



**Important:** Please read through this manual thoroughly before operating your engine.

Thank you for purchasing the AquaCraft PRO .15 BB ABC engine. This engine is designed only for use with model boats. This manual contains the instructions you need to safely operate and maintain your AquaCraft engine. Like all model engines, care must be taken in operation as severe injury can result from improper or careless use.

## REPAIR SERVICE

Repair service is available anytime.

After the 90-day warranty, you can still have your engine repaired for a small charge by the experts at AquaCraft's authorized repair facility, **Hobby Services**, at the address listed on the back cover of this manual.

To speed up the repair process, please follow the instructions below.

1. Under all circumstances return the **ENTIRE** engine.
2. Send written instructions that include a **THOROUGH** explanation of the problem, the service needed and your phone number during the day. If you expect the repair to be covered under warranty, be sure to include a proof-of-purchase date (your store receipt or purchase invoice).
3. Also be sure to send your full return address.

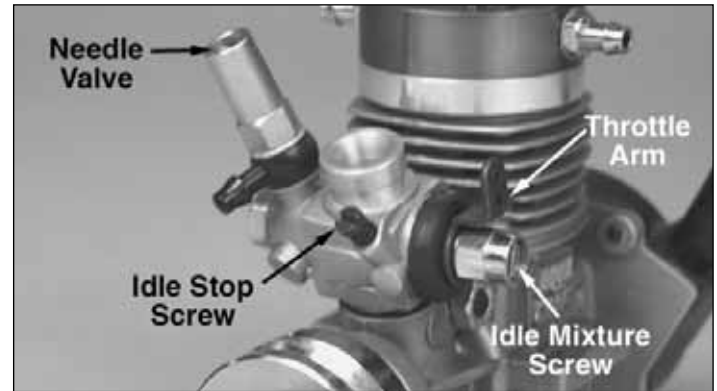
## WARRANTY

- AquaCraft will warrant this engine for 90 days after the purchase from defects in materials or workmanship. AquaCraft will either repair or replace, at no charge, the incorrectly made part.
- Make sure you save the receipt or invoice you were given when you bought your engine! It is your proof of purchase and we must see it before we can honor the warranty.
- To return your .15 BB Marine ABC for repairs covered under warranty you should send it to:

Hobby Services  
3002 N Apollo Drive Suite 1  
Champaign, IL 61822  
Attn: Service Department

Phone: (217) 398-0007 9:00 am - 5:00 pm Central Time M-F  
E-mail: [hobbyservices@hobbico.com](mailto:hobbyservices@hobbico.com)

## CARBURETOR



**Needle Valve:** The needle valve controls the ratio of fuel to air as it enters the carburetor.

**Idle Mixture Screw:** The idle mixture screw controls the ratio of fuel to air at idle.

**Idle Stop Screw:** The idle stop screw adjusts how far the throttle closes. It should be set to allow the throttle to close completely. This will allow you to stop the engine using the throttle trim on your transmitter.

**Throttle Arm:** This is the arm that is connected to the carburetor barrel and is operated by the throttle servo. As the carburetor barrel opens, the power of the engine increases. Power is decreased as it closes.

## RECOMMENDED FUELS

It is important to use only fuels that are specifically designed for use with model engines. The AquaCraft Pro .15 BB ABC engine will run best on fuel with a 5% to 15% nitromethane content containing castor oil or a castor-synthetic blend. The engine can overheat or will not get hot enough for the cylinder to expand properly if the fuel type is incorrect.

**Important: Do not use model fuels with 100% synthetic oil.**

## MUFFLER INSTALLATION

Attach the exhaust manifold and muffler (not included) by threading the two muffler screws (not included) through the crankcase and into the manifold. Tighten the screws firmly, being careful not to strip the threads in the manifold.

## FUEL LINE INSTALLATION

Attach fuel tubing to the fuel nipples on your fuel tank and route them directly to their assigned destinations. Use a minimum of tubing but be careful not to crimp the lines.

### Pressure Line

The carburetor of your model engine requires consistent fuel pressure when running. Pressure is created in the muffler by the exhaust. Some of the pressure is used to pressurize the fuel tank. Attach a piece of fuel tubing from the pressure fitting on the muffler to the vent tube in the fuel tank. This will help to maintain more consistent fuel flow during running.

### Fuel Line

Connect a medium size silicone fuel line from the fuel inlet on the carburetor to the pick-up tube that is connected to the fuel tank. This is the line that feeds fuel into your engine.

### **Water Cooling Lines**

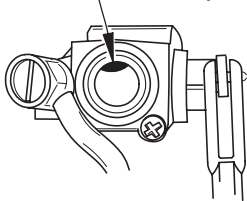
Connect the boat's water-cooling lines to the cylinder head using medium silicone fuel tubing. It is important to make sure that the water-cooling lines are unobstructed and allow water to flow directly through the cylinder head. Once again, use a minimum of tubing and be careful not to crimp the lines.

## **STARTING THE ENGINE**

### **There are Several Simple Steps to Starting the Engine**

1. Install a glow plug. The glow plug threads into the top of the cylinder head. We recommend the O.S.<sup>®</sup> #8 glow plug (OSMG2691).
2. Fill the tank almost to the top. Leave a little air at the top of the tank.
3. Open the high-speed needle valve 2-1/2 turns out from fully closed (**counterclockwise**) from fully closed. The high-speed needle is sticking out the left side of the engine (looking at it from behind the prop). If you have previously run the engine, keep the same needle valve setting that you used on your last run.
4. Prime the engine by lightly pulling the recoil handle with the intake choked. Stop when you see the fuel reach the carburetor. This will take approximately 2-3 pulls. **DO NOT ENERGIZE THE GLOW PLUG DURING THIS STEP.** The quantity of fuel drawn into the engine by priming is an important factor in starting the engine successfully.
5. Secure the glow starter onto the engine's glow plug.

Carburetor 1/8th open



6. Check that the throttle is 1/8 open from the fully closed position. Pull the recoil handle in quick strokes until the engine fires. **If you pull the recoil handle beyond 12-15 inches, you will damage your engine.** Repeat, if necessary. After 10 pulls, if the engine fails to start there is a chance that there may not be enough fuel in the engine. Remove the glow starter and repeat step 4. If the recoil becomes difficult to pull, the engine has become flooded. If this occurs, simply remove the glow plug and turn the engine upside down. Pull the recoil handle 2-3 times and the excess fuel will drain out. Re-install the glow plug, re-attach the glow starter, and try starting the engine again.
7. Once started, remove the glow starter after 10-15 seconds.

## **BREAKING IN THE ENGINE**

To insure long life and good performance from your AquaCraft Pro .15 engine, you **MUST** break-in the engine. The break-in period is critical for long life of the internal parts of the engine. This should be done over the first 5 or 6 tanks of fuel.

### **Some Things to Remember During Break-In**

1. Use the same fuel that you will use for normal running.
2. Resist the urge to accelerate and decelerate quickly.
3. Break-in puts stress on the glow plug and you can burn it out during break-in. Make sure you have an extra plug or two on hand.

### **The First Tank**

Your first tank of fuel should be running the engine at a very rich high-speed needle valve setting. This allows the fuel to carry as much oil as possible into the engine to lubricate the internal parts during the break-in.

1. Open the needle valve 2-1/2 turns out from fully closed (**counterclockwise**). This is factory set already, but check it to make sure. When closing the high-speed needle, close the needle until you feel some resistance. **DO NOT** over tighten or you will damage the engine.
2. Start the engine.
3. Once the engine is started, open the high-speed needle valve around 1/8 turn at a time, finding the setting where the engine just barely runs. This may take a few times adjusting the needle. The engine will perform sluggishly and stall from time to time - this is normal during the break-in process.
4. Place the boat in the water and run the engine at a medium speed, periodically accelerating and decelerating. **Do not give the engine full throttle at this time.**
5. Continue running the engine until the tank is almost out of fuel. Do not allow the engine to run out of fuel. This leans out the engine and can cause overheating.

### **Tanks 2-6**

Turn in the needle valve (clockwise) around 1/8 turn each tank from the previous setting. You should notice that the engine performs better during each run. After the 6th tank, you should be near to the peak performance of the engine.

### **Adjusting the Idle**

From time to time you will have to make adjustments to keep your engine running smoothly. Factors such as humidity, altitude, and temperature will all affect engine performance. If your engine will not idle smoothly, try adjusting the idle mixture screw. Start the engine and let it run at idle. Pinch the fuel line. If the engine speeds up, the mixture is too rich. Stop the engine and turn the idle mixture screw clockwise 1/8 of a turn. Repeat this process until there is no change when pinching the fuel line.

If the engine slows down when pinching the fuel line, the mixture is set too lean. Richen the idle mixture screw 1/8 turn counterclockwise. Once again, repeat this process until there is no change when pinching the fuel line.

### **How to Stop Your Engine**

Just as squeezing the throttle trigger on your transmitter increases power, pushing the trigger the opposite way decreases power. Pushing the throttle trigger forward should close off the throat of the carburetor completely, cutting off air intake and stopping the engine.

If you are using a stick type transmitter, set the throttle trim so that you can stop the engine by moving the throttle trim lever down to close off the carburetor.

If the above methods fail, simply pinch the fuel line leading to the carburetor. This will keep the engine from getting fuel and the engine will stop.

## ENGINE MAINTENANCE

### *Ways to Ensure a Long Life for Your Engine.*

1. Keep your engine clean. Dirt will act as insulation on an engine. It will not be able to shed heat as easily.
2. Do not over-lean your engine.
3. Make sure that there is good water flow through the cylinder head.
4. Do not over heat the engine. This goes along with keeping it clean, not over-leaning the engine, and periodically checking the water-cooling lines.
5. Do not use a fuel with low oil content. Make sure that you use a fuel from a reputable manufacturer that is labeled as model engine fuel.
6. Avoid using old fuels in the engine. Always run all of the fuel out of the engine. After running for the day, use after-run oil and work it into the engine by pulling the recoil starter 3-4 times.
7. Do not use a fuel with a nitromethane (often called nitro) content over 20%.
8. Do not use silicone sealer on the engine joints. Silicone sealer contains acetic acid, which is corrosive if it gets inside your engine.
9. Store your engine someplace where it will not be subjected to extreme temperature changes.

### ***Glow Plug***

The glow plug is an item that will wear out and need replacement from time to time. It is a good idea to remove the glow plug before your first run, heat it and see how well it glows. You should see a bright orange glow from the filament. If a coil or two will not glow or the plug will not glow at all, replace the plug. If the engine quits when you remove the glow starter, the plug might need to be changed, although this may be because you are running too rich and need to screw in your high-speed needle some. Look at the glow plug when you are running the engine. If you see some bubbles coming from around the plug, replace the glow plug (copper) gasket, or both the plug and the gasket. Make sure you have a spare plug or two on hand every time you run the AquaCraft Pro .15.

### ***Fuel Storage***

Fuel can go bad. The main ingredient in model fuel is methanol, which is basically a form of alcohol. Alcohols can absorb water out of the air, so keep your fuel jug capped at all times. Store your fuel out of the sunlight and in a cool place. Bad fuel is one of the most difficult problems to diagnose in engines. If you have tried everything you can think of to remedy an engine that is not running correctly, try using some fresh fuel.

### ***Fuel Line***

Fuel line is susceptible to pinhole leaks. You cannot see the hole in the fuel line, but if you see bubbles in the line going to the carburetor, replace the fuel line. Another symptom of a leak in the fuel line is a surging engine. The properly tuned engine will surge when the air bubbles enter the carburetor. It is basically leaning out the mixture.

### ***Overheating***

One of the worst things you can do to your engine is overheat it. The oils that lubricate the engine are carried in the fuel. If your engine is set too lean, there will not be enough oil in the engine to lubricate the internal parts and your engine will overheat. This will cause premature wear in the engine and cause damage.

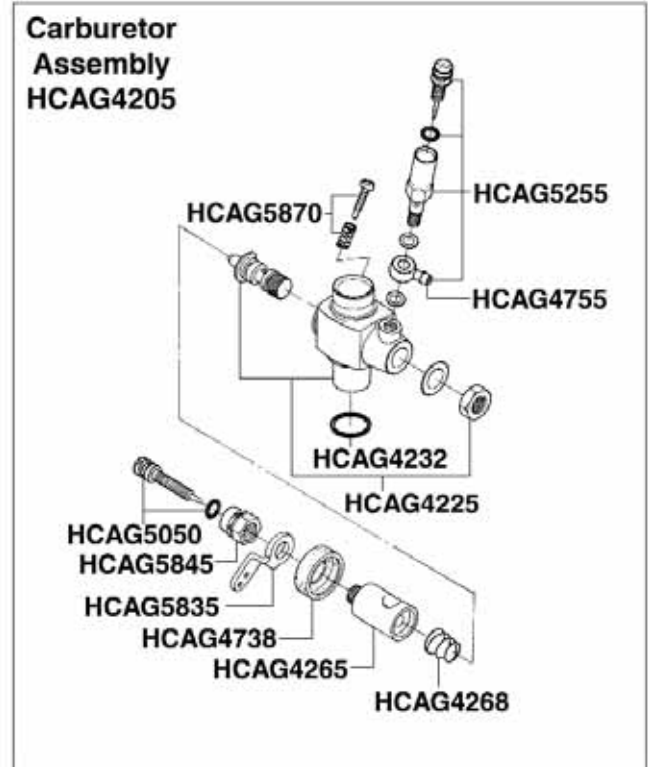
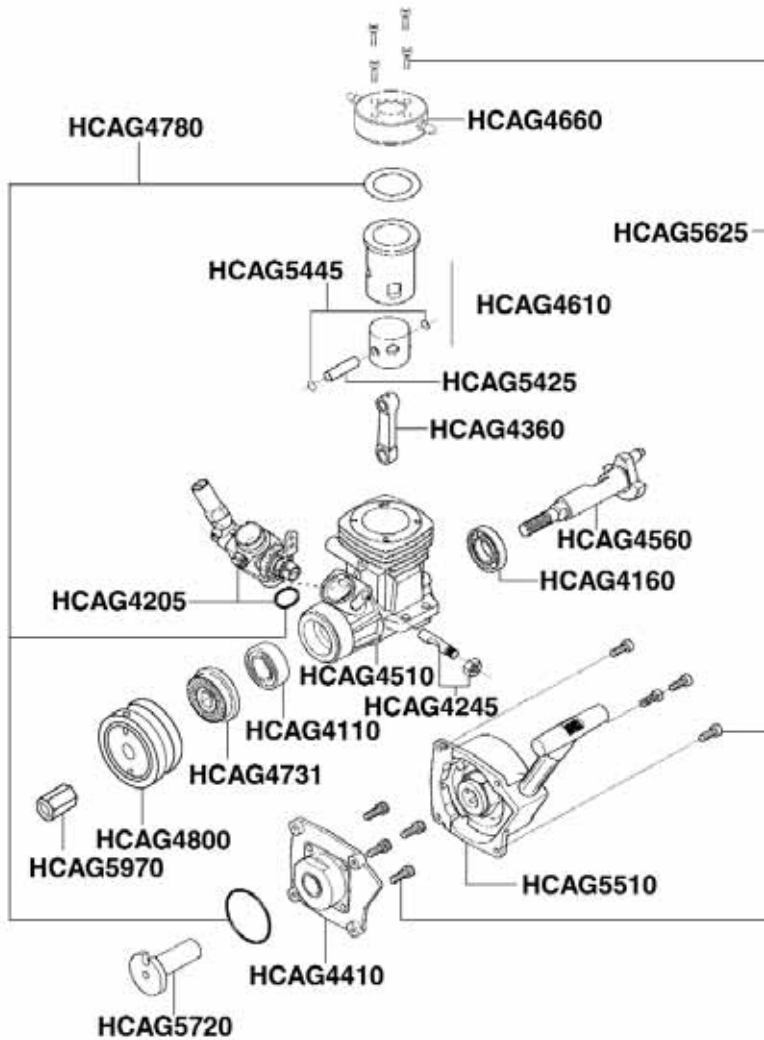
## SAFETY PRECAUTIONS

- Use care to avoid touching the propeller anytime the engine is running. Pay equally close attention to items such as loose clothing, shirtsleeves, ties, scarves, long hair or anything else that may become entangled in the spinning propeller. If your fingers, hands, etc. come in contact with the spinning propeller, you may be severely injured.
- Because of the speed and mass of R/C boats, they are capable of inflicting property damage and severe personal injury if a collision occurs. Never run this engine when the possibility of collision with people or property exists.
- R/C boats are controlled by radio signals, which are subject to possible interference from other R/C transmitters, paging systems or other electrical noise. Before turning your radio on, make sure no one else in the area is operating a radio on the same frequency (channel).
- A weakened or loose propeller may disintegrate or be thrown off. Since propeller tip speeds with powerful engines may exceed 600 feet per second, it must be understood that such a failure can result in serious injury.
- Model engine fuel is poisonous. Do not allow it to come into contact with the eyes or mouth. **Always store fuel in a clearly marked container and out of the reach of children.**
- Model engine fuel is highly flammable. Keep it away from open flame, excessive heat, sources of sparks, or anything else that might ignite it. **Do not smoke or allow anyone else to smoke** in close proximity to open fuel. Make sure that fuel lines are in good condition so that fuel will not leak onto a hot engine causing a fire.
- Never operate your engine in an enclosed space. Model engines, like automobile engines, exhaust deadly carbon monoxide. **Run your engine only in an open area.**
- Model engines generate considerable heat. Do not touch any part of your engine until it has cooled. Touching the muffler, cylinder head, or exhaust header may result in a serious burn.
- Use safety glasses when starting or running engines. The propeller may throw loose material such as sand or gravel into your face.

**If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this engine immediately in new and unused condition to the place of purchase.**

# Replacement Parts

(Available from your hobby dealer)



STOCK #	DESCRIPTION	STOCK #	DESCRIPTION
HCAG4110	Bearing (Front)	HCAG4800	Flywheel
HCAG4160	Bearing (Rear)	HCAG5050	Idle Needle w/ O-Ring
HCAG4205	Carburetor Assembly	HCAG5255	Needle Valve Assembly
HCAG4225	Carb Body w/ Spray Bar	HCAG5425	Piston Pin
HCAG4232	Carb O-Ring	HCAG5445	Piston Pin Retainer (2)
HCAG4245	Carb Retainer w/ Nut	HCAG5510	Recoil Starter Assembly
HCAG4265	Carburetor Rotor (Barrel)	HCAG5625	Screw Set (Head & Coverplate)
HCAG4268	Carb Rotor Spring	HCAG5720	Start Shaft
HCAG4360	Connecting Rod	HCAG5835	Throttle Arm
HCAG4410	Coverplate / Adapter	HCAG5845	Throttle Arm Nut
HCAG4510	Crankcase	HCAG5870	Throttle Stop Screw w/ Spring
HCAG4560	Crankshaft	HCAG5970	Universal Joint Assembly
HCAG4610	Cylinder and Piston Set		
HCAG4660	Cylinder Head (Water Cool)	<b>Optional (not pictured):</b>	
HCAG4731	Drive Washer	HCAG5100	Manifold w/ Coupler
HCAG4738	Dust Cover / Carb Boot	HCAG5910	Tuned Pipe Set (Complete)
HCAG4755	Fuel Inlet Nipple w/ Gasket	HCAG5915	Tuned Pipe
HCAG4780	Gasket Set (4)	HCAG4735	Exhaust Coupler w/ Straps