

OWNERS INFORMATION MANUAL FOR THE FOX 19BB



Bore - - - - .650
Stroke - - - .600
Disp - - - - .199
RPM - - - - 16,500

January 1, 1982

MESSAGE FROM DUKE FOX:

We are very proud of our Fox 19BB and want it to give you the best possible service. Please read the owner's manual in its entirety and follow its instructions to the best of your ability. If you have any questions not covered here, please feel free to call us at Area Code 501-646-1656.

NOTE:

The Fox 19BB has a unique design feature of being able to turn the cylinder 90 degrees or 180 degrees from the standard side exhaust configuration, with no additional parts required. If you wish to have the exhaust in the rear or to the opposite side, just pull the four cylinder head bolts, turn the cylinder the way you wish, and install the cylinder head bolts. Be careful that the cylinder liner also turns with the cylinder casting, and that you do not get the ports out of position. Also be careful that you do not damage the thin gasket between the cylinder section and the case.

SUITABLE MODELS

The Fox 19BB is intended for all sport and scale type model airplanes that their size and weight would fit. They are suited to model helicopters if auxiliary cooling is provided. Your Fox 19BB also makes an excellent race car engine if a suitable heat sink is provided. Your Fox 19BB is also well suited to model boat use if a cool clamp is provided for the head.

WARNING

There is always the possibility you may lose control of your model. Do not fly in any location where your model might strike people or do property damage should this occur.

INSTALLATION

Your Fox 19BB mounts in the normal manner. If your airplane calls for a firewall mount we recommend the Fox #50203 one piece metal mount, as it is very rigid. If your airplane is designed with a hardwood beam type mount, be sure they are well braced between the two beams, and the beams are gusseted to the firewall, and preferably, one to the other. Flimsy motor mounts will allow the engine to vibrate excessively and may damage the model and cause foaming of the fuel tank. If a cowling is used, provision should be made for both air inlet and outlet.

PROPELLERS TO USE

We recommend an 8" diameter, 4" or 5" pitch propeller for most models. We recommend hardwood propellers of maple, birch or cherry wood. We recommend you never use a metal, fiberglass, or nylon propeller on your airplane because they are more likely to cut off part of your hand should you have an accident. Your Fox 19BB will run satisfactorily on a 9" or 10" diameter propeller but the large carburetor venturi will have practically no suction, and to get a satisfactory fuel draw the carburetor should be replaced with one having a smaller venturi.

WARNING

Always keep clear of the propeller. It is possible for a propeller to cut off a finger or for a piece to come off and put an eye out.

FUEL TO USE

Your Fox 19BB should run very well on no nitro fuel in warm weather. The no nitro fuel formula we recommend is castor oil - 20%, UCON - 2%, propylene oxide - 2%, methanol - 76%. In cool or cold weather it may be necessary to go to a nitro fuel to prevent an RPM drop when the battery wire is removed. Duke's fuel is ideal and works better than many 10% mixes because it contains propylene oxide which helps in idling and a detergent which help keeps the carbon down. For rather spectacular performance you may want to try Fox Missile Mist fuel.

WARNING

Model airplane fuel is both flammable and extremely poisonous. Use the same safety precautions you would with a can of gasoline or a bottle of poison.

GLOW PLUGS

Your Fox 19BB should be fitted with Fox long thread glow plugs. For a good idle, the idle bar type seems better, however, these motors work surprisingly well on the cheaper standard variety.

TO START YOUR FOX MOTOR

1. Mount your motor securely on a mount that does not put a strain on the mounting lug. #4-40 screws are the size to use. The fuel supply should be so positioned so the fuel level is no more than 1/2" above or below the fuel nipple. The fuel line should not be higher than fuel level at any point. Use Fox medium silicone type fuel line.
2. Close the throttle - adjust the idle stop screw (the one on the top), so you can see a hairline opening in the intake when the throttle is pushed closed.
3. Holding the throttle shut, screw the low speed needle (the one on the exhaust side) in until it seats, then back it out 1 turn.
4. Screw the high speed needle in until it seats, then back it out 4 turns.
5. Set throttle at 1/3 open position, connect the glow plug wire and crank counter-wise with a quick, snappy flipping motion. If it does not start in a few flips, try choking it a turn or two. It should start and run at these settings.

WARNING

A model airplane motor can get hot enough to cause a serious burn. Do not touch the motor right after it has been running.

BREAK IN

No special break in is required. Go ahead and install it in your airplane and fly. We do recommend you keep your carburetor set slightly rich at all times. In the interest of good compression and long life we have fitted your motor as tight as we dare. In the event yours is fit too close and you have trouble with the piston seizing (engine stops abruptly on lean), continue to run the engine at full throttle with the high speed needle rich enough so that it doesn't want to quit for a couple tanks of fuel, or until it will hold a full power setting. You should be aware, however, that it takes about 1 hour running time to full break in. For this period any motor is likely to stop at idle speed, and it is really futile to try to fine tune the idle until the motor has been run this amount of time.

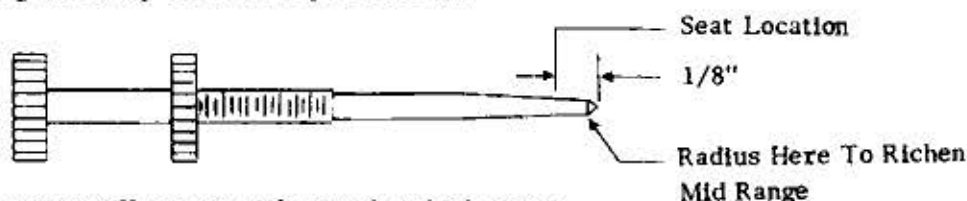
WARNING

Never fly a control line model within 200 feet of power lines. Death by electrocution is possible if your model comes near a power line. Direct contact is not necessary.

FINE TUNING YOUR FOX 19BB CARBURETOR

The most reliable settings are those in which the lower 2/3 of the throttle range is as lean as possible without stalling and becomes slightly rich in the 3/4 to full throttle setting. The needle on the fuel nipple side is the high speed needle and controls the mixture in the wide open throttle position. The needle on the other side is the low speed needle and controls the mixture through idle and mid-range. Both screw in to lean and out to richen. For normal tank installations and flight conditions we recommend that the low speed mixture adjustments be made for maximum RPM. The high speed is adjusted by screwing the high speed needle in until the motor obtains maximum RPM, then backing out until the motor slows down 200 RPM.

If, after your Fox 19BB is run, you wish to alter the mixture contour, you can do so by working on the tip of the low speed needle.



If the motor will not get rich enough at high speed:

File 1/64 or so off the end at a 45 degree angle.

If the motor is lean at midrange:

Sand a radius on the edge shown.

If the mid-range can be made to work fine by screwing the needle in a bit too much for a good idle:

Try sanding the seat location but avoid removing metal toward the tip.

If you mess up you have not ruined an expensive part:

Try to get it working just exactly the way you want.

NOTE:

A lot of cases of the motor quitting in maneuvers can be corrected by shortening the flopper tube. We recommend you leave a 3/4" to 1" space between the back of your tank and the flopper tube weight. Many cases of excessive plug failure can be traced to power panels that do not work right. Unfortunately, there are power panels on the market that do not work as well as they are supposed to. If in doubt, resort to the hobby battery and see if this corrects the problem.

WHEN THINGS DON'T GO SO WELL

Motor Won't Start:	Bad plug - replace Fuel tank empty. Fuel line collapsed, leaky or off.
Motor Won't Keep Running with Glow Plug Heater Off:	Bad plug. Too rich a setting. Water in your fuel.
Motor Quits Right After Take Off:	Flopper tube stuck in forward position.
Motor Goes Lean and Quits After a Couple Minutes Flying:	Hole in flopper tube in tank.
Glow Plug Burns Out Every Flight:	Over voltage on battery (plug should glow orange, not white). Element crumpled. Caused by cranking with case flooded.

IN CASE OF CRASH, DO NOT TURN THE PROP OVER YET:

- 1st - Remove from rest of model.
- 2nd - Wash under hot water faucet.
- 3rd - Remove plug and rear cover and wash in stoddard solvent.
- 4th - Now check and see if it turns over freely. If so, it is probably not hurt.

OTHERWISE, CONTINUE TO DISASSEMBLE

TO CONTINUE DISASSEMBLY:

Remove head screws, lift off head, head button and cylinder assembly. Remove crank case screws and remove rear cover. Slide off the connecting rod. After removing the thrust washer you can drive the crank back out with a wood or plastic mallet.

REASSEMBLY:

Reassembly is straightforward but be sure the wrist pin snap rings are seated in the piston groove and are tight. It is easy to squeeze the snap ring too much in disassembly and when re-installed it is not tight. If in doubt, stretch the snap ring.

FACTORY SERVICE:

We want your Fox engine to perform well for you. Technical advice can be obtained by phoning Area Code 501-646-1656. If your motor has become worn or crashed and you desire our factory repair service, mail it directly to us. We will disassemble the motor, replace all necessary parts, test run and return the motor to you charges collect. It has not proven practical to make any sort of estimates. We will assure you, however, that our charges will never be more than 60% of the list price of a new motor.

GOOD LUCK AND ENJOY YOUR FOX MOTOR - IT IS ONE OF THE FINEST BUILT ANYWHERE

PARTS FOR 1982 MODEL FOX 19BB

PART NAME	NUMBER	PRICE
Crankcase	22001	18.00
Rear Cover	22011	6.00
Cylinder Head	22002	5.75
Cylinder Head Button	22043	5.00
Cylinder Casting	22025	16.00
Cylinder Liner and Piston	22004	16.00
Wrist Pin	22006	1.25
Wrist Pin Keepers (pk of 3)	13540	1.00
Connecting Rod	22007	9.00
Crankshaft (Normal Rotation)	22008	14.00
Crankshaft (Clockwise Rotation)	22028	16.00
Crankshaft Stud	22518	2.50
Thrust Washer (Rear)	22009	6.00
Prop Nut (pk of 2)	13512	1.25
Prop Washer (Front)	11913	1.00
Screw & Gasket Set	22014	2.00
Bearing - Rear Main	22042	12.00
Bearing - Front Main	22042	12.00
Muffler - Conventional	90266	19.95
Carburetor Complete w/Mtg Screws & Gasket	22050	19.95
Throttle Casting	22060	8.00
Rotating Barrel	22061	8.00
Idle Stop Screw & Spring	23662	2.00
Low Speed Mixture Needle	22063	1.50
High Speed Mixture Needle	21964	1.50
Servo Arm	24066	1.50
Friction Clip for L.S. Needle)		
Friction Clip for H.S. Needle) pair	24067	2.00
#10-32 Knurled Nut (pkg of 2)	21670	1.50
Jet Assembly with Fuel Nipple	22071	13.00
Cam Screw	22072	2.00
Fuel Nipple	21973	2.00
Mounting Screws and Gasket	23675	1.00

OTHER FOX PRODUCTS YOU MAY WANT TO USE
WITH YOUR FOX 19BB

FOX 19BB MUFFLER

Fox produces two conventional silencers that will fit your Fox 19BB. #90266 tilts down from the exhaust flange and #90267 tilts up from the exhaust flange. Select the model that fits your airplane best.

FOX PROP SHAFT EXTENSION

The Fox prop shaft extensions are supplied in two lengths, 1/2" long and 3/4" long. To get the 1/2" extension length, order #90412. To get the 3/4" extension length, order #90413.

FOX FUEL FILTER

For your Fox 19BB you will want to #90701 small Fox fuel filter.

FOX SPINNERS

These are machined from a solid aluminum bar and are buffed to a high gloss. They are available in three different styles: Conical - which is the shortest; Conventional which is a little longer; and Slim Jim - which is the longest. They range in sizes from 1-1/2" to 2-1/2" in diameter. In ordering, please specify it is for a 1/4" shaft so that you get the proper hardware.

FOX FUEL LINE

We recommend that you use our #86884 medium silicone tuff line.

FOX GLOW PLUGS

Your Fox 19BB operates best with #40602 R.C. Long Glow Plug.

FOX WHEELS

Fox wheels are produced in a spoked hub design and a smooth hub design. Both are high quality and well balanced. Select the size and style best suited to your airplane.

FOX WHEEL COLLARS

Fox wheel collars are produced in two and three wheel sets. If your model has wheel pants we have a special flanged collar that makes mounting your wheel pants easy.

FOX WRENCH

Our #70104 - 4 Way Wrench will accomodate both your prop nut and glow plug and is attractively finished in chrome. You will want to have one of these.

FOX 4-STEP REAMER

This is a useful tool to ream the hole in a propeller to the proper size.



For the past 30 years, nitromethane has been a relatively cheap power additive and ignition accelerator. While it is a necessary ingredient in engines designed for it, most imported engines and many of our newer engines operate well on a basic alcohol fuel. FOX "Gold Star" Fuel contains a detergent and an igniter which makes it run a bit cleaner and start and idle a bit better than the basic 22% castor oil, 78% methanol mix. Try it, your engine and your wallet will both like it.

