

MENTOR



Baukasten / kit # 21 4228

MULTIPLEX[®]

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D Sicherheitshinweise

Prüfen Sie vor jedem Start den festen Sitz des Motors und der Luftschraube - insbesondere nach dem Transport, härteren Landungen sowie Abstürzen. Prüfen Sie ebenfalls vor jedem Start den festen Sitz und die richtige Position der Tragflächen auf dem Rumpf.

Akku erst einstecken, wenn Ihr Sender eingeschaltet ist und Sie sicher sind, daß das Bedienelement für die Motorsteuerung auf "AUS" steht.

Im startbereiten Zustand nicht in den Bereich der Luftschraube greifen.
Vorsicht in der Luftschraubendrehebene - auch Zuschauer zur Seite bitten!

Zwischen den Flügeln die Motortemperatur durch vorsichtige Fingerprobe prüfen und vor einem Neustart den Motor ausreichend abkühlen lassen. Die Temperatur ist richtig, wenn Sie den Motor problemlos berühren können. Insbesondere bei hohen Außentemperaturen kann dieses bis zu 15 Minuten dauern.

Denken Sie immer daran: Niemals auf Personen und Tiere zufliegen.

F Conseils de sécurité

Avant chaque décollage, vérifiez la fixation du moteur et de l'hélice, notamment après le transport, après les atterrissages violents et après un "Crash". Vérifiez également, avant chaque décollage la fixation ainsi que le positionnement de l'aile par rapport au fuselage.

Ne branchez l'accu de propulsion que si vous êtes sûr que votre émetteur est allumé et que l'élément de commande moteur est en position "ARRET".

Ne mettez pas vos doigts dans l'hélice! Attention à la mise en marche, demandez également aux spectateurs de reculer.

Entre deux vols, vérifiez en posant un doigt dessus, la température du moteur, laissezle refroidir suffisamment avant le prochain décollage. La température est correcte si vous pouvez maintenir votre doigt ou votre main sur le moteur. Le temps de refroidissement peut varier jusqu'à 15 minutes s'il fait particulièrement chaud.

Pensez-y toujours: ne volez jamais vers ou au-dessus des personnes ou des animaux.

GB Safety notes

Before every flight check that the motor and propeller are in place and secure - especially after transporting the model, and after hard landings and crashes. Check also that the wing is correctly located and firmly secured on the fuselage before each flight.

Don't plug in the battery until you have switched on the transmitter, and you are sure that the motor control on the transmitter is set to "OFF".

When the model is switched on, ready to fly, take care not to touch the propeller. Keep well clear of the propeller disc too, and ask spectators to stay back.

Allow the motor to cool down after each flight. You can check this by carefully touching the motor case with your finger. The temperature is correct when you can hold your finger on the case without any problem. On hot days this may take up to 15 minutes.

Please keep in mind at all times: don't fly towards people or animals.

I Note di sicurezza

Prima di ogni decollo controllare che il motore e la eliche siano fissati stabilmente - specialmente dopo il trasporto, atterraggi duri e se il modello è precipitato. Controllare prima del decollo anche il fissaggio e la posizione corretta delle ali sulla fusoliera.

Collegare la batteria solo quando la radio è inserita ed il comando del motore è sicuramente in posizione "SPENTO".

Prima del decollo non avvicinarsi al campo di rotazione della eliche. Attenzione alla eliche in movimento - pregare che eventuali spettatori si portino alla dovuta distanza di sicurezza!

Tra un volo e l'altro controllare cautamente con le dita la temperatura del motore e farli raffreddare sufficientemente prima di ogni nuovo decollo. La temperatura è giusta se si possono toccare senza problemi. Specialmente con una temperatura esterna alta questo può durare fino a 15 minuti.

Fare attenzione: Non volare mai nella direzione di persone ed animali.

E Advertencias de seguridad

Compruebe antes de cada despegue que el motor y la hélice estén fuertemente sujetados, sobretodo después de haberlo transportado, de aterrizajes más fuertes así como después de una caída. Compruebe igualmente antes de cada despegue que las alas estén bien sujetas y bien colocadas en el fuselaje.

Conectar la batería, cuando la emisora esté encendida y Usted esté seguro que el elemento de mando para el motor esté en "OFF".

No meter la mano en la zona inmediata a la hélice cuando el avión esté a punto de despegar. ¡Cuidado con la zona de la hélice! ¡Pedir a los espectadores que se aparten!

Entre los vuelos hay que comprobar cuidadosamente la temperatura del motor con el dedo y dejar que el motor se enfríe antes de volver a despegar. La temperatura es correcta, si puede tocar el motor sin problemas. Sobretodo en el caso de temperaturas del ambiente muy altas, esto puede tardar unos 15 minutos.

Recuerde: No volar nunca hacia personas o animales.

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 **before** you start construction, referring to the Parts List, as **we cannot exchange components which you have already modified**. If you find any part is not acceptable for any reason, we will readily correct or exchange it once we have examined the faulty component. Just send the component to our Model Department. Please be **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 MENTOR:

Receiving system components in the model

| | | |
|--|------------------|-------------------------|
| MULTIPLEX <i>RX-7-Synth IPD</i> receiver | 35 MHz A-band | Order No. 5 5880 |
| alternatively: | 40 / 41 MHz band | Order No. 5 5882 |
| or MULTIPLEX <i>RX-9 Synth DS IPD</i> receiver | 35 MHz A-band | Order No. 5 5885 |

| | |
|--|-------------------------|
| 2 x MULTIPLEX <i>Mini HD servo</i> (elevator / rudder) | Order No. 6 5123 |
| 2 x MULTIPLEX <i>Tiny MG servo</i> (ailerons) | Order No. 6 5122 |
| 1 x MULTIPLEX <i>Tiny MG servo</i> (aero-tow release) | Order No. 6 5122 |

Power set:

| | |
|---|--------------------------|
| MULTIPLEX <i>Magister / Mentor power set</i> | Order No. 33 2632 |
| Motor: Himax C 3528-1000, speed controller: CC PHOENIX 45, propeller: 11 x 5.5", driver and spinner | |

Flight battery:

| | |
|---|--------------------------|
| MULTIPLEX Li-Batt BX 3/1-3200 flight battery | Order No. 15 7136 |
| or MULTIPLEX Li-Batt BX 3/1-4800 flight battery | Order No. 15 7150 |

Tools:

Scissors, balsa knife, combination pliers, screwdriver.

Specification:

| | |
|--|--|
| Wingspan | 1630 mm |
| Fuselage length | 1170 mm |
| All-up weight with Li-Batt BX 3/1-3200 | approx. 2000 g |
| Wing area | approx. 45 dm ² |
| Wing loading (FAI) | approx. 44.5 g / dm ² |
| RC functions | Aileron, elevator, rudder and motor; optional aero-tow release |

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

Important note

This model is not made of styrofoam™, and it is not possible to glue the material using white glue, polyurethane or epoxy; these adhesives only produce a superficial bond which gives way when stressed. Please use medium-viscosity cyano-acrylate glue exclusively, preferably our Zacki-ELAPOR®, # 59 2727 - the cyano glue optimised specifically for ELAPOR® particle foam.

If you use Zacki-ELAPOR® you will find that you do not need cyano kicker or activator for most joints. However, if you wish to use a different adhesive, and are therefore obliged to use kicker / activator spray, we recommend that you apply the material in the open air to avoid health problems.

Please take care when handling cyano-acrylate adhesives. These materials harden in seconds, so you should avoid getting 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 assembling the model

Check the contents of your kit.

You will find **Figs. 1 + 2** and the Parts List helpful here.

2. The fuselage

The first step is to glue the canopy latches **22** and the motor mounts **35** to both fuselage shells, fitting the fore-and-aft motor mount supports **42** at the same time.

Fig. 3

3. Servo installation

Trial-fit the rudder and elevator servos in the fuselage shells **3 + 4**, then secure them with a drop of glue applied to the servo mounting lugs. Fix the servo leads to the fuselage sides using paper masking tape, so that the wires and connectors cannot cause damage, and do not get in the way when the fuselage shells are joined later.

Fig. 4

4. Snakes

Prepare the control “snakes” **53 - 54** as follows: cut the outer and inner tubes to length if necessary, slip the inners inside the outers and insert the steel pushrods **51 - 52**. Connect the pushrods to the servos, position the snakes in the channels as shown, and glue them in place. Hold the fuselage shells on a flat surface so that they cannot distort.

Figs. 5 + 6

5. Wing screw supports

Clip the wing screw supports **33 + 34** together, and apply glue to the joints; you may need to use combination pliers for this. Insert the prepared wing screw supports in the right-hand fuselage shell, and glue them in place.

Fig. 7

6. Installing the aero-tow mechanism

Glue the aero-tow mechanism **40** in the channel in the fuselage insert **5** using cyano.

If you don't wish to install the aero-tow mechanism until later, you must take care not to allow glue to get onto the fuselage insert **5** when you join the fuselage shells. To fit the aero-tow servo subsequently, slide a balsa knife down the sides of the insert and cut through the lateral locating pieces; the insert can then be removed upwards, allowing you to install the aero-tow mechanism and release servo.

To operate the aero-tow mechanism you will need one additional Tiny-S servo; the servo can be installed now, or at any subsequent time.

Locate the aero-tow release pushrod **41** (1 mm Ø spring steel wire), and connect the Z-bend to the innermost hole in the servo output arm. Slide the servo into the recess in the fuselage insert.

Set the servo to the “closed” end-point, and shorten the pushrod where it projects out of the tow mechanism; round off the cut end using fine abrasive paper.

Fit the fuselage insert **5** in the left-hand fuselage shell **3**, and glue it in place.

Figs. 8 + 9

7. Joining the fuselage shells

Place one of the flat undercarriage supports **67** in the right-hand fuselage shell, and offer up the shells to each other “dry” (no glue). When you are sure that everything fits accurately, the shells can be glued together. Check that the fuselage remains perfectly straight while the glue is curing.

Figs. 10 + 11

8. Tailwheel unit

Assemble the tailwheel unit as follows: fit the 26 mm Ø wheel **72** and two collets **73** on the steel wire tailwheel axle **71**, and secure the collets using the socket-head grub screws **74** (M3 x 3 mm).

The tailwheel axle is attached to the tailwheel unit **70** using two more collets **73**. Please note: fit the upper collet without its grub screw initially, then set the tailwheel steering lever **76** to the correct position when viewed from above. With all the parts aligned correctly, tighten the long grub screw **75** through the slot in the tailwheel steering lever **76** to connect all the parts. Fit the swivel pushrod connector **77** in the hole in the tailwheel steering lever **76**, and secure it with the washer **78** and the nut **79**. Secure the nut with a tiny drop of cyano.

Fig. 12

9. Main undercarriage

The first step here is to attach the wheels and axles to the aluminium main undercarriage unit.

Fit the following parts loosely onto the M4 socket-head screw **62**: the washer **65**, the lightweight wheel **61**, a second washer **65** and the nut **63**. Now locate the wheel axle holes in the main undercarriage unit **60** and insert this assembly into one hole; secure it with the self-locking nut **64**, and tighten the locknut **63** on the other side. Repeat the procedure with the second wheel.

Fig. 13

10. Installing the main undercarriage

The “undercarriage support with nut sockets” **66** can now be installed in the fuselage. Position the second flat undercarriage support **67** on the underside of the fuselage. The main undercarriage unit **60** should now be attached to the fuselage using the four M3 screws **68**, which pass through parts **67** and are secured to the undercarriage support **66** using the four nuts **69**.

Fig. 14

11. Releasing the ailerons and rudder

The control surfaces are supplied still attached to the wing panels **7 + 8** and the tailplane **12** by means of one or two small recessed lugs. The particle foam itself acts as the hinge - no additional hinge tape or similar is necessary. Remove the lugs by making two parallel cuts spaced about 1 mm apart using a balsa knife. Flex the control surfaces repeatedly up and down in order to free up the hinge. **Caution:** take care not to separate the control surfaces from the wing or tailplane at the hinge axis.

You may find that odd foam particles are missing along the hinge line; this is of no consequence, and is not grounds for complaint.

Fig. 15

12. Preparing the swivel pushrod connectors

Fit the elevator and rudder pushrod connectors **25** in the outermost hole of the horns **24** and secure them with the washers **26** and nuts **27**. **Caution:** note the correct orientation of the connectors. Tighten the nuts carefully, ensure that the connectors swivel smoothly, then apply a tiny drop of cyano (on a pin) to prevent them shaking loose. Fit the socket-head grub screws **28** in the pushrod connectors **25** using the allen key **29**.

Figs. 16 + 17

Fit the pushrod connectors **25** in the second hole from the outside of the aileron horns **24** and prepare them as described above. **Caution:** 1 x left, 1 x right.

Glue the prepared horns **24** in the horn recesses in the elevator **11** and rudder **12** using cyano; note that the row of holes must face the hinge line. **Caution:** check that the horns are the right way round.

Figs. 18

13. Attaching the tail panels

Glue the fin **12** in the recess in the fuselage, taking care to set it exactly at 90° to the wing and tailplane saddles. Check first, and trim if necessary.

Fig. 19

Place the tailplane **11** on the fuselage from the underside, check alignment carefully, and glue it in place. It must be at 90° to the fin, and parallel to the wing saddle.

Fig. 20

14. Installing the tailwheel unit

Glue the prepared tailwheel unit **70** in the appropriate channel in the tailplane using plenty of cyano.

Fig. 21

15. Connecting the tail pushrods

Slip the pushrod ends through the swivel pushrod connectors **25**, centre the control surfaces and the tailwheel, and tighten the grub screws **28** to secure the pushrods.

16. Completing the wings

Remove any rough edges from the spar covers **9 / 10**, then carefully glue them in the wing panels **7** and **8**, applying glue to the bottom and both sides. Take particular care to keep the glue away from the surfaces into which the tubular spar **50** will be fitted later. The next step is to check that the joiner tube **50** fits, but do not attempt this until you are sure that there is no active adhesive inside the socket. If you neglect this, you may find that the wings can never be separated again!

Fig. 22

17. Installing the aileron servos

The aileron servos are installed in the recesses in the wing panels **7 + 8**, which are designed to accept Tiny S or HS 81 servos. Apply adhesive only to the servo mounting lugs (in case the servos have to be replaced at any time). Deploy the servo leads in the appropriate channels, and connect them to the extension leads. You will need to cut small voids to house the connectors. Connect the pre-formed end of the aileron pushrods **30** to the servo output arms, and connect the plain end to the swivel connectors on the aileron horns as shown.

Fig. 23

18. Checking the wing joiner system

Join the wing panels temporarily using the tubular wing spar **50**. Trim the parts if necessary to obtain a close fit.

Attach the wing to the fuselage using the screws **32** and the wing retainer straps **31**, and carry out any minor adjustments required.

Screw the wing to the fuselage again and check that everything fits properly. Any trimming required should be completed at this stage.

Figs. 24 + 25

19. Gluing the canopy latch tongues in place

The canopy **6** is fitted on the fuselage by first sliding it towards the wing, then folding it down at the front.

Temporarily insert the two latch tongues **23**, position them carefully, and check that they fit correctly. Apply thick cyano to the patterned surface, then push the latch lugs into the slots in

the canopy. Place the canopy on the model, allow the latch tongues to engage in the latches **22**, then immediately move the canopy to exactly the right position. Wait for about one minute for the glue to set, then carefully raise the canopy again and lift it off. Apply more adhesive round the latch tongues if necessary.

Fig. 26

20. Installing the flight battery, receiver and receiver battery

The flight battery is housed in the compartment under the wing, extending forward under the canopy, while the receiver should be attached to the fuselage side next to the battery. When installing these components please bear the stated Centre of Gravity in mind. Stick the Velcro tape (mushroom side) **20** to the inside of the fuselage bottom. Please note that the adhesive on the Velcro tape is not strong enough for this application, so it should be glued in place with cyano.

The final position of the flight battery is determined when you balance the finished model; it should then be marked inside the fuselage.

As the model is fitted with five servos, the speed controller's BEC system is generally not capable of supplying the current required. For this reason the model is designed for a separate receiver battery. The location of this battery and the associated switch harness is left up to the builder, and will vary according to the model's Centre of Gravity.

Fig. 27

21. Power set:

The model is designed to be fitted with the MULTIPLEX *Magister / Mentor power set*, Order No. **33 2632**.

The set contains the following items: Himax C 3528-1000 motor, CC PHOENIX 45 speed controller, 11 x 5.5" propeller, driver and spinner.

Fig. 28

22. Attaching the motor bulkhead to the motor mount

Motor sidethrust and downthrust can be adjusted using the motor mounts **35** (already fitted) and the motor bulkhead **36**. Tightening the four adjustor screws **37** flush with the bulkhead automatically sets an asymmetrical motor thrustline of 2.5° right sidethrust and no downthrust.

We recommend that you prepare the motor mount system as follows: tighten the screws **38** and the adjustor screws **37** before you install the bulkhead, so that the screws cut their own threads in the holes. If you own an M3 tap, it is a good idea to run it through the holes to cut clean threads. It is also a good idea to open up the through-holes in the motor bulkhead **36** to 4 mm Ø, in order to create slightly more space for the screws **38**.

Bearing in mind that we are looking at the motor bulkhead from the rear (!), we suggest the following screw settings as the initial set-up:

| | |
|----------------------------|------------------------------|
| Left upper adjustor screw | 3.5 mm = approx. seven turns |
| Right upper adjustor screw | 3.5 mm = approx. seven turns |
| Left lower adjustor screw | 1.5 mm = approx. three turns |
| Right lower adjustor screw | 1.5 mm = approx. three turns |

Since the lower adjustor screws initially project into the motor mount guides, these must be left proud by 1.5 mm, as stated above. The 2 mm difference between the upper and lower screw settings produces the actual downthrust.

Fig. 29

Check that the screws project by the stated amounts. You may well have to carry out minor thrustline adjustments during the test-flying procedure.

23. Installing the motor

Install the motor and the motor bulkhead **36** in such a way that the end of the shaft extends about 10 mm beyond the front face of the motor bulkhead. You may need to use packing pieces to achieve this.

Fig. 30

Fitting the spinner: the spinner cone is a snap-fit on the spinner mount **13**, which is attached to the propeller driver. Position the speed controller as close as possible to the motor, and fix it to the fuselage side using Velcro tape.

Complete all the electrical connections as described in the instructions supplied with your radio control system.

Do not connect the flight battery to the speed controller until you have switched the transmitter on, and ensured that the throttle stick (or other throttle control) is at the motor "OFF" position.

Connect the servo plugs to the receiver. Switch the transmitter on, then connect the flight battery in the model to the speed controller, and the controller to the receiver. If the controller features a BEC circuit, this must be disabled by isolating the red (+) wire in the receiver connector.

Now switch the motor on briefly and check the direction of rotation of the propeller once more. Whenever you are test-running the motor, remove all loose lightweight objects around the model (both behind and in front of it), and hold the model firmly. If the propeller spins in the wrong direction, swap over two of the motor leads. Never swap over the battery leads!

Caution: keep well clear of the propeller, as it is capable of inflicting serious injury!

24. Deploying the aerial on the underside of the fuselage

The receiver aerial should be threaded through a hole in the underside of the fuselage, then deployed aft in the direction of the tailplane.

This is done by piercing a tunnel from the inside of the fuselage to the outside, threading the aerial through it and taping it full-length to the fuselage. If the aerial is longer than the fuselage, allow the excess wire length to trail freely.

25. Setting the control surface travels

The control surface travels must be set correctly to ensure that the model has harmonious, well-balanced control response:

Elevator

| | |
|----------------------|-------|
| up (stick back) | 15 mm |
| down (stick forward) | 12 mm |

Rudder: left and right each 15 mm

Ailerons (opposite directions)

| | |
|------|-------|
| up | 15 mm |
| down | 7 mm |

For a right-hand turn the right aileron (as seen from behind the model) must deflect up. The "down" travel is not critical, and should be correct automatically.

Always measure the control surface travels at the widest part of the surface.

If your radio control system does not allow you to set these precise travels, don't worry, as they are not crucial. If the discrepancy is large, you may have to re-position the appropriate pushrod connector by mounting it in a different hole in the horn.

26. Gilding the lily - applying the decals

The kit is supplied with a multi-colour decal sheet **2**. Cut out

the individual name placards and emblems and apply them to the model in the position shown in the kit box illustration, or in an arrangement which you find pleasing. The decals adhere strongly, so make sure they are positioned correctly first time!

27. Balancing

Like any other aircraft, the Mentor must be balanced at a particular point in order to achieve stable flying characteristics. Assemble your model ready to fly, and install the flight battery.

The Centre of Gravity (CG) should be at a position about 85 mm aft of the root leading edge, i.e. at the fuselage sides. Mark this point on both sides of the fuselage.

Support the model at this position on two fingertips, and it should balance level. If not, you can move the flight battery forward or aft to correct the balance point. Once the correct position is found, mark the location of the flight pack inside the model to ensure that it is always replaced in the same position. The CG location is not critical - 10 mm forward or aft of the stated position presents no problems.

Fig. 31

28. 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.

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 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 transmitter 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, while 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. There should only be 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 ...

The Mentor should always be launched exactly into any wind.

If you are a beginner to model flying we strongly recommend that you ask an experienced model pilot to help you for the first few flights.

29. Taking off from a hard strip

If you have access to a hard landing strip, a ground take-off is the safest option.

Apply full up-elevator initially, and hold it on all the time the model is on the ground. Point the aircraft directly into wind and open the throttle gradually so that it accelerates. Keep the model on track using the tailwheel / rudder. Apply full-throttle to continue

accelerating, gradually returning the elevator stick to neutral. The tail will now rise; when the model reaches flying speed apply gentle but deliberate up-elevator to lift off. Allow the aeroplane to climb at a steady, fairly shallow angle, taking care to keep the airspeed up!

From a closely mown grass strip a ground take-off works just like on a hard strip, but the ground-roll will be longer. If you do not have access to a take-off strip, a hand-launch works fine.

Caution: if your assistant is an experienced hand-launcher then you can be confident of success; if not, watch out!

30. Hand-launching

Please don't try unpowered test-glides with this model - the result is invariably a damaged airframe. The Mentor should always be hand-launched with the motor running at full-throttle, and always pointing directly into wind.

Ask an experienced modeller to hand-launch your aircraft for you: he should run forward for two or three paces, then give the machine a powerful straight launch, with the wings and fuselage level. Use the controls to hold the model in a steady, gentle climb - remember to keep the rate of ascent shallow and the airspeed high!

Allow the aeroplane to climb to a safe height, then adjust the trims on the transmitter until it flies in a perfectly straight line "hands off".

While the model is still at a safe altitude, throttle back and try out the controls on the glide. Carry out a "dry run" landing approach at a safe height so that you are prepared for the real landing when the battery runs flat.

Don't try any tight turns at first, and especially not on the landing approach at low altitude. It is always better to land safely at some distance from you, than to force the model back to your feet and risk a heavy landing.

31. 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 you are using. Make use of all sensible safety systems 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.

We - the MULTIPLEX team - hope you have many hours of pleasure building and flying your new model.

MULTIPLEX Modellsport GmbH & Co. KG
Product development and maintenance



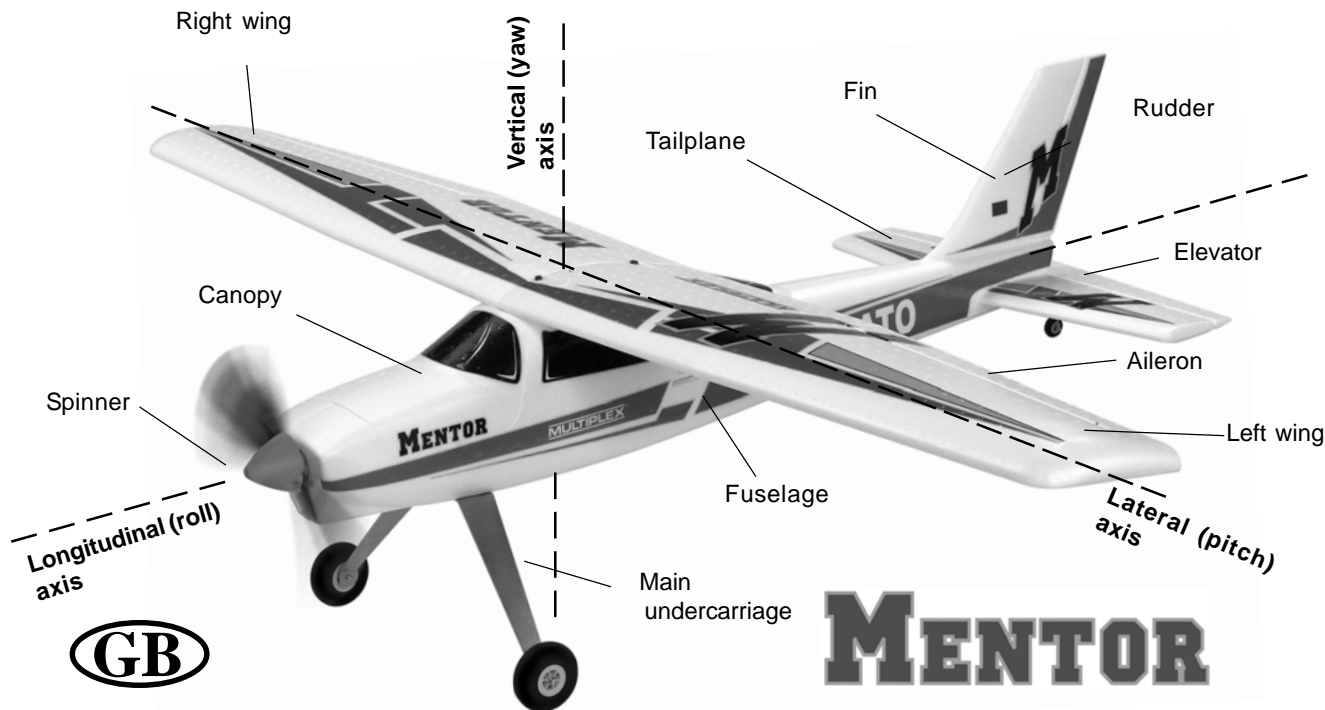
Klaus Michler

Mentor KIT

| Part No. | Description | Material | Dimensions | |
|--------------------------|-------------|---|----------------------------|---------------------|
| No. off | | | | |
| 1 | 1 | Building instructions | Paper, 80 g/m ² | A4 |
| 2 | 1 | Decal set | Printed adhesive film | 700 x 1000 mm |
| 3 | 1 | L.H. fuselage shell | Moulded Elapor foam | Ready made |
| 4 | 1 | R.H. fuselage shell | Moulded Elapor foam | Ready made |
| 5 | 1 | Fuselage insert, aero-tow mechanism | Moulded Elapor foam | Ready made |
| 6 | 1 | Canopy | Moulded Elapor foam | Ready made |
| 7 | 1 | L.H. wing panel | Moulded Elapor foam | Ready made |
| 8 | 1 | R.H. wing panel | Moulded Elapor foam | Ready made |
| 9 | 1 | L.H. wing spar cover | Moulded Elapor foam | Ready made |
| 10 | 1 | R.H. wing spar cover | Moulded Elapor foam | Ready made |
| 11 | 1 | Tailplane | Moulded Elapor foam | Ready made |
| 12 | 1 | Fin | Moulded Elapor foam | Ready made |
| 13 | 1 | Spinner | Moulded Elapor foam | Ready made |
| 60 | 1 | Main undercarriage unit | Aluminium | Ready made |
| Small items | | | | |
| 20 | 3 | Velcro tape, "mushroom" | Plastic | 25 x 60 mm |
| 21 | 3 | Velcro tape, "felt" | Plastic | 25 x 60 mm |
| 22 | 2 | Canopy latch | Inj. moulded plastic | Ready made |
| 23 | 2 | Canopy latch 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 | Socket-head grub screw | Metal | M3 x 3 mm |
| 29 | 1 | Allen key | Metal | 1.5 mm A/F |
| 30 | 2 | Aileron pushrod, one Z-bend | Metal | 1 Ø x 80 mm |
| 31 | 2 | Wing retainer strap | Inj. moulded plastic | Ready made |
| 32 | 4 | Wing retainer screw | Plastic | M5 x 60 mm |
| 33 | 2 | Wing screw support A | Inj. moulded plastic | Ready made, M5 |
| 34 | 2 | Wing screw support B | Inj. moulded plastic | Ready made, M5 |
| 35 | 2 | Motor mount | Inj. moulded plastic | Ready made |
| 36 | 1 | Motor bulkhead | Inj. moulded plastic | Ready made |
| 37 | 4 | Motor bulkhead adjustor screw | Metal | M3 x 10 mm |
| 38 | 2 | Motor bulkhead adjustor screw | Metal | M3 x 16 mm |
| 39 | 1 | Spinner mount | Inj. moulded plastic | Ready made |
| 40 | 1 | Aero-tow mechanism | Inj. moulded plastic | Ready made |
| 41 | 1 | Aero-tow release pushrod, one Z-bend | Metal | 1 Ø x 80 mm |
| 42 | 2 | Fore-and-aft motor support | Rectangular plastic tube | 10 x 20 x 200 mm |
| Wire and rod | | | | |
| 50 | 1 | Tubular wing spar | CFRP tube | 10 Ø x 8 Ø x 800 mm |
| 51 | 2 | Pre-formed pushrod, elevator / rudder | Metal | 0.8 Ø x 492 mm |
| 52 | 1 | Tailwheel pushrod | Metal | 1.3 Ø x 530 mm |
| 53 | 3 | Snake outer sleeve, ele. / rud. / tailwheel | Plastic | 3 Ø x 2 Ø x 408 mm |
| 54 | 2 | Snake inner tube, elevator / rudder | Plastic | 2 Ø x 1 Ø x 450 mm |
| Undercarriage set | | | | |
| 61 | 2 | Lightweight wheel | Plastic | 73 Ø, 4 mm hub bore |
| 62 | 2 | Socket-head screw | Metal | M4 x 35 mm |
| 63 | 2 | Nut | Metal | M4 |
| 64 | 2 | Self-locking nut | Metal | M4 |
| 65 | 4 | Washer | Metal | M4 |
| 66 | 1 | Undercarriage support with nut sockets | Inj. moulded plastic | Ready made |
| 67 | 2 | Flat undercarriage support | Inj. moulded plastic | Ready made |
| 68 | 4 | Screw | Metal | M3 x 45 mm |
| 69 | 4 | Nut | Metal | M3 |
| 70 | 1 | Tailwheel unit | Inj. moulded plastic | Ready made |
| 71 | 1 | Tailwheel axle | Metal | 1.6 mm Ø |
| 72 | 1 | Lightweight tailwheel | Foam rubber | 26 mm Ø |
| 73 | 4 | Collet | Metal | 2.2 Ø x 7 Ø x 5 mm |
| 74 | 4 | Socket-head grub screw | Metal | M3 x 3 mm |
| 75 | 1 | Socket-head grub screw | Metal | M3 x 5 mm |
| 76 | 1 | Tailwheel steering lever | Inj. moulded plastic | Ready made |
| 77 | 1 | Swivel pushrod connector | Metal | Ready made, 6 mm Ø |
| 78 | 1 | Washer | Metal | M2 |
| 79 | 1 | Nut | Metal | M2 |

The basics of flying - using a model aircraft as an example

Any aircraft - full-size or model - can be controlled around three primary axes: the vertical (yaw) axis, the lateral (pitch) axis and the longitudinal (roll) axis. Operating the elevator produces a change in the model's flight attitude around the lateral axis (nose up or down). External influences such as air turbulence constantly tend to divert the model from its intended flight path, and it is the pilot's job to control the model actively in such a way that it flies where he or she wants it to. The aircraft's altitude is controlled using the power system (motor and propeller). In our models the rotational speed of the propeller is usually controlled proportionally by means of an electronic speed controller. Although applying up-elevator will make the model climb, it is important to understand that it will also make it slow down, i.e. the aircraft will only continue to climb until its airspeed falls to the minimum flying speed (stall speed). Opening the throttle (increasing power) will enable the model to continue climbing, i.e. the power of the motor dictates the maximum climb angle.



The wing secti

The wing features a cambered cross-section (known as an airfoil) which affects the air as it passes through it: within a given space of time, the air flowing over the wing has to cover a longer distance than the air flowing under the wing. This generates a low-pressure area on the top surface of the wing which tends to create lift, holding or raising the aircraft in the air. **Fig. A**

The Centre of Gravity

If your Mentor is to fly safely and stably it must balance at the correct point - just like every other aircraft. It is absolutely essential to set the correct CG (balance point) before you fly the model for the first time.

The stated CG position is measured from the root leading edge of the wing (on either side of the fuselage). Support the model on your fingertips at these points, and it should balance level. Even better: use the MPX CG gauge, # 69 3054. **Fig. B** If necessary, adjust the position of the flight battery until this is the case. If you still cannot set the balance point correctly, add ballast (lead, plasticene, modelling clay) to the nose or tail to correct it. If ballast is needed, fix it very securely. If the model is tail-heavy, the ballast must be fixed in the fuselage nose. If it is nose-heavy, the ballast is fixed at the tail end of the fuselage.

The **longitudinal dihedral** (difference between the wing and tailplane incidence) is also important. Provided that you attach the wing and tailplane to the fuselage exactly as described in these instructions, this parameter will automatically be correct.

If both these settings - centre of gravity and longitudinal dihedral - are correct, you will have no problems flying the model, and the test-flying process will be straightforward. **Fig. C**

Control surfaces, control surface travels

The model will only be able to offer safe, accurate flying characteristics if the control surfaces move freely, deflect in the correct directions, and move to the appropriate angles. The control surface travels stated in the building instructions have been established as a result of practical flight testing, and we strongly recommend that you keep to them - at least initially. You may wish to adjust them later to suit your style of flying, and this is a straightforward procedure.

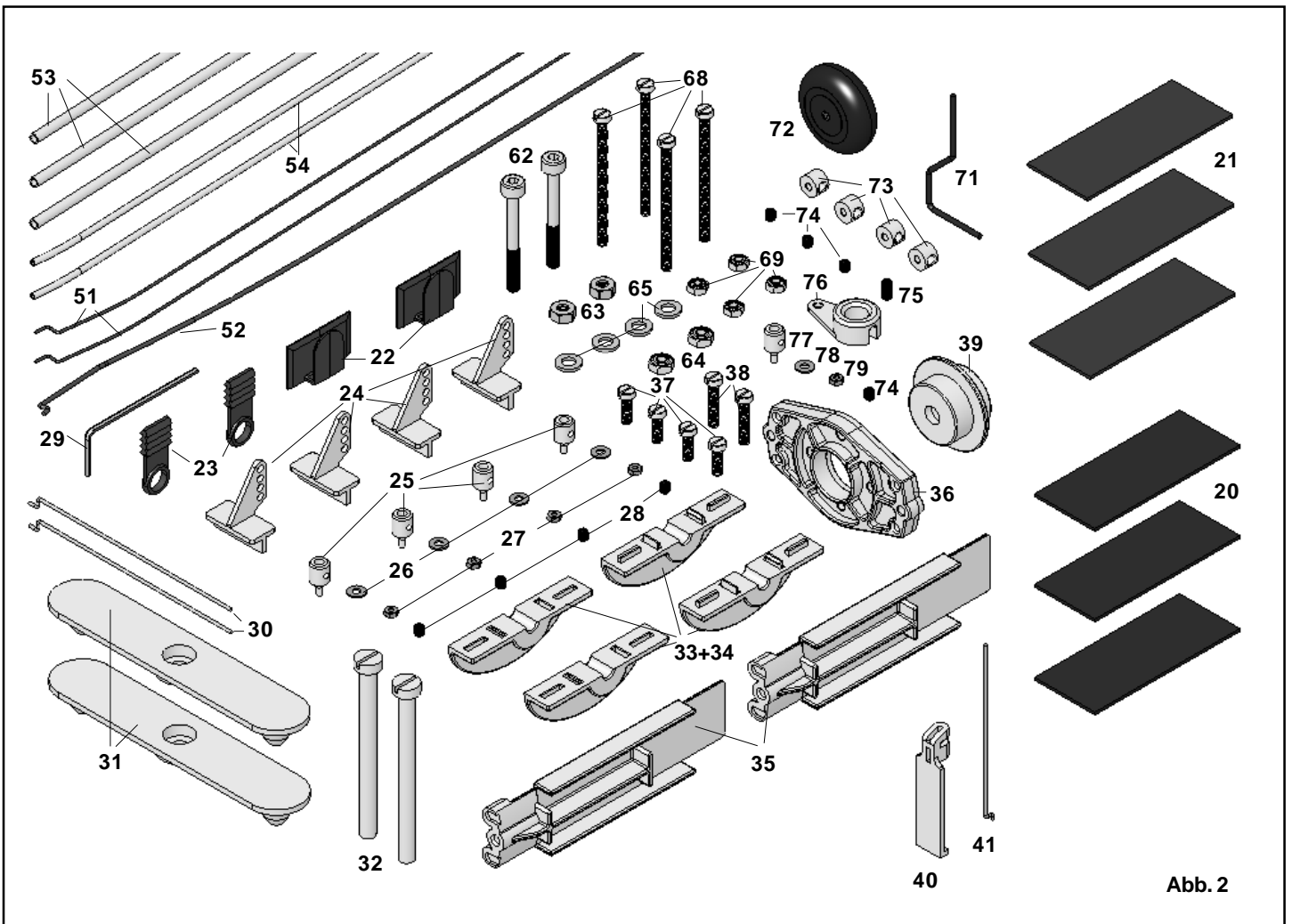
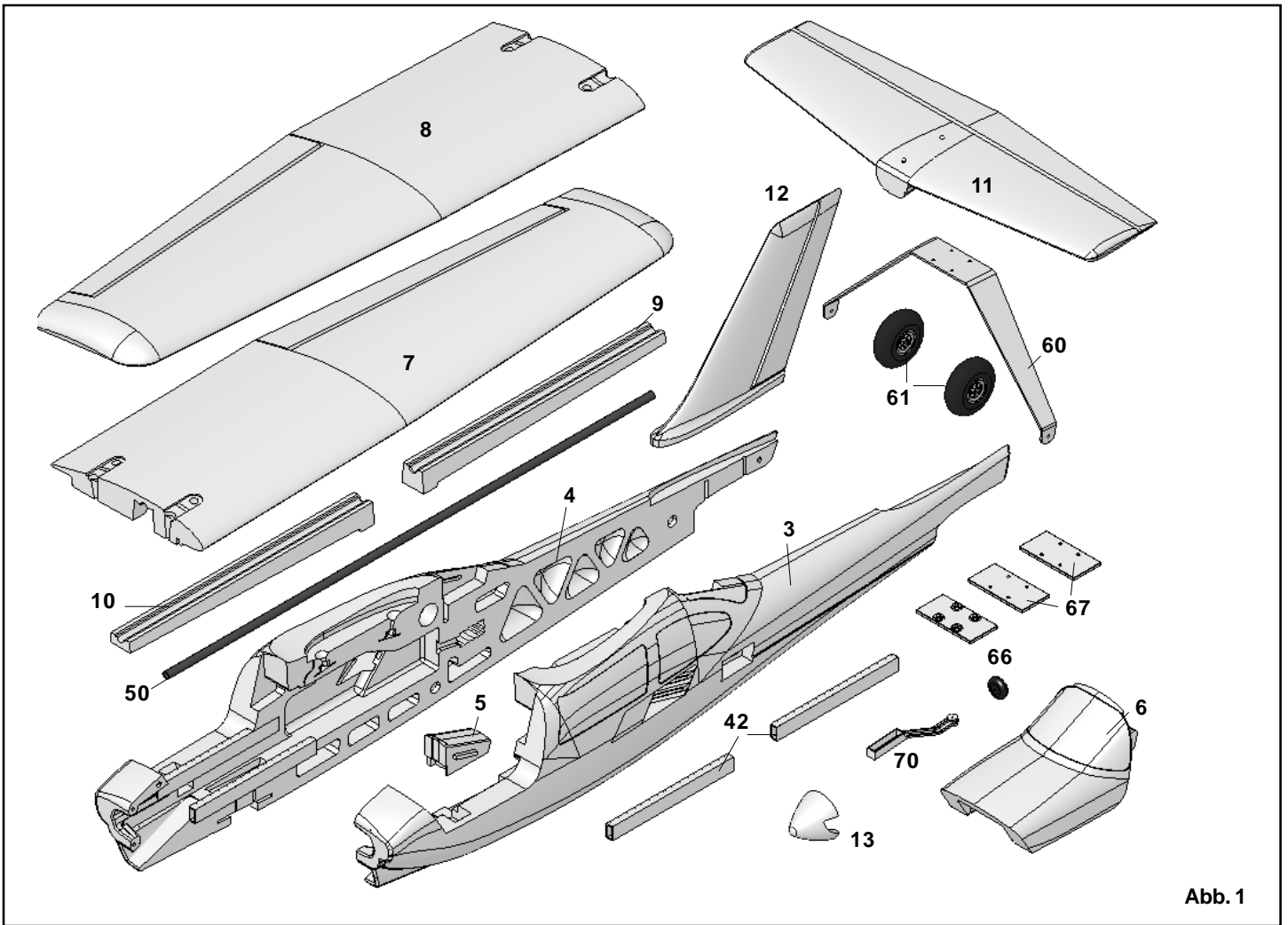
Transmitter control function arrangements

The transmitter is fitted with two primary sticks which control the servos in the model; the servos in turn move the control surfaces. The arrangement of the control functions shown here corresponds to Mode A, but other stick modes are possible.

The transmitter is used to operate the control surfaces as follows:

- | | |
|-------------------------------|---------------|
| The rudder (left / right) | Fig. D |
| The elevator (up / down) | Fig. E |
| The ailerons (left / right) | Fig. F |
| The throttle (motor off / on) | Fig. G |

The throttle (motor control) stick must stay in the set position by itself, i.e. it must not be self-centring. For this reason the throttle stick is usually set up with a ratchet. If your transmitter is not set up in this way, please read the operating instructions supplied with the RC set to find out how to set up the throttle ratchet.



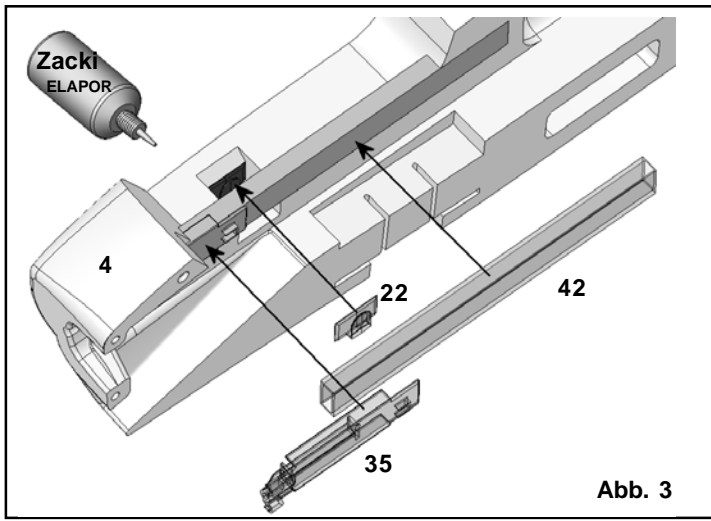


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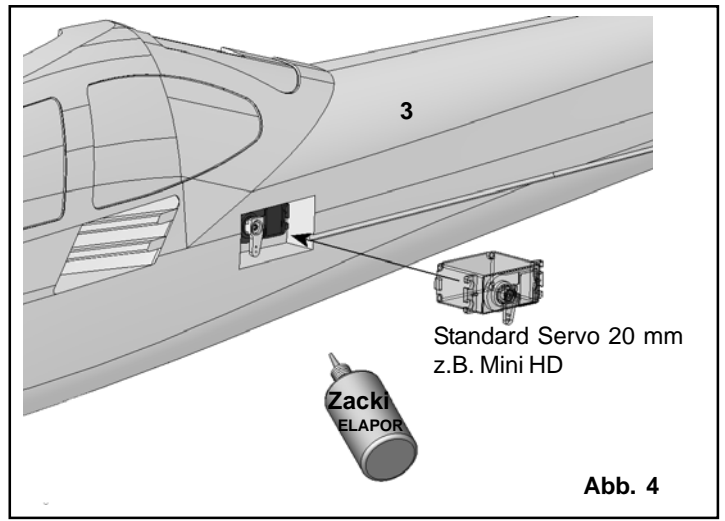


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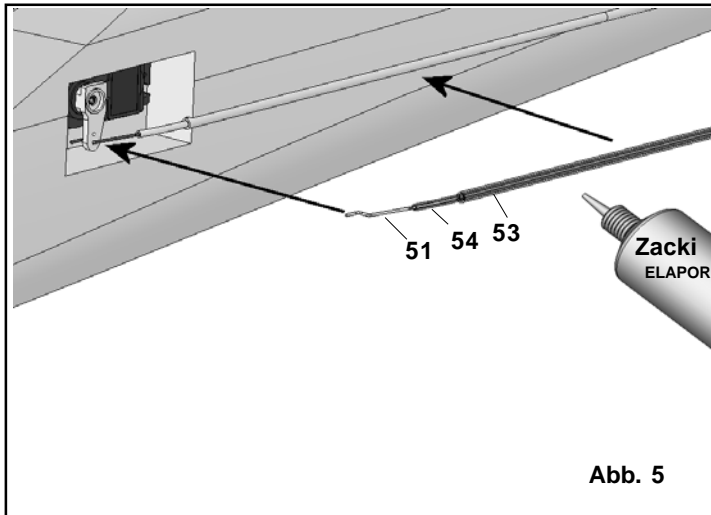


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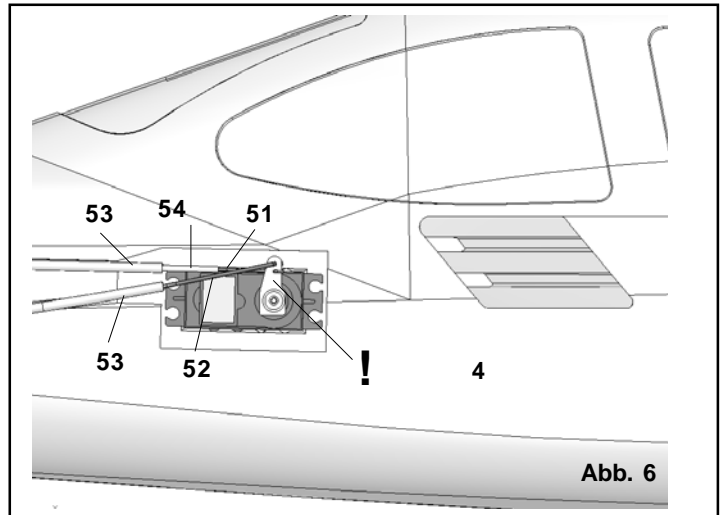


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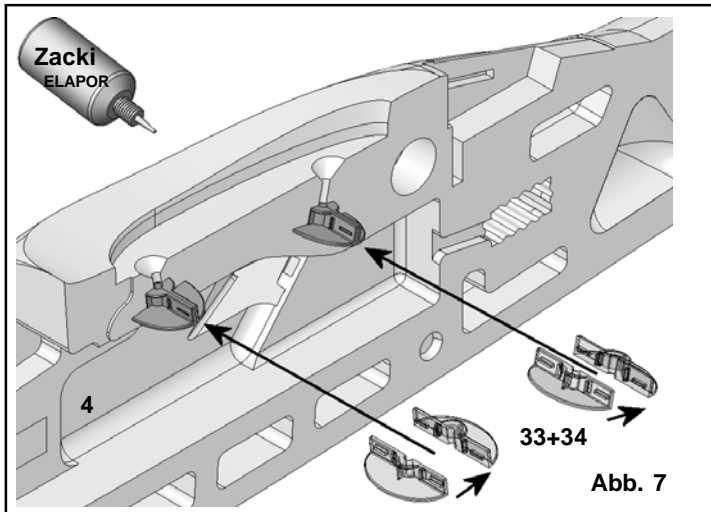


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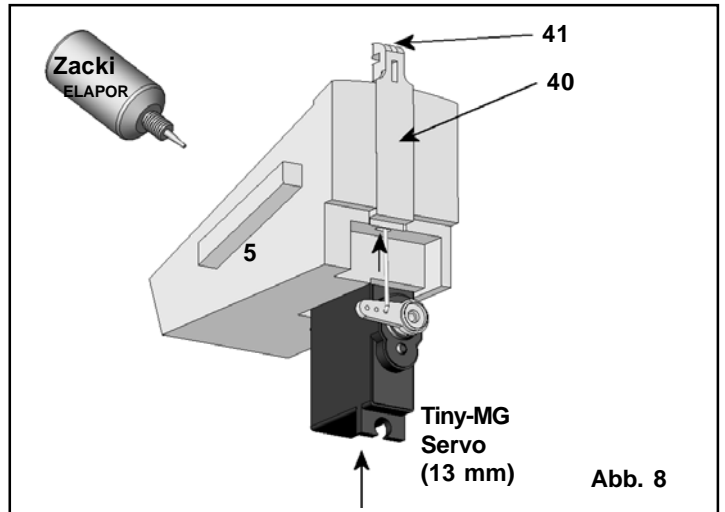


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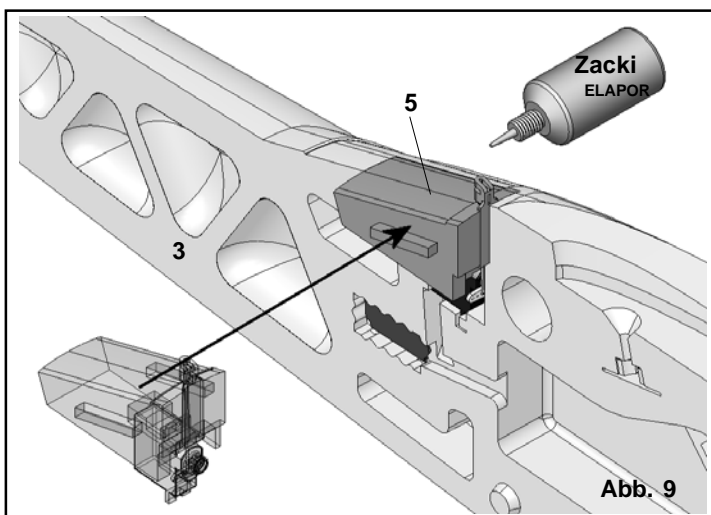


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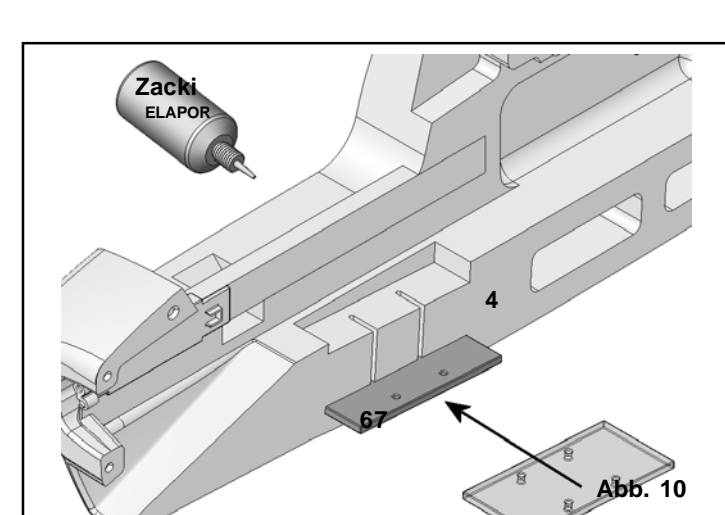
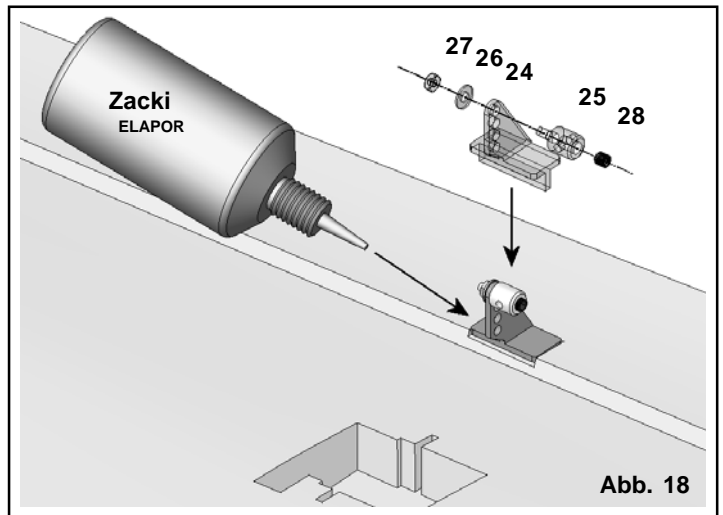
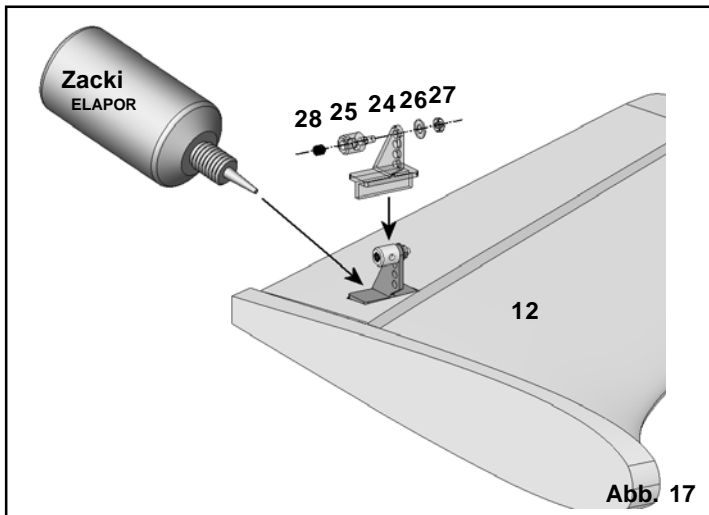
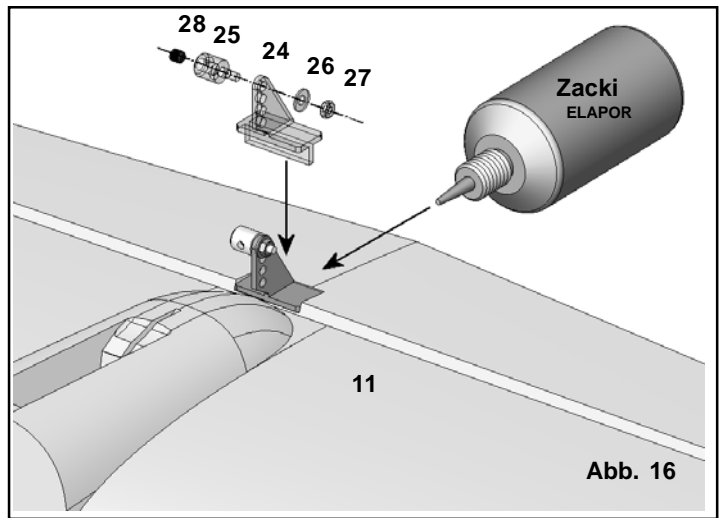
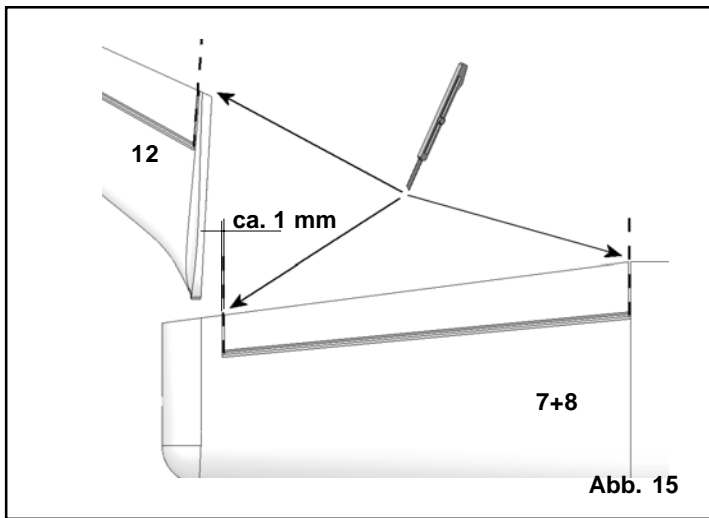
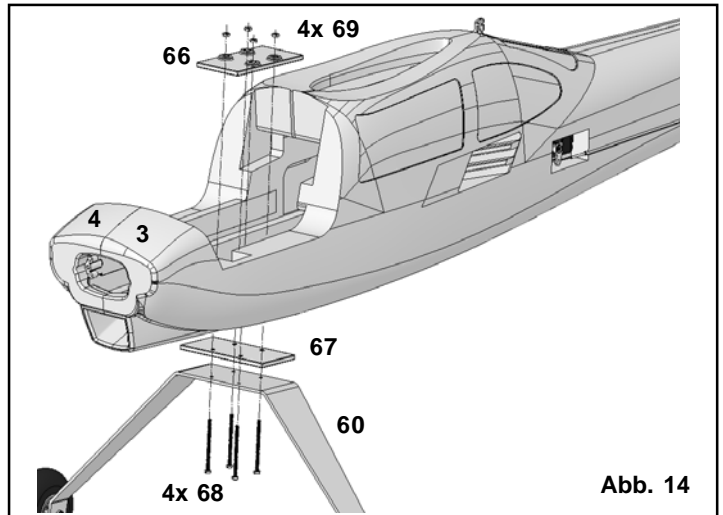
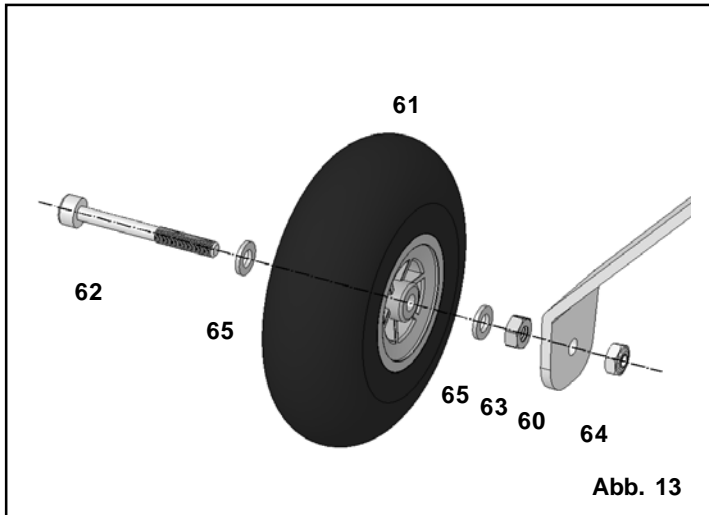
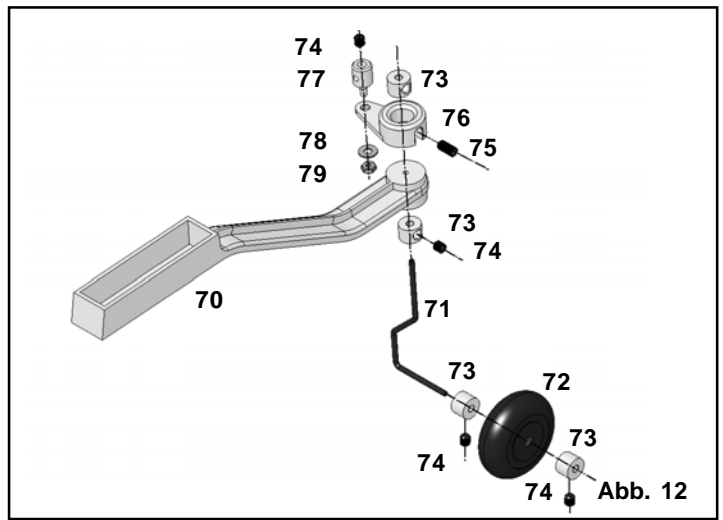
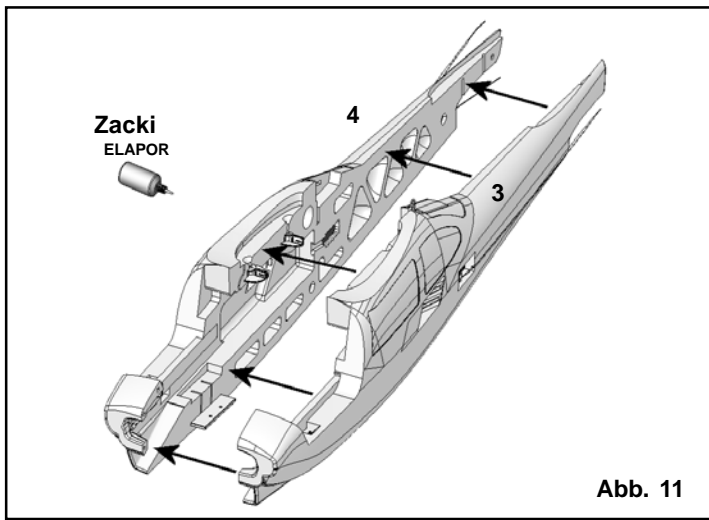


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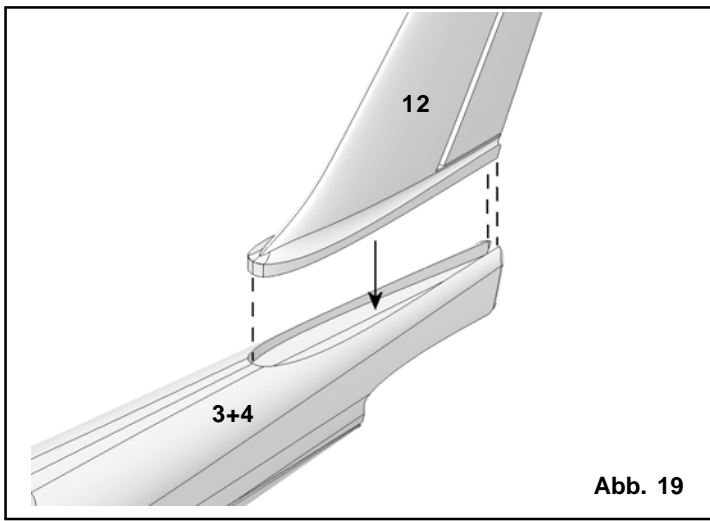


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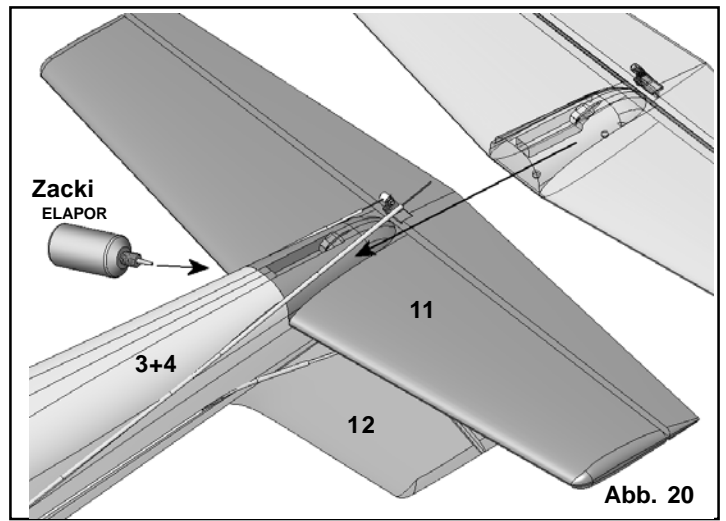


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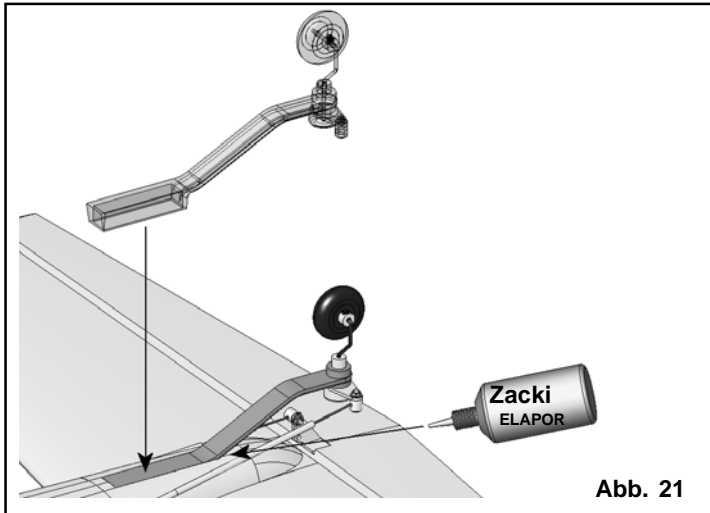


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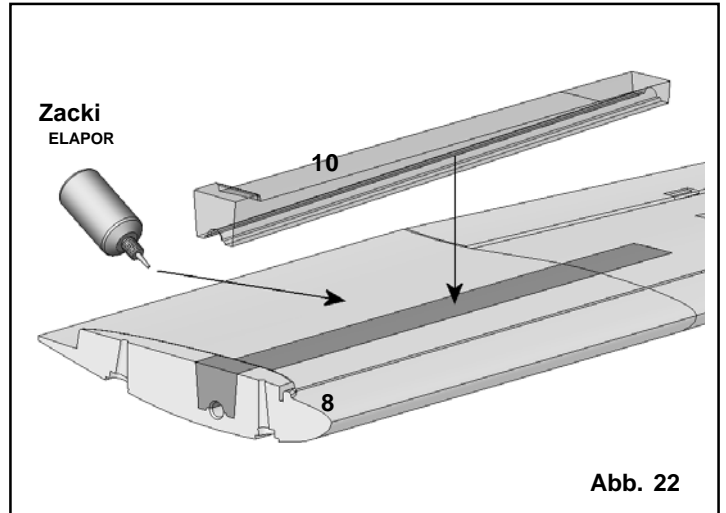


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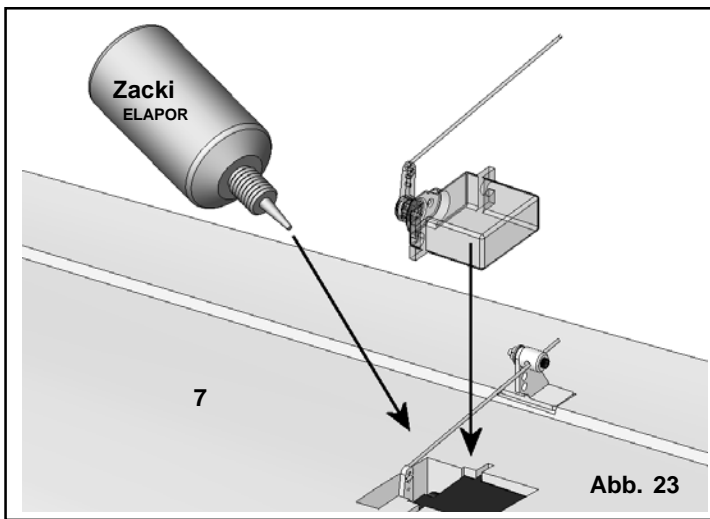


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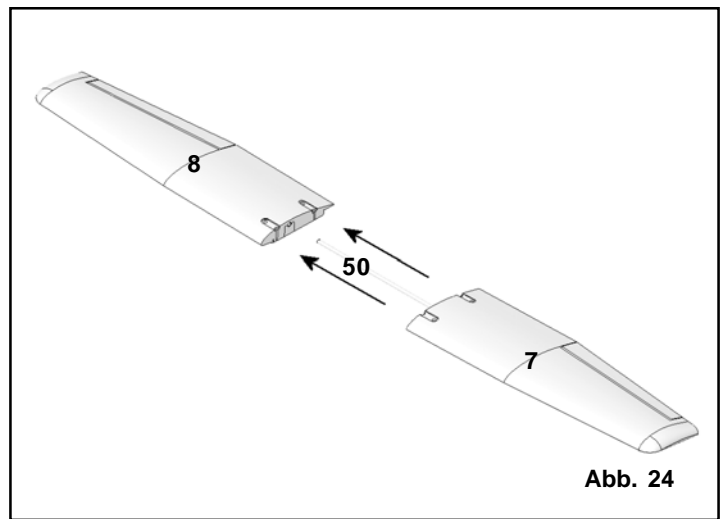


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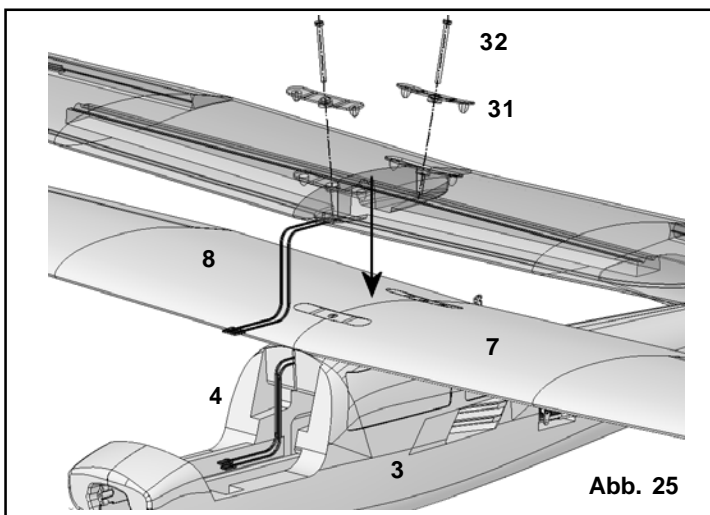


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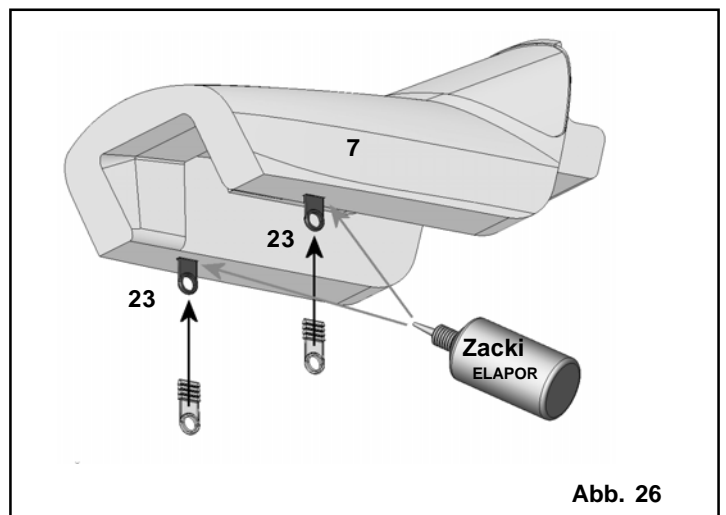


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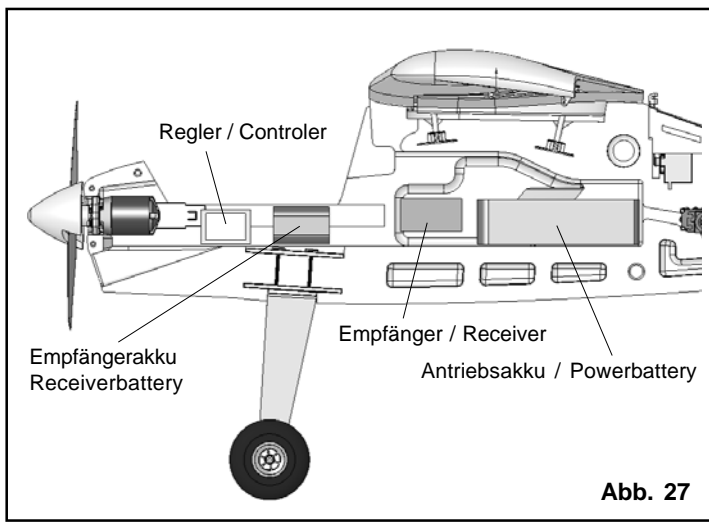


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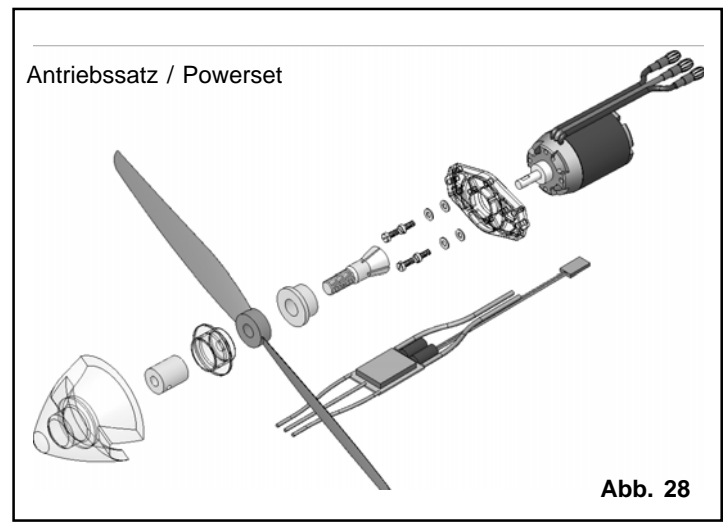


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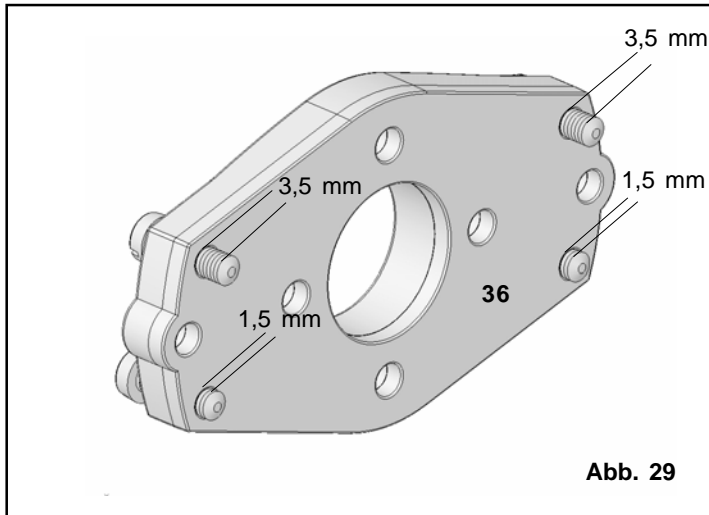


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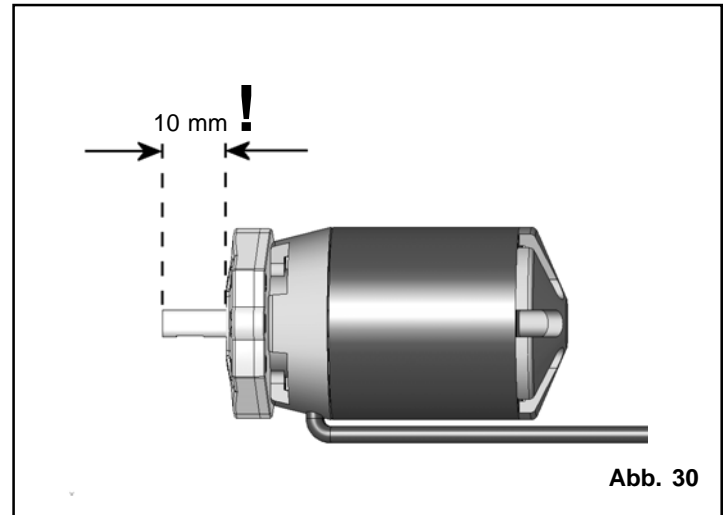


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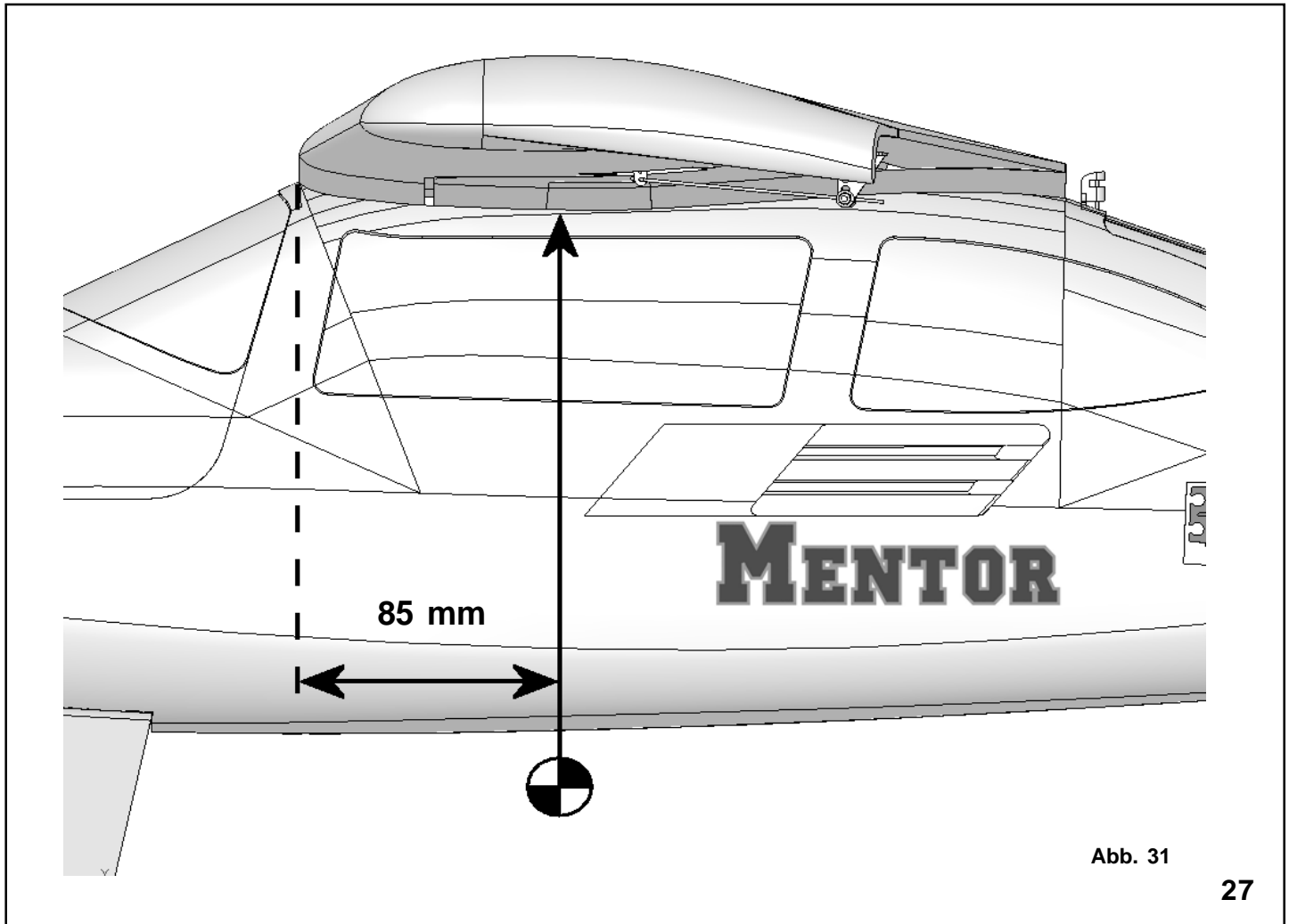


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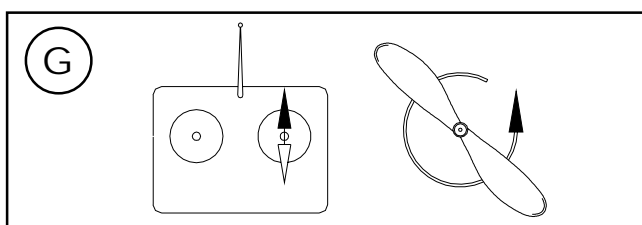
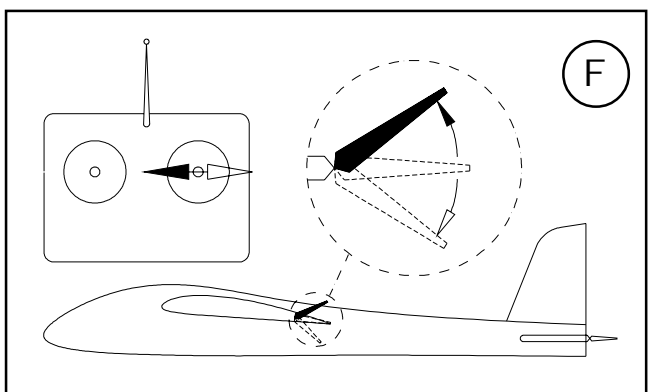
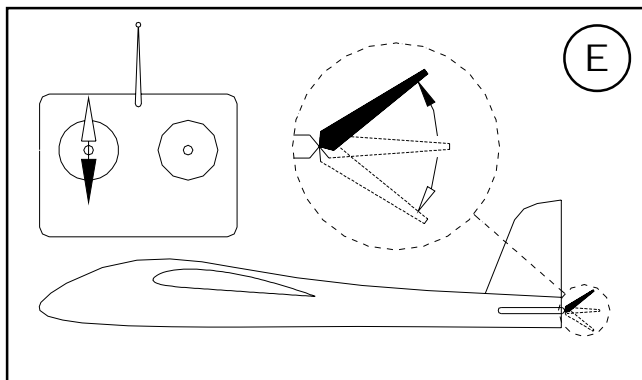
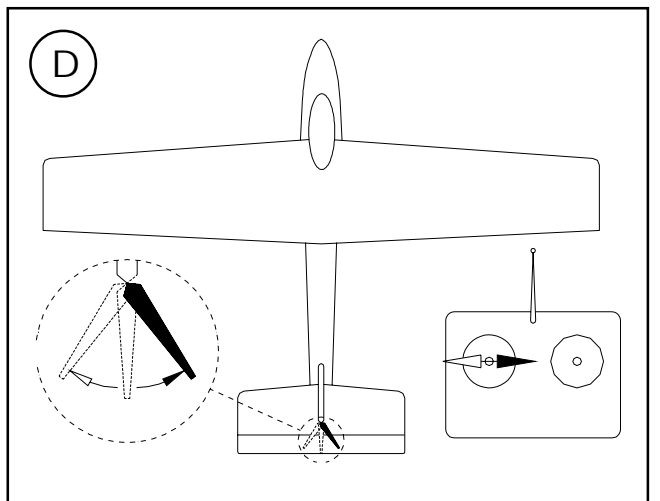
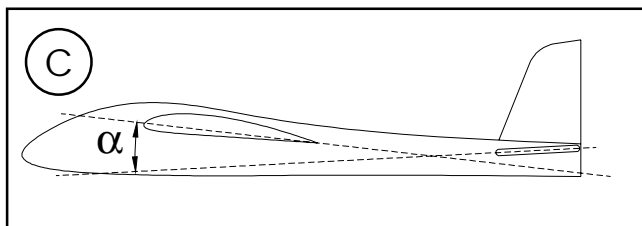
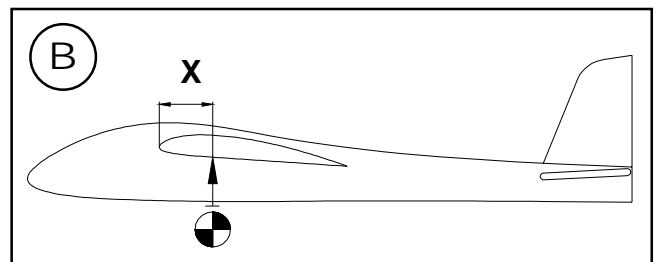
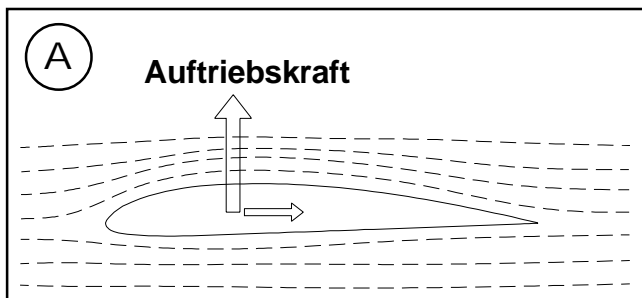
Grundlagen am Beispiel eines Flugmodells

Basic information relating to model aircraft

Bases du pilotage d'un modèle réduit

ozioni fondamentali

Principios básicos tomando como ejemplo un avión



Ersatzteile

Replacement parts
Pièces de rechanges
Parti di ricambio
Repuestos

MENTOR

(bitte bei Ihrem Fachhändler bestellen)

(please order from your model shop)

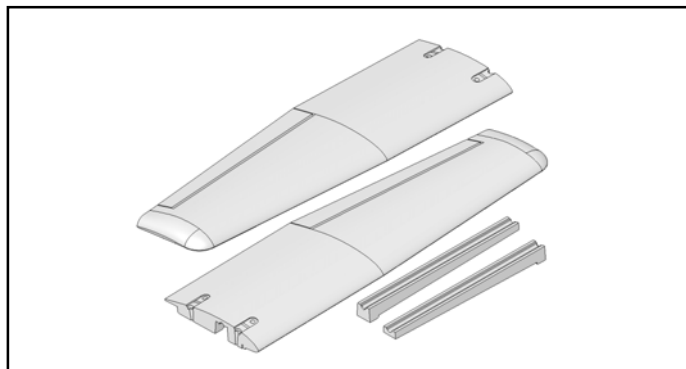
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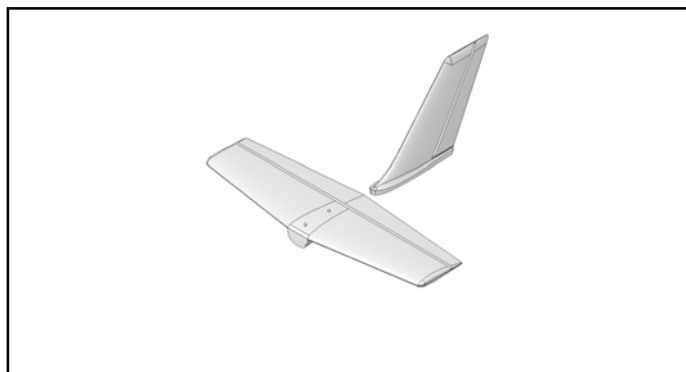
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Tragflächen
Wing panels
Ailes
Ali
Alas



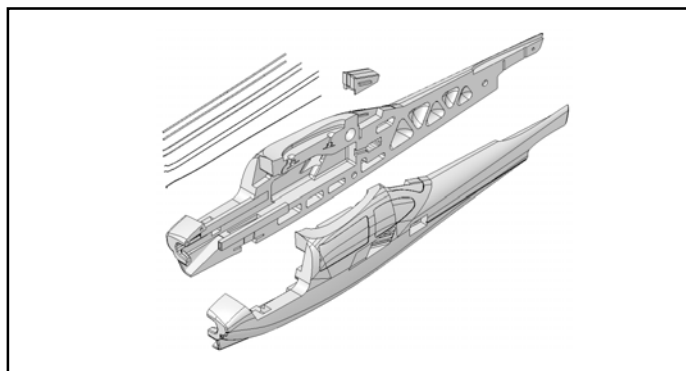
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Tragflächen
Wing panels
Ailes
Ali
Alas



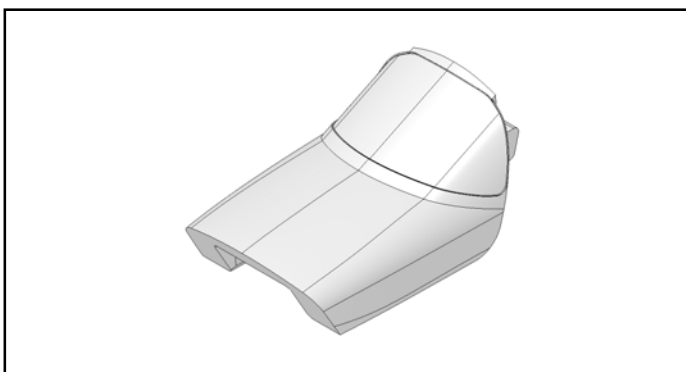
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Rumpfhälften + Bowdenzüge
Fuselage shells + snakes
Moitié de fuselage + tringlerie
Semigusci fusoliera + bowden
Fuselaje + transmisiones bowden



22 4229

Kabinenhaube
Canopy
Verrière
Capottina
Cabina



Ersatzteile

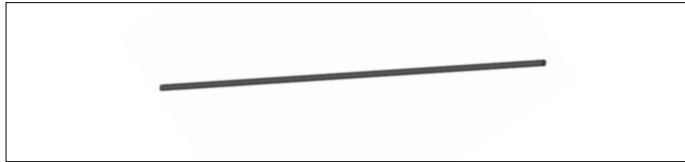
**Replacement parts
Pièces de rechanges
Parti di ricambio
Repuestos**

MENTOR

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(da ordinare presso il rivenditore)
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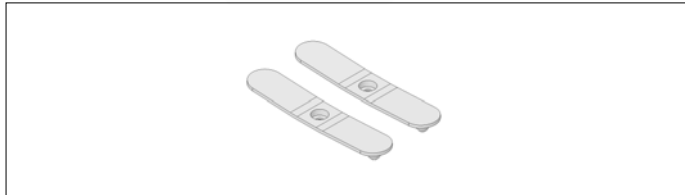
72 3129

CFK Holmrohr
CFRP Wing joiner
Tube en fibre de carbo
tubo carbonio
Tubo Fibra de vidrio



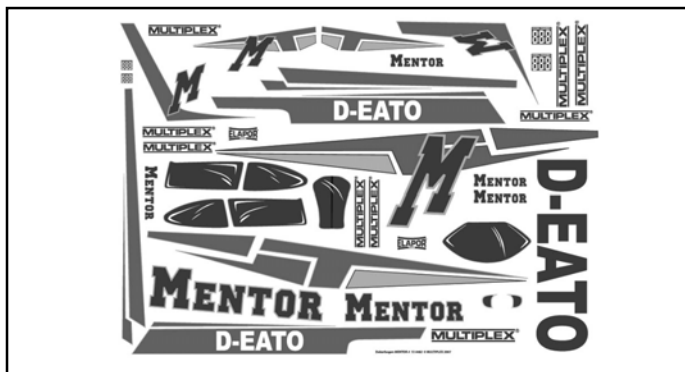
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Flügelarretierung
Wing retainer strap
Parties de fixation d'aile
Supporti alari
Fijación para alas



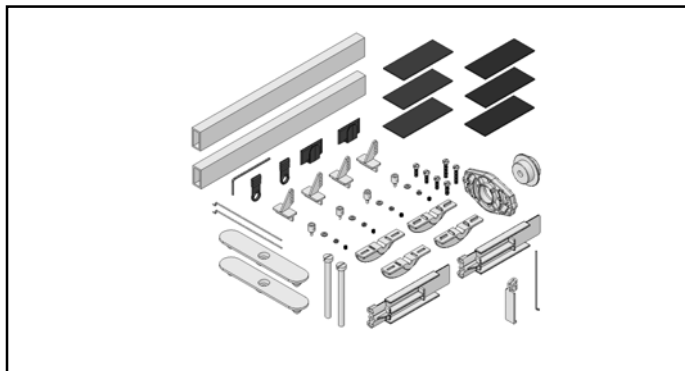
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Dekorbogen
Decal sheet
Planche de décoration
Decals
Lámina decorativa



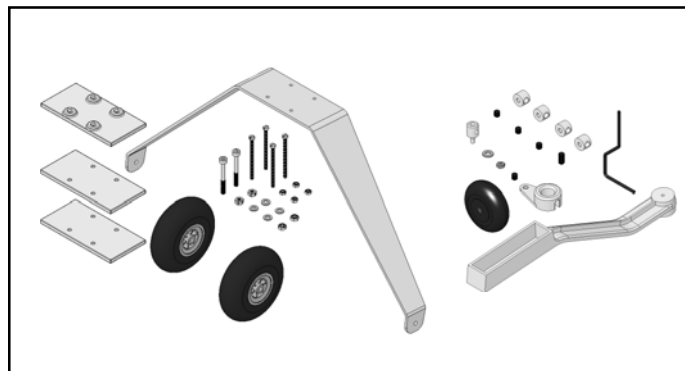
22 4232

Kleinteilesatz
Small items set
Petit nécessaire
Minuteria
Piezas pequeñas



22 4233

Hauptfahrwerk
Main undercarriage
Train d'atterrissage principal
carrello principale
Tren principal



72 3481

Heckfahrwerk
Tailwheel
Queue légère
Leggera
Ligera para el tren de cola

