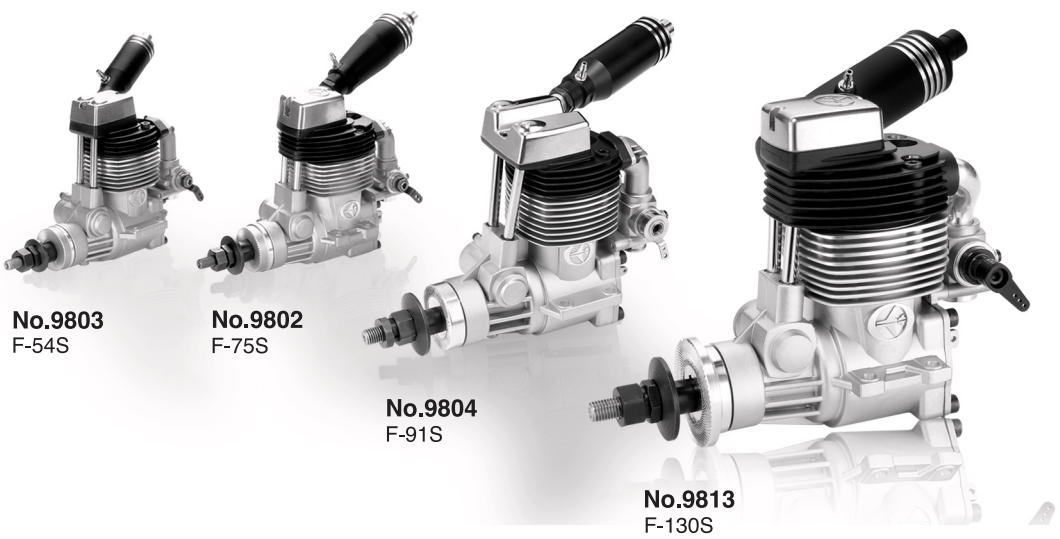
4-STROKE

AIRCRAFT ENGINE INSTRUCTIONS



No.9803
F-54S

No.9802
F-75S

No.9804
F-91S

No.9813
F-130S

INTRODUCTION

Congratulations on your purchase of a Thunder Tiger Four-stroke model engine. These engines represent the latest in Thunder Tiger design and manufacturing techniques employing advanced CAD design and CNC manufacturing. All major components of Thunder Tiger engines are machined from the highest quality materials in our state-of-the-art manufacturing plant. Engines are then subjected to rigorous quality control checks to ensure that your engine will provide years of trouble-free use.
The F series powerhouse engines are the ultimate in four-stroke performance: the ability to swing a large prop, increased torque, reduced noise and improved fuel economy. Featuring a twin-needle updraft carburetor, black anodized cylinder head, oversized valves, and a high-performance silencer for best power-to-weight ratio. Precision air bleed carburetor makes adjustments simple, and efficient mufflers keep things quiet at the field. Perfect for the pilot looking for the authentic aircraft sound.

IMPORTANT

This engine will provide you with years of safe use, provided that you carefully follow these safety instructions:

1. This model engine IS NOT A TOY, but a powerful miniature engine that is capable of inflicting damage to both people and property if misused.
2. Always mount the engine securely in a test stand or high-quality engine mount. Never, ever attempt to clamp your engine in a vise.
3. When operating your engine keep all spectators at least 20 feet away.
4. Make sure that you use the correct propeller for your engine. Specific recommendations are listed in this manual.
5. Make sure that the propeller nut is securely fastened before each flight.
6. Keep yourself away from the path of the propeller when running your engine.
7. Keep your hands away from the propeller. Always use a " Chicken Stick" or electric starter to start your engine.
8. Make all adjustments to the engine and carburetor from behind the propeller.
9. Never use your hands or any other part of your body to stop the propeller. Do not throw any object into the propeller to stop the engine. Cut off the fuel supply by removing the fuel line, pinching it closed, or closing the throttle barrel completely.
10. Never use a propeller that is cracked, nicked or damaged in any way.
11. It is recommended that you wear safety glassed when operating any model engine.
12. Do not run your engine around dirt, sand or loose gravel. Such material can be thrown into your eyes by the propeller. In addition, the engine can be damaged by these materials entering the carburetor.
13. Take care to keep all loose clothing, rags, tools, etc. away from the propeller.
14. Keep all fuel lines, glow clips, etc. away from the propeller.
15. Take care when handling your engine after running. Model engines get very hot during operation!
16. Always operate your engine with proper ventilation. Model engines produce toxic fumes when run in a closed room or confined area.

SPECIFICATIONS

Engine/Item No.	F-54S/ 9803	F-75S/ 9802	F-91S/ 9804	F-130S/ 9813
Displacement (cc/cu.in)	8.87 / .541	12.33 / .752	14.97 / .914	21.28/ 1.298
Bore (mm/in)	24 / 0.945	28.3 / 1.114	28.3 / 1.114	33.6 / 1.323
Stroke (mm/in)	19.6 / 0.772	19.6 / 0.772	23.8 /0.937	24 / 0.945
Practical R.P.M. (rpm)	2,200 ~ 13,000	2,300 ~ 12,000	2,000 ~12,000	2,000 ~ 12,000
Output power (HP/RPM)	0.8 / 12,000	1.2 / 11,000	1.6/11,000	2.2 / 11,000
Weight (w/muffler) (g/oz)	419.6 / 14.80	457.2 / 16.13	742.8 /26.20	822.5 / 29.01

NECESSARY ACCESSORIES

The following items are necessary for operating your engine, and are available from your local hobby supplier.

■Fuel

A good quality, commercially available fuel containing 20% oil and 10-15% nitro is recommended for use in Thunder Tiger four-stroke engine. Fuels containing a blend of both castor and synthetic oils is best. Fuels containing only castor oil are not recommended! (during breaking-in period, it is recommeded to use fuel containing at least 20% lubrication oil.)

■Glow Plug

Four-stroke engines produce one explosion for every two revolutions. A specific type of glow plug is required for your four-stroke engine. The type and quality of glow plug used in your engine can affect overall performance and reliablity. For Thunder Tiger four-stroke engine, we strongly recommend Thunder Tiger's new Red Line RF high-performance glow plug #9776. Other brands of glow plug such as O.S.:Type F, Saito:P-1, Hangar9 #3010 and McCoy MC-4C are also suitable for your Thunder Tiger four-stroke engine.



Glow Plug

■Glow Starter

1.2~1.5V power source for heating the glow plug during engine start up. Thunder Tiger offers a series of rechargable glow starters to suit your power requirements.



Glow Starter

■Plug Wrench

Used for tightening the glow plug as well as the propeller nut. A Thunder Tiger #1102 4-way wrench is recommended.



Plug Wrench

■Fuel Pump or Bottle

Required to fill the fuel tank on your model . A Thunder Tiger hand-crank pump (#1645) or 12V electric pump (#1658) are available from your hobby dealer.



Fuel pump

■Chicken Stick / Safety Stick

Used to flip the propeller when starting the engine by hand. Never use your fingers to start a model engine!

■Electric Starter

Most engines can be started quickly with an electric starter. Used with a 12 volt battery, it is the safest and most convenient method.



Electric Starter

■Propeller

Suggested propeller sizes are shown in the table below, with allowances for different type of aircraft and performance goals. Factors such as aircraft weight, size, flying style will affect your choice of props. After break-in, select the optimum prop size and test-fly. Begin your tests with suggested propeller sizes in the table below:

Engine	Breaking - in	Stunt/Aerobatic	Scale
F-54S	11x5	10x9,11x10,11x5,11x6, 11x7	11x8,12x7,12x8
F-75S	11x8	11x8,11x9,12x7, 12x8,12.5x6	13.5x8,14x7,11x7(3blade)
F-91S	11x10	11x10,11x11,12x10,12x11, 13x9	14x7, 15x6, 16x6,12x8(3-blade)
F-130S	14x10	13x11~13,14x10~11	15x8,16x6~8,18x5~6

Caution
It is very important to use a well-balanced propeller and spinner. An unbalanced propeller or spinner can cause substantial damage to both the aircraft and engine.

■Fuel Tank

Choose a proper fuel tank as recommended by the manufacurer of your airplane kit. Thunder Tiger offers a series of fuel tanks that are available at your hobby dealer.

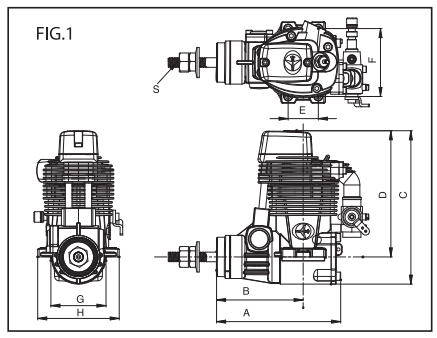
■Fuel Line

Choose a high quality, silicone fuel line for use with your Thunder Tiger engine.

INSTALLATION OF THE ENGINE

Mount your engine securely to rigid hardwood rails (e.g. maple) or a radial engine mount of metal or glass-filled nylon composite. The top surfaces of the motor mount must be absolutely flat and parallel to avoid crankcase distortion and stress. Ensure that only the highest quality mounting hardware such as hardened steel screws, etc are used to secure your engine. In order to reduce engine noise and vibrations, a dampening engine mount can also be used. Please refer the FIG.1 and the table for these engines external dimensions.

FIG.1



Item	A(mm/in.)	B(mm/in.)	C(mm/in.)	D(mm/in.)	E(mm/in.)	F(mm/in.)	G(mm/in.)	H(mm/in.)	S(thread)
F-54S	79.0/3.11	57.0/2.24	99.8/3.93	81.5/3.21	20.0/0.79	44.0/1.73	35.6/1.40	51.0/2.01	1/4-28
F-75S	81.9/3.22	57.4/2.26	101.3/3.99	83.0/3.27	20.0/0.79	45.0/1.77	36.5/1.44	54.0/1.13	1/4-28
F-91S	92.5/3.64	66.5/2.62	117.7/4.63	95.7/3.77	25.0/0.98	52.0/2.05	43.0/1.69	60.0/2.36	5/16-24
F-130S	96.2/3.79	68.5/2.70	121.8/4.80	99.3/3.91	25.0 /0.98	58.0/2.28	46.0/1.81	67.0/2.64	5/16-24

■Fuel Tank Installation

The fuel tank should be mounted as close to the engine as possible. Ideally, the center line of the fuel tank should be level with the needle valve. The design of your aircraft will determine actual tank location, but use the above instruction as a general guideline for best performance. Fuel tank location can affect overall engine performance.
Ensure your fuel system is sealed and well-constructed to avoid eventual fuel or air leakages. If possible, wrap your fuel tank with high quality foam rubber to reduce fuel foaming from airframe vibration.

■Glow Plug Installation

Use a 4-way wrench to insert the glow plug into your engine. Be careful not to use excessive force, ensure the plug is tight and the copper washer is properly sealed beneath the glow plug.

■Muffler Installation

After the engine is mounted on your model or test stand, secure the muffler to the exhaust pipe. Screw the exhaust pipe into the cylinder head at the desired angle and secure with the jam nut.

■Propeller Installation

Mount a suitable propeller securely to your engine. If using a spinner, ensure the cut-out area for the propeller blades offer adequate clearance so that no part of the prop is touching the spinner.

Caution
If a four-stroke engine is run too lean or under excessive loads, pre-ignitation occurs in the combustion chamber (called " knocking" or "detonation"). This condition will cause unusual vibrations and could possibly damage the engine! The biggest danger, however, is that these vibrations often loosen the prop nut and send the propeller flying off the engine. Please ensure the prop nut is always fastened securely!

ENGINE BREAK-IN

Proper break-in is critical to the life of any model engine. During this period, the precision metal parts of the engine are properly mated and worn in. It is critical that the engine be run in an area free from excessive dirt and sand. Your engine may be broken-in on a test bench or mounted on your model. Both methods are fine, however, a test bench allows you to keep the engine away from dirt as well as making adjustments easier.

■Break-in checklist

(A) Use the proper fuel and glow plug as described in NECESSARY ACCESSORIES.
(B) Select the proper propeller as recommended in the propeller chart.
(C) Ensure the high-speed needle valve is opened 2-3/4~ 3 turns.
(D) We strongly recommend the use of a tachometer when tuning a four-stroke engine. Although the carburetor adjustments are the same, four-stroke engines cannot be tuned by sound like a 2-stroke. Use of a tachometer will eliminate the risk of damaging your engine by running it too lean.

■Starting the engine

(A) Ensure the glow plug and propeller are installed and properly tightened.
(B) Ensure the fuel lines are properly connected, with the fuel pick-up connected to the carburetor and the pressure line connected to the muffler pressure nipple.
(C) Ensure the muffler is properly installed.
(D) Fill the fuel tank.
(E) Prime the engine using the following steps (ensure the glow plug igniter is NOT connected!)
  1. Open the carburetor to full throttle.
  2. Apply the starter and rotate the propeller for 5~6sec, or until you notice fuel draining from the carb.
(F) Adjust the throttle to 25% open.
(G) Rotate the prop clockwise until you feel the prop hits compression stroke.
(H) Connect the glow plug igniter.
(I) Start the engine counterclockwise using an electric starter or "Chicken Stick".

Caution
When using an electric starter, never attempt to start a flooded engine. Although the electric starter may turn the engine over, it can damage the connecting rod and/or other components. If the engine is flooded, simply remove the glow plug, turn the engine over and spin the propeller with electric starter or " Chicken-Stick". The excess fuel will be forced out the glow plug hole.

■During Break-in

(A) Do not exceed 5,000 R.P.M.during the first five minutes of operation.
(B) Because of the extremely rich needle setting used during breaking-in, you may be required to keep the glow plug igniter attached.
(C) After consuming the first tank of fuel, allow the engine to cool. You can then re-start the engine and gradually lean the needle setting during the next few tanks.
(D) During the third fuel tank, lean the needle valve for optimum R.P.M. using a tachometer, then enrich mixture until a drop of 200-300 R.P.M. occurs.

CARBURETOR ADJUSTMENTS

The low speed needle valve is located inside the throttle barrel body on the right side of the carburetor when viewed from the engine front. This needle valve controls the idle and midrange mixture of the engine.

(A) After the high-speed needle valve has been set, keep running the engine at full throttle for about 10 seconds, then abruptly close the throttle to idle speed. Run at idle for about 5 seconds, then quickly open the throttle.
(B) If the engine hesitates before picking up speed and abundant smoke and unburned fuel come out of the exhaust, the low speed mixture is too rich. Screw in (clockwise) the low speed needle about 1/8 turn at a time until the transition from idle to high speed is satisfactory.
(C) Similarly, if the engine rapidly speeds up before quitting, the mixture is too lean. Turn the needle counter-clockwise until the transition improves.
(D) If the throttle transition is difficult for you to observe, try allowing the engine to idle slightly longer before opening the throttle. Then repeat the above procedures until you are satisfied with the transition.

ENGINE CARE

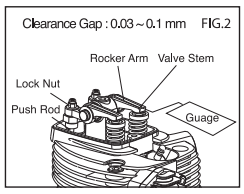
Always keep the outside of your engine clean. Using clean, fresh fuel can keep your fuel tank, pump, and fueling system free from dirt particles. Install a fresh filter between the fuel tank and carburetor, and between your fuel pump and filling line to prevent any dirt from entering your engine.
Model fuel contains alcohol, which is hydroscopic (it attracts moisture from the atmosphere). This can cause corrosion to the internal engine parts. After each flying session, run all the fuel out from the engine and disconnecting the fuel line from the carburetor. Put 4 or 5 drops of after-run oil (Marvel Mystery Oil, Prather, Pacer, etc.) into the carburetor and turn the engine over several times by hand to protect the engine bearing and internal parts from corrosion.
The use of after-run oil is also important during periods of prolonged storage (such as winter).
We suggest removing the engine from the model, liberally applying oil into the carburetor and glow plug hole, and wrap your engine in a soft cloth and store in a sealed plastic bag.
If you choose to store your engine on the airplane, make sure to store the model with engine down so as to keep the bearings lubridated.
Do not dismantle your engine unnecessarily, as this may upset precision fits such as piston/cylinder and valve/ tappet assemblies. If it is necessary to completely clean your engine, remove only the carburetor (do not disassemble), muffler and exhaust pipe. Flush the entire engine with fresh fuel and reassemble.

■Valve Clearance Adjustment

The valve clearances on your engine are factory set and will seldom require adjustment. However, after a considerable amount of running time if you detect a power loss, or if the engine must be disassembled after a crash, the valve clearances should be checked and adjusted. The valve adjusting kit, containing two gauges and one wrench, are enclosed in the box.

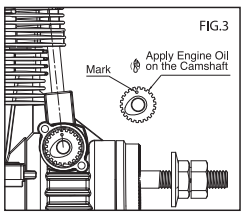
Note: Valve clearances MUST be checked when the engine is cold.

(A) Remove the rocker arm cover.
(B) Turn the propeller until you feel compression, then turn it an additional 1/4 turn and stop. Both valves should be closed now.
(C) The required valve clearances is .03mm-0.10mm(.0012-.004)measured between the valve stem and rockeer arm. A.03mm shim should pass through the gap, 0.10 mm should not. (Refer to FIG.2)



Caution: Incorrect valve clearances can cause difficult starting, erratic operation and loss of power.

■Installation of the Camshaft



The position of the camshaft determines the timing of your engine. An improper camshaft position will cause serious engine damage or your engine may not even start. It is strongly suggested that you DO NOT dismantle the camshaft. If for some reasons, you need to disassemble or change the camshaft, please follow proper procedures for re-installing the camshaft:
(A) Turn the crankshaft to the T.D.C. (top dead center). There is a T.D.C. mark on drive washer, set this mark on the top position.
(B) Apply some light oil (3-in-1, Mystery oil. Etc.) to the camshaft.
(C) Note that there is a mark on the side surface of the gear. When re-installing the camshaft, the mark must be aligned with the line on the push rod cover tube (Refer to FIG. 3.).
(D) Install the cam cover and properly secure the two screws.
(E) Rotate the crankshaft several revolutions to insure the camshaft is properly seated, then reassemble the remaining parts of the engine.

THUNDER TIGER 3 YEARS LIMITED WARRANTY

Your engine is guaranteed to be free from defects in materials and workmanship for a period of 3 years from the date of purchase when returned for service accompanied by proof of purchase (register receipt, credit card invoice, etc.). Crash damage or problems caused by improper use are not covered under this warranty. Damage caused by customer disassembly, use of improper accessories (such as propellers, glow plug, etc.) or any use of products other than its specific intended use will automatically void this warranty.

SERVICE PROCEDURES

This 4-stroke engine was produced by Thunder Tiger Corp., a guarantee for high quality, services, and hours of trouble-free operation.
Thunder Tiger products are sold worldwide through authorized distributors supported directly by Thunder Tiger. To receive the latest product information and enjoy full technical support, please contact your nearest hobby shop or Thunder Tiger authorized distributor.

TROUBLE SHOOTING GUIDE

SYMPTOM	CAUSE	CORRECTIVE ACTION
Engine will not start.	Low votage or discharged starting battery.	Replace/recharge starting battery. Install new glow plug.
	Bad glow plug. Insufficient prime.	Repeat priming procedure.
	Engine flooded.	Disconnect battery, remove plug and rotate prop to remove excess fuel.
Engine starts but will not run.	Over primed.	Disconnect battery and rotate prop several times to clear engine.
	Incorrect glow plug.	Verify plug type.
Engine starts but slows down then stops.	Mixture too rich.	Close needle valve 1/4 turn until engine runs smoothly.
Engine starts, speeds up, then stops.	Mixture too lean.	Open needle valve 1/4 turn until engine runs smoothly.
Engine quits when starter battery is removed.	Mixture too rich.	Close needle valve 1/4 turn and restart.
	Incorrect glow plug.	Change glow plug.
	Improper or bad fuel.	Change fuel.

Manufactured by THUNDER TIGER CORP.
www.thundertiger.com
JA0518-1 V2

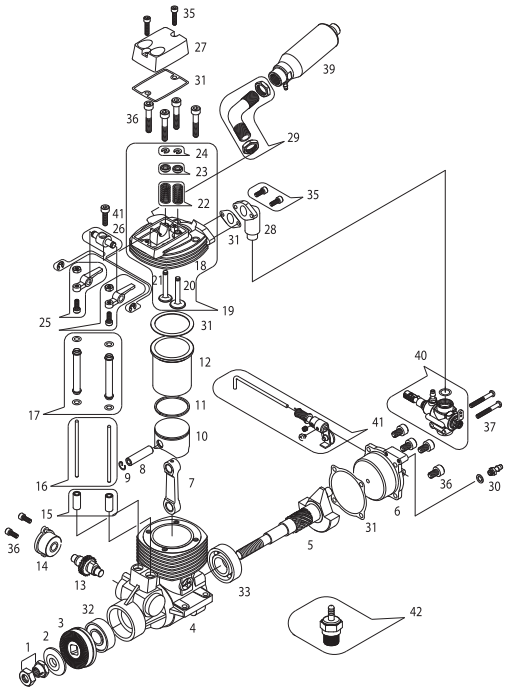
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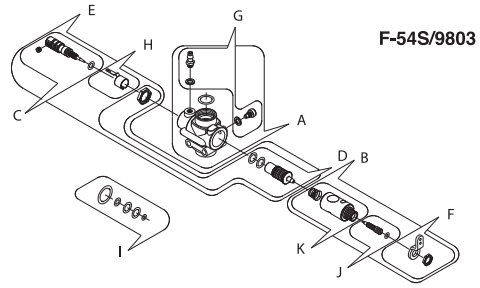
AIRCRAFT ENGINE PARTS UST.

F-54S/9803 PARTS LIST / ENGINE

NO	DESCRIPTION	PART #
1	PROP LOCKNUT SET	PN0144
2	PROP WASHER	AA0026B
3	DRIVE WASHER	AA2230
4	CRANKCASE	AN2274
5	CRANKSHAFT	AA2275
6	BACKPLATE	AA2276
7	CONNECTING ROD	AN0458
8	WEIST PIN ASSEMBLY	AA0459
9	CIRCLIP	AA0327
10	PISTON	AA0456
11	PISTON RING	AA0457
12	CYLINDER	AA0455
13	CAMSHAFT	AA2277
14	CAMSHAFT COVER SET	AN2278
15	CAM FOLLOWER SET	PN0146
16	PUSH ROD SET	PN0147
17	PUSH ROD COVER ASSEMBLY	PN0148
18	CYLINDER HEAD	AA0941
19	CYLINDER HEAD(W/VALVE ASSEMBLY)	PN0291
20	INLET VALVE	AA0474
21	EXHAUST VALVE	AA0475
22	VALVE SPRING SET	PN0150
23	SPRING RETAINER SET	PN0151
24	SPRING HOLD COLLARS	PN0152
25	ROCKER ARM SET	PN0153

NO	DESCRIPTION	PART #
26	ROCKER ARM SUPPORT SET	PN0154
27	ROCKER ARM COVER	AA0453
28	INLET PIPE	AA0476
29	EXHAUST PIPE SET	PN0155
30	BREATHER NIPPLE	PN0131
31	GASKET SET	PN0156
32	CRANKSHAFT BEARINGS(FRONT)	AMV608Z
33	CRANKSHAFT BEARINGS(REAR)	AMV6001LU
35	HEAD SCREWS SET	PN0157
36	CRANKCASE SCREWS SET	PN0158
37	CARBURETOR BOLTS SET	PN0159
39	MUFFLER ASSEMBLY	9220
40	CARBURETOR ASSEMBLY	9290N
42	GLOW PLUG.RF	9776





OPTION PARTS

41	CHOKE VALVE ASSEMBLY	9292

PARTS LIST / CARBURETOR

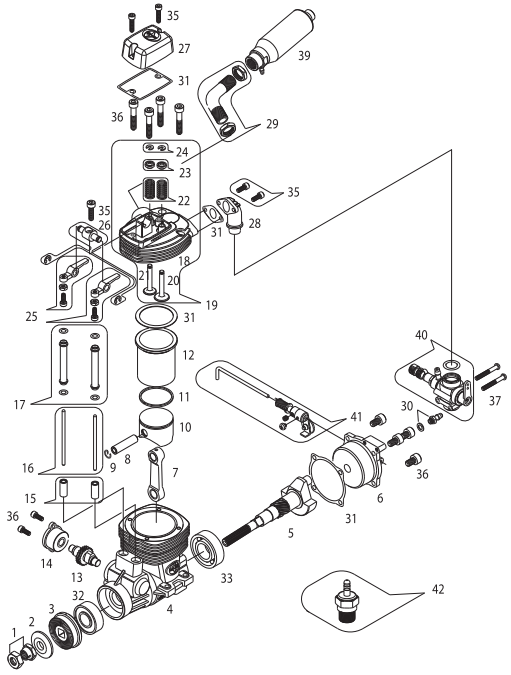
CARBURETOR

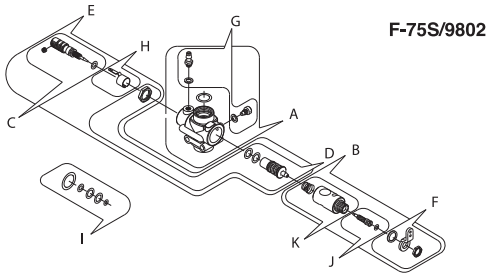
A	CARBURETOR BODY	PN1296
B	CARB.ROTOR ASSY	PN1297
C	NEEDLE VALVE ONLY	PN1156
D	SPRAY BAR ASSEMBLY	PN1298
E	NEEDLE VALVE ASSY.	PN1299
F	THROTTLE LEVER	PN1038
G	FUEL INLET ASSY.	PN1300
H	RATCHET SPRING	AA1181B
I	O RING SET,CARB	PN1301
J	MIX.MET.SCREW SET	PN1193
K	THROTTLE ROTOR SET	PN1302

F-75S/9802 PARTS LIST / ENGINE

NO	DESCRIPTION	PART #
1	PROP LOCKNUT SET	PN0144
2	PROP WASHER	AA2184B
3	DRIVE WASHER	AA2162
4	CRANKCASE	AN2140
5	CRANKSHAFT	AA2141
6	BACKPLATE	AA2142
7	CONNECTING ROD	AN2147
8	WRIST PIN	AA2151
9	CIRCLIP	AA0513
10	PISTON	AA2146
11	PISTON RING	AA0487
12	CYLINDER	AA2145
13	CAMSHAFT	AA2144
14	CAMSHAFT COVER SET	AN2152
15	CAM FOLLOWER SET	PN0146
16	PUSH ROD SET	PN0147
17	PUSH ROD COVER ASSEMBLY	PN0277
18	CYLINDER HEAD	AA2143
19	CYLINDER HEAD (W/VALVE ASSEMBLY)	AN2143
20	INLET VALVE	AA2153
21	EXHAUST VALVE	AA2154
22	VALVE SPRING SET	PN0279
23	SPRING RETAINER SET	PN0282
24	SPRING HOLD COLLARS	PN0152
25	ROCKER ARM SET	PN0153

NO	DESCRIPTION	PART #
26	ROCKER ARM SUPPORT SET	PN0283
27	ROCKER ARM COVER	AA2159
28	INLET PIPE	AA2161
29	EXHAUST PIPE SET	PN0130
30	BREATHER NIPPLE	PN0131
31	GASKET SET	PN0284
32	CRANKSHAFT BEARINGS(FRONT)	AMV609Z
33	CRANKSHAFT BEARINGS(REAR)	AMV6001LU
35	HEAD SCREWS SET	PN0285
36	CRANKCASE SCREWS SET	PN0286
37	CARBURETOR BOLTS SET	PN0159
39	MUFFLER ASSEMBLY	9777
40	CARBURETOR ASSEMBLY	9778
42	GLOW PLUG.RF	9776





OPTION PARTS

41	CHOKE VALVE ASSEMBLY	9292

PARTS LIST / CARBURETOR

CARBURETOR

A	CARBURETOR BODY	PN1306
B	CARB.ROTOR ASSY	PN1307
C	NEEDLE VALVE ONLY	PN1156
D	SPRAY BAR ASSEMBLY	PN1298
E	NEEDLE VALVE ASSY.	PN1299
F	THROTTLE LEVER	PN1038
G	FUEL INLET ASSY.	PN1300
H	RATCHET SPRING	AA1181B
I	O RING SET,CARB	PN1308
J	MIX. MET. SCREW SET	PN1309
K	THROTTLE ROTOR SET	PN1310

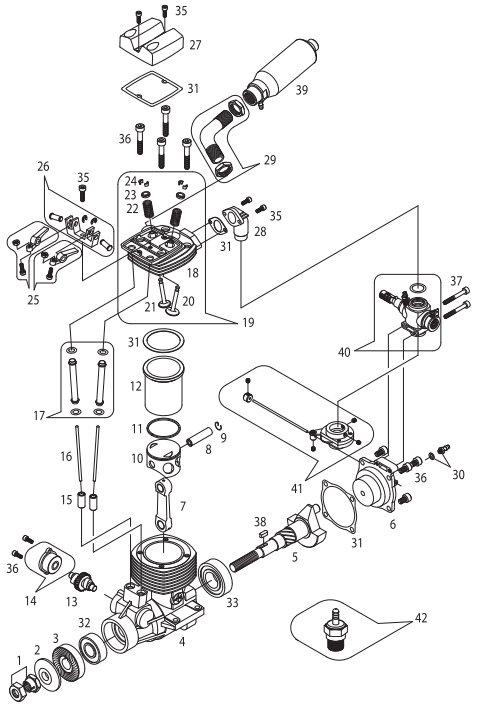
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AIRCRAFT ENGINE PARTS UST.

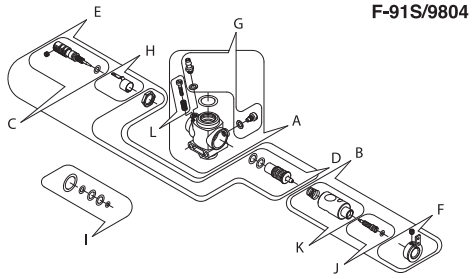
F-91S/9804 PARTS LIST / ENGINE

NO	DESCRIPTION	PART #
1	PROP LOCKNUT SET	PN0119
2	PROP WASHER	AA0512
3	DRIVE WASHER	AA0507
4	CRANKCASE	AN2299
5	CRANKSHAFT	AA0484
6	BACKPLATE	AA2300
7	CONNECTING ROD	AN0488
8	WRIST PIN	AA0489
9	CIRCLIP	AA0513
10	PISTON	AA0486
11	PISTON RING	AA0487
12	CYLINDER	AA0485
13	CAMSHAFT	AA2349
14	CAMSHAFT COVER SET	AN2348
15	CAM FOLLOWER SET	PN0121
16	PUSH ROD SET	PN0122
17	PUSH ROD COVER ASSEMBLY	PN0123
18	CYLINDER HEAD	AA2247
19	CYLINDER HEAD(W/VALVE ASSEMBLY)	PN0308
20	INLET VALVE	AA0504
21	EXHAUST VALVE	AA0505
22	VALVE SPRING SET	PN0125
23	SPRING RETAINER SET	PN0126
24	SPRING HOLD COLLARS	PN0127
25	ROCKER ARM SET	PN0128

NO	DESCRIPTION	PART #
26	ROCKER ARM SUPPORT SET	PN0129
27	ROCKER ARM COVER	AA0483
28	INLET PIPE	AA0506
29	EXHAUST PIPE SET	PN0130
30	BREATHER NIPPLE	PN0131
31	GASKET SET	PN0132
32	CRANKSHAFT BEARINGS(FRONT)	AMV6000Z
33	CRANKSHAFT BEARINGS(REAR)	AMV6002LU
35	HEAD SCREWS SET	PN0133
36	CRANKCASE SCREWS SET	PN0134
37	CARBURETOR BOLTS SET	PN0135
38	CRANKSHAFT KEY SET	PN0136
39	MUFFLER ASSEMBLY	9737
40	CARBURETOR ASSEMBLY	9291
42	GLOW PLUG.RF	9776



F-91S/9804



OPTION PARTS

41	CHOKE VALVE ASSEMBLY	9293

PARTS LIST / CARBURETOR

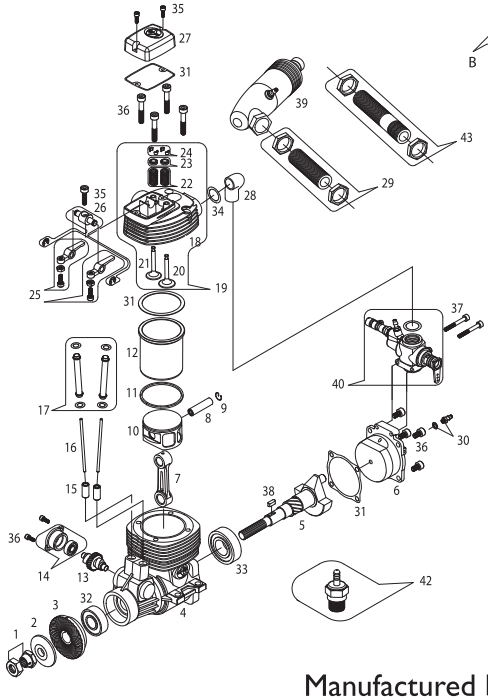
CARBURETOR

A	CARBURETOR BODY	PN1089
B	CARB.ROTOR ASSY	PN1090
C	NEEDLE VALVE ONLY	PN1091
D	SPRAY BAR ASSEMBLY	PN1092
E	NEEDLE VALVE ASSY.	PN1093
F	THROTTLE LEVER	PN1006
G	BOLT & FUEL INLET ASSY.	PN1007
H	RATCHET SPRING	AA1025B
I	O RING SET,CARB	PN1094
J	MIX.MET.SCREW SET	PN1095
K	THROTTLE ROTOR SET	PN1096
L	IDLE ADJUSTING SCREW	PN1097

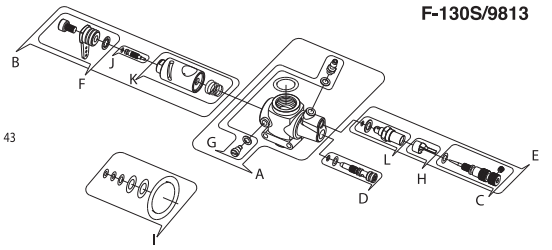
F-130S/9813 PARTS LIST / ENGINE

NO	DESCRIPTION	PART #
1	PROP LOCKNUT SET	PN0119
2	PROP WASHER	AA0512
3	DRIVE WASHER	AA2325
4	CRANKCASE	AN2340
5	CRANKSHAFT	AA2327
6	BACKPLATE	AA2338
7	CONNECTING ROD	AN2341
8	WRIST PIN	AA2324
9	CIRCLIP	AA2323
10	PISTON	AA2330
11	PISTON RING	AA2331
12	CYLINDER	AA2329
13	CAMSHAFT	AA2328
14	CAMSHAFT COVER SET	PN0312
15	CAM FOLLOWER SET	PN0121
16	PUSH ROD SET	PN0313
17	PUSH ROD COVER ASSEMBLY	PN0314
18	CYLINDER HEAD	AA2342
19	CYLINDER HEAD (W/VALVE ASSEMBLY)	PN0315
20	INLET VALVE	AA2343
21	EXHAUST VALVE	AA2344
22	VALVE SPRING SET	PN0316
23	SPRING RETAINER SET	PN0126
24	SPRING HOLD COLLARS	PN0127
25	ROCKER ARM SET	PN0317

NO	DESCRIPTION	PART #
26	ROCKER ARM SUPPORT SET	PN0318
27	ROCKER ARM COVER	AA2337
28	INLET PIPE	AA2332
29	EXHAUST PIPE SET	PN0319
30	BREATHER NIPPLE	PN0131
31	GASKET SET	PN0320
32	CRANKSHAFT BEARINGS(FRONT)	AMV6000Z
33	CRANKSHAFT BEARINGS(REAR)	AMV16002
34	O-RING	AA3009
35	HEAD SCREWS SET	PN0321
36	CRANKCASE SCREWS SET	PN0134
37	CARBURETOR BOLTS SET	PN0322
38	CRANKSHAFT KEY SET	PN0136
39	MUFFLER ASSEMBLY	9771
40	CARBURETOR ASSEMBLY	9772
42	GLOW PLUG.RF	9776



F-130S/9813



OPTION PARTS

43	EXHAUST EXTENSION PIPE SET	PN0323

PARTS LIST / CARBURETOR

CARBURETOR

A	CARBURETOR BODY SET	PN1348
B	CARB.ROTOR ASSY	PN1349
C	NEEDLE VALVE ONLY	PN1350
D	SPRAY BAR ASSEMBLY	PN1351
E	NEEDLE VALVE ASSY.	PN1352
F	THROTTLE LEVER	PN1353
G	BOLT & FUEL INLET	PN1007
H	RATECHET SPRING	AA1025B
I	O RING SET,CARB	PN1354
J	MIX.MET.SCREW SET	PN1355
K	THROTTLE ROTOR SET	PN1356
L	NEEDLE HOLDER SET	PN1357

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