KIEKHAEFER

MERCURY

OUTBOARD MOTORS

MODEL
KG.7

Super "10"

HURRICANE

OPERATING INSTRUCTIONS AND PARTS MANUAL

PATRON MEMBER
AMERICAN POWER BOAT ASSOCIATION

KIEKHAEFER CORPORATION
FOND DU LAC WISCONSIN U.S.A.

OUTBOARD *MERCURY* MOTORS

Dear friend and Outboard Enthusiast:

The Kiekhaefer Mercury outboard is one of the finest motors that superior engineering design, skill and workmanship can produce.

Before leaving the factory the motor is run in, thoroughly tested and inspected to assure efficient and economical performance, dependable service and many years of pleasure to the owner in its operation.

The maximum efficiency and exceptional performance and satisfaction built into the Kiekhaefer Mercury has been made possible by continuous research and engineering and the testing of these motors in the largest and most modern equipped laboratory for two-cycle engines in the country.

All self-contained power units require a certain amount of attention. The Kiekhaefer Mercury requires a normal amount of care and by closely following the instructions contained in this instruction book, a maximum of performance will be obtained.

The amount of attention is small but IMPORTANT.

Your Mercury Outboard Motor is equipped with roller and ball bearings throughout.

The Kiekhaefer Mercury is shipped from the factory ready for operation immediately after filling the gas tank with the recommended gasoline and oil mixture.

Note 1: The Warranty Period on your motor begins on date of purchase but warranty is not valid until you have filled out and mailed in your Registration Card. DO THIS AT ONCE. Be sure to list the CORRECT SERIAL NUMBER.

Note 2: Warranty does not apply if motor is operated with a propeller other than a Kiekhaefer propeller of type, diameter, and pitch fitted to engine in original factory assembly.

KIEKHAEFER CORPORATION
FOND DU LAC, WISCONSIN

THE FIRST FEW HOURS OF OPERATION ARE IMPORTANT

Like the finest automobile or aircraft engines, the Kiekhaefer MERCURY requires consideration when new. Follow fuel and lubricant instructions on the following pages carefully, and for the first five hours avoid sustained full speed operation. . . Have your official MERCURY Service Station check your motor for adjustments after the first fifteen hours of operation.

PORT AND STARBOARD SIDE OF MOTOR

The Port and Starboard (left and right) side of the MERCURY Outboard Motor is determined by viewing the motor from the rear, (propeller side) looking toward the bow of the boat. Viewing the motor thus, the steering handle is located on the Port (left) side. The opposite side is Starboard or right. This corresponds to the nautical terms as used on a boat or ship.

INSTALLING MOTOR ON BOAT

In order to obtain the best operating results, it is important that the motor be properly mounted on the transom (stern board) of the boat, and that the angle of the motor be adjusted so that the propeller drive is parallel to the travel of the boat when the motor is operated at full throttle.

To accomplish this, place the motor on the center of the transom and be certain to hand tighten (do not use pliers or wrench) the clamping screws, making sure that the motor is securely attached.

Adjust the motor angle by inserting the tilt lock pin in the proper hole in the clamp bracket, using the tilt handle on top of the motor for leverage. The drive shaft housing should be perpendicular to the surface of the water for best operation.

Operate the motor at full throttle (when motor is warmed up). If the boat rides with the bow high out of the water, adjust the angle of the motor by tilting the gear case towards the stern of the boat.

If the boat rides with the bow down, adjust the angle of the motor by tilting gear case away from the stern of the boat. The angle of the motor should be adjusted to compensate for varying boat loads (i.e., the number of persons in the boat). For maximum efficiency the boat should "plane" or ride on an even keel without "spanking".

The correct relation of the motor to the boat is of great importance, therefore, instructions for mounting the motor on the boat and recommended transom height should be carefully adhered to. Recommended transom height for the KG7 is 15 inches.

The transom height is measured from the bottom of the keel to the top of the transom, perpendicular to the keel line.

Lower transoms than recommended will place the gear case too far below the keel and may cause drag resulting in loss of speed, and will increase the danger of striking submerged objects. . . . . Transoms higher than recommended will raise the gear case too near the surface of the water which may cause cavitation or excessive slippage.

On boats with heavy or high keels, taper the keel from 20" forward of the stern up to a feather edge at the stern.

CAVITATION

The term cavitation as applied to the operation of an outboard motor is a condition whereby the propeller suddenly loses its load or "push", permitting the engine to rapidly increase its R.P.M. or race. This loss of load or "push" is usually attributed to a reduced volume of water around the propeller.

This is generally caused by the action of the propeller pushing the water vertically instead of in a horizontal plane. There are several conditions which may cause cavitation, such as:

1. Transom too high (propeller too near surface).
2. Rough water.
3. Fast turns.
4. Tilting boat during fast turns (propeller too near surface).
5. Gear case angled too far from stern of boat (propeller too near surface).
6. Design of boat, particularly a wide or high keel, causing water to be diverted from slip stream.
7. Using propeller of type, diameter and pitch other than recommended by the manufacturer.

FUEL MIXTURE

The proper selection and preparation of the fuel mixture to be used in your outboard is more important than it may seem to the casual outboard user. It is advantageous to select fresh gasoline and the recommended brand and grade of oil mixed in the proper proportion. Uniformity in fuel mixture will insure consistent carburetor adjustments and consequently uniform and consistent engine performance. Do not use aviation or "doped up" fuel mixtures, or alcohol-ether fuel mixtures, which may be injurious to seals and other composition parts. Usually it is a good policy to use the same grade of gasoline, with the same octane rating as used in your automobile, for the reason that the fuel, owing to its ready market in service stations, will be fresh and readily available. It is the factory's recommendation that the gasoline used in your MERCURY Outboard Motor have an octane rating not less than 72, and that the oil used by Kiekhaefer Aeromarine Two Cycle Engine Oil. In an emergency, when the recommended oil is not available, use SAE 30, nationally known standard brand of oil.

MIXING THE FUEL

Thoroughly mix the gasoline and oil in the proportion of 3/4 pint of oil to each gallon of gasoline. To insure proper mixing, cut the oil first with an equal part of gasoline, then add the remainder of the gallon of gasoline.

NOTE: Never pour the oil and gasoline into the motor fuel tank separately. Mix the fuel in a separate container, then transfer into a can with a spout or nozzle attached which will enable you to fill the fuel tank without spilling.

1. Cut the oil first with an equal part of gasoline.

2. Mix well in container.

3. Add remainder of gas.

4. Pour back into can

5. Fill 'er up.

6. NEVER pour the gasoline and oil into the fuel tank separately.

TO START A NEW MOTOR

1. Fill fuel tank with recommended fuel mixture.
2. Open fuel shut-off valve completely and open air vent screw on fuel tank cap.
3. Open carburetor needle valve 1 turn.
4. Set throttle lever at START position.
5. Pull out choke knob.
6. Start motor by pulling starter cable handle.
   CAUTION: When pulling starter cable, do not jerk it. Pull cable until starter engages, then pull vigorously. Do not allow starter cable to snap back, but retain hold on starter cable handle to permit cable to rewind slowly.
7. When motor starts, push choke knob in promptly.
8. Allow cold motor to warm up at part throttle for a minute or two before applying full throttle.
9. After motor warms up adjust carburetor needle valve, with throttle advanced, for best performance.

FINAL ADJUSTMENTS

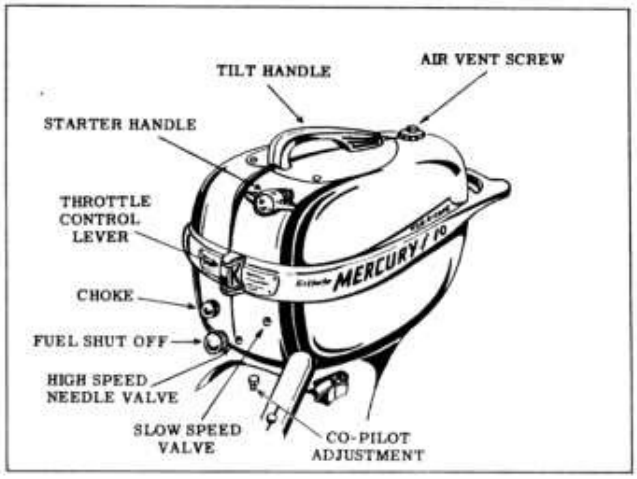
HIGH SPEED

The carburetor high speed needle valve has been adjusted at the factory. However, it may require resetting for best operation depending on the temperature, altitude, fuel characteristics and the gasoline and oil ratio in the fuel mixture. When making high speed carburetor adjustments, the throttle control lever must be all the way on FAST position. Do not attempt to make high speed adjustments with this lever in any other position. Always allow the engine to warm up before attempting to make final adjustments. Use screw driver and turn high speed needle valve in, clockwise, to a point where engine begins to slow down, due to lean mixture, then turn valve counter-clockwise approximately one-eighth of a turn to three-eighths of a turn. This adjustment must be made slowly in order to permit the change in the setting to effect the engine performance. Always leave setting in a little on the rich side. REMEMBER: Turn valve clockwise to lean mixture and counter-clockwise to richen mixture. Once in proper adjustment no further attention need be given with the exception of compensation for temperature extremes or a change in the oil content in the gasoline. Of course, a cold engine should be warmed up at part throttle, using choke if engine falters. Never operate a cold engine at full throttle. Give it a few minutes to reach operating temperature.

SLOW SPEED

When making slow speed adjustment, the throttle control lever must be all the way on SLOW position. Do not attempt to make slow speed adjustment with lever in any other position. Use screw driver to adjust slow speed valve. (Located through hole on front of cowl directly above steering handle). If motor runs rough with tendency to load, turn valve slowly counter-clockwise until smooth operation is obtained. If motor spits or stops, richen mixture by turning valve clockwise. This adjustment is very fine and only a fraction of a turn is usually required. REMEMBER: Turn valve counter-clockwise to lean mixture and clockwise to richen mixture for slow speed only (opposite to high speed).

If adjustments prove to be unstable, check to be sure that the carburetor is free of dirt or other foreign matter. If foreign matter is found in carburetor and removed with no improvement in engine performance, it is fairly certain that the ignition system should be checked for proper point setting, spark gap setting and oil soaked, cracked or frayed ignition wires. (See IGNITION INSTRUCTIONS).



IGNITION

1. The magneto breaker point setting is .018". However, when adjusting new points, the setting should be .020" inasmuch as the fibre block will wear to fit the contour of the cam and a smaller gap setting will occur. Resetting of the points should be done when the owner brings his motor to the dealer for a required check-up after the first 15 hours of operation. (This 15 hour general check-up is free of charge if the motor is brought back to the dealer from whom it was purchased).

2. Spark plug gap - .025".

3. Check the breaker points after first 20 hours and at the beginning of each season. Reset if necessary.

4. Do not replace spark plugs with any make or type different from the original equipment.

5. Check spark plug wires periodically and change if frayed, cracked, or oil soaked.

LOWER UNIT

1. Keep lower unit filled with Kiekhaefer Aeromarine Special Outboard Gear Lubricant. (Do not use ordinary automotive grease).

2. Check lower unit after every 50 hours of operation, and at least once a season.

3. To refill, remove filler plug and air vent screw on right side of gear housing, insert nozzle of grease tube in plug opening and fill until grease overflows at vent hole. Replace screw and plug and tighten firmly to prevent entry of water and loss of grease.

TO STOP MOTOR

Move throttle control lever to STOP position.

Motor can also be stopped by closing fuel shut-off valve and running carburetor dry at reduced speed.

If motor is to be removed from boat and transported in a position other than vertical, the fuel shut-off valve and the air vent in the fuel tank cap should be closed.

MULTIPLE DISC CLUTCH

The KG7 model Mercury Outboard Motor has a new automatic safety clutch, designed on the multiple disc principle. This permits the propeller to slip upon striking interference, without the use or need of a shear pin. Permanent, reliable and indistructible, this method gives greater propeller protection, insures greater safety by limiting impact loads upon the shaft, gears, bearings and the rest of the driving mechanism.

CARE OF MOTOR WHEN DROPPED OVERBOARD

RECOVER MOTOR AS SOON AS POSSIBLE

DO NOT ATTEMPT TO START A MOTOR AFTER IT HAS BEEN DROPPED OVERBOARD UNTIL YOU HAVE DONE THE FOLLOWING:

1. Remove starter and flywheel.
2. Remove fuel tank, fuel line, carburetor, and spark plugs.
3. Drain as much water from the crankcase and the cylinder as possible by shaking the motor in upright, vertical, and horizontal positions.
4. Turn motor by propeller in all three positions to force any remaining water in crankcase through the ports and spark plug openings.
5. Wash out with gasoline using same procedure as above.
6. Pour a tablespoonful of oil into the cylinders through the spark plug openings.
7. Turn propeller several revolutions to distribute the oil through the cylinders.
8. Blow off magneto with compressed air, if available; or, spray with carbon-tetrachloride and carefully wipe magneto dry.
9. Wipe spark plug wires dry.
10. Drain and clean the fuel tank, fuel line, carburetor; wipe and dry spark plugs.
11. Check and if necessary, adjust contact points and spark plug gaps.
12. Fill fuel tank with proper mixture.
13. Open fuel shut-off valve, and with throttle and spark control lever at STOP position, operate starter several times. This will assist in removing any remaining water by injecting fuel mixture throughout powerhead.
14. Move throttle and spark control lever to START position and start motor; run until motor is warmed up and dried out.
15. CAUTION: If the motor is noisy when started up, stop motor (as the crankshaft or rods may be bent or the rings broken). Take to local Mercury Dealer for repair.
16. CAUTION: Do not operate motor without water in the coolingsystem and water pump. Use tank or barrel of water or by using a flushing device attached to garden hose. (Our accessory # M-60-582).

VALUABLE SUGGESTIONS

1. Always fasten clamping screws securely by hand and as an added precaution use rope or chain to tie motor to boat.

2. Always have a screw driver, pliers, cotter pins, and an extra spark plug handy when motor is being used.

3. Metal plates especially designed on either side of the transom will prevent your boat from becoming marred by the clamp bracket.

4. If your boat is over 16 feet in length and used in navigable water, you must comply with the Federal Motor Boat Law.

SALT WATER OPERATION

1. As soon as motor is removed from the boat, the cooling system should be flushed out. This can be done by operating motor in a tank or barrel of FRESH water or by using a flushing device attached to a garden hose.

2. While water is flowing through motor when using the flushing device, turn crankshaft several times by pulling the starter cable handle.

3. Be sure to keep the motor vertical until motor has been flushed out and properly drained.

4. Rinse off outside of motor with FRESH water.

5. Wipe motor with dry cloth, then with oily cloth.

6. Always keep motor clean.

7. Remove propeller and grease propeller shaft.

WARRANTY

We warrant each new outboard motor to be free from defects in material and workmanship under normal use and when operated according to these instructions. Within 90 days from date of sale to original purchaser, we will exchange free of charge, f.o.b. factory, any part which our examination shall disclose to our satisfaction to be defective.

This warranty shall not apply to any motor which is not registered with us, or has been subject to misuse, alteration, or accident; or which has been used for racing or equipped with racing propeller or if warranty seal has been broken.

The manufacturer reserves the right to make changes in design or improvements upon its products without imposing any obligation on itself to install the same upon its products theretofore manufactured.

STORAGE

1. If motor has been used in salt water, follow the instructions given for CARE OF MOTOR WHEN USED IN SALT WATER.

2. Remove grease plug and air vent screw from gear case.

3. Fill gear case with Kiekhaefer Aeromarine Special Outboard Gear Lubricant. Replace the grease plug and air vent screw.

4. Drain the fuel tank, fuel line , and carburetor.

5. Remove and clean the carburetor and fuel filter.

6. Squirt clean oil in crankcase through carburetor venturi opening. (#20 SAE)

7. Remove spark plugs; pour one tablespoon of clean oil into plug openings.

8. Rotate crankshaft several times by pulling starter cable.

9. Replace carburetor, fuel filter and spark plugs.

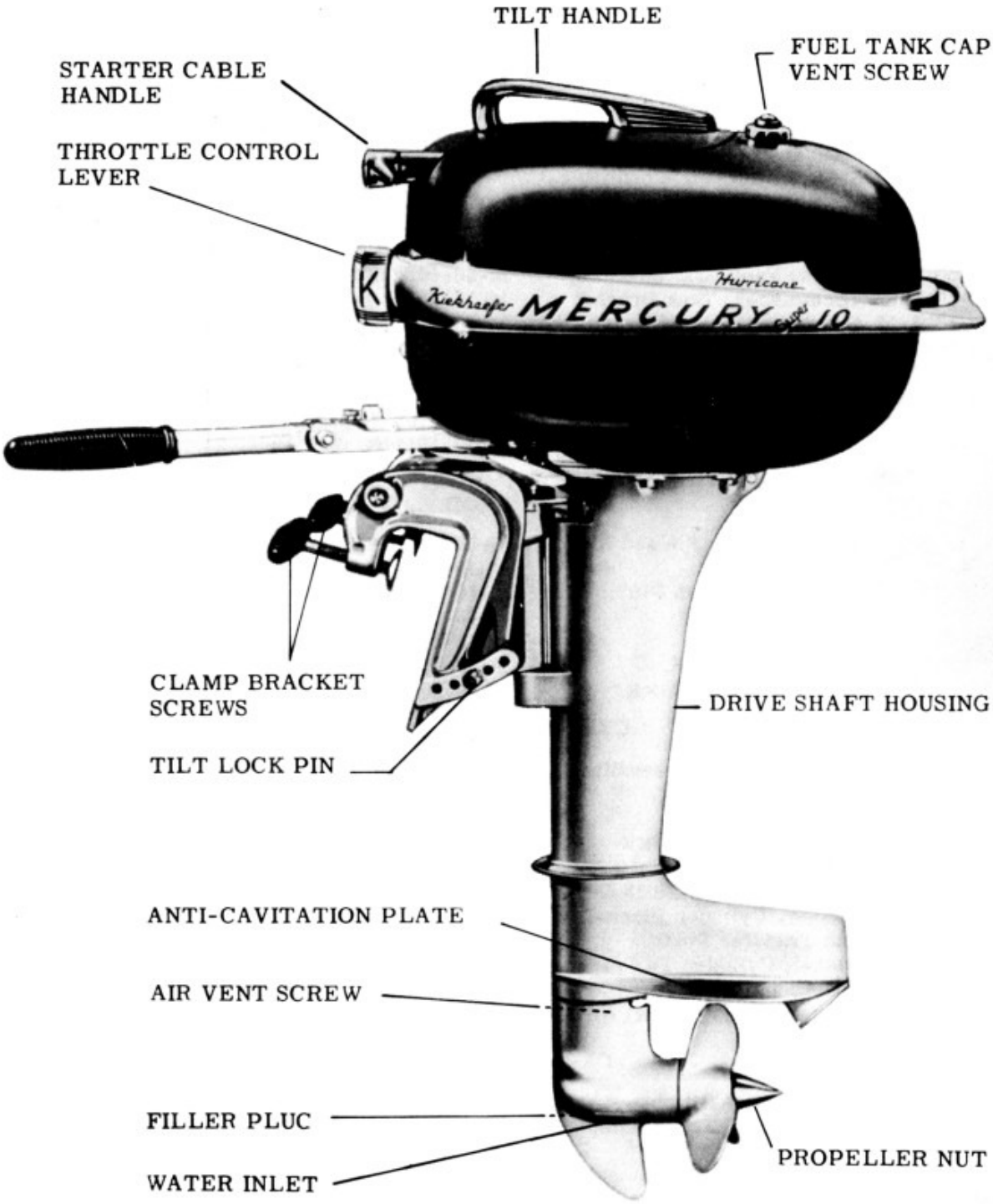
10. Wipe all exposed parts with dry rag and oil same.

11. Turn the propeller over two or three revolutions in reverse direction. This will reverse the impeller vanes and assist in draining the water. Leave the vanes in reverse position.

12. Store the motor in a dry place, in a vertical position, and if possible, on a rack in the same position as when mounted on a boat.

13. Cover motor with canvas or replace in original shipping box or carton. KEEP UPRIGHT.

MODEL KG7



PATENTS PENDING

CRANKCASE

M-10-1191	Crankcase Assembly
M-10-1192	Crankcase
M-10-1002	Bearing, Upper Roller
M-60-405	Bearing, Upper Ball
M-10-1004	Seal, Upper oil
M-10-1005	Stud, Crkse. To Drive Shft. Hsg.
M-10-1006	Stud, Crkse. To Crkse. Bottom
M-10-1007	Stud, Carburetor Mounting
M-60-318	Wshr. Crkse. To Cyl. Stud
M-60-205	Nut, Crkse. To Cyl. Stud
M-10-1092	Bracket, Fuel Tank
M-60-177	Screw, Tank Brk. Mounting
M-60-319	Lockwasher, Tank Bracket
M-10-1193	Crankshaft Assembly
M-10-1011	Crankshaft
M-10-1103	Cntr. Main Bng. Assy.
M-10-1194	Center Main Bearing
M-10-1123	Pin, Reed Locating N.S.S.
M-10-1113	Dowel Pin
M-60-1048	Screw, Cntr. Main Clamping
M-10-1120	Reed - Left
M-10-1121	Reed - Right
M-10-1122	Plate, Reed Stop
M-60-101	Screw, Reed
M-60-327	Washer, Reed Screw
M-10-1162	Screw, Cntr. Main Bng. Lock
M-10-1008	Tab Wshr., Cntr. Main Bng. Lock Screw
M-10-1037	Crnkse. Bottom Assembly
M-10-1038	Crankcase Bottom
M-10-1044	Seal Oil, Lower
M-60-405	Bearing, Lower Ball
M-10-1021	Gasket, Crnkse. Bottom To Crnkse.
M-10-1022	Gasket, Crankcase Bottom To Plate
M-10-1023	Plate, Crankcase Bottom
M-60-203	Nut, Crankcase Stud
M-60-319	Washer, Crankcase Stud Nut
M-40-1011	Gasket, Drive Shaft Housing To Powerhead

PISTON & ROD

M-10-2050	Piston, Piston Pin and Ring Assembly
M-10-2037	Piston and Piston Pin Assembly
M-10-2034	Piston N.S.S.
M-10-2004	Pin, Piston N.S.S.
M-10-2005	Ring, Piston Pin Lock
M-10-2003	Ring, Piston
M-10-2053	Rod Assembly, Connecting
M-10-2054	Rod And Cap, Connecting
M-10-2055	Bearing, Piston Pin
M-10-2008	Bearing, Connecting Rod Roller
M-60-151	Screw, Connecting Rod Cap
M-10-2056	Washer, Needle Retaining

CYLINDER BLOCK

M-10-3107	Cylinder Block Assembly
M-10-3103	Cylinder Block
M-10-3024	Helicoil Insert
M-10-3055	Cover, Cylinder Block
M-10-3003	Gasket, Cylinder Block Cover
M-60-188	Screw, Cylinder Block Cover
M-60-320	Washer, Cylinder Block Cover And Transfer Port
M-10-3004	Gasket, Cylinder To Crankcase
M-10-3037	Cover; Transfer Port
M-10-3038	Gasket, Transfer Port Cover
M-60-186	Screw
M-10-3007	Stud, Cylinder To Crankcase
M-10-3027	Cover, Exhaust Manifold
M-10-3028	Plate, Manifold Baffle
M-10-3029	Gasket, Manifold Cover To Plate
M-10-3030	Gasket, Cylinder Block To Manifold Plate
M-60-187	Screw, Manifold Cover
M-10-1047	Washer, Rubber "O" Ring Water Seal

CARBURETOR

M-20-1150	Carburetor Assembly (Tillotson - AJ29A) Complete
M-20-159	Lever Screw, Stop
M-20-128	Gasket, Main Adjustment Screw
M-20-127	Gland, Main Adjustment
M-20-125	Nut, Main Adjustment
M-20-126	Packing, Main Adjustment
M-20-1046	Lead Shot
M-20-1089	Gasket
M-20-108	Welch Plug
M-20-114	Cotter Spring, Float Retaining
M-20-1168	By Pass Adjusting Spring (Idle)
M-20-156	Spring, Throttle Return
M-20-1090	Plug, By Pass
M-20-1110	Screw, By Pass Adjusting (Idle)
M-20-157	Lever, Throttle Stop
M-20-151	Throttle Shaft
M-20-1006	Gasket, Float Bowl
M-20-1182	Throttle Shutter
M-20-1003	Float

CARBURETOR (Con't)

M-20-1178	Needle Valve Adj. Screw (Main Adjustment)
M-20-1092	Tube, By Pass
M-20-1093	Tube, By Pass Assembly
M-20-1061	Screw And Lockwasher - Float Bowl Cover
M-20-1062	Screw And Lock Washer, Throttle Shutter
M-20-1094	Cover, Float Bowl
M-20-1180	Body N.S.S.
M-20-1183	Inlet Needle And Seat Assy.
M-20-1096	Inlet Valve N.S.S.
M-20-1097	Inlet Valve Seat N.S.S.
M-20-1184	Body, Service
M-20-1181	Air Bleed Tube (Internal) N.S.S.
M-20-1099	Screw Plug
M-20-1100	Tube, Nozzle Outlet N.S.S.
M-20-1148	Gasket, Carburetor Flange
M-20-314	Washer, Carburetor Stud
M-20-203	Nut, Carburetor Stud
M-20-1011	Throttle Lever Assembly
M-20-1041	Throttle Lever N.S.S.
M-20-1042	Pin, Throttle Lever N.S.S.
M-60-126	Screw, Throttle Lever To Carb.
M-20-1078	Valve Assy., Fuel Shut-Off
M-20-1079	Valve Assembly N.S.S.
M-20-1080	Body N.S.S.
M-20-1082	Stem N.S.S.
M-20-1083	Washer, Packing Gland
M-20-1084	Packing Gland Nut
M-20-1085	Nut, Gland
M-20-1025	Knob N.S.S.
M-20-1026	Pin, Knob Retaining
M-20-2025	Choke Assembly
M-20-2026	Lever, Choke Assembly
M-20-2027	Lever, Choke N.S.S.
M-20-2015	Pin, Shoke Lever N.S.S.
M-20-2004	Stud, Choke Lever
M-20-307	Washer, Choke Lever Stud
M-20-2003	Pin, Shoke Lever Stud
M-20-2002	Rod, Choke
M-20-2017	Cotter Pin, Choke Rod Retaining
M-20-2028	Shutter, Choke
M-20-155	Screw, Choke Shutter
M-20-2029	Spring, Choke Shutter
M-20-2016	Knob, Shoke

FUEL TANK

M-20-3106	Fuel Tank Assembly
M-20-3107	Fuel Tank
M-20-3108	Filter, Assembly
M-20-350	Adapter Nut
M-20-3109	Filter Element
M-20-354	End Cap
M-20-352	Washer, Rubber
M-20-371	Gasket, Seal
M-60-210	Nut, Elastic
M-20-355	Stud
M-20-3191	Connector
M-20-3221	Protector Rim Assembly
M-20-3222	Protector Rim
M-20-3086	Fastener, Spring Unit
M-20-3090	Rivet
M-20-3113	Stud, Front - Rim To Brkt.
M-20-3114	Stud, Rear - Rim To Cyl. Cover
M-60-1038	Screw, Tank To Rim - Front Lugs
M-60-156	Screw, Tank To Rim - Center And Rear
M-60-319	Lockwasher, Tank To Rim Screw
M-10-1064	Bushing, Front Bracket To Rim
M-20-3072	Bushing, Cylinder Block Cover To Rim
M-10-3073	Washer, Fairoprene, Stop Nut To Bracket
M-60-337	Washer, (Steel) Stop Nut
M-60-214	Nut, Elastic Stop
M-20-3130	Fuel Line Assembly
M-20-3131	Fuel Line
M-10-322	Nut, Compression
M-10-323	Sleeve, Compression
M-20-3116	Fuel Tank Cap Assembly
M-20-3094	Gas Cap
M-20-317	Gasket, Vent Screw
M-20-3095	Vent Screw
M-20-3009	Spring, Vent Screw
M-20-3078	Washer, Vent Screw Spring Retaining
M-20-3008	Chain And Link
M-20-327	Washer, Chain Retainer
M-20-2017	Cotter Pin
M-20-316	Retainer
M-20-3225	Cowl Assembly
M-20-3224	Cowl
M-20-3119	Fastener, Spring Unit
M-20-3091	Rivet
M-20-3088	Stud
M-20-3087	Crosspin, Quick Fastener
M-20-3089	Stud
M-20-3020	Grommet, Choke Rod
M-20-3223	Serial Plate
M-20-146	Drive Screw

MAGNETO

M-30-2016	Magneto, (Complete) K2A-202
M-30-2020	Stator Plate Assembly
M-30-2021	Stator Plate
M-60-106	Screw And Lockwasher, H.T. Lead
M-30-209	Clamp, H T. Lead
M-30-2022	Lead, H.T. (Short)
M-30-2023	Lead, H.T. (Long)
M-30-2024	Spring, Stator Plate Tension
M-30-2025	Plate, Stator Plate Tension Spring
M-30-2026	Gasket
M-30-206	Insulator, H.T. Connection
M-30-2027	Cover
M-30-2028	Magnet, Rotating
M-30-2051	Condenser
M-60-105	Screw, Primary Connection To Stator Plate
M-30-2029	Screw, Tension Spring Plate
M-60-201	Nut, Primary Connection To Breaker Assembly
M-30-2031	Lockwasher
M-30-2032	Breaker Assembly
M-30-2033	Screw, Breaker Point Mounting
M-60-301	Washer
M-30-205	Clamp, Coil Core
M-30-2044	Coil
M-30-2034	Screw, Cover Fastening
M-30-2035	Washer, Cover, Fastening Screw
M-30-2047	Washer, Felt
M-30-2048	Ring, Lock
M-30-221	Key, Flywheel
M-30-2019	Flywheel
M-30-2018	Tensioning Assembly
M-30-225	Spring, Adapter Tension
M-30-224	Screw, Adapter Tension
M-30-226	Plug, Mag. Pilot Friction

STARTER

M-30-4106	Starter Assembly
M-30-4107	Starter Cover Assembly
M-30-4002	Cover
M-30-455	Pin, Spring Anchor
M-60-406	Pin, Sheave Shaft Retaining
M-30-484	Shaft, Sheave
M-30-4003	Screw, Sheave Shaft
M-30-4088	Washer, Wave-Sheave Shaft
M-30-4018	Shim, Sheave Shaft
M-30-456	Starter Sheave Assembly
M-30-457	Sheave
M-30-4028	Bearing, Sheave Hub
M-60-138	Screw, Sheave Reinforcing
M-30-459	Pin, Spring Anchor, Sheave End
M-30-460	Pin, Retainer
M-30-4006	Washer, Pawl Retainer Spacer
M-30-470	Collar, Sheave Shaft
M-30-471	Retainer, Pawl
M-30-472	Washer, Pawl Retainer Tension
M-30-4084	Starter Pawl Assembly
M-30-4085	Pawl
M-30-4086	Magnet, Pawl
M-30-4007	Starter Cable Assembly
M-30-4045	Cable
M-30-464	Anchor, Cable
M-30-465	Handle, Starter Cable
M-30-466	Bushing, Handle
M-30-436	Spring, Starter
M-30-467	Plate, Friction
M-60-164	Screw, Friction Plate To Cover
M-60-319	Washer, Friction Plate To Cover Screw
M-60-586	Auxiliary Handle
M-60-309	Lockwasher, Auxiliary Handle Screw
M-30-4109	Ratchet, Starter
M-30-4113	Spark Plug J6J
M-30-4102	Protector, Spark Plug
M-30-4053	Harness Clamp, Ignition
M-60-170	Screw
M-60-210	Nut, Elastic Stop
M-60-161	Screw, Starter Cover - Rear
M-60-178	Screw, Starter Cover - Front
M-30-4126	Handle Assembly, Throttle Control
M-30-4125	Handle, Throttle N.S.S.
M-30-4047	Pin, Spacer Cam N.S.S.
M-30-4048	Cam, Throttle N.S.S.
M-30-4011	Spacer, Throttle Cam
M-60-102	Screw, Throttle Handle To Magneto
M-60-159	Screw, Throttle Handle To Magneto
M-60-310	Washer, Throttle Handle Screw
M-30-4105	Knob, Throttle Handle
M-60-197	Screw, Throttle Handle Knob
M-60-302	Washer, Throttle Cam
M-30-423	Bushing, Mag. Wire
M-10-149	Shim, Mag. Stator Plate

DRIVE SHAFT HOUSING

M-40-1023	Drive Shft. Hsg. Assy.
M-40-1024	Hsg., Drive Shaft
M-40-1002	Bushing, Upper - Rubber Mtg.
M-40-1005	Bushing, Lower - Rubber Mtg.
M-40-1025	Pipe, Water Inlet
M-40-1008	Stud, Hsg. To Gearcase
M-60-205	Nut, Hsg. To Gearcase Stud
M-60-315	Washer, Tab
M-60-203	Nut, Driveshaft Housing To Powerhead
M-60-320	Washer, Hsg. To Powerhead Stud Nut
M-60-320	Washer, Hsg. To Powerhead Stud Nut
M-40-1026	Stud, Drive Shaft Hsg. To Powerhead
M-60-318	Washer, Tab - Gear case Stud - Long
M-60-207	Nut - Gearcase Stud - Long
M-10-3031	Seal - "O" Ring

CLAMP BRACKET

M-40-2224	Clamp Brkt. Assy.
M-40-2202	Clamp Brkt. - Starboard Half
M-40-2223	Clamp Brkt. Port Half
M-40-2203	Thumb Screw Assembly
M-40-2204	Thumb Screw (Rubber Covered)
M-40-220	Washer, Thumb Screw
M-40-2205	Stud, Clamp Brkt. to Swivel Brkt.
M-40-2206	Shim, Swivel Bracket
M-60-230	Nut, Clamp Brkt. To Swivel Bracket Bolt.
M-40-2225	Tilt Lock Pin Assembly
M-40-2209	Swivel Bracket Assembly
M-40-2210	Swivel Bracket
M-40-2081	Disc, Friction
M-40-2185	Clamp Plate Assembly
M-40-2008	Spring, Clamp Plate N.S.S.
M-40-2009	Rivet, Clamp Plate Spring N.S.S.
M-40-2081	Disc, Friction

SWIVEL BRACKET

M-60-156	Screw, Clamp Plate To Swivel Bracket
M-60-319	Lockwasher, Clamp Plate To Swivel Bracket Screw
M-60-157	Screw, Co-Pilot Adjusting
M-40-2088	Co-Pilot Disc Assembly
M-40-210	Spring, Co-Pilot To Drive Shaft Housing
M-40-2010	Pin, Swivel Brkt. To Drive Shaft Housing
M-40-2089	Bracket Assembly, Steering Handle
M-40-2017	Bracket, Steering Handle
M-40-203	Spring, Bracket
M-60-164	Screw, Bracket Spring
M-60-319	Lockwasher, Brkt. Spring Screw
M-40-2018	Rivet, Spring Release
M-40-207	Bolt, Steering Bracket To Handle
M-40-2015	Nut, Steering Bracket To Handle Bolt
M-60-156	Screw, Bracket To Co-Pilot Disc.
M-60-319	Lockwasher, Bracket To Co-Pilot Disc Screw
M-40-2074	Steering Handle And Screw Driver
M-40-2075	Steering Handle
M-40-2090	Screw Driver Handle Assembly
M-40-2077	Grip Assembly
M-40-2078	Blade, Screw Driver
M-40-2082	Groove Pin Type 3
M-40-2019	Shim, Swivel Bracket

LOWER UNIT

M-50-1069	Gear Housing Assembly-Complete
M-50-1070	Gear Housing Assembly
M-50-1002	Housing, Gear
M-50-1071	Bearing, Prop Shaft Roller
M-50-1004	Bearing, Drive Shaft Roller
M-50-1072	Drive Shaft Assembly
M-50-1073	Drive Shaft
M-50-1007	Bearing
M-50-1008	Pilot And Oil Seal Assembly
M-50-1009	Pilot
M-50-1010	Oil Seal
M-50-1011	Pinion Gear
M-50-1012	Washer, Pinion Gear Lock
M-50-1074	Screw, Pinion
M-50-1075	Propeller Shaft Assembly
M-50-1076	Shaft, Propeller
M-50-1077	Gear, Propeller
M-50-1016	Pin, Gear
M-50-1018	Washer, Thrust
M-60-405	Bearing
M-50-1051	Spacer, Shim (Optional)
M-50-1019	Ring, Snap
M-50-1020	Washer, Pump Housing Sealing

LOWER UNIT (Con't)

M-50-1050 Shim, (Optional) .002 .003 .005
M-50-1021 Shim, (Optional) .010
M-50-1013 Shim, (Optional) .003
M-50-1022 Shim, (Optional) .002
M-50-1023 Shim, (Optional) .003
M-50-1205 Pump Cartridge Assembly
M-50-1025 Pump Cartridge
M-50-1078 Oil Seal, Prop. Shaft
M-50-1026 Seal, Water Pump Housing
M-60-407 Impeller Drive Key
M-50-1079 Impeller, Water Pump
M-50-1080 Cover, Water Pump
M-50-1030 Seal, Water Tube
M-50-1031 Washer, Water Line
M-50-1032 Screw, Grease Filler Hole
M-50-1033 Washer, Filler Hole Screw
M-60-181 Screw, Gear Case Vent
M-60-326 Washer, Gear Case Vent Screw
M-50-1218 Dampener, Vibration
M-50-1081 Stud, Long - Drive Shaft Housing To Gearcase
M-50-1082 Plate, Thrust
M-50-1083 Plate, Intermediate
M-50-1084 Plate, Friction
M-50-1085 Propeller ($7\frac{1}{2}$ x 11)
M-50-1086 Washer, Tab
M-50-1113 Spring
M-50-1100 Shim
M-50-1088 Shim
M-50-1114 Washer, Spacer
M-50-1099 Nut, Propeller
M-50-1101 Plate, Intermediate (13)
M-50-1115 Plate, Friction (14)

NOTES:

NOTES

NOTES

1. MOTOR WILL NOT START: (proceed as follows to determine the cause).
   (a) Be sure that there is fuel in the tank.
   (b) See that the fuel shut-off valve and air vent on fuel tank cap are open.
   (c) Mixture may be too lean, (See FINAL ADJUSTMENTS).
   (d) Carburetor may be flooded. Close high speed needle valve and crank engine several times.
   (e) Romove high speed needle valve to be sure gasoline is getting to carburetor.
   (f) If not getting gasoline, check shut-off valve and clean filter.

2. MOTOR OVERHEATS AND STOPS:
   (a) May be caused by insufficient oil in gasoline. Be sure instructions under FUEL MIXTURE have been followed.
   (b) If above instructions have been followed, check water pump impeller and replace if necessary. When pump is operating properly a spray of water can be observed being discharged from exhaust relief holes at rear of drive shaft housing at high speed. At idle water will discharge from swivel pin opening at bottom of drive shaft housing below clamping assembly.

3. MOTOR DEVELOPS LOW COMPRESSION:
   (a) Check for loose spark plugs.
   (b) Check powerhead gaskets for leaks and if necessary replace.
   (c) Install new piston rings.

4. MOTOR MISSES:
   (a) Be sure fuel tank cap vent screw is open.
   (b) Check spark plugs, wiring and points.
   (c) Check coil and condenser.
   (d) Inspect cylinder block for cracks.

5. MOTOR WILL NOT START WHEN HOT:
   (a) Do not use choke excessively.
   (b) Check spark when coil is warm. A defective coil sometimes functions normally when cold.

6. MOTOR DOES NOT PRODUCE FULL POWER OUTPUT:
   (a) See that propeller is free of weeds.
   (b) Check spark plugs for fouling.
   (c) Check contact point gap.

7. LOWER UNIT DEVELOPS A NOISE:
   (a) Refill the lower unit with Kiekhaefer Aeromarine Special Outboard Gear Lubricant.
   (b) Tighten clamp bracket screws.

8. MOTOR SWIVELS TOO EASILY OR TOO HARD:
   (a) Adjust tension to suit.

STRICT COMPLIANCE WITH THE OPERATING INSTRUCTIONS CONTAINED IN THIS BOOK WILL INSURE EFFICIENT OPERATION AND LONG LIFE FOR YOUR MOTOR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