

Dan Mc

Ranger® BOATS

Aluminum Series Owner/ Operator Manual

RECORD IMPORTANT INFORMATION!

Hull

HIN _____

Date Purchased _____

Dealer/Phone _____

Ignition Key Number _____

Registration Number/State _____

Engine

Model # _____

Serial # _____

Trailer

Model # _____

Serial # _____

Accessory 1

Model # _____

Serial # _____

Accessory 2

Model # _____

Serial # _____

INTRODUCTION

Take a few minutes to read this manual completely before you use your boat for the first time, it should answer any remaining questions you may have. Contact your dealer or local boating administrator for further information.

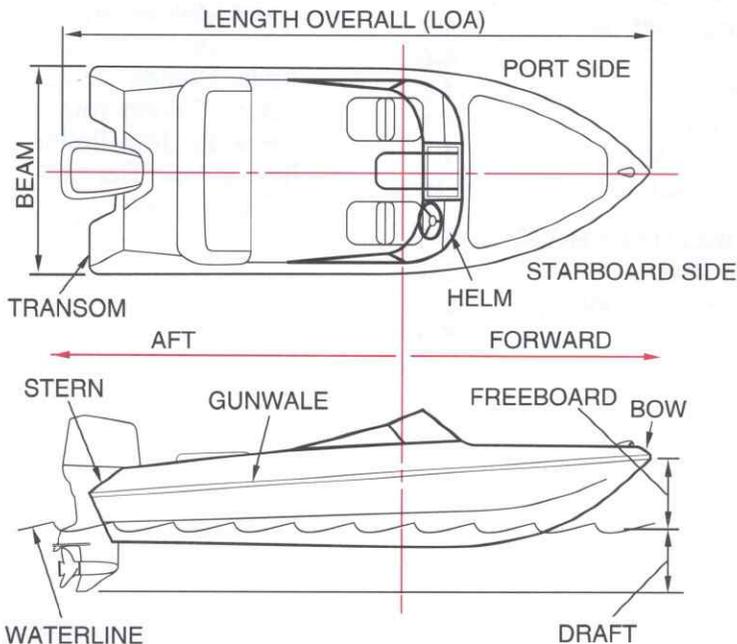
Because of our policy of continuous product improvement, the illustrations used in this manual may not be the same as on your boat and are intended only as representative reference views. Keep this manual on board for future reference.

IDENTIFICATION NUMBERS

Safeguard information about your boat by recording the Hull Identification Number (HIN) and model of your boat, and model and serial numbers of the engine and accessories on the inside front cover of this manual. The HIN is located on the upper, starboard corner of the transom. The HIN must be clearly visible and may not be removed, altered or tampered with in any way by federal law.

The identification numbers are important! Keep a copy of these numbers stored in a safe place off the boat. In case of theft, damage, etc., report these numbers to the local authorities, your insurance agent and your dealer.

BOATING TERMINOLOGY



KC-0036

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BOATING SAFETY

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

This section covers general boating safety information. Throughout this manual specific precautions and symbols identify safety related information.



The Safety Alert Symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



WARNING



This symbol and signal word indicate a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



CAUTION

This symbol and signal word indicate a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. This symbol **MAY** also be used to alert against unsafe practices.

CAUTION

This signal word indicates a situation which if not avoided, **MAY** result in product or property damage.

The precautions listed in this manual and on the boat are not all-inclusive. If a procedure, method, tool or part is not specifically recommended, you must satisfy yourself that it is safe for you and others, and that the boat will not be damaged or made unsafe as a result of your decision. **REMEMBER – ALWAYS USE COMMON SENSE WHEN OPERATING!**

BOATING 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 much more than is presented in 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.

BOATER RESPONSIBILITIES

Registration

The U.S. Coast Guard requires that all power boats operated on the navigable waters of the United States must be registered in the state of main use; also, many States require registration in that state whenever boating on waters within their state boundary. Always contact your state boating authorities (and neighboring states) for registration information on boats and trailers. Your dealer may be able to supply you with the appropriate forms.

Education

This manual is not intended to provide complete training on all aspects of boat operation. We strongly recommend that all operators of this boat seek additional training on boat handling and safety. Many states require operators under the age of 18 to be licensed in small boat operation and offer courses for training and certification.

The following is a listing of some of the agencies and organizations that offer safety training or information; refer to your local telephone directory for their telephone numbers and addresses.

- American Red Cross
- U.S. Coast Guard Auxiliary
- U.S. Power Squadrons
- State Boating Offices

Insurance

You must get insurance before operating your new boat. Loss by fire, theft or other causes, or liability protection against accidents is a must for responsible boaters. The boat owner is legally responsible for any damage or injury caused when he, or someone else operating the boat, is involved in an accident. Many states have laws detailing minimum insurance needs. Your insurance agent or your dealer may be able to supply you with more information.

BOATING SAFETY



Required Safety Equipment

Your boat has been equipped at the factory with most federally required (Class 1, 16' to 26') safety equipment for **inland** waters.

Federal law also requires at least one Type I, II or III Personal Flotation Device (PFD) for each person on board or being towed on water skis; and in addition, one throwable Type IV PFD. **As the owner, obtaining PFDs and other necessary safety equipment is your responsibility.**

Note

Requirements for coastal waters and inland waters differ; check with the local authorities for more information.

PFDs are intended to help you save your own life; you and your passengers should wear a PFD whenever boating. Many states require children age 18 or younger to wear PFDs at all times. It is especially important that children or non-swimmers wear a PFD. Make certain you know how to use PFDs. Try it on and make adjustments for a comfortable fit. Show children how to properly put on a PFD. There are three types of acceptable PFDs to wear and one type used for throwing in emergency situations.

Type I – good for off-shore or rough water use.

Type II – good for near-shore and most inland waters.

Type III – good for calm, inland waters. Type III PFDs are recommended for continuous use.

Type IV – designed to be thrown to person in the water. They are easy to hang on to in the water but do not protect as well as Types I, II or III. **Cushions should never be worn on a person's back and must always be kept handy for emergency situations.**

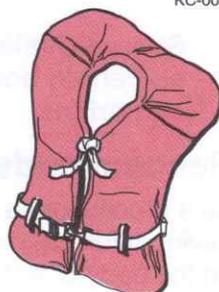
Note

Special PFDs are available for skiing and other water sports. These PFDs are constructed with materials suitable for high impact falls into the water.



TYPE I
LIFE PRESERVERS

KC-0041



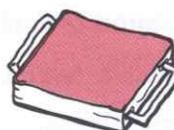
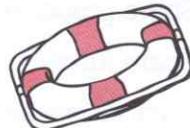
TYPE II
BUOYANT VESTS

KC-0051



TYPE III
FLOTATION AIDS

KC-0061



TYPE IV
THROWABLE DEVICES

KC-0071

Keep the following PFD points in mind:

- Set an example and wear your PFD. Require your passengers to wear them also.
- Make sure the PFD fits properly; this is especially important for children and non-swimmers.
- At the beginning of each season, check PFDs for damage and test for proper flotation.

Federal law also requires a USCG approved Sight Signaling Device on boats 16' and longer operating on the Great Lakes or coastal waters. The type of device is dependent on the size of the boat and if it is used during the day or night. Your dealer or the Coast Guard can provide you with more information.

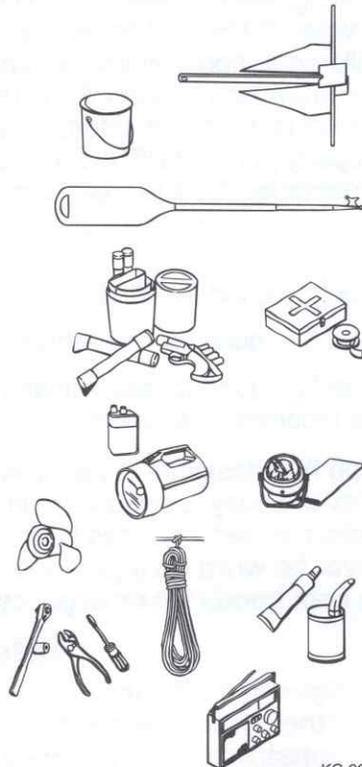
Note

Some signaling devices (pyrotechnics) are restricted from use on certain bodies of water, so always check with local authorities.

Recommended Equipment

As a precaution, a good boater will avoid potential problems on an outing by having additional equipment on board. Normally, this equipment is dependent on the body of water and the length of the trip, your dealer can assist you:

- First aid kit and manual
- Anchor with at least 75' of line
- Mooring lines and fenders
- Bailing device (bucket, hand pump, etc.)
- Combination oar/boat hook
- Day/night visual distress signal
- Lubricant
- Tool kit
- Spare propeller, nut and washer
- Spare fuses
- Local charts and compass
- Waterproof flashlight
- Portable AM/FM radio with weather band
- Spare flashlight and radio batteries
- Sunglasses and sun block



KC-0090



EMERGENCIES

Be prepared to deal with emergencies before they happen. Try to formulate a plan for each type 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.

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 \$200. Ask your insurance agent for detailed information.

Giving Assistance

If you see a distress signal, you must assume it is a real emergency and render assistance immediately. If you can assist a boat in distress, you should. An unwritten law of the sea is that one boater will aid another boater in distress. 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.

Fires

Most fires are the result of gasoline and oil accumulating in the bilge from careless fueling practices. Use the fire extinguisher at the **base of the flames** using a sweeping motion. Prudent and accurate use of the available chemicals should contain all but the worst fires. Verify that the fire has been extinguished. If so, check damage and get assistance immediately. **If not, get out and swim at least 25 yards upwind from the boat and use the visual distress signals to get assistance.**

On board fires involving the fuel system usually result in either an explosion that completely destroys the boat, or the boat burning to the waterline and self extinguishing. Deciding on abandoning the boat or staying to fight the fire is difficult and depends on many factors. **Try to formulate a fire plan in advance to make that decision quickly and without hesitation.**



KC-0160



WARNING

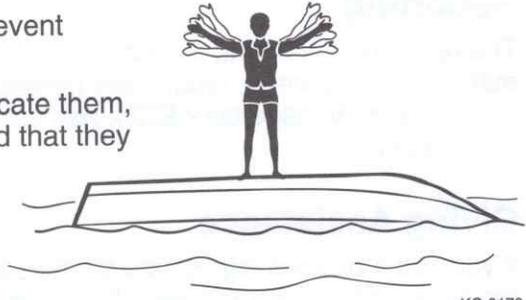


Gasoline will float on top of water and can burn. If the boat is abandoned, swim up wind, far enough to avoid fuel that may spread over the surface of the water to avoid serious injury.

Capsizing

A boat may capsize or swamp when least expected. Like fires, try to formulate a plan in advance on what to do if it should happen. Keep in mind the following guidelines:

- Try to turn the engine OFF to prevent damage.
- If others were on board, try to locate them, make sure they're conscious and that they can swim.
- **Stay with the boat, it will float!** Climb up on the hull and try to get assistance.
- Don't try to swim to shore. It's usually further than it looks.

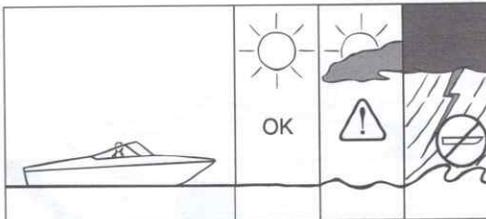


KC-0170

HAZARDOUS CONDITIONS

Every waterway poses hazards that you should avoid; shallow water, tree stumps, sand bars, etc. Ask local boaters for information and consult a marine chart when boating on unfamiliar waters. As the operator of the boat, you should try to avoid all hazards, known and unknown. The following information does not contain all possible water hazards.

Weather



KC-0210

Getting caught in severe weather is hazardous. Check with local weather stations, the U.S. Coast Guard, or Weather service broadcasts (162.55 or 162.40 Mega-hertz) for the latest conditions. It is recommended to check the weather not only before but periodically while you are boating.



Dam Spillways

The water around a dam spillway is a hazardous area. It is subject to rapid changes. Boaters must keep clear of the spillway areas below dams.

Weeds

Weeds are generally a threat to your boat's engine. Weeds on the propeller may cause the engine to vibrate. They may also restrict water intake causing the engine to overheat. If you run into weeds, stop the engine and clear the propeller and water intake completely of weeds. Consult the engine operating manual for more information.

Note

Weeds can sometimes be removed by shifting to neutral, pausing a moment, then shifting to reverse to unwind the weeds from the propeller.

Shallow Water Operation

Operating in shallow water presents a number of hazards. Water of any depth may contain stump fields, sand bars, rocks, or other unmarked underwater hazards.

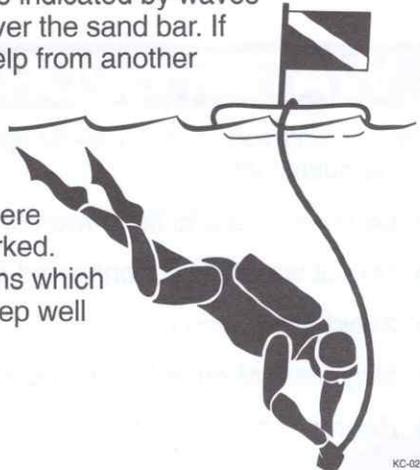
If the engine strikes an underwater hazard, check for boat and engine damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller.

Sand Bars

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 the sand bar. If you ground the boat on a sand bar, seek help from another boater.

Warning Markers

It is a good idea to ask local authorities if there are hazardous areas and how they are marked. Boaters must also recognize the flag designs which indicate that skin divers are present and keep well clear of the area.



KC-0250

Watch for swimmers. Swimming areas may not be marked. Steer clear from the area and always remain alert.



KC-0260



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.

DISTRESS

KC-0352

OPERATION BY MINORS

Minors must 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 contact the state boating authorities for information.

PASSENGER SAFETY

Whenever you are going for an outing, make sure that at least one passenger is familiar with the operation and safety aspects of the boat in case of emergency. Show all passengers the location of emergency equipment and show how to use it. Don't allow passengers to drag their feet or hands in the water, or sit on the bow, sundeck, or gunwale while the boat is moving.

WATER SPORTS

When using your boat for water sports, be safe and courteous and follow these guidelines:

- Be considerate to fishermen and others you share the water with.
- Do not water ski in congested areas.
- Avoid navigation markers.
- Stay clear of other boats and skiers.
- Return immediately to a fallen skier.

BOATING SAFETY



WARNING

- Skiers must wear a USCG approved flotation device. A type III water ski vest is an approved and practical PFD.
- Keep at least 100' away from all other objects.
- When skiing have an experienced driver and aft facing observer in the boat.
- Never ski in shallow water or at night.
- Never jump from a moving boat.
- Always keep a downed skier in sight.
- Turn the motor OFF before you get close to someone in the water.



CIRCLE



SKIER IN WATER



CUT MOTOR



SPEED FASTER



SPEED SLOWER



TURN LEFT



TURN RIGHT



BACK
TO DOCK



SKIER O.K.



STOP



SPEED OK

KC-0270

GENERAL PRECAUTIONS

Your safety, the safety of your passengers, and other boaters are among your responsibilities as operator of this boat. Your boat must be in compliance with U.S. Coast Guard safety equipment regulations. You should know how to react correctly to adverse weather conditions, have good navigation skills, and follow the "rules of the road" as defined by the Coast Guard and state/county/local regulations.

You must never operate a boat while under the influence of alcohol or any other drug. Remember...you are also responsible for the alcohol/drug use and on-board behavior of your passengers. Drugs reduce your reaction time and affect your better judgement. When combined with the sun, wind, noise and activity of boating, drugs compound fatigue and can be very dangerous.

Before each outing you should check all safety equipment, such as fire extinguishers, PFDs, flares, distress flags, flashlights, engine stop switch, etc. They should be operable, in good condition, readily visible, and easily accessed.

Tell someone of your travel plans. Check local weather reports before casting off; do not leave the dock area when strong winds and electrical storms are in the area or predicted to be in the area.

Know the weight capacity of your boat. Do not overload your boat.

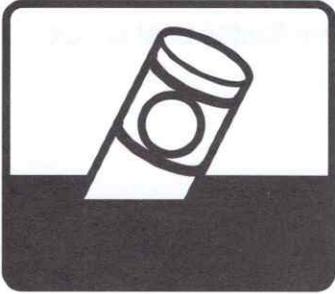


WARNING



Read and understand this manual and the engine manual, and be sure that you understand all controls and operating instructions before attempting to operate the boat. Improper operation can be extremely dangerous.

2



BASIC RULES OF THE ROAD



CAUTION

The nautical rules of the road must be followed to prevent collisions between vessels. Like traffic laws for automobiles, the operator is legally required to follow the rules.

The following information outlines only the most basic of the nautical rules of the road. For more information, contact your local U.S. Coast Guard Auxiliary.

AIDS TO NAVIGATION

Learn to recognize the different buoys and day markers; they are the signposts of the waterway. There are 2 primary marking systems in use in the U.S.; the Uniform State Waterway Marking System (USWMS) used on inland waters and maintained by each state, and the Federal Waterways Marking System (FWMS) used on coastal waters and rivers and maintained by the U.S. Coast Guard (USCG). In addition, the FWMS has two modified systems; Western River Buoyage, and Intracoastal Waterway Buoyage. Be sure to check with local authorities on the buoyage system in use.

The type of hazard/warning buoys and markers depend on the area of jurisdiction. Check with local boating authorities.

USWMS System

In the USWMS Lateral System, well defined channels are marked with red and black buoys. Lateral means the sides of the channel are marked and the boat should pass between them.

The USWMS Cardinal System is used when there is no well defined channel or where an obstruction may be approached from more than one direction. With the cardinal system:

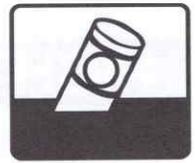
- Pass north or east of BLACK-TOPPED WHITE buoy.
- Pass south or west of RED-TOPPED WHITE buoy.
- RED and WHITE VERTICALLY STRIPED buoy indicates boat should pass outside of the buoy (away from shore).

Uniform State Regulatory Markers

USWMS regulatory markers are white with international orange geometric shapes; you must obey regulatory markers.



BASIC RULES OF THE ROAD



FWMS System

The FWMS Lateral System is for use on navigable waters except Western Rivers and Intracoastal Waterways.

The markings on these buoys are oriented from the perspective of being entered from seaward (the boater is going towards the port). This means that red buoys are passed on the starboard (right) side when proceeding from open water into port, and black buoys to port (left) side.

The right side (starboard) of the channel is marked with RED, even numbered buoys. The left (port) side of the channel is marked with GREEN, odd numbered buoys.



UNLIGHTED
BELL BUOY



SPAR BUOY



CAN BUOY



LIGHTED BUOY



NUN BUOY

KC-0420

The middle of the channel is marked with RED and WHITE vertically striped buoys; pass close to these buoys.



SPHERICAL SAFE
WATER MARKER

KC-0430

Obstructions, channel junctions, etc. are marked with RED and GREEN horizontally striped buoys.

A RED band at the top means the preferred channel is to the left of the buoy; a GREEN top band means the preferred channel is to the right of the buoy.



STARBOARD
DAY
MARKER

Day markers are colored and numbered the same as buoys. RED, triangular day markers with even numbers mark the starboard side of the channel. GREEN, square day markers with odd numbers mark the port side of the channel.



PORT
DAY
MARKER

Lights, bells and horns are used on buoys for night or poor visibility conditions.

KC-0440

RIGHT-OF-WAY



CAUTION

In general, boats with less maneuverability have right-of-way over more agile craft. You must stay clear of the vessel with right-of-way and pass to his stern.

Privileged Boats

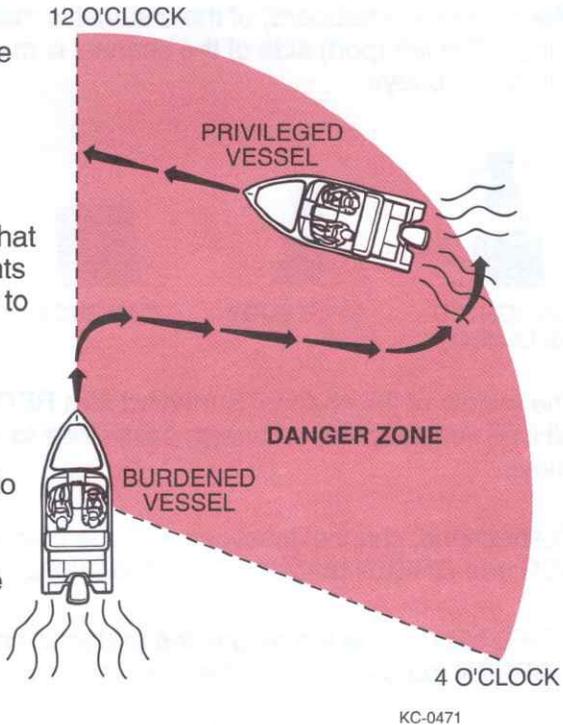
Privileged boats have right-of-way and can hold course and speed. Sailboats and boats paddled or rowed have the right-of-way over motor boats. Sailboats under power are considered motorboats. Small pleasure craft must yield to large commercial boats in narrow channels.

Burdened Boats

The burdened boat is the boat that must make whatever adjustments to course and speed necessary to keep out of the way of the privileged boat.

Crossing Situation

In crossing situations, the boat to the right from the 12 o'clock to the 4 o'clock position has the right-of-way. It must hold course and speed. The burdened boat keeps clear and passes behind the privileged boat. Boats going up and down a river have the privilege over boats crossing the river.

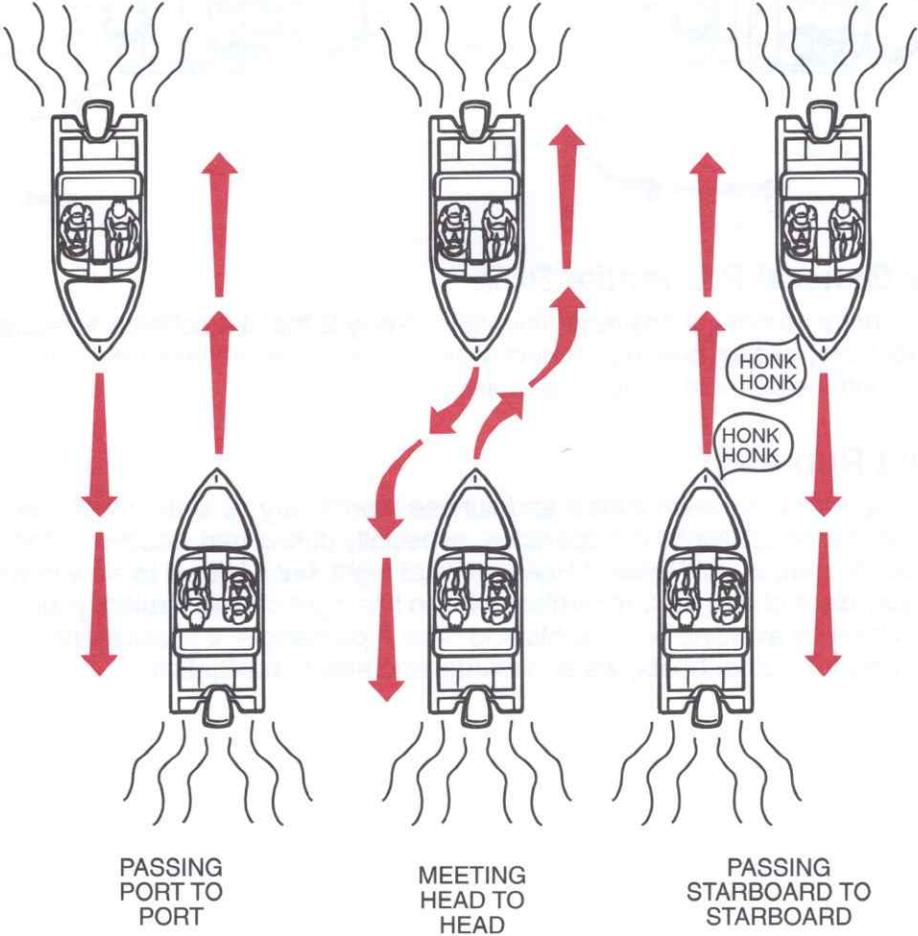


BASIC RULES OF THE ROAD



Meeting Head-On

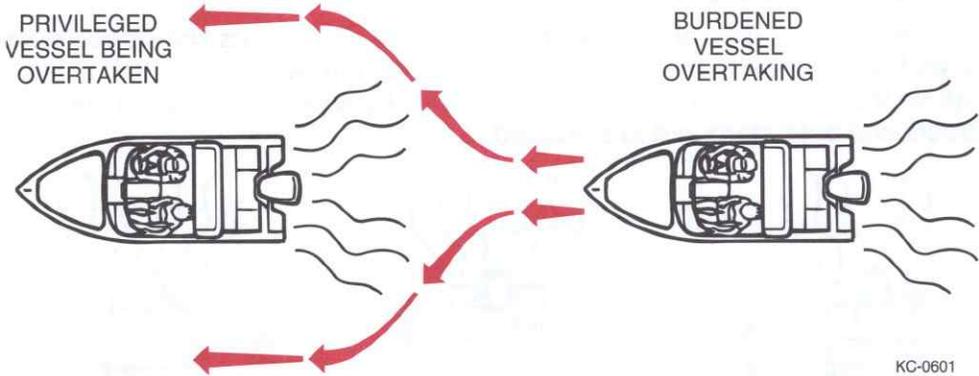
Neither boat has the right-of-way in this situation. Both boats should decrease speed, should turn to the right, and pass port-to-port. However, if both boats are on the left side of a channel, each vessel should sound two short horn blasts and pass starboard to starboard.



KC-0581

Overtaking

The boat that is overtaking one ahead of it is the burdened boat and must make any adjustments necessary to keep out of the way of the privileged boat.



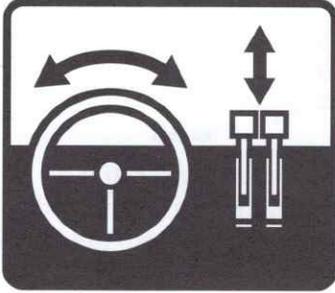
The General Prudential Rule

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.

Night Running

Boats operating between sunset and sunrise (hours vary by state) must use navigational lights. Nighttime operation, especially during bad weather or fog can be dangerous. All Rules of Road apply at night, but it is best to slow down and stay clear of all boats, regardless of who has right-of-way. Protect your night vision by avoiding bright lights and have a passenger, if possible, help keep watch for other boats, water hazards, and aids to navigation.

3



CONTROLS AND INDICATORS

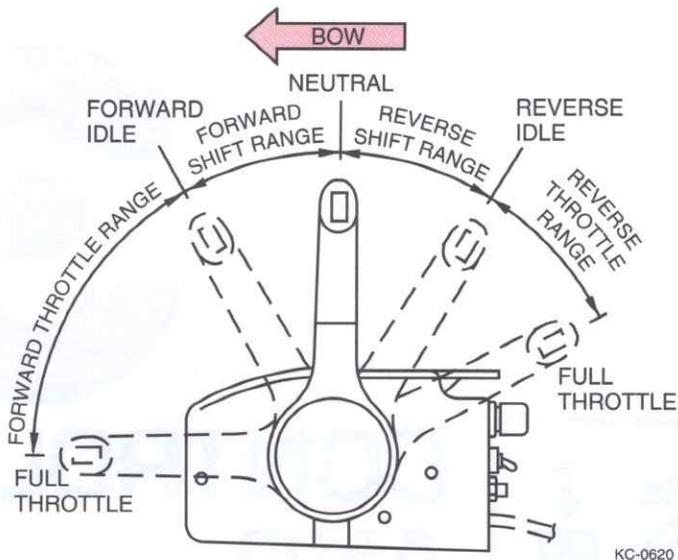
Knowing the controls and indicators on your boat is essential for safe and proper operation. The controls and indicators shown in this section may be optional or slightly different than those on your boat.

SHIFT/THROTTLE CONTROL

The shift/throttle control on your boat differs from model to model and may depend on the engine used. The following control is typical of the operation of most remote controls. Be sure to consult the engine or control manual for operational differences.

CAUTION

Do not shift too quickly from forward to reverse. Stay in neutral, or idle position until the boat has lost most of its headway before completing the shift to reverse or engine damage may occur.



KC-0620

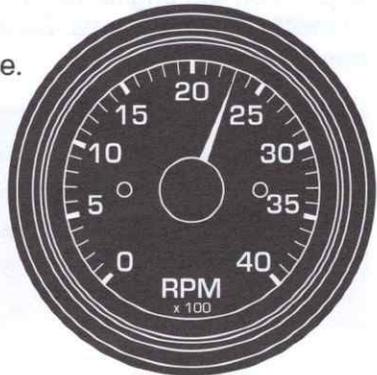
This one-hand, single lever control operates as both a gear shifter and a throttle. The lever automatically locks in the neutral (straight up and down) position for safety when starting. The lever can only be moved from neutral by pressing the neutral lock release button. Shifting is accomplished by moving the lever into the first 15° of travel; push the lever for forward, and pull the lever back for reverse. By advancing the lever beyond 15°, you move from the shifting range to the throttle range.

INSTRUMENTS

Instruments are illuminated for night operation. Their type, number, and location vary by model; some may not appear on your model.

Tachometer

Registers engine speed in revolutions per minute. Use this gauge to keep the engine within the proper operating range. Consult the engine manual for the proper RPM operating range for your engine.



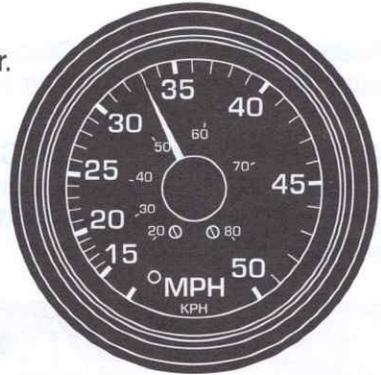
KC-0700

CONTROLS AND INDICATORS



Speedometer

Registers forward boat speed in miles per hour. Use this gauge to monitor fuel consumption and propeller performance. Since most marine speedometers operate with water pressure, accuracy is only approximate.



KC-0710

Fuel Gauge

On models with a permanent fuel tank, this gauge registers approximate fuel level in the gas tank. The Ignition switch must be in the RUN position to activate the gauge.



KC-0720

Trim Gauge

Measures engine or stern drive tilt and indicates the relative position of the bow, up or down when boat is on plane. Use this gauge to monitor boat trim.



KC-0740

Switches

Each electrical circuit on your boat is equipped with a control switch. Some switches may have an LED indicator for easy ON/OFF identification. Most switches will have a fuse holder, or circuit breaker adjacent to the switch.

Master Power Switch – Disconnects the boat electrical systems from the batteries. When not using the boat, keep this switch in the OFF position.

Navigation Lights Switch – Controls the running and anchor lights for night operation. NAV position will turn on the red and green bow lights, white stern light, and gauge illumination. ANC position turns on only the white stern light for night anchoring.



CAUTION

Never operate the boat between sunset and sunrise with the switch in the anchor light position. Running lights are required to indicate direction and right-of-way at night.

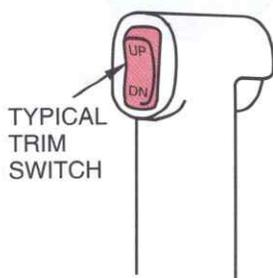
Bilge Switch – Activates the bilge pump to remove excess water from the bilge.

CAUTION

Be sure to switch the bilge OFF when the boat is not in use. Wave action or trailer travel can cause the pump to run down the battery.

Ignition Switch – Starts and stops the engine. Be sure to consult the engine operator's manual for information.

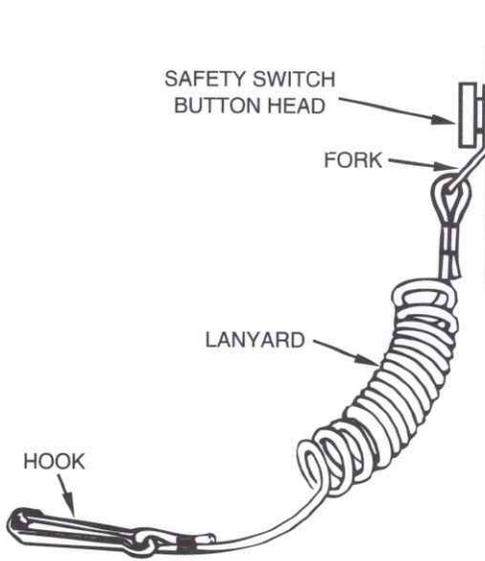
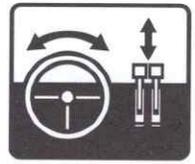
Horn Button – Push and hold to sound the horn.



KC-0931

Trim Switch – If your engine is equipped with power trim and tilt, this switch activates that function. Push and hold the switch until the engine is at the desired angle. Use this switch in combination with the trim gauge.

CONTROLS AND INDICATORS



Engine Stop Switch and Lanyard –

The engine stop switch stops the engine when engaged. Attach the lanyard to the boat operator whenever the engine is running. If the operator is thrown from the seat or moves too far from the helm the lanyard will engage the switch and shut off the engine.

To attach the lanyard, hold out the button head and slide the fork beneath the safety switch. Attach the hook on the opposite end of the lanyard to a strong piece of clothing on the operator, such as a belt loop.

KC-0950



WARNING

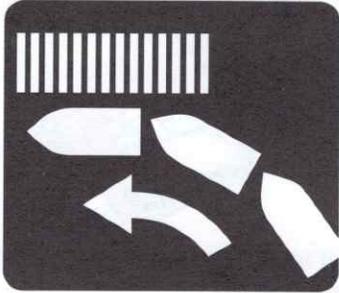


Attach the Engine Stop Switch lanyard to the operator before starting the engine. This will prevent the boat from becoming a runaway if you are accidentally thrown from the boat.

The Engine Stop Switch can only be effective when it is in good working condition. Observe the following:

- Never remove or modify the Engine Stop Switch and/or lanyard.
- Lanyard must always be free from obstructions that could interfere with its operation .

ONCE A MONTH: Check switch for proper operation. With engine running, pull lanyard. If engine does not stop, see your DEALER for replacement of switch.



4

OPERATION

This section describes the basics of fueling, starting, running, trimming, docking and starting your boat. Since there is a variety of control and engine options, be sure to consult the other owner's manuals provided with your boat.

FUELING

Consult the engine operator's manual for proper procedures. Built-in tanks have the fuel filler aft in the boat. Some models with oil injection also have fillers for the oil reservoir.



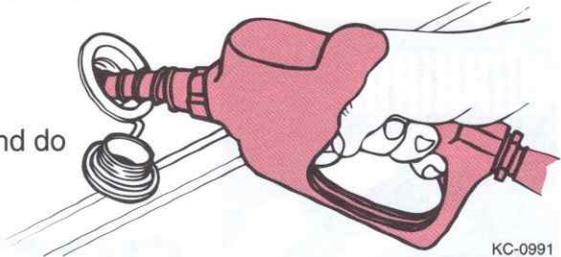
WARNING



Gasoline is extremely flammable and highly explosive under certain conditions. Always stop the engine and never smoke or allow open flames or sparks within 50 feet of the fueling area when refueling.

Take care not to spill gasoline. If gasoline is spilled accidentally, wipe up all traces of it with dry rags and immediately dispose of the rags properly onshore. When fueling:

- Close all doors, hatches, windows, and other compartments.
- Extinguish cigarettes, pipes, stoves, and all other flame producing items.
- Make sure all power is off, and do not operate any electrical switches.
- Remove fuel fill cap. Insert hose nozzle and make sure nozzle is in contact with or grounded against fill opening. This will reduce the risk of static spark.
- Add fuel. Do not fill to capacity to allow for fuel expansion.
- Tighten the fuel filler cap completely after refueling.
- Check oil level.



Note

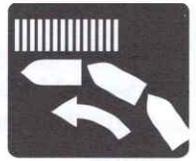
Each time you fill up, inspect fuel lines for leaks and hose deterioration.

After fueling, you should:

- Close fill cap securely and wipe up spillage.
- Open all windows, hatches, doors, and compartments.

LUBRICATION (Outboards)

Your engine may be equipped with an oil injection system that automatically feeds oil to the engine. Use lubricant that is recommended by the manufacturer, or NMMA TC-WII certified. You will find the recommended lubricant listed in the engine manual. If you need assistance, consult your dealer.



STARTING

1. Squeeze fuel primer bulb several times until firm (outboard models).
2. Operate blower (stern drive models).



WARNING



The blower must be operated for a minimum of four minutes before each time the engine is started. In addition, the blower should be operated continuously when at idle or slow speed running. Failure to operate the blower can cause an explosion.

3. Attach Emergency Engine Stop Switch lanyard to its switch and to the operator.
4. Place shift/throttle control handle in NEUTRAL.
5. Turn key clockwise to START position. After motor starts, release key.
6. Push control handle forward to go forward, pull back for reverse.



CAUTION

Always go slowly in reverse to avoid taking water in over the transom. You can swamp the boat by taking on too much water.

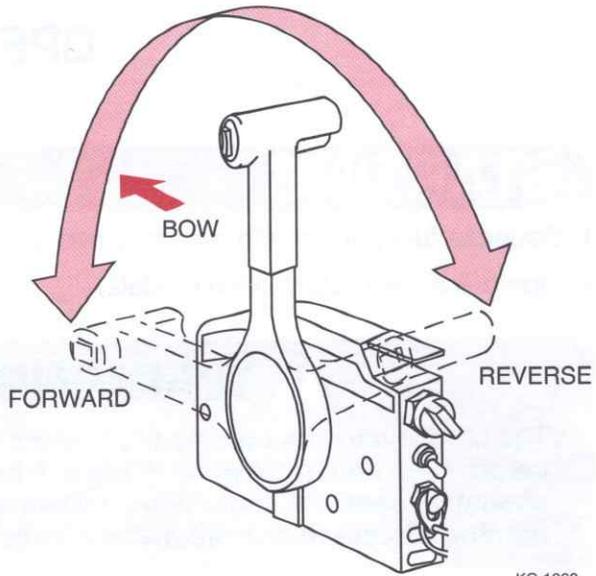
SHIFTING/RUNNING

Follow these guidelines when shifting your boat:

- Pause in neutral before shifting from forward to reverse, or reverse to forward.
- Avoid shifting into reverse while the boat is traveling forward at speed.
- Keep the shifter control clean and clear of obstructions.

To shift into forward: press the neutral lock button while pushing the control lever forward.

To shift into reverse: press the neutral lock button while pushing the control lever backward.



KC-1060

WARNING ALARM

CAUTION

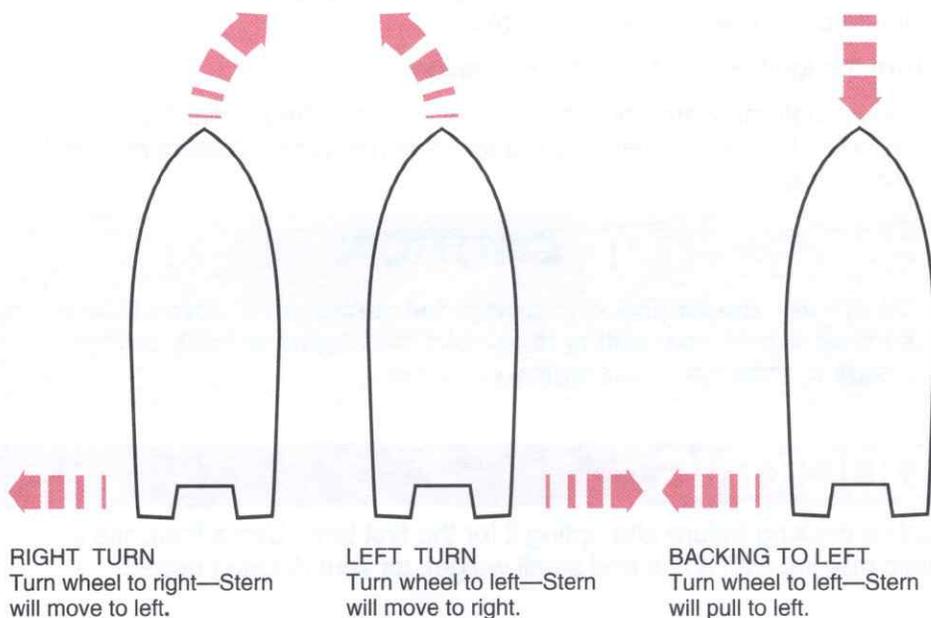
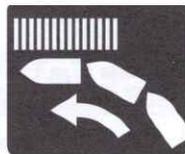
Continued operation after the warning alarm has sounded may cause severe engine damage.

Your boat may be equipped with a warning alarm that will sound if an engine problem develops. If the warning alarm sounds, **IMMEDIATELY** throttle back to idle speed and shift into neutral. **IMMEDIATELY** check the gauges and stop the engine. On some models, the horn may emit a short chirping sound during starting to verify operation.

STEERING CONTROLS

Practice steering your boat. Make sure that the steering system is working correctly and is properly maintained. Follow these guidelines to keep your boat handling well.

OPERATION



KC-1071

- Keep the cable end clear of obstructions such as wiring, control cables, fuel lines, tow lines and mooring lines.
- Keep the moving parts clean and lubricated.
- Inspect the steering cables for kinks, damage, and corrosion.



WARNING



The steering system must be in good operating condition for safe boat operation. Frequent inspection, lubrication, and adjustment by your dealer is recommended.

All boats have a tendency to wander somewhat at slow speeds. A natural reaction to this effect is to steer the boat back and forth in an attempt to compensate for wandering. Invariably, the compensation will result in oversteer and only worsen the effect. Keep the steering wheel in the center position, the boat will wander back and forth somewhat, but the overall course will be a straight one.

STOPPING

1. Slowly bring the control lever to the idle position. If the boat has been driven for a long period of time at high speed, allow the engine a 2-3 minute cool-down period at low idle.
2. Turn the ignition key to the OFF position.
3. If any problems were encountered during the outing, have the boat inspected by your dealer and request any necessary repairs before the next outing.



CAUTION

Do not use the engine stop switch for normal shut down. Doing so may impair your ability to re-start the engine quickly or may create a hazardous swamping condition.

DOCKING

Practice docking before attempting it for the first time. Use a float, like a plastic milk jug with a line and small weight, as your docking target.



WARNING

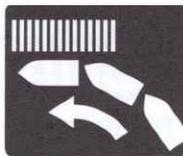


Never use your hand, arm or other part of your body to attempt to keep the boat from hitting the dock. The boat could push against the dock, causing an injury.

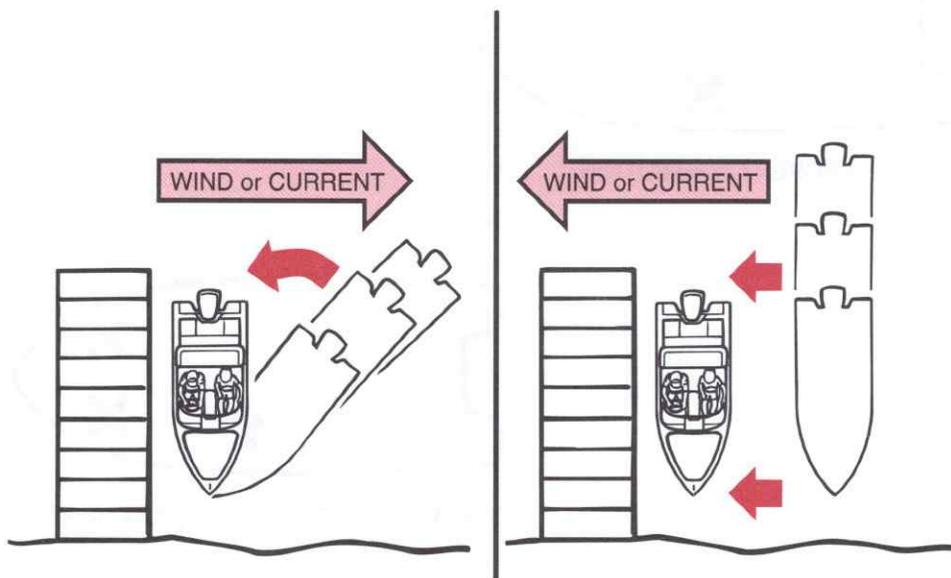
Follow these guidelines when docking:

- Approach docks with the port side of the boat if possible.
- Come to a stop a short distance from the dock, then proceed slowly.
- Have fenders, mooring lines and crew ready.
- Observe how the wind and current are moving your boat. Approach the dock with the boat pointed into the wind, if possible. If the wind or current is pushing you away from the dock, use a sharper angle of approach. If you must approach the dock downwind or down current, use a slow speed and shallow angle. Be ready to reverse to stop and maintain position.
- If there is no wind or current, approach the dock at a 10 to 20 degree angle.

OPERATION



- If possible, throw a line to a person on the dock and have that person secure a bow line.
- With the bow secure, swing the stern in with the engine, or pull it in with a boat hook.



KC-1120

Before tying-up the boat, be sure to use enough fenders to protect the boat from damage. If possible, tie-up with the bow towards the waves with a good quality double-braided nylon line. Tie-up only to the lifting or tie-down eyes; never use the handrails or windshield frames. If the boat is to be moored for a long period of time, use chafing protectors on lines to protect the gelcoat finish. Leave a little slack in the lines to allow for some wave movement or tidal action if applicable.

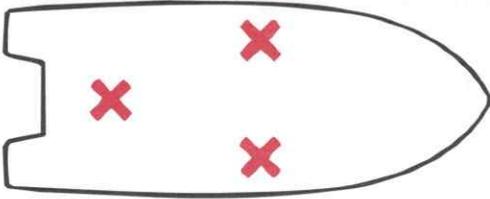
Follow these guidelines when departing:

- Very slowly shift into forward at idle speed.
- When the stern moves away from the dock, turn the engine away from the dock.
- Cast off bow line and back away.

If the wind or current is pushing away from the dock, cast off all lines and allow to drift until you are clear.

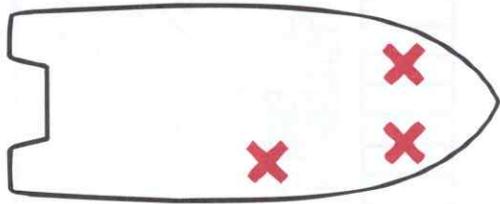
BOAT TRIM

The performance of your boat depends on load weight and distribution. Distribute weight evenly, from bow to stern, and also from port to starboard. After loading, the boat's trim can be adjusted by changing the engine trim angle.



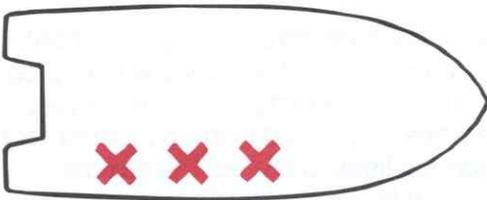
PROPER DISTRIBUTION

KC-1260



IMPROPER DISTRIBUTION (BOW HEAVY)

KC-1270



IMPROPER DISTRIBUTION
(STARBOARD HEAVY)

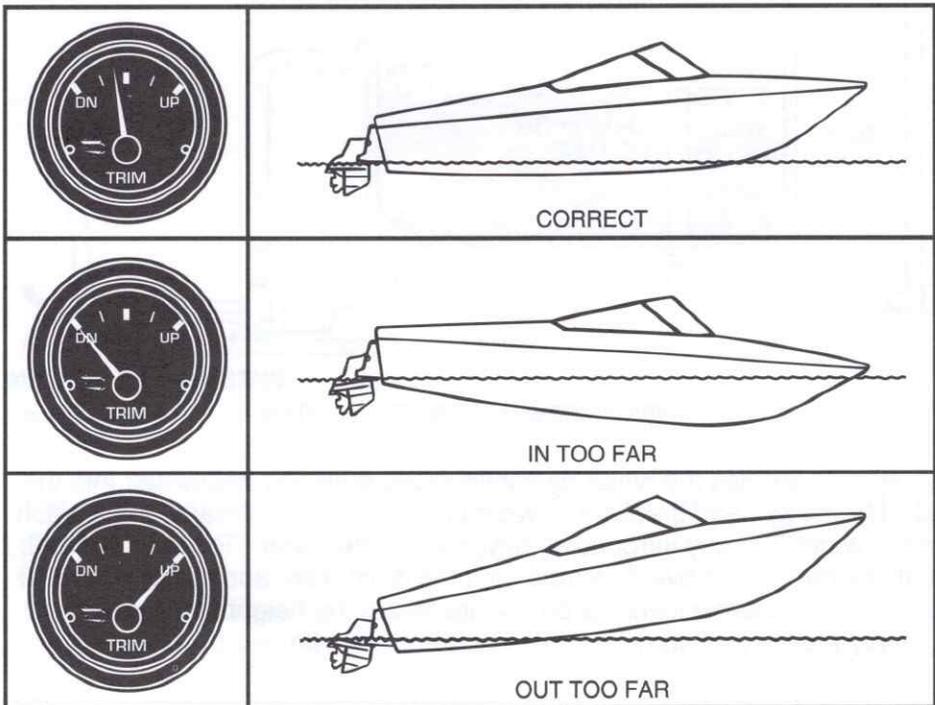
KC-1280



DRIVE TRIM ANGLE

Trim angle is the angular relationship between the lower drive unit and the transom of the boat. Boat trim while underway greatly affects boat performance and efficiency. For best results, the boat should be on plane and trimmed to reduce the wetted surface. With less boat in the water, both speed and fuel economy increases. Engines with manual trim must be adjusted for best overall operation for the load and conditions. Engines with power trim should be adjusted continuously for best results.

If the engine is trimmed in too far (closer to the boat bottom), speed drops, fuel economy decreases, and the boat may not handle correctly. However, it does provide better acceleration from a stand still; and because it forces the bow down, visibility is improved. If the engine is trimmed out too far (away from the boat bottom), steering torque may increase, the boat may be difficult to get on a plane, and may bounce.



KC-1150



WARNING



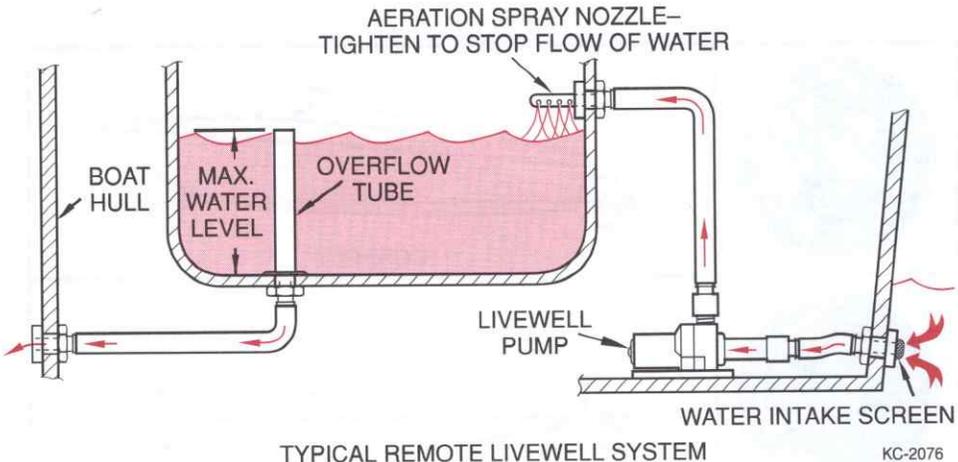
Do not trim the engine out too far or the boat may begin to “porpoise” (bounce up and down). Porpoising reduces control and visibility.

To use power trim effectively, always start with the engine trimmed in. As the boat planes, increase the angle out. Experience is the best teacher for understanding proper trim.

FISHING FEATURES

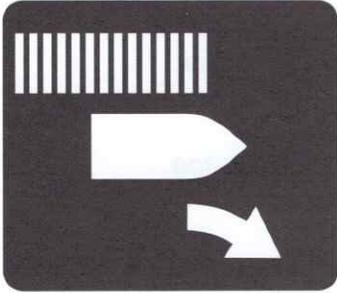
Livewell

Some boats are equipped with a livewell for protection of your catch. The livewell is equipped with an aeration pump that oxygenates the water to keep the fish alive. To prevent stagnation of water, empty the livewell after you are finished using it. Never allow soap or detergents inside the livewell, residue from cleaners may be harmful to fish.



This system aerates the water by continuously pumping freshwater into the well. The spray head breaks the water into many small streams that splash into the water, thereby introducing oxygen into the water. To fill the livewell; install the removable overflow tube into the drain hole, and turn the livewell pump ON. The water level will be maintained to the height of the overflow. To empty the livewell; turn OFF livewell pump and remove overflow tube.

5



GETTING UNDERWAY

There are many things to consider to make your boating trip safe and enjoyable. This section includes a safety checklist, boarding guidelines, boat loading, and capacity information.

The contents of this section should be read and understood before casting off. Remember, if you have a problem during your cruise, you can't get out and fix it, or walk to safety or for help.

You are responsible for the safety of all passengers, the boat, and any damage the boat or its wake may cause. Always keep passengers from blocking your view so that you do not run into other boats, swimmers, water skiers, personal water vehicles, or aids to navigation.

SAFETY CHECKLIST

The following checks are essential to safe boating and must be performed before starting the engine. Get in the habit of performing these checks in the same order each time so that it becomes routine.



WARNING



DO NOT launch the boat if any problem is found during the Safety Check. A problem could lead to an accident during the outing causing severe injury or death. Have any problem attended to immediately; see your dealer.

Pre-Operation

- Check the weather report, wind and water conditions.
- Check that the required safety equipment is on board.
- Check that the fire extinguisher is fully charged.
- Check that bilge drain plug is installed properly.
- Check that no fuel, oil or water is leaking or has leaked into the bilge compartment.
- Check all hoses and connections for leakage and damage.
- Check the propeller for damage.
- Check the engine cooling water intake pick-up for blockage.
- Check that battery terminals are clean and tight.
- Check electrical circuits (lights, pumps, horn, etc.) for proper operation.
- Check that throttle/shift control is in neutral.
- Check that the steering system operates properly.
- Check that all required maintenance has been performed.

During Operation

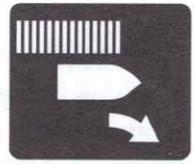
- Check gauges frequently for signs of abnormal behavior.
- Check that controls operate smoothly.
- Check for excessive vibration.

After Operation

- Fill fuel tank to prevent moisture due to condensation.
- Check for fuel, oil and water leakage.
- Check the propeller for damage.

SAFETY EQUIPMENT

Federal and local laws require certain safety equipment to be on board at all times. In addition, responsible boaters carry other equipment in case of emergency. Check with local boating authorities for any additional requirements over and above federal requirements.



BOARDING

When boarding the boat, always step in. Do not jump. Avoid stepping on fiberglass or other potentially slippery surfaces. Board one person at a time.

Do not board the boat while carrying gear. Set gear on the dock, board the boat and then pick-up the gear.

Boat Loading

The performance of your boat is dependent on load weight and distribution. Passengers should board one at a time and should distribute themselves to maintain trim. Remember to distribute weight from right to left, and also from front to back.



WARNING



All passengers should be carefully seated and not be riding on the deck, gunwale, rear sun deck, or elevated pedestal fishing seats while underway. Passengers riding in the bow rider seats should exercise extreme caution. During rough water operation, passengers in the bow rider seats should move to the aft passenger seats.

- Do not allow your passengers to ride with their feet dangling over the side, floating debris can cause serious injury.
- Avoid excess weight in the bow or stern.
- Securely stow all extra gear in stowage areas to prevent load shifting. Do not stow gear on top of safety equipment; safety equipment must be quickly accessible.
- In adverse weather, reduce the load in the boat. People/load capacity ratings are based upon normal boating conditions.
- Do not use the engine unit as a boarding ramp. Make sure engine is off when swimmers, divers, and skiers are boarding to prevent injury.

Capacity

Boats up to 26' in the National Marine Manufacturers Association (NMMA) program have a maximum rated load capacity, which is stated on the certification plate (if equipped). The load capacity of boats under 20' are determined by the USCG. The person/load capacity is determined by various USCG formulas. Actual capacity is determined by the availability of proper seating on the boat. Acceptable seating determines the number of passengers, not the overall load capacity.

U.S. COAST GUARD MAXIMUM CAPACITIES	
8 PERSONS OR 1150 LBS.	
1600	LBS. PERSONS, (MOTOR) GEAR
140	H.P. MOTOR
THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION	
MANUFACTURER:	
MODEL:	
DESIGN COMPLIANCE WITH NMMA REQUIREMENTS BELOW IS VERIFIED. MFGR. RESPONSIBLE FOR PRODUCTION CONTROL.	
LOAD CAPACITY • COMPARTMENT VENTILATION STEERING, FUEL AND ELECTRICAL SYSTEMS INTERNATIONAL LIGHTS • BASIC FLOTATION MANEUVERABILITY	
	NATIONAL MARINE MANUFACTURERS ASSN.

OUTBOARD POWERED BOATS ONLY

KC-1440

Note

The capacity plate for outboard powered boats lists the maximum horsepower that the boat can safely use. It is unlawful to overpower a boat.

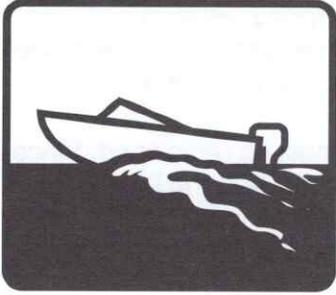


WARNING



Do not exceed the USCG certified maximum capacities under any circumstances. Overloading will reduce freeboard and increase the likelihood of swamping, especially in heavy seas. Overloading causes handling to become sluggish making it hard to react quickly.

Overpowering outboard powered craft is extremely dangerous. Overpowering will make the boat unstable and could cause loss of helm control.



6

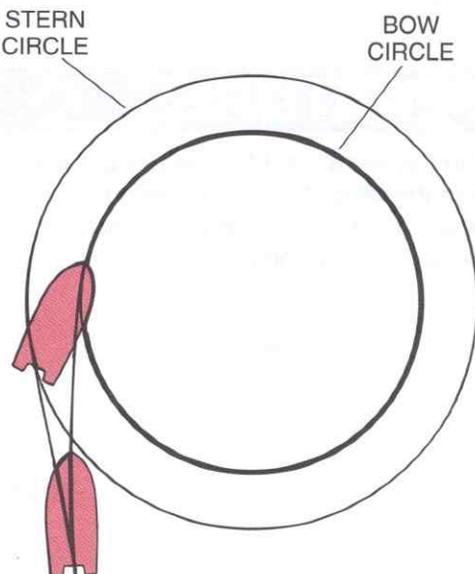
RUNNING

We urge you and all others operating the boat to seek certified instruction from the local boating authorities.

This section is designed to present the most basic operational principles. It is NOT intended to cover all conditions encountered during operation. The principles presented in this manual are limited directly to the operation of the boat. The responsibility for the proper application of these principles belongs to you.

MANEUVERING TECHNIQUES

Steering response depends on three factors: engine position, motion and throttle.



Like an automobile, high speed maneuvering is relatively easy and takes little practice to learn. Slow speed maneuvering, on the other hand, is far more difficult and requires time and practice to master.

When making tight maneuvers, it is important to understand the effects of turning. Since both thrust and steering are at the stern of the boat, the stern will push away from the direction of the turn. The bow follows a smaller turning circle than the stern.

The effects of unequal propeller thrust, wind, and current must also be kept in mind. While wind and current may not always be present, an experienced boater will use them to his advantage. Unequal thrust is an aspect shared by all single engine propeller-driven watercraft. A clockwise rotation propeller tends to cause the boat, steering in the straight ahead position, to drift to starboard when going forward, and to port when going backward. At high speed, this effect is usually unnoticed, but at slow speed; especially during backing, it can be powerful. For this reason, many veteran boaters approach the dock with the port side of the boat toward the dock, if possible.

Stopping (checking headway) is a technique that must be developed. Since a boat has no brakes, reverse thrust is used to slow and stop the boat. The momentum of the boat will vary according to the load as well as the speed. Make it a practice to slow to idle (no-wake) speed before shifting into reverse.

It is best to learn maneuvering skills in open water away from traffic. Adequate practice is the only way to develop your boating skills.

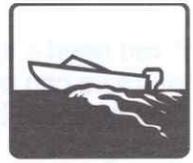
SALT WATER

If boat is moored in salt water for long periods, tilt the engine out of the water (except during freezing temperatures). After removing the boat from the water, lower the engine to the run (down) position until the cooling system has drained thoroughly. Hose the entire hull down with fresh water and wipe dry.

Today's engines are built for operation in either fresh or salt water. Fresh water internal flushing is not normally required, however, it may be desirable after use in salt, polluted, or brackish water. Your dealer will assist you in securing the appropriate engine flushing device.

FREEZING TEMPERATURES

When the boat will be operated and left in the water and temperatures drop below freezing, the engine must remain in the tilted down (submerged) position at all times to prevent water in the engine from freezing. When the boat is removed from the water, drain the engine completely.

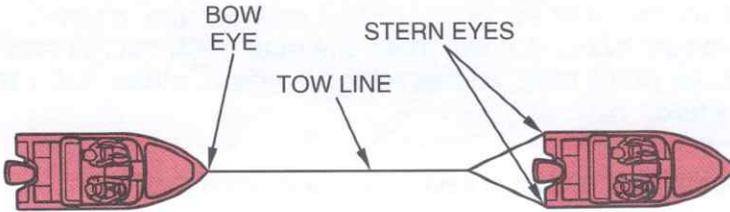


TOWING PROCEDURE

If seas are rough, it may not be easy to extend the tow line from one boat to another. In these cases, use a light throwing line with a weight on one end and with the heavier towing line secured to it.

Never attempt to tow a much larger or grounded vessel. Because of the tremendous stress caused by towing, use a tow line that is rated at least 4 times the gross weight of the boat being towed. Tow ropes must always be in good condition, free of any cuts or abrasions.

Attach tow line to the bow eye on the disabled boat. Attach the opposite end of the bridle only to the stern eyes of the tow boat. Wrap the bridle with chafing gear where it rubs against the boat or any corners. Leave at least 2 boat lengths between the boats for adequate movement.



KC-2111



When towing, use only the bow and stern eyes; never use cleats, handrails, etc. Do not allow anyone to be in line with the tow rope. If the rope should break or pull free, a dangerous recoil could occur which may seriously injure or kill anyone in its path.

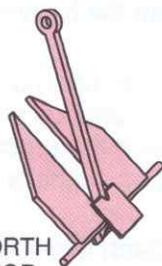
Adjust the tow line to match wave action. Keep the boats on the crest or in the trough of the waves at the same time. In protected, calm waters, shorten the line for better handling. Always tow at moderate speed, allowing for adverse wind and wave conditions. Have the operator of the towed boat steer with you if possible.

If you need a tow, or wish to tow another boat, use great care. The boat structure can be damaged by excessive pulling strain. You should always offer help to a boat in trouble. However, towing a capsized, grounded, or hull damaged boat is dangerous. Give assistance to the occupants; then call the proper authorities.

ANCHORING

Dropping Anchor

There are many types of anchors available on the market. The choice of one anchor over another depends on many factors. An anchor will usually hold best in a mixture of mud and clay or in hard sand. A lightweight Danforth anchor is recommended for general boating. For more information on anchors consult your dealer.



DANFORTH
ANCHOR

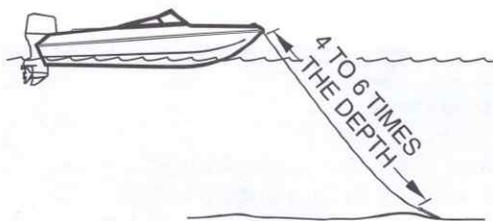
KC-1571



CAUTION

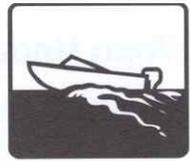
Always anchor from the bow; NEVER anchor from the stern. A small amount of current will make the boat unsteady...a strong current can pull a boat, anchored by the stern, under water and keep it there.

When anchoring, it is helpful to keep a few guidelines in mind.



KC-1531

- Make sure the line is tied to the anchor and tie the other end of the line to the forward cleat or bow eye.
- Head the boat into the wind or current over the spot where you want to lower the anchor.
- Stop the boat before lowering the anchor.
- When the anchor hits bottom, slowly back up the boat, keeping tension on the line. Let out an anchor line that is 4 to 6 times the depth of the water. For example, if you are in 10 feet of water, let out 40 to 60 feet of line.



- Secure anchor line to the bow cleat. Pull on line to make sure anchor is holding.
- Occasionally check your position against the shoreline. If the anchor is dragging and you are drifting, reset the anchor.

Weighing (Pulling In) Anchor

Start engine and move forward until anchor line is straight up and down. Pull hard to lift anchor from the bottom material.

If the anchor is stuck, attach anchor line to the bow cleat so that it is taut. The up and down motion of the bow from wave action may lift the anchor from the bottom. If the anchor remains stuck, let out a few more feet of line and attach it to the bow cleat. Slowly maneuver the boat around the anchor until the anchor pulls loose. Be sure to keep the line tight during this procedure.

PERFORMANCE BOATING

Some boat models; especially those with high horsepower engines, are capable of truly exhilarating performance. Don't be tempted to push your boat to its limits until you are familiar with your boat's operating characteristics. The operator should have at least 10 hours of experience with the boat before any extended full throttle operation.

Here are some guidelines for performance operation. Read them, practice them, and soon you will be operating your boat to its full capability.

Before Running

- Keep the bottom clean and free of scum, barnacles and other growth. Growth on the hull can slow the boat down considerably.
- Prepare the boat. Be sure all gear is properly stowed and compartments are latched.
- Weight distribution affects performance. Keep weight in the boat low and evenly distributed. Remove unnecessary weight and keep on shore.
- The propeller should be of the proper pitch to turn the recommended RPM rating for the engine and of the proper type for your average load and individual requirements. Your dealer can help you select a performance propeller.

When Underway



WARNING



Keep one hand on the wheel and the other on the throttle at all times. If the boat begins to operate in an unsafe way, pull back on the throttle and trim the engine IN at the same time.

- Increase speed. The bow will start to come down.

Note

Do not trim the engine out too far or the boat may begin to “porpoise” (bounce up and down). Porpoising lowers top speed and fuel efficiency, and reduces control and visibility.

- When the bow begins to fall, trim the engine out. Trimming the engine out at speed will cause the boat to rise up. The boat will begin accelerating without adjusting the throttle because less of the boat is dragging in the water. Steering will become easier because the propeller has less torque.
- Watch the tachometer to keep the engine within the full throttle operating range. See the engine operator’s manual for the proper tachometer reading at full throttle.

High speed operation on smooth water is very stable, but quick reactions and adjustments are needed to maintain control. Know your limits and stay within them. Always keep one hand on the steering wheel and the other on the throttle; constant adjustments are necessary for rapidly changing conditions. Small inputs of throttle and steering are exaggerated at high speeds. Depending on the speed, keep watch well ahead so that you may have enough time to react.



7

CARE AND MAINTENANCE

This section describes how to care and maintain your boat. It includes information about maintaining electrical components, corrosion protection, and general maintenance.

ELECTRICAL

Battery

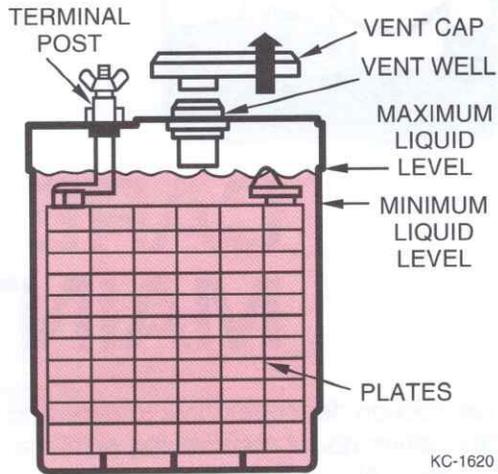
The boat is equipped with a 12-volt direct current (12 VDC) negative ground electrical system. The positive (red) wire is hot and feeds current from the battery to the electrical systems. The negative (black) wire is ground and completes the circuit back to the battery. Until the engine is running at high idle or faster, all electrical power comes from the main battery. Once the engine is started and running above 1200 rpm, electrical power is then provided by the engine alternator. The alternator provides more power as engine speed is increased. When the engine is operating, the alternator is charging the battery.

More electrical accessories than ever are being used on today's boats. Continuous operation of electrical accessories when the engine is not operating, or operating at low idle (trolling) speeds may discharge the battery to the point where it may not be able to crank the engine. A poorly maintained battery will discharge more quickly, and if corrosion is present, the engine might not start due to high electrical resistance at the battery terminals, even though there may be sufficient battery reserves to start the engine.

! WARNING !

Batteries contain sulfuric acid which can cause severe burns. Wear protective clothing to avoid acid contact with skin, eyes, etc.

Check the battery frequently for signs of corrosion. If corrosion is evident, clean terminal posts with a baking soda and water solution and a wire brush. Before cleaning, remove the vent caps and seal the vent wells with corks to prevent the solution from getting inside the battery. Also, check the fluid levels in the cells. Usually, a level approximately 1/4 to 1/2 inch above the plates is sufficient. If needed, fill with distilled water; do not overfill! Some batteries are sealed, and cannot be filled.



KC-1620

Batteries are perishable products and will self-discharge. If you operate your boat sparingly, you may want to charge your battery occasionally. To recharge, remove the battery from the boat and remove the battery caps (when applicable). Recharge the battery according to the directions enclosed with your battery charger. When installing the battery in the boat, make sure the battery is secured in the battery box.

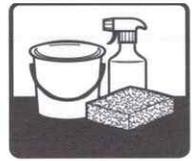
! WARNING !

Batteries produce explosive hydrogen gas. Never attempt starting your engine with jumper cables under any circumstances. Keep all sparks, flames and smoking materials away from batteries. Risk of spark at the battery post igniting gasoline or hydrogen fumes is too great. Always wear eye protection when near batteries and have adequate ventilation when charging. An explosion can cause blindness or other serious injuries.

Circuit Breakers and Fuses

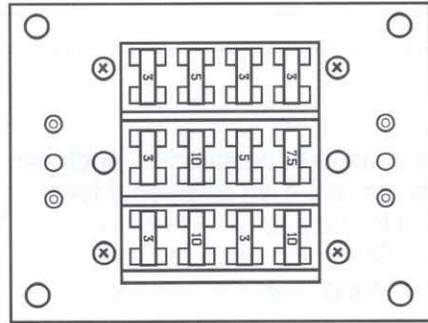
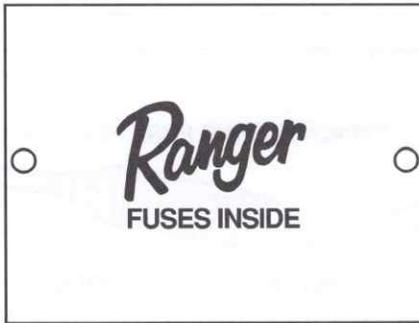
All electrical circuits are protected from overload by the use of fuses or circuit breakers. In the event of an overload or short circuit, the fuse will blow or circuit breaker will trip. If a circuit continuously overloads under normal operating conditions, have your boat inspected by the dealer immediately.

CARE AND MAINTENANCE



CAUTION

Never exceed the recommended fuse sizes or bypass the fuse safeguard. Always install the proper (type and rating) fuses whenever replacing or changing fuses. Continuous fuse/breaker failures indicate a severe problem that requires immediate attention. Failure to install correct fuse may result in damage to the electrical system or severe personal injury.



RAN-9

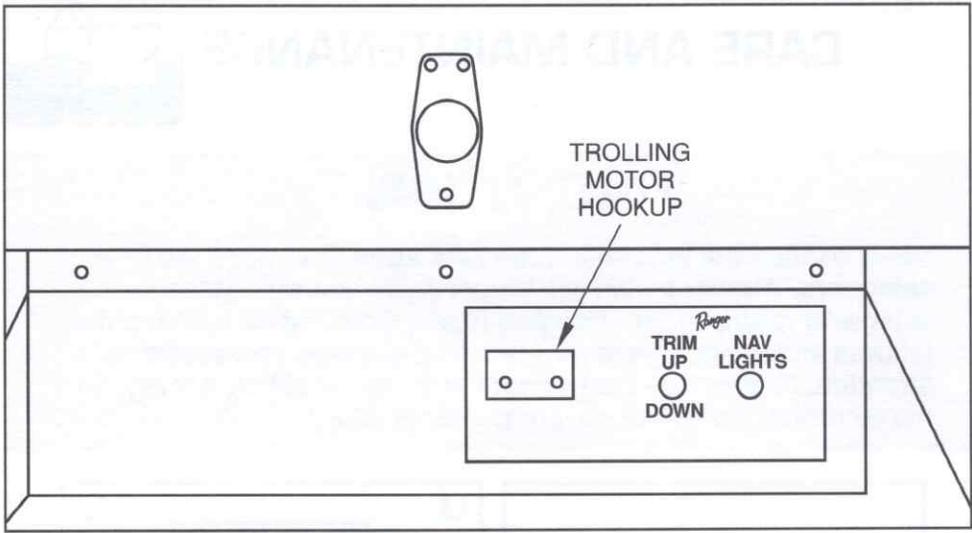
The recessed fuse panel, located for easy access, features plug-in type ATC fuses. By removing the fuse panel cover, the fuses can be easily inspected or replaced.

The panel has a capacity of twelve individual circuits. The particular accessory(ies) they operate are shown on the decal on the back side of the fuse panel lid.



CAUTION

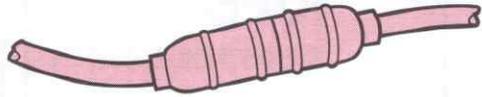
The electrical system is designed to protect you from short circuits and overload. Any modifications to the system, such as adding electrical accessories, should be done by a qualified technician.



RAN-10

Some installed accessories, such as the stereo, have an additional fuse located in the positive lead of the stereo. Some in-line fuse holders can be found near the battery.

TYPICAL IN-LINE FUSE HOLDER



(TWIST AND PULL TO OPEN)

KC-1640

CORROSION PROTECTION

Galvanic Corrosion

Galvanic corrosion (electrolysis), to the boater, is the break-up of metals due to the effects of electrolytic action. When two dissimilar metals are immersed in a conductive fluid (salt water), an electric current is produced, much like a battery. As the current flows, it takes with it tiny bits of the softer metal. If not stopped, a great deal of damage could occur.

If you operate in salt, polluted, or brackish waters, your boat should be equipped with a transom mounted zinc anode to prevent damage to those metal parts coming in contact with the water. The zinc is, by design, self-sacrificing. It is slowly eroded away by electrolytic action and requires periodic inspection for deterioration. If the zinc shows extreme erosion, it must be replaced to continue protection, or damage to other metal parts may result.

Most engines are equipped with one or more zinc anodes which must also be inspected regularly for deterioration. Some boat models may be equipped with an electronic cathode system. This system emits a low current electrical charge into the water close to the metal components. This charge cancels the effect of electrolysis.

CAUTION

Never paint or coat zinc anodes or cathodes with any substance. Once covered, they do not provide protection from galvanic corrosion. Replace anodes if they have deteriorated 50% or more.

Salt Water Corrosion

The entire boat should be rinsed with fresh water and washed immediately after use in salt water. If the boat is used primarily in salt water, wax the hull monthly and apply corrosion inhibitor to all hardware. See your dealer for products suitable for the marine salt water environment. Fresh water internal flushing is recommended when used in salt, polluted, or brackish waters. Flush the entire engine cooling system with fresh water for at least 5 minutes after use in these waters. See your dealer for appropriate flushing devices.

CARE AND MAINTENANCE



GENERAL MAINTENANCE

Marine Growth

If accelerated marine growth is a problem in your area, an anti-fouling bottom paint may be necessary to slow growth and prevent gelcoat damage. Before selecting a bottom paint, talk with other boaters and your dealer to determine which product works best in your area. Many local variables can affect the selection of paint. Be sure to follow the paint manufacturer's directions exactly.

Cleaning

Periodic cleaning is the best way to keep your boat looking new. Regular washing and waxing keep dirt and scum from building up and deteriorating the finish. Keeping your boat in "show room" condition means greater personal satisfaction and higher resale value. Special cleaning products are available from your dealer to remove mildew.

Hull

When washing the boat, be sure to use a mild detergent and warm water solution. DO NOT use abrasive cleaners, solvents, ammonia or chlorine as these will damage the gelcoat surface. Under extreme conditions, special cleaners may be used to remove marine growth, such as scum or algae, from the hull; see your dealer.

Waxing the entire gelcoat surface at least twice a season is recommended for all climates. Use of a specially formulated marine gelcoat wax will prevent color fade and soil and scum adhesion. If the gelcoat has chalked or faded from lack of proper maintenance, buffing may be necessary to bring back the shiny appearance. Hand buffing with #7 rubbing compound or power buffing with glazing compound #1 will quickly restore the surface.

Upholstery

Regular washing with mild detergent and warm water or automotive vinyl cleaners is sufficient to keep the cushions, canopy top, and vinyl coverings in good condition. Keep the cushions from becoming soaked and dry off thoroughly after washing to prevent mildew accumulation after the boat is covered. Prop the cushions up in the boat when covered to allow air circulation and spray with mildew repellent. Lubricate canopy top snaps with petroleum jelly.

CAUTION

Certain automotive, household and industrial cleaners can cause further damage and discoloration. Solvents and dry cleaning fluids, or products that contain dyes such as waxes, should be used with caution. Whenever cleaning stubborn stains, be sure to test the treatment in an unseen area first. The following stain treatments should be used with discretion. Between steps, be sure to rinse thoroughly with plenty of clean water and allow to dry.

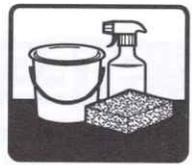
Stain	Steps		
	1	2	3
Ballpoint Ink*	A	B	E
Chewing Gum	D	A	B
Coffee, Tea or Chocolate	B		
Crayon	D	B	
Eyeshadow	B		
Grease	D	B	E
Ketchup	A	B	
Latex Paint	A	B	E
Lipstick	A	B	
Mildew or Wet Leaves*	C	A	B
Motor Oil	B		
Paint, Oil Base (Dried)	D	A	B
Paint, Oil Base (Fresh)	D	B	E
Permanent Marker*	B	C	E
Shoe Polish*	D	B	E
Soil	A	B	
Spray Paint	B	E	
Suntan Lotion	A	B	E
Tar/Ashpalt	D	A	B
Yellow Mustard	A	B	C

*These products contain certain dyes that stain permanently.

Treatment

- A. Medium soft brush-warm soapy water.
- B. Household spray cleaner (Fantastic).
- C. One (1) tablespoon bleach to one (1) quart water.
- D. Wipe or scrape off excess. (Chill gum with ice.)
- E. Follow instructions of staining agent manufacturer.

CARE AND MAINTENANCE



Carpet

Occasional washing with mild detergent and warm water or household carpet cleaners will keep the carpet clean. Thoroughly hose the detergent out of the carpet and into the bilge. This is usually the best time to clean the bilge. Let the carpet dry in the sun to prevent any mildew or odor caused by moisture.

Windshield

A clean windshield is important. The windshield requires special cleaning to prevent scratches to the surface. Use a mild soap solution and damp cloth only. Harsh detergents, solvents, chemicals or dry cloths will scratch the surface.

Bilge

Your bilge accumulates oil and greasy dirt over a period of time and should be cleaned out. Usually, ordinary soap and water does not remove the accumulation, and something stronger is necessary. Consult your dealer for recommendations on special bilge cleaning products.

Stainless Steel and Chrome

Stainless steel and chrome plated parts are not totally resistant to corrosion. Occasional cleaning and polishing with a marine chrome and stainless polish will maintain and extend the useful life. In salt water areas, rinse all hardware with fresh water and apply a light coating of corrosion inhibitor oil to enhance appearance.

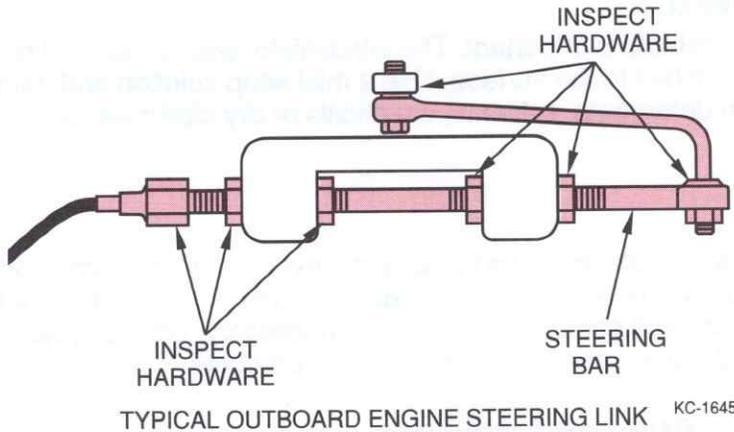
FUEL SYSTEM

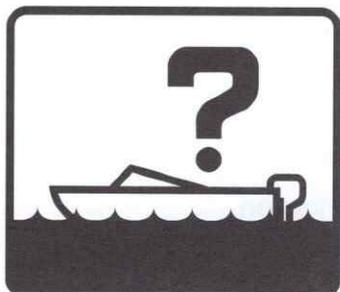
Fuel lines, vent hoses, and drain hoses should be checked frequently for leaks. Some models are equipped with removable inspection plates for fuel system component inspection. If a leak occurs around the fitting, then tightening of the hose clamps may be all that is necessary. However, if the leak continues, replace the hose immediately to prevent a build-up of fluids or gases. Surface cracking on the hose indicates wear, and replacement is recommended. Use fuel system parts certified for marine use only; do not substitute automotive parts in marine application.

STEERING SYSTEM

The steering system is the primary link for engine control and must be inspected and maintained regularly. The hardware at both the helm and engine end of the steering cable must be checked frequently for tightness. Refer to the engine operator's manual for the appropriate torques.

The steering bar must be lubricated monthly to ensure smooth operation. Turn the steering wheel to a full starboard turn to expose the bar. Use a high quality waterproof marine grease and fully coat the bar. Turn the steering wheel back and forth to work the grease in.





8

TROUBLESHOOTING

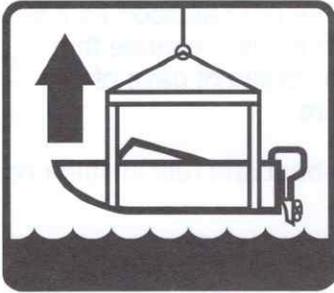
The following chart will assist you in finding and correcting minor mechanical and electrical problems. If an engine problem is indicated, consult your engine owner's manual.

Some problems may require specialized skill and tools to correct them; see your dealer.

TROUBLE CHECK CHART

Symptom	Possible Cause
Engine will not crank	<ul style="list-style-type: none">● Engine stop switch not connected● Throttle/shift control in gear● Main circuit breaker open● Battery terminals corroded● Weak battery● Loose or corroded battery wiring connections● Engine problem
Engine cranks but will not start	<ul style="list-style-type: none">● No fuel in tank● Fuel filter clogged

Symptom	Possible Cause
Engine cranks but will not start (cont.)	<ul style="list-style-type: none"> ● Contaminated fuel ● Engine problem
Poor boat performance	<ul style="list-style-type: none"> ● Contaminated fuel ● Uneven load distribution ● Engine trim wrong ● Improper propeller selection ● Excessive water in bilge ● Engine problem
Poor gas mileage	<ul style="list-style-type: none"> ● Plugged flame arrestor (stern drive) ● Engine trim wrong ● Marine growth on hull ● Engine problem
Throttle/shifting problems	<ul style="list-style-type: none"> ● Corroded cable ● Kink in cable ● Engine problem
Excessive vibration	<ul style="list-style-type: none"> ● Propeller damaged or fouled ● Engine problem
Electrical problems	<ul style="list-style-type: none"> ● Blown fuse or open circuit ● Loose wiring connections ● Defective switch or gauge



9

STORAGE

Storage or winter lay-up requires special preparation to prevent damage to the boat. Perform all annual maintenance at this time.

Without proper preparation, storage for long periods of time may cause internal parts of the engine and drive unit to rust because of lack of lubrication. Or, if the boat is stored in below freezing temperatures, water inside the bilge or cooling system may freeze causing damage. Damage to the boat due to improper storage will not be covered by the warranty. The following procedures should help prevent damage to your boat.

While The Boat Is Still In The Water

1. Fill fuel tank and add the proper amount of fuel stabilizer and conditioner according to the manufacturer's recommendations.
2. Operate boat for at least 15 minutes to be sure that treated fuel has reached engine.

Note

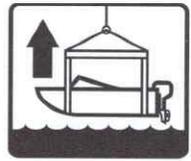
If the boat is to be stored for more than 5 months, stored in a high moisture (humidity) environment, in temperature extremes, or stored outdoors, "fog" the engine with a rust preventative fogging oil according to the manufacturer's recommendations. See your dealer.

When The Boat Is Removed From The Water

Note

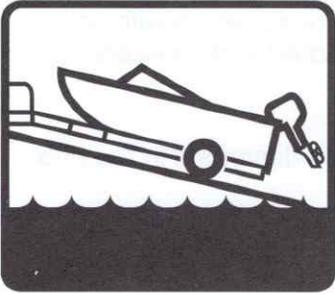
Remove the bilge drain plug immediately after taking the boat out of the water. After washing, raise the bow of the boat high to allow as much water as possible to drain while performing other storage preparations.

- Flush the engine cooling system with clean water. DO NOT exceed 1500 rpm when flushing.
- Perform all scheduled maintenance. For stern drives, tuning the engine and changing the oil and fuel filters (if equipped) is especially important.
- Thoroughly clean the hull, deck and interior of the boat as soon as it is removed from the water. Cleaning at this time is easier because the marine growth is still wet. Be sure to allow for a couple of days of air drying to prevent mildew due to trapped moisture.
- Apply a coat of wax to the entire surface of the boat and rust inhibitor on all metal parts.
- Clean all traces of dirt, oil, grime, and grease from the engine and bilge. Touch-up areas of engine where paint has been removed.
- Prepare the engine for storage according to the instructions contained in the engine owner's manual.
- Store the bilge drain plug in a plastic bag and tape it to the throttle control lever so that it is easily found for reactivation.
- Remove the battery from the boat. Clean, fully charge and store the battery in an area not subject to freezing temperatures. Never store batteries close to heat, spark, or flame producing devices.
- Repack trailer wheel bearings with water resistant wheel bearing grease. If the trailer is equipped with bearing protectors, squirt grease into hubs with a grease gun.
- Park trailer and boat in a protected area. If the rig is left outside, install a boat cover. See your dealer.
- Loosen tie-downs and winch line but be sure the boat is resting properly on hull supports.
- Jack up trailer and place blocks under trailer frame to relieve weight on trailer tires and springs.



Reactivating The Boat After Storage

- Charge and install battery in boat.
- Check engine and bilge for signs of nesting animals; clean as necessary.
- Check entire engine for cracks and leaks caused by freeze damage.
- Check hose condition and all hose clamps for tightness.
- Install bilge drain plug.
- Perform daily maintenance. If not performed during lay-up, perform annual maintenance.
- If the boat is equipped with the optional fresh water cooling system (stern drive only) and was drained for storage, fill the system with fresh coolant solution.
- Check and lubricate steering system.
- Remove blocks from under trailer frame.
- Tighten tie-downs and trailer winch line.
- Check tire pressure and lug nuts on trailer.
- Take the boat to the water and start it. It may take a minute of cranking to allow the fuel system to prime. Allow a one minute cool down period for every 15 seconds of cranking. When the engine starts, keep a close watch over the gauge readings and check for leakage and abnormal noises. Keep speeds low for the first 15 minutes until the engine has reached normal operating temperature.



10

TRAILERING

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. All metal frames are sandblasted, then primed and electrostatically 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

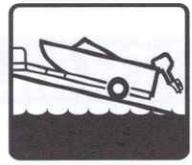
Trailer tires should be properly inflated and maintained! The load-carrying capacity of your trailer is based on the tire pressure. Inadequate tire pressures can void your tire and trailer warranty and could also lead to an accident damaging to people or equipment!



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.

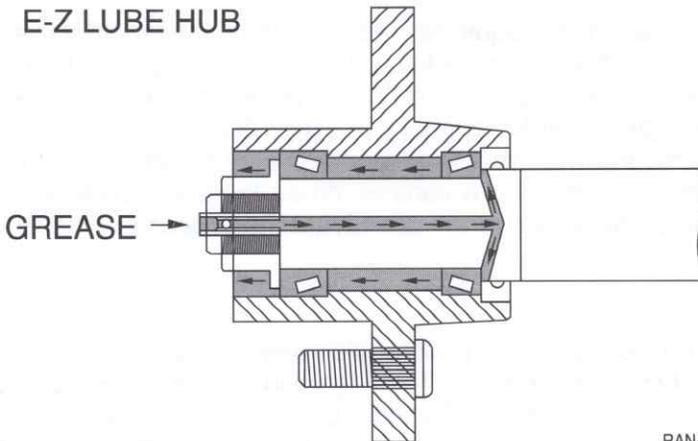


E-Z LUBE HUBS

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.

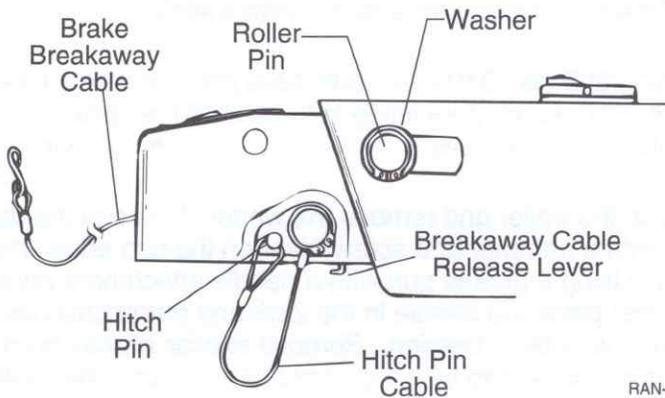
To do so, jack up the trailer and remove the wheel. Remove the dust cap by lightly tapping with a hammer and screwdriver on the cap edge where it meets the hub. Using a grease gun with a needle attachment (available at most parts stores) place the needle in the Zerk and pump until new grease appears 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

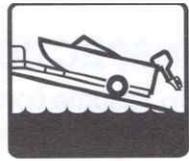
If your trailer is equipped with brakes, follow the safety and maintenance tips listed below for best service.

- 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. 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.



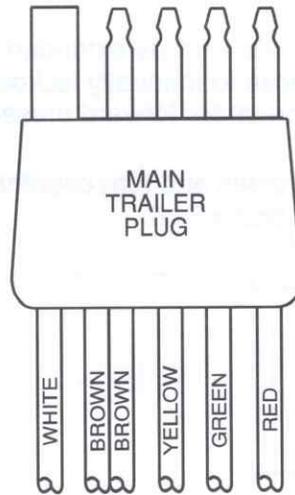
- Disc brake trailers are equipped with an electric solenoid valve to prevent the disc brakes from being activated while reversing your trailer. Unlike drum brakes, which lose 80% of their braking capability in reverse, disc brakes will operate at full capacity in either direction. It is, therefore, 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.
- 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.

TRAILERING



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



RAN-4



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.

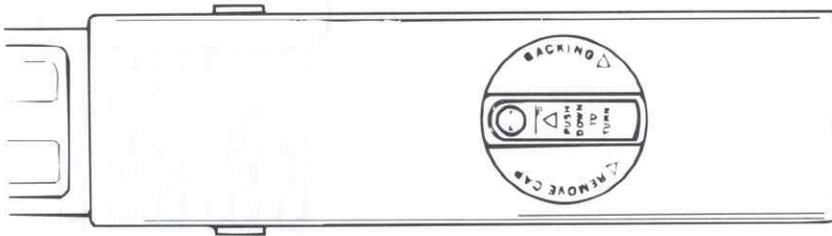
INSPECTION

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

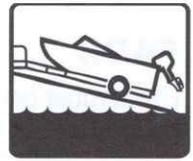
BRAKE LOCKOUT INSTRUCTIONS

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. Lockout should return to normal position under forward pressure.
- Press down and turn counter-clockwise to remove reverse lockout cap to check brake fluid.

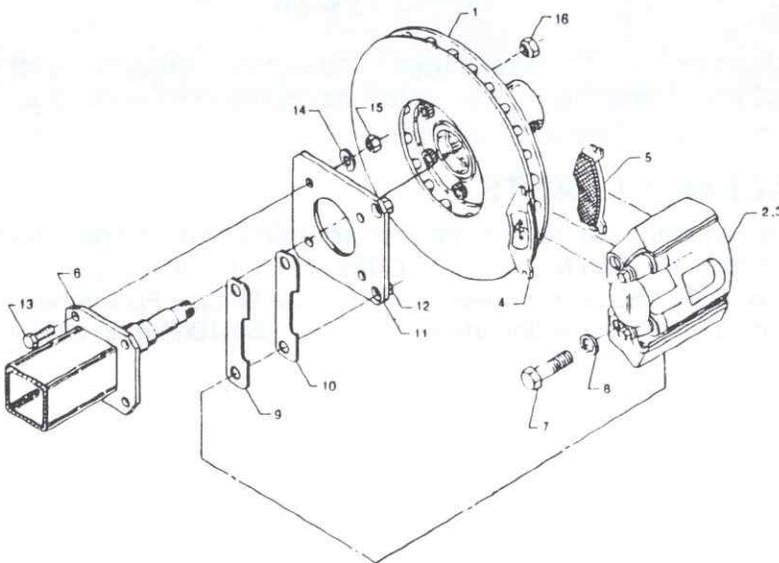


RAN-2



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



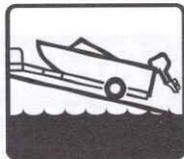
CAUTION

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

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.

TRAILERING



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.

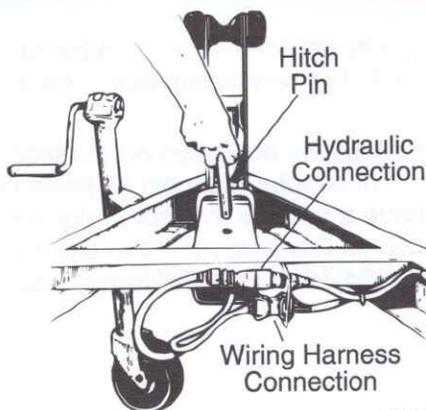
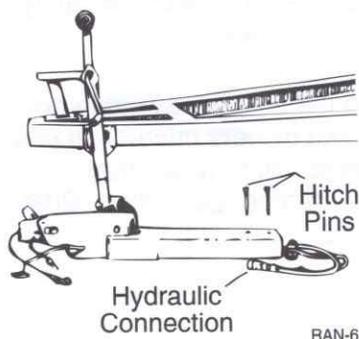
REMOVABLE TONGUE

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. 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.



RAN-7

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.

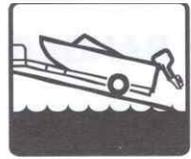
TOWING YOUR RANGER TRAIL TRAILER . . .

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.

TRAILERING



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. 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.

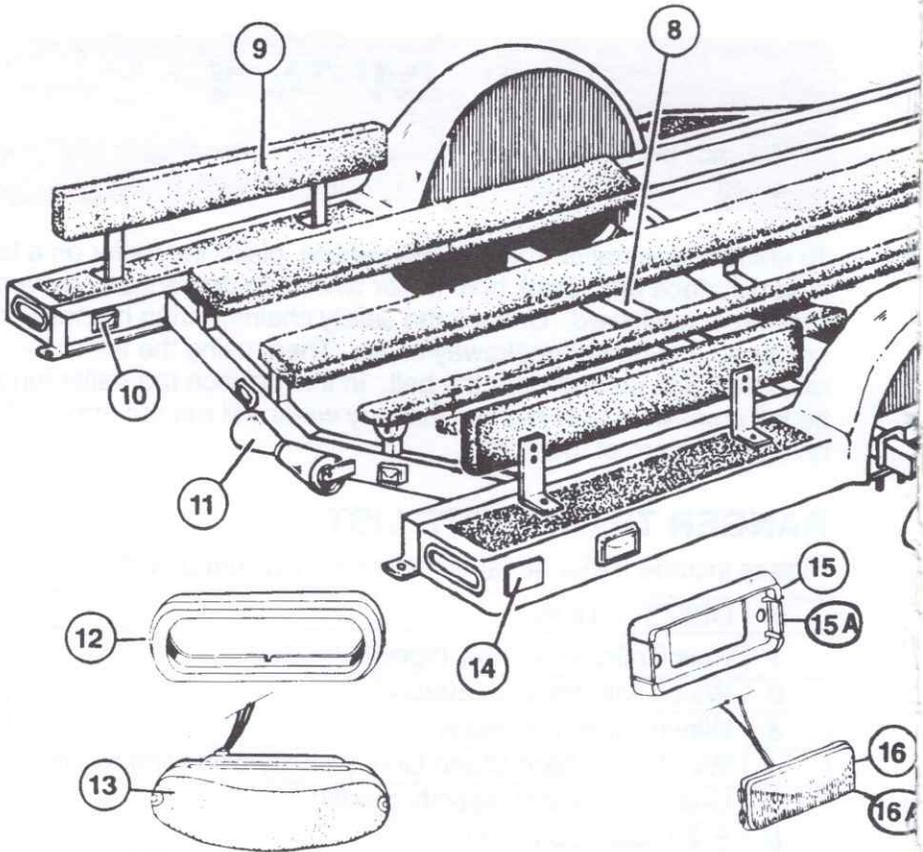
To unhitch your trailer from the tow vehicle, place the trailer on a level and paved surface and chock both trailer wheels to prevent any movement forward or backward. Unhook the safety chains, wiring harness and, if so equipped, the brake breakaway cable. Then, using the trailer tongue jack, raise the 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.

RANGER TRAIL PARTS LIST

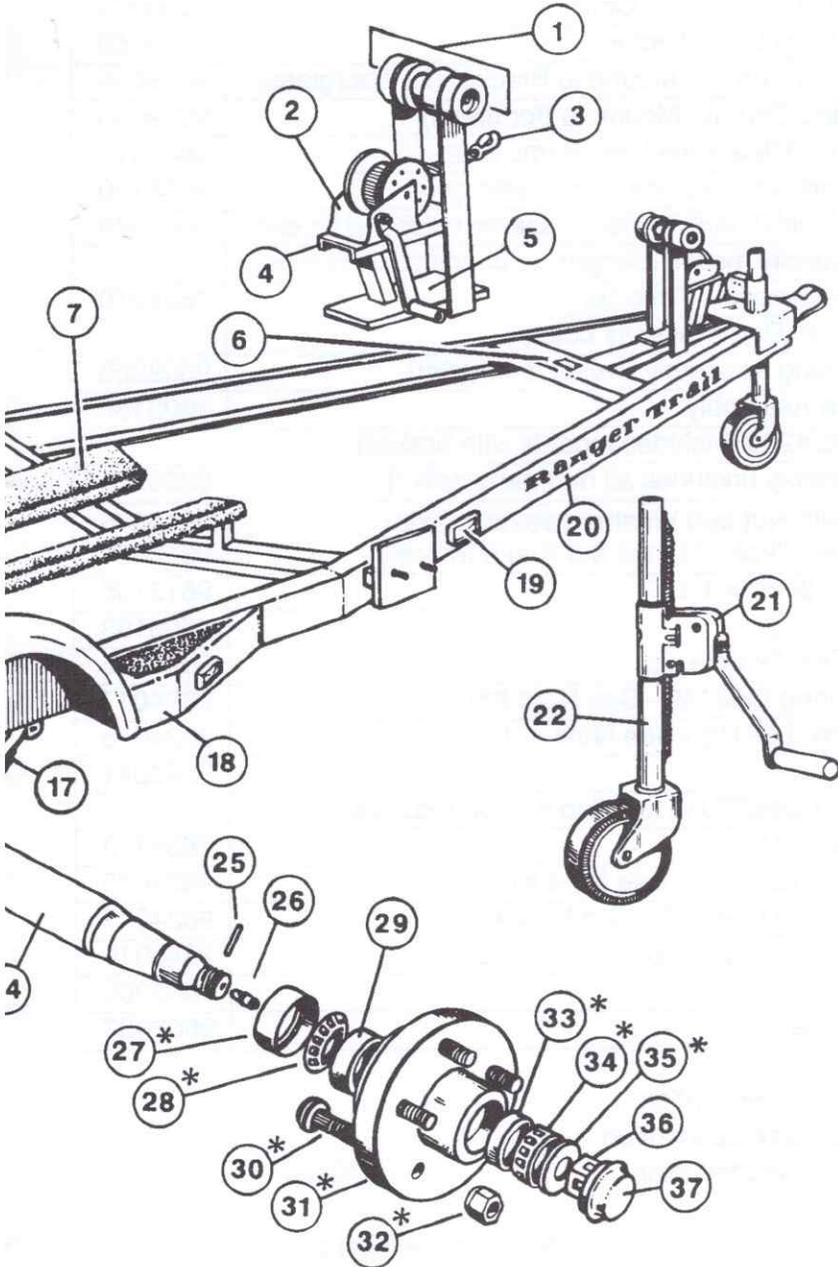
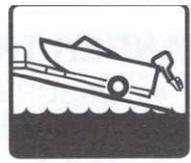
Please include trailer serial number when ordering parts.

#	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

RANGER TRAIL PARTS



TRAILERING



Hub Assembly (includes Hub Parts Marked “*”)

RAN-8

RANGER TRAIL PARTS LIST (continued)

#	DESCRIPTION	PART #
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
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) Spindle with Brake Flange (for brake trailers)	9612075 9612497
25	Dowel Pin 3/16" x 1 1/2"	9612195
26	Grease Fitting	9606103
27	Grease Seal-Double Lip	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

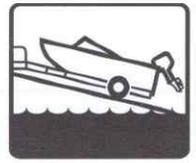
WHEEL - Order by size/description

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

TRAILERING



TRAILER DATA

OWNER _____

Address _____

DEALER _____

Address _____

Phone _____

TRAILER MODEL _____

Serial No. _____

License Number _____

OTHER _____

WOOD MANUFACTURING COMPANY, INC. LIMITED WARRANTY

Ranger® Aluminum Boats and RangerTrail® Trailers

Wood Manufacturing Company, Inc., a Division of Genmar Holdings, Inc., warrants to you, the **first retail purchaser**, that this 1998 model year Ranger, aluminum boat is free from defects in material or workmanship at the time the boat is delivered by a factory authorized dealer, subject to the "What This Warranty Does NOT Cover" section set forth below. If a defect in material or workmanship is discovered in a main seam weld (hull side to bottom chine, transom, center keel and deck to hull) within twenty (20) years after the date the boat is purchased, then Wood will repair or replace, at its sole option, those parts of the boat found by Wood to be defective. If a defect in material or workmanship is discovered in an interior support, beam, rib or brace within ten (10) years after the date the boat is purchased, then Wood will repair or replace, at its sole option, those parts of the boat found by Wood to be defective. Wood also warrants to you that it will repair or replace, at its sole option, all other defects in materials and workmanship in the boat for a period of one (1) year after the date the boat is purchased. Your sole and exclusive remedy is the repair or replacement of components covered by this warranty. All warranties run concurrently.

Warranty on boats in commercial use or livery service is limited to coverage for main seam welds, interior supports, beams, ribs or braces only for one (1) year after the boat is purchased, subject to the "What is Not Covered" section set forth below. No other warranties are extended to boats in commercial use or livery service.

This Ranger, boat or RangerTrail, trailer, including any alleged defective part, must be returned to an authorized Ranger, dealer within the applicable warranty period to obtain warranty service. The Ranger, dealer will carry out the warranty procedures on the owner's behalf. All warranty work will be performed at an authorized dealer, at the Ranger, factory, or at another repair facility that Wood selects. The owner is responsible for the expense associated with transporting the boat to and from the repair facility.

An action for breach of warranty shall be barred unless it is commenced within four (4) years from the date the cause of action accrues. An action for breach of any duty or obligation to repair or replace shall be barred unless it is commenced within one year from the date the cause of action accrues, regardless of the time remaining in the applicable warranty period.

What this Warranty Does NOT Cover:

1. A boat, including its components, that has been altered or modified so as to adversely affect its operation, performance or durability.
2. Engines, outdrives, controls, propellers, batteries, and other equipment or accessories which are not manufactured by Wood, whether or not warranted by other manufacturers.
3. Windshield breakage and leakage around windshields, hatches or other designed openings.
4. Damage resulting from galvanic corrosion, oxidation or electrolysis caused by reverse polarity.
5. Any boat which has been misused, used in a negligent manner, used for racing, used without normal maintenance, operated contrary to any instruction furnished by Wood, accident or operated in violation of any Federal, State, Coast Guard or other governmental agency laws, rules or regulations.
6. Weight, speed, fuel consumption or other estimated performance characteristic.
7. Loss of time, inconvenience, rental charges, boat payments, travel expense, loss of use, haul out, launch, towing and storage charges, loss of or damage to personal property, or other remedies not specifically allowed.
8. A boat which has been overpowered according to the maximum recommended engine horsepower specified on the capacity plate, or which has been altered by the use of a transom bracket or jack plate.
9. Canvas, zippers, vinyl, upholstery, plastics, fabric or trim.
10. Dealer preparation, cleaning and final adjustments and alignments in preparing the boat for delivery.
11. Repairs made necessary due to inadequate trailering or trailer support, or trailers that are improperly assembled, designed or adjusted.
12. Any paint or decal damage caused by trailering, launching, or impact.

The warranty for trailers shall include all original components of the trailer except tires, paint, and those components manufactured by companies other than Wood.

Remedy under this warranty is expressly limited to repair or replacement of defects in materials or workmanship, and **does not include incidental or consequential damages** which are specifically **DISCLAIMED. NOTE: SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.** The express limited warranty described above is exclusive. All **IMPLIED WARRANTIES** are **LIMITED IN THEIR DURATION TO THE ONE (1) YEAR WARRANTY PERIOD.** ALL IMPLIED WARRANTIES, INCLUDING **MERCHANTIBILITY** and **FITNESS FOR A PARTICULAR PURPOSES** ARE **DISCLAIMED** IN THEIR ENTIRETY AFTER EXPIRATION OF THE ONE (1) YEAR WARRANTY PERIOD. There are no warranties which extend beyond the description on the face hereof. **NOTE: SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS WHICH VARY FROM STATE TO STATE.**

This document contains the entire warranty given by Wood. This warranty is **not transferable**. Wood does not authorize any person or persons, including its dealers, to change the terms of this express limited warranty, which is Wood's **only** warranty. Wood reserves the right to change or improve the design or manufacture of Ranger, boats without obligation to modify any boat previously manufactured.

Ranger®

**“Still Built One
At A Time”**

WOOD MANUFACTURING CO., INC.

P.O. Box 179, Flippin, AR 72634

Phone 501-453-2222

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