

Building instructions

AMIGO II

Sailplane model for F/F and R/C
Accommodates 2- to 4-channel R/C equipment
Convertible to powered sailplane operation

An "exploded view" drawing

of the model is supplied as a supplement of the building instructions. Removed from the center pages of the German text it should prove a welcome help on studying the instructions.

For illustrations refer to German text please

Technical data

Wingspan	78 $\frac{3}{4}$ "
Length of fuselage	44 $\frac{11}{16}$ "
Wing area	577 sq.in.
Stab area	117 sq.in.
Total area	694 sq.in.

Weight, ready to fly

without R/C equipment approx	19 $\frac{1}{2}$ ozs.
with R/C gear, up to	35 ozs.
Total area loading	3.93—7.20 ozs. per sq. ft.

Generalities

AMIGO II is a sailplane model for the "sunday pilot". It is easy to build and has forgiving flight characteristics. Flown as a R/C model it can carry a payload of up to 1 lb. 2 oz.

Building instructions

follow the sequence of numbering of the parts and apply to the F/F variant of AMIGO II. Instructions for the installation of R/C equipment are given in the RC-INSTALLATION-PLAN.

Be sure to observe the plans, the exploded view, list of materials, strip and sheetwood keys during the build of the model!

Preparing the build

Carefully remove all die-cut parts from the sheets, using a razor blade or a sharp knife, saw out printed parts and remove fuzz.

Parts (44), (46), (52), (53) are assembled from 2 parts each, part (39) is built up from three parts. They must be cemented prior to their installation and fashioned as per plan. In addition to these parts several others carry the remark "2 parts" in the list of materials; they must be cemented as per plan.

Assembly of components should be made on a straight board of soft wood (balsa will do), to which the plan, protected by a sheet of wax paper, is tacked.

Collect parts for individual components and lay on table in numerical order.

Make it a standing rule to carefully fit all parts prior to assembly and to sand them, if necessary. Sandpaper of varying grades is one of the most important tools on building a model.

For cement use UHU-hart or RUDOL-hart; for cementing larger areas, such as in case of part (42), slower drying glues may be used, such as UHU-coll, indent No. 958 (not contained in the kit). For attaching wing planking panels UHU-Kontakt, indent No. 957 (not contained in the kit) is well suited. UHU-plus, indent No. 950/41 (not contained in the kit) should be used for wood/metal connections!

The fuselage

is assembled from parts (1) — (54) and built in two major assembly groups (front section and tail boom).

Fuselage front section

Cement formers (2) through (5) onto top face of base plate (1), add the keel (6) at the bottom face of it. Attach planking (7). The two tow hooks (8) are inserted with braces (9) attached on either side. After adding the auxiliary formers (10) through (14), the planking (15) may be fitted and cemented to either side, followed by planking (16). When dry planking parts (15) and (16) are sanded flush with planking part (7), see section B-B.

Tail boom

Splice the two parts of planking (17) at the position indicated in the plans, same goes for part (18). Splice longerons (19) and cement to planking part (18), flush with edge of same, fit cross braces (20) through (25) and cement. Cement part (17) on either side, fit uprights (20) — (25) in such a manner that they stand back $\frac{1}{4}$ " from the upper edge of part (17), then cement in position.

Cement lower planking (26) at splicing station, splice fuselage longerons (19), cement flush with edge, fit and cement braces (20) through (25).

Then attach planking part (26) with braces cemented in position.

Fig. 1 Front section of fuselage fitted with planking and nose block. The tail boom, in foreground, is still in the assembly stage.

Assembly of fuselage and ensuing steps

Mate tail boom to fuselage front section, insert and cement well. Mount parts (27) through (30), fit part (31) and cement, then add parts (32) through (36).

The noseblock is assembled from parts (37) and (38) and cemented to front end of fuselage.

Fit and cement fillet (39) next, then sand to proper contour.

Now doubler (40) and former (41) are cemented in position and planking (42), which braces the fuselage framework, is fitted and attached with UHU-coll. Next follow parts (44) and (45), which are also fitted and cemented. Finally the nose block, parts (37), (38) and the rear block (44) are sanded to proper shape, as per plan.

Cabin fairing

Normally is built up from a single-piece part (46) and parts (47), (49), (50) and (51). He who is willing to dispense with the more realistic effect of a glazed-in canopy may fashion part (46) from 2 balsa blocks, 13/32" thick and sanded to appropriate shape. In this case former (50) has to be replaced by former (48). The latter variant offers the advantage of permitting the wing to slide off much better in a crash landing.

Fig. 2 The fuselage during assembly, prior to sanding. The illustration shows the two variants of the cabin fairing.

The fuselage finished that far is now very carefully sanded as per sectional views in the plans, using sandpaper of various grades, starting with the coarsest variety. Especially the section of the fuselage aft of the wing should be thoroughly sanded in order to "add lightness" here. This serves to keep down the amount of ballast weight and consequently the all up weight, which improves flight performance.

Empennage

Assemble fin (52) and rudder (53) from 2 parts each and firmly attach to each other.

Attention!

In case you are building the R/C version of the model, be sure to observe the appropriate instructions and sectional view A-A in the RC-INSTALLATION-PLAN.

After sanding the vertical tail group (as per section F-F) it is cemented to the fuselage, fillets (54) are added and carefully contour-sanded.

The horizontal tailgroup consists of parts (55) through (75) and is assembled over the drawing, following the sequence of the numbering of the parts, when dry sand framework. The pseudo — elevator (74) is firmly cemented to the trailing edge (59); sand thoroughly to cut down weight.

Fig. 3 The horizontal tailgroup during assembly.

Attention! Be sure to observe appropriate instructions and sectional view B-B of the RC-INSTALLATION-PLAN in case you are building the 4-channel R/C variant, since in this case the elevator must be movably attached.

If AMIGO II is to be flown radio controlled, the hooks (75) are omitted.

Wing

It is assembled from parts (76) through (116).

For ease of transport of the finished model, the wing is built as a two-panel affair. Although it is possible to build each wing panel in two separate units — main panel and tip section — on a straight board and to assemble these parts afterwards incorporating the necessary dihedral, it is recommended that you use a simple jig (see sketch on plan) and build the panel as a unit in it.

Commence with the build of the right-hand wing panel.

Pin leading edge (76) and trailing edge (77) of wing main panel to plan properly spaced. Block up front end of trailing edge with auxiliary strip (U), as shown in plan. Blocking up the trailing edge at this station is essential for correct undercamber of airfoil section (and good flight performance).

Cement ribs (78) through (81) and the top main spar (82) in position, using the dihedral gauge (W) to check accurate tilt of rib (78).

Remove main panel structure from building board after cement has thoroughly set, then cement lower main spar in position.

Roughen outer surface of tube (83) with a file, degrease, using SPANNFIX-IMMUN thinner and carefully cement in position with UHU-plus (not contained in the kit). Fill the cavities between top and bottom spar of the two inner rib groups with fillet strips (84). Be sure to cement these parts well!

Fit and thoroughly cement web parts (85) and (86).

The tip panel is built up in a similar manner from parts (87) through (100).

Be sure to position auxiliary strips (U) exactly as per plan below trailing edge in order to provide properly reduced undercamber in the tip panel.

Main panel and tip panel are now carefully mated and connected by parts (101) through (107). Be sure to assemble and cement these parts with great care.

One of the keying dowels (108) is cemented forward of the wing spar.

The second keying dowel (108) is installed aft of the wing spar in a later phase — on assembly of the left wing panel. These dowels have no load-carrying function, they merely serve to properly position the two wing panels in relation to each other. Sand leading edge to match the shape of the upper rib contour. Then attach the planking panels (109) through (112), preferably with UHU-kontakt (not contained in the kit). Make sure that the wing rests warp-free on its building board during assembly.

After adding the tip (113) and the butt rib (114) the wing should be sanded very carefully. Secure trailing edge brace (115) in position with a strip of Perlon ribbon. This brace prevents the wing rubber bands from cutting and damaging the trailing edge.

Fig. 4 The two wing panels during assembly.

Assembly of the left hand wing panel follows the method described above. Turn plan upside-down and slightly rub with an oil-soaked wad of cotton in order to make the drawing visible through the paper.

The two wing panels are connected to each other by dowel (116).

Covering

The covering is attached with GLUTOFIX paper glue. The grain of the paper should run spanwise on wing and stab, otherwise there will be wrinkles in the covering.

He who wants a particularly sturdy model should apply two coats of GLATTFIX-pore-filler (indent No. 207) and then cover fuselage and vertical tailgroup with either Japanese silk, indent No. 613, or synthetic silk, indent No. 615. Material for this optional type of covering job is not supplied in the kit.

Varnishing

Wing and stab are given from 3 to 5 coats of heavily thinned clear SPANNFIX-IMMUN dope (indent No. 1408/1) and pinned to building board for several hours between intermediate coats. As shown in view Q of the plan, the last rib of each wing tip must be blocked up 13/64" at the trailing edge. This provides a certain amount of washout and improves stability and circling flight characteristics.

The colour finish may follow next, the entire model is given a coat of SPANNFIX-IMMUN, indent No. 1408/2—15, colour to suit your own idea of a paint job. The illustration on the lid of the packing box serves as a guide for an attractive colour scheme.

Remember: coloured varnish is heavier than clear one, so use it sparingly in order to hold down the weight of the model, otherwise performance may suffer.

Dethermalizer

(see the pertaining two sketches of the plan). The dethermalizer serves to prevent o.o.s. flights in thermals of the F/F model. It may, of course, be dispensed with in the case of the R/C variant.

Attachment of stab: 2 elastics 3/64 x 3/64 x 1 9/16" Ø (I) are slipped onto the tailboom, the stab is mounted in such a manner that the beech dowel (73) engages the opening of platform (45). The two elastics (I) are then pulled through the slot of the elevator and fastened at the end of the fuselage. A small notch cut into the rear block will help secure the elastics in proper position.

Two additional elastics 3/64 x 3/64 x 1 9/16" Ø (II) are attached to the left hook of part (75), pulled about the bottom of the fuselage and attached to the right hook.

A suitable length of fuse, indent No. 657, is slipped between fuselage and elastics (I) and lighted at both ends prior to launching the model. The length of the fuse governs the burning time and thereby the duration of flight.

When the fuse burns the elastics (I), the elastics (II) pull up the stab, the tilt of which is limited by the rudder. The excessive displacement of the stab makes the model come down like a parachute and prevents o.o.s. flights.

In order to avoid charring the fuselage a suitable piece of tin foil, taken from a cigarette pack, should be glued to the bottom side of the fuselage where the fuse is attached.

Decals

are cut up into individual groups, then soaked in water for some 30 seconds and carefully slid from their paper backing onto appropriate part of the model.

Balancing the model

is one of the most important steps of the build of a model. If the center of gravity is not correctly positioned the model is unable to fly properly.

Correct position of the c.g. is indicated on the plans. Model supported at this point at either side of fuselage should balance, preferably with the nose pointing slightly downward. Proper balance generally requires adding some ballast (lead shot, indent No. 549, not contained in the kit) at the fuselage nose (ballast chamber).

Testflying

Select a calm or at least near-calm day and a meadow slightly sloping downward toward the direction of the wind for initial flights.

After assembling the model check wing and stab for proper alignment with each other and the fuselage.

Then hand-launch AMNGO II with a gentle movement of your arm and in slightly downward direction; never launch model in upward direction! Model must glide straight and flat.

Should the model stall, that is fly in a wavy manner, this means it is tailheavy and requires additional ballast weight in the fuselage nose.

If it dives it is nose heavy and ballast must be removed from the ballast chamber accordingly.

Circling flight may be caused by warps in either vertical tail or wing and should be corrected at once.

Tow launch

The F/F version of the model is tow-launched with the aid of perlon line of 1/64" \varnothing (indent No. 1337). Use the front hook for initial launches. Once you have become accustomed with the model and its peculiarities you may use the rear hook, which permits attaining greater altitude prior to releasing the model.

Powered glider variant of AMIGO II

If no helper is available for tow-launching AMIGO II may be equipped with a pylon engine mount. Its motor quickly gets the model up to great altitudes for long soaring flights. The engine mount is simply sandwiched between the two wing panels, permitting an extremely simple and rapid conversion of the model. A kit for building the mount is available under indent No. 124. Use of a .049 cu.in. displ. engine is recommended.

Fig. 5 AMIGO II fitted with pylon engine mount.

R/C soarer version of AMIGO II

The ultimate in flying pleasure is provided by a model equipped with radio control. For appropriate information please refer to the RC-INSTALLATION-PLAN.

Here's wishing you much fun flying your AMIGO II model.

January 1966

List of materials AMIGO II

Part. No.	Designation	Amt. req.	Material	Dimensions in inches
1	base plate	1	balsa	14 31/32x1 57/64x5/64
2	former	1	balsa-ply	1/8, according to plan
3	former	1	balsa-ply	1/8, a. t. p.
4	former	1	balsa-ply	1/8, a. t. p.
5	former	1	balsa-ply	1/8, a. t. p.
6	keel	1	plywood	14 31/32x51/64x1/16
7	planking	2	balsa	14 31/32x3 5/32x5/64
8	tow hook	2	zinc-plated iron wire	1 25/32x1/16 Ø
9	brace	2	plywood	2 3/8x33/64x1/32
10	auxiliary former	2	balsa-ply	1/8, a. t. p.
11	auxiliary former	2	balsa-ply	1/8, a. t. p.
12	auxiliary former	2	balsa-ply	1/8, a. t. p.
13	auxiliary former	2	balsa-ply	1/8, a. t. p.
14	auxiliary former	2	balsa-ply	1/8, a. t. p.
15	planking	2	balsa	15 9/32x1 17/64x1/16
16	planking	2	balsa	15 3/8x1 17/64x1/16
17	planking (2 parts)	2	balsa	27 9/16x1 57/64x5/64
18	planking (2 parts)	1	balsa	26 3/16x1 13/61x5/64
19	fuselage longeron (2 parts)	4	balsa	34 9/32x5/32x5/32
20	upright/brace	4	balsa	1 11/32x5/32x5/32 (2 off) 1 27/64x5/32x5/32 (2 off)
21	upright/brace	4	balsa	1 5/32x5/32x5/32 (2 off) 1 5/16x5/32x5/32 (2 off)
22	upright/brace	4	balsa	63/64x5/32x5/32 (2 off) 1 5/32x5/32x5/32 (2 off)
23	upright/brace	4	balsa	7/8x5/32x5/32 (2 off) 1 1/32x5/32x5/32 (2 off)
24	upright/brace	4	balsa	23/32x5/32x5/32 (2 off) 7/8x5/32x5/32 (2 off)
25	upright/brace	4	balsa	19/32x5/32x5/32 (2 off) 3/4x5/32x5/32 (2 off)
26	planking (2 parts)	1	balsa	27 9/16x1 57/64x5/64
27	reinforcement	2	balsa	5 43/64x1 1/2x5/64
28	brace	4	balsa	1 27/64x5/32x5/32 (2 off) 1 35/64x5/32x5/32 (2 off)
29	auxiliary former	1	balsa-ply	1/8, a. t. p.
30	reinforcement	1	beech dowel	2 3/32x5/32 Ø
31	wing platform	4	balsa	5/64, a. t. p.
32	dowel	2	beech dowel	3 1/32x13/64 Ø
33	upright	2	balsa	53/64x5/32x5/32
34	doubler	2	plywood	2 61/64x2 3/8x1/32
35	auxiliary former	1	plywood	1/16, a. t. p.
36	planking	2	balsa	3 25/64x63/64x5/64
37	backbone of nose section	1	balsa	13/32, a. t. p.
38	nose section, side	2	balsa	13/32, a. t. p.
39	fillet (3 parts)	1	balsa	2 3/8x2 11/64x1 3/16
40	doubler	2	plywood	4 27/32x2 7/32x1/32
41	former	1	balsa-ply	1/8, a. t. p.

List of materials AMIGO II

Part. No.	Designation	Amt. req.	Material	Dimensions in inches
42	planking	2	balsa	17 11/32x3 5/16x1/16
43	former	1	balsa-ply	1/8, a. t. p.
44	rear block (2 parts)	1	balsa	61/64x51/64x31/64
45	stab platform	1	plywood	4 17/64x1 3/16x1/32
46	cabin fairing (2 parts)	1	balsa	4 47/64x2 9/64x43/64
47	front former	1	plywood	1/16, a. t. p.
48	rear former	1	plywood	1/8, a. t. p.
49	dowel	3	beech dowel	63/64x5/32 Ø
50	cabin former	1	balsa-ply	1/8, a. t. p.
51	cabin canopy	1	comm.item	indent No. 1349
52	fin (2 parts)	1	balsa	5/32, a. t. p.
53	rudder (2 parts)	1	balsa	5/32, a. t. p.
54	fillet	2	balsa	2 11/16x13/32x5/16, triangular
55	spar	2	balsa	24 19/32x13/64x1/8
56	bottom planking	2	balsa	2 19/64x37/64x1/16
57	bottom planking	1	balsa	1 3/16x1 1/16x1/16
58	leading edge	1	balsa	24 19/32x1/4x15/64 (milled)
59	trailing edge	1	balsa	25x1/4x5/32
60	rib	2	balsa	5/64, a. t. p.
61-70	rib	2 each	balsa	1/16, a. t. p.
71	to planking (2 parts)	1	balsa	1 3/16x3 5/8x1/16
72	tip	2	balsa	13/32, a. t. p.
73	stopper	1	beech dowel	2 1/4x5/32 Ø
74	elevator	1	balsa	25x1 5/16x13/64
75	stab hook	2	piano wire	3/64 Ø, a. t. p.
76	leading edge	2	balsa	24 7/32x13/32x13/64
77	trailing edge	2	balsa	24 7/32x13/16x13/64
78	rib	2	balsa	5/64, a. t. p.
79	rib	4	plywood	1/16, a. t. p.
80	rib	2	balsa	5/64, a. t. p.
81	rib	24	balsa	5/64, a. t. p.
82	wing spar	4 each	pine	24 7/32x13/64x1/8, and 15 3/8x13/64x1/8
83	tube	2	brass	3 13/64x13/64 OD, 11/64 ID
84	fillet	8	pine	1 17/64x13/64x1/8
85	web	2	balsa-ply	1 15/32x13/32x1/8
86	web	16	balsa-ply	1 25/64x13/32x1/8
87	leading edge	2	balsa	15 7/16x13/32x13/64
88	trailing edge	2	balsa	15 9/16x13/61x13/64
89-98	rib	2 each	balsa	5/64, a. t. p.
99	web	2	balsa-ply	1 25/64x9/32x1/8
100	web	2	balsa-ply	1 5/16x15/64x1/8
101	dihedral brace	4	plywood	1/16, a. t. p.
102	rib (2 parts)	2	balsa	5/64, a. t. p.
103	doubler	2	balsa	5/64, a. t. p.
104	gusset	2	balsa-ply	1/8, a. t. p.
105	gusset	2	balsa-ply	1/8, a. t. p.

List of materials AMIGO II

Part. No.	Designation	Amt. req.	Material	Dimensions in inches
106	gusset	2	balsa-ply	1/8, a. t. p.
107	gusset	2	balsa-ply	1/8, a. t. p.
108	dowel	2	beech dowel	3 23/64x5/32 Ø
109	planking	2	balsa	24 7/32x3 23/64x1/16
110	planking	2	balsa	15 3/8x3 23/64x1/16
111	planking (2 parts)	4	balsa	1/16, a. t. p.
112	planking	2	balsa	4 11/32x2 3/8x1/16
113	tip	2	balsa	13/32, a. t. p.
114	butt rib	2	plywood	1/16, a. t. p.
115	trailing edge brace	2	zinc-plated iron wire	2 3/8x1/16 Ø
116	dowel	1	piano wire	5 33/64x5/32 Ø

Also required and contained in the kit:

- 1 tube UHU-hart or RUDOL 333 hart
- 1 bag GLUTOFIX paper glue, for attaching the tissue covering
- 5 sheets JAPICO-MODELLSPAN tissue paper (.06 ozs,per.sq.ft), indent No. 524/3
- 1 perlon ribbon 6 x 5/8", for attaching the trailing edge wire brace, ex indent No. 110/1
- 1 decal AMIGO II
- 1 decal owner's address
- 4 elastics 13/64 x 3/64 x 1 37/64 Ø, for attaching the wing, indent No. 723/2
- 4 elastics 3/64 x 3/64 x 1 37/64 Ø, for attaching the stab, indent No. 1116/3

For assembly of the wing

- 1 dihedral gauge W plywood 1/16 a.t.p.
- 9 blocks U 1/32 plywood 51/64 x 19/32 x 1/32"

Required, but not contained in the kit

- UHU-plus, indent No. 950/41
 - UHU-coll, indent No. 958
 - UHU-kontakt, indent No. 957
 - SPANNFIX-IMMUN, indent No. 1408/1, for weather proofing
 - SPANNFIX-IMMUN, indent No. 1408/2—15 or
 - UNIVERSAL — varnish, indent No. 921/2—14, for the colour finish, colours to suit
 - GLATTFIX, indent No. 207, primer for balsa surfaces
 - lead shot, indent No. 549, for balancing the model
 - Scotch tape, for closing the ballast chamber
 - Perlon tow line, 1/64 Ø, indent No. 1337
 - 1 tow launch ring, ex indent No. 552
 - TEMPO, winch for tow launching, indent No. 1374
 - tin foil, for protection of fuselage
 - fuse, indent No. 657
- } for tow launching
- } for use of dethermalizer

The pylon engine mount for AMIGO II is available under indent No. 124. Suitable for engines of .049 cu.in. displ.

Strip and sheet wood key AMIGO II

This compilation is intended to help modellers properly use the strip and sheet stock contained in the kit.

Amt. req.	Material	Dimensions in inches	Req. for parts
2	balsa	25x13/64x1/8	55
8	balsa	25x5/32x5/32	19, 20, 21, 22, 23, 24, 25, 28, 33
1	balsa	25x1/4x5/32	59
2	balsa	24 5/8x13/32x13/64	76, with slots
2	balsa	15 3/4x13/32x13/64	87, with slots
2	balsa	24 5/8x13/16x13/64	77, conical, with slots
2	balsa	15 3/4x13/16x13/64	88, conical, with slots
1	balsa	25x1/4x15/64	58, milled to shape
1	balsa	5 29/32x13/32x5/16	54, triangular
1	balsa-ply	25x13/32x1/8	86
1	balsa-ply	9 27/32x13/32x1/8	85, 86, 99, 100
8	pine	25x13/64x1/8	82, 84
1	beech dowel	15 3/4x5/32 \emptyset	30, 49, 73, 108
1	beech dowel	7 7/8x13/64 \emptyset	32
2	balsa	24 5/8x3 23/64x1/16	109
2	balsa	16 5/32x3 23/64x1/16	110
1	balsa	25x1 25/64x13/64	74, pre-shaped

Text for building plan AMIGO II

round off corners
cut canopy to match shape of wing
2° angle of incidence
0° angle of incidence
tinfoil paper, aft
fuse, fore
1 right
1 left
F/F model
fuse burning
stab tilted up
How the dethermalizer works
Mate to lower contour of wing
Dihedral gauge for wing center
lower side
side parts
top side
dowel of left wing panel
Plan view of wing drawn plane
Recess in part (18)
schematic of polyhedral wing
scale $\frac{1}{20}$ th
building board
mainplane jig
Plan view of fuselage, with cabin fairing, vertical tail surfaces and parts (18), (36)
and (45) omitted for clarity.
Splice of fuselage longerons
ballast chamber
recess for ballast chamber
center section of wing
outer wing panel (tip)