

# VIKING

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outboard motor  
owner's manual

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**EATON'S OF CANADA**

# INDEX

|                                          |         |
|------------------------------------------|---------|
| SPECIFICATIONS .....                     | Page 2  |
| GENERAL INFORMATION .....                | Page 2  |
| INSTALLING ENGINE .....                  | Page 2  |
| PROPELLERS .....                         | Page 5  |
| OPERATION .....                          | Page 5  |
| BREAK-IN PERIOD .....                    | Page 5  |
| FUEL .....                               | Page 6  |
| STARTING PROCEDURE .....                 | Page 7  |
| SERVICING ENGINE .....                   | Page 9  |
| CARE AFTER OPERATION IN SALT WATER ..... | Page 10 |
| SUBMERGED ENGINE .....                   | Page 11 |
| LUBRICATION .....                        | Page 12 |
| TROUBLE CHECK LIST .....                 | Page 14 |

## **GENERAL INFORMATION**

### **SERVICE RECOMMENDATIONS**

Do not attempt to make repairs or adjustments not specifically covered in this manual. Should you ever need technical assistance, please contact your Authorized Viking Outboard Service Facility.

### **INFORMATION REQUESTS**

When asking for technical assistance, be sure to give complete information. Include the Model Number; Serial Number; Purchase Date and place of purchase and State Briefly the Trouble you are having.

### **IDENTIFICATION PLATE**

An identification plate that lists the engine Model and Serial number is located under the engine cover on the forward floor of the support plate.

## **INSTALLING ENGINE**

### **BOAT TRANSOM**

Your new Viking Outboard (if a standard shaft model) is designed to be installed on a boat with a vertical transom height of 15". For a long shaft model, the correct transom height is 20". Proper transom height is essential to obtain maximum forward thrust from your engine.

If the transom is too high, propeller slippage (cavitation) may result, affecting general performance and proper cooling of the engine.

## **9.6 H.P. SPECIFICATIONS**

HORSEPOWER — 9.6 O.B.C. Certified Brake H.P. @ 4750 R.P.M.

RECOMMENDED OPERATING RANGE — 4300-5200 R.P.M.

ENGINE — Two-Cycle, Twin Cylinder, Alternate Firing.

BORE AND STROKE —  $2\frac{3}{16}$ " x  $1\frac{3}{4}$ "

DISPLACEMENT — 13.15 Cu. In.

COOLING — Water Cooled — Displacement Type Water Pump.

PROPELLER — Standard Aluminum Alloy —  $8\frac{1}{4}$ " Diameter,  $8\frac{1}{4}$ " Pitch, Right Hand Rotation, Spline Drive.

SPARK PLUG — Champion 14J.

FUEL TANK — Remote.

TRANSOM HEIGHT — 15".

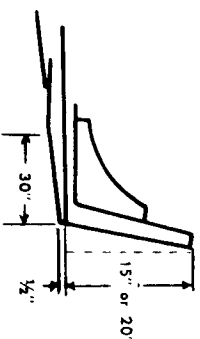
WEIGHT — Approx. 56 lbs.

(SPECIFICATIONS, PRODUCT AVAILABILITY AND DESIGN SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION)

If the transom is too low, the lower unit will be riding too low in the water, causing excessive drag.

Interference from the keel is frequently the cause of propeller cavitation. By tapering the keel as shown, this can be eliminated.

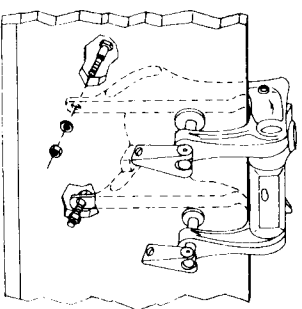
Keel should be faired from a point 30" ahead of the transom so that at the transom the keel is no more than  $\frac{1}{2}$ " in thickness.



## MOUNTING ENGINE

Mount the engine at the center of the transom and tighten the stern bracket clamp screws alternately by hand until tight. If the engine is not centered on the transom, the torque of the propeller will tend to cause the boat to run off course and create hard steering and control.

### Do Not Use a Wrench to Tighten the Clamp Screws as the Brackets May Be Damaged.



Check the tightness of the clamp screws occasionally during operation. The stern brackets and clamp screws not only support the weight of the engine but also are subjected to thrust loads, shock loads and steering stresses. Tight clamp screws will guard against damage to the transom and also prevent the engine from working loose during operation.

## CURVED AND REVERSE ANGLE TRANSOMS

Most outboards do not adapt well to mounting on curved or reverse angle boat transoms. In order to mount the engine on boats with these types of transoms, shims will be required between the stern brackets and boat transom in order to have a flat, vertical or slightly reclined transom mounting surface.

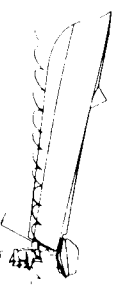
## ADJUSTING ENGINE ANGLE

Under ideal conditions, efficiency is greatest with the lower unit operating in a level position as the entire thrust of the propeller is then applied parallel to the direction of motion.

The angle of the engine is easily adjusted by changing the position of the angle adjusting bar in the holes or slots provided in the stern brackets.

### Important:

If the engine is tilted too close to the transom, the bow of the boat will "dig in" or "plow." If it is tilted too far away from the transom, the bow will ride high and the boat may "gallop" or "porpoise." If the engine races or overspeeds on sharp turns, lower the adjustment until the correct position is found.



## TILTING ENGINE

To tilt your engine up out of the water, push the tilt release lever down, and grasping the engine by the back of the support plate, pull the engine up and forward, out of the water until the tilt stop engages. The engine will automatically lock in the tilted position.

To tilt the engine back down, pull tilt stop forward and allow the engine to slowly return to the normal operating position. The engine should automatically lock in the running position.

However, if the lock does not

engage, push the tilt release

lever down to lift the reverse

lock clear of the lock bar.

Push engine down into running

position and then return

the tilt release lever to the

"up" or locked position. This

will lock the engine in the

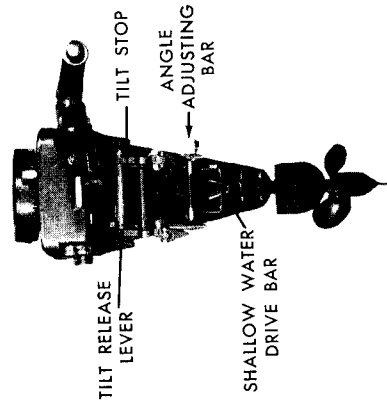
normal operating position

and prevent it from tilting

up under rapid deceleration

or normal reverse thrust

loads.



## REVERSE LOCK

Your engine is equipped with a reverse lock to prevent it from tilting out of the water when operating in reverse and also to release the engine when an underwater object is struck when operating in forward gear.

The impact load triggers the release system and allows the engine to tip up and pass over the object. After passing over the object, the engine may not lock back in the running position, therefore, manually return the tilt release knob to the locked position if necessary.

**NOTE:** When operating at very slow trolling speeds in shallow water, due to the high impact load required to release the tilt-reverse lock mechanism, it is permissible to release the tilt-reverse lock mechanism to avoid damage to the lower unit, propeller and boat. This will allow the engine to tilt over minor obstructions such as small rocks, sand bars and logs. WHEN OPERATING IN REVERSE OR AT OTHER THAN TROLLING SPEEDS, IT IS ABSOLUTELY ESSENTIAL THAT THE ENGINE BE OPERATED WITH THE TILT-REVERSE LOCK MECHANISM ENGAGED AT ALL TIMES. FAILURE TO DO SO COULD RESULT IN SEVERE DAMAGE TO STRUCTURAL PARTS OR THE ENGINE.

**CAUTION:** Be extremely careful to avoid striking any underwater objects when operating in reverse gear as the engine will transmit all shock loads directly to the transom of the boat with the possibility of subsequent damage both to the engine and to the boat.

## SHALLOW WATER DRIVE

When operating at very slow trolling speeds in shallow water, the engine may be tilted and operated in the shallow water drive position as follows:

1. Position TILT RELEASE LEVER in forward (unlocked) position.
2. Grasp handle on rear of cover and pull engine forward—up and out of water.
3. Pull SHALLOW WATER DRIVE BAR to uppermost position.
4. Lower engine into water until SHALLOW WATER DRIVE BAR rests against ANGLE ADJUSTING BAR.

## PROPELLERS

Your engine is equipped with a propeller which will give you good all around operating characteristics. However, the performance of your engine under special conditions can be improved by changing to a propeller that is designed for your particular boat and application.

The correct propeller will be determined by the boat design, the weight of the boat and the application. No one particular propeller can deliver optimum performance under the different conditions of boat design and application met with in present day boating. Each application requires the use of a propeller specifically designed for the purpose.

If a propeller change is going to be made, it is very important that a tachometer be used to determine engine R.P.M. with the new propeller. **THE R.P.M. MUST FALL WITHIN THE OPERATING LIMITS GIVEN ON THE "SPECIFICATIONS" PAGE OR SERIOUS DAMAGE TO THE ENGINE MAY RESULT."**

## PROPELLER MAINTENANCE

If the propeller is bent, unbalanced or badly nicked or clogged with weeds, unusual or excessive vibration will occur. If any of these symptoms are evident, operation of the engine should be avoided or limited, and the propeller cleaned, replaced or repaired as soon as possible. As a safety measure, always carry a spare propeller, shear pins, propeller nut and cotter pin.

# OPERATION

## OIL SELECTION

Use only high quality SAE 40 Heavy Duty outboard motor oil.

## GASOLINE SELECTION

### PREFERRED

Non-leaded (or low lead) high octane gasoline; Marine White, Automotive, or Light Aircraft gasolines are highly recommended.

### ACCEPTABLE

Regular grade automotive gasoline of 90 Octane minimum can be used if the preferred recommended fuels are not readily available.

## DO NOT USE

Premium gasolines which contain phosphorus compounds and other additives should be avoided.

## BREAK-IN PROCEDURE

Gasoline-Oil Mixture (24-1 or 4% oil)

Mix correct amount of outboard motor oil with each gallon of gasoline (see gasoline-oil mixture requirements and fuel ratio conversion table).

## FOR A PROPER FUEL MIX

1. Maintain a clean fuel tank.
2. Strain oil fuel through a fine mesh strainer.
3. Pour one (1) gallon of fresh gasoline into an empty fuel tank.  
Add proper amount of SAE 40 Heavy Duty outboard motor oil.  
Add balance of gasoline, mix thoroughly.
4. Observe safety rules—mix fuel in a well ventilated area (preferable outdoors). Avoid sparks and open flames.
5. Repeated use of additive compounds such as "break-in" oils, "tune-up" compounds, "tonics," "friction reducing" compounds, etc., is not recommended.

## IMPORTANT GASOLINE-OIL MIXTURE REQUIREMENTS

| Oil Type                  | Break-in Ratio | Hours Req'd on Break-in Ratio | Special Run-in Period | Minimum Hours Required Prior to Continuous Full Throttle Operation | AFTER                   | BREAK-IN                                |
|---------------------------|----------------|-------------------------------|-----------------------|--------------------------------------------------------------------|-------------------------|-----------------------------------------|
| SAE 40 Outboard Motor Oil | 24/1 or 4% Oil | 3                             | 1 Hr.*                | 3                                                                  | Pleasure 50/1 or 2% Oil | Commercial or Heavy Duty 24/1 or 4% Oil |

\* Momentary bursts of full throttle operation

## RUNNING SCHEDULE

1. Run engine at moderate speed (approximately  $\frac{1}{2}$  throttle) for ten minutes. Check operation of the water pump and cooling system. (Refer to "Checking Water Pump Operation.")
2. Advance to full throttle for a few seconds.
3. Return to moderate speed for several minutes.
4. Repeat steps 2 and 3 gradually increasing time of full throttle operation until 5 minutes of full throttle operation has been reached. This break-in operation will require approximately one (1) hour running time.
5. Use the 24-1 gasoline-oil mix for an additional two (2) hours.
6. AVOID CONTINUOUS FULL THROTTLE OPERATION FOR AN ADDITIONAL TWO (2) HOURS.
7. Your outboard motor may now be operated at any throttle setting desired using the proper fuel ratio as specified in the gasoline-oil chart.
8. Observe required maintenance and operating instructions.

## FUEL RATIO CONVERSION TABLE

| RATIO                | GASOLINE QTY.                          |                    | OIL QTY. |
|----------------------|----------------------------------------|--------------------|----------|
| 24/<br>or<br>4% Oil  | 1 Gallon<br>3.8 Liters                 | $\frac{1}{8}$ Pint | 5.3 oz.  |
|                      | 6 Gallons (5 Imp. Gal.)<br>23 Liters   | 2 Pints            | 32 oz.   |
|                      | 12 Gallons (10 Imp. Gal.)<br>46 Liters | 4 Pints            | 64 oz.   |
| 50/1<br>or<br>2% Oil | 1 Gallon<br>3.8 Liters                 | $\frac{1}{8}$ Pint | 2.6 oz.  |
|                      | 6 Gallons (5 Imp. Gal.)<br>23 Liters   | 1 Pint             | 16 oz.   |
|                      | 12 Gallons (10 Imp. Gal.)<br>46 Liters | 2 Pints            | 32 oz.   |

# STARTING PROCEDURE

## STARTING

Make sure that fuel tank has a sufficient amount of properly mixed fuel and that vent screw located

1. Make fuel tank cap or gauge is open (1, figure A).
2. Connect fuel line to bushing on engine. Slide sleeve on fuel line coupler back, engage with bushing and release sleeve to lock in place (1, figure B).
3. Squeeze prime bulb (2, figure B) in fuel line several times until bulb becomes firm. This pumps fuel from tank to engine in preparation for starting.
4. Place gear shift lever (3, figure B) in "NEUTRAL." Never start engine in gear.
5. For a cold engine, pull choke knob out (4, figure B).
6. Turn throttle control to "START" position—do not over advance (5, figure B).
7. Pull starter rope (6, figure B) out slowly until the starter pinion gear engages with the flywheel (8, figure B), then give the rope a smooth, rapid, even pull.
8. The engine should start on the second or third pull. However, when starting for the first time, several additional pulls on the starter may be required in order to initially prime the engine.
9. After engine has started push choke knob in. If engine "pops" and begins to stall, choke again. Continue intermittent choking until engine is warmed up.

## TO STOP

Retard throttle control to "choke to stop" position, shift engine into "neutral." Pull choke knob out to stop.

## STARTING A WARM ENGINE

Perform steps 4, 6 and 7 as outlined under "starting procedure." If engine fails to start after several attempts, then use the choke.

## EMERGENCY STARTING

A starter collar has been provided on the flywheel which may be used to start the engine if the automatic rewind starter does not operate.

1. Remove engine cover, and wrap starter rope around emergency starter collar (9, figure B).
2. Perform steps 3 through 6 under "STARTING PROCEDURE."
3. Turn engine over with emergency starter rope—exercise caution to make sure hands and clothing do not come in contact with moving parts of engine.

- 7 -



Figure A. Opening Vent Screw

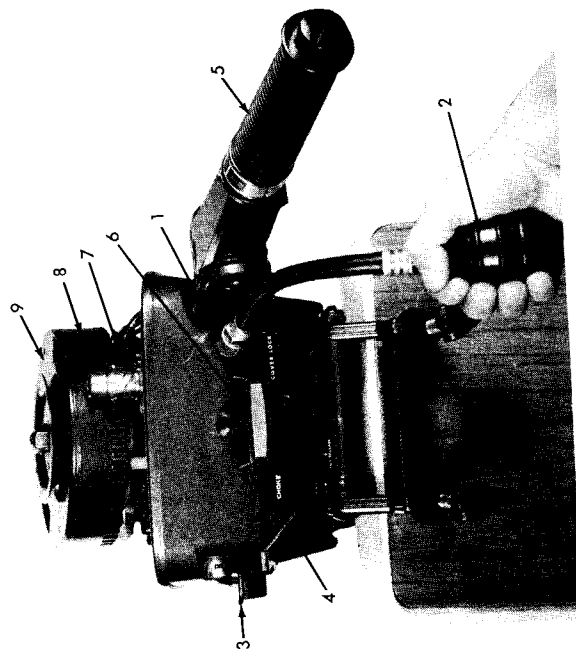


Figure B. Starting Engine

## ENGINE FLOODING

Flooding occurs when a warm engine is over-choked or cranked with the throttle setting reduced below the "START" position. If engine is flooded, open choke, advance throttle control to start position and continue cranking until engine starts.

## ADJUSTING CARBURETOR

Changes in temperature, humidity, barometric pressures and fuels may have carburetor adjustments necessary to obtain best starting and low speed operation.

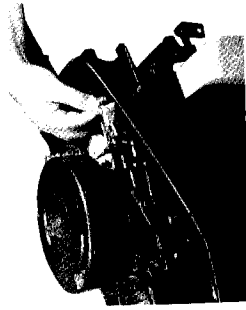
The carburetor has two separate fuel systems; a high speed system which governs full throttle operation and an idle system which governs idle speeds.

The high speed system is equipped from the factory with a fixed non-adjustable jet which must not be changed or altered.

The idle system is governed by an adjustable needle valve and can be adjusted as follows:

### INITIAL SETTING:

Turn idle adjustment needle "in" (clockwise) until it seats lightly. **DO NOT OVER-TIGHTEN AS NEEDLE AND SEAT MAY BE DAMAGED.** Back needle out one full turn. The engine will run at this setting but the mixture may be too rich for good operation.



Adjusting Carburetor

### FINAL ADJUSTMENT:

1. Start engine and run until fully warmed up.
2. Return controls to neutral-idle position.
3. Turn idle adjustment needle counter-clockwise (open) until engine looses power and begins to roll or gallop due to an over-rich mixture. Slowly turn needle clockwise (close) until engine runs smoothly and begin to pick-up speed. Continue turning clockwise

until engine pops or stalls due to a lean mixture. Set adjustment half way between these two points.

4. Do not adjust leaner than necessary to obtain smooth idling. It is better to have the idle setting a little rich than too lean.

**NOTE:** It may be necessary to repeat steps 3 and 4 to achieve ultra-fine tuning. Any carburetor adjustments other than those outlined above should be made by your local Authorized Viking Service Facility.

## GEAR SHIFT

Your engine is equipped with a gear shift control to provide operation in "Forward," "Neutral" and "Reverse" gear. If the engine is not running, "DO NOT FORCE THE SHIFT LEVER."

Never shift with engine speed control set above "Shift" position. This may damage the gears and shift mechanism.

1. Turn throttle control so that pointer on the handle is at "SHIFT" position on grip.
2. Move shift lever to "FORWARD" or "REVERSE" position.
3. Advance throttle control.

**CAUTION:** To avoid damaging the shifting mechanism always shift with a quick snapping action-- never "ease" engine into gear. Exercise care when operating in reverse as too high a speed may cause water to be taken into the boat over the transom.

## THROTTLE STOP

Your engine is equipped with a throttle stop which can be adjusted to establish the correct idle speed.

Turn the throttle stop screw in or out as required to obtain an idling speed of 600-700 R.P.M. when in "Forward" and "Reverse" gear.



Adjusting Throttle Stop

## COOLING

Your engine is water cooled by a water pump which acts as a positive displacement pump at low engine speeds and as a centrifugal pump at high engine speeds. The pump is located in the lower motor leg (CAUTION: The water pump has a rubber impeller which can be damaged by operation in excessively silty or sandy water.)

Cooling water is picked up on the underside of the anti-cavitation plate just ahead of the propeller and is discharged after circulation through the power head, along with the exhaust gases.

**CAUTION: NEVER RUN YOUR ENGINE OUT OF WATER.**

## CHECKING WATER PUMP OPERATION

Normal operation of the water pump is indicated by a spray of water flowing out of the port located on the back of the motor leg. Water SHOULD be clearly visible at all operating speeds. If water is not visible, STOP ENGINE IMMEDIATELY. Check cooling water intake passages on the sides of the gear housing, to make sure weeds or other foreign obstructions are not blocking the passages. If trouble persists contact your Ward's Retail Store immediately. Operation of the engine with insufficient cooling water will result in severe internal damage due to overheating if not corrected.

## OPERATION IN FREEZING TEMPERATURES

When using the engine in freezing or near freezing temperatures, keep lower unit submerged in the water. If engine is tilted out of water, water remaining in the cooling system and lower unit may freeze and cause related parts to rupture. If there is a chance of ice forming on the water, the engine should be removed and drained completely. Any water left in the cooling system or lower unit may freeze and rupture the associated parts.

## ADJUSTING STEERING FRICTION

Steering friction is controlled through an adjusting screw in the top port side of the swivel bracket. Adjust as desired by tightening or loosening screw.



Adjusting Steering Friction

## SERVICING ENGINE

### REMOVING COVER

Remove engine cover by pulling Cover Release Lever, located on front of support plate forward. Lift cover up and off.

To re-install, engage cover retainer with slot in rear of support plate, pull slightly forward, and push down over seal. Push cover release lever back to lock cover in place.

### SERVICING SPARK PLUGS

Hard starting, missing, overheating, pre-ignition, or lack of power are signs of defective, insufficiently tightened, or wrong type spark plugs. Whenever engine performance indicates that the spark plugs are in need of attention (See Trouble Check List) service as follows:

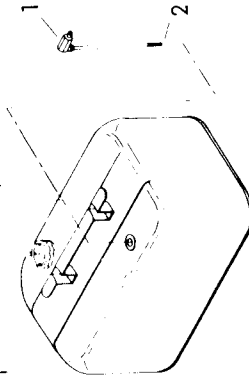
1. Remove engine cover.
2. Disconnect spark plug leads (twist slightly counter-clockwise and pull off).
3. Remove spark plugs. Clean and inspect. If the tip of the insulator is rough, cracked, broken, blistered, or if the electrodes are eroded away so that they can not be gapped to .030 inches, replace with new plugs.

The Correct Replacement Spark Plugs Are: Champion L4J

#### NOTE:

If the standard spark plug (L4J) is not available, substitutes as listed below may be used. However it is highly recommended that you return to the use of the standard spark plug as soon as possible.

| Champion | Autolite | AC    | Robert Bosch |
|----------|----------|-------|--------------|
| L4       | AE21X    | M42FF | W225TI       |
| L5       | AE2      | 42FF  |              |



### SERVICING FUEL FILTERS

#### Fuel Tank Filter

1. Remove fuel tank adapter (1) to gain access to fuel filter on bottom of pick-up tube (2).
2. Clean by rinsing in clean gasoline.

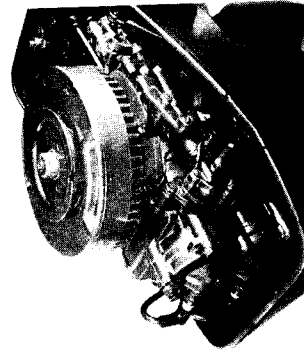
#### NOTE:

It is not necessary to remove fuel line from adaptor to service filter.

#### Fuel Pump Filter

1. Remove engine cover.
2. Remove fuel pump filter from the inlet side of the fuel pump.
3. Clean by rinsing in clean gasoline.

(Observe fire prevention rules when cleaning fuel filters.)



FILTER

### SERVICING PROPELLER

Inspect propeller at frequent intervals for nicks, bent blades or hub slippage and have repaired or replaced if damaged. Remove propeller and lubricate propeller shaft periodically to insure free fit and easy removal or assembly at all times.

To prevent accidental starting, disconnect spark plug wires.

1. Remove cotter pin (1) from propeller nut (2), remove nut.
2. Remove thrust pin (3) located in hub on back of propeller. Replace if damaged or broken.
3. This is a spline drive propeller. To remove, pull straight back and off propeller shaft. If propeller is frozen to the shaft, tap gently with a block of wood to loosen.
4. Lubricate propeller shaft splines liberally before re-installing propeller.
5. Re-install propeller, thrust pin, propeller nut and cotter pin.

### EXTERIOR MAINTENANCE

Your Viking Outboard is protected with an Acrylic Enamel finish. To maintain its appearance, wash and wax frequently using automotive cleaners and waxes.

### CARE AFTER OPERATION IN SALT WATER

All engine parts that contact the water have been chemically treated to retard salt water corrosion. However, you should take some special precaution after running your engine in salt water.

1. Always tilt the engine out of the water when not in use.
2. Periodically run engine in fresh water to flush out salt deposits.
3. Wash engine down with fresh water and periodically apply an automotive type wax to protect the finish.
4. Periodically remove propeller and lubricate propeller shaft.
5. Whenever engine will not be used for a day or longer, disconnect negative battery cable to prevent battery run-down and electrolysis.

## REMOVING ENGINE FROM BOAT

To remove the engine from the boat, simply reverse the installation procedure.

**CAUTION:** When removing, maintain engine in an upright position, resting on its skag until all water has drained from the motor leg. Do not transport or store engine in a position where the lower unit is elevated above the power head, as water may drain into the power head interior and cause extensive damage.

## SUBMERGED ENGINE—FRESH WATER

If the engine is recovered within a short time after being submerged, try to start it as outlined below:

1. Remove spark plugs. Turn engine over several times by hand to expel water from crankcase and cylinder.
2. If fuel tank was submerged, drain all fuel from tank and flush with fresh fuel until all water is removed.
3. Dry and install spark plugs.
4. Drain fuel lines and carburetor.
5. IF THE ENGINE DOES NOT TURN OVER FREELY, TAKE IT TO YOUR AUTHORIZED VIKING OUTBOARD SERVICE FACILITY IMMEDIATELY. If it is not possible to have the engine serviced immediately after submersion, the power head should be submerged in clean fresh water to prevent rust or oxidation until it can be serviced.
6. Try starting engine using fresh fuel mixture. If engine starts, run for at least an hour, or until all parts are thoroughly warmed-up and water has evaporated from internal moving parts. If engine does not start or turn over freely, TAKE IT TO YOUR AUTHORIZED VIKING OUTBOARD SERVICE FACILITY.

## SUBMERGED ENGINE—SALT WATER

Do not attempt to start an engine that has been submerged in salt water.

1. Perform steps 1, 2, 3, and 4 as listed under "Submerged Engine—Fresh Water." If it is not possible to have the engine serviced immediately after submersion, the powerhead should be submerged in clean fresh water to prevent rust, oxidation or salt accumulation until it can be serviced.
2. Take engine to your Authorized Viking Outboard Service Facility.

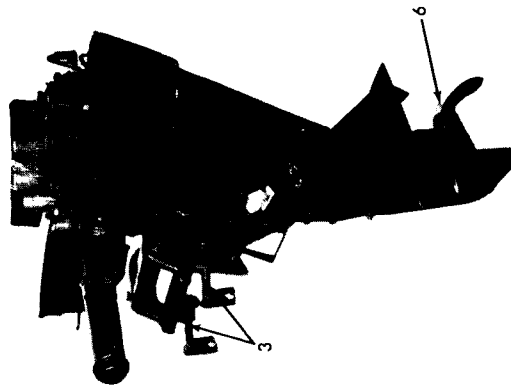
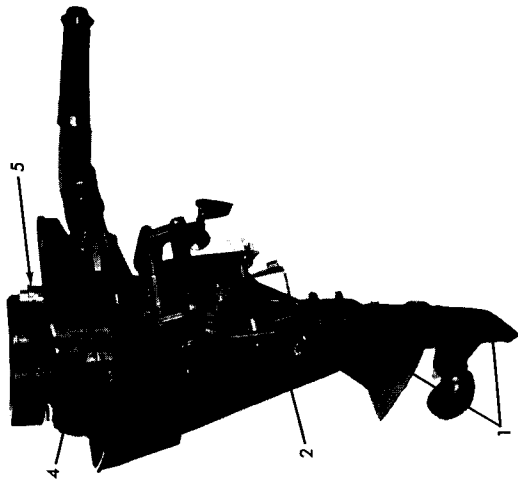
## PREPARATION FOR STORAGE

Before storing your engine it must be protected against rust and possible damage from freezing temperatures. The following procedure must be performed with the engine mounted on boat and operated in a body of fresh water.

1. Run the engine until it is thoroughly warmed-up.
2. Place gear shift in "Neutral" and allow engine to run at fast idle. Remove fuel line from bushing on engine. Using a rust preventive oil, rapidly inject oil into carburetor air intake for a period of ten (10) to twenty (20) seconds until engine stops. The above procedure will coat the interior of the crankcase with a protective coating of oil.
3. Remove boat and outboard from water. Drain all fuel lines and carburetor.
4. Put an ounce or two of SAE 40 Outboard Motor Oil into each spark plug hole. Turn engine over several times to distribute the oil. This will lubricate the pistons, rings and cylinder walls and expel water from the cooling system. Re-install spark plugs.
5. Drain and refill lower gear housing as outlined under "Lubrication."
6. Lubricate all moving parts as outlined under "Lubrication."
7. Clean exterior of engine. Apply an automotive type wax to protect the finish and prevent rust or corrosion.
8. Remove propeller and apply coating of lubricant on propeller shaft. Re-install propeller.
9. Store engine in an upright position in a dry, well ventilated area.

## PREPARATION FOR USE AFTER STORAGE

1. Remove spark plugs. Clean or replace as required.
2. Check lubricant in lower gear housing.
3. Clean exterior of engine. Apply an automotive type wax to protect the finish.
4. Follow standard operating procedures.



## LUBRICATION CHART

| Lubrication Points | Illust. No. | Lubricant | † Frequency                                                    |
|--------------------|-------------|-----------|----------------------------------------------------------------|
| * Gear Housing     | 1           | 1         | * Every 30 hours of use<br>Drain and replace every<br>6 months |
| Swivel Bracket     | 2           | 2         | Every 60 days                                                  |
| Stern Bracket      | 3           | 3         | Every 60 days                                                  |
| Control Linkage    | 4           | 3         | Every 60 days                                                  |
| Start Pinion Gear  | 5           | 3         | Every 30 days                                                  |
| Propeller Shaft    | 6           | 3         | Every 60 days                                                  |

### LUBRICATION CODE:

- 1 — Non-corrosive, leaded, E.P. 90 outboard gear lube
- 2 — All Purpose Automotive Chassis Lubricant
- 3 — "Ryton" #2EP or SAE 40 Motor Oil

† If your Outboard is used in salt water or in commercial use, lubricate oftener as required.

### \* GEAR HOUSING LUBRICATION PROCEDURE

The lubricant in the lower gear housing should be checked after every thirty (30) hours of operation and replaced every one hundred (100) hours (six months) or at least once each season (prior to storage). Use a non-corrosive, leaded, E.P. 90 outboard gear lube. DO NOT USE A CORROSIVE LUBRICANT.

## TO DRAIN

With engine in an upright position, remove both the upper and lower plug screws and allow lubricant to drain completely.

### NOTE:

When draining lubricant check for water contamination. If evidence of water is present, take your engine to your Authorized Viking Outboard Service Facility. Continued operation with water in gear housing will result in damage to drive gears.

## TO REFILL

1. When old lubricant has drained, insert tube nozzle into lower plug screw hole.
2. Add lubricant until it appears at top of hole.
3. Reinstall top plug screw and washer.
4. Remove nozzle and install lower plug screw and washer. Tighten securely.
5. Allow engine to stand in an upright position for at least one-half (1/2) hour with upper screw removed. This will permit the gear lube to completely fill all cavities in the gear housing.

6. Recheck gear lube level. Add lube as outlined below if necessary, to bring lube level up to top hole. Reinstall top plug screw and washer. Tighten securely.

## TO ADD GEAR LUBRICANT

1. Remove lower plug screw and washer and insert nozzle of tube into hole.
2. Remove upper plug screw and washer.
3. Add lube until it appears at top hole.
4. Reinstall upper plug screw and washer and tighten securely.
5. Remove nozzle, reinstall lower plug screw and washer and tighten securely.

### NOTE:

Whenever gear lubricant is added, it is recommended that the gear housing and lubricant be inspected for water contamination.

To inspect, loosen (no not remove) gear housing drain screw and allow a small amount of lubricant to drain. If water is present it will drain prior to the actual lubricant. Should water be present, take your engine to your Authorized Viking Outboard Service Facility.

# TROUBLE CHECK LIST

|   | Engine Does Not Start | Starts But Does Not Run | Engine Misses | Does Not Idle | Does Not Develop Full Power |                                                             |
|---|-----------------------|-------------------------|---------------|---------------|-----------------------------|-------------------------------------------------------------|
| X | X                     |                         |               |               |                             | Remote Fuel Tank Not Connected                              |
| X | X                     |                         | X             | X             | X                           | Remote Controls in Need of Adjustment                       |
| X | X                     |                         |               |               |                             | Fuel Tank Empty                                             |
|   | X                     | X                       |               |               |                             | Puddle Drain System Dirty or Clogged                        |
| X | X                     |                         | X             | X             | X                           | Fuel Line Kinked or Pinched                                 |
|   | X                     |                         |               |               |                             | Fuel Filters Dirty or Clogged                               |
|   | X                     |                         | X             | X             | X                           | Vent Screw Gasket Obstructing Air Flow                      |
| X | X                     |                         | X             | X             | X                           | Vent Screw on Fuel Tank Filler Cap Closed                   |
| X | X                     |                         | X             | X             | X                           | Air Leak In Engine                                          |
|   | X                     | X                       |               |               |                             | Air Leak In Fuel System                                     |
|   | X                     |                         | X             | X             | X                           | Carburetor Passages Clogged or Dirty                        |
| X | X                     |                         | X             | X             | X                           | Incorrect Fuel-Oil Mixture                                  |
| X | X                     | X                       | X             | X             | X                           | Carburetor Out of Adjustment                                |
| X | X                     | X                       | X             | X             | X                           | Engine Flooded                                              |
| X | X                     |                         |               |               |                             | Wrong Type Spark Plugs                                      |
| X | X                     | X                       | X             | X             | X                           | Defective or Fouled Spark Plugs                             |
| X | X                     | X                       | X             | X             | X                           | Breaker Contact Points Out of Adjustment                    |
| X | X                     | X                       | X             | X             | X                           | Breaker Contact Points Burned or Pitted                     |
| X | X                     | X                       | X             | X             | X                           | Weak Ignition Coils                                         |
| X | X                     | X                       | X             | X             | X                           | Weak or Defective Condenser                                 |
| X | X                     | X                       | X             | X             | X                           | Spark Plug Lead Wires Interchanged                          |
| X | X                     |                         |               |               |                             | Frayed or Cracked Lead Wire Insulation                      |
| X |                       | X                       |               |               |                             | Disconnected, Grounded or Loose Wiring in Electrical System |
| X | X                     | X                       |               |               |                             | Dry Breaker Point Post                                      |

\* See Your Authorized Viking Outboard Service Facility