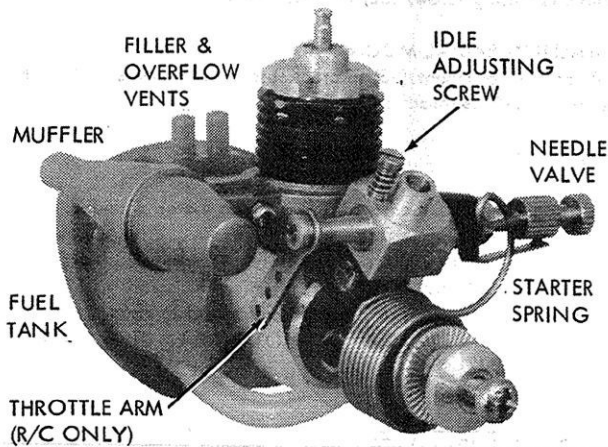




OPERATING INSTRUCTIONS FOR G-MARK .03 U/C AND .03 R/C ENGINES



SPECIFICATIONS

Engine Type	Two cycle, glow, front rotary valve
Bore343 in. (8.72 mm)
Stroke324 in. (8.23 mm)
Displacement03 cu. in. (0.49 cc)
Weight (with fuel tank, muffler)	1.49 oz. (43.8 gr.)
Size	2-3/4" lg. x 2" high
Speed Range (nominal)	6000 to 18,000 RPM
Propeller	4-1/2" dia. x 2" pitch
Recommended Fuel	20-25% nitromethane

PREPARATION FOR USE

- a. Assemble muffler around engine. Tighten retaining screw securely. Make sure muffler tab engages crankcase detent to lock muffler in position.
- b. Check that glow head and propeller are securely attached. Radial mount may be installed if this type of mounting is preferred.
- c. Mount engine on test block for break-in. (Do not use a vise!).

BREAK-IN

- a. Install normal propeller on engine. When prop screw is

tightened, blade should rest horizontal when pulled upward against compression. Balancing of prop and removal of sharp nylon edges from prop with fine sandpaper is recommended.

- b. For break-in, use lower grade of nitromethane fuel. Use strainer when filling tank. Switch to desired higher grade for normal operation of engine (Cox Red Label, or equivalent, is recommended).

- c. Start engine and operate it for 35 minutes thru break-in stages listed below. Note: These engines are built to very close tolerances and some may require even more break-in time than shown to obtain best idle and top RPM's.

STAGE	RUNNING TIME	THROTTLE SETTING
1	10 Minutes	Fully Open
2	10 Minutes	Fully Open
3.	10 Minutes	Fully Open
*4	5 Minutes	Vary throttle thru operating range.

NEEDLE VALVE SETTING

- a. Full rich for lowest running RPM.
- b. Close valve to obtain middle RPM range.
- c. Leanest setting for max engine RPM.

- d. Adjust idle. Operate thru all speeds.

Allow 10 Minutes rest between each break-in stage. Do not permit engine to overheat.

*Not required for .03 U/C engine.

STARTING ENGINE

- a. Open needle valve 3-4 turns CCW from fully closed position. Place throttle in full open position.
- b. Hold finger over carburetor intake and suck fuel into carb by turning prop 3 or 4 revolutions counter-clockwise.
- c. With injector or small pump, squirt 2 drops of fuel into carb intake and small hole in front side of muffler ring.
- d. Connect 1.5 volt starting battery to glow head (1.2V nicad O.K.) with a battery clip. If glow driver is used, make certain current to glow head is kept below 1.75 amps or glow head coil may be damaged or burned out.
- e. Hook spring over prop blade, rotate propeller clockwise approximately one full turn, then release.
- f. If engine refuses to fire, check that glow head coil gets red hot with battery connected. If not, check battery, connector and glow head. Correct the defect and try again.
- g. If engine starts, but stops immediately, open needle valve 1/2 turn, prime engine, and start it again.
- h. If engine coughs and spits a lot of fuel from the exhaust, the engine is flooded. Close needle valve fully and crank engine until it starts briefly. Open needle valve again and continue cranking until it starts. A new prime will probably not be needed.

- b. Remove glow head. With good battery connected, it should glow brightly. Replace it if bad.

- c. Fuel expelled thru exhaust indicates rich mixture (too much fuel). Close needle valve slightly until correct starting position is found.

- d. Dry exhaust emission indicates possible lean mixture. Add more prime, open needle valve, or both, until engine starts.

IDLE ADJUSTMENT

- a. Set idle adjustment screw so only a hair slit of the fuel intake hold is visible in carb intake when throttle is fully closed.

- b. While running engine, vary this adjustment very slightly until lowest stable idle is obtained. Remember that high speed needle valve setting has some effect on idle adjustment. Also, temperature, humidity and fuel type also affect changes in idling and top end.

ENGINE INSTALLATION

- a. Mount engine solidly in airframe. Tighten mounting screws or bolts securely. Use lock washers.

- b. Position fuel tank so upper fuel level is not above needle valve position, nor is centerline of tank more than 1-1/4" below needle valve.

- c. Install engine servo and throttle linkage so full throttle arm movement is obtained without binds. If available, use

IF ENGINE FAILS TO START

- a. Check starter battery condition. Replace if necessary. Check for breaks in wires or poor contact at plug connector.

throttle override arm to prevent possible binds.

d. For starter use, a small prop spinner is helpful. Observe other notes on prop installation under "BREAK-IN".

ENGINE MAINTENANCE

a. Never disassemble engine unless necessary. Never overtighten parts that screw together, otherwise distortion and damage to close tolerance parts may occur.

b. If engine ingests dirt, do not run it until thoroughly cleaned. Take it apart, clean with engine fuel, oil it, and reassemble.

c. Should engine tighten up, it is not necessarily frozen. Do not return it to the factory or dealer for service! Most often this condition is caused by a varnish deposit on cylinder walls caused by high humidity, slow running, etc. If so, remove glow head and unscrew cylinder from crankcase using the wrench provided. Follow standard de-varnish procedures, using a de-varnish brush or fine steel wool to remove varnish build-up. Never use any other abrasive, or engine will be ruined!

d. After final use, oil engine lightly with light oil (machine oil or SAE-10 O.K.) and wrap it in a cloth to protect against entry of dust and dirt.

REMOVING R/C THROTTLE HOUSING

Should this operation be required, use a pair of cutters to clip the washer end of carb retaining pin (13). Remove washer and

pin. Replace with new parts at reassembly. Make certain both the pin and washer fit tightly against air intake (12).

REMOVING FUEL TANK

Pull tank back plate (31) from tank (30) using tab for leverage. Remove retaining screws (32) to loosen tank.

INSTALLING RADIAL MOUNT

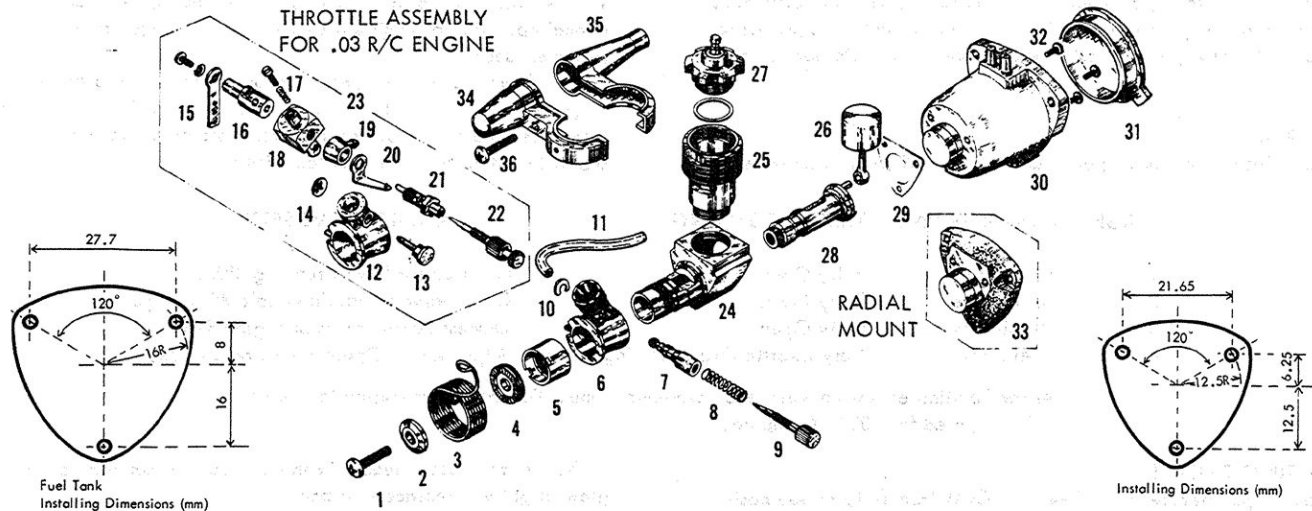
Attach radial mount (33) to crankcase with 3 screws (32). Be sure gasket (29) is intact and in place.

WARRANTY

This engine is guaranteed against defects in material and workmanship for 30 days from date of purchase. Glow plugs or glow heads are not guaranteed. No other warranty is expressed or implied. If engine is returned to factory within warranty, include proof of purchase and \$3.00 to cover cost of handling and return postage. **DO NOT TAKE ENGINE BACK TO YOUR DEALER!**

FACTORY REPAIR SERVICE

Minor repairs, adjustments, check-outs are \$5.00, plus parts. Complete overhaul or replacement (new engine performance) - \$19.95. Purchaser to pay postage and C.O.D. fees.



PARTS LIST FOR .03 U/C AND .03 R/C ENGINES

ITEM NO.	DESCRIPTION	PRICE	ITEM NO.	DESCRIPTION	PRICE
03-1, -2	Prop screw, washer	\$.60	03-23	Throttle assy, R/C	\$12.00
03-3	Starter spring	.75	03-24	Crankcase	8.50
03-4	Drive washer	1.50	03-25, -26	Cylinder, piston assy	12.00
03-5	Retainer, air intake	1.50	03-27	Glow head, gasket	3.50
03-6	Air intake, U/C	1.50	03-28	Crankshaft	5.00
03-7 thru -10	Needle valve assy, U/C	4.50	03-29	Rear gasket	.50
03-8, -9	Needle valve, spring, U/C	2.60	03-30, -31	Tank assembly	2.50
03-11	Fuel Tubing (See Your Dealer)		03-32	Screws, tank retaining	.25
03-12	Air intake, R/C	1.50	03-33	Radial mount	2.00
03-13, -14	Carb retaining pin, washer	.60	03-34 thru -36	Muffler assy	4.50
03-15 thru -18	Throttle housing assy, R/C	6.00	03-37	Propeller	1.00
03-19 thru -22	Needle valve assy, R/C	4.50	03-38	Wrench	1.25
03-22	Needle valve only, R/C	2.00			

Order parts by Part Number and description. Add \$2.00 for shipping and handling. California residents add sales tax. No C.O.D. on parts or engine orders.

Note: .03 U/C and .03 R/C engines are identical except for U/C carb (-6 thru -9) and R/C throttle assembly (23).

Engine repair parts and glow heads available thru your dealer or direct from Cannon R/C.