

## CARE AND OPERATION OF YOUR



# CONQUEST .15 ENGINES

### INTRODUCTION

The new Cox Conquest .15 engines were developed specifically for competition use; however, they also make excellent sport engines.

The engines are available in two configurations — one for Free Flight and Control Line flying (Cat. No. 2800) and one for Radio Control flying (Cat. No. 2810). Except for carburetors and heads, the engines appear identical, however there are internal differences in porting and timing.

The Free Flight engine features a special tuned length intake venturi which serves to reduce needle valve sensitivity. The engine is also equipped with an insert-type glow head with a trumpet-shaped chamber.

The Radio Control engine is fitted with a Perry carburetor and utilizes a finned head which accepts a standard long-reach glow plug.

Both engines feature a hardened steel cylinder liner and a sintered iron piston. Both the liner and piston are precision machined to a specific contour to yield maximum speed and power and to facilitate easy restarts at operating temperatures.

A modified Schneurle porting system is employed to achieve optimum fresh charge induction and exhaust scavenging.

An exhaust extractor (Cat. No. 2890) is available as an accessory. This will allow exhaust to be ducted out of cowling at a 15 degree angle. A special muffler (Cat. No. 2861) is also available as an accessory. The muffler has a die cast aluminum body with an internal baffle tube. Noise attenuation is achieved with minimum power loss.

Your Cox Conquest .15 is precision built throughout and should be treated like a fine piece of machinery. Before running your engine read the remainder of the instructions carefully. By following the few precautions stated in these instructions you can be assured of keeping your Conquest .15 in top competition running condition for many hours.

### CAUTION — PROPELLER SAFETY

Use only balanced hardwood or epoxy-fiber propellers on this engine. Never use nylon propellers or propellers of other materials (including Cox black or gray propellers) as the high speed of this engine may cause the blades to part. Never rework the hub of a propeller as this may weaken the propeller and cause failure.

Install the propeller with the nut and washer supplied. Tighten the nut firmly but not to the point of breaking the propeller material. Recheck tightness after each engine run.

Always keep your face and body away from plane of rotating propellers. Keep spectators at least 10 feet away.

Inspect propeller after each flight. Discard any propeller that shows nicks, scratches, splits, cracks or any sign of wear.

### PREPARATION FOR RUNNING

#### No. 2800 Free Flight and Control Line Engine

To obtain peak RPM this engine must operate on a pressurized fuel system. Use either crankcase pressure or one of the inflatable type tanks. To use crankcase pressure, drill a 1/64 (.0156) inch diameter hole through the pressure fitting boss in the backplate.

For events requiring more frequent glow head changes because of higher nitromethane content fuel such as Free Flight A Gas, Control Line Scale Racing, A Speed and FAI Combat, it is recommended that the insert head supplied be replaced with Cat. No. 28067 head and Cat. No. 28124 glow plug.

#### No. 2810 Radio Control Engine

For very slow idle speeds this engine must be equipped with an exhaust extractor or muffler. However, initial operation should be without muffler or extractor, as the extra heat generated by either can damage a new engine until internal parts are properly seated.

### MOUNTING

Using 4-40 (or 3mm) machine screws, mount engine securely to hardwood, glass-reinforced plastic or metal mounting surface. Be sure to use a fuel filter in the fuel line and make sure the pressure fuel system is airtight, if used.

### STARTING AND BREAK-IN

Fill the fuel tank with Cox Glow Fuel, or another good low nitromethane content fuel, and install an 8 X 4 propeller. Open the needle valve 3½ turns for the engine set up to run with crankcase pressure, or 5 turns for the engine equipped with the Perry carburetor. Prime both venturi opening and exhaust port, connect a fully-charged 1½ volt battery with a good quality clip (Cox Glow Plug Clip, Cat. No. 755-6, is ideal) and start engine. The engine should start running quite rich (four cycling). Run at this setting for the first minute of operation. Gradually lean the engine until the mixture is only slightly rich and continue running for a minimum of 15 minutes total time at this setting. The engine should now hold a lean setting — if not, continue break-in until it will.

Any further break-in should be with the propeller intended for flying trimmed to 7/8 of original diameter and fuel intended for operation at a slightly rich setting for a minimum of 15 minutes. If the fuel intended for operation contains more than 50% nitromethane, start with Cox Racing Fuel or similar medium nitromethane content fuel and run as above, then repeat procedure with operating fuel until engine will hold a lean setting.

### OPERATION

#### No. 2800 Free Flight and Control Line Engine

The engine as set up at the factory has a minimum piston to head clearance for maximum performance on low nitromethane content fuels. The clearance can decrease during extended operation due to seating of the parts. If this happens a head gasket (Cat. No. 28180) should be added so the piston just clears the head at operating temperature. If higher nitromethane content fuels are to be used and/or the weather is very hot or humid, increase the number of head gaskets until optimum performance is reached. Recommended fuels and propellers for the various classes are:

CATEGORY	EVENT	FUEL	
		(% NITRO-METHANE)	PROPELLER
Free Flight	FAI Power	0	7 x 3½, 7½ x 3½
	A Gas	30-70	7 x 4, 8 x 3½, 8 x 4
Control Line	Scale Racing	30-70	7 x 5, 7 x 6
	A Speed	50-70	6 x 7, 6 x 7½
	FAI Speed	0	6 x 7, 6 x 7½
	FAI Combat	30-50	7 x 5

#### No. 2810 Radio Control Engine

See the Perry instruction sheet for adjustment of the Perry carburetor. To obtain a reliable, low idle, either a muffler (Cat. No. 2861) or exhaust extractor (Cat. No. 2890) should be fitted to provide adequate exhaust back pressure. Recommended fuels and props for these classes are:

CATEGORY	EVENT	FUEL	
		(% NITRO-METHANE)	PROPELLER
Radio Control	Sport R/C	5-15	8 x 3½, 8 x 4
	Quarter Midget	10-15	7 x 5

### MAINTENANCE

If dirt or foreign matter enters the engine, carefully disassemble, using the wrenches supplied. Note the position of piston and rod assembly in relation to cylinder, and replace them in same position during reassembly. Immerse the parts in solvent (kerosene or alcohol is recommended) and brush to remove grit. Make certain bearings are clean and free-spinning when dry. If there is any noticeable bearing roughness when clean, the bearing should be replaced. To remove the rear bearing, heat the case until the bearing falls out when the case is rapped sharply on a hard surface. The front bearing can be removed by inserting a wood or soft metal drift through crankshaft bore and tapping out the bearing. Use the crankshaft as a guide when reinstalling the bearings. Bearings must be oiled with light machine oil before reassembling. Be sure to reinstall the same cylinder base gasket as was removed, or replace gaskets (Cat. No. 28180) with same thickness as originally installed. Be sure to cross-tighten cylinder head screws during reassembly and make certain engine is free when turned over by hand.

### LIMITED WARRANTY

Your Cox Engine (except glow head) is guaranteed against defects in material and workmanship for a period of ninety (90) days from

date of purchase. Glow heads are not guaranteed because of their delicate nature. **This warranty is in lieu of all other warranties express or implied, including warranties of merchantability or fitness.**

The entire engine must be returned to factory for replacement or service under this guarantee. Include \$1.00 to cover cost of handling and return postage.

In requesting warranty service the date of purchase and dealer's name and address must be included with your request.

### FACTORY REPAIR SERVICE

Minor repairs, examinations, or adjustments — \$2.50 plus parts. Complete overhaul (guaranteed new engine performance)

Conquest .15 F.F. & C.L.	Cat. No. 2800	\$28.00
Conquest .15 R/C	Cat. No. 2810	\$30.00

including parts. On all C.O.D. shipments, purchaser pays postage and C.O.D. fees.

### REPLACEMENT PARTS

Purchase parts from your hobby dealer. If not available, order direct from the factory. No C.O.D.'s please. Send remittance with your order. On orders less than \$3.00 add \$.50 handling charge. California residents enclose applicable state sales tax.

Price and design of parts subject to change without notice.

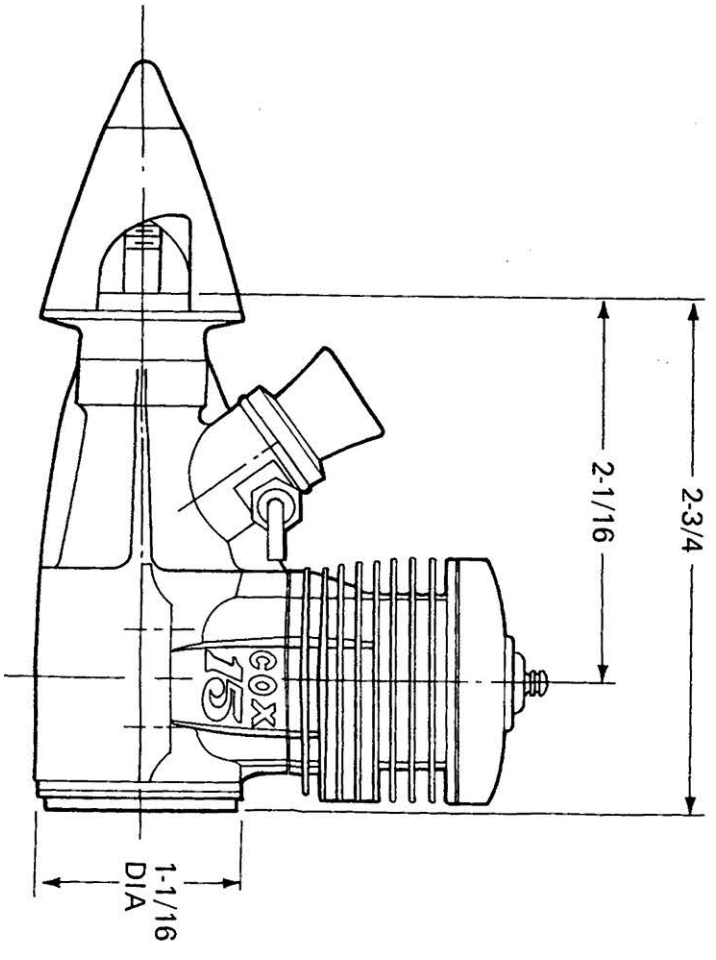
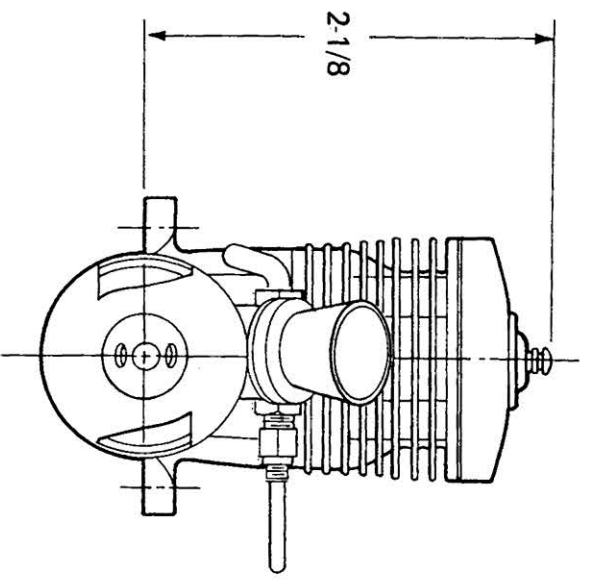
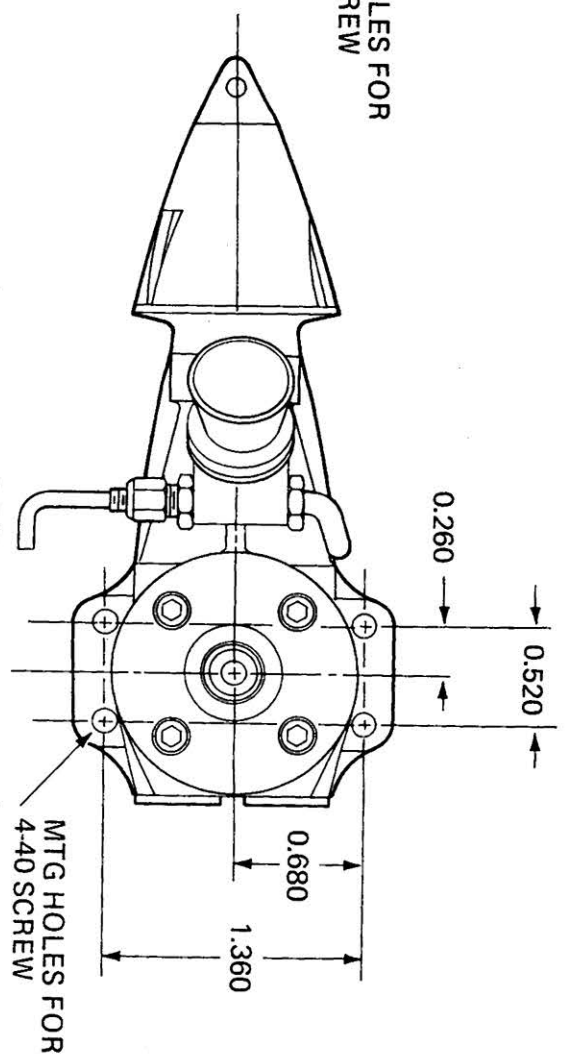
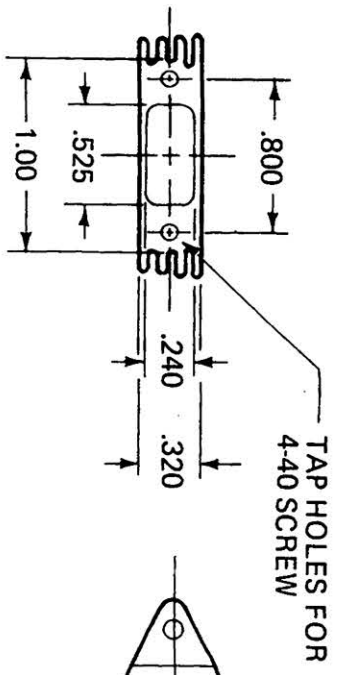
ENGINE PARTS					
CONQUEST .15 CAT. NO. 2800 (F.F.) & 2810 (R/C)					
DESCRIPTION	CAT. NO.	LIST PRICE EACH	DESCRIPTION	CAT. NO.	LIST PRICE EACH
<b>For 2800 &amp; 2810:</b>			<b>For 2800 ONLY:</b>		
Crankcase	28013	7.95	Needle Valve Ass'y.	28178	2.50
Rear Bearing	28014	4.50	Venturi	28021	1.50
Front Bearing	28016	3.50	Glow Head & Gasket	28181	1.75
Prop Washer & Nut	28177	.75	Head	28032	1.50
Backplate	28029	1.00	<b>For 2810 ONLY:</b>		
Gasket & Screw Set	28180	.75	Piston, Sleeve & Rod	28056	19.95
Cylinder Casing	28182	3.00	Crankshaft & Spacer	28093	12.95
<b>For 2800 ONLY:</b>			Carburetor Retainer & Nut	28179	.75
Piston, Sleeve & Rod	28001	19.95	Glow Head & Gasket	28191	1.25
Crankshaft & Spacer	28017	12.95	Head	28067	2.00
Spinner Ass'y.	28166	2.95	Drive Washer & Sleeve	28183	1.00



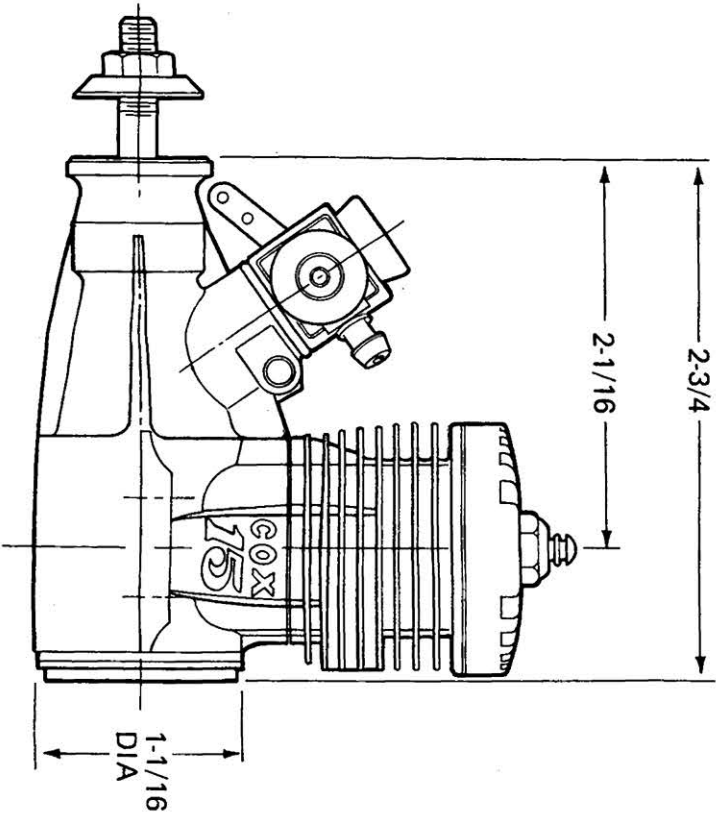
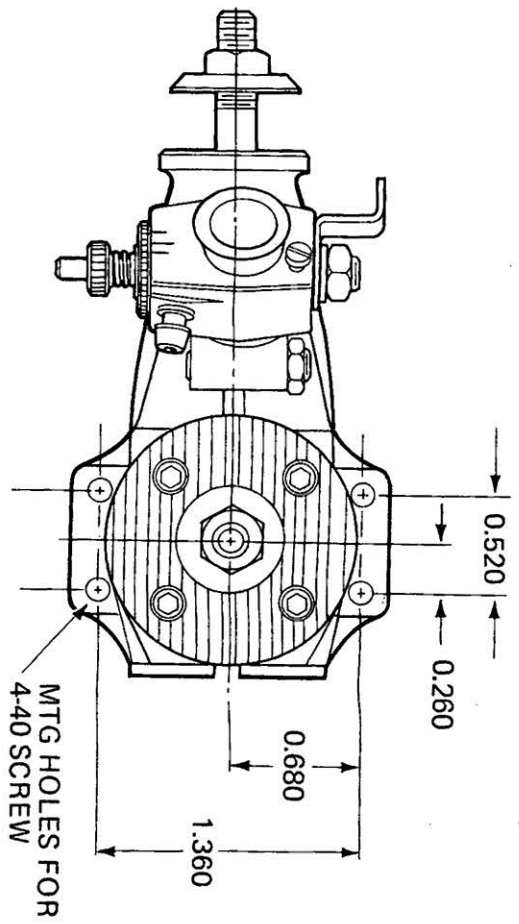
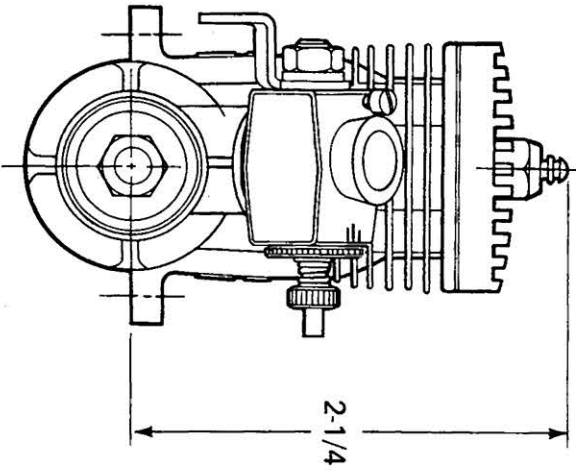
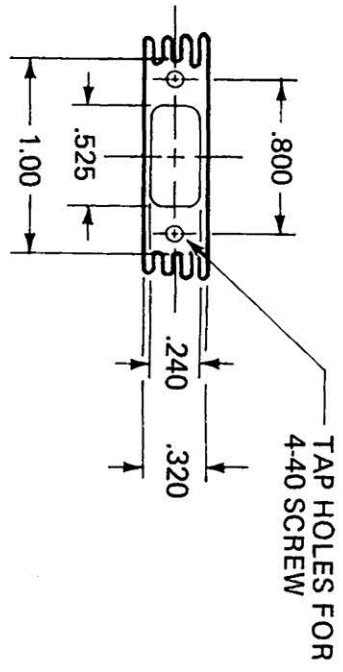
**COX HOBBIES**

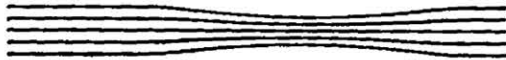
a division of LEISURE DYNAMICS, INC.  
1525 East Warner Avenue  
Santa Ana, California 92702

NO. 2800 FREE FLIGHT & CONTROL LINE ENGINE



NO. 2810 RADIO CONTROL ENGINE





**PERRY AEROMOTIVE**

581 N. TWIN OAKS VALLEY ROAD • SAN MARCOS, CALIF. 92069

## **ABOUT YOUR PERRY CARBURETOR**

Your engine runs on a fuel and air mixture. The ratio of fuel to air determines how rich or lean the engine runs. The amount of fuel and air determines how fast or slow the engine runs. The idle speed screw raises or lowers the idle speed. The idle mixture disc regulates the idle mixture. A clockwise movement, of the disc leans the mixture and a counter-clockwise movement richens the mixture. The idle mixture disc is very sensitive so only move it a small increment at a time.

## **INSTALLATION**

Insert the carburetor into the throat of the engine. Hold it firmly against the "O" ring while tightening. Adjust the exhaust baffle so that it is firmly closed when the carburetor barrel is closed.

Note: when the barrel is closed there should be a 1/32" gap between the barrel hole and the body. This can be readjusted with the idle speed adjustment screw. When the carburetor is properly installed break the set on the "O" rings in the idle mixture disc by turning the disc about a quarter turn each way with a screwdriver. Now set the reference slot on the center reference mark.

## **ADJUSTING FOR HIGH AND IDLE SPEED**

Close the needle valve completely and then open one full turn. Make sure the barrel is fully open. Prime the engine and start. (Note: Due to the design of the carburetor, the fuel is very free flowing.) Don't overchoke. Adjust the needle valve for a slightly rich two-cycle as you would for normal flight. Now, throttle down and listen carefully. If the engine gradually speeds up and dies it is too lean. Rotate the idle mixture disc a very small amount counter-clockwise to richen the mixture. (Note: Use a small screwdriver in the reference slot of the idle mixture disc to rotate it while the engine is running.) If the engine runs slower and slower and quits it is too rich. Rotate the idle mixture disc clockwise to lean the idle setting. (Note: The idle mixture disc need only be moved a few thousandths of an inch at a time to obtain the idle setting.) Once the idle mixture is adjusted the "O" ring seals will take a set and it will remain at that setting virtually indefinitely.

A final test is to hold the nose of the airplane up then down. If it quits in the up position it is too lean and if it quits in the down position it is too rich. (Note: Most engines will idle very near the center reference mark.)

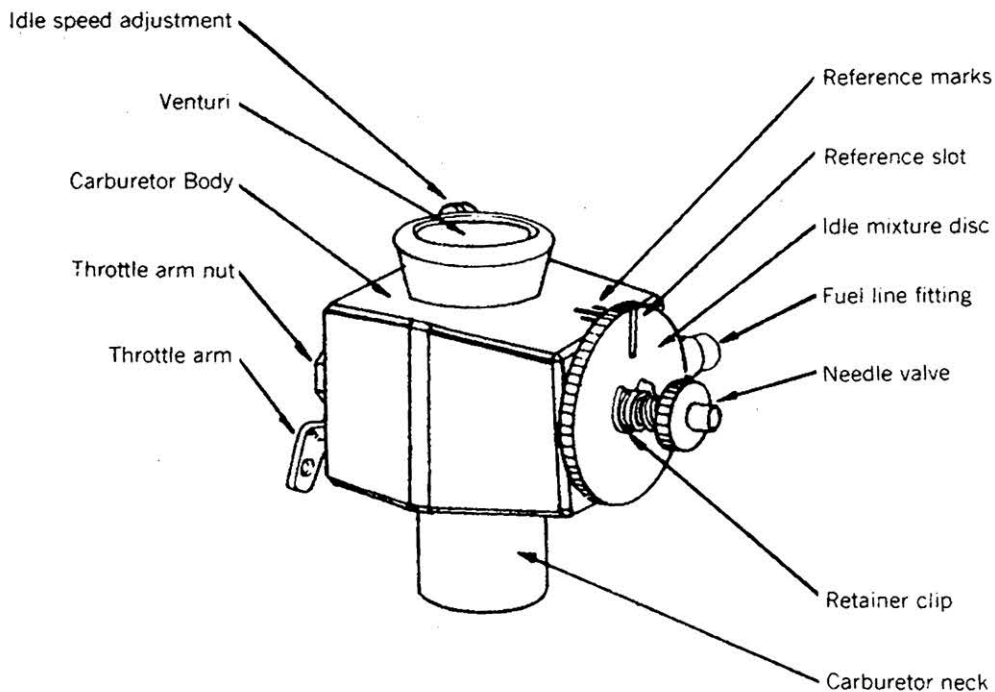
You may further reduce the idle speed by cutting down the amount of air (closing the carburetor barrel). This is done by turning the idle speed screw counter-clockwise.

## **CARE AND CLEANING**

To dis-assemble the carburetor for cleaning, remove the needle valve, spring and retaining clip. The idle mixture disc can now be removed by working it back and forth and pulling firmly. The carburetor barrel need not be removed so as not to disturb the throttle linkage. Do not remove the "O" rings from the idle mixture disc as they are subject to damage during removal. If treated properly they will last the life of the carburetor.

You may use the following solvents to clean the carburetor: gasoline, kerosene, alcohol. Note: **Do not soak the carburetor in any solvent.** Immerse it briefly in the recommended solvents and immediately dry it thoroughly.

All Perry Carburetors are calibrated to be used on the engine specified on the box and must not be used on a different model engine, even though the displacement is the same: for example: A Super Tigre G 60 carburetor will not work satisfactory on a Super Tigre ST 60 etc.



### SERIES 72-B

**THIS IS THE SEVENTY TWO MODEL B CARBURETOR. THESE PARTS ARE NOT INTERCHANGEABLE WITH THE OLD MODEL AS SEVERAL MODIFICATIONS HAVE BEEN MADE TO FURTHER IMPROVE PERFORMANCE.**

#### IMPORTANT

**When ordering parts specify part number, engine and engine displacement.**

PART No.		PRICE
B710	BODY WITH FUEL LINE FITTING	Micro\$4.20: Small\$ 4.80: Large \$5.40
B711	IDLE SPEED SCREW	.30
B712	FUEL LINE FITTING	.45
B713	NECK "O" RINGS	.35
B714	NECK SCREW WITH WASHER	.30
B720	BRASS BARREL WITH JET	Micro\$ 3.60: Small\$4.20: Large 4.80
B721	DOUBLE THROTTLE ARM	.45
B722	SINGLE THROTTLE ARM	.30
B723	THROTTLE ARM STAR WASHER	.15
B724	NEEDLE VALVE & SPRING	1.20
B725	THROTTLE ARM NUT	.15
B730	IDLE MIXTURE DISC WITH "O" RINGS	3.85
B731	RESERVOIR "O" RINGS	.30
B732	RETAINER CLIPS (PKS. OF 5)	.60

**REMEMBER – When ordering parts specify engine, its displacement, and part number.**