

RCMAX 65 Installation and Operation

Congratulations, and thank you for purchasing your new RCMAX engine.

This is a high performance, two stroke engine which produces over five times the power of a standard largescale, RC car/buggy engine. Please be prepared for the transformation of your RC!!

Drive with care while you are getting used to this.

We strongly recommend fitting a remote kill switch to your engine, as should be the practice with all largescale cars. Most normal 1/5 scale kill switches, plug straight in place of the stock button provided.

Important Safety Note:

Because of the performance potential of this engine in a vehicle, such as the HPI Baja, it is necessary to operate the vehicle in a suitable, controlled environment. It should not be operated in a public space where people are engaged in other activities, such as a public park. Do not operate in an area where there are children playing, near pets or other animals. Do not operate on a public highway.

Loss of control of such a vehicle could result in serious injury to another person, family pet or other animal.

Be aware that the engine silencing is minimal so do not run the engine in an area where this could cause a nuisance. You and those around you should always use ear protection during operation.

Please note: All of the manufacturers safety instructions for the operation of the vehicle in which the engine is fitted, must be followed.

Fuel Safety Guidelines

Fuel is highly flammable. Never operate the vehicle near open flames. Do not smoke while handling fuel. Always operate the vehicle in a well ventilated area. Model car engines produce carbon monoxide fumes.



Installation in Losi 5ive-T

Installation in the Losi is pretty much the same as a standard engine with the exception of the expansion chamber. This is supplied with a bracket to attach to the rear differential housing. It is connected to the engine using an "O" ring sealed joint and a retaining spring. The 'O' ring is supplied fitted to the pipe. Just push the pipe over the exhaust stub, attach the spring, and bolt to the bracket.

Throttle/Carb/Intake

A Walbro WJ71 big bore carb is fitted as standard on the RCMAX 65. This carb has had the stock throttle shaft drilled and a quick release fitting added so that you can simply hook it up to your cars servo arm and adjust to suit.

An intake system is provided with your engine package which brings the air filter in line with the vents in the body so that clean fresh air is being used for optimal performance.

NOTE: See further sheet for more information on the carb and settings

Gearing

A higher ratio is required for the main drive gears. A 30 tooth pinion and 50 tooth spur gear should provide a good starting point. Suitable gears for the Losi are made by **Blackbone Racing** and available from us.

This ratio should give the car rapid acceleration and a reasonable top speed so it can be used in a reasonably sized space. Lots of other gear combinations are available, please just ask we carry stock of all the popular sizes.

Drivetrain

Because of the considerable extra performance of the engine it will be necessary to upgrade the drivetrain with heavy duty parts. We would recommend using heavy duty drive shafts, heavy duty billet diff housings as supplied by **7075RC** with the larger bearings and Billet diff casing such as the **RCMAX 7075 case**.

We also advise to use 1M weight oil or a locker in the centre, 500k in the rear and 300k oil in the front diff. In this way you will always have at least two wheels driving and a good spread of the power.



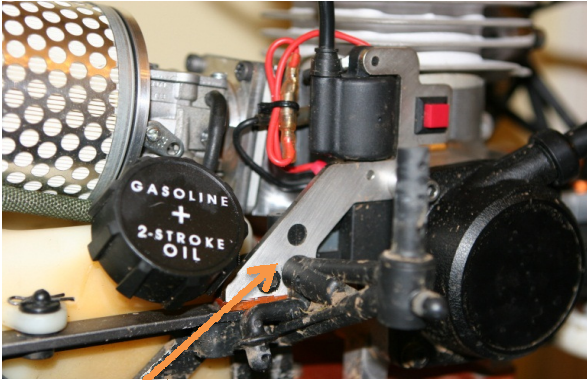
Note: See supplementary sheet for installation in the HPI BAJA

Installation in a HPI BAJA

Installation in the vehicle is straightforward. The engine is designed to make use of most of the existing mounting points with the exception of the left side of the chassis. Here two brackets are supplied as part of the engine package, which replace the original parts.

Some adjustment will be required to your throttle linkage to connect to the carburettor due to the size and spacing.

The RCMAX exhaust mounts to the engine with an 'O' ring sealed joint and to the chassis making use of the 5T side rails and body mounting pins. Thus it is quick and easy to release if you need access to your radio gear, etc. It is recommended that you fit a **Team Chase** roll cage to your vehicle to protect the engine and expansion chamber in the event of a roll.

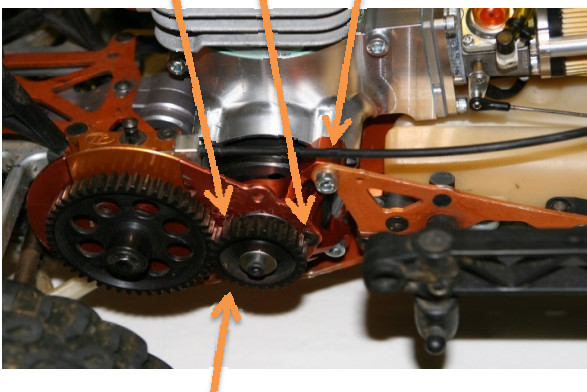


Left side front mount



Left side rear mount

Right side mounting bolts (2 behind pinion)



Exhaust supported by body mount pins



Note: Three M5 bolts fitted from below the chassis, not shown in the photo's

Note: See supplementary sheet for installation in the Losi 5ive-T

Due to the considerable increase in power over the standard engine it is advisable to replace the standard drivetrain parts, such as gears and drive shafts, with heavy duty, upgrade parts. We would recommend using a billet aluminium alloy diff case with steel gears throughout. Backbone Racing now make a full set of replacement, heavy duty gears for the Baja gearbox.

Primary drive gears should only be from Backbone Racing, which we stock a full range of sizes.

Drive shafts should be heavy duty types. We would also recommend that you fit a locked or limited slip differential.

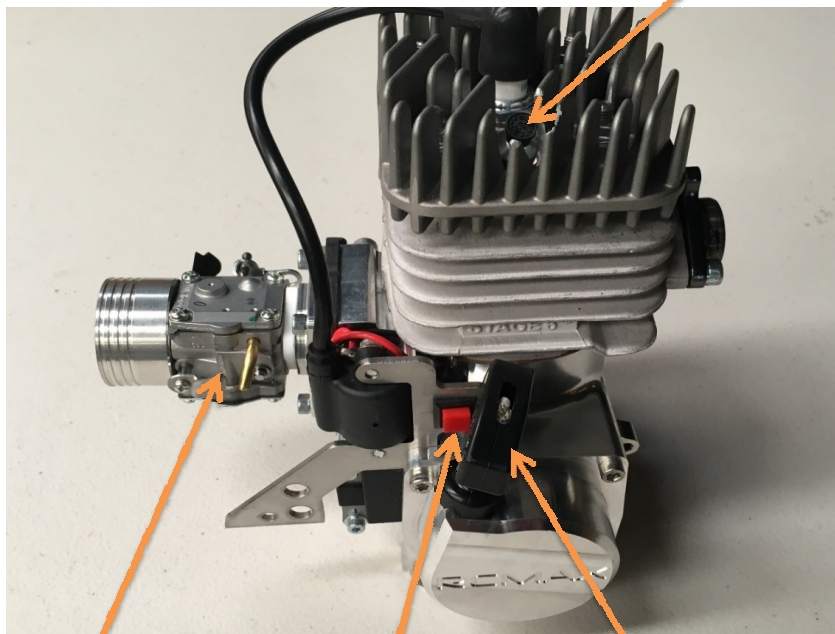
To make control of the vehicle easier it would be advisable to fit some sort of wheelie bar on the rear of the chassis. This, together with the locked diff, helps to make the vehicle more driveable on the throttle.

Finally a good set of wheels, preferably billet alloy, with zero growth foams and tight fitting bead locks will be required.

Engine Starting Procedure

NOTE: Your Air Filter requires oiling before use - We are cautious with the fumes from the oil causing issues during shipment.

Decompression valve is NOT used on the 65 due to the short stroke



Engine stop switch

Pull starter

Choke lever - automatically releases when throttle is opened

First Time Engine Starting.

When starting for the first time following engine installation it will be necessary to draw the fuel from the tank up to the carburettor. Push the choke lever down into the 'ON' position. Press the decompressor valve down and pull the starter cord about 3-4 times a little slower than for engine starting. If you have a clear fuel tube you will see the fuel being drawn into the carburettor. Once this procedure is complete you can start the engine.

Engine Starting.

With the choke on and the decompressor valve pressed down, pull the starter cord rapidly to start the engine. **Please note that it is necessary to reset the decompressor valve after each pull of the starter.** After two to three pulls of the starter the engine should fire. At this point release the choke lever, press the decompressor and pull the starter cord to start the engine. Two or three **STRONG, HARD** pulls should be sufficient.

Engine Break-In.

After starting the engine make sure it is fully up to operating temperature before driving the vehicle. For initial break in during the first tank, allow the engine to idle with intermittent blips of the throttle. For the second tank of fuel operate the vehicle at reduced speed using short bursts of throttle to allow the engine and clutch shoes to fully bed in. From this point on you can increase performance as you get accustomed to the operation of the engine.

Safety Note: Do not try to start the engine without the decompressor valve pressed down. Any attempt to do this could result in personal injury and possible damage to the starter mechanism.

Safety Note: Because of space limitations within the vehicle, the silencing of the exhaust system is limited. Always wear ear protection when running the engine.

Walbro WJ71 Carburettor Setting

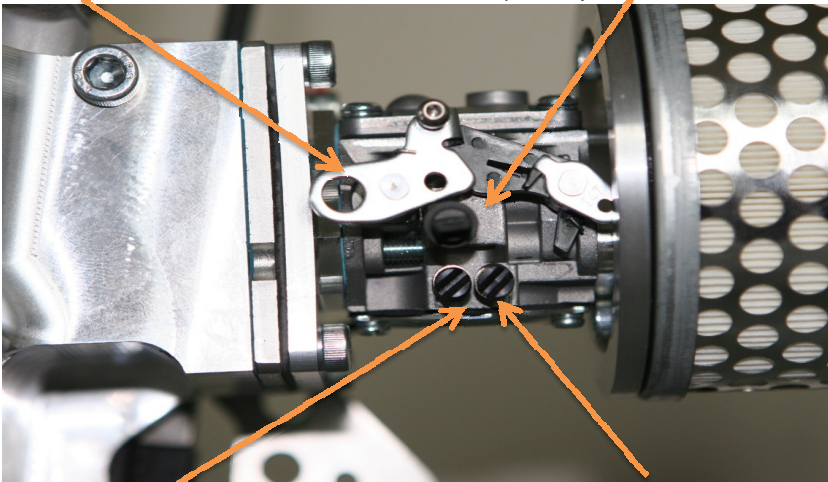
Your engine has already been run at the factory on our Dyno and the carb is set at a starting point. Make sure you complete the run in of the engine on a rich setting before considering leaning it out for optimal performance. Please remember your climate and altitude could result in the requirement for different settings, so as with any two stroke, start with caution and care.

We fit the Walbro WJ71 carb as standard which does not come with a priming bowl. However priming the engine is simple. Pull the engine over with the choke on a few times in order for the fuel pump within the carb to pull the fuel up the line into the carb itself. Its ideal to use a clear fuel line so you can watch this process and see when the fuel reaches the carb. Then you can expect the engine to fire up, sometimes with the aid of a small amount of throttle and choke.

Location of carburettor controls

Throttle lever

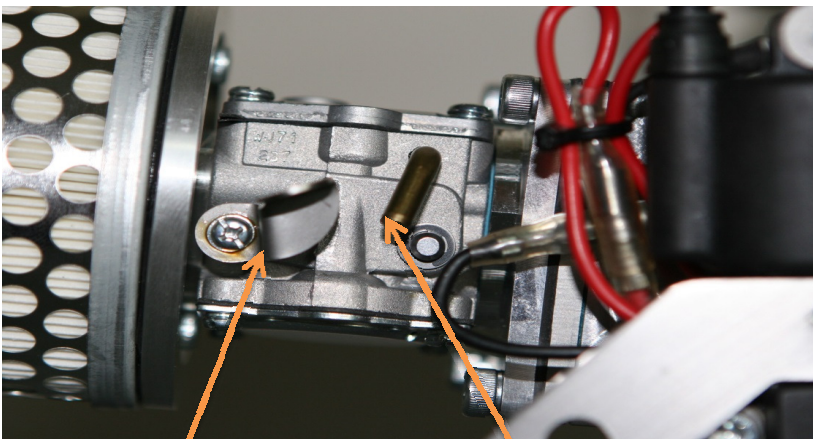
Idle Speed adjustment screw



Low Speed mixture adjustment screw
Base setting:- 1 1/2 turns out

High Speed mixture adjustment screw
Base setting:- 1 3/4 turns out (rich)

The base settings of the mixture screws may need some adjustment to suit your local atmospheric conditions e.g. temperature, humidity. If so adjustments should be made 1/16 of a turn at a time, with a test run after each adjustment. Do not exceed 1/4 turn in from the factory setting or it may result in engine damage.



Choke lever
Shown in 'OFF' position

Fuel feed connection

Note: The choke is automatically released when the throttle is opened

Note: This carburettor has only one connection to the fuel tank. This is the fuel feed tube which must have an in tank filter fitted.

There is no fuel return tube required so this should be removed and the hole blanked off using a suitable sealing plug.

The RCMAX "Torque-lock" clutch system

Within the recent updates to the engine design, some improvements were made to the RCMAX clutch in order to solve the issues that many old RCMAX users had reported experiencing. The 62mm design was overall very good but some weak points meant that the setup was failing.

The important points to note for your reference is that the Billet clutch bell is now made from a different grade of stainless steel, so that it properly interacts with the hardened steel clutch shoes

The Clutch shoes can be fitted in two ways, firstly either as shown in the below photograph, with the plain faces of the shoes facing outwards, which offers a very hard and positive bite which grips harder the more power you apply to it. OR you can fit the shoes the "conventional" direction which offers a softer bite with a higher slip rate. Feel free to play and see what suits your driving style. There is no need to remove the spring, just remove the clutch pack and flip it over.



The most important of the updates to the clutch is the Super-alloy spring, designed and manufactured at a spring specialist local to us who operate mostly in the aerospace and oil industries. This spring can withstand extreme temperatures without distortion.

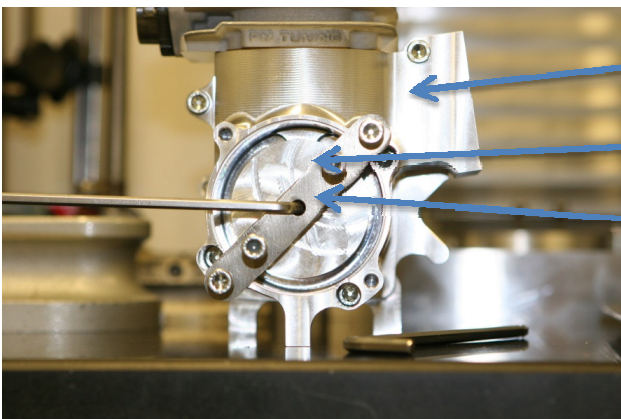
You may also notice we have gone further on clutch venting, the new backplate, clutch tower and case vents all work towards a long shoe life.

Clutch Removal/Replacement

Included with the engine is a tool designed to make clutch backplate removal easy if required for servicing. The picture shows how to hold the clutch back plate while the centre retaining bolt is loosened.

Then simply wind the bolts which are threaded into the clutch backplate evenly in, turning them a fraction of a turn each in sequence so that they pull against the clutch tool and pop the backplate off the taper on the crankshaft. This then allows inspection of the crankseal and further stripping of the engine.

Clutch back plate removal



M6 bolts screwed into crankcase and clutch back plate (4 off)

Allen key inserted into back plate retaining bolt

Clutch holding tool

Tools are available on the market called "piston stoppers" which are screwed into the spark plug hole and stop engine rotation by physically stopping the piston from moving in the cylinder. **Do not use of this type of tool because it can result in damage to internal engine components and subsequent engine failure.**

Maintenance

To ensure that you get the maximum enjoyment from this product and a good service life, RCMAX recommends that you take a little time to clean the engine and vehicle after use. It is easy to spot a little problem such as a loose bolt on an engine mount before it becomes a much bigger problem.

It is absolutely essential that only the best quality fully synthetic two-stroke oil is used. We recommend JMP Fully Synth race oil but there are lots of great products on the market. (please ask if you are unsure)

This must be mixed at a fuel/oil ratio of 25:1. Only good quality 95+ Octane must be used to prevent the possibility of detonation or seizure. We recommend using an additive called Tetraboost with your fuel for the ultimate in reliability. (or run a two-stroke friendly leaded race fuel such as VP C12.)

The best type of air filter to use with the engine is the quality dual stage RAM-AIR filter and should be kept oiled for best performance. The filter is very effective at keeping the engine clean internally even when run in dusty conditions. Regular cleaning and re-oiling is required to keep air filtration at its best. The use of an water resistant Outerwears protective element is recommended for filtering out large debris.

Paper element filters can be used but should be of the highest spec, such as that supplied in the past, and should be run dry and kept clean with regular checks

Please ensure that your fuel equipment, and fuel system of the vehicle is kept in a clean condition. Dirt can play havoc with carburettors leading to much frustration and little fun. Please make sure your vehicle in-tank fuel filter is in good working order.

Due to the size of these engines, they tend to offer a longer service life from the piston and ring than you may be used to with traditional tuned RC engines. This will depend on how you use it and look after it but its not unusual for a well maintained RCMAX to go years between rebuilds.

If you are unsure about carrying out a rebuild, we are more than happy to do it for you for a small charge plus parts.

Please contact RCMAX for advice, or service, if you are in any doubt.

Contact details are as follows:

Main Contact: Mike Taylor
Contact E-mail: mike@rcmax.co.uk

Limited Warranty

What this Warranty Covers

RCMAX warrants that the product purchased will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

What is Not Covered

This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the product, (iv) attempted service by anyone other than RCMAX or their appointed agent, or (v) products not purchased from RCMAX or their appointed agent. (vi) the product if aftermarket components, which are not specifically approved by RCMAX are used with the product, e.g. exhaust system.

OTHER THAN THE EXPRESS WARRANTY ABOVE, RCMAX MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE

Purchasers Remedy

RCMAX's sole obligation and purchasers sole and exclusive remedy shall be that RCMAX will, at its option, either (i) service, or (ii) replace, any product determined by RCMAX to be defective. RCMAX Reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of RCMAX. Proof of purchase is required for all warranty claims.
SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASERS SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability

RCMAX SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF RCMAX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further in no event shall the liability of RCMAX exceed the individual price of the Product on which the liability is asserted. As RCMAX has no control over use, set-up, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, set-up or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law

These terms are governed by the laws of England (without regard to conflict of law principals). This warranty gives you specific legal rights. RCMAX reserves the right to change or modify this warranty at any time without notice.