

Milan



Bauanleitung
Notice de construction
Building instructions
Istruzioni di montaggio
Instrucciones de montaje

MULTIPLEX[®]

Baukasten
unbespannt

Milan
Best.-Nr. 21 4096

CONTEST *line*

Baukasten
bespannt

Milan
Best.-Nr. 21 4168

CONTEST *line plus*

Building instructions

High-performance F3J glider

MILAN ready to cover # 21 4096
MILAN Factory covered # 21 4168

Dear fellow modeller,

Congratulations on your choice of the **MILAN** high-performance F3J glider. This is an extremely distinctive model with an excellent performance, and we hope you will thoroughly enjoy building and flying it.

MULTIPLEX model kits are subject to constant quality checks throughout the production process, and we sincerely hope that you are happy with the contents of your kit. However, we would ask you to check all the parts **before** you start construction, as we **cannot exchange components** which you have already worked on. If you find any part is not acceptable for any reason, we will readily correct or exchange it. Just send the component to our Model Department and be **sure** to include a brief description of the fault.

We are constantly working on improving our models, and for this reason we must reserve the right to change the kit contents in terms of shape or dimensions of parts, technology, materials and fittings, without prior notification. Please understand that we cannot entertain claims against us if the kit contents do not agree in every respect with the instructions and illustrations.

Caution!

Radio-controlled models, and especially model aircraft, are by no means playthings. Building and operating them safely requires a certain level of technical competence and manual skill, together with discipline and a responsible attitude at the flying field.

Errors and carelessness in building and flying the model can result in serious personal injury and damage to property. Since we, as manufacturers, have no control over the construction, maintenance and operation of our products, we wish to take this opportunity to point out these hazards, and to emphasise your personal responsibility.

Kit contents (see Parts List for details)

- 1 Contest-Line wing, carbon fibre reinforced, with full-contact spars, factory-fitted joiner system, finished leading edges, finished aerodynamically efficient wingtips, machined servo wells and sanded trailing edges. Aileron and camber-changing flap lining strips installed under the wing skins, packed in bubble-wrap wing bags.
- 1 MULTIPOXY fuselage, carbon fibre reinforced, with factory-fitted tail joiner sleeves, integral MULTILock tail retainers, factory-fitted bowden cables and hard white surface.
- 1 CFRP canopy
- 1 pair V-tail panels with finished leading edge, sanded trailing edge, lined control surfaces and finished tips.
- 1 Bag wooden parts including V-tail template
- 1 Bag high-quality small hardware items and fittings
- 1 Bundle wire and rod
- 1 High-strength steel wing joiner tube with carbon fibre stiffener rod
- 1 Name placard - decal sheet
- 1 Building instructions

Specification MILAN

Wingspan	3400 mm
Fuselage length	1444 mm
Wing area (FAI)	73 dm ²
All-up weight, according to fittings, surface finish and ballast	2450 - 3000 g
Wing loading (FAI) min. approx.	33 g/dm ²
Wing section	MH 32 mod.
Tail section	NACA 0009/0010

RC functions

Ailerons	2 servos	Min.	15 Ncm
Camber-changing flaps	2 servos	Min.	15 Ncm
V-tail	2 servos	Min.	15 Ncm

Radio control components

For the **MILAN** we recommend Super FL BB servos, MPX # 6 5057, for the **aileron and camber-changing flap servos**.

If you are likely to fly aerobatics and generally push your machine towards the limit we recommend the Super FL mc, MPX # 6 5063.

The fuselage is designed to take the "Ein-Stein" unit, MPX # 1 4004, for the **elevator and rudder** functions of the **V-tail**. Alternatively you can use two Micro 3 BB servos, MPX # 6 5049 or Micro mc/V2 servos, MPX # 6 5078.

It is important that the **receiver battery** should be of generous capacity to cope with the model's receiving system, bearing in mind that you will be using 6 servos. We recommend a 1700 mAh pack: 4 cells 1.7 Ah SCR-C, MPX Order No. 15 5556. (Extra battery capacity always makes more sense than lead ballast.)

If you use the "Ein-Stein" unit a separate **switch harness** is not required. If you prefer separate servos and receiver you will need a switch harness with charge socket, MPX # 8 5100.

We strongly recommend that you also fit some form of receiver battery monitor. MULTIPLEX offers a comprehensive range:

Receiver battery tester	Order No. 8 5541*
Receiver battery alarm	Order No. 8 5104
Receiver battery monitor	Order No. 7 5160

If you prefer a separate **receiver** we suggest the Micro 5/7, MPX # 5 5933.

For the electrical connection between the wing-mounted servos and the fuselage you can use the Cable Set MPX, # 8 5255(2x). A suitable cable set with the Universal connector system (UNI) is available under # 8 5253(2x).

Important note

For all joints involving the styrofoam wing cores it is essential that you do not use solvent-based adhesives, and in particular avoid instant or cyano-acrylate glue (cyano, or CA). These materials will melt and destroy a large volume of foam, and the component will be completely ruined. Use solvent-free adhesives, such as 5-minute epoxy or white glue.

For all other joints any standard modelling adhesive can be used. We recommend in particular our wide range of MULTIPLEX - ZAP instant "cyano" glues, which includes adhesives of different viscosity, fillers and cleaners. Use ZAP if you want construction to proceed easily, smoothly and fast. Be sure to read the instructions supplied with these materials.

Notes on using epoxy

Epoxy laminating resin is not a proper adhesive as it stands. However, you can make a variety of excellent adhesives by mixing additives into it. By careful choice of filler you can match the characteristics of the adhesive to the requirements of the moment.

1. Chopped cotton fibres, Order No. 60 2738, produce a tough but flexible joint.
2. Superfine glassfibres, Order No. 60 2784, produce a rock-hard joint.
3. Micro-balloons, Order No. 60 2779/80, convert the resin into a lightweight filler paste.
4. The special thixotropic agent, Order No. 60 2782, makes all the adhesives and fillers listed above thixotropic, i.e. prevents them running off a vertical surface.

MILAN

The kit you have just purchased includes **every item** you need to complete the basic airframe, including linkage hardware, but does not include adhesives.

You can make a significant contribution to the model's ultimate performance and appearance by building accurately, carefully and patiently. A badly built model usually flies badly and is hard to control. An accurately built and well trimmed model will reward you with high performance, docile handling and a pleasing appearance, and will give pleasure to pilot and onlooker alike. Take your time - the effort is well worth while. These building instructions have been designed to help you get the best out of the kit, so please follow the procedures and the sequence of assembly described as accurately as possible. MULTIPLEX model kits are subject to constant quality checks throughout the production process, and we sincerely hope that you are happy with the contents of your kit. However, we would ask you to check all the parts **before** you start construction, as we **cannot exchange components** which you have already worked on. If you find any part is not acceptable for any reason, we will readily correct or exchange it. Just send the component to our Model Department and be **sure** to include a brief description of the fault.

A few words on the history of the **MILAN**:

The idea for this model came about when we saw the need for a model which could be used in all types of glider competition in which duration, distance and precision landing tasks were set. In designing the **MILAN** we placed particular emphasis on outstanding min. sink performance and distance capability.

The **MILAN's** low sinking speed and excellent circling characteristics (for thermalling) allow the model to compete on level terms with "floaters" in weak thermal conditions.

On the other hand its broad speed range makes it possible to fly across large areas of sink quickly, and you need have no fears of windy weather.

The **MILAN** is so extraordinarily agile that you will think you are flying a much smaller model, and this makes it quite feasible to fly from small slopes.

The **MILAN's** unique appearance makes it stand out from the great mass of gliders.

The proven Butterfly (Crow) landing system provides excellent glide path control and accurate landings once set up correctly.

So - let's get down to work.

Fuselage

We will start by completing the fuselage, as this is the reference point for all the other components.

Towhook support block

The towhook support block **10** should be epoxied in place at this early stage while accessibility is still good. Measure a point **470 mm** aft of the extreme point of the nose on the underside of the fuselage using a tape measure. Drill a central 4 mm Ø hole at this point and seal it off on the outside with a strip of tape. Roughen up the inside of the fuselage at the block position using 80-grit abrasive paper. Glue the towhook block **10** centrally over the hole using thickened 5-minute epoxy.

Completing the canopy

Fit the canopy 5 on the fuselage and check the fit; if necessary, carefully sand back the area where it mates with the fuselage until it slips into place really snugly. An extra five minutes' work at this stage will reward you with a permanently good-looking model.

Installing the canopy latch

The canopy is held in place using the epoxy/glass spring **56**. Glue the spring in place using 5-minute epoxy. Roughen up the joint surfaces with 80-grit abrasive paper beforehand.

[Fig. 1]

The latch bolt 56 is eventually glued in the canopy, but only when the moulding has been trimmed to follow the contours of the wing.

Installing the "Ein-Stein" in the fuselage

We strongly recommend the "Ein-Stein" module for the **MILAN**; it consists of a top-quality 7-channel receiver and incorporates two micro-servos and a switch.

Installation is straightforward and takes only a few minutes.

Place the receiver battery (4/1700 mAh, MPX # 15 5556) in the extreme nose of the fuselage. Mark the position of the rear end of the battery on the fuselage floor and sand the inside of the fuselage sides immediately aft of that point using 80-grit abrasive paper. Cut the support rail 12 to a length of about 110 mm and glue it centrally to the bottom of the fuselage under the mounting plate position, butting up against the battery. Use thickened epoxy for this joint. The "Ein-Stein" mounting plate can now be glued on top of the support rail, again using thickened epoxy. Sand the underside thoroughly before applying the glue. Leave a gap about 20 mm wide between the battery and the mounting plate for the separation filters; the space will also allow you access to the cables.

Tip: to charge the receiver battery you will need to disconnect the battery cable from the "Ein-Stein". Glue a piece of scrap wood to the connector, projecting upwards, so that you can pull the plug out without resorting to pliers.

[Abb. 2]

Installing conventional RC components in the fuselage

As an alternative to the "Ein-Stein" you can install two Micro 3 BB servos, MPX # 6 5049, or Micro mc/V2 servos, MPX # 6 5078. For this variant you will need parts 11, 12 and 13.

Glue the two servo mounting blocks 13 to the servo plate 11 spaced 33 mm apart (servo case length). Mark the position of the servo lug mounting holes on the blocks, drill the holes and screw the servos to the plate. Glue the support rail 12 centrally to the underside of the servo plate, leaving it projecting at the front.

Place the receiver battery (4/1700 mAh, MPX # 15 5566) in the extreme nose of the fuselage. Mark the position of the rear end of the battery on the fuselage floor and sand the inside of the fuselage sides immediately aft of that point using 80-grit abra-

sive paper. The support rail 12 doubles as the back-stop for the receiver battery. Glue the support rail and the servo plate to the fuselage floor using thickened epoxy. The receiver can be attached to the support rail in front of the servos using hook-and-loop (Velcro) tape.

Mount the RC system switch athwart the fuselage above the receiver and screw it to the cabin flange. Use the switch harness with charge socket, MPX # 8 5100.

[Abb. 3]

Installing the receiver battery

Fix the receiver battery in the tip of the fuselage using hook-and-loop tape (MPX # 68 3312) and pack foam round it. It is held in place at the rear by the support rail 12. Push a piece of styrofoam between the fuselage and the battery at the top to ensure that it cannot shift in flight.

Completing the wing joiner

The wing joiner consists of the 12 mm Ø steel tube 47 and the solid 10 mm Ø CFRP rod 48, which has to be glued inside the tube. The steel tube prevents the carbon fibre rod fracturing spontaneously, while the carbon rod effectively reduces flexing in the tube. It is best to glue the rod permanently to the steel tube using UHU Plus Endfest 300 (slow-setting epoxy) or thick cyano.

Wing - fuselage transition

The wing is fixed to the fuselage using four screws 51. The two front screws engage in slots in the wing saddle and locate the wing. The two rear screws hold the wing firmly on the fuselage. Drill 2 mm Ø pilot-holes at the marked points at the front of the wing saddle on the fuselage, then open them up to 5 mm Ø. Saw out the slots with a hacksaw blade and carefully file them out to the correct width. Assemble the wings and mark a line on the underside 25 mm back from the root leading edge. Mark the final position of the screws along the 25 mm line, spaced 18 mm apart - 9 mm each side of the centreline; take care to position the screw holes symmetrically. Drill 4.5 mm Ø holes at the marked points to a depth of 15 mm. Carefully drive the thread-cutting screw 53 into the blind holes, unscrew it, blow out the swarf, and repeat the process several times. Apply a drop of thin cyano to the threaded holes, let the glue cure completely, then finally clean up the threads with the special screw again.

If you are not satisfied with the thread-cutting operation, simply drill out the holes to 6.5 mm Ø and epoxy the screws in the holes.

Cut down the screws 51 to a length of about 18 mm (plus the head) and temporarily screw them into the threaded holes to the point where the wing can be slid into place and held securely. Carefully align the wing with the fuselage and mark the position of the rear stepped screw holes on the fuselage. Remove the wing and drill 4.5 mm Ø holes at the marked points. The fuselage is reinforced with aluminium at this point to absorb the forces efficiently.

Carefully drive the thread-cutting screw 53 through the holes repeatedly to obtain clean threaded holes.

If you have access to an M5 tap, drill the holes 4.2 mm Ø and tap the holes in the usual way. Attach the wings with the screws 55 and check that they are securely held.

[Abb. 4]

Although we keep manufacturing tolerances to an absolute minimum it is not always possible to exclude slight variations in the wing-fuselage transition area. Only slight remedial work is ever required.

Completing the canopy latch

The next step is to sand back the top rear end of the canopy to follow the contours of the wing section when the wing is attached to the fuselage. Work carefully here - it is very easy to file away too much material.

Completing the V-tail

Each tail panel is supported in the fuselage by a pair of steel dowels fitted in the factory-installed sleeves. The panels can therefore be removed separately at any time. They are held in place by the proven MULTIlOCK system.

Sand the tail panels overall to obtain a smooth airfoil.

Hold the tail panels against the fuselage and mark the position of the dowel sleeves on the root ribs. Drill the holes about 4mmØ. Remove any rough edges from the steel dowels 54, sand them thoroughly for about half their length and slip the unsanded end into the fuselage. Fit the tail panels on the dowels and check that the roots line up correctly with the root fairings. File out the holes if necessary.

Stick wide parcel tape over the root fairings on the fuselage, apply mould release wax to the tape and then plug the steel dowels into the fuselage again. Attach the wings to the fuselage and set up the model flat on the workbench. Place the V-tail template under the fuselage and temporarily plug in the tail panels.

Check alignment carefully, then mix up some thickened epoxy or UHU-Plus Endfest 300 and force it into the holes in the tail panel roots. Push the tail panels onto the dowels, align them carefully and tape them in place.

[Abb. 6]

Installing the V-tail retainers

The MULTIlOCK latch sockets for the tail panels are factory-installed in the fuselage. All that remains is to glue the latch bolts 45 in matching holes in the tail panels.

Mask off the latch sockets on the fuselage with parcel tape and apply mould release wax to the area.

Slit the tape in a cross pattern and push the latch bolts in until they snap into place. Apply a little rubber stamp ink or similar to the projecting tips of the latch bolts, then plug in the tail panels and let the ink mark the position of the bolts on the root ribs. Drill 3 mm Ø pilot-holes at the marked points, then open them up to 6 mm Ø. Check the fit "dry" (no glue) and when you are satisfied glue the latch bolts into the tail panels.

TIP: if you wish to remove the latch bolts before gluing them into the tail panels the simplest method is to use a pair of pincers. Grip the latch bolt at the recessed area and "roll" the pincers along the root fairing to release the latch.

The tail panels are now held securely when the model is in the air, and can be fitted and released quickly and easily. To unlock the MULTIlOCK system prior to dismantling the model, grasp the tail panel at the leading edge and brace the fuselage against your body. A quick tug on the tail panel will unlatch the MULTIlOCK system and the panel can then be removed after disconnecting the clevis.

Installing the V-tail linkages

The tail control surfaces are actuated by means of the horns 55, which are supplied pre-formed.

Cut a channel 2 x 2 mm in section and about 45 mm long along the leading edge of each control surface. A small hand-held milling cutter is a very good tool for this, although it is also possible to use a sharp knife and a small bradawl. Check that the horn is a snug fit in the channel and tape it in place. Temporarily tape the control surfaces to the V-tail panels and check the horn position with the help of the pushrods 80. Sol-

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Abbildungen

Illustrations

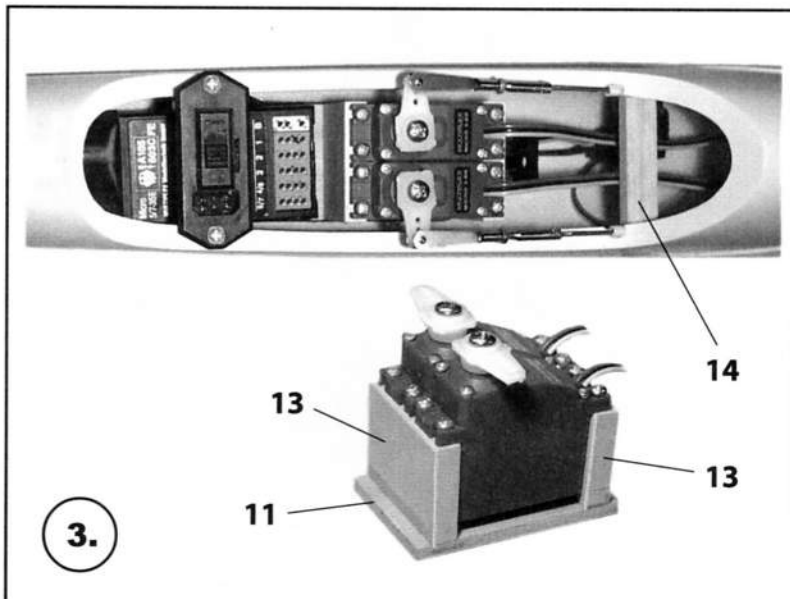
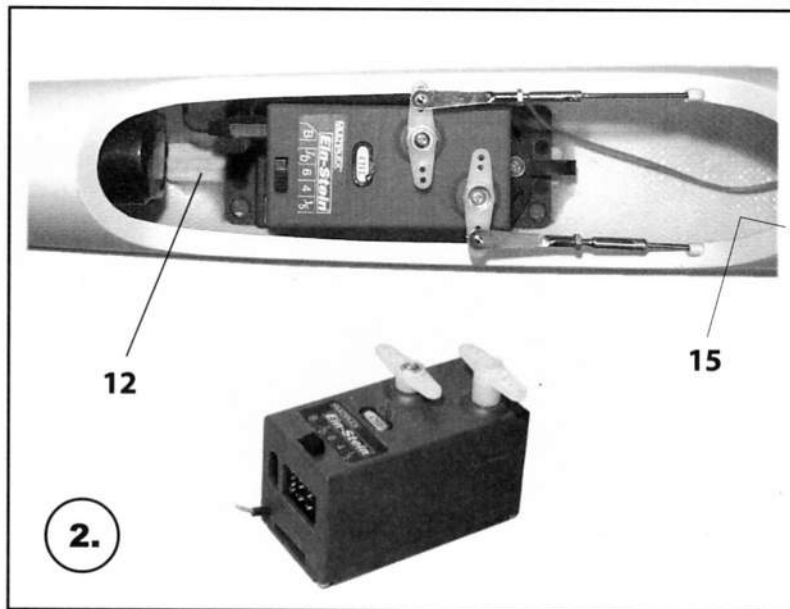
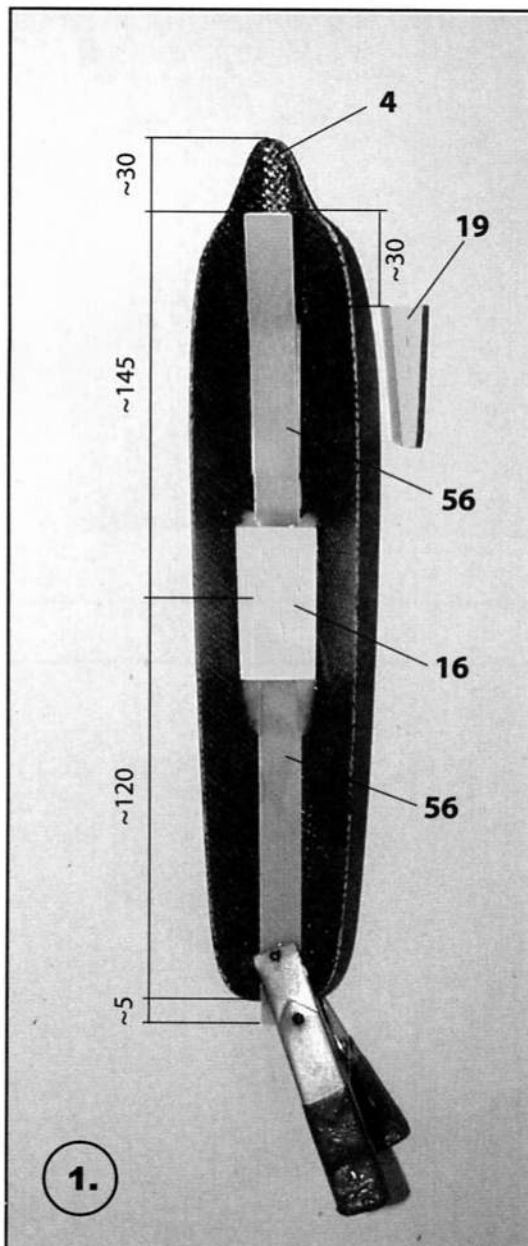
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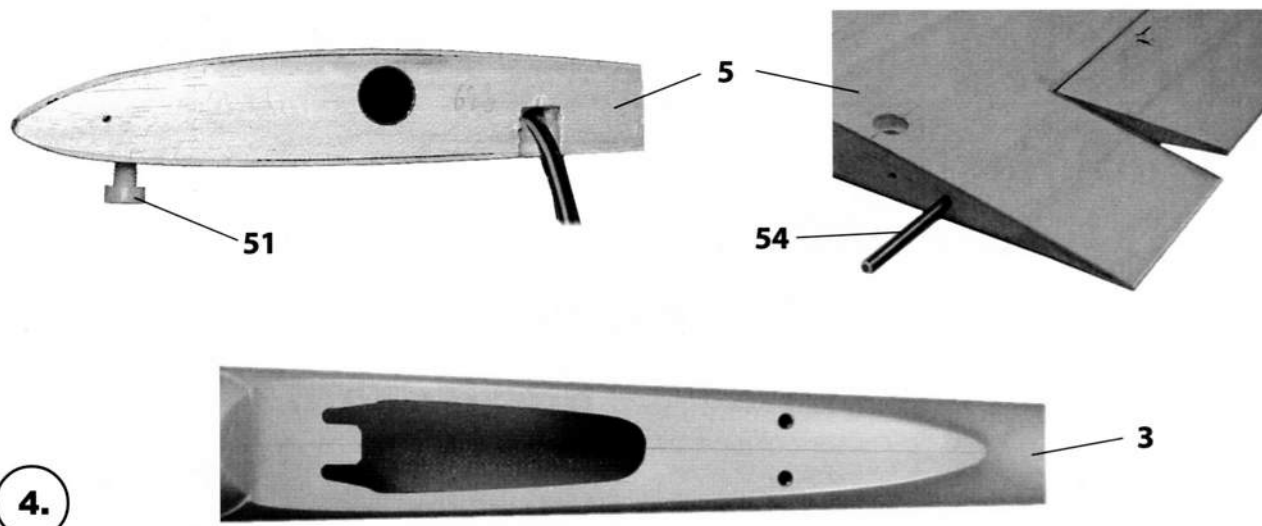
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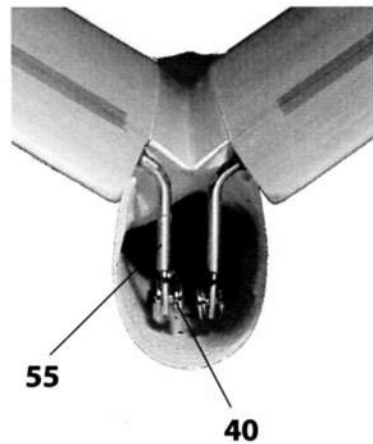
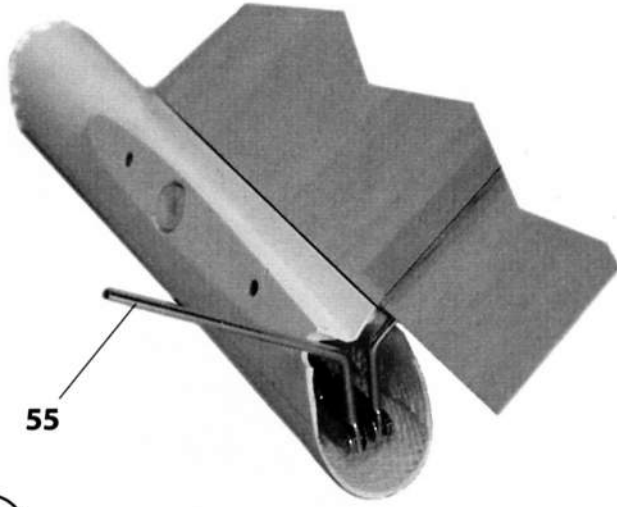
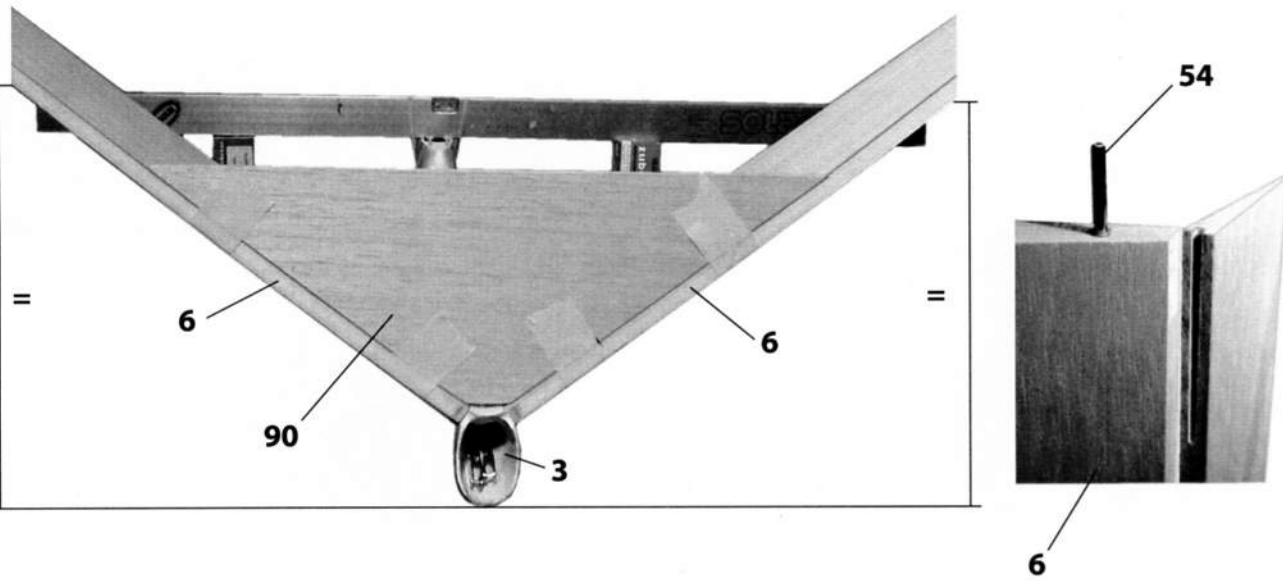
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