OPERATING INSTRUCTIONS
Super Cyclone ENGINES
Super Cyclone Will Fly Any Kit
Now on the Market

WARNING: Do not attempt to operate your Super Cyclone engine until you have carefully studied the following instructions:
Regardless of how many different makes of gasoline engines you have owned, we suggest that you carefully read over these operating instructions before starting your engine. The finished product and all its parts have been carefully and completely tested. They are guaranteed against defects in material or workmanship. A sixty-day guarantee is included with each engine. This guarantee is void if your engine has been disassembled, tampered with, or burnt up by running with a fly-wheel without any provision being made for cooling. Any demand for replacements must be received by the manufacturer together with the engine, plus postage both ways, within sixty days from date of purchase. Serial number of your engine must be included.

Common sense in the use of gasoline makes it perfectly safe. Use care in filling your tank. Keep away from inflammable material. Always run your engine out in the open. Extreme care must be used at all times in keeping clear of the propeler.

When engine is mounted in your ship and ready to fly, get out in the open away from all possible obstructions. On your initial flights use only a small amount of gas or a short timer. Your model should be rigged correctly before filling up your tank—otherwise it might leave the area and either be lost or cracked up. Airplane pilots and mechanics exercise extreme caution AT ALL TIMES. If you practice being careful and take care of your engine, you will win lots of events, and have many hours of pleasure in flying your Super Cyclone.

Don't take your engine apart unless absolutely necessary. If your plane should nose over in dirt or sand and the engine become fouled, then it is imperative that the engine be taken down, thoroughly washed with gasoline, oiled and reassembled.

Enclosed with the engine is an envelope containing exhaust manifold, gasket and screws. The engine is ready to install in your ship. As the engine is brand new and all moveable parts have been fitted together as closely as possible, it would be wise to run the engine for short periods and not wide open until after the engine has one-half hour's time or so. Flywheel job should be broken in with a propeller before being run wide out with the flywheel. When bench testing with flywheel, run for short periods unless provision is made for cooling. Should you desire to run the engine for additional break-in before ship installation, we suggest that you go to the necessary amount of preparatory work so that the engine can be run properly. DO NOT merely squeeze the engine up in a vise or fasten the mounts to a chunk of wood, and then expect to get results.

Obtain a piece of hard wood about 8" to 1" thick, 4" to 6" wide, and 12" long. On one end, cut a notch 1½" wide and 2½" deep. Fit the engine and tank into this notch and either screw or bolt the engine in place. Use only round or flister head screws as the flat head or counter-sink type may crack the crank case lugs.

Wire the engine according to the wiring diagram. Screw this assembly to a good bench or solid table.

For bench running or testing use two large door bell batteries for current.

The condenser leads should be anchored down or secured in such a way that they do not break off from vibration.

FUEL MIXTURE VERY IMPORTANT

USE GREAT CARE

Always use gas mixed as below for your fuel. Otherwise you will ruin your engine.

Mix three parts good grade white automobile gasoline (do not use Ethyl Aviation, or high test gasolines as they are unsatisfactory in small engines) to one part S.A.E. 70 oil. The oil and gas must be thoroughly mixed in a clean separate container before pouring into the gas tank. It is IMPERATIVE that the above instructions be carried out. Cheap or inferior oils will ruin the engine in one or two minutes of running. DON'T TAKE ANY CHANCES. For best results, keep your gas mixture fresh by mixing only the amount that would be required for the day's flying.
STARTING YOUR ENGINE

WHEN IT IS COLD
Make sure that the spark is okay by holding the spark plug wire about 1/2" from the cylinder. Give your prop a quick turn over and see if a spark occurs at this point. If so, replace wire on the plug and open the needle valve about 2¼ turns. With the ignition on and the spark set in starting position (ratchet plunger in the fifth or sixth notch from either side), snap the engine over until the spark is visible. Then advance the plug and crank over to start. If the ignition is okay and the engine properly primed, it should start up. Should the engine refuse to start, repeat the priming process.

After the engine starts, the correct running adjustment is made by screwing the needle valve a couple of notches at a time. The spark lever is adjusted against engine rotation for maximum R.P.M. A fine adjustment is made on the needle valve by screwing either in or out. If the spark is advanced too far the engine will run roughly. Experience will show you the correct setting.

Care should be exercised to avoid flooding the engine. Should this occur, raw gasoline will show out of the exhaust port. Remove the plug and crank engine over until all signs of gas are absent. Clean and replace plug and repeat the starting process.

The flywheel jobs are started by using a small piece of sash cord or light rope placed in the groove in the flywheel. Turn the engine over by holding both ends of the cord and pull from the side. Be sure to turn engine counter-clockwise. The engine can be primed by dropping one or two drops of gas mixture into the carburetor opening from an eyedropper. In both cases, a little practice will acquaint you with the correct spark and needle valve setting for easy starting.

WHEN IT IS HOT
After your engine is warmed up, it will require very little priming. Start the engine with the spark retarded but leave the needle valve where the engine runs nicely and choke it only once or twice (one or two turn covers).

It is easy to flood any hot two-stroke engine and care must be taken in this respect. There is no hard and fast rule about starting your engine. With a very little practice, you will discover your own particular system.

CARE OF COILS
The spark coil should never be dropped or left lying around any old place. They are designed to operate on two standard cells and it is not necessary to use more voltage. COILS SHOULD NEVER BE MOUNTED ON A METAL SURFACE. Fasten coil to a non electrical conductor.

ENGINE FAILURE IN THE AIR
If there is plenty of gas in your tank, but after a few seconds in the air your engine stops, it may be caused by vibration which has disengaged your electrical system; or the engine is running too lean or rich a mixture. The Super Cyclone runs quite cold in the air, and it will be better to fly your model by adjusting your needle valve about 1/4 turn rich. With just a little practice, the exact setting can be easily found.

TROUBLE CHART
If your engine fails to start, check the following: Exhausted batteries, fouled or dirty spark plug, broken or loose wire terminals, points not making proper contact, out of gas, improper gasoline and oil mixture, gasoline or needle valve seat chocked, engine flooded, too much gas in cylinder.

If batteries are exhausted, install new batteries. If plug is fouled, scrape and clean with gasoline and readjust to 0.15 or 0.20 g.p. If you have a loose wire, secure carefully. If contact points are bad, use fine sandpaper to clean. Try to purchase batteries that will test 10 amperes or more. For best results, BUY THE BEST.

Before being delivered to you, your engine has been assembled and tested by expert engine mechanics. If you follow our instructions in the operation and care of your engine, you will have many long hours of flying ahead of you. Every part of your engine has left the factory only after the most careful and rigid inspection. Anything mechanical is subject to mechanical failure, however, this can be reduced to the minimum by proper care. If you do your part by properly taking care of your engine, you will find that your engine will always be ready to run. Keep your engine clean by washing it off with solvent after each day's flying. Breaker arm, can follower and ratchet plunger.

REPAIR INFORMATION
When it is necessary to have any major work done on your Super Cyclone, we suggest you take it to your Favorite Local Dealer. If he is unable to overhaul it for you, send it to us. Your engine can be sent to us with the greatest confidence for repair. We will replace only the parts that are actually needed. Old or broken parts are returned to the owner inclosed with the engine.

Do not take your engine to the nearest mechanic for an overhaul job as, in most cases, he will not be able to do a satisfactory job. Please adhere to the following procedure when returning engine for repair: Send the engine to us with an explanation of what appears to be at fault, including in your correspondence the serial number of your engine. Serial number is located on rear of crank case cover (to see, remove tank). The engine will then be thoroughly inspected and an estimate on cost of repairs will be mailed, containing what parts are needed and the total cost, which includes a small labor charge plus the return postage charge. Upon receipt of money order to cover these costs, the engine is then repaired, thoroughly cleaned and oiled, given factory tests, and returned to the sender. We do not repair any engine without the permission of the owner.

The guarantee of the Super Cyclone Engine does not apply if you have attempted to repair any parts belonging to the engine. The engine is a precision piece of mechanism and must be repaired only by men experienced in its construction.

To disassemble engine, take off gas tank by unscrewing and nut. Remove rear crankcase cover with a wrench made with four slots and...
a center hole to coincide with lugs on crankcase cover. A satisfactory wrench can be made by filing notches into a round piece of hardwood to fit the cover. This is put in and held by a vise while holding the engine and unscrewing cover. Cylinder is removed by unscrewing the four base screws. It is not necessary to remove the cylinder head only in the event of replacing same. To take off cylinder head, unscrew six cylinder head screws and spark plug. To break gasket loose, insert a round piece of wood into the cylinder barrel and at same time, hold cylinder in one hand and lightly tapping on the wood with hammer, drive the head off. Before removing cam be sure to note position of flat on cam on relation to crank pin.

After removing the piston and connecting rod, the cam should be pulled off preferably with a small puller or the shaft may be tapped on the propeller end with a piece of hardwood. Take care not to bend the shaft or damage the threads.

To remove timer assembly from crankcase, insert a small screwdriver into the slot in the timer casting. Gently spread casting slot apart just enough so that the timer assembly can be pulled from the case. Be sure to watch for the ratchet plunger and spring under the timer so you will not lose them.

All parts should be washed thoroughly with gasoline and oiled before assembly. Be sure to use all new gaskets.

To convert engine from upright to inverted or vice-versa, note position of flat on crankshaft. Pull cam with small puller. Remove timer assembly as described in dissasemble of engine. Take out small ratchet plunger and spring and insert in opposite hole and oil. Replace timer assembly 180° opposite from which it came. Cam is replaced 180° opposite. Remove needle valve seat and clip by unscrewing nut and replace in opposite side. Note position of hole in needle valve faces down. Loosen tank stud nut and turn tank 180° opposi,

Cylinder and piston may be turned 180° for opposite side exhaust.

Note: If no cam puller is available, the engine should be completely disassembled, connecting rod and piston removed, etc., before driving shaft loose from cam as stated in engine disassembly. Don’t use pliers to remove spark plugs, adjust points, etc. Obtain small wrenches for this purpose.

Before removing piston, make note of position of piston head deflector with exhaust port.

The old head gasket can be loosened from cylinder or head by soaking in dope thinner or alcohol.

Special Note: If at any time a new or used crankshaft or crankcase is used on an engine, be sure to note, when both are assembled with thrust bearing and washers, that there is sufficient end play. The largest round journal of crankshaft should protrude from crankcase approximately .002 to .004 of an inch. In that way, when new cam is pressed on and propeller installed, you can move crankshaft back and forth in crankcase. This has to be so, or else when you tighten propeller on shaft you are pulling the crankshaft against thrust bearing and washers causing them to break or score.

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### SPECIFICATIONS GR SERIES

**Type:** Two-port, two-stroke cycle, air-cooled.

**Fuel Admission:** Rotary valve.

**Normal Horsepower:** 1/3 to 1/4.

**Bore:** 2½", **Stroke:** 1½".

**Displacement:** 604 cu. in.; **Weight:** 9½ oz.

**Fuel:** S.A.E. 70; **Gasoline:** Untreated auto fuel.

**Fuel Mixture:** Oil, 1 part; gasoline, 3 parts.

**Spark Plug Gap:** .012.

**Breaker Point Gap:** .015 to .020.

**Recommended Normal Propeller R.P.M.:** 6000 to 7000.

**Recommended Propeller Pitch:** 6".

**Recommended Propeller Diameter:** 13"; **14".

**Engine Rotation:** Counter-clockwise.

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### PARTS LIST FOR GR SERIES — SUPER CYCLONE ENGINES

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<th>Per Eng.</th>
<th>Name of Part</th>
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MANUFACTURED BY
SUPER CYCLONE, Inc.

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