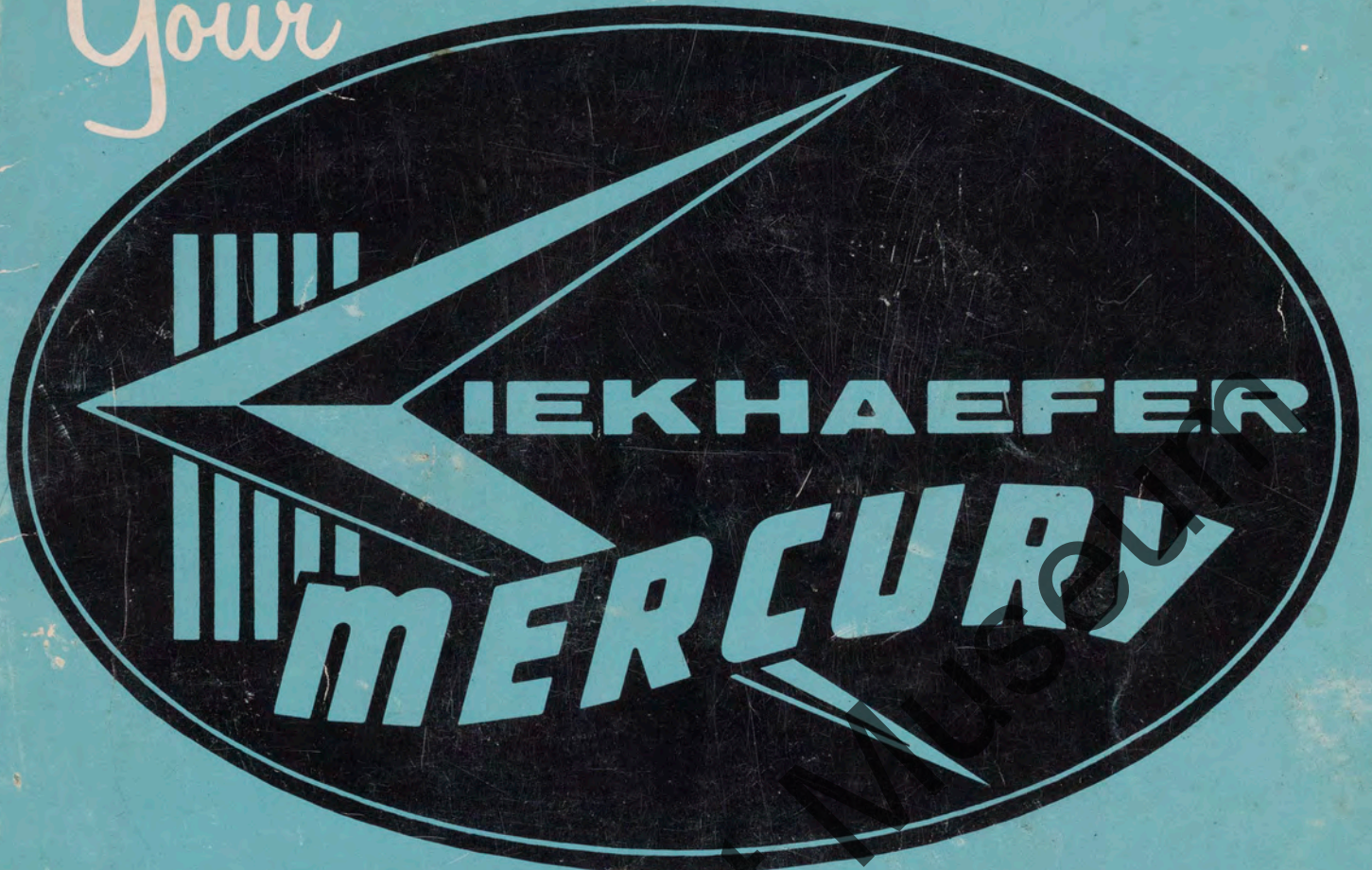


Your



OUTBOARD

Owner's Guide

operation and maintenance

MARK 10

Antique Books

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

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 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,
KIEKHAEFER CORPORATION

 E. C. Kiekhaefer
 President

ECK/db



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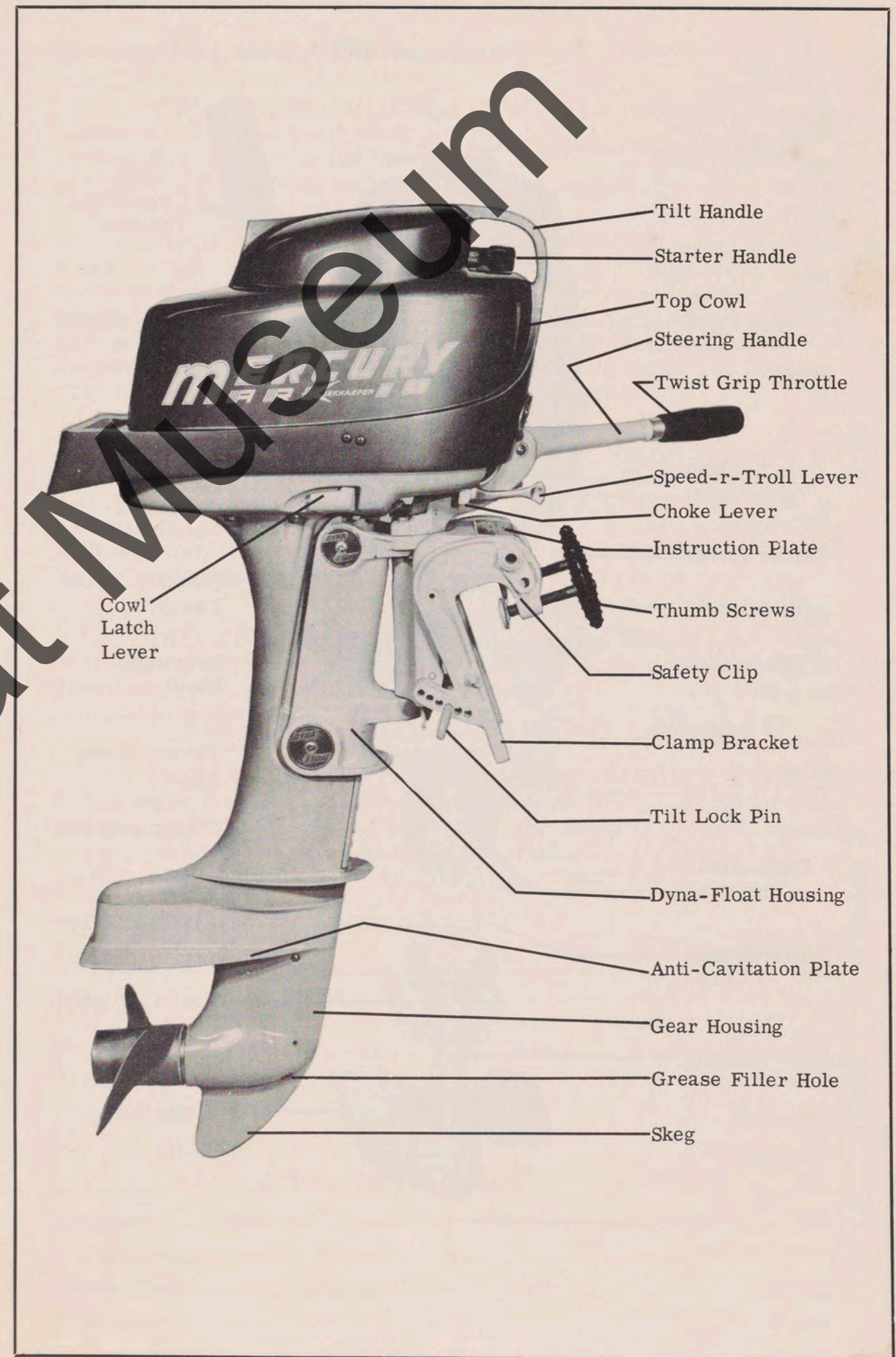


Figure 1
Mark 10 Trol-Twin, Side View

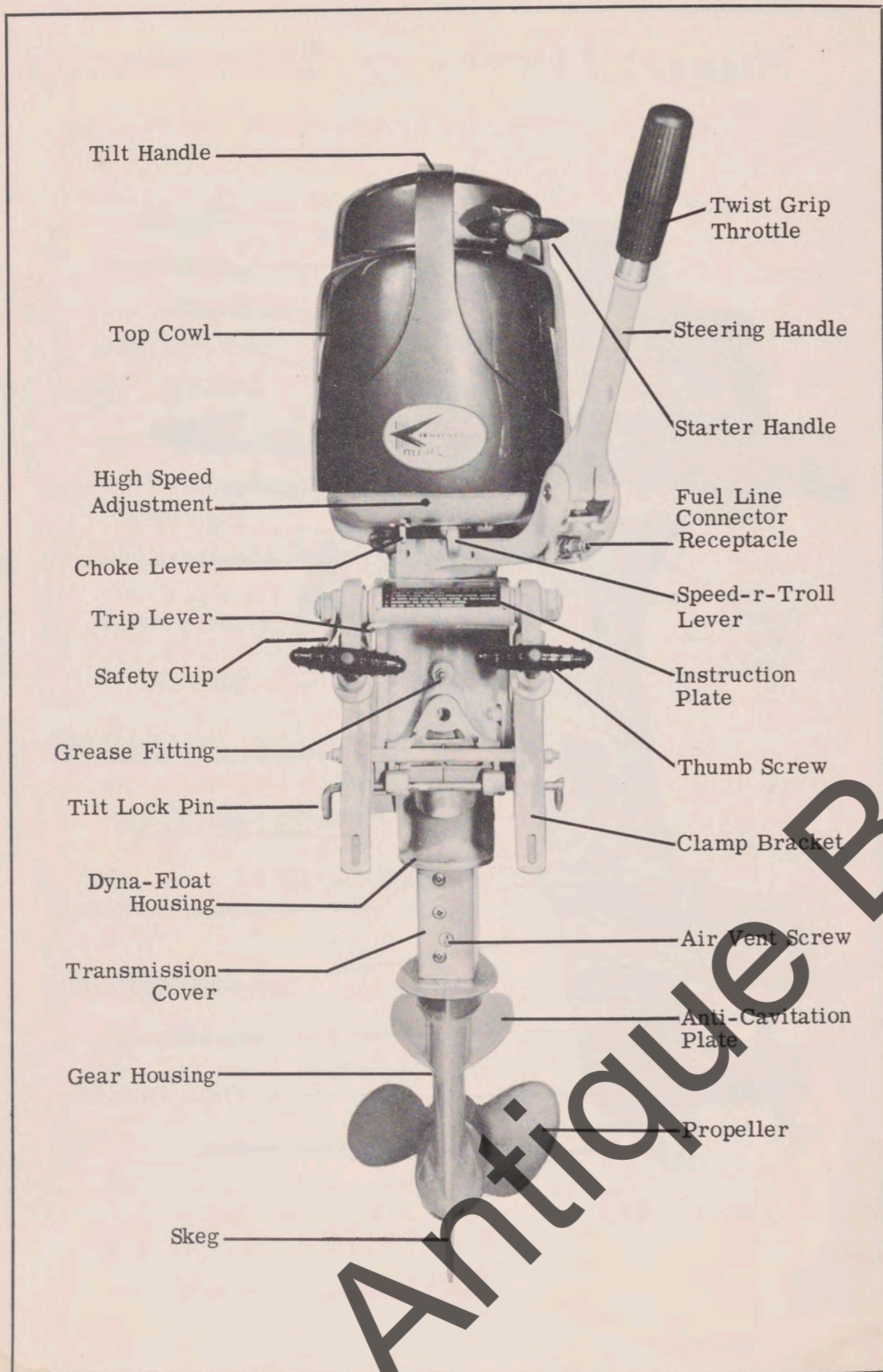


Figure 2
Mark 10 Trol-Twin, Front View

Section I—General Information

1-1. SERVICE RECOMMENDATIONS. This publication includes operating and service instructions applying to Kiekhaefer Mercury Mark 10 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 having 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. 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 in regard to service matters, always specify model and serial number.

1-3. 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.

1-4. CYLINDER NUMBERING AND FIRING ORDER. The Mark 10 Outboard Motor is a two-cylinder, alternate-firing internal combustion engine. Cylinders fire at 180° intervals, giving two equally-spaced power impulses for each revolution of the crankshaft. Cylinders are numbered from top to bottom, top cylinder being number one.

1-5. SPECIFICATIONS

MARK 10

Bore	2 $\frac{1}{32}$ "
Stroke	2 $\frac{1}{8}$ "
Total Piston Displacement	18.5 Cu. In.
Weight	66 Pounds
Recommended Spark Plugs	Champion J7J
Recommended Spark Plug Electrode Gap	.025"
Recommended Magneto Contact Point Gap	.018"
Recommended Spark Advance	.250" B.T.D.C.
Rated Horsepower (Continuous Duty) @ 4000 R.P.M.	10 H.P.
Full Tank Capacity	6 Gals.

1-6. 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. The propeller installed at the factory has been found to give the best average overall performance on standard utility boats. Performance of faster, lighter boats or slower, heavier boats often can be improved by fitting propeller pitch and diameter better suited to speed and load conditions. For propeller recommendations applying to your particular boat, consult your Mercury dealer.

1-7. 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.

1-8. 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.

1-9. 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!

Section II—Preparation for Starting



Figure 3
Twist Grip Throttle

2-1. DETERMINING CORRECT TRANSOM HEIGHT. The Mark 10 is designed for a transom height of 15½-17 inches. Variation is due to differences in boat design. (See "Cavitation," Paragraph 4-4.)

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. 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. (See Figure 4.) 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 if clamps should accidentally work loose during operation.

2-3. TILT LOCK ADJUSTMENT. Bear in mind that the tilt lock pin must be in place at all times during operation of motor. The motor is locked in normal operating position at all speeds. To tilt motor up, depress the trip lever on the front of the swivel bracket. (See Figure 6.) By depressing and pushing back at same time on trip lever, tilt lock lever will allow the motor to remain in release position, thus allowing the motor to tilt while gliding over submerged objects in shallow water at slow speeds.

Lock in the full tilt position by pulling lock lever recess into position on swivel bracket. (See Figure 5.) The motor will tilt up when operating in forward gear, if the force against the gear housing exceeds the normal engine load, such as when striking a submerged object. Holes are provided in the clamp bracket to permit changing location of tilt lock pin for proper adjustment of tilt angle. (See Figure 4.) The motor operates in truly weedless position, permitting safe navigation over weedbeds, bars, logs or marshy shallows. 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. However, with some boats 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 tilt angle so 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 4-4.) It is, therefore, preferable to level the boat by proper loading rather than by extreme adjustment of 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 remain in a fixed-course position without the need of manual con-

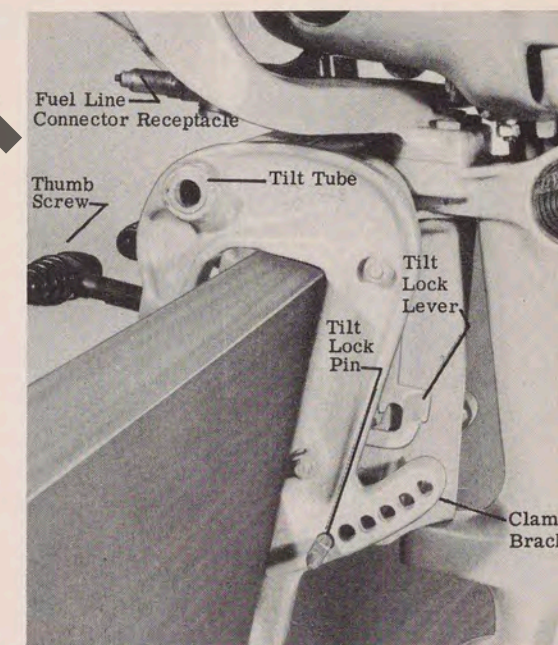


Figure 4
Clamp Bracket on Transom



Figure 5
Tilt-Up Lock

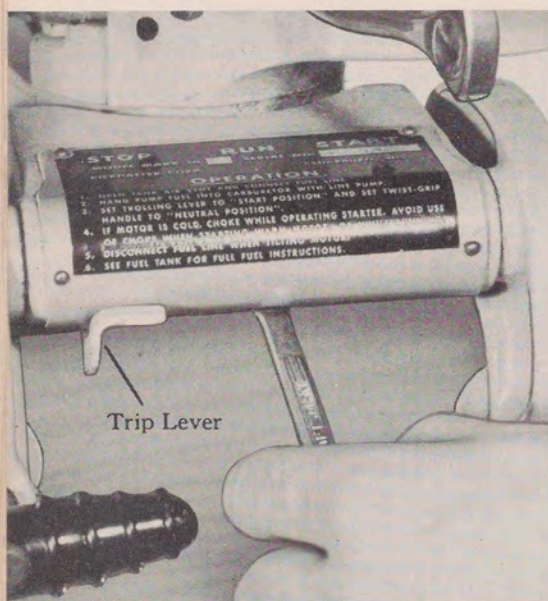


Figure 6
Co-Pilot Adjustment

Mercury "Tank Traps" are excellent for this purpose. They are simple, rugged thumb screw clamps which can be permanently installed 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 Number 24016.

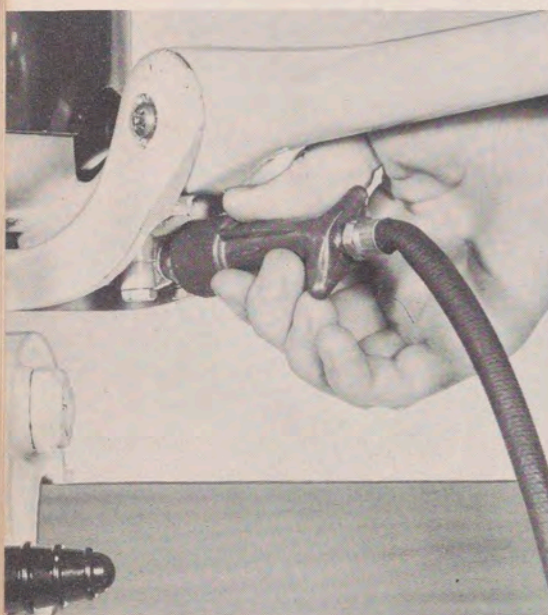


Figure 7
Inserting Twist Connector

control, yet will not be too tight to allow free and easy steering. Adjustment is attained by means of hexagon head screw in bottom face of swivel bracket. Tighten the screw to increase friction; loosen to decrease friction. (See Figure 6.)

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 left front side beneath handle bracket. (See Figure 7.) 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.

2-6. RECOMMENDED FUEL MIXTURE. Thoroughly mix one can of Kiekhaefer Quicksilver 2-Cycle Engine Oil with each 2 gallons of good grade gasoline, or if available, the use of marine white, automotive white or light aircraft gasoline is preferred. (See Figure 8.) 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.

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

2-7. 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 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 carburetion trouble.

2-8. IMPORTANCE OF CONSISTENT FUEL MIXTURES. Carburetor adjustment is 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 will cause spark plug fouling, erratic carburetion, excessive smoking and faster-than-normal carbon accumulation.



Figure 8
Quicksilver 2-Cycle Engine Oil

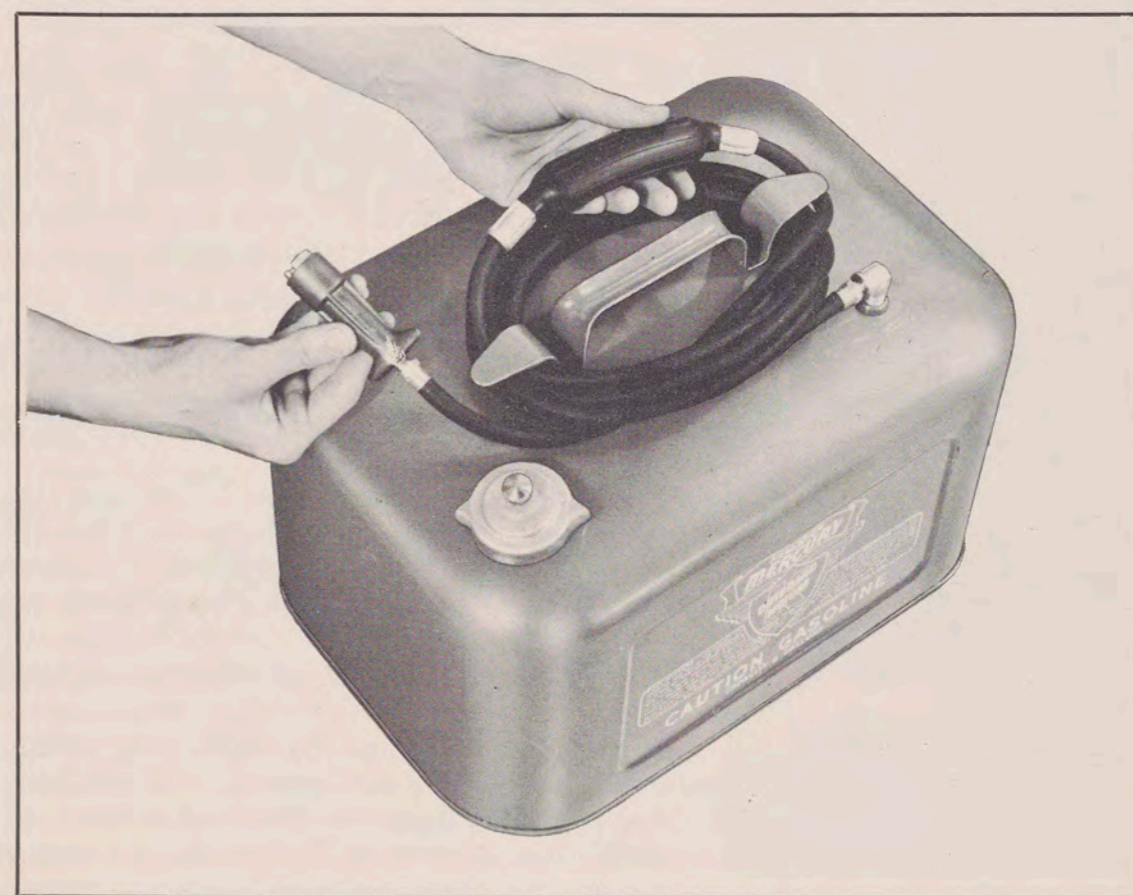


Figure 9
Remote Fuel Tank

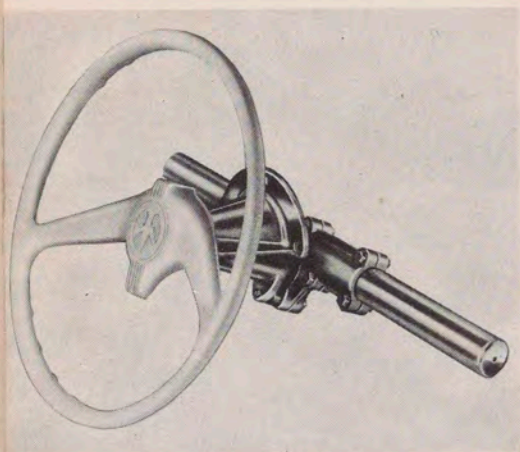


Figure 10
"Ride-Guide" Steering

Install remote steering and throttle and shift controls on right side to help overcome engine torque.) See your dealer for further information.

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.



Figure 11
Priming Fuel System

primed, pressure will be felt. Should motor begin to falter after starting, continue priming until fuel in carburetor is built up by running of motor.

6. If motor is cold, set choke in closed position (move choke lever away from twist grip throttle). (See Figures 2 and 12.) Avoid use of choke if motor is warm.

2-9. 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. Drain plug on bottom allows convenient draining of tank.

2-10. REMOTE CONTROLS. See your local Mercury dealer for full details of installation, cable lengths and other information.

2-11. STEERING CABLE ATTACHMENT. Kiekhaefer "Ride-Guide" Steering is recommended for your safety and pleasure. For attachment, see your local dealer or instructions in "Ride-Guide" Kit. (See Figure 10.) (Note:

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

3-3. STARTING PROCEDURE

1. Be sure fuel tank contains a sufficient amount of fuel mixture.
2. Make certain that fuel tank is properly secured in boat.
3. Connect fuel line to motor by inserting twist connector into receptacle beneath handle. Lock by twisting $\frac{1}{4}$ turn clockwise, as shown in Figure 7. Be sure connector is securely attached.
4. Open air vent screw on remote fuel tank cap.
5. Prime fuel system by squeezing primer tube on fuel line. (See Figure 11.) When fully

7. Align indicator arrow on control handle with "N" (neutral) on indicator ring of twist grip throttle.

8. Move "Speed-r-Troll" lever to the left (toward throttle handle) to "Start" position as indicated on instruction plate and choke engine by moving choke lever to the right (away from throttle handle).

9. Pull the starter handle to start engine and set choke lever in "Off" position as soon as engine starts.

10. After engine is started, move "Speed-r-Troll" lever to right side ("Troll" position on instruction plate) to obtain the desired revolutions-per-minute (RPM) in neutral.

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.

Section IV—Operation

4-1. FORWARD. After starting in "Neutral," turn twist grip throttle to the position where the arrow is in alignment with "Forward" on the indicator ring and the transmission will engage the forward drive thus initiating forward motion. (See Figure 3.)

The "Speed-r-Troll" lever can be adjusted to obtain the desired trolling RPM in Forward. (See Figure 12.) Continue to turn twist grip to obtain desired speed in "Forward." Engine can be operated in either forward or reverse from neutral position after starting.

4-2. REVERSE. To place engine in "Reverse" from "Forward" position, turn twist grip throttle back through "Neutral" position directly into "Reverse." (See Figure 3.) Continue to turn twist grip throttle to increase speed in "Reverse."

Do not operate motor with tilt lock pin removed.

4-3. 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 at the left rear edge of the lower cowl. 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. STOP if water is not being discharged from "tell-tale" hole. Avoid further operation until waterpump and cooling system have been checked. Opera-



Figure 12
"Speed-r-Troll" Lever

tion of motor with defective 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.

4-4. CAVITATION. Cavitation is indicated by intermittent or continued overspeed of the engine, 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 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 transom 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.

4-5. CAUTION FOR SHALLOW WATER OPERATION. When twist grip throttle handle 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.

Section V—Stopping

5-1. STOPPING. If the motor is to remain installed on the boat, ready for immediate re-start, stop by turning twist grip throttle to "Neutral" or slow speed position and moving choke lever to right.

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 carburetor has run dry.

Close the fuel tank air vent knob.

5-2. REMOVING MOTOR FROM BOAT. Disconnect the remote throttle and shift controls and remote steering controls from the motor, if it is so equipped. Disconnect the fuel line. Loosen the clamp bracket screws and disconnect safety cable or safety chain, if so equipped.

Caution: Keep the 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 VI—Adjustments and Minor Repairs

6-1. REMOVING COWLING. Remove top cowl by pulling the two latch pin levers forward. The latch levers are located on the sides of the bottom cowl. (See Figure 13.) Cowl can be removed by lifting off (up and forward), exposing entire powerhead for necessary servicing.

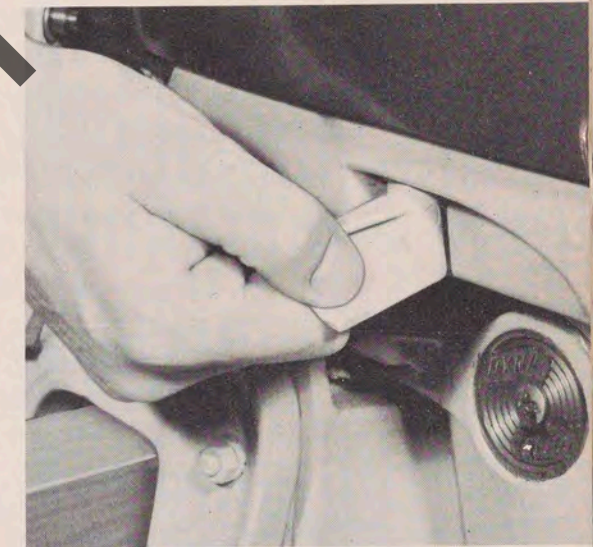


Figure 13
Removing Cowl

6-2. ADJUSTING CARBURETOR. Before attempting to correct faulty engine performance by readjusting carburetor, check for other possible causes of trouble as outlined in the "Trouble Chart," Paragraph 11-3. Carburetor is pre-set at the factory.

6-3. ADJUSTMENTS PROVIDED. The carburetor is provided with two adjustments: 1) The high speed mixture adjusting needle and 2) the low speed mixture adjusting needle (with knurled head). The high speed mixture adjusting needle turns clockwise for leaner mixture, counterclockwise for richer mixture. Low speed mixture adjusting needle also turns clockwise for leaner mixture, counterclockwise for richer mixture. (See Figure 14.)

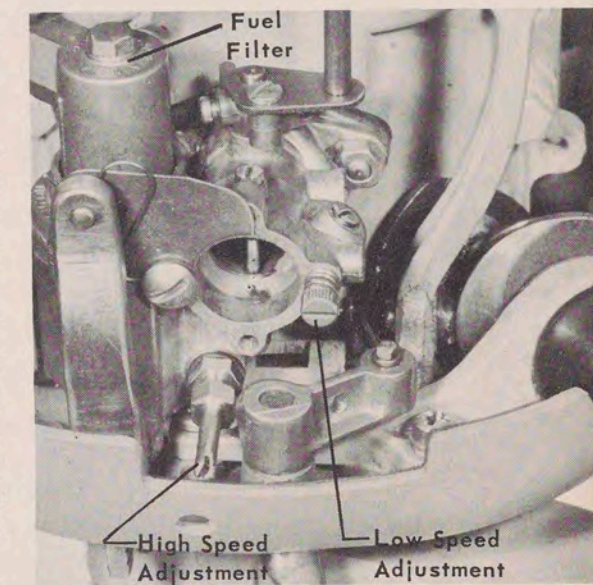


Figure 14
Carburetor Adjustments

6-4. APPROXIMATE INITIAL SETTING. If the carburetor is so badly out of adjustment that the motor cannot be started, an approximate initial setting can be attained as follows: Turn both high speed and low speed mixture adjusting needles inward (clockwise) until they seat lightly. Do not turn tight because doing so will damage needle and seat. Back out high speed mixture adjusting needle $1\frac{1}{2}$ turns and low speed needle one turn. This setting will permit starting but will be found too rich for normal operation; therefore, as soon as motor starts, make correct final adjustments as instructed under "High Speed Mixture Adjustment" and "Low Speed Mixture Adjustment," following.

6-5. HIGH SPEED MIXTURE ADJUSTMENT. Warm motor up thoroughly and set choke in open position (left). While operating motor at wide open throttle, slowly turn high speed mixture adjusting needle counterclockwise until corresponding bank of cylinders start to "four cycle" and motor begins to slow down (see "Caution" below). Then turn high speed mixture adjusting needle clockwise through range where cylinders fire normally to 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 a 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 carburetor. Operation of engine under condition of reduced fuel flow may cause damage due to lean fuel mixture and resultant overheating.

6-6. LOW SPEED MIXTURE ADJUSTMENT. With the motor running at idling speed while in forward ("F") 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. 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.

6-7. SERVICING FUEL TANK FILTER. Remove the fuel line from elbow and unscrew to remove fuel pick up tube. The filter, a fine wire mesh, can be cleaned by rinsing in clean benzol (benzine).

6-8. SERVICING ENGINE FUEL FILTER.

1. Remove cowl as instructed in Paragraph 6-1.
2. Remove fuel line from filter and the screw from the top of each filter cover.
3. Remove fuel filter cover.
4. Inspect filter, fuel lines and fittings for signs of wear or leakage.
5. Drain and clean filter.
6. Replace filter cover; 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.

6-9. 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"), service as follows:

1. Remove cowl 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 with new plugs. Replace only with Champion J7J 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 1/2 turn with a wrench will generally be sufficient. Do not overtighten, thereby stripping threads.

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.

6-10. 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 propeller blades while removing the propeller nut. (See Figure 15.)

2. Use 5/8" wrench or socket to remove elastic stop nut located inside propeller hub.

3. Slide propeller off. If tight, a light tap with a piece of wood on back of propeller will loosen. Be careful not to lose the front and rear alignment spacers on propeller.

Note: When replacing the propeller, apply a thin coat of grease on splines of the propeller shaft, especially if operated in salt water, to aid in removing at any future time.

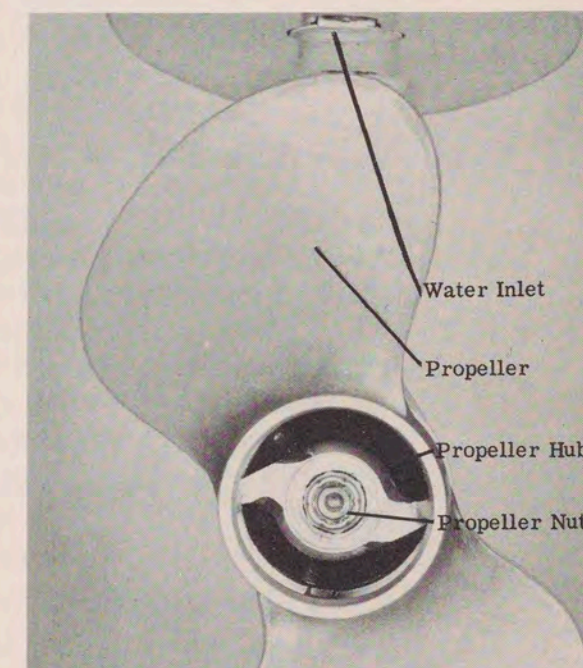


Figure 15
Removing Propeller

Section VII—Preventive Maintenance

7-1. LOWER DRIVE UNIT LUBRICATION. Every 25 hours of operation, lubricate the lower drive unit with Kiekhaefer Aeromarine Special Outboard Gear Lubricant as follows:

1. Remove the air vent screw, located on the transmission cover plate on the front of the driveshaft housing, just above the anti-cavitation plate and marked "Vent." (See Figure 2.) 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 and transmission assembly cannot be completely filled as required.

2. Remove the grease filler plug, located in lower right side of gear housing. (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 screw, 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 housing.

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 non-channeling waterproof marine gear lubricant.

7-2. CONTROL LINKAGE LUBRICATION. Occasionally apply a drop of S.A.E. 30 engine oil or DC4 Compound (Kiekhaefer Accessory No. 92-24108) to bushings, control linkage joints, etc. Applying grease to these points will prevent binding or sticking of the operating mechanism.

7-3. 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 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 DC4 Compound (Kiekhaefer Accessory No. 92-24108).
5. Service the spark plugs as instructed under Paragraph 6-9.
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. Wire with "TOP" marker is placed to number one (top) cylinder.
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 Merchromatic 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 6-7 and 6-8.
11. Check controls. Be sure all connections and fittings are in good condition, properly secured and correctly adjusted.

Note: The magneto contact points should not be disturbed as long as the engine 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.

Section VIII—Special Care Required

8-1. 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 or barrel to flush cooling system. (See Paragraph 8-2.) (*Note: When running in tank or barrel, water level must be above lower "Dyna-Float" cover or engine may overheat.*) 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 top cowl.
4. Service fuel filter as instructed in Paragraphs 6-7 and 6-8.
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 stick into the spark plug hole. Apply about 2 ounces 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 transfer ports. Repeat this operation on No. 2 cylinder, then install spark plugs and operate the starter vigorously to distribute oil around the inside of the crankcase and cylinders.
9. Connect the spark plug cables. Be sure each cable is connected to its respective spark plug.
10. Clean the motor thoroughly, including all accessible powerhead parts. Install the cowl and apply a thin film of clean, fresh engine oil to all painted surfaces.
11. Remove the propeller; apply graphite grease or DC4 Compound to the propeller shaft; and re-install the propeller. (See Paragraph 6-10.)

8-2. 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, as all interior passages are scientifically processed to provide corrosion protection. While there is no complete protection known for exterior surfaces, there are ways by which electrolysis and corrosion damage can be minimized. Following the simple steps, 1-thru-6 below, should materially increase the life of all exposed parts and decorative finishes:

1. Any outboard motor, when left on a boat, should be tilted fully out of the water.
2. Disconnect the positive battery terminal on electric starting engines when in dock or in storage for any long period of time.
3. Do not use hoods or canvas covers over engine, as this will keep drops of spray from evaporating and will frequently cause condensation which will make dry salt deposits wet and more corrosive. Fresh water rinsing is best for this condition.
4. Grease the thumbscrews of the engine with lubricant or DC4 Compound (Part No. 92-24108) to insure smooth operation.
5. Grease the propeller shaft splines occasionally with DC4 Compound or graphite grease, thus enabling the propeller to be removed easily.
6. The entire powerhead can be sprayed with a coating of rust-preventive oil to protect the finish of all parts beneath the cowl. The exterior of the engine also can be sprayed or wiped to prevent salt corrosion from dulling the finish.

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

Occasionally, remove propeller and apply graphite grease or DC4 Compound to propeller shaft splines. This will retard corrosive action of salt on propeller hub and propeller shaft.

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 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 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 a broken piston.

4. Pour alcohol in cylinders first, or use Quicksilver Engine Cleaner (Kiekhaefer Accessory No. 92-26845); 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.

Section IX—Silencing

9-1. SILENCING. Because 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 10's and all Mercury Motors are inherently quiet by design. Further silencing, however, is achieved on the driveshaft housing Dyna-Float Suspension with no loss in horsepower.

9-2. DRIVESHAFT HOUSING. Nominal vibrations of the drive-shaft housing are reduced by the new Dyna-Float Suspension which utilizes famous Lord rubber mounts in shear. The motor is strategically suspended in rubber, with no rigid connection between the engine and clamping brackets.

Section X—Maintenance Suggestions

10-1. 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 Engine Oil and Kiekhaefer Aeromarine Grease at all times.
2. Follow factory recommended maintenance schedule in Preventive Maintenance Section (Sec. VII) of this manual and adhere to factory recommended operating procedures. Use only factory recommended propellers.
3. Dealer will test and adjust motor for the owner at the time of purchase, and he will demonstrate the correct operating procedures.

10-2. 10-HOUR CHECKUP. New owners are entitled to a 10-hour free checkup from the selling dealer. He will:

1. Adjust points.
2. Clean carburetor and fuel system.
3. Check grease in lower unit and fill if required.
4. Check waterpump. Tell-tale water outlet hole must be clear.
5. Lubricate control linkage.
6. Check and tighten all nuts and bolts.
7. Test and adjust motor after completing tuneup.

10-3. 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	Service Reference
x	x							Fuel Tank Empty	Refill
x	x							Fuel Line Not Connected	Para. 2-5
x	x	x			x	x	x	Fuel Line Pinched or Kinked	Para. 2-5
	x				x	x		Fuel Filter in Need of Cleaning	Para. 6-7
x	x	x			x	x	x	Air Leak in Vacuum System	Para. 2-9
x							x	Low Speed Needle Valves Mal-adjusted	Para. 6-6
	x						x	High Speed Needle Valves Mal-adjusted	Para. 6-5
							x	Wrong Oil in Fuel Mixture	Para. 2-6
	x						x	Wrong Gasoline in Fuel Mixture	Para. 2-6
							x	Not Enough Oil in Fuel Mixture	Para. 2-6
	x						x	Too Much Oil in Fuel Mixture	Para. 2-6
x								Engine Flooded	Para. 3-3
x	x				x	x	x	Spark Plugs Fouled or Defective	Para. 6-9
	x						x	Wrong Type Spark Plugs	Para. 6-9
x								No Spark	Para. 6-9
x	x	x			x	x	x	Weak Spark or Intermittent Spark	Para. 6-9
x	x	x			x	x	x	Magneto Contact Points Need Attention	Para. 7-3
x	x						x	Spark Plug Leads Interchanged	Para. 7-3
							x	Waterpump Failure	Para. 4-3
							x	Cooling System Clogged	Para. 4-3
							x	Cavitation	Para. 4-4
							x	Propeller Damaged	Para. 7-3
							x	Tilt Angle Not Correctly Adjusted	Para. 2-3
							x	Boat Improperly Loaded	Para. 2-3
							x	Transom Too Low	Para. 2-1
							x	Transom Too High	Para. 2-1
	x						x	Excessive Spark Advance	Para. 1-5
							x	Insufficient Spark Advance	Para. 1-5
							x	Propeller of Wrong Pitch or Diameter	Para. 1-6

10-4. PROPELLER RECOMMENDATIONS. The factory selects and equips the assembled motor with a standard type propeller and sets the spark advance on the magneto to give good performance on the average type of boat. Specific results cannot be guaranteed because of variable use.

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 of 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 as 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-Torg
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