

# ***Predator 60/70***

## ***SE & Max 90***

## ***Instruction Manual***



### ***SPECIFICATIONS***

	<b><u>60/70</u></b>	<b><u>60/70 SE</u></b>	<b><u>Max 90</u></b>
⇒ MAIN BLADES	690mm	700mm	720mm
⇒ MAIN ROTOR SPAN	60.6 in	60.6 in	62.9 in
⇒ TAIL ROTOR SPAN	10.5 in	10.5 in	11.2 in
⇒ OVERALL LENGTH	54.5 in	54.5 in	55.7 in
⇒ HEIGHT	17.2 in	17.2 in	18.2 in
⇒ ENGINE	60 ~ 70	60 ~ 70	80 ~ 90

***Century Helicopter Products***

Designed and Developed in USA

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# **Building Instructions for the Predator series eCCPM helicopter kits.**

## **Introduction**

Congratulations on your purchase of Century Helicopter Product's newest RC helicopter model. The Predator eCCPM is the most anticipated and long awaited Century model helicopter. The attention is well deserved as the Predator will be unmatched in affordability, quality and performance. Compared to other 60 class models, pilots will be elated to find the Predator is built to please. This kit will exceed your expectations for precision control at an affordable price.

In order to take advantage of the Predator's performance capabilities we recommend using a high quality computer radio system with 120 degree and/or 140 degree eCCPM mixing. The radio system should have at least 8 channels to use modern heading lock gyros and throttle governors. The radio should also have a minimum of 5 programmable points on both throttle and pitch curves. Servos used should be quality coreless, ball bearing and having a minimum torque rating of 70 oz/in. The tail rotor servo should have a servo speed of 0.11sec/60 degrees or better.

## **Warning**

This radio controlled model is not a toy! It is a precision machine requiring proper assembly and setup to avoid accidents. It is the responsibility of the owner to operate this product in a safe manner as it can inflict serious injury otherwise. It is recommended that if you are in doubt of your abilities, seek assistance from experienced radio control modelers and associations. As manufacturer, we assume no liability for the use of this product.

## **Pre-assembly Information**

Upon opening the kit, all the major component parts are bagged by relationship to the different sections of the helicopter. Some components of the Predator have been factory assembled. The instruction manual details the assembly of all components, including factory assemblies, should servicing be required at a future time. Pre assembled components, parts, screws, and nuts required for each step are packaged in the same bag.

At steps that require attaching steel hardware to plastic parts, the plastic part should be prepared ahead of time by forming the threads with an available fastener of the same size. When the parts are ready for assembly, a small amount of Slow CA should be applied very carefully to the formed plastic threads as the fastener is installed. We do not warranty bearings that are frozen from glue.

Metal fasteners into metal parts should use Loctite 260 - Green.

Metal fasteners (set screws) should use Loctite 242 - Removeable.

Metal parts to bearings should use Loctite 262 - Permanent (requires heat to remove).

Tail gears and the autorotation unit require lubrication with a good quality thick bearing grease.

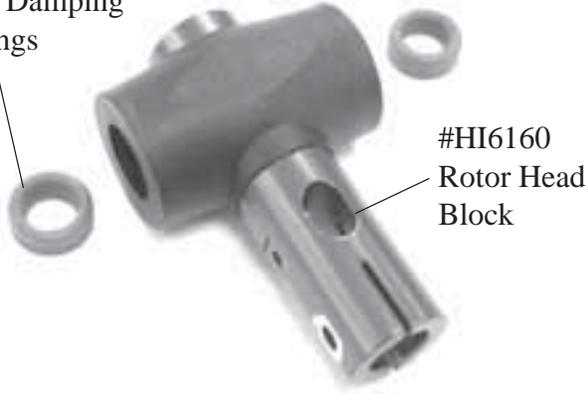
Be careful when opening each bag as not to lose any hardware. Care has been taken in filling and packing of each bag however mistakes do happen, if there is a parts shortage or missing hardware please contact us at:

Century Helicopter Products 1740 Unit C Junction Ave., San Jose, CA 95112

Tel: 1-408-451-1156 Web: [www.centuryheli.com](http://www.centuryheli.com)

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#HI6181A  
Head Damping  
O-Rings



1

Press in the damping o-rings into the rotor head block.  
Lubricate with light oil.

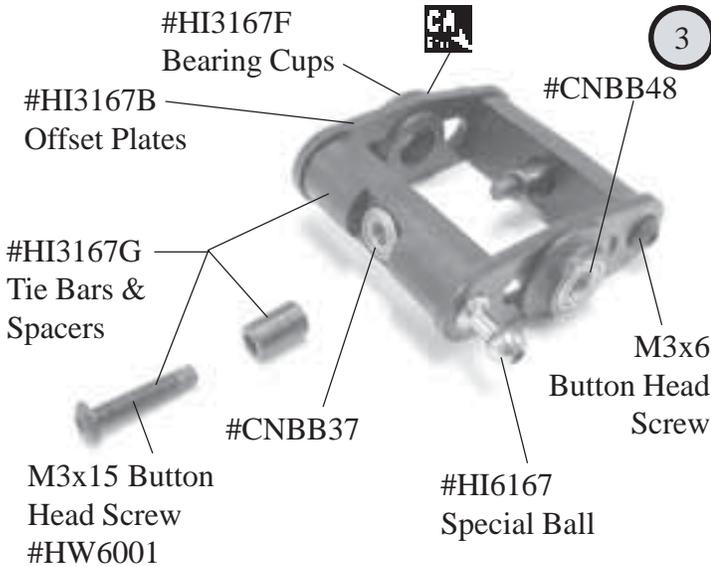
#CN2215A  
Silver Head Button

SE & Max  
only



2

Bond the threaded stud into the head button using permanent locktight then apply more permanent locktight and bond into the top of the rotor head block.



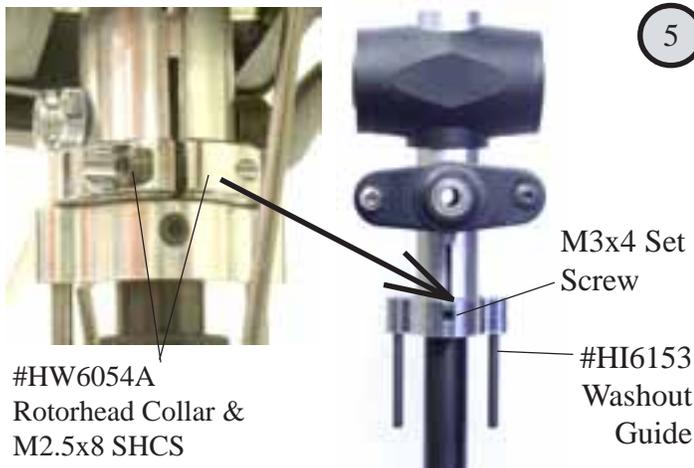
3

Assemble the seesaw parts around the rotor head block. Bond the bearing cups to the metal offset plates using Slo CA adhesive.



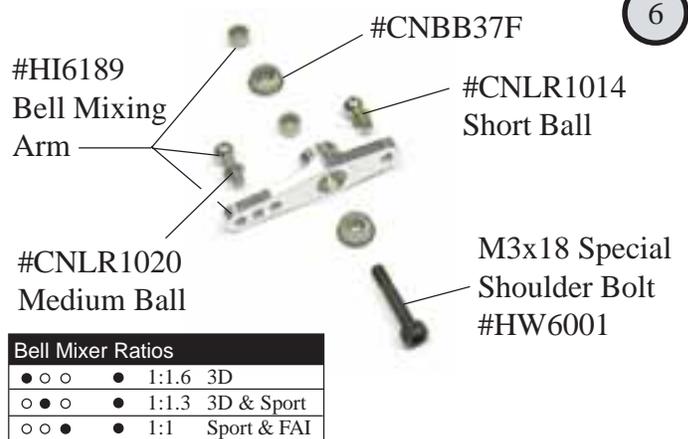
4

Make sure that the steel ball is mounted on the left when on the rotor head.



5

Slide the rotorhead collar and press it firmly against the head block and leave the fastener loose for now. The washout guide should be positioned against the rotor head block, with the pins aligned parallel to the feathering spindle.



6

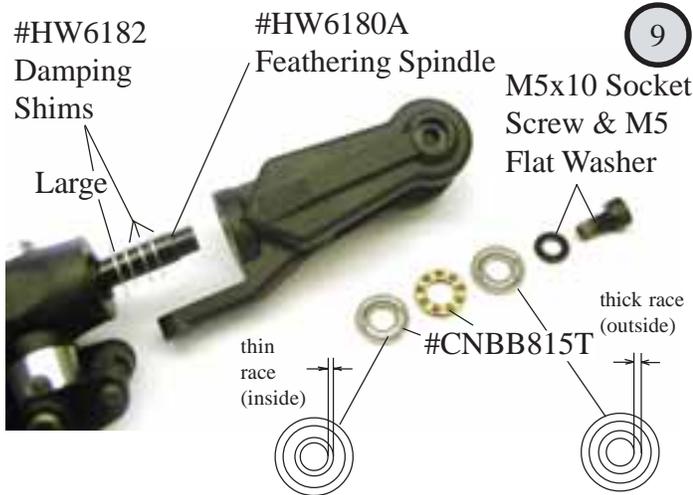
Press the M3x7 Flanged bearings into the seesaw capturing one steel spacer in between. Attach to the blade grip with the special shoulder bolt.



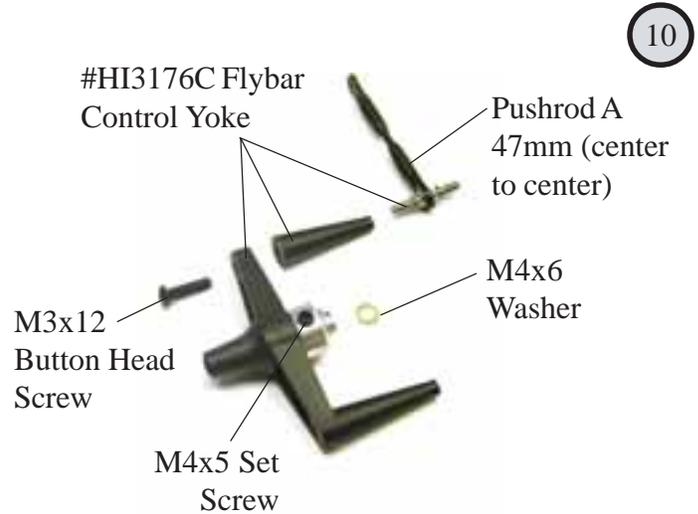
Insert one ball bearing into each end of the main blade grip. Slide the M14 Thrust Washer against the inside bearing.



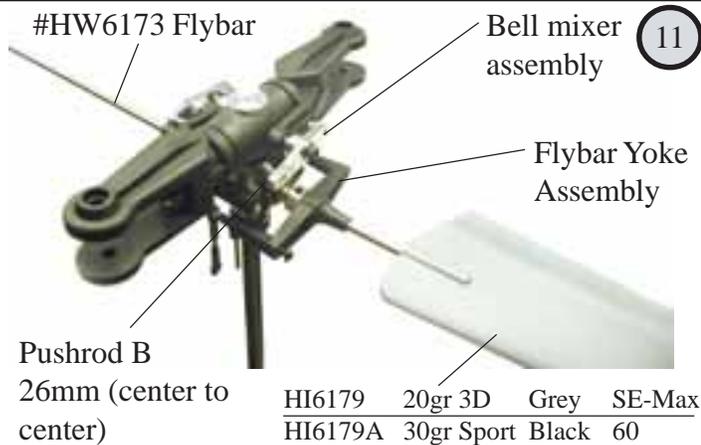
Attach the seesaw assembly with one M3x18 special socket screw threaded into the blade grip. Be careful not to over-tighten the screw.



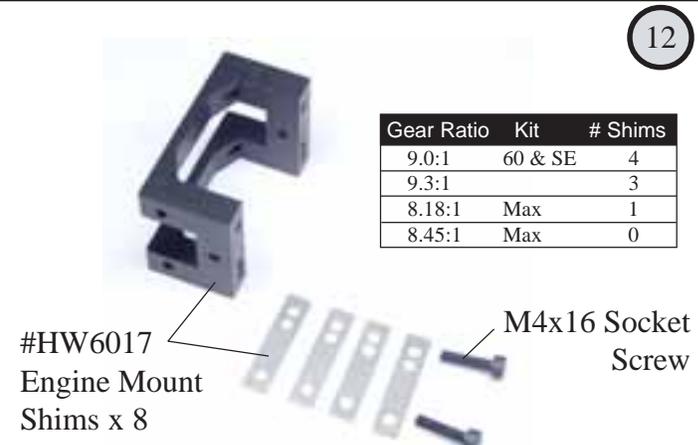
Slide one **large** shim against the o-rings followed by three shims onto the feathering spindle, followed by the blade grip assembly. Pitch arm is on leading edge. Grease and install the thrust bearings and secure with the M5x10 socket screw and washer using threadlock.



Assemble each flybar control arm half before it is installed by threading the double studded ball into the end of the tapered end of the control arm.



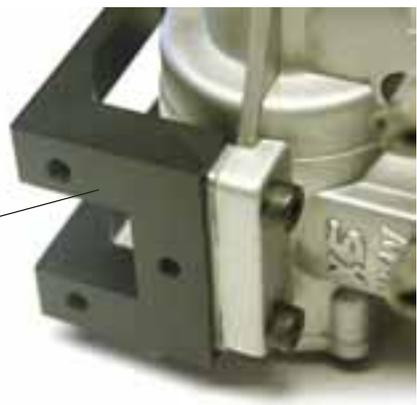
Assemble the flybar, paddles and flybar yoke around the rotor head and secure with the M4x5 set screws attached from the top of the arms using threadlock. Adjust pushrod and attach to from the seesaw to the medium ball on the adjustable side of the bell mixer. Apply CA to bond the paddle to the flybar.



Before installing the engine, check the gear ratio to determine the correct number of shims to install between the mounting lugs on the engine and the engine mount.

13

Engine centered in engine mount.



Install the engine into the mount using the correct number of shims and ensure that the engine is centered in the mount. Use locktight on the M4 socket screws.

14

#HI6009 Cooling Fan

#HW6012 Fan Hub

Hole for governor magnet.



If a governor is planned to be installed, install the magnets into the holes already molded into the bottom of the cooling fan and attach the sensor mount, overlapping the engine bolts.

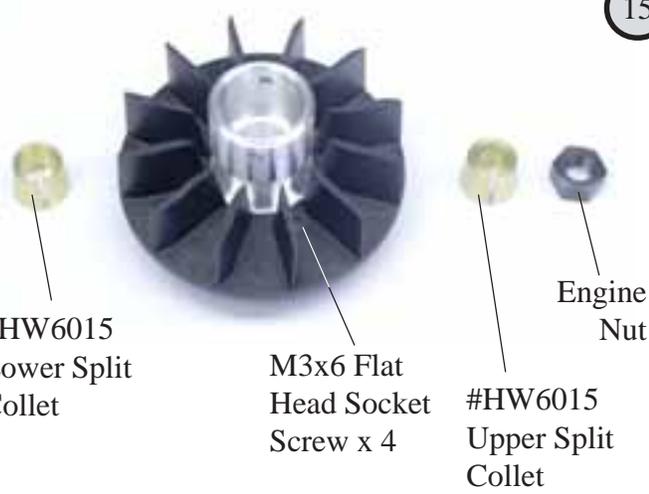
15

#HW6015 Lower Split Collet

M3x6 Flat Head Socket Screw x 4

#HW6015 Upper Split Collet

Engine Nut



The fan and hub are pre-assembled in the kit. The engine collets will fit both O.S. Max and Y.S. crankshafts.

16

Lower Collet

Oil Collets before tightening

Engine Thrust Washer



Ensure that the split in the collet is positioned away from slot for the Woodruff key. The lower collet is a tight fit to the crankshaft. Use the engine nut to start the collet onto the crankshaft, apply oil to collet.

17

Position the fan assembly, apply oil to the collet and insert the upper split collar and the original engine nut. Clean the engine threads and apply locktight to the engine nut and tighten in place.



18

#HW6011 Clutch Shoe

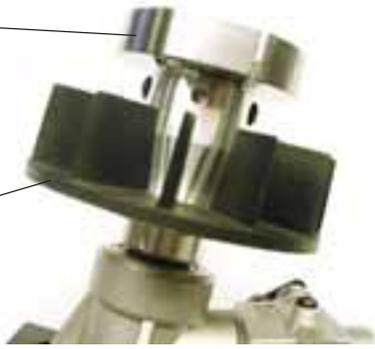
M3x6 Button Head Screws x 2

Apply light grease to the Torrington bearing in the center of the clutch shoe. Be sure that no grease contacts the clutchbell.



Clutch Shoe

Fan Assembly



19

Attach the clutch shoe with the M3 button socket bolts using threadlock.

Pre-Assembled

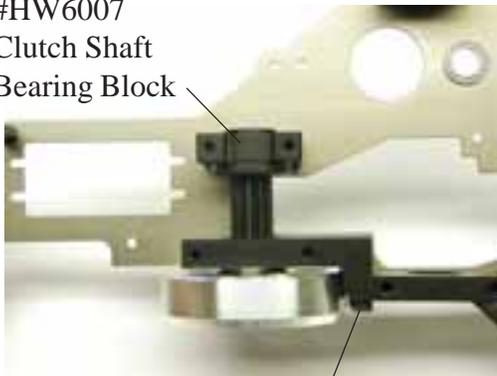
#HW6045 Lower Short Bearing Block

#HW6013 Clutch Bell Assembly 10T  
#HW6013A Clutch Bell Assembly 11T  
#HW6013B Clutch Bell Assembly 12T  
#HW6014 Replacement Clutch Lining

Clean the clutchbell and inside of the bearing with alcohol. Apply a small amount of permanent locktight around the top 15mm edge of the aluminum clutchbell where it will contact the bearing. Ensure the bearing is against the clutchbell. Press evenly and firmly as this is a very tight fit. A press should be used.

20

#HW6007 Clutch Shaft Bearing Block



M3x12 Socket Screw x 2

#HW6045 Lower Long Bearing Block

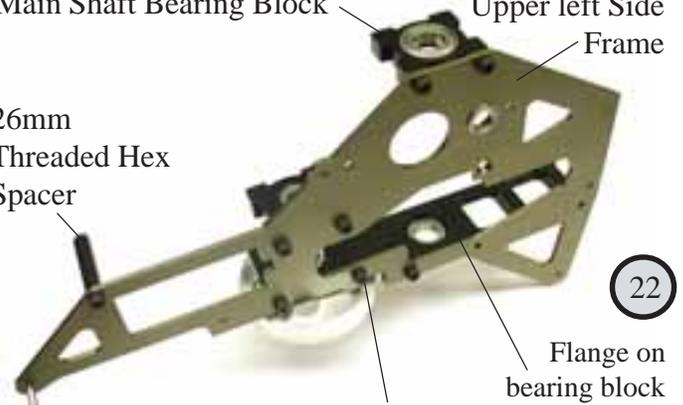
Clean the top of the clutchbell gear and inside of the upper bearing with alcohol. Apply a small amount of permanent locktight around the top edge of the clutch gear where it will contact the bearing. Press the clutch shaft bearing block in place. Attach the long bearing block with M3x12 socket screws but do not tighten at this time.

21

#HW6042 Main Shaft Bearing Block

#HW6110 Upper left Side Frame

26mm Threaded Hex Spacer



M3x8 Socket Screws x 8

Flange on bearing block faces down.

Attach the clutchbell and bearing block assembly (flange down), main shaft bearing block and front hex threaded spacer with M3x8 socket screws to the left upper side frame. Do not use locktight at this time. Notice the countersunk hole below the bearing is on the outside.

22

#HI3205 Servo Mount Tabs

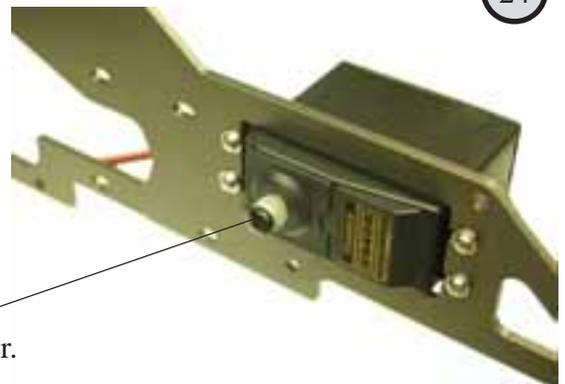


Rubber servo tabs, eyelets and screws provided with radio.

23

Prepare the rear ccpm servo, attach the rubber servo tabs and the eyelets from the top of the servo.

Servo output shaft to rear of helicopter.



Install the rear ccpm servo into the inside of the right side of the upper side frames. Be careful, look for the countersunk hole below the bearing is on the outside.

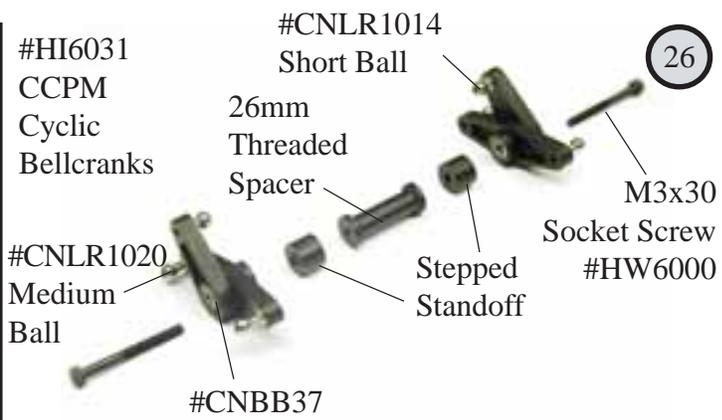
24



#HI6032 Rear CCPM Lever (25)

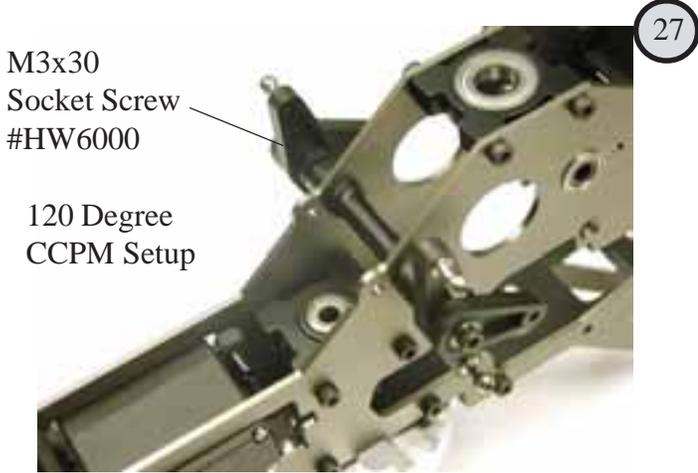
#HI6110 Upper Side Frames Left & Right

Install the rear ccpm lever into the upper frames flush with the bearing on the left side, having the mount extend out the right side frame. Assemble the upper frames but do not use locktight at this time.



#HI6031 CCPM Cyclic Bellcranks (26)  
 #CNLR1014 Short Ball  
 26mm Threaded Spacer  
 #CNLR1020 Medium Ball  
 #CNBB37  
 Stepped Standoff  
 M3x30 Socket Screw #HW6000

The stepped standoff is positioned with the step against the ball bearing in the ccpm bellcrank. Correct orientation has the two symmetric steel ball facing outwards and the obtuse angle towards the swashplate.



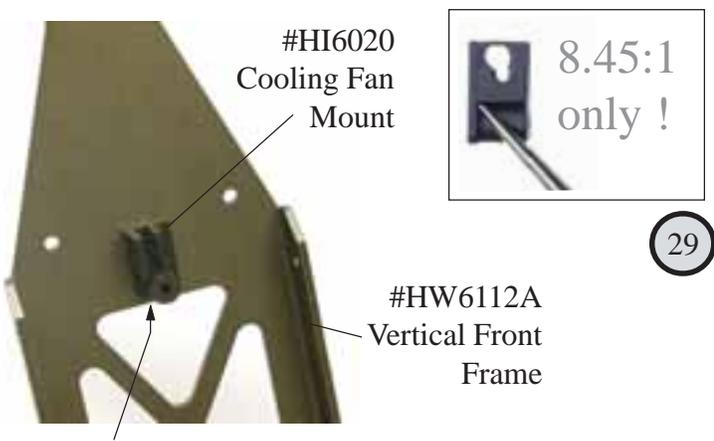
M3x30 Socket Screw #HW6000 (27)  
 120 Degree CCPM Setup

Apply locktight to the threads on the inside standoff, insert between the frames and attach the ccpm cyclic bellcranks being careful to observe the correct direction. For 140 Degree ccpm setup, move bellcranks to forward holes.



#CNLR1014 Short Ball (28)  
 M3x10 Button Head Screw

Press the rear ccpm lever onto the mount that sticks out of the right side of the upper frames with the steel ball downwards. Secure with the M3 button head screw.

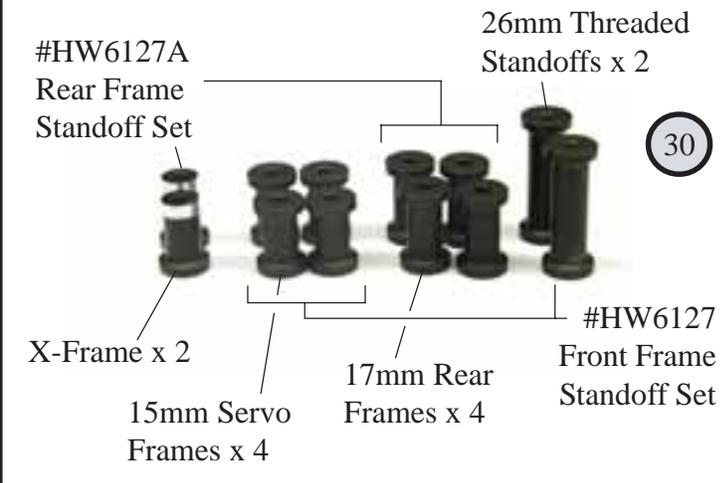


#HI6020 Cooling Fan Mount (29)  
 8.45:1 only!

#HW6112A Vertical Front Frame

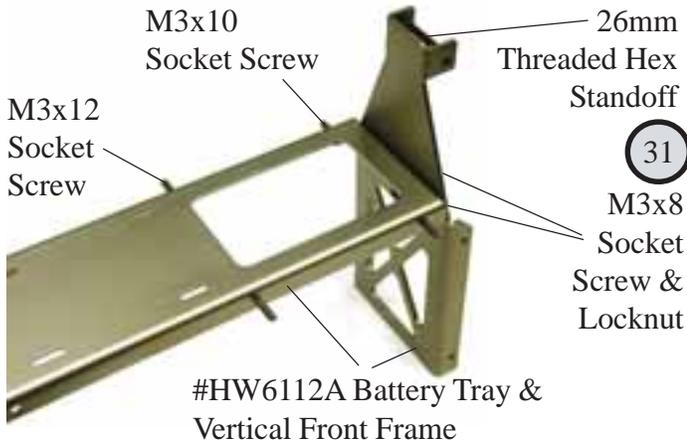
M3x8 Self Tap Screw (from behind)

Attach the front cooling fan mount to the vertical front frame inserting the M3 screw from the flat side of the frame. Note: 8.45:1 gear ratio requires the shroud mount hole to be modified.

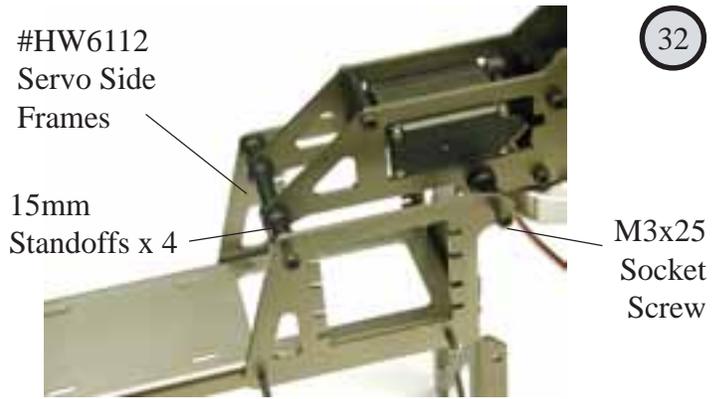


#HW6127A Rear Frame Standoff Set (30)  
 26mm Threaded Standoffs x 2  
 X-Frame x 2  
 15mm Servo Frames x 4  
 17mm Rear Frames x 4  
 #HW6127 Front Frame Standoff Set

Ensure that the correct standoffs are used in the correct locations. The 26mm threaded hex standoffs are not shown.



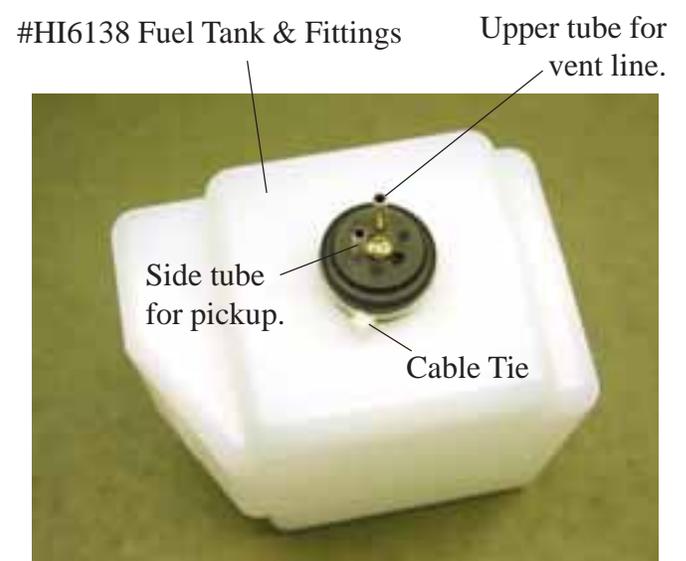
Attach two M3x12 Socket screws from the inside of the battery tray at the forward holes and two M3x10 Socket screws to the rear holes. Attach the vertical frame (note flanges are rearward) to the battery tray with M3x8 screws.



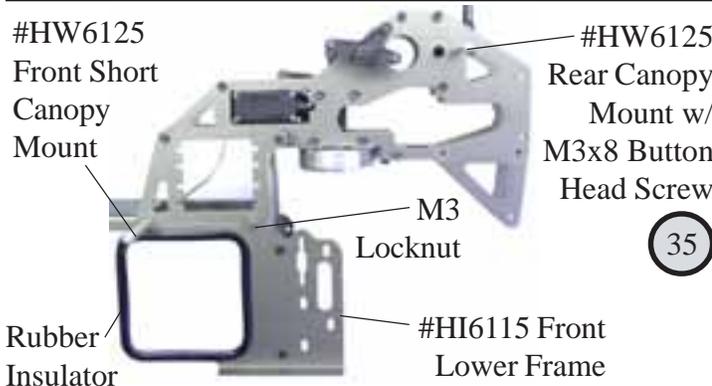
Attach the servo frames, battery tray and upper frames together using M3x25 Socket screws. It is best to apply locktight directly to the standoffs through the side frame holes instead of the screws.



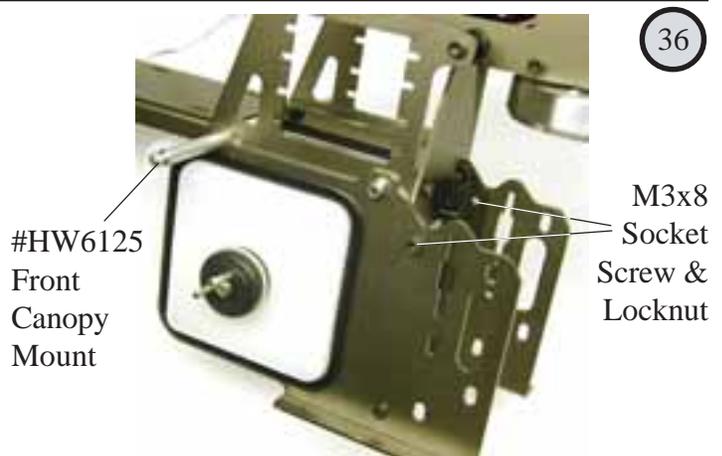
Assemble the fuel tank fittings. Gently bend the vent line and test until it reaches the top of the fuel tank. Order is larger outside cap, rubber stopper, smaller inside cap. Test the pickup line so the clunk stays at least 3/8" away from the wall.



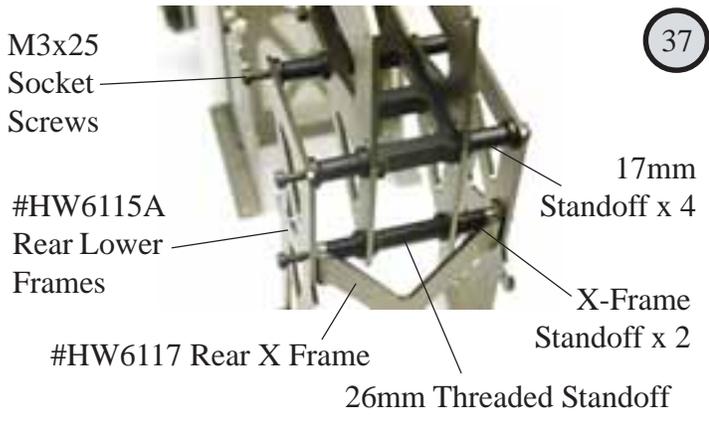
After the fuel tank fittings are inserted, tighten the M2.5x18 self tap screw and attach the cable tie around the outside of the stopper.



Install the rubber insulators to the frames. Install the left side front lower frame over the M3 threaded studs on the battery tray. Attach the shorter canopy standoff to the front stud and a locknut to the rear stud. Attach the longer, rear canopy standoff to the upper frames using M3x10 Button head screw from the inside of the frames.

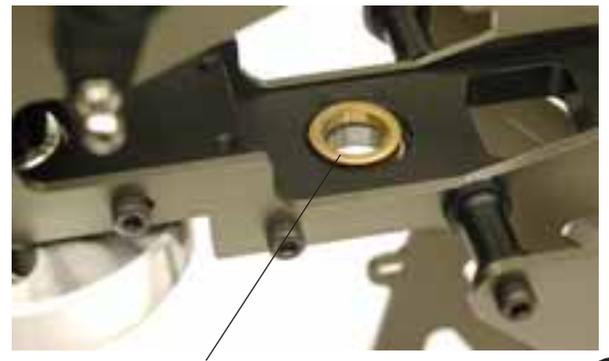


Install fuel tank (only fits one way) and attach the other front lower side frame. Similarly secure it to the vertical frame with M3x8 socket screws and locknuts.



37

Attach the X Frame to the lower side frames first using M3x25 Socket screws and locknuts at the lower hole on a flat surface. Attach to the upper frames with M3x25 Socket screws, apply threadlock to the holes on the upper side frames.



#HW6054 Spacer

38

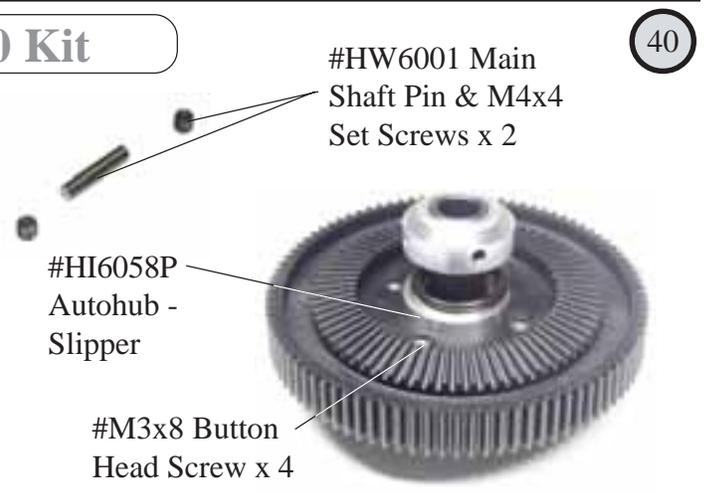
Before the main gear assembly can be inserted, make sure that the M10x14x3.5 spacer is positioned on top of the lower main shaft bearing. It will simply self align in the block. Remember, do not locktight any bolts on the clutchbell or starting shaft bearing blocks until the engine is installed.



60/70 Kit

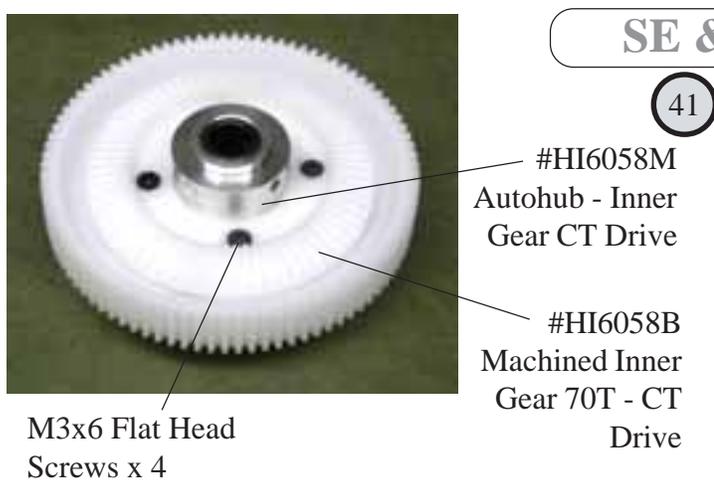
39

Thread the slipper cap onto the sleeve until the holes align together. Insert two M4x4 set screws at 180 degrees apart and tighten gently. Later when the main shaft pin is attached, these can be removed and locktightened in place.



40

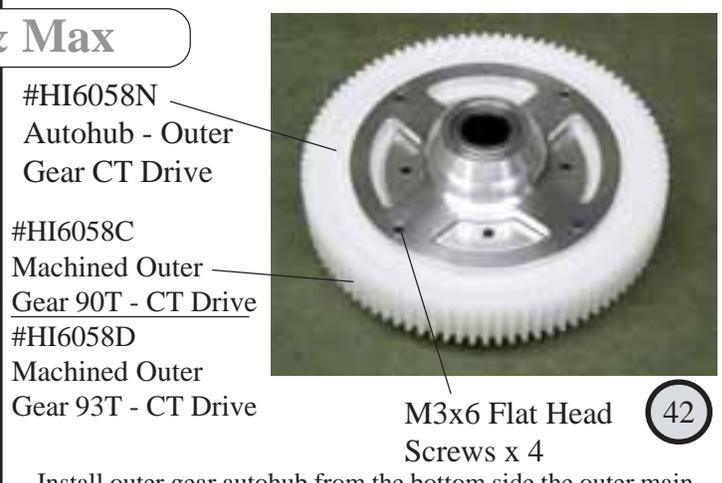
Slide the autohub for the slipper drive from the bottom of the main gear. Attach with M3 button head screws and tightening evenly. Insert the slipper cap assembly, capturing the o-ring under the cap against the autohub.



SE & Max

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Install inner gear autohub from the bottom side the inner (tail) gear using threadlock. Attach with M3 flat head screws and tightening evenly. Note the autohub is pre-assembled.



42

Install outer gear autohub from the bottom side the outer main gear using threadlock. Attach with M3 flat head screws and tightening evenly. Overtightening these screws could touch the upper side frames. \*\*Use heavy bearing grease only in auto rotation hub.



43

Main gear assembly, slipper or constant drive type.

#HW6001 Main Shaft M3 Pin

Insert the main gear assembly from the side and slide the main shaft through the upper main shaft bearing block. Align the M4 threaded hole with 3mm hole on the main shaft and insert the pin.



44

#HW6001 M4x4 Set Screw x 2

After the main shaft pin is started, press it in and start threading the M4 set screws. Continue adjusting until the pin is centered in the autohub assembly. Remove one at a time and apply locktight. These do not need to be torqued down.



45

#HW6054 Bottom Collar & M3x6 Flat head screws x 2

Slipper Main Gear

Inspect the bottom collar, make sure the step in the collar is towards the ball bearing. Press firmly on the main shaft until the top threaded hole aligns with the holes in the bottom collar. Apply locktight to the M3 Flat head screws.



46

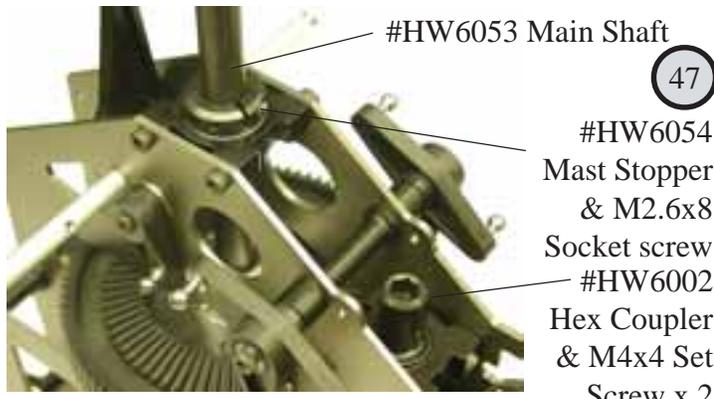
Constant Drive Main Gear

#HW6054 Bottom Collar & M3x6 Flat head screws x 2



#CNBB1018T & Special Washer

Install the main shaft thrust bearing (SE & Max only) and special washer against the lower bearing followed by the bottom collar. Make sure the step in the collar is away from the thrust bearing. Apply locktight to the two M3 Flat head screws.

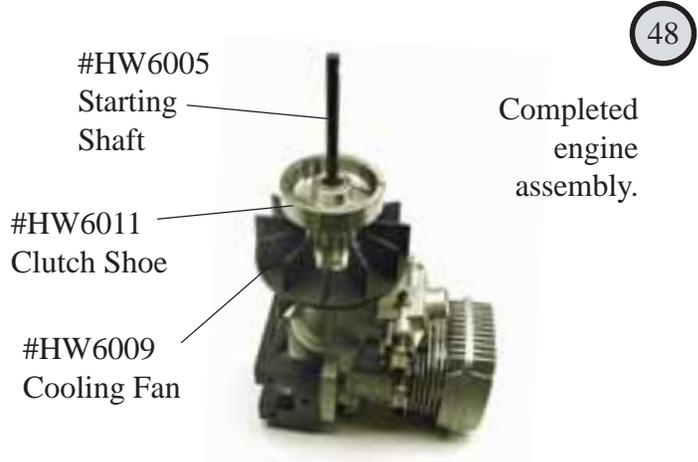


47

#HW6053 Main Shaft

- #HW6054 Mast Stopper & M2.6x8 Socket screw
- #HW6002 Hex Coupler & M4x4 Set Screw x 2

To set the upper mast stopper, press down firmly on the main shaft and tighten the M2.6 Socket screw using locktight. Install the starting shaft, pull up on the shaft and apply locktight to the top of the shaft and position one of the set screws on the flat spot.

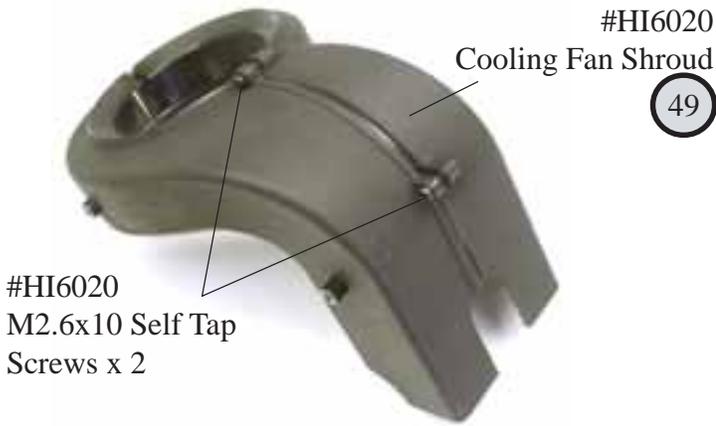


48

- #HW6005 Starting Shaft
- #HW6011 Clutch Shoe
- #HW6009 Cooling Fan

Completed engine assembly.

Check once more that everything is ready on the engine. Make sure that the carburetor has been seated properly and the securing screw is tight.

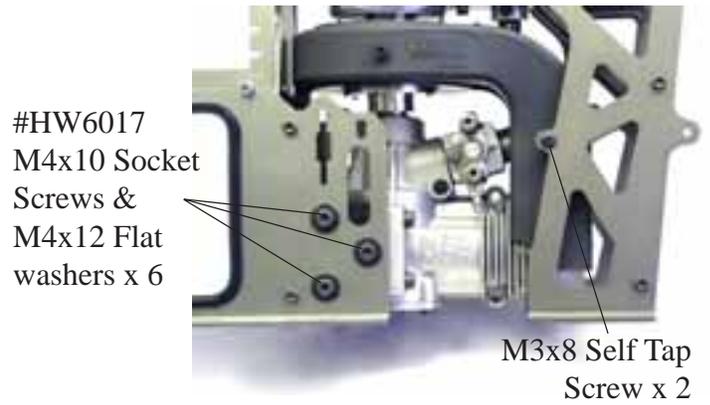


#HI6020  
Cooling Fan Shroud

49

#HI6020  
M2.6x10 Self Tap  
Screws x 2

Match the cooling fan shroud together and secure with M2.6 screws. Do not install the frontmost screw at this time.

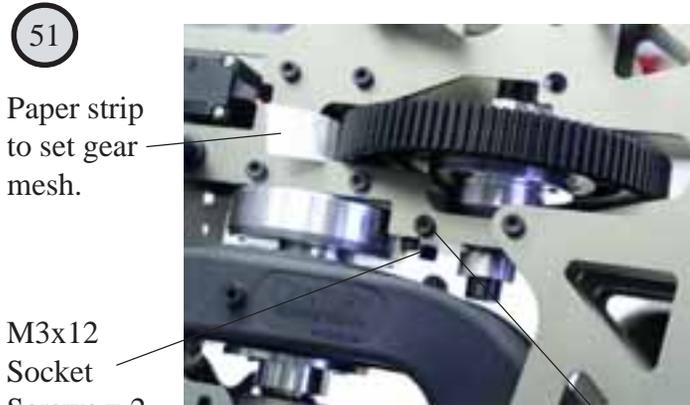


#HW6017  
M4x10 Socket  
Screws &  
M4x12 Flat  
washers x 6

M3x8 Self Tap  
Screw x 2

Slide the engine assembly in place and install the M4 Socket bolts and washers. Do not locktight these and leave these loose until the clutch is aligned to the clutchbell. Some fore - aft adjustment is possible. Install the M3 screws for the shroud and leave loose for adjustment later.

50



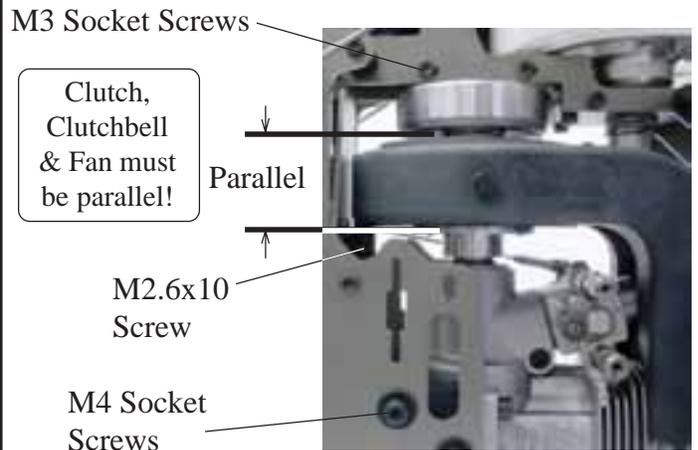
51

Paper strip  
to set gear  
mesh.

M3x12  
Socket  
Screws x 2

Remove and locktight  
M3x8 Socket screw.

Cut a strip of paper 1/2" (12mm) wide to set the gear mesh between the clutch bell and the main gear. The paper should run through the gears without tearing. After the engine is tightened in place the M3x12 screws need to be tightened last.



M3 Socket Screws

Clutch,  
Clutchbell  
& Fan must  
be parallel!

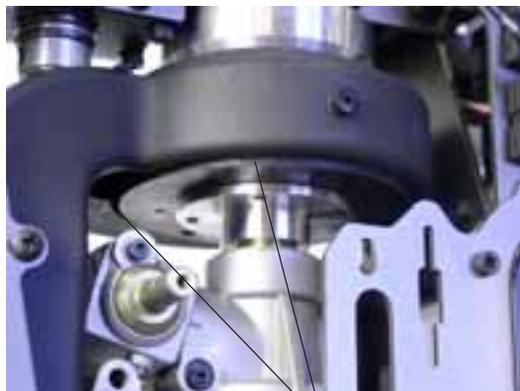
Parallel

M2.6x10  
Screw

M4 Socket  
Screws

52

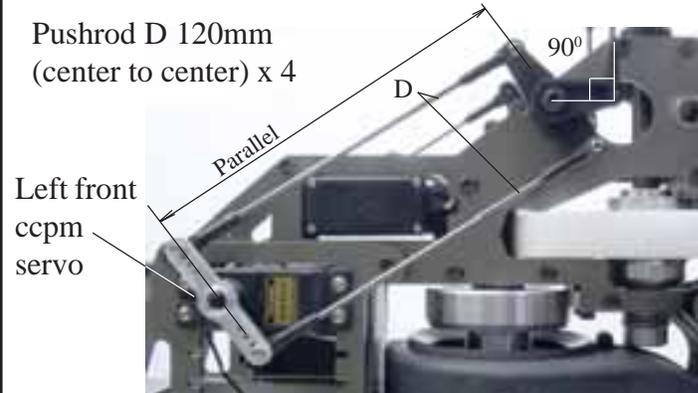
Sighting the bottom of the clutch bell, adjust until the clutch is parallel to the clutchbell in both the left/right and front/back directions. Once satisfied, carefully remove and locktight the M3 and M4 bolts. Insert the M2.6 screw to capture the front of the cooling shroud.



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Gap

By loosening the M3x8 and M2.6 self tap screws that hold the cooling fan shroud to the frames, the shroud can be adjusted until it does not touch the cooling fan.



Pushrod D 120mm  
(center to center) x 4

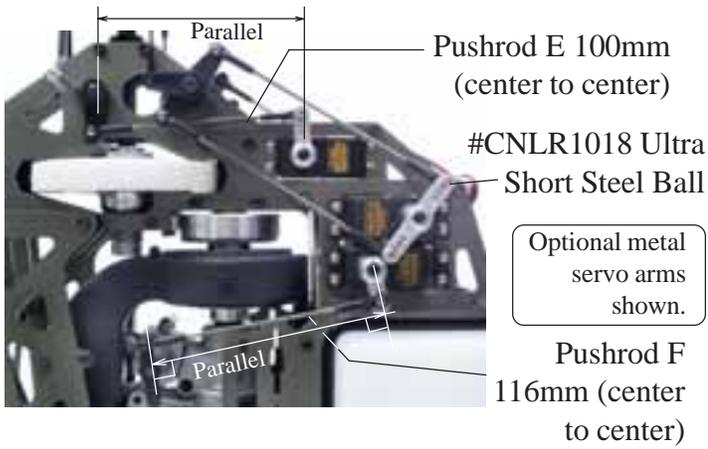
90°

Left front  
ccpm  
servo

Parallel

It is imperative that all three CCPM servos have output arms allow the ball to be attached at a 20mm radius. Install both left and right front ccpm servos to the servo frames. Secure using the servo tabs held by pliers from behind. Install the short steel ball to the underside of the servo arm. Ensure the 90 degree angle on bellcrank to swashplate pushrod at midstick.

54

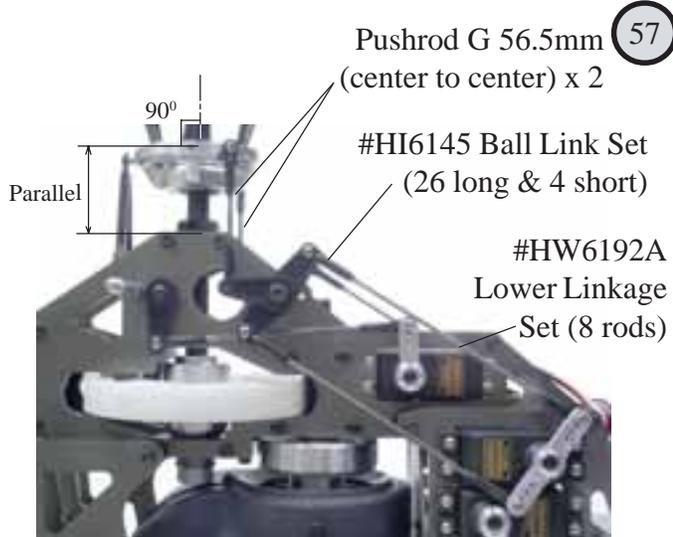


Install throttle servo to the right side frames. Attach the short ball with M2 thread to the carburetor lever arm with M2 nut and the short steel ball to the top side of the servo arm at 13.5mm. Ensure the 90 degree angle from the pushrod to the servo and carburetor arm for linear setup at midstick.

55



The double bearing swashplate requires no maintenance. If a steel ball needs changing, insert the 2.5 hex key through one of the extra holes in the outside ring. Two medium ball on the inside race.



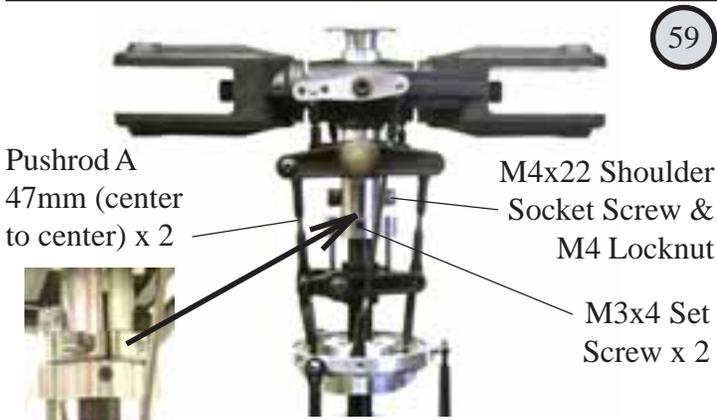
Install the swashplate on the main shaft and connect to the rear and front ccpm pushrods. Trim the radio to level the swashplate, set to 90 degrees to the main shaft.

57



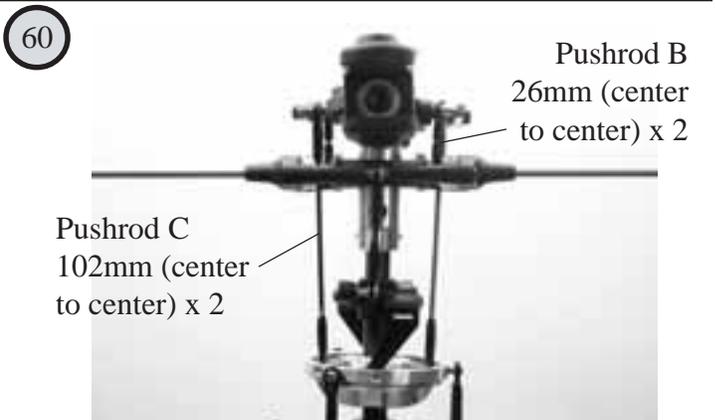
The washout unit comes assembled. Slide onto the main shaft and ensure that the screw is on the left side of the main shaft.

58



Insert and tighten the M2.5 screw into the collar. Slide the washout guide and align the washout pins with the washout guide. Attach the rotor head with M4 socket head cap screw and M4 locknut. Insert the M3 set screws and position the guide with the screws aligned to the slot in the head block.

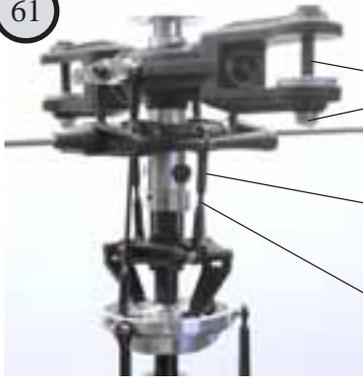
59



Attach pushrod C from the long ball on the inside race of the swashplate to the single ball (non adjustable) on the bell-hiller mixing arms. These pushrod lengths are starting points, adjustment is necessary for the particular style of flying.

60

61



#HW6001 M5x35  
Shoulder Socket  
Screw x 2 & M5  
Locknut x 2

#HI6145 Ball Link Set  
(26 long & 4 short)

#HW6192 Upper  
Linkage Set (6 rods)

The main rotor grips will accept rotor blades that have a root thickness that is from 12mm to 18mm and have a 5mm hole. Carbon Rotortech and wooden Aerotech blades are designed for 5mm blades bolts.

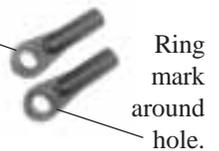
The rotor head pushrods for all versions of the Predator will start from the basic lengths indicated here. Many of the pushrods in the kit are pre-assembled, requiring only minor length changes to suit the particular servo installation.

62

Location	Pushrod	Rod	Length c/c
Flybar Yoke to Washout (2)	A	25mm	47mm
Seesaw to Bell Mixer (2)	B	15mm	26mm
Swashplate to Bell Mixer (2)	C	80mm	102mm
CCPM Bellcrank to Servo (4)	D	104mm	120mm
Elevator Bellcrank to Servo (1)	E	80mm	100mm
Carburetor Arm to Servo (1)	F	80mm	116mm
CCPM Bellcrank to Swashplate (2)	G	35mm	56.5mm

All dimensions are measured center to center of ball links.

Clean side  
faces  
outwards.



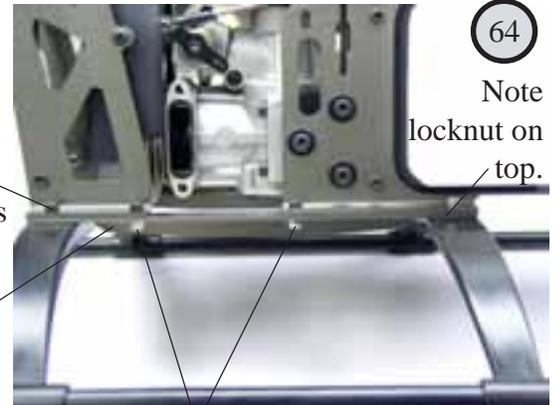
Note: Ball links are designed to be installed in one direction only. Look carefully at the ball link ends to see that on one side there is a ring around the hole, this side presses over the steel control balls.



Assemble the landing skids onto the struts, note the correct direction is to have the struts sweep forward. Position the rear strut at approximately 37mm from the end and secure the skid with the M3 set screw. Leave the front loose for now.

63

M3x20  
Socket  
Screws x 4  
& M3x10  
Flat Washers  
#HW6117  
Landing  
Gear Frame



M3x8 Socket Screws x 4  
& M3 Locknuts x 8

Attach the landing gear frame to the mechanics with M3x8 socket screws and locknuts. Attach the landing gear with M3x20 socket screws, M3x10 flat washers (against struts) and locknuts, sliding the front skids into final position. Secure the M3 set screws.

64

Note  
locknut on  
top.



Insert the M3x5 set screw into the bevel gear and leave loose until the transmission is fitted to the mechanics. Set the gear mesh by running a single piece of paper between the bevel gear and the main gear. Once in position, locktite the set screw.

65

26mm Threaded  
Hex Spacers x 3



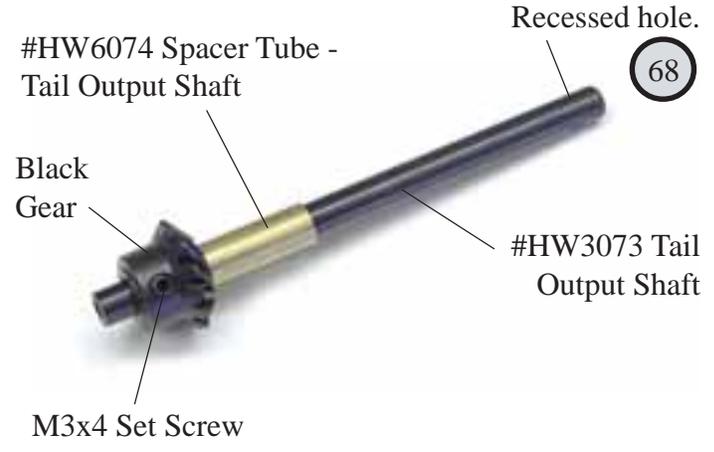
#HW6062 Tailboom 795mm 60/70 & SE  
#HW6062A Tailboom 825mm Max 90  
#HW6063 Torque Drive Shaft 60/70 & SE  
#HW6063A Torque Drive Shaft Max 90

Insert the 26mm hex spacers into the transmission half.

66



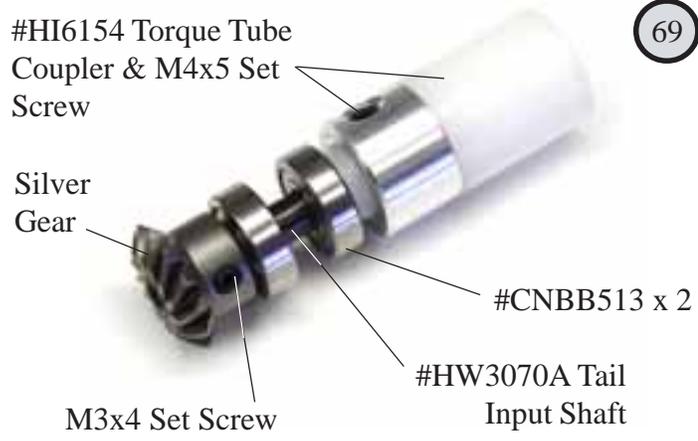
67



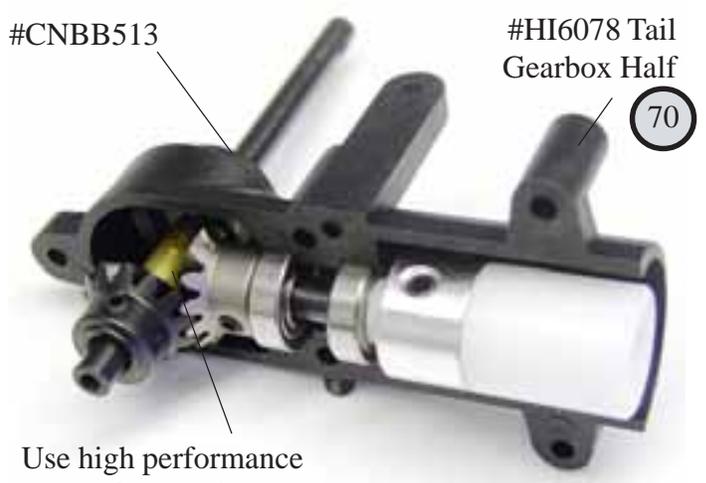
68

Looking down on the two tail gears notice that the black gear has teeth that are in the opposite direction to the silver gear. Make sure the black gear is mounted to the tail output shaft.

Align the hole in the black gear over the hole in the end of tail output shaft and secure with the M3 set screw using locktight. Slide the spacer tube against the gear.



69



70

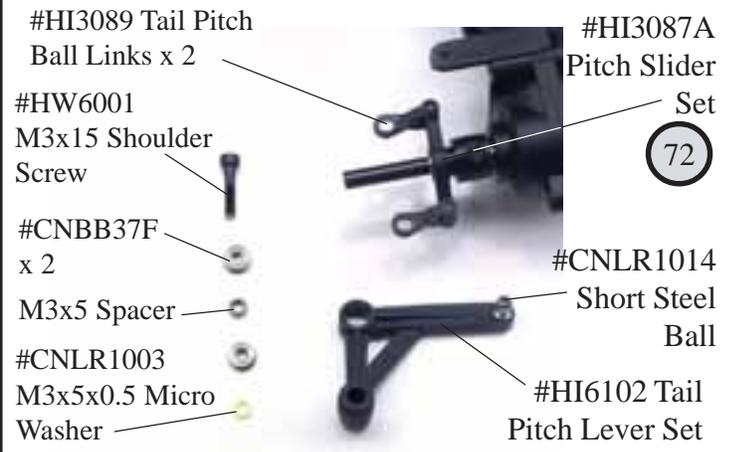
Align the hole in the silver gear over the hole in the end of the tail input shaft and secure with the M3 set screw. Slide two M5x13 bearings and install temporarily into one half of the gearbox (positioning the bearings) and secure the torque coupler with M4 set screw over the flat spot using threadlock.

Use high performance grease for metal gears.

Press one M5x13 bearing into the right hand side (with mount for tail pitch lever) of the tail gearbox. Position the tail output shaft and input shaft into the gearbox half. Adjust torque fitting if necessary. Pack gears with quality grease.



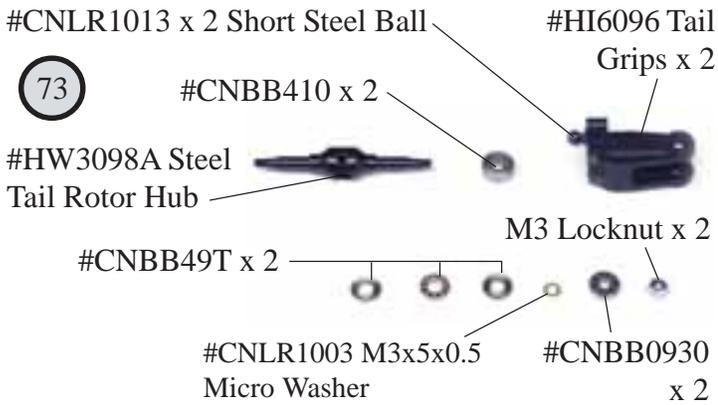
71



72

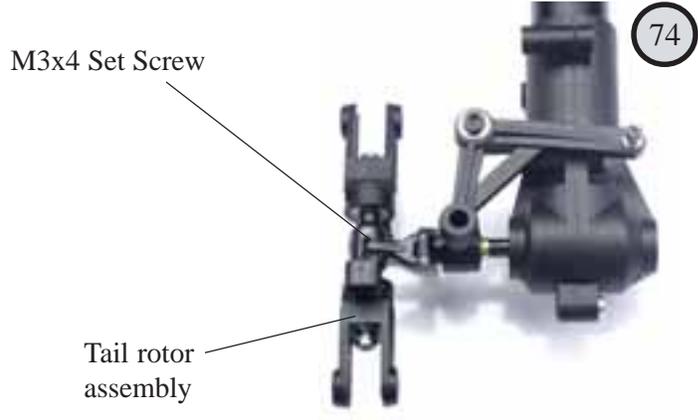
Insert the torque drive shaft using a little oil on the o-rings as it is pressed into the tailboom (press towards the bearing) and align the tailboom end to the molded key in the tail gearbox. Close the gearbox with the M3 socket screws and locknuts.

Slide the tail pitch slider set onto the tail output shaft and insert the M3 shoulder screw from the bottom of the pitch lever with the micro washer between the lever and the mount on the gearbox and tighten in place.



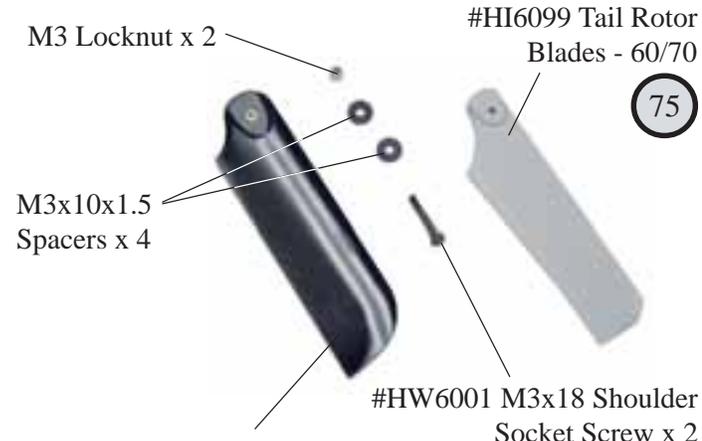
73

Press the M4 bearing into the end, slide the M3 thrust bearing (in correct order), micro washer, M3 bearing and locknut from inside the grip. Use locktight on the locknut.



74

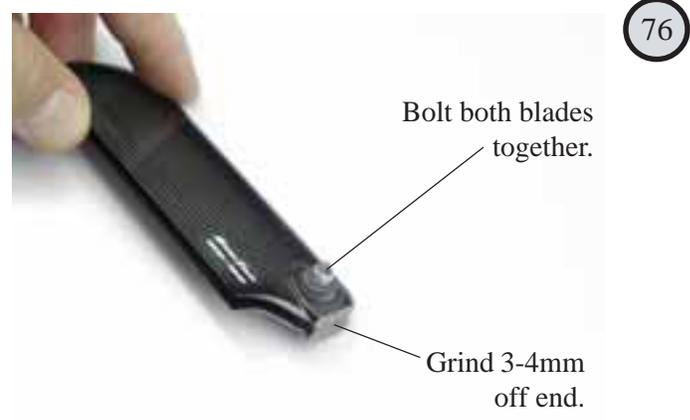
Insert tail rotor grip assembly onto the tail output shaft, aligning the set screw over the indent in the shaft using locktight. Attach the tail pitch ball links to the balls, the steel ball is on the leading edge of the blades.



75

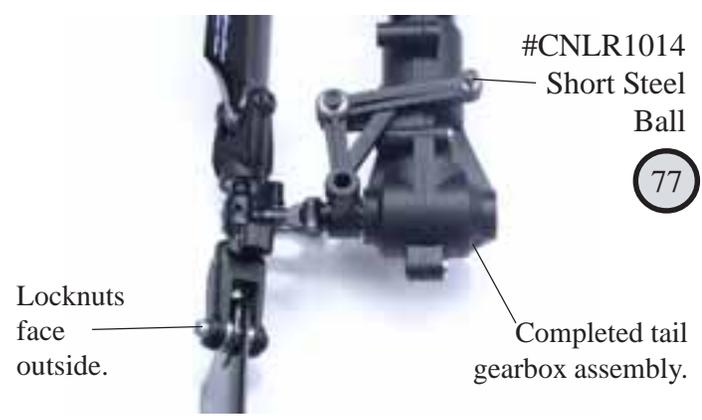
#CN260956 Rotortech 95mm Tail Blades - SE  
#CN261056 Rotortech 105mm Tail Blades - Max 90

Tail rotor blades are installed with the leading edge rotating upwards into the downwash of the main blades. Looking at the left side of the Predator, the blades turn clockwise with the steel ball on the leading edge.



76

The carbon tail blades will not fit the tail rotor grips without trimming the ends. Attach the two blades together and grind 3-4mm off the end of the blades as shown.



77

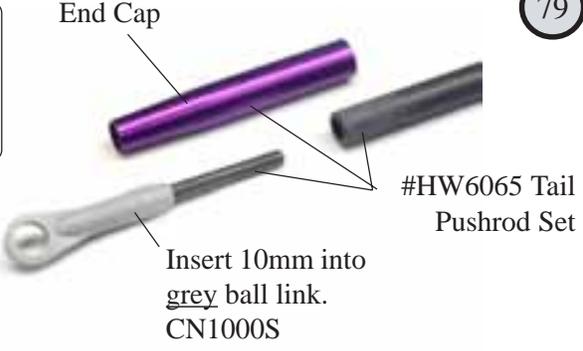
Install the tail rotor blades to the tail rotor grips with the M3 shoulder socket cap screws, M3 spacers on both sides the blades and secured with M3 locknuts, fitted into the molded recess on the tail blade grips.



78

Insert the front of the tail boom into the front tail transmission half and close the transmission. Secure with M3 socket screws locknuts. Attach the tail boom assembly to the mechanics with M3x8 screws first then the Flat head screws. Attach first, then remove and locktight all the screws.

Only complete one end now!



79

Insert the M2 threaded rod 10mm into the grey ball link. Slide the end cap over the carbon tube and make a mark, remove and sand the carbon up to this mark for better adhesion. Using JB Weld or Epoxy bond in place. Only complete one end at this time. Thread the ball link into the end cap until it stops using threadlock.



80

60/70 only.

The Aluminum support struts are ready for installation.



81

SE & Max 90 only.

Insert and mark each end of the carbon struts where the strut fittings will overlap. Remove and sand down each carbon end until they slide easily into the fittings. Scratch inside the fittings also. Using JB Weld or Epoxy, bond the fittings in place. Make sure each strut has the fittings 90° degrees to each other.



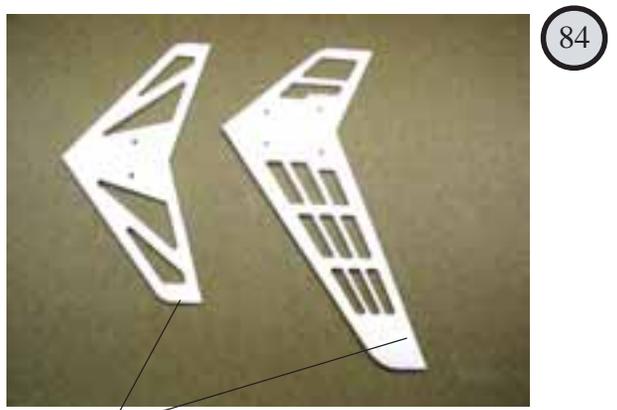
82

Install the rudder servo into the tail rudder servo mounts using M2.5 self tapping screws inserted through the top of the servo grommets into the vertical mounts.



83

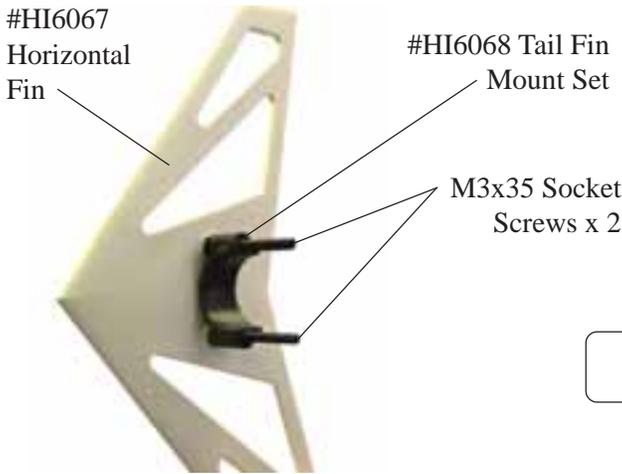
Wrap the tail mount liners around the tail boom and trim if necessary. Install the rudder servo mount assembly onto the tail boom, over the liners and secure using the M2.5 socket screws. Leave these loose until after the tail pushrod has been attached. Attach the rudder servo horn, positioning the steel ball at 12-14mm from the servo center.



84

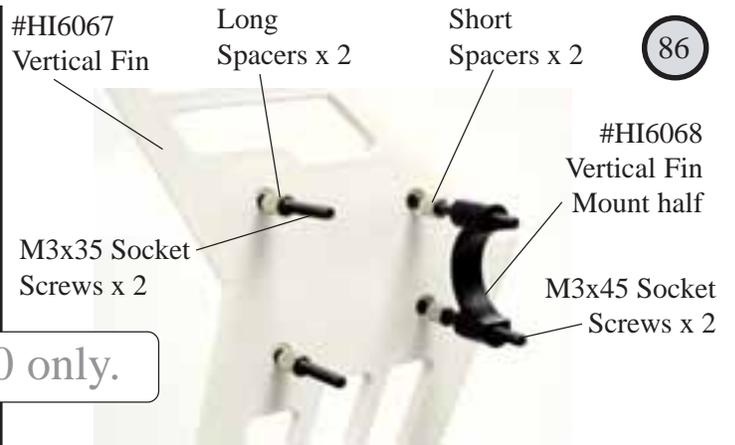
60/70 only.

Install the decals for the fins at this time.



Insert the M3 socket screws through the top of the plastic fin and through the top tail fin mount (straight ends). Notice that the bottom fin mount is angled for comparison.

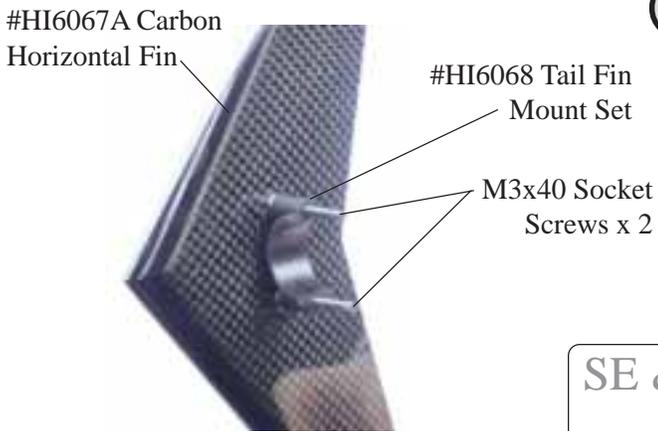
85



Insert the M3 socket screws through the holes in the plastic vertical fin. Slide the short spacers on the front bolts and the long on the rear bolts. Slide the vertical fin mount on after the short spacers.

86

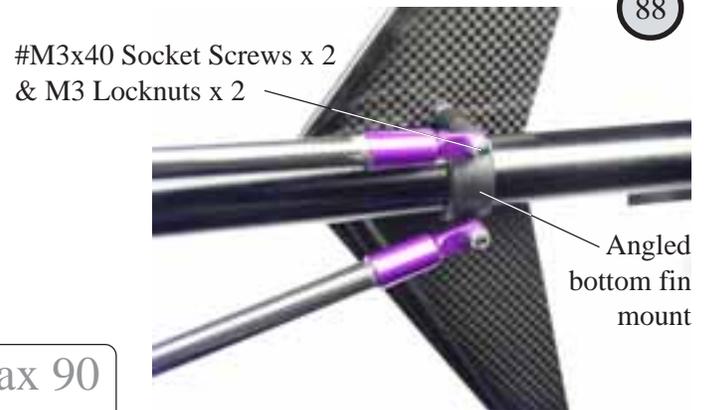
60/70 only.



Insert the M3 socket screws through the top of the carbon fin and through the top tail fin mount (straight ends). Notice that the bottom fin mount is angled for comparison.

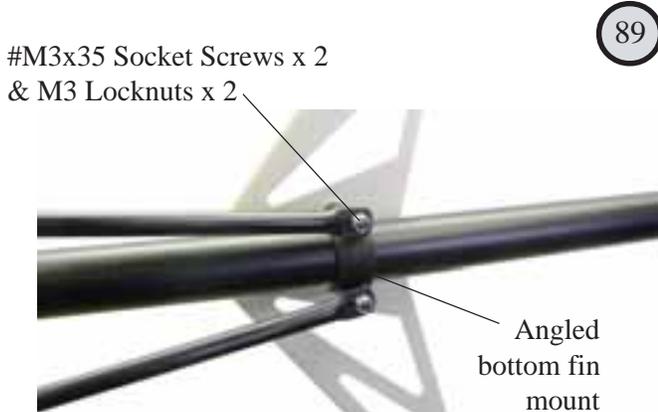
87

SE & Max 90 only.



Slide the bottom fin mount (taller side of angled ends towards mechanics) over the M3 screws and insert the carbon tail struts and secure with M3 locknuts.

88



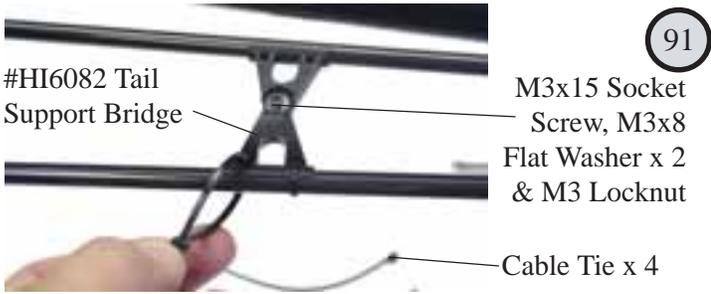
Slide the bottom fin mount (taller side of angled ends towards the mechanics) over the M3 screws and insert the aluminum tail struts and secure with M3 locknuts.

89



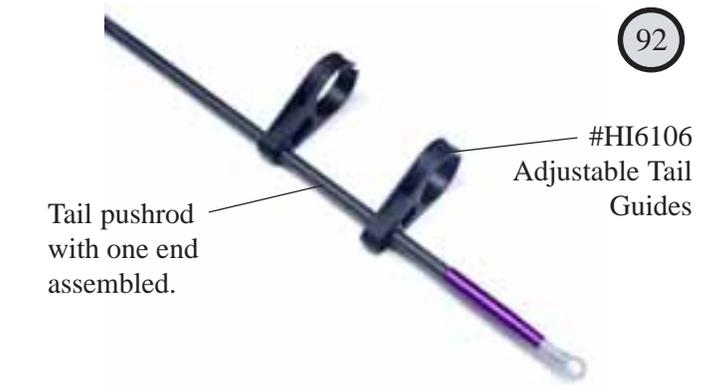
Attach the struts (aluminum or carbon) to the main mechanics using M3 socket screws, M3x9x3 plastic spacer on the outside and secure with M3 locknuts on the inside of the frames.

90

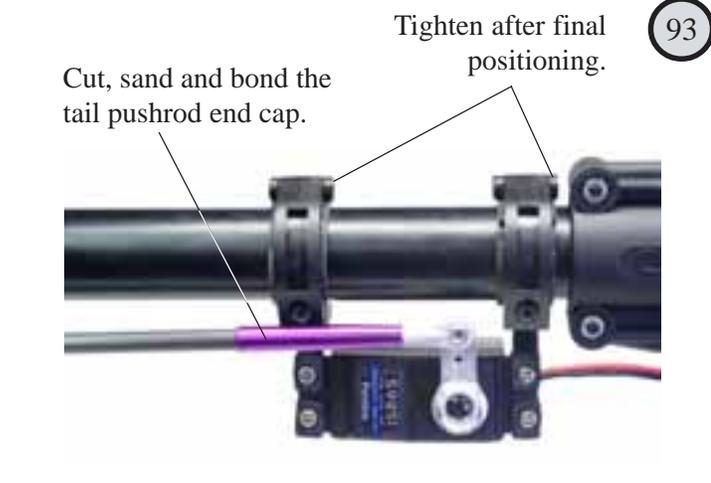


SE & Max 90 only.

Assemble the support bridge with M3 hardware. Press each side onto the support strut and secure with the cable tie wraps provided.



Slide the two tail pushrod clamps over the unfinished end of the tail pushrod and attach to the tail boom. Press the ball link onto the steel ball on the tail pitch bellcrank. Position the one guide in front of the horizontal fin and one half way between the fin and the mechanics bringing the pushrod to the right side of the helicopter.



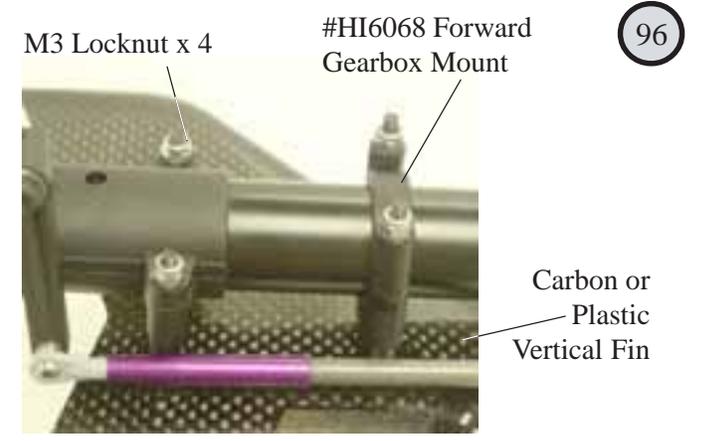
Assemble the other pushrod end cap and ball link to mark and cut the tail pushrod to match the steel ball on the servo. Bond the end cap in place and fine tune the position by moving the rudder servo mount and then tighten in place.



Remove the pushrod from the servo and slide through the entire range of movement. Continue adjusting the guides until the pushrod moves very smooth and then secure the tail guides with the cable ties.



Insert the M3 socket screws through the holes in the carbon vertical fin. Slide the short spacers on the front bolts and the long on the rear bolts. Slide the vertical fin mount on after the short spacers.



Slide the M3 socket screws through the mounts on the tail gear box and attach the forward gear box mount capturing the tail boom and secure in place with M3 locknuts.

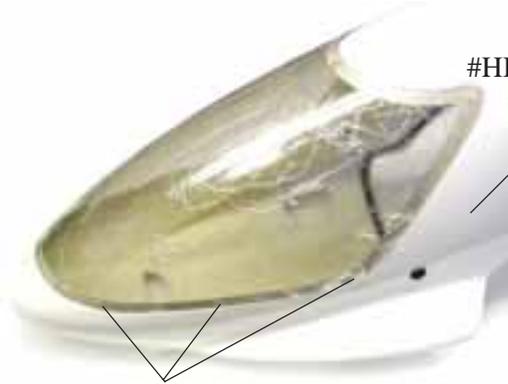
#HI6133  
Windshield



97

Leave the protective coating in place until after it is drilled for mounting screws. Rough cut the windshield leaving 3mm [1/8"] then carefully cut out the windshield following the line molded into the windshield.

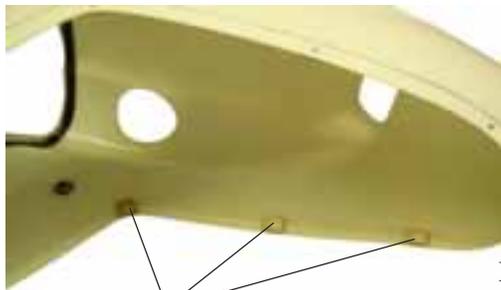
#HI6130 Fiberglass  
Gelcoat Canopy



98

Drill 8-9 holes.

Position the windshield and tape in place. Mark and drill pilot holes around the windshield edge, centered through the matching recess of the canopy.



99

#HW6125  
Wood inside  
mounts

Flush to canopy  
edge.



Bond the wood inside mounts into the inside of the canopy with Epoxy. Center each block over the holes with the top edge flush to the canopy edge. Once cured, drill the final hole size for the screws.



100

#HW6125  
Rubber  
Grommets x 4  
#HI6131 Decal  
Sheet

Install lower  
grommet after the  
decals is applied.

Clean the canopy. Trim the decals from the sheet and apply to the side of the canopy before the lower grommet is installed. Cut through the decal and install the lower grommet through the canopy.

Attach the windshield with the M3 self tapping screws being careful not to overtighten them.

101

M3x6 Self Tap  
Screws x 10

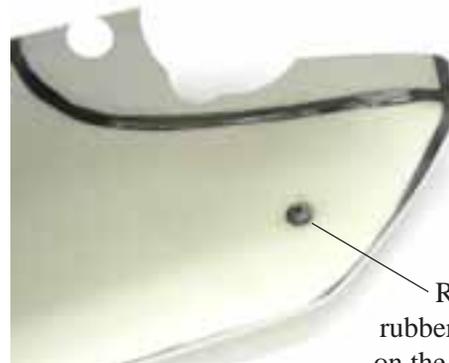


60/70 SE &  
Max 90

**Decal Locations**

- |    |     |   |
|----|-----|---|
| 1. | 8.  | Lower cheek of canopy.                  |
| 2. | 7.  | Middle, below windshield.               |
| 3. | 6.  | From edge below rear grommet            |
| 4. | 10. | Horizontal Fin (top & bottom on 60/70). |
| 5. | 9.  | Vertical Fin (above & below on 60/70).  |

102



Reinforce the  
rubber grommets  
on the inside using  
"Goop" adhesive.

After the canopy is finished, the wooden blocks can be painted white to match the canopy. The rubber grommets should be reinforced using "Goop" adhesive or similar.

## Predator 60, SE & Max Replacement Parts

HI6009	COOLING FAN	HW6017	ENGINE MOUNT - OS/YS w/SHIMS
HI6020	COOLING FAN SHROUD SET	HW6042	M/SHAFT BEARING BLOCK w/BEARING
HI6031	CCPM CYCLIC BELLCRANKS	HW6042A	M/SHAFT BEARING BLOCK w/THRUST
HI6032	CCPM ELEVATOR LEVER SET	HW6045	LOWER BEARING BLOCK ASSEMBLY w/BB
HI6056	MAIN GEAR - 90T	HW6053	MAIN SHAFT
HI6058B	MACHINED TAIL GEAR - 70T CT DRIVE	HW6054	MAST STOPPER w/BOTTOM COLLAR
HI6058C	MACHINED MAIN GEAR - 90T CT DRIVE	HW6054A	ROTORHEAD COLLAR & SCREW
HI6058D	MACHINED MAIN GEAR - 93T CT DRIVE	HW3057	TAIL TRANSMISSION BEVEL GEAR
HI6058E	MACHINED MAIN GEAR - 92T CT DRIVE	HW6059	TAIL TRANSMISSION DRIVE SHAFT
HI6058F	CONSTANT TAIL DRIVE ASSEMBLY - 90T	HW6062	TAIL BOOM 795mm - 60/70
HI6058G	CONSTANT TAIL DRIVE ASSEMBLY - 93T	HW6062A	TAIL BOOM 825mm - MAX 90
HI6058K	SLIPPER CAP & SLEEVE	HW6063S	TAIL S/S TORQUE DRIVE SHAFT - 60/70
HI6058L	SLIPPER O-RINGS (2)	HW6063A	TAIL S/S TORQUE DRIVE SHAFT - MAX 90
HI6058M	INNER TAIL GEAR AUTO HUB - CT DRIVE	HW6065	TAIL PITCH CONTROL ROD SET - CARBON
HI6058N	OUTER MAIN GEAR AUTO HUB W/T.B. - CT DRIVE	HW6070	TAIL GEARBOX INPUT SHAFT
HI6058P	SLIPPER AUTOROTATION HUB W/T.B.	HW6073	TAIL GEARBOX OUTPUT SHAFT
HI6060	FRONT TAIL TRANSMISSION (L&R)	HW6074	SPACER TUBE - TAIL OUTPUT SHAFT
HI6067	TAIL FIN SET - PLASTIC	HW6075	TAIL GEAR SET
HI6067A	TAIL FIN SET - CARBON	HW3098A	STEEL TAIL ROTOR HUB
HI6068	TAIL FIN MOUNT SET	HW6110	UPPER SIDE FRAME - L&R
HI6078	TAIL GEARBOX (L&R)	HW6112	SERVO SIDE FRAMES (2)
HI6080	TAIL BOOM SERVO MOUNT SET	HW6112A	VERTICAL FRAME & BATTERY TRAY
HI6082	TAIL STRUT SUPPORT BRIDGE SET	HW6115	FRONT LOWER FRAMES - L&R
HI3087A	TAIL PITCH SLIDER SET	HW6115A	REAR LOWER FRAME - L&R
HI3089	TAIL PITCH BALL LINKS	HW6117	LANDING GEAR FRAME & REAR X FRAME
HI6096	TAIL BLADE GRIP SET	HW6123	LANDING SKIDS - ALLOY 10mm (2) - 60/70
HI6099	TAIL ROTOR BLADES - PLASTIC (2) CLEAR	HW6123A	LANDING SKIDS - ALLOY 12mm (2) - MAX 90
HI6099-O	TAIL ROTOR BLADES - PLASTIC (2) ORANGE	HW6125	CANOPY MOUNTS & GROMMET SET (4)
HI6102	TAIL PITCH LEVER SET	HW6127	FRONT FRAME STANDOFF SET (6)
HI6106	TAIL PUSHROD GUIDES - ADJUSTABLE SLOT (2)	HW6127A	REAR FRAME STANDOFF SET (6)
HI6122	LANDING STRUTS - PLASTIC (2)	HW6146	CCPM SWASHPLATE 120-140 DEGREE
HI6122A	LANDING STRUTS - CARBON (1)	HW6173	FLYBAR 520mm - ALL
HI6130	FIBERGLASS CANOPY ONLY	HW6180A	FEATHERING SHAFT with BALL
HI6131	PREDATOR & MAX DECAL	HW6182	HEAD SHIM SET - 8x13(2), 8x15(2)
HI6132	INSTRUCTION MANUAL - 60, SE & MAX	HW6183	Thrust Bearing Spacer (4)
HI6133	WINDSHIELD ONLY	HW6192	UPPER LINKAGE SET (6 RODS)
HI6138	FUEL TANK w/FUEL FITTINGS & ISOLATORS	HW6192A	LOWER LINKAGE SET (8 RODS)
HI6145	BALL LINK SET (26 LONG, 4 SHORT)	HW6202	TAIL BOOM SUPPORT STRUTS - ALLOY (2)
HI3152A	RADIUS LINK W/PIN (2)	HW6202A	TAIL BOOM SUPPORT STRUTS - CARBON (2)
HI3152C	WASHOUT SET - 10MM	CN2215A	HEAD BUTTON - SILVER
HI6153	WASHOUT GUIDE	CN2341	AEROTECH 690mm H/P ARF MAIN BLADES
HI6154	TORQUE TUBE DRIVE COUPLER	CN267001	ROTORTECH 700mm 3D CARBON BLADES
HI6160	ROTOR HEAD YOKE	CN267201	ROTORTECH 720mm 3D CARBON BLADES
HI6167	SPECIAL BALL SET (2)	CN260956	ROTORTECH TAIL BLADES 95mm
HI3167B	SEESAW OFFSET PLATES (2)	CN261056	ROTORTECH TAIL BLADES 105mm
HI3167F	BEARING CUPS & SPACERS (2) - M8	CNBB37	Bearing - seesaw, washout, cyclic & bell mixers
HI3167G	SEESAW TIE BAR & SPACERS (2)	CNBB37F	Bearing - tail pitch lever
HI3176C	SYMMETRICAL FLYBAR YOKE SET	CNBB0930	Bearings - tail grip (2)
HI6179	FLYBAR PADDLES - 20 GRAM 3D	CNBB48	Bearing - flybar
HI6179A	FLYBAR PADDLES - 30 GRAM SPORT	CNBB49T	Bearing - tail grip thrust
HI6181A	HEAD DAMPING O-RINGS - STANDARD (4) RED	CNBB410	Bearing - tail grip
HI6181B	HEAD DAMPING O-RINGS - HARD (4) BLACK	CNBB511	Bearing - start shaft, tail trans & output
HI6184	MAIN ROTOR BLADE GRIPS (2)	CNBB513	Bearing - tail trans, tail input & output
HI6189	METAL BELL MIXER ARM SET (2)	CNBB610	Bearing - tail pitch plate
HI3205	SERVO MOUNTING TABS (10)	CNBB812F	Bearing - elevator lever
HW6000	HARDWARE PACK	CNBB812TB	Bearing - clutch, torrington bearing
HW6001	HEAD BOLT & WASHER SET	CNBB715T	Bearing - main grip thrust
HW6002	HEX ADAPTER	CNBB816	Bearing - main grips, tail drive support
HW6005	STARTER SHAFT	CNBB1018T	Bearing - main shaft thrust
HW6007	START SHAFT BEARING BLOCK w/BB	CNBB1019	Bearing - main shaft
HW6011	CLUTCH SHOE	CNLR1006	Micro Washer 4x6x0.5 (10)
HW6012	COOLING FAN HUB	CNLR1013	SHORT STEEL BALL M2 (2)
HW6013	CLUTCH BELL ASSEMBLY - 10T	CNLR1014	SHORT STEEL BALL M3 (2)
HW6013A	CLUTCH BELL ASSEMBLY - 11T	CNLR1018	ULTRA SHORT STEEL BALL M2 (2)
HW6013B	CLUTCH BELL ASSEMBLY - 12T	CNLR1019	LONG STEEL BALL M3 (2)
HW6014	CLUTCH LINING (2)	CNLR1020	MEDIUM STEEL BALL M3 (2)
HW6015	SPLIT COLLET SET (2) - OS/YS		