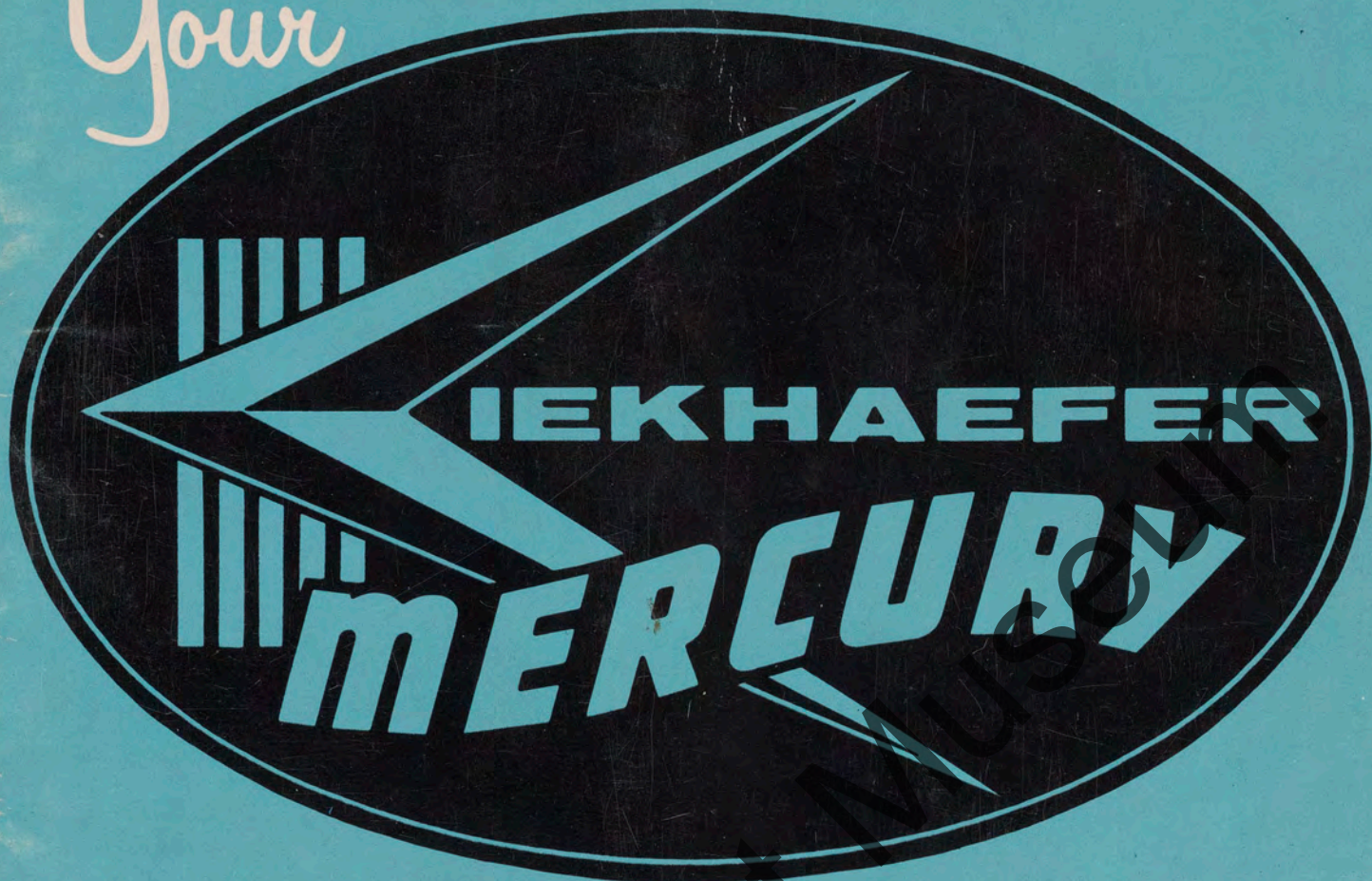


Your



**OUTBOARD**

Owners Guide

operation and maintenance

**MARK 75**

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**KIEKHAEFER CORPORATION**  
 CEDARBURG, WISCONSIN, U.S.A.  
 Manufacturers of  
**MERCURY**  
 OUTBOARD MOTORS

**MERCURY OUTBOARD OWNER**  
 In reply... please address all correspondence to company... not to individual.

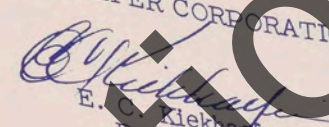
The Kiekhaefer Corporation takes pride in your particular and distinct selection of one of its superb outboard motors, and welcomes you into that select family of individuals who recognize quality, engineering, and performance.

Your Mercury Outboard is the finest motor that superior research, engineering, design, and workmanship can produce. Satisfaction of maximum efficiency and top performance are built into every Kiekhaefer Mercury Outboard by continuous laboratory research and testing, in the largest and finest equipped country for small, two-cycle engines, manufactured in the

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".

Failure to use a normal amount of care and maintenance will result in loss of maximum performance and dependable service, originally built into this engine.

A self-contained power unit, such as your outboard, requires a certain amount of attention. A normal amount of care can be exercised by the operator by closely following the instructions contained in this manual.

Sincerely yours,  
  
 E. C. Kiekhaefer  
 President

ECK/db



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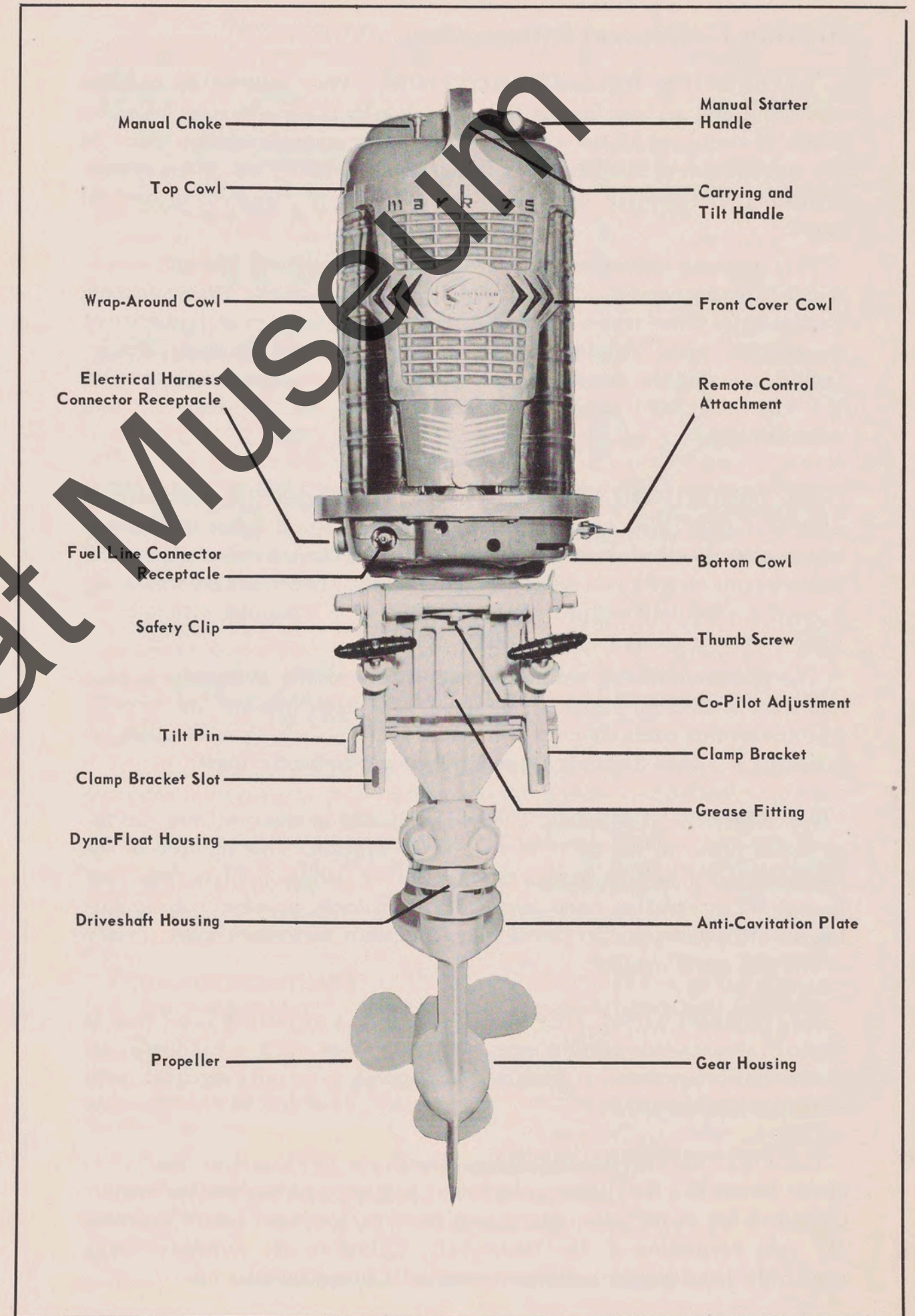


Figure 1  
Mark 75 Marathon "Six"

## Section I—General Information

1-1. SERVICE RECOMMENDATIONS. This publication includes operating and service instructions applying to the Kiekhaefer Mercury Mark 75 Outboard Motor with the model designation, Marathon "Six." In the preparation of this handbook, careful consideration was given to such adjusting and service operations as usually are 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 having the necessary factory-designed tools and equipment plus the knowledge and experience required to do the job correctly and economically.

1-2. DESCRIPTION OF MODEL. The Kiekhaefer Mercury Mark 75 Marathon "Six" is an entirely new concept in outboard motor engineering which embodies fuel economy in design. The motor is operated on dual battery ignition with two sets of points, coils and condensers incorporating a regular automotive-type system. The motor is equipped with a complete electric starting and generating system.

The operation of this outboard motor is practically automatic in that one lever is used for starting and stopping in both forward and reverse. The lower unit contains only two gears with no shifting mechanism, as reversing is attained simply through reversing the motor itself.

1-3. SERIAL NUMBER. The serial number is stamped into the instruction plate on the front of the swivel bracket. This number is the manufacturer's key to numerous engineering details applying to your motor. When ordering parts, accessories and tools, or when corresponding with the manufacturer or dealer on service matters, always specify model and serial number.

1-4. DIRECTIONAL REFERENCES. Front of boat is bow; rear is stern. Starboard side 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.

1-5. CYLINDER NUMBERING. The Mark 75 Marathon "Six" Outboard Motor is a 6-cylinder, alternate-firing internal combustion engine. Cylinders fire at 60° intervals, giving six equally-spaced power impulses for each revolution of the crankshaft. Cylinders are numbered consecutively from top to bottom, top cylinder being number one.

## 1-6. SPECIFICATIONS

Mark 75

Bore .....	2-7/16"
Stroke .....	2-1/8"
Firing Order (Marked on Cylinder Block Cover Below No. 4 Spark Plug) .....	1-6-4-2-5-3
Total Piston Displacement .....	59.4 Cu. In.
Weight .....	(Approx.) 168 Lbs.
Recommended Spark Plugs (Champion):	
Normal Utility Service .....	J6J
Recommended Spark Plug Electrode Gap .....	.025"
Recommended Distributor Contact Point Opening .....	.008" +.000 -.000
Recommended Spark Advance .....	235" BTDC
Rated Horsepower (Continuous Duty) .....	60 BHP
Fuel Tank Capacity .....	6 Gal.

1-7. PROPELLERS. It is not possible to design a single propeller which will give optimum performance under all conditions of engine speed, boat type and speed and load. For this reason your engine is shipped from the factory without a propeller. For propeller recommendations applying to your particular boat, consult your Mercury dealer and see Paragraph 9-4. Using an improper propeller for the application will void the Warranty Agreement.

1-8. WARRANTY INSTRUCTIONS. Manufacturer's Warranty Agreement appears on the inside back cover 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.

1-9. WRITE A LETTER OF EXPLANATION. When sending a complete 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.

1-10. 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 7-1.) Ship to your Certified Mercury Service establishment or to:

KIEKHAEFER CORPORATION  
PARTS & SERVICE DIVISION  
BEAVER DAM, WISCONSIN

**All Shipping Charges Must Be Prepaid!**

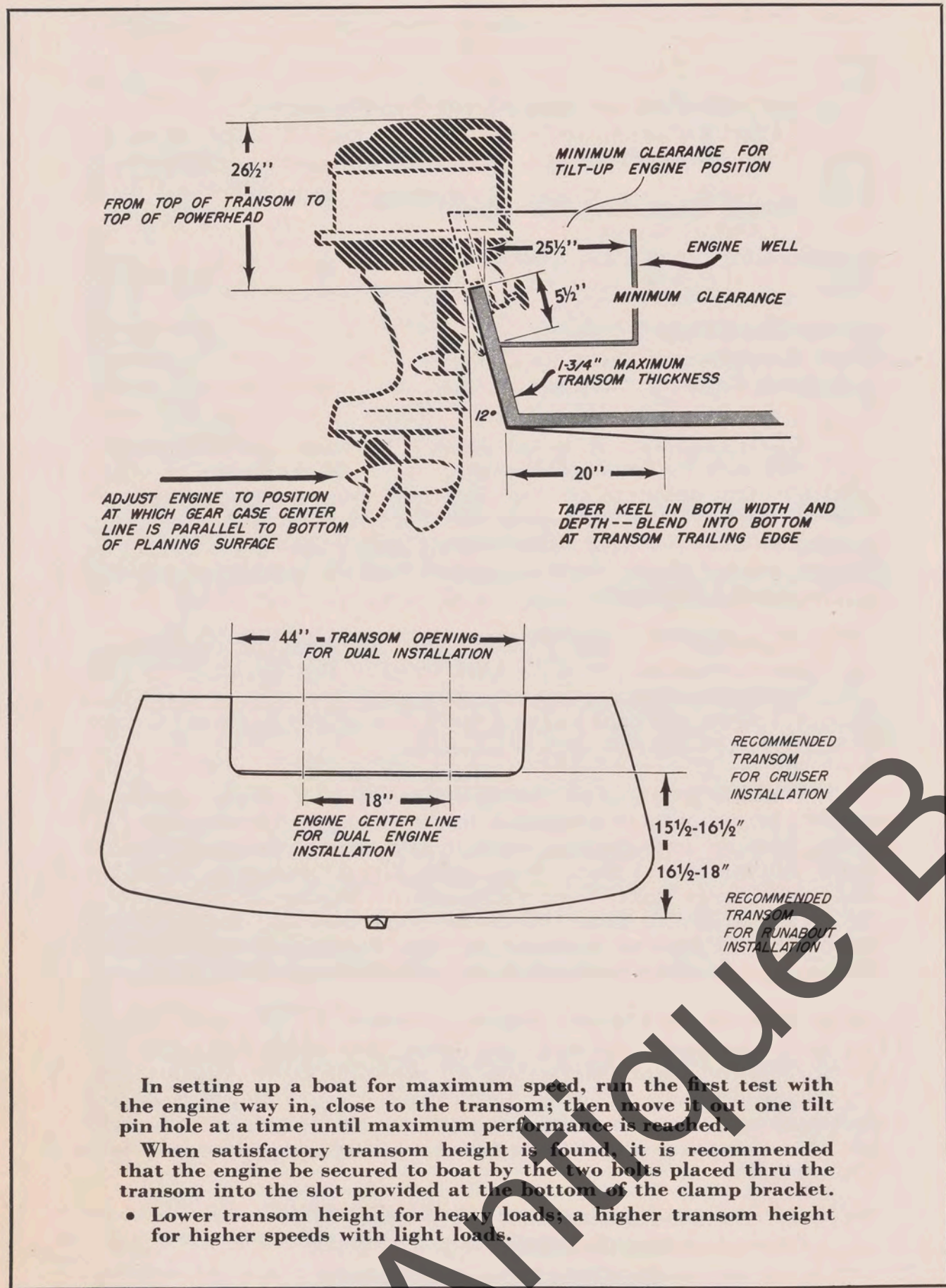


Figure 2  
General Specifications—Transom Mounting

In setting up a boat for maximum speed, run the first test with the engine way in, close to the transom; then move it out one tilt pin hole at a time until maximum performance is reached.

When satisfactory transom height is found, it is recommended that the engine be secured to boat by the two bolts placed thru the transom into the slot provided at the bottom of the clamp bracket.

- Lower transom height for heavy loads; a higher transom height for higher speeds with light loads.

## Section II—Preparation for Starting

2-1. PLACING MOTOR ON TRANSOM OF BOAT. The Mark 75 is designed for a transom height of 15 1/2-18 inches. (See "Cavitation," Paragraph 4-6, and refer to Propeller Recommendation Chart, Paragraph 9.4, as transom height will vary according to conditions.) The motor is mounted in the center of the transom. (See Figure 2.)

2-2. CLAMP BRACKET. Installation of the motor on the transom should be given very careful attention. The clamp bracket must not only support the weight of the motor, but it is subject to thrust loads, shock loads and steering stresses. These forces are applied directly to the transom through the clamp bracket assembly. (See Figure 3.) 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.

After obtaining the desired transom height the Mark 75 must be bolted to the transom of the boat. The bolts are placed thru the clamp brackets at bottom end of slot to keep brackets down, flush with the top of the transom.

**CAUTION!** Failure to bolt motor to transom may result in damage to boat and/or loss of motor.

During operation, clamp screws should be checked occasionally for tightness. For additional security, a safety cable or chain may be connected between boat and clamp bracket to prevent loss of motor should clamps accidentally work loose during operation.

2-3. TILT LOCK ADJUSTMENT. Holes are provided in the clamp bracket to permit changing location of tilt lock pin for proper adjustment of tilt angle. (See Figure 4.) Under ideal conditions, efficiency is best with the lower unit operating in level position, as entire thrust is then applied parallel to direction 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. This condition can be corrected considerably by adjusting the tilt angle so that boat rides level. If boat rides stern-high, increase tilt angle. If boat rides bow-high, decrease tilt angle. It must be considered that operation with excessive tilt will reduce performance noticeably and may induce cavitation. (See "Cavitation," Paragraph 4-6.) It is, therefore preferable to level the boat by proper loading rather than by extreme adjustment of

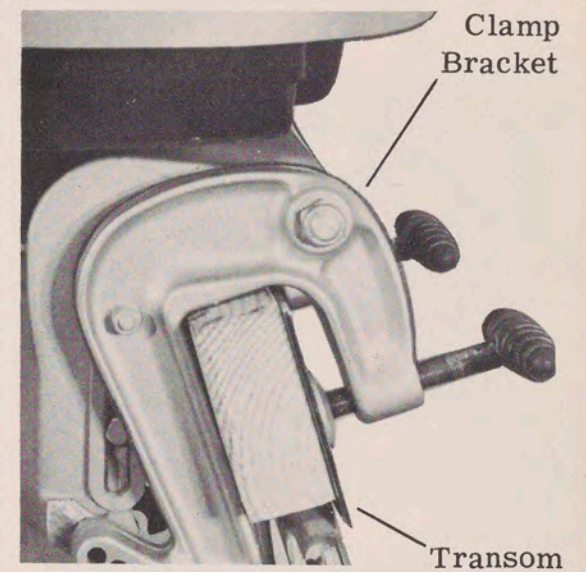


Figure 3  
Clamp Bracket on Transom

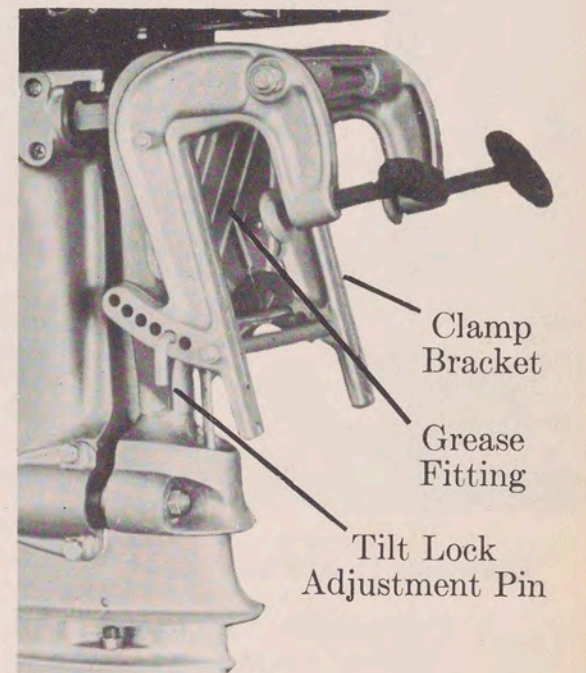
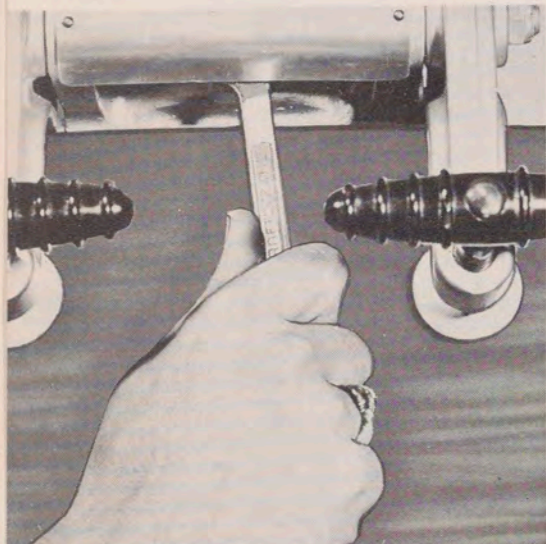


Figure 4  
Tilt Lock Adjustment

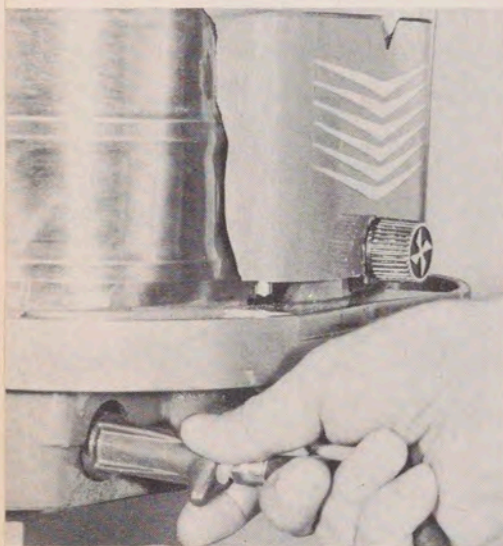
the tilt angle. Except on very rough water, if tilt angle is correctly adjusted and boat is favorably loaded, a properly-designed boat will ride level and will plane without "spanking" or "bucking."

**2-4. ADJUSTING CO-PILOT.** The co-pilot provides velvet-smooth friction control in the steering mechanism. Recommended adjustment is such that the motor will turn freely with operation of remote control steering wheel. Adjustment is attained by means of a hexagon head screw in bottom face of swivel bracket. (See Figure 5.) Tighten the screw to increase friction; loosen to decrease friction.



**Figure 5**  
Co-Pilot Adjustment

**2-5. INSTALLING FUEL TANK.** Set the fuel tank in approximate correct position in bottom of boat. Connect the fuel line to motor by inserting the twist connector into receptacle on right front side of bottom cowl. (See Figure 6.) Lock by turning  $\frac{1}{4}$  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 bottom of boat. Mercury "Tank Traps" are excellent for this purpose. They are simple, rugged thumb screw clamps which can be installed permanently in the boat. The tank can then be locked in position or freed by a turn of each thumb screw. A set of three "Tank Traps" can be obtained under Kiekhaefer Accessory No. 24016.



**Figure 6**  
Inserting Twist Connector

**2-6. RECOMMENDED FUEL MIXTURE** Thoroughly mix one can of Kiekhaefer Quicksilver 2-Cycle Engine Oil (Figure 7) with each 2 gallons of good grade gasoline, or if available, the use of 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. Motors equipped with Quicksilver (hydro) lower units require one can of Kiekhaefer Quicksilver 2-Cycle Engine Oil to each gallon 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. For motors equipped with Quicksilver lower units, double the above quantities of oil for the same amount of gasoline.*

Check with your dealer. He can make specific recommendations regarding types and brands of fuel in your locality best suited for out-board use.

**2-7. 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 fuel tank. Measure accurately the required amounts of oil and gasoline; pour oil into remote tank; and add a small amount of gasoline (about the same amount as oil). 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 poor carburetion.

**2-8. IMPORTANCE OF CONSISTENT FUEL MIXTURES.** Carburetor adjustments are sensitive to fuel mixture variations resulting from use of different gasolines and oils or due to careless measuring or mixing. This may necessitate frequent re-adjustment of carburetors. 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 engine damage due to lack of sufficient lubrication. Using more than the recommended proportion of oil



**Figure 7**  
Kiekhaefer Quicksilver  
2-Cycle Engine Oil



**Figure 8**  
Remote Fuel Tank

will cause spark plug fouling, erratic carburetion, excessive smoking and faster-than-normal carbon accumulation.

#### 2-9. 6-GALLON FUEL TANK

1. A primary fuel tank filter is incorporated in the bottom of the fuel pickup tube.
2. Check valve in fuel connector prevents loss of fuel after disconnecting.
3. Drain plug on bottom allows convenient draining of tank.

**2-10. STEERING CABLE ATTACHMENT.** With "Ride-Guide" Steering, make connections as described in the Installation Instructions accompanying the kit. Usually, once attached to the motor, Ride-Guide Steering and motor will remain as a unit on the boat during your out-boarding season. See your local Kiekhaefer Mercury dealer for Ride-Guide Steering information.

With rope-and-pulley steering, make all cable connections at removable center swivel lock by pressing in knurled pin  $\frac{1}{4}$  turn and releasing.

**2-11. REMOTE CONTROL ATTACHMENT.** Attach remote control station to the boat with the screws and nuts furnished with the control. It is recommended that the remote controls and steering be mounted on the left side of the boat because of the rotation of the propeller and subsequent torque development.

The control cable is attached to the clevis yoke on the left side of the bottom cowl in the following manner:

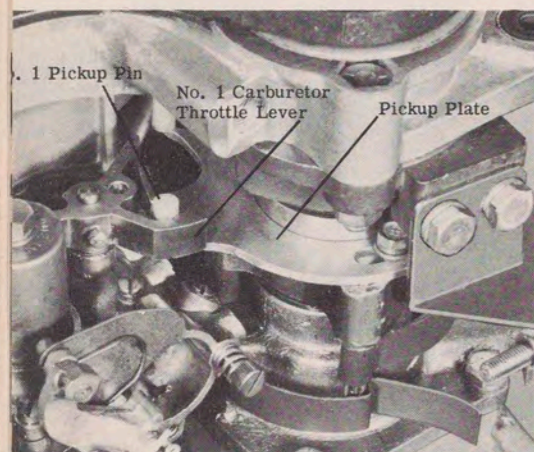
1. Hold cable vertically so that clevis yoke pin can be placed through the round brass cable anchor slots. Cable should be below clevis.
2. Turn cable down and move throttle and shift control lever in control station so that anchor pin in end of nylon guide will fit into the anchor bracket on bottom cowl.
3. Push and turn knurled pin  $\frac{1}{4}$  turn after it is extended through slot to anchor it. It will be necessary to adjust brass cable anchor (turns on brass tube) to get proper location. Install as follows:

##### a. Cable Anchor

The brass cable anchor on the motor end of the remote control cable should be adjusted so that the bottom cowl lever will strike the stop blocks at each end of the slot before the control lever reaches the limit of its travel in the control box.

##### b. Forward Start Position

Remove front cover and wrap-around cowl from engine. Move control lever forward until No. 1 pickup pin is about to contact No. 1 carburetor throttle lever on top carburetor shaft. Set detent plate in control box so that this is the FORWARD START position. (See Figure 9.)



**Figure 9**  
Lever Cluster  
Forward Start Position

##### c. Reverse Start Position

Same as FORWARD START position: Set detent plate in control box so that when lever is pulled back to this position the carburetors are about to be opened by the reverse carburetor throttle pickup lever. (See Figure 18.)

**2-12. ELECTRIC STARTING ATTACHMENTS.** Fasten the connector plug on end of electrical wiring harness to the receptacle on the right front side of the motor. Connect battery leads by installing battery lugs on end of lead wires and fasten securely to CORRECT TERMINALS OF BATTERY. Use grease to prevent corrosion of terminals.

**2-13. TWIN INSTALLATION.** For twin installation of steering and remote control units, see your local Kiekhaefer Mercury dealer. When operating two Mark 75's on the same boat, it is recommended to use two batteries, each independent of the other.

### Section III—Starting

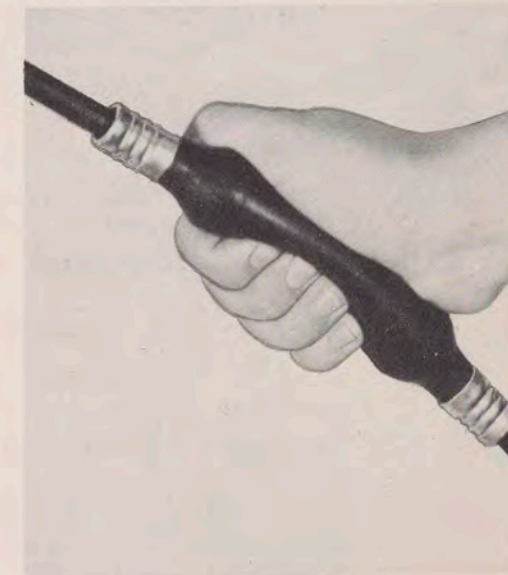
**3-1. NEW MOTOR OPERATING RECOMMENDATIONS.** Your motor is ready for normal service when shipped from the factory and does not require "breaking in." A little special consideration during the initial operating period will prevent the possibility of damage. During the first five hours of operation avoid sustained high speeds.

**3-2. FUEL SYSTEM.** The fuel flow from tank to carburetor is induced by fuel pumps located on the side of the crankcase and operated from crankcase pressure. After initial priming of the carburetors, fuel is drawn into the pumps and then forced to carburetors under pressure.

#### 3-3. STARTING PROCEDURE.

1. Be sure remote fuel tank contains a 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 control bracket by twisting  $\frac{1}{4}$  turn, as shown in Figure 6.
3. Open air vent screw on fuel tank cap.
4. Prime fuel system by squeezing primer tube on fuel line. (See Figure 10.) When fully primed, pressure will be felt. Should motor begin to falter after starting, continue priming until fuel in carburetor is built up by running the motor.

5. The single lever on the remote control station is used to start in forward or reverse and to stop the motor. To start the motor, turn key switch to ON position. This unlocks the electrical circuit. The motor cannot be started electrically or manually without the ignition key in the ON position. Advance the control handle to either the FORWARD START (FRONT DETENT) or REVERSE START (REAR DETENT) position by moving the control lever until it strikes the detent plate on the control box, depending on whether the boat is to be



**Figure 10**  
Priming Fuel System



Figure 11  
Remote Control Station

STOP position. This allows the control lever to be in position ready for immediate restart.

6. If starting a "cold" engine, choke by turning ignition key as far clockwise as possible and, at the same time, depressing the starter button on the control handle which is in the FORWARD START or REVERSE START position. *NOTE: Avoid use of choke when engine is warm.*



Figure 12  
Manual Choke in Closed Position

*Engine cannot be started in reverse direction with manual rewind starter.)*

## Section IV—Operation

4-1. FORWARD. Advancing the control lever on the remote control box to FORWARD increases the speed until the lever is at the end of its travel and maximum speed is attained. If the control lever is retarded from FORWARD to FORWARD STOP (REVERSE START), the starter button should not be depressed until the motor has completely

backed out or ready to operate in forward. There is no "neutral" gear. With the control lever touching the detent plate in the desired direction for start," depress the starter button as far as possible with the thumb and the motor will start in whichever direction the control lever has been set.

To accelerate in either forward or reverse from the "Start" position, pull the control lever to the right and pass the detent in the desired direction, moving the control lever to attain the desired speed. The detent in "Start" position rests in a horizontal slot and can be adjusted slightly so that RPM (revolutions per minute) can vary 600-1000.

The "Start" position for one direction is the "Stop" position for opposite direction; i.e., FORWARD START (front detent plate) is also position of REVERSE STOP. REVERSE START position is also the FORWARD

stopped. If the motor is still turning over, the starter engaging mechanism will not engage when the starter button is depressed in REVERSE START position. (See Figure 11.) (*NOTE: A clanging sound will result as the mechanism attempts to engage.*)

4-2. IDLE. When the engine is started, it is in "idle forward" or "idle reverse." Engine speed can be decreased by retarding the control lever or increased by advancing the control lever.

4-3. REVERSE. To operate in REVERSE, when the motor is in forward motion (i.e., approaching a dock with the control lever in FORWARD), retard the control lever from FORWARD by pulling the control lever back to by-pass the forward detent, then move the control lever thru the rear detent to the REVERSE START position. Motor will stop. Depress starter button to start motor in reverse. Pull control lever to the right and back to increase reverse speed as desired.

4-4. STOPPING. Always stop engine with control lever by retarding the throttle to REVERSE STOP or FORWARD STOP position. AFTER ENGINE IS STOPPED, TURN KEY "OFF" TO AVOID BATTERY DRAIN. Never turn key to "Off" position while motor is running.

4-5. CRUISING FUEL ECONOMY. A special feature of your Mark 75 provides far greater fuel economy than ever before provided on any outboard motor. This is obtained by a specially designed linkage between the carburetor and ignition system. It is automatically brought into operation by pulling control lever back to give cruising speed 70 to 90 percent of maximum speed. The special feature increases cruising range (or miles per gallon) as much as 60 percent and reduces fuel consumption (gallons per hour) more than 50 percent.

4-6. HOW TO DETERMINE WHETHER WATERPUMP IS OPERATING. Normal operation of the waterpump is indicated by a "tell-tale" stream of water issuing from a small hole in the top edge of the driveshaft housing on the port side. If at any time during operation this stream is not evident, stop motor and 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 exhaust outlet at slow speed. This also indicates that waterpump is operating. STOP if water is not discharging from either hole. Operation of motor with defective waterpump or with obstruction in the cooling system will cause severe damage due to overheating. Motor should be referred to Certified Kiekhaefer Mercury Service facilities for inspection and necessary repair.

4-7. CAVITATION. Cavitation is indicated by intermittent or continued overspeed of the engine, accompanied by violent water agitation and a sharp reduction in 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 offers very little reaction to propeller rotation. Most commonly, cavitation is caused by one of the following:

1. Propeller operating too close to surface. This may be due to tran-

som being too high; tilt angle adjusted so lower unit is too high; or boat riding stern-high due to improper loading.

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.

3. Propeller fouled by weeds, rope, etc.

4. Damaged or broken propeller blades. Broken blade is usually indicated by excessive vibration.

5. Slipping clutch in propeller. This might be mistaken for cavitation.

4-8. CAUTION FOR SHALLOW WATER OPERATION. When engine is in reverse, lower unit is locked in normal operating position and cannot tilt up when striking bottom or submerged object. Shock load of impact could cause transom breakage, particularly when boat is backing up. Care, thus, should be exercised when operating motor in reverse.

4-9. REMOVING MOTOR FROM BOAT. Disconnect remote control cable and electrical harness from the motor. Disconnect the steering attachment. Loosen the clamp bracket screws and disconnect safety cable or safety chain, if so equipped. Remove bolts securing motor to transom.

*CAUTION! Keep motor in an upright position, resting on its skeg, until all water has drained from the driveshaft housing. If the motor is placed on its side while the water remains trapped in the driveshaft housing, some water may drain into the powerhead and enter the cylinders through the exhaust ports.*

## Section V—Adjustments and Minor Repairs

### 5-1. REMOVING COWLING.

1. Remove front cover plate by loosening the knurled screw on the bottom of the plate and lifting up until the hinge disengages at the pivot point. (See Figure 13.)

2. Release the 3 fastening clamps to permit the cowl band to be removed from the engine.



Figure 13  
Removing Cowl Plate

*CAUTION! Under normal conditions all engine parts which need adjustment are now exposed. It is not necessary to remove the top cowling. If, in an emergency, it becomes necessary to remove the top cowl, remove the choke knob by unscrewing the hex head screw from the end of the choke rod (right hand thread). The top cowl is secured by 4 nuts under the cowl, 2 on each side. With these nuts removed, cowling may be lifted off.*

5-2. ADJUSTING CARBURETORS. Before attempting to correct faulty engine performance by readjusting carburetors, check for other possible causes of trouble as outlined in the "Trouble Chart," Paragraph 9-5.

*IMPORTANT! Carburetors are factory adjusted and, therefore, require no additional adjustment if operated at an altitude of less than 5,000 ft. In mountainous areas with high altitudes, the dealer will adjust with a carburetor adjusting propeller before delivery of the motor.*

5-3. ADJUSTMENTS PROVIDED. Each carburetor is provided with 2 adjustments: 1) The high speed mixture adjusting needle, and 2) the low speed mixture adjusting needle (with knurled screw), both of which are preset at the factory. (See Figure 14.) The low speed adjusting needle turns clockwise for leaner mixture, counterclockwise for richer mixture.

5-4. APPROXIMATE INITIAL SETTING. If the carburetors are so badly out-of-adjustment that the motor cannot be idled, an approximate initial setting can be attained as follows: Turn the low speed mixture adjusting needle inward (clockwise) until it seats lightly. Do not turn tight because doing so will damage the needle and seat. Back the needle out  $\frac{1}{8}$  turn. This setting will permit starting but may be too rich for normal operation; therefore, as soon as motor starts, make correct final adjustment as instructed under Paragraph 5-5, following.

*NOTE: In making the final adjustment of carburetors, bear in mind that the top 2 cylinders are fed by the top carburetor, the middle 2 cylinders by the middle carburetor and the bottom 2 cylinders by the bottom carburetor. Adjustments on each carburetor, therefore, will affect mixture to corresponding cylinders only. Carburetor adjustment, if needed, should be done by Certified Kiekhaefer Mercury dealer who has the proper factory-approved equipment.*

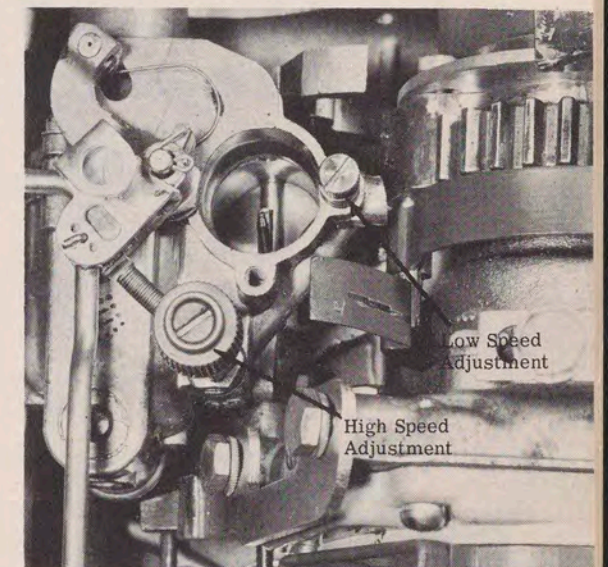


Figure 14  
Carburetor Mixture Adjustments

5-5. LOW SPEED (IDLE) MIXTURE ADJUSTMENT. With the motor running at idling speed while in forward gear, turn the low speed mixture adjusting needle counterclockwise until affected cylinders start 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. (See Figure 14.) 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.

5-6. HIGH SPEED MIXTURE ADJUSTMENT. Normally the high speed mixture adjusting needle is touched only when carburetor is cleaned or repaired or badly out of adjustment.

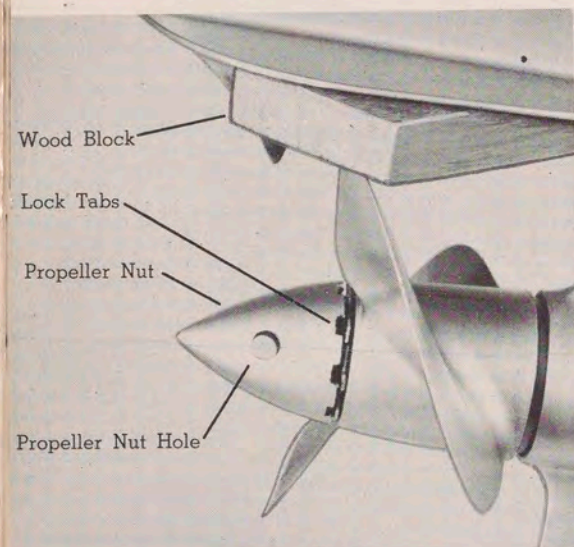
To adjust, warm motor up thoroughly and set choke in open position (down). While operating motor at wide open throttle, slowly turn high speed mixture adjusting needle counterclockwise until corresponding bank of cylinders starts to "four-cycle," and motor begins to slow down (see "Caution," below). Then turn high speed mixture adjusting needle clock-

wise through range where cylinders fire normally to the point where motor again slows down, indicating that mixture is becoming too lean. Determine this critical "leaning out" point as accurately as possible and back adjusting needle out one-half turn from that point. When in doubt, it is better to set mixture slightly rich rather than too lean, because an excessively lean mixture will cause overheating and loss of power. Sustained full-throttle operation with an excessively-lean mixture may cause severe engine damage.

**CAUTION!** "Four-cycling" refers to a condition of operation under which cylinders fire every other revolution instead of once every revolution. It is indicated by the loss of power and a characteristic low-frequency exhaust note. If, in making high speed mixture adjustment, it is found that "four-cycling cannot be induced, even though high speed mixture adjusting needle is turned to full rich position, it is possible that a restriction in fuel flow exists between fuel tank and carburetors. Operation of engine under condition of reduced fuel flow may cause damage due to lean fuel mixture and resultant overheating.

**5-7. SERVICING SPARK PLUGS.** Operation with defective or wrong type spark plugs will be reflected by engine performance as indicated by hard starting, fouling, missing, overheating, pre-ignition or lack of normal power. Therefore, whenever engine performance indicates that the spark plugs are in need of attention (see "Trouble Chart," Paragraph 9-5), service as follows:

1. Remove wrap-around cowl as instructed in Paragraph 5-1.
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 with new plugs. Replace only with Champion spark plugs type J6J.



**Figure 15**  
Removing Propeller

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 1/2 turn with a wrench will generally be sufficient. Do not over-tighten, thereby stripping threads.

5. Connect 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 misfiring due to intermittent shorting of the high tension circuit.

**5-8. SERVICING FUEL TANK FILTER.** Remove the fuel line from elbow and unscrew

to remove fuel pickup tube. The fine wire filter mesh can be cleaned by rinsing in clean benzol (benzine).

**5-9. SERVICING ENGINE FUEL FILTER.**

1. Remove wrap-around cowl as instructed in Paragraph 5-1.
2. Remove fuel lines from carburetor filters 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.

**5-10. HOW TO REMOVE PROPELLER.**

1. **CAUTION!** 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 the propeller blades while removing the propeller nut. Be sure ignition switch is "Off" before rotating propeller. (See Figure 15.)

2. Bend lock tabs away from propeller nut with screwdriver.
3. Insert screwdriver into hole in propeller nut and turn counter-clockwise to remove.
4. Slide propeller off. If tight, a slight tap with a piece of wood on back of propeller will loosen.

**NOTE:** When replacing the propeller, apply a thin coat of grease on splines of the propeller shaft to aid in removing at any future time. Also be sure the spacer washer is in place behind the propeller.

**Section VI—Preventive Maintenance**

**6-1. LOWER DRIVE UNIT LUBRICATION.** Every 25 hours of operation, lubricate the lower drive unit with Kiekhaefer Aero-marine Special Outboard Gear Lubricant as follows:

1. Remove the air vent screw, located on the left side of the gearcase, just underneath the cavitation plate. (See Figure 16.) Never apply grease to the lower unit without first removing this air vent screw, as the injected grease displaces air which must be allowed to escape, otherwise the gearcase cannot be completely filled as required.

2. Remove the grease filler plug, located in bottom left side of gearcase. (See Figure 16.)

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



**Figure 16**  
Lower Unit Lubrication

4. Replace air vent screw and grease filler plug, taking special care that the gasket is in place under the head of each so that water will not leak past the threads into the gear-case.

*CAUTION! Do not use regular automotive grease in the lower drive unit. In an emergency, when Kiekhaefer Aeromarine Special Outboard Gear Lubricant is not immediately available, use best quality waterproof non-channeling marine gear lubricant.*

6-2. CONTROL LINKAGE LUBRICATION. Occasionally apply a drop of SAE 30 engine oil or DC4 Compound (Kiekhaefer Accessory No. 92-24108) to bushings, control linkage joints, shift cams, etc.

6-3. 25-HOUR INSPECTION. Periodic, systematic inspection is the simplest and most positive way of discovering and correcting defects before they can cause inconvenience or mechanical damage.

The recommended 25-hour inspection interval is based on average operating conditions in utility service. Under severe conditions of 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 power-head parts.
2. Lubricate the lower drive unit as instructed in Paragraph 6-1.
3. Lubricate control linkage and cams as instructed in Paragraph 6-2.
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, damaged or bent condition. If condition is doubtful, refer to Certified Kiekhaefer Mercury Service facilities for inspection. Before reinstalling the propeller, lubricate the propeller shaft with graphite grease or DC4 Compound (Kiekhaefer Accessory No. 92-24108).
5. Service the spark plugs as instructed under Paragraph 5-7.
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 surfaces for damage or corrosion. Thoroughly clean damaged or corroded areas and apply matching paint (Kiekhaefer Merchromatic Spray Paints—see your local dealer).
9. Check entire unit for loose, damaged or missing parts. Tighten or replace as required.
10. Service fuel filters as instructed in Paragraphs 5-8 and 5-9.
11. Check controls. Be sure all connections and fittings are in good condition, properly secured and correctly adjusted.
12. Grease swivel bracket through grease fitting located on underside of bracket. (See Figure 4.) Use Utility Push Type Grease Gun (Accessory Part No. 91-26152) and Kiekhaefer Aeromarine Special Gear Lubricant.
13. Lubricate distributor adaptor and pilot through grease fitting on adaptor with high temperature grease.

*NOTE: Distributor breaker points should not be disturbed as long as the engine is operating satisfactorily. Servicing of distributor contact points, should be done by Certified Kiekhaefer*

*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.*

## Section VII—Special Care Required

7-1. 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 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 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 other abrasions:

1. Operate motor in water tank or barrel to flush cooling system. Disconnect the fuel line from the motor and allow motor to run at idling speed until it stops of its own accord, indicating that carburetors have run dry.
2. Drain fuel tank and fuel lines.
3. Remove cowling.
4. Service fuel filters as instructed in Paragraphs 5-8 and 5-9.
5. Lubricate lower drive unit as instructed in Paragraph 6-1.
6. Lubricate control linkage as instructed in Paragraph 6-2.
7. Remove spark plugs.
8. Rotate crankshaft to a position where the No. 1 (top) piston is at bottom dead center position. This can be determined by inserting a pencil or small stick into the spark plug hole. Apply about 2 oz. of Kiekhaefer Quicksilver 2-Cycle Engine Oil into the spark plug hole of the No. 1 cylinder, allowing time for some of the oil to drain into the crankcase via the transfer ports. Repeat this operation for cylinders 2 thru 6, then install spark plugs and operate the starter vigorously to distribute oil around inside of crankcase and cylinders.
9. Again remove spark plugs. Clean and re-install.
10. Connect spark plug cables. Be sure each cable is connected to its respective spark plug.
11. Lubricate distributor adaptor and pilot as instructed in Item 13, Paragraph 6-3.
12. Clean the motor thoroughly, including all accessible powerhead parts. Install cowling and apply a thin film of clean, fresh engine oil to all painted surfaces.
13. Remove propeller; apply graphite grease or DC4 Compound to propeller shaft; and re-install propeller. (See Paragraph 5-10.)
14. Lubricate swivel bracket as instructed in Item 12, Paragraph 6-3. (See Figure 4.)
15. Battery care and storage. (See Paragraph 8-6 and 8-7.)

7-2. ATTENTION REQUIRED FOLLOWING OPERATION IN SALT WATER OR SILT. It is not necessary to flush the cooling system of this engine after operation in salt water or silt. All parts are scientifically processed to provide salt and silt water protection.

7-3. ATTENTION REQUIRED FOLLOWING COMPLETE SUBMERSION. A motor which has been submerged must be completely disassembled for cleaning and inspection. This requires the facilities and experience of Certified Kiekhaefer Mercury Service facilities and should be accomplished as soon as possible after recovery. Delayed action will encourage rust and abrasion of internal parts. If Certified Kiekhaefer Mercury Service is not immediately available, follow instructions in steps 6 thru 12 under Paragraph 7-1. This will temporarily 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 the powerhead. Most of the water can be eliminated by removing spark plugs and operating starter with spark plug holes facing downward.

**CAUTION!** If motor 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 broken piston.

4. Pour alcohol in cylinders first, as alcohol will dissolve water. Next 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. (Refer to Item 8, Paragraph 7-1.) If alcohol and oil are not available, insert rod into fuel check unit to open check valve and actuate primer bulb which directs fuel into cylinders.

5. Take motor to Certified Kiekhaefer Mercury Service facilities as soon as possible.

## Section VIII—Electric Starting, Description and Maintenance

8-1. DESCRIPTION. The electric starter system for the Mark 75 Marathon "Six" is a 12-volt type especially designed for outboard use. It is 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 sprayproof, an electrically operated choke and a full-wave rectifier which converts AC generating current to DC current for charging the battery. (See Figure 17.)

8-2. CIRCUITS. The electrical system consists of 4 circuits: The generating circuit, starter circuit, choke circuit and ignition circuit. (See Figure 17.)

1. Generating Circuit: 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

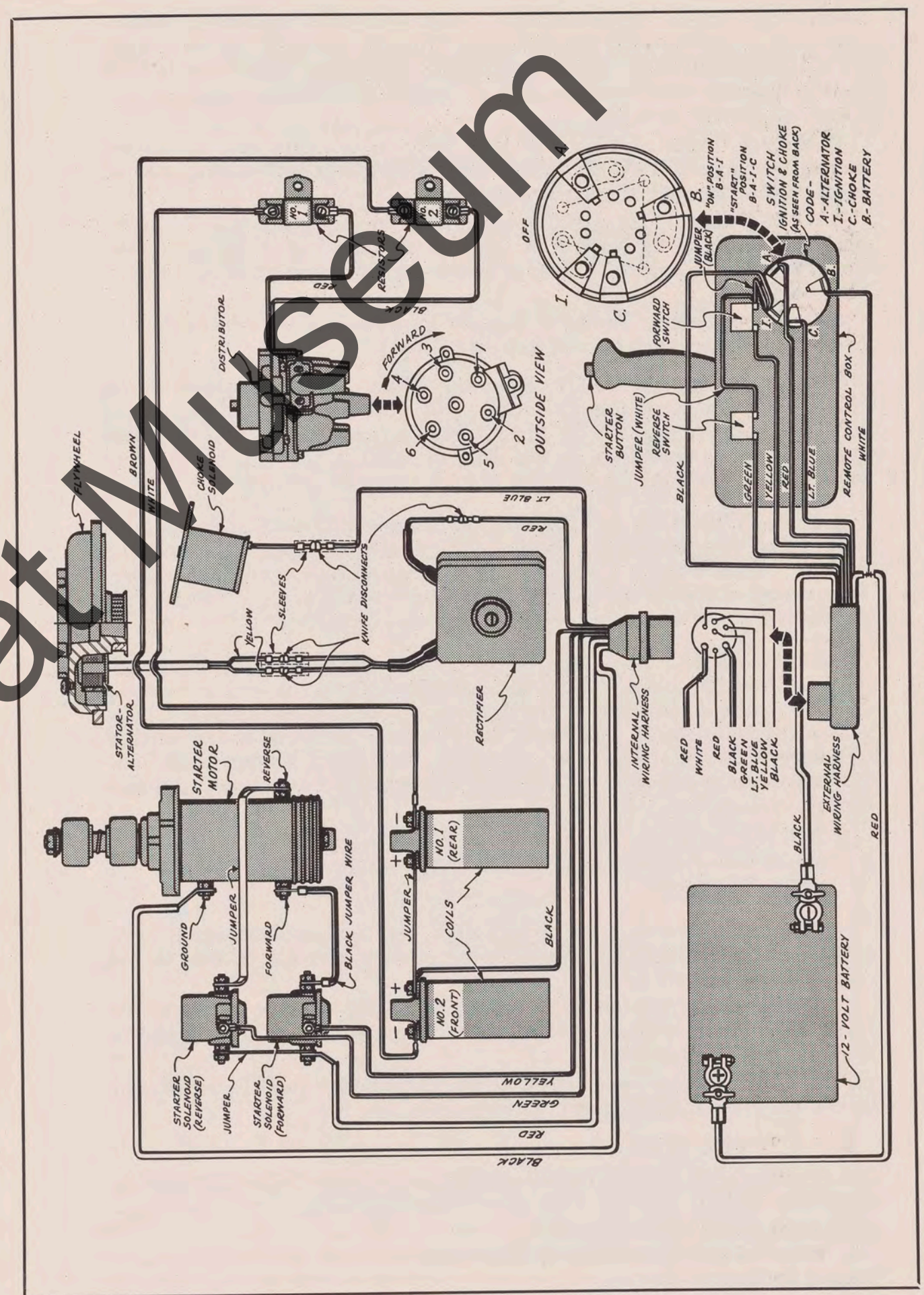


Figure 17  
Mark 75 Electric Starter Wiring Diagram

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 on the control box, and from there to the battery on the positive side. Negative side of battery is connected through connector to ground of engine.

2. Starter Circuit: Consists of a 12-volt starter motor and starter engaging mechanism. Two (2) starter solenoids prevent full starting current from passing through the ignition switch.

3. Choke Circuit: To operate choke, turn the ignition key to full right position. While using electric choke, manual choke must be in "down" position (open); however, manual choke can be operated at all times if necessary.

4. Ignition Circuit: Motor is stopped by retarding the control handle to STOP position, then turning key "Off."

8-3. MAINTENANCE OF SYSTEM. This electrical system is as trouble-free and as simple as our research and engineering departments have 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 Kiekhaefer Mercury Service facility.

8-4. ELECTRICAL ACCESSORIES. Accessories—such as horns, running lights, etc.—should be installed with electrical connections attached directly to the battery terminals via the thumb screws on the battery. The current charge to the battery is approximately 7 amps at 5000 RPM, the exact current depending upon battery condition.

8-5. BATTERY. A battery of 53 ampere-hour capacity is recommended. A strong battery must be maintained. If the battery shows less than 9½ volts when under starting load, it should be recharged. Check with a DC voltmeter. A reading under 9½ 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.*

8-6. MAINTENANCE OF BATTERY. All lead acid batteries have an inherent, self-discharge characteristic. When it is not in use, owner can maintain battery by:

1. Recharging every 60 days or when specific gravity drops below 1.150. Recharge rate should not be over 6 amperes. Discontinue charging when gravity reaches 1.270.

2. Observing water level when adding distilled water. Level should be not more than 3/16" above perforated baffles.

#### 8-7. WINTER STORAGE CARE OF BATTERY.

1. Remove battery from its installation as soon as possible and remove all grease, sulfate and dirt from top surface with water hose and compressed air hose or other means.

2. Cover plates with distilled water, but not over 3/16" above perforated baffles.

#### 9-5. TROUBLE CHART.

- A. DOES NOT START
- B. RUNS IRREGULARLY OR MISSES
- C. STARTS MOMENTARILY AND CUTS OUT
- D. DOES NOT IDLE PROPERLY
- E. ENGINE SPEED FASTER THAN NORMAL
- F. ENGINE SPEED SLOWER THAN NORMAL
- G. DOES NOT DEVELOP NORMAL BOAT SPEED
- H. MOTOR OVERHEATS

A	B	C	D	E	F	G	H	POSSIBLE CAUSE	SEE PARA.
x	x							Fuel Tank Empty .....	Refill
x	x							Fuel Line Not Connected.....	2-5
x	x	x	x		x	x	x	Fuel Line Pinched or Kinked.....	2-5
x	x				x	x		Fuel Filter in Need of Cleaning.....	5-9
x								Air Vent Screw on Fuel Tank Cap Is Closed.....	3-3
x								Failure to Prime Fuel System.....	3-3
x	x	x	x		x	x	x	Air Leak in Vacuum Fuel System.....	3-2
					x	x	x	Wrong Oil in Fuel Mixture.....	2-6
x	x				x	x	x	Wrong Gasoline in Fuel Mixture.....	2-6
					x	x	x	Not Enough Oil in Fuel Mixture.....	2-6
x	x				x	x	x	Too Much Oil in Fuel Mixture.....	2-6
x					x			Low Speed Carb. Needle Valves Mal-Adjusted.....	5-5
x						x	x	High Speed Carb. Needle Valves Mal-Adjusted.....	5-6
x								Electrical Harness Connected Improperly.....	2-12
x								Battery Leads Connected Improperly.....	2-12
x								Remote Control Cable Connected Improperly.....	2-11
x								Engine Flooded .....	3-3
x	x				x	x	x	Spark Plugs Fouled or Defective.....	5-7
	x				x	x	x	Wrong Type Spark Plugs.....	5-7
x								No Spark .....	5-7
x	x	x	x		x	x	x	Weak Spark or Intermittent Spark.....	5-7
x	x	x	x		x	x	x	Ignition Contact Points Need Attention.....	6-3
x	x				x	x		Spark Plug Leads Interchanged.....	5-7
					x	x	x	Waterpump Failure .....	4-5
					x	x	x	Cooling System Clogged .....	4-5
					x	x		Cavitation .....	4-6
					x	x		Propeller Damaged .....	5-10
					x	x		Tilt Angle Not Correctly Adjusted.....	2-3
					x	x	x	Boat Improperly Loaded .....	2-3
						x		Transom Too Low .....	2-1
					x	x		Transom Too High .....	2-1
x					x	x	x	Excessive Spark Advance .....	1-6
					x	x		Insufficient Spark Advance .....	1-6
					x	x	x	Propeller of Wrong Pitch or Diameter.....	9-4

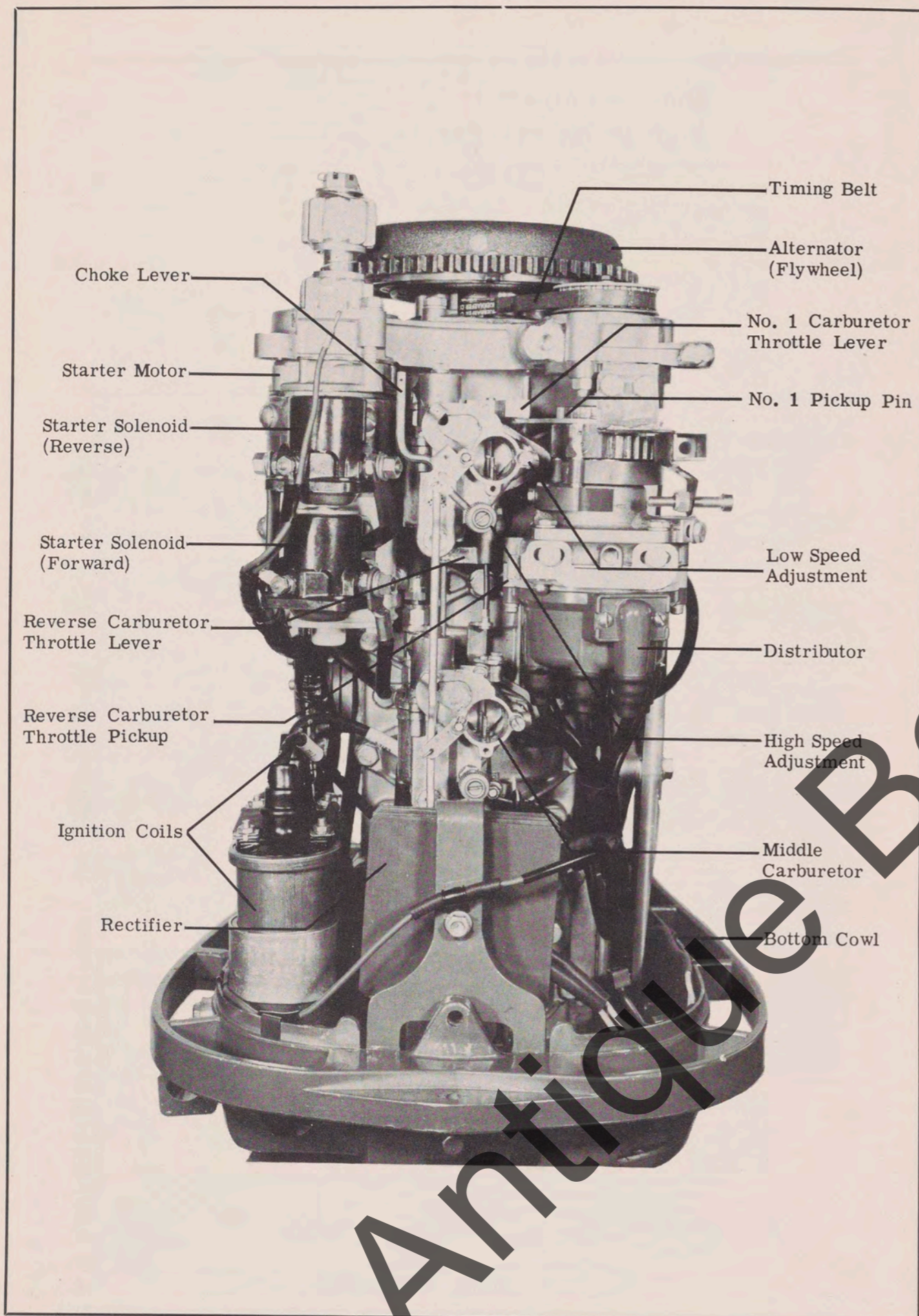


Figure 18  
Mark 75 Powerhead

## Section X—Silencing

10-1. DESCRIPTION. Because Kiekhaefer Mercury Vari-Timed reed valves are buried within the crankcase of the engine where the sound waves tend to cancel out each other, the Mark 75 Marathon "Six"—and all Kiekhaefer Mercury Motors—are inherently quiet by design. Further silencing, however, is achieved on the cowling and on the driveshaft housing with no loss in horsepower.



Figure 19  
Dyna-Float Suspension

10-2. COWLING. A rugged, sound-absorbing blanket is applied to the inside metal surface of the cowl.

10-3. DRIVESHAFT HOUSING. Nominal vibrations of the driveshaft housing are reduced by the new Dyna-Float Suspension which utilizes famous Lord rubber mounts in shear. (See Figure 19.) The motor is strategically suspended in rubber, with no rigid connection between the engine and clamping brackets.

## NOTES

## CERTIFIED SERVICE ORGANIZATION

In order to provide prompt and efficient service on Mercury Outboard Motors, Distributors and Certified Service Organizations are located in principal cities of the United States and Canada.

Each Certified Mercury Service organization or Distributor carries a stock of original Mercury repair parts. Each is equipped with factory service tools and factory trained mechanics, assuring expert repair service on all Mercury Motors.

Genuine Kiekhaefer parts and service will assure continuous motor satisfaction. Our long experience in motor maintenance prompts us to urge all service work be done by our Certified Service Organization or at our factory. Mechanics or individuals not acquainted with Kiekhaefer products, or without proper service tools, should not be permitted to work on or make major repairs.

**WARRANTY:** *The Kiekhaefer Corporation warrants each new Mercury outboard motor manufactured by it to be free from defects in material and workmanship.*

*The Company's obligations shall be limited to replacing for the original purchaser Free of Charge, any part or parts found upon examination at our factory at Beaver Dam, Wisconsin, to be defective under normal use and service, on account of defects in material or workmanship, for ninety (90) days from date of purchase by the original purchaser. Provided further that purchaser gives written notice to the Distributor or the Company of such defects, and that during said period the motor is properly cared for, operated under normal conditions, and that all transportation charges on part or parts submitted for replacement under this warranty must be borne by the purchaser.*

*The correction of such defects by repair or replacement shall constitute a fulfillment of all the Company's obligations to the purchaser.*

*This warranty is in lieu of all other warranties, expressed or implied, and any and all other obligations or liabilities on its part contractual or otherwise.*

*No employee, agent, distributor, or dealer of the Kiekhaefer Corporation shall have the right to modify or change this warranty without written authorization signed by an officer of the Kiekhaefer Corporation.*

*This warranty shall not apply to any motor which shall have been repaired or altered outside of our factory, or authorized repair service facilities in any way so in our judgment affects its operation or reliability or to any motor which has been subject to misuse, negligence, or accident, or which has been used for racing or equipped with a propeller not of our manufacture, or in any other manner than that recommended by the Company.*

*This warranty shall not apply to any motor or accessory part which in the opinion of the manufacturer has been damaged due to mishandling, improper storage, rust, corrosion, deterioration, etc. that may have occurred due to extreme dampness, heat, cold, storage, floods, or conditions beyond the control of the Company, or to any equipment where a grade of fuel or lubricating oil used results in engine malfunction.*

*This warranty expressly does not cover the free replacement of parts made inoperative because of wear occasioned by use. Further, this warranty shall not apply to any motor which is not registered with the manufacturer.*

*All rights are reserved to change or improve design in later models at any time without incurring any obligation to install same on any motor previously purchased.*

KIEKHAEFER CORPORATION  
BEAVER DAM, WISCONSIN

**KIEKHAEFER  
MERCURY**

**— FIRST  
IN THE  
INDUSTRY**

**Full Jeweled  
Power:  
Ball and  
Roller  
Bearings  
Throughout**

**Multiple Disc  
Safety  
Clutch**

**Full Feathered  
Safety  
Steering**

**Waterproof  
Ignition  
Components**

**Dyna-Float  
Suspension  
Silencing**

**Colorful  
Color  
Combinations**

**Automatic  
Rewind  
Starter**

**Vari-Timed  
Valves**

**Flo-Torq  
Propeller  
Drive**

**Variable  
Volume  
Waterpump**

**Uni-Cast  
One-Piece  
Gear Housing**

You can be proud  
you own a

**KIEKHAEFER  
MERCURY**

Soon you will take your new Mercury on its first run . . . with the family on a lake cruise . . . for a spin on the river . . . or just fishin'. When you do, you are in for the surprise of your life . . . for, Mercury's engineers and designers have built into your new motor the smoothest operation, unexcelled power and speed and precise idling which have combined in 17 years to earn Mercury its enviable position in modern outboard leadership. Compare your new motor any time, any place . . . feature for feature . . . pound for pound . . . performance for performance . . . and you can be PROUD you own a MERCURY!



**KIEKHAEFER CORPORATION**

**Parts and Service Division**

**BEAVER DAM, WISCONSIN**