

EasyGlider PRO

vorgesehen für die MULTIPLEX
Brushless-Antriebe # 33 2636 u. # 33 2642
oder als Segler



BK / KIT EasyGlider PRO # 21 4226

MULTIPLEX[®]

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Examine your kit carefully!

MULTIPLEX model kits are subject to constant quality checks throughout the production process, and we sincerely hope that you are completely satisfied with the contents of your kit. However, we would ask you to check all the parts (referring to the Parts List) **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 gladly correct the defect or replace the item in question once we have inspected it. Please send the part to our Model Department, being **sure** to include the purchase receipt and 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 the 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 are obliged to take this opportunity to point out these hazards and to emphasise your personal responsibility.

Additional items required for the EasyGlider PRO:

Adhesive and activator:

Use medium-viscosity cyano-acrylate glue ("cyano" - not styrofoam cyano) for this model. Epoxy adhesives produce what initially appears to be a sound joint, but the bond is only superficial, and the hard resin breaks away from the parts under load. Hot-melt glue (from a glue gun) is a useful alternative adhesive.

MULTIPLEX radio control system components for EasyGlider PRO:

RX-7-SYNTH receiver	35 MHz e.g. A-band	Order No. 5 5880
alternatively	40 MHz	Order No. 5 5882
or		
Micro IPD UNI receiver	35 MHz e.g. A-band	Order No. 5 5971
alternatively	40 MHz	Order No. 5 5972
Tiny-S UNI servo (2 x required)	Elevator / rudder	Order No. 6 5121
Nano-S UNI servo (2 x required)	2 x aileron	Order No. 6 5120
Extension lead, 400 mm UNI	Aileron servo, 2 x	Order No. 8 5029
optional: separation filter lead, 200 mm UNI	Aileron servo, 2 x	Order No. 8 5035

Battery charger:

MULTIcharger LN-3008 EQU Order No. 9 2540
For LiPo, Lilo and LiFe batteries with 2S or 3S cells, and NiMH and NiCd batteries with 4 to 8 cells.

EasyGlider PRO power set

Order No. 33 2636
Contents: Motor - Himax 2816 - 1220, speed controller- BL-27 II, 10" x 6" propeller, collet adaptor, propeller driver, spinner

EasyGlider PRO tuning power set

Best.-Nr. 33 2642

Inhalt:

Motor - Himax 3516 - 1130, Regler - BL -37 II, Luftschraube 12x6, Spannzange, Mitnehmer, Spinner

Flight battery

Li-BATT BX-2100 mAh 2/1 2100	Order No. 15 7130
Li-BATT BX-2500 mAh 2/1 2500	Order No. 15 7190
Li-BATT BX-3200 mAh 2/1 3200	Order No. 15 7135

Propeller driver and spinner for EasyGlider PRO

Order No. 73 3500

Additional items required for the glider variant only

NiMH receiver battery, 4 / 1800 mAh	Order No. 15 6007
Mini switch harness with charge socket	Order No. 8 5045
Aero-tow release	Order No. 72 3470

Tools:

Scissors, balsa knife, side-cutters.

Note: remove the illustration pages from the centre of the building instructions.

Specification:

	Glider	Electric glider
Wingspan	1800 mm	1800 mm
Overall length	1110 mm	1110 mm
All-up weight	approx. 710 g	with standard power system approx. 810 g
Wing area, FAI	approx. 41.6 dm ²	FAI approx. 41.6 dm ²
Wing loading	approx. 17 g / dm ²	approx. 20 g / dm ²
RC functions	Elevator, rudder, aileron	as glider, plus throttle

Important note

This model is not made of styrofoam™, and it is not possible to glue the material using white glue or epoxy. Please be sure to use cyano-acrylate glue exclusively, preferably in conjunction with cyano activator ("kicker"). We recommend medium-viscosity (thick) cyano. This is the procedure with Elapor®: spray cyano activator on one face of the joint; allow it to air-dry for around two minutes until the surface appears to be "dry", then apply cyano adhesive to the other face. Join the parts, and immediately position them accurately.

Please take care when handling cyano-acrylate adhesives. These materials harden in seconds, so don't get them on your fingers or other parts of the body. We strongly recommend the use of goggles to protect your eyes.

Keep the adhesive out of the reach of children!

1. Before starting construction

Please check the contents of your kit before you start construction. You will find **Figs. 1 + 2** and the Parts List helpful here.

Completing the fuselage and tail panels

2. Preparing the "snakes"

Check the length of the elevator snake sleeves **43** and **45**, and shorten them if necessary.

	43	3 / 2 Ø x 785 mm
	45	2 / 1 Ø x 850 mm
Steel	41	0.8 Ø x 875 mm, insert!

Repeat the procedure with the rudder snake sleeves **44** and **46**.

	44	3 / 2 Ø x 785 mm
	46	2 / 1 Ø x 850 mm
Steel	42	0.8 Ø x 875 mm, insert!
Aerial sleeve	47	3/2 Ø x 785 mm (shorten if necessary)

3. Installing the snakes in the fuselage shells

Important: the fuselage tail boom is considerably strengthened and stiffened by the addition of the snake outer sleeves **43** and **44**, which must be glued full-length to the shells in order to obtain the full effect. The same applies to the aerial sleeve **47**.

Check that the snakes operate smoothly and freely, and take care not to allow glue to run into the outer sleeves.

Left-hand fuselage shell:

Install the complete elevator snake (wire rod length = 875 mm) in the left-hand fuselage shell; the pre-formed end should be at the front (servo end).

Fig. 3

Position the snake outer sleeve **43** flush at the front of the fuselage shell, as shown in **Fig. 4**. Lay the shell down flat and run cyano along the whole length of the outer sleeve **43** and the channel in the fuselage to glue the parts together strongly. **Fig. 5**

Right-hand fuselage shell:

Install the complete rudder snake (wire rod length = 875mm) in the right-hand fuselage shell. The pre-formed end should be at the front (servo end).

Fig. 6

Position the snake outer sleeve **44** flush at the front of the fuselage shell, as shown in **Fig. 7**. Lay the shell down flat (note the locating spigot; place the fuselage shell over the

corner of the table) and run cyano along the whole length of the outer sleeve **44** and the channel in the fuselage to glue the parts together strongly.

Fig. 8

4. Installing the aerial sleeve

Trim-fit the aerial sleeve **47**, cut it to length and glue it in the right-hand fuselage shell - taking care not to bend or distort the moulding.

Fig. 9

5. Installing the tow-hook

Glider version: glue the towhook **32** in the moulded recess in the fuselage shell **4**.

Fig. 9

6. Installing the motor mount

Glue the motor mount **34** in the right-hand fuselage shell, and wipe away any adhesive which is squeezed out. The exposed face of the motor mount will later be glued when the shells are joined; take care to keep adhesive off this area. Note that the motor mount should also be installed in the glider version, as it adds considerable strength.

Fig. 10

7. Installing the servos in the fuselage shells

Set the servos to "neutral" (centre) from the transmitter, and fit them in the moulded recesses in the left and right fuselage shells, as shown in **Fig. 11**. If you are using different servos, you may have to trim the recesses slightly to obtain a close fit. Lay the servo leads in the channel, running from bottom to top, and tape them in place. Apply a drop of cyano to the servo lugs to attach them to the foam material. Connect the pre-formed ends of the wire pushrods to the servo output arms, and push the arms onto the servos at an angle of 90° to the servo sides (don't forget to fit the servo output screws). Glue the plastic latch catches **22** in both fuselage sides as shown. Glue the extension leads in the cable holders **36**, positioning the ends flush as shown in the detail drawing. Glue the cable holders **36** in the moulded recesses in both fuselage sides, pushing them in as far as they will go. Deploy the leads carefully and glue the fore-and-aft formers **37** in place.

Fig. 11

8. Joining the fuselage shells

The most suitable adhesive for this stage is thick cyano-acrylate, used in conjunction with activator.

Caution: for the tuning version the balance weights 2 x **33** should first be glued in the recesses at the tail, as shown in **Fig. 12**.

The first step is to check "dry" (no glue) that the fuselage shells **3 + 4** fit together accurately; it may be necessary to carry out minor trimming.

Spray cyano activator on the joint surfaces of the fuselage shell **4** and leave it to air-dry for about two minutes.

Apply cyano adhesive to the joint surfaces of the fuselage shell **3**, then join the parts carefully, taking care to align them accurately and immediately. Note that the fuselage joint line must be perfectly straight - no bends allowed!

Fig. 12

9. Installing the rudder hinge

Glue the rudder hinge **31** in the tail end of the fuselage using a small amount of cyano. Take great care that no glue gets onto the hinge pivot axis.

Fig. 13

Use a sharp balsa knife to cut a central slot for the rudder hinge **31** in the leading edge of the rudder. Take care: injury hazard!

Extend the slot in the rudder **5** downward by about 3 to 4 mm, as this makes it easier to install the rudder and tailplane at a later stage.

Fig. 14

10. Attaching the horn to the rudder

Use a pair of side-cutters to cut down the projecting spigot of the rudder horn **24** to a length of about 2 mm. Insert the swivel pushrod connector **25** in the second hole from the inside of the rudder horn **24**, and secure it with the washer **26** and nut **27**. **Caution:** note the orientation of the swivel connector! Tighten the nut very carefully so that the barrel swivels smoothly: it should not wobble, but must not jam. Apply a tiny drop of cyano to the nut (on the tip of a pin) when you are satisfied. Fit the grub screw **28** in the threaded hole in the swivel pushrod connector **25** using the allen key **29** provided. Apply cyano activator to the moulded recess in the rudder, then glue the rudder horn **24** in the recess, with the row of holes facing the hinge pivot axis.

Fig. 15

11. Freeing the elevator and rudder

Cut a 1 mm slot at each end of the elevator, which is attached to the tailplane **12**. Move the rudder and elevator to and fro repeatedly in order to make the hinges free-moving - do not separate the control surfaces!

Fig. 16

12. Attaching the horn to the elevator

Insert the swivel pushrod connector **25** in the outermost hole in the elevator horn **24**, and secure it with the washer **26** and the nut **27**. **Caution:** note the orientation of the swivel connector! Tighten the nut very carefully so that the barrel swivels smoothly: it should not wobble, but must not jam. Apply a tiny drop of cyano to the nut (on the tip of a pin) when you are satisfied. Fit the grub screw **28** in the threaded hole in the swivel pushrod connector **25** using the allen key **29** provided.

Apply cyano activator to the moulded recess in the elevator, then glue the horn **24** in the recess, with the row of holes facing the hinge pivot axis.

Fig. 17

13. Gluing the fin to the tailplane

Glue the fin **13** to the tailplane **12**, setting it exactly at 90°. Check this with a tool such as a setsquare.

Fig. 18

14. Gluing the tail assembly to the fuselage

Position the tail assembly on the fuselage "dry" (no glue), and check that the parts fit correctly: first insert the hinge **31** in the rudder **13**, then slide the assembly forward onto the fuselage. Check in particular that the tailplane **12** is a snug fit on the fuselage, without any gaps, and lies parallel to the wing saddle at the front of the fuselage. You can check this by laying the GRP wing joiner **40** on the wing saddle, fixing it in place exactly at right-angles to the fuselage centreline using paper masking tape. Now sight along the fuselage from the nose, and align the tailplane with the wing joiner. When you are confident that the parts can be positioned correctly, the tail assembly can be glued to the fuselage permanently. Check once more for correct alignment and a close fit before leaving the glue to harden. A little extra care at this stage is well worthwhile, as it avoids long-term disappointment in a model which refuses to fly straight.

15. Securing the rudder and elevator pushrods

Slip the wire pushrods **41** and **42** through the swivel pushrod connectors **25**, set the servos and control surfaces to neutral (centre), and tighten the socket-head grub screws **28** in the connectors to secure the pushrods.

Figs. 19 + 20

Completing the wings

16. Freeing the ailerons

Cut a 1 mm slot at each end of the ailerons, which are attached to the wing panels **8** and **9**. Move the ailerons to and fro repeatedly in order to make the hinges free-moving - do not separate the control surfaces!

Fig. 21

17. Attaching the horns to the ailerons

Insert the swivel pushrod connectors **25** in the outermost holes in the aileron horns **24**, and secure them with the washers **26** and the nuts **27**.

Caution: be sure to produce a handed pair (different left and right)! Tighten the nuts very carefully so that the barrels swivel smoothly: they should not wobble, but must not jam. Apply a tiny drop of cyano to the nuts (on the tip of a pin) when you are satisfied. Fit the grub screws **28** in the threaded holes in the swivel pushrod connectors **25** using the allen key **29** provided. Apply cyano activator to the moulded recesses in the ailerons, then glue the horns **24** in the recesses, with the row of holes facing the hinge pivot axis.

Fig. 22

18. Installing the aileron servos

Set the servos to "neutral" (centre) from the transmitter, and fit the output arms on the servos at 90° to the case sides - 1 x left and 1 x right (mirror-image pair).

Trial-fit the servos in the moulded recesses in the wing panels **8** and **9**: you may need to carry out minor adjustments to suit the type of servo you are using. Apply a drop of hot-melt glue to each slot in the wings for the servo mounting lugs, and immediately press the servos into the recesses; apply an extra drop of glue if necessary.

Fig. 23

19. Installing the aileron pushrods

Connect the pre-formed end of the steel pushrods **30** to the outermost hole in the servo output arms, and slip the plain end through the swivel pushrod connectors **25**. Set the ailerons and servos to neutral, and tighten the grub screws **28** to secure the pushrods.

Fig. 23

20. Deploying the aileron servo leads

Lay each servo lead in a curve running towards the wing joiner channel, and extend it with a 400 mm extension lead: the leads can either be soldered together or connected using the standard plug and socket. You will find a notch in each of the spar covers **10** and **11** designed to accommodate the connectors. Now deploy the extension leads in a straight line along the front face of the spar channel, standing on edge.

The servo leads **must** project from the underside of the wing roots by **60** mm on the left and **75** mm on the right, as this makes it possible to connect them to the extension leads glued in the cable holders **36**. The remainder of the extension leads can be stowed in the channel and secured.

Figs. 23 + 24

21. Installing the spar covers

Carefully trial-fit the spar covers **10** and **11** in the wing panels **8** and **9**. When you are confident that the covers are a close fit, and can be installed flush with the wing surface, they can be glued in place permanently using cyano. Ensure in particular that no adhesive gets onto those surfaces of the wings into which the GRP wing joiner **40** will be inserted later. Please don't fit the wing joiner **40** in the wings until you are certain that there is no active adhesive inside the channels. The best way to ensure this is to spray activator inside and wait for about five minutes. If you neglect this warning, you may find that you can never separate the wing panels again.

Deploy the servo leads in the channel in the spar covers, and secure them with a little glue (hot-melt adhesive or contact cement). Don't use cyano for this, as it tends to make the cable insulation brittle.

Fig. 23

22. Checking the wing joiner system

The model can now be assembled using the GRP wing joiner **40**: slide the wing panels onto the joiner until they are 5 cm short of the fuselage on each side, then connect the plugs on the aileron extension leads to the sockets installed in the fuselage. Slide the wings closer to the fuselage, and you will find that the connected leads help to locate them properly. Finally push the wings into the fuselage on both sides.

Check that the wing panels **8** and **9** are a snug fit (no gaps) where they meet the fuselage. If they are excessively tight, carefully compress the edges of the wing root where they enter the fuselage recess. **Note: the wing panels should not be glued to the fuselage.** This enables you to remove the wings to make the model easier to transport.

Fig. 25

23. Installing the canopy latch lugs

First glue the canopy former **35** in the underside of the canopy **7**, then push the two latch tongues **23** through the former, and set them flush. Apply thick cyano to the serrated edges - no activator in this case! - then insert the latch tongues in the slots in the canopy. Immediately fit the canopy on the fuselage and allow the latch tongues to engage in the latch catches **22**. Check the position of the canopy on the fuselage without delay, then wait about one minute before cautiously re-opening the canopy. Spray activator on the glued joints between the latch tongues and the canopy former **35**.

Fig. 26

General note on the receiving system installation

The remaining airborne equipment can now be installed in the cabin area. Before you fit the receiver battery permanently it is important to check the model's Centre of Gravity (CG); you can often correct the balance point at this stage by shifting the batteries.

Velcro tape (hook tape **20** + loop tape **21**) is supplied for securing the receiving system components, but please note that the adhesive layer on the tape is not sufficient for this application, so apply cyano to reinforce the joints.

In both versions of the aeroplane the receiver should be installed aft of the servos, again using Velcro tape. Thread the aerial wire (attached to the receiver) into the plastic sleeve **47**, which has already been installed. The easy way to do this is to file a length of steel rod to a point, then slip it through the sleeve **47** from the tail end. Push the point into the end of the aerial insulation and apply a drop of cyano to the joint. You can then pull the aerial through the sleeve from the tail end.

The model is designed for the installation of an MPX aero-tow release, # 72 3470; the mechanism is simply glued in the glider nose **5**. A short length of snake outer sleeve runs from the release unit towards the tow release servo, passing through the centre of the battery pack as shown. The linkage takes the form of a length of 1.2 mm Ø steel rod.

Fig. 27

Motor + receiving system installation in the electric-powered version

Our recommended components have been thoroughly tested, and are well matched to each other.

If you wish to use different units, especially if they take the form of a more powerful motor, then it is your responsibility to ensure that the airframe is "up to the job".

Install the motor and tighten all screws thoroughly. Deploy the power cables in such a way that they cannot possibly foul any of the motor's moving parts. Tape the wires to the fuselage.

Fig. 28

The speed controller can be attached to the fuselage side adjacent to the receiver, using Velcro tape.

The intended location of the flight battery is the space aft of the receiver. The battery should be positioned in such a way that little or no ballast is required to balance the completed model. Secure the battery with Velcro tape in the usual way. Now complete all the receiving system connections as described in the instructions supplied with your radio control system. Check that all the cables are secured well, but are not under strain or tension.

Fit the propeller driver on the motor output shaft. Allow about 1 mm clearance between the rear face of the driver and the fuselage.

Attach the propeller blades to the propeller driver, and tighten the pivot screws fully, but not excessively. The blades must be able to swing down under their own weight when you hold the model's nose up.

Switch the transmitter on, connect the flight battery to the speed controller, and the controller to the receiver. The controller you are using must feature a BEC (Battery Eliminator Circuit) system, i.e. the receiver draws power from the flight battery.

Switch the motor on briefly, and check the direction of rotation of the propeller. When test-running the power system remove all light, loose objects behind the model, and hold it really firmly.

Caution: even small motors and propellers represent a serious injury hazard!

Setting the control surface travels

The control surface travels must be correct, otherwise the model will not respond harmoniously to the controls. All travels are measured at the widest point of the control surface concerned.

Elevator		
up	- stick back (towards you) -	approx. + 8-10mm
down	- stick forward (away from you) -	approx. - 8-10mm
Rudder	left and right	approx. 15-20mm
each way		

Ailerons	
up	approx. + 15 mm
down	approx. - 6 mm
Spoilers - both ailerons up	approx. + 20 mm
Spoiler mixer (elevator trim compensation)	approx. - 4 mm

Fig. 29

The "Spoiler" function is designed to shorten the landing approach by deflecting both ailerons up simultaneously. At the same time the appropriate down-elevator trim is mixed in, so that the model maintains a stable attitude. This function can only be implemented if your radio control system features suitable mixer facilities.

Please refer to the instructions supplied with your RC system for details of this.

Note: when you apply a right-aileron command, the right-hand aileron - as seen from the tail, looking forward - must deflect up.

If you cannot set the stated control surface travels using your

radio control system's adjustment facilities, you may need to re-install the swivel pushrod connector in a different hole in the horn.

Gilding the lily - applying the decals

The kit is supplied with a multi-colour decal sheet, part 2. Cut out the individual name placards and emblems and apply them to the model in the positions shown in the kit box illustration, or in another arrangement which you find pleasing.

Balancing the model

Like every other aircraft, your EasyGlider PRO must be balanced at a particular point if it is to fly efficiently and stably. Assemble the model completely, ready to fly. Corrections are possible by altering the position of the receiver battery or the flight pack. If this is still not sufficient, add nose ballast or tail ballast until the model balances at the stated point.

The **Centre of Gravity** should be at a point **70 mm** back from the leading edge of the wing, measured where the wings meet the fuselage. Mark this point on the underside of the wing roots with a waterproof felt-tip pen. Support the model at the marked points on two fingertips, and the aeroplane should balance level. Make any adjustments required, and mark the location of the airborne components once you have found the correct position in the fuselage, so that you can be sure always to replace the battery in the same position.

Fig. 30

Preparing for the first flight

For the first flight wait for a day with as little breeze as possible. The early evening is often a good time.

If this is your first model aircraft, your next step is to ask an experienced model pilot to help you, as things usually do not go well if you try to manage on your own. Your local model flying club should be able to help you find someone, or - failing that - your nearest model shop may be able to assist you. Our flight simulator for the PC can also provide valuable experience prior to your "first real steps" in model flying.

You can download the simulator at no charge from our website www.multiplex-rc.de. You will also need the matching interface cable for your MPX transmitter; this is available from model shops under Order No. # 8 5153. **Be sure to carry out a range check before the first flight.**

Just before the flight, charge up the transmitter battery and the flight pack (or receiver battery) using the recommended procedures. Ensure that "your" channel is not already in use before you switch on the transmitter.

Ask your assistant to walk away from the model, holding the transmitter. The aerial should be fitted but completely collapsed. Your assistant should operate one of the functions constantly while you watch the servos. The non-controlled servo should stay motionless up to a range of about 60 m, and the controlled one should follow the stick movements smoothly and without any delay. Please note that this check can only give reliable results if the radio band is clear of interference, and if no other radio control transmitters are in use - even on different channels. If the range check is successful, repeat it **with the motor running** (EasyGlider Electric only). There should be no more than a very slight reduction in effective radio range with the motor turning. If you are not sure about anything, please don't risk a flight. Send the whole system (including battery, switch harness and servos) to the Service Department of your RC system manufacturer and ask them to check it.

The first flight ...

Glider:

A test-glide from shoulder level, directly into wind, will give you an approximate idea of the model's "trim", i.e. whether it is set up correctly, or whether the control surfaces or transmitter trims need to be adjusted. If the model swings away to one side, move the rudder trim slightly in the opposite direction. If the model banks - one wing lower than the other - apply slight aileron trim correction.

Hand-towing

This is the classic method of launching a glider to height. Attached to a suitable length of towline, the model is pulled up by your assistant running into wind; the glider will rise up the line in a similar fashion to a kite. The towline first needs to be prepared as follows: tie the towing and a pennant to the "model" end of the line. The ring is engaged on the towhook 32, the towline unwound and your assistant (launcher) takes the free end and walks upwind until the line is taut. The model should be held under gentle tension before it is released. The launcher watches the model (over his shoulder), adjusting his pace to maintain a steady rate of climb. Take care not to overstress the model during the launch; this is a particular danger in a fairly strong wind.

Bungee launching

This is the easiest method of launching a glider of this size, as no assistant is needed, and launch heights of around 100 m are easily achieved. From this altitude quite long flying times can be achieved, and they will be even longer if you manage to contact a thermal, although this does depend on the prevailing weather.

Thermal flying

Making the best use of flat field thermals is not particularly easy, and calls for considerable skill and experience. Areas of rising air are harder to detect and recognise at a flat field, because they tend to occur at higher altitude than at the hillside, where it is often possible to find lift while the model is cruising along the edge of the slope and then circle away in it. A thermal at a flat field which occurs directly overhead is very hard to recognise, and to exploit it to the full requires a highly skilled pilot. For this reason it is always best to go thermal seeking off to one side of where you are standing.

You will recognise thermal contact by the glider's behaviour. Good thermals are obvious because the model will climb strongly, but weak thermals take a practised eye to detect, and you will need a lot of skill to make use of them. With a little practice you will be able to recognise likely trigger points for thermals in the local landscape. The ground warms up in the sun's heat, but heat absorption varies according to the type of terrain and the angle of the sun's rays. The air over the warmer ground becomes warmer in turn, and the mass of warm air flows along close to the ground, driven by the breeze. Strong winds usually prevent thermal build-up. Any obstruction - a shrub or tree, a fence, the edge of a wood, a hill, a passing car, even your own model on the landing approach - may cause this warm air to leave the ground and rise. Imagine a drop of water on the ceiling, wandering around aimlessly, and initially staying stuck to the ceiling. If it strikes an obstruction it will fall on your head. A triggered thermal can be thought of as the opposite of the drop of water.

The most obvious thermal triggers include sharply defined snow fields on mountain slopes. The air above the snow field is cooled, and flows downhill; at the edge of the snow field, part-way down the valley, the cool air meets warm air flowing gently uphill, and pushes it up and away as if cut off by a knife. The result is an extremely powerful but bumpy thermal bubble. Your task is to locate the rising warm air and centre your model in it. You will need to control the glider constantly to keep it centred, as you

can expect the most rapid climb rate in the core of the thermal. Once again, this technique does demand some skill.

To avoid losing sight of the machine be sure to leave the thermal in good time. Remember that a glider is always easier to see under a cloud than against a clear blue sky. If you have to lose height in a hurry, do bear the following in mind:

The structural strength of the EasyGlider PRO is very great for this class of model, but it is not infinite. If you attempt to destroy the model forcibly, please don't expect any sympathy or compensation from us.

Flying at the slope

Ridge soaring is an extremely attractive form of model flying. Soaring for hours on end in slope lift, without needing any outside aid for launching, must be one of the finest of modelling experiences. But to "milk" a thermal to the limits of vision, bring it down again in a continuous series of aerobatic manoeuvres, and then repeat the whole show - that must surely be the last word in model flying.

But take care - there are dangers for your model lurking at the slope. Firstly, in most cases landing is much more difficult than at a flat field site. It is usually necessary to land in the lee of the hill where the air is turbulent; this calls for concentration and a high-speed approach with last-minute airbrake extension. A landing on the slope face, i.e. right in the slope lift, is even more difficult. Here the trick is to approach slightly downwind, up the slope, and flare at exactly the right moment, just before touch-down.

Aero-towing

An ideal combination for learning to aero-tow, and for actual aero-towing, is a Mentor and an EasyGlider PRO. If you wish to take-off from grass, you will need a fairly powerful motor in the Magister, e.g. a brushless external rotor type (generally known as an "outrunner") with around 300 Watts of power.

For the tow you require a 20 m length of braided cable of 1 to 1.5 mm Ø. Tie a loop of 0.5 mm Ø nylon line (weak link) at the end, and connect it to the aero-tow release (# 72 3470) fitted to the EasyGlider PRO.

Fig. 27

Check that the towline is resting on top of the Mentor's tailplane. The tug now rolls forward until the towline is taut, and only then should the tug's pilot apply full-throttle. Both aeroplanes accelerate: the tug stays on the ground initially, while the glider lifts off, but the glider pilot keeps his model flying low above the ground, directly in the wake of the tug; the tug can now lift off safely. The two models should be kept climbing steadily, even through turns. Avoid flying directly over your heads during the first few attempts at aero-towing, as it is difficult to detect the models' attitudes from this angle. To drop the tow cease climbing, bring the two aeroplanes to straight and level flight, then close the throttle on the tug and operate the tow-release on the glider.

Electric flying

With the electric version - the EasyGlider Electric - you have the optimum level of autonomy and independence. You can fly from a flat field and carry out about four climbs to a sensible gliding height from a single battery charge. At the slope you can also keep the electric power system as a "lifebelt", i.e. you only use the motor to "keep afloat", and avoid landing out, i.e. landing at the bottom of the slope when the lift fails.

Flight performance

What is meant by a glider's performance?

The two most important parameters are **sinking speed** and **glide angle**. Sinking speed is a measure of the vertical height lost per second relative to the surrounding air. The sinking speed is primarily determined by the wing loading (weight relative to wing

area). Here the EasyGlider PRO offers a really excellent performance - much better than conventional models - as its wing loading is so low (only around 17 g / dm²). This means that only slight thermal assistance is necessary (warm air rising) to cause the model to gain height. Wing loading is also the main factor in determining the model's airspeed - the lower the loading, the slower the model. Low airspeed means that the model can be turned extremely tightly, and this is also advantageous when thermal flying, as areas of lift are usually very small when close to the ground.

The glider's low airspeed also benefits you considerably if you are a beginner, as you have more time to think, and the model is more likely to "excuse" a mistake at the controls.

However, there's always a down-side:

The other important parameter in glider performance is the **glide angle**. This is stated as a ratio, i.e. from a particular altitude the model flies such and such a distance. The glide angle increases as wing loading rises, and at the same time - of course - the model's airspeed increases. This becomes necessary if you wish to fly in relatively strong winds, and when you need "energy retention" for flying aerobatics.

For thermal flying you need a good glide angle too, as this is the key to flying across areas of "sink" (the opposite of a thermal) quickly, so that you can seek out another thermal. To increase the glide angle you need to increase the wing loading, and this is done by increasing the glider's weight, i.e. by installing ballast in the model. This should be positioned in the wing if possible. In the EasyGlider PRO there is an ideal location: it is the GRP tube which forms the wing joiner. The internal diameter of this tube is 7.8 mm. Normally a ballast rod of this size would be difficult to find, and expensive to purchase. However, by chance the diameter of standard M8 studding (threaded rod) is just the right size. **This material has a diameter of 7.7 mm, and you will be able to buy it at low cost in any DIY store.** You may find that only half a full length is sufficient. In this case you must ensure that the rod cannot slide from side to side, e.g. by fitting lengths of balsa dowel in both ends of the wing joiner, so that the weight is held in the centre.

Safety

Safety is the First Commandment when flying any model aircraft. Third party insurance should be considered a basic essential. If you join a model club suitable cover will usually be available through the organisation. It is your personal responsibility to ensure that your insurance is adequate.

Make it your job to keep your models and your radio control system in perfect order at all times. Check the correct charging procedure for the batteries used in your RC set. Make use of all sensible safety measures and precautions which are advised for your system. An excellent source of practical accessories is the MULTIPLEX main catalogue, as our products are designed and manufactured exclusively by practising modellers for other practising modellers.

Always fly with a responsible attitude. You may think that flying low over other people's heads is proof of your piloting skill; others know better. The real expert does not need to prove himself in such childish ways. Let other pilots know that this is what you think too. Always fly in such a way that you do not endanger yourself or others. Bear in mind that even the best RC system in the world is subject to outside interference. No matter how many years of accident-free flying you have under your belt, you have no idea what will happen in the next minute.

The fascination of it all

Model flying is, and always has been, a fascinating hobby, and a thoroughly enjoyable way of spending your leisure hours. Take your time to get to know your new EasyGlider PRO really well. Plan to spend many hours in the open air, where you will learn to

appreciate the model's excellent performance and its docile handling. You can join us in enjoying one of the few types of sport which combine high technology, manual dexterity, and sophisticated personal skills. You can fly alone or with friends, and at the same time you can enjoy the pleasures of nature - treats which have become rare in today's world.

We - the MULTIPLEX team - wish you many hours of pleasure in building and flying your new model. Happy landings!

MULTIPLEX Modellsport GmbH & Co. KG

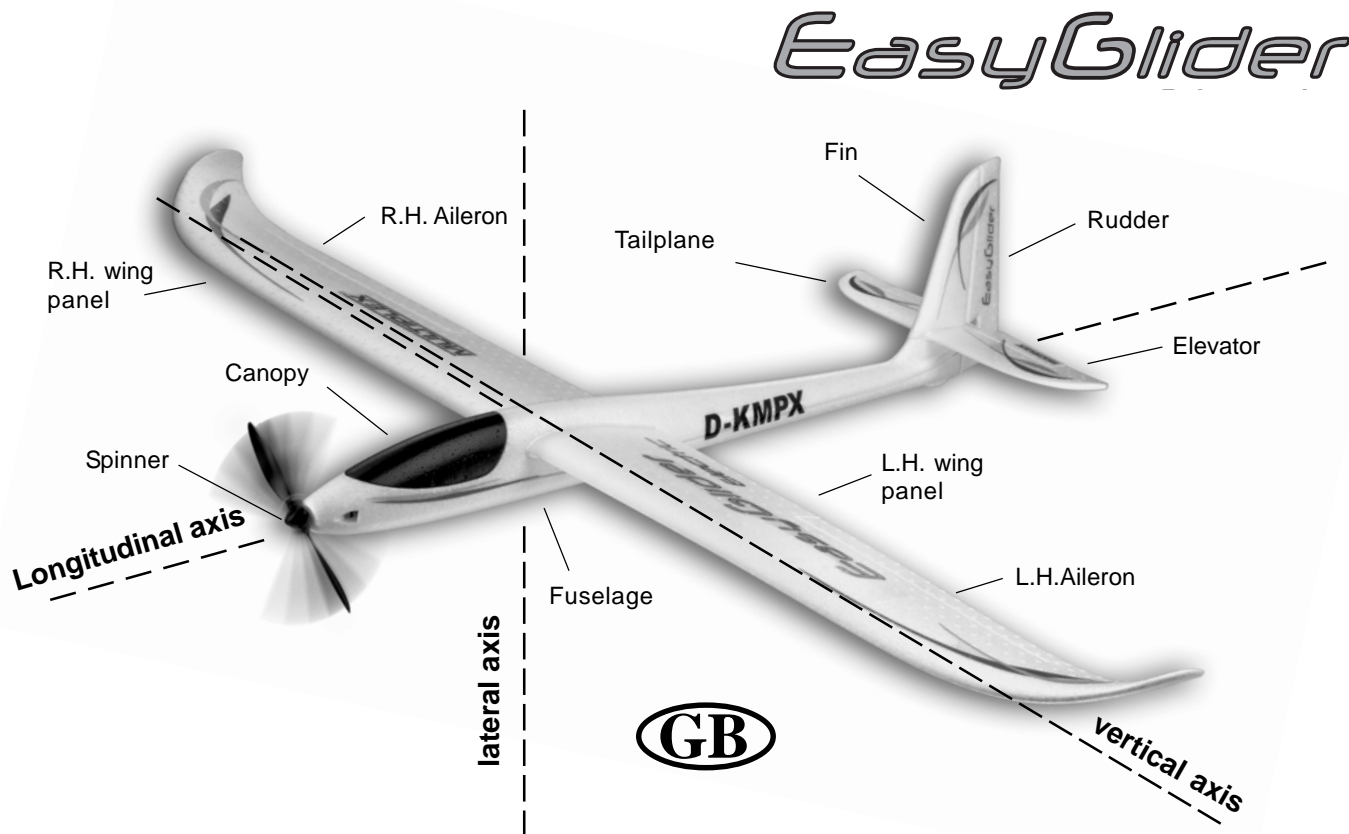


Model Development Dept.

Basic information relating to model aircraft

Any aircraft, whether full-size or model, can be controlled around the three primary axes: vertical (yaw), lateral (pitch) and longitudinal (roll).

When you operate the elevator, the model's attitude alters around the lateral axis. If you apply a rudder command, the model swings around the vertical axis. If you move the aileron stick, the model rolls around its longitudinal axis. External influences such as air turbulence may cause the model to deviate from its intended flight path, and when this happens the pilot must control the model in such a way that it returns to the required direction. The basic method of controlling the model's height (altitude) is to vary motor speed (motor and propeller). The rotational speed of the motor is usually altered by means of a speed controller. Applying up-elevator also causes the model to gain height, but at the same time it loses speed, and this can only be continued until the model reaches its minimum airspeed and stalls. The maximum climb angle varies according to the power available from the motor.



Wing section

The wing features a cambered airfoil section over which the air flows when the model is flying. In a given period of time the air flowing over the top surface of the wing has to cover a greater distance than the air flowing under it. This causes a reduction in pressure on the top surface, which in turn creates a lifting force which keeps the aircraft in the air. **Fig. A**

Centre of Gravity (CG)

To achieve stable flying characteristics your model aircraft must balance at a particular point, just like any other aircraft. It is absolutely essential to check and set the correct CG position before flying the model for the first time.

The CG position is stated as a distance which is measured aft from the wing root leading edge, i.e. close to the fuselage. Support the model at this point on two fingertips (or - better - use the MPX CG gauge, # 69 3054); the model should now hang level.

Fig. B

If the model does not balance level, the installed components (e.g. flight battery) can be re-positioned inside the fuselage. If this is still not sufficient, attach the appropriate quantity of trim ballast (lead or plasticene) to the fuselage nose or tail and secure it carefully. If the model is tail-heavy, fix the ballast at the fuselage nose; if the model is tail-heavy, attach the ballast at the tail end of the fuselage.

The **longitudinal dihedral** is the difference in degrees between the angle of incidence of the wing and of the tail. Provided that you work carefully and attach the wing and tailplane to the fuselage without gaps, the longitudinal dihedral will be correct

automatically.

If you are sure that both these settings (CG and longitudinal dihedral) are correct, you can be confident that there will be no major problems when you test-fly the model. **Fig. C**

Control surfaces, control surface travels

The model will only fly safely, reliably and accurately if the control surfaces move freely and smoothly, follow the stick movements in the correct "sense", and move to the stated maximum travels. The travels stated in these instructions have been established during the test-flying programme, and we strongly recommend that you keep to them initially. You can always adjust them to meet your personal preferences later on.

Transmitter controls

The transmitter features two main sticks which the pilot moves to control the servos in the model, which in turn operate the control surfaces.

The functions are assigned according to Mode A, although other stick modes are possible.

The transmitter controls the control surfaces as follows:

- | | |
|---------------------------|---------------|
| Rudder (left / right) | Fig. D |
| Elevator (up / down) | Fig. E |
| Aileron (left / right) | Fig. F |
| Throttle (motor off / on) | Fig. G |

Unlike the other controls, the throttle stick must not return to the neutral position automatically. Instead it features a ratchet so that it stays wherever you put it. Please read the instructions supplied with your radio control system for the method of setting up and adjusting the transmitter and receiving system.

Parts List
EasyGlider PRO KIT # 21 4226



Part No.	No. off	Description	Material	Dimensions
1	1	Building instructions	Paper	DINA4
2	1	Decal sheet	Printed adhesive film	350 x 1000 mm
3	1	L.H. fuselage shell	Elapor foam	Ready made
4	1	R.H. fuselage shell	Elapor foam	Ready made
5	1	Glider nose	EPP foam	Ready made
7	1	Canopy	Elapor foam	Ready made
8	1	L.H. wing panel	Elapor foam	Ready made
9	1	R.H. wing panel	Elapor foam	Ready made
10	1	L.H. spar cover	Elapor foam	Ready made
11	1	R.H. spar cover	Elapor foam	Ready made
12	1	Tailplane	Elapor foam	Ready made
13	1	Fin	Elapor foam	Ready made
Small parts set, EasyGlider PRO				
20	2	Velcro tape, hook	Plastic	25 x 60 mm
21	2	Velcro tape, loop	Plastic	25 x 60 mm
22	2	Canopy-Lock catch	Inj. moulded plastic	Ready made
23	2	Canopy-Lock tongue	Inj. moulded plastic	Ready made
24	4	Glue-fitting control surface horn	Inj. moulded plastic	Ready made
25	4	Swivel pushrod connector	Metal	Ready made, 6 mm Ø
26	4	Washer	Metal	M2
27	4	Nut	Metal	M2
28	4	Allen-head grub screw	Metal	M3 x 3 mm
29	1	Allen key	Metal	1.5 A/F
30	2	Pre-formed aileron pushrod	Metal	1 Ø x 80 mm
31	1	Hinge	Inj. moulded plastic	Ready made
32	1	Glider towhook	Inj. moulded plastic	Ready made
33	2	Trim ballast, tuning version	Steel ball	13 mm Ø
34	1	Motor mount	Inj. moulded plastic	Ready made
35	1	Canopy former	Inj. moulded plastic	Ready made
36	2	Cable holder	Inj. moulded plastic	Ready made
37	2	Fuselage fore-and-aft former	Inj. moulded plastic	Ready made
Wire and rod set, EasyGlider PRO				
40	1	Wing joiner	GRP tube	10 Ø x 8 x 1000 mm
41	1	Pre-formed elevator pushrod	Metal	0.8 Ø x 875 mm
42	1	Pre-formed rudder pushrod	Metal	0.8 Ø x 875 mm
43	1	Elevator snake outer sleeve	Plastic	3 / 2 Ø x 785 mm
44	1	Rudder snake outer sleeve	Plastic	3 / 2 Ø x 785 mm
45	1	Elevator snake inner tube	Plastic	2 / 1 Ø x 850 mm
46	1	Rudder snake inner tube	Plastic	2 / 1 Ø x 850 mm
47	1	Aerial sleeve	Plastic	3 / 2 Ø x 785 mm

Replacement parts (see also page 50/51; please order from your local model shop)

Decal sheet	72 4236
Fuselage shells + snakes	22 4150
Canopy	22 4151
Wing panels	22 4159
Small parts set	22 4152
Wing joiner	72 3190
Canopy-Lock (canopy retainer)	72 5136
Tail set	22 4160

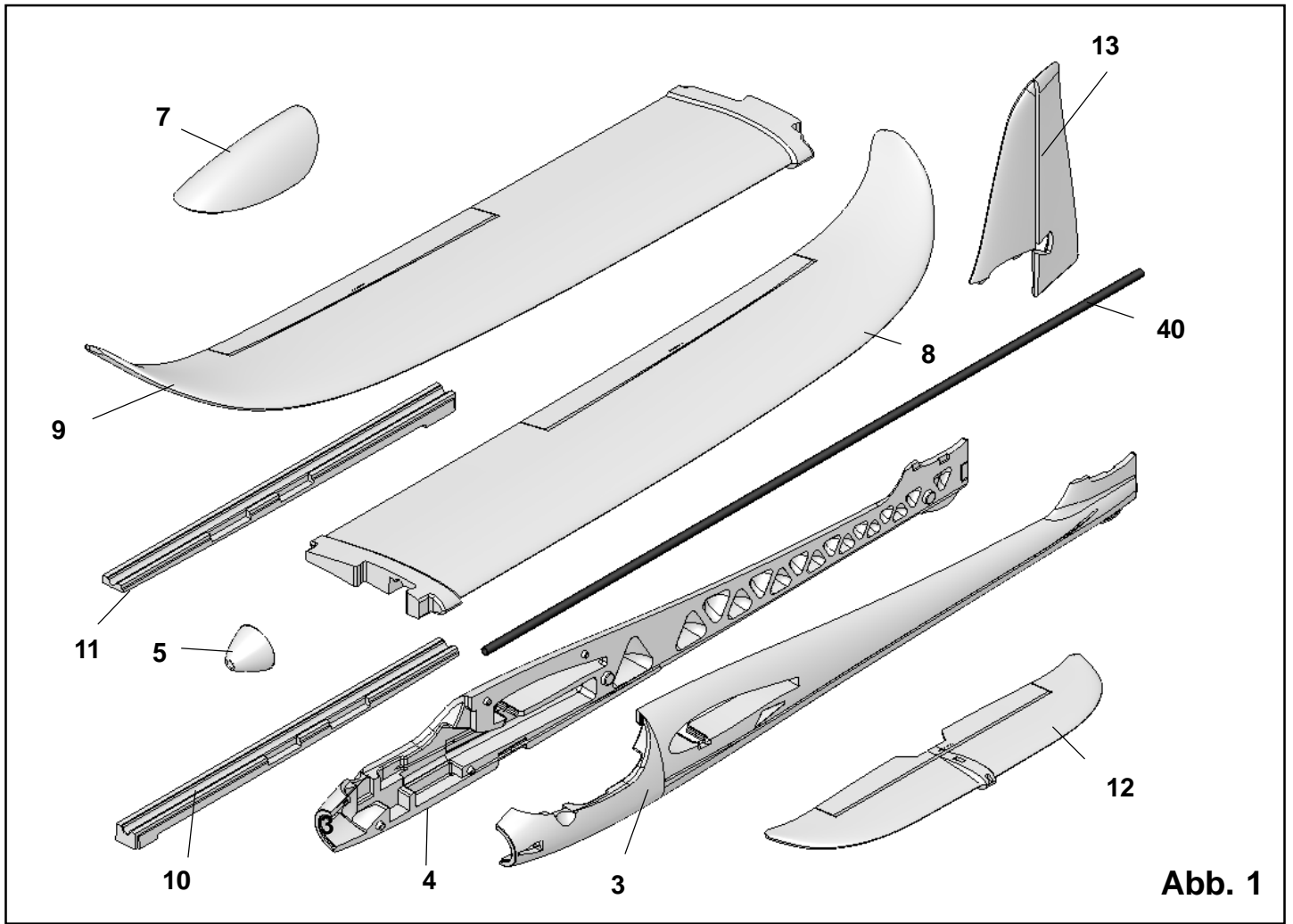


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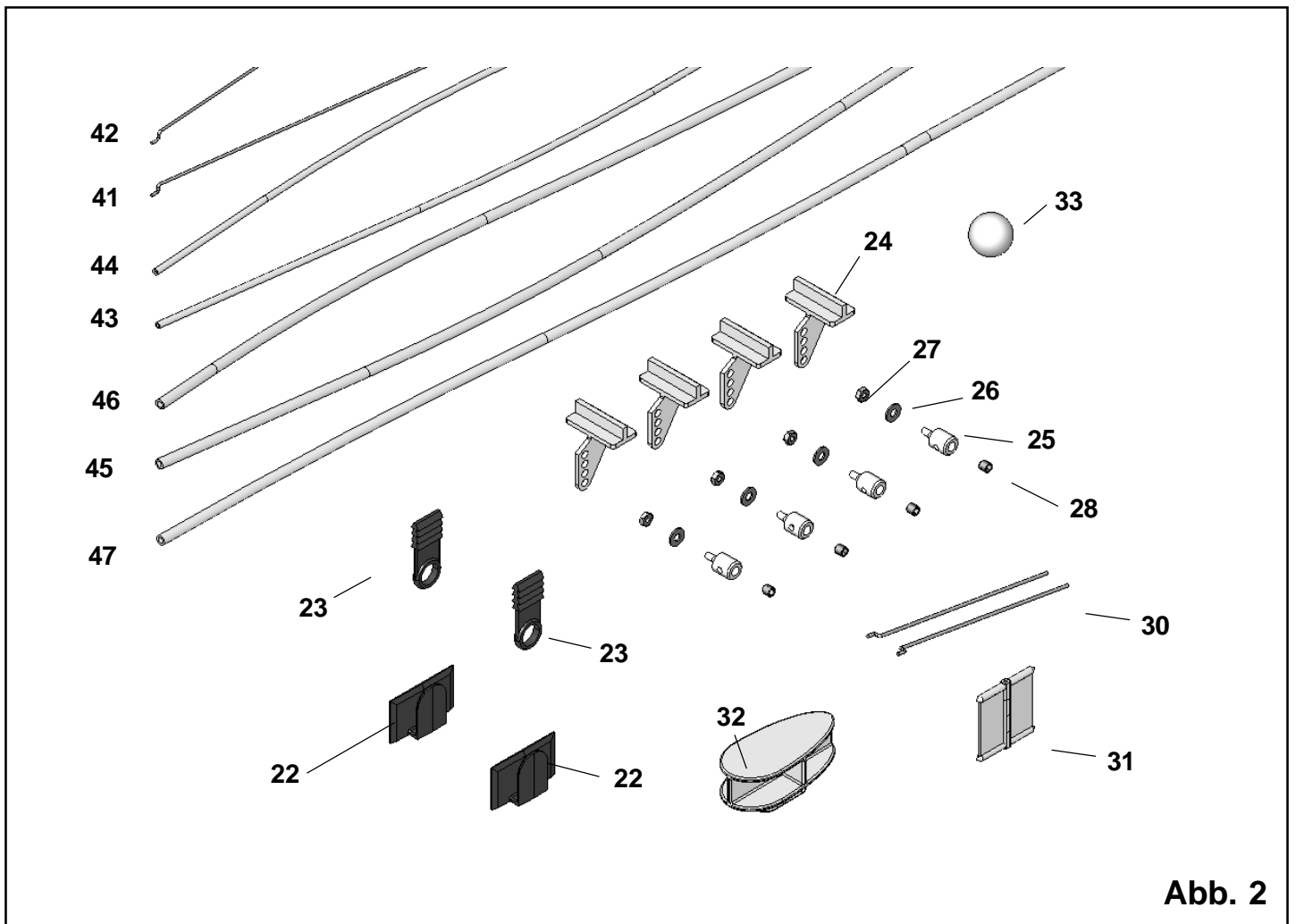


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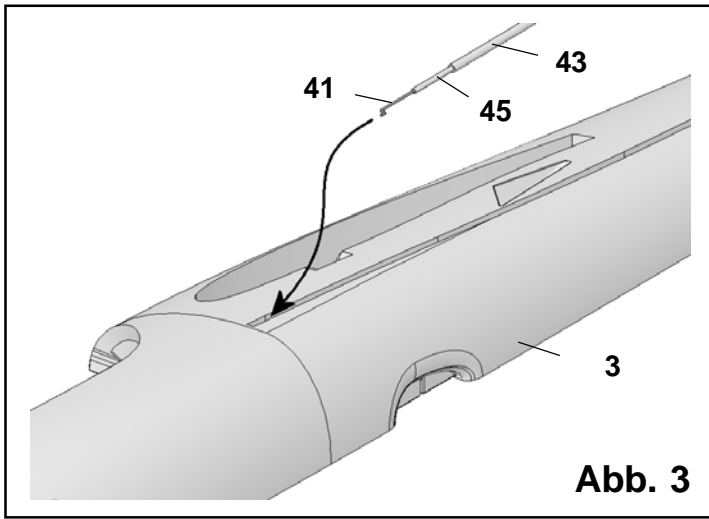


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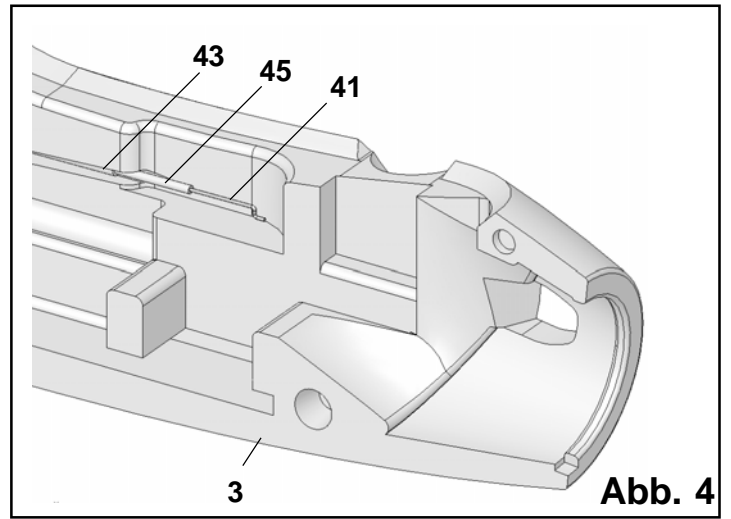


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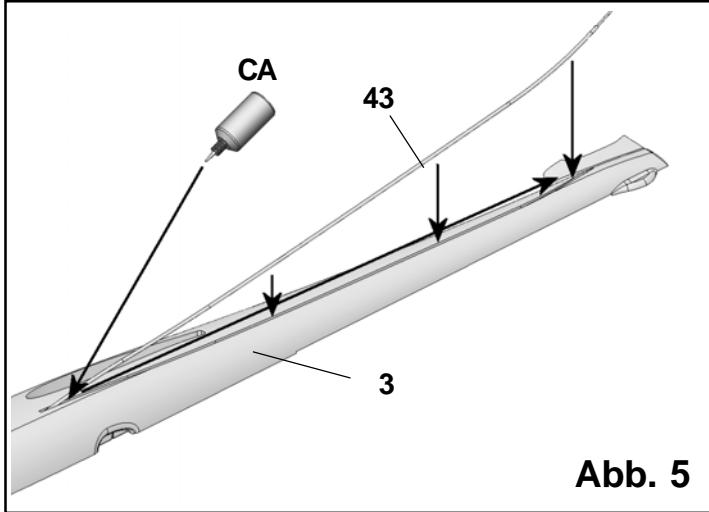


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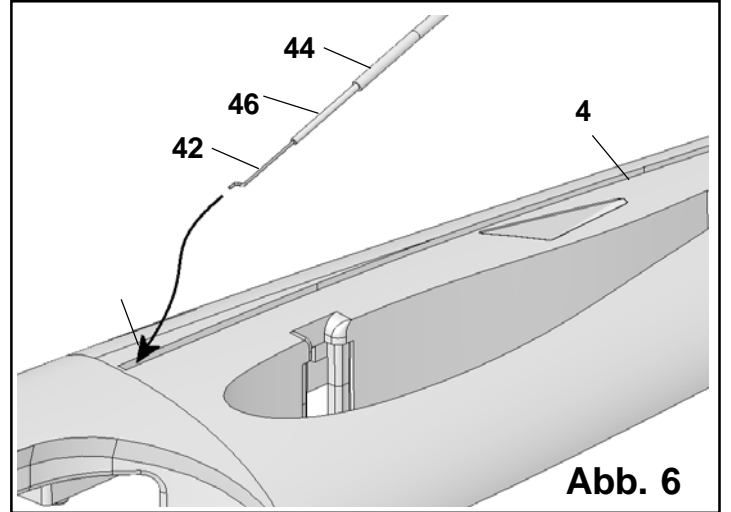


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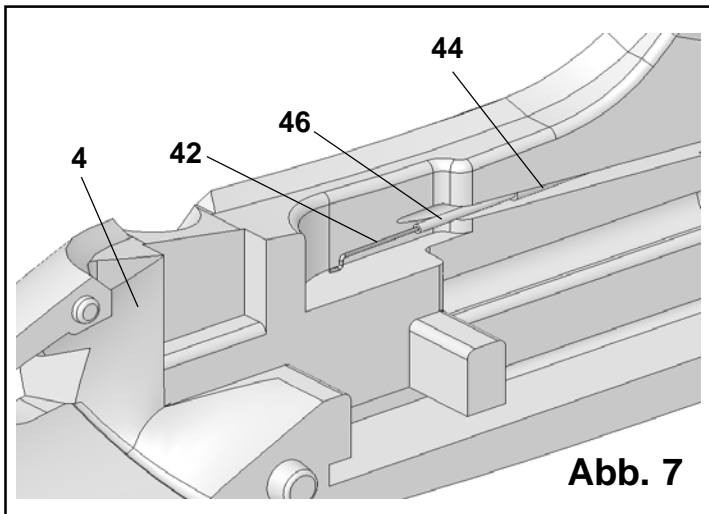


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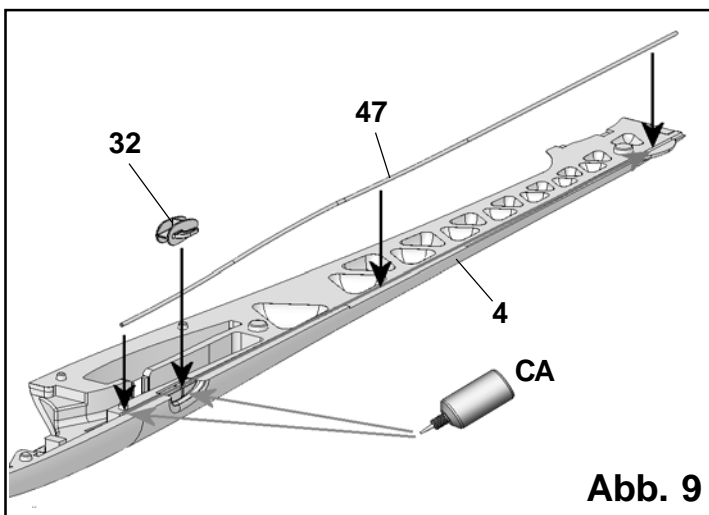
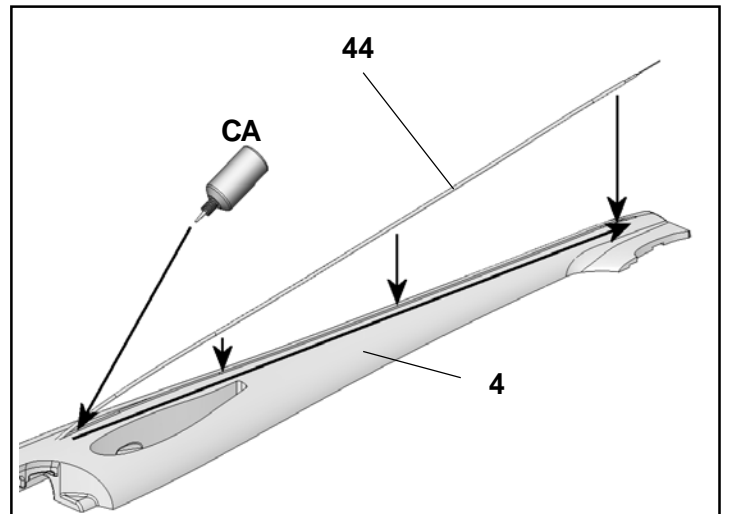


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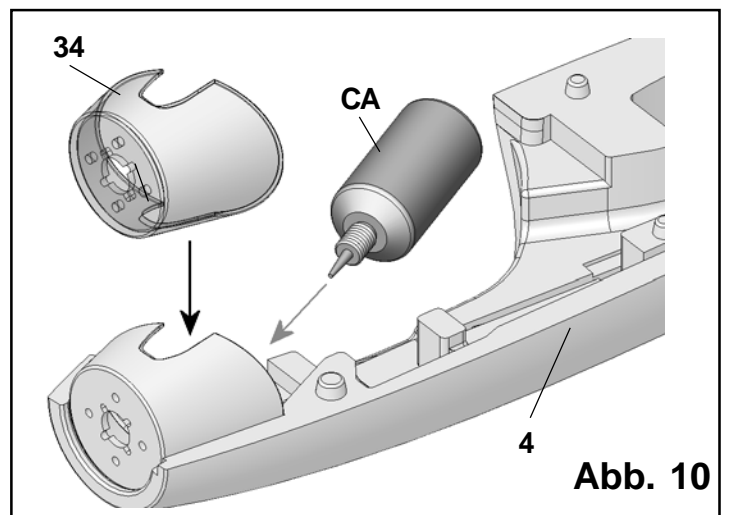


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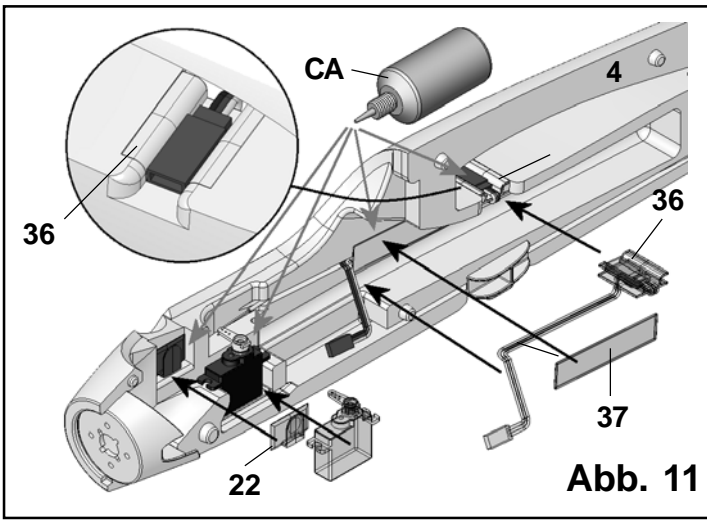


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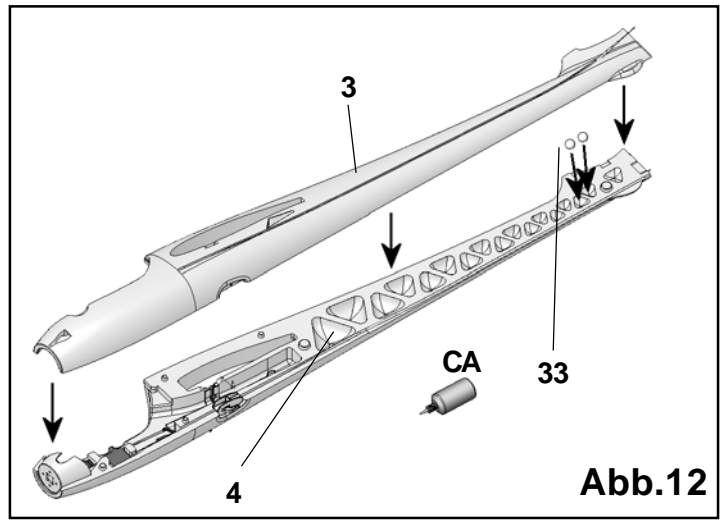


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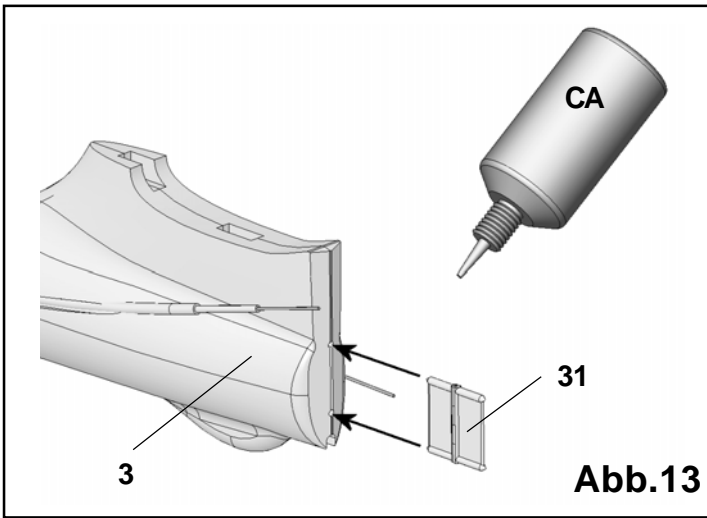


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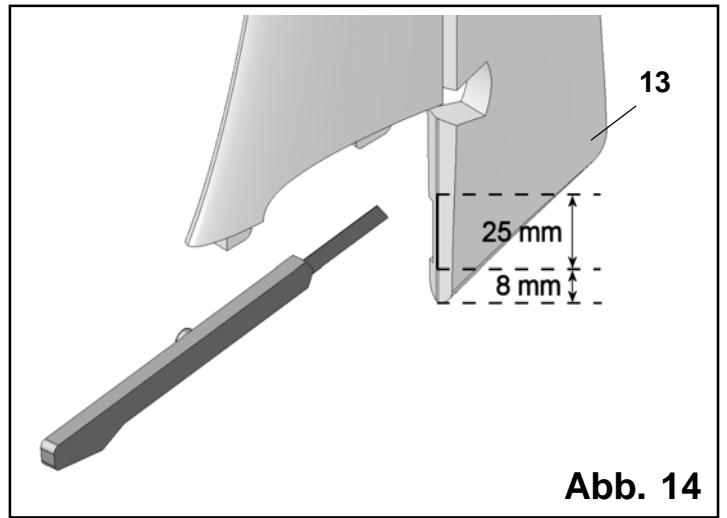


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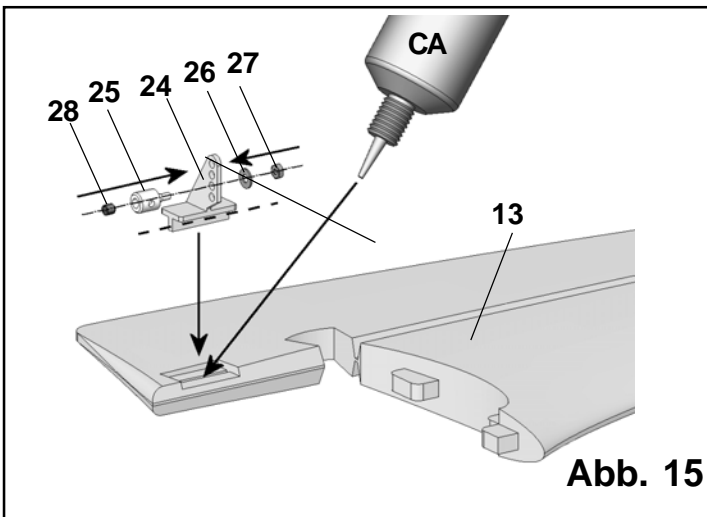


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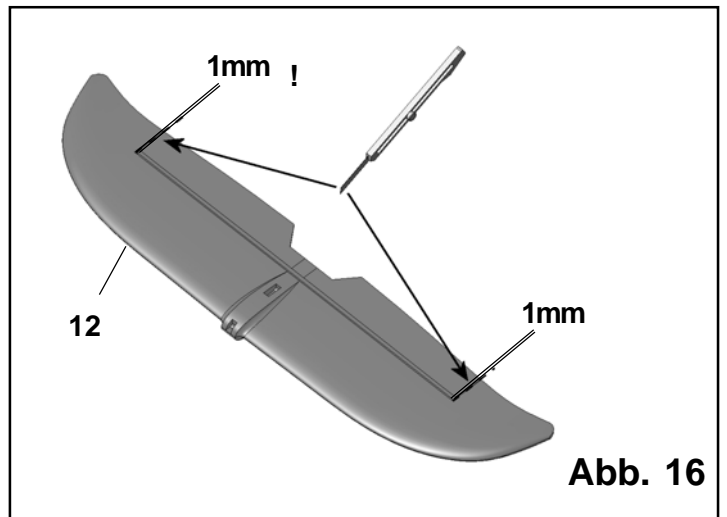


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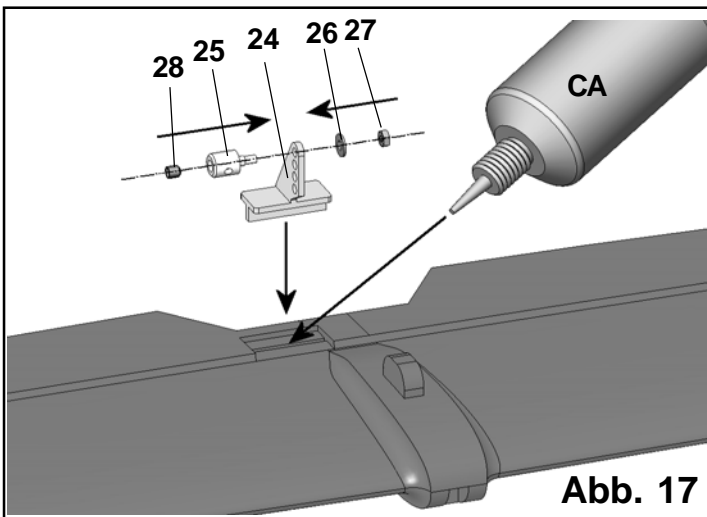


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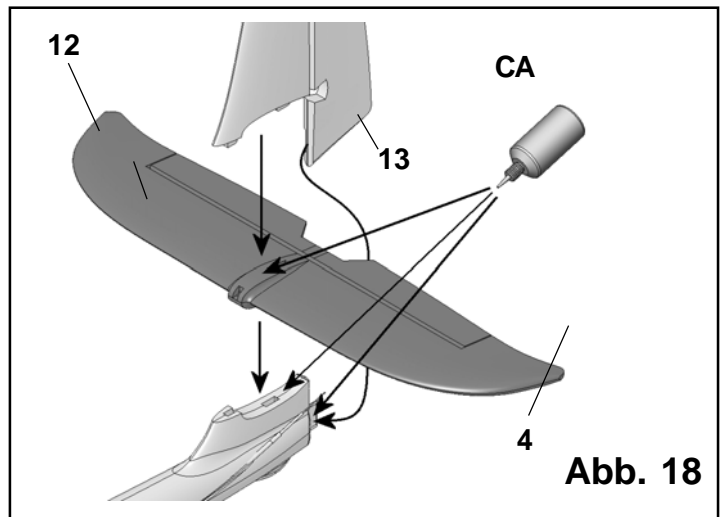


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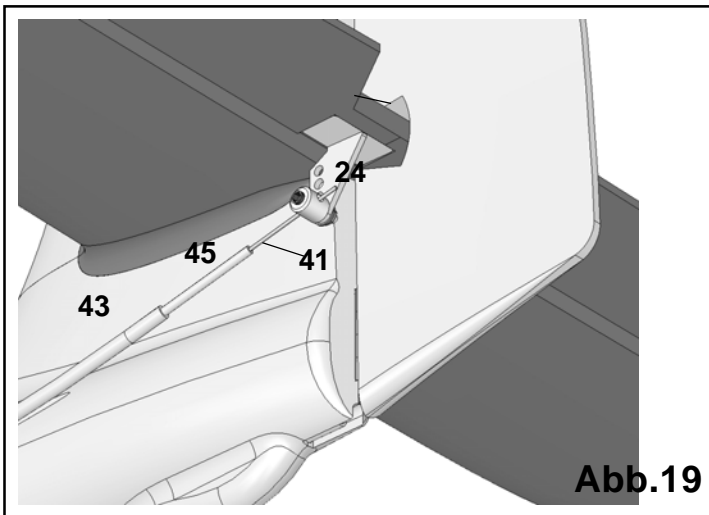


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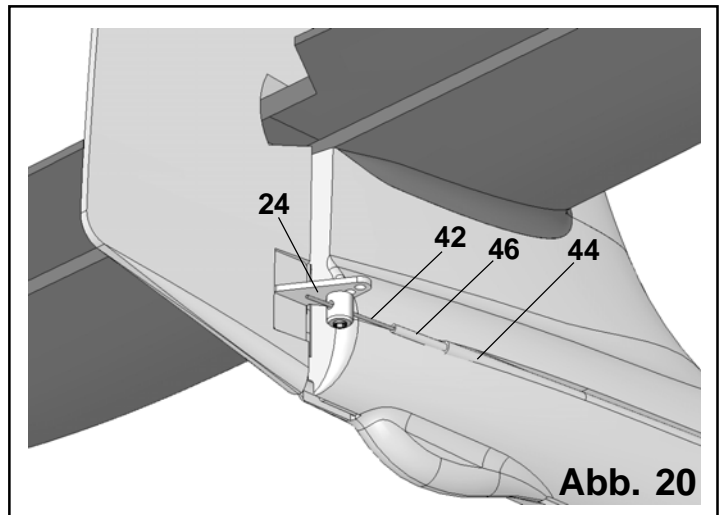


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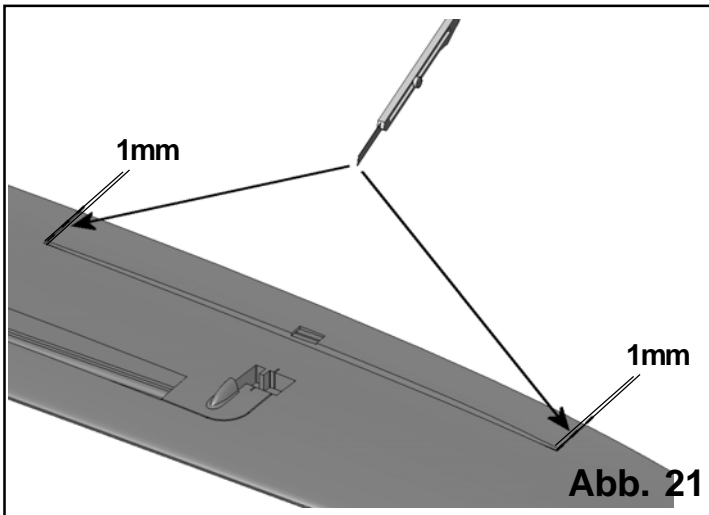


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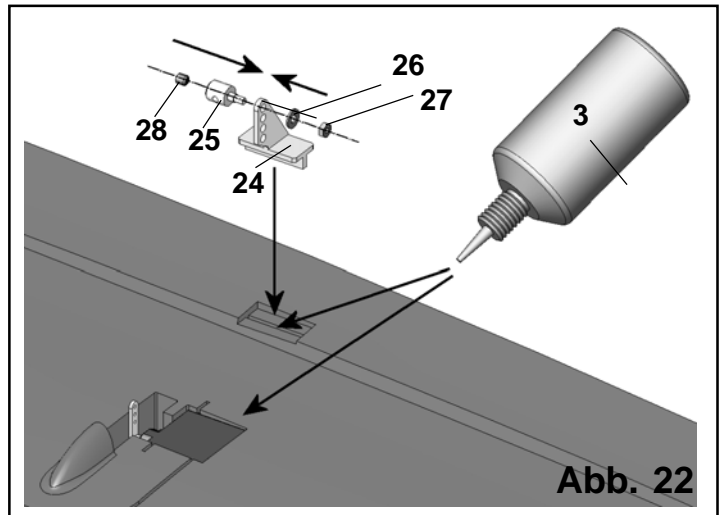


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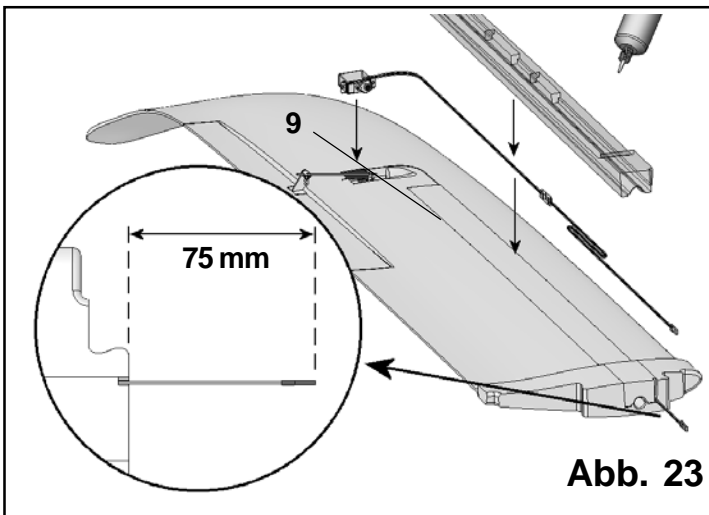


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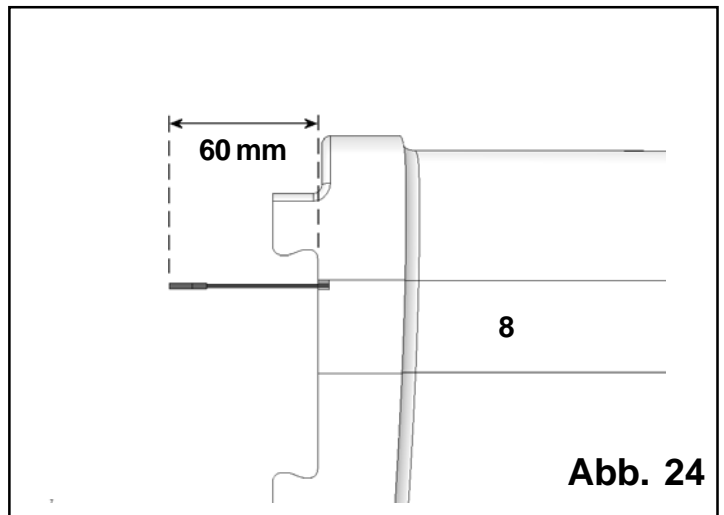


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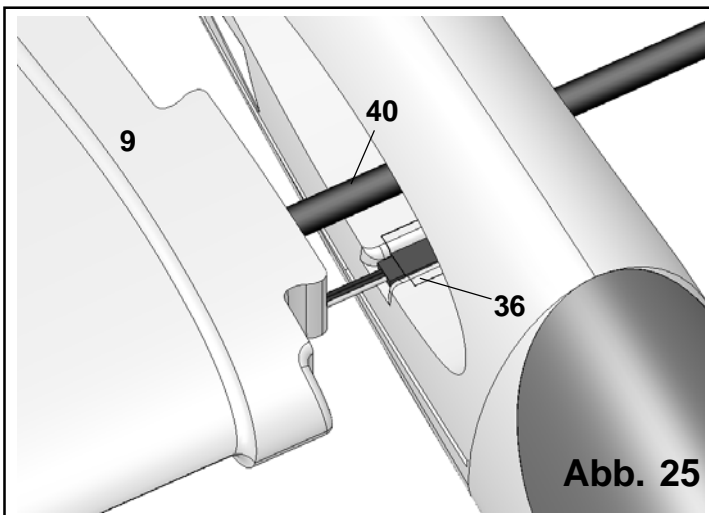


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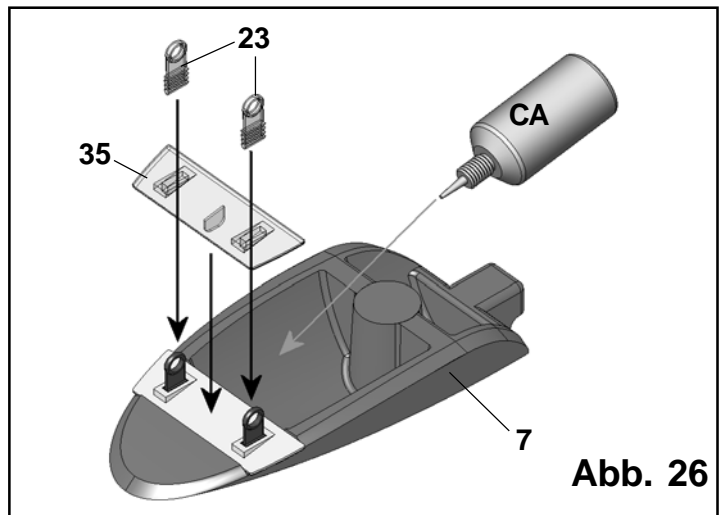
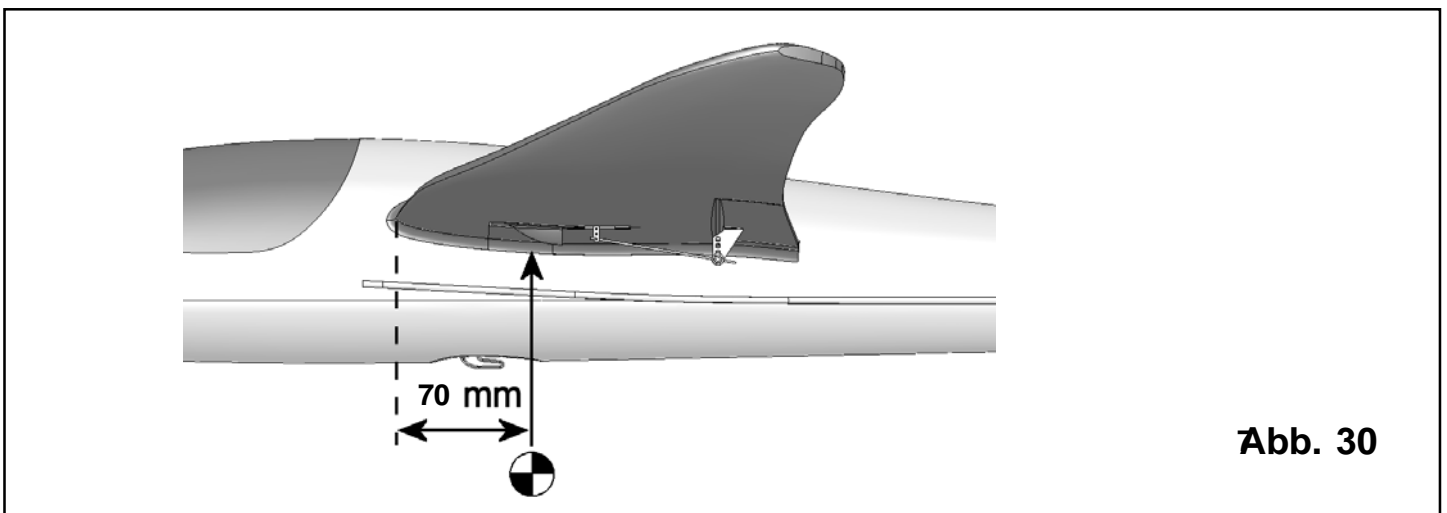
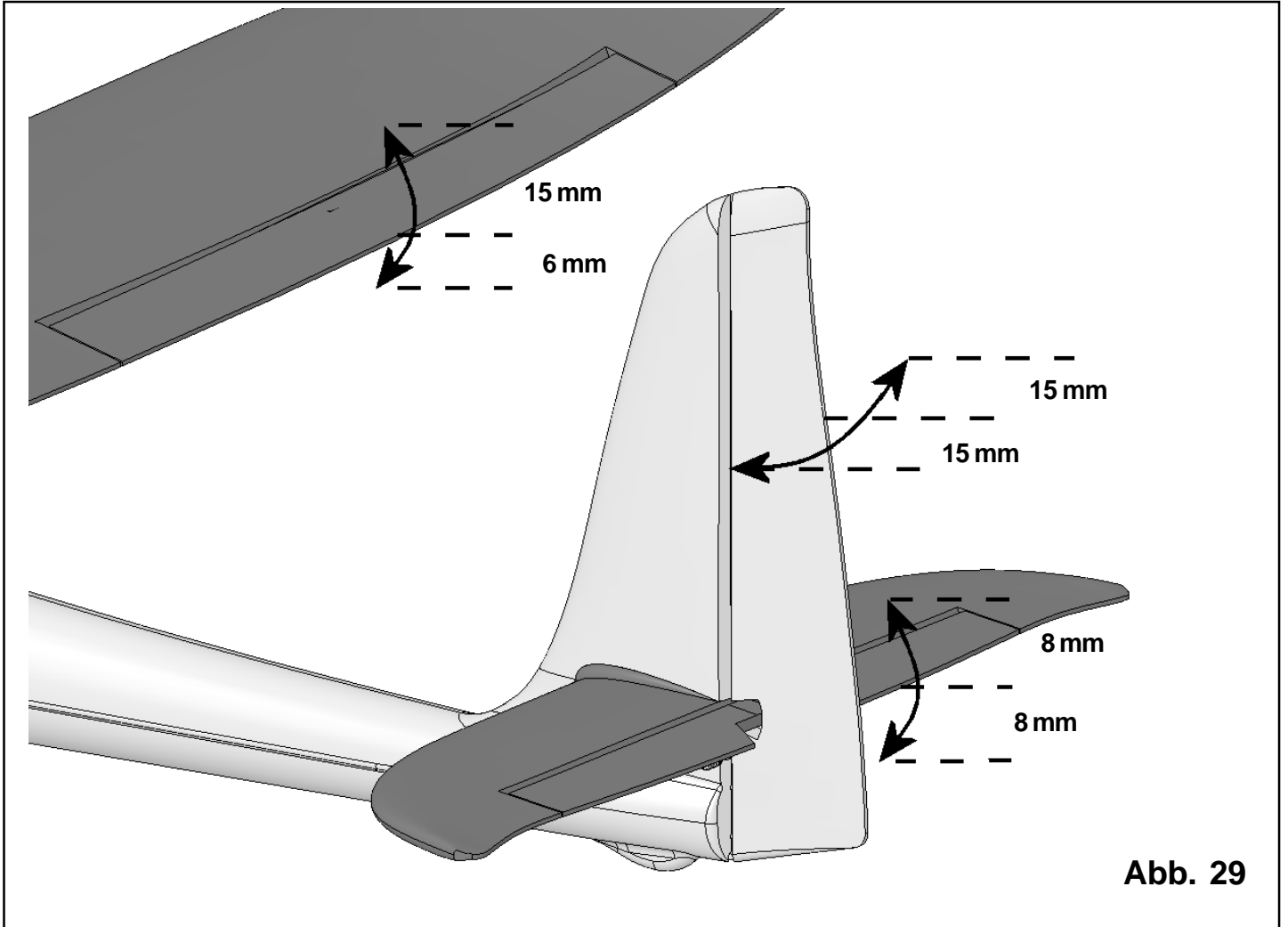
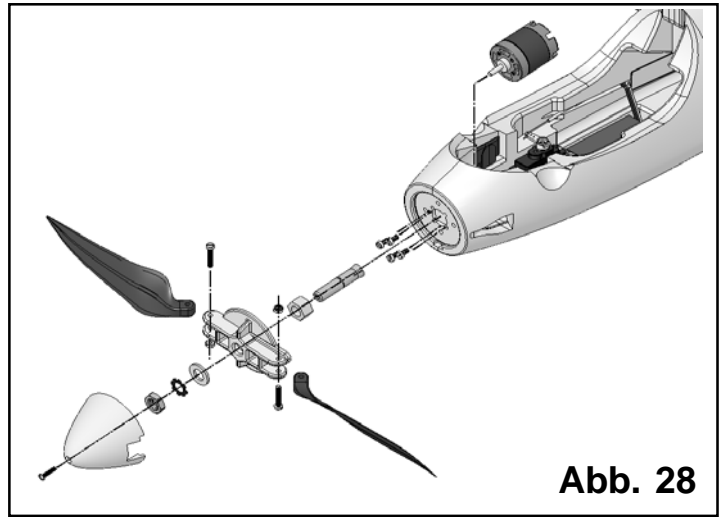
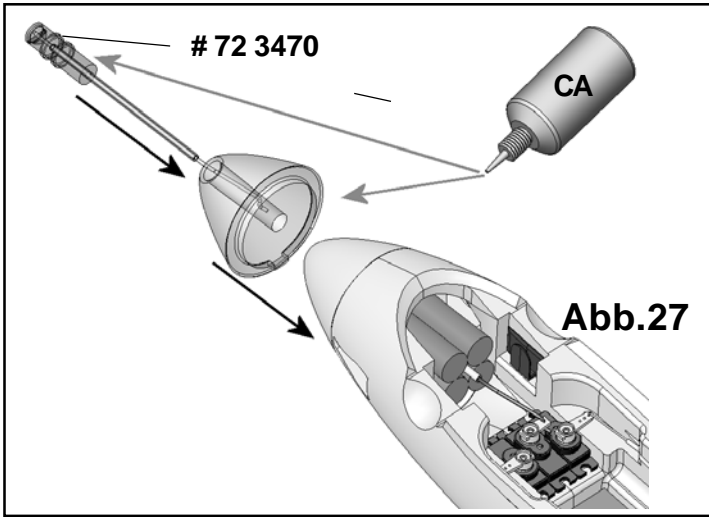


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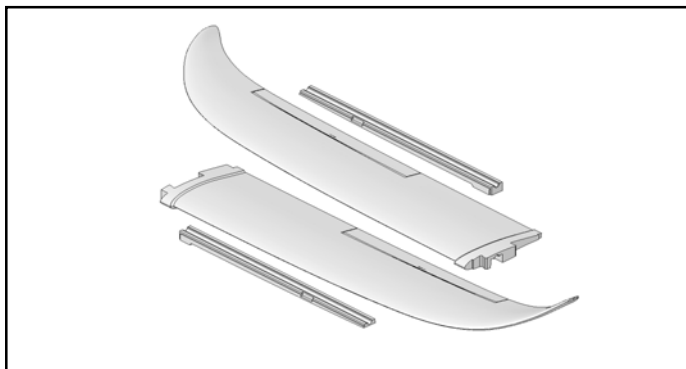
Ersatzteile
Replacement parts
Pièces de rechanges
Parti di ricambio
Repuestos

EasyGlider PRO

(bitte bei Ihrem Fachhändler bestellen)
(please order from your model shop)
(S.V.P. à ne commander que chez votre revendeur)
(da ordinare presso il rivenditore)
(por favor, dirijase a su distribuidor)

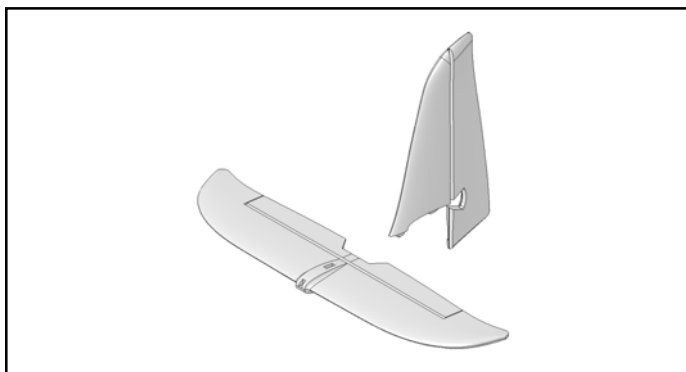
22 4159

Tragflächen
Wing panels
Ailes
Ali
Alas



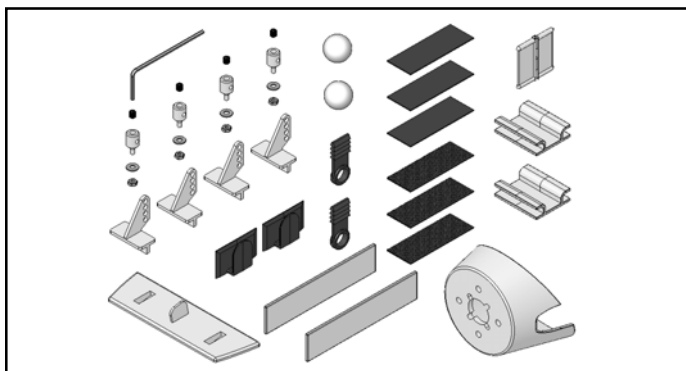
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Leitwerkssatz
Tail set
Kit de gouvernes
Piani di coda
Timones



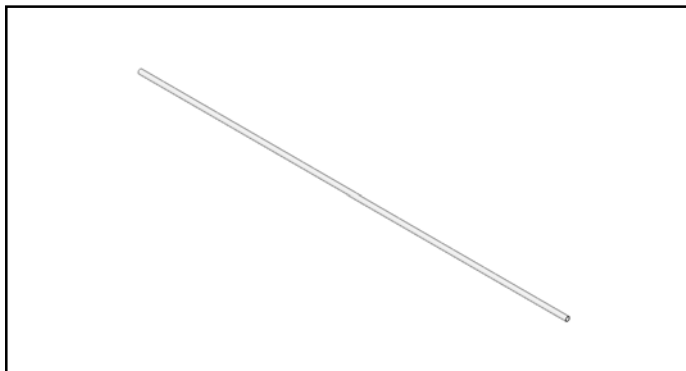
22 4152

Kleinteilesatz
Small items set
Petit nécessaire
Minuteria
Piezas pequeñas



72 3190

Holmverbinder
Wing joiner
Clé d'aile
Baionetta
Larguero (bayoneta)



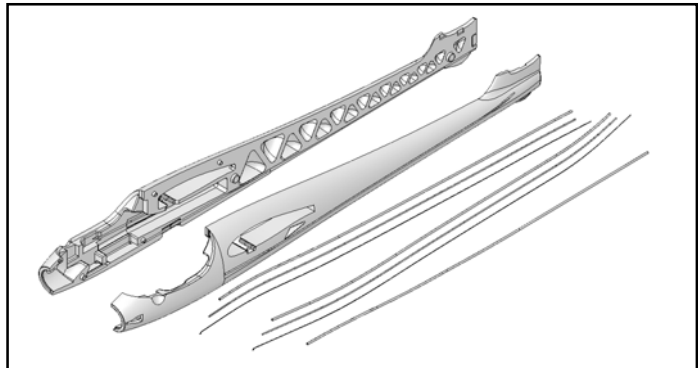
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22 4150

Rumpfhälften + Bowdenzüge
Fuselage shells + snakes
Moitié de fuselage + tringlerie
Semigusci fusoliera + bowden
Fuselaje + transmisiones bowden



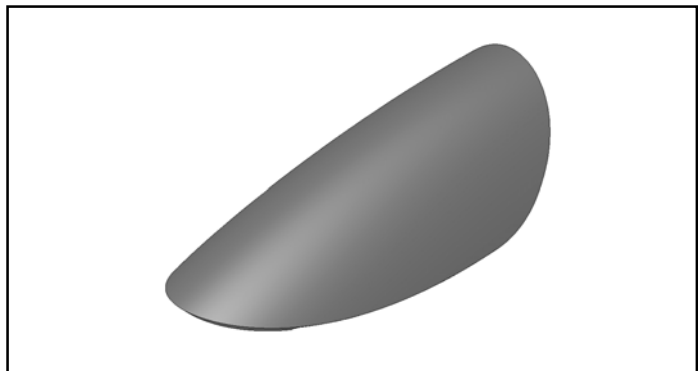
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Dekorbogen
Decal sheet
Planche de décoration
Decals
Lámina decorativa



22 4151

Kabinenhaube
Canopy
Verrière
Capottina
Cabina



72 5136

Canopy-Lock
Kabinen-
haubenverschluss
fermeture de verrière
chiusura capottina
Cierre de cabina

