

1: SAB Goblin - Helicopter Kits - Helicopters

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The minimalist art gives no real impression as to what is inside, so all that was left was to open it! It appears as though just as much thought went into the packaging as the design. I was presented with six neatly packed boxes that would make any Tetris fan proud. On top of the boxes, nestled in the center, was the full color instruction manual. Picking up the manual first, I flicked through it briefly and found that everything was illustrated using 3D CAD drawings, as well as additional photos showing various electronics installations. The first box I pulled out was box number 4. Opening box 4 revealed four foam trays, each wrapped in its own bag, that contained most of the aluminum parts for the heli. The foam trays had been cut specifically to accept the part it was holding, and looked great. The next box I pulled out was box number 6. This box contained the flat carbon fiber parts, such as the skids and side frames. Underneath box 6 was box 2, which contained the canopy and foam blade holder. The canopy is a work of art in itself, and painted by canopy experts "Canomod". The finish of the canopy was spectacular, Canomod really did an excellent job. There were two smaller boxes next to each other, 5 and 7. Box 7 was empty, and the manual showed that this was where combo parts were stored if they were offered. Box 5 contained bags of hardware, and finally box 3 contained the unique boom, blades, and tail blades. Equipment Needed Choosing your equipment for a heli can be a very personal thing. There are many choices out there, and it helps to do a lot of research beforehand, and you can ask around and see what fellow flyers think. Patrick was very helpful, both in answering my questions and suggesting possible setups that I could use. Couple that with the customer service I got from KDE and it was a no brainer. Servos While browsing servo options, it became apparent that the Torque servos from Outrage were very popular. I contacted Outrage, and they very graciously provided a set of servos for this review. The torque servos are ultra high speed and high torque servos, with an all aluminum case that helps dissipate heat, titanium coated gear train, helical gears, and brushless motor. The cyclic servos are the Torque BL, which can handle up to 8. The tail servo, BL, again at 8. Impressive stats for anyone! Bus receiver, and again it was a no brainer to pair it with a CGY flybarless gyro. Bus features of both the gyro and receiver, I was able to cut down on wiring, but the biggest bonus is being able to adjust the gyro gains of the rudder, aileron, and elevator channels from my 8FGS. This has fast no pun intended become my favorite setup for helis, and I was excited to try it out on the Goblin. Batteries Again I already had some SkyLipo mah 6S batteries, so decided to stick with those and ordered a couple more. They are only 40C, but watching a few videos online of similar powered Goblines convinced me that I would be happy with the setup for now. I decided to use a separate Lipo for the receiver, mainly to take advantage of a High Voltage setup. As I came to appreciate later, this was a decision that would save me a lot of money and heart ache. Building Building the Goblin is almost as fun as flying it. Every step of assembly is marked with a number that corresponds with a bag number, and in that bag are all the parts you need for the current assembly step. In fact, there are so many small ziplock bags in this kit that you will be stocked up for a long time afterwards! As mentioned earlier, the instruction manual is made up of 3D CAD drawings to aid you in the construction process, and is extremely easy to follow. Now here is where SAB breaks the mold yet again, this time with preassembled parts. SAB stresses that the preassembled parts in the kit are all built with threadlock, and that there is no need to take them apart. In many other kits it is necessary to take these sub assemblies apart in order to threadlock them back together, and is a necessary part of the assembly process. I did a little reading online to see what others had done, and found that the ones that had trusted in SAB had no problems, so I decided to follow suit and trust what SAB was saying. However, I did randomly select a part and disassemble it, only to find that the parts had indeed been assembled with threadlock. The side frames went together extremely fast. One of the many unique features about the Goblin is how most of the electronics and mechanical parts are installed on an upper aluminum plate. This entire plate is removable via several screws, leaving the side frames behind, making replacing the side frames a two minute job. The photo above shows the completed side frames, just about everything else is installed on the aluminum

base plate. The motor drives the rotor head indirectly via a belt and pulley system. This pulley system also contains the one way auto bearing, which must be lubed triflow before installation. The tail is also belt driven, with a separate spring loaded belt tensioner that hangs below the main aluminum plate. The main gear is helical cut for extra strength and meshes directly with an aluminum pinion gear at the top of the motor pulley. There is no backlash on the pinion, nor the ability to adjust it, and it is important to use WD40 to lubricate these gears for the first few flights in order for them to break in. Do not be tempted to use an alternative lubricant, I saw first hand on another Goblin what a mess this created, plus it could shorten the life of your gears by causing excessive wear. This mount is spring loaded against the main aluminum plate, which acts as a tensioner on the motor to pulley belt. I took one of the larger ziplock bags from the kit, and placed the motor inside it with the shaft poking through one of the corners. I then used a dremel with a cut off disc to carefully cut off the excess shaft, after measuring several times to make sure I had it right. The ziplock bag kept any fine metal particles from entering the motor case, which could possibly cause problems later on. The motor mount was then installed into the side frames, along with the main mechanics, and I installed the motor belt before snugging down all the bolts. Another thing to consider is what size motor pulley you will need to use. SAB has a myriad of different pulleys to choose from, so make sure you know which one you want when you order your kit! The head and swash were up next, and these are some of the parts that are already assembled. You can take them apart if you want, or use them as is. One of the neat features about this particular head, is the fact that the blade grips and yolk have lines etched into them which, when lined up, equal zero pitch. This makes setting up the head a snap, especially with the turnbuckles that connect the blade grips directly to the swash, no need to unclip any ball links! The only thing left to build at this point is the tail. There is no traditional tail hub, instead you have a carbon fiber "cage" that houses the tail rotor shaft and pulley. This is held to the boom with four belts, and can be adjusted by sliding it forward or backward on the boom to adjust belt tension. The tail blades grips are already assembled, along with the pitch slider, which greatly speeds up assembly that is unless you want to check them yourself! The plastic inserts for the tail pushrod and servo were already glued in place, and only a small amount of work was needed to get the rest of the boom finished up. The paint finish on the boom was just as good as the canopy, but there were still a couple of very minor cosmetic flaws. These flaws were along the black part of the boom, and only noticeable upon close inspection. Speaking of the boom, it is one of the most obvious unique features of the goblin. Made of carbon fiber, the boom is of a square, tapered design. This incredibly strong design means that boom supports are not required, and there is no horizontal fin. The boom has an aluminum shoe that slides onto the big aluminum plate sandwiched between the side frames. This is then held in place by two big nylon bolts through the top, as well as two cap head bolts through the side. Once the nylon bolts are snugged down with the included tool, a carbon fiber lockring is installed over the top to stop them from turning. This advisory from Bert was another great example of the customer service from SAB. With the mechanics finished all too quickly, it was time to move on to the electronics installation! The servos are laid down on their side, spaced evenly around the main shaft, and link directly to the swash with very short ball links. This arrangement just about eliminates any linkage play, and makes for a crisper feeling cyclic. Initially I installed the servos using the rubber grommets that we are all familiar with, but after reading more input from fellow Goblin owners, I decided to remove them and bolt the servos directly to their mounts. Supposedly this eliminates any play in the servo, making a more accurate cyclic. I used the included four way servo arm that came with the Torque servo. It is a very stiff arm, but must be trimmed down and the three unused arms need to be cut off. I made sure everything was centered before I started trimming the servo horn. There is however a slight drawback to an otherwise impressive design. Therefore, it is important to center your servos before installation. I did a dry run with my electronics setup out of the heli, and did all my centering on the table. The goblin features a raised platform for installing your receiver and gyro. I ended up putting the controller for the CGY on the top, and my receiver underneath. The gyro sensor was installed on the underside of the main aluminum plate. SAB also provides a place for you to run your antennas, in my case one on either side of the boom. I later added a short piece of plastic tubing to help prevent any chafing on the antenna wires. I installed my receiver battery on the underside of the Goblin, directly below the main shaft so as not to affect the center of gravity. I decided to try

out the Perfect Regulators failsafe switch, which allowed me to run my battery directly into the switch via the deans ultra plug, and then two wires from the switch - one to the receiver and one to the CGY In the event of a failure, the switch fails to the "on" position. The Castle ESC proved to be something of a challenge. I wanted as much of the ESC sitting on that aluminum plate as possible in order to help dissipate heat. After a lot of head scratching I finally figured out a way that I was happy with.

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My day job consists of seeing various high end plastics and aluminum machined daily. As you can imagine that makes me pay close attention to the manufacturing of those materials. I was not disappointed by this kit. You can tell that the quality of the materials as well as the manufacturing was held to a high standard. Lay out everything neatly in the kit is step one. Step two is to try to force myself to read through the entire manual at least once prior to beginning the build. It is a good idea to remove the burrs from edges of the carbon fiber. This will prevent damaging wires, o-rings and Velcro when they rub against the edges of the carbon. I got out my Dremel with a small round sanding cylinder. I proceeded to sand the edges of all of the carbon fiber parts. This part is not fun, but it is just so much easier to do before you begin assembly. I finished this with a small piece of sandpaper and needle file in the areas where the sanding drum could not reach. Be sure to wear long sleeves, gloves and a dust mask for this step. The next thing I did was to put a small amount of thin CA on a cotton swab and quick go over any edges of the carbon fiber that I thought may take some abuse. This includes the landing gear, battery tray and front of the frames. You can go as crazy with this as you like, but try not to put much on there. You may have to sand it off later if something mates to that part of the carbon fiber. Normally not an issue if you keep it super thin. My preference is just enough on the edge to see it wet. After that I jumped straight into the first steps of the manual. You begin by assembling the main frame and the landing gear. This is nice because in a very short time you can see it already looking like a heli. All of this was straightforward except one thing made me nervous. The landing gear carbon fiber supports are held on by screws. Two of the screws go into aluminum, but the other two screws tighten into the carbon fiber. For this step they recommend a little thin CA. Hesitantly I followed their instructions and found this to work perfectly. I placed a small amount of thin CA onto the tip of the screw. I then screwed it in a little at a time, then I would back it out partially. After that I would screw it in a little more, and just continue that process until the screw was fully engaged. The idea here is to use the screw as a forming tap. So as the CA hardens, the screw, or tap, is creating threads. Four screws, zero issues. The transmission is the next part of the assembly. It can be very intimidating upon first glance. The instructions made this go effortlessly. I was shocked to find that there were not any adjustments for gear mesh. Now that is faith in design and manufacturing. This is without a doubt the most intriguing power transfer system I have dealt with. If you enjoyed legos or puzzles, hold on because you are going to really enjoy this part. All of this went very smooth, but take special care during the assembly when you place the spring HC on the belt tensioner support. The spring has a bend on each end. One bend is offset more than the other, so take precaution to get this the correct direction. There are only two positions that the belt tensioner support can be mounted. You need to be certain when you choose a motor that the motor shaft is at least This will be important as that is the dimension that you need to cut the shaft length to. I accomplished this by first placing the motor inside a plastic storage bag and poking the shaft through the bottom. Then I cut the shaft off using Dremel with the cut off disc. I went ahead and used the cut off disc to also put a flat on the motor shaft for the set screw of the pulley. The storage bag keeps all of the metal particles away from the motor. The aluminum motor mount has two different bolt patterns. Both the Kontronik and the Quantum bolted right up without issue. The main rotor assembly went quickly as most was completed already. All that was needed was to screw the blade grip arm assembly to the blade grips and screw the balls onto the swash. Here you need to decide if you are going to fly sport or 3d. If you fly 3d you will want to be certain the washers are installed to tightened the head. If you fly sport you will want the washers removed so you can run lower head speeds. The assembly of the tail hub was very straightforward. Nice, clean and efficient would describe the design the best. Again, made easier by the fact that a lot was already done for me. Now for the other stunning aspect of this helicopter, the tail boom. It is without a doubt one of the reasons I knew one way or another that I would have this helicopter in my hangar eventually. The tail boom is all hollow carbon fiber. Lighter and stronger than I would have guessed. This is another area in which some of the work is already done for you. This makes quick work out of the tail assembly. There are a few things to note

though. The tail servo mounts under the tail boom. The boom is held on by two nylon bolts. In the event of a crash, the design allows for the nylon bolts to break and the tail boom to separate cleanly. I hope I do not have the opportunity to test this any time soon, but if I do I will be certain to let everyone know how that worked out! Take extra precaution to secure the servo wire to the inside, bottom of the tail boom. Should the servo wire come in contact with the belt drive it could result in an unanticipated pirouetting auto! Also take note to position the servo wire extension for the tail servo so that it will come unplugged in the event of tail boom separation. After you mount the servo and the tail section, the next thing is to make the linkage for the tail servo. I decided to wrap the ends of the tube with Kevlar thread and thin CA. This should ensure that the carbon tube does not split. Once installed, my carbon rod would bind slightly in the tail linkage support HS. I used a round needle file to get the fit just as I wanted it. I did notice that after the first few flights I had some binding there again. Once more with the needle file and all was good. The machining on this kit is top notch. There is no doubt that strict tolerances must be held for this design to work. It seems that this was accomplished as my kit went together without issue. The only true imperfection I found was that the head of one of the set screws M3x20mm was not finished, so there was no place to put your hex driver. Luckily I was able to work around the issue since it was used in the front of the tail boom. I screwed it in by hand, then used green Loctite to secure it in permanently. I used hot glue to secure the servo wire to the bottom of the tail boom. Some are using different adhesives due to their wires coming loose over time. I decided to follow the instructions and just watch mine closely. So far it is still bonded well. Also on quite a few of the kits the tail boom does not have the glossy finish of the canopy. Understandably SAB is trying to solve this problem. My feeling would be to send the booms to Canomod to have them painted along side the canopies, but I understand the added cost that would have to be passed along to the consumer. Now you are ready to begin assembly of the different modules. Electronic installation was easier on this heli than others I have done. One of the reasons is that this is the first time I have assembled a sized heli. The larger heli naturally allows more room to place wires. Another reason is that SAB decided to mount the cyclic servos directly beneath the swash.

3: "New" Goblin Manual Rev.2 - HeliFreak

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Just one picture to show how all of the parts are individually bagged and labeled for each step of the build, very nice. I just use a little piece of wet and dry sandpaper. I cleaned up all of the carbon parts before starting the build. The battery trays are first up, only thing to watch out for is the countersinking on my main tray was a little too big, this keeps the screw out of the way of rubbing on the packs but when you tighten the screw down, the plate might not be held properly. To fix it, you can take a counter sinking tool and use it in the alloy thread a little but you can just make sure you nip up the screws properly but not over tighten them, they will cut a little into the alloy if the need to. Main frame goes together next, when you are putting it together make sure you sit it on a flat surface and tighten the screws evenly, a little at a time around the frame to keep it all straight as it tightens up. An important hint from Rotorvated is to fit the ESC before putting the side plate on, especially if you are going to use the lower mounting plate for the Batteries. I have used the upper plate as my packs are not so big and the original design for the CoG was to have the packs in the higher position, the lower was added just to accommodate big packs. With the packs in the upper position my Hawk ESC will fit without disassembly. Next is the carbon landing gear. When assembling the plastic sliders to the bottom of the legs I found it much easier to use a 2. If you have a 4mm Tap use it to create a thread in the carbon leg in the lower hole where the carbon doubler screws in, if not you can use a standard screw to make the thread but you will find the carbon will expand a little around the hole. With either method if the face of the carbon is now raised then you will need to file, sand or cut the carbon on the outside face to be flat again. If not the doubler will not sit against the Landing gear leg as it was designed to do. I used a file to flatten out the carbon, you will see when you mount the gear if the doubler sits away from the LG leg and need to be trimmed further. The instructions also show using some CA on the screws that thread into the carbon. Let this dry before assembly and it makes a very sturdy thread for the thread. Now on to the fun part of the transmission system, bling, bling, bling. Not much to say here, make sure you clean up the holes in both shafts before you insert them. I also found the nut on the collar of the mainshaft was a bit tight in the slot so I used the bolt to get it into place before trying to mount it on the shaft. The mainshaft was spot on, there was no vertical movement when it was assembled. When assembling the countershaft with the pulley that has the oneway in it I found there was a bit too much vertical movement in the pulley. I ended up adding a Mikado 0. I will keep an eye on it to see if there is any issue after a few flights but I think it is better than having a large amount of float in the pulley. As described in the instructions the gear mesh is tight and will wear in after a few flight, so is nothing to worry about. I have used food safe silicone spray on the main gear instead of the recommended WD40 as it is a bit cleaner. This shows that SAB are taking feedback and updating the kits as they produce them to address any issues as they are reported. The same was true with the additional washers in the head to increase the preload, these are also factory fitted to kits that came out after the issue was identified. A quick picture of the completed transmission. If you look closely at the spring it has the bend further out on the end that goes into the pulley mount plate and the bend is closer on the end that fixes into the post. This may explain why some people are having trouble keeping the spring in place as when I preload it in the direction that it will be when against the belt, it does not lift out of the hole at all. You may be able to see in the following photos that the ends of the spring are bent at different lengths. When mounting the pulley the instructions show where the pulley should be when resting, i. It is interesting that in the video they are using a prototype pulley mount and the hole for the spring is on the other side of the mount, but it gives the idea of what you are after and how to place it against the belt. The screws were mounted onto the motor plate as shipped and while I could see there was Loctite applied, one of the screws came loose when I put the lock on. Easily fixed by using some wick-in Loctite and let it dry before putting the locknut back in place. The motor pulley is then mounted and lined up with the main plate and the shaft marked to show where to it needs to be cut. You could just use the measurements in the instructions but I prefer to confirm them and measure myself, as they say, measure twice cut once. With the Scorpion motors, spare shafts are cheap and easy to get from ArkRC if you make a mistake

or later want to fit the motor to another heli that requires a longer shaft. A good use for the large zip lock bags in kit is to cover the motor when cutting the shaft, some tape around the shaft keeps it sealed so no metal filings end up in the motor or bearings. A Dremel cut-off wheel makes short work of the shaft, make sure you round off the sharp edge after getting it cut to the right length. The flat for the grub screw can now be cut. I cut only 1 flat even though there are 2 grub screws at 90 degrees, the second screw will be fine on the shaft itself although you could put two flats on there if you want. The motor can now be put aside until final assembly. The rotor head is already constructed and the shipment that came to Australia already has the additional 0. SAB say in the instructions that all of the parts already constructed in the kit have Loctite correctly applied and do not need to be disassembled, this has been confirmed by everyone who has taken them apart so I am not going to take these components apart unnecessarily. I mounted up the lever arms after adjusting them to the lengths in the manual. Note that they are turnbuckles so the alloy rod thread is a reverse thread and also the link arms are not symmetrical and the SAB logo faces out from the ball. The balls on the swash are added at this stage as well. The single piece boom is very stiff and strong and while the finish of the boom could be improved as there are some pinhole pockets in the resin, the construction looks very solid. The lower mounting bar at the front of the boom screws in ok, but you may need to run a 4mm drill or knife in the holes in the boom to get the stepped piece of the brace to fit into the hole, it looks like the paint closes up the hole a little and when it is removed the alloy fits fine. I did use Loctite on the long grub screw in the middle as well as some CA as shown in the instructions. Back to the other end of the boom now. Use some alcohol Metho to clean up the inside of the boom and also the carbon pieces that fit inside the boom. I applied the double sided tape to the carbon pieces first. Then use the screws to position the plates before pressing them into place in the boom. Thunder Fighter The manual recommends using CA to attach the pushrod ends into the carbon tail rod but I prefer to use Epoxy for this type of job. Which ever glue you use, make sure you clean the parts well and to get rid of any oil and I roughen up the inside of the carbon rod a little before gluing. I like to run a thread into the plastic links before mounting them on the tail rod, otherwise if they are stiff it can cause you to break the glue bonds or scuff up the thread when trying to grip the rod with pliers. While you have the Epoxy out, you can put a couple of small dabs on the end of the springs and insert them into back of the motor mount plate to keep them in place, saves them falling out as you fit the motor plate. At this stage the tail can be fitted to the boom and the major components can start to be assembled. Before this step it is good to think about how you will be mounting your FBL controller. If you are using a controller with a separate sensor then there is an area provided under the main plate where it will be both protected and kept perpendicular to the mainshaft. If you are planning on using this setup then it is much easier to mount the sensor before assembling the main plate onto the main frames. For single piece units there is an accessory tray that can be mounted on top of the main tray and you can even mount 2 piece units here if you like. I have decided to fit the tray to mount the main body of my FBL controller on rather than mount it to the frame side as shown in the manual while still mounting the sensor underneath. This hopefully will end up with a cleaner install although it does mean the plate needs to be removed to access the 2 large nylon bolts to remove the boom when required. It is important to make this decision now as one of the bolts for the accessory tray is under where the FBL sensor will mount. When mounting the sensor, it is very important to make sure it is mounted square to the frame but it does not need to be centered on the heli. You also want to make sure the lead from the sensor is kept free from resting on anything for a few centimeters if possible. To assist in the mounting I have used the mounting tray as a spacer shown in the picture below to keep it square but also mounted it off center to allow the lead some flex. I am now using the 3M VHB clear tape shown in the picture below to mount all of my sensors and FBL units, usually 2 layers of this tape give good vibration resistance without allowing the sensor to move around. I have added a piece of heatshrink to the lead where it passes through the metal frame to stop any chance of the wires being damaged. Here are a couple of photos showing how the sensor sits and the lead is run, I have added a small piece of the 3M tape to the lead where it passes through the frame to keep it in place so it does not touch the alloy in front of the sensor. Notice the position of the tail belt pulley adjusted as per the video link to earlier. I am waiting on my servos that should be here soon so have done a loose assembly of the major components just to see how everything fits, normally I would not mount the head until after leveling the swash

plate but have put it on just to see how it all looks. Next step will be the installation of the gear and Vbar setup. The specifications say there should be 0. Now the hard part, fitting the gear and doing the wiring. The safe switch provides 2 power outputs to the Vbar, which is the minimum you would want to have with the current trends in fast strong servos coupled with FBL systems. I am using XT60 plugs which work well for the 2s setup but they can be a little hard to unplug. I have found a quick squirt of the Silicone spray used on the belts works very well to make these plugs easier to use. The Outrage Torq servos and the Spektrum satellites that connect directly to the Vbar make for a fairly clean setup. In this configuration you also need to make sure you connect the negative from the ESC to the Vbar negative, this can be achieved by using the programming lead from the ESC and connecting its earth to the negative of the sensor lead, I use an extension cable with an additional plug grafted in. I also use an ebay Bluetooth module with my Android phone for tweaking the Vbar at the field. This does make the cable a little complex but it has been reliable running this configuration in my Logo I looked at extending one of the lead from the ESC or the motor but in the end I made up an extension by butting a male and female plug together, the bullet plugs I am using are cut so the backs of the 2 pieces mate together and can be filled with solder. For the Swash servos I am mounting with the rubber mounts provided with the servos including the brass inserts to keep from over compressing the rubber. I would have mounted the servos directly against the mounts but as a spacer is needed for the Torq servos, the rubber is the easiest way of providing the spacer. You could use a carbon servo mount as the other option or make up your own spacer but I have found with the rubber mounts and inserts the servos mount up solidly so I will stay with this setup for now. I am using the Futaba Heavy Duty T arms which have a hole a little further out than the recommended mm at You will need to trim the horns very close around the back as there is not much room between the pack of the servo arm and the alloy mount. I did not need to use the ball spacer with this setup and have nearly vertical links, if anything having the balls at 19mm would probably give vertical links but for now I will go with this setup. When mounting the tail servo I found I was able to just slide the servo lead down beside the servo when putting it in place, this meant that I was able to use some strapping tape to hold the servo lead against the side of the servo before mounting it. I used a long piece of tape so that I could see from outside if it let go at any time. It is important to ensure the lead is kept out of the way of the belt as described in the instructions, there are several ways of doing this being discussed on the forums, from turning the servo by degrees and modifying the rod to using glue and even string to secure the lead. Along with the tape I have used hot glue and also wrapped the lead around the bottom stay of the boom, this may or may not be a good solution as it has been pointed out that in a big crash the boom may break and leave the stay in the main frames and cause the servo lead to break. I am not too worried about it as I can replace the servo lead myself if it is damaged in a larger crash and hopefully in a smaller crash where the boom ejects the servo lead will just disconnect from the extension lead in the main frames.

4: SAB HELI DIVISION GOBLIN MANUAL Pdf Download.

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Unfortunately, stiff head dampers and low head speeds result in wobbling of the main rotor. The cure is to gradually increase the head speed until the wobble goes away. On the Goblin, this happened around rpm. With a measured current draw of about 20A, flight times can approach eight minutes of smooth, non-3D flight. Once I was able to dial in a proper head speed, I was really able to appreciate at how locked-in the Goblin felt. The large wraparound canopy and tail fairing makes the Goblin very easy to see in the sky. Because of the dual-stage transmission, the main gear outside diameter is much smaller than those found in single-stage transmissions. Because of this, the canopy can be made much narrower, resulting in much less drag. At full tilt, the Goblin has to be one of the fastest ships around. Everybody at the field was amazed at the high speed passes that I was making over the runway. At an all up weight of just over 10 pounds, I was a little concerned the Goblin would feel heavy in the sky. However, my first collective push with the Goblin quickly put that to rest. In fact, the Goblin feels extremely light on the sticks and starts and stops maneuvers nearly instantly. With the Quantum Kv motor and default gearing, my governed head speed was approximately rpm in my stunt flight mode. At this head speed, the is extremely nimble and is virtually asking to be thrown around the sky. Current draw averaged around 50A with mixed pitch pumping and smooth 3D, which results in flight times of almost five minutes. According to the manual, the maximum recommended head speed is rpm, which will make the collective response even stronger at the expense of much higher current draw. At all the head speeds that I tried, the Goblin tracks extremely well through all maneuvers. The combination of the precise mechanics, high quality electronics, and the iKON flybarless controller, make the really groove into fast flight. I loved making high-speed backwards inverted passes over the field and the incredible stability provided by the iKON really inspired confidence as I brought the passes lower and lower to the ground. While fast passes over the field are fun, the was designed from the ground up to be a hardcore 3D machine and it excels at it. Roll and flip rates are incredibly quick, yet also very controllable. It feels as though the airframe has almost no inertia in the air, as rotation starts the instant the cyclic is moved and it also stops the instant the stick is returned to center. Likewise, collective response is just amazing and the power system used has some much torque the setup is nearly unboggable. Tic-tocs appear as if the helicopter is bouncing between two walls. As expected, tail control is solid, holding like the proverbial vise, regardless of going forward, backwards, or sideways. The main flight packs are designed to be installed from the front of the helicopter, which necessitates removing the canopy. Since the rear of the canopy wraps relatively tightly around the main shaft, it can be a little tricky to get on and off. I found it best to move the swash all the way down and then rotate the main rotor so that the blades are perpendicular to the body. Then the top edges of the canopy can slide above the swashplate with the least amount of flexing. Swash servos are arranged symmetrically around the mainshaft and connect to the swash with a short, stiff linkage. The manual omits which way it goes, but the proper direction is with the long leg facing down. The Savox servos that I used had a plastic rib that protruded above the rubber grommets. I trimmed off this rib so the servo would sit on the rubber rather than rocking on the plastic rib. Be sure to keep the threads on the pitch links well lubricated with grease. This is to prevent the edges from cutting into the insulation of the wires. I poked the shaft through a plastic sandwich bag and then taped the bag prior to using a Dremel cut off wheel to trim the shaft to the desired dimension. The bagging prevents metal chips from finding its way into the bearings and into the motors innards. I used a small round file to slightly increase the opening to make it fit more smoothly. I also put a light coating of grease on the pushrod to further reduce friction. Final Word I really enjoyed building and flying the Goblin. With a high level of pre-assembly, the build goes quickly. Once in the air, the flight performance in phenomenal! In my book, SAB is two for two when it comes to producing awesome helicopters and I look forward to seeing what they come up with next!

5: HeliFreak - SAB Goblin detailed build thread

Mad4heli Field Mackay with a goblin , , Here's a good look at the mad4heli field in mackay with a goblin , We now stock OXY heli! What an amazing little heli, Here's a short overview of the OXY 3 Tareq www.enganchecubano.com was.

It has been my favorite heli to date. The reasons are many, but include aesthetics, feel, agility, speed, design and maintenance. This left me with a desire to capture that in a smaller model when I first heard that SAB was going to release a little Goblin. I was immediately impressed with the design layout. Watching the pros fly the just made me hunger for one even more. Package- These days we all have come to expect top of the line helicopters to come well packaged. SAB did not disappoint. Even more amazing is that they even show how everything is packaged in their manual. So you know exactly which box is the correct number. I love the use of their foam trays to hold the machined aluminum parts. Looks just like a display case! It leaves little need for build videos or build threads. The first thing that grabbed my attention is the great looking cover and the colored pages. On the first page I was shocked to see that they included a machined plate with each helicopter that has a personal serial number on it. You need to go to their website and register your kit so they can let you know about possible upgrades or developments. After that you will find some great data on specifications, notes for assembly, building supplies needed and recommended components. The manual has these amazing rendered photos of each step, with just enough words to fill in any possible gaps. Page 19 reveals a transmission setup that lists in table form all of the possible pinion sizes with corresponding ratios. On page 20 I was surprised to find that there were instructions showing where to place the electronics, as well as the routes in which to run the wires. Finally you will find everything that you would expect from nine colored pages of exploded views with all part numbers to a section on periodic maintenance. Build Preparations- Before a build there are a few things that I do with every kit. I also debur all of the carbon fiber pieces using a combination of a sanding drum on a rotary tool, sanding sponges and emery boards. These two steps are often skipped by builders without consequence. It is more of a preference than a necessity. I also find it a pain to handle carbon fiber that has sharp or rough edges. The manual does state on page 20 to debur carbon pieces in area where electrical wires run. I would say do that in the least. A friend once told me that you could use CA or liquid electrical tape to go around the edges to seal them and avoid sanding. Typically fallen parts will just stay where they fell and be easy to see against the white towel. Build- Let the fun begin! I should start by admitting that building is NOT my favorite part of this hobby. Building is so far down on the list that I would have trouble counting that high. SAB not only helps take the sting out of building for me, they make it truly enjoyable. I am a machinist by trade, so I can see the true quality and care in the manufacturing of these parts. Every single part on the entire helicopter went together as designed without any tweaking at all except for the single tail pushrod guide that is located in the tail boom. The guide would perfectly allow the pushrod to glide through it when not installed, but as soon as I would screw the guide into place the pushrod would bind in it. Upon looking through the tail boom it was apparent that the outer radius of the guide was hitting against the inside of the boom. This was slightly squeezing the guide. I ended up sanding the outer radius with my rotary tool until the fit was perfect. All in all about 20 minutes was spent on correcting that imperfection. All of the ball links fit perfectly. No slop nor binding. The lengths of each linkage given in the manual was almost spot on. A turn or two was all that was required to tune the head and get everything centered. I ended up following it exactly. I routed all the wiring as shown in the manual. I mounted the iKon flybarless unit with the wires facing forward. This allowed me to leave the USB plugin to the back of the heli for easy access for tuning on the laptop later on. Other RC helicopter manufacturers should take note of designing a model knowing that wires are going to need to go somewhere. Major thumbs up SAB! You can use mini servos or full size servos for cyclic control. I chose the mini size since I am far from a smack 3D pilot and was highly concerned with weight on this model. The kit comes with a couple different servo spacers so that you can get the linkages lined up for optimal geometry. The Savox servos fit without issue. There is very little clearance between the canopy and the linkages from the side cyclic servos to the swash. I have not seen them rub, but they are super close. Mounting the full size tail servo could not have been much better. I was highly concerned with this

model having a buried tail servo and hidden tail guide pushrod. SAB really thought this through when designing these. Not only a cinch to install, but easy access to inspect and maintain. Oh, and did I mention that the hidden tail pushrod is just slick? First Flight- The first flight of any new model is always nerve racking for me. Luckily the maiden flight was completely uneventful. So there were a few test hops just to tune the adjust the headspeed and tail gain in the transmitter. After that I managed a couple of flights just trying to get a feel of the little Goblin. By the end of the second flight the bond was already made. Battery options- SAB recommends batteries ranging in size from mah to mah. My testing was done with mah and mah 45C packs. There is quite a difference in size between the two packs, but more importantly roughly 6 oz of weight. My recommendation is lean towards the mah packs if you plan on flying aggressively. If you plan on sport flying the mah will give you a 6 minute flight time at rpm. You could even get more if you optimized your power system to run at that headspeed. My style is closer to a mix of sport and mild 3d. The mah packs will easily give me a 6 minute flight at rpm. For 3D, stick to the mah packs and you will get a flight time between 3 to 4 minutes if you fly at a headspeed. The manual recommends not exceeding RPM due to safety reasons. For this I found that RPM is perfect as it allows me a good flight time on the mah pack and has tons of power to perform anything I can throw at it. Occasionally I will drop into a very low headspeed for the fun of it and to practice collective management. For this model I found that gives me a long flight time and still gives me plenty of performance to moderately sport fly and even do smooth transitional 3D. Every great now and then I get the urge to crank it up and give it my attempt at smack 3D. For this I found to my liking as at that headspeed the model is almost just too fast for me. I have to give myself a little extra room to keep everything safe. They have kept the same styling through their release of the and There was little doubt that when the was announced that the styling would match that of its predecessors. I opted for the red one despite my concerns that it may be difficult to see in low light conditions. To my surprise the red is just amazing. Strictly for test purposes I flew it several times right after the sun went down and am extremely impressed with the visibility. Let me sum it up by saying that whoever the person that is making styling decisions for SAB should have plenty of job security for years! Tailboom- One of the most distinguishing features of the Goblin series of helicopters is the hollow molded carbon fiber tail boom. There are no supports and the boom is not round like all other helicopters before it. The strength of the boom is a remarkable feat of engineering. I have tried to flex and bend it, but man that thing is stout. Not only does the design eliminate the need for supports, but allows for amazing visibility in all orientations that some other helicopters lack. It gives a wonderful pallet for talented painters to go crazy and express themselves versus those of us whom had wrapped trim tape around the end of the tail boom for visual cues on the standard round boom. On all of the Goblin helicopters SAB incorporates break away bolts so that in a crash the boom has a chance of survival. There is no exception. They use two nylon bolts that hold the top of the boom to the frame that should break in a crash. Again, used to allow the boom to separate from the frames in the case of a crash. Then they went and ingeniously routed the tail pushrod inside the boom in a way that does not interfere with the belt not only for aesthetics, but to protect it from harm in transport and handling. They have tested the model from RPM all the way to rpm.

6: SAB Heli Division - Goblin Review - RC Groups

Goblin Helicopters, SAB Goblin, Goblin, Goblin , Goblin Sport, Goblin V2, Sport, Goblin , Goblin , SG, SG, SG, Goblin Helicopter, Goblin.

When I first saw Kyle Stacy fly his tri bladed with custom black head and tail parts I really hoped that SAB would incorporate that into a production Goblin down the road. Front to back the frame, canopy and boom are made from real carbon fiber that really accents the black anodized parts nicely. The manual has amazing 3D photos of each step, showing you where every part goes. It leaves little need for newcomers to search forum threads or YouTube videos for build help. At the beginning of each chapter a full page picture shows the parts breakdown of what will be used in that section build. They even have a page dedicated to different pinion sizes and ratios as well as what motors and ESC combinations to use that will work best with the specific headspeeds that you would like to achieve. The boxes and individual part bags are all labeled and correspond with the manual. When you open the box that houses the head, tail and transmission parts you will find them displayed in beautiful foam trays securely protecting each CNC machined aluminum piece during the shipping process. The large vibrant colored canopy and tail boom are individually packed. Canomod did an excellent job on the paint work, stickers, and clear coat. I decided to go with the red and yellow paint scheme for the best visibility in all lighting conditions. The assembly was straight forward per the manual. If you are new to the Goblin line of helicopters you may not know the Goblin helicopters are not like your traditional style gear train design. SAB uses a unique design where the motor pulley drives a belt; the belt turns a shaft with a helical gear that then drives the main shaft. Not only is it efficient but it is quiet as well. The belt allows just a little give in the system acquiring the desired final ratio in two steps rather than one, allowing less load to be put on any one component. The mesh between the helical gear and drive gear is very snug but will break in quickly after a few flights. I applied Dry Fluid on all my gears and shafts to ensure smooth operation and longevity. The motor installs onto the aluminum motor mount and cut motor shaft is held firmly in place with a 3rd bearing support to keep the motor from moving during even the hardest smack maneuvers. The motor mount has self tensioning springs to ensure constant pressure on the belt. Once the belt is installed spin the motor by hand to ensure the drive belt has proper vertical alignment on the gear. If it favors high or low, adjust the motor pinion to split the difference. This rotor head has been developed in order to increase the usable rotor RPM range without having to change the rigidity of the dampening system. Furthermore, this solution allows an optimal control of the geometry even when large amounts of torque are introduced into the system. The HPS3 head also allows for a lower range of headspeeds where DFC style heads are rigid, do not like lower headspeeds and tend to bobble. The HPS3 head is mounted onto the beefy 12mm high strength steel main shaft. The machine quality and aluminum material used are top notch. The ball links are bidirectional so you do not have to pop the links off to adjust the length when tracking the blades. This is a nice feature considering that popping the ball links on and off will wear out your links over time. Once you have the swash assembled you can install the swash and head onto the main shaft. All of the links fit perfectly with zero slop or binding. The lengths of each linkage given in the manual were spot on. A turn or two was all that was required to tune the head and get everything centered. I really like the fact that I can adjust blade tracking without disconnecting the plastic ball links. Depending on the servos you use, SAB has offered a few different ways to mount the servos to allow the most ideal servo geometry. Always plug in your servos and center the servo arms before you install the servos onto the transmission servo mount plate as it is not impossible but difficult to reach the servo horn screws once installed. The manual gives you recommendations of where to place the electronics. I routed all the wiring as shown in the manual. I mounted the NEO flybarless unit with the wires facing forward on the rear upper gyro tray. Tail assembly starts with building the tail hub assembly, pitch slider, bell crank lever, and tail case. Make sure you apply grease and Loctite to the proper parts. The tolerances were perfect with zero play and everything moved extremely smoothly. The Gobblins have a unique design where the tail side plate and vertical fin make up the tail case. They are held together by tail case spacers and adjustable machine screws and lock washers which allow the case to slide back and forth to adjust

main belt tension. Once you the hex nuts taped into the tail boom you can drop the tail belt down the boom and slide the tail case onto the boom and snug up the bolts. To assemble the tail pushrod my personal fail safe method is to score the threaded rod and glue it into the carbon rod with thick CA. I then apply a small amount of CA and wrap both the pushrod and carbon rod with fine black thread. Once dry, I coat both sides in five minute epoxy and let everything fully harden. To install the tail boom onto the frame insert the boom into the frame until the nylon bolt holes line up. Snug down the nylon bolts, tighten the machine screws and install the carbon fiber boom safety lock piece. Slide the belt onto the front pulley and tighten the belt as tight as possible before flipping the belt tensioner into place. The KSE uses a full carbon fiber canopy and flexes nice to assist installing and removing the canopy without rubbing on the links or causing unnecessary stress on the paint. The paint quality of both the canopy and boom features beautiful lines and bright vivid colors. SAB includes canopy saver rubber gasket and canopy mousse to protect the canopy edges from scuffing. The first thing I noticed when I put the through its paces was that it tracked perfectly through the corners, with noticeably higher cyclic control precision at center stick. The bright yellow and carbon fiber Canomod canopy and boom was extremely easy to see in all orientations and the traditional skids gave it a nice new look. For sport flying the really flies well at rpm with zero bobble and extends your flight times over 6 minutes. I tend to fly in Bank 2 at rpm, it is the perfect compromise to be able to fly big air 3D and still get 5 minute flight times. Flight mode Throttle RPM.

7: Goblin Helicopters

HeliFreak > R/C Helicopter Support > SAB Goblin // "New" Goblin Manual Rev.2 SAB Goblin // SAB Heli Division // - Goblin Helicopters Factory Support.

8: SAB Goblin - RC Heli Pilot Online

The Goblin Black Thunder Sport from SAB Heli Division provides an incredible cost to performance package by offering a proven and robust platform that is the Goblin Black Thunder Helicopter!

9: SAB GOBLIN MANUAL Pdf Download.

SAB Goblin ; SAB Goblin. SAB Goblin Helicopter Kit Kyle Stacy Edition SAB Goblin Mini Comet (Yellow - Red) - SAB Motor & ESC Included [SG].

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