



AMOS June 2022 Newsletter

AMOS General Membership Meeting Recap – 10am 6/18/2021

New Business:

Guest Speaker:

Michael Rutledge conducted a thoroughly comprehensive presentation of the Citrus Heights Volunteer Drone Task Force. Mike came in uniform, equipped complete with a squad car, police radio and scanner, and a drone with a viewing device.

Mike explained the functions and responsibilities of the drone program, which included the gamut from traffic enforcement to first-person viewing assistance for criminal activities.

Mike is on call and will assist not only the CHPD, but also other law enforcement agencies and first responders, including fire departments, CHP, etc..

Mike launched the drone and flew to 300' while explaining the complex abilities and functions of the drone.

Much appreciation for Mikes' presentation! If you did not attend the meeting, you missed out!

Updates/Project Status:

Dave is working with the city of Lincoln Recycled Water Dept. on the possibility of providing agriculture non-potable water to our field. A bid is in process for a fixture close to the AMOS field. The water supply itself would be quite minimal. This would be a valuable source for fire control for AMOS.

Our website is still going under refinement and also has been moved to a better platform.

A possible drone presentation is being considered for our Heli event.

Will Doyle is crafting an article to be presented to the AMA.

Dave is leaving the large tent in place throughout the Heli and 3D events.

Dave stated that he will be delegating more tasks/responsibilities to the volunteers due to the growing complexities and sizes of our main events.

Dave stated his support for Shanti Landens' run for supervisor in Placer County. She is a friend of and supports AMOS.

Andrew has eliminated non-paid members from the AMOS membership list. We now stand at 233 members.

Andrew will be on "holiday" starting July 12th for four weeks. He possibly will be available occasionally by email during that period.

We are now getting some younger members/possible members and suggestions were made that, if older members had equipment that they are not presently using or are maybe selling, to consider donating it to some of our newer, younger members. That would give them a little boost in acclimating to the hobby.

Tom stated that there were some 12 and 13-year-old students last week that did quite well.

Suggestions were made by members to receive more information regarding the outcome of our events

Jody reported the proceeds from our Float Fly to be \$569.

The following are excerpts from Daves' meeting agenda.

These topics were discussed in varying detail.

Event and Marketing Updates:

Helifest flier created, posted on Website and FB page. Printed flyers are at the hobby shops and in the Frequency Box.

3D flier created, posted on Website and FB page. Printed flyers are at the hobby shops and in the Frequency Box.

AMOS Membership, 2022 Event Brochures and all posted Event Flyers are in the Freq Box

Field Improvements Updates:

- o 50 yards of AB was delivered, spread and compacted for the new helipad, drone area and access road**
- o New Helipad and Drone Track shade plus Petromat has been installed**
- o Petromat for Sections 1,2 and 3 has been installed.**
- o Field has been mowed for the last time this year**
- o Taxiway stripes have been added. "Taxiway" text to be added**
- o Entry signs advertising our Events has been added**
- o Brackets in ground for 6 "flags." 6 more will be installed soon.**
- o Electrical and lights for events will be up through the September Jet Rally**
- o Spectator shade areas are completed. 10' x 40' each.**
- o 6' Chain link Safety Fence (at Spectators seating area) will also be up during the duration of our events.**

- Several Petromat patches have been added on the runway and in the pits
- 3' Round Tables are done. They will be painted and installed next week.
- Pilot stations rearranged for easier communication - now that flight line is getting longer

General Updates:

- Thanks to Nick Graham AMOS got over 2,500 hits on FB last week. Great Job NICK!!
- Warbirds Event was a success: 26 Pilots, \$11,000 generated for Healing Heroes, 150 Spectators and a great time had by all.

AMOS Event News



Warbirds Over Roseville

The Warbirds Over Roseville was a great 4 day extravaganza event starting on Thursday June 9th and ending on Saturday June 11th.

The event had 26 pilots and over 150 Spectators. \$11,000 was generated for the Healing Heroes Charity.

The Taco's on Thursday night were excellent. The food sold at the event was brought in from El polo Loco restaurant. There was a ice cream stand which went over well with the kids on Saturday.

This Warbird event had more turbine Jets flying than previous events.

The whole Event grounds looked very similar to last years jet event less the large Boot and Huge tent in the back area. Very nice setup.



AMOS RC CLUB
TREASURER'S REPORT
May 1, 2022

	Current Month	Same Month Last Year	Year To Date	Last Year To Date	Budget (Full Year)
INCOME					
Donations, Cash		50	-	287	385
Event Revenue	1,040	1,116	1,595	1,116	3,500
Field Improvement Fees	825	900	4,800	3,000	5,000
Interest Earned			1	-	3
Late Fees	20	10	110	120	170
Membership Dues	700	680	11,619	11,290	23,000
Other	15		25	-	94
Total Income	2,600	2,756	18,150	15,813	32,152
EXPENSE					
AMA Charter (Including Insurance Certificate)			120	120	120
Charitable Contributions			-	100	200
County Taxes			-	-	256
Equipment Purchase		217	-	217	300
Event Costs		1,743	-	1,743	3,500
Field Improvements	2,500	2,413	2,500	2,413	5,000
Field Lease		623	2,592	3,117	7,880
Field Maintenance		239	-	239	3,000
Filing Fees	101	25	151	25	50
Miscellaneous			21	1	1,000
Other		1	4	1	100
PayPal Fees	98		526	-	1,000
Porta-Potty		134	731	701	1,704
Postage			18	-	200
Recognition Awards			-	143	400
Supplies			-	-	430
Training Costs			-	-	200
Website Maintenance			665	330	660
Total Expense	2,699	5,396	7,328	9,152	26,000
CASH RECONCILIATION					
Beginning Cash Checking	6,309	32,614	7,104	23,312	7,104
Beginning Cash PayPal	2,374	-	923		923
Beginning Cash Undeposited	720	-	457		457
Beginning Cash Savings	52,004	10,000	42,003	10,000	42,003
Total Beginning Cash	61,407	42,614	50,487	33,312	50,487
Cash received	2,600	2,756	18,150	15,813	32,152
Cash Disbursed	(2,699)	(5,396)	(7,328)	(9,152)	(26,000)
Net Cash In (Out)	(99)	(2,640)	10,822	6,661	6,152
Ending Cash Checking	7,133	29,001	7,133	29,001	
Ending Cash Paypal	1,452	-	1,452	-	
Ending Cash Undeposited	720	973	720	973	
Ending Cash Savings	52,004	10,000	52,004	10,000	
Total Cash	61,308	39,974	61,308	39,974	56,639
Operating Cash	23,508	27,174	23,508	27,173	18,839
Reserves Set Aside	37,800	12,800	37,800	12,800	37,800
Total Cash	61,308	39,974	61,308	39,973	56,639

AMOS 2022 Events

2022 EVENTS

EVENT NAME	MONTH	DATES
Pattern Contest	April	9
Float Fly	May	16-22
Warbirds over Roseville*	June	9-11
Central Valley Heli-Fest*	July	7-9
NorCal 3D Throwdown*	July	14-16
Everything Electric	August	11-13
Thunder in the Valley Jet Rally*	September	8-10
Profile	October	29

*major events

NorCal 3-D THROWDOWN

Associated Modelers of Sacramento Radio Control Flight Club **AMOSRC** .com

First Class Field
RECONNECT WITH YOUR BUDDIES

JULY 14-16

A benefit for PEACER Breast Cancer Foundation

HELIDIRECT

AMOSRC.com AMOS Field 4015 E Catlett Rd Lincoln, CA 95648

Associated Modelers of Sacramento Radio Control Flight Club **AMOSRC** .com

PLEASE REGISTER EARLY! THIS WILL BE A SELL-OUT EVENT!

PayPal VISA

Registration Fees: We accept PayPal and all Major Credit Cards

Pre-Register

- \$20 Entry Fee
- \$40 for Entry, 1 Shirt, 1 Lunches, and 1 Dinner
- \$75 for Entry, 1 Shirt, 1 Lunches, 1 Dinner, & Saturday Night Awards Banquet Dinner

Pilots Day Off Event

- \$40 Entry Fee, 1 Shirt, 1 Dinner
- \$65 for Entry, 1 Shirt, 1 Lunches, and 1 Dinner
- \$100 for Entry, 1 Shirt, 1 Lunches, 1 Dinner & Saturday Night Awards Banquet Dinner

JULY 14-16, 2022

AMOS .com ASSOCIATED MODELERS OF SACRAMENTO, INC.

CENTRAL VALLEY HELI FEST

Associated Modelers of Sacramento Radio Control Flight Club **AMOSRC** .com

First Class Field
RECONNECT WITH YOUR BUDDIES

JULY 9 SPECTATOR DAY

We will have great Raffle prizes with 100% of the proceeds going to Gi-Gi's House for our Down Syndrome Friends

Absolute CNC Products

EQDORIFT

XGuard RC

THW HOBBYING

RCBATTERY.COM

NMP

KONTRONIK

BKHOBBIES

ASSOCIATED MODELERS OF SACRAMENTO, INC.

AMOSRC.com AMOS Field 4015 E Catlett Rd Lincoln, CA 95648

WHY ATTEND THE NORCAL 3-D THROWDOWN?

40 Gold Medals

- This will be a premier 3D event in NorCal more than just a "fly in" it will be an event!
- Top Name World Class Pilots Attending - Bryant Mack and Santiago Pineda
- We will have pilots from all over coming in - Central Valley, Bay Area, SoCal, Nevada, Washington and Arizona
- We are making a major push through social media, flyers, email and social TV to draw us there will be lots of spectators!
- Plus, we are posting our own "direction signs" leading spectators to the field from 2 miles out!
- This event is organized by experienced organizers. This is NOT a day in the air with dogs and burgers!
- This event is an opportunity to give back. We are promoting Peacer Breast Cancer Foundation, the job is to give generously as the top donors will be "called out" and awarded for their contributions.
- Throughout the event we will be donating from both pilots and spectators into a special QR Code given opportunity.
- Our Saturday night event: There's Choice, City's Choice, Youth Recognition, Best Model Factory Dinner, Crown Awards and Pilots Award.
- On Saturday of course, we will have a "Open Field Moon Dinner" on Friday prior to that. (please email contact person)
- Our announcer will call your maneuvers! (for spectators benefit)
- Professional announcer will have sound system that covers the entire air and spectator areas.
- 22- 19'x24' Shields areas which amounts to over 1,000 sq ft of shade. See the AMOS web site for details (AMOSRC.com)
- Additional 600 sq ft of shade in our second row for our Dining Area and Registration
- We are providing for every weather with 12 large Food Caters and one large Mobile Cooler for the Dining Area
- Area of 62 sq space available as well. Please use the AMOS web site for details (AMOSRC.com)
- We will have 24 4x4 Light Towers for Night Flying every night
- Electrical outlets every 20' in the site, so no need for generators.
- 100' fence and gate at the end of the day in the dining tent. No alcohol in pits.
- Two Pro Photographers will be on site for "static and action shots" Each night we hand out FREE 8"x10" photos of the best maneuvers.
- Smaller prizes will be going lots of High Quality RC Apparel -shirts, hats, stickers, etc.
- "Come on" marker to show whenever you need it during the event. Just pass your marker at the Reg. Desk. No food orders.
- All of our pit areas fill up at night with "insider pilots" so it's a great place to visit.
- Easy RV access (in and out) and lots of space for low overhead parking starting Wednesday, July 13th. No hook ups.
- Thunder Valley Casino is less than 2 miles away. It can easily be seen from our field and the drive is 2 minutes.
- We will offer a meal of \$8 per person.
- We welcome 30% of all kinds. No tents.
- Hand washing stations, hand sanitizer and all the stuff to stay safe.
- There are several high quality and inexpensive hotels within 5 miles of the field.
- Recessed food concession stand (The Concessions where you will find that a "hot above")
- The best local driver "Tom Trank" on Thursday night will drive with plenty of balloons. Don't miss to all registrations.
- High quality "on-site" professionally prepared lunch (P.K. Sapi) and dinner (P.K.)
- Catapult Banquet Dinner along with the Awards presentation on Saturday night.
- Top Class Bar and Beverage stand both bars and appetizers. Free Coffee and Doughnuts Thursday, Friday and Saturday morning.
- For cold bottled water in the pits for all pilots 7:00.
- Runway is 270' long by 60' wide with very long grassed runways.
- Our field has 2 personal downhills. you are flying from a slightly elevated position.
- Over 100 acres of emergency landing area, just in case. No rock, tree, shrubs or obstacles.
- Spectators: FREE
- Parking: FREE
- RC Overnight Parking: FREE

Registration: Visit AMOSRC.com to Register Online or to print the Registration Form

AMOS Flying Field, 4015 E Catlett Rd Lincoln, CA at the corner of E. Catlett Rd & Fishywater Road, two miles West of Thunder Valley Golf Course

QUESTIONS? Contact Dave Long 916-881-2744
Visit the Facebook Event page at AMOSRC. Visit our web site at www.amosrc.com

Coming up are the Heli-fest – Helicopter event 7-7 and the 3D Throw-down event starting 7-14. Both Events are one week apart.

The Sign up for these events is on the clubs web page. You can also pay for the Pilot entry fee with Paypal.

Fee goes up at the event. The Heli event is \$25 and the 3D event is \$20

Another Taco Thursday to be held on Thursday 7-7 5:30pm.

I wrote this article a while back for Setting up Older but high end R/C Helicopters. Could be of use to those wanting to setup there Helicopters for the event.



Setting up a R/C Helicopter with a CCPM Rotor Head

CCPM abbreviation:

CCPM - Cyclic Collective Pitch Mixing

eCCPM - "electronic Cyclic Collective Pitch Mixing

How it works:

On the R/C helicopter 3 servos are used to simultaneously control the Elevator, Aileron and Pitch functions by moving linkages that are attached to the outside circle of the round Swashplate. The Swashplate is a circular part that mounts on the shaft just above the body of the helicopter. It transfers the motion of the servos to the Fly-bar and Rotor heads to activate Aileron, Elevator and Pitch functions.

The outside connections on the Swash ring are the Elevator being in the rear, the Aileron in the front right and the Pitch in the front left. Looking from the back of the Helicopter.

4 Linkages also run from the smaller inside ring of the Swash up to the mixing levers which control the pitch of the Rotor Blades and the Flybar - Aileron / Elevator movement.

A push up and down of all the servos becomes the pitch function. A front to back movement becomes the Elevator and side to side movement of the servos becomes Aileron function. Both upper and lower link sets turn freely around each other. Only the motion of the swash is transferred from the lower to upper link sets.



There are some different layouts. This is a CCPM setup for a Trex 500 electric.

The CCPM system is a great advancement over older helicopter setups because all three servos are sharing the work load when each function is needed. They use team work. Older Helicopter's had a single servo to solely control each function. It wasn't like they burned up servos out but performance was lacking. The older setup was sluggish and not very responsive for advanced helicopter aerobatics like 3D flying.

The three types of CCPM Swashplate types - 120, 135 and 140 degree:

The rotational degrees between the Elevator Linkage on the Swash to the Aileron linkage on the Swash is the type of CCPM. The Swashplate is round and the arrangement of the links that connect to the servo linkages are distributed in a circular pattern. For 120 degree the Elevator to Pitch linkage degrees would be 120 and likewise the Aileron and Pitch linkages are also 120 degrees apart, giving you the whole 360 degrees.

On a 130 and 140 degree Swash the Aileron and Pitch connections (front two) are closer together and are extended out using Ball link extension arms. There is a ball link extension on the 120 degree system but it is usually on the rear elevator ball link.



140 Degree CCPM with a Leveler tool on the shaft

120 degree is the most popular CCPM system but has some unequal servo motions for 3D flyers. The Aileron function isn't linear with the elevator function, which causes a slight change in pitch because the elevator servo has to move 35% more than the rest.

Futaba's explanation:

On a 120 degree setup, the left/right cyclic is slightly faster than the fore/aft cyclic.

135 and 140 degree CCPM offers smoother operation of the combined servos and an equal cyclic rate all around because the Aileron and Pitch controls on the swash plate are closer together. Although 135 and 140 CCPM give up some Aileron function to gain linearity in the overall cyclic operation.

Some higher end radios like the Futaba 14MZ have programming to compensate for the lack of 120 CCPM linearity but cost big bucks. All Futaba radios have the ability to do 135 and 140 CCPM even the cheaper models, that's why there popular with Helicopter flyers.

The higher end radios give the helicopter flyer the ability to adjust more points for the pitch and throttle curves. For example instead of the 5 points on most radios the Futaba 12FG has 17 point curves. 10 can be adjusted and 7 are to check transition.

CCPM Heli/Radio Setup



Initial Radio Setup - Setup the Radio for Helicopter and the Swash Type, on many radios these are configured in the same menu called - Model Type or Parameter.

Your manual will have a chart of the abbreviations used to set your radio for the type of Swash on your helicopter. It should contain pictures of the different Swash layouts.

For instance on a Futaba Radio 120 degree is HR3, 140 and 135 degree are H-3.

Advanced Flybarless setups use H-1 which lets the Flybarless module control the Swash setup. Since the Flybarless Control Module is a 3 axis gyro it can do the Swash mixing on its own based on the position of the helicopter without the Radios preset mixing for a regular Flybared Swash.

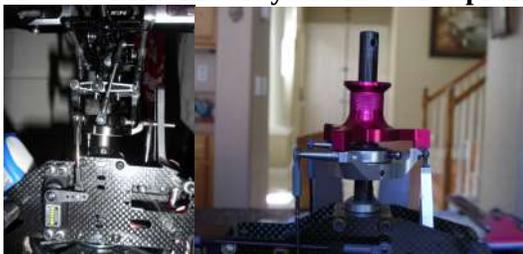
1) Center all sub-trims before starting. Don't preset throttle and pitch curves. You want to calibrate with full pitch and throttle movements when you start your setup.

- 2) Remove the Head assembly (if it's installed) by removing the top shaft screw and nut then disconnecting it's links from the Swash assembly.
- 3) Install Servos and connect them to the receiver, then turn on the radio and let them center. Set the Throttle stick to 50% or half throttle. At this point some will even go into the throttle curve and set all the points to 50% so the throttle stays at half even if the throttle stick is moved by accident. Some radios have a temporary half stick hold setting.
- 4) Assemble the Pitch, Aileron and Elevator linkages. The lengths should be shown in the manual. Everything should be close to lining up if you use the manual link lengths. Use a caliper to set the length. Some links go on to the ball only one way. If there is some writing or a notch on the link, that is the outside direction.
- 5) With the throttle at 50% all linkages controlling the Swashplate should be at half throw. The servo arms or linkages that directly control the Swashplate will be either parallel or Horizontal to the Swash. The Swash should be level if everything is aligned.
- Smaller Helicopters use a linkage directly from the servo mounted below and larger ones use linkage arms that work to transfer the servo motion to the swash. All pushrod linkages running up to the Swashplate have to be at 90 degrees - all the way around. A linkage that's slightly angled won't work very good. If the linkage is angled look for a ball link to be installed on the wrong side of a servo or linkage arm.



- 6) Make sure the stick movements on the radio activate the Swashplate and throttle correctly. If a function is working backward reverse the channel in the radio settings. This can be tricky for CCPM as all three servos are doing Pitch, Elevator and Aileron. Looking from the rear of the Heli the Aileron and Elevator should react the same as the stick movement on your radio. Forward stick forward Swash and so on. The Pitch should increase /decrease with the throttle. Increasing throttle will raise the Swashplate on the shaft (Pitch) and push the throttle linkage out turning the engine carburetor throttle arm counter clockwise. Some European Heli's have reverse pitch and Rotor turn direction.
- 7) Install the Swash plate leveler tool. This tool slides on to the shaft and has three arms that cover each of the three ball link mounting blocks on the swash. The arms of the tool should cover each of the three link blocks with no space. If there is a open space adjust the particular linkage to close the space. After adjustment the swash should be at 90 degrees with the shaft all the way around.

If this is done correctly after the Rotor Head assembly is installed all the mixing levers that activate the pitch and Ail /Elev funtions should also be level. So at Mid throttle you will be at 0 pitch. This will give you



full play to both Plus and Minus Pitch limits.

With the leveler tool installed move the throttle up and down to increase and decrease the pitch. The Swash plate should move up and down with the Leveler tool. There shouldn't be any space between the 3 leveler tool arms and the link connection blocks on the Swash as it is going up and down. If two arms have a space you would adjust the linkage of the remaining arm that has contact with the tool. If there's a space in one arm you adjust only that arm to make contact with the tool. If the leveler tool sits flat on all three arms at low pitch but there's a space on one arm at high pitch or visa versa you can adjust the end point on the radio only if you have adjusted the link lengths as good as you can get them.

8) After installing the whole rotor head assembly, screw/nut and links, the goal is to keep the Washout levers horizontal at 0 pitch which is at half throttle. When the Washout levers are level you are in the center of the pitch movement. This way the rotor blades will move - + 10 deg to -10 deg. These end limits can be different for various models. Again adjust the link sizes to achieve this. Start with the manual adjustment sizes they should be close.

Watch out for aftermarket ball links that are different in size they can throw off the linkage arm length if the measurement in the manual is not given as the full linkage length.

You don't need as much negative pitch as positive because negative pitch is for flying inverted and the body of the helicopter isn't in the way of the air stream.

Now with the whole setup correct you can balance your Blades and install them on the Rotor Head Grips. Use a blade balancer to get the blades equal in weight.

Adjusting the pitch of the Blades:

After the blades are on the Rotor Head you need to adjust them so they both have the same pitch at the different throttle settings. You will need a Pitch gauge that fits your size helicopter blades. Line up the Pitch Gauge with the Flybar to read the pitch. At low throttle you should be at -10 deg and Full throttle you should be at plus 10 degrees. Mid stick should be at 0 degrees. The pitch limits can vary from model to model see your instructions.

To adjust the Blade tracking you check the pitch of one blade then lock the pitch gauge on that setting and switch it to the other blade. Both blades should be the same pitch for each point up and down the Pitch/Throttle range. If not adjust the linkages to make them equal.

When flying you might still have to adjust the tracking that's because the blades might weigh the same but the distribution of weight in the material up and down there lengths between the two might be different.

Look at the blades in a hover both blades should look like one blade. If you see two blades splitting apart at the ends you'll need to adjust the top Rotor linkage on one side.

To make things easier put a red decal at the end of one blade so you can tell which blade is higher or lower.



Throttle Adjustment:

Make sure the throttle servo activates the throttle arm on the engine from low to high limits of it's travel. Fully closed Carb Barrel for Low throttle and fully open barrel for High throttle. The throttle range is automatic on electric models as it's controlled by the ESC.

Radio Configuration of Mixing Controls

Condition Setup - Some radios need to have the helicopter mixing switches activated or assigned so they can be used for Idle-up and hold functions. This is done in a separate menu.

The basic Helicopter radio mixing switch setup uses two mixing switches. The **Idle-up** switch which has 3 positions and mixes the Throttle and Pitch settings through Normal , Aerobatic and 3D modes called Normal, Idle-up 1 and Idle-up 2. This switch is usually located on the top left of the transmitter case to the front and has three positions.

The other is a **Throttle Hold** switch which overrides the Idle-up switch and forces the motor to run at idle and gives you only pitch control on the throttle stick for Autorotation landings. Practicing Autorotation is good in case the engine dies. You can always switch the Throttle Hold off and fly with power again. To bring the heli down using Autorotation bring it down with forward speed and at 5-10 feet above the ground increase the pitch to soften the landing. Moving forward is much better than dropping straight down.

The hold switch is usually located on the top right of the transmitter case to the front.

You thought this mixing nightmare was over not so fast! Now you have to adjust the Pitch and throttle curves.

The default curve adjustments for the Pitch / Throttle are linear. Both Pitch and Throttle increase in equal motions when the throttle stick is moved. Adjusting the Pitch and Throttle curves separately but relative to each other allows you to change this response.

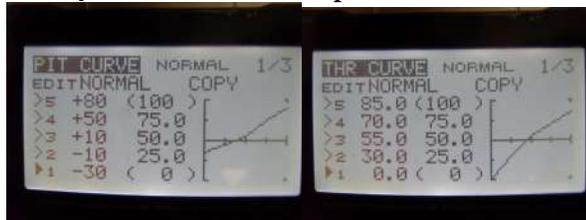
On the Normal Setting you only want a small amount of negative pitch at low throttle so you reduce the Pitch curve to say -30 to give you -2 degrees of pitch at 0 throttle. When you initially set up the pitch on the helicopter you had full negative throw which is -100 so when you reduced that number to -30 at 0 throttle you got the -2 degrees what you need for Normal flying.

On my heli -30 = -2 degrees of pitch on the blades but how do you find that on your Helicopter.

You use a pitch gauge on your heli to help with adjusting the pitch curves. Set your pitch gauge to -2 degrees lock it, and put it on a blade and adjust the pitch curve low stick number on the radio to change the pitch of your blades to -2 at 0 throttle. Then set the gauge to +10 degrees and adjust the high throttle point for +10 of pitch. Now set all the points in between to give you a linear curve.

Using the approximate numbers for the pitch curve is useless if you don't check that the value on your radio will give you the exact pitch you need on your helicopter blades along the curve.

Idle-up Normal mode example:

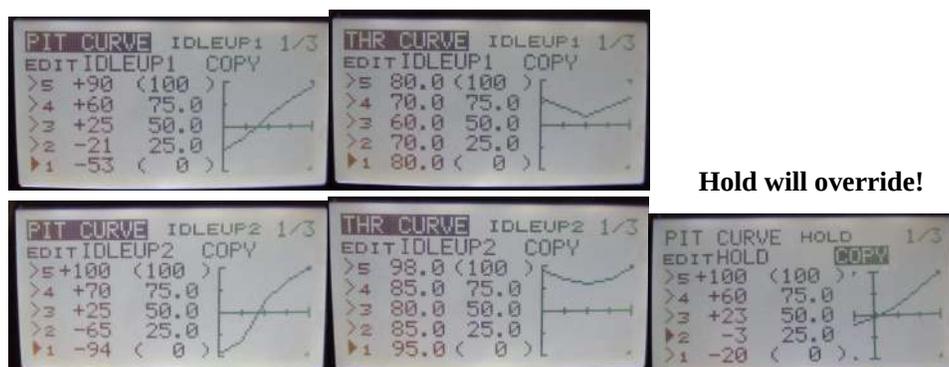


Number set on the left is the setting.

When flying you can fine tune these curves. Land first then add more throttle or Pitch where you need it. Remember the stick position.

The Helicopter should "Float" at Mid stick in a nice hover. If the Helicopter drops fast as you reduce the throttle you want to increase the throttle curve numbers. 0 to 30 might go from 0 to 40 to get a slower "Dropping Feather" type decent. Adjust throttle curves before you change the pitch curves. Remove the control of any dials on your radio that change pitch and throttle curve settings. They could get moved accidentally and drastically change the curves. These dials were designed for flyers that wanted to

do basic flying with the preset linear curves. They could dial in a little more or less pitch or throttle as they needed.



Moving the Idle up switch on the radio up one click will take you to the Idle-up 1 mixing mode. Two clicks and you'll be in Idle-up 2. In these modes the negative pitch at low throttle will be increased giving you more negative pitch on the rotor blades for flying inverted for doing stunts. -5 degrees is good for loops and rolls and slow inverted flying. -10 on Idle-up 2 for high speed 3D stunts.

The throttle response will increase for both negative and positive pitch with Mid throttle stick being the lowest throttle but still at 60% for 1 and 80% for 2. These values can vary from Model.

The Hold switch will override the Idle-up switches and force the engine to run at idle. This sets the pitch control for auto rotation. The motor go to idle and you will only have pitch control.

Be careful with the Idle-up switch-if you activate it by accident into say Idle-up 2 and you think your in Normal flying mode your Helicopter will drop at a super fast rate and smash into the ground when you reduce the stick to low throttle. Always gradually reduce throttle to bring the Helicopter down. You have to return to the Normal setting to land the Helicopter.

Idle up Pitch Movement - example settings:

Idle up Normal -2 to +10 degrees - Rotor Head RPM - 1200- 1900 (depending on Model)

Idle up 1 Pitch Movement -5 to +10 Rotor Head speed - 1500-2100 RPM

Idle up 2 Pitch Movement -10 to +10 Rotor head Speed- 1600 - 2300 RPM

Throttle Hold Settings:-2 to +10 degrees of Pitch movement - engine at solid idle

Idle-up Throttle Settings

Idle-up Normal - 0 to 100% throttle

Idle-up 1 - 80% at low throttle 60% at Mid-stick and 90% at high throttle

Idle-up 2 - 90% at low throttle 80% at Mid-stick and 100% at high throttle

These are examples, a good quality helicopter will have examples of these settings in the manual usually in the form of a table. Use the manual settings.

Rear Rotor Blade Direction Check:

The easy way to check if the rear rotor blades are moving in the right direction left to right is to simply put one rotor blade straight down and think of it like the steering fin of a boat. Looking from behind the helicopter the Right Rudder radio stick movement will turn the blade right and left will turn the blade to the left just like a boat steering system.

Note – most helicopters use this direction system but a few don't.



Difference between reverse on the Gyro and reverse on the rudder channel in the Radio:

The reverse/normal setting on the Radio for the rudder controls the direction the rear rotor blades activate which will control the right and left turning of the helicopter. If you do the Rotor Blade Direction check and the direction is wrong you would reverse the radio channel for rudder.

The Gyro reverse/normal setting controls direction the Gyro activates the rudder rotor blades to counteract forces trying to turn the helicopter in flight, like the opposing force of the main rotor blade movement and the wind. This keeps the helicopter tail steady. If the Gyro reverse/normal setting is incorrect the helicopter tail will spin on the ground and it will not take off. Usually the normal setting on is used when pairing the Gyro with the same set rudder servo.

Governor:

A Governor is a unit which adjusts the throttle and pitch automatically. A RPM sensor is attached to the fuel engine so the unit reads how fast the motor is turning. The Pitch and throttle servo leads run through the Governor. It has to be configured usually through a computer connection or through radio stick movements.

They are very good for 3D flying because they keep the engine running at the top of the RPM level needed for the amount of pitch your pushing to do stunts. The downside is they can consume more battery power for electric models and use more fuel up for engine models. The Governor will tax you!

On many high quality electric helicopter ESC's they have a Governor mode you can use without having to buy a extra unit. No engine sensor needed as it's electric.

Usually the Pitch and throttle curves in the Radio menu have to be adjusted to some default value. The Governors directions should show how to do this.

There is much more to setting these Helicopters up but this article should get most starting helicopter flyers a good push to getting there helicopters set up correctly. If you have a older helicopter most of these same instructions apply. Older helicopters are even simpler to set up in many ways. There are also may Youtube instruction video's to help.

How good you setup your Helicopter makes up for 90% of the success you will have with it !!

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