Mark 40

KIEKHAEFER

MERCURY

OWNERS GUIDE

operation · maintenance · repair

* BALL AND ROLLER BEARINGS THROUGHOUT

KIEKHAEFER CORPORATION
CEDARBURG, WISCONSIN, U.S.A.

Manufacturers of KIEKHAEFER MERCURY OUTBOARD MOTORS

In reply please address all correspondence to company . . . not to individual.

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 factory research and testing, in the largest and finest equipped laboratory for small, two-cycle engines, manufactured in the country.

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

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

PATRON MEMBER AMERICAN POWER BOAT ASSOCIATION

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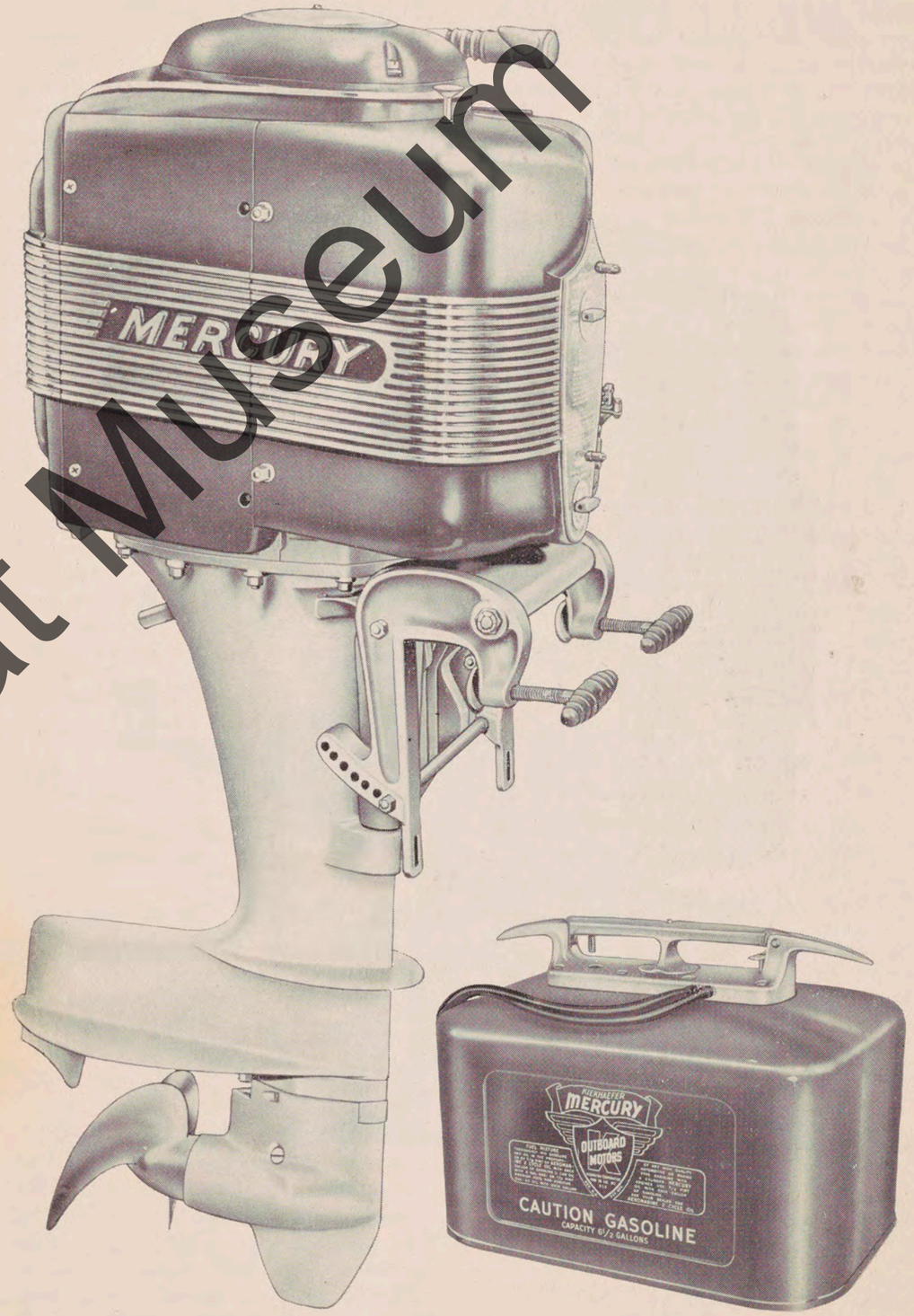
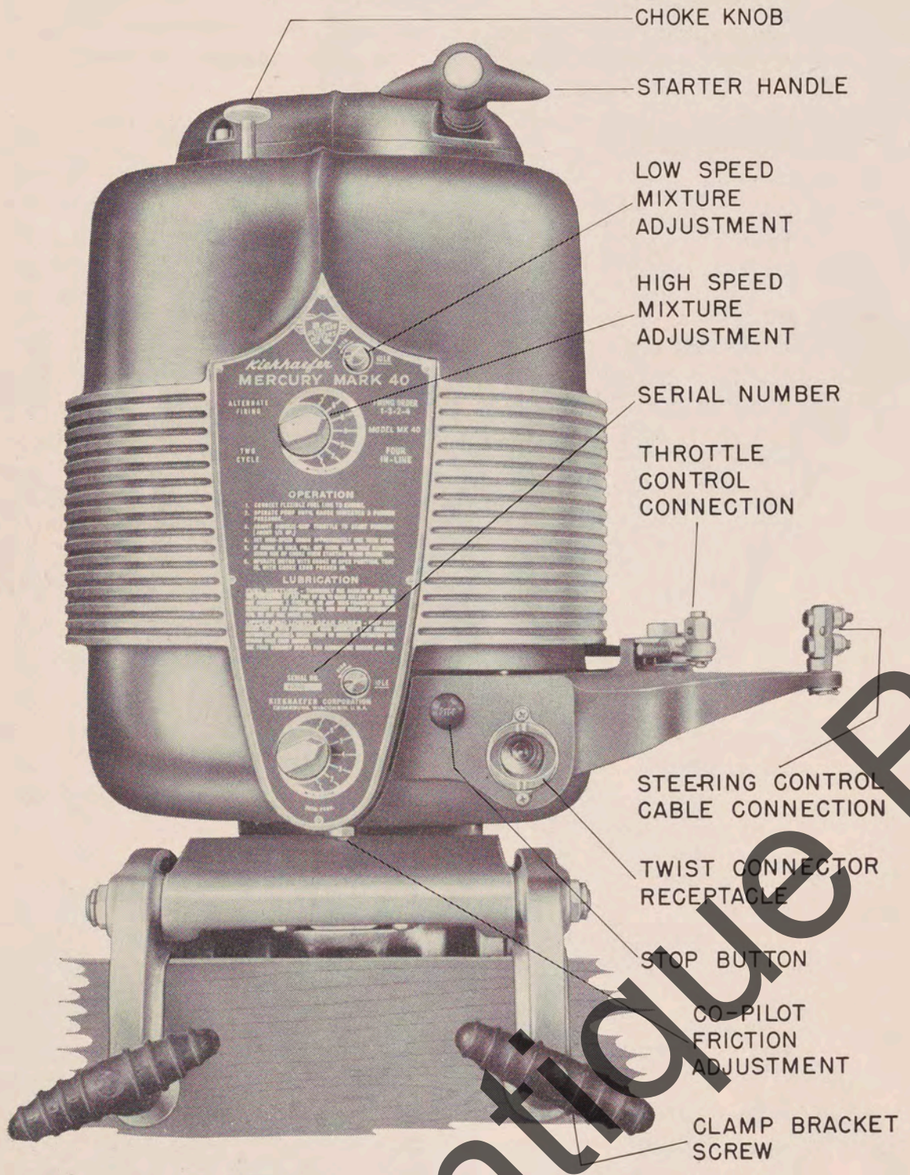




SECTION I—GENERAL INFORMATION

1-1. SERVICE RECOMMENDATIONS. This publication includes operating and service instructions applying to the Kiekhaefer Mercury Mark 40 Outboard Motor. In the preparation of this handbook, careful consideration was given to such adjusting and service operations as are usually required in normal service; also included are certain emergency repairs which should be done only in the case of extreme necessity, when Certified Mercury Service facilities are not immediately available. 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 dis-assembly 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. Serial number is stamped into instruction plate on front of cowl. 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 manufacturer or dealer in regard to service matters, always specify model and serial number.

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

1-4. CYLINDER NUMBERING AND FIRING ORDER. The Mark 40 Outboard Motor has a four-cylinder, alternate-firing engine. Cylinders fire at 90° intervals, giving four equally-spaced power impulses for each revolution of the crankshaft. Cylinders are numbered consecutively from top to bottom, top cylinder being number one. Firing order is 1-3-2-4.

1-5. SPECIFICATIONS

Bore	2-7/16"
Stroke	2-1/8"
Total Piston Displacement	39.6 Cu. In.
Weight	122 Pounds
Recommended Spark Plugs (Champion):	
Normal Utility Service	J6J
Sustained High Speed or Heavy Duty Service	K2 or K3
Recommended Spark Plug Electrode Gap	.025"
Recommended Magneto Contact Point Gap	.015"-.018"
Recommended Spark Advance:	
Normal Utility Service	.235" B.T.D.C.
Above 5500 R.P.M.	.255" B.T.D.C.
Rated Horsepower (Continuous Duty)	25 B.H.P. PLUS*

*More at higher R.P.M.

1-6. PROPELLERS. It is not possible to design a single propeller which will give optimum performance under all conditions of engine speed, boat speed and load. Propeller installed at factory has been found to give best average over-all performance on standard utility boats. Performance of faster, lighter boats or slower, heavier boats can often be improved by fitting propeller of pitch and diameter better suited to speed and load conditions. For propeller recommendations applying to your particular boat, consult your Mercury dealer.

1-7. FEDERAL REGULATIONS. Operation of boats equipped with outboard motors on navigable waterways within the continental limits

of the United States requires compliance with the "Rules and Regulations for Uninspected Vessels", the enforcement of which is under the jurisdiction of the United States Coast Guard. Under law, navigable waters are interpreted as those waters which are customarily used for interstate navigation, including the oceans within legal limits, gulf coasts, bays and rivers tributary to them, Great Lakes and connecting waterways and other specifically designated waters. Specific rules and regulations applying to your particularly locality can be ascertained by inquiry directed to the "Commandant, U. S. Coast Guard Headquarters, Washington 25, D.C.". The following requirements apply in general:

(a) Boat must be equipped with Coast Guard approved life preservers, life jackets or buoyant cushions in sufficient number to sustain every person aboard.

(b) If boat is more than 16 feet long, it must be equipped with a whistle or horn capable of producing intermittent blasts of 2 seconds or more duration and audible for at least one-half mile

(c) If boat is used to carry passengers for hire, it must be equipped with a fire extinguisher of at least 1 quart capacity.

(d) When operated between sunset and sunrise, boat must be equipped with a bright light aft (rear) visible around the horizon, plus a combined lantern showing green to starboard (right) and red to port (left) carried on fore (front) part of boat.

(e) If boat is more than 16 feet in length and is undocumented, it must be numbered. Numbers are assigned upon application and upon compliance with ownership requirements by the Commander of the Coast Guard District in which the boat is owned. Assigned number must be displayed on each bow.

1-8. WARRANTY INSTRUCTIONS. Manufacturer's Warranty Agreement appears on inside back cover of handbook. A warranty registration card accompanies each motor from the factory. Your dealer has been instructed to fill out this card and send the designated portion to the factory; he is also instructed to 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. Your letter should give 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 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 6-1). Ship to Certified Mercury Service Establishment or to: KIEKHAEFER CORPORATION, MERCURY PARTS DIVISION, BEAVER DAM, WISCONSIN, ATTENTION: SERVICE DEPARTMENT.

ALL SHIPPING CHARGES MUST BE PREPAID!

1-11. HOW TO USE THIS HANDBOOK. Information in this handbook is arranged in sections according to subject matter as follows:

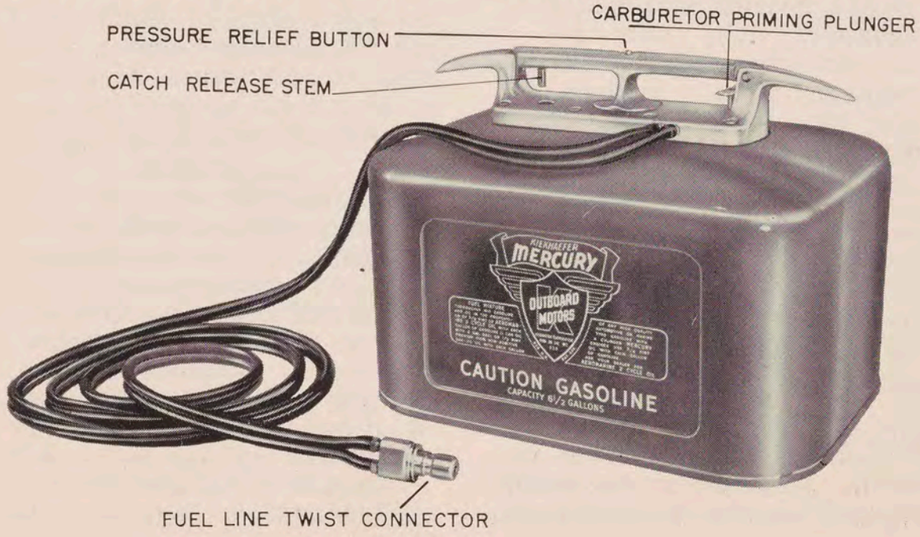
Section I—General Information
Section II—Installation
Section III—Fuel Mixture and Lubrication
Section IV—Operation
Section V—Preventive Maintenance
Section VI—Special Care Required
Section VII—Adjustments and Minor Repairs
Section VIII—Illustrated Parts List

SECTION II—INSTALLATION

2-1. CLAMP BRACKET. Installation of motor on transom should be given very careful attention. Clamp bracket must not only support weight of motor but is subject to thrust loads, shock loads and steering stresses. These forces are applied directly to transom through clamp bracket assembly. Therefore, to avoid damage to transom and to prevent motor from working loose during operation, it is important that clamp screws are securely and equally tightened. 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 accidentaly work loose during operation.

2-2. DETERMINING CORRECT TRANSOM HEIGHT. The Mark 40 is designed for a transom height of 16 inches. Due to wide variation in boat design, exact depth of lower unit in water will not be ideal in all cases. As a general rule, best performance is attained with lower unit set as shallow as possible, up to the point where propeller develops a tendency to cavitate easily, as explained under "Cavitation", paragraph 4-9. If a boat has a heavy or deep keel, resulting slipstream turbulence just ahead of propeller may increase tendency toward cavitation; this may require lower unit to be set deeper than normally. Keel turbulence can be reduced by tapering keel in both width and depth from a point about 20 inches forward of trailing edge. If transom is too low, too much of drive shaft housing will be submerged and the increased drag will have a noticeable effect in reducing speed. Also, running lower unit deeper than necessary increases danger of damage due to striking submerged obstacles.

2-3. TILT LOCK ADJUSTMENT. Holes are provided in clamp bracket ta permit changing location of tilt lock pin for proper adjustment of tilt angle. Under ideal conditions, efficiency is best with lower unit operating in level position, because entire thrust is then applied parallel to plane 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 4,9; it is therefore preferable to level boat by proper loading rather than by extreme adjustment of tilt angle. Except on very rough water, if tilt angle is correctly adjusted and boat is favorably loaded, a properly-designed boat will ride level and will plane without "spanking" or "bucking".

2-4. INSTALLING FUEL TANK. Set fuel tank in approximately correct position in bottom of boat. Connect fuel-air line to motor by inserting twist connector into receptacle in control bracket; lock by turning ¼ turn clockwise. Determine most favorable position of fuel tank, bearing in mind the importance of arranging fuel-air line in such a manner that it cannot become pinched, kinked, sharply bent or stretched during operation of motor. Check with motor in extreme left turn and right turn positions. Secure tank to bottom of boat; Mercury "Tank-Traps" are excellent for this purpose; these are simple, rugged thumb screw clamps which can be permanently installed in boat. 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 M-60-5235.

SECTION III—FUEL MIXTURE AND LUBRICATION

3-1. RECOMMENDED FUEL MIXTURE. Mix fuel in the exact proportion of 1 can (12 ounces) of Kiekhaefer Aeromarine Engine Oil to **each gallon** of gasoline. Use standard commercial automotive gasoline of not less than 72 octane rating. In an emergency, when Kiekhaefer Aeromarine Engine Oil is not available, substitute highest quality, non-detergent, S.A.E. 30 engine oil refined from 100% Pennsylvania crude.

CAUTION

In some areas, octane rating of regular grade gasoline may be sub-standard; also, some standard automotive fuels contain benzol (benzine) which may be harmful to parts fabricated wholly or partially from rubber, such as fuel lines, oil seals, diaphragms and gaskets. Refer to "Special Fuels", paragraph 3-4. Check with your dealer; he can make specific recommendations regarding types and brands of fuel in your locality best suited for outboard motor use.

3-2. 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. Do not mix fuel directly in tank; measure accurately the required amounts of oil and gasoline, pour oil into open-top container and add a small amount of gasoline (about the same amount as the oil). Mix thoroughly by shaking or stirring vigorously, then add balance of gasoline and mix again. Cleanliness is of prime importance in mixing fuel because even a very small particle of dirt can cause carburetion trouble.

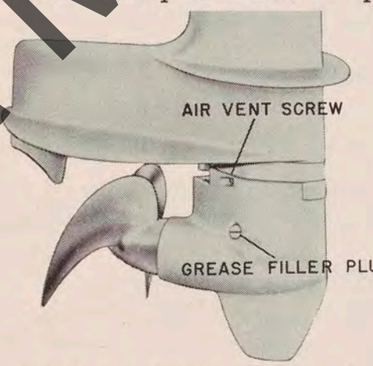
3-3. IMPORTANCE OF CONSISTENT FUEL MIXTURES. Carburetor adjustment is sensitive to fuel mixture variations resulting from use of different gasolines and oils or due to careless measuring or mixing. This may necessitate frequent re-adjustment of carburetors. Be consistent; prepare each batch of fuel exactly 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.

3-4. SPECIAL FUELS. The Mark 40 is engineered for maximum performance on standard commercial automotive gasoline and no advantage can be gained from the use of special fuels. Fuels containing alcohol, benzol (benzine) ether and chemical compounds will cause operational difficulties and may be harmful to certain parts, in particular flexible fuel and air lines, oil seals, diaphragms, gaskets and other parts fabricated partially or wholly from rubber. Aside from cost considerations, there is the advantage of knowing that standard commercial automotive gasoline is continually sold in sufficient quantities so that the supply is clean, fresh and free of water.

3-5. LOWER DRIVE UNIT LUBRICATION. Every 25 hours of operation, lubricate lower drive unit with Kiekhaefer Aeromarine Special Outboard Gear Lubricant as follows:



(1) Remove air vent screw (slotted round head screw near top of lower unit on starboard side).

(2) Remove filler plug (slotted plug directly below air vent screw).

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

(4) Replace filler plug and vent screw. Be sure fiber gasket is in place under head of each; otherwise water will seep past threads into gearcase. Tighten securely.

CAUTION

Never apply grease to lower unit without first removing air vent screw. The injected grease displaces air which must be allowed to escape; otherwise housing can not be completely filled as required.

Never use regular automotive grease in lower drive unit; in an emergency, when Kiekhaefer Aeromarine Special Outboard Gear Lubricant is not immediately available, use best quality waterproof marine gear lubricant.

3-6. CONTROL LINKAGE LUBRICATION. Occasionally apply a drop of S.A.E. 30 automotive engine oil to control linkage bearing points.

SECTION IV—OPERATION

4-1. FUEL SYSTEM. Operation of fuel system is shown schematically in Figure 1. Carburetors (3) are connected to fuel tank (17) through fuel filter (2), by fuel lines (1), (4) and (7). Fuel flow from tank to carburetors is induced by pressure transmitted from crankcase to air space above fuel line level via air line (12), running from pressurized valve (13) to twist connector (6) on cowl (5), thence via air line (8) to top of fuel tank. For starting, initial fuel flow to carburetors is induced by hand-operated priming pump (18). Disc filter (22) is incorporated in bottom of fuel pick-up tube (21). Fuel level is indicated by graduated sector (16) actuated by float (20) on arm (19). Pressure relief valve (11) in center of carrying handle permits relieving pressure when necessary. Check valve in twist connector (6) permits disconnecting fuel-air line without loss of tank pressure. Latch (14) releases hinged portion of carrying handle so it can be raised to uncover filler opening. Seal (9) prevents pressure leakage from filler opening during operation. Filler opening extension tube (10) prevents

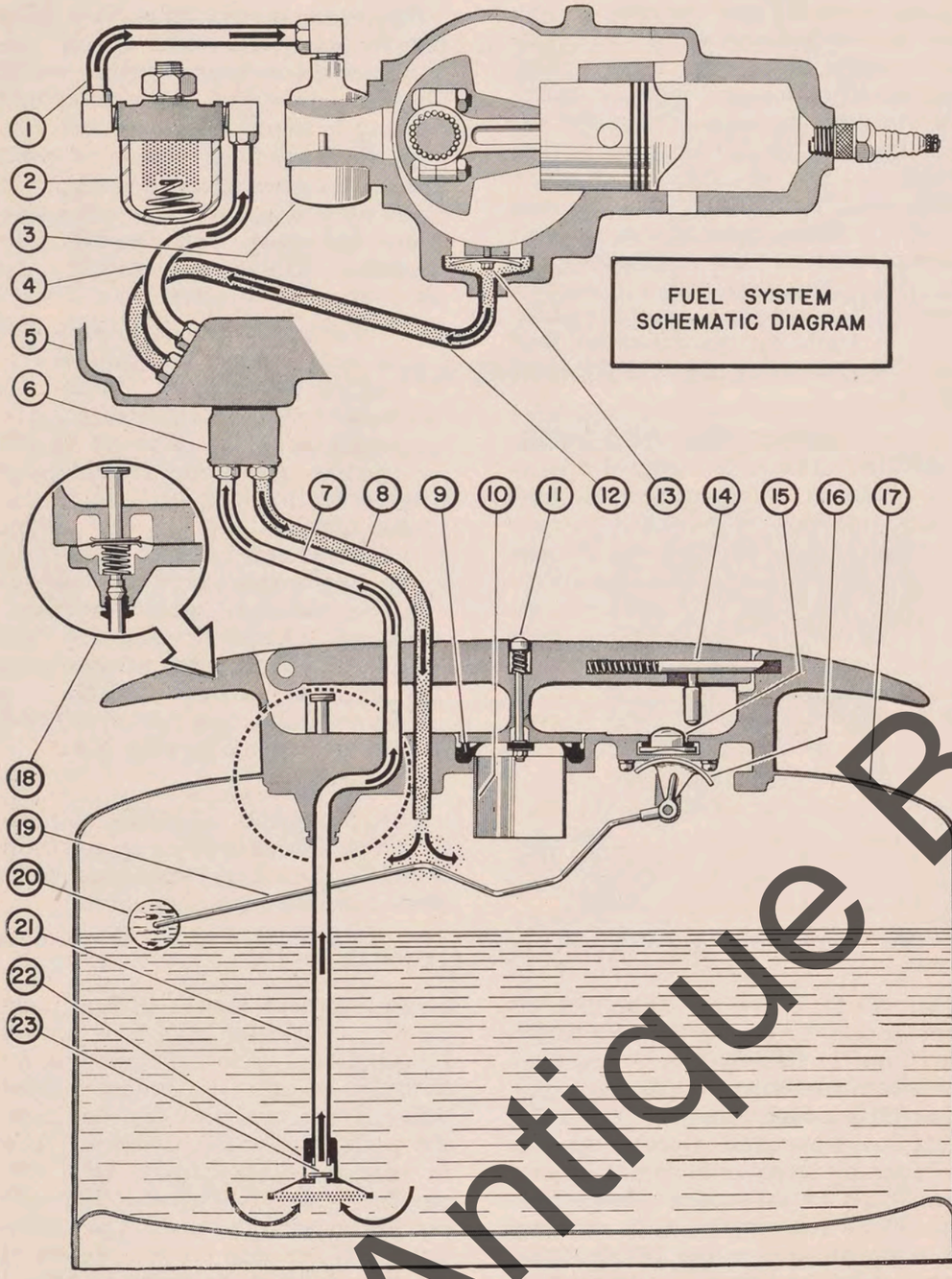


Figure 1

overfilling. Magnifying lens (15) is provided to make fuel gauge graduations more easily readable. Check valve (23) is essential to operation of the priming pump.

4-2. NEW MOTOR OPERATING RECOMMENDATIONS. Motor is ready for normal service when shipped from factory and does not require "breaking in". A little special consideration during the initial operating period will prevent possibility of damage. During first five hours of operation, avoid sustained high speeds. Do not use more than the recommended proportion of oil in the fuel mixture; too much oil can be harmful. Do not add so-called "break-in" compounds to the fuel mixture; these too can be harmful.

CAUTION

If engine suddenly should show signs of overheating or loss of power, check operation of water pump as instructed under paragraph 4-8.

4-3. STARTING PROCEDURE.

(1) Be sure fuel tank contains a sufficient amount of fuel mixture.

(2) Be sure fuel tank is properly secured in boat.

(3) Connect fuel air line to motor by inserting twist connector into receptacle on control bracket; lock by twisting $\frac{1}{4}$ turn clockwise.

(4) Prime carburetors by operating priming pump on fuel tank; apply finger pressure equally to both ears of priming pump handle. When carburetor bowls are filled to proper level, float valves will close; this will be indicated by increased resistance to operation of priming pump. Continued pumping thereafter may result in damage to pump diaphragm.

(5) If motor is cold, set choke in closed position (up). Avoid use of choke if motor is warm.

(6) With throttle about 1/3 open, operate starter. As soon as motor starts, move choke to open position (down). Operate cold motor at reduced speeds for a few minutes until it has reached normal operating temperature. During normal operation, always keep choke in open position.

NOTE

Starter is of 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. In the event of starter failure, motor can be started by means of auxiliary starter plate underneath starter assembly (See "Using Auxiliary Starter Plate", paragraph 7-11).

4-4. FLOODING. Flooding refers to an accumulation of excess fuel in the crankcase. It is usually due to excessive use of choke but it may also occur if motor is allowed to stand for a period of time without relieving tank pressure. When motor is in a flooded condition, an overrich fuel-air mixture is induced into the cylinders; this mixture does not ignite readily and sometimes fouls spark plugs. Proceed as follows:

(1) Disconnect fuel-air line from receptacle.

(2) Set choke in wide-open position (down).

(3) Set throttle in wide-open position.

(4) Operate starter until motor fires.

(5) If motor fails to start with above procedure, spark plugs may have become fouled by fuel deposited on electrodes; remove spark plugs, wash in clean gasoline, dry and re-install.

4-5. STOPPING. If motor is to remain installed on boat, ready for im-

mediate re-start, stop by merely depressing stop button on control bracket. If motor is to remain idle for a period of time or if motor is to be removed from boat, stop by disconnecting fuel-air line from motor and allowing motor to run at idling speed until it stops of its own accord, indicating that carburetors have run dry. Relieve tank pressure by depressing pressure relief button on fuel tank carrying handle.

4-6. REMOVING MOTOR FROM BOAT. Disconnect remote controls from motor. Disconnect fuel-air line. Loosen clamp bracket screws. Disconnect safety cable or safety chain if so equipped.

CAUTION

Keep motor in an upright position, resting on skeg, until all water has drained from drive shaft housing. If motor is placed on its side while water remains trapped in drive shaft housing, some water may drain into power head and enter cylinders through exhaust ports.

4-7. CAUTION FOR SHALLOW WATER OPERATION. When backing up in shallow water, bear in mind the danger of striking submerged obstacles; shock load of impact could cause transom breakage. Therefore it is recommended that propeller be tilted free of water when maneuvering in shallow water or in the vicinity of underwater obstacles which extend near the surface.

4-8. HOW TO DETERMINE WHETHER WATER PUMP IS OPERATING. Normal operation of water pump is indicated by "tell-tale" stream of water issuing from small hole in bottom edge of exhaust manifold cover. If at any time during operation this stream is not evident, stop motor immediately and check hole with a piece of wire to be sure it is not clogged; if it is not clogged, avoid further operation until water pump and cooling system have been checked for defect. Operation of motor with defective water pump or with obstruction in cooling system will cause severe damage due to overheating. Motor should be referred to Certified Mercury Service facilities for inspection and necessary repair.

4-9. CAVITATION. Cavitation is indicated by intermittent or continued overspeed of engine, accompanied by violent water agitation and a sharp reduction in boat speed. Cavitation occurs when 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. As a result, engine races violently and very little forward thrust is developed. A particular boat may operate without cavitation in fairly smooth water and in normal turns but may cavitate occasionally in very rough water or when banking sharply in tight turns. If objectionable, this condition can usually be minimized by operating lower unit deeper in water, with a possible sacrifice in top speed performance. 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.

NOTE

Failure of shear pin is sometimes mistaken for cavitation. See "Replacing Shear Pin", paragraph 7-12.

4-10. 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-Air Line Not Connected	Para. 2-4
x	x	x			x	x	x	Fuel-Air Line Pinched or Kinked	Para. 2-4
	x				x	x	x	Fuel Filter In Need of Cleaning	Para. 7-8, 7-9
x	x	x			x	x	x	Air Leak In Pressurizing System	Para. 4-1
x			x					Low Speed Needle Valves Mis-Adjusted	Para. 7-7
	x				x	x	x	High Speed Needle Valves Mis-Adjusted	Para. 7-6
						x	x	Wrong Oil In Fuel Mixture	Para. 3-1
	x				x	x	x	Wrong Gasoline In Fuel Mixture	Para. 3-1
					x	x	x	Not Enough Oil In Fuel Mixture	Para. 3-1
	x		x		x	x	x	Too Much Oil In Fuel Mixture	Para. 3-1
x								Engine Flooded	Para. 4-4
x	x		x		x	x	x	Spark Plugs Fouled or Defective	Para. 7-10
	x		x		x	x	x	Wrong Type Spark Plugs	Para. 7-10
x								No Spark	Para. 7-10
x	x	x	x		x	x	x	Weak Spark or Intermittent Spark	Para. 7-10
x	x	x	x		x	x	x	Magneto Contact Points Need Attention	Para. 5-2
x	x				x	x		Spark Plug Leads Interchanged	See Note*
					x	x	x	Water Pump Failure	Para. 4-8
					x	x	x	Cooling System Clogged	Para. 6-2
				x		x		Cavitation	Para. 4-9
				x		x		Propeller Damaged	Para. 5-2
				x		x		Tilt Angle Not Correctly Adjusted	Para. 2-3
				x	x	x		Boat Improperly Loaded	Para. 2-3
						x		Transom Too Low	Para. 2-2
				x		x		Transom Too High	Para. 2-2
	x				x	x	x	Excessive Spark Advance	Para. 1-5
					x	x		Insufficient Spark Advance	Para. 1-5
				x	x	x		Propeller of Wrong Pitch or Diameter	Para. 1-6
				x		x		Broken Shearpin	Para. 7-12

* Connect in same sequence as arranged on cylinder block; top lead goes to number one cylinder; bottom lead goes to number four cylinder.

SECTION V—PREVENTIVE MAINTENANCE

5-1. PRE-USE INSPECTION. Immediately before each period of operation, check motor and installation as follows:

(1) Check clamp brackets to be sure motor is firmly seated on transom and clamp screws are equally and securely tightened. Check safety cable or chain if so equipped.

(2) Check fuel supply; be sure tank is properly secured in boat.

(3) Be sure tilt lock pin is in place and tilt angle is correct.

(4) Check fuel-air line connections at motor and at fuel tank. Be sure line is not kinked, pinched, sharply bent or stretched; check in full left turn and right turn positions.

(5) Check controls; be sure all connections and fittings are in good condition, properly secured and correctly adjusted.

5-2. 25-HOUR INSPECTION. Periodic, systematic inspection is the most simple and positive way of discovering and correcting defects before they can cause inconvenience or mechanical damage. The following procedure, if carried out regularly, will add many hours of trouble-free service to the life of your motor. 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.

(1) Remove cowling.

(2) Clean entire unit thoroughly, including all accessible power head parts.

(3) Lubricate lower drive unit as instructed under paragraph 3-5.

(4) Lubricate control linkage as instructed under paragraph 3-6.

(5) 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 propeller, lubricate propeller shaft with graphite grease or with "Lubriplate No. 130A".

(6) Service spark plugs as instructed under paragraph 7-10.

(7) Inspect spark plug leads for damage or deterioration, particularly where insulation comes in contact with metal parts. Be sure to re-connect each lead to its respective spark plug.

(8) Inspect fuel and air lines for damage, or deterioration. Check connections on tank and on twist connector, bearing in mind the importance of an air-tight pressurizing system.

(9) Inspect finish for damage or corrosion; thoroughly clean damaged or corroded areas and apply matching finish.

(10) Check entire unit for loose, damaged or missing parts; tighten or replace as required.

(11) Install cowling.

(12) Check entire fuel tank and its fittings for loose, damaged or missing parts; tighten or replace as required. Be sure all screws are tight. Check for evidence of leakage as indicated by fuel accumulation around fuel gauge lens, carrying handle fastening screws, pressure relief valve button, priming pump stem and filler opening seal ring. Leakage around priming pump stem may indicate a defective priming pump diaphragm.

(13) Every 100 hours of operation or whenever performance indicates that this attention is needed, service fuel filter as instructed under paragraph 7-8.

(14) Check controls; be sure all connections and fittings are in good condition, properly secured and correctly adjusted. Re-adjust co-pilot tension if necessary (See paragraph 7-2).

(15) Remove starter assembly and check condition of starter cable; if replacement is required, refer starter assembly to Certified Mercury Service facilities; while starter assembly is off, motor can be started by means of auxiliary starter plate (See paragraph 7-11).

NOTE

Magneto contact points should not be disturbed as long as engine is operating satisfactorily; servicing of magneto contact points should be done by Certified Mercury Service facilities. If points are cleaned and adjusted at time of inter-season checkover, they will normally require no further attention for at least 100 hours of operation.

SECTION VI—SPECIAL CARE REQUIRED

6-1. PREPARATION FOR STORAGE OR SHIPMENT. In preparing motor for storage or shipment, two precautions must be taken into consideration: First, the unit must be protected against physical damage; second, 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 new container must be made, it should be so constructed that weight of unit is supported by clamp bracket. Also, suitable blocking and bracing should be provided to hold motor securely in place regardless of position in which container might be set. Opening should be sealed against entry of dirt, but air vent should be provided to prevent moisture accumulation due to condensation. Before placing motor in 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. Disconnect fuel-air line from 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) Service fuel filters as instructed in paragraph 7-8 and 7-9.

(4) Flush cooling system as instructed under paragraph 6-2.

(5) Lubricate lower drive unit as instructed under paragraph 3-5.

(6) Lubricate control linkage as instructed under paragraph 3-6.

(7) Remove cowling.

(8) Remove spark plugs.

(9) Rotate crankshaft to position where number one (top) piston is at bottom dead center position; this can be determined by inserting a pencil or stick into spark plug hole. Apply about 2 ounces of Kiekhaefer Aeromarine Engine Oil into spark plug hole of number one cylinder, allowing time for some of the oil to drain into crankcase via transfer ports. Repeat this operation on number two, three and four cylinders, then install spark plugs and operate starter vigorously to distribute oil around inside of crankcase and cylinders.

10) Again remove spark plugs, clean and re-install.

(11) Connect spark plug cables; be sure each cable is connected to its respective spark plug.

(13) Clean motor thoroughly, including all accessible power head parts. Install cowling and apply a thin film of clean, fresh engine oil to all painted surfaces.

(13) Remove propeller, apply graphite grease or "Lubriplate No.

130A" to propeller shaft and re-install propeller.

6-2. ATTENTION REQUIRED FOLLOWING OPERATION IN SALT WATER OR SILT. Operation in salt water or silt results in the accumulation of salt deposits or mineral deposits in cooling system water passages and around cylinder water jackets. Unless removed regularly, these deposits will build up to the extent that circulation of cooling water becomes restricted or cut off entirely; also, the deposits act as heat insulators which reduce transfer of heat from cylinders to cooling water. This condition will cause overheating, loss of performance and perhaps serious engine damage. After operation in salt water or silt, flush cooling system by operating motor in a barrel or tank of fresh, clean water or by applying special flushing attachment (Kiekhaefer Accessory Number M-60-5131) which permits forcing fresh tap water through cooling system with a standard garden hose. While flushing, operate starter to facilitate flow of water through pump.

CAUTION

It is recommended that spark plug leads be disconnected before operating starter so motor will not be started accidentally.

After flushing, keep motor in an upright position, resting on skeg, until all water has drained from drive shaft housing. If motor is placed on its side while flushing or while water remains trapped in drive shaft housing, some water may drain into power head and enter cylinders through exhaust port holes.

Occasionally, remove propeller and apply graphite grease or "Lubriplate No 130A" to propeller shaft splines; this will retard corrosive action of salt on propeller hub and propeller shaft.

6-3. 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 12 under paragraph 6-1; this will temporarily retard rust and corrosion. Basically, the points to remember are these:

(1) Recover motor as quickly as possible.

(2) Flush entire motor with fresh, clean water to remove salt, mud, silt, weeds, etc.

(3) Get as much water as possible out of power head. 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 as alcohol will dissolve water, 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.

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

SECTION VII—ADJUSTMENTS AND MINOR REPAIRS

7-1. REMOVING COWLING. Remove choke knob by unscrewing it from end of choke rod (right hand thread). Cowl is secured by four stud nuts, two on each side; with these nuts loosened, cowl can be pulled forward off of studs. Be careful not to bend carburetor adjusting screw stems.

7-2. ADJUSTING CO-PILOT. Co-pilot provides velvet-smooth friction control in steering mechanism. Recommended adjustment is such that motor will remain in a fixed-course position without need of manual control, yet will not be too tight to allow free and easy steering. Adjustment is attained by means of hexagon head screw in top face of swivel bracket. Turn screw clockwise to increase friction, counterclockwise to decrease friction.

7-3. ADJUSTING CARBURETORS. Before attempting to correct faulty engine performance by re-adjusting carburetors, check for other possible causes of trouble as outlined in "Trouble Chart", paragraph 4-10.

7-4. ADJUSTMENTS PROVIDED. Each carburetor is provided with two adjustments, namely, the high speed mixture adjusting needle (with pointer knob) and the low speed mixture adjusting needle (with knurled knob). High speed mixture adjusting needle turns clockwise for leaner mixture, counter-clockwise for richer mixture. Low speed mixture adjusting needle turns clockwise for richer mixture, counter-clockwise for leaned mixture.

7-5. APPROXIMATE INITIAL SETTING. If carburetors are so badly out of adjustment that motor can not be started, an approximate initial setting can be attained as follows: Turn high speed mixture adjusting needle and low speed mixture adjusting needle inward (clockwise) until they seat **lightly;** do not turn tight because doing so will damage needle and seat. Back high speed needle out one full turn and low speed needle one-half 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".

NOTE

In making final adjustment of carburetors, bear in mind that top two cylinders (1 and 2) are fed by top carburetor and bottom two cylinders (3 and 4) are fed by bottom carburator. Therefore, adjustments on each carburetor will affect mixture to corresponding cylinders only.

7-6. HIGH SPEED MIXTURE ADJUSTMENT. 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 counter-clockwise until corresponding bank of cylinders start to "four cycle" and motor starts 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 **exactly 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 each 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 carburetors. Inability of engine to "four cycle" may also be due to reduced rate of fuel flow to carburetors due to air leakage in pressurizing system Operation of engine under condition of reduced fuel flow may cause damage due to lean fuel-air mixture and resultant overheating.

7-7. LOW SPEED MIXTURE ADJUSTMENT. With motor running at idling speed, turn low speed mixture adjusting needle clockwise until affected cylinders start to "load up" or fire unevenly due to over-rich mixture; then slowly turn needle counter-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 mixture set slightly rich rather than too lean.

7-8. SERVICING FUEL TANK FILTER.

(1) Remove handle assembly from fuel tank. This requires removing the 8 screws and sealing washers which secure handle assembly to tank.

(2) Loosen coupling nut on fuel pick-up tube to free filter head.

(3) Filter disc is porous metal which can be cleaned by rinsing in clean benzol (benzine).

(4) Install filter head on fuel pick-up tube. Start coupling threads one or two turns with fingers to avoid danger of cross threading. Do not tighten more than necessary to attain a fuel-tight seal.

(5) When re-installing handle assembly, bear in mind the importance of maintaining air-tight joints in the pressurizing system; be sure gasket is in good condition; also note condition of sealing washers which must be assembled under heads of the 8 handle fastening screws. Note that, in order to clear screws which secure retaining frame (inside tank), handle assembly must be installed with fuel-air line connection fittings toward decal side of tank.

7-9. SERVICING ENGINE FUEL FILTER.

(1) Remove filter bowl by loosening thumb nut on bale assembly; be careful of filter element retaining spring and filter element.

(2) Wipe out bowl with clean rag.

(3) Filter element is porous metal which can be cleaned by rinsing in clean benzol (benzine).

(4) Install filter element to filter top; hollow portion of filter element must be against gasket. Cork gasket should be in place so that four holes of gasket and filter top line up.

(5) Mount filter element retaining spring in bowl with small end of spring up.

(6) Place filter bowl to filter top so that small end of spring is centered in filter element depression.

(7) Bring bale assembly underneath to center of filter bowl and tighten finger tight.

7-10. 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 spark plugs are in need of attention (See Trouble Chart", 4-10) service as follows:

(1) Remove spark plug cover, secured by two screws at rear.

(2) Disconnect spark plug leads.

(3) Remove spark plugs, clean and inspect. If tip of insulator is rough, cracked, broken or blistered or if 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 of the following types:

Normal Utility Service—
Champion J6J.

Sustained High Speed or Heavy Duty Service —
Champion K2 or K3.

(4) Install spark plugs. Be sure gaskets are in good condition. Start threads one or two turns with fingers to avoid danger of cross-threading. Do not tighten more than necessary to attain a gas-tight seal.

(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 mis-firing due to intermittent shorting of high tension circuit.

7-11. USING AUXILIARY STARTER PLATE. In an emergency, when rewind starter becomes inoperative, motor can be started by means of a rope applied to auxiliary starter plate located underneath starter assembly. Starter assembly is secured to top of motor by three screws and washers; with these removed, starter assembly is free.

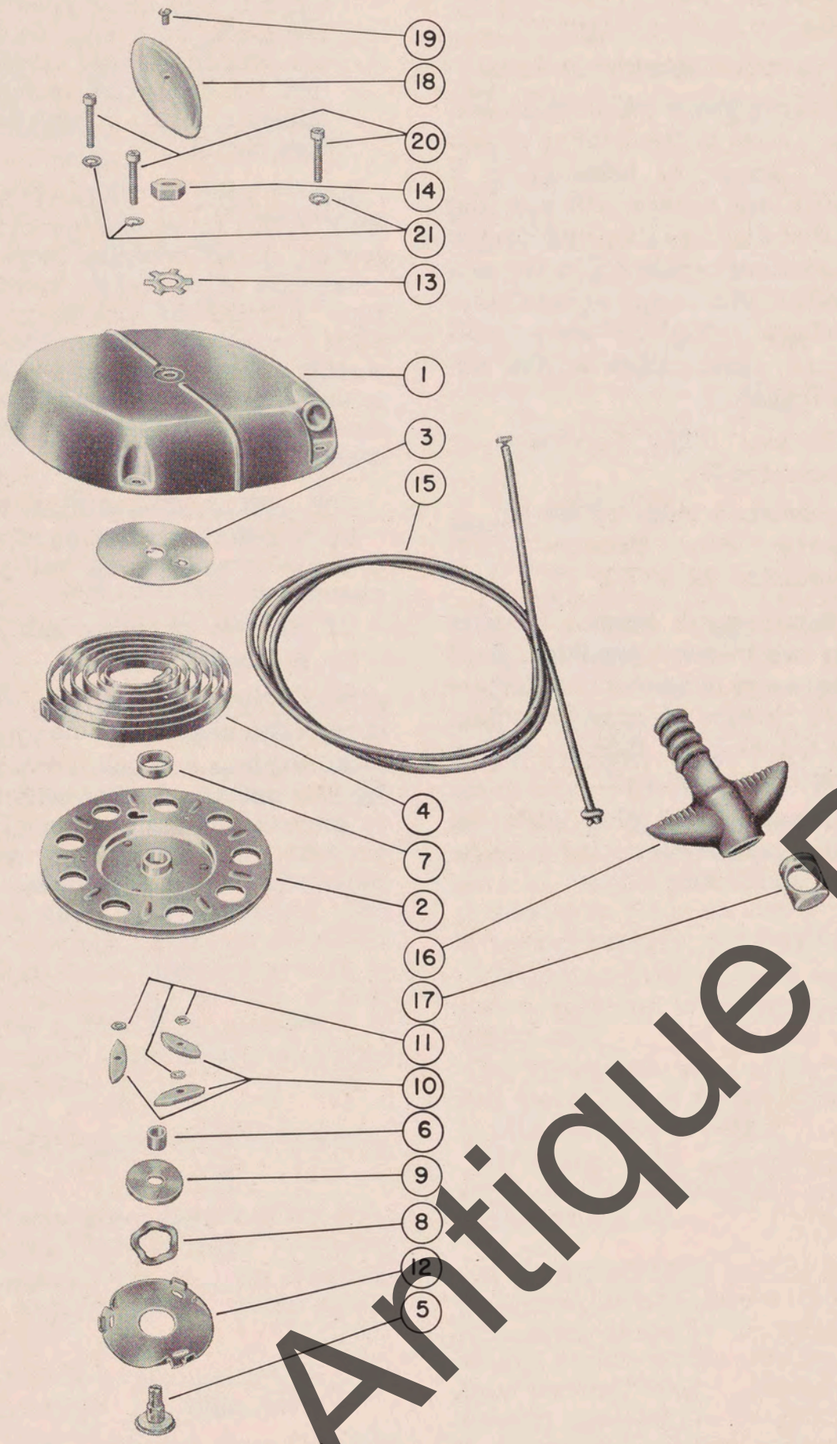
7-12. REPLACING SHEAR PIN. Upon shearing pin, immediate use of choke to stop engine will prevent overreving.

(1) Remove propeller hub nut.

(2) Remove hub collar.

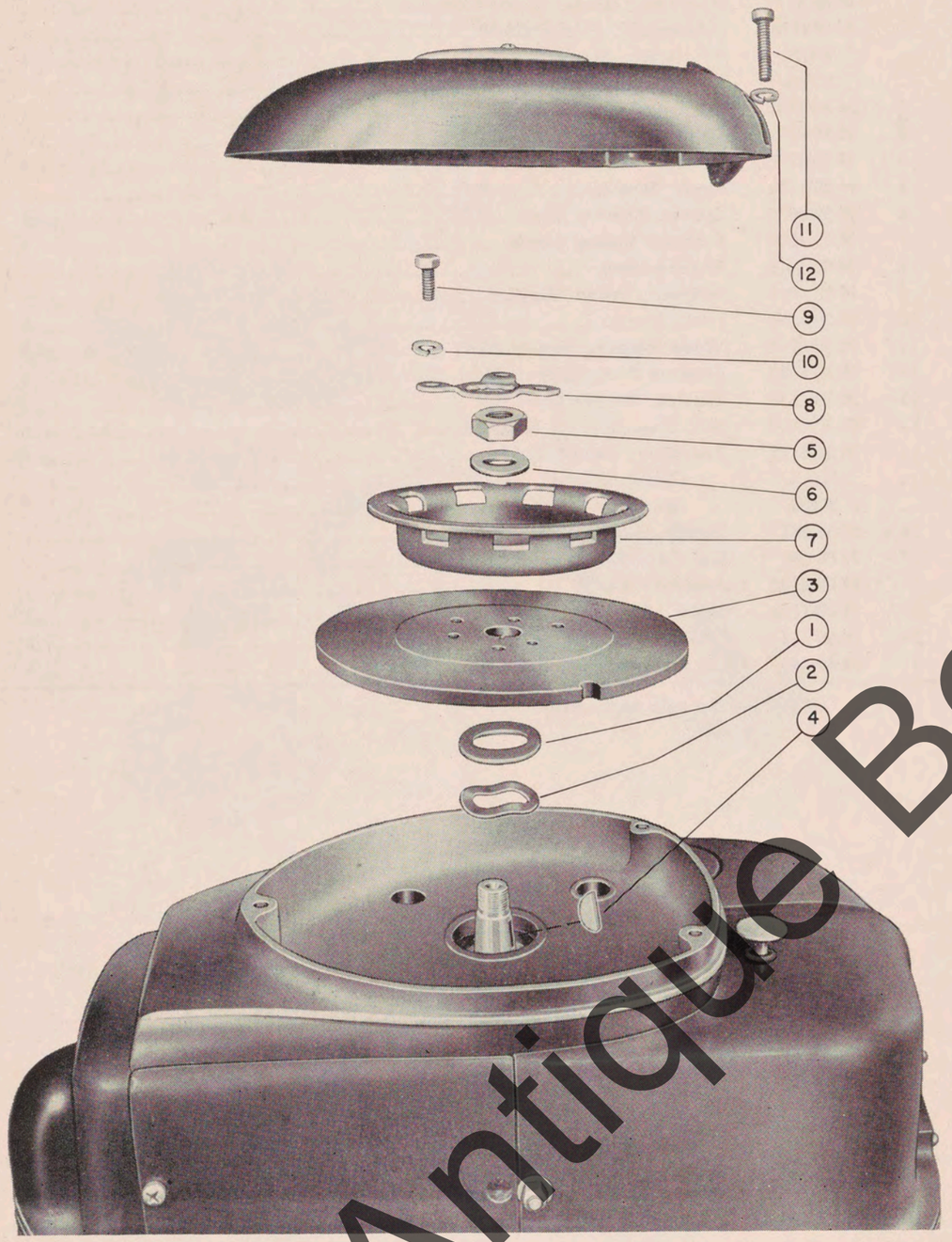
(3) Replace shear pin. Always carry extra shear pins along.

(4) Replace hub collar and propeller hub nut; start nut on with fingers to prevent cross threading. Tighten propeller nut securely to approximately 12 to 15 foot pounds.

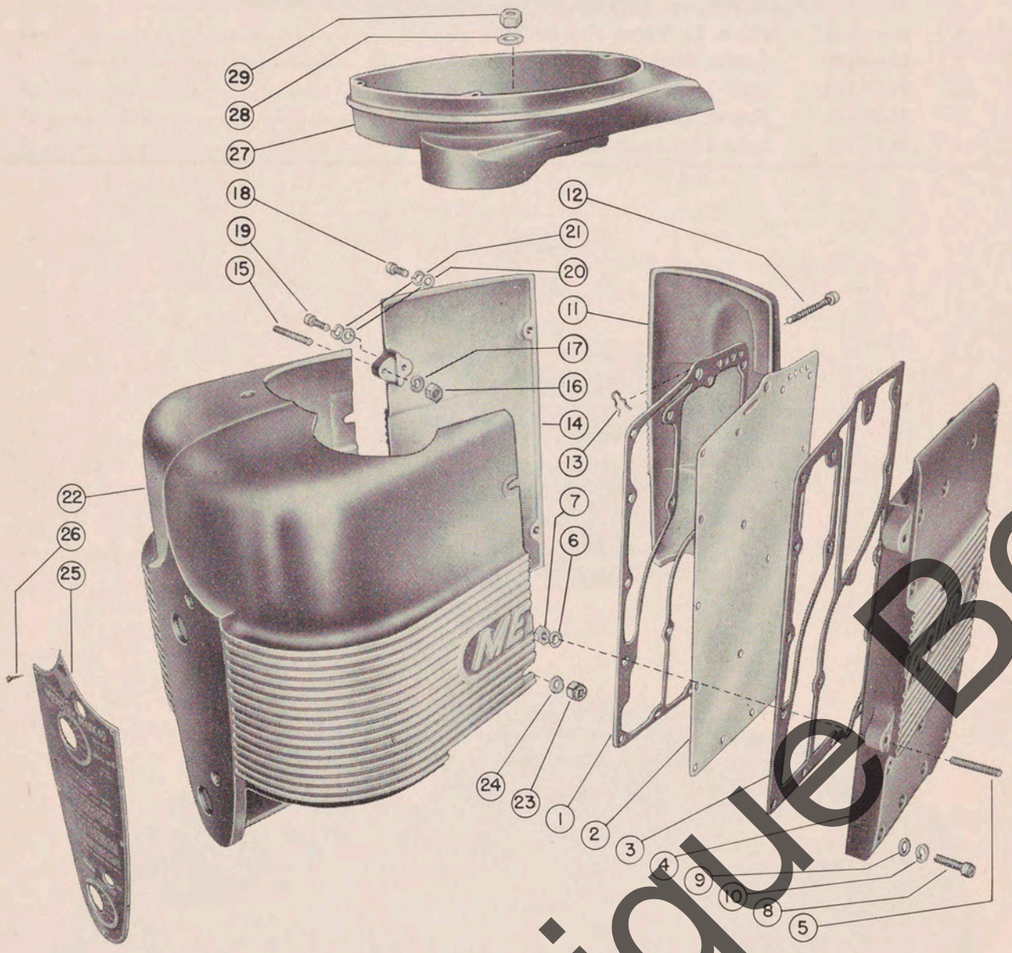


REF. NO.	STOCK NO.	NAME	QUANTITY
--	M-30-4177	Assembly, Starter Cover Complete	1
1	M-304178	Assembly, Starter Cover	1
--	N.S.S.	Cover, Starter	1
--	N.S.S.	Guide, Cable	1
2	M-30-4069	Sheave Assembly	1
3	M-30-4075	Retainer, Spring	1
4	M-30-4076	Spring, Rewind	1
5	M-30-4151	Shaft, Sheave	1
6	M-30-4090	Spacer, Sheave Shaft	1
7	M-30-4092	Bushing, Spring Guide	1
8	M-30-4079	Wavewasher	1
9	M-30-4080	Retainer, Wave Washer	1
10	M-30-4081	Pawl, Starter	3
11	M-30-4091	Wave Washer, Starter Pawl	3
12	M-30-4082	Retainer Plate, Starter Pawl	1
13	M-30-4116	Washer, Sheave Shaft Nut	1
14	M-30-4087	Nut, Sheave Shaft (L.H. Thread)	1
15	M-30-4122	Assembly, Starter Cable	1
--	N.S.S.	Cable, Starter	1
--	N.S.S.	Anchor, Cable	1
16	M-30-465	Handle, Starter Cable	1
17	M-30-466	End Cap, Cable	1
18	M-30-4145	Auxiliary Cover	1
19	M-30-1008	Screw, Auxiliary Cover	1
20	M-60-114	Screw, Starter Cover To Timing Case	3
21	M-60-348	Split Lock Washer, Starter Cover Screw	3

N.S.S. — Not sold separately

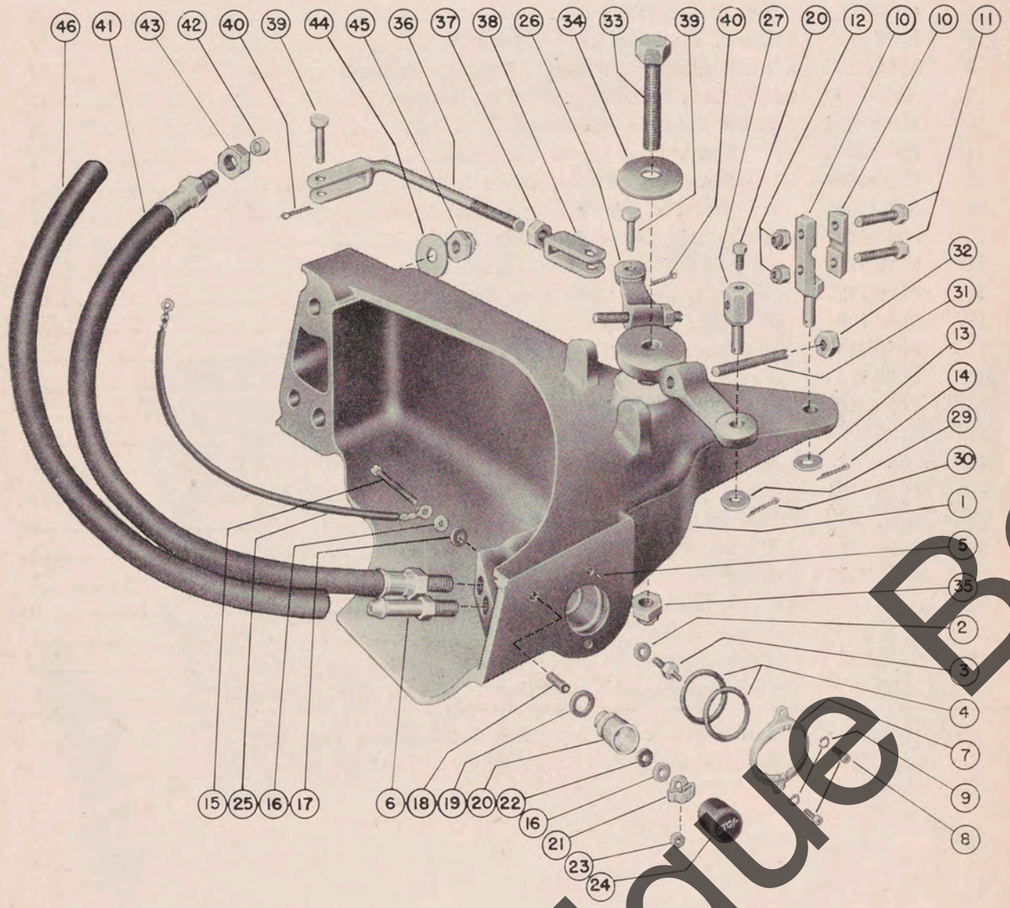


REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-60-370	Washer, Flywheel	1
2	M-60-371	Wave Washer, (timing pulley end play)	1
3	M-10-1271	Flywheel	1
4	M-10-1177	Key, Flywheel Drive	1
5	M-60-236	Nut, Flywheel	1
6	M-60-372	Washer, Flywheel Nut	1
7	M-30-4130	Auxiliary Starter Plate	1
8	M-10-1346	Plate, Flywheel Nut Locking	1
9	M-60-1010	Screw, Locking Plate	3
10	M-60-319	Split Lockwasher, Locking Plate Screw	3
11	M-60-114	Screw, Starter Cover to Timing Case	3
12	M-60-348	Split Lockwasher, Starter Cover Screw	3



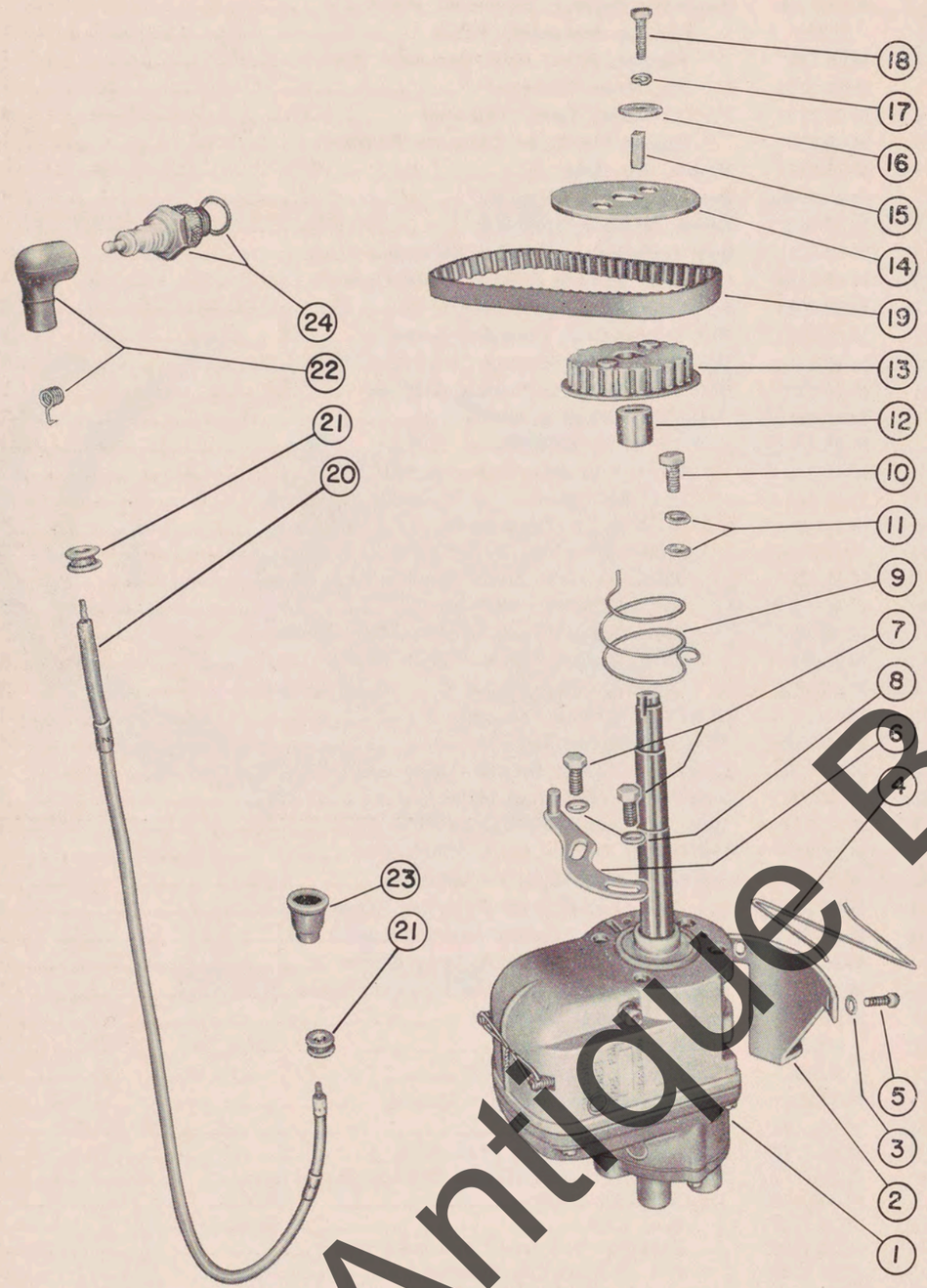
REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-10-3148	Gasket, Cylinder Block to Manifold Plate	1
2	M-10-3098	Plate, Exhaust Manifold	1
3	M-10-3149	Gasket, Manifold Plate to Cover	1
--	M-10-3150	Exhaust Manifold Cover Assembly	1
4	N.S.S.	Cover, Exhaust Manifold	1
5	M-10-1203	Stud, Front Cowl Mounting	2
6	M-60-319	Split Lockwasher, Stud Locking Nut	2
7	M-60-202	Nut, Stud Locking	2
8	M-60-114	x Screw, Manifold Cover Mounting	17
9	M-60-320	x Washer, Manifold Cover Mounting Screw	17
10	M-60-348	x Split Lockwasher, Manifold Cover Screw	17
--	M-10-3091	Spark Plug Cover Assembly	1
11	M-10-3092	Spark Plug Cover	1
12	M-60-1067	Screw, Spark Plug Cover Mounting	2
13	M-10-3093	Hair Pin, Spark Plug Cover Screw	2
--	M-10-1347	Intake Side Cover Assembly	1
14	M-10-3134	Cover, Intake Side	1
15	M-10-1203	Stud, Front Cowl Mounting	2
16	M-60-202	Nut, Stud Locking	2
17	M-60-319	Split Lockwasher, Stud Nut	2
18	M-60-114	Screw, Intake Side Cover Mounting (rear)	2
19	M-60-116	Screw, Intake Side Cover Mounting (front)	2
20	M-60-320	Washer, Intake Side Cover Screw	4
21	M-60-348	Split Lockwasher, Intake Side Cover Screw	4
22	M-10-3151	Cowl, Front	1
23	M-60-208	Nut, Front Cowl Mounting	4
24	M-60-337	Washer, Front Cowl Mounting Nut	4
25	M-20-3410	Name Plate	1
26	M-60-146	Drive Screw, Name Plate	6
27	M-30-697	Cover, Timing Case	1
28	M-60-332	Washer, Timing Case Mounting Nut	3
29	M-60-205	Nut, Timing Case Mounting	3

x — Part of M-10-3147 Cyl. Block & Crankcase Assembly.
N.S.S. — Not sold separately



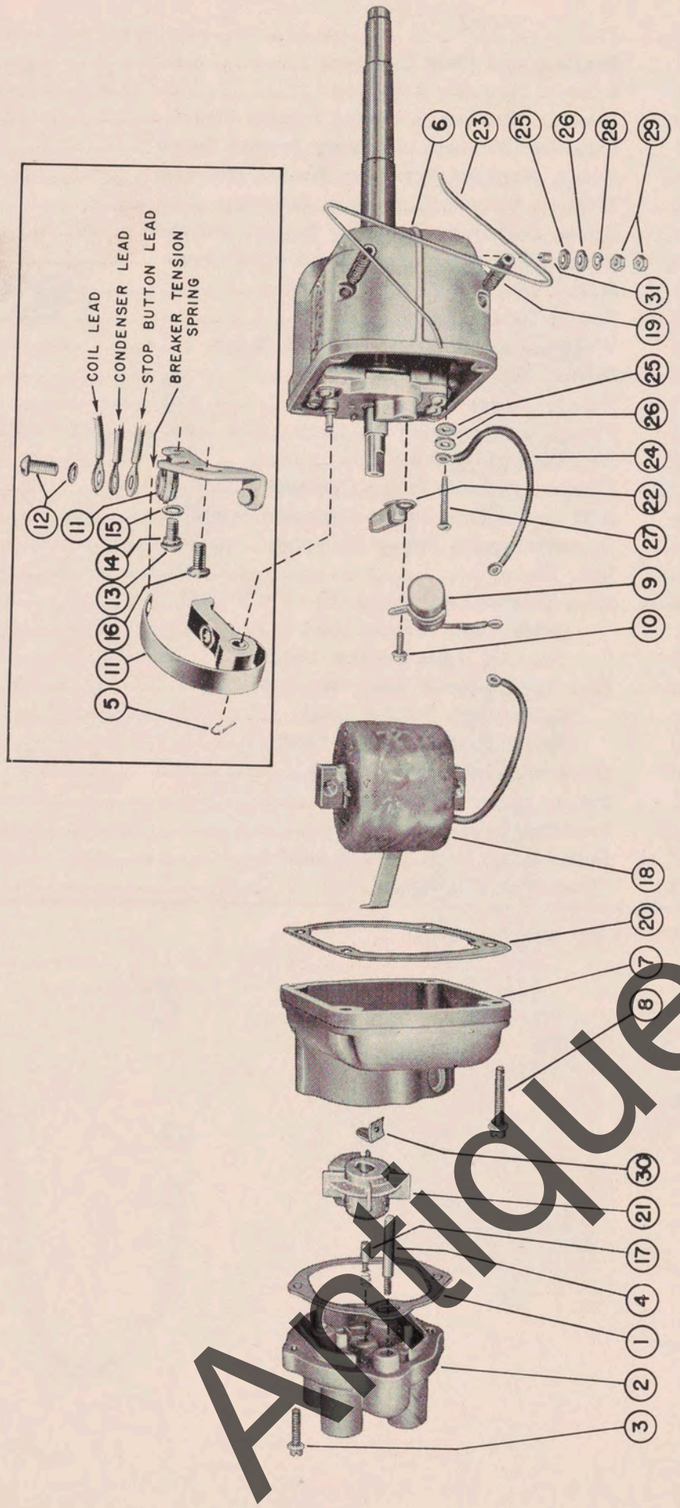
REF. NO.	STOCK NO.	NAME	QUANTITY
--	M-40-2366	Assembly Bracket, Instrument Panel	1
1	N.S.S.	Bracket, Instrument Panel	1
2	M-60-326	Washer, Fibre, Male Connector Pin	1
3	M-20-3409	Pin, Male Connector	1
4	M-20-3361	"O" Ring, Twist Connector	2
5	M-60-432	Groove Pin, Twist Connector Retainer	1
6	M-20-3362	Nipple, Air Hose	1
7	M-20-3363	Retainer, Twist Connector	1
8	M-60-1107	Screw, Retainer Mounting	2
9	M-60-321	Split Lockwasher, Retainer Mounting Screw	2
10	M-40-2189	Coupling, Steering Control Swivel Case	1
11	M-60-1054	Screw, Swivel Case Clamping	2
12	M-60-210	Nut, Swivel Case Clamping Screw	2
13	M-60-320	Washer, Steering Control Coupling	1
14	M-20-2017	Cotter Pin, Steering Control Coupling	1
--	M-40-2249	Assembly, Shorting Button	1
15	M-60-1060	Screw, Shorting Button	1
16	M-60-345	Washer, Shorting Button Screw	2
17	M-60-346	Insulating Washer, Shorting Button Screw	1
18	M-40-2250	Insulating Bushing, Shorting Button Screw	1
19	M-40-2251	Gasket, Shorting Button Base	1
20	M-40-2262	Base, Shorting Button	1
21	M-40-2253	Spring, Shorting Button	1
22	M-40-2254	Insulating Washer, Shorting Button Screw	1
23	M-60-224	Nut, Shorting Button Screw	1
24	M-40-2255	Cover, Shorting Button	1
25	M-40-2135	Shorting Wire	1
26	M-40-2367	Magneto Control Lever	1
27	M-40-2145	Coupling, Throttle Control Swivel	1
28	M-60-101	Screw, Throttle Control Cable Locking	1
29	M-60-320	Washer, Throttle Control Swivel	1
30	M-20-2017	Cotter Pin, Throttle Control Swivel	1
31	M-60-1063	Set Screw, Control Lever Adjusting	2
32	M-60-227	Jam Nut, Control Lever Adjusting Screw	2
33	M-60-1112	Screw, Magneto Control Lever Mounting	1
34	M-60-373	Washer, Magneto Control Lever Screw	1
35	M-40-2015	Nut, Magneto Control Lever Mounting Screw	1
--	M-40-2173	Rod and Yoke Assembly	1
36	N.S.S.	Yoke	1
36	N.S.S.	Rod	1
37	M-60-220	Nut, Throttle Control Yoke Locking	1
38	M-40-2176	Yoke, Throttle Control	1
39	M-40-2177	Pin, Magneto Control Connecting	2
40	M-20-2017	Cotter Pin, Magneto Control Connecting Pin	2
--	M-20-3259	Fuel Line Assembly	1
41	M-20-3260	Fuel Line	1
42	M-20-3105	Bushing, Fuel Line Connecting Nut	1
43	M-20-3104	Nut, Fuel Line Connecting	1
44	M-60-353	Washer, Instrument Panel Bracket Mounting Nut	3
45	M-40-2015	Nut, Instrument Panel Bracket Mounting Stud	3
46	M-20-3444	Air Line	1

N.S.S. — Not sold separately

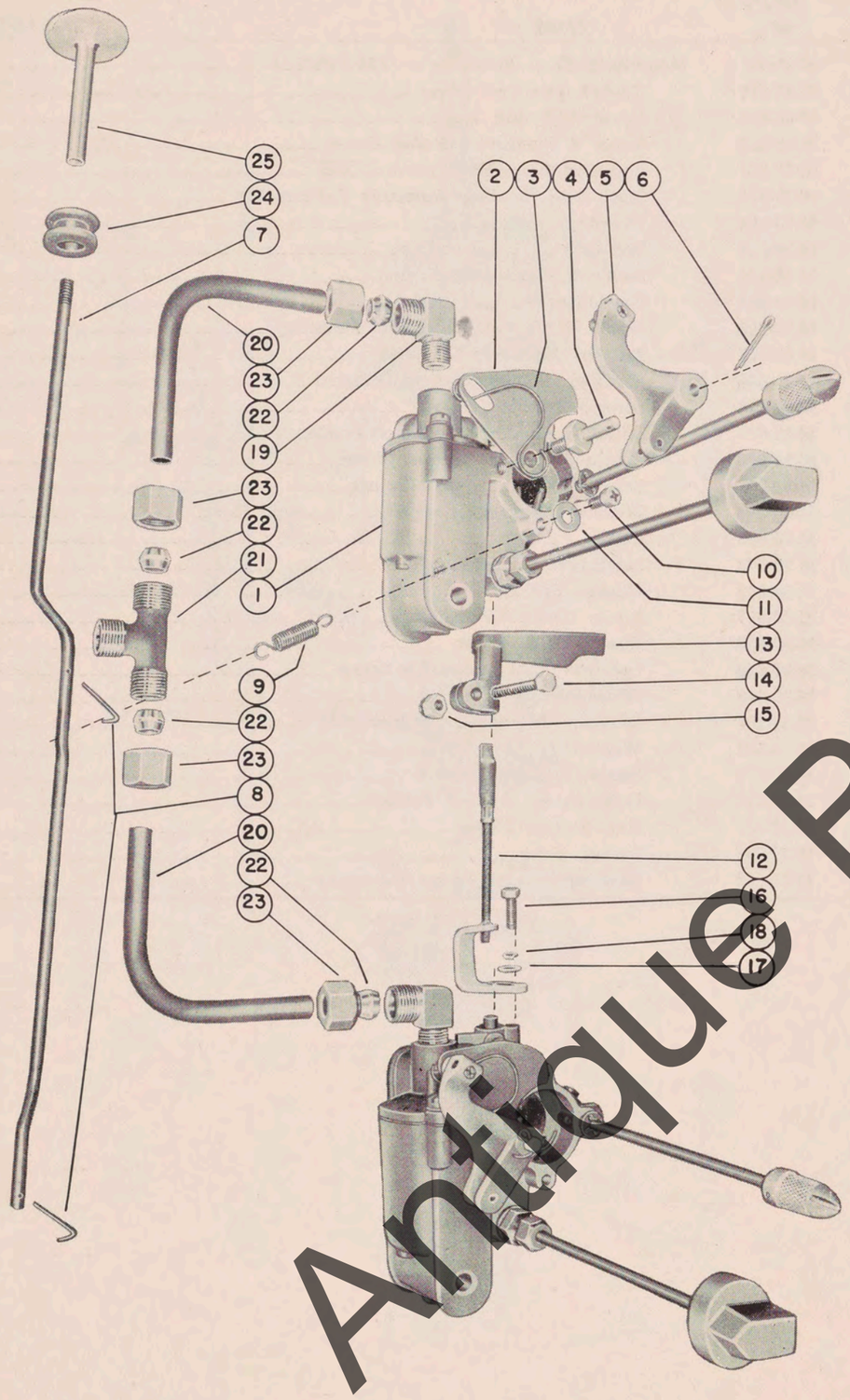


REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-30-691	Magneto and Shaft Extension	1
2	M-30-602	Bracket, Magneto Actuating	1
3	M-30-604	Washer, Magneto Actuating Bracket Screw	2
4	M-30-667	Lockwire, Magneto Actuating Bracket Screw	1
5	M-60-1082	Screw, Magneto Actuating Bracket Mounting	2
6	M-30-606	Magneto Bracket, Carburetor Actuating	1
7	M-60-186	Screw, Carburetor Actuating Bracket Mounting	2
8	M-60-320	Washer, Carburetor Actuating Bracket Screw	2
9	M-30-609	Spring, Magneto Assembly Torsion	1
10	M-60-186	Screw, Torsion Spring Mounting	1
11	M-30-320	Washer, Torsion Spring Mounting Screw	2
12	M-30-692	Spacer, Magneto Timing Pulley	1
13	M-30-693	Pulley, Driven	1
14	M-30-694	Flange, Driven Pulley	1
15	M-30-695	Key, Magneto Driving	1
16	M-50-1168	Washer, Magneto Pulley Clamping Screw	1
17	M-60-309	Split Lockwasher, Pulley Clamping Screw	1
18	M-30-614	Screw, Magneto Pulley Clamping	1
19	M-30-696	Belt, Timing	1
20	M-30-669	High Tension Lead Assy. (No. 1 & 4 Cyl.)	2
--	N.S.S.	Cable, High Tension Lead	2
--	M-30-671	Terminal, High Tension Lead	2
20	M-30-672	High Tension Lead Assy. (No. 2 & 3 Cyl.)	2
--	N.S.S.	Cable, High Tension Lead	2
--	M-30-671	Terminal, High Tension Lead	2
21	M-60-408	Grommet, High Tension Lead	8
22	N.S.S.	Spring, Spark Plug Protector	4
22	M-30-4137	Protector, Spark Plug	4
23	M-30-675	Rubber Cap, High Tension Lead	4
24	M-30-4113	Spark Plug (Champion J-6-J)	4

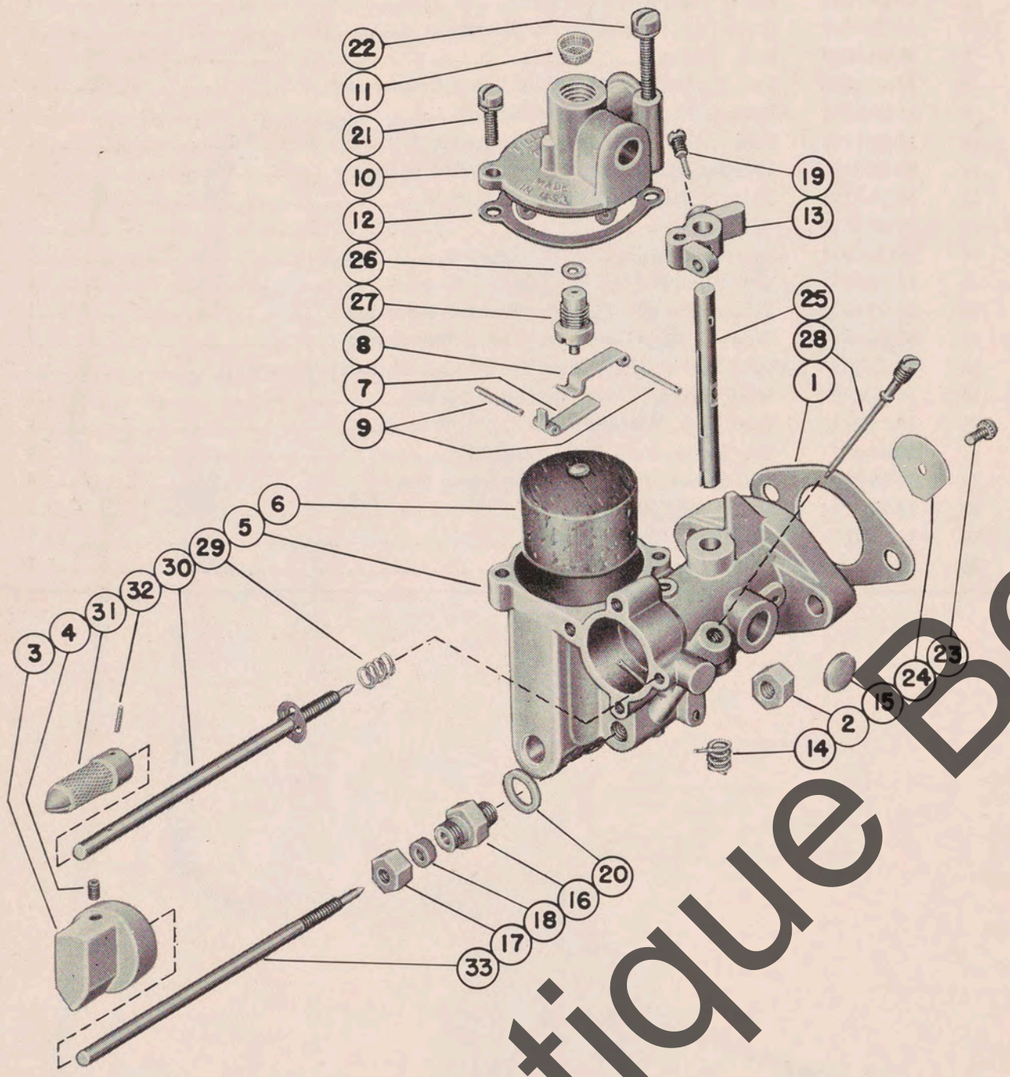
N.S.S. — Not sold separately



REF. NO.	STOCK NO.	NAME	QUANTITY
--	M-30-691	Magneto & Shaft Extension — FM-XV4B70A	1
1	M-30-618	Gasket, End Cap Cover	1
2	M-30-674	Cover, End Cap	1
3	M-30-620	Screw & Washer, End Cap Cover	2
4	M-30-621	Rod, Distributor High Tension Lead	1
5	M-30-676	Snap Ring, Breaker Assembly Fulcrum Pin	1
6	M-30-622	Frame	1
7	M-30-623	End Cap	1
8	M-30-624	Screw & Washer, End Cap	4
9	M-30-685	Condenser	1
10	M-30-626	Screw & Washer, Condenser Mounting	1
11	M-30-627	Breaker Assembly Complete	1
12	M-30-630	Screw & Washer, Breaker Terminal	1
13	M-30-626	Screw, Contact Support	1
14	M-30-677	Lockwasher, Contact Support Screw	1
15	M-30-660	Washer, Contact Support Screw	1
16	M-30-698	Screw, Contact Support Locking	1
17	M-30-634	Brush & Spring, Coil Lead	1
18	M-30-683	Coil	1
19	M-30-678	Set Screw, Coil Bridge	2
20	M-30-642	Gasket, End Cap	1
21	M-30-651	Rotor, Distributor	1
22	M-30-652	Cam Wick & Holder	1
23	M-30-680	Lockwire, Coil Bridge Set Screw	1
24	M-30-643	Wire, Primary Terminal	1
25	M-30-661	Washer, Ground Screw Insulating	2
26	M-30-633	Washer, Ground Screw	2
27	M-30-679	Screw, Primary Ground	1
28	M-30-646	Lockwasher, Ground Screw	1
29	M-30-647	Nut, Ground Screw	2
30	M-30-687	Spring, Rotor	1
31	M-30-632	Bushing, Ground Screw Insulating	1

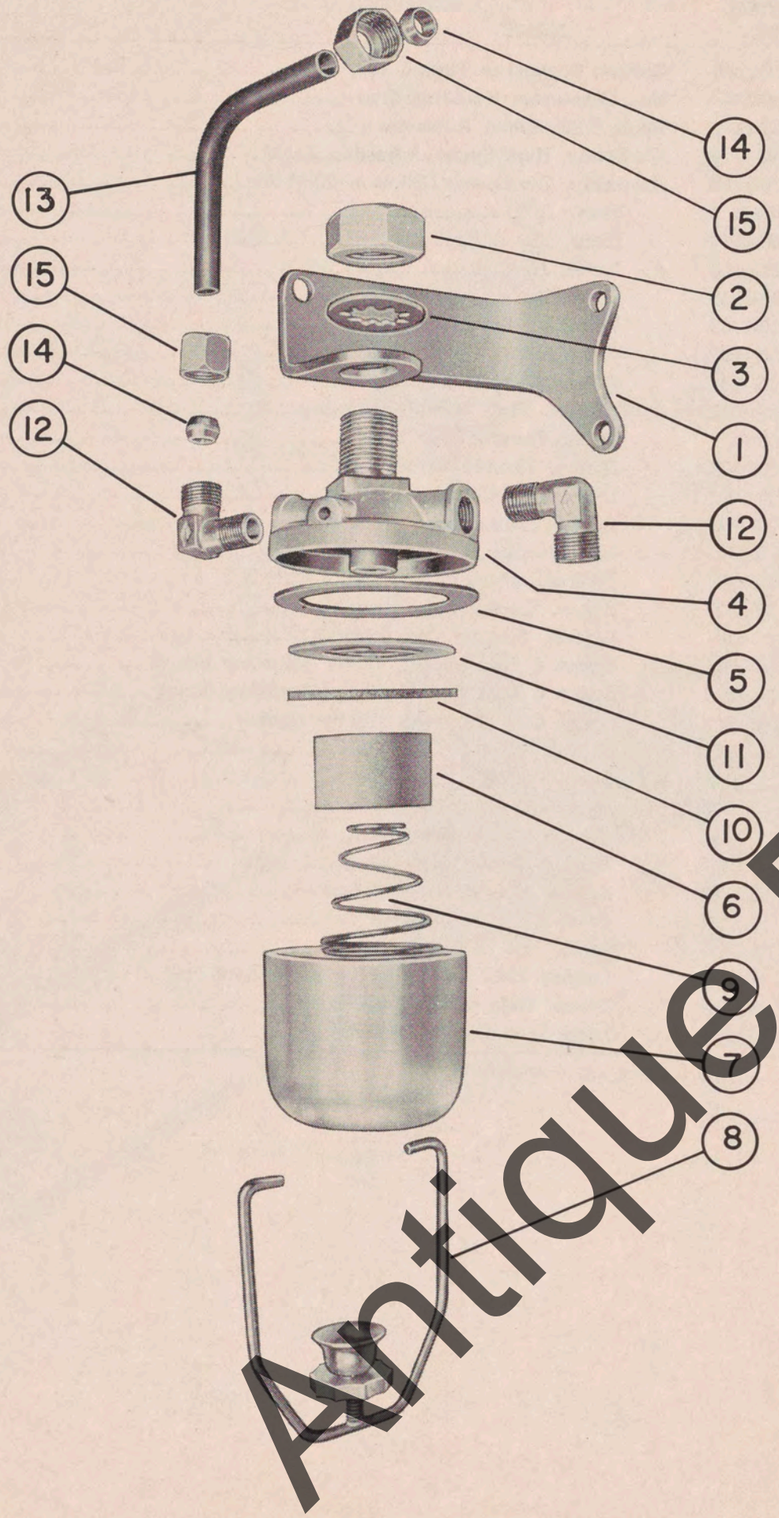


REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-20-1152	Carburetor Assembly, Tillotson AJ33-A	2
2	M-20-2038	Shutter, Choke	2
3	M-20-2030	Spring, Choke Shutter	2
4	M-20-2031	Screw Pin, Choke Lever Pivot	2
5	M-20-2034	Lever Assembly, Choke	2
6	M-20-2017	Cotter Pin, Choke Lever Retaining	2
7	M-20-2037	Rod, Choke	1
8	M-20-2003	Pin, Choke Rod To Choke Lever Connecting	2
9	M-20-2038	Spring, Choke Rod Positioning	1
10	M-60-1053	Screw, Choke Rod Spring Mounting	1
11	M-60-341	Washer, Choke Rod Spring Mounting Screw	1
12	M-20-1126	Throttle Pick Up Bracket Assembly	1
13	M-20-1129	Throttle Pick Up	1
14	M-60-1054	Screw, Throttle Pick Up Locking	1
15	M-60-210	Nut, Throttle Pick Up Locking Screw	1
16	M-60-1055	Screw, Throttle Pick Up Bracket Mounting	1
17	M-60-341	Washer, Pick Up Bracket Mounting Screw	1
18	M-60-342	Split Lockwasher, Pick Up Bracket Mounting Screw	1
19	M-60-420	Male Elbow, Carburetor Fuel Intake	2
20	M-20-3443	Fuel Line, Tee Union to Carburetor	2
21	M-60-437	Tee Union, Fuel Line Assembly	1
22	M-20-3105	Ball Sleeve, Fuel Line Connecting Nut	4
23	M-20-3104	Nut, Fuel Line Connecting	4
24	M-60-408	Grommet, Choke Knob	1
25	M-20-2039	Choke Knob	1

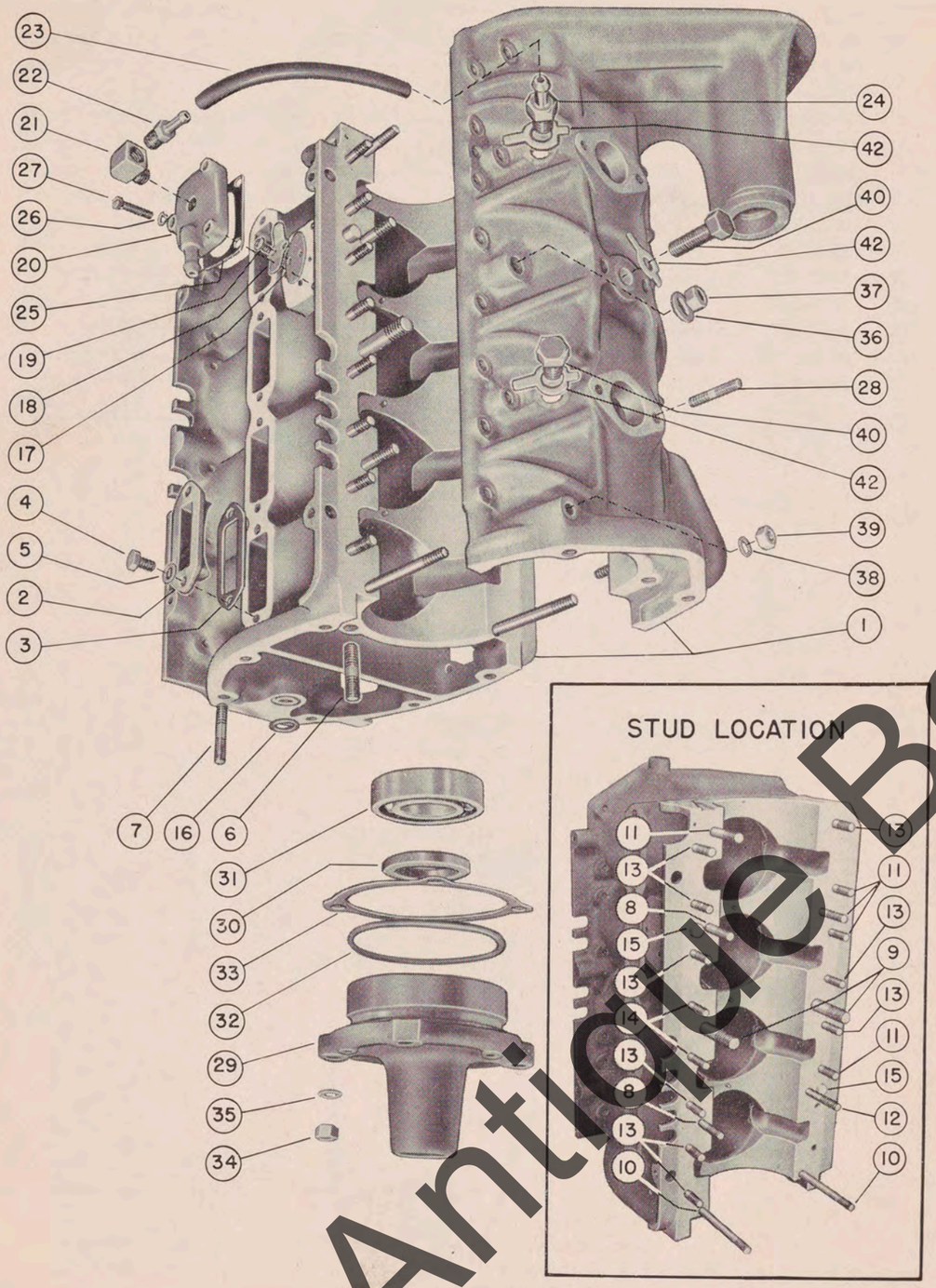


REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-20-1148	Gasket, Carburetor Flange	2
2	M-60-235	Nut, Carburetor Mounting Stud	4
3	M-20-1130	Knob, High Speed Adjusting	2
4	M-60-1070	Set Screw, High Speed Adjusting Knob	2
--	M-20-1152	Assembly, Carburetor (Tillotson AJ-33-A)	2
5	N.S.S.	Body	2
6	M-20-1176	Float	2
7	M-20-1136	Lever, Float (lower)	2
8	M-20-1137	Lever, Float (upper)	2
9	M-20-1138	Pin, Float Lever Pinion	4
10	M-20-1135	Cover, Bowl Cover	2
11	M-20-1141	Screen, Inlet	2
12	M-20-1006	Gasket, Float Bowl	2
13	M-20-157	Lever, Throttle Stop	2
14	M-20-156	Spring, Throttle Return	2
15	M-20-108	Plug, Body Channel Welch	2
16	M-20-127	Gland, Stuffing Box	2
17	M-20-125	Nut, Stuffing Box	2
18	M-20-126	Packing, Stuffing Box	2
19	M-20-159	Screw, Throttle Stop Lever	2
20	M-20-128	Gasket, Stuffing Box Gland	2
21	M-20-1061	Screw & Lockwasher, Cover Mounting (short)	2
22	M-20-1139	Screw & Lockwasher, Cover Mounting (long)	2
23	M-20-1062	Screw & Lockwasher, Throttle Shutter	2
24	M-20-1182	Shutter, Throttle	2
25	M-20-1145	Shaft, Throttle	2
26	M-20-1143	Gasket, Inlet Seat	2
27	M-20-1142	Needle & Seat, Inlet	2
28	M-20-1167	Tube Assembly, By-Pass	2
29	M-20-1132	Spring, Idle Adjustment Screw	2
30	M-20-1174	Screw, Idle Adjustment	2
31	M-20-2039	Knob, Idle Adjusting	2
32	M-20-2033	Groove Pin, Idle Adjusting Knob Retaining	2
33	M-20-1144	Screw, High Speed Adjustment	2
--	M-20-1046	Lead Shot, Channel Plug	6

N.S.S. — Not sold separately



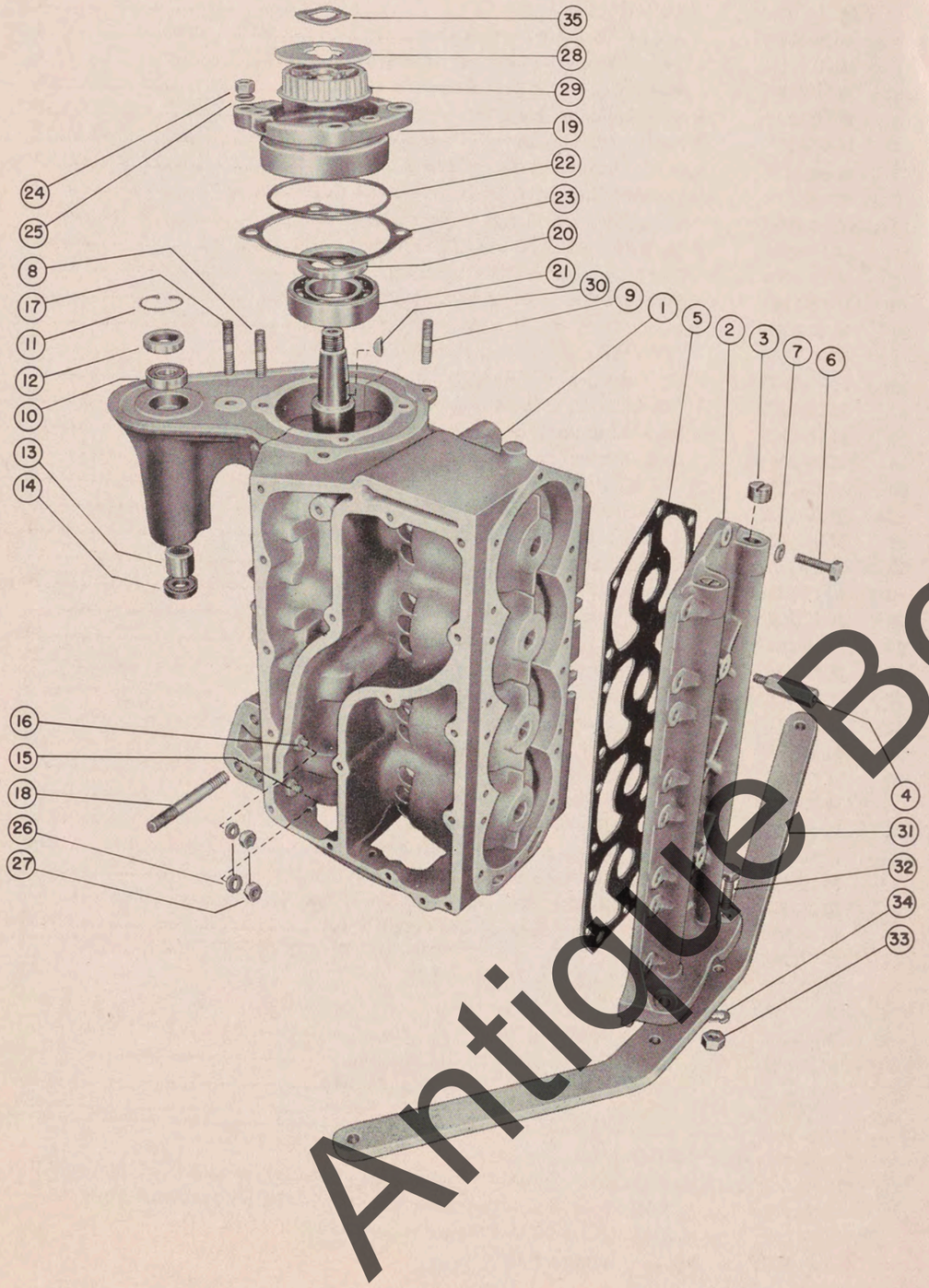
REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-20-3266	Bracket, Fuel Filter Mounting	1
2	M-20-3271	Nut, Filter Top to Mounting Bracket	1
3	M-20-3270	Lockwasher, Mounting Nut	1
--	M-20-3434	Assembly, Fuel Filter Complete	1
4	M-20-3435	Filter Top	1
5	M-20-3436	Gasket, Filter Top	1
6	M-20-3437	Filter Element	1
7	M-20-3438	Bowl	1
8	M-20-3439	Bale Assembly	1
9	M-20-3440	Spring, Filter Element Retaining	1
10	M-20-3441	Gasket, Filter Element	1
11	M-20-3442	Plate, Filter Element Gasket Backing	1
12	M-60-420	Elbow, Filter Top to Fuel Line Connecting	2
13	M-20-3443	Fuel Line, Filter Top to Tee Union	1
14	M-20-3105	Ball Sleeve, Fuel Line Connecting Nut	2
15	M-20-3104	Nut, Fuel Line Connecting	2



STUD LOCATION

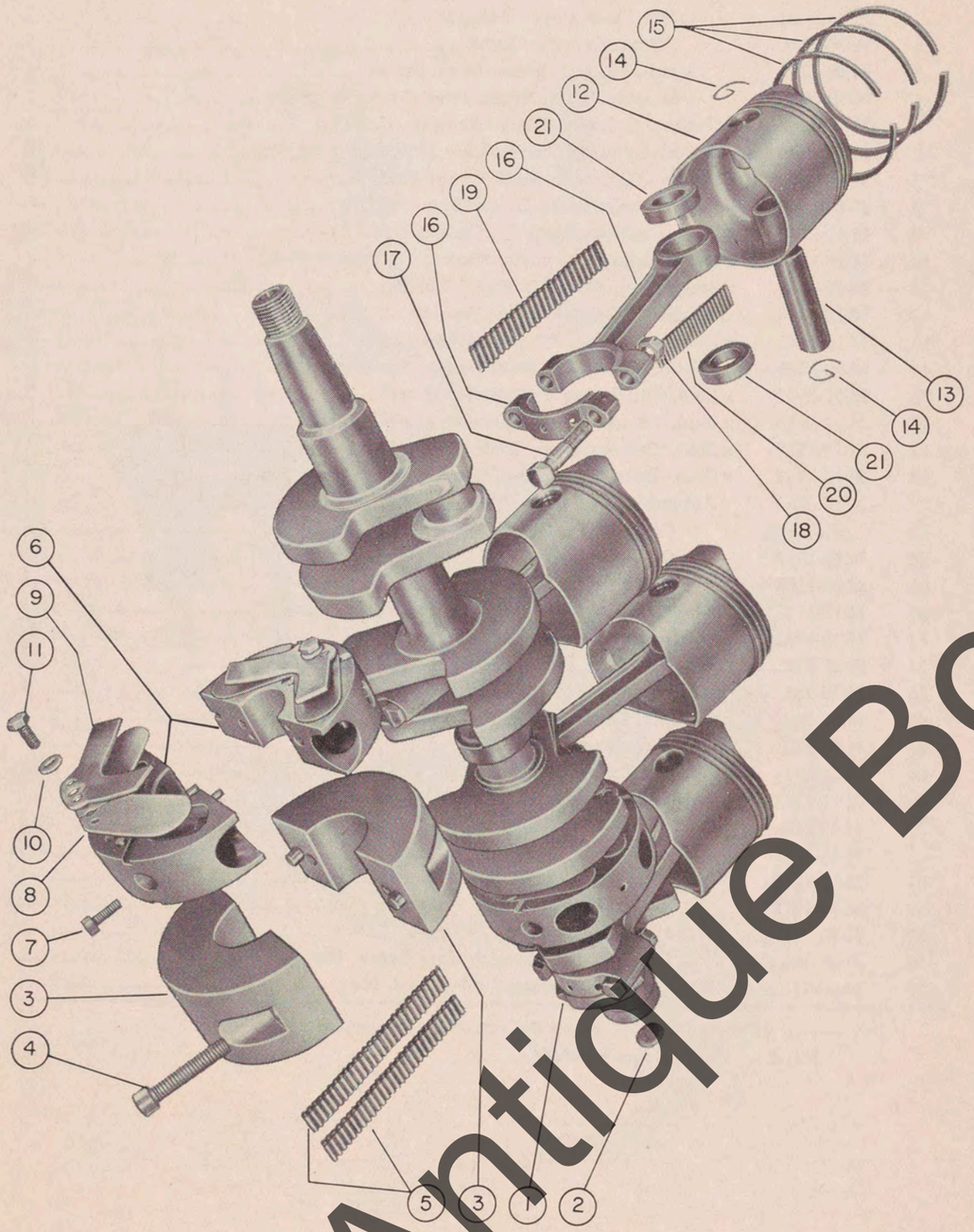
REF. NO.	STOCK NO.	NAME	QUANTITY
1	N.S.S.	x Cylinder Block	1
1	N.S.S.	x Crankcase	1
2	M-10-3037	Cover, Transfer Port	4
3	M-10-3038	Gasket, Transfer Port Cover	4
4	M-60-186	Screw, Transfer Port Cover Mounting	8
5	M-60-320	Washer, Transfer Port Cover Screw	8
6	M-10-1250	x Stud, Cylinder Block & Crankcase to End Cap	3
7	M-10-3113	x Stud, Cylinder Block & Crankcase to Drive Shaft Housing	8
8	M-10-3077	x Stud, Cylinder Block to Crankcase	2
9	M-10-3078	x Stud, Cylinder Block to Crankcase	2
10	M-10-3079	x Stud, Cylinder Block to Crankcase	2
11	M-10-3080	x Stud, Cylinder Block to Crankcase	5
12	M-10-3084	x Stud, Cylinder Block to Crankcase	1
13	M-10-1148	x Stud, Cylinder Block to Crankcase	9
14	M-40-1026	x Stud, Cylinder Block to Crankcase	2
15	M-10-1184	Dowel Pin, Cylinder Block to Crankcase	2
16	M-10-3083	"O" Ring, Water Inlet Sealing	1
17	M-10-1315	Reed, Fuel Pressure Valve	1
18	M-10-1316	Stop, Fuel Pressure Valve Reed	1
19	M-60-125	Screw, Fuel Pressure Reed Stop	2
20	M-10-1356	** Cover, Pressure Valve	1
--	M-10-1317	Cover, Pressure Valve	1
21	M-60-246	* Elbow, Check Valve and Hose Connector	1
22	M-10-1357	* Check Valve and Hose Connector	1
23	M-10-1358	* Hose, Pressure Relief	1
24	M-10-1348	***Screw, Bearing Locking and Pressure Relief Hose Connector	1
25	M-10-1318	Gasket, Pressure Valve Cover	1
26	M-60-309	Lockwasher, Pressure Valve Cover Screw	3
27	M-60-1105	Screw, Pressure Valve Cover Mounting	3
28	M-10-1148	* Stud, Carburetor Mounting	4
--	M-10-1342	Assembly, End Cap Lower	1
29	N.S.S.	End Cap Lower	1
30	M-10-1340	Oil Seal, Lower End Cap Ball Bearing	1
31	M-50-1165	Ball Bearing, Lower End Cap	1
32	M-10-1129	"O" Ring, Lower End Cap	1
33	M-10-1197	Shim, End Cap to Crankcase	As Req.
34	M-60-218	Nut, End Cap Mounting Stud	3
35	M-60-332	Washer, End Cap Mounting Stud	3
36	M-60-340	Washer, Crankcase Stud (ref. No. 9)	2
37	M-60-221	x Nut, Crankcase Stud (ref. No. 9)	2
38	M-60-320	Washer, Crankcase Stud	21
39	M-60-220	Nut, Crankcase Stud	21
40	M-10-1162	Screw, Main Bearing Locking	1
41	M-10-1163	Screw, Center Main Bearing Locking	1
42	M-10-1008	Tab Washer, Bearing Locking Screw	3

* Model Mark 40-H Only
** Model Mark 40-H Only — Substitute Cover No. M-10-1317 on Standard Mark 40.
*** Model Mark 40-H Only — Substitute Cover No. M-10-1162 on Standard Mark 40.
x — Part of M-10-3147 Cyl. Block & Crankcase Assembly.
N.S.S. — Not sold separately.



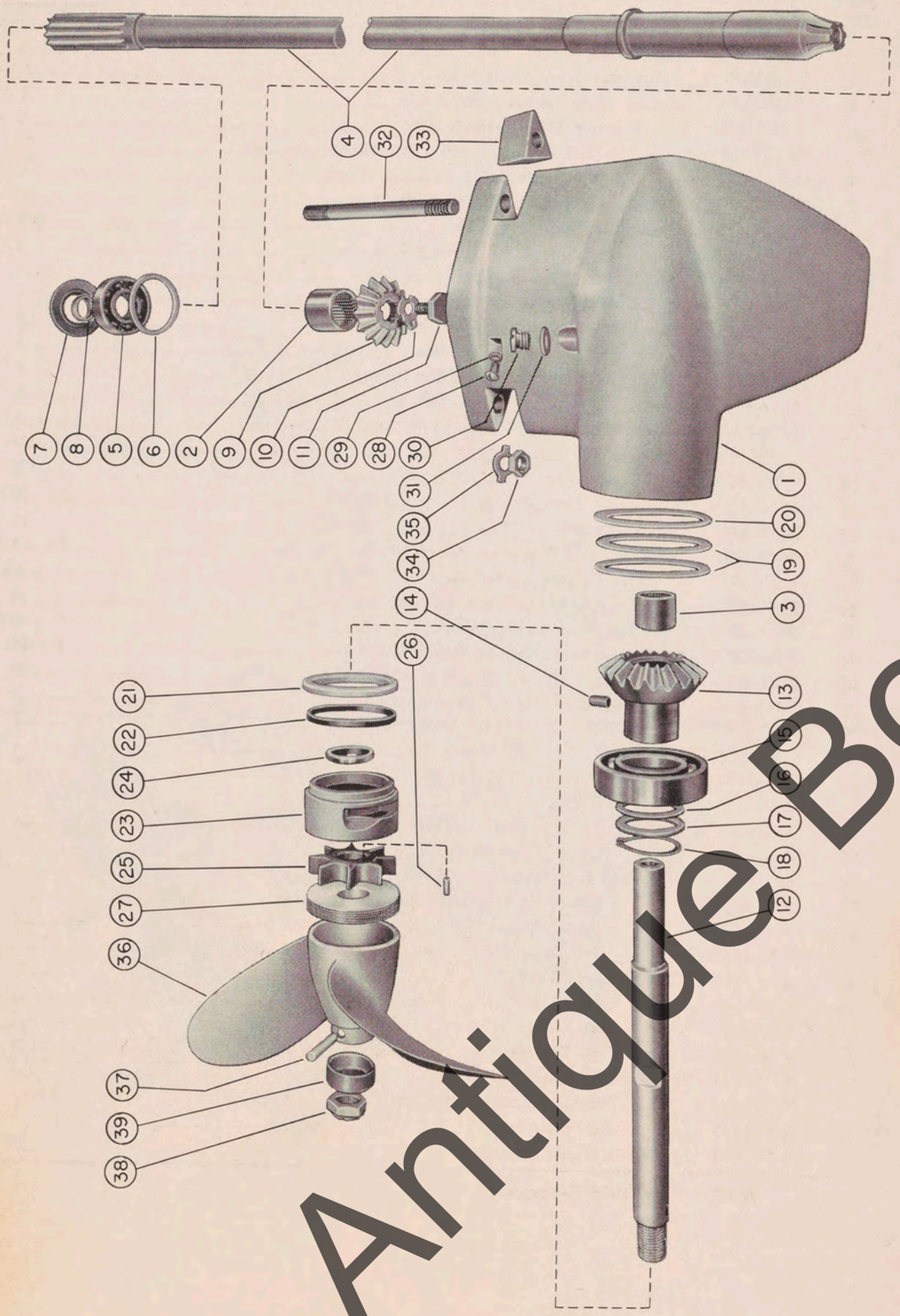
REF. NO.	STOCK NO.	NAME	QUANTITY
1	N.S.S.	x Cylinder Block	1
--	M-10-3123	Cylinder Block Cover Assembly	1
2	M-10-3124	Cover, Cylinder Block	1
3	M-60-429	Pipe Plug, Cylinder Block Cover	4
4	M-10-3086	Shoulder Stud, Spark Plug Cover Mounting	2
5	M-10-3087	Gasket, Cylinder Block Cover	1
6	M-60-1046	Screw, Cylinder Block Cover Mounting	18
7	M-60-320	Washer, Cylinder Block Cover Mounting Screw	18
8	M-10-1250	x Stud, Crankcase to Upper End Cap	4
9	M-10-1146	x Stud, Cylinder Block To Timing Case Cover	2
10	M-10-1335	x Ball Bearing, Magneto Shaft	1
11	M-10-1144	x Snap Ring, Magneto Shaft Bearing	1
12	M-10-1336	x Oil Seal, Magneto Shaft Bearing	1
13	M-10-1145	x Needle Bearing, Magneto Shaft Lower	1
14	M-50-1078	x Oil Seal, Magneto Shaft Needle Bearing	1
15	M-10-3085	x Stud, Crankcase to Cylinder Block	1
16	M-10-1150	x Stud, Crankcase to Cylinder Block	1
17	M-10-1337	x Stud, Crankcase to Timing Case Cover	1
18	M-10-1338	x Stud, Instrument Panel Bracket Mounting	3
--	M-10-1339	Assembly, End Cap Upper	1
19	N.S.S.	Cover, End Cap Upper	1
20	M-10-1340	Oil Seal, Upper End Cap Bearing	1
21	M-50-1165	Ball Bearing, Upper End Cap	1
22	M-10-1129	"O" Ring, Upper End Cap	1
23	M-10-1341	Shim, End Cap Cover to Crankcase	As Req.
24	M-60-218	Nut, End Cap Cover Mounting Stud	4
25	M-60-332	Washer, End Cap Cover Mounting Stud Nut	4
26	M-60-320	Washer, Crankcase to Cylinder Stud Nut	2
27	M-60-220	Nut, Crankcase to Cylinder Stud	2
28	M-10-1343	Flange, Timing Pulley	1
29	M-10-1344	Timing Pulley (driver)	1
30	M-60-433	Key, Pulley Driving	1
--	M-40-2213	Assembly, Steering Arm	1
31	M-40-2178	Steering Arm	1
32	M-60-1071	Screw, Steering Arm Mounting	2
33	M-60-228	Nut, Steering Arm Mounting Screw	2
34	M-60-350	Lockwasher, Steering Arm Screw Nut	2
35	M-60-371	Wavewasher (Timing Pulley End Play)	1

x — Part of M-10-3147 Cyl. Block & Crankcase Assembly.
N.S.S. — Not sold separately.



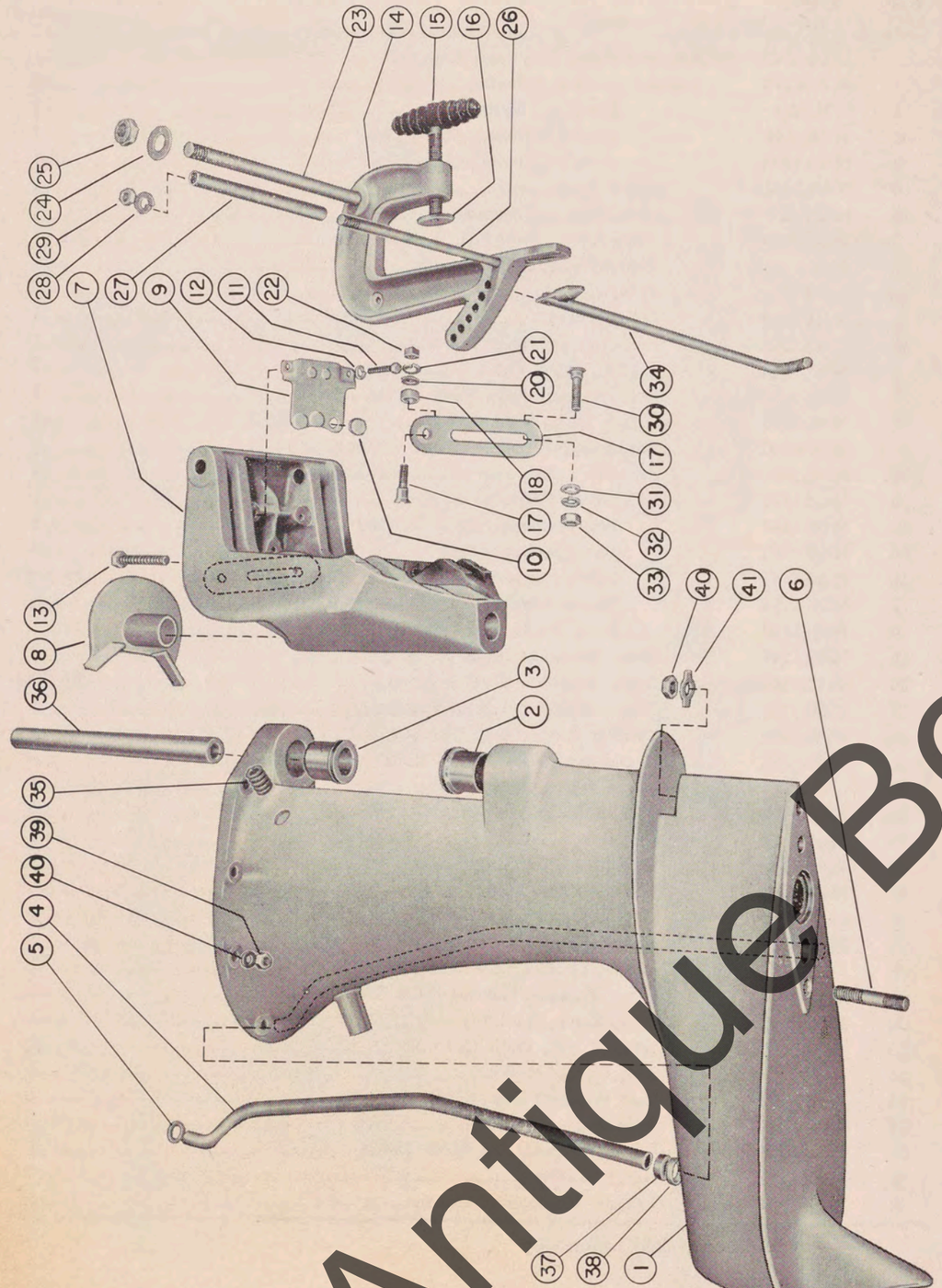
REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-10-1332	Crankshaft	1
2	M-10-1108	Felt Oiler, Drive Shaft Spline	1
3	M-10-1333	Center Main Bearing Assembly	1
--	N.S.S.	Bearing Center Main	1
--	M-10-1259	Dowel Pin, Center Main Bearing Assembly	2
4	M-60-1047	Screw, Center Main Bearing Assembly	2
5	M-10-1114	Needle Roller, Center Main Bearing	56
6	M-10-1334	Assembly, Main Bearing	2
--	M-10-1113	Dowel Pin, Main Bearing Assembly	4
7	M-60-1048	Screw, Main Bearing Assembly	4
--	M-10-1300	Dowel Pin, Reed Locating	16
8	M-10-1272	Reed Set, Main Bearing Valve	2
9	M-10-1122	Reed Stop, Main Bearing Reed Valves	8
10	M-60-327	Washer, Reed Stop Mounting Screw	8
11	M-60-1095	Screw, Reed Stop Mounting	8
--	M-10-2037	Assembly, Piston, Piston Pin & Lock Ring	4
12	N.S.S.	Piston	4
13	N.S.S.	Piston Pin	4
14	M-10-2005	Lock Ring, Piston Pin	8
15	M-10-2003	Ring, Piston	12
--	M-10-2089	Assembly, Connecting Rod & Cap	4
16	N.S.S.	Connecting Rod & Cap	4
17	M-10-2090	Screw, Connecting Rod	8
18	M-10-2088	Nut, Connecting Rod	8
19	M-10-1114	Needle Roller, Crankpin	100
20	M-10-2058	Needle Roller, Piston Pin	88
21	M-10-2057	Washer, Needle Locating	8

N.S.S. — Not sold separately



REF. NO.	STOCK NO.	NAME	QUANTITY
--	M-50-1219	Asembly, Gear Housing Complete	1
--	M-50-1220	Assembly, Gear Housing	1
1	N.S.S.	Housing, Gear	1
2	M-50-1149	Needle Bearing, Drive Shaft	1
3	M-50-1004	Needle Bearing, Prop Shaft	1
4	M-50-1151	Drive Shaft	1
5	M-50-1152	Ball Bearing, Drive Shaft	1
6	M-50-1153	Shim, Drive Shaft Ball Bearing	As Req.
7	M-50-1154	Assembly, Pilot & Oil Seal	1
--	N.S.S.	Pilot	1
--	M-50-1212	Oil Seal	1
8	M-50-1157	Retainer, Drive Shaft Bearing	1
9	M-50-1158	Pinion, Drive Shaft	1
10	M-50-1159	Tab Washer, Drive Shaft Pinion Screw	1
11	M-60-1059	Screw, Drive Shaft Pinion	1
--	M-50-1160	Assembly, Propeller Shaft & Gear	1
12	M-50-1161	Shaft, Propeller	1
13	M-50-1162	Gear, Propeller Shaft	1
14	M-50-1163	Pin, Propeller Gear Driving	1
15	M-50-1165	Ball Bearing, Propeller Shaft	1
16	M-50-1164	Shim, Propeller Shaft Bearing	As Req.
17	M-50-1166	Thrust Washer, Propeller Shaft	1
18	M-50-1167	Snap Ring, Propeller Shaft	1
19	M-50-1168	Shim, Propeller Shaft Bearing	2
20	M-50-1169-2-3-5-10	Shim, Propeller Shaft Bearing	As Req.
21	M-50-1171	Washer, Water Pump Housing	1
22	M-50-1170	Sealing Ring, Pump Housing	1
--	M-50-1172	Assembly, Water Pump Housing	1
23	N.S.S.	Housing, Water Pump	1
24	M-50-1213	Seal, Propeller Shaft	1
25	M-50-1175	Impeller	1
26	M-60-407	Key, Drive for Impeller	1
27	M-50-1176	Cover, Water Pump	1
28	M-60-181	Screw, Gear Case Vent	1
29	M-60-326	Fibre Washer, Gear Case Vent Screw	1
30	M-50-1177	Screw, Grease Filler Hole	1
31	M-50-1033	Fibre Washer, Grease Filler Screw	1
32	M-50-1179	Stud, Drive Shaft Housing to Gear Case	1
33	M-50-1180	Special Nut, Gear Case Stud	1
34	M-60-222	Nut, Gearcase Stud	1
35	M-50-1181	Tab Washer, Gear Case Stud Nut	1
36	M-50-1231	Propeller — 2 Blade	1
37	M-50-1232	Pin — Propeller to Shaft Shear	1
38	M-50-1139	Nut Propeller	1
39	M-50-1234	Collar, Propeller	1

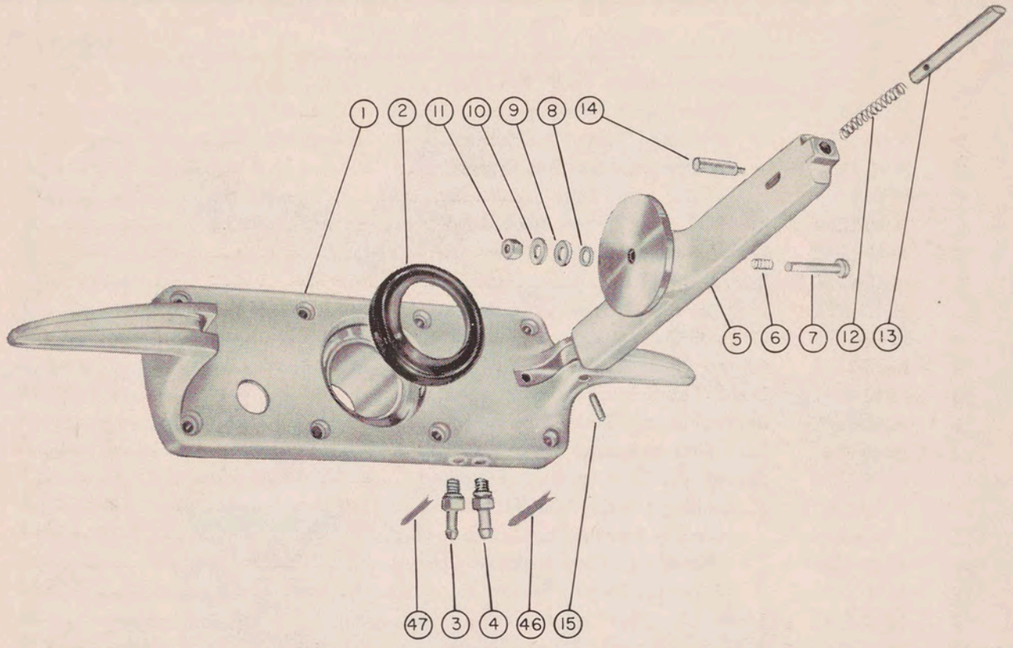
N.S.S. — Not Sold Separately



REF. NO.	STOCK NO.	NAME	QUANTITY
--	M-40-1112	Assembly, Drive Shaft Housing	1
1	N.S.S.	Drive Shaft Housing	1
2	M-40-1051	Bushing, Swivel Pin Lower	1
3	M-40-1054	Bushing, Swivel Pin Upper	1
4	M-40-1069	Water Inlet Tube	1
5	M-40-1062	"O" Ring, Water Inlet Tube Seal	1
6	M-40-1060	Stud Housing to Gear Case	1
7	M-40-2234	Swivel Bracket	1
--	M-40-2081	Disc, Swivel Bracket Friction	3
8	M-40-2108	Co-Pilot Disc	1
9	M-40-2111	Clamp Plate	1
10	M-40-2081	Disc, Clamp Plate Friction	3
11	M-60-1052	Screw, Clamp Plate Mounting	2
12	M-60-319	Lockwasher, Clamp Plate Mounting Screw	2
13	M-60-1056	Screw, Co-Pilot Tension Adjusting	1
--	M-40-2365	Assembly, Clamp Bracket	2
14	N.S.S.	Clamp Bracket	2
15	M-40-2203	Assembly, Thumb Screw	2
16	M-40-285	Washer, Thumb Screw	2
17	M-40-2242	Lever, Tilt Stop	2
18	M-40-2227	Spacer, Tilt Stop Lever	2
19	M-40-2228	Screw, Tilt Stop Lever Anchor	2
20	M-60-320	Washer, Lever Anchor Screw	4
21	M-60-348	Lockwasher, Lever Anchor Screw	4
22	M-60-220	Nut, Lever Anchor Screw	4
23	M-40-2237	Stud, Clamp Bracket to Swivel Bracket	1
24	M-40-2238	Shim, Clamp Bracket to Swivel Bracket	2
25	M-60-237	Nut, Clamp Bracket to Swivel Bracket Stud	2
26	M-40-2239	Stud, Clamp Brackets	1
27	M-40-2240	Spacer, Clamp Brackets Stud	1
28	M-60-350	Lockwasher, Clamp Brackets Stud	2
29	M-60-205	Nut, Clamp Brackets Stud	2
30	M-40-2229	Screw, Tilt Stop Lever Retaining	2
31	M-60-320	Washer, Lever Retaining Screw	2
32	M-60-348	Lockwasher, Lever Retaining Screw	2
33	M-60-220	Nut, Lever Retaining Screw	2
34	M-40-2241	Assembly, Tilt Lock Pin	1
35	M-40-210	Spring, Co-Pilot	2
36	M-40-2121	Swivel Pin	1
37	M-50-1030	Seal, Water Tube Lower	1
38	M-40-1063	Special Washer, Water Tube Lower	1
39	M-60-218	Nut, Drive Shaft Housing to Power Head Stud	8
40	M-60-332	Washer, Drive Shaft Stud Nut	8
41	M-60-222	Nut, Gear Housing to Drive Shaft Housing Stud	1
42	M-50-1181	Tab Washer, Housing to Housing Stud Nut	1

N.S.S. — Not sold separately.

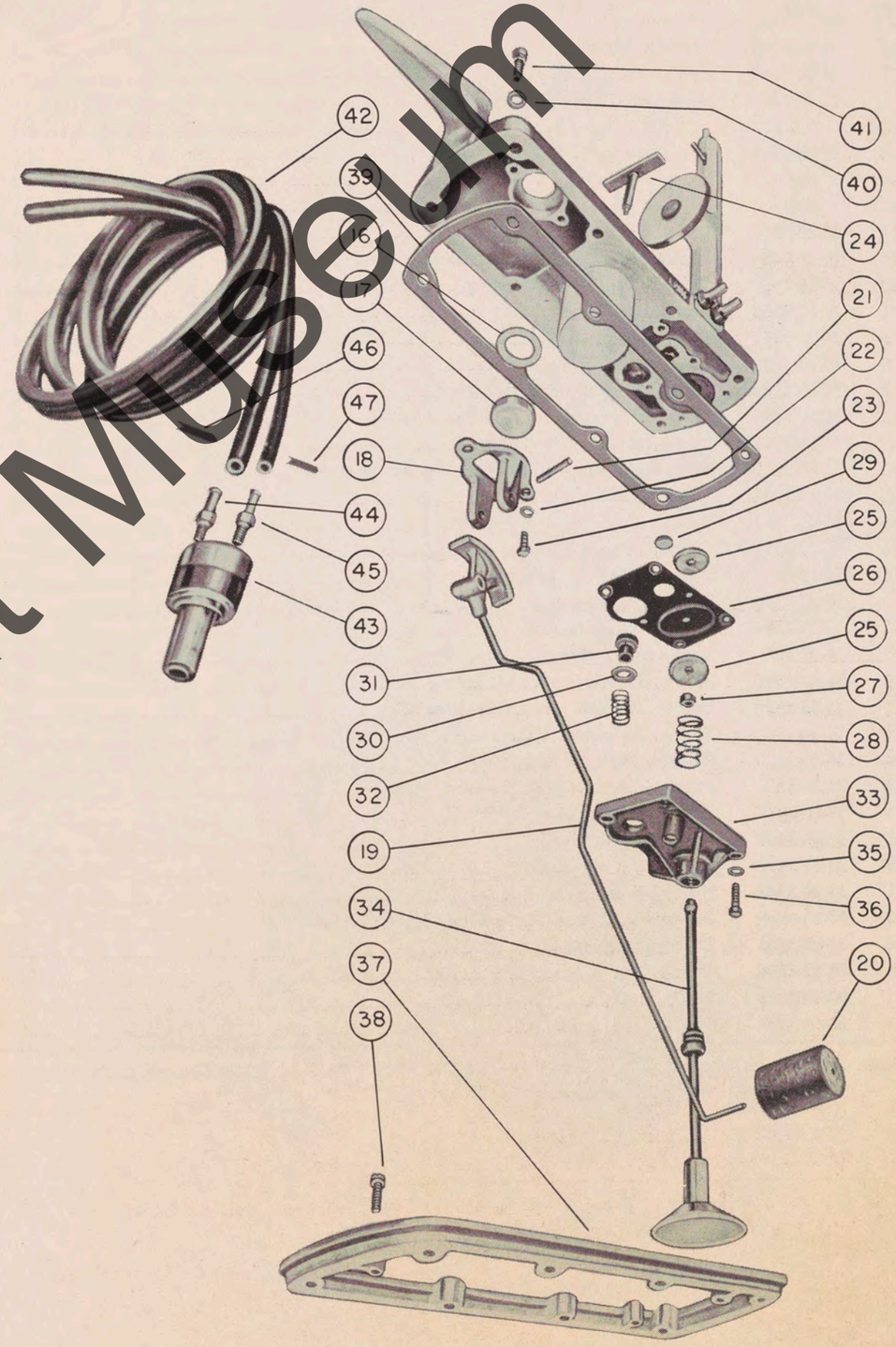
FUEL TANK ASSEMBLY — GROUP No. 15-A



REF. NO.	STOCK NO.	NAME	QUANTITY
--	M-20-3365	Assembly, Fuel Tank Complete	1
1	M-20-3365	Cover, Fuel Tank (Base Half)	1
2	M-20-3367	Seal, Filler Tube	1
3	M-20-3368	Nipple, Air Hose	1
4	M-20-3362	Nipple, Fuel Hose	1
--	N.S.S.	Tube, Filler	1
5	M-20-3370	Handle	1
6	M-20-3371	Spring, Plunger	1
7	M-20-3372	Rod, Pressure Relief	1
8	M-20-3373	Washer, Pressure Relief Rod Back Up	1
9	M-20-3374	Washer, Pressure Relief Rod Valve	1
10	M-20-3375	Washer, Pressure Relief Rod Return	1
11	M-20-3376	Nut, Pressure Relief Rod	1
12	M-20-3377	Spring, Latch Pin	1
13	M-20-3378	Pin, Latch	1
14	M-20-3379	Pin, Trigger	1
15	M-20-3380	Pin, Pivot	1
46	M-20-3405	Clamp, Fuel Hose	2
47	M-20-3406	Clamp, Air Hose	2

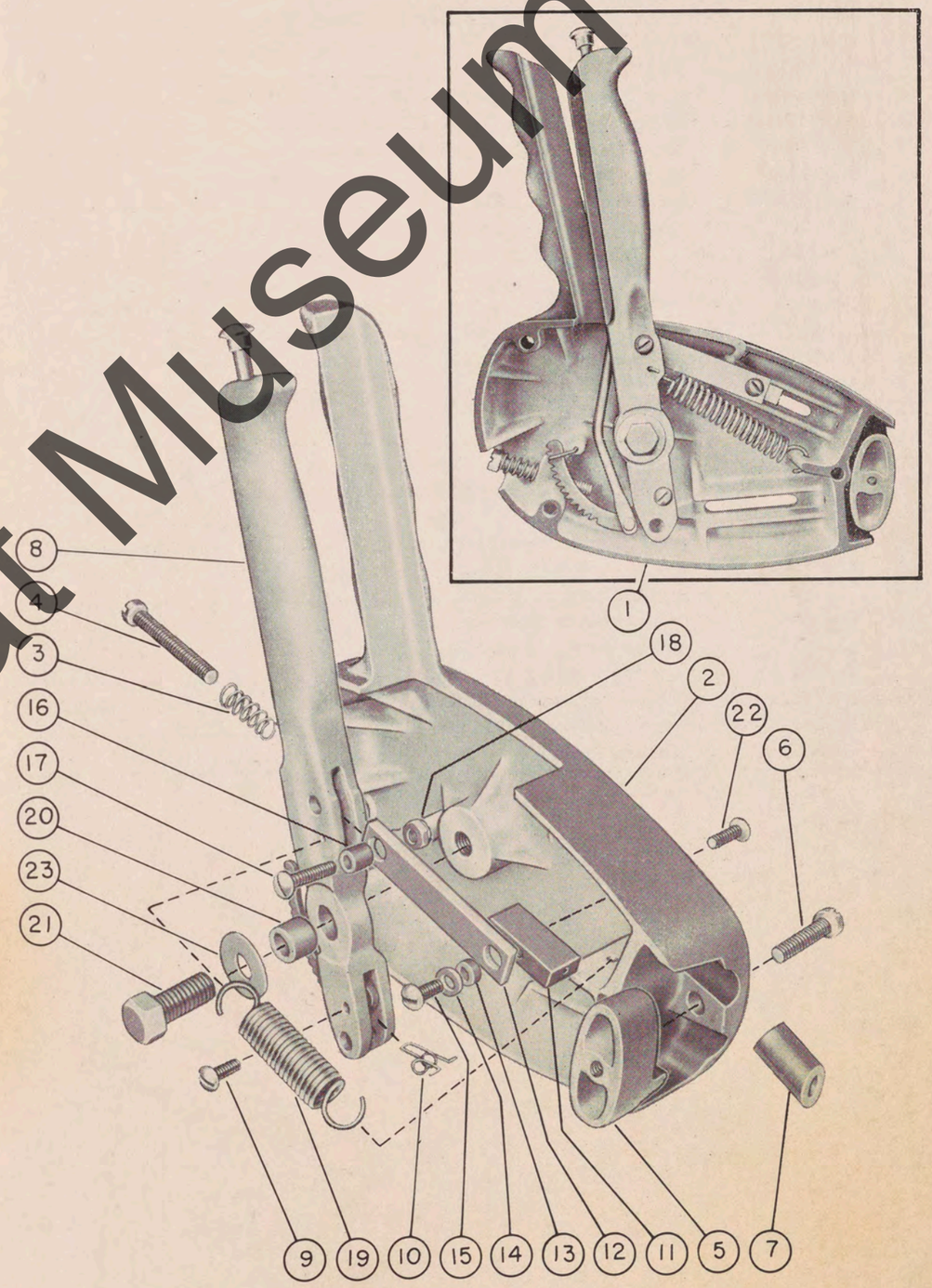
Note: All parts in groups 15-A and 15-B are part of M-20-3365 Fuel Tank Assembly, Complete.
N.S.S. — Not sold separately

FUEL TANK ASSEMBLY — GROUP No. 15-B



REF. NO.	STOCK NO.	NAME	QUANTITY
16	M-20-3381	Gasket, Lens	1
17	M-20-3382	Lens	1
--	M-20-3383	Assembly, Fuel Gage	1
18	N.S.S.	Retainer, Fuel Gage	1
--	M-20-3384	Assembly, Indicator and Float	1
19	N.S.S.	Assembly, Indicator	1
20	N.S.S.	Float	1
21	M-20-3385	Rivet, Float Arm Pivot	1
22	M-60-309	Lockwasher, Retainer Mounting Screw	2
23	M-60-169	Screw, Retainer Mounting	2
24	M-20-3386	Assembly, Primer Shaft	1
25	M-20-3387	Disc, Primer	2
26	M-20-3388	Diaphragm, Primer	1
27	M-60-248	Nut, Primer Shaft Assembly	1
28	M-20-3390	Spring, Compression (pressure relief)	1
29	M-20-3391	Valve, Pressure Relief	1
30	M-60-352	Washer, Pressure Relief Valve Spring	1
31	M-20-3392	Valve, Fuel	1
32	M-20-3393	Spring, Compression Primer	1
33	M-20-3394	Cover, Primer	1
34	M-20-3395	Assembly, Fuel Filter	1
--	M-20-3396	Nut, Compression	1
--	M-20-3105	Sleeve, Compression	1
35	M-60-309	Lockwasher, Primer Cover Screw	6
36	M-20-3397	Screw, Primer Cover Mounting	6
37	M-20-3399	Frame, Handle Assembly Retaining	1
38	M-60-169	Screw, Retaining Frame	3
39	M-20-3400	Gasket, Handle Assembly	1
40	M-20-3401	Fiber Gasket, Handle Assembly Screw	8
41	M-60-200	Screw, Handle Assembly	8
42	M-20-3402	Hose, Fuel and Air	1
43	M-20-3403	Assembly, Connector	1
44	M-20-3362	Nipple, Fuel Hose	1
45	M-20-3404	Assembly, Check Valve & Air Hose Connector	1
46	M-20-3405	Clamp, Fuel Hose	2
47	M-20-3406	Clamp, Air Hose	2
--	M-20-3398	Tank, Fuel	1
--	M-20-3407	Decal, Fuel Tank	1

Note: All parts in groups 15-A and 15-B are part of M-20-3365 Fuel Tank Assembly, Complete.
N.S.S. — Not sold separately



REMOTE THROTTLE CONTROL — GROUP No. 16

REF. NO.	STOCK NO.	NAME	QUANTITY
1	M-60-5272	Assembly, Remote Throttle Control Complete	1
2	M-60-5273	Housing	1
--	N.S.S.	Guide, Ratchet	1
3	M-60-5274	Spring, Handle Jam Screw	1
4	M-60-1120	Screw, Handle Jam	1
5	M-60-5275	Block, Cable Guide Grommet Clamping	1
6	M-60-1121	Screw, Clamping Block	1
7	M-60-5276	Grommet, Cable Guide	1
8	M-60-5277	Assembly, Handle	1
--	N.S.S.	Handle	1
--	N.S.S.	Ratchet	1
--	N.S.S.	Rod, Ratchet	1
--	N.S.S.	Rivet, Ratchet & Rod Assembly	1
--	N.S.S.	Button, Ratchet Rod	1
9	M-60-1122	Screw, Ratchet Pivot	1
10	M-60-5278	Spring, Ratchet Torsion	1
11	M-60-5279	Block, Cable Guide	1
12	M-60-5280	Connector, Handle to Guide Block	1
13	M-60-5281	Spacer, Guide Block Screw	1
14	M-60-374	Washer, Guide Block Screw	1
15	M-60-1123	Screw, Guide Block	1
16	M-60-5282	Spacer, Connector Screw	1
17	M-60-1124	Screw, Connector Screw	1
18	M-60-248	Nut, Connector Screw	1
19	M-60-5283	Spring, Handle Tension	1
20	M-60-5284	Spacer, Handle Pivot Screw	1
21	M-60-1125	Screw, Handle Pivot	1
22	M-60-1126	Screw, Guide Block Guide	1
23	M-60-375	Washer, Handle Pivot Screw	1

N.S.S. — Not sold separately

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.

All labor, on parts replacement is free of charge, FOB factory where examination discloses to our satisfaction that the part in question is defective under the terms set forth in the Warranty.

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.

Standard parts and repair work are FOB factory, or any Certified Kiekhaefer Service Organization. The Distributor nearest you or the factory will be pleased to give you the name of the Service Organization in your locality.

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 obligation 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 judgement effects 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 other than that recommended by the Company is used.

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

FAST, POWERFUL

RELIABLE

SLEEK

KIEKHAEFER
MERCURY
OUTBOARD MOTORS

KIEKHAEFER CORP., BEAVER DAM, WISC.