... Mercury Outboard Owner

The Kiekhaefer Corporation takes pride in your particular and distinct selection of one of its superb outboard motors and welcomes you into that select family of individuals who recognize quality, engineering and performance.

Your Mercury Outboard is the finest motor that research, engineering design and workmanship have produced.

Satisfaction of maximum efficiency and top performance is built into every Kiekhaefer Mercury Outboard by continuous factory research and testing in the largest and finest equipped laboratory for small, two-cycle engines manufactured in the country.

The wide acceptance of this outstanding motor — by sports enthusiasts and commercial users alike — in such a short time has marked it as the recognized motor of quality, through its proven record and exclusive, famous "firsts."

By closely following the instructions contained in this manual for care and maintenance, your new Merc will give you superior performance and dependable service for many years to come.

KIEKHAEFER CORPORATION

Kiekhaefer Corporation, Beaver Dam, Wisconsin

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1-1. SERVICE RECOMMENDATIONS
This publication includes operating and service instructions applying to Kiekhaefer Mercury Merc 400 Outboard Motors. In the preparation of this handbook, careful consideration was given to such adjusting and service operations as are usually required in normal service.

It is urgently recommended that the owner should not attempt repairs which are not specifically covered in this handbook. Other repairs, particularly those which require extensive disassembly or replacement of internal parts, should be done only by Certified Mercury Service facilities which have the necessary factory-designed tools and equipment plus the knowledge and experience required to do the job correctly and economically.

1-2. SERIAL NUMBER
The serial number is stamped into the instruction plate on the front of the swivel bracket. (Figure 1) This number is the manufacturer's key to numerous engineering details which apply to your motor. When ordering parts, accessories and tools, or when corresponding with the manufacturer or dealer in regard to service matters, always specify model and serial number.

1-3. DIRECTIONAL REFERENCES
Front of boat is bow; rear is stern. Starboard is right side; port is left side. In this handbook, all directional references are given as they appear when viewing boat from stern, looking toward bow.

1-4. CYLINDER NUMBERING AND FIRING ORDER
The Merc 400 Outboard Motor has a four-cylinder, alternate-firing internal combustion engine. Cylinders fire at 90° intervals, giving four equally-spaced power impulses for each revolution of the crankshaft. Cylinders are numbered consecutively from top to bottom, top cylinder being number one. Firing order (marked on cylinder block cover below No. 2 spark plug) is 1-3-2-4.

1-5. Specifications

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1-6. PROPELLERS
It is not possible to design a single propeller which will give optimum performance under all conditions of motor speed, boat type and speed and load. The 12” pitch Quicksilver aluminum propeller, shipped with your motor, is suitable for most applications; however, if it does not fit your particular application, your dealer will gladly exchange it for another Quicksilver propeller, but we suggest that you keep it as a spare. For propeller recommendations applying to your particular boat, consult your Mercury dealer and see Paragraph 11-5. Using an improper propeller for the application will void the Warranty Agreement. (See Paragraphs 6-8 and 6-9 for installing and removing propeller.)

1-7. WARRANTY INSTRUCTIONS
Manufacturer’s Warranty Agreement appears on the last page of this handbook. A warranty registration card accompanies each motor from the factory. Your dealer will fill out this card and send the designated portion to the factory. He will give you the stub attached thereto.

1-8. WRITE A LETTER OF EXPLANATION
When writing about a motor, parts or accessories to the factory or to your dealer for service, send an accompanying letter of explanation containing the following information: 1) Serial Number, 2) Model Number, 3) Date Purchased, 4) Dealer from Whom Purchased, 5) Number of Hours Motor Has Been Operated, 6) Details of Trouble Experienced, 7) Special Service Instructions, 8) Date of Shipment, 9) How Packed, 10) How Shipped, 11) Dates of Previous Correspondence, and 12) Copy of Bill of Lading.

No motor is to be shipped to the factory without specific written authorization.

1-9. MOTOR SHIPPING INSTRUCTIONS
If the motor contains fuel, drain thoroughly and seal all openings from which fuel might leak during shipment. Clean exterior and all accessible parts. Attach identification tag bearing your name and address, motor serial number and model number. Pack carefully, using original shipping carton, if available. (See Paragraph 8-1.) Ship to your Certified Mercury Service establishment or to:

KIEKHAEFER CORPORATION
PARTS & SERVICE DIVISION
BEAVER DAM, WISCONSIN

All Shipping Charges Must Be Prepaid!

To find the Authorized Mercury Service facilities in your locality or when traveling, refer to the yellow classified pages in the local telephone directory under “Outboard Motors”.  

Find Your Nearest Dealer In The Yellow Pages
2-1. DETERMINING CORRECT TRANSOM HEIGHT

The Mere 400 is designed for a recommended transom height of 16½ inches (long shaft models, 20½ inches). Variation in transom height can be accommodated by cutting down or shrinking top of transom. (See “Cavitation,” Paragraph 4-5, Propeller Chart, Paragraph 11-5, and Figure 1A).

2-2. CLAMP BRACKET

Installation of the motor on the transom should be given very careful attention. The clamp bracket not only must support the weight of the motor, but it is subject to thrust, impact, inertial and steering stresses. These forces are applied directly to the transom through the clamp bracket assembly. Therefore, to avoid damage to the transom and to prevent the motor from working loose during operation, it is important that the clamp screws are securely and equally tightened and motor may be secured to transom with two bolts through clamp bracket slots. (See Figure 1.) During operation, clamp screws should be checked occasionally for tightness on the transom. Several safety features have been incorporated in this model. Shock absorbers lessen the stress when motor tilts up upon striking submerged object, etc. Also, a mercury switch, located on the left side of the powerhead, shuts off the motor when tilted up.

2-3. TILT PIN ADJUSTMENT

Holes are provided in the clamp bracket to permit changing location of tilt lock pin for proper adjustment of tilt angle. Tilt angle of motor on transom should be set so anti-cavitation plate (Figures 1 and 1A) is about parallel with bottom of boat. Speed of boat, which have center of gravity located forward, may sometimes be improved by tilting motor out one tilt pin hole. This will tend to raise bow and reduce wetted surface. If motor is tilted in, boat will ride with bow down, wetting more of the bottom and reducing speed. The preceding generally will improve operation in rough water.

Under ideal conditions, efficiency is best with lower unit operating in level position, because entire thrust then is applied parallel to plane of motion. With some boats, however, and under certain unfavorable conditions of loading, there will be a tendency to ride stern high or bow high. (Figure 3) This condition can be corrected considerably by adjusting tilt angle so that boat rides level.

CAUTION: Failure to bolt motor to transom may result in damage to boat and/or loss of motor.
It must be considered that operation with excessive tilt will reduce performance noticeably and may induce cavitation. It is, therefore, preferable to level boat by proper loading rather than by extreme adjustment of tilt angle. Except on very rough water, if tilt angle is correctly adjusted and boat is favorably loaded, a properly designed boat will ride level and will plane without “spanking” or “bucking.”

2-4. TILT STOP LEVER
Motor can be locked in tilt-up position by pulling tilt stop lever (Figure 1) with motor fully tilted. Do not use tilt stop lever while trailering. Tilt motor and place a block of wood between clamp and swivel brackets.

2-5. INSTALLING FUEL TANK
Set the fuel tank in approximate correct position in bottom of boat. Connect fuel line to motor by inserting twist connector into receptacle on right front side of bottom cowl. (Figure 4.) Lock by turning ¼ turn clockwise. Determine the most favorable position of the fuel tank, bearing in mind the importance of arranging the fuel line in such a manner that it cannot become pinched, kinked, sharply bent or stretched during operation of the motor. Check with the motor in extreme left and right turn positions. Secure tank to boat. Mercury “Tank Traps” (Kiekhaefer Accessory No. 24016) are excellent for this purpose. They are simple rugged thumb screw clamps which can be installed permanently in the boat. The tank then can be locked or freed by a turn of each thumb screw.

2-6. RECOMMENDED FUEL MIXTURE
Thoroughly mix one 12 oz. can of Kiekhaefer Quicksilver 2-Cycle Engine Oil with each 2 gallons of good grade gasoline or one 30 oz. can of Quicksilver Oil (Figure 5) with 5 gallons of gasoline in your remote fuel tank. (Figure 6) If available, marine white, automotive white or light aircraft gasoline is preferred. In an emergency, when Kiekhaefer Quicksilver Oil is not available, substitute highest quality S.A.E. 30 engine oil and increase proportion of oil to one pint (16 oz.) to each 2 gallons of gasoline.

OPERATION IN CANADA: Use 3 cans (36 oz.) Kiekhaefer Quicksilver oil to 5 Imperial gallons of gasoline in remote fuel tank, or in emergency, use one Imperial quart highest quality S.A.E. 30 oil to each 4 Imperial gallons of gasoline. One Imperial gallon is equal to 1.2 U.S. gallons.

Check with your dealer. He can make specific recommendations regarding types and brands of fuel in your locality best suited for outboard motor use.
2-8. CORRECT FUEL MIXING PROCEDURE

Observe fire prevention rules, particularly in the matter of smoking. Mix fuel outdoors or at least in a well-ventilated location. Mix fuel directly in the remote tank. Measure accurately the required amounts of oil and gasoline. Pour a small amount of gasoline into remote tank (Figure 5) and add a small amount of oil (about the same amount as gas). Mix thoroughly by shaking or stirring vigorously; then add balance of gasoline and mix again. Cleanliness is of prime importance in mixing fuel, as even a very small particle of dirt can cause carburetor trouble.

Always use fresh gasoline. Gasoline contains certain gum and varnish deposits and, when kept in a tank for a length of time, may give carburetor trouble and cause spark plug fouling.

2-9. IMPORTANCE OF CONSISTENT FUEL MIXTURES

Carburetor idle adjustment is sensitive to fuel mixture variations which result from use of different gasolines and oils or due to inaccurate measuring or mixing. This may necessitate frequent readjustment of the carburetor idle needle. Be consistent. Prepare each batch of fuel exactly the same as previous ones.

Caution: Using less than the recommended proportion of oil may result in very serious motor damage due to lack of sufficient lubrication. Using more than the recommended proportion of oil will cause spark plug fouling, erratic carburetion, excessive smoking and faster-than-normal carbon accumulation.
2-10. FUEL TANK FEATURES
1. A primary fuel tank filter is incorporated in bottom of fuel pickup tube.
2. Check valve in fuel connector prevents loss of fuel after disconnecting.
3. Fuel line can be connected and disconnected easily from motor.
   (Figure 4)
4. Caution: Do not use other than recommended fuel tanks!
   NOTE: A 12 gallon remote fuel tank (1232-1635A1)
   is available for long distance cruising.

2-11. STEERING AND CONTROL MOUNTING
Kiekhaefer “Ride-Guide” Steering is recommended for your safety
and pleasure. (Figure 8) See your local dealer and instructions in
“Ride-Guide” kit for installation. If cable-and-pulley steering is
used, make cable connections at removable center swivel lock.
Note: Right side installation of remote steering and throttle-shift
controls in boat is recommended to help overcome motor torque.

2-12. REMOTE CONTROL ATTACHMENT (Single Lever)
Instructions for installation are included with control. Right side
mounting in boat is recommended. If left side mounting is necessary,
remove throttle-shift handle and place on opposite side of control
housing. If control cables are removed from the motor at any time,
reinstall in the following manner:
1. Place single lever remote control handle in neutral position and
   smaller neutral throttle lever (on side of box) down all the way.
2. Move throttle lever (on motor) forward to stop.
3. Attach brass throttle barrel and anchor pin on motor. (Figure 7)
   Note that shift cable travels first, throttle cable second, when moving
   control handle.
4. With single lever remote control handle and shift lever on motor
   both in neutral position, attach brass shift barrel and anchor pin on
   motor (Figure 7) without disturbing setting. Brass barrels may be ad-
   justed on cables for correct position and to compensate for cable
   backlash. If control cables are not properly adjusted, motor will
   not operate satisfactorily.
5. Remove wrap-around cowl and check that magneto is held tightly
   against idle stop screw when control handle is in neutral position.

NOTE: For manual starting (non-electric) motors,
- a shorting switch (to stop motor) must be installed.
- Remove plug from remote control box above throttle-
  shift cable and install switch between box and motor.
3-1. NEW MOTOR OPERATING RECOMMENDATIONS

Your motor is ready for normal service when shipped from the factory and does not require “breaking in”. A little special consideration during the initial operating period will prevent the possibility of damage. During the first five hours of operation, avoid sustained high speeds.

CAUTION: Do not operate motor with lower unit out of water or severe damage may result to water pump due to dry operation.

3-2. FUEL SYSTEM

Fuel flow from tank to carburetor is induced by the fuel pump located on the side of the crankcase and is actuated by crankcase vacuum pressure. After initial priming of the carburetor, fuel is drawn into pump and fed to carburetor under pressure.

3-3. ELECTRIC STARTING PROCEDURE

1. Be sure fuel tank contains sufficient amount of fuel mixture and that tank is properly secured in boat.
2. Connect fuel line to motor by inserting twist connector into receptacle on cowl. Lock by twisting 1/4 turn clockwise, as shown in Figure 4.
3. Open air vent screw on fuel tank cap.
4. Be sure that remote control cables are attached as instructed in Paragraph 2-12. (Figure 7).
5. Check that manual choke button on top cowl is in down position. Avoid use of choke if motor is warm.
6. Fasten connector plug on end of electrical wiring harness to receptacle on right front side of motor. Check steering attachment. (See Paragraph 2-11).
7. Connect battery leads. Install battery lugs on end of lead wires and fasten securely to correct terminals on battery. Red lead of harness attaches to positive (+) post of battery and black lead to negative (—) post of battery. Use grease to prevent corrosion of terminals. (See Figure 2.) The positive battery clamp has a 3/4" stud for battery cable, and negative battery clamp has a 3/8" stud. The positive (+) battery lead from the harness will have a larger hole in the spade end.
8. Prime carburetors and fuel system by squeezing priming tube on fuel line. When fully primed, pressure will be felt.
9. If motor should falter, actuate choke.
10. Shift into neutral. A safety switch prevents starting in either forward or reverse gear.

WARNING: The starter motor is not designed for continuous operation, and serious damage may result if operated continuously.

11. With throttle handle in neutral, raise neutral throttle lever (on side of remote control housing) to the stop and actuate electric starter by turning ignition key past “ON” position and allow to return to “ON.” Before shifting motor, return neutral throttle lever to closed position (down).

CAUTION: If motor is cold, engage starter with key in full right position and, simultaneously, depress choke button on the remote control box. During normal operation, do not depress choke button.
3-4. MANUAL STARTING PROCEDURE

1. Accomplish 1-thru-4 in Paragraph 3-3. (If electric model, leave electrical connections attached.)

2. Prime fuel system by squeezing primer tube on fuel line. (See Figure 9.) When fully primed, pressure will be felt. Should motor begin to falter after starting, actuate choke.

3. If motor is cold, set manual choke in closed position (up). (See Figure 10.) Avoid use of choke if motor is warm.

4. Shift into neutral.

5. Turn key to “ON” position, if electric model.

6. With throttle in neutral position and neutral throttle lever raised to the stop position, operate manual rewind starter. As soon as motor starts, move manual choke to open (down) position and return neutral throttle lever to closed position (down). During normal operation, always keep choke in open position.

Note: Starter is automatic rewind type. Proper operating technique will add many hours of life to starter cable and to starter internal mechanism. Grasp handle firmly and pull outward slowly until engagement of ratchet mechanism can be felt. Then continue outward pull with a full, vigorous stroke. Do not release handle at end of stroke and allow it to snap back. Retain grip on handle and allow cable to rewind slowly. Ratchet release mechanism is designed so starter cannot engage during rewind.
4-1. RUNNING WITHOUT BATTERY (Electric Starting)

If it should be necessary to run without a battery connected to the Merc 400 motor, disconnect the alternator leads (yellow) from the rectifier at the “pull” disconnects provided for this purpose. Then tape the two alternator leads individually and secure on the motor to prevent breakage or short circuiting.

4-2. DUAL MOTOR INSTALLATION (Electric Starting)

When operating two Merc 400 motors on the same boat, it is recommended to use two batteries, each independent of the other. Ride-Guide Dual Steering Control is recommended for Merc 400 dual motor installation.

4-3. SHIFTING GEARS

Approximately the first 45 degrees of control handle travel . . . forward and reverse . . . shifts the motor. The remainder of the control handle movement advances the throttle.

DON'TS

1. Don't operate motor with tilt lock pin removed.

2. Don't try to shift into "REVERSE" while motor is not running. Reverse gear clutch may not be in exact relative position to permit engagement with shifter clutch. Forcing shift lever under this condition will result in bent or damaged shifting mechanism. Smooth operation of the single-lever remote control will insure best results.

4-4. HOW TO DETERMINE WHETHER WATER PUMP IS OPERATING

Normal operation of the water pump is indicated by a “tell-tale” stream of water issuing from a small hole in the bottom edge of the cowl on the port side. If at any time during operation this stream is not evident, check hole with a piece of wire to be sure that it is not clogged. If clogged, motor may be operated as long as water is discharging from drive shaft housing exhaust relief outlet. This also indicates that water pump is operating. STOP if water is not being discharged from exhaust relief outlet and avoid further operation until water pump and cooling system have been checked for failure. Operation of motor with inoperative water pump or with obstruction in the cooling system will cause severe damage due to overheating. Motor should be referred to Certified Mercury Service facilities for inspection and necessary repair.
4-5. CAVITATION
Cavitation is indicated by intermittent or continued overspeed of the motor, accompanied by violent water agitation and a sharp reduction of boat speed. Cavitation occurs when the slipstream (flow of water past propeller) changes from a smooth, consistent flow to a turbulent flow. Under conditions of cavitation, the turbulent area or cavity around the propeller causes a very noticeable loss of forward thrust. Most commonly, cavitation is caused by one of the following:
1. Propeller operating too close to surface. This may be due to transom being too high, hull angle adjusted so that lower unit is too high or boat riding stern-high because of improper loading. (Figure 3)
2. Turbulence in slipstream due to obstruction such as a wide or deep keel. This can be helped in most cases by tapering keel in both width and depth from a point about 20 inches forward of trailing edge; however, for best results, boat should have no keel in last 4 feet of stern.
3. Propeller fouled by weeds, rope, etc.
4. Damaged or broken propeller blades. Broken blade is usually indicated by excessive vibration.
5. Propeller safety clutch slipping due to damage. This might be mistaken for cavitation.

4-6. CAUTION FOR SHALLOW WATER OPERATION
When shift lever is in "NEUTRAL", or "REVERSE" position, lower unit is locked in normal operating position. Shock load of impact could cause transom breakage, particularly when boat is backing up. Proceed cautiously when in reverse motion and be careful of underwater obstructions. Do not accelerate motor to high RPM.

NOTE: Motor must be in forward gear to raise in tilt-up position.

5-1. STOPPING
If the motor is to remain installed on the boat, ready for immediate re-start, stop by shifting into neutral gear and turning key to "OFF" position. (Merely turn magneto shorting switch on the remote control station "OFF" on the manual starting Merc 400.) If the motor is to remain idle for a period of time, or if the motor is to be removed from the boat, stop by disconnecting the fuel line from the motor and allowing motor to run at idling speed until it stops of its own accord, indicating that carburetors have run dry. Then turn key to "OFF" (magneto shorting switch "OFF" on manual starting Merc 400 motors)
Close the fuel tank air vent screw.

Important: Always retard throttle lever in "Forward" or "Reverse" before turning key "OFF". Rectifier may become damaged if motor is running above idle speed.

5-2. REMOVING MOTOR FROM BOAT
Disconnect the remote controls, steering connections and electrical starting harness from the motor. Disconnect the fuel line. Remove bolts which secure motor to transom and loosen the clamp bracket screws.

Caution: Keep the motor in an upright position, resting on its side, until all water has drained from the drive shaft housing. If the motor is placed on its side while the water remains trapped in the drive shaft housing, some water may drain into the powerhead and enter the cylinders through the exhaust ports. Be sure all water drain holes in gear housing are open and free so that water will drain completely.
6-1. REMOVING COWLING

1. Remove front cover plate by pushing in heavily on bottom of plate with one hand and, simultaneously turning knob on bottom of plate ¼-turn with other hand. Then lift plate up until hinge disengages at pivot point. (Figure 11)

2. Release the two fastening clamps to permit the cowl band to be removed from the motor.

CAUTION: Under normal conditions, all motor parts that need adjustment are now exposed. It is not necessary to remove the top cowl. If, in an emergency, it becomes necessary to remove the top cowl, remove the choke knob by unscrewing the hex screw from the end of the choke rod (right hand thread). The top cowl is secured by four self-locking nuts under the cowl, two on each side. With these nuts removed, cowl may be lifted off (note washers under nuts). It is recommended, however, that the motor not be run with the cowl off.

6-2. CARBURETOR ADJUSTMENT

Each carburetor is provided with one adjustment; however, before attempting to readjust carburetors, check for other possible causes of trouble as outlined in the "Trouble Chart". Paragraph 11-3. The low speed mixture adjusting needle (with knurled screw) turns clockwise for leaner mixture, counterclockwise for richer mixture. High speed has a fixed jet, similar to those used in automobiles.

6-3. APPROXIMATE INITIAL SETTING

If carburetors are so badly out of adjustment that motor cannot be started, turn low speed mixture adjusting needle inward (clockwise) until it seats lightly, then turn back out one turn. (Turning tight will damage the needle and seat.) This approximate setting will permit starting but may be found too rich for normal operation; therefore, as soon as motor starts, correct final adjustment may be attained as instructed in "Low Speed Mixture Adjustment", Paragraph 6-4.

IMPORTANT: Carburetors are factory adjusted and, therefore, require no additional adjustment if operated at an elevation of less than 4,000 ft. In mountainous areas with high elevations, the dealer will select different high speed jets, install them on the carburetors and adjust with a carburetor adjusting propeller before delivery of the motor. In making final adjustment of carburetors, it should be borne in mind that the top two cylinders (1 and 2) are fed by top carburetor, and bottom two (3 and 4) are fed by bottom carburetor; therefore, adjustments on each carburetor will affect mixture to corresponding cylinders only.
6-4. LOW SPEED MIXTURE ADJUSTMENT
Warm up motor before attempting to make adjustment. Remove cowl as instructed in Paragraph 6-1. With the motor running at idling speed while in forward gear, turn the low speed mixture adjusting needle counterclockwise until motor starts to “load up” or fire unevenly due to over-rich mixture. Then slowly turn the needle clockwise until cylinders fire evenly and motor picks up speed. Continue turning clockwise until too lean a mixture is obtained and motor slows down and misfires. Set adjustment screw halfway between rich and lean. Do not adjust leaner than necessary to attain reasonably smooth idling. When in doubt, it is preferable to have the mixture set slightly rich rather than too lean.

Note: Idle cannot be adjusted effectively while in “Neutral”, or motor will sputter and stop when shifted to “Forward” because of “no load” condition while adjusting.

6-5. SERVICING FUEL TANK FILTER
Detach the fuel line from fuel tank and remove fuel pickup tube by removing four screws in top connector housing. The filter, a fine wire mesh, can be cleaned by rinsing in clean benzol (benzene).

6-6. SERVICING MOTOR FUEL FILTER
1. Remove cowl as instructed in Paragraph 6-1.
2. Remove fuel lines from filters upper and lower and the screw from the top of each.
3. Remove fuel filter covers.
4. Inspect filters, fuel lines and fittings for signs of wear or leakage.
5. Drain and clean filters.
6. Replace filter covers, tighten screw and install cowl.

Note: Fuel filter is more than adequate to take care of all requirements under normal use. If, after all other checks, it is determined that the fuel filter is the cause of the trouble, the filter element should be replaced.

6-7. SERVICING SPARK PLUGS
Operation with old or wrong type spark plugs will be reflected by motor performance as indicated by hard starting, fouling, missing, overheating, pre-ignition or lack of normal power. Therefore, whenever motor performance indicates that the spark plugs are in need of attention (see “Trouble Chart”), service as follows:

1. Remove wrap-around cowl band as instructed in Paragraph 6-1.
2. Disconnect spark plug leads.
3. Remove spark plugs, clean and inspect. If the tip of the insulator is rough, cracked, broken or blistered or if the electrodes are burned away to the extent that they are thin and cannot be satisfactorily adjusted to the recommended .025” gap, replace them with new Champion J6M or J6J spark plugs.
4. Install spark plugs. Be sure that gaskets are in good condition. Start the threads one or two turns with fingers to avoid danger of cross-threading. After seating plug finger-tight on gasket, a ¼ turn more with a wrench will generally be sufficient to tighten. Do not overtighten; insulator may crack due to over-stressing spark plug body or threads may strip in cylinder head.
5. Connect the spark plug leads. Be sure each lead is connected to its respective spark plug.

Note: If high tension lead insulation is damaged or deteriorated, new leads must be installed. Defective insulation will cause hard starting and mis-firing due to intermittent shorting of the high tension circuit.
6-8. INSTALLING PROPELLER

Apply a thin coat of waterproof grease on splines of propeller shaft, especially if operated in salt water, to aid in removing at any future time. Place \( \frac{1}{8} \)" thick backing washer, propeller, \( \frac{1}{32} \)" thick backing washer, tab lockwasher (making sure that it fits correctly over splines, as shown in Figure 12 insert) and propeller nut in this order on propeller shaft. Place a block of wood flat between the anti-cavitation plate and the propeller and tighten nut until tabs of lockwasher line up with recesses in propeller nut. (See Figure 12.) Bend tabs to secure nut.

IMPORTANT: Installation of a new propeller should be exercised with care, as the tab lockwasher inner splines must seat fully on splined propeller shaft. (Figure 12) Bend tabs of lockwasher into propeller nut recesses, or propeller nut and propeller will back off.

CAUTION: When installing or removing propeller, because of the motor’s ease in starting, place a block of wood between the anti-cavitation plate and propeller to prevent accidental starting and to protect the hands from propeller blades while removing the propeller nut.

6-9. HOW TO REMOVE PROPELLER

1. Bend lock tabs away from propeller nut with screwdriver.
2. Insert screwdriver into hole in propeller nut and turn counterclockwise to remove.
3. Slide propeller off. If tight, a light tap with a piece of wood on back of the propeller will loosen.
7-1. LOWER DRIVE UNIT LUBRICATION

Periodically lubricate the lower drive unit with Kiekhaefer Special Quicksilver Outboard Gear Lubricant (Part No. 92-29415 or 92-29409) as follows:

1. Remove the air vent screw and lubricant filler plug, located on the left side of the gear housing (Figure 13), being careful not to lose the accompanying washers.

   *Note: Never apply lubricant to the lower unit without first removing the air vent screw, as the injected lubricant displaces air which must be allowed to escape; otherwise the gear housing cannot be completely filled as required.*

2. Insert lubricant tube into filler plug hole and inject lubricant until excess fluid starts to flow out of air vent screw hole, indicating that the housing is filled.

3. Replace air vent screw and filler plug, taking special care that the washer is in place under the head of each so that water will not leak past the threads into the gear housing.

   *Caution: Do not use regular automotive grease in the lower drive unit. Use only Kiekhaefer Special Quicksilver Gear Lubricant.*
7-2. CONTROL LINKAGE LUBRICATION

Occasionally apply a drop of S.A.E. 30 engine oil or MULTIPURPOSE Quicksilver Lubricant to bushings, control linkage joints, etc. Keep the reverse lock cam well lubricated with good quality water-resistant grease. (MULTIPURPOSE Quicksilver Lubricant, Kiekhaefer Accessory No. 92-30239, is recommended.) Apply lubricant to the cam guide slot in the gear housing and to the cam faces. Lack of lubrication at this point will cause binding or sticking of the shifting mechanism.

7-3. REVERSE LOCKING CAM LUBRICATION

Remove the pipe plug in the right side of the drive shaft housing — between the splash plates — and occasionally lubricate the reverse locking cams. (Figure 14-c) The motor should be in reverse gear position so that the reverse locking cams, adjacent to the hole, are apart and lubricant can flow between both cams. Use MULTIPURPOSE Quicksilver Lubricant (92-30239) with Lubricant Gun (Kiekhaefer Accessory No. 91-30500).
(Note: Only a small amount of lubricant is necessary).

7-4. PERIODIC INSPECTION

Periodic, systematic inspection is the simplest and most positive way of discovering and correcting a failure before it can cause inconvenience or mechanical damage.

The recommended periodic inspection interval is based on average operating conditions in utility service. Under severe conditions, continuous heavy duty or high speed operation, the inspection interval should be shortened. The inspection includes the following:

1. Clean the entire unit thoroughly, including all accessible powerhead parts.
2. Lubricate the lower drive unit as instructed in Paragraph 7-1.
3. Lubricate control linkage as instructed in Paragraph 7-2.
4. Remove propeller and inspect. Trim nicks and burrs with a file, being careful not to remove more metal than absolutely necessary. Inspect for cracks, damage or bent condition. If condition is doubtful, refer to Certified Mercury Service facilities for inspection. Before reinstalling the propeller, lubricate the propeller shaft with graphite grease or MULTIPURPOSE Quicksilver Lubricant (Kiekhaefer Accessory No. 92-30239). See Paragraphs 6-8 and 6-9.
5. Service the spark plugs as instructed under Paragraph 6-7.
6. Inspect spark plug leads and electrical leads for damage or deterioration, particularly where insulation comes in contact with metal parts. Be sure to reconnect each lead to its respective post.
7. Inspect fuel lines for damage or deterioration.

8. Inspect the finish for damage or corrosion. Thoroughly clean damaged or corroded areas and apply matching paint (Kiekhaefer Quicksilver Spray Paints—See your local dealer).

9. Check entire unit for loose, damaged or missing parts. Tighten or replace as required.

10. Service the fuel filters as indicated under Paragraphs 6-5 and 6-6.

11. Check controls. Be sure all connections and fittings are in good condition, properly secured and correctly adjusted.

12. Lubricate magneto adaptor and pilot through grease fittings on adaptor with high temperature grease. (Figure 14 a)

13. Grease swivel bracket through grease fitting located on underside of bracket. (Figure 14 b)

14. Lubricate reverse locking cams as instructed in Paragraph 7-3. (Figure 14 c)

15. Lubricate starter motor shaft (electric starting motors) with light film of S.A.E. No. 10 oil. Do not over lubricate.

**Note:** The magneto contact points should not be disturbed as long as the motor is operating satisfactorily. Servicing of magneto contact points should be done by Certified Mercury Service facilities. If the points are cleaned and adjusted at the time of the inter-season checkover, they will normally require no further attention for at least 100 hours of operation.
2-1. PREPARATION FOR STORAGE OR SHIPMENT

In preparing the motor for storage or shipment, two precautions must be taken into consideration: 1) The unit must be protected against physical damage, and 2) the unit must be protected from rust, corrosion and dirt. Original shipping carton is ideal for storage or shipment but, if it is no longer available and a new container must be made, it should be so constructed that weight of the unit is supported by the clamp bracket. Also, suitable blocking and bracing should be provided to hold the motor securely in place regardless of the position in which the container might be set. The opening should be sealed against entry of dirt, but an air vent should be provided to prevent moisture accumulation due to condensation. Before placing the motor in a container, the following preventive measures should be applied to protect external and internal parts from rust and corrosion:

1. Operate motor in water tank to flush cooling system. (See Paragraph 8-2.) Disconnect the fuel line from the motor and allow motor to run at idling speed until it stops of its own accord indicating that carburetor has run dry.
2. Drain fuel tank and fuel lines.
3. Remove cowlings.
4. Service fuel filter as instructed in Paragraphs 6-5 and 6-6.
5. Lubricate lower drive unit as instructed in Paragraph 7-1.
6. Lubricate control linkage as instructed in Paragraph 7-2.
7. Remove spark plugs.
8. Rotate crankshaft to position where the number one (top) piston is at bottom dead center position. This can be determined by inserting a pencil or rod into the spark plug hole. Apply about 2 ounces of Kiekhaefer Quicksilver Storage Seal (Part No. 92-28143) into the spark plug hole of the No. 1 cylinder, allowing time for some of the oil to drain into the crankcase via transfer ports. Repeat this operation on Nos. 2, 3 and 4 cylinders, then install spark plugs and operate the starter vigorously to distribute oil around the inside of the crankcase and cylinders.
9. Again remove the spark plugs, clean and re-install.
10. Connect the spark plug cables. Be sure each cable is connected to its respective spark plug.
12. Lubricate reverse locking cam. See Paragraph 7-3.
13. Clean the motor thoroughly, including all accessible powerhead parts. Install the cowling and apply a thin film of clean, fresh engine oil to all painted surfaces.
14. Remove the propeller, apply graphite grease or MULTIPURPOSE Quicksilver Lubricant to the propeller shaft, and re-install propeller. (See Paragraphs 6-8, 6-9.)

IMPORTANT: When storing outboard motors for the winter, be sure that all water drain holes in the gear housing are open and free so that all water will drain out. Trapped water may freeze and expand thus cracking the gear housing. Check and refill lower unit with Kiekhaefer Special Quicksilver Gear Lubricant (Part No. 92-29415 or 92-29409) before storage to protect against possible water leakage into gear housing caused by loose air vent plug or loose lubricant filler plug. Be sure to replace gaskets under screws, renewing any damaged gaskets.

8-2 ATTENTION REQUIRED FOLLOWING OPERATION IN SALT WATER OR SILT

Even though the interior surfaces of this outboard motor are treated to resist corrosion, there still is a possibility of a mechanical build-up of salt and silt deposits which
no form of protective coating can prevent and which can be eliminated only by occasional flushing with fresh water. While there is no complete protection known for exterior surfaces, there are ways by which electrolysis and corrosion damage can be minimized. Follow the simple steps, 1-thru-6 below, to materially increase the life of all exposed parts and decorative finishes:
1. Any outboard motor, when left on a boat, should be tilted out of the water.
2. Disconnect the negative battery terminal on electric starting motors when in dock or in storage for any long period of time.
3. Lubricate the thumb screws (Figure 1) of the motor with MULTIPURPOSE Quicksilver Lubricant (92-30239) to insure smooth operation.
4. Lubricate the propeller shaft splines occasionally with MULTIPURPOSE Quicksilver Lubricant or graphite grease, thus enabling the propeller to be removed easily.
5. The entire powerhead can be sprayed with a coating of rust preventive oil (Part No. 92-23152) to protect the finish of all parts beneath the cowl. The exterior of the motor can also be sprayed or wiped to prevent salt corrosion from dulling the finish.
6. Flush cooling system by removing plug on gear housing marked “FLUSH,” threading flushing device (Part No. 24789A1) into hole and attaching garden hose coupling. While flushing, operate starter to facilitate water flow through water pump. Do not use full pressure from city water tap. As a precautionary measure, remove propeller before flushing motor, or be sure to stand away from the propeller when flushing.

IMPORTANT: While and after flushing, keep motor in upright position, resting on skeg, until all water has drained from drive shaft housing to prevent water from entering the powerhead through the exhaust ports.

By following the above simple preventive maintenance operations at regular intervals, years will be added to the life of your motor when used in salt water.

8-3. ATTENTION REQUIRED FOLLOWING COMPLETE SUBMERSION

Motor which has been submerged must be completely disassembled for cleaning and inspection. This requires the facilities and experience of Certified Mercury Service facilities and should be accomplished as soon as possible after recovery. Delayed action will encourage rust and corrosion of internal parts. If Certified Mercury Service is not immediately available, follow instructions in steps 6 through 11 under Paragraph 8-1. This will retard rust and corrosion. Basically, the points to remember are these:

1. Recover motor as quickly as possible.
2. Wash entire motor with fresh, clean water to remove salt, mud, silt, weeds, etc.
3. Get as much water as possible out of powerhead. Most of the water can be eliminated by removing spark plugs and operating starter with spark plug holes facing downward.

Caution: If starter does not turn over freely when starter is operated, do not force. This may be an indication of internal damage such as a bent connecting rod or a broken piston.

4. Pour alcohol in cylinders first, or use Quicksilver Engine Cleaner (Part No. 92-28845); then lubricate all internal parts which can be reached with engine oil. This is best accomplished by injecting oil into spark plug holes, installing spark plugs and operating starter to distribute oil. If alcohol and oil are not available, insert a rod into fuel check unit to open check valve and actuate primer bulb. Direct fuel flow into cylinders.

5. Take motor to Certified Mercury Service facilities as soon as possible.
9-1. SILENCING

Because Mercury Vari-Timed reed valves are buried within the crankcase of the motor where the sound waves tend to cancel out each other, the Merc 400's and all Mercury Motors are inherently quiet by design. Further silencing, however, is achieved in the cowling and in the lower unit.

9-2. COWLING

A rugged, sound-absorbing blanket is applied to the inside metal surface of the cowl.

9-3. DRIVE SHAFT HOUSING

Nominal vibrations of the drive shaft housing are reduced by the Dyna-Float Suspension which utilizes rubber mounts in shear. The motor is strategically suspended in rubber, with no rigid connection between the motor and clamp brackets. (Figure 15)
10-1. DESCRIPTION
The new electric starting system, negative ground, for the Merc 400 is a 12 volt type especially designed for outboard use, as simple and dependable as the starting system on your automobile. There are no adjustments to make. The starting system consists of a 12-volt electric starter, fully spray-proof, an electrically operated choke, and the Merc 400 electric starting model has a full-wave rectifier converting AC generating current to DC current for charging the battery. (See diagram on Page 4.)

10-2. CIRCUITS
The electrical system consists of four circuits: The generating circuit, starter circuit, choke circuit and magneto circuit.
1. Generating Circuit (Merc 400 with generator): Within the flywheel are permanent magnets and a wound stator. The alternating current generated in the stator windings passes to the rectifier which, in turn, produces direct current from the alternating current. Negative side of the rectifier is grounded; positive side goes to the internal harness plug. Through the plug, current passes on to the ignition switch in the control box, and from there to the battery on the positive side. Negative side of battery is connected through connector to ground of motor.
2. Starter Circuit: Consists of a 12-volt motor and starter engaging mechanism. A starter solenoid prevents full starting current from passing through the ignition switch.
3. Choke Circuit: To operate choke, key must be in “ON” position. While using electric choke, manual choke must be in down position; however, manual choke can be operated at all times, if necessary.
4. Magneto Circuit: Motor is stopped by grounding the magneto, not by choking. This is accomplished by turning key to “OFF” (left) position. Motor also is stopped by interrupting the ignition circuit via the mercury switch when the motor is tilted up.

10-3. MAINTENANCE
This electrical system is as trouble-free and as simple as our research and engineering department has been able to make it. If, for any reason, some part of the electrical system is not in operation, do not attempt to fix it yourself, but refer to your nearest Certified Mercury Service facilities. (See Sections 6, 7 and 8.)

10-4. ELECTRICAL ACCESSORIES
Any accessories, such as horns, running lights, etc., should be installed with electrical connections attached directly to the battery terminals via the screws on the battery lugs. (See Figure 16). The current charge to the battery is approximately 7 amps at full throttle, the exact current depending upon battery condition.

10-5. BATTERY
A strong battery must be maintained. If the battery shows less than 9 1/2 volts when under starting load, it should be recharged. Check with a DC voltmeter. A reading under 9 1/2 volts (measured at the battery terminals under starting load) indicates insufficient voltage and subsequent shortage of power, with the result that the motor will not turn fast enough to start.

NOTE: Check also can be made with a hydrometer. If the reading is below 1.150 (specific gravity), recharge or replace the present battery.

10-6. INSTALLATION
When installing a new battery, make it a habit to wire brush the tapered terminals and clamp terminals, then clean and grease them. This will protect against high resistance connections which make it difficult to keep the battery fully charged and may contribute to low available voltage in entire electrical starting system.

10-7. MAINTENANCE OF BATTERY
All lead acid batteries (Figure 16) have an inherent self-discharge characteristic when not in use. Recharge every 60 days or when specific gravity drops below 1.150. (Recharge rate should not be over 6 amperes. Discontinue charging when gravity reaches 1.280.) Cover plates with distilled water, but not over 3/16” above perforated baffles.
11-1. CUSTOMER SATISFACTION

Mercury dealers acknowledge responsibility to Mercury owners for their continued satisfaction. Owners, in turn, may further increase this satisfaction by accepting the following suggestions:

1. Follow recommendations of complete lubrication. Be sure to use Kiekhaefer Quicksilver 2-Cycle Engine Oil and Kiekhaefer Special Quicksilver Gear Lubricant at all times.

2. Follow factory recommended maintenance schedule in Preventive Maintenance Section (Sec. 7) of this manual and adhere to factory recommended operating procedures.

3. Use only factory-recommended Quicksilver propellers. Always carry an extra Quicksilver propeller of lower pitch for water skiing and as a "spare" should your standard propeller become severely damaged by underwater obstruction.

4. Dealer will test and adjust motor for owner at time of purchase, and he will demonstrate correct operation.

11-2. 10-HOUR CHECKUP

New owners are entitled to a 10-hour free checkup from the selling dealer. This check must be made within the first 30 days of the warranty period or at the end of 10 hours operation, whichever occurs first. The outboard motor must be delivered to the selling dealer's service department for this free checkup. The dealer will:

1. Adjust points.
2. Clean carburetors and fuel system.
3. Check lubricant in lower unit and fill if required.
4. Check water pump operation.
5. Lubricate control linkage, magneto adaptor and swivel pin.
7. Check and tighten all nuts and bolts.
8. Test and adjust motor after completing tuneup.
### Trouble Chart

<table>
<thead>
<tr>
<th>Condition</th>
<th>Causes</th>
<th>Service Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Does not start</td>
<td>Fuel Tank Empty</td>
<td>Para. 2-6</td>
</tr>
<tr>
<td><strong>B</strong> Runs irregularly or misses</td>
<td>Fuel Line Not Connected</td>
<td>Para. 2-5</td>
</tr>
<tr>
<td><strong>C</strong> Starts momentarily and cuts out</td>
<td>Fuel Line Pinched or Kinked</td>
<td>Para. 2-5</td>
</tr>
<tr>
<td><strong>D</strong> Does not idle properly</td>
<td>Fuel Filter in Need of Cleaning</td>
<td>Para. 6-6</td>
</tr>
<tr>
<td><strong>E</strong> Engine speed faster than normal</td>
<td>Air Leak in Vacuum Fuel System</td>
<td>Para. 3-2</td>
</tr>
<tr>
<td><strong>F</strong> Engine speed slower than normal</td>
<td>Low Speed Needle Valves Mal-adjusted</td>
<td>Para. 6-4</td>
</tr>
<tr>
<td><strong>G</strong> Engine speed not normal</td>
<td>Wrong Oil in Fuel Mixture</td>
<td>Para. 2-6</td>
</tr>
<tr>
<td><strong>H</strong> Does not develop normal boat speed</td>
<td>Wrong Gasoline in Fuel Mixture</td>
<td>Para. 2-6</td>
</tr>
<tr>
<td><strong>I</strong> Motor overheats</td>
<td>Not Enough Oil in Fuel Mixture</td>
<td>Para. 2-6</td>
</tr>
<tr>
<td><strong>J</strong> Does not idle properly</td>
<td>Too Much Oil in Fuel Mixture</td>
<td>Para. 2-6</td>
</tr>
<tr>
<td><strong>K</strong> Engine speed not normal</td>
<td>Engine Flooded</td>
<td>Para. 3-5</td>
</tr>
<tr>
<td><strong>L</strong> Spark plugs fouled or defective</td>
<td>Spark Plugs Fouled or Defective</td>
<td>Para. 6-7</td>
</tr>
<tr>
<td><strong>M</strong> Wrong type spark plugs</td>
<td>Wrong Type Spark Plugs</td>
<td>Para. 6-7</td>
</tr>
<tr>
<td><strong>N</strong> No spark</td>
<td>No Spark</td>
<td>Para. 6-7</td>
</tr>
<tr>
<td><strong>O</strong> Weak spark or intermittent spark</td>
<td>Weak Spark or Intermittent Spark</td>
<td>Para. 6-7</td>
</tr>
<tr>
<td><strong>P</strong> Magneto contact points need attention</td>
<td>Magneto Contact Points Need Attention</td>
<td>Para. 7-4</td>
</tr>
<tr>
<td><strong>Q</strong> Spark plug leads interchanged</td>
<td>Spark Plug Leads Interchanged</td>
<td>Para. 6-7</td>
</tr>
<tr>
<td><strong>R</strong> Water pump failure</td>
<td>Water Pump Failure</td>
<td>Para. 4-4</td>
</tr>
<tr>
<td><strong>S</strong> Cooling system clogged</td>
<td>Cooling System Clogged</td>
<td>Para. 4-4</td>
</tr>
<tr>
<td><strong>T</strong> Cavitation</td>
<td>Cavitation</td>
<td>Para. 4-5</td>
</tr>
<tr>
<td><strong>U</strong> Propeller damaged</td>
<td>Propeller Damaged</td>
<td>Para. 7-4</td>
</tr>
<tr>
<td><strong>V</strong> Tilt angle not correctly adjusted</td>
<td>Tilt Angle Not Correctly Adjusted</td>
<td>Para. 2-3</td>
</tr>
<tr>
<td><strong>W</strong> Boat improperly loaded</td>
<td>Boat Improperly Loaded</td>
<td>Para. 2-3</td>
</tr>
<tr>
<td><strong>X</strong> Transom too low</td>
<td>Transom Too Low</td>
<td>Para. 2-1</td>
</tr>
<tr>
<td><strong>Y</strong> Transom too high</td>
<td>Transom Too High</td>
<td>Para. 2-1</td>
</tr>
<tr>
<td><strong>Z</strong> Excessive spark advance</td>
<td>Excessive Spark Advance</td>
<td>Para. 1-5</td>
</tr>
<tr>
<td><strong>aa</strong> Insufficient spark advance</td>
<td>Insufficient Spark Advance</td>
<td>Para. 1-5</td>
</tr>
<tr>
<td><strong>bb</strong> Propeller of wrong pitch or diameter</td>
<td>Propeller of Wrong Pitch or Diameter</td>
<td>Para. 11-5</td>
</tr>
</tbody>
</table>
### 11-4. RECORDING ELECTRIC STARTER KEY NUMBER

If Key is Lost, Write Directly To: KIENKAEFER CORPORATION PARTS & SERVICE DIV. 311 E. BURNETT ST. BEAVER DAM, WIS.

For New Key at Nominal Charge, Give Key Number When Writing.

### 11-5. PROPELLER RECOMMENDATIONS

The speed at which a given boat will travel is governed mainly by the horsepower available. Use of the correct propeller will allow the motor to turn at recommended RPM and develop full power. First select trial propeller from chart, using approximate boat length. This usually will be the correct choice. Refer to transom height recommendation. Establish exact transom height and tilt pin setting by test. To check, make a trial run and observe boat speed with water speedometer. The correct propeller has been selected if speed attained falls within "Speed Range" on chart shown for this propeller. If trial run speed is lower than shown on chart or is at low end of range, the next lower pitch is the correct propeller. If speed is higher than that shown on chart, the next higher pitch is the correct propeller. For dual installation, the next higher pitch propeller may be best. For water skiing, it may be desirable to use the next lower pitch propeller; however, be cautious — do not operate at full throttle when using ski propeller but not pulling skiers. If, in this connection, a propeller has too little pitch for the application, dangerous overspeed of the engine may result! If a propeller has too much pitch for the application, acceleration will be slow and top speed will be low. Light, fast boats require higher pitch propellers, while heavier boats — which operate for longer periods near full throttle — require lower pitch propellers.

A chart of QuickSilver Propellers recommended for your Mercury Outboard follows:

<table>
<thead>
<tr>
<th>PROPELLER</th>
<th>NUMBER</th>
<th>POWER</th>
<th>WEIGHT</th>
<th>LENGTH</th>
<th>TRANSM</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-16727G3</td>
<td>15&quot;</td>
<td>2 Blade Bronze</td>
<td>100-1000</td>
<td>15-1/4&quot;</td>
<td>16-17&quot;</td>
<td>25-26</td>
</tr>
<tr>
<td>A-16728G3</td>
<td>15&quot;</td>
<td>2 Blade Bronze</td>
<td>100-1500</td>
<td>15-1/4&quot;</td>
<td>16-17&quot;</td>
<td>25-26</td>
</tr>
<tr>
<td>A-16729G3</td>
<td>15&quot;</td>
<td>2 Blade Bronze</td>
<td>100-1500</td>
<td>15-1/4&quot;</td>
<td>16-17&quot;</td>
<td>25-26</td>
</tr>
<tr>
<td>A-16730G3</td>
<td>15&quot;</td>
<td>2 Blade Bronze</td>
<td>100-1500</td>
<td>15-1/4&quot;</td>
<td>16-17&quot;</td>
<td>25-26</td>
</tr>
<tr>
<td>A-16731G3</td>
<td>15&quot;</td>
<td>2 Blade Bronze</td>
<td>100-1500</td>
<td>15-1/4&quot;</td>
<td>16-17&quot;</td>
<td>25-26</td>
</tr>
<tr>
<td>A-16732G3</td>
<td>15&quot;</td>
<td>2 Blade Bronze</td>
<td>100-1500</td>
<td>15-1/4&quot;</td>
<td>16-17&quot;</td>
<td>25-26</td>
</tr>
</tbody>
</table>

*Gross Loads are approximate; include boat weight, motor, fuel, passengers and gear.

Note: Recommended Operating RPM — 5500

Increase transom height to 30° recommended for long shaft ("I" type) motors.

WARNING: See Paragraph 3 of Warranty on Page 28, relating specifically to the use of propellers covered by the warranty agreement.

### 11-6. PROPELLER REPAIR

If your propeller should become damaged, be sure that it is repaired only at the factory or at one of the Mercury-authorized factory-equipped propeller service stations. There is a station manned by factory-trained men located in your area to provide prompt service. (See your local Mercury Outboard dealer for locations.) This is your assurance that your propeller’s original superb precision will be restored in the process of repair, and that you will continue to enjoy its superior performance for the entire life of the propeller.

Every propeller should be checked whenever damage is suspected, as just one slightly damaged blade (often not apparent) can cause excessive vibration resulting in bearing and engine wear, loosened joints and fittings or cavitation with destruction of metal and loss of propulsion. Repair costs are moderate at Mercury Propeller Repair Stations which are geared for this work via factory-trained repairmen who use factory-recommended procedures and equipment.
We warrant each new Mercury Motor and accessories thereto, manufactured by us and still owned by the original retail purchaser, to be free from defects in material and workmanship.

This warranty shall become effective only upon our receipt of a completed Motor Registration Card, identifying the motor to which it is to be applied. It shall remain in effect for ninety (90) days after the day on which the motor is first used by the purchaser, but in no event for a longer period than one (1) year after the date of purchase.

This warranty shall not apply to any motor which has been: (1) injured by neglect, accident, abnormal operation, or by repairs or alterations performed elsewhere than at one of our authorized repair facilities; (2) used for racing or with a racing type lower unit; (3) operated otherwise than with a propeller manufactured by us and recommended for use on the motor, or to a propeller of other manufacture unless certified in writing by our Engineering Department as having design characteristics suitable for use on the motor; or, (4) operated with a fuel, oil or lubricant of a grade or type which has not been recommended by us for use with the motor.

Claim shall be made under this warranty by delivering the motor for inspection to a franchised Mercury dealer or by giving notice in writing to a Mercury distributor or to the Company. Any motor or parts sent to us for inspection or repair must be shipped with transportation charges prepaid.

Our obligation under this warranty shall be limited to replacing, free of charge, such part or parts found by us to be defective as shall be necessary to remedy any malfunction resulting from defects of material or workmanship as covered by this warranty.

Except as herein expressly provided, we make no other warranty, express or implied with respect to any motor manufactured by us, and we reserve the right to change or improve the design of any motors without assuming any obligation to modify any motor previously manufactured.

This warranty may not be modified or extended by anyone except pursuant to a written authorization signed by an officer of Kiekhaefer Corporation.

KIEKHAEFER CORPORATION  BEAVER DAM, WISCONSIN
World’s No. 1 Outboard!

A. Holder of more International outboard motorboating records for endurance, speed and dependability than all other outboard brands combined.

B. Holder of the World’s Outboard Endurance Record . . . Twice around the world — 50,000 miles, equal to 20 years normal hard usage, certified by the United States Auto Club.

C. A Mercury production, 60 cu. in. 6-cylinder motor holds the Union of International Motor Boating official World’s Speed Record for Outboards . . . 115.547 M.P.H.

D. Winner of first 17 places in the Annual 1,068-Mile Mississippi River Marathon for pleasure boats — between St. Louis and New Orleans — sanctioned by the American Power Boat Association.

Wherever outboard families journey, they talk about Kiekhaefer Mercury dependability . . . dependability proved throughout the record 50,000-mile endurance run (twice around the world). For you this means 20 years of average outboard use.

Equip your boat and motor, too, with the utmost in outdoor safety and pleasure, afforded to you by Quicksilver Accessories . . . engineered, manufactured and sold by the Kiekhaefer Corporation only.

You have Mercury, the very finest outboard motor . . . far out in front in smooth operation, unexcelled power, and record endurance . . . and you have Quicksilver Accessories, tailored to your pleasure. You can be PROUD you own a MERCURY!

KIEKHAEFER CORPORATION • Parts and Service Division • BEAVER DAM, WISCONSIN
Quicksilver outboard lubricants tested and proved in Mercury's World Record 50,000 mile Endurance Run.

insist on Quicksilver lubricants for your mercury outboard