

# SH .21 XB AND XB-1 PRO COMPETITION OFF-ROAD ENGINE OPERATING INSTRUCTIONS



P/N PT2008-XB  
P/N PT2008-XB-1

Displacement.....	3.497cc
Bore.....	16.27mm
Stroke.....	16.75mm
Maximum RPM.....	38,000rpm
Power.....	2.8hp@38,000rpm
Weight.....	464gr

- Ceramic Piston (XB) with 8-Port Chrome-Plated Brass Sleeve (Liner)
- Aluminium Piston (XB-1) with 8-Port Chrome-Plated Brass Sleeve (Liner)
- Dual Ball Bearing-Supported Crankshaft and Dual Bushing-Supported Connecting Rod
- Three-Needle Slide Carburettor and Heat-Dissipating Cylinder Head
- 7.5mm and 8.5mm Carburettor Intake Restrictors

## INTRODUCTION

Thank you for choosing the SH .21 XB/XB-1 PRO Competition Off-Road engine. All SH engines are designed for high power output and easy handling.

The SH .21 XB/XB-1 PRO Competition Off-Road engines are designed specifically for 1/8th scale off-road racing and feature competition-grade aluminium-alloy parts, a ceramic piston (XB) / Aluminium piston (XB-1) with 8-port chrome-plated brass sleeve (liner), dual ball bearing-supported crankshaft, three-needle slide carburettor with 7.5mm and 8.5mm intake restrictors, heat-dissipating cylinder head and superb attention to detail and quality. All SH engines are manufactured using CNC manufacturing equipment to ensure every engine is produced to the exacting quality that you would expect from an engine of this caliber. SH engines offer the best in reliability, power and cost.

## BECOMING FAMILIAR WITH YOUR ENGINE

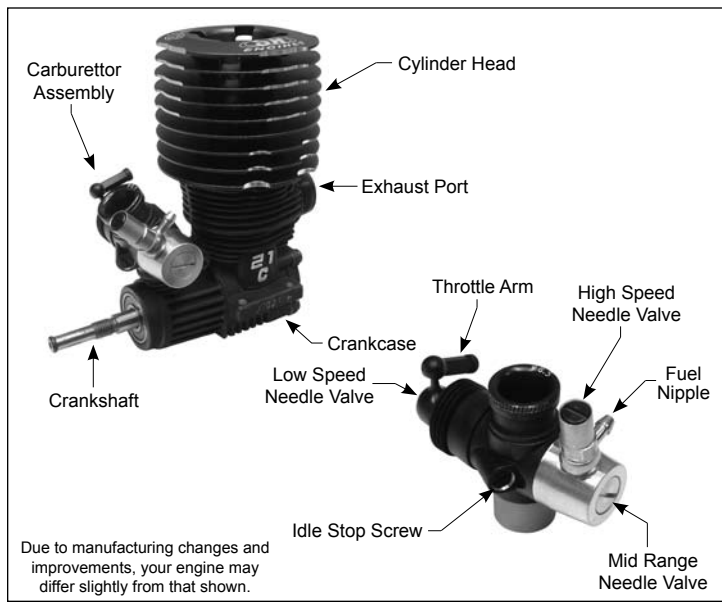
Please read through these operating instructions in their entirety to familiarise yourself with the features and operation of your new SH .21 XB/XB-1 PRO Competition Off-Road engine.

Should you encounter any problems with your engine, we have included a separate Troubleshooting Guide with these Operating Instructions to help you solve them. Please use the photos below to familiarise yourself with the components of your new SH engine.

## CAUTION - PLEASE READ BEFORE USE!

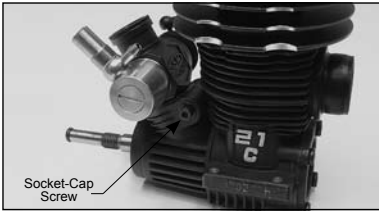
SH engines will consistently give you dependable performance and reliability and will be a source of satisfaction and pleasure if you follow these instructions as to the engine's proper and safe use. You alone are responsible for the safe operation of your engine, so act sensibly and with care at all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

- Never use any fuel in your engine other than glow fuels specifically designed for use in model car/buggy engines. Use of any other types of fuel can cause severe damage to the engine and/or personal injury.  
**NEVER USE GASOLINE/PETROL OR DIESEL FUEL!**
- Never operate your model on any public streets. This could cause traffic accidents, personal injury or property damage.
- Before starting the engine, make sure that the throttle trim is set to the idle position. Starting the engine at any setting above idle can cause the model to lurch out of your hands.
- When the engine is running, there are certain parts that rotate at high speeds. Be careful not to touch the drive shafts, gears, clutch assembly or other moving parts. Serious injury could result.
- It is normal for the engine to get very hot during operation, especially the cylinder head and exhaust system. Never touch the engine or exhaust system while they are hot.
- Model car engines produce vibration when they are running. It is important to periodically check the engine mounting screws, exhaust mounting screws and other assemblies to ensure they are tight. Running the engine with the engine mounting screws loose can lead to severe engine and/or chassis damage.
- Glow fuel engines emit exhaust vapors that are poisonous and can be dangerous to your health. It is important that you operate your engine in a very well-ventilated area, preferably outdoors.
- Glow fuels, like those used in your model engine, are poisonous. Follow all the precautions that are printed on the fuel manufacturer's container.
- Keep glow fuels out of the reach of children.
- Glow fuels are extremely flammable. Keep glow fuels away from high heat, sparks, and flame.



## CARBURETTOR INSTALLATION

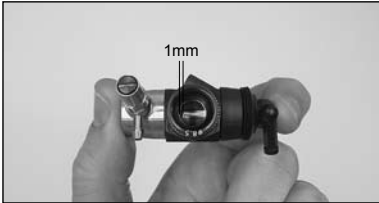
The carburettor is held in place using the pinch sleeve and socket-cap screw installed in the crankcase. Slide the base of the carburettor into the crankcase, being careful to keep the carburettor perpendicular to the front of the engine. With your thumb, push down on the carburettor firmly so the base of the carburettor fits completely into the crankcase and the carburettor O-ring seals the gap between the two parts. While holding the carburettor in place, GENTLY tighten the socket-cap screw with a 2mm hex wrench to draw the pinch sleeve into place.



**WARNING** The socket-cap screw only needs to be tightened enough to keep the carburettor from turning in the crankcase. Overtightening the socket-cap screw can cause severe damage to the base of the carburettor.

## IDLE STOP SCREW

The idle stop screw adjusts the closure of the carburettor barrel. The idle stop screw should be adjusted so that the carburettor barrel stays open about 1/16" (1mm). Turning the idle stop screw clockwise will cause the carburettor barrel to stay open more. Turning the idle stop screw counterclockwise will allow the carburettor barrel to close more. If the carburettor barrel stays open too far, the engine will idle very high and your vehicle's clutch will never disengage. If the idle stop screw is closed too far, the engine may die during idle or when you engage your vehicle's brakes. Ideally, the engine should idle smoothly, yet slow enough so that the clutch stays disengaged.



## EXHAUST SYSTEM

The engine does not include an exhaust system. The exhaust system is typically designed for the particular car, truck or buggy that you have and is generally included with your kit. The engine is designed to be used with a tuned pipe. To extract optimal power and performance from your engine, we strongly suggest the use of a 1/8th scale tuned pipe designed for the powerband that you desire. The engine uses a standard 1/8th scale round slip-on header held in place with a spring around the cylinder head.



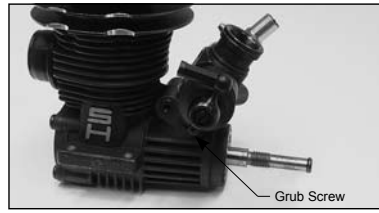
## CARBURETTOR INTAKE RESTRICTORS

The engine features intake restrictors that you can use to fine-tune the power output of the engine. The engine comes stock with an 8.5mm restrictor already installed in the carburettor. A 7.5mm restrictor is included separately. To change the restrictor, remove the restrictor by firmly twisting and pulling it out of the carburettor. Apply a light coat of after-run oil to the o-rings on the new restrictor, then firmly push it into the carburettor. **Do not run the engine without a restrictor in place.**



## THROTTLE ARM POSITION

The throttle arm angle can be adjusted to better suit your particular vehicle's throttle linkage setup. Using a 1.5mm hex wrench, loosen the grub screw at the base of the throttle arm, then adjust the angle of the throttle arm either forward or backward and firmly tighten the grub screw.



## FUEL AND GLOW PLUG RECOMMENDATIONS

### Fuel Recommendation

For the break-in period you should use a fuel specifically designed for R/C car engines that contains no more than 20% nitromethane and 10%~14% oil content. Once the engine has been adequately broken in (about 45~60 minutes of run-time) you can switch to an R/C car fuel containing up to, but no more than, 30% nitromethane and 10%~14% oil content. We recommend using XTM Racing or Trinity Monster Horsepower fuel.

**WARNING** We do not recommend using fuels designed for R/C airplane engine use. These fuels do not contain the proper amount of lubricants; therefore, they will cause the engine to overheat or run erratically and severe damage to the engine can result.

### Glow Plug Recommendation

The glow plug can make a big difference in how your engine performs. For both the break-in period and normal use, we recommend using a "cold" or "medium" heat-range glow plug intended specifically for performance engines like the SH Engines # 5 or the SH Engines # 4. After the break-in period you may want to use a different heat-range glow plug. If the engine has a hard time idling, you may want to use a hotter glow plug, like the SH Engines # 3.

**WARNING** Do not use glow plugs intended for four stroke airplane engines or glow plugs with an "idle bar". Using the wrong type of glow plug will cause the engine to run erratically and make it difficult to tune properly. The wrong type of glow plug could also damage the engine.

## WARNING ABOUT HYDRO-LOCKING

If at any time the engine becomes difficult to turn over - STOP! The engine has become flooded (hydro-locked) and the excess fuel must be removed or damage to the engine could occur. To remove the excess fuel from the engine follow the steps listed below:

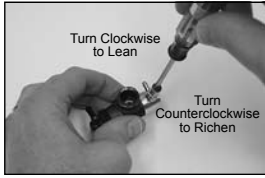
- Completely close the high speed needle valve (turn clockwise) until it bottoms out. **Do this gently. Don't force it!**
- Remove the glow plug from the cylinder head.
- With a rag over the top of the engine, turn over the engine using your starter box to expel the excess fuel from the engine.
- Make sure that the glow plug has not been fouled, then reinstall it.
- Reset the high speed needle valve (turn counterclockwise) 3 full turns out from bottom (fully closed).

**IMPORTANT** After running the engine for the day, turn the crankshaft so that the piston is at bottom dead center. If you leave the piston at top dead center, the piston may lock in place when the engine cools down.

## HIGH SPEED, MID RANGE AND LOW SPEED NEEDLE VALVES

### High Speed Needle Valve

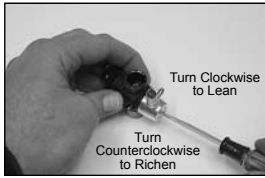
The high speed needle valve is preset from the factory for the initial starting procedure. **Do not make adjustments to it at this time.** The high speed needle valve is used to meter the air/fuel mixture at full throttle. Turn the needle valve clockwise to lean the mixture or turn the needle valve counterclockwise to richen the mixture.



**Check to ensure that the high speed needle valve is set at 3 full turns out from the closed position for the break-in process.**

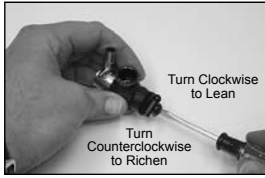
### Mid Range Needle Valve

The mid range needle valve is preset from the factory for the initial starting procedure and normal use, and is used fine-tune the air/fuel mid range mixture. Turn the needle valve clockwise to lean the mixture or turn the needle valve counterclockwise to richen the mixture. **Do not make adjustments to the mid range needle valve until after tuning both the high and low speed needle valves, and until AFTER the engine has been broken in.**



### Low Speed Needle Valve

The low speed needle valve is preset from the factory for the initial starting procedure. **Do not make adjustments to it at this time.** The low speed needle valve meters the air/fuel mixture at idle and during transition from idle to full throttle. Turn the needle valve clockwise to lean the mixture or turn the needle valve counterclockwise to richen the mixture. The low speed needle valve is preset from the factory, but minor adjustments may need to be made to suit your application: fuel used, glow plug and environment all contribute to the setting.



**Do not adjust the low speed needle valve until AFTER the engine has been broken in.**

## RESETTING THE NEEDLE VALVES TO THE FACTORY SETTINGS

There may come a time when you get the needle valve settings out of spec, resulting in poor engine performance or not even being able to start the engine at all. If this occurs, reset the high speed, mid range and low speed needle valves to their factory settings as described below:

### Resetting the High Speed Needle Valve

- Gently turn the high speed needle valve clockwise until it bottoms out (fully closed). **Do not force it or you may damage the carburettor.**
- Turn the high speed needle valve counterclockwise (open) **3 full turns.**

### Resetting the Mid Range Needle Valve

- The mid range needle valve should be flush with the carburettor housing.

### Resetting the Low Speed Needle Valve

- Open the carburettor barrel completely.
- While holding the carburettor barrel open with your fingers, use a flat blade screwdriver to gently turn the low speed needle valve clockwise until it bottoms out (fully closed). **Do not force it or you may damage the carburettor.** From this point, turn the low speed needle valve counterclockwise **3 full turns.**

## STARTING PROCEDURE

**IMPORTANT** We recommend using a 1/8th scale starting box to start your engine. We strongly suggest reading the operating instructions that are included with your starter box before attempting to start the engine. This will ensure that you are familiar with how to use your starter box properly, so you don't damage your starter box or your engine.

- ❑ If your vehicle's fuel tank has a primer pump, press this pump several times to draw fuel to the carburettor. When the fuel reaches the carburettor, stop priming. Over-priming the engine can cause the engine to "hydro-lock".

**Never try to start the engine if it is hydro-locked. This could cause serious damage to the engine.**

- ❑ If your fuel tank does not have a primer pump, fuel will be drawn into the carburettor when you turn the engine's crankshaft using your starter box.

- ❑ The engine is started by connecting the power to the glow plug then turning the crankshaft, using your starter box, until the engine starts. Once the engine has started, your vehicle can be removed from the starter box.

**PRO TIP** When the engine is new, it can sometimes be difficult to turn over and may cause your starter box to slip. A trick to help this is to loosen the glow plug slightly, start the engine, then remove the glow starter and retighten the glow plug. This effectively lessens the engine's compression, making it easier to turn over the engine.

## BREAK-IN PROCEDURE

The SH .21 XB PRO Competition Off-Road engine features a ceramic piston (XB-1 features an aluminium piston) and a chrome-plated brass sleeve (liner). The cylinder sleeve (liner) is tapered at the top, causing resistance when the piston moves through the top of the stroke. This is normal. When the engine heats up to operating temperature, this resistance will decrease and the proper clearance will be achieved. The break-in procedure will guide you through the steps necessary to properly break in your new engine. Please follow the steps closely.

**Breaking in an engine with a ceramic piston is the same as breaking in a standard ABC engine, except that the break-in period may take a little longer.**

### DO NOT OMIT THE ENGINE BREAK-IN PROCEDURE!

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 good quality R/C car fuel that contains no more than 20% nitromethane and 10%~14% oil content.**



To make sure that you're not leaning out the engine too much and overheating it during break-in and under normal use, we suggest using a temp gun to monitor the engine's temperature.

**During break-in, engine temperature should not exceed 280°F (138°C). The optimum engine operating temperature is 230°~260°F (110°~127°C). The minimum engine operating temperature is 180°F (82°C).**

- ❑ Follow the Starting Procedure to start the engine.
- ❑ Once the engine starts, keep the glow starter attached to the glow plug and let the engine run for about 10 seconds without giving it throttle. This will allow the engine to warm up. At this point the engine should be running very "rich" and the engine will also sound like it's running rough.



❑ After the engine has been running for about 10 seconds, remove the glow starter from the glow plug. Advance the throttle in short, quick bursts and drive your vehicle for about 2~3 minutes. If the engine is running rich enough, you should notice smoke coming from the tuned pipe and the engine should sound like it's running very rough. Also, your vehicle will barely be moving because the engine is running so rich that it won't produce much power. This is what you want for now. If there is not smoke coming from the tuned pipe, richen the high speed needle valve 1/4 turn (turn counterclockwise). After 2~3 minutes stop the engine by pinching the fuel line to the carburettor.

❑ Let the engine cool for approximately 10 minutes, then restart it. Set the high speed needle valve mixture to a slightly leaner setting, about 1/8 turn more in (turn clockwise). Repeat the procedure above, advancing the throttle in short, quick bursts and driving your vehicle for about 2~3 minutes, then stop the engine again and let it cool for approximately 10 minutes.

❑ Repeat the procedure above, leaning the high speed needle valve about 1/8 turn more each time. In all, you should run the engine a total of about 45~60 minutes. After 45~60 minutes of run-time the engine will be broken in. Run the engine with the high speed needle valve set slightly rich, but lean enough to power your vehicle adequately. At this point the engine should hold a good setting on the high speed needle valve and you can begin to fine tune the needle valve settings to increase performance.

**IMPORTANT** It is of the utmost importance that the engine never be leaned out too much. When running the engine, you should always be able to see a faint trail of smoke coming from the tuned pipe. If you can't, stop the engine immediately and richen the high speed needle valve (turn counterclockwise). You should also make sure there is plenty of air flowing over the cylinder head to keep the engine from overheating.

### **FINE-TUNING YOUR ENGINE**

After your engine has been broken in, you can set the high speed, low speed, and mid-range needle valves for optimum engine performance.

**WARNING** Be careful to never lean out the engine 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**

❑ Start the engine and remove the glow starter from the glow plug, then allow the engine to warm up for about 10 seconds.

❑ After the engine has warmed up, drive your vehicle as you normally would. If the engine seems to be running rich (i.e., not reaching maximum power), lean the high speed needle valve about 1/16 of a turn (turn clockwise) at a time until the desired setting is achieved. Always make sure that you run the engine slightly rich - you want to be able to see a faint exhaust trail at all times.

**IMPORTANT** To get more power from your engine you can use fuel containing up to 30% nitromethane. We must caution you though, that once you run the engine with increased nitro you may not get satisfactory results if you decide to go back to a lower nitro content.

#### **Setting the Low Speed Needle Valve**

❑ Start the engine and adjust the high speed needle valve as per the procedures above. Close the throttle until the engine slows down enough so that your vehicle's clutch is disengaged and the wheels don't turn when your vehicle is lifted from the ground. Allow the engine to idle for about 10~15 seconds.

❑ While holding your vehicle off the ground (making sure to keep your fingers away from the moving parts), quickly open the throttle in a short burst. If the engine just stops running as soon as the throttle is advanced, the low speed needle valve is too lean and the engine is not getting enough fuel. With the engine stopped, richen the low speed needle valve about 1/16 of a turn (turn counterclockwise).

❑ Restart the engine and repeat the procedure above until the engine will transition smoothly and quickly. Very slight hesitation in the transition is normal.

❑ If you quickly advance the throttle and the engine seems to be very rich during transition (i.e., lots of smoke coming from the tuned pipe and very rough sounding), the low speed needle valve is too rich and the engine is getting too much fuel. With the engine stopped, lean the low speed needle valve about 1/16 of a turn (turn clockwise).

❑ Restart the engine and repeat the procedure above until the engine will transition smoothly and quickly. Very slight hesitation in the transition is normal.

#### **Setting the Mid Range Needle Valve**

❑ Start the engine and adjust the high and low speed needle valves as per the previous procedures. Turn the mid range needle valve in no more than 1/8th of turn increments to adjust the engine's mid range transition. If the engine's mid range is rich, lean the mid range needle valve. If the engine's mid range is lean, richen the mid range needle valve. **Do not adjust the mid range needle valve until after both the high and low speed needle valves are properly adjusted.**

❑ Now drive your vehicle as you normally would for a while to get a feel for how the engine reacts to throttle. Now that you know the proper way to tune the engine, you can make slight adjustments to the carburettor until you are satisfied with the performance.

**IMPORTANT** We suggest using a temp gun to frequently check the operating temperature of your engine during use. The optimal operating temperature is between 230° and 260°F (110°~127°C). Do not let the engine exceed 280°F (138°C). If the engine exceeds 280°F (138°C), stop the engine immediately and re-tune the carburettor to a richer setting.

### **ENGINE MAINTENANCE AND SERVICE INFORMATION**

- After you are finished running the engine for the day, pinch the fuel line to stop the engine. This will allow the engine to burn any excess fuel out of the crankcase. Remove the glow plug from the engine and squirt several drops of after-run oil into the glow plug hole and the carburettor opening. Turn the crankshaft several times to distribute the oil throughout the engine, then reinstall the glow plug and copper washer. The after-run oil will prevent the inside of the engine (especially the crankshaft bearings) from rusting.
- Check the engine's cylinder head bolts and backplate screws after each day of use to ensure that they're tight. This will prevent air leaks from causing erratic engine performance.
- After running the engine for the day, turn the crankshaft so that the piston is at bottom dead centre. If you leave the piston at top dead center, the piston may lock in place when the engine cools down.

**A Replacement Parts List, Troubleshooting Guide, and Warranty Information can be found on the separate sheet packaged with your new engine. For service and support in North America only, please contact us using the information below:**

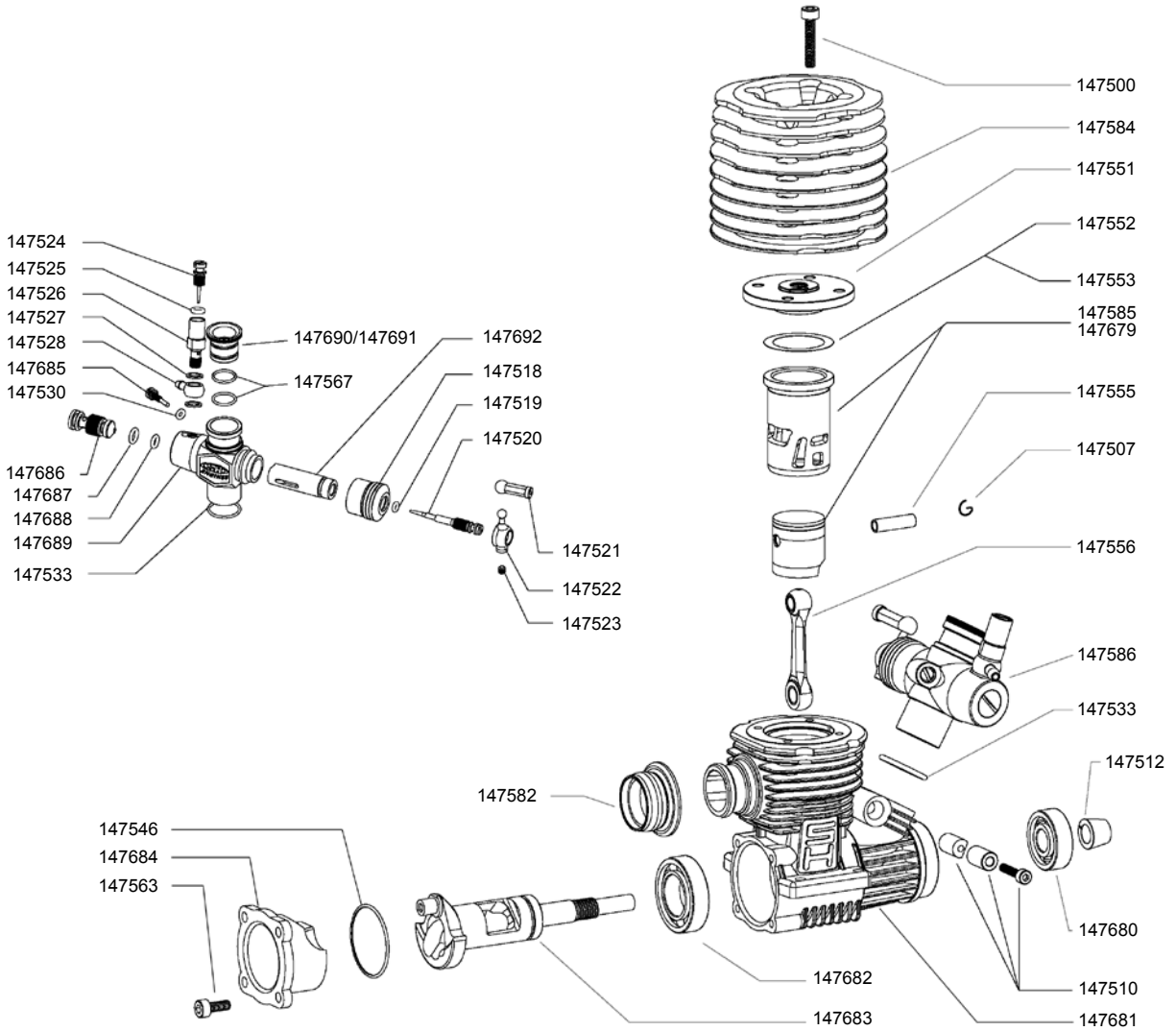
#### **In North America:**

**Global Services**  
**18480 Bandilier Circle**  
**Fountain Valley, CA 92708**  
**Phone: (714) 963-0329**  
**Fax: (714) 964-6236**  
**Email: [service@globalhobby.net](mailto:service@globalhobby.net)**



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# SH .21 XB AND XB-1 PRO COMPETITION OFF-ROAD ENGINE EXPLODED PARTS VIEW AND PARTS LIST



ORDER #	REFERENCE #	DESCRIPTION
147500	TE001	Cylinder Head Screw Set (4)
147507	TE0050	Wrist Pin Clips (2)
147510	TE012A	Carburettor Retaining Bolt Assembly
147512	TE011	Flywheel Collet
147518	TE9004A	Carburettor Barrel Dust Boot
147519	TE9003	Idle Needle Valve O-Ring
147520	TE9007	Idle Needle Valve
147521	TE9018	Throttle Ball Cup
147522	TE9005	Throttle Arm (Ball Link)
147523	TE9016	Throttle Arm Grub Screw
147524	TE9011	High Speed Needle Valve
147525	TE9012	High Speed Needle Valve O-Ring
147526	TE9013	High Speed Needle Valve Mounting Seat
147527	TE9014	Needle Valve Seat Washers
147528	TE9015	Fuel Nipple
147530	TE9009	Idle Stop Screw O-Ring
147533	TE010A	Carburettor Base O-Ring
147546	TE12228	Backplate O-Ring
147551	TE003C	Head Button
147552	TE004A	Head Gasket - 0.10mm
147553	TE004B	Head Gasket - 0.20mm
147555	TE006	Wrist Pin

ORDER #	REFERENCE #	DESCRIPTION
147556	TE008D	Connecting Rod
147563	TE023	Backplate Screw Set
147567	TE9006	Carburetor Restrictor O-Ring
147582	TE020A	Exhaust Header Gasket
147584	TE2002M-4	Cylinder Head
147585	TE2031IA	Piston and Sleeve Set (Aluminium)
147586	TE2009A	Carburettor Assembly - 3-Needle Slide
147679	TE2031HA	Piston and Sleeve Set (Ceramic)
147680	TE015B	Front Ball Bearing
147681	TE2019A	Crankcase
147682	TE016D1	Rear Ball Bearing
147683	TE017L5	Crankshaft - SG
147684	TE022E-1	Backplate
147685	TE9010A	Idle Stop Screw
147686	TE9017G	Mid Range Needle Valve Only
147687	TE9022A	Mid Range Needle Valve O-Ring - Large
147688	TE9022B	Mid Range Needle Valve O-Ring - Small
147689	TE20901A	Carburettor Body Only
147690	TE9008AB1	Carburettor Intake Restrictor - 8.5mm
147691	TE9008AB3	Carburettor Intake Restrictor - 7.5mm
147692	TE9002C	Carburettor Barrel

## SH .21 XB AND XB-1 PRO COMPETITION OFF-ROAD ENGINE TROUBLESHOOTING GUIDE

This troubleshooting guide has been provided to help you diagnose and solve most problems that you may encounter with your SH engine. 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 using the information below.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
1) Engine does not start	A) Failed glow plug B) Glow Starter not charged and/or faulty C) Idle mixture screw set too lean D) Old or contaminated fuel E) Engine flooded with too much fuel F) Air leak in fuel system and/or engine	A) Replace glow plug with new one B) Fully charge glow starter and/or replace C) Reset idle mixture to factory setting (Pg 3) D) Replace with new fuel E) Remove glow plug and expel fuel from cylinder (Pg 2) F) 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) Idle mixture screw set too lean D) Fuel lines kinked E) Defective fuel tank	A) Replace fuel lines and/or tighten all engine bolts B) Reset high speed needle valve to factory setting (Pg 3) C) Reset idle mixture to factory setting (Pg 3) D) Check and straighten fuel lines E) Replace fuel tank
3) 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) Idle mixture set too lean E) Idle mixture set too rich F) Air leak in fuel system and/or engine	A) Replace with new recommended glow plug (Pg 2) B) Replace with new recommended fuel C) Reset high speed needle valve to leaner setting D) Set idle mixture richer E) Set idle mixture leaner F) Replace fuel lines and/or tighten all engine bolts
4) Engine overheats	A) Engine running too lean B) Body shell 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 body to allow air to enter and exit C) Use fuel recommended only for R/C cars D) Allow engine further break-in time
5) Engine vibrates excessively	A) Engine and/or engine mounts loose	A) Tighten all engine and engine mounting bolts
6) Engine does not idle down	A) Idle stop screw out of adjustment B) Engine has developed an air leak C) One or more carburettor O-ring damaged D) High speed needle valve set too lean	A) Adjust idle stop screw to factory setting (Pg 2) B) Check and tighten all engine screws C) Replace carburettor O-ring(s) D) Reset high speed needle valve to factory setting (Pg 3)

## WARRANTY AND SERVICE INFORMATION

Your SH engine is guaranteed to be free of workmanship and component error for a period of 90 days starting from the original time of purchase. Warranty claims must be accompanied by an itemized sales receipt that shows the purchase date. Do not return your engine to the place of purchase. They are not authorised or equipped to perform warranty work on SH engines. When requesting warranty service, please observe the following guidelines:

- Always send the complete engine, including the carburettor. The engine must be removed from the vehicle first. Do not send your vehicle along with the engine.
- Include a note detailing the problem or service you are requesting. Service cannot be provided without this information. Include your daytime phone number, shipping address and/or email address in the event we need more details pertaining to the service requested.
- If your engine is out of the warranty period you may request an estimate of services at the time you return your engine for service. An omission of this request implies permission for Global Services to service your engine at our discretion.
- Include a method of payment for any service charges.
- Send the engine to us by United Parcel Service, Federal Express or by Insured Mail. Postage is nonrefundable.
- Send your package to the address at right.

**In North America:**

**Global Services**  
**18480 Bandilier Circle**  
**Fountain Valley, CA 92708**



**Phone: (714) 963-0329**  
**Fax: (714) 964-6236**  
**Email: [service@globalhobby.net](mailto:service@globalhobby.net)**