



BELL 206B

JET RANGER

FOR COBRA MECHANICS

STEP 1

- A. The opening in the top of the fuselage needs to be finished to the correct size. The width of the flange that runs horizontally around the opening should be trimmed to a width of $3/16$ ". The rear vertical flange should be $1/2$ " wide.
- B. Refer to the side view drawing for the position of F2. It is located between the front and rear door lines. Position F2 and check for fit. Minor sanding may be required. Also be sure that the two cut outs on the bottom edge of F2 fit the $1/4$ " x $5/8$ " stringers.
- C. Install the two formers F1 with the tab on the end fitting into the slots on F2. Tack glue F1 and F2 in place with a thick cyanoacrylate glue such as "Super Jet" or "Zap a Gap".
- D. Position the two $1/4$ " x $5/8$ " x $8\ 9/16$ " stringers with the end fitting into the cutout in F2. Do not glue in place yet.
- E. Locate F3 with the cutouts at the bottom edge fitting over the other end of the stringers. Tack glue F3 and the stringers in place.
- F. F1, F2, F3 and the stringers can now be glued in place using a thick cyanoacrylate glue. Make a fillet in the joints and then spray with a glue accelerator. Do not use epoxy as it will not stick to the fiberglass as well as a cyanoacrylate glue.
- G. Cut out the four side windows and the two bottom front windows. The lower windows can be left uncut and painted black or dark blue, if you wish. A "Moto Tool" with a "Tuffgrind Fiber" cutoff wheel works best. Cut about $1/16$ " away from the line and finish with a sanding block.

STEP 2

- A. Build the Cobra helicopter as described in the Cobra instruction manual but with the following modifications.
- B. Remove the plywood floor and the right and left front stays, #408 and #409.
- C. The front of the top servo tray, where the rudder servo fits for Cobra, is cut off. The rudder servo will be mounted inside the fuselage.
- D. Remove the tail boom and tail struts. The tail control wire will be used later in assembly.
- E. Remove the radius arm stay, #805, and the control rod from the radius arm stay to the swashplate.

- F. Assemble the two rear mounting brackets, #284, to the side frames with the upper screw of the rear tail boom mount.
- G. Remove the pivot bolt on the left side of the swashplate (the one used for the radius arm). Mount the swashplate locating tube, #804JR, onto the swashplate with a 3 x 16mm skt. hd. screw, #232.
- H. Mount the anti-rotation bracket, #805, to the left side frame under the two upper main shaft bearing block screws.
- J. Remove the landing gear and enlarge the four landing gear mounting holes in the side frames to 5/32" diameter.
- K. Remove the muffler and the rotor head and set aside for now.

STEP 3

- A. Lower the chassis into the fuselage and position it on top of the stringers as shown on the drawing. The chassis is located 3/32" in front of F3. Mark the centers of the four mounting holes on the stringers. Remove the chassis from the fuselage. From the two rear marks on the stringers measure forward 7 1/4" and mark the location of the holes for the front landing gear struts. Drill a 5/32" hole through the stringer and the fiberglass at the six locations.
- B) Turn the fuselage over and enlarge the six holes **IN THE FIBERGLASS ONLY** to 3/8" diameter.
- C) A hole must be cut in the bottom of the fuselage to allow the air from the fan to pass through. Measure 5/8" forward from F3. This will be the rear edge of the hole. Then measure 2 1/2" from the edge for the length of the hole. Make the width the same as the distance between the two stringers. The hole may be extended to the rear by another 1" if you wish a larger access to the glow plug.
- D. Reinstall the chassis in the fuselage and bolt it in place with two 4 x 15mm socket head screws, #239, and two 4mm lock nuts, #275.
- E. Glue F4 behind the chassis flush against the two rear mounting angles. The small hole in F4 should be to the left side.
- F. Drill a 1/8" hole through the rear mounting angles into F4. Remove the chassis from the fuselage.
- G. Position F8 horizontally in front of F4 on the left side of the helicopter and glue in place using cyanoacrylate glue.

STEP 4 - TAIL BOOM

- A. Measure 3 1/2" back from the front end of the tail boom and make a vertical line. Mark another line 13 3/4" back. These lines are the locations of F5 and F6.

- B. Glue F6 in place at the 13 3/4" mark with the lower 1/8" hole to the left side of the fuselage.
- C. Drill a 1/8" hole through the tail control rod exit. Install the tail control rod tube through the rod exit and the hole in F6. Leave about 1/2" of the tube protruding outside the fuselage then glue it in place. The tube can be cut off flush with the fuselage after the glue has set.
- D. Cut the tail drive tube to a length of 23" and slide through the top hole in F6.
- E. Glue F5 in place at the 3 1/2" mark with the tail drive tube going through the top hole and the control rod tube in the lower hole. Glue both tubes in place.
- F. Laminate both F9 parts together. Mark a line 1 1/4" from the end of the tail boom. This is where F9 is located. Shape F9 to fit at the marked location and glue in place.
- G. F10 is glued to the inside of the tail boom where the vertical fin mounts. The front edge of F10 fits against F9. The 1/4" lip that the tail cone fits on will have to be removed to clear the F10 former. This then allows F10 to fit flush against the fiberglass.
- H. Epoxy the tail gearbox mount, #435, into the hole in F9. Drill a 1/8" hole in the top and bottom of the tail boom to allow access to the 3mm set screws in the tail gearbox mount.
- J. The tail boom and tail cone should then to be cut out to fit around the tail gearbox.
- K. Check the tail boom for fit on the fuselage. Some sanding may be required around the fiberglass seams.
- L. Slide F7 onto the tail drive tube - about 2". Use a "15 minute epoxy" or a "30 minute epoxy" and apply a generous amount to the 3" protrusion on the fuselage. Slide the tail boom all the way on with the tail drive tube and tail control tube going through the holes in F4.
- M. Glue the tail control tube to F4 and cut the tube off leaving 1/8" sticking out.
- N. Reinstall the chassis in the fuselage and insert the tail gearbox with drive wire, following the instructions in the Cobra manual. When the drive wire has been inserted into the front drive coupler, slide F7 forward on the drive tube against F4 and glue in place.

STEP 5 - TOP COWLING

- A. Cut the egg shaped hole in the cowling as per the top view drawing.
- B. The five vent holes on the sides of the cowling can now be cut out. Then glue a piece of screen on the inside.
- C. Place the top cowling on the fuselage and check for fit. Sand if necessary. Attach the cowling with six #2 x 1/4 wood screws, #272, as shown on the drawing. Use a 1/16" drill for the pilot holes.

STEP 6 - TAIL SURFACES

- A. Cut the horizontal stabilizer from the 1/4' x 4" balsa sheet provided to a length of 10 3/4". Sand to the air foil shape shown on the side view drawing. The tail boom is marked where it should be cut out for the fin. Slide the stabilizer through the cutouts and glue in place with a thick cyanocrylate glue to form a fillet.
- B. The vertical tail fin is cut from the same 1/4' x 4" balsa sheet in two pieces which are then glued together (see drawing). Sand the fin with the leading edge rounded and trailing edge tapered. Glue the 1" x 1 1/2" plywood piece on the right side of the fin where the mounting screws are located.
- C. Bend the 1/16" x 6 1/2" wire for the tail skid as shown on the drawing.
- D. Cut a groove in the fin and glue the tail skid in place.
- E. Mount the fin with two #4 x 1/2" wood screws, #268. The front screw goes through the tail boom, then F10. The rear screw goes through the tail cone then into F10.

STEP 7 PAINTING

- A. Remove the chassis and tail gearbox from the fuselage. The top cowling, tail cone and vertical tail fin will be painted separately from the fuselage.
- B. Use an automotive body filler such as "Bondo" to fill in any low spots around the seams and the joint between the tail boom and fuselage. Sand the fiberglass before applying the filler.
- C. The tail fins must be finished with a wood grain filler such as "Pactra Prep Primer".
- D. Give all the parts one coat of primer. Use either "Pactra Formula U" or one of the epoxy paints such as "K & B". Let dry.
- E. Any small pin holes or voids will show up now and should be filled with a spot putty. Sand all the parts with a 400 grit paper.
- F. Paint one more coat of primer and sand smooth with a 600 grit paper. Then apply gloss coats to desired finish.

STEP 8 FINAL ASSEMBLY

- A. Mount the rudder servo in F8 with the output shaft to the front of the fuselage.
- B. Solder one threaded coupling, #579, to one end of the tail control wire. Attach a nylon clevis, #581, to the threaded coupling. Slide control wire through tube and attach clevis to rudder servo.
- C. Cut out the bottom front plastic windows to the scribed lines. Glue the windows to the inside with a cyanoacrylate glue.

- D. Set the chassis inside the fuselage then attach a suitable muffler through the side window. (The Hirobo square muffler, #665, is ideal.) Mark the fuselage where the muffler exhaust tube will exit. Make a 5/8" dia. hole at this location.
- E. Mount the chassis in the fuselage with two 4x15mm socket head screws, #239, two 4x10mm washers, #261, and two 4mm lock nuts, #275, in the two front chassis holes. Bolt the rear mounting brackets, #284, to F4 with two 3x12mm socket head screws, #235, two 3mm washers, #276, and two 3mm lock nuts, #243.
- F. Attach the landing gear

(the following section is for building and mounting the optional scale landing gear):

The landing gear is mounted with four 4x25mm socket head screws, #250, through the four front and rear holes in the mounting stringers with a 4x10mm washer, #261, under the head of the two screws. Then, from the bottom of the fuselage, on each bolt slide on a spacer, a landing gear mounting plate, then a 4mm lock nut, #275.

Slide two landing gear clamps onto each skid. The rear clamp is 7/8" from the end of the skid to back edge of the clamp. The front clamp is 7 1/4" from the rear clamp. Attach the landing gear struts to the clamps with two 2x14mm pan head screws and two 2mm hex nuts. Position the rubber dampers on the struts and fit the straps over the rubber dampers. Attach to the landing gear mounting plates with eight 3x6mm socket head screws.

- G. Lubricate the tail drive wire with a light grease and install the tail gearbox assembly. Fasten the front end of the drive wire into the drive coupler with four 4x6mm set screws, #288. The gearbox is held with two 3x5mm set screws, #251, in the tail gearbox mount, #453.
- H. With the tail control rod attached to the rudder servo and the servo in the neutral position, cut the rod to the correct length so that when the threaded coupling, #579, is soldered on and the clevis attached to the gearbox control lever, the gearbox control rod is in the center of the slot.
- J. Attach the tail cone using two #2x1/4" PK screws, #272, located at the top and bottom. Remount the vertical tail fin.
- K. See the Cobra instruction manual for the fuel tank set up. It is located in the cutout provided in F2. Use foam tape where the fuel tank touches the plywood.
- L. Position the battery pack in the nose between the two F1 formers. Wrap the battery in foam rubber. Mount the receiver in front of the fuel tank in foam rubber.
- M. Attach the front windshield with four #2x1/4" PK screws, #272. Use a 1/16" drill for pilot hole. Mount the top cowling with the six #2x1/4" PK screws, #272.
- N. Bolt the rotor head to the main shaft with a 3x20mm socket head screw, #234.
- O. See the Cobra instruction manual for final set up and flying notes.

Good luck and lots of fine flying with your GMP Cobra/Ranger.

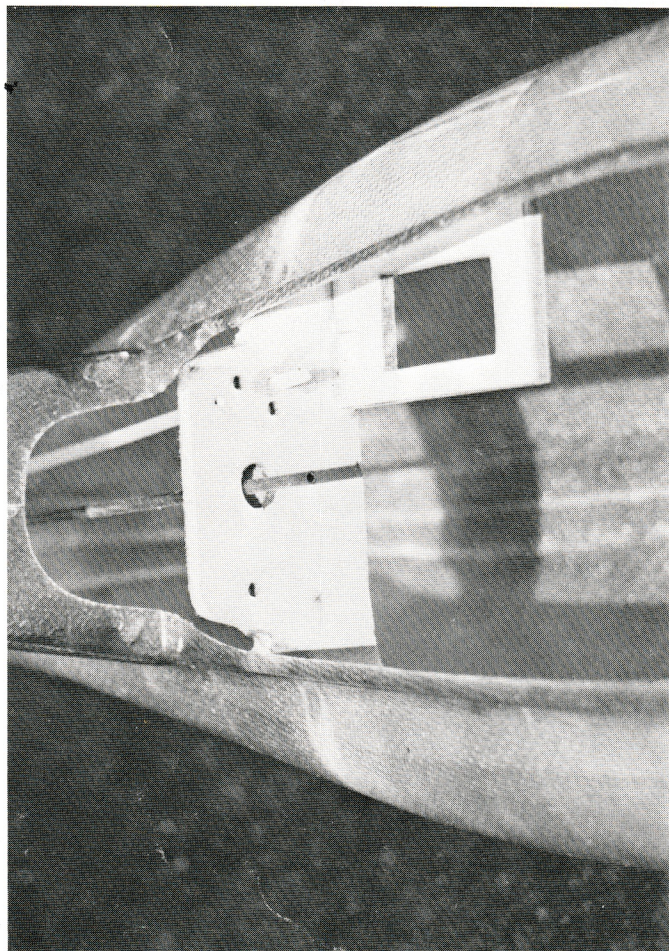
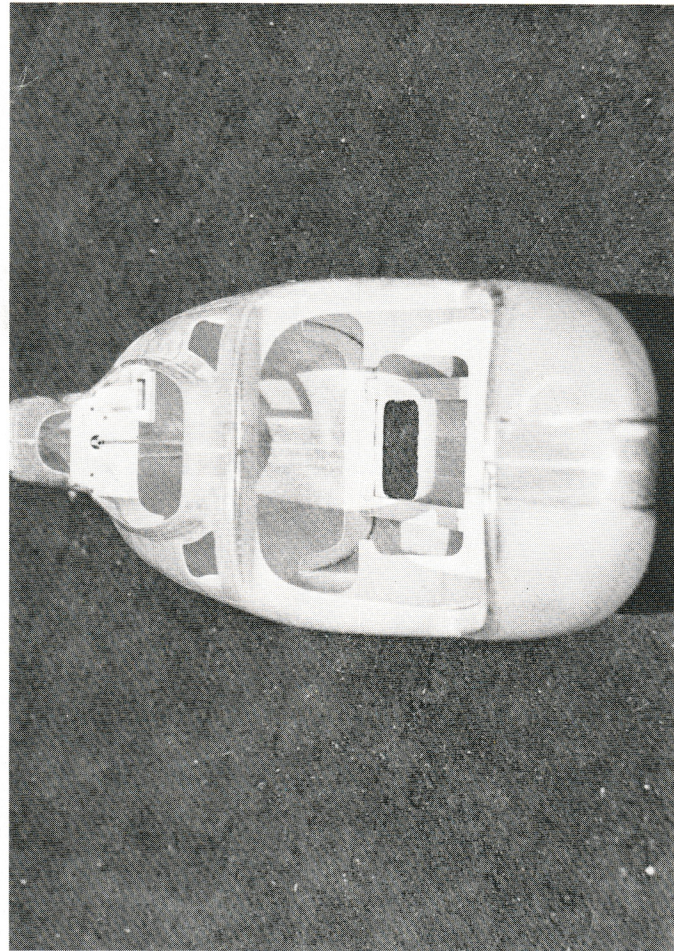
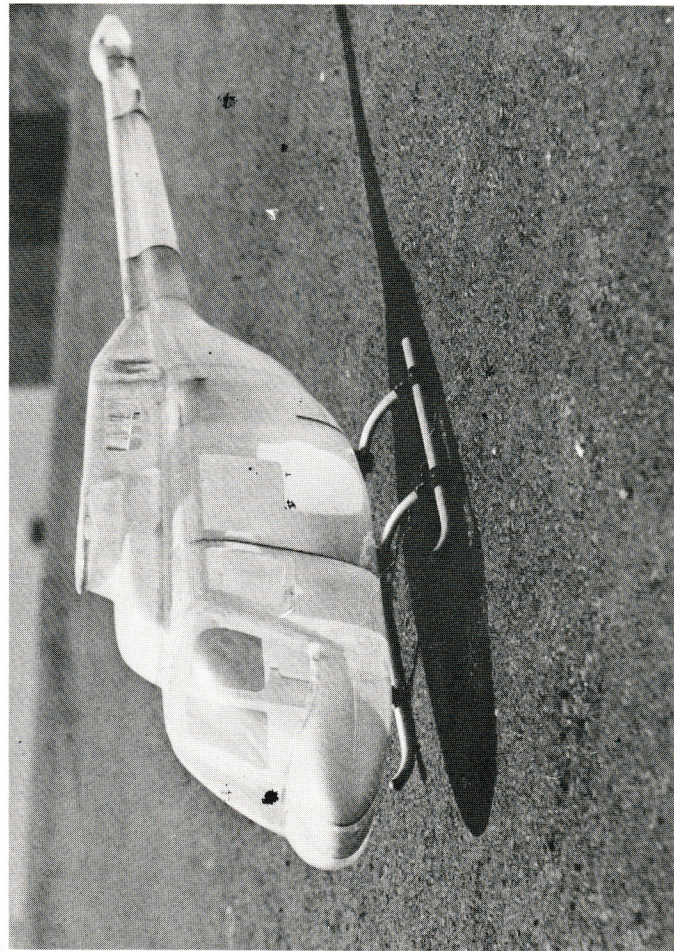
JET RANGER FUSELAGE KIT - Part #800JR
PARTS LIST

<u>PART #</u>	<u>DESCRIPTION</u>	<u>Qty</u>	<u>Kit</u>
801FU	Fuselage - Fiberglass	1	
801TB	Tail Boom - Fiberglass	1	
801TH	Top Cowling - Fiberglass	1	
801TC	Tail Cone - Fiberglass	1	
801WS	Windshield - Plastic	1	
801BW	Bottom Windows - Plastic	1	
868JR	Plywood Set	1	
	Plywood Sheet (1)		
	Balsa Sheet - 1/4" x 4" x 24" (1)		
	HardwoodStringers - 1/4 x 5/8 x 8 9/16" (2)		
	1" x 1 1/2" Plywood (1)		
553	Tail Drive Wire	1	
554	Tail Drive Tube	1	
284	Rear Mounting Bracket	2	
805JR	Anti Rotation Bracket	1	
855JR	Tail Skid Wire - 6 1/2"	1	
879JR	Hardware Set	1	
863JR	Instruction Manual	1	
867JR	Drawing	1	
804JR	Swashplate Locating Tube	1	
866JR	Screen	2	
861	Decals	2	
662	Landing Gear (optional)		
665	Muffler (optional)		

HARDWARE SET

<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>KIT</u>
239	4x15mm Skt Hd Screw	2	
275	4mm Lock Nut	2	
261	4x10mm Washer	4	
276	3mm Washer	2	
243	3mm Lock Nut	2	
232	3x16mm Skt Hd Screw	1	
272	#2x1/4" PK Screw	12	
268	#4x1/2" Wood Screw	2	

JET RANGER PHOTO SHEET #1



JET RANGER PHOTO SHEET #2

