

**OPERATING INSTRUCTIONS**  
**SERVICE MANUAL**  
and  
**PARTS LISTS**

**SENSATION**

MONOCYCLE

**ENGINE**

**SENSATION MOWER, INC.**

**RALSTON, NEBR.**

OPERATING INSTRUCTIONS  
SERVICE MANUAL  
and  
PARTS LISTS

The following guarantee is effective *only* if you complete and return the above card

## Sensation Engine Guarantee

The guarantee covers a period of 90 days from date of delivery. Within this period SENSATION Engines will replace to the original purchaser, at no charge, any parts found upon examination at the factory in Omaha, Nebraska, to be defective under normal use and service on account of defects in material or workmanship when engine is used on approved applications. No parts are to be returned to us without our written consent. All transportation charges on part or parts sent in for inspection or replacement under the guarantee must be paid for by the purchaser. The guarantee does not cover replacement of parts that have become useless because of wear occasioned by extreme use. It does not cover the labor cost of replacing parts nor is it effective if the engine has been misused, in a negligent manner, or been subject to an accident. Guarantee on accessories such as condensers, carburetors, magnetos, spark plugs, etc., are guaranteed separately by their respective manufacturers.

*This guarantee is not effective if the engine has been repaired or changed outside of our factory in any way, which in our judgment affects its operation. It is expressly brought to your attention that this engine is NOT covered by guarantee if LUBRICATION INSTRUCTIONS HAVE NOT BEEN FOLLOWED EXACTLY, and not unless registration card is sent in.*

# GENERAL INFORMATION

This pamphlet has been prepared to assist the owner in becoming acquainted with his Sensation Engine and enable him to get the best results from his engine. The details of this engine's construction as well as operating procedure and parts list are included in the following pages. Save it for reference in case it should become necessary to order parts or to refresh your memory on construction or operating details.

The Sensation Monocycle Engine is a single cylinder, two cycle, air cooled engine but because of the superior design and volume ratios employed and because the engine fires with every revolution of the crankshaft, the name "Monocycle" has been adopted. This engine is wonderfully engineered and precision-built throughout. Although it is extremely light in weight, it is of very rugged construction. Given proper lubrication and care, the engine will provide you with remarkable service for a very long time.

In the event that any major trouble occurs, we advise shipping the engine back to the factory where you can be assured of receiving the best service and know-how for the Sensation Engine. The extreme light weight of the engine makes this possible at very reasonable shipping rates.

## STARTING AND OPERATING

**BE SURE YOU READ THE FOLLOWING BEFORE ATTEMPTING TO START THE ENGINE**

**1. Fuel and Lubrication.** Mix one-half pint of No. 40 Mobile Outboard Special oil or equivalent to one gallon of "Regular" gasoline. Use a clean container for mixing. The simplest method is to mix two gallons of gasoline and one pint of oil in a three-gallon gasoline can, or one quart of oil and four gallons of gasoline in a five-gallon can. In either case, enough additional space remains in the can so that a very good mix may be obtained by simply shaking the can. Fill the engine's fuel tank with this mixture. No other lubricating is necessary as it is all done by the oil in the fuel itself. If there is a shut-off valve at the bottom of your tank, open it to allow the fuel to reach the carburetor.

**2. Starting the Engine.** (a) If the engine is equipped with a **Carter Carburetor**, move the choke lever to the choke position as far as it will go. Advance the throttle to one-half open position. Wind the starting rope around the starting pulley in a clockwise direction so that when the rope is pulled the engine will rotate clockwise. Pull the starting rope with a quick, sharp motion. Usually one pull with the engine choked is enough; however, if the engine does not start on the first pull, repeat the operation. As soon as the engine starts, move the choke lever to about half choke and allow the engine to run this way for a minute as a warm-up period. Then move the choke lever to the OFF position and the engine is ready to go to work.

(b) If the engine is equipped with a Tillotson Carburetor, open the needle valve at the bottom of the carburetor bowl (high-speed carburetor adjustment) one full turn and move the throttle to one-half open position. Wind the starting rope around the starting pulley in a clockwise position so that when the rope is pulled the engine will rotate clockwise. Then, holding the choke lever in the choke position with one hand, pull the starting rope with a quick, sharp motion. Usually one pull with the engine choked is enough; however, if the engine does not start on the first pull, repeat the operation. As soon as the engine starts, release the choke so that it returns to the OFF position. Close the needle valve on the carburetor bowl about one-fourth turn. This needle valve should now be about three-fourths of a turn open, which is the normal operating position. A little experience will determine the best operating position for your particular engine.

When the engine is warm, it is usually not necessary to choke it when starting. Merely adjust control to normal running position and crank the engine.

**3. Operating the Engine.** Do not operate the engine at wide open throttle for the first ten hours. It must be broken in just as your car is to provide maximum performance. Usually the Sensation Engine's speed is controlled by a hand throttle. Therefore, do not operate the engine at a speed that is higher than necessary to do the work.

**4. Stopping the Engine.** To stop the engine, close the throttle and then depress the shorting spring until it touches the spark plug, holding it in this position until the engine stops. Close the gas tank shut-off valve.

**5. Storing the Engine.** If the engine is to remain idle for some time or is to be transported, it should be allowed to run with the fuel tank shut off until the engine stops, thus running the carburetor and fuel line dry of fuel. If the engine is to be stored, it should be wiped clean, covered up and stored in a dry place.

## MAINTENANCE

To insure lasting, fine performance of your engine, the following simple rules of maintenance should be observed:

- A. Use one-half pint of No. 40 Mobile Outboard Special oil or equivalent mixed with one gallon of "Regular" gasoline for fuel.
- B. Do not run the engine at excessive speeds when it is not under a load.
- C. Remove and clean spark plug every fifty hours and adjust gap to twenty thousandths (.020) of an inch.
- D. Clean the air cleaner regularly.

# TROUBLE CHART

TROUBLE	POSSIBLE CAUSE	REMEDY
<b>ENGINE FAILS TO START</b>	1. No fuel in tank	Refill tank.
	2. Water or dirt in fuel	Drain tank and line and refill with new fuel.
	3. Fuel shut off	Open shut-off on tank and into carburetor.
	4. Defective or fouled spark plug	Remove spark plug and inspect. If porcelain is cracked, replace plug; if wet or dirty, clean plug and adjust gap to .020".
	5. Defective ignition	Check the spark plug wire for break or loose connection. Remove spark plug wire from spark plug and hold terminal of wire $\frac{1}{8}$ " to $\frac{1}{4}$ " away from plug terminal. Turn engine over with starting rope. Spark will jump the gap if ignition system is all right.
	6. Flooded	Remove spark plug and crank engine several times; replace plug.
	7. Improper carburetor adjustment	See paragraph No. 2 on "Starting Engine," page 3.
	8. Air cleaner clogged	Remove air cleaner, wash in gasoline, blow out with air, dip in oil and replace.
	9. Muffler or cylinder exhaust ports clogged	Remove muffler, inspect and clean. Remove exhaust manifold and scrape exhaust ports clean. (If it is necessary to clean exhaust ports, rotate starter pulley by hand until the skirt of piston covers the ports so that no particles will fall into the combustion chamber.)
	10. Poor compression	Check lubricating mix in fuel. Inspect rings and replace if necessary.
<b>ENGINE LACKS POWER</b>	1. Incorrect lubrication	Check fuel mix.
	2. Worn or stuck piston rings	Inspect rings, replace if necessary.
	3. Cylinder ports or muffler clogged	See No 9 under "Engine Fails to Start" above.
	4. Air cleaner clogged	See No. 8 under "Engine Fails to Start" above.
<b>ENGINE HEATING</b>	1. Improper lubrication or fuel mixture	Check fuel for correct oil mix.
	2. Cooling air flow obstructed	Remove blower housing and remove refuse between cylinder fins.
	3. Engine overloaded	Reduce engine load.

# SENSATION ENGINE

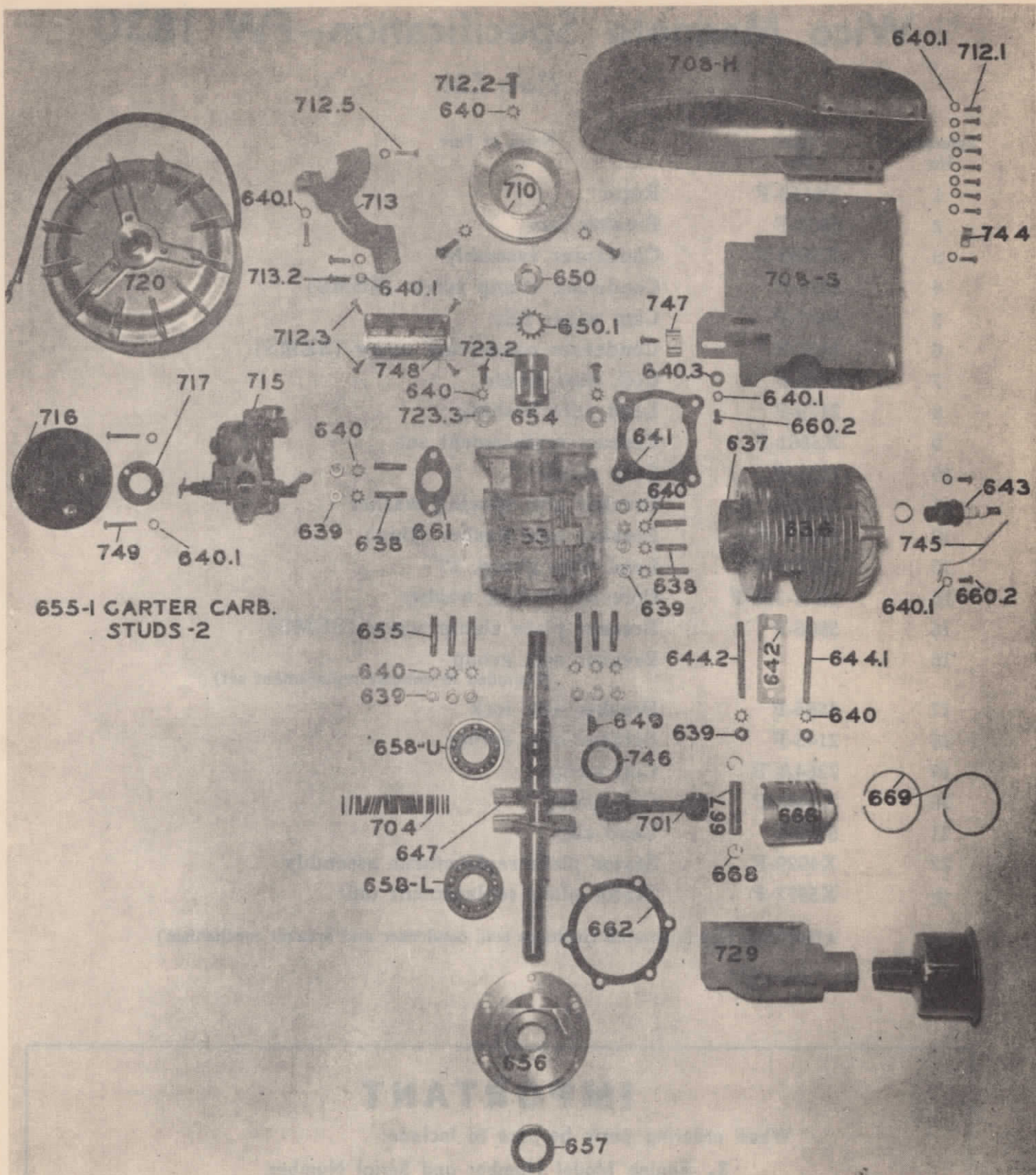
## Parts List

Part No.	No. Required	Description	Part No.	No. Required	Description
636	1	Cylinder	668	2	Piston Pin Lock Rings
637	1	Cylinder Sleeve	669	2	Piston Rings
638	6	Studs, $\frac{1}{4} \times 1\frac{1}{8}$ ( $\frac{1}{4}$ -28, $\frac{1}{4}$ -20)	701	1	Connecting Rod
639	14	Nuts, $\frac{1}{4}$ "-28	702	1	Wrist Pin Bushing
640	19	Lock Washers, $\frac{1}{4}$ "	704	28	Needle Bearings
640.1	19	Lock Washers, $3/16$ "	708H	1	Blower Housing
640.3	3	Flat Washer, $3/16$ "	708S	1	Cylinder Shroud
641	1	Cylinder Gasket	710	1	Starter Hub
642	1	Manifold Gasket	712.1	9	Screws, $\#8 \times \frac{1}{2}$ " Sheet Metal
643	1	Spark Plug	712.2	3	Bolt, $\frac{1}{4} \times \frac{3}{4}$ " Stove
644.1	1	Stud, $\frac{1}{4}$ "x3"	712.3	4	Sheet Metal Screw, $\#6 \times \frac{3}{8}$
644.2	1	Stud, $\frac{1}{4}$ "x2 $\frac{5}{8}$ "	712.5	2	Sheet Metal Screw, $\#8 \times \frac{3}{4}$
646	1	Crankshaft	713	1	Bracket
647	2	Counterweights	713.2	2	Bolts, $3/16 \times \frac{5}{8}$ "
648	6	Rivets, $\frac{1}{4} \times \frac{1}{2}$	715	1	Carburetor
649	1	Woodruff Key	716	1	Air Cleaner
650	1	Nut, $\frac{5}{8}$ "-18	717	1	Air Cleaner Gasket
650.1	1	Lock Washer, $\frac{5}{8}$ "	720	1	Magneto Assembly
653	1	Crankcase	723.2	2	Bolts, $\frac{1}{4} \times \frac{1}{2}$
654	1	Upper Seal	723.3	2	Washer, $\frac{1}{4}$ "
655	6	Stud, $\frac{1}{4} \times 1\frac{3}{8}$	729	1	Manifold
655.1	2	Stud (carburetor studs for Carter in lieu of #638) $\frac{1}{4} \times 2$ "	730	1	Muffler
656	1	Crankcase Bottom	742	1	Starter Rope Handle
657	1	Garlock Seal	743	1	Starter Rope
658L	1	Lower Bearing, #3205	744	1	Clip — Magneto Wire
658U	1	Upper Bearing, #105K	745	1	Shorting Spring
660.2	4	Bolt, $3/16 \times \frac{3}{8}$ Stove	746	3 (avg.)	Shims
661	1	Carburetor Gasket	747	1	Clamp — Throttle Wire
662	1	Bottom Gasket	748	1	Name Plate
666	1	Piston and Ring Locks	749	2	Screws — $8/32 \times 1$ "
667	1	Piston Wrist Pin	750	1	Rivet — Aluminum $\frac{1}{8} \times \frac{3}{8}$ " L.

## IMPORTANT

When ordering parts be sure to include:

1. Engine Model Number and Serial Number.
2. Part Number and Description.
3. Quantity desired.



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STUDS-2

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Quantity desired.  
Part Number and Description.

# Wico Magneto Specification—FW 1830

## *Parts List*

Reference No.	Part No.	Name of Part
1	Y6153-F	Rotor
2	4932-F	Breaker cam
3	X5800-F	Condenser assembly
4	5431-F	Condenser clamp screw (SEMS)
5	5077-F	Cam wiper felt
6	5431-F	Condenser connecting screw (SEMS)
7	5850-F	Coil, dust shield
8	2179-F	Lead wire bushing
9	X5861-F	Contact replacement set
10	2157-F	Core screw
11	5220-F	Breaker arm spacing washer
12	2357T-F	Breaker arm washer (thin)
13	X2215-F	Lead wire group, 17"
14	IKA-362-F	Core screw lock washer
15	5806-F	Breaker plate clamp screw (SEMS)
16		Breaker arm group (Included in contact replacement set)
17	4585-F	Breaker arm lock
18	2145-F	Breaker arm spring
19	2264A/B	Coil wedge
20	X4943-F	Coil group
21	5152-F	Lead clip
22	X4929-F	Stator plate replacement assembly
★	X5977-F	Stator plate replacement unit

★NOTE— Not illustrated (includes coil, condenser and breaker mechanism)

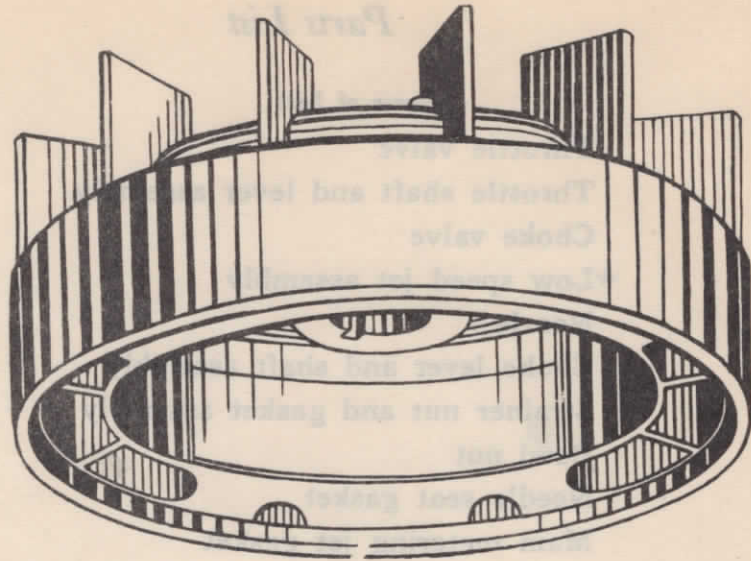
## **IMPORTANT**

When ordering parts be sure to include:

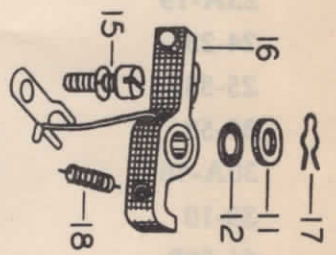
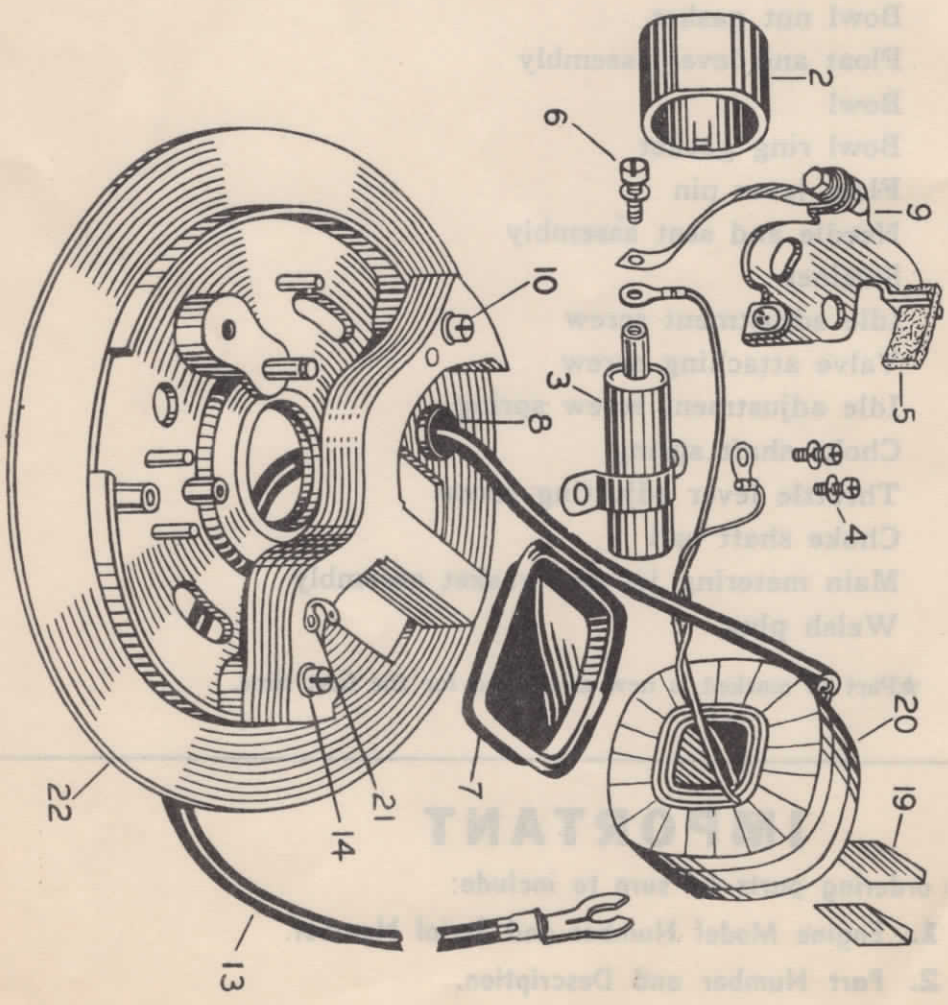
- 1.** Engine Model Number and Serial Number.
- 2.** Part Number and Description.
- 3.** Quantity desired.



Center Carburetor-N-6972



Part No.  
 2-127  
 3-6118  
 7-132  
 11-1928  
 12-317  
 14-368  
 15-185  
 15-49  
 20-32  
 20-38  
 20-35  
 20-110  
 21-1028  
 23-37  
 23A-19



15  
 16  
 17  
 11  
 12  
 18

# Carter Carburetor-N-697S

## *Parts List*

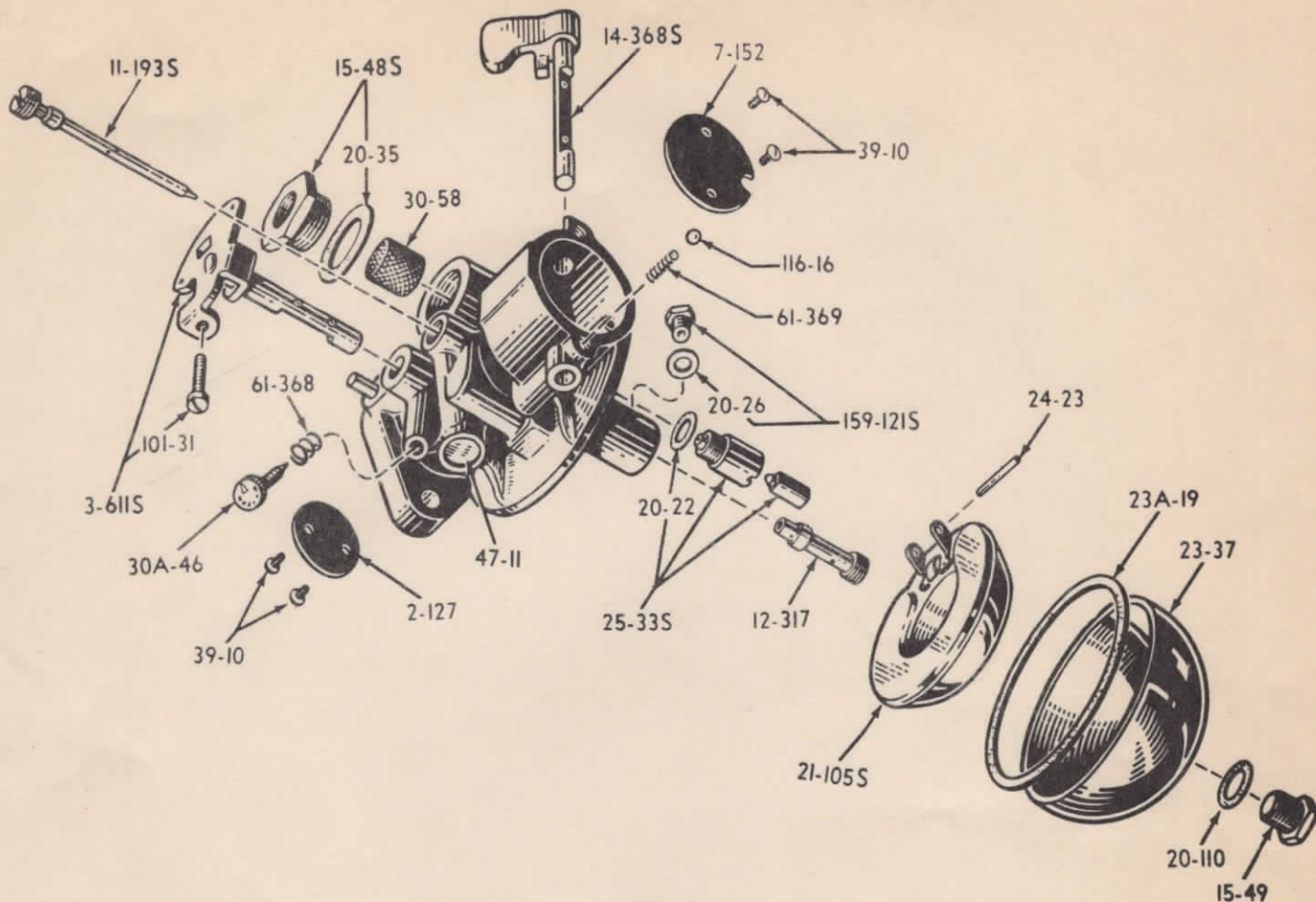
Part No.	Name of Part
2-127	Throttle valve
3-611S	Throttle shaft and lever assembly
7-152	Choke valve
11-193S	★Low speed jet assembly
12-317	Nozzle
14-368S	Choke lever and shaft assembly
15-48S	Strainer nut and gasket assembly
15-49	Bowl nut
20-22	Needle seat gasket
20-26	Main metering jet gasket
20-35	Strainer nut gasket
20-110	Bowl nut gasket
21-105S	Float and lever assembly
23-37	Bowl
23A-19	Bowl ring gasket
24-23	Float lever pin
25-33S	Needle and seat assembly
30-58	Strainer
30A-46	Idle adjustment screw
39-10	Valve attaching screw
61-368	Idle adjustment screw spring
61-369	Choke shaft spring
101-31	Throttle lever adjusting screw
116-16	Choke shaft ball
159-121S	Main metering jet and gasket assembly
47-11	Welsh plug

★Part so marked is new and listed for the first time.

## **IMPORTANT**

When ordering parts be sure to include:

- 1. Engine Model Number and Serial Number.**
- 2. Part Number and Description.**
- 3. Quantity desired.**



## SERVICE PROCEDURE

### TO DISASSEMBLE

1. Remove carburetor from engine.
2. Remove bowl nut, gasket and bowl.
3. Remove float pin, float, needle and needle seat. Check float for dents, leaks, and wear on float lip or in float pin holes.
4. Remove bowl ring gasket.
5. Remove main metering jet and gasket assembly.
6. Remove low speed jet, idle adjusting screw and idle adjusting screw spring.
7. Remove strainer nut and gasket assembly and strainer.
8. Remove nozzle.
9. Remove throttle valve screws, valve, and shaft and lever assembly.
10. Do not remove choke valve and shaft unless replacement of these parts is necessary. A spring loaded ball retains choke in wide open position. Be sure to use a new ball and spring when replacing choke shaft and lever assembly.
11. Clean all parts in clean gasoline or solvent, making sure all carbon accumulation is removed from bore, especially where throttle valve seats in casting. Blow out all passages with compressed air. Replace all worn and damaged parts. Always use new gaskets.

### TO ASSEMBLE

12. Install throttle shaft and valve. Valve must be installed with trademark "C" on side toward idle port when viewing from flange side. Always use new screws. With valve screws loose and throttle lever set screw backed out, seat valve by tapping lightly with a small screwdriver. Hold in place while tightening screws.
13. Install nozzle, making sure it seats in casting.
14. Install main metering jet and gasket assembly.
15. Install needle seat, needle, float and float pin.
16. Set float level. With carburetor casting inverted, float resting lightly against needle in its seat, there should be  $13/64$ " clearance between machine surface of casting and free end of float (side opposite needle seat). Adjust by bending lip of float with small screwdriver. (Use gauge T109-39).
17. Install bowl ring gasket, bowl nut gasket and bowl nut. Tighten securely after making sure bowl is centered in gasket.
18. Install low speed jet, seating it securely in casting.
19. Install open end of strainer in strainer nut and gasket assembly and install strainer nut assembly.
20. Then install idle adjusting screw, finger tight. Back out 1 to 3 turns. Do not use pliers or screwdriver, as it may damage idle screw.

## SENSATION ENGINE PARTS PRICE LIST

All prices F.O. B. Ralston - Subject to change without notice

Part No.	No. Reg.	Name of part	List price each
636, 637	1	Cylinder assembly . . . . .	25.00
638	6	Studs, 1/4 x 1-1/8 (1/4-28, 1/4-20) . . . . .	.10
639	14	Nuts, 1/4" - 28 . . . . .	.02
640	19	Lock washers, 1/4" . . . . .	.01
640.1	19	Lock washers, 3/16" . . . . .	.01
640.3	3	Flat washers, 3/16" . . . . .	.01
641	1	Cylinder gasket . . . . .	.20
642	1	Manifold gasket . . . . .	.20
643	1	Spark plug . . . . .	.95
644.1	1	Stud, 1/4" x 3" . . . . .	.15
644.2	1	Stud, 1/4" x 2-5/8" . . . . .	.15
646, 647, 648	1	Crankshaft assembly . . . . .	23.25
649	1	Woodruff key . . . . .	.03
650	1	Nut, 5/8" - 18 . . . . .	.06
650.1	1	Lock washer, 5/8" . . . . .	.03
653	1	Crankcase . . . . .	19.60
654	1	Upper Seal, Rotary Valve . . . . .	1.10
655	6	Stud, 1/4 x 1-3/8 . . . . .	.11
655.1	2	Stud, (Carburetor studs for Carter in lieu of #638) 1/4 x 2" . . . . .	.15
656	1	Crankcase bottom . . . . .	5.40
657	1	Lower seal (Garlock) . . . . .	.85
658-L	1	Lower Bearing #3205 . . . . .	3.50
658-U	1	Upper Bearing #105K . . . . .	3.50
660.2	4	Bolt, 3/16 x 3/8 . . . . .	.02
661	1	Carburetor gasket . . . . .	.20
662	1	Bottom gasket . . . . .	.28
666	1	Piston and ring locks . . . . .	9.60
667	1	Piston wrist pin . . . . .	.65
668	2	Wrist pin lock rings . . . . .	.02
669	2	Piston rings . . . . .	.45
701	1	Connecting rod . . . . .	5.70
702	1	Wrist pin bushing . . . . .	.35
704	28	Needle bearings . . . . .	.02
708H	1	Blower housing . . . . .	7.00
710	1	Starter hub . . . . .	3.50
712.1	9	Screws, #8 x 1/2" sheet metal . . . . .	.01
712.2	3	Bolt, 1/4 x 3/4 . . . . .	.02
712.3	4	Sheet metal screw, #6 x 3/8 . . . . .	.01
712.5	2	Sheet metal screw, #8 x 3/4 . . . . .	.01
713	1	Bracket . . . . .	3.40
713.2	2	Bolts, 3/16 x 5/8" . . . . .	.02
716	1	Air cleaner, mesh type . . . . .	1.50
---		SPECIAL NOTICE - For superior air cleaner protection see reverse side	

Part No.	No.	Name of part	List price each
717	1	Air cleaner gasket .....	.05
720	1	Magneto Assembly .....	26.00
723.2	2	Bolts, 1/4 x 1/2. ....	.02
723.3	2	Washer, 1/4".....	.01
729	1	Manifold exhaust .....	4.75
730	1	Muffler.....	1.60
742, 743	1	Starter rope and handle.....	.35
744	1	Clip-Magneto wire support.....	.05
745	1	Shorting spring.....	.15
746	3	Shims.....	.02
747	1	Clamp - throttle wire.....	.03
748	1	Name plate.....	.20
749	2	Screws - 8/32 x 1".....	.02

SKINNER AIR CLEANER ASSEMBLY

1	End plate (casting).....	1 .28
1	End plate (stamping).....	.20
2	Studs, 8/32 x 4".....	.22
2	Elastic stop nuts.....	.07
1	Skinner cartridge.....	1.50

For best possible protection for your engine use PHELPS "LO-VEL" air cleaner. If your engine is in use where soil is sandy or abrasive PHELPS "LO-VEL" air cleaner affords maximum protection. Specify carburetor on your engine when ordering the PHELPS "LO-VEL" air cleaner.

Complete PHELPS "LO-VEL" air cleaner assembly 2.75  
 Extra air filter bags..... .70

SENSATION MOWER, INC.  
 RALSTON, NEBRASKA

WICO MAGNETO PARTS LIST PRICE - FW - 1830  
 All prices F. O. B. Ralston - Subject to change without notice

Ref. No.	Part No.	No. per Unit	Part Name	List Price each
1	Y6153-F	1	Rotor.....	12.50
2	4932-F	1	Breaker cam.....	1.15
3	X5800-F	1	Condenser assembly.....	1.75
4	5431-F	2	Condenser clamp screw.. (SEMS).....	.05
5	5077-F	1	Cam wiper felt.....	.05
6	5431-F	1	Condenser connecting screw (SEMS).....	.05
7	5850-F	1	Coil, dust shield.....	.10
8	2179-F	1	Lead wire bushing.....	.05
9	X5861-F	1	Contact replacement set..	3.35
10	2157-F	2	Core screw.....	.05
11	5220-F	2	Breaker arm spacing washer.....	.05
12	2357T-F	1	Breaker arm washer (thin)	.05
13	X2215-F	1	Lead wire group 17".....	.30
14	IKA362F	2	Core screw lock washers .	.05
15	5806-F	1	Breaker plate clamp screw	.05
16			Breaker arm group..... (Included in contact re- placement set)	.05
17	4585-F	1	Breaker arm lock.....	.05
18	2145-F	1	Breaker arm spring.....	.10
19	2264A/B	1	Coil wedge.....	.05
20	X4943-F	1	Coil group.....	7.05
21	5152-F	1	Lead clip.....	.05
22	X4929-F	1	Stator plate replacement assembly.....	3.50
**	X5977-F	1	Stator plate replacement unit.....	12.50
	FW-1830		COMPLETE WICO MAGNETO.....	26.00

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NOTE - not illustrated  
 (includes coil, condenser  
 and breaker mechanism)

SENSATION MOWER, INC.  
 RALSTON, NEBRASKA

CARTER CARBURETOR PRICE LIST N-2475S

All prices F.O. B. Ralston - Subject to change without notice

Part No.	Part Name	List Price
1A-73	Flange gasket . . . . .	.17
2-127	Throttle valve . . . . .	.17
3-831S	Throttle shaft and lever assembly . . . . .	1.30
7-152	Choke valve. . . . .	.17
11-194S	Low speed jet and high speed adjusting . . . . .	
	needle assembly . . . . .	.86
11B-375S	Bowl drain plug assembly (N-2475S late prod.) . . . . .	.23
12-338	Nozzle (N-2026S) . . . . .	.69
14-460S	Choke shaft and lever assembly . . . . .	1.30
15-50S	Bowl nut assembly (N-2026S) (Sup. by 15-54S) . . . . .	.26
15-54S	Bowl nut assembly (Sup. by 15-64S) . . . . .	.26
15-64S	Bowl nut assembly . . . . .	.26
20-22	Needle seat gasket . . . . .	.08
20-110	Bowl nut gasket . . . . .	.08
20-133	Bowl drain gasket (N-2475S late prod.) . . . . .	.09
21-139S	Float and lever assembly (N-2026S) . . . . .	2.60
21-163S	Float and lever assembly (N-2475S) . . . . .	2.60
23-42	Bowl (N-2026S) . . . . .	1.30
23-59	Bowl (N-2475S early prod. ) . . . . .	1.30
23-64	Bowl (with drain) (N-2475S late prod.) . . . . .	1.30
23A-19	Bowl ring gasket . . . . .	.17
24-23	Float lever pin (N-2026S) (Sup. by 24-30). . . . .	.09
24-30	Float lever pin. . . . .	.09
25-33S	Needle and seat assembly (N-2475S) . . . . .	1.38
25-219S	Needle and seat assembly (N-2026S) . . . . .	1.38
30A-46	Idle adjustment screw . . . . .	.52
47-11	Welsh plug . . . . .	.12
61-368	Idle adjustment screw spring. . . . .	.08
61-369	Choke shaft spring . . . . .	.08
61-383	High speed adjusting needle spring. . . . .	.09
61-600	Bowl drain spring (N-2475S late prod.) . . . . .	.09
101-31	Throttle lever adjusting screw . . . . .	.09
101-320	Choke and throttle valve attaching screw. . . . .	.03
116-16	Choke shaft ball . . . . .	.02
N-2475S	CARTER CARBURETOR COMPLETE . . . . .	12.50

BRANSON MOTOR INC.  
BRANSON, MISSOURI