WARRANTY

This engine is guaranteed against defects in materials and workmanship for 90 days from date of purchase. Glow Heads are NOT WARRANTED because they require periodic replacement. Should your engine require warranty service, please contact our Customer Service Department. Do not take engine back to your hobby dealer.

FACTORY REPAIR SERVICE

Minor repair, examinations, or adjustments – $4.00 plus parts.

Complete overhaul, new engine performance guaranteed: .049 - .051 $24.35; & .09 - $27.75 These prices include parts.

CUSTOMER SERVICE

For any questions or service regarding any Cox products please contact our Customer Service Department at 1-800-451-0339. Customer Service hours are from 8:00 A.M. to 4:30 P.M. Pacific Time, Monday thru Friday.

We have listed those items which are most likely to require replacement during the life of this product. We have also included an exploded assembly drawing which identifies all replacement items available.

ORDERING INSTRUCTIONS

You may order parts from Cox by telephone or mail. Orders may be charged to your Visa or Mastercard. For credit card orders give the following information: name, card number and expiration date. For other orders please send a check or money order made payable to Cox for the full amount including the following postage and handling charges:

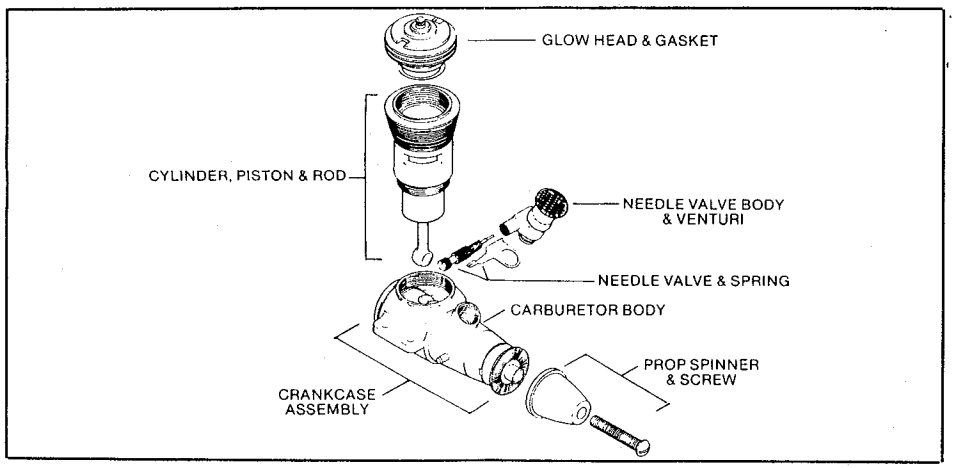
TOTAL PARTS COST	POSTAGE & HANDLING
Orders from $0.01 to $5.00	$1.25
5.01 to 10.00	3.00
10.01 to 20.00	4.00
20.01 to 30.00	5.50
30.01 to 40.00	6.50
40.01 up	7.50

Insured packages – Add $1.00

International Orders – Please pay with international Money Order only. Add $5.00 additional for postage.

California residents add state sales tax.

Allow 2-3 weeks for delivery.



ENGINE REPLACEMENT PARTS LIST

DESCRIPTION	#170 Tee Dee .049		#200 Tee Dee .051		#210 Tee Dee .09	
	Part No.	List Price	Part No.	List Price	Part No.	List Price
Glow Head & Gasket	1702	4.25	1702	4.25	2102	4.50
Needle Valve & Spring	1709	2.00	1709	2.00	2109	2.40
Cylinder, Piston & Rod	1775	15.00	2045	13.50	2175	15.75
Prop Spinner & Screw	1718	1.40	1718	1.40	2119	1.30
Carburetor Body	1724	3.20	222024	3.20	222124	2.90
Needle Valve Body & Venturi	1789	12.50	1789	12.50	2189	11.95
C'Case, C*Shaft, Carburetor Body, Retaining Nut, Drive Plate, C'Case Cover & Thrust Washer	1779	22.50	2049	22.00	2179	21.50
Wrench	1530	1.20	1530	1.20	22131	2.60
Piston/Rod Reset Tool	1796	3.50	1796	3.50	2196	3.75

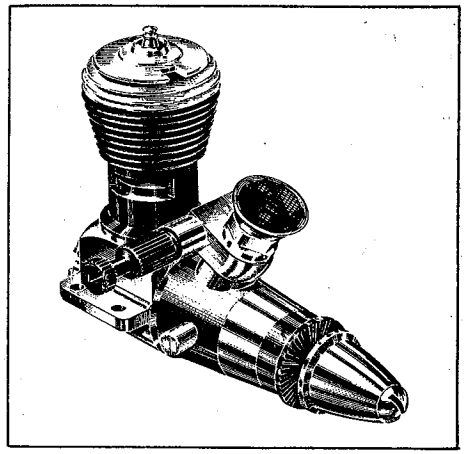
PRICE AND DESIGN OF PARTS SUBJECT TO CHANGE WITHOUT NOTICE

FOR QUESTIONS REGARDING YOUR COX PRODUCTS CALL THE COX COURTESY LINE TOLL FREE 800/451-0339

Cox Customer Service Department
475 North Sheridan Street
Corona, CA 91720-2004
Open 8:00 AM - 4:30 PM Pacific Time
Monday thru Friday
800/451-0339

TEE DEE ENGINES .049, .051, & .09

CARE AND OPERATION



SPECIFICATIONS

	TEE DEE .049	TEE DEE .051	TEE DEE .09
Weight	1.48 oz (41.9 g)	1.48 oz (41.9 g)	2.72 oz (77.1 g)
Bore	.406 in (10.3 mm)	.410 in (10.4mm)	.497 in (12.6 mm)
Stroke	.386 in (9.8mm)	.386 in (9.8mm)	.471 in (11.9 mm)
Displacement	.0499 cu in .82 cc	.0509 cu in .835 cc	.0913 cu in 1.497 cc

THIS ENGINE IS A VERY HIGHLY PRECISE CONTEST-TYPE ENGINE

Keep it immaculately clean, use Cox glow fuel or racing fuel and it will maintain its winning characteristics for a long period of time.

These engines will develop almost full power within one minute of running time; but a few, those which are slightly on the tight side, may not develop full power under one hour. Even these will develop sufficient power for average flying almost immediately. The only break-in required is a rich (slow) running with a recommended pitch propeller for the first few minutes. Gradually close the needle valve to peak operating RPM's for a short period, then run rich for a few minutes. Repeat this procedure for 5 to 15 minutes or until engine will hold top RPM.

NOTE: Your Tee Dee .049 engine develops its maximum H.P. at approximately 22,500 RPM. Use propellers that keep the RPM's below 24,000. Damage could result if engine is allowed to run above this figure.

(A) PREPARATION FOR RUNNING

1. Mount the engine in the plane, or if you want to give it some running first, mount it on a suitable mount. Do not hold the engine directly in a vise.

2. Place a propeller on the shaft with the flat side of the blades toward the engine and lock securely with the propeller screw.

3. Obtain a fuel tank from your local hobby dealer and connect the tank outlet to the carburetor fuel inlet nozzle. Use a clear plastic fuel line so this can be checked visually. Best results will be obtained by mounting the tank close to the engine and with the average fuel level at the same height as the carburetor needle valve.

4. Obtain a 1½ volt Cox dry cell battery or equivalent, and connect it with 2 flexible insulated wires to the glow plug clip. Recommended is the purchase of the Cox #400 Starter kit which includes battery, glow plug clip, Super Power Fuel, filler hose, and engine wrench. Do not use a higher voltage battery. If you do, the plug will burn out. Most hobby dealers sell the Cox #400 Kit and glow plug clips.

5. Balance and trim propeller. This is very essential for good performance. Sand off any bead of plastic along the edges of the blades. Fit a drill or shaft through the hole and rest the shaft on razor blades set in wooden blocks. Sand the heavy blade until the propeller will balance in a horizontal position. Care must be taken to do the sanding without spoiling the airfoil characteristics of the propeller blades. Caution: Use only nylon or wooden props.

(B) STARTING THE TEE DEE ENGINES

No matter how expert you are with small engines you will have better luck with these engines if you follow directions exactly as listed and do each operation in the exact order given.

1. Close the carburetor needle valve, by turning it clockwise until it stops. Do not force it.

2. Fill the tank with Cox fuel.

3. Open the needle valve (counter clockwise) exactly 4½ turns for the .049 and .051 or 3½ turns for the .09 engine.

4. If the fuel level in the tank is lower than the carburetor venturi, put your finger over the air intake of the engine and pull the prop through compression until the fuel hose is full. Use a clear plastic fuel line so this can be checked visually. If the tank is mounted so the fuel level is higher than the carburetor the hose will fill itself when the needle valve is opened.

5. Squirt a few drops of fuel into the exhaust ports to prime the engine.

6. Connect the battery by connecting the clip on the glow head.

7. Flip the propeller over counterclockwise. For quick starting the propeller must be flipped quite vigorously. The engine should start instantly if it has been primed with the correct amount of fuel in the exhaust port.

8. When the engine starts it will be running very rich and slow. The first time the engine is started let it continue to run rich for a period of 60 seconds. After approximately 60 seconds, slowly close the needle valve clockwise to the best running position and remove the battery connection. Subsequent starts may be adjusted to best running position immediately.

9. If starting is delayed for any reason, close needle valve, otherwise engine will become flooded. This precaution is only necessary if the tank is mounted so the fuel level is higher than the carburetor.

(C) FAILURE TO START

1. If the engine coughs and spits a bit of fuel spray from the exhaust, it is too rich. Close the needle valve and continue cranking until engine starts briefly. Open the needle valve again and crank it over. It should start immediately. Blowing into the exhaust ports between flips will help clear the excess fuel out of the glow plug.

2. If it starts up with lots of power and dies immediately it is too lean. Open the needle valve a half turn, prime the engine, and crank it over again. If the trouble persists and the tank is lower than the carburetor try choking again as in Section B Par. 4. If the engine hasn't been run for some time it is possible that thick castor oil is clogging the jets. Choking will clear this out.

3. If the engine still persists in above action it is possible the carburetor jets are stopped up. Remove the venturi and needle valve body. Three tiny jet holes will be found in the groove around the venturi tube. Clean these jet holes with a piece of fine wire. Reassemble and the engine should run.

4. If the engine refuses to fire at all, remove the Glow Head and connect it to the clip. If the little coil inside does not get red hot, it is either burnt out or the battery is dead or the connections are made incorrectly. Replace the battery or the plug, or correct the connections. Glow plugs are **never** guaranteed. Do not return the engine to the factory for a burnt out glow plug because the cost to you will be excessive. Buy one from your dealer.

5. If you are not using Cox fuel, try it. **Never use gasoline or gasoline type fuels.**

(D) OPERATING TIPS AND ENGINE CARE

1. The glow plug is built right into the head in one unit. When the plug burns out just replace the entire head.

2. After the last run, oil the engine with a light oil (SAE 10 is good) and wrap it with cloth or otherwise protect it from dust and dirt.

3. If the engine gets dirt in it through crack-up or otherwise, do not run it until it is thoroughly cleaned. **Take it apart,** wash it, oil it, and reassemble.

4. If the engine gets tight it is not frozen up. Do not send to factory. A new engine will sometimes tighten up a few times, especially after slow runs. This is more likely to happen, and will occur more often to an engine that is properly fitted, and has properly smooth wearing surfaces. Do not run it tight. The tightness is caused by a shellac-like deposit on the cylinder wall. Screw the head off. **Remove the cylinder** and scour the inside wall very lightly with a bit of fine or medium steel wool. Wash, oil, and replace. The engine will then turn over freely and run properly. **Never** use sandpaper, emery cloth, or abrasives of any kind, or scrapers. Such methods will ruin the cylinder. Steel wool will not harm the bore.

5. Certain kinds of weather, especially warm, humid (sticky) weather will cause excessive shellacking in a new cylinder. The smoother the fit the more susceptible is the engine to this trouble.

6. Do not tighten the head too firmly. Set it up just snug. Before removing head allow it to cool so it will loosen more easily. Use both wrenches when removing glow head. The top fin has flats for this purpose. Exhaust port should not be used to hold cylinder as damage could result from burrs being forced into the cylinder.

7. To remove the glow head from a hot engine — pour a little fuel slowly over the glow head to reduce the head temperature. Do not run it over the cylinder. The head will then release easily. A hot head will stick and forced removal may damage the cylinder.

8. Do not tighten the carburetor retainer nut more than enough to hold the carburetor from rattling. Overtightening will distort the front bearing and cause power drop and inconsistent running.

9. Tighten venturi nut only enough to hold needle valve body in position. Overtightening may strip the thread from the plastic carburetor body.

10. The needle valve body may be removed and replaced in the opposite position if desired.

WARNING

USE OF THE FOLLOWING EQUIPMENT CAN DAMAGE YOUR ENGINE AND WILL VOID YOUR WARRANTY!

- DIESEL CONVERSION KITS
- SHAVED OR EXTREMELY HIGH COMPRESSION HEADS
- FUELS CONTAINING 100 PERCENT SYNTHETIC OIL FOR LUBRICATION

(E) PRESSURIZATION

Pressurizing is very critical when taken directly off the crankcase. On this engine pressurizing means have been provided and the rotary valve controls the pressure to normal operating limits. The hole in the pressure fitting on this engine is already started, but the hole will have to be drilled through the crankcase at this point before you can run on pressure. To rig for pressure observe the following steps:

1. Remove the back cover, cylinder, piston and rod assembly, venturi and needle valve assembly.

2. Rotate crankshaft until the port opening in the shaft points towards the pressure fitting on the right side of the black plastic carburetor body.

3. Continue drilling the hole already started in the pressure fitting through the crankcase. Use a #60 drill (.040 diameter).

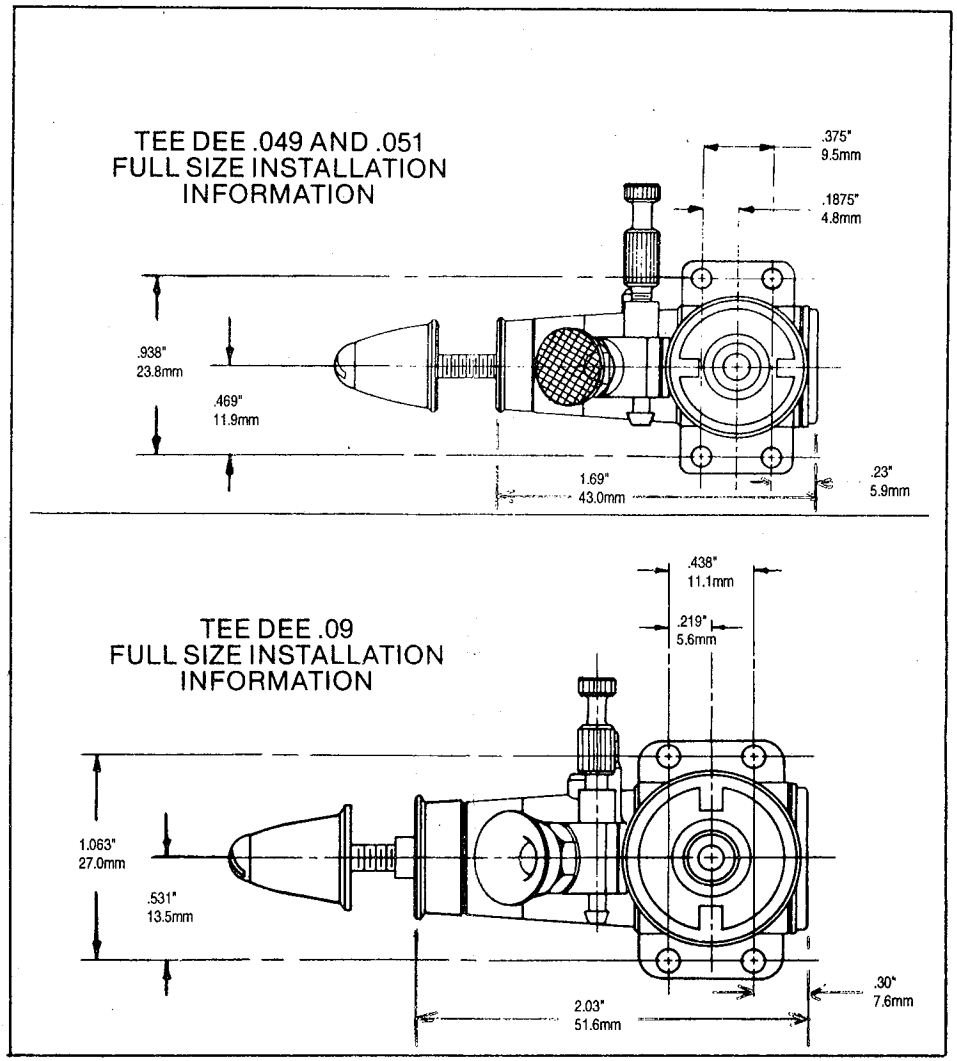
4. Rotate crankshaft to deburr the drilled hole.

5. Flush crankcase and shaft thoroughly with methanol to remove all metal particles.

6. Lubricate shaft with light weight oil and reassemble engine.

The fuel tank **must** be air tight in order for the engine to operate properly on pressure. Be sure the tubing that connects the pressure fitting on the engine to the tank is also air tight. If the engine does not run smoothly air is getting into the pressure system. Check it thoroughly.

With pressure, the venturi may be opened to 3/32" on the .049 and .051 or 7/32" on the .09 engine to attain maximum power although the gain is very little.



(F) TO REMOVE CARBURETOR BODY FROM AN ENGINE:

1. Remove backplate, cylinder, and piston-rod assembly.
2. Remove spinner and engage prop screw approximately 3 or 4 threads in crankshaft.
3. With rear of crankcase on a hard smooth surface, tap prop screw with hammer until prop drive plate disengages from crankshaft.
4. Unscrew carburetor retaining nut and slip carburetor body off.
5. To re-assemble engine, reverse above procedure. To re-press drive plate onto crankshaft, put drive plate face down on a smooth flat surface. Obtain a short length of wood dowel of a size that will fit into the intake hole of crankshaft. Tap dowel with hammer until drive plate is fully seated on crankshaft.