

VIBE⁹⁰_{SG} FBL

SUPPLEMENTAL MANUAL



Vibe 90SG-FBL Specifications

Overall Length.....	53.5 in (1359mm)	
Height.....	16.73 in (425mm)	
Main Rotor Diameter	63.19 in (1605mm)	with 720mm rotor blade
Tail Rotor Diameter.....	11.34 in (288mm)	with 105mm rotor blade
Gear Ratio	8:1:4.65	
Weight (no fuel)...	approximately 9.96lb (4.52kg)	not including main rotor blades
Control System.....	120 or 140 CCPM	

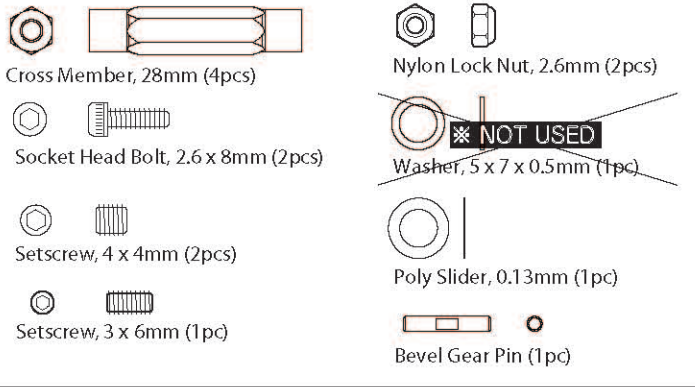
Thank you for purchasing this JR product.

Please also refer to the VIBE90SG (Flybar) assembly manual during assembly of this product.

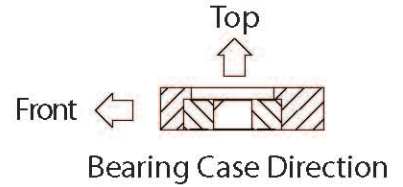
【Removed and New parts list】

	Removed parts from VIBE90SG	Quantity	New parts for VIBE90SG FBL	Quantity
Step 1	Washer, 5 × 7 × 0.5mm	1		
	Autorotation Assembly	1	Autorotation Assembly	1
Step 2	Low-Profile Landing Strut	2	Low-Profile Landing Strut v2	2
	Landing Skid	2	Landing Skid v2 (Black)	2
	Landing Skid Cap	4	Landing Skid Cap	4
	Socket Head Bolt, 3 × 20mm	4	Socket Head Bolt, 3 × 18mm	4
	Setscrew, 4 × 4mm	4	Setscrew, 3 × 4mm	4
Step 4	Washout Base	1	Main Blade Holder Assembly	2
	Washout Arm Assembly	2	FBL Pitch Arm (90)	2
	Swashplate Limiter	1	Control Ball, 5.5mm	2
	Socket Head Bolt, 3 × 14mm	2	Socket Head Bolt, 3 x 6mm	2
	Steel Joint Ball	2	Socket Head Bolt, 3 x 12mm	2
	Flat Head Screw, 2 × 10mm	2		
	Main Blade Holder	2	FBL Center Hub (90)	1
	Pitch Arm	2	Socket Head Bolt, 2.6 x 8mm	2
	Mixing Arm	2		
	Steel Joint Ball	4		
	Washer, 3 × 4.5 × 1mm	2		
	Socket Head Bolt, 3 × 6mm	2		
	Socket Head Bolt, 3 × 12mm	4		
	Flat Head Screw, 2 × 8mm	4		
	Main Rotor Hub	1	FBL Washout Arm Assembly	2
	Blade Spindle Shaft	1	Socket Head Bolt, 3 x 20mm	2
	Spindle Shaft Washer	2		
	Socket Head Bolt, 5 × 10mm	2		
	O-ring Damper, 10 × 18 × 4mm	4		
	Seesaw shaft	1	Spindle Shaft (10mm)	1
	Flybar Arm A	2	Spindle Washer, 6mm	2
	Flybar Arm B	2	Button Head Bolt, 6 x 10mm	2
	Seesaw Spacer Collar	2	Thrust Bearing Cap	2
	Flybar, 520mm	1	Flat Head Screw, 2 x 8mm	4
	Threaded Rod, 2.3 × 30mm	2		
	Socket Head Bolt, 2 × 10mm	4		
	Button Head Bolt, 4 × 8mm	2		
	Setscrew, 4 × 4mm	2		
	Control Ball, 4mm	2	Threaded Rod, 2.3 x 85mm(Φ 2.5)	2
	Socket Head Bolt, 3 × 8mm	2		
	Universal Link	4	FBL Pitch Jig Base	1
	Universal Link S	4	FBL Pitch Jig Rod	2
Threaded Rod, 2.3 × 15mm	2	Socket Head Bolt, 3 x 8mm	1	
Threaded Rod, 2.3 × 80mm	2	Setscrew, 3 x 4mm	2	
Step 5	Washer, 6 × 10 × 0.5mm	1	Carbon Tail Rotor Blade	2
	Tail Brace Tubu	2	Carbon Tail Brace Tube	2
Step 6	Self Tapping Screw, 2.6 × 12mm	20	Type C Servo Mounting Plate	2
	Flat Washer, M2.6	20	HEX Tapping Screw, 2.6 × 12mm	20
			Sponge/Foam Rubber, 80 × 250 × 4mm	1
Step 7	FRP Body	1	FRP Body	1
	Decal	1		
			Glow Plug Extension Lead	1

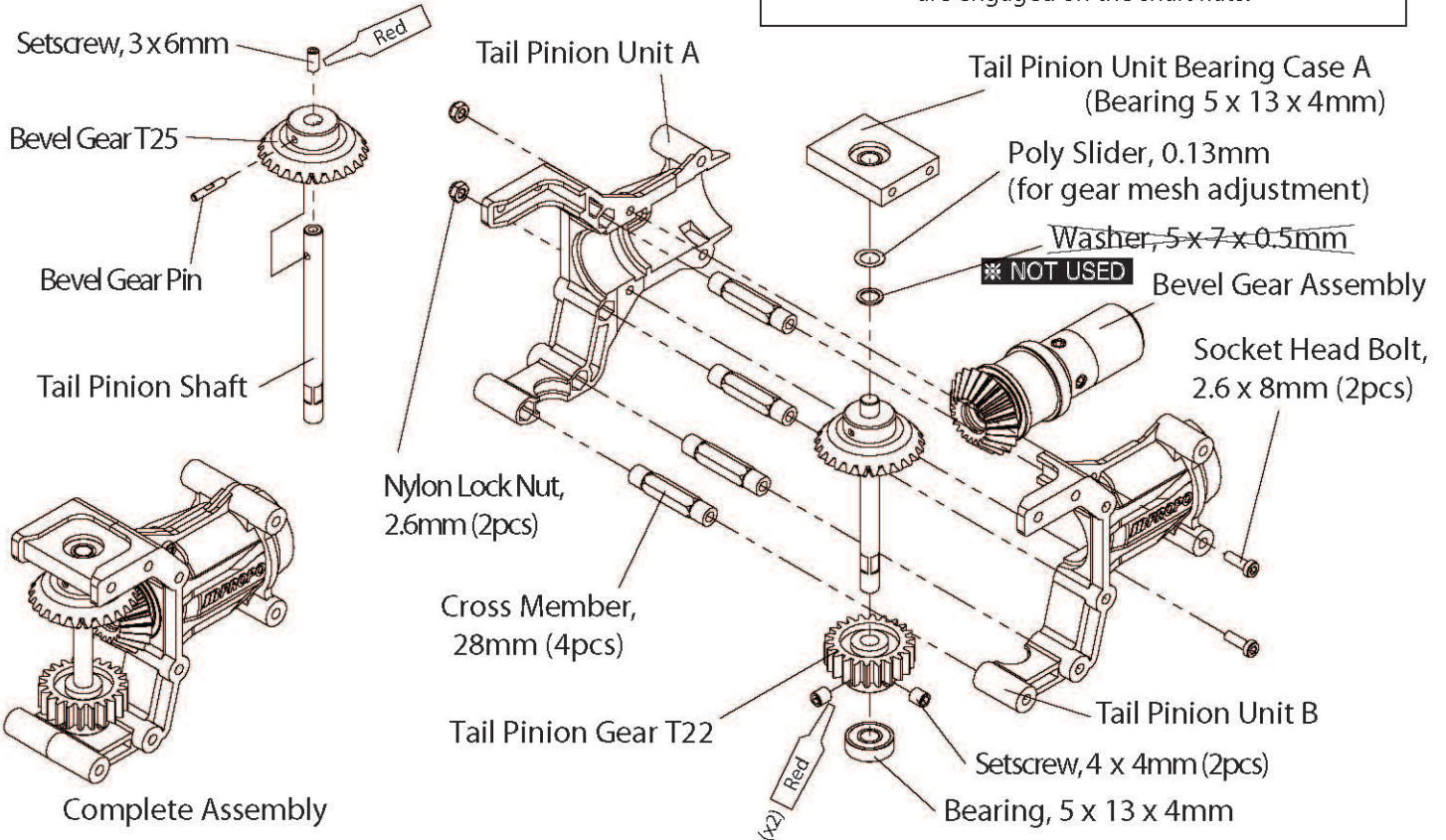
1-3 TAIL DRIVE TRANSMISSION ASSEMBLY



Install the bearing case as noted in the drawing.



Complete the full assembly but fasten the Tail Pinion Gear T22 with 4x4mm setscrews while pushing down on the T22 gear and pulling up on the shaft and T25 bevel gear. This ensures correct bevel mesh, and no up/down slop in the shaft assembly. Secure so that the set screws are engaged on the shaft flats.



1-6 DOUBLE MAIN DRIVE GEAR ASSEMBLY

The Autorotation Assembly has been changed.

There is no change to the assembly method. However, if you wish to purchase replacement parts, please refer to the parts list at the back of this manual.

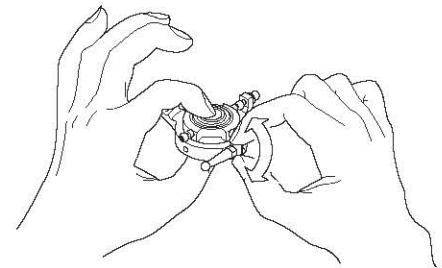
2-12 LANDING GEAR INSTALLATION

Landing Strut, Landing Skid, Landing Skid Cap, Socket Head Bolt 3 x 20mm and Setscrew 4 x 4mm have been changed.

There is no change to the assembly method. However, if you wish to purchase replacement parts, please refer to the parts list at the back of this manual.

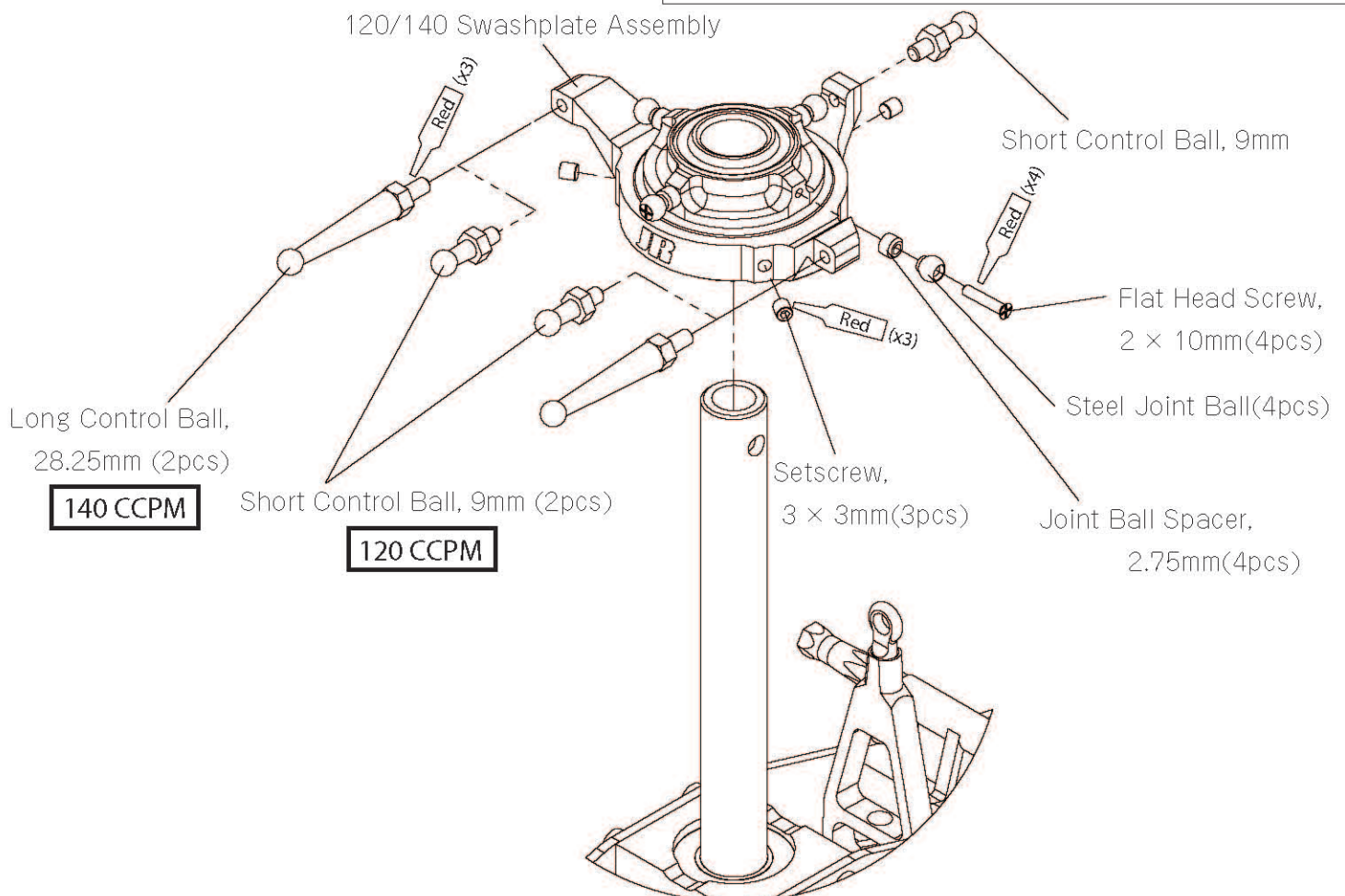
4-1 SWASHPLATE/WASHOUT INSTALLATION

The washout base is not used. Please refer to the following figure to assemble the Swashplate.

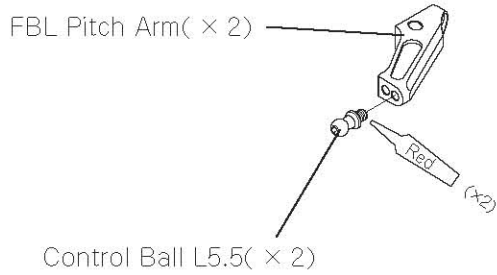
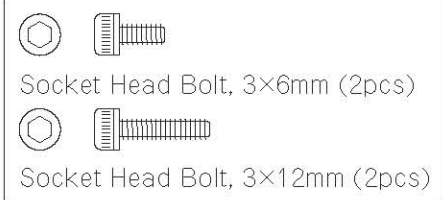


Install the long control balls for 140 CCPM or the short control balls for 120 CCPM (depending on your pre-existing bell crank layout).

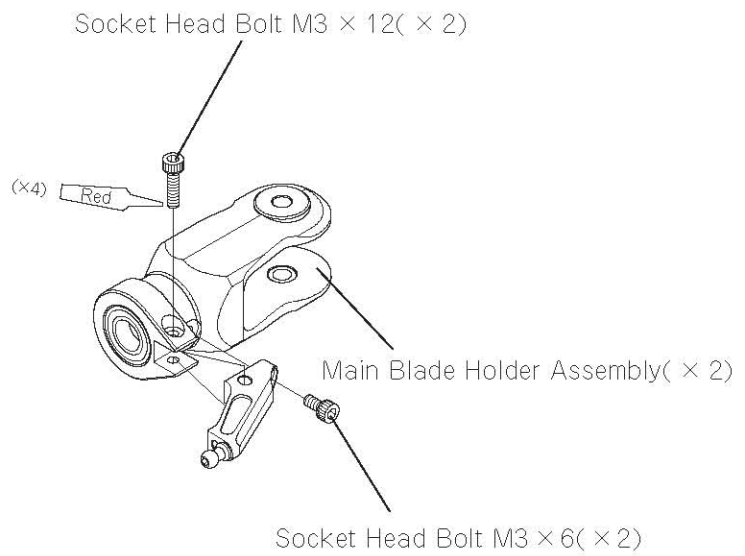
If there is play between the upper and lower Swashplate, evenly tighten the Setscrews 3 × 3mm (on lower the swashplate) little by little until the play is almost removed. Do not overtighten as binding and damage to the bearing will occur.



4-2 MAIN BLADE HOLDER ASSEMBLY



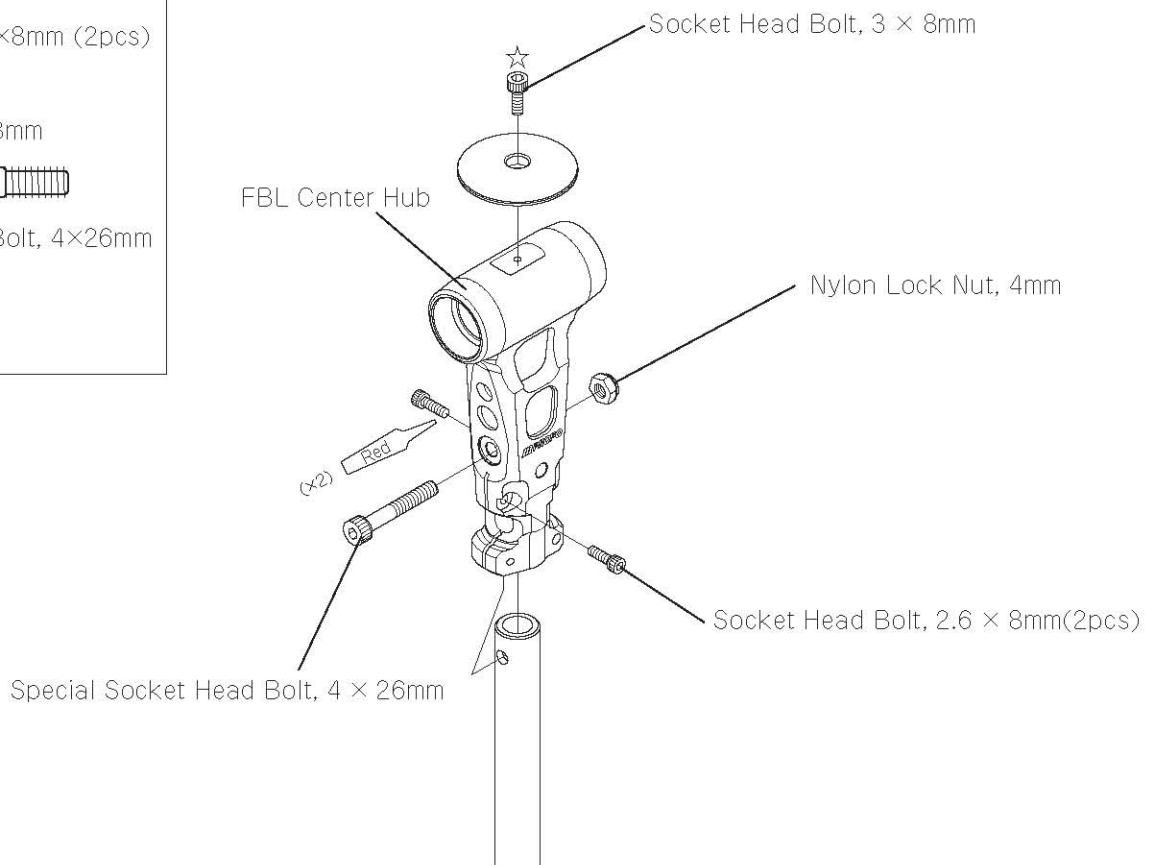
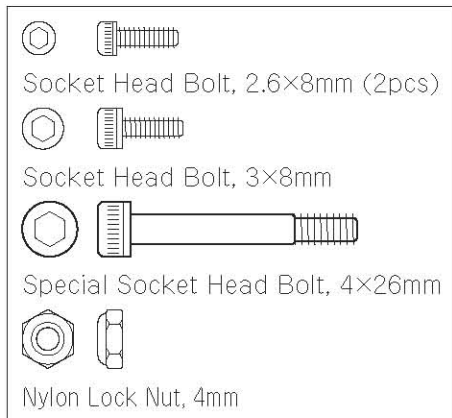
※ The control ball is typically installed in the outer hole. Depending on your exact servo setup, this will usually result in a cyclic pitch (Aileron/Elevator) range of $\pm 12^\circ$. If a greater pitch range is required, please install the ball in the inner hole. For further details on flybarless (FBL) setup instructions please refer to the manual accompanying your FBL gyro.



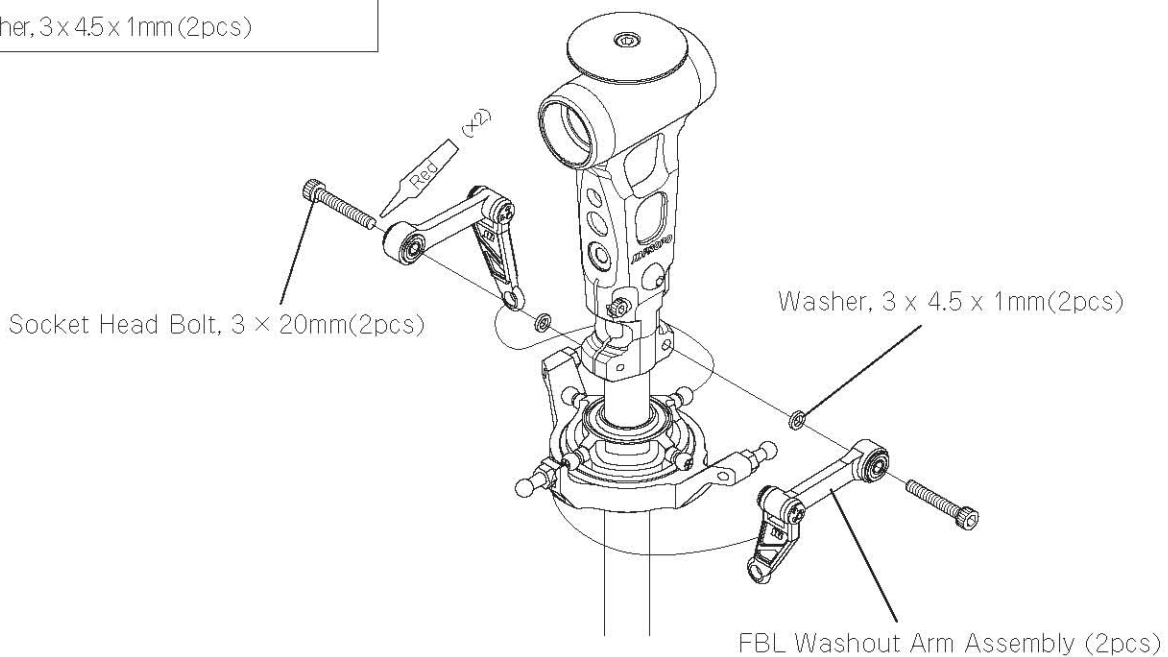
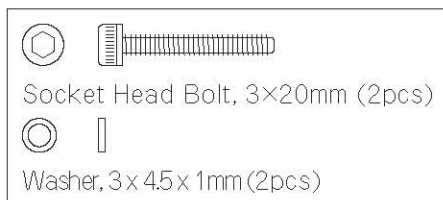
※ Make two sets.

4-3 FBL CENTER HUB ASSEMBLY

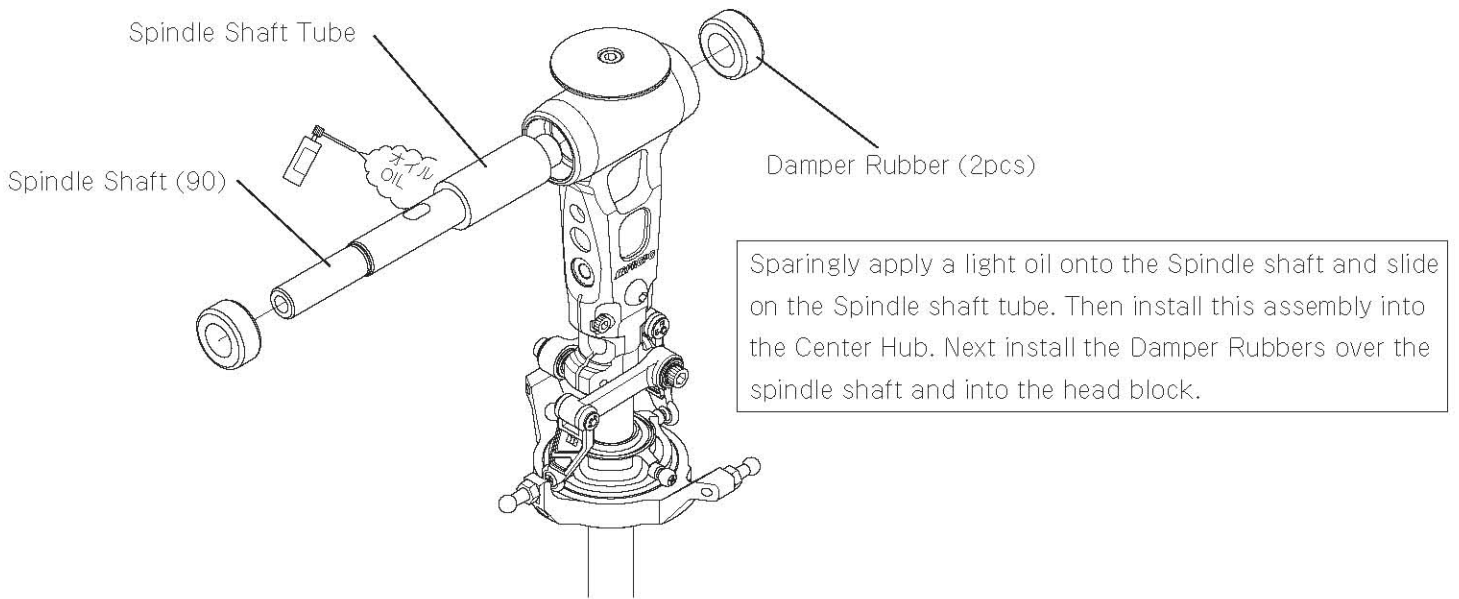
Temporarily tighten the bolt indicated by a ☆. It will be firmly tightened following Pitch adjustment.



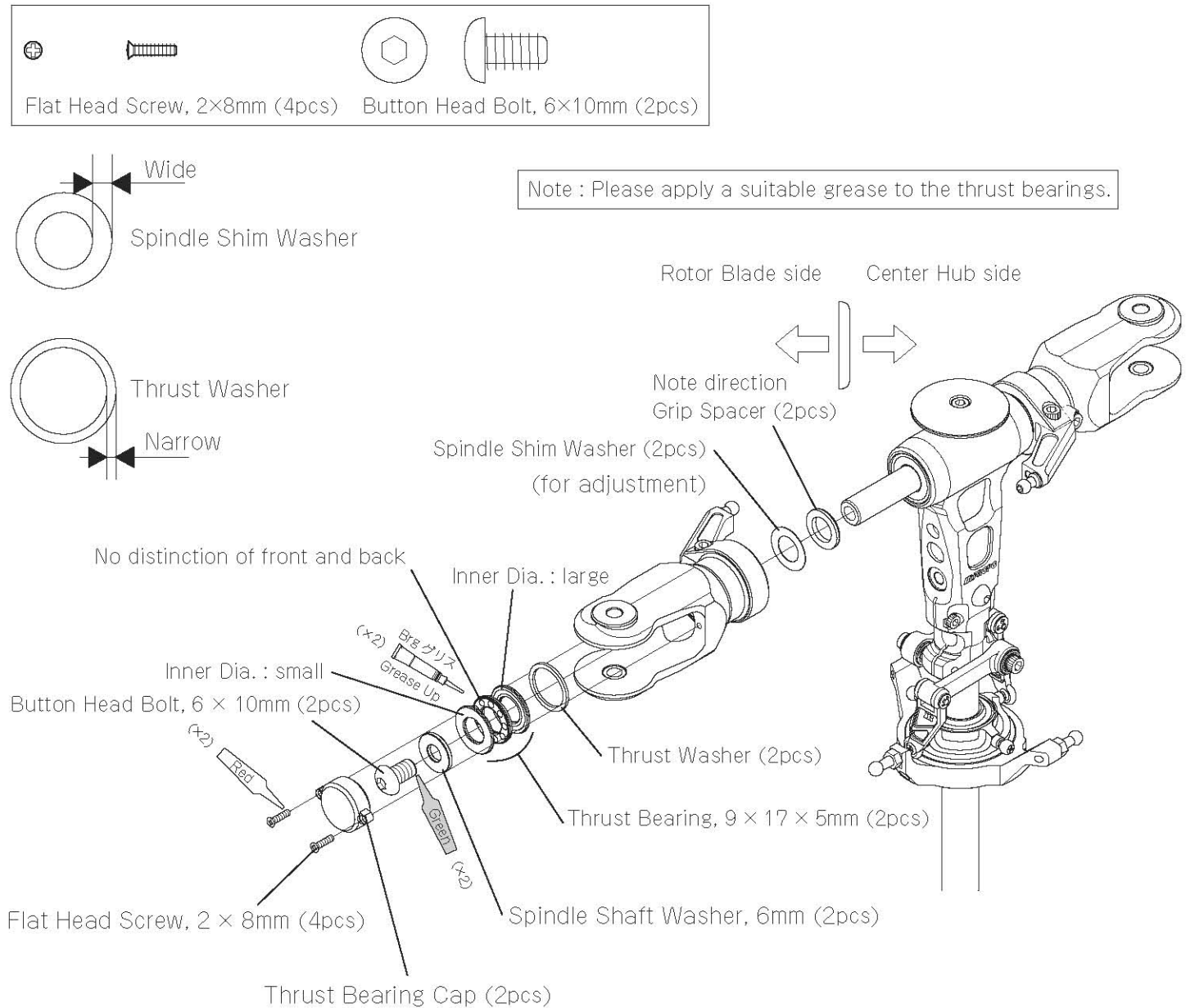
4-4 FBL WASHOUT ARM ASSEMBLY



4-5 SPINDLE SHAFT ASSEMBLY



4-6 MAIN ROTOR GRIP INSTALLATION



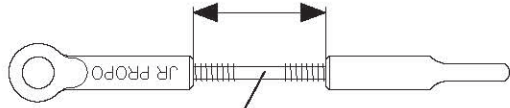
Note : Please replace these bolts each time they are removed for maintenance, etc.

4-7 LINKAGES



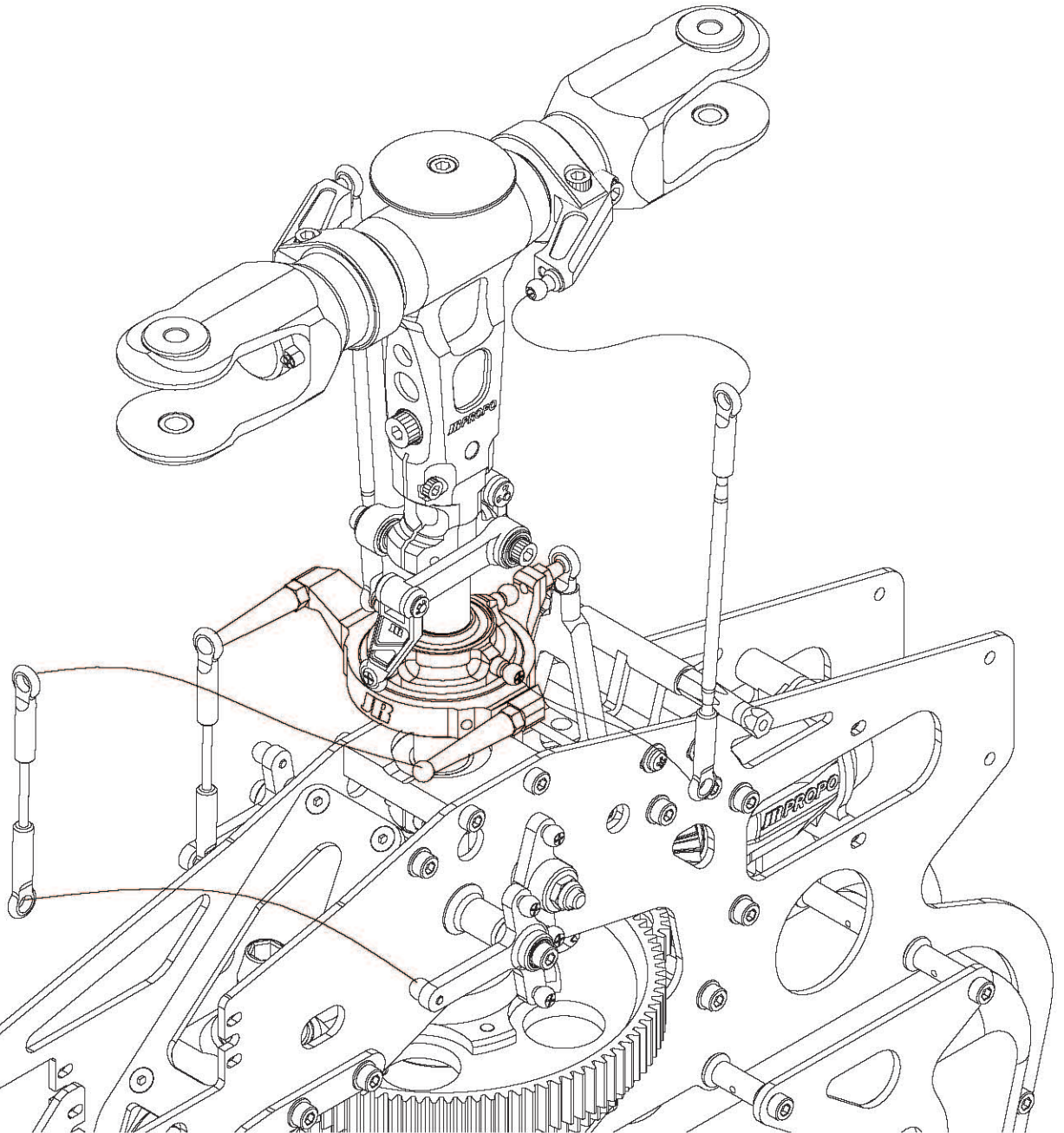
Threaded Rod, 2.3 × 85mm (∅2.5) (2pcs)

Universal Link (8pcs)



Threaded Rod, 2.3 × 35(2pcs)

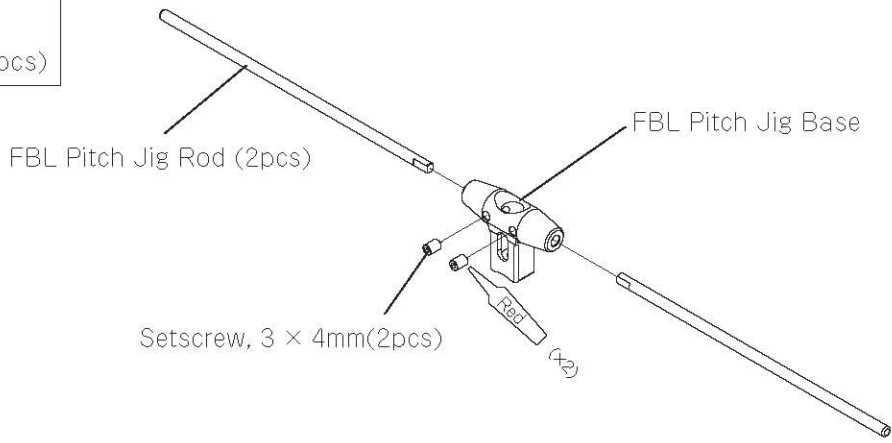
※ Make two sets.



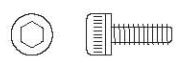
ADJUSTMENT ~ FBL PITCH JIG ASSEMBLY



 Setscrew, 3×4mm (2pcs)

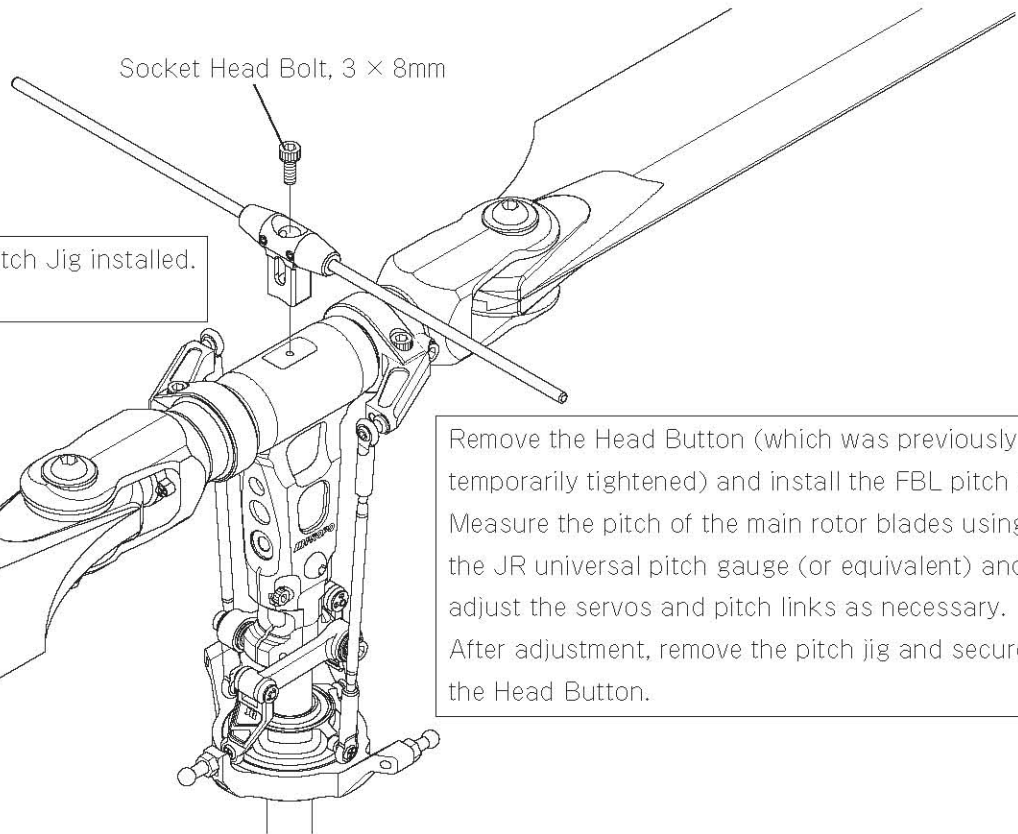


How to adjust Main Rotor Pitch



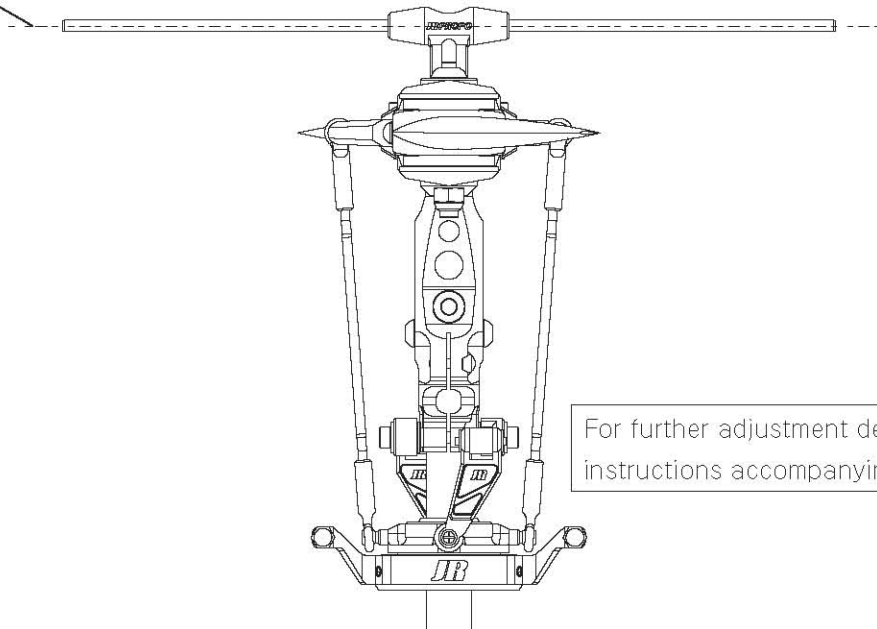
 Socket Head Bolt, 3×8mm

Never fly with the FBL Pitch Jig installed.
This is very dangerous.



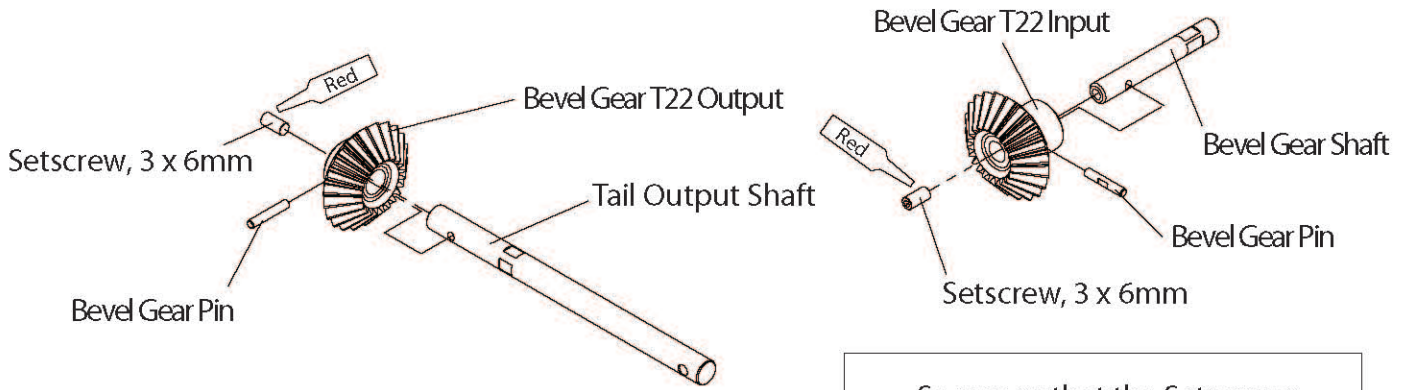
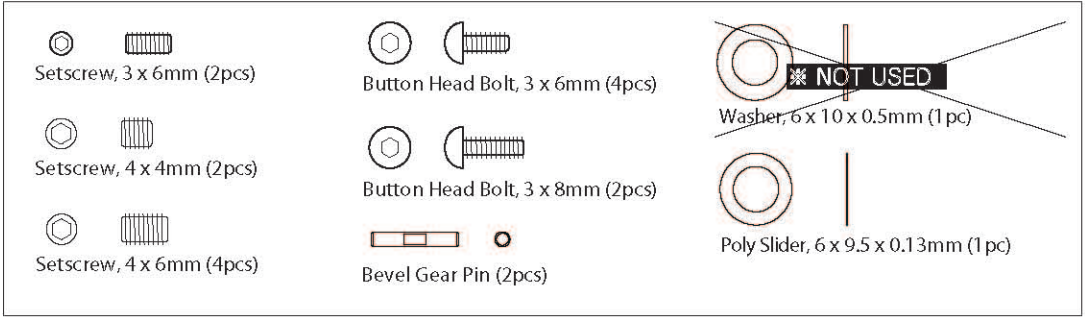
Remove the Head Button (which was previously temporarily tightened) and install the FBL pitch jig. Measure the pitch of the main rotor blades using the JR universal pitch gauge (or equivalent) and adjust the servos and pitch links as necessary. After adjustment, remove the pitch jig and secure the Head Button.

baseline

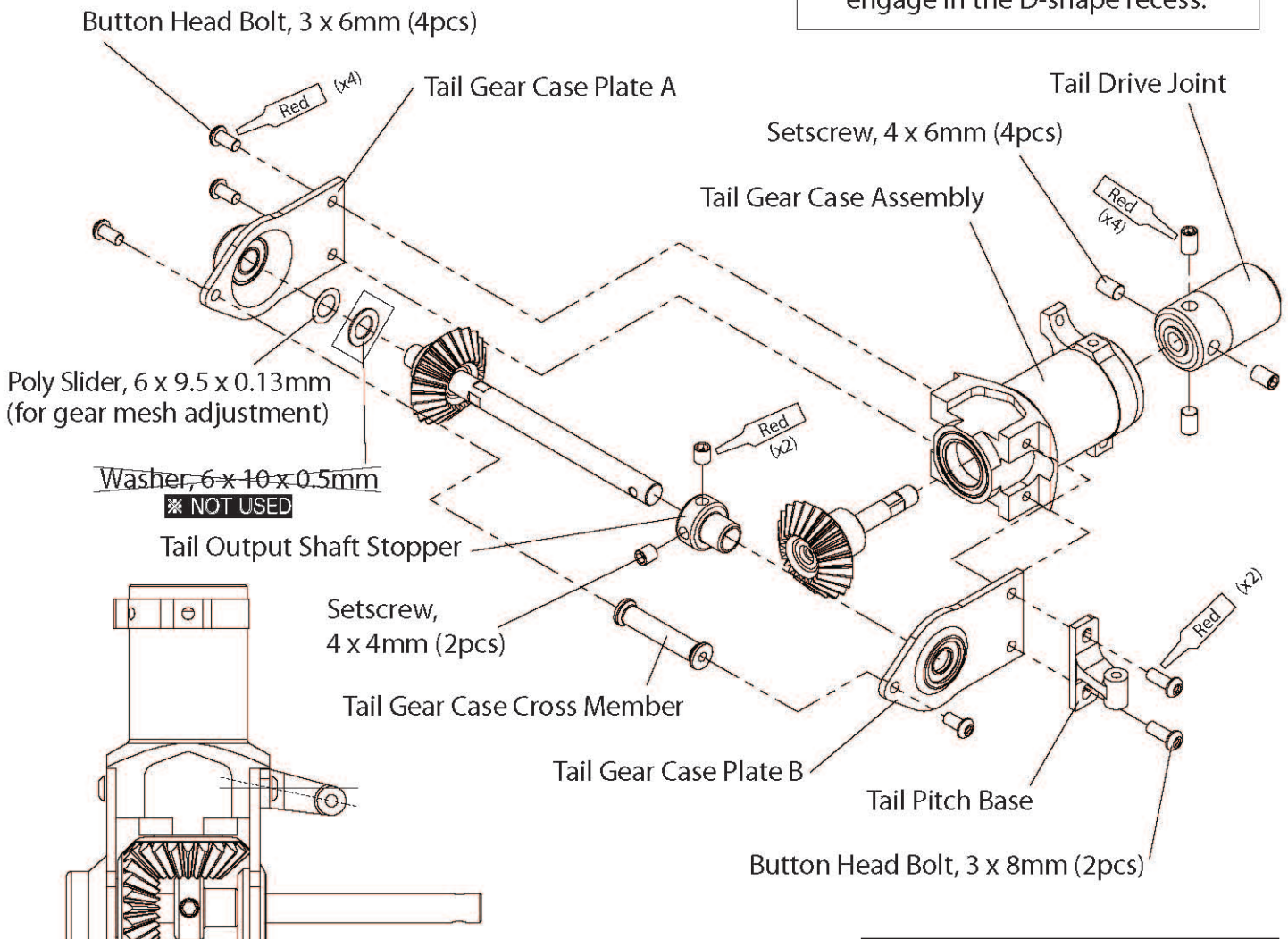


For further adjustment details, please refer to the instructions accompanying your Gyro system.

5-3 TAIL GEAR CASE INSTALLATION 1

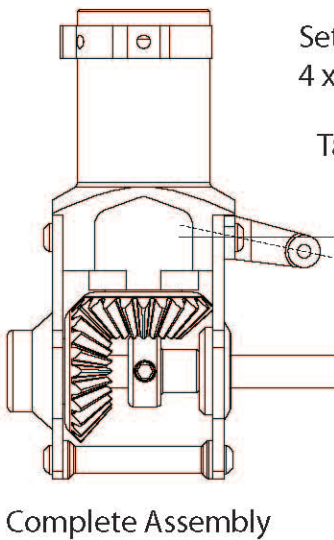


Secure so that the Setscrews engage in the D-shape recess.



Note: Finally tighten the Tail Output Shaft Stopper setscrews after assembly is complete to remove and allow free play of the output shaft.

Note the proper direction of Tail Pitch Base and Tail Gear Case Plate.



5-7 TAIL BLADE HOLDER ASSEMBLY

Carbon Tail Rotor Blades are included.

Although there is no change in the assembly method, if you wish to purchase replacement parts, please refer to the parts list at the back of this manual.

5-8 TAIL BOOM BRACE ASSEMBLY

Tail Brace Tube has been changed.

Although there is no change in the assembly method, if you wish to purchase replacement parts, please refer to the parts list at the back of this manual.

6-1 SERVO INSTALLATION 1

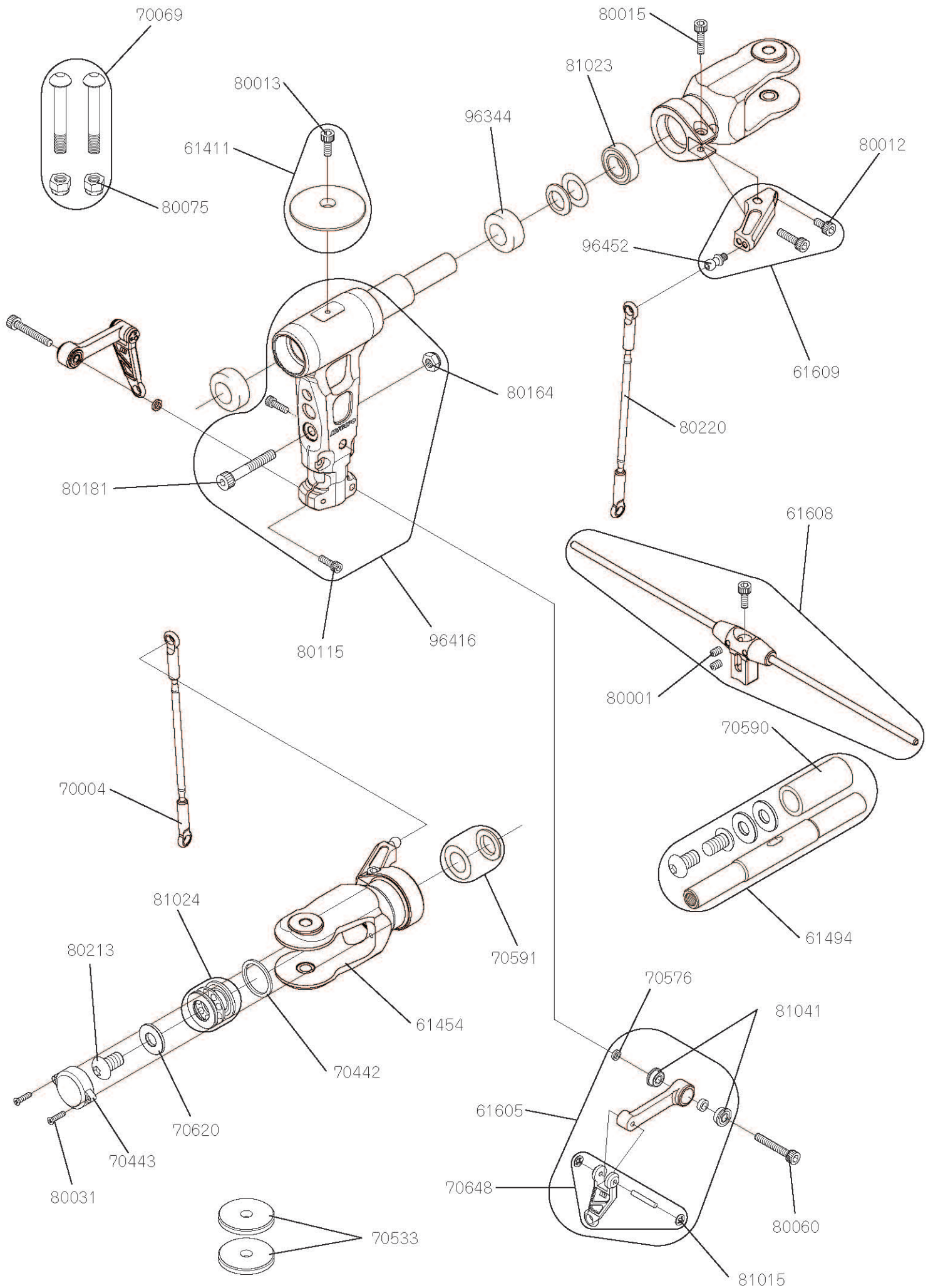
Type B Servo Mounting Plates, Sponge/Foam Rubber (for wrapping the receiver) and a glow plug extension lead are added. Also the Self Tapping Screws 2.6 x 12 in this step (and in the next step) have been changed to Hex Tapping Screws 2.6 x 12.

Although there is no change in the assembly method, if you wish to purchase replacement parts, please refer to the parts list at the back of this manual.

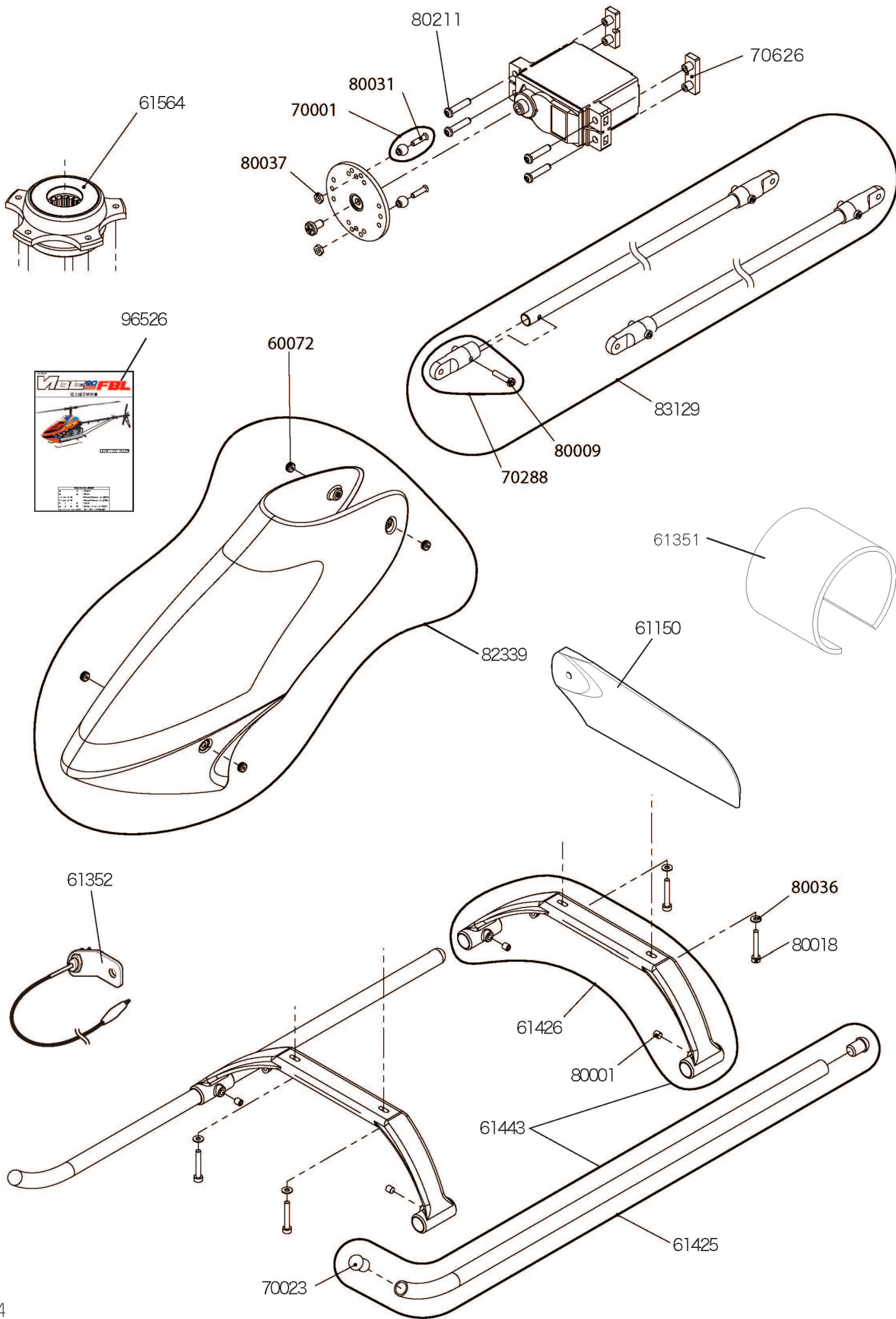
7-1 BODY/MAIN ROTOR BLADE ATTACHMENT

The FRP body design has been changed. Also a decal sheet is not supplied.

Although there is no change in the assembly method, if you wish to purchase replacement parts, please refer to the parts list at the back of this manual.



Item #	Description	Quantity	Note
61454	MAIN BLADE HOLDER ASSEMBLY	1	L-1790ZZ already assembled
61411	HEAD BUTTON	1	w/Socket Head Bolt, 3 × 8mm
61494	SPINDLE SHAFT (10mm)	1	w/Shaft Tube,Washer,Bolts
61605	FBL WASHOUT ARM ASSEMBLY	2	Collar : Red LF-730ZZ already assembled
61608	FBL PITCH JIG SET	1	one set
61609	FBL PITCH ARM (90)	1	w/Socket Head Bolts
70004	UNIVERSAL LINK	10	
70069	MAIN BLADE BOLTS, 5mm	2	w/Nylon Lock Nut, 5
70442	THRUST WASHER	2	
70443	THRUST BEARING CAP	2	
70533	ROTOR SPACER, 3mm	4	
70576	WASHER, 3 X 4.5 X 1mm	2	
70590	SPINDLE SHAFT TUBE	1	
70591	GRIP SPACER SET	1	w/Spindle Shim Washer
70620	SPINDLE WASHER, 6mm	2	
70648	WASHOUT LINK C	2	w/Washout Link Pin
80001	SETSCREW, 3 × 4mm	10	
80012	SOCKET HEAD BOLT, 3 × 6mm	10	
80013	SOCKET HEAD BOLT, 3 × 8mm	10	
80015	SOCKET HEAD BOLT, 3 × 12mm	10	
80031	FLAT HEAD SCREW, 2 × 8mm	10	
80060	SOCKET HEAD BOLT, 3 × 20mm	10	
80075	NYLON LOCK NUT, 5mm	10	
80115	SOCKET HEAD BOLT, 2.6 × 8mm	10	
80164	NYLON LOCK NUT, 4mm	10	
80181	SPECIAL SOCKET HEAD BOLT, 4 × 26mm	2	
80213	BUTTON HEAD BOLT, 6 × 10mm	10	
80220	THREADED ROD, 2.3 × 85mm(∅ 2.5)	2	
81015	CA STOPPER RING, 2mm	10	
81023	SHIELDED BEARING, 9 × 17 × 5mm	2	L-1790ZZ
81024	THRUST BEARING, 9 × 17 × 5mm	1	SST-1790DSG
81041	FLANGED BEARING, F3 × 7 × 3mm	2	LF-730ZZ
96344	DAMPER RUBBER	4	Hardness : 90°
96452	CONTROL BALL, 5.5mm	1	
96416	FBL CENTER HUB(90)	1	w/Bolts



Item #	Description	Quantity	Note
60072	RUBBER GROMMET	4	
61150	CARBON TAIL ROTOR BLADE	2	
61351	SPONGE/FORM RUBBER, 80 × 250 × 4mm	1	
61352	GLOW PLUG EXTENSION LEAD	1	
61425	LANDING SKIDS(BLACK)	2	w/LANDING SKID CAP
61426	LOW PROFILE LANDING STRUT V2	2	w/SETSCREW, 3 × 4mm
61564	AUTOROTATION UNIT	1	w/BEARING
70001	JOINT BALLS, 2 × 8mm SCREWS	10	
70023	LANDING SKID CAP	4	
70288	TAIL BRACE CONNECTOR(60)	4	
70626	TYPE C SERVO MOUNTING PLATE	10	
80001	SETSCREWS, 3 × 4mm	10	
80009	SOCKET HEAD BOLTS, 2.6 × 12mm	10	
80018	SOCKET HEAD BOLTS, 3 × 18mm	10	
80031	FLAT HEAD SCREWS, 2 × 8mm	10	
80036	FLAT WASHERS, 3 mm	10	
80037	NUTS, 2mm	10	
80211	HEX TAPPING SCREWS, 2.6 × 12mm	10	
82339	FRP BODY SET VIBE90SG	1	
83129	CARBON TAIL BRACE SET, 590mm	1	
96526	ASSEMBLY INSTRUCTIONS(VIBE 90 SG-FBL)	1	

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