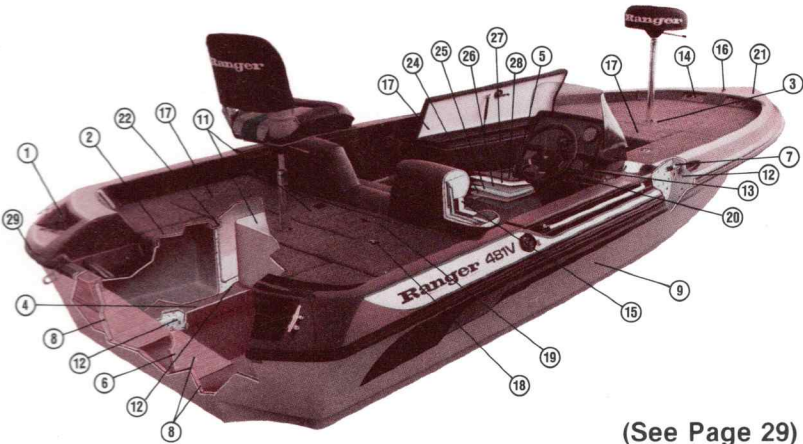


Ranger®

BOATS

OWNER/OPERATOR MANUAL



Ranger Trail

TRAILERS

© COPYRIGHT 1993 WOOD MANUFACTURING CO., INC.
FOR RANGER BOAT YEAR MODELS 1993-1994







RULES OF THE ROAD FOR OUTBOARDING



- Keep clear of sailing craft and rowboats. Yield right of way to slower boats.
- Always keep to the right.
- Do not use your motor near swimmers or skin divers.
- Learn the sign language of the various buoys and warning signals. These are your nautical traffic signs, posted for your safety and convenience.

COASTAL WARNING DISPLAY SYSTEM

The United States Weather displays coastal warning signals (RED and BLACK flags by day, RED and WHITE lights by night) whenever winds dangerous to navigation are forecast. Learn these signals and heed them. Ignoring them can be dangerous to you.

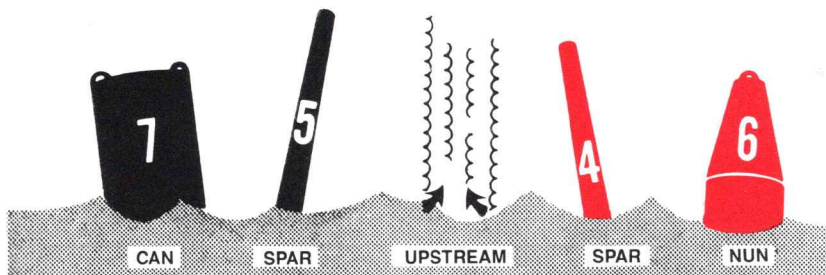
	◀ DAY SIGNALS	NIGHT SIGNALS ▶
 WARNING: SKIN DIVER IN AREA 	 SMALL CRAFT WARNING - Winds up to 38 miles an hour (33 knots) and/or sea conditions dangerous to small craft operations forecast for area.	
	 GALE WARNING - Winds from 39 to 54 miles an hour (34 to 48 knots) forecast for area.	
	 WHOLE GALE WARNING - Winds from 55 to 73 miles an hour (48 to 63 knots) forecast for area.	
	 HURRICANE WARNING - Winds 74 miles an hour (64 knots) and above forecast for area.	

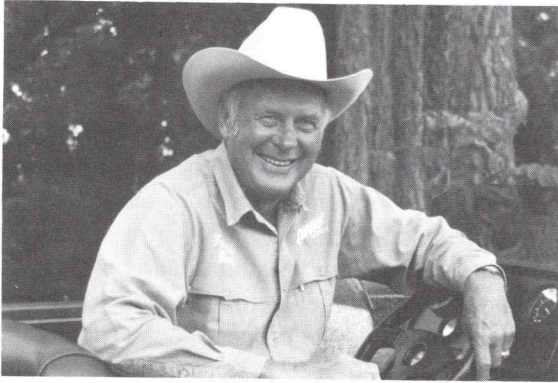
BUOYS . . . YOUR WATERWAY SIGNPOSTS

There are three basic types of buoys: NUN (cone shaped), SPAR (spar shaped) and CAN (cylindrical shaped).

Buoys marked with a contrasting band of color indicate that the channel splits. If the buoy is a can with a red band, then the preferred channel is to the starboard side of the buoy. If the buoy is a nun with a green band, then the preferred channel is to the port side of the buoy.

Going upstream, the RIGHT (Starboard) side of the channel is marked with even numbered RED buoys, nuns or spars; the LEFT (Port) side of the channel is marked with odd numbered GREEN buoys, cans or spars. RED and WHITE vertically striped buoys indicate the middle of a channel. Always pass close to these buoys.





A MESSAGE FROM FORREST WOOD . . .

Congratulations! As the owner of a new Ranger boat you have shown that you are a knowledgeable buyer. Ranger has earned the reputation of being the leading manufacturer of quality fishing boats and your investment can, with care, retain its value while giving excellent service through the years.

This manual is intended to help you better understand your boat and make basic care and maintenance quite simple. Additionally, it provides information that could be essential to its safe operation. Please take the time to study this manual along with your engine operating manual before operating your boat.

Should you have questions, contact your Ranger dealer or contact us at:

Ranger Boats
P.O. Box 179
Flippin, AR 72634
(870) 453-2222

Please let me remind you that pleasant boating is safe boating and the very best safety rules are your COMMON SENSE and SOUND JUDGMENT.

Thank you for becoming a part of the "Ranger Family"!

Sincerely,

A handwritten signature in cursive script that reads "Forrest L. Wood". The signature is written in dark ink and is positioned above the printed name and title.

Forrest L. Wood
Founder

GETTING TO KNOW AND HANDLE YOUR RANGER BOAT ...

Your Ranger dealer should see that you have selected the proper horsepower engine for the rating range of the boat model you have chosen. The proper engine mounting height has been selected for optimum performance and the correct propeller has been chosen.

Since most boats spend more time on the trailer than in the water, a Ranger Trail trailer can extend the useful life of your new boat. The load **MUST** be evenly distributed on the properly fitting "bunks" or "pads" of the trailer. The boat should not rest on the loading rollers, but should properly cradle on the bunks.

Always park your rig so that the trailer tongue is higher than the stern of the boat, so that any water can drain from the hull when the drain plug is removed. All livewell valves should be placed in the "empty" position to properly drain your livewell plumbing.

A properly fitted boat cover will protect your investment from the damaging effects of the ultraviolet rays of sunlight, as well as from road film, rain and dirt abrasion while trailering. The cover also protects your accessory equipment and fishing tackle from "prying eyes" and helps to guard against pilferage.

Familiarize yourself with the instruments and indicators used with all installed equipment. Factory equipment manuals are included to assist you to properly operate your trolling motor; depth finders; engine tachometer; speedometer; and any additional accessories that you have installed. Naturally this Ranger manual is only complete when you have completely studied your engine operating manual and are familiar with engine operation.

Now you are ready for a ride in your new boat! This will be an exciting, fun experience if you exercise the proper caution and observe all safety rules and regulations.

Before launching your boat ... stop on the ramp short of the water. Stop your vehicle's engine and set the parking brake. At the rear of the boat, install your transom drain plug (we often store our plug in one of the splash-well drain holes near the top of the transom) and remove the trailering tie-downs, trailering arms, motor supports and/or support brackets. Slowly back the boat and trailer into the water and unhook the winch strap hook. When in the driver's seat, put on and secure your life vest and attach the engine emergency stop switch lanyard to your person. Start engine and back your boat off the trailer. You should experience no problem if the water is adequately deep for proper

launching.

While you are easing along within the "No Wake" zone you should trim your engine all the way down to its lowest position (in). Turn the steering right and left to insure that there is no undue slack and inspect the steering system. Look for any loose connections at the engine and beneath the driver's console (see pp. 19-21). Inspection of this crucial linkage system can be visually made at home or at the lake, but should be done at regular intervals. Before applying power and "opening it up", insure that all passengers are properly seated and are wearing an approved Personal Flotation Device (PFD or Life vest). Check to see that there are no obstructions in your path. We recommend that the front pedestal seat be removed from the front deck base and positioned in the special base provided in the front floor of the boat. This will provide for an unobstructed view while driving. The power pedestal should be pushed down into the lowest position. Should there be no base provided in the floor, the seat should be removed and securely placed in the floor of the boat.

When you have cleared the "No Wake" zone it is time to accelerate and get your new boat "on plane". Before applying power, insure that all passengers are properly and securely seated in appropriate locations. Abruptly move the throttle lever into the full open position (full forward). The bow of the boat will rise into the air for a moment . . . this is normal operation when a boat is "coming out of the hole" and is no cause for alarm. The bow will quickly come back down into a level running position. When the boat begins to accelerate rapidly, the throttle should be pulled back to obtain a comfortable running speed. Always increase your speed a little at a time until you are running at a speed at which you feel safe and are in complete control... **NEVER FASTER THAN YOUR EXPERIENCE DICTATES!** At this moderate speed you should begin to trim your engine into a higher position (out). Please refer to your engine owner's manual for more information on power trim use and operations. Your speed will increase and the bow will lift. The boat will begin to run with the back rear portion of the hull in contact with the water and steering will become easier. Over-trimming will result in excessively high RPM (note your tachometer) and the steering can develop "torque" or a "pull" toward the right. Trim back down slightly for best operation. A different trim setting (see your trim indicator) will be required for different throttle settings. You will soon develop an instinctive feel for these settings. Your ear, will become attuned to the sound of the proper engine RPM. Again, over trimming is to be avoided as excessive RPM can cause engine damage and can also cause your prop to "blow out" (lose its grip on the water because it is too near the surface). If the bow

of your boat should begin to bob up and down (called "porpoising") you will probably have over trimmed. Bump the trim button down a little until the motion stops.



WARNING: Improper use of power trim may lead to excessive bow steer or steering torque (pull) and could lead to accidental injury or death.

If your boat should continue to "porpoise", a slight increase in throttle and speed will generally correct the condition. Proper distribution of the load in your boat will make a great difference in its operation. Moving tackle boxes or ice chests rearward or toward the front can greatly effect boat performance and handling.

When beginning a turn with the engine trimmed in the higher positions, the trim switch should be pressed to LOWER the engine further into the water just prior to and during the turning of the steering wheel. Practice and experience will determine just how far down you will need to trim for safely handling a turn at various speeds and water conditions. Just remember to **MAKE SAFETY YOUR GUIDE** when attempting any new or unfamiliar maneuver. Proceed **ONLY AT SPEEDS AT WHICH YOU FEEL SAFE AND IN CONTROL!**

Naturally, it is impossible to describe here all the different situations that you may encounter. Just remember that **COMMON SENSE** is your best safety precaution. Your new boat is built to safely carry you in **NORMAL OPERATION**, but it is up to you to stay alert and to avoid dangerous situations. Safe boating is in the hands of the operator.

Even the pleasant experience of the "first ride in your new boat" must sometime come to an end. Hopefully you have purchased a "drive on" trailer with your boat. The key to simple and effortless loading of your boat is having the trailer in the proper position. This "right" position is determined by the steepness of the ramp. Here, you will have to experiment with the proper depth to have your trailer in. The most common mistake is having the trailer too deep, so a little time spent experimenting with different depth positions can ultimately save you much time and embarrassment. To load at slow speed, position your boat to head directly between the guide bunks or guide rollers and use the thrust of your outboard engine to drive the boat forward until the bow contacts the roller on the bow stand block. Shut down your outboard and fasten the winch strap hook to the bow eye. Tighten the winch strap and lock winch before pulling the boat from the water. Your engine should be trimmed up into a higher position before the trailer is pulled up the ramp to prevent damage to the lower unit or propeller. Pull the rig

up the ramp and park well out of the way of other boaters. Stop your vehicle engine and set parking brake. Remove the drain plug, open and drain the livewell system, and stow all loose equipment. We recommend that you install a transom saver, or engine support brace, between the trailer frame and the lower unit of your engine to prevent damage to your transom while the boat is in transit.

For the most possible boating and fishing enjoyment familiarize yourself completely with your boat and with the instruction manuals for all additional equipment. If you are a novice, there are publications on good seamanship recommended to make your boating safe and enjoyable. We also recommend that you enroll and attend any of the excellent safe boating courses offered and conducted by your area Power Squadron or the U.S. Coast Guard Auxiliary.



WARNING: The operator (driver) is responsible for the correct and safe operation of the boat, the equipment aboard and the safety of all occupants aboard. We strongly recommend that the operator read this manual and thoroughly understand the operational instructions for the engine and all related accessories before the boat is used.

BOAT DATA

OWNER _____

Address _____

DEALER _____

Address _____

Phone _____

BOAT - MAKE/MODEL _____

Serial No. _____

Key No. _____

ENGINE - MAKE/MODEL _____

Serial No. _____

Drive Unit Serial No. _____

OTHER _____

TABLE OF CONTENTS

Getting to Know and Handle Your Ranger Boat	2
Boat Data (Owner's Information)	6
Special Information	8
Your Ranger Dealer's Responsibilities.....	8
Owner/Operator's Responsibilities.....	9
Warnings and Cautions.....	10
Hull Identification Plate	11
U.S. Coast Guard Capacity Information Plate.....	12
Recommended On-Plane Seating Locations	13
Fuel System.....	14
Your Livewell Aeration System.....	16
Steering At Console	19
Your Boat's Finish	22
Maintenance and Repair	22
Your Power Pedestals	25
Key Locks, Carpet and Upholstery.....	27
Cutaway View of Boat	28
Inboard/Outboard (Stern Drive) Models.....	30
Adding Accessories To Your Boat	31
Complete Wiring Diagrams	33
Wiring Information	36
Electrical System	37
Fuse Panel Information.....	37
Bow Panel Information.....	38
Installation of Trolling Motor Plug.....	39
Installation of Battery Charger Plug.....	39
Upright and Level Flotation	42
Federal Requirements for Recreational Boats	43

YOUR RANGER TRAIL TRAILER

General Information and Maintenance.....	46
Your E-Z Lube Hubs.....	47
Trailer Brakes.....	48
VR-10 Disc Brake Parts List	51
Removable Tongue.....	53
Before Towing Your Ranger Trail Trailer	54
Towing Your Ranger Trail Trailer.....	54
Trailer Data (Owner's Information)	56
Ranger Trail Parts List.....	57
Trailer Exploded View	58
Tips for Better, Safer Boating	61
Limited Warranty.....	62

SPECIAL INFORMATION

The following special information is intended to alert you to possible dangers and to information important to the safe operation of your boat and other equipment. Observe them carefully. However, simply being aware of the "WARNING", "CAUTION" and "NOTICE" notations in this manual will not eliminate the dangers that they signal if you do not implement the information. These warnings, plus common sense operation will insure you a safe and fun boating or fishing outing.

Please take special note when you see one of the following signs:



WARNING: Failure to follow the advice of a "warning" may result in bodily injury or death.



CAUTION: Non-compliance with "caution" instructions could result in failure of, or damage to, the product and/or equipment.



NOTICE: Draws special attention to installation, operation, or other important maintenance information.

ALL information or instructions in this manual could be necessary for proper operation and/or maintenance. If you do not understand any portion of this manual, please contact your Ranger dealer or our Customer Service Department for any additional information.

IMPORTANT: Your Ranger Dealer's Responsibilities ...

Generally, it is the dealer's responsibility to the customer to make sure that the boat has been equipped as ordered with a properly installed and functioning engine that is within the horsepower rating specified for that model boat. The dealer should see that the engine is outfitted with the proper propeller for that boat model and for the load that the boat is normally expected to carry.

The dealer should help to familiarize the customer with the on-board equipment and explain operation of this equipment; the engine operation; and the proper functioning and operation of the boat itself.

Prior to delivery, the dealer should make certain that the product and equipment is completely operational; the proper propeller is installed; and that all oil, fuel system and lubrications systems are understood. The dealer should explain the operation of all instrumentation equipment, and the boat electrical and livewell systems.

The dealer should check for correct carburetor adjustment, throttle and steering functioning, and instrumentation accuracy. Engine cooling water should be properly circulating.

The dealer should test for maximum engine RPM as specified in the engine manufacturer's specification sheet(s) and/or engine owner's manual for proper operation of all equipment and for proper adjustment of steering effort and direction. All necessary adjustments for maximum efficiency should be made.

Owner/Operator's Responsibilities ...

It is the owner/operator's responsibility to perform all safety checks and to ensure that all lubrication and maintenance instructions are complied with for maximum safety and proper operation.

It is also the owner/operator's responsibility to return the unit to the Ranger dealer for a periodic checkup.

The owner/operator is responsible for the correct operation of the boat and for the safety of its occupants. Be sure that all operators read this manual before attempting to operate the boat. Your passengers should be shown the location and use of all emergency equipment and one passenger should be instructed how to handle the boat in case of emergency. U.S. Coast Guard requirements for PFDs (Personal Flotation Devices, or Life vests) can vary, depending on the type of boat. Be sure to comply with the U.S. Coast Guard regulations that apply to your boat. The owner/operator should, however, make certain that all passengers in the boat are in possession of, and are securely wearing, a PFD whenever the boat is in operation. We strongly recommend that an engine emergency stop switch (kill switch) be securely connected to the boat operator any time that the engine is in operation!

Learn the waterway rules of the locality in which you intend to operate your boat. Navigable waterways are controlled by Federal regulations while inland lakes and Canadian waters are controlled by local jurisdictions. Obey all regulations to protect yourself, your passengers, and fellow boating enthusiasts.

Before boating, obtain the weather forecast for your area. Familiarize yourself with the weather bureau warning system signal(s) and waterway traffic sign/markings information.

Contact your local U.S. Coast Guard Auxiliary and take advantage of their excellent boating and safety classes and seasonal boat inspections.



WARNING: Operating a boat with an engine of horsepower in excess of that specified on the boat's capacity plate can result in loss of control over the boat's operation and could lead to an accident resulting in injury or death of the boat's occupants.



WARNING: Imprudent operation of the boat, with or without the use of PFDs and an approved engine emergency stop switch, can lead to property damage, injury or death of the boat operator or passenger(s), or other, whether within the boat or outside the boat.



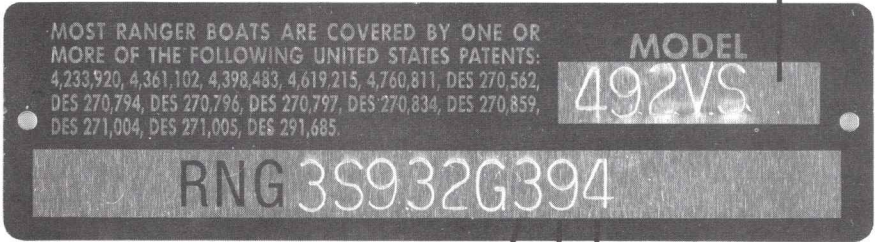
WARNING: The boat operator should insure that the lanyard connection to the emergency stop switch is of ample length to insure that the inadvertent activation of the switch is not likely. Accidental triggering of the emergency stop switch could result in loss of engine power at inopportune times, such as while docking or in heavy seas, strong currents or high winds and could lead to an accident resulting in injury or death.



WARNING: Do not exceed the maximum weight and persons capacity found on the U.S. Coast Guard capacity information plate located on your boat. Overloading severely affects the stability and handling of your boat and could lead to an accident causing injury or death.

HULL IDENTIFICATION PLATE

Model Number

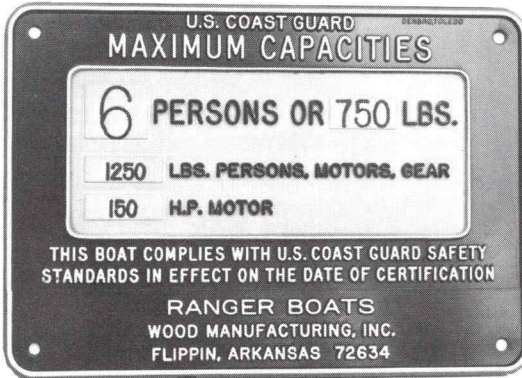


Year Mfg. _____ Year Model _____

The hull I.D. Plate is located on the outboard side of the starboard transom, above the water line, and contains the following information:

- (1) Boat patent information
- (2) Model Number - This number should be referred to when ordering parts or making other inquiries.
- (3) Hull Identification Number (Serial Number) - Should also be included in any inquiries or when ordering parts. The U.S.C.G. requires the H.I.N. number be permanently affixed and remain on the starboard transom of the boat. Do not alter this plate in any way.

U.S. COAST GUARD CAPACITY INFORMATION PLATE



Familiarize yourself with your boat's maximum capacities. Do not exceed the maximum weight (in pounds) or persons capacity (number) found on the U.S.C.G. capacity information plate attached to your boat. **Know the ratings and load your boat accordingly. It is a must for safe boating.**

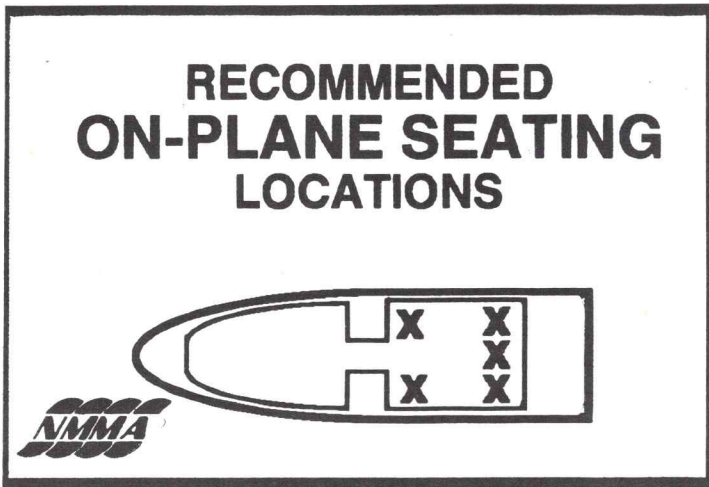


WARNING: Failure to observe maximum weight and horsepower capacities could create conditions favorable to an accident that could result in injury or death to the occupants.

Recommended On-Plane Seating Locations

A decal similar to the one in Fig. 1, below, should be found on your boat in the area of the U.S. Coast Guard Capacity plate. The areas marked by "X's" are the areas of the boat considered safe and suitable for on-plane seating. The operator of the boat should be familiar with these locations. The boat should not be operated at or above planing speeds with persons on board not seated in the designated areas shown.

FIG. 1



WARNING: Do not operate the boat on plane with persons located outside the on-plane locations shown on the decal. Failure to do so could cause a person(s) to be thrown overboard resulting in injury or death.

FUEL SYSTEM

The fuel system consists of a fuel tank equipped with an electric sending unit. The fuel level is displayed on the console mounted gauge when the ignition switch is "on". On models with two tanks, a console mounted switch marked "fuel" is used to switch the gauge from one tank to the other. Push the switch to the left to display the left tank fuel level on the gauge. Push to the right to display the right tank fuel level. The center position is "off". A fuel hose connects the fuel tank to the engine. On models with more than one tank, a switch valve is installed to switch from tank to tank. This valve, located on the panel supporting the driver and passenger seat or near the splashwell, depending on the model, is clearly marked and easily operated.

* Fuel tanks optional on some models.

SAFETY AND MAINTENANCE TIPS

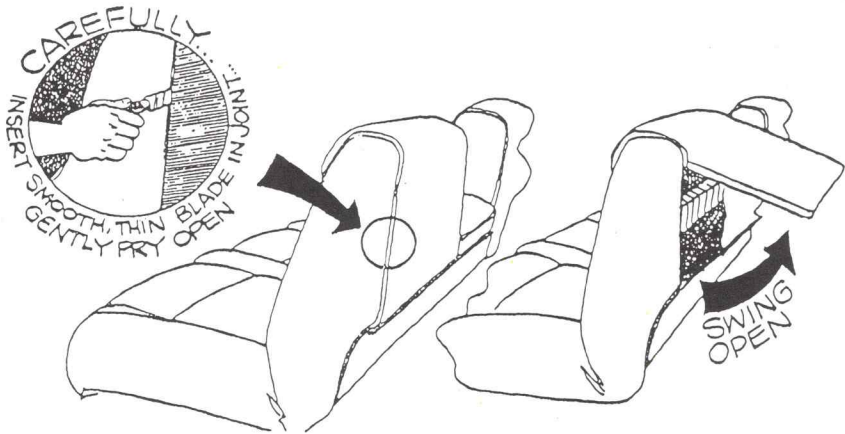
The fuel system in your Ranger requires little or no maintenance. However the periodic inspection outlined below is strongly recommended.

- (1) Check fuel tank(s) for leakage, especially around electric sender and fuel hose connections.
- (2) Check fuel tank hold down brackets, making sure they are secure.
- (3) Check battery hold down or boxes, making sure they are secure.
- (4) Do not store items on, in, or around fuel tanks or batteries. "Good housekeeping" in this compartment is essential to safe boating and a maintenance-free fuel and electrical system.
- (5) Check hose connections at the deck fuel fill, fuel tank vent, and (if equipped with more than one tank), the fuel switch valve.



CAUTION: Maintenance or repairs should be performed by your Ranger dealer or other qualified personnel.

Naturally, a leak-free fuel system is a **MUST** for proper engine operation and on-board safety. Always inspect for fuel leaks prior to connecting a battery charger to your engine cranking battery. Rear fuel/battery compartment lid should always be propped open for ventilation when charging any batteries.



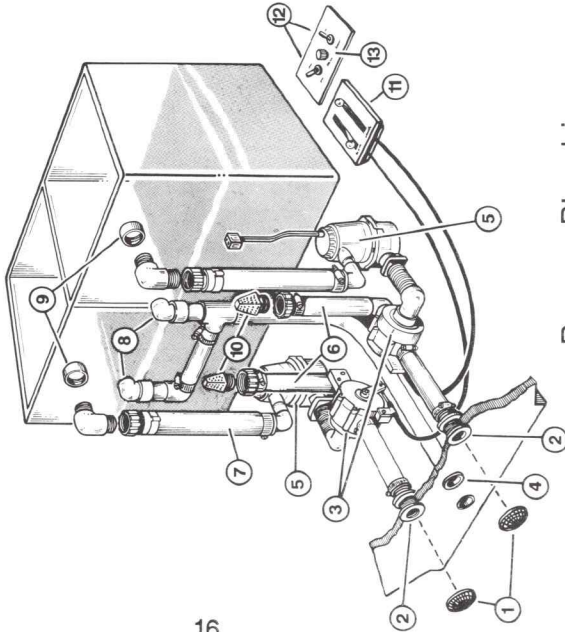
If necessary to remove this type seating to inspect the fuel system, please follow these instructions . . .

Insert a flat blade putty knife (or similar tool) between the seat edge and bead trim approximately 4" up from the rear deck (carpet). Carefully, pry out on the seat back flap enough to get a finger into the gap. Continue to pull the flap up to expose 3 #10 truss head screws. Remove these screws. Repeat for the other side. Slide the entire seat forward approximately 2" and lift it from the boat (two people are suggested for the lifting operation). When reinstalling the seat, be sure that the 2 tabs mounted at the front of the fuel tank opening fit into the slots in the seat bottom.

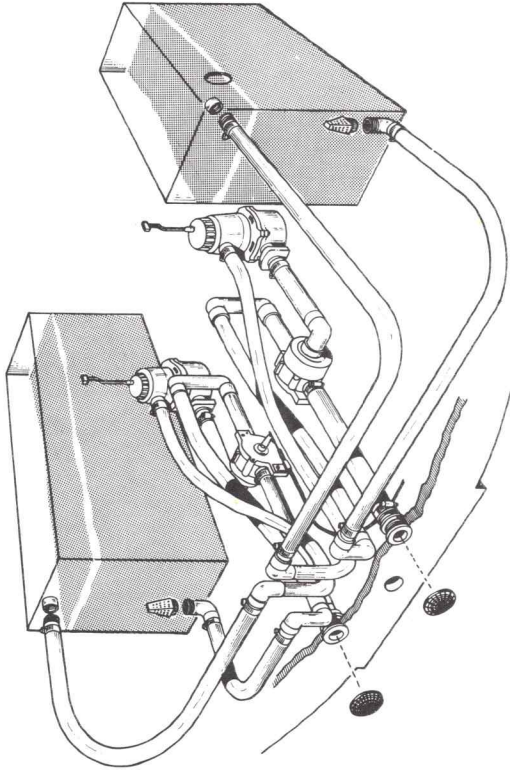
YOUR LIVEWELL AERATION SYSTEM

The livewell aerator system in a Ranger boat is designed to supply the water and oxygen necessary to the survival of your catch. This patented system not only allows fresh water to be pumped in through the aerator supply line(s), but also permits recirculation and aeration at any speed of boat operation.

Examine the illustrations below to familiarize yourself with the major parts and functions.



Ranger Plumbing



Fisherman Series

1. **Intake screen** - Prevents debris from entering livewell plumbing - turn counter-clockwise and pull to remove for cleaning.
 2. **Thru-hull grommet #T-68** - Threaded fitting that passes through transom. Drainline hose attaches to interior end.
 3. **Livewell control valve** - Unique design incorporates a patented "flapper" system that allows water to flow only in the direction you desire. Its two modes of operation are: (a) Fill- allows water to flow into livewell, but not out; (b) Empty- should you decide to empty your livewell, or want to keep it empty until you catch your first fish, valve will let water flow out of livewell, but not in.
 4. **Thru-hull grommet #T-98** - Threaded fitting that passes thru transom. Overflow hose attaches to interior end.
 5. **Aerator pump** - 12V pump circulates water through aerator system, replenishing oxygen.
 6. **Livewell drain** - Drains water from livewell when valve (#3) is in "empty" position.
 7. **Aerator supply line** - The line between outlet on pump and uppermost fitting in livewell.
 8. **Overflow line** - Larger line between transom and livewell. Maintains water level in livewell. Prevents overflowing.
 9. **Aerator spray cap** - Directs aerated water in a downward oxygen-rich spray. Unscrew to clean any debris that should accumulate.
 10. **Livewell drain screen** - Prevents debris, such as crayfish, shad, pork rind, plastic worms, etc., from entering aerator plumbing pump and valve. Should not be removed except for necessary cleaning or maintenance.
 11. **Livewell control cable** - Operates valve (#3). See instructions under #3 above.
 12. **Aerator pump switch** - Located at driver's console.
13. **Livewell timer** - Located at driver's console. Will operate only when pump switch (#12) is in automatic position. On models with two livewells, this time is wired to operate both pumps. However, one livewell can be operated in the manual (continuous run) mode, while the other well can be controlled by the timer by switching to the automatic mode. The timer automatically starts and stops the aerator pump at intervals determined by the setting of the timing knob. The livewell timer varies the "off" time from approximately 1 minute in "minimum" (full counter-clockwise) position to approximately 15 minutes in the "maximum" (full clockwise) position. No matter which position the timer knob is in, the "on" time of the pump remains approximately 1 minute.
- Switches livewell pump to off, manual or automatic.

MAINTENANCE TIPS FOR AERATOR SYSTEM

- (1) Remove screens (#1 and #10) only for flushing aerator system.
- (2) Keep screens in place for cleaning and during operation. Replace damaged or broken screens immediately.
- (3) Do not exceed the recommended fuse size on the aerator pumps (a larger fuse WILL NOT make a stronger aerator system!).
- (4) Lubricate pivot on livewell control cable (#12) periodically using light weight machine oil.
- (5) Continual operation of pump (especially dry) will damage pump. Be sure aerator switches (#12) are "off" when storing, etc.

TROUBLESHOOTING

■ *Pump runs, but will not pump water.*

- ⇒ Entrapped air pocket around pump impeller has "air locked" pump. With valve in "fill" position, back boat up slowly to expel entrapped water.
- ⇒ Grass, sticks, or other debris have clogged the filters or cavity around the pump impeller, restricting water flow to pump. Clean screens, or remove screens and flush system with garden hose using moderate pressure.

■ *Pump will not run (no "hum" is heard).*

- ⇒ Make sure switch is in the "Manual" position (in "Automatic" the pump could be working, but in off time).
- ⇒ Check master breaker switch in the rear compartment.
- ⇒ Check fuse. Replace if necessary.
- ⇒ Check wire connector at pump.
- ⇒ Replace pump.

■ *Livewells will not hold water in "Fill" position.*

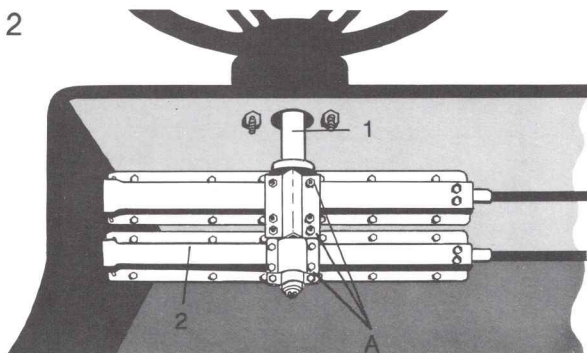
- ⇒ Flush system to clear debris from livewell valve.
- ⇒ Check cable to valve connection for proper adjustment.
- ⇒ Remove cable, put water in livewell to see if well will hold water with cable removed. If so, adjust cable to match actuator arm.
- ⇒ Remove valve and disassemble. Clean inside of valve with warm soapy water and inspect flappers for nicks, cuts and abrasions. Replace flappers if necessary.

STEERING AT CONSOLE



WARNING: The steering in your boat is one of the most important items and should be checked by the driver every time the boat is used. You should school yourself and make it a habit to check the steering methodically, loose or worn steering could lead to an accident causing injury or death.

FIG. 2



If your new Ranger is horsepower rated at 175 h.p. and below, it is equipped with no-feedback steering*. This system is designed to reduce steering torque to a minimum. However, this is not to be used or to be interpreted in any way as an "Automatic Pilot". A firm grip on the wheel is required at all times.

Steering torque is the turning energy produced by the outboard motor in the direction opposite of propeller rotation (see Fig. 3, pg. 20).

If you are experienced in the operation of boats equipped with conventional mechanical steering, you may find this system to have a slightly different feel. The no-feedback clutch device (located in the steering helm) requires slightly more free motion or center slack felt at the wheel.

You should familiarize yourself with the "feel" of the steering at various speeds and never exceed speeds beyond your comfort level.

We suggest that the steering be adjusted after the first 20 hours of operation and thoroughly inspected every 25 hours thereafter to maintain a minimum of free motion travel (see your dealer for proper adjustment procedures).

Rangers that are horsepower rated at 200 h.p. and above have rack and pinion steering as standard. There are two basic parts to this system as installed (see Fig. 2, above).

* Except 680C and Tiller models.

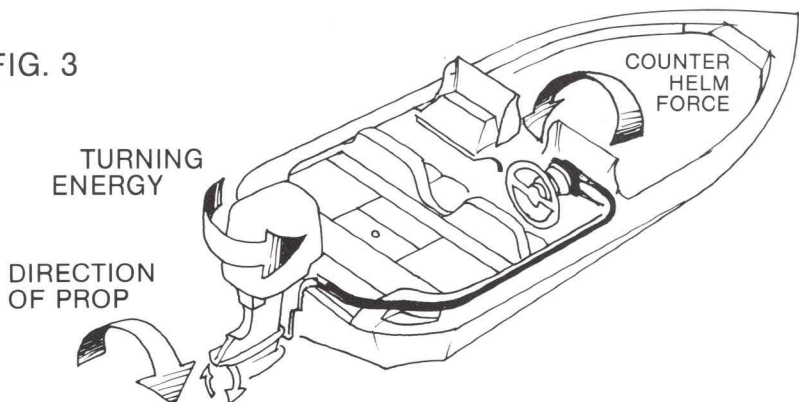
- (1) Helm Assembly: Bolts through the steering console. The steering wheel attaches to the top end and the steering cable(s) attaches to the bottom end.
- (2) Steering Cable(s): The rack end of the steering cable(s) bolts to the helm. The other end of the cable connects to the engine.

MAINTENANCE: Make sure all nuts (4 on single cable models, 8 on twin cable models) marked "A" on Fig. 2 (pg. 19) are tight. If you have doubt and want to tighten them, use a torque wrench and tighten to 50 to 60 inch pounds.

WARNING: With rack and pinion steering, there may be noticeable steering torque felt at the wheel under certain conditions. The driver must always keep a firm grip on the steering wheel, failure to do so could lead to an accident causing injury or death.



FIG. 3



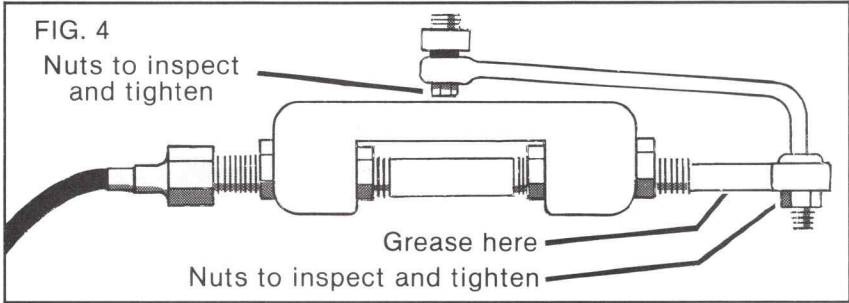
STEERING CONNECTIONS AT ENGINE

The steering will be connected at the engine by a method similar to the ones shown in Figures 4 & 5 (pg. 21).

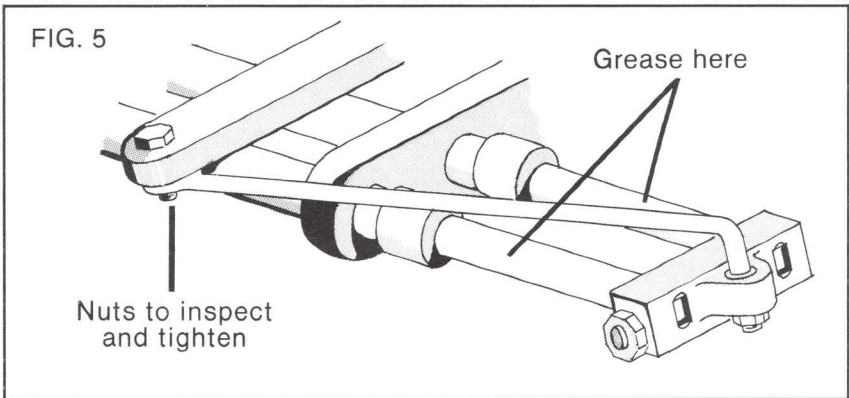
Because Ranger does not supply the "cable to engine" connectors, except on pre-rigged packages, we will not make specific installation or torque recommendations. However, Figures 4 & 5 show maintenance and check points that should be regularly inspected.



CAUTION: See your authorized marine dealer for specific information concerning maintenance of engine connections.



CAUTION: See engine owner's manual for proper greasing and maintenance of engine link rod and steering kit.



YOUR BOAT'S FINISH . . .

MAINTENANCE AND REPAIR

The gel-coat (color) used on your Ranger Boat is of the highest quality available today. To keep it looking new and in good condition these tips will prove helpful.

- A light duty rubbing compound (available at most auto parts stores) is recommended for stains such as mold, water lines on the hull, fine scratches on finish or just to bring back that "look new" shine.
- Automotive wax or polish is good for preserving the shine and building an "armor coat" to prevent scratches and will also help protect hull while in wet storage.
- A boat cover (which is available from your Ranger dealer) is also a wise investment to help prevent damage while the boat is at home or on the road.



NOTICE: Do not use acids or other strong chemicals to clean your boat.

Careful as you may be, you will get that scratch from the dock or beach that will need some attention. Most Ranger dealers are equipped to do fiberglass repair, and large jobs are better left to the experts, however, minor scratches, chips, and gouges may be repaired by you.

These instructions are to repair solid color gel-coat only, not poliflake:

1. Using masking tape, tape around damaged area slightly larger than actual flaw. Keeping area to be repaired as small as possible.
2. Remove any damaged glass or gel-coat. Sand damaged area and all surface inside tape, enough to rough up area and remove shine, using #220 grit dry sand paper.
3. Wash area with a solvent such as acetone and allow to dry.



WARNING: These materials are very flammable. Do not smoke or use electric equipment while using them. Improper handling could result in an explosion resulting in injury or death.

- Using Ranger touch-up gel-coat or putty only, thoroughly mix 1% catalyst (MEKP) with desired amount of gel-coat or putty.



NOTICE: Gel-coat will not cure by itself, you must use a catalyst.

- With a putty knife, trowel catalyzed gel-coat in desired area, leaving it slightly higher than the original surface to allow for shrinkage.
- When patch has dried, remove masking tape and carefully sand back to the original shape using #600 grit WET sandpaper. Then buff with a light duty buffing compound.

NOTE: Area may have to be filled more than once due to shrinkage.

NOTE: Due to different dye lots the color may vary somewhat. However, we take all steps to keep our color consistent.



NOTICE: Do not hold buffer in one area long enough to burn gel-coat.

If for some reason you need to spray gel-coat over your patch, you will need to follow these steps:

- Mask around area to be sprayed.
- Sand area with #220 grit dry sandpaper removing all shine.
- Clean area with acetone.
- Mix Ranger touch-up gel-coat by thinning with styrene, approximately 2 parts gel-coat to 1 part styrene.

NOTE: If styrene is not available, acetone may be substituted. Add 1% catalyst (MEKP) to gel-coat and stir thoroughly.

NOTE: Protect carpet, seats, and all other exposed areas from overspray by covering these areas.

5. Apply one coat, being sure to cover and fill all sand marks and thin spots.
6. Flush gun and let gel-coat set approximately 10 minutes.
7. Repeat step #4, this time adding wax solution approximately 4 ounces of solution to a quart of gel-coat, then repeat step #5.
8. Let set approximately 8 hours or until dry and tack free.
9. Wet sand with #600 grip WET sandpaper and buff with light buffing compound.



NOTICE: Do not sand metalflake surfaces. A different procedure is used to repair these finishes. You should contact your Ranger Dealer for more information.

YOUR POWER PEDESTALS . . .

A "power pedestal" is a nitrogen gas filled steel cylinder that is used to raise and lower the fishing seats mounted on the forward and aft casting platforms. This enables you to select the proper seat height for comfort in any fishing situation. Pushing the empty seats all the way down helps to provide an unobstructed viewing area around the boat when underway and the lower seats also offer less wind resistance.

To raise the seat, simply lift your weight slightly off the seat while raising the seat actuating lever simultaneously. To lower the seat, keep your weight on the seat and lift the lever up.

These pedestals are constructed to the highest standard of workmanship and will give years of trouble-free service. A minimum amount of care will insure proper operation. Periodically apply a light weight oil (like household "3 and 1" oil) to the power unit piston. Take care not to over stress the pedestal by placing excessive strain on the seat and power unit while it is extended into the full up position. Always lower the seat to the full down position when the boat is underway. We recommend that the seat and pedestal be removed from the front casting deck and remounted into the special base mounted in the front of the deck floor when running. Should your boat not have the additional base, the front fishing seat should be removed and securely placed in the floor of the boat.

Your power pedestals are warranted for one full year against defects in materials and workmanship. Should a pedestal fail, return the unit to Springfield Marine, Attention: Warranty/Repair, Hwy. 160, P.O. Box 588, Nixa, Missouri 65714, or call 417-725-2667. Repairs not covered by warranty will be charged at their regular rate.



WARNING: Power unit is under pressure. Do not attempt to disassemble it or tamper with it in any way.

If your power pedestal will not remain in position, either up or down, you may need to make a minor adjustment to the air cylinder that causes the pedestal to be raised up and down.

With your chair removed from the pedestal, use a Phillips #0 screwdriver to move the adjustment screw as shown in the accompanying diagram.

If your seat will not raise up to the proper height, adjust the screw approximately 1/4 (one-quarter) turn in a counter-clockwise direction and try the pedestal again.

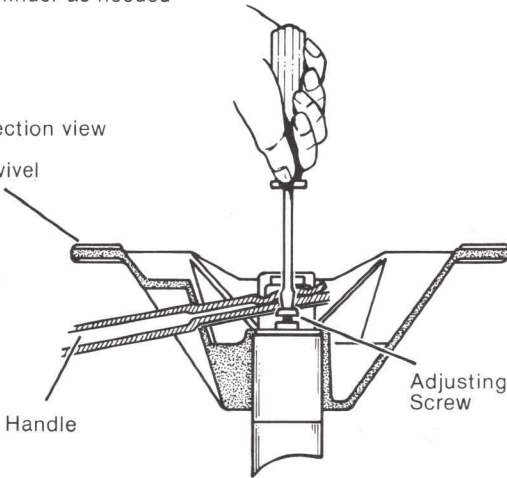
If your seat will not remain in the upright position, move the adjustment screw approximately 1/4 (one-quarter) turn in a clockwise direction.

NOTE: You may need to fine-tune your pedestal by moving the adjustment screw a bit more in one direction or the other.

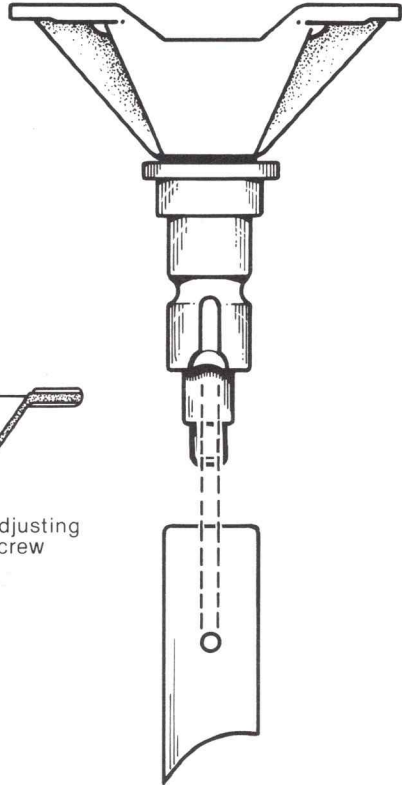
**NON-ADJUSTABLE
SNAP LOCK SWIVEL**

Adjust the screw in the end of the air cylinder as needed

Section view of swivel



**ADJUSTING AIR RIDE HANDLE
Prior To Installing Seat**



* Non-Adjustable pedestals are standard on some models, the same warranty applies.

KEY LOCKS, CARPET AND UPHOLSTERY

Your Ranger boat has been equipped with top-quality marine grade key locks to secure your storage areas. Should your boat be subjected to use in or near salt water, care should be taken to flush the locks out thoroughly with fresh water to prevent corrosion.

The carpet in your boat is the finest grade available. Although the special backing is RESISTANT to oil and gasoline, spills should be removed with soap and water to maintain the good looks and extend the carpet life. A car-wash is suitable for washing and rinsing your carpet as well as cleaning the fiberglass surfaces.

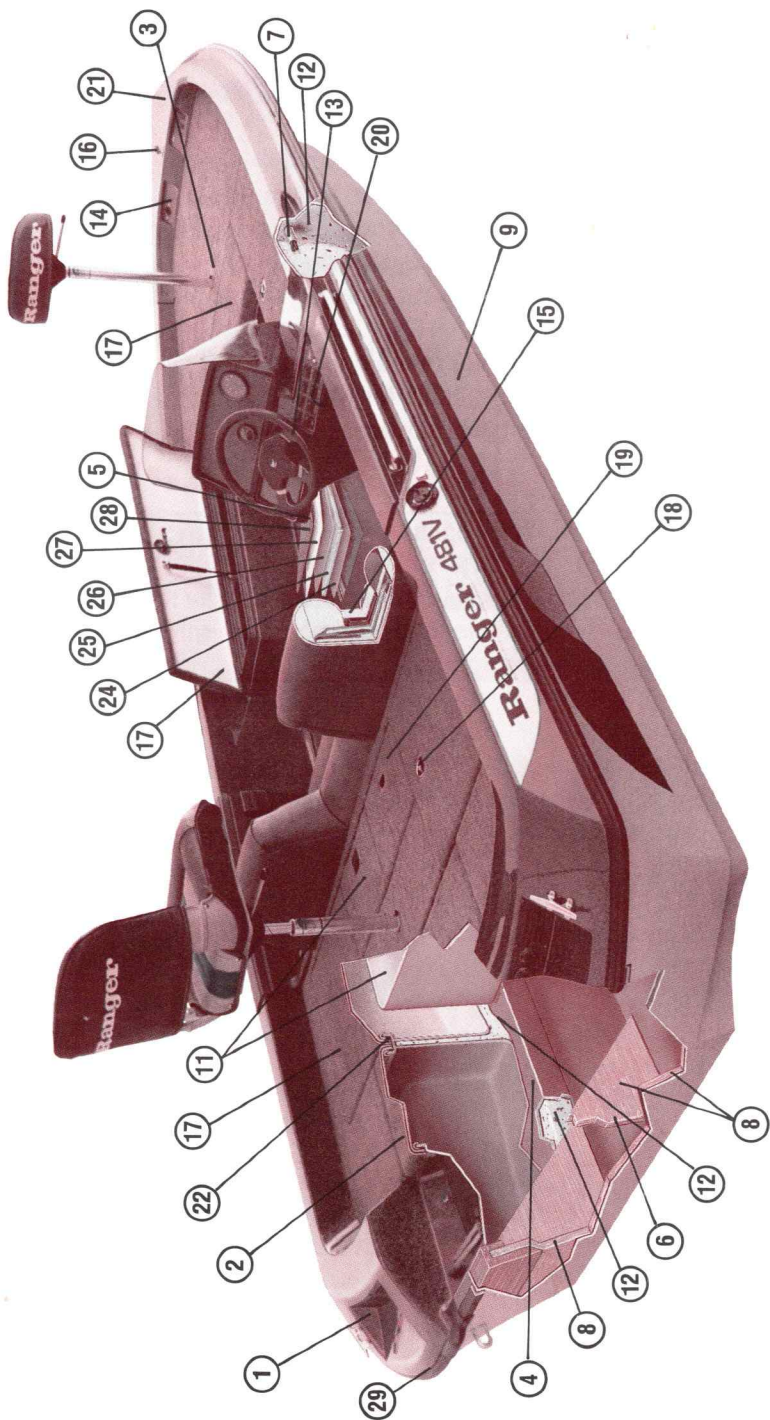


NOTICE: The popular and effective "fish scents" that are commonly sprayed on lures today will cause deterioration of the carpet backing. Use caution to spray these formulas well away from your boat carpet! Any spills should be cleaned up promptly.

Your Ranger upholstery is top-grade marine vinyl. Naturally, the suppleness and color fidelity of the upholstery is best maintained by storing your boat out of direct sunlight. Cleaning and conditioning of your upholstery is best accomplished with an approved, top-quality vinyl cleaner. To loosen stubborn soil or embedded dirt in textured surfaces, use a soft bristle brush, your approved cleanser, followed by wiping with damp sponge. To remove chewing gum, tars, paint, shoe polish or heel marks, use a cloth dampened with kerosene or naphtha. Ball point pen ink may sometimes be removed if rubbed immediately with a rag dampened with water or rubbing alcohol.



NOTICE: Do not use acetone, paint remover or other strong solvents on boat's upholstery.



1. Battery and gas storage compartments are ventilated to outside atmosphere.
2. Wood reinforcement, glass covered, under all hinges, to insure that fasteners stay tight.
3. Pedestal seat base plates are mounted on 3/4" plywood encased with fiberglass.
4. Reinforced fiberglass stringers are completely glassed to hull before floor goes down.
5. All storage compartments are carefully laminated to floor and deck to form leak-proof seal.
6. All dry storage, rod storage, gas and battery storage and livewells that do not have a gel-coated surface are double protected with a sealer coat of polyester primer that fills any tiny pin holes that might exist. All dry storage compartments are either carpeted or have gel-coated interior surfaces.
7. Wiring harness is manufactured and color coded by Ranger. Wiring is carried through gunwales down each side of the boat through 1" p.v.c. pipe.
8. Unique stress-directed fiberglass pultruded transom (U.S. Patent 4,760,811).
9. Ranger gel-coat (or outer surface) is a minimum of 15 mils in thickness. This provides a longer lasting finish.
10. The fiberglass and resin formula used in the construction of a Ranger hull provides the highest degree of strength without adding excess weight.
11. Livewells are plumbed to hold and recirculate water pumped into the system or to circulate water from outside the boat through livewells and back to the outside and to drain quickly and completely.
12. Floation is strategically located throughout the boat to provide level flotation in the event the boat is ever swamped. Virtually every cavity that is not used for livewells or storage is filled with foam flotation material. Ranger has converted to a new foam material that is CFC (chloro-fluorocarbon) free, so as to better control emissions and help to protect the ozone layer. This foam is injected into each cavity and, as it expands and then cures into rigid material, it adds considerable structural strength to the boat and functions as a safety flotation material second to none.
13. Rack and pinion steering with sport steering wheel gives easy handling control of a Ranger.
14. A forward wiring access for easy hook-up of electrical accessories.
15. Upholstery and seats are designed and constructed by Ranger using vinyl fabrics especially developed for the boating industry.
16. Slow-away running light connections front and rear are attached with stainless steel screws.
17. The lids to all storage boxes are flex resistant and extremely quiet.
18. Flush mounted key locks are used to secure storage boxes.
19. Livewells have splash guards to keep water from splashing out into the boat.
20. Easily accessible fuse panel. Some models mount this panel convenient to the driver's position, while other models have fuses mounted on the rear power compartment lid.
21. Bow, stern and console areas suitable for mounting accessories such as anchors, trolling motors, instruments, etc., are reinforced with plywood encased in fiberglass.
22. Every dry storage box has a lip with rubber trim seal surrounding the box which helps keep surface water from running in and keeps inside contents dry.
23. Floor drains, front and rear, will allow water to drain to rear of boat where it may be pumped or drained out.
24. The bottom side of all floors are undercoated to keep bilge water and condensation moisture out.
25. Floors are made of 3/8" plywood, handcut and fitted to each individual boat, then permanently bonded to stringers.
26. Fiberglass approximately 1/8" thick on top side of floor to encase plywood and give sandwich effect.
27. A sealer coat of polyester primer over complete interior, not including gel-coated surfaces, to fill any pin holes that might remain.
28. Carpet used in a Ranger boat exceeds all industry standards for marine carpeting to keep your boat looking new with minimal effort. The carpet fibers are 100% stabilized against ultra violet ray fading and deterioration and the backing is gas and oil resistant (avoid, however, spilling "fish attractant" or other "cover scents" on any marine carpet).
29. Most models feature a tough vinyl rubrail with polypropylene insert to take the abuse of docking and mooring. The 400 series have a vinyl insert instead of polypropylene.

INBOARD/OUTBOARD (Stern Drive) MODELS

For proper engine operation, read the Owner's Manual supplied by the engine manufacturer. Any necessary repairs or adjustments must be made by an authorized service center of the engine manufacturer. Wood Manufacturing Co., Inc. is not authorized to make repairs on engines or associated equipment.

OF PARTICULAR IMPORTANCE . . .

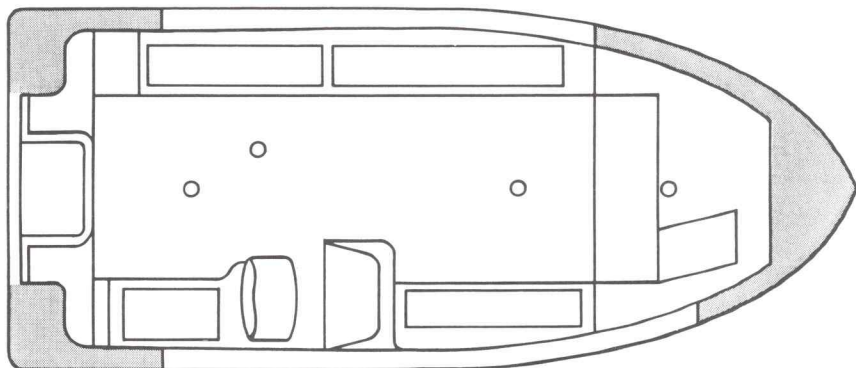
- Ranger Inboard/Outboards are equipped with an electric blower which will remove gas fumes from the engine compartment. The blower is controlled by a switch at the driver's console. Check the blower periodically by turning it on (flip switch at console "on") and putting your hand over the blower outlet vent to make sure it is exhausting air. Also, check the ventilation hoses that attach to the blower for proper connection.

- Be sure the engine and outdrive are properly drained during cold weather to prevent freeze damage (consult your engine owner's manual or see your Ranger dealer).



WARNING: Operate blower for at least 5 minutes before starting engine to remove any gas fumes that might have accumulated in the engine compartment. Failure to operate the blower could lead to an explosion causing injury or death.

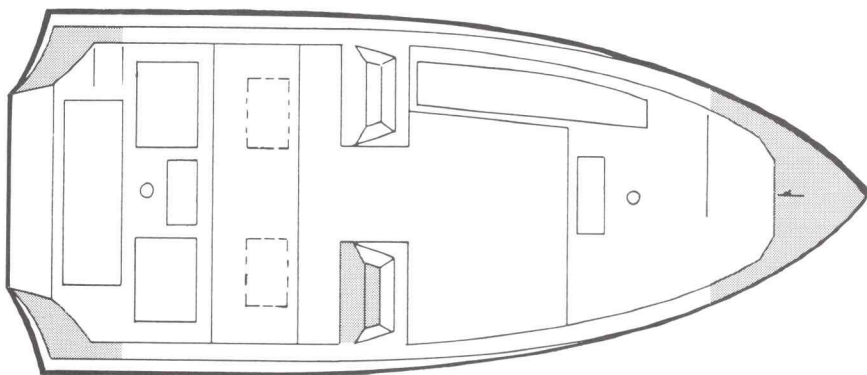
ADDING ACCESSORIES TO YOUR BOAT . . .



FISHERMAN

Likely, your boat has come equipped with the accessories you desire. However, should you choose to install additional ones, use the drawing below as a guide for locating them.

The area of the gunwale (uppermost level of the deck) shaded in gray have the reinforcement necessary for installing common "add on" items. Carefully locate all accessories so that their safe, easy operation is not hampered.



300 SERIES

The bow section of the gunwale is properly reinforced for installing such accessories as trolling motors, electric anchors and depth sounders. We recommend thru-bolting all trolling motors, anchor davits and other heavier accessories. Normally 1/4" stainless steel bolts with self locking nuts and 1 1/4" fender washer will do the job. Lightweight depth sounders or similar equipment and hardware can be installed using #8 or #10 stainless steel screws. Always drill a pilot hole through the fiberglass (just smaller than the screw you're going to use) before attempting to install a screw. This lessens the chance of "stripping" the hold or chipping the gel-coat around the hole.

If additional instruments are desired on the console, holes may be drilled using a hole saw of the proper size. The underside of the console face is reinforced for support.

The flat "knee" areas of the rear gunwale (around rear storage vents) are reinforced to accept such accessories as the Ranger custom fit ski ladder, electric anchors, boat reins and other accessories.



NOTICE: Use Marine Sealer around all screws installed into transom or floor of boat. When installing screws below water line, be sure sealer used is recommended for such.

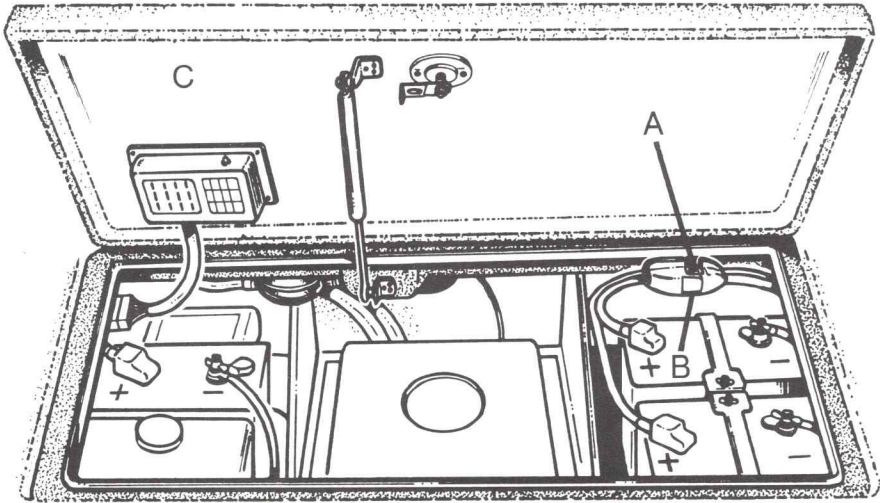
When installing additional electric accessories, always use the proper gauge (size) wire recommended for that item. Insure that the proper size breaker or fuse is used. "Splicing" into another accessory's power supply could overload the circuit and should be avoided.



CAUTION: Always disconnect the positive and negative leads from the battery terminals before installing, removing, servicing, or troubleshooting any part of the electrical system.


WIRING INFORMATION - REAR STORAGE COMPARTMENT

FIG. 6



HOOK UP OF TROLLING MOTOR LEADS:

24 VOLT SYSTEM	{	RED to Battery	1(+)	positive	}	12 VOLT SYSTEM
		BLACK to Battery	1(-)	negative		
		ORANGE to Battery	2(+)	positive		
		WHITE to Battery	2(-)	negative		

 **CAUTION:** Hooking up leads to trolling motor in any other manner could result in severe damage to both batteries and panel.

Breakers A and B are located inside the covered rear storage (raise lid). See Fig. 6 above. Breaker C is located on fuse panel. See Fig. 7 on page 37.

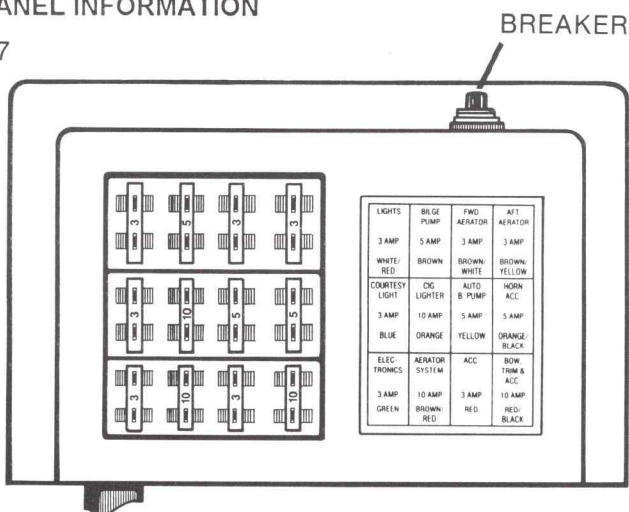
Breakers A and B are circuit protection (40 amp 12 volt) for the positive (+) leads in the trolling motor wiring (bow to stern). A problem in the system could result in the breaker(s) being tripped. Should this occur, the breaker(s) can be reset by depressing the button. If this occurs again, disconnect battery leads and trace immediately, or take it to your Ranger dealer for repair.

Breaker C, in Fig. 7, below, is the circuit breaker/switch (38 amp 12 volt) for the accessories. (See wiring diagram on page 35). Should a breaker trip, simply push to reset. This switch should also be in the "off" position (extended) when trailering or storing the boat. It acts as a master switch and turns off all accessories getting their power from the Ranger fuse panel. Remember, engine circuits will not be affected by these breakers/switches, but could have breakers or fuses of their own. Consult your engine owners manual for electrical particulars.

ELECTRICAL SYSTEM

FUSE PANEL INFORMATION

FIG. 7



The fuse panel, located for easy access, features plug-in type ATC fuses. The fuses can be easily inspected or replaced.

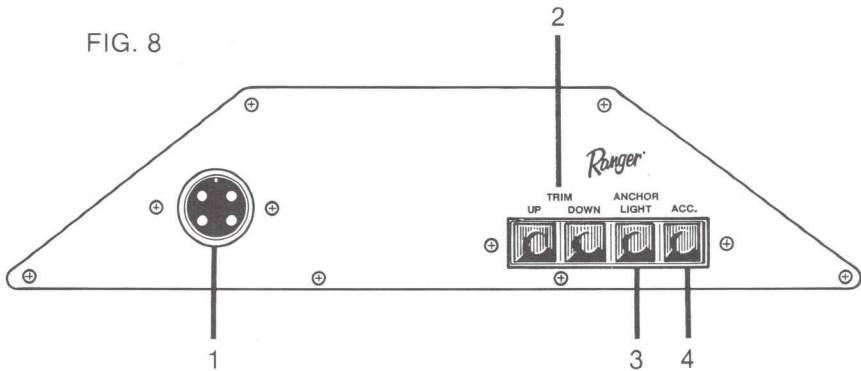
The panel has a capacity of twelve individual circuits (Fig. 7 above). The particular accessory(ies) they operate are shown on the decal on the right side of the fuse panel or back side of fuse panel cover.



CAUTION: Do not exceed recommended fuse sizes. Always install proper rated fuse when adding accessories to the fuse panel.

BOW PANEL INFORMATION

The purpose of our system is to provide a minimal voltage drop trolling motor system. The 24 volt system comes standard with 6 gauge leads. These leads, or wires, run through plastic pipe down the port side of the gunnel from the bow panel to the rear storage compartment in the stern. View Fig. 8, below to familiarize yourself with the parts and their functions.



1. **Trolling motor/Battery charger receptacle** - "Type IV" shown and is distinguishable by its four sockets. This system comes with two male plugs, one to be installed on the trolling motor, the other on the battery charger. (See trolling motor and battery charger plug wiring instructions.)
2. **Engine trim switch** - Can be used to trim engine from front deck while fishing. NOT to be used when main engine is running!
3. **Anchor light switch** - Controls the rear navigation light.
4. **Accessory switch.**



CAUTION: Do not connect main leads to batteries until all other connections have been made.



CAUTION: Hooking up main leads in any other manner could result in severe damage to both batteries and panel.

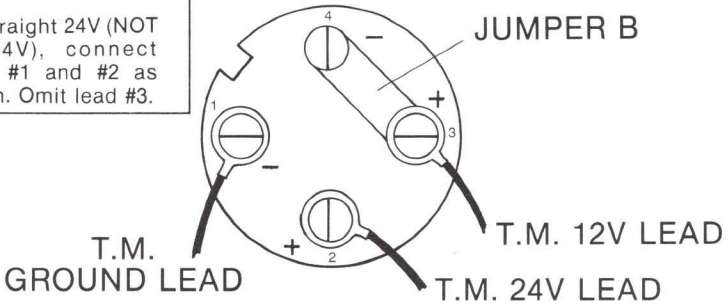
INSTALLATION OF 4 PRONG "TYPE IV" PLUG TO TROLLING MOTOR AND BATTERY CHARGER

The Type IV plug is not designed for direct attachment to bare wires. All wires must be terminated with a #10 ring terminal of the appropriate wire gauge size. When assembling plug, insure that two cover screws pass through grooves in plug body.

FIG. 9 TYPE FOUR TROLLING MOTOR PLUG
(Part #10335) 12/24V

NOTE

For straight 24V (NOT 12V/24V), connect leads #1 and #2 as shown. Omit lead #3.



CAUTION: Always disconnect trolling motor plug prior to any direct charging to any battery in the rear storage area.

FIG. 10 TYPE FOUR TROLLING MOTOR RECEPTACLE

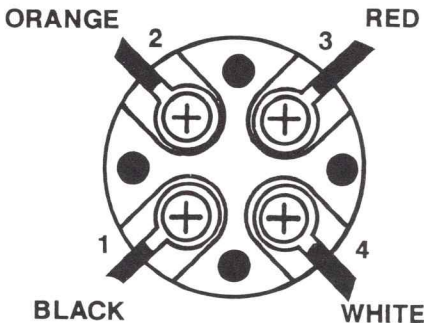


FIG. 11 TYPE FOUR TROLLING MOTOR PLUG
(Part #10335) 12V

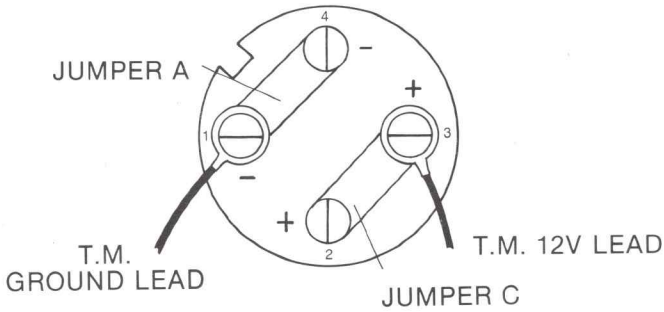


FIG. 12 TYPE FOUR BATTERY CHARGER PLUG
(Part #10336) 12V

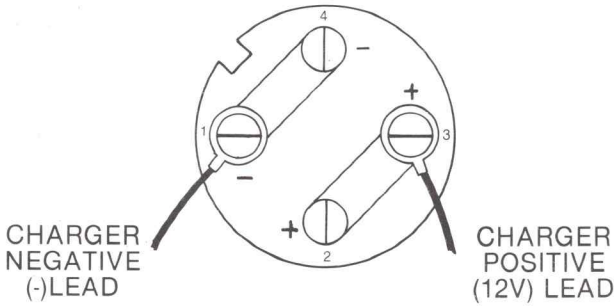
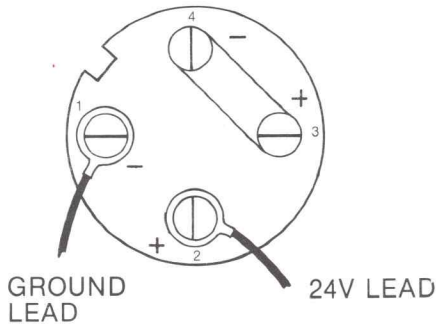


FIG. 13 TYPE FOUR BATTERY CHARGER PLUG
24V



SAFETY AND MAINTENANCE TIPS

- Always disconnect trolling motor plug from panel when not in use. This is for your safety as well as discouraging corrosion between the trolling motor plug and the trolling motor receptacle.

- When adding accessories, make sure you use the positive and negative terminal from the same battery. Red and Black are battery #1; and Orange and White are battery #2.

- Check battery connections periodically to make sure they are corrosion free and TIGHT.

- Alterations of any part of the wiring system should be avoided! Such alterations could cause damage and/or electrical short.

- Inspect wiring connections and terminals periodically for corrosion, etc. Replace as needed. Replacement components should always be of equal or greater rating and quality. We recommend Ranger replacement parts available through your Ranger dealer.

- Always disconnect the positive and negative leads from the battery terminals before installing, removing, servicing, or troubleshooting any part of the electrical system.

UPRIGHT AND LEVEL FLOTATION

A Ranger-built boat is designed with "safety first" in mind. Ranger Boat Company pioneered the "upright and level" principle of insuring that a swamped boat, in static water conditions, would float **level at the surface** and stay in an **upright position**. This enables the occupants to remain with their craft until rescue or until boat can be emptied. The United States Coast Guard requires that a boat float **level**, however, Ranger's own strict requirements specify that the boat remain **upright** as well.

Hopefully, you will never need this feature. But it is reassuring to know that your Ranger boat, even if completely filled with water, will remain safely at the surface. Ranger achieves this unique buoyancy by insuring that virtually ALL areas inside the deck, sides and gunnels of your boat, that are not required for storage or service entry, are injected with an expanding polyurethane foam material. These cavities are filled to insure that water cannot enter and great attention is given to this operation. The floor drains of your boat are a unique part of the stabilization system of your boat should it fill with water. The floor drains should always be kept open and free from debris so that initial water can run in to the center drain compartment of the boat. This compartment runs above the keel line and, when filled with water, supplied the weight necessary to stabilize and prevent the boat from rolling over, much as would a keel.

While your Ranger has more foam flotation than the regulations require, care should be taken when installing additional equipment or accessories not to remove any more of the foam material than is absolutely necessary.

Ranger boat models have been tested and certified for this floating characteristic, while swamped, by Wyle Laboratories, Huntsville, Alabama.

FEDERAL REQUIREMENTS FOR RECREATIONAL BOATS

EQUIPMENT	CLASS A (Under 16' in Length)	CLASS I (16', but under 26')
Whistle or Horn	Must have means of making an efficient sound signal.	
Visual Distress	None Required During Daytime	All recreational boats, when used on coastal waters, which includes the Great Lakes, the Territorial Seas, and those waters directly connected to the Great Lakes and the Territorial Seas, up to a point where the waters are less than two miles wide, must be equipped with visual distress signals.
Lights	Proper light displays are required to be shown from sunset to sunrise.	
Fire Extinguishers	One B-1 U.S.C.G. or U.L. approved fire extinguisher unless the construction is such that explosive flammable vapors cannot be trapped, there are no closed compartments, no permanently installed fuel tanks on board.	
PFD'S	Type I, II, III, or V for each person aboard.	Type I, II, III or V for each person on board and one Type IV.
Numbering	All undocumented vessels equipped with propulsion machinery must be numbered in the state of principle use.	
Certificate of Number	A valid certificate of number showing the numbers issued to a vessel must be on board whenever the vessel is in use.	
Display of Number	Number must be painted or permanently attached to each of the forward half of the vessel, and no other number may be displayed thereon.	

NOTE: The above information is not conclusive. The owner/operator should check all current Federal, State, and Local Regulations to insure compliance.

Boat operators are required to file a boating accident report with their state boating law enforcement agency when their boat is involved in certain boating accidents as follows:

- 1) There is loss of life or probable loss of life.
- 2) Personal injury requiring medical treatment (other than first aid).
- 3) Damage to property that exceeds \$500.

YOUR RANGER TRAIL TRAILER . . .

Congratulations! You have purchased the perfect trailer for your Ranger boat. Since the design of your trailer is the specific set-up of load and bunk configuration for our particular model boat, you can be confident that your hull is properly supported and protected. The custom-matched fiberglass fenders (available on most models) will give years of rust-free service. All metal frames are sandblasted, then primed and electro-statically painted with acrylic urethane enamel for long lasting, maintenance-free use. The carpet installed on the trailer bunks not only enhances the appearance of the unit, but also acts as a skid-resistant surface. The bunks are constructed of high quality, pressure-treated 2" x 6" lumber and are easily removed by simply unbolting them. Should your carpet become worn or torn, it can be quickly replaced to continue to provide protection to your hull and to enhance the appearance of your rig.

GENERAL INFORMATION AND MAINTENANCE

With a minimum of maintenance and a little care, your Ranger Trail Trailer will give you many years of safe, trouble free service. However, as with any piece of fine machinery, some items should be checked and serviced regularly.

- Keep the hubs properly lubricated at all times as described in the hub section of this manual.
- Lubricate jack wheel gears and spline periodically.
- Check all lights before each use of the trailer.
- Check the tires for wear, cuts or other damage before each use and replace as needed. Check tire pressure often. See tire sidewall for maximum pressure and maximum load.
- Check lug nuts for tightness before use. Torque lug nuts to 90-95 ft. lbs.
- Periodically check the winch strap and winch parts for any wear and replace worn parts.
- Remember . . . a small expense for preventive maintenance is much less expensive now than a road-side breakdown later!



CAUTION: Trailer tires should be properly inflated and maintained! The load-carrying capacity of your trailer is based on the tire pressure. Inadequate tire pressures can void your tire and trailer warranty and could also lead to an accident damaging to people or equipment!



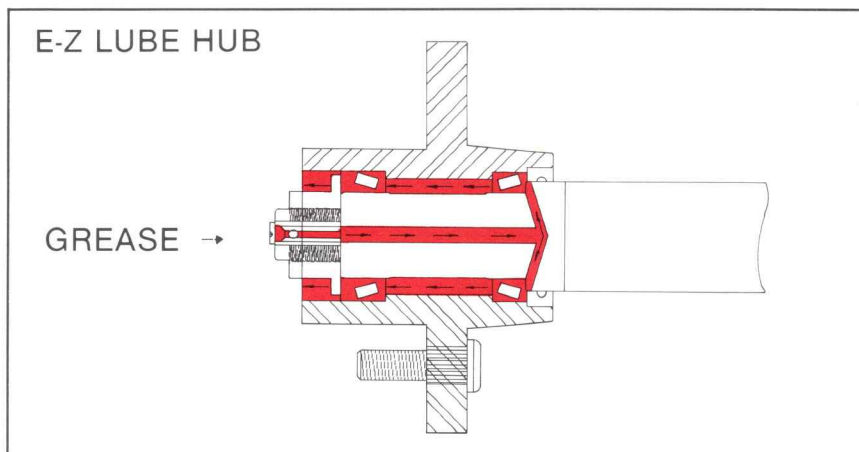
WARNING: Lug nuts should be properly tightened before each use. Failure to do so could result in loss of a wheel and could lead to an accident causing injury or death.

E-Z LUBE HUBS

These hubs have a unique method of lubrication which will, if used properly, ensure many miles of carefree trailering. The illustration will show the various parts of the system and how the grease actually fills from the rear bearing and the back of the hub, forward to the outer bearing. Since the **E-Z Lube Hub**, properly maintained, lubricates the rear bearing first, all air is forced forward out of the hub, making for a more perfect seal.

On trailers rated 2995 lbs., 3400 lbs., and 4200 lbs., the wheel bearings are lubricated via a flush mount Zerk fitting in the end of the spindle. These bearings should be serviced every 10,000 miles or one (1) year.

To do so, jack up the trailer and remove the wheel. Remove the dust cap by lightly tapping with a hammer and screwdriver on the cap edge where it meets the hub. Using a grease gun with a needle attachment (available at most parts stores) place the needle in the Zerk and pump until new grease appears around the outside bearing. Remove excess grease from bearings and cap then reinstall the cap with a gasket sealer around the sealing lip. Drive the dust cap in place with a rubber hammer, reinstall wheel.



TRAILER BRAKES

If your trailer is equipped with brakes, follow the safety and maintenance tips listed below for best service.

- Always hook up the brake breakaway cable securely to the tow vehicle (should the trailer come loose, cable will activate the brakes to help slow runaway trailer). Always insert hitch pin after latching coupler to trailer ball (Fig. 15, page 50). Release any pressure on the breakaway cable that might have inadvertently been applied during hook up. To do so, press up on cable release lever located under hitch to the rear of the ball seat (see Fig. 15, page 50).
- Disc brake trailers are equipped with an electric solenoid valve to prevent the disc brakes from being activated while reversing your trailer. Unlike drum brakes, which lose 80% of their braking capability in reverse, disc brakes will operate at full capacity in either direction. It is, therefore, essential that the wire from the solenoid valve be connected to the reverse light wire of the tow vehicle. When the tow vehicle is put in reverse gear, the solenoid will deactivate the brakes and allow you to back up. (Fig. 16, page 50)

To check proper operation of solenoid valve, place tow vehicle gear shift in reverse (with engine shut off and ignition on). Backup lights should turn on and an audible "click" should be heard at the valve. If lights come on and no "click" is heard, check for an electrical wiring or connection problem.



CAUTION: Make sure back up lights **do not** come on when tow vehicle transmission is in any gear other than reverse.

- Coupler will not latch if not properly seated onto ball.
- Check cap of master cylinder often for tightness.
- Follow routine maintenance and inspection for disc brakes as outlined in your Disc Brake Manual.

To minimize corrosion, it is highly recommended that the disc brake calipers and rotors be rinsed off with fresh water after trailer has been immersed in salt water.

INSPECTION

To assume continued proper operation of our trailer disc brakes, annual inspection is recommended.

BRAKE LOCKOUT INSTRUCTIONS

Brake lockout is useful in situations where you need to back over soft ground or up a hill while electric solenoid is disconnected.

- When hitch is fully extended, press down reverse lockout cap and turn clockwise to manually lockout brakes (see Fig. 14, below). Lockout should return to normal position under forward pressure.
- Press down and turn counter-clockwise to remove reverse lockout cap to check brake fluid.

FIG. 14

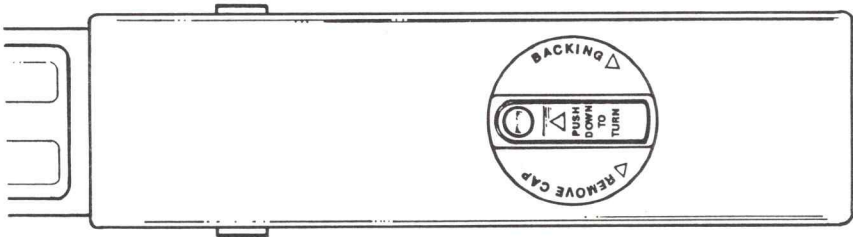


FIG. 15

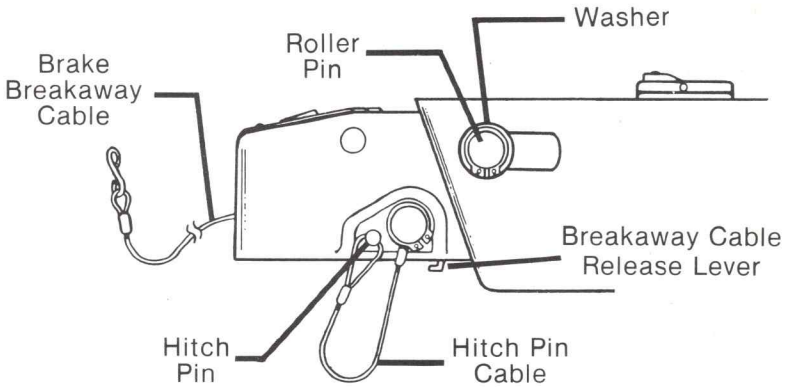
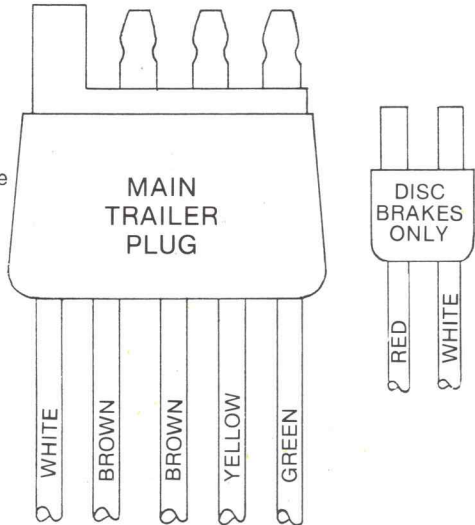


FIG. 16

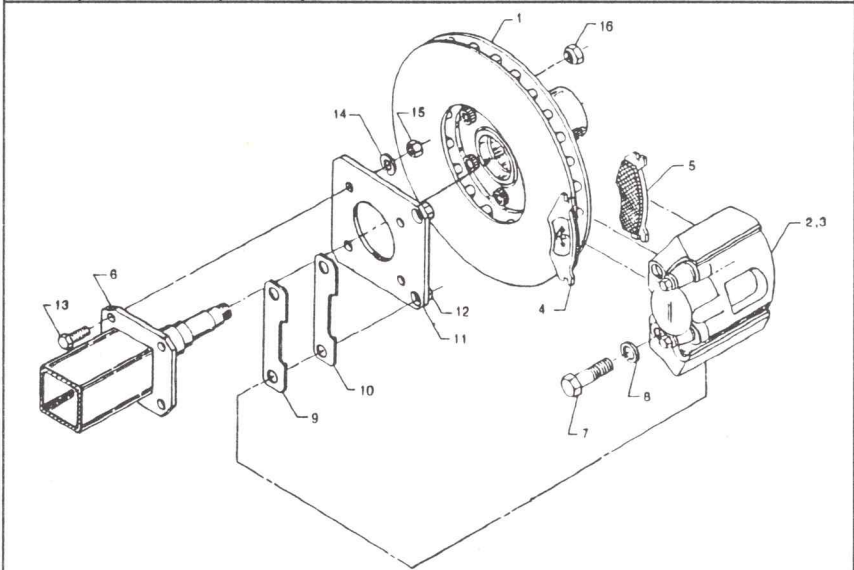
RANGERTRAIL WIRING

- WHITE - Ground
- BROWN - Tail & Clearance lights
- YELLOW - Left stop & turn lights
- GREEN - Right stop & turn lights
- RED - To back-up light wire on vehicle
- WHITE - Ground



VR-10 DISC BRAKE PARTS LIST

#	Part No.	Qty	Description
1	33662	2	VR-10 Hub/Vented Rotor Assembly
2	33590L	1	Brake Caliper Assembly Left Hand (shown)
3	33590R	1	Brake Caliper Assembly Right Hand
4	32248	2	Caliper Brake Pad, Inner
5	32249	2	Caliper Brake Pad, Outer
6		1	Axle with 4-Hole Brake Flange
7	32397	4	9/16" - 18 x 1 3/4" Bolt
8	32413	4	9/16" Lock Washer
9	33530	2	Spacer, Thin
10	33534	4	Spacer, Thick
11	33539	2	Mounting Bracket
12		4	9/16" Nut welded to Mounting Bracket
13	32409	8	7/16" - 20 x 1" Bolt
14	32410	8	7/16" Lock Washer
15	32411	8	7/16" Hex Nut
16	32494	10	1/2" Wheel Nut



PADS

Pads must be replaced when 1/16" inch (0.060") of pad friction material is left.



CAUTION: If not familiar with disc brake pad replacement, have work performed by a qualified individual or service shop.

ROTORS

Rotors should be resurfaced by a qualified brake specialist if extreme galling or wear marks are present.



CAUTION: Rotors must be replaced if distance between brake surfaces becomes less than 0.882" inches (22.4 mm) due to wear or machining.

RUST

Check for extreme rust on mounting bolts, flanges and welds, which may weaken the structural integrity of the system. Repair or replace as necessary.

LEAKS



CAUTION: Check for leaks in the brake lines and fittings. Leaks will lead to loss of trailer braking ability. Repair or replace as necessary.

REPLACEMENT PARTS

(See VR-10 Disc Brake parts list on page 51)

All replacement parts can be purchased from **Unique Functional Products**, 135 Sunshine Lane, San Marcos, CA 92069. If you have any questions or problems with the disc brakes, please write or call Unique Functional Product's customer service department at 1-800-854-1905 or in California 1-800-542-6400.



WARNING: The braking mechanism on this trailer is designed as an aid in slowing and stopping the trailer. The braking system on the tow vehicle is the primary slowing and stopping system. You will not be able to stop the tow vehicle and the towed trailer as quickly as you could stop the tow vehicle alone.

REMOVABLE TONGUE

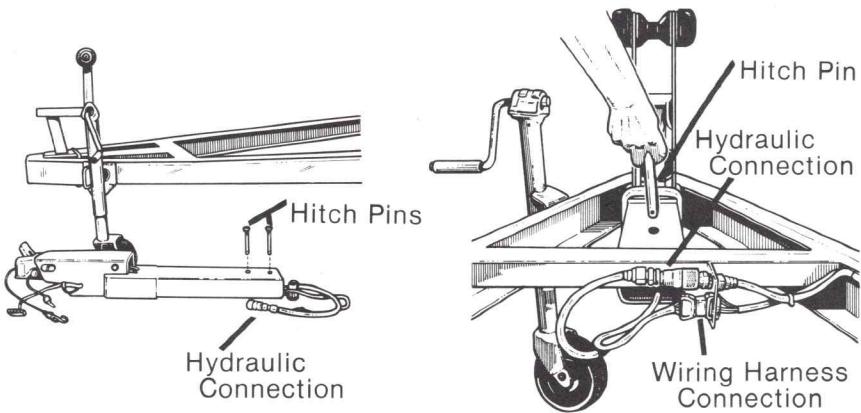
The removable tongue option was made available for those with limited storage space for their boat and trailer. Its design uses 2 hitch pins to secure the coupler slide assembly to the receiver. Do not, under any circumstances, tow your trailer without both pins inserted completely through the slide and receiver.

If you have the brake option, the hydraulic connection is made behind the winch stand support bar (refer to Fig. 17, below). The wiring harness connection is also made in this area. To remove the coupler, support the trailer on the swing away jack stand. Disconnect the wire harness and brake line (if so equipped). Remove the 2 hitch pins and slide the coupler forward and out of the receiver.



WARNING: When installing the coupler, be sure to install both hitch pins and connect the brake line and/or the wire harness before towing. Failure to do so could lead to an accident resulting in injury or death.

FIG. 17



BEFORE TOWING YOUR RANGER TRAIL TRAILER . . .

Make sure that your tow vehicle is equipped with a **2 inch ball** of machined or forged steel! **Never** use a ball smaller than 1.97 inch diameter or larger than 2.0 inch diameter. Naturally, your tow vehicle should be equipped with a properly rated and substantial towing hitch, well braced and firmly connected to your vehicle. Make sure that your vehicle is properly wired for the trailer light connection.

The height of the towing ball above the ground will greatly influence the tongue weight of the trailer. The base of the ball should be between 16" to 18" from the ground.

TOWING YOUR RANGER TRAIL TRAILER . . .

Back your tow vehicle into position so that the ball is directly under the trailer hitch ball socket. Stop your vehicle's engine and set parking brake. Make sure that the release handle on the trailer hitch is raised and pulled to the rear. This will show that the ball socket is open and ready to receive the tow ball. Then, by turning the tongue jack handle, lower the hitch until it seats fully on the tow ball. Be sure that the tongue jack wheel is slightly clear of the ground. Close the ball socket latch by pushing downward into the recess. The release handle should close smoothly if the ball has been seated correctly into the socket. If the release handle does not close, **DO NOT TOW THE TRAILER**. To make sure that the connection is secure, lower the tongue jack until the ram has lifted the trailer hitch and trailer tongue connection 3 or 4 inches. If the ball does not disengage, you may be reasonably sure that the attachment is secure.

Next, fully retract the jack into the full up position and connect the safety chains to the connection points on your tow vehicle hitch.

If your trailer is equipped with brakes, hook up the breakaway cable and insert the coupler hitch pin as shown in the brake owners manual. If you do not have a manual for your brake system, please call or write Unique Functional Products, 135 Sunshine Lane, San Marcos, California 92069, 1-800-854-1905 or in California 1-800-542-6400.

If you have a removable tongue trailer, make sure the 2 hitch pins holding the coupler slide assembly in the receiver are properly installed and seated (Fig. 17, pg. 53). If both pins are not inserted through the assembly, do not tow your trailer.

On removable tongue trailers with brakes, there is a hydraulic connection that must be made in order for the brakes to work. This is a push together, quick connect type fitting. Failure to make this connection will result in no braking assistance from the trailer. Hook up the wire harness (2 places on the removable tongue), and check that all lights are operating properly. Test your vehicle lights to make sure that the trailer's brake and turn signals duplicate your vehicle's. Remove any trailer wheel chock and carefully drive off.



CAUTION: Retract jack fully before towing! Replace coupler and ball if worn ... do not attempt repair or adjustment.

To unhitch your trailer from the tow vehicle, place the trailer on a level and paved surface and chock both trailer wheels to prevent any movement forward or backward. Unhook the safety chains, wiring harness and, if so equipped, the brake break-away cable. Then, using the trailer tongue jack, raise the hitch up and clear the ball. In this position the trailer tongue should be left somewhat bow high so that any water will run out through the drain hole in the stern of the boat.

TRAILER DATA

OWNER _____

Address _____

DEALER _____

Address _____

Phone _____

TRAILER MODEL _____

Serial No. _____

License Number _____

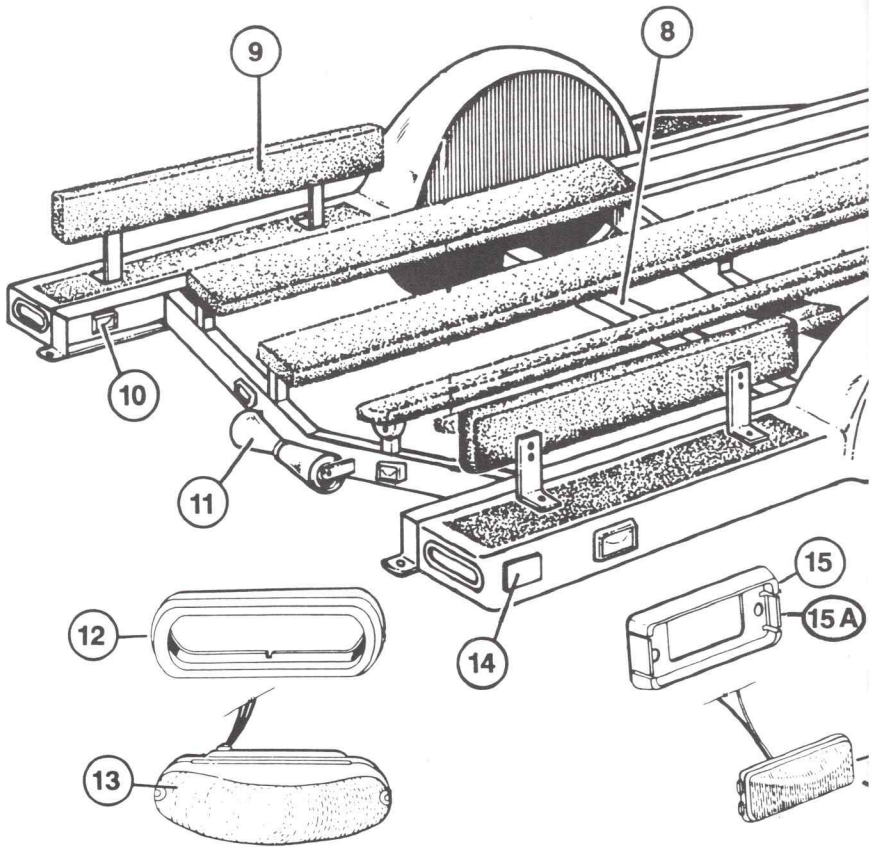
OTHER _____

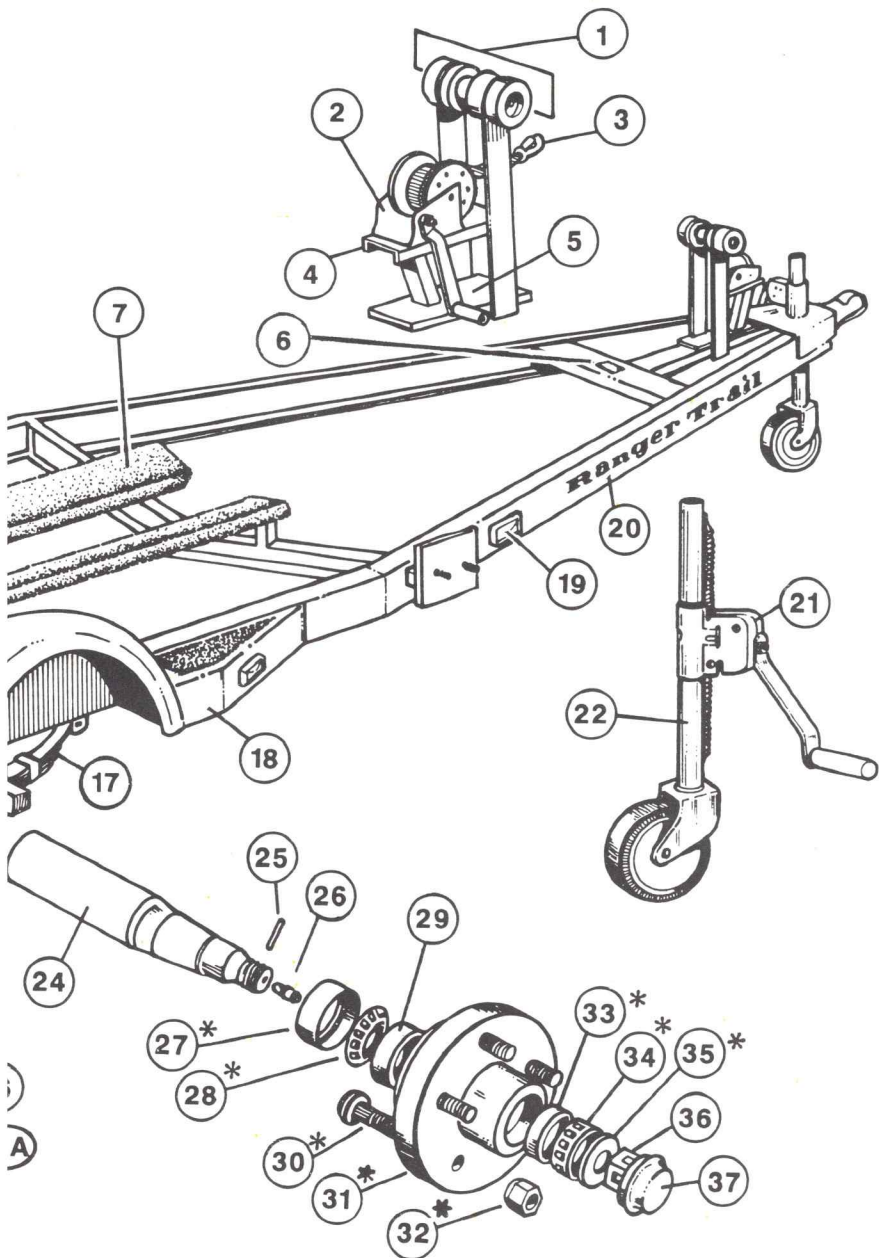
RANGER TRAIL PARTS LIST

Please include trailer serial number when ordering parts.

#	DESCRIPTION	PART #
1	Bow Roller Assembly (specify model)	
2	Winch with Handle (2995/4200)	9642039
3	Winch Strap with Hook	9642019
4	Winch/Bow Stop Stand Only (specify color and model)	
5	U-Bolt Assembly (specify model)	
6	E-Z Lube Hub Decal	7604407
7	Carpeted Bunk (specify model, location on trailer and carpet color)	
8	Axle with Spindles (specify model and color)	
9	Carpeted Bunk (specify model, location on trailer and carpet color)	
10	License Light (lamp only)	9639210
11	Keel Roller Assembly (specify model)	
12	MDL 60 Tail Light Rubber Seal	9639350
13	MDL 60 Tail Light Lamp Only	9639370
14	Red Rectangular Reflector	9639250
15	Non-ground Chrome Mounting Bracket (for fiberglass)	9639035
15A	Self-ground Chrome Mounting (for metal)	9639030
16	Red Marker/Clearance Light (lamp only)	9639110
16A	Yellow Marker/Clearance Light (lamp only)	9639130
17	Spring (Model 2120/2995/4200-specify color and model)	9633040
18	Fender (specify model, left/right, color and serial number)	
19	Yellow Rectangular Reflector	9639270
20	Ranger Trail Decal (specify color)	
21	Jack Housing Assembly (welds to coupler)	9609050
22	Jack Tube Assembly	9609150

RANGER TRAIL PARTS





Hub Assembly (includes Hub Parts Marked (“**”))

RANGER TRAIL PARTS LIST (continued)

#	DESCRIPTION	PART #
For Models 2995/4200 (includes models with brakes)		
23	Hub Assembly (includes all hub parts with *)	9606020
24	Spindle with Nut and Washer (welds to axle)	9612075
	Spindle with Brake Flange (for brake trailers)	9612497
25	Dowel Pin 3/16" x 1 1/2"	9612195
26	Grease Fitting	9606103
27	Grease Seal-Double Lip (NOK #AD2527E-See Note #2)	9624105
28	Inner Bearing (L68149 - See Note #1)	9624017
29	Inner Race (L68110 - See Note #1)	9624075
30	Wheel Stud	9648041
31	Hub with Races/Studs (available upon request)	
32	1/2" - 20 Lug Nut	7838110
33	Outer Race (L68110 - See Note #1)	9624075
34	Outer Bearing (L68149 - See Note #1)	9624017
35	Spindle Washer "D" Type	7840010
36	Spindle Nut	7838900
37	Hub Dust Cap	9606087

TIRE - Order by size/description WHEEL - Order by size/description
 CARPET - Order by model/color

Note #1: Use "L" number for cross referencing at local parts store.

Note #2: Replacement single lip seals are by manufacturer:
 Victor #47319/NAPA #47319/National #473317

TIPS FOR BETTER, SAFER BOATING

- **ALCOHOL and DRUGS** - The debilitating effects of alcohol and other drugs reduces reaction time and detracts from judgment. The combined effect of the outdoor environment ... sun, heat, wind, rough water, and noise can be more fatiguing than one would imagine and, combined with drugs or alcohol, can be very dangerous.
- **GAME PLAN** - Tell a friend, neighbor or another family member where you will be boating and when you plan to return. Be certain that this individual has a good description of your boat and any other identifying information that could be needed to help find you should an emergency arise.
- **TOOLS and SPARE PARTS** - Many people have been stranded by minor breakdowns that they could have repaired themselves. It is a good idea to carry a few tools and common spare parts and to be familiar with simple repairs that you can easily accomplish.
- **GASOLINE RESERVES** - Never push your boating range to the limit of your gas tank capacity ... one-third of the fuel to go, one-third to come back and one-third to reserve.
- **GOOD BOATKEEPING** - A clean boat is a safer boat. Take care to see that rods, lures, nets, gaffs and other potentially harmful gear are properly stowed so that it cannot blow or move around while the boat is underway. Perform all maintenance and safety checks regularly. Secure all icebox or cooler lids and place any trash or debris safely under cover until the trip is over.
- **SPEED and SKILL** - The fast and powerful boat can require the operator to exercise a high level of skill and attention to driving. Only go as fast as your skill and good judgment dictates is safe. You are in charge of the well being of your passengers and yourself. Be alert for any hazards in the water and operate your boat only in such a manner as would be appropriate for the water conditions. Be a good boating "neighbor" and do not create a hazard or annoyance to others. The best safety equipment is your own good judgment.
- **SKIERS and SWIMMERS** - Do not allow operation of the engine when anyone is in the water near the stern of the boat. Never back up to a down skier or anyone in the water. Never drive your boat directly behind a skier.

Wood Manufacturing Co., Inc.
Ranger® Boats and Ranger Trail® Trailers
Limited Warranty

Wood Manufacturing Company, Inc. ("Wood") expressly warrants that each of its fiberglass Ranger® Boats and Ranger Trail® Trailers are free from defects in material and workmanship under normal operating conditions. The duration of this limited warranty is (A) One (1) year from date of purchase by the original (first) purchaser as to Ranger® Boat and Ranger Trail® Trailer. (B) Five (5) years from date of purchase by the original (first) purchaser (transferable to subsequent purchasers as to the unexpired portion) as to structural members comprising the hull section of each Ranger® Boat. This limited warranty is subject to the following terms and conditions.

Wood's sole obligation and the Buyer's sole and exclusive remedy against Wood for breach of the express warranty shall be for the repair or replacement of defective parts, free of charge to the Buyer.

To validate this Limited Warranty, the registration card must be completed and returned to Wood within ten days from original purchase. No warranty claim will be considered unless the registration card is in our file.

Under the Limited Warranty, Wood shall have no obligation and the Buyer shall have no remedy against Wood for any other damages including, but not limited to, incidental or consequential damages, direct or indirect, for lost profits, lost sales, loss of time, injury to person or property or for any other incidental or consequential loss from any cause or otherwise, and whether or not occasioned by Wood's negligence.

To obtain warranty service, Buyer must notify Wood of any defect as soon as possible after the discovery of the defect. Repairs will be made by Wood at its factory or Wood may authorize a dealer in your area to make the repairs. Transportation to and from Wood's factory shall be at the Buyer's expense. Wood shall not be responsible for towing, road service charges or any other transportation.

The warranty for the boat does not apply to the following: (1) engines, outdrives, controls, propellers, or other equipment or accessories carrying their own individual warranties; (2) Gel-Coat cracking, crazing, blistering or fading; (3) installation of engines or accessories which are not authorized by Wood; (4) any Ranger® Boat which has been altered, subjected to misuse, negligence, improper trailering, accident or overpowered (according to recommended engine horsepower on capacity information plate); and (5) windshield breakage.

The warranty for the trailers shall include all original components of the trailer except tires, body paint and those components manufactured by other companies which carry the manufacturer's individual warranty.

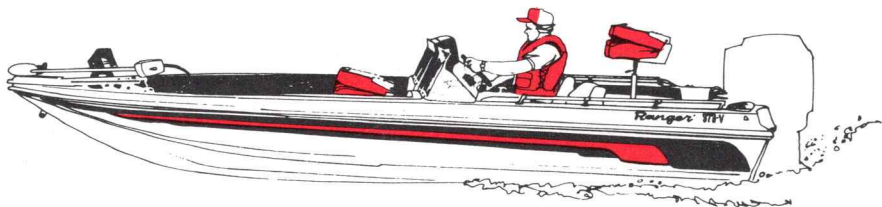
THE EXPRESS WARRANTY DESCRIBED ABOVE SHALL BE EXCLUSIVE AND THERE IS NO OTHER WARRANTY OR LIABILITY, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE AND WHETHER OR NOT OCCASIONED BY SELLER'S NEGLIGENCE. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THE ENTIRE CONTRACT IS EMBODIED IN THIS WRITING AND THIS CONTRACT CONSTITUTES THE FINAL EXPRESSION OF THE PARTIES AGREEMENT, AND IT IS A COMPLETE AND EXCLUSIVE STATEMENT OF THE TERMS OF THAT AGREEMENT.

NOTICE: Some states do not allow the exclusion or limitation of incidental or consequential damages and some states do not allow limitation on how long an implied warranty lasts. Therefore, some of the above limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty applies only to Ranger® Boats constructed of fiberglass. Ranger® Boats constructed of aluminum have a separate warranty.

Ranger[®]

**“Still Built One
At A Time”**



WOOD MANUFACTURING CO., INC.

P.O. Box 179, Flippin, AR 72634

Phone 870-453-2222