

# Quick 30 Pro

Assembly Instructions & Parts Listing



Exclusively Distributed by:  
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## **Quick 30 Pre-Assembly Information**

### **Quick Worldwide & Hobbies & Helis International:**

Quick of Japan and Hobbies & Helis International teamed up to make parts 6 years ago. In the beginning, our specialty was the manufacturing of various upgrade parts for many of the plastic helicopters on the market. After four years of distributing numerous upgrades and crash parts for other helicopters, we decided to develop our own line of helicopters. That's when the notion of the Quick 30 Pro was conceived. As the development of the kit began, initial designs were approved, proto-types were made and flown - all to ensure that the design was flawless. No minor details were over-looked. After countless hours of hard work and dedication, Hobbies & Helis is proud to release the first in a new standard in Helicopters - the Quick 30 Pro.

### **Warning:**

The radio-controlled model helicopter contained in this kit is not a toy. Rather, it is a sophisticated piece of equipment. This product is not recommended for use by children. Radio controlled models such as this are capable of causing both property damage and/or bodily harm to both the operator/assembler and/or spectator if not properly assembled and operated. Hobbies & Helis assumes no liability for damage that could occur from the assembly and/or use/misuse of this product.

### **AMA:**

We strongly encourage all prospective and current R/C aircraft pilots to join the Academy of Model Aeronautics. The AMA is a non-profit organization that provides services to model aircraft pilots. As an AMA member, you will receive a monthly magazine entitled Model Aviation, as well as a liability insurance plan to cover against possible accident or injury. All AMA charter aircraft clubs require individuals to hold a current AMA sporting license prior to the operation of their model.

### **Pre-Assembly Information:**

Quick Helicopters are put together with care and quality topping our priority list. A recommendation when you are ready to begin building this model is that you examine the kit and understand the contents of the packages and read thoroughly before starting the assembly process.

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# Quick 30 Features

1. Heavy Duty Frame Construction: Quick 30 frames are made of the highest Quality 2000 series Aluminum. These frames are not only rigid but will provide excellent vibration absorption.
2. One-Way Hex Start Shaft System: The one-way bearing allows the engine to continue to run after the starter motor has been stopped.
3. Ball Bearing Idler Pulley: The ball bearing idler pulley provides smooth consistent power to the tail by not allowing the belt to jump teeth.
4. Belt driven Tail: Belt Driven tail is not only a reliable way to drive a tail, but is also very smooth and is low maintenance feature.
5. High Quality Ball Bearings: Quick 30 Pro offers ball bearings on all moving parts unlike other machines.
6. EMS Collective System: The EMS Collective design allows ease of setup with fewer moving parts. EMS constitutes overall design simplicity and represents the future of helicopter technology.
7. Heavy-Duty Clutch System: Based on the same design as our famous heavy-duty clutch upgrade that fits most popular machines, this clutch will give many years of problem free operation.
8. Control Linkages: The control linkages that are provided with the Quick 30 Kit are high quality 2.3mm stainless steel rods and the rod ends are made of a high quality liquid Delrin.
9. Independent Blade Axle Design: The dual blade axle construction is pinned above and below the centerline of the of the main blade grips. This rotor head design far exceeds the quality of any rotor head on the market today.
10. Advanced Airfoil Flybar Paddles: These paddles will provide the best both kind of flight characteristics 3D & Sport flying. Not only do they provide smooth forward flight, they also provide quick response upon demand.
11. Rearward facing Engine Design: This design provides easy access to the glow plug and is advantageous for easy engine removal.
12. This machine utilizes high quality, Machined parts which are also bright-dipped and anodized for metal protection and beautiful appearance.

# Tools Needed to Assemble the Quick 30 Pro



Phillips Screw Driver



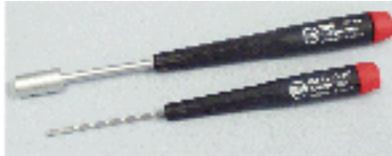
Hobby Knife  
EXL16030-1 \$0.99



Metric Ruler



Scissors



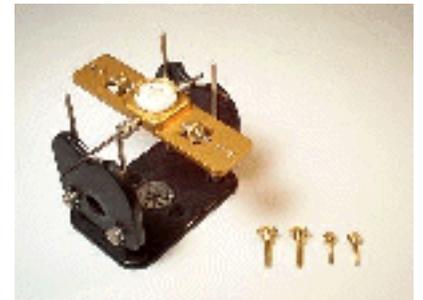
Nut Drivers  
5.0mm WIH26550 \$7.50  
5.5mm WIH26555 \$7.70  
7.0mm. WIH26570 \$7.90  
Allen Drivers  
1.5mm WIH26315 \$4.10  
2.0mm WIH26320 \$3.80  
2.5mm WIH26325 \$3.80  
3.0mm WIH26330 \$3.90



Needle Nose Pliers



Piston Head Lock  
HHI7020 \$6.99



Bubble Blade Balancer  
HHI7010 \$39.99 □  
High Point Balancer  
DUB499 \$29.99



Carbon Paddle Gauges  
HHI7000 \$9.99



Universal Flybar Lock □  
HHI7040 \$24.99



Pitch Gauge □  
HHI7001 \$24.99



Ball End Drivers □  
HHI7050 \$14.99



Ball link Pliers □  
Mat1001 \$39.99



Counter Balance Shaft □  
HHI7030 \$18.99

Motor Requirements (Not Included)



Any .30 class motor  
OS30 OSMG1940 \$119.99 □



Glow Plug  
OSMG2691 \$6.25



Fuel Filter  
QUI9002 \$4.99

Buliding Supplies (Essential)



30 Size Muffler  
HHI3004 \$44.99



CA Glue  
GBG1 \$6.29



Fuel Tubing  
PRA7092 \$2.49



Spiral Wrap  
HHI2809 \$2.49  
HHI2810 \$2.49



JB Weld  
JBW8265S \$6.29



4" Small Wire Ties  
HHIWT01 \$2.49



Loctite  
PT42  
\$2.99

# Option Parts & Accessories



Receiver Wrap  
HHI2008 \$3.49



Receiver Hold Down Straps  
HHI55\*\* \$4.99  
2 Per Bag & Colors: Red,White,Purple,Black



Receiver Strong Box  
HHI2200 \$12.99



Mini Cock Striaight  
TET4311 \$15.99



Triangle Joint  
TET4302 \$8.99



Tube Ends  
QUI9001 \$3.99



Base Load Antenna  
HHI5302 \$19.99



Finishing Caps 20 Per Bag  
HHIM1110\* \$1 1.99  
Available in Purple,Gold,Clear  
Anodizing



Quick 30 Pro Servo Arm Set  
Call or E-mail \$24.99



30 Size Skid Stops  
HHI200\* \$6.99  
Available in many Colors  
See website or Call for Detail



Landing Gear Damp.  
HHI2004 \$14.99



Flybar Stiffeners  
HHI4023 \$16.99



Throttle Extension (OS)  
HHI2550B \$1 1.99

# Radio Requirements

## Radios:

Hobbies & Helis & it's distributors carry various lines of helicopter radios. We recommend the use of at least a 7 or 8 channel radio. Other radios support the EMS Mixing but provide less of the essential functions that make flying more enjoyable. In conclusion, any radio that supports EMS mixing will work fine.

## Servos:

This is the single most important function of the helicopter. Any premium sport servo will offer acceptable performance. However due to the nature of EMS collective we suggest the use of digital servos to enhance and ensure match servo timing without servo interaction.

## Field Equipment



Hand Crank Pump  
IMP66710 \$27.99



Super-X Pump &  
Switch SOTP1750  
\$29.95



12V 15A Starter Battery  
HCAP3305 \$18.99



Torque Master 180  
HCAP3305 \$69.99



Field Box  
HHI7500 \$39.99



Standard Glow Starter  
GPMP2022 \$34.99



Glow plug leads  
HCAP2501 \$6.99  
or make your own.



Quick Field Charger  
HCAM3000 \$59.99

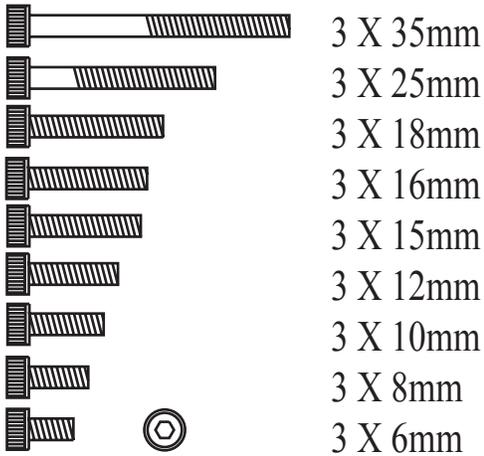


Power Panel  
HCAP0305 \$34.99

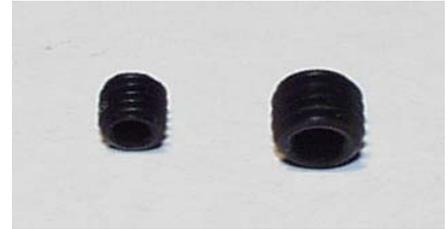
# Hardware Identification

Note: Print this page and keep near by during the building process for the identification of all the hardware. The drawings on this page are scaled so that you may hold the part to the picture for sizing.

## 3mm Cap Head Bolts



## Set Screws



From left to right the sizes are:  
3mm, 4mm

## Washers

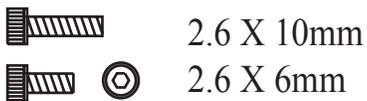


Nord Lock  
Washers



3mm  
Washers

## 2.6mm Cap Head Bolts



## Screws



2mm Phillips  
Head Screws



Self-Tap  
Screws

## Nuts & Lock Nuts



From Left to Right.  
2.6mm Nut, 2.6mm Locknut, 3mm Nut, &  
3mm Locknut

## Other Hardware



Pivot Ball  
3 X 4mm



Standard  
Shim Ball

Read the entire manual first to get an idea of the machine's makeup, each step will contain a parts list, a text description of the assembly, and pictures to illustrate the construction. If there are any questions or concerns call or E-mail us and will be happy help. Also, if possible, print this manual in color because we have some things color-coded. It is also recommended that you degrease your bolts with acetone or rubbing alcohol and use blue (242) locktite. The alcohol/acetone helps the locktite stick.

## Step 1: Upper Frame & Bearing Block Assembly

### Parts List



Main Shaft  
Bearing Blocks (2)



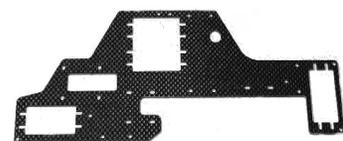
Clutch Bell  
Bearing Block (1)



Counter Gear  
Assm. &  
BRG. Block (1)



5 X 10 X 4mm  
Bearings Flanged (2)



Upper Frames (2)

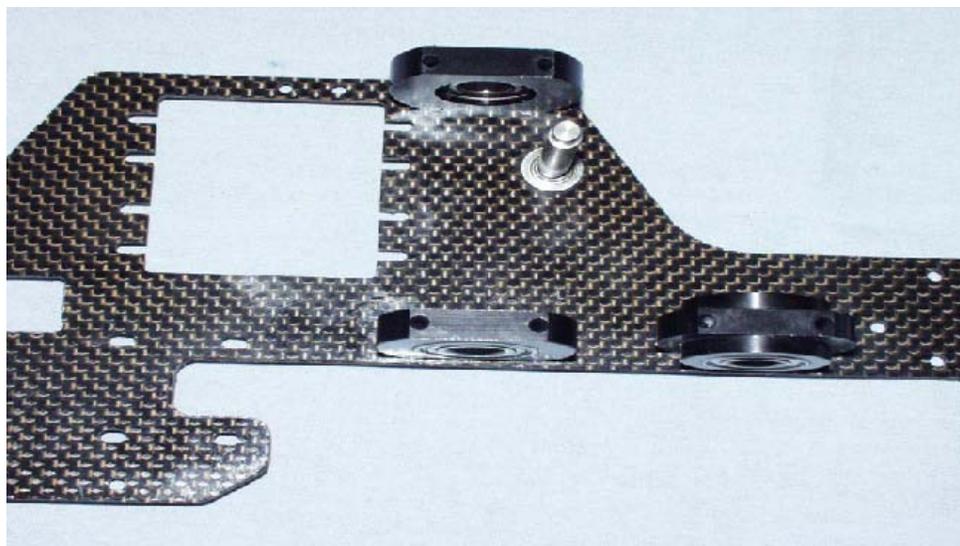
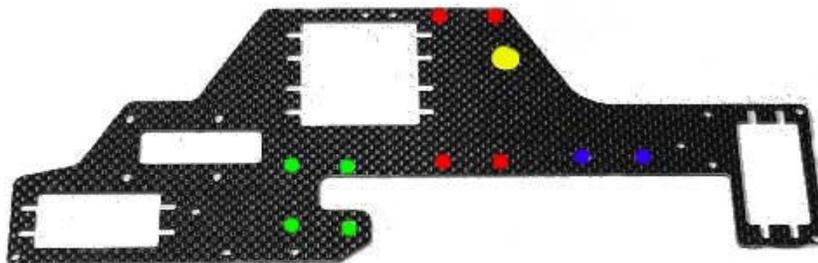
3 X 8mm  
Cap Head Bolts (20)

1 - Locate both upper frames install the 5 X 10 X 4mm Bearings with flanged portion of the bearing facing toward inside (Hole ID Yellow).

2 - It is necessary that the ridge portion of the Main shaft bearing blocks face each other on all installation. The ridge is identified as the side which only a portion of the bearing can be viewed.

3 - Begin installing the main shaft bearing blocks on half of the frame (RED). Next Install the Clutch bell bearing block with the smaller inside hole facing up (BLUE). Now install the Counter gear Assm. w/Brg. block. (GREEN)

Note: If Bearings are a tight fit, use round file or fine sand paper rolled in to a tube and lightly sand until proper fit is acquired.



## Step 2: Elevator Control Shaft

### Parts List



Inner Elevator Control Arm (1)



Outer Elevator Control Arm (1)



Elevator Control Shaft (1)

3mm Set Screws (2)

The Inner Elevator Control Shaft is attached to the Elevator Control Shaft using 3mm Set Screw being sure that the set set screw hits the flat on the shaft. Then insert the shaft through the bearing in the frame. Now attach the Outer Elevator Control Arm using the same method as Inner Elevator Control Arm. Note: The Inner Elevator Control Arm has bigger hole where the shaft is inserted.



## Step 2-2: Main Frame Support

### Parts List



Front Frame Support

3 X 8mm Cap Head Bolts (4)

Install the Frame Support to one side of the frames using (2) 3 X 8mm Cap Head Bolts the other 2 bolts will be used when the other side of the frames are captured.

After you complete attaching the frame support attach the other side of the upper frames.



## Step 2-3: Install of Front Lower Frames

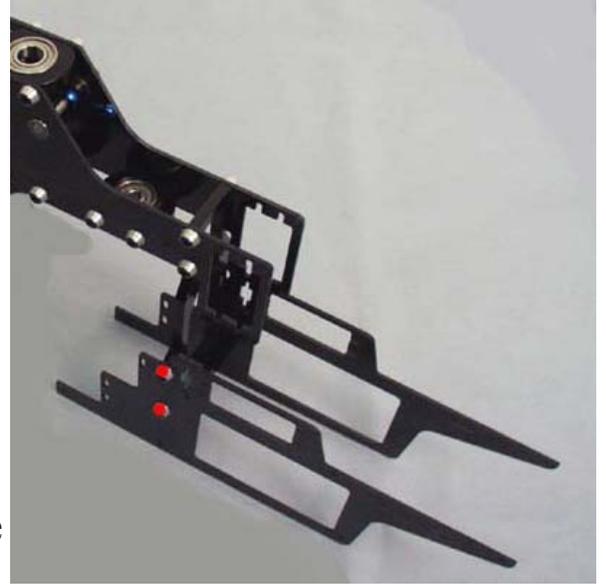
### Parts List



Lower Front Frames

3 X 8mm Cap Head Bolts (4)

Attach the Lower Frames to the Frame Support using 3 X 8mm Cap Head Bolts. By Examining the Frame Piece, you will notice that there are 3 holes for attaching to the Frames to the Frame Support. Use only the top two holes (Marked in RED) at this point, as the last hole will be used for the right-angle frame pieces to be installed later.



## Step 2-4: Install of Rear Lower Frames

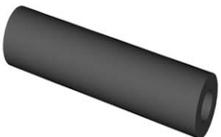
### Parts List



Lower Rear Frames (2)



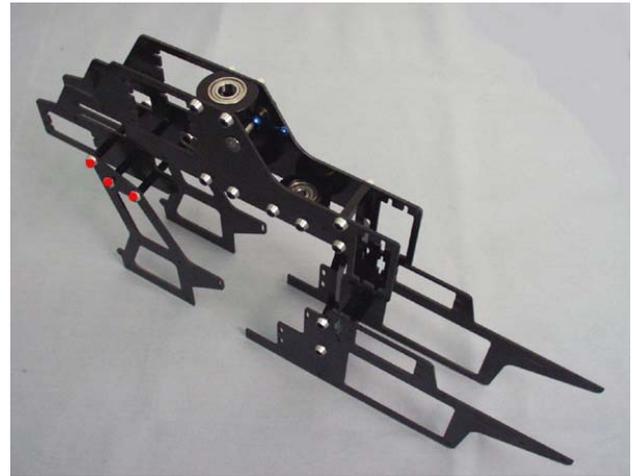
Cross-Spacer 12mm (6)



Cross-Member 26mm (3)

3 X 22 mm Cap Head Bolts (6)

Loctite the 3 X 22mm Bolt and place it through the hole (Marked in RED) in the Lower frame piece. Place the 12mm Cross-spacer on the other side. Place a 26mm Cross-member between the frames behind the corresponding hole. Attach the frame piece and finish installing the remaining bolts and cross-members in the same manner. Note: Repeat process on other side

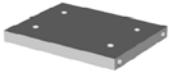


### Step 3: Install front Radio Bed & Gyro Plate

#### Parts List

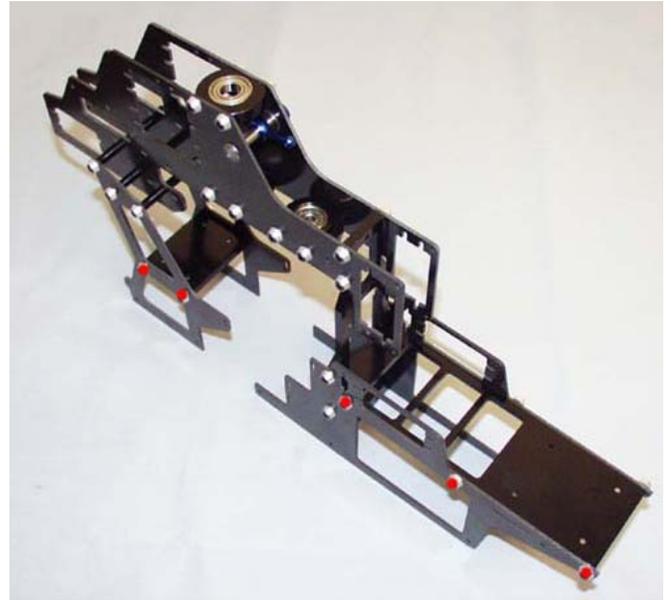


Front Radio Bed (1)



Rear Gyro Mount (1)

3 X 6mm Cap Head Bolts (10)



1. Install front Radio Tray and Rear Gyro Mount using 3 X 6mm Cap head bolts. The Red Dot indicate the holes. Remember to put the bolts in both sides of the frames.

### Step 4: Main Gear & Auto-Rotation Clutch

#### Parts List



Main Gear (1)



Auto-Rotation Clutch (1)

3 X 6mm Cap Head Bolts (4)

Install the Main Gear to the Autorotation clutch using 3X6mm Cap Head bolts. The main gear is to be bolted to the recessed flat portion of the auto-rotation clutch. As shown below.

Bottom View



Top View



## Step 5: Installation of Front Tail Pulley

### Parts List



Tail Pulley (1)  
3mm Set Screw (1)

The Front Tail Pulley is installed over the reduced portion of the Counter Gear Shaft. Tighten the Set screw into the pulley be sure that it is secured to the flat on the shaft.



The Counter Gear Shaft pictured on the left illustrates the reduced portion of the shaft. make sure the pulley is fastened to the flat shown in this picture.



## Step 6: Installation of Main Gear Assm. & Main Shaft

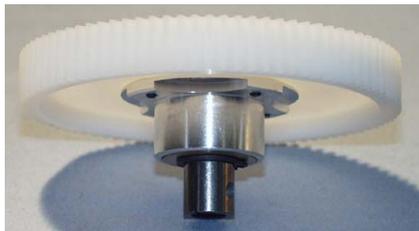
### Parts List



Main Shaft Retainer Collar (1)



Main Shaft (1)



Main Gear & Autorotation Clutch Assm. (1)

- 3 X 16mm Cap Head Bolt (1)
- 3mm Lock Nut (1)
- 3mm Washers (2)
- 3mm Set Screws (4)

This is the installation of the main shaft and main gear. All you have to do is slide the main gear into the opening in front of the front tail pulley assembly. Once the main gear is installed you need to slide the main shaft bearing blocks from the top down. Once the main shaft is in place put the 3 X 16mm cap head bolt with a washer through the hole in the bottom of the autorotation clutch. Put a washer on the other end of the bolt and lock it down with the 3mm locknut. Now your autorotation clutch should be attached to the mainshaft. Next is to install the main shaft retainer collar. All you have to do on this is to slide the collar over the main shaft, pull the mainshaft up so that there is no slop, and install the four 3mm set screws.



## Step 7: Installation of Clutch Lining

### Parts List



Clutch Bell (1)



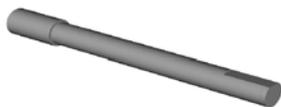
Clutch Lining (1)

Install the clutch lining into the clutch bell. Scuff up the inside of the clutch bell with Xacto knife for better glue adhesion. Use two-part JB Weld (8265S). The clutch lining is pre-cut, but for future reference the length is 126mm. Perform a dry fit, but make sure the lining is completely secure against the inside walls of the clutch bell. Remove lining. Now apply a thin layer of JB weld to clutch bell. Insert clutch lining making sure the ends butt up to each other properly and smoothly. Lack of trueness or excessive use of JB weld will cause improper engagement of the clutch shoe



## Step 8: Installation of Clutch Bell

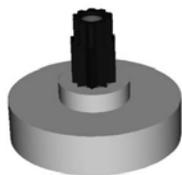
### Parts List



Start Shaft (1)



Start Coupler (1)



Clutch Bell (1)

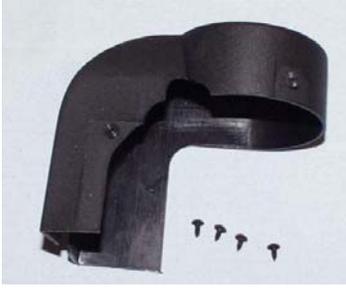
4 x 4mm Set Screw (1)

Insert the Start shaft through the center of the clutch bell. Take the clutch bell and the start shaft and insert assembly into the clutch bell bearing-block. Mesh both gears and be sure that the clutch bell is firmly in place. Slide the start-coupler onto the start-shaft where it comes through the bearing block on the top side. Tighten the set-screw onto the flat on shaft making sure that shaft does not have any up or down play. Adjust if necessary.



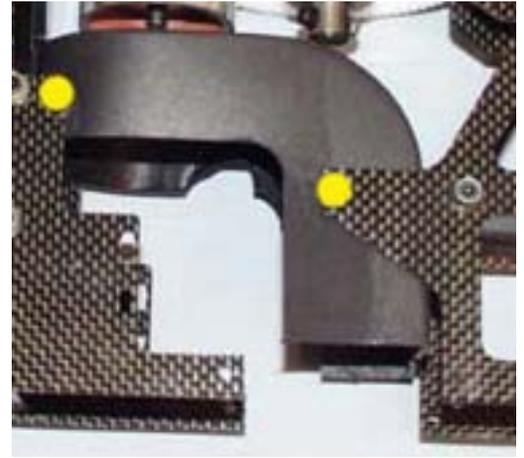
## Step 9: Installation of Fan Cover

### Parts List



Fan Shroud (1)  
Self Tap Screws (4)

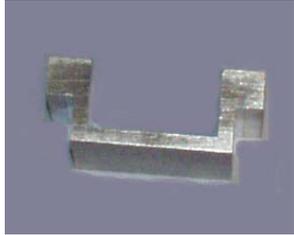
Install the fan cover into the frames using 4 provided self tapping screws (the fan cover may need adjustment later for maximum cooling). The mounting holes for the fan cover are the slots in the frames. Once you have your fan shroud in its final placement use some thick CA to ensure that the screws don't come out.



## Step 10: Installation of Motor Mount to Motor

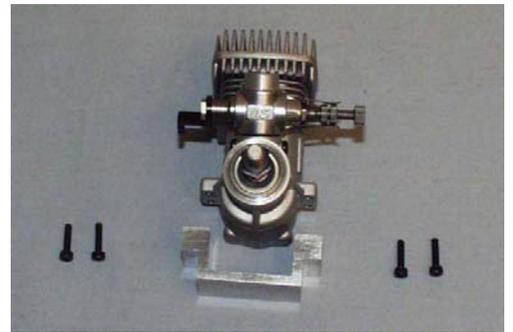
### Parts List

30 Size Motor (not provided) (1)



Motor Mount (1)  
3 X 12mm Cap Head Bolts (4)

Attach the motor to motor mount  
The motor mount is symmetrical so all you have to do is line up the holes and tighten the bolts.



### Parts List



Upper Fan Collet (1)



Lower Fan Collet (1)



Fan Hub (1)

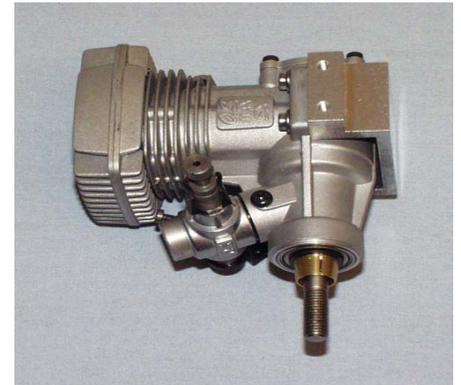


Fan (1)

3 X 6mm Phillips screws (4)

## Step 11: Installation of Fan Hub

Install lower fan collet by removing drive washer, but leave the 1mm spacer provided under drive washer in place. Install the brass conical fan collet. Now install the fan to the fan hub using 3 X 6 Phillips flat screws. Install the fan hub & fan assembly over the brass collet. Install upper fan collet and Nord-lock washers over crank-shaft. Lastly, locktite the prop-nut in place and tighten using the HHI piston headlock.



## Parts List



Clutch (1)

3 X 8mm Cap Head Bolts (2)

## Step 12: Installation of Clutch

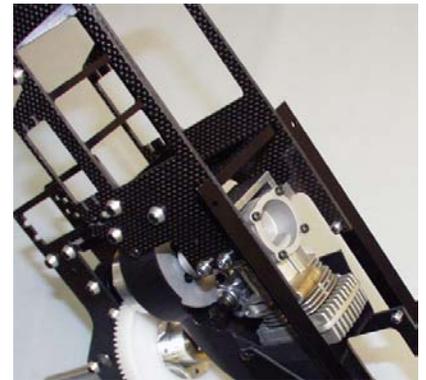
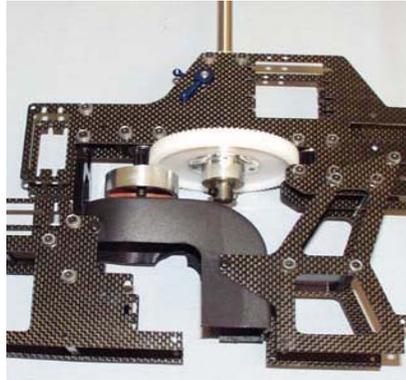
The final step before engine installation is to attach the clutch to the fan hub. You may check for run-out by dial-indicating the bearing surface between the one-way bearing and the clutch. Use the 3 X 8 mm Cap Head Bolts to attach the clutch to the fan Hub.



## Parts List

3 X 8mm Cap Head Bolts (4)

## Step 13: Installation of Motor into Helicopter



Install the motor into the frames using 3 X 8 mm Cap head bolts. At this point you will want to finalize the gear mesh making sure that the engine and clutch are straight and the all gears move smoothly. Also making sure that the clutch is fully housed in the clutch bell. Make sure that all gears are fully engaged into each other but do not over engage the gears because you want the gears to run smooth.

## Parts List

## Step 14: Installation of Right Angle Frame Rails



Right Angle Frame Rails (1)

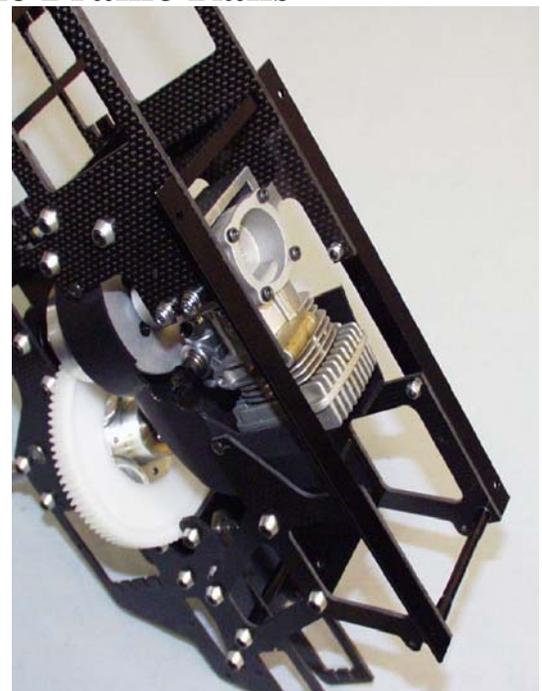


54mm Cross-member (1)

3 X 8mm Cap Head Bolts (8)

3mm Lock Nuts (4)

Install lower frame rails. Be careful to examine and determine the left rail from the right rail - they are different! The rear-most hole uses a 3 X 8mm cap head bolt threaded into a 54mm cross member. Next, the front hole is attached to the frame support using a 3 x 8 mm Cap Head Bolt. The remaining four holes use 3 X 8mm cap head bolts retained with 3mm lock Nuts.

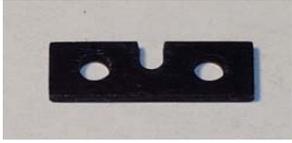


## Step 15: Installation of Servos

### Parts List

2.6 X 12mm Cap Head Bolts (20)

2.6mm Lock Nuts (20)

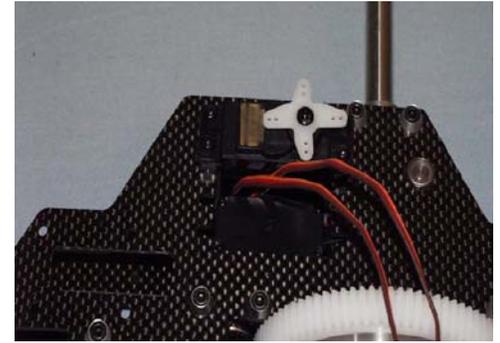


Servo Fixing Plates (20)

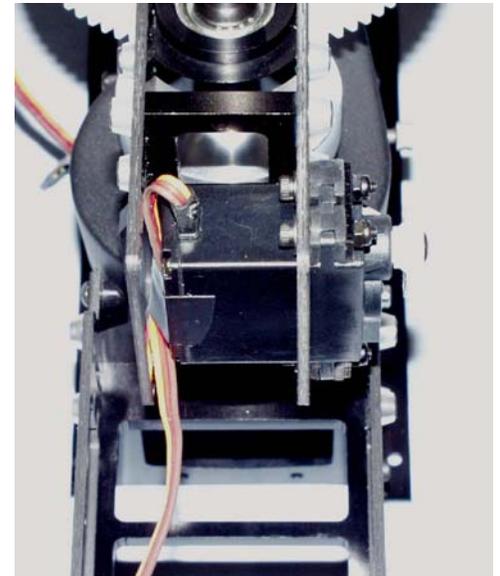
We recommend the use of high-quality digital servos, however it is not required. The CCPM/EMS design enables the servos to share the load, so you can use entry-level servos. Also CCPM geometry favors linear servo output from head servos. Long servo arms allow reduced throws in your servos and keep servo output more linear, but they require more torque. Thus, the digital servos, with their precision and high torque, are ideal. Servo installation for this section requires (20) pcs. of each of the following: 2.6mm X 14mm Cap head Bolts, 2.6mm Lock nuts, 2.6mm washers & (10) servo fixing plates. The first servo to install is the lower rear swash-plate servo. The spline of the servo must face forward and then you must tape the wire as displayed. The next step is to install the upper rear swashplate servo. You must also tape the servo-lead on this servo, but this time on the bottom. Next, install the front elevator servo and the spline of this servo should be facing the top of the machine. The throttle servo is installed next. Install the servo with the spline facing the rear of the machine. Lastly, install the rudder servo. The spline must face the rear of the machine. Depending on your assembly experience, you may want to split the servo for installation. In this application, the top half of the servo is mounted into the frames of the helicopter and the servo is then reassembled in the machine. Note: It may be necessary to add an additional servo fixing plate between servo flange and the frames to allow for wire clearance. This adjustment needs only to be addressed on the rudder servo. Failure to allow proper servo wire clearance can cause servo malfunction!



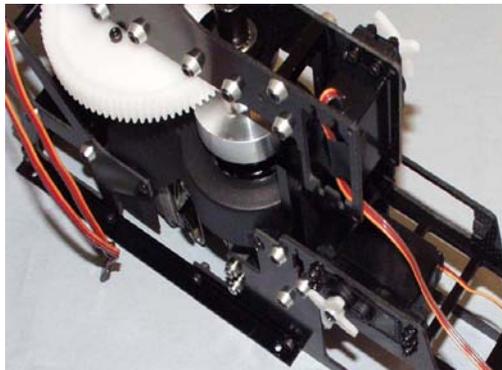
Lower Swashplate Servo



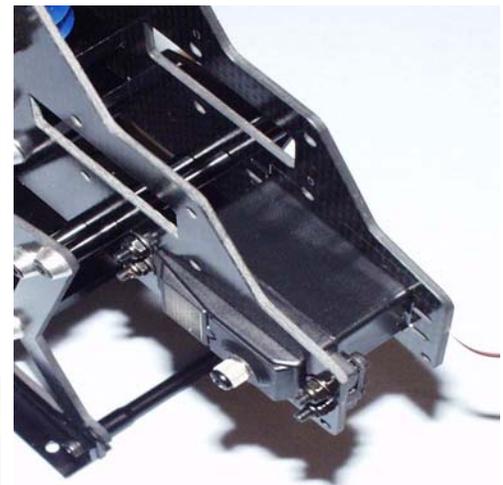
Upper Swashplate Servo



Front Elevator Swashplate Servo



Throttle Servo



Rudder Servo

## Step 16: Installation of Fuel Tank

### Parts List



- Fuel Tank (1)
- Steel Lines (3)
- Metal Plates (2)
- Bolt (1)
- Rubber Stopper(1)
- Klunk (1)

Building the tank consists of the following: Cut a piece of fuel tubing approximately 2.5 inches in length. Make sure that when the tank is completed, the klunk stays in the middle of the tank. Line two is the vent line. Bend the tubing so that it is as close to the top of tank as possible without blocking the line. The third line may be used for filling tank when a header tank is not in use. Otherwise, simply plug this line. After the lines are built, the small threaded plate is placed on the inside of the tank. Place the large plate on the outside. Insert the bolt through the outside, through the rubber stopper, and thread bolt into the small plate. Be careful not to over tighten the bolt or the stopper will split.

Installation of the fuel tank consists of building the connections and sliding the tank between the frame sections once that has been completed. Optional: Add 54mm front cross member and if you feel it is needed then add 2-1cm X 1cm pieces of double side tape stacked on each side between the cross member and the frame.



Optional Mounting System



### Parts List



Skid Pipes (2)



Landing Gear Struts (2)

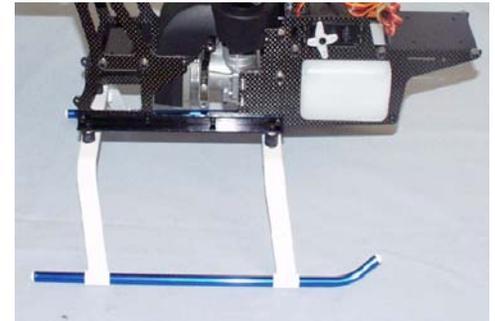


Skid Pipe End Caps (4)

- 3mm Set Screws (4)
- 3 X 12mm Cap Head Bolts (4)
- 3mm Lock Nuts (4)

## Step 17: Installation of Landing Gear

Landing Gear Installation: Hold one strut up to you helicopter so that the landing gear strut is centered. Mark the hole with a pen or a marker. Drill 1/8 or 3.1 mm holes. Hold your other strut up to the one you already drilled. Drill the second strut. Insert the metal skid pipes into struts. Bolt the struts to the right angle frame pieces with 3 X 12mm Cap head Bolts. It is recommended that you use Landing Gear Dampeners (HHI2004). After installing the landing gear to the frames, make any adjustments to allow the landing gear to sit evenly on the ground. Finish by fastening the skid pipes with 3 X 3mm set screws and CA gluing the end caps in.



## Parts List

- 3 X 3mm Set Screws (2)
- 3 X 6mm Cap Head Bolts (6)
- 2 X 7mm Phillips Head Screw (2)
- 3 X 25mm Cap Head Bolts (1)
- 3mm Lock Nuts (1)
- 2.0mm Med Ball Links (2)
- 2 X 10mm Phillips screws (1)
- 2 X 8mm Phillips screws (2)
- Shim balls (2)



5 X 10 X 4 Flanged Bearings (2)

Tail Pitch Change Lever Mount (1)



Tail Pitch Change Lever (1)



Tail Pitch Slider (1)



Tail Rotor Assembly (1)



Tail Pulley Spacers (2)



Tail Idler Pulley (1)



Tail Output Shaft (1)



Tail Case Crossmember (1)



Tail Gear Case Side Plates (2)



Tail Boom w/Tail Case Mount (1)

## Step 18: Building Tail Case



Tail Drive Belt (1)

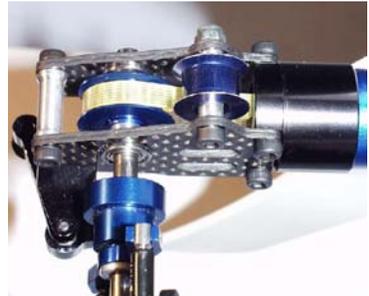


Tail Rotor Blades (2)

The next step is to build and install the tail-boom and gear-case assembly. First you need to install the bearings into the tail gear case side plates. You do this the same way as with the bearings in the main frames. Make sure that the flanges on your bearings are facing the inside. Take the rear tail gear case side-plates and fasten one side to the rear tail-case hub. Next, attach the tail-rotor assembly to the tail output shaft using a 3 X 3mm set screw. Install the shim balls onto the blade grips with the 2 X 8mm phillips screws. You should use the holes that are farther away from the center. Now slide the tail-pitch slider onto the tail output shaft and attach the plastic ball-links. You will need to adjust this assembly later. Slide this assembly and shaft into the attached side-plate. Begin attaching the pulley to the shaft, but first slide the first of the two pulley-spacers onto the shaft. The pulley will now attach to the shaft using a 3 X 3mm set-screw this set-screw will fit nicely into the index hole on the shaft. Now slide the belt through the tail boom and around the rear tail pulley. Put the other spacer on the tail output shaft and attach the other side plate to the rear tail case hub. Next, attach the rear tail case cross-member using two 3 X 6 mm cap head bolts. Finish building the tail case by mounting the tail pitch control-lever mount and tail pitch control-lever. Attach the mount with 2 mm X 7mm phillips head bolts to the tail-case side-plates. Finally, attach the tail pitch control-lever to the mount using 2 x 10 mm Phillips Screw. Attach the tail idler-pulley using 3 x 25mm Cap Head Bolt & 3mm locknut. Also, place the 5.5mm spacers on either side of the idler-pulley and slide between the tail-case side-plates.



Rear Tail Pulley (1)



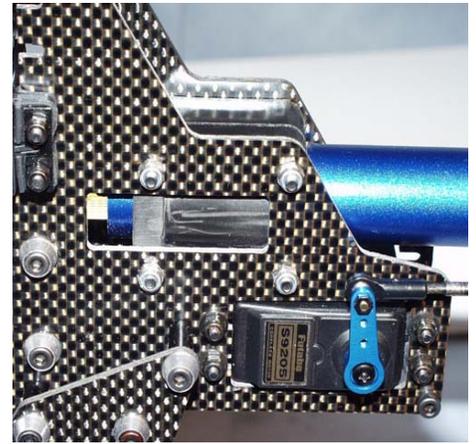
## Parts List



- Horizontal Fin Mount (1)
- Tail Boom Clamps (2)
- Tail Boom w/Tail Case
- 3 X 35mm Cap Head Bolts (4)
- 3mm Lock Nuts (4)

## Step 19: Tail Boom Installation

Installing the boom into the frames: Use the plastic boom holders and four 3 x 35mm cap head bolts with four 3mm Locknuts. With the belt straight in the boom, point the tail rotor assembly towards the sky. Slide the belt over front pulley and make the belt snug. Rotate the boom to the right 90 degrees. After the boom has been rotated into the proper position, test the tension of the belt by depressing the belt approximately  $\frac{1}{4}$  the width of the boom. Tighten the bolts making sure everything is 90 degrees and square. Simply slide the horizontal fin mount over the boom for later use.



## Step 20: Tail Boom Support Installation

### Parts List

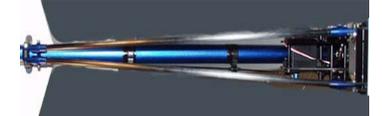


- Tail Boom Support Ends (4)



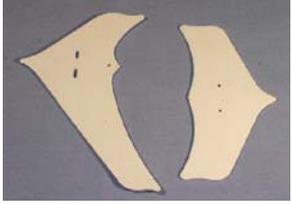
- Tail Boom Support Rods (2)
- 3 X 10mm Cap Head Bolts (2)
- 3 X 18mm Cap Head Bolts (1)
- 3mm Lock Nuts (3)
- 2.6 X 10mm Cap Head Bolts (4)

Attaching the boom supports: The first step in mounting the dual booms supports to your machine is to attach them and make a dry fit. The ends that bolt to the lower main frames are fastened with 3 X 10mm cap head bolts and 3mm lock-nuts. The two ends that attach to the horizontal fin mount use a 3mm X 18mm cap head bolt and a 3mm lock-nut. After the boom supports are dry-fitted, drill out aluminum support end holes by first using a 1mm drill, then a 2mm drill and finally a 3mm drill. Complete the installation by applying a thin layer of CA glue on the outside of the carbon rod, slipping the alum. ends over rod and finally installing the 2.6mm X 10mm cap head bolts.



## Step 21: Tail Fin Installation

### Parts List



Horizontal & Vertical Fins (1)



Horizontal Fin Mount (1)

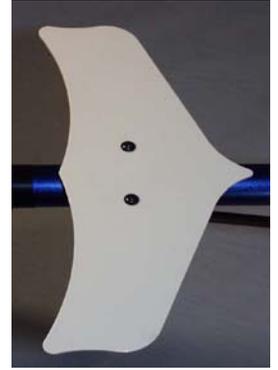


Vertical Fin Mount (1)

3 X 8mm Cap Head Bolts (2)

3 X 6mm Cap Head Bolts (2)

Installing fin set: attach the Horizontal Fin to the Fin Mount by using 2- 3 X 8mm Cap Head Bolts. Attach the vertical fin to the mount using 3 X 6mm Cap Head Screws & the Vertical Fin Mount.



## Step 22: Swashplate & Anti-Rotation Guide Installation

### Parts List



120 degree Swashplate (1)



Anti-Rotation Guide A&B (1)

3 X 6mm Cap Head Bolts (2)

Installing the swash plate and the anti-rotation guide assembly: Slide the swash plate over the main shaft and point the swash plate anti-rotation pin towards the rear. Assemble the two-piece anti-rotation guide using 2- 3 X 6mm Cap Head Bolts. Next, slide the pin from swash into the anti-rotation guide slot and install the anti-rotation guide base between the frames using (4) 3 X 6mm Cap Head bolts.



## Step 23: Washout Assm.

### Parts List



- Washout Assembly (1)
- Washout Anti-Rotation Guide (1)
- 2.0mm Med Ball Links (2)

Install the Washout on the main shaft and finish by connecting the washout links to the swashplate. After the Washout is in place install the Washout Anti-rotation Guide over the Main Shaft with the pin placed into the slot on the washout unit. Keep the guide loose until the Head and control linkages are installed.



## Step 24: Main Rotor Head Assm. & Installation

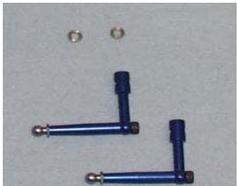
### Parts List



- Main Rotor Head (1)



- Flybar (1)



- Flybar Control Arms (2)
- 3mm Spacers (2)



- Flybar Control Paddles (2)
- 3mm Set Screws (2)
- 3 X 22mm Cap Head Bolts
- 3mm Lock Nuts

Before you bolt the head to the main shaft, install the 3mm fly bar and paddles. First step is to insert the fly bar into the seesaw unit and position so that it is close to center. Next slide the 3mm shim over the fly bar followed by the fly bar control arms. This will need to be done on each side of the seesaw unit. To ensure that the fly bar is centered, measure the remaining length on each side of the seesaw and make them the same. After the fly bar is centered, tighten the 3mm set screws onto the fly bar making sure the arms are parallel. After the fly bar is secured into the head, make a mark on each side of the fly bar 20mm in from the end. Then screw the paddles on to this mark make sure they are parallel to the fly bar control arms. The two holes in the fly bar paddles are for general flying and acrobatic flying. The front hole gives slower rates, the back faster. Attach the Head to the main shaft using a 3mm X 22mm Cap Head Bolt & 3mm Lock Nut.



# Step 25: Linkage Rod Assembly & Installation

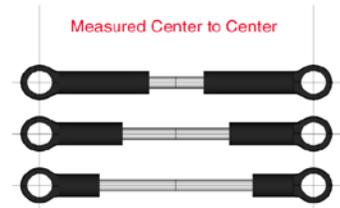
## Parts List

### Rod Sizes

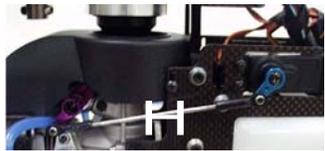
- 2.3 X 15mm (2)
- 2.3 X 30mm (1)
- 2.3 X 35mm (3)
- 2.3 X 50mm (1)
- 2.3 X 75mm (1)
- 2.3 X 80mm (1)
- 2.3 X 85mm (2)



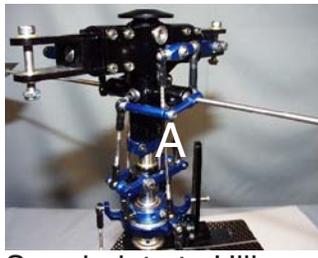
- Small Ball Link Left (2)
- Medium Ball Link Center (18)
- Long Ball Links Right (4)



Rods to Make	Location of Linkage Rods Part A to Part B	Rod ID	Rod Length	Ball Link Size 1	Ball Link Size 2	Total Length Center to Center
2	Swashplate to Hiller	(A)	85mm	Medium	Medium	102mm
2	Hiller to Seasaw	(B)	15mm	Small	Medium	26mm
2	Flybar Control Arm to Washout Arms	(C)	35mm	Medium	Medium	53mm
1	Elevator Control Arm to Front Swashplate	(D)	35mm	Medium	Medium	52mm
1	Front Elevator Servo to Elevator Control Arm Assm.	(E)	75mm	Medium	Medium	92mm
1	Rear Lower Swash Servo to Swashplate	(F)	50mm	Long	Long	72mm
1	Rear Upper Swash Servo to Swashplate	(G)	30mm	Medium	Medium	48mm
1	Throttle Servo to Carb	(H)	80mm	Long	Long	98mm
1	Tail Servo to Tail Pitch Change Lever	(I)	560mm-562mm	Medium	Medium	642mm



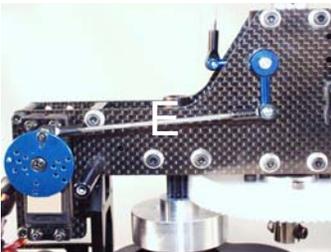
Throttle Servo to Carb.



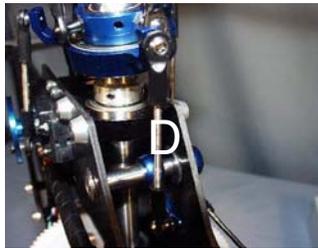
Swashplate to Hiller



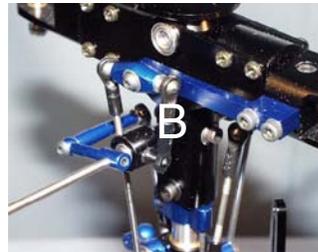
Tail Servo to Tail Pitch Change Lever



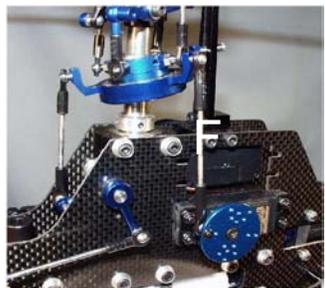
Frnt. Elevator Servo to Elevator Control Arm



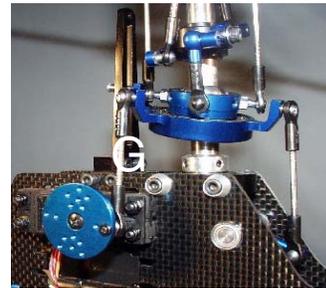
Elevator Control Shaft to Swashplate



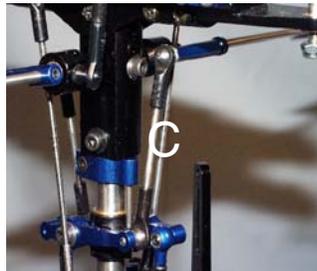
Hiller to Seasaw



Rear Lower Swash. Servo to Swashplate



Rear Upper Swash. Servo to Swashplate



Inline Flybar Control Arm to Washout Arms

Assemble all Linkage Rods based on the chart and the pictures to identify their location. All Linkage Rods are measured center to center and are approximate length. The tail rod installation and radio setup will be further explained on the next page.

## Step 26: Upper Frames 26mm Cross-member

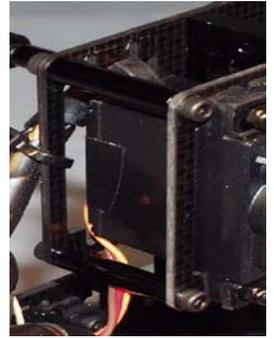
### Parts List

3 X 8mm Cap Head Bolts (4)

Install the 2-26mm Cross-Members Into the Upper Frames with 3 X 8 mm Cap Head Bolts



26mm Cross-Member (2)



## Step 27: Radio Setup

**First, change your radio to 3 Point, 120 Degrees swashplate mixing. My advice is to read your radio manual for proper adjustment of the swash mixing.**

**After you have the radio gear installed, the basic guide-lines for proper setup of an EMS system is everything must be 90 Degrees and Parallel with all control sticks in the center. After all linkages are installed and everything meets the above requirements, you should have 0 degrees of main rotor blade pitch at center stick. Make the necessary adjustment to complete the setup.**

### Pitch Curve Setup:

**Complete the following steps in the Pitch Curve Menu of the Radio. In Normal Mode make the Pitch curve the following: at Bottom-Stick, 0 to -2 Degrees; Mid-Stick, 5 to 6 Degrees, and Top-Stick, 9 to 10 Degrees. For Stunt 1 & 2: Bottom-Stick, -9 Degrees; Mid-Stick, 0 Degrees; and Top-Stick, 9 Degrees. Note: Stunt one and two should only be used by pilots ready for forward flight and aerobatics. Do not use these settings until your skill level is ready.**

**Throttle Curve Setup: Normal Mode, Bottom-Stick 20 Percent throttle; Mid-Stick, 50 Percent Throttle, Top Stick 100 Percent Throttle. Stunt 1 & 2 Bottom-Stick 100 Percent; Mid-Stick, 25 Percent; Top Stick, 100 Percent.**

**Tail Rotor: Setup the Tail rotor limits so the throws that the tail pitch slider does not exceed a 5mm gap between the tail case and the tail pitch slider.**

## Step 26: Canopy Mounting

### Parts List



Fiberglass Canopy (1)



Canopy Cross-members

Long (2)

Short (2)

Mount the Stand-offs to the main frames using 3 X6 mm Cap Head Bolts. (The standoffs are cross-members with a flare at one end). After the Stand-offs are mounted to the frames, place the canopy in position with the upper opening surrounding the swash plate. The bottom of the canopy should appear level. Now that canopy is located in a position that you deem appropriate, place a mark on the outside of the canopy that corresponds to the location of the stand-offs on the frames. This is accomplished by shining a flashlight inside the canopy so you can see where the stand-offs are touching the inside canopy walls. Finally, after the marks are made on the canopy, drill a 1/4 hole at each mark and insert the canopy rubber grommets into the drilled holes. Attach the canopy to the stand-offs using 3mm x 10mm Cap Screws.

## Additional Setup Information

**Servo Arm Length:** The lengths of the three head servos should be identical. The effective length of the inner and outer elevator control arms is 20mm. So, try to get the lengths as close to 20mm as possible.

**Orient the servo arms:** With the collective stick centered, ensure that the head servo arms are perpendicular to their control rods. If they are not rotate your arms to they are close and use your subtrims to fine tune them.

**Leveling the swash:** Using a ruler measure from the bottom of the swashplate to the top mainshaft bearing block. Adjust all the connecting rods so that the swashplate is level. Equal all the way around the swashplate.

**Level the washout and mixer arms:** With the collective stick centered and the flybar perpendicular to the mainshaft, ensure that the washout and mixer arms are perpendicular to the mainshaft. Adjust rods as necessary.

**Additional tail rotor information:** When you set up your tail rotor you need to make sure that your tail pitch slider is not going to hit your tail pitch control lever mount. With some gyros you can adjust this and others you can't. If you have a gyro that you can't adjust this all you need to do is take a piece of fuel tubing and slide it onto your tail output shaft. Spin your tail rotor to make sure the fuel tubing is long enough but not too long.

**Helicopter Center of Gravity(CG):** When the flybar is perpendicular to the tailboom, pick it up and the nose should be just slightly heavier. If you need to just move your battery forward to get proper CG.