ASSEMBLY INSTRUCTIONS

Vibe 500e Specifications	
Overall Length	33.25 in (844.55mm)
Height	11.75 in (298.45mm)
Main Rotor Diameter	37.75 in (958.85mm)
Tail Rotor Diameter	7.3 in (185mm)
Main Gear Ratio	7.08:1 or 6.54:1
Tail Gear Ratio	4.5:1
Weight (without battery)	3.9 lb (1800 g)
Control System	120 CCPM

HELI DIVISION

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INTRODUCTION

To say electric helis are everywhere these days is a bit of an understatement. Electric helicopter performance and popularity is on a level now that is unprecedented in the history of RC. And with the demand for more power and potential comes the demand for a heli platform that can handle it.

Enter the Vibe 500e. JR's latest foray into electric helicopter design has the benefit of drawing on years of glow heli development, producing a platform built from the ground up to dominate. The design is all new, and was conceived with one goal in mind—being the smoothest, most precise electric helicopter available. Features like the belt-driven tail, aluminum head and tail assemblies plus more, make precision and smoothness a possible reality. The result is a connection between you and your heli that feels like nothing you've ever flown before.

KEY FEATURES

- 120 CCPM
- Belt-driven tail
- Full aluminum head and tail assemblies
- Designed for 6S Li-Po power (2200 or 2600mAh Thunder Power or similar)
- Designed for E-flite Power 25 1000Kv high power heli motor system for aggressive 3D performance
- Uses E-flite 60-Amp Pro ESC
- Requires 425–430mm main blades
- Constant driven tail rotor

PREASSEMBLY WARNING

When first opening your helicopter, you will notice that all of the parts are packaged and numbered to coordinate with the assembly step numbers of this instruction manual. All small hardware (nuts, bolts, washers, etc.) for each step is separated and packaged separately within the main parts bags. When beginning a section, you will need to open only the bag with the corresponding number to the section you are going to start. It is suggested that you place all of the hardware in an open container (e.g., coffee can) during assembly so as not to lose any of the small parts. It may also be helpful to familiarize yourself with the various sizes of screws, bolts, nuts, etc., as illustrated in the appropriate assembly section before you begin assembly. At the end of each assembly, in most cases, there should be no parts remaining.

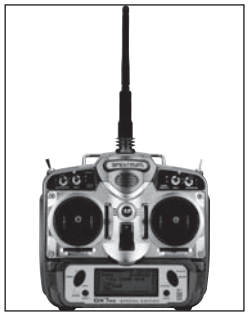
NOTE: Your kit also includes JR® red and green threadlock. Unlike conventional U.S.-made threadlock, JR red is the U.S. equivalent of blue. JR green is the equivalent of U.S. red.

Great care has been taken in filling the bags with the correct quantity of parts and hardware for each section. However, occasionally mistakes do happen. In the event that you find a parts shortage or are in need of technical assistance, please contact your local JR Heli Division parts dealer or contact the Horizon Service Center directly.

RECOMMENDED RADIO SYSTEM

JR 12X 2.4
(JRP1200)

JR X9303 2.4
(JRP2925)



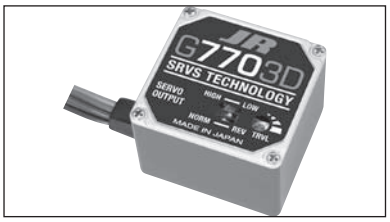
Spektrum DX7se
(SPM2731)

CCPM-Ready JR Radio Systems

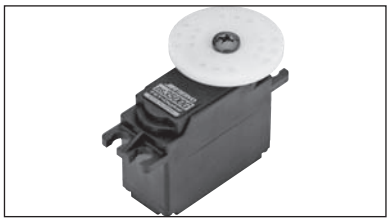
Most current JR and Spektrum heli radio systems (12X, XP9303, X9303 2.4, DX7se, DX7 and DX6i) are equipped with 120° CCPM electronics for use with JR CCPM machines. Radios you may be flying now, like the X347, X388S, XP783 and XP8103* have 120° CCPM capability built in but require activation by the Horizon Service Department. For details, please call (877) 504-0233.
*Please note that many XP8103 systems have the CCPM function already activated. Please check with the Horizon Service Center for details.

Spektrum is used with permission of
Bachmann Industries, Inc.

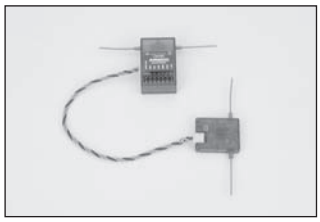
ITEMS REQUIRED TO COMPLETE ASSEMBLY



G770 3D Gyro (JRPG7703D)



3500G Gyro Servo (JRPG3500G)

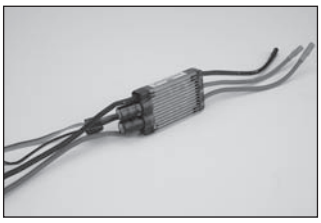


Spektrum AR6200, AR7000 or JR R921 Receiver (SPMAR6200)

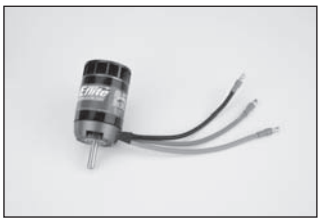
DS3517 High-Speed Mini Servo (x3)

2200mAh–2600mAh (6S Battery) (THP27006SP30)

PAAPT02 Zap-A-Gap CA+



E-flite 60-AMP PRO SB Brushless ESC (EFLA1060)



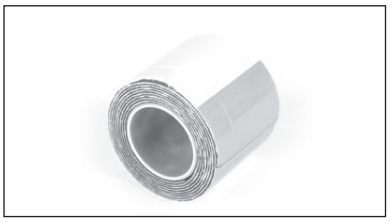
E-flite Power 25 Heli BL Outrunner Motor,1000KV (EFLM4025H)

Nylon Wire Ties (ASC7709)

Grease

PAAPT39 30-Minute Z-Poxy

Rubbing Alcohol



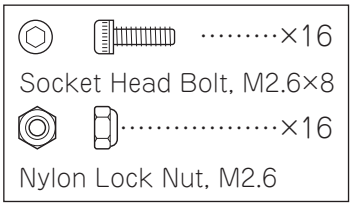
Double-Sided Servo Tape (BRP7541)

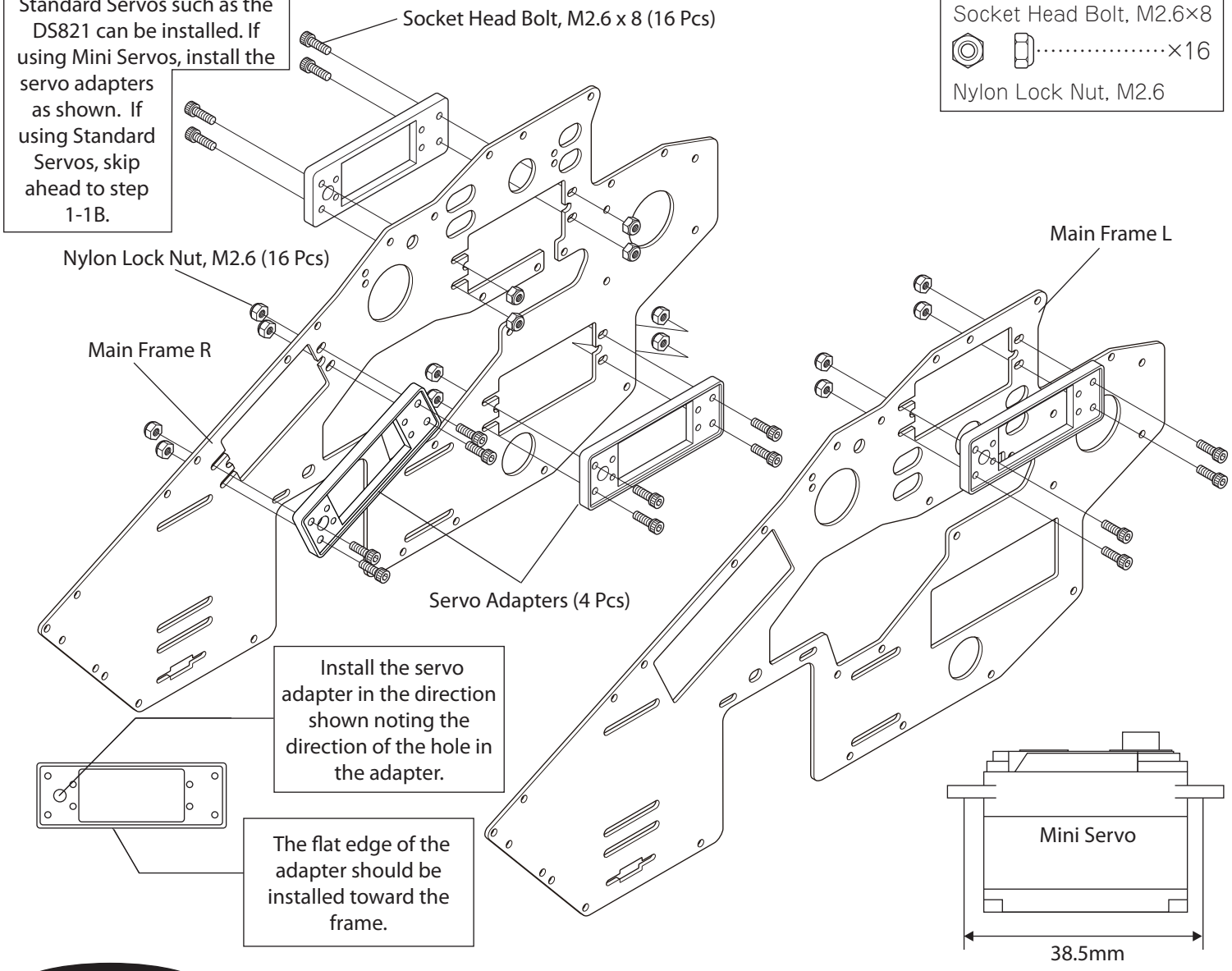
Oil Touch Pen (JRP961296)

Pitch Gauge w/Case JRP960326

1-1A ATTACHING THE SERVO ADAPTERS

Note: Either Mini Servos such as the DS3517 or Standard Servos such as the DS821 can be installed. If using Mini Servos, install the servo adapters as shown. If using Standard Servos, skip ahead to step 1-1B.

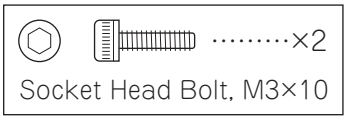




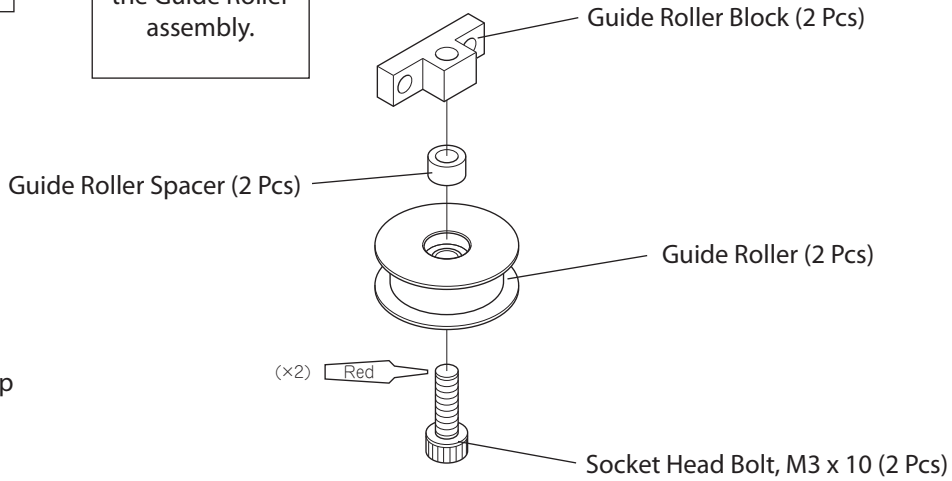
Install the servo adapter in the direction shown noting the direction of the hole in the adapter.

The flat edge of the adapter should be installed toward the frame.

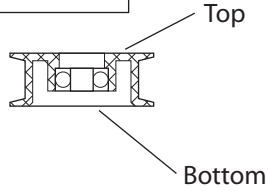
1-1B ASSEMBLING THE GUIDE ROLLER



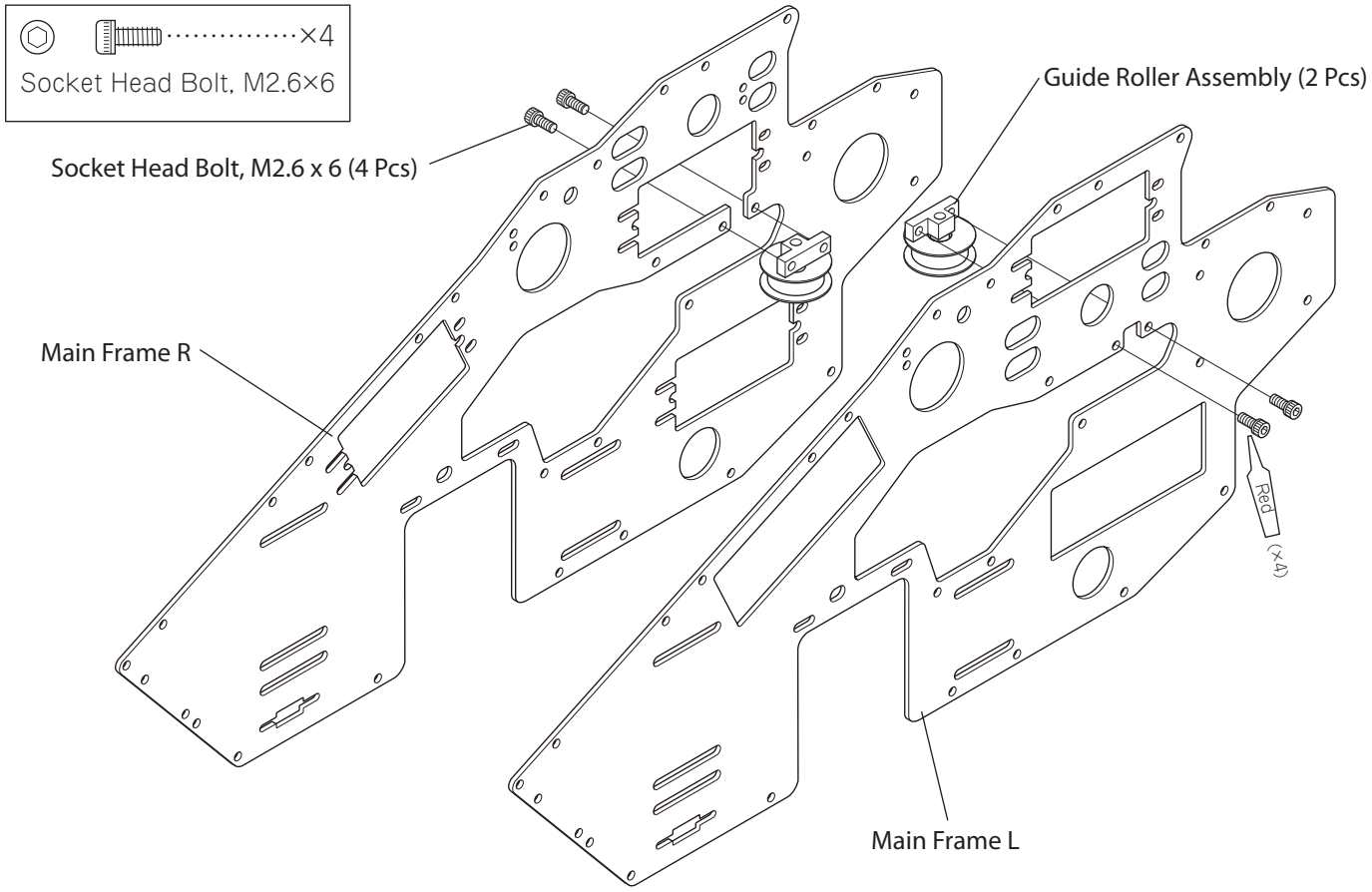
Prepare 2 sets of the Guide Roller assembly.



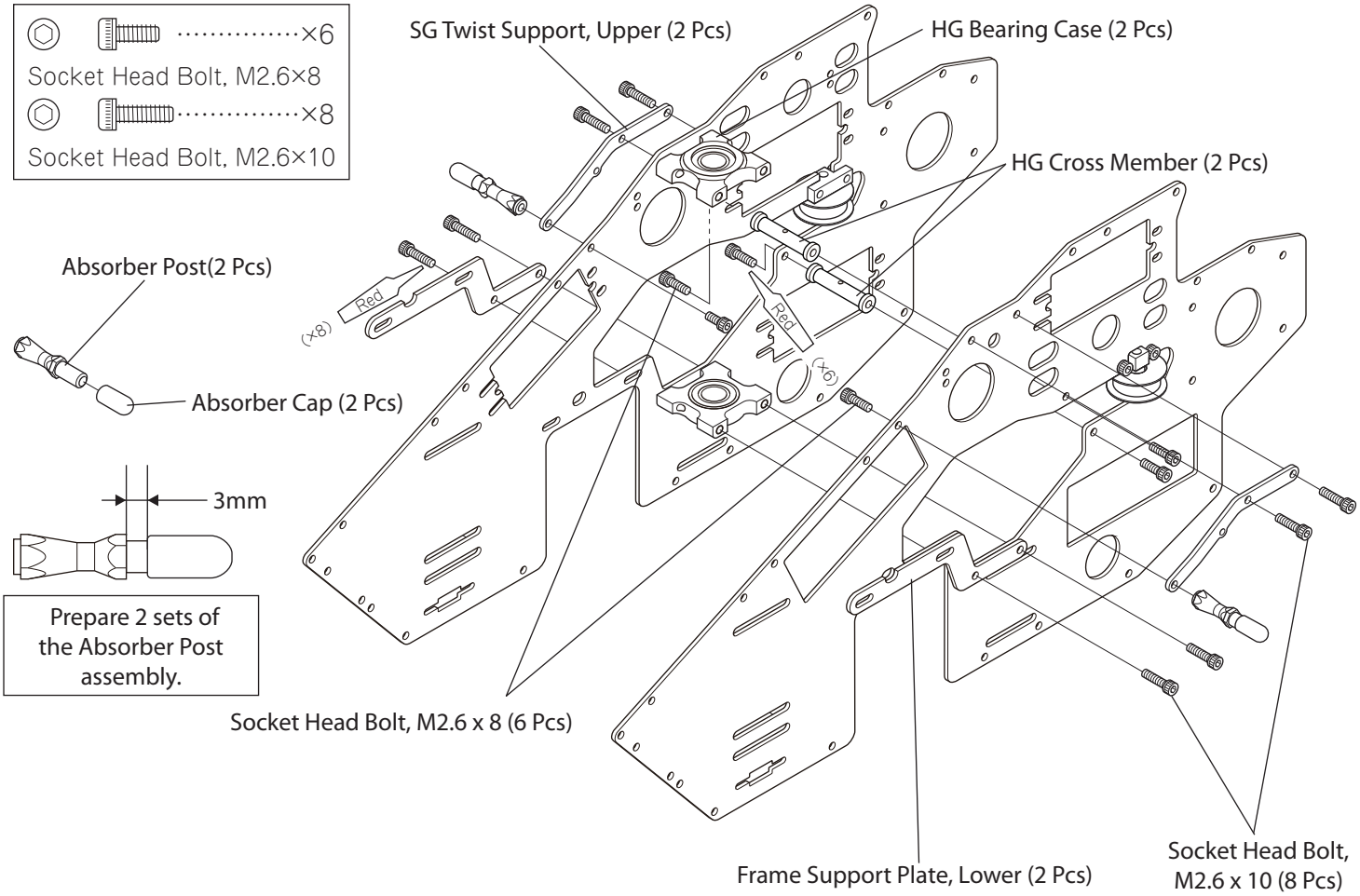
Note the proper direction of the Guide Roller.



1-2 ATTACHING THE GUIDE ROLLER

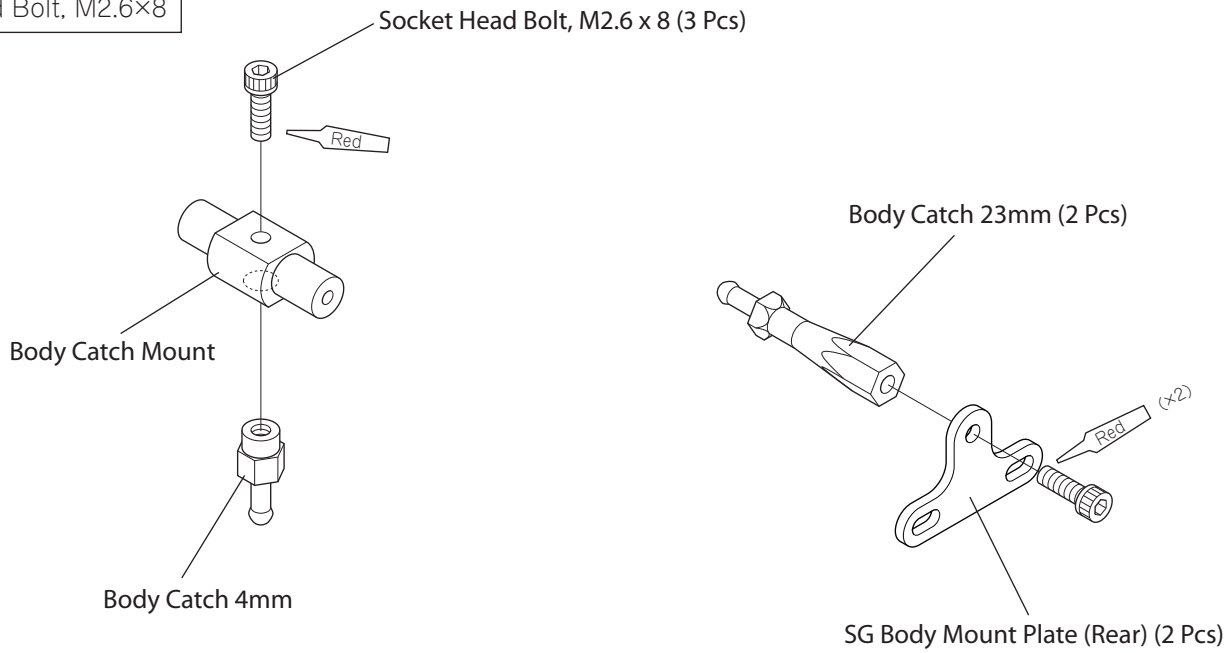


1-3 ATTACHING THE BEARING CASE AND FRAME SUPPORT



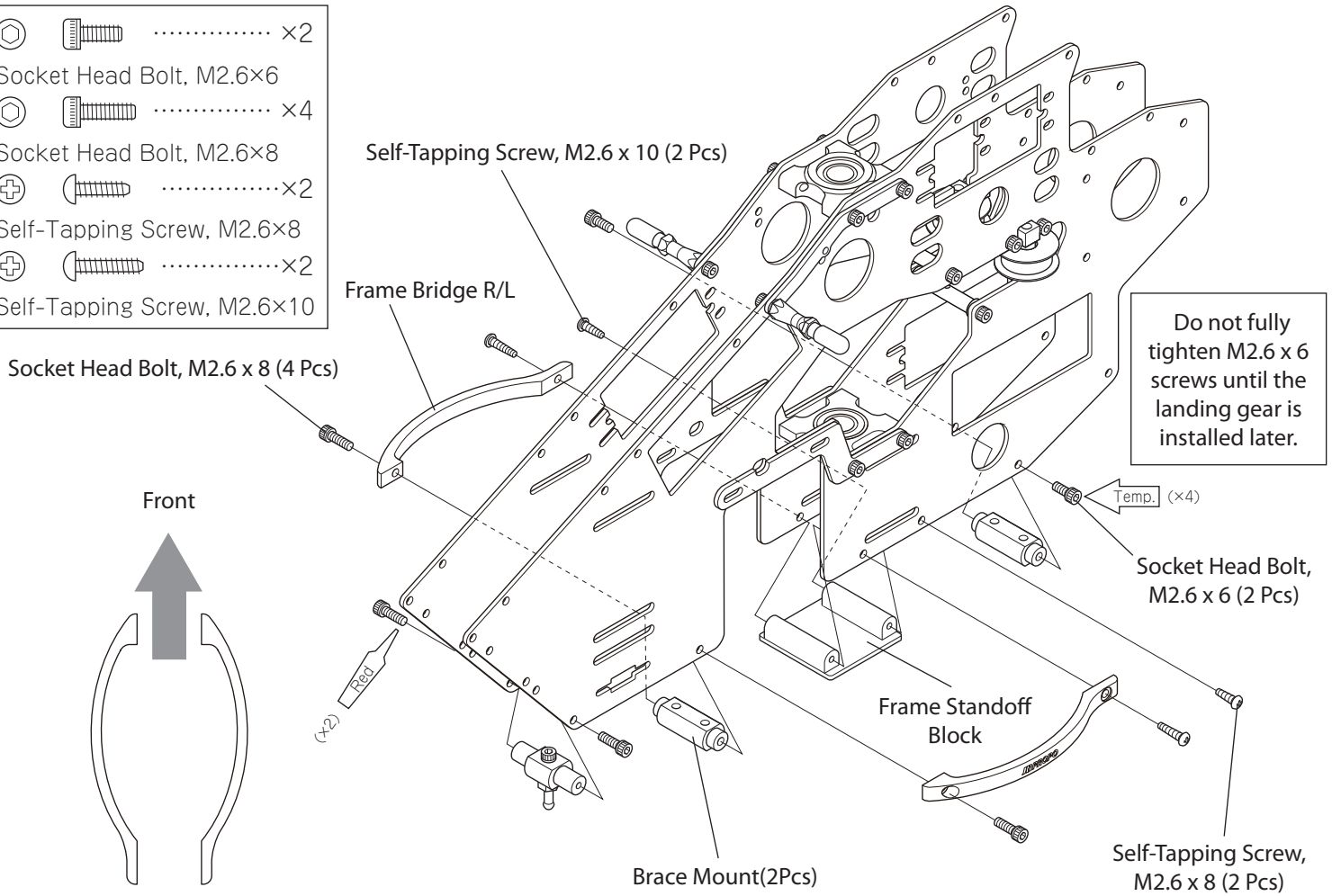
1-4 ATTACHING THE BODY CATCH

×3
Socket Head Bolt, M2.6×8



1-5 ATTACHING THE FRAME BRIDGE

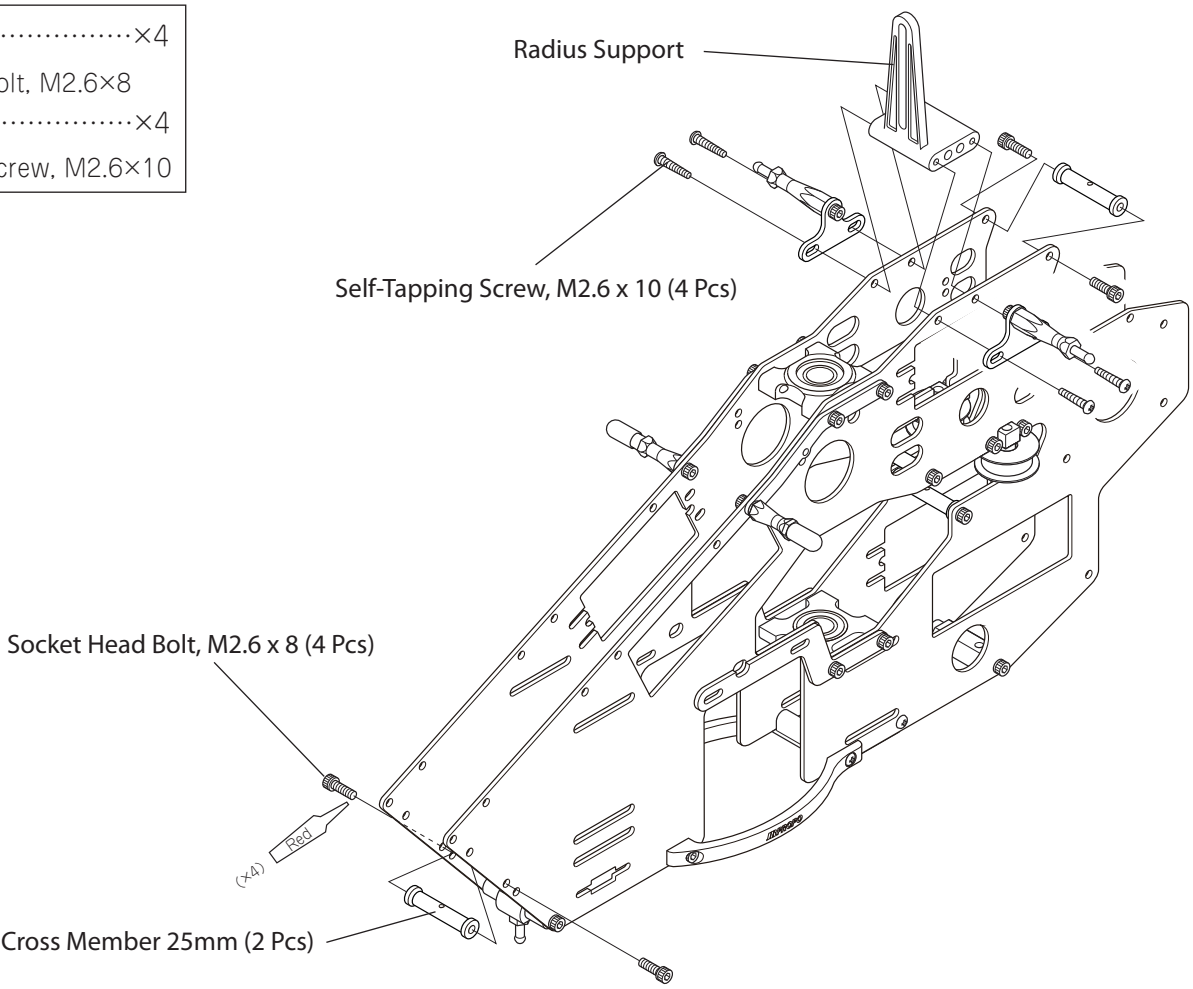
×2
Socket Head Bolt, M2.6×6
×4
Socket Head Bolt, M2.6×8
×2
Self-Tapping Screw, M2.6×8
×2
Self-Tapping Screw, M2.6×10



Do not fully tighten M2.6 x 6 screws until the landing gear is installed later.

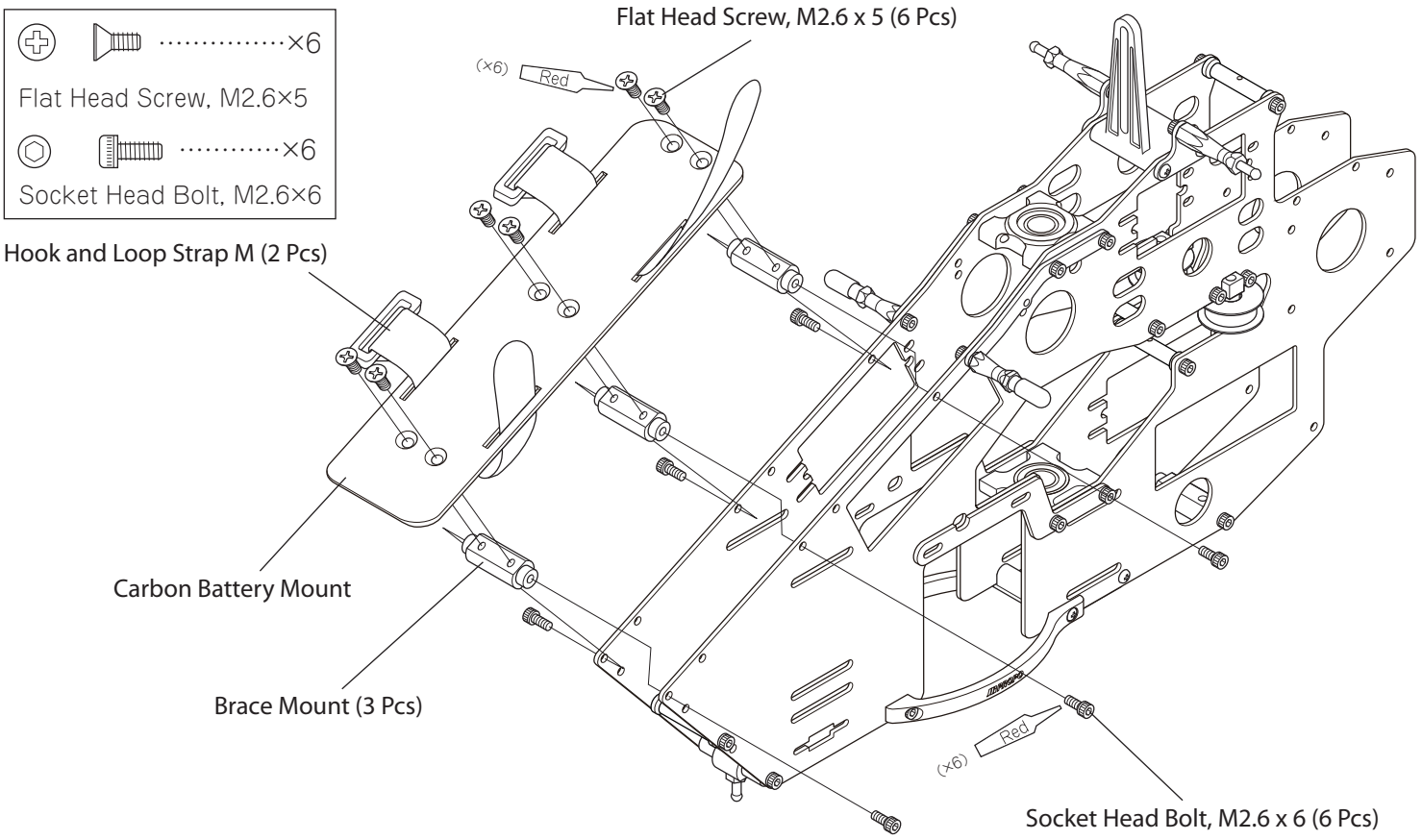
1-6 ATTACHING THE RADIUS SUPPORT

×4
Socket Head Bolt, M2.6×8
×4
Self-Tapping Screw, M2.6×10



1-7 ATTACHING THE BATTERY MOUNT

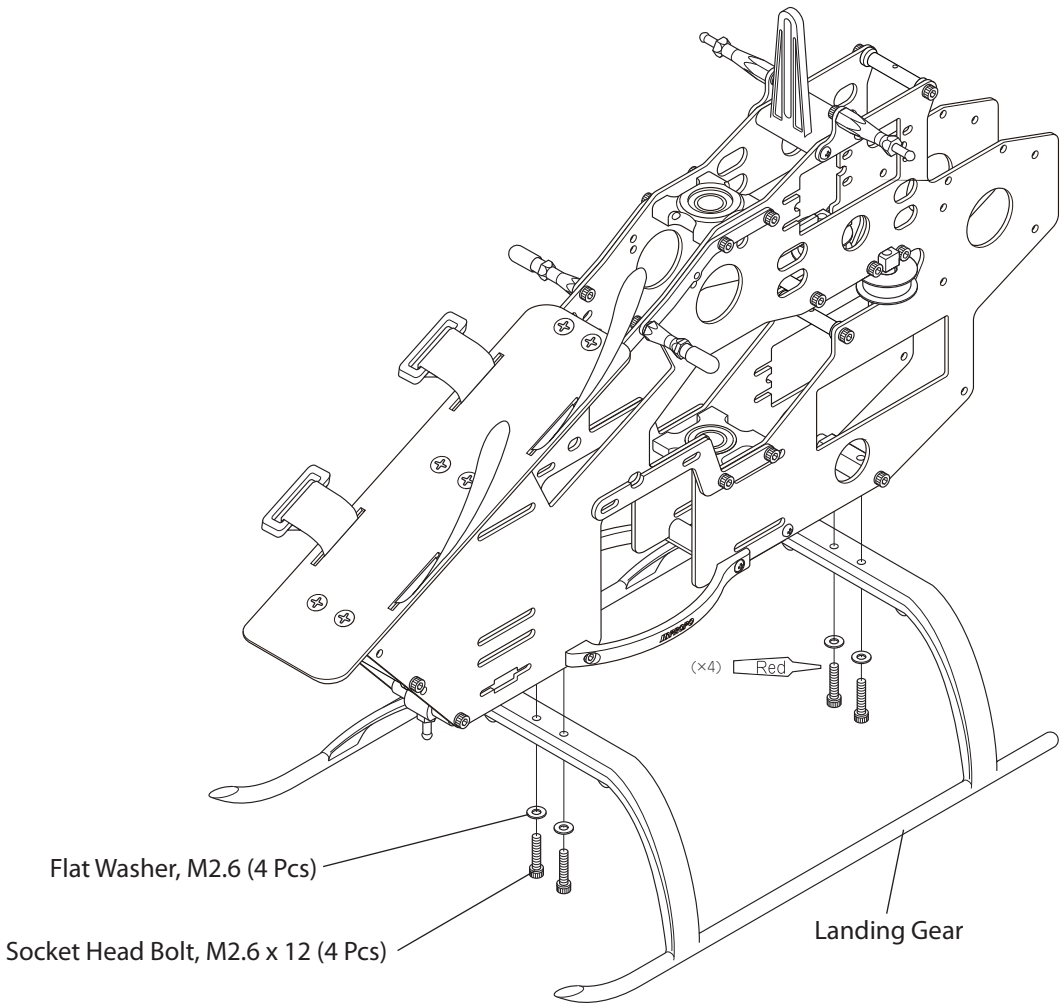
×6
Flat Head Screw, M2.6×5
×6
Socket Head Bolt, M2.6×6



1-8 ATTACHING THE LANDING GEAR

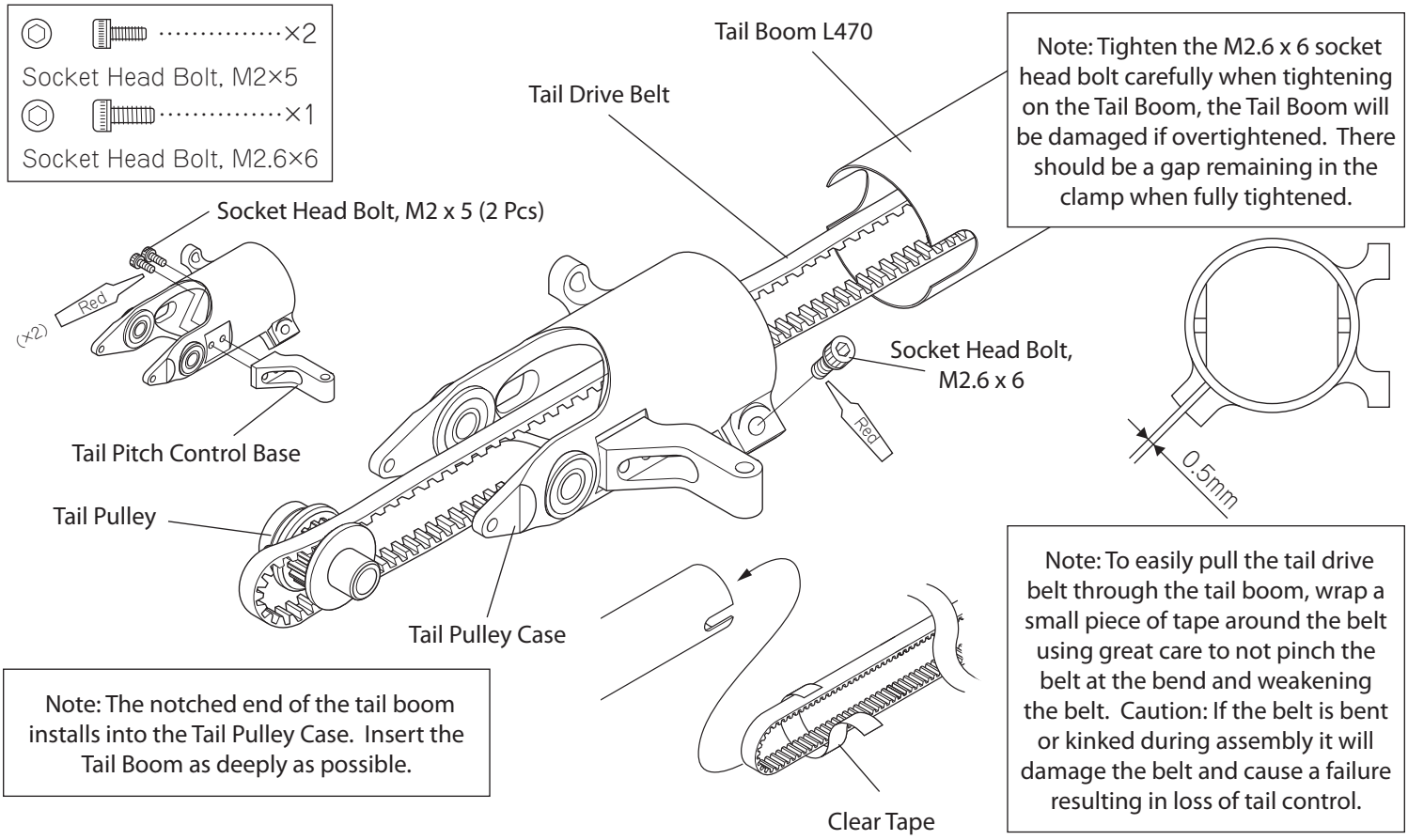
×4
Socket Head Bolt, M2.6×12
×4
Flat Washer, M2.6

Note: After the landing gear is installed, fully tighten the bolts left loose from Step 1-5.



2-1 ATTACHING THE TAIL PULLEY CASE

×2
Socket Head Bolt, M2×5
×1
Socket Head Bolt, M2.6×6

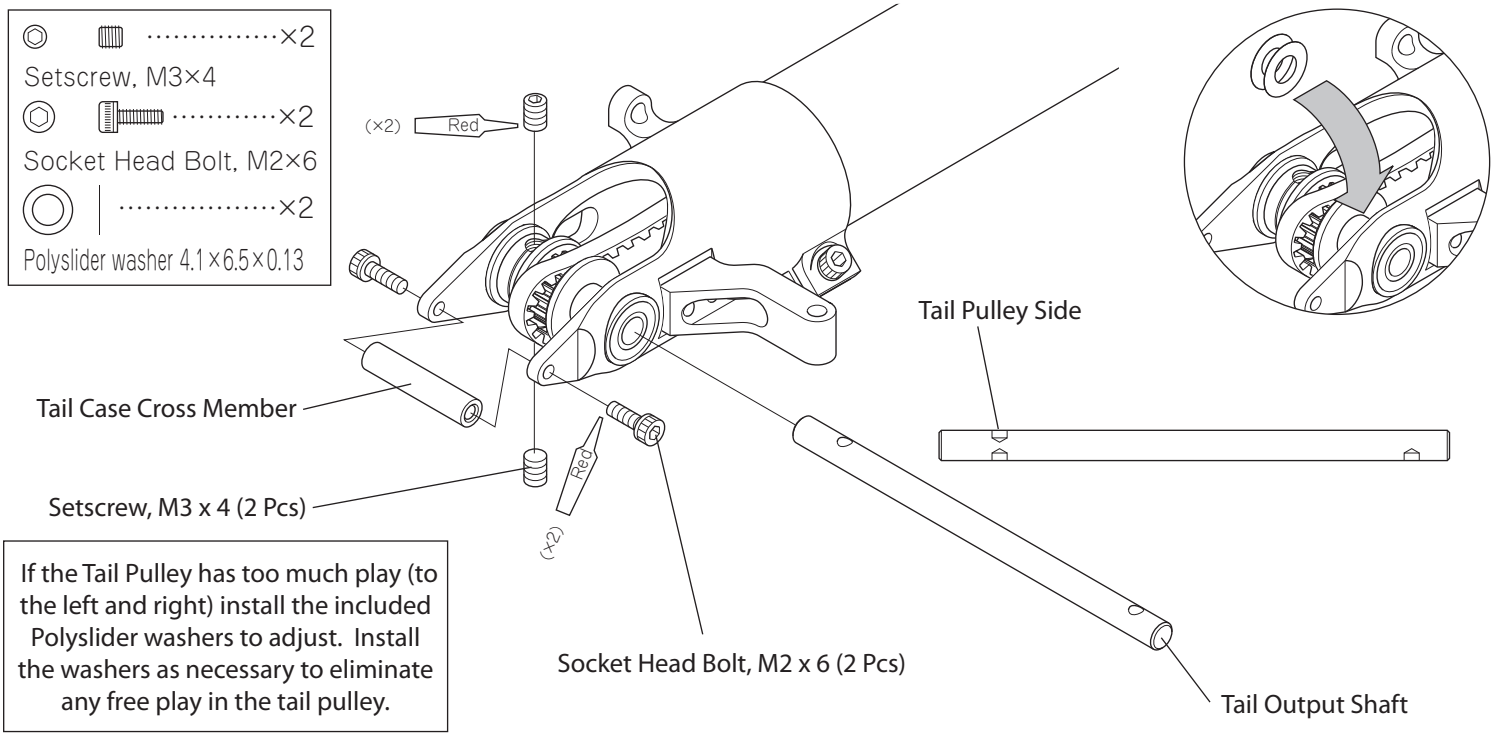


Note: Tighten the M2.6 x 6 socket head bolt carefully when tightening on the Tail Boom, the Tail Boom will be damaged if overtightened. There should be a gap remaining in the clamp when fully tightened.

Note: The notched end of the tail boom installs into the Tail Pulley Case. Insert the Tail Boom as deeply as possible.

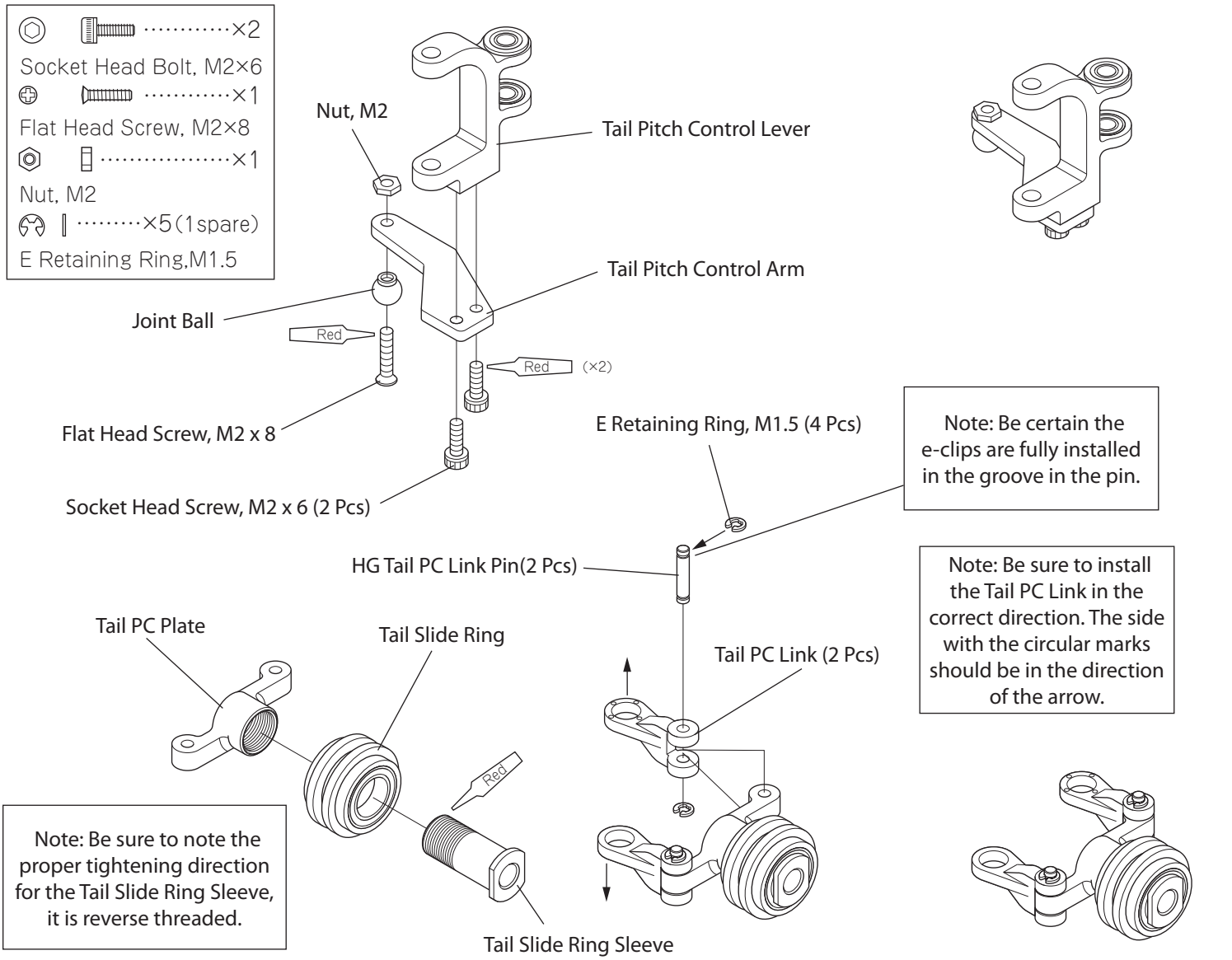
Note: To easily pull the tail drive belt through the tail boom, wrap a small piece of tape around the belt using great care to not pinch the belt at the bend and weakening the belt. Caution: If the belt is bent or kinked during assembly it will damage the belt and cause a failure resulting in loss of tail control.

2-2 ATTACHING THE TAIL OUTPUT SHAFT



If the Tail Pulley has too much play (to the left and right) install the included Polyslider washers to adjust. Install the washers as necessary to eliminate any free play in the tail pulley.

2-3 ASSEMBLING THE TAIL PITCH CONTROL LEVER



Note: Be certain the e-clips are fully installed in the groove in the pin.

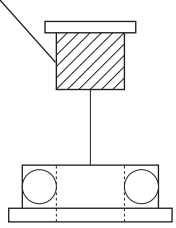
Note: Be sure to install the Tail PC Link in the correct direction. The side with the circular marks should be in the direction of the arrow.

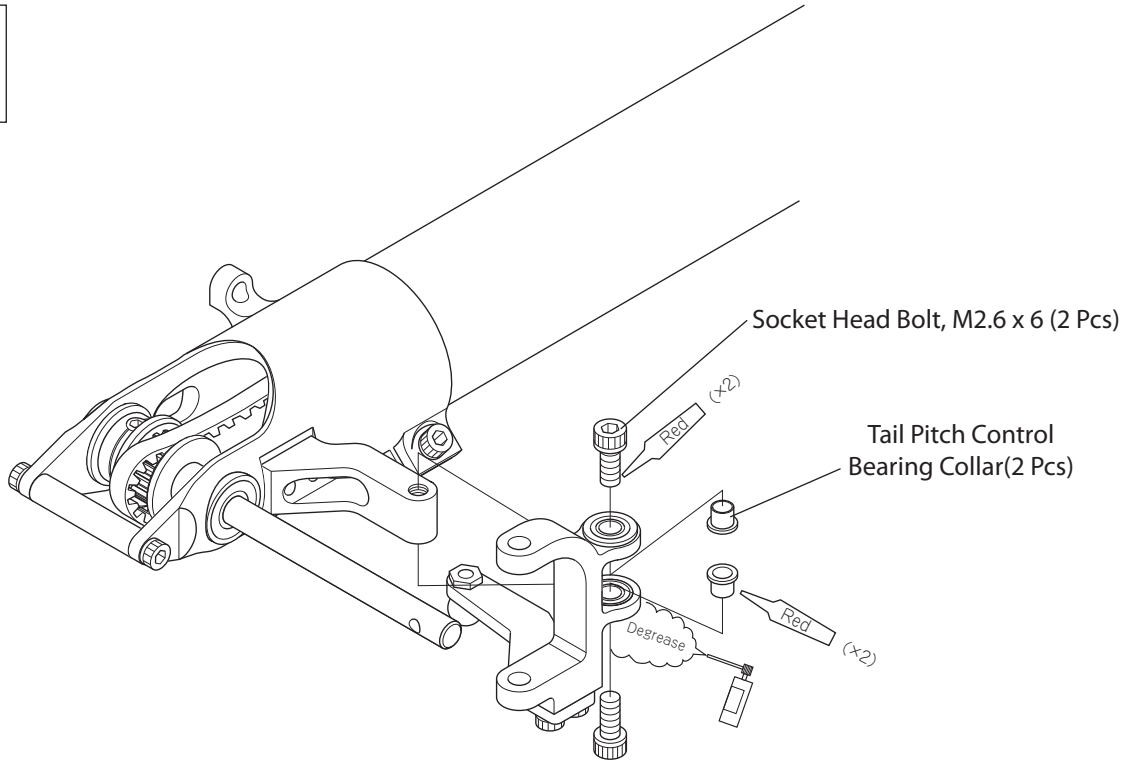
Note: Be sure to note the proper tightening direction for the Tail Slide Ring Sleeve, it is reverse threaded.

2-4 ATTACHING THE TAIL PITCH CONTROL LEVER 1

×2
Socket Head Bolt, M2.6×6

Apply a thin and even layer of red threadlock to adhere



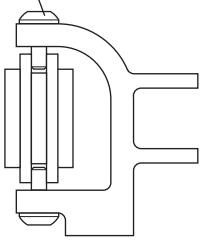


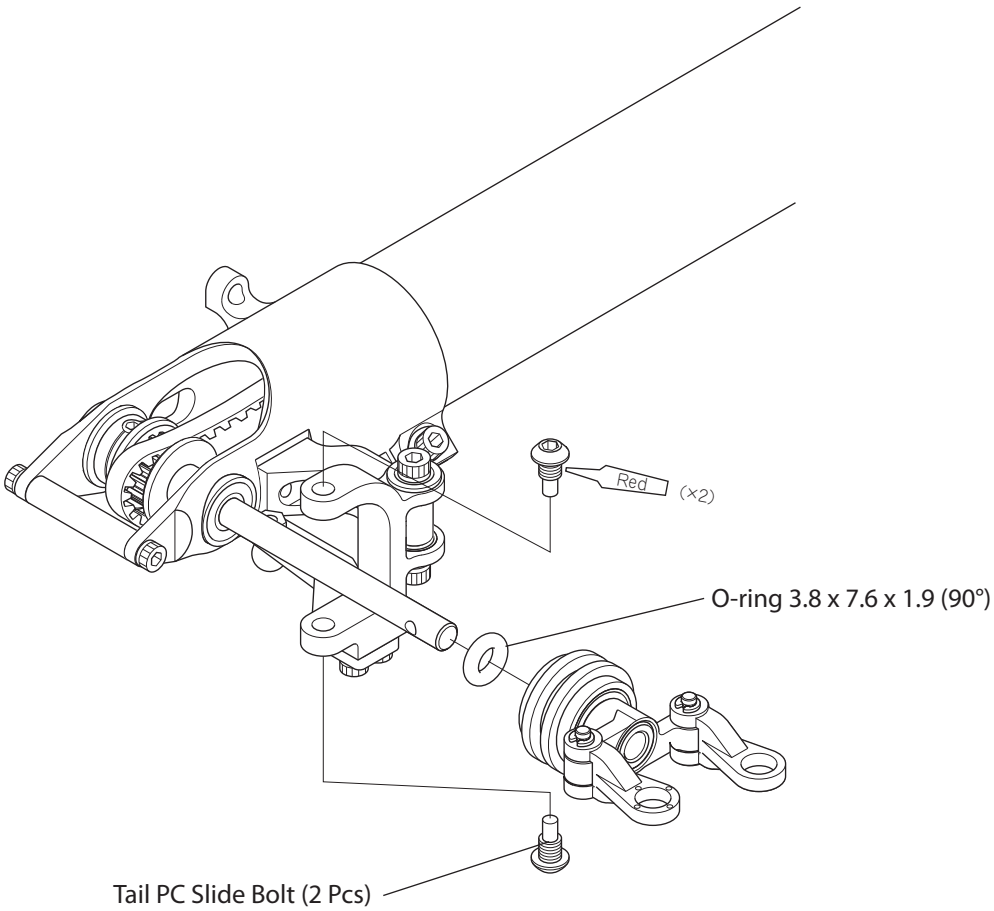
2-5 ATTACHING THE TAIL PITCH CONTROL LEVER 2

×2
Tail PC Slide Bolt

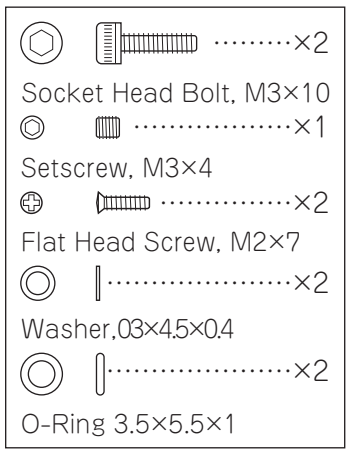
×1
O-Ring 3.8×7.6×1.9(90°)

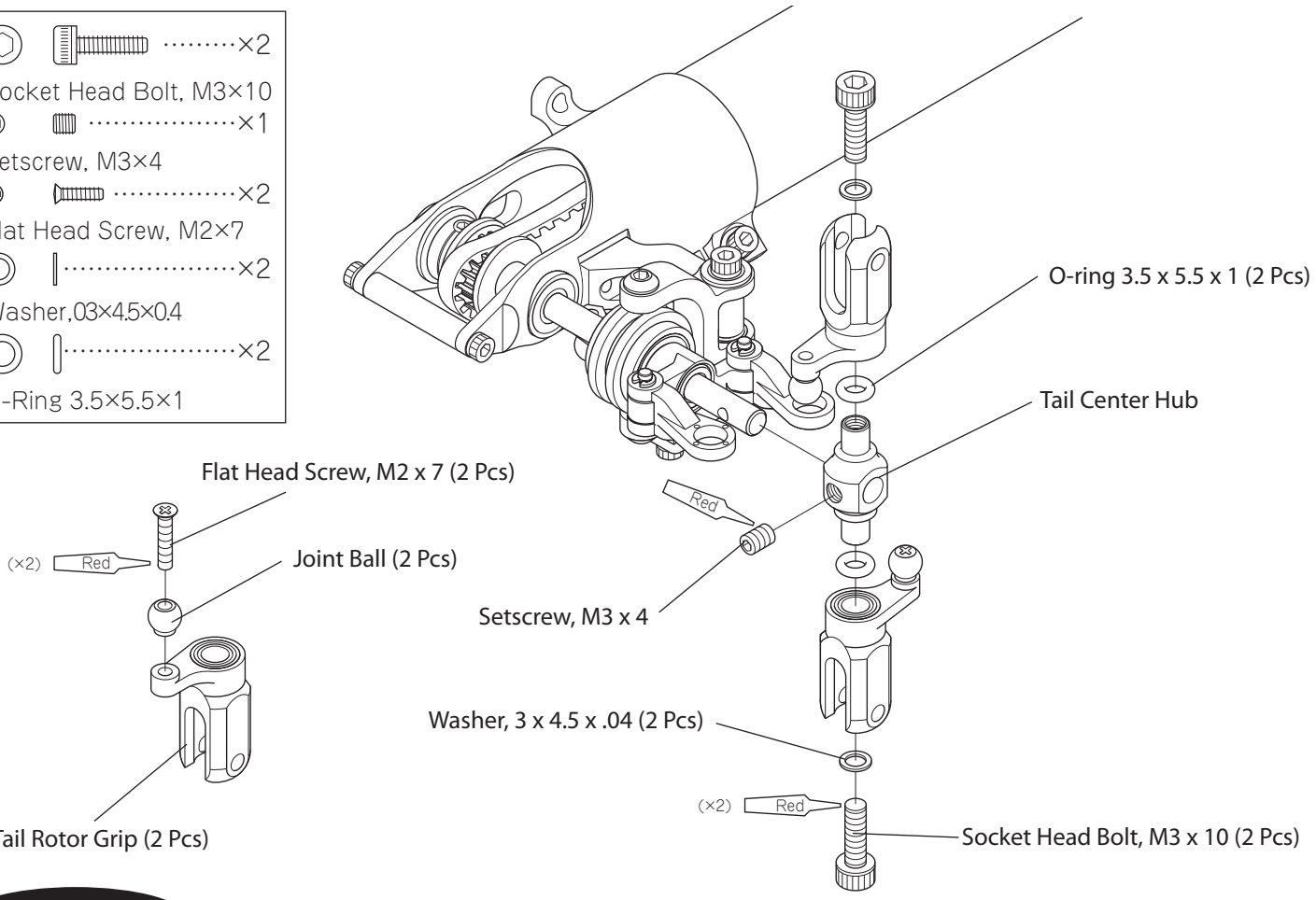
Tighten the Tail PC Slide Bolts, fitting them in the groove in the tail slide ring.



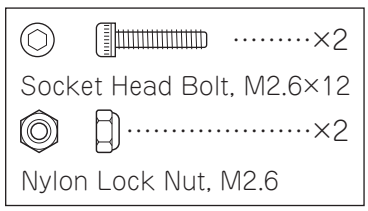


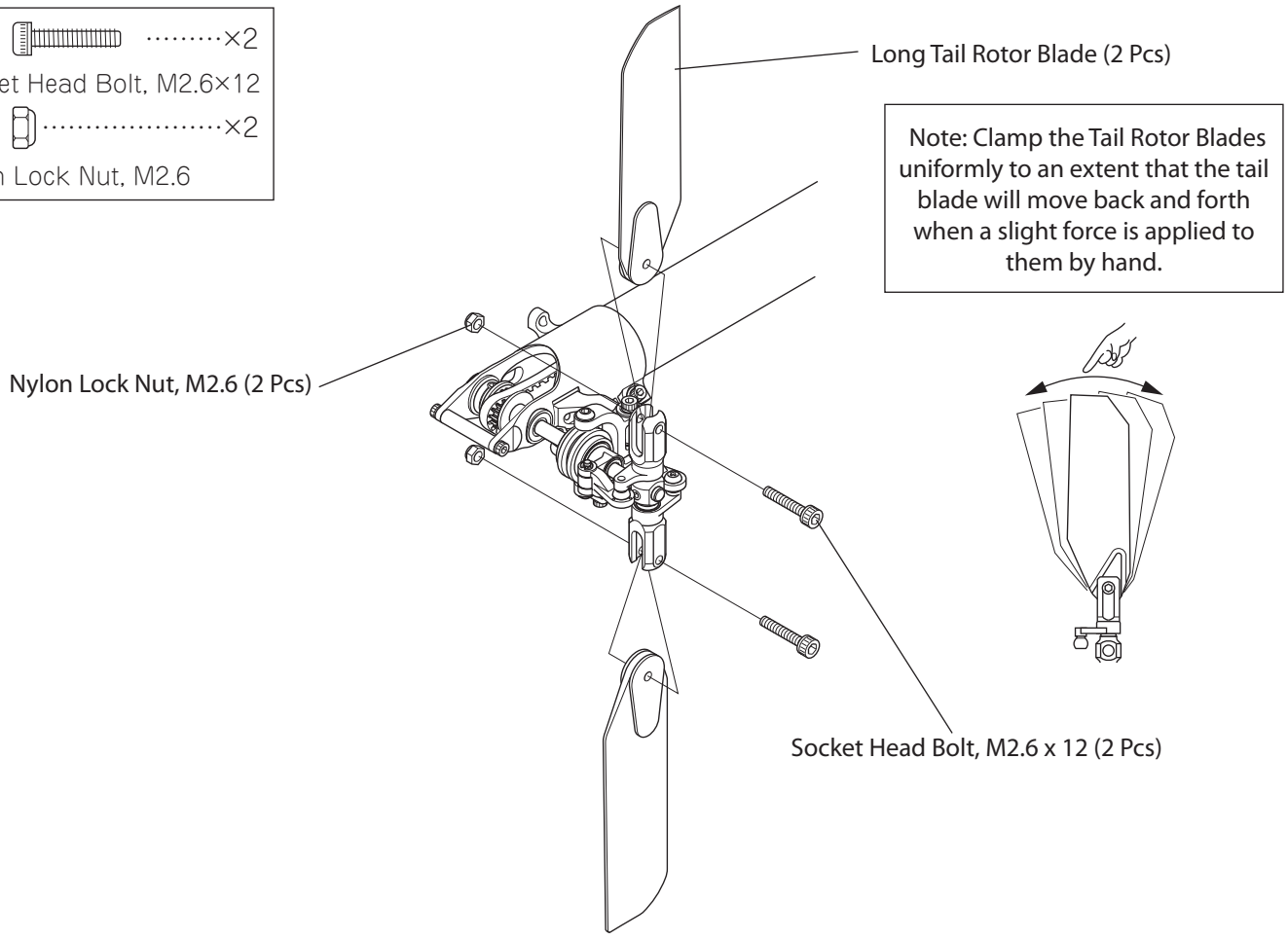
2-6 ATTACHING THE TAIL ROTOR GRIP



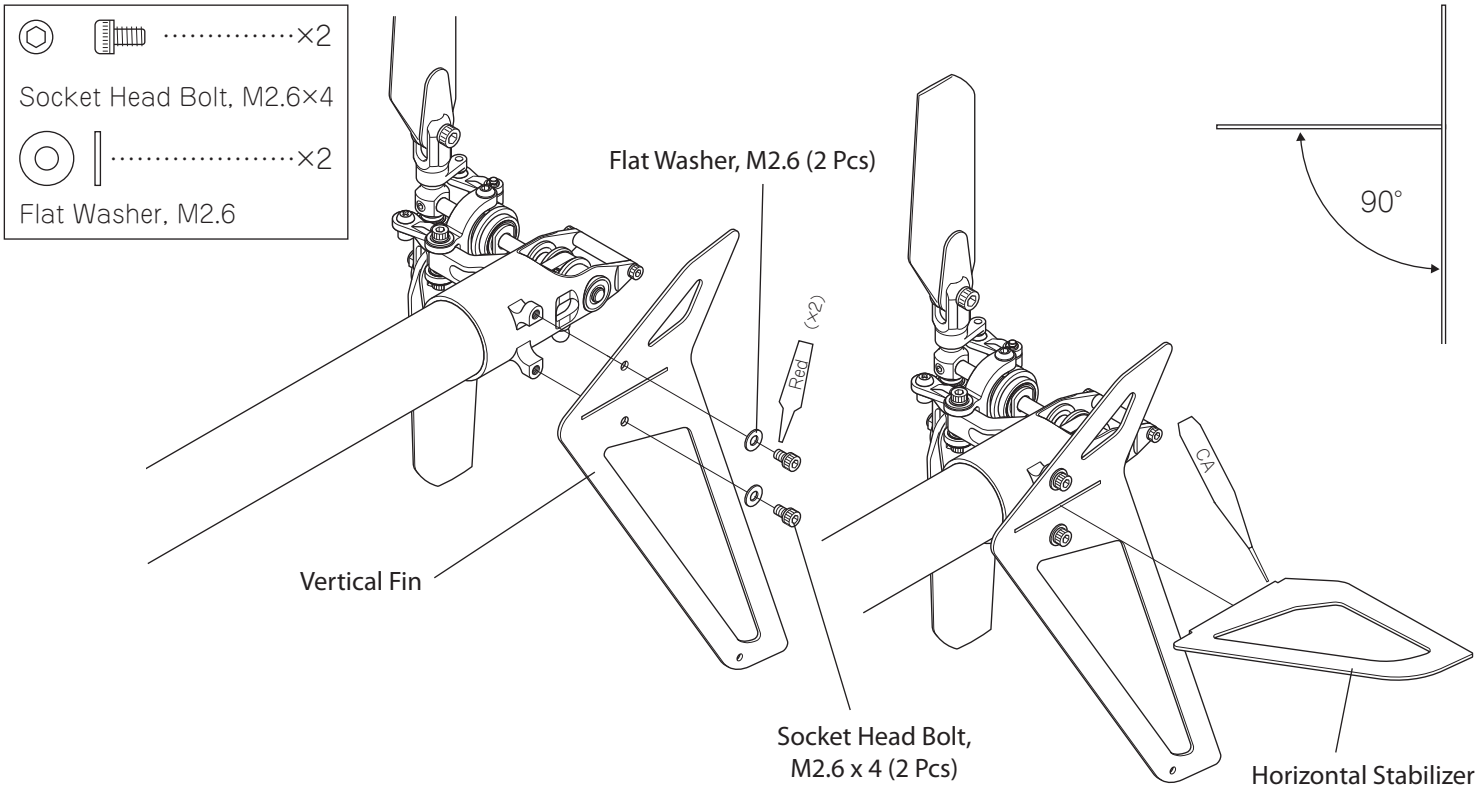


2-7 ATTACHING THE TAIL ROTOR BLADE

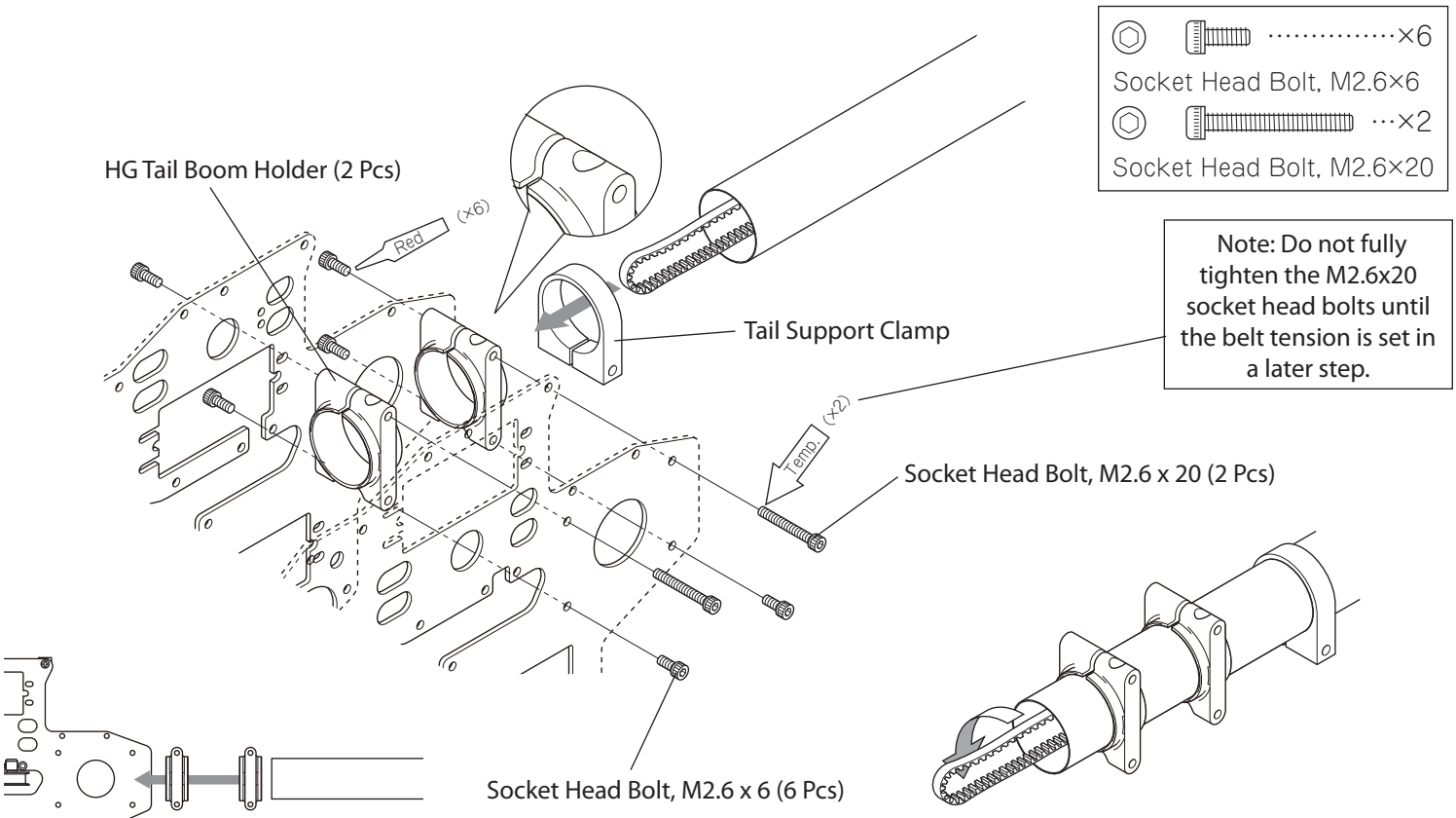




2-8 ATTACHING THE HORIZONTAL STABILIZER AND VERTICAL FIN



2-9 INSTALLING THE TAIL BOOM

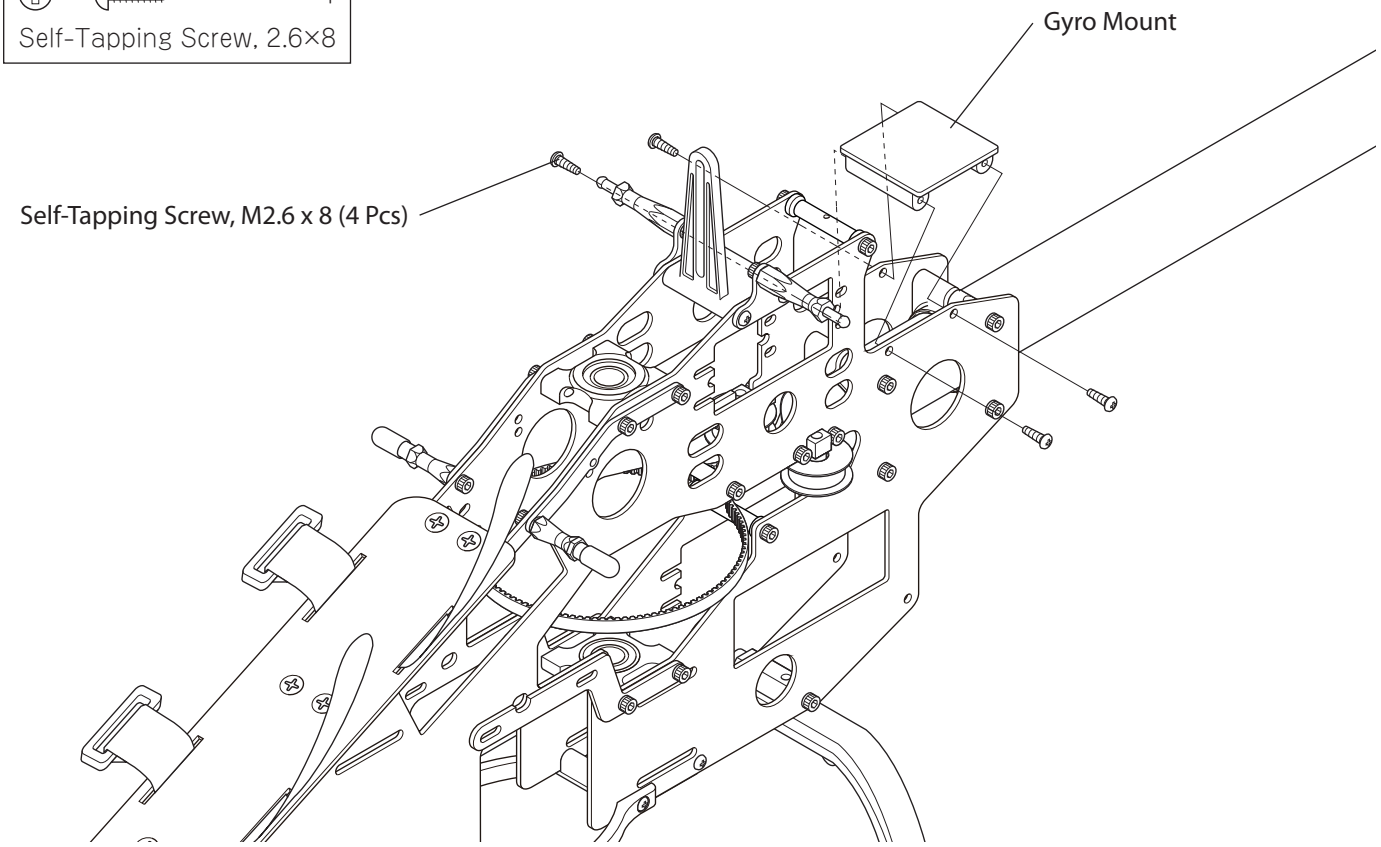


Note: Insert the tail boom as far forward as it will go into the tail boom holders; belt tension will be set later in the assembly.

Note: Pay close attention to the direction of rotation of the belt. With the belt installed as shown, sight down the tube to ensure that the belt is not twisted down the length of the boom, then rotate the belt 90 degrees in the direction of the arrow to ensure the tail blades rotate the proper direction and the belt is not twisted or kinked. The tail blade rotation direction will be verified later in step 3-5.
Caution: If the belt is twisted or kinked it will cause premature wear and failure of the belt which will cause loss of tail control.

3-1 ATTACHING THE GYRO MOUNT

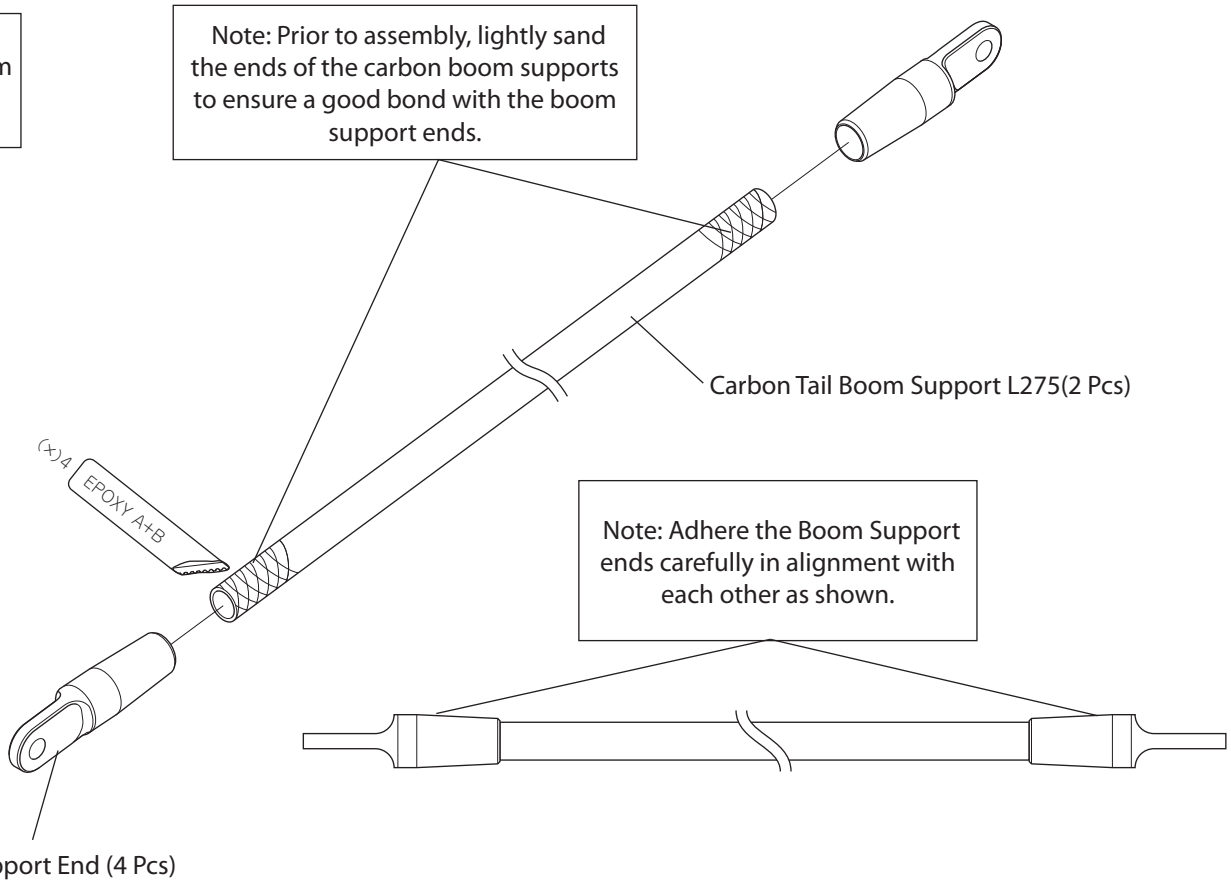
×4
Self-Tapping Screw, 2.6×8



3-2 ASSEMBLING THE BOOM SUPPORTS

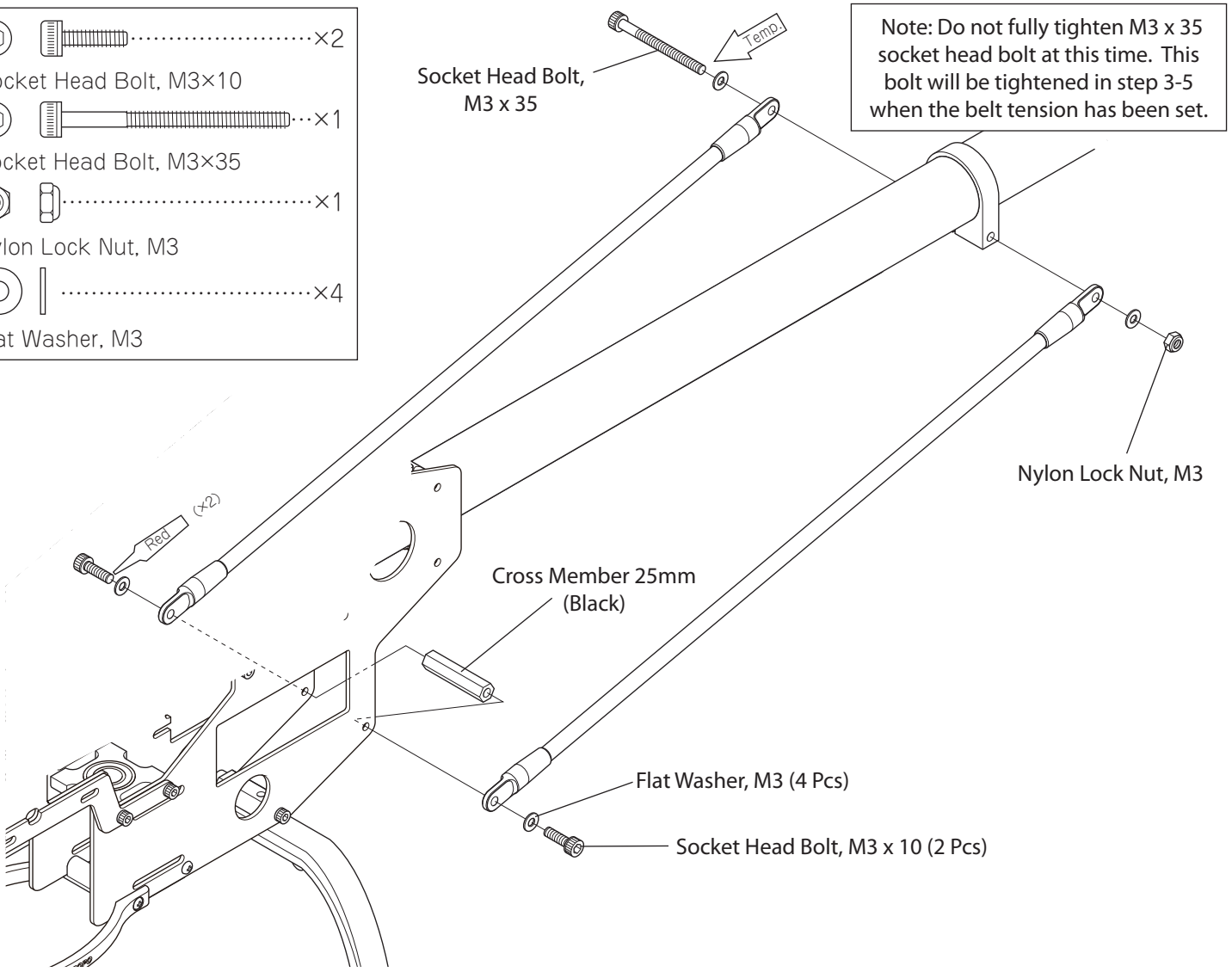
Assemble 2 Boom Supports

Note: Prior to assembly, lightly sand the ends of the carbon boom supports to ensure a good bond with the boom support ends.



3-3 ATTACHING THE BOOM SUPPORTS

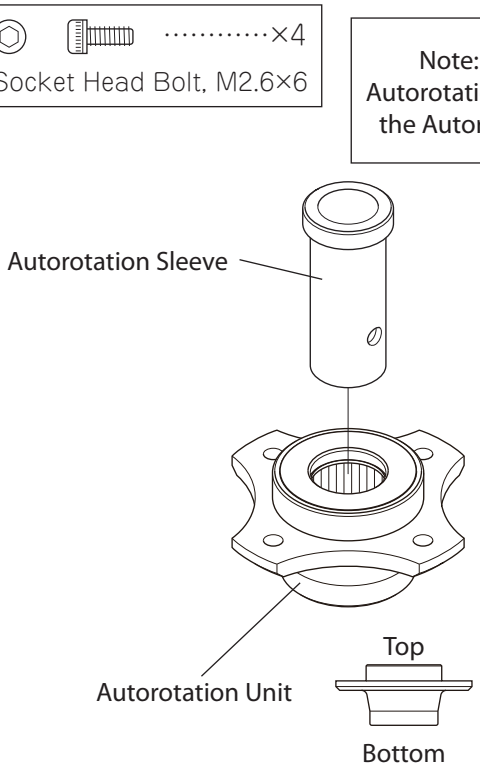
×2
Socket Head Bolt, M3×10
×1
Socket Head Bolt, M3×35
×1
Nylon Lock Nut, M3
×4
Flat Washer, M3

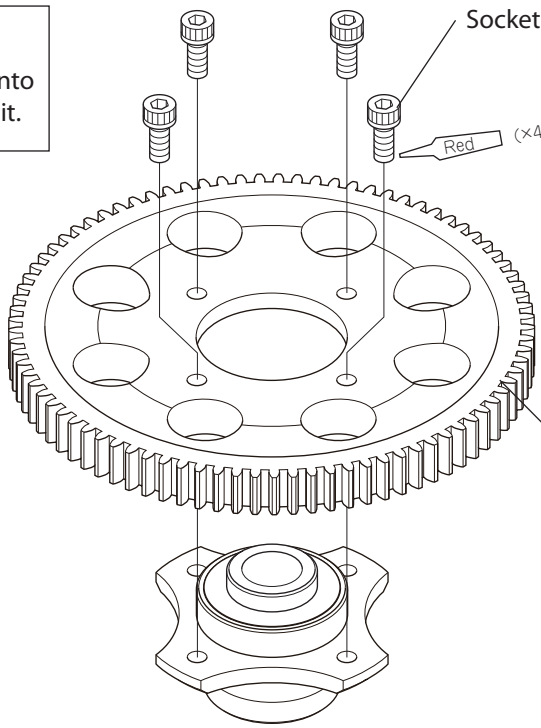


3-4 ASSEMBLING THE MAIN DRIVE GEAR

×4
Socket Head Bolt, M2.6×6

Note: Insert the Autorotation Sleeve into the Autorotation Unit.





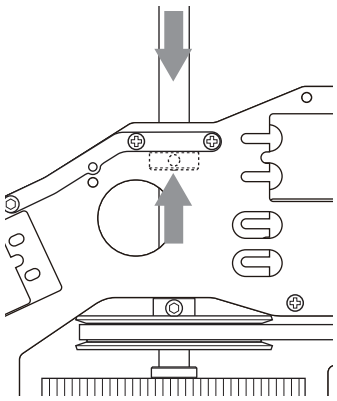
Note: Tighten the bolts for the main gear equally to prevent warping.

3-5 ATTACHING THE MAIN DRIVE GEAR - FRONT PULLEY

×2
Socket Head Bolt, M2.6×15
×2
Setscrew, M3×3
×1
Main Shaft Spacer
×2
Nylon Lock Nut, M2.6

Main Shaft

Note: Install the Main Shaft in the proper direction as shown through the top bearing block, then through the Main Shaft Collar, Front Pulley, Main Drive Gear Assembly, Auto Rotation Collar, Main Shaft Spacer, and finally the bottom Main Shaft Bearing Block. Be sure to loop the Tail Drive Belt around the Front Pulley in the direction shown previously in step 2-9.



Main Shaft Collar

Red (×2)

Front Pulley

Note: After installing the Front Pulley and Auto Rotation Assembly, push down on the Main Shaft, and pull up on the Main Shaft Collar until it is against the top Main Shaft Bearing Block. Tighten the M3 x 3 Setscrews in the Collar while holding the Main Shaft Collar against the Bearing Block and the Main Shaft pressed down against the lower Main Shaft Bearing Block.

Note: The proper direction to install the Auto Rotation Collar is as shown.

Nylon Lock Nut, M2.6 (2 Pcs)

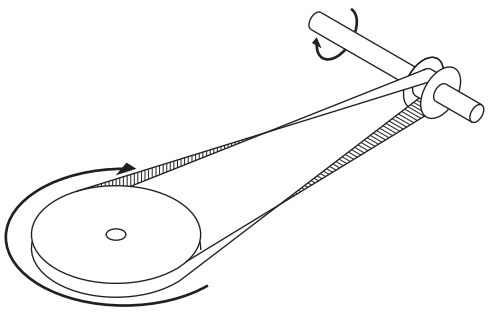
Autorotation Collar

Main Shaft Spacer

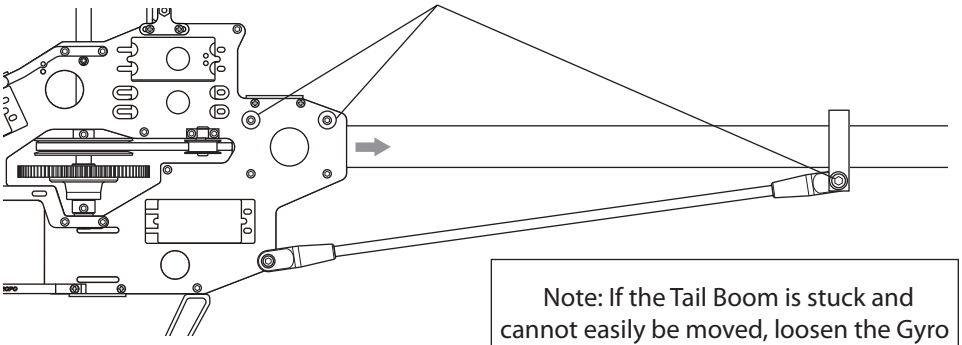
Main Drive Gear Assembly

Note: After installing the Main Shaft through the bottom Main Shaft Bearing Block, install the M2.6 x 15 socket head bolts through the Front Pulley and Main Shaft and then through the Auto Rotation Assembly and Auto Rotation Collar by aligning the holes in each assembly with the corresponding holes in the Main Shaft.

Check that the Tail Drive Belt direction rotation is correct as shown and there are no twists in the belt. Ensure the Tail Blades rotate in the proper direction prior to flight.



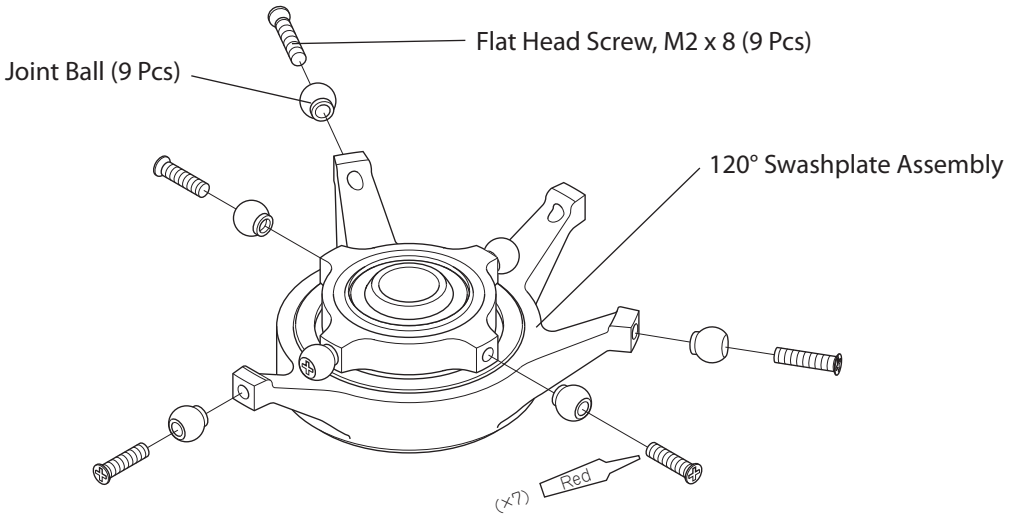
Note: After the direction of the Tail Drive Belt has been confirmed, set the belt tension. The belt tension should be set by pulling out on the Tail Boom so that the belt will remain in contact with the Guide Roller when pressed with a finger between the Front Pulley and Guide Roller. When the belt tension is set properly, tighten the bolts left loose previously in step 3-3.



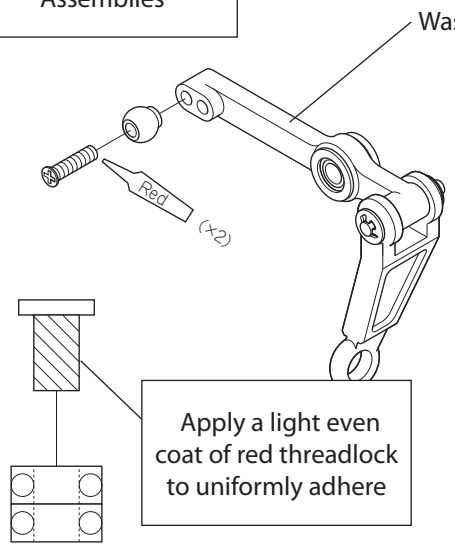
Note: If the Tail Boom is stuck and cannot easily be moved, loosen the Gyro Mount attachment screws.

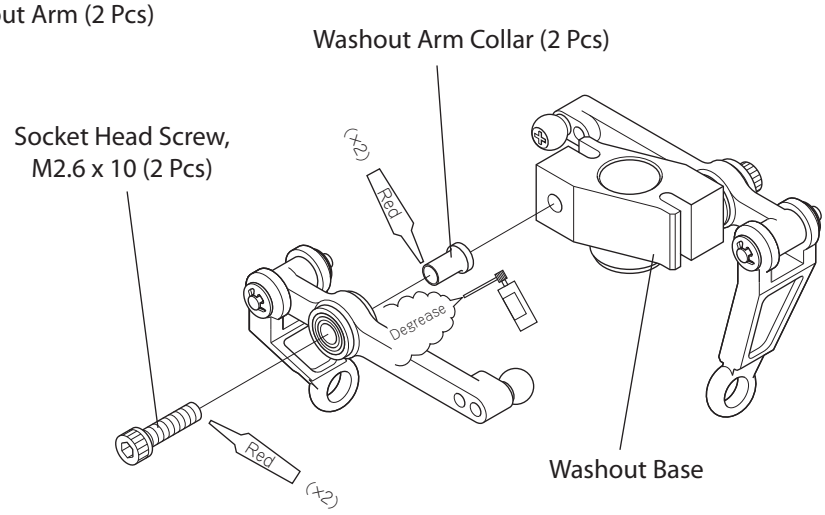
4-1 ASSEMBLING THE SWASHPLATE AND WASHOUT ASSEMBLY

×2
Socket Head Bolt, M2.6×10
×9
Flat Head Screw, M2×8



Note: Assemble 2 Washout Arm Assemblies

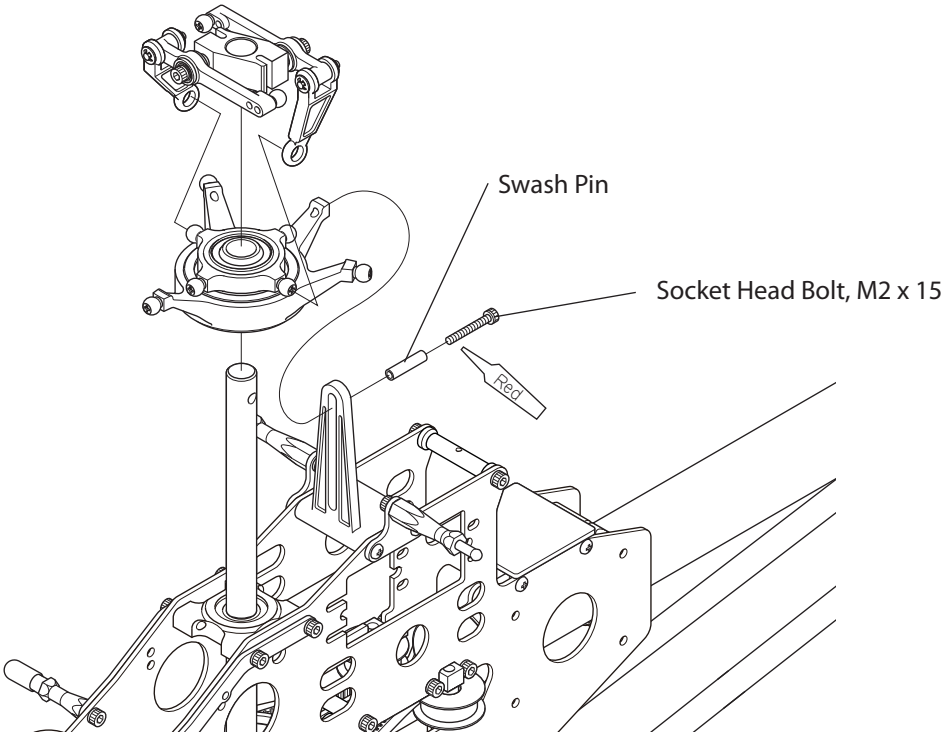




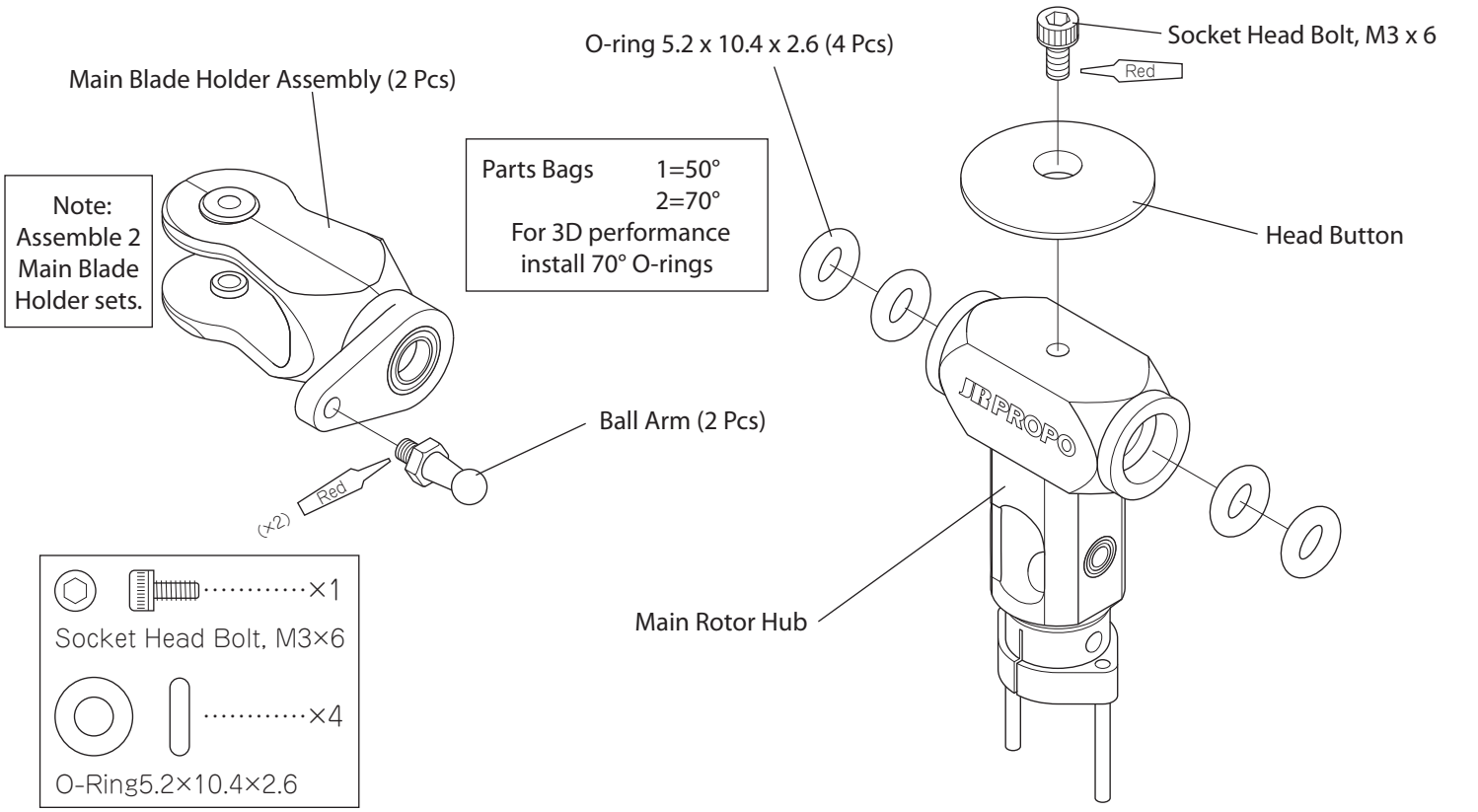
4-2 ATTACHING THE SWASHPLATE AND WASHOUT ASSEMBLY

×1
Socket Head Bolt, M2×15

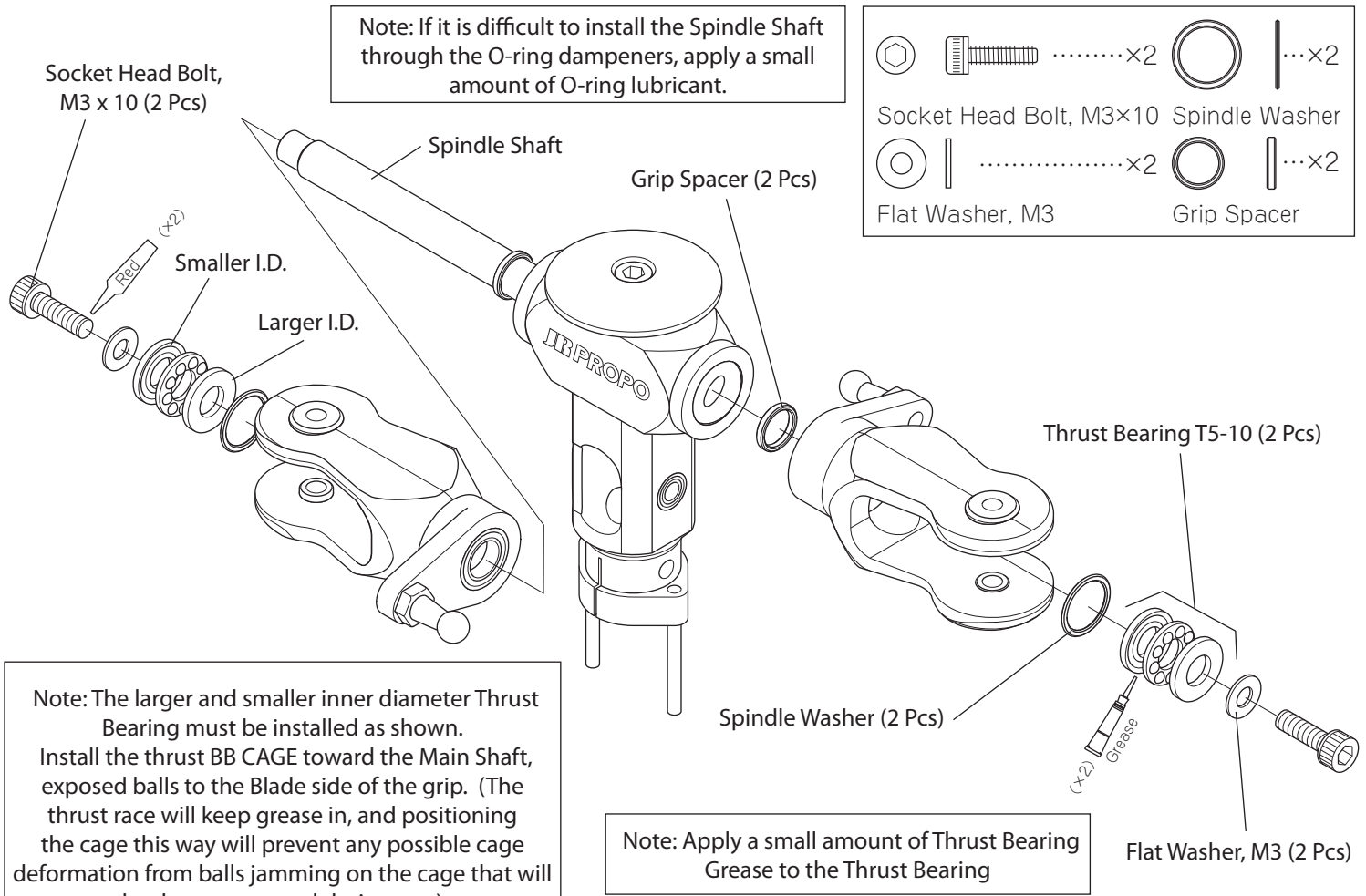
Note: Slide the Swashplate onto the Main Shaft. Install the M2 x 15 and Swash Pin onto the Swashplate going through the Radius Support as shown. Next install the Washout Assembly onto the Main Shaft and install the Washout links onto the Joint balls on the Swashplate as shown.



4-3 ASSEMBLING THE MAIN BLADE HOLDER AND ROTOR HUB 1



4-4 ASSEMBLING THE MAIN BLADE HOLDER AND ROTOR HUB 2

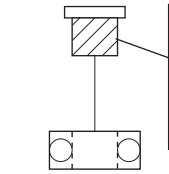


Note: The larger and smaller inner diameter Thrust Bearing must be installed as shown.
Install the thrust BB CAGE toward the Main Shaft, exposed balls to the Blade side of the grip. (The thrust race will keep grease in, and positioning the cage this way will prevent any possible cage deformation from balls jamming on the cage that will be thrown outward during use.)

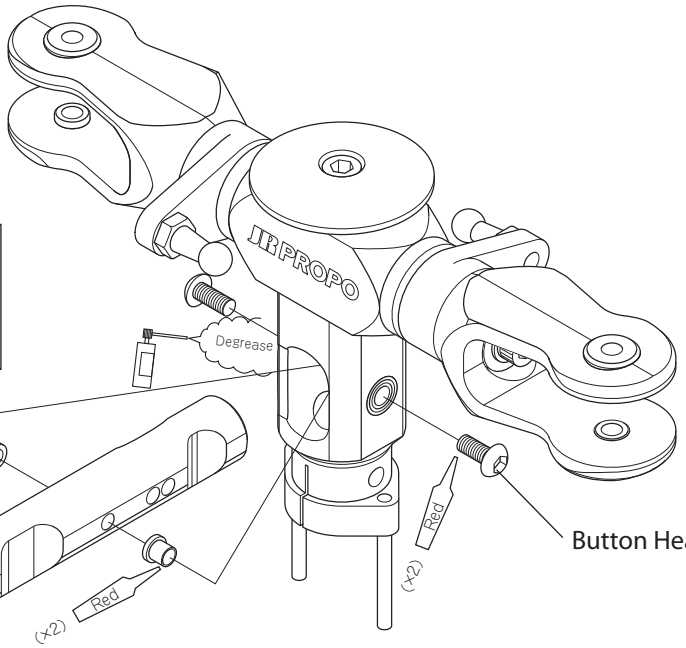
Note: Apply a small amount of Thrust Bearing Grease to the Thrust Bearing

4-5 ATTACHING THE SEESAW

×2
Button Head Bolt, M2.5×6
×2
Seesaw center Collar



Apply a light, even coat of red threadlock to uniformly adhere.



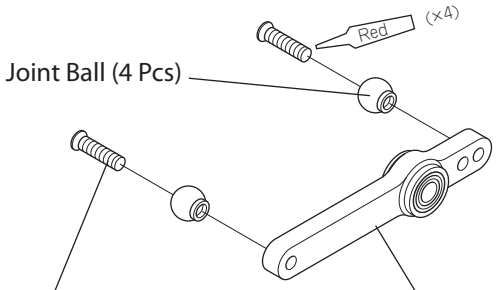
Seesaw Center Collar (2 Pcs)

Seesaw Assembly

Button Head Bolt, M2.5 x 6 (2 Pcs)

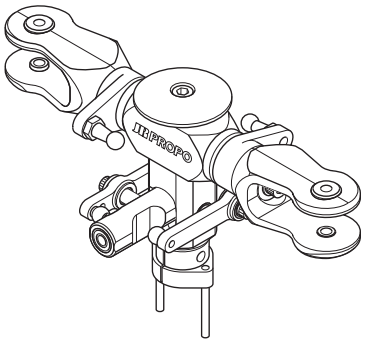
4-6 ATTACHING THE SEESAW ARM

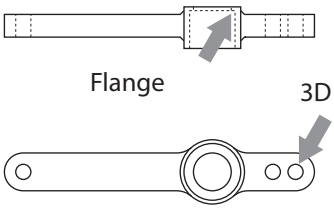
×4
Flat Head Screw, M2×8
×2
Socket Head Bolt, M2.6×14
×2
Flat Washer, 2.6×4.5×0.5



Joint Ball (4 Pcs)

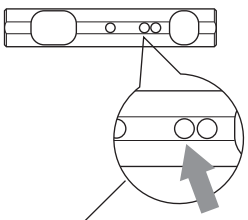
Flat Head Screw, M2 x 8 (4 Pcs)





Note: The Seesaw Arm is installed with the bearing retaining flange toward the Seesaw Arm. For 3D flight attach the joint ball to the outer hole.

Seesaw Arm(2 Pcs)

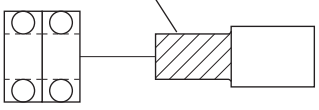


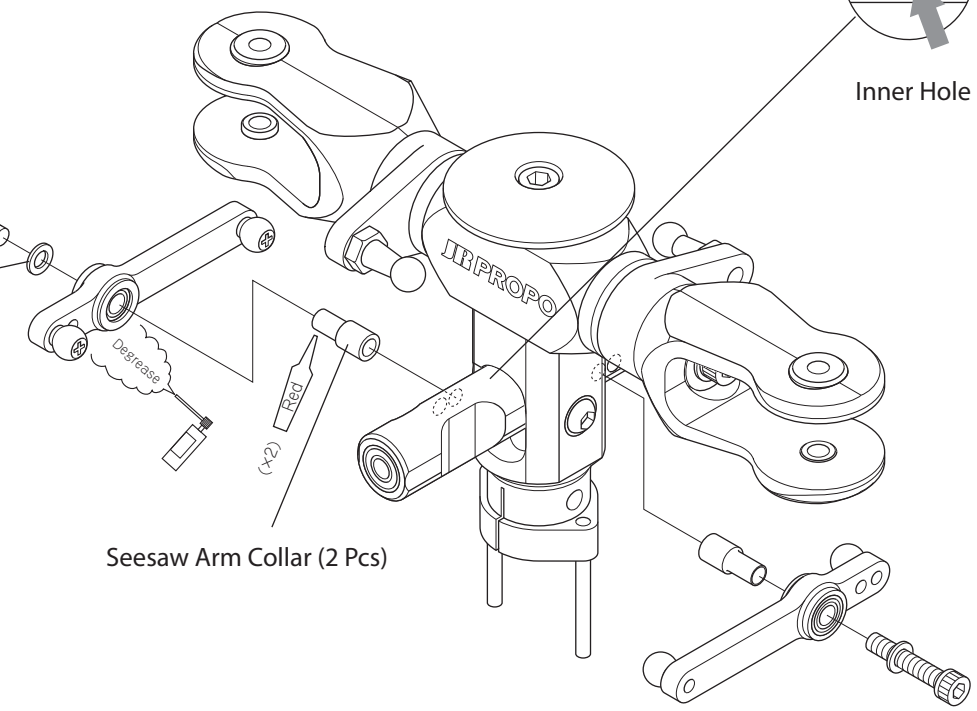
Inner Hole

Socket Head Bolt, M2.6 x 14 (2 Pcs)

Washer, 2.6 x 4.5 x 0.5 (2 Pcs)

Apply a light, even coat of red threadlock to uniformly adhere.

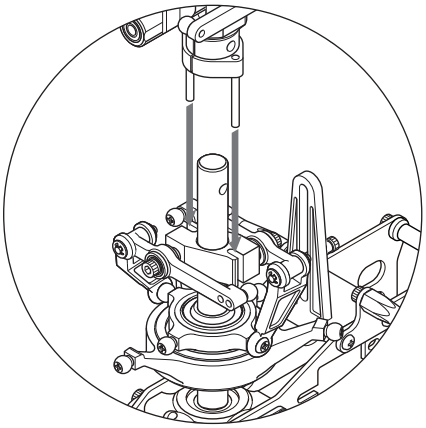




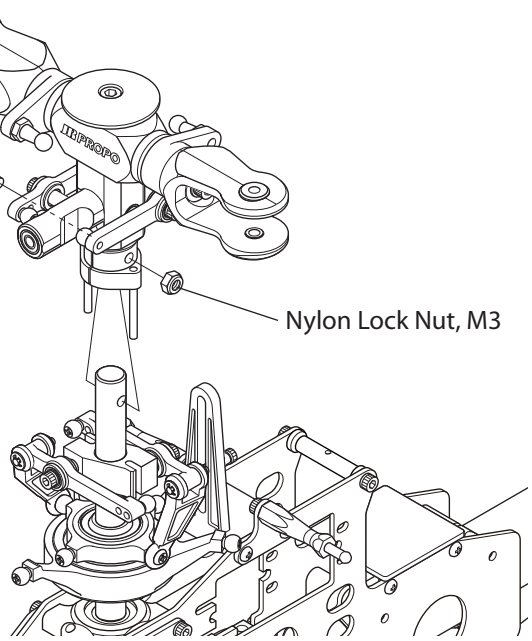
Seesaw Arm Collar (2 Pcs)

4-7 ATTACHING THE MAIN ROTOR HEAD

×1
Specil Socket Head Bolt, M3×18
×1
Nylon Lock Nut, M3



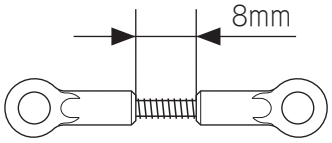
Special Socket Head Bolt, M3 x 18

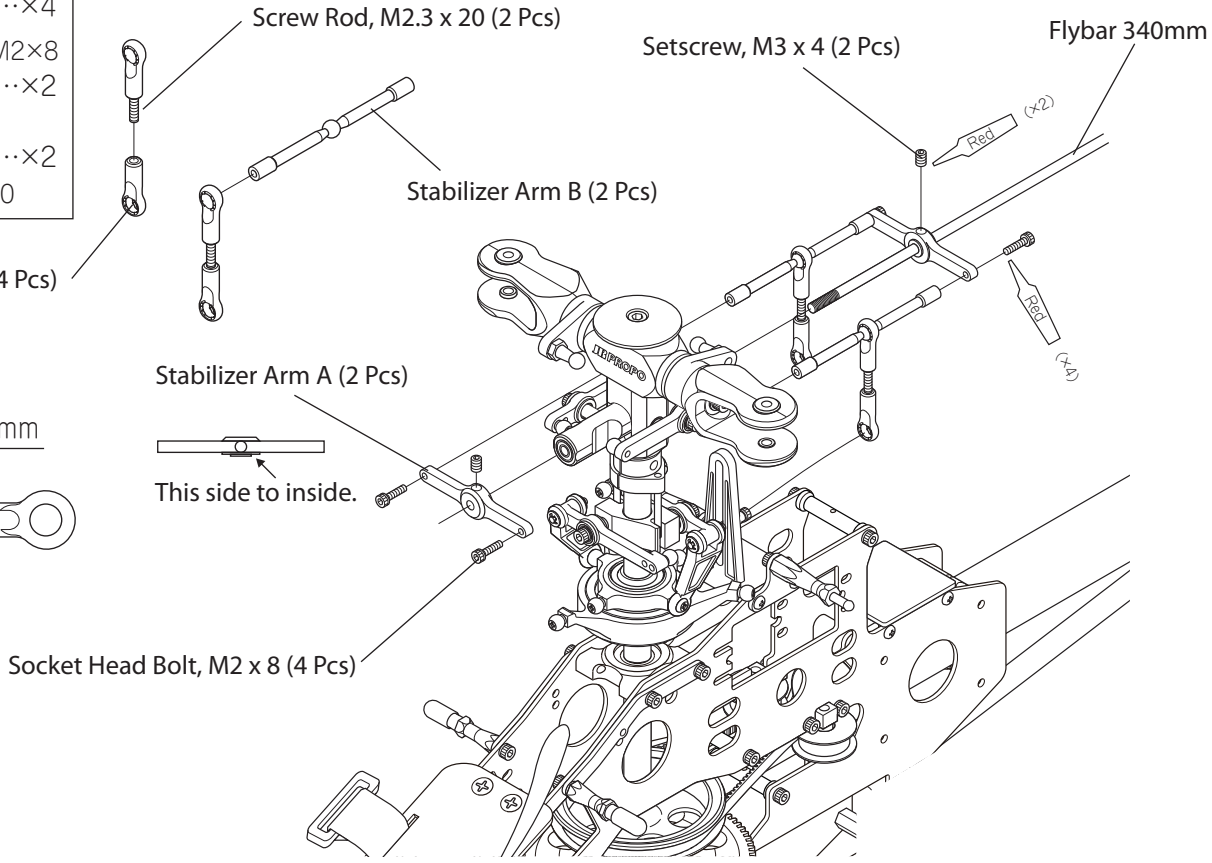


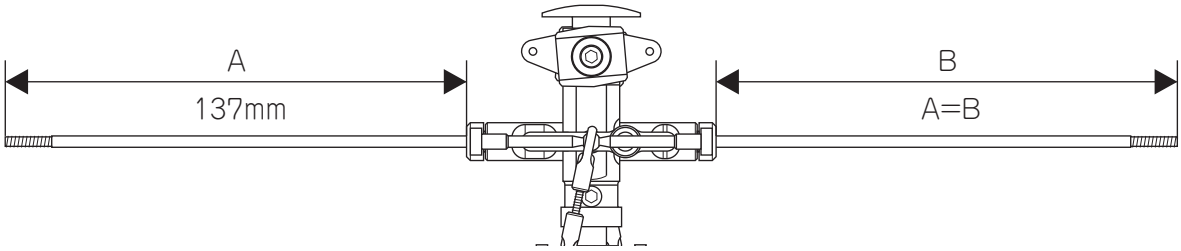
Note: Be certain that the washout pins engage in the slots in the Washout Base to ensure the phase is correct.
Caution: Be certain to check that the washout pins remain in the slots in the Washout Base prior to every flight. If the washout pins are not engaged properly in the Washout Base, the CCPM controls will be out of phase, causing incorrect cyclic response in flight and will potentially cause a crash.

4-8 ATTACHING THE STABILIZER ARM

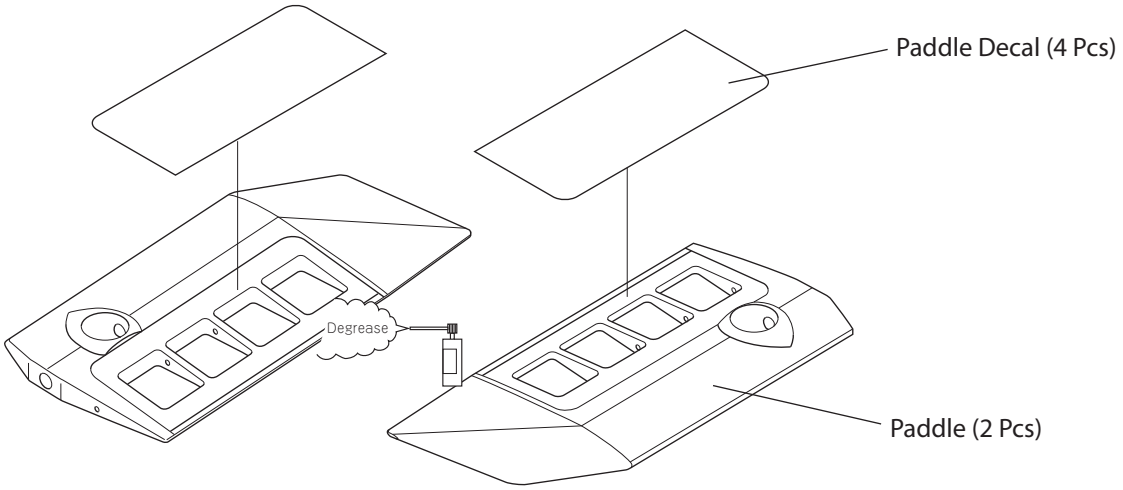
×4
Socket Head Bolt, M2×8
×2
Setscrew, M3×4
×2
Screw Rod, M2.3×20



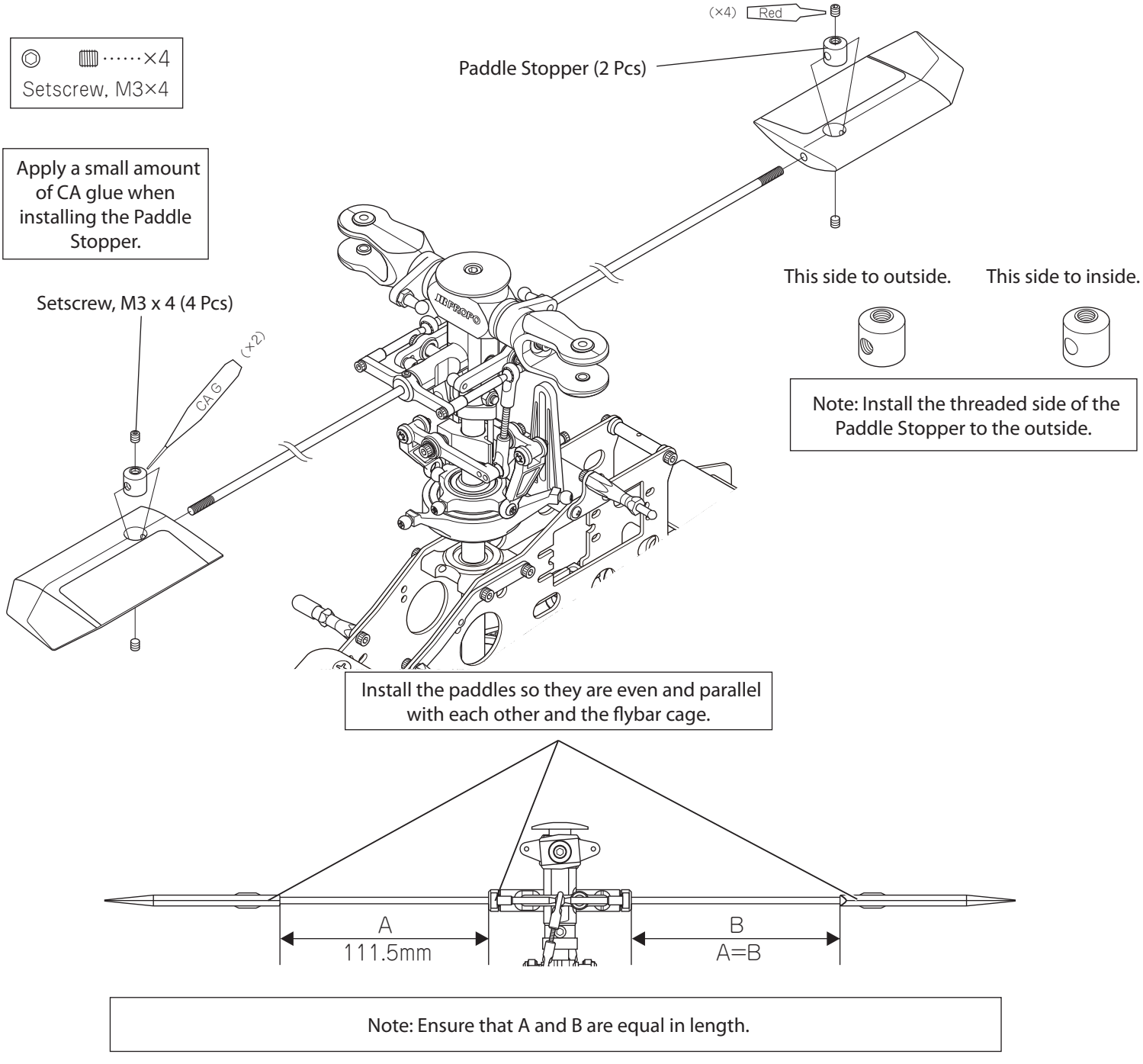




4-9 ATTACHING THE PADDLE DECALS

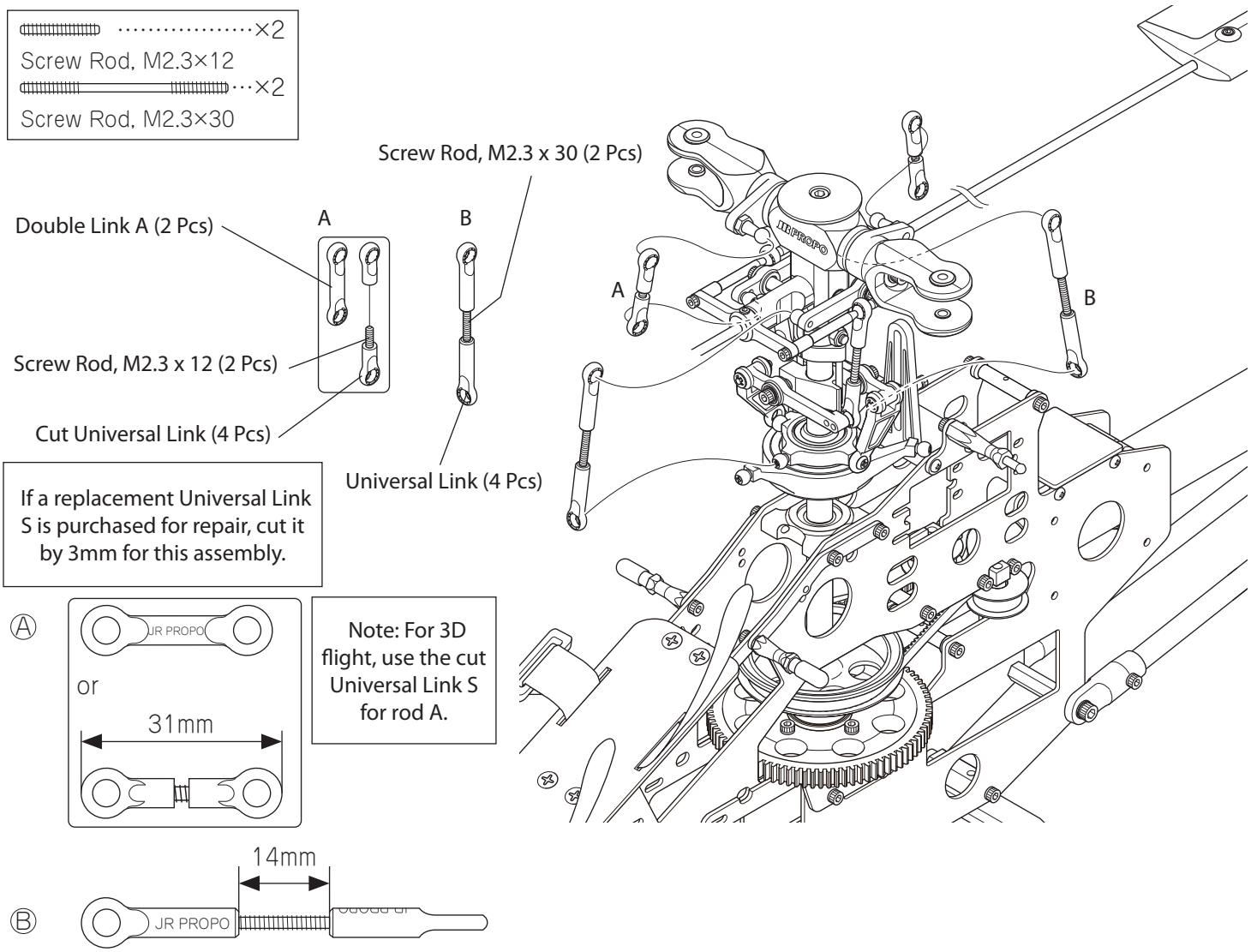


4-10 ATTACHING THE PADDLE



4-11 INSTALLING MAIN ROTOR HEAD LINKAGES

×2
Screw Rod, M2.3×12
×2
Screw Rod, M2.3×30



If a replacement Universal Link S is purchased for repair, cut it by 3mm for this assembly.

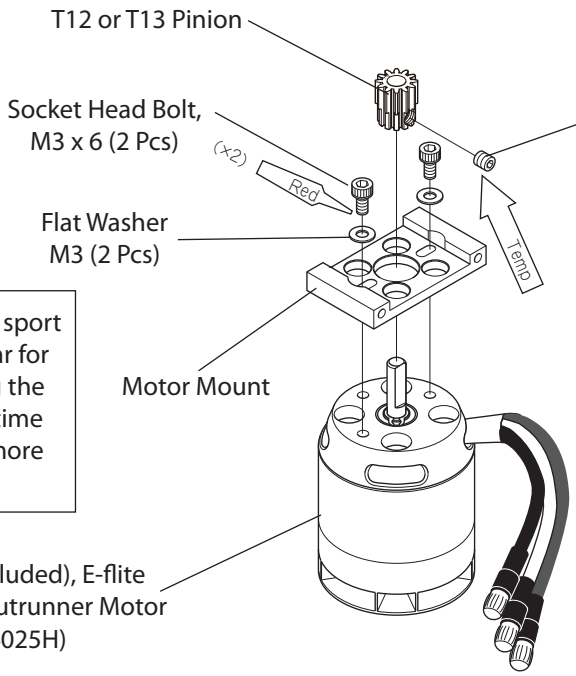
Ⓐ

Note: For 3D flight, use the cut Universal Link S for rod A.

Ⓑ

5-1 ASSEMBLING THE MOTOR AND MOTOR MOUNT

×2
Socket Head Bolt, M3×6
×1
Setscrew, M4×4
×2
Flat Washer, M3

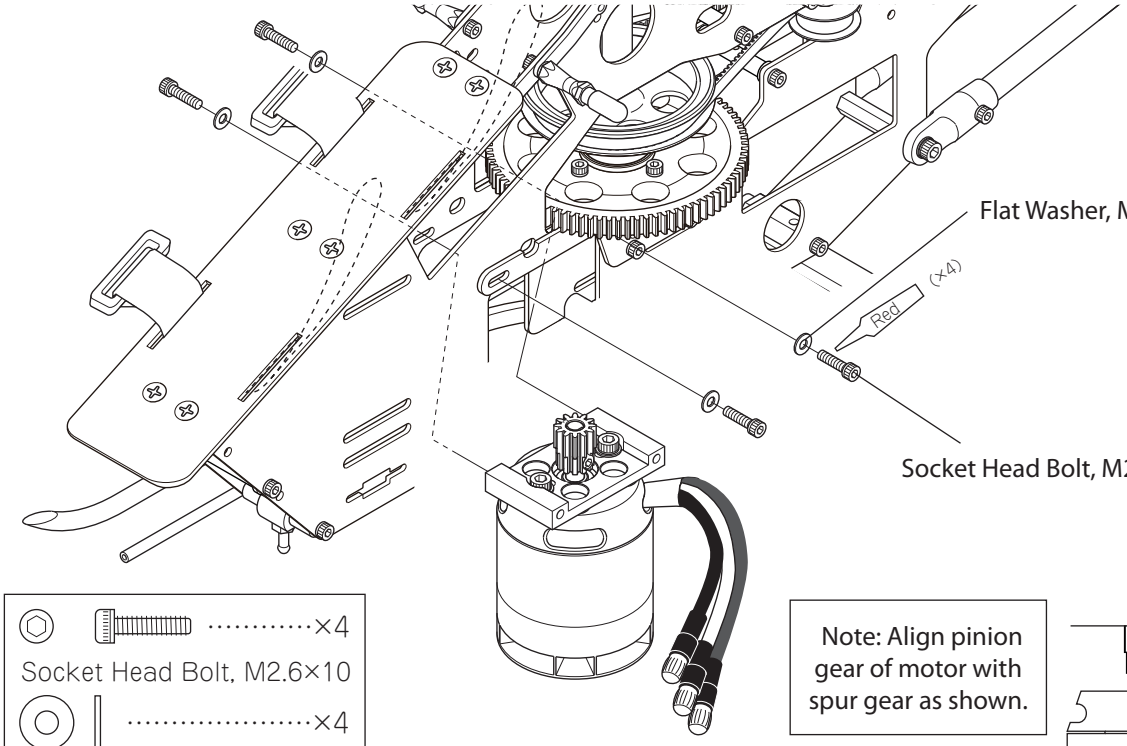


Note: Install the T12 pinion gear for sport 3D flight. Install the T13 pinion gear for aggressive 3D performance. Using the T13 pinion will result in less flight time per charge, but higher power for more aggressive performance.

Note: Do not fully tighten Setscrew, M4 x 4 at this time. Fully tighten later when the proper height position on the Motor Shaft to line up with the Main Gear is determined.

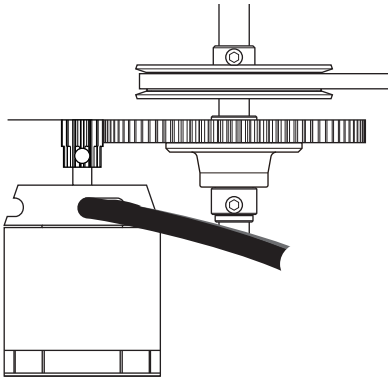
Parts Bags
T12 Pinion ③
T13 Pinion ④

5-2 ATTACHING THE MOTOR



×4
Socket Head Bolt, M2.6×10
×4
Flat Washer, M2.6

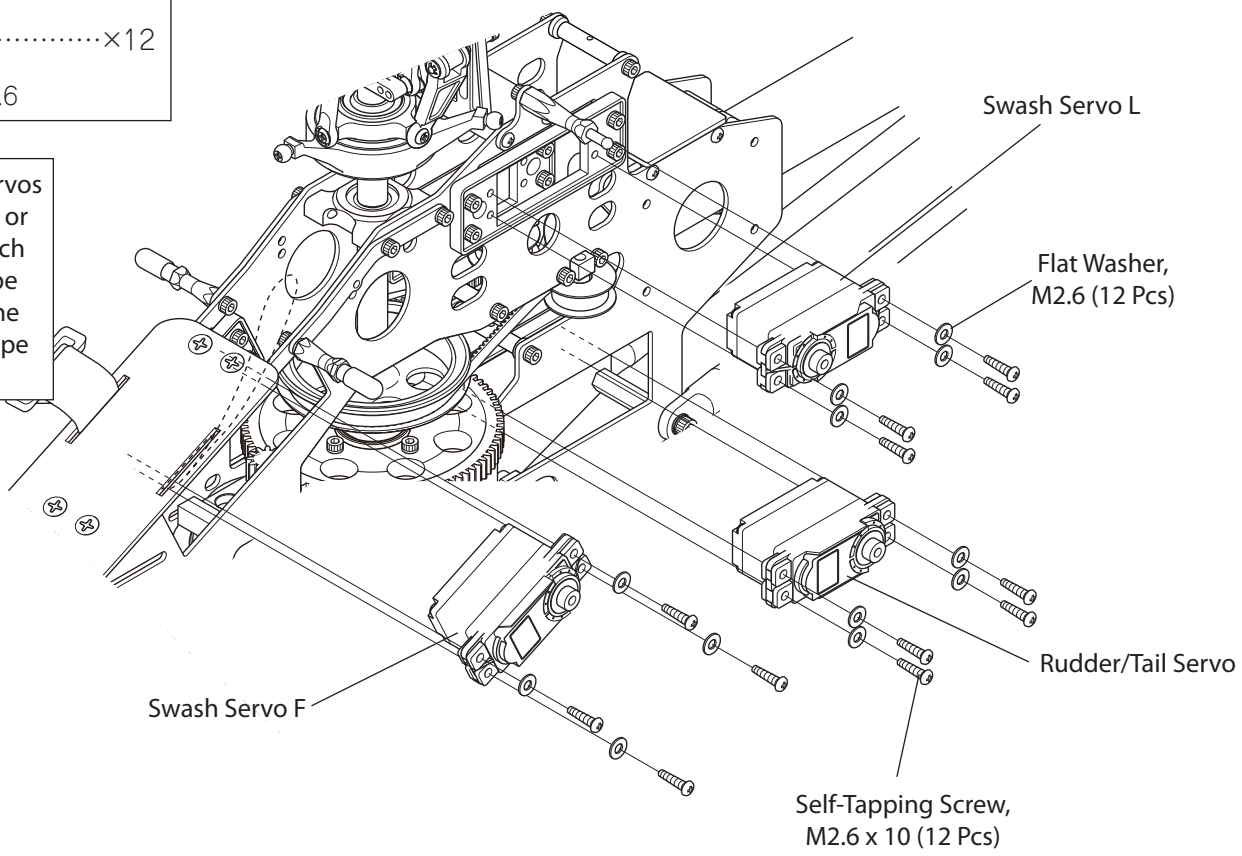
Note: Align pinion gear of motor with spur gear as shown.



5-3A INSTALLING MINI SERVOS PART 1

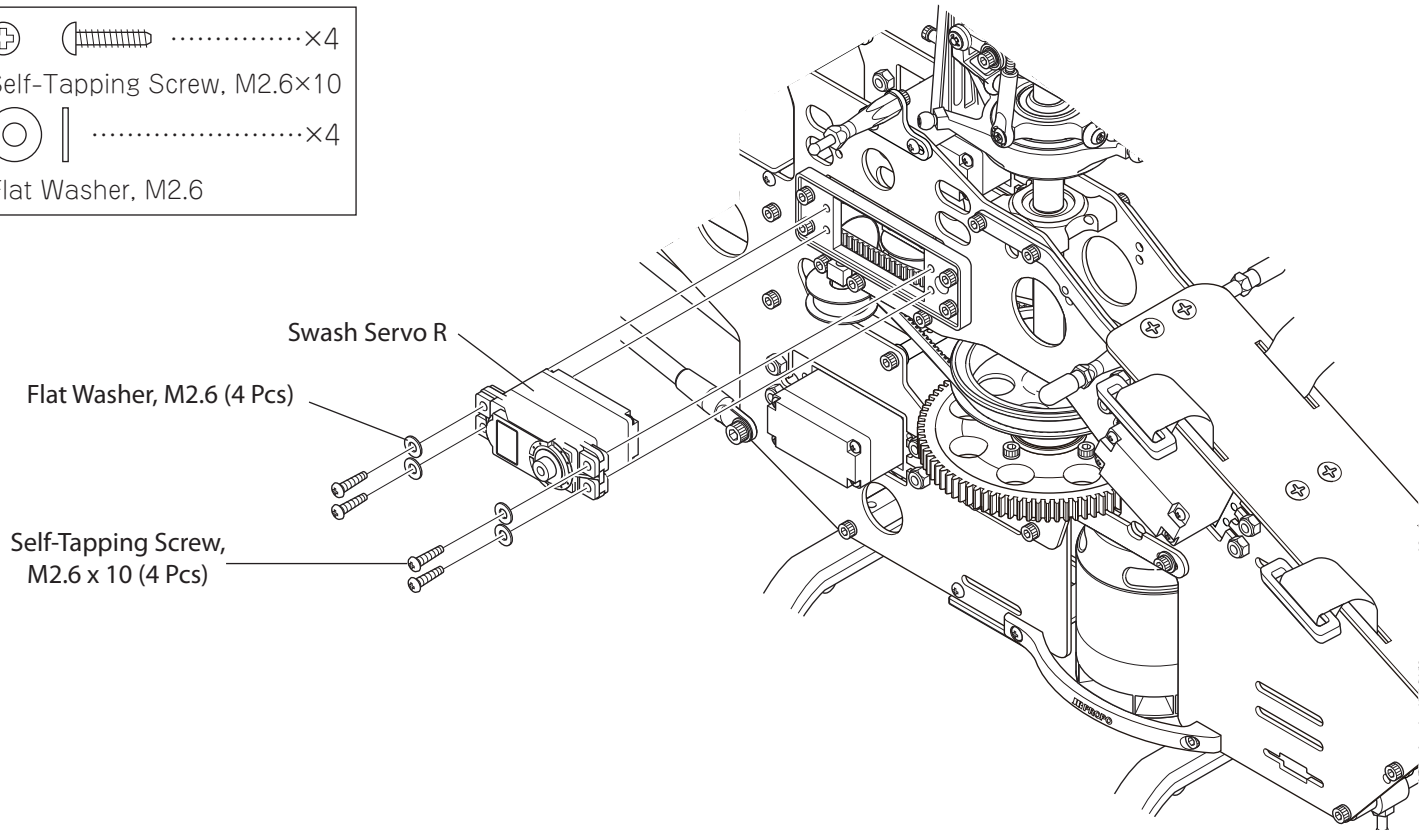
×12
Self-Tapping Screw, M2.6×10
×12
Flat Washer, M2.6

Note: Either Mini Servos such as the DS3517 or Standard Servos such as the DS821 can be installed. Follow the directions for the type you will install.



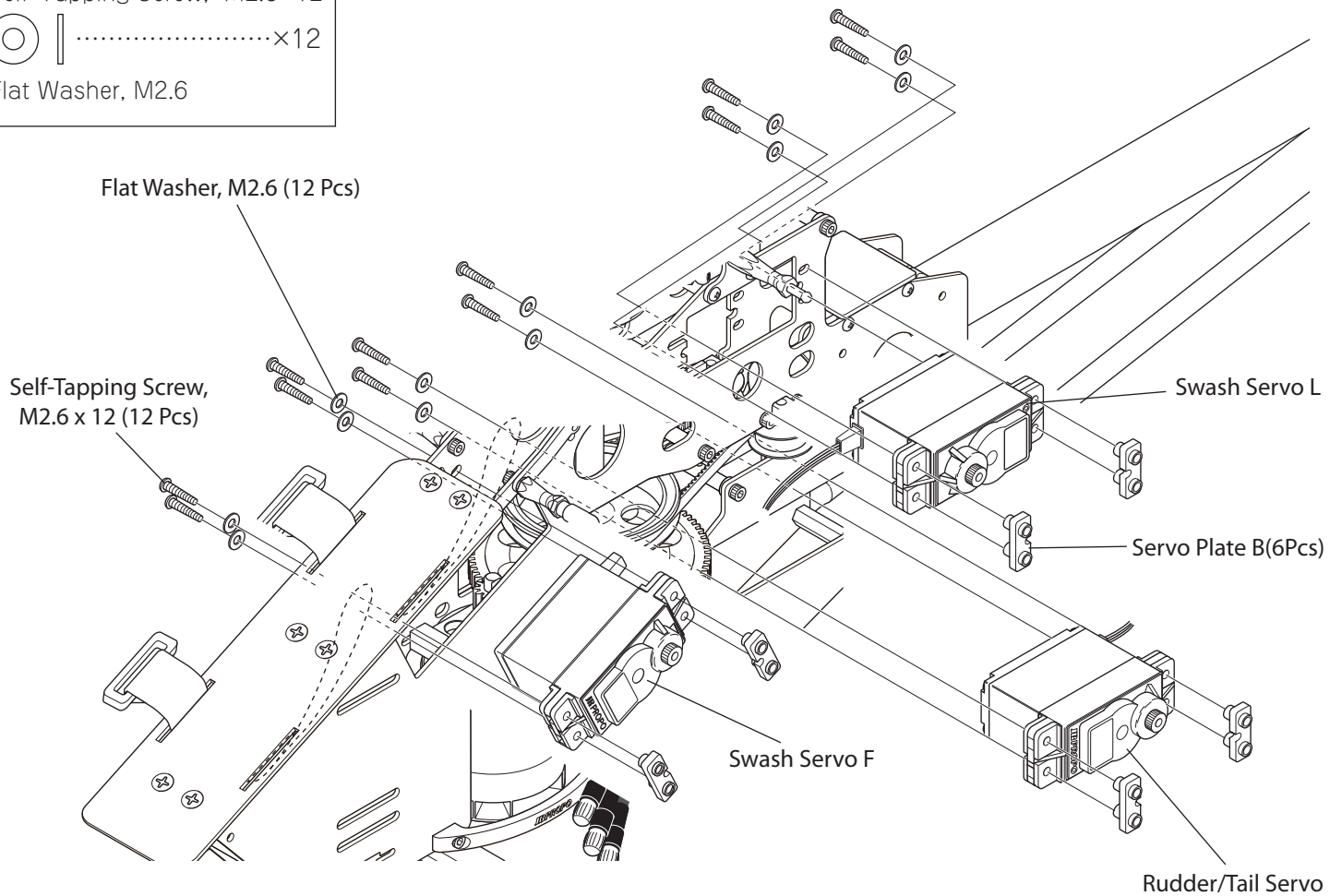
5-3B INSTALLING MINI SERVOS PART 2

×4
Self-Tapping Screw, M2.6×10
×4
Flat Washer, M2.6



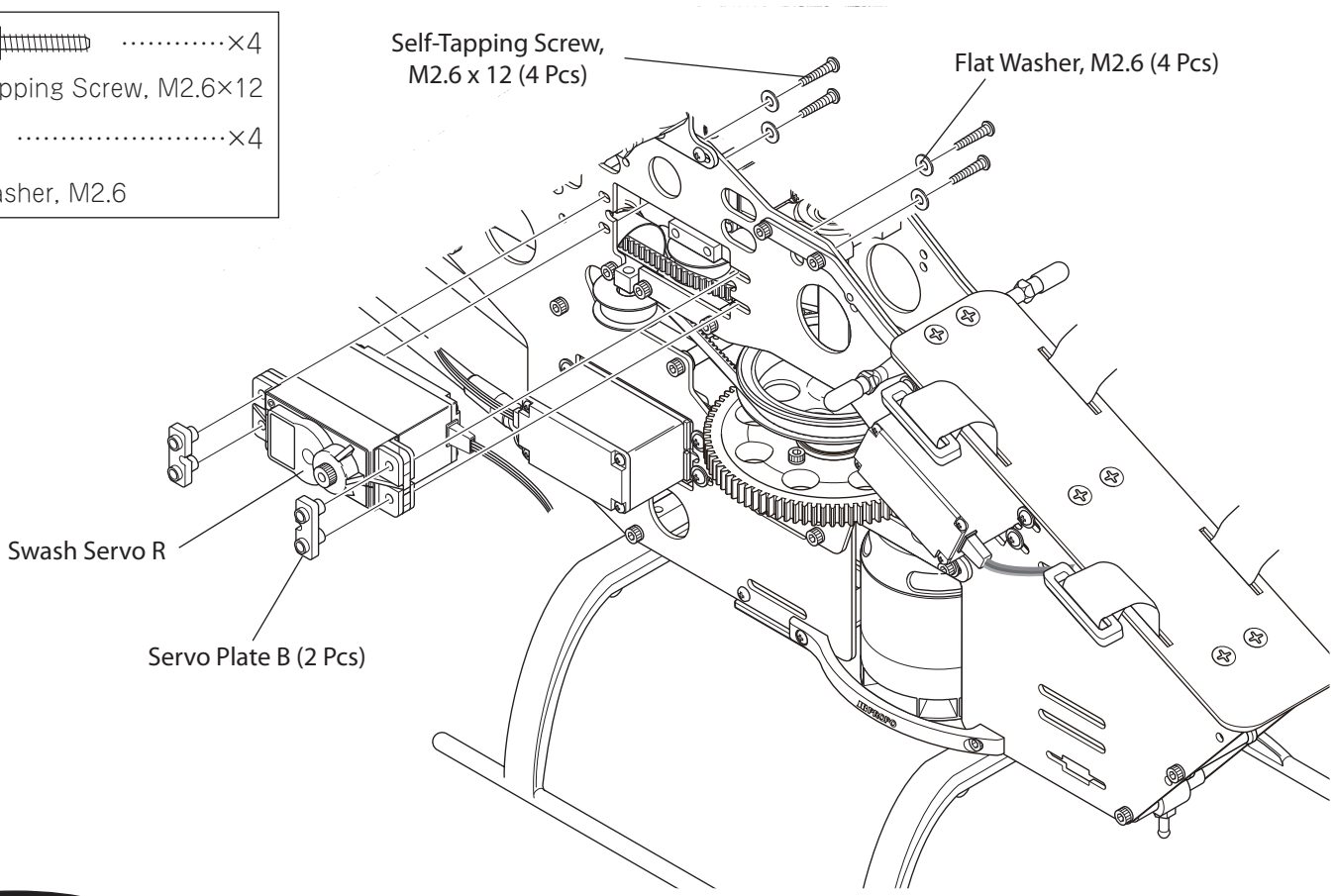
5-4A INSTALLING STANDARD SERVOS PART 1

×12
Self-Tapping Screw, M2.6×12
×12
Flat Washer, M2.6



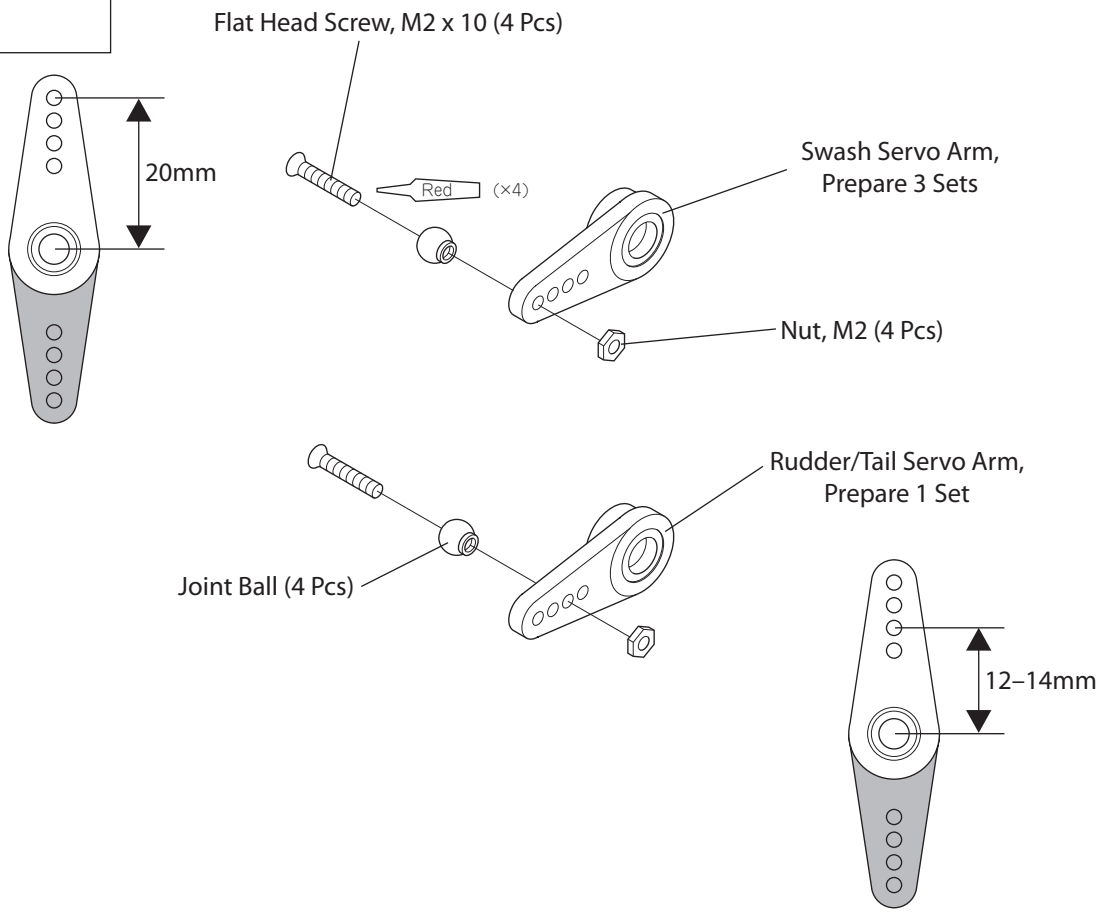
5-4B INSTALLING STANDARD SERVOS PART 2

×4
Self-Tapping Screw, M2.6×12
×4
Flat Washer, M2.6



5-5 PREPARING THE SERVO ARMS

×4
Flat Head Screw, M2×10
×4
Nuts, M2



RADIO SYSTEM PREPARATION

The following preparations are suggested for use with JR® radio systems. However, these procedures are applicable to most other brand radio systems. These suggested adjustments are necessary to ensure correct installation and attachment of the control linkages and servo horns.

TRANSMITTER PREPARATION

1. Set all trim levers, knobs, and switches to the neutral or zero positions.
2. Turn the transmitter power switch to the "On" position.
3. Reset all functions and input values of your computer radio system to the factory preset position.
4. Move the throttle/collective control stick to the center or half stick position. Next slide the throttle trim lever to the full low position.

RECEIVER FLIGHT PACK PREPARATION

1. With the transmitter still on, slide the receiver switch to its "On" position. All servos should move to the neutral or center position.
2. Check that all servos operate with the appropriate control stick.
3. Reset the throttle stick to the center position, making sure the throttle trim is still at low.
4. Turn off the receiver switch first, followed by the transmitter. For proper operation, it's important that the servo horns are positioned on the servos in the "exact" neutral position. Although most computer radio systems offer a sub-trim feature, it is suggested that the servo horns be manipulated on the servos to achieve the "exact" neutral settings.

SERVO HORN INSTALLATION SUGGESTIONS

Since the servo output spline on a JR system has an odd number of teeth (23), it's possible to reposition the servo arm on the servo at 90° intervals to achieve the proper neutral attachment of the servo horn.

Once the correct arm of the servo horn has been established, it's suggested that the remaining unused arms be removed from the servo horn as shown in the installation diagrams in the following section.

It will also be necessary to enlarge the appropriate hole in the servo horn slightly to allow correct installation of the steel control balls to the servo horn.

120 3-SERVO CCPM SWASHPLATE MIXING

The JR® 120° CCPM or Cyclic Collective Pitch Mixing system offers the user a control system that can accomplish the same control inputs as a one-servo standard system, but with increased precision and reduced complexity.

As with the one servo system, the JR CCPM system utilizes three servos for the three main controls: aileron (roll), elevator (pitch), and collective. The CCPM lower swashplate ring is designed with only three control balls, spaced at 120° from each other, hence the 120° CCPM designation. Although the control balls are not at 90° as in the standard system, the aileron (roll) axis is still parallel to the main mechanics of the helicopter, and the elevator (pitch) axis still functions at 90° to the mechanics as does the one-servo system.

The main difference in the way that these two systems operate is that unlike the one servo system where the three servos work completely independently from each other, the CCPM systems work as a team to achieve the same control inputs. For example, if an aileron (roll) input is given, two servos work together to move the swashplate left and right. If an elevator (pitch) input is given, all three servos work together to move the swashplate fore and aft. For collective, it's also the strength of three servos that will move the swashplate up and down the main rotor shaft. With two or three servos working at the same time during any given control input, servo torque is maximized and servo centering is also increased. In addition to these benefits, CCPM achieves these control responses without the need for complex mechanical mixing systems that require many more control rods and parts to set up.

This amazing CCPM control is achieved through special CCPM swashplate mixing that is preprogrammed into many of today's popular radio systems. Since the 120° CCPM function is preprogrammed, CCPM is no more complicated to set up than a conventional one-servo standard system. When you factor in the reduced parts count and easy programming, CCPM is actually easier to set up and operate than many conventional systems.

For JR radio owners, please refer to the radio information contained at the front of this manual or on the following pages to determine if your radio system has the CCPM function. For other brands of radio systems, please contact the radio manufacturer for CCPM information. Please note that it is not possible to program a non-CCPM radio system for CCPM operation.

UNDERSTANDING CCPM CONTROL SYSTEMS

The JR 120° three servo CCPM relies on the radio's special CCPM swashplate mixing, rather than a conventional mechanical mixer that is utilized to achieve the same results.

The radio's 120° 3-servo CCPM function automatically mixes the three servos to provide the correct mixing inputs for aileron (roll), elevator (pitch), and collective. The following is an example of how each control input affects the servo's movement.

1. COLLECTIVE

When a collective pitch input is given, all three servos move together in the same direction, at equal amounts, to raise and lower the swashplate while keeping the swashplate level. During this function, all three servos travel at the same value (100%) so that the swashplate can remain level during the increase and decrease in pitch. As mentioned, this mixing of the three servos is achieved through the radio's CCPM program.

2. ELEVATOR (PITCH)

When an elevator input is given, all three servos must move to tilt the swashplate fore and aft, but their directions vary. The servos move together in the same direction, while the rear swashplate servo moves in the opposite direction. For example, when a down elevator (forward cyclic) command is given, the front swashplate servos will move the swashplate down, while the rear swashplate servo moves so that the swashplate will tilt forward. During this function with 120° CCPM, the rear swashplate servo travels at 100%, while the front swashplate servos travel at 50% (1/2 the travel value). This difference in travel is necessary due to the fact that the position of the 120 CCPM rear control ball is two times the distance of the two front control ball positions as measured from the center of the swashplate.

3. AILERON (ROLL)

When an aileron (roll) input is given, the front swashplate servos travel in opposite directions, while the rear swashplate servo remains motionless, such as, when a right aileron command is given.

IMPORTANT CCPM PROGRAMMING DO'S AND DON'TS

A. TRAVEL ADJUST

It is extremely important that the travel adjustment values for the three CCPM servos (aileron, elevator and Aux1) be initially set to exactly the same travel value. If the travel value is not similar for each servo, it will create unwanted pitching and rolling of the swashplate during collective pitch inputs. The travel values for each servo will be adjusted in the final radio setup to remove any minor pitch and roll coupling during pitch, roll and collective movements.

Minor travel value adjustments are necessary due to slight variations in servo travel and centering. Although the three servos may appear to travel at the same amounts in each direction, in reality the servos can vary slightly. This variation is more common in analog-type servos. If JR's new digital servos are used, the travel adjustment values will generally not need to be altered.

B. SERVO REVERSING

It is also extremely important that the servo reversing directions for the three CCPM servos (aileron, elevator, Aux 1) be set as indicated in the upcoming radio programming steps. If one or more servos is not set to the correct direction, the CCPM function will be out of synchronization, and the three control functions (Aileron, Elevator, Collective) will not move properly. In the event that a control surface is working in the wrong direction, the control function can only be reversed by changing the desired CCPM value for that function from a (+) to a (-) value or vice versa.

> *Example: If when you increase the collective pitch, the pitch of the main blades actually decreases, it will be necessary to access the CCPM function and change the travel value for this function from (+) to (-), or (-) to (+). This will reverse the direction of the collective pitch function without affecting the movement of the aileron and elevator functions.*

C. CCPM SERVO CONNECTIONS

The JR® 120° CCPM system requires the use of three servos to operate Aileron, Elevator and Aux1(Pitch). The labeling of these servos can become quite confusing because, with the CCPM function, the three servos no longer work independently, but rather as a team, and their functions are now combined. For this reason, we will refer to the three servos in the following manner:

Elevator Servo: This is the front CCPM servo. The channel number for this servo when using a JR radio is CH3.

Aileron Servo: This is the top left CCPM servo. The channel number for this servo when using a JR radio is CH2.

Aux 1 (Pitch) Servo: This is the right CCPM servo. The channel number for this servo when using a JR radio is CH6.

Please refer to the CCPM connections chart below for clarification. For non-JR radios, please consult your radio instructions for proper connection.

CCPM SOFTWARE INITIAL ADJUSTMENTS

RADIO SYSTEM REQUIREMENTS (NOT INCLUDED)

6-channel or greater RC helicopter system with 120° CCPM function

CCPM-Ready JR Radio Systems

Most current JR and Spektrum heli radio systems (12X, X9303 2.4, XP9303, DX7se, DX7, DX6i, as well as older 10 series systems) are equipped with 120° CCPM electronics for use with JR CCPM machines. Radios you may be flying now, like the X347, X388S, XP783 and XP8103 have 120° CCPM capability built in but require activation by the Horizon Service Department. Please call 877-504-0233 for details.

**Please note that many XP8103 systems have the CCPM function already activated. Please check with the Horizon Service Center for details.*

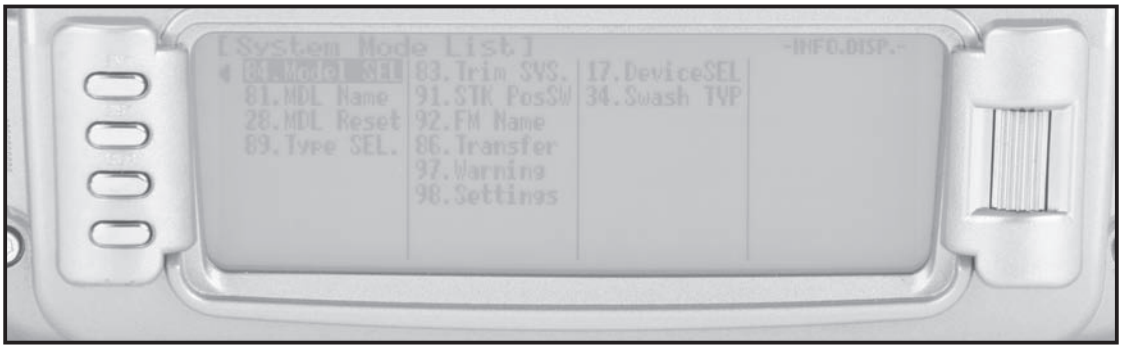
JR 12X PROGRAMMING

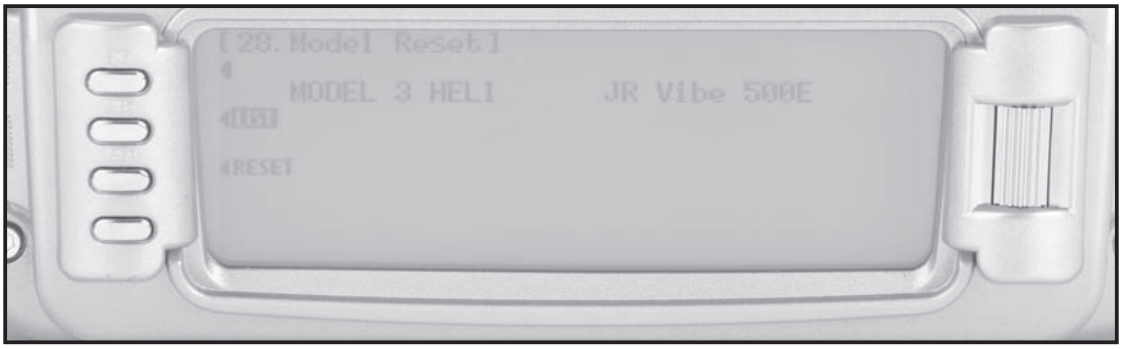
The following activation and setup procedure should be used for JR 12X systems. Prior to activating the CCPM function, it is first suggested that the data reset function be performed to reset the desired model number to be used back to the factory default settings.

Caution: Prior to performing the data reset function, it will be necessary to select the desired model number to be used.

A) Model Select/Data Reset

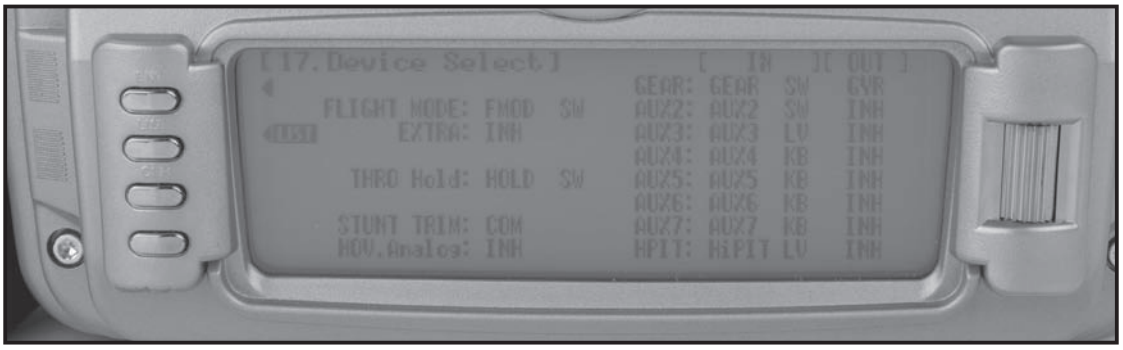
Press the ENT key while turning the power switch on to enter the system mode. Next, move the cursor to the MODEL SEL function. Press the roll selector to enter the model select function. Select the desired model number to be used, then press the roll selector. Next, move the roll selector to highlight LST, and press the roll selector. Move the roll selector to highlight MDL RESET, then press the roll selector. Press the CLEAR key, then press YES to reset the data of the current model selected.





B) Device Select

Move the roll selector to highlight the Device SEL function, then press the roll selector to access the Device Select function. Next, move the cursor to the OUT: column in the GEAR row and select the GYR setting.

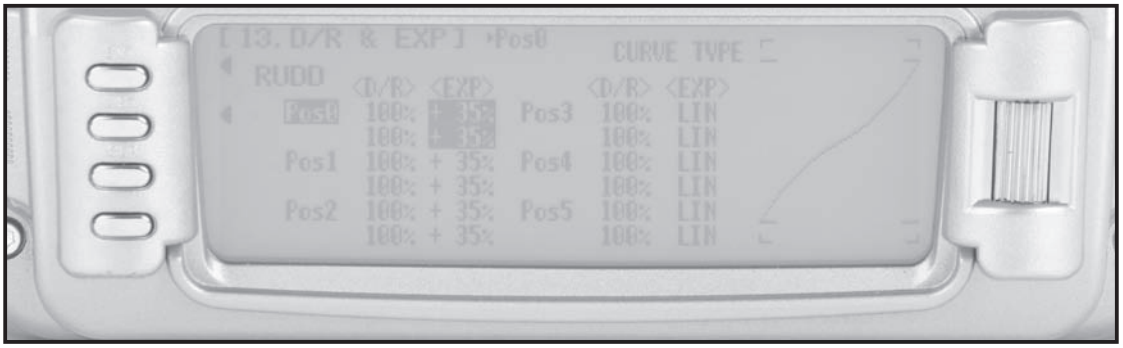


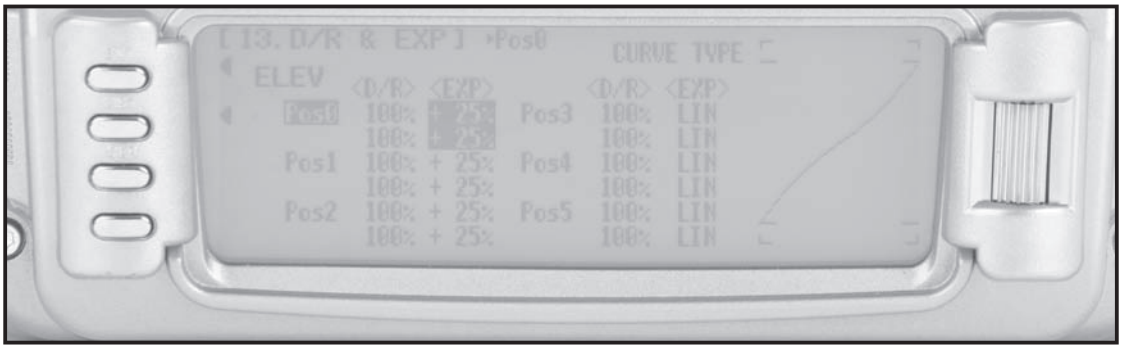
C) CCPM Activation

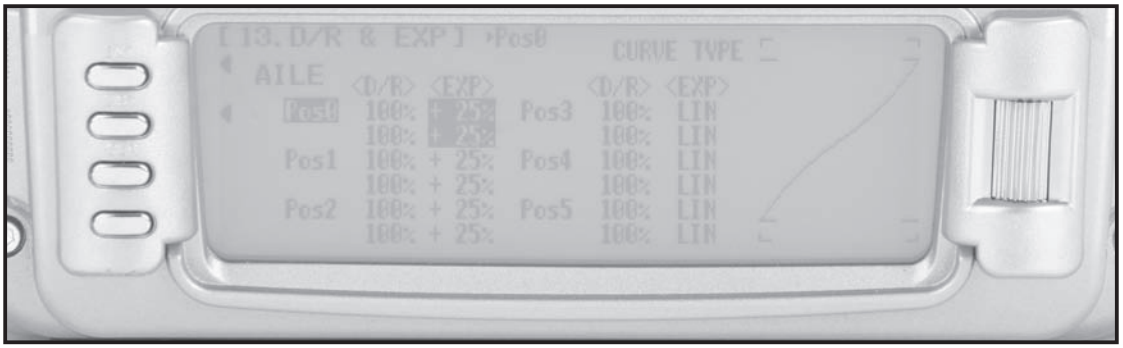
Move the roll selector to highlight the SWASH TYP function, then press the roll selector to access the swashplate type function. Press the roll selector to access the variations of CCPM mixing, then move the roll selector to select the CCPM type (120). Move the roll selector to highlight LST and press the roll selector to exit the system mode.

D) D/R and EXPO Selection

Turn the power switch on, then press the ENT key to enter function mode. Move the roll selector to highlight the D/R and EXPO function, then press the roll selector to enter the function. Set the Dual Rate and Expo values as desired, below are suggested settings. Press the LST key to return to the menu.

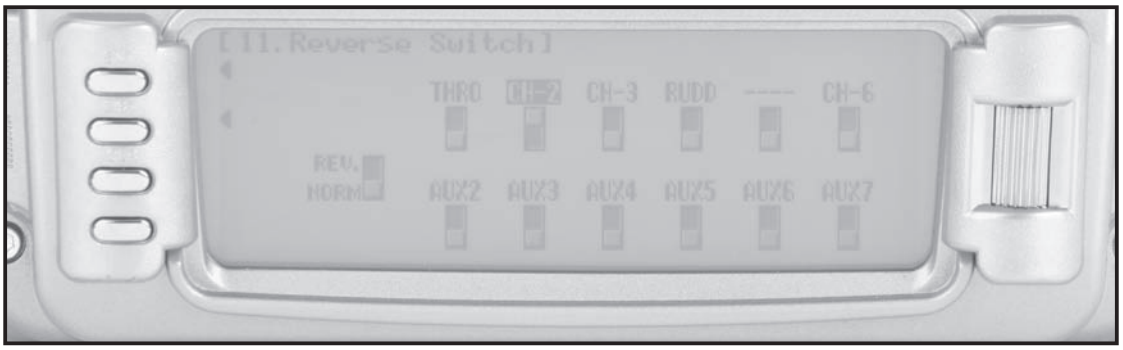






E) Servo Reversing

Move the roll selector and highlight REV.SW on the screen, then press the roll selector to enter the function. Next, reverse channel 2 by moving the roll selector, and pressing as needed to change from NORM to REV. Press the LST key to return to the menu.



F) Travel Adjustment

Move the roll selector until TRVL ADJ is highlighted on the screen, then press the roll selector to enter the function. Adjust the values as shown by moving the roll selector to highlight the desired channel, while using the control stick to select up/down, or left/right values to be adjusted. Please note that the required travel values will vary based on the type of servo selected. Press the LST key to return to the menu.

G) CCPM Settings

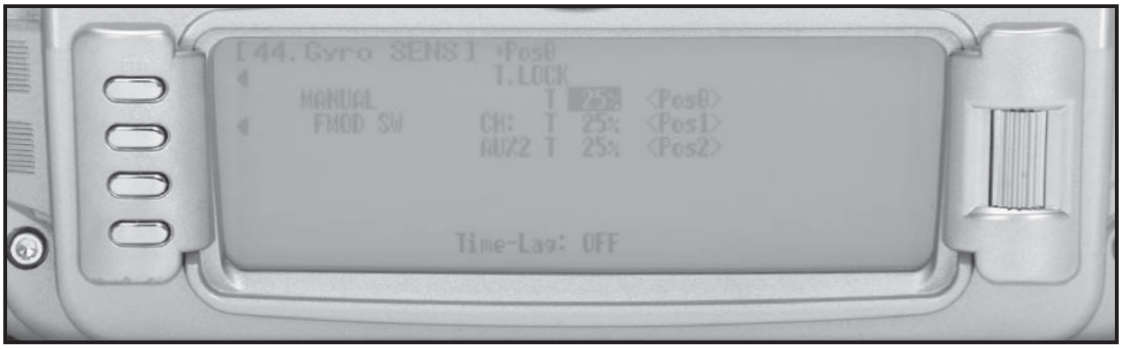
Move the roll selector to highlight the SWASH MIX function, then press the roll selector to enter the function. Set the value of the aileron, elevator, and pitch functions from the factory default setting using the rolling selector. Press the LST key to return to the menu.

H) Throttle Hold Setting

Move the roll selector to highlight the THRO HOLD function, then press the roll selector to enter the function. Activate the throttle hold function. Set the hold position in this function so that when the throttle hold switch is pulled, the motor does not run with the throttle stick at idle and throttle trim set at the idle position. Press the LST key to return to the menu.

I) Gyro Sensitivity Selection

Move the roll selector to highlight the GYRO function, then press the roll selector to enter the function. Set the gyro gain as shown as a starting point for the G770 3D gyro. Adjust the percentage as necessary when flying the heli. Other gyros may require different settings, consult your gyro manual for further information on setting the gain. Press the LST key to return to the menu.



J) Mix to Throttle

Move the roll selector to highlight the MIX -> THRO function, then press the roll selector to enter thefunction. Begin by selecting SW SEL for both Aileron to Throttle and Elevator to Throttle, and set to on when in ST-1 and ST-2. Set the Aileron to Throttle and Elevator to Throttle mixing as shown. This function is used to prevent the head speed from sagging during aerobatics. Adjust these values as needed in flight. This function is not required if using a governor. Press the LST key to return to the menu.

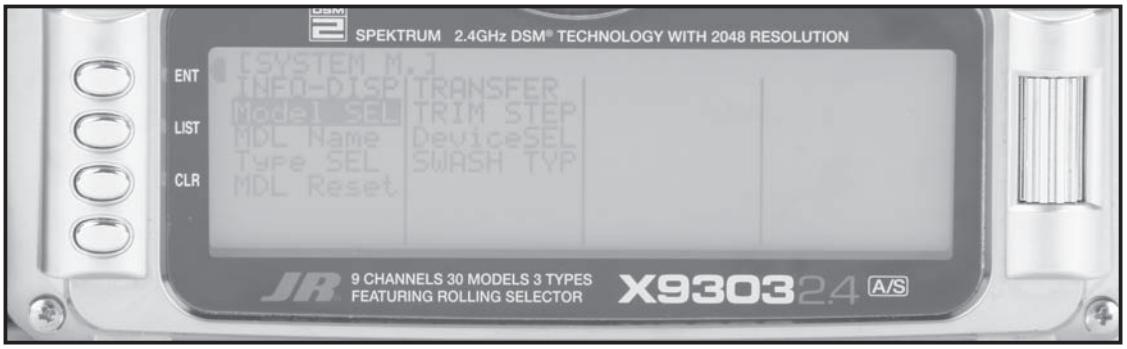
JR X9303 2.4 AND XP9303: PROGRAMMING

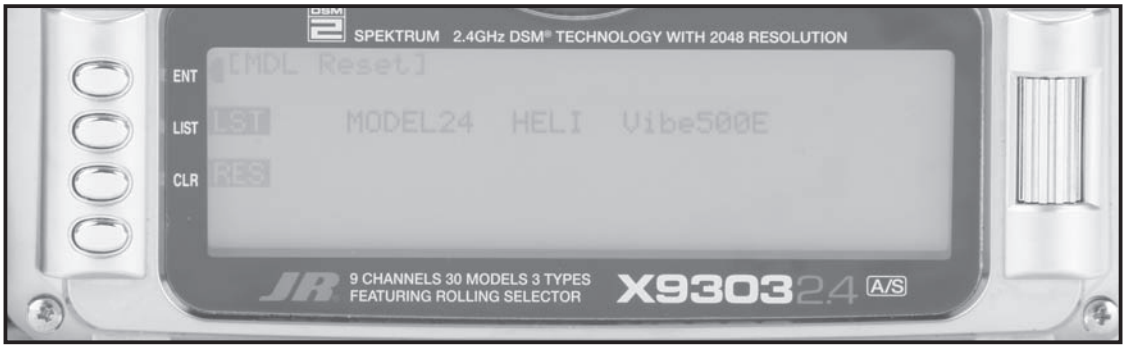
The following activation and setup procedure should be used for the JR 9303 systems. Prior to activating the CCPM function, it is first suggested that the data reset function be performed to reset the desired model number to be used back to the factory default settings.

Caution: Prior to performing the data reset function, it will be necessary to select the desired model number to be used.

A) Model Select/Data Reset

Press the ENT key while turning the power switch on to enter the system mode. Next, move the cursor to the MODEL SEL function. Press the roll selector to enter the model select function. Select the desired model number to be used, then press the roll selector. Next, move the roll selector to highlight LST, and press the roll selector. Move the roll selector to highlight MDL RESET, then press the roll selector. Press the CLEAR key, then press YES to reset the data of the current model selected.





B) Device Select

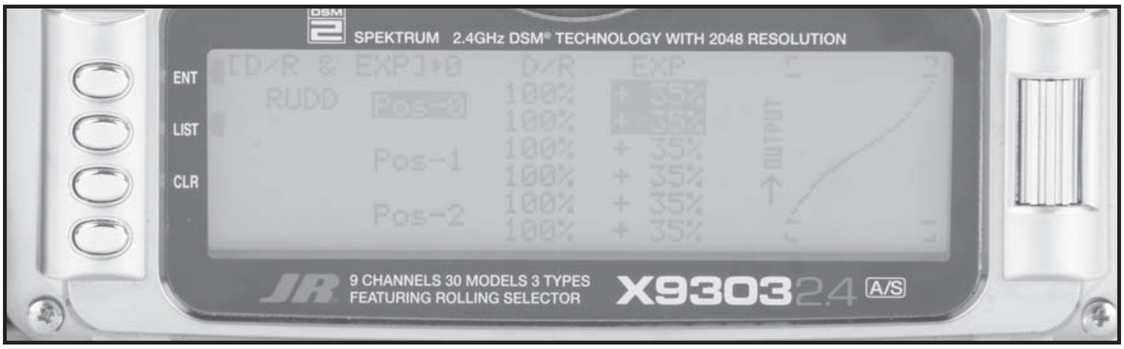
Move the roll selector to highlight the Device SEL function, then press the roll selector to access the Device Select function. The GYR setting for channel AUX2 will be set when the gyro function is activated in a following step. Note: When using a 6-channel receiver, it will be necessary to use the travel adjust function or a program mix to set the Gyro gain instead of the built-in Gyro function.

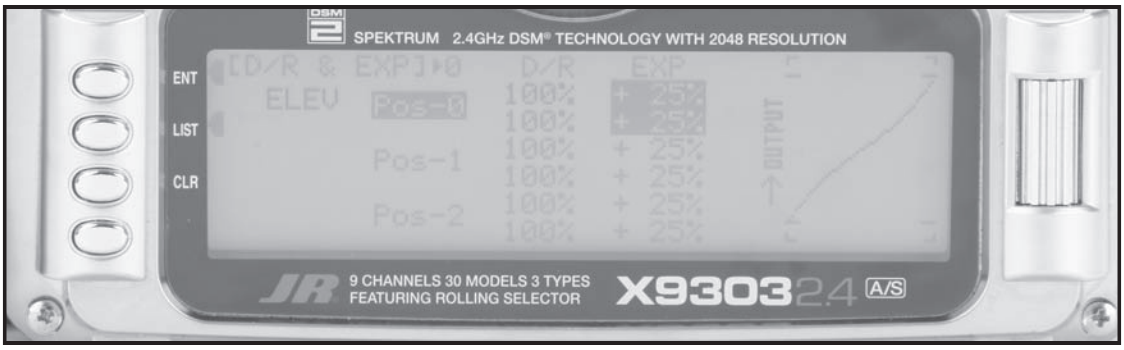
C) CCPM Activation

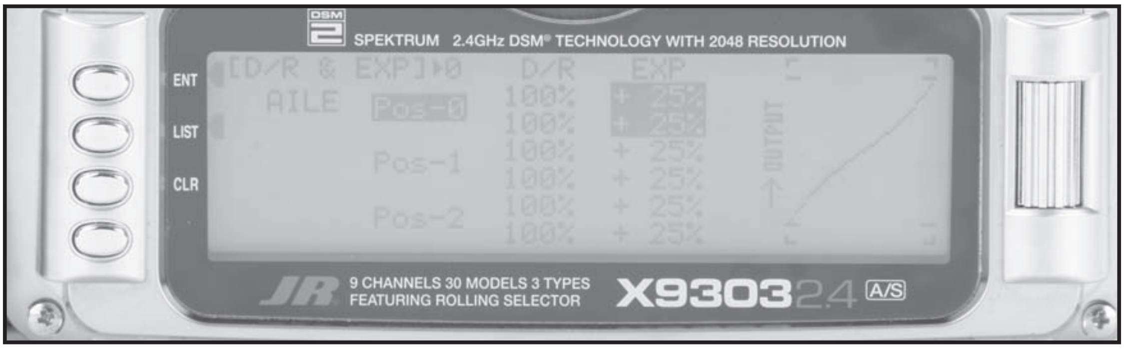
Move the roll selector to highlight the SWASH TYP function, then press the roll selector to access the swashplate type function. Press the roll selector to access the variations of CCPM mixing, then move the roll selector to select the desired CCPM type (120). Move the roll selector to highlight LST and press the roll selector to exit the system mode.

D) D/R and EXPO Selection

Turn the power switch on, then press the ENT key to enter function mode. Move the roll selector to highlight the D/R and EXPO function, then press the roll selector to enter the function. Set the Dual Rate and Expo values as desired (below are suggested settings). Press the LST key to return to the menu.

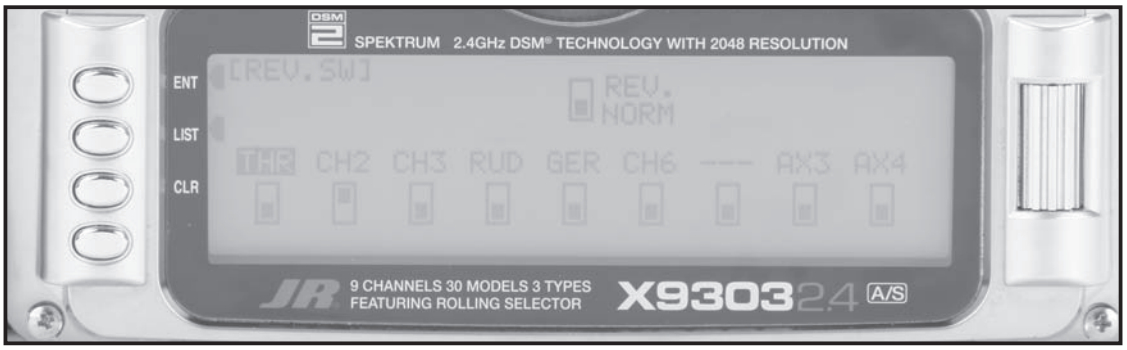






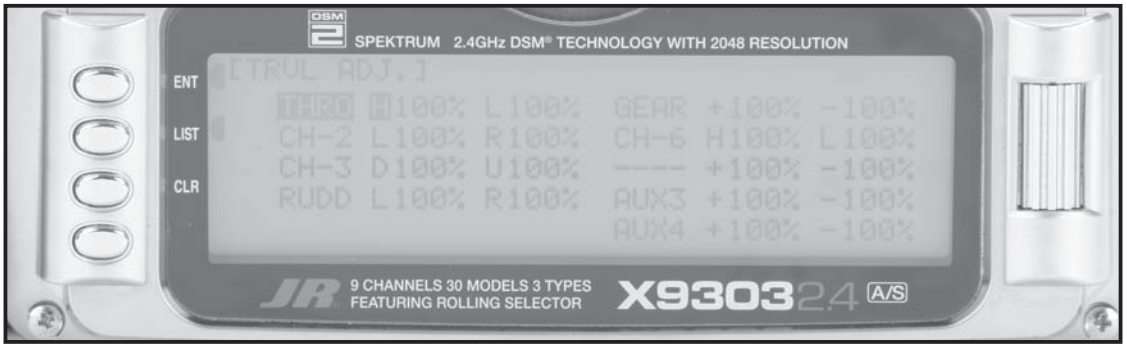
E) Servo Reversing

Move the roll selector and highlight REV.SW on the screen, then press the roll selector to enter the function. Next, reverse channel 2 by moving the Roll selector, and pressing as needed to change from NORM to REV. Press the LST key to return to the menu.



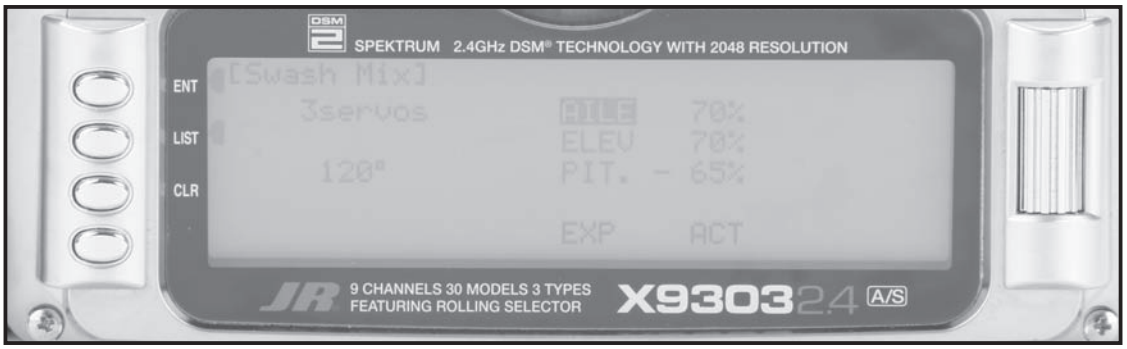
F) Travel Adjustment

Move the roll selector until TRVL.ADJ is highlighted on the screen, then press the roll selector to enter the function. Adjust the values as shown by moving the roll selector to highlight the desired channel, while using the control stick to select up/down, or left/right values to be adjusted. Please note that the required travel values will vary based on the type of servo selected. Press the LST key to return to the menu.



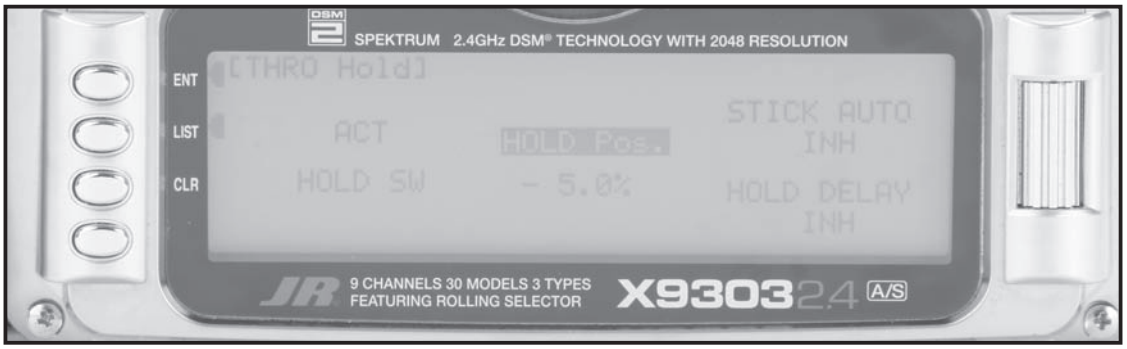
G) CCPM Settings

Move the roll selector to highlight the SWASH MIX function, then press the roll selector to enter the function. Set the value of the aileron, elevator, and pitch functions from the factory default setting using the + and - keys. Press the LST key to return to the menu.



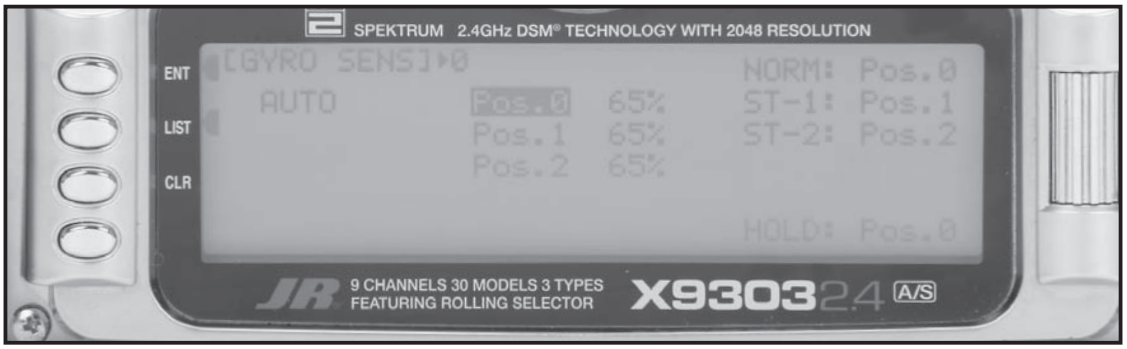
H) Throttle Hold Setting

Move the roll selector to highlight the THRO HOLD function, then press the roll selector to enter the function. Activate the throttle hold function. Set the hold position in this function so that when the throttle hold switch is pulled, the motor does not run with the throttle stick at idle and throttle trim set at the idle position. Press the LST key to return to the menu.



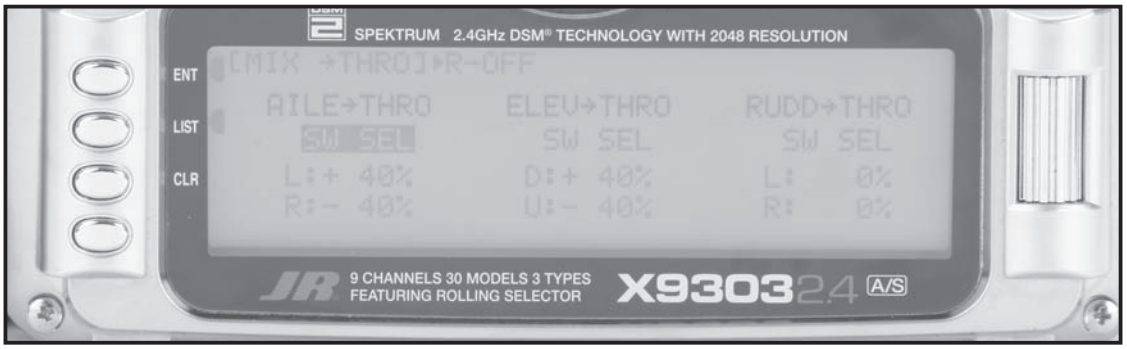
I) Gyro Sensitivity Selection

Move the roll selector to highlight the GYRO function, then press the roll selector to enter the function. Set the gyro gain as shown as a starting point for the G770 3D gyro. Adjust the percentage as necessary when flying the heli. Other gyros may require different settings; consult your gyro manual for further information on setting the gain. Press the LST key to return to the menu. Note: When using a 6-channel receiver, it will be necessary to use the travel adjust function or a program mix to set the Gyro gain instead of the built in Gyro function.



J) Mix to Throttle

Move the roll selector to highlight the MIX -> THRO function, then press the roll selector to enter the function. Begin by selecting SW SEL for both Aileron to Throttle and Elevator to Throttle, and set to on when in ST-1 and ST-2. Set the Aileron to Throttle and Elevator to Throttle mixing as shown. This function is used to prevent the head speed from sagging during aerobatics. Adjust these values as needed in flight. This function is not required if using a governor. Press the LST key to return to the menu.



JR 7202 AND SPEKTRUM DX7se AND DX7: PROGRAMMING

The following activation and setup procedure should be used for the JR 7202, Spektrum DX7se and DX7 systems. Prior to activating the CCPM function, it is first suggested that the data reset function be performed to reset the desired model number to be used back to the factory default settings.

Caution: Prior to performing the data reset function, it will be necessary to select the desired model number to be used.

A) Model Select/Data Reset

Press the Down and Select keys while turning the power switch on to enter the system mode. Next, move the cursor to the MODEL SEL function with the UP key. Select the desired model number to be used with the increase or decrease key. Next, press the UP key until MODEL RESET is displayed. Press the CLEAR key, then press YES to reset the data of the current model selected.

B) CCPM Activation

Press the UP key until the SWASH TYPE function is displayed, then press the INCREASE key to select 120 CCPM type as shown.

C) Input Select function

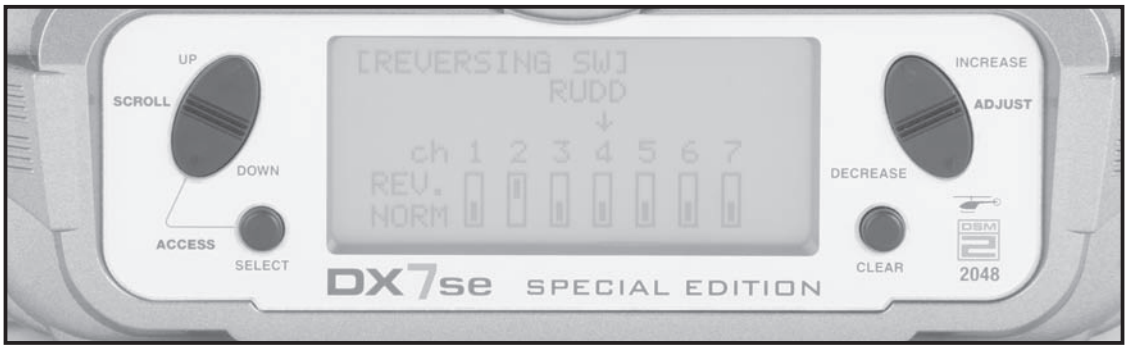
Press the DOWN key until the INPUT SELECT function is displayed, then set AUX 2 or GEAR to GYRO. If using a 7 channel receiver, either the Gear or Aux 2 channels can be used for the Gyro gain. If using a 6-channel receiver, use the Gear channel press the down and select keys together to exit the system menu.

D) D/R and EXPO Selection

Turn the power switch on, then press the DOWN and SELECT keys together to enter the function mode. Press the UP key to select the D/R and EXPO function. Set the Dual Rate and Expo values as desired, below are suggested settings.

E) Servo Reversing

Press the UP key to select the REVERSING function. Next, reverse channel 2 by selecting the channel with the SELECT key, and pressing the INCREASE key as needed to change from NORM to REV.



F) Travel Adjustment

Press the UP key to select the TRAVEL ADJUST function. Set the Travel Adjust values as shown as initial settings, while using the control stick to select up/down, or left/right values to be adjusted. Please note that the required travel values will vary based on the type of servo selected.

G) CCPM Settings

Press the UP key to select the SWASH MIX function. Change the value of the aileron, elevator, and pitch functions from the factory default setting using the INCREASE key and selecting the channel with the select key to the values as shown.

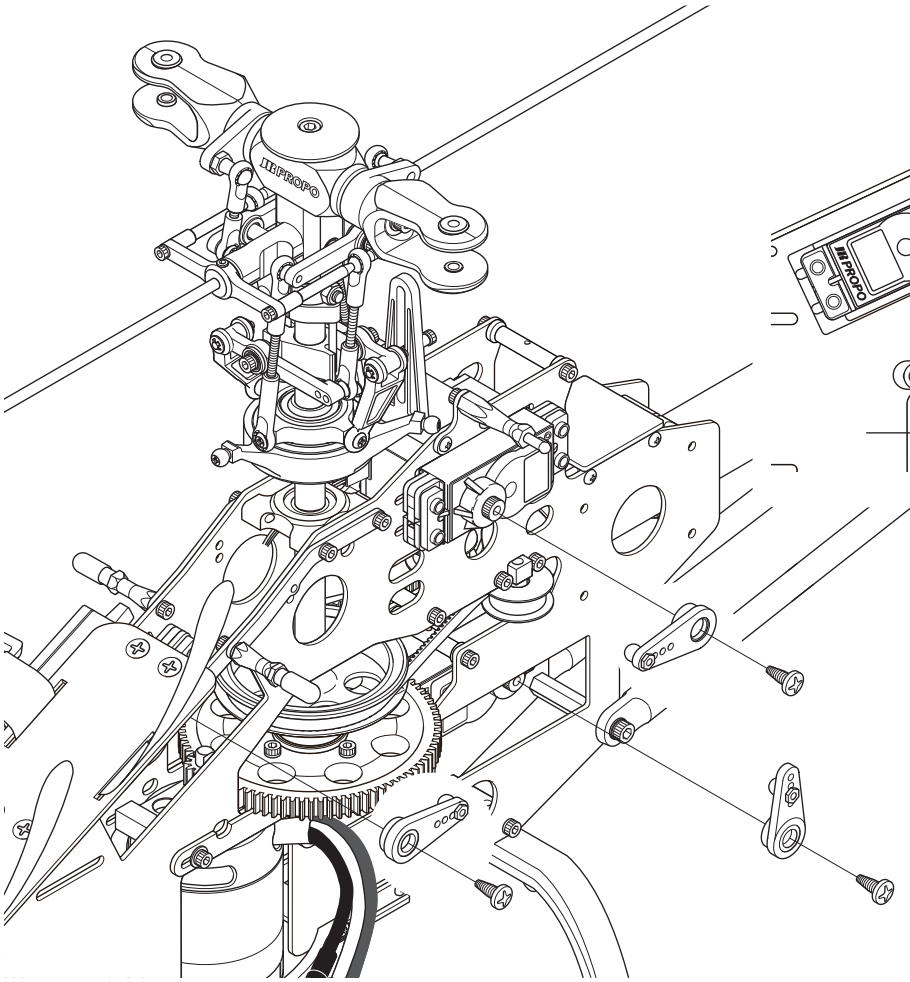
H) Throttle Hold Setting

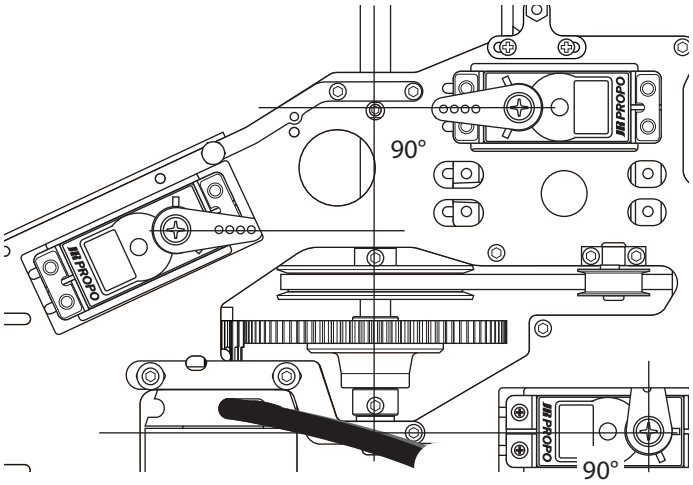
Press the UP key to select the THRO HOLD function. Press the INCREASE key to activate the function.
Set the hold position in this function so that when the throttle hold switch is pulled, the motor does not run with the throttle stick at idle and throttle trim set at the idle position.

I) Gyro Sensitivity Selection

Press the UP key to select the GYRO SENS function. Set the gyro gain as shown as a starting point for the G770 3D gyro. Adjust the percentage as necessary when flying the heli. Other gyros may require different settings; consult your gyro manual for further information on setting the gain.

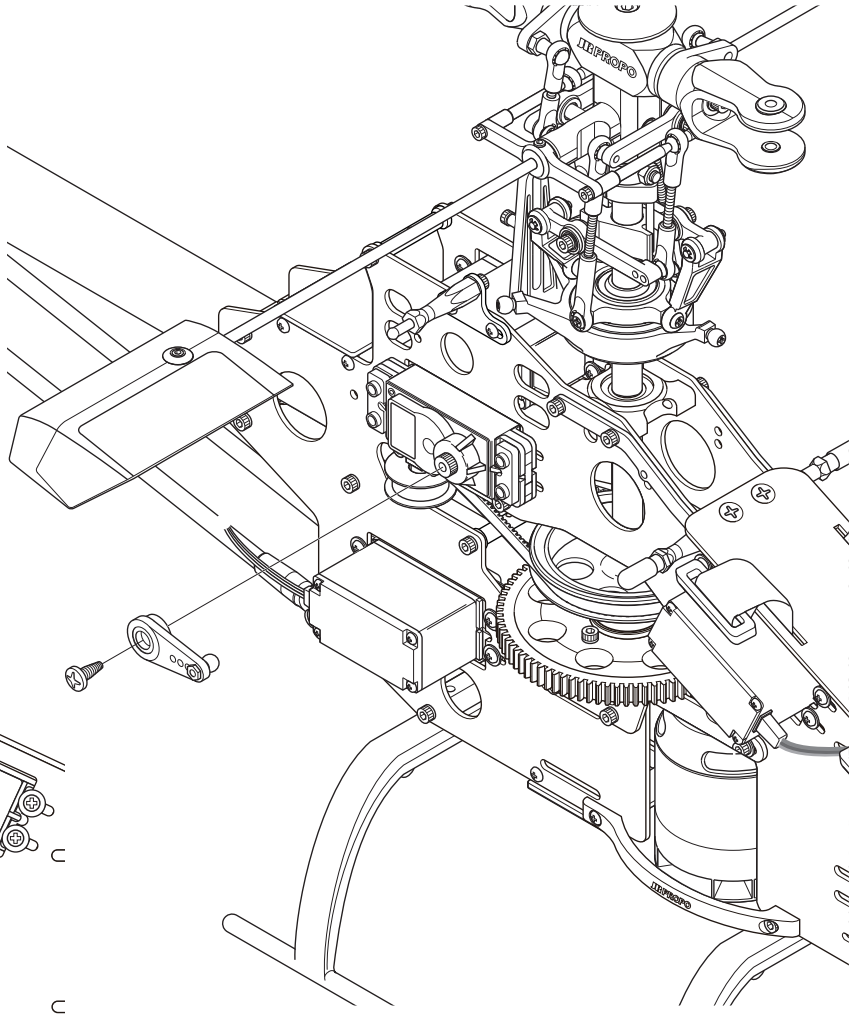
5-6 INSTALLING THE SERVO ARMS

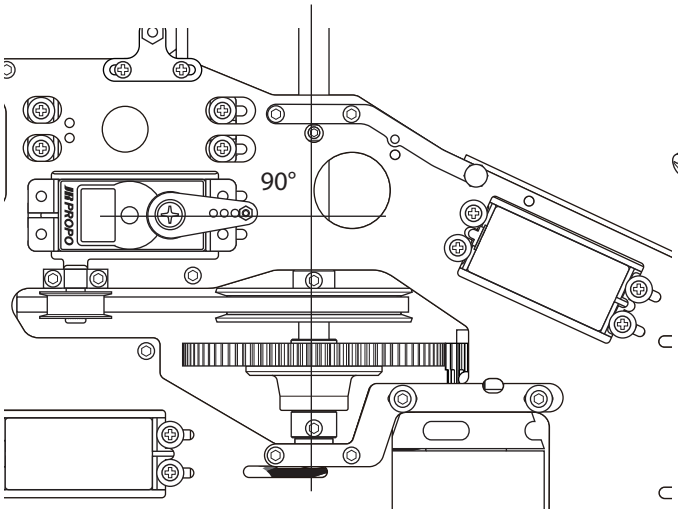




Caution: Unplug at least one of the 3 brushless motor leads from the speed control to the motor to prevent the motor from arming and running while setting up the servos and linkages. Failure to do this can lead to the motor running, possibly causing bodily injury and property damage.

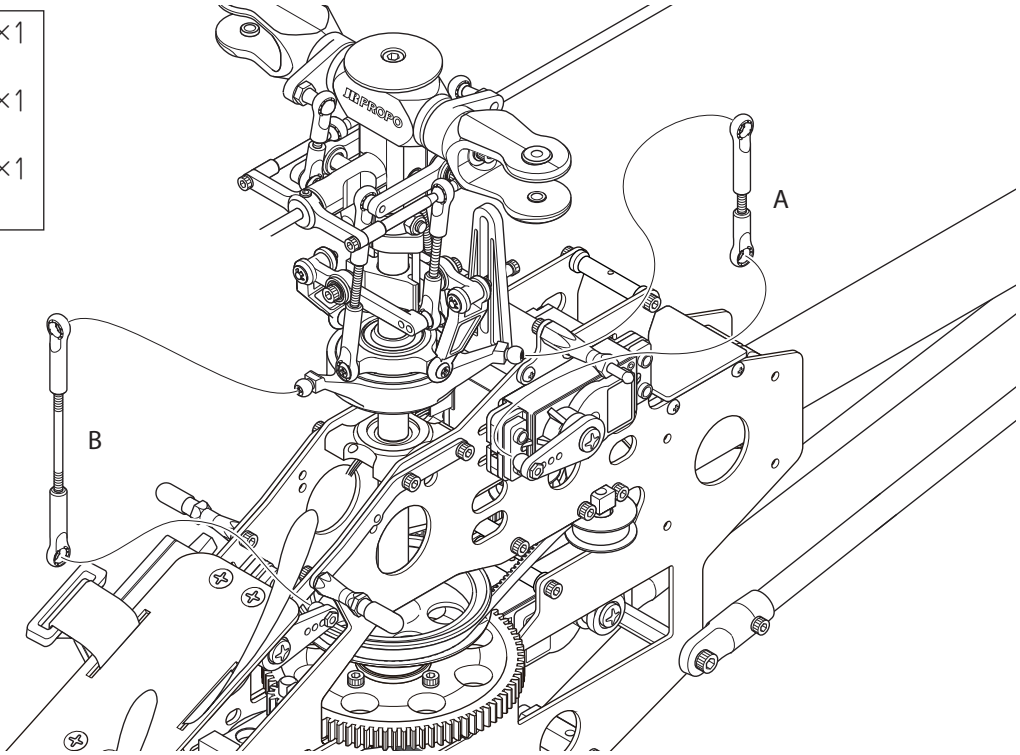
Install the servo arms on the servos as shown with the arms at the angles shown with the transmitter and receiver turned on, and throttle/pitch stick in the center.





5-7 INSTALLING SWASH SERVO LINKAGES

×1
Screw Rod, M2.3×25
×1
Screw Rod, M2.3×40
×1
Screw Rod, M2.3×50



Screw Rod, M2.3 x 25

Ⓐ JR PROPO

6.5mm

Universal Link S

Screw Rod, M2.3 x 50

Universal Link (5 Pcs)

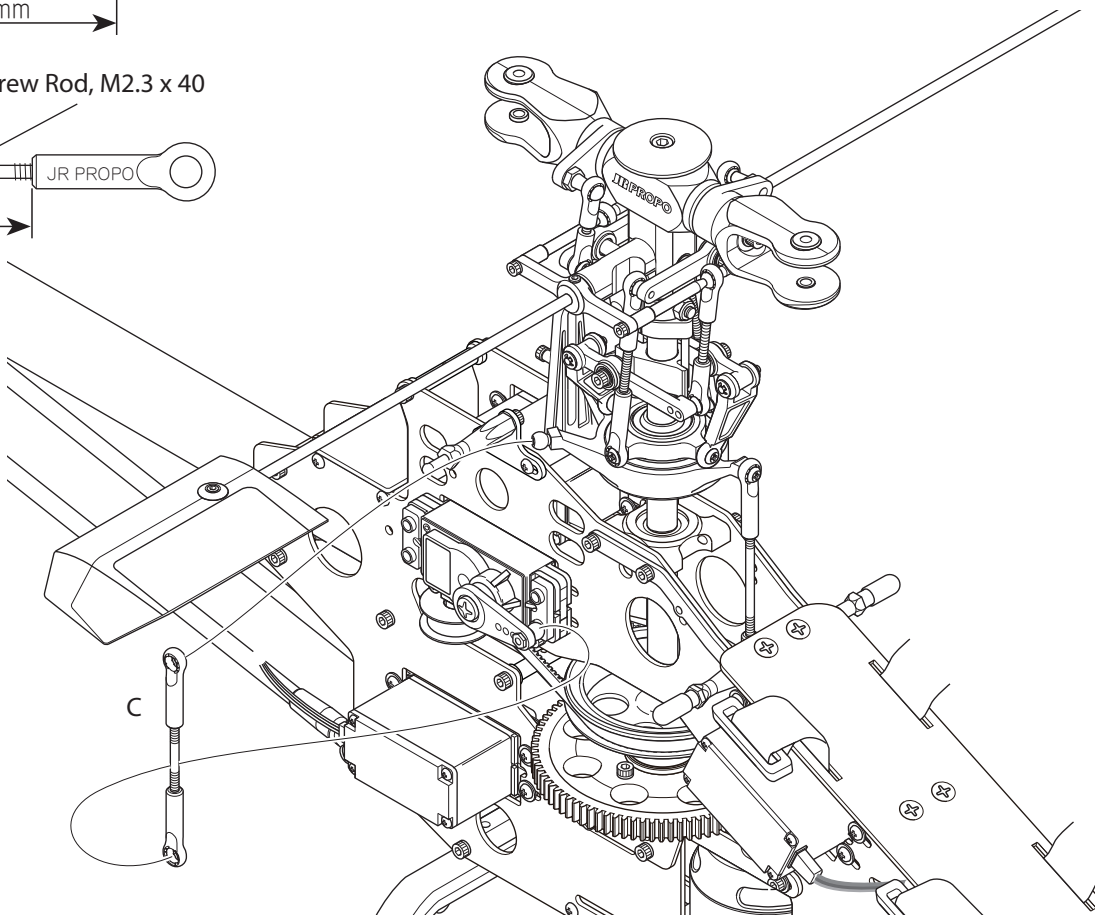
Ⓑ JR PROPO

32mm

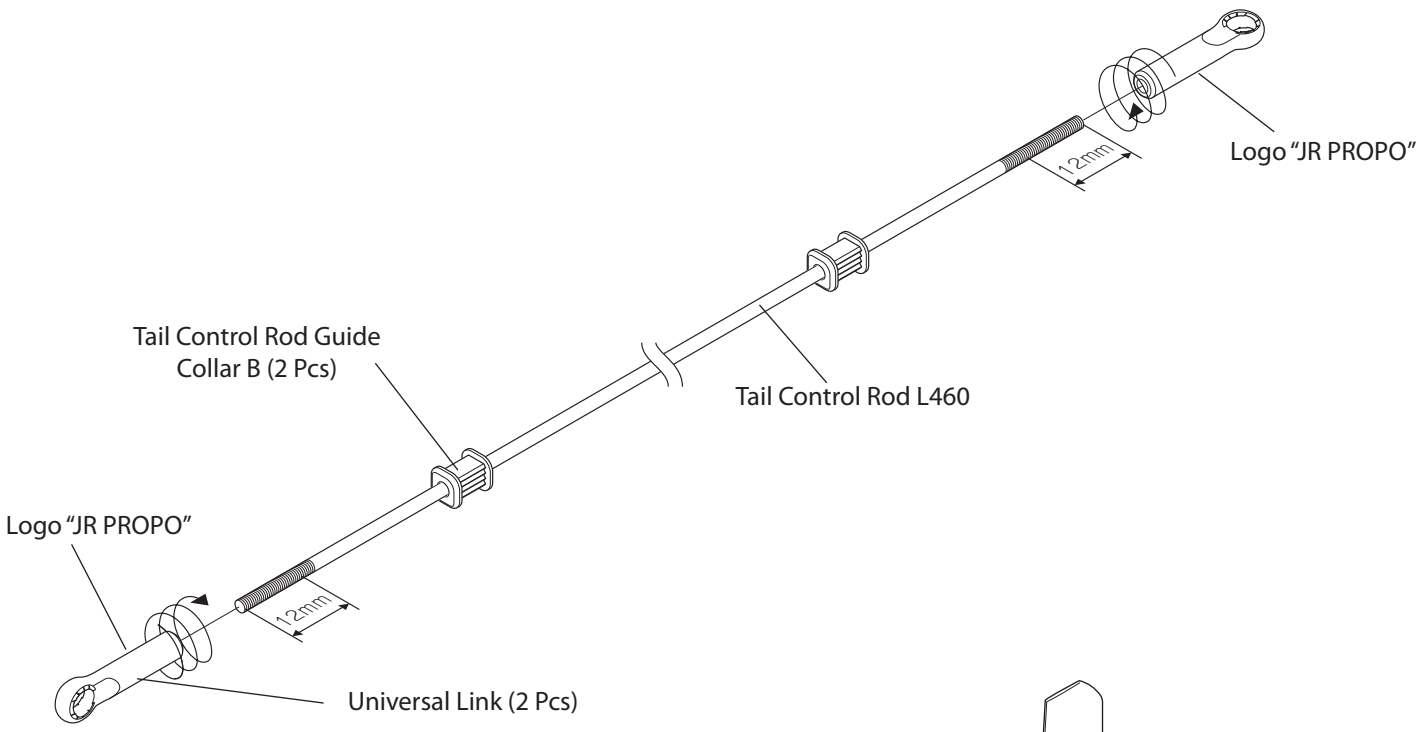
Screw Rod, M2.3 x 40

Ⓒ JR PROPO

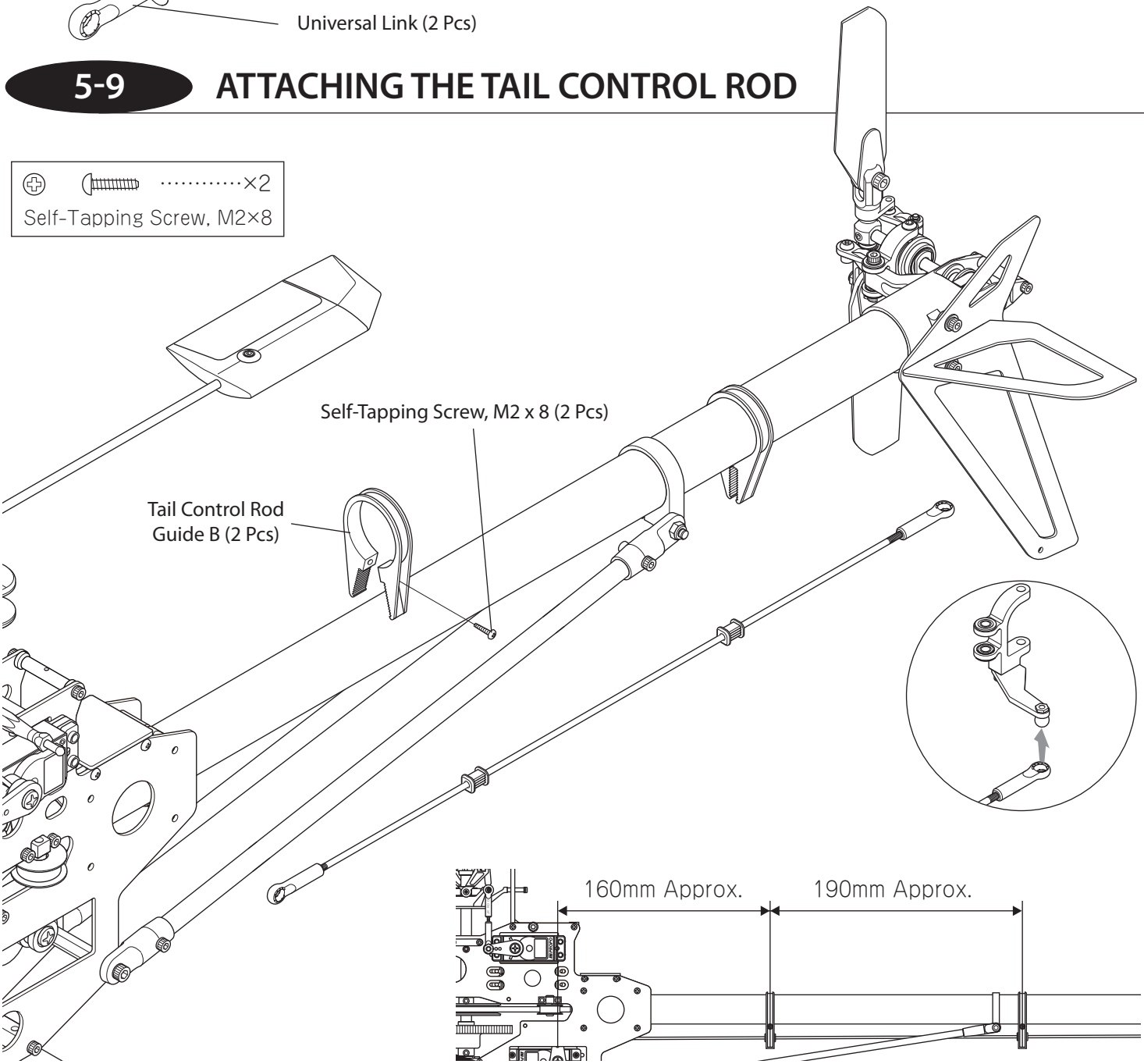
21mm



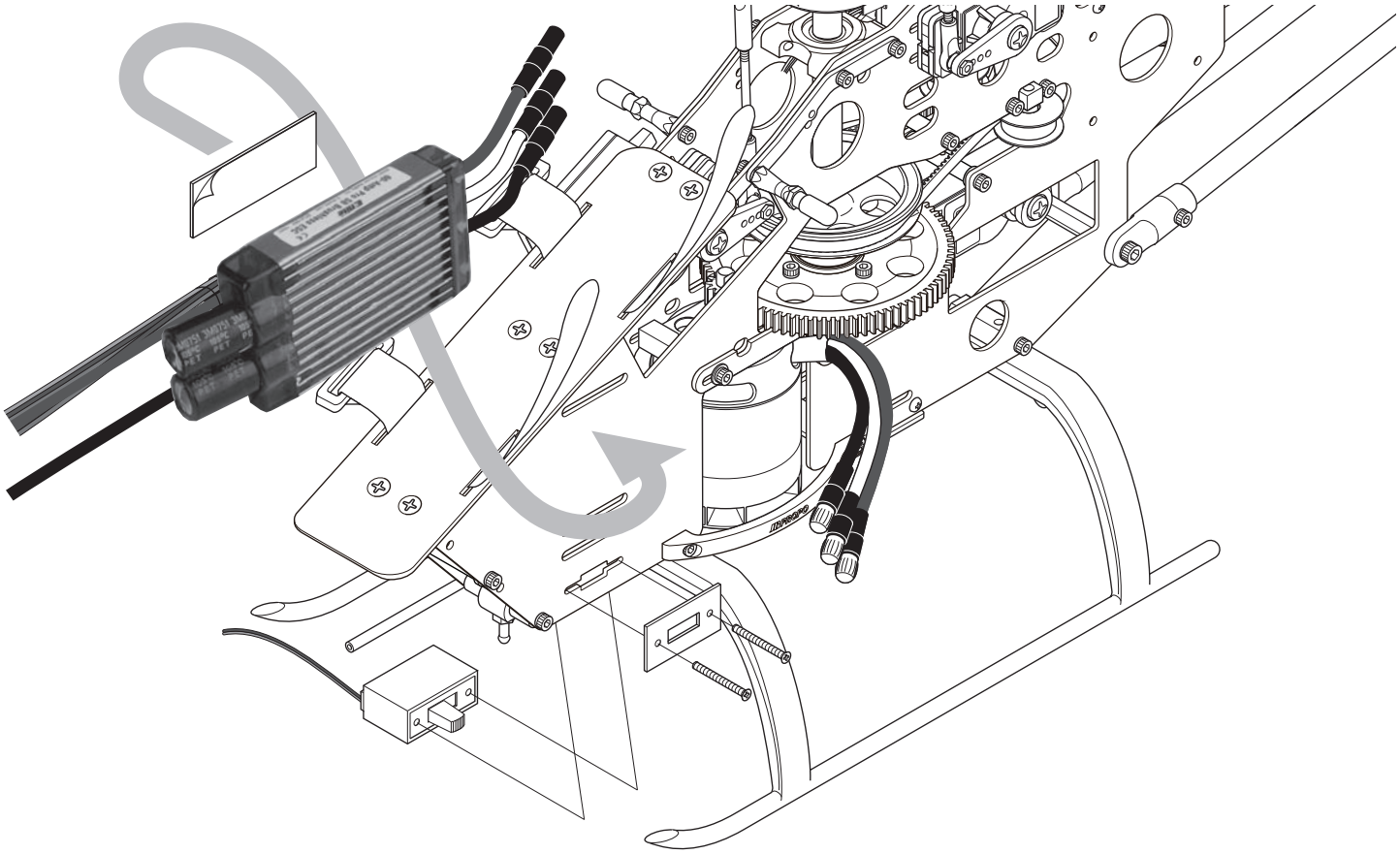
5-8 ASSEMBLING THE TAIL CONTROL ROD



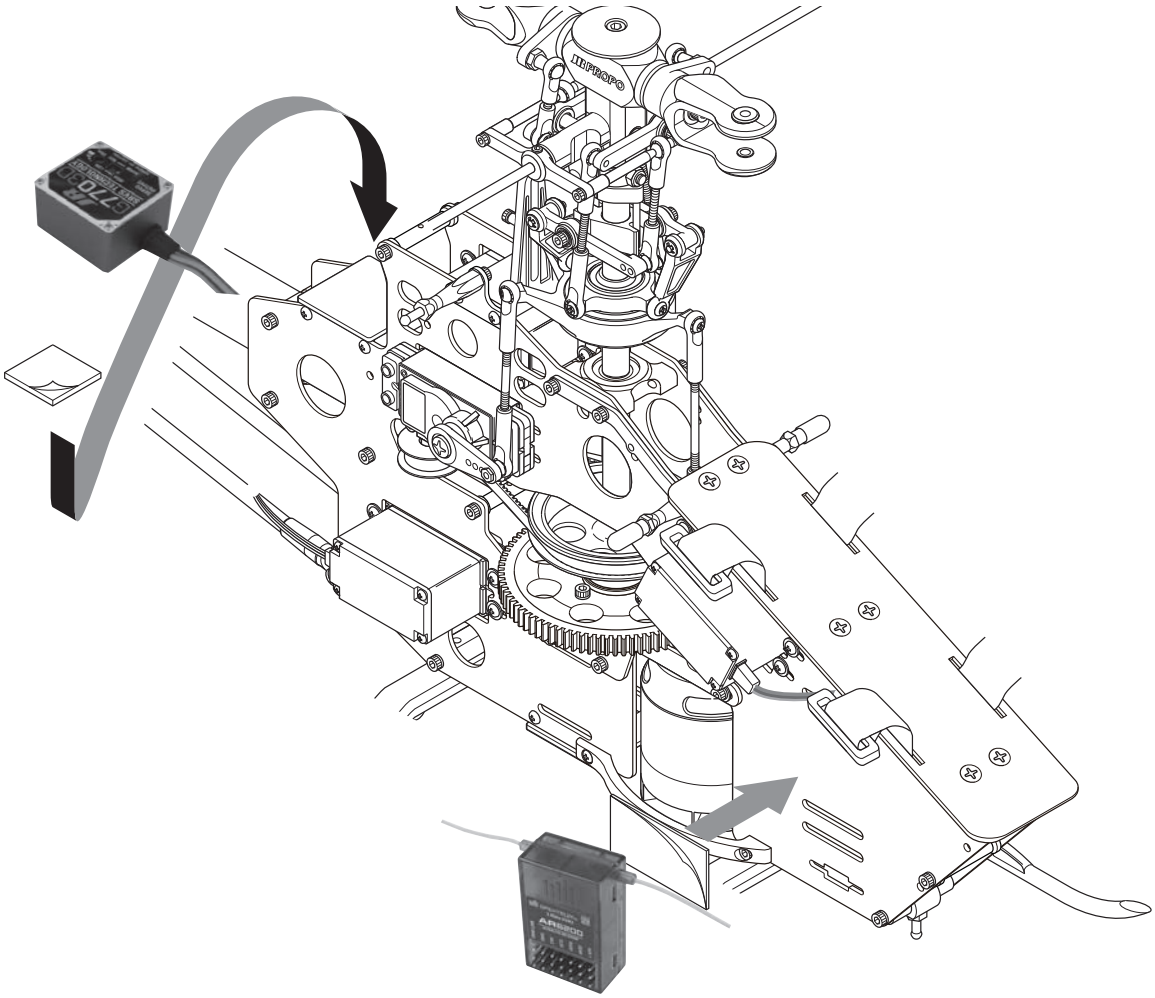
5-9 ATTACHING THE TAIL CONTROL ROD



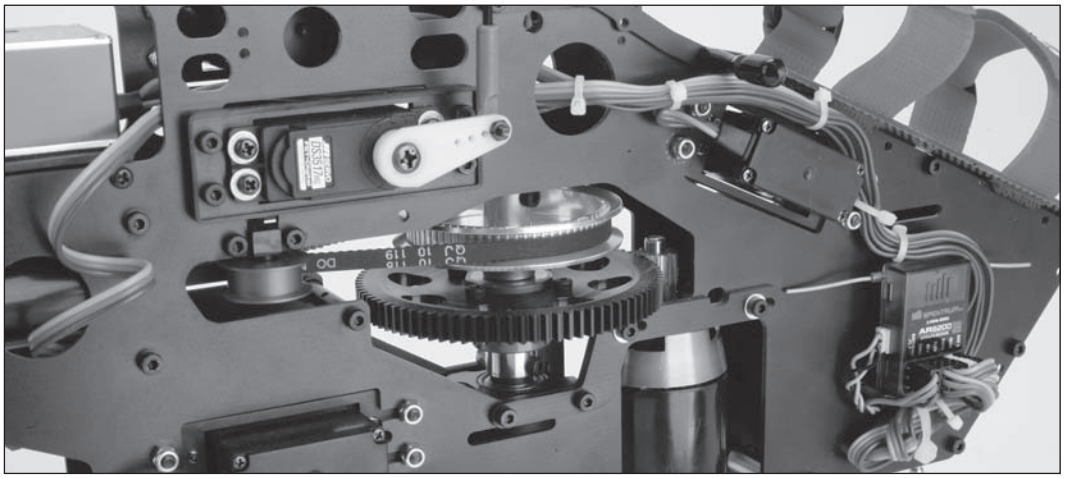
6-1 INSTALLING THE SPEED CONTROLLER



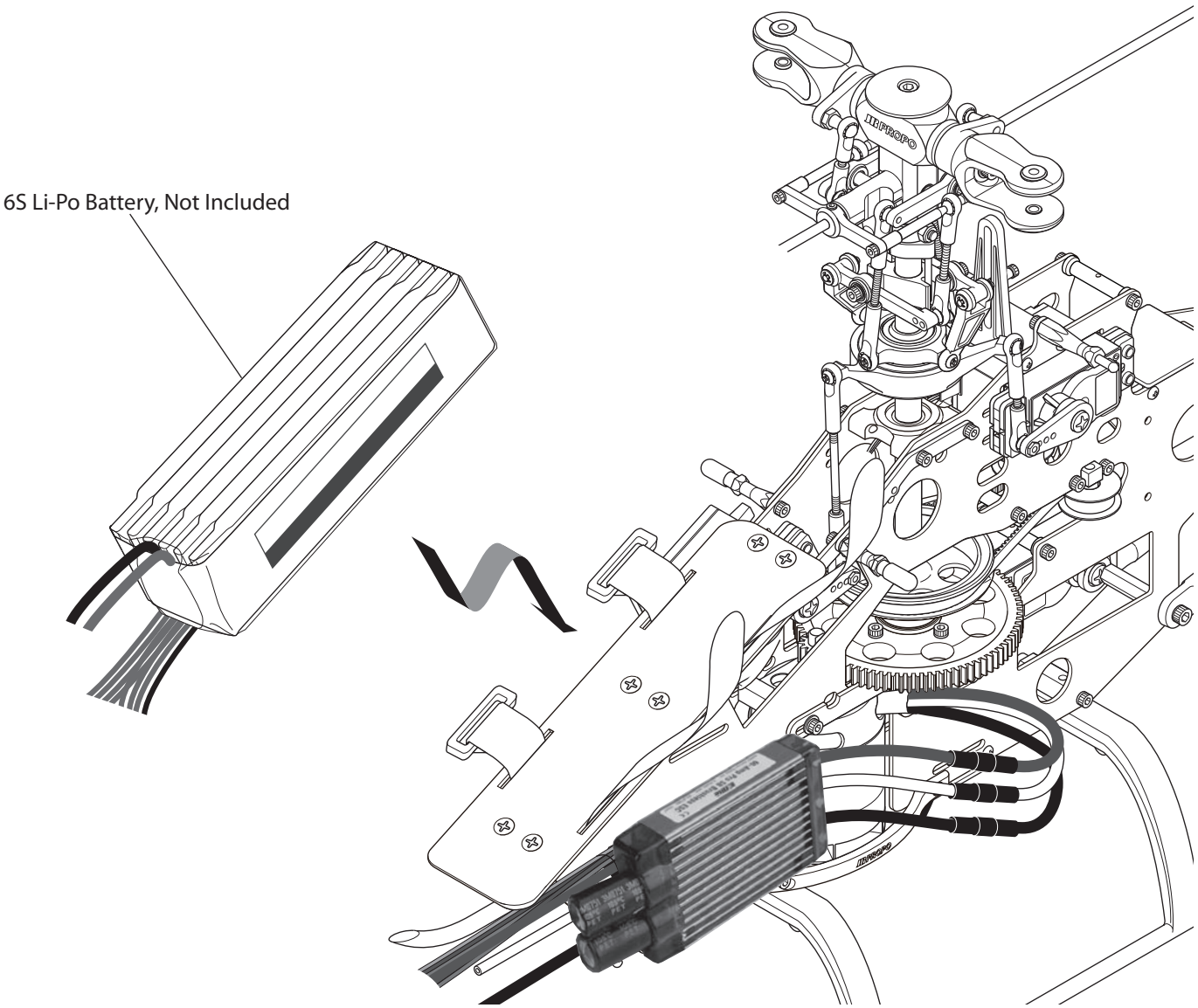
6-2 INSTALLING THE RECEIVER AND GYRO



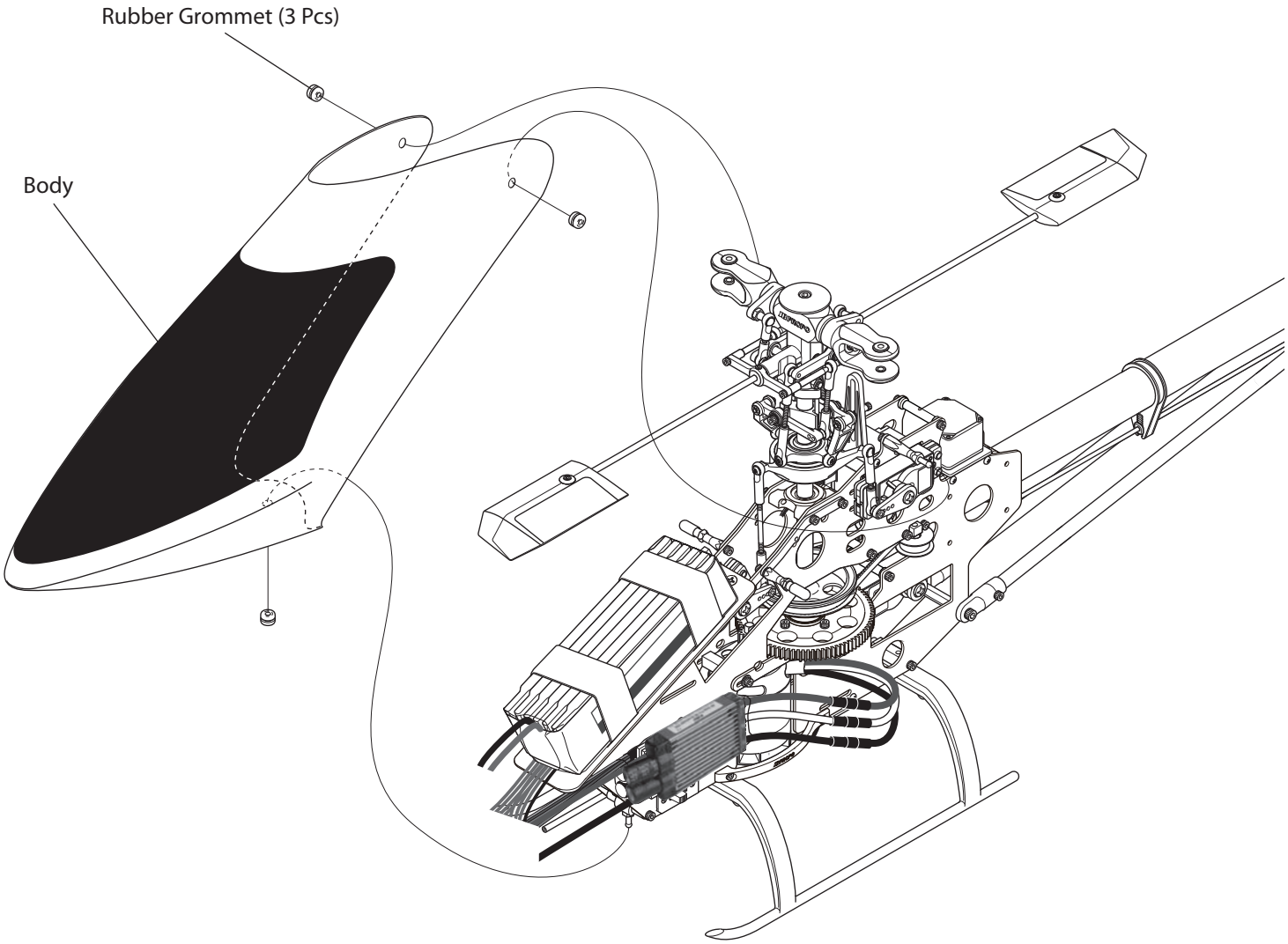
6-3 FIXING THE WIRING



6-4 INSTALLING THE BATTERY



6-5 INSTALLING THE BODY



BASIC ADJUSTMENT AFTER ASSEMBLY

The following information is very important and has a great effect on flight performance. Read it thoroughly to fully understand the contents.

The Helicopter does not work properly without first performing basic settings in the Radio and of the helicopter mechanics. Optimum settings of each helicopter can only be made following a test flight. The following provides information only for initial settings. Note that this is not final and the best setting for your Radio and helicopter can only be determined following test flights.

1. Initial Setting of Radio System

Using the Radio Set Up Sheets earlier in this manual and the instruction manual for the Radio used, make the initial settings for the Radio.

2. Wiring to the Receiver

See the wiring diagram earlier in the manual and the instruction manual for the gyro, speed control, and motor used, to connect each servo, speed control and gyro.

The three servos to be linked to the JR CCPM will now be called the "swash servo F (Front)," "swash servo R (Right)" and "swash servo L (Left)" for convenience sake.

The tail rotor servo will be called the "rudder servo." Check the connections of each servo for any error. If they are not correctly connected, subsequent adjustments cannot be properly made. Basic connections are the same for both JR-made and Futaba-made servos, but channel arrangement on the receiver differs between them.

3. Servo Neutral Adjustment – 1

Turn on the Radio and the receiver (switch on the helicopter) to confirm that all the servos function properly (first disconnect the wiring to the motor so that the main rotor will not run). Next, adjust the neutral position of the swash servos F, R and L. (for the Radio's aileron and elevator, set the trim to the neutral position. If the Radio has hovering pitch and pitch trim adjusting functions, set them to the center also).

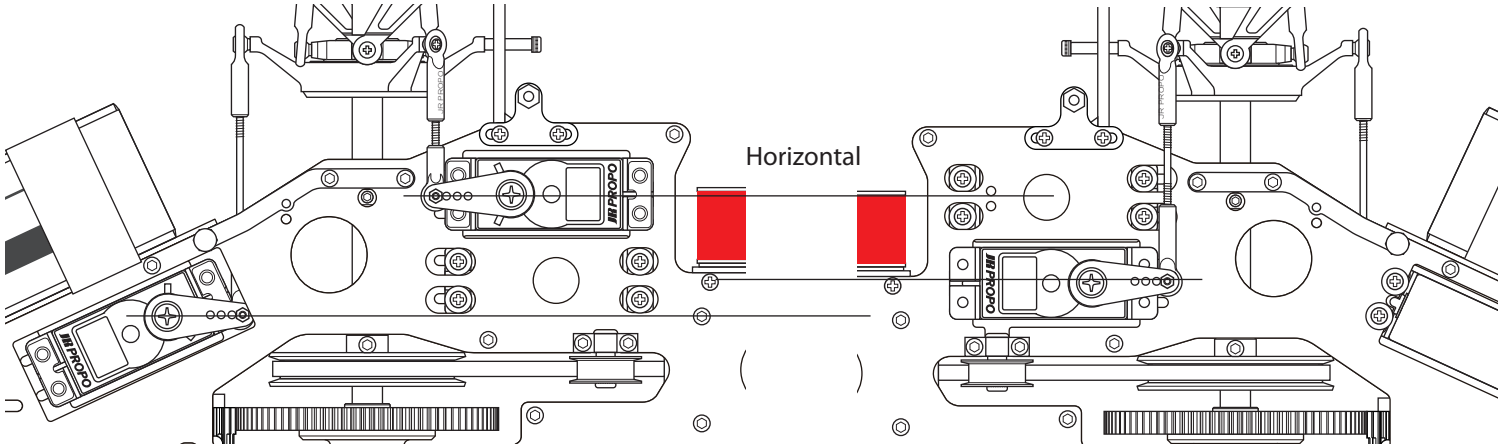
Enter the pitch curve function of the Radio and find out the neutral position of the pitch (throttle) stick by seeing an input value in the middle of the travel (the spot indicating the input value "50" is the neutral position). The servo angle at this time serves as a reference. THIS IS VERY IMPORTANT.

Next, check in this state whether or not the F, R and L swash servos are at the reference positions shown in the figure below. For the rudder servo, check whether or not it is positioned as indicated in each assembly process.

If the servo horn is not appropriately angled, remove and re-attach it so that it will be aligned with the reference positions.

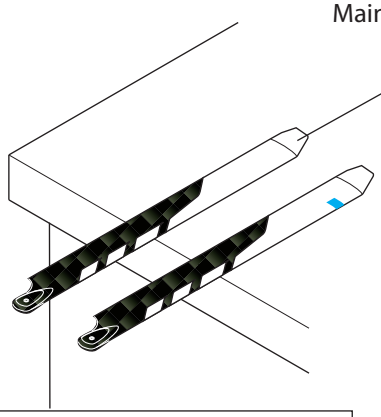
4. Servo Neutral Adjustment – 2

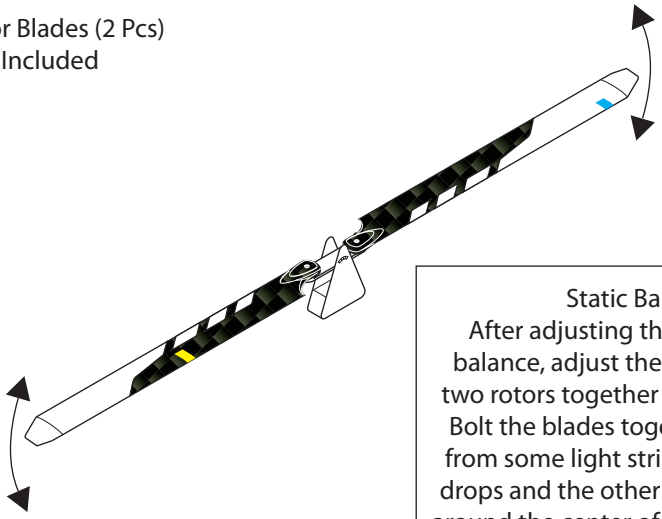
Use the sub-trim function to adjust any slight misalignment between the neutral position of the Radio and that of each servo (this function provides adjustment for individual servos. For the swash servos F, R and L, this is not a steering adjustment. Do not confuse it with each trim function for the aileron, elevator and pitch on the front of the Radio.)



6-6 BALANCING THE MAIN ROTOR BLADES

Main Rotor Blades (2 Pcs)
Not Included

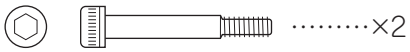




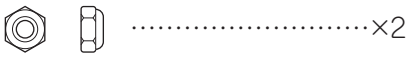
Longitudinal Balance
Place the rotor blades on a desk edge or a mast-like object. Mark the center of gravity position of each rotor blade itself. Wrap tape at the tip of one blade so the center of gravity position of the two blades is within 5mm.

Static Balance
After adjusting the longitudinal balance, adjust the balance of the two rotors together (static balance). Bolt the blades together and hang from some light string. If one blade drops and the other rises, wrap tape around the center of gravity (position of longitudinal balance) of the lighter blade until the blades hang level.

6-7 ATTACHING THE MAIN ROTOR BLADES

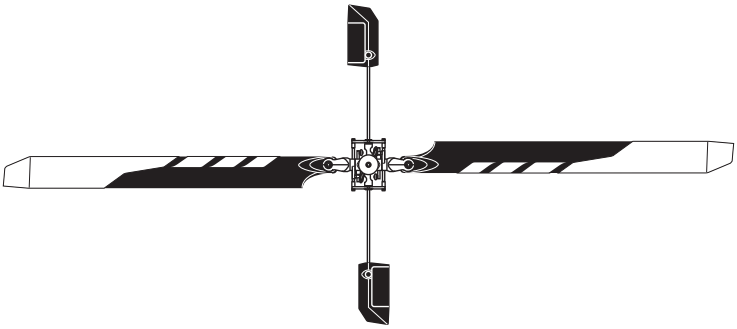


Special Socket Head Bolt, M3×22



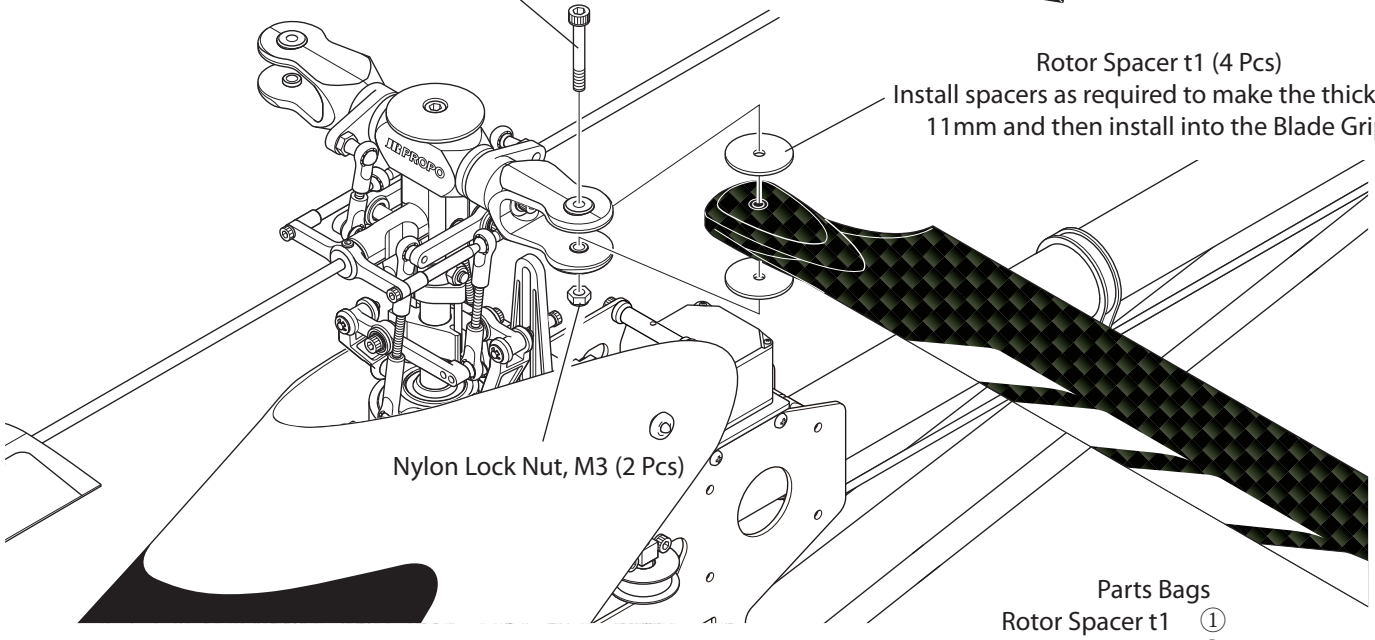
Nylon Lock Nut, M3

Note: Screw in the Special Cap Bolts until they have fully engaged with the nylon area of the Nylon Lock Nuts, and tighten them firmly so that they will not be loosened when the Motor starts running. The blade should be able to be rotated freely when pressed with a finger, but not loose enough to move freely when the heli is held on its side.



Special Socket Head Bolt, M3 x 22 (2 Pcs)

Rotor Spacer t1 (4 Pcs)
Install spacers as required to make the thickness 11mm and then install into the Blade Grip.



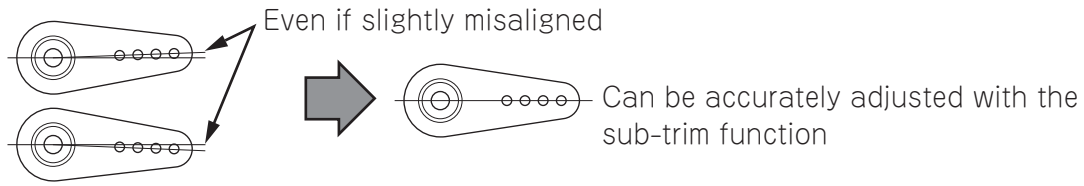
Nylon Lock Nut, M3 (2 Pcs)

Parts Bags
Rotor Spacer t1 ①
Rotor Spacer t0.5 ②

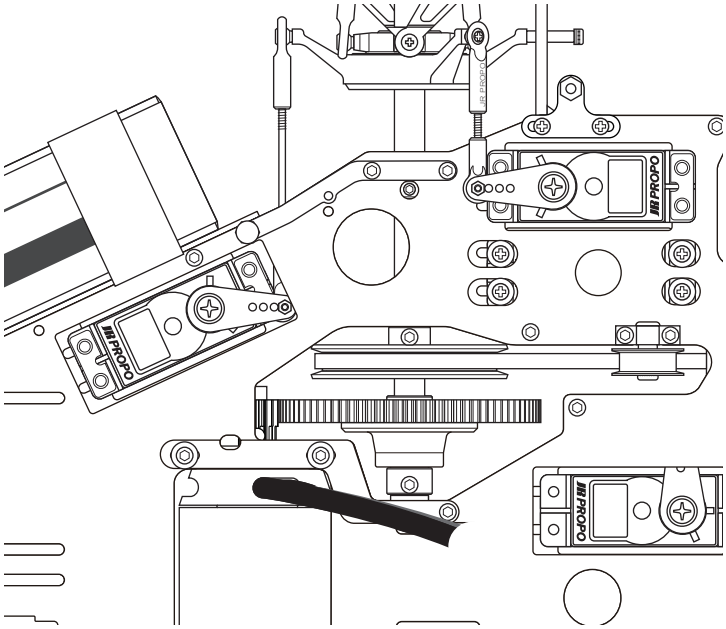
LEVELING THE SWASHPLATE

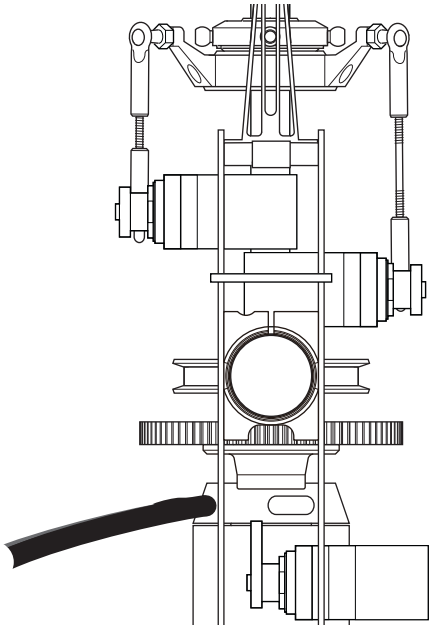
CCPM SERVO CENTERING WITH THE SUB-TRIM FUNCTION

It may be necessary to make minor servo centering adjustments with the use of the sub-trim function to achieve the desired servo arm positions. Adjust the sub-trim percentages through the radio system as necessary to make the servo wheels center properly. With proper servo arm positioning, little to no sub trim will be required.



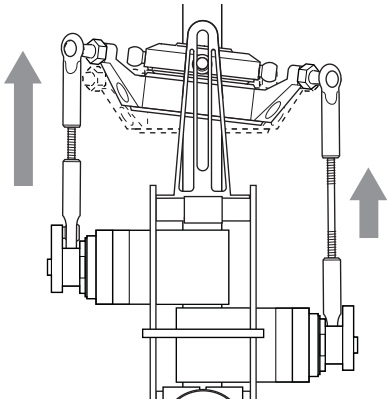
After the control linkages have been attached to the swashplate, it will be necessary to check the swashplate to ensure that it is level. To do this, turn on the radio system and place the collective stick in the center position as before. Next, check to make sure that all trim levers and knobs are also in their center position. Check to ensure that the servo wheels are centered as shown. If the servos are not centered as shown, please adjust the sub trim function in the radio system as necessary. Once it's determined that the servo wheels are centered properly, it will now be necessary to check the swashplate to ensure that it is also level or neutral in this position. It is suggested that the swashplate first be checked from the rear of the model to ensure that it's level from left to right. If the swashplate is not level as compared to the frame of the model, adjust either the left or right servo control rod as needed.





Once the left to right adjustment is completed, it will now be necessary to check the fore/aft position of the swashplate to ensure that it is also level on this axis. If the swashplate is not level in the fore/aft axis, it is suggested that the adjustment be made to the front servo control linkage as needed. If you are unsure as to which linkage needs adjustment or are having difficulty obtaining the correct adjustment, please check the length of each control rod to ensure that it is adjusted to the correct length. Only minor adjustments should be made to the lengths of the control linkages at this time. Any major adjustments indicate either incorrect linkage lengths or incorrect servo arm positioning. If the control linkage lengths are altered from the recommended lengths more than one or two turns, this will have a great effect on the range and settings of the collective pitch in later steps. If required, use sub trims of each servo to fine-tune 90-degree positions of the linkages. No more than 15 points should ever be required, since the servo arm can be flipped and a different spline can be used.

PITCH-TO-AILERON MIXING ADJUSTMENT



PITCH-TO-AILERON MIXING ADJUSTMENT WITH TRAVEL ADJUST

It is very possible that the travel of each servo varies slightly, which can cause the swashplate to be tilted to the left or right when the collective is moved to the extreme high and low pitch positions. This condition is generally more common when standard-type servos are used. If JR® digital servos are used, the adjustment required is generally very small, if any. These variations in travel can be corrected by altering the travel value of each servo slightly through the travel adjustment function. To check the pitch-to-aileron mixing, it will first be necessary to position the collective stick in the center position and make sure the swashplate is level.

Next, move the collective stick from the center position to the high pitch position while viewing the swashplate from the rear of the model as shown in the diagram below. While moving the swashplate, look for any tendency for the swashplate to roll to the left or right as it reaches the high pitch position. Repeat this procedure several times to be sure that your observations are correct. If no rolling tendency is found, it will now be necessary to repeat this procedure from the center collective stick position to full low pitch. If no rolling tendency is found, proceed to the next step.

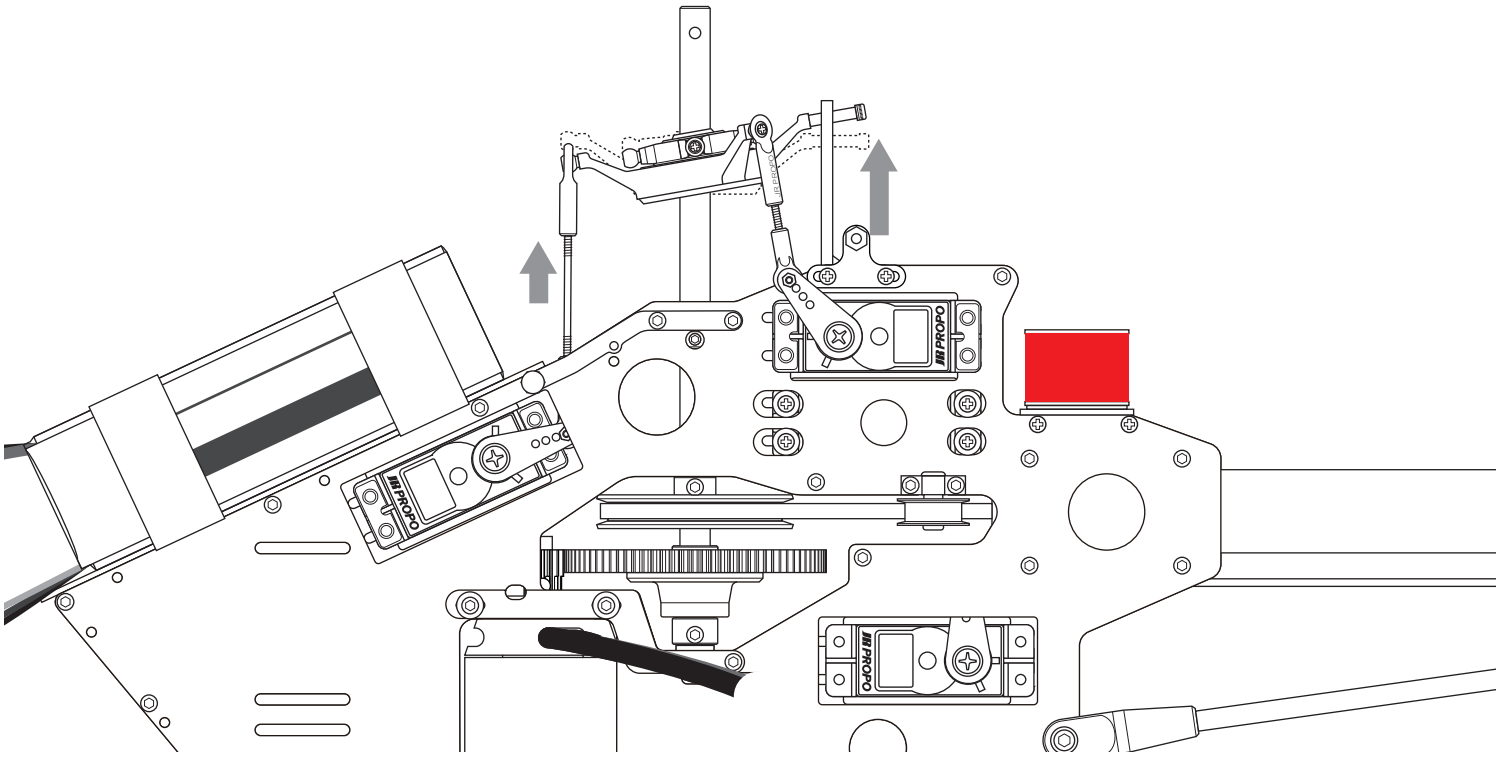
In our example, we have shown that the swashplate has been tilted to the right as the collective has been increased to full pitch. This would indicate that the right servo's maximum travel is less than the left servo's maximum travel.

In this condition, we suggest that the travel value for the right servo be increased slightly (5–10%). Repeat the procedure above if the same condition occurs, but to a lesser degree. The travel value of the right servo should be increased slightly and retested. In most cases, it will require only the adjustment of the left or right servo to correct this situation. Once this condition has been corrected, repeat this procedure for the center-to-low collective pitch position and adjust as needed.

PITCH-TO-ELEVATOR MIXING

PITCH-TO-ELEVATOR MIXING ADJUSTMENT WITH TRAVEL ADJUST

The total travel of each servo can vary slightly, which can also cause the swashplate to be tilted fore and aft when the collective is moved to the extreme high and low pitch positions. This situation can also be corrected if necessary through the use of the travel adjustment function. To check pitch-to-elevator mixing, it will first be necessary to position the collective stick in the center position as in the previous step. Next, move the collective stick from the center to the high pitch position while viewing the swashplate from the left side of the model. While moving the swashplate, look for any tendencies for the swashplate to tilt fore or aft as it reaches the high pitch positions. Repeat this procedure several times to be sure that your observations are correct. If no tilting tendency is found, proceed to the next step. In our example, we have shown that the swashplate has tilted forward as the collective has been increased to full high pitch. This would indicate that the front servo's maximum travel is less than that of the two left/right servos. In this condition, we suggest that the travel value for the front servo be increased slightly (5–10%). Repeat the above procedure and decrease the value as needed until the tilting tendency is eliminated. For information on the travel adjustment function, please refer to your radio's instruction manual for details. Once this condition has been corrected, repeat this procedure for the center-to-low collective pitch position and adjust as needed. Note: It is very important that during this step, only the travel value for the front servo (elevator) be adjusted to correct any pitch-to-elevator tendencies. If the travel value of the left or right servo changes, this will the pitch-to-aileron tendencies corrected in the previous step. If you feel that readjustment of the left and right servo travel is necessary, then it is suggested that the travel for each servo be increased or decreased at the same amount and the pitch-to-aileron procedure be retested.



TAIL SERVO ADJUSTMENT

TAIL ROTOR SERVO SETTINGS

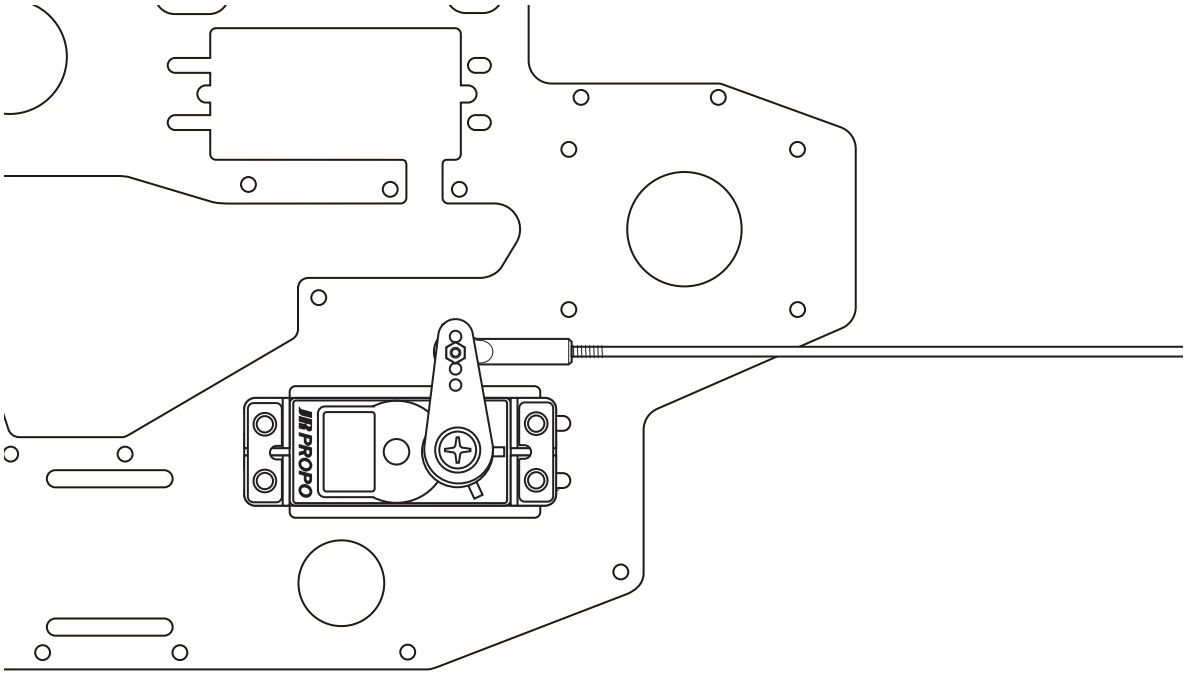
Note: Please refer to the instructions for your gyro in addition to these notes. Please have your gyro connected to the receiver and the tail rotor servo plugged into the gyro while performing these checks.

Servo Horn: The servo horn needs to be attached so that there is an angle of 90° between the linkage rod and the servo horn's arm with the servo at neutral as shown in the figure below. It is best to install the arm on the servo with the gyro in rate or normal gain mode so that the servo is centered properly. After the servo arm is installed and the tail control rod set, the gyro can then be set to tail lock mode as desired. The tail rotor linkage rod should now be adjusted in length so the tail rotor pitch slider is in the middle of its travel.

Reverse Switch (servo direction): The direction of the tail rotor servo movement is set in the Radio using the servo reversing function. To check if the servo moves in the correct direction move the rudder (tail rotor control) stick on the Radio to the left. The servo arm should move toward the rear of the helicopter. Moving the Radio stick to the right should move the servo arm toward the front of the helicopter. The gyro's direction of response to rotation of the helicopter is discussed and set on page 50 of these instructions.

Travel Adjust (right and left angle adjustment): The Radio travel adjust setting for the tail rotor (rudder) channel will generally control yaw rate. The physical servo limits for left and right are set on the gyro. Please refer to your gyros instructions.

Sub-trim (Radio's internal rudder trim): Generally this should remain at zero but may require adjustment depending on your make and model of gyro. Please refer to your gyro's instructions for further information about its setup.



FINAL SERVO ADJUSTMENT AND RADIO SETUP

Now that the radio system is completely installed into the helicopter, it's necessary to check and adjust the following:

1. Servo Direction (Servo Reversing)

Check to ensure that all servos have been set to the correct direction.

2. Sub-Trim Settings

It's suggested that the correct neutral settings be achieved without the use of the Sub-Trim function, as this will affect the neutral position of the servos. Adjust the cyclic trim using the control rods until a neutral hover is achieved.

3. Pitch/Throttle Curve Adjustment

It is very important that the throttle and pitch curves are adjusted properly to achieve the best performance from your helicopter. When properly adjusted, the main rotor head rpm should remain consistent throughout all maneuvers and throttle stick positions. A constant rpm will also help to improve the effectiveness and accuracy of the tail rotor and gyro systems.

A) Pitch Curve

It will now be necessary to establish the maximum pitch value required for your application prior to adjustment. For example, if you are a 3D pilot, then your maximum negative pitch will be -12, and your maximum positive pitch will be +12.

The maximum pitch range that you will require will be 24° total. The maximum pitch range mentioned above must be established through the use of the pitch travel value in the CCPM function. As mentioned previously, do not try to establish the maximum pitch curve values through adjustment of the travel adjustment function, as this will alter the pitch-to-aileron and pitch-to-elevator travel values established earlier.

Please refer to the CCPM activation section for information on how to access the CCPM function. Once the CCPM function has been activated, set the maximum positive pitch settings as mentioned above. Since the CCPM function does not allow for independent travel settings for positive and negative pitch, it will be necessary to establish the maximum positive pitch, since this is generally the largest degree of pitch in the pitch range. Once the maximum positive pitch range is set, the maximum pitch range positive and negative can be reduced as needed through the pitch curve function. Set the main rotor pitch gauge to the desired maximum pitch setting, then increase or decrease the CCPM pitch travel (labeled Pitch or Ch 6) as needed until this pitch setting is achieved.

Once this procedure has been completed, the positive and negative pitch settings for each flight mode can be adjusted through the radio's pitch curve function. Please refer to your radio's instruction manual for more information.

Note: Flight modes #1 and #2 are duplicated for safety.

Throttle Curve Settings

Below are examples of possible throttle curves during various flight conditions.

It will be necessary to fine-tune and adjust these values during test flights to achieve a constant main rotor rpm.

Gyro Gain Adjustment (All Gyros)

Please refer to your Gyro's instruction manual for proper gain settings.

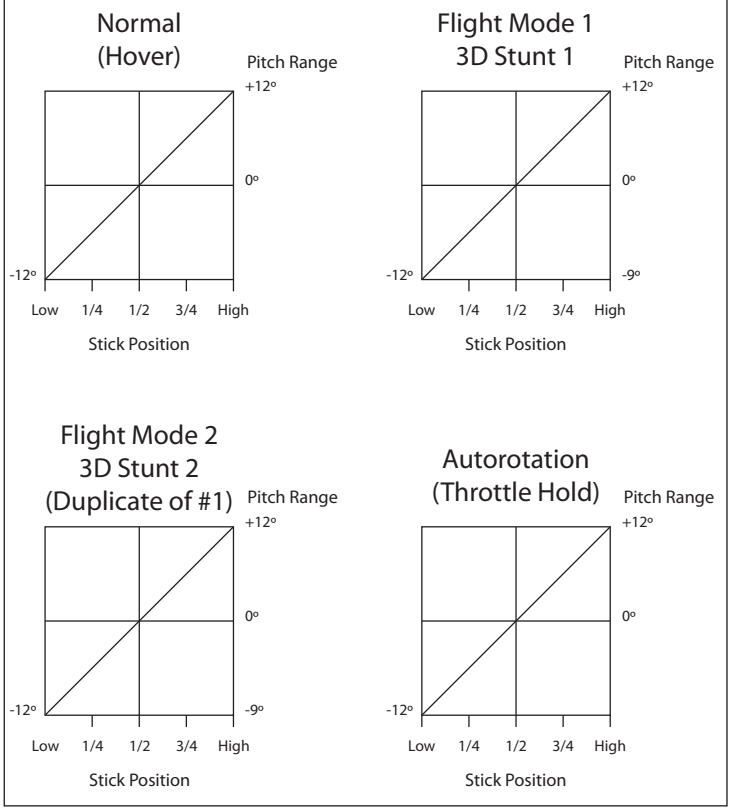
Gyro Direction

It will also be necessary to confirm the direction the gyro compensates when the body of the helicopter is rotated. To do this, turn the radio system on and suspend the helicopter by the main rotor head. Next, move the rudder stick to the right and watch the direction that the tail rotor servo arm travels. Now while watching the tail rotor servo arm, rotate the body of the helicopter counterclockwise. The servo arm should move in the same direction as when the rudder stick was moved to the right. If the arm moves in the opposite direction, reverse the gyro and re-test. Generally with the G770 3D Gyro, the gyro reversing switch will be left set to NORM on the gyro.

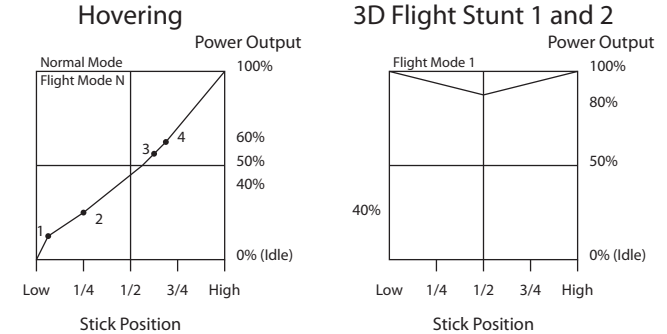
Pitch Range Settings

Flight Mode	Application	Low Pitch (Low Stick)	Hovering Pitch (Half Stick)	High Pitch (High Stick)
N	Hovering	-12º	0º	+12º
1	3D Flight #1	-12º	0º	+12º
*2	3D Flight #2	-12º	0º	+12º
H	Autorotation	-12º	0º	+12º

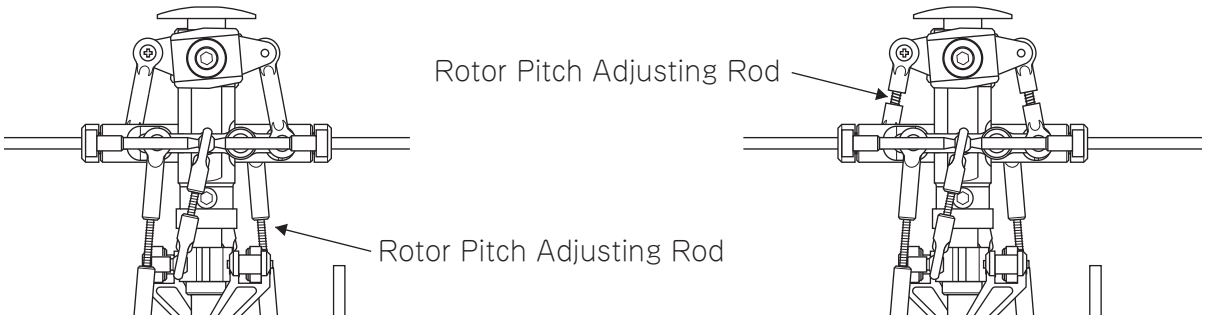
Pitch Curve Settings



Throttle Curve Settings



PITCH ADJUSTMENT LINKAGES



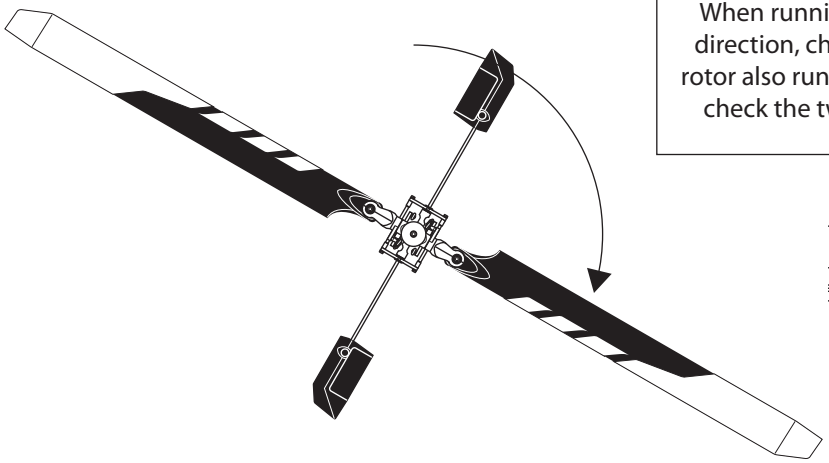
Sport

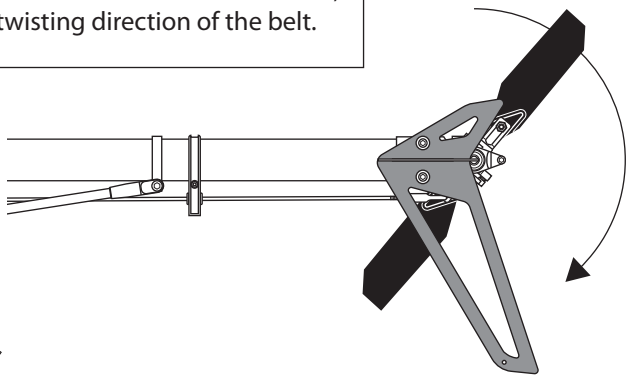
3D

The right figure above illustrates the 3-D set up assembled earlier. In this case, the high pitch is 12° and the low pitch is -12°, totaling to 24°, and the intermediate pitch is 0°.

CONFIRMATION OF PROPER BLADE DIRECTION

Check the running direction of the tail rotor. When running the tail rotor in the arrow direction, check whether or not the main rotor also runs in the arrow direction. If not, check the twisting direction of the belt.





FINAL PREFLIGHT CHECK

Once all assemblies have been completed, please review the following suggestions before attempting initial flights.

- Review the instruction book and confirm that all assembly steps have been completed thoroughly.
- Check to ensure that all servos are operating smoothly and in the correct direction. Also verify that there is no binding in the control rods and that each servo horn is secured with a servo horn mounting screw.
- Check to ensure that all bolts and screws have been completely tightened and secured with threadlock where indicated.
- Verify that the gyro is operational and compensating in the correct direction.
- Make sure that both the transmitter and receiver have been fully charged (refer to your radio system instructions for proper charging procedures).
- Check to ensure that the throttle is working properly and in the correct direction.

BLADE TRACKING ADJUSTMENT

Blade tracking is an adjustment to the main rotor blade pitch that must be accomplished during the initial test flights.

Although the blade pitch angle in each blade may appear equal, it is still possible for a set of main rotor blades to run "out of track," making adjustment necessary.

Main rotor blades that are out of track with one another can cause vibration, instability and a loss of power due to additional drag.

On the initial flight, it will be necessary to increase the blade speed to just before lift-off rpm and view the rotor disc at eye level from a safe distance (approximately 15 to 20 feet (4.7 to 6 meters)).

Note which blade is running low (by colored tracking tape) and increase the pitch of the low blade one turn of the ball link at a time until each blade runs in track (on the same plane).

Please refer to the diagrams on the following page to identify the different tracking situations, as well as methods to mark each rotor blade for tracking identification.

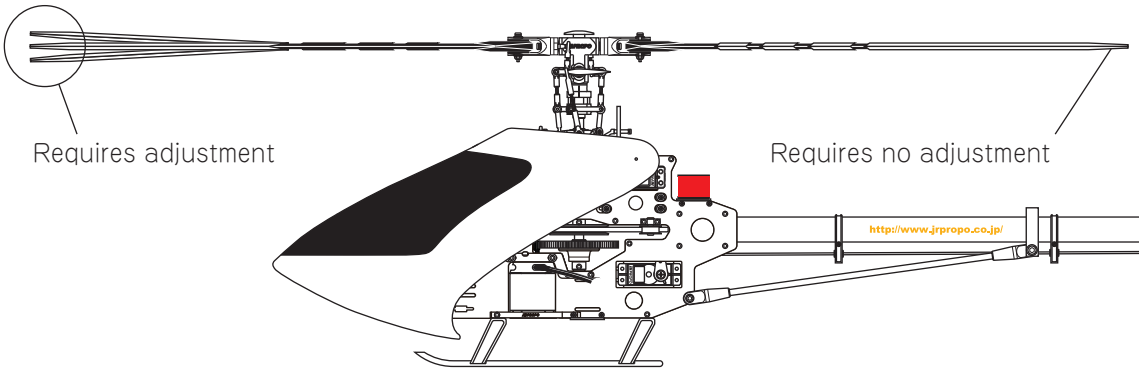


Fig.A

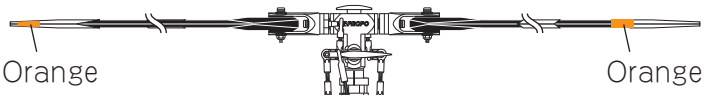


Fig.B

Check All Nuts and Bolts

A helicopter is subject to high vibration during flight. It is important to check that all screws, nuts and bolts are properly secured after each day of flying. It is also suggested that you perform a "quick" inspection between each initial test flight for approximately the first 6 to 10 flights.

Main Rotor Head

Periodically check the main rotor head dampeners to maintain maximum rotor head performance.

When reassembling the main rotor head, apply a light coating of oil to the dampeners to prolong life.

It is also suggested at this time that the rotor head thrust bearings be lubricated using a high-speed grease. This will prolong the visibility of the thrust bearings.

Washout Base

Lubricate the washout base using light oil every 10 –15 flights to ensure smooth operation and reduce wear. Inspect the washout base every 50–75 flights. If excessive wear is noted, replace as needed.

Tail Pitch Slider

Lubricate the tail pitch slider using light oil every 5–10 flights to ensure smooth operation and reduce wear.

Check Ball Link Wear

Check to ensure that all universal links fit freely but securely to the control balls. If there is excessive play noted, adjust and/or replace the universal link in question.

Cleaning

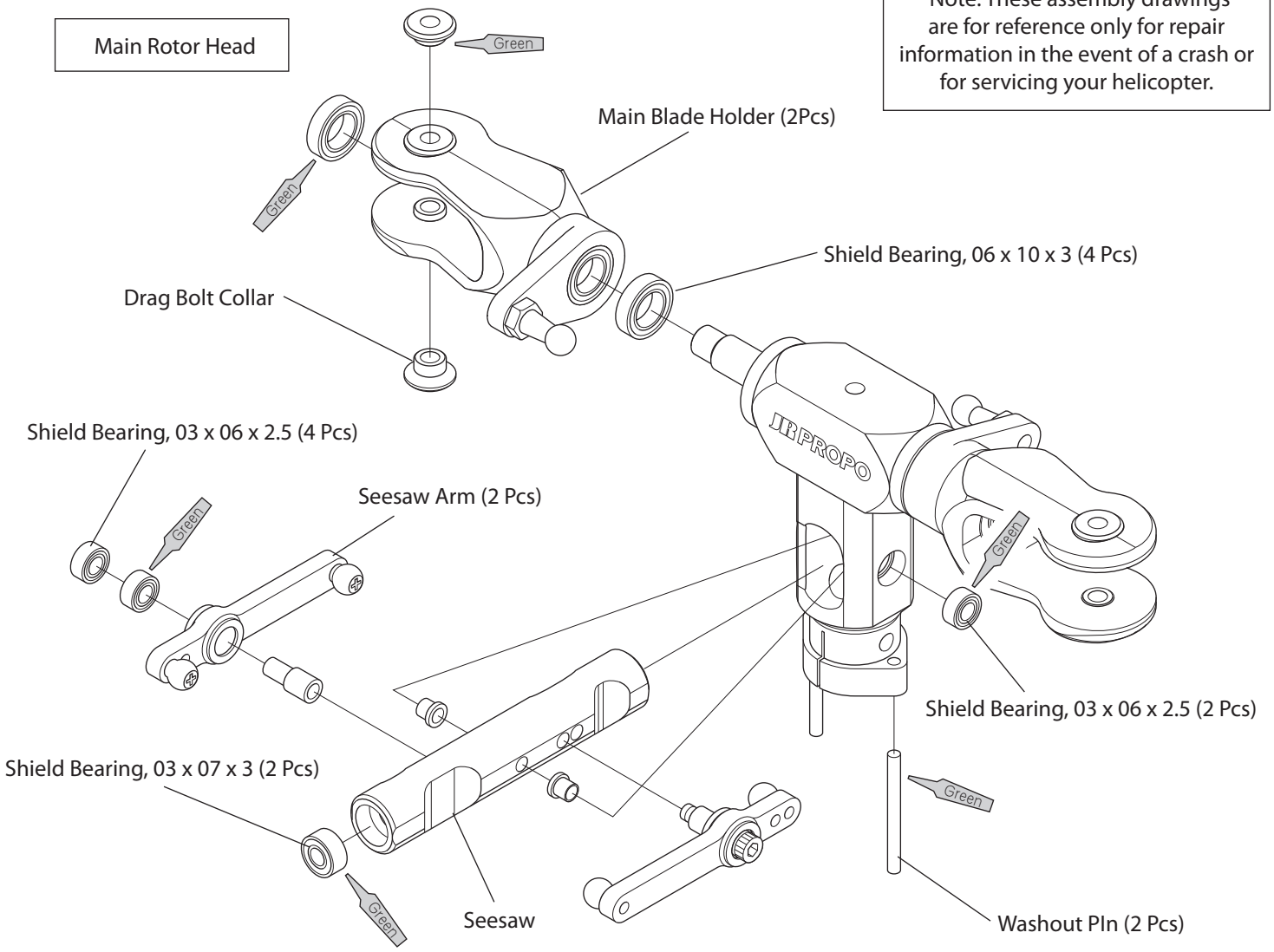
At the end of each flight or flying session, wipe down your helicopter with a clean towel or rag. This is also a good time to inspect all parts for tightness or fatigue. Remember, a clean, well-maintained helicopter will provide you with many hours of trouble-free flight.

Ball Links

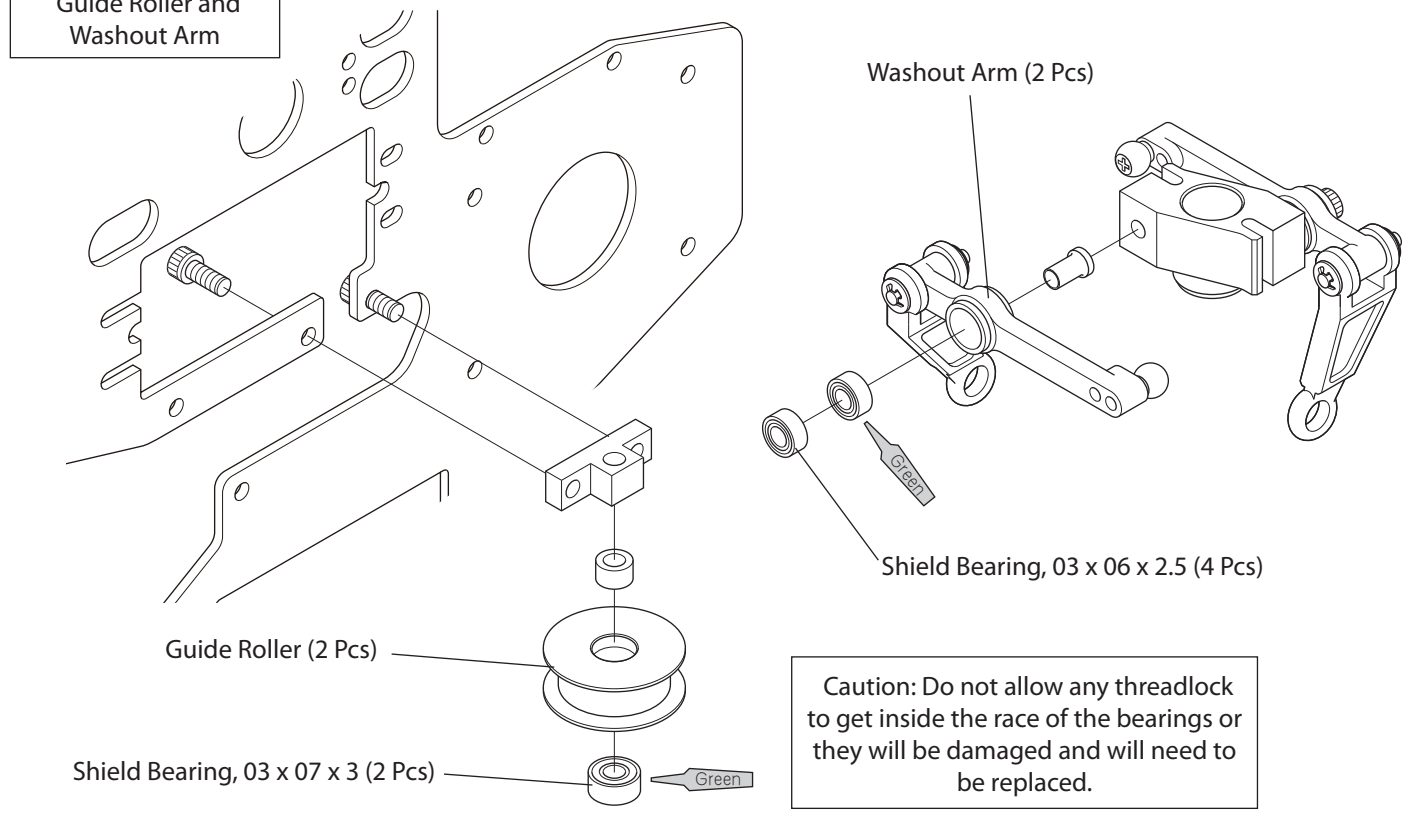
Check ball links every 15–20 flights for increased play and looseness. Adjust the ball links using pliers to tighten the ball race if needed.

Note: These assembly drawings are for reference only for repair information in the event of a crash or for servicing your helicopter.

Main Rotor Head

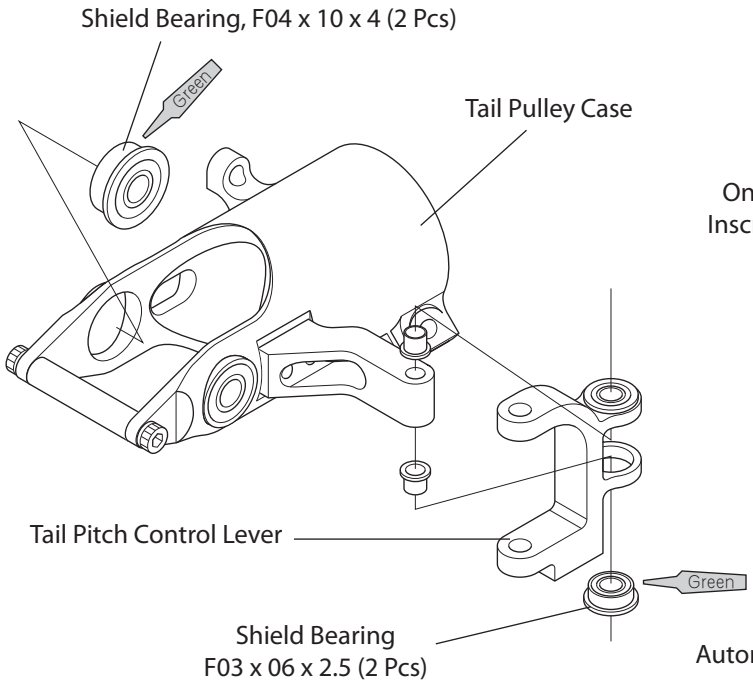


Guide Roller and Washout Arm

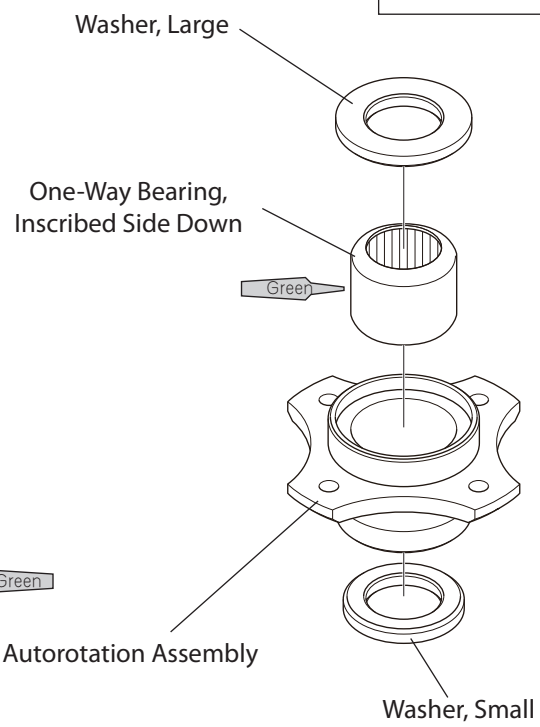


Caution: Do not allow any threadlock to get inside the race of the bearings or they will be damaged and will need to be replaced.

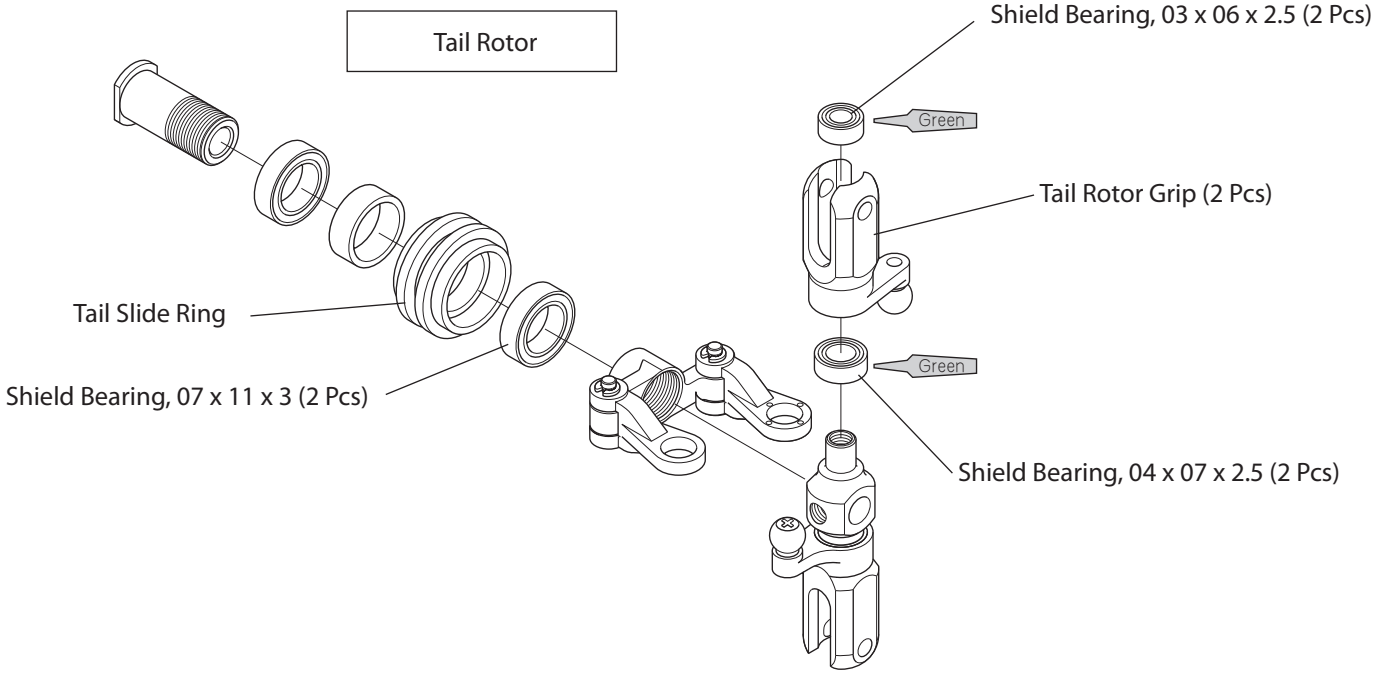
Tail Pulley Case

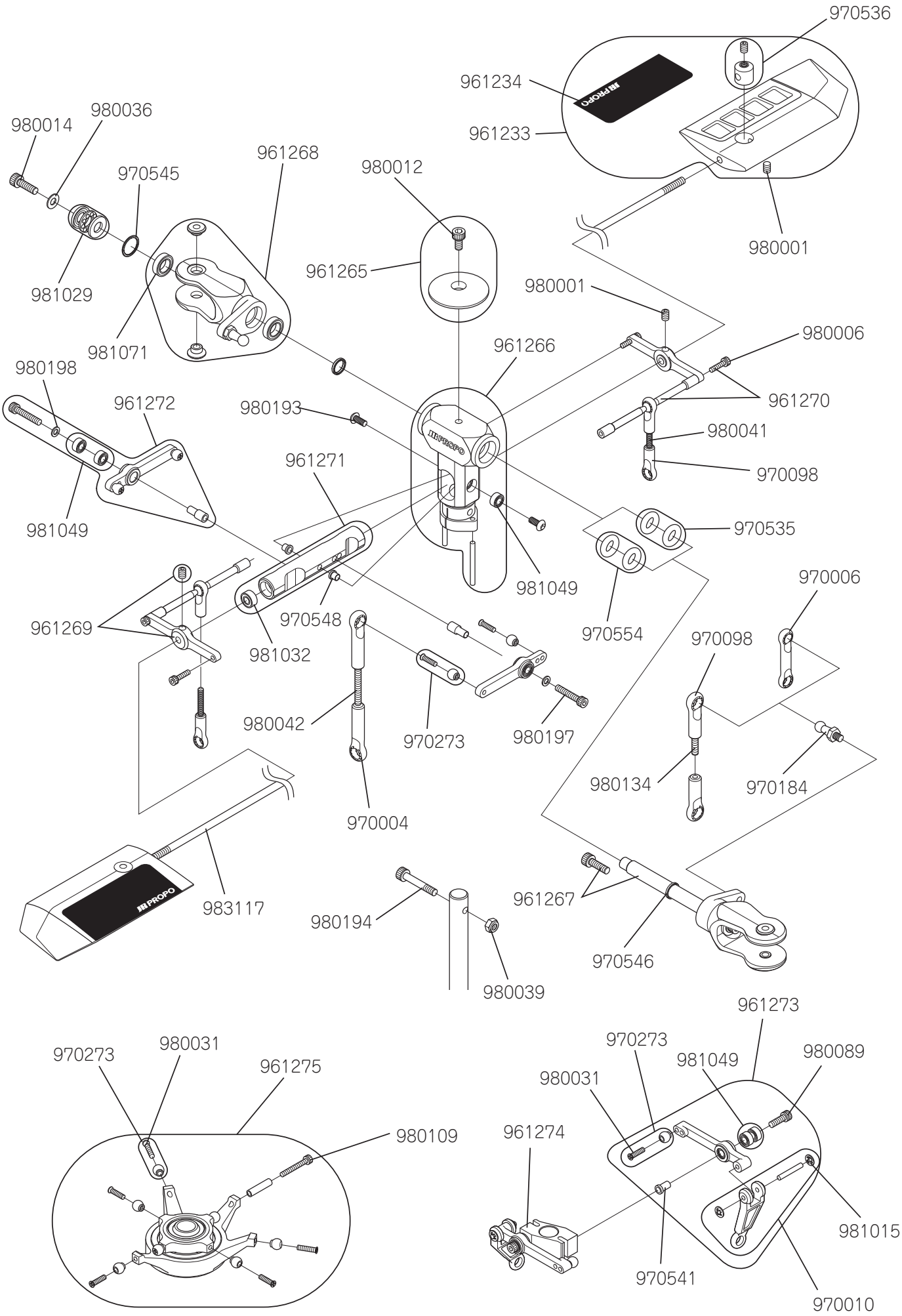


Autorotation Unit



Tail Rotor

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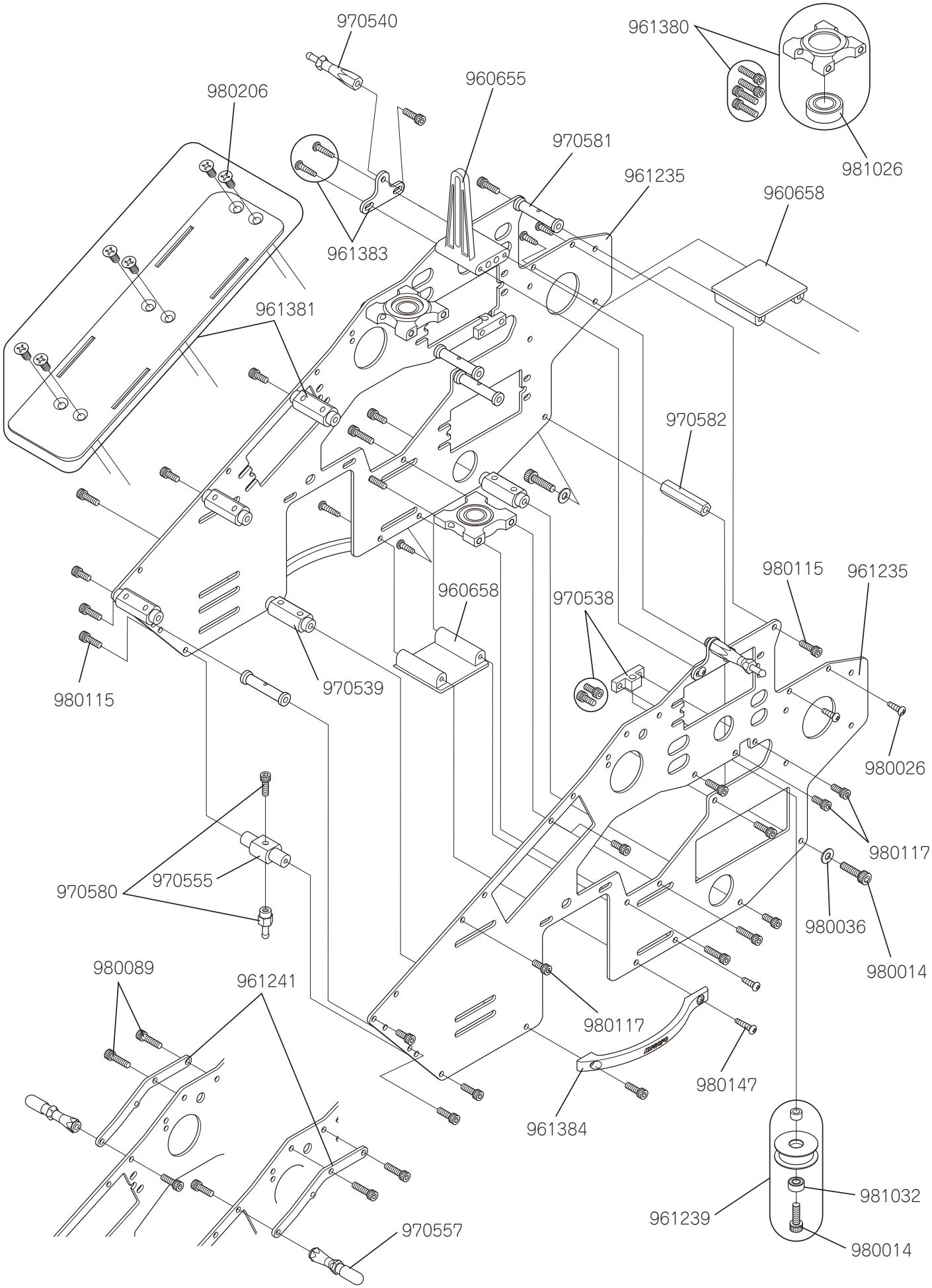
981015
970541
970010

REPLACEMENT PARTS LISTING

Item#	Description	Quantity	Remarks
961233	Paddle	×2	
961234	Paddle Decal	×2	
961265	Head Botton	×1	Socket Head Bolt, M3×6
961266	Main Rotor Hub	×1	Washout Pin
961267	Spindle Shaft	×1	Socket Head Bolt, M3×10
961268	Main Blade Holder Assembly	×1	Ball Arm
961269	Stabilizer Arm A	×2	Setscrew, M3×4
961270	Stabilizer Arm B	×2	Socket Head Bolt, M2×8
961271	Seesaw Assembly	×1	
961272	Seesaw Arm Assembly	×2	Seesaw Center Collar
961273	Washout Arm Assembly	×2	
961274	Washout Base	×1	
961275	120° Swashplate Assembly	×1	Swash Pin
970004	Universal Link	×10	
970006	Double Link A	×4	
970010	Washout Link	×2	
970098	Universal Link S	×5	
970184	Ball Arm L9	×1	
970273	Joint Ball E	×10	Flat Head Screw,M2×8
970535	Damper O-ring 70°	×4	(5.2×10.4×2.6)
970536	Paddle Stopper	×2	Setscrew, M3 ×4
970541	Bearing Collar (VET-039)	×2	
970545	Spindle Washer	×2	
970546	Grip Spacer	×2	
970548	Seesaw Center Collar	×2	
970554	Damper O-ring 50°	×4	(5.2×10.4×2.6)
980001	Setscrew, M3×4	×10	
980006	Socket Head Bolt, M2×8	×10	
980012	Socket Head Bolt, M3×6	×10	
980014	Socket Head Bolt, M3×10	×10	
980031	Flat Head Screw, M2×8	×10	
980036	Flat Washer, M3	×10	
980039	Nylon Lock Nut, M3	×10	
980041	Screw Rod, M2.3×20	×2	
980042	Screw Rod, M2.3×30	×2	
980089	Socket Head Bolt, M2.6×10	×10	
980109	Socket Head Bolt, M2×15	×10	
980134	Screw Rod, M2.3×12	×2	
980193	Button Head Bolt, M2.5×6	×2	
980194	Special Socket Head Bolt, M3×18	×2	
980197	Socket Head Bolt, M2.6×14	×10	
980198	Washer, 2.6×4.5×0.5	×2	
981015	CA Retaining Ring, M2	×10	
981029	Thrust Bearing 05×10×4	×2	T5-10
981032	Shield Bearing 03×07×3	×2	L-730ZZ
981049	Shield Bearing 03×06×2.5	×2	L-630ZZ
981071	Shield Bearing 06×10×3	×2	L-1060ZZ
983117	Flybar 340mm	×2	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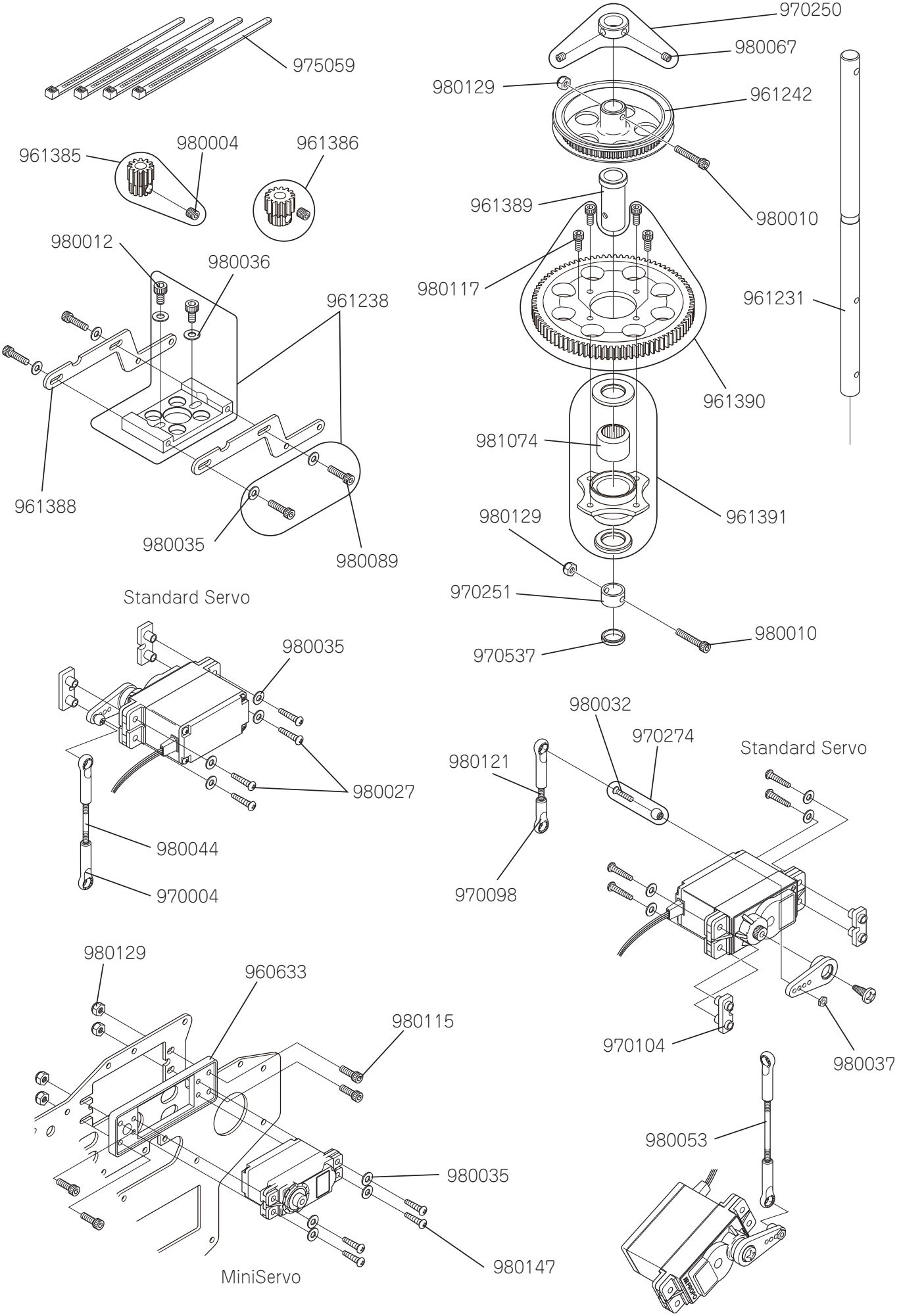
970580
970555
980036
980014
980089
961241
980117
980147
961384
981032
961239
970557
980014

REPLACEMENT PARTS LISTING

Item#	Description	Quantity	Remarks
960655	Radius Support	×1	Self-Tapping Screw, M2.6×8
960658	Gyro Mount	×1	
961235	SG Main Frame	×1	L/R
961239	Guide Roller	×2	L-730ZZ Bearing Spacer
961241	SG Twist Support (For Upper)	×2	
961380	HG Bearing Case	×1	Socket Head Bolt, M2.6×10/M2.6×8
961381	Carbon Battery Mount	×1	Brace Mount
961383	SG Body Mount Plate (Rear)	×2	Self-Tapping Screw, M2.6×10
961384	Frame Bridge	×1	L/R
970538	Guide Roller Block	×2	Socket Head Bolt, M2.6×6
970539	Brace Mount	×2	
970540	Body Catch 23mm	×1	
970555	Body Catch Mount	×1	
970557	Absorber Post L16	×2	Absorber Cap
970580	Body Catch 4mm	×1	Socket Head Bolt, M2.6×8
970581	HG Cross Member 25mm	×2	
970582	Cross Member 25mm (Black)	×2	
980014	Socket Head Bolt, M3×10	×10	
980015	Socket Head Bolt, M3×12	×10	
980026	Self-Tapping Screw, M2.6×8	×10	
980036	Flat Washer, M3	×10	
980089	Socket Head Bolt, M2.6×10	×10	
980115	Socket Head Bolt, M2.6×8	×10	
980117	Socket Head Bolt, M2.6×6	×10	
980147	Self-Tapping Screw, M2.6×10	×10	
980206	Flat Head Screw, M2.6×5	×10	
981026	Shield Bearing 08×16×5	×2	L-1680ZZ
981032	Shield Bearing 03×07×3	×2	L-730ZZ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Standard Servo
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980129
970251
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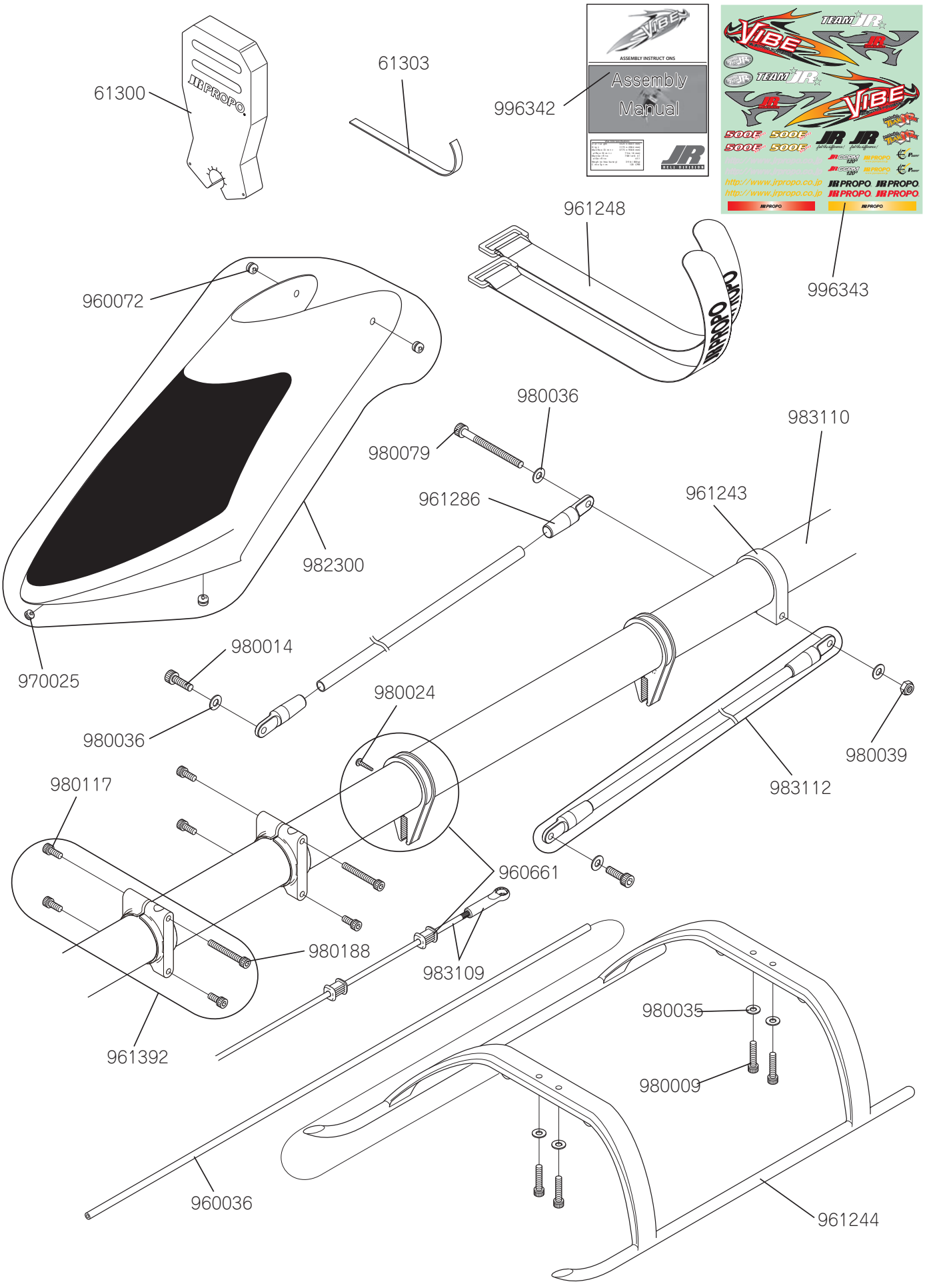
970537
980035
980027
980044
970004
980032
970274
Standard Servo
980121
970098
970104
980037
980129
960633
980115
980035
980147
MiniServo
980053

REPLACEMENT PARTS LISTING

Item#	Description	Quantity	Remarks
960633	Servo Adapters	×4	
961231	Main Shaft	×1	
961238	Motor Mount	×1	Socket Head Bolt
961242	Front Pulley T72	×1	
961385	T12 Pinion Gear	×1	Setscrew, M4×4
961386	T13 Pinion Gear	×1	Setscrew, M4×4
961388	Frame Support Plate(Lower)	×2	
961389	Autorotation Sleeve	×1	
961390	T85 Main Drive Gear	×1	Socket Head Bolt, M2.6×6
961391	Autorotation Unit	×1	
970004	Universal Link	×10	
970098	Universal Link S	×5	
970104	Servo Set Plate B	×10	
970250	Main Shaft Collar	×1	Setscrew, M3×3
970251	Autorotation Collar	×1	
970274	Joint Ball F	×10	Flat Head Screw, M2×10
970537	Main Shaft Spacer	×1	
975059	Nylon Strap S	×10	
980004	Setscrew, M4×4	×10	
980010	Socket Head Bolt, M2.6×15	×10	
980012	Socket Head Bolt, M3×6	×10	
980027	Self-Tapping Screw, M2.6×12	×10	
980032	Flat Head Screw, M2×10	×10	
980035	Flat Washer, M2.6	×10	
980036	Flat Washer, M3	×10	
980037	Nut, M2	×10	
980044	Screw Rod, M2.3×40	×2	
980053	Screw Rod, M2.3×50	×2	
980067	Setscrew, M3×3	×10	
980089	Socket Head Bolt, M2.6×10	×10	
980115	Socket Head Bolt, M2.6×8	×10	
980117	Socket Head Bolt, M2.6×6	×10	
980121	Screw Rod, M2.3×25	×2	
980129	Nylon Lock Nut, M2.6	×10	
980147	Self-Tapping Screw, M2.6×10	×10	
981074	Bearing One-Way 10×12×10	×1	HF-1012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ASSEMBLY INSTRUCT ONS
Assembly Manual
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982300
970025
980014
980036
980024
980039
983112
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983109
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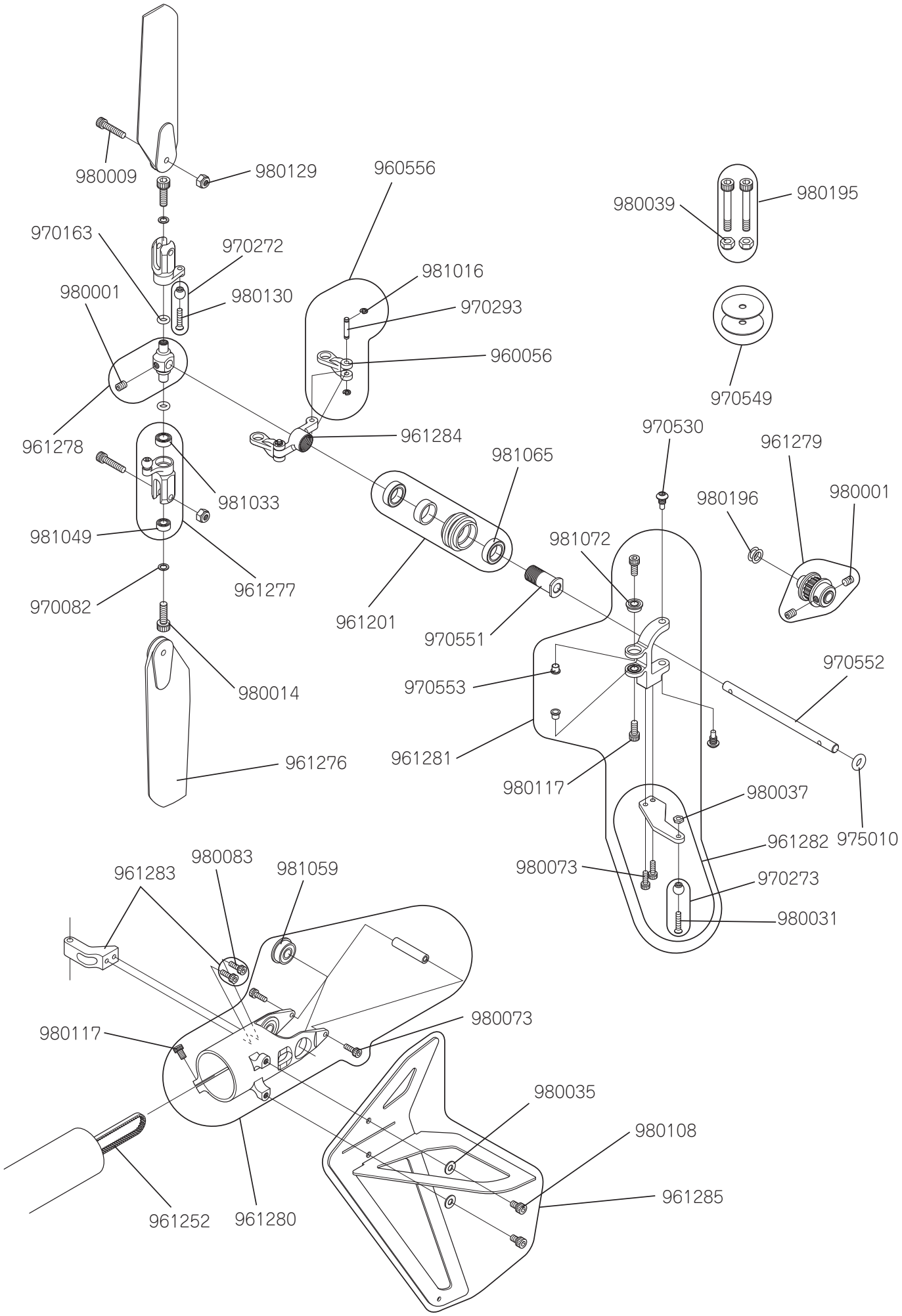
980009
960036
961244

REPLACEMENT PARTS LISTING

Item#	Description	Quantity	Remarks
960036	Antenna Pipe	×3	
960072	Rubber Grommet	×4	
960661	Tail Rod Guide B (2 Pcs)	×2	Includes Tail Rod Guide Collar B
961243	Tail Support Clamp	×1	
961244	Skid	×1	
961248	Hook and Loop Strap M	×2	230mm
961286	Boom Supporter End Φ5	×2	
961300	Blade Holder	×1	
961303	Hook and Loop Strap S	×2	200mm
961392	HG Tail Boom Holder	×2	Socket Head Bolt
970025	Switch Damper Rubber	×4	
980009	Socket Head Bolt, M2.6×12	×10	
980014	Socket Head Bolt, M3×10	×10	
980024	Self-Tapping Screw, M2×8	×10	
980035	Flat Washer, M2.6	×10	
980036	Flat Washer, M3	×10	
980039	Nylon Lock Nut, M3	×10	
980079	Socket Head Bolt, M3×35	×10	
980115	Socket Head Bolt, M2.6×8	×10	
980117	Socket Head Bolt, M2.6×6	×10	
980129	Nylon Lock Nut, M2.6	×10	
980188	Socket Head Bolt, M2.6×20	×10	
980206	Flat Head Screw, M2.6×5	×10	
982300	FRP Body Set	×1	Rubber Grommet
983109	Tail Control Rod L460	×1	Universal Link
983110	Tail Boom L470	×1	
983112	Carbon Tail Boom Support Set Φ5	For 1 Unit	
996342	Assembly Manual (Vibe 500 E)	×1	
996343	Decal (Vibe 500 E)	×1	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961280

REPLACEMENT PARTS LISTING

Item#	Description	Quantity	Remarks
960056	Tail PC Link	×2	PC Link Only
960556	Tail PC Link B	×1	
961201	Tail Slide Ring	×1	Bearing
961252	Tail Drive Belt (40S2M1224G)	×1	
961276	Long Tail Rotor Blade(BK)	×2	
961277	Tail Rotor Grip	×2	Bearing/Joint Ball
961278	Tail Center Hub	×1	Setscrew, M3×4
961279	Tail Pulley	×1	Setscrew, M3×4
961280	Tail Pulley Case	×1	Bearing/Tail Case Cross Member
961281	Tail Pitch Control Lever set	×1	Control Arm/Bearing Collar
961282	Tail Pitch Control Arm	×1	Joint Ball
961283	Tail Pitch Control Base	×1	Socket Head Bolt, M2×5
961284	Tail PC Plate	×1	
961285	Horizontal Stabilizer and Vertical Fin Set	×1 each	Socket Head Bolt, M2.6×4
970082	Washer 03×4.5×0.4	×10	
970163	O-ring 3.5×5.5×1	×2	
970272	Joint Ball D	×10	Flat Head Screw, M2×7
970273	Joint Ball E	×10	Flat Head Screw, M2×8
970293	HG Tail PC Link Pin	×2	
970530	Tail PC Slide Bolt	×2	
970551	Tail Slide Ring Sleeve	×1	
970552	Tail Output Shaft	×1	
970553	Tail Pitch Control Bearing Collar	×2	
970549	Rotor Spacer Set (JRC430)	×1	T0.5,T1 and T1.5 (4 Pcs)
975010	O-ring Set	×5	3.8×7.6×1.9 90°
980001	Setscrew, M3×4	×10	
980009	Socket Head Bolt, M2.6×12	×10	
980014	Socket Head Bolt, M3×10	×10	
980031	Flat Head Screw, M2×8	×10	
980035	Flat Washer, M2.6	×10	
980037	Nut, M2	×10	
980039	Nylon Lock Nut, M3	×10	
980073	Socket Head Bolt, M2×6	×10	
980083	Socket Head Bolt, M2×5	×10	
980108	Socket Head Bolt, M2.6×4	×10	
980117	Socket Head Bolt, M2.6×6	×10	
980129	Nylon Lock Nut, M2.6	×10	
980130	Flat Head Screw, M2×7	×10	
980195	Drag Bolt Set	×2	
980196	Polyslider Washer 4.1×6.5×0.13	×5	
981016	E Retaining Ring, M1.5	×10	
981033	Shield Bearing 04×07×2.5	×2	L-740ZZ
981049	Shield Bearing 03×06×2.5	×2	L-630ZZ
981059	Shield Bearing F04×10×4	×2	LF-1040ZZ
981065	Shield Bearing 07×11×3	×2	L-1170ZZ
981072	Shield Bearing F03×06×2.5	×2	LF-630ZZ

Safety, Precautions and Warnings

As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.
Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is necessary to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model out into the street or populated areas for any reason.
- Never operate your model with low transmitter batteries.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

Safety Do's and Don'ts for Pilots

- Check all control surfaces prior to each takeoff.
- Do not fly your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
- Do not fly during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your aircraft. Strong winds can cause similar problems.
- Do not take chances. If at any time during flight you observe any erratic or abnormal operation, land immediately and do not resume flight until the cause of the problem has been ascertained and corrected. Safety can never be taken lightly.
- Do not fly near power lines.

Warranty Information

Warranty Period

Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.
(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.
(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.
If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.
Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

Safety Precautions

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property.
This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to a service technician.

Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. A Service Repair Request is available at www.horizonhobby.com on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Warranty Inspection and Repairs

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

Non-Warranty Repairs

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards.
If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. Please note: non-warranty repair is only available on electronics and model engines.
Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

USA: Please call 1 877 504 0233 or visit horizonhobby.com to find our distributor for your country for support with any questions or concerns regarding this product or warranty.

HORIZON HOBBY

4105 Fieldstone Road
Champaign, Illinois 61822
(877) 504-0233
horizonhobby.com

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