

INSTRUCTIONS AND REPAIR PARTS LIST

Eatons

Viking

OUTBOARD MOTORS

5.0 N. O. A. CERTIFIED BRAKE HORSE-
POWER AT 4000 R. P. M.

DeLuxe Alternate Firing Twin Cylinder
Model No. C256A

ALWAYS GIVE COMPLETE MOTOR
MODEL NUMBER WHEN ORDERING
PARTS—

Manufactured expressly for

The T. EATON COMPANY LIMITED, CANADA

by

OUTBOARD, MARINE & MFG. CO. OF CANADA, LTD. — PETERBORO, CANADA

INSTRUCTIONS FOR VIKING OUTBOARD MOTOR

WARRANTY

VIKING OUTBOARD MOTORS

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

This warranty shall not apply to any motor which has been subject to misuse, alteration, or accident; or which has been used for racing or equipped with a racing propeller.

THE T. EATON CO. LTD.

HOW TO OPERATE AND CARE FOR YOUR OUTBOARD MOTOR

Your motor is easy to operate and built to give years of service. Every user should read these instructions carefully before attempting to operate the motor.

IMPORTANT

Spark Plugs for your motor are packed in the tool kit.

We recommend Champion J10 Spark Plug for replacement.

Insert spark plugs in cylinders before attempting to start motor. Upper spark plug wire is marked "top."

Right and left motor cover assemblies are packed separately in shipping container. Attach these after inserting spark plugs.

Fuel and Lubrication

Use any good grade of medium (regular) gasoline and a Medium Heavy S.A.E. 30 oil. Mix the oil and gasoline thoroughly. For best results strain the fuel through a chamois or through a funnel with a fine gauge strainer screen. **Never pour gasoline or oil into the tank unmixed.**

Keep the gear housing filled with a good waterproof outboard motor gear grease. To fill the gear housing, remove the grease screw plug in gear housing. Also remove the drain plug screw located in the gear housing cap on the propeller end of housing. (This will allow water to drain out.) Then fill housing with grease through the grease plug hole. Housing is filled when grease comes out of drain plug hole. Do not use automobile differential or cup grease.

How to Attach the Motor to the Boat

Hang the motor over the stern of the boat with the bracket in the center of the stern board or transom. Tighten the bracket thumb screws securely. Do not use a wrench. Change the shaft angle adjustment on the stern bracket, if necessary, so that the shaft is in a vertical position when the boat is loaded and running. The motors are made for use on a standard 15 inch height stern. If the stern is higher cut down to 15 inches to accommodate the bracket so that the propeller will be at the right depth.

CAUTION: Weeds or mud may clog the water intake so the water cannot circulate. If the motor heats turn it off at once and clean out the intake. To continue to run the motor without the water circulating will damage it just as it would to run an automobile without water.

Oiling Instructions

1. For first five hours, mix $\frac{3}{4}$ pint of Pennsylvania Gas-Engine oil, medium heavy S.A.E. No. 30 with each gallon of gasoline.
2. After five hours of operation, reduce oil to $\frac{1}{2}$ pint per each gallon of gasoline.
3. Mix the oil and gasoline thoroughly in a clean separate can before pouring into fuel tank.
4. Keep gear housing filled with outboard motor gear grease.

INSTRUCTIONS FOR VIKING OUTBOARD MOTOR

Operating Instructions

1. Open gasoline shut-off valve under right hand side (as you face motor installed on boat) of tank. Open vent screw in filler cap of the gasoline tank. The motor will not operate when vent is closed.
2. Move timer lever to position marked "START" on gasoline tank.
3. Turn carburetor control dial to extreme left to word "PRIME" and hold in this position about 8 to 10 seconds then release.
4. Pull starter handle forcibly. Repeat 3 or 4 times. If motor does not start, repeat priming instructions described in paragraph 3.
5. After motor starts advance timer lever to "RUN" position. Turn carburetor mixture lever slowly to the right until motor runs smoothly.
6. When motor warms up it may be necessary to readjust both timer lever and carburetor lever in order to attain maximum speed.
7. To stop motor move timer lever to position marked "STOP."

Removing Motor from Boat

When removing motor from boat, lift motor in a straight upward position and hold in this position until all water is drained from the underwater exhaust tube and water cooling system. Do not stand motor on magneto or carry with the magneto down as this may allow water to enter the powerhead from muffler or underwater exhaust tube. When laying motor down see that the carburetor side is up.

When the motor is left on the boat, tilt it out of the water so the underwater exhaust outlet is above the water line. The motor should be tilted so that the shaft hangs on an angle that will allow the water to drain from the exhaust tube. A stick inserted between the shaft and stern bracket will hold the motor so it will not drop back in the water from any movement of the boat. If the exhaust pipe is left in the water, water may enter the cylinder.

Ignition System

MAGNETO: The correct magneto point gap is .020. It needs no attention as long as the spark is good. To clean points, use a very fine coil file or nail file. A piece of hard paper drawn between the points will remove dirt and grease. Be careful not to leave any lint from the paper on the points.

SPARK PLUG: The correct spark plug gap is .025. Plugs are set properly at the factory and are right when the motor is received. We recommend Champion J10 spark plug for replacement. Keep the spark plug cable free from oil and do not permit it to become frayed and broken. Clean the spark plugs periodically and reset the gap.

Replace the Shear Pin

A shear pin is used on the propeller and will shear-off when the propeller strikes an obstruction. When the pin shears-off the motor continues to run but the propeller will not turn. This prevents damage to the gears and shafts. **Turn off the motor immediately when a pin shears.** To replace the pin, unscrew the propeller shaft nut and slip off the propeller. Remove the old pin and replace it with a new one. Always carry extra shear pins in your tool kit.

Propeller Clutch

In the propeller hub of model No. C256A, as shown in drawing on page 7, is built a clutch. When the propeller strikes an underwater obstruction this device de-clutches the propeller, then engages again when the obstruction is passed.

Timer Lever Friction

Should the speed control lever become so loose that it will not remain in a set position, it can be tightened by tightening the armature base clamp screw underneath the flywheel base.

INSTRUCTIONS FOR VIKING OUTBOARD MOTOR

Mixture Lever Friction

Should the mixture lever on carburetor become so loose that it will not remain in a set position, it can be tightened by drawing down on the packing nut. If tightening of the packing nut will not tighten mixture lever it may be necessary to replace the packing. To replace packing, remove the mixture lever from carburetor, also packing nut. Remove old packing, replace with new and reassemble.

How to Remove the Flywheel

Hold the flywheel rigid, unscrew the flywheel nut about two full turns. Have someone lift up on the flywheel and then place a piece of bar solder or a block of lead over the flywheel nut and tap flywheel nut a sharp blow with a hammer. If flywheel does not come off loosen nut a trifle more. When flywheel comes off, use care not to lose the key by which the flywheel is held in engagement with the shaft. When again replacing flywheel, draw up the nut that holds it as tight as possible. Use a hammer on the wrench to insure good tightening.

How to Care for Motor Used In Salt Water

The motor should be removed from the boat when not in service. Flush the motor thoroughly by running it in a barrel of fresh water. Wipe the motor dry and go over all parts with an oily cloth.

Caution

DO NOT RUN MOTOR OUT OF WATER. If motor is being run in a tank or barrel of water be sure that the gear housing as well as propeller is fully submerged while running. Watch motor very closely as the churning of the water by the propeller may create an air pocket and cause the motor to race and do serious damage to motor. DO NOT RUN THE MOTOR IN A TANK FOR MORE THAN TWO MINUTES. NEVER RACE THE MOTOR WHEN RUNNING IN A TANK.

Propeller

Motors are equipped with a propeller to give the best all around performance on the average boat.

Adding a high speed propeller to a motor will not increase the speed of the boat unless the boat itself is light and designed to develop higher speed.

How to Care for a Motor Used In Cold Weather

The motor will not freeze while in use, but when it is idle, drain it by setting it in an upright position and revolving the flywheel. If the motor is to be stored during cold weather be sure that no water is left in the motor, or it may freeze.

Motors That Have Been Submerged

A motor that has been submerged is temporarily out of working order. It must be dried out thoroughly before it can be used again. Remove all the fuel and dry the motor slowly over heat.

The magneto may need special attention. Remove the flywheel and dry the armature thoroughly with a rag and allow to remain open until completely dry. Be sure coil is dry by leaving magneto in open air for 24 hours or bake in a temperature not exceeding 100° F. for an hour. Do not spin flywheel while magneto is wet as it may short coil.

Remove, dry and clean spark plugs. Remove carburetor, drain out all water, and flush thoroughly with gasoline.

Rotate motor slowly by means of propeller while pouring a small quantity of lubricating oil through spark plug holes, thus forcing all water out of cylinders and crankcase.

When magneto is thoroughly dry, reassemble on motor and check spark plug by holding end of ignition cables about 1/8" away from cylinder head while spinning flywheel with starter rope. Test each cable repeatedly, grounding other cable to some part of motor.

INSTRUCTIONS FOR VIKING OUTBOARD MOTOR

Should the above test fail to produce a spark or produces only a weak spark, take it to an Authorized Service Station. Before starting motor be sure all parts including magneto, spark plugs, gasoline line and carburetor are reassembled on the motor. Pour two teaspoonsful of pure lubricating oil in each cylinder through the spark plug hole.

To Store the Motor

Store the motor in a dry place and be sure it is thoroughly dry before storing. Drain the gasoline tank. Remove the spark plugs, put two teaspoons of pure lubricating oil in each cylinder and revolve the flywheel several times to spread a coating of oil over the cylinder walls, and replace the spark plugs. Pack the gear housing with grease. Wipe the entire motor with a cloth saturated with oil. Wrap the motor in cloth or heavy paper, or place it in the motor shipping box. Store it in a dry place.

To Put the Motor In Use After Storage

Inspect the motor thoroughly before you use it. Pack the gear case full of new outboard motor grease. Do not use ordinary automobile grease. Clean the contact points by running a piece of hard paper or cardboard between them. Be careful not to leave any lint from the paper on the points. If they are very dirty or rough use a fine coil file or a nail file to polish them. Set the points at the proper distance (.020 of an inch).

Clean the strainer screen in bottom of carburetor. Clean out the tank, the gasoline feed pipe and the carburetor. Mix the oil and gasoline, fill the tank and be sure the gasoline is flowing to the carburetor.

Clean the spark plugs and replace them with new ones if they are cracked, broken or badly burned.

Replace any damaged parts. Tighten all screws and nuts.

After long continuous, hard service, a very complete overhauling by an expert is advisable.

Increase In Speed After Use

After about 50 hours of use motor develops full speed and power. We cannot be responsible for wear or damage to motors used for racing or equipped with a racing propeller.

How to Obtain Service

If your Outboard Motor refuses to operate or does not perform properly and you can find nothing in this booklet which covers the possible cause for failure, we suggest that you take the motor to an Authorized Service Station.

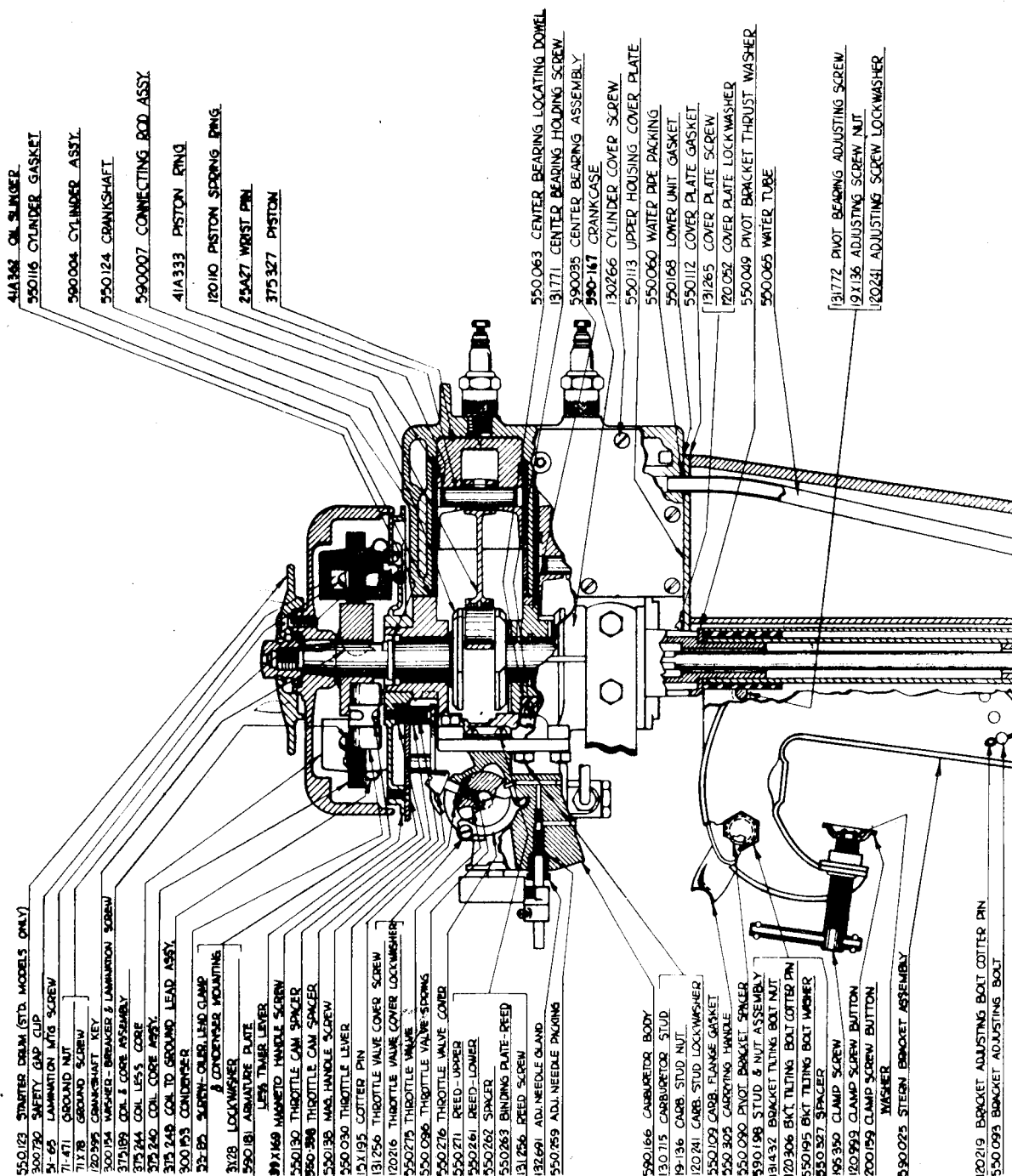
How to Order Repair Parts

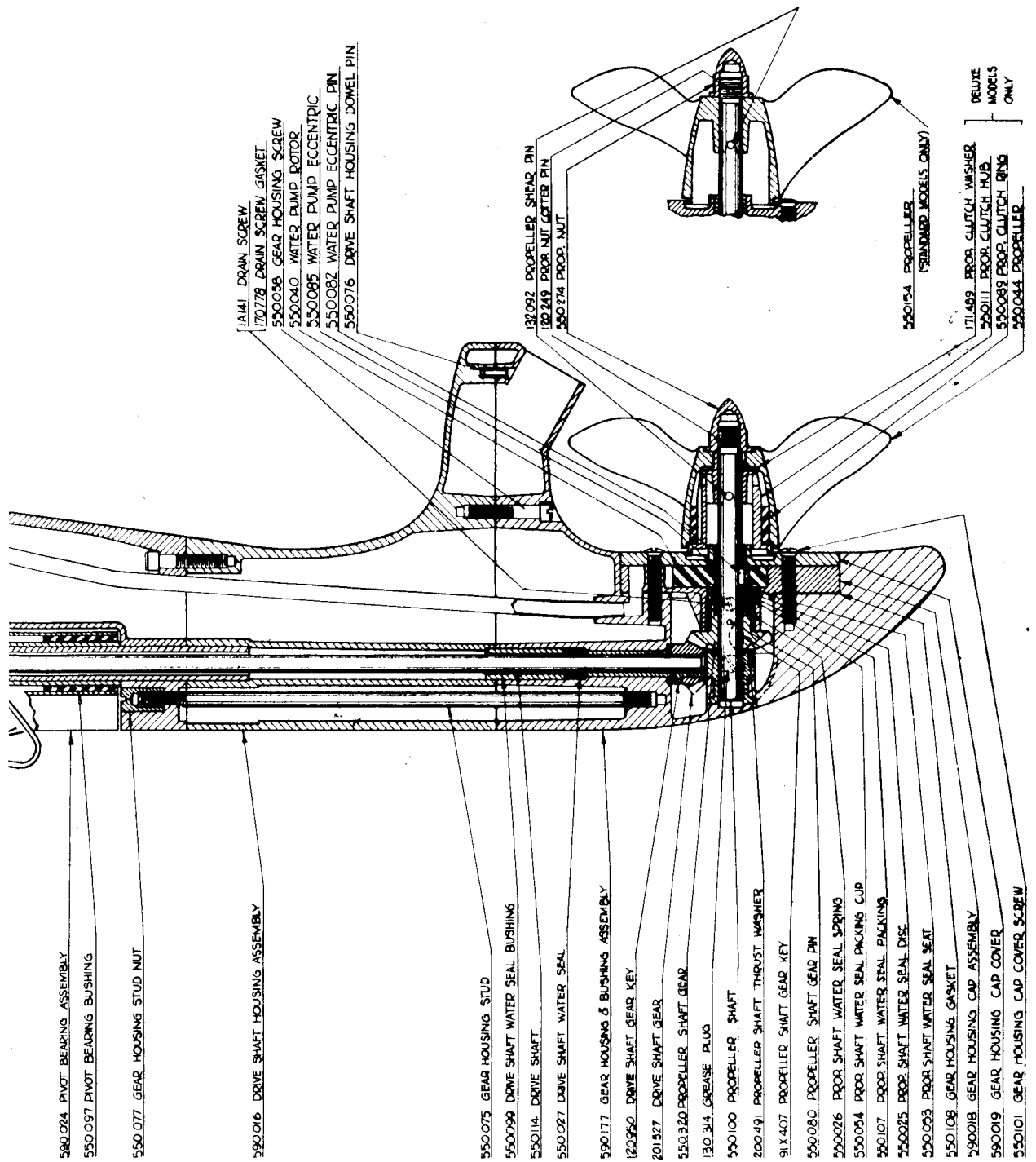
This instruction book gives you a complete repair parts list for your Outboard Motor. Should you need to order repair parts they may be obtained through the nearest branch of The T. Eklund Co. or Service Station.

If you order repair parts we need the following information to enable us to fill your order correctly:

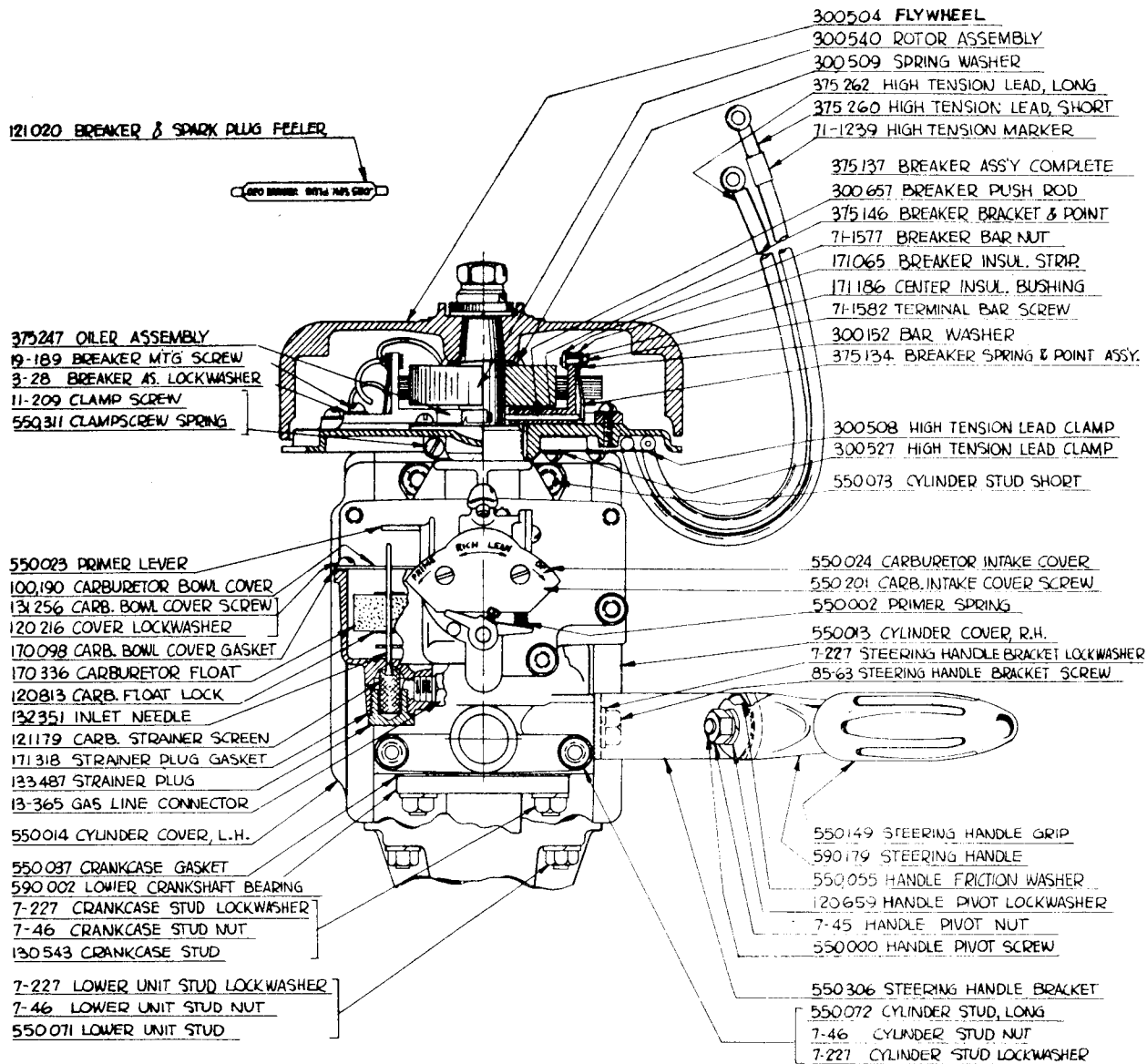
1. Part number and description of part as shown in this list.
2. Complete motor Model Number. The model number will be found stamped in the corner of the gasoline tank.

ORDER BY PART NAME GIVING COMPLETE MOTOR MODEL NUMBER

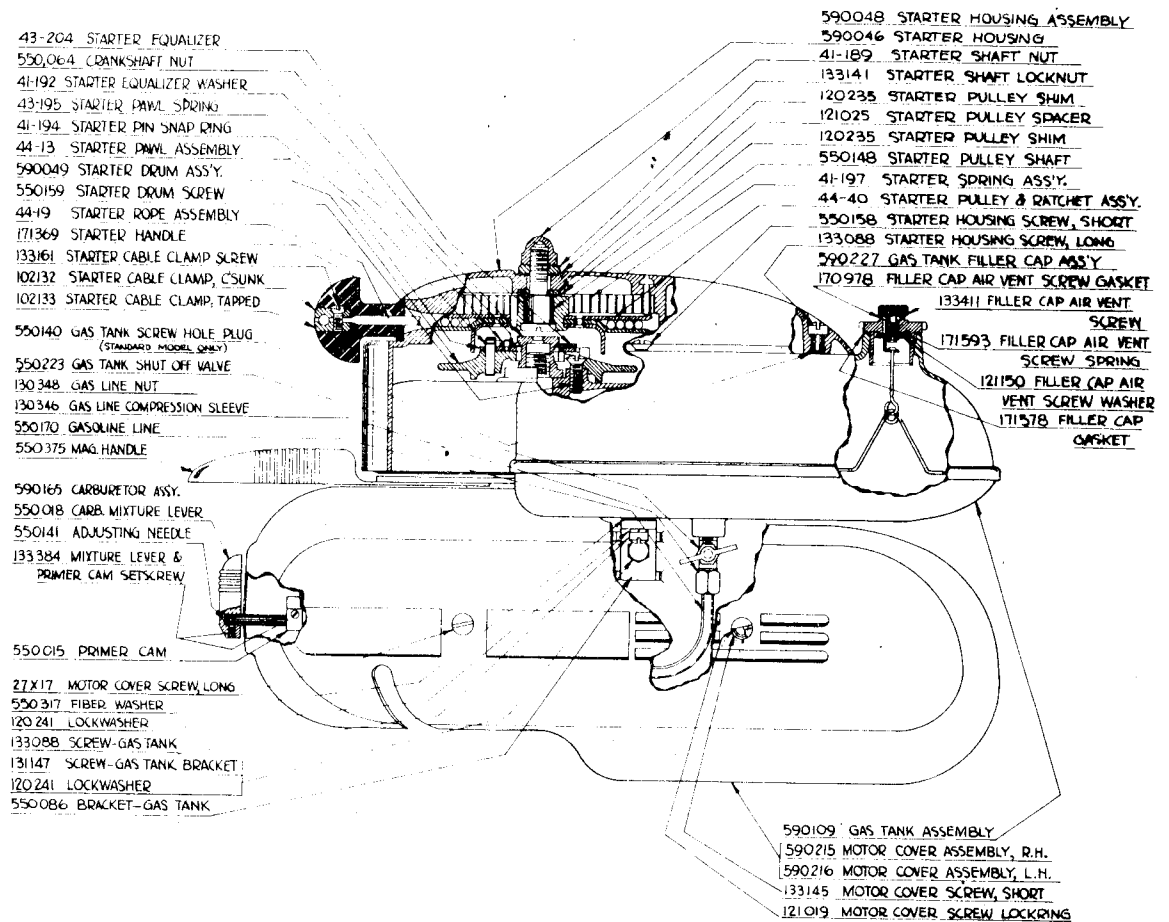




Order By Part Number and Name Giving Motor Model Number



Order By Part Number and Name Giving Motor Model Number



Order By Part Number and Name Giving Motor Model Number

Part Number	Part Name	Can. Price	Part Number	Part Name	Can. Price
1A141	Drain Screw	\$.04	121-150	Filler Cap Air Vent Washer	.025
3X28	Lockwasher-Breaker Mounting; Con-		121-179	Carburetor Strainer Screen	.15
	denser Mounting	.025	130-266	Cover Screw	.025
7X45	Handle Pivot Screw Nut	.04	130-314	Grease Plug	.15
7X46	Nut—Lower Unit Stud; Cylinder Stud;		130-346	Gas Line Compression Sleeve	.025
	Crankcase Stud	.04	130-348	Gas Line Nut	.05
7X227	Lockwasher—Crankcase Stud; Cylin-		130-543	Crankcase Stud	.25
	der Stud; Lower Unit Stud; Steering		130-715	Carburetor Stud	.15
	Handle Bracket	.04	131-147	Gas Tank Bracket Screw	.05
11X209	Screw—Clamp	.16	131-256	Screw—Carburetor Bowl Cover; Reed	
13X365	Gasoline Line Male Connector	.10		Binding Plate	.025
13A624	Screw Driver	.40	131-265	Upper Housing Cover Plate Screw...	.025
15X195	Cotter Pin	.04	131-432	Bracket Tilting Bowl Nut	.05
19X136	Nut—Carburetor Stud	.04	131-771	Center Bearing Holding Screw	.05
19-189	Screw—Breaker Mounting	.04	131-772	Pivot Bearing Adjusting Screw	.15
25A27	Piston Wrist Pin	.48	132-092	Propeller Shear Pin	.025
39X169	Magneto Handle Screw—Short	.08	132-351	Inlet Needle	.15
41A189	Acorn Nut—Starter Shaft	.25	132-364	Motor Cover Screw—Long	.15
41A192	Washer—Starter Equalizer	.03	132-691	Adjusting Needle Gland	.15
41A194	Snap Ring—Pawl Pin	.03	133-088	Gas Tank Screw	.025
41B197	Starter Spring Assembly	1.20	133-145	Motor Cover Screw—Short, Deluxe	
41A333	Piston Ring	.40		Only	.05
41A362	Oil Slinger	.025	133-161	Starter Cable Clamp Screw	.05
43A195	Spring—Pawl	.05	133-384	Setscrew—Dial and Cam	.05
43A204	Equalizer	.05	133-411	Filler Cap Air Vent Screw	.25
44-13	Pawl—Starter	.15	133-487	Strainer Plug	.40
44-19	Rope	1.50	170-098	Carburetor Bowl Cover Gasket	.05
44-40	Pulley and Ratchet Assembly	1.50	170-336	Carburetor Float	.05
51-65	Screw—Lamination Mounting	.04	170-619	Spring—Low Speed—Adjusting Screw.	.05
53X85	Screw—Oilier Mounting; Condenser		170-778	Drain Screw Gasket	.025
	Mounting; Clamp Mounting	.025	170-978	Filler Cap Air Vent Screw Gasket...	.05
65X913	Magneto Handle Nut	.025	171-065	Insulation Strip	.05
71A45	Screw—Terminal	.04	171-186	Bushing, Insulation	.025
71X78	Screw—Ground	.04	171-318	Strainer Plug Gasket	.05
71-471	Nut—Ground	.025	171-369	Starter Handle—Deluxe only	.40
71X915	Lockwasher—Magneto Handle	.03	171-489	Propeller Clutch Washer	.05
71X918	Shakeproof Washer—Breaker Assembly	.025	171-578	Gas Tank Filler Cap Gasket	.05
71-1239	High Tension Lead Marker	.04	171-593	Filler Cap Air Vent Screw Spring	
71X1531	Washer—Oilier Mounting	.03		Screw	.05
71-1577	Bar Nut	.15	195-350	Clamp Screw	.30
71-1582	Screw	.025	200-159	Clamp Screw Button Washer	.025
85X63	Screw—Handle	.08	200-322	Spark Plug Assembly J-10	.75
91X407	Key—Gear	.05	200-491	Propeller Shaft Thrust Washer	.25
100-190	Bowl Cover—Carburetor	.25	201-527	Drive Shaft Gear (Pinion)	3.00
102-132	Clamp—Starter Cable—countersunk..	.25	300-152	Bar Washer	.025
102-133	Clamp—Starter Cable—tapped	.25	300-153	Condenser	.90
120-052	Lockwasher—Upper Hsg. Plate Cover	.025	300-154	Washer—Lamination Mounting;	
120-110	Spring Ring	.025		Breaker Mounting	.025
120-216	Lockwasher—Throttle Valve Cover,		300-504	Flywheel	5.25
	Carburetor Bowl Cover Screw ...	.025	300-505	Bearing Shim—Armature Plate	.15
120-219	Cotter Pin—Bracket Adjusting Bolt ..	.025	300-508	Clamp—High Tension Lead	.025
120-235	Shim—Starter Shaft	.025	300-509	Rotor Holding Spring (Spring Washer)	.15
120-241	Lockwasher—Carburetor Stud; Pivot		300-517	Coil to Breaker Lead	.025
	Bearing Adjusting Screw; Gas Tank		300-527	Clamp—High Tension Lead	.025
	Bracket; Gas Tank Screw	.025	300-540	Rotor Assembly	3.90
120-249	Cotter Pin—Propeller Nut	.025	300-657	Push Rod	.30
120-306	Cotter Pin—Bracket Tilting Bolt	.025	300-730	Clip—Safety Gap	.025
120-395	Crankshaft Key	.05	375-134	Breaker Spring Assembly	.40
120-659	Lockwasher—Handle Pivot	.025	375-137	Breaker Assembly	2.55
120-813	Lock—Carburetor Float	.05	375-146	Breaker Bracket and Point Assembly..	1.00
120-950	Drive Shaft Gear Key	.15	375-189	Coil and Lamination Assembly	5.25
120-999	Clamp Screw Button	.25	375-240	Coil Core Assembly	1.20
121-019	Motor Cover Screw Lockring	.025	375-244	Coil Less Core	4.15
121-020	Breaker and Spark Plug Feeler Gauge	.15	375-246	Armature Plate and Clamp Screw	
121-025	Shim	.05		Assembly	2.25

Prices subject to change without notice.

Order By Part Number and Name Giving Motor Model Number

Part Number	Part Name	Can. Price	Part Number	Part Name	Can. Price
375-247	Oiler and Felt Assembly	.15	550-154	Propeller Standard Only	3.75
375-248	Coil to Ground Lead Assembly	.15	550-158	Starter Housing Screw—Short— Deluxe only	.025
375-260	High Tension Lead—Short	.68	550-159	Screw—Starter Drum, Starter Housing	.05
375-262	High Tension Lead—Long	.68	550-168	Lower Unit Gasket	.15
375-327	Piston and Dowel Pin Assembly	3.00	550-170	Gasoline Line	1.15
550-000	Handle Pivot Screw	.05	550-174	Starter Housing Screw	.05
550-002	Primer Lever Spring	.05	550-195	Washer	.05
550-015	Primer Cam	.55	550-201	Screw—Cover	.05
550-018	Carburetor Mixture Lever	.60	550-204	Groove Pin	.15
550-023	Primer Lever	.75	550-223	Gas Tank Shut-off Valve	.75
550-024	Carburetor Intake Cover	1.15	550-259	Packing—Adj. Needle	.025
550-025	Propeller Shaft Water Seal Disc	.05	550-261	Reed—Lower	.40
550-026	Propeller Shaft Water Seal Spring	.05	550-262	Spacer	.025
550-027	Drive Shaft Water Seal Washer	.05	550-263	Binding Plate—Reed	.05
550-030	Throttle Lever	.40	550-271	Reed—Upper	.40
550-037	Gasket—Crankcase	.05	550-274	Nut—Propeller	.30
550-040	Water Pump Rotor	1.50	550-275	Throttle Valve	1.50
550-044	Propeller Deluxe Only	3.75	550-276	Cover—Valve	1.15
550-049	Pivot Bracket Thrust Washer	.75	550-280	Adjusting Screw—Low Speed	.15
550-053	Propeller Shaft Water Seal Seat	.30	550-282	Throttle Cam	.75
550-054	Propeller Shaft Water Seal Packing Cup	.15	550-304	Wrench	.40
550-055	Handle Friction Washer	.025	550-305	Handle—Carrying	1.15
550-058	Gear Housing Screw	.15	550-306	Bracket—Handle	1.15
550-060	Water Pipe Packing	.025	550-311	Spring—Clamp Screw	.15
550-063	Center Bearing Locating Dowel	.05	550-317	Gas Tank Screw Washer	.025
550-064	Crankshaft Nut	.40	550-320	Propeller Shaft Gears	4.50
550-065	Water Tube	.75	550-327	Spacer	.05
550-071	Lower Unit Stud	.15	550-329	Magneto Handle Screw	.025
550-072	Cylinder Stud—Long	.25	550-332	Cover Screw	.05
550-073	Cylinder Stud—Short	.15	550-338	Throttle Cam Spacer—Long	.10
550-075	Gear Housing Stud	.75	550-341	Magneto Handle	2.25
550-076	Drive Shaft Housing Dowel Pin	.05	590-002	Lower Crankshaft Bearing	5.00
550-077	Gear Housing Stud Nut	.45	590-004	Cylinder Assembly	18.75
550-080	Propeller Shaft Gear Pin	.05	590-007	Connecting Rod Assembly	3.00
550-082	Water Pump Eccentric Pin	.05	590-016	Drive Shaft Housing Assembly	18.00
550-085	Water Pump Eccentric	1.15	590-018	Gear Housing Cap Assembly	3.75
550-086	Gas Tank Bracket	.75	590-019	Gear Housing Cap Cover	1.50
550-089	Propeller Clutch Ring	1.00	590-024	Pivot Bearing Assembly	4.00
550-090	Pivot Bracket Spacer	.40	590-025	Stern Bracket Assembly	7.50
550-093	Bracket Adjusting Bolt	.25	590-035	Crankshaft Center Bearing Assembly	6.00
550-096	Throttle Valve Spring	.15	590-043	Magneto Handle and Cam Assembly	1.50
550-097	Pivot Bearing Bushing	.55	590-046	Starter Housing—deluxe only	3.75
550-099	Drive Shaft Water Seal Bushing	.75	590-048	Starter Housing Assembly—deluxe only	12.75
550-100	Propeller Shaft	2.25	590-049	Starter Drum Assembly—deluxe only	1.90
550-101	Gear Housing Cap Cover Screw	.15	590-080	Gas Tank and Transfer Assembly— Std. only	14.00
550-107	Propeller Shaft Water Seal Packing	.05	590-081	Gas Tank and Transfer Assembly— deluxe only	14.00
550-108	Gear Housing Gasket	.05	590-088	Motor Cover Assembly R.H.—Deluxe only	7.00
550-109	Carburetor Flange Gasket	.15	590-089	Motor Cover Assembly L.H.—Deluxe only	7.00
550-111	Propeller Clutch Hub	1.15	590-093	Gas Tank Filler Cap Assembly	1.25
550-112	Drive Shaft Upper Housing Cover Plate Gasket	.15	590-123	Starter Rope Assembly	1.50
550-113	Drive Shaft Upper Housing Cover Plate	1.00	590-136	Motor Cover Complete	14.00
550-114	Drive Shaft	1.50	590-165	Carburetor Assembly—Deluxe only	11.25
550-116	Cylinder Flange Gasket	.05	590-166	Carburetor Body Assembly	4.50
550-123	Starter Drum—Standard Only	1.50	590-167	Crankcase	10.50
550-124	Crankshaft	12.60	590-177	Gear Housing	9.00
550-130	Throttle Cam Spacer—Short	.05	590-179	Handle Assembly	1.50
550-138	Magneto Handle Screw—Long	.025	590-181	Armature Plate Complete Less Timer Lever	19.95
550-140	Gas Tank Screw Hole Plug	.025	590-198	Stud and Nut Assembly	.40
550-141	Carburetor High Speed Adjusting Needle	.55	590-215	Cylinder Cover—R.H.	3.00
550-148	Starter Pulley Shaft—Deluxe only	.40	590-216	Cylinder Cover—L.H.	3.00
550-149	Steering Handle Grip	.55			

Prices subject to change without notice.

Trouble Chart

The following chart aims to provide an outline for the systematic tracing down of trouble with the least amount of effort. Finding the cause of trouble usually suggests the remedy.

Motor won't start—

GASOLINE TROUBLE

- Tank empty.
- Shut-off Valve closed.
- Carburetor flooded, if motor is warm.
- Mixture too thin, if engine is cold.
- Too much oil mixed with gasoline.
- Water in carburetor, tank or strainer.
- Pipe clogged.
- Spray nozzle or feedhole in carburetor clogged.
- Vent in filler cap closed.

NO SPARK

- Wire to contact screw disconnected.
- Wire to spark plug disconnected.
- Water, oil, or carbon on magneto breaker points.
- Magneto breaker points do not come together when flywheel is revolved.
- Magneto breaker points do not separate when flywheel is revolved.

SPARK PLUG FAULTY

- Fouled with carbon, oil or moisture.
- Porcelain cracked.
- Center pole loose.
- Points not properly adjusted—should be apart .025.

Motor overheats—

- Lack of oil or water.
- Wrong propeller.

Motor knocks—

- Flywheel nut loose.
- Carbon in cylinders (caused by too much oil in gasoline).
- Motor too hot, causing pre-ignition.
- Bearings loose or worn.
- Piston or cylinder worn.

Motor is stiff or cranks hard—

- Rust in cylinder.
- Bearings out of line.
- Crankshaft bent.
- Gear shaft bent.
- No grease in gear case.

Water stops circulating—

- Obstruction in water intake.
- Leak at water pipe connections.
- Broken water pipe.
- Motor not setting deep enough in water.
- Worn pump rotor.

Poor compression—

- Piston rings carbonized and stuck in groove.
- Cylinder scored.

Motor misses—

WIRING

- Broken or loose wiring.
- Poor insulation.
- Wires short circuited with moisture, oil or foreign material.

MAGNETO

- Breaker points corroded.
- Breaker points improperly spaced.
- Weak coil.
- Weak condenser.
- Weak magneto.
- Foreign matter or oil on breaker points.

CARBURETOR

- Foreign matter in spray nozzle or needle valve or feed hole.
- Gasoline line restricted.
- Water or foreign matter in carburetor strainer.
- Water in carburetor.

Motor loses power—

IMPROPER MIXTURE

- Too rich (will slow down).
- Too thin (will backfire or "spit" as well as slow down).

LACK OF COMPRESSION

- Improper gas and oil mixture.
- Scored cylinder.
- Worn rings.

Motor runs but propeller does not revolve—

- Propeller pin sheared off.
- Broken drive on Propeller shaft.

Motor vibrates—

- Faulty ignition.
- Loose pivot bearing.
- Bent propeller wheel.
- Motor loose on boat.

Motor runs but boat makes little or no progress—

- Propeller blades bent.
- Rope or other obstruction dragging in water.
- Weeds on propeller.