



Photo: I. WALLINMÄÄ

Designing was started in autumn 1991

Building was started in autumn 1993

Plane completed 4.7.1996

First flight 10.8.1996



September 1992

One of the hardest thing in the beginning was to get center of gravity in right place



Seeking shapes for fuselage

December 1992

Designing hours approx. 1000+

Building hours approx. 2300



Mosler MMCB-engine



engine was bought 21.8.1991 from Ilmailutarvike Inc.  
Kuopio, Finland



During designing there was no help available from the seller of the engine because IImailutarvike Inc. finished its action in 1993.



Also engine's manufacturer Mosler finished its action in 1994.



Pulling and pressing tests were made for wood material



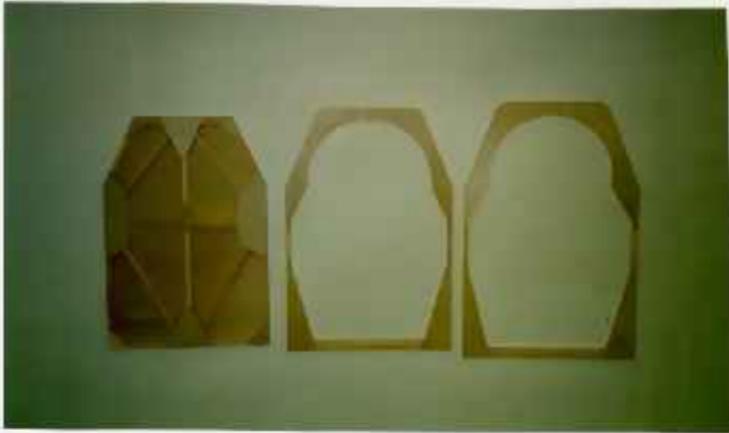
Metal parts should be ready as soon as possible, thus they can be assembled easily before covering the fuselage.



Hegy propeller 48" x 38" seems to be suitable.



Fuel tank is easy to install before covering front part of fuselage. Inside the tank there is a splash wall.

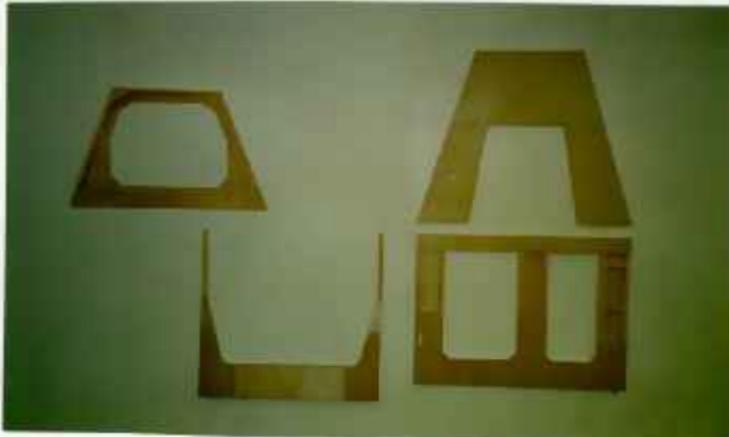


Making frames first is the best way to start woodworking.

Note!

Support blocks in firewall should be placed where they are needed.

Firewall and frames of front fuselage



Don't sand outer surface of frames yet.

Instrument panel, main frame and back frames

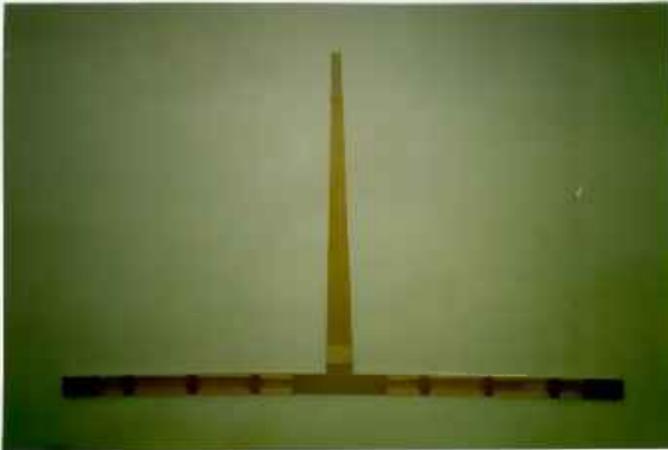


Front spar of fin is made from abache.

Frames of rear fuselage and fin spars



Frames under work



Spars of rudder and stabilizer

Prototypes ribs are made from 2cm polystyrene. In drawings there is pvc which should be used.

Ribs are made with bandsaw. 1.2mm alclad-sheet is used as a sawing jig and attached to rib with two rivet pins. Two holes for pins are in ribs datum line. Two millimeter slot holes are sawed to both rib ends which helps correct installing.



Wing and tail ribs.



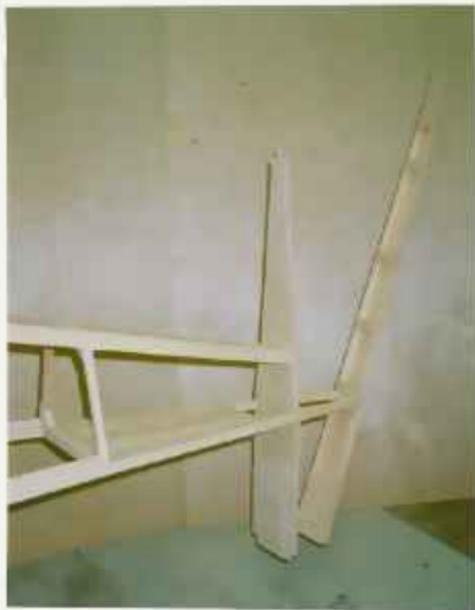
Fuselage main subassembly is made after frames. Cockpit is wider in drawings and service holes for instrument panel are bigger than in prototype.



First step in fuselage assembly.



Second step is to glue upper wood strips of rear fuselage.



Assembling fin spars.  
Fin ribs are also glued  
in this state.



Mounting tray is moved on the floor and firewall is put to right place. Bracing should be used to confirm firewalls correct assembly. Firewall must be absolutely in correct place in every direction. Rear fuselage is supported so that datum line is level.

Datum line of fuselage must be in horizontal level.



Blocks which are glued to mounting tray supports fuselage. Fuselage is also glued to these blocks temporarily by using cardboard from where it can be easily detached. Blocks shouldn't be so wide than fuselage allowing plywood covering of the fuselage sides.



Place for a stabilizer



Details of the fin.

First plywood covering of the fuselage is glued under lowest fin rib.

Front edge of the fin is made from abache.

Note!

Rudder should be ready allowing fin sanding and placing hinges.

Lacquer inner construction before sanding.

Check correct shape during sanding with plywood sheet.

Tail spring should be installed before covering the rear fuselage.

Drill spring holes from behind through fin spars. After drilling, install the front bracket so that tailwheel is absolutely vertical.

Tail spring must be glued also to both holes.





Engine mounting to the firewall.

Support strip in the front of firewall can be cut now.

Upper bracket is installed first. It helps drilling holes to firewall.

Rest of engine mounting holes are drilled next to the firewall.



Following parts are also installed before covering front fuselage:

- fuel tank brackets
- hinges for rudder pedals
- brake pedals brackets
- brake cables holes
- brackets for landing gear



Front brackets of landing gear are installed first. Those brackets helps drilling bolt holes for landing gear. Rear holes can be drilled next. Use a jig to confirm right place for holes. Rear holes must be drilled from down to up.



Rudder and brake pedal installing.

Instrument panel



Fuel meter hose installing.



Joystick needs a teflon-collar assembled in meter panel. Make the collar too tight at first. When the stick is in proper position, you can wider the teflon to right size.



Due to lack of space,  
all instruments need  
to be small size.

In prototype all meters  
are installed to panel  
that can be detached.

Instrument panel  
don't have shock  
absorber.





Assembling ribs for a stabilizer. Center ribs have plywood covering.



Structure of stabilizer, elevator and rudder.



Stabilizers top surface should be covered first.

Note!

Glue surfaces of the ribs must be well purified before gluing.

Mounting holes for stabilizer must be drilled before covering down surface.

Installing hinges.

Inner construction lacquer coating.

Note!

There shall be no lacquer on glue surfaces!

Ribs must have vent holes!





Be patient when installing hinges.

Thin plywood sheets can be used to get hinge line straight.

Aluminium profile (20mm x 50mm) can be used as a help. At first hinges can be 'badly' glued to the profile. With the profile hinges can be glued to the spar. Mounting holes can be drilled when the glue is dry.

Don't tighten bolts too much!





Glue and sand the stabilizer front edge. After sanding glue woven glass cloth on the front edge.

Glue bevelled plywood washers on the stabilizer mounting holes.



Foam plastic is glued under the rudder and shapes should fit with the fuselage.



Front edges of the rudder are from balsa wood. Sand the balsa so that it allow only small gap to the fin.



Plywood covering must be started from rear.

Manholes and strengthenings of rudder wire should be glued to plywood before gluing it to fuselage.



Hole for rudder wire should be checked first with wire using whole movement range.



Second step is covering the fin from same side as rear cover of the fuselage. After gluing, lacquer inner parts and check the vent holes!





Mounting bolts of the stabilizer.





Tail wheel



Making the rudder wire fairing.



Assembled rudder wire fairing.

Bracing for  
luggage room ↗



Rear end of the sidestick.



Base of the fin  
is rounded with  
microballoon  
cement.

Plywood joints are covered with  
woven glass cloth.

Stepping hole is not necessary!



Assembling hinges for the canopy

Glue bracing under the rear hinge. Bracing is needed to maintain the strength of the longeron.



The canopy for prototype is from polycarbonate.



Fuselage details.





Designing cowl panels.



Engine is 'living' a little bit during a flight.  
This should be noticed when designing  
cowl panels.



Plywood joints in a firewall must be covered with woven glass cloth or stitch-bonded fabric.

1/16" Fiberfrax insulation is glued between firewall and Alclad-sheet.

Felted cloth is used between fuel tank and frames to prevent abrasion. Use felted cloth in bands also.



Antenna installation

The panel under heels is made from fibreglass. Brake cables goes under edge sides.





Pentti Alanne and jig for a wingspar.

All the strips needed for two PIK-26 'Mini-Sytky' were made with timberworkmachine in a picture.



Glued longerons of wingspar just before surfacing.



Gluing the top longeron of wingspar



Installed support blocks. Remember vent holes!



Centre part of wingspar



Thick support blocks are needed for wings main mounting.

Plywood chips are glued between center block and spars to share compression.

Support blocks must have vent holes!

Lacquer inner surfaces!

Note!

Remember to mark center line for both sides of spar.



Main spar and false spar waiting for wing assembling.

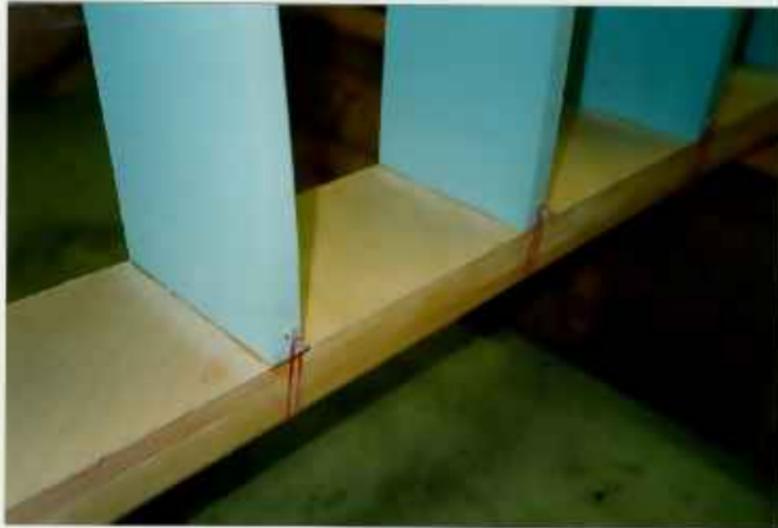
Holes for main mounting bolts are drilled first to wingspar. Holes must be orthogonal against spar. After drilling the spar can be matched to fuselage and then you can drill mounting holes to main frame. Don't use final hole size yet.



Trim the wingspar to right size before gluing ribs. Alclad-jig is good for checking the right shape.

Mark the rib places to the spar.

Glue trailing edge ribs first.



Make sure that gluing surfaces are clean and plywood is sanded!

Gluing the wing ribs

Check that ribs are in line. Use thread and ribs trailing edge chase.



Gluing the rear spar.  
Use bubble tube for checking that ribs are upright.



Gluing corner blocks for center ribs.  
Center ribs are covered with plywood.



Turn wing spar upside down when beginning the wings leading edge assembling.

Edge and center ribs are glued first. Check the right position with plumb line.

Use the plumb line also when installing rest of the ribs.





Gluing the front spar.

During gluing check all the time that ribs are vertical and in right places.



The stand for wings plywood covering.



Fitting the wing to the fuselage.



Wing is being fitted to the fuselage.



When the wing spar is resting tight to the main frame, check that back frame is also tight to rear spar. Adjust back frame with sanding or gluing more material if necessary.



Fitting and checking.



Wings main mounting (Size of the bolt is not final)



Rear spar under the back frame.



Plywood sheets are fit together with pilot nails. Skew of the sheets can be made with electric file. Skew is about 15 x thickness of plywood.

Wing must be well supported for covering.



Top side of the wings root is covered first. Make sure that gluing surfaces are well cleaned. Brush and vacuum-clean the ribs.



Assembling hinges with help of aluminium profile.  
Note! Getting hinge-line straight is the most difficult part in making this aeroplane.  
Use nail strip in plywood joint place. Sand bags can be used as a weight on the ribs.



Bottom covering is also started from root.

**Warning!**

The wing must be well supported to prevent bending. Especially rear spar and hinge line must be straight.



Assembling aileron ribs.

Note vent holes!

Covering the top side of aileron.

Few nails are keeping aileron spar straight during the gluing. The nails are in leading edge line.

Bevelled wood strip under the trailing edge is supporting during gluing.





Covering the aileron.

Gluing the rear spar of the aileron.





Assembling aileron side hinges.



Operating shafts of the ailerons.



Driving pins of the ailerons.  
Rear driving pin is certified against rotation.

Inner surface must  
be lacquered.

Don't lacquer gluing  
surfaces.

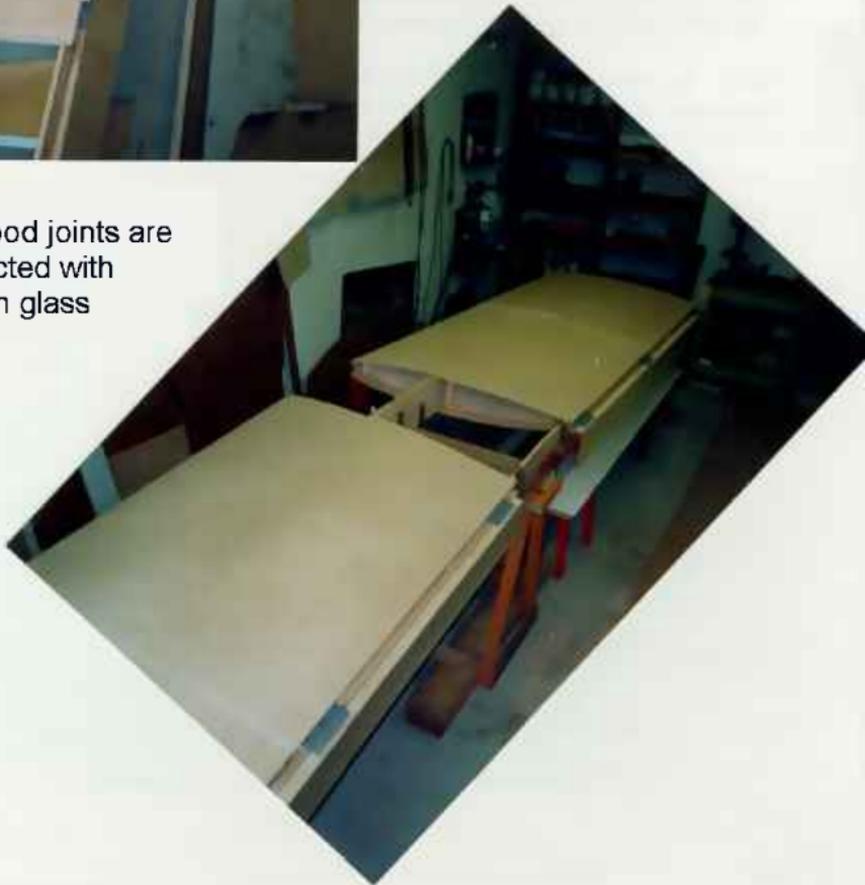
Wooden inner  
surface must have  
glue or lacquer.





Bottom of the wing is covered last.

Plywood joints are protected with woven glass cloth.





Plywood strips are glued to wing tips. Strips are for wing tip mounting.

Jigs for wing tips are made from polystyrene.



Anchoring hook.



Counterbalance  
for aileron.



Aileron hinge  
and hinge pin.



Aileron tips and  
tip moulds.



Leading edge of the wing.



Woven glass cloth is glued around the leading edge.

Pitot tubes must be assembled before closing left side of the wing.

Tubes can be also assembled inside the leading edge.



Moulds for wing tips (polystyrene).



Wing tips ready.



Wing tips are  
glued to wing.

Leading edge of the wing  
is smoothed with microballoon.

Warning!

Don't damage the  
woven glass cloth.



Covered wing





Joining the wing and the fuselage:

- trimming the plywood cover in root of the wing
- assembling rear brackets of the wing
- finalizing hole size for the main mounting of the wing



Checking the aileron movement.



Moulds for wheel spats.

Use acetone to get polystyrene away after lamination.



Fuselage construction ready.

Mould for engine hood.



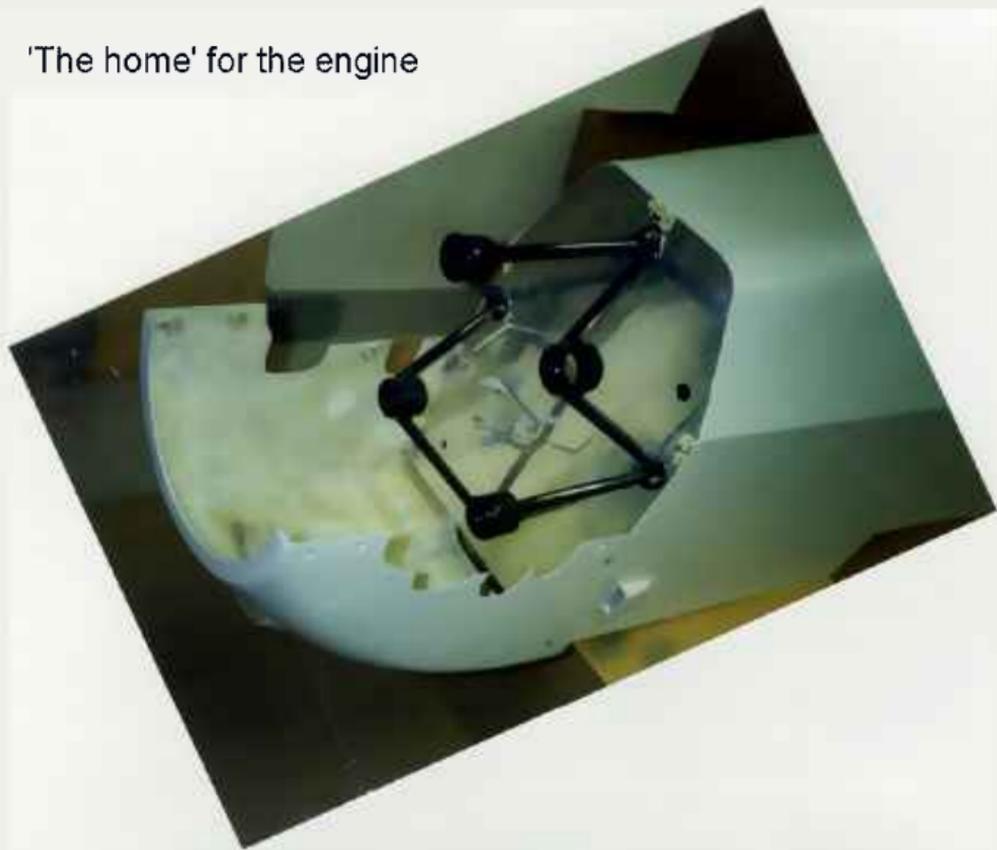


Engine hood ready.



Camloc's are used for engine hood joining.

'The home' for the engine





Bearing brackets for aileron driving shafts.

Warning!  
These brackets must be in line to allow comfortable aileron using.



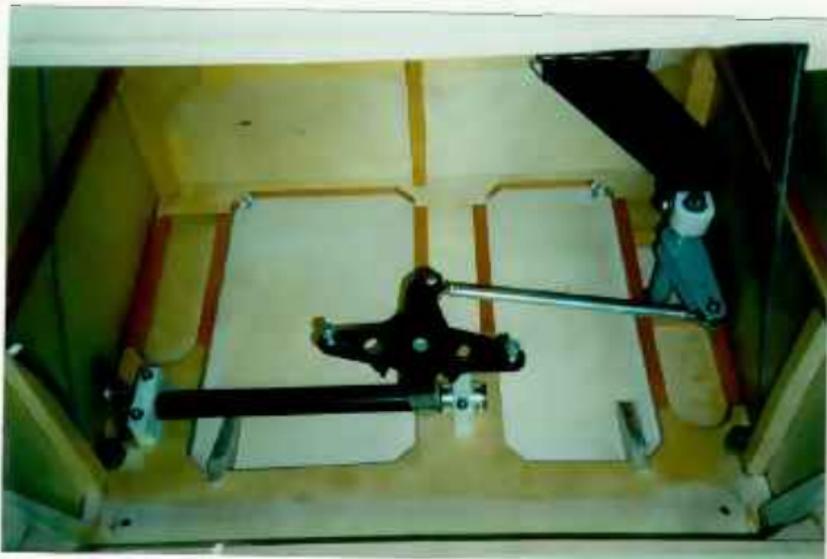
Metal parts for director system



Foot step is  
purposeless.



Working gear for ailerons and flaps.





-elevator push-rod

-link plate for elevator

-Teflon joint

-rear end of the stick

-aileron pushrod

-flap axle with Teflon bearing

-rudder wire with control block



Wooden 'push-rods' are only for checking right length.



Aileron mechanism





Link plate must be installed as near as possible to the right side of the fuselage.



Hole for the stick in the back frame should be as small as possible. Make sure that stick don't scrape the frame.



Flight stick



Flap lever

Rudder wire goes inside nylon pipe.  
Antenna cable assembled in left side.



Main mounting of the wing.



Eye bolts in rear mounting of the wing fasten also seat harness.



Covering the seat with plywood.  
Stitch-bonded fabric is glued to  
the edges.





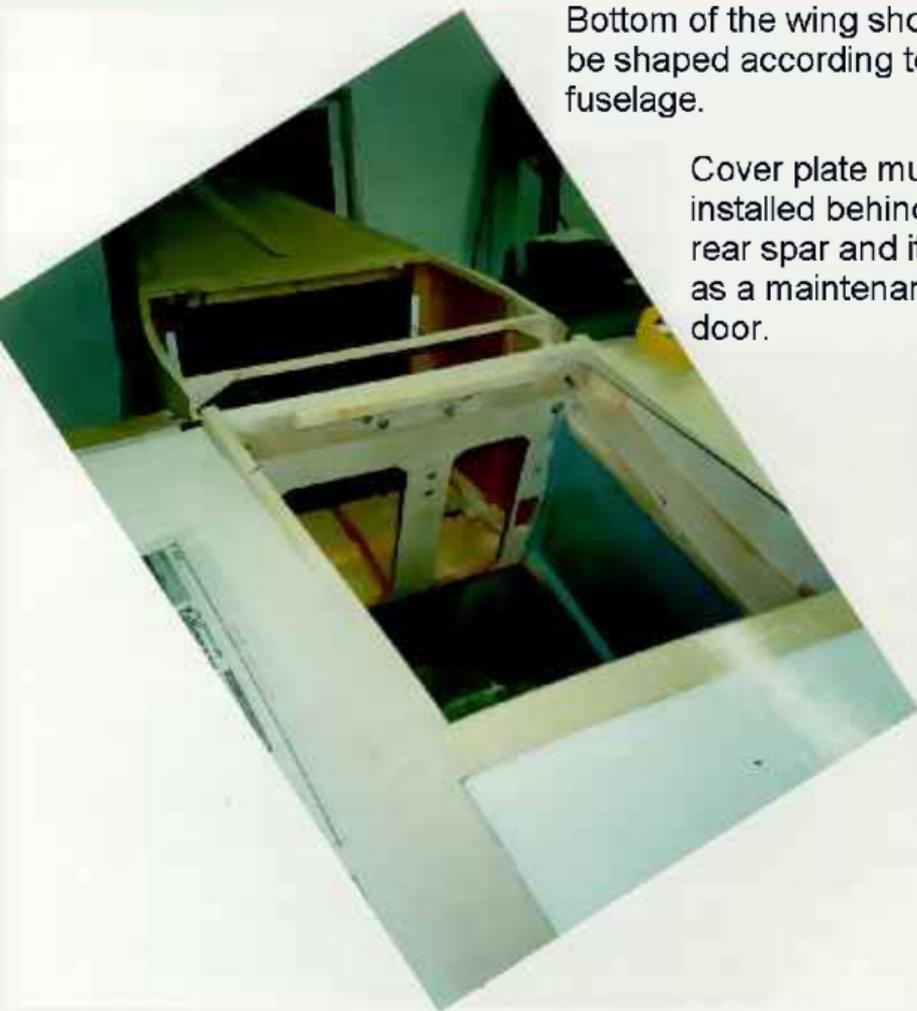
Foam plastic supports the seat from below.  
Small luggage room is under the seat.



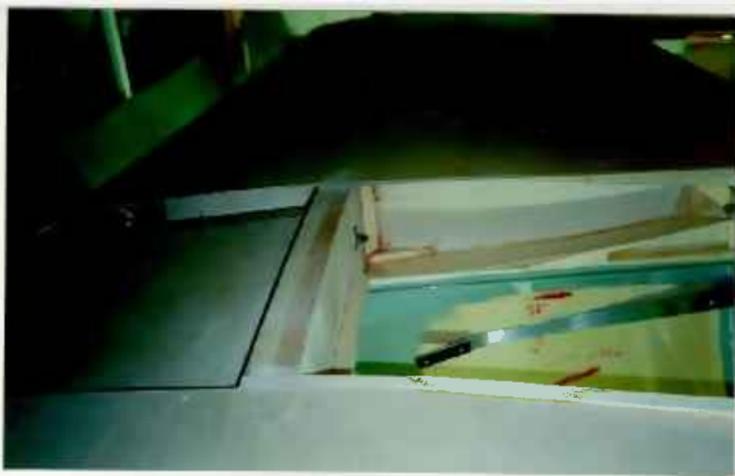
Assembled seat



Bottom of the wing should be shaped according to fuselage.



Cover plate must be installed behind the rear spar and it works as a maintenance door.



Mould for the bottom cover of the wing.

Bottom cover is attached to wing with Camloc's. Front edge of the cover is attached with a bracket to engine mounting.

Center bracing supports the cockpit floor.



- fuel tank
- fuel cock
  
- rudder and brake pedals
  
- rudder wires
  
- heel tray
  
- support strips of the floor



- back sheet (plywood)
- heel tray (fiber glass)
- cover sheet between fuselage and the wing (Alclad)
- cockpit floor (plywood) with radio (lcom) tray



- fuel tank
- fuel cock and hose
- rudder pedal and spring
- rudder wire
- brake pedal
- front bracket and bolt of the landing gear
- heel tray
- pitot tube



Tray for a radio (fiber glass).



← Lower adapter for fuel meter tube



Details from cockpit



Engine mounting and  
some details

Hanger for an oil filter

Fuel filter

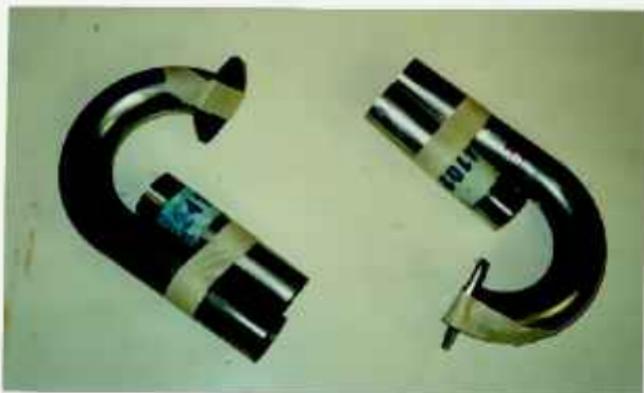




Zenith 24 carburetor



Welding jig for an intake manifold



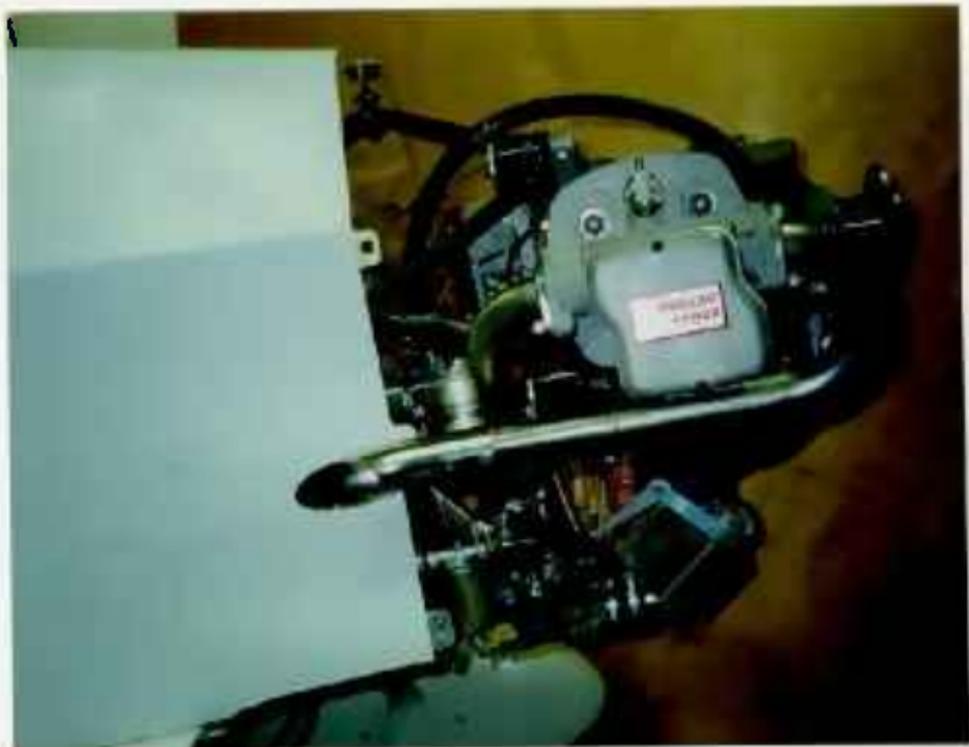
Exhaust pipe parts



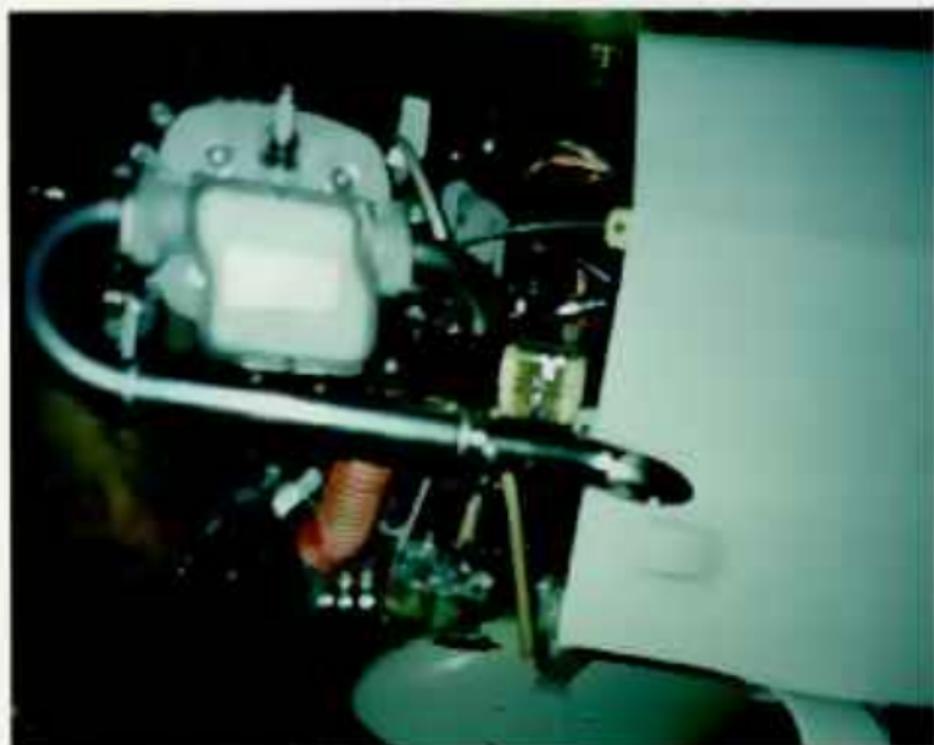
Induction manifold, carburetor and selector valve.



Engine room



Engine room



Engine room, left side



Engine installation from front



Finishing



Painting with electric injector.



Assembling codes and finishing painting.



Signs for cockpit have to be made also.



Landing gear is made from spring steel.  
Azusalite 5" wheels. Azusa brakes. Tires 4.10/3.50 x 5



Details



Toe-in for wheels is zero.

Collars in the landing gear mounting can be adjusted when assembling the landing gear and checking that tightness is right.



Breather tube for fuel tank comes from same point than brake wire (right side of the fuselage). Pitot tube comes from same point than left side brake wire.



Cockpit

Note!

Throttle lever has been moved lower during the prototypes flying tests.

Instruments:

- air-speed meter
- compass
- variometer
- gasoline gauge
- altimeter
- bank indicator
- clock
- oil temperature gauge
- rpm indicator
- cylinder head temperature meter
- oil pressure gauge

Other equipment:

- magneto switch
- fuse for rpm indicator

Controllers:

- air inlet temperature
- throttle
- choke





Engine testing



Taking the wing for Nummela airfield. 28.6.1996.



And the fuselage. 30.6.1996.



Happy crew: Jorma Teriö, Kaj Mellén (The builder) and Sami Vainio





A new home for PIK-26 'Mini-sytky' at Nummela airfield.



Construction at Nummela.



Mini-sytky is ready 4.7.1996 at 22.30 o'clock.



Empty weight was 127 kg  
(incl. oil).

Weighed 135 kg.





'Experimental'-text outside the cockpit is required.





Pictures





Inspector Tero Asikainen at his work. 23.7.1996



Antti Koskinen (left) was a supervisor for the designing and building project. Kaj Mellén (right), the designer and builder of the first PIK-26 'Mini-Sytky'.



Preliminary runs were taken for four and half hours.



Taxying were also tested...



Do I dare to fly with it???

Ready...



...for the...

...first flight!





First straight  
flights were  
flown 31.7.1996





Actual first flight were flown 10.8.1996.  
Photo was taken after the flight.



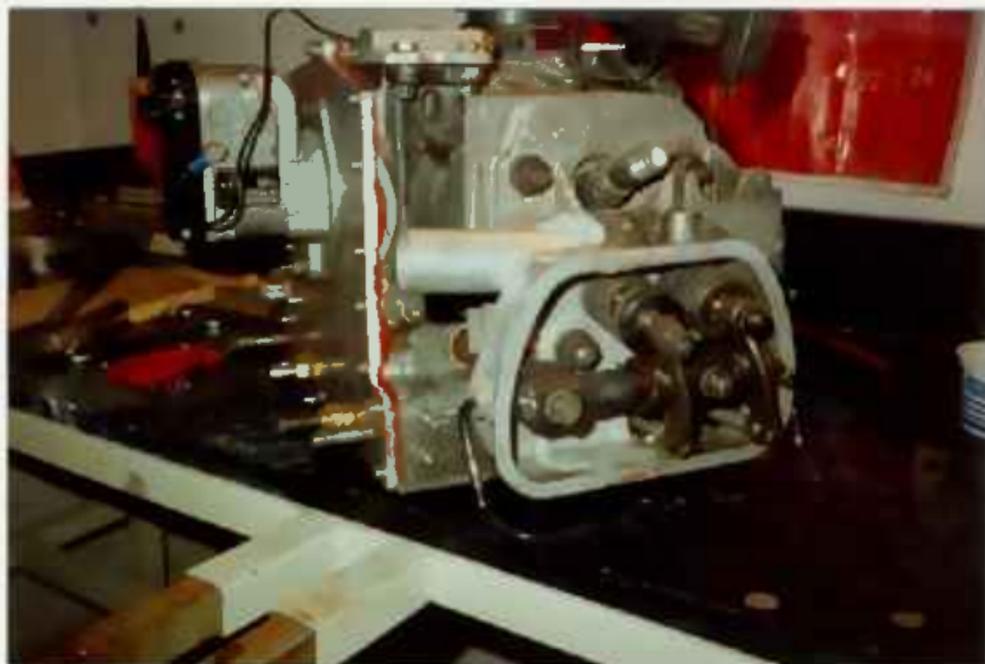
Kaj Mellén and his wife (chief of the project).



IT FLYES!!!



1/2 VW-engine was made by Pentti Alanne. The engine is assembled in Pentti's Mini-Sytky, OH-U356.



Fairbanks-Morse magneto is installed to the engine.



Engine parts before assembling



Engine mounting for the OH-U356 is not similar to the first 'Mini-Sytky'.



In 'Alanne-aeroplane-factory' were made two aeroplanes at same time: Pentti (father) made a PIK-26 'Mini-Sytky' and Eero (son) made a Corby Starlet.





In curtilage of Alanne.





Building up and preliminary run before moving for Nummela airfield.



To the Nummela...



Second 'Mini-Sytky' has just been inspected.  
From left: Pentti Alanne (builder), Olli Riekki (test pilot) and Tapani Vanttinen (inspector).



Builders and their planes at Nummela.



Sun is setting at Nummela.





Having a coffee at local fuel station after inspection. From left: Pentti Alanne, Tapani Vääntinen, Olli Rieikki and Jorma Teriö.



Olli Rieikki flew the first flights for the OH-U356.



First flight  
for Alanne.





Both PIK-26's for the first time at Hyvinkää-experimental-summer-days, 28-29.6.1997.







There is always people with questions.