# XP8103 HELI DATA SHEET VENTURE CP BASIC SETUP

MODEL NO. _____

MODEL NAME _____

MODULATION SPCM - ZPCM - PPM _____

| | | | AILE | ELEV | RUDD |
|---|---|---|---|---|---|
| DUAL-RATE • EXP | 0 | D/R | 90% | 90% | 90% |
| | | EXP | Adjust as needed | | |
| | 1 | D/R | 100% | 100% | 100% |
| | | EXP | Adjust as needed | | |

| | | |
|---|---|---|
| AUTO D/R (POS. 1) | ST1 | INH • ACT |
| | ST2 | INH • ACT |
| | ST2 | INH • ACT |

| | | |
|---|---|---|
| INPUT SEL | AUX2 | HOLD SW• PIT.TRIM•INH |
| | GEAR | ACT • INH |

| | THRO | AILE | ELEV | RUDD | GEAR | PIT | AUX2 | AUX3 |
|---|---|---|---|---|---|---|---|---|
| REVERSE SW | (NORM) • REV | NORM • (REV) | (NORM) • REV | NORM • (REV) | (NORM) • REV | (NORM) • REV | (NORM) • REV | (NORM) • REV |
| SUB TRIM | Adjust as needed | | | | | | | |
| TRAVEL ADJUST | Refer to the CCPM section of this manual for proper settings | | | | | | | |
| FAIL SAFE (SPCM) | | | | | | | | |

| | | EXP | L | 1 | 2 | 3 | H |
|---|---|---|---|---|---|---|---|
| THROTTLE CURVE | N | OFF•ON | 0% | 30% | 50% | 70% | 100% |
| | 1 | OFF•ON | 40% | 50% | 60% | 80% | 100% |
| | 2 | OFF•ON | Optional | | | | |
| PITCH CURVE | N | OFF•ON | -2° pitch | % | 5° pitch | % | 10° pitch |
| | 1 | OFF•ON | -5° pitch | % | 5° pitch | % | 10° pitch |
| | 2 | OFF•ON | % | % | % | % | % |
| | H | OFF•ON | -5° pitch | % | 5° pitch | % | 13° pitch |

| | | | |
|---|---|---|---|
| GYRO SENS | INH • RUDD D/R • (AUTO) | 0 | 80% |
| | | 1 | 60% |
| | | NORM | 0 |
| | | STNT | 1 |
| | | HOLD | 1 |
| | | INVT | 1 |

Refer to gyro gain section for settings

| | | |
|---|---|---|
| THRO HOLD | INH • (ACT) | POS |
| | | Set for idle |

| | | |
|---|---|---|
| THRO HOLD | INH • (ACT) | OFFSET |
| | | Adjust as needed |

| | | | |
|---|---|---|---|
| REVO MIX | NORMAL | UP | % |
| | | DOWN | % |
| | STUNT | UP | % |
| | | DOWN | % |
| ACC MIX | | | % |

Refer to your gyro's instructions for proper settings

| | | CHANNEL | SW | EXP | L | 1 | 2 | 3 | H |
|---|---|---|---|---|---|---|---|---|---|
| PROGRAM MIX | MIX1 | → | | OFF-ON | | | | | |
| | MIX2 | → | | OFF-ON | | | | | |
| | | | | +POS | | -POS | | OFFSET | |
| | MIX3 | → | | | % | | % | | |

| | | | | |
|---|---|---|---|---|
| Swash Type | 1 Servo Norm 2 Servo 180° (3 Servo 120°) 4 Servo 90° | | | |
| | Aile | Elev | Pit | |
| Exp Act•(INH) | ⊕ - 70% | ⊕ - 70% | + (-) 65% | |

# XP8103 HELI DATA SHEET VENTURE CP 3D SETUP

MODEL NO. _____

MODEL NAME _____

MODULATION SPCM - ZPCM - PPM _____

| | | | AILE | ELEV | RUDD |
|---|---|---|---|---|---|
| DUAL-RATE • EXP | 0 | D/R | 90% | 90% | 90% |
| | | EXP | Adjust as needed | | |
| | 1 | D/R | 100% | 100% | 100% |
| | | EXP | Adjust as needed | | |

| | | |
|---|---|---|
| AUTO D/R (POS. 1) | ST1 | INH • (ACT) |
| | ST2 | INH • (ACT) |
| | ST2 | INH • ACT |

| | | |
|---|---|---|
| INPUT SEL | AUX2 | HOLD SW• PIT.TRIM•INH |
| | GEAR | ACT • INH |

| | THRO | AILE | ELEV | RUDD | GEAR | PIT | AUX2 | AUX3 |
|---|---|---|---|---|---|---|---|---|
| REVERSE SW | (NORM) • REV | NORM • (REV) | (NORM) • REV | NORM • (REV) | (NORM) • REV | (NORM) • REV | (NORM) • REV | (NORM) • REV |
| SUB TRIM | Adjust as needed | | | | | | | |
| TRAVEL ADJUST | Refer to the CCPM section of this manual for proper settings | | | | | | | |
| FAIL SAFE (SPCM) | | | | | | | | |

| | | EXP | L | 1 | 2 | 3 | H |
|---|---|---|---|---|---|---|---|
| THROTTLE CURVE | N | OFF•ON | 0% | 30% | 50% | 70% | 100% |
| | 1 | OFF•ON | 100% | 80% | 50% | 80% | 100% |
| | 2 | OFF•ON | Optional | | | | |
| PITCH CURVE | N | OFF•ON | -2° pitch | % | 5° pitch | % | 10° pitch |
| | 1 | OFF•ON | 10° pitch | % | 0° pitch | % | 10° pitch |
| | 2 | OFF•ON | % | % | % | % | % |
| | H | OFF•ON | -5° pitch | % | 5° pitch | % | 13° pitch |

| | | | |
|---|---|---|---|
| GYRO SENS | INH • RUDD D/R • (AUTO) | 0 | 80% |
| | | 1 | 60% |
| | | NORM | 0 |
| | | STNT | 1 |
| | | HOLD | 1 |
| | | INVT | 1 |

Refer to your gyro's instructions for proper settings

| | | | |
|---|---|---|---|
| THRO HOLD | INH • (ACT) | POS | |
| | | Set for idle | |

| | | | |
|---|---|---|---|
| THRO HOLD | INH • (ACT) | OFFSET | |
| | | Adjust as needed | |

| | | | |
|---|---|---|---|
| REVO MIX | NORMAL | UP | % |
| | | DOWN | % |
| | STUNT | UP | % |
| | | DOWN | % |
| ACC MIX | | | % |

Refer to revolution mixing section for proper settings

| | | CHANNEL | SW | EXP | L | 1 | 2 | 3 | H |
|---|---|---|---|---|---|---|---|---|---|
| PROGRAM MIX | MIX1 | → | | OFF-ON | | | | | |
| | MIX2 | → | | OFF-ON | | | | | |
| | | | | +POS | | -POS | | OFFSET | |
| | MIX3 | → | | | % | | % | | |

| | | | | |
|---|---|---|---|---|
| Swash Type | 1 Servo Norm 2 Servo 180° (3 Servo 120°) 4 Servo 90° | | | |
| | Aile | Elev | Pit | |
| Exp Act•(INH) | ⊕ - 70% | ⊕ - 70% | ± 65% | |

# 10X HELI DATA SHEET
# VENTURE CP 3D SETUP

**MODEL NO. (84)** _____

**MODEL NAME (81)** _____

**MODULATION (85) SPCM-ZPCM-PPM** _____

| | THRO | AILE | ELEV | RUDD | GEAR | PITCH | AUX2 | AUX3 | AUX4 | AUX5 |
|---|---|---|---|---|---|---|---|---|---|---|
| REVERSE SW | R (N) | (R) N | R (N) | (R) N | R (N) | R (N) | R (N) | R (N) | R (N) | R (N) |
| TRAVEL ADJUST (12) | Refer to the CCPM section of this manual for proper settings | | | | | | | | | |
| SUB-TRIM (15) | Adjust as needed | | | | | | | | | |
| TRIM RATE (83) | % | | | | | | | | | |

| | | | AILE | ELEV | RUDD |
|---|---|---|---|---|---|
| D/R EXP (13) | 0 | D/R | 90% | 90% | 90% |
| | | EXP | Adjust as needed | | |
| | | TYPE | | | |
| | 1 | D/R | 100% | 100% | 100% |
| | | EXP | Adjust as needed | | |
| | | TYPE | | | |
| | 2 | D/R | Optional | | |
| | | EXP | | | |
| | | TYPE | | | |
| AUTO D/R (23) | ST-1 | INH•(ACT) | 0•(1)•2 | 0•(1)•2 | 0•(1)•2 |
| | ST-2 | INH•ACT | 0•1•2 | 0•1•2 | 0•1•2 |
| | ST-3 | INH•ACT | 0•1•2 | 0•1•2 | 0•1•2 |
| | ST-4 | INH•ACT | 0•1•2 | 0•1•2 | 0•1•2 |
| | HOLD | INH•(ACT) | 0•(1)•2 | 0•(1)•2 | 0•(1)•2 |

| | | | |
|---|---|---|---|
| THROTTLE HOLD (16) | HOLD SW | | INH•(HOLD)•GEAR |
| | POS | | Adjust for Idle |
| | AUTO CUT | | (INH)•ACT |
| | | | POS |
| | Delay | | 1/4 (1/2) 3/4 1 |
| FUNCTION SELECT (17) | FLIGHT EXTRA | | (INH)•GEAR•AILE |
| | GEAR SW | | (INH)•GEAR•HOLD |
| | AUX2 SW | | (INH)•ACT |
| | PIT. LEVER | LOW | (INH)•ACT |
| | | HI | (INH)•ACT |
| | ADT STUNT | | INH•(ACT) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| GYRO SENS (44) | INH • AUX 3 • AUTO | 0 | Refer to the Gyro Gain Section of this manual for proper settings | | | | |
| | | 1 | | | | | |
| | | 2 | | | | | |
| | | NR | S1 | S2 | S3 | S4 | HD |
| | | 0 | 1 | | | | 1 |

| | | | | CHANNEL MASTER → SLAVE | TRIM | SW | OFFSET | | +GAIN | –GAIN |
|---|---|---|---|---|---|---|---|---|---|---|
| PROGRAM MIX (51) - (58) | 1 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | | | | |
| | 2 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | | | | |
| | 3 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | | | | |
| | 4 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | | | | |

| | | | | | | | EXP | | L | 1 | 2 | 3 | 4 | 5 | 6 | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | | | | | | OUT | | | | | | | | |
| | 6 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | | | | | | OUT | | | | | | | | |
| | 7 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | | | | | | OUT | | | | | | | | |
| | 8 | INH • ACT | | → | OFF • ON | NR•S1•S2•S3•S4 HD•AX2•GER | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | | | | | | OUT | | | | | | | | |

# 10X HELI DATA SHEET
# VENTURE CP INITIAL SETUP CONTINUED

| | | EXP | | L | 1 | 2 | 3 | 4 | 5 | 6 | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| THRO CURVE (18) TH,TRIM=SLOW HOV.T=CENTER | N | OFF • (ON) | IN | 0 | | | | | | | 100 |
| | | | OUT | 0 | | | 50% | | | | 100 |
| | | | HOV.SEL | —— | HOV | HOV | HOV | HOV | HOV | HOV | —— |
| | 1 | OFF • (ON) | IN | 0 | | | | | | | 100 |
| | | | OUT | 100% | | | 60% | | | | 100 |
| | 2 | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | OUT | | | | | | | | |
| | 3 | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | OUT | | | | | | | | |
| | 4 | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | OUT | | | | | | | | |
| PITCH CURVE (68) P,TRIM=CENTER HOV.P=CENTER | N | OFF • (ON) | IN | 0 | | | | | | | 100 |
| | | | OUT | -2°Pitch | | | 5°Pitch | | | | 10°Pitch |
| | | | HOV.SEL | —— | HOV | HOV | HOV | HOV | HOV | HOV | —— |
| | 1 | OFF • (ON) | IN | 0 | | | | | | | 100 |
| | | | OUT | -10°Pitch | | | 0°Pitch | | | | 10°Pitch |
| | 2 | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | OUT | | | | | | | | |
| | 3 | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | OUT | | | | | | | | |
| | 4 | OFF • ON | IN | 0 | | | | | | | 100 |
| | | | OUT | | | | | | | | |
| | HOLD | OFF • (ON) | IN | 0 | | | | | | | 100 |
| | | | OUT | -5°Pitch | | | 5°Pitch | | | | 13°Pitch |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TAIL ROTOR CURVE (47) | N | NOR | IN | L | 1 | 2 | 3 | 4 | 5 | 6 | H |
| | | ORG | OUT | | | | | | | | |
| | 1 | NOR | IN | 0 | Refer to your gyro's instruction manual for proper settings | | | | | | 100 |
| | | ORG | OUT | | | | | | | | |
| | 2 | NOR | IN | 0 | | | | | | | 100 |
| | | ORG | OUT | | | | | | | | |
| | 3 | NOR | IN | 0 | | | | | | | 100 |
| | | ORG | OUT | | | | | | | | |
| | 4 | NOR | IN | 0 | | | | | | | 100 |
| | | ORG | OUT | | | | | | | | |
| MIX RATE | | 1/1 • 1/2 • 1/4 • 1/10 | | | | | | | | | |

| TRIM OFFSET (82) | HV.T | HV.P | LO.P | HI.P |
|---|---|---|---|---|
| | | | | |

| | | |
|---|---|---|
| Rudder→Throttle 4→1 MIX (41) | R | % |
| | L | % |
| MODE SELECTION | NR • (S1) • S2 • S3 • S4 • AX2 | |

| | | |
|---|---|---|
| Aileron→Throttle 2→1 MIX (41) | R | % |
| | L | % |
| MODE SELECTION | NR • (S1) • S2 • S3 • S4 • AX2 | |

| | | |
|---|---|---|
| Elevator→Throttle 3→1 MIX (41) | U | |
| | D | |
| MODE SELECTION | NR • (S1) • S2 • S3 • S4 • AX2 | |

| | | | |
|---|---|---|---|
| FAIL-SAFE (77) | Z | MODE | HOLD • 1.0s • 0.5s • 0.25s |
| | | MEMORY | |
| | S | MEMORY | |

| | | | | | | |
|---|---|---|---|---|---|---|
| SWASHPLATE MIXING TYPE (65) | 1 SERVO • (3SERVO - 120°CCPM) • 3SERVO - 140°CCPM | | | | | |
| | 1 SERVO | ELE → AIL | D | % | | |
| | | | U | % | | |
| | | AIL → ELE | L | % | | |
| | | | R | % | | |
| | SWITCH | NR • S1 • S2 • S3 • S4 • HD | | | | |
| 3 SERVO 120° CCPM | AIL | +70% | ELE | +70% | PIT | -65% |
| 3 SERVO 140° CCPM | AIL | % | ELE | % | PIT | % |

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

1. **Servo Direction (Servo Reversing)**
   Check to insure that all servos have been set to the correct direction as shown in programming section, pages 20-22.

2. **Dual Rates**
   It is suggested that for initial flights the Dual Rate function values be set as follows:
   0 Position (low rate): 90%
   1 Position (high rate): 100%

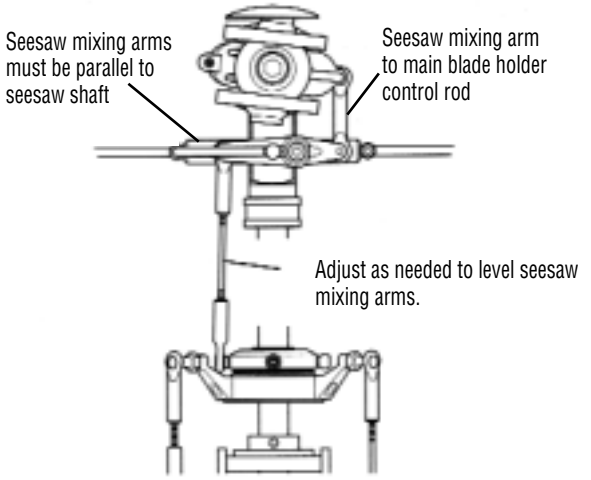
3. **Exponential Settings**
   It is suggested that the exponential rate settings remain in the 0 value position until the initial test flights. After initial flights, adjust the exponential values to achieve the desired control feel.

4. **Sub-Trim Settings**
   It is suggested that the correct neutral settings be achieved without the use of the sub-trim feature. If sub-trim is used for final flight adjustments, it is suggested that the sub-trim values not exceed 20. If the sub-trim values are greater, readjust the control linkages and reset the sub-trims to 0.

5. **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 Adjustment**

It will now be necessary to adjust the main rotor blade pitch to match the settings shown in the chart. A main rotor blade pitch gauge (sold separately) will be necessary for this procedure. Prior to setting the main rotor blade pitch, it will be necessary to first set the required blade pitch at 1/2 (center) stick. Turn the system on and set the collective pitch stick to the center position as in previous steps. If all linkages are properly adjusted, the swashplate/rotor head system should appear as shown in the diagram below. Please note that at the center pitch position, the seesaw mixing arms located on the rotor head are parallel (level) to the seesaw shaft/flybar assembly.



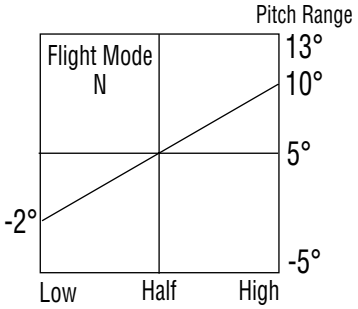

View from front of model

## Pitch Range Settings

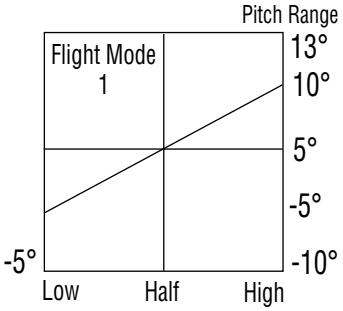
| Flight Mode | Application | Low Pitch (Low Stick) | Hovering Pitch (Half Stick) | High Pitch (High Stick) |
|---|---|---|---|---|
| N | Hovering | -2° | 5° | 10° |
| I | Stunt & Aerobatic Flight | -5° | 5° | 10° |
| 2 | 3D Flight | -10° | 0° | 10° |
| H | AutoRotation | -5° | 5° | 13° |

## Pitch Curve Settings

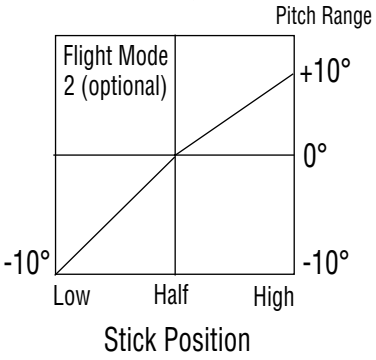
Hovering (Linear Curve)



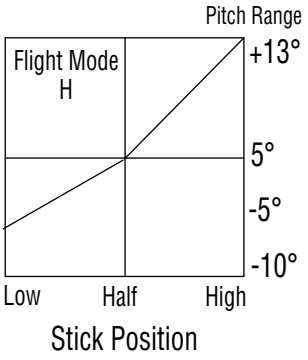

Stunt & Aerobatic Flight




3D Flight




Autorotation




**Venture™ 30 Standard Flight**

Once the position of the seesaw mixing arms have been established, attach a main rotor pitch gauge (sold separately) to one rotor blade and check the current pitch setting. The current pitch should be approximately +5 at center stick. If the pitch is slightly less or more, this can be adjusted later through the radio's Pitch Curve function. Attach the pitch gauge to the second main rotor blade and match the pitch at this time.

**Venture 30 3D Flight**

Once the position of the seesaw mixing arms has been established, attach a main rotor pitch gauge (sold separately) to one rotor blade and check the current pitch setting. Adjust the pitch to the desired setting (0° pitch at center stick) by adjusting the seesaw mixing arm to the main blade holder control rods as shown is Step 4-5. Attach the pitch gauge to the second main rotor blade and match the pitch at this time.

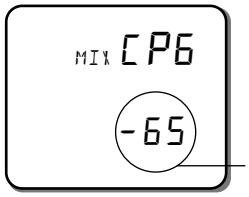
It will now be necessary to establish the maximum pitch value required for your application prior to adjustment. For example, if you are a beginning pilot, then your maximum negative pitch will be -5, and your maximum positive pitch will be +10. The maximum pitch range that you will require will be 15°. If you are a 3D pilot flying the Venture, then your maximum negative pitch will be -10, and your maximum positive pitch will be +10 (+13 for autorotations). The maximum pitch range that you will require will be 23°.

The maximum pitch range mentioned above must be established through the use of the pitch travel value in the CCPM function. 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 in Steps 3-7 and 3-8. Please refer to the CCPM activation section, pages 20-22, 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 negative Pitch range can be reduced as needed through the Pitch Curve function.

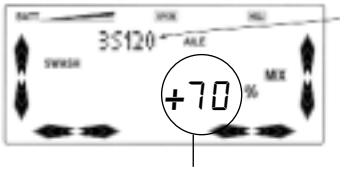
Set the main rotor pitch gauge to the desired maximum pitch setting, then increase or decrease the CCPM pitch travel (labeled Pitch or Ch6) as needed until this pitch setting is achieved.

**XP652/XP662**



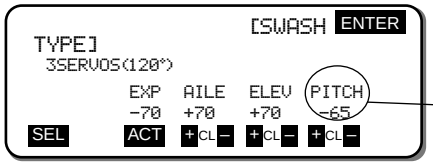

Increase or decrease the value as needed.

**X-378**




Increase or decrease the value as needed.

**PCM 10 Series**




Increase or decrease the value as needed.

**XP8103**

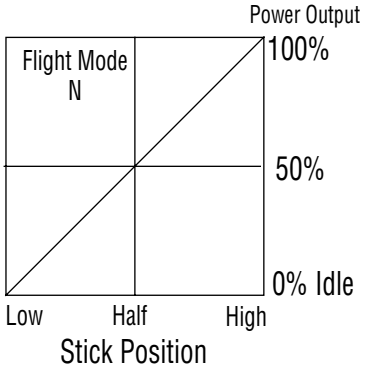

Increase or decrease the value as needed.

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.

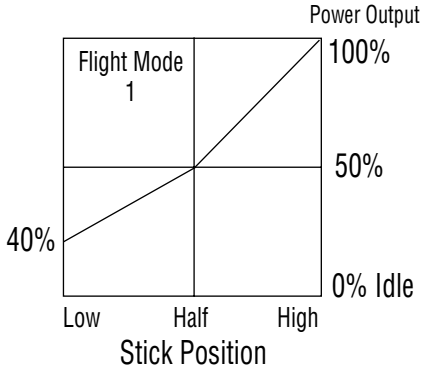
**B. Throttle Curve Settings**

Below are several examples of possible throttle curves during various flight conditions. Since throttle curves can vary greatly due to engine and muffler combinations, it will be necessary to fine tune and adjust these values during test flights to achieve a constant main rotor rpm.

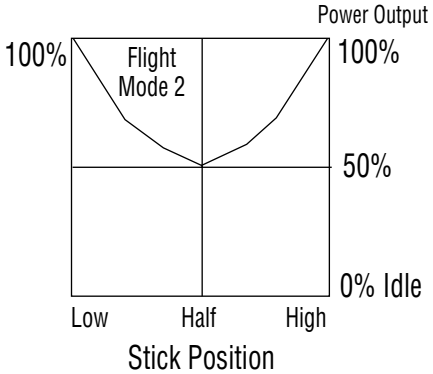
Hovering (Linear Curve)




Stunt & Aerobatic Flight




3D Flight (Optional)



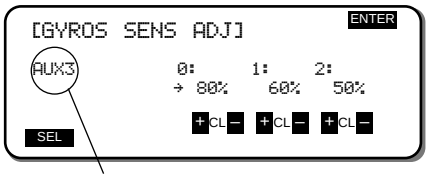

It will also be necessary to set the correct idle speed of the engine when the Throttle Hold function is activated. This idle value is located within the Throttle Hold function. This will allow the engine to remain at idle when practicing autorotations.

**6. Gyro Gain Adjustment (Dual Remote Gain Gyros only)**

It will be necessary to adjust the "gain" or compensation of the gyro to create the correct amount of "holding power" necessary for a solid neutral tail rotor. The intent of the gyro is to compensate for abrupt movements, or wind direction changes.

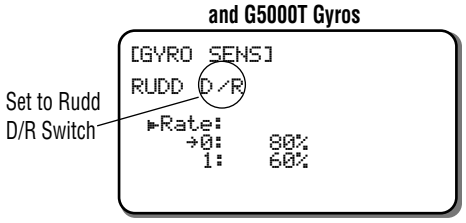
For hovering, it is recommended that you start with the gyro gain at approximately 80° and continue to increase slightly until the tail of the helicopter "hunts," then reduce the value slightly.

**PCM 10 Series Radio with G460T, G550T, and G5000T Gyros**

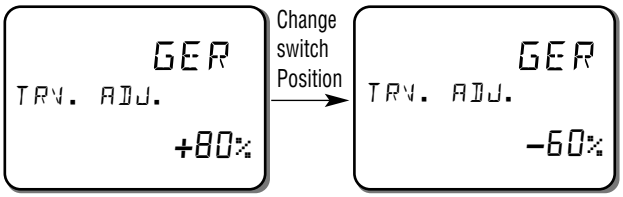



Press *SEL* to select AUX3 or AUTO GAIN function.

**XP8103 with G460T, G550T, and G5000T Gyros**




**XP652 with G460T, G550T, and G5000T Gyros**




*Please refer to your radio's instructions for more information.*

This same adjustment will also be necessary to achieve proper forward flight. Generally, the gyro gain for forward flight will be approximately 10%–20% less than that of the established hover gain due to aerodynamic forces present in forward flight. We have recommended a 60% value as a good starting position.

**7. Verifying Gyro Direction**

It will also be necessary to confirm the direction the gyro compensates when the body of the helicopter is rotated.

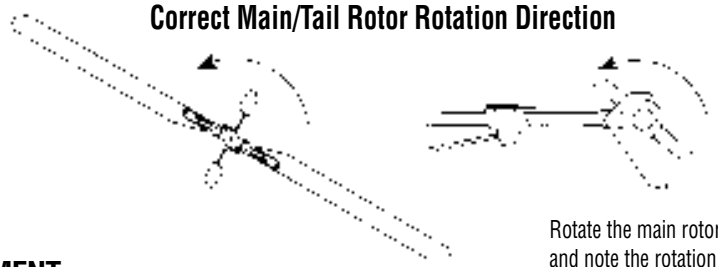
To do this, turn the radio system on and suspend the helicopter by the main rotor head. Next, move the rudder stick to the right and watch the direction that the tail rotor servo arm travels. Now while watching the tail rotor servo arm, rotate the body of the helicopter counterclockwise. The servo arm should move in the same direction as when the rudder stick was moved to the left. If the arm moves in the opposite direction, reverse the gyro and re-test.

## 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.
- Verify that the tail rotor assembly rotates in the correct direction (see the diagram below).
- Verify that the gyro is operational and compensating in the correct direction (detailed in Step 8, page 49).
- Insure 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.
- Make sure that both the transmitter and receiver have been fully charged (refer to your radio system instructions for proper charging procedures).
- Insure that the throttle is working properly and in the correct direction.

**Correct Main/Tail Rotor Rotation Direction**



Rotate the main rotor counterclockwise (backward) and note the rotation of the tail rotor.

## 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).

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 below to identify the different tracking situations, as well as several methods to mark each rotor blade for tracking identification.

## BLADE TRACKING IDENTIFICATION

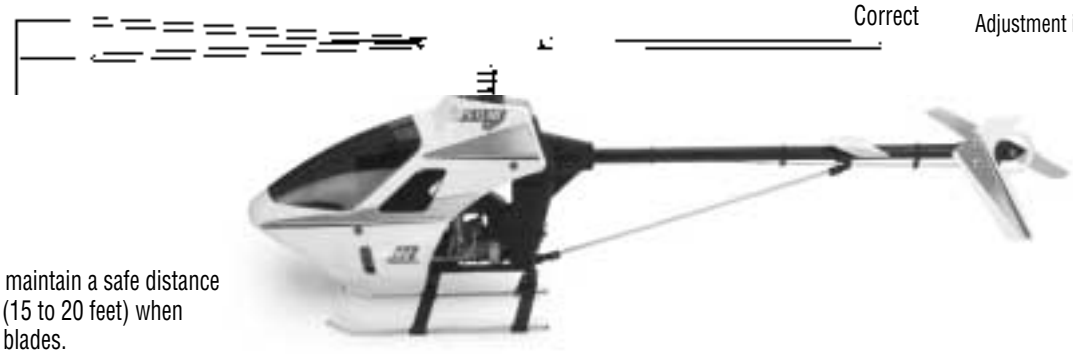
**Out of Track**

Incorrect

**In Track**

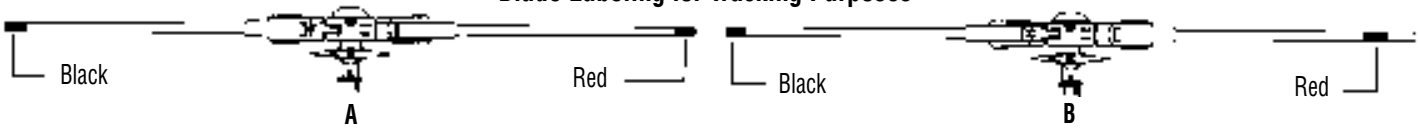
Correct

Adjustment is **not** necessary



**Caution:** Be sure to maintain a safe distance from the helicopter (15 to 20 feet) when tracking main rotor blades.

**Blade Labeling for Tracking Purposes**




A: Use two different blade tracking tape colors (e.g., black and red) at the tip of each main rotor blade.

B: Use the same color blade tracking tape located at different positions on each rotor blade.

**Note:** Adding additional blade tracking tape to the rotor blades at this stage will make it necessary to re-static balance the main rotor blades.

# Flight Training

**Flight Simulators**

A model helicopter simulator is *highly recommended* and is an excellent training aid. Simulators like the CSM V10 will help you learn the orientation and inputs needed to fly a model helicopter, without the risk of damaging your model to learn these same reactions. In general, most beginning pilots find that using an RC simulator prior to their first actual flights with their model increase the speed in which they learn, and also decrease the number of crashes associated with learning to fly. Even the most experienced Heli pilots continue to practice with a flight simulator to learn new maneuvers and stick inputs prior to trying these maneuvers with their actual models.

**Training Gear**

Before you commence, it is also *highly recommended* that you first purchase and install helicopter flight training gear to your Venture to prevent accidental prior to tracking the blades, or attempting to fly the model.

**Experienced Help**

It is also *highly recommended* if possible that you seek help from an experienced RC helicopter pilot prior to your first flights. Contact your local hobby shop for more information on clubs and pilots in your area.

**Where to Fly**

It is recommended that for your first flights, you locate a large smooth parking lot or paved surface that is in a private setting. The training gear will allow the model to slide smoothly on a flat hard surface, which will reduce the risk of tipovers while learning. A smooth grass surface will also work if it is not possible to locate a large parking lot, however the training gear will have a tendency to catch in the grass which increases the possibility of a tip over.

**When to Fly**

For your first flights, it is recommended that you chose a day with calm or no wind as the model will be much easier to control without the additional wind factor. Generally, you will want to pick a day where the wind is below
5 mph if possible for the best results. Please also note that the model should always be positioned nose into the wind for the best results.

# Basic Hover Training Practices

Once you have properly tracked the main rotor blades and have tuned the engine as needed, it is now time to move on to the initial flight training practices listed below.

**Ground Skating**

The first step towards learning to fly is ground skating. The model should be positioned nose into the wind, and the pilots should be located approx-imately 15-20 feet behind the model, and slightly to the left or right. The tail of the model should always face towards the pilot during these initial flight practices. To start ground skating, simply increase the throttle slowly until the model starts to become light in the training skids. Next, move the cyclic stick forward slightly; the model should slide forward. Begin to skate the model slowly to the left, right, forward and backwards gently until you become familiar with the stick inputs. Once you have become comfortable with this, you can also practice rotating the model to the left and right using the rudder stick. Be careful when doing this; if the model rotates the nose towards you, the cyclic controls will be reversed.

**Short Stationary Hovering**

Once you have become comfortable with grounds skating, your next step is to try to perform a short stationary hover. To do this, increase the throttle slowly until the model starts to lift from the ground. When the model is 1 foot from the ground, gently reduce the throttle so that the model will settle back down gently. Continue this procedure, and try to increase the time that the model remains airborne.It is important that you keep the model within 3 feet of the ground while performing this exercise, as this will prevent an accidental tip over.

**Long Stationary Hovering**

Once you have become comfortable with the short stationary hover, the next step is to try to increase the length of time that you are able to keep the model in stationary hover. Continue to practice this exercise until you are able to keep the model in a stationary hover for a full tank of fuel.

**Traveling Hover**

Once you have become comfortable with the long stationary hover, the next step is to try to perform a traveling hover. To do this, lift the model into a stationary hover approximately 1 foot from the ground. Next, move the cyclic stick forward gently, the model will start moving forward. Once the model has traveled 10–15 feet, gently pull back on the cyclic stick until the model returns to stationary hover. Next, gently move the cyclic stick backwards until the model returns to its original position in stationary hover. Repeat this exercise for left and right cyclic as well.

Once you have completed these exercises, you are well on your way to learning to Hover. Please seek advise from an experienced heli pilot in your area on flight progression from this stage forward.

**Engine**

After each day of flying, fully drain the fuel tank. Then, start the engine and let it idle until the engine and the fuel line are completely burned off. It is also suggested that an after-run oil be used to prevent premature engine corrosion.

**Tail Rotor Belt**

Periodically check the tension on the tail drive belt (as shown in Step 1-2, page 8) to insure that it has sufficient tension for proper engagement. It is especially important to check this after initial test flights.

**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 6–10 flights.

**Check Ball Link Wear**

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

**Battery Maintenance**

Check to insure that your batteries are properly mounted and charged. The most frequent cause of crashes (aside from pilot error) is battery failure or disconnection. Be certain that your batteries are fully charged and limit your flight time to 3 or 4 flights between charging. If more flight time is required, purchase a reliable quick field charger.

**Cleaning**

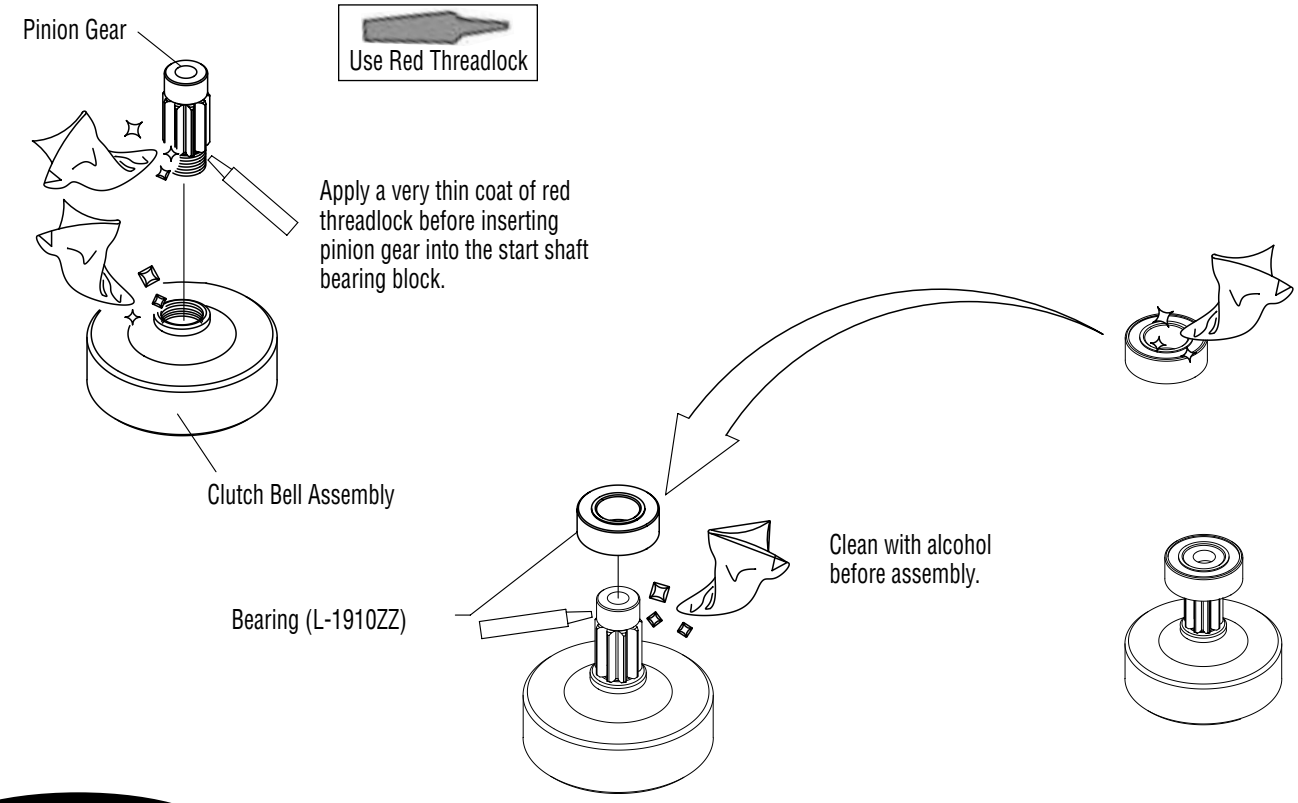
At the end of each flight or flying session, wipe down your helicopter with a clean towel or rag. This is also a good time to inspect all parts for tightness or fatigue. A clean, well-maintained helicopter will provide you with many hours of trouble-free flight.

| PROBLEM | CAUSE | CURE |
|---|---|---|
| Helicopter vibrates excessively | a. Rotor blades out of balance<br>b. Flybar/paddles not centered<br>c. Engine running roughly<br>d. Excessive clutch run out | Re-balance rotor blades<br>Re-center flybar on rotor head<br>Re-adjust engine lean/rich settings<br>Re-align clutch assembly |
| Engine runs inconsistent | a. Incorrect fuel mixture<br>b. Fuel line problem<br>c. Glow plug damaged | Re-adjust engine settings<br>Check/replace lines (including inside the tank)<br>Replace glow plug |
| Main rotor blades do not track | a. Blade pitch not equal<br>b. Blades warped or twisted | Re-set blade pitch w/ gauge and retest<br>Check and replace as needed |
| Model "wobbles" in hover | a. Rotor rpm too low | Increase throttle at hover or decrease pitch |
| Clutch grabs when at idle | a. Engine rpm too high<br>b. Engine/clutch mis-aligned | Reduce trim value/engine rpm<br>Re-align and retest |
| Model will not lift off the ground | a. Engine too rich<br>b. Blade pitch incorrect<br>c. Throttle curve incorrect | Lean needle valve settings<br>Re-check with pitch gauge<br>Re-check throttle curve settings |
| Model rotates uncontrollably | a. Gyro direction reversed<br>b. Tail servo reversed<br>c. Gyro gain too low<br>d. Main rotor rpm too low | Re-check gyro direction and retry<br>Re-check servo direction and retry<br>Increase gyro gain and retry<br>Increase throttle or decrease pitch |
| Model constantly drifts in same direction | a. Linkage out of adjustment<br>b. Servo centering not correct<br>c. Trim levers not centered | Re-check linkages per manual<br>Re-check servo neutral and reset<br>Check TX trim lever position |

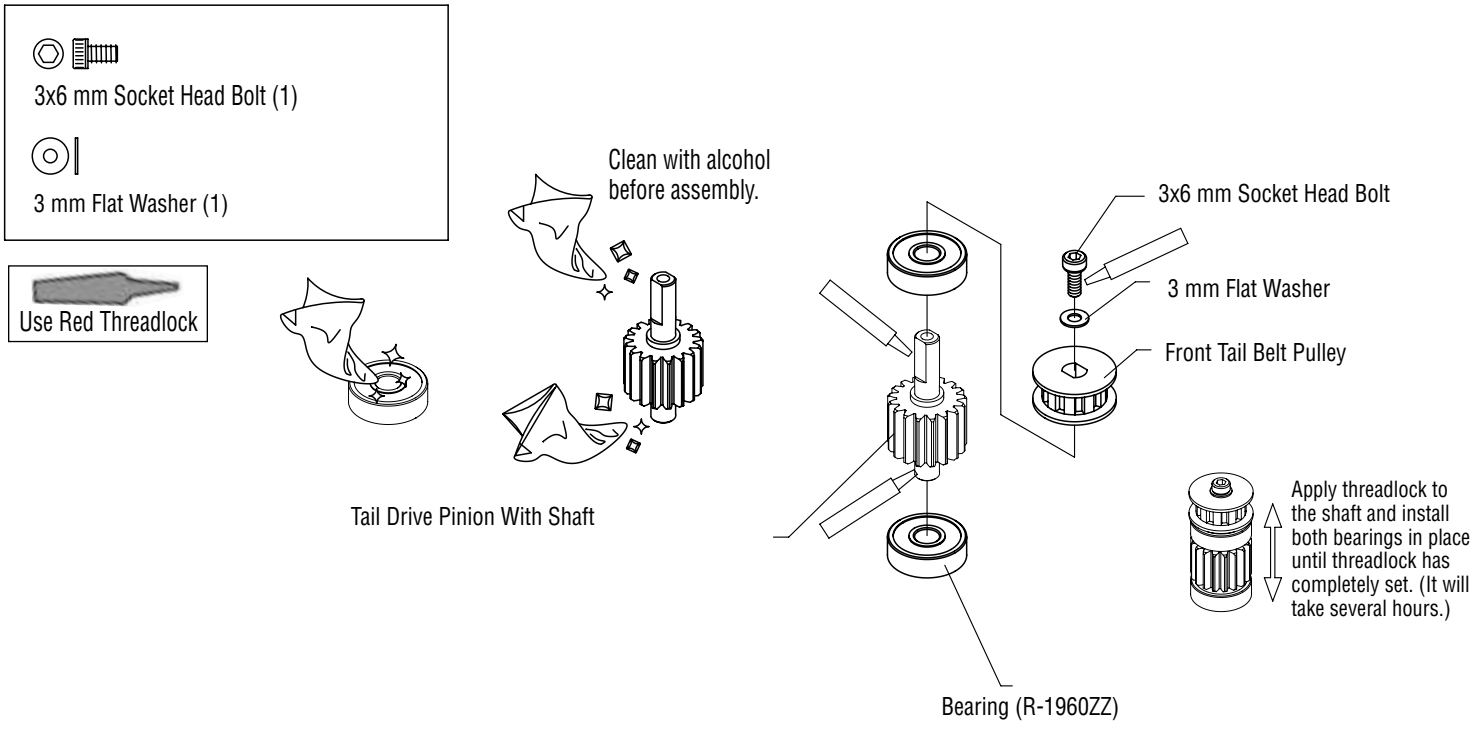
**For additional questions, please contact:**
**Venture Help Line: 217-355-9511**
**9a.m.–5p.m. Mon–Fri CST**
**E-mail: venturehelp@horizonhobby.com**

The following parts included in your kit are preassembled. When maintenance or repair is necessary, please refer to these sections for disassembly or reassembly procedures.

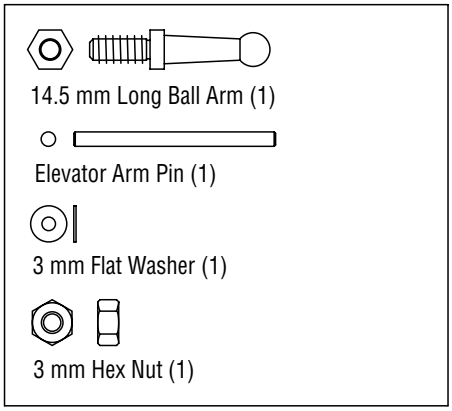
## 1-1 CLUTCH BELL ASSEMBLY

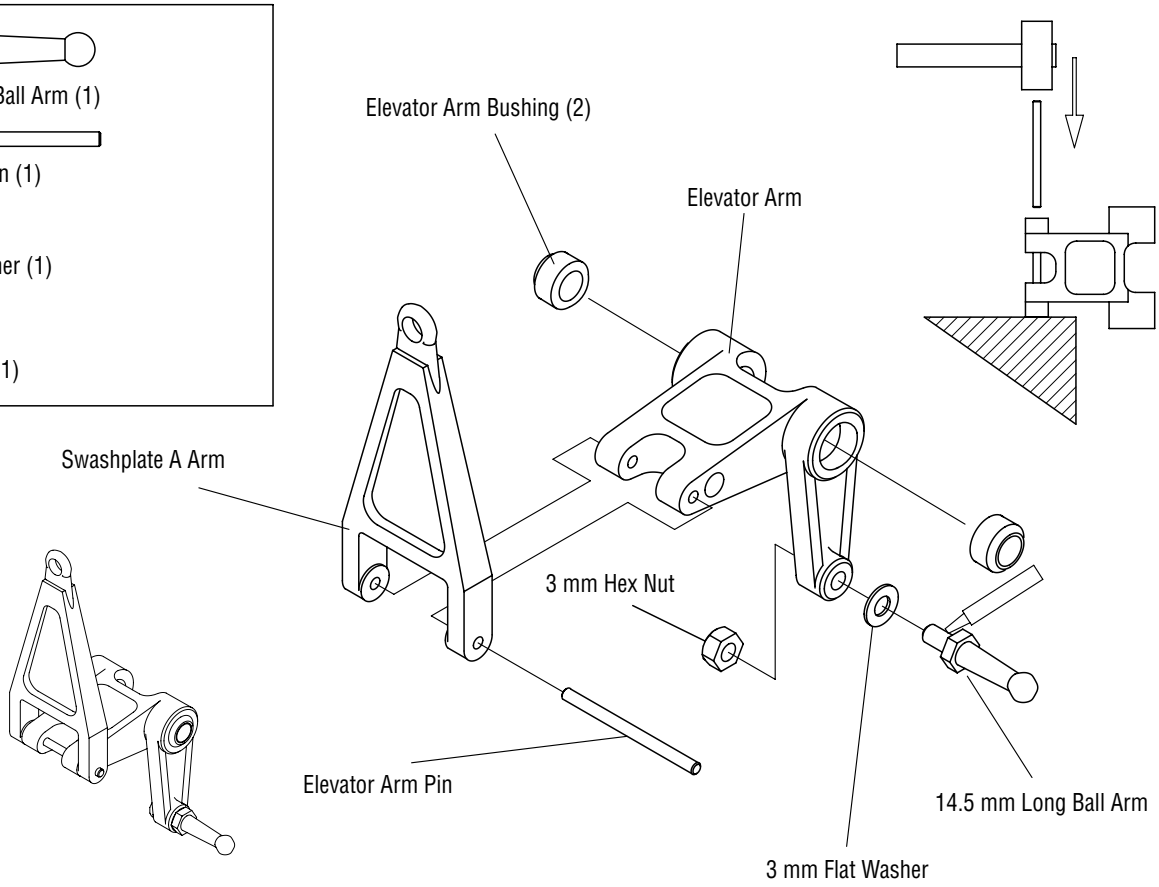



## 1-2 TAIL DRIVE PINION/BEARING ASSEMBLY

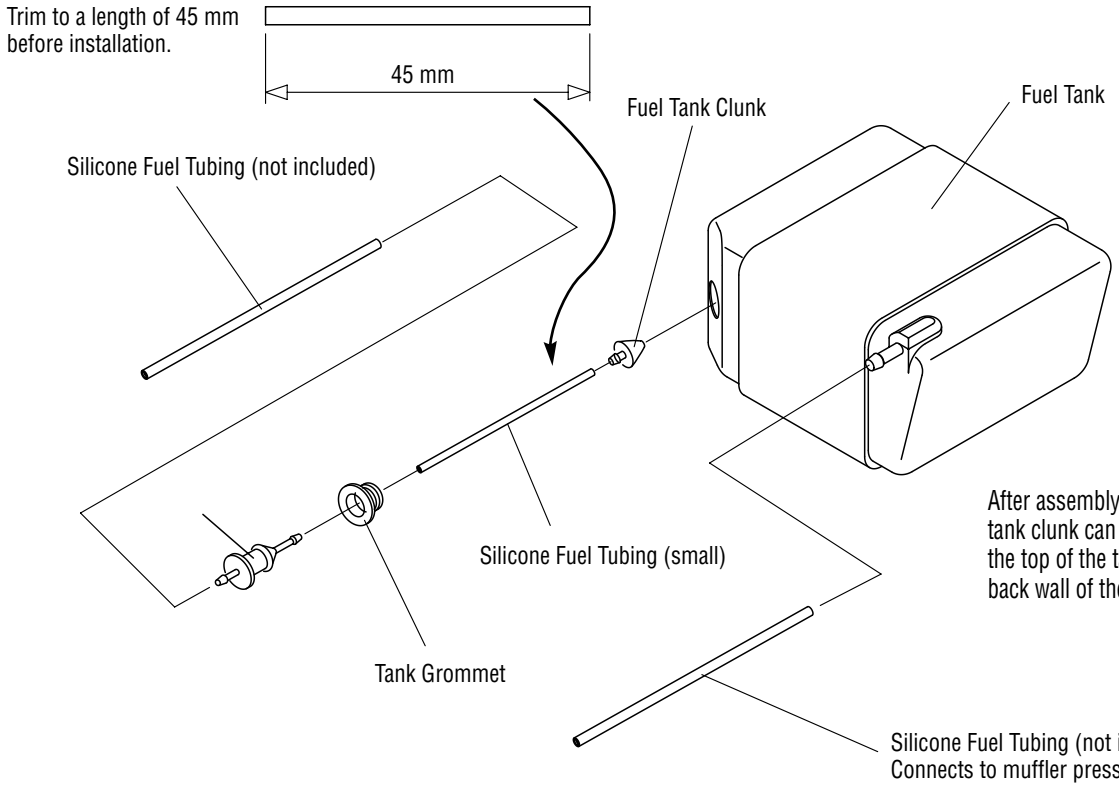


# 1-3 ELEVATOR ARM ASSEMBLY



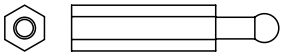




# 1-4 FUEL TANK ASSEMBLY




After assembly, check to be sure the fuel tank clunk can move from the bottom to the top of the tank without touching the back wall of the fuel tank.

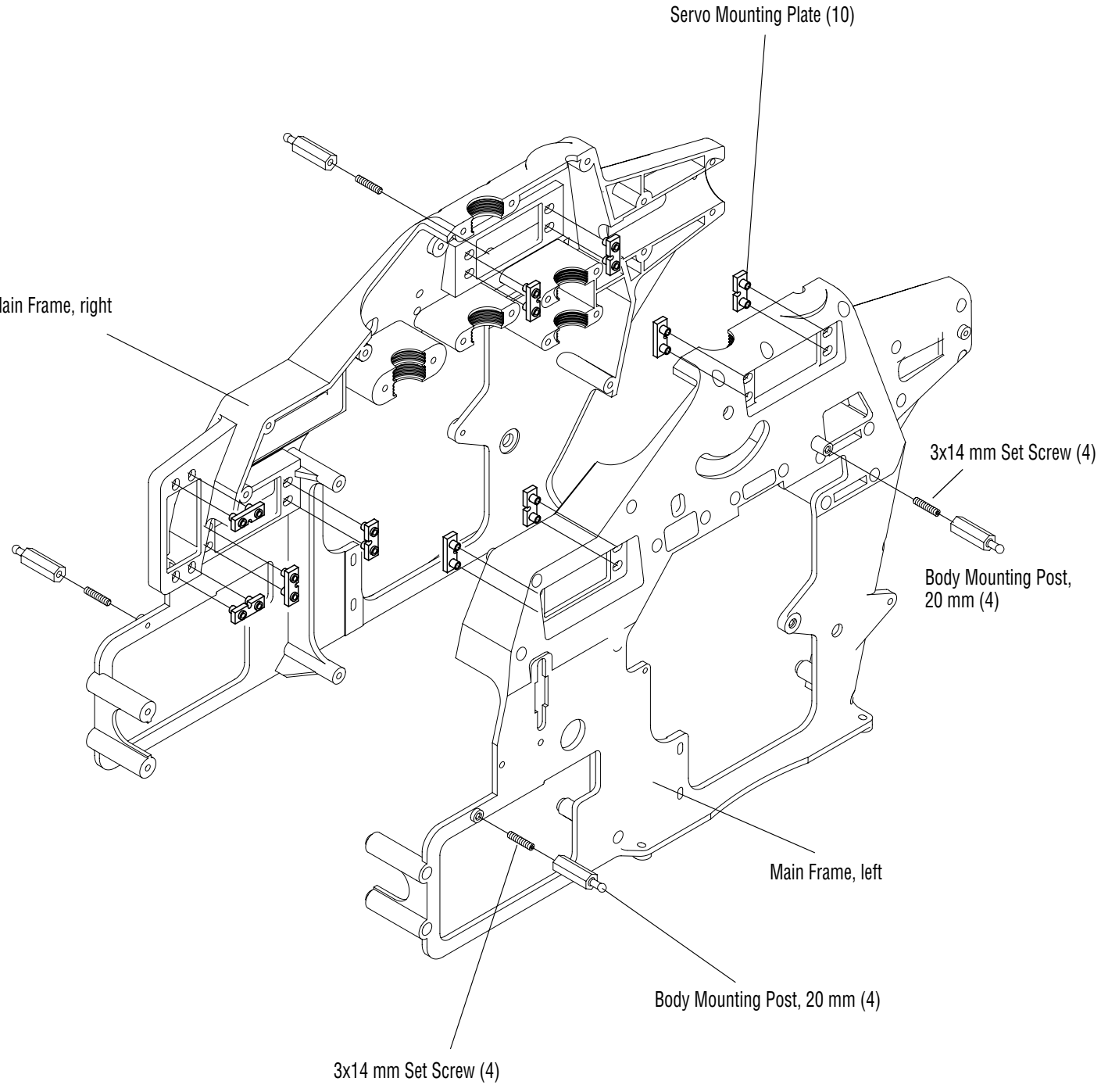
# 2-1 MAIN FRAME SECTION ASSEMBLY



Body Mounting Post, 20 mm (4)

3x14 mm Set Screw (4)

Install the servo mounting plates as shown.



# 2-2 MAIN FRAME CLUTCH/TAIL PINION/ELEVATOR/FUEL TANK INSTALLATION

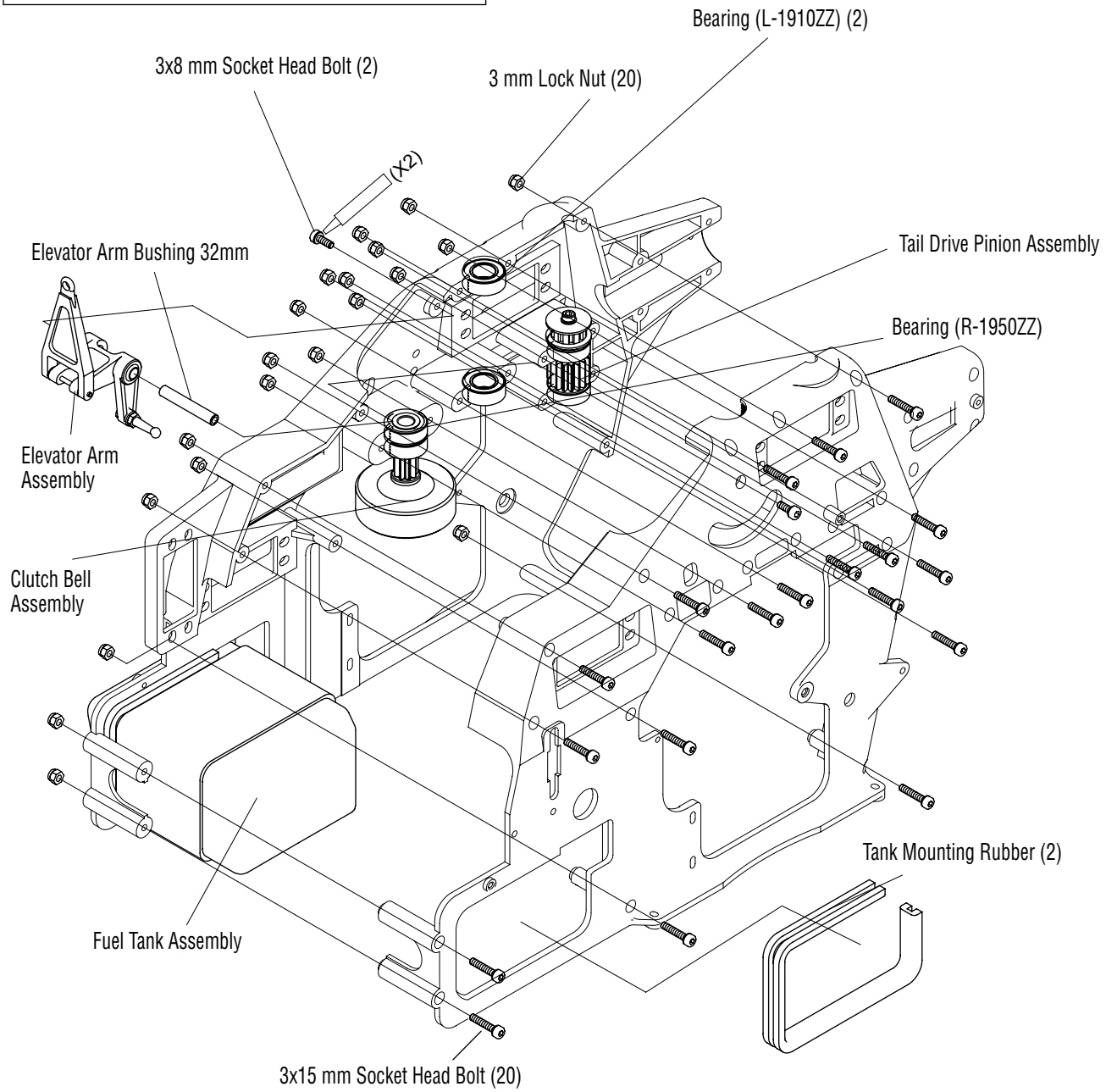
3x8 mm Socket Head Bolt (2)

3x15 mm Socket Head Bolt (20)

3 mm Lock Nut (20)

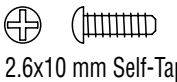
Elevator Arm Bushing 32 mm (1)

Use Blue Threadlock

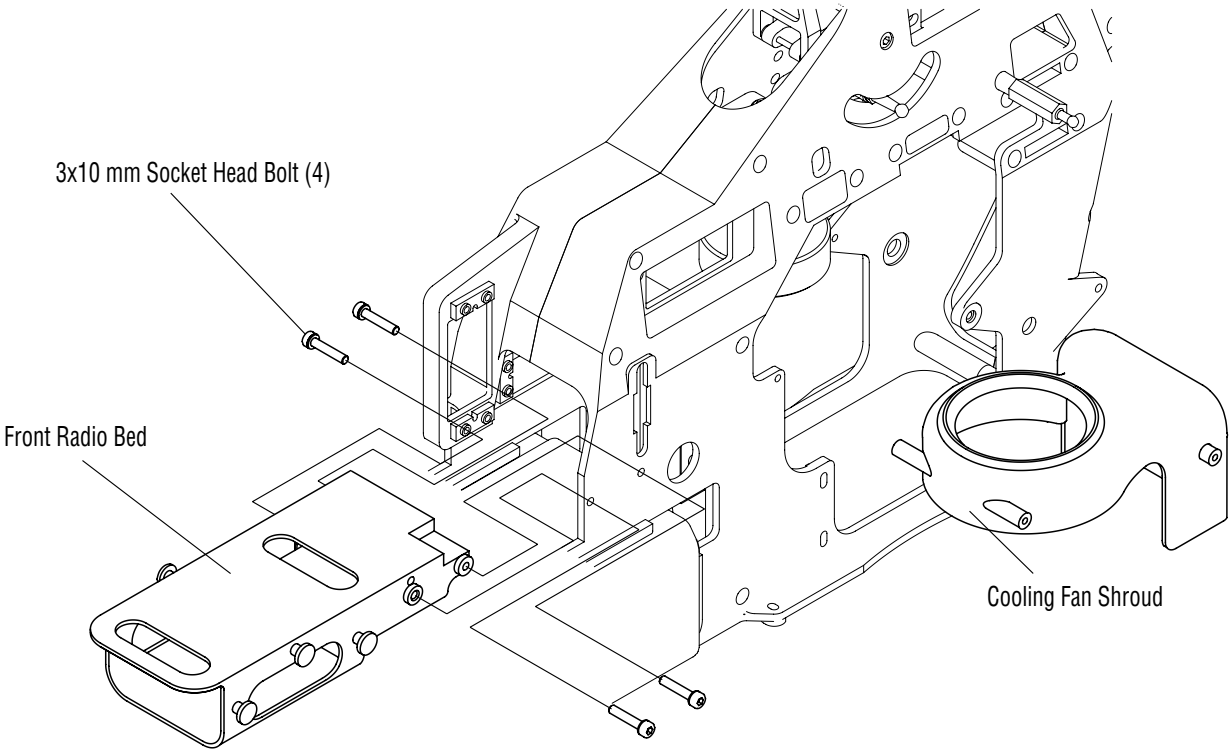


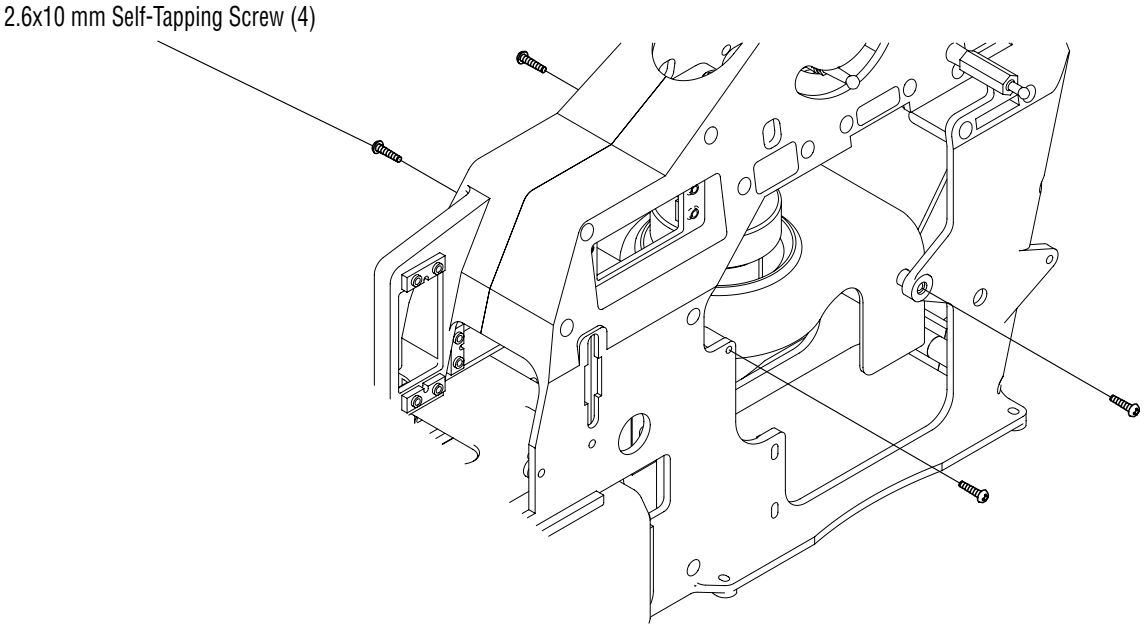
# 2-3 FRONT RADIO BED/COOLING FAN SHROUD INSTALLATION

3x10 mm Socket Head Bolt (4)



2.6x10 mm Self-Tapping Screw (4)



# 3-1 MAIN DRIVE GEAR/AUTOROTATION ASSEMBLY INSTALLATION

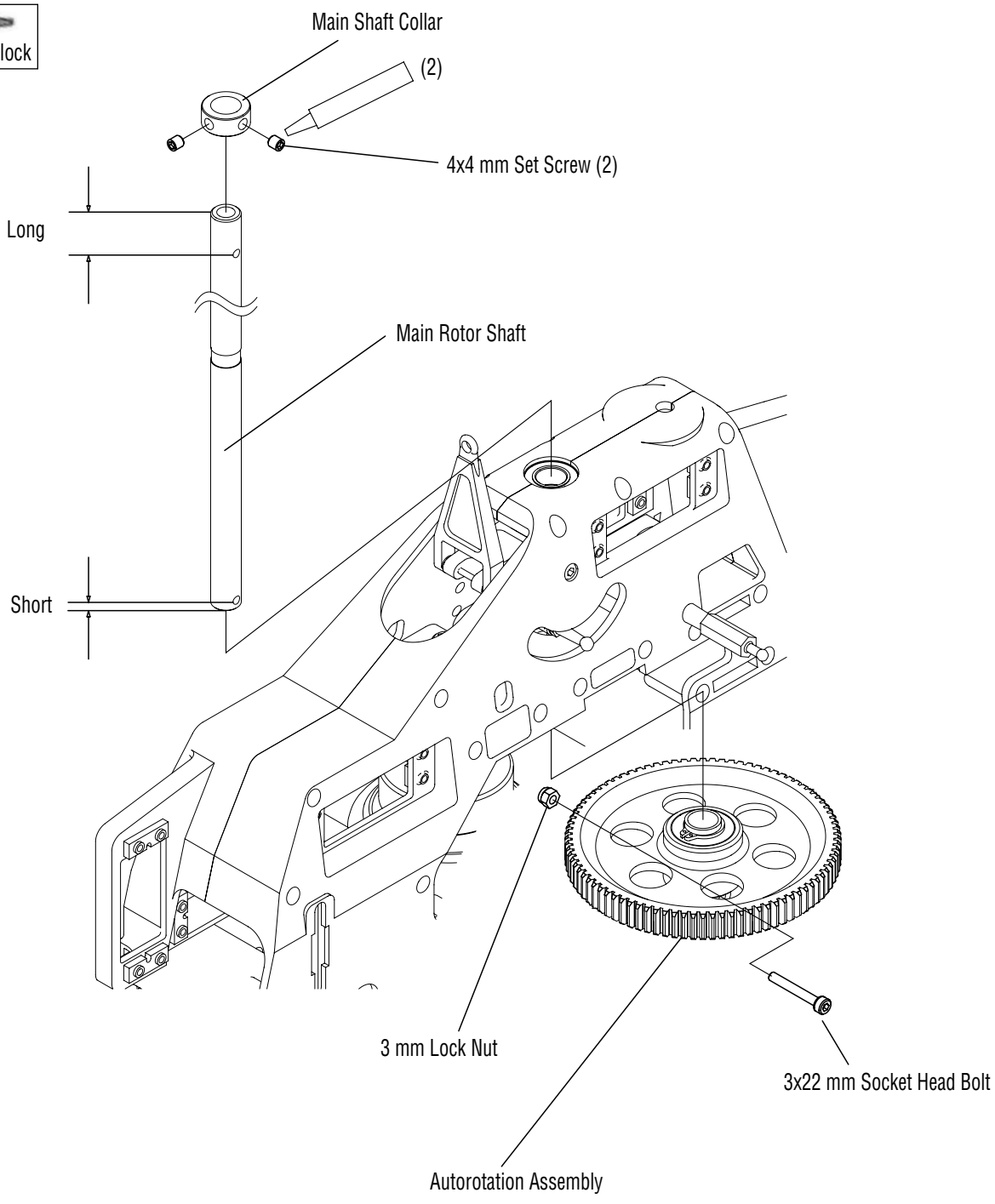

4x4 mm Set Screw (2)


3x22 mm Socket Head Bolt (1)

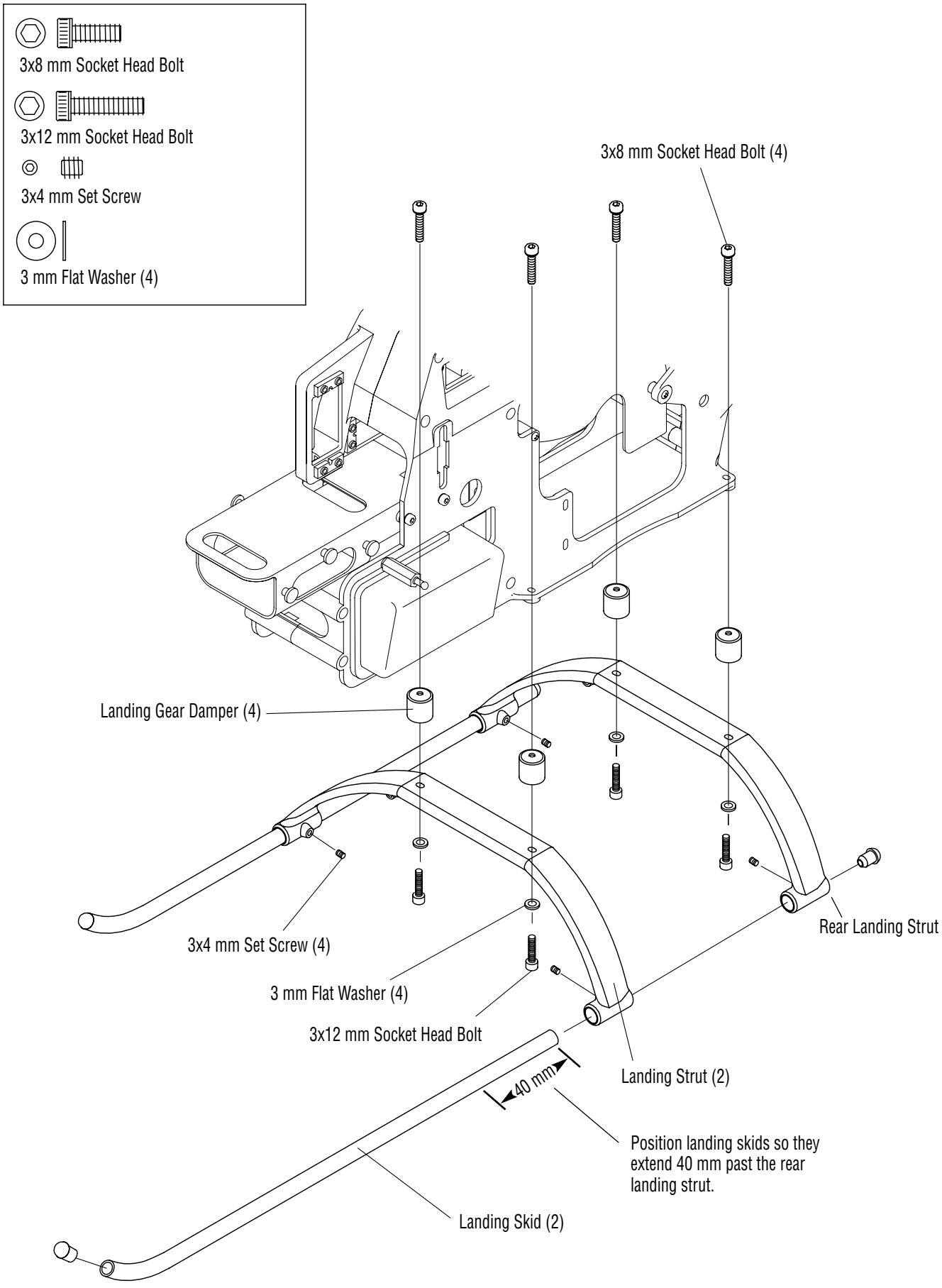

3mm Lock Nut (1)

Secure the autorotation hub to the main rotor shaft using the 3x22 mm socket head bolt. Next, slide the main shaft collar onto the main rotor shaft. While pulling upward on the main rotor shaft, secure the main shaft collar to the main rotor shaft using the four 4x4 mm set screws.

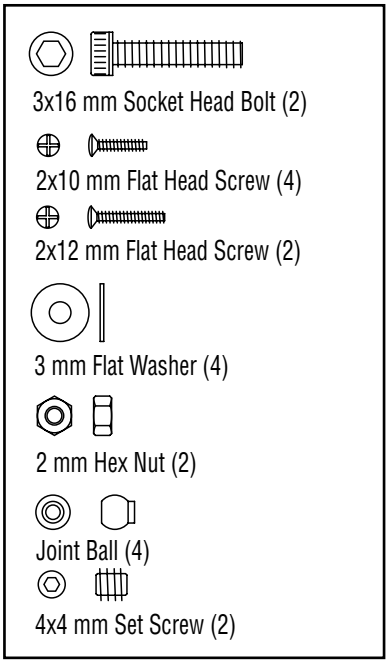

Use Blue Threadlock

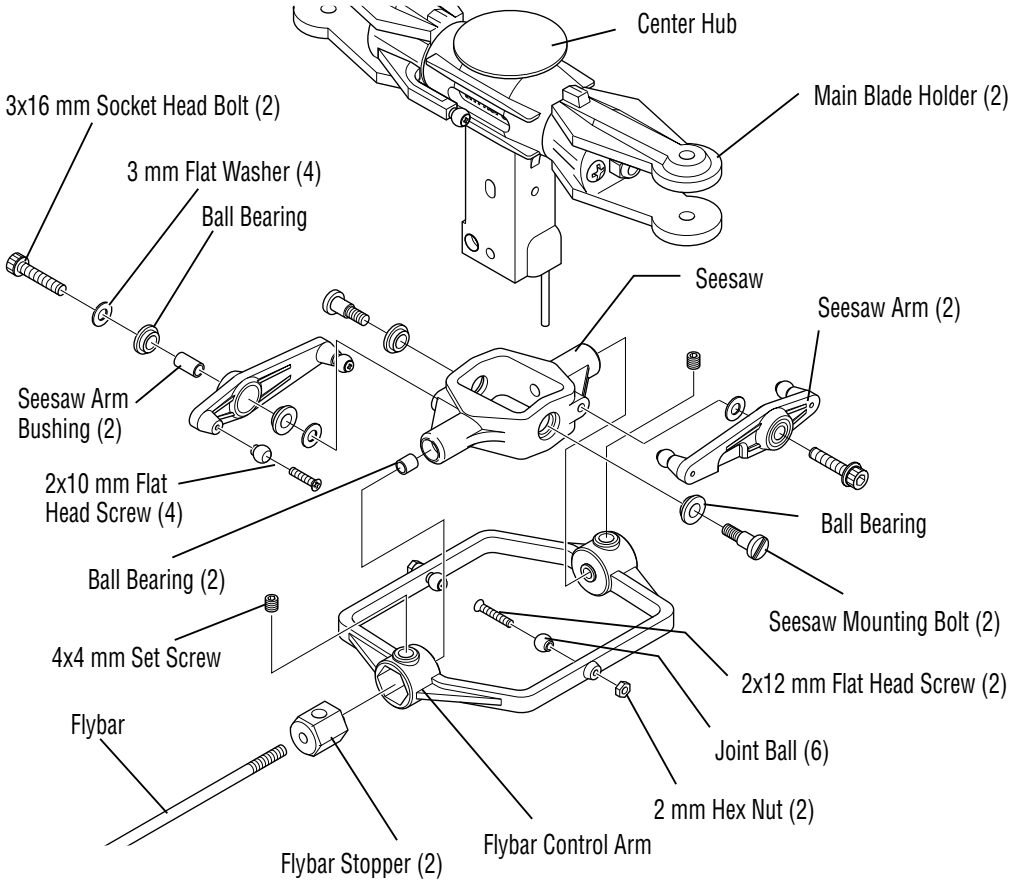


# 3-2 LANDING GEAR ASSEMBLY INSTALLATION

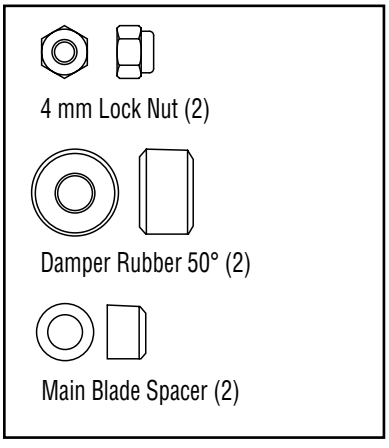


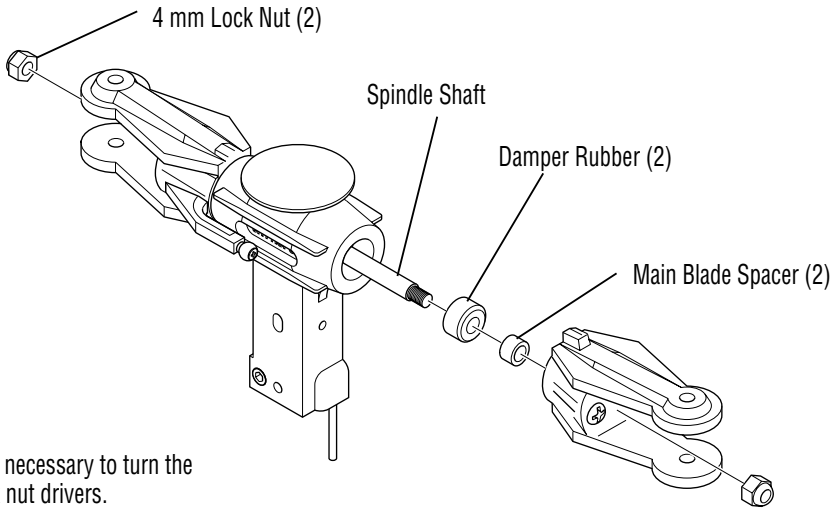
# 4-1 FLYBAR CONTROL ARM/SEESAW ARM ASSEMBLY




# 4-2 MAIN BLADE HOLDER ASSEMBLY



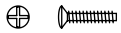




When removing the main blade holders, it will be necessary to turn the nuts both ends at a time using the two 7 mm hex nut drivers.

It will be necessary to remove one side of the main blade holders to remove the spindle shaft.

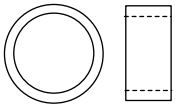
# 4-3 MAIN BLADE HOLDER ASSEMBLY

3x6 mm Self-Tapping Screw (4)

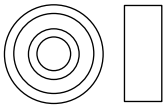


2x10 mm Flat Head Screw (2)

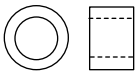
Joint Ball (2)



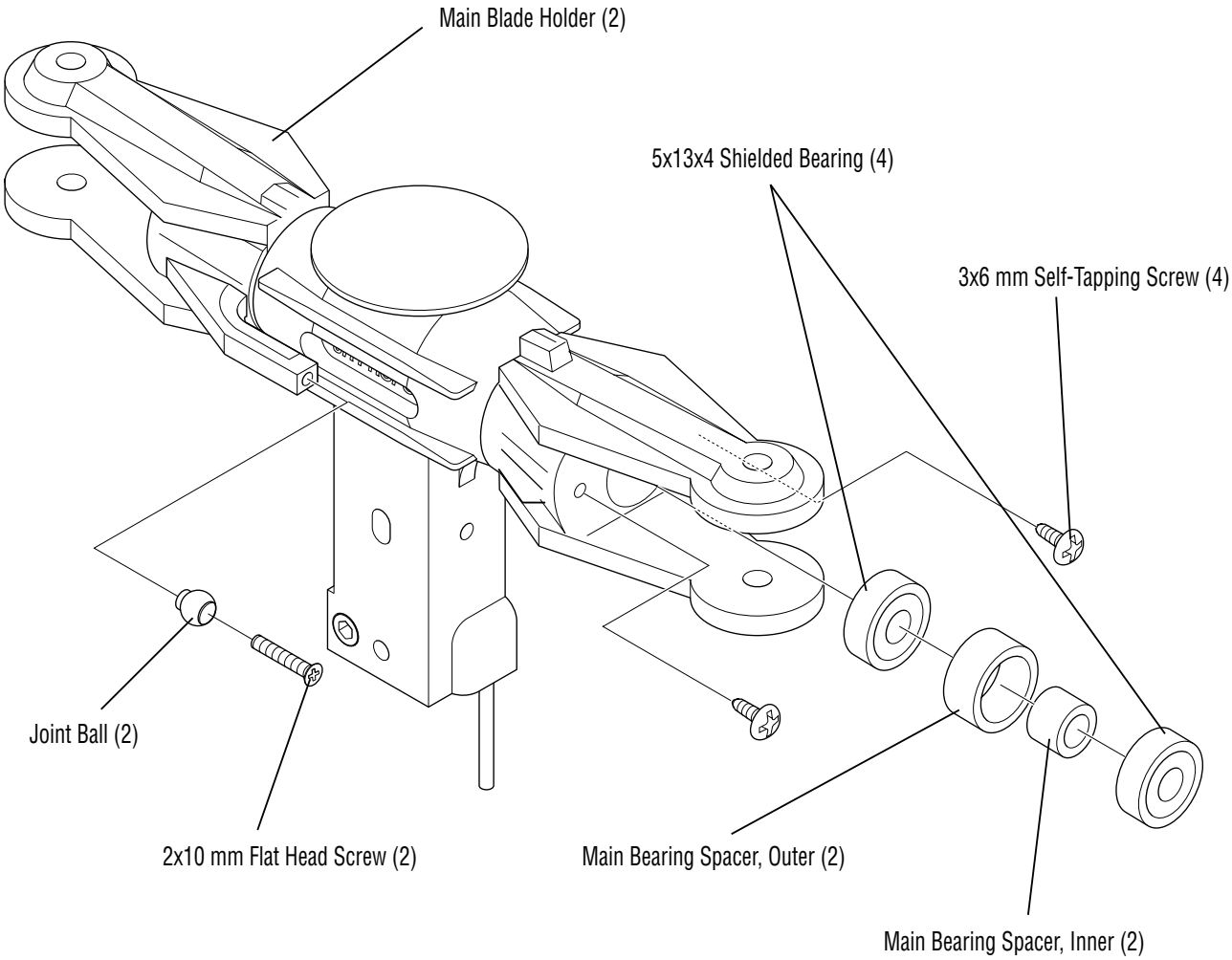
Main Blade Bearing Spacer, Outer (2)



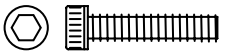
5x13x4 Shielded Bearing (4)



Main Blade Bearing Spacer, Inner (2)

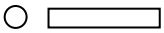


# 4-4 WASHOUT ASSEMBLY


3x15 mm Socket Head Bolt (2)


2x10 mm Flat Head Screw (2)


3 mm Flat Washer (2)

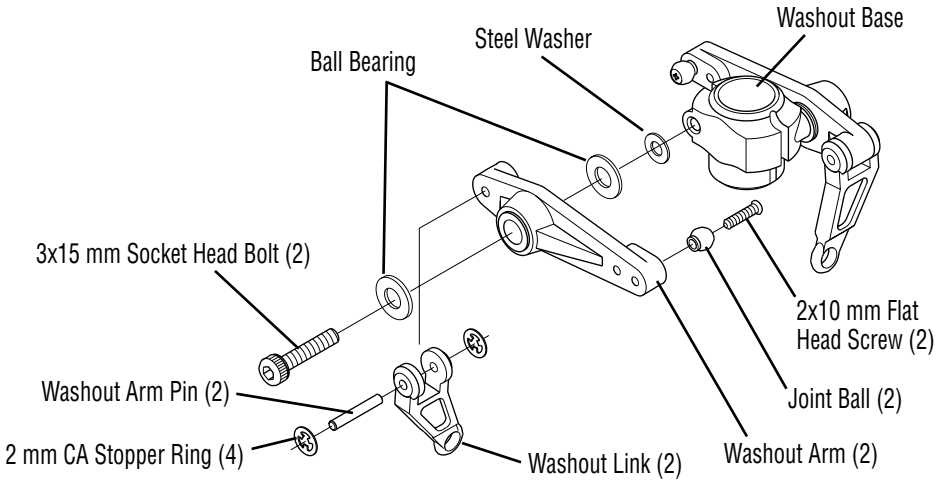

Washout Arm Pin (2)


2 mm CA Stopper Ring (4)


Joint Ball (2)

Be careful not to over-tighten the 3x15 mm socket head bolt.

If any clearance is detected between the washout arm and the washer base, an additional nylon washer (t0.13) can be used.




# 4-5 SWASHPLATE ASSEMBLY


4x4 mm Set Screws (3)

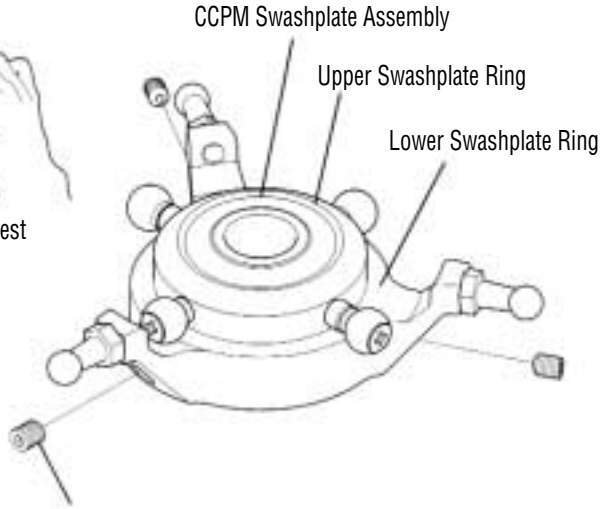
While holding the inside ball race, pivot the swashplate and check for excessive play. Adjust as necessary.


Swashplate Adjustment Test

**Swashplate Adjustment**

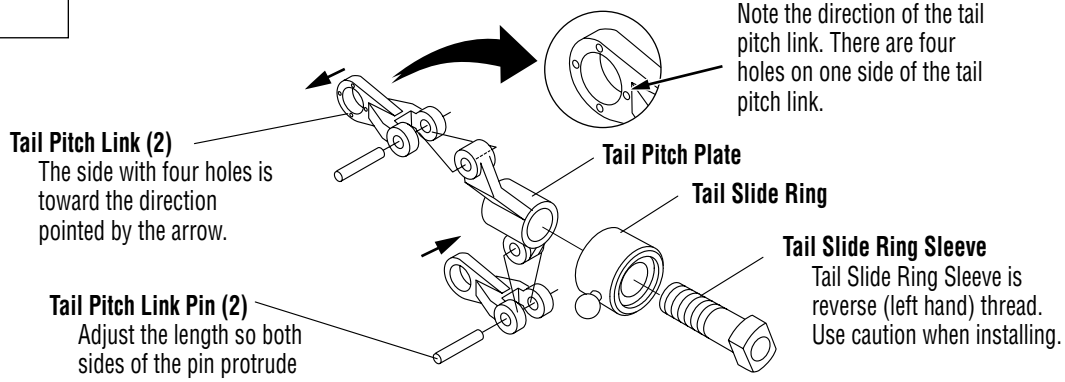
The 120° CCPM swashplate is adjustable via the 3–4x4 mm set screws. If excessive play is found in the test above, gently tighten each of the 3–4 mm set screws the same amount and re-test. The swashplate should move freely, but without notable play.

**Caution:** If the 3–4 mm set screws are over tightened, damage to the swashplate bearings can occur.

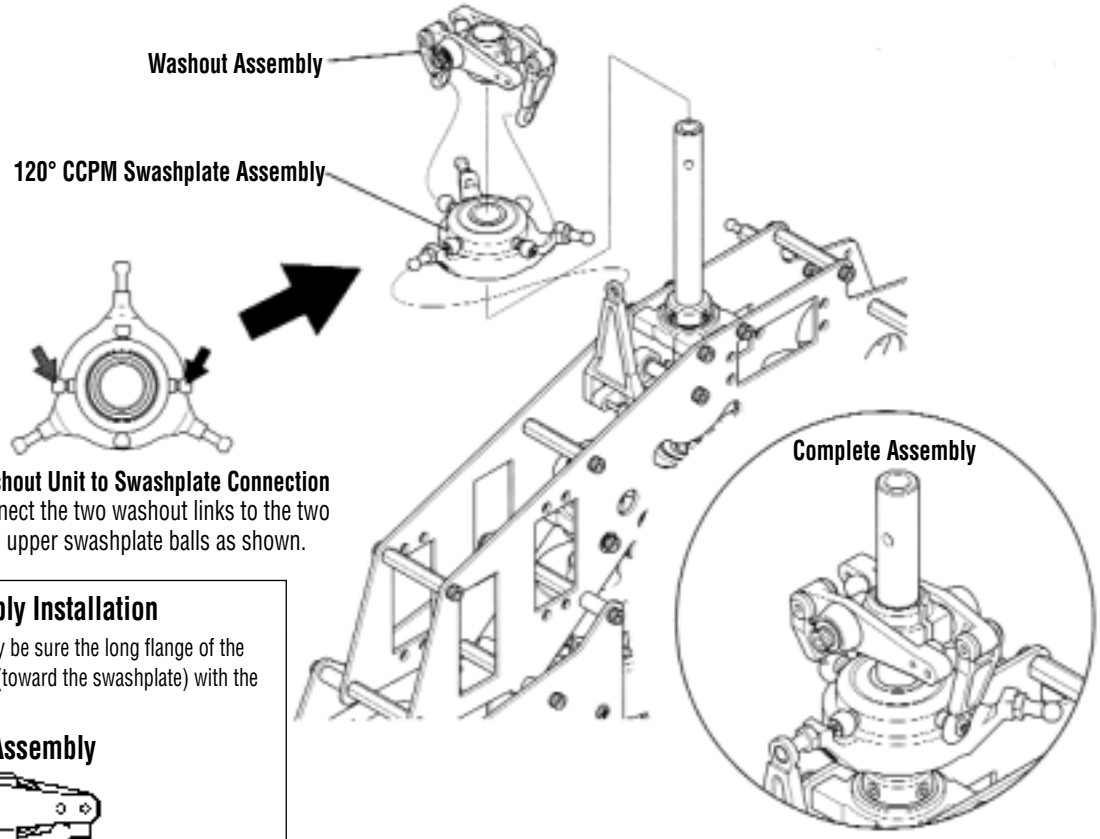


# 4-6 TAIL PITCH PLATE ASSEMBLY

○ ▭
Tail Pitch Link Pin (2)




# 4-7 SWASHPLATE/WASHOUT ASSEMBLY INSTALLATION

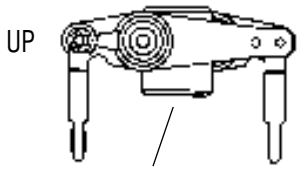



**Washout Unit to Swashplate Connection**
Connect the two washout links to the two long upper swashplate balls as shown.

### *Washout Assembly Installation

When installing the washout assembly be sure the long flange of the mixing base is positioned downward (toward the swashplate) with the short portion facing upward.

**Washout Assembly**




The long portion of mixing base flange must face downward.

# 4-8 ROTOR HEAD INSTALLATION

2.6x12 mmSocket Head Bolt (1)

3x20 mmSocket Head Bolt (1)

3 mm Flat Washer (1)

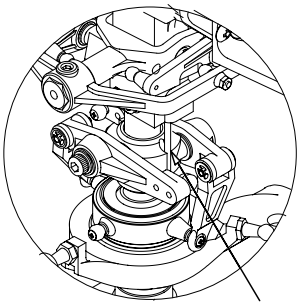
2.6 mm Lock Nut (1)

3 mm Lock Nut (1)

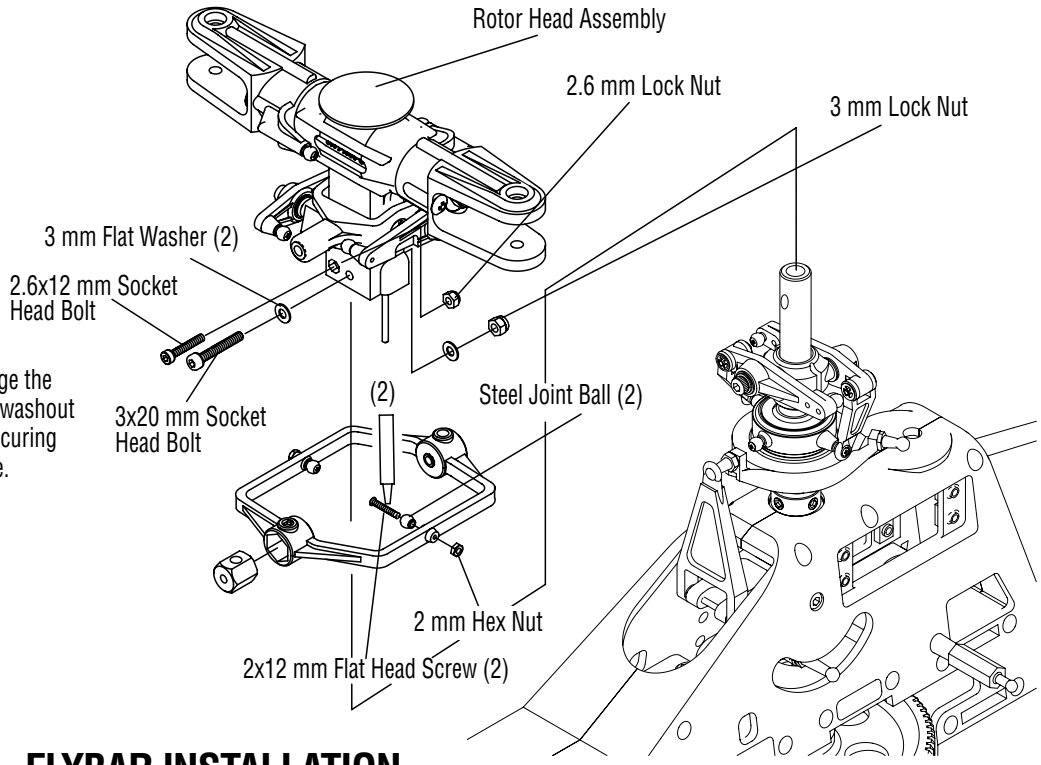
2x12 mm Flat Head Screw (2)

Steel Joint Ball (2)

2 mm Hex Nut (2)



**Note:** Be sure to engage the rotor hub pin into the washout base groove before securing the rotor head in place.

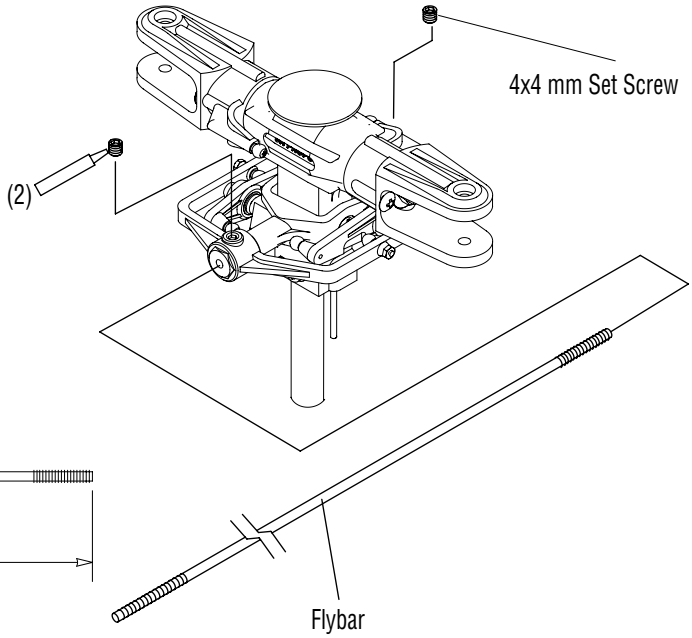



# 4-9 FLYBAR INSTALLATION

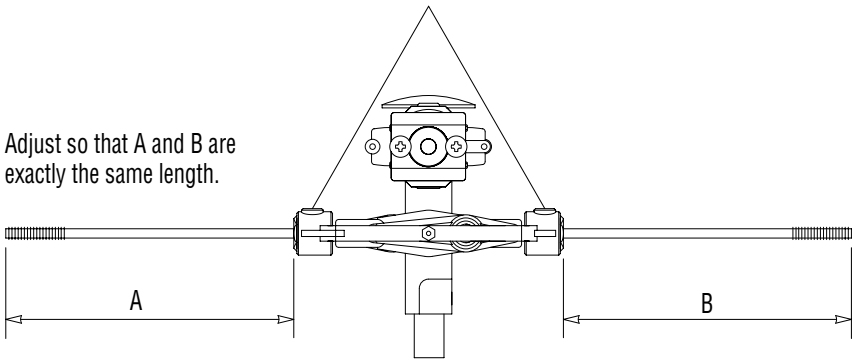
4x4 mm Set Screw

Use Blue Threadlock

Center the flybar in the seesaw shaft before securing the flybar control arm.




Adjust so that A and B are exactly the same length.



# 4-10 FLYBAR PADDLE ATTACHMENT (TRAINER PADDLES)

4x6 mm Set Screw

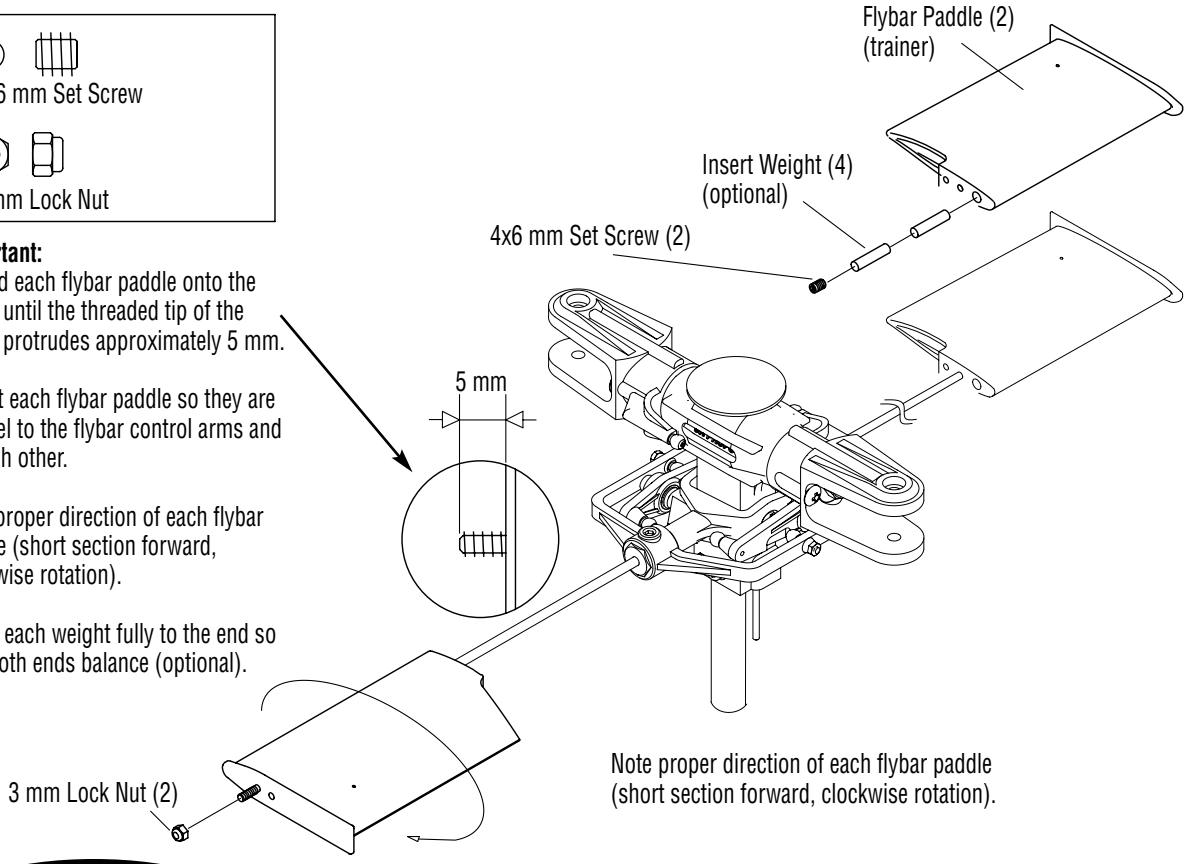
3 mm Lock Nut

**Important:**
Thread each flybar paddle onto the flybar until the threaded tip of the flybar protrudes approximately 5 mm.

Adjust each flybar paddle so they are parallel to the flybar control arms and to each other.

Note proper direction of each flybar paddle (short section forward, clockwise rotation).

Insert each weight fully to the end so that both ends balance (optional).

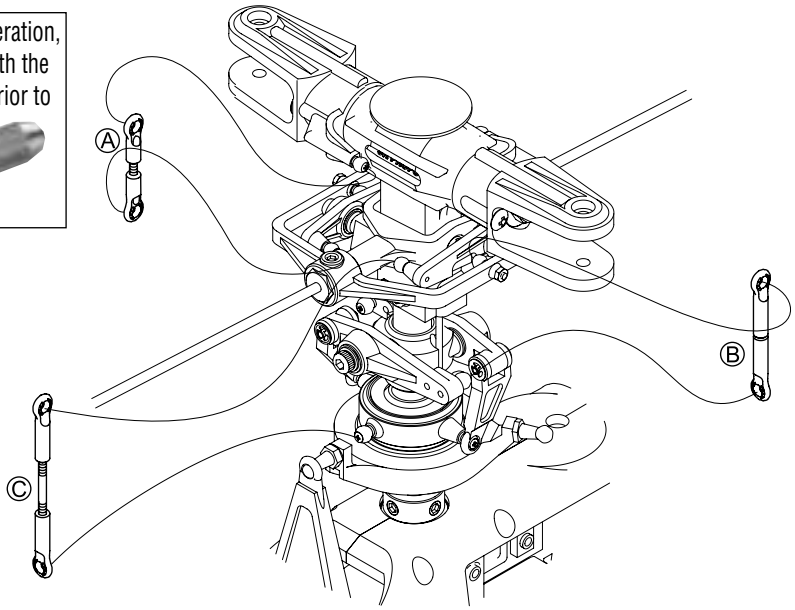



Note proper direction of each flybar paddle (short section forward, clockwise rotation).

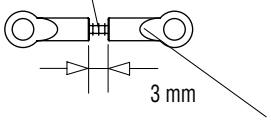
# 4-11 ROTOR HEAD/SWASHPLATE CONTROL ROD INSTALLATION

**Important:**
Thread each universal link onto the 2.3 mm threaded rod to the length shown below. Not the correct direction of the universal link. Next, install each rod so the JR Propo logo faces outward.

**Option:** For smooth operation, pre-size the ball links with the JR ball link sizing tool prior to attachment.

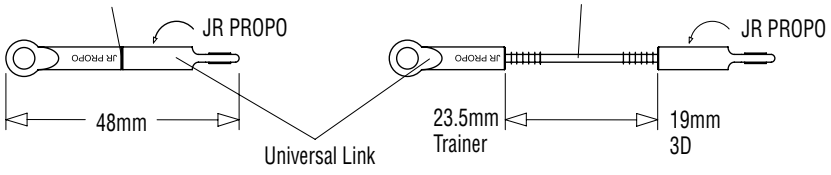



Ⓐ Seesaw Arm to Main Blade Holder (2)
(2.3x15mm threaded rod)



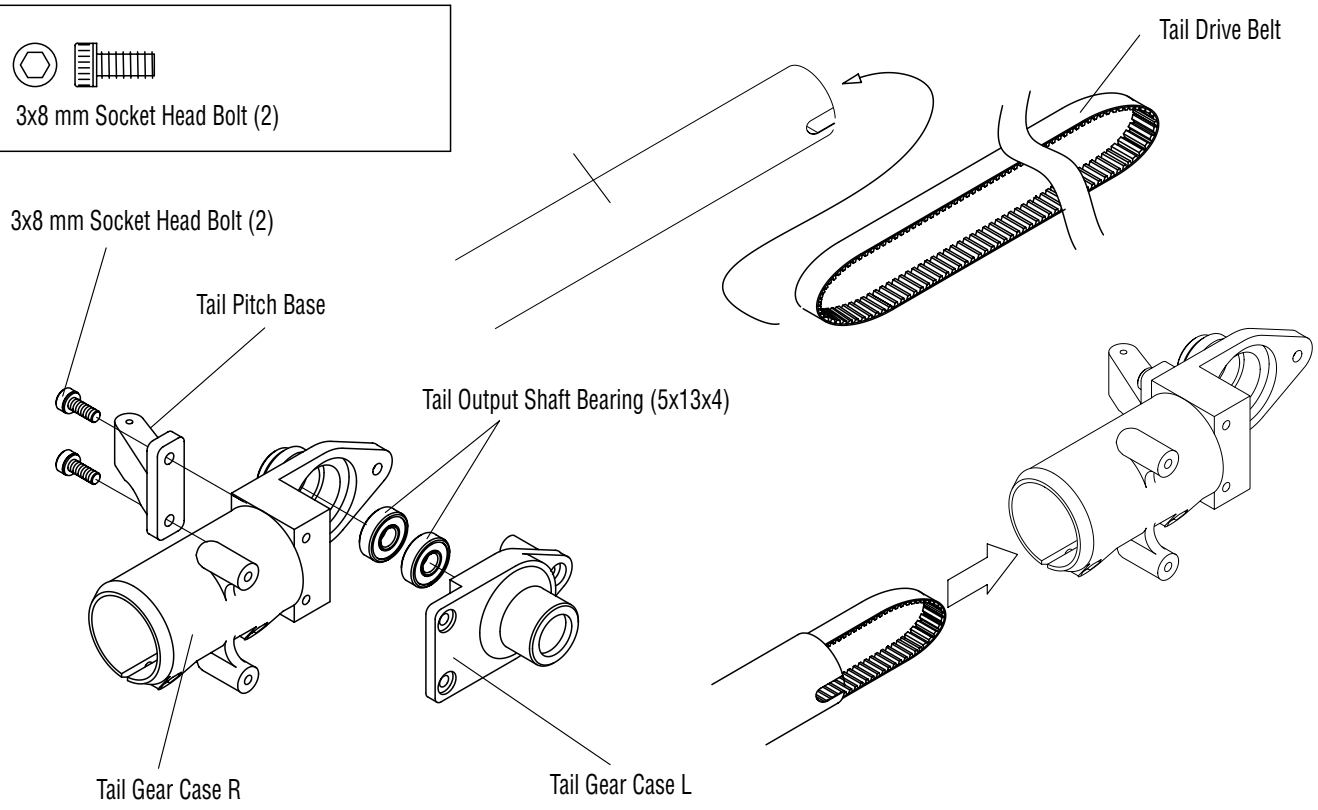

Ⓑ Washout Arm to Flybar Control Arm (2)
(2.3x20mm threaded rod)

Ⓒ Swashplate to Seesaw Arm (2)
(2.3x40mm threaded rod)



# 5-1 TAIL GEAR CASE PREPARATION

3x8 mm Socket Head Bolt (2)

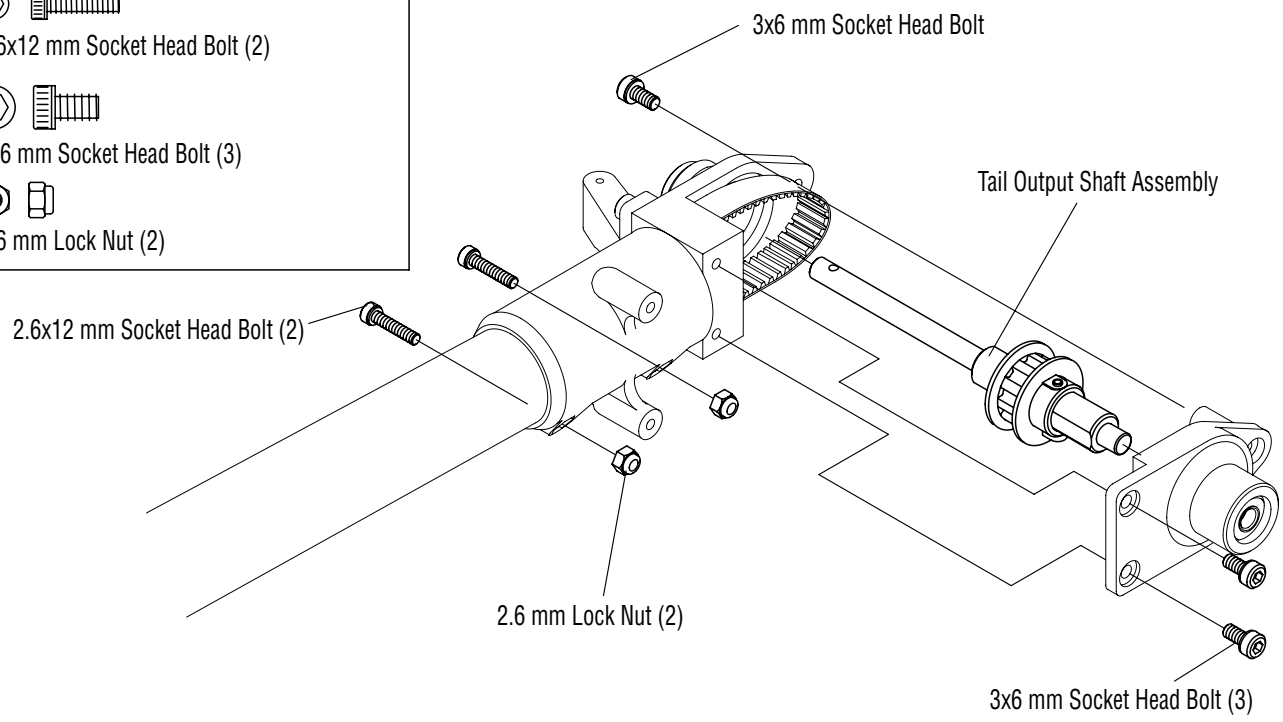



# 5-2 TAIL GEAR CASE ASSEMBLY

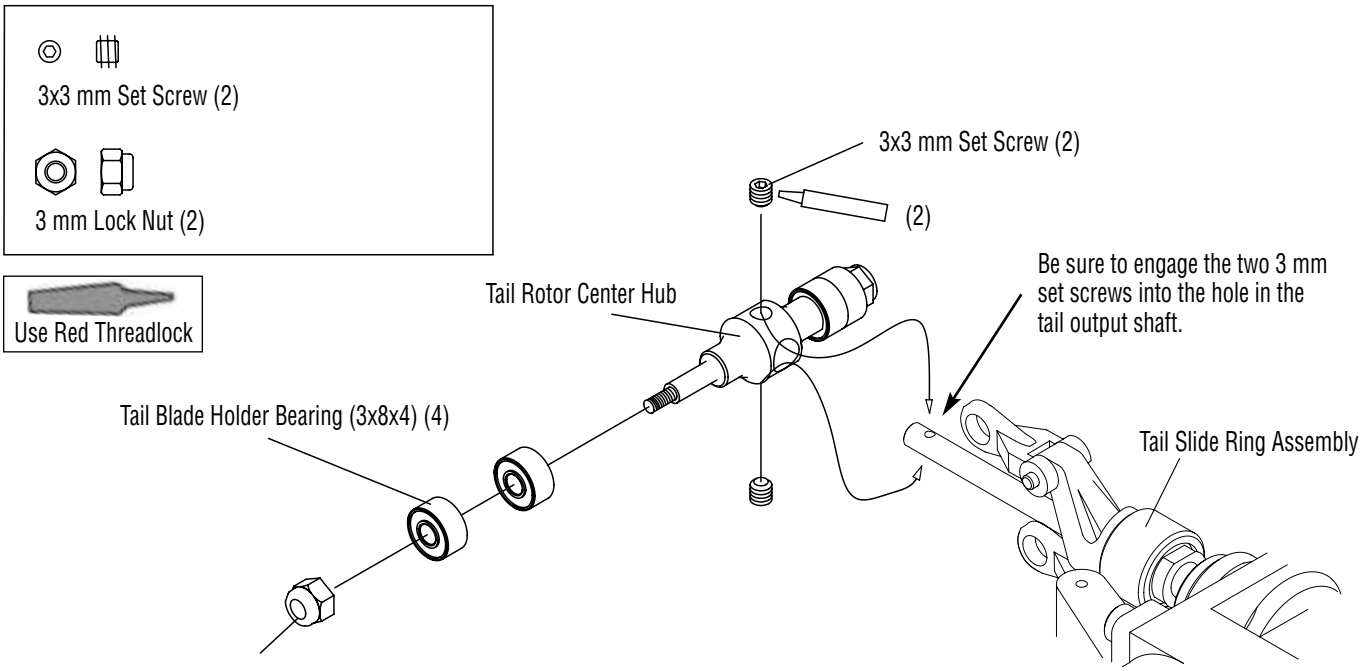
2.6x12 mm Socket Head Bolt (2)

3x6 mm Socket Head Bolt (3)

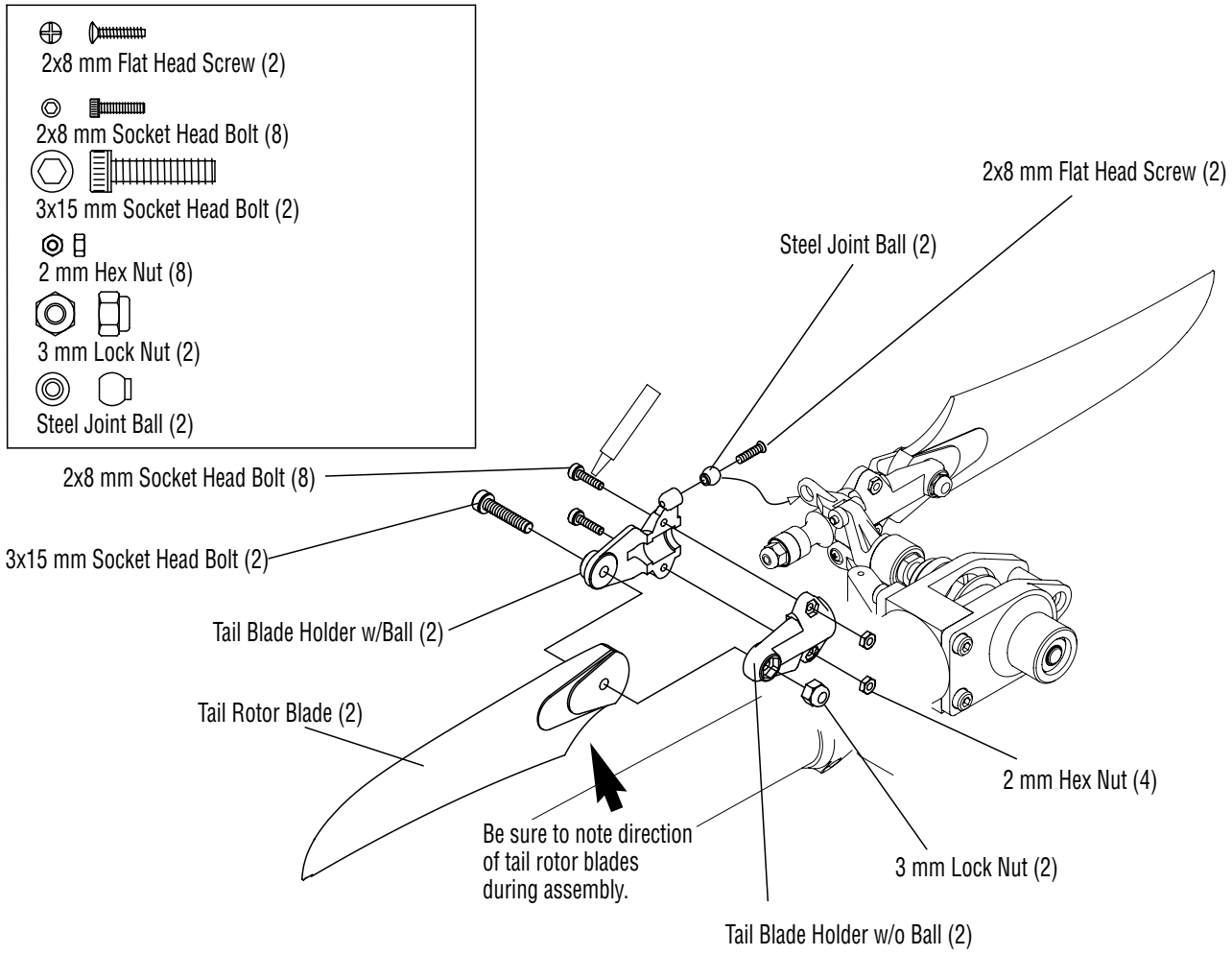
2.6 mm Lock Nut (2)



# 5-3 TAIL CENTER HUB ASSEMBLY




# 5-4 TAIL BLADE HOLDER ASSEMBLY



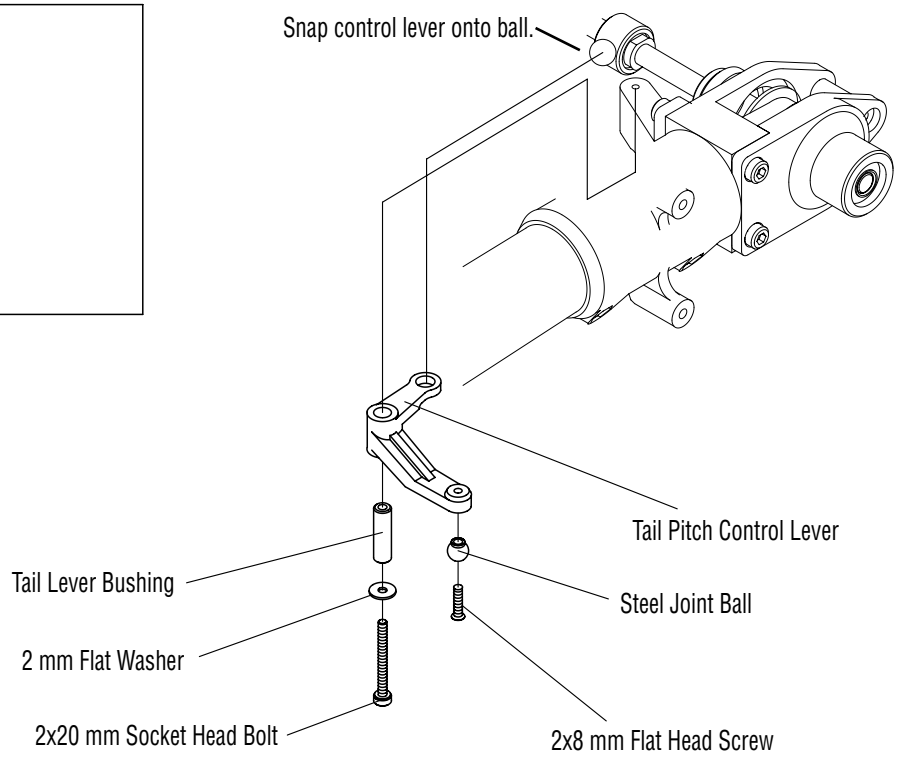
# 5-5 TAIL PITCH CONTROL LEVER INSTALLATION

2x8 mm Flat Head Screw (1)

2x8 mm Socket Head Bolt (1)

2 mm Flat Washer (1)

Steel Joint Ball (1)



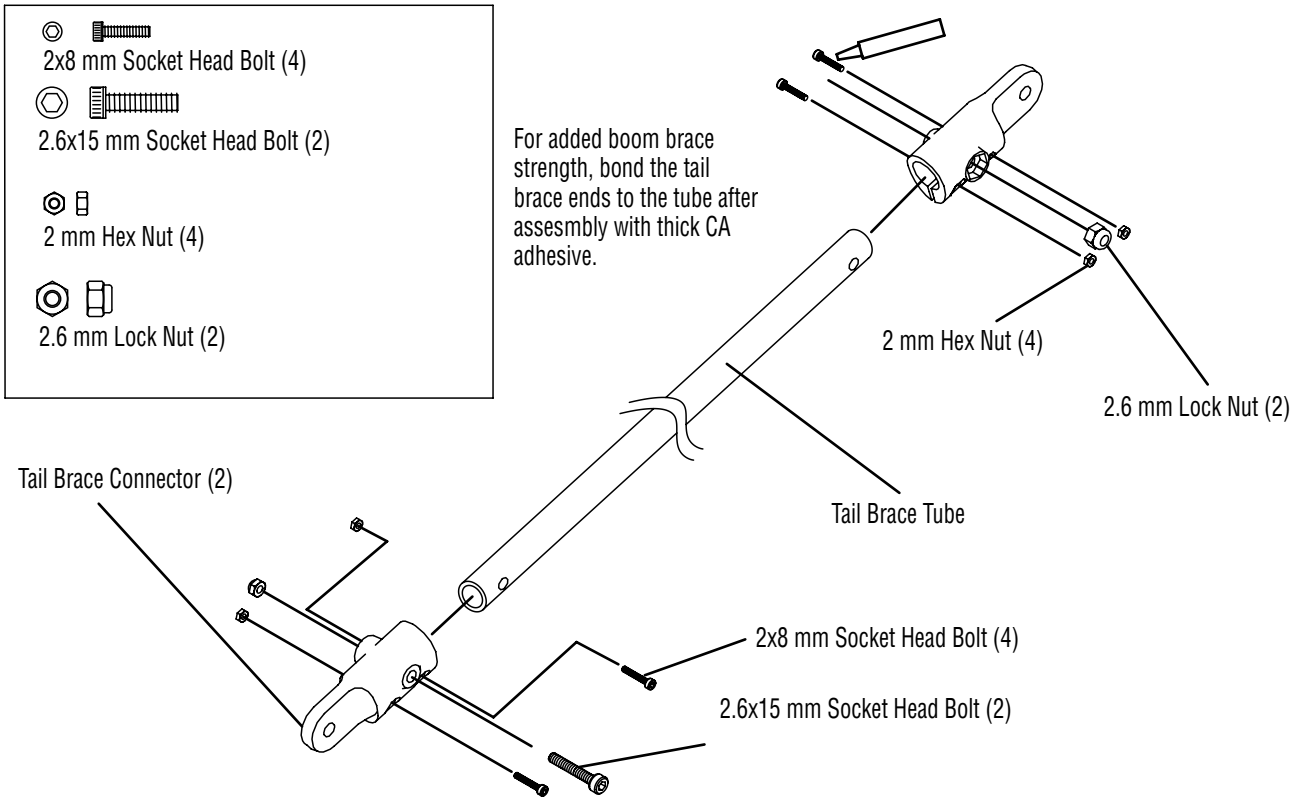

# 5-6 TAIL BOOM BRACE ASSEMBLY

2x8 mm Socket Head Bolt (4)

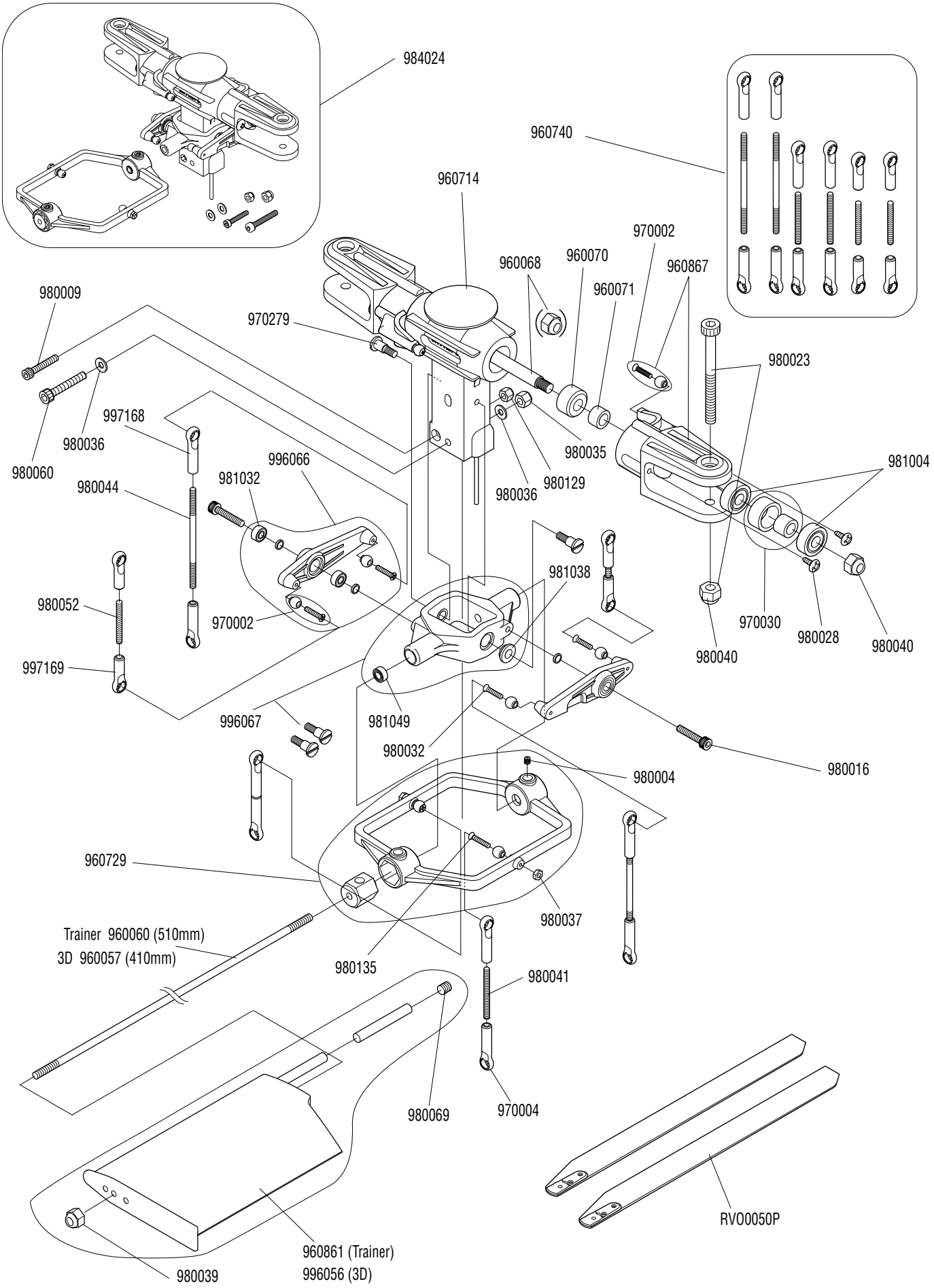
2.6x15 mm Socket Head Bolt (2)

2 mm Hex Nut (4)

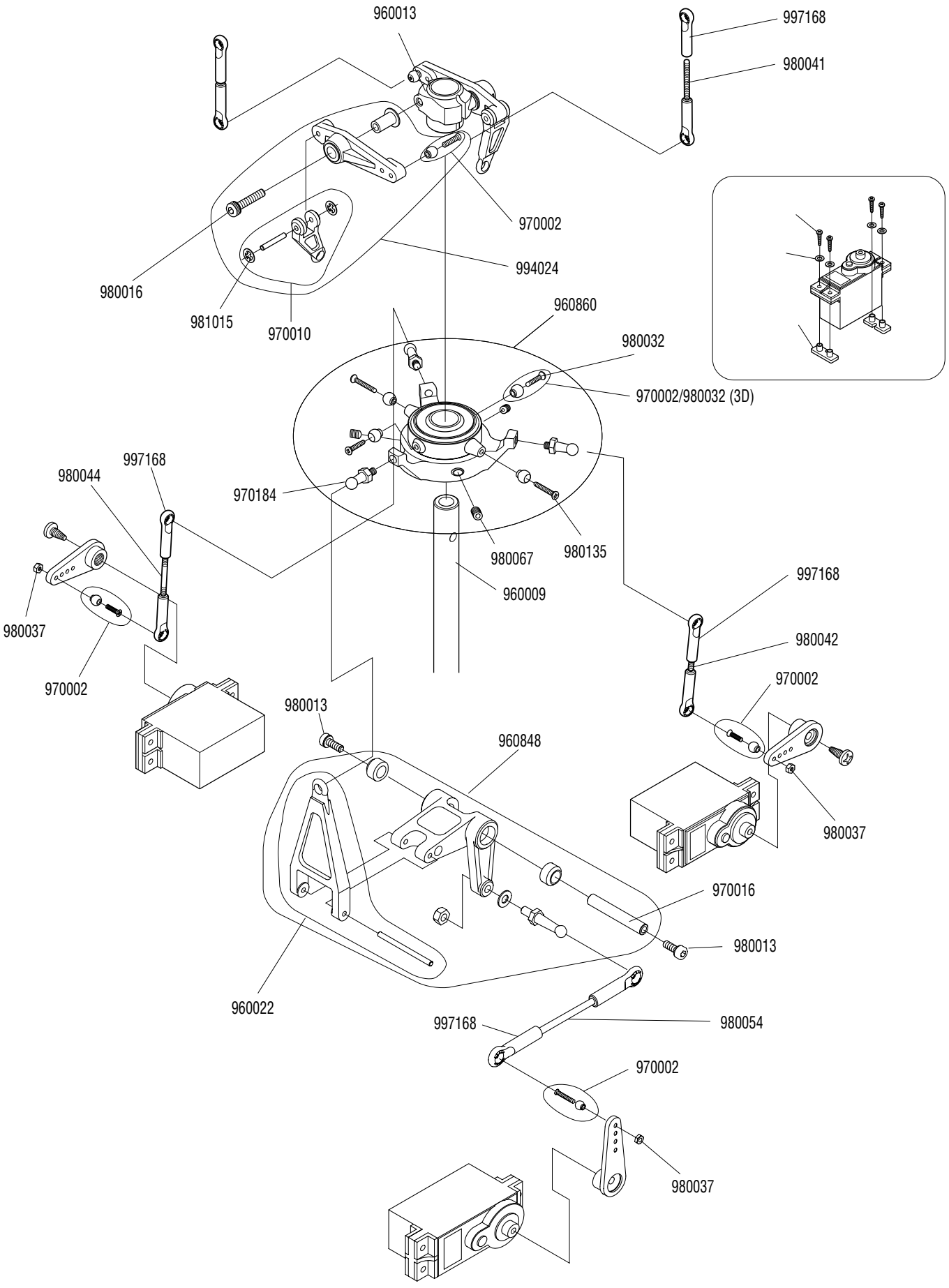
2.6 mm Lock Nut (2)



# MAIN ROTOR HEAD ASSEMBLY



| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP960729 | Flybar Control Arm | Flybar Control Arm | 1 |
| | | Steel Joint Balls | 2 |
| | | Flat Head Screw 2x12 mm | 2 |
| | | 2 mm Hex Nuts | 2 |
| | | 4x4 mm Set Screws | 2 |
| JRP960060 | Flybar 540 mm | Flybar 540 mm (Training) | 2 |
| JRP996057 | Flybar 410 mm | Flybar 410 mm (3D) | 2 |
| JRP980009 | 2.6x12 mm Socket Head Bolt | 2.6x12 mm Socket Head Bolt | 10 |
| JRP980060 | 3x20 mm Socket Head Bolt | 3x20 mm Socket Head Bolt | 10 |
| JRP980135 | Flat Head Screw 2x12 mm | Flat Head Screw 2x12 mm | 10 |
| JRP960861 | Flybar Paddle | Flybar Paddle | 2 |
| | | Insert Weight | 4 |
| | | 4x6 mm Set Screw | 2 |
| | | 3mm Lock Nut | 2 |
| JRP996067 | Seesaw Arm | Seesaw Arm | 2 |
| | | Seesaw Bearing Inner | 2 |
| | | Steel Joint Ball | 4 |
| | | Flat Head Screw M2x10 | 4 |
| JRP996056 | 3D Flybar Paddle | 3D Flybar Paddle | 2 |
| JRP997168 | Universal Ball Links, Black | Universal Ball Links, Black | 10 |
| JRP997169 | Universal Ball Links Short, Black | Universal Ball Links Short, Black | 5 |
| JRP980052 | Control Rod M2.3x15 | Control Rod M2.3x15 | 2 |
| JRP980041 | Control Rod M2.3x20 | Control Rod M2.3x20 | 2 |
| JRP980044 | Control Rod M2.3x40 | Control Rod M2.3x40 | 2 |
| RVO0550P | Main Rotor Blade 550 mm | Main Rotor Blade 550 mm | 1 |
| JRP980023 | Main Blade Bolt | Main Blade Bolt 4x30 mm | 2 |
| JRP984024 | Main Rotor Head Assembly | Main Rotor Head Assembly | 1 |
| JRP960714 | One-piece Main Rotor Hub | One-Piece Main Rotor Hub | 1 |
| JRP970279 | Seesaw Shaft Bolt | Seesaw Shaft Bolt | 2 |
| JRP960068 | Spindle Shaft | Spindle Shaft | 1 |
| JRP960070 | Damper Rubber 50 degree | Damper Rubber | 2 |
| JRP960071 | Damper Collar | Damper Collar | 2 |
| JRP970030 | Main Blade Bearing Spacer | Inner Bearing Spacer | 2 |
| | | Outer Bearing Spacer | 2 |
| JRP980028 | Self-Tapping Screw 3x6 mm | Self Tapping Screw 3x6 mm | 10 |
| JRP980040 | 4 mm Lock Nut | 4mm Lock Nut | 10 |
| JRP960867 | Main Blade Holder | Main Blade Holder | 2 |
| | | Steel Joint Ball | 2 |
| | | Flat Head Screw 2x10 mm | 2 |
| JRP996067 | Seesaw Shaft | Seesaw Shaft | 1 |
| | | Seesaw Shaft Bolt | 2 |
| JRP960740 | Head Linkage Set | Control Rod M2.3x40 | 2 |
| | | Control Rod M2.3x20 | 2 |
| | | Control Rod M2.3x15 | 2 |
| | | Ball Links, Long | 8 |
| | | Ball Links, Short | 4 |
| JRP980036 | Plate Washers, 3 mm | Plate Washers, 3 mm | 10 |
| JRP970002 | Joint Balls/2x10 mm Screws | Joint Balls/2x10 mm Screws | 10 |
| JRP981004 | Ball Bearings, 5x13x4 mm | Ball Bearings, 5x13x4 mm | 2 |
| JRP980039 | Lock Nuts, 3 mm | Lock Nuts, 3 mm | 10 |
| JRP980129 | Lock Nuts, 2.6 mm | Lock Nuts, 2.6 mm | 10 |
| JRP981032 | Washout Arm Bearings | Washout Arm Bearings | 2 |
| JRP981038 | Seesaw Pivot Bearings | Seesaw Pivot Bearings | 2 |
| JRP981049 | Seesaw/Flybar Bearings | Seesaw/Flybar Bearings | 2 |
| JRP980032 | Flat Head Screws, 2x10 mm | Flat Head Screws, 2x10 mm | 10 |
| JRP980037 | Hex Nuts, 2 mm | Hex Nuts, 2 mm | 10 |
| JRP980069 | Set Screws, 4x6 mm | Set Screws, 4x6 mm | 10 |
| JRP980004 | Set Screws, 4x4 mm | Set Screws, 4x4 mm | 10 |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970002
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970002/980032 (3D)
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980037
970002
997168
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970002
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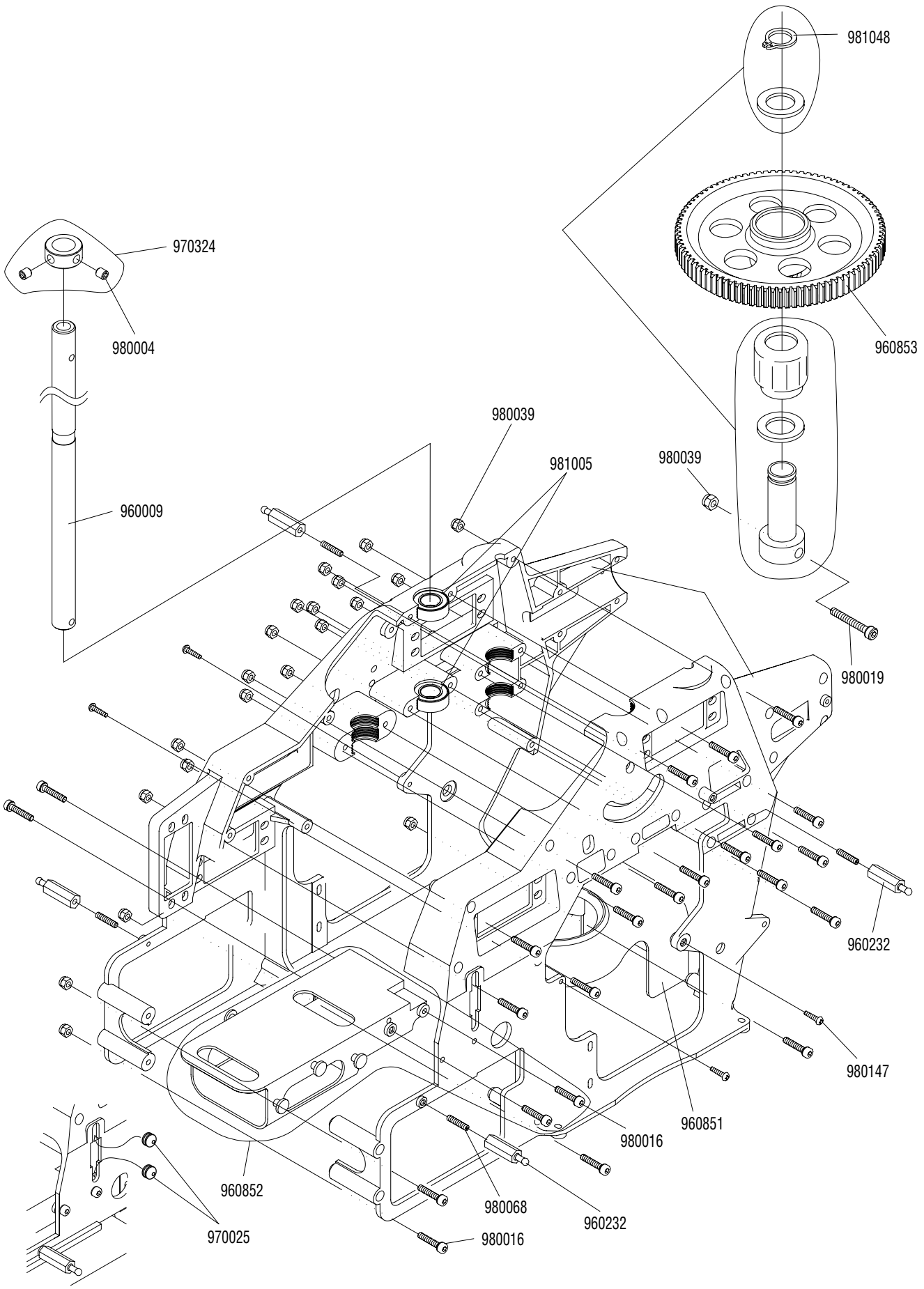
980037
970016
980013
960022
997168
980054
970002
980037

| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP960848 | V Elevator Arm | Elevator Arm | 1 |
| | | Elevator Arm Bushing | 2 |
| | | Long Ball Arm 14.5 | 1 |
| | | Elevator Arm Pin L32 | 1 |
| | | 3 mm Lock Nut | 1 |
| | | 3 mm Flat Washer | 1 |
| | | Swashplate Arm | 1 |
| | | Swashplate Arm Pin | 1 |
| JRP960022 | Swashplate A Arm | Swashplate Arm | 1 |
| | | Swashplate Arm Pin | 1 |
| JRP970016 | Elavator Arm Bushing 32 mm | Elevator Arm Bushing 32 mm | 2 |
| JRP970323 | Servo Mounting Plate | Servo Mounting Plate | 10 |
| JRP970184 | Ball Arm 9 mm | Ball Arm 9 mm | 1 |
| JRP960860 | 120 Deg. Swashplate Assembly | 120 Deg. Swashplate Assembly | 1 |
| | | Steel Joint Ball | 4 |
| | | Ball Arm 9mm | 3 |
| | | Flat Head Screw 2x10 mm | 2 |
| | | Flat Head Screw 2x12 mm | 2 |
| | | 3x3 mm Set Screw | 3 |
| JRP970078 | Joint Ball Spacer, 2.75 mm (3D) | Joint Ball Spacer | 2 |
| JRP960013 | Washout Base | Washout Base | 1 |
| JRP980032 | Flat Head Screw, 2x10 mm | Flat Head Screw, 2x10 mm | 10 |
| JRP980054 | Control Rod M2.3x65 | Control Rod M2.3x65 | 2 |
| JRP980042 | Control Rod M2.3x30 | Control Rod M2.3x30 | 2 |
| JRP981015 | CA Stopper Ring 2 mm | CA Stopper Ring 2 mm | 10 |
| JRP994024 | Washout Arm | Washout Arm | 2 |
| | | Washout link | 2 |
| | | Washout Bearing Shaft 4 mm | 2 |
| | | Washout Link Pin | 2 |
| | | Washout Bearing Collar | 2 |
| | | M3x15 CAP.B | 2 |
| | | Steel Joint Ball | 2 |
| | | Flat Head Screw M2x10 | 2 |
| JRP981021 | Ball Bearing 4x8x3 mm (L-840ZZ) | Ball Bearing 4x8x3 mm (L-840ZZ) | 2 |
| JRP970010 | Washout Link | Washout Link | 2 |
| | | Washout Link Pin | 2 |
| | | CA Stopper Ring | 4 |
| JRP997168 | Universal Ball Link, Black | Universal Ball Link, Black | 10 |
| JRP960009 | Main Rotor Shaft | Main Rotor Shaft | 1 |
| JRP980041 | Control Rod, 2.3x20 mm | Control Rod, 2.3x20 mm | 2 |
| JRP980016 | Socket Head Bolt, 3x15 mm | Socket Head Bolt, 3x15 mm | 10 |
| JRP970002 | Joint Balls/2x10 mm Screws | Joint Balls/2x10 mm Screws | 10 |
| JRP980027 | Self Tapping Screws, 2.6x12 mm | Self Tapping Screws, 2.6x12 mm | 10 |
| JRP980035 | Plate Washer, 2.6 mm | Plate Washer, 2.6 mm | 10 |
| JRP980044 | Control Rod, 2.3x40 mm | Control Rod, 2.3x40 mm | 2 |
| JRP980037 | Hex Nuts, 2 mm | Hex Nuts, 2 mm | 10 |
| JRP980067 | Set Screws, 3x3 mm | Set Screws, 3x3 mm | 10 |
| JRP980135 | Flat Head Screw, 2x12 mm | Flat Head Screw, 2x12 mm | 10 |
| JRPA215 | Heavy-Duty Servo Arms | Heavy-Duty Servo Arms | 2 |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980016
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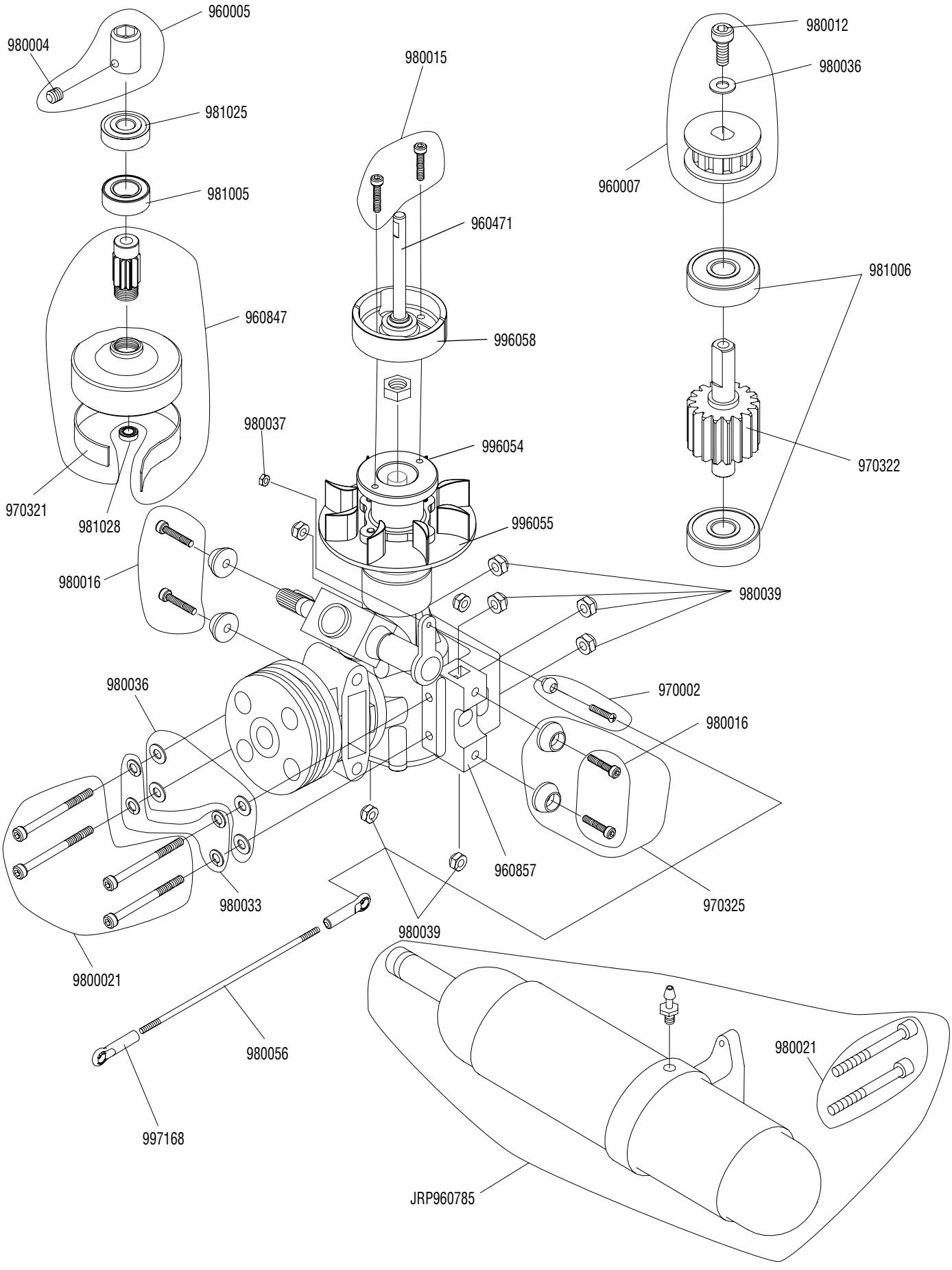
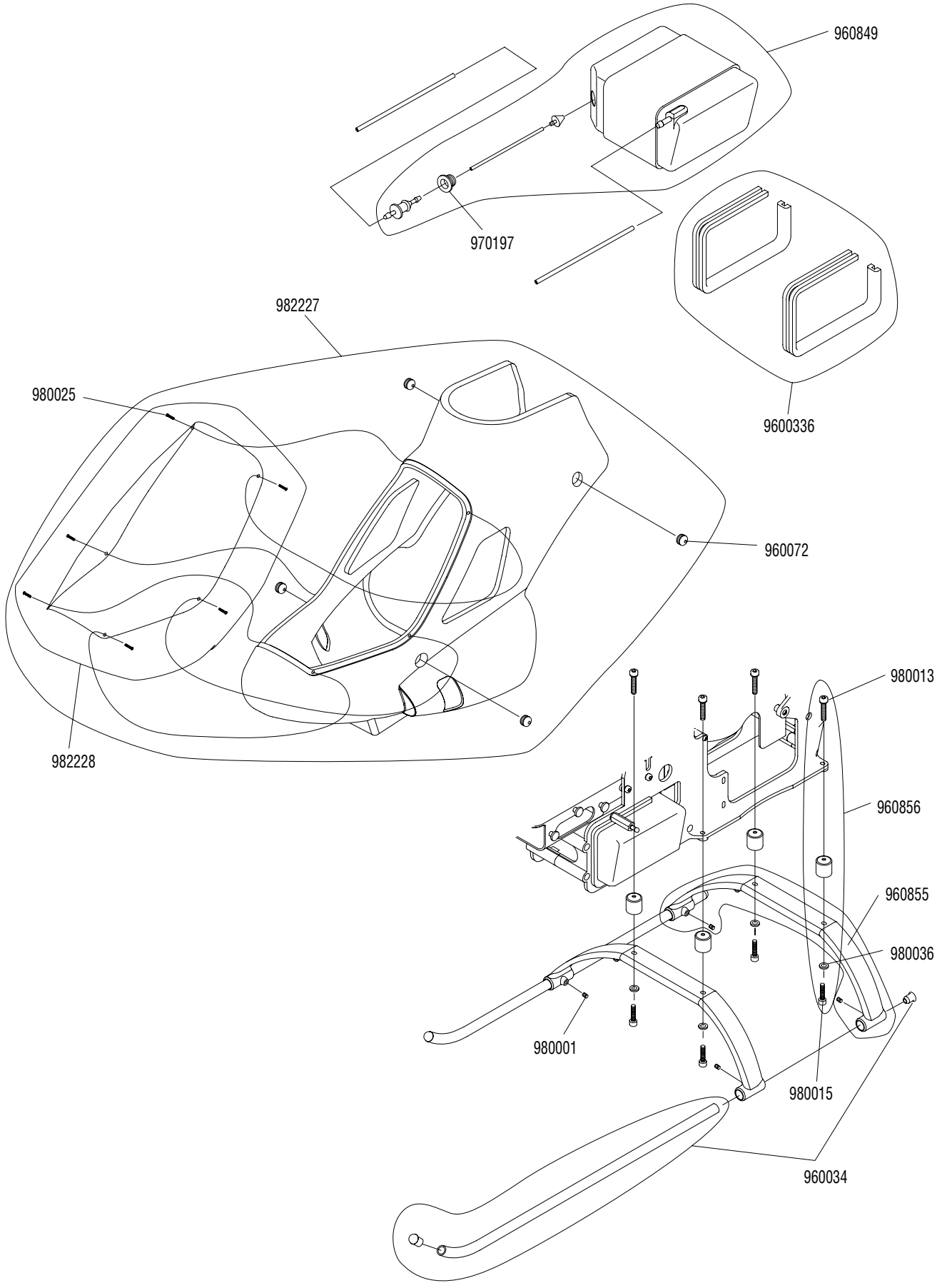
980068
960232
970025
980016

| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP960850 | Main Frame L/R | Main Frame R | 1 |
| | | Main Frame L | 1 |
| JRP980068 | 3x15 mm Set Screw | 3x15 mm Set Screw | 10 |
| JRP960232 | Body Mounting Standoff L21 | Body Mounting Standoff L21 | 2 |
| JRP980013 | 3x8 mm Socket Head Bolt | 3x8 mm Socket Head Bolt | 10 |
| JRP980039 | 3 mm Lock Nut | 3mm Lock Nut | 10 |
| JRP960851 | Cooling Fan Shroud | Cooling Fan Shroud | 1 |
| | | 2.6x10 mm Self-Tapping Screw | 4 |
| | | 2.6 mm Flat Washers | 4 |
| JRP980147 | M2.6x10 Self-Tapping Screw | 2.6x10 mm Self-Tapping Screw | 10 |
| JRP960852 | Front Radio Bed | Front Radio Bed | 1 |
| | | 3x10 mm Socket Head Bolts | 4 |
| JRP970324 | Main Shaft Collar | Main Shaft Collar | 1 |
| | | 4x4 mm Set Screw | 2 |
| JRP980004 | 4x4 mm Set Screw | 4x4 mm Set Screw | 10 |
| JRP980019 | 3x22 mm Socket Head Bolt | ` | 10 |
| JRP960853 | Main Drive Gear 88T | Main Drive Gear 88T | 1 |
| JRP960854 | Autorotation Bearing Assembly | Oneway Bearing | 1 |
| | | Autorotation Shaft | 1 |
| | | Autorotation Spacer | 2 |
| | | CA Stopper Ring 11 mm | 1 |
| JRP981048 | CA Stopper Ring 11 mm | CA Stopper Ring 11 mm | 1 |
| JRP960009 | Main Rotor Shaft | Main Rotor Shaft | 1 |
| JRP981005 | Main Rotor Shaft Bearings | Main Rotor Shaft Bearings | 2 |
| JRP980016 | Socket Head Bolts, 3x15 mm | Socket Head Bolts, 3x15 mm | 10 |
| JRP970025 | Switch Damper Rubber | Switch Damper Rubber | 4 |

## ENGINE/CLUTCH/TAIL DRIVE PULLEY ASSEMBLY



| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP981005 | Ball Bearing 10x19x7 mm (L-1910ZZ) | Ball Bearing 10x19x7 mm (L-1910ZZ) | 2 |
| JRP960847 | Clutch Bell Assembly | Clutch Bell Assembly | 1 |
| JRP970321 | Clutch Lining | Clutch Lining | 1 |
| JRP970322 | Tail Drive Pinion | Tail Drive Pinion | 1 |
| | | 3x6 mm Socket Head Bolt | 1 |
| | | 3 mm Flat Washer | 1 |
| JRP960007 | Front Tail Belt Pulley | Front Tail Belt Pulley | 1 |
| | | 3x6 mm Socket Head Bolt | 1 |
| | | 3 mm Flat Washer | 1 |
| JRP981006 | Ball Bearing 6x19x6 mm (R-1960ZZ) | Ball Bearing 6x19x6 mm (R-1960ZZ) | 2 |
| JRP981025 | Ball Bearing 5x19x6 mm (635ZZ) | Ball Bearing 5x19x6 mm (635ZZ) | 2 |
| JRP980016 | 3x15 mm Socket Head Bolt | 3x15 mm Socket Head Bolt | 10 |
| JRP980021 | 3x30 mm Socket Head Bolt | 3x30 mm Socket Head Bolt | 10 |
| JRP980033 | 3mm Spring Washer | 3mm Spring Washer | 10 |
| JRP960857 | Engine Mount .30 (Plastic) | Engine Mount .30 | 1 |
| JRP996054 | Cooling Fan Blades | Fan Blades & Screws | 1 |
| JRP996055 | Cooling Fan Hub | Cooling Fan Hub | 1 |
| JRP996058 | Clutch Assembly w/ Bearing | Clutch Assembly w/Bearing | 1 |
| | | 3x12 mm Socket Head Bolt | 2 |
| JRP970325 | Engine Mount/Frame Washers | Engine Mount/Frame Washers | 4 |
| | | 3x12 mm Socket Head Bolt | 4 |
| | | 3mm Lock Nut | 4 |
| JRP960005 | Starter Hex Adaptor | Starter Hex Adaptor | 1 |
| | | 4x4 mm Set Screw | 1 |
| JRP960471 | Starter Shaft | Starter Shaft | 1 |
| JRP981007 | Ball Bearing 20x32x7 mm (6804ZZ) | Ball Bearing 20x32x7 mm (6804ZZ) | 1 |
| JRP980056 | Control Rod M2.3x85 | Control Rod M2.3x85 | 2 |
| JRP980004 | Set Screws, 4x4 mm | Set Screws, 4x4 mm | 10 |
| JRP981028 | Clutch Bell Bearing | Clutch Bell Bearing | 1 |
| JRP980015 | Socket Head Bolts, 3x12 mm | Socket Head Bolts, 3x12 mm | 10 |
| JRP980036 | Plate Washers, 3 mm | Plate Washers, 3 mm | 10 |
| JRP980039 | Lock Nuts, 3 mm | Lock Nuts, 3 mm | 10 |
| JRP970002 | Joint Balls/2x10 mm Screws | Joint Balls/2x10 mm Screws | 10 |
| JRP997168 | Universal Ball Link, Black | Universal Ball Link, Black | 10 |
| JRP960785 | Muffler, .30-.36 | Muffler, .30-.36 | 1 |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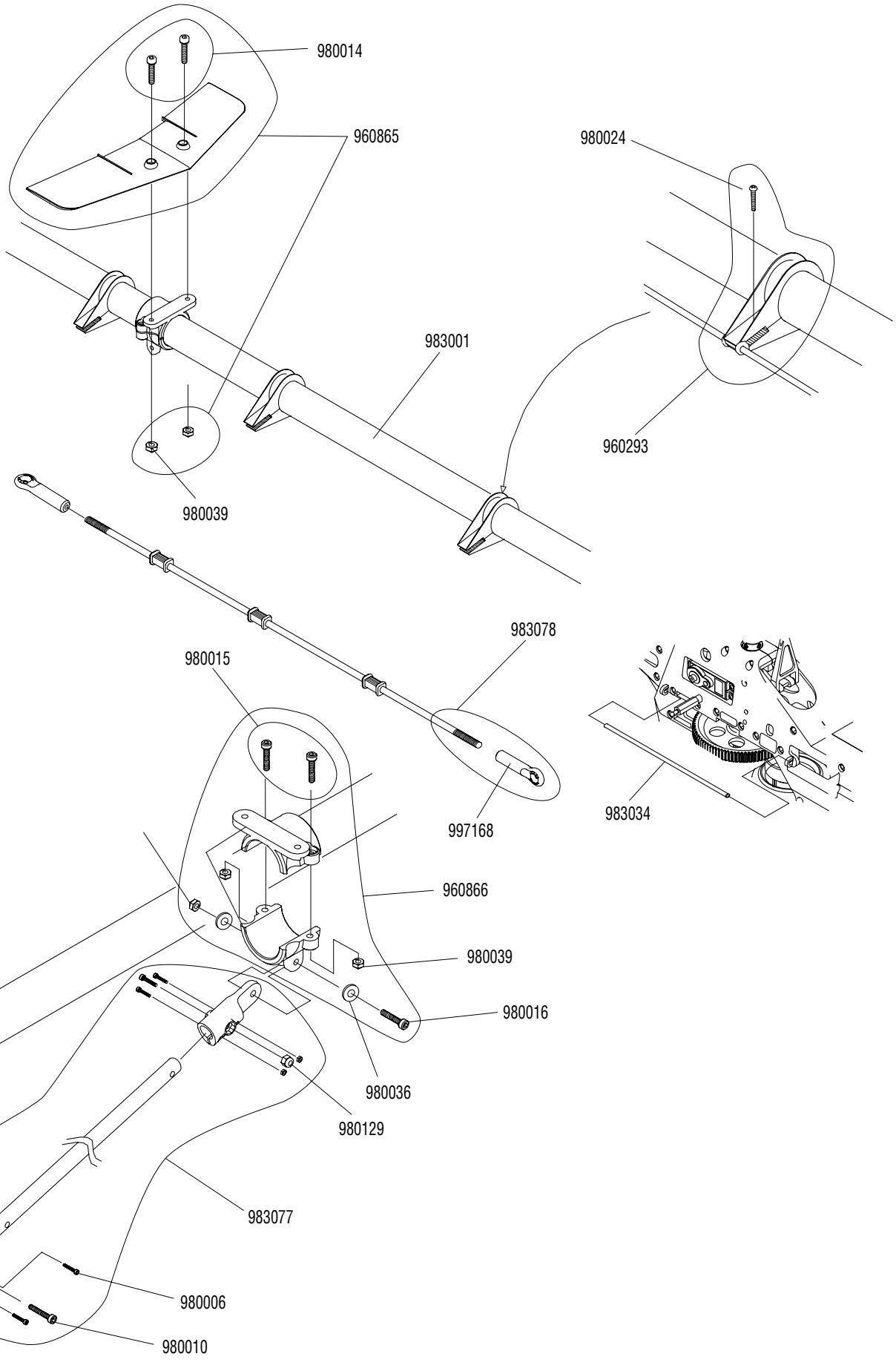
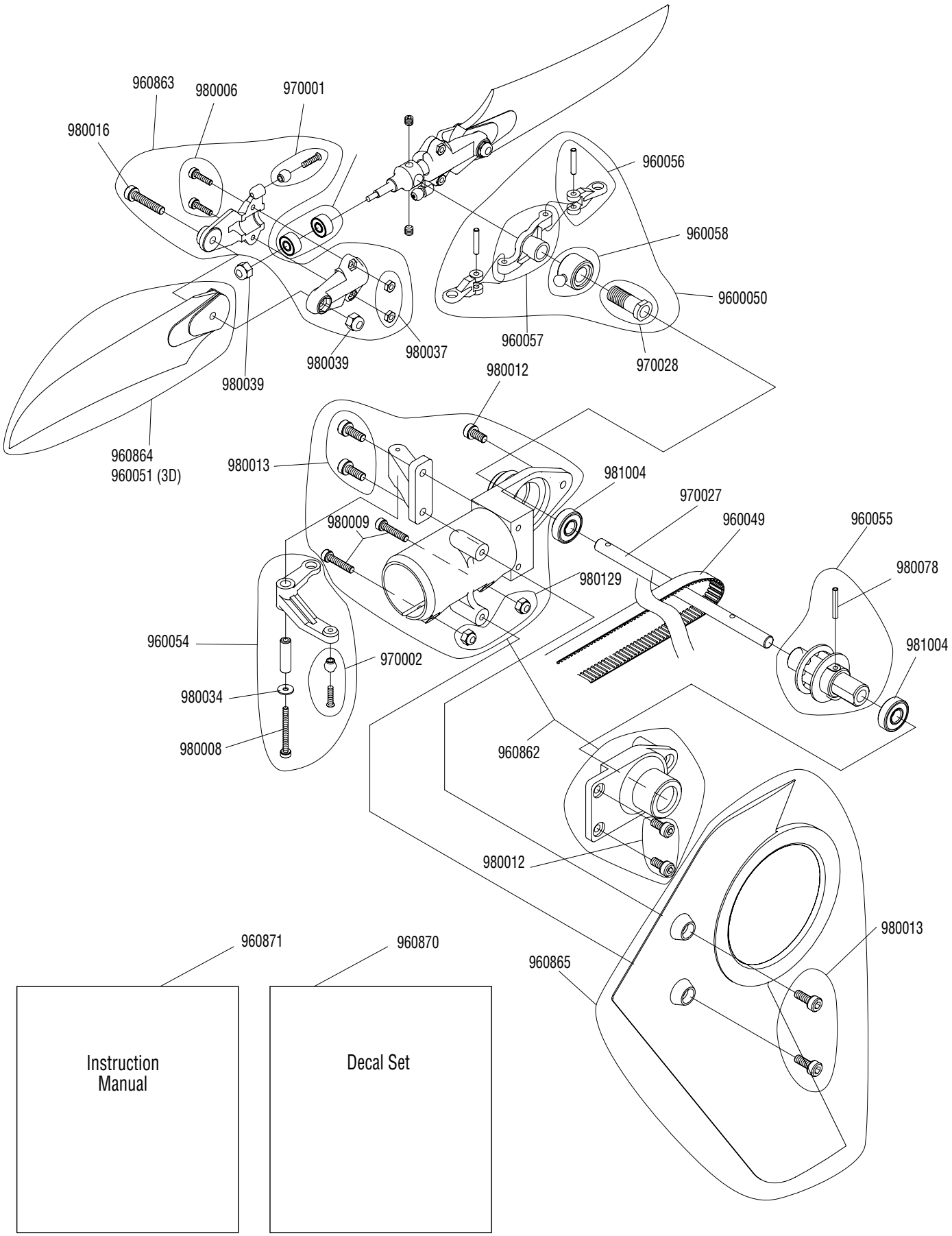
960856
960855
980036
980001
980015
960034

| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP960849 | Fuel Tank Assembly | Fuel Tank | 1 |
| | | Fuel Tank Clunk | 1 |
| | | Nipple | 1 |
| | | Tank Grommet | 1 |
| | | Silicone Tube(Small) | 1 |
| JRP960336 | Tank Mounting Rubber | Tank Mounting Rubber (1 m) | 1 |
| JRP970197 | Tank Grommet | Tank Grommet | 2 |
| JRP960855 | Landing Struts | Landing Struts | 2 |
| | | 3x4 mm Set Screw | 4 |
| JRP980001 | 3x4 mm Set Screw | 3x4 mm Set Screw | 10 |
| JRP960034 | Landing Skids | Landing Skids | 2 |
| | | Landing Skid Caps | 4 |
| JRP980015 | 3x12 mm Socket Head Bolt | 3x12 mm Socket Head Bolt | 10 |
| JRP980036 | 3 mm Flat Washer | 3 mm Flat Washer | 10 |
| JRP982227 | Venture 30 Body Set | Body | 1 |
| | | Canopy | 1 |
| | | 2.3x8 mm Self-Tapping Screw | 6 |
| | | Rubber Grommet | 4 |
| JRP982228 | Canopy | Canopy | 1 |
| | | 2.3x8 mm Self-Tapping Screw | 6 |
| JRP960856 | Landing Gear Dampers | Landing Gear Dampers | 4 |
| | | 3x8 mm Socket Head Bolt | 4 |
| | | 3x12 mm Socket Head Bolt | 4 |
| | | 3mm Flat Washer | 4 |
| JRP960072 | Rubber Grommet | Rubber Grommet | 4 |
| JRP980025 | Self-Tapping Screws, 2.3x8 mm | Self-Tapping Screws, 2.3x8 mm | 10 |
| JRP980013 | Socket Head Bolts, 3x8 mm | Socket Head Bolts, 3x8 mm | 10 |

# TAIL BOOM/TAIL FIN/TAIL BRACE ASSEMBLY



| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP980129 | 2.6 mm Lock Nut | 2.6 mm Lock Nut | 10 |
| JRP980014 | 3x10 mm Socket Head Bolt | 3x10 mm Socket Head Bolt | 10 |
| JRP996064 | Horizontal Fin | Horizontal Fin | 1 |
| JRP960865 | Fin Set | Horizontal and Vertical Fins | 1 |
| JRP983001 | Tail Boom | Tail Boom | 1 |
| JRP983077 | Tail Brace Set | Tail Brace Tube 430 mm | 1 |
| | | Tail Brace Connector | 2 |
| | | 3x15 mm Socket Head Bolt | 2 |
| | | 2.6x15 mm Socket Head Bolt | 2 |
| | | 2x8 mm Socket Head Bolt | 4 |
| | | 3 mm Lock Nut | 2 |
| | | 2.6 mm Lock Nut | 2 |
| | | 2 mm Hex Nut | 4 |
| JRP960866 | Tail Brace Clamp | Tail Brace Clamp U | 1 |
| | | Tail Brace Clamp L | 1 |
| | | 3x12 mm Socket Head Bolt | 2 |
| | | 3x15 mm Socket Head Bolt | 1 |
| | | 3mm Lock Nut | 3 |
| | | 3mm Flat Washer | 2 |
| JRP983078 | Tail Control Rod 880mm | Tail Control Rod 880 mm | 1 |
| | | Universal Link | 2 |
| JRP960293 | Tail Rod Guide B Set | Tail Rod Guide B Set | 4 |
| | | Rod Guide | 1 |
| | | Tail Control Rod Guide B | 4 |
| | | Tail Control Rod Bush | 1 |
| | | 3x10 mm Socket Head Bolt | 1 |
| | | 2x8 mm Socket Head Bolt | 4 |
| JRP983034 | Tail Control Tubing 600 mm | Tail Control Tubing 600 mm | 2 |
| JRP980024 | Self-Tapping Screws, 2x8 mm | Self-Tapping Screws, 2x8 mm | 10 |
| JRP980039 | Lock Nuts, 3 mm | Lock Nuts, 3 mm | 10 |
| JRP997168 | Universal Ball Link, Black | Universal Ball Link, Black | 10 |
| JRP981015 | CA Stopper Ring, 2 mm | CA Stopper Ring, 2 mm | 10 |
| JRP980016 | CA Stopper Ring, 1.5 mm | CA Stopper Ring, 1.5 mm | 10 |
| JRP980036 | Plate Washers, 3 mm | Plate Washers, 3 mm | 10 |
| JRP980006 | Socket Head Bolts, 2x8 mm | Socket Head Bolts, 2x8 mm | 10 |
| JRP980010 | Socket Head Bolts, 2.6x15 mm | Socket Head Bolts, 2.6x15 mm | 10 |
| JRP980037 | Hex Nuts, 2 mm | Hex Nuts, 2 mm | 10 |


960863
980006
970001
980016
960056
960058
9600050
960057
970028
980037
980039
980039
960864
960051 (3D)
980012
980013
981004
970027
960049
960055
980009
980078
980129
960054
970002
981004
980034
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960862
980012
980013
960865
960871
960870
Instruction Manual
Decal Set

| PART # | DESCRIPTION | COMMENTS/ADDITIONAL CONTENTS | QUANTITY |
|---|---|---|---|
| JRP960049 | Tail Drive Belt 564 mm | Tail Drive Belt 564 mm | 1 |
| JRP960862 | Tail Case | Tail Case R | 1 |
| | | Tail Case L | 1 |
| | | Tail Pitch Base | 1 |
| | | 3x8 mm Socket Head Bolt | 2 |
| | | 3x6 mm Socket Head Bolt | 3 |
| | | 2.6x12 mm Socket Head Bolt | 2 |
| | | 2.6 mm Lock Nut | 2 |
| JRP981004 | Ball Bearing 5x13x4 mm (R-1350ZZ) | Ball Bearing 5x13x4 mm (R-1350ZZ) | 2 |
| JRP980012 | 3x6 mm Socket Head Bolt | 3x6 mm Socket Head Bolt | 10 |
| JRP970027 | Tail Output Shaft | Tail Output Shaft | 1 |
| JRP960055 | Tail Belt Puller | Tail Belt Pulley | 1 |
| | | Spring Pin 2x13 mm | 1 |
| JRP970001 | Steel Joint Ball A | Steel Joint Ball | 10 |
| | | Flat Head Screw 2x8 mm | 10 |
| JRP980037 | 2 mm Hex Nut | 2 mm Hex Nut | 10 |
| JRP980078 | Sping Pin 2x13 mm | Sping Pin 2x13 mm | 5 |
| JRP960222 | Tail Center Hub B | Tail Center Hub B | 1 |
| | | 3x3 mm Set Screw | 2 |
| | | 3 mm Lock Nut | 2 |
| JRP981022 | Ball Bearing 3x8x4 mm (R-830ZZ) | Ball Bearing 3x8x4 mm (R-830ZZ) | 2 |
| JRP960863 | Tail Blade Holder Set | Tail Blade Holder Set w/Ball Base | 2 |
| | | Tail Blade Holder Set w/o Ball | 2 |
| | | Steel Joint Ball | 2 |
| | | Flat Head Screw 2x8 mm | 2 |
| | | 2x8 mm Socket Head Bolt | 4 |
| | | 2 mm Hex Nut | 4 |
| | | 3x15 mm Socket Head Bolt | 2 |
| | | 3 mm Lock Nut | 2 |
| JRP960864 | Tail Rotor Blade | Tail Rotor Blade | 2 |
| JRP960054 | Tail Pitch Control Lever | Tail Pitch Control Lever | 1 |
| | | Tail Pitch Lever Bushing | 1 |
| | | 2x20 mm Socket Head Bolt | 1 |
| | | 2 mm Flat Washer | 1 |
| | | Steel Joint Ball | 1 |
| | | Flat Head Screw 2x8 mm | 1 |
| | | Vertical Fin | 1 |
| | | 3x8 mm Socket Head Bolt | 2 |
| | | 3x10 mm Socket Head Bolt | 2 |
| | | 3 mm Lock Nut | 2 |
| JRP980067 | 3x3 mm Set Screw | 3x3 mm Set Screw | 10 |
| JRP980089 | 2.6x10 mm Socket Head Bolt | 2.6x10 mm Socket Head Bolt | 10 |
| JRP960057 | Tail Pitch Plate | Tail Pitch Control Plate | 1 |
| JRP981049 | Ball Bearing 3x6x2.5 mm (L-630ZZ) | Ball Bearing 3x6x2.5 mm (L-630ZZ) | 2 |
| JRP960056 | Tail Pitch Link | Tail Pitch Link | 2 |
| | | Tail Pitch Link Pin | 2 |
| | | CA Stopper Ring 2mm | 4 |
| JRP960050 | Tail Slide Ring Assembly | Tail Slide Ring | 1 |
| | | Tail Slide Ring Sleeve | 1 |
| | | Tail Pitch Plate | 1 |
| | | Tail Pitch Link | 2 |
| | | Tail Pitch Link Pin | 2 |
| JRP980006 | Socket Head Bolts, 2x8 mm | Socket Head Bolts, 2x8 mm | 10 |
| JRP980016 | Socket Head Bolts, 3x15 mm | Socket Head Bolts, 3x15 mm | 10 |
| JRP980039 | Lock Nuts, 3 mm | Lock Nuts, 3 mm | 10 |
| JRP960051 | Tail Rotor Blades (3D) | Tail Rotor Blades (3D) | 2 |
| JRP980013 | Socket Head Bolts, 3x8 mm | Socket Head Bolts, 3x8 mm | 10 |
| JRP980008 | Socket Head Bolts, 2x20 mm | Socket Head Bolts, 2x20 mm | 10 |
| JRP980034 | Plate Washers, 2 mm | Plate Washers, 2 mm | 10 |
| JRP960058 | Tail Slide Ring | Tail Slide Ring | 1 |
| JRP970028 | Tail Slide Ring Sleeve | Tail Slide Ring Sleeve | 1 |
| JRP960870 | Venture 30 Decal Set | Decal A | 1 |
| JRP960871 | Venture 30 Assembly Manual | Assembly Manual | 1 |


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3886