

# FLAMBEAU OUTBOARD MOTORS MANUAL FOR OPERATION AND MAINTENANCE

## 2½ and 5 HORSEPOWER MODELS

### SECTION I: OPERATION

#### A. READYING MOTOR FOR USE:

Oil has been placed in the cylinders as a rust preventive, and must be removed before any attempt is made to operate the motor. To remove the oil from the cylinders, the following procedure should be used:

1. Remove the right hand motor cover (the side with only two screws) by loosening the two securing screws. (The 2½ horsepower model has only one screw.)
2. Remove the corks from the spark plug holes in the cylinders.
3. Ground the spark plug wires from the magneto to any part of the motor.
4. With motor lying on the two legs at the back of the gas tank, spin flywheel several times with starter rope or Kwik-Starter.

In readying your motor for use the following should be done:

1. Check gap on spark plug points with feeler gauge, (should be .025"). Insert spark plugs in cylinder heads and tighten securely with special wrench provided.
2. Attach the spark plug wire marked "top" to the top spark plug and the other wire to the lower plug. Tighten the spark plug nuts securely with pliers. (On the 2½ horsepower model there is only one wire to be attached.)
3. Replace motor cover. Your FLAMBEAU has been otherwise serviced at the factory. Fill the gas tank with properly mixed fuel (See Sect. II, D), read the remainder of this manual and you are ready to operate your motor.

#### B. ATTACHING MOTOR TO BOAT.

In order to obtain the most efficient operation from your motor, the below procedure should be followed:

1. Place motor in the center of the transom on stern of boat.
2. With boat floating EMPTY, see that propeller and underwater exhaust are completely submerged. If this is not the case, the transom must be cut down so that the proper depth of propeller and underwater exhaust may be obtained. For the best results your FLAMBEAU should be used on a boat with a transom not more than 15 inches high.
3. After proper depth has been determined according to paragraph 2 above, tighten the clamp screws by HAND. DO NOT USE TOOLS for this purpose as hand tightening is sufficient.
4. Remove cotter pin in angle adjustment pin.
5. Place angle adjustment pin in hole which will permit the drive housing to be most nearly vertical when boat is empty.
6. Replace cotter pin.
7. Attach rope or chain to carrying handle and fasten to boat to insure that your motor will not be lost if dropped overboard.

#### C. PROPELLER:

Our PATENTED propeller clutch, eliminating the use of a shear pin is similar to a standard disk clutch. The clutching force is proportional to the water thrust and therefore prevents slippage throughout the entire speed range. The blades must be kept fairly clear of weeds to insure perfect operation. In normal operation the clutch slips only when it meets an obstruction, at which time the thrusting force is lost, permitting the propeller shaft to revolve while the propeller lies against the obstruction. When the propeller is free of the obstruction, the water thrust causes the clutch to reengage.

#### D. TILT-UP:

FLAMBEAU Outboard Motors do not rely on friction in maintaining a tilt-up position. A positive tilt-up securing lock is provided on the left side of the stern bracket to prevent the motor from accidentally slipping back into the water. The center of gravity of the FLAMBEAU is such that the motor should be tilted up ONLY BY GRASPING THE BUILT-IN HANDLE IN THE BACK OF THE GAS TANK AND LIFTING FORWARD. When the pivot bracket clears the tilt-up lock, depress it and allow the motor to rest on the lip of the pin. NEVER ATTEMPT TO RAISE THE MOTOR BY PRESSING DOWN THE STEERING HANDLE.

#### Releasing Tilt-Up Lock

To lower the motor into the water, lift the motor slightly by the built-in grip in the back of the gas tank to free the locking pin from the edge of the pivot bracket. As the locking pin is equipped with a spring, it will withdraw inside of the stern bracket, permitting the motor to be lowered into the water.

#### CAUTION

The gasoline shut-off valve should be closed before the motor is tilted. THE MOTOR SHOULD NEVER BE TILTED SO FAR FORWARD THAT THE PROPELLER IS HIGHER THAN THE CRANK CASE as such angle might allow water to enter the cylinders through the exhaust ports.

#### E. PATENTED DUAL CARBURETION:

Your FLAMBEAU has PATENTED DUAL CARBURETION which makes it possible to operate the motor at full speed or trolling without further adjustment after original settings have been made. Two carburetor adjustment wheels have been conveniently located on either side of the shut-off valve, one for high speed and one for low speed.

#### F. STARTING AND OPERATING INSTRUCTIONS:

Attach motor securely to boat in accordance with instructions given in SECTION I, B. Fill gas tank with correct fuel mixture described in SECTION II, D. 1.

1. Completely open air vent screw in gas tank filler cap.
2. Open gasoline shut-off valve two complete revolutions. If opened more priming pin will not operate.
3. Open HIGH SPEED carburetor adjustment wheel, one complete turn, and the LOW SPEED adjustment wheel  $5/8$  turn.
4. Coil starting rope clockwise in starter disk sheave. (On motors equipped with Kwik-Starter, no starter rope is needed.)
5. Move speed control lever to "START" position.
6. Press down priming pin on top of shut-off valve. Hold down until gasoline comes out of overflow tube on left side of motor just below gas tank. Then release. It is necessary to prime motor only when starting cold.
7. Give starter rope a quick, strong pull with right hand, holding steering handle with left hand. A sluggish pull will not start the motor. On motors equipped with a Kwik-Starter, pull starter handle slowly until it engages, then forcibly as with the rope in sheave. Repeat until motor starts. If motor does not start in three or four attempts, repeat instruction 6 and 7.

#### Procedure if Motor is Flooded

If the motor does not start after repeated attempts, it may be flooded. To clean out a flooded motor close the gasoline shut-off valve and the two carburetor adjustment wheels by turning them clockwise. Drain excess gasoline from carburetor by

turning the motor as far clockwise as possible and tilting up the motor, being careful not to raise the propeller higher than the crank case. After lowering back into water, spin the motor until it starts. When the motor starts, open the gasoline shut-off valve and adjustment wheels to their original settings. No further priming should be necessary. Under extreme conditions, it may be necessary to remove the spark plugs, and blow out or carefully dry the points before the motor will start.

8. After motor starts, move speed control lever, to "FAST" position and adjust HIGH SPEED carburetor adjustment wheel until motor runs smoothly. After motor has warmed up running at high speed, move speed control lever toward "SLOW" position and adjust LOW SPEED carburetor adjustment wheel until the motor runs smoothly at low speeds. If the motor stops without popping it is too rich, and the low speed needle valve should be turned toward "Lean", moving the knobs on the wheel about  $1/16$ ". Start the motor and try this setting. If the motor stops without popping it is still too rich and should be leaned down a little more. Continue in this way until the motor runs at low speed or starts popping. Popping indicates that it is too lean. If the motor pops and quits it must be richened up a little. Continue richening it by turning the knob about  $1/16$ " at a time until the motor runs without popping. This adjustment is then right. Normally this adjustment is between  $1/2$  and  $5/8$  turn open. If in making this adjustment the valve is moved too far at a time the proper position may never be found. It could be found only by chance. This adjustment is critical and must be right. By the above procedure the right adjustment can be found without chance. Then move speed control lever back to "FAST" position and readjust HIGH SPEED wheel. All conditions being equal, once set, carburetor adjustment wheels need not be changed. If starting under extremely cold conditions, it may be necessary to slightly enrich HIGH SPEED Setting until motor is warmed up.

9. To stop the motor, move speed control lever to "STOP" position. NOTE: If no water is emitting from the water exhaust hole, and the small water outlet hole in the left hand motor cover, the pump is not functioning properly and your motor should be stopped. For instructions on checking the water pump see SECTION II, E.

#### Intermediate Carburetor Adjustment

To insure smooth and instant acceleration in the FLAMBEAU Outboard Motor, a device similar to the accelerating pump in an automobile has been designed and built into the carburetor. The adjustment for this device will be found on the bottom and right hand side of the carburetor, after the right hand motor cover (the one with the two securing screws) has been removed, and will be referred to herein as the intermediate adjustment.

The intermediate adjustment controls the gas-air mixture for speeds obtained with the throttle opened just a little or just cracked. This throttle valve opening is obtained when the left edge of the speed control lever is directly over the point above the word "START" on the instruction plate.

This adjustment is made before the motor leaves the factor and should be right for all normal conditions. Proper setting is between  $1/2$  and  $5/8$  of a turn open.

However, if after high and low speed adjustments are properly set it should be found necessary to refine the intermediate adjustment, set the speed control lever at the cracked throttle position and allow the motor to run for several minutes. If the motor pops, open the intermediate adjustment (This adjustment has a right hand thread. Screw out to open) a little at a time until the motor runs smoothly without popping. If the motor runs without popping, close the intermediate adjustment (screw in to close) a little at a time until the motor begins to pop. The popping indicates a too lean mixture. Open the adjustment a little at a time until the motor runs smoothly without popping.

## G. BREAKING-IN YOUR FLAMBEAU:

Good performance depends to a great extent on the care with which the motor is operated in the initial runs. With the exception of setting your carburetor adjustments, your motor should not be run at more than TWO-THIRDS of maximum speed during its first FOUR HOURS of operation.

## H. REMOVING MOTOR FROM BOAT:

Using front and back grips, raise motor straight up; hold in vertical position until all water drains from the underwater exhaust. Do not tilt motor so that the water from the lower housing can run into the cylinders.

Carry your FLAMBEAU by the forward grip. It is balanced so the power head is higher than the lower unit.

Place the motor only in a clean dry area where sand and dirt cannot foul the magneto. The rear end of the gas tank has special brackets incorporated in its design for use as legs.

## SECTION II: M A I N T E N A N C E

### A. REMOVABLE PARTS:

FLAMBEAU Outboard Motors are constructed so that cylinder sleeves and all bearings are removable and replacable. There are no cast-in parts. This feature will enable your dealer to give you prompt and efficient service.

### B. KWIK-STARTER:

ALL FLAMBEAU Outboard Motors can be equipped with the Kwik-Starter, which is listed as an accessory. The Kwik-Starter is secured to the motor by three screws, two just in front of the forward edge of the lower part of the gas tank and one at the top of the gas tank between the gasoline shut-off valve and the filler cap.

### C. SPEED CONTROL LEVER:

The lever controlling gasoline and advancing or retarding the spark may loosen after long service. It can be tightened by drawing up a clamp screw located on the magneto base. This screw is accessible through the hole just back of the instruction plate on the right hand side of the motor. Move the speed control lever to a position between "STOP" and "SLOW", and the clamp screw will become visible just in front of screw holding the spark plug wire in place.

### D. LUBRICATION INSTRUCTIONS:

#### 1. FUEL

Correct fuel mixture will insure long life and satisfactory performance of your FLAMBEAU, as it is a two-cycle motor in which the lubrication of the cylinders, pistons, and crank shaft and connecting rod bearing is supplied by the oil mixed with the gasoline.

NEVER POUR CLEAR GASOLINE OR OIL INTO THE TANK. Use a separate container for mixing. MIX GASOLINE AND OIL THOROUGHLY. FUEL CONTAINER SHOULD BE AGITATED EACH TIME BEFORE FILLING GAS TANK.

STRAIN ALL FUEL BEFORE USING. In whatever container gasoline is stored, atmospheric and temperature changes often cause condensation. The water thus caused, results in hard starting and sluggish operation. Therefore, it is recommended that



all fuel be strained through a chamois to eliminate the accumulated water. Clean equipment will decidedly aid in obtaining best operational results. With the purchase of your FLAMBEAU, the purchase of a new fuel container is a small cost and a worthwhile investment.

**GASOLINE RECOMMENDED:** TEXACO FIRE CHIEF Gasoline or equivalent is entirely satisfactory. The compression ratio in the FLAMBEAU is not such as to require ethyl or high test gasoline, although these gasolines may be used.

**OIL RECOMMENDED:** Use TEXACO OUTBOARD MOTOR OIL, S.A.E. 40, or equivalent, mixing 2/3 pint of oil with each gallon gasoline. Use only oils recommended for outboard motors.

## 2. GREASING:

The gear housing should be kept filled with TEXACO Outboard Gear Lubricant or equivalent. To refill, remove the vent screw and pipe plug in gear housing. Insert grease gun or tube and fill until grease flows from the vent. Replace the vent screw and grease plug, making sure they are secure.

Check grease every day the motor is used.

## E. WATER PUMP:

The water pump, located between the gear housing and the propeller housing, is of the positive displacement type employing a neoprene impellor which gives long and uninterrupted service.

If after long, hard use, any part of the pump becomes worn, it can be replaced in the following manner:

1. Remove the propeller.
2. Remove the propeller drive pin.
3. Using special wrench from the tool kit, remove the pump housing, which has a left hand thread and is removed by turning clockwise.

If it is noticed that no water is coming out of the water exhaust, or if the motor runs hot, the intake slots in the pump housing should be checked to see if they are clogged by foreign matter. If the intake holes are not clogged, the impellor should be checked for wear.

## F. STEERING ARM FRICTION:

Steering arm friction can be changed by adjusting screws located on either side of the swivel bracket bearing.

## G. REMOVING FLY WHEEL:

In performing maintenance work on your FLAMBEAU, the flywheel should never be removed unless it is absolutely necessary to check ignition points, the condenser or coils in the magneto, to replace the high tension wires or to remove the carburetor. If your motor is equipped with a Kwik-Starter, remove the starter by following the procedure given in Section II, B. The center plate must be removed by unscrewing the three equally spaced screws within the rope sheave plate. Holding the fly wheel securely with one hand, unscrew the fly wheel nut two turns, place the point of a screw driver between the fly wheel and the housing and pry the fly wheel upward, taking out all the play. Holding the fly wheel in this position, strike the fly wheel nut a square solid blow with a hammer. When the fly wheel is loosened from the crankshaft, remove the nut completely and lift off the fly wheel being careful not to lose the key which engages the fly wheel to the shaft.

In replacing the fly wheel, the nut must be drawn up as tightly as possible. Use a hammer on the wrench to insure good tightening.

## H. IGNITION:

In checking the ignition, the spark plugs should be removed and reconnected to the magneto wires. With the plugs lying on the cylinders, the spark can be checked by spinning the fly wheel with the starter rope or Kwik-Starter. A weak spark may indicate a weak coil or condenser; spark plugs may be dirty or broken, and contact points may be dirty or out of adjustment. Your FLAMBEAU is equipped with an Eiseman Magneto. In order to check the breaker points, remove the fly wheel according to instructions given in G. above, using a feeler gauge from the tool kit, being sure that the breaker points, in open position, are .020" apart.

## I. SPARK PLUG ADJUSTMENTS:

Spark plugs need cleaning from time to time due to the fact that two-cycle operation requires that oil be mixed with gasoline for proper lubrication. While normal operation can be had without extraordinary attention to the plugs, nevertheless, the most pleasure can be had from your FLAMBEAU by keeping the plugs clean at all times. The spark plugs of every FLAMBEAU are carefully adjusted before they leave the factory. Continued use or accidental dropping of a plug can change its setting and the points should be checked from time to time to assure that they are .025" apart. A feeler gauge should be used for this purpose.

## J. THE CARBURETOR:

FLAMBEAU PATENDED dual carburetion employs a carburetor located directly between the gas tank and the power head in vertical alignment, eliminating all gasoline lines. A high speed manifold and a low speed manifold operate off one float bowl. Immediately to either side of the gasoline shut-off valve, are high and low speed carburetor adjustment wheels which control the needle valve in each manifold. The low speed manifold is in operation at all times, while the high speed manifold is controlled by means of a butterfly valve, which is automatically opened and closed by the same lever which advances and retards the spark. The low speed manifold is small in diameter giving velocity to the mixture, and is located next to the exhaust manifold so that the mixture is kept in better vaporization not only by the speed of travelling through the small venturi, but also by the heat from the exhaust manifold. The high speed manifold on the right side of the motor has an accelerating well which provides smooth operation throughout the speed range.

Carburetor Strainer: The PATENDED carburetor requires very little attention as the strainer or screen is of the self-cleaning type. The strainer is located so that it extends well above the bottom of the gas tank, does not lie in a recess, and is kept free of foreign matter by the movement of the gasoline. If for some reason the screen becomes clogged, it can be reached by removing the fly wheel and gas tank, as per these instructions, and will be found in the hexagon valve at the bottom of the tank. Before removing this valve, the gasoline shut-off valve must be removed by unscrewing. Upon unscrewing the valve, the screen can be removed and cleaned. At this time the gasoline tank can be cleaned by flushing with clean gasoline. In assembly, if the valve gasket has become damaged, a new one must be used.

Adjustment Wheel Friction: Friction on the adjustment wheels is automatically set and needs no further adjustment.

Gasoline Shut-Off Valve: Friction on the gasoline shut-off valve is set by spring pressure. In case the valve becomes loose and it will not remain in a set position, it may be necessary to replace the packing. To replace the packing, unscrew shut-off valve, and lift out, holding priming pin to one side. When replacing shut-off valve, apply pressure to one side of priming pin so that the small spring inside of shut-off valve tube will not slip into the gas tank.

#### K. GASOLINE TANK:

To remove the gasoline tank, the instruction for removing the fly wheel must be followed, and then:

1. Remove the right hand motor cover.
2. Remove the spark plug wires and the plugs and lift out the magneto base carefully.
3. Remove two screws at the back end of the power head and two screws under the magneto. These screws secure the carburetor in place between the gas tank and the power head.
4. Lifting straight up remove gas tank and carburetor from power head, exercising care to prevent damage to the carburetor gaskets located between the carburetor and the power head. If these gaskets become damaged, they must be replaced. To separate gas tank and carburetor, unscrew, "HIGH SPEED" and "LOW SPEED" carburetor adjustment wheels.

#### L. LAYING UP MOTOR:

When putting your motor away for the inactive season, use the following procedure, and store in a dry, clean place:

1. If motor has been used in salt water, follow salt water instructions contained in SECTION II, O.
2. Drain water completely from all parts of the motor.
3. Remove spark plugs, place a small amount of lubricating oil in the cylinders, revolve the fly wheel to spread the oil over the cylinder walls and replace the plugs.
4. Fill the gear housing with grease.
5. Wipe the motor with a cloth saturated with oil.
6. To prevent rust from entering the motor, wrap it in a paper, a blanket, or a piece of canvas.

#### M. PRE-SEASON MAINTENANCE:

Assuming that the owner has followed the above instructions in laying up his motor for the off season, the following routine should be followed in readying the motor for use:

1. Remove the spark plugs and ground the wires to some part of motor.
2. With motor lying on the two legs on the back of the gas tank, spin the fly wheel several times with rope or Kwik-Starter to eliminate excess oil from the cylinders.
3. Clean the spark plugs, check the points for proper adjustment and replace the plugs.
4. Tighten all nuts and screws, make sure the fly wheel nut is tight.
5. Inspect the complete motor to see that all parts are undamaged.
6. Wipe off motor with a clean rag.
7. Fill gas tank with properly mixed fuel.
8. Put the motor on a test tank or boat and start it. Adjust the carburetor.
9. Make sure the water is flowing from the water exhaust.

#### N. CARE OF MOTOR IF SUBMERGED:

The procedure for getting a submerged motor back into operation varies with the length of time it was under water and the condition of the bottom on which it lay. If the motor has merely been dropped over-board in fairly clear water and has been under a few minutes, the following procedure should be used.

1. Drain all water from the gas tank and carburetor by emptying the tank in an inverted position.

2. Remove spark plugs and drain water from the cylinders by turning over the motor with either a rope or Kwik-Starter on both upright and inverted positions.

3. Remove the magneto and blow the complete assembly out with air pressure if available.

4. Wipe with a dry cloth and dry it out thoroughly so that no water remains about the coils before replacing.

5. Clean spark plugs and replace after pouring a small amount of oil in each cylinder after which turn the crank shaft a few turns to distribute the oil.

6. Make sure the gas tank is clean and fill with a fresh fuel mixture, making sure that no water is in the tank before this is done.

7. Start the motor and allow to run until normal operation is achieved to make sure that no water remains in the motor.

If the motor has been submerged a considerable length of time and especially if the bottom is muddy, a more thorough procedure must be followed:

1. Drain all water from the gas tank and carburetor by inverting motor.

2. Remove the fly wheel and magneto and follow the procedure as outlined in step (3) above.

3. Remove the gasoline tank and carburetor from the power head according to these instructions.

4. Remove and clean the spark plugs.

5. By turning the motor over slowly in an upright and inverted position, you can work much of the water out of the cylinders and crank case.

6. Clean the carburetor and gas tank completely in gasoline, allow to dry and assemble.

7. Pour a small amount of oil into each cylinder before replacing the spark plugs.

8. After replacing the thoroughly dried magneto and fly wheel, check the ignition as outlined elsewhere in these instructions.

#### O. SALT WATER INSTRUCTIONS:

FLAMBEAU Motors are constructed for use in both fresh and salt water. While the materials used in FLAMBEAU Outboard Motors are salt water proof, science has not as yet developed any material which resists the corrosive action of salt water. The following instructions will extend the life and satisfactory performance of your motor when it is used in salt water.

1. Maintain a barrel of fresh water near where you store your motor when not in use.

2. Mount the motor in the barrel and run it several minutes after each use. Wipe off the motor with a cloth dampened with fresh water.

3. Fill the gear housing with grease to force out any salt water that may have entered the housing.

#### P. CARE OF MOTOR IN COLD WEATHER:

After use in cold weather and before racking up your motor, prevent freezing as follows:

1. Drain the motor of water by placing in an upright position and revolve the flywheel with the starter rope or Kwik-Starter.

2. When it is observed that no more water comes out of motor, lay it in horizontal position on its legs and repeat revolving the flywheel.

3. Fill the gear housing with grease to remove any water.