Heli-Max™ Kinetic 50™

INSTRUCTION MANUAL

Rotor Span: 52.75 in [1340mm]
Weight: 7.5 lb [3402g]
Length: 47 in [1194mm]
Height: 15.25 in [387mm]
Engine: .46-.51 cu in [7.5-8cc] 2-Stroke
Gear Ratio: 9.1:1 (Main)
5:1 (Tail)

WARRANTY

Heli-Max™ guarantees this kit to be free from defects in both materials and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. **In no case shall Heli-Max's liability exceed the original cost of the purchased kit.** Further, Heli-Max reserves the right to change or modify this warranty without notice.

In that Heli-Max has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim, send the defective part or item to Hobby Services at this address.

Hobby Services
3002 N. Apollo Dr., Suite 1
Champaign, IL 61822
USA

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

READ THROUGH THIS INSTRUCTION MANUAL FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

Heli-Max™

Champaign, Illinois
(217) 398-8970, Extension 6
E-mail: **helihotline@hobbico.com**

TABLE OF CONTENTS

INTRODUCTION

Thank you for purchasing the Heli-Max™ Kinetic™ .50. We are certain you will get many hours of enjoyment out of this model. If you should have any questions or concerns please feel free to contact us at:

helihotline@hobbico.com

For the latest technical updates or manual corrections to the Kinetic .50 visit the Heli-Max web site at:

www.helimax-rc.com

Open the “Helicopters” link, and then select the Kinetic .50. If there is new technical information or changes to this model a “tech notice” box will appear in the upper left corner of the page.

For any helicopter to perform to its full potential, it must be equipped with all the right gear (servos, batteries, receiver, etc). While other brands of equipment can be used, the equipment we recommend has the advantage of being extensively tested and proven effective. If you assemble this model according to this manual and use the recommended equipment, you should get top performance from your Kinetic .50.

CAUTION: Be aware that the Kinetic .50 is operated on the same frequency band as most R/C models. If flying your helicopter within five miles of an R/C site, there is a real possibility that you could be operating your model on the same frequency (channel) as another R/C pilot. If this happens, a crash will result—with the person flying the more expensive model suffering the greater loss (and having greater potential for property damage or injury). The best thing to do is to join an R/C club and fly at the site where frequency control measures will be in effect. If you insist on flying elsewhere, always be aware of your proximity to R/C flying sites.

AMA

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below.

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302
Tele: (800) 435-9262
Fax (765) 741-0057
Or via the Internet at:
http://www.modelaircraft.org

Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in severe injury to yourself and others.

- Keep your face and body as well as all spectators away from the plane of rotation of the rotors.
- Keep these items away from the rotors: loose clothing (includes ties, scarfs and shirt sleeves), long hair, and loose objects (such as pencils, screwdrivers) which can fall from shirt or jacket pockets.
- The spinning blades of a model helicopter can cause serious injury. Main rotor blades are consumable items, please inspect blades before flight.
- When choosing a flying site for your Kinetic .50, stay clear of buildings, trees and power lines.
- AVOID flying in or near crowded areas. DO NOT fly close to other people, children or pets.
- Maintain a safe pilot-to-helicopter distance while flying.
- Your Kinetic .50 should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size helicopter. Because of its performance capabilities, the Kinetic .50, if not assembled and operated correctly, could possibly cause serious injury to you or spectators and damage to property.
- You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances, the written instructions should be considered as correct.
- You must take time to build **properly**, **true** and **strong**.
- You must use an R/C radio system that is in first-class condition and a correctly sized engine and components throughout the building process.
- You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air.
- You must check the operation of the model before **every** flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check linkages or other connectors often and replace them if they show any signs of wear or fatigue.
- If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

We, as the manufacturer, provide you with a top quality, thoroughly tested ARF and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow the instructions to build a safe and enjoyable model.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the Kinetic .50 that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

The Kinetic .50 requires five servos. The cyclics, throttle and collective require a minimum of 42 oz/in for basic aerobatics. A Hi-Speed and Hi-Torque tail servo such as the (FUTM0224) Futaba® DS9254 is highly recommended to obtain the best performance from the gyro.

A 6-channel transmitter is required to fly the Kinetic .50. Modern computer radios make adjustments considerably easier and are highly recommended. Plus the features on the radios today make 3D maneuvers possible.

Transmitter/Receiver Recommendations:
- Budget: Futaba 6EXH FM w/4 S3151 Servo (FUTK58**)
- Mid-Range: Futaba 7CHF FM w/4 S3151 Servos (FUTJ73**)
- High-End: Futaba 9CHPS PCM Synthesized (FUTK9205)

Recommended Cyclic, Throttle and Collective Servos:
- Budget: Futaba S3001 (FUTM0029)
- Mid-Range: Futaba Digital S3151 (FUTM0310)
- High-End: Futaba Digital S9252 (FUTM0222)

Recommended Gyro and Tail Servo:
- Budget: Futaba GY240 (FUTM0809) and S3151 Servo (FUTM0310)
- Mid-Range: Futaba GY401 w/S9254 Servo (FUTM0808)
- High-End: Futaba GY611 w/S9256 Servo (FUTM0825)

Recommended Receiver Batteries:
A 4-cell, 4.8 volt (2000mAh minimum) NIMH/NICAD battery pack is recommended for the Kinetic .50
- Hydrimax™ 4.8volt 2000mah Flat Battery (HCAM6321)
- Hydrimax 4.8volt 3600mah Flat Battery (HCAM6333)
- Hydrimax 4.8volt 4200mah Flat Battery (HCAM6335)

ADDITIONAL ITEMS REQUIRED

REQUIRED HARDWARE AND ACCESSORIES
This is the list of hardware and accessories required to finish the Kinetic .50. Order numbers are provided in parentheses.

- ❑ O.S.® 50 SX-H Ringed Hyper (OSMG1951)
- ❑ Torpedo Muffler .46-.50 (CEHG3033)
- ❑ Great Planes® Pro Thread Locker (GPMR6060)
- ❑ Great Planes 1" x 3' Double Sided Tape (GPMQ4442)
- ❑ Great Planes 3' Silicone Fuel Tubing (GPMR4131)
- ❑ Great Planes Fuel Filter (GPMQ4150)
- ❑ O.S. Remote Glow Plug Adapter (OSMG2401)
- ❑ Heli-Max .30 – .50 Size Blade Holder (GPMQ4150)

FIELD EQUIPMENT
- ❑ Heli-Max One-Way Start Shaft (HMXP2050)
- ❑ Hobbico® Glow Plug Wrench (HCAP2550)
- ❑ Hobbico Ultra-Tote™ Field Box Complete Combo (HCAP5105) (Includes the following items):
  - Filling Station Can Fittings Set (GPMP4155)
  - 12V Charger Torqmaster™ Battery (HCAP0200)
  - Deluxe Power Panel II (HCAP0302)
  - Torqmaster 12V 7A Battery (HCAP0800)
  - 5' Recoil Fuel Tubing (HCAP2200)
  - Panel-Ready Locking Glow Plug Clip (HCAP2502)
  - Panel-Ready Top Fueler™ 6/12 Volt (HCAP3107)
  - Torqmaster 90 12V Starter (HCAP3200)
  - Ultra-Tote Field Box (HCAP5020)

OPTIONAL SUPPLIES AND TOOLS
- ❑ O.S. Crankshaft Clamp .32-.46 (OSMR1004)
- ❑ DuraTrax® Phillips Screwdriver (DTXR0181)
- ❑ DuraTrax Slotted Screwdriver (DTXR0177)
- ❑ Hobbico Needle Nose Pliers (HCAR0625)
- ❑ Hobbico Curved Scissors (HCAR0667)
- ❑ Heli-Max Ball Link Pliers (HMXR4858)
- ❑ Heli-Max Pitch Gauge (HMXR4850)
- ❑ Heli-Max Blade Balancer (HMXR4855)
- ❑ DuraTrax 5.5mm Nut Driver (DTXR0212)

IMPORTANT BUILDING NOTES

- There are two types of threaded fasteners used in this kit:
  Self-Tapping Screws are designated by a diameter and a length and are intended to thread into plastic.

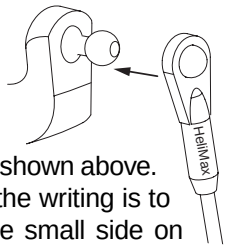
  This is a 3mm x 10mm Self-Tapping 

  Machine screws are designated by a diameter and threads per mm/inch. This type of screw is referred to as Socket Head Cap Screw (SHCS) through out this manual.

  This is a 3mm x 10mm SHCS 

- **Thread Locker:** Model engines generate a lot of vibration and cause screws to work loose. Thread Locker (GPMR6060) should be used on all machine screws when they are threaded into a pre-tapped hole in metal. Generally blue thread locker is removable and should be used in all cases. Please keep in mind only a small amount of thread locker is needed to retain the bolt. Please check preassembled components for thread locking compound.

- **Ball Links:** If you look closely at the plastic ball links used on this helicopter you will notice the holes on each side of the link are different sizes. The side with the smaller hole also has writing on it as shown above. When you snap the link on, make sure the writing is to the outside. If you accidentally snap the small side on first, the ball link may crack. If the ball link does not pivot freely once snapped on, you can use a small pair of pliers to lightly squeeze the link and help loosen it up.



- When you see the term ***test fit*** in the instructions, it means that you should first position the part on the assembly to verify it fits properly. Once you are sure, then proceed with the instructions or assembly.

- **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.

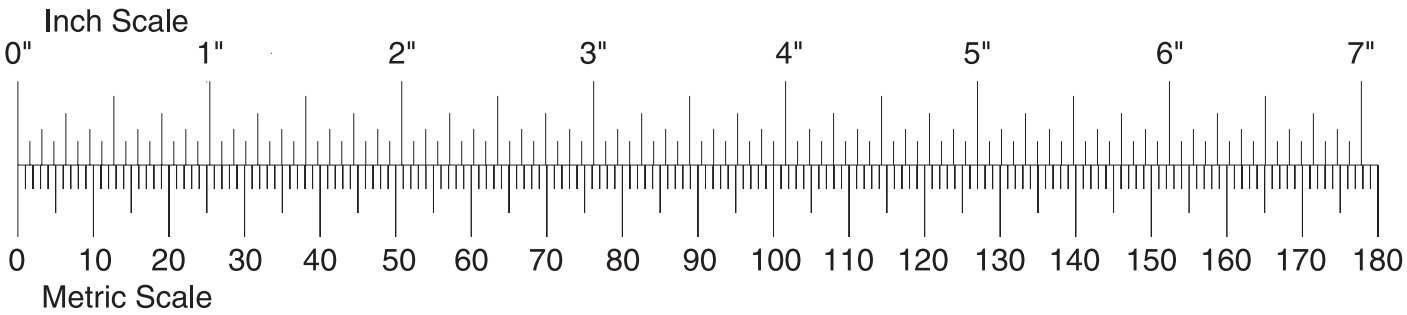
KIT INSPECTION

Before starting to build, take an inventory of the model to make sure it is complete, and inspect the parts to make sure they are of acceptable quality. If any parts are missing or are not of acceptable quality, or if you need assistance with assembly, contact Product Support. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list.

Heli-Max Product Support:
3002 N. Apollo Drive, Suite 1,
Champaign, IL 61822
Telephone: (217) 398-8970, ext. 6,
Fax: (217) 398-7721
E-mail: **helihotline@hobbico.com**

KIT CONTENTS

Bag 1: Head Parts and Paddles
Bag 2: Main Mechanics
Bag 3: Clutch System and Fan
Bag 4: Links, Gyro and Tail Servo Mounts
Bag 5: Fin Set
Bag 6: Landing Gear Set
Bag 7: Main Blades
Bag 8: Tail Boom
Bag 9: Servo Tray Set
Bag 10: Lower Frames, Fuel Tank, Fan Shroud
Bag 11: Canopy

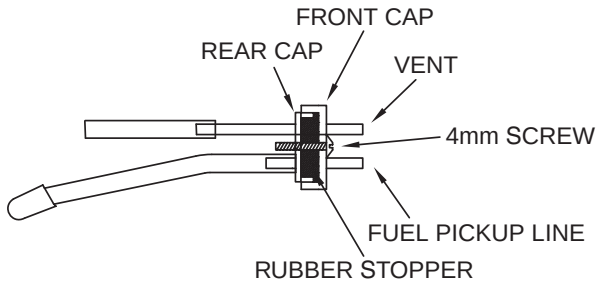


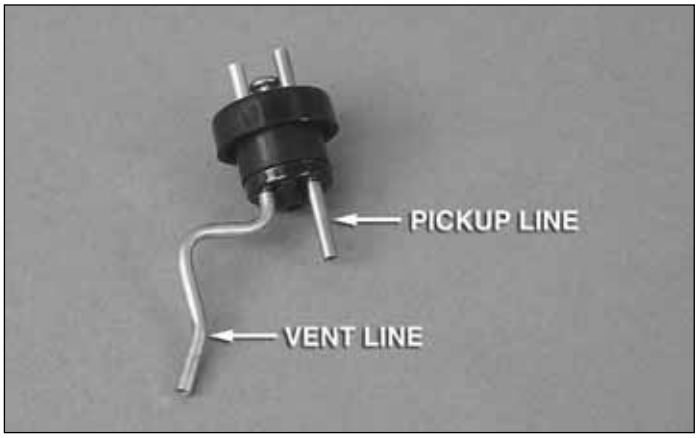
ASSEMBLY INSTRUCTIONS

LOWER FRAME AND TANK

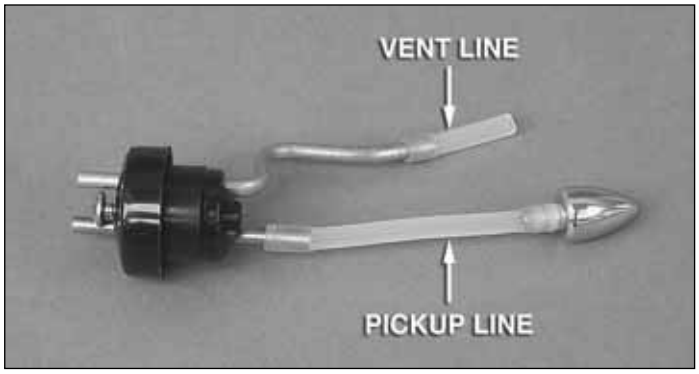
Bag 10 Contents: *Main Frame Assembly (Engine Mount and Fuel Tank Installed), Fuel Stopper, Brass Tubing, Silicone Fuel Line, and Stopper Screw, Lower Fan Shroud.*

AS VIEWED FROM THE TOP

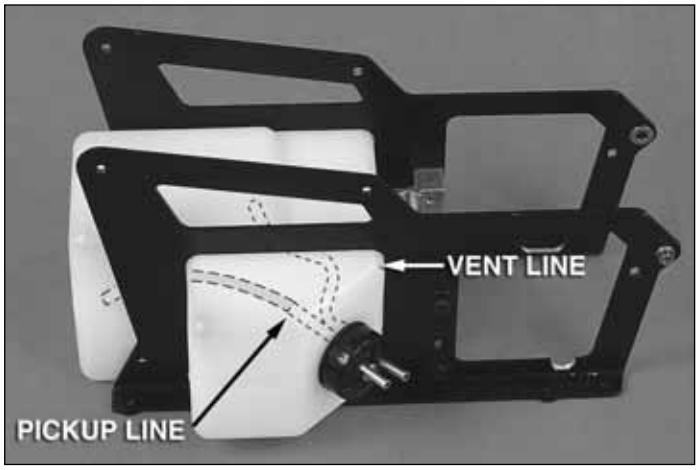




❏ 1. Slide the short brass tubing through the front cap. Slide the rubber fuel tank stopper over the brass tubing from the back side. Install the rear cap. Insert the long pre-bent piece of brass tubing through the rear cap and through the rubber stopper. Leave 1/2" [12.7mm] of brass tubing protruding from the front of the cap. Install the 4mm self-tapping screw through the front cap and into the rear cap (Start the screw into the cap. Do not tighten until it has been installed into the fuel tank).

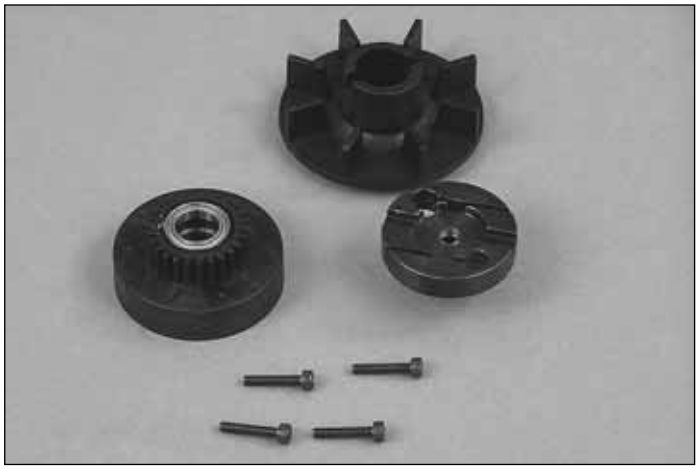


❏ 2. Cut the clunk line to a length of 60mm and slide it onto the short brass tubing. Slide the fuel tubing over the clunk. Cut a piece of the larger silicone tubing to 30mm with an angled cut as shown above. Install on the vent line. **Hint:** Use a marker to identify the pickup line later.

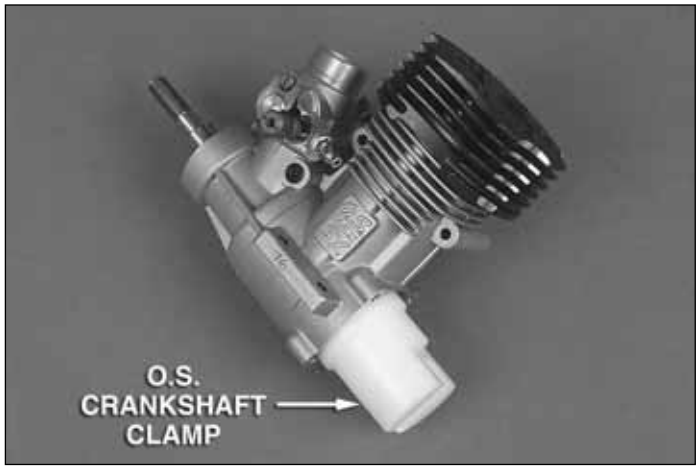


❏ 3. Rotate the vent line against the pickup line to make it easier to install. Slide the fuel line assembly into the fuel tank and align the vent line with the top of the tank (if you find it difficult to see inside the tank, hold it up to a bright light). Tighten the 4mm fuel tank stopper screw until you feel it begin to compress. Do not overtighten this as you may strip the rear cap.

ENGINE



Bag 3 Contents: *Clutch Bell, Fan, Clutch, Engine Mount*
From Bag 10: *Screws (3x16mm Socket Head Cap Screw)*



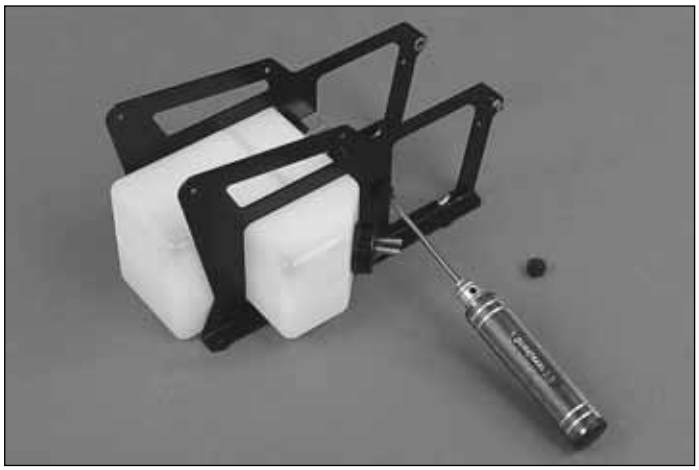
Note: You will need to lock the crankshaft while tightening the clutch and nut. We recommend using a O.S. Crankshaft Clamp .32-.46 (OSMR1004) as shown above.

❏ 1. Remove the nut from the end of the engine's crankshaft but leave the large flat washer resting against the front ball bearing. The large washer (10x16mm) included in the kit is only used if your engine did not include one.

❏ 2. Slide the clutch bell onto the stepped end of the clutch and test fit the assembly on the engine. Once you verify everything threads on properly, remove the clutch and bell.

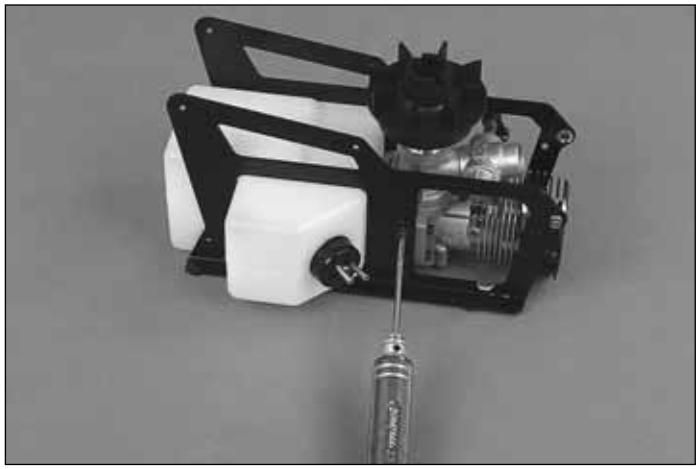
❏ 3. Apply thread lock to the crankshaft of the engine and thread the clutch onto the engine. Use a thick piece of cardboard to protect the crankshaft and tighten the clutch using a screwdriver as shown in the picture above.

❏ 4. Install the fan on the engine. Make sure the key on the bottom of the fan lines up with the slots in the clutch. Place the 6.5x13mm washer on the crankshaft, apply some thread lock to the crankshaft threads and install the original crankshaft nut. Using a crankshaft clamp and a 7/16" [11mm] wrench, tighten the nut down against the fan. Re-install the engine's backplate.



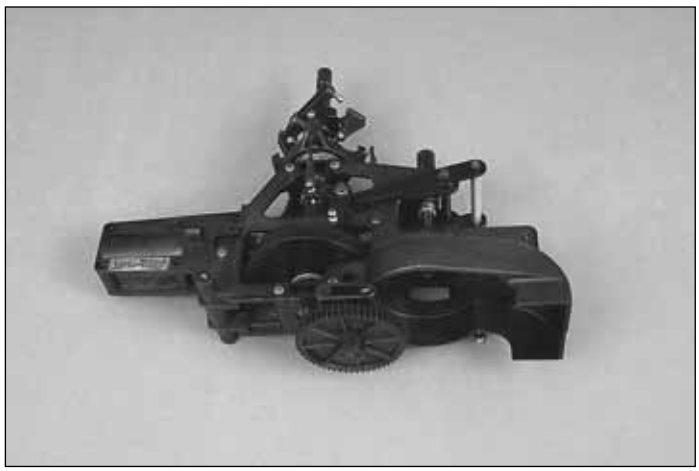
❏ 5. Using a 2.5mm hex driver remove the two engine mount bolts from the right side of the frame. Remove the right side frame and fuel tank for now.

❏ 6. Install the engine onto the mount using thread locker and the four 3x16mm screws provided.

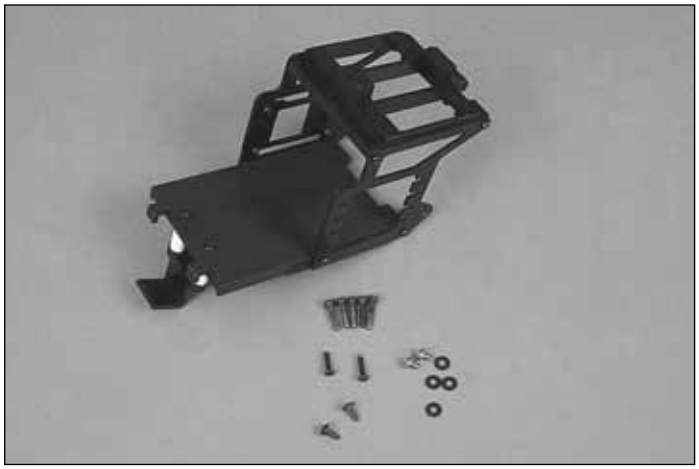


❏ 7. Install the right side frame using the 3x12mm screws and large washers (use thread lock). Before tightening the bolts place the frames on a flat surface to ensure they are parallel. Tighten the bolts. Check the left side engine mount bolts (factory-assembled) for thread locker and apply if necessary.

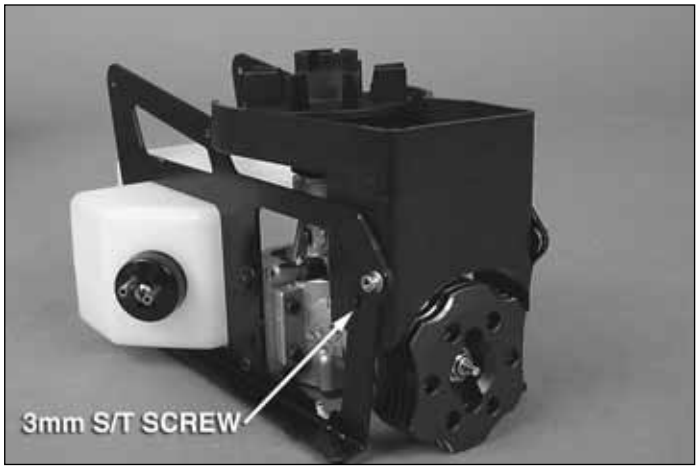
UPPER FRAME AND SERVO FRAME INSTALLATION



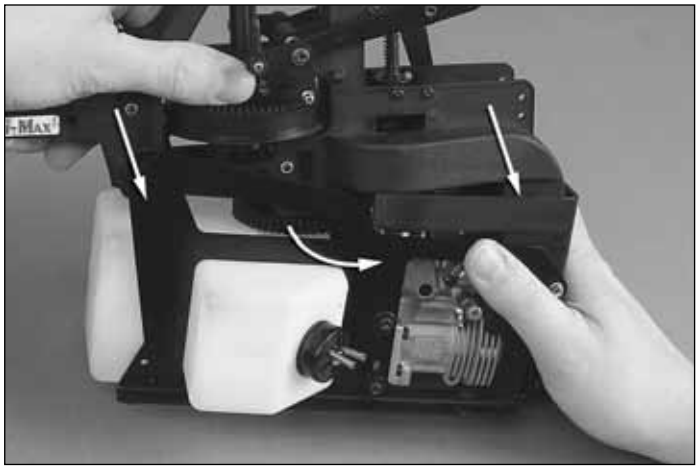
Bag 2 Contents: *Assembled Main Mechanics*



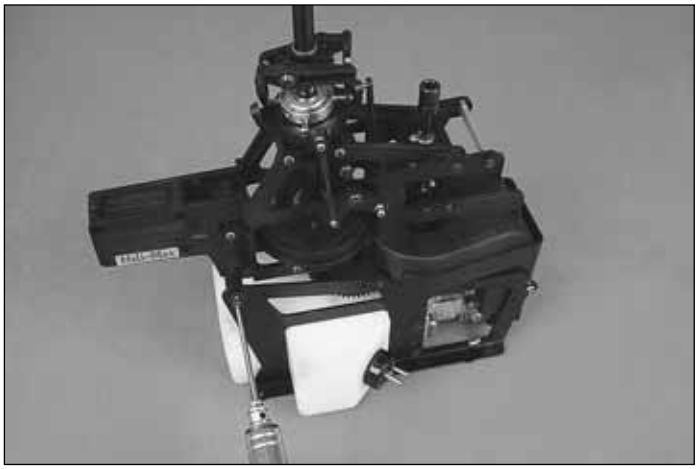
Bag 9 Contents: *Servo Tray Set, 3x12mm Cap Screw (4), 3x8mm Self-Tapping Screw (2), 3x8mm Mashine Screw (2), 3x8x1mm Flat Washer (4), 3x12mm Self-Tapping Screw*



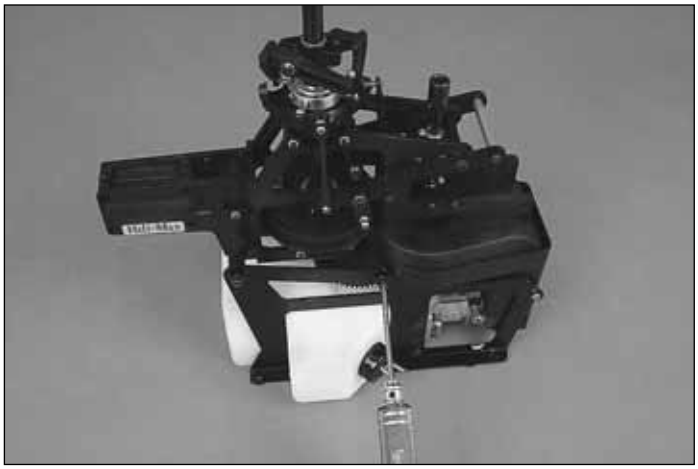
❏ 1. Slide the lower fan shroud over the engine as shown in the picture above and install the 3mm self-tapping screw as shown. Repeat on the opposite side.



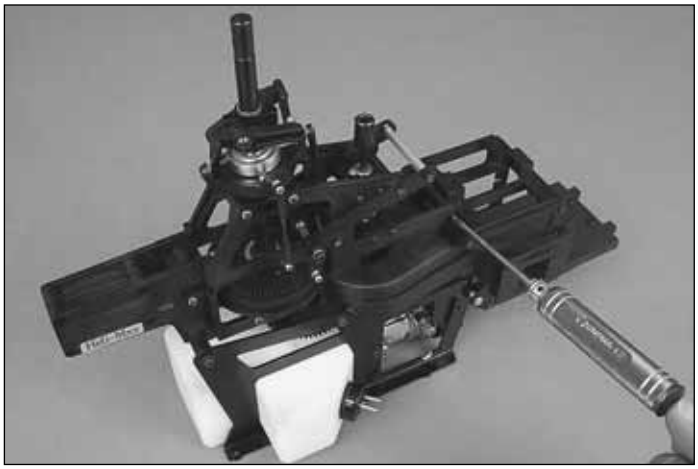
❏ 2. Slide the rear portion of the upper frame into the lower frame. Align the upper and lower fan shroud and slide the upper frame forward while pressing downward. The clutch bell and pinion must clear the main gear before the upper frame will slide down into its proper location.



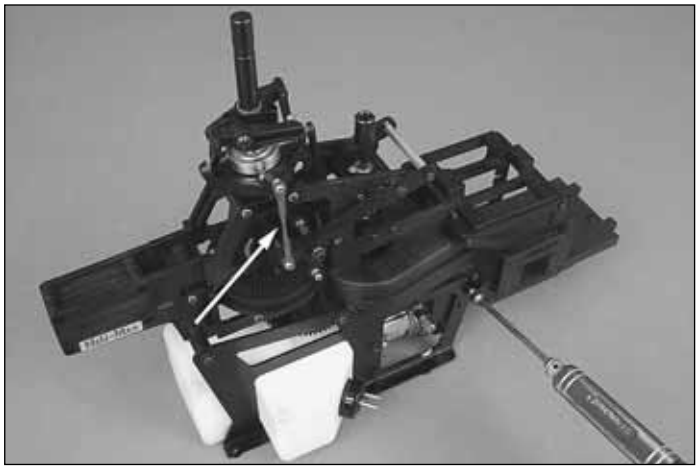
❏ 3. Apply thread locker to one 3x12mm socket head cap screw. Install the screw and washer as shown above. Repeat on the opposite side of the frame.

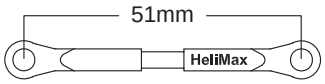


❏ 4. Apply thread locker to one 3x14mm socket head cap screw. Install the screw and washer as shown above. Repeat on the opposite side of the frame.



❏ 5. Slide the servo frame in-between the lower frames and onto the upper frames. Install a 3x12mm self-tapping screw into the top of the frame as shown above. Repeat for the opposite side.

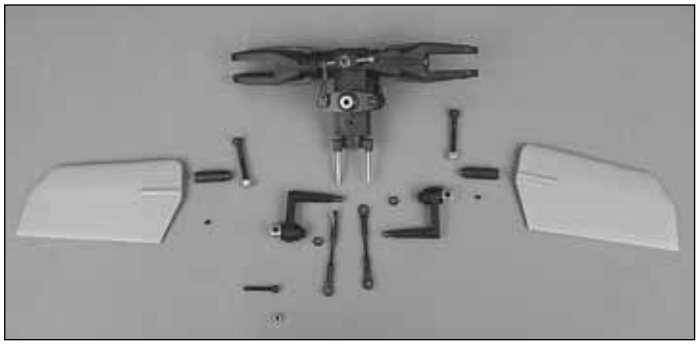




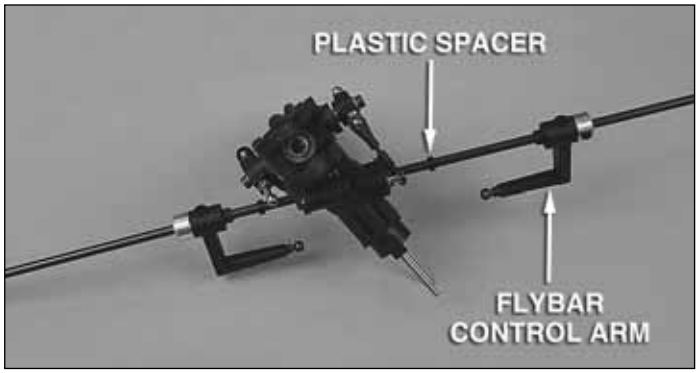
(Sketch not to scale)

❏ 6. Install the silver 3x6mm silver Phillips screw into the lower part of the servo frame as shown above. Remove the two bellcrank to swash linkages and verify they are 51mm long. Go ahead and re-install the linkages now.

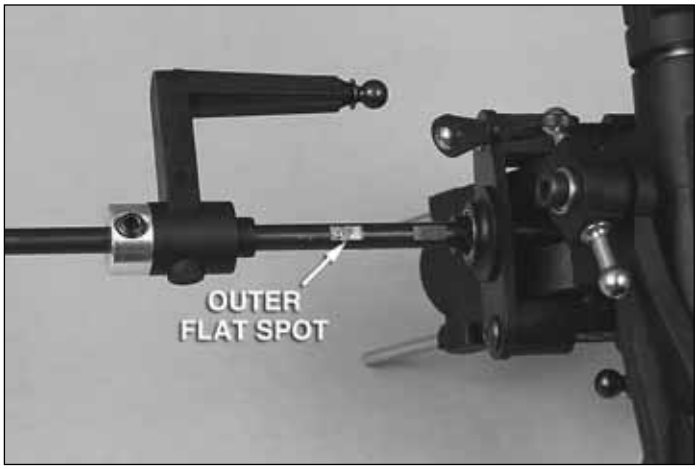
MAIN ROTOR HEAD ASSEMBLY AND INSTALLATION



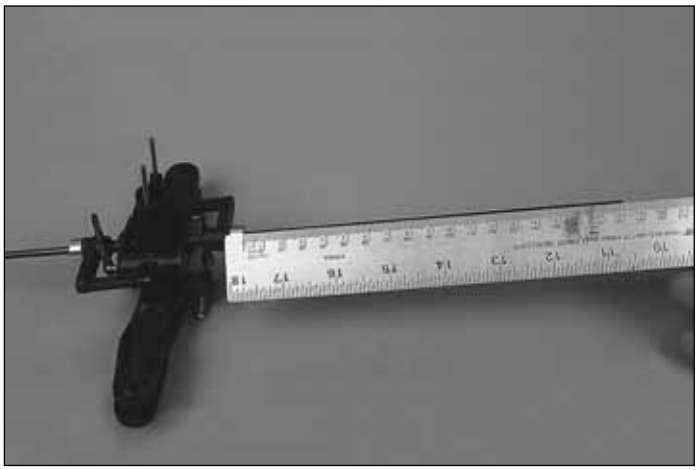
Bag 1 Contents: *Flybar Control Arm [4x6x2.5mm Plastic Spacer (2), Washout-Flybar Pushrod (2), Flybar Control Arm (2), 5x4mm Set Screw], Flybar Paddles [Flybar Weights (2), 3x3mm Set Screws (2), Flybar Paddles .50 Sized (2)], Main Head Assembly, 4x30mm Cap Screw (2), 4mm Locknut (2), 3x20mm Cap Screw, 3mm Locknut*



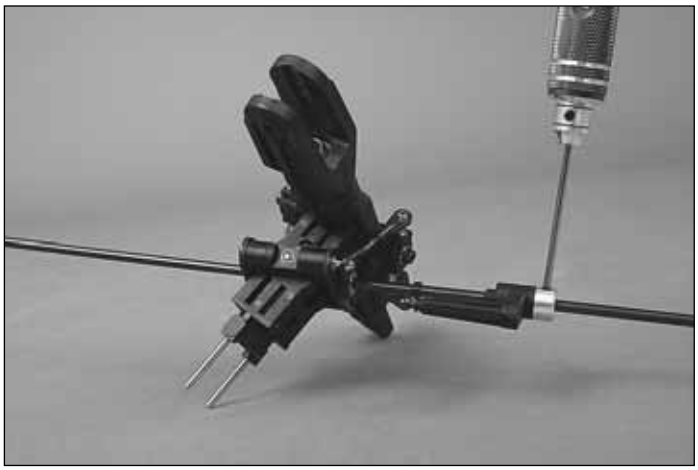
❏ 1. Slide the 4mm flybar (found in tail boom bag 8) through the flybar carrier bearings and slide a plastic bushing on from each side. Next slide the control arms onto the flybar as shown in the picture above. (The set screws will face upwards.)



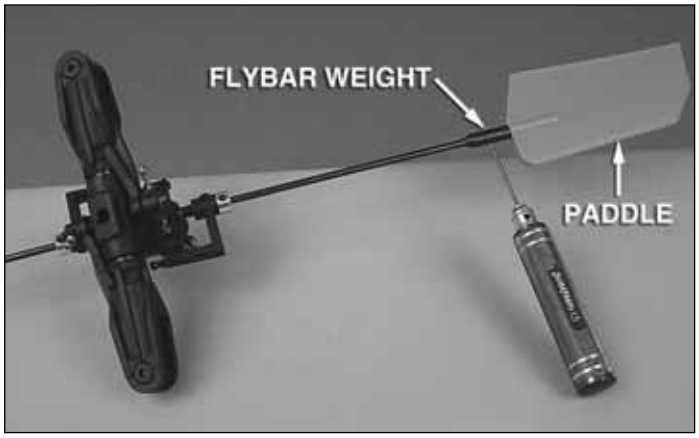
❑ 2. Remove the set screws from the flybar arms and align the hole with the flat spot on the flybar. Apply a small amount of thread locker to each of the set screws and re-install. Only lightly tighten them at this time as the flybar needs to be centered.



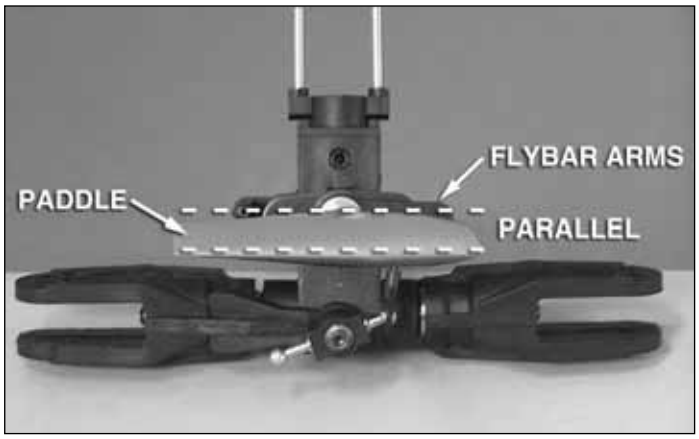
❑ 3. Using a ruler, center the flybar as shown above. The measurement should be approximately 181mm for each side.



❑ 4. Once the flybar is centered, tighten the flybar arm set screws.

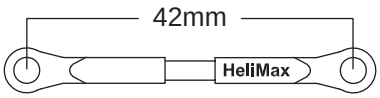


❑ 5. Install the two 3x3mm set screws into the flybar weights. Slide the weights onto the flybar with the beveled end facing inward. Thread the paddles onto the flybar at least 1" [25.4mm]. Measure from the outside of the flybar arm to the beginning of the paddle. Make sure both paddles are the same distance out and facing forward as shown.



❑ 6. Align the paddle with the flybar control arms as shown above. The paddles and arms must be parallel. Slide the flybar weights all the way out against the paddles and tighten the set screws.

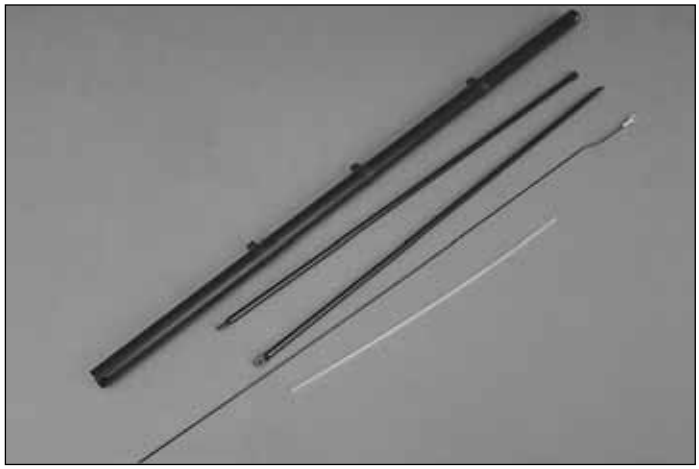
❑ 7. Slide the head onto the main shaft and align the bolt hole in the head block with the hole in the main shaft. To help align the two holes, insert a 2.0mm hex driver into the hole. Insert the 3x16mm SHCS through the head block and main shaft. Place a 3mm nylon lock nut on the opposite side and tighten the bolt.



(Sketch not to scale)

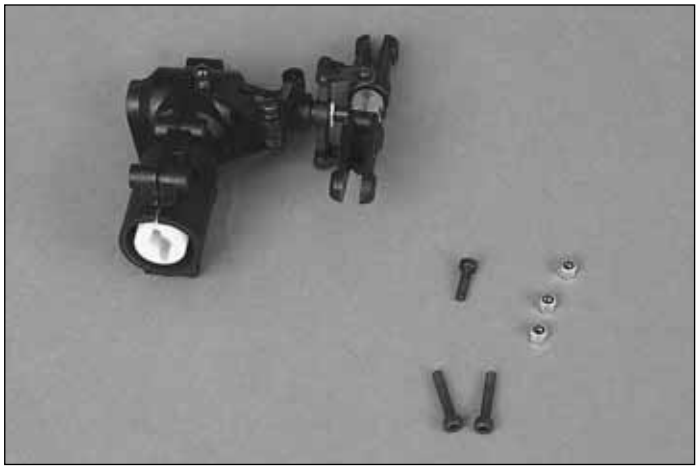
❏ 8. Check the two linkages and verify they are 42mm. Install the two linkages onto the flybar control arm and the washout arm as shown above. Temporarily install the 4mm main blade bolts into the blade grips. Do not tighten at this time.

TAIL BOOM AND GEARBOX ASSEMBLY



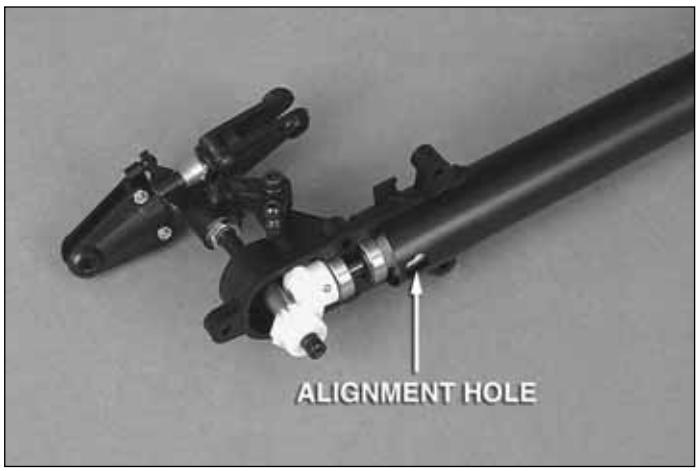
Bag 8 Contents: *Tail Boom, Tail Boom Supports, Tail Rotor Pushrod, Antenna Tube*

Bag 8-1 Contents: *Torque Tube*

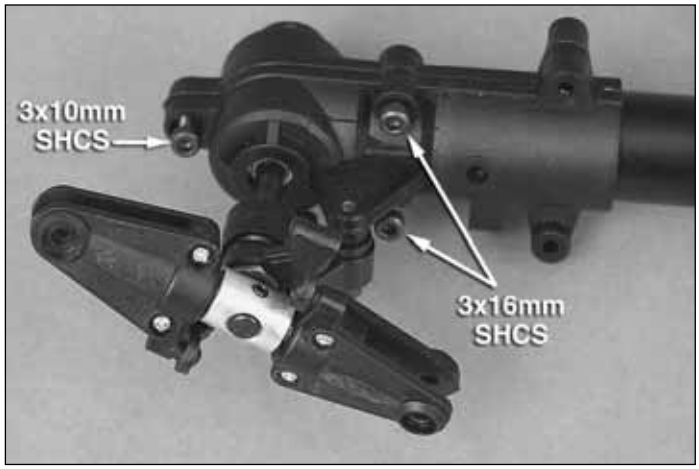


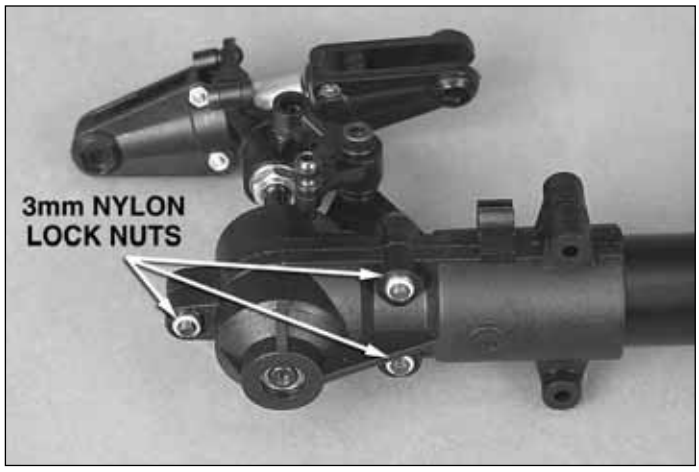
Bag 8-2 Contents: *3x16mm SHCS, 3x10mm SHCS, 3mm Nylon Lock Nuts*

❏ 1. Insert the torque tube into the tail boom. If the O-rings do not slide easily, apply a small amount of dishwashing soap to the O-rings.

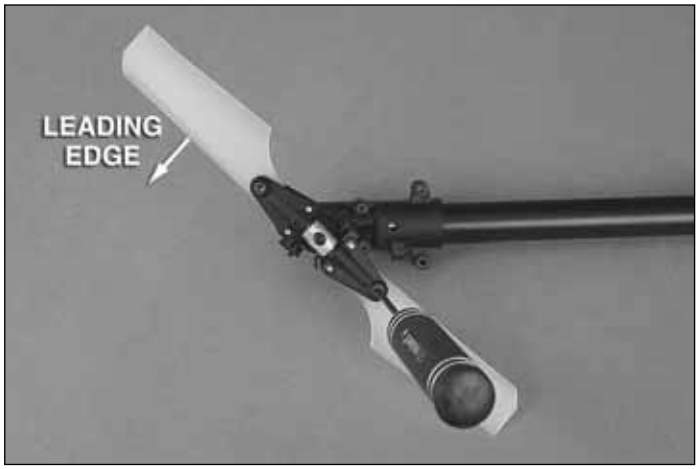


❏ 2. Remove the left side of the tail rotor gearbox and insert the right side into the boom as shown above. Please notice there are two holes on one end of the tail boom. This is the end where the tail gearbox attaches. Make sure the alignment tab molded in the tail rotor gearbox halves line up with the hole in the tail boom. Install the left side of the tail rotor gearbox.



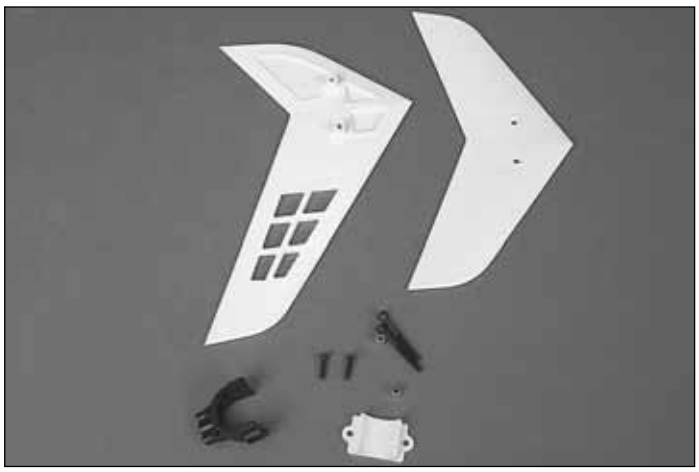


❏ 3. Install three 3mm nylon lock nuts on the back side of the gearbox where you just inserted the 3mm screws. Tighten the bolts.



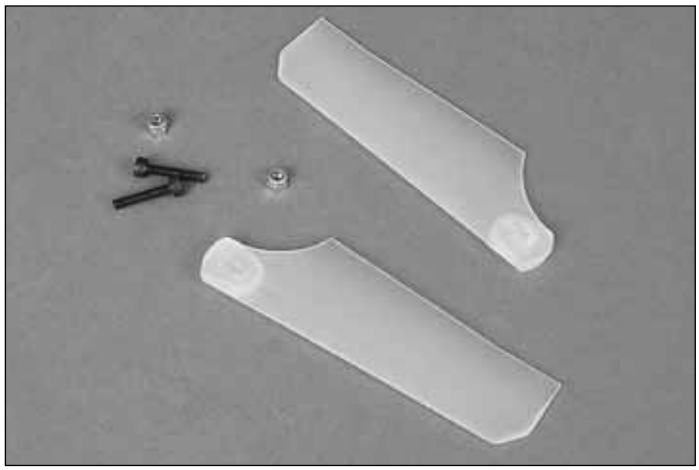
❏ Install the plastic tail blades as shown above using a 3x16mm SHCS and 3mm Nylon lock nuts. Tighten until the blades will support their own weight. Both tail blades need to be tightened equally.

HORIZONTAL AND VERTICAL FINS

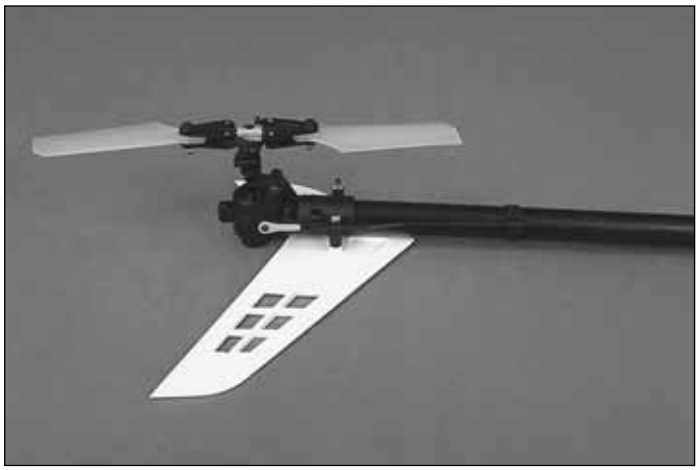


Bag 5 Contents: *Horizontal Tail Fin, Vertical Fin, Horizontal Fin Mount, Horizontal Mounting Plate, 3x30mm Cap Screw, 3x11mm Self-Tapping Screw, 3mm Locknut*

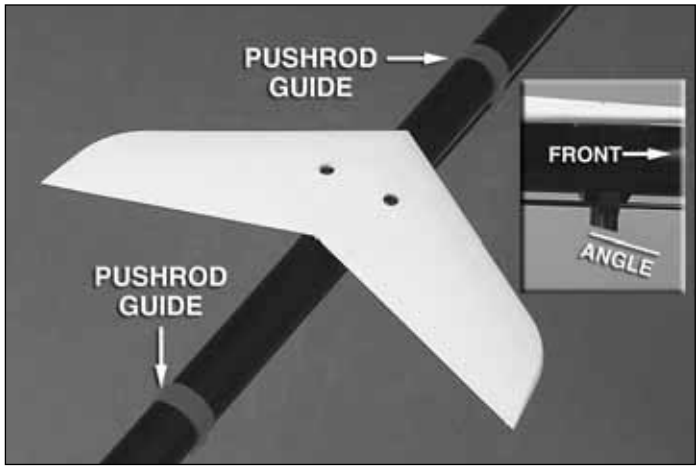
TAIL BLADES



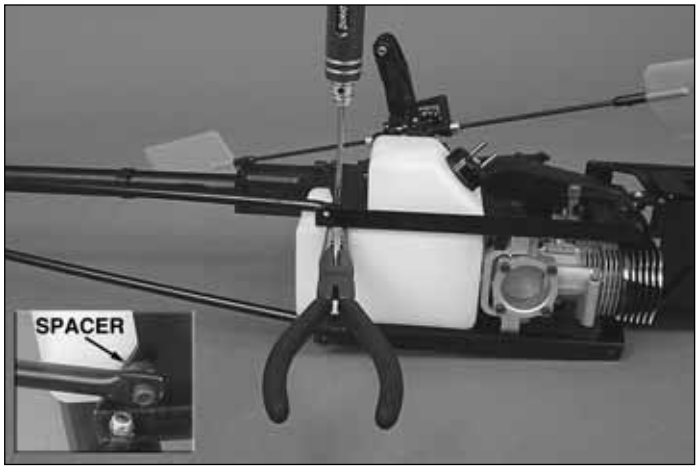
Bag 5-1 Contents: Tail Rotor Blades, 3x16mm Cap Screw (2), M3 Locknut (2), Fiber Filled Tail Blades 85mm (2)



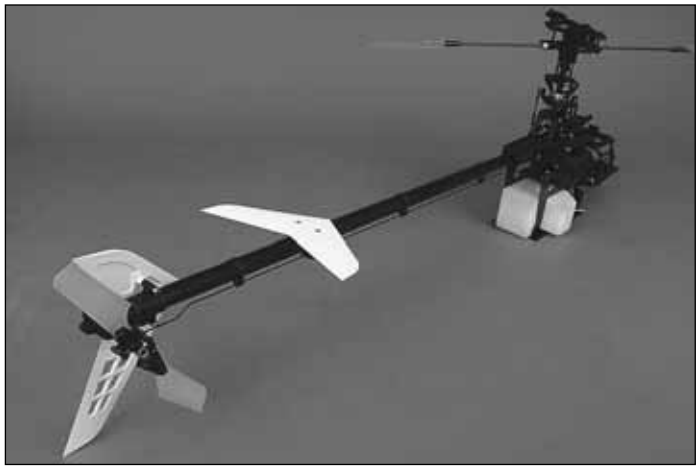
❏ 1. Using two 3x30mm screws and 3mm nylon lock nuts, attach the vertical fin to the tail rotor gearbox as shown above.



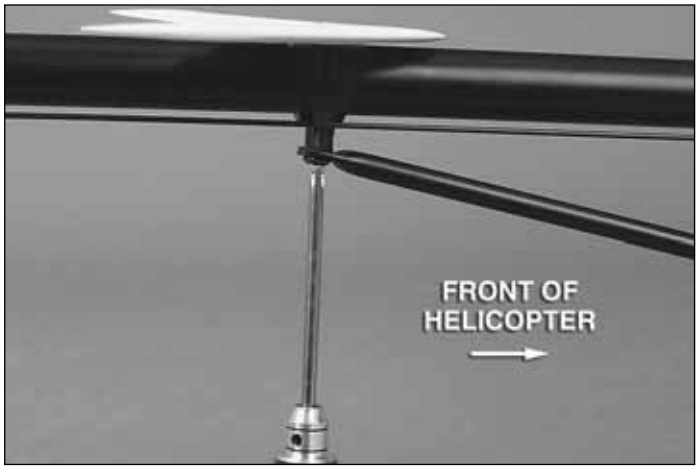
❏ 2. Install the horizontal fin clamp. Using two 3x16mm self-tapping screws, attach the horizontal fin to the clamp. Do not completely tighten bolts at this time as you will need to adjust the position in a later step.



❏ 1. Install the boom supports using two 3x10mm SHCS and two 3mm nylon lock nuts. You will need a pair of small needle nose pliers for this step.

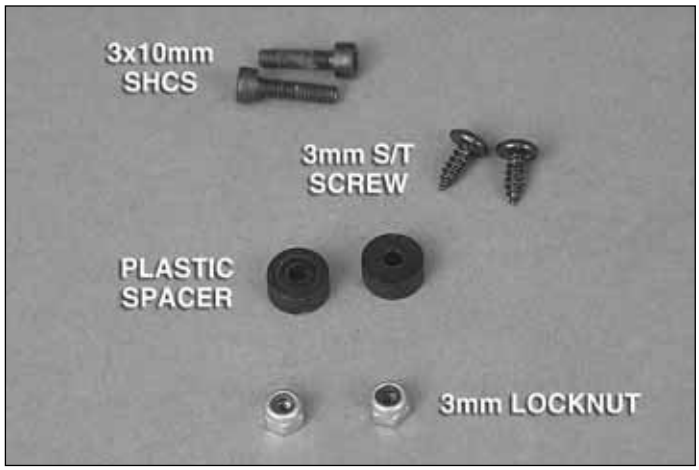


❏ 3. Slide the tail boom into the main frame as shown. It will be necessary to turn the main rotor head while pushing forward on the boom to help align the tail drive system. The frame screws used to clamp the boom are installed in a later step.

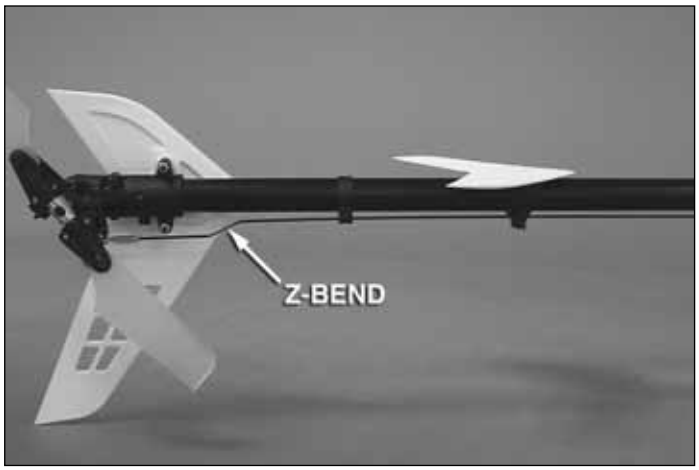


❏ 2. Install the two 3x8mm self-tapping screws. Use a drop of CA on the screw to prevent it from coming loose. Please notice that the angle molded on the bottom of the fin clamp angles down and toward the front of the helicopter.

TAIL BOOM SUPPORTS

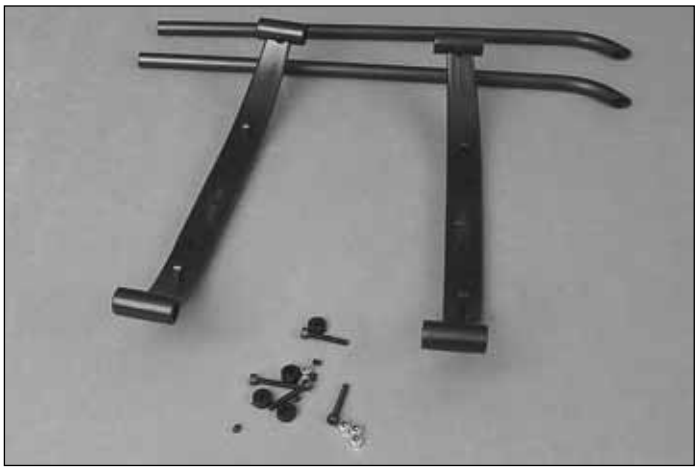


Bag 8-3 Contents: *3x10mm SHCS, 3mm Self-Tapping Screws, Plastic Spacers, 3mm Nylon Lock Nuts*



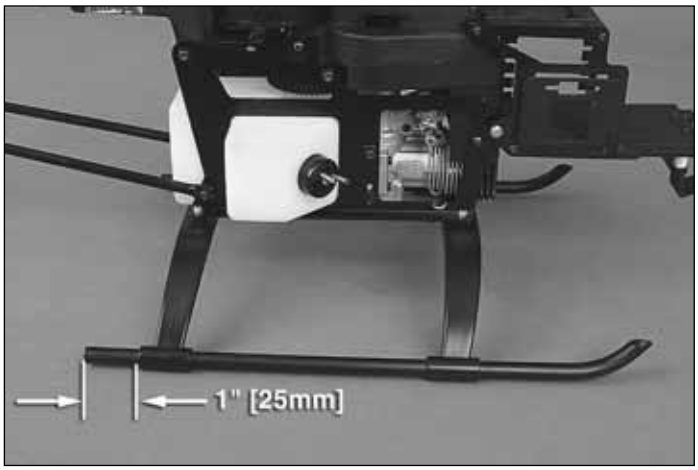
❏ 3. Slide the tail rotor pushrod through the guides and horizontal fin clamp. The Z-bend lines up vertically as shown in the picture. Snap the plastic ball link onto the tail rotor bellcrank.

LANDING GEAR

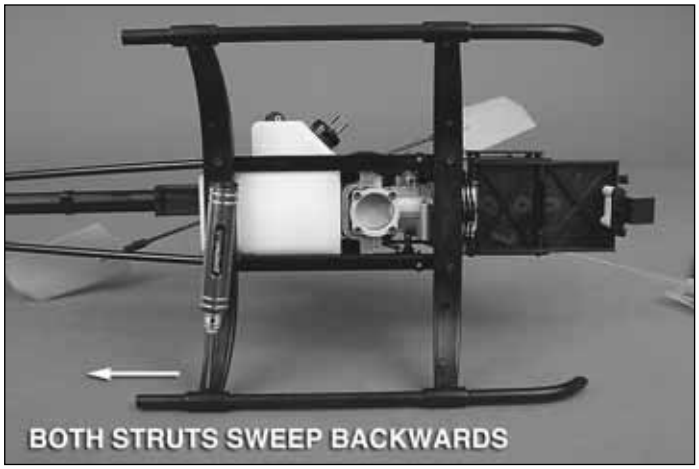


Bag 6 Contents: *3x20mm SHCS (4), Plastic Spacers, 3mm Nylon Lock Nut (4), 3x4mm Set Screws (4)*

❏ 1. Insert a 3x20mm SHCS through the underside of the landing gear strut. Slide a plastic spacer on the top and insert the screw into the front frame hole. From the top, install a 3mm nylon lock nut and tighten the bolt. Repeat for the other side and the rear strut. If the front skid does not clear the cylinder head on your engine, then simply mount the front skid in the aft hole.



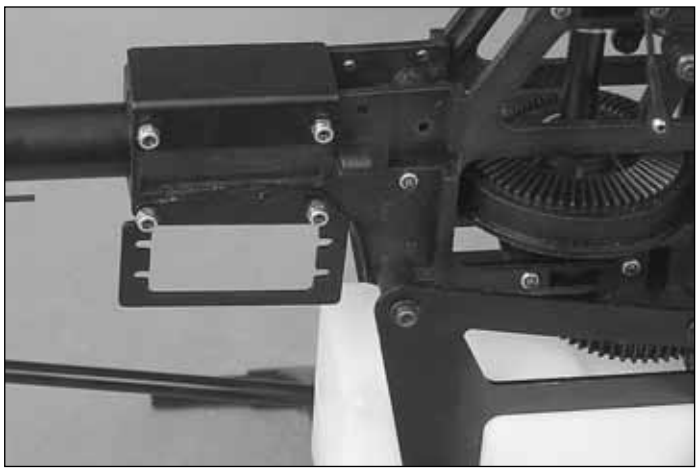
❏ 2. Slide the landing gear skids through the struts from the front. Leave approximately 1" [25mm] protruding from the back.



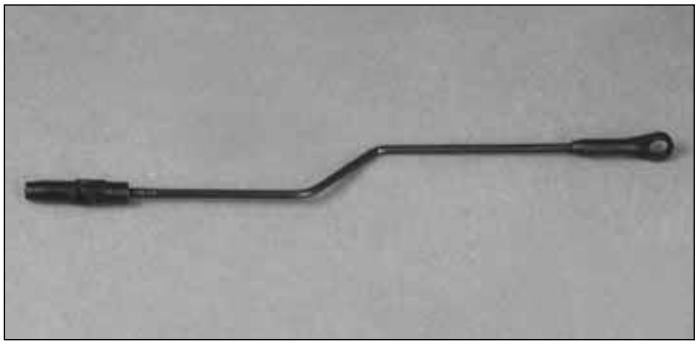
❏ 3. Install the four 3x4mm set screws into the inside of the struts. These are used to lock the struts to the skids. Please be careful not to overtighten.

GYRO MOUNT AND TAIL ROTOR SERVO MOUNT

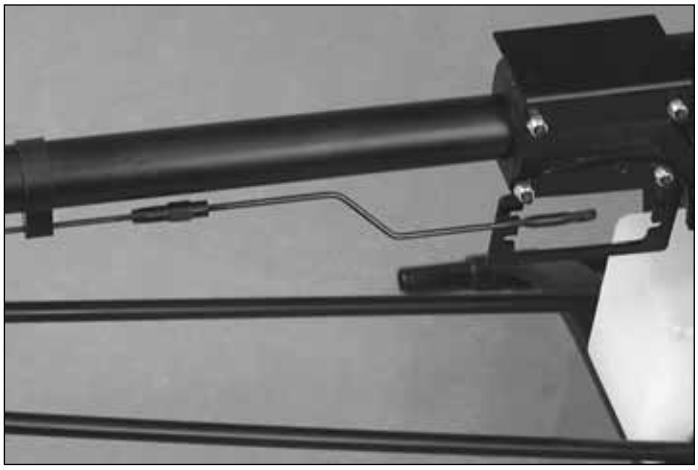
Bag 4 Contents: *Tail Rotor Servo Mount, Linkage Rods, Tail Rotor Pushrod Coupler, Servo Retainers*



❏ 1. Install the gyro and servo mount using four 3x30mm SHCS and four 3mm nylon lock nuts as shown above. Push the boom all the way forward into the frame while turning the rotor head before tightening the bolts down completely. **Please make sure the boom is far enough forward to engage the tail drive.**

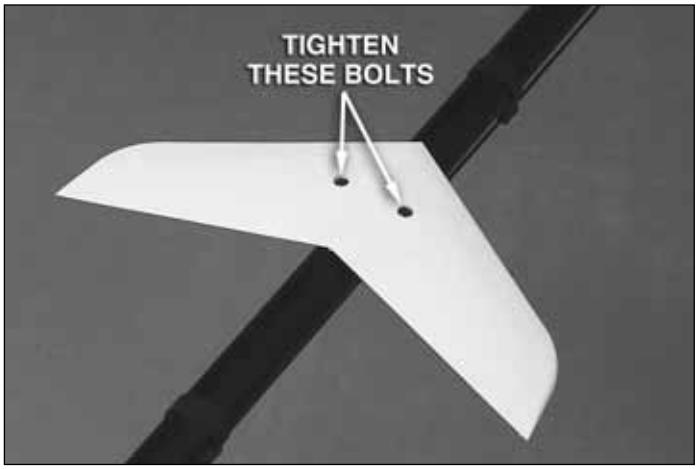


❏ 2. Thread the plastic tail rotor pushrod coupler onto the short pushrod at least 1/4" [6.4mm]. If you find the coupler difficult to thread on you can use a hobby knife to chamfer the ball link.



❏ 3. Thread the coupler and pushrod onto the tail pushrod as shown.

HORIZONTAL FIN ALIGNMENT

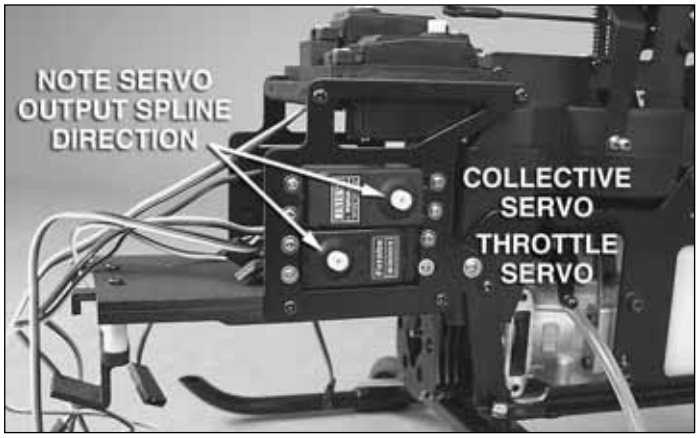


❏ Align the horizontal fin and tighten the bolts that were left loose earlier.

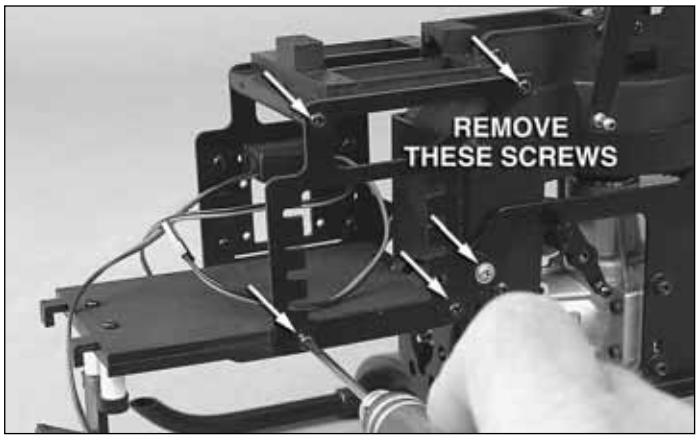
EQUIPMENT INSTALLATION

SERVOS AND POWER SWITCH

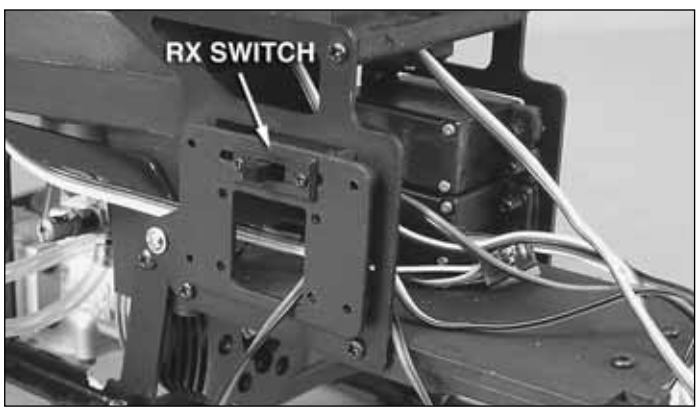
Please follow the manufacturer's instructions for your servos. Install the grommets and eyelets and remove the servo arm screws and servo arms.



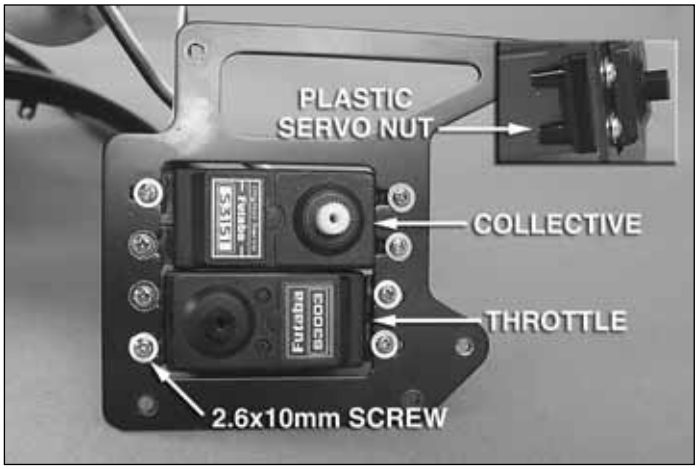
❏ 1. Use the picture above as a reference when installing the throttle and collective servos.



❏ 2. Remove the left side servo frame by removing the five screws as shown above.



❏ 3. Now is the best time to install the receiver power switch.



❏ 4. The collective and throttle servos are mounted on the **inside of the frame**. Slide the throttle servo into the frame as shown above. Install a 2.6x10mm screw and use a plastic servo nut behind the servo. Tighten the 2.6mm screw until the grommet begins to compress. Install the other three screws and the plastic servo nut on the opposite end of the servo.

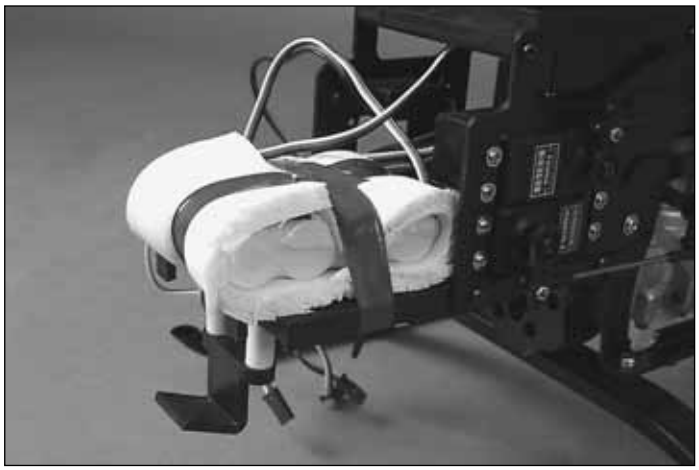
❏ 5. Install the collective servo using four 2.6x10mm screws and two plastic servo nuts. Re-install the servo frame with the five screws you removed earlier.

❏ 6. Install the forward/aft cyclic servo using four 2.6x10mm screws. Note servo arm direction.

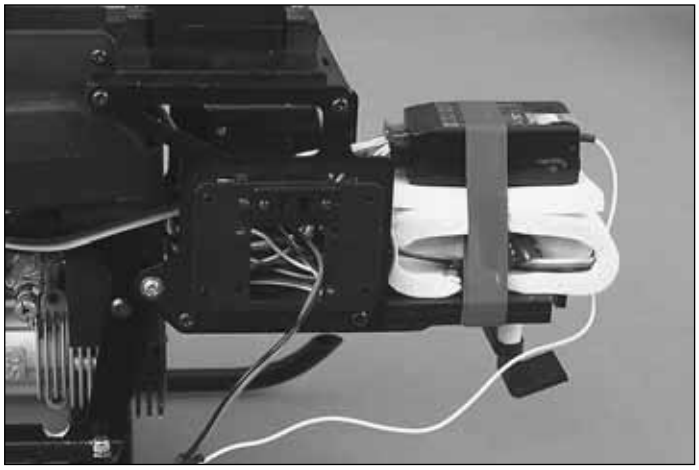
❏ 7. Install the left/right cyclic servo using four 2.6x10mm screws. Note servo arm direction.

❏ 8. Install the tail rotor servo as shown using four 2.6x10mm screws and two plastic servo nuts.

BATTERY, RECEIVER AND GYRO



❏ 1. Wrap the battery with 1/4" foam. Use electrical tape to attach the foam to the battery. Place the battery on the front tray and attach it with electrical tape.

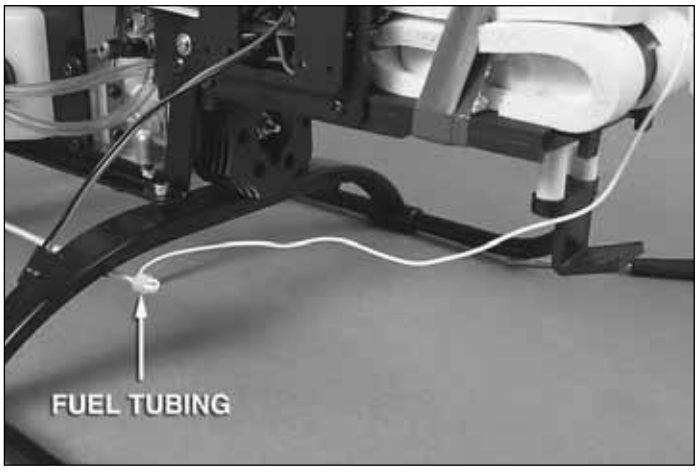


❏ 2. Place a piece of 1/4" foam on top of the battery and place the receiver on top of the foam. Wrap lightly but securely with electrical tape, leaving room for the foam to absorb vibration.

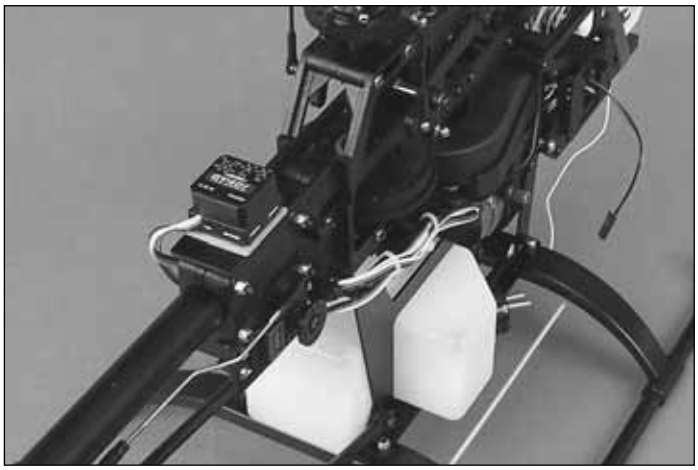
RECEIVER CHANNEL ASSIGNMENTS

RECEIVER TYPE	LEFT / RIGHT CYCLIC	FOR/AFT CYCLIC	TAIL ROTOR	GYRO GAIN	COLLECTIVE	THROTTLE
Futaba PPM / FM	CH 1	CH 2	CH 4	CH 5	CH 6	CH 3
Futaba PCM 1024	CH 1	CH 2	CH 4	CH 5	CH 6	CH 3
Futaba PCM 2048 G3	CH 4	CH 5	CH 2	CH 3	CH 6	CH 1
Hitec	CH 1	CH 2	CH 4	CH 5	CH 6	CH 3
JR	CH 2	CH 3	CH 4	CH 5	CH 6	CH 1
Airtronics	CH 2	CH 1	CH 4	CH 5	CH 6	CH 3
Multiplex	CH 1	CH 2	CH 3	CH 6	CH 4	CH 5

RECEIVER ANTENNA

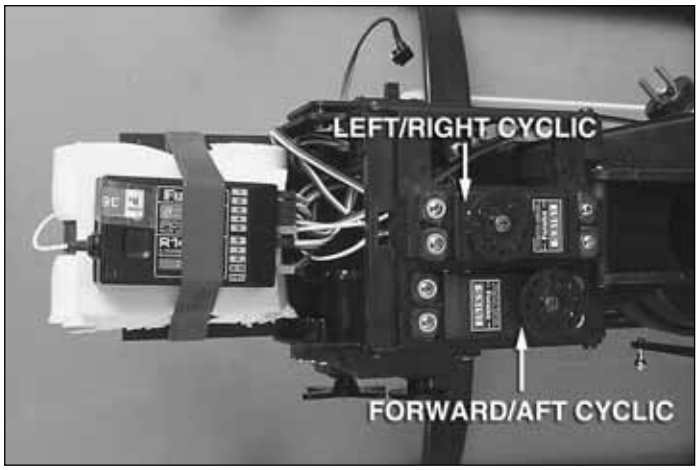


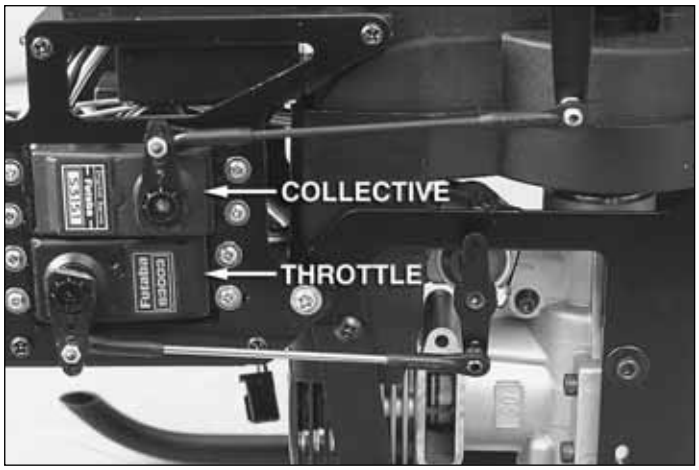
❏ 1. Slide the antenna tube into the mounts on the bottom of the landing gear. Cut two pieces of fuel tubing 1/4" [6.4mm] long and slide onto the tube in the front and back to capture it. Slide the receiver antenna through the tube. Use a rubber band to attach the antenna to the horizontal fin.



❏ 2. Following the manufacturer's instructions, install your gyro as shown. Use zip ties or Velcro® to bundle the excess wire and prevent it from reaching the gears.

CONNECTING THE SERVOS TO THE RECEIVER





❏ Using the table above, plug the servos into the appropriate channels on the receiver.

SETUP QUICK REFERENCE

	L/R CYCLIC	F/A CYCLIC	THROTTLE	TAIL ROTOR	GYRO	COLLECTIVE
EPA/ATV	110% / 110%	110% / 110%	100% / 90%	100% / 100%	100% / 100%	100% / 100%
D/R	100%	100%		100%		
EXP	-30%	-30%		-30%		
Reverse (Futaba)	1 – Normal	2 – Normal	3 – Reverse	4 – Reverse	5 – Normal	6 – Normal
Servo Arm Length	10.5mm	10.5mm	13mm	17.5mm		10.5mm
Sub Trim	0	0	0	0	0	0
Trim Step*	4* -- 1	4* -- 1	4	4* -- 1		
	**After initial flights, reduce trim step to 1 for a finer adjustment.*					
MODEL TYPE	H-1					
TH-CUT	ACT	Rate: -10%	Thr: 5%	SW-H		
Fail Safe			Low Throttle–Idle			
GYRO (Head Hold)	SW-E	MODE - GY	UP> 60%	CT>60%	DN>55%	
HOV-THR	INH - Best to use mechanical adjustments					
HOV-PIT	INH - Best to use mechanical adjustments					
Throttle Hold	ACT	POS>+- 0%	R-OF> INH	RT>+- 0%		
THROTTLE CURVE						
Normal	0%	25%	50%	75%	100%	
PITCH CURVE						
Normal	45% / -2°	55%	65% / +4.5°	82%	100% / +10°	
Hold	30% / -4°	47%	65% / +4.5°	82%	100% / +10°	

RADIO SETUP

FUTABA: 6EXH – 7CH – 9CH

This manual assumes you have already read through your transmitter operating instructions and are familiar with its operation. The settings shown will be for a beginner; recommendations for intermediate and 3D pilots are on page 23. The settings provided can be used as a starting point for other transmitters but please verify the model is set up correctly before flying. Settings such as the servo reversing can vary depending on the radio manufacturer and which servo you use. The settings shown are for Futaba transmitters and Futaba servos.

Before setting up the servo arms and linkages, make sure the servos are hooked up properly and rotate in the proper direction.

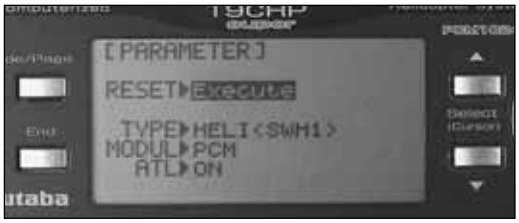
TRANSMITTER PREPARATION

❏ Using the instructions provided with your radio, select a new model memory on your transmitter. Perform a reset on the model memory to ensure that previous settings are eliminated. ***WARNING: Please make absolutely sure you have selected an empty model memory before starting.***

RESET MODEL MEMORY

6EXH

7CH



9CH

❏ 1. Futaba T6EXH: Press (Select) until you see the [SWSH] option. Verify that it is set to 1-S for swashplate type. Next select the [MODL] menu and press the (Select) button. The transmitter will show [REST CLR]. Now hold the (+) slider upwards at least two seconds to execute the reset.

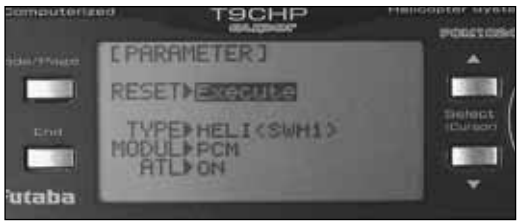
❏ 2. Futaba T7CH: Select the [PARAMETER] menu and verify the model [TYPE>] is set to [H-1]. Position the cursor on [RESET>EXECUTE]. Press the rotary dial and hold it for two seconds. The screen will show [SURE?]. Press the rotary dial again to confirm and execute the reset.

❏ 3. Futaba T9CH: Select the [PARAMETER] menu and verify the model [TYPE>] is set to SWH1. Position the cursor on [RESET>EXECUTE]. Press the rotary dial and hold it for two seconds. The screen will show [SURE?]. Press the rotary dial again to confirm and execute the reset.

SET MODULATION TYPE

6EXH

7CH



9CH

Most computer radios are capable of transmitting in FM/PPM or PCM. Depending on your radio and receiver, you must set the modulation type in the radio. If the modulation type is wrong, the receiver and servos will not operate at all. If you are having problems, this is the first thing to check.

Once the modulation type is changed, it is necessary to power down and power up again before the change will take effect. Futaba radios also keep the modulation type in memory for each model. If the modulation changes from model to model, then the transmitter must be powered down and up again before the controls will work.

❏ Futaba T6EXH: Select the [MODL] menu and press (Select) button twice. The screen should now show [PULS] [PPM/PCM]. Use the data ▲ and ▼ button to select the type.

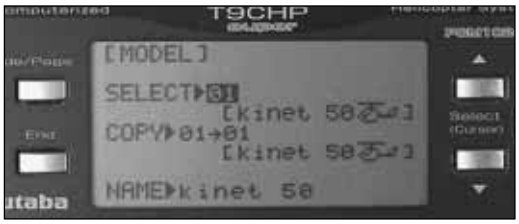
❏ Futaba T7CH: Select the [PARAMETER] menu and use the ◄ and ► cursor buttons to scroll down to the [MODUL>] line. Use the rotary dial to select either [PCM] or [PPM].

❏ Futaba T9CH: Select the [PARAMETER] menu and use the ▲ and ▼ buttons to scroll down to the [MODUL] line. Use the rotary dial to select either [PCM] or [PPM].

MODEL NAME

6EXH

7CH



9CH

❏ Futaba T6EXH: Select the [MODL] menu and press the (Select) button three times. Use the ▲ and ▼ data buttons to change letters and use the (Select) button to move to the next character.

❏ Futaba T7CH: Select the [MODEL] menu and use the ► button to move down to [NAME]. Use the Rotary Dial to change letters and the ◄ and ► buttons to change positions within the name.

❏ Futaba T9CH: Select the [MODEL] menu and use the ▲ and ▼ buttons to move down to [NAME]. Use the Rotary Dial to change letters and the ▲ and ▼ buttons to change positions within the name.

EXPONENTIAL

Exponential should be used to soften the control feel around center. Futaba radios use a "–" percentage to soften the sensitivity. Please read your transmitter's instruction manual to determine if "–" or "+" exponential should be used. Futaba users should start out with –30% exponential on the following controls: Forward and Aft cyclic, Left and Right cyclic, and Tail Rotor.

Most radios allow you to set the exponential for low and high rates independently; you should set both rates to the same value in case you accidentally have the dual rate switched on. Dual rates are not needed on the Kinetic .50. If you still feel the model is too sensitive, increase the exponential % until you are satisfied with the overall feel.

6EXH

7CH

9CH

❏ Futaba T6EXH: Press the (MODE) button until the screen shows [D/R ch1 100%]. Press the (Select) button until the screen shows [EXPO CH1 + – 0%]. Use the ▼ button and decrease to –30%. Flip the Dual Rate switch on the transmitter and adjust the low/high rate also. Repeat this for the forward/aft (CH2) and tail rotor (CH4).

❏ Futaba T7CH: Select the [D/R,EXP] menu. Press the cursor ► button to move down to [EXP + – 0%]. Use the rotary dial to set the value to –30%. Cursor back up to [CH> 1-AIL] and turn the rotary dial clockwise one position. You will notice the arrow next to AIL changes. This is the low rate setting for CH1 AIL; set it to –30%. Turn the rotary dial clockwise one position and the display will change to [CH> 2-ELE]. Continue setting the high and low rate exponential to –30% for forward/aft cyclic (CH2) and tail rotor (CH3).

❏ Futaba T9CH: Select the [*D/R,EXP] menu. Press the cursor ▼ button to move down to [EXP + – 0%]. Use the rotary dial to set the % to -30%. Cursor back up to [CH> 1-AIL] and turn the rotary dial clockwise one position. You will notice the arrow next to AIL changes. This is the low rate setting for CH1 AIL; set it to –30%. Turn the rotary dial clockwise one position and the display will change to [CH> 2-ELE]. Continue setting the high and low rate exponential to –30% for (CH4) tail rotor.

SERVO REVERSING

6EXH

7CH

9CH

WARNING: *These settings are ONLY for Futaba radios using Futaba servos. Please double-check the settings before flight to be absolutely sure they are correct.*

❏ Futaba T6EXH with Futaba Servos: Select the [REVR] menu. Reverse channels 3-Throttle and 4-Tail Rotor. Channels 1, 2, 5, and 6 should remain as [NORM]

❏ Futaba T7CH with Futaba Servos: Select the [REVERSE] menu. Reverse channels 3-Throttle and 4-Tail Rotor. Channels 1, 2, 5, and 6 should remain as [NORM]

❏ Futaba T9CH with Futaba Servos: Select the [REVERSE] menu. Reverse channels 3-Throttle and 4-Tail Rotor. Channels 1, 2, 5, and 6 should remain as [NORM]

END POINT ADJUSTMENTS

6EXH

7CH

9CH

❏ Futaba T6EXH: Select the [EPA] menu and set CH1 and CH2 to 110% (left/right and forward/aft).

❏ Futaba T7CH: Select the [EPA] menu and set CH1 and CH2 to 110% (left/right and forward/aft).

❏ Futaba T9CH: Select the [EPA] menu and set CH1 and CH2 to 110% (left/right and forward/aft).

SUB-TRIM

If possible, sub-trim should be avoided. Most servo arms are designed with an odd number of splines which allows you to rotate it 90° or 180° and change the center position of the arm. If you cannot get the arm perfectly straight, then a small % of sub-trim may be used but it is best to avoid using it. Sub-trim can decrease the available throw one direction.

FAIL-SAFE

6EXH

7CH

9CH

This function is only available for PCM receivers and cannot be used on FM. What fail-safe provides is a set of commands for the servos to follow if the receiver should experience interference for more than two seconds. Please set the throttle [FAIL SAFE] to bring the engine back to idle and leave all other servos set to [HOLD]. This will help to prevent damage in the case of severe interference.

GYRO FUNCTION

6EXH

7CH

9CH

The gyro function is only used on gyros that have a remote gain that plugs into the receiver. If your gyro does not have remote gain, please follow the instructions provided with the gyro and set it up for heading hold mode.

❏ Futaba T6EXH: Select the [GYRO] menu. Enable the function and set the gain to +60%.

❏ Futaba T7CH: Select the [GYRO] menu. Enable the function and set the switch to [SW-E] (Flight Condition Switch). Set all positions to [A 60%] which is AVCS (Heading Hold) and 60% gain.

❏ Futaba T9CH: Select the [GYRO] menu. Enable the function and set the switch to [SW-E] (Flight Condition Switch). Set all positions to [A 60%] which is AVCS (Heading Hold) and 60% gain.

THROTTLE CUT

7CH

9CH

❏ Futaba T7CH: Select the [TH-CUT] menu. Enable the function and set the switch to [SW-H], using the following settings: [RATE –10%] — [THR> 5%]

❏ Futaba T9CH: Select the [TH-CUT] menu. Enable the function and set the switch to [SW-H], using the following settings: [RATE–10%] — [THR>5%] — [POSI->DOWN]

HOVER AND THROTTLE TRIMS

Since the hover and throttle trims operate only in normal flight mode, it's best to disable them and make changes with mechanical adjustments.

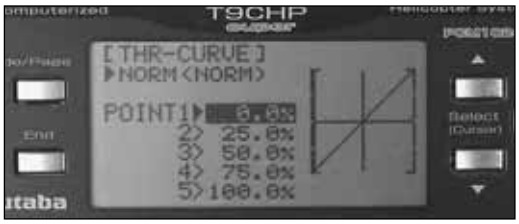
HI-LO PITCH TRIMS

Set the "CONTROL" to null on both HI and LO pitch trims.

THROTTLE CURVE

6EXH

7CH



9CH

❏ Futaba T6EXH: Select the [N-TH] menu. Set Point #1 to 0%. Press (Select) to move to the next point. Set Point #2 to 25%, set Point #3 to 50%, Point #4 to 75% and Point #5 to 100%.

❏ Futaba T7CH: Select the [TH-CRV(N)] menu. Press the ► button until you are editing Point #1. Use the rotary dial to set it to 0%. Press the ◄ button to move to Point #2 and set it to 25%. Set Point #3 to 50%, Point #4 to 75% and Point #5 to 100%.

❏ Futaba T9CH: Select the [TH-CV/NOR] menu. Set Point #1 to 0%. Press the ▼ button to move to Point #2 and set it to 25%. Set Point #3 to 50%, Point #4 to 75% and Point #5 to 100%.

PITCH CURVE

6EXH

7CH

9CH

❑ Futaba T6EXH: Select the [N-PI] menu. Set Point #1 to 45%. Press (Select) to move to Point #2 and set it to 55%. Continue to set Point #3 to 65%, Point #4 to 82% and Point #5 to 100%.

❑ Futaba T7CH: Select the [PI-CRV(N)] menu. Press the ► button until you are editing Point #1. Use the rotary dial to set it to 45%. Press the ◄ button to move to Point #2. Set it to 55%. Set Point #3 to 65%, Point #4 to 82% and Point #5 to 100%.

❑ Futaba T9CH: Select the [PI-CV/NOR] menu. Set Point #1 to 45%. Press the ▼ button to move to Point #2. Set it to 55%. Set Point #3 to 65%, Point #4 to 82% and Point #5 to 100%.

INTERMEDIATE AND BASIC AEROBATIC CURVES

Please take the time to become accustomed to the new setup. The increased negative collective will make the controls very sensitive. Be aware of switches, as well. Accidentally switching to "Idle Up 2", for instance, automatically advances the engine to full throttle.

ADVANCED 3D AND AEROBATIC CURVES

Once accustomed to the curves above, you can use these curves for everything from everyday flight to advanced 3D aerobatics. The throttle mixes help maintain rotor head speed. If your Kinetic .50 loses head speed during maneuvers, increase the throttle mix percentages.

BASIC AND INTERMEDIATE AEROBATIC CURVES

THROTTLE CURVE	POINT 1	POINT 2	POINT 3	POINT 4	POINT 5
Normal	0%	25%	50%	75%	100%
Idle Up 1	25%	37%	50%	75%	100%
Idle Up 2	85%	70%	60%	80%	100%

PITCH CURVE	POINT 1	POINT 2	POINT 3	POINT 4	POINT 5
Normal	45% / -3°	55%	65% / +4.5°	82%	100% / +10°
Idle Up 1	35% / -4.5°	50%	65% / +4.5°	82%	100% / +10°
Idle Up 2	0% /-10°	32%	65% / +4.5°	82%	100% / +10°
Hold	30% / -5°	47%	65% / +4.5°	82%	100% / +10°

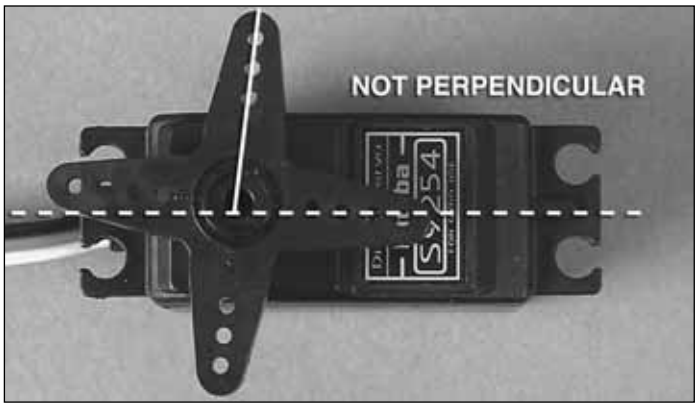
ADVANCED 3D AND AEROBATIC CURVES

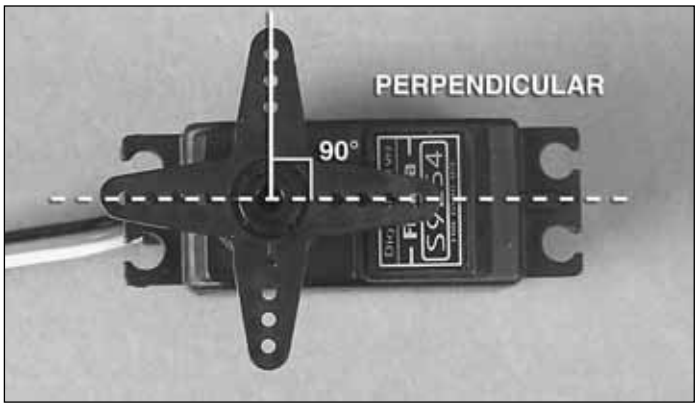
THROTTLE CURVE	POINT 1	POINT 2	POINT 3	POINT 4	POINT 5
Normal	0%	25%	50%	75%	100%
Idle Up 1	25%	37%	50%	75%	100%
Idle Up 2	100%	70%	50%	70%	100%

PITCH CURVE	POINT 1	POINT 2	POINT 3	POINT 4	POINT 5
Normal	35% / -4.5°	42%	50% / 0°	82%	100% / +10°
Idle Up 1	35% / -4.5°	42%	50% / 0°	82%	100% / +10°
Idle Up 2	0% /-10°	25%	50% / 0°	82%	100% / +10°
Hold	20% / -7°	47%	50% / 0°	82%	100% / +10°

THROTTLE MIXES	L/R Cyclic →Throttle 40%	F/A Cyclic →Throttle 40%	T/R →Throttle 40%

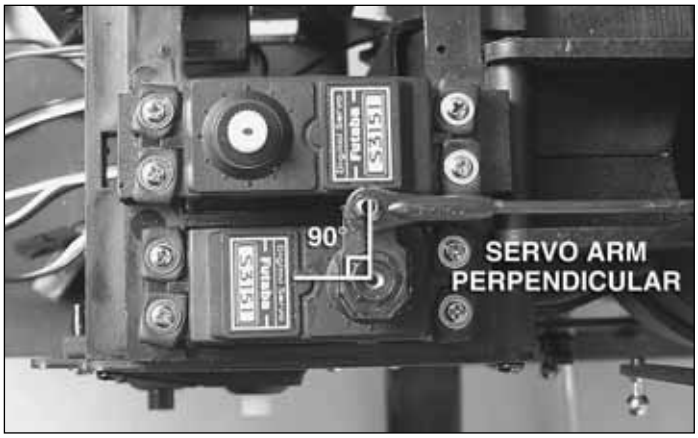
SERVO SETUP AND LINKAGES

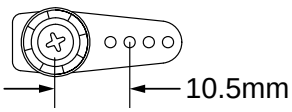




Most servo arms have an odd number of splines, which allows you to rotate it 90°, 180° or 270° to help with the centering. All servo arms should be perpendicular to the servos when installed in the Kinetic .50.

FORWARD/AFT CYCLIC SETUP

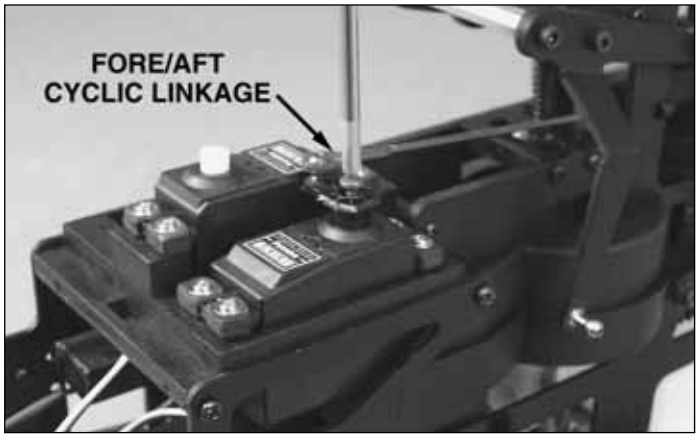


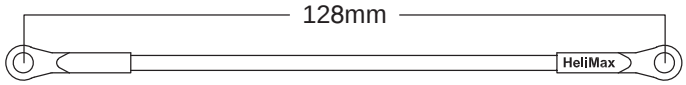


❏ 1. Turn on the transmitter and receiver and center the sticks. Test fit a servo arm onto the servo. The arm must be perpendicular to the servo, as shown above. (If the arm isn't perfectly aligned, rotate it 90° and recheck alignment. Repeat until 90° alignment is achieved.)

❏ 2. Remove the arm and using a pair of wire cutters, clip off the three unused sides. Install a metal control ball into the servo arm at 10.5mm from center (second hole out from center on Futaba arms). Using thread locker, install the 2mm nut onto the back side of the servo arm and tighten.

❏ 3. Verify the servo arm clears the left/right cyclic servo. If needed, trim the arm as required.

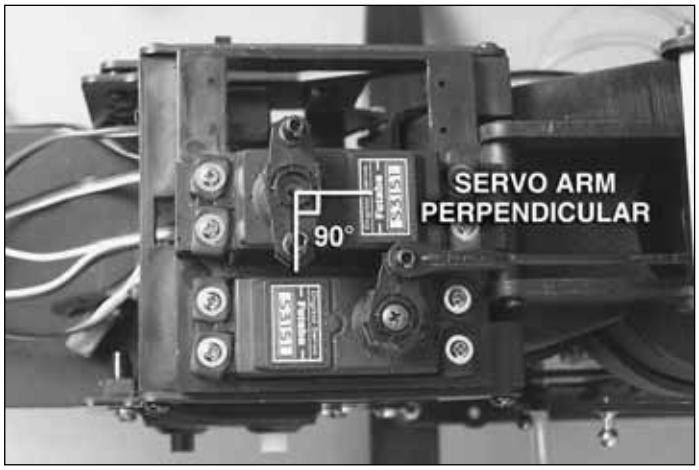


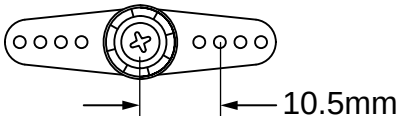


(Sketch not to scale)

❏ 4. Install the servo arm and screw as shown above. Locate the forward/aft cyclic linkage and verify that it is 128mm long. Install linkage as shown above.

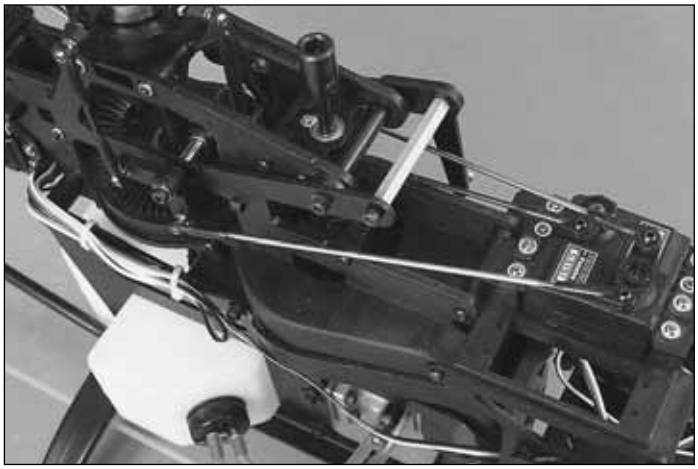
LEFT/RIGHT CYCLIC SETUP

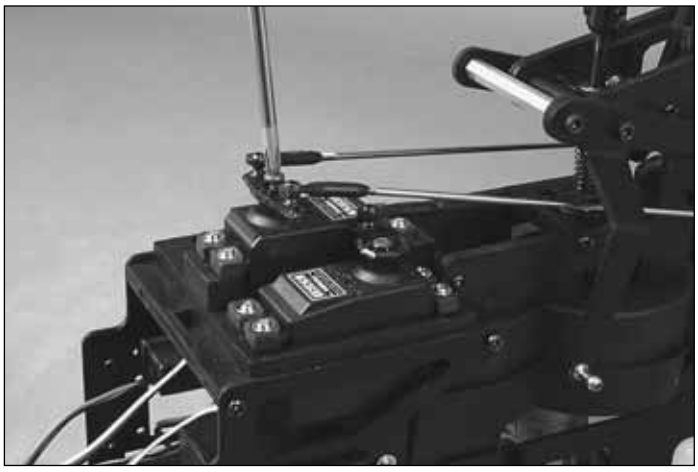


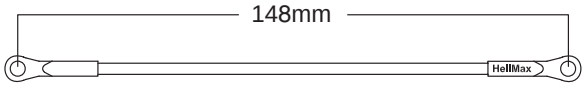


❏ 1. Turn on the transmitter and receiver and center the sticks. Test fit a servo arm onto the servo. The arm must be perpendicular to the servo, as shown.

❏ 2. Remove the arm and using a pair of wire cutters, clip off the two unused sides. Install a metal control ball onto both sides at 10.5mm from center (second hole out from center on Futaba arms). Using thread locker, install the 2mm nuts onto the back side of the servo arm and tighten.







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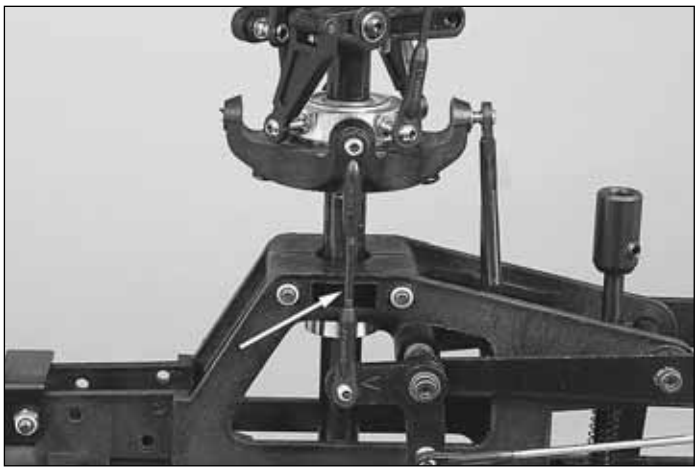
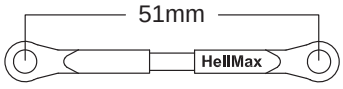
❏ 3. Install the servo arm and screw as shown above. Locate the left/right cyclic linkages and make sure they are both 148mm long. Install the linkages and the servo arm screw.





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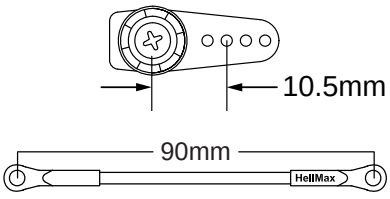
❏ 4. Please remove the bellcrank to swashplate linkage as shown above and verify it is 51mm long. Repeat on the opposite side.

COLLECTIVE SERVO SETUP

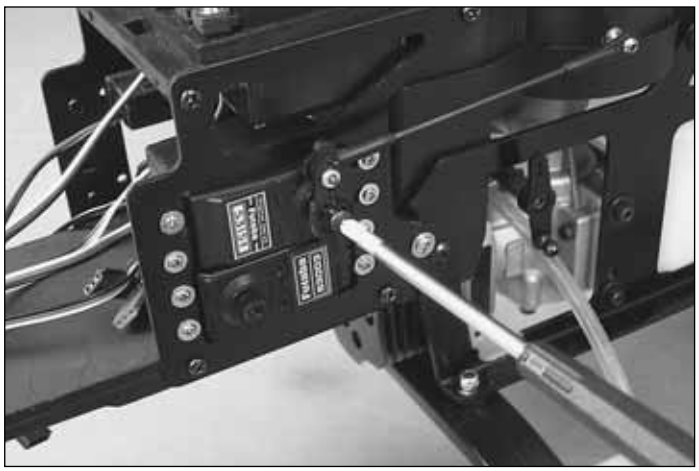


(Sketch not to scale)

❏ 1. Make sure that the transmitter and receiver are “ON” and the sticks are centered. Put a servo arm in place, making sure that one side is perpendicular to the servo.

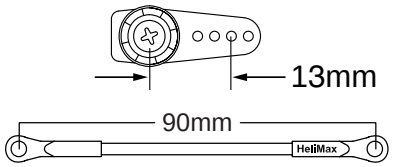
❏ 2. Remove the arm and using a pair of wire cutters, clip off the three unused sides. Install a metal control ball into the servo arm at 10.5mm from center (second hole from center on Futaba arms). Using thread locker, install the 2mm nut onto the back side of the ball and tighten.

❏ 3. Verify the collective pushrod is 90mm long. Install as shown above.



❏ 4. Install the collective servo arm screw.

THROTTLE SETUP



(Sketch not to scale)

❏ 1. Make sure that the transmitter and receiver are “ON” and the sticks are centered. Put a servo arm in place, making sure that one side is perpendicular to the servo.

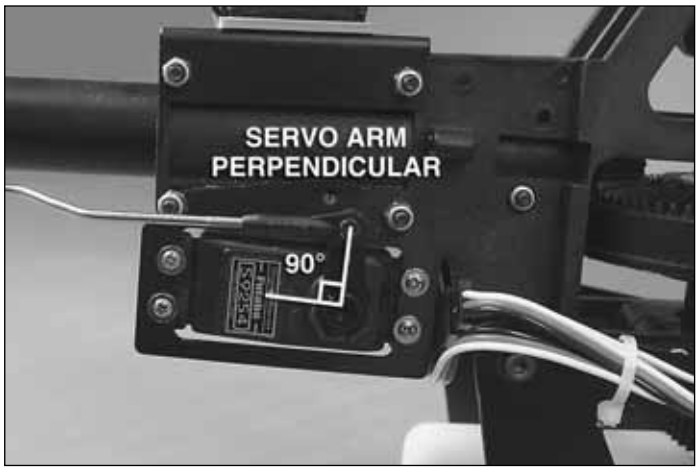
❏ 2. Remove the arm and using a pair of wire cutters, clip off the three unused sides. Install a metal control ball into the servo arm at 13mm from center (third hole out from center on Futaba arms). Using thread locker, install the 2mm nut onto the back side of the ball and tighten.

❏ 3. Verify the throttle pushrod is 90mm long. Install the ball link onto the throttle arm. Make sure that the throttle arm on the engine is straight up and down when the stick is at half throttle. The O.S. .50 SX-H Hyper has indentations on the carb.

❏ 4. Leave the other side of the linkage loose. Move the throttle to idle and verify the throw is correct and does not bind. Move the throttle to full and place the linkage over the control ball. Verify that the servo is traveling the proper distance. If necessary use the radio’s End Point Adjustments.

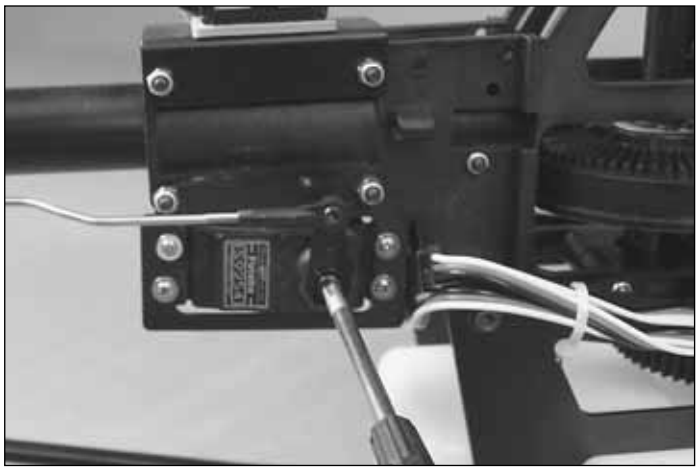
❏ 5. Install the servo arm screw.

TAIL ROTOR SERVO



❏ 1. With the transmitter and receiver turned on, make sure the gyro is centered. (Use Normal mode instead of Heading hold.) Place a servo arm onto the servo and verify the arm is perpendicular to the servo.

❏ 2. Remove the arm and using a pair of wire cutters, clip off the three unused sides. Install a metal control ball into the servo arm at 17.5mm from center (fourth hole out from center on Futaba arms). Using thread locker, install the 2mm nut onto the back side of the ball and tighten.



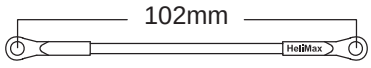
❏ 3. Install the servo arm screw. Move the T/R stick to full left. Hold the pushrod ball link over the control ball and verify the servo throw is correct. Balance the left and right throws by adjusting the pushrod length. Make sure the pushrod does not bind when moving either direction. Try to keep the gyro limit near 100% by adjusting the length of the servo arm. Your goal is to have maximum mechanical throw without binding and have the gyro limit at 100%.

GY401 GYRO SETUP

If you are using a digital servo such as the Futaba S9254 or S9253, the DS mode switch should be “ON”. Otherwise, set it to “OFF”. The “DIR” should be set to “NOR” or “OFF”.

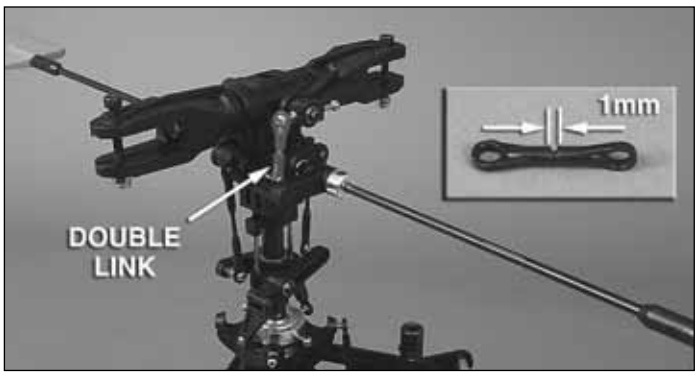
HEAD AND LINKAGES

INSTALL MAIN ROTOR HEAD LINKAGES



(Sketch not to scale)

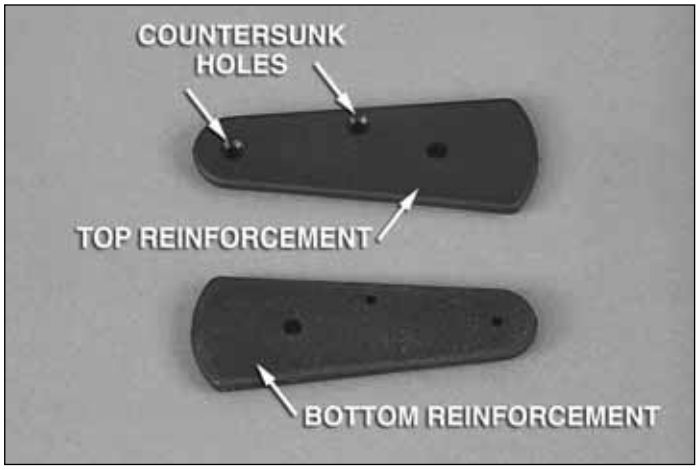
❏ 1.Find the two pre-assembled collective linkages and verify they are 102mm long. Install the linkages as shown above.

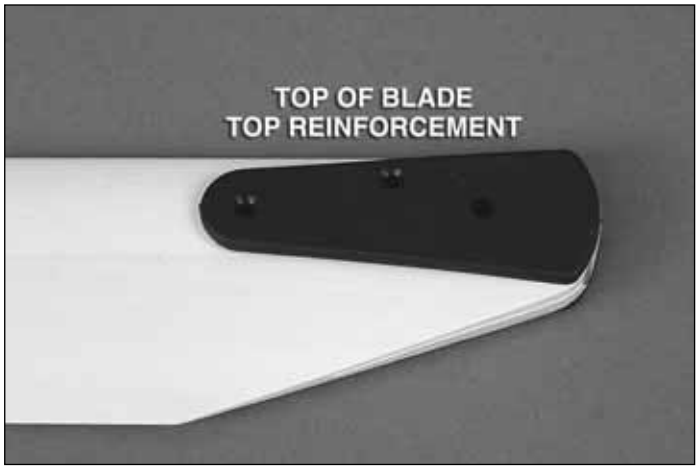


❏ 2. The short double links should have a 1mm gap between the ball links as shown above.

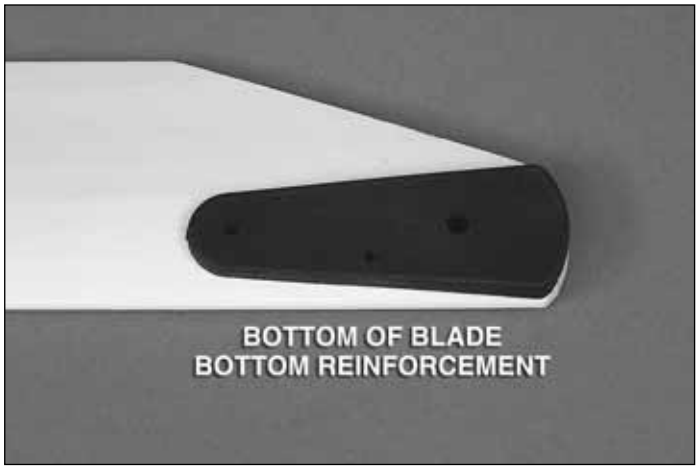
MAIN BLADES

Warning: *The blade root reinforcements* ***must be glued to the main blades****. Please inspect the blades for damage before assembling them. Do not exceed 1700 RPM with the wood blades or failure may occur. Blades are considered consumable items and should be discarded if there is any sign of damage.*

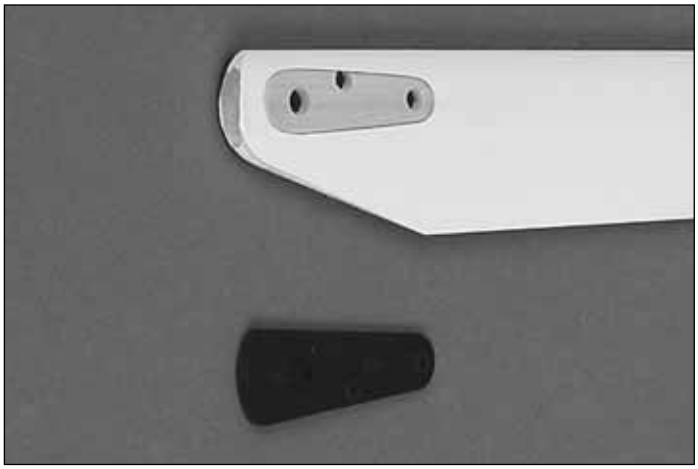




❏ 1. Position the blade as shown above and test fit the top reinforcement on the blade.

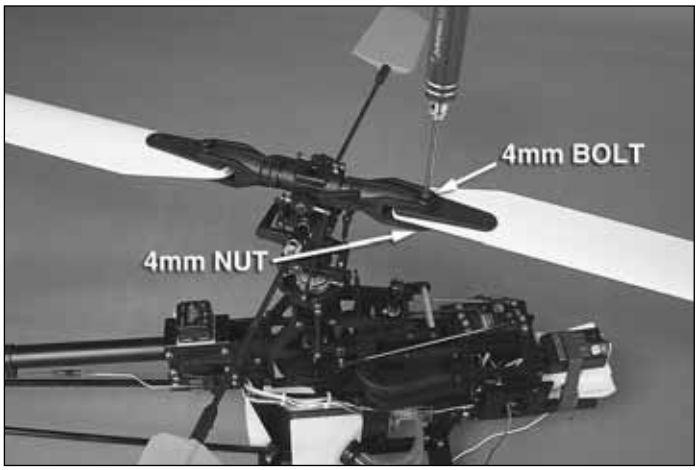


❏ 2. Turn over the blade and test fit the bottom reinforcement.



❏ 3. Once you have verified everything fits properly, mix up some 30-minute epoxy and apply it to the exposed wood on the root of the blade. Install the top and bottom reinforcements as shown above. Double check your work to verify the reinforcements are installed properly. Install and tighten the two 2.6mm screws into the reinforcements as shown.

❏ 4. Use a paper towel dampened with isopropyl alcohol to remove the excess glue from the blade. Before the epoxy sets, install the blades into the grips to clamp the reinforcements down onto the blade. Once the epoxy has set, you can proceed to the next step.

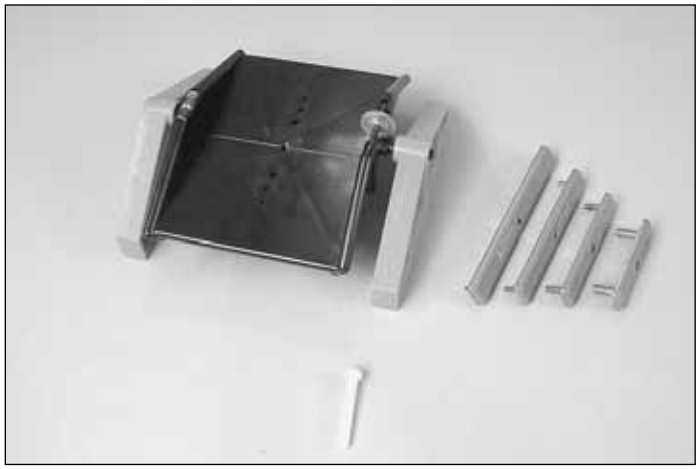


❏ 5. Using the 4mm bolts and nylon lock nuts, install the blades into the grips as shown.

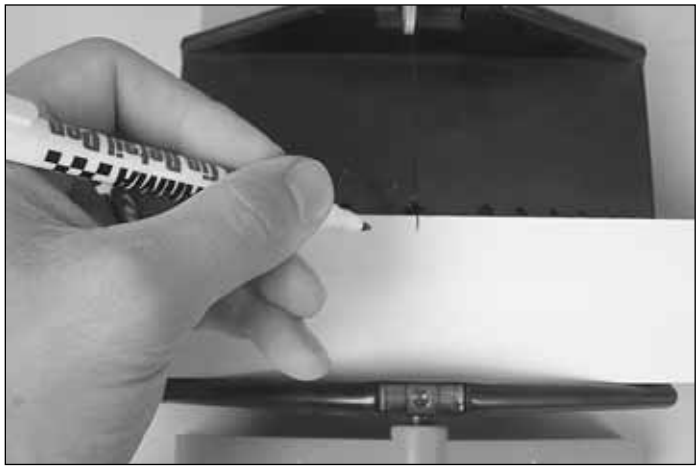
BLADE BALANCING

Note: *All main blades must be balanced before use. We recommend using the Heli-Max Blade Balancer (HMXE4855).*

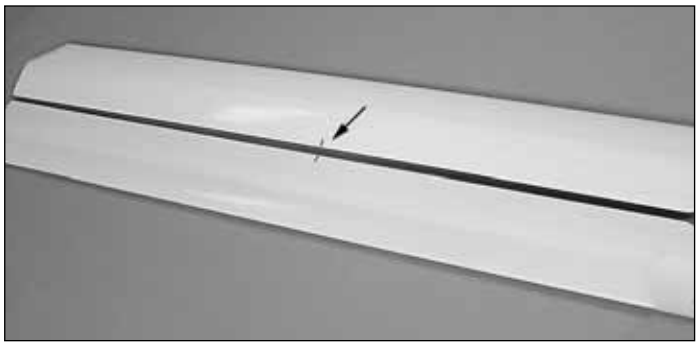
❏ 1. Apply the two colored stripe decals to the tips of your main rotor blades (for use in blade tracking later on).



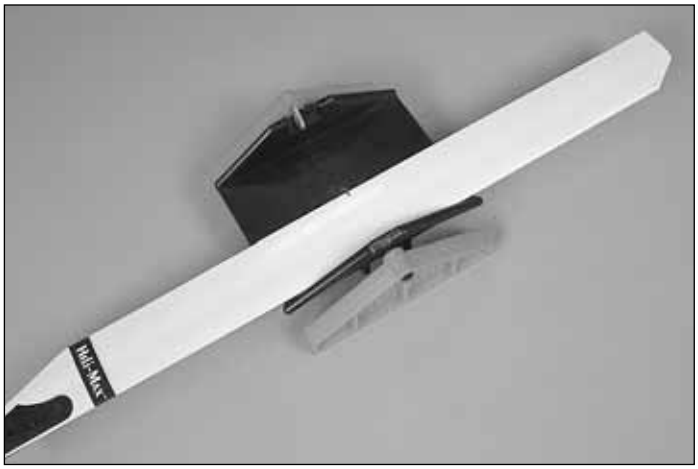
❏ 2. Prepare the balancer for use by rotating the brass adjustment dial until the bubble in the vial indicates level. Make sure that the blade balancer does not move during this process.



❏ 3. Place one blade onto the balancer with the leading edge against the side with the level. Shift the blade on the balancer until the bubble indicates level. The middle of the black balancing tray is now at the C.G. of this blade. Mark this position on the blade with a felt tip pen.

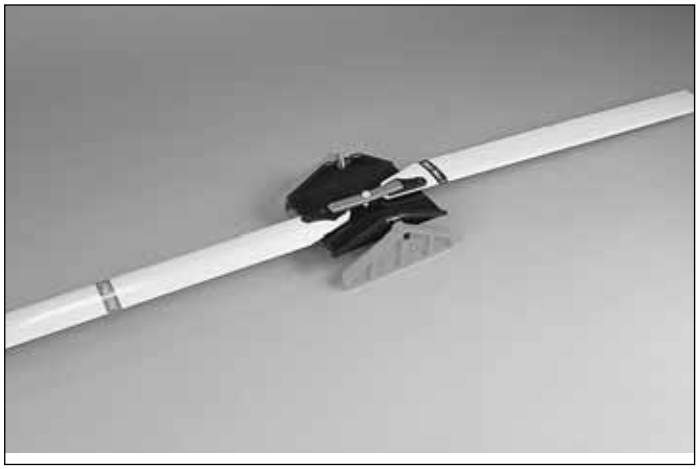


❏ 4. Line up the ends of both blades. Transfer the mark you made on the first blade to the second blade.



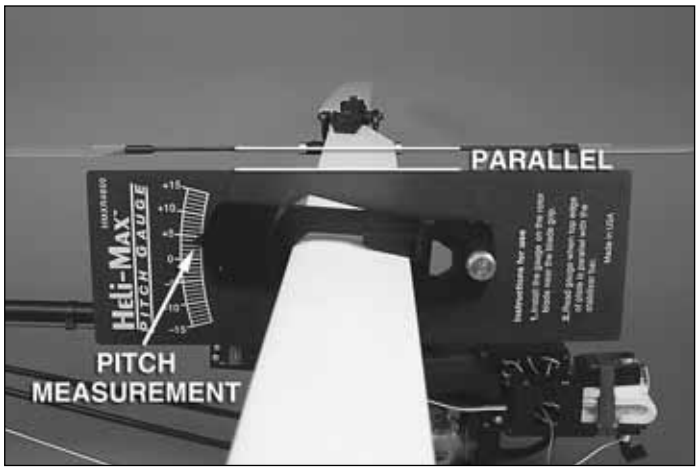
❏ 5. Position the second blade on the tray, with the mark at the center. Add balancing or electrical tape to the lighter end until the bubble indicates that both sides are level. The C.G. of both blades is now matched. If the tape ends overlap, make sure the overlapping end points to the *trailing* edge of the blade.

❏ 6. Your Heli-Max Blade Balancer includes four sizes of blade mounting plates and a nylon mounting bolt. Select the mounting plate that best fits the holes in the blade grips. Secure the mounting plate and two blades to the balancer with the nylon mounting bolt.



❏ 7. Add tape to the C.G. of the lighter blade until the bubble level indicates that the two blades balance. Using a different tape color in this step will remind you that future adjustments will require both balancing steps.

PITCH CURVES



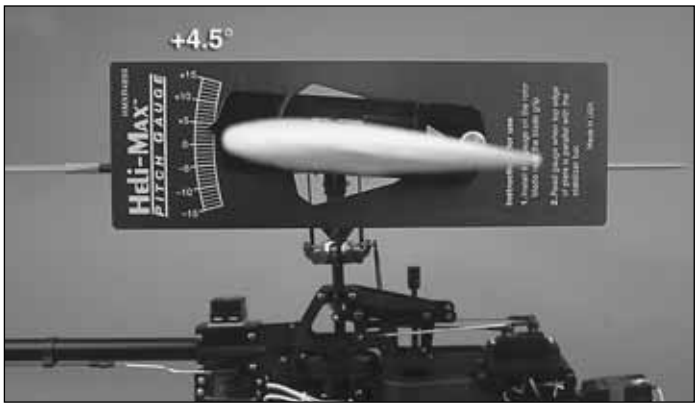
❏ 1. The pitch gauge is used by setting the desired pitch on the gauge and adjusting the blade pitch until the top (or bottom) of the gauge is parallel with the flybar. Make sure the flybar is level while doing this. If you need to make an adjustment to the pitch of the blades, then adjust the long linkages that connect the swashplate to the mixer arm. The goal is to have positive 10° at full throttle/collective and negative 10° at low throttle/collective. Then use the pitch curves within the radio to adjust the collective pitch range.

Warning: *Beginners should use a maximum negative 2° collective with the throttle stick at idle. It helps to reduce the sensitivity of the collective and prevents hard landings when the throttle is brought back to idle. Later, once you advance and need more negative collective, simply make adjustments in the transmitter.*

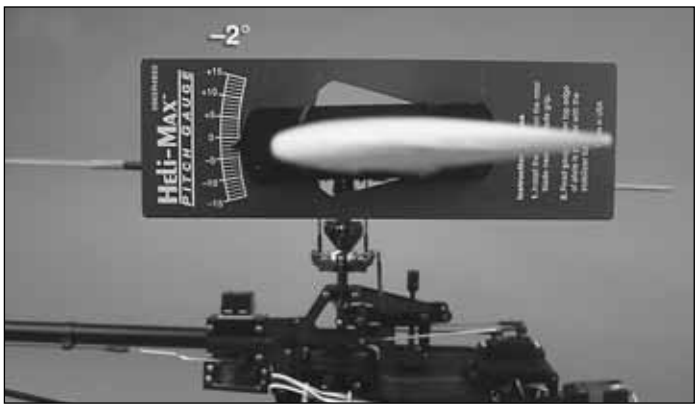
PITCH CURVE SETUP

PITCH CURVE	POINT 1	POINT 2	POINT 3	POINT 4	POINT 5
Normal	45% / -2°	55%	65% / +4.5°	82%	100% / +10°
Hold	30% / -4°	47%	65% / +4.5°	82%	100% / +10°

❏ 2. Turn on the transmitter and receiver. Move the collective stick to full throttle. Place the pitch gauge on the blade as shown and set it to +10°. Align the top (or bottom) of the pitch gauge with the flybar. If necessary, adjust the long linkage between the mixer and the swashplate. Once the correct pitch has been established, adjust the length of the linkage on the opposite side to match.



❏ 3. On your transmitter, place the throttle/collective stick in the center. Verify that the setting is around +4.5°. If the pitch is off, adjust Point #3 in the pitch curve on your radio. If you adjust Point #3, adjust Points #2 and #4 to maintain a smooth curve.

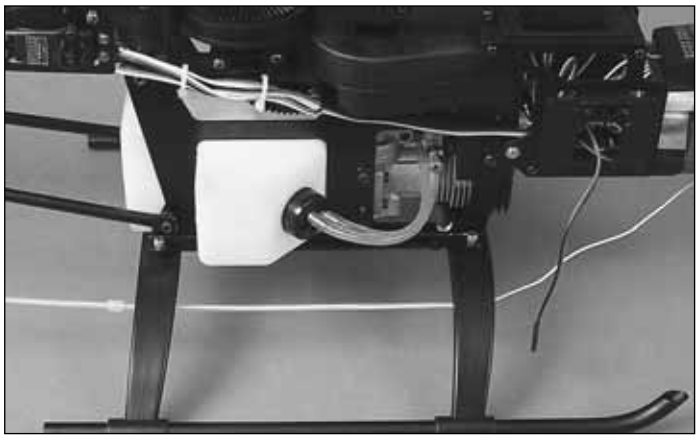


❏ 4. Lower the throttle/collective stick on the transmitter to the bottom. Verify that the setting is around –2°. Use pitch curve Point #1 if adjustments are needed. Once you are finished, set Point #2 to keep an even curve.

❏ 5. Repeat the pitch curve setup for the Hold function and any other Idle Ups you may need.

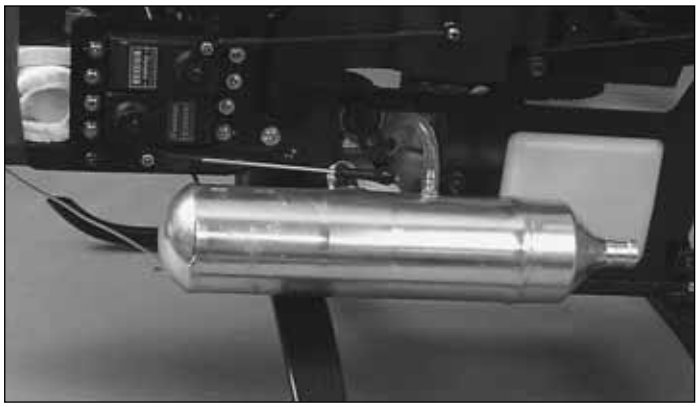
FINAL ASSEMBLY

FUEL LINES



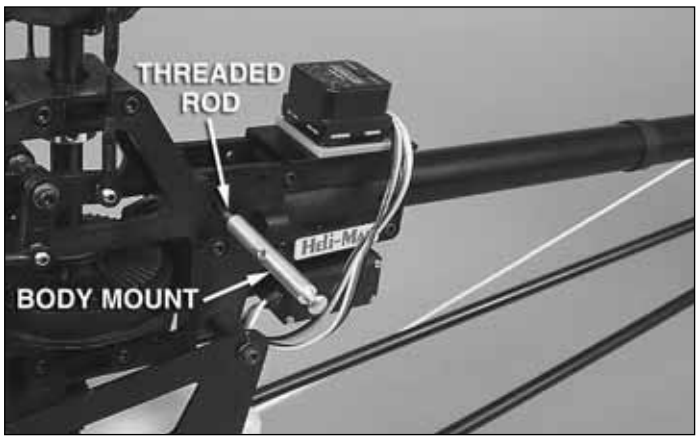
❏ Cut a piece of 4" [102mm] fuel line for the carburetor pickup line and install. Use the remaining fuel line for the pressure line to the muffler.

MUFFLER INSTALLATION



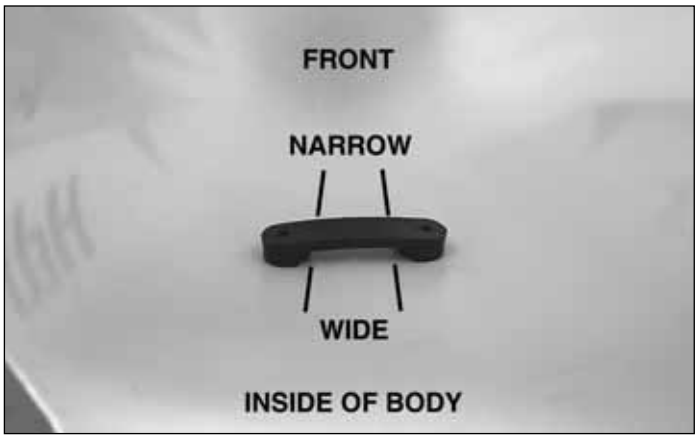
❏ Install your muffler following the manufacturer's instructions. Mounting hardware should be included with the muffler.

BODY AND MOUNTS



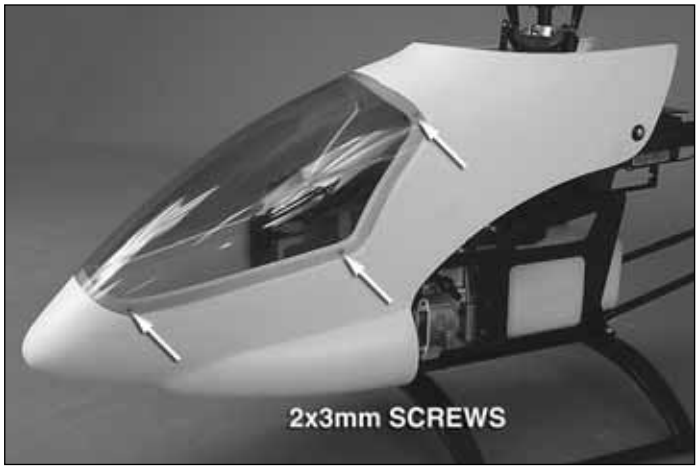
❏ 1. Slide the threaded rod through the frame. Using thead locking compound, install the body mounts as shown above.

❏ 2. Trim the front of the body as shown above. Make a clean cut by making several passes with a hobby knife. Mark the body 5/8" [16mm] up from the back edge and 5/8" [16mm] right. Drill 1/4" [6.4mm] holes for the rubber grommets. Install the grommets into the body.



❏ 3. Install the front body clamp using two 3x8mm self-tapping screws. Please note that the wider end should face the back of the canopy.

❏ 4. Depending on your muffler, it may be necessary to cut the body for clearance. Leave at least 1/4" [6.4mm] between the body and muffler. Mount the body by sliding the canopy latch onto the “L” bracket on the servo tray. Lift up the back portion of the body and push the grommets onto the rear body mounts.



❏ 5. Once the body is installed, trim and test fit the windshield. When satisfied with the fit, drill 1/16" [1.5mm] holes at the locations shown and use 2x3mm self-tapping screw to attach the windshield. Repeat for the other side of the body.

DECALS

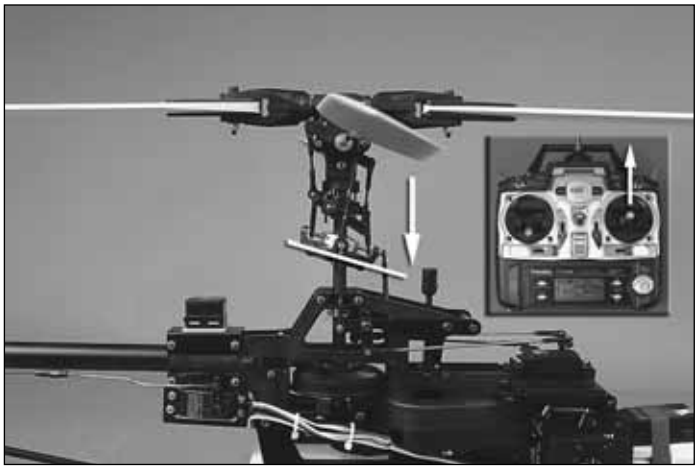
❏ Clean the body thoroughly with glass cleaner to remove any mold release left over from manufacturing. Spraying glass cleaner on the body before applying the decals enables you to reposition them until they are perfectly placed. Once in place, use a squeegee to remove the cleaner, allowing the decals to “stick” in place.

PREPARE FOR FLIGHT

CHECK THE CONTROL DIRECTIONS

Turn on the transmitter and allow the gyro 5 seconds to initialize before moving the helicopter or operating the sticks. If everything has been adjusted properly the swashplate should be level with the main frame when the sticks are centered.

Forward Cyclic



❏ Look at the helicopter from the right side. Push the right stick forward. The swashplate should tilt forward as shown.

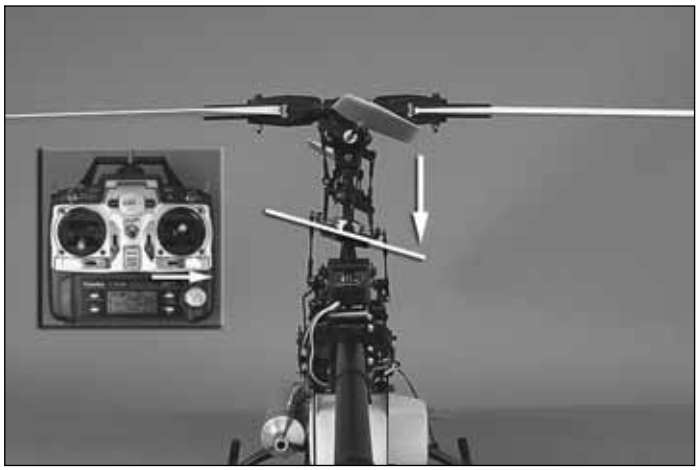
Aft Cyclic

❏ Pulling the right stick back should make the swashplate tilt backwards.

Left Cyclic

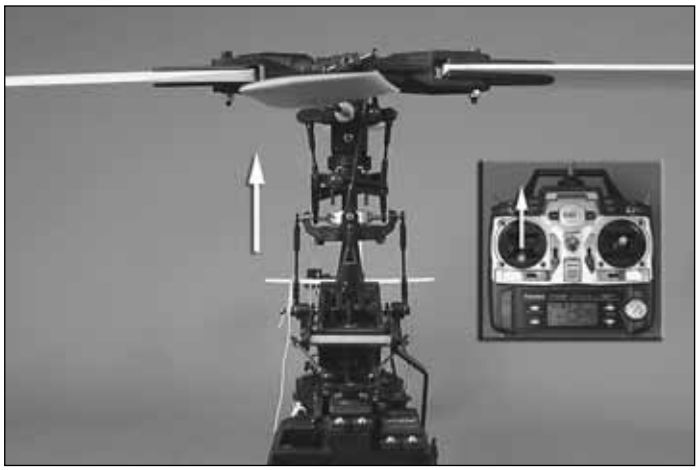
❏ View the helicopter from the rear. Pushing the right stick to the left should make the swashplate tilt to the left.

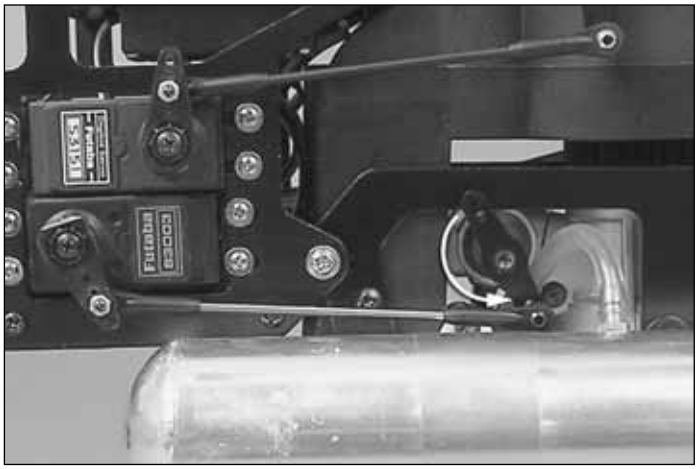
Right Cyclic



❏ Continue to view the helicopter from the rear. Pushing the right stick to the right should make the swashplate tilt to the right.

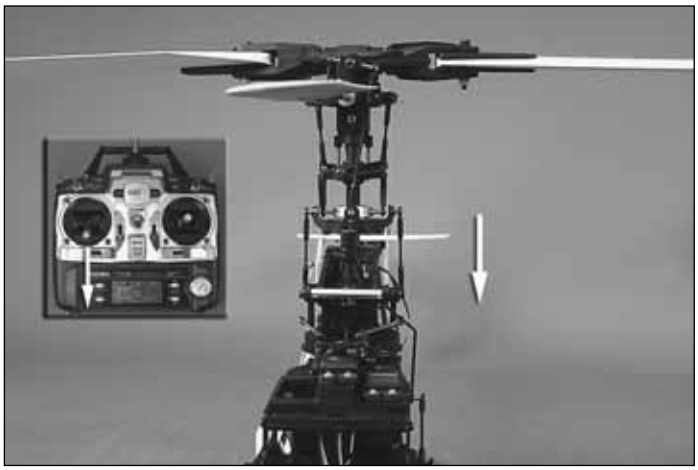
Ascend Collective





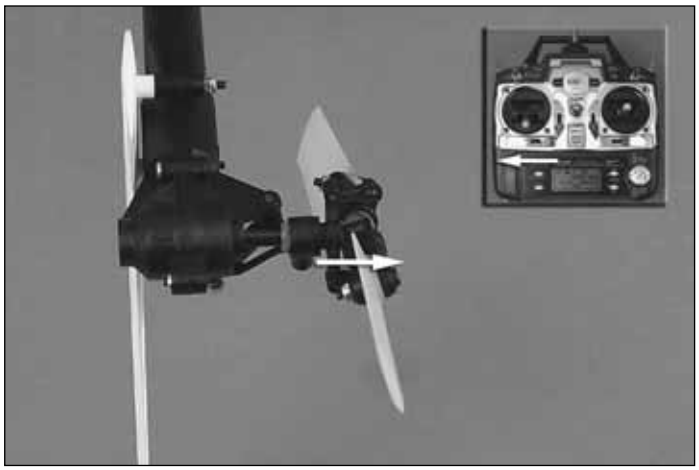
❏ When the left (collective) stick is pushed forward, the swashplate should move up and the carburetor should open.

Descend Collective



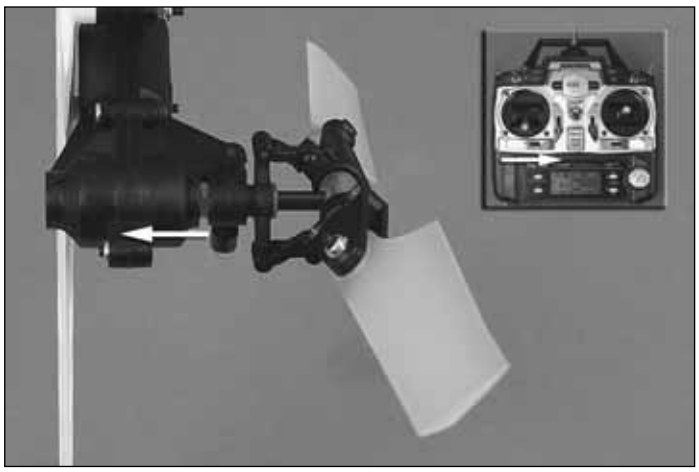
❏ When the left (collective) stick is pulled backward, the swashplate should move down and the carburetor should close.

Left Tail Rotor



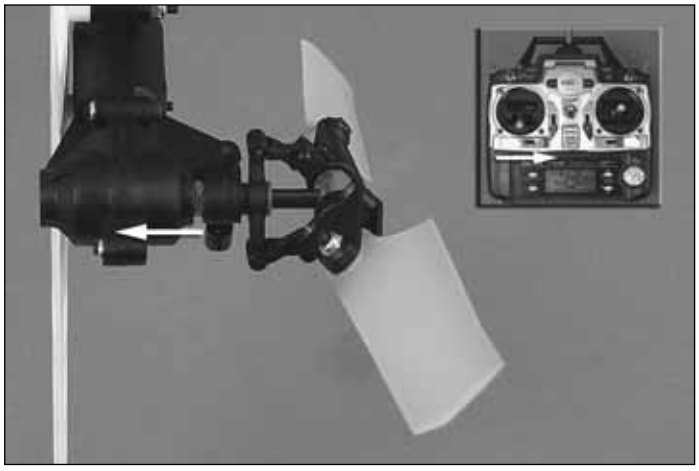
❏ When the left (tail rotor) stick is moved to the left, the tail pitch slider should move to the right as shown.

Right Tail Rotor



❏ When the left (tail rotor) stick is moved to the right, the tail pitch slider should move to the left as shown.

Gyro Compensation Direction



❏ Pick the helicopter up by the main shaft and rotate the nose to the left (counterclockwise). The gyro should compensate by moving the tail rotor pitch slider to the left (toward the tail boom). If the pitch slider moves right instead, change the reversing switch for the servo.

RANGE CHECK

Ground check the range of your radio before the first flight of the day. With the transmitter antenna collapsed and the receiver and transmitter "ON", you should be able to walk at least 100 feet away from the model and still have control. Have an assistant stand by your model and tell you what the servos are doing while you work the controls. If the controls do not respond correctly, do not fly! Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash. Failure to follow these safety precautions may result in severe injury to you and others. Keep yourself and all spectators away from the plane of rotation of the rotors. Keep these items away from the rotors: loose clothing (shirt sleeves, ties, scarfs), long hair, or loose objects (such as pencils or screwdrivers) that may fall out of shirt or jacket pockets into the rotors. The spinning blades of a model helicopter can cause serious injury. When choosing a flying site for your model, stay clear of buildings, trees and power lines. AVOID flying in or near crowded areas. DO NOT fly close to people, children or pets. Maintain a safe pilot-to-helicopter distance while flying.

BALANCE THE MODEL (C.G.)

The Kinetic .50 should balance level when picked up by the flybar with the flybar perpendicular to the tail boom. If the tail drops, the helicopter is tail heavy and you need to add weight to the front or if possible move equipment forward. If the nose drops, you need to add some weight to the tail of the helicopter or move equipment back as needed.

The C.G. on a model helicopter is not as critical as it is on model airplanes, but can cause some trim problems as you learn to fly. If nose weight is needed, consider using a larger capacity battery.

At this stage, the model should be in ready-to-fly condition.

IDENTIFY YOUR MODEL

Whether you fly at an AMA sanctioned R/C club site or somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is required at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 38 and place it on or inside your model.

CHARGE THE BATTERIES

Follow the battery charging instructions that came with your radio control system. You should always charge your transmitter and receiver batteries the night before you go flying, and at other times recommended by the radio manufacturer.

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code, refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

GENERAL

1) I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
2) I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.
5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models while being flown indoors.
7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

RADIO CONTROL

1) I will have completed a successful radio equipment ground check before the first flight of a new or repaired model.
2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.
4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission.
5) I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed [in the complete AMA Safety Code].
9) Under no circumstances may a pilot or other person touch a powered model in flight; nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing.

FLYING

Please try to find a local club (check **www.modelaircraft.org** for listings) or find an experienced modeler for help before starting to fly. There are a lot of mistakes that can be made during the assembly of helicopters that an experienced modeler can catch. They will help you get the model setup properly and verify that the model is trimmed out and ready for your first flight.

The web sites listed below are discussion forums for R/C Helicopters and Planes. There is a lot of information available on the forums.

www.rcgroups.com
www.rcuniverse.com
www.runryder.com

Computer flight simulators are excellent practice before risking your model. Great Planes RealFlight® G3.5 (GPMZ4405) is the most realistic simulator available and is highly recommended.

CONTROLS

Shown below are the controls available on the Heli-Max Kinetic .50 and how they operate during flight.

Forward Cyclic

Moving the right (cyclic) stick forward causes the helicopter to lean forward and start moving forward.

Aft Cyclic

Moving the right (cyclic) stick backward causes the helicopter to lean backward and start moving backward.

Left Cyclic

Moving the right (cyclic) stick to the left causes the helicopter to lean left and start moving in that direction.

Right Cyclic

Moving the right (cyclic) stick to the right causes the helicopter to lean right and start moving in that direction.

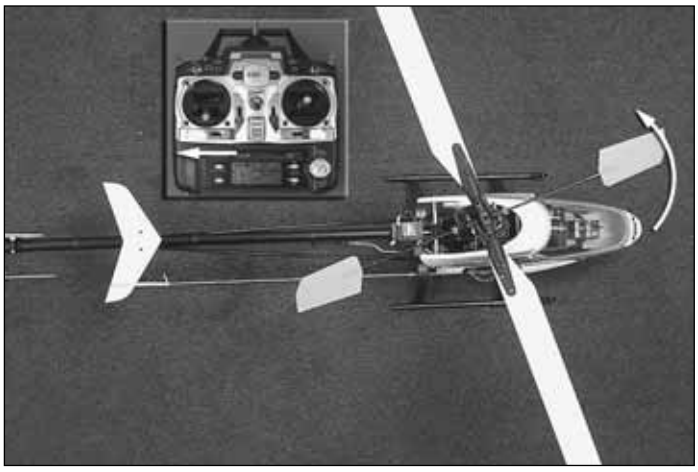
Ascend Collective

When the left (collective) stick is moved forward, the helicopter will ascend.

Descend Collective

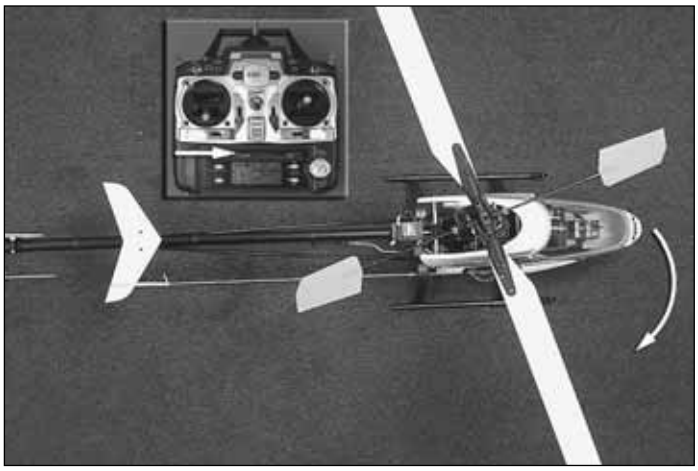
When the left (collective) stick is moved downward, the helicopter will descend.

Left Tail Rotor



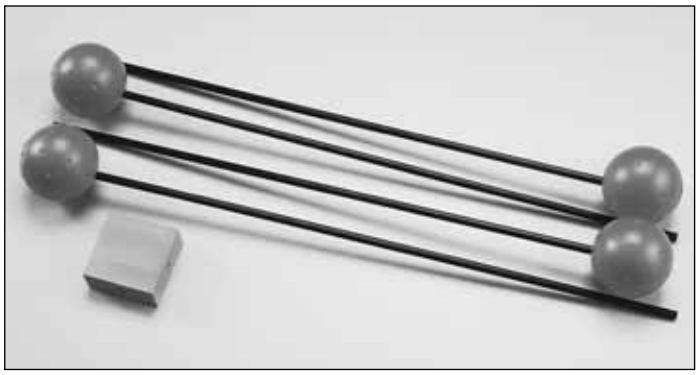
When the left (tail rotor) stick is moved to the left, the nose of the helicopter will move left and the helicopter will rotate counterclockwise.

Right Tail Rotor



When the left (tail rotor) stick is moved to the right, the nose of the helicopter will move right and the helicopter will rotate clockwise.

TRAINING GEAR



If you have never flown a helicopter before, consider purchasing training gear. It not only helps prevent crashes and tip-overs, but prevents damage by softening not-so-perfect landings. The Heli-Max Training Gear (HMXE2025) is highly recommended.

FLYING CONDITIONS

During your first flight, it is very helpful to fly in light winds and have a helper to keep an eye on things around you. If you are flying off grass, make sure it is cut low. This will allow the helicopter to slide around without catching. Finally, make sure there are no obstacles or distractions in your flying area.

BEFORE EACH FLIGHT

Please inspect the model for loose or damaged parts. Inspect the main rotor blades and ball links. Make sure you have selected the proper model in the transmitter and all of the controls operate in the correct direction.

STARTING THE MODEL

Set the engine's needle valve to the recommended factory setting. Please review the manufacturer's operating instructions for the engine.

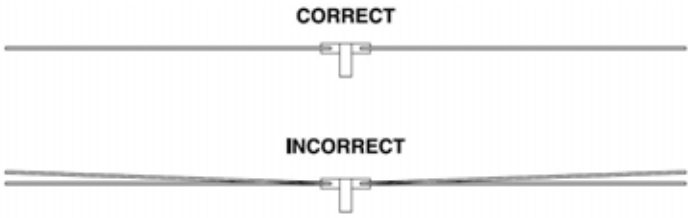
If you are flying at a club, be sure you use their frequency control system. Turn on the radio first and select the correct model. Turn on the helicopter next. Allow the gyro to initialize for at least 5 seconds before moving the model or using the transmitter.

Fill the fuel tank. Make sure the idle up switch on the transmitter is set to normal mode and the throttle is at idle. Check the throttle arm on the engine to verify it is at idle.

Attach the glow igniter to the glow plug. You must have a solid hold on the blade grip in case the model starts at a throttle position other than idle. Use the starter to turn the engine over. If the engine does not want to start, check the glow plug by removing it and attaching the glow igniter. Verify that the needle settings are correct. It is possible the engine could be flooded. If no problems can be found, assume the engine is flooded. Remove the fuel line from the carburetor and try starting the engine again.

Once the model has been started and has warmed up, remove the glow igniter. Carry the model out to the location where you plan on flying. Place the model on the ground and walk back at least 30' [or 10m].

ADJUST BLADE TRACKING



If you feel uncomfortable adjusting blade tracking by yourself, please have a helper do the sighting for you and simply fly the model. Slowly bring the main rotor up to speed but do not lift off the ground. Please wear safety glasses when performing the next step. Observe whether the rotational planes of the blades are the same. If they are not, adjust one of the short double linkages to bring the blades into the same plane.

TAKEOFF

Slowly add power and observe the model. If you feel it needs trimming at any time, simply lower the collective stick all the way down to land and adjust the trim on the transmitter. For now, simply bring the collective stick up until the helicopter is “light on the skids”. As you become more comfortable with the helicopter, you can lift higher off the ground. Stay low until you become comfortable.

If you should get into trouble, simply bring the collective stick down slowly and the helicopter will settle and land. This is when the training gear serves its purpose, since it helps to level the helicopter automatically before landing. The training gear will also allow the model to slide on most surfaces.

You will notice the cyclic controls lag behind your control inputs. This is perfectly normal and something you get the feel for with time. It’s normal to drift around in a hover until you are used to flying the model. The cyclic controls on the Kinetic .50 are fairly sensitive so only small movements are necessary.

HOVERING

Once the helicopter is hovering, concentrate on holding the helicopter in one spot. This can take some practice. Wind has a big effect on the stability of the helicopter. Be patient and take your time. Trying to rush the learning process can be costly.

LANDING

Level the helicopter into a hover and slowly decrease power until the helicopter settles onto the ground.

BASIC MANEUVERS

Once you have become accustomed to hovering, it is time to work on moving the helicopter around. Just pick some points on the ground (you can mark the ground if you like) and fly the helicopter over to them. Try to maintain a steady hover directly over those points. For now, always keep the tail pointing directly at you. This helps to keep your orientation.

Pirouettes: Add a small amount of tail rotor (left or right) and try rotating the helicopter slightly sideways and see if you can maintain the hover. If you get uncomfortable bring the tail back towards you. Once you begin to feel comfortable, try moving the helicopter to the side and turning back. Then fly back to the other side in straight lines.

Once you become comfortable with those you can try rotating the helicopter 360°, which is called a pirouette. The helicopter can drift during pirouettes, so make sure you have plenty of room to perform the maneuver.

After pirouettes, it is time to move onto nose-in hovering. It is best to wait for a calm day. Take off and climb to 15'. Practice half pirouettes, working from tail-in to nose-in hovering. Try to lengthen the delay between the transitions. As you improve, you’ll remain nose-in for longer periods of time.

Now it’s time to work into basic forward flight. Just take the basic hovering maneuvers listed above and slowly go out farther and faster, but always bring the helicopter back after one pass. Practice controlled slow flight in close as well. The more time you spend practicing, here the easier things will be later on.

AEROBATICS

When you become comfortable in fast forward flight, you can slowly progress into aerobatics. Once you are in forward flight, use the idle up switch to raise the rotor RPM for aerobatics; this provides the power to fly inverted. Also, in wind, it may be difficult to descend for a landing without the idle up on.

The first step is chandelles. Fly straight across in front of you and pull up to a 45° angle. Now at the top, when the helicopter slows down to a stop, apply some tail rotor to bring the nose around 180° and continue back down on the 45° angle.

As you progress with the maneuver, you can pull to greater angles, up to 90 degrees. This would be called a stall turn.

Loops: Once you are comfortable with chandelles and stall turns, it’s time to move onto the loop. The key to the loop is entering with plenty of air speed. Start pulling aft cyclic to enter the loop. As the model goes inverted at the top, pull back on the throttle a little bit (towards negative (–) collective) to help hold altitude. As the model comes back vertical, add some positive (+) collective to speed. One of the most common mistakes made on loops is using too much negative (–) collective at the top of the loop.

Flips: These are a lot easier to perform than they sound. Start with plenty of altitude. From an upright hover, slowly add in full forward cyclic. As the model approaches vertical, bring the collective stick back to center. As the model

continues to fly inverted, you will need to start adding in negative (–) collective (or pull the collective stick back towards you) to maintain altitude. As the model transitions back to vertical, again bring the collective stick back to the middle and start adding in positive (+) collective as the model comes back to the upright position.

It is all a matter of timing. The most important thing is to move the sticks smoothly. If you are too aggressive with the sticks, the head speed will drop and you will lose power.

Rolls: These are very similar to flips and require proper timing on the collective. From fast forward flight, slowly move the stick to full right cyclic. As the model approaches knife edge (blades vertical), slowly move the collective stick towards 0°. As the model approaches inverted, you should slowly move the collective stick towards –5° (to maintain inverted flight). By the time the model reaches knife edge again, the collective should be near 0°. Slowly move the collective stick towards +5° to maintain upright flight. This is a simple maneuver to perform but one of the most difficult ones to perfect.

Inverted Hovering: Keep in mind flying a helicopter inverted is very difficult but can be learned. One of the problems is three out of four controls are reversed (forward/aft cyclic, collective and tail rotor). You have to mentally reverse these while flying. It will take some practice. If you have a simulator, this is the best place to start.

Perform a half loop and hold the inverted portion for short periods of time. As you become accustomed to the reversed controls, you will extend the time you fly inverted. This is very difficult and will take some time to pick up. Also, make sure you have plenty of altitude for recovery.

GOOD LUCK AND GREAT FLYING!

PARTS LIST

ORDERING REPLACEMENT OR MISSING PARTS

Replacement parts for the Heli-Max Kinetic .50 ARF are available using the order numbers in the Replacement Parts List located in the back of this manual. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Heli-Max web site at **www.helimax-rc.com**. Choose “Where to Buy” at the bottom of the menu on the right side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer.

Parts may also be ordered directly from Hobby Services by calling (217) 398-0007, or via facsimile at (217) 398-7721, but full retail prices and shipping and handling charges will apply. Illinois and Nevada residents will also be charged sales tax. When ordering, please include a Visa® or MasterCard® number and the expiration date of the card.

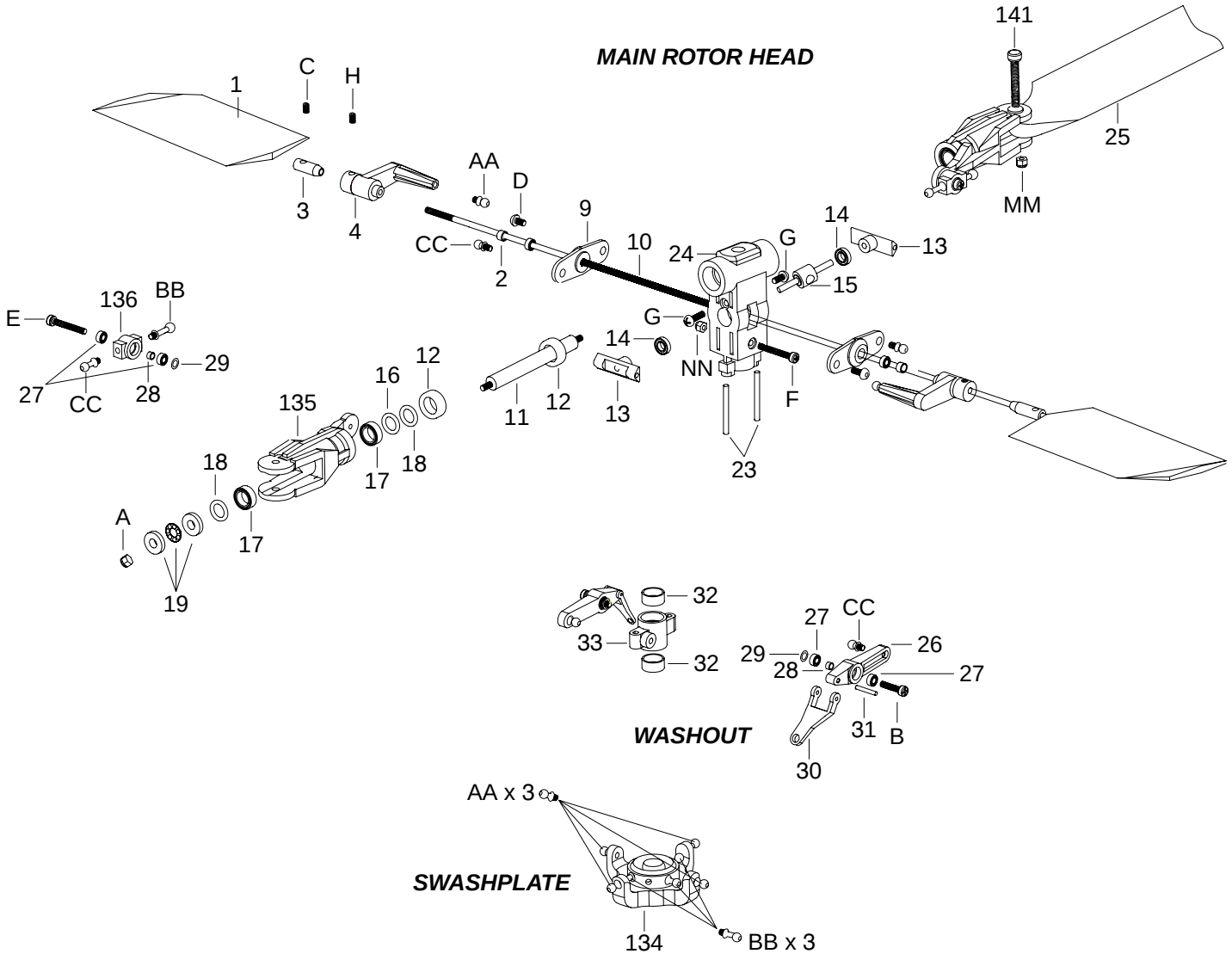
Mail parts orders and payments by personal check to:

Hobby Services
3002 N Apollo Drive, Suite 1
Champaign IL 61822

Be certain to specify the order number exactly as listed in the Replacement Parts List. Payment by credit card or personal check only; no C.O.D.

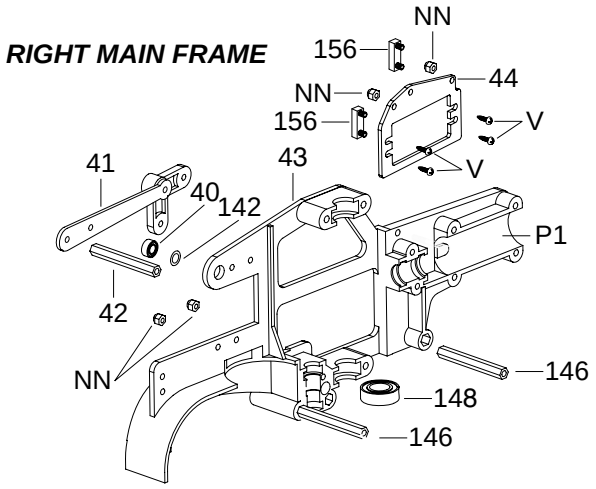
If additional assistance is required for any reason contact Product Support at (217) 398-8970, Ext. 6, or by e-mail at:

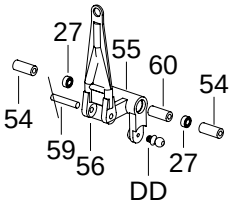
helihotline@hobbico.com



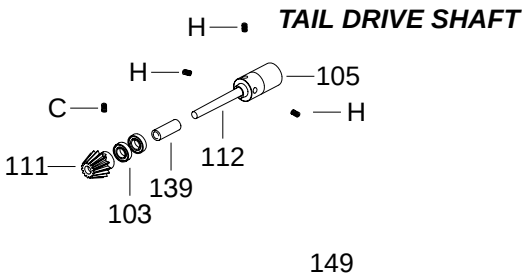
Stock #	Description	Contents
HMXE1008	Main Rotor Blades 600mm	**25** x1pc
HMXE4463	Metal Swashplate Set	**134** x1pc, **AA** x3pcs, **BB** x4pcs
HMXE4464	Radius Link w/Pin	**30,31** x2pcs
HMXE4465	Washout Set	**26,27,28,29,30, 31,32,33,B** x2pcs
HMXE4466	Rotor Head Yoke	**24** x1pc, **G** x2pcs
HMXE4467	Seesaw Set	**9,13,CC,D** x2pcs
HMXE7288	Ball Bearing (6x13x5mm)	**17** x4pcs
HMXE7289	Thrust Bearing (6x12x4.5mm)	**19** x2pcs
HMXE7290	Ball Bearing (3x7x3mm)	**27** x14pcs

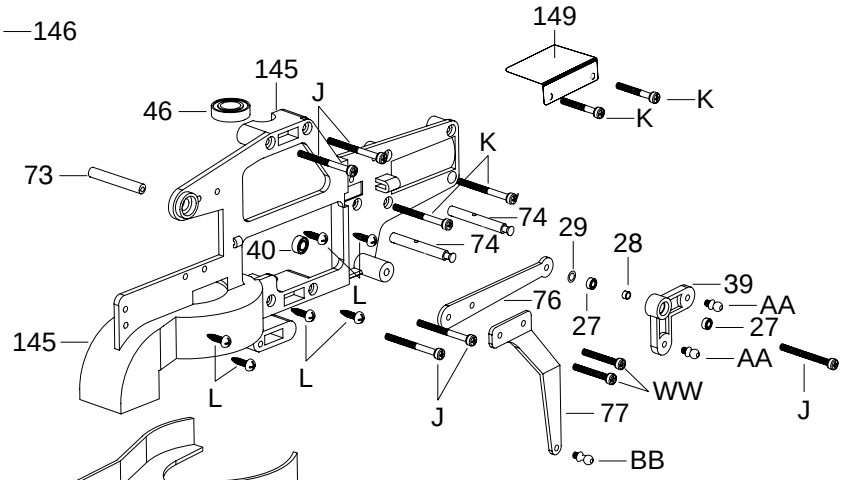
Stock #	Description	
HMXE7291	Ball Bearing (4x8x3mm)	**8** x2pcs
HMXE7810	3D Flybar Paddles	**1,3,C** x2pcs
HMXE7812	Flybar	**10** x1pc
HMXE7813	Feathering Shaft	**11** x1pc
HMXE8315	Main Blade Grips	**135,141,MM** x2pcs
HMXE8415	Damping Rubbers	**12** x2pcs
HMXE8823	Bell Mixer Arm Set	**28,29,CC,BB** x1pc, **136** x2pcs
HMXE9004	Stabilizer Control Arms	**2,4,H** x2pcs
HMXE9009	Seesaw Shaft Set	**15** x1pcs, **14,G** x2pcs
HMXE9901	Washout Guide Pins	**23** x2pcs



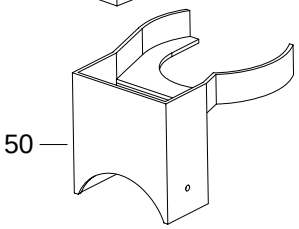


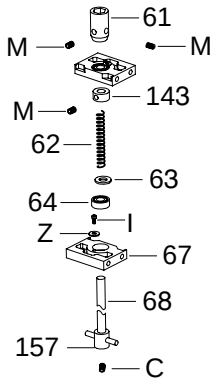
ELEVATOR ARM ASSEMBLY



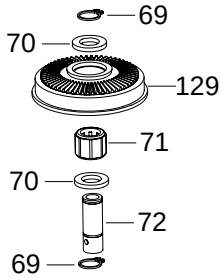


LEFT MAIN FRAME

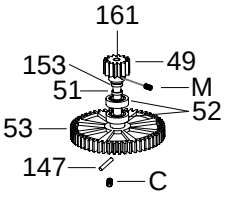




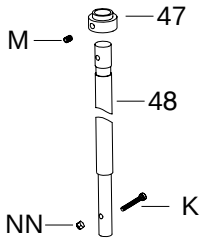
START SHAFT ASSEMBLY



MAIN GEAR ASSEMBLY



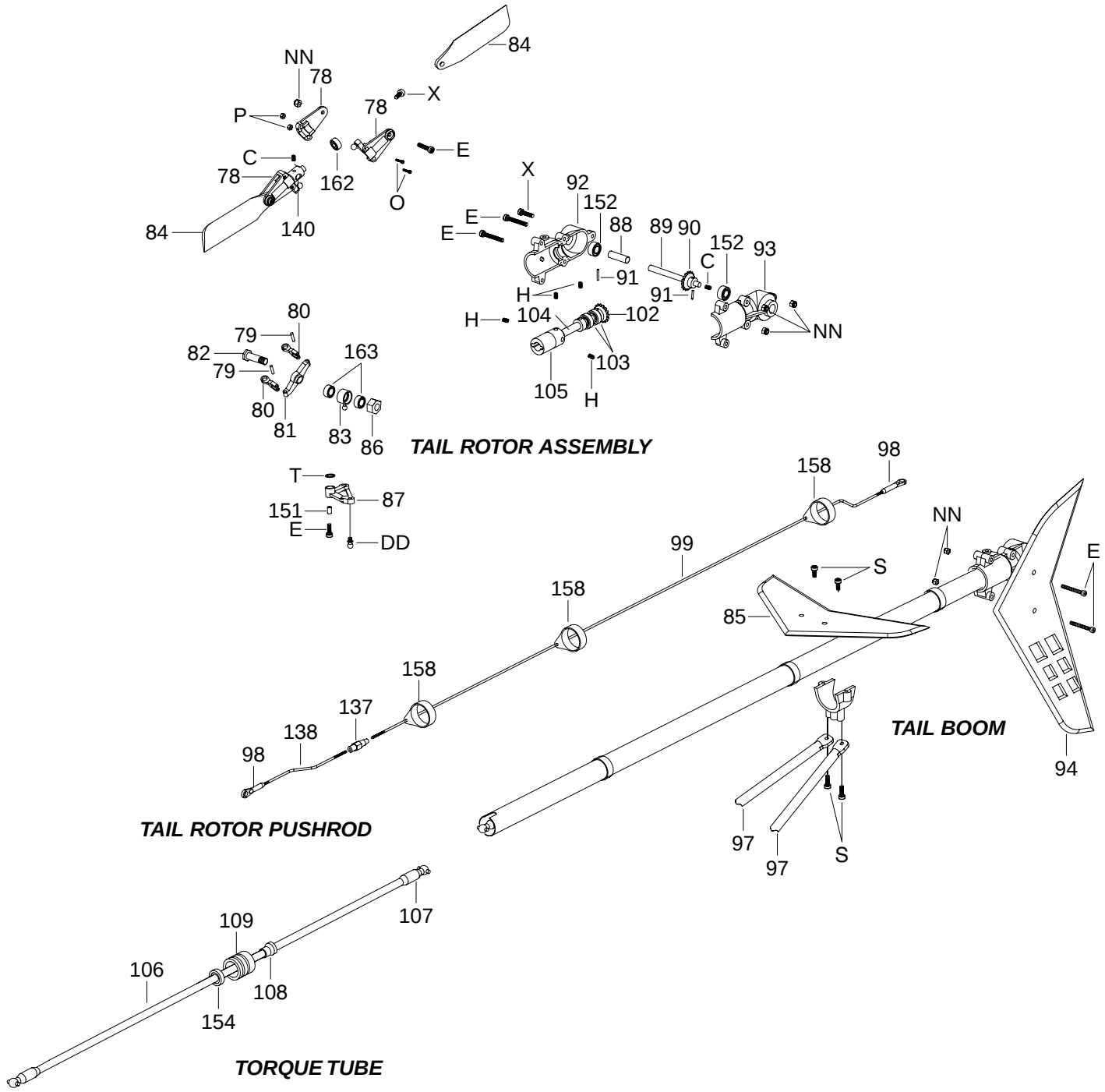
COUNTER GEAR



MAIN SHAFT

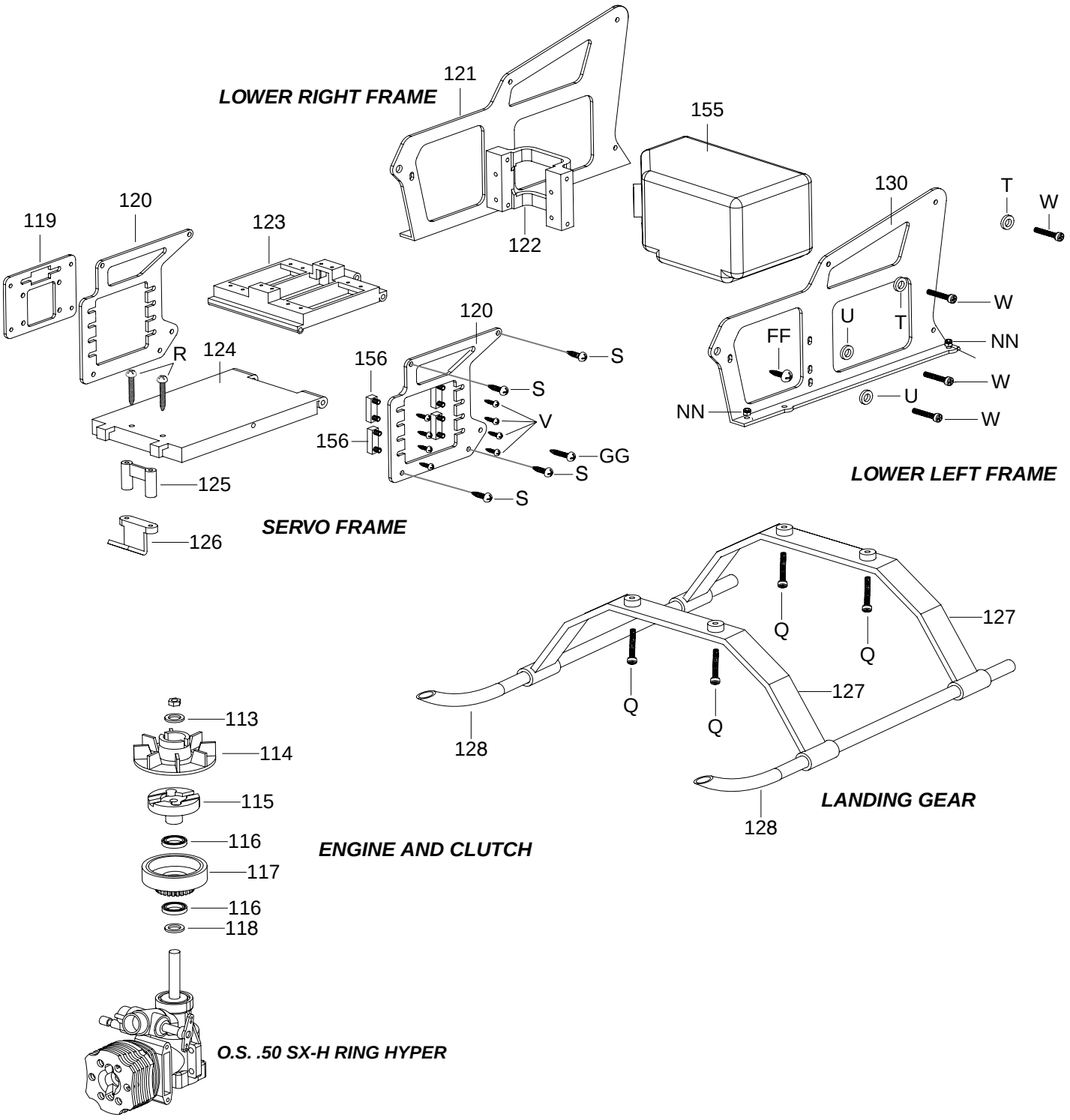
Stock #	Description	Contents
HMXE4400	Hex Adapter	**61** x1pc, **M** x2pcs
HMXE4401	Start Shaft	**62,63,68,143,157,M** x2pcs
HMXE4402	Starter Shaft Bearing Blocks	**67,I,Z** x2pcs, **L** x8pcs
HMXE4403	Bellcranks L&R Cyclic	**29,28,39** x2pcs, **AA** 4pcs
HMXE4404	Elevator Arm Set	**56,55,59,60,DD** x1pc, **54,K** 2pcs
HMXE4452	Cooling Fan Shroud	**50,FF** x1pc
HMXE4454	Collective Pitch Lever Set	**41,42,73, 76,77** x1pc, **W** x4pcs
HMXE4456	Main Gear	**129** x1pc, **70** x2pcs
HMXE4457	Upper Side Frames	**43,145** x1pc, **J** x4pcs, **K** x5pcs, **NN** x9pcs
HMXE4468	10mm Bearing Spacer	**70** x2pcs

Stock #	Description	Contents
HMXE7293	Main Shaft BB (10x19x5mm)	**46** x1pc
HMXE7295	Tail Rotor Coupler Bearings	**103** x2pcs
HMXE7298	Ball Bearing (8x19x6)	**148** x1pc
HMXE7323	Counter Drive Gear 55T	**53,147** x1pcs
HMXE7922	Gyro Mount	**149** x1pc
HMXE8416	Primary Drive Shaft	**161** x1pc, **M** x2pcs
HMXE8417	Metal Drive Gear	**49,51,153** x1pc
HMXE8418	Autorotation Hub & Bearing Set	**72** x1pc, **69,70,71** x2pcs
HMXE8419	Main Shaft	**48,K** x1pc
HMXE8420	Mast Stopper	**47** x1pc
HMXE8423	Rear Rudder Servo Mount	**44,156,K** x1pc
HMXE8425	Hex Spacer and Rod	**74,146** x2pcs
HMXE9123	Tail Bevel Gear	**111,C** x1pc
HMXE9124	Tail Drive Primary Shaft	**112,139** x1pc

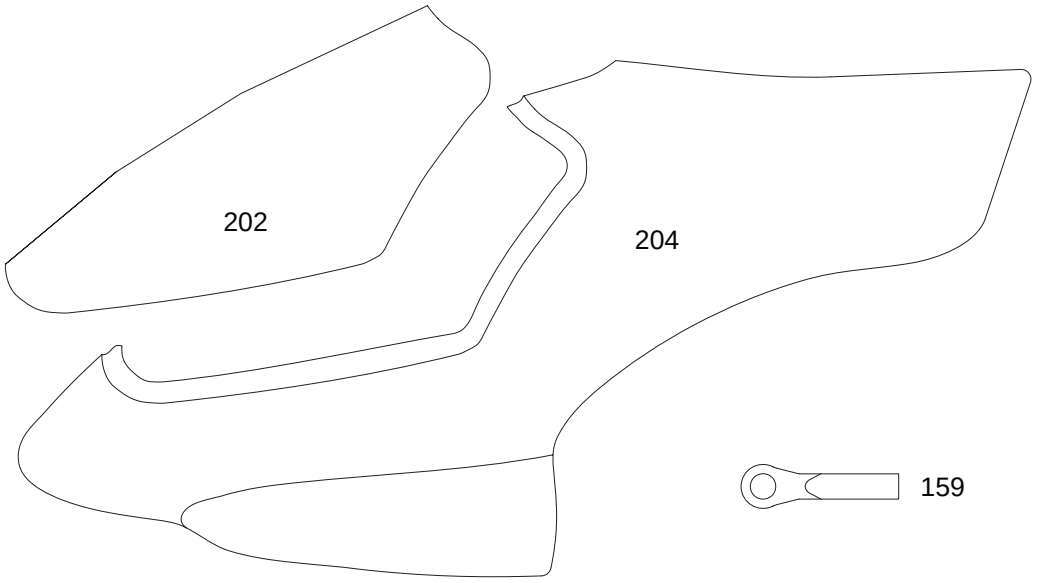


Stock #	Description	Contents
HMXE4705	Assorted Hardware	
HMXE7292	Ball Bearing (3x10x4mm)	**162** x4pcs
HMXE7294	Tail Slider BB (6x10x3mm)	**163** x2pcs
HMXE7295	Tail Output Shaft BB (5x13x4mm)	**152** x2pcs
HMXE7297	Ball Bearing (5x11x4mm)	**162** x4pcs
HMXE9121	Tail Drive Coupler	**105** x1pc, **H** x3pcs
HMXE9125	Tail Boom	**165** x1pc
HMXE9126	Tail Torque Drive	**106,109** x1pc, **154** x2pcs
HMXE9127	Tail Control Rod Set	**99,137,138** x1pc, **98** x2pcs
HMXE9128	Tail Input Shaft	**104** x1pc
HMXE9129	Tail Output Shaft	**89** x1pc

Stock #	Description	Contents
HMXE9130	Tail Output Shaft Spacer Tube	**88** x1pc
HMXE9131	Tail Rotor Hub	**140,C** x1pc
HMXE9132	Dual Tail Boom Supports	**97** x1pcs
HMXE9912	Tail Fin Set	**85,94** x1pc, **S,E** x2pcs
HMXE9913	Tail Gear Set	**90,102,X** x1pc, **91,C,E** x2pcs
HMXE9914	Tail Gearbox	**92,93,X** x1pc
HMXE9915	Tail Pitch Slider Set	**81,82,83,86** x1pc
HMXE9916	Tail Pitch Ball Links	**79,80** x2pcs
HMXE9917	Tail Blade Grip Set	**78,O,P,X** x2pcs
HMXE9918	Tail Rotor Blades	**84,E,NN** x2pcs
HMXE9919	Tail Pitch Lever Set	**87,151,E,T** x1pc
HMXE9920	Tail Pushrod Guides	**158** x3pcs

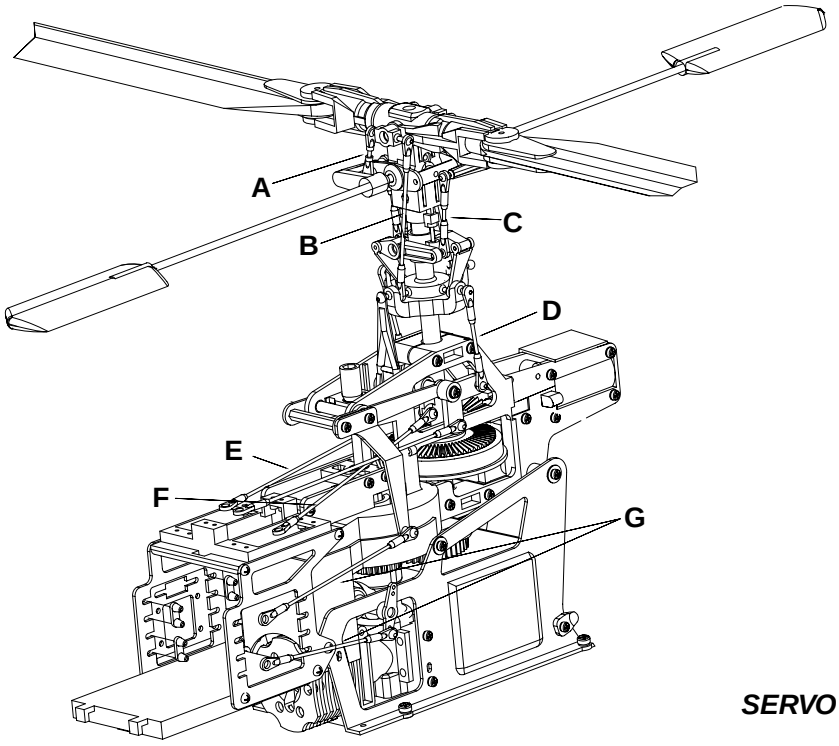


Stock #	Description	Contents
HMXE4450	Cooling Fan	**113,114** x1pc
HMXE4451	Clutch Bell	**117** x1pc
HMXE4453	Clutch Shoes	**115** x1pc
HMXE4460	Landing Struts	**127** x2pcs, **QQ,NN** x4pcs
HMXE4461	500cc Fuel Tank and Fittings	**155** x1pc
HMXE4705	Assorted Hardware Pack	
HMXE8421	Lower Side Frame Set	**121,130** x1pc, **T** x4pcs
HMXE8422	Front Servo Frame Set	**119,120,120,123, 124** x1pc, **FF** x2pcs, **S** x8pcs, **E** x10pcs
HMXE8424	Landing Skids	**128** x2pcs
HMXE8824	Engine Mount	**122** x1pc, **W,U** x4pcs
HMXE7296	Ball Bearing (8x19x6mm)	**148** x1pc
HMXE7299	Ball Bearing (12x18x4)	**116** x2pc
HMXE9008	Servo Mounting Plates	**156** x10pcs

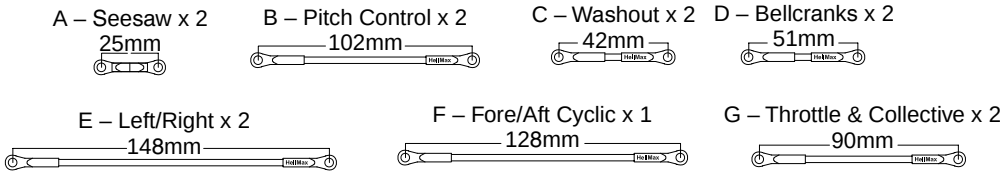


Stock #	Description	Contents
HMXE4462	Plastic Links	See Below
HMXE4469	Stainless Ball 3mm Short	**206** x2pcs
HMXE4704	Antenna Tube	**205** x1pc
HMXE7289	Thrust Bearing	**19** x2pcs
HMXE7438	Canopy Screws & Hardware	x1

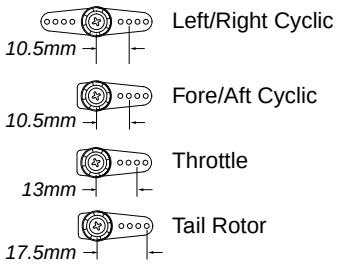
Stock #	Description	Contents
HMXE7439	Canopy	**204** x1pc
HMXE7440	Clear Windshield	**202** x1pc
HMXE7510	Decal	x1pc
HMXE7811	Pushrod Set	x14pcs



LINKAGES AND LENGTHS



SERVO ARM LENGTHS



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Kinetic™ 50

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