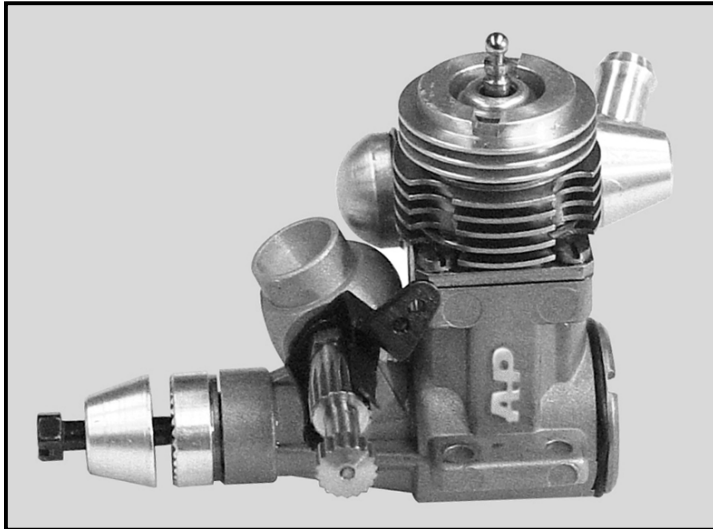


Wasp .061

OPERATING INSTRUCTIONS

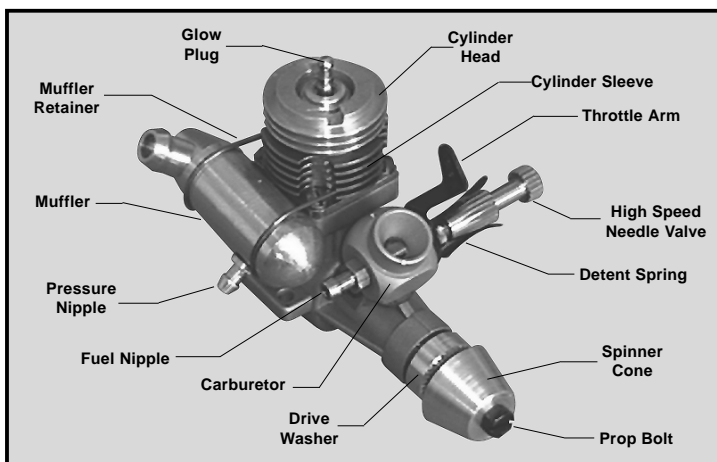


INTRODUCTION

The AP Engines Wasp .061 R/C engine is a single cylinder, two cycle engine utilizing the highest small engine technology for long life, light weight, high power output and ease of use. A single needle carburetor is used for very easy and hassle free carburetor adjustments. The Wasp .061 R/C comes standard with a machined aluminum spinner cone, extra head gaskets for fine tuning and a muffer to help keep the noise down. The engine was designed by expert engineers and built by master craftsmen using only the highest quality materials and CNC machinery. These qualities provide the long life and dependability you have come to expect from an engine of this caliber.

BECOMING FAMILIAR WITH THE AP ENGINES WASP .061 R/C

If you are familiar with the operation of model engines or just can't wait to run your new Wasp engine, please read through the Quick Starting Guide included. This guide will help you get started right away and also includes some good recommendations. We do recommend reading through this instruction sheet in it's entirety to familiarize yourself with the features and operation of your new engine. We have also included a Troubleshooting Guide should you encounter any problems. Please use the photo below to familiarize yourself with the components of your new Wasp .061 R/C engine.



SPECIFICATIONS

Displacement.....	0.994cc
Bore.....	11.25mm
Stroke.....	10mm
Practical R.P.M.....	3,000 - 25,000
Weight (w/Muffer).....	1.9oz

WARNING!

AP model engines will consistently give you dependable performance and reliability and will be a source of satisfaction and pleasure if you follow these instructions as to the engine's proper and safe use. You alone are responsible for the safe operation of your engine, so act sensibly and with care at all times. This AP model engine is not a toy. It is a precision built machine whose power is capable of causing serious injury to yourself and to others if abused, misused or if you fail to observe proper safety precautions while using it.

- ⚠ Keep spectators, especially small children, at least 20 feet away from the engine while it is running.
- ⚠ Mount the engine securely in the airplane or on a suitable engine test stand to run the engine. Follow the mounting instructions in your kit's instruction manual or on the plans for individual mounting recommendations. Do not clamp the engine in a vise to test run it.
- ⚠ Use the recommended size propeller and follow the proper procedure for mounting the propeller. Use the correct size wrench to tighten the propeller bolt. Do not use pliers.
- ⚠ Inspect the spinner cone, propeller and propeller bolt on a regular basis, looking for any signs of nicks, cracks or loosening.
- ⚠ To stop the engine, adjust the throttle linkage to completely close the throttle barrel and therefore cut off the air supply. You can also pinch the fuel line to stop the engine, but only if the line is safely accessible. Do not throw anything into the spinning propeller or attempt to use your hands to stop the engine.
- ⚠ While the engine is running stand behind the engine to make any adjustments to the needle valve. Do not reach over or around the propeller. Do not lean towards the engine. Do not wear loose clothing or allow anything to be drawn into the spinning propeller while the engine is running.
- ⚠ If you need to carry your model while the engine is running, be conscious of the spinning propeller. Keep the airplane pointed away from you and others.
- ⚠ Do not use tight fitting cowls over the engine. They can restrict air from flowing over the engine and result in engine damage from overheating.

ENGINE INSTALLATION

□ Engine Orientation

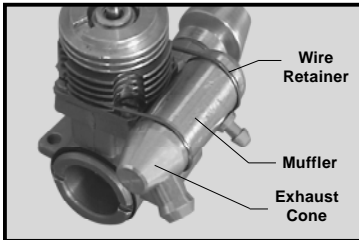
The AP Engines Wasp .061 R/C can be orientated in any position on the firewall. For optimum performance the engine should be mounted either upright or rotated 90° to the side if necessary. Keep in mind that if you mount the engine inverted, carburetor adjustments will need to be made differently and the fuel tank may need to be lowered. (See tank size and orientation to carburetor on next page). Engines mounted inverted tend to run richer during idle and transition to full throttle and generally are more difficult to setup.

❑ Engine Bolts and Firewall Requirements

The Wasp .061 R/C should be mounted to a glass filled nylon motor mount (AP Engines Part # 211195 recommended) or to an integrated wood beam mount built into the fuselage structure of the aircraft. Use only high quality # 3 sheet metal screws and washers to mount the engine to a glass filled mount. Use 4-40 socket cap screws, washers and locknuts to mount the engine to a wood beam mount. If using a glass filled mount, the firewall in the airplane should be aircraft grade plywood no less than 1/8" thick. The firewall should also be reinforced to meet the torque and power of the engine.

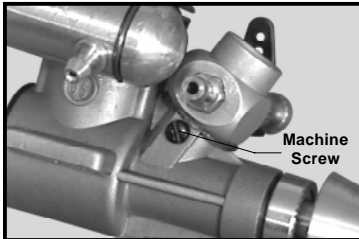
❑ Muffler Installation

The muffler is mounted to the engine using the wire retainer provided. To install the muffler, slide the loop end of the retainer over the top of the cylinder head and secure it between the lower cooling fin just above the cylinder sleeve bolts. Slip the muffler under the two hooks in the retainer and engage the hole in the side of the muffler with the exhaust port on the side of the engine. Slide the two hooks into the machined grooves in the muffler to secure it in place. The exhaust cone on the rear half of the muffler is adjustable to better match the installation in your particular model. This is a friction fit, so simply rotate the exhaust cone to the desired angle and leave it in place.



❑ Carburetor Installation

The carburetor is held in place using two 2mm x 3mm machine screws provided. Slide the base of the carburetor into the crankcase, being careful to keep the carburetor perpendicular to the front of the engine. With your thumb, push down on the carburetor firmly so the base of the carburetor seats completely into the crankcase and the carburetor o-ring seals the gap between the two. While holding the carburetor in place, thread the two machine screws into the carburetor base and tighten them using a flat blade screwdriver. Tighten the screws until they are snug. Do not overtighten them.



❑ Tank Size and Orientation to Carburetor

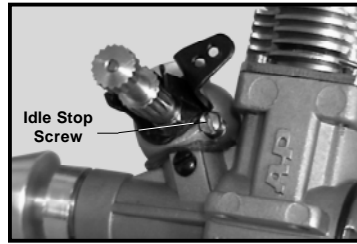
The size of the fuel tank used should be 1oz. - 2oz. depending on the model and the length of flights desired. Use of a 2oz. tank will provide between 15 - 20 minutes of run time at full throttle. Use of a fuel tank any larger than 2oz. can lead to excessive leaning of the engine during flight or erratic engine operation and is not recommended.

Ideally, the stopper in the fuel tank should be even with the high speed needle valve, or just slightly below the high speed needle valve. In some cases models will only allow the fuel tank to be mounted higher than the ideal location. A fuel tank that is positioned higher than the ideal location usually doesn't pose any problem except when it is mounted excessively higher and/or is used in conjunction with an inverted mounted engine or during extreme aerobatic flight. If mounting your engine inverted, it is advised to lower the fuel tank so the stopper is 1/4" below the high speed needle valve. Doing this will prevent fuel from siphoning into the engine and flooding it when the fuel tank is full. If you cannot lower the fuel tank far enough, we suggest lowering it as far as can be allowed in your particular application. *Always connect the vent/pressure line from the fuel tank to the pressure nipple on the muffler.*

❑ Idle Stop Screw

The idle stop screw is used to adjust the closure of the throttle barrel. It is held in place using spring tension. We recommend setting the idle stop screw to allow the throttle barrel to close completely. This way the engine can be shut off using your radio transmitter.

If you look carefully at the screw head, you will notice the head is machined off center, similar to the lobe on a cam. Turning the screw so the high point of the head is towards the throttle arm will result in keeping the throttle barrel from completely closing. Turning the screw so the high point of the head is away from the throttle arm will allow the throttle barrel to close completely.

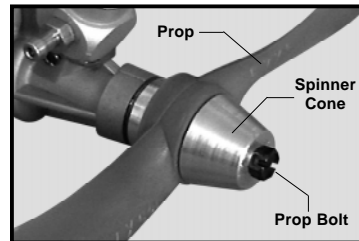


This setup is recommended so you can shut down the engine using the throttle trim lever on the transmitter.

❑ Propeller Installation

Note: Before installing any propeller it must be properly balanced. Running an engine using an improperly balanced propeller can lead to excessive vibration which will cause excessive stress and wear on both the engine and the airframe. Overall performance will also be reduced. Balance the propeller using the recommended method stated by the propeller manufacturer. Several products are available to properly balance propellers. Ask your local retailer for more information about these items.

Using a 7/32" drill bit, drill out the hole in the propeller hub to fit the back of the aluminum spinner cone. Push the spinner cone onto the front side of the propeller. Slide the propeller bolt through the spinner cone and propeller, then thread the bolt into the front of the engine. Completely tighten the prop bolt to secure the propeller in place. When tightening the prop bolt, use the



proper size open end wrench, adjustable wrench or flat blade screwdriver. Do not use pliers.

PROPELLER, GLOW PLUG AND FUEL

❑ Propeller Recommendation

The diameter and pitch of the propeller needed for the Wasp .061 R/C will vary greatly depending on the application the engine is used in. The weight, drag and the type of model and how you intend to fly it are all factors in determining the correct size of propeller to use. Experimentation will be necessary to find the optimal size propeller for your particular application. Ideally you want to use a propeller that the engine will turn in the 11,000 - 22,000 R.P.M. range *on the ground*, yet power the airplane sufficiently. Using a propeller that is too small will cause the engine to run at too high an R.P.M. Using a propeller that is too large will cause the engine run at too low an R.P.M. and cause the engine to lug down too much. In both instances this will lead to difficulty in making needle valve adjustments, premature engine wear and eventual engine failure.

Propeller Size Recommendations

4.75 x 4.75	5 x 3	5.5 x 2
5.5 x 2.5	5.7 x 3	6 x 2
6 x 3	6 x 4	7 x 3

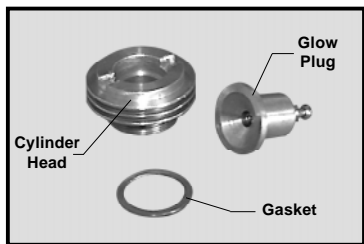
Use a 5.7 x 3 propeller for the break-in procedure

❑ Glow Plug Recommendation

We recommend using only glow plugs designed specifically for the Wasp .061 R/C. Use of any other glow plug may result in performance loss and engine tuning difficulties.

❑ Glow Plug Removal and Installation

There will come a time when you must remove the glow plug, either because it needs replacement or to add or remove cylinder head gaskets. To remove the glow plug, carefully unscrew the cylinder head, using the provided wrench, and remove it from the cylinder sleeve. Carefully remove the aluminum gasket and push the glow plug out of the cylinder head. To install a new glow plug, push the glow plug up into the cylinder head and carefully install the aluminum gasket onto the machined base in the inside of the cylinder sleeve. Thread the cylinder head assembly into the cylinder sleeve, being careful not to cross-thread the two parts. Tighten the cylinder head down snug.



❑ Fuel Recommendation

Fuel can make a big difference in the way your engine performs and how long it will last. We recommend using two types of fuel with the Wasp .061 R/C. For the break-in period you *must* use a fuel containing no more than 15% nitro methane and no less than 20% Castor Oil lubricant. Use of fuel containing more than the recommended percentage of nitro methane or *any* synthetic lubricants will cause the engine to run too hot and result in excessive wear and engine failure in a very short period of time. To achieve proper break-in the fuel used must contain Castor Oil. Castor Oil will help keep the engine running cooler during the break-in period. It will also help carry away any residual debris from the engine without actually doing harm to the engine. Once the engine has been adequately broken-in (about 45 minutes of run-time using the recommended break-in fuel), a fuel containing up to, but no more than 35% nitro methane and no less than 16% Castor Oil and synthetic lubricant blended fuel can be used.

Note: We do not recommend using fuels that contain only synthetic lubricants. Synthetic lubricants have a much lower flash point than Castor Oil lubricants. The Flash point is the point at which the lubricant suspended in the fuel begins to actually burn and loses its lubricating qualities. Using fuels containing a blend of Castor Oil and synthetic lubricants results in an engine that runs cooler and lasts longer. One lean run using a fuel containing only synthetic lubricants can cause severe engine wear and eventual failure in a short period of time. Using fuels with a Castor Oil and synthetic blend of lubricants greatly reduces this chance. Please also keep in mind that the higher percentage of nitro in the fuel will produce more power, yet it will also cause the engine to run hotter and to wear more quickly. This is just one more reason to use a fuel containing a Castor Oil and synthetic lubricant blend.

HIGH SPEED NEEDLE VALVE

❑ High Speed Needle Valve

The high speed needle valve is used to meter the air/fuel mixture. Turn the needle clockwise to lean the mixture or turn the needle counterclockwise to richen the mixture. When you start the engine for the very first time the needle valve should be turned in completely, then backed out 2-1/2 turns. When you start the engine after that, leave the needle valve at the same position it was in when you shut down the engine.

STARTING PROCEDURE

The Wasp .061 R/C can be started using an electric starter or it can be started by hand. For safety and ease of starting, especially when the engine is brand new, we recommend using an electric starter. *The following two procedures should be done with the power to the glow plug off.*

❑ Starting by Hand

When starting the engine by hand always use a chicken stick. If you must use your finger, wear a good leather glove to prevent the prop from cutting you. *Never just use your bare hand or serious injury could result.*

To make the engine easier to start by hand it should first be primed. This is done by opening the carburetor completely and choking the engine by putting your finger over the carburetor opening. With the carburetor choked, quickly flip the propeller through the compression stroke 2 - 3 times. This will draw fuel into the engine. Over-priming the engine can cause the engine to "hydro-lock" or flood. This is a result of too much fuel in the engine before it actually fires. Remove your finger from over the carburetor and pull the propeller through the compression stroke once to check for a hydro-locked condition. Never try to start the engine if it is in a hydro-locked state. This could cause serious damage to yourself and the engine.

❑ Starting with an Electric Starter

When using an electric starter it is not necessary to prime the engine. The starter will turn the engine over fast enough that the engine will draw fuel on it's own. Priming the engine prior to using an electric starter can cause the engine to "hydro-lock" or flood. This is a result of too much fuel in the engine before it actually fires. Turning the engine over with an electric starter while the engine is flooded can cause extreme damage to the engine and/or cause your propeller assembly to come loose or spin off completely. Pull the propeller through the compression stroke one time by hand to check for a hydro-locked state before applying the starter.

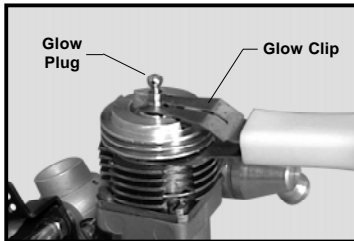
BREAK-IN PROCEDURE

Note: The Wasp .061 R/C engine does not use a ring to seal the combustion chamber. The cylinder sleeve is tapered at the top, causing severe resistance when the piston moves through the top of the stroke. This is normal. When the engine heats up to operating temperature and begins to break-in, this resistance will decrease and the proper piston and cylinder clearance will be achieved. Do not in any way disassemble the engine and try to modify the piston and cylinder fit. This will void any and all warranties. The break-in procedure will guide you through the steps necessary to properly break-in your new Wasp .061 R/C engine. Please follow the steps closely.

The break-in process allows the engine parts to perfectly fit to each other and properly protect each part from premature wear. The engine should be broken in using a fuel that contains no more than 15% nitro methane and no less than 20% Castor Oil lubricant. Synthetic lubricant fuels should not be used during the break-in procedure. For the break-in procedure we recommend mounting the engine into the airplane it will be used in. This way the muffler, fuel tank and throttle linkage can all be tested in combination with the engine. If your airplane uses a cowling, it should be removed during the break-in procedure.

- ❑ 1) Install a 5.7 x 3 propeller onto the engine.
- ❑ 2) Turn the high speed needle valve out 2-1/2 turns from the fully closed position.
- ❑ 3) If you are using an electric starter to start the engine, follow the procedure in the previous section. If you are starting the engine by hand, follow that procedure in the previous section.

- ❑ 4) Open the throttle barrel to approximately 1/4 throttle. Connect the glow starter to the glow plug. If you are using a glow starter connected to a power panel, turn the amperage adjustment knob until the meter reads between 3 and 4 amps. Start the engine using an electric starter or by hand. If starting by hand you will need to vigorously flip the propeller through the compression stroke several times before the engine will start.



- ❑ 5) Once the engine starts, open the throttle barrel to about 1/2 throttle and immediately turn the high speed needle valve in (lean) until the engine runs without cutting out. The exhaust should be very noticeable from the muffler and the engine should sound like it is running very rough. This is a good "rich" mixture setting.

❑ 6) After the engine has been running for about 1 minute, remove the glow starter from the glow plug. Advance the throttle barrel to full throttle. Adjust the high speed needle valve so that the engine continues to run rich. Let the engine run for approximately 5 minutes at full throttle then stop the engine.

❑ 7) Let the engine cool for approximately 10 minutes then restart it. Advance the throttle to full and set the high speed needle valve to a slightly leaner setting. Let the engine run for about 5 minutes at this setting then stop the engine and let it cool for approximately 10 minutes.

❑ 8) Repeat the procedure in step # 7, while setting the high speed needle valve slightly leaner each time. In all, you should run the engine about a total of 40 minutes of actual running time. The engine is fully broken-in when it will hold a peak R.P.M. setting at full throttle for about 5 minutes with no tendency to fluctuate or overheat. After the break-in period is completed the engine is ready for flight.

SETTING THE MIXTURE

Now that your engine is fully broken-in, you can set the high speed needle valve for optimum flight performance.

Note: Be careful to never lean the engine out too much. Remember that the lubricants for your engine are suspended in the fuel. If you lean out the fuel mixture too much you will also be lowering the amount of lubricant entering your engine. Less lubricant means more chance of your engine overheating and possible engine failure.

❑ Setting the High Speed Needle Valve

❑ 1) Start the engine and remove the glow starter from the glow plug. Allow the engine to warm up for about 1 minute.

❑ 2) After the engine has warmed up, advance the throttle to full and slowly lean the high speed valve until the engine reaches peak R.P.M. After reaching peak R.P.M. richen the mixture slightly until an audible drop in R.P.M. is heard. If you are using a tachometer this should be between a 200 - 300 R.P.M. drop.

❑ 3) With the engine running at full power, carefully lift the nose of the airplane about 45° into the air. The mixture should not become too lean, but you may hear a slight increase in R.P.M. This is good. If the engine sags, or loses R.P.M. when you hold the nose up, the mixture is too lean and should be set slightly richer. The engine should always exhibit a noticeable smoke trail from the exhaust.

Note: R.P.M. will increase about 10% - 30% in the air. This is due to the forward motion of the aircraft as it is flying. Because of this forward motion, more air is entering the carburetor, at a higher force, and causes the mixture to lean out. Additionally, as the fuel level in the fuel tank goes down, fuel draw becomes more difficult for the engine, especially during aerobatics, also causing the mixture to go lean. It is imperative that you set the mixture rich while on the ground to compensate for the leaning tendencies that will happen in the air. Always watch the exhaust during your flight. The engine should leave a noticeable white smoke trail at all times. If there is no smoke trail, the engine is running too lean. You should land immediately and reset the mixture.

HINTS AND TIPS

Your new AP Engines Wasp .061 R/C engine will provide your model with high power and dependable performance in most any situation. There may be a few situations however, that you may need to fine tune the setup of your engine to obtain reliable operation and good power output.

❑ High Altitude

It is a fact with all model engines, big or small, that they will not produce the same amount of power at high altitudes as they do at low altitudes. This is because engine compression is reduced due to lower air density at higher altitudes. To improve the power output we recommend using a higher nitro content fuel. Preferably 25% - 35% nitro content.

❑ Extreme Temperatures

If you are using your engine in extremely hot weather, you may find it necessary to lower the nitro content in the fuel and/or install one of the extra head gaskets under the cylinder head to lower the compression ratio. In both cases, this will help the engine run cooler and prevent it from cutting out or detonating due to over-compression.

In cold weather environments you may find you need to do the opposite. Use a fuel that contains from 25% - 35% nitro content and use only one head gasket in the engine. Using the higher nitro fuel will help improve engine starting and ease tuning in cold weather.

MAINTENANCE

❑ Avoid running the engine under dusty conditions. If you are in a dusty environment we suggest using an air filter over the carburetor. A small piece of women's nylon stocking placed over the carburetor and held in place with a small rubber band works well for small engines.

❑ At the end of every flying day, purge the engine of fuel by disconnecting the fuel line and allowing the engine to run dry of fuel.

❑ Use a high quality after run oil in the engine after you have purged the engine of fuel. Inject the oil into the engine through the carburetor. Turn the engine over several times to distribute the lubricant inside the engine.

❑ Wipe the outside of the engine dry using a soft cloth.

SERVICE

All AP engines returned for warranty service must be within the warranty terms as stated on the warranty card provided with your engine. Do not return the engine to the place of purchase. They are not authorized or equipped to perform warranty work on AP products. When requesting warranty service, please observe the following:

☞ Always send the complete engine including the carburetor and muffler. The engine must be removed from the model.

☞ Include a note detailing the problem or service you are requesting. Service cannot be provided without this information. Include your daytime phone number in the event we need more details pertaining to the service requested.

☞ You may request an estimate of services at the time you return your engine for service. An omission of this request implies permission for the AP Engines Service Center to service your engine at our discretion.

☞ Include a method of payment for any service charges. If not specified, the unit will be returned to you C.O.D.

☞ Please include a check or money order in the amount of \$6.50 to cover postage and handling charges for the return of your engine. Do not send cash.

☞ Send the engine to us by United Parcel Service, Federal Express or by Insured Mail. Postage is not refundable. Send to:

AP Engines Service Center
18480 Bandilier Circle
Fountain Valley, CA 92728
Phone (714) 963-0329
Fax (714) 964-6236
E-mail: service@globalhobby.com

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QUICK START and TROUBLESHOOTING GUIDE



The following information is provided to get your new AP Engines Wasp .061 R/C running right away with minimal effort. We have listed our recommendations for fuel, propeller, starting procedures and other recommended accessories. Also included is general information about the accessories needed for the Wasp .061 R/C engine that we hope you will find helpful.

This Quick Start Guide should not be used as a replacement to the Operating Instructions included, rather it should be used along with the Operating Instructions. We highly recommend reading through the Operating Instructions to familiarize yourself with each part of the engine, along with the proper procedures for engine break-in, tuning, care and maintenance.

OUR RECOMMENDATIONS

The following items are recommended for use with the Wasp .061 R/C engine. These items are recommended for initial start-up and running. Please read through the Operating Instructions for further details.

❑ **Fuel:** AP NFX 15% Nitro Fuel (# 211115)

We suggest using our own brand of AP NFX fuels. AP fuel comes in three different nitro contents, 15%, 25% and 35% that can all be used in the Wasp .061 R/C engine. NFX fuels are blended specifically for AP Engines using only high quality Nitromethane, Methanol and Castor Oil to provide high power output along with easy starting and unmatched lubricating and heat dissipation qualities.

❑ **Fuel Tank:** Sullivan 2oz. Flexible Tank (# 436)

The Sullivan 2oz. fuel tank is a perfect match for the Wasp .061 R/C. It is large enough to give you about 15 - 20 minutes of run-time at full throttle, yet it is small enough to fit into most models. The Sullivan 1oz. fuel tank will also work well while only sacrificing some run-time.

❑ **Glow Plug:** Included

The included glow plug is designed to be used with fuels using 10% - 35% nitro content and in any environment. It is a "hot" type of glow plug for easy starting, excellent transition and incredible top end. The plug is also very durable and able to withstand the high R.P.M.'s that the Wasp will run at.

❑ **Propeller:** APC 5.7 x 3 Propeller (# LP05730)

We have found that the engine runs at it's best using APC brand props. They are designed to be very efficient, run quiet at high R.P.M.'s and are also durable. Use this size prop to break-in your engine, then change to the prop that best suits your application. Use the guide in the Operating Instructions to help you find the right size propeller.

❑ **Glow Driver:** Cox Glow Clip (# 7556) or Sullivan (# M050)

The Cox Glow Clip is an excellent affordable choice for heating the glow plug. It is prewired and ready to be soldered to a 1.2 - 1.5 volt Sub-C Nicad or attach banana plugs to the wires and it can be used with a power panel in your flight box. The Sullivan glow driver is an all-in-one unit that includes a Nicad battery. Simply secure it to the top of the glow plug. It's a little more money, but it's by far the easiest and most economical way to go over the long run.

❑ **Motor Mount:** AP Engines Motor Mount (# 211195)

The AP Engines motor mount is a glass filled type that mounts to a plywood firewall in the model. It is easy to install and rugged, yet in the event of a crash, will break away to minimize damage to the engine and/or airframe.

QUICK STARTING

❑ Engine Preparation

❑ 1) Mount the engine to the recommended motor mount. A wood beam mount built into the airframe would also be sufficient.

❑ 2) Install the muffler to the engine using the wire retainer provided. The exhaust cone on the back of the muffler can be rotated to help direct the exhaust away from your model.

❑ 3) Install the carburetor using the two machine screws provided. Be careful to ensure the carburetor is seated firmly to the crankcase. This will allow the o-ring to properly seal the gap between the two parts.

❑ 4) Using a 7/32" drill bit, drill out the center hub in the propeller. Install the propeller and the spinner cone to the engine using the propeller bolt provided. Tighten the propeller bolt securely using an adjustable wrench.

❑ Engine Starting

❑ 1) Carefully turn the high speed needle valve in completely until it stops, then turn the needle valve out 2-1/2 turns. This is the mixture setting for initial starting.

❑ 2) If hand starting, prime the engine by opening the throttle barrel completely, placing your finger over the carburetor opening and flipping the prop through compression 2-3 times. If you will be using an electric starter, do not prime the engine. The starter will turn the engine over fast enough to draw fuel on it's own.

❑ 3) Connect the glow starter to the glow plug. Open the carburetor barrel to about 1/4 throttle and start the engine. If you are starting the engine by hand, you will need to vigorously flip the prop several times before the engine will start. Once the engine begins running, immediately turn the high speed needle valve in to keep the engine running.

❑ 4) Advance the throttle to full while turning high speed needle valve in to keep the engine running. The engine should be producing a very noticeable white exhaust from the muffler and sound like it is running rough. Allow the engine to run only for about 5 minutes, then shut the engine off.

❑ 5) Now that you have started your Wasp .061 R/C engine it must be properly broken-in. Proper break-in will seat all of the moving parts, particularly the piston and cylinder sleeve. This procedure takes about 40 minutes of run-time and is highly recommended. An engine that is properly broken-in will produce more power, be more user-friendly and last much longer than an engine that does not receive a break-in period. For this reason we highly recommend following the break-in procedure detailed in the Operating Instructions before you run the engine further.

TROUBLESHOOTING GUIDE

This troubleshooting guide has been provided to help you diagnose and solve most problems that you may encounter with your AP Engines Wasp .061 R/C. Most problems encountered can be solved by carefully following the problem-cause-solution sections below. If you cannot solve the problem using this troubleshooting guide, please feel free to contact us at the address or phone number listed.

AP Engines Customer Care
 18480 Bandilier Circle
 Fountain Valley, CA 92728
 Phone (714) 963-0329 Fax (714) 964-6236
 E-mail: service@globalhobby.com

PROBLEM	CAUSE	SOLUTION
1) Engine does not start	A) Failed glow plug B) Glow Starter not charged and/or faulty C) Engine not being turned over fast enough D) Old or contaminated fuel E) Engine flooded with too much fuel F) Faulty fuel tank and/or stopper assembly G) Air leak in fuel system and/or engine	A) Replace glow plug with a new one B) Fully charge glow starter and/or replace C) Use an electric starter to start engine D) Replace with new fuel E) Remove glow plug and expel fuel from cylinder F) Check and/or replace fuel tank assembly G) Replace fuel lines and/or tighten all engine bolts
2) Engine does not draw fuel	A) Air leak in fuel system and/or engine B) High Speed Needle Valve fully closed C) Fuel lines kinked D) Defective fuel tank	A) Replace fuel lines and/or tighten all engine bolts B) Reset high speed needle valve to factory setting C) Check and straighten fuel lines D) Replace fuel tank
3) Engine vibrates excessively	A) Propeller out of balance B) Engine and/or motor mount loose	A) Balance propeller B) Tighten motor mounting bolts
4) Engine does not transition	A) Failed and/or wrong type glow plug B) Old and/or wrong type fuel C) High speed needle valve set too rich D) Air leak in fuel system and/or engine E) Propeller too large	A) Replace with new recommended glow plug B) Replace with new recommended fuel C) Reset high speed needle valve to leaner setting D) Replace fuel lines and/or tighten all engine bolts E) Replace with one size smaller propeller
5) Throttle barrel does not close completely	A) Idle stop screw out of adjustment B) Throttle servo linkage out of adjustment	A) Turn idle stop screw counterclockwise until barrel closes completely B) Adjust throttle linkage to close throttle barrel completely.
6) Engine Overheats	A) Engine running too lean B) Cowl too restrictive C) Wrong type of fuel used D) Engine not fully broken-in	A) Richen high speed needle valve B) Open larger vents in cowling to allow air to exit C) Use fuel with recommended oil content D) Allow engine further break-in time
7) Engine stops abruptly	A) Engine running too lean B) Piston & Cylinder fit loose C) Compression ratio too high	A) Richen high speed needle valve B) Return engine to AP Engines Service Center C) Install one head gasket to lower compression



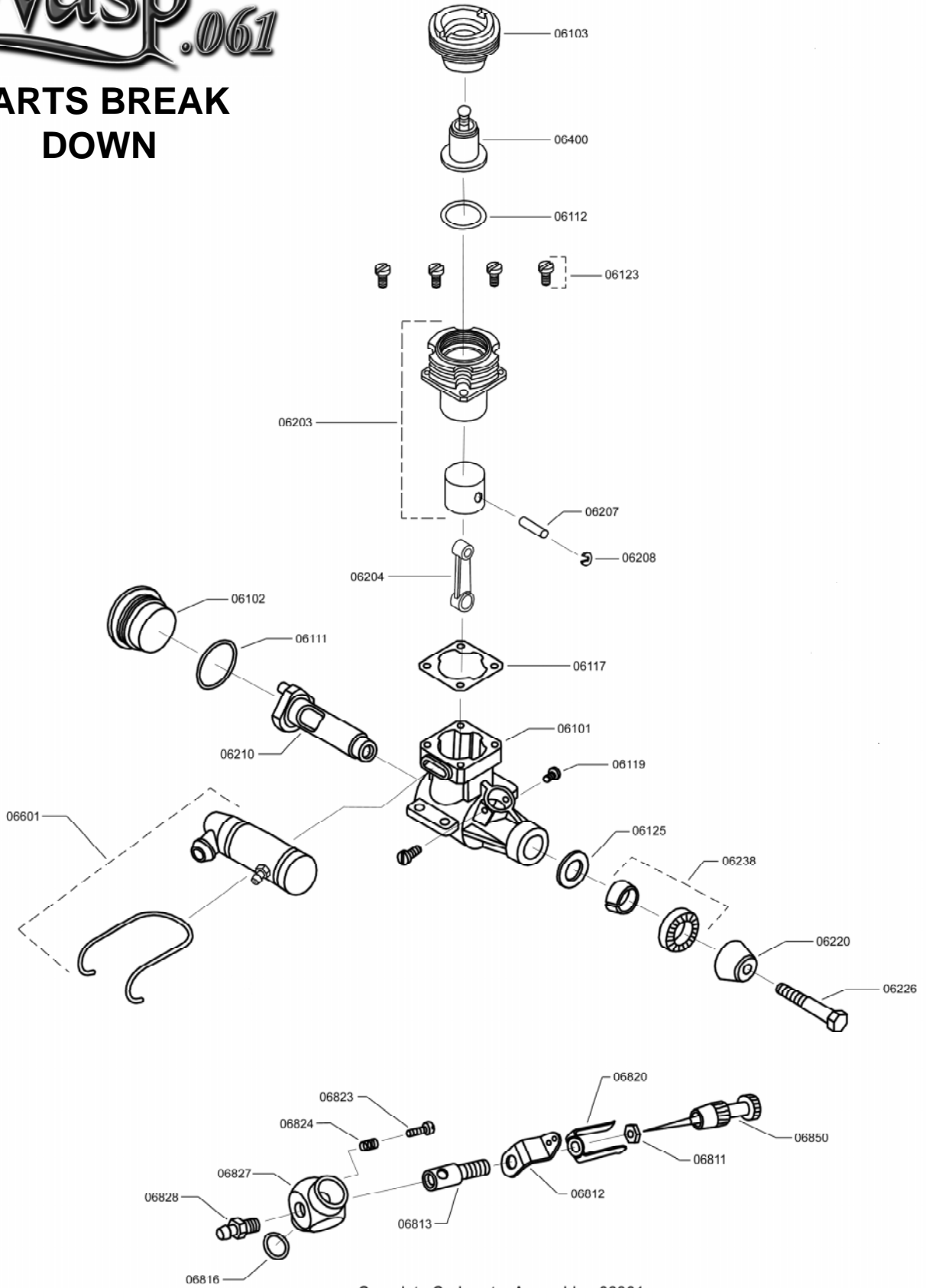
PARTS LIST

To order replacement parts, visit your nearest AP Engines dealer or call the AP Engines Service Center direct at 1-714-963-0329. Parts are listed here in numerical order.

QUANTITY	PART #	DESCRIPTION
1	06101	Crankcase
1	06102	Backplate
1	06103	Cylinder Head
1	06111	Backplate Gasket
1	06112	Cylinder Head Gasket
1	06117	Cylinder Sleeve Gasket
2	06119	Carburetor Hold Down Bolts
4	06123	Cylinder Sleeve Bolts
1	06125	Drive Washer Gasket
1	06203	Piston and Cylinder Set
1	06204	Connecting Rod
1	06207	Wrist Pin
1	06208	Wrist Pin Retainer
1	06210	Crankshaft
1	06220	Propeller Spinner
1	06226	Propeller Bolt
1	06238	Drive Washer and Collet Set
1	06400	Glow Plug
1	06601	Muffler and Muffler Retainer Set
1	06801	Carburetor Assembly
1	06811	Throttle Arm Retaining Nut
1	06812	Throttle Arm
1	06813	Throttle Barrel
1	06816	Carburetor O-ring
1	06820	Detent Spring
1	06823	Idle Stop Screw
1	06824	Idle Stop Screw Spring
1	06827	Carburetor Body
1	06828	Fuel Nipple
1	06850	Needle Valve

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PARTS BREAK DOWN



Complete Carburetor Assembly - 06801