEMBLY

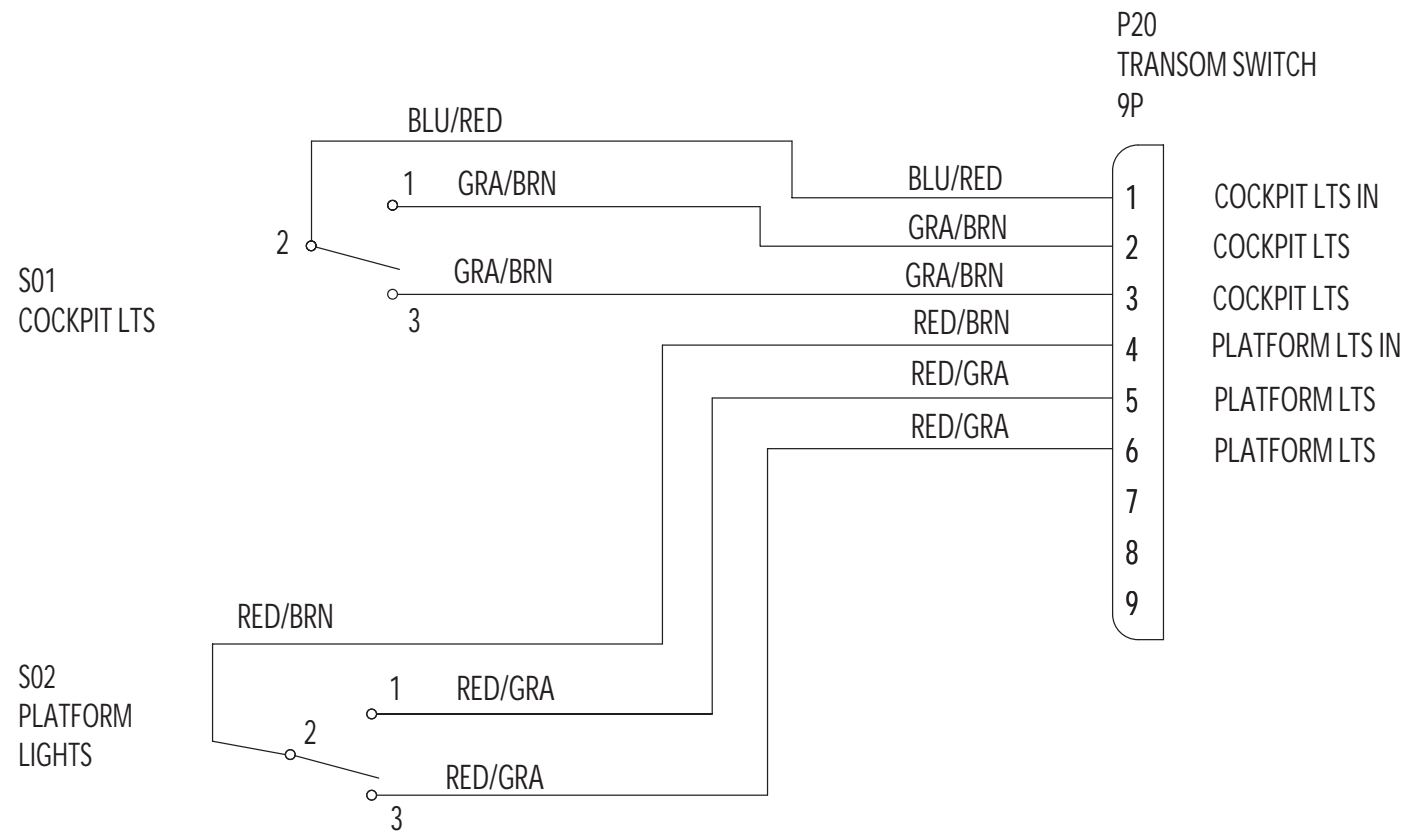


FOUR WINNS PARTS LIST

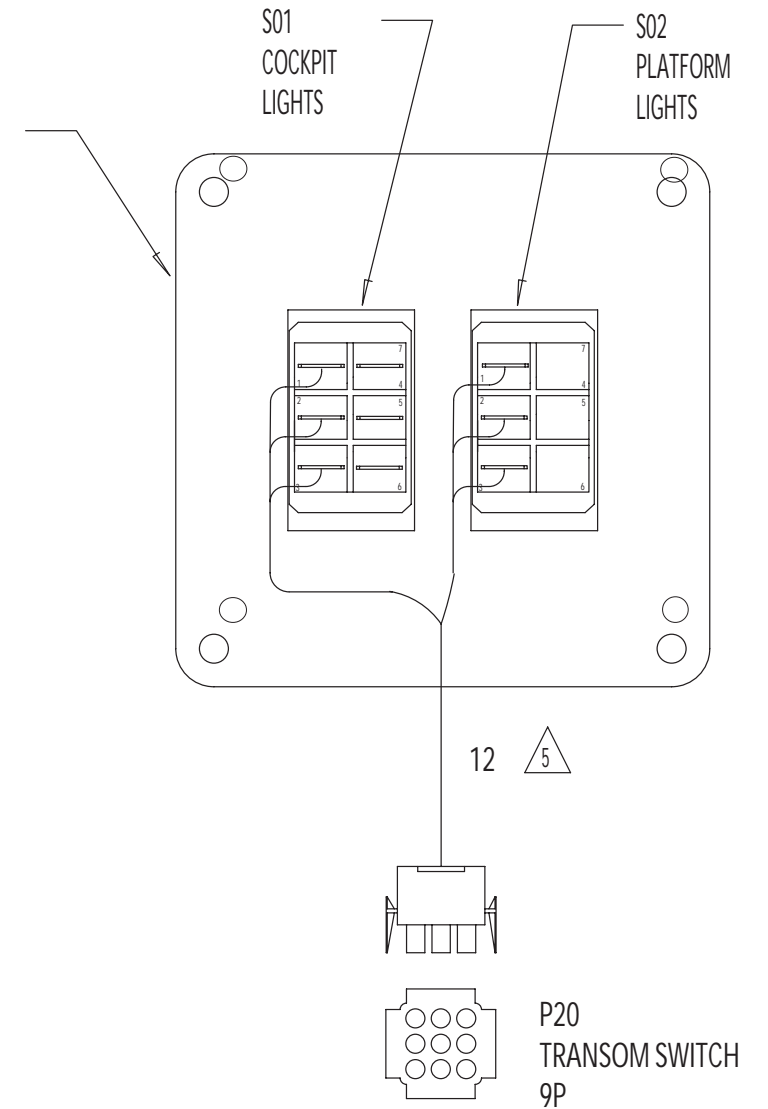
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0194	1	TERM,RING,PG,#8,12-10	12	AMP
	028-0196	6	TERM,RING,1/4,12-10	14	AMP
	028-0197	1	TERM,RING,3/8,12-10	15	AMP
	028-0200	9	TERM,SS,#10,12-10	21	AMP
	028-0498	15	TERM,ANDERSON,30A	23	ANDERSON
CB60	REF	REF	BREAKER,30A DP IGNITION PROTECT	SHORE1	CARLING
CB61	REF	REF	BREAKER,30A DP IGNITION PROTECT	SHORE2	CARLING
GND9	REF	REF	AC GROUND	PANEL GROUND	
R04	REF	REF	RECEPTACLE,AC	COCKPIT REFRIGERATOR	
WH01	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	WATER HEATER	ANDERSON
R01	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	WATER HEATER	ANDERSON
R02	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	BATTERY CHARGER	ANDERSON
CH01	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	BATTERY CHARGER	ANDERSON
R03	028-0502	1	HOUSING,ANDERSON,4 WAY W/LATCH	COCKPIT REFRIGERATOR	ANDERSON
TB11	027-1727	1	TERMINAL STRIP,10 POS	AC MAINS	
GND60	REF	REF	GROUND BOX	SHORE POWER 1 GROUND	PORTAGE WIRE
GND61	REF	REF	GROUND BOX	SHORE POWER 2 GROUND	PORTAGE WIRE

FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
GRA	12	R01	1	23	BA	WH01	1	23		WATER HEATER HOT
WHT	12	R01	2	23	BA	WH01	2	23		WATER HEATER NEUTRAL
GRN	12	R01	3	23	BA	WH01	3	23		WATER HEATER GROUND
ORN	12	R02	1	23	BB	CH01	1	23		BATTERY CHARGER HOT
WHT	12	R02	2	23	BB	CH01	2	23		BATTERY CHARGER NEUTRAL
GRN	12	R02	3	23	BB	CH01	3	23		BATTERY CHARGER GROUND
BLU	12	R03	1	23	BC	R04	L1	21		COCKPIT REFRIGERATOR HOT
WHT	12	R03	2	23	BC	R04	L2	21		COCKPIT REFRIGERATOR NEUTRAL
GRN	12	R03	3	23	BC	R04	G	12		COCKPIT REFRIGERATOR GROUND
BLK	10	TB11	1	21	BD	CB60	LOAD	14		SHORE 1 HOT
WHT	10	TB11	2	21	BD	CB60	LOAD	14		SHORE 1 NEUTRAL
GRN	10	TB11	3	21	BD	GND60	G	14		SHORE 1 GROUND
BLK	10	TB11	4	21	BE	CB61	LOAD	14		SHORE 2 HOT
WHT	10	TB11	5	21	BE	CB61	LOAD	14		SHORE 2 NEUTRAL
GRN	10	TB11	6	21	BE	GND61	G	14		SHORE 2 GROUND
GRN	10	TB11	7	21		GND9	-	15		AC GROUND



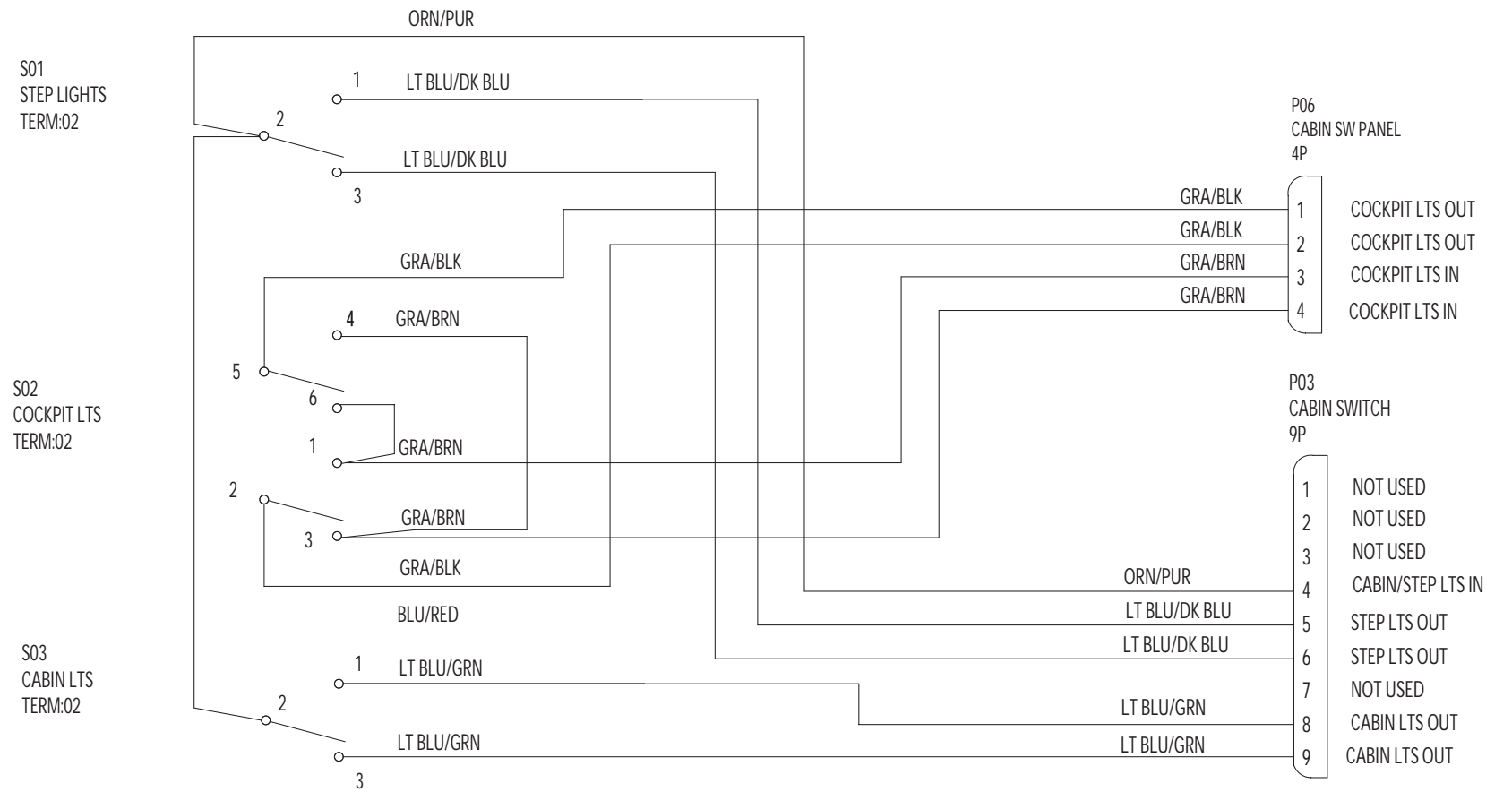
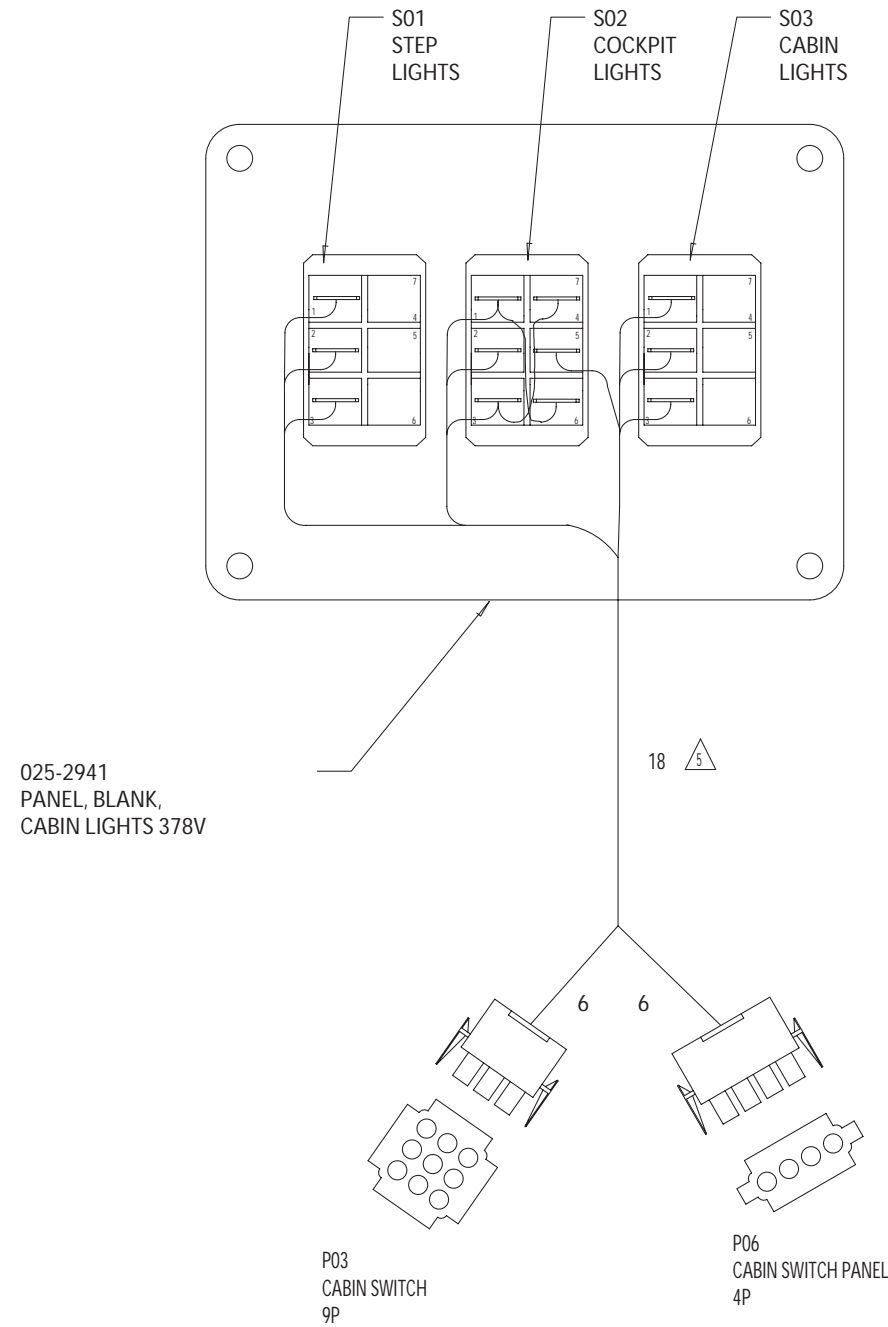
025-2940
PANEL, BLANK,
COCKPIT/PLATFORM 378V



FOUR WINNS PARTS LIST

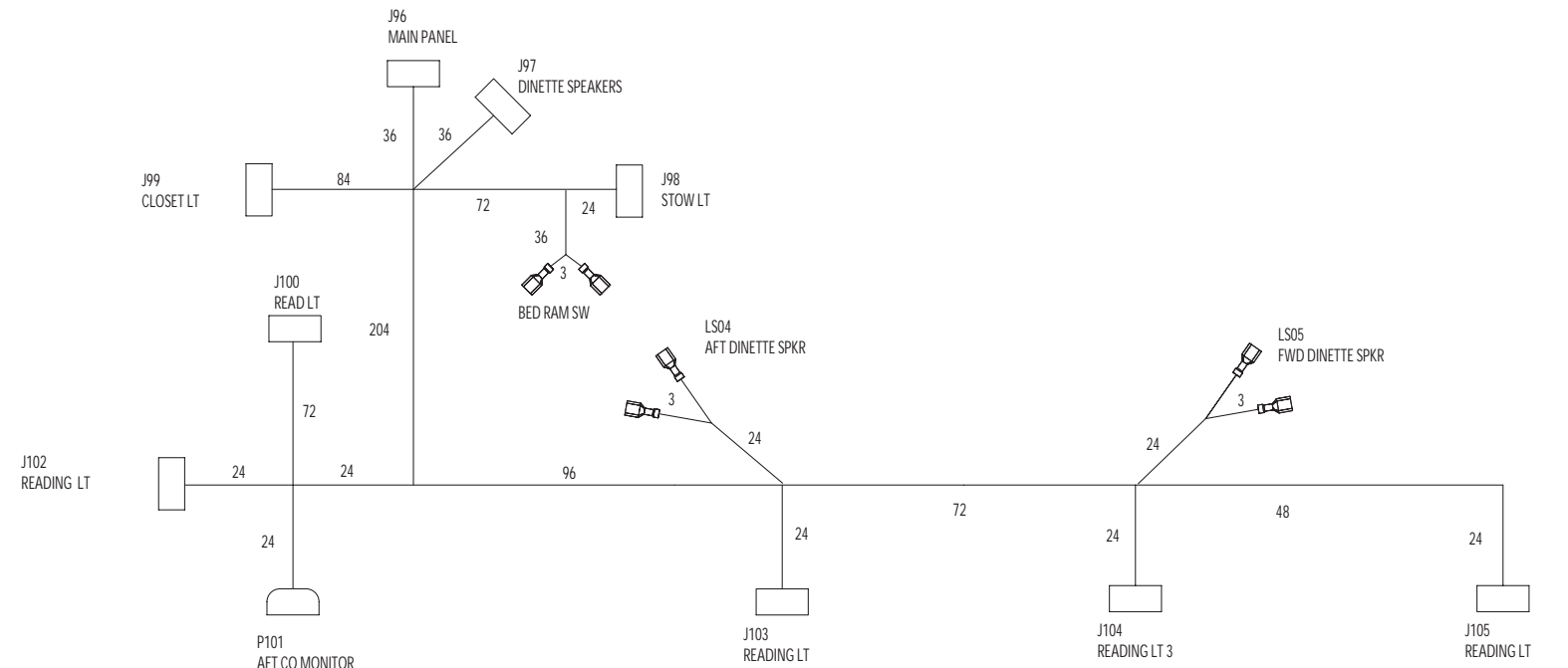
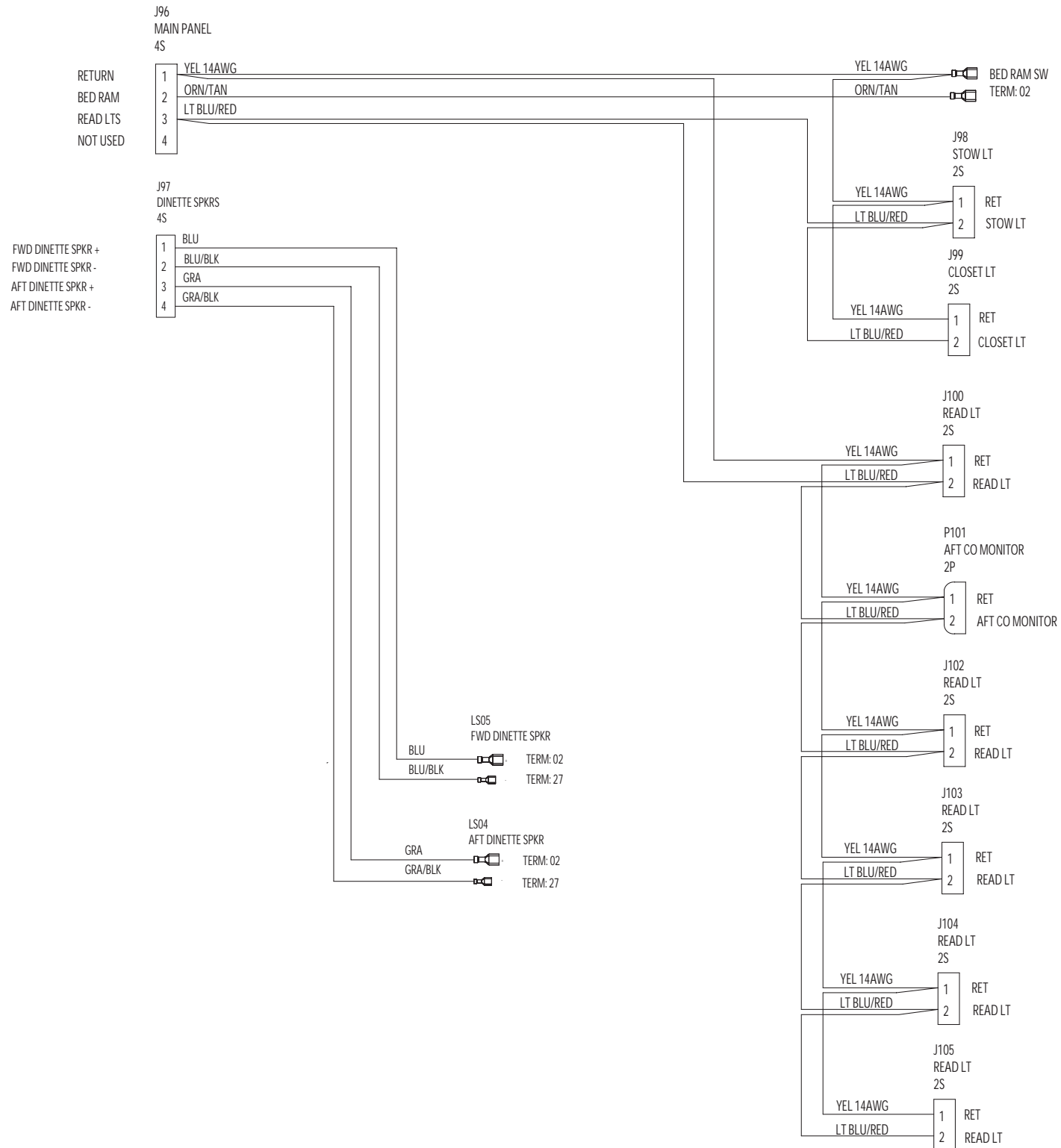
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0390	6	PIN,UMNL,18-14	41	AMP
	028-0177	6	RECEPT,FASTON,,250,18-14	02	AMP
	025-2940	1	PANEL,BLANK, COCKPIT/PLATFORM 378V		AMP
P20	028-0449	1	PLUG, UMNL,9 CKT	TRANSOM SWITCH	AMP
S01	028-1776	1	SWITCH, SPDT, ON-NONE-ON CONT XI	COCKPIT LIGHTS	CARLING
S02	028-1776	1	SWITCH, SPDT, ON-NONE-ON CONT XI	PLATFORM LIGHTS	CARLING

378 VISTA COCKPIT/PLATFORM LIGHTS PANEL ASSEMBLY



FOUR WINNS PARTS LIST

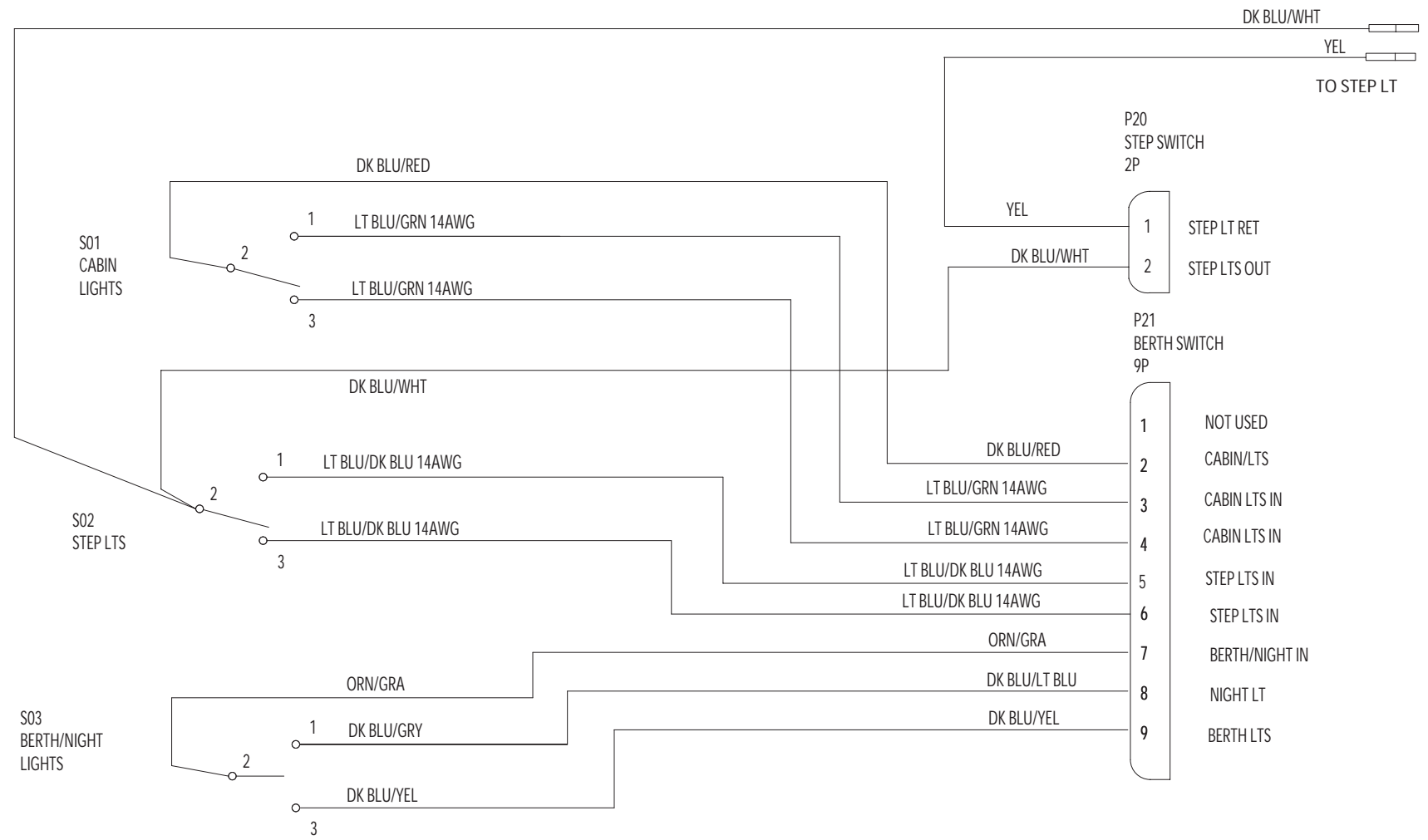
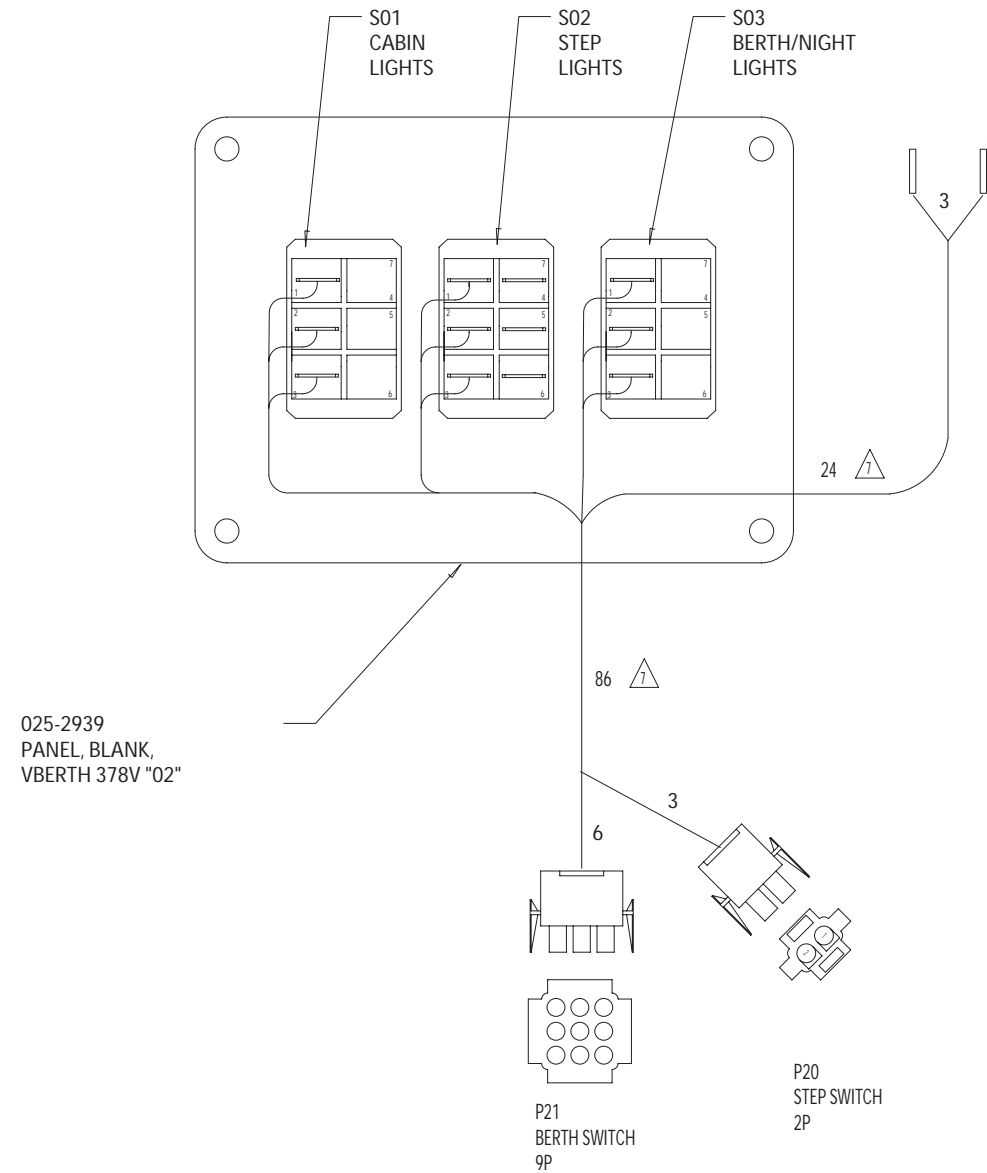
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	12	RECEPT,FASTON,.250,18-14	02	AMP
	028-0390	9	PIN,UMNL,18-14	41	AMP
	025-2941	1	PANEL,BLANK, CABIN LIGHTS 368V		
P03	028-0449	1	PLUG, UMNL,9 CKT	CABIN SWITCH	AMP
P06	028-0448	1	PLUG, UMNL,4 CKT	CABIN SWITCH PANEL	AMP
S01	028-1135	1	SWITCH, SPDT, ON-ON CONT III	STEP LIGHTS	CARL
S02	028-1752	1	SWITCH, DPDT, ON-ON CONT III	COCKPIT LIGHTS	CARL
S03	028-1135	1	SWITCH, SPDT, ON-ON CONT III	CABIN LIGHTS	CARL



FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	4	FASTON, 250,16-14,SMINS	02	AMP
	028-0112	2	FASTON, 110,20-16	27	AMP
	028-0390	2	PIN,UMNL,18-14	41	AMP
	028-0454	23	SOCKET,UMNL,18-14	42	AMP
J96	028-0451	1	RECEPT,UMNL,4 CKT	MAIN PANEL	AMP
J97	028-0442	1	RECEPT,UMNL,4 CKT	DINETTE SPEAKERS	AMP
J98	028-0442	1	RECEPT,UMNL,2 CKT	STOW LT	AMP
J99	028-0441	1	RECEPT,UMNL,2 CKT	CLOSET LT	AMP
J100	028-0441	1	RECEPT,UMNL,2 CKT	READING LT	AMP
P101	028-0447	1	PLUG,UMNL,2 CKT	AFT CO MONITOR	AMP
J103	028-0441	1	RECEPT,UMNL,2 CKT	READING LT	AMP
J104	028-0441	1	RECEPT,UMNL,2 CKT	READING LT	AMP
J105	028-0441	1	RECEPT,UMNL,2 CKT	READING LT	AMP
J106	028-0441	1	RECEPT,UMNL,2 CKT	READING LT	AMP

378 VISTA STBD CABIN HARNES ASSEMBLY



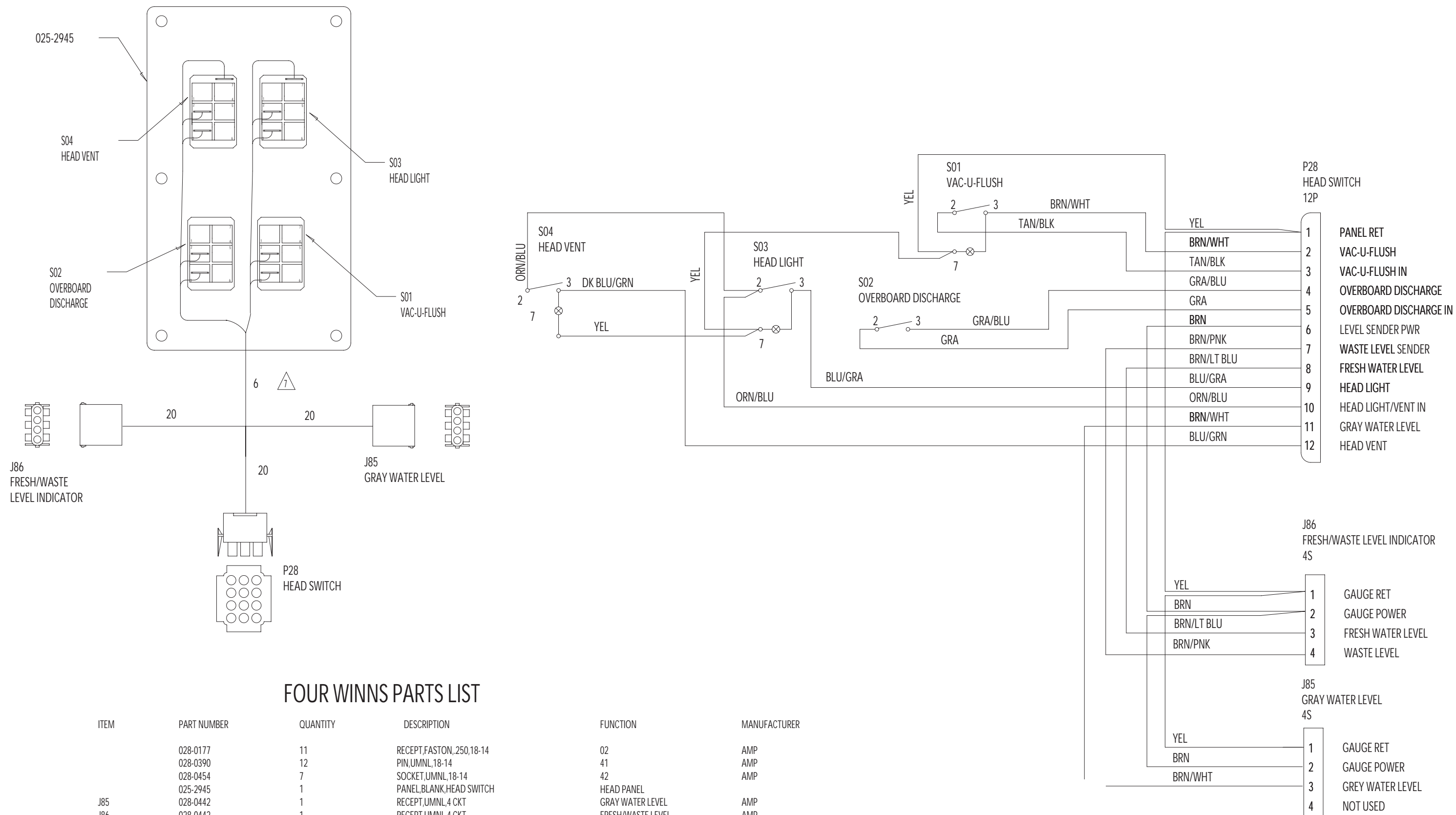
FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0390	8	PIN,UMNL,18-14	41	AMP
	028-0454	2	SOCKET,UMNL,18-14	42	AMP
	028-0177	1	RECEPT,FASTON,.250,18-14	02	AMP
	025-2939	1	PANEL,BLANK, VBERTH 368V		
P20	028-0447	1	PLUG, UMNL,2 CKT	STEP SWITCH	AMP
P21	028-0449	1	PLUG, UMNL,9 CKT	BERTH SWITCH	AMP
S01	028-1135	1	SWITCH, SPDT, ON-ON CONT III	CABIN LIGHTS	CARL
S02	028-1135	1	SWITCH, SPDT, ON-ON CONT III	STEP LIGHTS	CARL
S03	028-0461	1	SWITCH, SPDT, ON-OFF-ON CONT III	BERTH/NIGHT LIGHTS	CARL

FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
YEL	16	P20	1	41		-	-	42		STEP LTS RET
DK BLU/RED	16	S01	2	02		P21	2	41		CABIN LTS
LT BLU/GRN	14	S01	1	02		P21	3	41		CABIN LTS IN
LT BLU/GRN	14	S01	3	02		P21	4	41		CABIN LTS IN
DK BLU/WHT	16	S02	2	02	SA	P20	2	41		STEP LTS OUT
DK BLU/WHT	16	S02	2	02	SA	-	-	42		STEP LTS OUT
LT BLU/DK BLU	14	S02	1	02		P21	5	41		STEP LTS IN
LT BLU/DK BLU	14	S02	3	02		P21	6	41		STEP LTS IN
ORN/GRA	16	S03	2	02		P21	7	41		BERTH/NIGHT LTS IN
DK BLU/GRY	16	S03	1	02		P21	8	41		NIGHT LT
DK BLU/YEL	16	S03	3	02		P21	9	41		BERTH LT

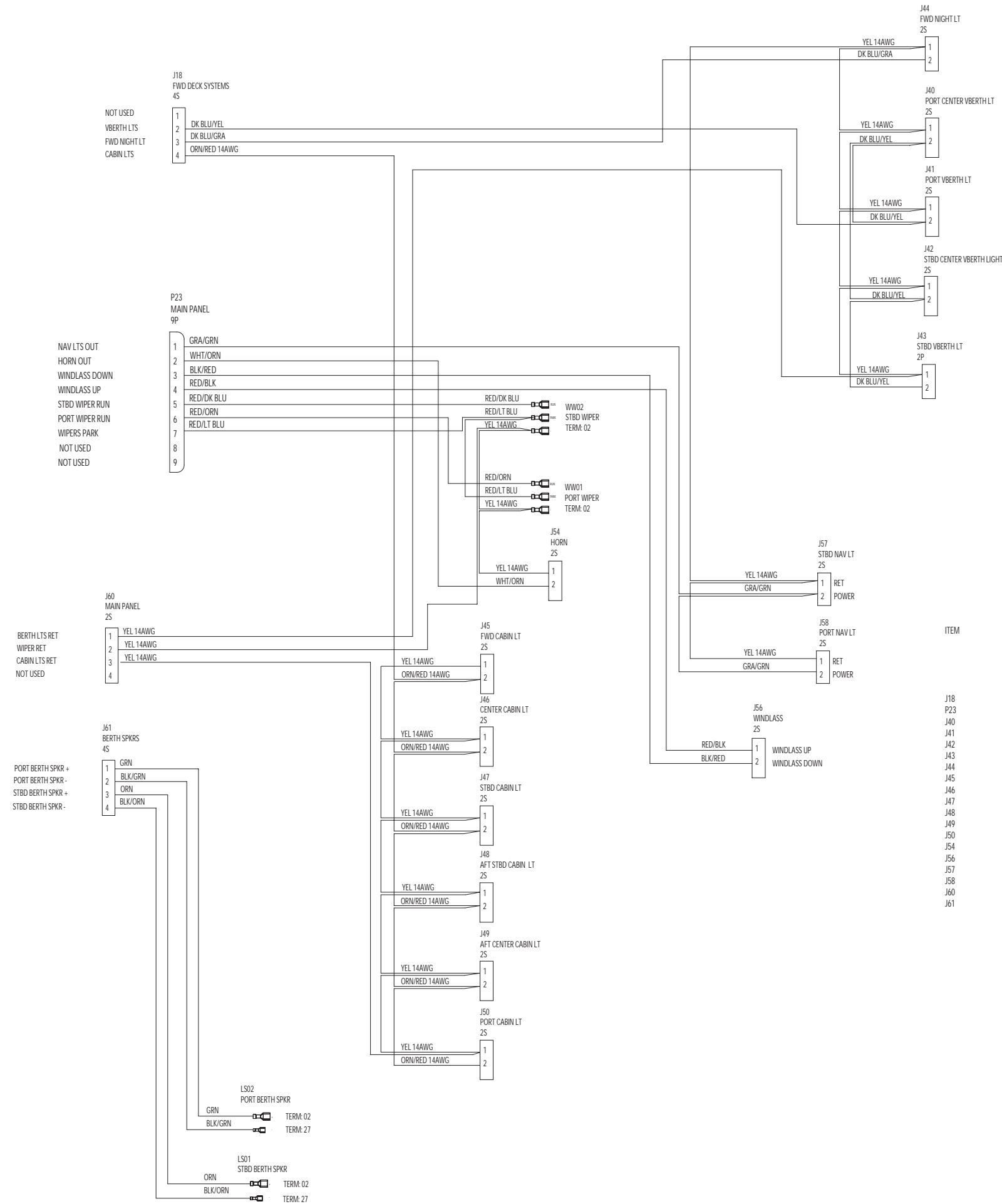
**378 VISTA
V-BERTH SWITCH
PANEL ASSEMBLY**



FOUR WINNS PARTS LIST

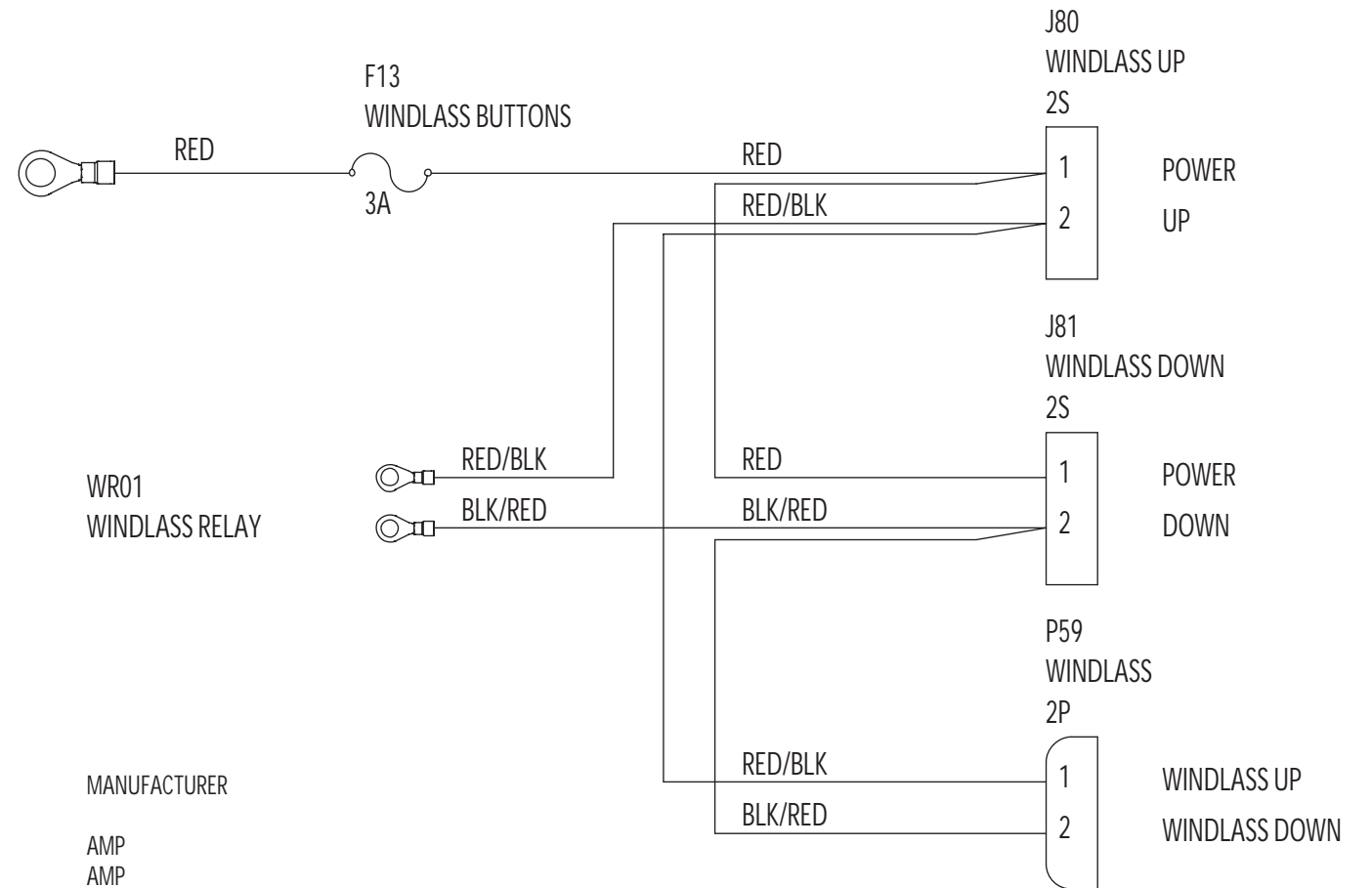
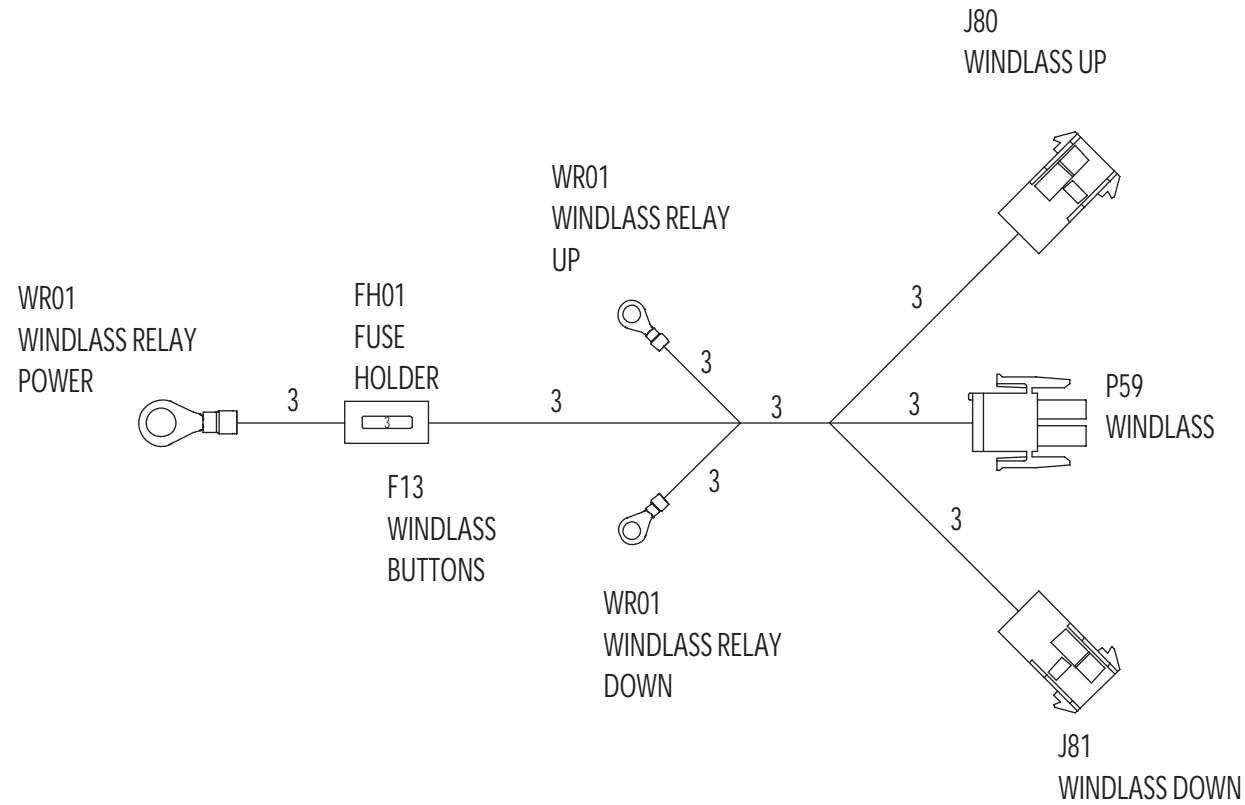
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	11	RECEPT,FASTON ,250,18-14	02	AMP
	028-0390	12	PIN,UMNL,18-14	41	AMP
	028-0454	7	SOCKET,UMNL,18-14	42	AMP
	025-2945	1	PANEL,BLANK,HEAD SWITCH	HEAD PANEL	
J85	028-0442	1	RECEPT,UMNL,4 CKT	GRAY WATER LEVEL	AMP
J86	028-0442	1	RECEPT,UMNL,4 CKT	FRESH/WASTE LEVEL	AMP
P28	028-0451	1	PLUG,UMNL,12 CKT	HEAD SWITCH	AMP
S01	028-0457	1	SWITCH,UNLIT ON OFF,CONT III	VAC-U-FLUSH	CARL SW
S02	028-0456	1	SWITCH, UNLIT (ON) OFF,CONT III	OVERBOARD DISCHARGE	CARL SW
S03	028-0457	1	SWITCH,SPST ON OFF,CONT III	HEAD LIGHT	CARL SW
S04	028-0457	1	SWITCH,SPST,ON OFF,CONT III	HEAD VENT	CARL SW

378 VISTA HEAD SWITCH PANEL ASSEMBLY



FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	8	RECEPT.FASTON_250,18-14	02	AMP
	028-0112	2	RECEPT.FASTON_110,20-26	27	AMP
	028-0390	7	PIN,UMN,18-14	41	AMP
	028-0454	44	SOCKET,UMN,18-14	42	AMP
J18	028-0442	1	RECEPT,UMN,4 CKT	FWD DECK	AMP
P23	028-0449	1	RECEPT,UMN,9 CKT	SWITCH PANEL	AMP
J40	028-0441	1	RECEPT,UMN,2 CKT	VBERTH LT	AMP
J41	028-0441	1	RECEPT,UMN,2 CKT	VBERTH LT	AMP
J42	028-0441	1	RECEPT,UMN,2 CKT	VBERTH LT	AMP
J43	028-0441	1	RECEPT,UMN,2 CKT	VBERTH LT	AMP
J44	028-0441	1	RECEPT,UMN,2 CKT	FWD NIGHT LT	AMP
J45	028-0441	1	RECEPT,UMN,2 CKT	CABIN LT	AMP
J46	028-0441	1	RECEPT,UMN,2 CKT	CABIN LT	AMP
J47	028-0441	1	RECEPT,UMN,2 CKT	CABIN LT	AMP
J48	028-0441	1	RECEPT,UMN,2 CKT	CABIN LT	AMP
J49	028-0441	1	RECEPT,UMN,2 CKT	CABIN LT	AMP
J50	028-0441	1	RECEPT,UMN,2 CKT	CABIN LT	AMP
J54	028-0441	1	RECEPT,UMN,2 CKT	HORN	AMP
J56	028-0441	1	RECEPT,UMN,2 CKT	WINDLASS	AMP
J57	028-0441	1	RECEPT,UMN,2 CKT	STBD NAV LT	AMP
J58	028-0441	1	RECEPT,UMN,2 CKT	PORT NAV LT	AMP
J60	028-0442	1	RECEPT,UMN,4 CKT	MAIN PANEL	AMP
J61	028-0442	1	RECEPT,UMN,4 CKT	BERTH SPKRS	AMP



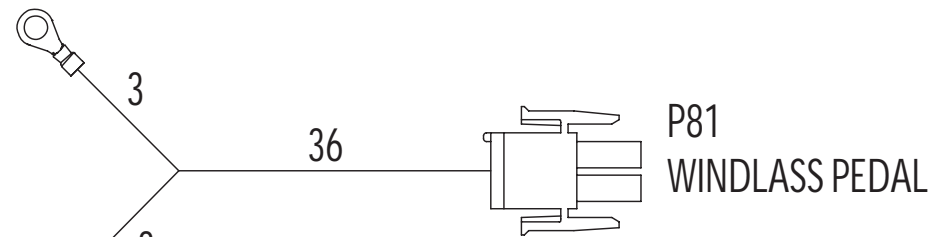
FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0189	2	TERM,RING,#8,16-14	08	AMP
	028-0193	1	TERM,RING,3/8,.250	11	AMP
	028-0390	2	PIN,UMNL,18-14	41	AMP
	028-0454	4	SOCKET,UMNL,18-14	42	AMP
	028-0506	1	FUSE,ATC,3A		BUSS
F13		1	FUSE HOLDER,INLINE		3M
FH01	028-0441	1	RECEPT,UMNL,2 CKT		AMP
J80	028-0441	1	RECEPT,UMNL,2 CKT		AMP
J81	028-0447	1	PLUG,UMNL,2 CKT		AMP
P59	065-0842-02	REF	WINDLASS RELAY		
WR01					

FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
RED	16	WR01	+	11		FH01	LINE	51		BUTTON POWER
RED	16	FH01	LOAD	51		J80	1	42	SA	BUTTON POWER
RED	16	J80	1	42	SA	J81	1	42		BUTTON POWER
RED/BLK	16	WR01	UP	08		J80	2	42	SB	WINDLASS UP
RED/BLK	16	J80	2	42	SB	P59	1	41		WINDLASS UP
BLK/RED	16	WR01	DOWN	08		J81	2	42	SC	WINDLASS DOWN
BLK/RED	16	J81	2	42	SC	P59	2	41		WINDLASS DOWN

FP01
FOOT PEDAL



FP01
FOOT PEDAL

FP01
FOOT PEDAL

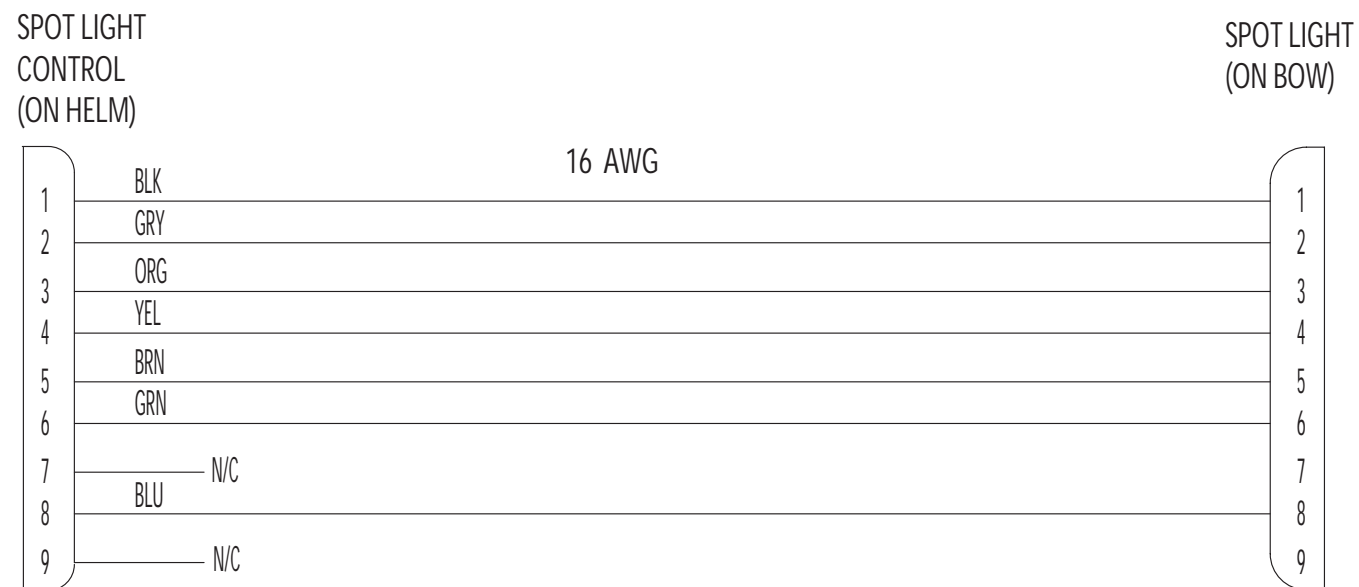


FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0193	2	TERM,RING,3/8,16-14	11	AMP
	028-0390	2	PIN,UMNL,18-14	41	AMP
FP01		REF	FOOT PEDAL,MAXWELL	FOOT PEDAL	
P81	028-0447	1	PLUG,UMNL,2 CKT	WINDLASS PEDAL	AMP

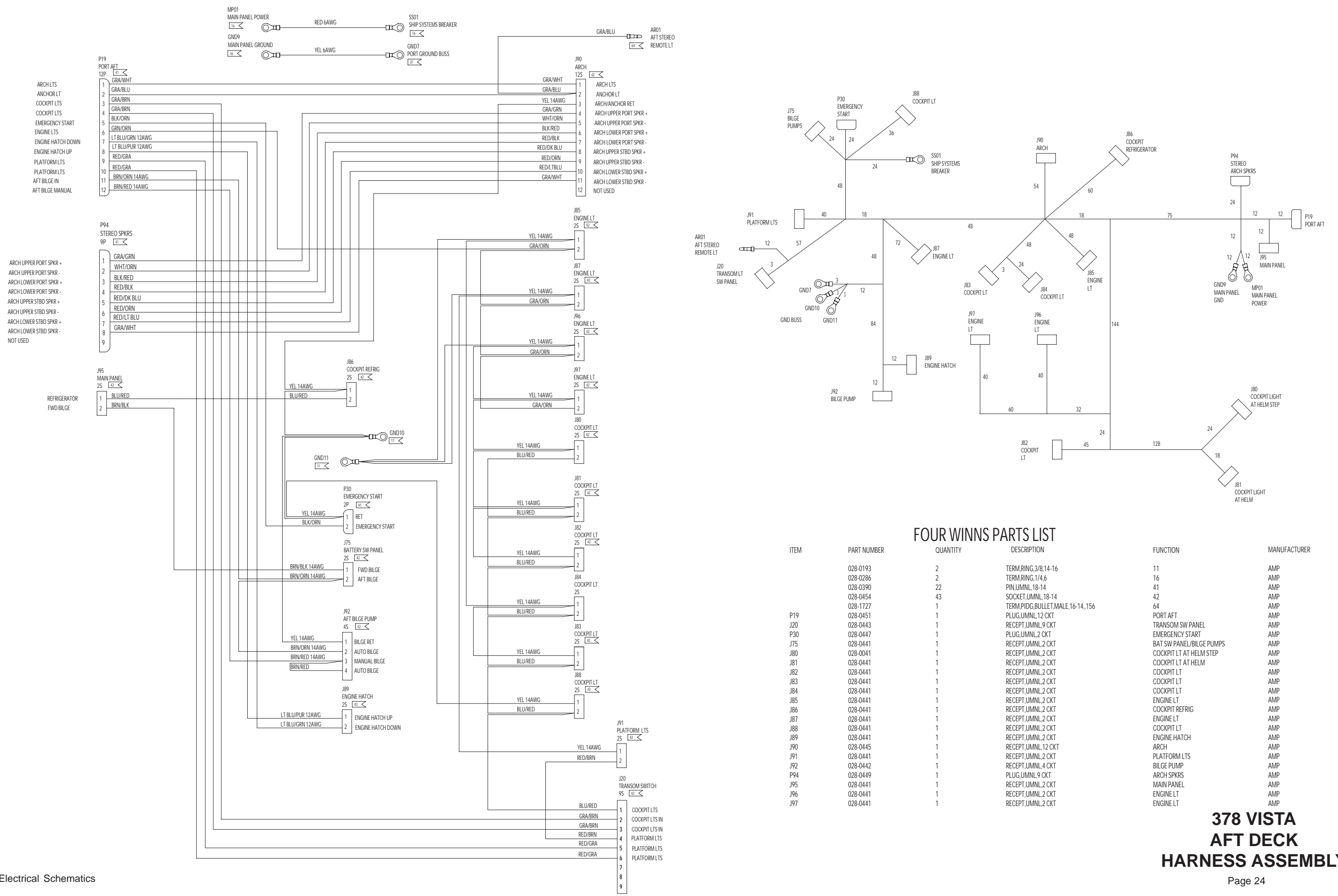
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
BLK/RED	16	FP01	-	10	BA	P81	1	41		WINDLASS PEDAL RET
RED	16	FP01	+	10	BA	P81	2	41		WINDLASS PEDAL POWER



FOUR WINNS PARTS LIST

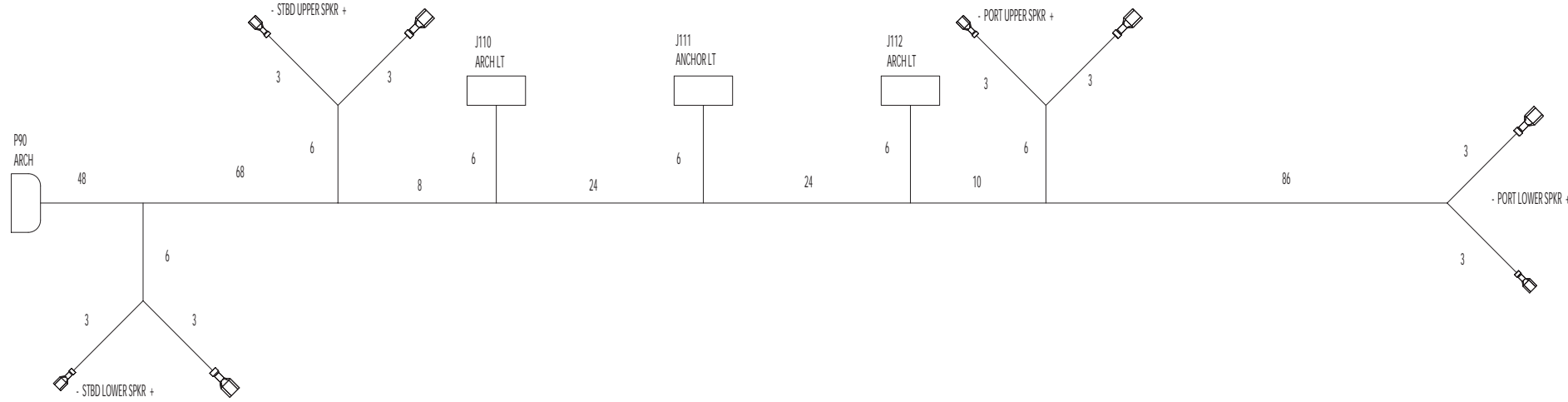
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	MANUFACTURER
P1	1-640511-0	1	CONN.HOUSING,9 CKT	AMP
P2	1-640511-0	1	CONN.HOUSING,9 CKT	AMP
7 PER CONN.	350967-1	14	PIN,MALE	AMP



FOUR WINNS PARTS LIST

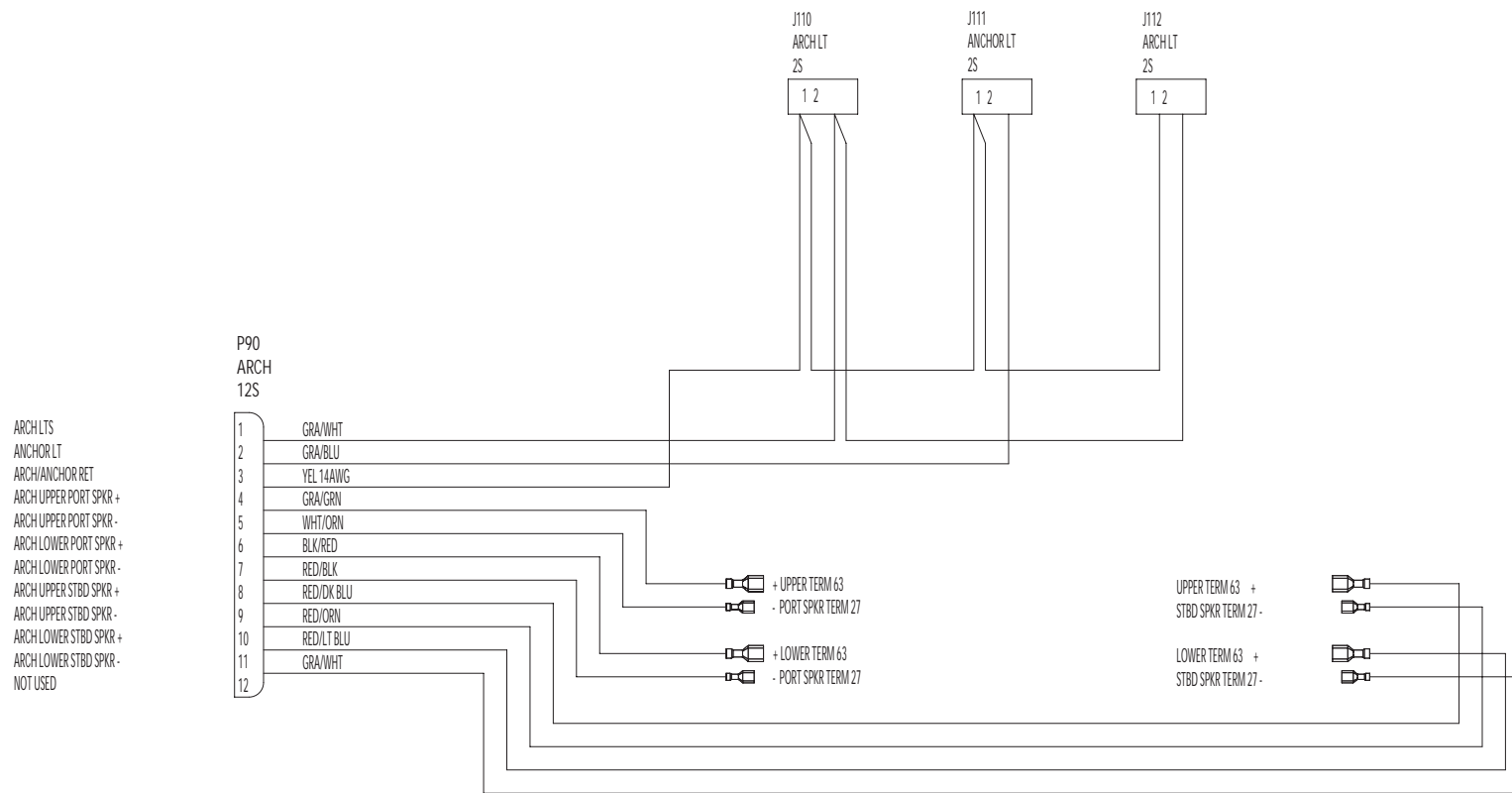
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0193	2	TERM,RING,3/8,14-16	11	AMP
	028-0286	2	TERM,RING,1/4,6	16	AMP
	028-0390	22	PIN,UMNL,18-14	41	AMP
	028-0454	43	SOCKET,UMNL,18-14	42	AMP
	028-1727	1	TERM,PIDG,BULLE,MALE,16-14,.156	64	AMP
P19	028-0451	1	PLUG,UMNL,12 CKT	PORT AFT	AMP
J20	028-0443	1	RECEPT,UMNL,9 CKT	TRANSOM SW PANEL	AMP
P30	028-0447	1	PLUG,UMNL,2 CKT	EMERGENCY START	AMP
J75	028-0441	1	RECEPT,UMNL,2 CKT	BAT SW PANEL/BILGE PUMPS	AMP
J80	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT LT AT HELM STEP	AMP
J81	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT LT AT HELM	AMP
J82	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT LT	AMP
J83	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT LT	AMP
J84	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT LT	AMP
J85	028-0441	1	RECEPT,UMNL,2 CKT	ENGINE LT	AMP
J86	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT REFRIG	AMP
J87	028-0441	1	RECEPT,UMNL,2 CKT	ENGINE LT	AMP
J88	028-0441	1	RECEPT,UMNL,2 CKT	COCKPIT LT	AMP
J89	028-0441	1	RECEPT,UMNL,2 CKT	ENGINE HATCH	AMP
J90	028-0445	1	RECEPT,UMNL,12 CKT	ARCH	AMP
J91	028-0441	1	RECEPT,UMNL,2 CKT	PLATFORM LTS	AMP
J92	028-0442	1	RECEPT,UMNL,4 CKT	BILGE PUMP	AMP
P94	028-0449	1	PLUG,UMNL,9 CKT	ARCH SPKRS	AMP
J95	028-0441	1	RECEPT,UMNL,2 CKT	MAIN PANEL	AMP
J96	028-0441	1	RECEPT,UMNL,2 CKT	ENGINE LT	AMP
J97	028-0441	1	RECEPT,UMNL,2 CKT	ENGINE LT	AMP

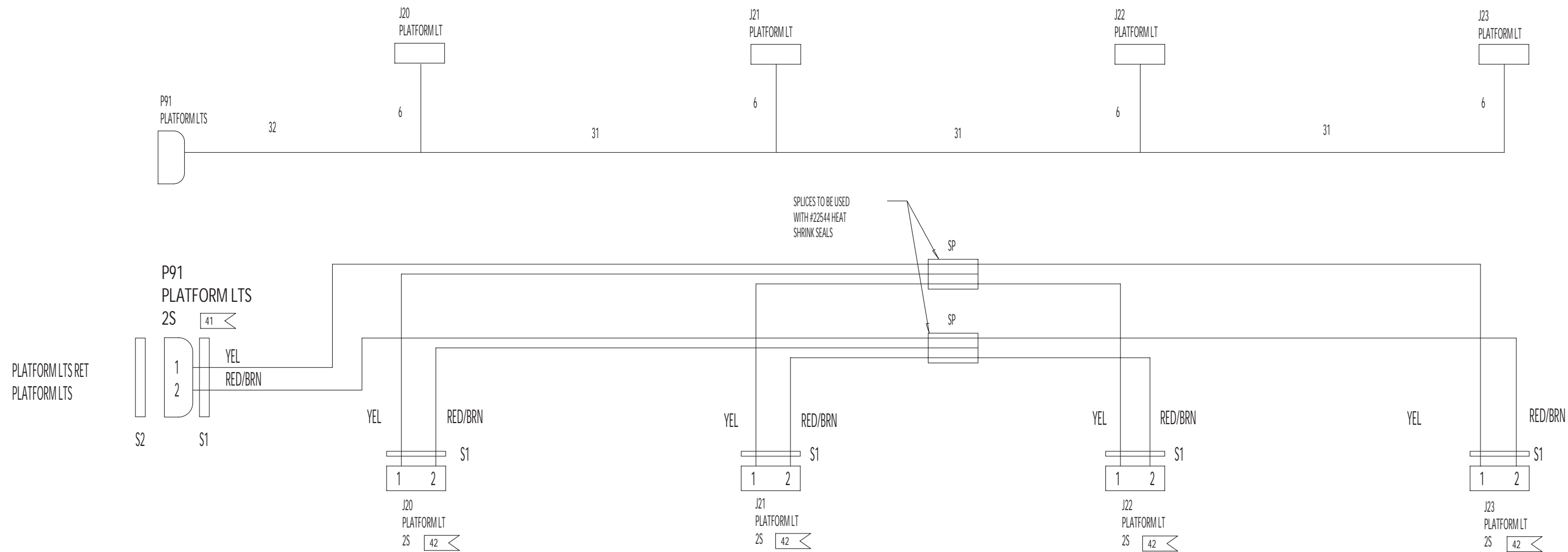
378 VISTA AFT DECK HARNESS ASSEMBLY



FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0112	4	TERM,FASTON,110,18-14	27	AMP
	028-0390	11	PIN,UMNL,18-14	41	AMP
	028-0454	6	SOCKET,UMNL,18-14	42	AMP
	028-1288	4	TERM,FASTON,205,18-14	63	AMP
J110	028-0441	1	RECEPT,UMNL,2 CKT	ARCH LT	AMP
J111	028-0441	1	RECEPT,UMNL,2 CKT	ANCHOR LT	AMP
J112	028-0441	1	RECEPT,UMNL,2 CKT	ARCH LT	AMP
P90	028-0449	1	PLUG,UMNL,12 CKT	ARCH	AMP

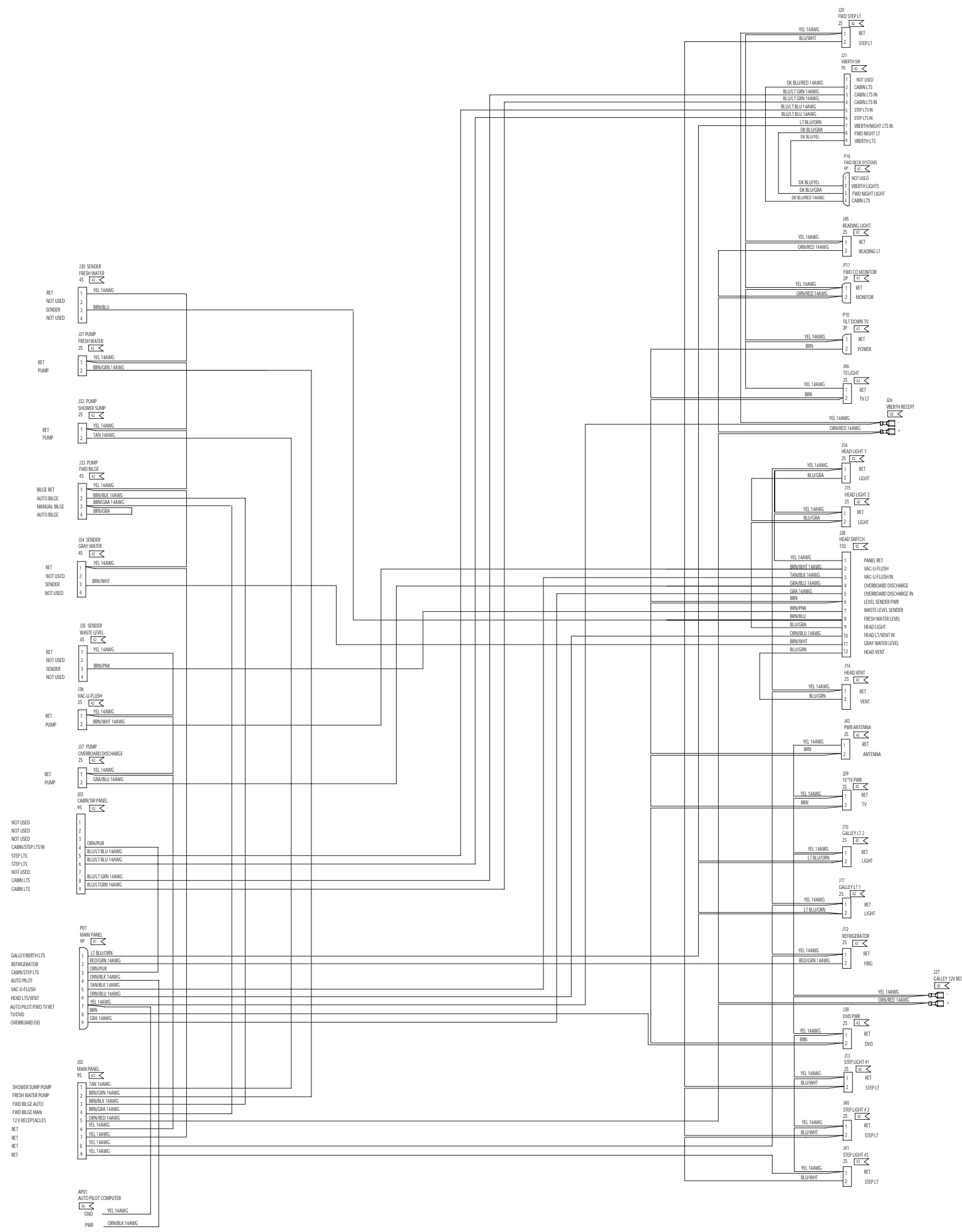




FOUR WINNS PARTS LIST

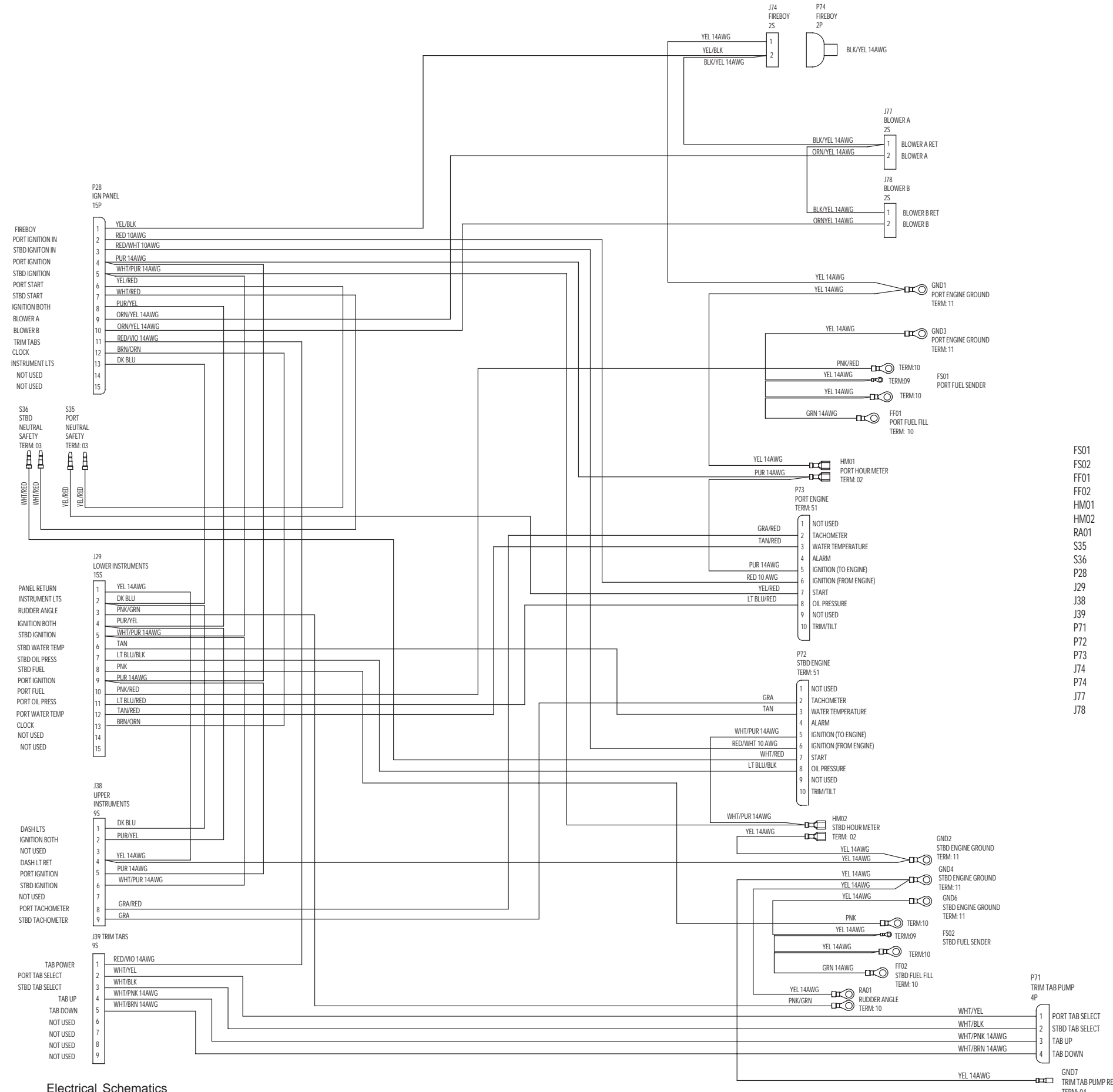
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER	MFG PART #
-	028-0390	2	PIN,UMNL,18-14	41	AMP	-
-	028-0454	8	SOCKET,UMNL,18-14	42	AMP	-
P91	028-0447	1	PLUG,UMNL,2 CKT	PLATFORM LTS	AMP	-
J20	028-0441	1	RECEPT,UMNL,2 CKT	PLATFORM LT	AMP	-
J21	028-0441	1	RECEPT,UMNL,2 CKT	PLATFORM LT	AMP	-
J22	028-0441	1	RECEPT,UMNL,2 CKT	PLATFORM LT	AMP	-
J23	028-0441	1	RECEPT,UMNL,2 CKT	PLATFORM LT	AMP	-
S1	028-1772	5	SEAL,UMNL,WIRE,2CKT	-	AMP	794270-1
S2	028-1771	1	SEAL,UMNL,INTERFACE,2 CKT	-	AMP	794269-1
SP	-	2	SPLICE,2-16,1-14AWG	-	AMP	350923-3
SEAL	-	2	HEAT SHRINK SEAL W/ SEALANT	-	WAYTEK	22544

378 VISTA PLATFORM LIGHTS HARNESS ASSEMBLY



FOUR WINNS PARTS LIST

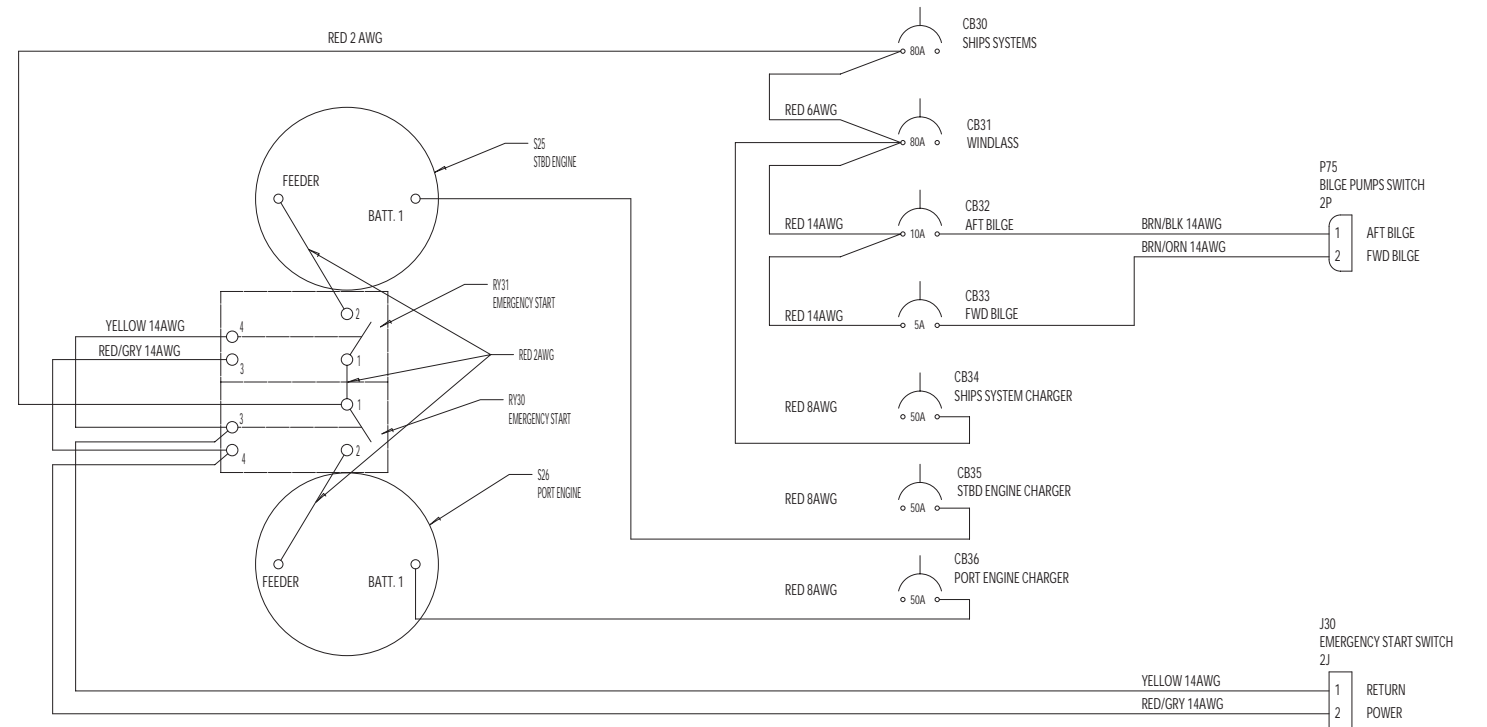
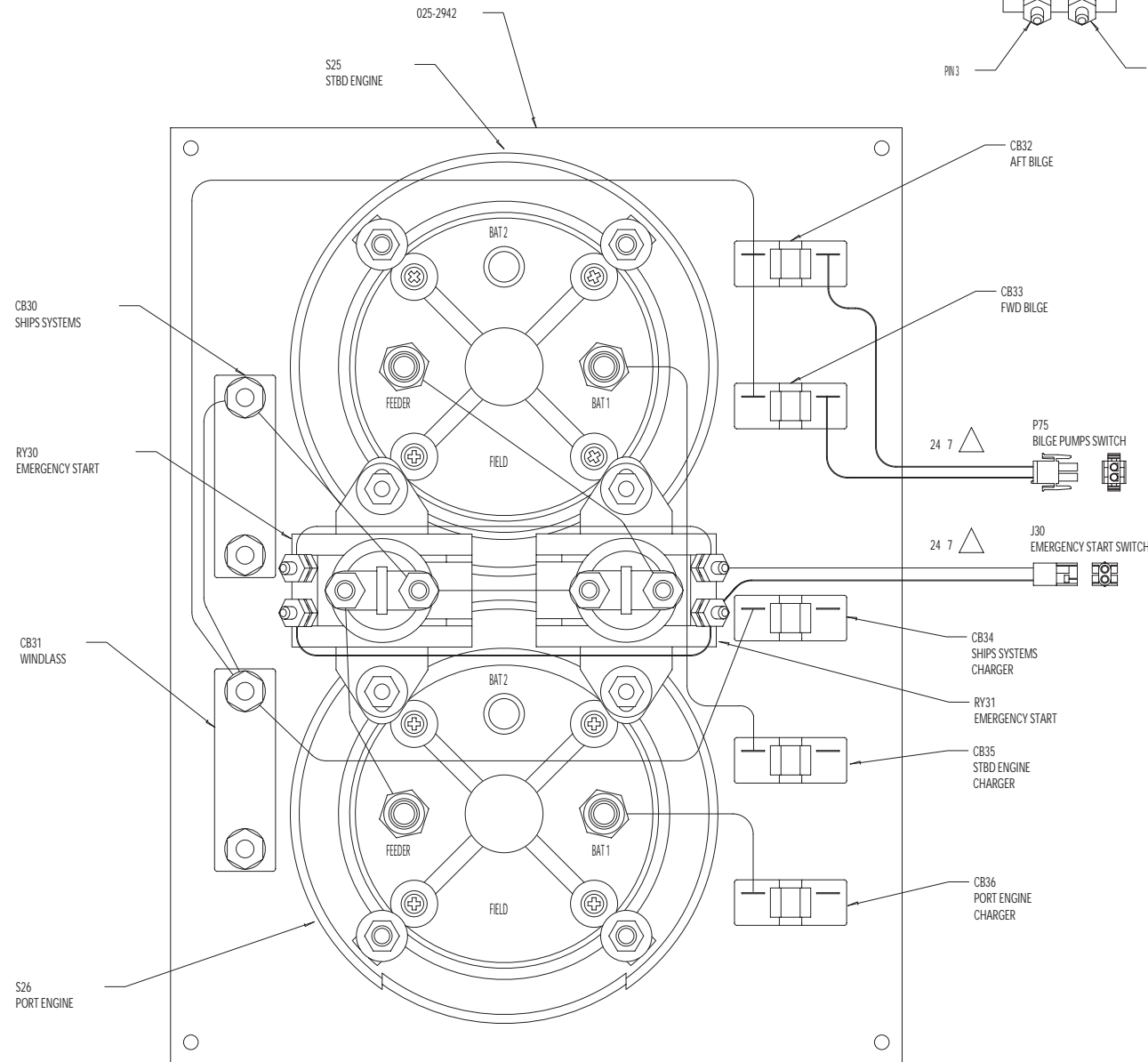
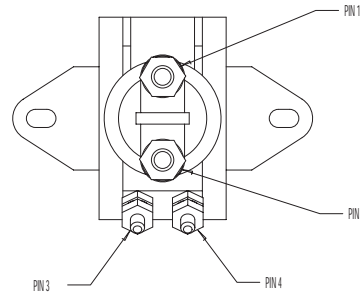
ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	4	TERM.FASTON, 250,18-14	02	AMP
	028-0390	16	PN UMNL 18-14	41	AMP
	028-0454	105	SOCKET UMNL 18-14 UNTERMINATED	42	AMP
				56	
P01	028-0449	1	PLUG UMNL 9 CKT	MAIN PANEL	AMP
P17	028-0447	1	PLUG UMNL 2 CKT	FWD CO MONITOR	AMP
P18	028-0448	1	PLUG UMNL 4 CKT	FWD DECK	AMP
J02	028-0443	1	RECEPT UMNL 9 CKT	MAIN PANEL	AMP
J03	028-0443	1	RECEPT UMNL 9 CKT	CABIN SW PANEL	AMP
J10	028-0441	1	RECEPT UMNL 2 CKT	GALLEY LT 2	AMP
J11	028-0441	1	RECEPT UMNL 2 CKT	REFRIGERATOR	AMP
J12	028-0441	1	RECEPT UMNL 2 CKT	HEAD VENT	AMP
J14	028-0441	1	RECEPT UMNL 2 CKT	HEAD LIGHT 2	AMP
J15	028-0441	1	RECEPT UMNL 2 CKT	HEAD LIGHT 1	AMP
J16	028-0441	1	RECEPT UMNL 2 CKT	HEAD LIGHT 1	AMP
J28	028-0445	1	RECEPT UMNL 12 CKT	HEAD SWITCH	AMP
J30	028-0442	1	RECEPT UMNL 4 CKT	FRESH WATER SENDER	AMP
J31	028-0441	1	RECEPT UMNL 2 CKT	FRESH WATER PUMP	AMP
J32	028-0441	1	RECEPT UMNL 2 CKT	SHOWER SLUMP PUMP	AMP
J33	028-0442	1	RECEPT UMNL 4 CKT	FWD BILGE PUMP	AMP
J34	028-0442	1	RECEPT UMNL 4 CKT	GREY WATER SENDER	AMP
J35	028-0442	1	RECEPT UMNL 4 CKT	WASTE LEVEL SENDER	AMP
J36	028-0441	1	RECEPT UMNL 2 CKT	VAC-U-FLUSH	AMP
J37	028-0441	1	RECEPT UMNL 2 CKT	OVERBOARD DISCRGE PUMP	AMP
J29	028-0441	1	RECEPT UMNL 2 CKT	TV PWR CONN	AMP
J27	028-1100	REF	RECEPT 12V AFI	GALLEY 12V RECEPTACLE	
J26	028-1100	REF	RECEPT 12V AFI	VBERTH 12V RECEPTACLE	
J21	028-0443	1	RECEPT UMNL 9 CKT	VBERTH SWITCH	AMP
J20	028-0441	1	RECEPT UMNL 2 CKT	FWD STEP LIGHT	AMP
P10	028-0447	1	PLUG UMNL 2 CKT	TILT DOWN TV IN V-BERTH	AMP
J38	028-0441	1	RECEPT UMNL 2CKT	DVD POWER	AMP
J13	028-0441	1	RECEPT UMNL 2CKT	STEP LIGHT # 1	AMP
J40	028-0441	1	RECEPT UMNL 2CKT	STEP LIGHT # 2	AMP
J41	028-0441	1	RECEPT UMNL 2CKT	STEP LIGHT # 3	AMP
J45	028-0441	1	RECEPT UMNL 2CKT	READING LIGHT	AMP
J46	028-0441	1	RECEPT UMNL 2CKT	TV LIGHT	AMP



028-0390	17	PIN,UMNL,16-14	41	AMP
028-0454	31	SOCKET,UMNL,16-14 VENDER TERMINATED	42 51	AMP AMP
FS01	REF	FUEL SENDER,SW	PORT FUEL SENDER	
FS02	REF	FUEL SENDER,SW	STBD FUEL SENDER	
FF01	REF	FUEL FILL,SS	PORT FUEL FILL	
FF02	REF	FUEL FILL,SS	STBD FUEL FILL	
HMO1	REF	HOUR METER,HOBBS	PORT HOUR METER	
HMO2	REF	HOUR METER,HOBBS	STBD HOUR METER	
RA01	REF	RUDDER ANGLE SENDER	RUDDER REFERENCE	
S35	REF	SWITCH, NEUTRAL SAFETY	PORT NEUTRAL SAFETY	
S36	REF	SWITCH, NEUTRAL SAFETY	STBD NEUTRAL SAFETY	
P28	1	PLUG,UMNL,15 CKT	IGNITION PANEL	AMP
J29	1	RECEPT,UMNL,15 CKT	LOWER INSTRUMENTS	AMP
J38	1	RECEPT,UMNL,9 CKT	UPPER INSTRUMENTS	AMP
J39	1	RECEPT,UMNL,9 CKT	TRIM TABS	AMP
P71	1	PLUG,CMNL,4 CKT	TRIM TAB PUMP	AMP
P72		PLUG,ENGINE, OMC	STBD ENGINE PLUG	OMC
P73		PLUG,ENGINE, OMC	PORT ENGINE PLUG	OMC
J74	1	RECEPT,UMNL,2 CKT	FIREBOY	AMP
P74	1	PLUG,UMNL,2 CKT	FIREBOY	AMP
J77	1	RECEPT,UMNL,2 CKT	BLOWER A	AMP
J78	1	RECEPT,UMNL,2 CKT	BLOWER B	AMP

378 VISTA AFT SYSTEMS HARNES ASSEMBLY

RELAY PIN REFERENCE



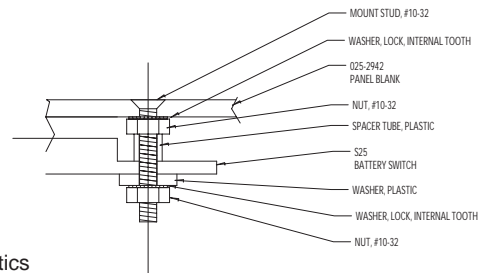
FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	CODE	MANUFACTURER
	028-0177	6	RECEPTACLE,FASTON,250/18-14	02	AMP
	028-0179	1	RECEPTACLE,FASTON,250/12-10	07	AMP
	028-0206	3	TERMINAL,1/8-14	16	AMP
	028-0209	4	TERMINAL,1/8-14	08	AMP
	028-0209	2	TERMINAL,1/8-14	18	AMP
	028-0193	2	TERMINAL,1/8-14	11	AMP
		1	TERMINAL,1/8-14	14	AMP
	028-0192	6	TERMINAL,1/8-14	31	AMP
	028-0196	1	TERMINAL,1/8-14	10	AMP
P75	028-0447	1	RELAY,BLANK,2CXT		AMP
J30	028-0441	1	RECEPTACLE,1/8-14	41	AMP
	028-0454	2	SOCKET,1/8-14		AMP
CB30	028-0462	1	BREAKER,80A		SHIPS SYSTEMS
CB31	028-0462	1	BREAKER,80A		CARL SW
CB32	028-0296	1	BREAKER,10A		WINDLASS
CB33	028-0296	1	BREAKER,10A		AFT BILGE
CB34	028-0296	1	BREAKER,50A		MP
CB35	028-1756	1	BREAKER,50A		SHIPS SYSTEM CHARGER
CB36	028-1756	1	BREAKER,50A		MP
S25	028-1756	1	BREAKER,50A		STBD ENGINE CHARGER
S26	028-0551	1	SWITCH, BATTERY #2112 ON/OFF		MP
RY30	028-1753	1	RELAY, BATTERY SWITCH PANEL		GENERAL
RY31	028-1753	1	RELAY, BATTERY SWITCH PANEL		EMERGENCY START

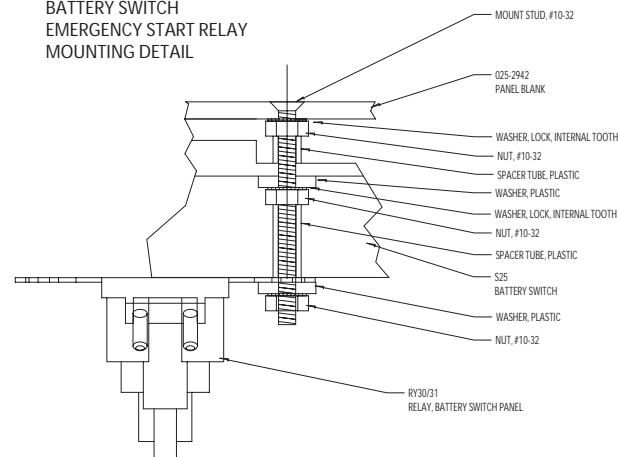
FOUR WINNS WIRE LIST

COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
RED	2	S25	FEEDER	18		RY31	2	31		EMERGENCY START
RED	2	S26	FEEDER	18		RY30	2	31		EMERGENCY START
RED	2	RY30	1	31		CB30	LINE	31		EMERGENCY START
RED	2	RY30	1	31		RY31	1	31		EMERGENCY START
RED	6	CB30	LINE	16		CB31	LINE	16		WINDLASS/SHIPS SYSTEM CHARGER
RED	8	CB31	LINE	16		CB34	LOAD	17		SHIPS SYSTEM CHARGER
RED	14	CB31	LINE	10		CB32	LINE	02	SA	AFT BILGE IN
RED	14	CB32	LINE	02	SA	CB33	LINE	02		FWD BILGE IN
RED	8	S25	BAT1	11		CB35	LOAD	17		STBD ENGINE CHARGER
RED	8	S26	BAT1	11		CB36	LOAD	17		PORT ENGINE CHARGER
BRN/BLK	14	CB33	LOAD	02		P75	1	41		AFT BILGE
BRN/ORN	14	CB33	LOAD	02		P75	2	41		FWD BILGE
YELLOW	14	RY30	3	08	SB	J30	1	42		EMERGENCY START
RED/GRY	14	RY30	4	08	SC	J30	2	42		EMERGENCY START
YELLOW	14	RY30	3	08	SB	RY31	4	08		EMERGENCY START
RED/GRY	14	RY30	4	08	SC	RY31	3	08		EMERGENCY START

BATTERY SWITCH MOUNTING DETAIL



BATTERY SWITCH EMERGENCY START RELAY MOUNTING DETAIL

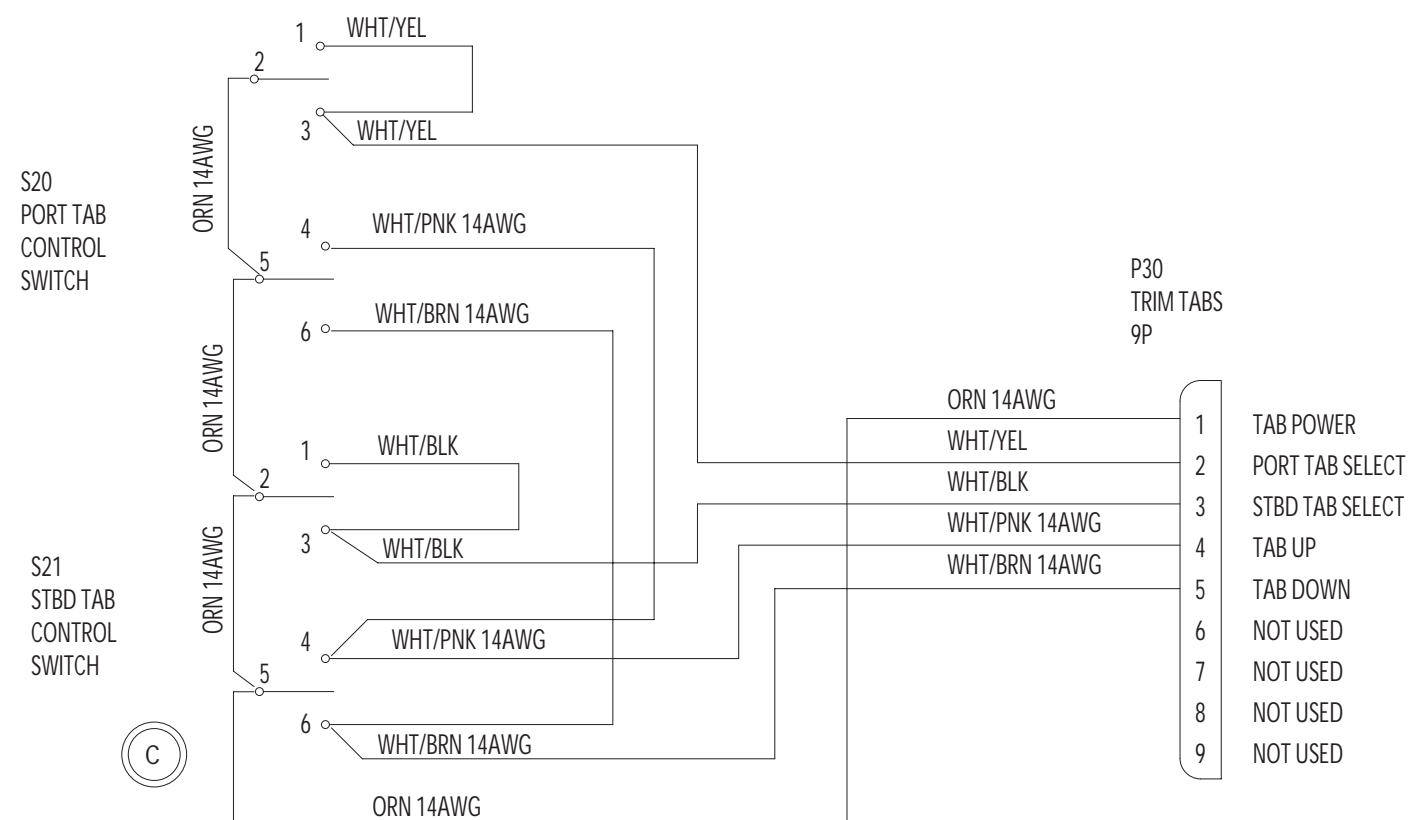


FOUR WINNS WIRE LIST

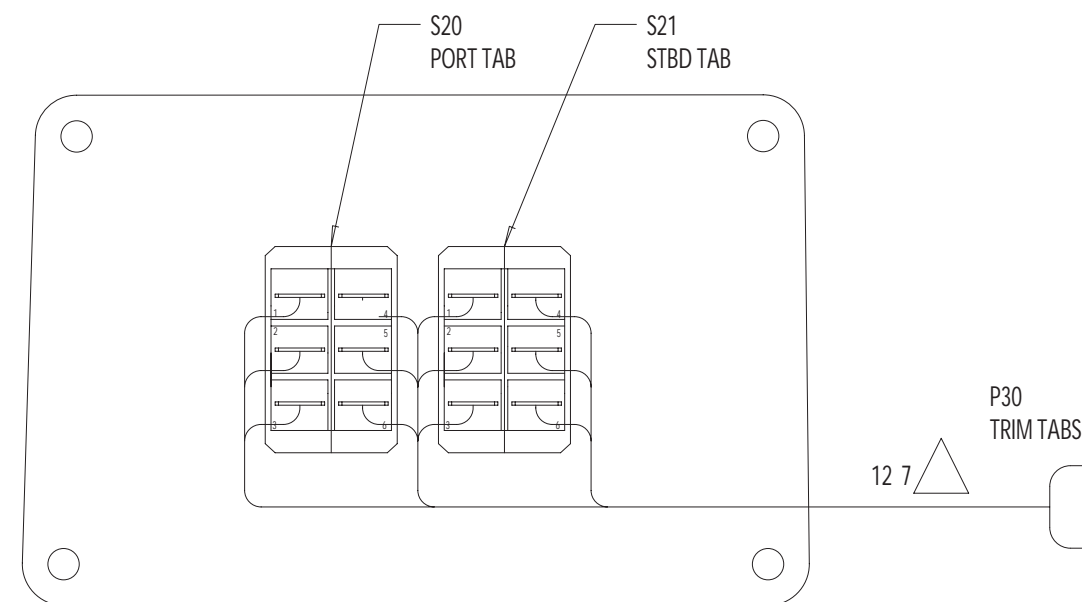
COLOR	GA	FIRST	PIN	TERM	NOTE	SECOND	PIN	TERM	NOTE	FUNCTION
ORN	14	P30	1	41		S21	5	02	SA	TAB POWER
WHT/YEL	16	P30	2	41		S20	3	02	SD	PORT TAB SELECT
WHT/BLK	16	P30	3	41		S21	3	02	SE	STBD TAB SELECT
WHT/PNK	14	P30	4	41		S21	4	02	SF	TAB UP
WHT/BRN	14	P30	5	41		S21	6	02	SG	TAB DOWN
ORN	14	S20	5	02	SC	S20	2	02		
ORN	14	S20	5	02	SC	S21	2	02	SB	TAB POWER
ONR	14	S21	2	02	SB	S21	5	02	SA	TAB POWER
WHT/BRN	14	S20	6	02	SG	S21	6	02		TAB DOWN
WHT/PNK	14	S20	4	02	SF	S21	4	02		TAB UP
WHT/YEL	16	S20	3	02	SD	S20	1	02		PORT TAB SELECT
WHT/BLK	16	S21	3	02	SE	S21	1	02		STBD TAB SELECT

FOUR WINNS PARTS LIST

ITEM	PART NUMBER	QUANTITY	DESCRIPTION	FUNCTION	MANUFACTURER
	028-0177	34	TERM,FASTON,250,18-14	02	AMP
	028-0390	28	SOCKET,UMNL,18-14	42	AMP
	025-2185	1	PANEL,BLANK,TRIM TABS	BLANK PANEL	
P30	028-0449	1	PLUG,UMNL,9 CKT	TRIM TABS	AMP
S20	028-0460	1	SWITCH,(ON) OFF (ON) CONT III	PORT TAB SELECT	CARL SW
S21	028-0460	1	SWITCH,(ON) OFF (ON) CONT III	STBD TAB SELECT	CARL SW



REAR PANEL VIEW



**378 VISTA
TRIM TABS
PANEL ASSEMBLY**
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PART # 090-2744