OWNER'S INSTRUCTION BOOK *and* SERVICE MANUAL

ECLIPSE

Air Cooled

OUTBOARD MOTOR

1937 MODELS—SM and SB

BENDIX MARINE PRODUCTS COMPANY
SOUTH BEND - - - - - - - - - INDIANA

WARRANTY

WE, BENDIX MARINE PRODUCTS COMPANY, warrant the Eclipse Air-Cooled Outboard Motor, and the Eclipse Electric Outboard Motor manufactured by us, to be free from defects in material or workmanship, under normal use in service. Our obligation under this warranty is limited to replacing or repairing, at our factory, any part or parts thereof, which shall, within three months after delivery to the original purchaser, be returned to us at South Bend, Indiana, with transportation charges prepaid, and which on examination, shall prove to our satisfaction to have been defective. This warranty is expressly in lieu of all other warranties expressed or implied, and of any other obligation or liability on our part.

This warranty shall not apply to any motor which has been repaired or worked on by any one other than a duly authorized distributor or agent, in any way which in our judgment affects the operation or reliability of the motor, or which has been subject to misuse, negligence or accident.

BENDIX MARINE PRODUCTS COMPANY,
401 Bendix Drive, South Bend, Indiana.

IMPORTANT

Outside Repair Charges

WE WILL NOT BE RESPONSIBLE FOR TIME SPENT AND WORK PERFORMED BY OTHERS THAN THE FACTORY, UNLESS SUCH REPAIRS ARE FIRST AUTHORIZED BY US IN WRITING.

SPECIFICATIONS

Bore and Stroke	$2\frac{1}{16}$"x1½"
No. of Cylinders	1
Piston Displacement cu. in.	5.01 cu. in.
B. H. P.	2 to 2¼ at 3300 R. P. M.
R. P. M.	450-3300
Weight Empty	27¾ lbs.
No. Piston Rings	3
Propeller Diameter and Pitch	7½"x5"
Fuel Capacity	5½ pts.
Starting	Manual rope
Ignition	Bendix Scintilla Magneto or 6 V. Battery
Make of Carburetor	Stromberg
Gear Ratio	12-19
Type of Exhaust	Under water
Cooling System	Air

IMPORTANT

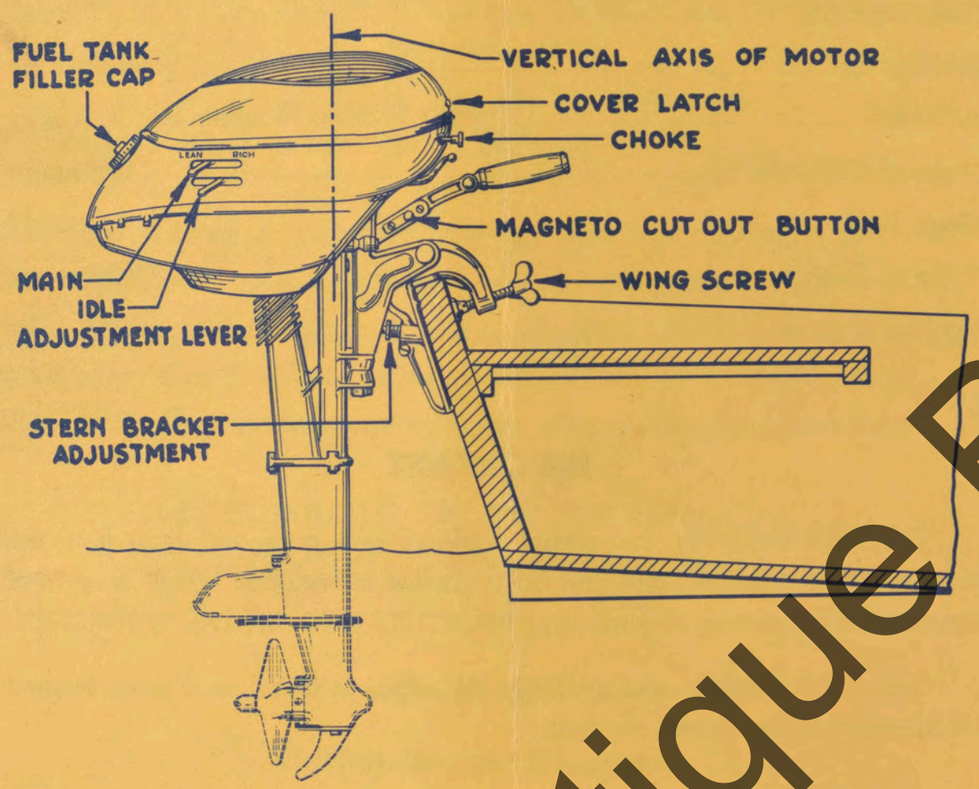
Fill out completely the owner's registration card and mail it to the factory. This card is important as it carries information which is of vital importance for factory records and PROTECTS YOU ON THE WARRANTY.

The serial number and model of the motor is found on a plate located on the side of the swivel bracket.

I

INSTALLATION AND STARTING INSTRUCTIONS

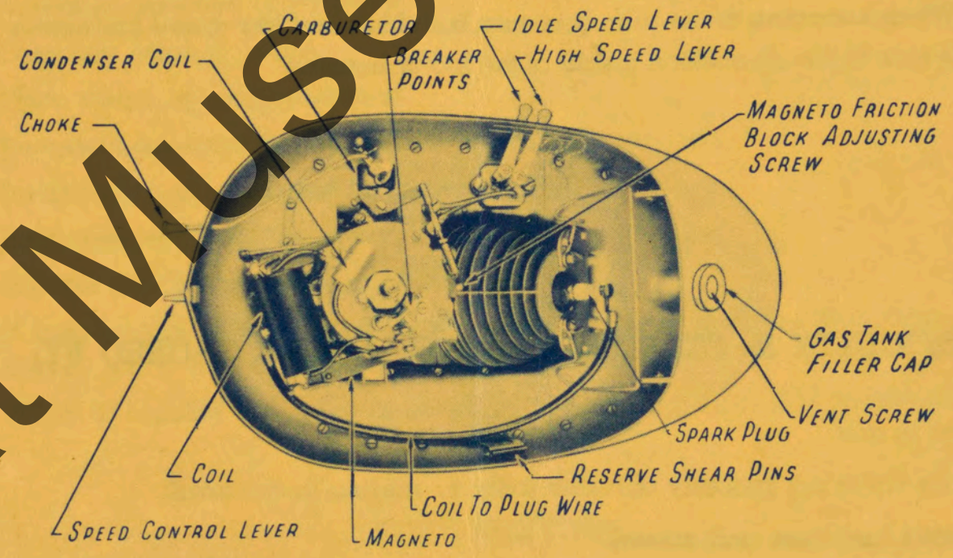
1. Place motor on stern of boat.
2. Tighten wing screw securely. Do not use wrench or pliers.
3. Tilt motor to approximately a vertical position by running out the adjusting screw located at the rear of the stern bracket.
4. For best performance the water line (which is the rib above the anti-cavitation plate) should be at the water level. The transom should not be higher than thirteen (13) inches.



5. Fill gasoline tank. Use a mixture of one half pint of SAE No. 30 oil and one gallon of gasoline.

   NOTE: It is important to mix the fuel very thoroughly before putting in tank. When using the motor on continuous heavy duty service, also during the break in period of first ten hours use one pint of SAE No. 30 oil to one gallon of gasoline.

6. Open gas tank vent screw, located on the gasoline tank filler cap as far as possible.
7. Place speed control lever in central position or toward high speed.
8. Wrap starting rope in groove on flywheel.
9. Plug in cable on SB models.
10. Close choke while starting if motor is cold. Avoid excess use of choke.



11. Pull on rope so that motor spins rapidly. When motor starts release choke.
12. Adjust high speed carburetor lever to correct setting for motor to run smoothly .
13. Do not run engine over half speed for first eight hours.
14. Always keep grill cover closed except when starting the motor.

II

TO STOP MOTOR

1. Press down button located on steering arm to stop SM Model motors.

1a. Pull cable from socket to stop SB Model motors.

2. Turn high speed carburetor lever to closed position, i. e. toward the rear of the motor.

3. When removing motor from boat turn both high and low speed carburetor levers to the off position inside of the motor housing.

III

DIFFICULTY IN STARTING MOTOR MAY BE CAUSED BY:

Water in gas.

Needle valve not properly adjusted (refer to starting instructions).

Clogged fuel lines and screen.

Fouled or defective spark plug (residue collected on insulator, especially if operated in salt water).

Loose electrical connections.

Corroded breaker points.

Breaker points not properly adjusted.

Stoppage of carbon (after long period of operation) in exhaust passages, exhaust ports and piston ring grooves, causing rings to stick.

Battery low (on SB Model only).

Damp coil.

Broken down condenser.

Wires at breaker grounded to magneto cover or flywheel (SM Model only).

IV

IMPOSSIBLE TO START

Gasoline tank empty.

Mixture valve not properly adjusted.

Water in fuel.

Clogged screen and fuel lines.

Fouled or defective spark plugs.

Corroded breaker points.

Open circuit in ignition system.

Excessive accumulation of carbon in exhaust passages.

Burned out coil or shorted condenser .

Battery dead (on SB Model only).

Breaker points not properly adjusted.

If improper oil is used or oil is not properly mixed with the fuel a greasy deposit will collect in the tank and interfere with starting.

Wires at breaker grounded to magneto cover or flywheel (SM Model only).

V

FUEL MIXTURE

The lubrication of the Eclipse Outboard Motor is accomplished by mixing oil with the gasoline. As the gasoline air mixture is compressed in the crankcase, the oil is very readily carried to all points requiring lubrication except the gear case. For best operation use a mixture of one-half pint of SAE No. 30 oil to one gallon of gasoline, except during break-in period when one pint of oil to one gallon of gas should be used. Any good grade of gasoline will be satisfactory. It is absolutely necessary that the oil be well mixed with the gasoline before being put in the tank.

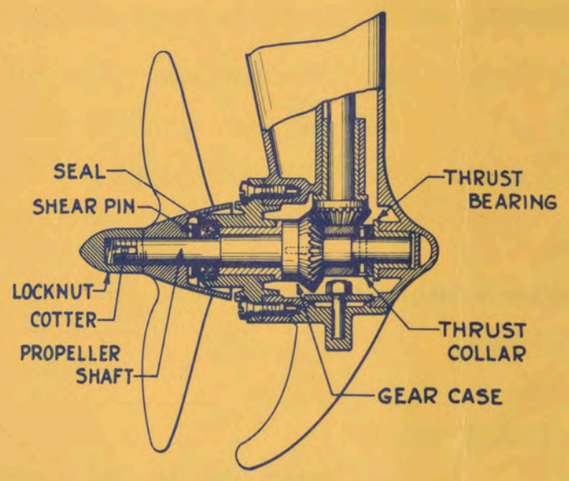
VI

LUBRICATION OF GEAR CASE

For good results the gearcase should be kept well lubricated and free from water. The water can be drained by removing both grease plugs on the gear case and allowing it to drain. Three ounces of grease should be kept in the gearcase at all times.

This grease is inserted by screwing a tube of Eclipse Gearcase Grease into the grease hole on one side of the gearcase and forcing the grease through until it comes out of the grease hole on the opposite side.

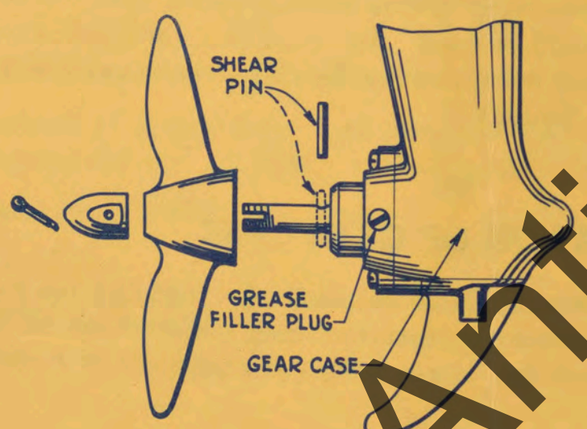
If the gears sing it is probable that they need grease. Water left in the gearcase will cause corrosion and may crack the case if allowed to freeze there.



VII

SHEAR PIN

The propeller is attached to the propeller shaft by means of a small shear pin. This pin shears if any undue loads are applied to the propeller or engine and prevents any damage to them. It can be replaced by removing the propeller nut and propeller. The broken pin can be driven out and a new one installed. The propeller and nut are then replaced. It is advisable that the owner carry spare shear pins in holder under hood. Two extra pins are supplied with each motor.



VIII

CAVITATION

If the propeller is too near the water surface or stern frame of the boat, cavitation is likely to occur. Cavitation is the condition in which the propeller is operating in very turbulent water including much air. Grass and weeds on the gearcase may cause cavitation.

IX

COOLING

The Eclipse Outboard Engine, like modern airplane engines, uses air for cooling. The air enters through a grill in the top of the hood and is forced down over the cooling fins on the cylinder and crankcase by a fan built into the flywheel. The air is exhausted from the bottom of the hood.

In order to maintain proper cooling it is important that the air cooling system not be restricted by laying anything on the grill or under the flywheel. The grill should be closed at all times while the motor is in operation.

X

FLYWHEEL

The flywheel has a cooling fan built into it. It should be kept free of rust and corrosion. To remove the flywheel loosen the holding nut until it comes tight against the pulling stop. Further loosening of the nuts should pull the flywheel loose from its shaft. If this does not loosen the flywheel, a sharp hammer blow on the nut while in the pulling position will loosen the flywheel. When the flywheel is replaced it should be tightened well into place to prevent any slippage in operation.

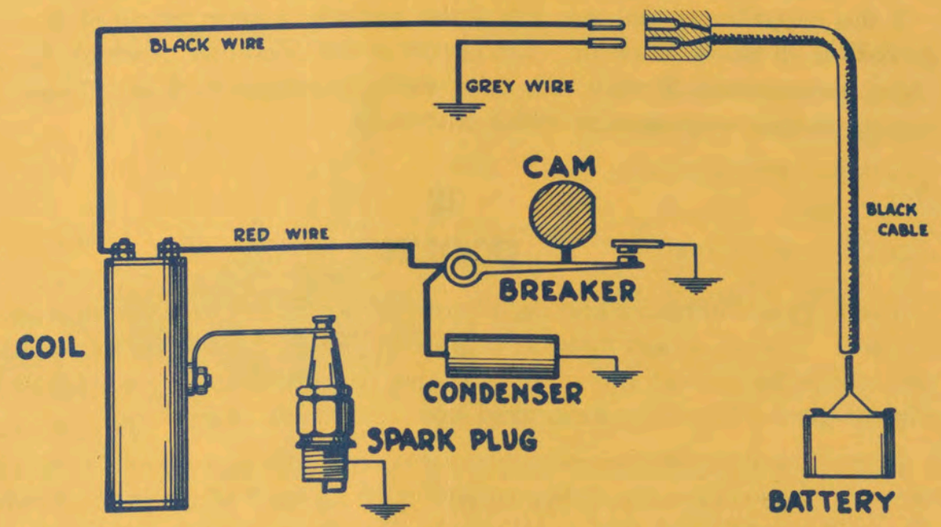
XI

IGNITION (SB MODEL)

The ignition system on the SB Model is the same as that used on most automobiles. A small breaker or contactor is closed once every revolution of the motor by a cam action on the crankshaft. The closing of this breaker allows a current to flow from the battery through a small ignition coil. The interruption of this current causes a high voltage to be impressed on the spark plug and a spark to jump across its gap. A condenser is placed across the breaker contacts to improve its action.

XII

WIRING DIAGRAM (SB MODEL)

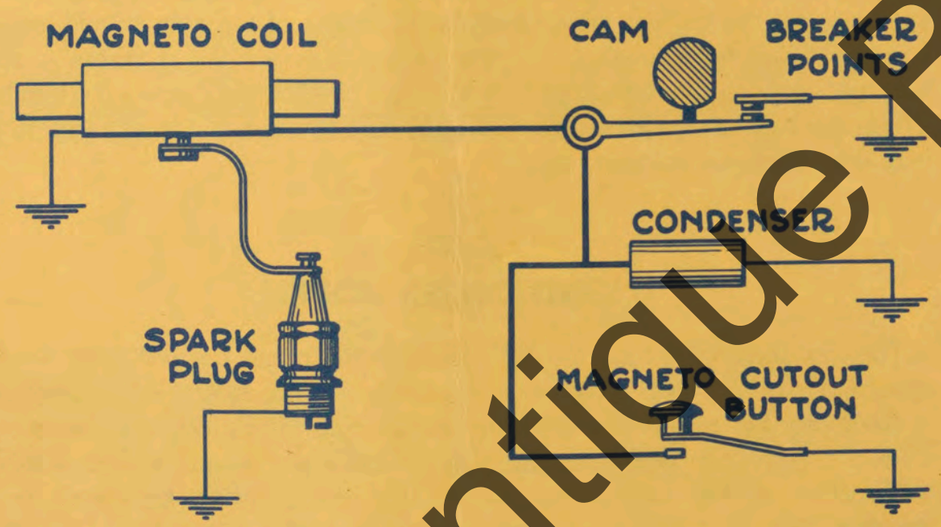


For best results use a Champion Spark Plug H-10 and genuine Bendix Eclipse replacement coils, breakers, etc.

Any available 6-Volt battery may be used.

XIII

IGNITION (SM MODEL)



The ignition system on the SM Model is of the magneto type. The magneto rotor is keyed directly to the crankshaft and rotates inside of the stator or

the stationary piece of the magneto. The wiring diagram above shows the hookup from the cutout button through the condenser, to the breaker points and on to the magneto coil and spark plug.

The magneto should be serviced only by authorized Eclipse outboard motor dealers or distributors. However, in the event that it should become necessary to remove the coil or rotor from the magneto, great care must be used to keep dirt from the ground faces of the coil core and dirt or steel shavings from the inside of the magneto, as either may result in the destruction of the magneto.

XIV

REGULATING MAGNETO FRICTION

At the rear of the magneto is the magneto friction block adjusting screw (illustrated in the cut showing the top of the motor). This screw when turned either in or out regulates the friction between the magneto and its bearing on the crankcase. This drag or friction can be felt at the speed control lever. If, after the motor has been run several hours, the speed control lever will not remain where it has been set, simply tighten the set screw to produce more friction. **Care should be taken not to tighten the screw too much as that would put a strain on the speed control lever.** Just a slight drag is all that is necessary.

XV

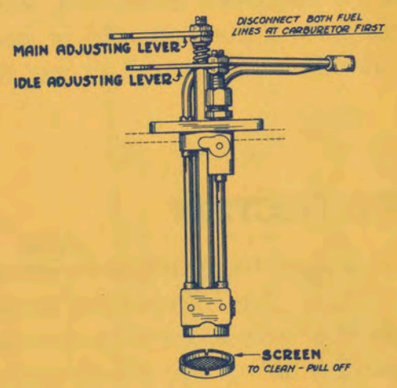
CARBURETOR

The Eclipse Outboard Motor uses a Stromberg fuel lift carburetor. This carburetor uses no float chamber but has a novel fuel lift mechanism which takes gas directly from the tank to the carburetor.

The flow of air past restrictions in the carburetor causes a vacuum to be applied to tubes running to the bottom of the gasoline tank. This vacuum tends to draw gasoline up through the tubes toward the carburetor. Air Bleeds run from free air to the gasoline intake tubes. These bleeds allow bubbles of air to enter the gasoline tubes along with the gas. These air bubbles allow the vacuum to draw this air gas mixture up to the carburetor.

The carburetor itself consists of a main venturi and two smaller venturi. The tubes from the tank are connected to holes in these small venturi. A portion of the main venturi can be rotated so as to act like a throttle. The air flowing through one of the small venturi is connected to a circular passage around the main venturi. The other small venturi is connected to the main venturi beyond the rotating throttle valve. It is used for idling only. A normal choke valve is used on the air intake.

Note on the outside of the Flywheel housing the slots through which the carburetor needle valve adjusting levers extend. The top lever controls the high speed needle and the lower lever controls the idle speed needle. The latter lever is used only at very slow motor speeds. Between the slots different positions are marked from LEAN to RICH; 1-2-3-4-5. These figures are for the owner's convenience in obtaining the correct setting of the carburetor needle valve levers. Before starting the motor set the high speed lever at about position 4 and then regulate for best running position after the motor has been started.



XVI

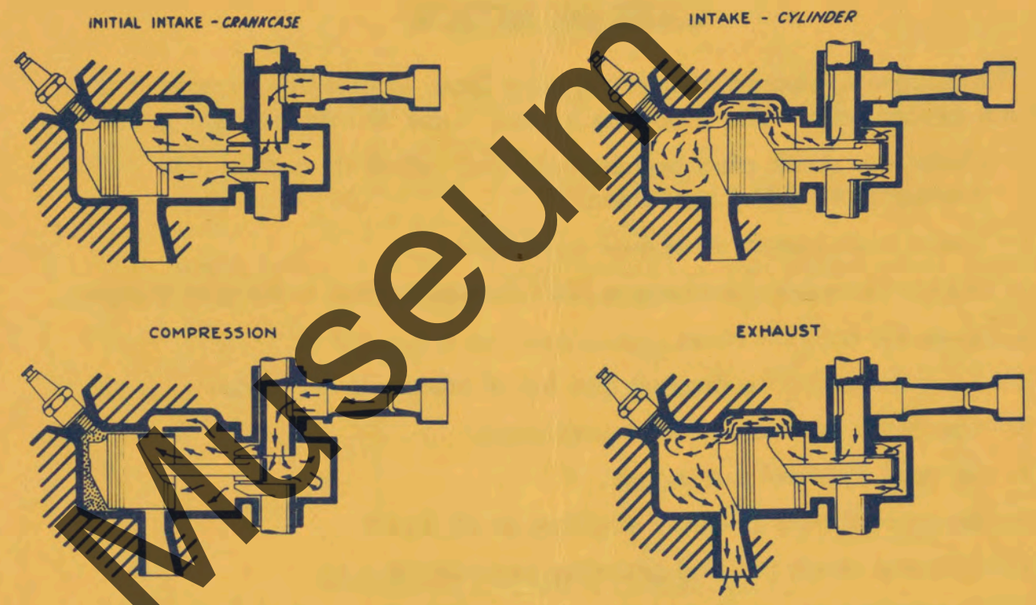
TWO STROKE CYCLE

The Eclipse Outboard Motor uses a two-stroke cycle with rotary intake valve. This is somewhat different from the ordinary automobile engine which uses a four-stroke cycle and poppet valves.

In the two-stroke cycle engine, the gas-air mixture is admitted to the cylinder by means of ports in the cylinder wall which are uncovered by the piston at the bottom of its stroke.

During the upstroke of the piston a gas-air mixture is drawn into the crankcase through the port in the upper crankshaft bearing and hollow crankshaft. This port is shut off during the down stroke of the piston and the mixture in the crankcase is compressed.

At the bottom of the stroke the piston uncovers ports in the cylinder wall which allow the compressed mixture in the crankcase to enter the cylinder and drive the burned gasses out. On the up stroke the ports are closed and the mixture is compressed. At the top of this stroke the spark plug



ignites the mixture. The burning mixture forces the piston down and the cycle is then repeated .

It is to be noted that two actions are occurring at the same time in the two-stroke cycle. On the up stroke a mixture is being drawn into the crankcase and another mixture is being compressed in the cylinder. On the down stroke the mixture in the crank case is being compressed and that in the cylinder is burning. Thus there is one explosion every revolution of the engine.

XVII

SALT WATER OPERATION

When the Eclipse Motor is used in salt water special care must be taken to prevent corrosion of the exposed parts. The gearcase must never be left in the water when not operating. It is recommended that the motor be removed from the boat and washed with fresh water after each use in salt water. It should be wiped with an oily rag at frequent intervals and the gearcase kept free of water. Keep the spark plug and ignition system clean and free from salt water.

The Bendix Marine Products Company cannot be held responsible for corrosion due to neglect of the above instructions.

XVII

CARE OF MOTOR

The Eclipse Outboard Motor will give long, trouble-free service if it is given proper care. The following service items should be kept in mind:

1. Clean the spark plug occasionally and adjust its gap to .035". The porcelain should be kept clean.
2. Use a fresh battery whenever necessary.
3. Adjust the breaker contacts to .020" clearance when in the open position.
4. Keep the contacts clean.
5. Keep the gearcase drained and full of grease. (3 oz. grease).
6. Clean the exhaust passage each year.
7. Be sure flywheel nut is tight.
8. Be sure all bolts and nuts are tight at all times.
9. Examine shear pin and propeller periodically.
10. Keep the motor well cleaned and wipe off often with an oily cloth.
11. Do not leave gearcase in water, particularly not in salt water.

DO NOT TAKE THE GASOLINE TANK APART (I.E. SEPARATE THE TWO PORTIONS) AS IT HAS BEEN SEALED BY A SPECIAL PROCESS. ONCE SEPARATED THERE IS NO ASSURANCE AGAINST LEAKING. SEE YOUR SERVICE MAN.

XIX

IF MOTOR IS SUBMERGED

1. Remove motor from water as soon as possible.
2. Remove coil, spark plug, breaker and carburetor. Wash with gasoline and dry.
3. Remove water from cylinder and crankcase by turning flywheel slowly by hand and at the same time tilting motor so water will run out exhaust port.
4. Place a small amount of oil in the cylinder and crankcase.
5. Drain tank of all water and replace all parts in their correct positions.
6. Start motor and run until all water is removed from engine.

XX

STORAGE

Before placing the motor in storage take the following precautions:

1. Drain all water from the gearcase.
2. Wash motor with fresh water and wipe off with an oily cloth.
3. Refill gearcase with Eclipse Gearcase Grease.
4. Remove spark plug and pour a tablespoon of oil into the cylinder. Turn the flywheel over several times and replace the spark plug.
5. Drain all gasoline from tank and carburetor.
6. Clean gasoline filter.
7. Store motor in its normal vertical position.

XXI

REMOVE FROM STORAGE

1. Remove spark plug and rotate flywheel rapidly to blow out excess oil.
2. Clean spark plug and replace it.
3. Tighten flywheel nut and all other nuts and screws.
4. Start motor in normal manner.

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