

BK 117

The BK 117 fuselage kit is intended for use with the SCOUT 60, CHAMPION and HELI-STAR mechanics, and also for the earlier SUPERIOR and BELL 222 drive sets. We recommend the CHAMPION or SCOUT 60, as these are a perfect match in terms of weight, floor attachment, fuel tank position and rotor diameter.

The fuselage can be built completely without installing the mechanical components, but you should know beforehand which mechanics are to be installed, so that appropriate preparations can be made for the installation.

Cut out all the openings in the fuselage, cutting along the marked lines. Use a saw and a file, or a small electric drill and rotary cutter.

Cut out the fuselage centre section (1) as follows:

Side windows, left and right	(a)
Four vents per side, left and right	(b)
Jet efflux, left and right	(c)
Floor opening	(d)
Upper opening for mechanics	(e)

Cut out the fuselage front section (2) as follows:

Side windows, left and right	(f)
Door windows, left and right	(g)
Front screen, left and right	(h)
Lower side windows, left and right	(i)
Roof window, left and right	(j)
Upper vent, left and right	(k)
Jet inlet, left and right	(l)
Upper opening for mechanics	(m)
Landing light	(n)

Cut out the rear section (3) as follows:

Horizontal stab. slots, left and right	(o)
Gearbox opening	(p)

If you are installing a SCOUT mechanics set, the upper opening (e) for the swashplate holder needs to be enlarged slightly.

Cut out the glazing (4) leaving a 3 mm wide flange, as shown in the example (one door pane). Trim them to fit in the fuselage, and adjust the openings if necessary. Trim the jet efflux holes to size.

Please note: All glazing is glued to the inside of the fuselage. The side panels in the fuselage centre section (1) - openings (a) and (f) - are left open. Do not glue the glazing in place until painting is complete.

Mechanical installation

Install the guide tube (28) and glue it in place. The position of the tube is shown on the main plan.

Trim the floor spars (16) and (17) to fit, and glue them in place. Check that they make good contact with the moulding. Make the bulkheads (18), (22) and (23) as shown on the main plan. If you are installing SCOUT mechanics, make the bulkheads as shown in the supplementary plan. Glue bulkhead (18) in place, and glue the spar (10) to the front screen.

Complete the rear section of the fuselage (3) as described below, but do not attach it to the fuselage centre section yet (1).

Glue the horizontal stabiliser (20) in place, and add the fins (21). Glue the bulkheads (22) and (23) in place, noting that they are handed. Glue the gearbox reinforcement (24) in place, followed by the tube (25). The tube should be keyed with glasspaper on the joint surface beforehand. Take care to install it straight, observing the 11 mm dimension. See detail "S" on the main plan.

Before gluing in the spar (26) it is best to fit the control cable (27) from the front end. Route it along the top and through bulkheads (22) and (23), and glue it also to the horizontal stabiliser (20) and in the corner at point xxxxxx (see main plan). It is useful to install temporarily the 45 Grad gearbox at this stage as it stiffens the structure. The spar (26) can now be trimmed to size, glued in place, and sanded smooth.

The completed tail section (3) can now be epoxied to the fuselage centre section (1).

Important: Please take particular care over this stage. Roughen up all joint areas before gluing, to provide a key for the adhesive. Screw the fuselage front section (2) to the fuselage centre section (1). Place the fuselage floor on a flat surface. Align the tail section (horizontal and vertical stabilisers) accurately. Glue this area carefully, and reinforce the joint to the fuselage centre section (1) with small strips of glass cloth (see xxxx on the main plan).

Fill the seams where necessary, and sand the filler smooth. Apply several coats of sanding sealer to all wooden parts and sand smooth. The fuselage can now be painted, using good quality plastic enamels. Apply fuel-proofer to the wooden parts inside the fuselage.

Important: Do not apply more paint than is necessary. A well-filled paintbrush can quickly add a surprising amount of weight. It is very easy to add several hundred unnecessary grams in this way.

Tip: The fuselage is supplied pigmented, and we recommend that the pigmented surface is left as the base colour, over which trim striping and other decoration can be applied, using either paint or self-adhesive film.

When the model has been painted, the glazing, vent grilles (b) and exits (4) can be fitted.

The rear upper attachment for the mechanics is formed by the bar (36), which is fitted with parts (37) and (38), as shown at "D" on the main plan and "L" on the supplementary plan. The mechanics are screwed to this part. The fixing holes must be drilled to suit the mechanical aggregate which you are installing.

The fuel tank position of the CHAMPION, SCOUT and SUPERIOR is dictated by the overall design of the mechanics, and no change is required with the new fuselage. For the HELI-STAR (BELL 222) mechanics the tank must be moved to the right, next to the chassis.

Install the 45 Grad gearbox in the fuselage together with the tailskid, using the screws (29).

Very important: Do not over-tighten these screws; it is vital not to compress the gearbox, otherwise the ballraces will overheat.

The next step is to install the tail rotor gearbox. If you are installing the SCOUT mechanism, the tail rotor gearbox housing should be replaced with the housing included in the fuselage kit, and installed as shown in drawing "H" on the plan.

Referring to the main plan, insert the shaft (S1764) into the 45 Grad gearbox, install the tail rotor gearbox, and secure it with the clamp (30). Do not forget the spacer sleeves (30a). (See detail "A" on the main plan.) Connect the 44 mm long tail control pushrod to the tail rotor gearbox. Check that it moves freely. At a later stage the sleeve (27) is fixed to the mechanics using the clip (31), as shown at "B". The clip needs to be drilled differently for each type of mechanics set. Fit the 220 mm pushrod and guide (32) to the chassis, and connect the clevis to the servo. If you are using SCOUT mechanics, this pushrod is 300 mm long, and runs as shown at "I" on the supplementary plan. In this case the bowden cable outer is not fixed to the mechanics side plate. The precise length of the pushrods cannot be determined until the mechanics are in place.

Mount the coupling element on the tail rotor drive shaft (S1765), apply plenty of grease to the shaft, and slide it into the guide tube (28). It is important that the shaft is lubricated over its entire length. Apply several coats of grease to the shaft initially, to ensure good lubrication. Leave the shaft loose at the tail end.

At this stage the main mechanical assembly should be prepared for installation in the fuselage.

If you are installing CHAMPION mechanics, the wooden front structure should be cut back by 40 mm (see "C" on the main plan).

If you are installing SCOUT mechanics the wooden front structure should be cut back by 47 mm at the top (see "J" on the supplementary plan).

The control system pushrods then run back above the wooden front structure. Make up the control connections as described in the instructions supplied with the mechanical set.

In the case of CHAMPION and SCOUT mechanics, pass the M4 x 10 socket cap screw through the centre at the rear, and lock it with the M4 locknut. Bore out the centre hole in the floor spar (17) slightly, to make space for the locknut. The mechanics and skid bars are attached at the rear using the screws (34) at the side, and the screw (35) at the front (see details "E" and "F" on the main plan, and "E" and "F" on the supplementary plan). If you are using plastic skid bars, do not forget the washers under the locknuts. The front skid bar is given extra support at the sides by the screws (34).

Details of the installation for the SUPERIOR and the HELI-STAR (BELL 222) are shown at "G" and "H" on the main plan. See detail "K" on the supplementary Plan for the CHAMPION and SCOUT.

Make up the attachment for the front section (2) to the fuselage centre section (1). Full details are shown on the main plan and the detail drawings.

Trim the wood reinforcements (5), (6), (7) and (8) to match the shape of the fuselage, and epoxy them in place. Apply glue to the heads of the screws (9) and (10) to secure them. Drill 2.5 mm holes in the fuselage centre section (1) to accept the bolts (14), as shown on the plan. Apply glue to the threads of the bolts and screw them in. The washer (15) is glued in place later, when the fuselage components have been trimmed to fit. The washer serves as guide for the bolt (14).

Fit the complete mechanics in the fuselage, at the same time introducing the tail rotor shaft into the coupling, and fix it to the floor and the skid gear.

The position of the hexagon threaded sleeves (35) will vary according to the type of mechanics installed. The correct positions are shown on the plan (see "E" on the main plan and "J" on the supplementary plan). If you are using CHAMPION or HELI-STAR (BELL 222) mechanics, the unit is mounted using two screws (36). With SUPERIOR mechanics, the threaded rod (37) is used. The HELI-STAR (BELL 222) will require new holes. See the plan for the correct dimensions.

Mark the position of the threaded sleeves (37) on the fuselage, as the position of the plywood doubler (39) is taken from these holes. The screw (40) is fitted here later.

Caution: It is very important to position these parts accurately, otherwise the whole fuselage may be distorted when the screw (40) is tightened. To locate the exact position in the fuselage, screw an M3 x 30 screw (supplied) into the threaded sleeve (37). If you now hold the fuselage up to the light, or shine a torch through it from the inside, you will see the screwhead clearly.

Apply plenty of epoxy to the reinforcements (39), insert the sleeve (41) and lightly screw in the screw (40). Do not tighten the screw until the glue has set hard.

Clamp the tail drive in place, leaving about 1 mm of axial play at the front end of the coupling.

The tail rotor coupling set for the HELI-STAR and early versions of the SUPERIOR is not included in the kit and must be ordered separately (Order No. S2819).

The following silencers may be used:

1. Silencer S0925 (outlet pipe facing down). Recommended for the following mechanics: BELL 222, SUPERIOR, HELI-STAR and CHAMPION (up to 1987). If you use this silencer, you will need to cut a hole in the fuselage floor for the outlet pipe. Allow a little clearance around the pipe.
2. Silencer S0924 (outlet pipe facing aft). Recommended for CHAMPION mechanics (1988 and later) and the SCOUT 60. Both models have a single-sided tank support plate as standard, which allows this large-volume silencer to be used. The silencer outlet pipe must be extended using silicone sleeving (Order No. S0923), as shown on the supplementary plan.

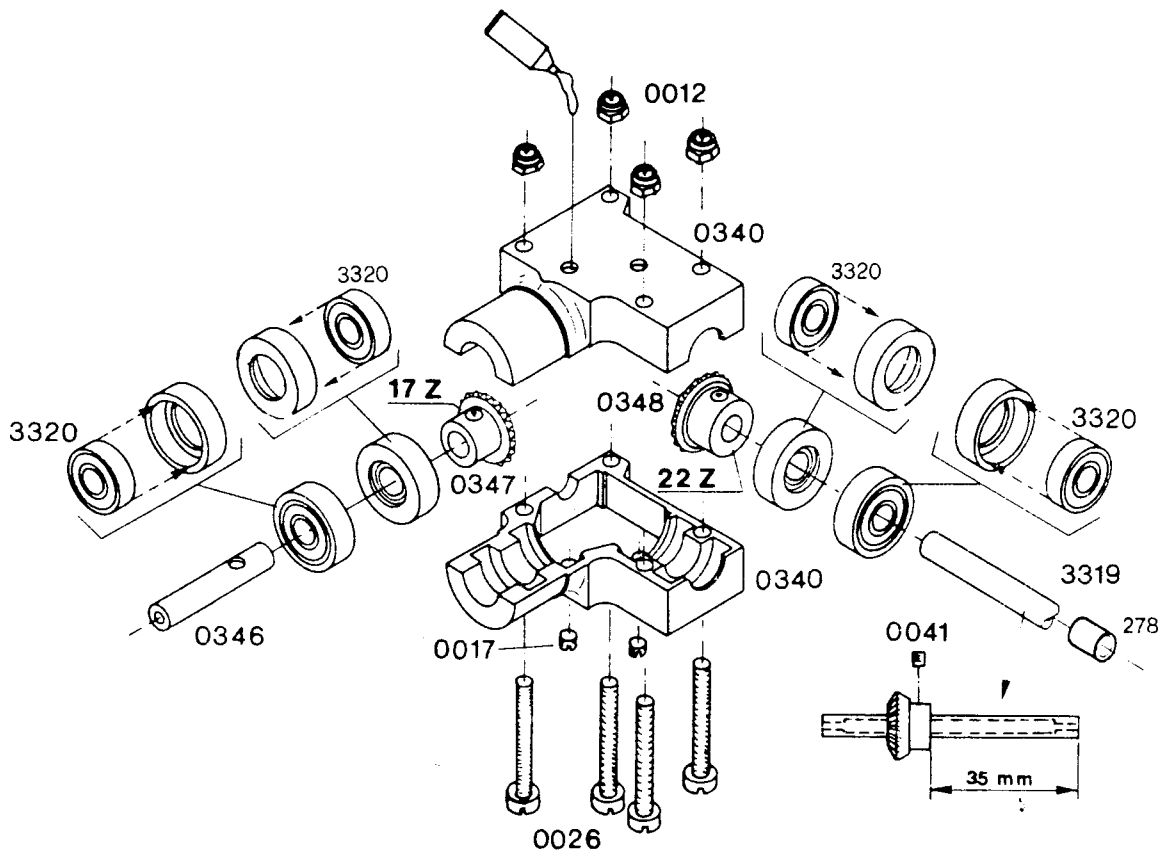
Pre-1987 CHAMPION mechanics can be converted by purchasing the single-sided tank support plate, Order No. S3112. The silencer described above can then be used.

We reserve the right to alter technical specifications.

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Contrary to the construction plan, the ball races should be inserted into the gear box as shown in the drawing below.



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robbe Modellsport GmbH

Werk Schlüter · Dieselstraße 5 · 6052 Mühlheim am Main · West Germany
Telefon-Sammel-Nr. (0 61 08) 62 38 / Telefax: (0 61 08) 718 43

Made in West-Germany Importe d'Allemagne