BLADE® 130 X Calibration and Troubleshooting

The Blade® 130 X helicopter is a high-performance 3D helicopter, designed for intermediate to advanced pilots. It contains all the same control functionality of a much larger 3D helicopter, and as such, requires a higher level of attention and maintenance than other models from the Blade line, such as the CX, mCX, and mCP X helicopters. Through the feedback of our valued customers, we have found the need to provide some information regarding certain aspects of this model in order for every Blade customer to have the best possible hobby experience.

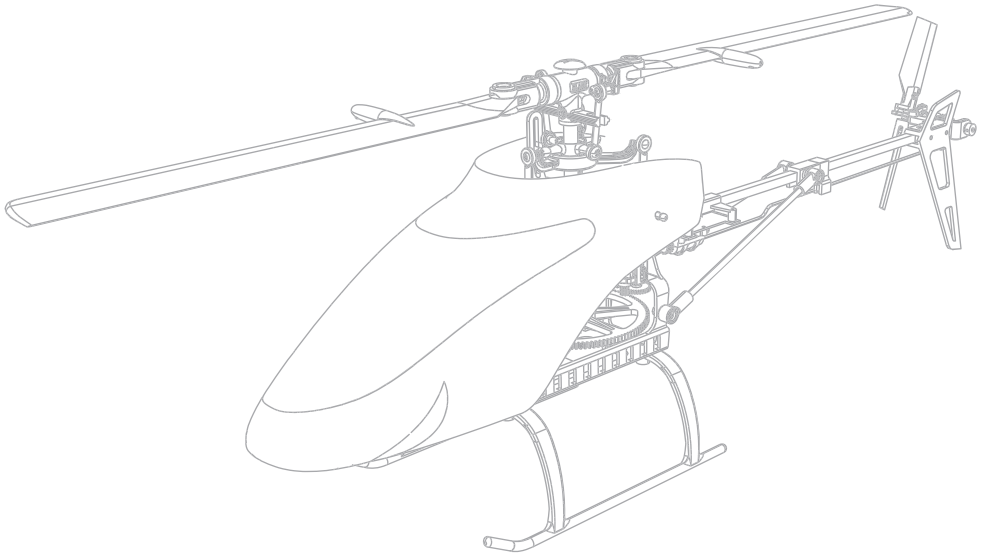
Calibration Procedure

If you are having problems with your Blade 130 X seeming to need trim or drifting in flight, you can help solve the issue by performing the calibration procedure described below. Only use sub trim during the calibration procedure.
It is normal for the servos to move slightly back and forth at neutral.

✓	Calibration Procedure Checklist
	1. Unplug the motor from the control board.
	2. Plug the battery into the helicopter and ensure the model remains motionless while arming.
	3. Move the throttle stick above the idle position to activate the gyros. The servos will begin to respond to movements. Do not move the helicopter.
	4. Watch for any drifting of the swashplate or tail linkage. Counter the drift on each axis with sub trim. For example; if the swashplate drifts to the right, add left aileron sub trim. If the swashplate begins to drift left, you've added too much sub trim. The goal is to add enough sub trim to prevent any drifting.

When the calibration procedure is complete the swashplate and tail linkage will remain in a neutral position when the gyro is active and the helicopter is motionless.

IMPORTANT: Moving the throttle stick back to zero will reset the gyros after 5 seconds.



Troubleshooting

Problem	Possible Cause	Solution
Tail vibration during spool up	RPM of the main and tail systems reach a point of resonance during spool up.	The tail hits a resonant frequency at a certain head speed,but only during spool up, which does not indicate a problem with the helicopter. The key is to quickly move through this head speed range. To avoid this issue, advance the throttle from low throttle to about 75% throttle immediately. The goal is to pop the helicopter off the ground as quickly as possible without letting the headspeed remain where the resonance is present. Once it moves past this head speed and is off the ground and in the air, the vibration will disappear.
	If the vibration does not stop at flight RPM, the tail output shaft could be bent.	Replace the tail output shaft
Roll on takeoff	Letting the helicopter spool up slowly can cause vibration, which will cause an unwanted roll.	As soon as the blades start spinning, the pilot needs to start flying the model.
		When taking off with the Blade 130 X, increase the throttle quickly to pop it off the ground.
	The Blade 130 X can get stuck in the grass very easily because it is so lightweight.	Take the helicopter off of a smooth surface such as concrete.
Tail is not holding	When the throttle hold is on, the pitch range is not equal.	Activate throttle hold, adjust all three cyclic linkages to achieve 0° pitch at half stick
	Tail rotor gear is stripped/slipping. This may not be apparent until, with the helicopter powered off, you hold the main rotor head still with one hand and GENTLY rotate the tail rotor with the other hand using light pressure. The tail should not spin freely.	The torque shaft has a flat side, which matches a "D" shaped hole in the C gear, and may strip in the event of a crash or rotor strike. Replace the gear if it is slipping.
		The crown gear on the main shaft can strip in the event of a rotor strike; carefully inspect it and replace if teeth appear to be worn or chipped.
Servos appear to react in an odd manner	When the motor is off, the gyros on the control board are turned off.	With the motor off, the servos respond directly to your inputs and do not react to helicopter movements. When the motor is powered on, the servos will react to helicopter movement and respond differently to stick inputs.
	If the servos jitter and twitch when helicopter is not flying, the servos need to be cleaned.	Use a small amount of plastic-safe electronics cleaner on the servo mechanics. Apply cleaner every 20 flights to prevent the servo from getting dirty.
	The servo is damaged.	If the servo wires are frayed or not fully secured to servo board, re-solder the wires to the servo board or replace the servo.
		Replace the servo.
Oscillations	For the sake of pure 3D performance, we have found that an occasional "wobble" during a hard 3D maneuver was preferred over the performance with a lower gain value.	The "gain" or sensitivity of the gyros on the Blade 130 X AS3X® board come pre-set from the factory at a level that is suitable for most pilots. In certain conditions, the user may wish to adjust those gains. If the heli oscillates, the gain is too high and should be reduced. If the heli feels mushy and not locked-in, an increase in gain is required.
High motor temperatures	Flying back to back flights without letting the motor cool.	Allow the motor to cool between flights. Generally, we have found that the acceptable motor temperature is approximately 160°F (71°C) depending on ambient temperature.

BLADE® 130 X

AS3X Gain Programming, Post-Crash Inspection, Replacing a Broken Tailboom, and Gear Diagrams

AS3X® Gain Programming

Entering Programming Mode	Changing Between Axis For Gain Changes	Changing Gain Values	Resetting Gain Values	Exiting Programming Mode
1. Set the transmitter throttle to high (100%). 2. Connect the flight battery in the helicopter. 3. The Status LED will turn solid blue, then there will be a sequence of Red, Green, and Blue Flashing LEDs. 4. The Red LED will be solid and the status LED will start flashing.	Move the Elevator stick forward or backward to change which axis gain is being adjusted **Red LED = *Elevator*** **Green LED = *Aileron*** **Blue LED = *Rudder***	There are ten steps available in positive and negative directions, for a total of 20 gain values on each axis. Gain changes will affect flight performance, but the available range will always ensure the helicopter is flyable. Move the Aileron stick to change the gain values. ***Right Aileron*** increases the gain—the LED light will start flashing faster. ***Left Aileron*** decreases the gain—the LED light will start flashing slower. The LED is solid when the gain is at the default value (*neutral gain*).	To reset the settings to default, hold right rudder for 5 seconds while in programming mode. There will be a sequence of Red, Green and Blue flashing LEDs to signify the default settings have been applied. Rudder value must be at 100% travel for this to occur.	Disconnect the battery, set the throttle to low throttle or activate throttle hold and re-initialize the helicopter.

Post-crash inspection procedure

1. Inspect gears **A** and **B** for stripped or missing teeth. *See diagram 2*
2. Confirm the tail boom is fully inserted into the frame.
3. Inspect the boom supports for loose mounting screws, cracks or loose boom support ends.
4. Carefully inspect the tail boom for cracks.
5. Confirm the tail case is fully seated onto boom and fits tightly.
6. Inspect gears **C** and **D** for stripped or missing teeth, as well as proper fit onto flat spots on drive shafts. *See Diagrams 1 and 3*
7. Make visual inspection of the tail shaft for runout by slowly rotating the drive train by hand and watching for visible signs of a bent tail output shaft.
8. Confirm the bottom pin on the tail pitch slider is not broken or bent, and is properly seated in the slot on the tail pitch bellcrank.
9. Inspect the tail grips for excessive play or binding.
10. Inspect the tail blades for chips, cracks or elongated mounting hole.

Replacing the tailboom

1. Loosen the screws that clamp the boom in the rear of the frame, the servo mount and the boom support mount. Remove all the parts from the broken boom and remove the tail output shaft from the tail case.
2. Inspect the all the bevel gears carefully and ensure the tail drive (torque) shaft is straight. Gears **C** and **D** should have a flat spot in the mounting hole and should not spin freely on the torque shaft. Replace any damaged components. *See Diagram 1*
3. Fully seat the new boom in the fuselage.
4. Slide the tail servo up against the frame on the boom.
5. Slide the boom support clamp onto the boom and install the boom supports.
6. Insert the torque shaft into the boom with the longer flat spot to the front. Install gear **B** while inserting the torque shaft. *See Diagram 2*
7. Slide the tail case onto the boom and ensure it is fully seated.
8. Install gear **C** onto the torque shaft. *See Diagram 1*
9. Install gear **D** and spacer onto the tail output shaft as you press the tail output shaft through the tail case, paying attention to align the flat spot on the tail output shaft with the D shaped hole in the gear. *See Diagrams 1 and 3*
10. Install the retaining collar with the tail output shaft fully seated so there is no end play. *See Diagram 3*
11. Power on your transmitter and activate throttle hold on, then connect the battery to the helicopter with the tail servo plugged in and confirm the tail servo is centered. Disconnect the battery.
12. Install the tail pushrod and adjust the position of the servo on the boom to achieve the center position shown in the following diagram. *See Diagram 3*

Diagram 1

Gear fit

Gears **B**, **C**, and **D** fit onto a flat spot on their respective drive shafts. Ensure the gears fit snuggly on the flat spot and do not spin.

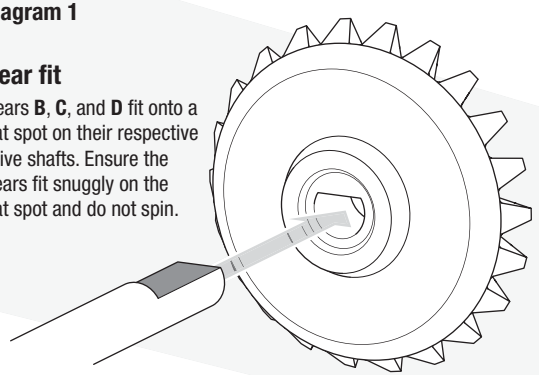


Diagram 2

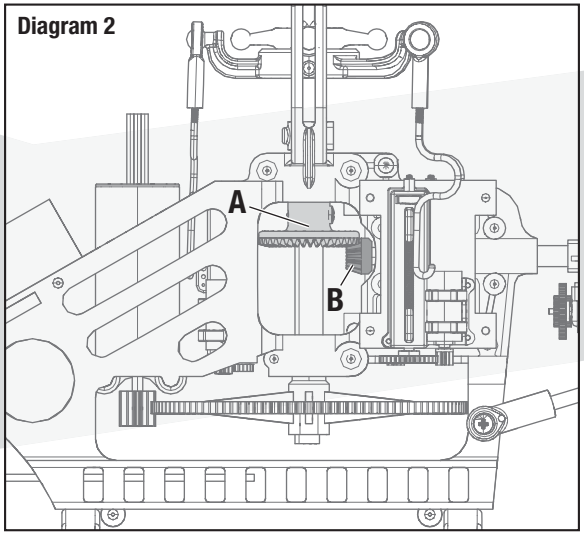
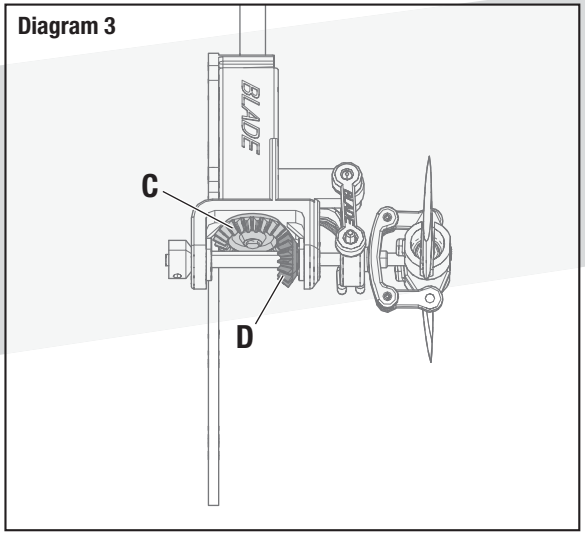


Diagram 3



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